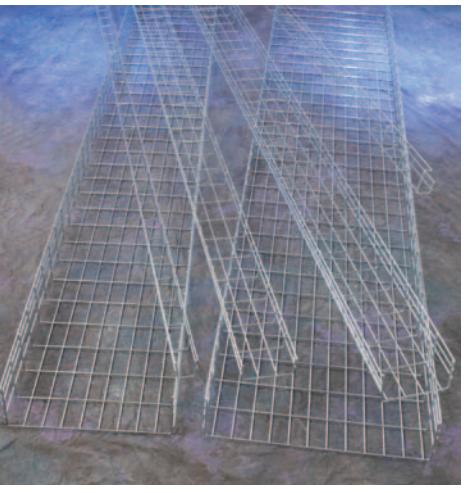
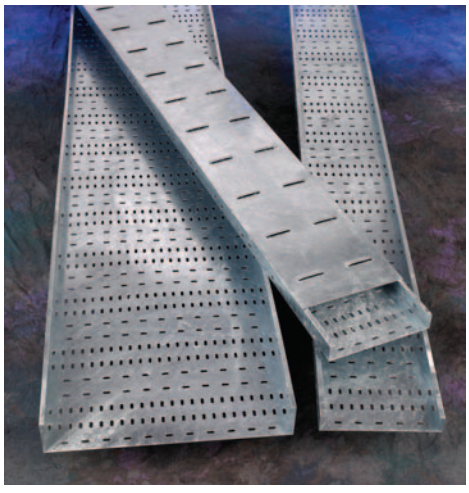
Cable Support Systems

أنظمة دعم الكابل

CTME-10

COOPER B-Line





General Information

Located less than 20 kilometers from Saudi Aramco headquarters in Dhahran, the facility offers an extensive line of electrical products, components, and engineering services for the region's growing oil and gas market. The new 50,000-square foot facility has been reviewed by Aramco, which involves passing the Saudi oil company's strenuous quality management assessments and strict Saudisation provisions. In conjunction with the facility's Aramco-approved status, Cooper B-Line has pledged to maintain at least 50% Saudi-employed workforce at the plant, a promise that will pay dividends in the local job market.

Cooper B-Line offers the region a broad line of cable support products, including aluminum, steel, and fiberglass cable ladder, as well as its pan cable tray and Flextray wire basket products. With the introduction of this catalog, Cooper B-Line now offers pan cable tray to the region.

Cooper B-Line also provides its specification engineering services locally, providing both pre- and post-sale engineering and technical support to customers throughout the region. Cooper B-Line's presence in this area represents a continuation of the company's investment in the global oil and gas industry, adding the GCC to its global coverage area that already includes offices in Korea, London, Calgary, and Houston.

معلومات عامة

يمتد المصنع على مساحة 50 ألف قدم مربع، وعلى مسافة أقل من 20 كيلومتر من المقر الرئيسي لشركة أرامكو السعودية في مدينة الظهران، ويوفر المصنع خط إنتاج شامل للمنتجات، والمكونات الكهربائية، والخدمات الهندسية المناسبة لسوق النفط والغاز المزدهرة في المنطقة. وقد قامت شركة أرامكو بمراجعة إجراءات إنشاء المصنع والاطلاع على مرافقه، حيث اجتاز المصنع معايير شركة البترول السعودية البالغة الدقة في تقييم إدارة الجودة وشروط السعودة الصارمة الخاصة بها. وإضافةً إلى اعتماد المرافق الذي حصل عليه المصنع من شركة أرامكو، فقد تعهدت إدارة المصنع بأنها ستحافظ على تخصيص نسبة 50% على الأقل من القوة العاملة لمصنع "كوبر بي-لاين" للعمالة السعودية، وهو وعد سيؤتي ثماره في سوق العمل المحلية.

يوفر مصنع "كوبر بي-لاين" للمنطقة خط إنتاج واسع لمنتجات دعم الكابلات، بما في ذلك سلالم الكابلات المصنوعة من الألومنيوم، والصلب، والألياف الزجاجية، وكذلك علب الكابلات الوعائية ومنتجات سلال الأسلاك من نوع Flextray. ومع إدخال هذه المجموعة من المنتجات ضمن خطوط الإنتاج، فإن مصنع "كوبر بي-لاين" يوفر للمنطقة علب الكابلات الوعائية في الوقت الحالي.

كما يوفر مصنع "كوبر بي-لاين" خدمات المواصفات الهندسية على المستوى المحلي، حيث توفر خدمات الدعم الهندسي والفني قبل وبعد البيع للعملاء في جميع أنحاء المنطقة. إن وجود مصنع "كوبر بي-لاين" في هذه المنطقة يمثل استمرارية الشركة في الاستثمار في صناعة النفط والغاز العالمية، لا سيما مع إضافة منطقة دول مجلس التعاون الخليجي إلى منطقة التغطية العالمية للشركة، والتي تشمل مكاتب في كل من كوريا ولندن ومدينة كالجاري، ومدينة هيوستون في الولايات المتحدة.

Specifications & Approvals

Cooper B-Line's Dammam facility is ISO Certified to ISO 9001:2008 by UKAS

Cooper B-Line's Cable Ladder and Flextray™ products are UL Classified as noted

AL HOTY

Cooper B-Line's Cable Ladder, Flextray, and Pan Cable Tray products have been tested and witnessed by Al Hoty. Documentation available upon request.

Cooper B-Line's Cable Ladder conforms to the requirements of IEC Standard 61537, 2001 Ed.

Cooper B-Line's Cable Ladder and Flextray™ products are CSA Classified as noted

Cooper B-Line's "FA" Fiberglass trays are approved by the American Bureau of Shipping (see page 172 for details)

Cooper B-Line is a member of the Cable Tray Institute (CTI)

Cooper B-Line is a member of the National Electrical Manufacturer's Association (NEMA)

المواصفات والاعتمادات

حصل مصنع "كوبر بي-لاين" بالدمام على شهادة الأيزو 9001 لعام 2008 من دائرة الاعتمادات الصناعية بالمملكة المتحدة (UKAS).

سلم الكابل "كوبر بي-لاين" ومنتجات Flextray™ مصنفة من UL على النحو المشار إليه.

AL HOTY

تم اختبار واعتماد أنظمة سلالم الكابلات وعلب الكابلات الوعائية ونظام Flextray الخاصة بمصنع "كوبر بي-لاين" بواسطة مجموعة الحوطي. الوثائق متاحة عند الطلب.

يتطابق نظام سلالم الكابلات الخاص بمصنع "كوبر بي-لاين" مع متطلبات معيار اللجنة الدولية للتقنيات الإلكترونية رقم 61537، إصدار 2001.

منتجات أنظمة سلالم الكابلات ونظام Flextray™ الخاصة بمصنع "كوبر بي-لاين" معتمدة من الرابطة الكندية للمواصفات القياسية حسب المشار إليه.

تم اعتماد أنظمة علب الكابلات "FA" المصنوعة من الألياف الزجاجية الخاصة بمصنع "كوبر بي-لاين" من قبل المكتب الأمريكي للشحن البحري (انظر الصفحة 172 لمعرفة التفاصيل)

مصنع "كوبر بي-لاين" عضو في معهد أنظمة علب الكابلات (CTI)

مصنع "كوبر بي-لاين" عضو في جمعية المصنعين الكهربائيين الوطنية (NEMA)

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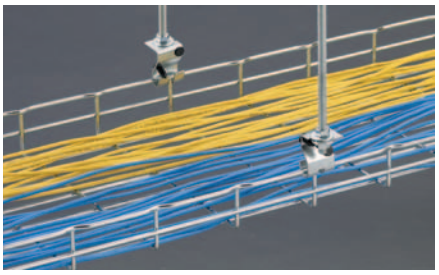
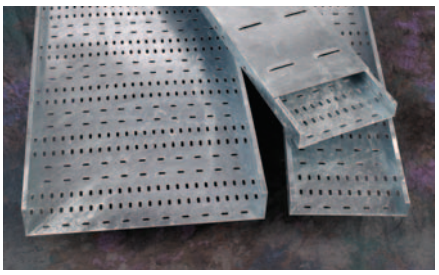


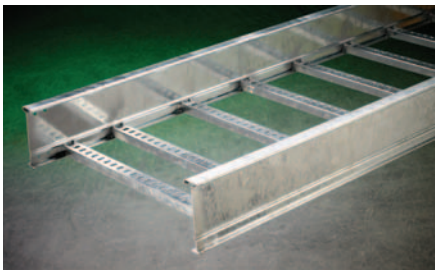
Flextray

Flextray is a flexible, field-adaptable way to manage cables throughout your project. The tray itself can be cut and bent to the needs of the installer on the jobsite, allowing cable runs to be adjusted as needed. The wide range of sizes offered by Cooper B-Line makes Flextray a great choice for everything from a small cable drop to a large trunk of cables. Our tray has the market-preferred "T" weld safety edge, protecting both the cable and the installer during cable installation.



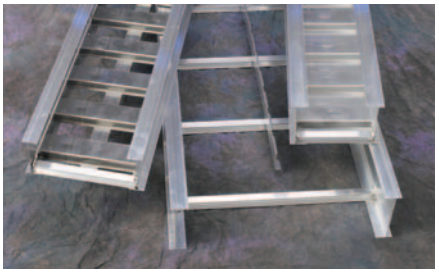
Pan Cable Tray

Cooper B-Line's pan cable tray is designed specifically for instrumentation cables that can be affected by cable sag or pinching when installed in a ladder tray. The tray consists of a flat trough of bent sheet metal, and can be ordered with or without perforation for cable ventilation. A continuous bottom surface allows for constant cable support with no cable sag, while a full range of radiused cable fittings allow the cables to bend slowly, adhering to cable manufacturer's recommendations. A flange on top of the tray provides added strength.



Steel Cable Ladder

Light duty steel cable ladders are designed with a top flange for stiffness, and a bottom flange to support rungs securely. Heavier duty ladders utilize Cooper B-Line's I-Beam siderail profile, the strongest available siderail shape. The I-Beam provides provides more strength using less material, meaning that the ladders are lighter and easier to installl. Rungs for all cable ladders support a 200 lbs. concentrated load beyond the cataloged cable load.



Aluminum Cable Ladder

All Cooper B-Line aluminum cable ladders are manufactured from marine-grade aluminum, making them ideal for a variety of applications, both onshore and offshore. Like the steel cable ladders, aluminum cable ladders have a specially shaped I-Beam siderail. Special options are available to minimize the number of supports required for the ladder, including mid-span splice plates and extra long lengths.

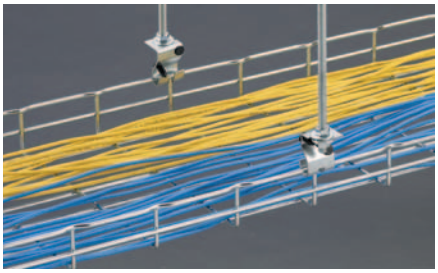
Fiberglass Cable Ladder

Fiberglass ladder is a non-metallic cable management system that is ideal for hot, humid environments. The material is also lightweight, corrosion resistant, and treated with a special surface veil for UV resistance. Rungs are both mechanically attached and bonded with adhesive for a secure connection.

Cable Cleats

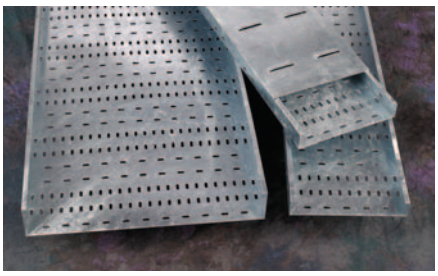
Cooper B-Line cable cleats are designed to support and retain your cables within your cable tray system in everyday conditions. More importantly, they help prevent damage in short circuit conditions. Unfortunately, short circuits to happen, and when they do, they are destructive and dangerous. Cable cleats are one of the first lines of defense to help protect your personnel, your cables, and your cable ladder and tray systems.

نظرة عامة على المنتج



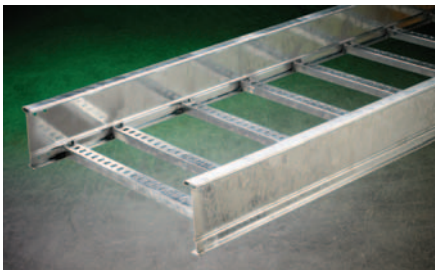
نظام Flextray للتحكم في الكابلات

نظام Flextray عبارة عن طريقة مرنة وسهلة التكييف للتحكم في الكابلات في المشروع بالكامل. ويمكن قطع المجرى نفسه وثنيه حسب احتياجات فني التركيب في موقع العمل، مما يسمح بتعديل مجرى الكابل حسب المطلوب. ومن خلال النطاق العريض من المقاسات والأحجام التي يوفرها مصنع "كوبر بي-لاين"، فإن نظام Flextray للتحكم في الكابلات يُعتبر من أفضل الحلول لجميع الأغراض في هذا المجال بداية من سقاطة الكبل حتى صندوق الكابلات الكبير. يتميز نظام التحكم في الكابلات الخاص بنا بحافة أمان اللحام المصممة على شكل حرف "T" والمفضلة في الأسواق، والتي تعمل على حماية كل من الكابل وفني التركيب أثناء عملية التركيب.



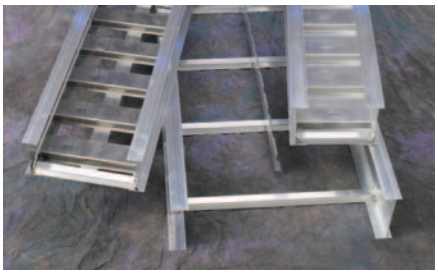
علب الكابلات الوعائية

علب الكابلات الوعائية من مصنع "كوبر بي-لاين" مصممة خصيصًا لكابلات الأجهزة التي يمكن أن تتأثر بارتخاء الكابلات أو انضغاطها عند تركيبها في سلالم الكابلات. تتكون علب الكابلات من وعاء مسطح من الصفائح المعدنية، ويمكن الحصول عليها مثقبة، أو غير مثقبة لتهوية الكابلات. ويسمح السطح السفلي الممتد بدعم الكابلات بشكل مستمر مع عدم حدوث ارتخاء فيها، كما تساعد المجموعة الكاملة من تجهيزات الكابلات الجاهزة على ثني الكابلات ببطء، مع الالتزام بتوصيات الشركة المصنعة للكابلات. كما توجد شفة علوية للعلبة تعطيها قوة إضافية.



سلالم الكابلات المصنوعة من الصلب

سلالم الكابلات المصنوعة من الصلب ذات الخدمة الخفيفة مصممة بشفة علوية تمنحها القوة والصلابة، كما توجد شفة سفلية لدعم الدرجات بشكل آمن. أما سلالم الكابلات ذات الخدمة الشاقة فتستخدم نظام دعامات على شكل حرف I ذات القضبان الجانبية الخاصة بمصنع "كوبر بي-لاين" وهو أقوى شكل من أشكال القضبان الجانبية المتاحة. ويوفر نظام دعامات على شكل حرف I مزيدًا من القوة باستخدام أقل قدر من المواد، بمعنى أن السلالم تكون أخف وأسهل في التثبيت. وتتحمل درجات السلالم لجميع الكابلات ثقل حتى 200 رطل من الحمل المركز بالإضافة إلى حمل الكابل المذكور بالكتالوج.



سلالم الكابلات المصنوعة من الألومنيوم

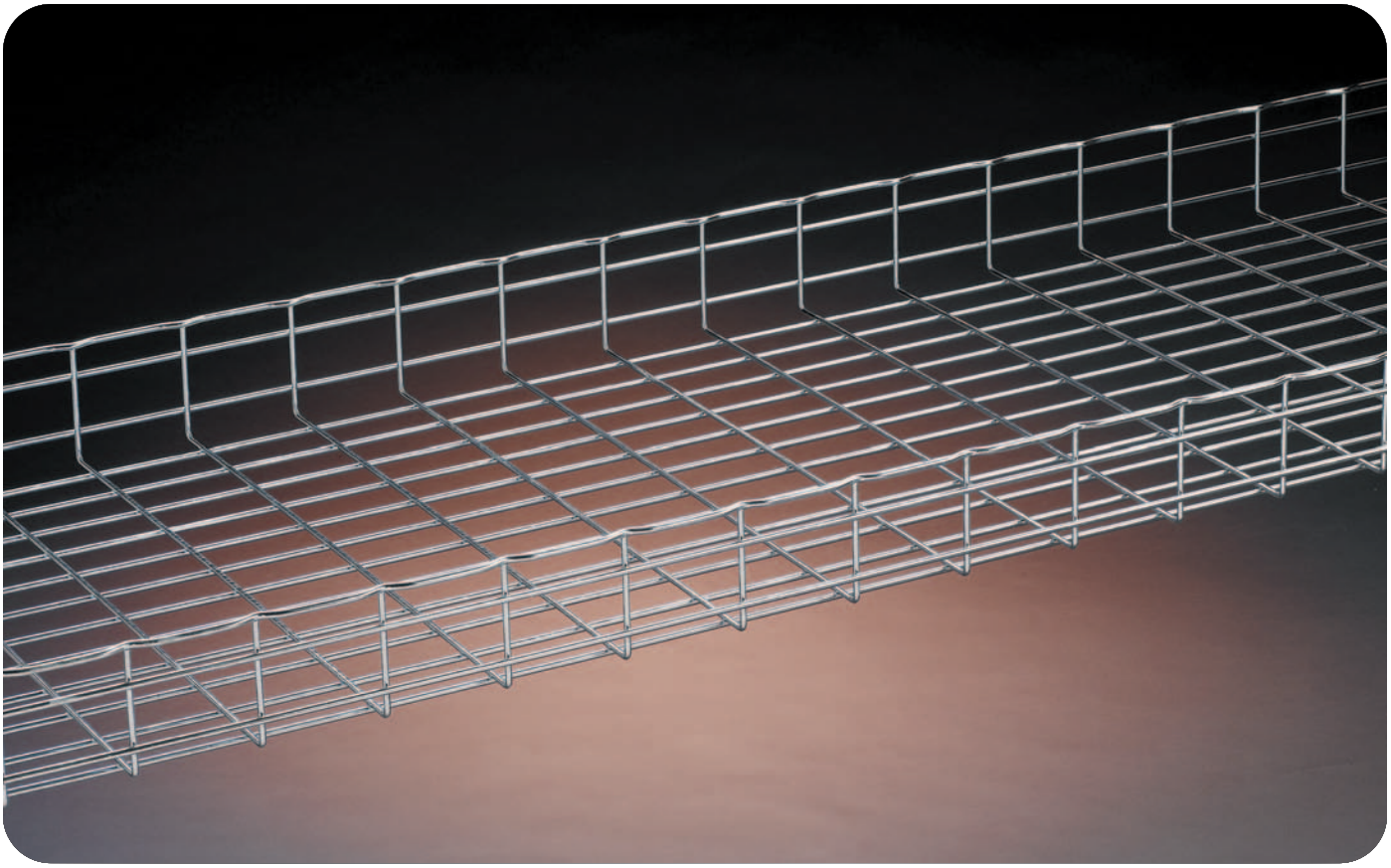
إن جميع سلالم الكابلات المصنوعة من الألومنيوم التي يقدمها مصنع "كوبر بي-لاين" يتم تصنيعها من الألومنيوم "البحري"، مما يجعلها منتجاً مثاليًا لمجموعة متنوعة من الاستخدامات سواء في المواقع البحرية، أو المواقع البرية. ومثل سلالم الكابلات المصنوعة من الصلب، يوجد بسلالم الكابلات الألومنيوم نظام دعامات القضبان الجانبية على شكل حرف I. كما توجد خيارات خاصة لتقليل عدد الدعامات المطلوبة للسلم، بما في ذلك الألواح المتراكبة بطول نصف باع، وأطوال إضافية أخرى.

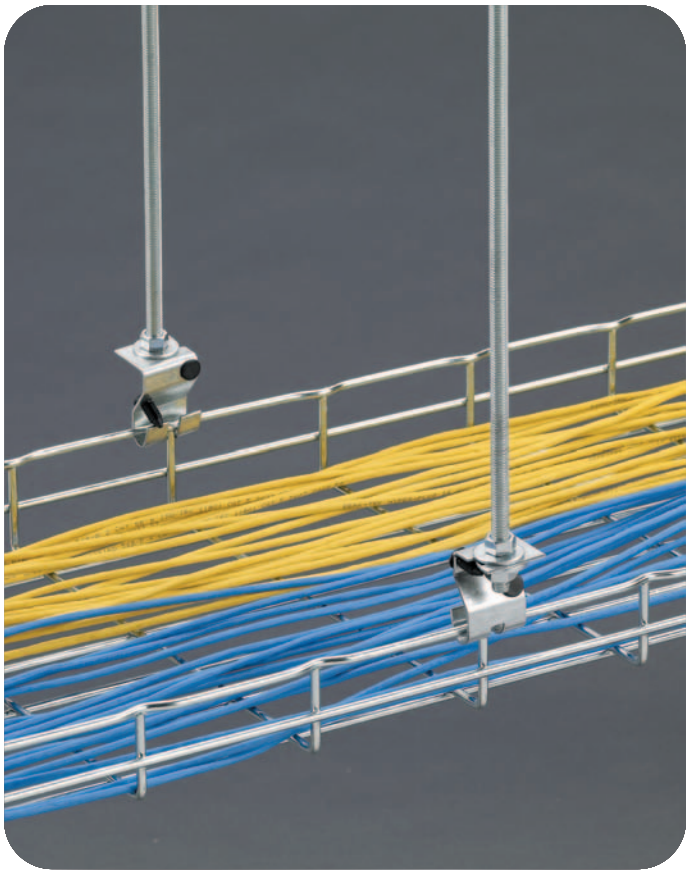
سلالم الكابلات المصنوعة من الألياف الزجاجية

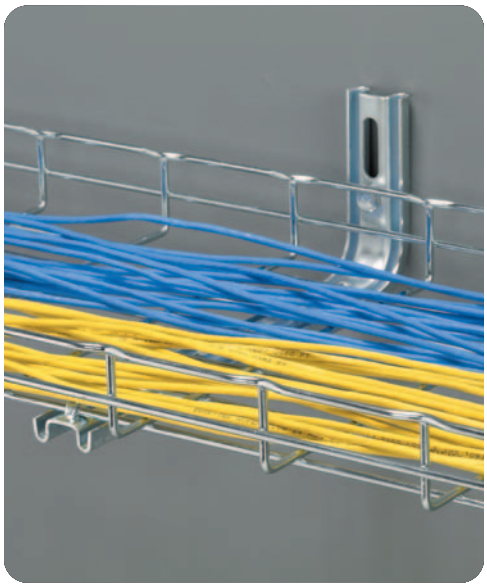
سلم الكابلات المصنوع من الألياف الزجاجية عبارة عن نظام إدارة كابلات غير معدني، ويعتبر الحل المثالي للبيئات الحارة والرطبة. فهذه المادة تتميز بخفة الوزن ومقاومة التآكل، فضلاً عن أنها معالجة بطبقة سطحية خاصة لمقاومة الأشعة فوق البنفسجية. يتم تركيب وربط الدرجات بطريقة ميكانيكية باستخدام مادة لاصقة لضمان ربطها بشكل آمن.

مرابط الكابلات

إن مرابط الكابلات التي يقدمها مصنع "كوبر بي-لاين" مصممة خصيصاً لدعم وتثبيت الكابلات داخل نظام علب الكابلات في ظروف الحياة اليومية. والأهم من ذلك أنها تساعد على منع وقوع أضرار في حالات حدوث قصر في الدائرة الكهربائية (الماس الكهربائي). ولكن حالات الماس الكهربائي أمر واقع، وعندما تحدث تكون مدمرة وخطيرة. وتعتبر مرابط الكابلات هي أول الخطوط الدفاعية لحماية العاملين والكابلات وأنظمة سلالم الكابلات.







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The F.A.S.T. System is Foldable, Adjustable, Stackable, and Tool-less, providing many options to manage cables inside your raised floor space. With only a few parts, you can create everything from a basic single layer installation to a cantilevered, multiple-tier cable run. Make the most of your raised floor space and your time with the F.A.S.T. System!

Finish Information

Flextray Cable Tray and Accessories are available in a wide variety of finishes to meet the environmental or aesthetic requirements of customer installations. Use the list below to find the finish and suffix that will meet your needs.
Available product finishes will be listed on individual pages throughout the catalog.
Finish codes shown in bold type are the standard for that product.

EG (ZN)
Electroplated Zinc Galvanized Finish applied after fabrication
Recommended applications: Controlled interior
UL/CSA Classified as an equipment ground conductor when spliced as recommended
ASTM B633 - Average thickness of 0.3 mils (8 microns)

GS (GLV)
Pre-Galvanized Zinc Finish applied before fabrication
Recommended applications: Limited industrial & interior
UL/CSA Classified as an equipment ground conductor when spliced as recommended
ASTM A641

BLE (FB)
Black Powder Coat Finish applied after fabrication
Recommended applications: Controlled interior
UL/CSA Classified as an equipment ground conductor when coating has been removed at splice contact points
Average paint thickness of 1.2 mils (30 microns) to 3.0 mils (75 microns)

BLO
Black Oxide Finish
Recommended applications: Controlled interior
ASTM D769

SPC
Custom Powder Coat Finish applied after fabrication
Recommended applications: Controlled interior
UL/CSA Classified as an equipment ground conductor when coating has been removed at splice contact points
No Specification

HD (HDG)
Hot Dip Galvanized Finish applied after fabrication
Recommended applications: Exterior, corrosive
UL/CSA Classified as an equipment ground conductor when spliced as recommended
ASTM A123 - Average thickness of 2.4 mils (60 microns) to 3.2 mils (80 microns)

304S (SS4)
304L Stainless Steel
Recommended applications: Food preparation, wash-down areas
ASTM A580

316S (SS6)
316L Stainless Steel
Recommended applications: Highly corrosive applications & marine environments
ASTM A580

Grounding Information

Statement for all UL Classified products:

This product is classified by Underwriters Laboratories, Inc. as to its suitability as an equipment grounding conductor only. 556E

Most sizes of FLEXTRAY are UL Classified to serve as an Equipment Ground Conductor. The ground path can be achieved in one of two ways listed on page 11:

Grounding Information (cont.)

1. Use the recommended quantity of UL Classified splices to connect sections and at places where the tray is cut.
2. Run an appropriately sized ground wire alongside the tray and attach it to each tray section and on both sides of a cut in the tray. (This method is recommended by NEMA VE-2 Installation Manual.)

NEMA Load & Fill Chart

Flextray Series Part Number	Size height x width	Support Span / Loading Capacity* Lbs/Ft (max) 5'-0"	6'-0"	7'-0"	8'-0"	Cable Fill (50% fill)** Actual Area Inside Tray (in²)	Number of CAT 5e Cables***	Number of CAT 6 Cables***
FT1.5X12	1 1/2" x 12"	29	17	14	11	12.2	176	124
FT2X2	2" x 2"	34	28	24	20	4.3	61	43
FT2X4	2" x 4"	52	43	35	27	8.2	118	83
FT2X6	2" x 6"	66	47	35	27	12.1	175	123
FT2X8	2" x 8"	66	47	35	27	16.1	231	163
FT2X12	2" x 12"	68	47	35	27	23.9	345	243
FT2X16	2" x 16"	68	47	35	27	31.8	459	324
FT2X18	2" x 18"	68	47	35	27	35.8	516	364
FT2X20	2" x 20"	68	47	35	27	39.7	573	404
FT2X24	2" x 24"	68	47	35	27	47.5	686	484
FT2X30	2" x 30"	68	47	35	27	59.8	862	608
FT2X32	2" x 32"	77	53	39	30	63.3	914	645
FT4X4	4" x 4"	58	49	42	36	15.8	227	160
FT4X6	4" x 6"	93	77	60	46	23.6	341	240
FT4X8	4" x 8"	94	78	61	47	31.5	454	321
FT4X12	4" x 12"	119	83	61	47	47.5	686	484
FT4X16	4" x 16"	119	83	61	47	63.5	917	647
FT4X18	4" x 18"	119	83	61	47	71.5	1032	728
FT4X20	4" x 20"	119	83	61	47	79.5	1148	810
FT4X24	4" x 24"	128	89	65	50	95.5	1379	973
FT4X30	4" x 30"	128	89	65	50	119.5	1725	1217
FT6X8	6" x 8"	111	77	57	43	47.3	682	481
FT6X12	6" x 12"	124	86	63	48	71.6	1034	729
FT6X16	6" x 16"	128	89	65	50	95.3	1375	970
FT6X18	6" x 18"	128	89	65	50	107.3	1549	1092
FT6X20	6" x 20"	141	98	72	55	118.9	1716	1211
FT6X24	6" x 24"	154	107	78	60	143.3	2068	1459

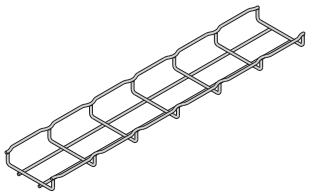
* Published load chart has not been tested with Flexmate splice. Please consult the factory for load information when using the Flexmate option.

** Flextray fill capacity is based on NEC allowable fill of 50%. The NEC rule requires that the cable cross-sectional areas together may not exceed 50% of the tray area (width x depth = fill). Cables will nearly completely fill the cable tray when reaching the 50% cable fill, due to empty space between the surface of the cables. TIA recommends 40% fill ratio. Flextray loads shown in the loading chart will not be exceeded at 50% fill.

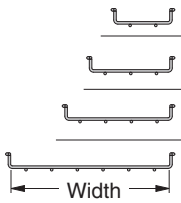
*** CAT 5e 4-pr non-plenum approximated at .21 in. diameter, CAT 6 4-pr non-plenum approximated at .25 in. diameter. Actual diameters vary by cable manufacturer.

Flextray™ Straight Sections

1.5” Deep Flextray



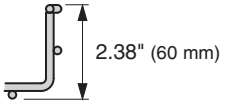
Height: 1.38" (35 mm)
Length: 118.312" (3 meter)
Wire Dia. Minimum: .196" (5.0 mm)
Finishes:
EG, GS, **BLE**, HD, 304S, 316S

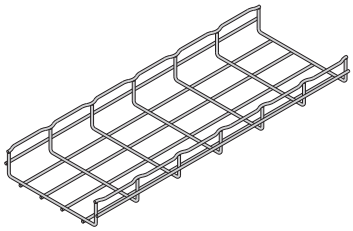


Part Number	Width in.	Width mm	Wt. Per Pc. lbs.	Wt. Per Pc. kg
FT1.5X4X10	4	100	5.8	2.63
FT1.5X6X10	6	150	7.4	3.35
FT1.5X8X10	8	200	9.0	4.08
FT1.5X12X10	12	300	12.1	5.49

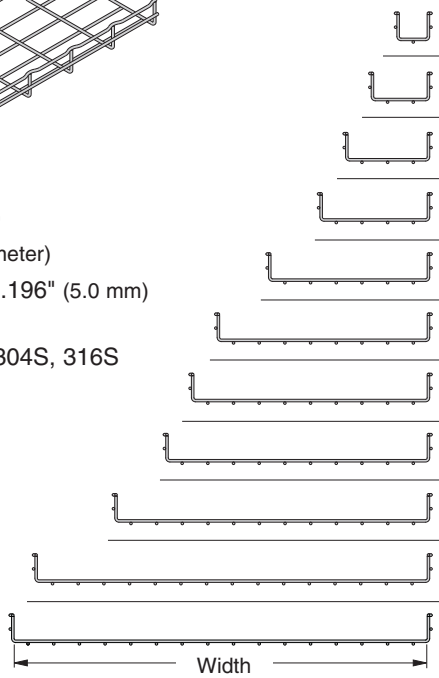
Only FT1.5X12 (12” wide) is UL Classified

2” Deep Flextray





Height: 2.38" (60 mm)
Length: 118.312" (3 meter)
Wire Dia. Minimum: .196" (5.0 mm)
Finishes:
EG, GS, **BLE**, HD, 304S, 316S



Part Number	Width in.	Width mm	Wt. Per Pc. lbs.	Wt. Per Pc. kg
FT2X2X10	2	50	6.6	2.99
FT2X4X10	4	100	8.2	3.72
FT2X6X10	6	150	9.7	4.40
FT2X8X10	8	200	11.2	5.08
FT2X12X10	12	300	14.3	6.48
FT2X16X10	16	400	17.4	7.89
FT2X18X10	18	450	18.9	8.57
FT2X20X10	20	500	20.4	9.25
FT2X24X10	24	600	23.5	10.66
FT2X30X10	30	750	28.1	12.74
FT2X32X10	32	800	29.7	13.47

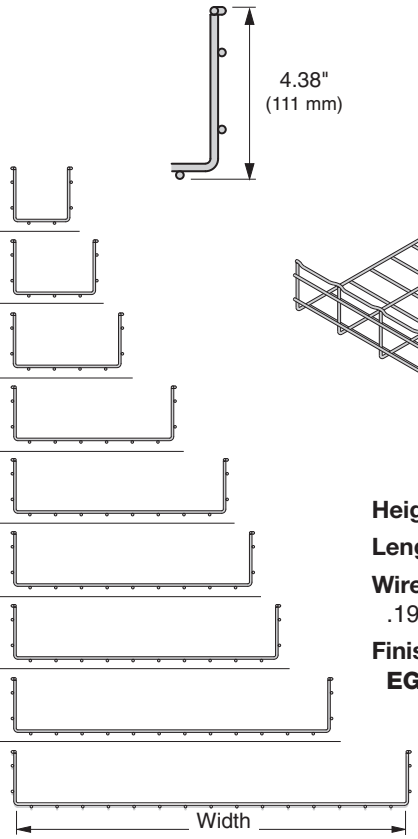
FT2X6 (6” wide) through FT2X32 (32” wide) are UL Classified

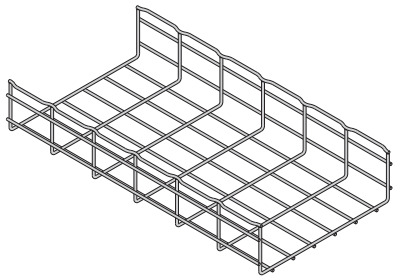
See page - 10 for finish information

4” Deep Flextray

Part Number	Width in.	Width mm	Wt. Per Pc. lbs.	Wt. Per Pc. kg
FT4X4X10	4	100	11.25	5.10
FT4X6X10	6	150	12.79	5.80
FT4X8X10	8	200	14.32	6.49
FT4X12X10	12	300	17.39	7.89
FT4X16X10	16	400	20.45	9.27
FT4X18X10	18	450	21.99	9.97
FT4X20X10	20	500	23.52	10.67
FT4X24X10	24	600	26.59	12.06
FT4X30X10	30	750	31.19	14.15

All 4” deep Flextrays are UL Classified





Height: 4.38" (111 mm)

Length: 118.312" (3 meter)

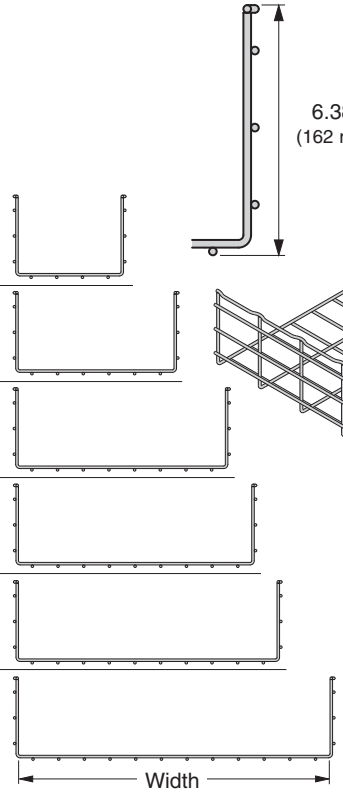
Wire Diameter Minimum: .196" (5.0 mm)

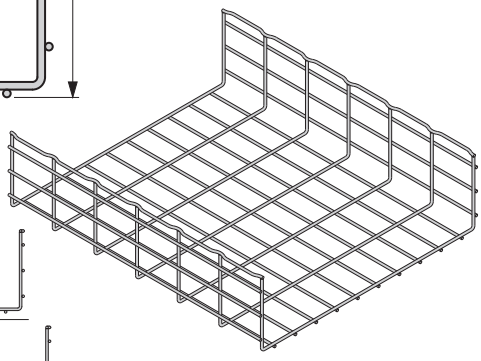
Finishes: **EG**, GS, **BLE**, HD, 304S, 316S

6” Deep Flextray

Part Number	Width in.	Width mm	Wt. Per Pc. lbs.	Wt. Per Pc. kg
FT6X8X10	8	200	17.39	7.89
FT6X12X10	12	300	20.45	9.27
FT6X16X10	16	400	23.52	10.67
FT6X18X10	18	450	25.06	11.37
FT6X20X10	20	500	26.59	12.06
FT6X24X10	24	600	29.66	13.45

All 6” deep Flextrays are UL Classified





Height: 6.38" (162 mm)

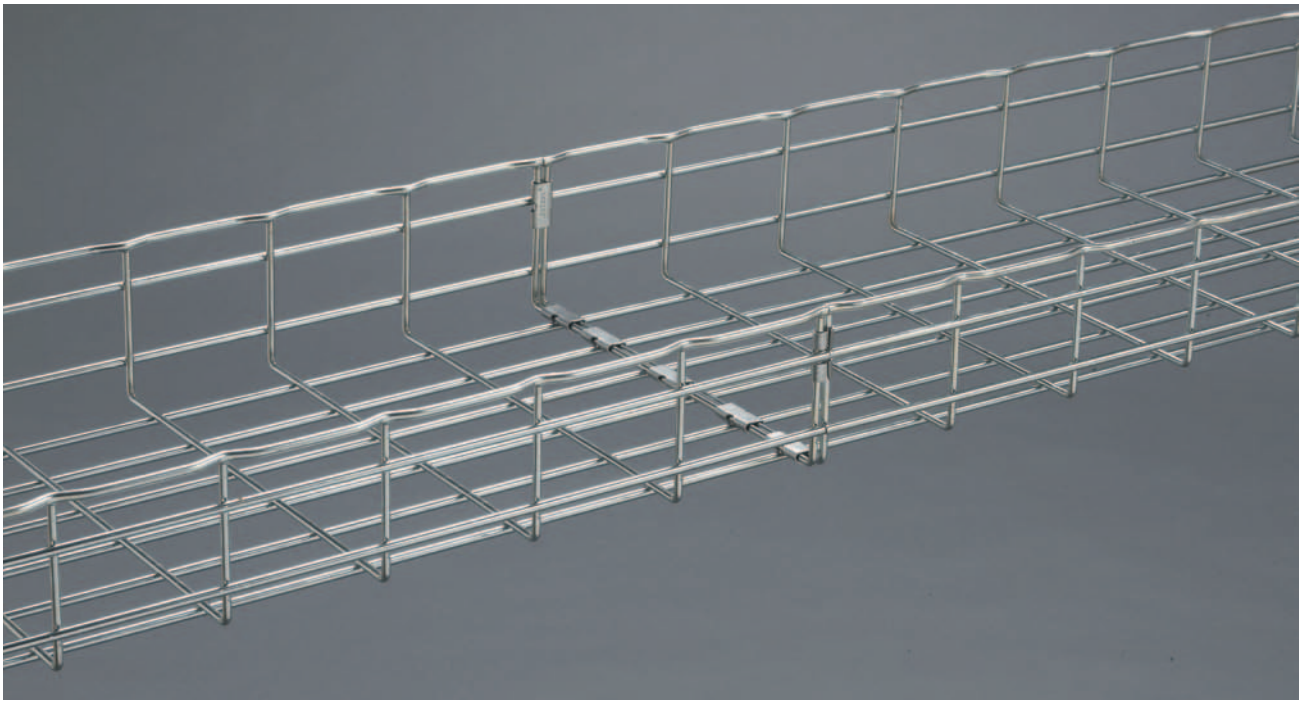
Length: 118.312" (3 meter)

Wire Diameter Minimum: .196" (5.0 mm)

Finishes: **EG**, GS, **BLE**, HD, 304S, 316S

See page - 10 for finish information

Flextray™ Splicing Accessories

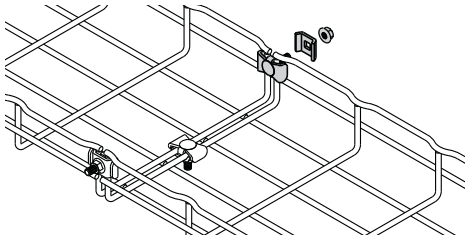


Washer Splice Kit

- Washer is staked to bolt, holding part stationary during installation
- Fewer parts to handle
- For use with all tray widths and sizes
- Finishes __: **EG**, **BLE**

BLE suffix indicates black zinc finish for this part only

Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
WASHER SPL KIT__	Assembly of Staked Washer Stud/Washer & Finned Nut	50	4.5	2.04



Splicing Chart (number of splices required for UL Classification)

Tray Height	Tray Width - number of splices 2" (50mm)	4" (100mm)	6" (150mm)	8" (200mm)	12" (300mm)	16" (400mm)	18" (450mm)	20" (500mm)	24" (600mm)
2"	NC	NC	4	4	4	4	4	5	5
4"	NM	4	5	6	6	7	7	7	8
6"	NM	NM	NM	6	6	7	7	7	8

NC = Not UL Classified in this size NM = Flextray is not manufactured in this size

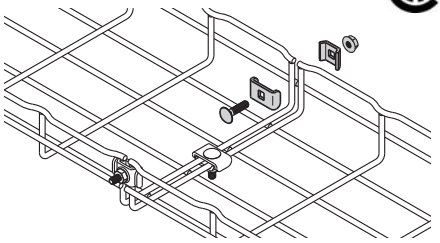
Splice Hardware Components

- Works with all splicing needs
- For use with all tray widths and sizes
- Components are sold separately
- Finishes __: **EG**, **BLE-BLO**, 304S, 316S

FTHDWE 1/4 not available in **BLE**.

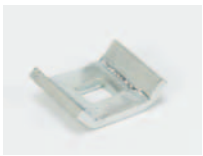
TOP WASHER & BTM WASHER not available in **BLO**.

Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
FTHDWE 1/4__	1/4" x 1" Carriage Bolt & Finned nut	50	1.2	0.54
TOP WASHER__	1" Square Splice Washer	50	1.4	0.63
BTM WASHER __	1 3/16" Square Splice Washer	50	2.0	0.91



BTM WASHER

FTHDWE1/4



TOP WASHER

Splicing Chart (number of splices required for UL Classification)

Tray Height	Tray Width - number of splices 2" (50mm)	4" (100mm)	6" (150mm)	8" (200mm)	12" (300mm)	16" (400mm)	18" (450mm)	20" (500mm)	24" (600mm)
2"	NC	NC	4	4	4	4	4	5	5
4"	NM	4	5	6	6	7	7	7	8
6"	NM	NM	NM	6	6	7	7	7	8

NC = Not UL Classified in this size NM = Flextray is not manufactured in this size

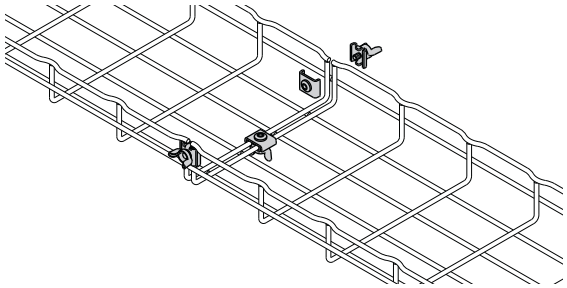
See page - 10 for finish information

Flextray™ Splicing Accessories

Wing Splice

Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
FTSWN__	Wing Splice	50	3.0	1.38

- Two piece design for easy handling
- Tool-less installation
- Reduces installation time, especially when used on fittings and bends
- Finish__: **ZN**



Splicing Chart (number of splices required for UL Classification)

Tray Height	Tray Width - number of splices 2" (50mm)	4" (100mm)	6" (150mm)	8" (200mm)	12" (300mm)	16" (400mm)	18" (450mm)	20" (500mm)	24" (600mm)
2"	NC	NC	4	4	4	4	4	5	5
4"	NM	4	5	6	6	7	7	7	8
6"	NM	NM	NM	6	6	7	7	7	8

NC = Not UL Classified in this size

NM = Flextray is not manufactured in this size

Flexmate Splice System

Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
FLEXMATE2__	Flexmate Splice Clips	50	1.0	0.45
FLEXMATE TOOL	Flexmate Splice Tool	1	0.7	0.32

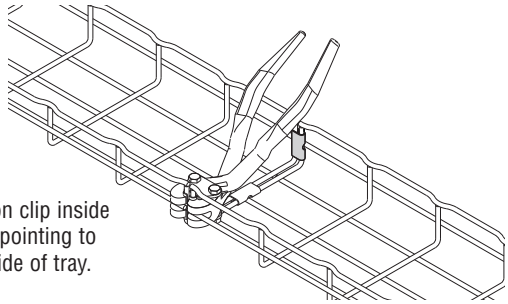
- Fastest splice connection method available in the industry
- For use with 4" (100mm) to 12" (300mm) wide tray
- Flexmate clips and tool sold separately
- Finishes __: **GS**, BLE

Note: Please contact Cooper B-Line when using Flexmates on tray widths larger than 12" (300mm) for specific requirements.
Cooper B-Line recommends that splice/supports comply with NEMA VE-2 installation requirements

FLEXMATE2

FLEXMATE TOOL

Flexmate Tool is used to install splices quickly.



Position clip inside tool, pointing to outside of tray.

Splicing Chart (number of splices required for UL Classification)

Tray Height	Tray Width - number of splices 2" (50mm)	4" (100mm)	6" (150mm)	8" (200mm)	12" (300mm)
2"	NC	NC	5	5	5
4"	NM	5	6	7	7
6"	NM	NM	NM	7	7

NC = Not UL Classified in this size

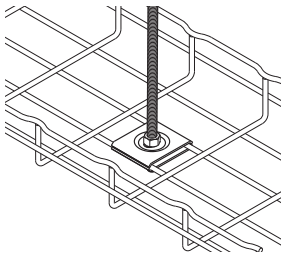
NM = Flextray is not manufactured in this size

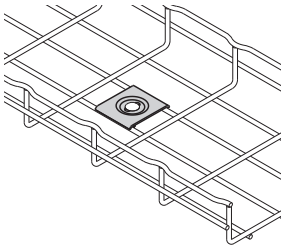
See page - 10 for finish information

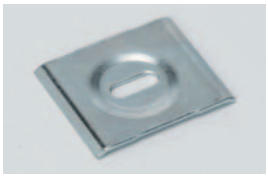
Hold Down Plate

- Easy way to mount 4" (100mm) wide tray for raceway run.
- Use 1/4" screws to attach SUPT WASHER to your specific wall/stud application (hardware sold separately).
- FTA6HD can be used in pairs to create a center-hung support using 3/8" rod.
- To complete 3/8" center hanger assembly use:
  2 - FTA6HD
  2 - HN 3/8"-16 hex nuts
- Finish: **ZN**, SS6

Part Number	Slot Size	Qty./Box	Wt./Box lbs.	Wt./Box kg
SUPT WASHER__	.28" x .70"	50	4.7	2.13
FTA6HD__	.40" x .70"	50	3.5	1.59



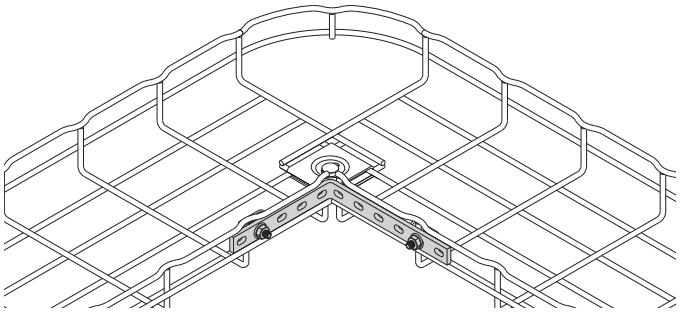




90 Degree Kit

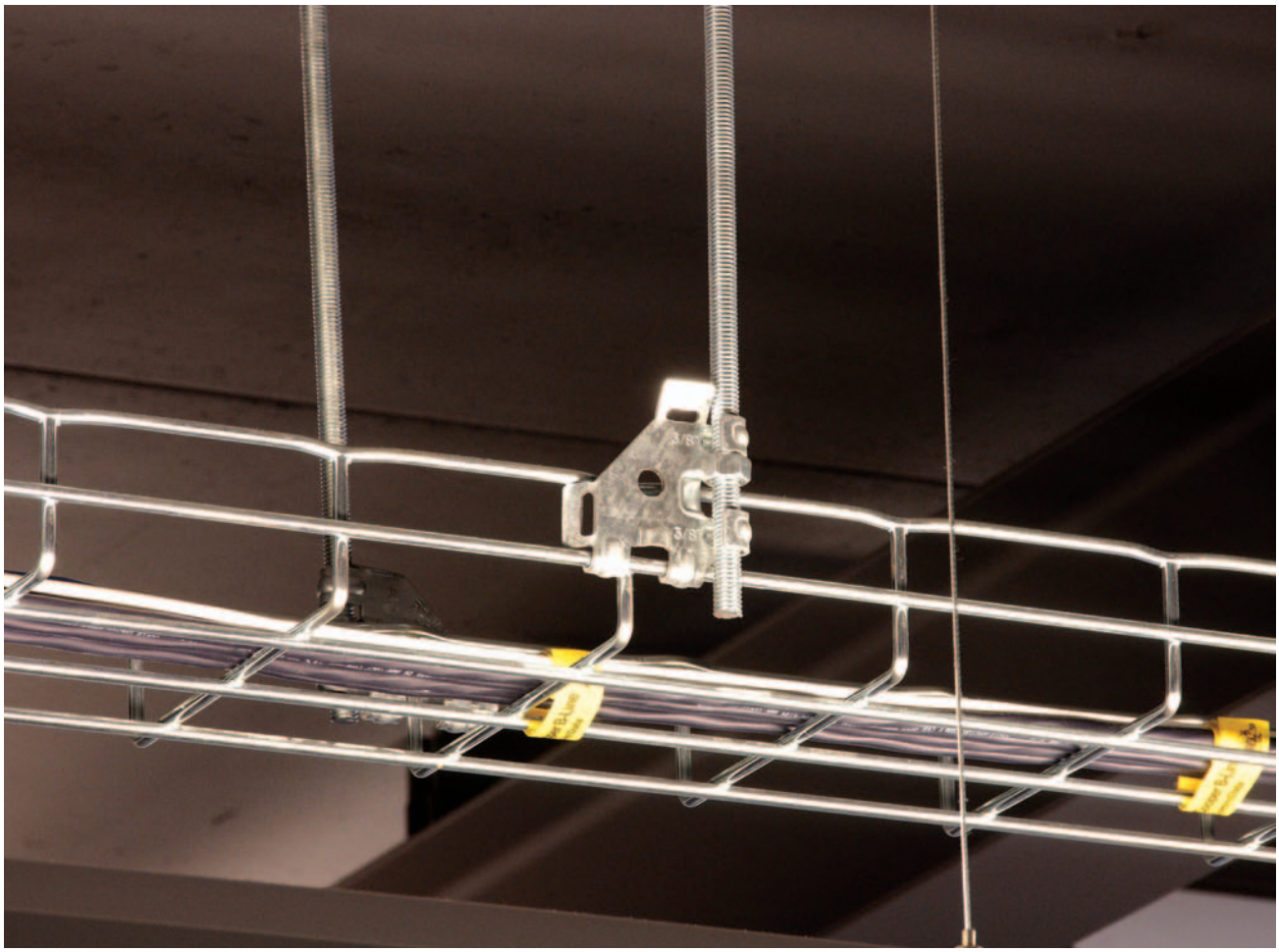
- For fast assembly of 90° turns and tee fittings
- For use with all tray widths and sizes
- One kit will make two 90° turns or one tee fitting
- 90 DEGREE KIT: includes: two (2) 90° splice bars and eight (8) FTSCH
- Finishes __: **EG**, BLE, 316S

Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
90 DEGREE KIT__	90 degree splice bar & hardware	1	1.3	0.59



See page - 10 for finish information

Flextray™ Ceiling Support Methods

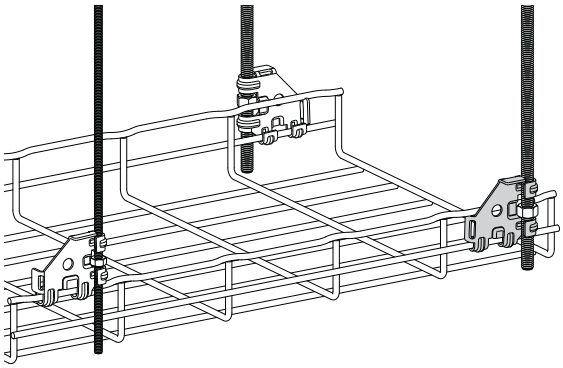


Flip Clip™

- Accommodates 1/4" and 3/8" rod sizes
- Installs quickly with a screwdriver or pliers thus reducing installation time
- Requires only one hex nut (not included) to hang and level the Flextray
- Retainer tabs can be bent over to lock-in the threaded rod and wire basket
- Finishes __: **ZN**, FB, SS6

Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
WB46H__	Flip Clip	50	5.2	2.36

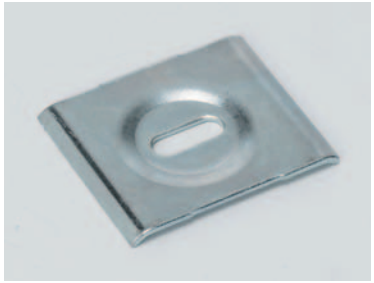
Snap retainer stops in place after cable is loaded.

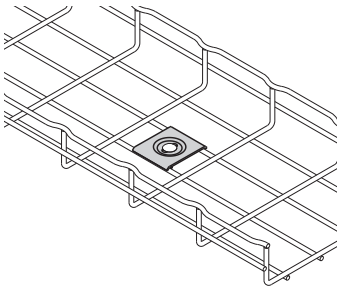


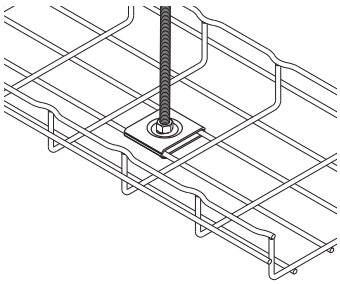
Hold Down Plate

- Easy way to mount 4" (100mm) wide tray for raceway run.
- Use 1/4" screws to attach SUPT WASHER to your specific wall/stud application (hardware sold separately).
- FTA6HD can be used in pairs to create a center-hung support using 3/8" rod.
- To protect cables use threaded rod protector (page 61).
- To complete 3/8" center hanger assembly use:
  2 - FTA6HD
  2 - HN 3/8"-16 hex nuts
- Finish: **ZN**, SS6

Part Number	Slot Size	Qty./Box	Wt./Box lbs.	Wt./Box kg
SUPT WASHER__	.28" x .70"	50	4.7	2.13
FTA6HD__	.40" x .70"	50	3.5	1.59







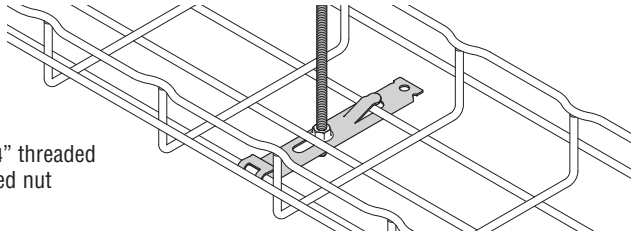
See page - 10 for finish information

Flextray™ Ceiling Support Methods

Center Hung Clip

Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
CTR HUNG CLP__	Light Duty Center Hanger	50	4.0	1.81

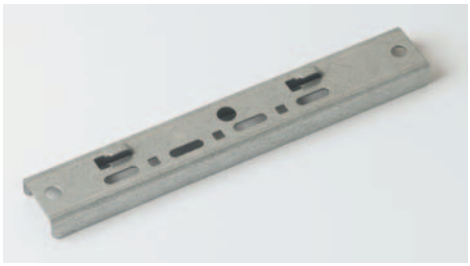
- Use for light duty cabling applications
- For use with 1 1/2" (38mm) & 2" (51mm) deep tray with 4" (100mm) and 6" (150mm) widths
- Built-in hold down tab
- Accepts 1/4" threaded rod
- Threaded rod and nuts sold separately
- Finishes __: **GS**, BLE



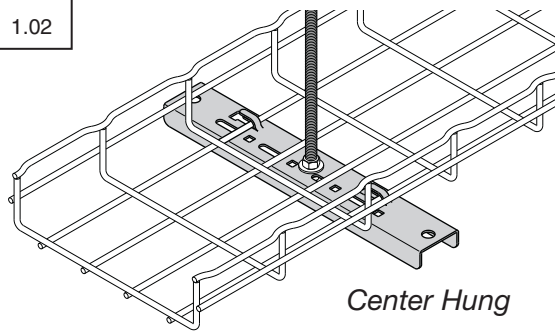
Assemble with 1/4" threaded rod and finned nut

Center Trapeze Hanger

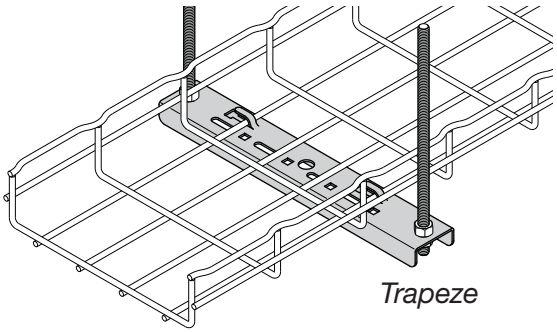
Part Number	Maximum Tray Width in.	Maximum Tray Width mm	Actual Length in.	Actual Length mm	Wt./Pc. lbs.	Wt./Pc. kg
FTB06CT	6"	150	9.78"	248	0.61	0.27
FTB08CT	8"	200	11.75"	298	0.74	0.33
FTB12CT	12"	300	15.69"	398	0.98	0.44
FTB16CT	16"	400	19.63"	498	1.61	0.73
FTB18CT	18"	450	21.59"	548	1.77	0.80
FTB20CT	20"	500	23.56"	598	1.93	0.87
FTB24CT	24"	600	27.50"	698	2.25	1.02



- Can be installed as center-hung or traditional trapeze hanger
- Multiple options to secure Flextray to hanger
  - Built in hold down tabs (use screwdriver to bend down tab)
  - Compatible with TOOLLESS CLIP with snap-in locking pin
  - Compatible with WBUHD hold down clip when tray crosswire is aligned over top of hanger
  - Slots and holes for optional hardware attachment
- Corrosion resistant pre-galvanized zinc finish (other finishes available upon request)
- Center hole for up to 1/2" rod
- Hole on each end for up to 3/8" rod



Center Hung



Trapeze

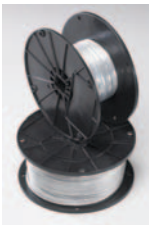
See page - 10 for finish information

KwikWire™ Clamps & Wire Rope

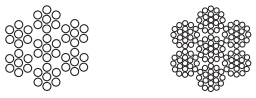
- KwikWire system replaces jack chain or ATR to support lighting, ductwork, and Flextray.
- Can be quickly installed around beams - No drilling required.
- Ideal for sloped ceilings - can hang objects at up to 60° angles.
- Simple height adjustments are made by releasing locking tab, no tools required.
- Spools of wire can be cut to length in field, reducing waste and up front planning.

Part Number	Clamp Description For Use With Rope Diameter	Qty./Box
BKC100	1/32", 1/16" & 3/32"	100
BKC200	3/32", 1/8" & 3/16"	50

Part Number	Rope Diameter - Working Load	Qty./Spool
BKW063 (1)	1/16" - 96 lbs.	500 ft.
BKW094 (1)	3/32" - 184 lbs.	500 ft.
BKW125 (1)	1/8" - 340 lbs.	500 ft.
BKW188 (2)	3/16" - 840 lbs.	250 ft.
BKCC	Wire Rope Cutter	1



Wire Rope Construction



(1) 7 x 7 (2) 7 x 19

KwikWire™ Clamp Working Loads*

Clamp Part No.	Wire Rope Dia.	Lbs. Safety Factor 5
BKC100	1/32"	0-22
BKC100	1/16"	0-75
BKC100	3/32"	25-150
BKC200	3/32"	25-150
BKC200	1/8"	25-250
BKC200	3/16"	50-640

** Working loads shown are for hanging vertically. For suspending at 15°, 30°, 45° or 60° angles from vertical, use the following percentage of the working loads from the chart:*

15° = 96%
30° = 86%
45° = 70%
60° = 50%

See page - 10 for finish information

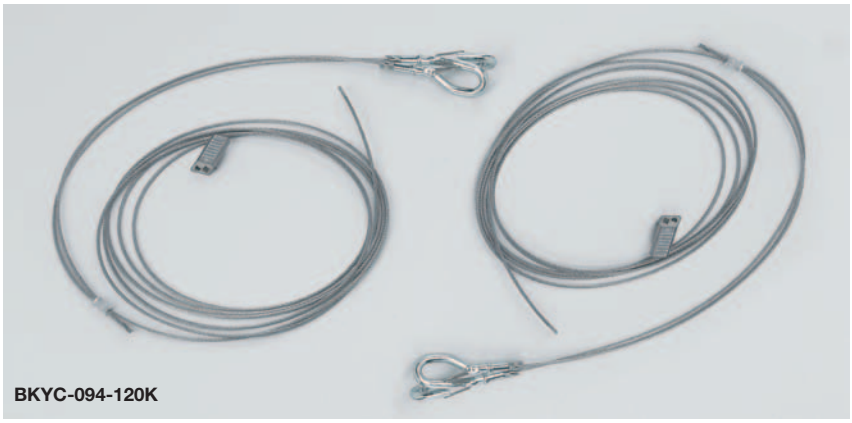
KwikWire™ Cable Assemblies

KwikWire™

New

- New KwikWire "Y" Cable Assemblies will simplify the installation of light fixtures and cable tray.
- "Y" Cables enable a single suspension point to provide two securement points.
- "Y" legs are 18" in length.
- "Y" Cable Assembly Kits include two (2) 10'-0" long cable assemblies and two (2) KwikWire clamps.
- Add-on cable assemblies can be field installed on KwikWire systems.

BKYC-094



BKYC-094-120K

Part Number	Description	Qty./Box
BKYC-094	Carabiner	20
BKYC-094-120K	Carabiner	10

See page - 10 for finish information

KwikWire™ Starter Kit

- Starter Kit includes everything you need to get the job done.
- Kits are packaged in a 5-gallon bucket for easy transportation. The lid includes a built-in cable counter to simplify measuring and cutting the wire rope to length.
- Starter Kit includes KwikWire clamps, a spool of wire rope, and a cable cutter.

Part Number	Kit Includes - Working Load	Qty./Box
BKS10063	BKC100 (100 pcs.), Cable Cutter 1/16"Ø Wire Rope (500 ft.)	1
BKS10094	BKC100 (100 pcs.), Cable Cutter 3/32"Ø Wire Rope (500 ft.)	1
BKS20125	BKC200 (50 pcs.), Cable Cutter 1/8"Ø Wire Rope (500 ft.)	1
BKS20188	BKC200 (50 pcs.), Cable Cutter 3/16"Ø Wire Rope (250 ft.)	1

KwikPak™ Wire Rope & Clamps

KwikPak™ makes handling KwikWire™ a breeze!

- Refill your starter kit with a B-Line KwikPak™.
- KwikPaks include KwikWire clamps and a spool of wire rope.
- KwikPaks are shipped in a specially designed dispenser box to ease field cutting of wire.

Part Number	Kit Includes - Working Load	Qty./Box
BKP10063	BKC100 (100 pcs.), Cable Cutter 1/16"Ø Wire Rope (500 ft.)	1
BKP10094	BKC100 (100 pcs.), Cable Cutter 3/32"Ø Wire Rope (500 ft.)	1
BKP20125	BKC200 (50 pcs.), Cable Cutter 1/8"Ø Wire Rope (500 ft.)	1
BKP20188	BKC200 (50 pcs.), Cable Cutter 3/16"Ø Wire Rope (250 ft.)	1

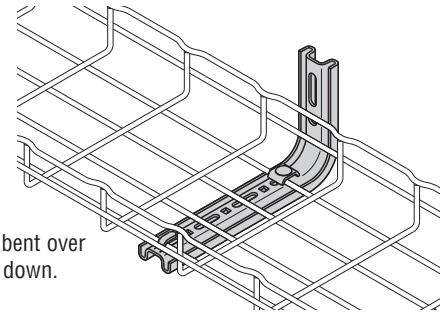
See page - 10 for finish information

Flextray™ Wall Support Methods

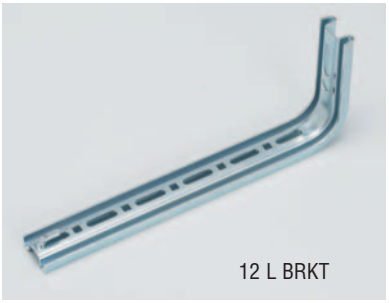
L Brackets

- Installs tray to wall cleanly
- Built-in tab for hold down (not available in stainless steel)
- For use with 4" (100mm) to 24" (600mm) wide trays
- Use with pedestal clamp in raised floor applications
- Hardware sold separately
- Finishes __: **EG**, HD, BLE, 316S

Part Number	Use With Tray Width	Qty./Box	Wt./Box lbs.	Wt./Box kg
4 L BRKT__	4" (150mm)	1	0.6	0.27
8 L BRKT__	6" (150mm) & 8" (200mm)	1	0.8	0.36
12 L BRKT__	12" (300mm)	1	1.3	0.59
16 L BRKT__	16" (400mm)	1	1.4	0.63
20 L BRKT__	18" & 24" (450 & 500mm)	1	2.0	0.91
24 L BRKT__	24" (600mm)	1	2.3	1.04



Tab can be bent over for hold down.

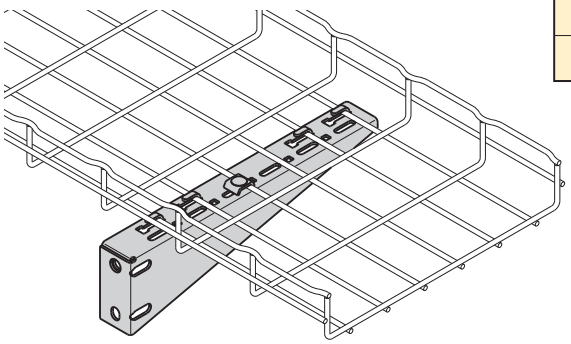


12 L BRKT

Shelf Brackets

- Heavy-duty support bracket
- For use with 6" (150mm) to 24" (600mm) wide trays
- Built-in tab for hold down
- Optional hardware sold separately
- Finishes __: **GLV**, HDG, SS6

Part Number	Use With Tray Width	Qty./Box	Wt./Box lbs.	Wt./Box kg
FTB06CS__	6" (150mm)	1	0.5	0.22
FTB08CS__	8" (200mm)	1	0.6	0.27
FTB12CS__	12" (300mm)	1	1.2	0.54
FTB16CS __	16" (400mm)	1	1.7	0.77
FTB18CS __	18" (450mm)	1	1.9	0.86
FTB20CS __	20" (500mm)	1	2.6	1.18
FTB24CS __	24" (600mm)	1	3.2	1.45



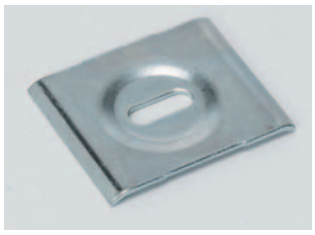
FTB24CS shown

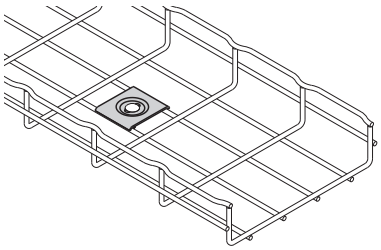
See page - 10 for finish information

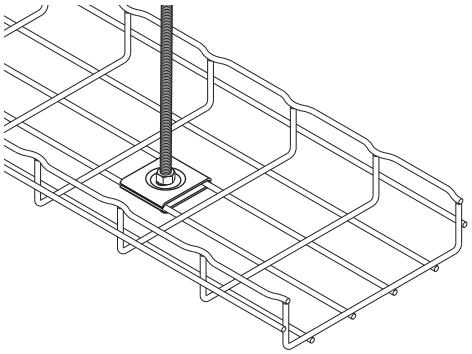
Hold Down Plate

Part Number	Slot Size	Qty./Box	Wt./Box lbs.	Wt./Box kg
SUPT WASHER__	.28" x .70"	50	4.7	2.13
FTA6HD__	.40" x .70"	50	3.5	1.59

- Easy way to mount 4" (100mm) wide tray for raceway run.
- Use 1/4" screws to attach SUPT WASHER to your specific wall/stud application (hardware sold separately).
- FTA6HD can be used in pairs to create a center-hung support using 3/8" rod.
- To complete 3/8" center hanger assembly use:
  2 - FTA6HD
  2 - HN 3/8"-16 hex nuts
- Finish: **ZN**, SS6



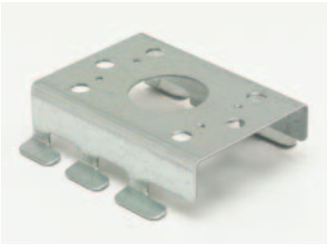


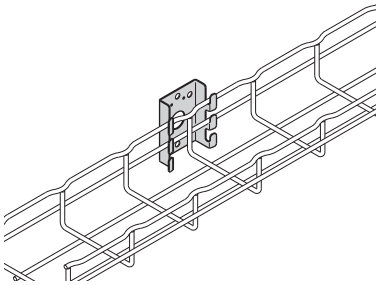


Wall Supports

Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
FTA050CC__	Wall Support Bracket	1	0.8	0.36

- Use to attach 2" (50mm) or 4" (100mm) trays to walls, struts or cabinets
- Use for raceway mounting
- Mount to metal framing for vertical support
- Tabs are built in for tray hold down
- Mount to side rail for electrical box connection
- Finishes __: **GLV**





See page - 10 for finish information

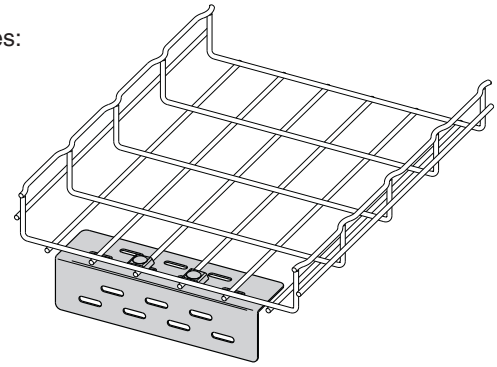
Wall Termination Kit

- Kit includes all hardware necessary to support Flextray when terminated at a wall
- Mount slotted angle to wall with up to 3/8" hardware (not included)
- Finishes __: **ZN**, FB, SS6

Part Number	Length	Qty./Box	Wt./Box lbs.	Wt./Box kg
FTA9WTK__	9”	1	1.3	0.59

Wall Termination Kit includes:

1 - Angle with Slots
2 - FTSCH



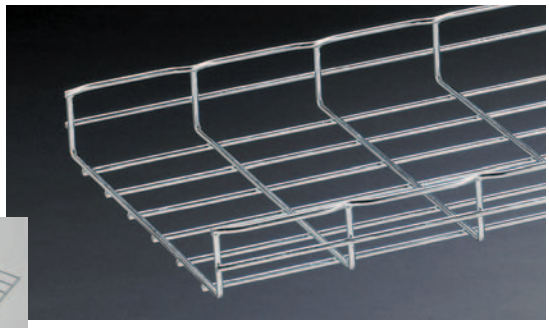
See page - 10 for finish information

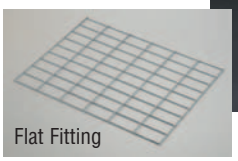
Flextray™ F.A.S.T. Underfloor System

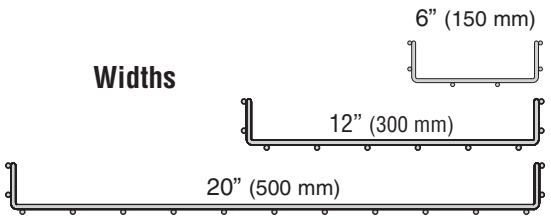
The F.A.S.T. System is an innovative and flexible way to support and manage cables in raised floor applications. This Foldable, Adjustable, Stackable, Tool-less System uses Flextray, stands, and accessories to provide a variety of options for your project and the fastest installation time on the market. Best of all, it does not attach to the raised floor structure and can be installed either before or after floor is in place.

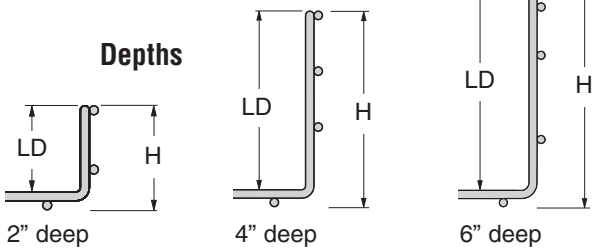
F.A.S.T. System Flextray

- Rounded ends on all wires
- UL Classified (see technical data for details)
- Depths: 2”, 4”, & 6” nominal
- Lengths: 24”, 48”, & 118”
- Use flat fitting (WBUFLT) for turns
- Wire Diameter: 0.191” (4.9mm)
- Standard finishes: **GLV**
  Consult customer service for other available finishes





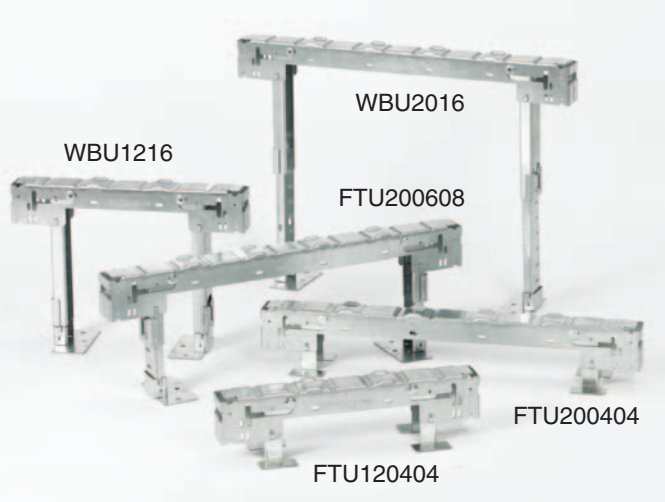




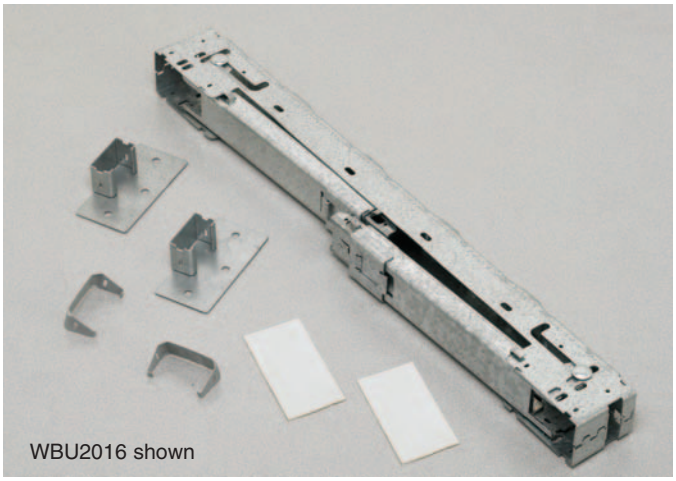
	Part Number	Width in.	Width mm	Length in.	Length mm	LD in.	LD mm	H in.	H mm	Wt. Per Pc. lbs.	Wt. Per Pc. kg
2” (50mm) deep	**FTU2X6X2**	6	150	23.9	603	1.63	41	2.02	51	2.03	0.92
	FTU2X6X4	6	150	47.5	1206	1.63	41	2.02	51	3.95	1.79
	FTU2X6X10	6	150	118.4	3008	1.63	41	2.02	51	9.72	4.41
	FTU2X12X2	12	300	23.9	603	1.63	41	2.02	51	2.99	1.36
	FTU2X12X4	12	300	47.5	1206	1.63	41	2.02	51	5.82	2.64
	FTU2X12X10	12	300	118.4	3008	1.63	41	2.02	51	14.32	6.50
	FTU2X20X2	20	500	23.9	603	1.63	41	2.02	51	4.28	1.94
	FTU2X20X4	20	500	47.5	1206	1.63	41	2.02	51	8.33	3.78
	FTU2X20X10	20	500	118.4	3008	1.63	41	2.02	51	20.45	9.28
4” (100mm) deep	**FTU4X6X2**	6	150	23.9	603	4.38	111	4.77	121	2.67	1.21
	FTU4X6X4	6	150	47.5	1206	4.38	111	4.77	121	5.20	2.36
	FTU4X6X10	6	150	118.4	3008	4.38	111	4.77	121	12.79	5.80
	FTU4X12X2	12	300	23.9	603	4.38	111	4.77	121	3.64	1.65
	FTU4X12X4	12	300	47.5	1206	4.38	111	4.77	121	7.08	3.21
	FTU4X12X10	12	300	118.4	3008	4.38	111	4.77	121	17.39	7.89
	FTU4X20X2	20	500	23.9	603	4.38	111	4.77	121	4.93	2.24
	FTU4X20X4	20	500	47.5	1206	4.38	111	4.77	121	9.58	4.35
	FTU4X20X10	20	500	118.4	3008	4.38	111	4.77	121	23.52	10.67
6” (150mm) deep	**FTU6X6X2**	6	150	23.9	603	6.38	162	6.77	172	3.32	1.51
	FTU6X6X4	6	150	47.5	1206	6.38	162	6.77	172	6.45	2.93
	FTU6X6X10	6	150	118.4	3008	6.38	162	6.77	172	15.85	7.19
	FTU6X12X2	12	300	23.9	603	6.38	162	6.77	172	4.28	1.94
	FTU6X12X4	12	300	47.5	1206	6.38	162	6.77	172	8.33	3.78
	FTU6X12X10	12	300	118.4	3008	6.38	162	6.77	172	20.45	9.28
	FTU6X20X2	20	500	23.9	603	6.38	162	6.77	172	5.57	2.53
	FTU6X20X4	20	500	47.5	1206	6.38	162	6.77	172	10.83	4.91
	FTU6X20X10	20	500	118.4	3008	6.38	162	6.77	172	26.59	12.06
Flats	**WBUFLT**	20	500	24	604	-	-	-	-	2.96	1.34
	WBUFLT-12	12	250	24	604	-	-	-	-	1.50	0.68
	WBUFLT-06	6	150	24	604	-	-	-	-	1.00	0.45

See page - 10 for finish information

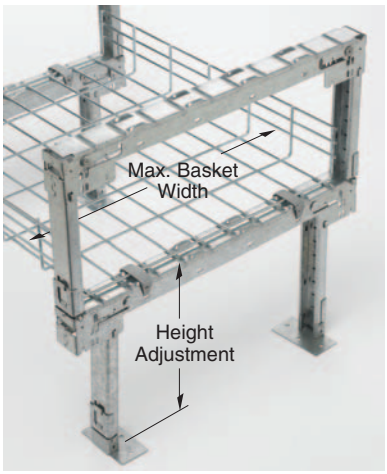
Stands



- No tools required for installation
- Formed top surface free of protrusions or sharp edges
- Up to 6" height adjustment
- Inside and outside leg positioning
- Folded and boxed for ease in shipping
- Patent Pending
- Stand part number includes:
  - one (1) stand
  - two (2) feet
  - two (2) adhesive pads
  - two (2) hold down clips
- Standard finish: Pre-Galvanized



WBU2016 stands shown in double tier application.
Feet and adhesive pads not required for second tier assembly.



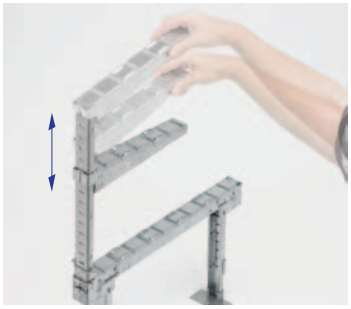
Part Number	Max. Basket Width in.	Max. Basket Width mm	Height Adjustment in.	Height Adjustment mm	Stands Per Box	Wt. Per Box lbs.	Wt. Per Box kg
FTU120404	12	300	4	101	2	1.82	0.82
FTU120608	12	300	6-8	152-203	2	2.79	1.26
WBU1216	12	300	10-16	254-406	2	7.44	3.37
WBU1224 *	12	300	18-24	457-609	2	9.06	4.11
WBU1231 *	12	300	25-31	635-787	2	10.52	4.77
FTU200404	20	500	4	101	2	2.34	1.06
FTU200608	20	500	6-8	152-203	2	3.36	1.52
WBU2016	20	500	10-16	254-406	2	8.56	3.88
WBU2024	20	500	18-24	457-609	2	10.20	4.62
WBU2031 *	20	500	25-31	635-787	2	11.64	5.28

*** Legs are packed separately in box and not inserted in stand.**

See page - 10 for finish information

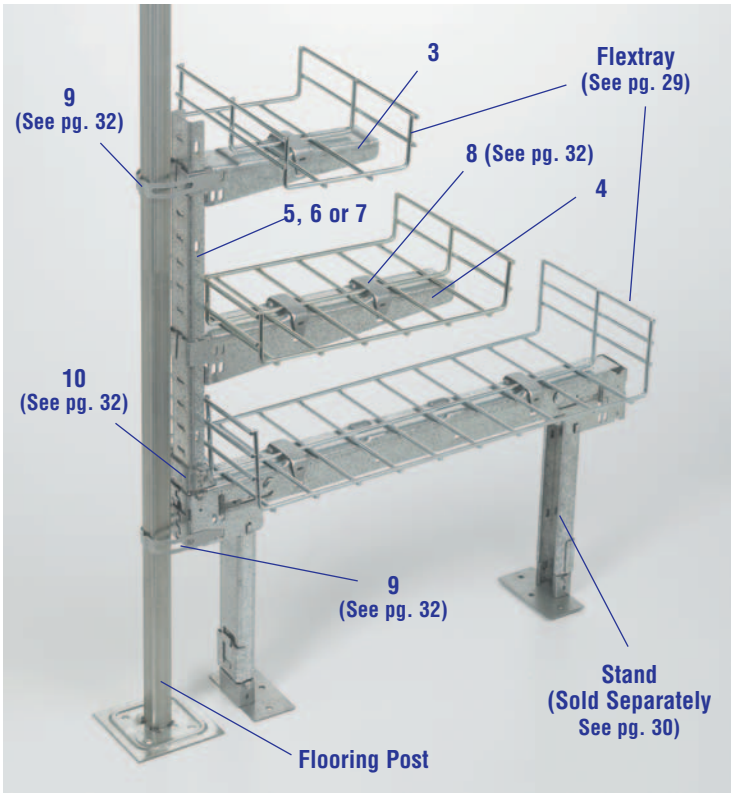
Cantilever Kits & Accessories

- No tools required for installation
- Simple design for tiered applications
- Available in kits or individual parts
- Adjustable shelf height
- Formed top surface has no sharp edges
- Can be installed independent of raised floor
- Standard finish: Pre-Galvanized



Adjustability of shelf brackets

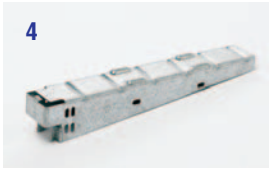
WBUCK812 Double Tier Cantilever Kit Shown with WBU2016 Stand



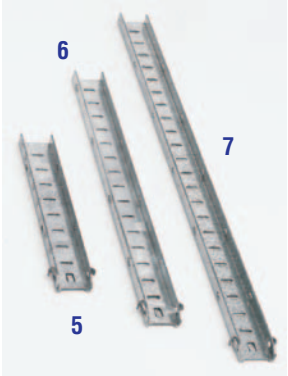
WBUCK12 - Single Tier Cantilever Kit
Includes
(1) WBUCB12
(1) WBUL16
(1) WBUCF
(2) WBUHD

WBUCK812 - Double Tier Cantilever Kit
Includes
(1) WBUCB8
(1) WBUCB12
(1) WBUL24
(1) WBUCF
(3) WBUHD

WBUCB8



WBUCB12



Part Number	Item #	Description	Max Height † in.	Max Height † mm	Box Qty.	Wt. Per Box lbs.	Wt. Per Box kg
WBUCK12 *	1 Δ	Cantilever Kit - Single Tier with 12" Bracket	7.30	185	10	15.62	7.08
WBUCK812	2 Δ	Cantilever Kit - Double Tier with 8" & 12" Brackets	15.25	387	10	25.40	11.52
WBUCB8	3	8" Cantilever Bracket for 6" Flextray	-	-	10	5.51	2.50
WBUCB12	4	12" Cantilever Bracket for up to 12" Flextray	-	-	10	9.16	4.15
WBUL16	5	Short Vertical Support	7.30	185	10	4.37	1.98
WBUL24	6	Medium Vertical Support	15.25	387	10	8.45	3.83
WBUL31	7	Tall Vertical Support	22.25	565	10	12.07	5.47

** For use with 2" and 4" deep Flextray on the lower level.* † Height - from top of stand Δ *Stand not included*

See page - 10 for finish information

Hold Down Clip

- Spring steel clip to attach Flextray to stands
- No tools required for installation
- Holds both continuous and spliced wire sections securely
- Works with stands and cantilever brackets

Part Number	Item #	Description	Box Qty.	Wt. Per Box lbs.	Wt. Per Box kg
WBUHD	8	Basket Clip	50	1.10	0.50

Pedestal Clip

- Optional spring steel clip to give added rigidity to system
- Works with stands and cantilever brackets

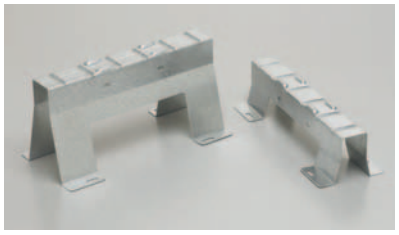
Part Number	Item #	Description	Box Qty.	Wt. Per Box lbs.	Wt. Per Box kg
WBUPC	9	Pedestal Clip	50	1.65	0.75

Cantilever Foot

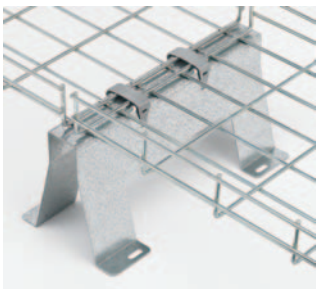
- Secures vertical support into stand top
- Only required when stand legs are in the inner position

Part Number	Item #	Description	Box Qty.	Wt. Per Box lbs.	Wt. Per Box kg
WBUCF	10	Cantilever Foot	50	8.65	3.92

Under Floor Stand



- Heights of 3”, 4”, 5” or 6”
- Leg cutout allows for airflow
- No tools required to mount Flextray to stand
- Use WBUHD hold down clips to secure basket
- Stand width is 12”
- Fasten to floor for maximum stability
- Floor mounting slot size: .313” (7.9mm) x .813” (20.6mm) for 1/4” hardware



Part Number	Overall Height in.	Overall Height mm	Wt. Per Each lbs.	Wt. Per Each kg
WBU1203	3	76	1.32	0.60
WBU1204	4	101	1.60	0.72
WBU1205	5	127	1.88	0.85
WBU1206	6	152	2.17	0.98

See page - 10 for finish information

L Bracket & Toolless Clip

- For use when access to ground floor is limited
- Use with round post sizes 0.9" (25mm) through 1.2" (30mm)
- Use with square posts
- Order clamps and brackets separately
- Built-in tab for hold down
- Tool-less Clip (plenum-rated material) - Snap-in locking pin securely holds basket to bracket


TOOLLESS CLIP

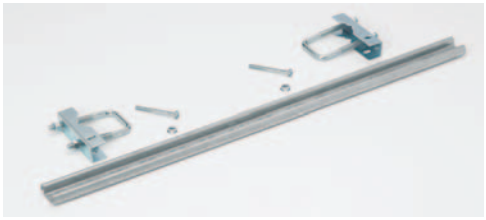
Part Number	Description	Qty.	Wt. Per Box lbs.	Wt. Per Box kg
TOOLLESS CLIP	Tool-less Hold-Down Clip	50/Box	1.00	0.45

Brackets (Zinc Plated)

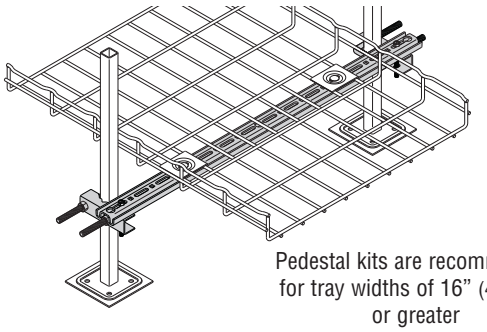
Part Number	System Width in.	System Width mm	Length in.	Length mm	Box Qty.	Wt. Per Box lbs.	Wt. Per Box kg
8 L BRKT	6-8	150-200	8	200	1	0.80	0.36
12 L BRKT	12	300	12	300	1	1.30	0.59

Pedestal Clamp & Kit

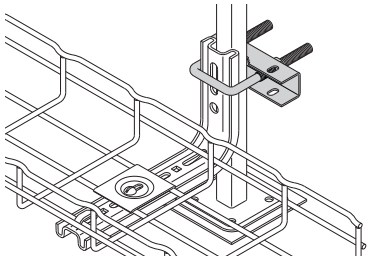
- Clamps to existing raised-access floor stanchion
- Use L BRKT (shown above) or full pedestal kit to support trays under the raised access floor (sold separately)
- For tray widths 2" (50mm) to 20" (500mm)
- *Pedestal Clamp Kit includes two (2) pedestal clamps, 28" (711mm) profile section, bolts & nuts
- Kits include hardware
- Finishes __: **EG**



Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
PEDESTAL CLAMP__	Pedestal Clamp	1	0.6	0.27
PEDESTAL KIT__	Pedestal Clamp Kit	1*	3.3	1.49

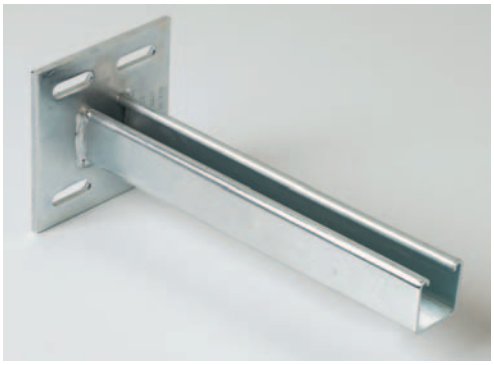


Pedestal kits are recommended for tray widths of 16" (400mm) or greater

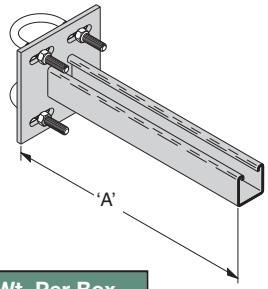


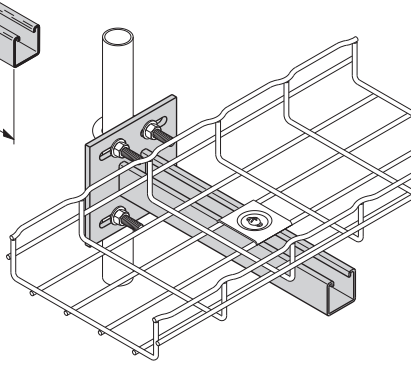
See page - 10 for finish information

Under Floor Support Bracket



- Under Floor Support Bracket provides rugged support for Flextray System from access floor post.
- To complete the installation, the following hardware must be ordered separately.
  (2) - B501 U-Bolts
  (1) - SUPT WASHER Hold Down
  (1) - 1/4"-20 x 1" Slotted Head Screw
  (1) - N224WO Channel Nut
- Finish: **ZN**

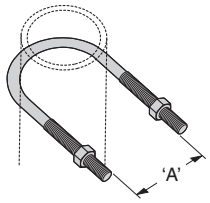




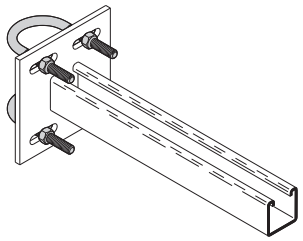
Part Number	'A' in.	'A' mm	Thread in.	Thread mm	Box Quantity	Wt. Per Box lbs.	Wt. Per Box kg
B409UF-12	12"	300	12"	300	1	3.6	1.63
B409UF-18	18"	450	18"	450	1	4.5	2.04
B409UF-21	21"	533	21"	533	1	5.4	2.45

U-Bolts

- Designed for attachment of Under Floor Support Brackets to access floor post. Each U-Bolt includes two (2) hex nuts.
- Finish: **ZN**



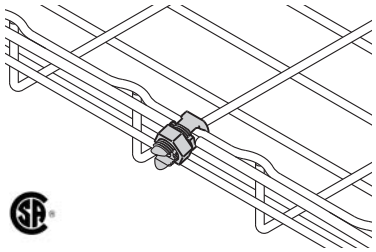
Part Number	'A' in.	'A' mm	Thread Size	Box Quantity	Wt. Per Box lbs.	Wt. Per Box kg
B501-1	$1\frac{3}{8}$"	30	$\frac{5}{16}$"-18	50	7.0	3.17
B501-1$\frac{1}{2}$	2"	50	$\frac{5}{16}$"-18	50	8.0	3.63
B501-2	$2\frac{7}{16}$"	62	$\frac{3}{8}$"-16	20	5.4	2.45
B501-2$\frac{1}{2}$	$2\frac{15}{16}$"	75	$\frac{3}{8}$"-16	25	8.0	3.63



See page - 10 for finish information

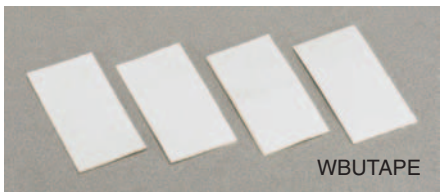
Ground Bolt

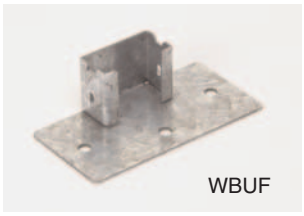
- Attaches up to #1 ground wire to each tray section when separate ground wire is required
- Used for UL grounding compliance.
- When using color powder coated finish or paint, coating must be removed at the points of contact.
- Finish: Copper Plated



Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
GROUND BOLT	Ground Bolt	1	0.11	0.05

Adhesive & Feet



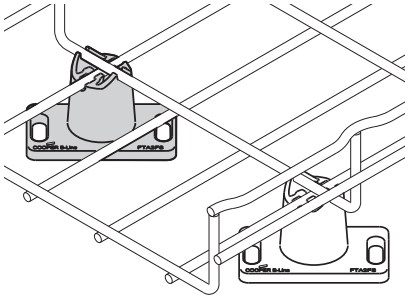


- WBUTAPE - Double-sided adhesive pads for temporary positioning of floor stands Pad Size: 2" (50mm) x 4" (100mm)
- WBUFA - Adhesive to secure stand to floor

Part Number	Description	Box Qty.	Wt. Per Box lbs.	Wt. Per Box kg
WBUF	Stand Foot	10	2.36	1.07
WBUTAPE	Double-Sided Tape	50	2.50	1.13
WBUFA	Floor Adhesive	1 Gallon	10.78	4.89

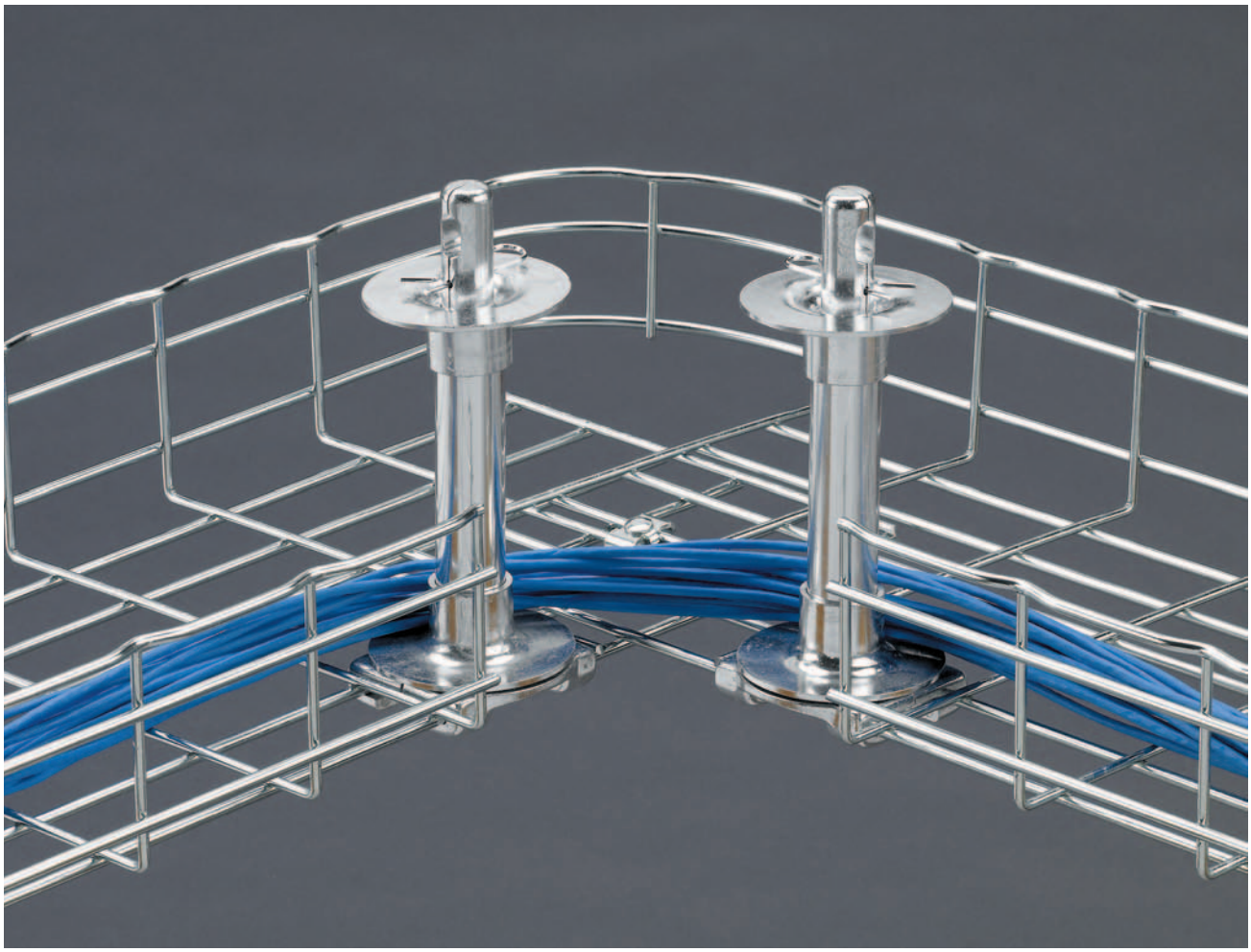
Floor Stand

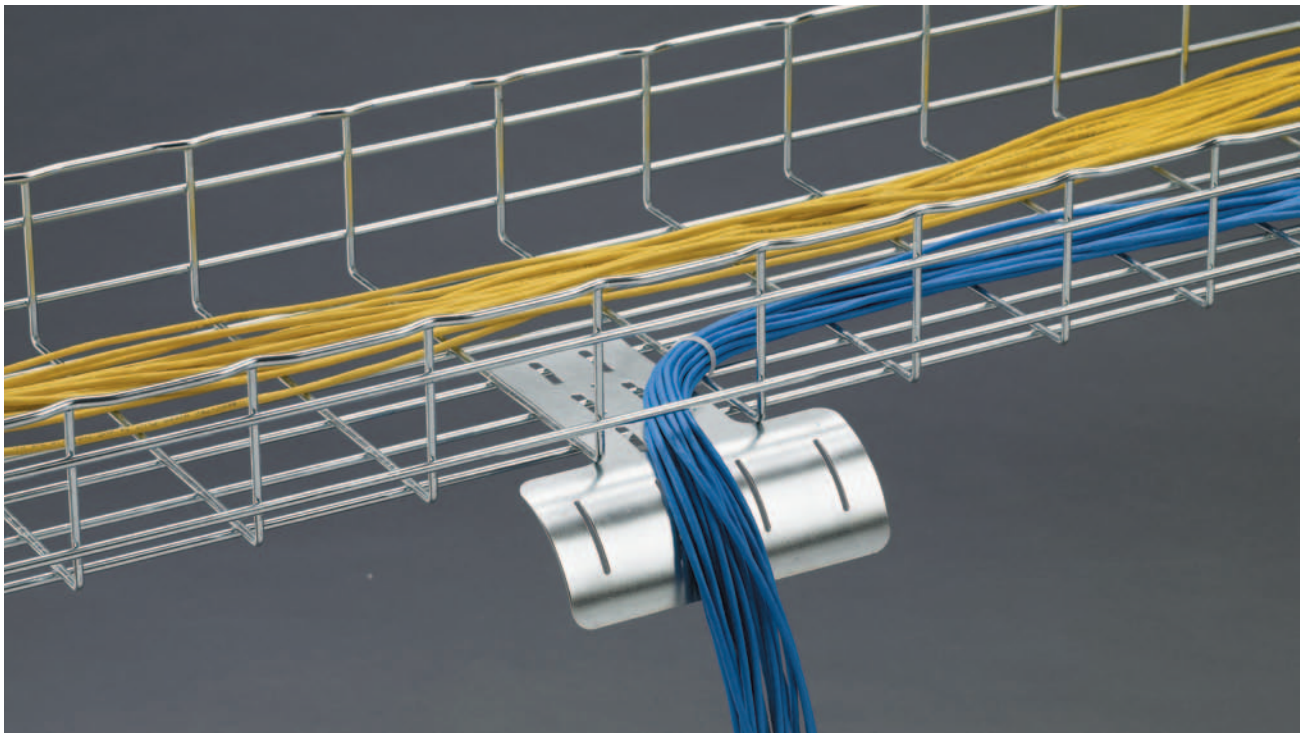
- Non-metallic snap lock floor stand is designed for use under access floors.
- Floor stand elevates Flextray System $1\frac{5}{8}$" (41.3mm) above the floor.
- To attach floor stand, use Liquid Nails® or anchors.
- Elevation increments of $1\frac{3}{8}$" (35mm) can be obtained by stacking floor stands.
- Sized for $\frac{1}{4}$" hardware (order separately).
- Material: Black Plenum-rated Plastic



Part Number	Wt. Per Pc. lbs.	Wt. Per Pc. kg	Box Quantity
FTA2FS	0.44	0.20	10

See page - 10 for finish information

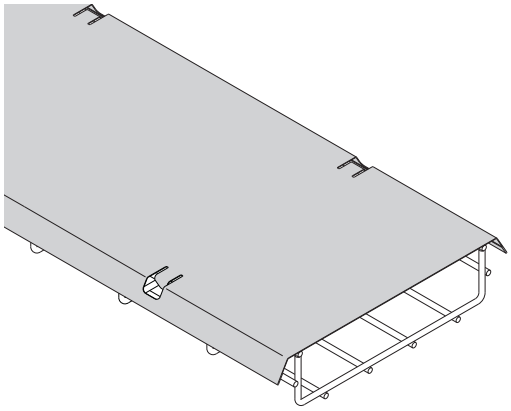


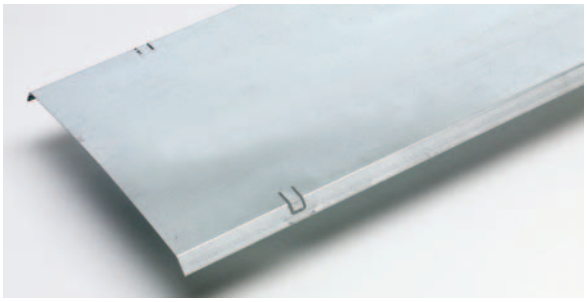


Covers

- Protects cable from debris and dust
- Adds security to cable installation
- Easy bend-over tabs secure cover to trays
- Available for 2" (50mm) to 24" (600mm) wide trays
- Comes in 118" (2997mm) length
- Finishes __: **GS,** BLE, 304S, 316S

Part Number	Use With Tray Width	Qty./Box	Wt./Box lbs.	Wt./Box kg
2 IN COVER__	2" (50mm)	1	3.8	1.72
4 IN COVER__	4" (100mm)	1	5.7	2.58
6 IN COVER__	6" (150mm)	1	6.7	3.04
8 IN COVER__	8" (200mm)	1	8.7	3.94
12 IN COVER__	12" (300mm)	1	11.6	5.26
16 IN COVER__	16" (400mm)	1	15.6	7.07
18 IN COVER__	18" (450mm)	1	17.0	7.71
20 IN COVER__	20" (500mm)	1	18.5	8.39
24 IN COVER__	24" (600mm)	1	22.0	9.98

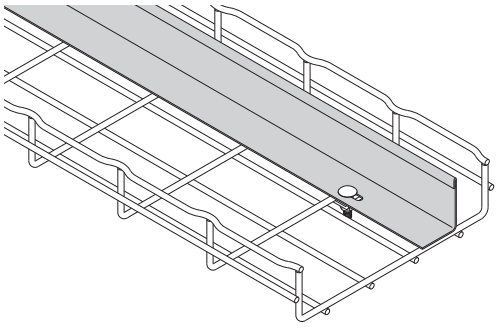




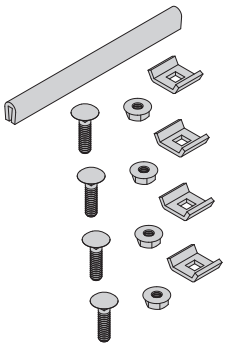
Dividers

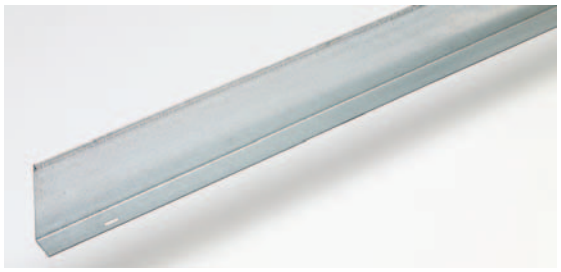
- Allows cable separation within a single tray
- Hemmed/rounded edge provides cable jacket safety
- Hardware included
- Field miter for bends and turns
- Dual slots every 24" (609mm) for field cutting
- Available in 2" (50mm), 4" (100mm) and 6" (150mm) heights
- Comes in 118.125" (3000mm) length
- Finishes __: **GS,** BLE, 304S, 316S

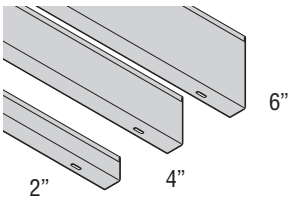
Part Number	Use With Tray Depth	Qty./Box	Wt./Box lbs.	Wt./Box kg
2 IN DIVIDER__	2" (50mm) Deep	1	3.5	1.59
4 IN DIVIDER __	4" (100mm) Deep	1	9.6	4.35
6 IN DIVIDER __	6" (150mm) Deep	1	14.5	6.58



Dividers include hardware shown below





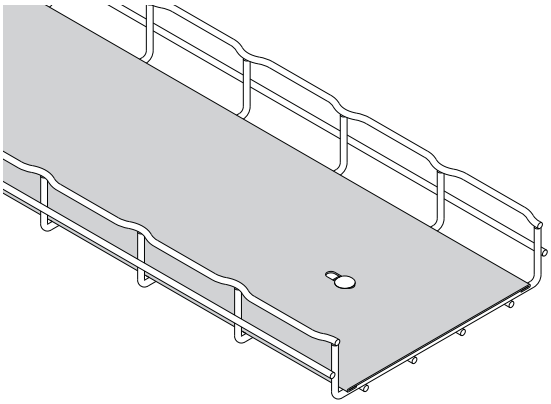


See page - 10 for finish information

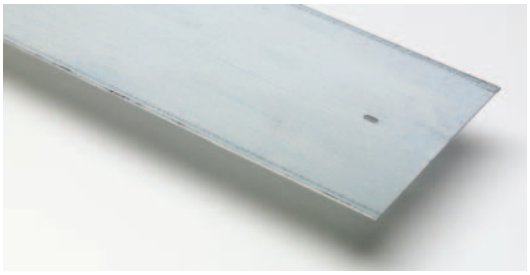
Solid Bottom Inserts

Part Number	Use With Tray Width	Qty./Box	Wt./Box lbs.	Wt./Box kg
INSERT 4X118__	4” (100mm)	1	6.8	3.08
INSERT 6X118__	6” (150mm)	1	9.8	4.44
INSERT 8X118__	8” (200mm)	1	13.3	6.03
INSERT 12X118__	12” (300mm)	1	21.6	9.80
INSERT 16X118__	16” (400mm)	1	26.4	11.97
INSERT 18X118__	18” (450mm)	1	32.4	14.69
INSERT 20X118__	20” (500mm)	1	32.9	14.92
INSERT 24X118__	24” (600mm)	1	39.3	17.82

- Continuous support for sensitive cables
- Security of cable in high-traffic areas
- Hardware included
- Available for 2” (50mm) to 24” (600mm) wide trays
- Comes in 118” (2997mm) length
- Finishes __: **GS,** BLE, 304S, 316S



Attach with FTHDWE 1/4 & Top Washer



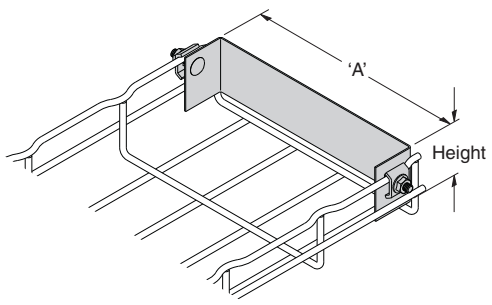
Blind Ends

Part Number	‘A’ in.	‘A’ mm	Height in.	Height mm	Box Quantity
FT BE 2X2	2”	50	2”	50	1
FT BE (*)X4	4”	100	(*)	(*)	1
FT BE (*)X6	6”	150	(*)	(*)	1
FT BE (**)X8	8”	200	(*)	(*)	1
FT BE (**)X12	12”	300	(**)	(**)	1
FT BE (**)X16	16”	400	(**)	(**)	1
FT BE (**)X18	18”	450	(**)	(**)	1
FT BE (**)X20	20”	500	(**)	(**)	1
FT BE (**)X24	24”	600	(**)	(**)	1

- Forms a closure for a dead-end Flextray
- Hardware included
- Finish: **GLV,** SS6

(*) Insert: 2 = 2" (50 mm), 4 = 4" (100 mm) for height

(**) Insert: 2 = 2" (50 mm), 4 = 4" (100 mm), 6 = 6" (150 mm) for height

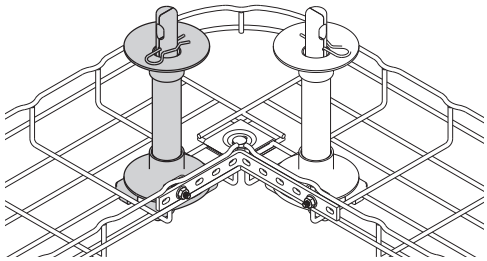


See page - 10 for finish information

Cable Roller

- Protects and maintains recommended cable radii for Cat 5, Cat 5E, Cat 6, Cat 6A, Fiber, etc.
- Height of roller can be adjusted to tray depth
- Installs in seconds with no tools
- Reduces cable installation time
- Prevents migration of cables
- For use with 4" (100mm) to 32" (800mm) tray widths
- Finish: Cast Aluminum

Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
CABLE ROLLER	Cable Roller	1	1.0	0.45

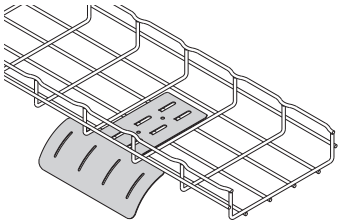


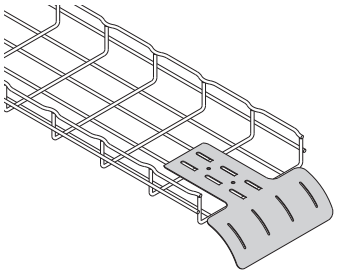
Quick, snap-together design

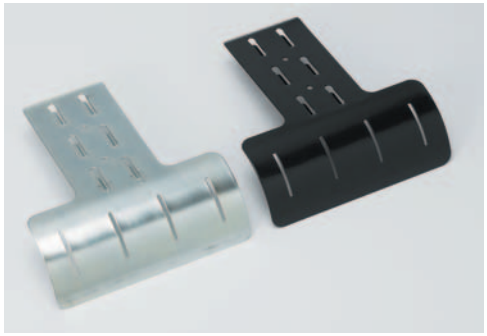
Drop Out Fitting

- Keeps cable radius secure at drop point
- For use with 4" (100mm) to 32" (800mm) wide trays
- Attaches to tray without hardware
- Drop outs can be attached at bottom, side or ends of tray
- Hold down tabs on bottom of drop out to secure tray (tabs not available on stainless steel drop out)
- Finishes __: **EG**, BLE

Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
DROP OUT__	Drop Out Fitting	1	0.5	0.22



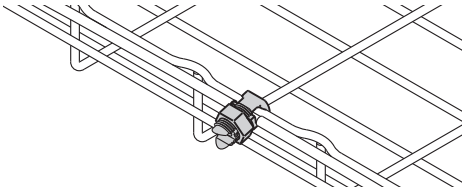




Ground Bolt

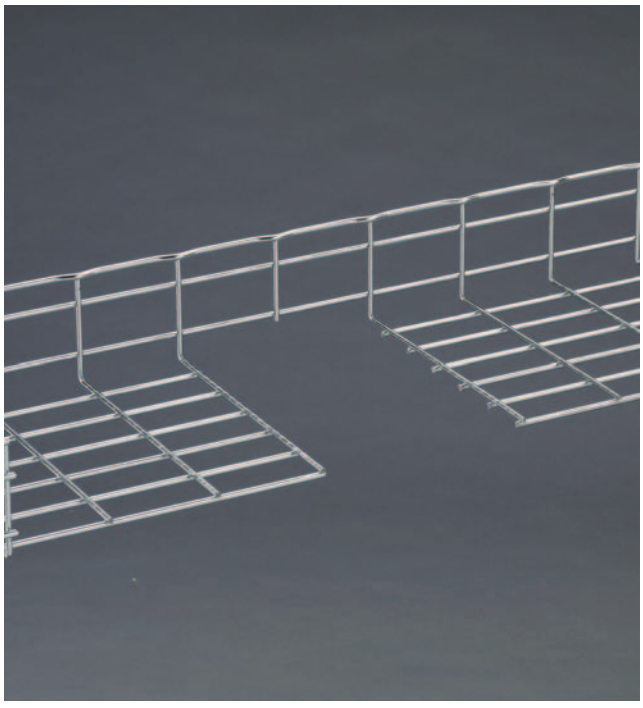
- Attaches up to #1 ground wire to each tray section when separate ground wire is required
- Used for UL grounding compliance.
- When using color powder coated finish or paint, coating must be removed at the points of contact.
- Finish: Copper Plated

Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
GROUND BOLT	Ground Bolt	1	0.11	0.05



See page - 10 for finish information

Flextray™ Installation



- Exclusive, patented Cleanshear™ cuts tray fast
- No sharp edges
- Designed specifically for cutting Flextray
- Safely cut and bend Flextray into any configuration

Flextray Cutters

Part Number	Description	Qty./Box	Wt./Box lbs.	Wt./Box kg
CLEANSHEAR	Cleanshear Cutting Tool	1	4.3	1.95

Patented

1 Face tray up. Slide cutter next to vertical wire and cut.

2 Turn tray to the side with open side facing you. Repeat step 1 to cut wire.

3 Finish cutting all side wires.

4 Turn tray open-side down and cut wires from bottom of tray.

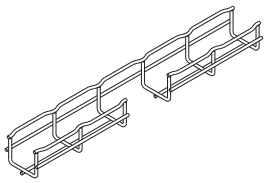
5 Finish cutting by moving to other side of tray to cut remaining wires,

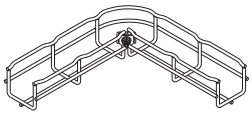
90° Horizontal Bends (Short Radius)

- Make your own field cut horizontal bends using Clearshear™ to make safe, smooth cuts
- Can be made from any tray width and depth with any available finish
- SUPT WASHER & FTHDWE 1/4 hardware may be used on bottom of tray instead of WASHER SPL KIT where desired

2" (50mm) Tray Width

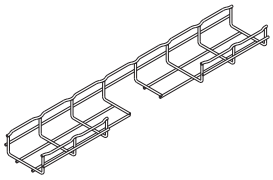
Flextray Depth	Required Hardware Description	Quantity
2" (50mm)	WASHER SPL KIT	1

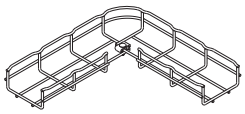




4" (100mm) Tray Width

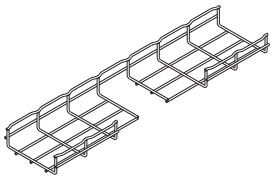
Flextray Depth	Required Hardware Description	Quantity
1 1/2" (38mm)	WASHER SPL KIT	1
2" (50mm)	WASHER SPL KIT	1
4" (100mm)	WASHER SPL KIT	1

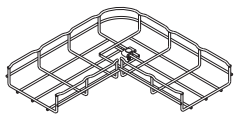




6" (150mm) Tray Width

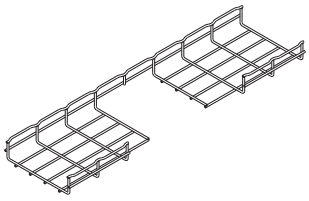
Flextray Depth	Required Hardware Description	Quantity
1 1/2" (38mm)	WASHER SPL KIT	1
2" (50mm)	WASHER SPL KIT	1
4" (100mm)	WASHER SPL KIT	1

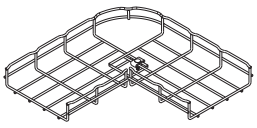




8" (200mm) Tray Width

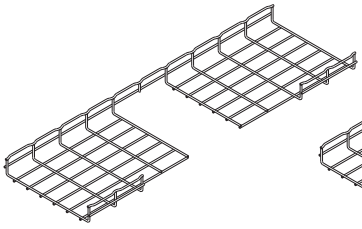
Flextray Depth	Required Hardware Description	Quantity
1 1/2" (38mm)	WASHER SPL KIT	1
2" (50mm)	WASHER SPL KIT	1
4" (100mm)	WASHER SPL KIT	1
6" (150mm)	WASHER SPL KIT	1

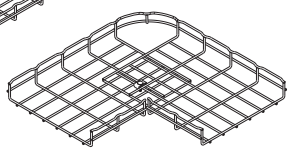




12" (300mm) Tray Width

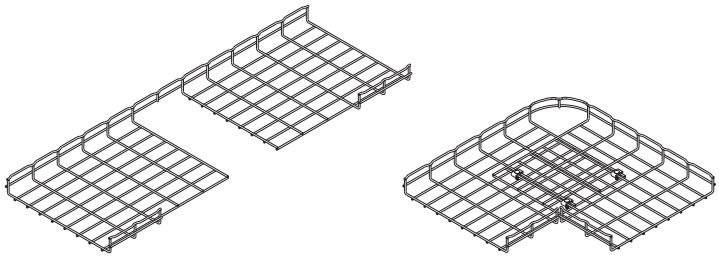
Flextray Depth	Required Hardware Description	Quantity
1 1/2" (38mm)	WASHER SPL KIT	1
2" (50mm)	WASHER SPL KIT	1
4" (100mm)	WASHER SPL KIT	1
6" (150mm)	WASHER SPL KIT	1





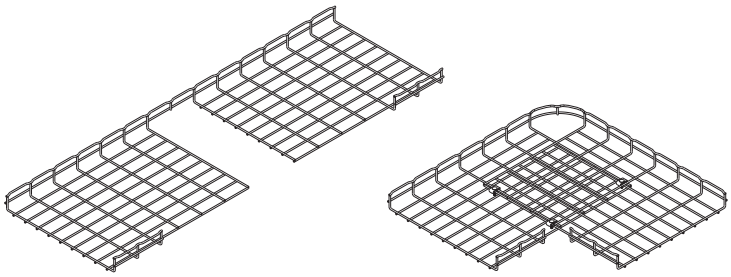
90° Horizontal Bends (Short Radius)

- Make your own field cut horizontal bends using Clearshear™ to make safe, smooth cuts
- Can be made from any tray width and depth with any available finish
- SUPT WASHER & FTHDWE 1/4 hardware may be used on bottom of tray instead of WASHER SPL KIT where desired



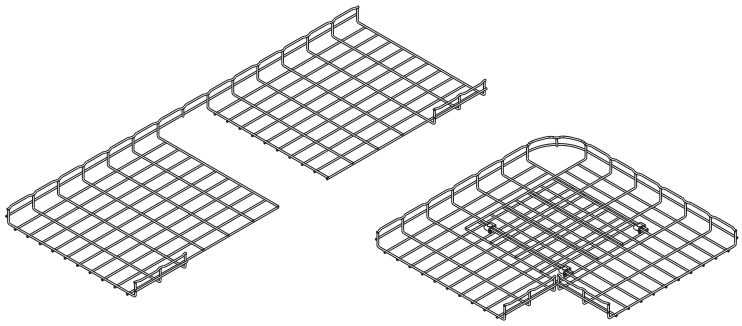
16" (400mm) Tray Width

Flextray Depth	Required Hardware Description	Quantity
2" (50mm)	WASHER SPL KIT	3
4" (100mm)	WASHER SPL KIT	3
6" (150mm)	WASHER SPL KIT	3



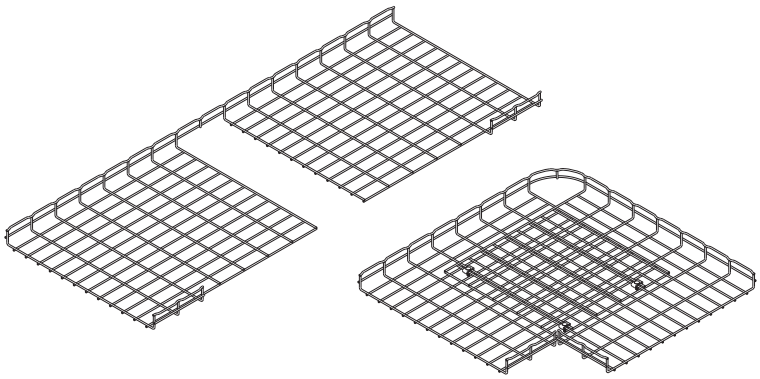
18" (450mm) Tray Width

Flextray Depth	Required Hardware Description	Quantity
2" (50mm)	WASHER SPL KIT	3
4" (100mm)	WASHER SPL KIT	3
6" (150mm)	WASHER SPL KIT	3



20" (500mm) Tray Width

Flextray Depth	Required Hardware Description	Quantity
2" (50mm)	WASHER SPL KIT	3
4" (100mm)	WASHER SPL KIT	3
6" (150mm)	WASHER SPL KIT	3



24" (600mm) Tray Width

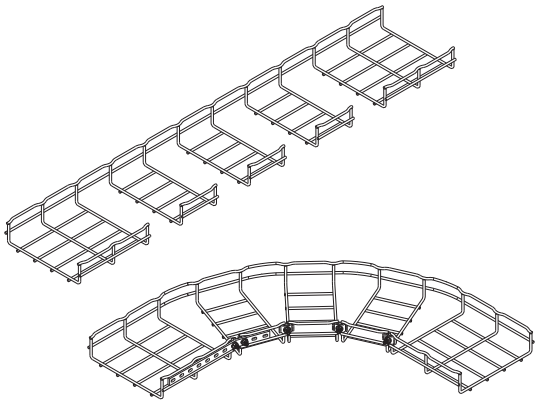
Flextray Depth	Required Hardware Description	Quantity
2" (50mm)	WASHER SPL KIT	3
4" (100mm)	WASHER SPL KIT	3
6" (150mm)	WASHER SPL KIT	3

90° Horizontal Bends (Long Radius)

- Make your own field cut horizontal sweeps using Clearshear™ to make safe, smooth cuts
- Can be made from any tray width and depth with any available finish
- Cut as many Segments as required to control sweep radius (use chart for recommendations)
- One (1) WASHER SPL KIT is required to connect each cut segment minus one, this segment uses one (1) SPLICE BAR, two (2) FTHDWE 1/4 and two (2) BTM WASHER

Flextray Width	Segments To Be Removed	Component Qty.		
		WASHER SPL KIT	FTHDWE 1/4 & BTM WASHER	SPLICE BAR
4" (100mm)	2	1	2	1
6" (150mm)	3	2	2	1
8" (200mm)	4	3	2	1
12" (300mm)	6	5	2	1
16" (400mm)	7	6	2	1
18" (450mm)	8	7	2	1
20" (500mm)	10	9	2	1
24" (600mm)	11	10	2	1
30" (750mm)	13	12	2	1
32" (800mm)	13	12	2	1

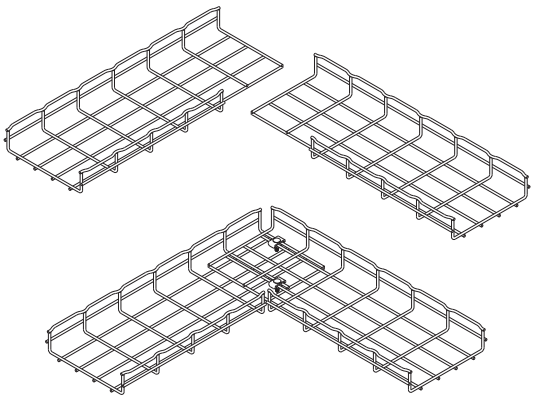
- Illustration shown below is for a 8" (200mm) width
- 1.5" deep Flextray has only one (1) side wire
  2" deep Flextray has two (2) side wires - shown
  4" deep Flextray has three (3) side wires
  6" deep Flextray has four (4) side wires



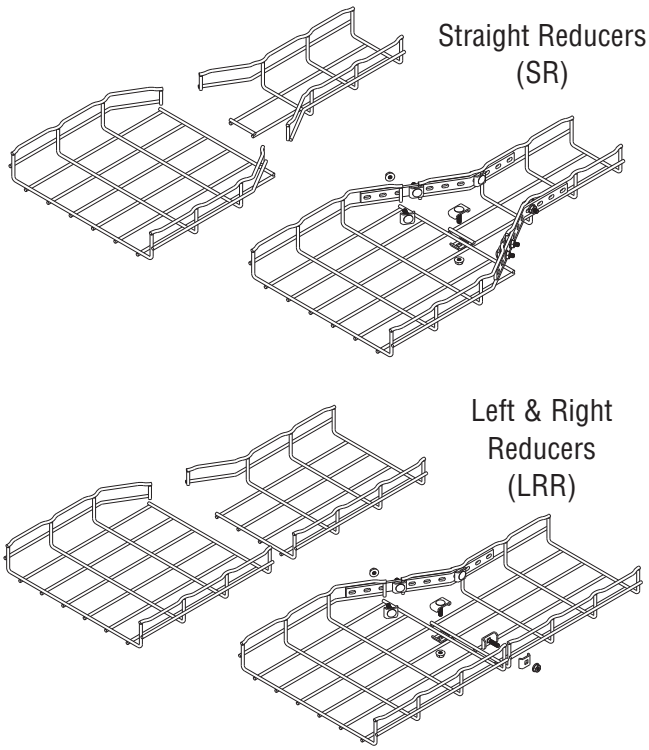
90° Horizontal Bend From (2) Straight Sections

Flextray Width	Side Sections To Be Removed	WASHER SPL KIT Qty.
4" (100mm)	1	2
6" (150mm)	2	2
8" (200mm)	2	2
12" (300mm)	3	2
16" (400mm)	4	3
18" (450mm)	5	3
20" (500mm)	5	3
24" (600mm)	6	4
30" (750mm)	8	4
32" (800mm)	8	4

- Cut required number of wire side sections listed in chart per the illustration below
  (Illustration is for a 8" (200mm) width)
- 1.5" deep Flextray has only one (1) side wire
  2" deep Flextray has two (2) side wires - shown
  4" deep Flextray has three (3) side wires
  6" deep Flextray has four (4) side wires



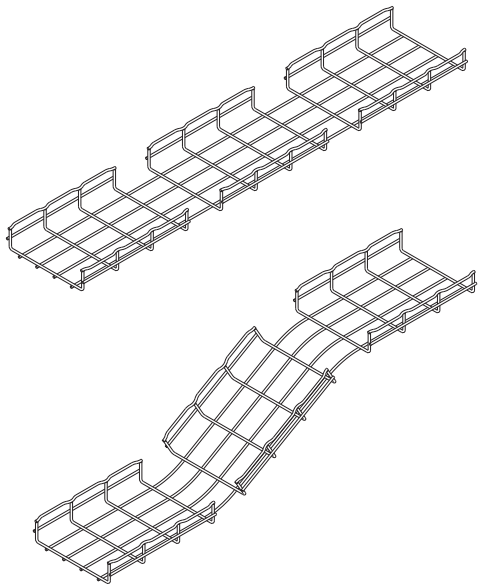
Reducers



Large Flextray Width	Component Qty. WASHER SPL KIT (SR)	(LRR)	FTHDWE 1/4 & BTM WASHER (SR)	(LRR)	SPLICE BAR (SR)	(LRR)
4" (100mm)	-	1	-	2	-	1
6" (150mm)	-	2	-	2	-	1
8" (200mm)	1	2	4	2	2	1
12" (300mm)	2	3	4	2	2	1
16" (400mm)	2	3	4	2	2	1
18" (450mm)	2	3	4	2	2	1
20" (500mm)	3	3	4	2	2	1
24" (600mm)	3	3	4	2	2	1
30" (750mm)	3	3	4	2	2	1
32" (800mm)	3	3	4	2	2	1

- 1.5" deep Flextray has only one (1) side wire
  2" deep Flextray has two (2) side wires - shown
  4" deep Flextray has three (3) side wires
  6" deep Flextray has four (4) side wires

Vertical Inside & Outside Bends

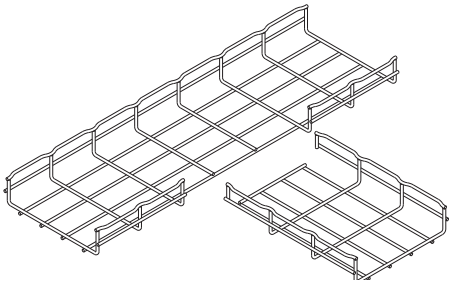


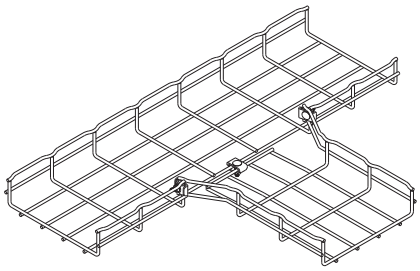
- Cut wire section as shown and bend to desired angle
- 1.5" deep Flextray has only one (1) side wire
  2" deep Flextray has two (2) side wires - shown
  4" deep Flextray has three (3) side wires
  6" deep Flextray has four (4) side wires

Horizontal Tees (and crosses)

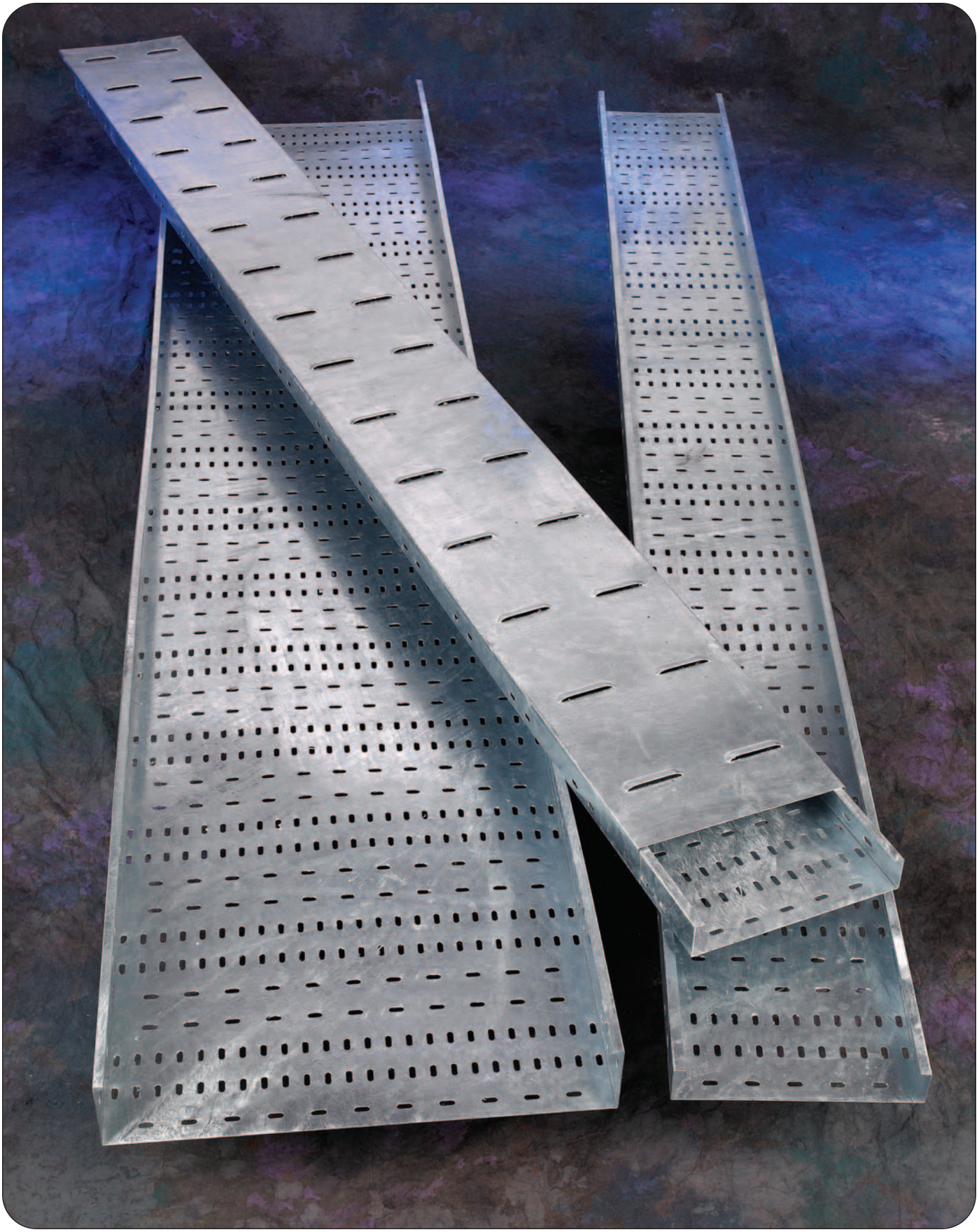
Flextray Width	WASHER SPL KIT Qty.
2" (50mm)	2
4" (100mm)	2
6" (150mm)	3
8" (200mm)	3
12" (300mm)	4
16" (400mm)	4
18" (450mm)	4
20" (500mm)	4
24" (600mm)	4
30" (750mm)	5
32" (800mm)	5

- Cut wire side sections as shown in the illustration below (Illustration is for a 8" (200mm) width)
- 1.5" deep Flextray has only one (1) side wire
  2" deep Flextray has two (2) side wires - shown
  4" deep Flextray has three (3) side wires
  6" deep Flextray has four (4) side wires
- For crosses, duplicate process on opposite side





Pan Cable Tray



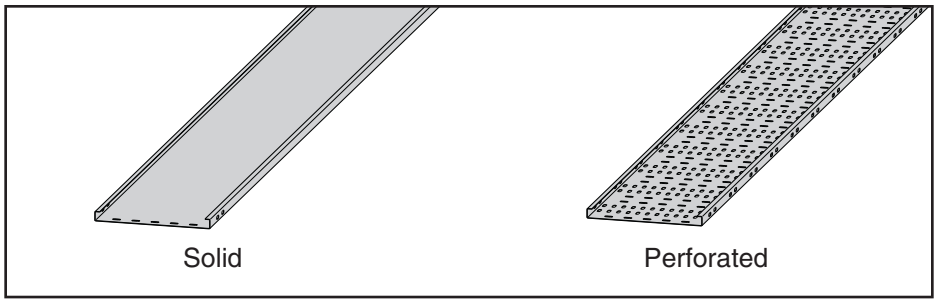
Light Duty - 25mm Height Straight Sections

Straight Section Part Numbering

Example: **T 025 V G 10 - 050 - 3**

Tray	Height	Tray Type	Material	Thickness Δ	Width	Length
Pan Cable Tray	● 025 = 25mm	● V = Perforated ● S = Solid	● G = Hot Dip Galvanized After Fabrication ● P = Pre-Galvanized Steel ● SS4 = 304 Stainless Steel ● SS6 = 316 Stainless Steel ● A = Aluminum	See Charts Below	● 50 = 50mm ● 100 = 100mm ● 150 = 150mm ● 300 = 300mm ● 400 = 400mm ● 600 = 600mm	● **3** = 3m

See table below for standard product configurations.



Steel

Part Number	Height In.	Height mm	Width In.	Width mm	Material Thickness Δ In.	Material Thickness Δ mm
T025 * †10-050-3	1	25	2	50	19 ga.	1.0
T025 * †10-100-3	1	25	4	100	19 ga.	1.0
T025 * †10-150-3	1	25	6	150	19 ga.	1.0
T025 * †10-300-3	1	25	12	300	19 ga.	1.0
T025 * †10-400-3	1	25	16	400	19 ga.	1.0
T025 * †12-600-3	1	25	24	600	18 ga.	1.2

Aluminum

Part Number	Height In.	Height mm	Width In.	Width mm	Material Thickness Δ In.	Material Thickness Δ mm
T025 * A10-050-3	1	25	2	50	0.040	1.0
T025 * A10-100-3	1	25	4	100	0.040	1.0
T025 * A10-150-3	1	25	6	150	0.040	1.0
T025 * A10-300-3	1	25	12	300	0.040	1.0
T025 * A15-400-3	1	25	16	400	0.060	1.5
T025 * A15-600-3	1	25	24	600	0.060	1.5

All dimensions are in millimeters unless otherwise specified
* Insert tray type, V or S
† Insert material type (G, P, SS4, SS6)

● Green = Fastest shipped items ● Black = Normal lead-time items ● Red = Normally long lead-time items

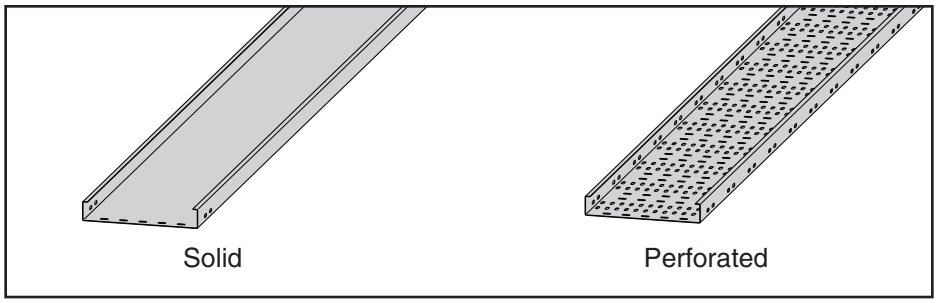
Medium Duty - 50mm Height Straight Sections

Straight Section Part Numbering

Example: **T 050 V G 12 - 100 - 3**

Tray	Height	Tray Type	Material	Thickness Δ	Width	Length
Pan Cable Tray	● 050 = 50mm	● V = Perforated ● S = Solid	● G = Hot Dip Galvanized After Fabrication ● P = Pre-Galvanized Steel ● SS4 = 304 Stainless Steel ● SS6 = 316 Stainless Steel ● A = Aluminum	See Charts Below	● 50 = 50mm ● 100 = 100mm ● 150 = 150mm ● 300 = 300mm ● 400 = 400mm ● 600 = 600mm ● 900 = 900mm	● **3** = 3m

See table below for standard product configurations.



Steel

Part Number	Height In.	Height mm	Width In.	Width mm	Material Thickness Δ In.	Material Thickness Δ mm
T050 * †10-050-3	2	50	2	50	19 ga.	1.0
T050 * †10-100-3	2	50	4	100	19 ga.	1.0
T050 * †10-150-3	2	50	6	150	19 ga.	1.0
T050 * †12-300-3	2	50	12	300	18 ga.	1.2
T050 * †12-400-3	2	50	16	400	18 ga.	1.2
T050 * †15-600-3	2	50	24	600	16 ga.	1.5
T050 * †15-900-3	2	50	36	900	16 ga.	1.5

Aluminum

Part Number	Height In.	Height mm	Width In.	Width mm	Material Thickness Δ In.	Material Thickness Δ mm
T050 * A15-050-3	2	50	2	50	0.060	1.5
T050 * A15-100-3	2	50	4	100	0.060	1.5
T050 * A15-150-3	2	50	6	150	0.060	1.5
T050 * A15-300-3	2	50	12	300	0.060	1.5
T050 * A20-400-3	2	50	16	400	0.080	2.0
T050 * A20-600-3	2	50	24	600	0.080	2.0
T050 * A20-900-3	2	50	36	900	0.080	2.0

All dimensions are in millimeters unless otherwise specified
* Insert tray type, V or S
† Insert material type (G, P, SS4, SS6)

● Green = Fastest shipped items ● Black = Normal lead-time items ● Red = Normally long lead-time items

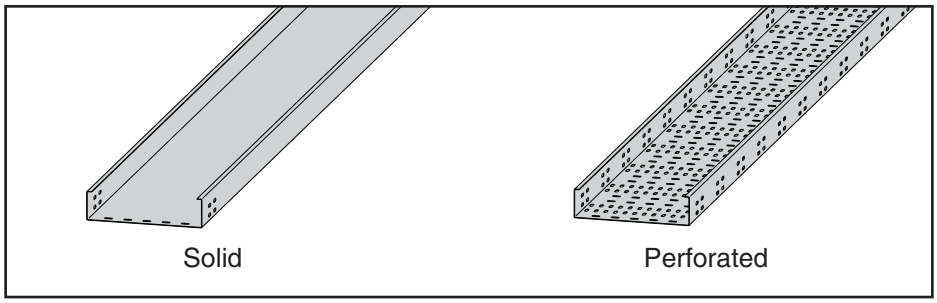
Heavy Duty - 75mm Height Straight Sections

Straight Section Part Numbering

Example: **T 075 V G 12 - 300 - 3**

Tray	Height	Tray Type	Material	Thickness Δ	Width	Length
Pan Cable Tray	● 075 = 75mm	● V = Perforated ● S = Solid	● G = Hot Dip Galvanized After Fabrication ● P = Pre-Galvanized Steel ● SS4 = 304 Stainless Steel ● SS6 = 316 Stainless Steel ● A = Aluminum	See Charts Below	● 100 = 100mm ● 150 = 150mm ● 300 = 300mm ● 400 = 400mm ● 600 = 600mm ● 900 = 900mm	● **3** = 3m

See table below for standard product configurations.



Steel

Part Number	Height In.	Height mm	Width In.	Width mm	Material Thickness Δ In.	Material Thickness Δ mm
T075 * †10-100-3	3	75	4	100	18 ga.	1.2
T075 * †10-150-3	3	75	6	150	18 ga.	1.2
T075 * †12-300-3	3	75	12	300	18 ga.	1.2
T075 * †12-400-3	3	75	16	400	18 ga.	1.2
T075 * †12-600-3	3	75	24	600	16 ga.	1.5
T075 * †12-900-3	3	75	36	900	16 ga.	1.5

Aluminum

Part Number	Height In.	Height mm	Width In.	Width mm	Material Thickness Δ In.	Material Thickness Δ mm
T075 * A10-100-3	3	75	4	100	0.080	2.0
T075 * A10-150-3	3	75	6	150	0.080	2.0
T075 * A12-300-3	3	75	12	300	0.100	2.5
T075 * A12-400-3	3	75	16	400	0.100	2.5
T075 * A12-600-3	3	75	24	600	0.120	3.0
T075 * A12-900-3	3	75	36	900	0.120	3.0

All dimensions are in millimeters unless otherwise specified
* Insert tray type, V or S
† Insert material type (G, P, SS4, SS6)

● Green = Fastest shipped items ● Black = Normal lead-time items ● Red = Normally long lead-time items

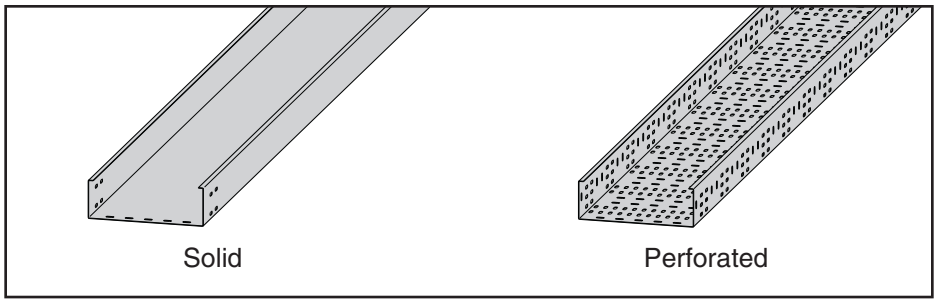
Extra Heavy Duty - 100mm Height Straight Sections

Straight Section Part Numbering

Example: **T 100 V G 15 - 450 - 3**

Tray	Height	Tray Type	Material	Thickness Δ	Width	Length
Pan Cable Tray	● 100 = 100mm	● V = Perforated ● S = Solid	● G = Hot Dip Galvanized After Fabrication ● P = Pre-Galvanized Steel ● SS4 = 304 Stainless Steel ● SS6 = 316 Stainless Steel ● A = Aluminum	See Charts Below	● 100 = 100mm ● 150 = 150mm ● 300 = 300mm ● 400 = 400mm ● 600 = 600mm ● 900 = 900mm	● **3** = 3m

See table below for standard product configurations.



Steel

Part Number	Height In.	Height mm	Width In.	Width mm	Material Thickness Δ In.	Material Thickness Δ mm
T100 * †12-100-3	4	100	4	100	18 ga.	1.2
T100 * †12-150-3	4	100	6	150	18 ga.	1.2
T100 * †12-300-3	4	100	12	300	18 ga.	1.2
T100 * †12-400-3	4	100	16	400	16 ga.	1.5
T100 * †15-600-3	4	100	24	600	16 ga.	1.5
T100 * †15-900-3	4	100	36	900	16 ga.	1.5

Aluminum

Part Number	Height In.	Height mm	Width In.	Width mm	Material Thickness Δ In.	Material Thickness Δ mm
T100 * A12-100-3	4	100	4	100	0.080	2.0
T100 * A12-150-3	4	100	6	150	0.080	2.0
T100 * A12-300-3	4	100	12	300	0.100	2.5
T100 * A12-400-3	4	100	16	400	0.100	2.5
T100 * A15-600-3	4	100	24	600	0.120	3.0
T100 * A15-900-3	4	100	36	900	0.120	3.0

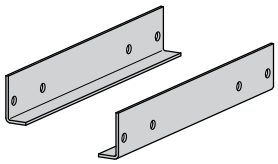
All dimensions are in millimeters unless otherwise specified
* Insert tray type, V or S
† Insert material type (G, P, SS4, SS6)

● Green = Fastest shipped items ● Black = Normal lead-time items ● Red = Normally long lead-time items

Pan Cable Tray Accessories

Standard Splice Plates

- Furnished in pairs with M6 hardware.
- Material thckness:
  Steel - 2.5mm
  Aluminum - 3.0mm
- Not included with straight sections or fittings - order separately

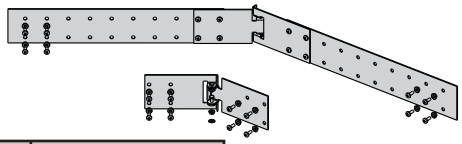


Pan Cable Tray Series	Catalog No.
T025	**TSP025***
T050	**TSP050***
T075	**TSP075***
T100	**TSP100***

* Insert material type

Horizontal Adjustable Splice Plates

- Furnished in pairs with M6 hardware.
- Material thckness:
  Steel - 2.5mm
  Aluminum - 3.0mm

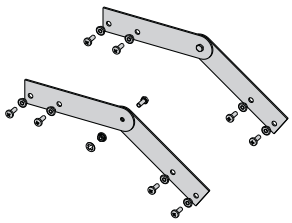


Pan Cable Tray Series	Catalog No.
T025	**THA025***
T050	**THA050***
T075	**THA075***
T100	**THA100***

* Insert material type

Vertical Adjustable Splice Plates

- Furnished in pairs with M6 hardware.
- Material thckness:
  Steel - 2.5mm
  Aluminum - 3.0mm

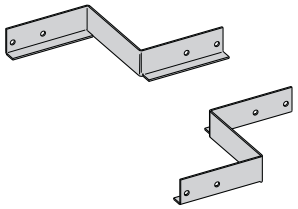


Pan Cable Tray Series	Catalog No.
T025	**TVA025***
T050	**TVA050***
T075	**TVA075***
T100	**TVA100***

* Insert material type

Straight Reducing Splice Plates

- Furnished in pairs with M6 hardware.
- Material thckness:
  Steel - 2.5mm
  Aluminum - 3.0mm

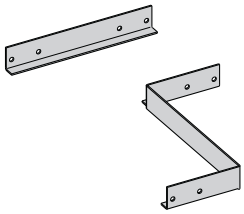


Pan Cable Tray Series	Catalog No.
T025	**TRS025*-††**
T050	**TRS050*-††**
T075	**TRS075*-††**
T100	**TRS100*-††**

* Insert material type †† Insert width reduction

Left Reducing Splice Plates

- Furnished in pairs with M6 hardware.
- Material thckness:
  Steel - 2.5mm
  Aluminum - 3.0mm

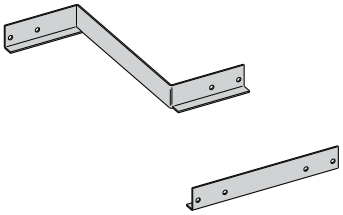


Pan Cable Tray Series	Catalog No.
T025	**TLR025*-††**
T050	**TLR050*-††**
T075	**TLR075*-††**
T100	**TLR100*-††**

* Insert material type †† Insert width reduction

Right Reducing Splice Plates

- Furnished in pairs with M6 hardware.
- Material thckness:
  Steel - 2.5mm
  Aluminum - 3.0mm



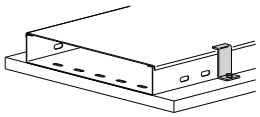
Pan Cable Tray Series	Catalog No.
T025	**TRR025*-††**
T050	**TRR050*-††**
T075	**TRR075*-††**
T100	**TRR100*-††**

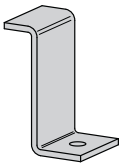
* Insert material type †† Insert width reduction

* G = Hot Dip Galvanized after Fabrication, P = Pre-Galvanized, SS4 = 304 Stainless Steel, 316 = 316 Stainless Steel, A = Aluminum

Hold-Down Clip

- Sold individually with M6 hardware.
- Material thckness:
  Steel - 2.5mm
  Aluminum - 3.0mm



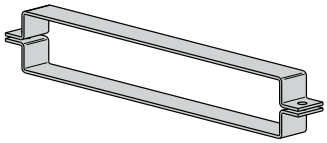


Pan Cable Tray Series	Catalog No.
T025	**THD025*-M6**
T050	**THD050*-M6**
T075	**THD075*-M6**
T100	**THD100*-M6**

* Insert material type

Cover Clamp

- Sold individually (as shown) with M6 hardware.
- Material thckness:
  Steel - 2.5mm
  Aluminum - 3.0mm

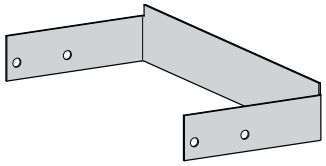


Pan Cable Tray Series	Catalog No.
T025	**TCL025*-††**
T050	**TCL050*-††**
T075	**TCL075*-††**
T100	**TCL100*-††**

* Insert material type †† Insert tray width

Blind End

- Sold individually with M6 hardware.
- Material thckness:
  Steel - 2.5mm
  Aluminum - 3.0mm



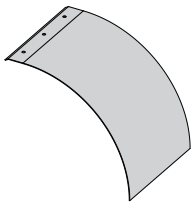
Pan Cable Tray Series	Available Tray Widths mm	Catalog No.
T025	50, 100, 150, 300, 400, 600	**TBE025*†**
T050	50, 100, 150, 300, 400, 600, 900	**TBE050*†**
T075	100, 150, 300, 400, 600, 900	**TBE075*†**
T100	100, 150, 300, 400, 600, 900	**TBE100*†**

* Insert material type
† Insert tray width

Tray Width
mm to inches
50 = 2”
100 = 4”
150 = 6”
300 = 12”
400 = 16”
600 = 24”
900 = 36”

End Drop-Out

- Sold individually with M6 hardware.
- Material thckness:
  Steel - 1.5mm
  Aluminum - 3.0mm



Pan Cable Tray Width	Catalog No.
50	**TDO*-050**
100	**TDO*-100**
150	**TDO*-150**
300	**TDO*-300**
400	**TDO*-400**
600	**TDO*-600**
900	**TDO*-900**

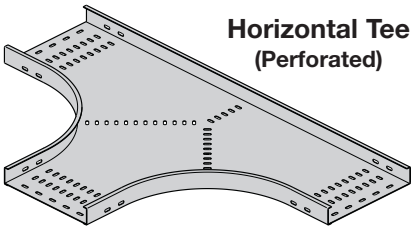
* Insert material type

Tray Width
mm to inches
50 = 2”
100 = 4”
150 = 6”
300 = 12”
400 = 16”
600 = 24”
900 = 36”

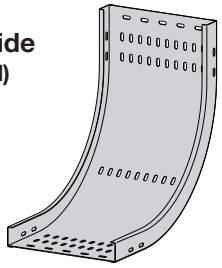
* G = Hot Dip Galvanized after Fabrication, P = Pre-Galvanized, SS4 = 304 Stainless Steel, 316 = 316 Stainless Steel, A = Aluminum

Pan Cable Tray Fittings

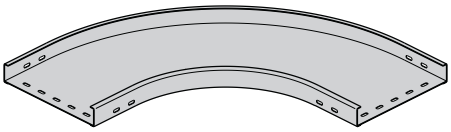
Horizontal Tee
(Perforated)



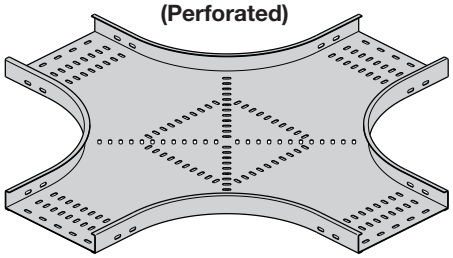
Vertical Inside
(Perforated)



Horizontal Bend
(Solid)



Horizontal Cross
(Perforated)



Fittings Part Numbering

Prefix

Example: **T 050 V G 15 - 300 - 90 HB 300**

Series
Pan Cable Tray

Height
- 025 = 25mm
- 050 = 50mm
- 075 = 75mm
- 100 = 100mm

Tray Type
- V = Perforated
- S = Solid

Material
- G = Hot Dip Galvanized After Fabrication
- P = Pre-Galvanized Steel
- SS4 = Stainless Steel 304
- SS6 = Stainless Steel 316
- A = Aluminum

Thickness
- 15 = 1.5mm (Steel)
- 30 = 3.0mm (Aluminum)

Width
- 050 = 50mm
- 100 = 100mm
- 150 = 150mm
- 300 = 300mm
- 400 = 400mm
- 600 = 600mm
- 900 = 900mm

Angle
- 45 = 45°
- 90 = 90°

Type
- HB = Horizontal Bend
- *HT = Horizontal Tee
- *HX = Horizontal Cross
- VI=Vertical Inside Bend
- VO = Vertical Outside Bend

Radius
- 300 = 300mm
- 600 = 600mm

*Angle not required on HT & HX

Green = Fastest shipped items Black = Normal lead-time items Red = Normally long lead-time items

Horizontal Tee (HT)

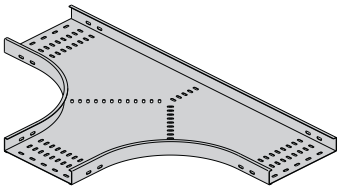
Steel

Bend Radius R		Tray Width		Horizontal Tee				
				Catalog No.	Dimensions			
					A		B	
in.	mm	in.	mm		in.	mm	in.	mm
12	(300)	2	(50)	(Prefix)-050-HT300	18 1/4	(463.5)	36 1/2	(927.0)
		4	(100)	(Prefix)-100-HT300	19 1/4	(488.5)	38 1/2	(977.0)
		6	(150)	(Prefix)-150-HT300	20 3/16	(513.5)	40 3/8	(1027.0)
		12	(300)	(Prefix)-300-HT300	23 3/16	(588.5)	46 3/8	(1177.0)
		16	(400)	(Prefix)-400-HT300	25 1/8	(638.5)	50 1/4	(1277.0)
		24	(600)	(Prefix)-600-HT300	29 1/16	(738.5)	58 1/8	(1477.0)
		36	(900)	(Prefix)-900-HT300	35	(888.5)	70	(1777.0)
24	(600)	2	(50)	(Prefix)-050-HT600	30 1/16	(763.5)	60 1/8	(1527.0)
		4	(100)	(Prefix)-100-HT600	31 1/32	(788.5)	62 1/16	(1577.0)
		6	(150)	(Prefix)-150-HT600	32 1/32	(813.5)	64 1/8	(1627.0)
		12	(300)	(Prefix)-300-HT600	35	(888.5)	70	(1777.0)
		16	(400)	(Prefix)-400-HT600	36 15/16	(938.5)	73 7/8	(1877.0)
		24	(600)	(Prefix)-600-HT600	40 7/8	(1038.5)	81 3/4	(2077.0)
		36	(900)	(Prefix)-900-HT600	46 25/32	(1188.5)	93 9/16	(2377.0)

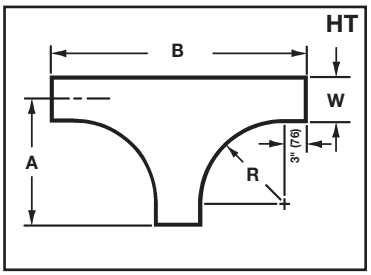
Aluminum

Bend Radius R		Tray Width		Horizontal Tee				
				Catalog No.	Dimensions			
					A		B	
in.	mm	in.	mm		in.	mm	in.	mm
12	(300)	2	(50)	(Prefix)-050-HT300	18 3/16	(462.0)	36 3/8	(924.0)
		4	(100)	(Prefix)-100-HT300	19 3/16	(487.0)	38 3/8	(974.0)
		6	(150)	(Prefix)-150-HT300	20 5/32	(512.0)	40 1/4	(1024.0)
		12	(300)	(Prefix)-300-HT300	23 1/8	(587.0)	46 1/4	(1174.0)
		16	(400)	(Prefix)-400-HT300	25 1/16	(637.0)	50 1/8	(1274.0)
		24	(600)	(Prefix)-600-HT300	29	(737.0)	58	(1474.0)
		36	(900)	(Prefix)-900-HT300	34 15/16	(887.0)	69 7/8	(1774.0)
24	(600)	2	(50)	(Prefix)-050-HT600	30	(762.0)	60	(1524.0)
		4	(100)	(Prefix)-100-HT600	30 31/32	(787.0)	61 15/16	(1574.0)
		6	(150)	(Prefix)-150-HT600	31 31/32	(812.0)	64	(1624.0)
		12	(300)	(Prefix)-300-HT600	34 15/16	(887.0)	69 7/8	(1774.0)
		16	(400)	(Prefix)-400-HT600	36 7/8	(937.0)	73 3/4	(1874.0)
		24	(600)	(Prefix)-600-HT600	40 13/16	(1037.0)	81 5/8	(2074.0)
		36	(900)	(Prefix)-900-HT600	46 23/32	(1187.0)	93 7/16	(2374.0)

(Prefix) See page 56 for catalog number prefix.

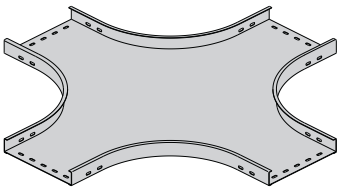


Perforated Shown

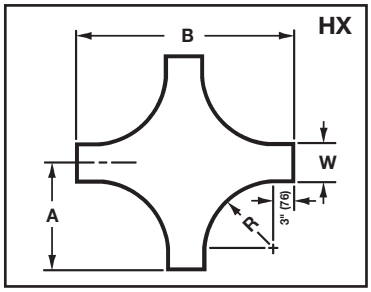


All dimensions in parentheses are in millimeters unless otherwise specified.
Manufacturing tolerances apply to all dimensions.

Horizontal Cross (HX)



Solid Shown



Steel

Bend Radius R in.	Bend Radius R mm	Tray Width in.	Tray Width mm	Horizontal Cross Catalog No.	Dimensions A in.	Dimensions A mm	Dimensions B in.	Dimensions B mm
12	(300)	2	(50)	(Prefix)-050-HX300	18 1/4	(463.5)	36 1/2	(927.0)
		4	(100)	(Prefix)-100-HX300	19 1/4	(488.5)	38 1/2	(977.0)
		6	(150)	(Prefix)-150-HX300	20 3/16	(513.5)	40 3/8	(1027.0)
		12	(300)	(Prefix)-300-HX300	23 3/16	(588.5)	46 3/8	(1177.0)
		16	(400)	(Prefix)-400-HX300	25 1/8	(638.5)	50 1/4	(1277.0)
		24	(600)	(Prefix)-600-HX300	29 1/16	(738.5)	58 1/8	(1477.0)
		36	(900)	(Prefix)-900-HX300	35	(888.5)	70	(1777.0)
24	(600)	2	(50)	(Prefix)-050-HX600	30 1/16	(763.5)	60 1/8	(1527.0)
		4	(100)	(Prefix)-100-HX600	31 1/32	(788.5)	62 1/16	(1577.0)
		6	(150)	(Prefix)-150-HX600	32 1/32	(813.5)	64 1/8	(1627.0)
		12	(300)	(Prefix)-300-HX600	35	(888.5)	70	(1777.0)
		16	(400)	(Prefix)-400-HX600	36 15/16	(938.5)	73 7/8	(1877.0)
		24	(600)	(Prefix)-600-HX600	40 7/8	(1038.5)	81 3/4	(2077.0)
		36	(900)	(Prefix)-900-HX600	46 25/32	(1188.5)	93 9/16	(2377.0)

Aluminum

Bend Radius R in.	Bend Radius R mm	Tray Width in.	Tray Width mm	Horizontal Cross Catalog No.	Dimensions A in.	Dimensions A mm	Dimensions B in.	Dimensions B mm
12	(300)	2	(50)	(Prefix)-050-HX300	18 3/16	(462.0)	36 3/8	(924.0)
		4	(100)	(Prefix)-100-HX300	19 3/16	(487.0)	38 3/8	(974.0)
		6	(150)	(Prefix)-150-HX300	20 5/32	(512.0)	40 1/4	(1024.0)
		12	(300)	(Prefix)-300-HX300	23 1/8	(587.0)	46 1/4	(1174.0)
		16	(400)	(Prefix)-400-HX300	25 1/16	(637.0)	50 1/8	(1274.0)
		24	(600)	(Prefix)-600-HX300	29	(737.0)	58	(1474.0)
		36	(900)	(Prefix)-900-HX300	34 15/16	(887.0)	69 7/8	(1774.0)
24	(600)	2	(50)	(Prefix)-050-HX600	30	(762.0)	60	(1524.0)
		4	(100)	(Prefix)-100-HX600	30 31/32	(787.0)	61 15/16	(1574.0)
		6	(150)	(Prefix)-150-HX600	31 31/32	(812.0)	64	(1624.0)
		12	(300)	(Prefix)-300-HX600	34 15/16	(887.0)	69 7/8	(1774.0)
		16	(400)	(Prefix)-400-HX600	36 7/8	(937.0)	73 3/4	(1874.0)
		24	(600)	(Prefix)-600-HX600	40 13/16	(1037.0)	81 5/8	(2074.0)
		36	(900)	(Prefix)-900-HX600	46 23/32	(1187.0)	93 7/16	(2374.0)

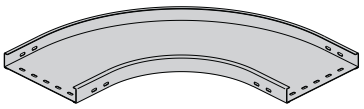
(Prefix) See page 56 for catalog number prefix.

All dimensions are millimeters unless otherwise specified.
Manufacturing tolerances apply to all dimensions.

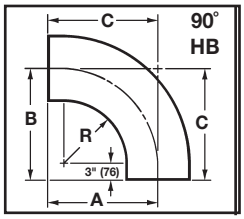
Horizontal Bend 90° (HB)

Steel

Bend Radius R		Tray Width		90° Horizontal Bend							
				Catalog No.	Dimensions						
					A		B		C		
in.	mm	in.	mm		in.	mm	in.	mm	in.	mm
12	(300)	2	(50)	(Prefix)-050-90HB300	18 1/4	(463.5)	18 1/4	(463.5)	18 1/4	(463.5)
		4	(100)	(Prefix)-100-90HB300	19 1/4	(488.5)	19 1/4	(488.5)	19 1/4	(488.5)
		6	(150)	(Prefix)-150-90HB300	20 3/16	(513.5)	20 3/16	(513.5)	20 3/16	(513.5)
		12	(300)	(Prefix)-300-90HB300	23 3/16	(588.5)	23 3/16	(588.5)	23 3/16	(588.5)
		16	(400)	(Prefix)-400-90HB300	25 1/8	(638.5)	25 1/8	(638.5)	25 1/8	(638.5)
		24	(600)	(Prefix)-600-90HB300	29 1/16	(738.5)	29 1/16	(738.5)	29 1/16	(738.5)
		36	(900)	(Prefix)-700-90HB300	35	(888.5)	35	(888.5)	35	(888.5)
24	(600)	2	(50)	(Prefix)-050-90HB600	30 1/16	(763.5)	30 1/16	(763.5)	30 1/16	(763.5)
		4	(100)	(Prefix)-100-90HB600	31 1/32	(788.5)	31 1/32	(788.5)	31 1/32	(788.5)
		6	(150)	(Prefix)-150-90HB600	32 1/32	(813.5)	32 1/32	(813.5)	32 1/32	(813.5)
		12	(300)	(Prefix)-300-90HB600	35	(888.5)	35	(888.5)	35	(888.5)
		16	(400)	(Prefix)-400-90HB600	36 15/16	(938.5)	36 15/16	(938.5)	36 15/16	(938.5)
		24	(600)	(Prefix)-600-90HB600	40 7/8	(1038.5)	40 7/8	(1038.5)	40 7/8	(1038.5)
		36	(900)	(Prefix)-900-90HB600	46 25/32	(1188.5)	46 25/32	(1188.5)	46 25/32	(1188.5)



90° Horizontal Bend
Solid Shown



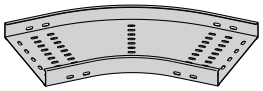
Aluminum

Bend Radius R		Tray Width		90° Horizontal Bend							
				Catalog No.	Dimensions						
					A		B		C		
in.	mm	in.	mm		in.	mm	in.	mm	in.	mm
12	(300)	2	(50)	(Prefix)-050-90HB300	18 3/16	(462.0)	18 3/16	(462.0)	18 3/16	(462.0)
		4	(100)	(Prefix)-100-90HB300	19 3/16	(487.0)	19 3/16	(487.0)	19 3/16	(487.0)
		6	(150)	(Prefix)-150-90HB300	20 5/32	(512.0)	20 5/32	(512.0)	20 5/32	(512.0)
		12	(300)	(Prefix)-300-90HB300	23 1/8	(587.0)	23 1/8	(587.0)	23 1/8	(587.0)
		16	(400)	(Prefix)-400-90HB300	25 1/16	(637.0)	25 1/16	(637.0)	25 1/16	(637.0)
		24	(600)	(Prefix)-600-90HB300	29	(737.0)	29	(737.0)	29	(737.0)
		36	(900)	(Prefix)-700-90HB300	34 15/16	(887.0)	34 15/16	(887.0)	34 15/16	(887.0)
24	(600)	2	(50)	(Prefix)-050-90HB600	30	(762.0)	30	(762.0)	30	(762.0)
		4	(100)	(Prefix)-100-90HB600	30 31/32	(787.0)	30 31/32	(787.0)	30 31/32	(787.0)
		6	(150)	(Prefix)-150-90HB600	31 31/32	(812.0)	31 31/32	(812.0)	31 31/32	(812.0)
		12	(300)	(Prefix)-300-90HB600	34 15/16	(887.0)	34 15/16	(887.0)	34 15/16	(887.0)
		16	(400)	(Prefix)-400-90HB600	36 7/8	(937.0)	36 7/8	(937.0)	36 7/8	(937.0)
		24	(600)	(Prefix)-600-90HB600	40 13/16	(1037.0)	40 13/16	(1037.0)	40 13/16	(1037.0)
		36	(900)	(Prefix)-900-90HB600	46 23/32	(1187.0)	46 23/32	(1187.0)	46 23/32	(1187.0)

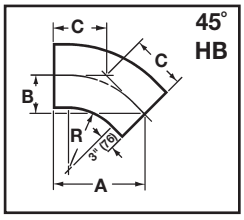
(Pre) See page 56 for catalog number prefix.

All dimensions in parentheses are in millimeters unless otherwise specified.
Manufacturing tolerances apply to all dimensions.

Horizontal Bend 45° (HB)



45° Horizontal Bend
Perforated Shown



Steel

Bend Radius R in.	Bend Radius R mm	Tray Width in.	Tray Width mm	Catalog No.	45° Horizontal Bend Dimensions A in.	A mm	B in.	B mm	C in.	C mm
12	(300)	2	(50)	(Prefix)-050-45HB300	18 13/32	(467.7)	7 5/8	(193.8)	10 25/32	(274.0)
		4	(100)	(Prefix)-100-45HB300	19 1/8	(485.4)	7 29/32	(201.1)	11 3/16	(284.4)
		6	(150)	(Prefix)-150-45HB300	19 13/16	(503.1)	8 3/16	(208.4)	11 19/32	(294.7)
		12	(300)	(Prefix)-300-45HB300	21 7/8	(556.1)	9 1/16	(230.4)	12 13/16	(325.8)
		16	(400)	(Prefix)-400-45HB300	23 1/4	(591.5)	9 5/8	(245.0)	13 5/8	(346.5)
		24	(600)	(Prefix)-600-45HB300	26 1/16	(662.2)	10 25/32	(274.3)	15 9/32	(387.9)
		36	(900)	(Prefix)-700-45HB300	30 1/4	(768.3)	12 17/32	(318.2)	17 23/32	(450.0)
24	(600)	2	(50)	(Prefix)-050-45HB600	26 3/4	(679.9)	11 1/16	(281.6)	15 11/16	(398.3)
		4	(100)	(Prefix)-100-45HB600	27 15/32	(697.6)	11 3/8	(288.9)	16 3/32	(408.6)
		6	(150)	(Prefix)-150-45HB600	28 5/32	(715.2)	11 21/32	(296.3)	16 1/2	(419.0)
		12	(300)	(Prefix)-300-45HB600	30 1/4	(768.3)	12 17/32	(318.2)	17 23/32	(450.0)
		16	(400)	(Prefix)-400-45HB600	31 5/8	(803.6)	13 1/8	(332.9)	18 17/32	(470.8)
		24	(600)	(Prefix)-600-45HB600	34 13/32	(874.3)	14 1/4	(362.2)	20 5/32	(512.2)
		36	(900)	(Prefix)-900-45HB600	38 9/16	(980.4)	16	(406.1)	22 5/8	(574.3)

Aluminum

Bend Radius R in.	Bend Radius R mm	Tray Width in.	Tray Width mm	Catalog No.	45° Horizontal Bend Dimensions A in.	A mm	B in.	B mm	C in.	C mm
12	(300)	2	(50)	(Prefix)-050-45HB300	18 3/8	(466.7)	7 5/8	(193.8)	10 25/32	(273.4)
		4	(100)	(Prefix)-100-45HB300	19 1/8	(485.4)	7 29/32	(201.1)	11 3/16	(284.4)
		6	(150)	(Prefix)-150-45HB300	19 13/16	(503.1)	8 3/16	(208.4)	11 19/32	(294.7)
		12	(300)	(Prefix)-300-45HB300	21 7/8	(556.1)	9 1/16	(230.4)	12 13/16	(325.8)
		16	(400)	(Prefix)-400-45HB300	23 9/32	(591.5)	9 5/8	(245.0)	13 5/8	(346.5)
		24	(600)	(Prefix)-600-45HB300	26 1/16	(662.2)	10 25/32	(274.3)	15 9/32	(387.9)
		36	(900)	(Prefix)-700-45HB300	30 1/4	(768.3)	12 17/32	(318.2)	17 23/32	(450.0)
24	(600)	2	(50)	(Prefix)-050-45HB600	26 3/4	(679.9)	11 1/16	(281.6)	15 11/16	(398.3)
		4	(100)	(Prefix)-100-45HB600	27 15/32	(697.6)	11 5/16	(288.9)	16 3/32	(408.6)
		6	(150)	(Prefix)-150-45HB600	28 5/32	(715.2)	11 21/32	(296.3)	16 1/2	(419.0)
		12	(300)	(Prefix)-300-45HB600	30 1/4	(768.3)	12 17/32	(318.2)	17 23/32	(450.0)
		16	(400)	(Prefix)-400-45HB600	31 5/8	(803.6)	13 1/8	(332.9)	18 17/32	(470.8)
		24	(600)	(Prefix)-600-45HB600	34 13/32	(874.3)	14 1/4	(362.2)	20 5/32	(512.2)
		36	(900)	(Prefix)-900-45HB600	38 9/16	(980.4)	16	(406.1)	22 5/8	(574.3)

(Pre) See page 56 for catalog number prefix.

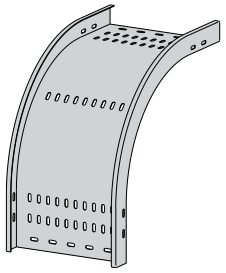
All dimensions are in millimeters unless otherwise specified.
Manufacturing tolerances apply to all dimensions.

Vertical Outside Bend 90° (VO)

Steel

90° Vertical Outside Bend

Bend Radius R in.	Bend Radius R mm	Width in.	Width mm	Catalog No.	VO Dimensions for Side Rail Heights 25mm - 100mm A	B	C
12	(300)	2	(50)	(Pre)-050-90VO300	17 1/4" (438.5)	17 1/4" (438.5)	17 1/4" (438.5)
		4	(100)	(Pre)-100-90VO300			
		6	(150)	(Pre)-150-90VO300			
		12	(300)	(Pre)-300-90VO300			
		16	(400)	(Pre)-400-90VO300			
		24	(600)	(Pre)-600-90VO300			
		36	(900)	(Pre)-900-90VO300			
24	(600)	2	(50)	(Pre)-050-90VO600	29 1/16" (738.5)	29 1/16" (738.5)	29 1/16" (738.5)
		4	(100)	(Pre)-100-90VO600			
		6	(150)	(Pre)-150-90VO600			
		12	(300)	(Pre)-300-90VO600			
		16	(400)	(Pre)-400-90VO600			
		24	(600)	(Pre)-600-90VO600			
		36	(900)	(Pre)-900-90VO600			

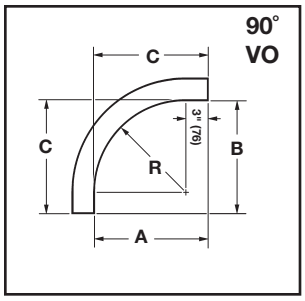


90° Vertical Outside Perforated Shown

Aluminum

90° Vertical Outside Bend

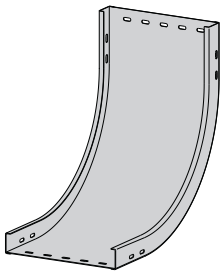
Bend Radius R in.	Bend Radius R mm	Width in.	Width mm	Catalog No.	VO Dimensions for Side Rail Heights 25mm - 100mm A	B	C
12	(300)	2	(50)	(Pre)-050-90VO300	17 7/32" (437.0)	17 7/32" (437.0)	17 7/32" (437.0)
		4	(100)	(Pre)-100-90VO300			
		6	(150)	(Pre)-150-90VO300			
		12	(300)	(Pre)-300-90VO300			
		16	(400)	(Pre)-400-90VO300			
		24	(600)	(Pre)-600-90VO300			
		36	(900)	(Pre)-900-90VO300			
24	(600)	2	(50)	(Pre)-050-90VO600	29 1/32" (737.0)	29 1/32" (738.5)	29 1/32" (738.5)
		4	(100)	(Pre)-100-90VO600			
		6	(150)	(Pre)-150-90VO600			
		12	(300)	(Pre)-300-90VO600			
		16	(400)	(Pre)-400-90VO600			
		24	(600)	(Pre)-600-90VO600			
		36	(900)	(Pre)-900-90VO600			

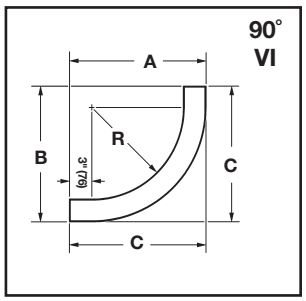


(Prefix) **See page 56 for catalog number prefix.**

All dimensions are millimeters unless otherwise specified.
Manufacturing tolerances apply to all dimensions.

Vertical Inside Bend 90° (VI)





90° Vertical Inside
Solid Shown

Steel

90° Vertical Inside Bend

Bend Radius R in.	Bend Radius R mm	Width in.	Width mm	Catalog No.	VI Dimensions for Side Rail Heights 25mm A	25mm B	25mm C	50mm A	50mm B	50mm C	75mm A	75mm B	75mm C	100mm A	100mm B	100mm C
		2	(50)	(Pre)-050-90VI300												
		4	(100)	(Pre)-100-90VI300												
		6	(150)	(Pre)-150-90VI300	18 7/32"	18 7/32"	18 7/32"	19 9/32"	19 9/32"	19 9/32"	20 9/32"	20 9/32"	20 9/32"	21 1/4"	21 1/4"	21 1/4"
12	(300)	12	(300)	(Pre)-300-90VI300												
		16	(400)	(Pre)-400-90VI300	(465.0)	(465.0)	(465.0)	(490.0)	(490.0)	(490.0)	(515.0)	(515.0)	(515.0)	(540.0)	(540.0)	(540.0)
		24	(600)	(Pre)-600-90VI300												
		36	(900)	(Pre)-900-90VI300												
		2	(50)	(Pre)-050-90VI600												
		4	(100)	(Pre)-100-90VI600												
		6	(150)	(Pre)-150-90VI600	30 1/8"	30 1/8"	30 1/8"	31 1/8"	31 1/8"	31 1/8"	32 3/32"	32 3/32"	32 3/32"	33 1/16"	33 1/16"	33 1/16"
24	(600)	12	(300)	(Pre)-300-90VI600												
		16	(400)	(Pre)-400-90VI600	(765.0)	(765.0)	(765.0)	(790.0)	(790.0)	(790.0)	(815.0)	(815.0)	(815.0)	(840.0)	(840.0)	(840.0)
		24	(600)	(Pre)-600-90VI600												
		36	(900)	(Pre)-900-90VI600												

Aluminum

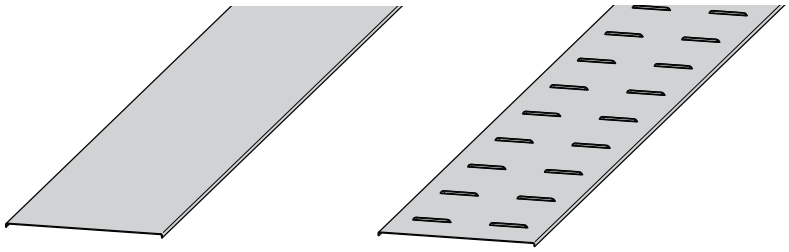
90° Vertical Inside Bend

Bend Radius R in.	Bend Radius R mm	Width in.	Width mm	Catalog No.	VI Dimensions for Side Rail Heights 25mm A	25mm B	25mm C	50mm A	50mm B	50mm C	75mm A	75mm B	75mm C	100mm A	100mm B	100mm C
		2	(50)	(Pre)-050-90VI300												
		4	(100)	(Pre)-100-90VI300												
		6	(150)	(Pre)-150-90VI300	18 5/16"	18 5/16"	18 5/16"	19 5/16"	19 5/16"	19 5/16"	20 9/32"	20 9/32"	20 9/32"	21 1/4"	21 1/4"	21 1/4"
12	(300)	12	(300)	(Pre)-300-90VI300												
		16	(400)	(Pre)-400-90VI300	(465.0)	(465.0)	(465.0)	(490.0)	(490.0)	(490.0)	(515.0)	(515.0)	(515.0)	(540.0)	(540.0)	(540.0)
		24	(600)	(Pre)-600-90VI300												
		36	(900)	(Pre)-900-90VI300												
		2	(50)	(Pre)-050-90VI600												
		4	(100)	(Pre)-100-90VI600												
		6	(150)	(Pre)-150-90VI600	30 1/8"	30 1/8"	30 1/8"	31 1/8"	31 1/8"	31 1/8"	32 3/32"	32 3/32"	32 3/32"	33 1/16"	33 1/16"	33 1/16"
24	(600)	12	(300)	(Pre)-300-90VI600												
		16	(400)	(Pre)-400-90VI600	(765.0)	(765.0)	(765.0)	(790.0)	(790.0)	(790.0)	(815.0)	(815.0)	(815.0)	(840.0)	(840.0)	(840.0)
		24	(600)	(Pre)-600-90VI600												
		36	(900)	(Pre)-900-90VI600												

(Prefix) See page 56 for catalog number prefix.

All dimensions are in millimeters unless otherwise specified.
Manufacturing tolerances apply to all dimensions.

Covers



Solid Flanged

Ventilated Flanged

A full range of covers is available for straight sections and fittings.

Solid covers should be used when maximum enclosure of the cable is desired and no accumulation of heat is expected. **Ventilated covers** provide an overhead cable shield yet allow heat to escape.

Cooper B-Line recommends that covers be placed on vertical cable tray runs to a height of 6 ft. (1.83 m) to 8 ft. (2.44 m) above the floor to isolate both cables and personnel. **Flanged covers** have a 1/4 in. (6.3 mm) flange. Cover clamps are not included with the cover and must be ordered separately.

Cover Part Numbering

Example: **TC F L G 15 - 300 - 3**

Series
Pan Cable Tray Cover

Cover Edge
- F = Flanged

Cover Style
- L = Ventilated
- S = Solid

Material
- G = Hot Dip Galvanized After Fabrication
- P = Pre-Galvanized Steel
- SS4 = 304 Stainless Steel
- SS6 = 316 Stainless Steel
- A = Aluminum

Thickness
- 15 = 1.5mm (Steel)
- 30 = 3.0mm (Aluminum)

Width
- 50 = 50mm
- 100 = 100mm
- 150 = 150mm
- 300 = 30mm
- 400 = 400mm
- 600 = 600mm
- 900 = 900mm

Cover Type
- 3 = 3m Straight Section

Horizontal Bands
- 45HB300 = 45°, 300mm radius
- 45HB600 = 45°, 600mm radius
- 90HB300 = 90°, 300mm radius
- 90HB600 = 90°, 600mm radius

Horizontal Tees
- HT300 = 300mm radius
- HT600 = 600mm radius

Horizontal Crosses
- HX300 = 300mm radius
- HX600 = 600mm radius

90° Vertical Bend - Inside
- 90VI300 = 300mm radius
- 90VI600 = 600mm radius
- 90VI300 = 300mm radius
- 90VI600 = 600mm radius
- 90VI300 = 300mm radius
- 90VI600 = 600mm radius
- 90VI300 = 300mm radius
- 90VI600 = 600mm radius

90° Vertical Bend - Outside
- 90VO300-025 = 300mm radius, 25mm height
- 90VO600-025 = 600mm radius, 25mm height
- 90VO300-050 = 300mm radius, 50mm height
- 90VO600-050 = 600mm radius, 50mm height
- 90VO300-075 = 300mm radius, 75mm height
- 90VO600-075 = 600mm radius, 75mm height
- 90VO300-100 = 300mm radius, 100mm height
- 90VO600-100 = 600mm radius, 100mm height

Green = Fastest shipped items Black = Normal lead-time items Red = Normally long lead-time items

AL-HOTY CALIBRATION SERVICES
A BRANCH OF AL-HOTY LTD. CO.
C. R. 2051015391
P. O. Box 31729, Al-Khobar 31952
Kingdom of Saudi Arabia
Tel. : (03) 8644150 / 8948020 / 8945452
Fax : (03) 8943960
E-Mail : acs@al-hoty.com
Website : www.al-hoty.com

شركة الحوطي لخدمات المعايرة
فـــرع شـــركة الحـــوطي المحـــدودة
س.ت ٢٠٥١٠١٥٣٩١
ص.ب ٣١٧٢٩ - الخبر ٣١٩٥٢
المملكة العربية السعودية
تلفون : ٨٩٤٥٤٥٢ / ٨٩٤٨٠٢٠ (٠٣) ٨٦٤٤١٥٠
فاكس : (٠٣) ٨٩٤٣٩٨٠
بريد إلكتروني : acs@al-hoty.com
موقع الشبكة : www.al-hoty.com

اعتماد الهيئة العربية السعودية للمواصفات والمقاييس
SAUDI ARABIAN STANDARDS ORGANIZATION ACCREDITED

TEST CERTIFICATE

Certificate No. AI-116255 Page No. 1 of 1

Customer : Cooper Industries Middle East LLC
P.O. Box 70160, Al Khobar 31952, K. S. A.
Fax No. (03) 812-1291

Item Submitted

Description	:	**Preforated Pan Tray**
Manufacturer	:	Cooper B-Line
Test Requested	:	Safe Working Load Test as per section 10.4 of the IEC 61537 Standard.
Summary of Test Method	:	The test was performed by applying uniformly distributed known load into the Unit Under Test (UUT) to determine the corresponding deflection.
Date Tested	:	15 May 2010

Certifies that the above listed material has been tested using calibrated test equipment.

Test Results

Test Description	Length & Width of Tray	Required Deflection as per IEC 61537 section 10.4	Applied (kg/m)	Deflection (mm)
Safe Working Load	3000 x 150 mm	30 mm	0	0.00
Test			19.02	8.35
			38.03	16.39
			56.23	24.58
			76.07	33.97
			95.08	45.97

Test Equipment Used

Description	ACS ID No.	Calibration Due Date	Certificate No.	Traceability
Digital Platform Balance	ACS-KH-250	01 December 2010	109849	NIST
Digital Height Gauge	ACS-KH-083	26 November 2010	109826	NPL

Tested By: _____ Test Engineer (stamp)

Reviewed By: _____ E. S. Vallestero Quality Manager

Approved By: _____ R. A. Rivera Laboratory Manager

AL-HOTY CALIBRATION SERVICES · AL-KHOBAR · C.R 2051015391

Preforated Pan Tray

Regional Offices
Riyadh : P. O. Box 7359 - Tel. : 01 2066431
Jeddah : P. O. Box 8129 - Tel. : 02 6613793
Jubail : P. O. Box 467 - Tel. : 03 3407953

المكاتب الرئيسية
الرياض : ص. ب ٧٣٥٩ - تلفون : ٢٠٦٦٤٣١ (٠١)
جدة : ص. ب ٨١٢٩ - تلفون : ٦٦١٣٧٩٣ (٠٢)
الجبيل : ص. ب ١٤٧ - تلفون : ٣٤٠٧٩٥٣ (٠٣)

AL-HOTY CALIBRATION SERVICES
A BRANCH OF AL-HOTY LTD. CO.
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Kingdom of Saudi Arabia
Tel. : (03) 8644150 / 8948020 / 8945452
Fax : (03) 8943960
E-Mail : acs@al-hoty.com
Website : www.al-hoty.com

شركة الحوطي لخدمات المعايرة
فـــرع شـــركة الحـــوطي المحـــدودة
ص.ت ٢٠٥١٠١٥٣٩١
ص ب ٣١٧٢٩ – الخبر ٣١٩٥٢
المملكة العربية السعودية
تلفون : ٨٩٤٥٤٥٢ / ٨٩٤٨٠٢٠ (٠٣)
فاكس : (٠٣)٨٩٤٣٩٨٠
بريد إلكتروني : acs@al-hoty.com
موقع الشبكة : www.al-hoty.com

عتماد الهيـــئة العربية السعودية للمواصفات والمقاييس
SAUDI ARABIAN STANDARDS ORGANIZATION ACCREDITED

TEST CERTIFICATE

Certificate No. AI-116256 Page No. 1 of 1

Customer : Cooper Industries Middle East LLC
P.O. Box 70160, Al Khobar 31952, K. S. A.
Fax No. (03) 812-1291

Item Submitted

Description	:	**Preforated Pan Tray**
Manufacturer	:	Cooper B-Line
Test Requested	:	Safe Working Load Test as per section 10.4 of the IEC 61537 Standard.
Summary of Test Method	:	The test was performed by applying uniformly distributed known load into the Unit Under Test (UUT) to determine the corresponding deflection.
Date Tested	:	15 May 2010

Certifies that the above listed material has been tested using calibrated test equipment.

Test Results

Test Description	Length & Width of Tray	Required Deflection as per IEC 61537 section 10.4	Applied (kg/m)	Deflection (mm)
Safe Working Load	3000 x 200 mm	30 mm	0	0.00
Test			38.03	3.31
			76.07	6.84
			114.10	10.15
			152.13	13.79
			190.16	18.04
			228.20	22.92
			266.23	29.88
			281.44	Failed

Test Equipment Used

Description	ACS ID No.	Calibration Due Date	Certificate No.	Traceability
Digital Platform Balance	ACS-KH-250	01 December 2010	109849	NIST
Digital Height Gauge	ACS-KH-083	26 November 2010	109826	NPL

Tested By: _____ Test Engineer (stamp)

Reviewed By: _____ E. G. Vallestero Quality Manager

Approved By: _____ R. A. Rivera Laboratory Manager

AL-KHOBAR - C.R 2051015391 AL-HOTY CALIBRATION SERVICES

Preforated Pan Tray

Regional Offices
Riyadh : P. O. Box 7359 - Tel : 01 2066431
Jeddah : P. O. Box 8129 - Tel. : 02 6613793
Jubail : P. O. Box 467 - Tel. : 03 3407953

المكاتب الرئيسية
الرياض : ص. ب ٧٣٥٩ – تلفون : ٢٠٦٦٤٣١ (٠١)
جـــدة : ص. ب ٨١٢٩ – تلفون : ٦٦١٣٧٩٣ (٠٢)
الجبيل : ص. ب ٤٦٧ – تلفون : ٣٤٠٧٩٥٣ (٠٣)

AL-HOTY CALIBRATION SERVICES
A BRANCH OF AL-HOTY LTD. CO.
C. R. 2051015391
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Tel. : (03) 8644150 / 8948020 / 8945452
Fax : (03) 8943980
E-Mail : acs@al-hoty.com
Website : www.al-hoty.com

اعتماد الهيئة العربية السعودية للمواصفات والمقاييس
SAUDI ARABIAN STANDARDS ORGANIZATION ACCREDITED

شركة الحوطي لخدمات المعايرة
فرع شركة الحوطي المحدودة
س.ت ٢٠٥١٠١٥٣٩١
ص.ب ٣١٧٢٩ - الخبر ٣١٩٥٢
المملكة العربية السعودية
تلفون : ٨٩٤٥٤٥٢ / ٨٩٤٨٠٢٠ / ٨٦٤٤١٥٠ (٠٣)
فاكس : ٨٩٤٣٩٨٠ (٠٣)
بريد إلكتروني : acs@al-hoty.com
موقع الشبكة : www.al-hoty.com

TEST CERTIFICATE

Certificate No. AI-116257 Page No. 1 of 1

Customer : Cooper Industries Middle East LLC
P.O. Box 70160, Al Khobar 31952, K. S. A.
Fax No. (03) 812-1291

Item Submitted

Description	:	**Preforated Pan Tray**
Manufacturer	:	Cooper B-Line
Test Requested	:	Safe Working Load Test as per section 10.4 of the IEC 61537 Standard.
Summary of Test Method	:	The test was performed by applying uniformly distributed known load into the Unit Under Test (UUT) to determine the corresponding deflection.
Date Tested	:	15 May 2010

Certifies that the above listed material has been tested using calibrated test equipment.

Test Results

Test Description	Length & Width of Tray	Required Deflection as per IEC 61537 section 10.4	Applied (kg/m)	Deflection (mm)
Safe Working Load	3000 x 600 mm	30 mm	0	0.00
Test			95.08	3.40
			190.16	6.40
			285.25	9.33
			380.33	13.27
			475.41	16.19
			551.48	19.40

Test Equipment Used

Description	ACS ID No.	Calibration Due Date	Certificate No.	Traceability
Digital Platform Balance	ACS-KH-250	01 December 2010	109849	NIST
Digital Height Gauge	ACS-KH-083	26 November 2010	109826	NPL

Tested By: ACS 05 TECH. Test Engineer (stamp)

Reviewed By: E. S. Vallestero Quality Manager

Approved By: R. A. Rivera Laboratory Manager

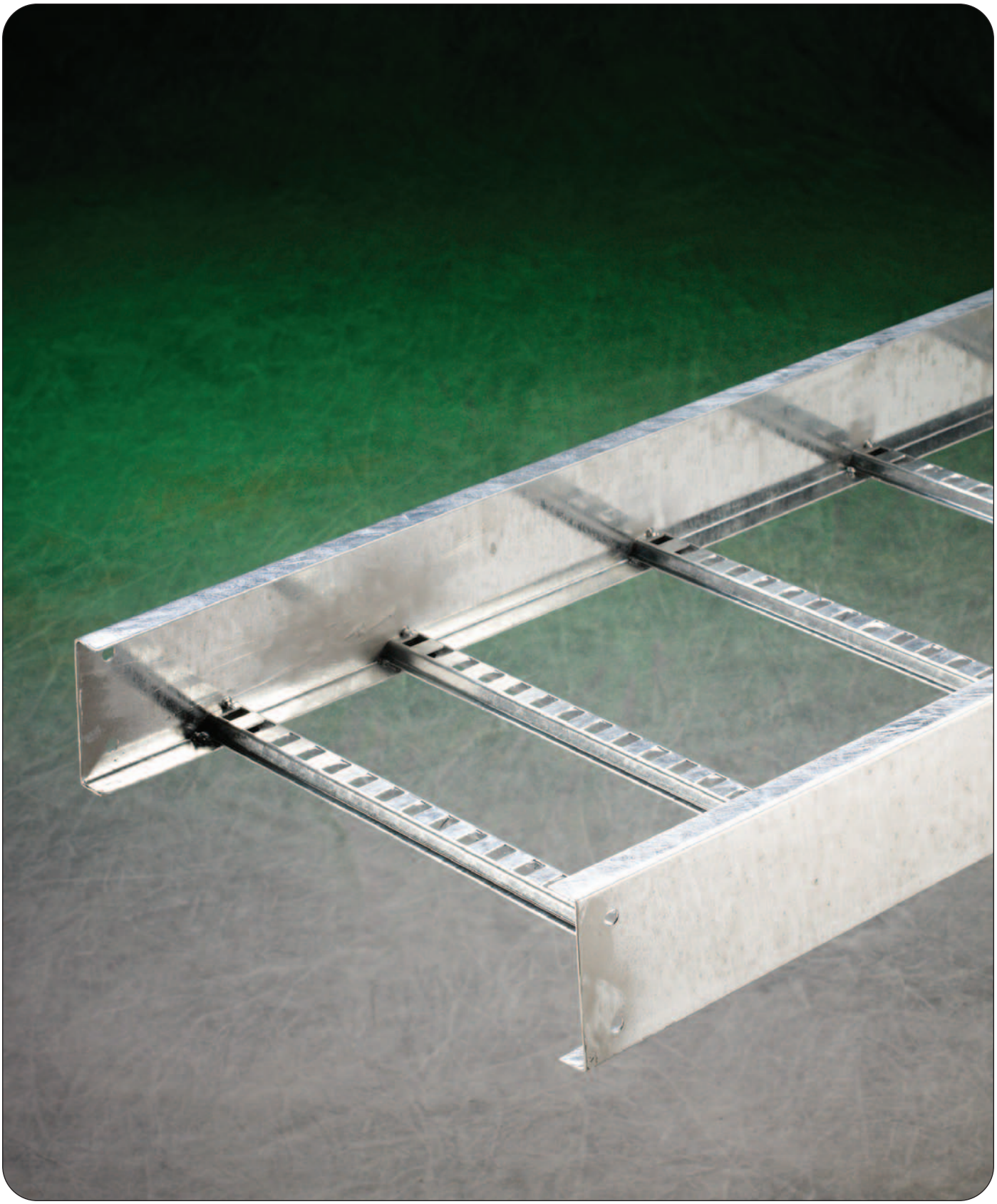
AL-HOTY CALIBRATION SERVICES

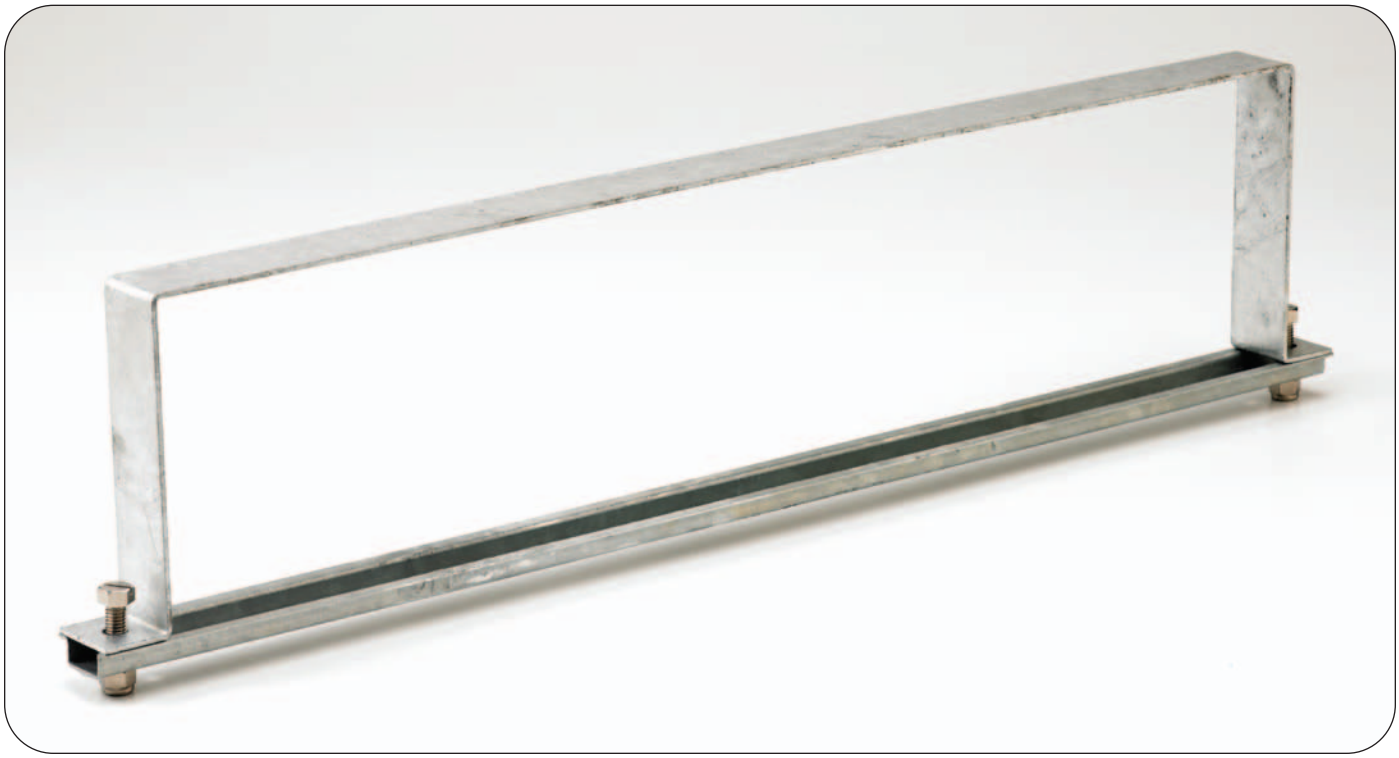
Preforated Pan Tray

Regional Offices
Riyadh : P. O. Box 7359 - Tel. : 01 2066431
Jeddah : P. O. Box 8129 - Tel. : 02 6613793
Jubail : P. O. Box 467 - Tel. : 03 3407953

المكاتب الرئيسية
الرياض : ص . ب ٧٣٥٩ - تلفون : ٢٠٦٦٤٣١ (٠١)
جدة : ص . ب ٨١٢٩ - تلفون : ٦٦١٣٧٩٣ (٠٢)
الجبيل : ص . ب ٤٦٧ - تلفون : ٣٤٠٧٩٥٣ (٠٣)

Light Duty Steel Cable Ladder





3" (76mm) NEMA VE 1 Loading Depth - Series 148

Actual Side Rail Height - 3.625" (92mm)

Actual Loading Depth = 3.077" (78mm)

4" (101mm) NEMA VE 1 Loading Depth - Series 156

Actual Side Rail Height - 4.188" (106mm)

Actual Loading Depth = 3.628" (92mm)

5" (127mm) NEMA VE 1 Loading Depth - Series 166

Actual Side Rail Height - 5.199" (132mm)

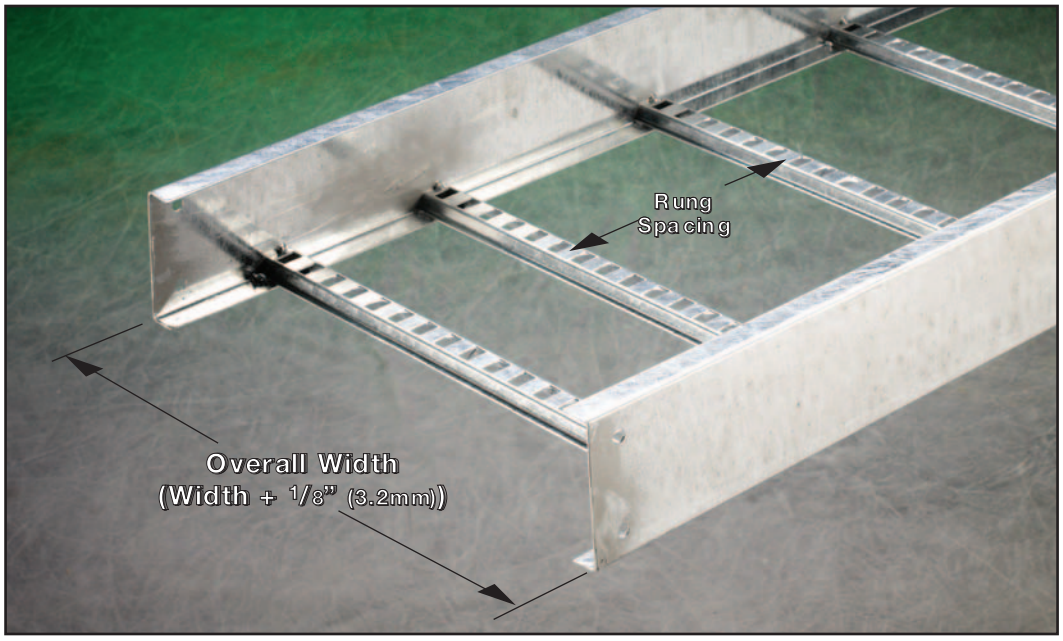
Actual Loading Depth = 4.628" (117mm)

Straight Section Part Numbering

Example: **156 P 09 SL - 24 - 144**

Series	Material	Rung Spacing	Rung Type	Width	Length	
148	**P** = Pre-Galvanized Steel	**06** = 6" (152)	**SL** - Slotted	**06** = 6" (152)	① **144** = 12 ft. (3.7m)	148
156	**G** = Hot Dip Galvanized After Fabrication Steel	**09** = 9" (228)		**09** = 9" (228)	② 120 = 10 ft. (3.0m)	
166		**12** = 12" (305)		**12** = 12" (305)	① **144** = 12 ft. (3.7m)	156
				18 = 18" (457)	② 120 = 10 ft. (3.0m)	
				24 = 24" (609)	① **144** = 12 ft. (3.7m)	166
				30 = 30" (762)	② 120 = 10 ft. (3.0m)	
				36 = 36" (914)		

①Primary Length.
②Secondary Length.

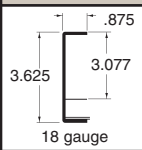


All dimensions in parentheses are in millimeters unless otherwise specified.

Dimensional & Loading Information

Series 148 - 3" (76mm) Loading Depth

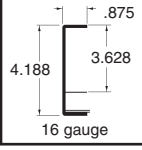
Values are based on simple beam tests per NEMA VE 1 on 36" (914mm) wide cable tray with rungs spaced on 12" (305mm) centers. The published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply the published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable tray being installed.

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Span meters	Load lbs/ft	Load kg/m	Deflection Multiplier		Design Factors for Two Rails	
148		NEMA: 12A, 8C CSA: C1-3m UL Cross-Sectional Area: 0.40 in^2	6 8 10 12	1.8 2.4 3.0 3.7	204* 115 73 51	304* 171 109 76	0.0011 0.0036 0.0087 0.0181	0.019 0.061 0.149 0.309	Area=0.51 in^2 Sx=0.48 in^3 Ix=0.89 in^4	Area=3.29 cm^2 Sx=7.87 cm^3 Ix=37.04 cm^4

*When using 12" (305mm) rung spacing load capacity is limited to 195 lbs/ft (290.16 kg/m) for 36" (914mm) tray width. When cable trays are used in continuous spans, the deflection of the cable tray is reduced by as much as 50%.
Design factors: Ix = Moment of Inertia, Sx = Section Modulus.

Series 156 - 4" (101mm) Loading Depth

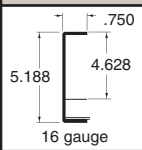
Values are based on simple beam tests per NEMA VE 1 on 36" (914mm) wide cable tray with rungs spaced on 12" (305mm) centers. Cable trays will support without collapse a 200 lb. (90.7 kg) concentrated load over and above the published loads. The published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply the published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable tray being installed.

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Span meters	Load lbs/ft	Load kg/m	Deflection Multiplier		Design Factors for Two Rails	
156		NEMA: 12B, 8C CSA: C1-3m UL Cross-Sectional Area: 0.40 in^2	6 8 10 12	1.8 2.4 3.0 3.7	304* 171 109 76	452* 254 163 113	0.0007 0.0021 0.0051 0.0110	0.011 0.036 0.087 0.181	Area=0.68 in^2 Sx=0.724 in^3 Ix=1.517 in^4	Area=4.39 cm^2 Sx=11.86 cm^3 Ix=63.14 cm^4

*When using 12" (305mm) rung spacing, load capacity is limited to 234 lbs/ft (348.192 kg/m) for 30" (762mm) tray width and 195 lbs/ft (290.16 kg/m) for 36" (914mm) tray width. When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%.
Design factors: Ix = Moment of Inertia, Sx = Section Modulus.

Series 166 - 5" (127mm) Loading Depth

Values are based on simple beam tests per NEMA VE 1 on 36" (914mm) wide cable tray with rungs spaced on 12" (305mm) centers. Cable trays will support without collapse a 200 lb. (90.7 kg) concentrated load over and above the published loads. The published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply the published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable tray being installed.

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Span meters	Load lbs/ft	Load kg/m	Deflection Multiplier		Design Factors for Two Rails	
166		NEMA: 12B, 8C CSA: C1-3m UL Cross-Sectional Area: 0.70 in^2	6 8 10 12	1.8 2.4 3.0 3.7	308* 173 111 77	458* 258 165 115	0.0004 0.0013 0.0032 0.0067	0.007 0.033 0.055 0.114	Area=0.77 in^2 Sx=0.93 in^3 Ix=2.40 in^4	Area=4.97 cm^2 Sx=15.24 cm^3 Ix=99.90 cm^4

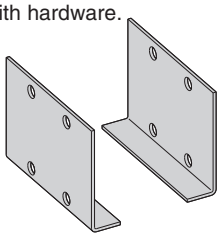
*When using 12" (305mm) rung spacing, load capacity is limited to 234 lbs/ft (348.192 kg/m) for 30" (762mm) tray width and 195 lbs/ft (290.16 kg/m) for 36" (914mm) tray width. When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%.
Design factors: Ix = Moment of Inertia, Sx = Section Modulus.

All dimensions in parentheses are in millimeters unless otherwise specified.

Light Duty Steel Cable Ladder Accessories

Standard (L-Shaped) Splice Plates

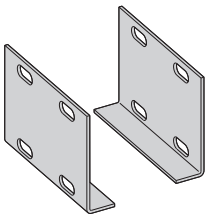
- One pair including hardware provided with each section.
- Furnished in pairs with hardware.
- Prepackaged in pairs in a plastic bag, with hardware.
- 4-hole pattern L-shaped splice plates.
- L-shaped lay-in design.
- (*) Insert ZN or G



Tray Series	Catalog No.
148	**9(*)-4004**
156	**9(*)-4005**
166	**9(*)-4006**

Expansion (L-Shaped) Splice Plates

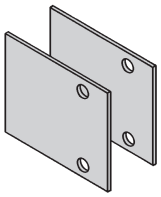
- Expansion plates allow for one inch expansion or contraction of the cable tray, or where expansion joints occur in the supporting structure.
- **Bonding Jumpers are required. Order Separately.**
- L-shaped lay-in design.
- Furnished in pairs with hardware.
- (*) Insert ZN or G



Tray Series	Catalog No.
148	**9(*)-4014**
156	**9(*)-4015**
166	**9(*)-4016**

Universal Splice Plates

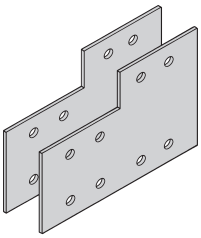
- Used to splice to existing cable tray systems.
- Furnished in pairs with hardware.
- (*) Insert P or G



Tray Series	Catalog No.
148	**9(*)-2004-1/2**
156	**9(*)-2005-1/2**
166	**9(*)-2006-1/2**

Step Down Splice Plates

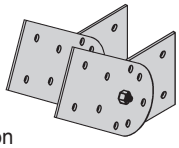
- These splice plates are offered for connecting cable tray sections having side rails of different heights.
- Furnished in pairs with hardware.
- (*) Insert ZN or G



Tray Series	Catalog No.
156 to 148	**9(*)-8004**
166 to 156 or 148	**9(*)-8045**

Vertical Adjustable Splice Plates

- These plates provide for changes in elevation that do not conform to standard vertical fittings.
- Furnished in pairs with hardware.
- (*) Insert ZN or G



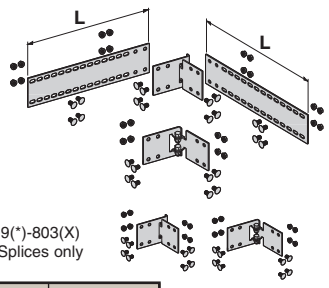
Requires supports within 24" on both sides, per NEMA VE 2.

Tray Series	Catalog No.
148	**9(*)-7024**
156	**9(*)-8024**
166	**9(*)-8025**

Horizontal Adjustable Splice Plates

- Offered to adjust a cable tray run for changes in direction in a horizontal plane that do not conform to standard horizontal fittings.
- Furnished in pairs with hardware.
- New design bonding jumpers **not** required.
- (*) Insert ZN or G
- (X) Insert 4 for series 148 or 156
  5 for series 166
  6 for series 176

9(*)-803(X)-12 or 9(*)-803(X)-36
One pair splice plates with extensions.



9(*)-803(X)
Splices only

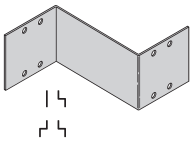
Catalog No.	Cable Tray End Cut	Tray Width	'L'
9(*)-803(X)	Mitered	Thru 36" (914)	N/A
9(*)-803(X)-12	Not mitered	Thru 12" (305)	16" (406)
9(*)-803(X)-36	Not mitered	Thru 36" (914)	41" (1041)

Requires supports within 24" (609mm) on both sides, per NEMA VE 2.

All dimensions in parentheses are in millimeters unless otherwise specified.

Offset Reducing Splice Plate

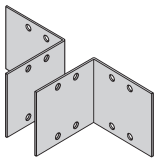
- This plate is used for joining cable trays having different widths. When used in pairs they form a straight reduction; when used singly with a standard splice plate they form an offset reduction.
- Furnished as one plate with hardware.
- (‡) Insert reduction
- (*) Insert P or G



Tray Series	Catalog No.
148	9(*)-8064-(‡)
156	9(*)-8064-(‡)
166	9(*)-8065-(‡)

Tray to Box Splice Plates

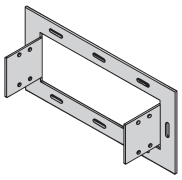
- Used to attach the end of a cable tray run to a distribution box or control panel.
- Furnished in pairs with hardware.
- (*) Insert P or G



Tray Series	Catalog No.
148	9(*)-8054
156	9(*)-8054
166	9(*)-8055

Frame Type Box Connector

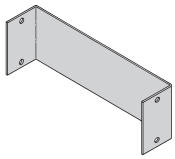
- Designed to attach the end of a cable tray run to a distribution cabinet or control center to help reinforce the box at the point of entry.
- Furnished with tray connection hardware.
- (‡) Insert tray width
- (*) Insert P or G



Tray Series	Catalog No.
148	9(*)-8074-(‡)
156	9(*)-8074-(‡)
166	9(*)-8075-(‡)

Blind End

- This plate forms a closure for a dead end cable tray.
- Furnished as one plate with hardware.
- (‡) Insert tray width
- (*) Insert P or G



Tray Series	Catalog No.
148	9(*)-8084-(‡)
156	9(*)-8084-(‡)
166	9(*)-8085-(‡)

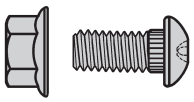
Tray Hardware

Pre-Galvanized Tray Hardware

Catalog No. **RNCB 3/8"-16 x 3/4" Znplt**
Ribbed Neck Carriage Bolt ASTM A307 Grade A

Catalog No. **SFHN 3/8"-16 Znplt**
Serrated Flange Hex Nut ASTM A563 Grade A

Finish: Zinc Plated ASTM B633, SC1



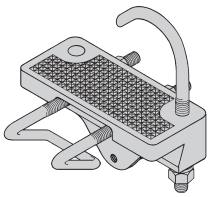
Hot Dip Galvanized Tray Hardware

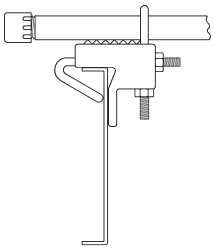
Catalog No. **RNCB 3/8"-16 x 3/4" CZ** Ribbed Neck Carriage Bolt Chromium Zinc ASTM F-1136-88

Catalog No. **SFHN 3/8"-16 CZ** Serrated Flange Hex Nut Chromium Zinc ASTM F-1136-88

Conduit to Tray Adaptor

- For easy attachment of conduit terminating at a cable tray.
- Use on aluminum or steel cable trays.





Catalog No.	Conduit Size in.	Conduit Size mm
9G-1158-1/2, 3/4	1/2, 3/4	15, 20
9G-1158-1, 1 1/4	1, 1 1/4	25, 32
9G-1158-1 1/2, 2	1 1/2, 2	40, 50
9G-1158-2 1/2, 3	2 1/2, 3	65, 80
9G-1158-3 1/2, 4	3 1/2, 4	90, 100

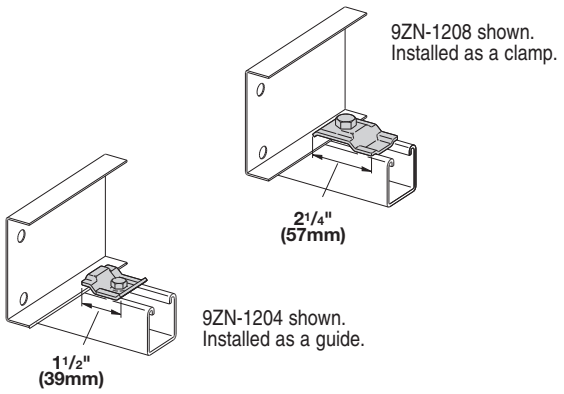
All dimensions in parentheses are in millimeters unless otherwise specified.

Cable Tray Clamp/Guide

- Features a no-twist design.
- Has four times the strength of the traditional design.
- Each side is labeled to ensure proper installation.
- Furnished in pairs, with or without hardware.

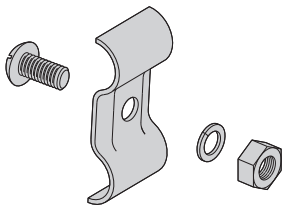
Patent # RE35479

Catalog No.		Overall Length		Hardware Size	Finish
Without Hardware	With Hardware	in.	mm		
9ZN-1204	**9ZN-1204NB**	1 1/2	38	1/4"	ZnPlt
9ZN-1208	**9ZN-1208NB**	2 1/4	57	3/8"	ZnPlt



Ground Clamp

- Mechanically attaches grounding cables to cable tray.
- Hardware included.
- (*) Insert ZN or SS4

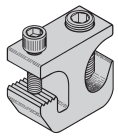


Catalog No.	Cable Size
9(*)-2351	#1 thru 2/0
9(*)-2352	3/0 thru 250 MCM

Grounding Clamp

B-Line Cable Tray is UL® classified as to its suitability as an equipment grounding conductor. If a separate conductor for additional grounding capability is desired, B-Line offers this clamp for bolting the conductor at least once to each tray section.

- Accepts #6 AWG to 250 MCM.

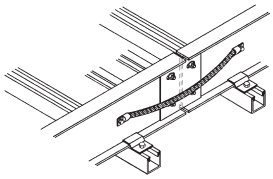


Catalog No.	Material	Item
9A-2130	Tin Plated Aluminum	Grounding Clamp

Bonding Jumper

Use at each expansion splice and where the cable tray is not mechanically/electrically continuous to ground.
Sold individually.

- Hardware included.
- See table 392.7(B)(2) on page 233 for amperage ratings required to match the UL cross-sectional area of the tray.
- 600 amp rating.
- Bonding jumper is 16" (406) long.

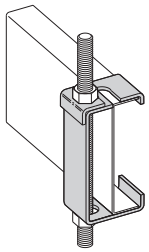


Catalog No.	Cross-Sectional Area	Ampacity
99-N1	1.5 Square inches	600

Hanger Rod Clamp

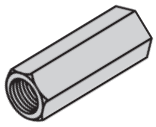
- For 1/2" ATR.
- Furnished in pairs.
- Order ATR and hex nuts separately.
- Two piece "J"-hanger design.
- 9ZN-1113 has 275 lbs. (1.22kN)/pair safety factor 3 capacity.
- 9ZN-532(X) has 1500 lbs. (6.67kN)/pair capacity safety factor 3.

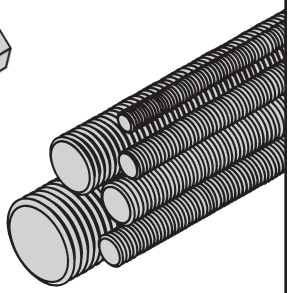
Tray Series	Catalog No.
148	**9ZN-1113**
156	**9ZN-5324**
166	**9ZN-5325**



Threaded Rod (ATR) & Rod Coupling

Loading based on safety factor 5.
Standard Finish: Zinc plated



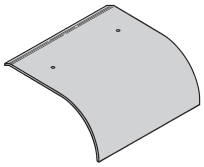


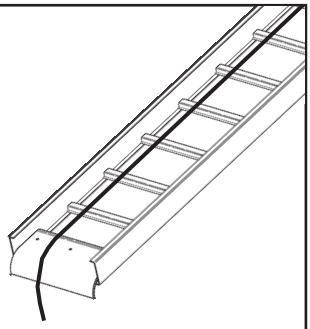
Size	Loading lbs. (kN)	Catalog No.	Available Lengths	Coupling Cat. No.
3/8-16	730 (3.24)	**ATR 3/8 x Length**	36" (914), 72" (1829), 120" (3048), 144" (3657)	**B655-3/8**
1/2-13	1350 (6.00)	**ATR 1/2 x Length**	36" (914), 72" (1829), 120" (3048), 144" (3657)	**B655-1/2**

All dimensions in parentheses are in millimeters unless otherwise specified.

Ladder Drop-Out

- This special designed, easy to install drop-out provides a 4" (101.6 mm) radius to protect cables exiting the cable tray from damage.
- Attaches to a ladder rung.
- Hardware included.
- (*) Insert P or G
- (‡) Insert tray width



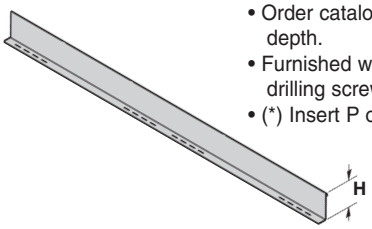


Catalog No.	9(*)-1104T-(‡)

Barriers

Straight Section

- Standard length: 120" (3 m) 144" (12 ft.).
- Order catalog number based on loading depth.
- Furnished with four #10 x ½" plated self-drilling screws and a 99-9982 splice.
- (*) Insert P or G

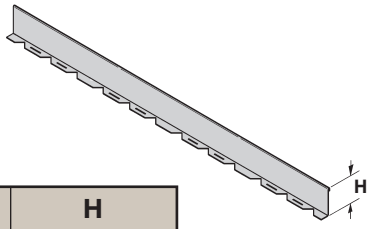


Tray Series	Catalog No.	H in.	H mm
148	72(*)-Length	2.8	58
156	737(*)-Length	3.4	70
166	747(*)-Length	4.4	91

Length =
144 for 12'
or
120 for 10'

Horizontal Bend

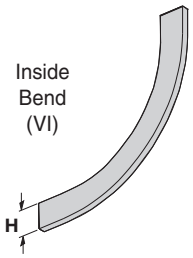
- Horizontal Bend Barriers are flexible in order to conform to any horizontal fitting radius. Cut to length.
- Order catalog number based on loading depth.
- Furnished with three #10 x ½" zinc plated self-drilling screws and a 99-9982 Barrier Strip Splice.
- Standard length is 72" (1828mm) (6 ft.), sold individually.
- (*) Insert P or G

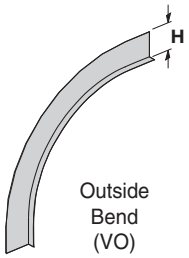


Tray Series	Catalog No.	H in.	H mm
148	72(*)-90HBFL	2.8	58
156	737(*)-90HBFL	3.4	70
166	747(*)-90HBFL	4.4	91

Vertical Bend Barriers

- Vertical Bend Barriers are preformed to conform to a specific vertical fitting.
- Furnished with three #10 x ½" plated self-drilling screws and a 99-9982 Barrier Strip Splice.
- (*) Insert P or G
- (**) Insert 30, 45, 60 or 90 for degrees
- (†) Insert 12 or 24 for radius

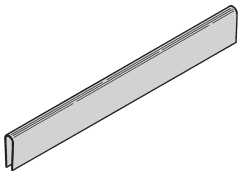


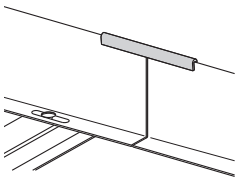


Tray Series	Catalog No. Inside Bend	Catalog No. Outside Bend	H in.	H mm
148	72(*)-(**)VI(†)	72(*)-(**)VO(†)	2.8	58
156	737(*)-(**)VI(†)	737(*)-(**)VO(†)	3.4	70
166	747(*)-(**)VI(†)	747(*)-(**)VO(†)	4.4	91

Barrier Strip Splice

- Plastic splice holds adjoining barrier strips in straight alignment.





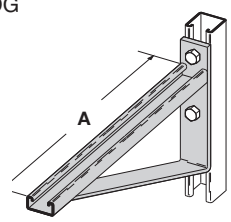
Catalog No.	99-9982

All dimensions in parentheses are in millimeters unless otherwise specified.

Light Duty Steel Cable Ladder Accessories

Cantilever Bracket

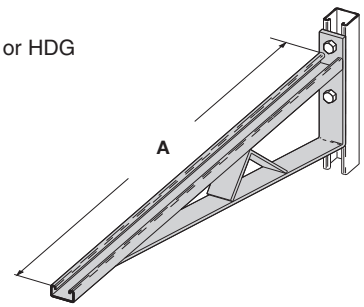
- Finishes available: ZN, GRN, or HDG
- Safety Load Factor 2.5



Catalog No.	Uniform Load lbs	Uniform Load kN	Tray Width in.	Tray Width mm	'A' in.	'A' mm
B494-12	1580	7.02	6 & 9	152 & 229	12	305
B494-18	1000	4.45	12	305	18	457
B494-24	996	4.43	18	457	24	610

Cantilever Bracket

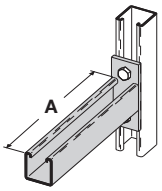
- Finishes available: ZN, GRN, or HDG
- Safety Load Factor 2.5



Catalog No.	Uniform Load lbs	Uniform Load kN	Tray Width in.	Tray Width mm	'A' in.	'A' mm
B494-30	924	4.11	24	610	30	762
B494-36	864	3.84	30	762	36	914
B494-42	580	2.58	36	914	42	1067

Cantilever Bracket

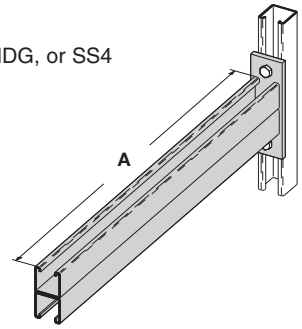
- Finishes available: ZN, GRN, HDG, SS4. or SS6
- Safety Load Factor 2.5



Catalog No.	Uniform Load lbs	Uniform Load kN	Tray Width in.	Tray Width mm	'A' in.	'A' mm
B409-12	960	4.27	6 & 9	152 & 228	12	304.8
B409-18	640	2.84	12	305	18	457.2
B409-24	480	2.13	18	457	24	609.6

Cantilever Bracket

- Finishes available: ZN, GRN, HDG, or SS4
- Safety Load Factor 2.5



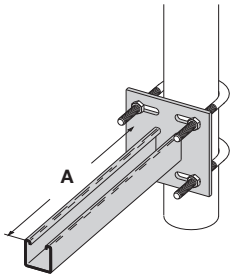
Catalog No.	Uniform Load lbs	Uniform Load kN	Tray Width in.	Tray Width mm	'A' in.	'A' mm
B297-30	665	2.95	24	609.6	30	762.0
B297-36	550	2.44	30	762.0	36	914.4
B297-42	465	2.06	36	914.4	42	1066.8

Underfloor Support (U-Bolts not included)

- Finish available: ZN
- Safety Load Factor 2.5.

U-Bolt Size	Fits Pipe O.D.
B501-3/4	.841 - 1.050
B501-1	1.051 - 1.315
B501-1 1/4	1.316 - 1.660
B501-1 1/2	1.661 - 1.900
B501-2	1.901 - 2.375
B501-2 1/2	2.376 - 2.875

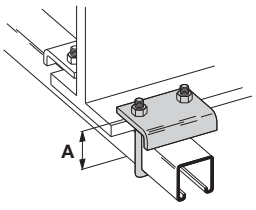
- Order properly sized U-Bolts separately.



Catalog No.	Uniform Load lbs	Uniform Load kN	Tray Width in.	Tray Width mm	'A' in.	'A' mm
B409UF-12	800	3.55	6 & 9	152 & 229	12	305
B409UF-21	450	2.00	12 & 18	305 & 457	21	533

Beam Clamp

- Finishes available: ZN or HDG
- Sold in pieces with hardware.
- Design load when used in pairs. Safety Load Factor 5.0



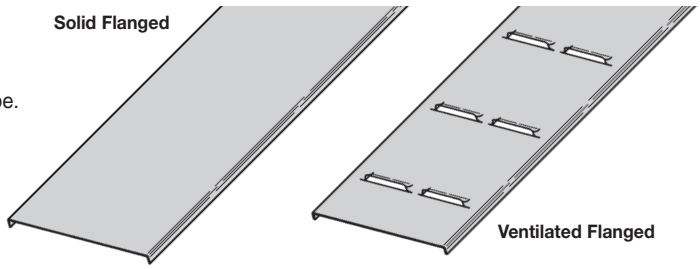
Catalog No.	Design Load* lbs	Design Load* kN	'A' in.	'A' mm
B441-22	1200	5.34	3 3/8	86
B441-22A	1200	5.34	5	127

All dimensions in parentheses are in millimeters unless otherwise specified.

Covers

Solid covers should be used when maximum enclosure of the cables is desired and no accumulation of heat is expected.
Ventilated covers provide an overhead cable shield yet allow heat to escape.

Cooper B-Line recommends that covers on vertical cable tray runs to a height of 6 ft. (1.83 m) to 8 ft. (2.44 m) above the floor to isolate both cables and personnel.
Flanged covers have a .30 in. (7.6 mm) flange. Cover clamps are not included with the cover and must be ordered separately.



Covers Part Numbering

Prefix

Example: **80 1 P - 20 - 24 - 144**

Cover Type	Detail	Material	Material Thickness	Tray Width	Item Description
80 = Solid 81 = Ventilated	1 = Flanged	P = Pre-Galvanized G = HDGAF	20 = 20 Ga. Steel for Pre-Galvanized 18 = 18 Ga. Steel for HDGAF	06 = 6" (152) 09 = 9" (228) 12 = 12" (305) 18 = 18" (457) 24 = 24" (609) 30 = 30" (762) 36 = 36" (914)	For Straight Section Cover: **Pre-Galvanized Only:** 144 = 12 ft. (3.66 m) 120 = 10 ft. (3.05 m) **Pre-Galvanized & HDGAF** 72 = 6 ft. (1.83 m) 60 = 5 ft. (1.52 m) For fitting covers: Insert suffix of fitting to be covered. See example below.

Covers 30" and 36" wide have reinforcing ridges.

Example of Catalog Number for Fitting Cover:

Vertical Bend Cover

Prefix / Suffix

80 1 P 20 - 24 - 90 VO 24 - 4*

- 4* — Side Rail* Height
- 24 — Radius
- VO — Fitting
- 90 — Angle
- 24 — Width
- 20 — Material Thickness
- P — Material
- 1 — Detail
- 80 — Cover Type

* Required for VO fittings only.

Quantity of Standard Cover Clamps Required

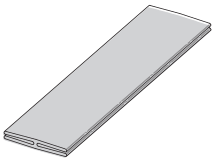
Straight Section 60" (1.52m) or 72" (1.83m)	4 pcs.
Straight Section 120" (3.05m) or 144" (3.66m)	6 pcs.
Horizontal/Vertical Bends	4 pcs.
Tees	6 pcs.
Crosses	8 pcs.

Note: When using the Heavy Duty Cover Clamp, only one-half the number of clamps stated above is required.

Cover Joint Strip

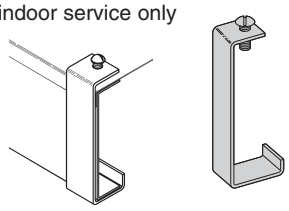
- Used to join covers
- Plastic
- (‡) Insert tray width

Cat. No.	99-9980-(‡)



Standard Cover Clamp

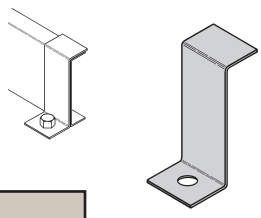
- Sold per piece
- For indoor service only



Tray Series	Catalog No.	
	Znplt	HDGAF
148	9ZN-9019	9G-9019
156	9ZN-9014	9G-9014
166	9ZN-9015	9G-9015

Combination Hold Down & Cover Clamp

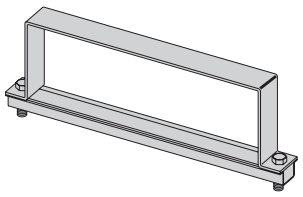
- Sold per piece
- For indoor service only



Tray Series	Catalog No.	
	Znplt/Pre-Galv.	HDGAF
148	9ZN-9243	9G-9243
156	9P-9043	9G-9043
166	9P-9053	9G-9053

Heavy Duty Cover Clamp

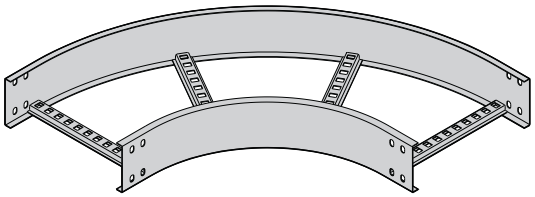
- (‡) Insert tray width

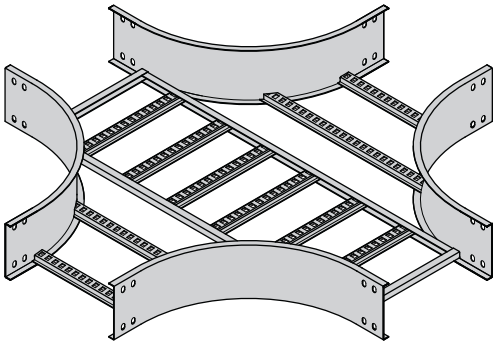


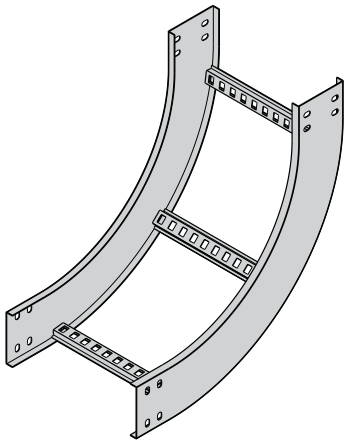
Tray Series	Catalog No.	
	Pre-Galv.	HDGAF
148	9P-(‡)-9040	9G-(‡)-9040
156	9P-(‡)-9044	9G-(‡)-9044
166	9P-(‡)-9054	9G-(‡)-9054

All dimensions in parentheses are in millimeters unless otherwise specified.

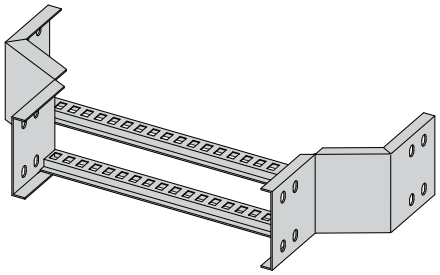
Light Duty Steel Cable Ladder Fittings







Fittings engineered with 3" (76mm) tangents for splicing integrity.



Fittings Part Numbering

Prefix

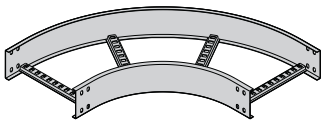
Example: **1 4 P SL - 24 - 90 HB 24** (9" rung spacing is standard)

Series	Height	Material	Rung Type	Width	Angle	Type	Radius
1	4 = 148 5 = 156 6 = 166	P = Pre-Galvanized G = HDGAF	SL = Slotted Rung	06 = 6" (152) 09 = 9" (228) 12 = 12" (305) 18 = 18" (457) 24 = 24" (609) 30 = 30" (762) 36 = 36" (914)	30 = 30° 45 = 45° 60 = 60° 90 = 90°	HB = Horizontal Bend HT = Horizontal Tee HX = Horizontal Cross VI = Vertical Inside Bend VO = Vertical Outside Bend LR = Left Reducer RR = Right Reducer SR = Straight Reducer	12 = 12" (305) 24 = 24" (609)

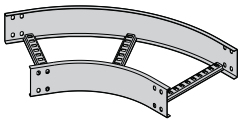
All dimensions in parentheses are in millimeters unless otherwise specified.

Horizontal Bends 90° 60° 45° 30° (HB)

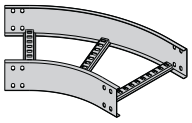
1 pair splice plates with hardware included.



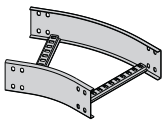
90° Horizontal Bend



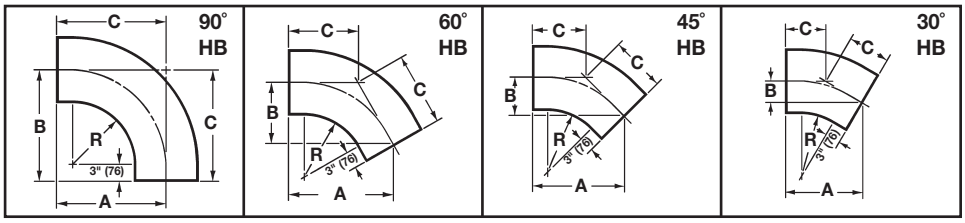
60° Horizontal Bend



45° Horizontal Bend



30° Horizontal Bend



Bend Radius R		Tray Width		90° Horizontal Bend Dimensions								60° Horizontal Bend Dimensions							
				Catalog No.	A		B		C			Catalog No.	A		B		C		
in.	mm	in.	mm		in.	mm	in.	mm	in.	mm			in.	mm	in.	mm	in.	mm	
12	305	6	152	(Pre)-06-90HB12	18	450	18	450	18	450		(Pre)-06-60HB12	17 1/2	445	10 1/8	257	11 11/16	297	
		9	228	(Pre)-09-90HB12	19 1/2	495	19 1/2	495	19 1/2	495		(Pre)-09-60HB12	18 13/16	478	10 7/8	276	12 1/2	318	
		12	305	(Pre)-12-90HB12	21	533	21	533	21	533		(Pre)-12-60HB12	20 1/16	510	11 5/8	295	13 3/8	340	
		18	457	(Pre)-18-90HB12	24	600	24	600	24	600		(Pre)-18-60HB12	22 11/16	576	13 1/8	333	15 1/8	384	
		24	609	(Pre)-24-90HB12	27	686	27	686	27	686		(Pre)-24-60HB12	25 5/16	643	14 5/8	372	16 7/8	429	
		30	762	(Pre)-30-90HB12	30	750	30	750	30	750		(Pre)-30-60HB12	27 7/8	708	16 1/8	410	18 9/16	472	
		36	914	(Pre)-36-90HB12	33	838	33	838	33	838		(Pre)-36-60HB12	30 1/2	775	17 5/8	448	20 5/16	516	
24	609	6	152	(Pre)-06-90HB24	30	750	30	750	30	750		(Pre)-06-60HB24	27 7/8	708	16 1/8	410	18 9/16	472	
		9	228	(Pre)-09-90HB24	31 1/2	800	31 1/2	800	31 1/2	800		(Pre)-09-60HB24	29 3/16	741	16 7/8	429	19 7/16	494	
		12	305	(Pre)-12-90HB24	33	838	33	838	33	838		(Pre)-12-60HB24	30 1/2	775	17 5/8	448	20 5/16	516	
		18	457	(Pre)-18-90HB24	36	914	36	914	36	914		(Pre)-18-60HB24	33 1/16	840	19 1/8	486	22 1/16	560	
		24	609	(Pre)-24-90HB24	39	991	39	991	39	991		(Pre)-24-60HB24	35 11/16	907	20 5/8	524	23 13/16	605	
		30	762	(Pre)-30-90HB24	42	1067	42	1067	42	1067		(Pre)-30-60HB24	38 1/4	972	22 1/8	562	25 1/2	648	
		36	914	(Pre)-36-90HB24	45	1143	45	1143	45	1143		(Pre)-36-60HB24	40 7/8	1038	23 5/8	600	27 1/4	692	

45° Horizontal Bend											30° Horizontal Bend								
12	305	6	152	(Pre)-06-45HB12	15 3/4	400	6 1/2	165	9 3/16	233		(Pre)-06-30HB12	13 1/8	333	3 1/2	89	7	175	
		9	228	(Pre)-09-45HB12	16 13/16	427	6 15/16	176	9 13/16	249		(Pre)-09-30HB12	13 7/8	352	3 11/16	94	7 7/16	189	
		12	305	(Pre)-12-45HB12	17 7/8	454	7 3/8	187	10 7/16	265		(Pre)-12-30HB12	14 5/8	372	3 15/16	100	7 13/16	198	
		18	457	(Pre)-18-45HB12	20	500	8 1/4	210	11 11/16	297		(Pre)-18-30HB12	16 1/8	410	4 5/16	135	8 5/8	219	
		24	609	(Pre)-24-45HB12	22 1/16	560	9 1/8	232	12 15/16	329		(Pre)-24-30HB12	17 5/8	448	4 11/16	119	9 7/16	240	
		30	762	(Pre)-30-45HB12	24 3/16	614	10	250	14 3/16	360		(Pre)-30-30HB12	19 1/8	486	5 1/8	130	10 1/4	260	
		36	914	(Pre)-36-45HB12	26 5/16	668	10 15/16	278	15 7/16	392		(Pre)-36-30HB12	20 5/8	524	5 1/2	140	11 1/16	281	
24	609	6	152	(Pre)-06-45HB24	24 3/16	614	10	250	14 3/16	360		(Pre)-06-30HB24	19 1/8	486	5 1/8	130	10 1/4	260	
		9	228	(Pre)-09-45HB24	25 1/4	641	10 1/2	267	14 13/16	376		(Pre)-09-30HB24	19 7/8	505	5 5/16	135	10 5/8	270	
		12	305	(Pre)-12-45HB24	26 5/16	668	10 15/16	278	15 7/16	392		(Pre)-12-30HB24	20 5/8	524	5 1/2	140	11 1/16	281	
		18	457	(Pre)-18-45HB24	28 7/16	722	11 13/16	300	16 11/16	424		(Pre)-18-30HB24	22 1/8	562	5 15/16	151	11 13/16	300	
		24	609	(Pre)-24-45HB24	30 9/16	776	12 11/16	322	17 15/16	456		(Pre)-24-30HB24	23 5/8	600	6 5/16	160	12 5/8	321	
		30	762	(Pre)-30-45HB24	32 11/16	830	13 9/16	345	19 1/8	486		(Pre)-30-30HB24	25 1/8	638	6 3/4	172	13 7/16	341	
		36	914	(Pre)-36-45HB24	34 13/16	884	14 7/16	367	20 3/8	518		(Pre)-36-30HB24	26 5/8	676	7 1/8	181	14 1/4	362	

(Pre) See page 78 for catalog number prefix.

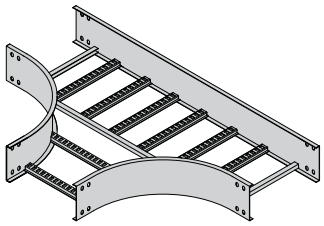
All dimensions in parentheses are millimeters unless otherwise specified.

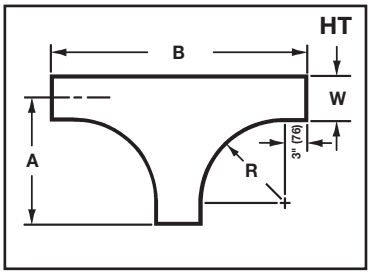
Width dimensions are to inside wall. Manufacturing tolerances apply to all dimensions.

Horizontal Tee (HT)

2 pair splice plates with hardware included.

Bend Radius R		Tray Width		Horizontal Tee Dimensions				
				Catalog No.	A		B	
in.	mm	in.	mm		in.	mm	in.	mm
12	305	6	152	(Prefix)-06-HT12	18	457	36	914
		9	228	(Prefix)-09-HT12	19½	495	39	991
		12	305	(Prefix)-12-HT12	21	533	42	1067
		18	457	(Prefix)-18-HT12	24	610	48	1219
		24	609	(Prefix)-24-HT12	27	686	54	1372
		30	762	(Prefix)-30-HT12	30	762	60	1524
		36	914	(Prefix)-36-HT12	33	838	66	1676
24	609	6	152	(Prefix)-06-HT24	30	762	60	1524
		9	228	(Prefix)-09-HT24	31½	800	63	1600
		12	305	(Prefix)-12-HT24	33	838	66	1676
		18	457	(Prefix)-18-HT24	36	914	72	1829
		24	609	(Prefix)-24-HT24	39	991	78	1981
		30	762	(Prefix)-30-HT24	42	1067	84	2134
		36	914	(Prefix)-36-HT24	45	1143	90	2286



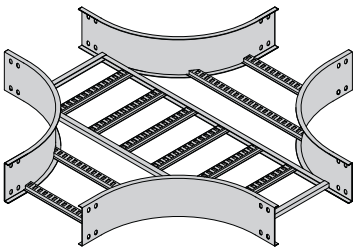


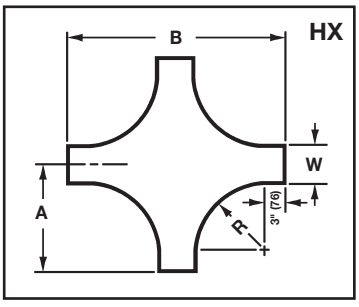
(Prefix) See page 78 for catalog number prefix.

Horizontal Cross (HX)

3 pair splice plates with hardware included.

Bend Radius R		Tray Width		Horizontal Cross Dimensions				
				Catalog No.	A		B	
in.	mm	in.	mm		in.	mm	in.	mm
12	305	6	152	(Prefix)-06-HX12	18	457	36	914
		9	228	(Prefix)-09-HX12	19½	495	39	991
		12	305	(Prefix)-12-HX12	21	533	42	1067
		18	457	(Prefix)-18-HX12	24	610	48	1219
		24	609	(Prefix)-24-HX12	27	686	54	1372
		30	762	(Prefix)-30-HX12	30	762	60	1524
		36	914	(Prefix)-36-HX12	33	838	66	1676
24	609	6	152	(Prefix)-06-HX24	30	762	60	1524
		9	228	(Prefix)-09-HX24	31½	800	63	1600
		12	305	(Prefix)-12-HX24	33	838	66	1676
		18	457	(Prefix)-18-HX24	36	914	72	1829
		24	609	(Prefix)-24-HX24	39	991	78	1981
		30	762	(Prefix)-30-HX24	42	1067	84	2134
		36	914	(Prefix)-36-HX24	45	1143	90	2286





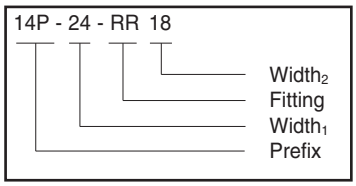
(Prefix) See page 78 for catalog number prefix.

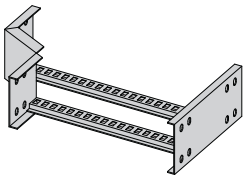
All dimensions in parentheses are millimeters unless otherwise specified.
Width dimensions are to inside wall. Manufacturing tolerances apply to all dimensions.

Reducers (LR, SR, RR)

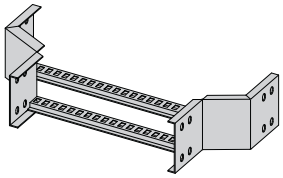
1 pair splice plates with hardware included.

Reducer Part Numbering

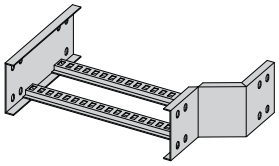




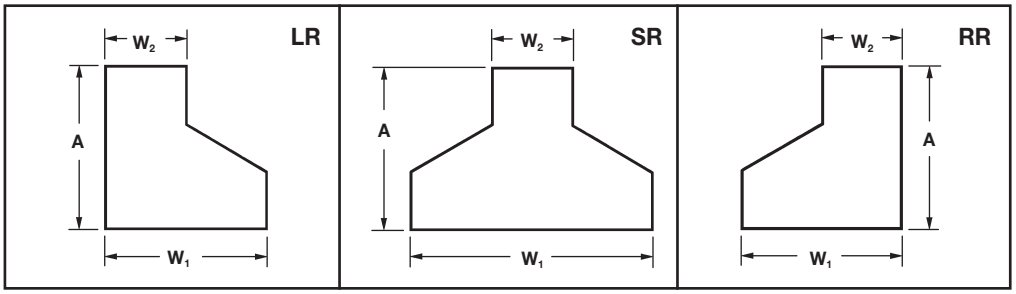
Left Reducer



Straight Reducer



Right Reducer



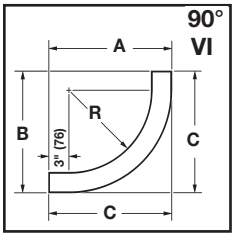
Tray Width				Left Hand Reducer			Straight Reducer			Right Hand Reducer		
W_1		W_2		Catalog No.	A		Catalog No.	A		Catalog No.	A	
in.	mm	in.	mm		in.	mm		in.	mm		in.	mm
9	228	6	152	(Prefix)-09-LR06	9 3/4	248	(Prefix)-09-SR06	8 7/8	225	(Prefix)-09-RR06	9 3/4	248
12	305	6	152	(Prefix)-12-LR06	11 1/2	292	(Prefix)-12-SR06	9 3/4	248	(Prefix)-12-RR06	11 1/2	292
		9	228	(Prefix)-12-LR09	9 3/4	248	(Prefix)-12-SR09	8 7/8	225	(Prefix)-12-RR09	9 3/4	248
18	457	6	152	(Prefix)-18-LR06	14 15/16	379	(Prefix)-18-SR06	11 1/2	292	(Prefix)-18-RR06	14 15/16	379
		9	228	(Prefix)-18-LR09	13 3/16	340	(Prefix)-18-SR09	10 5/8	270	(Prefix)-18-RR09	13 3/16	340
		12	305	(Prefix)-18-LR12	11 1/2	292	(Prefix)-18-SR12	9 3/4	248	(Prefix)-18-RR12	11 1/2	292
24	609	6	152	(Prefix)-24-LR06	18 3/8	467	(Prefix)-24-SR06	13 3/16	340	(Prefix)-24-RR06	18 3/8	467
		9	228	(Prefix)-24-LR09	16 11/16	424	(Prefix)-24-SR09	12 3/8	314	(Prefix)-24-RR09	16 11/16	424
		12	305	(Prefix)-24-LR12	14 15/16	379	(Prefix)-24-SR12	11 1/2	292	(Prefix)-24-RR12	14 15/16	379
		18	457	(Prefix)-24-LR18	11 1/2	292	(Prefix)-24-SR18	9 3/4	248	(Prefix)-24-RR18	11 1/2	292
30	762	6	152	(Prefix)-30-LR06	21 7/8	555	(Prefix)-30-SR06	14 15/16	380	(Prefix)-30-RR06	21 7/8	555
		9	228	(Prefix)-30-LR09	20 1/8	511	(Prefix)-30-SR09	14 1/16	358	(Prefix)-30-RR09	20 1/8	511
		12	305	(Prefix)-30-LR12	18 3/8	462	(Prefix)-30-SR12	13 3/16	335	(Prefix)-30-RR12	18 3/8	462
		18	459	(Prefix)-30-LR18	14 15/16	380	(Prefix)-30-SR18	11 1/2	292	(Prefix)-30-RR18	14 15/16	380
		24	609	(Prefix)-30-LR24	11 1/2	292	(Prefix)-30-SR24	9 3/4	248	(Prefix)-30-RR24	11 1/2	292
36	914	6	152	(Prefix)-36-LR06	25 5/16	643	(Prefix)-36-SR06	16 11/16	424	(Prefix)-36-RR06	25 5/16	643
		9	228	(Prefix)-36-LR09	23 9/16	598	(Prefix)-36-SR09	15 13/16	402	(Prefix)-36-RR09	23 9/16	598
		12	305	(Prefix)-36-LR12	21 7/8	555	(Prefix)-36-SR12	14 15/16	380	(Prefix)-36-RR12	21 7/8	555
		18	457	(Prefix)-36-LR18	18 3/8	462	(Prefix)-36-SR18	13 3/16	335	(Prefix)-36-RR18	18 3/8	462
		24	609	(Prefix)-36-LR24	14 15/16	380	(Prefix)-36-SR24	11 1/2	292	(Prefix)-36-RR24	14 15/16	380
		30	762	(Prefix)-36-LR30	11 1/2	292	(Prefix)-36-SR30	9 3/4	248	(Prefix)-36-RR30	11 1/2	292

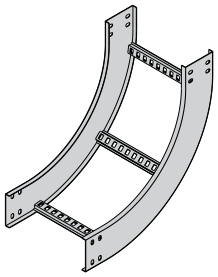
(Prefix) See page 78 for catalog number prefix.

All dimensions in parentheses are millimeters unless otherwise specified.
Width dimensions are to inside wall. Manufacturing tolerances apply to all dimensions.

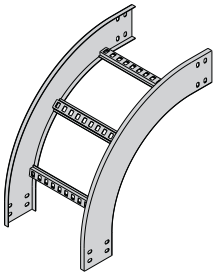
Vertical Bend 90° (VO, VI)

1 pair splice plates with hardware included.

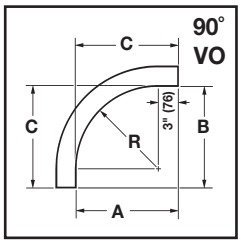




90° Vertical Inside



90° Vertical Outside



90° Vertical Outside Bend

Bend Radius R in.	Bend Radius R mm	Width in.	Width mm	Catalog No.	VO Dimensions All Series Heights A	B	C
12	300	6	152	(Pre)-06-90VO12	15" (381)	15" (381)	15" (381)
		9	228	(Pre)-09-90VO12			
		12	305	(Pre)-12-90VO12			
		18	457	(Pre)-18-90VO12			
		24	609	(Pre)-24-90VO12			
		30	762	(Pre)-30-90VO12			
		36	914	(Pre)-36-90VO12			
24	600	2	152	(Pre)-06-90VO24	27" (686)	27" (686)	27" (686)
		9	228	(Pre)-09-90VO24			
		12	305	(Pre)-12-90VO24			
		18	457	(Pre)-18-90VO24			
		24	609	(Pre)-24-90VO24			
		30	762	(Pre)-30-90VO24			
		36	914	(Pre)-36-90VO24			

(Pre) See page 78 for catalog number prefix.

90° Vertical Inside Bend

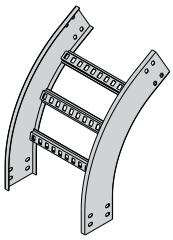
Bend Radius R in.	Bend Radius R mm	Width in.	Width mm	Catalog No.	VI Dimensions Series 14 Steel A	B	C	Series 15 Steel A	B	C	Series 16 Steel A	B	C
12	305)	6	152	(Pre)-06-90VI12	$18^{7}/_{16}$" (468)	$18^{7}/_{16}$" (468)	$18^{7}/_{16}$" (468)	$19^{3}/_{16}$" (487)	$19^{3}/_{16}$" (487)	$19^{3}/_{16}$" (487)	$20^{3}/_{16}$" (513)	$20^{3}/_{16}$" (513)	$20^{3}/_{16}$" (513)
		9	228	(Pre)-09-90VI12									
		12	305	(Pre)-12-90VI12									
		18	457	(Pre)-18-90VI12									
		24	609	(Pre)-24-90VI12									
		30	762	(Pre)-30-90VI12									
		36	914	(Pre)-36-90VI12									
24	609)	6	152	(Pre)-06-90VI24	$30^{7}/_{16}$" (773)	$30^{7}/_{16}$" (773)	$30^{7}/_{16}$" (773)	$31^{3}/_{16}$" (792)	$31^{3}/_{16}$" (792)	$31^{3}/_{16}$" (792)	$32^{3}/_{16}$" (817)	$32^{3}/_{16}$" (817)	$32^{3}/_{16}$" (817)
		9	228	(Pre)-09-90VI24									
		12	305	(Pre)-12-90VI24									
		18	457	(Pre)-18-90VI24									
		24	609	(Pre)-24-90VI24									
		30	762	(Pre)-30-90VI24									
		36	914	(Pre)-36-90VI24									

(Pre) See page 78 for catalog number prefix.

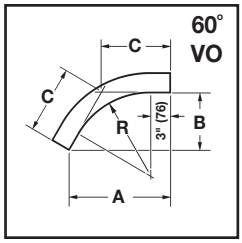
All dimensions in parentheses are millimeters unless otherwise specified.
Manufacturing tolerances apply to all dimensions.

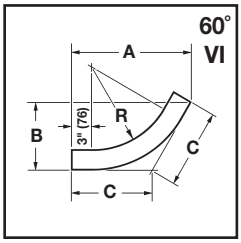
Vertical Bend 60° (VO, VI)

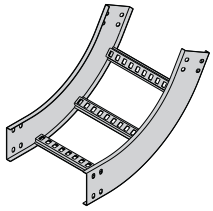
1 pair splice plates with hardware included.



60° Vertical Outside







60° Vertical Inside

60° Vertical Outside Bend

Bend Radius R in.	Bend Radius R mm	Width in.	Width mm	Catalog No.	VO Dimensions All Series Heights A	B	C
12	300	6	152	(Pre)-06-60VO12	14 7/8" (378)	8 5/8" (219)	9 15/16" (252)
		9	228	(Pre)-09-60VO12			
		12	305	(Pre)-12-60VO12			
		18	457	(Pre)-18-60VO12			
		24	609	(Pre)-24-60VO12			
		30	762	(Pre)-30-60VO12			
		36	914	(Pre)-36-60VO12			
24	600	2	152	(Pre)-06-60VO24	25 5/16" (643)	14 5/8" (371)	16 7/8" (428)
		9	228	(Pre)-09-60VO24			
		12	305	(Pre)-12-60VO24			
		18	457	(Pre)-18-60VO24			
		24	609	(Pre)-24-60VO24			
		30	762	(Pre)-30-60VO24			
		36	914	(Pre)-36-60VO24			

(Pre) See page 78 for catalog number prefix.

60° Vertical Inside Bend

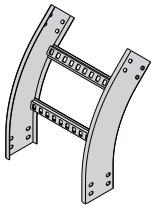
Bend Radius R in.	Bend Radius R mm	Tray Width in.	Tray Width mm	Catalog No.	VI Dimensions Series 14 Steel A	B	C	Series 15 Steel A	B	C	Series 16 Steel A	B	C
12	305	6	152	(Pre)-06-60VI12	18 1/16" (459)	10 7/16" (265)	12" (305)	18 1/2" (470)	10 11/16" (271)	12 3/8" (314)	19 3/8" (492)	11 3/16" (284)	12 15/16" (328)
		9	228	(Pre)-09-60VI12									
		12	305	(Pre)-12-60VI12									
		18	457	(Pre)-18-60VI12									
		24	609	(Pre)-24-60VI12									
		30	762	(Pre)-30-60VI12									
		36	914	(Pre)-36-60VI12									
24	609	6	152	(Pre)-06-60VI24	28 7/16" (722)	16 7/16" (417)	18 15/16" (481)	28 15/16" (735)	16 11/16" (424)	19 1/4" (489)	29 3/4" (755)	17 3/16" (436)	19 7/8" (505)
		9	228	(Pre)-09-60VI24									
		12	305	(Pre)-12-60VI24									
		18	457	(Pre)-18-60VI24									
		24	609	(Pre)-24-60VI24									
		30	762	(Pre)-30-60VI24									
		36	914	(Pre)-36-60VI24									

(Pre) See page 78 for catalog number prefix.
(*) = Insert VI for Vertical Inside Bend. Insert VO for Vertical Outside Bend.

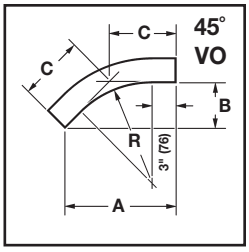
All dimensions in parentheses are millimeters unless otherwise specified.
Manufacturing tolerances apply to all dimensions.

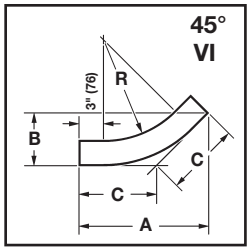
Vertical Bend 45° (VO, VI)

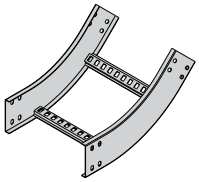
1 pair splice plates with hardware included.



45° Vertical Outside







45° Vertical Inside

45° Vertical Outside Bend

Bend Radius R in.	Bend Radius R mm	Width in.	Width mm	Catalog No.	VO Dimensions All Series Heights A	B	C
12	300	6	152	(Pre)-06-45VO12	13 5/8" (346)	5 5/8" (143)	8" (203)
		9	228	(Pre)-09-45VO12			
		12	305	(Pre)-12-45VO12			
		18	457	(Pre)-18-45VO12			
		24	609	(Pre)-24-45VO12			
		30	762	(Pre)-30-45VO12			
		36	914	(Pre)-36-45VO12			
24	600	2	152	(Pre)-06-45VO24	22 1/16" (560)	9 1/8" (232)	12 15/16" (328)
		9	228	(Pre)-09-45VO24			
		12	305	(Pre)-12-45VO24			
		18	457	(Pre)-18-45VO24			
		24	609	(Pre)-24-45VO24			
		30	762	(Pre)-30-45VO24			
		36	914	(Pre)-36-45VO24			

(Pre) See page 78 for catalog number prefix.

45° Vertical Inside Bend

Bend Radius R in.	Bend Radius R mm	Tray Width in.	Tray Width mm	Catalog No.	VI Dimensions Series 14 Steel A	B	C	Series 15 Steel A	B	C	Series 16 Steel A	B	C
12	305	6	152	(Pre)-06-45(*)12	16 3/16" (411)	6 11/16" (170)	9 1/2" (241)	16 9/16" (420)	6 7/8" (174)	9 11/16" (246	17 1/4" (438)	7 3/16" (182)	10 1/8" (257)
		9	228	(Pre)-09-45(*)12									
		12	305	(Pre)-12-45(*)12									
		18	457	(Pre)-18-45(*)12									
		24	609	(Pre)-24-45(*)12									
		30	762	(Pre)-30-45(*)12									
		36	914	(Pre)-36-45(*)12									
24	609	6	152	(Pre)-06-45(*)24	24 11/16" (627)	10 3/16" (259)	14 7/16" (367)	25 1/16" (662)	10 3/8" (263)	11 14/16" (373)	25 3/4" (654)	10 11/16" (271)	15 1/16" (382)
		9	228	(Pre)-09-45(*)24									
		12	305	(Pre)-12-45(*)24									
		18	457	(Pre)-18-45(*)24									
		24	609	(Pre)-24-45(*)24									
		30	762	(Pre)-30-45(*)24									
		36	914	(Pre)-36-45(*)24									

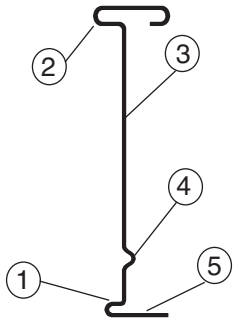
(Pre) See page 78 for catalog number prefix.
(*) = Insert VI for Vertical Inside Bend. Insert VO for Vertical Outside Bend.

All dimensions in parentheses are millimeters unless otherwise specified.
Manufacturing tolerances apply to all dimensions.

Steel Cable Tray, Series 2, 3, 4 & 5

COOPER B-Line -- the Side Rails

Our I-Beam -- the most efficient structural shape

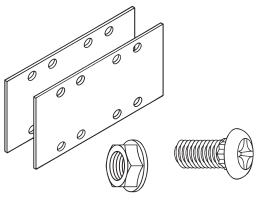


1. **Roll formed for extra strength**
2. **Enlarged top flange for stiffness**
3. **Structural grade traceable steel**
4. **Rung top lock**
5. **Rung bottom rest**

Side rails and rungs are stamped every 18" with:

- **Company Name**
- **Part Number**
- **Material**
- **Heat Trace Number**

COOPER B-Line -- the Splices -- provide system integrity



The Splices -- the engineered connection:
- Special high strength eleven gauge steel
- Eight bolt connection for required strength
- Finish and hardware options

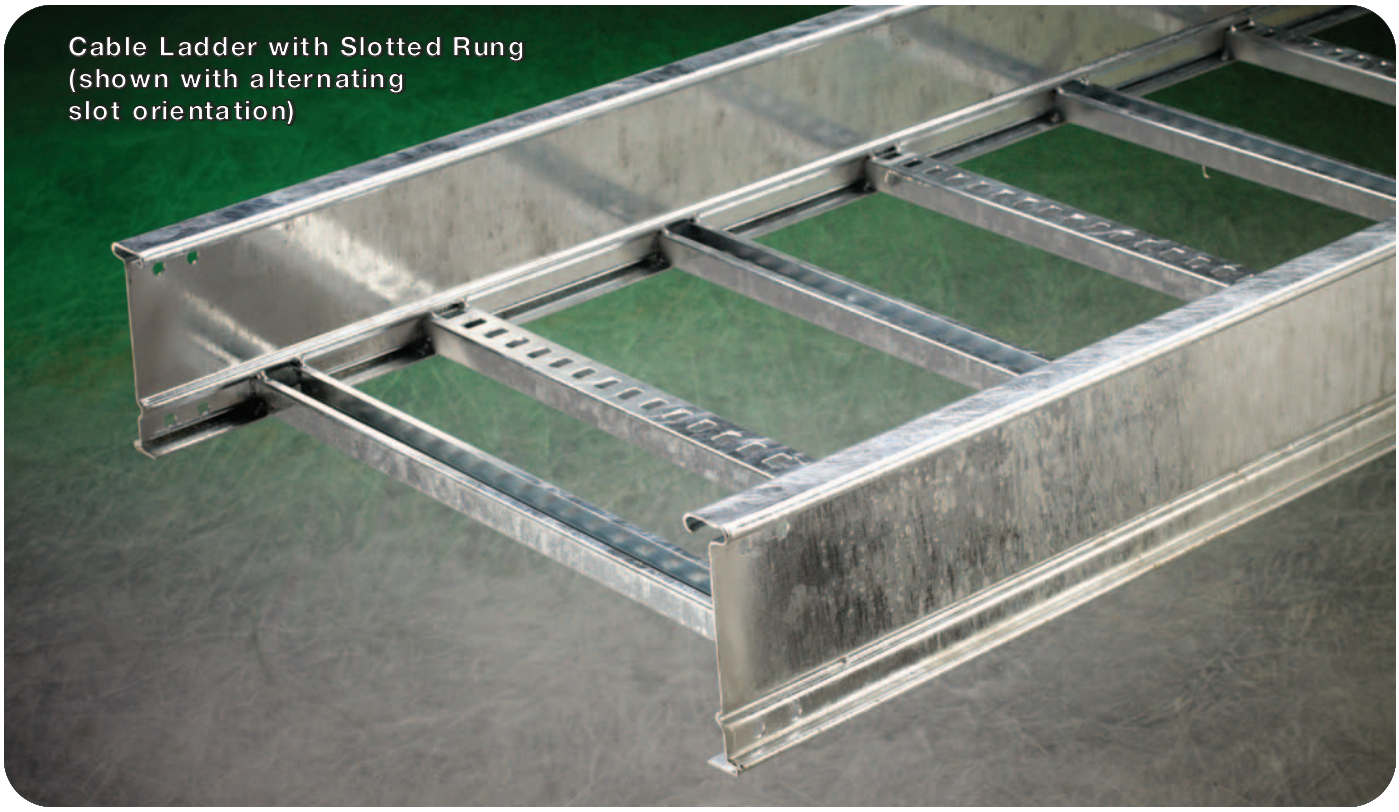
COOPER B-Line -- Hot Dip Galvanized After Fabrication (HDGAF) -- providing system integrity

- ASTM A123/CSA Type I
- In plant post-dip inspection and deburr
- ASTM F-1136-88 Grade 3 Splice hardware exceeds NEMA requirements.
- ASTM A123 Covers available - system compatibility

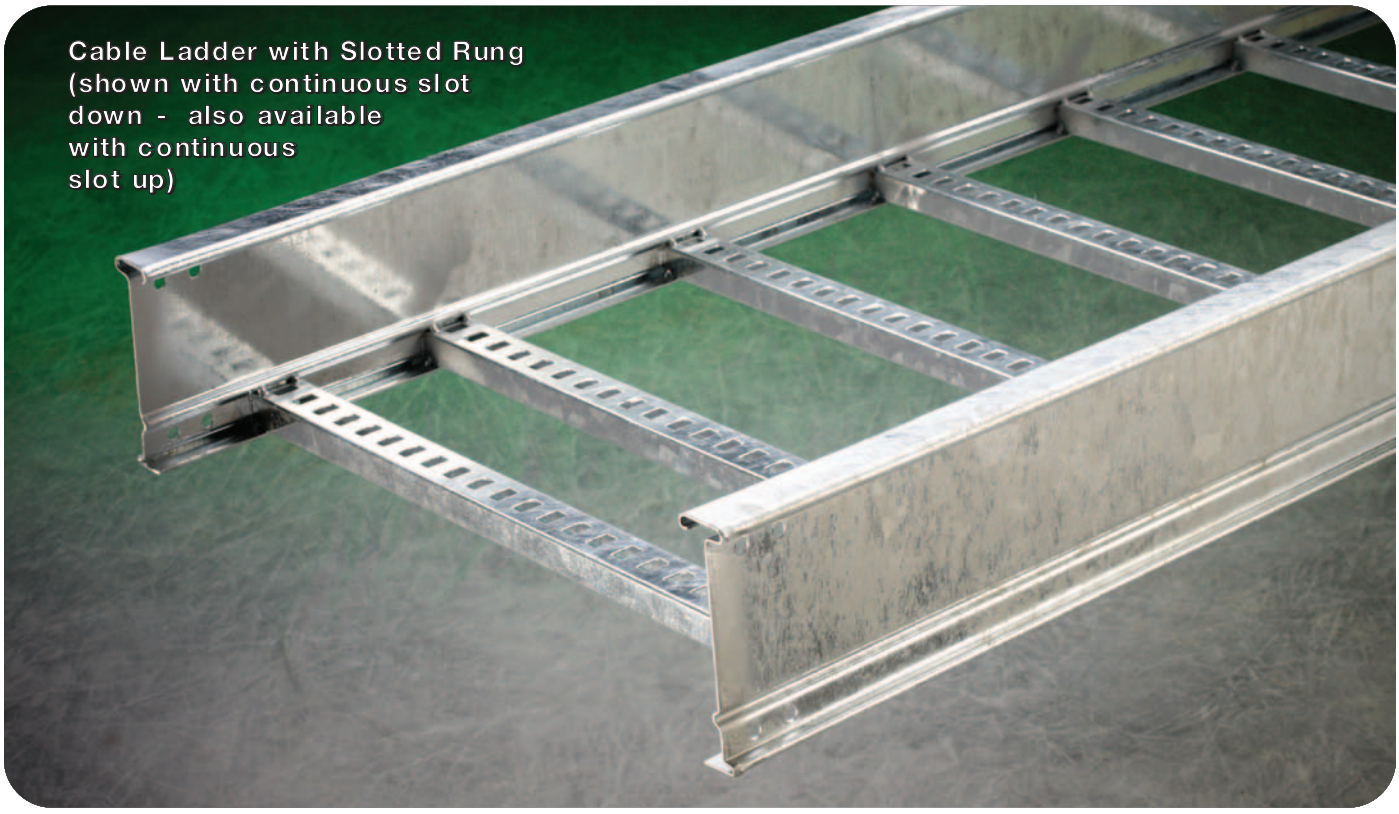
COOPER B-Line -- Pre-Galvanized- Hot Dip Mill Galvanized -- providing system integrity

- ASTM A653SS Gr.33 G90/ CSA Type II
- Anti-corrosive silicon bronze welds eliminate cosmetic painting

COOPER B-Line -- our reliable time-tested products. A system that works.
- 200 lb. Concentrated Load- side rail and rungs
- Splice integrity - 3" fitting tangents



Cable Ladder with Slotted Rung (shown with alternating slot orientation)



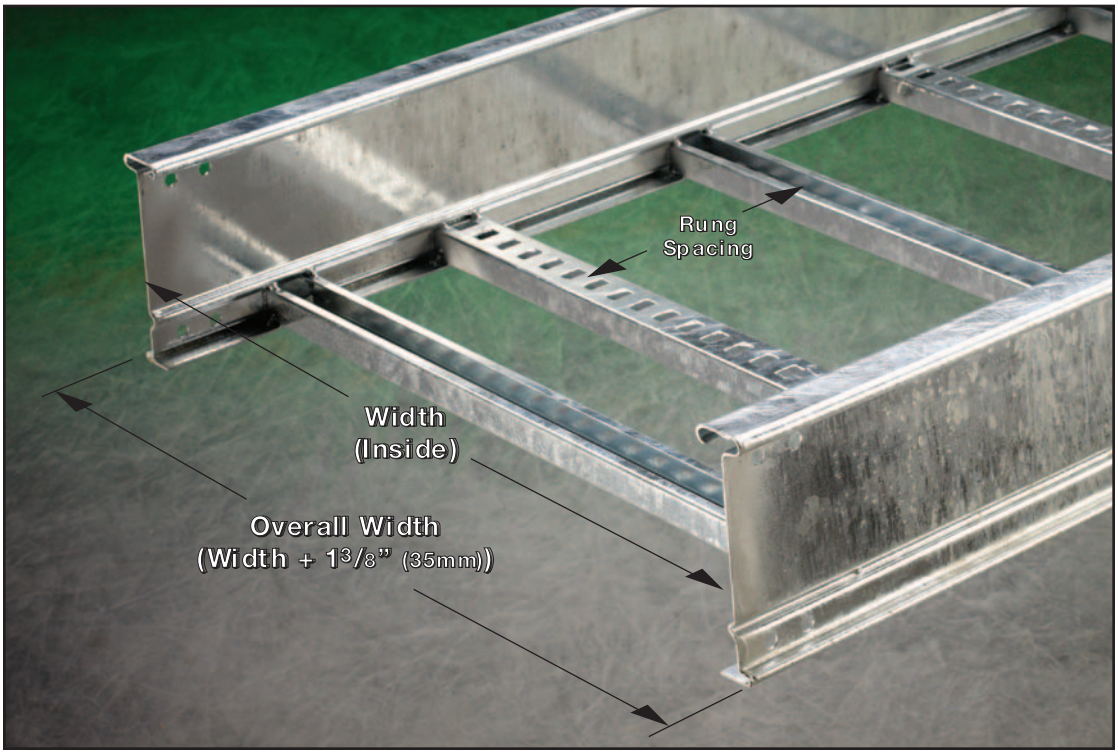
Cable Ladder with Slotted Rung (shown with continuous slot down - also available with continuous slot up)

4" (101mm) NEMA VE 1 Loading Depth
5" (127mm) Side Rail Height

Straight Section Part Numbering

Example: **356 P 09 SL DN - 24 - 144**

Series	Material	Rung Spacing	Rung Type	Rung Orientation	Width	Length
356	**P** = Pre- Galv. Steel	**06** = 6" (152)	**SL** - Slotted	**Blank** - Slots alternate up & down (as shown below)	**06** = 6" (152)	① **240** = 20 ft. (6.1m) 356
		09 = 9" (228)			**09** = 9" (228)	② 144 = 12 ft. (3.7m)
454	**G** = Hot Dip Galvanized Steel	**12** = 12" (305)			**12** = 12" (305)	① **240** = 20 ft. (6.1m) 454
		After Fabrication		**DN** - Continuous slot down	**18** = 18" (457)	② 288 = 24 ft. (7.3m)
				UP - Continuous slot up	**24** = 24" (609)	①Primary Length.
					30 = 30" (762)	②Secondary Length.
					36 = 36" (914)	



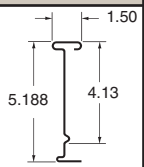
All dimensions in parentheses are in millimeters unless otherwise specified.

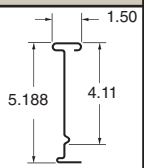
4" (101mm) NEMA VE 1 Loading Depth
5" (127mm) Side Rail Height

Dimensional & Loading Information

Values are based on simple beam tests per NEMA VE 1 on 36" (914mm) wide cable tray with rungs spaced on 12" (305mm) centers. Cable trays will support without collapse a 200 lb. (90.7 kg) concentrated load over and above published loads. Published load safety factor is 1.5.
To convert 1.5 safety factor to 2.0, multiply published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable tray being installed.

Individual rungs will support without collapse a 200 lb. (90.7 kg) concentrated load applied at the mid-span of the rung, over and above the NEMA rated cable load with a 1.5 safety factor for highlighted NEMA spans and loads.

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Span meters	Load lbs/ft	Load kg/m	Deflection Multiplier		Design Factors for Two Rails	
356	 16 gauge	NEMA: 20A, 16C CSA: D1-6m UL Cross-Sectional Area: 0.70 in²	10	3.0	276	411	0.0021	0.036	Area=1.00 in² Sx=1.31 in³ Ix=3.73 in⁴	Area=6.45 cm² Sx=21.47 cm³ Ix=155.25 cm⁴
			12	3.7	192	285	0.0043	0.074		
			14	4.3	141	210	0.0080	0.136		
			16	4.9	108	160	0.0140	0.233		
			18	5.5	85	127	0.0220	0.373		
			20	6.1	69	103	0.0330	0.568		

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Span meters	Load lbs/ft	Load kg/m	Deflection Multiplier		Design Factors for Two Rails	
454	 14 gauge	NEMA: 20C CSA: E-6m UL Cross-Sectional Area: 1.00 in²	12	3.7	294	438	0.0022	0.055	Area=1.34 in² Sx=1.75 in³ Ix=4.96 in⁴	Area=8.65 cm² Sx=28.68 cm³ Ix=206.45 cm⁴
			16	4.9	166	246	0.0100	0.175		
			18	5.5	131	195	0.0160	0.280		
			20	6.1	106	158	0.0250	0.427		
			22	6.7	88	130	0.0370	0.625		
			24	7.3	74	110	0.0520	0.886		

When cable trays are used in continuous spans, the deflection of the cable tray is reduced by as much as 50%.
Design factors: Ix = Moment of Inertia, Sx = Section Modulus.

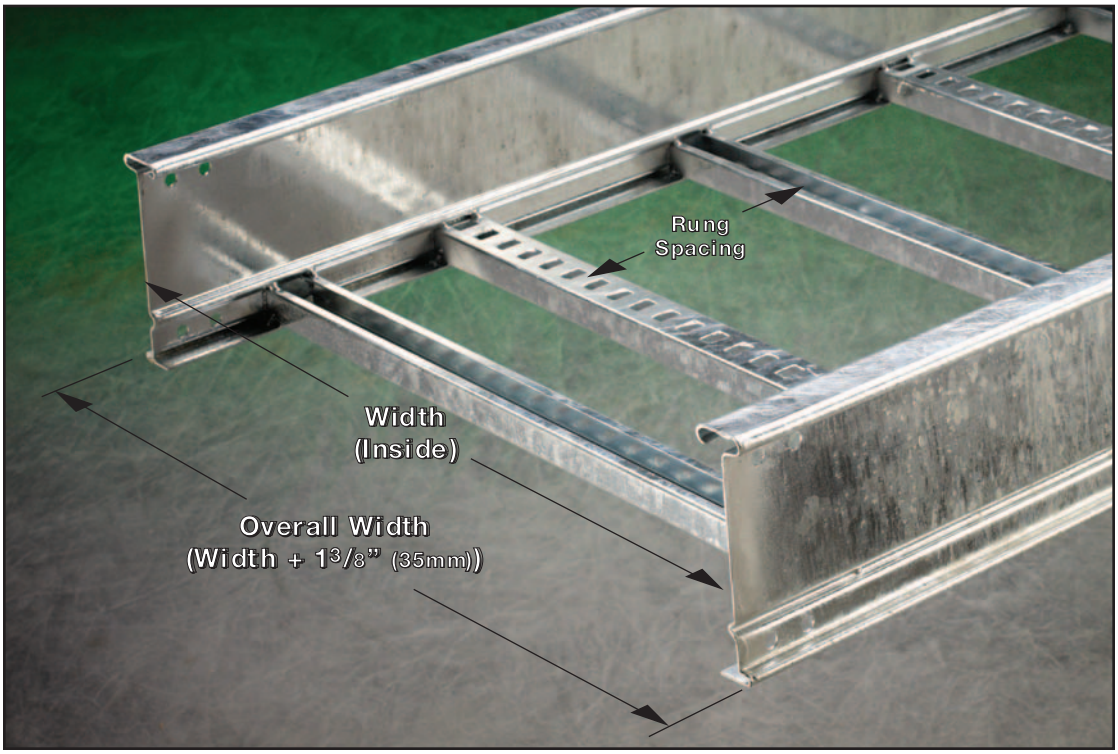
All dimensions in parentheses are in millimeters unless otherwise specified.

5" (127mm) NEMA VE 1 Loading Depth
6" (152mm) Side Rail Height

Straight Section Part Numbering

Example: **366 P 09 SL DN - 24 - 144**

Series	Material	Rung Spacing	Rung Type	Rung Orientation	Width	Length
366	**P** = Pre- Galv. Steel	**06** = 6" (152)	**SL** - Slotted	**Blank** - Slots alternate up & down (as shown below)	**06** = 6" (152)	① **240** = 20 ft. (6.1m) 366
464	**G** = Hot Dip Galvanized After Fabrication Steel	**09** = 9" (228)			**09** = 9" (228)	② 144 = 12 ft. (3.7m)
		12 = 12" (305)			**12** = 12" (305)	① **240** = 20 ft. (6.1m) 464
				DN - Continuous slot down	**18** = 18" (457)	② 288 = 24 ft. (7.3m)
				UP - Continuous slot up	**24** = 24" (609)	
					30 = 30" (762)	①Primary Length.
					36 = 36" (914)	②Secondary Length.



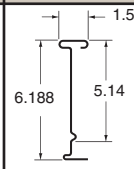
All dimensions in parentheses are in millimeters unless otherwise specified.

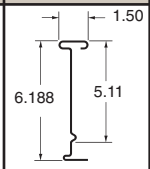
5" (127mm) NEMA VE 1 Loading Depth
6" (152mm) Side Rail Height

Dimensional & Loading Information

Values are based on simple beam tests per NEMA VE 1 on 36" (914mm) wide cable tray with rungs spaced on 12" (305mm) centers. Cable trays will support without collapse a 200 lb. (90.7 kg) concentrated load over and above published loads. Published load safety factor is 1.5.
To convert 1.5 safety factor to 2.0, multiply published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable tray being installed.

Individual rungs will support without collapse a 200 lb. (90.7 kg) concentrated load applied at the mid-span of the rung, over and above the NEMA rated cable load with a 1.5 safety factor for highlighted NEMA spans and loads.

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Span meters	Load lbs/ft	Load kg/m	Deflection Multiplier		Design Factors for Two Rails	
366		NEMA: 20B, 16C CSA: E-6m UL Cross-Sectional Area: 1.00 in²	10	3.0	300	446	0.0014	0.023	Area=1.11 in² Sx=1.71 in³ Ix=5.74 in⁴	Area=7.16 cm² Sx=28.02 cm³ Ix=238.92 cm⁴
			12	3.7	208	310	0.0028	0.048		
			14	4.3	153	228	0.0052	0.089		
			16	4.9	117	174	0.0089	0.151		
			18	5.5	93	138	0.0140	0.242		
			20	6.1	75	112	0.0220	0.369		

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Span meters	Load lbs/ft	Load kg/m	Deflection Multiplier		Design Factors for Two Rails	
464		NEMA: 20C CSA: E-6m UL Cross-Sectional Area: 1.00 in²	12	3.7	342	508	0.0020	0.036	Area=1.49 in² Sx=2.28 in³ Ix=7.65 in⁴	Area=9.61 cm² Sx=37.36 cm³ Ix=318.42 cm⁴
			16	4.9	192	286	0.0070	0.113		
			18	5.5	152	226	0.0110	0.182		
			20	6.1	123	183	0.0160	0.277		
			22	6.7	102	151	0.0240	0.406		
			24	7.3	85	127	0.0340	0.574		

When cable trays are used in continuous spans, the deflection of the cable tray is reduced by as much as 50%.
Design factors: Ix = Moment of Inertia, Sx = Section Modulus.

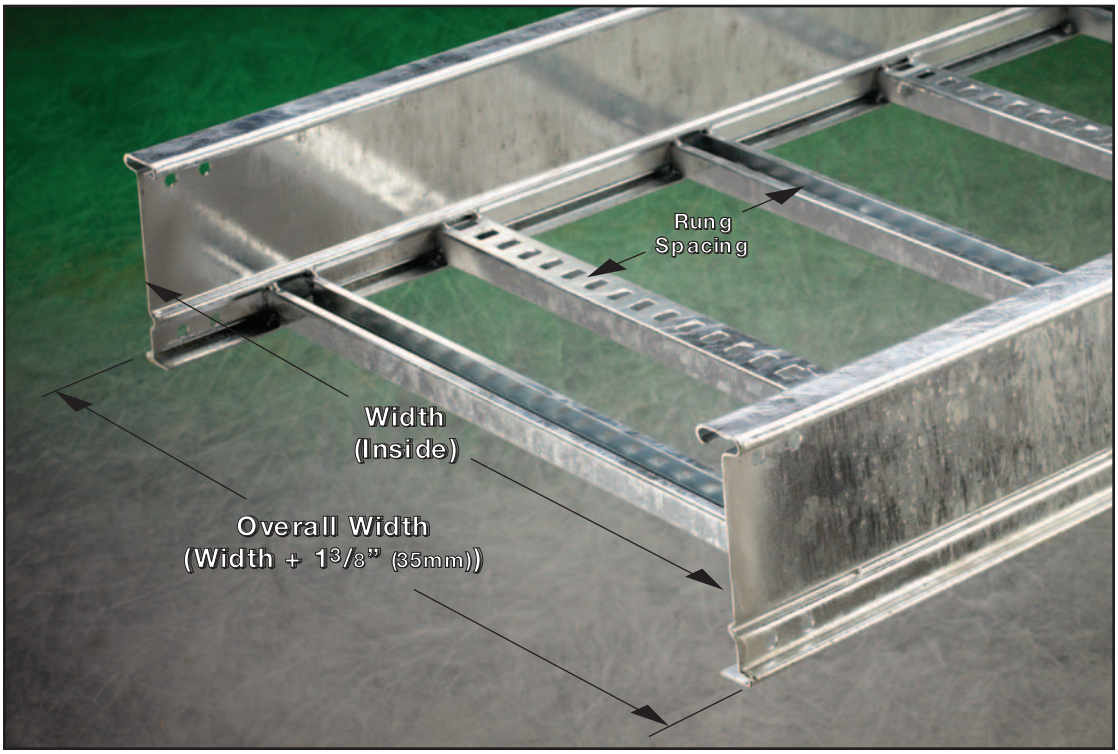
All dimensions in parentheses are in millimeters unless otherwise specified.

6" (152mm) NEMA VE 1 Loading Depth
7" (178mm) Side Rail Height

Straight Section Part Numbering

Example: **476 P 09 SL DN - 24 - 144**

Series	Material	Rung Spacing	Rung Type	Rung Orientation	Width	Length
476	**P** = Pre- Galv. Steel	**06** = 6" (152)	**SL** - Slotted	**Blank** - Slots alternate up & down (as shown below)	**06** = 6" (152)	① **240** = 20 ft. (6.1m) 476
		09 = 9" (228)			**09** = 9" (228)	② 288 = 24 ft. (7.3m)
574	**G** = Hot Dip Galvanized After Fabrication Steel	**12** = 12" (305)			**12** = 12" (305)	① **240** = 20 ft. (6.1m) 574
					18 = 18" (457)	② 288 = 24 ft. (7.3m)
				DN - Continuous slot down	**24** = 24" (609)	
					30 = 30" (762)	①Primary Length.
				UP - Continuous slot up	**36** = 36" (914)	②Secondary Length.



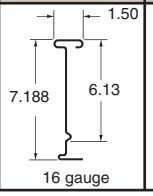
All dimensions in parentheses are in millimeters unless otherwise specified.

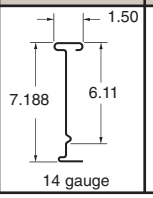
6" (152mm) NEMA VE 1 Loading Depth
7" (178mm) Side Rail Height

Dimensional & Loading Information

Values are based on simple beam tests per NEMA VE 1 on 36" (914mm) wide cable tray with rungs spaced on 12" (305mm) centers. Cable trays will support without collapse a 200 lb. (90.7 kg) concentrated load over and above published loads. Published load safety factor is 1.5.
To convert 1.5 safety factor to 2.0, multiply published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable tray being installed.

Individual rungs will support without collapse a 200 lb. (90.7 kg) concentrated load applied at the mid-span of the rung, over and above the NEMA rated cable load with a 1.5 safety factor for highlighted NEMA spans and loads.

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Span meters	Load lbs/ft	Load kg/m	Deflection Multiplier		Design Factors for Two Rails	
476		NEMA: 20B, 16C CSA: D1-6m UL Cross-Sectional Area: 1.00 in²	12	3.7	214	318	0.0019	0.033	Area=1.22 in² Sx=2.14 in³ Ix=8.30 in⁴	Area=7.87 cm² Sx=35.07 cm³ Ix=345.47 cm⁴
			16	4.9	100	179	0.0062	0.105		
			18	5.5	95	141	0.0100	0.168		
			20	6.1	77	115	0.0150	0.255		
			22	6.7	64	95	0.0220	0.374		
			24	7.3	53	80	0.0310	0.529		

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Span meters	Load lbs/ft	Load kg/m	Deflection Multiplier		Design Factors for Two Rails	
574		NEMA: 20C CSA: E-6m UL Cross-Sectional Area: 1.50 in²	12	3.7	361	537	0.0014	0.025	Area=1.64 in² Sx=2.87 in³ Ix=11.10 in⁴	Area=10.58 cm² Sx=47.03 cm³ Ix=462.02 cm⁴
			16	4.9	203	302	0.0046	0.078		
			18	5.5	160	239	0.0073	0.125		
			20	6.1	130	193	0.0110	0.191		
			22	6.7	107	160	0.0160	0.280		
			24	7.3	90	134	0.0230	0.396		

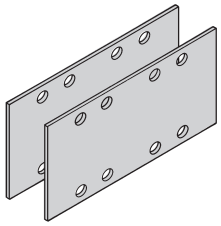
When cable trays are used in continuous spans, the deflection of the cable tray is reduced by as much as 50%.
Design factors: Ix = Moment of Inertia, Sx = Section Modulus.

All dimensions in parentheses are in millimeters unless otherwise specified.

Heavy Duty Steel Cable Ladder Accessories

Splice Plates

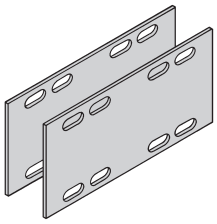
- Standard 8-hole pattern for all steel splice plates.
- Furnished in pairs with hardware.
- One pair including hardware provided with straight section.
- Boxed in pairs with hardware.
- (*) Insert ZN or G



Catalog No.	Height	
	in.	mm
9(*)-8005	5	127
9(*)-8006	6	152
9(*)-8007	7	178

Expansion Splice Plates

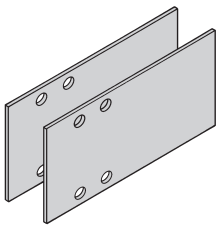
- Expansion plates allow for one inch expansion or contraction of the cable tray, or where expansion joints occur in the support structure.
- Furnished in pairs with hardware.
- **Bonding Jumpers are required on each siderail. Order Separately.**
- (*) Insert ZN or G



Catalog No.	Height	
	in.	mm
9(*)-8015	5	127
9(*)-8016	6	152
9(*)-8017	7	178

Universal Splice Plates

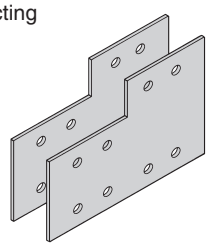
- Used to splice to existing cable tray systems.
- Furnished in pairs with hardware.
- (*) Insert ZN or G



Catalog No.	Height	
	in.	mm
9(*)-8005-1/2	5	127
9(*)-8006-1/2	6	152
9(*)-8007-1/2	7	178

Step Down Splice Plates

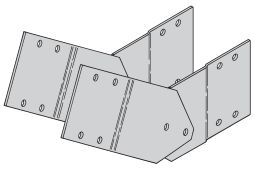
- These splice plates are offered for connecting cable tray sections having side rails of different heights.
- Furnished in pairs with hardware.
- (*) Insert ZN or G



Catalog No.	Height	
	in.	mm
9(*)-8060	6 to 5	152 to 127
9(*)-8061	7 to 5	178 to 127
9(*)-8062	7 to 6	178 to 152

Vertical Adjustable Splice Plates

- These plates provide for changes in elevation that do not conform to standard vertical fittings.
- Furnished in pairs with hardware.
- **Bonding Jumpers not required.**
- (*) Insert G or P



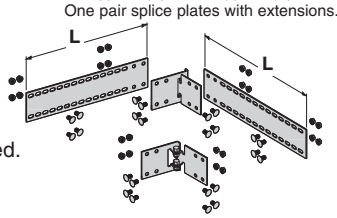
Catalog No.	Height	
	in.	mm
9(*)-8025	5	127
9(*)-8026	6	152
9(*)-8027	7	178

Requires supports within 24" (609mm) on both sides, per NEMA VE 2.

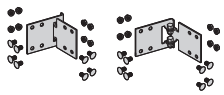
Horizontal Adjustable Splice Plates

- Offered to adjust a cable tray run for changes in direction in a horizontal plane that do not conform to standard horizontal fittings.
- Furnished in pairs with hardware.
- New design bonding jumpers **not** required.
- (*) Insert ZN or G
- (X) Insert 5, 6 or 7 for side rail height.

9(*)-803(X)-12 or 9(*)-803(X)-36
One pair splice plates with extensions.



9(*)-803(X)
Splice only



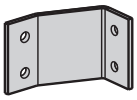
Catalog No.	Cable Tray End Cut	Tray Width	'L'
9(*)-803(X)	Mitered	Thru 36" (914)	N/A
9(*)-803(X)-12	Not mitered	Thru 12" (305)	16" (406)
9(*)-803(X)-36	Not mitered	Thru 36" (914)	41" (1041)

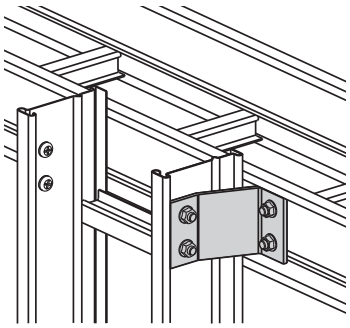
Requires supports within 24" (609mm) on both sides, per NEMA VE 2.

All dimensions in parentheses are in millimeters unless otherwise specified.

Cross Connector Bracket

- For field connecting crossing section.
- Furnished in pairs with 3/8" hardware.
- (*) Insert ZN or G

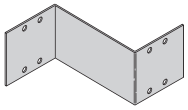




Catalog No.	9(*)-1240

Offset Reducing Splice Plate

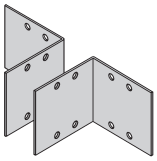
- This plate is used for joining cable trays having different widths. When used in pairs they form a straight reduction; when used singly with a standard splice plate, they form an offset reduction.
- Furnished as one plate with hardware.
- (‡) Insert reduction
- (*) Insert G or P



Catalog No.	Height	
	in.	mm
9(*)-8065-(‡)	5	127
9(*)-8066-(‡)	6	152
9(*)-8067-(‡)	7	178

Tray to Box Splice Plates

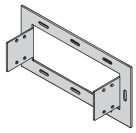
- Used to attach the end of a cable tray run to a distribution box or control panel.
- Furnished in pairs with hardware.
- (*) Insert G or P



Catalog No.	Height	
	in.	mm
9(*)-8055	5	127
9(*)-8056	6	152
9(*)-8057	7	178

Frame Type Box Connector

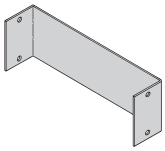
- Designed to attach the end of a cable tray run to a distribution cabinet or control center to help reinforce the box at the point of entry.
- Furnished with tray connection hardware.
- (*) Insert ZN or G
- (‡) Insert tray width



Catalog No.	Height	
	in.	mm
9(*)-8075-(‡)	5	127
9(*)-8076-(‡)	6	152
9(*)-8077-(‡)	7	178

Blind End

- This plate forms a closure for a dead end cable tray.
- Furnished as one plate with hardware.
- (*) Insert G or P
- (‡) Insert tray width



Catalog No.	Height	
	in.	mm
9(*)-8085-(‡)	5	127
9(*)-8086-(‡)	6	152
9(*)-8087-(‡)	7	178

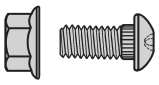
Tray Hardware

Pre-Galvanized Tray Hardware

Catalog No. **RNCB 3/8"-16 x 3/4" ZnpIt** Ribbed Neck ZN Carriage Bolt ASTM A307 Grade A

Catalog No. **SFHN 3/8"-16 ZnpIt** Serrated Flange Hex Nut ZN ASTM A563 Grade A

Finish: Zinc Plated ASTM B633, SC1



Hot Dip Galvanized Tray Hardware

Standard: **Catalog No.** **RNCB 3/8"-16 x 3/4" CZ** Ribbed Neck Carriage Bolt ASTM F1136-88 Grade 3 Chromium Zinc

Catalog No. **SFHN 3/8"-16 CZ** Serrated Flange Hex Nut ASTM F1136-88 Grade A Chromium Zinc

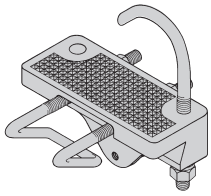
Optional: **Catalog No.** **RNCB 3/8"-16 x 3/4" SS6** AISI Stainless Steel

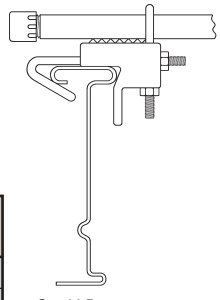
Catalog No. **SFHN 3/8"-16 SS6** AISI 316 Stainless Steel

Example: 9G-8004SS6

Conduit to Tray Adaptor

- For easy attachment of conduit terminating at a cable tray.
- Use on aluminum or steel cable trays.





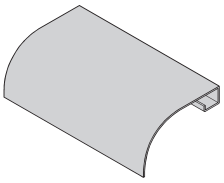
Steel I-Beam

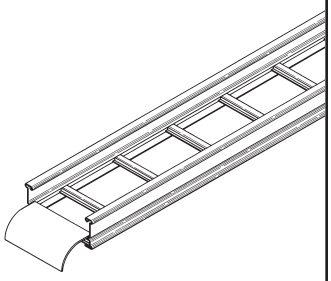
Catalog No.	Conduit Size	
	in.	mm
9G-1158-½, ¾	½, ¾	15, 20
9G-1158-1, 1¼	1, 1¼	25, 32
9G-1158-1½, 2	1½, 2	40, 50
9G-1158-2½, 3	2½, 3	65, 80
9G-1158-3½, 4	3½, 4	90, 100

All dimensions in parentheses are in millimeters unless otherwise specified.

Ladder Drop-Out

- Specially-designed Ladder Drop-Outs provide a rounded surface with 4" (101 mm) radius to protect cable as it exits from the cable tray, preventing damage to insulation. The drop-out will attach to any desired rung.
- (*) Insert P or G
- (‡) Insert tray width



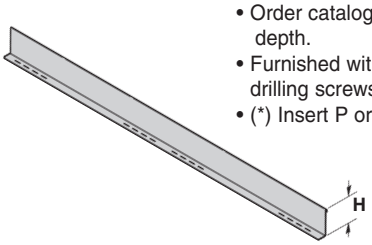


Catalog No.	9(*)-1104-(‡)

Barriers

Straight Section

- Standard length: 120" (3.05m) 144" (3.66m).
- Order catalog number based on loading depth.
- Furnished with four #10 x 1/2" plated self-drilling screws and a 99-9982 splice.
- (*) Insert P or G

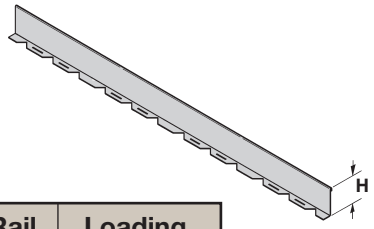


Catalog No.	Side Rail Height		Loading Depth 'H'	
	in.	mm	in.	mm
74(*)-Length	5	127	4	101
75(*)-Length	6	152	5	127
76(*)-Length	7	178	6	152

Length = 144 for 12' (3.66m) or 120 for 10' (3.05m)

Horizontal Bend

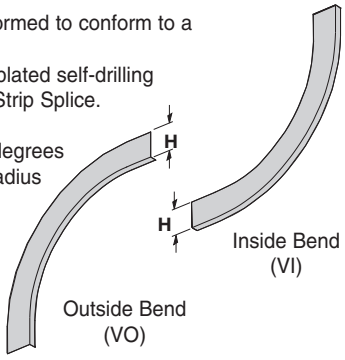
- Horizontal Bend Barriers are flexible in order to conform to any horizontal fitting radius. Cut to length.
- Order catalog number based on loading depth.
- Furnished with three #10 x 1/2" zinc plated self-drilling screws and a 99-9982 Barrier Strip Splice.
- Standard length is 72" (1828mm) (6 ft.), sold individually.
- (*) Insert P or G



Catalog No.	Side Rail Height		Loading Depth 'H'	
	in.	mm	in.	mm
74(*)-90HBFL	5	127	4	101
75(*)-90HBFL	6	152	5	127
76(*)-90HBFL	7	178	6	152

Vertical Bend Barriers

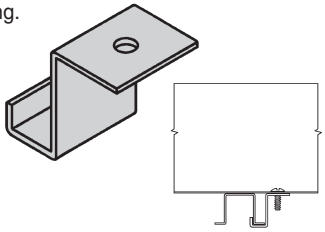
- Vertical Bend Barriers are preformed to conform to a specific vertical fitting.
- Furnished with three #10 x 1/2" plated self-drilling screws and a 99-9982 Barrier Strip Splice.
- (*) Insert P or G
- (**) Insert 30, 45, 60 or 90 for degrees
- (†) Insert 12, 24, 36 or 48 for radius



Inside Bend Catalog No.	Outside Bend Catalog No.	Side Rail Height		Loading Depth 'H'	
		in.	mm	in.	mm
74(*)-(**)VI(†)	74(*)-(**)VO(†)	5	127	4	101
75(*)-(**)VI(†)	75(*)-(**)VO(†)	6	152	5	127
76(*)-(**)VI(†)	76(*)-(**)VO(†)	7	178	6	152

Barrier Strip Clip

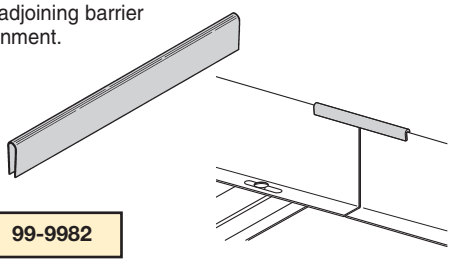
- Zinc plated steel barrier clip fastens to either aluminum or steel ladder rung.
- Furnished with one #10 x 1/2" zinc plated self-drilling screw.



Catalog No.	9ZN-9002

Barrier Strip Splice

- Plastic splice holds adjoining barrier strips in straight alignment.

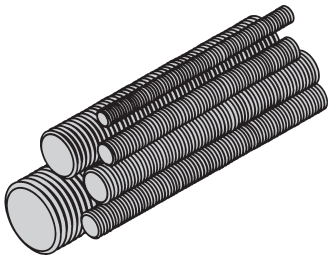


Catalog No.	99-9982

All dimensions in parentheses are in millimeters unless otherwise specified.

Threaded Rod

Loading based on safety factor 5.
Standard Finish: Zinc Plated.

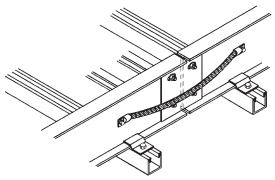


Size	Loading lbs. (kN)	Catalog No.	Available Lengths in. (mm)
3/8-16	730 (3.25)	ATR 3/8 x Length	36" (914), 72" (1829), 120" (3048), 144" (3657)
1/2-13	1350 (6.00)	ATR 1/2 x Length	36" (914), 72" (1829), 120" (3048), 144" (3657)

Bonding Jumper

Use at each expansion splice and where the cable tray is not mechanically/electrically continuous to ground.
Sold individually.

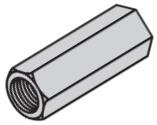
- Hardware included.
- See table 392.7(B)(2) on page 233 for amperage ratings required to match the UL cross-sectional area of the tray.
- See tray loading chart for UL cross-sectional area.
- Bonding jumper is 16" (406) long.



Catalog No.	Cross-Sectional Area	Ampacity
99-N1	1.5 Square inches	600

Rod Couplers

Loading based on safety factor 5.
Standard Finish: Zinc Plated.

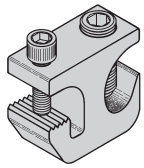


Size	Coupling Cat. No.
3/8-16	B655-3/8
1/2-13	B655-1/2

Grounding Clamp

Cooper B-Line Cable Tray is UL® classified as to its suitability as an equipment grounding conductor. If a separate conductor for additional grounding capability is desired, B-Line offers this clamp for bolting the conductor at least once to each cable tray section.

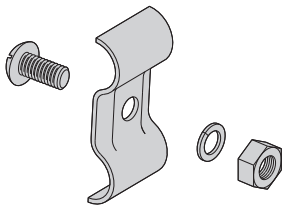
- Accepts #6 AWG to 250 MCM.



Item	Material	Catalog No.
Grounding Clamp	Tin Plated Aluminum	9A-2130

Ground Clamp

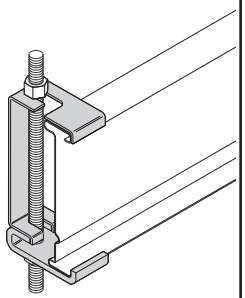
- Mechanically attaches grounding cables to cable tray.
- Hardware included.
- (*) Insert ZN or SS4



Catalog No.	Cable Size
9(*)-2351	#1 thru 2/0
9(*)-2352	3/0 thru 250 MCM

Hanger Rod Clamp

- For 1/2" ATR.
- Furnished in pairs.
- Order ATR and hex nuts separately.
- Two-piece "J"-hanger design.
- (*) Insert ZN or G
- 1500 lbs./pair capacity safety factor 3.

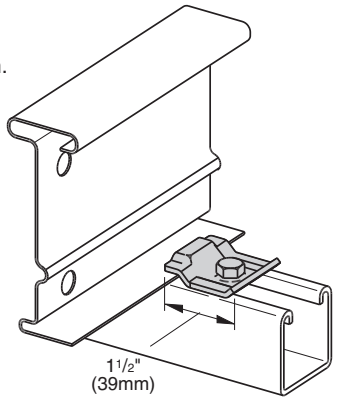


Catalog No.	Rail Height in.	Rail Height mm
9(*)-5325	5	127
9(*)-5326	6	152
9(*)-5327	7	178

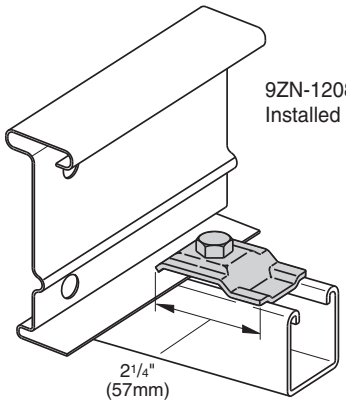
All dimensions in parentheses are in millimeters unless otherwise specified.

Cable Tray Clamp/Guide

- Features a no-twist design.
- Has four times the strength of the traditional design.
- Each side is labeled to ensure proper installation.
- Furnished in pairs, with or without hardware.



9ZN-1204 shown.
Installed as a guide.



9ZN-1208 shown.
Installed as a clamp.

Catalog No.		Overall Length		Hardware Size	Finish
Without Hardware in.	With Hardware mm				
9ZN-1204	**9ZN-1204NB**	1 1/2	38	1/4"	Znplt
9ZN-1208	**9ZN-1208NB**	2 1/4	57	3/8"	Znplt
9A-1205	**--**	2 1/4	57	1/2"	Alum.
9G-1205	**--**	2 1/4	57	1/2"	HDGAF
9SS6-1205	**--**	2 1/4	57	1/2"	316SS
9ZN-1205	**--**	2 1/4	57	1/2"	Znplt

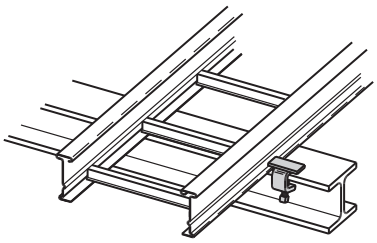
Patent # RE35479

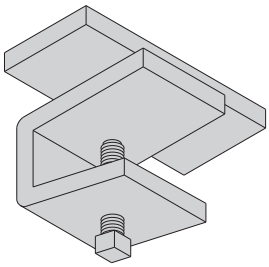
Note: For heavy duty or vertical applications see 9(*)-1241 or 9(*)-1242 page 101.

When installing this device as an expansion guide on the outside flange of *Steel Side Rail*, use the Catalog No. **B202** Square Washer in order to properly elevate the guide.

Cable Tray Guide

- Expansion guide for single or double cable tray runs.
- Guide allows for longitudinal movement of the cable tray.
- No field drilling of support I-beam or channel is required.
- Guides are required on both sides of cable tray to prevent lateral movement - can be placed on either the inside or outside flange of cable tray.
- Guides are sold in pieces - two guides are required per tray.
- Maximum flange thickness 1 1/8" (28.58 mm).

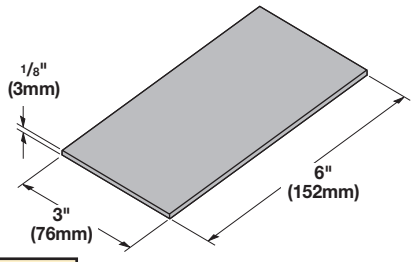




Catalog No.	Finish
9ZN-1249	Zinc Plated
9G-1249	HDGAF

Nylon Pad

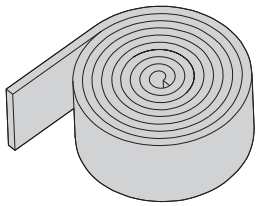
- Use for friction reduction.
- Hardness: Shore D80.
- Low friction coefficient.
- UV resistant (black).
- Excellent weatherability.
- UL-94HB.



Catalog No.	99-NY36

Neoprene Roll

- Used for material isolation.
- 1/8" x 2" x 20' roll.
- Hardness: Shore A60.
- Good weatherability.



Catalog No.	99-NP240

All dimensions in parentheses are in millimeters unless otherwise specified.

Trapeze Support Kit

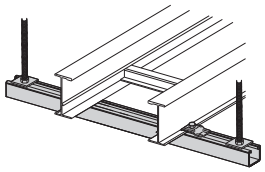
Cooper B-Line's trapeze kits provide the components required for a single trapeze support in one package. These kits are available in pre-galvanized steel with zinc-plated hardware or hot dip galvanized steel with 316 stainless steel hardware.

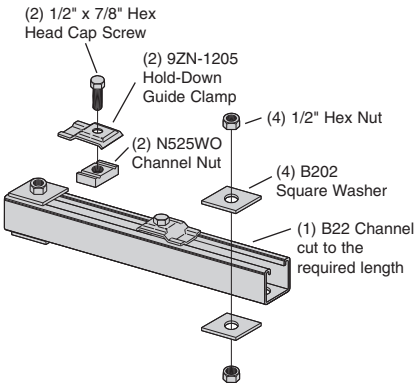
The SH channel provides the convenience of pre-punched slots, which eliminate the need for field drilling.

The illustrated hardware is sealed in a plastic bag and boxed with the channel,which is pre-cut to the appropriate length as shown in the chart.

Designed for use with 1/2" threaded rod. Order rod separately.

Catalog No.	Tray Width		Channel Length		Uniform Load	
	in.	mm	in.	mm	lbs	kN
9P-5506-22SH(†)	6	152	16	406	1600	7.11
9P-5509-22SH(†)	9	229	18	457	1250	5.56
9P-5512-22SH(†)	12	305	22	559	1125	5.00
9P-5518-22SH(†)	18	457	28	711	865	3.85
9P-5524-22SH(†)	24	610	34	864	700	3.11
9P-5530-22SH(†)	30	762	40	1016	590	2.62
9P-5536-22SH(†)	36	914	46	1168	510	2.27
9P-5542-22SH(†)	42	1067	52	1321	450	2.00





• (†) Insert 3/8 for 3/8" threaded rod hardware.

Safety factor of 3.0 on all loads.

Heavy Duty Trapeze Support Kit

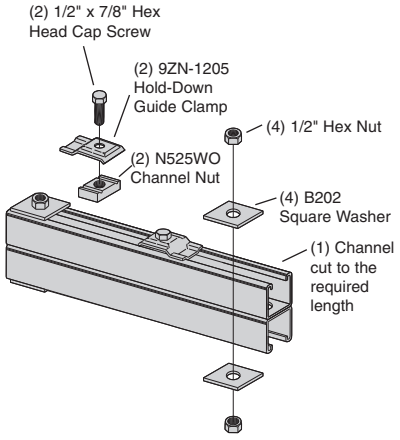
Cooper B-Line's trapeze kits provide the components required for a single trapeze support in one package. These kits are available in Dura-Green® epoxy coated steel with zinc-plated hardware or hot dip galvanized steel with 316 stainless steel hardware.

The SH channel provides the convenience of pre-punched slots, which eliminates the need for field drilling.

The illustrated hardware is sealed in a plastic bag and boxed with the channel, which is pre-cut to the appropriate length as shown in the chart.

Designed for use with 1/2" threaded rod. Order rod separately.

Catalog No.	Tray Width		Channel Length		Uniform Load	
	in.	mm	in.	mm	lbs	kN
9(*)-5506-22SHA	6	152	16	406	1350	6.01
9(*)-5509-22SHA	9	229	18	457	1350	6.01
9(*)-5512-22SHA	12	305	22	559	1350	6.01
9(*)-5518-22SHA	18	457	28	711	1350	6.01
9(*)-5524-22SHA	24	610	34	864	1350	6.01
9(*)-5530-22SHA	30	762	40	1016	1350	6.01
9(*)-5536-22SHA	36	914	46	1168	1350	6.01
9(*)-5542-22SHA	42	1067	52	1321	1350	6.01

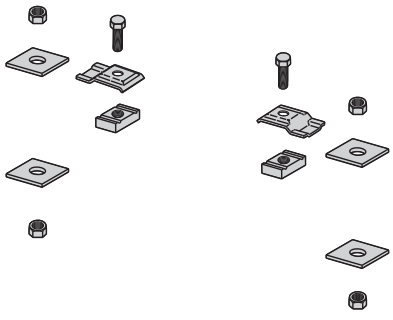


• (*) Insert GRN or G

Safety factor of 3.0 on all loads.

Trapeze Hardware Kit

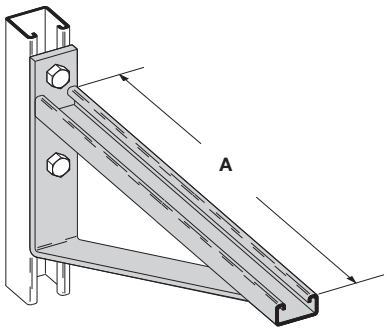
Catalog No. (plastic bagged)	
9ZN-5500-1/2	**9G-5500-1/2**
1 pr. 9ZN-1205 2 HHC Screw 1/2 x 7/8 ZN 2 N525 WO ZN 4 B202 ZN 1/2" sq washer 4 HN 1/2 ZN	1 pr. 9G-1205 2 HHC Screw 1/2 x 7/8 SS6 2 N525 WO SS6 4 B202 HDG 1/2" sq washer 4 HN 1/2 SS6



All dimensions in parentheses are in millimeters unless otherwise specified.

Cantilever Bracket

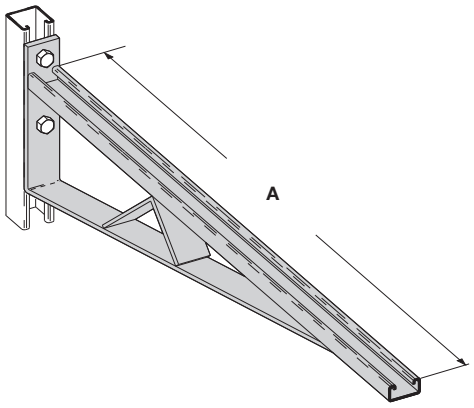
Finishes available: ZN, GRN, or HDG
Safety Load Factor 2.5



Catalog No.	Uniform Load		Tray Width		'A'	
	lbs	kN	in.	mm	in.	mm
B494-12	1580	7.02	6 & 9	152 & 229	12	305
B494-18	1000	4.45	12	305	18	457
B494-24	996	4.43	18	457	24	610

Cantilever Bracket

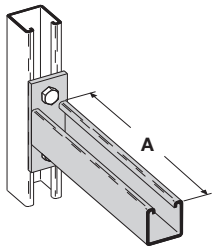
Finishes available: ZN, GRN, or HDG
Safety Load Factor 2.5



Catalog No.	Uniform Load		Tray Width		'A'	
	lbs	kN	in.	mm	in.	mm
B494-30	924	4.11	24	610	30	762
B494-36	864	3.84	30	762	36	914
B494-42	580	2.58	36	914	42	1067
B494-48	500	2.22	42	1067	48	1219

Cantilever Bracket

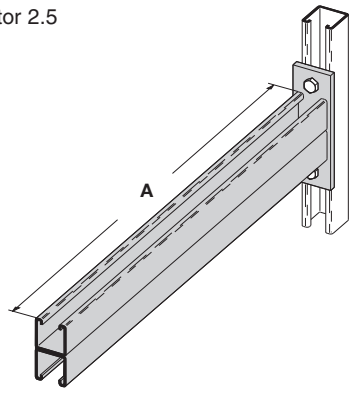
Finishes available: ZN, GRN, or HDG
Safety Load Factor 2.5



Catalog No.	Uniform Load		Tray Width		'A'	
	lbs	kN	in.	mm	in.	mm
B409-12	980	4.27	6 & 9	152 & 229	12	305
B409-18	640	2.84	12	305	18	457
B409-24	480	2.13	18	457	24	610

Cantilever Bracket

Finishes available: ZN, GRN, or HDG
Safety Load Factor 2.5

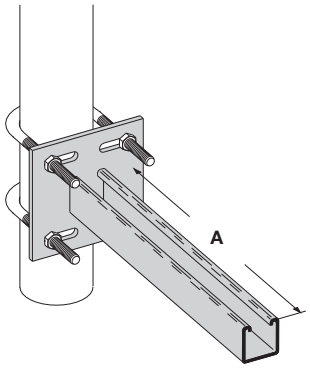


Catalog No.	Uniform Load		Tray Width		'A'	
	lbs	kN	in.	mm	in.	mm
B297-12	1660	7.37	6 & 9	152 & 229	12	305
B297-18	1100	4.88	12	305	18	457
B297-24	836	3.71	18	457	24	610
B297-30	625	2.78	24	610	30	762
B297-36	550	2.44	30	762	36	914
B297-42	465	2.06	36	914	42	1067

All dimensions in parentheses are in millimeters unless otherwise specified.

Underfloor Support (U-Bolts not included)

- Finish available: ZN
- Safety Load Factor 2.5



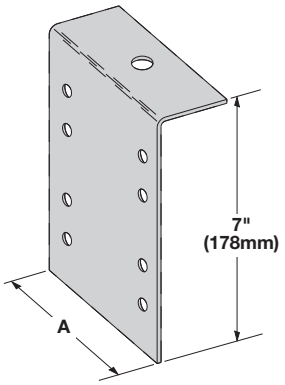
U-Bolt Size	Fits Pipe O.D.
B501-3/4	.841 - 1.050
B501-1	1.051 - 1.315
B501-1 1/4	1.316 - 1.660
B501-1 1/2	1.661 - 1.900
B501-2	1.901 - 2.375
B501-2 1/2	2.376 - 2.875

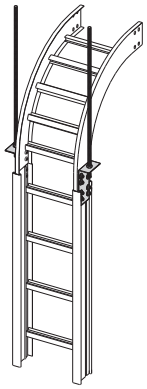
- Order properly sized U-Bolts separately.

Catalog No.	Uniform Load lbs	Uniform Load kN	Tray Width in.	Tray Width mm	'A' in.	'A' mm
B409UF-12	800	3.55	6 & 9	152 & 229	12	305
B409UF-21	450	2.00	12 & 18	305 & 457	21	533

Vertical Hanger Splice Plates

- (*) Insert ZN or G
- Design load is 1500 lbs/pair. Safety Factor of 2.5
- Furnished in pairs with hardware.

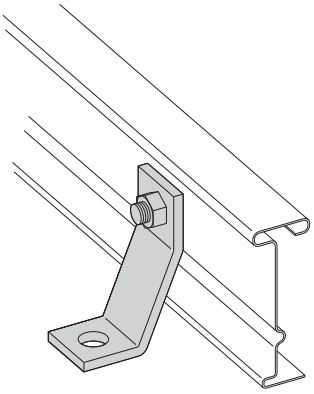




Catalog No.	Outside Cable Tray Ht.	'A' in.	'A' mm
9(*)-8225	5"	3.73	110.74
9(*)-8226	6"	4.84	136.14
9(*)-8227	7"	5.84	161.54

Heavy Duty Hold-Down Bracket

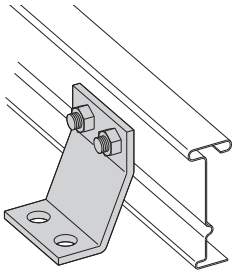
- Design load is 2000 lbs/pair.
- Two bolt design.
- Sold in pairs.
- 3/8" cable tray attachment hardware provided.
- 1/2" support attachment hardware **not** provided.
- (*) Insert ZN or G

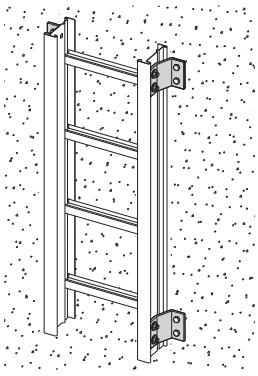


Catalog No.	9(*)-1241

Heavy Duty Hold-Down Bracket

- Design load is 4000 lbs/pair.
- Four bolt design.
- Sold in pairs.
- 3/8" cable tray attachment hardware provided
- 1/2" support attachment hardware **not** provided.
- (*) Insert ZN or G





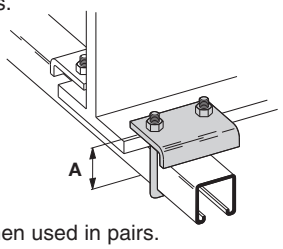
Catalog No.	9(*)-1242

All dimensions in parentheses are in millimeters unless otherwise specified.

Heavy Duty Steel Cable Ladder Accessories

Beam Clamp

- Finishes available: Insert ZN or HDG
- Sold in pieces.

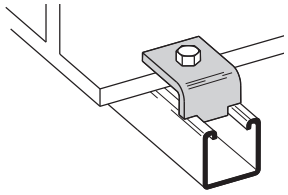


Design load when used in pairs.
Safety Load Factor 5.0

Catalog No.	Design Load* lbs	kN	'A' in.	mm
B441-22	1200	5.34	3 3/8	86
B441-22A	1200	5.34	5	127

Beam Clamp

- Finishes available: ZN, GRN, HDG, or SS4
- Sold in pieces.
- Design load is 1200 lbs. (5.34kN) when used in pairs.
- Safety Load Factor 5.0
- Order HHCS and Channel Nuts separately.

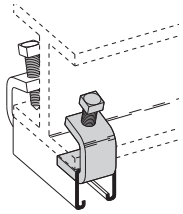


Catalog No.	B355

Beam Clamp

- Finishes available: ZN, GRN, or HDG
- Sold in pieces.

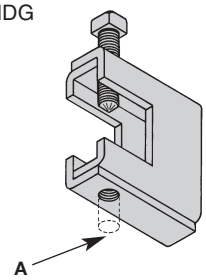
Design load when used in pairs.
B212-3/8 = 600 lbs. (2.67kN)
Safety Load Factor 5.0

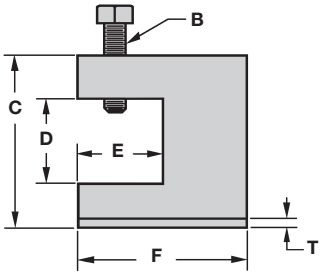


Cat. No.	B212-1/4		B212-3/8	
Design Load *	600 lbs.	2.67 kN	1000 lbs.	4.45 kN
Max. Flange Thick	3/4"	19 mm	1 1/8"	28.6 mm
Mat'l. Thickness	1/4"	6.3 mm	3/8"	9.5 mm

B305 Thru B308 & B321 Series Beam Clamps

- Finishes available: ZN or HDG
- Setscrew included.
- Safety Load Factor 5.0

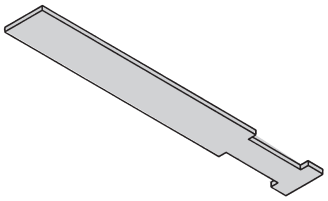




Cat. No.	Rod Size A	B	C	D	E	F	T	Design Load lbs	kN
B305	3/8"-16	3/8"-16	2 5/16"	7/8"	1 1/8"	2 1/2"	11 Ga.	600	2.67
B306	3/8"-16	1/2"-13	2 7/16"	7/8"	1 1/8"	2 1/2"	7 Ga.	1100	4.90
B307	1/2"-13	1/2"-13	2 7/16"	7/8"	1 1/8"	2 1/2"	7 Ga.	1100	4.90
B308	1/2"-13	1/2"-13	2 9/16"	7/8"	1 1/8"	2 1/2"	1/4"	1500	6.68
B321-1	3/8"-16	1/2"-13	3 9/16"	1 11/16"	1 5/8"	3 1/4"	1/4"	1300	5.79
B321-2	1/2"-13	1/2"-13	3 9/16"	1 11/16"	1 5/8"	3 1/4"	1/4"	1400	6.23

B312 Anchor Strap

- Finish available: ZN
- For a maximum beam thickness of 3/4" (19).
- For thicker beams, step up one flange width size.

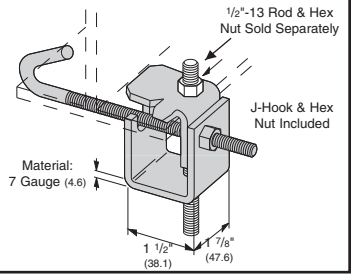


Cat. No.	Flange Width
B312-6	Up to 6"
B312-9	6" - 9"
B312-12	9" - 12"

Beam Clamp

Catalog No.	For Flange Width in.	mm	Wt./C lbs	kg
B750-J4	3"- 6"	76.2 - 152.4	109	49.4
B750-J6	5"- 9"	127.0 - 288.6	124	56.2
B750-J9	8"- 12"	203.2 - 304.8	135	61.2
B750-J12	11"- 15"	279.4 - 381.0	147	66.7

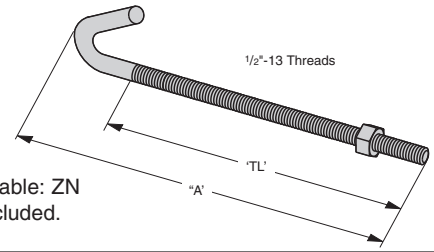
- Finish available: ZN
- Design Load 500 lbs. (2.22 kN)
- Safety Load Factor 5.0
- Recommended torque: 'J'-Hook Nut 125 In.-Lbs. (14.1 kN/m)
- Maximum flange thickness of 3/4" (19)



Beam Clamp J-Hook

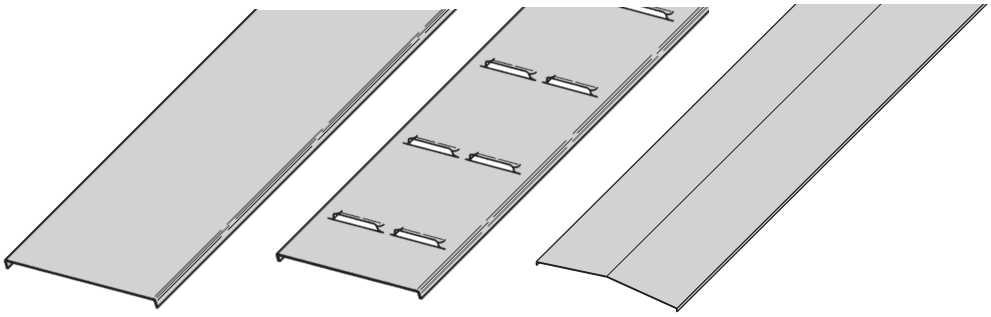
Catalog No.	'A' in.	mm	Thread Length 'TL' in.	mm	Wt./C lbs	kg
B700-J4	8 1/2"	215.9	5"	127.0	44	19.9
B700-J6	11 1/2"	292.1	6"	152.4	53	24.0
B700-J9	12 1/4"	368.3	6"	152.4	63	28.6
B700-J12	17 1/2"	444.5	6"	152.4	78	35.4

- Finish available: ZN
- Hex Nut included.



All dimensions in parentheses are in millimeters unless otherwise specified.

Covers



Solid Flanged | Ventilated Flanged | Peaked Flanged

A full range of covers is available for straight sections and fittings.

Solid covers should be used when maximum enclosure of the cable is desired and no accumulation of heat is expected. **Ventilated covers** provide an overhead cable shield yet allow heat to escape.

Cooper B-Line recommends that covers be placed on vertical cable tray runs to a height of 6 ft. (1.83 m) to 8 ft. (2.44 m) above the floor to isolate both cables and personnel. **Flanged covers** have a 1/2 in. (13 mm) flange. Cover clamps are not included with the cover and must be ordered separately. All **peaked covers** are flanged. Standard peaked covers have 1/2" (13 mm) peak.

Steel Cover Part Numbering

Prefix

Example: **80 2 P 20 - 24 - 144**

Cover Type	Detail	Material	Material Thickness	Tray Width	Item Description
80 = Solid 81 = Ventilated 82 = Peaked	2= Flanged Steel (All fittings) 3= Flanged Steel (All straight sections)	P = Pre-Galvanized G = HDGAF	20 = 20 Pre-Galv 18 = 18 HDGAF	06 = 6" (152) 09 = 9" (228) 12 = 12" (305) 18 = 18" (457) 24 = 24" (609) 30 = 30" (762) 36 = 36" (914)	For Straight Section Covers: **Pre-Galvanized Only:** 144 = 12 ft. (3.66 m) 120 = 10 ft. (3.05 m) **Pre-Galvanized & HDGAF** 72 = 6 ft. (1.83 m) 60 = 5 ft. (1.52 m) For fitting covers: Insert suffix of fitting to be covered. See example below.

Covers 30" (762) and 36" (914) wide have reinforcing ridges.

Examples of Catalog Numbers for Fitting Covers:

Horizontal Bend Cover

Prefix | Suffix

80 2 P 20 - 18 - 90 HB 24

- 24 — Radius
- HB — Fitting
- 90 — Angle
- 18 — Width
- 20 — Material Thickness
- P — Material
- 2 — Detail
- 80 — Cover Type

Vertical Bend Cover

Prefix | Suffix

80 2 G 18 - 24 - 90 VO 24 - 4*

- 4* — Side Rail* Height
- 24 — Radius
- VO — Fitting
- 90 — Angle
- 24 — Width
- 18 — Material Thickness
- G — Material
- 2 — Detail
- 80 — Cover Type

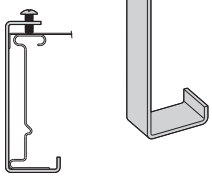
* Required for VO fittings only

All dimensions in parentheses are in millimeters unless otherwise specified.

Heavy Duty Steel Cable Ladder Cover Accessories

Standard Cover Clamp

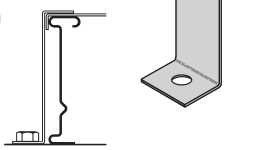
- For indoor service only.
- Sold per piece.
- (*) Insert ZN or G



Tray Type	Side Rail Height in.	Side Rail Height mm	Catalog No.
Steel	5	127	9(*)-9015
	6	152	9(*)-9016
	7	178	9(*)-9017

Combination Cover and Hold-Down Clamp

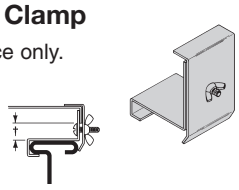
- Sold per piece.
- (*) Insert P or G
- For indoor service only.



Tray Type	Side Rail Height in.	Side Rail Height mm	Catalog No.
Steel	5	127	9(*)-9053
	6	152	9(*)-9063
	7	178	9(*)-9073

Raised Cover Clamp

- For indoor service only.
- For use with flanged covers only.



† Specify gap of 1", 2", 3" or 4"

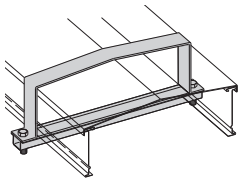
Tray Type	Catalog No.
Series 3 & 4 Steel Straight Section	9ZN-9115-†
All Steel Fittings	9ZN-910†

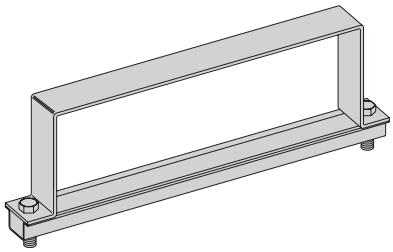
Heavy Duty Cover Clamp

- Recommended for outdoor service.
- (*) Insert P or G

(‡) Insert tray width
† Add P to Catalog No. for 1/2" (13mm) peaked cover clamp.

Peaked Cover Clamp





Side Rail Height in.	Side Rail Height mm	Catalog No.
5	127	9(*)-(‡)-9054†
6	152	9(*)-(‡)-9064†
7	178	9(*)-(‡)-9074†

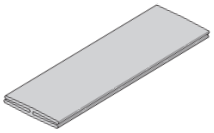
Quantity of Standard Cover Clamps Required

Straight Section 60" (1.52m) or 72" (1.83m) .....4 pcs.
Straight Section 120" (3.05m) or 144" (3.66m).....6 pcs.
Horizontal/Vertical Bends .....4 pcs.
Tees.....6 pcs.
Crosses.....8 pcs.

Note: When using the Heavy Duty Cover Clamp, only one-half the number of clamps stated above is required.

Cover Joint Strip

- Used to join covers
- Plastic
- (‡) Insert tray width

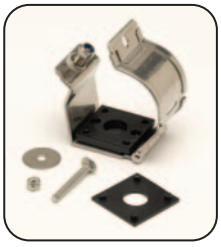


Catalog No.	99-9980-(‡)

Cable Cleats

(See pages 220 - 224)

Trefoil Cable Cleats



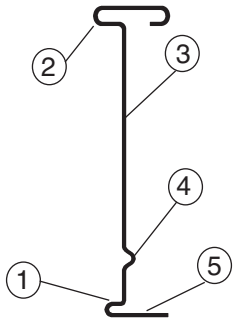
Cable Cleats

All dimensions in parentheses are in millimeters unless otherwise specified.

Stainless Steel Cable Tray, Series 3, & 4

COOPER B-Line -- the Side Rails

Our I-Beam -- the most efficient structural shape

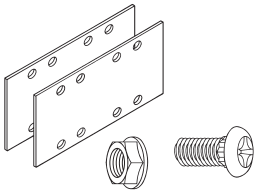


1. **Roll formed for extra strength**
2. **Enlarged top flange for stiffness**
3. **Structural grade traceable steel**
4. **Rung top lock**
5. **Rung bottom rest**

Side rails and rungs are stamped every 18" with:

- **Company Name**
- **Part Number**
- **Material**
- **Heat Trace Number**

COOPER B-Line -- the Splices -- provide system integrity



The Splices -- the engineered connection:
- Special high strength eleven gauge steel
- Eight bolt connection for required strength
- Finish and hardware options

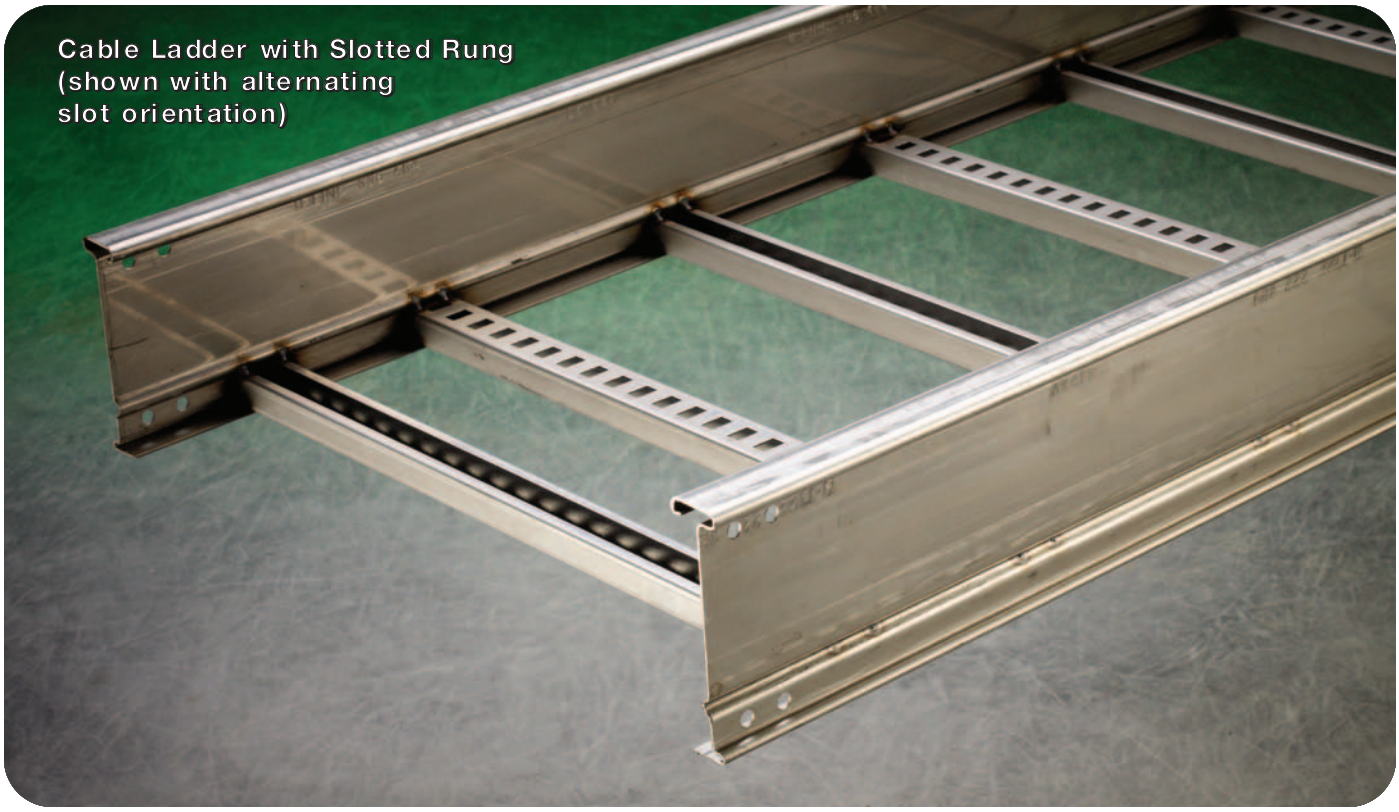
COOPER B-Line -- Hot Dip Galvanized After Fabrication (HDGAF) -- providing system integrity

- ASTM A123/CSA Type I
- In plant post-dip inspection and deburr
- ASTM F-1136-88 Grade 3 Splice hardware exceeds NEMA requirements.
- ASTM A123 Covers available - system compatibility

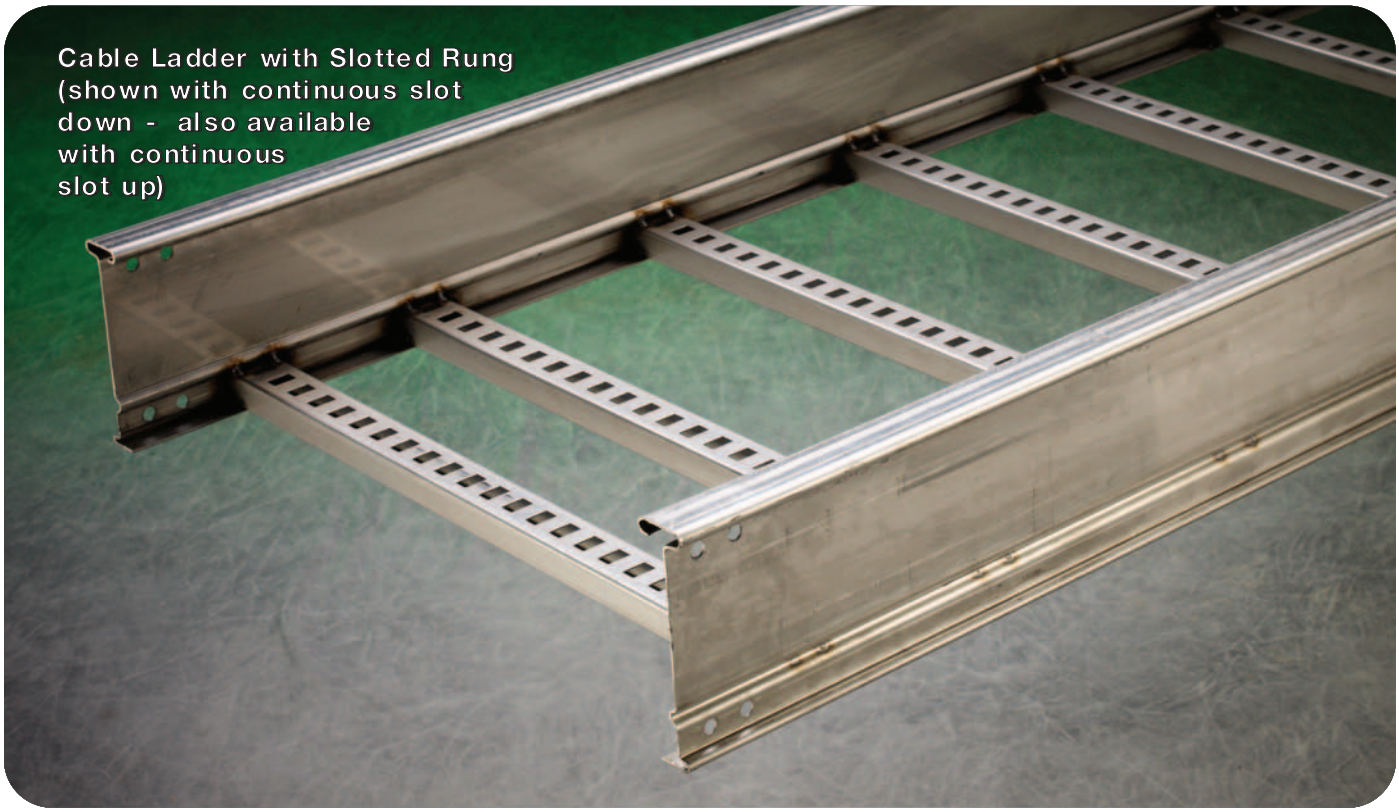
COOPER B-Line -- Pre-Galvanized- Hot Dip Mill Galvanized -- providing system integrity

- ASTM A653SS Gr.33 G90/ CSA Type II
- Anti-corrosive silicon bronze welds eliminate cosmetic painting

COOPER B-Line -- our reliable time-tested products. A system that works.
- 200 lb. Concentrated Load- side rail and rungs
- Splice integrity - 3" fitting tangents



Cable Ladder with Slotted Rung (shown with alternating slot orientation)



Cable Ladder with Slotted Rung (shown with continuous slot down - also available with continuous slot up)

3" (76mm) NEMA VE 1 Loading Depth - 4" (101mm) Side Rail Height - Series 348

Actual Loading Depth = 3.13" (79mm)

4" (101mm) NEMA VE 1 Loading Depth - 5" (127mm) Side Rail Height - Series 358

Actual Loading Depth = 4.13" (105mm)

5" (127mm) NEMA VE 1 Loading Depth - 6" (152mm) Side Rail Height - Series 464

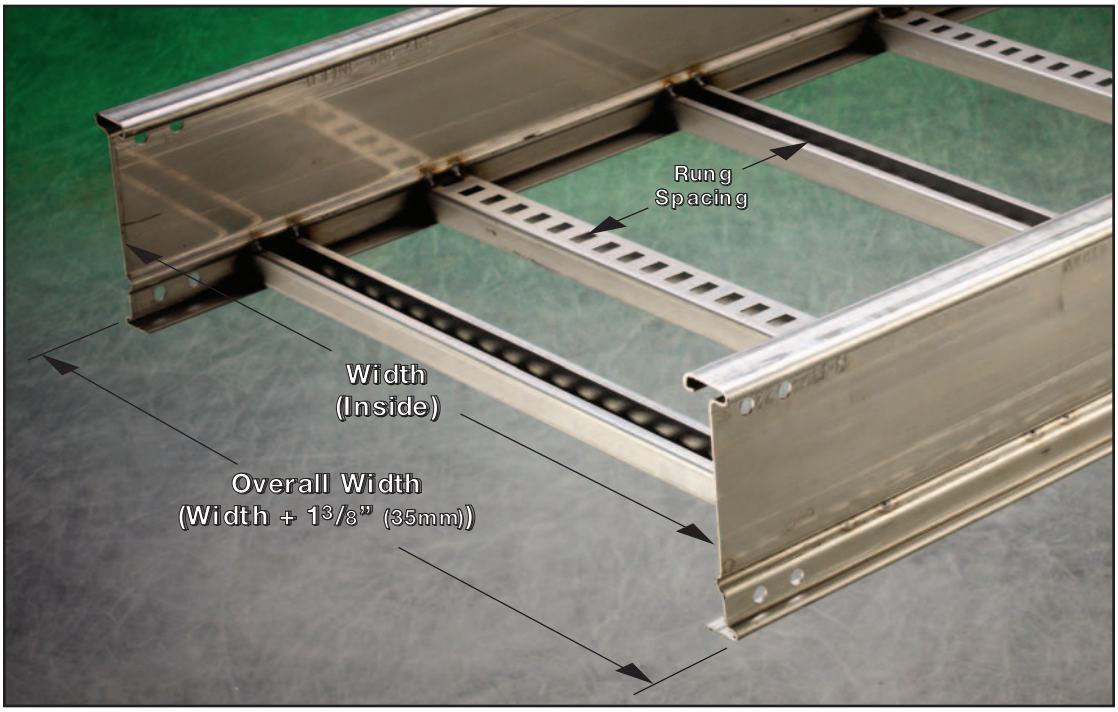
Actual Loading Depth = 5.11" (130mm)

Straight Section Part Numbering

Example: **358 SS6 09 SL DN - 24 - 144**

Series	Material	Rung Spacing	Rung Type	Rung Orientation	Width	Length
348	**SS4** = 304 Stainless Steel	**06** = 6" (152)	**SL** - Slotted	**Blank** - Slots alternate up & down (as shown below)	**06** = 6" (152)	① **144** = 12 ft. (3.7m) 348
		09 = 9" (228)			**09** = 9" (228)	② 120 = 10 ft. (3.0m)
358	**SS6** = 316 Stainless Steel	**12** = 12" (305)			**12** = 12" (305)	① **144** = 12 ft. (3.7m) 358
					18 = 18" (457)	② 240 = 20 ft. (6.1m)
464				**DN** - Continuous slot down	**24** = 24" (609)	① **240** = 20 ft. (6.1m) 464
					30 = 30" (762)	② 288 = 24 ft. (7.3m)
				UP - Continuous slot up	**36** = 36" (914)	

①Primary Length.
②Secondary Length.

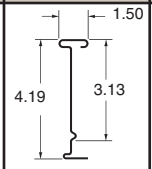


All dimensions in parentheses are in millimeters unless otherwise specified.

Dimensional & Loading Information

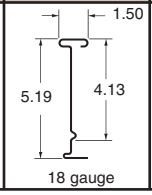
Values are based on simple beam tests per NEMA VE 1 on 36" (914mm) wide cable tray rungs spaced on 12" (305mm) centers. Cable trays will support without collapse a 200 lb. (90.7 kg) concentrated load over and above published loads. Published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable being installed.

Series 348 - 3" (76mm) Loading Depth

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Span meters	Load lbs/ft	Load kg/m	Deflection Multiplier		Design Factors for Two Rails	
348 SS†		NEMA: 16A, 12C CSA: C1-3m UL Cross-Sectional Area: 0.40 in²	10	3.0	180	268	0.0042	0.072	Area=0.79 in² Sx=0.79 in³ Ix=1.85 in⁴	Area=4.77 cm² Sx=12.95 cm³ Ix=77.00 cm⁴
			12	3.7	125	186	0.0090	0.148		
			14	4.3	92	137	0.0160	0.275		
			16	4.9	70	105	0.0270	0.469		
			18	5.5	56	83	0.0440	0.752		
			20	6.1	45	67	0.0670	1.145		

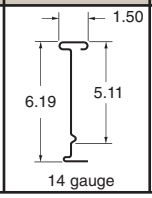
When cable trays are used in continuous spans, the deflection of the cable tray is reduced by as much as 50%. Design factors: Ix = Moment of Inertia, Sx = Section Modulus. † Insert 4 for 304 stainless steel or 6 for 316 stainless steel.

Series 358 - 4" (101mm) Loading Depth

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Span meters	Load lbs/ft	Load kg/m	Deflection Multiplier		Design Factors for Two Rails	
358 SS†		NEMA: 20A, 16B CSA: 89 kg/m-6.1m UL Cross-Sectional Area: 0.70 in²	10	3.0	248	369	0.0025	0.043	Area=0.83 in² Sx=1.09 in³ Ix=3.10 in⁴	Area=5.35 cm² Sx=17.86 cm³ Ix=129.03 cm⁴
			12	3.7	172	256	0.0062	0.089		
			14	4.3	127	188	0.0100	0.164		
			16	4.9	97	144	0.0160	0.280		
			18	5.5	77	114	0.0260	0.448		
			20	6.1	62	92	0.0400	0.684		

When cable trays are used in continuous spans, the deflection of the cable tray is reduced by as much as 50%. Design factors: Ix = Moment of Inertia, Sx = Section Modulus. † Insert 4 for 304 stainless steel or 6 for 316 stainless steel.

Series 464 - 5" (127mm) Loading Depth

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Span meters	Load lbs/ft	Load kg/m	Deflection Multiplier		Design Factors for Two Rails	
464 SS†		NEMA: 20A, 16C CSA: D1-6m UL Cross-Sectional Area: 0.70 in²	12	3.7	342	508	0.0020	0.036	Area=1.49 in² Sx=2.28 in³ Ix=7.65 in⁴	Area=9.61 cm² Sx=37.36 cm³ Ix=318.42 cm⁴
			14	4.3	192	286	0.0070	0.113		
			16	4.9	152	226	0.0110	0.182		
			18	5.5	123	183	0.0160	0.277		
			20	6.1	102	151	0.0240	0.406		
			24	7.3	85	127	0.0340	0.574		

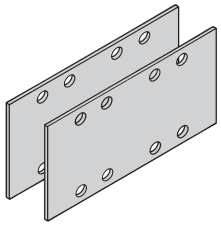
When cable trays are used in continuous spans, the deflection of the cable tray is reduced by as much as 50%. Design factors: Ix = Moment of Inertia, Sx = Section Modulus. † Insert 4 for 304 stainless steel or 6 for 316 stainless steel.

All dimensions in parentheses are in millimeters unless otherwise specified.

Stainless Steel Cable Ladder Accessories

Splice Plates

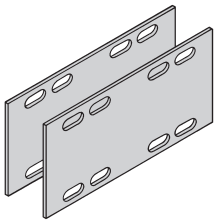
- Standard 8-hole pattern for all steel splice plates.
- Furnished in pairs with hardware.
- One pair including hardware provided with straight section.
- Boxed in pairs with hardware.
- (*) Insert SS4 or SS6



Catalog No.	Height	
	in.	mm
9(*)-8004	4	101
9(*)-8005	5	127
9(*)-8006	6	152

Expansion Splice Plates

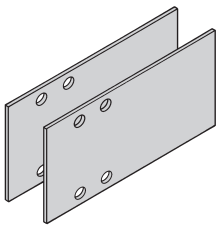
- Expansion plates allow for one inch expansion or contraction of the cable tray, or where expansion joints occur in the support structure.
- Furnished in pairs with hardware.
- **Bonding Jumpers are require on each siderail. Order Separately.**
- (*) Insert SS4 or SS6



Catalog No.	Height	
	in.	mm
9(*)-8014	4	101
9(*)-8015	5	127
9(*)-8016	6	152

Universal Splice Plates

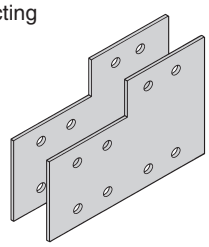
- Used to splice to existing cable tray systems.
- Furnished in pairs with hardware.
- (*) Insert SS4 or SS6



Catalog No.	Height	
	in.	mm
9(*)-8004-1/2	4	101
9(*)-8005-1/2	5	127
9(*)-8006-1/2	6	152

Step Down Splice Plates

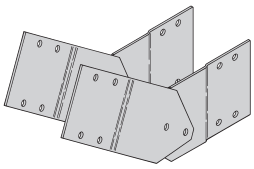
- These splice plates are offered for connecting cable tray sections having side rails of different heights.
- Furnished in pairs with hardware.
- (*) Insert SS4 or SS6



Catalog No.	Height	
	in.	mm
9(*)-8045	5 to 4	127 to 101
9(*)-8046	6 to 4	152 to 101
9(*)-8060	6 to 5	152 to 127

Vertical Adjustable Splice Plates

- These plates provide for changes in elevation that do not conform to standard vertical fittings.
- Furnished in pairs with hardware.
- **Bonding Jumpers not required.**
- (*) Insert SS4 or SS6



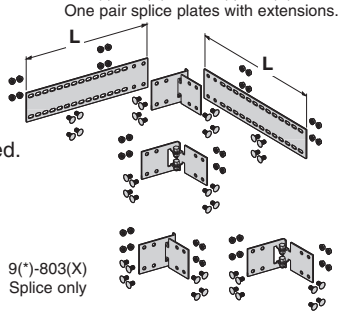
Catalog No.	Height	
	in.	mm
9(*)-8024	4	101
9(*)-8025	5	127
9(*)-8026	6	152

Requires supports within 24" on both sides, per NEMA VE 2.

Horizontal Adjustable Splice Plates

- Offered to adjust a cable tray run for changes in direction in a horizontal plane that do not conform to standard horizontal fittings.
- Furnished in pairs with hardware.
- New design bonding jumpers **not** required.
- (*) Insert SS4 or SS6
- (X) Insert 4, 5, or 6 for side rail height.

9(*)-803(X)-12 or 9(*)-803(X)-36
One pair splice plates with extensions.



9(*)-803(X)
Splice only

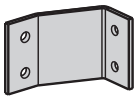
Catalog No.	Cable Tray End Cut	Tray Width	'L'
9(*)-803(X)	Mitered	Thru 36"	N/A
9(*)-803(X)-12	Not mitered	Thru 12"	16"
9(*)-803(X)-36	Not mitered	Thru 36"	41"

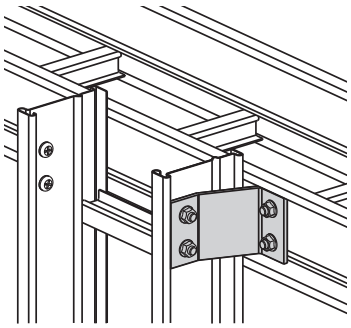
Requires supports within 24" on both sides, per NEMA VE 2.

All dimensions in parentheses are in millimeters unless otherwise specified.

Cross Connector Bracket

- For field connecting crossing section.
- Furnished in pairs with 3/8" hardware.
- (*) Insert SS4 or SS6

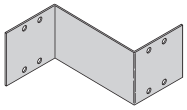




Catalog No.	9(*)-1240

Offset Reducing Splice Plate

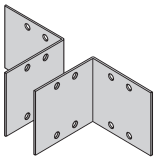
- This plate is used for joining cable trays having different widths. When used in pairs they form a straight reduction; when used singly with a standard splice plate, they form an offset reduction.
- Furnished as one plate with hardware.
- (‡) Insert reduction
- (*) Insert SS4 or SS6



Catalog No.	Height	
	in.	mm
9(*)-8064-(‡)	4	101
9(*)-8065-(‡)	5	127
9(*)-8066-(‡)	6	152

Tray to Box Splice Plates

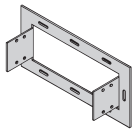
- Used to attach the end of a cable tray run to a distribution box or control panel.
- Furnished in pairs with hardware.
- (*) Insert SS4 or SS6



Catalog No.	Height	
	in.	mm
9(*)-8054	4	101
9(*)-8055	5	127
9(*)-8056	6	152

Frame Type Box Connector

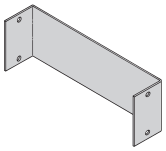
- Designed to attach the end of a cable tray run to a distribution cabinet or control center to help reinforce the box at the point of entry.
- Furnished with tray connection hardware.
- (*) Insert SS4 or SS6
- (‡) Insert tray width



Catalog No.	Height	
	in.	mm
9(*)-8074-(‡)	4	101
9(*)-8075-(‡)	5	127
9(*)-8076-(‡)	6	152

Blind End

- This plate forms a closure for a dead end cable tray.
- Furnished as one plate with hardware.
- (*) Insert SS4 or SS6
- (‡) Insert tray width

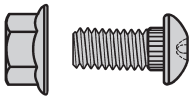


Catalog No.	Height	
	in.	mm
9(*)-8084-(‡)	4	101
9(*)-8085-(‡)	5	127
9(*)-8086-(‡)	6	152

Type 316 Tray Hardware

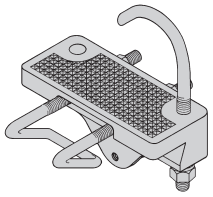
Catalog No. **RNCB 3/8"-16 x 3/4" SS6**
Ribbed Neck Carriage Bolt - 316 Stainless Steel

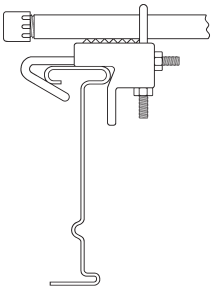
Catalog No. **SFHN 3/8"-16 SS6**
Hex Nut - 316 Stainless Steel



Conduit to Tray Adaptor

- For easy attachment of conduit terminating at a cable tray.
- Use on aluminum or steel cable trays.



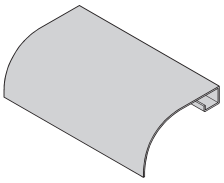


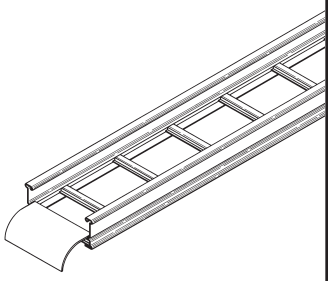
Catalog No.	Conduit Size	
	in.	mm
9G-1158-½, ¾	½, ¾	15, 20
9G-1158-1, 1¼	1, 1¼	25, 32
9G-1158-1½, 2	1½, 2	40, 50
9G-1158-2½, 3	2½, 3	65, 80
9G-1158-3½, 4	3½, 4	90, 100

All dimensions in parentheses are in millimeters unless otherwise specified.

Ladder Drop-Out

- Specially-designed Ladder Drop-Outs provide a rounded surface with 4" (101 mm) radius to protect cable as it exits from the cable tray, preventing damage to insulation. The drop-out will attach to any desired rung.
- (*) Insert SS4 or SS6
- (‡) Insert tray width



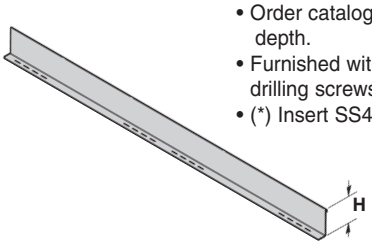


Catalog No.	9(*)-1104-(‡)

Barriers

Straight Section

- Standard length: 120" (3.05m) 144" (3.66m).
- Order catalog number based on loading depth.
- Furnished with four #10 x 1/2" plated self-drilling screws and a 99-9982 splice.
- (*) Insert SS4 or SS6

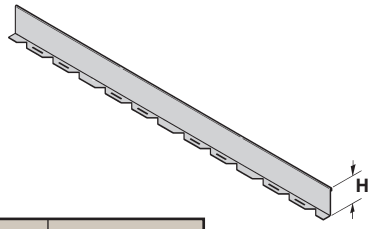


Catalog No.	Side Rail Height		Loading Depth 'H'	
	in.	mm	in.	mm
73(*)-Length	4	101	3	76
74(*)-Length	5	127	4	101
75(*)-Length	6	152	5	127

Length = 144 for 12' (3.66m) or 120 for 10' (3.05m)

Horizontal Bend

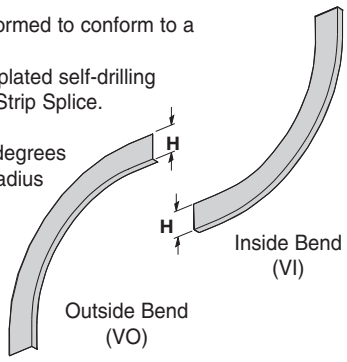
- Horizontal Bend Barriers are flexible in order to conform to any horizontal fitting radius. Cut to length.
- Order catalog number based on loading depth.
- Furnished with three #10 x 1/2" zinc plated self-drilling screws and a 99-9982 Barrier Strip Splice.
- Standard length is 72" (1828mm) (6 ft.), sold individually.
- (*) Insert SS4 or SS6



Catalog No.	Side Rail Height		Loading Depth 'H'	
	in.	mm	in.	mm
73(*)-90HBFL	4	101	3	76
74(*)-90HBFL	5	127	4	101
75(*)-90HBFL	6	152	5	127

Vertical Bend Barriers

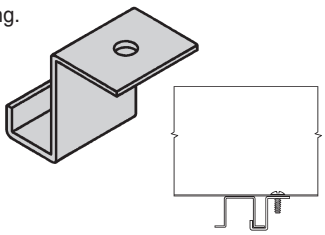
- Vertical Bend Barriers are preformed to conform to a specific vertical fitting.
- Furnished with three #10 x 1/2" plated self-drilling screws and a 99-9982 Barrier Strip Splice.
- (*) Insert SS4 or SS6
- (**) Insert 30, 45, 60 or 90 for degrees
- (†) Insert 12, 24, 36 or 48 for radius



Inside Bend Catalog No.	Outside Bend Catalog No.	Side Rail Height		Loading Depth 'H'	
		in.	mm	in.	mm
73(*)-(**)VI(†)	73(*)-(**)VO(†)	4	101	3	76
74(*)-(**)VI(†)	74(*)-(**)VO(†)	5	127	4	101
75(*)-(**)VI(†)	75(*)-(**)VO(†)	6	152	5	127

Barrier Strip Clip

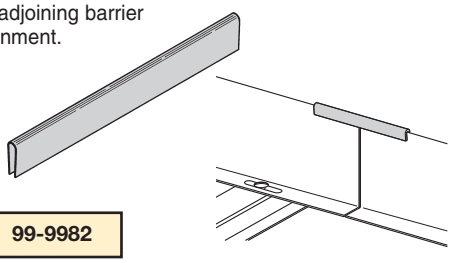
- Zinc plated steel barrier clip fastens to either aluminum or steel ladder rung.
- Furnished with one #10 x 1/2" SS4 plated self-drilling screw.
- (*) Insert SS4 or SS6



Catalog No.	9(*)-9002

Barrier Strip Splice

- Plastic splice holds adjoining barrier strips in straight alignment.

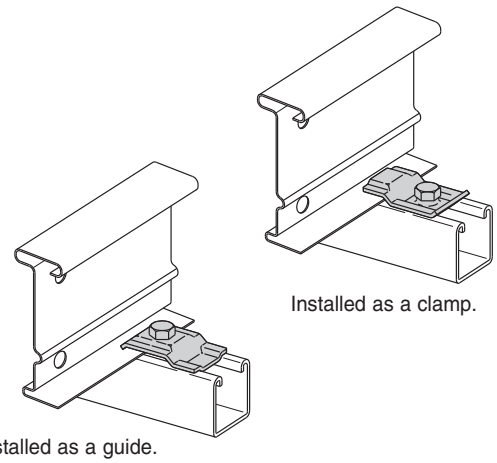


Catalog No.	99-9982

All dimensions in parentheses are in millimeters unless otherwise specified.

Cable Tray Clamp/Guide

- Features a no-twist design.
- Has four times the strength of the traditional design.
- Each side is labeled to ensure proper installation.
- Furnished in pairs, with or without hardware.

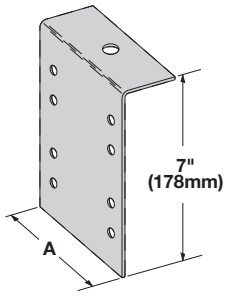


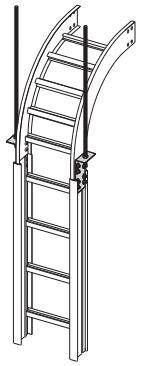
Catalog No.	9SS6-1205

Patent # RE35479

Vertical Tray Hanger

- (*) Insert SS4 or SS6
- Design load 1500 lbs/pair (6.67kN). Safety Factor of 2.5
- Furnished in pairs with hardware.

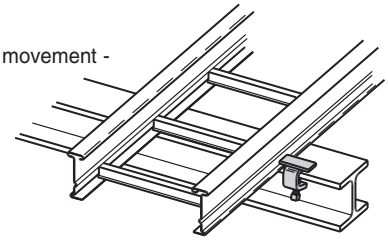


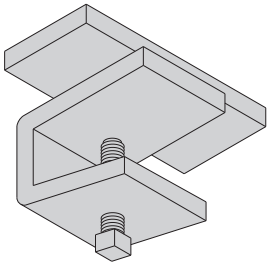


Catalog No.	Outside Cable Tray Ht.	'A' in.	'A' mm
9(*)-8224	4"	3.36	85.34
9(*)-8225	5"	4.36	110.74
9(*)-8226	6"	5.36	136.14

Cable Tray Guide

- Expansion guide for single or double cable tray runs.
- Guide allows for longitudinal movement of the cable tray.
- No field drilling of support I-beam or channel is required.
- Guides are required on both sides of cable tray to prevent lateral movement - can be placed on either the inside or outside flange of cable tray.
- Guides are sold in pieces - two guides are required per tray.
- Maximum flange thickness 1 1/8" (28.58 mm).





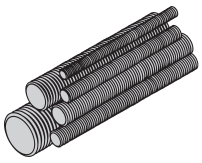
Catalog No.	Finish
9G-1249	HDGAF

Threaded Rod (ATR) & Rod Coupling

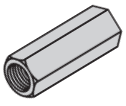
Loading based on safety factor 5.

Standard Finish: (*) Insert SS4 or SS6

Size	Loading lbs	Catalog No.	Available Lengths
3/8-16	730	ATR 3/8 x Length (*)	36", 72", 144"
1/2-13	1350	ATR 1/2 x Length (*)	36", 72", 144"

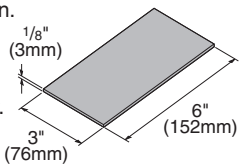


Size	Coupling Cat No.
3/8-16	B655-3/8 (*)
1/2-13	B655-1/2 (*)



Nylon Pad

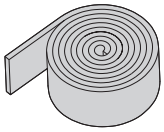
- Use for friction reduction.
- Hardness: Shore D80.
- Low friction coefficient.
- UV resistant (black).
- Excellent weatherability.
- UL - 94HB.



Catalog No.	99-NY36

Neoprene Roll

- Use for material isolation.
- 1/8" x 2" x 20' roll.
- Hardness: Shore A60.
- Good weatherability.

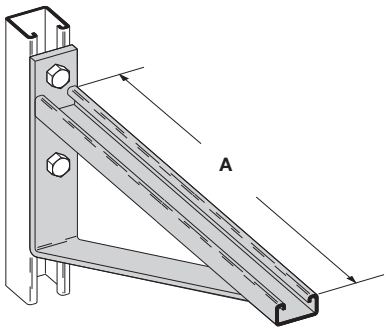


Catalog No.	99-NP240

All dimensions in parentheses are in millimeters unless otherwise specified.

Cantilever Bracket

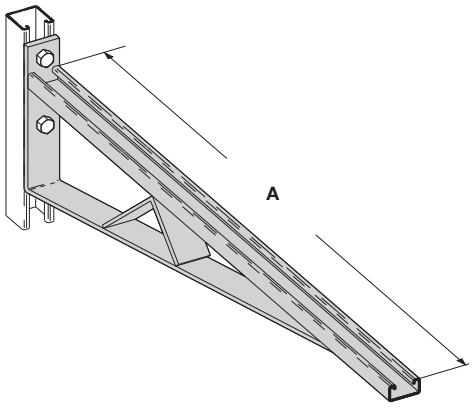
Finishes available: SS4 or SS6
Safety Load Factor 2.5



Catalog No.	Uniform Load		Tray Width		'A'	
	lbs	kN	in.	mm	in.	mm
B494-12	1580	7.02	6 & 9	152 & 229	12	305
B494-18	1000	4.45	12	305	18	457
B494-24	996	4.43	18	457	24	610

Cantilever Bracket

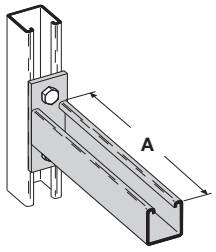
Finishes available: SS4 or SS6
Safety Load Factor 2.5



Catalog No.	Uniform Load		Tray Width		'A'	
	lbs	kN	in.	mm	in.	mm
B494-30	924	4.11	24	610	30	762
B494-36	864	3.84	30	762	36	914
B494-42	580	2.58	36	914	42	1067
B494-48	500	2.22	42	1067	48	1219

Cantilever Bracket

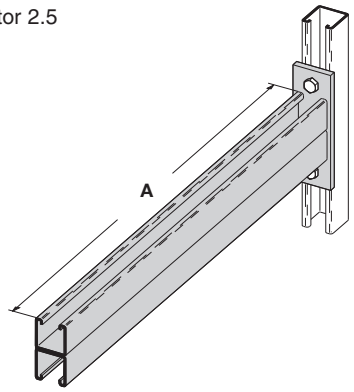
Finishes available: SS4 or SS6
Safety Load Factor 2.5



Catalog No.	Uniform Load		Tray Width		'A'	
	lbs	kN	in.	mm	in.	mm
B409-12	980	4.27	6 & 9	152 & 229	12	305
B409-18	640	2.84	12	305	18	457
B409-24	480	2.13	18	457	24	610

Cantilever Bracket

Finishes available: SS4 or SS6
Safety Load Factor 2.5

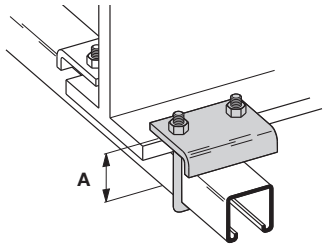


Catalog No.	Uniform Load		Tray Width		'A'	
	lbs	kN	in.	mm	in.	mm
B297-12	1660	7.37	6 & 9	152 & 229	12	305
B297-18	1100	4.88	12	305	18	457
B297-24	836	3.71	18	457	24	610
B297-30	625	2.78	24	610	30	762
B297-36	550	2.44	30	762	36	914
B297-42	465	2.06	36	914	42	1067

All dimensions in parentheses are in millimeters unless otherwise specified.

Beam Clamp

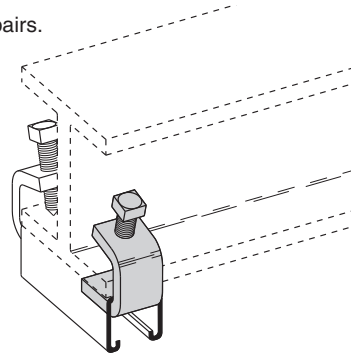
- Sold in pieces with hardware.
- (*) Insert SS4 or SS6
- Sold in pieces.
- Design load when used in pairs. Safety Load Factor 5.0



Catalog No.	Design Load lbs	Design Load kN	'A' in.	'A' mm
B441-22(*)	1200	5.34	3 3/8	86
B441-22A(*)	1200	5.34	5	127

Beam Clamp

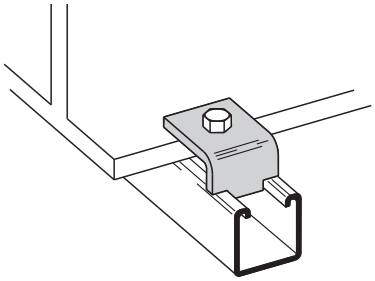
- Sold in pieces.
- Design load when used in pairs.
- Safety Load Factor 5.0
- 304 Stainless Steel



Catalog No.	B212-1/4SS4		B212-3/8SS4	
Design Load *	600 lbs.	2.67 kN	1000 lbs.	4.45 kN
Max. Flange Thick	3/4"	19 mm	1 1/8"	28.6 mm
Mat'l. Thickness	1/4"	6.3 mm	3/8"	9.5 mm

Beam Clamp

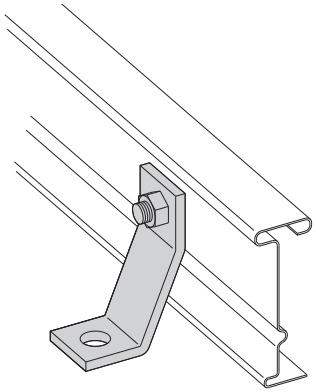
- Sold in pieces.
- Design load is 1200 lbs. (5.34kN) when use in pairs.
- Safety Load Factor 5.0
- Order HHCS and Channel Nuts separately.
- 304 Stainless Steel



Catalog No.	B355 SS4

Heavy Duty Hold-Down Bracket

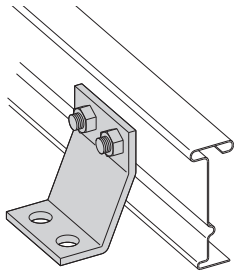
- Design load is 2000 lbs (8.9kN)/pair.
- Two bolt design.
- Sold in pairs.
- 3/8" cable tray attachment hardware provided.
- 1/2" support attachment hardware **not** provided.
- (*) Insert SS4 or SS6

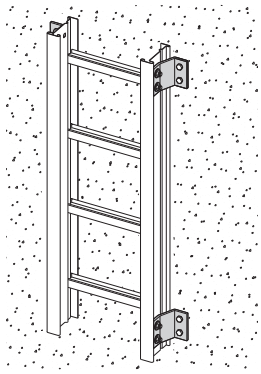


Catalog No.	9(*)-1241

Heavy Duty Hold-Down Bracket

- Design load is 4000 lbs (17.8kN)/pair.
- Four bolt design.
- Sold in pairs.
- 3/8" cable tray attachment hardware provided
- 1/2" support attachment hardware **not** provided.
- (*) Insert SS4 or SS6

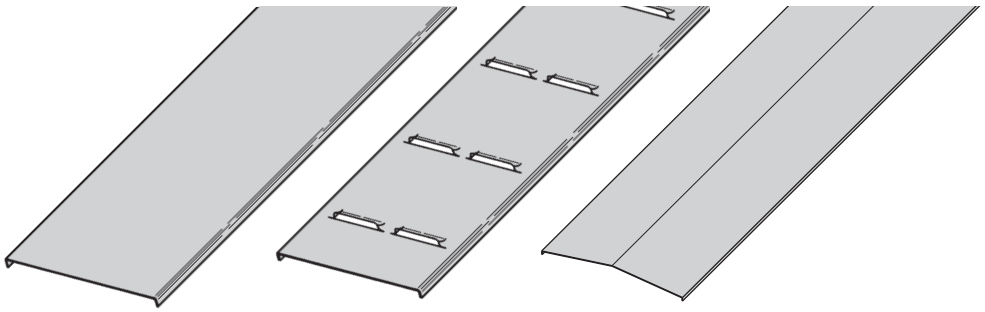




Catalog No.	9(*)-1242

All dimensions in parentheses are in millimeters unless otherwise specified.

Covers



Solid Flanged | Ventilated Flanged | Peaked Flanged

A full range of covers is available for straight sections and fittings.

Solid covers should be used when maximum enclosure of the cable is desired and no accumulation of heat is expected.
Ventilated covers provide an overhead cable shield yet allow heat to escape.
Cooper B-Line recommends that covers be placed on vertical cable tray runs to a height of 6 ft. (1.83 m) to 8 ft. (2.44 m) above the floor to isolate both cables and personnel. **Flanged covers** have a 1/2" (13 mm) flange. Cover clamps are not included with the cover and must be ordered separately. All **peaked covers** are flanged. Standard peaked covers have 1/2" (13 mm) peak.

Stainless Steel Cover Part Numbering

Prefix

Example: **80 3 SS4 - 20 - 24 - 144**

Cover Type	Detail	Material	Material Thickness	Tray Width	Item Description
80 = Solid 81 = Ventilated 82 = Peaked	2= Flanged Stainless Steel (All fittings) 3= Flanged Stainless Steel (All straight sections)	SS4 = 304 Stainless Steel SS6 = 316 Stainless Steel	20 = 20 Ga. Stainless Steel	06 = 6" (152mm) 09 = 9" (228mm) 12 = 12" (305mm) 18 = 18" (457mm) 24 = 24" (609mm) 30 = 30" (762mm) 36 = 36" (914mm)	For Straight Section Cover: 144 = 12 ft. (3.66 m) 120 = 10 ft. (3.05 m) 72 = 6 ft. (1.83 m) 60 = 5 ft. (1.52 m) For fitting covers: Insert suffix of fitting to be covered. See example below.

Covers 30" and 36" wide have reinforcing ridges.

Examples of Catalog Numbers for Fitting Covers:

Horizontal Bend Cover

Prefix | Suffix

80 2 SS4 20 - 18 - 90 HB 24

- 24 — Radius
- HB — Fitting
- 90 — Angle
- 18 — Width
- 20 — Material Thickness
- SS4 — Material
- 2 — Detail
- 80 — Cover Type

Vertical Bend Cover

Prefix | Suffix

80 2 SS4 20 - 24 - 90 VO 24 - 4*

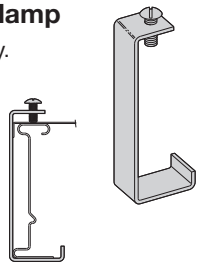
- 4* — Side Rail* Height
- 24 — Radius
- VO — Fitting
- 90 — Angle
- 24 — Width
- 20 — Material Thickness
- SS4 — Material
- 2 — Detail
- 80 — Cover Type

* Required for VO fittings only

All dimensions in parentheses are in millimeters unless otherwise specified.

Standard Cover Clamp

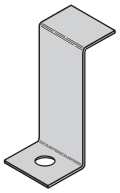
- For indoor service only.
- Sold per piece.
- 316 Stainless Steel

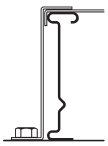


Tray Type	Side Rail Height in.	Side Rail Height mm	Catalog No.
Stainless Steel	4	101	9SS6-9014
	5	127	9SS6-9015
	6	152	9SS6-9016

Combination Cover and Hold-Down Clamp

- Sold per piece.
- (*) Insert SS4 or SS6
- For indoor service only.



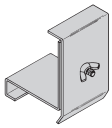


Tray Type	Side Rail Height in.	Side Rail Height mm	Catalog No.
Stainless Steel	4	101	9(*)-9043
	5	127	9(*)-9053
	6	152	9(*)-9063

Raised Cover Clamp

- For indoor service only.
- For use with flanged covers only.
- (*) Insert SS4 or SS6

† Specify gap of 1" (25mm), 2" (52mm), 3" (76mm) or 4" (101mm)



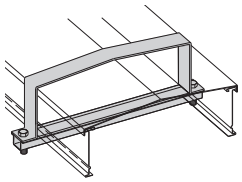
Tray Type	Catalog No.
Series 3 & 4 Steel Straight Section	9(*)-9115-†
All Steel Fittings (Also Series 1 Steel Straight Sections)	9(*)-910†

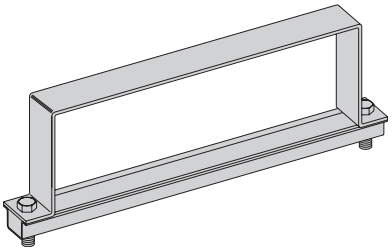
Heavy Duty Cover Clamp

- Recommended for outdoor service.
- (*) Insert SS4 or SS6

(‡) Insert tray width
† Add P to Catalog No. for 1/2" (13mm) peaked cover clamp.

Peaked Cover Clamp





Side Rail Height in.	Side Rail Height mm	Catalog No.
4	101	9(*)-(‡)-9044†
5	127	9(*)-(‡)-9054†
6	152	9(*)-(‡)-9064†

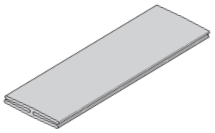
Quantity of Standard Cover Clamps Required

Straight Section 60" (1.52m) or 72" (1.83m) .....4 pcs.
Straight Section 120" (3.05m) or 144" (3.66m).....6 pcs.
Horizontal/Vertical Bends .....4 pcs.
Tees.....6 pcs.
Crosses.....8 pcs.

Note: When using the Heavy Duty Cover Clamp, only one-half the number of clamps stated above is required.

Cover Joint Strip

- Used to join covers
- Plastic
- (‡) Insert tray width

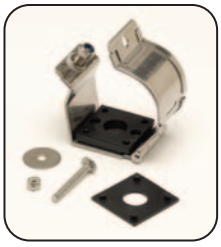


Catalog No.	99-9980-(‡)

Cable Cleats

(See pages 220 - 224)

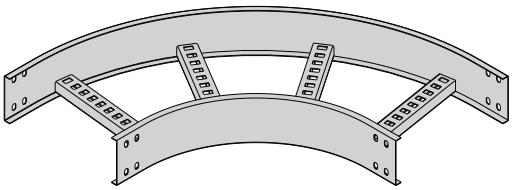
Trefoil Cable Cleats

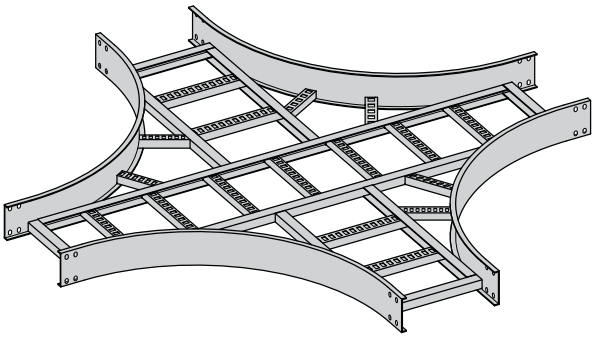


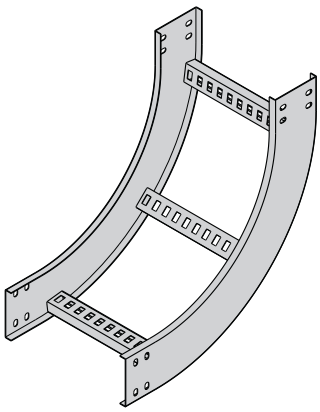
Cable Cleats

All dimensions in parentheses are in millimeters unless otherwise specified.

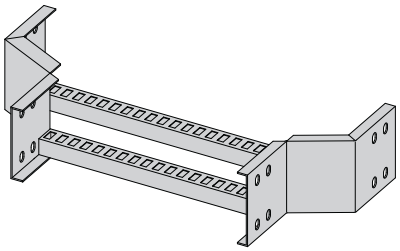
Heavy Duty & Stainless Steel Cable Ladder Fittings







Fittings engineered with 3” tangents for splicing integrity.



Fittings Part Numbering

(9" (228) rung spacing is standard)

Prefix

Example: **4 G - SLDN - 24 - 90 HB 24**

Side Rail Height

4 = 4" (101)
5 = 5" (127)
6 = 6" (152)
7 = 7" (178)

Material

G = HDGAF
P = Pre-Galvanized
SS4 = 304 Stainless Steel
SS6 = 316 Stainless Steel

Rung Type & Orientation

SL = Slotted Rung Alternating up & down
SLDN = Slotted Rung Continuous slot down
SLUP = Slotted Rung Continuous slot up

Width

06 = 6" (152)
09 = 9" (228)
12 = 12" (305)
18 = 18" (457)
24 = 24" (609)
30 = 30" (762)
36 = 36" (914)

Angle

30 = 30°
45 = 45°
60 = 60°
90 = 90°

Type

HB = Horizontal Bend
HT = Horizontal Tee
HX = Horizontal Cross
VI = Vertical Inside Bend
VO = Vertical Outside Bend
VT = Vertical Tee
VTU = Vertical Tee, Up
HYR = Horizontal Wye, Right
HYL = Horizontal Wye, Left
CSF = Cable Support Fitting
LR = Left Reducer Fitting
RR = Right Reducer Fitting
SR = Straight Reducer Fitting

Radius

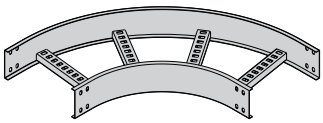
12 = 12" (305)
24 = 24" (609)
36 = 36" (914)
48 = 48" (1219)

Note: Horizontal crosses and tees 30" or wider, with a radius of 36" or larger, will be of two-piece construction.

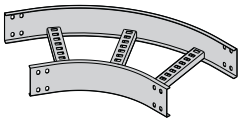
All dimensions in parentheses are in millimeters unless otherwise specified.

Horizontal Bend 90° 60° (HB)

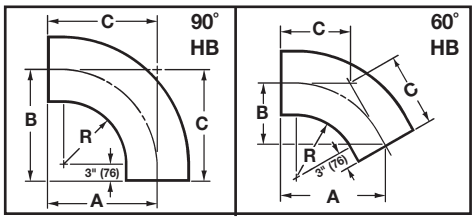
1 pair splice plates with hardware included.



90° Horizontal Bend



60° Horizontal Bend

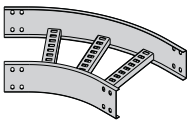


Bend Radius R		Tray Width		90° Horizontal Bend Dimensions							60° Horizontal Bend Dimensions							
				Catalog No.	A		B		C		Catalog No.	A		B		C		
in.	mm	in.	mm		in.	mm	in.	mm	in.	mm		in.	mm	in.	mm	in.	mm	
12	305	6	152	(Pre)-06-90HB12	18	457	18	457	18	457	(Pre)-06-60HB12	17 1/2	445	10 1/8	257	11 11/16	297	
		9	228	(Pre)-09-90HB12	19 1/2	495	19 1/2	495	19 1/2	495	(Pre)-09-60HB12	18 13/16	478	10 7/8	276	12 1/2	318	
		12	305	(Pre)-12-90HB12	21	533	21	533	21	533	(Pre)-12-60HB12	20 1/16	510	11 5/8	295	13 3/8	340	
		18	457	(Pre)-18-90HB12	24	610	24	610	24	610	(Pre)-18-60HB12	22 11/16	576	13 1/8	333	15 1/8	384	
		24	609	(Pre)-24-90HB12	27	686	27	686	27	686	(Pre)-24-60HB12	25 5/16	643	14 5/8	372	16 7/8	429	
		30	762	(Pre)-30-90HB12	30	762	30	762	30	762	(Pre)-30-60HB12	27 7/8	708	16 1/8	410	18 9/16	472	
		36	914	(Pre)-36-90HB12	33	838	33	838	33	838	(Pre)-36-60HB12	30 1/2	775	17 5/8	448	20 5/16	516	
		42	1218	(Pre)-42-90HB12	36	914	36	914	36	914	(Pre)-42-60HB12	33 1/16	840	19 1/8	486	22 1/16	560	
24	610	6	152	(Pre)-06-90HB24	30	762	30	762	30	762	(Pre)-06-60HB24	27 7/8	708	16 1/8	410	18 9/16	472	
		9	228	(Pre)-09-90HB24	31 1/2	800	31 1/2	800	31 1/2	800	(Pre)-09-60HB24	29 3/16	741	16 7/8	429	19 7/16	494	
		12	305	(Pre)-12-90HB24	33	838	33	838	33	838	(Pre)-12-60HB24	30 1/2	775	17 5/8	448	20 5/16	516	
		18	457	(Pre)-18-90HB24	36	914	36	914	36	914	(Pre)-18-60HB24	33 1/16	708	19 1/8	486	22 1/16	560	
		24	609	(Pre)-24-90HB24	39	991	39	991	39	991	(Pre)-24-60HB24	35 11/16	907	20 5/8	524	23 13/16	605	
		30	762	(Pre)-30-90HB24	42	1067	42	1067	42	1067	(Pre)-30-60HB24	38 1/4	972	22 1/8	564	25 1/2	648	
		36	914	(Pre)-36-90HB24	45	1143	45	1143	45	1143	(Pre)-36-60HB24	40 7/8	1038	23 5/8	600	27 1/4	692	
		42	1218	(Pre)-42-90HB24	48	1219	48	1219	48	1219	(Pre)-42-60HB24	43 1/2	1105	25 1/8	638	29	737	
36	915	6	152	(Pre)-06-90HB36	42	1067	42	1067	42	1067	(Pre)-06-60HB36	38 1/4	971	22 1/8	562	25 1/2	648	
		9	228	(Pre)-09-90HB36	43 1/2	1105	43 1/2	1105	43 1/2	1105	(Pre)-09-60HB36	39 9/16	1005	22 7/8	581	26 3/8	670	
		12	305	(Pre)-12-90HB36	45	1143	45	1143	45	1143	(Pre)-12-60HB36	40 7/8	1038	23 5/8	600	27 1/4	692	
		18	457	(Pre)-18-90HB36	48	1219	48	1219	48	1219	(Pre)-18-60HB36	43 1/2	1105	25 1/8	638	29	737	
		24	609	(Pre)-24-90HB36	51	1295	51	1295	51	1295	(Pre)-24-60HB36	46 1/16	1170	26 5/8	676	30 11/16	780	
		30	762	(Pre)-30-90HB36	54	1372	54	1375	54	1372	(Pre)-30-60HB36	48 1/16	1237	28 1/8	714	32 7/16	824	
		36	914	(Pre)-36-90HB36	57	1448	57	1488	57	1448	(Pre)-36-60HB36	51 1/4	1302	29 5/8	753	34 3/16	869	
		42	1218	(Pre)-42-90HB36	60	1524	60	1524	60	1524	(Pre)-42-60HB36	53 7/8	1368	31 1/8	791	35 15/16	913	
48	1220	6	152	(Pre)-06-90HB48	54	1372	54	1372	54	1372	(Pre)-06-60HB48	48 1/16	1221	28 1/8	715	32 11/16	830	
		9	228	(Pre)-09-90HB48	55 1/2	1410	55 1/2	1410	55 1/2	1410	(Pre)-09-60HB48	49 15/16	1268	28 7/8	734	33 5/16	846	
		12	305	(Pre)-12-90HB48	57	1448	57	1448	57	1448	(Pre)-12-60HB48	51 1/4	1302	29 5/8	753	34 3/16	868	
		18	457	(Pre)-18-90HB48	60	1524	60	1524	60	1524	(Pre)-18-60HB48	53 7/8	1368	31 1/8	791	35 15/16	913	
		24	609	(Pre)-24-90HB48	63	1600	63	1600	63	1600	(Pre)-24-60HB48	56 7/16	1434	32 5/8	829	37 5/8	956	
		30	762	(Pre)-30-90HB48	66	1676	66	1676	66	1676	(Pre)-30-60HB48	59 1/16	1500	34 1/8	867	39 3/8	1000	
		36	914	(Pre)-36-90HB48	69	1753	69	1753	69	1753	(Pre)-36-60HB48	61 11/16	1567	35 5/8	905	41 1/8	1045	
		42	1218	(Pre)-42-90HB48	72	1829	72	1829	72	1829	(Pre)-42-60HB48	64 1/4	1632	37 1/8	943	42 13/16	1087	

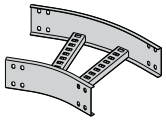
(Prefix) See page 118 for catalog number prefix.
All dimensions in parentheses are in millimeters unless otherwise specified.
Width dimensions are to inside wall. For all fittings add 1.375" (34.9mm) for total outside width.
Manufacturing tolerances apply to all dimensions.

Horizontal Bend 45° 30° (HB)

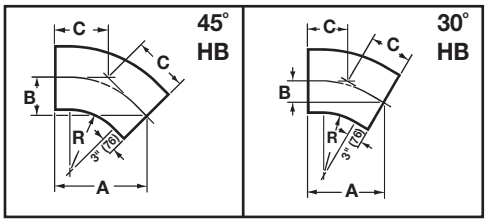
1 pair splice plates with hardware included.



45° Horizontal Bend



30° Horizontal Bend



Bend Radius R		Tray Width		45° Horizontal Bend Dimensions						30° Horizontal Bend Dimensions							
				Catalog No.	A		B		C		Catalog No.	A		B		C	
in.	mm	in.	mm		in.	mm	in.	mm	in.	mm		in.	mm	in.	mm	in.	mm
12	305	6	152	(Pre)-06-45HB12	15 3/4	400	6 1/2	165	9 3/16	233	(Pre)-06-30HB12	13 1/8	333	3 1/2	89	7	179
		9	228	(Pre)-09-45HB12	16 13/16	427	6 15/16	176	9 13/16	249	(Pre)-09-30HB12	13 7/8	352	3 11/16	94	7 7/16	189
		12	305	(Pre)-12-45HB12	17 7/8	454	7 3/8	187	10 7/16	265	(Pre)-12-30HB12	14 5/8	372	3 15/16	100	7 13/16	198
		18	457	(Pre)-18-45HB12	20	508	8 1/4	210	11 11/16	297	(Pre)-18-30HB12	16 1/8	410	4 5/16	135	8 5/8	219
		24	609	(Pre)-24-45HB12	22 1/16	560	9 1/8	232	12 15/16	329	(Pre)-24-30HB12	17 5/8	448	4 11/16	119	9 7/16	240
		30	762	(Pre)-30-45HB12	24 3/16	614	10	254	14 3/16	360	(Pre)-30-30HB12	19 1/8	486	5 1/8	130	10 1/4	260
		36	914	(Pre)-36-45HB12	26 5/16	668	10 15/16	278	15 7/16	392	(Pre)-36-30HB12	20 5/8	524	5 1/2	140	11 1/16	281
		42	1218	(Pre)-42-45HB12	28 7/16	722	11 13/16	300	16 11/16	424	(Pre)-42-30HB12	22 1/8	562	5 15/16	151	11 13/16	300
24	610	6	152	(Pre)-06-45HB24	24 3/16	614	10	254	14 3/16	360	(Pre)-06-30HB24	19 1/8	486	5 1/8	130	10/4	260
		9	228	(Pre)-09-45HB24	25 1/4	641	10 1/2	267	14 13/16	376	(Pre)-09-30HB24	19 7/8	505	5 5/16	135	10 5/8	270
		12	305	(Pre)-12-45HB24	26 5/16	668	10 15/16	278	15 7/16	392	(Pre)-12-30HB24	20 5/8	524	5 1/2	140	11 1/16	281
		18	457	(Pre)-18-45HB24	28 7/16	722	11 13/16	300	16 11/16	424	(Pre)-18-30HB24	22 1/8	562	5 15/16	151	11 13/16	300
		24	609	(Pre)-24-45HB24	30 9/16	766	12 11/16	322	17 15/16	456	(Pre)-24-30HB24	23 5/8	600	6 5/16	160	12 5/8	321
		30	762	(Pre)-30-45HB24	32 11/16	830	13 9/16	344	19 1/8	486	(Pre)-30-30HB24	25 1/8	638	6 3/4	172	13 7/16	341
		36	914	(Pre)-36-45HB24	34 13/16	884	14 7/16	367	20 3/8	518	(Pre)-36-30HB24	26 5/8	676	7 1/8	181	14 1/4	362
		42	1218	(Pre)-42-45HB24	36 15/16	938	15 5/16	389	21 5/8	549	(Pre)-42-30HB24	28 1/8	715	7 1/2	191	15 1/16	383
36	915	6	152	(Pre)-06-45HB36	32 11/16	830	13 9/16	344	19 1/8	486	(Pre)-06-30HB36	25 1/8	638	6 3/4	171	13 7/16	341
		9	228	(Pre)-09-45HB36	33 3/4	857	14	356	19 3/4	502	(Pre)-09-30HB36	25 7/8	657	6 15/16	176	13 7/8	352
		12	305	(Pre)-12-45HB36	34 13/16	884	14 7/16	367	20 3/8	518	(Pre)-12-30HB36	26 5/8	676	7 1/8	181	14 1/4	362
		18	457	(Pre)-18-45HB36	36 15/16	938	15 5/16	389	21 5/8	549	(Pre)-18-30HB36	28 1/8	114	7 1/2	191	15 1/16	383
		24	609	(Pre)-24-45HB36	39 1/6	992	16 3/16	411	22 7/8	581	(Pre)-24-30HB36	29 5/8	753	7 15/16	202	15 7/8	403
		30	762	(Pre)-30-45HB36	41 3/6	1046	17 1/16	433	24 1/8	613	(Pre)-30-30HB36	31 1/8	790	8 5/16	211	16 11/16	424
		36	914	(Pre)-36-45HB36	43 5/6	1100	17 15/16	456	25 3/8	645	(Pre)-36-30HB36	32 5/8	829	8 3/4	222	17 1/2	445
		42	1218	(Pre)-42-45HB36	45 7/16	1154	18 13/16	478	26 5/8	676	(Pre)-42-30HB36	34 1/8	867	9 1/8	232	18 1/4	464
48	1220	6	152	(Pre)-06-45HB48	41 3/16	1046	17 1/16	433	24 1/8	613	(Pre)-06-30HB48	31 1/8	791	8 5/16	211	16 11/16	424
		9	228	(Pre)-09-45HB48	42 1/4	1073	17 1/2	445	24 3/4	629	(Pre)-09-30HB48	31 7/8	810	8 9/16	218	17 1/16	433
		12	305	(Pre)-12-45HB48	43 5/16	1100	17 15/16	456	25 3/8	645	(Pre)-12-30HB48	32 5/8	829	8 3/4	222	17 1/2	445
		18	457	(Pre)-18-45HB48	45 7/16	1154	18 13/16	487	26 5/8	676	(Pre)-18-30HB48	34 1/8	867	9 1/8	232	18 1/4	464
		24	609	(Pre)-24-45HB48	47 9/16	1208	19 11/16	500	27 7/8	708	(Pre)-24-30HB48	35 5/8	905	9 9/16	243	19 1/16	484
		30	762	(Pre)-30-45HB48	49 11/16	1262	20 9/16	522	29 1/8	740	(Pre)-30-30HB48	37 1/8	943	9 15/16	252	19 7/8	505
		36	914	(Pre)-36-45HB48	51 13/16	1316	21 7/16	545	30 5/16	770	(Pre)-36-30HB48	38 5/8	981	10 5/16	262	20 11/16	525
		42	1218	(Pre)-42-45HB48	54 15/16	1395	22 5/16	567	31 9/16	802	(Pre)-42-30HB48	40 1/8	1019	10 3/4	273	21 1/2	546

(Prefix) See page 118 for catalog number prefix.

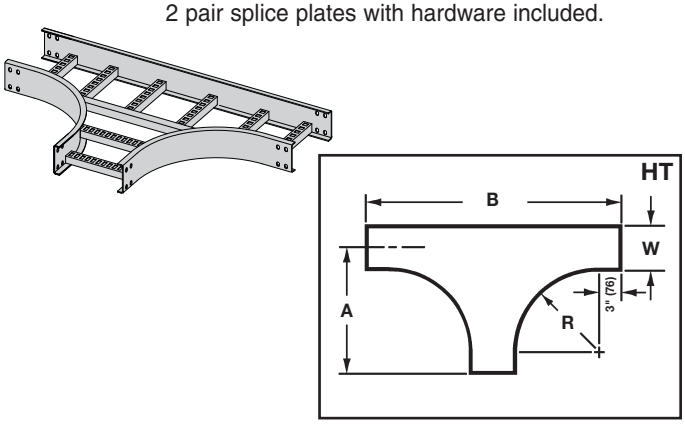
All dimensions in parentheses are in millimeters unless otherwise specified.

Width dimensions are to inside wall. For all fittings add 1.375" (34.9mm) for total outside width.

Manufacturing tolerances apply to all dimensions.

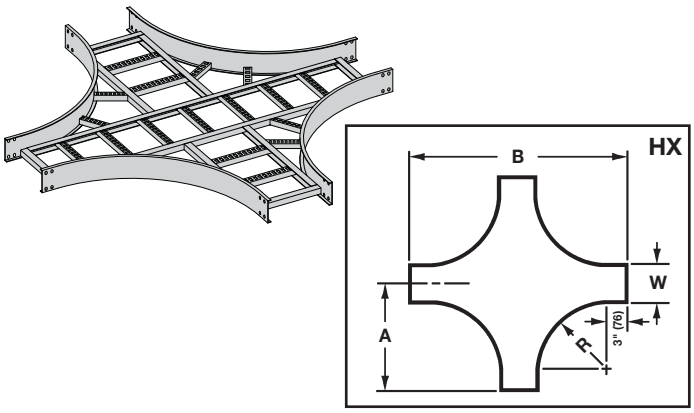
Horizontal Tee (HT)

2 pair splice plates with hardware included.



Horizontal Cross (HX)

3 pair splice plates with hardware included.



Bend Radius R		Tray Width		Horizontal Tee					Horizontal Cross				
				Catalog Number	Dimensions				Catalog Number	Dimensions			
					A		B			A		B	
in.	mm	in.	mm		in.	mm	in.	mm		in.	mm	in.	mm
12	305	6	152	(Prefix)-06-HT12	18	457	36	914	(Prefix)-06-HX12	18	457	36	914
		9	229	(Prefix)-09-HT12	19 1/2	496	39	991	(Prefix)-09-HX12	19 1/2	496	39	991
		12	305	(Prefix)-12-HT12	21	533	42	1067	(Prefix)-12-HX12	21	533	42	1067
		18	457	(Prefix)-18-HT12	24	609	48	1219	(Prefix)-18-HX12	24	609	48	1219
		24	609	(Prefix)-24-HT12	27	686	54	1372	(Prefix)-24-HX12	27	686	54	1372
		30	762	(Prefix)-30-HT12	30	762	60	1524	(Prefix)-30-HX12	30	762	60	1524
		36	914	(Prefix)-36-HT12	33	838	66	1676	(Prefix)-36-HX12	33	838	66	1676
		42	1067	(Prefix)-42-HT12	36	914	72	1829	(Prefix)-42-HX12	36	914	72	1829
24	610	6	152	(Prefix)-06-HT24	30	762	60	1542	(Prefix)-06-HX24	30	762	60	1524
		9	229	(Prefix)-09-HT24	31 1/2	800	63	1600	(Prefix)-09-HX24	31 1/2	800	63	1600
		12	305	(Prefix)-12-HT24	33	838	66	1676	(Prefix)-12-HX24	33	838	66	1676
		18	457	(Prefix)-18-HT24	36	914	72	1828	(Prefix)-18-HX24	36	914	72	1828
		24	609	(Prefix)-24-HT24	39	991	78	1982	(Prefix)-24-HX24	39	991	78	1982
		30	762	(Prefix)-30-HT24	42	1067	84	2134	(Prefix)-30-HX24	42	1067	84	2134
		36	914	(Prefix)-36-HT24	45	1143	90	2286	(Prefix)-36-HX24	45	1143	90	2286
		42	1067	(Prefix)-42-HT24	48	1219	96	2438	(Prefix)-42-HX24	48	1219	96	2438
36	915	6	152	(Prefix)-06-HT36	42	1067	84	2134	(Prefix)-06-HX36	42	1067	84	2134
		9	229	(Prefix)-09-HT36	43 1/2	1105	87	2210	(Prefix)-09-HX36	43 1/2	1105	87	2210
		12	305	(Prefix)-12-HT36	45	1143	90	2286	(Prefix)-12-HX36	45	1143	90	2286
		18	457	(Prefix)-18-HT36	48	1219	96	2438	(Prefix)-18-HX36	48	1219	96	2438
		24	609	(Prefix)-24-HT36	51	1295	102	2590	(Prefix)-24-HX36	51	1295	102	2590
		30	762	(Prefix)-30-HT36	54	1372	108	2744	(Prefix)-30-HX36	54	1372	108	2744
		36	914	(Prefix)-36-HT36	57	1488	114	2896	(Prefix)-36-HX36	57	1448	114	2896
		42	1067	(Prefix)-42-HT36	60	1524	120	3048	(Prefix)-42-HX36	60	1524	120	3048
48	1220	6	152	(Prefix)-06-HT48	54	1372	108	2743	(Prefix)-06-HX48	54	1372	108	2743
		9	229	(Prefix)-09-HT48	55 1/2	1410	111	2820	(Prefix)-09-HX48	55 1/2	1410	111	2820
		12	305	(Prefix)-12-HT48	57	1448	114	2896	(Prefix)-12-HX48	57	1448	114	2896
		18	457	(Prefix)-18-HT48	60	1524	120	3048	(Prefix)-18-HX48	60	1524	120	3048
		24	609	(Prefix)-24-HT48	63	1600	126	3200	(Prefix)-24-HX48	63	1600	126	3200
		30	762	(Prefix)-30-HT48	66	1676	132	3353	(Prefix)-30-HX48	66	1676	132	3353
		36	914	(Prefix)-36-HT48	69	1753	138	3535	(Prefix)-36-HX48	69	1753	138	3505
		42	1067	(Prefix)-42-HT48	72	1829	144	3658	(Prefix)-42-HX48	72	1829	144	3658

(Prefix) See page 118 for catalog number prefix.
All dimensions in parentheses are millimeters unless otherwise specified.
Width dimensions are to inside wall. For all fittings add 1.375" (34.9mm) for total outside width.
Manufacturing tolerances apply to all dimensions.

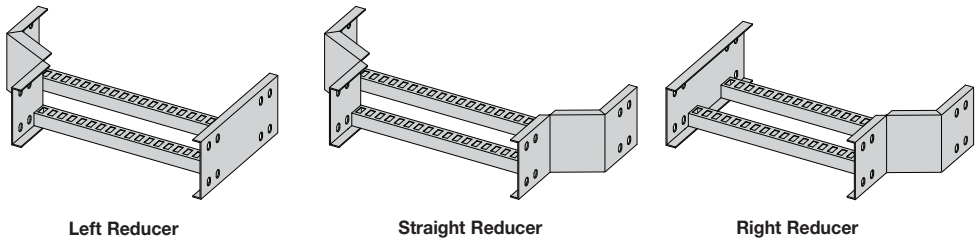
Reducers (LR, SR, RR)

1 pair splice plates with hardware included.

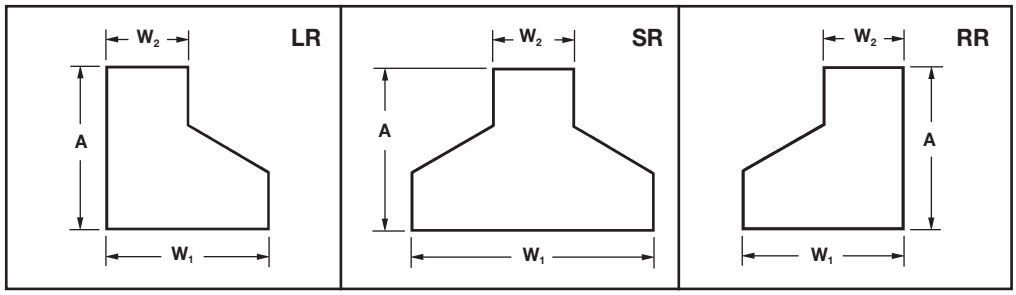
Reducer Part Numbering

Prefix - 24 - RR - 18

- 18 — $Width_2$
- RR — Fitting
- 24 — $Width_1$
- Prefix



Left Reducer | Straight Reducer | Right Reducer



Tray Width				Left Hand Reducer			Straight Reducer			Right Hand Reducer		
W_1		W_2		Catalog No.	A		Catalog No.	A		Catalog No.	A	
in.	mm	in.	mm		in.	mm		in.	mm		in.	mm
9	228	6	152	(Prefix)-09-LR06	9 3/4	248	(Prefix)-09-SR06	8 7/8	225	(Prefix)-09-RR06	9 3/4	248
12	305	6	152	(Prefix)-12-LR06	11 1/2	292	(Prefix)-12-SR06	9 3/4	248	(Prefix)-12-RR06	11 1/2	292
		9	228	(Prefix)-12-LR09	9 3/4	248	(Prefix)-12-SR09	8 7/8	225	(Prefix)-12-RR09	9 3/4	248
18	457	6	152	(Prefix)-18-LR06	14 15/16	379	(Prefix)-18-SR06	11 1/2	292	(Prefix)-18-RR06	14 15/16	379
		9	228	(Prefix)-18-LR09	13 3/16	340	(Prefix)-18-SR09	10 5/8	270	(Prefix)-18-RR09	13 3/16	340
		12	305	(Prefix)-18-LR12	11 1/2	292	(Prefix)-18-SR12	9 3/4	248	(Prefix)-18-RR12	11 1/2	292
24	609	6	152	(Prefix)-24-LR06	18 3/8	467	(Prefix)-24-SR06	13 3/16	340	(Prefix)-24-RR06	18 3/8	467
		9	228	(Prefix)-24-LR09	16 11/16	424	(Prefix)-24-SR09	12 3/8	314	(Prefix)-24-RR09	16 11/16	424
		12	305	(Prefix)-24-LR12	14 15/16	379	(Prefix)-24-SR12	11 1/2	292	(Prefix)-24-RR12	14 15/16	379
		18	457	(Prefix)-24-LR18	11 1/2	292	(Prefix)-24-SR18	9 3/4	248	(Prefix)-24-RR18	11 1/2	292
30	762	6	152	(Prefix)-30-LR06	21 7/8	555	(Prefix)-30-SR06	14 15/16	380	(Prefix)-30-RR06	21 7/8	555
		9	228	(Prefix)-30-LR09	20 1/8	511	(Prefix)-30-SR09	14 1/16	358	(Prefix)-30-RR09	20 1/8	511
		12	305	(Prefix)-30-LR12	18 3/8	462	(Prefix)-30-SR12	13 3/16	335	(Prefix)-30-RR12	18 3/8	462
		18	459	(Prefix)-30-LR18	14 15/16	380	(Prefix)-30-SR18	11 1/2	292	(Prefix)-30-RR18	14 15/16	380
		24	609	(Prefix)-30-LR24	11 1/2	292	(Prefix)-30-SR24	9 3/4	248	(Prefix)-30-RR24	11 1/2	292
36	914	6	152	(Prefix)-36-LR06	25 5/16	643	(Prefix)-36-SR06	16 11/16	424	(Prefix)-36-RR06	23 5/16	643
		9	228	(Prefix)-36-LR09	23 9/16	598	(Prefix)-36-SR09	15 13/16	402	(Prefix)-36-RR09	23 9/16	598
		12	305	(Prefix)-36-LR12	21 7/8	555	(Prefix)-36-SR12	14 15/16	380	(Prefix)-36-RR12	21 7/8	555
		18	457	(Prefix)-36-LR18	18 3/8	462	(Prefix)-36-SR18	13 3/16	335	(Prefix)-36-RR18	18 3/8	462
		24	609	(Prefix)-36-LR24	14 15/16	380	(Prefix)-36-SR24	11 1/2	292	(Prefix)-36-RR24	14 15/16	380
		30	762	(Prefix)-36-LR30	11 1/2	292	(Prefix)-36-SR30	9 3/4	248	(Prefix)-36-RR30	11 1/2	292
42	1067	6	152	(Prefix)-42-LR06	28 3/4	730	(Prefix)-42-SR06	18 3/8	467	(Prefix)-42-RR06	28 3/4	732
		9	228	(Prefix)-42-LR09	27 1/16	687	(Prefix)-42-SR09	17 1/2	445	(Prefix)-42-RR09	27 1/16	687
		12	305	(Prefix)-42-LR12	25 5/16	643	(Prefix)-42-SR12	16 11/16	424	(Prefix)-42-RR12	25 15/16	643
		18	457	(Prefix)-42-LR18	21 7/8	556	(Prefix)-42-SR18	14 15/16	379	(Prefix)-42-RR18	21 7/8	556
		24	609	(Prefix)-42-LR24	18 3/8	467	(Prefix)-42-SR24	13 3/16	335	(Prefix)-42-RR24	18 3/8	467
		30	762	(Prefix)-42-LR30	14 15/16	379	(Prefix)-42-SR30	11 1/2	292	(Prefix)-42-RR30	14 15/16	379
		36	914	(Prefix)-42-LR36	11 1/2	292	(Prefix)-42-SR36	9 3/4	249	(Prefix)-42-RR36	11 1/2	292

(Prefix) See page 118 for catalog number prefix.

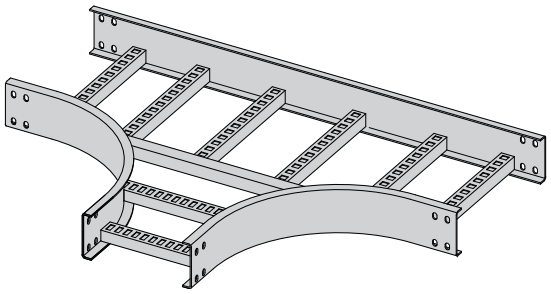
All dimensions in parentheses are millimeters unless otherwise specified.

Width dimensions are to inside wall. For all fittings add 1.375" (34.9mm) for total outside width.

Manufacturing tolerances apply to all dimensions.

Horizontal Reducing Tee (HT)

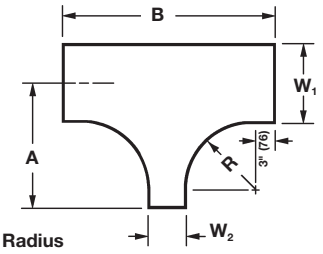
2 pair splice plates with hardware included.



Prefix - 36 - 18 HT 24

- Radius
- Fitting
- Width W_2
- Width W_1
- To complete catalog number, insert fitting prefix.

HT



Tray Width W1 in.	Tray Width W1 mm	Tray Width W2 in.	Tray Width W2 mm	* Insert Radius (12", 24", 36", or 48") Catalog No.	12" (305mm) Radius A in.	12" (305mm) Radius A mm	12" (305mm) Radius B in.	12" (305mm) Radius B mm	24" (609mm) Radius A in.	24" (609mm) Radius A mm	24" (609mm) Radius B in.	24" (609mm) Radius B mm	36" (914mm) Radius A in.	36" (914mm) Radius A mm	36" (914mm) Radius B in.	36" (914mm) Radius B mm	48" (1219mm) Radius A in.	48" (1219mm) Radius A mm	48" (1219mm) Radius B in.	48" (1219mm) Radius B mm
9	228	6	152	(Prefix)-09-06-HT*	19½	496	36	914	31½	800	60	1524	43	1092	84	2134	55½	1410	108	2743
12	305	6	152	(Prefix)-12-06-HT*	21	533	36	914	33	838	60	1524	45	1143	84	2134	57	1448	108	2743
		9	228	(Prefix)-12-09-HT*	21	533	39	991	33	838	63	1600	45	1143	87	2210	57	1448	111	2819
18	475	6	152	(Prefix)-18-06-HT*	24	609	36	914	36	914	60	1524	48	1219	84	2134	60	1524	108	2743
		9	228	(Prefix)-18-09-HT*	24	609	39	991	36	914	63	1600	48	1219	87	2210	60	1524	111	2819
		12	305	(Prefix)-18-12-HT*	24	609	42	1067	36	914	66	1676	48	1219	90	2286	60	1524	114	2496
24	609	6	152	(Prefix)-24-06-HT*	27	686	36	914	39	991	60	1524	51	1295	84	2134	63	1600	108	2743
		9	228	(Prefix)-24-09-HT*	27	686	39	991	39	991	63	1600	51	1295	87	2210	63	1600	111	2819
		12	305	(Prefix)-24-12-HT*	27	686	42	1067	39	991	66	1676	51	1295	90	2286	63	1600	114	2496
		18	457	(Prefix)-24-18-HT*	27	686	48	1219	39	991	72	1829	51	1295	96	2438	63	1600	120	3048
30	762	6	152	(Prefix)-30-06-HT*	30	762	36	914	42	1067	60	1524	54	1372	84	2134	66	1676	108	2743
		9	228	(Prefix)-30-09-HT*	30	762	39	991	42	1067	63	1600	54	1372	87	2210	66	1676	111	2819
		12	305	(Prefix)-30-12-HT*	30	762	42	1067	42	1067	66	1676	54	1372	90	2286	66	1676	114	2496
		18	457	(Prefix)-30-18-HT*	30	762	48	1219	42	1067	72	1829	54	1372	96	2438	66	1676	120	3048
		24	609	(Prefix)-30-24-HT*	30	762	54	1372	42	1067	78	1981	54	1372	102	2591	66	1676	126	3200
36	914	6	152	(Prefix)-36-06-HT*	33	838	36	914	45	1143	60	1524	57	1448	84	2134	69	1753	108	2743
		9	228	(Prefix)-36-09-HT*	33	838	39	991	45	1143	63	1600	57	1448	87	2210	69	1753	111	2819
		12	305	(Prefix)-36-12-HT*	33	838	42	1067	45	1143	66	1676	57	1448	90	2286	69	1753	114	2496
		18	457	(Prefix)-36-18-HT*	33	838	48	1219	45	1143	72	1829	57	1448	96	2438	69	1753	120	3048
		24	609	(Prefix)-36-24-HT*	33	838	54	1372	45	1143	78	1981	57	1448	102	2591	69	1753	126	3200
		30	762	(Prefix)-36-30-HT*	33	838	60	1524	45	1143	84	2134	57	1448	108	2743	69	1753	132	3353
42	1067	6	152	(Prefix)-42-06-HT*	36	914	36	914	48	1219	60	1524	60	1524	84	2134	72	1829	108	2743
		9	228	(Prefix)-42-09-HT*	36	914	39	991	48	1219	63	1600	60	1524	87	2210	72	1829	111	2819
		12	305	(Prefix)-42-12-HT*	36	914	42	1067	48	1219	66	1676	60	1524	90	2286	72	1829	114	2496
		18	457	(Prefix)-42-18-HT*	36	914	48	1219	48	1219	72	1829	60	1524	96	2438	72	1829	120	3048
		24	609	(Prefix)-42-24-HT*	36	914	54	1372	48	1219	78	1981	60	1524	102	2591	72	1829	126	3200
		30	762	(Prefix)-42-30-HT*	36	914	60	1524	48	1219	84	2134	60	1524	108	2743	72	1829	132	3353
		36	914	(Prefix)-42-36-HT*	36	914	66	1676	48	1219	90	2286	60	1524	114	2895	72	1829	138	3505

(Prefix) See page 118 for catalog number prefix.

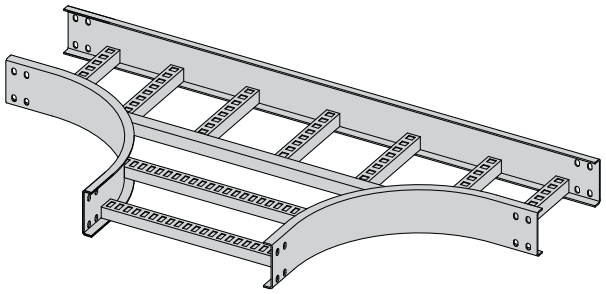
All dimensions in parentheses are millimeters unless otherwise specified.

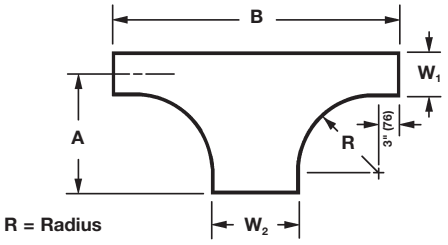
Width dimensions are to inside wall. For all fittings add 1.375" (34.9mm) for total outside width.

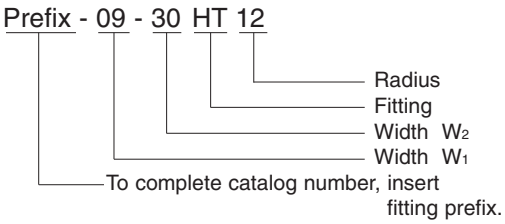
Manufacturing tolerances apply to all dimensions.

Horizontal Expanding Tee (HT)

2 pair splice plates with hardware included.





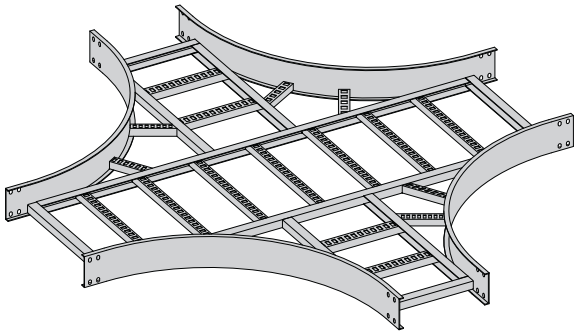


Tray Width W1 in.	Tray Width W1 mm	Tray Width W2 in.	Tray Width W2 mm	*Insert Radius (12", 24", 36", or 48") Catalog No.	12" (305mm) Radius A in.	12" (305mm) Radius A mm	12" (305mm) Radius B in.	12" (305mm) Radius B mm	24" (609mm) Radius A in.	24" (609mm) Radius A mm	24" (609mm) Radius B in.	24" (609mm) Radius B mm	36" (914mm) Radius A in.	36" (914mm) Radius A mm	36" (914mm) Radius B in.	36" (914mm) Radius B mm	48" (1219mm) Radius A in.	48" (1219mm) Radius A mm	48" (1219mm) Radius B in.	48" (1219mm) Radius B mm
		9	228	(Prefix)-06-09-HT*	18	457	39	991	30	762	63	1600	42	1067	87	2210	54	1372	111	2819
		12	305	(Prefix)-06-12-HT*	18	457	42	1067	30	762	66	1676	42	1067	90	2286	54	1372	114	2496
		18	457	(Prefix)-06-18-HT*	18	457	48	1219	30	762	72	1829	42	1067	96	2438	54	1372	120	3048
6	152	24	609	(Prefix)-06-24-HT*	18	457	54	1372	30	762	78	1981	42	1067	102	2591	54	1372	126	3200
		30	762	(Prefix)-06-30-HT*	18	457	60	1524	30	762	84	2134	42	1067	108	2743	54	1372	132	3353
		36	914	(Prefix)-06-36-HT*	18	457	66	1676	30	762	90	2286	42	1067	114	2895	54	1372	138	3503
		42	1067	(Prefix)-06-42-HT*	18	457	72	1829	30	762	96	2438	42	1067	120	3048	54	1372	144	3658
		12	305	(Prefix)-09-12-HT*	19½	496	42	1067	31½	800	66	1676	43½	1105	90	2286	55½	1410	114	2496
		18	457	(Prefix)-09-18-HT*	19½	496	48	1219	31½	800	72	1829	43½	1105	96	2438	55½	1410	120	3048
9	228	24	609	(Prefix)-09-24-HT*	19½	496	54	1372	31½	800	78	1981	43½	1105	102	2591	55½	1410	126	3200
		30	762	(Prefix)-09-30-HT*	19½	496	60	1524	31½	800	84	2134	43½	1105	108	2743	55½	1410	132	3353
		36	914	(Prefix)-09-36-HT*	19½	496	66	1676	31½	800	90	2286	43½	1105	114	2895	55½	1410	138	3503
		42	1067	(Prefix)-09-42-HT*	19½	496	72	1829	31½	800	96	2438	43½	1105	120	3048	55½	1410	144	3658
		18	457	(Prefix)-12-18-HT*	21	533	48	1219	33	838	72	1829	45	1143	96	2438	57	1448	120	3048
		24	609	(Prefix)-12-24-HT*	21	533	54	1372	33	838	78	1981	45	1143	102	2591	57	1448	126	3200
12	305	30	762	(Prefix)-12-30-HT*	21	533	60	1524	33	838	84	2134	45	1143	108	2743	57	1448	132	3353
		36	914	(Prefix)-12-36-HT*	21	533	66	1676	33	838	90	2286	45	1143	114	2895	57	1448	138	3503
		42	1067	(Prefix)-12-42-HT*	21	533	72	1829	33	838	96	2438	45	1143	120	3048	57	1448	144	3658
		24	609	(Prefix)-18-24-HT*	24	609	54	1372	36	914	78	1981	48	1219	102	2591	60	1524	126	3200
		30	762	(Prefix)-18-30-HT*	24	609	60	1524	36	914	84	2134	48	1219	108	2743	60	1524	132	3353
18	457	36	914	(Prefix)-18-36-HT*	24	609	66	1676	36	914	90	2286	48	1219	114	2895	60	1524	138	3503
		42	1067	(Prefix)-18-42-HT*	24	609	72	1829	36	914	96	2438	48	1219	120	3048	60	1524	144	3658
		30	762	(Prefix)-24-30-HT*	27	686	60	1524	39	991	84	2134	51	1295	108	2743	63	1600	132	3353
24	609	36	914	(Prefix)-24-36-HT*	27	686	66	1676	39	991	90	2286	51	1295	114	2895	63	1600	138	3503
		42	1067	(Prefix)-24-42-HT*	27	686	72	1829	39	991	96	2438	51	1295	120	3048	63	1600	144	3658
30	762	36	914	(Prefix)-30-36-HT*	30	762	66	1676	42	1067	90	2286	54	1372	114	2895	66	1676	138	3503
		42	1067	(Prefix)-30-42-HT*	30	762	72	1829	42	1067	96	2438	54	1372	120	3048	66	1676	144	3658
36	914	42	1067	(Prefix)-36-42-HT*	33	838	72	1829	45	1143	96	2438	57	1448	120	3048	69	1753	144	3658

(Prefix) See page 118 for catalog number prefix.
All dimensions in parentheses are millimeters unless otherwise specified.
Width dimensions are to inside wall. For all fittings add 1.375" (34.9mm) for total outside width.
Manufacturing tolerances apply to all dimensions.

Horizontal Expanding/Reducing Cross (HX)

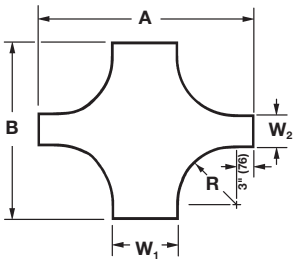
3 pair splice plates with hardware included.



Prefix - 36 - 18 HX 24

- Radius
- Fitting
- Width W_2
- Width W_1
- To complete catalog number, insert fitting prefix.

HX



Tray Width W_1 in.	Tray Width W_1 mm	Tray Width W_2 in.	Tray Width W_2 mm	* Insert Radius (12", 24", 36", or 48") Catalog No.	12" (305mm) Radius A in.	12" (305mm) Radius A mm	12" (305mm) Radius B in.	12" (305mm) Radius B mm	24" (609mm) Radius A in.	24" (609mm) Radius A mm	24" (609mm) Radius B in.	24" (609mm) Radius B mm	36" (914mm) Radius A in.	36" (914mm) Radius A mm	36" (914mm) Radius B in.	36" (914mm) Radius B mm	48" (1219mm) Radius A in.	48" (1219mm) Radius A mm	48" (1219mm) Radius B in.	48" (1219mm) Radius B mm
9	228	6	152	(Prefix)-09-06-HX*	39	991	36	914	63	1600	60	1372	87	2210	84	2134	111	2819	108	2743
12	305	6	152	(Prefix)-12-06-HX*	42	1067	36	914	66	1676	60	1372	90	2286	84	2134	114	2896	108	2743
		9	228	(Prefix)-12-09-HX*	42	1067	39	991	66	1676	63	1600	90	2286	87	2210	114	2896	111	2819
18	457	6	152	(Prefix)-18-06-HX*	48	1219	36	914	72	1829	60	1372	96	2438	84	2134	120	3048	108	2743
		9	228	(Prefix)-18-09-HX*	48	1219	39	991	72	1829	63	1600	96	2438	87	2210	120	3048	111	2819
		12	305	(Prefix)-18-12-HX*	48	1219	42	1067	72	1829	66	1676	96	2438	90	2286	120	3048	114	2896
24	609	6	152	(Prefix)-24-06-HX*	54	1372	36	914	78	1981	60	1372	102	2591	84	2134	126	3200	108	2743
		9	228	(Prefix)-24-09-HX*	54	1372	39	991	78	1981	63	1600	102	2591	87	2210	126	3200	111	2819
		12	305	(Prefix)-24-12-HX*	54	1372	42	1067	78	1981	66	1676	102	2591	90	2286	126	3200	114	2896
		18	457	(Prefix)-24-18-HX*	54	1372	48	1219	78	1981	72	1829	102	2591	96	2438	126	3200	120	3048
30	762	6	152	(Prefix)-30-06-HX*	60	1524	36	914	84	2134	60	1372	108	2743	84	2134	132	3353	108	2743
		9	228	(Prefix)-30-09-HX*	60	1524	39	991	84	2134	63	1600	108	2743	87	2210	132	3353	111	2819
		12	305	(Prefix)-30-12-HX*	60	1524	42	1067	84	2134	66	1676	108	2743	90	2286	132	3353	114	2896
		18	457	(Prefix)-30-18-HX*	60	1524	48	1219	84	2134	72	1829	108	2743	96	2438	132	3353	120	3048
		24	609	(Prefix)-30-24-HX*	60	1524	54	1372	84	2134	78	1981	108	2743	102	2591	132	3353	126	3200
36	914	6	152	(Prefix)-36-06-HX*	66	1676	36	914	90	2286	60	1372	114	2896	84	2134	138	3505	108	2743
		9	228	(Prefix)-36-09-HX*	66	1676	39	991	90	2286	63	1600	114	2896	87	2210	138	3505	111	2819
		12	305	(Prefix)-36-12-HX*	66	1676	42	1067	90	2286	66	1676	114	2896	90	2286	138	3505	114	2896
		18	457	(Prefix)-36-18-HX*	66	1676	48	1219	90	2286	72	1829	114	2896	96	2438	138	3505	120	3048
		24	609	(Prefix)-36-24-HX*	66	1676	54	1372	90	2286	78	1981	114	2896	102	2591	138	3505	126	3200
		30	762	(Prefix)-36-30-HX*	66	1676	60	1524	90	2286	84	2134	114	2896	108	2743	138	3505	132	3353
42	1067	6	152	(Prefix)-42-06-HX*	72	1829	36	914	96	2438	60	1372	120	3048	84	2134	144	3658	108	2743
		9	228	(Prefix)-42-09-HX*	72	1829	39	991	96	2438	63	1600	120	3048	87	2210	144	3658	111	2819
		12	305	(Prefix)-42-12-HX*	72	1829	42	1067	96	2438	66	1676	120	3048	90	2286	144	3658	114	2896
		18	457	(Prefix)-42-18-HX*	72	1829	48	1219	96	2438	72	1829	120	3048	96	2438	144	3658	120	3048
		24	609	(Prefix)-42-24-HX*	72	1829	54	1372	96	2438	78	1981	120	3048	102	2591	144	3658	126	3200
		30	762	(Prefix)-42-30-HX*	72	1829	60	1524	96	2438	84	2134	120	3048	108	2743	144	3658	132	3353
		36	914	(Prefix)-42-36-HX*	72	1829	66	1676	96	2438	90	2286	120	3048	114	2896	144	3658	138	3505

(Prefix) See page 118 for catalog number prefix.

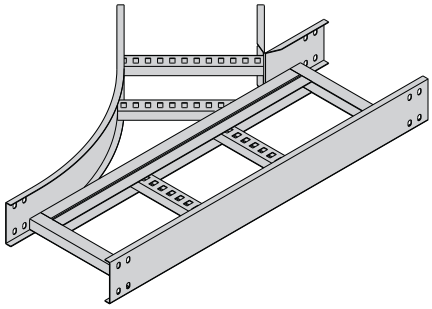
All dimensions in parentheses are millimeters unless otherwise specified.

Width dimensions are to inside wall. For all fittings add 1.375" (34.9mm) for total outside width.

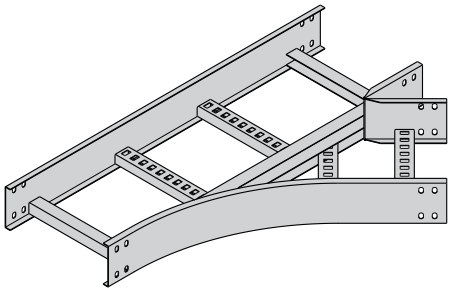
Manufacturing tolerances apply to all dimensions.

Horizontal Wye (HYL, HYR)

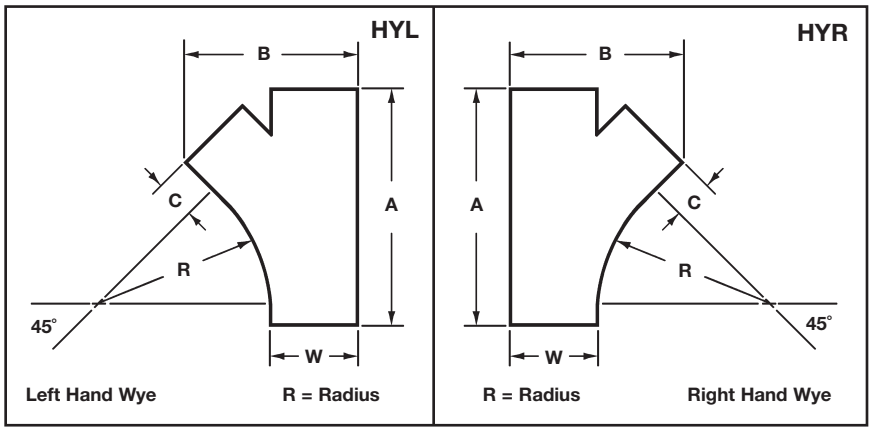
2 pair splice plates with hardware included.



Left Hand Wye



Right Hand Wye

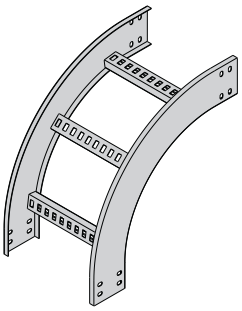


Bend Radius in.	Bend Radius mm	Tray Width in.	Tray Width mm	Left Hand Wye Catalog No.	Right Hand Wye Catalog No.	A in.	A mm	B in.	B mm	C in.	C mm
24	609	6	152	(Prefix)-06-HYL	(Prefix)-06-HYR	28 7/16	722	15 3/16	386	3 1/16	77
		9	228	(Prefix)-09-HYL	(Prefix)-09-HYR	32 11/16	831	20 5/16	516	6 1/16	154
		12	305	(Prefix)-12-HYL	(Prefix)-12-HYR	36 15/16	938	25 7/16	646	9 1/16	231
		18	457	(Prefix)-18-HYL	(Prefix)-18-HYR	45 3/8	1153	35 13/16	910	15 1/16	383
		24	609	(Prefix)-24-HYL	(Prefix)-24-HYR	53 7/8	1368	45 15/16	1167	21 1/16	535
		30	762	(Prefix)-30-HYL	(Prefix)-30-HYR	62 3/8	1585	56 3/16	1427	27 1/16	688
		36	914	(Prefix)-36-HYL	(Prefix)-36-HYR	70 7/8	1800	66 7/16	1687	33 1/16	993
		42	1067	(Prefix)-42-HYL	(Prefix)-42-HYR	79 3/8	2016	76 5/8	1946	39 1/16	992

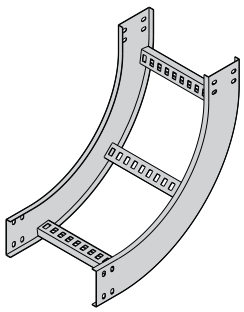
(Prefix) See page 118 for catalog number prefix.
All dimensions in parentheses are millimeters unless otherwise specified.
Width dimensions are to inside wall. For all fittings add 1.375" (34.9mm) for total outside width.
Manufacturing tolerances apply to all dimensions.

Vertical Bend 90° (VO, VI)

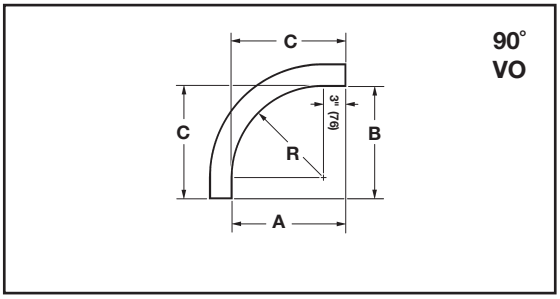
1 pair splice plates with hardware included.

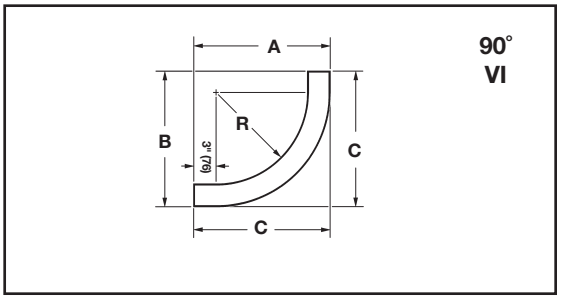


90° Vertical Outside



90° Vertical Inside





Bend Radius R	Tray Width		(*) Insert "VO" for Vert. Outside Bend Insert "VI" for Vert. Inside Bend	VO Side Rail Height 4" - 7"			VI Side Rail Height											
							4" (101mm)			5" (127mm)			6" (152mm)			7" (178mm)		
				A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
in.	in.	mm	Catalog No.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
12 (305)	6	152	(Prefix)-06-90(*)12	15 (381)	15 (381)	15 (381)	19 (483)	19 (483)	19 (483)	20 (508)	20 (508)	20 (508)	21 (533)	21 (533)	21 (533)	22 (559)	22 (559)	22 (559)
	9	228	(Prefix)-09-90(*)12															
	12	305	(Prefix)-12-90(*)12															
	18	457	(Prefix)-18-90(*)12															
	24	609	(Prefix)-24-90(*)12															
	30	762	(Prefix)-30-90(*)12															
	36	914	(Prefix)-36-90(*)12															
	42	1067	(Prefix)-42-90(*)12															
24 (609)	6	152	(Prefix)-06-90(*)24	27 (686)	27 (686)	27 (686)	31 (787)	31 (787)	31 (787)	32 (813)	32 (813)	32 (813)	33 (838)	33 (838)	33 (838)	34 (864)	34 (864)	34 (864)
	9	228	(Prefix)-09-90(*)24															
	12	305	(Prefix)-12-90(*)24															
	18	457	(Prefix)-18-90(*)24															
	24	609	(Prefix)-24-90(*)24															
	30	762	(Prefix)-30-90(*)24															
	36	914	(Prefix)-36-90(*)24															
	42	1067	(Prefix)-42-90(*)24															
36 (914)	6	152	(Prefix)-06-90(*)36	39 (991)	39 (991)	39 (991)	43 (1092)	43 (1092)	43 (1092)	44 (1118)	44 (1118)	44 (1118)	45 (1143)	45 (1143)	45 (1143)	46 (1168)	46 (1168)	46 (1168)
	9	228	(Prefix)-09-90(*)36															
	12	305	(Prefix)-12-90(*)36															
	18	457	(Prefix)-18-90(*)36															
	24	609	(Prefix)-24-90(*)36															
	30	762	(Prefix)-30-90(*)36															
	36	914	(Prefix)-36-90(*)36															
	42	1067	(Prefix)-42-90(*)36															
48 (1219)	6	152	(Prefix)-06-90(*)48	51 (1295)	51 (1295)	51 (1295)	55 (1397)	55 (1397)	55 (1397)	56 (1422)	56 (1422)	56 (1422)	57 (1448)	57 (1448)	57 (1448)	58 (1473)	58 (1473)	58 (1473)
	9	228	(Prefix)-09-90(*)48															
	12	305	(Prefix)-12-90(*)48															
	18	457	(Prefix)-18-90(*)48															
	24	609	(Prefix)-24-90(*)48															
	30	762	(Prefix)-30-90(*)48															
	36	914	(Prefix)-36-90(*)48															
	42	1067	(Prefix)-42-90(*)48															

(Prefix) See page 118 for catalog number prefix.

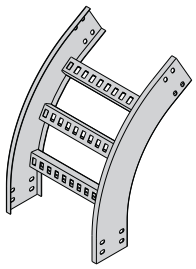
All dimensions in parentheses are millimeters unless otherwise specified.

Width dimensions are to inside wall. For all fittings add 1.375" (34.9mm) for total outside width.

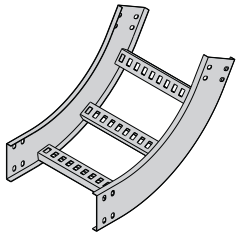
Manufacturing tolerances apply to all dimensions.

Vertical Bend 60° (VO, VI)

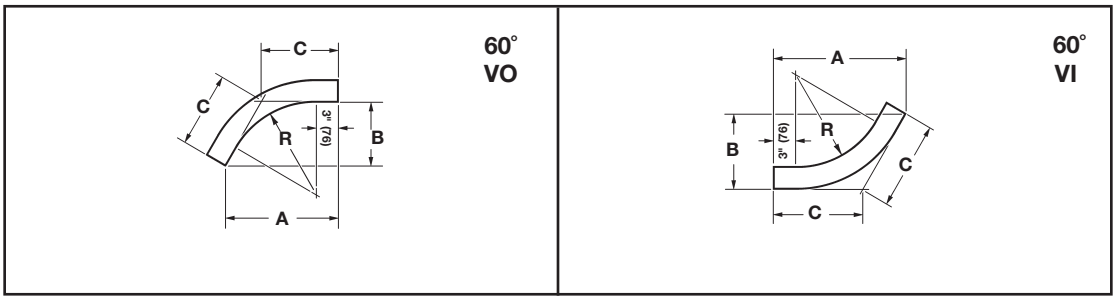
1 pair splice plates with hardware included.



60° Vertical Outside



60° Vertical Inside



Bend Radius R	Tray Width		(*) Insert "VO" for Vert. Outside Bend Insert "VI" for Vert. Inside Bend	VO Side Rail Height 4" - 7"			VI Side Rail Height											
							4" (101mm)			5" (127mm)			6" (152mm)			7" (178mm)		
				A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
in.	in.	mm	Catalog No.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
12 (305)	6	152	(Prefix)-06-60(*)12	14 7/8 (378)	8 5/8 (219)	9 15/16 (253)	18 3/8 (467)	10 5/8 (270)	12 1/4 (311)	19 1/4 (489	11 1/8 (283)	12 13/16 (326)	20 1/16 (510)	11 5/8 (296)	13 3/8 (340)	21 15/16 (557)	12 1/8 (308)	14 (356)
	9	228	(Prefix)-09-60(*)12															
	12	305	(Prefix)-12-60(*)12															
	18	457	(Prefix)-18-60(*)12															
	24	609	(Prefix)-24-60(*)12															
	30	762	(Prefix)-30-60(*)12															
	36	914	(Prefix)-36-60(*)12															
	42	1067	(Prefix)-42-60(*)12															
24 (609)	6	152	(Prefix)-06-60(*)24	25 5/16 (643)	14 5/8 (372)	16 7/8 (428)	28 3/4 (730)	16 5/8 (422)	19 3/16 (488)	29 5/8 (753)	17 1/8 (435)	19 3/4 (502)	30 1/2 (775)	17 5/8 (448)	20 5/16 (516)	31 3/8 (797)	18 1/8 (461)	20 7/8 (530)
	9	228	(Prefix)-09-60(*)24															
	12	305	(Prefix)-12-60(*)24															
	18	457	(Prefix)-18-60(*)24															
	24	609	(Prefix)-24-60(*)24															
	30	762	(Prefix)-30-60(*)24															
	36	914	(Prefix)-36-60(*)24															
	42	1067	(Prefix)-42-60(*)24															
36 (914)	6	152	(Prefix)-06-60(*)36	35 11/16 (907)	20 5/8 (524)	23 13/16 (605)	39 1/8 (994)	22 5/8 (575)	26 1/8 (663)	40 (1016)	23 1/8 (587)	26 11/16 (687)	40 7/8 (1038)	23 5/8 (600)	27 1/4 (692)	41 3/4 (1060)	24 1/8 (613)	27 13/16 (706)
	9	228	(Prefix)-09-60(*)36															
	12	305	(Prefix)-12-60(*)36															
	18	457	(Prefix)-18-60(*)36															
	24	609	(Prefix)-24-60(*)36															
	30	762	(Prefix)-30-60(*)36															
	36	914	(Prefix)-36-60(*)36															
	42	1067	(Prefix)-42-60(*)36															
48 (1219)	6	152	(Prefix)-06-60(*)48	46 1/16 (1170)	26 5/8 (676)	30 11/16 (780)	49 9/16 (1259)	28 5/8 (727)	33 (838)	50 3/8 (1280)	29 1/8 (740)	33 5/8 (854)	51 1/4 (1302)	29 5/8 (753)	34 3/16 (868)	52 1/8 (1324)	30 1/8 (765)	34 3/4 (883)
	9	228	(Prefix)-09-60(*)48															
	12	305	(Prefix)-12-60(*)48															
	18	457	(Prefix)-18-60(*)48															
	24	609	(Prefix)-24-60(*)48															
	30	762	(Prefix)-30-60(*)48															
	36	914	(Prefix)-36-60(*)48															
	42	1067	(Prefix)-42-60(*)48															

(Prefix) See page 118 for catalog number prefix.

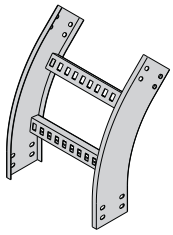
All dimensions in parentheses are millimeters unless otherwise specified.

Width dimensions are to inside wall. For all fittings add 1.375" (34.9mm) for total outside width.

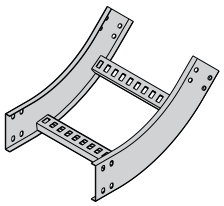
Manufacturing tolerances apply to all dimensions.

Vertical Bend 45° (VO, VI)

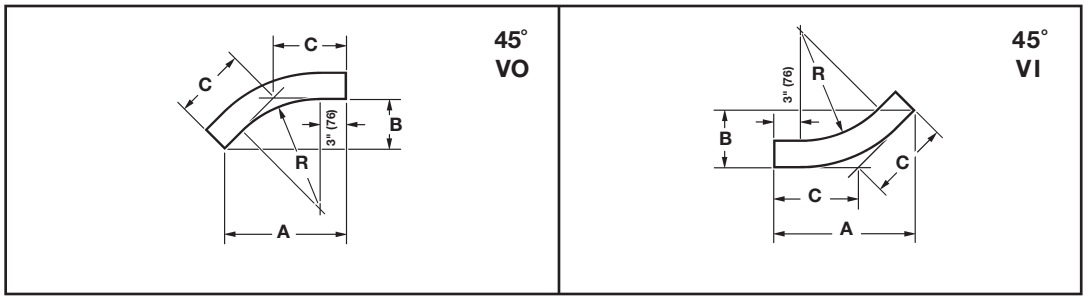
1 pair splice plates with hardware included.



45° Vertical Outside



45° Vertical Inside



Bend Radius R	Tray Width		(*) Insert "VO" for Vert. Outside Bend Insert "VI" for Vert. Inside Bend	VO Side Rail Height 4" - 7"			VI Side Rail Height											
							4" (101mm)			5" (127mm)			6" (152mm)			7" (178mm)		
				A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
in.	in.	mm	Catalog No.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
12 (305)	6	152	(Prefix)-06-45(*)12	13 5/8 (346)	5 5/8 (143)	8 (203)	16 7/16 (417)	6 13/16 (173)	9 5/8 (245)	17 1/8 (435)	7 1/8 (181)	10 1/16 (256)	17 7/8 (454)	7 3/8 (188)	10 7/16 (265)	18 9/16 (471)	7 11/16 (195)	10 7/8 (2176)
	9	228	(Prefix)-09-45(*)12															
	12	305	(Prefix)-12-45(*)12															
	18	457	(Prefix)-18-45(*)12															
	24	609	(Prefix)-24-45(*)12															
	30	762	(Prefix)-30-45(*)12															
	36	914	(Prefix)-36-45(*)12															
	42	1067	(Prefix)-42-45(*)12															
24 (609)	6	152	(Prefix)-06-45(*)24	22 1/16 (561)	9 1/8 (232)	12 15/16 (329)	24 15/16 (634)	10 5/16 (262)	14 5/8 (372)	25 5/8 (651)	10 5/8 (270)	15 (381)	26 5/16 (668)	10 15/16 (278)	15 7/16 (392)	27 1/16 (687)	11 3/16 (284)	15 13/16 (402)
	9	228	(Prefix)-09-45(*)24															
	12	305	(Prefix)-12-45(*)24															
	18	457	(Prefix)-18-45(*)24															
	24	609	(Prefix)-24-45(*)24															
	30	762	(Prefix)-30-45(*)24															
	36	914	(Prefix)-36-45(*)24															
	42	1067	(Prefix)-42-45(*)24															
36 (924)	6	152	(Prefix)-06-45(*)36	30 9/16 (776)	12 11/16 (323)	17 15/16 (456)	33 3/8 (848)	13 13/16 (351)	19 9/16 (497)	34 1/8 (867)	14 1/8 (359)	20 (508)	34 13/16 (885)	14 7/16 (367)	20 3/8 (518)	35 1/2 (902)	14 11/16 (284)	20 13/16 (402)
	9	228	(Prefix)-09-45(*)36															
	12	305	(Prefix)-12-45(*)36															
	18	457	(Prefix)-18-45(*)36															
	24	609	(Prefix)-24-45(*)36															
	30	762	(Prefix)-30-45(*)36															
	36	914	(Prefix)-36-45(*)36															
	42	1067	(Prefix)-42-45(*)36															
48 (1219)	6	152	(Prefix)-06-45(*)48	39 1/16 (992)	16 3/16 (411)	22 7/8 (581)	41 7/8 (1064)	17 3/8 (441)	24 9/16 (624)	42 5/8 (1083)	17 5/8 (448)	24 15/16 (633)	43 5/16 (1100)	17 15/16 (456)	25 3/8 (645)	44 (1118)	18 1/4 (464)	25 13/16 (656)
	9	228	(Prefix)-09-45(*)48															
	12	305	(Prefix)-12-45(*)48															
	18	457	(Prefix)-18-45(*)48															
	24	609	(Prefix)-24-45(*)48															
	30	762	(Prefix)-30-45(*)48															
	36	914	(Prefix)-36-45(*)48															
	42	1067	(Prefix)-42-45(*)48															

(Prefix) See page 118 for catalog number prefix.

All dimensions in parentheses are millimeters unless otherwise specified.

Width dimensions are to inside wall. For all fittings add 1.375" (34.9mm) for total outside width.

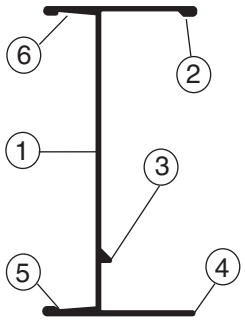
Manufacturing tolerances apply to all dimensions.

Aluminum Cable Tray, Series 2, 3 & 4

COOPER B-Line -- the Side Rails

Our I-Beam -- the most efficient structural shape

Using “Copper-free” 6063-T6 Aluminum Alloy



1. **I-beam side rail design**
   - maximize strength-to-weight ratio
2. **Added material to top flange to increase cable tray stiffness**
3. **Welding bead**
   - positive rung lock
   - added material disperses heat
4. **Bottom flange inside**
   - positive rung support
5. **Bottom flange outside**
   - strong lower flange for hold down clamps and expansion guides
6. **Top flange outside**
   - strong upper flange for securing the tray cover or the conduit-to-tray adapter

COOPER B-Line -- the Rungs -- provide system integrity

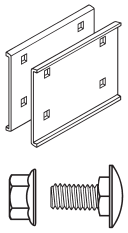
The rungs can represent 40% of your cable tray system.

Rung A Standard for widths through 24"
The 24" width supports 589 lbs. with safety factor 1.5

Rung B Standard for widths greater than 24"
The 36" width supports 487 lbs. with safety factor 1.5

- For industrial applications -- 200 lb. concentrated loads
- New P-Rung design allows P-Clamp cable fastening at any location.

COOPER B-Line -- the Splices -- provide system integrity



With the unique Wedge Lock splice system:
- Channel-shaped for extra strength
- Snaps into the side rail
- Positions and holds for bolting, a labor-saving feature
- Four bolt patterns, a labor-saving feature
- 316 Stainless Steel hardware is available as an option

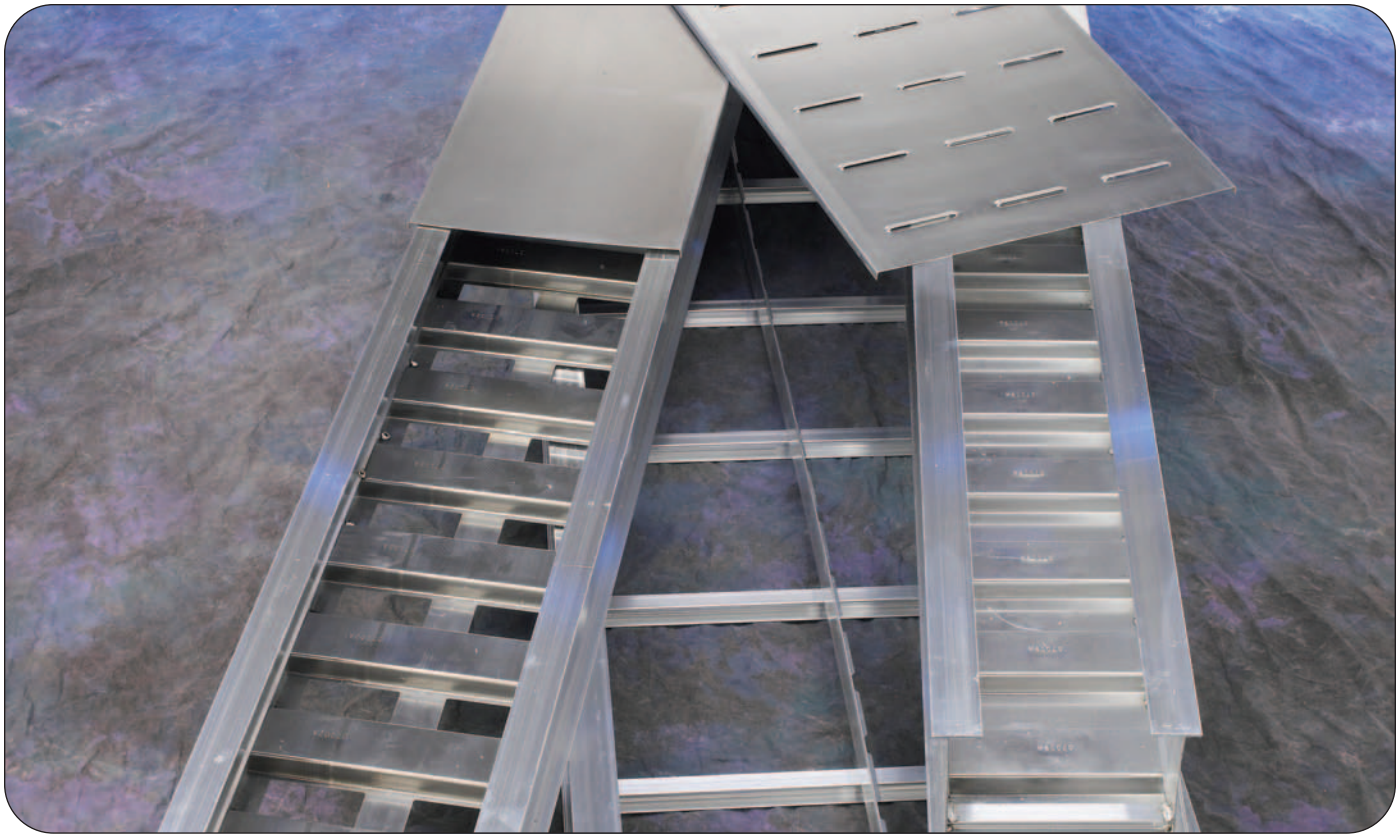
COOPER B-Line -- the Fittings -- provide system integrity

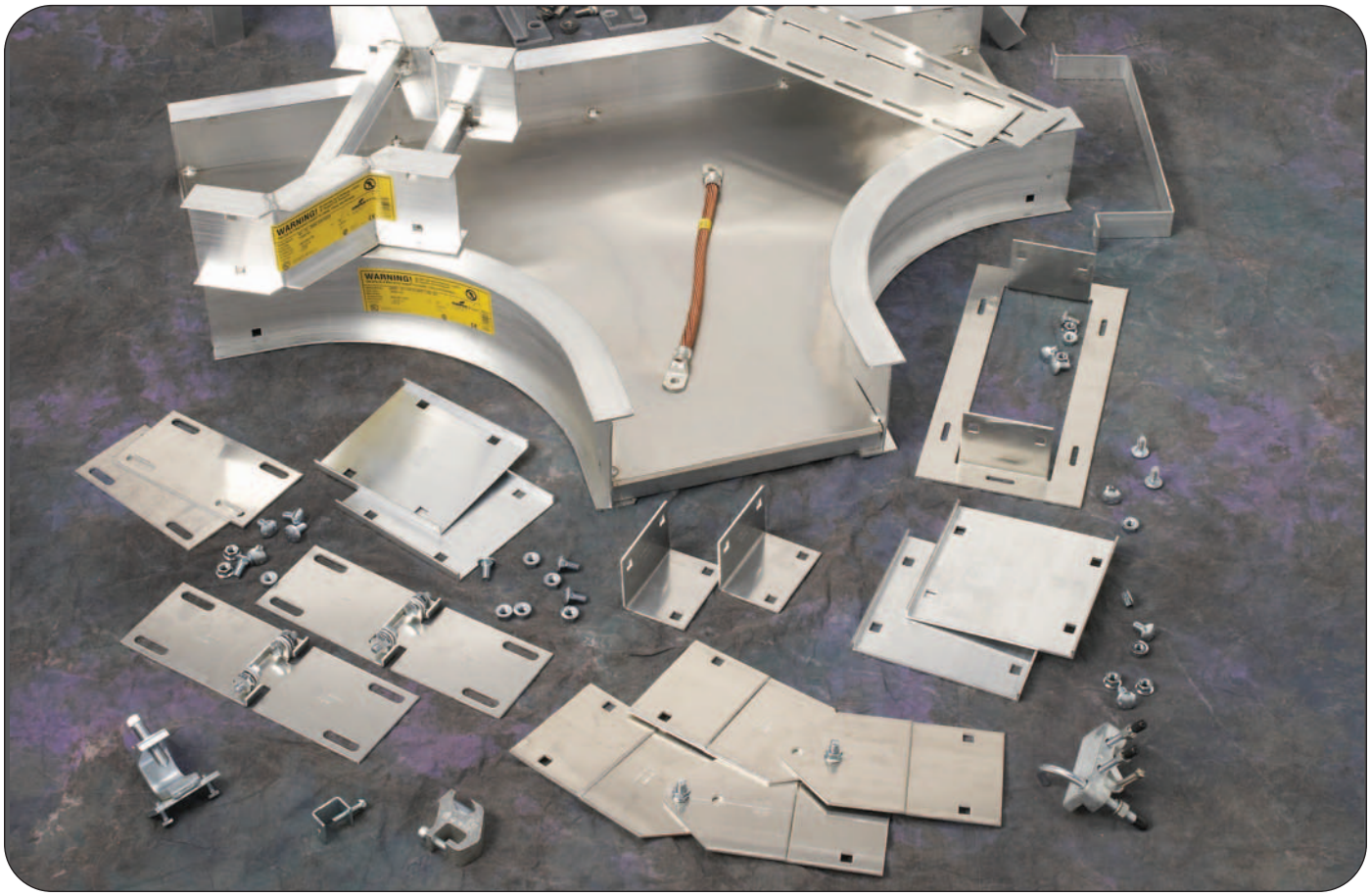
Surpasses NEMA VE 1 requirements
3" straight tangents for splice integrity

COOPER B-Line -- with a 200 lb. Concentrated Load -- providing system integrity

Side rails engineered to support a 200 lb. concentrated load + cable load
Rungs engineered to support a 200 lb. concentrated load + cable load

COOPER B-Line -- our reliable time-tested products. A system that works.




WARNING!
WARNING!

3" NEMA VE 1 Loading Depth
4" Side Rail Height

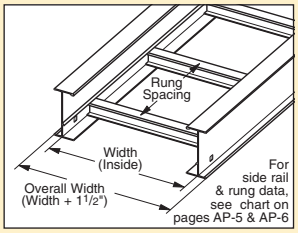
Straight Section Part Numbering

Prefix

Example: **24 A 09 - 24 - 144**

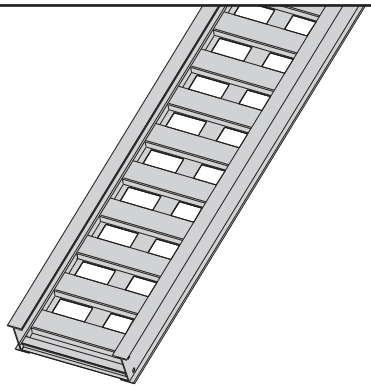
Series	Material	*Type	*Width	Length
24	**A** = Aluminum	**Ladder-** **06** = 6" rung spacing **09** = 9" rung spacing **12** = 12" rung spacing	**06** = 6" **09** = 9" **12** = 12" **18** = 18" **24** = 24" **30** = 30" **36** = 36"	① **144** = 12 ft. ② 120 = 10 ft.
34		**Trough-** 6" thru 36" wide **VT** = Vented Trough **ST** = Non-Ventilated Trough		① **240** = 20 ft. ② 144 = 12 ft.

①Primary Length.
②Secondary Length.

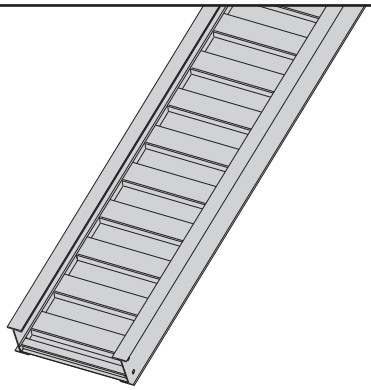


See page 237 for additional rung options. *Special sizes available.

Ladder Type
(Specify Rung Spacing)



Ventilated Trough



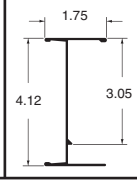
Non-Ventilated Trough

Dimensional & Loading Information

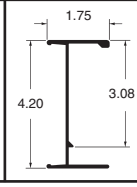
3" NEMA VE 1 Loading Depth
4" Side Rail Height

Values are based on simple beam tests per NEMA VE 1 on 36" wide cable tray with rungs spaced on 12" centers. Cable trays will support without collapse a 200 lb. (90.7 kg) concentrated load over and above published loads. Published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply the published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable tray being installed.

Individual rungs will support without collapse a 200 lb. (90.7 kg) concentrated load applied at the mid-span of the rung, over and above the NEMA rated cable load with a 1.5 safety factor for highlighted NEMA spans and loads. See table on page 237 for rung capacities.

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Design Factors for Two Rails	Span meters	Load kg/m	Deflection Multiplier	Design Factors for Two Rails
24		NEMA: 16A, 12C CSA: D1-3m UL Cross-Sectional Area:1.00 in^2	6 8 10 12 14 16	487* 284 181 126 93 71	0.001 0.003 0.008 0.016 0.030 0.052	Area=1.05 in^2 Sx=1.34 in^3 Ix=2.85 in^4	1.8 2.4 3.0 3.7 4.3 4.9	725* 422 270 187 138 105	0.017 0.055 0.135 0.279 0.518 0.883	Area=6.77 cm^2 Sx=21.96 cm^3 Ix=118.63 cm^4

When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%. Design factors: Ix = Moment of Inertia, Sx = Section Modulus.
* When using 18" rung spacing, load capacity is limited to 394 lbs/ft (586.27 kg/m) for 30" tray width and 325 lbs/ft (483.6 kg/m) for 36" tray width.

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Design Factors for Two Rails	Span meters	Load kg/m	Deflection Multiplier	Design Factors for Two Rails
34		NEMA: 20B, 16C CSA: E-6m UL Cross-Sectional Area: 1.50 in^2	10 12 14 16 18 20	320 222 163 125 99 80	0.005 0.009 0.017 0.030 0.047 0.072	Area=1.82 in^2 Sx=2.10 in^3 Ix=4.98 in^4	3.0 3.7 4.3 4.9 5.5 6.1	476 331 243 186 147 119	0.077 0.160 0.296 0.505 0.810 1.234	Area=11.74 cm^2 Sx=34.41 cm^3 Ix=207.28 cm^4

When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%. Design factors: Ix = Moment of Inertia, Sx = Section Modulus.

4" NEMA VE 1 Loading Depth
5" Side Rail Height

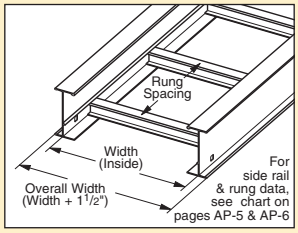
Straight Section Part Numbering

Prefix

Example: **25 A 09 - 24 - 144**

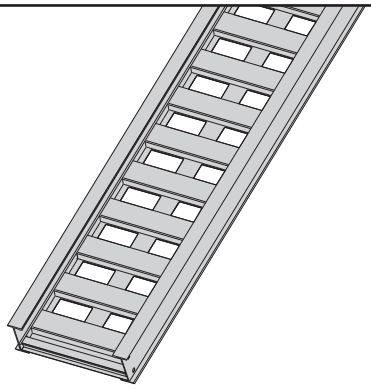
Series	Material	*Type	*Width	Length
25	**A** = Aluminum	**Ladder-** **06** = 6" rung spacing **09** = 9" rung spacing **12** = 12" rung spacing	**06** = 6" **09** = 9" **12** = 12" **18** = 18" **24** = 24" **30** = 30" **36** = 36"	① **144** = 12 ft. ② 240 = 20 ft.
35		**Trough-** 6" thru 36" wide **VT** = Vented Trough **ST** = Non-Ventilated Trough		① **240** = 20 ft. ② 144 = 12 ft.

①Primary Length.
②Secondary Length.

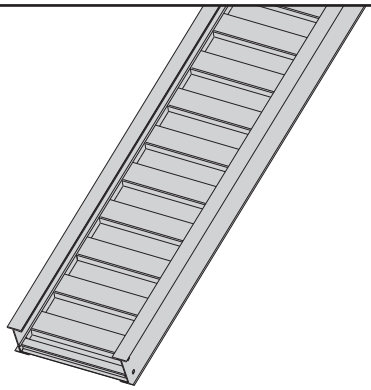


See page 237 for additional rung options. *Special sizes available.

Ladder Type
(Specify Rung Spacing)



Ventilated Trough



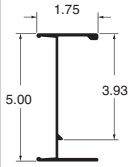
Non-Ventilated Trough

Dimensional & Loading Information

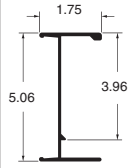
4" NEMA VE 1 Loading Depth
5" Side Rail Height

Values are based on simple beam tests per NEMA VE 1 on 36" wide cable tray with rungs spaced on 12" centers. Cable trays will support without collapse a 200 lb. (90.7 kg) concentrated load over and above published loads. Published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable tray being installed.

Individual rungs will support without collapse a 200 lb. (90.7 kg) concentrated load applied at the mid-span of the rung, over and above the NEMA rated cable load with a 1.5 safety factor for highlighted NEMA spans and loads. See table on page 237 for rung capacities.

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Design Factors for Two Rails	Span meters	Load kg/m	Deflection Multiplier	Design Factors for Two Rails
25		NEMA: 20A, 12C CSA: D1-6m UL Cross-Sectional Area: 1.00 in^2	10 12 14 16 18 20	200 139 102 78 62 50	0.0049 0.010 0.019 0.032 0.051 0.078	Area=1.24 in^2 Sx=1.80 in^3 Ix=4.62 in^4	3.0 3.7 4.3 4.9 5.5 6.1	298 207 152 116 92 74	0.083 0.172 0.319 0.545 0.873 1.330	Area=8.00 cm^2 Sx=29.50 cm^3 Ix=192.30 cm^4

When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%. Design factors: Ix = Moment of Inertia, Sx = Section Modulus.

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Design Factors for Two Rails	Span meters	Load kg/m	Deflection Multiplier	Design Factors for Two Rails
35		NEMA: 20B, 16C CSA: E-3m UL Cross-Sectional Area: 1.50 in^2	10 12 14 16 18 20	310 215 158 121 96 77	0.0035 0.0073 0.014 0.023 0.037 0.057	Area=1.67 in^2 Sx=2.35 in^3 Ix=6.37 in^4	3.0 3.7 4.3 4.9 5.5 6.1	461 320 235 180 142 115	0.060 0.125 0.232 0.395 0.633 0.965	Area=10.77 cm^2 Sx=38.51 cm^3 Ix=265.14 cm^4

When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%. Design factors: Ix = Moment of Inertia, Sx = Section Modulus.

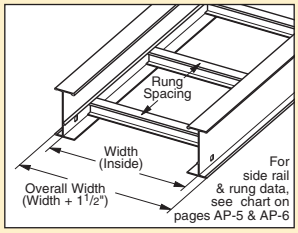
5" NEMA VE 1 Loading Depth
6" Side Rail Height

Straight Section Part Numbering

Prefix

Example: **26 A 09 - 24 - 144**

Series	Material	*Type	*Width	Length
26	**A** = Aluminum	**Ladder-**	**06** = 6"	① **144** = 12 ft. ② 240 = 20 ft. — 26
36		**06** = 6" rung spacing	**09** = 9"	① **240** = 20 ft. ② 144 = 12 ft. — 36
46		**09** = 9" rung spacing	**12** = 12"	① **240** = 20 ft. ② 288 = 24 ft. — 46
H46†		**12** = 12" rung spacing	**18** = 18"	① **240** = 20 ft. ② 300 = 25 ft. — H46
			24 = 24"	
		Trough-	**30** = 30"	
		6" thru 36" wide	**36** = 36"	
		VT = Vented Trough		
		ST = Non-Ventilated Trough		

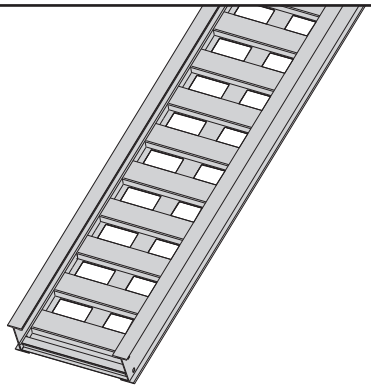


† H46A only available in ladder type 9" and 12" rung spacing.

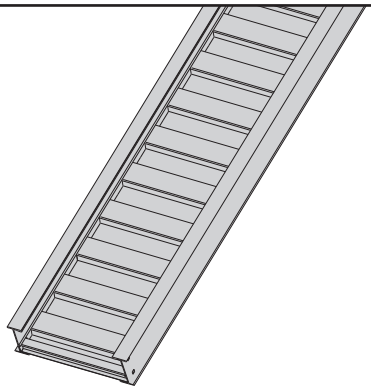
①Primary Length.
②Secondary Length.

See page 237 for additional rung options. *Special sizes available.

Ladder Type
(Specify Rung Spacing)



Ventilated Trough



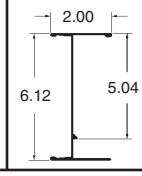
Non-Ventilated Trough

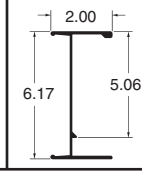
Dimensional & Loading Information

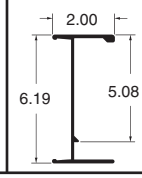
5" NEMA VE 1 Loading Depth
6" Side Rail Height

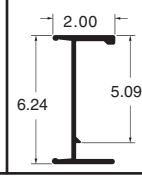
Values are based on simple beam tests per NEMA VE 1 on 36" wide cable tray with rungs spaced on 12" centers. Cable trays will support, without collapse, a 200 lb. (90.7 kg) concentrated load over and above published loads. Published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply the published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable tray being installed.

Individual rungs will support without collapse a 200 lb. (90.7 kg) concentrated load applied at the mid-span of the rung, over and above the NEMA rated cable load with a 1.5 safety factor for highlighted NEMA spans and loads. See table on page 237 for rung capacities.

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Design Factors for Two Rails	Span meters	Load kg/m	Deflection Multiplier	Design Factors for Two Rails
26		NEMA: 20A, 16B CSA: D1-6m UL Cross-Sectional Area: 1.00 in^2	10 12 14 16 18 20	204 142 104 80 63 51	0.0028 0.006 0.011 0.019 0.030 0.045	Area=1.41 in^2 Sx=2.53 in^3 Ix=7.915 in^4	3.0 3.7 4.3 4.9 5.5 6.1	304 211 155 119 94 76	0.049 0.101 0.186 0.318 0.509 0.776	Area=9.10 cm^2 Sx=41.46 cm^3 Ix=329.45 cm^4

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Design Factors for Two Rails	Span meters	Load kg/m	Deflection Multiplier	Design Factors for Two Rails
36		NEMA: 20B, 16C CSA: E-6m UL Cross-Sectional Area: 1.50 in^2	12 14 16 18 20 22	233 171 131 104 84 69	0.0043 0.008 0.014 0.022 0.033 0.049	Area=1.81 in^2 Sx=3.36 in^3 Ix=10.85 in^4	3.7 4.3 4.9 5.5 6.1 6.7	347 255 195 154 125 103	0.073 0.136 0.232 0.372 0.566 0.829	Area=11.68 cm^2 Sx=55.06 cm^3 Ix=451.61 cm^4

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Design Factors for Two Rails	Span meters	Load kg/m	Deflection Multiplier	Design Factors for Two Rails
46		NEMA: 20C CSA: E-6m UL Cross-Sectional Area: 1.50 in^2	14 16 18 20 22 24	210 161 127 103 85 72	0.0071 0.012 0.019 0.030 0.043 0.061	Area=2.06 in^2 Sx=3.59 in^3 Ix=12.18 in^4	4.3 4.9 5.5 6.1 6.7 7.3	313 239 189 153 127 106	0.121 0.207 0.331 0.505 0.739 1.046	Area=13.29 cm^2 Sx=58.83 cm^3 Ix=506.97 cm^4

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Design Factors for Two Rails	Span meters	Load kg/m	Deflection Multiplier	Design Factors for Two Rails
H46		NEMA: 20C+ CSA: 131 kg/m 7.6m UL Cross-Sectional Area: 2.00 in^2	16 18 20 22 24 25	261 206 167 138 116 88	0.0085 0.014 0.021 0.030 0.043 0.051	Area=2.95 in^2 Sx=5.33 in^3 Ix=17.30 in^4	4.9 5.5 6.1 6.7 7.3 7.6	388 307 248 205 173 131	0.145 0.233 0.355 0.520 0.737 0.867	Area=19.03 cm^2 Sx=87.34 cm^3 Ix=720.08 cm^4

When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%. Design factors: Ix = Moment of Inertia, Sx = Section Modulus.

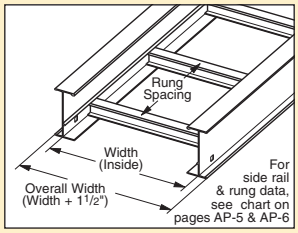
6" NEMA VE 1 Loading Depth
7" Side Rail Height

Straight Section Part Numbering

Prefix

Example: **37 A 09 - 24 - 240**

Series	Material	*Type	*Width	Length
37	**A** = Aluminum	**Ladder-**	**06** = 6"	① **240** = 20 ft. ② 144 = 12 ft. — 37
47		**06** = 6" rung spacing	**09** = 9"	① **240** = 20 ft. ② 288 = 24 ft. — 47
H47†		**09** = 9" rung spacing	**12** = 12"	① **240** = 20 ft. ② 300 = 25 ft. — H47
57†		**12** = 12" rung spacing	**18** = 18"	① **360** = 30 ft. ② 300 = 25 ft. — 57
			24 = 24"	
			30 = 30"	
			36 = 36"	



Trough-

6" thru 36" wide

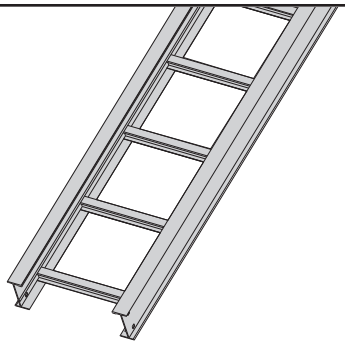
VT = Vented Trough

ST = Non-Ventilated Trough

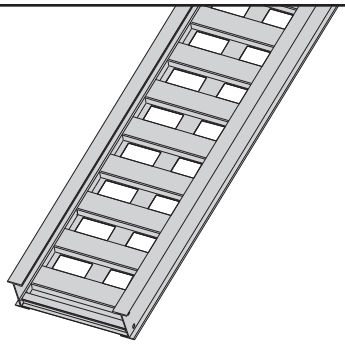
† H47A & 57A only available in ladder type 9" and 12" rung spacing.

①Primary Length.
②Secondary Length.

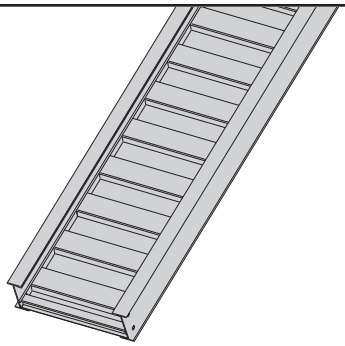
See page 237 for additional rung options. *Special sizes available.



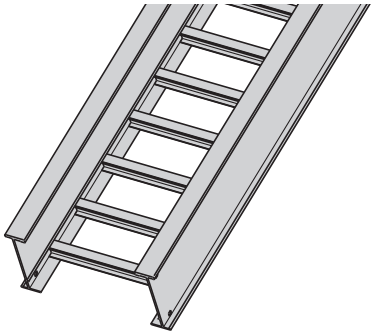
Ladder Type
(Specify Rung Spacing)



Ventilated Trough



Non-Ventilated Trough



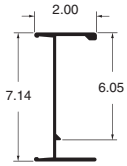
57A available in
(9" & 12" rung spacing in
12" to 36" widths)

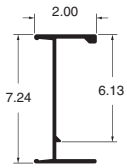
Dimensional & Loading Information

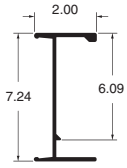
6" NEMA VE 1 Loading Depth
7" Side Rail Height

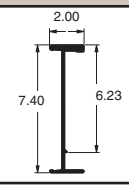
Values are based on simple beam tests per NEMA VE 1 on 36" wide cable tray with rungs spaced on 12" centers. Cable trays will support without collapse a 200 lb. (90.7 kg) concentrated load over and above published loads. Published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply the published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable tray being installed.

Individual rungs will support without collapse a 200 lb. (90.7 kg) concentrated load applied at the mid-span of the rung, over and above the NEMA rated cable load with a 1.5 safety factor for highlighted NEMA spans and loads. See table on page 237 for rung capacities.

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Design Factors for Two Rails	Span meters	Load kg/m	Deflection Multiplier	Design Factors for Two Rails
37		NEMA: 20B, 16C CSA: 106 kg/m 6.1m UL Cross-Sectional Area: 1.50 in²	12 14 16 18 20 22	222 163 125 99 80 66	0.0035 0.0064 0.011 0.017 0.027 0.039	Area=1.81 in² Sx=3.77 in³ Ix=13.50 in⁴	3.7 4.3 4.9 5.5 6.1 6.7	331 243 186 147 119 98	0.059 0.109 0.186 0.299 0.455 0.666	Area=11.68 cm² Sx=61.78 cm³ Ix=561.91 cm⁴

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Design Factors for Two Rails	Span meters	Load kg/m	Deflection Multiplier	Design Factors for Two Rails
47		NEMA: 20C CSA: 142 kg/m 6.1m UL Cross-Sectional Area: 2.00 in^2	14 16 18 20 22 24	204 156 123 100 83 69	0.0048 0.0082 0.0132 0.0201 0.0295 0.0418	Area=2.38 in² Sx=4.94 in³ Ix=17.88 in⁴	4.3 4.9 5.5 6.1 6.7 7.3	304 233 184 149 123 103	0.083 0.141 0.225 0.344 0.503 0.713	Area=15.35 cm² Sx=80.95 cm³ Ix=744.22 cm⁴

B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Design Factors for Two Rails	Span meters	Load kg/m	Deflection Multiplier	Design Factors for Two Rails
H47		NEMA: 20C+ CSA: 241 kg/m 6.1m UL Cross-Sectional Area: 2.00 in²	16 18 20 22 24 25	233 184 149 123 103 95	0.0064 0.010 0.016 0.023 0.033 0.038	Area=3.04 in² Sx=6.10 in³ Ix=22.91 in⁴	4.9 5.5 6.1 6.7 7.3 7.6	346 274 222 183 154 142	0.110 0.176 0.268 0.393 0.556 0.655	Area=19.61 cm² Sx=99.96 cm³ Ix=953.59 cm⁴

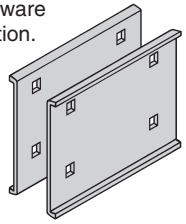
B-Line Series	Side Rail Dimensions	NEMA, CSA & UL Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Design Factors for Two Rails	Span meters	Load kg/m	Deflection Multiplier	Design Factors for Two Rails
57		NEMA: 20C+ CSA: 152 kg/m 9.1m UL Cross-Sectional Area: 2.00 in²	20 22 24 26 28 30	232 192 161 136 117 102	0.011 0.016 0.023 0.031 0.042 0.055	Area=4.22 in² Sx=7.73 in³ Ix=32.86 in⁴	6.1 6.7 7.3 7.9 8.5 9.1	345 285 240 202 174 152	0.187 0.274 0.388 0.534 0.718 0.947	Area=27.23 cm² Sx=126.67 cm³ Ix=1367.74 cm⁴

When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%. Design factors: Ix = Moment of Inertia, Sx = Section Modulus.

Series 2, 3, 4, & 5 Aluminum Cable Ladder Accessories

Wedge Lock Splice Plates
(Excluding H46, H47 & 57 Series)

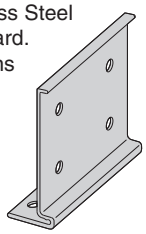
- Standard 4-hole pattern (except 9A-1007).
- Furnished in pairs, with hardware.
- One pair including hardware provided with each section.
- Boxed in pairs with hardware.
- For field installation drill 13/32" hole.



Catalog No.	Height	
	in.	mm
9A-1004	4	101
9A-1005	5	127
9A-1006	6	152
9A-1007	7	178

H46A, H47A and 57A Mid-Span Splice

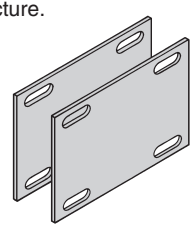
- Standard for H46A, H47A and 57A straight sections.
- Six bolt design 1/2" Stainless Steel Type 316 hardware standard.
- Available on ladder bottoms only. 09 and 12" rung spacing.



Tray Series	Catalog No.
H46A	9A-6006
H47A, 57A	9A-6007

Expansion Splice Plates

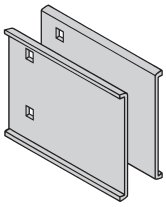
- Expansion plates allow for one inch expansion or contraction of the cable tray, or where expansion joints occur in the supporting structure.
- Furnished in pairs with hardware.
- **Bonding Jumpers are required on each siderail. Order Separately.**



Catalog No.	Height	
	in.	mm
9A-1014	4	101
9A-1015	5	127
9A-1016	6	152
9A-1017	7	178

Universal Splice Plates

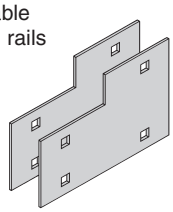
- Used to splice to existing cable tray systems.
- Furnished in pairs with hardware.



Catalog No.	Height	
	in.	mm
9A-1004-1/2	4	101
9A-1005-1/2	5	127
9A-1006-1/2	6	152
9A-1007-1/2	7	178

Step Down Splice Plates

- These splice plates are offered for connecting cable tray sections having side rails of different heights.
- Furnished in pairs with hardware.

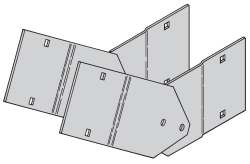


Catalog No.	Height	
	in.	mm
9A-1045	5 to 4	127 to 101
9A-1046	6 to 4	152 to 101
9A-1060	6 to 5	152 to 127
9A-1047	7 to 4	178 to 101
9A-1061	7 to 5	178 to 127
9A-1062	7 to 6	178 to 152

Vertical Adjustable Splice Plates

- These plates provide for changes in elevation that do not conform to standard vertical fittings.
- Furnished in pairs with hardware.
- **Bonding Jumper not required.**

Requires supports within 24" on both sides, per NEMA VE 2.

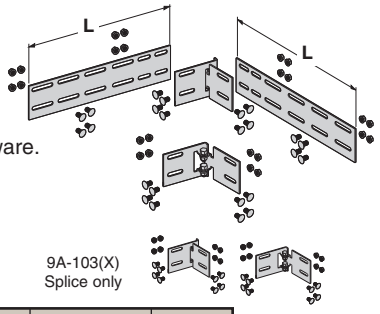


Catalog No.	Height	
	in.	mm
9A-1024	4	101
9A-1025	5	127
9A-1026	6	152
9A-1027	7	178

Horizontal Adjustable Splice Plates

- Offered to adjust a cable tray run for changes in direction in a horizontal plane that do not conform to standard horizontal fittings.
- Furnished in pairs with hardware.
- New design bonding jumpers **not** required.
- (X) Insert 4, 5, 6 or 7 for side rail height.

9A-103(X)-12 or 9A-103(X)-36
One pair splice plates with extensions.



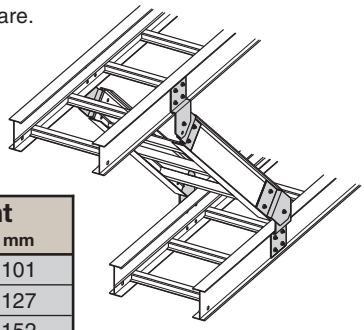
9A-103(X)
Splice only

Catalog No.	Cable Tray End Cut	Tray Width	'L'
9A-103(X)	Mitered	Thru 36"	N/A
9A-103(X)-12	Not mitered	Thru 12"	16"
9A-103(X)-36	Not mitered	Thru 36"	41"

Requires supports within 24" on both sides, per NEMA VE 2.

Branch Pivot Connectors

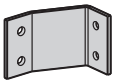
- Branch from existing cable tray runs at any point.
- Pivot to any required angle.
- UL Classified for grounding (bonding jumper not required).
- Furnished in pairs with hardware.

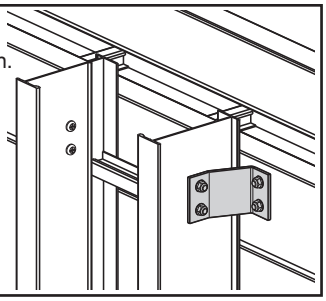


Catalog No.	Height	
	in.	mm
9A-2044	4	101
9A-2045	5	127
9A-2046	6	152
9A-2047	7	178

Cross Connector Bracket

- For field connecting crossing section.
- Furnished in pairs with 3/8" hardware.

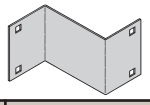




Catalog No.	9A-1240

Offset Reducing Splice Plate

- This plate is used for joining cable trays having different widths. When used in pairs they form a straight reduction; when used singly with a standard splice plate, they form an offset reduction.
- Furnished as one plate with hardware.
- (‡) Insert reduction



Catalog No.	Height in.	Height mm
9A-1064-(‡)	4	101
9A-1065-(‡)	5	127
9A-1066-(‡)	6	152
9A-1067-(‡)	7	178

Tray Hardware

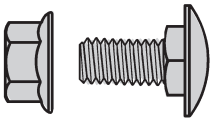
For field installation drill 13/32" hole.

Standard Tray Hardware

Catalog No. **SNCB 3/8" x 3/4" Znplt** Square Neck Carriage Bolt ASTM A307 Grade A

Catalog No. **SFHN 3/8"-16 Znplt** Serrated Flange Hex Nut ASTM A563 Grade A

Finish: Zinc Plated ASTM B633, SC1

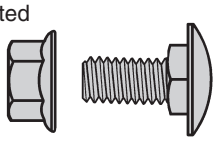


Optional Tray Hardware

Catalog No. **SNCB 3/8" x 3/4" SS6** Square Neck Carriage Bolt AISI 316 Stainless Steel

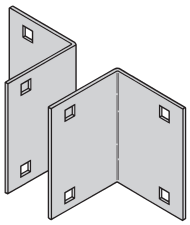
Catalog No. **SFHN 3/8"-16 SS6** Serrated Flange Hex Nut AISI 316 Stainless Steel

To order optional 316 Stainless Steel hardware add SS6 suffix to part number
Example: 9A-1004SS6



Tray to Box Splice Plates

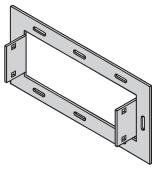
- Used to attach the end of a cable tray run to a distribution box or control panel.
- Furnished in pairs with hardware.



Catalog No.	Height in.	Height mm
9A-1054	4	101
9A-1055	5	127
9A-1056	6	152
9A-1057	7	178

Frame Type Box Connector

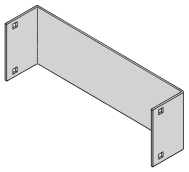
- Designed to attach the end of a cable tray run to a distribution cabinet or control center to help reinforce the box at the point of entry.
- Furnished with tray connection hardware.
- (‡) Insert tray width



Catalog No.	Height in.	Height mm
9A-1074-(‡)	4	101
9A-1075-(‡)	5	127
9A-1076-(‡)	6	152
9A-1077-(‡)	7	178

Blind End

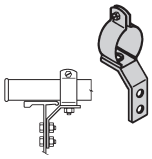
- This plate forms a closure for a dead end cable tray.
- Furnished as one plate with hardware.
- (‡) Insert tray width



Catalog No.	Height in.	Height mm
9A-1084-(‡)	4	101
9A-1085-(‡)	5	127
9A-1086-(‡)	6	152
9A-1087-(‡)	7	178

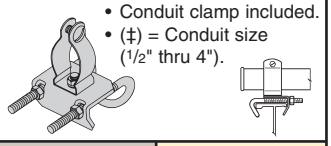
Conduit to Cable Tray Adaptors

- Assembly required.
- Mounting hardware included.
- Conduit clamps provided.
- (‡) = Conduit size (1/2" thru 4").



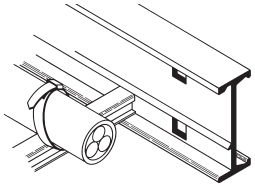
Catalog No.	9ZN-1150-(‡)

- Assembly required.
- Conduit clamp included.
- (‡) = Conduit size (1/2" thru 4").



Catalog No.	9ZN-1155-(‡)

Cable Tie (Ladder Tray)



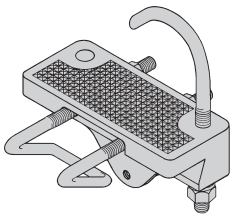
Nylon ties provide easy attachment of cable to ladder rungs; maximum cable O.D. is 3" (76mm).

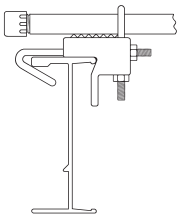
Overall Length 15"

Catalog No.	99-2125-15

Conduit to Cable Tray Adaptor

- For easy attachment of conduit terminating at a cable tray.
- Use on aluminum or steel cable trays.





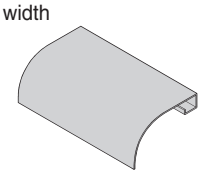
Aluminum I-Beam

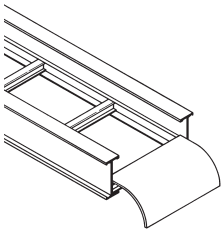
Catalog No.	Conduit Size in.	Conduit Size mm
9G-1158-1/2, 3/4	1/2, 3/4	15, 20
9G-1158-1, 1 1/4	1, 1 1/4	25, 32
9G-1158-1 1/2, 2	1 1/2, 2	40, 50
9G-1158-2 1/2, 3	2 1/2, 3	65, 80
9G-1158-3 1/2, 4	3 1/2, 4	90, 100

Series 2, 3, 4, & 5 Aluminum Cable Ladder Accessories

Ladder Drop-Out

- Specially-designed Ladder Drop-Outs provide a rounded surface with 4" (101 mm) radius to protect cable as it exits from the cable tray, preventing damage to insulation. The drop-out will attach to any desired rung.
- (‡) Insert tray width

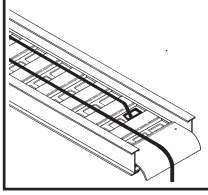


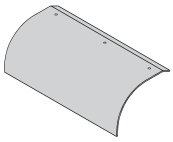


Catalog No.	9A-1104-(‡)

Trough Drop-Out & Drop-Out Bushing

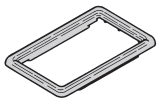
- These devices provide a rounded surface to protect cable as it exits from the trough-type cable tray.
- Hardware is included for attachment of the trough bottom drop-out.
- (‡) Insert tray width





Catalog No.
9A-1104T-(‡)

Trough-Type Drop-Out



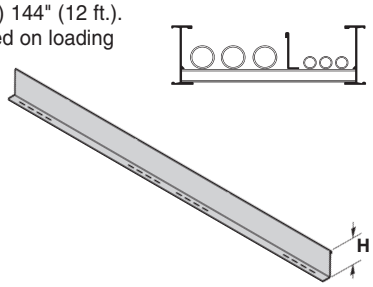
Catalog No.
99-1124

Snap-In Plastic Bushing

Barriers

Straight Section

- Standard length: 120" (3 m) 144" (12 ft.).
- Order catalog number based on loading depth.
- Furnished with four #10 x ½" plated self-drilling screws and a 99-9982 splice.

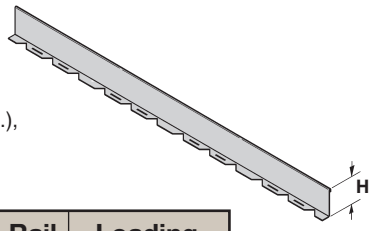


Catalog No.	Side Rail Height		Loading Depth 'H'	
	in.	mm	in.	mm
73A-Length	4	101	3	76
74A-Length	5	127	4	101
75A-Length	6	152	5	127
76A-Length	7	178	6	152

Length =
144 for 12'
or
120 for 10'

Horizontal Bend

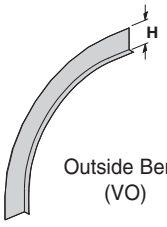
- Horizontal Bend Barriers are flexible in order to conform to any horizontal fitting radius. Cut to length.
- Order catalog number based on loading depth.
- Furnished with three #10 x ½" zinc plated self-drilling screws and a 99-9982 Barrier Strip Splice.
- Standard length is 72" (6 ft.), sold individually.



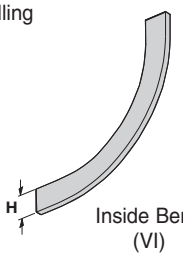
Catalog No.	Side Rail Height		Loading Depth 'H'	
	in.	mm	in.	mm
73A-90HBFL	4	101	3	76
74A-90HBFL	5	127	4	101
75A-90HBFL	6	152	5	127
76A-90HBFL	7	178	6	152

Vertical Bend Barriers

- Vertical Bend Barriers are preformed to conform to a specific vertical fitting.
- Furnished with three #10 x ½" plated self-drilling screws and a 99-9982 Barrier Strip Splice.
- (*) Insert 30, 45, 60 or 90 for degrees
- (†) Insert 12, 24, 36 or 48 for radius



Outside Bend
(VO)

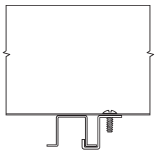


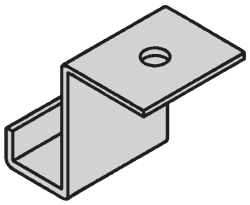
Inside Bend
(VI)

Inside Bend Catalog No.	Outside Bend Catalog No.	Side Rail Height		Loading Depth 'H'	
		in.	mm	in.	mm
73A-(*)VI(†)	73A-(*)VO(†)	4	101	3	76
74A-(*)VI(†)	74A-(*)VO(†)	5	127	4	101
75A-(*)VI(†)	75A-(*)VO(†)	6	152	5	127
76A-(*)VI(†)	76A-(*)VO(†)	7	178	6	152

Barrier Strip Clip

- Zinc plated steel barrier clip fastens to either aluminum or steel ladder rung.
- Furnished with one #10 x ½" zinc plated self-drilling screw.

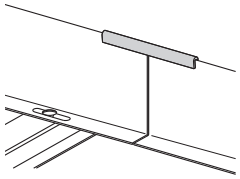


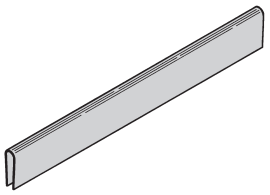


Catalog No.	9ZN-9002

Barrier Strip Splice

- Plastic splice holds adjoining barrier strips in straight alignment.

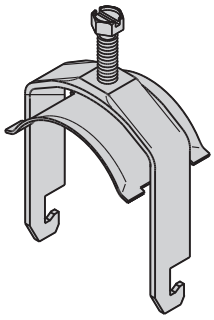




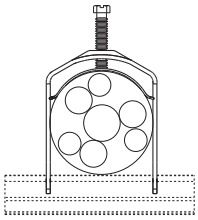
Catalog No.	99-9982

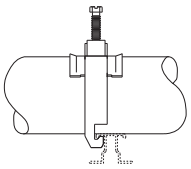
Stainless Steel Cable Clamp "P"

- Fits with series 2, 3, & 4 rungs.
- Attaches to rung at any point.
- 14 gauge Type 316 stainless steel material to minimize corrosion and induction heating.
- Plated steel and aluminum also available.



Refer Cable Fixing Section



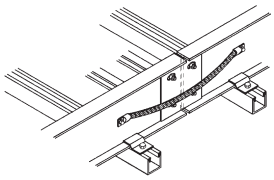


Catalog No.	Cable Size in.	Cable Size mm
BP081SS	.250 - .840	6.4 - 21.3
BP110SS	.810 - 1.100	20.6 - 28.0
BP135SS	.850 - 1.350	21.6 - 34.8
BP175SS	1.250 - 1.750	31.8 - 44.5
BP205SS	1.550 - 2.050	39.4 - 52.1
BP250SS	2.000 - 2.500	50.8 - 63.5
BP300SS	2.500 - 3.000	63.5 - 76.2
BP325SS	2.750 - 3.250	69.9 - 82.6
BP375SS	3.250 - 3.750	82.6 - 95.3
BP425SS	3.750 - 4.250	95.3 - 108.0
BP475SS	4.250 - 4.750	108.0 - 120.7

Bonding Jumper

Use at each expansion splice and where the cable tray is not mechanically/electrically continuous to ground. Sold individually.

- Hardware included.
- See table 392.7(B)(2) on page 233 for amperage ratings required to match the UL cross-sectional area of the tray.
- See tray loading chart for UL cross-sectional area.
- Bonding jumper is 16" long.

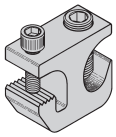


Catalog No.	Cross-Sectional Area	Ampacity
99-N1	0.40 Square inches	600
99-40	1.5 Square inches	1600
99-1620	2.0 Square inches	2000

Grounding Clamp

Cooper B-Line Cable Tray is UL® classified as to its suitability as an equipment grounding conductor. If a separate conductor for additional grounding capability is desired, Cooper B-Line offers this clamp for bolting the conductor at least once to each cable tray section.

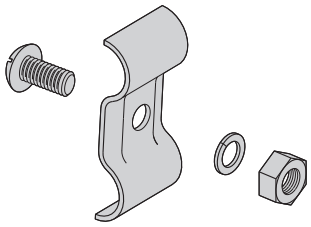
- Accepts #6 AWG to 250 MCM.



Catalog No.	Material
9A-2130	Tin Plated Aluminum

Ground Clamp

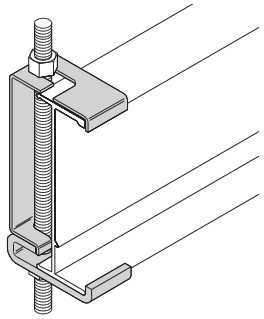
- Mechanically attaches grounding cables to cable tray.
- Hardware included.
- (*) Insert ZN or SS4



Catalog No.	Cable Size
9(*)-2351	#1 thru 2/0
9(*)-2352	3/0 thru 250 MCM

Hanger Rod Clamp

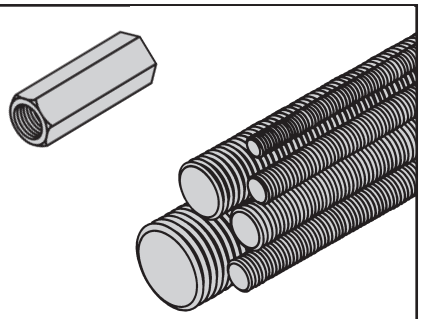
- For 1/2" ATR.
- Furnished in pairs.
- Order ATR and hex nuts separately.
- Two-piece "J"-hanger design.
- 1500 lbs./pair capacity safety factor 3.
- (*) Insert ZN or G



Catalog No.	Rail Height in.	Rail Height mm
9(*)-5324	4	101
9(*)-5325	5	127
9(*)-5326	6	152
9(*)-5327	7	178

Threaded Rod (ATR) & Rod Coupling

Size	Loading lbs	Catalog No.	Available Lengths	Coupling Cat. No.
3/8"-16	730	**ATR 3/8" x Length**	36", 72", 120", 144"	**B655-3/8**
1/2"-13	1350	**ATR 1/2" x Length**	36", 72", 120", 144"	**B655-1/2**



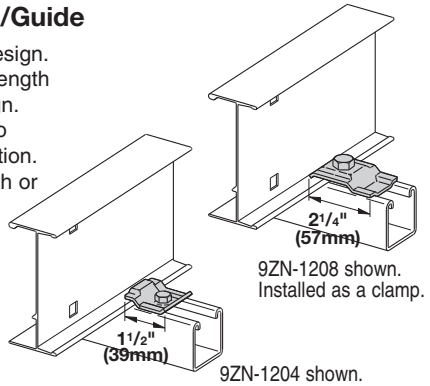
All dimensions in shaded areas are millimeters unless otherwise specified.

Loading based on safety factor 5.
Standard Finish: Zinc plated

Series 2, 3, 4, & 5 Aluminum Cable Ladder Accessories

Cable Tray Clamp/Guide

- Features a no-twist design.
- Has four times the strength of the traditional design.
- Each side is labeled to ensure proper installation.
- Furnished in pairs, with or without hardware.



9ZN-1208 shown. Installed as a clamp.

9ZN-1204 shown. Installed as a guide.

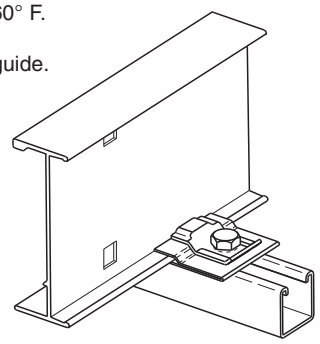
Patent # RE35479

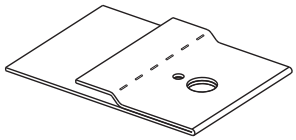
Note: For heavy duty or vertical applications see 9(*)-1241 or 9(*)-1242 page 147

Catalog No.		Overall Length		Hardware Size	Finish
Without Hardware	With Hardware	in.	mm		
9ZN-1204	9ZN-1204NB	1½	38	¼"	Znplt
9ZN-1208	9ZN-1208NB	2¼	57	⅜"	Znplt
9A-1205	--	2¼	57	½"	Alum.
9G-1205	--	2¼	57	½"	HDGAF
9SS6-1205	--	2¼	57	½"	316SS
9ZN-1205	--	2¼	57	½"	Znplt

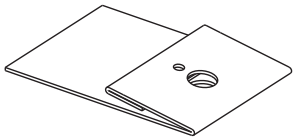
Isolator Pad

- Use as a friction reducer and/or as a dissimilar metal isolator barrier.
- UV resistant HDPE.
- Temperature range: -100 to 160° F.
- Designed to use with 9(*)-1205 or 9(*)-1208 clamp/guide.





Isolation pad shown as when used with a guide.

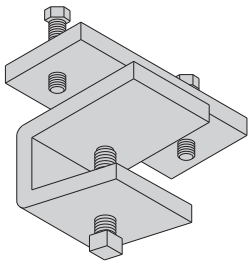


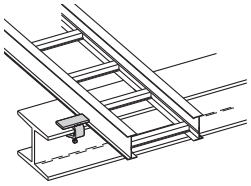
Isolation pad shown with top flange doubled under for clamp application.

Catalog No.	99-PE34

Cable Tray Clamp

- Hold-down clamps for single or double cable tray runs.
- No drilling of support I-beam or channel is required.
- Sold in pieces - two clamps are required per tray.
- Maximum beam flange thickness 1⅛" (28.58 mm).

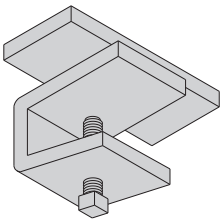




Catalog No.	Finish
9ZN-1249HD	Znplt
9G-1249HD	HDGAF

Cable Tray Guide

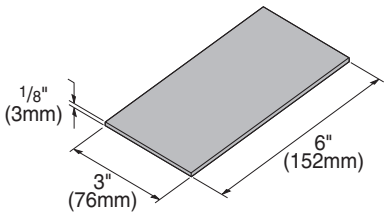
- Expansion guide for single or double cable tray runs.
- Guide allows for longitudinal movement of the cable tray.
- No field drilling of support I-beam or channel is required.
- Guides are required on both sides of cable tray to prevent lateral movement - can be placed on either the inside or outside flange of cable tray.
- Guides are sold in pieces - two guides are required per tray.
- Maximum flange thickness 1⅛" (28.58 mm).



Catalog No.	Finish
9ZN-1249	Znplt
9G-1249	HDGAF

Nylon Pad

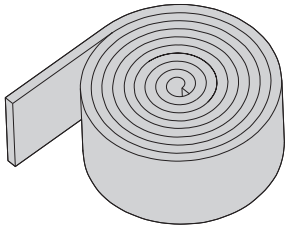
- Use for friction reduction.
- Hardness: Shore D80.
- Low friction coefficient.
- UV resistant.
- Excellent weatherability.
- UL - 94HB.



Catalog No.	99-NY36

Neoprene Roll

- Use for material isolation.
- ⅛" x 2" x 25' roll.
- Hardness: Shore A60.
- Good weatherability.



Catalog No.	99-NP240

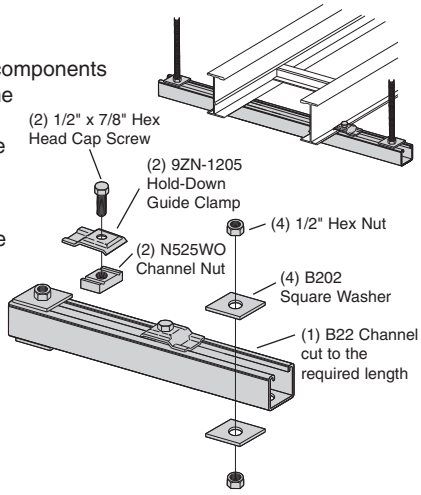
Trapeze Support Kit

Cooper B-Line's trapeze kits provide the components required for a single trapeze support in one package. These kits are available in pre-galvanized steel with zinc-plated hardware or hot dip galvanized steel with 316 stainless steel hardware.

The SH channel provides the convenience of pre-punched slots, which eliminate the need for field drilling.

The illustrated hardware is sealed in a plastic bag and boxed with the channel, which is pre-cut to the appropriate length as shown in the chart.

Designed for use with 1/2" threaded rod. Order rod separately.



Catalog No.	Tray Width		Channel Length		Uniform Load	
	in.	mm	in.	mm	lbs	kN
9P-5506-22SH(†)	6	152	16	406	1600	7.11
9P-5509-22SH(†)	9	229	18	457	1250	5.56
9P-5512-22SH(†)	12	305	22	559	1125	5.00
9P-5518-22SH(†)	18	457	28	711	865	3.85
9P-5524-22SH(†)	24	610	34	864	700	3.11
9P-5530-22SH(†)	30	762	40	1016	590	2.62
9P-5536-22SH(†)	36	914	46	1168	510	2.27
9P-5542-22SH(†)	42	1067	52	1321	450	2.00

• (†) Insert 3/8 for 3/8" threaded rod hardware.

Safety factor of 3.0 on all loads.

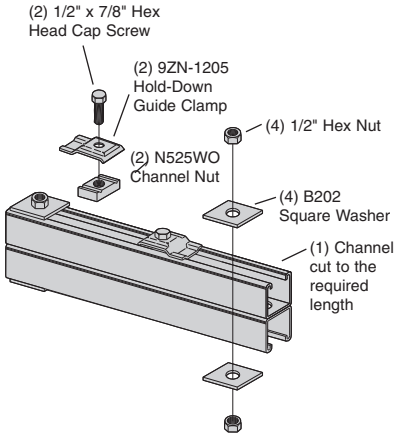
Heavy Duty Trapeze Support Kit

Cooper B-Line's trapeze kits provide the components required for a single trapeze support in one package. These kits are available in Dura-Green® epoxy coated steel with zinc-plated hardware or hot dip galvanized steel with 316 stainless steel hardware.

The SH channel provides the convenience of pre-punched slots, which eliminates the need for field drilling.

The illustrated hardware is sealed in a plastic bag and boxed with the channel, which is pre-cut to the appropriate length as shown in the chart.

Designed for use with 1/2" threaded rod. Order rod separately.

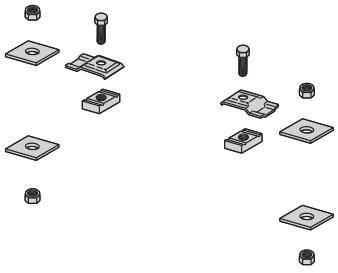


Catalog No.	Tray Width		Channel Length		Uniform Load	
	in.	mm	in.	mm	lbs	kN
9(*)-5506-22SHA	6	152	16	406	1350	6.01
9(*)-5509-22SHA	9	229	18	457	1350	6.01
9(*)-5512-22SHA	12	305	22	559	1350	6.01
9(*)-5518-22SHA	18	457	28	711	1350	6.01
9(*)-5524-22SHA	24	610	34	864	1350	6.01
9(*)-5530-22SHA	30	762	40	1016	1350	6.01
9(*)-5536-22SHA	36	914	46	1168	1350	6.01
9(*)-5542-22SHA	42	1067	52	1321	1350	6.01

• (*) Insert GRN or G

Safety factor of 3.0 on all loads.

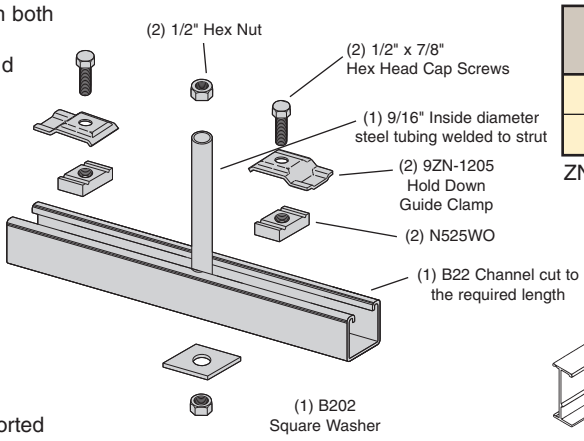
Trapeze Hardware Kit



Catalog No.	9ZN-5500-1/2	9G-5500-1/2
In plastic bag	1 pr. 9ZN-1205 2 HHC Screw 1/2 x 7/8 ZN 2 N525 WO ZN 4 B202 ZN 1/2" sq washer 4 HN 1/2 ZN	1 pr. 9G-1205 2 HHC Screw 1/2 x 7/8 SS6 2 N525 WO SS6 4 B202 HDG 1/2" sq washer 4 HN 1/2 SS6

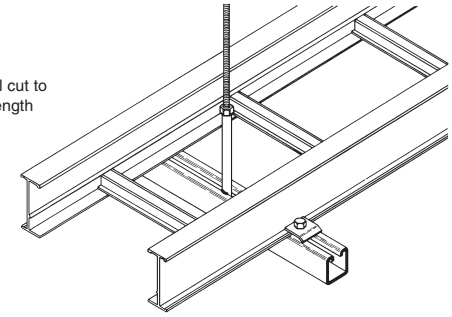
Center Hung Tray Support

- Cooper B-Line's unique Center Hung Cable Tray Support allows cable to be laid-in from both sides.
- Eliminates costly cable pulling and field cutting of cable tray supports. Labor costs are dramatically reduced.
- Required hardware and threaded rod material for trapeze assemblies are reduced by 50%.
- Designed for use with 1/2" threaded rod. (Order rod separately)
- Use with all aluminum and steel cable trays through 24" width.
- Load capacity is 700 lbs. per support. Safety factor of 3.0. Eccentric loading is not to exceed a 60% vs. 40% load differential.
- The maximum recommended unsupported span length is 144"/12 ft. (3.66 m).
- Hardware shown is furnished.

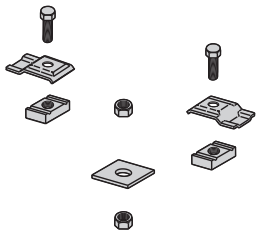


Catalog No.	Tray Width	Channel Length
9ZN-5212	6", 9", 12"	18"
9ZN-5224	18", 24"	30"

ZN = Zinc Plated

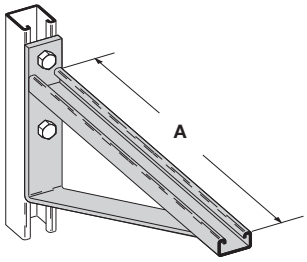


Center Hung Support Hardware Kit



Catalog No.	9ZN-5200
In plastic bag	1 pr. 9ZN-1205 2 HHC Screw 1/2 x 7/8 ZN 2 N525 WO ZN 1 B202 ZN 1/2" sq washer 2 HN 1/2 ZN

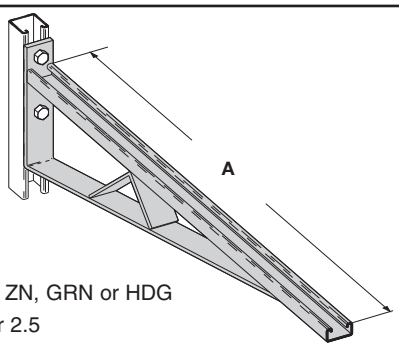
Bracket



Finishes available: ZN, GRN or HDG
Safety Load Factor 2.5

Catalog No.	Uniform Load		Tray Width		'A'	
	lbs	kN	in.	mm	in.	mm
B494-12	1580	7.02	6 & 9	152 & 229	12	305
B494-18	1000	4.45	12	305	18	457
B494-24	996	4.43	18	457	24	610

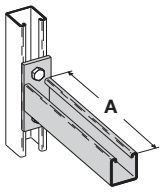
Bracket



Finishes available: ZN, GRN or HDG
Safety Load Factor 2.5

Catalog No.	Uniform Load		Tray Width		'A'	
	lbs	kN	in.	mm	in.	mm
B494-30	924	4.11	24	610	30	762
B494-36	864	3.84	30	762	36	914
B494-42	580	2.58	36	914	42	1067
B494-48	500	2.22	42	1067	48	1219

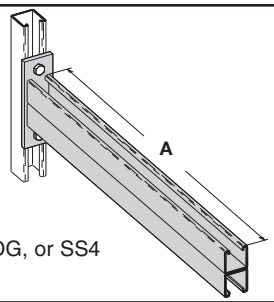
Cantilever Bracket



Finishes available: ZN, GRN, HDG, SS4 or SS6
Safety Load Factor 2.5

Catalog No.	Uniform Load lbs	Uniform Load kN	Tray Width in.	Tray Width mm	'A' in.	'A' mm
B409-12	960	4.27	6 & 9	152 & 229	12	305
B409-18	640	2.84	12	305	18	457
B409-24	480	2.13	18	457	24	610

Cantilever Bracket



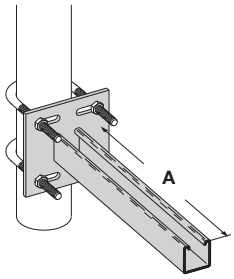
Finishes available: ZN, GRN, HDG, or SS4
Safety Load Factor 2.5

Catalog No.	Uniform Load lbs	Uniform Load kN	Tray Width in.	Tray Width mm	'A' in.	'A' mm
B297-12	1660	7.38	6 & 9	152 & 229	12	305
B297-18	1100	4.89	12	305	18	457
B297-24	835	3.71	18	457	24	610
B297-30	665	2.95	24	610	30	762
B297-36	550	2.44	30	762	36	914
B297-42	465	2.06	36	914	42	1067

Underfloor Support (U-Bolts not included)

U-Bolt Size	Fits Pipe O.D.
B501-3/4	.841 - 1.050
B501-1	1.051 - 1.315
B501-1 1/4	1.316 - 1.660
B501-1 1/2	1.661 - 1.900
B501-2	1.901 - 2.375
B501-2 1/2	2.376 - 2.875

- Order properly sized U-Bolts separately.

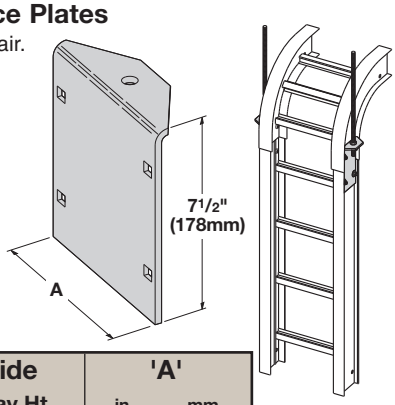


Finish available: ZN
Safety Load Factor 2.5

Catalog No.	Uniform Load lbs	Uniform Load kN	Tray Width in.	Tray Width mm	'A' in.	'A' mm
B409UF-12	800	3.55	6 & 9	152 & 229	12	305
B409UF-21	450	2.00	12 & 18	305 & 457	21	533

Vertical Hanger Splice Plates

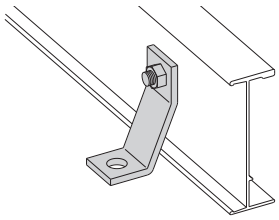
- Design load is 1500 lbs/pair. Safety Factor of 2.5
- Furnished in pairs with hardware.



Catalog No.	Outside Cable Tray Ht.	'A' in.	'A' mm
9A-1224	4"	3.84	97.54
9A-1225	5"	4.73	120.14
9A-1226	6"	5.84	148.34
9A-1227	7"	6.84	173.74

Heavy Duty Hold Down Bracket

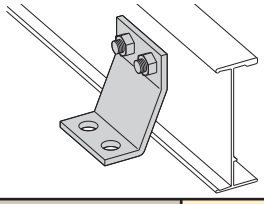
- Design load is 2000 lbs/pair.
- Two bolt design.
- Sold in pairs.
- 3/8" cable tray attachment hardware provided.
- 1/2" support attachment hardware **not** provided.
- (*) Insert: ZN, SS4 or SS6

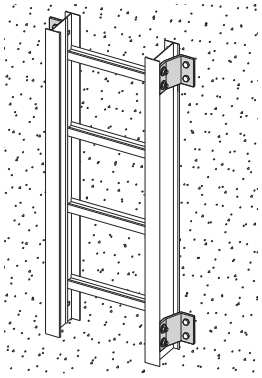


Catalog No.	9(*)-1241

Heavy Duty Hold-Down Bracket

- Design load is 4000 lbs/pair.
- Four bolt design.
- Sold in pairs.
- 3/8" cable tray attachment hardware provided
- 1/2" support attachment hardware **not** provided.
- (*) Insert: ZN, SS4 or SS6



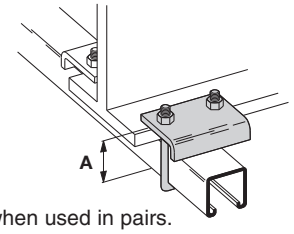


Catalog No.	9(*)-1242

Series 2, 3, 4, & 5 Aluminum Cable Ladder Accessories

Beam Clamp

- Finishes available: ZN or HDG
- Sold in pieces.

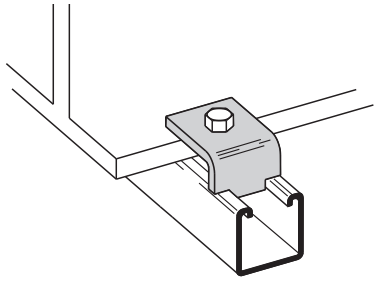


Design load when used in pairs.
Safety Load Factor 5.0

Catalog	Design Load*		'A'	
	lbs	kN	in.	mm
B441-22	1200	5.34	3 3/8	86
B441-22A	1200	5.34	5	127

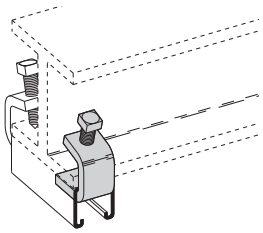
Beam Clamp B355

- Finishes available: ZN, GRN, HDG or SS4
- Sold in pieces.
- Design load is 1200 lbs. when used in pairs.
- Safety Load Factor 5.0
- Order HHCS and Channel Nuts separately.



Beam Clamp

- Finishes available: ZN, GRN or HDG
- Sold in pieces.

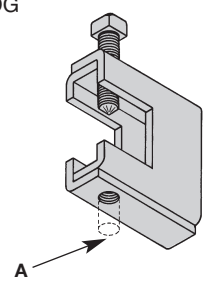


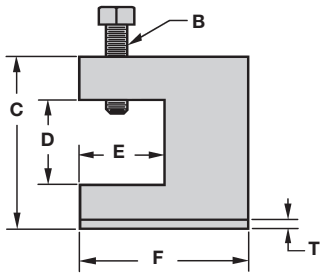
Design load when used in pairs.
Safety Load Factor 5.0

Cat. No.	B212-1/4		B212-3/8	
Design Load *	600 lbs.	2.67 kN	1000 lbs.	4.45 kN
Max. Flange Thick	3/4"	19 mm	1 1/8"	28.6 mm
Mat'l. Thickness	1/4"	6.3 mm	3/8"	9.5 mm

B305 Thru B308 & B321 Series Beam Clamps

- Finishes available: ZN or HDG
- Setscrew included.
- Safety Load Factor 5.0

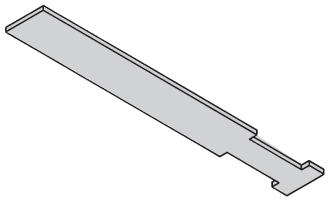




Cat. No.	Rod Size A	B	C	D	E	F	T	Design Load	
								lbs	kN
B305	3/8"-16	3/8"-16	2 5/16"	7/8"	1 1/8"	2 1/2"	11 Ga.	600	2.67
B306	3/8"-16	1/2"-13	2 7/16"	7/8"	1 1/8"	2 1/2"	7 Ga.	1100	4.90
B307	1/2"-13	1/2"-13	2 7/16"	7/8"	1 1/8"	2 1/2"	7 Ga.	1100	4.90
B308	1/2"-13	1/2"-13	2 9/16"	7/8"	1 1/8"	2 1/2"	1/4"	1500	6.68
B321-1	3/8"-16	1/2"-13	3 9/16"	1 11/16"	1 5/8"	3 1/4"	1/4"	1300	5.79
B321-2	1/2"-13	1/2"-13	3 9/16"	1 11/16"	1 5/8"	3 1/4"	1/4"	1400	6.23

B312 Anchor Strap

- Finish available: ZN
- For a maximum beam thickness of 3/4".
- For thicker beams, step up one flange width size.

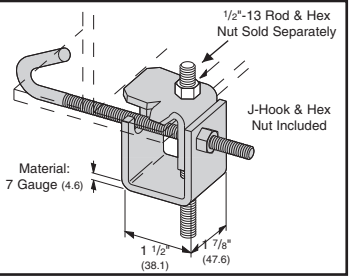


Cat. No.	Flange Width
B312-6	Up to 6"
B312-9	6" - 9"
B312-12	9" - 12"

Beam Clamp

Catalog No.	For Flange Width		Wt./C	
	in.	mm	lbs	kg
B750-J4	3"- 6"	76.2 - 152.4	109	49.4
B750-J6	5"- 9"	127.0 - 288.6	124	56.2
B750-J9	8"- 12"	203.2 - 304.8	135	61.2
B750-J12	11"- 15"	279.4 - 381.0	147	66.7

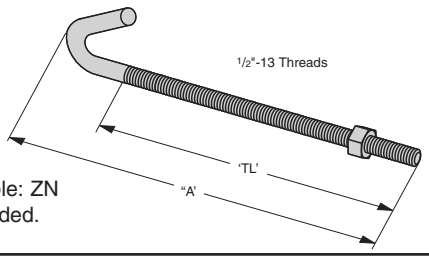
- Finish available: ZN
- Design Load 500 lbs. (2.22 kN)
- Safety Load Factor 5.0
- Recommended torque: 'J'-Hook Nut 125 In.-Lbs. (14.1 kN/m)
- Maximum flange thickness of 3/4"



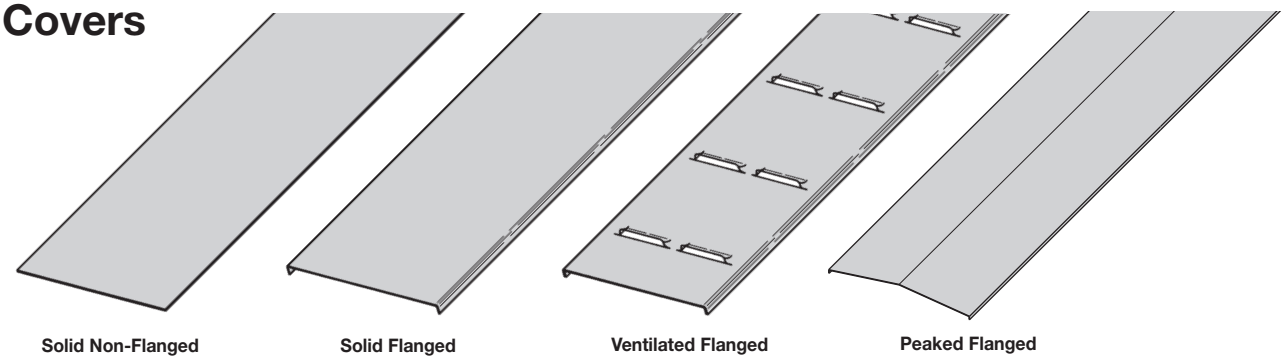
Beam Clamp

Catalog No.	'A'		Thread Length 'TL'		Wt./C	
	in.	mm	in.	mm	lbs	kg
B700-J4	8 1/2"	215.9	5"	127.0	44	19.9
B700-J6	11 1/2"	292.1	6"	152.4	53	24.0
B700-J9	12 1/4"	368.3	6"	152.4	63	28.6
B700-J12	17 1/2"	444.5	6"	152.4	78	35.4

- Finish available: ZN
- Hex Nut included.



Covers



Solid Non-Flanged | Solid Flanged | Ventilated Flanged | Peaked Flanged

A full range of covers is available for straight sections and fittings.

Solid covers should be used when maximum enclosure of the cable is desired and no accumulation of heat is expected. **Ventilated covers** provide an overhead cable shield, yet allow heat to escape.

Cooper B-Line recommends that covers be placed on vertical cable tray runs to a height of 6 ft. (1.83 m) to 8 ft. (2.44 m) above the floor to isolate both cables and personnel. **Flanged covers** have a 1/2 in. (13 mm) flange. Cover clamps are not included with the cover and must be ordered separately. All **peaked covers** are flanged. Standard peaked covers have 1/2" peak.

Aluminum Cover Part Numbering

Prefix

Example: **80 7 A 40 - 24 - 144**

Cover Type
- 80 = Solid
- 81 = Ventilated
- 82 = Peaked

Detail
- 6 = Non-Flanged (80 & 81 type only)
- 7 = Flange

Material
- A = Aluminum

Material Thickness
- 40 = .040 Aluminum All except 2 to 3 pitch

Tray Width
- 06 = 6"
- 09 = 9"
- 12 = 12"
- 18 = 18"
- 24 = 24"
- 30 = 30"
- 36 = 36"

See example below.

Item Description

For Straight Section Cover:
- 144 = 12 ft. (3.66 m)
- 120 = 10 ft. (3.05 m)
- 72 = 6 ft. (1.83 m)
- 60 = 5 ft. (1.52 m)

For fitting covers: Insert suffix of fitting to be covered.

Covers 30" and 36" wide have reinforcing ridges.

Examples of Catalog Numbers for Fitting Covers:

Horizontal Bend Cover

Prefix / Suffix

80 7 A 40 - 18 - 90 HB 24

- 24 — Radius
- HB — Fitting
- 90 — Angle
- 18 — Width
- 40 — Material Thickness
- A — Material
- 7 — Detail
- 80 — Cover Type

Vertical Bend Cover

Prefix / Suffix

80 7 A 40 - 24 - 90 VO 24 - 4*

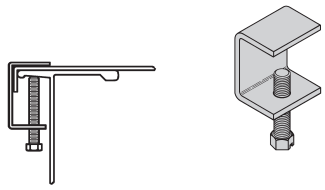
- 4* — Side Rail* Height
- 24 — Radius
- VO — Fitting
- 90 — Angle
- 24 — Width
- 40 — Material Thickness
- A — Material
- 7 — Detail
- 80 — Cover Type

* Required for VO fittings only

Series 2, 3, 4, & 5 Aluminum Cable Ladder Cover Accessories

Standard Cover Clamp

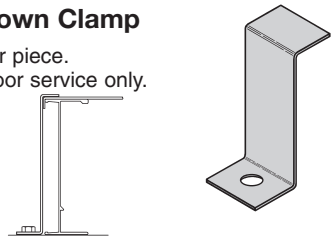
- For indoor service only.
- Setscrew included.
- Sold per piece.



Tray Type	Side Rail Height	Catalog No.
Aluminum	All Sizes	9ZN-9012
		9A-9012

Combination Cover and Hold Down Clamp

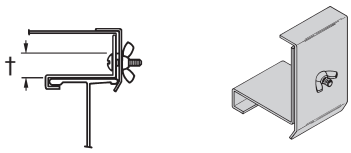
- Sold per piece.
- For indoor service only.



Tray Type	Side Rail Height in.	Side Rail Height mm	Catalog No.
Aluminum	4	101	9P-9043
	5	127	9P-9053
	6	152	9P-9063
	7	178	9P-9073

Raised Cover Clamp

- For indoor service only.
- For use with flanged covers only.

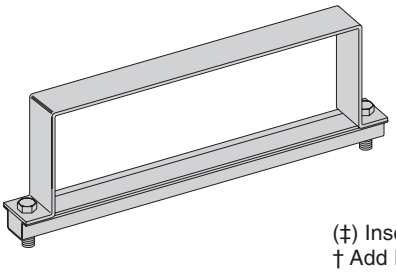


† Specify gap of 1", 2", 3" or 4".

Tray Type	Side Rail Height	Catalog No.
Aluminum	4" & 5" Deep	9ZN-9112-†
	6" & 7" Deep	9ZN-9113-†

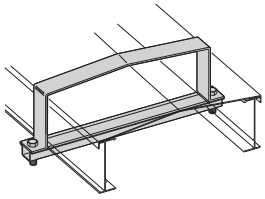
Heavy Duty Cover Clamp

- Recommended for outdoor service.



(‡) Insert tray width
† Add P to Catalog No. for peaked cover clamp.

Peaked Cover Clamp



Side Rail Height in.	Side Rail Height mm	Catalog No.
4	101	9A-(‡)-9044†
5	127	9A-(‡)-9054†
6	152	9A-(‡)-9064†
7	178	9A-(‡)-9074†

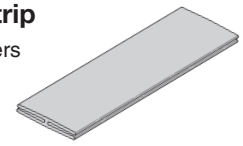
Quantity of Standard Cover Clamps Required

Straight Section 60" or 72".....4 pcs.
Straight Section 120" or 144".....6 pcs.
Horizontal/Vertical Bends.....4 pcs.
Tees.....6 pcs.
Crosses.....8 pcs.

Note: When using the Heavy Duty Cover Clamp, only one-half the number of clamps stated above is required.

Cover Joint Strip

- Used to join covers
- Plastic
- (‡) Insert tray width

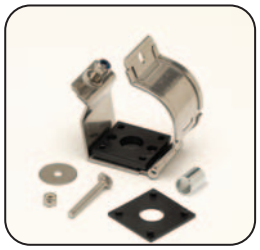


Catalog No.	99-9980-(‡)

Cable Cleats

(see pages 220 thru 224)

Trefoil Cable Cleats



Single Cable Cleats

Section 1- Acceptable Manufacturers

1.01 Manufacturer: Subject to compliance with these specifications, cable tray systems shall be as manufactured by Cooper B-Line, Inc.

Section 2- Cable Tray Sections and Components

2.01 General: Except as otherwise indicated, provide metal cable trays, of types, classes and sizes indicated; with splice plates, bolts, nuts and washers for connecting units. Construct units with rounded edges and smooth surfaces; in compliance with applicable standards; and with the following additional construction features. Cable tray shall be installed according to the latest revision of NEMA VE 2.

2.02 Materials and Finish: Straight section and fitting side rails and rungs shall be extruded from Aluminum Association Alloy 6063. All fabricated parts shall be made from Aluminum Association Alloy 5052.

2.03 Ladder Cable Trays shall consist of two longitudinal members (side rails) with transverse members (rungs) welded to the side rails. Rungs shall be spaced [6] [9] [12] inches on center. Rung spacing in radiused fittings shall be industry standard 9" and measured at the center of the tray's width. Each rung must be capable of supporting a 200 lb. concentrated load at the center of the cable tray over and above the cable load with a safety factor of 1.5.

2.04 Ventilated Trough Cable Trays shall consist of two longitudinal members (side rails) with a corrugated bottom welded to the side rails or rungs spaced 4" on center. The peaks of the corrugated bottom shall have a minimum flat cable bearing surface of $2^{3}/_{4}$" and shall be spaced on 6" centers. To provide ventilation in the tray, the valleys of the corrugated bottom shall have $2^{1}/_{4}$" x 4" rectangular holes punched along the width of the bottom.

2.05 Non-Ventilated Bottom Trough Cable Trays shall consist of two longitudinal members (side rails) with a corrugated bottom welded to the side rails or a solid sheet over rungs. The peaks of the corrugated bottom shall have a minimum flat cable bearing surface of $2^{3}/_{4}$" and shall be spaced on 6" centers.

2.06 Cable tray loading depth shall be [3] [4] [5] [6] inches per NEMA VE 1.

2.07 Straight sections shall have side rails fabricated as I-beams. Straight sections shall be supplied in standard [12 foot] [24 foot] [10 foot (3 m)] [20 foot (6 m)] lengths.

2.08 Cable tray widths shall be [6] [9] [12] [18] [24] [30] [36] inches or as shown on drawings.

2.09 Splice plates shall be the Wedge-Lock design with 4 nuts and bolts per plate. The resistance of fixed splice connections between an adjacent section of tray shall not exceed 0.00033 ohm.

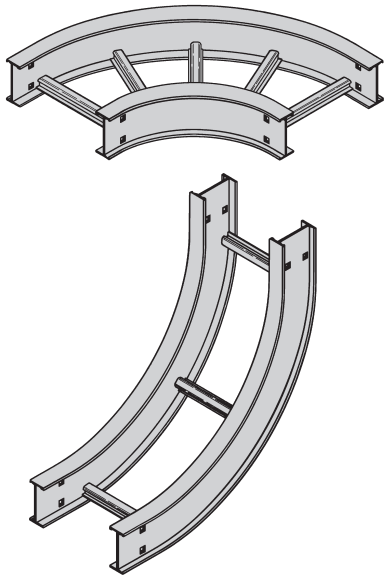
2.10 All fittings must have a minimum radius of [12] [24] [36] [48] inches.

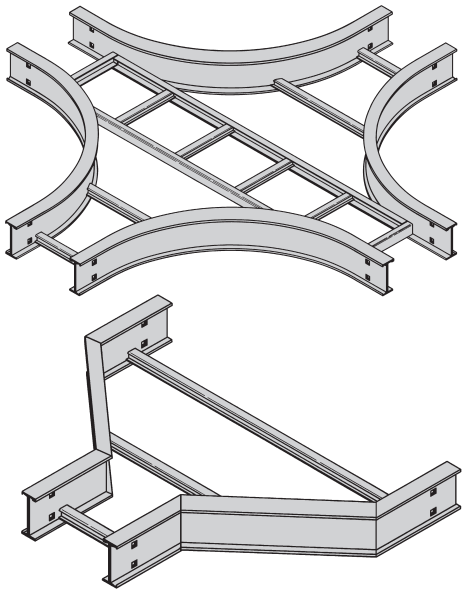
Section 3- Loading Capacities and Testing

3.01 Cable tray shall be capable of carrying a uniformly distributed load of _____ lbs./ft. on a _____ ft. support span with a safety factor of 1.5 when supported as a simple span and tested per NEMA VE 1 5.2. In addition to the uniformly distributed load the cable tray shall support 200 lbs. concentrated load at mid-point of span. Load and safety factors specified are applicable to both the side rails and rung capacities. Cable tray shall be made to manufacturing tolerances as specified by NEMA.

3.02 Upon request, manufacturer shall provide test reports in accordance with the latest revision of NEMA VE 1 or CSA C22.2 No. 126.

Series 2, 3, 4, & 5 Aluminum Cable Ladder Fittings





Fittings engineered with 3” tangents for splicing integrity.

Fittings Part Numbering

Prefix

Example: **4 A - 24 - 90 HB 24** (9" rung spacing is standard)

Side Rail Height	Material	Width	Angle	Type	Radius
4 = 4" (101)	A= Aluminum	06 = 6" (152)	30 = 30°	HB = Horizontal Bend	12 = 12" (305)
5 = 5" (127)	G=HDGAF	09 = 9" (228)	45 = 45°	HT = Horizontal Tee	24 = 24" (609)
6 = 6" (152)	P= Pre-Galvanized	12 = 12" (305)	60 = 60°	HX = Horizontal Cross	36 = 36" (914)
7 = 7" (178)	SS4= 304 Stainless Steel	18 = 18" (457)	90 = 90°	VI = Vertical Inside Bend	48 = 48" (1219)
	SS6= 316 Stainless Steel	24 = 24" (609)		VO = Vertical Outside Bend	
		30 = 30" (762)		VT = Vertical Tee	
		36 = 36" (914)		VTU = Vertical Tee, Up	
				HYR = Horizontal Wye, Right	
				HYL = Horizontal Wye, Left	
				CSF = Cable Support Fitting	
				LR = Left Reducer Fitting	
				RR = Right Reducer Fitting	
				SR = Straight Reducer Fitting	

For ventilated trough, solid trough, ventilated bottom or solid bottom, add VT, ST, 04 or SB as shown below: Available 6" thru 36"

Prefix
4AVT - 24 - 90HB24
Vented Trough

Prefix
4PST - 24 - 90HB24
Non-Ventilated Trough

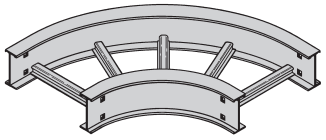
For flat non-ventilated: Available 6" and Wider

Prefix
5PSB - 24 - 90HB24
Non-Ventilated

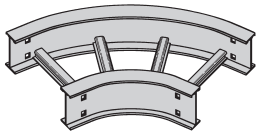
Note: Horizontal crosses and tees 30" or wider, with a radius of 36" or larger, will be of two-piece construction.

Horizontal Bend 90° 60° (HB)

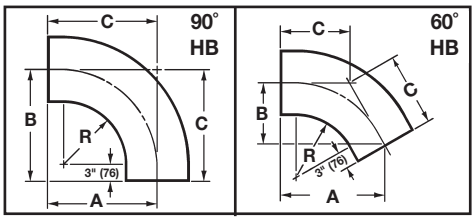
1 pair splice plates with hardware included.



90° Horizontal Bend



60° Horizontal Bend



Bottoms manufactured:
Ladder = 9" Rung Spacing
VT & 04 = 4" Rung Spacing
ST & SB = Flat sheet over 12" Rung Spacing

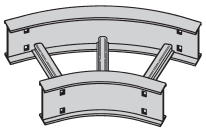
Bend Radius R		Tray Width		90° Horizontal Bend Dimensions							60° Horizontal Bend Dimensions						
				Catalog No.	A		B		C		Catalog No.	A		B		C	
in.	mm	in.	mm		in.	mm	in.	mm	in.	mm		in.	mm	in.	mm	in.	mm
12	305	6	152	(Pre)-06-90HB12	18	457	18	457	18	457	(Pre)-06-60HB12	17 1/2	445	10 1/8	257	11 11/16	297
		9	228	(Pre)-09-90HB12	19 1/2	495	19 1/2	495	19 1/2	495	(Pre)-09-60HB12	18 13/16	478	10 7/8	276	12 1/2	318
		12	305	(Pre)-12-90HB12	21	533	21	533	21	533	(Pre)-12-60HB12	20 1/16	510	11 5/8	295	13 3/8	340
		18	457	(Pre)-18-90HB12	24	610	24	610	24	610	(Pre)-18-60HB12	22 11/16	576	13 1/8	333	15 1/8	384
		24	609	(Pre)-24-90HB12	27	686	27	686	27	686	(Pre)-24-60HB12	25 5/16	643	14 5/8	372	16 7/8	429
		30	762	(Pre)-30-90HB12	30	762	30	762	30	762	(Pre)-30-60HB12	27 7/8	708	16 1/8	410	18 9/16	472
		36	914	(Pre)-36-90HB12	33	838	33	838	33	838	(Pre)-36-60HB12	30 1/2	775	17 5/8	448	20 5/16	516
		42	1218	(Pre)-42-90HB12	36	914	36	914	36	914	(Pre)-42-60HB12	33 1/16	840	19 1/8	486	22 1/16	560
24	610	6	152	(Pre)-06-90HB24	30	762	30	762	30	762	(Pre)-06-60HB24	27 7/8	708	16 1/8	410	18 9/16	472
		9	228	(Pre)-09-90HB24	31 1/2	800	31 1/2	800	31 1/2	800	(Pre)-09-60HB24	29 3/16	741	16 7/8	429	19 7/16	494
		12	305	(Pre)-12-90HB24	33	838	33	838	33	838	(Pre)-12-60HB24	30 1/2	775	17 5/8	448	20 5/16	516
		18	457	(Pre)-18-90HB24	36	914	36	914	36	914	(Pre)-18-60HB24	33 1/16	708	19 1/8	486	22 1/16	560
		24	609	(Pre)-24-90HB24	39	991	39	991	39	991	(Pre)-24-60HB24	35 11/16	907	20 5/8	524	23 13/16	605
		30	762	(Pre)-30-90HB24	42	1067	42	1067	42	1067	(Pre)-30-60HB24	38 1/4	972	22 1/8	564	25 1/2	648
		36	914	(Pre)-36-90HB24	45	1143	45	1143	45	1143	(Pre)-36-60HB24	40 7/8	1038	23 5/8	600	27 1/4	692
		42	1218	(Pre)-42-90HB24	48	1219	48	1219	48	1219	(Pre)-42-60HB24	43 1/2	1105	25 1/8	638	29	737
36	915	6	152	(Pre)-06-90HB36	42	1067	42	1067	42	1067	(Pre)-06-60HB36	38 1/4	971	22 1/8	562	25 1/2	648
		9	228	(Pre)-09-90HB36	43 1/2	1105	43 1/2	1105	43 1/2	1105	(Pre)-09-60HB36	39 9/16	1005	22 7/8	581	26 3/8	670
		12	305	(Pre)-12-90HB36	45	1143	45	1143	45	1143	(Pre)-12-60HB36	40 7/8	1038	23 5/8	600	27 1/4	692
		18	457	(Pre)-18-90HB36	48	1219	48	1219	48	1219	(Pre)-18-60HB36	43 1/2	1105	25 1/8	638	29	737
		24	609	(Pre)-24-90HB36	51	1295	51	1295	51	1295	(Pre)-24-60HB36	46 1/16	1170	26 5/8	676	30 11/16	780
		30	762	(Pre)-30-90HB36	54	1372	54	1375	54	1372	(Pre)-30-60HB36	48 1/16	1237	28 1/8	714	32 7/16	824
		36	914	(Pre)-36-90HB36	57	1448	57	1488	57	1448	(Pre)-36-60HB36	51 1/4	1302	29 5/8	753	34 3/16	869
		42	1218	(Pre)-42-90HB36	60	1524	60	1524	60	1524	(Pre)-42-60HB36	53 7/8	1368	31 1/8	791	35 15/16	913
48	1220	6	152	(Pre)-06-90HB48	54	1372	54	1372	54	1372	(Pre)-06-60HB48	48 1/16	1221	28 1/8	715	32 11/16	830
		9	228	(Pre)-09-90HB48	55 1/2	1410	55 1/2	1410	55 1/2	1410	(Pre)-09-60HB48	49 15/16	1268	28 7/8	734	33 5/16	846
		12	305	(Pre)-12-90HB48	57	1448	57	1448	57	1448	(Pre)-12-60HB48	51 1/4	1302	29 5/8	753	34 3/16	868
		18	457	(Pre)-18-90HB48	60	1524	60	1524	60	1524	(Pre)-18-60HB48	53 7/8	1368	31 1/8	791	35 15/16	913
		24	609	(Pre)-24-90HB48	63	1600	63	1600	63	1600	(Pre)-24-60HB48	56 7/16	1434	32 5/8	829	37 5/8	956
		30	762	(Pre)-30-90HB48	66	1676	66	1676	66	1676	(Pre)-30-60HB48	59 1/16	1500	34 1/8	867	39 3/8	1000
		36	914	(Pre)-36-90HB48	69	1753	69	1753	69	1753	(Pre)-36-60HB48	61 11/16	1567	35 5/8	905	41 1/8	1045
		42	1218	(Pre)-42-90HB48	72	1829	72	1829	72	1829	(Pre)-42-60HB48	64 1/4	1632	37 1/8	943	42 13/16	1087

(Pre) See page 152 for catalog number prefix.
All dimensions in parentheses are in millimeters unless otherwise specified.
Width dimensions are to inside wall. For aluminum fittings add 1.5 inches for total outside width.
Manufacturing tolerances apply to all dimensions.

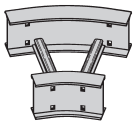
Horizontal Bend 45° 30° (HB)

1 pair splice plates with hardware included.

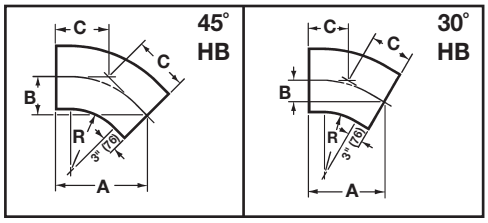
Bottoms manufactured:
Ladder = 9" Rung Spacing
VT & 04 = 4" Rung Spacing
ST & SB = Flat sheet over 12" Rung Spacing



45° Horizontal Bend



30° Horizontal Bend

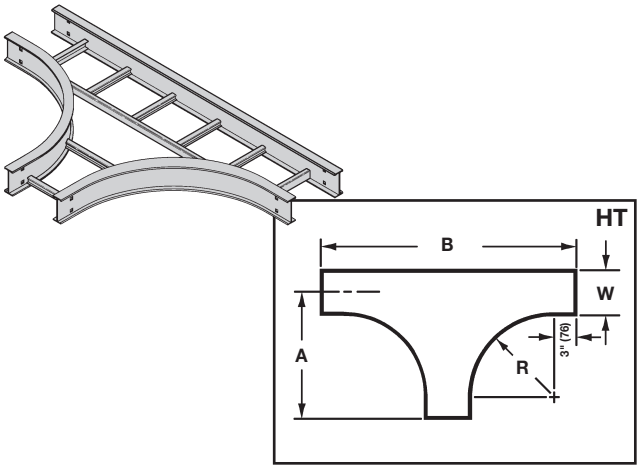


Bend Radius R		Tray Width		45° Horizontal Bend Dimensions							30° Horizontal Bend Dimensions						
				Catalog No.	A		B		C		Catalog No.	A		B		C	
in.	mm	in.	mm		in.	mm	in.	mm	in.	mm		in.	mm	in.	mm	in.	mm
12	305	6	152	(Pre)-06-45HB12	15 3/4	400	6 1/2	165	9 3/16	233	(Pre)-06-30HB12	13 1/8	333	3 1/2	89	7	179
		9	228	(Pre)-09-45HB12	16 13/16	427	6 15/16	176	9 13/16	249	(Pre)-09-30HB12	13 7/8	352	3 11/16	94	7 7/16	189
		12	305	(Pre)-12-45HB12	17 7/8	454	7 3/8	187	10 7/16	265	(Pre)-12-30HB12	14 5/8	372	3 15/16	100	7 13/16	198
		18	457	(Pre)-18-45HB12	20	508	8 1/4	210	11 11/16	297	(Pre)-18-30HB12	16 1/8	410	4 5/16	135	8 5/8	219
		24	609	(Pre)-24-45HB12	22 1/16	560	9 1/8	232	12 15/16	329	(Pre)-24-30HB12	17 5/8	448	4 11/16	119	9 7/16	240
		30	762	(Pre)-30-45HB12	24 3/16	614	10	254	14 3/16	360	(Pre)-30-30HB12	19 1/8	486	5 1/8	130	10 1/4	260
		36	914	(Pre)-36-45HB12	26 5/16	668	10 15/16	278	15 7/16	392	(Pre)-36-30HB12	20 5/8	524	5 1/2	140	11 1/16	281
		42	1218	(Pre)-42-45HB12	28 7/16	722	11 13/16	300	16 11/16	424	(Pre)-42-30HB12	22 1/8	562	5 15/16	151	11 13/16	300
24	610	6	152	(Pre)-06-45HB24	24 3/16	614	10	254	14 3/16	360	(Pre)-06-30HB24	19 1/8	486	5 1/8	130	10/4	260
		9	228	(Pre)-09-45HB24	25 1/4	641	10 1/2	267	14 13/16	376	(Pre)-09-30HB24	19 7/8	505	5 5/16	135	10 5/8	270
		12	305	(Pre)-12-45HB24	26 5/16	668	10 15/16	278	15 7/16	392	(Pre)-12-30HB24	20 5/8	524	5 1/2	140	11 1/16	281
		18	457	(Pre)-18-45HB24	28 7/16	722	11 13/16	300	16 11/16	424	(Pre)-18-30HB24	22 1/8	562	5 15/16	151	11 13/16	300
		24	609	(Pre)-24-45HB24	30 9/16	766	12 11/16	322	17 15/16	456	(Pre)-24-30HB24	23 5/8	600	6 5/16	160	12 5/8	321
		30	762	(Pre)-30-45HB24	32 11/16	830	13 9/16	344	19 1/8	486	(Pre)-30-30HB24	25 1/8	638	6 3/4	172	13 7/16	341
		36	914	(Pre)-36-45HB24	34 13/16	884	14 7/16	367	20 3/8	518	(Pre)-36-30HB24	26 5/8	676	7 1/8	181	14 1/4	362
		42	1218	(Pre)-42-45HB24	36 15/16	938	15 5/16	389	21 5/8	549	(Pre)-42-30HB24	28 1/8	715	7 1/2	191	15 1/16	383
36	915	6	152	(Pre)-06-45HB36	32 11/16	830	13 9/16	344	19 1/8	486	(Pre)-06-30HB36	25 1/8	638	6 3/4	171	13 7/16	341
		9	228	(Pre)-09-45HB36	33 3/4	857	14	356	19 3/4	502	(Pre)-09-30HB36	25 7/8	657	6 15/16	176	13 7/8	352
		12	305	(Pre)-12-45HB36	34 13/16	884	14 7/16	367	20 3/8	518	(Pre)-12-30HB36	26 5/8	676	7 1/8	181	14 1/4	362
		18	457	(Pre)-18-45HB36	36 15/16	938	15 5/16	389	21 5/8	549	(Pre)-18-30HB36	28 1/8	114	7 1/2	191	15 1/16	383
		24	609	(Pre)-24-45HB36	39 1/6	992	16 3/16	411	22 7/8	581	(Pre)-24-30HB36	29 5/8	753	7 15/16	202	15 7/8	403
		30	762	(Pre)-30-45HB36	41 3/6	1046	17 1/16	433	24 1/8	613	(Pre)-30-30HB36	31 1/8	790	8 5/16	211	16 11/16	424
		36	914	(Pre)-36-45HB36	43 5/6	1100	17 15/16	456	25 3/8	645	(Pre)-36-30HB36	32 5/8	829	8 3/4	222	17 1/2	445
		42	1218	(Pre)-42-45HB36	45 7/16	1154	18 13/16	478	26 5/8	676	(Pre)-42-30HB36	34 1/8	867	9 1/8	232	18 1/4	464
48	1220	6	152	(Pre)-06-45HB48	41 3/16	1046	17 1/16	433	24 1/8	613	(Pre)-06-30HB48	31 1/8	791	8 5/16	211	16 11/16	424
		9	228	(Pre)-09-45HB48	42 1/4	1073	17 1/2	445	24 3/4	629	(Pre)-09-30HB48	31 7/8	810	8 9/16	218	17 1/16	433
		12	305	(Pre)-12-45HB48	43 5/16	1100	17 15/16	456	25 3/8	645	(Pre)-12-30HB48	32 5/8	829	8 3/4	222	17 1/2	445
		18	457	(Pre)-18-45HB48	45 7/16	1154	18 13/16	487	26 5/8	676	(Pre)-18-30HB48	34 1/8	867	9 1/8	232	18 1/4	464
		24	609	(Pre)-24-45HB48	47 9/16	1208	19 11/16	500	27 7/8	708	(Pre)-24-30HB48	35 5/8	905	9 9/16	243	19 1/16	484
		30	762	(Pre)-30-45HB48	49 11/16	1262	20 9/16	522	29 1/8	740	(Pre)-30-30HB48	37 1/8	943	9 15/16	252	19 7/8	505
		36	914	(Pre)-36-45HB48	51 13/16	1316	21 7/16	545	30 5/16	770	(Pre)-36-30HB48	38 5/8	981	10 5/16	262	20 11/16	525
		42	1218	(Pre)-42-45HB48	54 15/16	1395	22 5/16	567	31 9/16	802	(Pre)-42-30HB48	40 1/8	1019	10 3/4	273	21 1/2	546

(Pre) See page 152 for catalog number prefix.
All dimensions in parentheses are in millimeters unless otherwise specified.
Width dimensions are to inside wall. For aluminum fittings add 1.5 inches for total outside width.
Manufacturing tolerances apply to all dimensions.

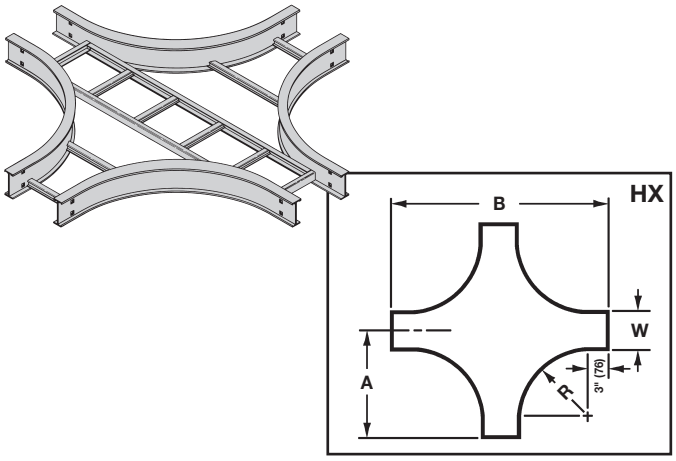
Horizontal Tee (HT)

2 pair splice plates with hardware included.



Horizontal Cross (HX)

3 pair splice plates with hardware included.



Bend Radius R		Tray Width		Horizontal Tee					Horizontal Cross				
				Catalog Number	Dimensions A		Dimensions B		Catalog Number	Dimensions A		Dimensions B	
in.	mm	in.	mm		in.	mm	in.	mm		in.	mm	in.	mm
12	305	6	152	(Prefix)-06-HT12	18	457	36	914	(Prefix)-06-HX12	18	457	36	914
		9	229	(Prefix)-09-HT12	19 1/2	496	39	991	(Prefix)-09-HX12	19 1/2	496	39	991
		12	305	(Prefix)-12-HT12	21	533	42	1067	(Prefix)-12-HX12	21	533	42	1067
		18	457	(Prefix)-18-HT12	24	609	48	1219	(Prefix)-18-HX12	24	609	48	1219
		24	609	(Prefix)-24-HT12	27	686	54	1372	(Prefix)-24-HX12	27	686	54	1372
		30	762	(Prefix)-30-HT12	30	762	60	1524	(Prefix)-30-HX12	30	762	60	1524
		36	914	(Prefix)-36-HT12	33	838	66	1676	(Prefix)-36-HX12	33	838	66	1676
		42	1067	(Prefix)-42-HT12	36	914	72	1829	(Prefix)-42-HX12	36	914	72	1829
24	610	6	152	(Prefix)-06-HT24	30	762	60	1542	(Prefix)-06-HX24	30	762	60	1524
		9	229	(Prefix)-09-HT24	31 1/2	800	63	1600	(Prefix)-09-HX24	31 1/2	800	63	1600
		12	305	(Prefix)-12-HT24	33	838	66	1676	(Prefix)-12-HX24	33	838	66	1676
		18	457	(Prefix)-18-HT24	36	914	72	1828	(Prefix)-18-HX24	36	914	72	1828
		24	609	(Prefix)-24-HT24	39	991	78	1982	(Prefix)-24-HX24	39	991	78	1982
		30	762	(Prefix)-30-HT24	42	1067	84	2134	(Prefix)-30-HX24	42	1067	84	2134
		36	914	(Prefix)-36-HT24	45	1143	90	2286	(Prefix)-36-HX24	45	1143	90	2286
		42	1067	(Prefix)-42-HT24	48	1219	96	2438	(Prefix)-42-HX24	48	1219	96	2438
36	915	6	152	(Prefix)-06-HT36	42	1067	84	2134	(Prefix)-06-HX36	42	1067	84	2134
		9	229	(Prefix)-09-HT36	43 1/2	1105	87	2210	(Prefix)-09-HX36	43 1/2	1105	87	2210
		12	305	(Prefix)-12-HT36	45	1143	90	2286	(Prefix)-12-HX36	45	1143	90	2286
		18	457	(Prefix)-18-HT36	48	1219	96	2438	(Prefix)-18-HX36	48	1219	96	2438
		24	609	(Prefix)-24-HT36	51	1295	102	2590	(Prefix)-24-HX36	51	1295	102	2590
		30	762	(Prefix)-30-HT36	54	1372	108	2744	(Prefix)-30-HX36	54	1372	108	2744
		36	914	(Prefix)-36-HT36	57	1488	114	2896	(Prefix)-36-HX36	57	1448	114	2896
		42	1067	(Prefix)-42-HT36	60	1524	120	3048	(Prefix)-42-HX36	60	1524	120	3048
48	1220	6	152	(Prefix)-06-HT48	54	1372	108	2743	(Prefix)-06-HX48	54	1372	108	2743
		9	229	(Prefix)-09-HT48	55 1/2	1410	111	2820	(Prefix)-09-HX48	55 1/2	1410	111	2820
		12	305	(Prefix)-12-HT48	57	1448	114	2896	(Prefix)-12-HX48	57	1448	114	2896
		18	457	(Prefix)-18-HT48	60	1524	120	3048	(Prefix)-18-HX48	60	1524	120	3048
		24	609	(Prefix)-24-HT48	63	1600	126	3200	(Prefix)-24-HX48	63	1600	126	3200
		30	762	(Prefix)-30-HT48	66	1676	132	3353	(Prefix)-30-HX48	66	1676	132	3353
		36	914	(Prefix)-36-HT48	69	1753	138	3535	(Prefix)-36-HX48	69	1753	138	3505
		42	1067	(Prefix)-42-HT48	72	1829	144	3658	(Prefix)-42-HX48	72	1829	144	3658

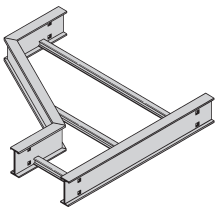
(Prefix) See page 152 for catalog number prefix.

All dimensions in parentheses are millimeters unless otherwise specified.

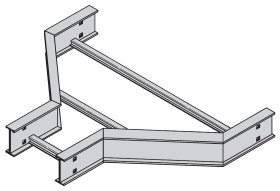
Width dimensions are to inside wall. For aluminum fittings add 1.5 inches for total outside width. Manufacturing tolerances apply to all dimensions.

Reducers (LR, SR, RR)

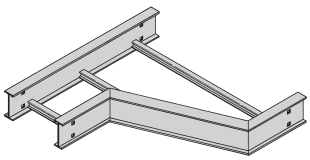
1 pair splice plates with hardware included.



Left Reducer

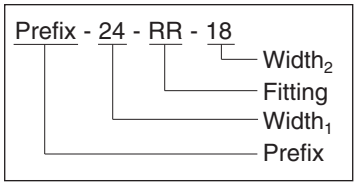


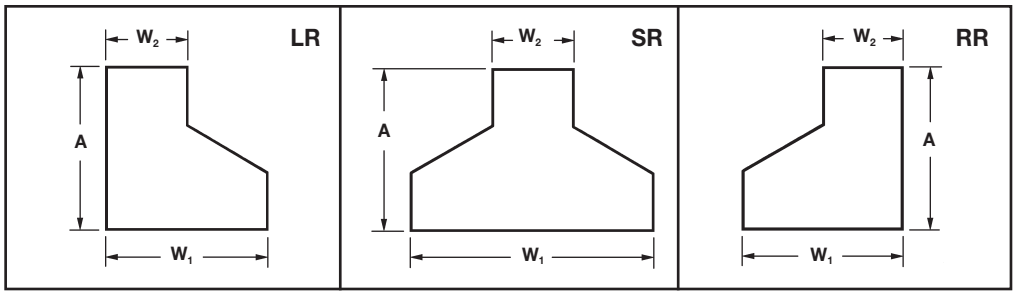
Straight Reducer



Right Reducer

Reducer Part Numbering





Tray Width				Left Hand Reducer			Straight Reducer			Right Hand Reducer		
W_1		W_2		Catalog No.	A		Catalog No.	A		Catalog No.	A	
in.	mm	in.	mm		in.	mm		in.	mm		in.	mm
9	228	6	152	(Prefix)-09-LR06	9 3/4	248	(Prefix)-09-SR06	8 7/8	225	(Prefix)-09-RR06	9 3/4	248
12	305	6	152	(Prefix)-12-LR06	11 1/2	292	(Prefix)-12-SR06	9 3/4	248	(Prefix)-12-RR06	11 1/2	292
		9	228	(Prefix)-12-LR09	9 3/4	248	(Prefix)-12-SR09	8 7/8	225	(Prefix)-12-RR09	9 3/4	248
18	457	6	152	(Prefix)-18-LR06	14 15/16	379	(Prefix)-18-SR06	11 1/2	292	(Prefix)-18-RR06	14 15/16	379
		9	228	(Prefix)-18-LR09	13 3/16	340	(Prefix)-18-SR09	10 5/8	270	(Prefix)-18-RR09	13 3/16	340
		12	305	(Prefix)-18-LR12	11 1/2	292	(Prefix)-18-SR12	9 3/4	248	(Prefix)-18-RR12	11 1/2	292
24	609	6	152	(Prefix)-24-LR06	18 3/8	467	(Prefix)-24-SR06	13 3/16	340	(Prefix)-24-RR06	18 3/8	467
		9	228	(Prefix)-24-LR09	16 11/16	424	(Prefix)-24-SR09	12 3/8	314	(Prefix)-24-RR09	16 11/16	424
		12	305	(Prefix)-24-LR12	14 15/16	379	(Prefix)-24-SR12	11 1/2	292	(Prefix)-24-RR12	14 15/16	379
		18	457	(Prefix)-24-LR18	11 1/2	292	(Prefix)-24-SR18	9 3/4	248	(Prefix)-24-RR18	11 1/2	292
30	762	6	152	(Prefix)-30-LR06	21 7/8	555	(Prefix)-30-SR06	14 15/16	380	(Prefix)-30-RR06	21 7/8	555
		9	228	(Prefix)-30-LR09	20 1/8	511	(Prefix)-30-SR09	14 1/16	358	(Prefix)-30-RR09	20 1/8	511
		12	305	(Prefix)-30-LR12	18 3/8	462	(Prefix)-30-SR12	13 3/16	335	(Prefix)-30-RR12	18 3/8	462
		18	459	(Prefix)-30-LR18	14 15/16	380	(Prefix)-30-SR18	11 1/2	292	(Prefix)-30-RR18	14 15/16	380
		24	609	(Prefix)-30-LR24	11 1/2	292	(Prefix)-30-SR24	9 3/4	248	(Prefix)-30-RR24	11 1/2	292
36	914	6	152	(Prefix)-36-LR06	25 5/16	643	(Prefix)-36-SR06	16 11/16	424	(Prefix)-36-RR06	23 5/16	643
		9	228	(Prefix)-36-LR09	23 9/16	598	(Prefix)-36-SR09	15 13/16	402	(Prefix)-36-RR09	23 9/16	598
		12	305	(Prefix)-36-LR12	21 7/8	555	(Prefix)-36-SR12	14 15/16	380	(Prefix)-36-RR12	21 7/8	555
		18	457	(Prefix)-36-LR18	18 3/8	462	(Prefix)-36-SR18	13 3/16	335	(Prefix)-36-RR18	18 3/8	462
		24	609	(Prefix)-36-LR24	14 15/16	380	(Prefix)-36-SR24	11 1/2	292	(Prefix)-36-RR24	14 15/16	380
		30	762	(Prefix)-36-LR30	11 1/2	292	(Prefix)-36-SR30	9 3/4	248	(Prefix)-36-RR30	11 1/2	292
42	1067	6	152	(Prefix)-42-LR06	28 3/4	730	(Prefix)-42-SR06	18 3/8	467	(Prefix)-42-RR06	28 3/4	732
		9	228	(Prefix)-42-LR09	27 1/16	687	(Prefix)-42-SR09	17 1/2	445	(Prefix)-42-RR09	27 1/16	687
		12	305	(Prefix)-42-LR12	25 5/16	643	(Prefix)-42-SR12	16 11/16	424	(Prefix)-42-RR12	25 15/16	643
		18	457	(Prefix)-42-LR18	21 7/8	556	(Prefix)-42-SR18	14 15/16	379	(Prefix)-42-RR18	21 7/8	556
		24	609	(Prefix)-42-LR24	18 3/8	467	(Prefix)-42-SR24	13 3/16	335	(Prefix)-42-RR24	18 3/8	467
		30	762	(Prefix)-42-LR30	14 15/16	379	(Prefix)-42-SR30	11 1/2	292	(Prefix)-42-RR30	14 15/16	379
		36	914	(Prefix)-42-LR36	11 1/2	292	(Prefix)-42-SR36	9 3/4	249	(Prefix)-42-RR36	11 1/2	292

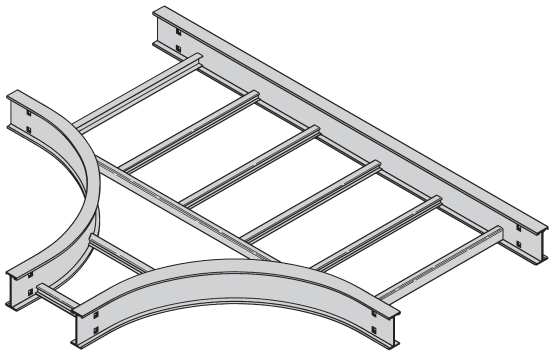
(Prefix) See page 152 for catalog number prefix.

All dimensions in parentheses are millimeters unless otherwise specified.

Width dimensions are to inside wall. For aluminum fittings add 1.5 inches for total outside width. Manufacturing tolerances apply to all dimensions.

Horizontal Reducing Tee (HT)

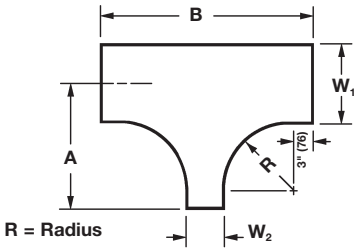
2 pair splice plates with hardware included.



Prefix - 36 - 18 HT 24

- Radius
- Fitting
- Width W_2
- Width W_1
- To complete catalog number, insert fitting prefix.

HT

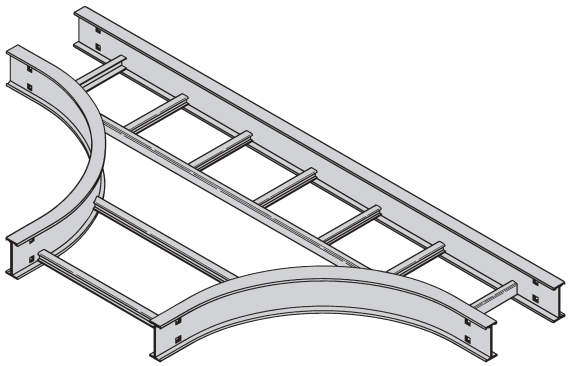


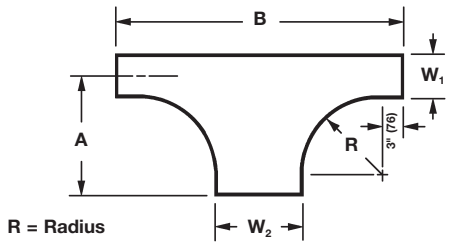
Tray Width W1 in.	Tray Width W1 mm	Tray Width W2 in.	Tray Width W2 mm	* Insert Radius (12", 24", 36", or 48") Catalog No.	12" Radius A in.	12" Radius A mm	12" Radius B in.	12" Radius B mm	24" Radius A in.	24" Radius A mm	24" Radius B in.	24" Radius B mm	36" Radius A in.	36" Radius A mm	36" Radius B in.	36" Radius B mm	48" Radius A in.	48" Radius A mm	48" Radius B in.	48" Radius B mm
9	228	6	152	(Prefix)-09-06-HT*	19 1/2	496	36	914	31 1/2	800	60	1524	43	1092	84	2134	55 1/2	1410	108	2743
12	305	6	152	(Prefix)-12-06-HT*	21	533	36	914	33	838	60	1524	45	1143	84	2134	57	1448	108	2743
		9	228	(Prefix)-12-09-HT*	21	533	39	991	33	838	63	1600	45	1143	87	2210	57	1448	111	2819
18	475	6	152	(Prefix)-18-06-HT*	24	609	36	914	36	914	60	1524	48	1219	84	2134	60	1524	108	2743
		9	228	(Prefix)-18-09-HT*	24	609	39	991	36	914	63	1600	48	1219	87	2210	60	1524	111	2819
		12	305	(Prefix)-18-12-HT*	24	609	42	1067	36	914	66	1676	48	1219	90	2286	60	1524	114	2496
24	609	6	152	(Prefix)-24-06-HT*	27	686	36	914	39	991	60	1524	51	1295	84	2134	63	1600	108	2743
		9	228	(Prefix)-24-09-HT*	27	686	39	991	39	991	63	1600	51	1295	87	2210	63	1600	111	2819
		12	305	(Prefix)-24-12-HT*	27	686	42	1067	39	991	66	1676	51	1295	90	2286	63	1600	114	2496
		18	457	(Prefix)-24-18-HT*	27	686	48	1219	39	991	72	1829	51	1295	96	2438	63	1600	120	3048
30	762	6	152	(Prefix)-30-06-HT*	30	762	36	914	42	1067	60	1524	54	1372	84	2134	66	1676	108	2743
		9	228	(Prefix)-30-09-HT*	30	762	39	991	42	1067	63	1600	54	1372	87	2210	66	1676	111	2819
		12	305	(Prefix)-30-12-HT*	30	762	42	1067	42	1067	66	1676	54	1372	90	2286	66	1676	114	2496
		18	457	(Prefix)-30-18-HT*	30	762	48	1219	42	1067	72	1829	54	1372	96	2438	66	1676	120	3048
		24	609	(Prefix)-30-24-HT*	30	762	54	1372	42	1067	78	1981	54	1372	102	2591	66	1676	126	3200
36	914	6	152	(Prefix)-36-06-HT*	33	838	36	914	45	1143	60	1524	57	1448	84	2134	69	1753	108	2743
		9	228	(Prefix)-36-09-HT*	33	838	39	991	45	1143	63	1600	57	1448	87	2210	69	1753	111	2819
		12	305	(Prefix)-36-12-HT*	33	838	42	1067	45	1143	66	1676	57	1448	90	2286	69	1753	114	2496
		18	457	(Prefix)-36-18-HT*	33	838	48	1219	45	1143	72	1829	57	1448	96	2438	69	1753	120	3048
		24	609	(Prefix)-36-24-HT*	33	838	54	1372	45	1143	78	1981	57	1448	102	2591	69	1753	126	3200
		30	762	(Prefix)-36-30-HT*	33	838	60	1524	45	1143	84	2134	57	1448	108	2743	69	1753	132	3353
42	1067	6	152	(Prefix)-42-06-HT*	36	914	36	914	48	1219	60	1524	60	1524	84	2134	72	1829	108	2743
		9	228	(Prefix)-42-09-HT*	36	914	39	991	48	1219	63	1600	60	1524	87	2210	72	1829	111	2819
		12	305	(Prefix)-42-12-HT*	36	914	42	1067	48	1219	66	1676	60	1524	90	2286	72	1829	114	2496
		18	457	(Prefix)-42-18-HT*	36	914	48	1219	48	1219	72	1829	60	1524	96	2438	72	1829	120	3048
		24	609	(Prefix)-42-24-HT*	36	914	54	1372	48	1219	78	1981	60	1524	102	2591	72	1829	126	3200
		30	762	(Prefix)-42-30-HT*	36	914	60	1524	48	1219	84	2134	60	1524	108	2743	72	1829	132	3353
		36	914	(Prefix)-42-36-HT*	36	914	66	1676	48	1219	90	2286	60	1524	114	2895	72	1829	138	3505

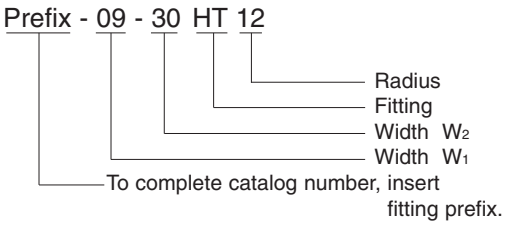
(Prefix) See page 152 for catalog number prefix.
All dimensions in parentheses are millimeters unless otherwise specified.
Width dimensions are to inside wall. For aluminum fittings add 1.5 inches for total outside width.
Manufacturing tolerances apply to all dimensions.

Horizontal Expanding Tee (HT)

2 pair splice plates with hardware included.





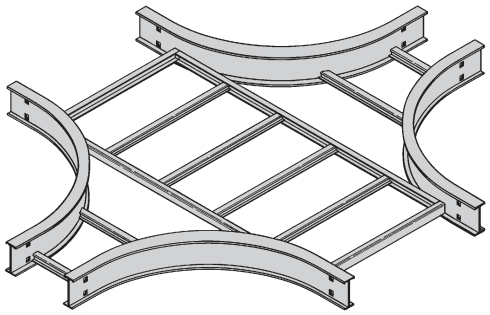


Tray Width W1 in.	Tray Width W1 mm	Tray Width W2 in.	Tray Width W2 mm	*Insert Radius (12", 24", 36", or 48") Catalog No.	12" Radius A in.	12" Radius A mm	12" Radius B in.	12" Radius B mm	24" Radius A in.	24" Radius A mm	24" Radius B in.	24" Radius B mm	36" Radius A in.	36" Radius A mm	36" Radius B in.	36" Radius B mm	48" Radius A in.	48" Radius A mm	48" Radius B in.	48" Radius B mm
6	152	9	228	(Prefix)-06-09-HT*	18	457	39	991	30	762	63	1600	42	1067	87	2210	54	1372	111	2819
		12	305	(Prefix)-06-12-HT*	18	457	42	1067	30	762	66	1676	42	1067	90	2286	54	1372	114	2496
		18	457	(Prefix)-06-18-HT*	18	457	48	1219	30	762	72	1829	42	1067	96	2438	54	1372	120	3048
		24	609	(Prefix)-06-24-HT*	18	457	54	1372	30	762	78	1981	42	1067	102	2591	54	1372	126	3200
		30	762	(Prefix)-06-30-HT*	18	457	60	1524	30	762	84	2134	42	1067	108	2743	54	1372	132	3353
		36	914	(Prefix)-06-36-HT*	18	457	66	1676	30	762	90	2286	42	1067	114	2895	54	1372	138	3503
		42	1067	(Prefix)-06-42-HT*	18	457	72	1829	30	762	96	2438	42	1067	120	3048	54	1372	144	3658
9	228	12	305	(Prefix)-09-12-HT*	19½	496	42	1067	31½	800	66	1676	43½	1105	90	2286	55½	1410	114	2496
		18	457	(Prefix)-09-18-HT*	19½	496	48	1219	31½	800	72	1829	43½	1105	96	2438	55½	1410	120	3048
		24	609	(Prefix)-09-24-HT*	19½	496	54	1372	31½	800	78	1981	43½	1105	102	2591	55½	1410	126	3200
		30	762	(Prefix)-09-30-HT*	19½	496	60	1524	31½	800	84	2134	43½	1105	108	2743	55½	1410	132	3353
		36	914	(Prefix)-09-36-HT*	19½	496	66	1676	31½	800	90	2286	43½	1105	114	2895	55½	1410	138	3503
		42	1067	(Prefix)-09-42-HT*	19½	496	72	1829	31½	800	96	2438	43½	1105	120	3048	55½	1410	144	3658
12	305	18	457	(Prefix)-12-18-HT*	21	533	48	1219	33	838	72	1829	45	1143	96	2438	57	1448	120	3048
		24	609	(Prefix)-12-24-HT*	21	533	54	1372	33	838	78	1981	45	1143	102	2591	57	1448	126	3200
		30	762	(Prefix)-12-30-HT*	21	533	60	1524	33	838	84	2134	45	1143	108	2743	57	1448	132	3353
		36	914	(Prefix)-12-36-HT*	21	533	66	1676	33	838	90	2286	45	1143	114	2895	57	1448	138	3503
		42	1067	(Prefix)-12-42-HT*	21	533	72	1829	33	838	96	2438	45	1143	120	3048	57	1448	144	3658
18	457	24	609	(Prefix)-18-24-HT*	24	609	54	1372	36	914	78	1981	48	1219	102	2591	60	1524	126	3200
		30	762	(Prefix)-18-30-HT*	24	609	60	1524	36	914	84	2134	48	1219	108	2743	60	1524	132	3353
		36	914	(Prefix)-18-36-HT*	24	609	66	1676	36	914	90	2286	48	1219	114	2895	60	1524	138	3503
		42	1067	(Prefix)-18-42-HT*	24	609	72	1829	36	914	96	2438	48	1219	120	3048	60	1524	144	3658
24	609	30	762	(Prefix)-24-30-HT*	27	686	60	1524	39	991	84	2134	51	1295	108	2743	63	1600	132	3353
		36	914	(Prefix)-24-36-HT*	27	686	66	1676	39	991	90	2286	51	1295	114	2895	63	1600	138	3503
		42	1067	(Prefix)-24-42-HT*	27	686	72	1829	39	991	96	2438	51	1295	120	3048	63	1600	144	3658
30	762	36	914	(Prefix)-30-36-HT*	30	762	66	1676	42	1067	90	2286	54	1372	114	2895	66	1676	138	3503
		42	1067	(Prefix)-30-42-HT*	30	762	72	1829	42	1067	96	2438	54	1372	120	3048	66	1676	144	3658
36	914	42	1067	(Prefix)-36-42-HT*	33	838	72	1829	45	1143	96	2438	57	1448	120	3048	69	1753	144	3658

(Prefix) See page 152 for catalog number prefix.
All dimensions in parentheses are millimeters unless otherwise specified.
Width dimensions are to inside wall. For aluminum fittings add 1.5 inches for total outside width.
Manufacturing tolerances apply to all dimensions.

Horizontal Expanding/Reducing Cross (HX)

3 pair splice plates with hardware included.

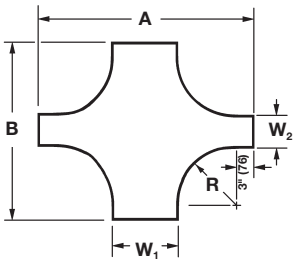


Prefix - 36 - 18 HX 24

- Radius
- Fitting
- Width W_2
- Width W_1

To complete catalog number, insert fitting prefix.

HX



Tray Width				* Insert Radius (12", 24", 36", or 48")	12" Radius				24" Radius				36" Radius				48" Radius			
W1		W2		Catalog No.	A		B		A		B		A		B		A		B	
in.	mm	in.	mm		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
9	228	6	152	(Prefix)-09-06-HX*	39	991	36	914	63	1600	60	1372	87	2210	84	2134	111	2819	108	2743
12	305	6	152	(Prefix)-12-06-HX*	42	1067	36	914	66	1676	60	1372	90	2286	84	2134	114	2896	108	2743
		9	228	(Prefix)-12-09-HX*	42	1067	39	991	66	1676	63	1600	90	2286	87	2210	114	2896	111	2819
18	457	6	152	(Prefix)-18-06-HX*	48	1219	36	914	72	1829	60	1372	96	2438	84	2134	120	3048	108	2743
		9	228	(Prefix)-18-09-HX*	48	1219	39	991	72	1829	63	1600	96	2438	87	2210	120	3048	111	2819
		12	305	(Prefix)-18-12-HX*	48	1219	42	1067	72	1829	66	1676	96	2438	90	2286	120	3048	114	2896
24	609	6	152	(Prefix)-24-06-HX*	54	1372	36	914	78	1981	60	1372	102	2591	84	2134	126	3200	108	2743
		9	228	(Prefix)-24-09-HX*	54	1372	39	991	78	1981	63	1600	102	2591	87	2210	126	3200	111	2819
		12	305	(Prefix)-24-12-HX*	54	1372	42	1067	78	1981	66	1676	102	2591	90	2286	126	3200	114	2896
		18	457	(Prefix)-24-18-HX*	54	1372	48	1219	78	1981	72	1829	102	2591	96	2438	126	3200	120	3048
30	762	6	152	(Prefix)-30-06-HX*	60	1524	36	914	84	2134	60	1372	108	2743	84	2134	132	3353	108	2743
		9	228	(Prefix)-30-09-HX*	60	1524	39	991	84	2134	63	1600	108	2743	87	2210	132	3353	111	2819
		12	305	(Prefix)-30-12-HX*	60	1524	42	1067	84	2134	66	1676	108	2743	90	2286	132	3353	114	2896
		18	457	(Prefix)-30-18-HX*	60	1524	48	1219	84	2134	72	1829	108	2743	96	2438	132	3353	120	3048
		24	609	(Prefix)-30-24-HX*	60	1524	54	1372	84	2134	78	1981	108	2743	102	2591	132	3353	126	3200
36	914	6	152	(Prefix)-36-06-HX*	66	1676	36	914	90	2286	60	1372	114	2896	84	2134	138	3505	108	2743
		9	228	(Prefix)-36-09-HX*	66	1676	39	991	90	2286	63	1600	114	2896	87	2210	138	3505	111	2819
		12	305	(Prefix)-36-12-HX*	66	1676	42	1067	90	2286	66	1676	114	2896	90	2286	138	3505	114	2896
		18	457	(Prefix)-36-18-HX*	66	1676	48	1219	90	2286	72	1829	114	2896	96	2438	138	3505	120	3048
		24	609	(Prefix)-36-24-HX*	66	1676	54	1372	90	2286	78	1981	114	2896	102	2591	138	3505	126	3200
		30	762	(Prefix)-36-30-HX*	66	1676	60	1524	90	2286	84	2134	114	2896	108	2743	138	3505	132	3353
42	1067	6	152	(Prefix)-42-06-HX*	72	1829	36	914	96	2438	60	1372	120	3048	84	2134	144	3658	108	2743
		9	228	(Prefix)-42-09-HX*	72	1829	39	991	96	2438	63	1600	120	3048	87	2210	144	3658	111	2819
		12	305	(Prefix)-42-12-HX*	72	1829	42	1067	96	2438	66	1676	120	3048	90	2286	144	3658	114	2896
		18	457	(Prefix)-42-18-HX*	72	1829	48	1219	96	2438	72	1829	120	3048	96	2438	144	3658	120	3048
		24	609	(Prefix)-42-24-HX*	72	1829	54	1372	96	2438	78	1981	120	3048	102	2591	144	3658	126	3200
		30	762	(Prefix)-42-30-HX*	72	1829	60	1524	96	2438	84	2134	120	3048	108	2743	144	3658	132	3353
		36	914	(Prefix)-42-36-HX*	72	1829	66	1676	96	2438	90	2286	120	3048	114	2896	144	3658	138	3505

(Prefix) See page 152 for catalog number prefix.

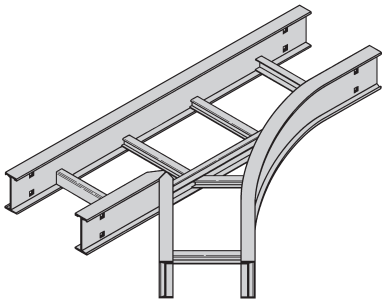
All dimensions in parentheses are millimeters unless otherwise specified.

Width dimensions are to inside wall. For aluminum fittings add 1.5 inches for total outside width.

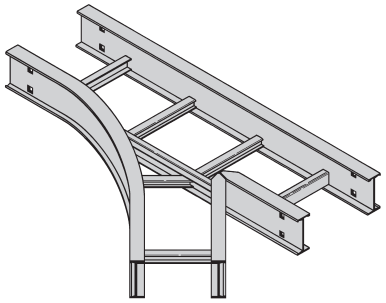
Manufacturing tolerances apply to all dimensions.

Horizontal Wye (HYL, HYR)

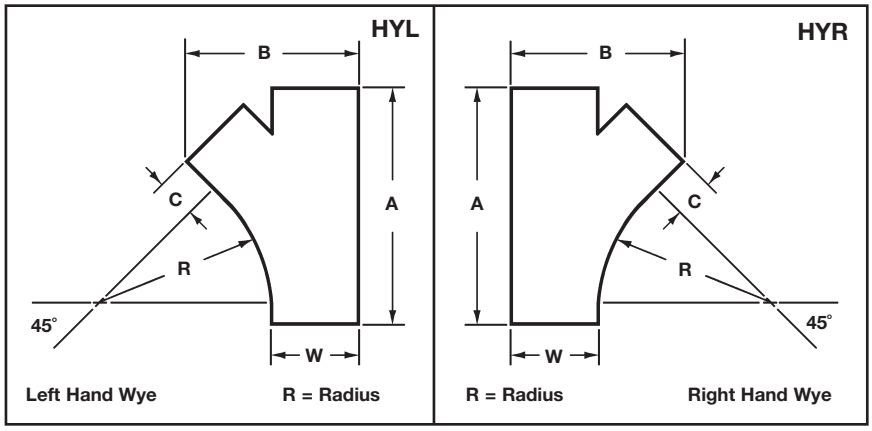
2 pair splice plates with hardware included.



Left Hand Wye



Right Hand Wye

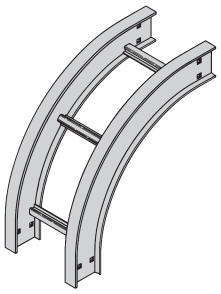


Bend Radius in.	Bend Radius mm	Tray Width in.	Tray Width mm	Left Hand Wye Catalog No.	Right Hand Wye Catalog No.	A in.	A mm	B in.	B mm	C in.	C mm
24	609	6	152	(Prefix)-06-HYL	(Prefix)-06-HYR	28 7/16	722	15 3/16	386	3 1/16	77
		9	228	(Prefix)-09-HYL	(Prefix)-09-HYR	32 11/16	831	20 5/16	516	6 1/16	154
		12	305	(Prefix)-12-HYL	(Prefix)-12-HYR	36 15/16	938	25 7/16	646	9 1/16	231
		18	457	(Prefix)-18-HYL	(Prefix)-18-HYR	45 3/8	1153	35 13/16	910	15 1/16	383
		24	609	(Prefix)-24-HYL	(Prefix)-24-HYR	53 7/8	1368	45 15/16	1167	21 1/16	535
		30	762	(Prefix)-30-HYL	(Prefix)-30-HYR	62 3/8	1585	56 3/16	1427	27 1/16	688
		36	914	(Prefix)-36-HYL	(Prefix)-36-HYR	70 7/8	1800	66 7/16	1687	33 1/16	993
		42	1067	(Prefix)-42-HYL	(Prefix)-42-HYR	79 3/8	2016	76 5/8	1946	39 1/16	992

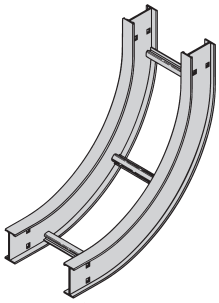
(Prefix) See page 152 for catalog number prefix.

All dimensions in parentheses are millimeters unless otherwise specified.

Width dimensions are to inside wall. For aluminum fittings add 1.5 inches for total outside width. Manufacturing tolerances apply to all dimensions.



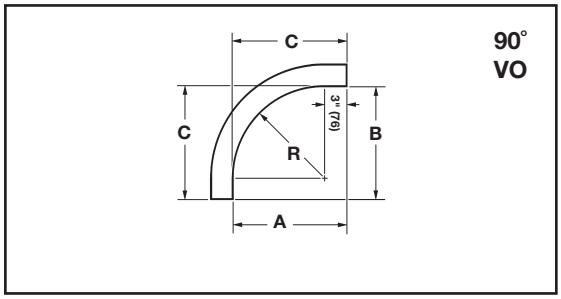
90° Vertical Outside

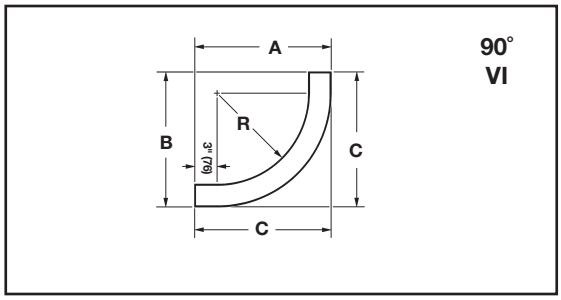


90° Vertical Inside

Vertical Bend 90° (VO, VI)

1 pair splice plates with hardware included.





Bend Radius R in.	Tray Width Insert in.	Tray Width Insert mm	(*) Insert "VO" for Vert. Outside Bend "VI" for Vert. Inside Bend Catalog No.	VO Side Rail Height 4" - 7" A in.	VO Side Rail Height 4" - 7" B in.	VO Side Rail Height 4" - 7" C in.	VI Side Rail Height 4" A in.	VI Side Rail Height 4" B in.	VI Side Rail Height 4" C in.	VI Side Rail Height 5" A in.	VI Side Rail Height 5" B in.	VI Side Rail Height 5" C in.	VI Side Rail Height 6" A in.	VI Side Rail Height 6" B in.	VI Side Rail Height 6" C in.	VI Side Rail Height 7" A in.	VI Side Rail Height 7" B in.	VI Side Rail Height 7" C in.
12 (305)	6	152	(Prefix)-06-90(*)12	15 (381)	15 (381)	15 (381)	19 (483)	19 (483)	19 (483)	20 (508)	20 (508)	20 (508)	21 (533)	21 (533)	21 (533)	22 (559)	22 (559)	22 (559)
	9	228	(Prefix)-09-90(*)12															
	12	305	(Prefix)-12-90(*)12															
	18	457	(Prefix)-18-90(*)12															
	24	609	(Prefix)-24-90(*)12															
	30	762	(Prefix)-30-90(*)12															
	36	914	(Prefix)-36-90(*)12															
	42	1067	(Prefix)-42-90(*)12															
24 (609)	6	152	(Prefix)-06-90(*)24	27 (686)	27 (686)	27 (686)	31 (787)	31 (787)	31 (787)	32 (813)	32 (813)	32 (813)	33 (838)	33 (838)	33 (838)	34 (864)	34 (864)	34 (864)
	9	228	(Prefix)-09-90(*)24															
	12	305	(Prefix)-12-90(*)24															
	18	457	(Prefix)-18-90(*)24															
	24	609	(Prefix)-24-90(*)24															
	30	762	(Prefix)-30-90(*)24															
	36	914	(Prefix)-36-90(*)24															
	42	1067	(Prefix)-42-90(*)24															
36 (914)	6	152	(Prefix)-06-90(*)36	39 (991)	39 (991)	39 (991)	43 (1092)	43 (1092)	43 (1092)	44 (1118)	44 (1118)	44 (1118)	45 (1143)	45 (1143)	45 (1143)	46 (1168)	46 (1168)	46 (1168)
	9	228	(Prefix)-09-90(*)36															
	12	305	(Prefix)-12-90(*)36															
	18	457	(Prefix)-18-90(*)36															
	24	609	(Prefix)-24-90(*)36															
	30	762	(Prefix)-30-90(*)36															
	36	914	(Prefix)-36-90(*)36															
	42	1067	(Prefix)-42-90(*)36															
48 (1219)	6	152	(Prefix)-06-90(*)48	51 (1295)	51 (1295)	51 (1295)	55 (1397)	55 (1397)	55 (1397)	56 (1422)	56 (1422)	56 (1422)	57 (1448)	57 (1448)	57 (1448)	58 (1473)	58 (1473)	58 (1473)
	9	228	(Prefix)-09-90(*)48															
	12	305	(Prefix)-12-90(*)48															
	18	457	(Prefix)-18-90(*)48															
	24	609	(Prefix)-24-90(*)48															
	30	762	(Prefix)-30-90(*)48															
	36	914	(Prefix)-36-90(*)48															
	42	1067	(Prefix)-42-90(*)48															

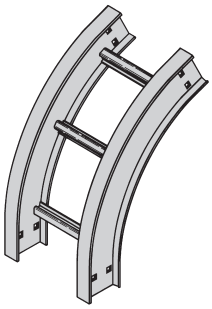
(Prefix) See page 152 for catalog number prefix.

All dimensions in parentheses are millimeters unless otherwise specified.

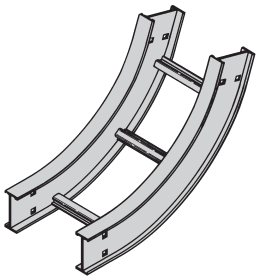
Manufacturing tolerances apply to all dimensions.

Vertical Bend 60° (VO, VI)

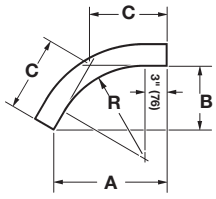
1 pair splice plates with hardware included.



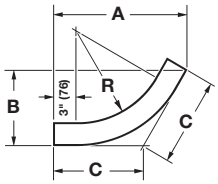
60° Vertical Outside



60° Vertical Inside



60° VO



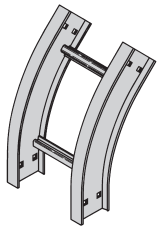
60° VI

Bend Radius R	Tray Width Insert		(*) Insert "VO" for Vert. Outside Bend "VI" for Vert. Inside Bend Catalog No.	VO Side Rail Height 4" - 7"			VI Side Rail Height											
							4"			5"			6"			7"		
				A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
in.	in.	mm		in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
12 (305)	6	152	(Prefix)-06-60(*)12	14 7/8 (378)	8 5/8 (219)	9 15/16 (253)	18 3/8 (467)	10 5/8 (270)	12 1/4 (311)	19 1/4 (489	11 1/8 (283)	12 13/16 (326)	20 1/16 (510)	11 5/8 (296)	13 3/8 (340)	21 15/16 (557)	12 1/8 (308)	14 (356)
	9	228	(Prefix)-09-60(*)12															
	12	305	(Prefix)-12-60(*)12															
	18	457	(Prefix)-18-60(*)12															
	24	609	(Prefix)-24-60(*)12															
	30	762	(Prefix)-30-60(*)12															
	36	914	(Prefix)-36-60(*)12															
	42	1067	(Prefix)-42-60(*)12															
24 (609)	6	152	(Prefix)-06-60(*)24	25 5/16 (643)	14 5/8 (372)	16 7/8 (428)	28 3/4 (730)	16 5/8 (422)	19 3/16 (488)	29 5/8 (753)	17 1/8 (435)	19 3/4 (502)	30 1/2 (775)	17 5/8 (448)	20 5/16 (516)	31 3/8 (797)	18 1/8 (461)	20 7/8 (530)
	9	228	(Prefix)-09-60(*)24															
	12	305	(Prefix)-12-60(*)24															
	18	457	(Prefix)-18-60(*)24															
	24	609	(Prefix)-24-60(*)24															
	30	762	(Prefix)-30-60(*)24															
	36	914	(Prefix)-36-60(*)24															
	42	1067	(Prefix)-42-60(*)24															
36 (914)	6	152	(Prefix)-06-60(*)36	35 11/16 (907)	20 5/8 (524)	23 13/16 (605)	39 1/8 (994)	22 5/8 (575)	26 1/8 (663)	40 (1016)	23 1/8 (587)	26 11/16 (687)	40 7/8 (1038)	23 5/8 (600)	27 1/4 (692)	41 3/4 (1060)	24 1/8 (613)	27 13/16 (706)
	9	228	(Prefix)-09-60(*)36															
	12	305	(Prefix)-12-60(*)36															
	18	457	(Prefix)-18-60(*)36															
	24	609	(Prefix)-24-60(*)36															
	30	762	(Prefix)-30-60(*)36															
	36	914	(Prefix)-36-60(*)36															
	42	1067	(Prefix)-42-60(*)36															
48 (1219)	6	152	(Prefix)-06-60(*)48	46 1/16 (1170)	26 5/8 (676)	30 11/16 (780)	49 9/16 (1259)	28 5/8 (727)	33 (838)	50 3/8 (1280)	29 1/8 (740)	33 5/8 (854)	51 1/4 (1302)	29 5/8 (753)	34 3/16 (868)	52 1/8 (1324)	30 1/8 (765)	34 3/4 (883)
	9	228	(Prefix)-09-60(*)48															
	12	305	(Prefix)-12-60(*)48															
	18	457	(Prefix)-18-60(*)48															
	24	609	(Prefix)-24-60(*)48															
	30	762	(Prefix)-30-60(*)48															
	36	914	(Prefix)-36-60(*)48															
	42	1067	(Prefix)-42-60(*)48															

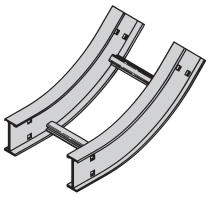
(Prefix) See page 152 for catalog number prefix.
All dimensions in parentheses are millimeters unless otherwise specified.
Manufacturing tolerances apply to all dimensions.

Vertical Bend 45° (VO, VI)

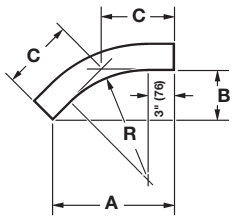
1 pair splice plates with hardware included.



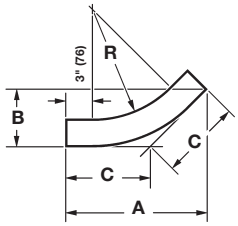
45° Vertical Outside



45° Vertical Inside



45° VO



45° VI

Bend Radius R	Tray Width		(*) Insert "VO" for Vert. Outside Bend Insert "VI" for Vert. Inside Bend Catalog No.	VO Side Rail Height 4" - 7"			VI Side Rail Height											
							4"			5"			6"			7"		
				A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
in.	in.	mm		in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
12 (305)	6	152	(Prefix)-06-45(*)12	13 5/8 (346)	5 5/8 (143)	8 (203)	16 7/16 (417)	6 13/16 (173)	9 5/8 (245)	17 1/8 (435)	7 1/8 (181)	10 1/16 (256)	17 7/8 (454)	7 3/8 (188)	10 7/16 (265)	18 9/16 (471)	7 11/16 (195)	10 7/8 (2176)
	9	228	(Prefix)-09-45(*)12															
	12	305	(Prefix)-12-45(*)12															
	18	457	(Prefix)-18-45(*)12															
	24	609	(Prefix)-24-45(*)12															
	30	762	(Prefix)-30-45(*)12															
	36	914	(Prefix)-36-45(*)12															
	42	1067	(Prefix)-42-45(*)12															
24 (609)	6	152	(Prefix)-06-45(*)24	22 1/16 (561)	9 1/8 (232)	12 15/16 (329)	24 15/16 (634)	10 5/16 (262)	14 5/8 (372)	25 5/8 (651)	10 5/8 (270)	15 (381)	26 5/16 (668)	10 15/16 (278)	15 7/16 (392)	27 1/16 (687)	11 3/16 (284)	15 13/16 (402)
	9	228	(Prefix)-09-45(*)24															
	12	305	(Prefix)-12-45(*)24															
	18	457	(Prefix)-18-45(*)24															
	24	609	(Prefix)-24-45(*)24															
	30	762	(Prefix)-30-45(*)24															
	36	914	(Prefix)-36-45(*)24															
	42	1067	(Prefix)-42-45(*)24															
36 (924)	6	152	(Prefix)-06-45(*)36	30 9/16 (776)	12 11/16 (323)	17 15/16 (456)	33 3/8 (848)	13 13/16 (351)	19 9/16 (497)	34 1/8 (867)	14 1/8 (359)	20 (508)	34 13/16 (885)	14 7/16 (367)	20 3/8 (518)	35 1/2 (902)	14 11/16 (284)	20 13/16 (402)
	9	228	(Prefix)-09-45(*)36															
	12	305	(Prefix)-12-45(*)36															
	18	457	(Prefix)-18-45(*)36															
	24	609	(Prefix)-24-45(*)36															
	30	762	(Prefix)-30-45(*)36															
	36	914	(Prefix)-36-45(*)36															
	42	1067	(Prefix)-42-45(*)36															
48 (1219)	6	152	(Prefix)-06-45(*)48	39 1/16 (992)	16 3/16 (411)	22 7/8 (581)	41 7/8 (1064)	17 3/8 (441)	24 9/16 (624)	42 5/8 (1083)	17 5/8 (448)	24 15/16 (633)	43 5/16 (1100)	17 15/16 (456)	25 3/8 (645)	44 (1118)	18 1/4 (464)	25 13/16 (656)
	9	228	(Prefix)-09-45(*)48															
	12	305	(Prefix)-12-45(*)48															
	18	457	(Prefix)-18-45(*)48															
	24	609	(Prefix)-24-45(*)48															
	30	762	(Prefix)-30-45(*)48															
	36	914	(Prefix)-36-45(*)48															
	42	1067	(Prefix)-42-45(*)48															

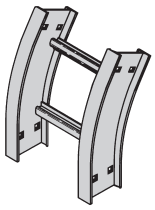
(Prefix) See page 152 for catalog number prefix.

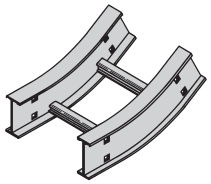
All dimensions in parentheses are millimeters unless otherwise specified.

Manufacturing tolerances apply to all dimensions.

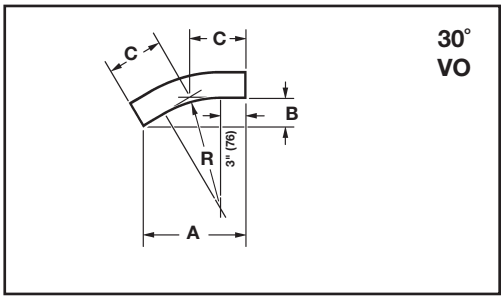
Vertical Bend 30° (VO, VI)

1 pair splice plates with hardware included.

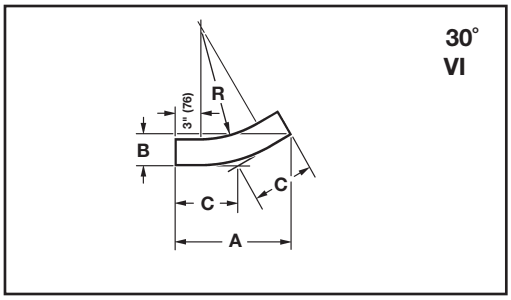




30° Vertical Outside



30° Vertical Inside

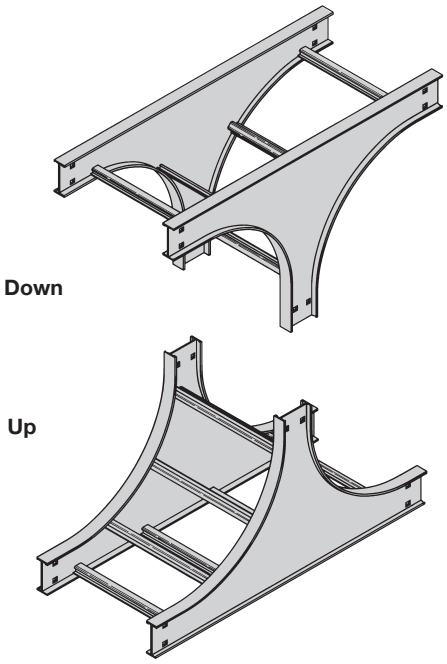


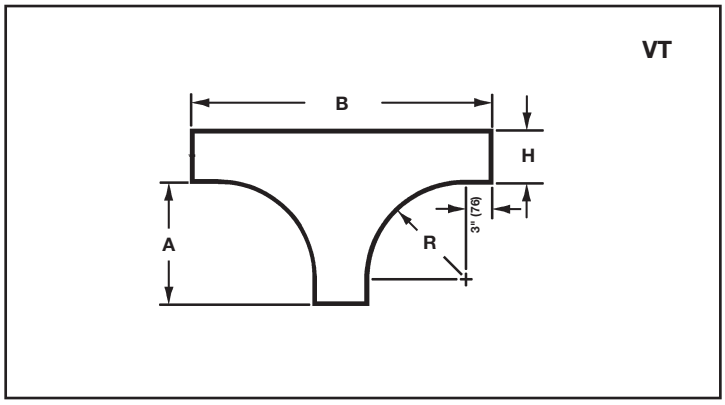
Bend Radius R	Tray Width		(*) Insert "VO" for Vert. Outside Bend Insert "VI" for Vert. Inside Bend Catalog No.	VO Side Rail Height 4" - 7"			VI Side Rail Height											
							4"			5"			6"			7"		
				A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
in.	in.	mm		in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
12 (305)	6	152	(Prefix)-06-30(*)12	11 5/8 (296)	3 1/8 (79)	6 3/16 (157)	13 5/8 (346)	3 5/8 (92)	7 5/16 (186)	14 1/8 (359)	3 3/4 (95)	7 9/16 (192)	14 5/8 (372)	3 15/16 (100)	7 13/16 (199)	15 1/8 (384)	4 1/16 (103)	8 1/16 (205)
	9	228	(Prefix)-09-30(*)12															
	12	305	(Prefix)-12-30(*)12															
	18	457	(Prefix)-18-30(*)12															
	24	609	(Prefix)-24-30(*)12															
	30	762	(Prefix)-30-30(*)12															
	36	914	(Prefix)-36-30(*)12															
	42	1067	(Prefix)-42-30(*)12															
24 (609)	6	152	(Prefix)-06-30(*)24	17 5/8 (448)	4 11/16 (120)	9 7/16 (240)	19 5/8 (499)	5 1/4 (133)	10 1/2 (267)	20 1/8 (511	5 3/8 (137)	10 3/4 (273)	20 5/8 (524)	5 1/2 (140)	11 1/16 (282)	21 1/8 (537)	5 5/8 (143)	11 5/16 (287)
	9	228	(Prefix)-09-30(*)24															
	12	305	(Prefix)-12-30(*)24															
	18	457	(Prefix)-18-30(*)24															
	24	609	(Prefix)-24-30(*)24															
	30	762	(Prefix)-30-30(*)24															
	36	914	(Prefix)-36-30(*)24															
	42	1067	(Prefix)-42-30(*)24															
36 (914)	6	152	(Prefix)-06-30(*)36	23 5/8 (600)	6 5/16 (160)	12 5/8 (321)	25 5/8 (651)	6 7/8 (174)	13 11/16 (348)	26 1/8 (663)	7 (175)	14 (356)	26 5/8 (676)	7 1/8 (181)	14 1/4 (362)	27 1/8 (689)	7 1/4 (184)	14 1/2 (287)
	9	228	(Prefix)-09-30(*)36															
	12	305	(Prefix)-12-30(*)36															
	18	457	(Prefix)-18-30(*)36															
	24	609	(Prefix)-24-30(*)36															
	30	762	(Prefix)-30-30(*)36															
	36	914	(Prefix)-36-30(*)36															
	42	1067	(Prefix)-42-30(*)36															
48 (1219)	6	152	(Prefix)-06-30(*)48	29 5/8 (753)	7 15/16 (202)	15 7/8 (403)	31 5/8 (803)	8 7/16 (214)	16 15/16 (430)	32 1/8 (816)	8 5/8 (219)	17 3/16 (437)	32 5/8 (829)	8 3/4 (222)	17 1/2 (445)	33 1/8 (842)	8 7/8 (226)	17 3/4 (451)
	9	228	(Prefix)-09-30(*)48															
	12	305	(Prefix)-12-30(*)48															
	18	457	(Prefix)-18-30(*)48															
	24	609	(Prefix)-24-30(*)48															
	30	762	(Prefix)-30-30(*)48															
	36	914	(Prefix)-36-30(*)48															
	42	1067	(Prefix)-42-30(*)48															

(Prefix) See page 152 for catalog number prefix.
All dimensions in parentheses are millimeters unless otherwise specified.
Manufacturing tolerances apply to all dimensions.

Vertical Tee Up/Down (VTU/VT)

2 pair splice plates with hardware included.





Bend Radius R	Tray Width		Vertical Tee Down	Vertical Tee Up	Side Rail Height "H"							
					4"		5"		6"		7"	
	Catalog No.		Catalog No.	Catalog No.	A	B	A	B	A	B	A	B
in.	in.	mm			in.	in.	in.	in.	in.	in.	in.	in.
12 (305)	6	152	(Prefix)-06-VT12	(Prefix)-06-VTU12	15 (381)	34 (846)	15 (381)	35 (889)	15 (381)	36 (914)	15 (381)	37 (940)
	9	228	(Prefix)-09-VT12	(Prefix)-09-VTU12								
	12	305	(Prefix)-12-VT12	(Prefix)-12-VTU12								
	18	457	(Prefix)-18-VT12	(Prefix)-18-VTU12								
	24	609	(Prefix)-24-VT12	(Prefix)-24-VTU12								
	30	762	(Prefix)-30-VT12	(Prefix)-30-VTU12								
	36	914	(Prefix)-36-VT12	(Prefix)-36-VTU12								
	42	1067	(Prefix)-42-VT12	(Prefix)-42-VTU12								
24 (609)	6	152	(Prefix)-06-VT24	(Prefix)-06-VTU24	27 (6867)	58 (1473)	27 (686)	59 (1498)	27 (686)	60 (1524)	27 (686)	61 (1549)
	9	228	(Prefix)-09-VT24	(Prefix)-09-VTU24								
	12	305	(Prefix)-12-VT24	(Prefix)-12-VTU24								
	18	457	(Prefix)-18-VT24	(Prefix)-18-VTU24								
	24	609	(Prefix)-24-VT24	(Prefix)-24-VTU24								
	30	762	(Prefix)-30-VT24	(Prefix)-30-VTU24								
	36	914	(Prefix)-36-VT24	(Prefix)-36-VTU24								
	42	1067	(Prefix)-42-VT24	(Prefix)-42-VTU24								
36 (914)	6	152	(Prefix)-06-VT36	(Prefix)-06-VTU36	39 (991)	82 (2083)	39 (991)	83 (2108)	39 (991)	84 (2134)	39 (991)	85 (2159)
	9	228	(Prefix)-09-VT36	(Prefix)-09-VTU36								
	12	305	(Prefix)-12-VT36	(Prefix)-12-VTU36								
	18	457	(Prefix)-18-VT36	(Prefix)-18-VTU36								
	24	609	(Prefix)-24-VT36	(Prefix)-24-VTU36								
	30	762	(Prefix)-30-VT36	(Prefix)-30-VTU36								
	36	914	(Prefix)-36-VT36	(Prefix)-36-VTU36								
	42	1067	(Prefix)-42-VT36	(Prefix)-42-VTU36								
48 (1219)	6	152	(Prefix)-06-VT48	(Prefix)-06-VTU48	51 (1295)	106 (2692)	51 (1295)	107 (2718)	51 (1295)	108 (2743)	51 (1295)	109 (2769)
	9	228	(Prefix)-09-VT48	(Prefix)-09-VTU48								
	12	305	(Prefix)-12-VT48	(Prefix)-12-VTU48								
	18	457	(Prefix)-18-VT48	(Prefix)-18-VTU48								
	24	609	(Prefix)-24-VT48	(Prefix)-24-VTU48								
	30	762	(Prefix)-30-VT48	(Prefix)-30-VTU48								
	36	914	(Prefix)-36-VT48	(Prefix)-36-VTU48								
	42	1067	(Prefix)-42-VT48	(Prefix)-42-VTU48								

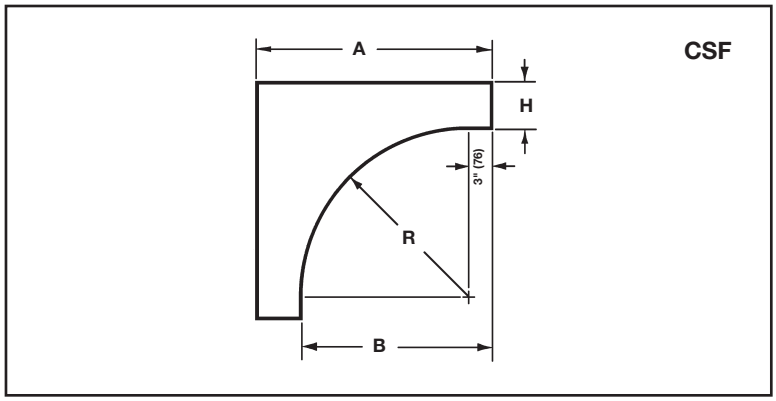
(Prefix) See page 152 for catalog number prefix.

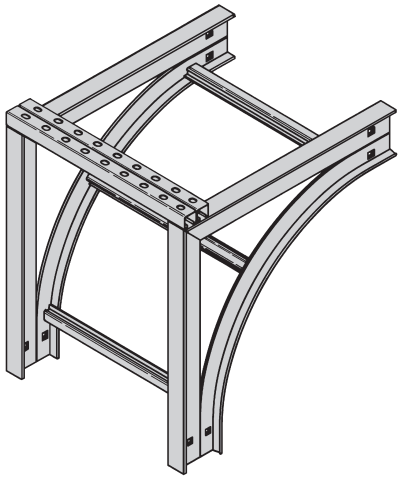
All dimensions in parentheses are millimeters unless otherwise specified.

Manufacturing tolerances apply to all dimensions.

Cable Support Fittings (CSF)

1 pair splice plates with hardware included.





This fitting is recommended for use at the top of vertical runs to support the weight of the cables. The top cross brace is drilled for installing eyebolts, ordered separately.

Bend Radius R in.	Tray Width in.	Tray Width mm	Catalog No.	Side Rail Height "H" 4" A in.	4" B in.	5" A in.	5" B in.	6" A in.	6" B in.	7" A in.	7" B in.
12 (305)	6	152	(Prefix)-06-CSF12	19 (483)	15 (381)	20 (508)	15 (381)	21 (533)	15 (381)	22 (559)	15 (381)
	9	228	(Prefix)-09-CSF12								
	12	305	(Prefix)-12-CSF12								
	18	457	(Prefix)-18-CSF12								
	24	609	(Prefix)-24-CSF12								
	30	762	(Prefix)-30-CSF12								
	36	914	(Prefix)-36-CSF12								
	42	1067	(Prefix)-42-CSF12								
24 (609)	6	152	(Prefix)-06-CSF24	31 (787)	27 (686)	32 (813)	27 (686)	33 (838)	27 (686)	34 (864)	27 (686)
	9	228	(Prefix)-09-CSF24								
	12	305	(Prefix)-12-CSF24								
	18	457	(Prefix)-18-CSF24								
	24	609	(Prefix)-24-CSF24								
	30	762	(Prefix)-30-CSF24								
	36	914	(Prefix)-36-CSF24								
	42	1067	(Prefix)-42-CSF24								
36 (914)	6	152	(Prefix)-06-CSF36	43 (1092)	39 (991)	44 (1118)	39 (991)	45 (1143)	39 (991)	46 (1168)	39 (991)
	9	228	(Prefix)-09-CSF36								
	12	305	(Prefix)-12-CSF36								
	18	457	(Prefix)-18-CSF36								
	24	609	(Prefix)-24-CSF36								
	30	762	(Prefix)-30-CSF36								
	36	914	(Prefix)-36-CSF36								
	42	1067	(Prefix)-42-CSF36								
48 (1219)	6	152	(Prefix)-06-CSF48	55 (1397)	51 (1295)	56 (1422)	51 (1295)	57 (1448)	51 (1295)	58 (1473)	51 (1295)
	9	228	(Prefix)-09-CSF48								
	12	305	(Prefix)-12-CSF48								
	18	457	(Prefix)-18-CSF48								
	24	609	(Prefix)-24-CSF48								
	30	762	(Prefix)-30-CSF48								
	36	914	(Prefix)-36-CSF48								
	42	1067	(Prefix)-42-CSF48								

(Prefix) See page 152 for catalog number prefix.
All dimensions in parentheses are millimeters unless otherwise specified.
Manufacturing tolerances apply to all dimensions.


WARNING!

Corrosion Guide

The information shown in this corrosion guide is based on full immersion laboratory tests and data generated from resin manufacturer's data. It should be noted that in some of the environments listed, splashes and spill situations may result in a more corrosive situation than indicated due to the evaporation of water. Regular wash down is recommended in these situations.
All data represents the best available information and is believed to be correct. The data should not be construed as a warranty of performance for that product as presented in these tables. User tests should be performed to determine suitability of service if there is any doubt or concern. Such variables as concentration, temperature, time and combined chemical effects of mixtures of chemicals make it impossible to specify the exact suitability of fiber reinforced plastics in all environments. Cooper B-Line will be happy to supply material samples for testing. These recommendations should only be used as a guide and Cooper B-Line does not take responsibility for design or suitability of materials for service intended. In no event will Cooper B-Line be liable for any consequential or special damages for any defective material or workmanship including without limitation, labor charge, other expense or damage to properties resulting from loss of materials or profits or increased expenses of operations.

CHEMICAL ENVIRONMENT	POLYESTER		VINYL ESTER	
	Max Wt. %	Max Oper. Temp °F	Max Wt. %	Max Oper. Temp °F
Acetic Acid	10	190	10	210
Acetic Acid	50	125	50	180
Acetone	N/R	N/R	100	75
Aluminum Chloride	SAT	170	SAT	200
Aluminum Hydroxide	SAT	160	SAT	170
Aluminum Nitrate	SAT	150	SAT	170
Aluminum Sulfate	SAT	180	SAT	200
Ammonium Chloride	SAT	170	SAT	190
Ammonium Hydroxide	1	100	10	150
Ammonium Hydroxide	28	N/R	28	100
Ammonium Carbonate	N/R	N/R	SAT	150
Ammonium Bicarbonate	15	125	SAT	130
Ammonium Nitrate	SAT	160	SAT	190
Ammonium Persulfate	SAT	N/R	SAT	150
Ammonium Sulfate	SAT	170	SAT	200
Amyl Alcohol	ALL	N/R	ALL	90
Amyl Alcohol Vapor	-	140	-	120
Benzene	N/R	N/R	100	140
Benzene Sulfonic Acid	25	110	SAT	200
Benzoic Acid	SAT	150	SAT	200
Benzoyl Alcohol	100	N/R	100	N/R
Borax	SAT	170	SAT	200
Calcium Carbonate	SAT	170	SAT	200
Calcium Chloride	SAT	170	SAT	200
Calcium Hydroxide	25	70	25	165
Calcium Nitrate	SAT	180	SAT	200
Calcium Sulfate	SAT	180	SAT	200
Carbon Disulfide	N/R	N/R	N/R	N/R
Carbonic Acid	SAT	130	SAT	180
Carbon Dioxide Gas	-	200	-	200
Carbon Monoxide Gas	-	200	-	200
Carbon Tetrachloride	N/R	N/R	100	75
Chlorine, Dry Gas	-	140	-	170
Chlorine, Wet Gas	-	N/R	-	180
Chlorine Water	SAT	80	SAT	180

CHEMICAL ENVIRONMENT	POLYESTER		VINYL ESTER	
	Max Wt. %	Max Oper. Temp °F	Max Wt. %	Max Oper. Temp °F
Chromic Acid	5	70	10	120
Citric Acid	SAT	170	SAT	200
Copper Chloride	SAT	170	SAT	200
Copper Cyanide	SAT	170	SAT	200
Copper Nitrate	SAT	170	SAT	200
Crude Oil, Sour	100	170	100	200
Cyclohexane	N/R	N/R	N/R	N/R
Cyclohexane, Vapor	ALL	100	ALL	130
Diesel Fuel	100	160	100	180
Diethyl Ether	N/R	N/R	N/R	N/R
Dimethyl Phthalate	N/R	N/R	N/R	N/R
Ethanol	50	75	50	90
Ethyl Acetate	N/R	N/R	N/R	N/R
Ethylene Chloride	N/R	N/R	N/R	N/R
Ethylene Glycol	100	90	100	200
Fatty Acids	SAT	180	SAT	200
Ferric Chloride	SAT	170	SAT	200
Ferric Nitrate	SAT	170	SAT	200
Ferric Sulfate	SAT	170	SAT	200
Ferrous Chloride	SAT	170	SAT	200
Fluoboric Acid	N/R	N/R	SAT	165
Fluosilicic Acid	N/R	N/R	SAT	70
Formaldehyde	50	75	50	100
Formic Acid	N/R	N/R	50	100
Gasoline	100	80	100	150
Glucose	100	170	100	200
Glycerine	100	150	100	200
Heptane	100	110	100	120
Hexane	100	90	100	130
Hydrobromic Acid	50	120	50	120
Hydrochloric Acid	10	150	10	200
Hydrochloric Acid	20	140	20	190
Hydrochloric Acid	37	75	37	95
Hydrofluoric Acid	N/R	N/R	15	80
Hydrogen Bromide, Dry	100	190	100	200

-: No Information Available N/R: Not Recommended SAT: Saturated Solution FUM: Fumes

Corrosion Guide

CHEMICAL ENVIRONMENT	POLYESTER		VINYL ESTER	
	Max Wt. %	Max Oper. Temp °F	Max Wt. %	Max Oper. Temp °F
Hydrogen Bromide, Wet	100	75	100	130
Hydrogen Chloride	-	120	-	200
Hydrogen Peroxide	5	100	30	100
Hydrogen Sulfide, Dry	100	170	100	210
Hydrogen Sulfide, Wet	100	170	100	210
Hypochlorous Acid	20	80	20	150
Isopropyl Alcohol	N/R	N/R	15	80
Kerosene	100	140	100	180
Lactic Acid	SAT	170	SAT	200
Lead Acetate	SAT	170	SAT	200
Lead Chloride	SAT	140	SAT	200
Lead Nitrate	SAT	-	SAT	200
Linseed Oil	100	150	100	190
Lithium Chloride	SAT	150	SAT	190
Magnesium Carbonate	SAT	140	SAT	170
Magnesium Chloride	SAT	170	SAT	200
Magnesium Hydroxide	SAT	150	SAT	190
Magnesium Nitrate	SAT	140	SAT	180
Magnesium Sulfate	SAT	170	SAT	190
Mercuric Chloride	SAT	150	SAT	190
Mercurous Chloride	SAT	140	SAT	180
Methyl Ethyl Ketone	N/R	N/R	N/R	N/R
Mineral Oils	100	170	100	200
Monochlorobenzene	N/R	N/R	N/R	N/R
Naphtha	100	140	100	170
Nickel Chloride	SAT	170	SAT	200
Nickel Nitrate	SAT	170	SAT	200
Nickel Sulfate	SAT	170	SAT	200
Nitric Acid	5	140	5	150
Nitric Acid	20	70	20	100
Oleic Acid	100	170	100	190
Oxalic Acid	ALL	75	ALL	120
Paper Mill Liquors	-	100	-	120
Perchlorethylene	100	N/R	100	N/R
Perchloric Acid	N/R	N/R	10	150
Perchloric Acid	N/R	N/R	30	80
Phosphoric Acid	10	160	10	200
Phosphoric Acid	100	120	100	200
Potassium Aluminum Sulfate	SAT	170	SAT	200
Potassium Bicarbonate	50	80	50	140
Potassium Carbonate	10	N/R	10	120
Potassium Chloride	SAT	170	SAT	200
Potassium Dichromate	SAT	170	SAT	200

CHEMICAL ENVIRONMENT	POLYESTER		VINYL ESTER	
	Max Wt.	Max Oper. Temp °F	Max Wt. %	Max Oper. Temp °F
Potassium Hydroxide	N/R	N/R	25	150
Potassium Nitrate	SAT	170	SAT	200
Potassium Permanganate	100	80	100	210
Potassium Sulfate	SAT	170	SAT	200
Propylene Glycol	ALL	170	ALL	200
Phthalic Acid	-	-	SAT	200
Sodium Acetate	SAT	160	SAT	200
Sodium Benzoate	SAT	170	SAT	200
Sodium Bicarbonate	SAT	160	SAT	175
Sodium Bisulfate	ALL	170	ALL	200
Sodium Bromide	ALL	170	ALL	200
Sodium Carbonate	10	80	35	160
Sodium Chloride	SAT	170	SAT	200
Sodium Cyanide	SAT	170	SAT	200
Sodium Hydroxide	N/R	N/R	50	150
Sodium Hydroxide	N/R	N/R	25	80
Sodium Hypochloride	N/R	N/R	10	150
Sodium Monophosphate	SAT	170	SAT	200
Sodium Nitrate	SAT	170	SAT	200
Sodium Sulfate	SAT	170	SAT	200
Sodium Thiosulfate	ALL	100	ALL	120
Stannic Chloride	SAT	160	SAT	190
Styrene	N/R	N/R	N/R	N/R
Sulfated Detergent	0/50	170	0/50	200
Sulfur Dioxide	100	80	100	200
Sulfur Trioxide	100	80	100	200
Sulfuric Acid	93	N/R	93	N/R
Sulfuric Acid	50	N/R	50	180
Sulfuric Acid	25	75	25	190
Sulfurous Acid	SAT	80	N/R	N/R
Tartaric Acid	SAT	170	SAT	200
Tetrachloroethylene	N/R	N/R	FUM	75
Toluene	N/R	N/R	N/R	N/R
Trisodium Phosphate	N/R	N/R	SAT	175
Urea	SAT	130	SAT	140
Vinegar	100	170	100	200
Water, Distilled	100	170	100	190
Water, Tap	100	170	100	190
Water, Sea	SAT	170	SAT	190
Xylene	N/R	N/R	N/R	N/R
Zinc Chloride	SAT	170	SAT	200
Zinc Nitrate	SAT	170	SAT	200
Zinc Sulfate	SAT	170	SAT	200

-: No Information Available N/R: Not Recommended SAT: Saturated Solution FUM: Fumes

Load Data

Fiberglass Cable Tray and Cable Channel are offered in four versions for applications as follows:

Standard Series	Resin Type	Color	Meets
13F, 24F, 36F, 46F, H46F, 48F FCC-03, FCC-04, FCC-06, FCC-08	Fire Retardant Polyester	Gray	ASTM E-84 Class 1 - UL94 VO Good Corrosion Resistance in most environments
High Performance			
13FV, 24FV, 36FV, 46FV, H46FV, 48FV FCCV-03, FCCV-04, FCCV-06, FCCV-08	Fire Retardant Vinyl Ester	Beige	ASTM E-84 Class 1 - UL94 VO Improved Corrosion Resistance For more severe environments Higher Heat Distortion Temperature
Dis-Stat/Low Smoke			
13FA, 24FA, 36FA, 46FA, H46FA, 48FA FCCA-03, FCCA-04, FCCA-06, FCCA-08	Fire Retardant Zero Halogen/Dis-Stat ABS TYPE APPROVED PRODUCT	Black	ASTM E-84 Class 1 - UL94 VO ASTM D257-99 Dissipates Static Charge Smoke Generation and Toxicity for Mass Transit Requirements and Off Shore application

Effect of Temperature

Strength properties of reinforced plastics are reduced when continuously exposed to elevated temperatures. Working loads shall be reduced based on the following:

Temperature in Degrees F	Approximate Percent of Strength
75	100
100	90
125	78
150	68
175	60
200	52

NEMA Standard 8-10-1986
If unusual temperature conditions exist, the manufacturer should be consulted.
Authorized Engineering information 8-20-1986

Typical Properties of Pultruded Components

B-Line Fiberglass Cable Tray systems are manufactured from glass fiber-reinforced plastic shapes that meet ASTM E-84, Smoke Density rating for polyester of 680, for vinyl ester 1025, Class 1 Flame Rating and self-extinguishing requirements of ASTM D-635. A surface veil is applied during pultrusion to insure a resin-rich surface and ultraviolet resistance.

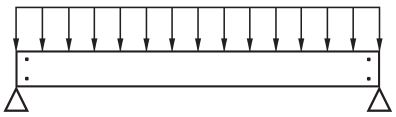
Flame Resistance (FTMS 406-2023) ign/burn, seconds	75/75
Intermittent Flame Test (HLT-15), rating	100
Flammability Test (ASTM D635) Ignition Burning Time	 none 0 sec.

Properties	Test Method	Unit/ Value	3" & 4" Cable Tray, Cable Channel		6" Cable Tray	
			Longitudinal	Transverse	Longitudinal	Transverse
Density	ASTM D1505	lbs/in^3	.058-.062	-	.072 - .076	-
Coefficient of Thermal Expansion	ASTM D696	in/in/°F	5.0 x 10^{-6}	-	5.0 x 10^{-6}	-
Water Absorption	ASTM D570	Max %	0.5	-	0.5	-
Dielectic Strength	ASTM D149	V/mil (vpm)	200	-	200	-
Flammability Classification	UL94	VO	-	-	-	-
Flame Spread	ASTM E-84	20 Max	-	-	-	-

Structural Characteristics of Cable Ladder and Supports

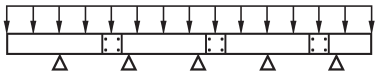
When viewed in its installed condition, any cable tray system performs functionally as a beam under a uniformly distributed load. There are four basic beam configurations typically found in a cable tray installation. All four types of beams support cable tray but each differ in the way that the beam is attached to the support.
The first two beam configurations, simple and continuous, apply to the cable tray itself. The second two beam configurations, cantilever and fixed, apply more to the cable tray supports than to the cable tray itself.

Simple Beam
A good example of simple beam is a single straight section of cable tray supported but not fastened at either end. When the tray is loaded the cable tray is allowed to deflect.

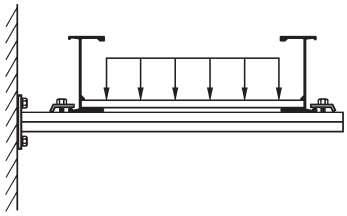


Simply beam analysis is used almost universally for beam comparisons even though it is seldom practical in field installations. The three most prominent reasons for using a simple beam analysis are: calculations are simplified; it represents the worst case loading; and testing is simple and reliable. The published load data in the B-Line cable tray catalog is based on the simple beam analysis per NEMA Standard FG-1.

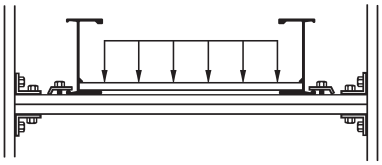
Continuous Beam
Continuous beam is the beam configuration most commonly used in cable tray installations. An example of this configuration is where cable trays are installed across several supports to form a number of spans. The continuous beam possesses traits of both the simple and fixed beams.
When equal loads are applied to all spans simultaneously, the counterbalancing effect of the loads on both sides of a support restricts the movement of the cable tray at the support. The effect is similar to that of a fixed beam. The end spans behave substantially like simple beams. When cable trays of identical design are compared, continuous beam installations will typically have approximately half the deflection of a simple beam of the same span. Therefore, simple beam data should be used for a general comparison only.



Cantilever Beam
A cantilever beam configuration occurs when one end of the beam is rigidly attached to the support and the other end is unsupported. This type of configuration is typically used when wall mounting a bracket to support cable tray. Since one end is unsupported, the cantilever beam will hold considerably less load than a comparable simple beam.



Fixed Beam
A fixed beam configuration has both ends of the beam rigidly attached to the supports. A good example of a fixed beam is the rung of a cable tray. By attaching the ends of the rung to the side rails, the ends are not free to move, bend or twist. This restriction in end movement effectively increases the load
carrying capacity of the member.
Fixed beam configurations are also typically found in strut rack type support systems. These types of racks are found extensively in tunnel applications for support of pipe and cable tray.



Standard B-Line Label

Warning! Walkways

It should be noted that cable tray is designed as a support for power or control cables, or both and is not intended or designed to be a walkway for personnel, the user is urged to display appropriate warnings cautioning against the use of this support as a walkway. The following language is suggested:

WARNING! Not to be used as a walkway, ladder or support for personnel. To be used only as a mechanical support for cables and tubing.

Authorized Engineering Information 8-20-1986

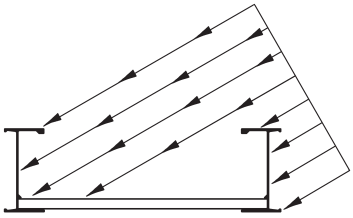
Structural Characteristics of Cable Ladder and Supports

Cable Loads
The cable load is simply the total weight of all the cables to be placed in the tray. This load should be expressed in lbs./ft.

Concentrated Loads
A concentrated static load represents a static weight applied between the side rails. Tap boxes, conduit attachments and long cable drops are just some of the many types of concentrated loads. When so specified, these concentrated static loads may be converted to an equivalent, uniform load (We) in pounds per linear foot by using the following formula:

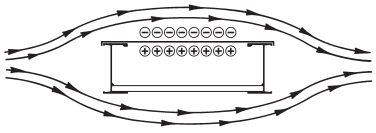
$$We = \frac{2x \text{ (concentrated static load)}}{\text{span length (ft.)}}$$

Wind Loads
Wind loads need to be determined for all outdoor cable tray installations. Most outdoor cable trays are ladder type trays,



Detail 1

therefore the most severe loading to be considered is pressure on the tray side rails (see Detail 1).
When covers are installed on outdoor cable trays, another factor to be considered is the aerodynamic effect which can produce a lift strong enough to separate a cover from a tray. Wind moving across a covered tray (see Detail 2) creates a positive pressure inside the tray and a negative pressure



Detail 2

above the cover. This pressure difference can lift the cover off the tray.
B-Line recommends the use of heavy duty wrap-around cover clamps when covered trays are installed in an area where strong winds occur.

Ice Loads
Glaze ice is the most commonly seen form of ice build-up. It is the result of rain or drizzle freezing on impact with an exposed object. Generally, only the top surface (or the cover) and the windward side of a cable tray system is significantly coated with ice. The maximum design load to be added due to ice should be determined from local and federal weather bureau information.

Snow Loads
Snow is measured by density and thickness. The density of snow varies almost as much as its thickness. The additional design load from snowfall should be determined using local snowfall records which can be obtained from local and federal weather bureaus.

Seismic Loads
In recent years a great deal of testing and evaluation of cable tray systems, and their supports, has been performed. The conclusions reached from these evaluations have shown the cable tray/strut support system exhibited more seismic capacity than originally expected. One of the factors contributing to this is the energy dissipating motion of the cables within the tray. Another factor is the high degree of ductility of the cable tray and the support material. These factors, working in conjunction with a properly designed cable tray system, should afford reasonable assurance to withstand even strong motion earthquakes. Please consult the factory with your specific seismic specifications and request a seismic brochure.

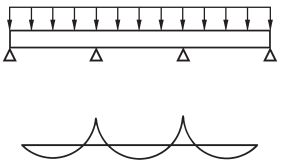
Splices
A lot of attention has been given to the strength of the side rails. These load bearing side rails must be spliced to form a continuous system, therefore the design of the splice plate is very important. The splice plate needs to be both strong and simple to install. These characteristics have been designed into B-Line's splice plates. B-Line's new high strength "L" shaped LAY-IN splice plate offers several advantages:

1) stronger than flat plate splices.
2) time saving - holds tray in position before fasteners are inserted.
3) provides base for an expansion splice to function - no vertical binding.
4) discourages splice on support-positioning, over the support is the worst place to splice - Fig 3.

The location of splices in a continuous span cable tray system is also very important. The splices should be located at points of minimum stress whenever practical. NEMA standards FG-1 limits the use of splice plates as follows:

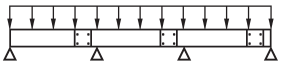
> Unspliced straight section should be used on a simple span and on end spans of continuous runs. Straight section lengths should be equal to or greater than the span length to ensure not more than one splice between supports. See Figures 1 through 3 for examples on splicing configurations.

Typical Continuous Span Configuration
Figure 1



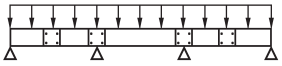
\+ Maximum positive moment
\- Maximum negative moment

Preferred Splice Plate Locations
Figure 2



Preferred splice location:
• ¼ span

Undesirable Splice Plate Locations
Figure 3



Undesired location:
• over supports
• mid spans

Cable Ladder Thermal Contraction and Expansion

X : Denotes hold-down clamp (anchor) at support.
– : Denotes expansion guide clamp at support.

It is important that thermal contraction and expansion be considered when installing cable tray systems. The length of the straight cable tray runs and the temperature differential govern the number of expansion splice plates required (see Table 1 below).

The cable tray should be anchored at the support nearest to its midpoint between the expansion splice plates and secured by expansion guides at all other support locations (see Figure 1 - Typical Cable Tray Installation). The cable tray should be permitted longitudinal movement in both directions from that fixed point.

Accurate gap settings at the time of installation is necessary for the proper operation of the expansion splice plates. The following procedure should assist the installer in determining the correct gap: (see Figure 2 - Gap Setting)

1. Plot the highest expected tray temperature on the maximum temperature line.
2. Plot the lowest expected tray temperature on the minimum temperature line.
3. Draw a line between the maximum and minimum points.
4. Plot the tray temperature at the time of installation to determine the gap setting.

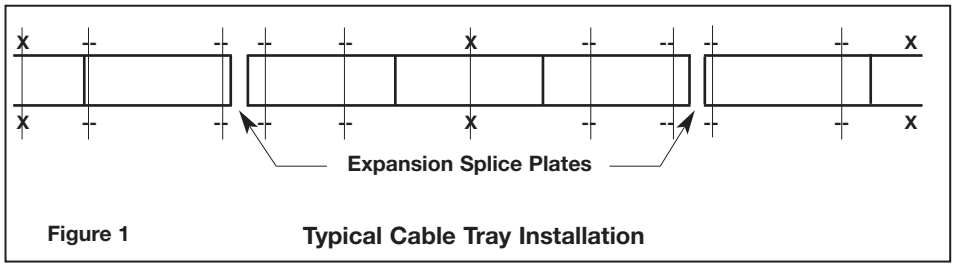


Figure 1 Typical Cable Tray Installation

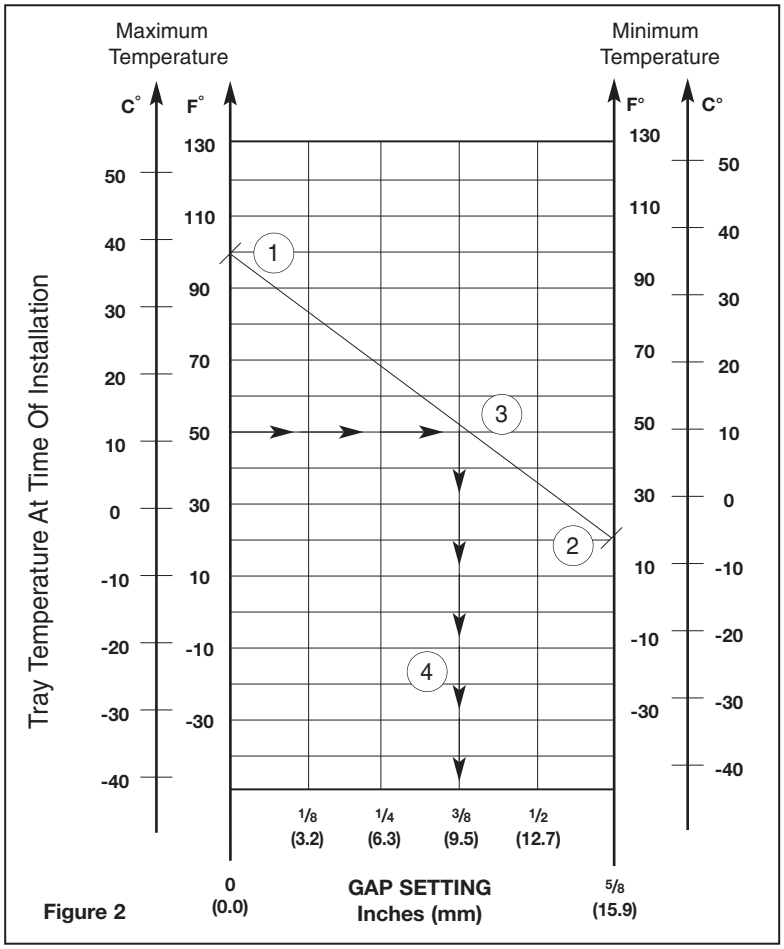


Figure 2

Table 1

Expansion or Contraction for Various Temperature Differences

Temperature Differential °F (°C)	Cable Tray Length for 1" Expansion	Tray Length for Each Expansion Connector*
25 (-4)	667 Feet (203.3m)	417 Feet (127.1m)
50 (10)	333 Feet (101.5m)	208 Feet (63.4m)
75 (24)	222 Feet (67.6m)	139 Feet (42.3m)
100 (38)	167 Feet (50.9m)	104 Feet (31.7m)
125 (51)	133 Feet (40.5m)	83 Feet (25.3m)
150 (65)	111 Feet (33.8m)	69 Feet (21.0m)
175 (79)	95 Feet (28.9m)	59 Feet (18.0m)

Note for gap set and hold down/guide location, see installation instruction above.
*1" (25.4mm) slotted holes in each expansion connector allow 5/8" (15.9mm) total expansion or contraction.
Authorized Engineering Information 8-20-1986

Cable Ladder Installation Guide

Installation of B-Line fiberglass cable tray should be made in accordance with the standards set by NEMA Publication VE-2, Cable Tray Installation Guide, and National Electrical Code, Article 318.

- Always observe common safety practices when assembling tray and fittings. Installations generally require some field cutting. Dust created during fabrication presents no serious health hazard, but skin irritation may be experienced by some workers.
- Operators of saws and drills should wear masks, long sleeve shirts or coveralls.
- Fabrication with fiberglass is relatively easy and comparable to working with wood. Ordinary hand tools may be used in most cases.
- Avoid excessive pressure when sawing or drilling. Too much force can rapidly dull tools and also produce excessive heat which softens the bonding resin in the fiberglass resulting in a ragged edge rather than a clean-cut edge.
- Field cutting is simple and can be accomplished with a circular power saw with an abrasive cut-off wheel (masonry type) or hack saw (24 to 32 teeth per inch).
- Drill fiberglass as you would drill hard wood. Standard twist drills are more than adequate.
- Any surface that has been drilled, cut, sanded or otherwise broken, **must be sealed** with a compatible resin. (see page 215)
- Carbide tipped saw blades and drill bits are recommended when cutting large quantities.
- Support the fiberglass material firmly during cutting operations to keep material from shifting which may cause chipping at the cut edge.
- Each tray section length should be equal to or greater than the support span.
- When possible, the splice should be located at quarter span.
- Fittings should be supported as per NEMA FG-1.

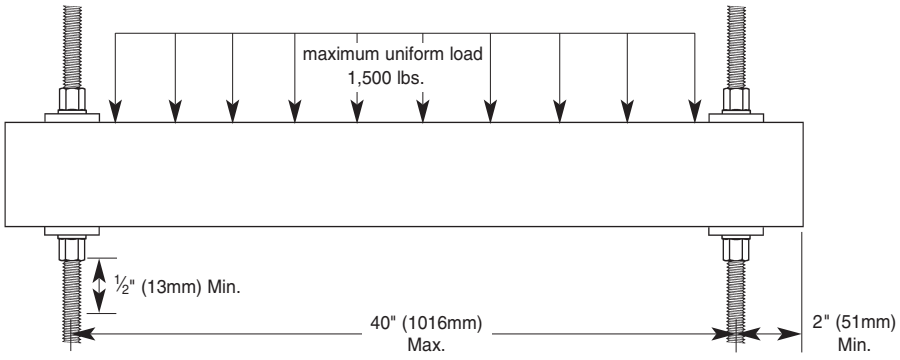
Recommended Fiberglass Trapeze Hanging Systems

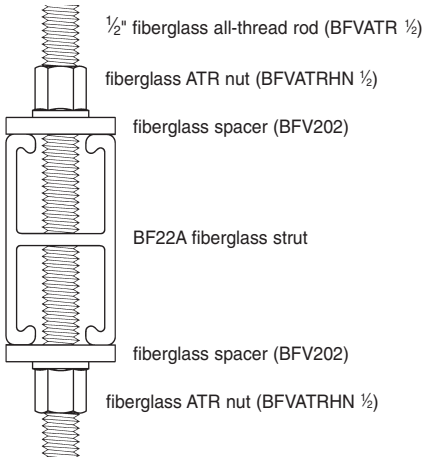
Notes:

1) A snug three to four ft.-lbs. torque is sufficient for all thread rod nuts.
2) When supporting cable tray, the spacing between each trapeze should not exceed the distance between splice plates.
3) When hanging from beam, B-Line BFPU751 series clamps provide extra thread engagement necessary for load ratings. All thread rod must be fully engaged in the clamp.
4) Design load safety factor is 3:1

BF22A Strut:

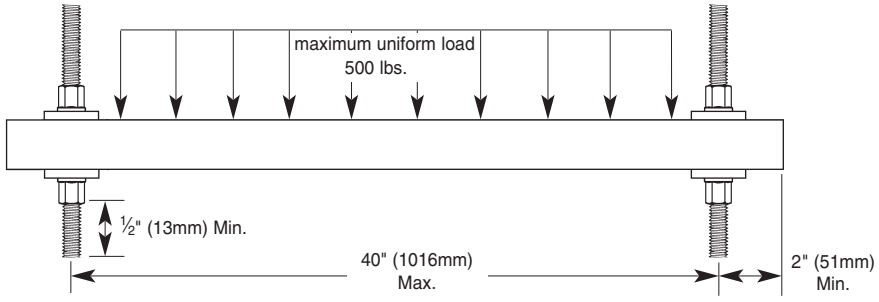
2" max between material being supported and rod

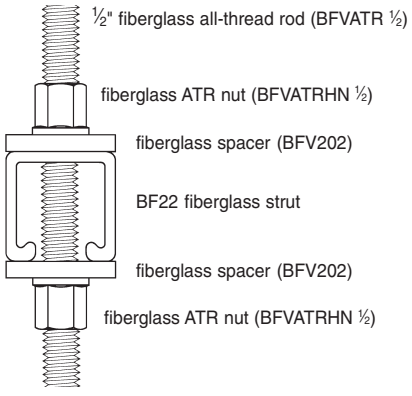




BF22 Strut:

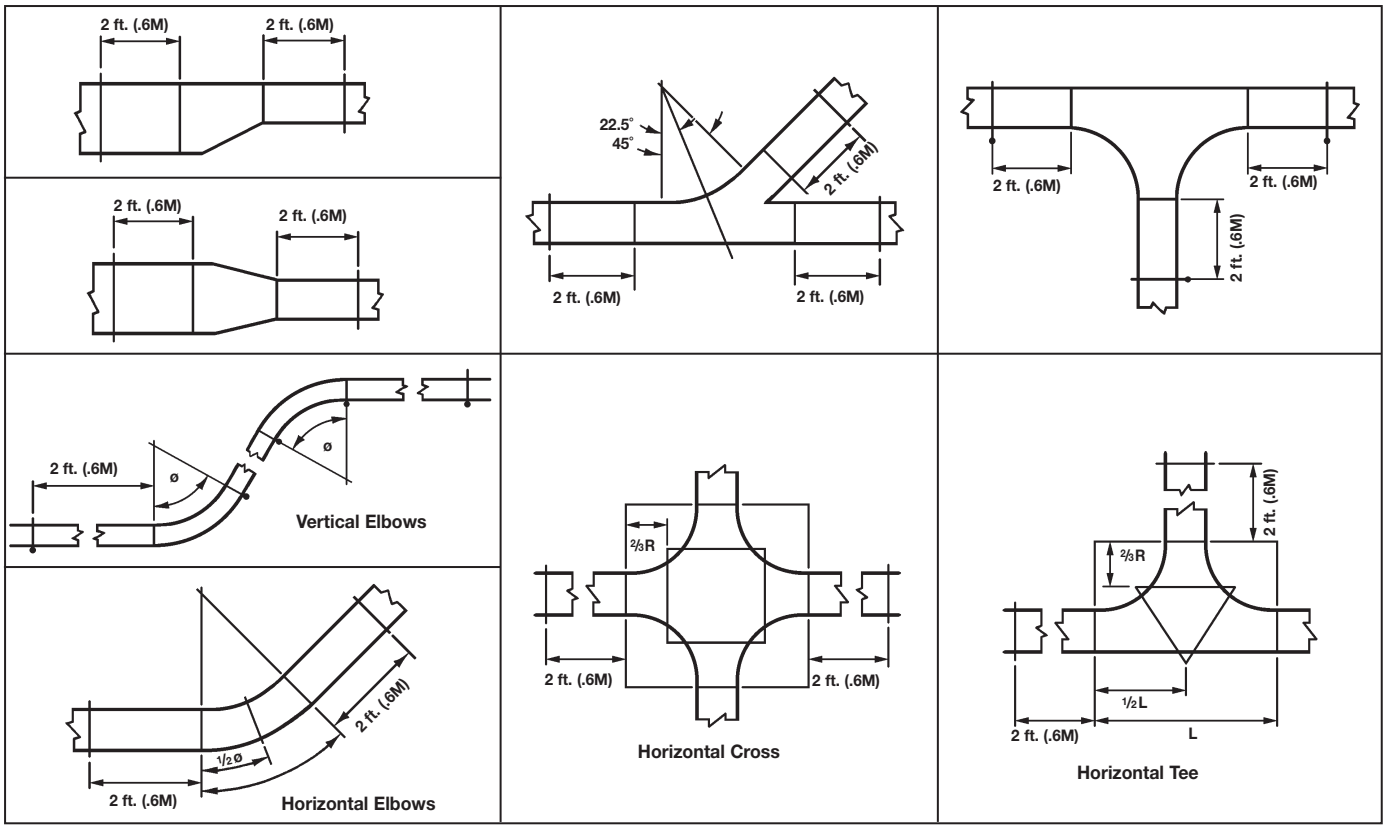
2" max between material being supported and rod





Cable Ladder Support Locations For Fittings

per NEMA VE-2 Installation Guide



Ø = 30˚, 45˚, 60˚, 90˚

How To Size Cable Ladder

Based on the National Electrical Code - 1993, Section 318

The National Electrical Code Article 318 was written primarily for verifying the cable fill in cable trays but little has been done to convert this information into a design procedure.

In the development of a complete cable tray support system, B-Line established a simple method of determining the right size tray to support any given amount of cables. The following tables cover our method for determining cable tray widths based on tray design and system voltage.

Table I

Table I is subdivided into two categories covering electrical service of 2000 volts or less. The first, Category A, is for any mixture of power or lighting cables with any mixture of control or signal cables. Category B is used when control and/or signal cables only are being used.

Control Circuit - the circuit of a control apparatus or system that carries the electric signals directing the performance of the controller, but does not carry the main power (NEC Article 100).
Signaling Circuit - any electric circuit that energizes signaling equipment (NEC Article 100).

Table II

Table II has only one category of electrical service and that is 2001 volts and over for types MV and MC cables both single and multiconductor.
Type MV is a single or multiconductor solid dielectric insulated cable rated 2001 volts or higher (NEC Article 326).
Type MC cable is a factory assembly of one or more conductors, each individually insulated and enclosed in a metallic sheath or interlocking tape, or a smooth or corrugated tube (NEC Article 334).Cables other than Types MV and MC can be installed provided they are "specifically approved for installation in cable trays."

Table III

Table III covers 3, 4 and 6 inch ventilated cable channels.

Tray Sizing Procedure

Step 1. Select proper cable tray table below based on cable voltage and tray type.

Cable Voltage	Cable Tray Type	Use:
2000 Volts or less	Ladder, Cable Tray	Table I
2001 Volts or more	Ladder, Cable Tray	Table II
2001 Volts or less	Cable Channel, ventilated	Table III

How To Size Cable Ladder

Tables I - Ladder Cable Tray - for cables rated 2000 volts or less

For power or lighting or any mixture of power, lighting, control or signal cables:

1. Multiconductor Cable

Conductor sizes 4/0 and larger*	tray width ≥ Sd	NEC 318-9(a) (1)
Conductor sizes 3/0 and smaller	tray width ≥ 0.857 Sa	NEC 318-9(a) (2)

Example: Calculate width of cable tray required for the following Type TC Cables.

6	4/c	500 kcmil	Power:	Diameter = 3.14	6 x 3.14 = 18.84
21	4/c	#8 AWG	Lighting:	Area = 0.407	.857 (21 x 0.407) = 7.32
20	5/c	#12 AWG	Control:	Area = 0.170	.857 (20 x 0.170) = 2.91
					29.07

Solution: Use 30 inch wide tray

2. Single Conductor Cable

Conductor sizes 250 MCM thru 900 MCM† only	tray width ≥ 0.023 Sa*	NEC 318-10(a) (2)
Conductor sizes 3/0 and smaller	tray width ≥ 0.857 Sa	NEC 318-10(a) (4)

Example: Calculate width of cable tray required for the following Type THW Wires.

6	1/c	4/0 AWG	Power:	Diameter = 0.710	(6 x 0.71) = 4.26
9	1/c	500 kcmil	Power:	Area = 0.83	.923 (9 x 0.83) = 6.89
6	1/c	250 kcmil	Power:	Area = 0.49	.923 (6 x 0.49) = 2.71
					13.86

Solution: Use 18 inch wide tray

3. Mixture of Single and Multiconductor Cable

Example: Calculate width of cable tray required for the following mix of cables. Use guidelines from (1) & (2) above.

2	3/c	250 kcmil	Type MC	Power:	Diameter = 1.84	2 x 1.84 = 3.68
12	4/c	#8 AWG	Type TC	Lighting:	Area = 0.41	.857 (12 x 0.41) = 4.22
60	4/c	#12 AWG	Type TC	Control:	Area = 0.12	.857 (60 x 0.12) = 6.17
4	1/c	1/0AWG	Type THW	Power:	Diameter = 0.55	(4 x 0.55) = 2.20
6	1/c	500kc mil	Type THW	Power:	Area = 0.83	.923 (6 x 0.83) = 4.60
						20.87

Solution: Use 24 inch wide tray

For control and/or signal duty cable only:

1. Multiconductor Cable

$$\text{tray width} \geq \frac{2Sa}{D} \qquad \text{NEC 318-9(b)}$$

All conductor sizes**

Example: Calculate width of cable tray required for the following Type TC Cables in 4 inch deep tray.

24	16/c	16 AWG	Control:	Area = 0.29	2(24 x 0.29) ÷ 4 = 3.48
42	4/c	12 AWG	Control:	Area = 0.13	2(42 x 0.13) ÷ 4 = 2.73
18	4/c	10 AWG	Control:	Area = 0.20	2(18 x 0.20) ÷ 4 = 1.80
					8.01

Solution: Use 24 inch wide tray

* The 4/0 and larger cable shall be installed in a single layer and no other cables shall be placed on them.
** For computation only depth D can not exceed 6 inches.
† For 1000 MCM and larger single conductor cable, refer to NEC 318-10(a)1 for sizing information.
Sd = the sum of the diameters, in inches, of all cables in the same ladder cable tray.
Sa = the sum of the cross-sectional areas, in square inches, of all cables in the same ladder cable tray.

How To Size Cable Ladder

Table II - Ladder - for cables rated 2000 volts or less

For MV or MC cables:

1. Mixture of Single and Multiconductor Cable NEC 318-12

All conductor sizes† tray width ≥ Sd

Example: Calculate width of cable tray required for the following cables.

4	1/c	500 kcmil	Type MV	Diameter =	1.05	4 x 1.05 = 4.20
10	3/c	2/0 AWG	Type MC	Diameter =	1.55	10 x 1.55 = 15.50
4	3/c	4/0 AWG	Type MV	Diameter =	1.78	4 x 1.78 = 7.12
						26.82

Solution: Use 30 inch wide tray

Table III - Cable Channel, Ventilated - for cables rated 2000 volts or less

For power, lighting, control and/or signal duty cables:

1. Multiconductor Cable (all size cables) NEC 318-9(E)

	3 inch wide	4 inch wide	6 inch wide
One cable only	Sa ≤ 2.3 in^2	Sa ≤ 4.5 in^2	Sa ≤ 7.0 in^2
Two or more cables	Sa ≤ 1.3 in^2	Sa ≤ 2.5 in^2	Sa ≤ 3.8 in^2

Example: Calculate width of cable channel required for the following Type TC Cables.

1	3/c	1/0 AWG	Area =	1.17 which is less than 1.3. **Use 3 inch wide.**
1	4/c	300 kcmil	Area =	3.77 which is less than 4.5. **Use 3 inch wide.**
6	4/c	#10 AWG	Area =	6 x 0.20 = 1.20 which is less than 1.3. **Use 3 inch wide.**
2	3/c	1/0 AWG	Area =	2 x 1.17 = 2.34 which is less than 2.5. **Use 4 inch wide.**

2. Single Conductor (1/0 AWG or larger) NEC 318-10(b)

	3 inch wide	4 inch wide	6 inch wide
Any number of cables	Sd ≤ 3.0	Sd ≤ 4.0	Sd ≤ 6.0

Example: Type THW Cables.

3	1/c	500 kcmil	Type THW	Diameter =	3 x 1.029 = 3.09 which is less than 4.0. **Use 4 inch wide.**
8	1/c	4/0 kcmil	Type THW	Diameter =	8 x 0.71 = 5.68 which is less than 6.0. **Use 6 inch wide.**

† Cables shall be installed in a single layer. Where single conductor cables are triplexed, quadruplexed or bound together in circuit groups, the sum of the diameters of the single conductors shall not exceed the cable tray width and these groups shall be installed in single layer arrangement.

Sd = the sum of the diameters, in inches, of all cables in the same ladder cable tray.

Sa = the sum of the cross-sectional areas, in square inches, of all cables in the same ladder cable tray.

Covers (Derating)

When cable trays are continuously covered for more than six feet with solid unventilated covers, the ampacity of the installed cables must be reduced per NEC-1993.

2000 volts or less

- MULTICONDUCTOR CABLES
  - use 95% of tables 310-16 and 310-18
- SINGLE CONDUCTOR CABLES
  - 600 MCM and larger use 70% of tables 310-17 and 310-19 1/0 AWG thru 500 kc mil use 60% of tables 310-17 and 310-19

2001 volts and over

- MULTICONDUCTOR CABLES
  - use 95% of tables 310-75 and 310-76
- SINGLE CONDUCTOR CABLES
  - use 70% of tables 310-69 and 310-70

Cross-Sectional Area

Rarely is the cross-sectional area of a multiconductor cable given in manufacturers literature or the National Electrical Code. To calculate the cross-sectional area simply square the diameter and multiply by 0.7854. The diameter used in the calculations is the overall outside diameter (O.D.) of the cable including insulation and/or armor.

Cross Sectional Area (Square Inches) = $0.7854\ (O.D.)^2$

Multipliers Used in Tables

The multipliers used in all tables are mathematical equivalents of Tables 318-9 and 318-10 of the National Electrical Code-1993.

An example can be found in column 1 of Table 318-9. The proportion of cable tray width (size inches) to allowable fill (seven square inches) is 0.857 for 3/0 and smaller multiconductor cables in ladder type trays. Therefore the product of 0.857 and the cross-sectional area of cables is the tray width.

SECTION 161xx
NON-METALLIC CABLE TRAY
POLYESTER, VINYL ESTER

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. The work covered under this section consists of the furnishing of all necessary labor, supervision, materials, equipment, tests and services to install complete cable tray systems as shown on the drawings.

B. Cable tray systems are defined to include, but are not limited to straight sections of [ladder type] [vented bottom type] [solid bottom type] cable trays, bends, tees, elbows, drop-outs, supports and accessories.

1.02 REFERENCES

A. ANSI/NFPA 70 – National Electrical Code

B. NEMA FG 1-2002 – Non-Metallic Cable Tray Systems

C. NEMA VE 2-2002 – Cable Tray Installation Guidelines

1.03 DRAWINGS

A. The drawings, which constitute a part of these specifications, indicate the general route of the cable tray systems. Data presented on these drawings are as accurate as preliminary surveys and planning can determine until final equipment selection is made. Accuracy is not guaranteed and field verification, of all dimensions, routing, etc., is directed.

B. Specifications and drawings are for assistance and guidance, but exact routing, locations, distances and levels will be governed by actual field conditions. Contractor is directed to make field surveys as part of his work prior to submitting system layout drawings.

1.04 SUBMITTALS

A. Submittal Drawings: Submit drawings of cable tray and accessories including clamps, brackets, hanger rods, splice plate connectors, expansion joint assemblies, and fittings, showing accurately scaled components.

B. Product Data: Submit manufacturer's data on cable tray including, but not limited to, types, materials, finishes, rung spacings, inside depths and fitting radii. For side rails and rungs, submit cross sectional properties including Section Modulus (Sx) and Moment of Inertia (Ix).

1.05 QUALITY ASSURANCE

A. Manufacturers: Firms regularly engaged in manufacture of cable trays and fittings of types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. NEMA Compliance: Comply with NEMA Standards Publication Number FG-1, "Non-Metallic Cable Tray Systems".

C. NEC Compliance: Comply with NEC, as applicable to construction and installation of cable tray and cable channel systems (Article 318, NEC).

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver cable tray systems and components carefully to avoid breakage, denting and scoring finishes. Do not install damaged equipment.

B. Store cable trays and accessories in original cartons and in clean dry space; protect from weather and construction traffic. Wet materials should be unpacked and dried before storage.

continued on page 181

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with these specifications, cable tray systems shall be as manufactured by Cooper B-Line, Inc. [or engineer approved equal].

2.02 CABLE TRAY SECTIONS AND COMPONENTS

A. General: Except as otherwise indicated, provide non-metallic cable trays, of types, classes, and sizes indicated; with splice plates, bolts, nuts and washers for connecting units. Construct units with rounded edges and smooth surfaces; in compliance with applicable standards; and with the following additional construction features. Cable tray shall be installed according to the latest revision of NEMA VE 2.

B. Material and Finish: Straight section structural elements; side rails, rungs and splice plates shall be pultruded from glass fiber reinforced polyester resin, vinyl ester resin or dis-stat.

C. Pultruded shapes shall be constructed with a surface veil to insure a resin-rich surface and ultraviolet resistance.

D. Pultruded shapes shall meet ASTM E-84, Class 1 flame rating and self-extinguishing requirements of ASTM D-635.

2.03 TYPE OF TRAY SYSTEM

A. Ladder Cable Trays shall consist of two longitudinal members (side rails) with transverse members (rungs) mechanically fastened and adhesively bonded to the side rails. Rungs shall be spaced [6] [9] [12] inches on center. Rung spacing in radiused fittings shall be industry standard 9" and measured at the center of the tray's width. Each rung must be capable of supporting a 200 lb. concentrated load at the center of the cable tray with a safety factor of 1.5 (See following rung loading table).

B. Ventilated Bottom Cable Trays shall consist of two longitudinal members (side rails) with rungs spaced 4" on center.

C. Solid Bottom Cable Trays shall consist of two longitudinal members (side rails) with a solid sheet over rungs spaced on 12" centers.

D. Cable tray loading depth shall be [2] [3] [5] inches per NEMA FG 1.

E. Straight sections shall be supplied in standard [10 foot (3m)] [20 foot (6m)] lengths.

F. Cable tray inside widths shall be [6] [9] [12] [18] [24] [30] [36] inches or as shown on drawings. Outside width shall not exceed inside by more than a total of 2".

G. Straight and expansion splice plates will be of "L" shaped lay-in design with an eight-bolt pattern in 5" fill systems and four-bolt pattern in 3" and 2" fill systems. Splice plates shall be furnished with straight sections and fittings.

H. All fittings must have a minimum radius of [12] [24] [36].

I. Molded fittings shall be formed with a minimum 3" tangent following the radius.

J. Systems with 3 inch loading depth shall have 90-degree and 45-degree molded fittings in 12 inch or 24 inch radius. (Polyester and vinylester only.)

K. Systems with 5 inch loading depth shall have 90-degree and 45-degree molded fittings in 24 inch or 36 inch radius. (Polyester and vinylester only.)

L. All other fittings shall be of mitered construction.

M. Dimension tolerances will be per NEMA FG 1.

continued on page 182

2.04 LOADING CAPACITIES

A. Cable trays shall meet NEMA class designation: [8C] [12C] [20B] [20C].

Or

A. Cable tray shall be capable of carrying a uniformly distributed load of _____ lbs./ft on a _____ foot support span with a safety factor of 1.5 when supported as a simple span and tested per NEMA VE 1 Section 5.2.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install cable trays as indicated: Installation shall be in accordance with equipment manufacturer's instructions, and with recognized industry practices to ensure that cable tray equipment comply with requirements of NEC and applicable portions of NFPA 70B. Reference NEMA VE 2 for general cable tray installation guidelines.

B. Coordinate cable tray with other electrical work as necessary to properly integrate installation of cable tray work with other work.

C. Provide sufficient space encompassing cable trays to permit access for installing and maintaining cables.

D. Cable tray fitting supports shall be located such that they meet the strength requirements of straight sections. Install fitting supports per NEMA VE 2 guidelines, or in accordance with manufacturer's instructions.

3.02 TESTING

A. Upon request manufacturer shall provide test reports witnessed by an independent testing laboratory of the "worst case" loading conditions outlined in this specification and performed in accordance with the latest revision of NEMA FG 1.

SECTION 161xx

LOW SMOKE, ZERO HALOGEN, NON-METALLIC CABLE TRAY

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. The work covered under this section consists of the furnishing of all necessary labor, supervision, materials, equipment, tests and services to install complete cable tray systems as shown on the drawings.

B. Cable tray systems are defined to include, but are not limited to straight sections of ladder type cable trays, bends, tees, elbows, drop-outs, supports and accessories.

1.02 REFERENCES

A. ANSI/NFPA 70 – National Electrical Code

B. NEMA FG 1-2002 – Non-Metallic Cable Tray Systems

C. NEMA VE 2-2002 – Cable Tray Installation Guidelines

1.03 DRAWINGS

A. The drawings, which constitute a part of these specifications, indicate the general route of the cable tray systems. Data presented on these drawings are as accurate as preliminary surveys and planning can determine until final equipment selection is made. Accuracy is not guaranteed and field verification, of all dimensions, routing, etc., is directed.

B. Specifications and drawings are for assistance and guidance, but exact routing, locations, distances and levels will be governed by actual field conditions. Contractor is directed to make field surveys as part of his work prior to submitting system layout drawings.

1.04 SUBMITTALS

A. Submittal Drawings: Submit drawings of cable tray and accessories including clamps, brackets, hanger rods, splice plate connectors, expansion joint assemblies, and fittings, showing accurately scaled components.

B. Product Data: Submit manufacturer's data on cable tray including, but not limited to, types, materials, finishes, rung spacings, inside depths and fitting radii. For side rails and rungs, submit cross sectional properties including Section Modulus (Sx) and Moment of Inertia (Ix).

1.05 QUALITY ASSURANCE

A. Manufacturers: Firms regularly engaged in manufacture of cable trays and fittings of types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. NEMA Compliance: Comply with NEMA Standards Publication Number FG-1, "Non-Metallic Cable Tray Systems".

C. NEC Compliance: Comply with NEC, as applicable to construction and installation of cable tray and cable channel systems (Article 392, NEC).

continued on page 184

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver cable tray systems and components carefully to avoid breakage, denting and scoring finishes. Do not install damaged equipment.

B. Store cable trays and accessories in original cartons and in clean dry space; protect from weather and construction traffic. Wet materials should be unpacked and dried before storage.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with these specifications, cable tray systems shall be part number **24FT09-12-240** as manufactured by Cooper B-Line, Inc. [or engineer approved equal].

2.02 CABLE TRAY SECTIONS AND COMPONENTS

A. General: Except as otherwise indicated, provide non-metallic cable trays, of types, classes, and sizes indicated; with splice plates, bolts, nuts and washers for connecting units. Construct units with rounded edges and smooth surfaces; in compliance with applicable standards; and with the following additional construction features. Cable tray shall be installed according to the latest revision of NEMA VE 2.

B. Material and Finish: Straight section structural elements; side rails, rungs and splice plates shall be pultruded from glass fiber reinforced zero halogen resin.

C. Pultruded shapes shall be constructed with a surface veil to insure a resin-rich surface and ultraviolet resistance.

D. Pultruded shapes shall meet the following criteria shown in Table 1:

Table 1

Test Performed	Specified Requirement
Flexural Strength	25,000 psi, Min.
Flexural Modulus	1,000,000 psi, Min.
Tensile Strength	17,000 psi, Min.
Tensile Modulus	900,000 psi, Min.
Impact Strength	25 ft-lb./in., Min.
Dielectric Strength	170 volts/mil, Min.
Arc Resistance	180 seconds, Min.
Water Absorption	0.2%, Max.
Thermal Expansion	0.000007 in./in./°F., Max.
Flame Spread Index	60, Max.
Flame Resistance	UL 94 V-0, Min.
Tracking Resistance	600 minutes, Min. at 2500V
Specific Optical	200 Max. within 4 minutes
Smoke Density	after start of test.

continued on page 185

SMOKE TOXICITY

Gases	Maximum Quantities
Hydrogen Chloride	10 ppm
Hydrogen Bromide	10 ppm
Hydrogen Cyanide	10 ppm
Hydrogen Sulfide	10 ppm
Vinyl Chloride	10 ppm
Ammonia	500 ppm
Aldehydes	30 ppm
Oxides of Nitrogen	100 ppm
Carbon Dioxide	15,000 ppm
Carbon Monoxide	1,000 ppm

Fiberglass pultruded shapes are manufactured per Creative Pultrusions Inc. Fiberglass Transportation Products-130 specifications.

2.03 TYPE OF TRAY SYSTEM

A. Ladder Cable Trays shall consist of two longitudinal members (side rails) with transverse members (rungs) mechanically fastened and adhesively bonded to the side rails. Ladder Cable Tray shall be Cooper B-Line part number 24FT09-12-240 [or engineered approved equal]. Rung spacing in radiused fittings shall be industry standard 9" and measured at the center of the tray's width.

B. Straight and expansion splice plates will be of "L" shaped lay-in design with a four-bolt pattern. Splice plates shall be furnished with straight sections and fittings.

C. All fittings must have a minimum radius of [12] [24] [36].

D. All fittings shall be of mitered construction.

E. Dimension tolerances will be per NEMA FG 1.

2.04 LOADING CAPACITIES

A. Cable tray shall be capable of carrying a uniformly distributed load of _____ lbs./ft on a _____-foot support span with a safety factor of 1.5 when supported as a simple span and tested per NEMA VE 1 Section 5.2.

continued on page 186

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install cable trays as indicated: Installation shall be in accordance with equipment manufacturer's instructions, and with recognized industry practices to ensure that cable tray equipment comply with requirements of NEC and applicable portions of NFPA 70B. Reference NEMA VE 2 for general cable tray installation guidelines.

B. Coordinate cable tray with other electrical work as necessary to properly integrate installation of cable tray work with other work.

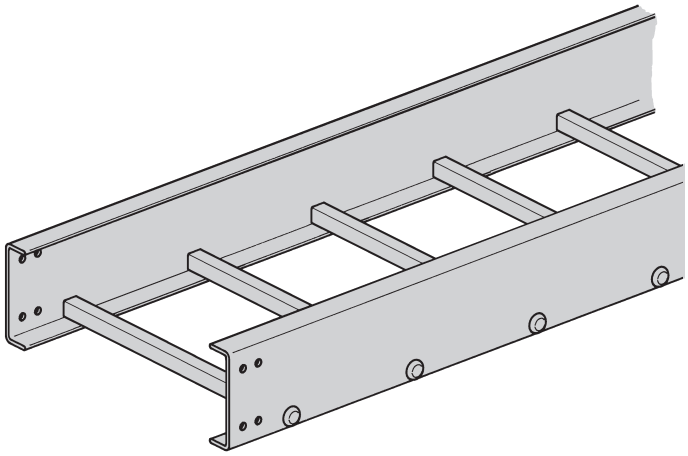
C. Provide sufficient space encompassing cable trays to permit access for installing and maintaining cables.

D. Cable tray fitting supports shall be located such that they meet the strength requirements of straight sections. Install fitting supports per NEMA VE 2 guidelines, or in accordance with manufacturer's instructions.

3.02 TESTING

A. Upon request manufacturer shall provide test reports witnessed by an independent testing laboratory of the "worst case" loading conditions outlined in this specification and performed in accordance with the latest revision of NEMA FG 1.

To order a Fiberglass straight section of cable tray, select the appropriate size and material from the charts below and place those symbols in the sequence shown to form the complete catalog number.



Procedure:

1. Select the correct Cooper B-Line **series** Fiberglass tray using the Load Data for straight sections shown on pages 188 thru 193.
2. Select the resin required. Polyester, Vinyl Ester, or Fire Retardant Zero Halogen/Dis-Stat. Refer to Corrosion Guide on pages 170 and 171, for the effect of environmental conditions on the desired material and the effective temperature range on page 172.
3. The tray prefix is completed by inserting the **rung spacing.**
4. Select the desired **width** in inches. Refer to How To Size Cable Tray Section if width has to be computed based on number and size of cables. See pages 241 thru 245.
5. Finally select the straight section **length** in inches. Fiberglass 120 [10'] (3m) or 240 [20'] (6m)

Straight Section Part Numbering

Example: Prefix **24** **F** **09** - **24** - **120**

Series	Material	Rung Spacing	Width	Length
13	F - Fiberglass Polyester Resin	6" (152)	6" (152)	120 [10 ft] (3m)
24	FV - Fiberglass Vinyl Ester Resin	9" (228)	9" (228)	240 [20 ft] (6m)
36	FA - Zero Halogen/ Dis-Stat	12" (305)	12" (305)	
46		*See page 355 for Marine Rung option.	18" (457)	
H46			24" (609)	
48			30" (762)	
			36" (914)	

Note: One pair of splice plates with SS6 hardware included.

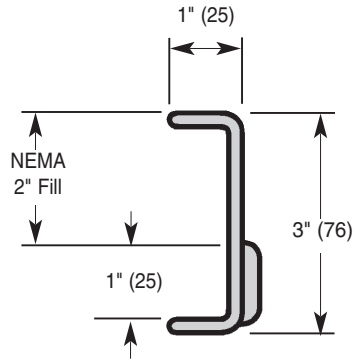
Fitting Section Part Selector

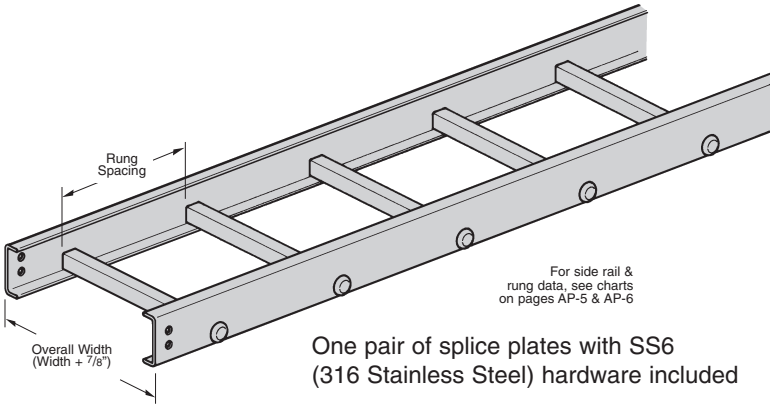
Example: Prefix **4** **F** - **24** - **90** **HB** **24**

Height	Material	Width	Angle	Type	Radius
3" (76)	F - Fiberglass Polyester Resin	6" (152)	30˚	HB - Horizontal Bend	12" (305)
4" (101)	FV - Fiberglass Vinyl Ester Resin	9" (228)	45˚	HT - Horizontal Tee	24" (609)
6" (152)	FA - Zero Halogen/ Dis-Stat	12" (305)	60˚	HX - Horizontal Cross	36" (914)
8" (203)		18" (457)	90˚	VI - Vertical Inside Bend	
		24" (609)		VO - Vertical Outside Bend	
		30" (762)		VT - Vertical Tee	
		36" (914)		VTU - Vertical Tee, Up	
				RR - Right Reducer	
				LR - Left Reducer	
				SR - Straight Reducer	

Notes: Standard rung spacing on fittings is 9" (225).
Splice plates with SS6 hardware included.

Fiberglass Cable Ladder Straight Sections





One pair of splice plates with SS6
(316 Stainless Steel) hardware included

Series 13 Fiberglass Straight Section Part Numbering

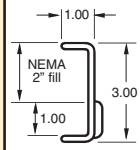
Prefix

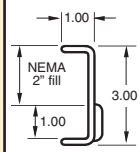
Example: **13 F 09 - 24 - 120**

Series	Material	Type	Width	Length
13	**F** = Polyester **FV** = Vinyl Ester **FA** = Zero Halogen/ Dis-Stat	**Ladder -** **06** = 6" rung spacing **09** = 9" rung spacing **12** = 12" rung spacing	**06** = 6" **09** = 9" **12** = 12" **18** = 18" **24** = 24"	① **120** = 10 ft. ② 240 = 20 ft. ①Primary Length. ②Secondary Length.

13

See page 219 for additional rung options.

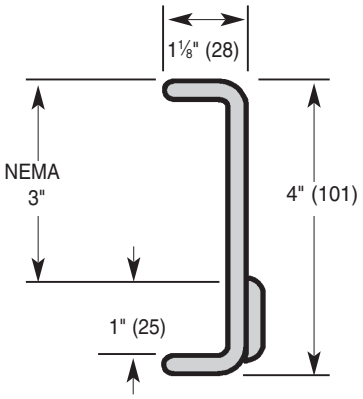
B-Line Series	Side Rail Dimensions	NEMA & CSA Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Span meters	Load kg/m	Deflection Multiplier
13F 13FV		NEMA: 8C	6	257	0.005	1.8	382	0.086
			8	145	0.016	2.4	216	0.267
			10	93	0.040	3.0	138	0.681
			12	64	0.083	3.7	95	1.411
			14	47	0.153	4.3	70	2.614

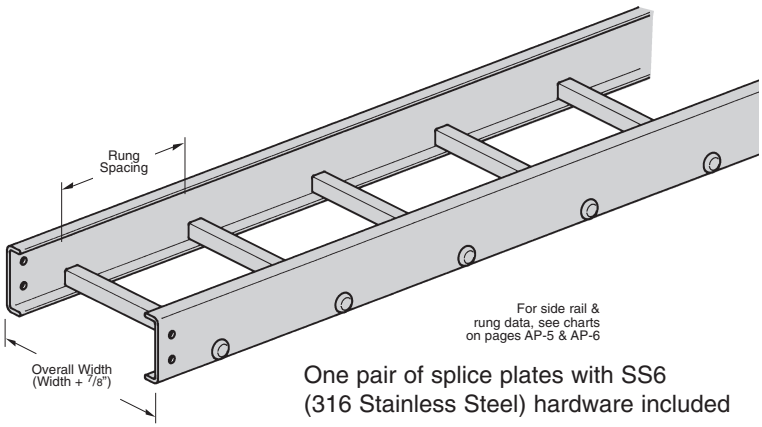
B-Line Series	Side Rail Dimensions	NEMA & CSA Classifications	Span ft	Load lbs/ft		Span meters	Load kg/m	
13FA		NEMA: 8C	6	178		1.8	264	
			8	100		2.4	149	
			10	64		3.0	95	
			12	44		3.7	65	

Values are based on simple beam tests per NEMA VFG-1 on 24" wide cable tray rungs spaced on 12" centers. Published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable being installed.

When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%.

Dimensions shown in parentheses are in millimeters, unless otherwise specified.





One pair of splice plates with SS6
(316 Stainless Steel) hardware included

Series 24 Fiberglass Straight Section Part Numbering

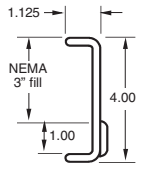
Prefix

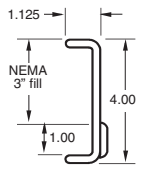
Example: **24 F 09 - 24 - 120**

Series	Material	Type	Width	Length
24	**F** = Polyester **FV** = Vinyl Ester **FA** = Zero Halogen/ Dis-Stat	**Ladder -** **06** = 6" rung spacing **09** = 9" rung spacing **12** = 12" rung spacing	**06** = 6" **09** = 9" **12** = 12" **18** = 18" **24** = 24" **30** = 30" **36** = 36"	① **120** = 10 ft. ② 240 = 20 ft. ①Primary Length. ②Secondary Length.

24

See page 219 for additional rung options.

B-Line Series	Side Rail Dimensions	NEMA & CSA Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Span meters	Load kg/m	Deflection Multiplier
24F 24FV		NEMA: 12C CSA: E-3m	6 8 10 12	627 353 226 157	0.001 0.004 0.011 0.022	1.8 2.4 3.0 3.7	933 525 336 233	0.023 0.074 0.182 0.378

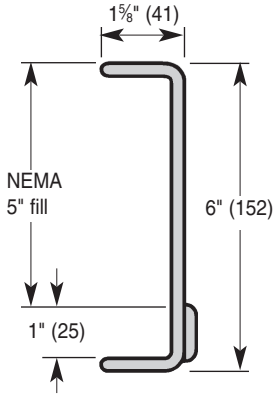
B-Line Series	Side Rail Dimensions	NEMA & CSA Classifications	Span ft	Load lbs/ft		Span meters	Load kg/m	
24FA		NEMA: 12C CSA: E-3m	6 8 10 12	400 226 144 100		1.8 2.4 3.0 3.7	595 336 214 149	

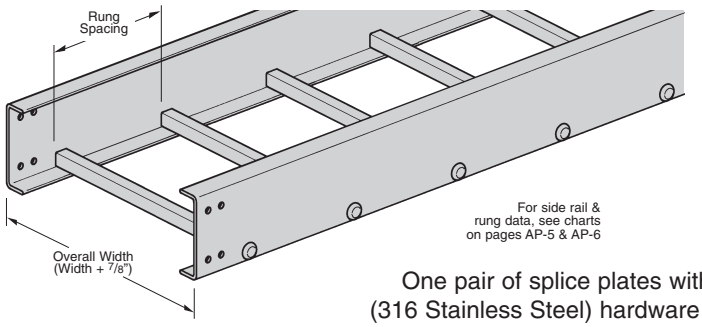
Values are based on simple beam tests per NEMA VFG-1 on 36" wide cable tray rungs spaced on 12" centers. Published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable being installed.

When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%.

Dimensions shown in parentheses are in millimeters, unless otherwise specified.

Fiberglass Cable Ladder Straight Sections





One pair of splice plates with SS6
(316 Stainless Steel) hardware included

Series 36 Fiberglass Straight Section Part Numbering

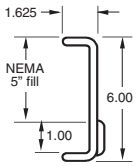
Prefix

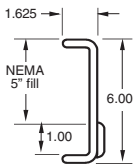
Example: **36 F 09 - 24 - 120**

Series	Material	Type	Width	Length
36	**F** = Polyester **FV** = Vinyl Ester **FA** = Zero Halogen/ Dis-Stat	**Ladder -** **06** = 6" rung spacing **09** = 9" rung spacing **12** = 12" rung spacing	**06** = 6" **09** = 9" **12** = 12" **18** = 18" **24** = 24" **30** = 30" **36** = 36"	① **120** = 10 ft. ② 240 = 20 ft. ①Primary Length. ②Secondary Length.

36

See page 219 for additional rung options.

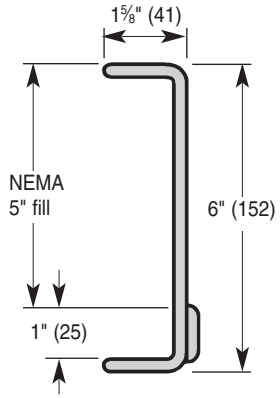
B-Line Series	Side Rail Dimensions	NEMA & CSA Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Span meters	Load kg/m	Deflection Multiplier
36F **36FV**		NEMA: 20B CSA: E-6m	12 14 16 18 20	246 181 139 109 89	0.006 0.011 0.019 0.031 0.047	3.7 4.3 4.9 5.5 6.1	367 269 206 163 132	0.104 0.193 0.330 0.528 0.811

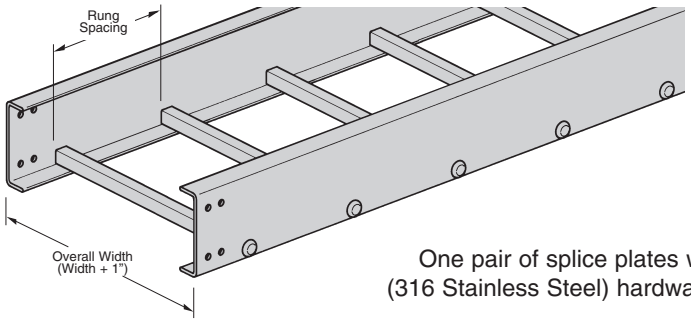
B-Line Series	Side Rail Dimensions	NEMA & CSA Classifications	Span ft	Load lbs/ft		Span meters	Load kg/m	
36FA		NEMA: 20B CSA: E-6m	12 14 16 18 20	208 153 117 93 75		3.7 4.3 4.9 5.5 6.1	309 227 174 138 111	

Values are based on simple beam tests per NEMA VFG-1 on 36" wide cable tray rungs spaced on 12" centers. Published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable being installed.

When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%.

Dimensions shown in parentheses are in millimeters, unless otherwise specified.





One pair of splice plates with SS6
(316 Stainless Steel) hardware included

Series 46 Fiberglass Straight Section Part Numbering

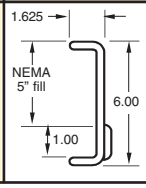
Prefix

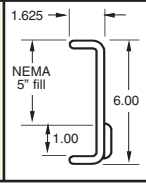
Example: **H46 F 09 - 24 - 120**

Series	Material	Type	Width	Length
46	**F** = Polyester **FV** = Vinyl Ester **FA** = Zero Halogen/ Dis-Stat	**Ladder -** **06** = 6" rung spacing **09** = 9" rung spacing **12** = 12" rung spacing	**06** = 6" **09** = 9" **12** = 12" **18** = 18" **24** = 24" **30** = 30" **36** = 36"	① **120** = 10 ft. ② 240 = 20 ft. ①Primary Length. ②Secondary Length.

46

See page 219 for additional rung options.

B-Line Series	Side Rail Dimensions	NEMA & CSA Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Span meters	Load kg/m	Deflection Multiplier
46F **46FV**		NEMA: 20C+ CSA: E-6m	12 14 16 18 20	393 288 221 174 141	0.005 0.009 0.015 0.023 0.035	3.7 4.3 4.9 5.5 6.1	584 429 329 260 210	0.079 0.145 0.246 0.396 0.605

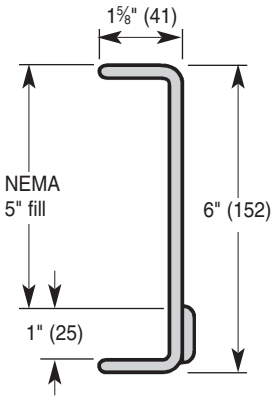
B-Line Series	Side Rail Dimensions	NEMA & CSA Classifications	Span ft	Load lbs/ft		Span meters	Load kg/m	
46FA		NEMA: 20C+ CSA: E-6m	12 14 16 18 20	278 204 156 123 100		3.7 4.3 4.9 5.5 6.1	413 303 232 183 149	

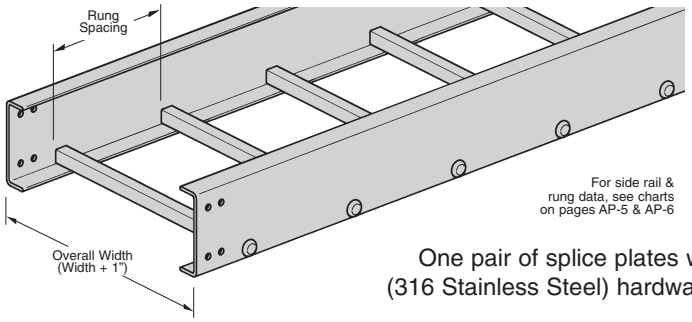
Values are based on simple beam tests per NEMA VFG-1 on 36" wide cable tray rungs spaced on 12" centers. Published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable being installed.

When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%.

Dimensions shown in parentheses are in millimeters, unless otherwise specified.

Fiberglass Cable Ladder Straight Sections





For side rail & rung data, see charts on pages AP-5 & AP-6

One pair of splice plates with SS6 (316 Stainless Steel) hardware included

Series H46 Fiberglass Straight Section Part Numbering

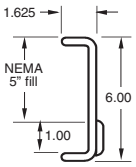
Prefix

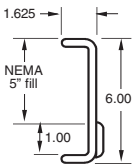
Example: **H46 F 09 - 24 - 120**

Series	Material	Type	Width	Length
H46	**F** = Polyester **FV** = Vinyl Ester **FA** = Zero Halogen/ Dis-Stat	**Ladder -** **06** = 6" rung spacing **09** = 9" rung spacing **12** = 12" rung spacing	**06** = 6" **09** = 9" **12** = 12" **18** = 18" **24** = 24" **30** = 30" **36** = 36"	① **120** = 10 ft. ② 240 = 20 ft. H46

①Primary Length.
②Secondary Length.

See page 219 for additional rung options.

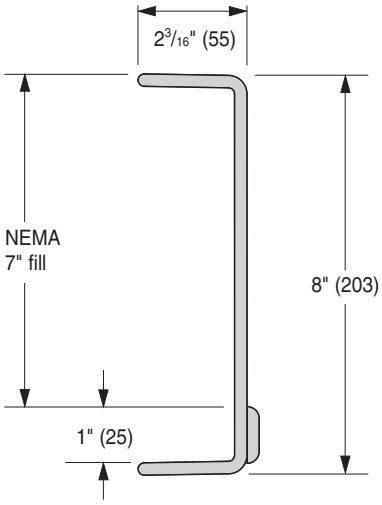
B-Line Series	Side Rail Dimensions	NEMA & CSA Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Span meters	Load kg/m	Deflection Multiplier
H46F **H46FV**		NEMA: 20C+ CSA: E-6m	12 14 16 18 20	424 312 239 188 153	0.005 0.009 0.015 0.023 0.035	3.7 4.3 4.9 5.5 6.1	631 464 355 280 227	0.079 0.144 0.248 0.396 0.608

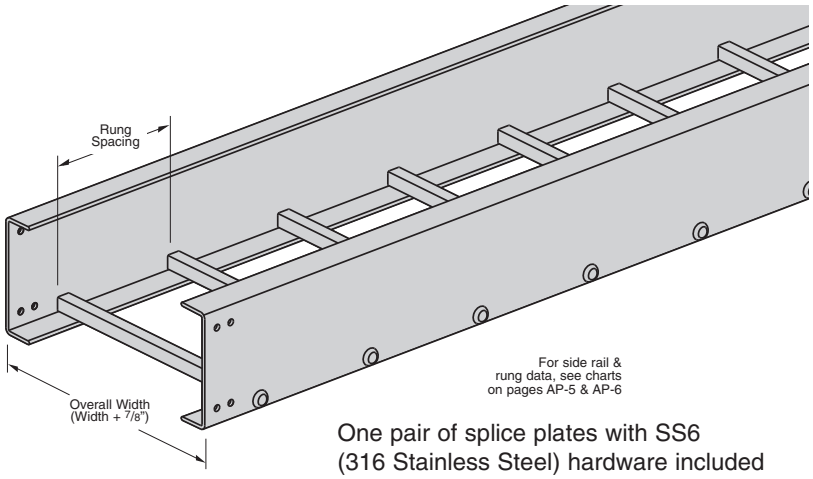
B-Line Series	Side Rail Dimensions	NEMA & CSA Classifications	Span ft	Load lbs/ft		Span meters	Load kg/m	
H46FA		NEMA: 20C+ CSA: E-6m	12 14 16 18 20	306 224 172 136 110		3.7 4.3 4.9 5.5 6.1	455 333 245 202 163	

Values are based on simple beam tests per NEMA VFG-1 on 36" wide cable tray rungs spaced on 12" centers. Published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable being installed.

When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%.

Dimensions shown in parentheses are in millimeters, unless otherwise specified.





One pair of splice plates with SS6
(316 Stainless Steel) hardware included

Series 48 Fiberglass Straight Section Part Numbering

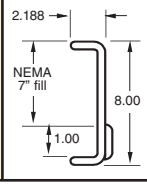
Prefix

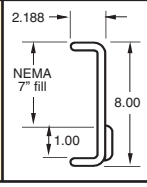
Example: **48 F 09 - 24 - 120**

Series	Material	Type	Width	Length
48	**F** = Polyester **FV** = Vinyl Ester **FA** = Zero Halogen Dis-Stat	**Ladder -** **06** = 6" rung spacing **09** = 9" rung spacing **12** = 12" rung spacing	**06** = 6" **09** = 9" **12** = 12" **18** = 18" **24** = 24" **30** = 30" **36** = 36"	① **120** = 10 ft. ② 240 = 20 ft. ①Primary Length. ②Secondary Length.

48

See page 219 for additional rung options.

B-Line Series	Side Rail Dimensions	NEMA & CSA Classifications	Span ft	Load lbs/ft	Deflection Multiplier	Span meters	Load kg/m	Deflection Multiplier
48F 48FV		NEMA: 20C+	12	348	0.003	3.7	518	0.052
			14	256	0.006	4.3	381	0.097
			16	196	0.010	4.9	291	0.165
			18	155	0.015	5.5	231	0.210
			20	125	0.024	6.1	187	0.401

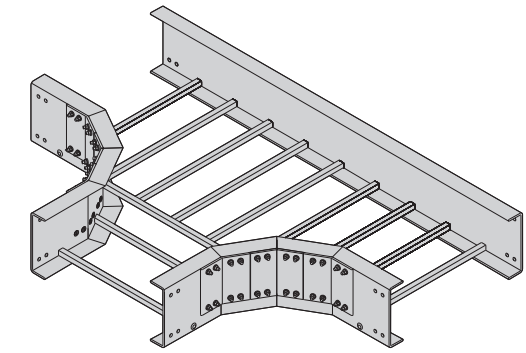
B-Line Series	Side Rail Dimensions	NEMA & CSA Classifications	Span ft	Load lbs/ft		Span meters	Load kg/m	
48FA		NEMA: 20C+	12	278		3.7	413	
			14	204		4.3	303	
			16	156		4.9	232	
			18	123		5.5	183	
			20	100		6.1	149	

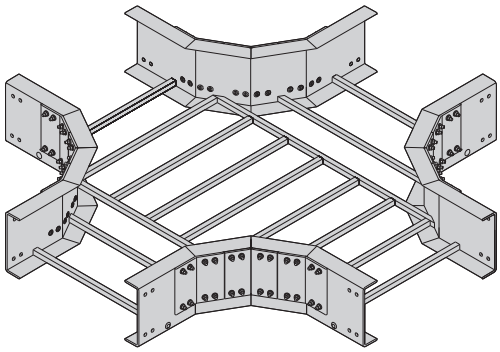
Values are based on simple beam tests per NEMA VFG-1 on 36" wide cable tray rungs spaced on 12" centers. Published load safety factor is 1.5. To convert 1.5 safety factor to 2.0, multiply published load by 0.75. To obtain mid-span deflection, multiply a load by the deflection multiplier. Cable tray must be supported on spans shorter than or equal to the length of the cable being installed.

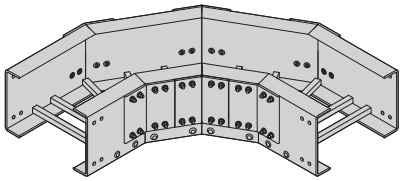
When trays are used in continuous spans, the deflection of the tray is reduced by as much as 50%.

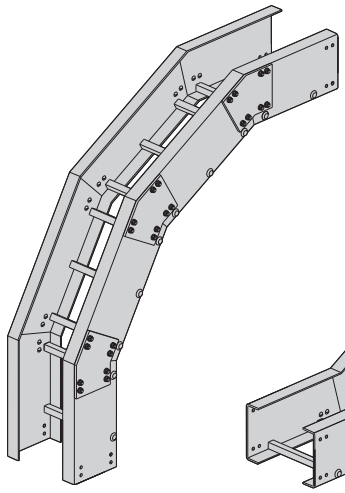
Dimensions shown in parentheses are in millimeters, unless otherwise specified.

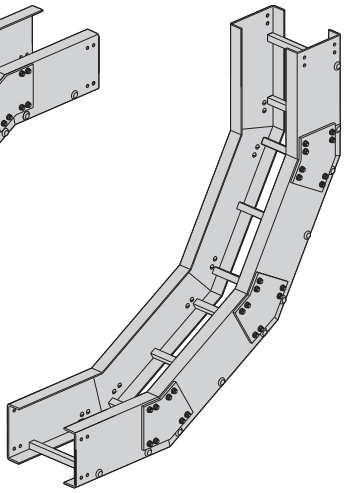
Fiberglass Cable Ladder Fitting Numbering System











Series 24 Fiberglass Fittings Part Numbering

Prefix

Example: **4 F - 12 - 90 HB 12**

(9" rung spacing is standard)

Height

3 = 3" **
4 = 4"
6 = 6"
8 = 8"

** 3" deep fittings are only available in 6" thru 24" widths and 12" radius only.

Material

F = Polyester
FV = Vinyl Ester
FA = Zero Halogen Dis-Stat

Width

06 = 6" (152)
09 = 9" (228)
12 = 12" (305)
18 = 18" (457)
24 = 24" (609)
30 = 30" (762)
36 = 36" (914)

Angle

45 = 45°
90 = 90°

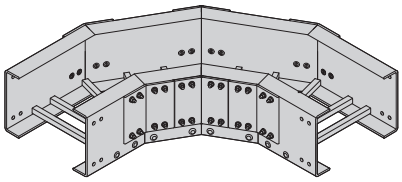
Type

HB = Horizontal Bend
HT = Horizontal Tee
HX = Horizontal Cross
VI = Vertical Inside Bend
VO = Vertical Outside Bend
LR = Left Reducer
RR = Right Reducer
SR = Straight Reducer
VT = Vertical Tee Down
VTU = Vertical Tee Up

Radius

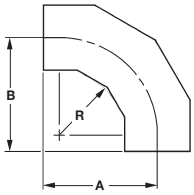
12 = 12" (305)
24 = 24" (609)
36 = 36" (914)

Horizontal Bend 90° (HB)



One pair of splice plates with SS6 hardware included.

- R - Bend Radius		Tray Width		90° Horizontal Bend - Mitered Dimensions				
				Catalog No.	A		B	
in.	mm	in.	mm		in.	mm	in.	mm
12	305	6	152	**(Prefix)-06-90HB12**	20 3/8	517	20 3/8	517
		9	228	**(Prefix)-09-90HB12**	21 7/8	555	21 7/8	555
		12	305	**(Prefix)-12-90HB12**	22 3/4	578	22 3/4	578
		18	457	**(Prefix)-18-90HB12**	26 5/16	668	26 5/16	668
		24	609	**(Prefix)-24-90HB12**	29 3/8	746	29 3/8	746
		30	762	**(Prefix)-30-90HB12**	32 3/8	822	32 3/8	822
		36	914	**(Prefix)-36-90HB12**	35 3/8	898	35 3/8	898
24	609	6	152	**(Prefix)-06-90HB24**	32 1/2	826	32 1/2	826
		9	228	**(Prefix)-09-90HB24**	34	864	34	864
		12	305	**(Prefix)-12-90HB24**	35 1/2	902	35 1/2	902
		18	457	**(Prefix)-18-90HB24**	38 1/2	978	38 1/2	978
		24	609	**(Prefix)-24-90HB24**	41 1/2	1054	41 1/2	1054
		30	762	**(Prefix)-30-90HB24**	44 1/2	1130	44 1/2	1130
		36	914	**(Prefix)-36-90HB24**	47 1/2	1207	47 1/2	1207
36	914	6	152	**(Prefix)-06-90HB36**	44 5/8	1133	44 5/8	1133
		9	228	**(Prefix)-09-90HB36**	46 1/8	1171	46 1/8	1171
		12	305	**(Prefix)-12-90HB36**	47 5/8	1209	47 5/8	1209
		18	457	**(Prefix)-18-90HB36**	50 5/8	1286	50 5/8	1286
		24	609	**(Prefix)-24-90HB36**	53 5/8	1362	53 5/8	1362
		30	762	**(Prefix)-30-90HB36**	56 5/8	1438	56 5/8	1438
		36	914	**(Prefix)-36-90HB36**	59 5/8	1514	59 5/8	1514



90° Mitered

Prefix - 06 - 90 HB 12
- Radius
- Fitting
- Angle
- Width
- To complete catalog number, insert fitting prefix.

(Prefix) See page 194 for catalog number prefix.
Dimensions for reference only, when critical contact factory.

For 3" Fittings

(Tray Widths - 6" thru 24" • Radius 12" only)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All are mitered

For 4" Fittings

(Tray Widths - 6" thru 36" • Radius 12", 24" & 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

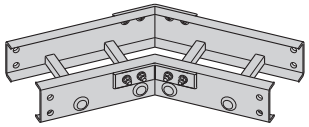
For 6" Fittings

(Tray Widths - 6" thru 36" • Radius 12", 24" & 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

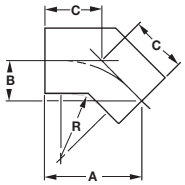
For 8" Fittings

(Tray Widths - 6" thru 36" • Radius 12", 24" & 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

Horizontal Bend 45° (HB)



One pair of splice plates with SS6 hardware included.



45° Mitered

Prefix - 06 - 45 HB 12
- Radius
- Fitting
- Angle
- Width
- To complete catalog number, insert fitting prefix.

(Prefix) See page 194 for catalog number prefix. Dimensions for reference only, when critical contact factory.

- R - Bend Radius		Tray Width		45° Horizontal Bend - Mitered Dimensions						
				Catalog No.	A		B		C	
in.	mm	in	mm		in.	mm	in.	mm	in.	mm
12	305	6	152	(Prefix)-06-45HB12	22 13/16	579	9 7/16	240	13 3/8	340
		9	228	(Prefix)-09-45HB12	23 7/8	606	9 7/8	251	14	355
		12	305	(Prefix)-12-45HB12	24 7/8	632	10 5/16	262	14 5/8	371
		18	457	(Prefix)-18-45HB12	27	686	11 3/16	284	15 7/8	403
		24	609	(Prefix)-24-45HB12	29 1/8	740	12 1/16	306	17 1/16	433
		30	762	(Prefix)-30-45HB12	31 1/4	794	12 15/16	328	18 5/16	465
		36	914	(Prefix)-36-45HB12	33 3/8	848	13 13/16	351	19 9/16	497
24	609	6	152	(Prefix)-06-45HB24	31 11/32	796	12 31/32	329	18 3/8	467
		9	228	(Prefix)-09-45HB24	32 13/32	823	13 13/32	341	19	483
		12	305	(Prefix)-12-45HB24	33 13/32	849	13 27/32	352	19 5/8	498
		18	457	(Prefix)-18-45HB24	35 17/32	902	14 23/32	374	20 7/8	530
		24	609	(Prefix)-24-45HB24	37 21/32	956	15 19/32	396	22 1/16	560
		30	762	(Prefix)-30-45HB24	39 25/32	1010	16 15/32	418	23 5/16	592
		36	914	(Prefix)-36-45HB24	41 29/32	1064	17 11/32	441	24 9/16	624
36	914	6	152	(Prefix)-06-45HB36	39 7/8	1013	16 1/2	419	23 3/8	594
		9	228	(Prefix)-09-45HB36	40 15/16	1040	16 15/16	430	23 15/16	608
		12	305	(Prefix)-12-45HB36	42	1067	17 3/8	441	24 9/16	624
		18	457	(Prefix)-18-45HB36	44 1/8	1121	18 1/4	463	25 13/16	655
		24	609	(Prefix)-24-45HB36	46 3/16	1173	19 1/8	486	27 1/16	687
		30	762	(Prefix)-30-45HB36	48 5/16	1227	20	508	28 5/16	719
		36	914	(Prefix)-36-45HB36	50 7/16	1281	20 7/8	530	29 9/16	751

For 3” Fittings

(Tray Widths - 6” thru 24” • Radius 12” only)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All are mitered

For 4” Fittings

(Tray Widths - 6” thru 36”
Radius 12”, 24” & 36”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

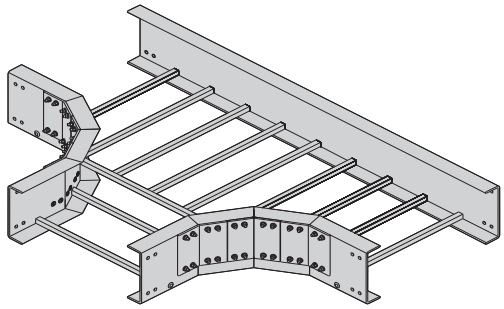
For 6” Fittings

(Tray Widths - 6” thru 36”
Radius 12”, 24” & 36”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 8” Fittings

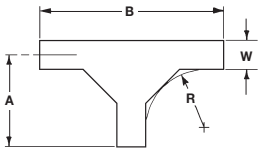
(Tray Widths - 6” thru 36”
Radius 12”, 24” & 36”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

Horizontal Tee (HT)

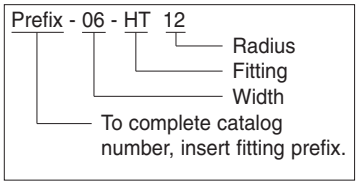


Two pair of splice plates with SS6 hardware included.

- R - Bend Radius		Tray Width		Horizontal Tee - Mitered Dimensions				
				Catalog No.	A		B	
in.	mm	in.	mm		in.	mm	in.	mm
12	305	6	152	(Prefix)-06-HT12	19¼	489	38	965
		9	228	(Prefix)-09-HT12	20¾	527	41	1041
		12	305	(Prefix)-12-HT12	22¼	565	44	1117
		18	457	(Prefix)-18-HT12	25¼	641	50	1270
		24	609	(Prefix)-24-HT12	28¼	717	56	1422
		30	762	(Prefix)-30-HT12	31¼	794	62	1575
		36	914	(Prefix)-36-HT12	34¼	870	68	1727
24	609	6	152	(Prefix)-06-HT24	31¼	794	62¼	1581
		9	228	(Prefix)-09-HT24	32¾	832	65¼	1657
		12	305	(Prefix)-12-HT24	34¼	870	68¼	1734
		18	457	(Prefix)-18-HT24	37¼	946	74¼	1886
		24	609	(Prefix)-24-HT24	40¼	1022	80¼	2038
		30	762	(Prefix)-30-HT24	43¼	1098	86¼	2191
		36	914	(Prefix)-36-HT24	46¼	1175	92¼	2343
36	914	6	152	(Prefix)-06-HT36	43¼	1098	86½	2191
		9	228	(Prefix)-09-HT36	44¾	1136	89½	2273
		12	305	(Prefix)-12-HT36	46¼	1175	92½	2343
		18	457	(Prefix)-18-HT36	49¼	1251	98½	2502
		24	609	(Prefix)-24-HT36	52¼	1327	104½	2654
		30	762	(Prefix)-30-HT36	55¼	1403	110½	2807
		36	914	(Prefix)-36-HT36	58¼	1479	116½	2959



Mitered Tee



(Prefix) See page 194 for catalog number prefix.
Dimensions for reference only, when critical contact factory.

For 3" Fittings

(Tray Widths - 6" thru 24" • Radius 12" only)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All are mitered

For 4" Fittings

(Tray Widths - 6" thru 36" • Radius 12", 24" & 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

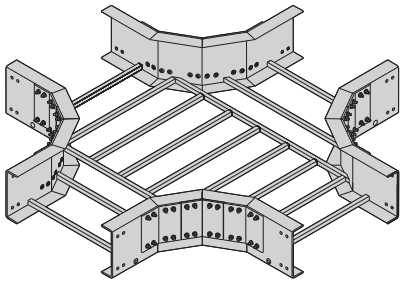
For 6" Fittings

(Tray Widths - 6" thru 36" • Radius 12", 24" & 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

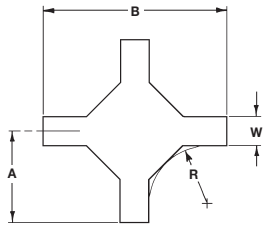
For 8" Fittings

(Tray Widths - 6" thru 36" • Radius 12", 24" & 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

Horizontal Cross (HX)



Three pair of splice plates with SS6 hardware included.



Mitered Cross

Prefix - 06 - HX 12
- Radius
- Fitting
- Width
- To complete catalog number, insert fitting prefix.

(Prefix) See page 194 for catalog number prefix.
Dimensions for reference only, when critical contact factory.

For 3" Fittings

(Tray Widths - 6" thru 24" • Radius 12" only)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All are mitered

For 4" Fittings

(Tray Widths - 6" thru 36"
Radius 12", 24" & 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 6" Fittings

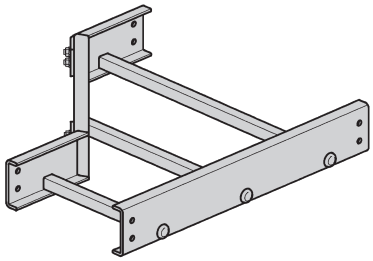
(Tray Widths - 6" thru 36"
Radius 12", 24" & 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

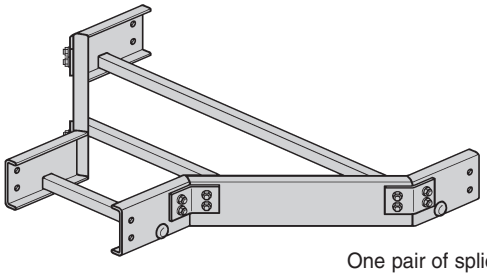
For 8" Fittings

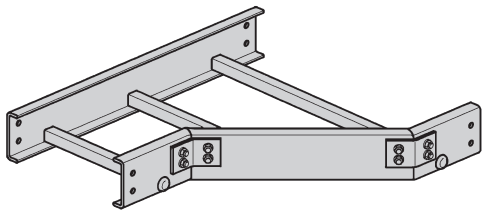
(Tray Widths - 6" thru 36"
Radius 12", 24" & 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

- R - Bend Radius		Tray Width		Horizontal Cross - Mitered Dimensions				
				Catalog No.	A		B	
in.	mm	in.	mm		in.	mm	in.	mm
12	305	6	152	**(Prefix)-06-HX12**	19¼	489	38	965
		9	228	**(Prefix)-09-HX12**	20¾	527	41	1041
		12	305	**(Prefix)-12-HX12**	22¼	565	44	1117
		18	457	**(Prefix)-18-HX12**	25¼	641	50	1270
		24	609	**(Prefix)-24-HX12**	28¼	717	56	1422
		30	762	**(Prefix)-30-HX12**	31¼	794	62	1575
		36	914	**(Prefix)-36-HX12**	34¼	870	68	1727
24	609	6	152	**(Prefix)-06-HX24**	31¼	794	62¼	1581
		9	228	**(Prefix)-09-HX24**	32¾	832	65¼	1657
		12	305	**(Prefix)-12-HX24**	34¼	870	68¼	1734
		18	457	**(Prefix)-18-HX24**	37¼	946	74¼	1886
		24	609	**(Prefix)-24-HX24**	40¼	1022	80¼	2038
		30	762	**(Prefix)-30-HX24**	43¼	1098	86¼	2191
		36	914	**(Prefix)-36-HX24**	46¼	1175	92¼	2343
36	914	6	152	**(Prefix)-06-HX36**	43¼	1098	86½	2191
		9	228	**(Prefix)-09-HX36**	44¾	1136	89½	2273
		12	305	**(Prefix)-12-HX36**	46¼	1175	92½	2343
		18	457	**(Prefix)-18-HX36**	49¼	1251	98½	2502
		24	609	**(Prefix)-24-HX36**	52¼	1327	104½	2654
		30	762	**(Prefix)-30-HX36**	55¼	1403	110½	2807
		36	914	**(Prefix)-36-HX36**	58¼	1479	116½	2959

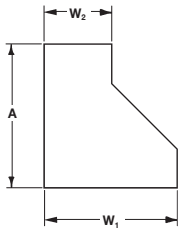
Reducers (LR) (SR) (RR)



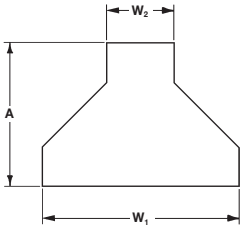




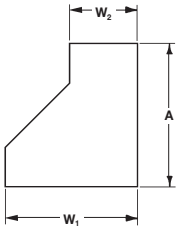
One pair of splice plates with SS6 hardware included.



Left Reducer



Straight Reducer



Right Reducer

3" Fittings
(Only available in W1 widths of 9", 12", 18" & 24")

4", 6" & 8" Fittings
(Available in all W1 widths shown in chart)

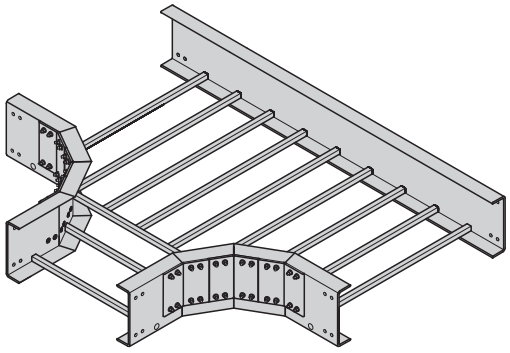
Reducers are all of mitered construction.

Prefix - 12 - SR 09
- Width2 W2
- Fitting
- Width1 W1
- To complete catalog number, insert fitting prefix.

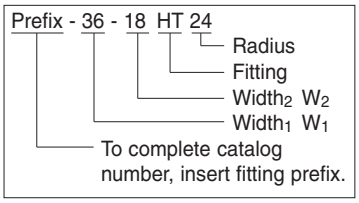
(Prefix) See page 194 for catalog number prefix.
Dimensions for reference only, when critical contact factory.

Tray Width				Left Hand Reducer			Straight Reducer			Right Hand Reducer		
W_1		W_2		Catalog No.	A		Catalog No.	A		Catalog No.	A	
in.	mm	in.	mm		in.	mm		in.	mm		in.	mm
9	228	6	152	(Prefix)-09-LR06	17½	444	(Prefix)-09-SR06	16	406	(Prefix)-09-RR06	17½	444
12	305	6	152	(Prefix)-12-LR06	20½	521	(Prefix)-12-SR06	17½	444	(Prefix)-12-RR06	20½	521
		9	228	(Prefix)-12-LR09	17½	444	(Prefix)-12-SR09	16	406	(Prefix)-12-RR09	17½	444
18	457	6	152	(Prefix)-18-LR06	26½	673	(Prefix)-18-SR06	20½	521	(Prefix)-18-RR06	26½	673
		9	228	(Prefix)-18-LR09	23½	597	(Prefix)-18-SR09	19	482	(Prefix)-18-RR09	23½	597
		12	305	(Prefix)-18-LR12	20½	521	(Prefix)-18-SR12	17½	444	(Prefix)-18-RR12	20½	521
24	609	6	152	(Prefix)-24-LR06	32½	825	(Prefix)-24-SR06	23½	597	(Prefix)-24-RR06	32½	825
		9	228	(Prefix)-24-LR09	29½	749	(Prefix)-24-SR09	22	559	(Prefix)-24-RR09	29½	749
		12	305	(Prefix)-24-LR12	26½	673	(Prefix)-24-SR12	20½	521	(Prefix)-24-RR12	26½	673
		18	457	(Prefix)-24-LR18	20½	521	(Prefix)-24-SR18	17½	444	(Prefix)-24-RR18	20½	521
30	762	6	152	(Prefix)-30-LR06	38½	978	(Prefix)-30-SR06	26½	673	(Prefix)-30-RR06	38½	978
		9	228	(Prefix)-30-LR09	35½	902	(Prefix)-30-SR09	25	635	(Prefix)-30-RR09	35½	902
		12	305	(Prefix)-30-LR12	32½	825	(Prefix)-30-SR12	23½	597	(Prefix)-30-RR12	32½	825
		18	457	(Prefix)-30-LR18	26½	673	(Prefix)-30-SR18	20½	521	(Prefix)-30-RR18	26½	673
		24	609	(Prefix)-30-LR24	20½	521	(Prefix)-30-SR24	17½	444	(Prefix)-30-RR24	20½	521
36	914	6	152	(Prefix)-36-LR06	44½	1130	(Prefix)-36-SR06	29½	749	(Prefix)-36-RR06	44½	1130
		9	228	(Prefix)-36-LR09	41½	1054	(Prefix)-36-SR09	28	711	(Prefix)-36-RR09	41½	1054
		12	305	(Prefix)-36-LR12	38½	978	(Prefix)-36-SR12	26½	673	(Prefix)-36-RR12	38½	978
		18	457	(Prefix)-36-LR18	32½	825	(Prefix)-36-SR18	23½	597	(Prefix)-36-RR18	32½	825
		24	609	(Prefix)-36-LR24	26½	673	(Prefix)-36-SR24	20½	521	(Prefix)-36-RR24	26½	673
		30	762	(Prefix)-36-LR30	20½	521	(Prefix)-36-SR30	17½	444	(Prefix)-36-RR30	20½	521

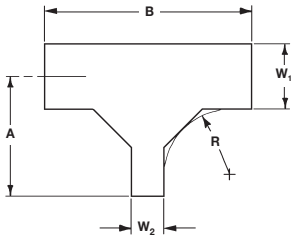
Horizontal Reducing Tee (HT)



Two pair of splice plates with SS6 hardware included.



(Prefix) See page 194 for catalog number prefix.
Dimensions for reference only, when critical contact factory.



Mitered

(For dimensions, see chart on page 201)

For 3” Fittings

(Radius 12” only
W1 tray widths - 9”, 12”, 18” & 24”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All are mitered

For 4” Fittings

(Radius 12”, 24” & 36”
W1 tray widths - 9” thru 36”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 6” Fittings

(Radius 12”, 24” & 36”
W1 tray widths - 9” thru 36”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 8” Fittings

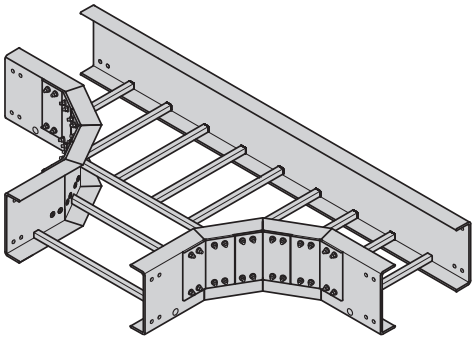
(Radius 12”, 24” & 36”
W1 tray widths - 9” thru 36”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

Horizontal Reducing Tee (HT)

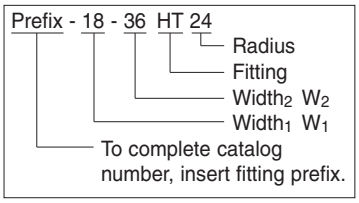
Mitered Fittings

Tray Width W_1 in.	W_1 mm	W_2 in.	W_2 mm	Catalog No. * Insert radius (12", 24" or 36")	12" Radius (305) A in.	A mm	B in.	B mm	24" Radius (609) A in.	A mm	B in.	B mm	36" Radius (914) A in.	A mm	B in.	B mm
9	228	6	152	(Prefix)-09-06-HT*	20¾	527	38½	978	32¾	832	62½	1587	44¾	1137	86½	2197
12	305	6	152	(Prefix)-12-06-HT*	22¼	565	38½	978	34¼	870	62½	1587	46¼	1175	86½	2197
		9	228	(Prefix)-12-09-HT*	22¼	565	41½	1054	34¼	870	65½	1664	46¼	1175	89½	2273
18	457	6	152	(Prefix)-18-06-HT*	25¼	641	38½	978	37¼	946	62½	1587	49¼	1251	86½	2197
		9	228	(Prefix)-18-09-HT*	25¼	641	41½	1054	37¼	946	65½	1664	49¼	1251	89½	2273
		12	305	(Prefix)-18-12-HT*	25¼	641	44½	1130	37¼	946	68½	1740	49¼	1251	92½	2350
24	609	6	152	(Prefix)-24-06-HT*	28¼	717	38½	978	40¼	1022	62½	1587	52¼	1327	86½	2197
		9	228	(Prefix)-24-09-HT*	28¼	717	41½	1054	40¼	1022	65½	1664	52¼	1327	89½	2273
		12	305	(Prefix)-24-12-HT*	28¼	717	44½	1130	40¼	1022	68½	1740	52¼	1327	92½	2350
		18	457	(Prefix)-24-18-HT*	28¼	717	50½	1283	40¼	1022	74½	1892	52¼	1327	98½	2502
30	762	6	152	(Prefix)-30-06-HT*	31¼	794	38½	978	43¼	1098	62½	1587	55¼	1403	86½	2197
		9	228	(Prefix)-30-09-HT*	31¼	794	41½	1054	43¼	1098	65½	1664	55¼	1403	89½	2273
		12	305	(Prefix)-30-12-HT*	31¼	794	44½	1130	43¼	1098	68½	1740	55¼	1403	92½	2350
		18	457	(Prefix)-30-18-HT*	31¼	794	50½	1283	43¼	1098	74½	1892	55¼	1403	98½	2502
		24	609	(Prefix)-30-24-HT*	31¼	794	56½	1435	43¼	1098	80½	2045	55¼	1403	104½	2654
36	914	6	152	(Prefix)-36-06-HT*	34¼	870	38½	978	46¼	1175	62½	1587	58¼	1480	86½	2197
		9	228	(Prefix)-36-09-HT*	34¼	870	41½	1054	46¼	1175	65½	1664	58¼	1480	89½	2273
		12	305	(Prefix)-36-12-HT*	34¼	870	44½	1130	46¼	1175	68½	1740	58¼	1480	92½	2350
		18	457	(Prefix)-36-18-HT*	34¼	870	50½	1283	46¼	1175	74½	1892	58¼	1480	98½	2502
		24	609	(Prefix)-36-24-HT*	34¼	870	56½	1435	46¼	1175	80½	2045	58¼	1480	104½	2654
		30	762	(Prefix)-36-30-HT*	34¼	870	62½	1587	46¼	1175	86½	2197	58¼	1480	110½	2807

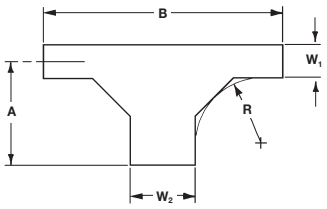
Horizontal Expanding Tee (HT)



Two pair of splice plates with SS6 hardware included.



(Prefix) See page 194 for catalog number prefix.
Dimensions for reference only, when critical contact factory.



Mitered
(For dimensions, see chart on page 203)

For 3” Fittings

(Radius 12” only
W1 tray widths - 6” thru 18”
W2 tray widths - 9” thru 24”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All are mitered

For 4” Fittings

(Radius 12”, 24” & 36”
W1 tray widths - 6” thru 30”)
W2 tray widths - 9” thru 36”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 6” Fittings

(Radius 12”, 24” & 36”
W1 tray widths - 6” thru 30”)
W2 tray widths - 9” thru 36”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 8” Fittings

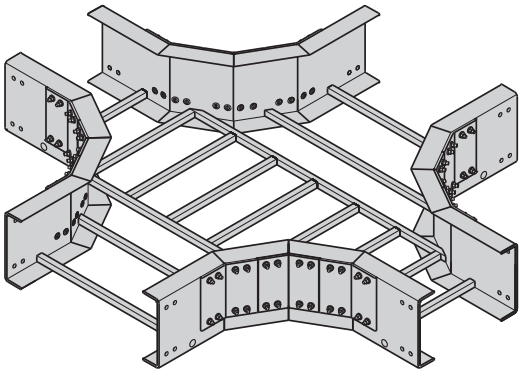
(Radius 12”, 24” & 36”
W1 tray widths - 6” thru 30”)
W2 tray widths - 9” thru 36”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

Horizontal Expanding Tee (HT)

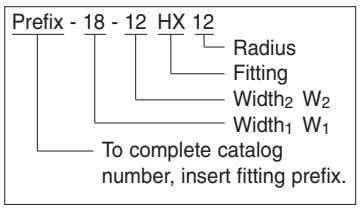
Mitered Fittings

Tray Width W_1 in.	W_1 mm	W_2 in.	W_2 mm	Catalog No. * Insert radius (12", 24" or 36")	12" Radius (305) A in.	A mm	B in.	B mm	24" Radius (609) A in.	A mm	B in.	B mm	36" Radius (914) A in.	A mm	B in.	B mm
6	152	9	228	(Prefix)-06-09-HT*	19¼	489	41½	1054	31¼	794	65½	1664	43¼	1098	89½	2273
		12	305	(Prefix)-06-12-HT*	19¼	489	44½	1130	31¼	794	68½	1740	43¼	1098	92½	2349
		18	457	(Prefix)-06-18-HT*	19¼	489	50½	1283	31¼	794	74½	1892	43¼	1098	98½	2502
		24	609	(Prefix)-06-24-HT*	19¼	489	56½	1435	31¼	794	80½	2045	43¼	1098	104½	2654
		30	762	(Prefix)-06-30-HT*	19¼	489	62½	1587	31¼	794	86½	2197	43¼	1098	110½	2807
		36	914	(Prefix)-06-36-HT*	19¼	489	68½	1740	31¼	794	92½	2349	43¼	1098	116½	2959
9	228	12	305	(Prefix)-09-12-HT*	20¾	527	44½	1130	32¾	832	68½	1740	44¾	136	92½	2349
		18	457	(Prefix)-09-18-HT*	20¾	527	50½	1283	32¾	832	74½	1892	44¾	136	98½	2502
		24	609	(Prefix)-09-24-HT*	20¾	527	56½	1435	32¾	832	80½	2045	44¾	136	104½	2654
		30	762	(Prefix)-09-30-HT*	20¾	527	62½	1587	32¾	832	86½	2197	44¾	136	110½	2807
		36	914	(Prefix)-09-36-HT*	20¾	527	68½	1740	32¾	832	92½	2349	44¾	136	116½	2959
12	305	18	457	(Prefix)-12-18-HT*	22¼	565	50½	1283	34¼	870	74½	1892	46¼	1175	98½	2502
		24	609	(Prefix)-12-24-HT*	22¼	565	56½	1435	34¼	870	80½	2045	46¼	1175	104½	2654
		30	762	(Prefix)-12-30-HT*	22¼	565	62½	1587	34¼	870	86½	2197	46¼	1175	110½	2807
		36	914	(Prefix)-12-36-HT*	22¼	565	68½	1740	34¼	870	92½	2349	46¼	1175	116½	2959
18	457	24	609	(Prefix)-18-24-HT*	25¼	641	56½	1435	37¼	946	80½	2045	49¼	1251	104½	2654
		30	762	(Prefix)-18-30-HT*	25¼	641	62½	1587	37¼	946	86½	2197	49¼	1251	110½	2807
		36	914	(Prefix)-18-36-HT*	25¼	641	68½	1740	37¼	946	92½	2349	49¼	1251	122½	3111
24	609	30	762	(Prefix)-24-30-HT*	28¼	717	62½	1587	40¼	1022	86½	2197	52¼	1327	110½	2807
		36	914	(Prefix)-24-36-HT*	28¼	717	68½	1740	40¼	1022	92½	2349	52¼	1327	116½	2959
30	762	36	914	(Prefix)-30-36-HT*	31¼	794	68½	1740	43¼	1098	92½	2349	55¼	1403	116½	2959

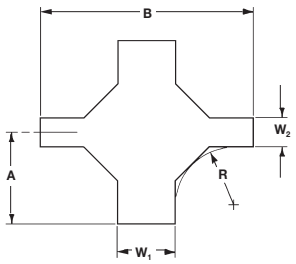
Horizontal Expanding/Reducing Cross (HX)



Three pair of splice plates with SS6 hardware included.



(Prefix) See page 194 for catalog number prefix.
Dimensions for reference only, when critical contact factory.



Mitered

(For dimensions, see chart on page 205)

For 3” Fittings

(Radius 12” only
W1 tray widths - 9” thru 24”
W2 tray widths - 6” thru 18”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All are mitered

For 4” Fittings

(Radius 12”, 24” & 36”
W1 tray widths - 9” thru 36”)
W2 tray widths - 6” thru 30”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 6” Fittings

(Radius 12”, 24” & 36”
W1 tray widths - 9” thru 36”)
W2 tray widths - 6” thru 30”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 8” Fittings

(Radius 12”, 24” & 36”
W1 tray widths - 9” thru 36”)
W2 tray widths - 6” thru 30”)
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

Horizontal Expanding/Reducing Cross (HX)

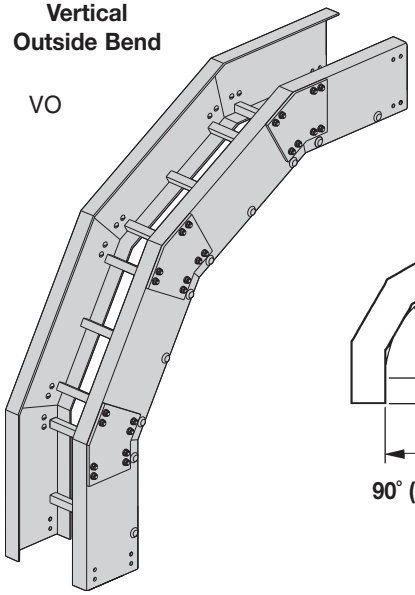
Mitered Fittings

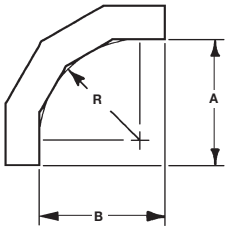
Tray Width W_1 in.	W_1 mm	W_2 in.	W_2 mm	Catalog No. * Insert radius (12", 24" or 36")	12" Radius (305) A in.	A mm	B in.	B mm	24" Radius (609) A in.	A mm	B in.	B mm	36" Radius (914) A in.	A mm	B in.	B mm
9	228	6	152	(Prefix)-09-06-HT*	19¼	489	41½	1054	31¼	794	65½	1664	43¼	1098	89½	2273
12	305	6	152	(Prefix)-12-06-HT*	19¼	489	44½	1130	31¼	794	68½	1740	43¼	1098	92½	2350
		9	228	(Prefix)-12-09-HT*	20¾	527	44½	1130	32¾	832	68½	1740	44¾	1136	92½	2350
18	457	6	152	(Prefix)-18-06-HT*	19¼	489	50½	1283	31¼	794	74½	1892	43¼	1098	98½	2502
		9	228	(Prefix)-18-09-HT*	20¾	527	50½	1283	32¾	832	74½	1892	44¾	1136	98½	2502
		12	305	(Prefix)-18-12-HT*	22¼	565	50½	1283	34¼	870	74½	1892	46¼	1175	98½	2502
24	609	6	152	(Prefix)-24-06-HT*	19¼	489	56½	1435	31¼	794	80½	2045	43¼	1098	104½	2654
		9	228	(Prefix)-24-09-HT*	20¾	527	56½	1435	32¾	832	80½	2045	44¾	1136	104½	2654
		12	305	(Prefix)-24-12-HT*	22¼	565	56½	1435	34¼	870	80½	2045	46¼	1175	104½	2654
		18	457	(Prefix)-24-18-HT*	25¼	641	56½	1435	37¼	946	80½	2045	49¼	1251	104½	2654
30	762	6	152	(Prefix)-30-06-HT*	19¼	489	62½	1587	31¼	794	86½	2197	43¼	1098	110½	2807
		9	228	(Prefix)-30-09-HT*	20¾	527	62½	1587	32¾	832	86½	2197	44¾	1136	110½	2807
		12	305	(Prefix)-30-12-HT*	22¼	565	62½	1587	34¼	870	86½	2197	46¼	1175	110½	2807
		18	457	(Prefix)-30-18-HT*	25¼	641	62½	1587	37¼	946	86½	2197	49¼	1251	110½	2807
		24	609	(Prefix)-30-24-HT*	28¼	717	62½	1587	40¼	1022	86½	2197	52¼	1327	110½	2807
36	914	6	152	(Prefix)-36-06-HT*	19¼	489	68½	1740	31¼	794	104½	2654	43¼	1098	128½	3264
		9	228	(Prefix)-36-09-HT*	20¾	527	68½	1740	32¾	832	104½	2654	44¾	1136	128½	3264
		12	305	(Prefix)-36-12-HT*	22¼	565	68½	1740	34¼	870	104½	2654	46¼	1175	128½	3264
		18	457	(Prefix)-36-18-HT*	25¼	641	68½	1740	37¼	946	104½	2654	49¼	1251	128½	3264
		24	609	(Prefix)-36-24-HT*	28¼	717	68½	1740	40¼	1022	104½	2654	52¼	1327	128½	3264
		30	762	(Prefix)-36-30-HT*	31¼	794	68½	1740	43¼	1098	104½	2654	55¼	1403	128½	3264

Vertical Bends 90° (VO) (VI)

Vertical Outside Bend

VO

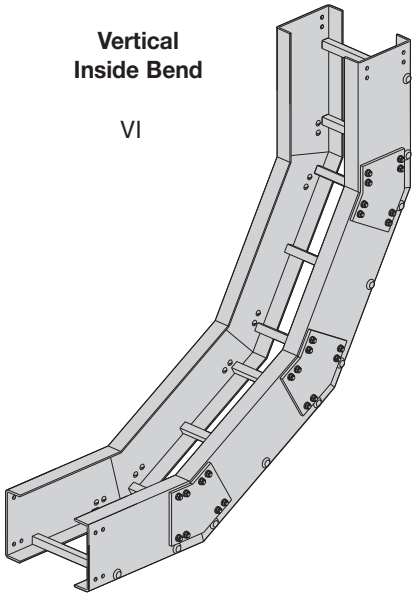


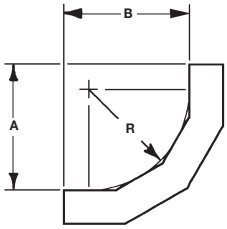


90° (VO) Mitered

Vertical Inside Bend

VI





90° (VI) Mitered

One pair of splice plates with SS6 hardware included.

Prefix - 06 - 90 VO 24
- 24 — Radius
- VO — Fitting
- 90 — Angle
- 06 — Width
- Prefix — To complete catalog number, insert fitting prefix.

Prefix - 06 - 90 VI 24
- 24 — Radius
- VI — Fitting
- 90 — Angle
- 06 — Width
- Prefix — To complete catalog number, insert fitting prefix.

(Prefix) See page 194 for catalog number prefix.
Dimensions for reference only, when critical contact factory.

For 3" Fittings

(Radius 12" only • Tray widths - 6" thru 24")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All are mitered

For 6" Fittings

(Radius 12", 24" & 36"
Tray widths - 6" thru 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 4" Fittings

(Radius 12", 24" & 36"
Tray widths - 6" thru 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 8" Fittings

(Radius 12", 24" & 36"
Tray widths - 6" thru 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

Vertical Bends 90° (VO) (VI)

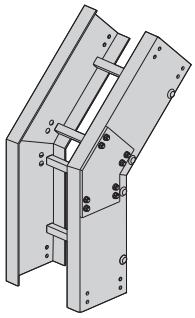
- R - Bend Radius		Tray Width		Catalog No.	90° Mitered							
					Vertical Outside Bend				Vertical Inside Bend			
					A		B		A		B	
in.	mm	in.	mm		in.	mm	in.	mm	in.	mm	in.	mm
		6	152	(Prefix)-06-90(*)12								
		9	228	(Prefix)-09-90(*)12								
		12	305	(Prefix)-12-90(*)12								
12	305	18	457	(Prefix)-18-90(*)12	$20\frac{5}{8}$	524	$20\frac{5}{8}$	524	$20\frac{5}{8}$	524	$20\frac{5}{8}$	524
		24	609	(Prefix)-24-90(*)12								
		30	762	(Prefix)-30-90(*)12								
		36	914	(Prefix)-36-90(*)12								
		6	152	(Prefix)-06-90(*)24								
		9	228	(Prefix)-09-90(*)24								
		12	305	(Prefix)-12-90(*)24								
24	609	18	457	(Prefix)-18-90(*)24	$28\frac{31}{32}$	735	$28\frac{31}{32}$	735	$28\frac{31}{32}$	735	$28\frac{31}{32}$	735
		24	609	(Prefix)-24-90(*)24								
		30	762	(Prefix)-30-90(*)24								
		36	914	(Prefix)-36-90(*)24								
		6	152	(Prefix)-06-90(*)36								
		9	228	(Prefix)-09-90(*)36								
		12	305	(Prefix)-12-90(*)36								
36	914	18	457	(Prefix)-18-90(*)36	$37\frac{15}{16}$	963	$37\frac{15}{16}$	963	$37\frac{15}{16}$	963	$37\frac{15}{16}$	963
		24	609	(Prefix)-24-90(*)36								
		30	762	(Prefix)-30-90(*)36								
		36	914	(Prefix)-36-90(*)36								

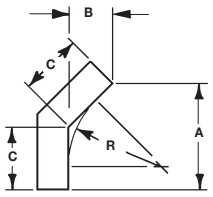
(*) Insert 'VO' for Vertical Outside Bend or 'VI' for Vertical Inside Bend.

Vertical Bends 45° (VO) (VI)

Vertical Outside Bend

VO

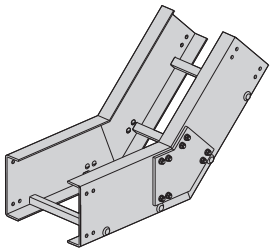


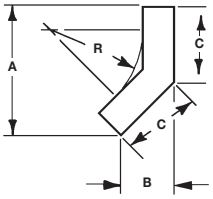


45° (VO) Mitered

Vertical Inside Bend

VI





45° (VI) Mitered

One pair of splice plates with SS6 hardware included.

Prefix - 06 - 45 VO 24
- Radius
- Fitting
- Angle
- Width
- To complete catalog number, insert fitting prefix.

Prefix - 06 - 45 VI 24
- Radius
- Fitting
- Angle
- Width
- To complete catalog number, insert fitting prefix.

(Prefix) See page 194 for catalog number prefix.
Dimensions for reference only, when critical contact factory.

For 3" Fittings

(Radius 12" only • Tray widths - 6" thru 24")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All are mitered

For 6" Fittings

(Radius 12", 24" & 36"
Tray widths - 6" thru 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 4" Fittings

(Radius 12", 24" & 36"
Tray widths - 6" thru 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 8" Fittings

(Radius 12", 24" & 36"
Tray widths - 6" thru 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

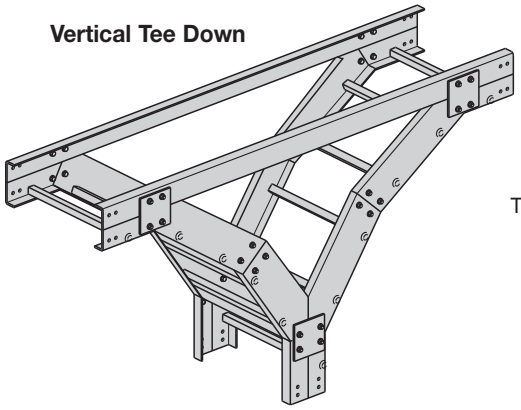
Vertical Bends 45° (VO) (VI)

- R - Bend Radius		Tray Width		Catalog No.	45° Mitered											
					Vertical Outside Bend						Vertical Inside Bend					
					A		B		C		A		B		C	
in.	mm	in.	mm		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
		6	152	(Prefix)-06-45(*)12												
		9	228	(Prefix)-09-45(*)12												
		12	305	(Prefix)-12-45(*)12												
12	305	18	457	(Prefix)-18-45(*)12	20 1/2	521	8 1/2	216	12	305	26 5/32	664	10 27/32	275	15 5/16	389
		24	609	(Prefix)-24-45(*)12												
		30	762	(Prefix)-30-45(*)12												
		36	914	(Prefix)-36-45(*)12												
		6	152	(Prefix)-06-45(*)24												
		9	228	(Prefix)-09-45(*)24												
		12	305	(Prefix)-12-45(*)24												
24	609	18	457	(Prefix)-18-45(*)24	28 31/32	736	12	305	16 31/32	431	36 1/16	916	14 15/16	379	21 1/8	537
		24	609	(Prefix)-24-45(*)24												
		30	762	(Prefix)-30-45(*)24												
		36	914	(Prefix)-36-45(*)24												
		6	152	(Prefix)-06-45(*)36												
		9	228	(Prefix)-09-45(*)36												
		12	305	(Prefix)-12-45(*)36												
36	914	18	457	(Prefix)-18-45(*)36	37 7/16	951	15 1/2	394	21 15/16	557	46	1168	19 1/32	483	26 15/16	684
		24	609	(Prefix)-24-45(*)36												
		30	762	(Prefix)-30-45(*)36												
		36	914	(Prefix)-36-45(*)36												

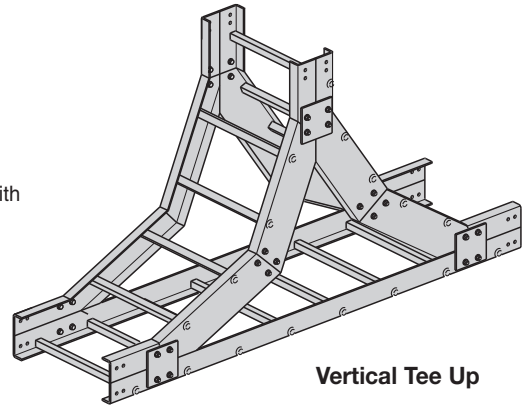
(*) Insert 'VO' for Vertical Outside Bend or 'VI' for Vertical Inside Bend.
60° and 30° vertical bends available in mitered construction.

Vertical Tee Up (VTU)
Vertical Tee Down (VT)

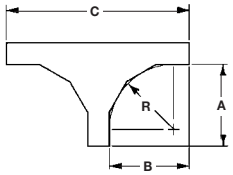
Vertical Tee Down



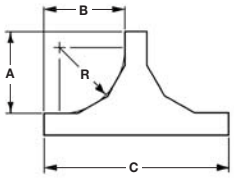
Two pair of splice plates with SS6 hardware included.



Vertical Tee Up



(VT) Mitered



(VTU) Mitered

C Dimension =
2 x B + Side Rail Height

Prefix - 06 - VT 24
- Radius
- Fitting
- Width
- To complete catalog number, insert fitting prefix.

C Dimension =
2 x B + Side Rail Height

(Prefix) See page 194 for catalog number prefix.
Dimensions for reference only, when critical contact factory.

For 3" Fittings

(Radius 12" only • Tray widths - 6" thru 24")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All are mitered

For 6" Fittings

(Radius 12", 24" & 36"
Tray widths - 6" thru 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 4" Fittings

(Radius 12", 24" & 36"
Tray widths - 6" thru 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

For 8" Fittings

(Radius 12", 24" & 36"
Tray widths - 6" thru 36")
Polyester, Vinyl Ester, Zero Halogen/Dis-Stat
All radius are mitered

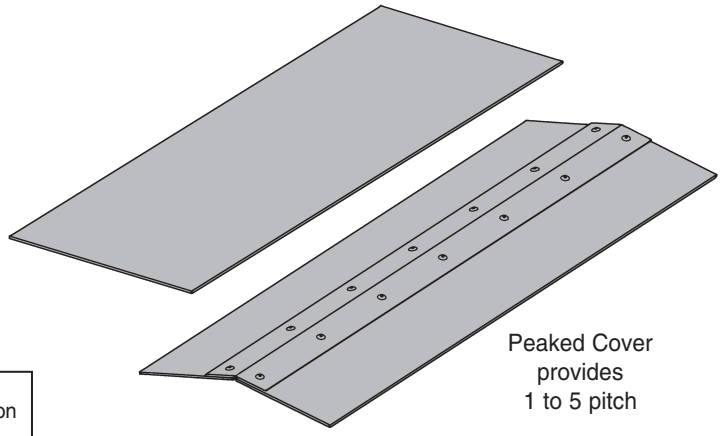
Vertical Tee Up (VTU)
Vertical Tee Down (VT)

- R - Bend Radius		Tray Width		Catalog No.	Mitered							
					Vertical Tee Down				Vertical Tee Up			
					A		B		A		B	
in.	mm	in.	mm		in.	mm	in.	mm	in.	mm	in.	mm
12	305	6	152	(Prefix)-06-(*)12	20 5/8	524	20 5/8	524	20 5/8	524	20 5/8	524
		9	228	(Prefix)-09-(*)12								
		12	305	(Prefix)-12-(*)12								
		18	457	(Prefix)-18-(*)12								
		24	609	(Prefix)-24-(*)12								
		30	762	(Prefix)-30-(*)12								
24	609	6	152	(Prefix)-06-(*)24	29	736	29	736	29	736	29	736
		9	228	(Prefix)-09-(*)24								
		12	305	(Prefix)-12-(*)24								
		18	457	(Prefix)-18-(*)24								
		24	609	(Prefix)-24-(*)24								
		30	762	(Prefix)-30-(*)24								
36	914	6	152	(Prefix)-06-(*)36	37 15/16	963	37 15/16	963	37 15/16	963	37 15/16	963
		9	228	(Prefix)-09-(*)36								
		12	305	(Prefix)-12-(*)36								
		18	457	(Prefix)-18-(*)36								
		24	609	(Prefix)-24-(*)36								
		30	762	(Prefix)-30-(*)36								

(*) Insert 'VT' for Vertical Tee Down or 'VTU' for Vertical Tee Up.

Covers

Material Thickness: ⅛" (3)
Cover Length: 10' (3m)
Standard Mounting Hardware: (10 each)
#10 x ½" stainless, self drilling screws provided with each section



Peaked Cover provides 1 to 5 pitch

Covers F - C - 24 - 120
- 120 = Length or fitting description
- 24 = Width
- C = Rail design
- F = Material

F	-	C	-	24	- 120	= Flat polyester
FV	-	C	-	24	- 120	= Flat vinyl ester
FA	-	C	-	24	- 120	= Flat zero halogen/Dis-Stat
FP	-	C	-	24	- 120	= Peaked polyester
FVP	-	C	-	24	- 120	= Peaked vinyl ester
FAP	-	C	-	24	- 120	= Peaked zero halogen/Dis-Stat

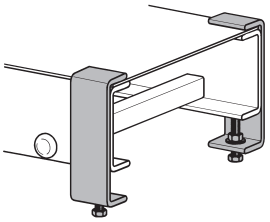
Peaked covers available for straight sections only.

Quantity of Standard Cover Clamps Required	
Straight Section 60" or 72"	4 pcs.
Straight Section 120" or 144"	6 pcs.
Horizontal/Vertical Bends	4 pcs.
Tees	6 pcs.
Crosses	8 pcs.

Note: When using the Heavy Duty Cover Clamp, only one-half the number of clamps stated above is required.

Standard Cover Clamp

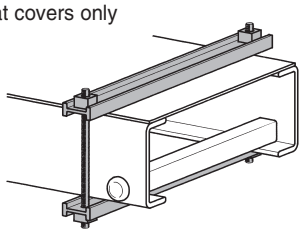
- Used to splice to existing cable tray systems.
- Furnished in pairs with hardware.



Catalog No.	Side Rail Height in.	Side Rail Height mm
9(Δ)-9013	3	76
9(Δ)-9014	4	101
9(Δ)-9016	6	152

Heavy Duty Cover Clamp

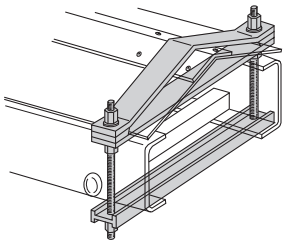
Recommended for outdoor service.
- W = tray width
- Heavy duty cover clamp available for flat covers only



Catalog No.	Side Rail Height in.	Side Rail Height mm
9F-W-9034	3	76
9F-W-9044	4	101
9F-W-9064	6	152
9F-W-9084	8	203

Peaked Cover Clamp

- W = tray width

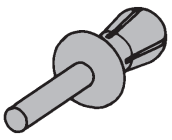


Catalog No.	Side Rail Height in.	Side Rail Height mm
9F-W-9034P	3	76
9F-W-9044P	4	101
9F-W-9064P	6	152
9F-W-9084P	8	203

Material Designations
(Δ) Insert one of the following material designations when required.
F = Polyester Resin (Example: 9F-9013)
FV = Vinyl Ester Resin (Example: 9FV-9013)
FA = Zero Halogen/Dis-Stat Resin (Example: 9FA-9013)

Thermo Plastic Drive Rivet

Shipped in packages of 25 pcs.



Catalog No.	TPDR

Part Number with Hardware Explanation

Examples: **9F-0000*** **polyester resin** or **9FV-0000*** **vinyl ester resin** or **9FA-0000*** **zero halogen/dis-stat resin**

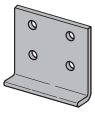
* indicates that additional information must be furnished to specify the type of hardware

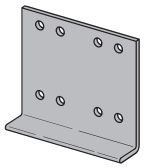
Hardware Option	316 Stainless Steel	Silicon Bronze	Fiberglass
replace * with	SS6	SB	FR

Example: 9F-4004 SS6: pair of 4-hole splice plates for 4" (101) system with stainless steel hardware
9FV-8006 SB: pair of 8-hole vinyl ester splice plates for 6" (152) system with silicon bronze hardware

Standard Lay-In Splice Plates

Included in needed quantities with tray section.
- Furnished in pairs
- Order only pairs of splice plates needed for field fabrication.
- SS6 hardware supplied as standard - use SS6 suffix.
- Other hardware available, specify by hardware suffix. Hardware other than SS6 is considered special.



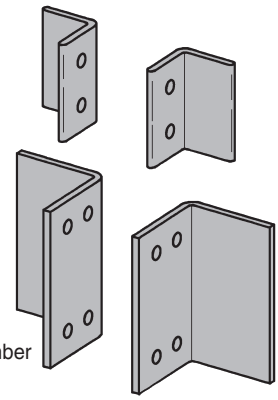


Material	Height	Catalog No.
Fiberglass	3" (76)	9(Δ)-4003*
	4" (101)	9(Δ)-4004*
	6" (152)	9(Δ)-8006*
	8" (203)	9(Δ)-8008*

* hardware suffix needed to complete part number

Tray to Box Splice Plates

These plates are used to attach the end of a tray run to a distribution box or control center.
- Furnished in pairs

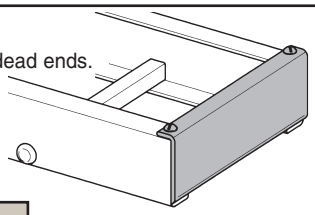


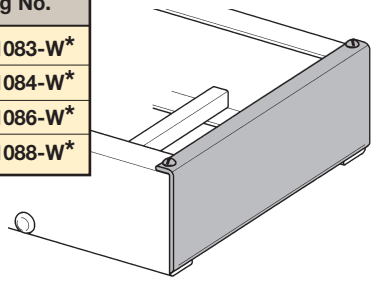
Material	Height	Catalog No.
Fiberglass	3" (76)	9(Δ)-4053*
	4" (101)	9(Δ)-4054*
	6" (152)	9(Δ)-8056*
	8" (203)	9(Δ)-8058*

* hardware suffix needed to complete part number

Blind End Plate

This plate forms a closure for any tray that dead ends.
- Furnished as one plate
- W = tray width



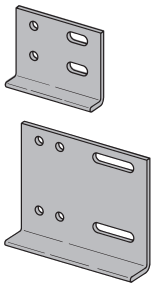


Material	Height	Catalog No.
Fiberglass	3" (76)	9(Δ)-1083-W*
	4" (101)	9(Δ)-1084-W*
	6" (152)	9(Δ)-1086-W*
	8" (203)	9(Δ)-1088-W*

* hardware suffix needed to complete part number

Expansion Splice Plate

L-shaped, lay-in style
- Furnished in pairs

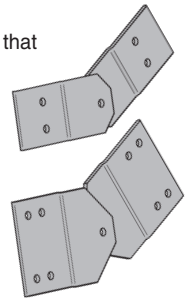


Material	Height	Catalog No.
Fiberglass	3" (76)	9(Δ)-4013*
	4" (101)	9(Δ)-4014*
	6" (152)	9(Δ)-8016*
	8" (203)	9(Δ)-8018*

* hardware suffix needed to complete part number

Vertical Adjustable Splice Plates

These plates provide for changes in elevation that do not conform to standard vertical fittings.
- Furnished in pairs

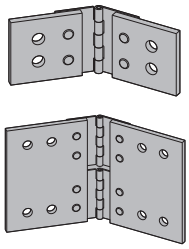


Material	Height	Catalog No.
Fiberglass	3" (76)	9(Δ)-4023*
	4" (101)	9(Δ)-4024*
	6" (152)	9(Δ)-8026*
	8" (203)	9(Δ)-8028*

* hardware suffix needed to complete part number

Horizontal Adjustable Splice Plates

These plates provide for changes in the horizontal direction that do not conform to standard fittings.
- Furnished in pairs
- Stainless steel hinges, FRP body

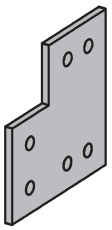


Material	Height	Catalog No.
Fiberglass	3" (76)	9(Δ)-4033*
	4" (101)	9(Δ)-4034*
	6" (152)	9(Δ)-8036*
	8" (203)	9(Δ)-8038*

* hardware suffix needed to complete part number

Step Down Splice Plates

These splice plates provide for changes in side rail heights.
- Furnished in pairs



Material	Height	Catalog No.
Fiberglass	8" to 6" (203 to 152)	9(Δ)-8086*
	8" to 4" (203 to 101)	9(Δ)-8084*
	6" to 3" (152 to 76)	9(Δ)-8063*
	6" to 4" (152 to 101)	9(Δ)-8064*
	4" to 3" (101 to 76)	9(Δ)-4043*

* hardware suffix needed to complete part number

(Δ) See page 212 for material selection

Dimensions shown in parentheses are in millimeters, unless otherwise specified.

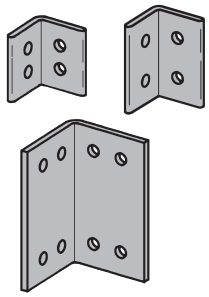
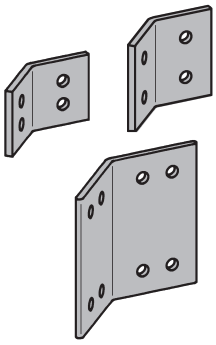
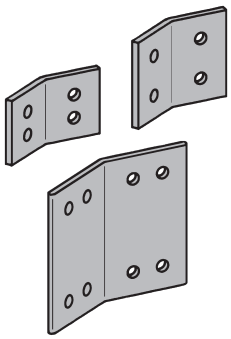
Horizontal and Vertical Splice Plates

* Hardware suffix needed to complete part number
All splice plate hardware is 3/8".

Hardware Suffix:
SS6 - 316SS
MO - Monel
SB - Silicon Bronze
FR - Fiberglass

Horizontal Splice Plates

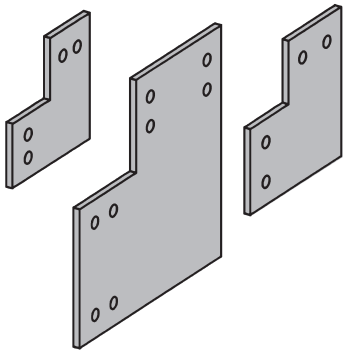
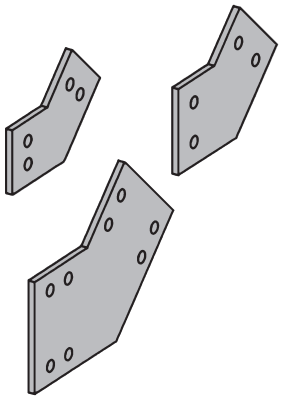
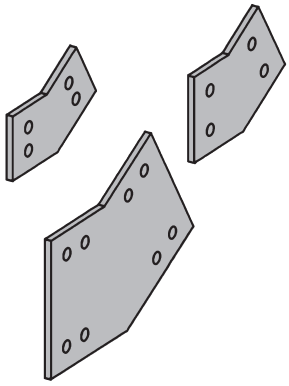
• Furnished in pairs
* Hardware suffix needed to complete part number

Catalog No. 90°	Catalog No. 45°	Catalog No. 30°
9(Δ)-4903H*	9(Δ)-4453H*	9(Δ)-4303H*
9(Δ)-4904H*	9(Δ)-4454H*	9(Δ)-4304H*
9(Δ)-8906H*	9(Δ)-8456H*	9(Δ)-8306H*
9(Δ)-8908H*	9(Δ)-8458H*	9(Δ)-8308H*

Vertical Splice Plates

• Furnished in pairs
* Hardware suffix needed to complete part number

Catalog No. 90°	Catalog No. 45°	Catalog No. 30°
9(Δ)-4903V*	9(Δ)-4453V*	9(Δ)-4303V*
9(Δ)-4904V*	9(Δ)-4454V*	9(Δ)-4304V*
9(Δ)-8906V*	9(Δ)-8456V*	9(Δ)-8306V*
9(Δ)-8908V*	9(Δ)-8458V*	9(Δ)-8308V*

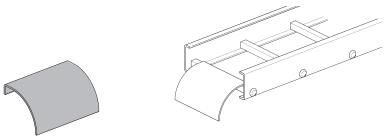
Standard lay-in splice plates with SS6 hardware included with tray sections.
Splice Plates are available in pairs and are a separate order item. They are not automatically supplied with tray sections.

(Δ) See page 212 for material selection

Ladder Drop-Out

Specially-designed Ladder Drop-Outs provide a rounded surface with adequate radius to protect cable as it exits from the tray, preventing damage to insulation.

- 4" (101) radius
- W = tray width

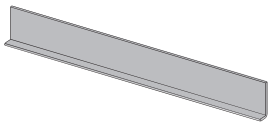


Catalog No.
9(Δ)-1104-W

Barriers

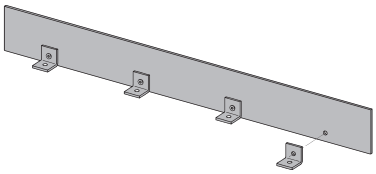
- Furnished with #10 x ½" self-drilling stainless steel screws

Catalog No.	Side Rail Height in.	mm
72(Δ)-120	3"	(76)
73(Δ)-120	4"	(101)
75(Δ)-120	6"	(152)
77(Δ)-120	8"	(203)



Flexible Horizontal Barrier Kit

One kit allows up to a 36" (914) radius position of the barrier.



Catalog No.	Side Rail Height in.	mm
72(Δ)-90HBFL	3"	(76)
73(Δ)-90HBFL	4"	(101)
75(Δ)-90HBFL	6"	(152)
77(Δ)-90HBFL	8"	(203)

Kit Contents:

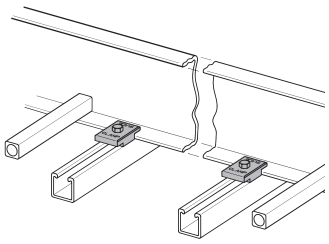
1 pc — 72" (1829) Straight Barrier
4 pc — 9F-9002 Barrier Strip Clip
8 pc — Thermo Plastic Drive Rivet
4 pc — #10 x ¾" Stainless Steel Self-Drilling Screw

Assembly required — directions included.

Clamp/Guide - Fiberglass

Nonmetallic

- Designed for ⅜" hardware - not included
- Combination hold down clamp and guide
- Material: Glass reinforced polyurathane



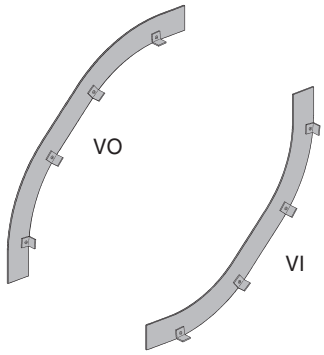
Catalog No.
9F-1208

Vertical Bend Barriers

7* (Δ) - 90 VO 24

- Radius
- VI or VO
- Angle
- Material
- Barrier Size

* Insert 2 for 3" (76) siderail height
3 for 4" (101) siderail height
5 for 6" (152) siderail height

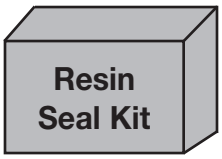


Resin Seal Kit

To reseal fiberglass after field modifications.

- 1 pint (473ml)

Contents: Sealant and Applicator.

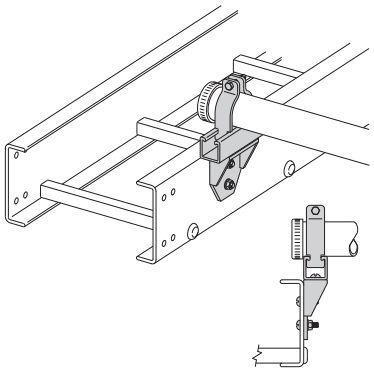


Catalog No.
RSK-010

Fiberglass Conduit to Cable Tray Adapter

- For rigid or PVC conduit
- Standard hardware is 316 stainless steel
- Add 'N' to end of part number if non-metallic hardware is preferred

Catalog No.	Conduit Size in.	mm
9F-2008	0.50	15
9F-2009	0.75	20
9F-2010	1.00	25
9F-2011	1.25	32
9F-2012	1.50	40
9F-2013	2.00	50
9F-2014	2.50	65
9F-2015	3.00	80
9F-2016	3.50	90
9F-2017	4.00	100

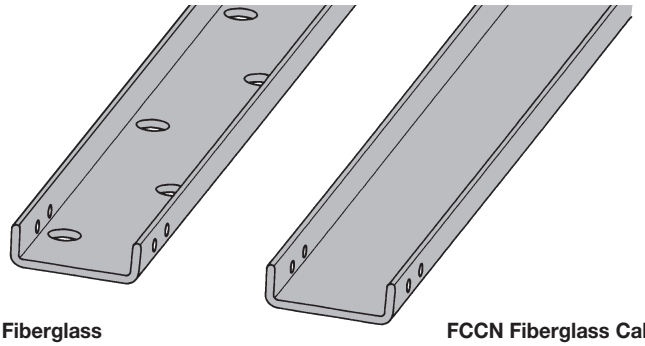


Dimensions shown in parentheses are in millimeters, unless otherwise specified.

(Δ) See page 212 for material selection

Straight Section

- Load data was interpolated from CSA testing.
- Loads shown are for FCCN series.
- Loads shown are for 6 ft. (1.83m) span with deflection of .7 (18.26) inches.



FCC Fiberglass Cable Channel Ventilated

FCCN Fiberglass Cable Channel Non-Ventilated

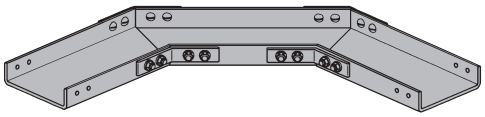
One pair of splice plates included with each straight section.

Catalog No.		Width		Length		Height		Load	
Ventilated	Non-Ventilated	in.	mm	ft.	m	in.	mm	Lbs/Ft	kg/m
(*)-03-120	(*)N-03-120	3	76	10	3	1	25	8	12
(*)-03-240	(*)N-03-240	3	76	20	6				
(*)-04-120	(*)N-04-120	4	101	10	3	1⅛	28	12	18
(*)-04-240	(*)N-04-240	4	101	20	6				
(*)-06-120	(*)N-06-120	6	152	10	3	1⅝	35	58	86
(*)-06-240	(*)N-06-240	6	152	20	6				
(*)-08-120	(*)N-08-120	8	203	10	3	2 3/16	55	87	129
(*)-08-240	(*)N-08-240	8	203	20	6				

(*) Insert material type straight sections
FCC for Polyester Resin
FCCV for Vinyl Ester Resin
FCCA for Zero Halogen/Dis-Stat Resin

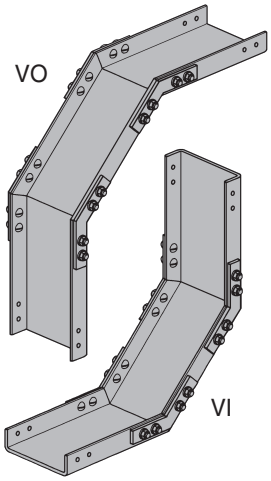
Cable Channel Fittings

All fittings are of mitered construction with 12" (305) radius.



One pair of splice plates included.

Horizontal	3" series	4" series	6" series	8" series
90°	(†)N-03-90HB12	(†)N-04-90HB12	(†)N-06-90HB12	(†)N-08-90HB12
45°	(†)N-03-45HB12	(†)N-04-45HB12	(†)N-06-45HB12	(†)N-08-45HB12



Vertical	3" series	4" series	6" series	8" series
90°	(†)N-03-90V*12	(†)N-04-90V*12	(†)N-06-90V*12	(†)N-08-90V*12
45°	(†)N-03-45V*12	(†)N-04-45V*12	(†)N-06-45V*12	(†)N-08-45V*12

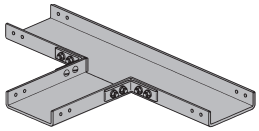
One pair of splice plates included.

(†) Insert material type for fittings
FCC for Polyester Resin
FCCV for Vinyl Ester Resin
FCCA for Zero Halogen/Dis-Stat Resin

Cable Channel Fittings

All fittings are of mitered construction with 12" (305) radius.

Horizontal Tees

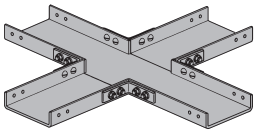


Two pair of splice plates included.

Catalog No.	Width in.	Width mm
FCC(†)N-03-HT12	3	76
FCC(†)N-04-HT12	4	101
FCC(†)N-06-HT12	6	152
FCC(†)N-08-HT12	8	203

(†) See page fitting material selection bottom of page 216

Horizontal Crosses



Three pair of splice plates included.

Catalog No.	Width in.	Width mm
FCC(†)N-03-HX12	3	76
FCC(†)N-04-HX12	4	101
FCC(†)N-06-HX12	6	152
FCC(†)N-08-HX12	8	203

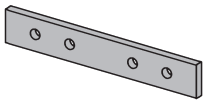
(†) See page fitting material selection bottom of page 216

Cable Channel Splice Plates

Splice Plates

(pairs)

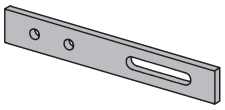
Included with tray sections.



Catalog No.
9(Δ)-1001 SS6

Expansion Splice Plates

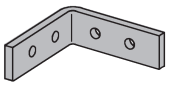
(pairs)



Catalog No.
9(Δ)-1013 SS6

Horizontal 90° Splice Plates

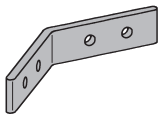
(pairs)



Catalog No.
9(Δ)-1901H SS6

Horizontal 45° Splice Plates

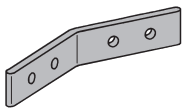
(pairs)



Catalog No.
9(Δ)-1451H SS6

Horizontal 30° Splice Plates

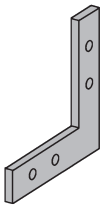
(pairs)



Catalog No.
9(Δ)-1301H SS6

Vertical 90° Splice Plates

(pairs)



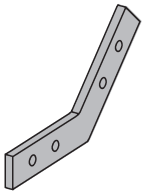
Catalog No.
9(Δ)-1901V SS6

Splice plates included with cable channel sections.
Standard hardware for splice plates is 1/4"-20 (316SS).

(Δ) See page 212 for material selection

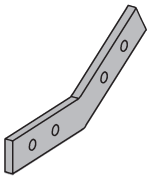
Cable Channel Splice Plates

Vertical 45° Splice Plates
(pairs)



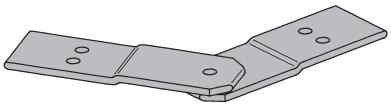
Catalog No.
9(Δ)-1451V SS6

Vertical 30° Splice Plates
(pairs)



Catalog No.
9(Δ)-1301V SS6

Horizontal Adjustable Splice Plates

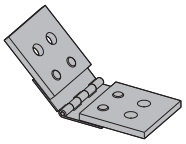


Catalog No.
9(Δ)-1023 SS6

Uses 3/8"-16 hardware.

Vertical Adjustable Splice Plates

Stainless steel hinge FRP body



Catalog No.
9(Δ)-1033 SS6

Uses 3/8"-16 hardware.

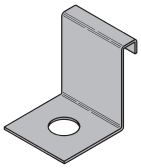
Splice plates included with cable channel sections.
Standard hardware for splice plates is 1/4"-20 (316SS). Hardware for adjustable splice plates is 3/8"-16 (316SS).

(Δ) See page 212 for material selection

Cable Channel Clamps

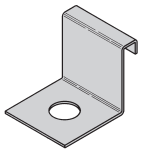
Expansion Guide Clamp
(one clamp)
• Order 1/2" hardware separately

Catalog No.	Width in.	Width mm
9SS6-1248-3	3	76
9SS6-1248-4	4	101
9SS6-1248-6	6	152
9SS6-1248-8	8	203



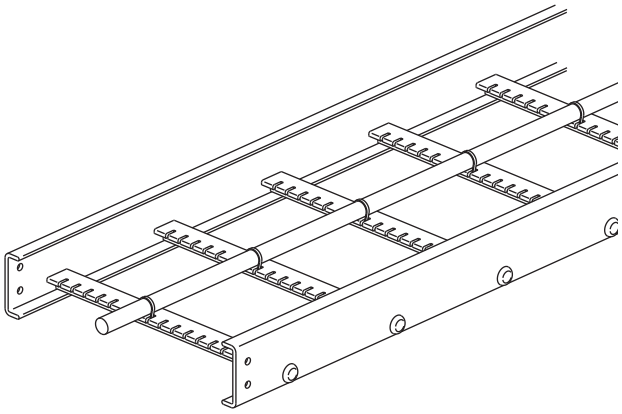
Hold-Down Clamp
(one clamp)
• Order 1/2" hardware separately

Catalog No.	Width in.	Width mm
9SS6-1247-3	3	76
9SS6-1247-4	4	101
9SS6-1247-6	6	152
9SS6-1247-8	8	203



Marine Rung Cable Tray/Fiberglass

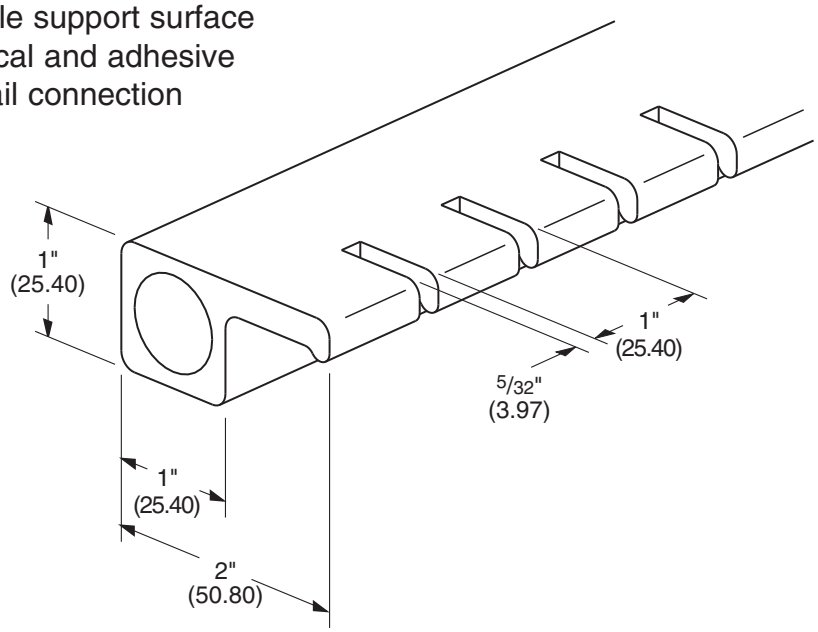
Patent Pending



Features:

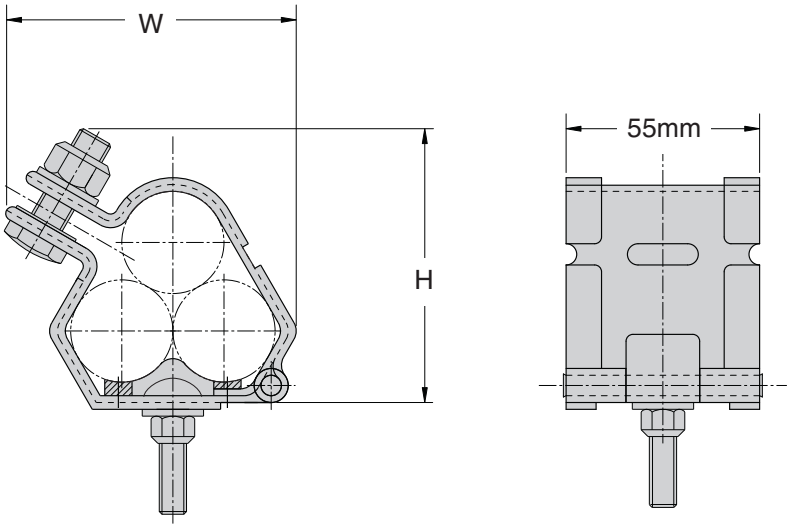
- For Coast Guard Requirements
  - Allows stainless steel banding of cables
  - 5/32" (15.88) slots 1 inch (25.40) on centers
  - Accommodates up to 5/8" (.625) banding
- Has applications on land
  - Vertical installation
  - Any location where extra cable positioning is required
- Designed for B-Line Fiberglass Series Cable Trays
- Part Number Indication
  - Add MR after rung spacing
  - Example: 46F09MR-36-240

Rung design provides:
- 2" (50.80) cable support surface
- Both mechanical and adhesive rung to side rail connection



Trefoil Cable Cleat with LSF Pad

1. Cable Cleats are recommended for installations where the highest levels of short circuit withstand are required.
2. Cable Cleats have been short circuit current tested in accordance with BS EN 50368:2003 standard.
3. Cable Cleats are available for single and trefoil cable applications.
4. Cable Cleat LSF-pad incorporate an integral low smoke, low fume, zero halogen pad.
5. Hardware to attach cleat to rung attachment bracket is included with cleat. Bracket must be ordered separately.



BS EN 50368:2003 (Cable Cleats for Electric Installations) Classification	
Cleat Type	Composite
Resistance to Electromechanical Force	130 kA peak / 50 kA RMS 600 mm spacing
Lateral Load Test	3.439 kg average
Axial Load Test	Pass
Operating Temperature Range	-40°C to +60°C
Impact Resistance	Very Heavy
Needle Flame Test	30 seconds

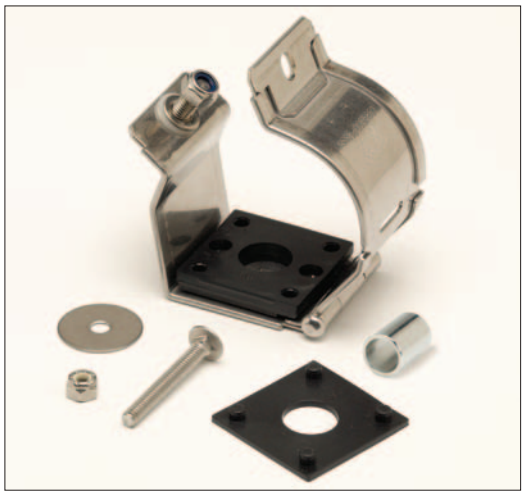
Technical Specifications	
Frame	50mm x 2mm Marine grade, Non-magnetic 316L
Closure Hardware	Captive 316 Stainless Steel M8 or M10 (M12 available) bolt and nylon-lock nut (Optional Hex Flange Lock Nut available)
Integral Pad	Low Smoke, Low Fume, Zero Halogen
Tools Required	Impact Wrench
Mounting Bolt	Provided with Cable Cleat

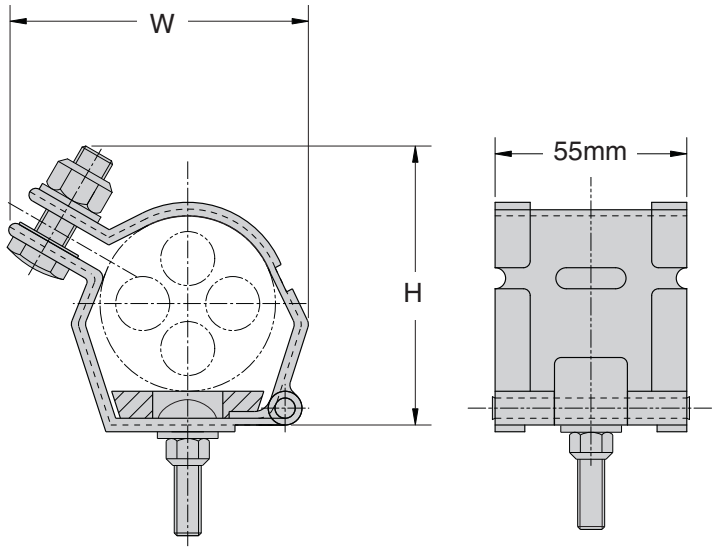
Part No.	Cable Range (mm)		Dimensions (mm)	
	Min. Dia.	Max. Dia.	H	W
9SS6-CCT1323	13	22	74	66
9SS6-CCT2125	21	25	77	70
9SS6-CCT2329	23	29	81	78
9SS6-CCT2531	25	31	84	81
9SS6-CCT2733	27	33	86	83
9SS6-CCT2935	29	35	90	89
9SS6-CCT3238	32	38	94	95
9SS6-CCT3541	35	41.5	98	100
9SS6-CCT3844	38	44.5	101	104
9SS6-CCT4248	42	48	105	111
9SS6-CCT4551	45	51	109	117
9SS6-CCT4753	47	53	111	120
9SS6-CCT4955	49	55	114	124
9SS6-CCT5157	51	57	116	127
9SS6-CCT5359	53	59	119	133
9SS6-CCT5561	55	61	127	137
9SS6-CCT5763	57	63	126	140
9SS6-CCT5965	59	65	128	144

Part No.	Cable Range (mm)		Dimensions (mm)	
	Min. Dia.	Max. Dia.	H	W
9SS6-CCT6167	61	67	132	147
9SS6-CCT6369	63	69	136	150
9SS6-CCT6571	65	71	140	153
9SS6-CCT6773	67	73	143	156
9SS6-CCT6975	69	75	147	160
9SS6-CCT7177	71	77	151	163
9SS6-CCT7379	73	79	154	166
9SS6-CCT7581	75	81	158	169
9SS6-CCT7783	77	83	161	173
9SS6-CCT7985	79	85	164	176
9SS6-CCT8187	81	87	169	179
9SS6-CCT8389	83	89	173	182
9SS6-CCT8896	88	96	181	192
9SS6-CCT96103	96	103	190	201
9SS6-CCT103111	103	111	199	204
9SS6-CCT111119	111	119	208	213
9SS6-CCT119128	119	128	217	221

Single Cable Cleat with LSF Pad

1. Cable Cleats are recommended for installations where the highest levels of short circuit withstand are required.
2. Cable Cleats have been short circuit current tested in accordance with BS EN 50368:2003 standard.
3. Cable Cleats are available for single and trefoil cable applications.
4. Cable Cleat LSF-pad incorporate an integral low smoke, low fume, zero halogen pad.
5. Hardware to attach cleat to rung attachment bracket is included with cleat. Bracket must be ordered separately.





BS EN 50368:2003 (Cable Cleats for Electric Installations) Classification	
Cleat Type	Composite
Resistance to Electromechanical Force	130 kA peak / 50 kA RMS 600 mm spacing
Lateral Load Test	3.439 kg average
Axial Load Test	Pass
Operating Temperature Range	-40°C to +60°C
Impact Resistance	Very Heavy
Needle Flame Test	30 seconds

Technical Specifications	
Frame	50mm x 2mm Marine grade, Non-magnetic 316L
Closure Hardware	Captive 316 Stainless Steel M8 or M10 (M12 available) bolt and nylon-lock nut (Optional Hex Flange Lock Nut available)
Integral Pad	Low Smoke, Low Fume, Zero Halogen
Tools Required	Impact Wrench
Mounting Bolt	Provided with Cable Cleat

Part No.	Cable Range (mm)		Dimensions (mm)	
	Min. Dia.	Max. Dia.	H	W
9SS6-CCS2832	28	32	61	55
9SS6-CCS3034	30	34	63	57
9SS6-CCS3236	32	36	65	59
9SS6-CCS3438	34	38	67	61
9SS6-CCS3640	36	40	17	63
9SS6-CCS3842	38	42	69	65
9SS6-CCS4044	40	44	71	67
9SS6-CCS4246	42	46	72	69
9SS6-CCS4448	44	48	74	71
9SS6-CCS4650	46	50	75	73
9SS6-CCS4852	48	52	77	75
9SS6-CCS5054	50	54	79	77
9SS6-CCS5256	52	56	80	79
9SS6-CCS5458	54	58	81	81
9SS6-CCS5660	56	60	83	83
9SS6-CCS5862	58	62	85	85
9SS6-CCS6064	60	64	86	87

Part No.	Cable Range (mm)		Dimensions (mm)	
	Min. Dia.	Max. Dia.	H	W
9SS6-CCS6266	62	66	88	89
9SS6-CCS6468	64	68	90	91
9SS6-CCS6670	66	70	91	93
9SS6-CCS6872	68	72	93	95
9SS6-CCS7074	70	74	95	97
9SS6-CCS7276	72	76	97	99
9SS6-CCS7478	74	78	99	101
9SS6-CCS7680	76	80	101	103
9SS6-CCS7682	76	82	103	105
9SS6-CCS8084	80	84	105	107
9SS6-CCS8286	82	86	107	109
9SS6-CCS8488	84	88	109	111
9SS6-CCS8690	86	90	110	113
9SS6-CCS9094	90	94	116	120
9SS6-CCS94118	94	118	135	137
9SS6-CCS118130	118	130	141	143
9SS6-CCS127150	127	150	162	165

Step 1: Know Your Cables

- What type of cable is being used?
  - Single or Multi-conductor
- What is the outside diameter of the cable(s)?
- What is the cable arrangement (single conductor cables only)?
  - Flat or Trefoil
- If a ground wire will be installed within the cleat, you will need the ground wire outside diameter.

Step 2: Know Your System

- What is the available short circuit current (RMS or i_p (peak))?
- What type of Cooper B-Line cable tray is installed?

Step 3: Select Your Cable Cleats

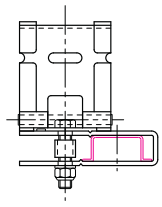
- See Pages 221 & 222

Step 4: Select Your Mounting Bracket

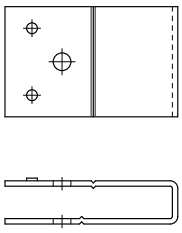
Mounting brackets are used to attach cable cleats to the rungs of the ladder type cable trays. Your tray type will determine the mounting bracket used.

Cooper B-Line Tray Types	Mounting Bracket
Aluminum welded rung trays with standard rungs. Steel Series 2, 3, 4 or 5, trays with standard rungs Fiberglass trays with standard rungs	9SS6-CCB-C
REDI-Rail™ Cable Tray	9SS6-CCB-D
Steel trays with strut rungs Aluminum trays with “Marine Rungs”	9SS6-CCB-B
Steel Series 1 trays with standard rungs	9SS6-CCB-A

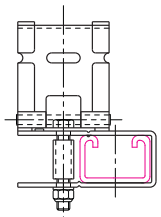
9SS6-CCB-A



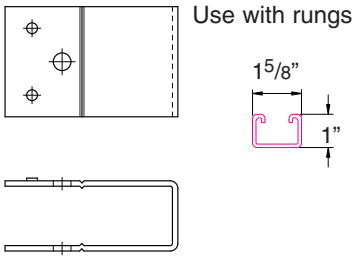
Use with rungs



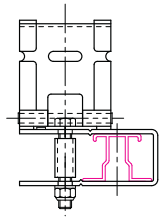
9SS6-CCB-B



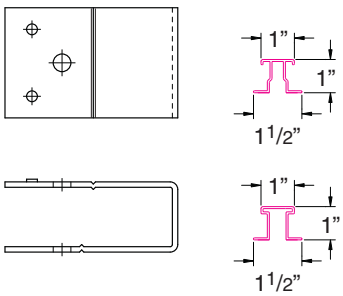
Use with rungs



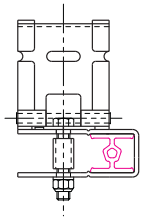
9SS6-CCB-C



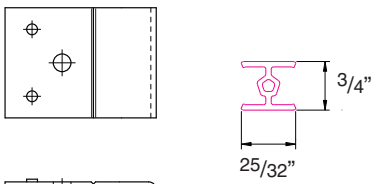
Use with rungs



9SS6-CCB-D



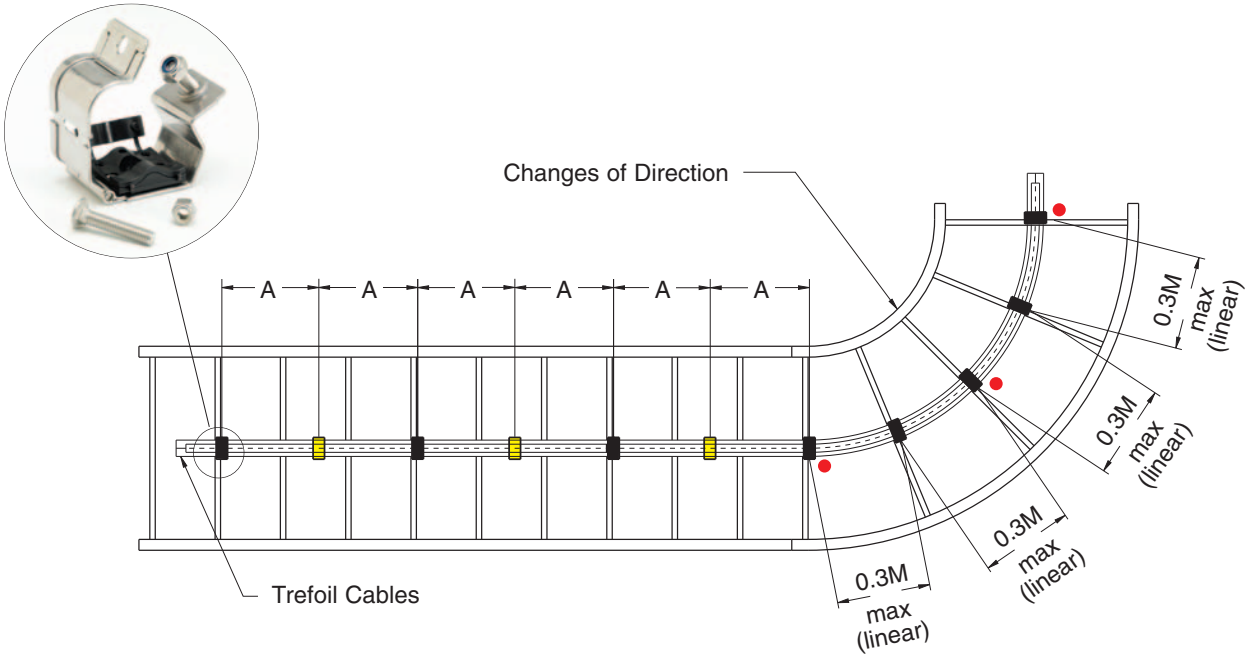
Use with rungs



Step 5: Determine Cleat Spacing for Installation

Your cable diameter is equal to the spacing between conductor centers shown below. Find your cable diameter at the top of the table and look down at the column below it. Find the value equal to or greater than the available short circuit for your system.

Single Conductor Short Circuit Withstand Table													
Max. Cable Cleat Spacing (A)		Spacing Between Conductor Centers (mm)											
		23	25	27	29	31	33	35	37	39	41	43	45
mm	In.	i_p peak (kA)											
225	9	179	187	194	203	209	216	220	229	234	240	246	250
300	12	155	163	168	174	181	187	192	198	203	209	214	215
450	18	128	133	137	144	148	152	157	161	165	170	174	178
600	24	110	115	119	124	128	132	135	139	143	148	150	153
675	27	104	108	113	117	121	124	128	132	135	139	143	147
900	36	89	93	97	102	104	108	110	115	117	121	124	127



IMPORTANT: Recommended Installation Procedures

It is important that the cleats are installed properly to secure your cables:

- It is not necessary for every cleat to be attached to the tray. Every other cleat (▮) must be attached to the tray system to mount cable in tray. Unattached cleats (▯) provide additional restraint to keep cables bundled.
- The bend radius should be 8 to 12 times the cable diameter.
- Cleats should always be installed at the beginning, middle and end of a bend (●), and at no time should the distance between cleats on a bend be more than 0.3M center to center.

Cooper B-Line Sales Engineers are available to assist you in selecting your cable cleats.
Phone: (800) 851-7415 ext. 366

The following factors should be considered when determining the appropriate cable tray system.

1. Material & Finish

- Standards Available (Pages 226 & 227)
- Corrosion (Pages 228 - 231)
- Thermal Contraction and Expansion (Page 232)
- Installation Considerations and Electrical Grounding Capacity (Page 233)

2. Strength

- Environmental Loads (Pages 234 & 235)
- Concentrated Loads (Page 235)
- Support Span (Page 235)
- Deflection (Page 236)
- Rung/Trough Data (Page 237)
- Load Capacity (NEMA & CSA Classes) (Pags 238 & 239)
- Cable Data (Page 240)

3. Width & Available Loading Depth

- Cable Diameter (Page 240)
- Allowable Cable Fill (Pages 241 - 245)
- Barrier Requirements (Page 246)
- Future Expansion Requirements (Page 246)
- Space Limitations (Page 246)

4. Length

- Lengths Available (Page 247)
- Support Spans (Not to exceed the length of straight sections) (Page 247)
- Space Limitations (Page 247)
- Installation (Page 247)

5. Loading Possibilities

- Power Application (Page 248)
- Data/Communication Cabling (Page 248)
- Other Factors to Consider (Page 248)

6. Bottom Type

- Type of Cable (Page 249)
- Cost vs. Strength (Page 249)
- Cable Exposure (Page 249)
- Cable Attachment (Page 249)

7. Fitting Radius

- Cable Flexibility (Page 249)
- Space Limitations (Page 249)

Standards Available

MATERIAL	MATERIAL SPECIFICATION	ADVANTAGES
Aluminum	6063-T6 (Side rails, Rungs and Splice Plates) 5052-H32 (Trough Bottoms, Covers and Accessories)	• Corrosion Resistance • Easy Field Fabrication & Installation • Excellent Strength to Weight Ratio • Excellent Grounding Conductor
Steel	ASTM A1011 SS Gr. 33 (14 Gauge Plain Steel) ASTM A1008 Gr. 33 Type 2 (16 & 18 Gauge Plain ASTM A653SS Gr. 33 G90 (Pre-Galvanized)	• Electric Shielding • Finish Options • Low Thermal Expansion • Limited Deflection
Stainless Steel	AISI Type 304 or AISI Type 316 ASTM A240	• Superior Corrosion Resistance • Withstands High Temperatures

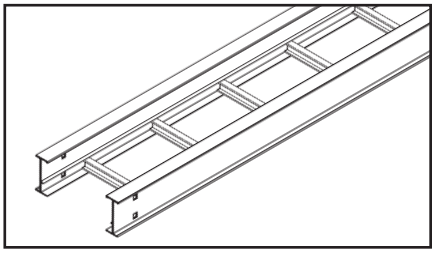
Note: Fiberglass available - see page 168

Aluminum

Aluminum cable trays are fabricated from structural grade “copper free” (marine grade) aluminum extrusions. Aluminum’s excellent corrosion resistance is due to its ability to form an aluminum oxide film that when scratched or cut reforms the original protective film. Aluminum has excellent resistance to "weathering” in most outdoor applications. Aluminum cable tray has excellent corrosion resistance in many chemical environments and has been used for over thirty years in petro-chemical plants and paper mills along the gulf coast from Texas to Florida. Typically, aluminum cable trays can perform indefinitely, with little or no degradation over time, making it ideal for many chemical and marine environments. The resistance to chemicals, indoor and outdoor, can best be determined by tests conducted by the user with exposure to the specific conditions for which it is intended. For further information, contact Cooper B-Line or the Aluminum Association.

Some common chemicals which aluminum resists are shown on pages 230 & 231.

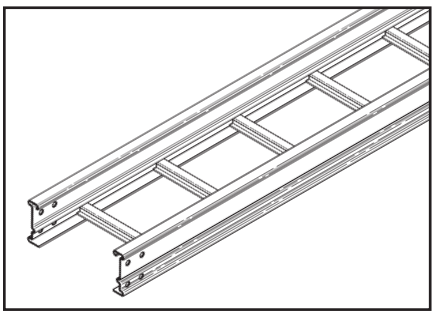
Aluminum Cable Tray



Steel

Steel cable trays are fabricated from continuous roll-formed structural quality steel. By roll-forming steel, the mechanical properties are increased allowing the use of a lighter gauge steel to carry the required load. This reduces the dead weight that must be carried by the supports and the installers. Using structural quality steel, Cooper B-Line assures that the material will meet the minimum yield and tensile strengths of applicable ASTM standards. All cable tray side rails, rungs and splice plates are numbered for material traceability. The corrosion resistance of steel varies widely with coating and alloy.

Steel and Stainless Steel Cable Tray



Note:

For help choosing proper cable tray material, see Cooper B-Line Technical Paper Series.
(bline.com/engineer/Technical.asp)

Stainless Steel

Stainless Steel cable trays are fabricated from continuous roll-formed AISI Type 304 or AISI Type 316/316L stainless steel. Both are non-magnetic and belong to the group called austenitic stainless steels. Like carbon steel, they exhibit increased strength when cold worked by roll-forming or bending.

Several important conditions could make the use of stainless steel imperative. These include long term maintenance costs, corrosion resistance, appearance and locations where product contamination is undesirable. Stainless steel exhibits stable structural properties such as yield strength and high creep strength at elevated temperatures.

Cooper B-Line’s stainless steel cable trays are welded using stainless steel welding wire to ensure each weldment exhibits the same corrosion resistant characteristic as the base metal. Localized staining in the weld area or heat affected zone may occur in severe environments. Specialized shielding gases and low carbon materials are used to minimize carbon contamination during welding and reduce staining and stress corrosion. Specify passivation after fabrication per ASTM A380 to minimize staining, improve aesthetics and further improve corrosion resistance.

A detailed study of the corrosive environment is recommended when considering a stainless steel design (see pages 230 & 231).

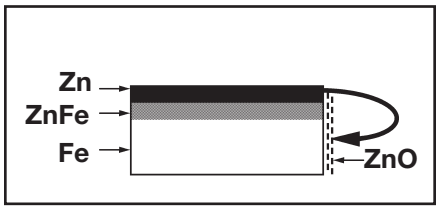
Standards Available

FINISH	SPECIFICATION	RECOMMENDED USE
Electrogalvanized Zinc	ASTM B633 (For Cable Tray Hardware and Accessories, Alum. and Pre-Galv.) (For Flextray Standard is B633 SC2)	Indoor
Chromium Zinc	ASTM F-1136-88 (Hardware for Hot Dip Galvanized Cable Tray)	Indoor/Outdoor
Pre-Galvanized Zinc	ASTM A653SS Gr.33 G90 (CSA Type 2) (Steel Cable Tray and Fittings)	Indoor
Hot Dip Galvanized Zinc After Fabrication	ASTM A123 (CSA Type 1) (Steel Cable Tray and Fittings)	Indoor/Outdoor
Special Paint	Per Customer Specification (Aluminum or Steel Cable Tray & Fittings)	Indoor

Zinc Coatings

Zinc protects steel in two ways. First it protects the steel as a coating and second as a sacrificial anode to repair bare areas such as cut edges, scratches, and gouges. The corrosion protection of zinc is directly related to its thickness and the environment. This means a .2 mil coating will last twice as long as a .1 mil coating in the same environment.

Galvanizing also protects cut and drilled edges.



Electrogalvanized Zinc

Electrogalvanized Zinc (also known as zinc plated or electroplated) is the process by which a coating of zinc is deposited on the steel by electrolysis from a bath of zinc salts. This finish is standard for cable tray hardware and some accessories for aluminum and pre-galvanized systems.

A rating of SC3, B-Line's standard, provides a minimum zinc coating thickness of .5 mils (excluding threaded rod, which is SC1 = .2 mils)

When exposed to air and moisture, zinc forms a tough, adherent, protective film consisting of a mixture of zinc oxides, hydroxides, and carbonates. This film is in itself a barrier coating which slows subsequent corrosive attack on the zinc. This coating is usually recommended for indoor use in relatively dry areas, as it provides ninety-six hours protection in salt spray testing per ASTM B117.

Chromium/ Zinc

Chromium/ Zinc is a corrosion resistant composition, which was developed to protect fasteners and small bulk items for automotive use. The coating applications have since been extended to larger parts and other markets.

Chromium/Zinc composition is an aqueous coating dispersion containing chromium, proprietary organics, and zinc flake.

This finish provides 1000 hours protection in salt spray testing per ASTM B117, exceeding NEMA VE-1 requirements by 300%.

Pre-Galvanized Zinc

(Mill galvanized, hot dip mill galvanized or continuous hot dip galvanized)

Pre-Galvanized steel is produced by coating coils of sheet steel with zinc by continuously rolling the material through molten zinc at the mills. This is also known as mill galvanized or hot dip mill galvanized. These coils are then slit to size and fabricated by roll forming, shearing, punching, or forming to produce B-Line pre-galvanized cable tray products.

The G90 specification calls for a coating of .90 ounces of zinc per square foot of steel. This results in a coating of .45 ounces per square foot on each side of the sheet. This is important when comparing this finish to hot dip galvanized after fabrication.

During fabrication, cut edges and welded areas are not normally zinc coated; however, the zinc near the uncoated metal becomes a sacrificial anode to protect the bare areas after a short period of time.

To further insure a quality product, B-Line welds all pre-galvanized cable trays with a silicon bronze welding wire allowing only a small heat affected zone to be exposed. This small area quickly repairs itself by the same process as cut edges.

Hot Dip Galvanized After Fabrication

(Hot dip galvanized or batch hot dip galvanized)

Hot Dip Galvanized After Fabrication cable tray products are fabricated from steel and then completely immersed in a bath of molten zinc. A metallic bond occurs resulting in a zinc coating that completely coats all surfaces, including edges and welds.

Another advantage of this method is coating thickness. Cable, trays hot dip galvanized after fabrication, have a minimum thickness of 1.50 ounces per square foot on each side, or a total 3.0 ounces per square foot of steel, according to ASTM A123.

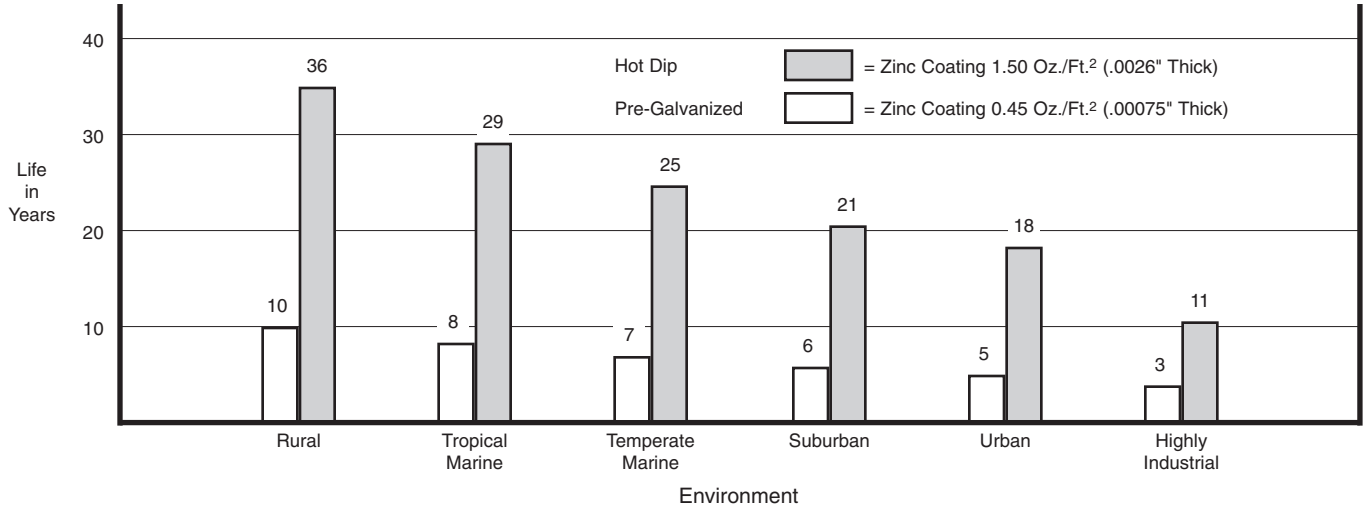
The zinc thickness is controlled by the amount of time each part is immersed in the molten zinc bath as well as the speed at which it is removed. The term "double dipping" refers to parts too large to fit into the galvanizing kettle and, therefore, must be dipped one end at a time. It does not refer to extra coating thickness.

The layer of zinc which bonds to steel provides a dual protection against corrosion. It protects first as an overall barrier coating. If this coating happens to be scratched or gouged, zinc's secondary defense is called upon to protect the steel by galvanic action.

Hot dip galvanized after fabrication is recommended for prolonged outdoor exposure and will protect steel for many years in most outdoor environments and in many aggressive industrial environments (see charts on page 228).

Standards Available

Service Life is defined as the time to 5% rusting of the steel surface.
Anticipated Life of Zinc Coatings In Various Atmospheric Environments



PVC Coating

PVC coating aluminum or steel cable tray is not recommended and has been removed from Cooper B-Line's cable tray line.

The application of a 15 mil PVC coating to aluminum or steel cable tray was a somewhat popular finish option 15 or more years ago. The soft PVC coating must be completely intact for the finish to be effective. In a caustic atmosphere, a pinhole in the coating can render it useless and corrode the cable tray. The shipment of the cable tray consistently damages the coating, as does installation. The splice hardware, splice plates and ground straps require field removal of the coating to ensure connections. PVC coated cable tray drastically increases the product's cost and delivery time.

Cooper B-Line recommends using fiberglass - See Fiberglass section, or stainless steel cable tray systems in highly corrosive areas.

Painting Cable Tray

Cooper B-Line offers painted cable tray to any color specified by the customer. It is important to note that there are key advantages and disadvantages to ordering factory painted cable tray. Cooper B-Line typically does not recommend factory painted cable tray for most applications.

Painted cable tray is often used in "open ceiling" applications, where all the overhead equipment and structure is painted the same color. In this type of application, additional painting is often necessary in the field, after installation, to ensure all of the supporting components, such as hanger rods, clamps and attaching hardware have been painted uniformly. Pre-painted cable tray interferes with common grounding practices, requiring the paint to be removed at splice locations, and/or the addition of bonding jumpers that were otherwise unnecessary. This additional field modification not only increases the installation cost, but causes potential damage to the special painted finish.

It is typically more cost effective to use an Aluminum or Pre-Galvanized Steel cable tray and paint it after installation, along with the other un-painted building components. Consult painting contractor for proper surface preparation.

Special Paint

B-Line cable tray and supports can be painted or primed to meet the customers requirements. Cooper B-Line has several colors available, consult the factory.

If a non-standard color is required the following information needs to be specified:

1. Type of material preparation (primer, etc.)
2. Type of paint, manufacturer and paint number or type of paint with chip.
3. Dry film thickness.

Material/Finish Prefix Designation Chart

Catalog Number Prefix	Material to be Furnished
A	Aluminum
P	Pre-Galvanized
G	Hot Dip Galvanized
ZN	Zinc Plated
S	Plain Steel
SS4	Type 304 Stainless Steel
SS6	Type 316 Stainless Steel

Corrosion

All metal surfaces are affected by corrosion. Depending on the physical properties of the metal and the environment to which it is exposed, chemical or electromechanical corrosion may occur.

Atmospheric Corrosion

Atmospheric corrosion occurs when metal is exposed to airborne liquids, solids or gases. Some sources of atmospheric corrosion are moisture, salt, dirt and sulphuric acid. This form of corrosion is typically worse outdoors, especially near marine environments.

Chemical Corrosion

Chemical corrosion takes place when metal comes in direct contact with a corrosive solution. Some factors which affect the severity of chemical corrosion include: chemical concentration level, duration of contact, frequency of washing, and operating temperature.

Storage Corrosion

Wet storage stain (White rust) is caused by the entrapment of moisture between surfaces of closely packed and poorly ventilated material for an extended period. Wet storage stain is usually superficial, having no affect on the properties of the metal.
Light staining normally disappears with weathering. Medium to heavy buildup should be removed, in order to allow the formation of normal protective film.
Proper handling and storage will help to assure stain-free material. If product arrives wet, it should be unpacked and dried before storage. Dry material should be stored in a well ventilated “low moisture” environment to avoid condensation formation. Outdoor storage is undesirable, and should be avoided whenever possible.

Galvanic Corrosion

Galvanic corrosion occurs when two or more dissimilar metals are in contacts in the presence of an electrolyte (ie. moisture). An electrolytic cell is created and the metals form an anode or a cathode depending on their relative position on the Galvanic Series Table. The anodic material will be the one to corrode. Whether a material is anodic depends on the relative position of the other material. For example: If zinc and steel are in contact, the zinc acts as the anode and will corrode; the steel acts as the cathode, and will be protected. If steel and copper are in contact, the steel is now the anode and will corrode.
The rate at which galvanic corrosion occurs depends on several factors:

1. The amount and concentration of electrolyte present- An indoor, dry environment will have little or no galvanic corrosion compared to a wet atmosphere.

2. The relative size of the materials- A small amount of anodic material in contact with a large cathodic material will result in greater corrosion. Likewise, a large anode in contact with a small cathode will decrease the rate of attack.

3. The relative position on the Galvanic Series Table - The further apart in the Galvanic Series Table, the greater the potential for corrosion of the anodic material.

Galvanic Series In Sea Water

Anodic End

More Anodic

Magnesium
Magnesium Alloys
Zinc
Beryllium
Aluminum - Zinc Alloys (7000 series)
Aluminum - Magnesium Alloys (5000 series)
Aluminum (1000 series)
Aluminum - Magnesium Alloys (3000 series)
Aluminum - Magnesium - Silicon Alloys (6000 series)
Cadmium
Aluminum - Copper Alloys (2000 series)
Cast Iron, Wrought Iron, **Mild Steel**
Austenitic Nickel Cast Iron
Type 410 Stainless Steel (active)
Type 316 Stainless Steel (active)
Type 304 Stainless Steel (active)
Naval Brass, Yellow Brass, Red Brass
Tin
Copper
Lead-Tin Solders
Admiralty Brass, Aluminum Brass
Manganese Bronze
Silicon Bronze
Tin Bronze
Type 410 Stainless Steel (passive)
Nickel - Silver
Copper Nickel Alloys
Lead
Nickel - Aluminum Bronze
Silver Solder
Nickel 200
Silver
Type 316 Stainless Steel (passive)
Type 304 Stainless Steel (passive)
Incoloy 825
Hastelloy B
Titanium
Hastelloy C
Platinum
Graphite

Cathodic End

Corrosion Guide

Chemical	Cable Tray Material								
	Aluminum			Stainless Type 304			Stainless Type 316		
	Cold	Warm	Hot	Cold	Warm	Hot	Cold	Warm	Hot
Acteone	R	R	R	R	R	R	R	R	R
Aluminum Chloride Solution	NR	NR	NR	NR	--	--	F	--	--
Anhydrous Aluminum Chloride	R	R	R	NR	--	--	F	--	--
Aluminum Sulfate	R	R	R	R	R	R	R	R	R
Ammonium Chloride 10%	F	F	NR	R	R	R	R	R	R
Ammonium Hydroxide	F	F	F	R	R	R	R	R	R
Ammonium Phosphate	F	F	NR	R	--	--	R	--	--
Ammonium Sulfate	F	--	--	R	R	R	R	R	R
Ammonium Thiocyanate	R	R	R	R	--	--	R	R	R
Amyl Acetate	R	R	R	R	R	R	R	R	R
Amyl Alcohol	R	R	R	R	--	--	R	R	R
Arsenic Acid	F	F	F	R	R	--	R	R	R
Barium Chloride	F	F	NR	R	R	R	R	R	R
Barium Sulfate	R	R	R	R	R	--	R	R	--
Barium Sulfide	NR	NR	NR	R	R	--	R	R	--
Benzene	R	R	R	R	R	R	R	R	R
Benzoic Acid	F	F	NR	R	R	R	R	R	R
Boric Acid	R	R	F	R	R	R	R	R	R
Bromine Liquid or Vapor	NR	NR	NR	NR	NR	NR	NR	NR	NR
Butyl Acetate	R	R	R	R	--	--	R	R	R
Butyl Alcohol	R	R	R	R	R	R	R	R	R
Butyric Acid	F	F	F	R	R	R	R	R	R
Calcium Chloride 20%	F	F	NR	R	--	--	R	--	--
Calcium Hydroxide	N	--	--	R	R	F	R	R	R
Calcium Hypochlorite 2 - 3%	F	--	--	R	--	--	R	--	--
Calcium Sulfate	R	R	--	R	R	--	R	R	--
Carbon Monoxide Gas	R	R	R	R	R	R	R	R	R
Carbon Tetrachloride	F	F	NR	F	F	F	R	R	R
Chloroform Dry	R	NR	NR	R	R	--	R	R	--
Chloroform Solution	R	NR	NR	--	--	--	--	--	--
Chromic Acid 10% CP	R	R	--	R	R	F	R	R	R
Citric Acid	F	F	F	R	R	NR	R	R	R
Copper Cyanide	NR	NR	NR	R	R	R	R	R	R
Copper Sulfate 5%	NR	NR	NR	R	R	R	R	R	R
Ethyl Alcohol	R	R	R	R	R	R	R	R	R
Ethylene Glycol	R	R	F	R	R	--	R	R	R
Ferric Chloride	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ferrous Sulfate 10%	R	NR	NR	R	R	--	R	R	--
Formaldehyde 37%	R	R	R	R	R	R	R	R	R
Formic Acid 10%	R	R	--	R	R	NR	R	R	R
Gallic Acid 5%	R	R	NR	R	R	R	R	R	R
Hydrochloride Acid 25%	NR	NR	NR	NR	NR	NR	NR	NR	NR
Hydrofluoric Acid 10%	NR	NR	NR	NR	NR	NR	NR	NR	NR
Hydrogen Peroxide 30%	R	R	R	R	R	R	R	R	R
Hydrogen Sulfide Wet	R	--	--	NR	NR	NR	R	R	R

R = Recommended
F = May be used under some conditions
NR = Not Recommended
-- = Information not available

The corrosion data given in this table is for general comparison only. (Reference Corrosion Resistance Tables, Second Edition)

The presence of contaminates in chemical environments can greatly affect the corrosion rate of any material.

B-Line strongly suggests that field service tests or simulated laboratory tests using actual environmental conditions be conducted in order to determine the proper materials and finishes to be selected.

For questionable environments see Fiberglass Cable Tray Corrosion Guide (Pages 170 & 171).

Cold = 50 - 80°F Warm = 130 - 170°F Hot = 200 - 212°F

Corrosion Guide

Chemical	Cable Tray Material								
	Aluminum			Stainless Type 304			Stainless Type 316		
	Cold	Warm	Hot	Cold	Warm	Hot	Cold	Warm	Hot
Lactic Acid 10%	R	F	NR	R	R	F	R	R	R
Lead Acetate 5%	NR	NR	NR	R	R	R	R	R	R
Magnesium Chloride 1%	NR	NR	NR	R	--	F	R	--	R
Magnesium Hydroxide	R	R	R	R	R	--	R	R	--
Magnesium Nitrate 5%	R	--	--	R	R	R	R	R	R
Nickel Chloride	NR	NR	NR	R	--	--	R	--	--
Nitric Acid 15%	NR	NR	NR	R	R	R	R	R	R
Oleic Acid	R	R	F	R	R	F	R	R	R
Oxalic Acid 10%	R	F	NR	NR	NR	NR	R	R	R
Phenol CP	R	R	R	R	R	R	R	R	R
Phosphoric Acid 50%	NR	NR	NR	R	R	R	R	F	NR
Potassium Bromide 100%	R	F	NR	R	R	--	R	R	R
Potassium Carbonate 100%	F	F	--	R	R	R	R	R	R
Potassium Chloride 5%	R	R	R	R	R	R	R	R	R
Potassium Dichromate	R	R	R	R	R	R	R	R	R
Potassium Hydroxide 50%	NR	NR	NR	R	R	R	R	R	R
Potassium Nitrate 50%	R	R	R	R	R	R	R	R	R
Potassium Sulfate 5%	R	R	R	R	R	R	R	R	R
Propyl Alcohol	R	R	R	R	R	R	R	R	R
Sodium Acetate 20%	R	F	F	R	R	R	R	R	R
Sodium Bisulfate 10%	R	F	F	R	R	R	R	R	R
Sodium Borate	R	F	F	R	R	R	R	R	R
Sodium Carbonate 18%	R	F	F	R	R	R	R	R	R
Sodium Chloride 5%	R	NR	NR	R	R	R	R	R	R
Sodium Hydroxide 50%	NR	NR	NR	R	R	R	R	R	R
Sodium Hypochlorite 5%	R	F	F	F	--	--	R	--	--
Sodium Nitrate 100%	R	R	R	R	R	R	R	R	R
Sodium Nitrite 100%	R	R	R	R	R	R	R	R	R
Sodium Sulfate 100%	R	R	F	R	R	R	R	R	R
Sodium Thiosulfate	R	R	R	R	R	R	R	R	R
Sulfur Dioxide (Dry)	R	R	R	R	R	R	R	R	R
Sulfuric Acid 5%	NR	NR	--	F	NR	NR	R	--	--
Sulfuric Acid 10%	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sulfuric Acid 50%	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sulfuric Acid 75 - 98%	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sulfuric Acid 98 - 100%	NR	NR	--	R	--	--	R	R	F
Tannic Acid 10 & 50%	NR	NR	NR	R	R	R	R	R	R
Tartaric Acid 10 & 50%	F	NR	NR	R	R	R	R	R	R
Vinegar	F	F	F	R	R	R	R	R	R
Zinc Chloride 5 & 20%	F	NR	NR	R	F	NR	R	R	R
Zinc Nitrate	F	NR	NR	R	R	R	R	R	R
Zinc Sulfate	F	NR	NR	R	R	R	R	R	R

R = Recommended
F = May be used under some conditions
NR = Not Recommended
-- = Information not available

The corrosion data given in this table is for general comparison only. (Reference Corrosion Resistance Tables, Second Edition)

The presence of contaminates in chemical environments can greatly affect the corrosion rate of any material.

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For questionable environments see Fiberglass Cable Tray Corrosion Guide (Pages 170 & 171).

Cold = 50 - 80°F Warm = 130 - 170°F Hot = 200 - 212°F

Thermal Contraction and Expansion

It is important that thermal contraction and expansion be considered when installing cable tray systems. The length of the straight cable tray runs and the temperature differential govern the number of expansion splice plates required (see Table 2 below).

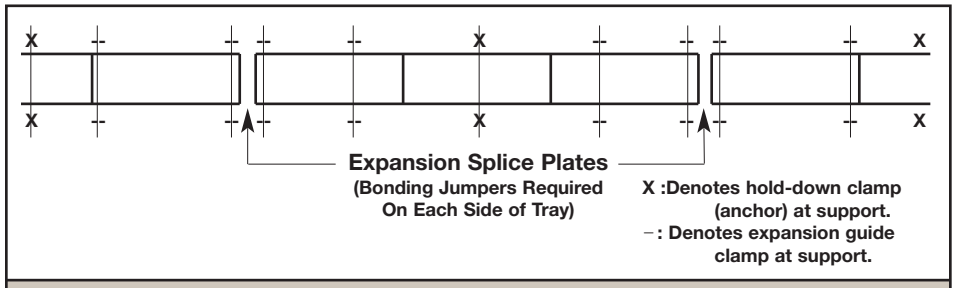
The cable tray should be anchored at the support nearest to its midpoint between the expansion splice plates and secured by expansion guides at all other support locations (see Figure 1). The cable tray should be permitted longitudinal movement in both directions from that fixed point. When used, covers should be overlapped at expansion splices.

Accurate gap settings at the time of installation are necessary for the proper operation of the expansion splice plates. The following procedure should assist the installer in determining the correct gap: (see Figure 2)

1. Plot the highest expected metal temperature on the maximum temperature line.
2. Plot the lowest expected metal temperature on the minimum temperature line.
3. Draw a line between the maximum and minimum points.
4. Plot the metal temperature at the time of installation to determine the gap setting.

Refer to page 175 for thermal contraction and expansion of fiberglass cable trays.

Figure 1



Typical Cable Tray Installation

Figure 2

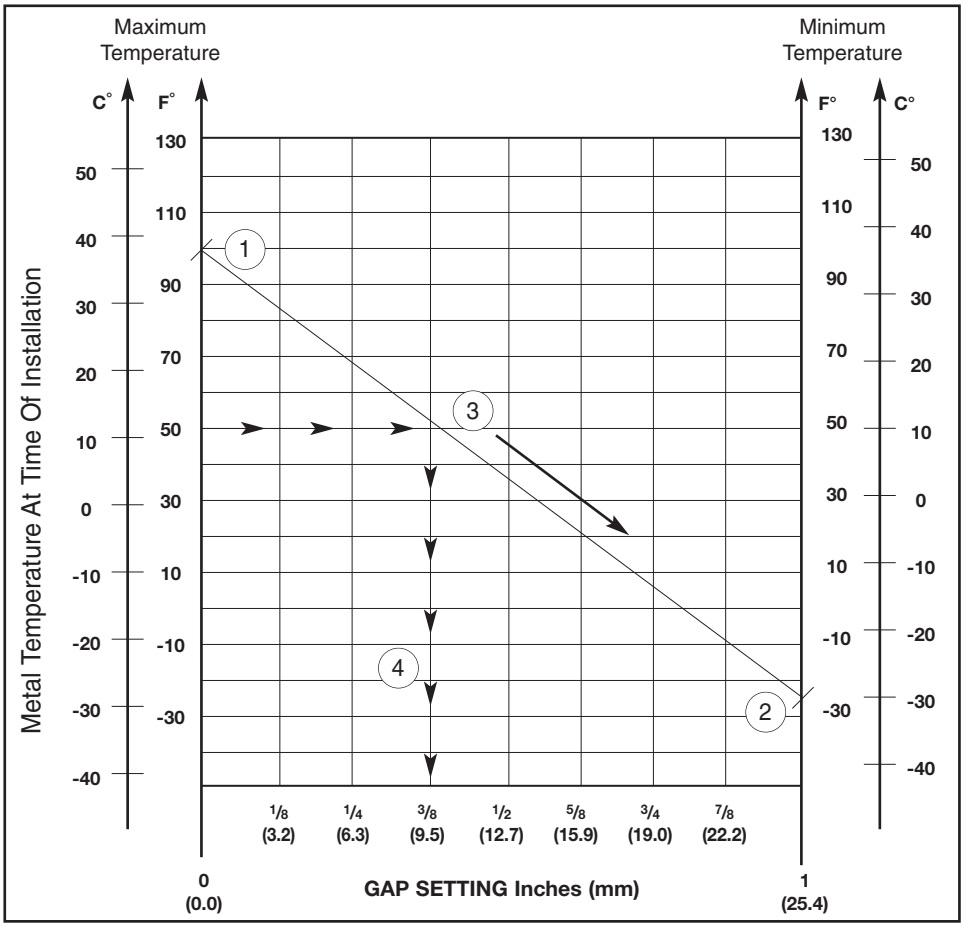


Table 2

Maximum Spacing Between Expansion Joints For 1" Movement									
Temperature Differential		Steel		Aluminum		Stainless Steel 304		316	
°F	°C	Feet	m	Feet	m	Feet	m	Feet	m
25	13.9	512	156.0	260	79.2	347	105.7	379	115.5
50	27.8	256	78.0	130	39.6	174	53.0	189	57.6
75	41.7	171	52.1	87	26.5	116	35.4	126	38.4
100	55.6	128	39.0	65	19.8	87	26.5	95	29.0
125	69.4	102	31.1	52	15.8	69	21.0	76	23.2
150	83.3	85	25.9	43	13.1	58	17.7	63	19.2
175	97.2	73	22.2	37	11.3	50	15.2	54	16.4

Note: every pair of expansion splice plates requires two bonding jumpers for grounding continuity.

Installation Considerations

Weight

The weight of an aluminum cable tray is approximately half that of a comparable steel tray. Some factors to consider include: shipping costs, material, handling, project weight restrictions and the strength of support members.

Field Modifications

Aluminum cable tray is easier to cut and drill than steel cable tray since it is a “softer” material. Similarly, galvanized steel cable tray is easier to cut and drill than stainless steel cable tray. Cooper B-Line aluminum cable tray uses a four bolt splice, resulting in half as much drilling and hardware installation as most steel cable tray, which uses an eight bolt splice. Hot dip galvanized and painted steel cable tray finishes must be repaired when field cutting or drilling. Failure to repair coatings will impair the cable tray’s corrosion resistance.

Availability

Aluminum, pre-galvanized, stainless steel and fiberglass cable tray can normally be shipped from the factory in a short period of time. Hot dip galvanized and painted cable tray requires an additional coating process, adding several days of preparation before final shipment. Typically, a coated cable tray will be sent to an outside source for coating, requiring additional packing and shipping.

Electrical Grounding Capacity

The National Electrical Code, Article 392.7 allows cable tray to be used as an equipment grounding conductor. All Cooper B-Line standard steel and aluminum cable trays are classified by Underwriter’s Laboratories per NEC Table 392.7 based on their cross-sectional area.

The corresponding cross-sectional area for each side rail design (2 side rails) is listed on a fade resistant UV stabilized label (see Figure 3). This cable tray label is attached to each straight section and fitting that is U.L. classified. U.L. assigned cross-sectional area is also stated in the loading charts in this catalog for each system.

NEMA Installation Guide

The new NEMA VE 2 is a cable tray installation guideline and is available from NEMA, CTI or Cooper B-Line. For free download see www.cabletrays.com.

Table 392.7(B)(2)
Metal Area Requirements for Cable Trays Used as Equipment Grounding Conductors

Maximum Fuse Ampere Rating, Circuit Breaker Ampere Trip Setting, or Circuit Breaker Protective Relay Ampere Trip Setting for Ground Fault Protection of any Cable Circuit in the Cable Tray System	Minimum Cross-Sectional Area of Metal* In Square Inches	
	Steel Cable Trays	Aluminum Cable Trays
60	0.20	0.20
100	0.40	0.20
200	0.70	0.20
400	1.00	0.40
600	1.50**	0.40
1000	--	0.60
1200	--	1.00
1600	--	1.50
2000	--	2.00**

For SI units: one square inch = 645 square millimeters.
* Total cross-sectional area of both side rails for ladder or trough-type cable trays; or the minimum cross-sectional area of metal in channel-type cable trays or cable trays of one-piece construction.
** Steel cable trays shall not be used as equipment grounding conductors for circuits with ground-fault protection above 600 amperes. Aluminum cable trays shall not be used as equipment grounding conductors for circuits with ground-fault protection above 2000 amperes.
For larger ampere ratings an additional grounding conductor must be used.

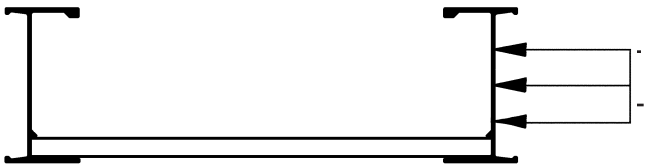
Figure 3

Environmental Loads

Wind Loads

Wind loads need to be determined for all outdoor cable tray installations. Most outdoor cable trays are ladder type trays, therefore the most severe loading to be considered is impact pressure normal to the cable tray side rails (see detail 1).

Detail 1



The impact pressure corresponding to several wind velocities are given below in Table 1.

Table 1
Impact Pressures

V(mph)	P(lbs/ft^2)	V(mph)	P(lbs/ft^2)
15	0.58	85	18.5
20	1.02	90	20.7
25	1.60	95	23.1
30	2.30	100	25.6
35	3.13	105	28.2
40	4.09	110	30.9
45	5.18	115	33.8
50	6.39	120	36.8
55	7.73	125	40.0
60	9.21	130	43.3
65	10.80	135	46.6
70	12.50	140	50.1
75	14.40	145	53.8
80	16.40	150	57.6

V= Wind Velocity
P= Impact Pressure

Note: These values are for an air density of 0.07651 lbs/ft^3 corresponding to a temperature of 60˚ F and barometric pressure of 14.7 lbs/in^2.

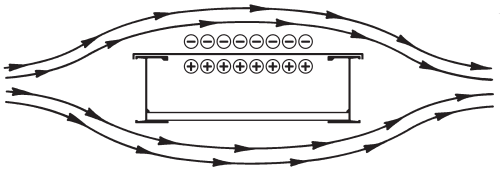
Example Calculation:

Side load for 6" side rail with 100 mph wind

$$\frac{25.6 \times 6}{12} = 12.8 \text{ lbs/ft}$$

When covers are installed on outdoor cable trays, another factor to be considered is the aerodynamic effect which can produce a lift strong enough to separate a cover from a tray. Wind moving across a covered tray (see detail 2) creates a positive pressure inside the tray and a negative pressure above the cover. This pressure difference can lift the cover off the tray.

Detail 2



B-Line recommends the use of heavy duty wrap-around cover clamps when covered trays are installed in an area where strong winds occur.

Special Notice:
Covers on wide cable tray and/or cable tray installed at elevations high off the ground may require additional heavy duty clamps or thicker cover material.

Ice Loads

Glaze ice is the most commonly seen form of ice build-up. It is the result of rain or drizzle freezing on impact with an exposed object. Generally, only the top surface (or the cover) and the windward side of a cable tray system is significantly coated with ice. The maximum design load to be added due to ice should be calculated as follows:

$$L_I = \left(\frac{W \times T_I}{144}\right) \times D_I \text{ where;}$$

L_I= Ice Load (lbs/linear foot)
W= Cable Tray Width (inches)
T_I= Maximum Ice Thickness (inches)
D_I= Ice Density = 57 lbs/ft^3
the maximum ice thickness will vary depending on location. A thickness of 1/2" can be used as a conservative standard.

Example Calculation:
Ice Loads for 24" wide tray with 1/2" thick ice;

$$\frac{24 \times .5}{144} \times 57 = 4.75 \text{ lbs/ft}$$

Environmental Loads

Snow Loads

Snow is measured by density and thickness. The density of snow varies almost as much as its thickness. The additional design load from snowfall should be determined using the building codes which apply for each installation.

Seismic Loads

A great deal of seismic testing and evaluation of cable tray systems, and their supports, has been performed. The conclusions reached from these evaluations is that cable tray is stronger laterally than vertically, since it acts as a truss in the lateral direction. Other factors that contribute to the stability of cable tray are the energy dissipating motion of the cables within the tray, and the high degree of ductility of the cable tray and the support material. These factors, working in conjunction with a properly designed cable tray system, should afford reasonable assurance to withstand even strong motion earthquakes.

When seismic bracing is required for a cable tray system, it should be applied to the supports and not the cable tray itself. Cooper B-Line's "Seismic Restraints" brochure provides OSHPD approved methods of bracing cable tray supports using standard Cooper B-Line products. Contact Cooper B-Line to receive a copy of this brochure.

Concentrated Loads

A concentrated static load represents a static weight applied at a single point between the side rails. Tap boxes, conduit attachments and long cable drops are just some of the many types of concentrated loads. When so specified, these concentrated static loads may be converted to an equivalent, uniform load (We) by using the following formula:

$$We = \frac{2 \times (\text{concentrated Static Load})}{\text{span length}}$$

Cooper B-Line's cable tray side rails, rungs and bottoms will withstand a 200 lb. static load without collapse (series 14 excluded)*. However, it should be noted that per NEMA Standard Publication VE1 cable tray is designed as a support for power or control cables, or both, and is not intended or designed to be a walkway for personnel. Each section of Cooper B-Line Cable Tray has a label stating the following message:

Warning! Not to be used as a walkway, ladder or support for personnel. To be used only as a mechanical support for cables and raceway.

Support Span

The strength of a cable tray is largely determined by the strength of its side rails. The strength of a cable tray side rail is proportionate to the distance between the supports on which it is installed, commonly referred to as the "support span". Therefore, the strength of a cable tray system can be altered by changing the support span. However, there is a limit to how much the strength of a cable tray system can be increased by reducing the support span, because the strength of the cable tray bottom members could become the determining factor of strength.

Once the load requirement of a cable tray system has been established, the following factors should be considered:

1. Sometimes the location of existing structural beams will dictate the cable tray support span. This is typical with outdoor installations where adding intermediate supports could be financially prohibitive. For this situation the appropriate cable tray must be selected to accommodate the existing span.
2. When cable tray supports are randomly located, the added cost of a higher strength cable tray system should be compared to the cost of additional supports. Typically, adding supports is more costly than installing a stronger series of cable tray. The stronger cable tray series (e.g. from 75 lbs./ft. on 20' span to 100 lbs./ft. on 20' span) will increase the price of the cable tray system minimally, possibly less than $1/ft., with little or no additional labor cost for installation. Alternately, one extra support may cost $100.00 (material and labor) for a simple trapeze. Future cable additions or the capability of supporting equipment, raceways for example, also favor stronger cable tray systems. *In summary, upgrading to a stronger cable tray series is typically more cost-effective than using the recommended additional supports for a lighter duty cable tray series.*
3. The support span lengths should be equal to or less than unspliced straight section lengths, to ensure that no more than one splice is placed between supports as stated in the NEMA VE 2 Cable Tray Installation Guideline.

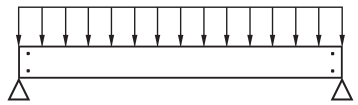
Deflection

Deflection in a cable tray system is primarily an aesthetic consideration. When a cable tray system is installed in a prominent location, a maximum simple beam deflection of 1/200 of support span can be used as a guideline to minimize visual deflection.

It is important at this point to mention that there are two typical beam configurations, simple beam and continuous beam, and to clarify the difference.

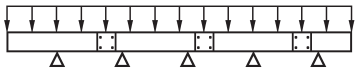
A good example of a simple beam is a single straight section of cable tray supported, but not fastened at either end. When the tray is loaded the cable tray is allowed to flex. Simple beam analysis is used almost universally for beam comparisons even though it is seldom practical in the field installations. The three most prominent reasons for using a simple beam analysis are: calculations are simplified; it represents the worst case loading; and testing is simple and reliable. The published load data in the Cooper B-Line cable tray catalog is based on the simple beam analysis per NEMA & CSA Standards.

Simple Beam



Continuous beam is the beam configuration most commonly used in cable tray installations. An example of this configuration is where cable trays are installed across several supports to form a number of spans. The continuous beam possesses traits of both the simple and fixed beams. When equal loads are applied to all spans simultaneously, the counter-balancing effect of the loads on both sides of a support restricts the movement of the cable tray at the support. The effect is similar to that of a fixed beam. The end spans behave substantially like simple beams. When cable trays of identical design are compared, the continuous beam installation will typically have approximately half the deflection of a simple beam of the same span. Therefore simple beam data should be used only as a general comparison. The following factors should be considered when addressing cable tray deflection:

Continuous Beam

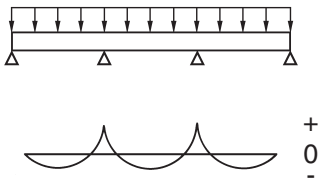


1. Economic consideration must be considered when addressing cable deflection criteria.
2. Deflection in a cable tray system can be reduced by decreasing the support span, or by using a taller or stronger cable tray.
3. When comparing cable trays of equivalent strength, a steel cable tray will typically exhibit less deflection than an aluminum cable tray since the modulus of elasticity of steel is nearly three times that of aluminum.
4. The location of splices in a continuous span will affect the deflection of the cable tray system. The splices should be located at points of minimum stress whenever practical. NEMA Standards VE 1 limits the use of splice plates as follows:

Unspliced straight sections should be used on all simple spans and on end spans of continuous span runs. Straight section lengths should be equal to or greater than the span length to ensure not more than one splice between supports.

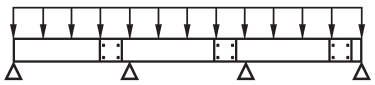
See the figures below for splicing configuration samples.

Typical Continuous Span Configuration

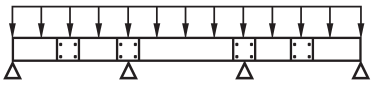


+ Maximum Positive Moment
- Maximum Negative Moment

Preferred Splice Plate Locations

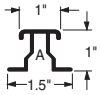
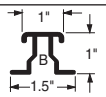
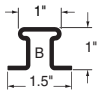
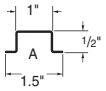
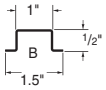
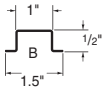
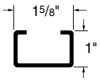


Undesirable Splice Plate Locations

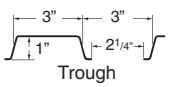


Load Capacity

Ladder Type Rungs

Rung Type	Design Factors	Material Type	Single Rung Uniform Load Capacity (in Lbs.) with safety factor of 1.5 Tray Width						
			6	9	12	18	24	30	36
	Ix = .0361 in.^{4} Sx = .0707 in.^{3}	Aluminum				766	575		
	Ix = .0432 in.^{4} Sx = .0877 in.^{3}	Aluminum						594	495
	Ix = .0249 in.^{4} Sx = .0528 in.^{3}	Steel	2912	1941	1456	971	728		
	Ix = .0312 in.^{4} Sx = .0661 in.^{3}	Steel						749	624
	Ix = .0450 in.^{4} Sx = .0787 in.^{3}	Aluminum Strut Rung	3328	2219	1664	1109	832	666	555
	Ix = .0445 in.^{4} Sx = .0782 in.^{3}	Steel Strut Rung	5172	3448	2586	1724	1293	1034	862
	Ix = .0039 in.^{4} Sx = .0134 in.^{3}	Steel Series 1	981	654	491	327	245		
	Ix = .0047 in.^{4} Sx = .0164 in.^{3}	Steel Series 1						230	192
	Ix = .0353 in.^{4} Sx = .0708 in.^{3}	Aluminum Marine Rung	2996	1997	1498	999	749	599	499
	Ix = .0347 in.^{4} Sx = .0685 in.^{3}	Steel Marine Rung	4530	3020	2265	1510	1133	906	755
	Ix = .0047 in.^{4} Sx = .0164 in.^{3}	Steel Series 1 Slotted Rung	1104	736	552	368	276	221	184
	Ix = .0304 in.^{4} Sx = .4810 in.^{3}	Steel Heavy Duty Slotted Rung	2784	1856	1392	928	696	557	464

Corrugated Bottoms (Ventilated and Solid)

Bottom Type	Design Factors	Material Type	Single Rung Load Capacity (in Lbs.) with safety factor of 1.5 Tray Width						
			6	9	12	18	24	30	36
 Trough	Ix = .0455 in.^{4} Sx = .0898 in.^{3}	Aluminum	3141	2029	1491	970	726	660	594

Load Capacity

Calculate each anticipated load factor, then add them to obtain a total load. (Example: Working Load = Cable + Concentrated + Wind + Snow + Ice Loads). The Working Load should be used, along with the maximum support spacing, to select a span/load class designation from Table 3. Table 4 (page 239) contains the most common load/span class designations per the US and Canadian metallic cable tray standard, CSA, C22.2 No. 126.1-98 First Addition, NEMA VE 1-1998.

Table 3 - These Loading Classes Are Historical and Supplied For Reference Only

Load Class		Class Designations for lengths of				
lb/ft	kg/m	ft 8 m (2.4)	ft 10 m (3.0)	ft 12 m (3.7)	ft 16 m (4.9)	ft 20 m (6.0)
25	37	––	A	––	––	––
45	67	––	––	––	––	D
50	74	8A	––	12A	16A	20A
65	97	––	C	––	––	––
75	112	8B	––	12B	16B	E or 20B
100	149	8C	––	12C	16C	20C
120	179	––	D	––	––	––
200	299	––	E	––	––	––

Note: 8A/B/C, 12A/B/C, 16A/B/C, and 20A/B/C were the traditional NEMA designations. A, C, D, and E were the conventional CSA designations. Actual tested loadings per span will be stated on the product labels.

Table 4 - B-Line Cable Tray Load Classes

Aluminum Copper free								Steel HDGAF/Pre-Galvanized							
Series	Load Depth	Load lb/ft	Load (kg/m)	Span ft	Span (m)	Former Classes NEMA	Former Classes CSA	Series	Load Depth	Load lb/ft	Load (kg/m)	Span ft	Span (m)	Former Classes NEMA	Former Classes CSA
H14AR	3	86	(128)	12	(3.7)	12B	D_1 (3m)	148*	3	51	(76)	12	(3.7)	12A	C_1 (3m)
24A	3	126	(187)	12	(3.7)	12C	D_1 (3m)	248*	3	103	(153)	12	(3.7)	12C	D_1 (3m)
34A	3	80	(119)	20	(6.1)	20B	E (6m)	346*	3	63	(94)	20	(6.1)	20A	D_1 (6m)
H15AR	4	102	(152)	12	(3.7)	12C	D_1 (3m)	444*	3	91	(135)	20	(6.1)	20B	E (3m)
25A	4	50	(74)	20	(6.1)	16B	D_1 (6m)	156*	4	76	(113)	12	(3.7)	12B	C_1 (3m)
35A	4	121	(180)	16	(4.9)	20B	E (3m)	258*	4	109	(162)	12	(3.7)	12C	D_1 (3m)
H16AR	5	114	(170)	12	(3.7)	12C	D_1 (3m)	356*	4	69	(103)	20	(6.1)	16C	D_1 (6m)
26A	5	51	(76)	20	(6.1)	20A	D_1 (6m)	358*	4	62	(92)	20	(6.1)	20A	D_1 (6m)
36A	5	84	(125)	20	(6.1)	20B	E (6m)	454*	4	106	(158)	20	(6.1)	20C	E (6m)
46A	5	103	(153)	20	(6.1)	20C	E (6m)	166*	5	77	(115)	12	(3.7)	12B	C_1 (3m)
H46A	5	167	(248)	20	(6.1)	167# @ 20'	131 kg/m (7.6m)	268*	5	110	(164)	12	(3.7)	12C	D_1 (3m)
H17AR	6	100	(149)	12	(3.7)	12B	D_1 (3m)	368†	5	59	(88)	20	(6.1)	20A	D_1 (3m)
37A	6	80	(119)	20	(6.1)	20B		366*	5	75	(112)	20	(6.1)	20B	E (6m)
47A	6	100	(149)	20	(6.1)	20C		464*†	5	123	(183)	20	(6.1)	119# @ 20'	E (6m)
H47A	6	149	(222)	20	(6.1)	149# @ 20'		176*	6	86	(128)	12	(3.7)	12B	137 kg/m (3.7m)
57A	6	102	(152)	30	(9.1)	102# @ 30'	152 kg/m (9.1m)	378*	6	51	(76)	20	(6.1)	20A	D_1 (3m)
S8A	6	161	(240)	30	(9.1)	161# @ 30'	240 kg/m (9.1m)	476*	6	77	(115)	20	(6.1)	20B	D_1 (6m)
Data-Track	All	120	(179)	9.8	(3.0)			574*	6	130	(193)	20	(6.1)	117# @ 20'	E (6m)
Half Rack	All	25	(37)	9.8	(3.0)			348†	3	125	(186)	12	(3.7)	12C	C_1 (3m)
Verti-Rack	All	100	(149)	12	(3.7)			358†	4	62	(92)	20	(6.1)	20A	89 kg/m (6.1m)
Multi-Tier	All	140	(208)	10	(3.1)			FT1.5X12	1 1/2	11	(16)	8	(2.4)		
								FT2X2	2	20	(30)	8	(2.4)		
								FT2X4	2	27	(40)	8	(2.4)		
								FT2X6	2	27	(40)	8	(2.4)		
Fiberglass								FT2X8	2	27	(40)	8	(2.4)		
								FT2X12	2	27	(40)	8	(2.4)		
13F	2	145	(216)	8	(2.4)	8C		FT2X16	2	27	(40)	8	(2.4)		
24F	3	156	(232)	12	(3.7)			FT2X18	2	27	(40)	8	(2.4)		
36F	5	88	(131)	20	(6.1)			FT2X20	2	27	(40)	8	(2.4)		
46F	5	141	(210)	20	(6.1)			FT2X24	2	27	(40)	8	(2.4)		
H46F	5	152	(226)	20	(6.1)			FT2X30	2	27	(40)	8	(2.4)		
48F	7	125	(187)	20	(6.1)			FT2X36	2	27	(40)	8	(2.4)		
								FT4X4	4	36	(53)	8	(2.4)		
								FT4X6	4	46	(68)	8	(2.4)		
								FT4X8	4	47	(70)	8	(2.4)		
								FT4X12	4	47	(70)	8	(2.4)		
								FT4X16	4	47	(70)	8	(2.4)		
								FT4X18	4	47	(70)	8	(2.4)		
								FT4X20	4	47	(70)	8	(2.4)		
								FT4X24	4	50	(74)	8	(2.4)	8A	
								FT4X30	4	50	(74)	8	(2.4)	8A	
								FT6X8	6	43	(64)	8	(2.4)	8A	
								FT6X12	6	48	(71)	8	(2.4)	8A	
								FT6X16	6	50	(74)	8	(2.4)	8A	
								FT6X18	6	50	(74)	8	(2.4)	8A	
								FT6X20	6	55	(82)	8	(2.4)	8A	
								FT6X24	6	60	(89)	8	(2.4)	8A	

* G denotes CSA Type 1 (HDGAF) or P denotes CSA Type 2 (Mill-Galvanized) † SS4 (Type 304 Stainless) or SS6 (Type 316 Stainless)

Cable Data

The cable load is simply the total weight of all the cables to be placed in the tray. This load should be expressed in lbs/ft.

The data on this page provides average weights for common cable sizes.

Multiconductor Cable Type TC, 600V with XHHW Conductors, Copper

Size	3 conductors with ground			4 conductors with ground		
	Diameter in.	Area in.^{2}	Weight lbs/ft	Diameter in.	Area in.^{2}	Weight lbs/ft
8	0.66	0.34	0.33	0.72	0.41	0.42
6	0.74	0.43	0.45	0.81	0.52	0.58
4	0.88	0.61	0.66	0.96	0.72	0.84
2	1.00	0.79	0.96	1.10	0.95	1.20
1	1.13	1.00	1.17	1.25	1.23	1.55
1/0	1.22	1.17	1.43	1.35	1.43	1.84
2/0	1.31	1.35	1.72	1.45	1.65	2.20
3/0	1.42	1.58	2.14	1.58	1.96	2.80
4/0	1.55		2.64	1.77		3.46
250	1.76		3.18	1.93		4.04
350	1.98		4.29	2.18		5.48
500	2.26		5.94	2.50		7.64
750	2.71		9.01	3.12		11.40
1000	3.10		11.70			

Multiconductor Cable Type MC, 600V with XHHW Conductors, Copper

Size	3 conductors with ground						4 conductors with ground					
	Diameter (in.)		Area (in.^{2})		Weight (lbs/ft)		Diameter (in.)		Area (in.^{2})		Weight (lbs/ft)	
	Without Jacket	With Jacket	Without Jacket	With Jacket	Alum. Armor	Steel Armor	Without Jacket	With Jacket	Without Jacket	With Jacket	Alum. Armor	Steel Armor
8	0.70	0.80	0.38	0.50	0.41	0.57	0.76	0.86	0.45	0.58	0.51	0.68
6	0.78	0.88	0.48	0.61	0.55	0.74	0.85	0.95	0.57	0.71	0.69	0.87
4	0.89	0.99	0.62	0.77	0.74	0.95	0.97	1.07	0.74	0.90	0.93	1.15
2	1.01	1.12	0.80	0.99	1.08	1.32	1.10	1.22	0.95	1.17	1.29	1.56
1	1.16	1.27	1.06	1.27	1.38	1.63	1.25	1.36	1.23	1.45	1.61	1.91
1/0	1.23	1.34	1.19	1.41	1.56	1.86	1.35	1.46	1.43	1.67	1.94	2.27
2/0	1.32	1.43	1.37	1.61	1.85	2.20	1.46	1.56	1.67	1.91	2.36	2.72
3/0	1.46	1.57	1.67	1.94	2.35	2.67	1.58	1.71	1.96	2.30	2.94	3.33
4/0	1.56	1.68			2.82	3.21	1.75	1.88			3.64	3.97
250	1.74	1.86			3.31	3.94	1.92	2.04			4.21	4.64
350	1.96	2.10			4.48	4.97	2.16	2.30			5.71	6.12
500	2.24	2.37			6.08	6.58	2.47	2.63			7.91	8.39
750	2.68	2.84			8.96	9.70	3.03	3.22			11.48	12.17

Single Conductor Cable 600V

Size	XHHW			THHN, THWN			TW, THW			USE, RHH, RHW		
	Diameter in.	Area in.^{2}	Weight lbs/ft	Diameter in.	Area in.^{2}	Weight lbs/ft	Diameter in.	Area in.^{2}	Weight lbs/ft	Diameter in.	Area in.^{2}	Weight lbs/ft
1/0	0.48		0.37	0.50		0.37	0.53		0.39	0.53		0.39
2/0	0.52		0.46	0.54		0.46	0.57		0.48	0.57		0.49
3/0	0.58		0.57	0.60		0.57	0.62		0.60	0.63		0.60
4/0	0.63		0.71	0.66		0.71	0.68		0.74	0.68		0.75
250	0.70	0.38	0.85	0.72	0.41	0.85	0.75	0.44	0.88	0.76	0.45	0.89
300	0.75	0.44	1.02	0.77	0.47	1.02	0.81	0.52	1.04	0.81	0.52	1.05
350	0.80	0.50	1.17	0.83	0.54	1.17	0.86	0.58	1.21	0.86	0.58	1.22
400	0.85	0.57	1.33	0.87	0.59	1.33	0.90	0.64	1.37	0.91	0.65	1.38
500	0.93	0.68	1.64	0.96	0.72	1.64	0.98	0.75	1.69	0.99	0.77	1.70
600	1.04	0.85	2.03	1.06	0.88	2.01	1.09	0.93	2.03	1.10	0.95	2.07
750	1.14	1.02	2.24	1.17	1.08	2.48	1.19	1.11	2.51	1.20	1.13	2.55
1000	1.29		2.52	1.32		3.30	1.34		3.31	1.35		3.33

Allowable Cable Fill

The following guidelines are based on the 2002 National Electrical Code, Article 392.

I) Number of Multiconductor Cables rated 2000 volts or less in the Cable Tray

(1) 4/0 or Larger Cables

The ladder cable tray must have an inside available width equal to or greater than the sum of the diameters (Sd) of the cables, which must be installed in a single layer. When using solid bottom cable tray, the sum of the cable diameters is not to exceed 90% of the available cable tray width.

Example: Cable Tray width is obtained as follows:

List Cable Sizes	(D) List Cable Outside Diameter	(N) List Number of Cables	Multiply (D) x (N) = Subtotal of the Sum of the Cable Diameters
3/C - #500 kcmil	2.26 inches	1	2.26 inches
3/C - #250 kcmil	1.76 inches	2	3.52 inches
3/C - #4/0 AWG	1.55 inches	4	6.20 inches

The sum of the diameters (Sd) of all cables = 2.26 + 3.52 + 6.20 = 11.98 inches; therefore a cable tray with an available width of at least 12 inches is required.

(2) Cables Smaller Than 4/0

The total sum of the cross-sectional areas of all the cables to be installed in the cable tray must be equal to or less than the allowable cable area for the tray width, as indicated in Table 5.
When using solid bottom cable tray, the allowable cable area is reduced by 22%.

Table 5

Inside Width of Cable Tray inches	Allowable Cable Area square inches
6	7.0
9	10.5
12	14.0
18	21.0
24	28.0

Example: The cable tray width is obtained as follows:

List Cable Sizes	(A) List Cable Cross Sectional Areas	(N) List Number of Cables	Multiply (A) x (N) + Total of the Cross-Sectional Area for each Size
3/C - #12 AWG	0.167 sq. in.	10	1.67 sq. in.
4/C - #12 AWG	0.190 sq. in.	8	1.52 sq. in.
3/C - # 6 AWG	0.430 sq. in.	6	2.58 sq. in.
3/C - # 2 AWG	0.800 sq. in.	9	7.20 sq. in.

The sum of the total areas is 1.67 + 1.52 + 2.58 + 7.20 = 12.97 inches.
Using Table 4, a 12-inch wide tray with an allowable cable area of 14 sq. inches should be used.

Note: Increasing the cable tray loading depth does not permit an increase in allowable cable area for power and lighting cables. The maximum allowable cable area for all cable tray with a 3 inch or greater loading depth is limited to the allowable cable area for a 3 inch loading depth.

(3) 4/0 or Larger Cables Installed with Cables Smaller than 4/0

The ladder cable tray needs to be divided into two zones (a barrier or divider is not required but one can be used if desired) so that the No. 4/0 and larger cables have a dedicated zone, as they are to be placed in a single layer.

continued on 242

Allowable Cable Fill

A direct method to determine the correct cable tray width is to figure the cable tray widths required for each of the cable combinations per steps (2) & (3).
Then add the widths in order to select the proper cable tray width.

Example: The cable tray width is obtained as follows:

Part A- Width required for #4/0 AWG and larger multiconductor cables

List Cable Size	(D) List Cable Outside Diameter	(N) List Number of Cables	Multiply (D) x (N) = Subtotal of the Sum of the Cable Diameters (Sd)
3/C - #500 kcmil	2.26 inches	1	2.26 inches
3/C - #4/0 AGW	1.55 inches	2	3.10 inches

Cable tray width (inches) required for large cables = 2.26 + 3.10 = 5.36 inches.

Part B- Width required for multiconductor cables smaller than #4/0 AWG

List Cable Sizes	(A) List Cable Cross Sectional Areas	(N) List Number of Cables	Multiply (A) x (N) = Total of the Cross-Sectional Area for each Size
3/C - #12 AWG	0.167 sq. in.	10	1.67 sq. in.
3/C - #6 AWG	0.430 sq. in.	8	3.44 sq. in.
3/C - #2 AWG	0.800 sq. in.	2	1.60 sq. in.

The sum of the total areas (inches) = 1.67 + 3.44 + 1.60 = 6.71 sq. inches.
From Table 5 (page 241), the cable tray width required for small cables is 6 inches.

The total cable tray width (inches) = 5.36 + 6.00 = 11.36 inches. A 12-inch wide cable tray is required.

(4) Multiconductor Control and/or Signal Cables Only

A ladder cable tray containing only control and/or signal cables, may have 50% of its total available cable area filled with cable. When using solid bottom cable tray pans, the allowable cable area is reduced from 50% to 40%.

Example: Cable tray width is obtained as follows:

2/C- #16 AWG instrumentation cable cross sectional area = 0.04 sq. in.
Total cross sectional area for 300 Cables = 12.00 sq. in.
Minimum available cable area needed = 12.00 x 2 = 24.00 sq. in.; therefore the cable tray width required for 4 inch available loading depth tray = 24.00/4 = 6 inches.

II) Number of Single Conductor Cables Rated 2000 Volts or Less in the Cable Tray

All single conductor cables to be installed in the cable tray must be 1/0 or larger, and are not to be installed with continuous bottom pans.

(1) 1000 KCMIL or Larger Cables

The sum of the diameters (Sd) for all single conductor cables to be installed shall not exceed the cable tray width. See Table 6.

Table 6

Inside Width of Cable Tray inches	Allowable Cable Area square inches
6	6.50
9	9.50
12	13.00
18	19.50
24	26.00
30	32.50
36	39.00

Allowable Cable Fill

(2) 250 KCMIL to 1000 KCMIL Cables

The total sum of the cross-sectional areas of all the single conductor cables to be installed in the cable tray must be equal to or less than the allowable cable area for the tray width, as indicated in Table 6 (page 242). (Reference Table 8)

(3) 1000 KCMIL or Larger Cables Installed with Cables Smaller Than 1000 KCMIL

The total sum of the cross-sectional areas of all the single conductor cables to be installed in the cable tray must be equal to or less than the allowable cable area for the tray width, as indicated in Table 7.

Table 7

Inside Width of Cable Tray inches	Allowable Cable Area square inches
6	6.50 - (1.1 Sd)
9	9.50 - (1.1 Sd)
12	13.00 - (1.1 Sd)
18	19.50 - (1.1 Sd)
24	26.00 - (1.1 Sd)
30	32.50 - (1.1 Sd)
36	39.00 - (1.1 Sd)

(4) Single Conductor Cables 1/0 through 4/0

These single conductors must be installed in a single layer. See Table 8.

Note: It is the opinion of some that this practice may cause problems with unbalanced voltages. To avoid these potential problems, the individual conductors for this type of cable tray wiring system should be bundled with ties. The bundle should contain all of the three-phase conductors for the circuit, plus the neutral if used. The single conductor cables bundle should be firmly tied to the cable tray assembly at least every 6 feet.

Table 8

Number of 600 Volt Single Conductor Cables That May Be Installed in Ladder Cable Tray

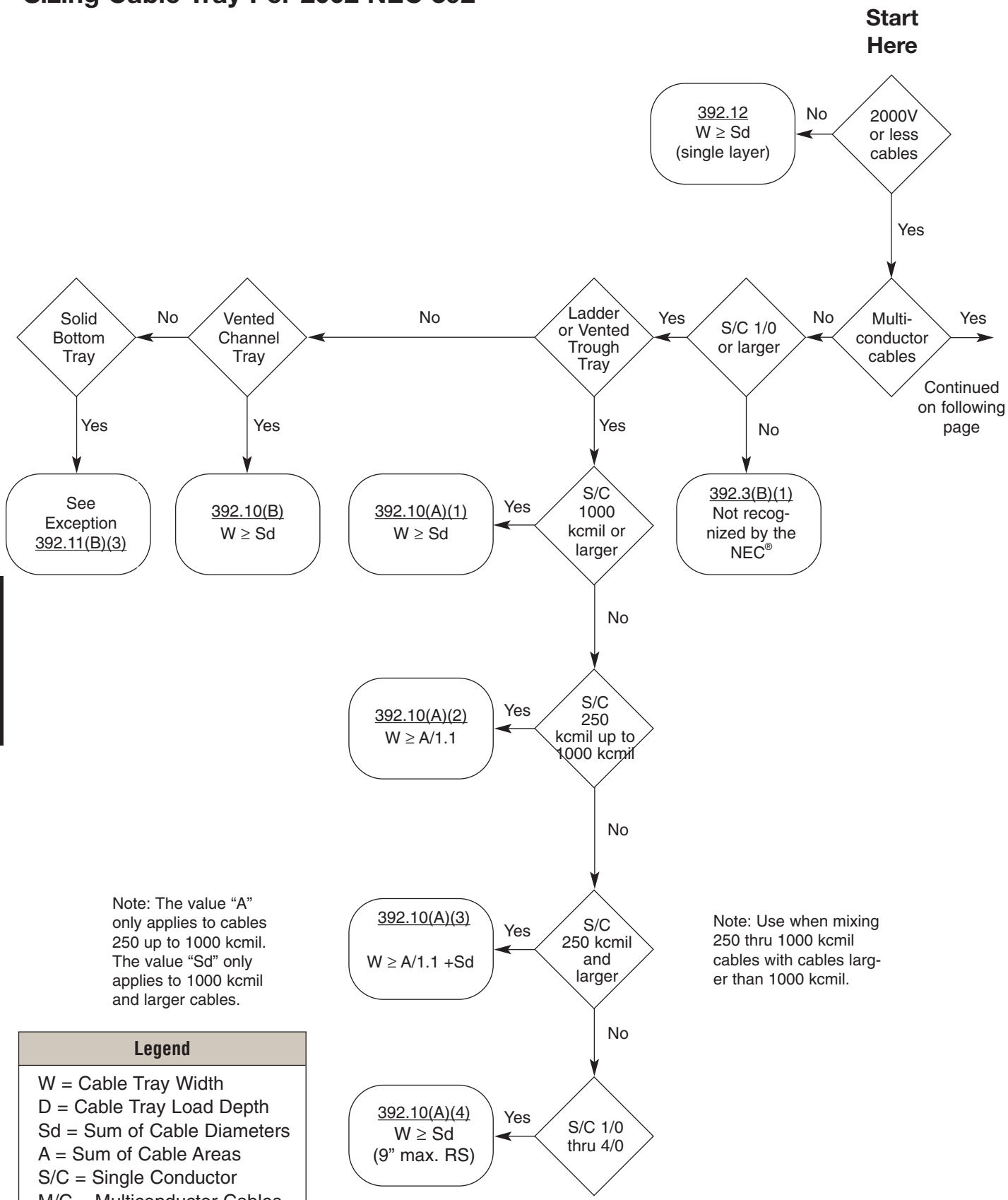
Single Conductor Size	Outside Diameter in.	Area sq. in.	Cable Tray Width 6 in.	9 in.	12 in.	18 in.	24 in.
1/0	0.58	-	10	15	20	31	41
2/0	0.62	-	9	14	19	29	38
3/0	0.68	-	8	13	17	26	35
4/0	0.73	-	8	12	16	24	32
250 Kcmil	0.84	.55	11	18	24	35	47
350 Kcmil	0.94	.69	9	14	19	28	38
500 Kcmil	1.07	.90	7	11	14	22	29
750 Kcmil	1.28	1.29	5	8	10	15	20
1000 Kcmil	1.45	-	4	6	8	12	16

Cable diameters used are those for Oknite-Okolon 600 volt single conductor power cables.

III) Number of Type MV and MC Cables Rated 2001 Volts or Over in the Cable Tray

The sum of the diameters (Sd) of all cables, rated 2001 volts or over, is not to exceed the cable tray width.

Sizing Cable Tray Per 2002 NEC 392



Note: The value "A" only applies to cables 250 up to 1000 kcmil. The value "Sd" only applies to 1000 kcmil and larger cables.

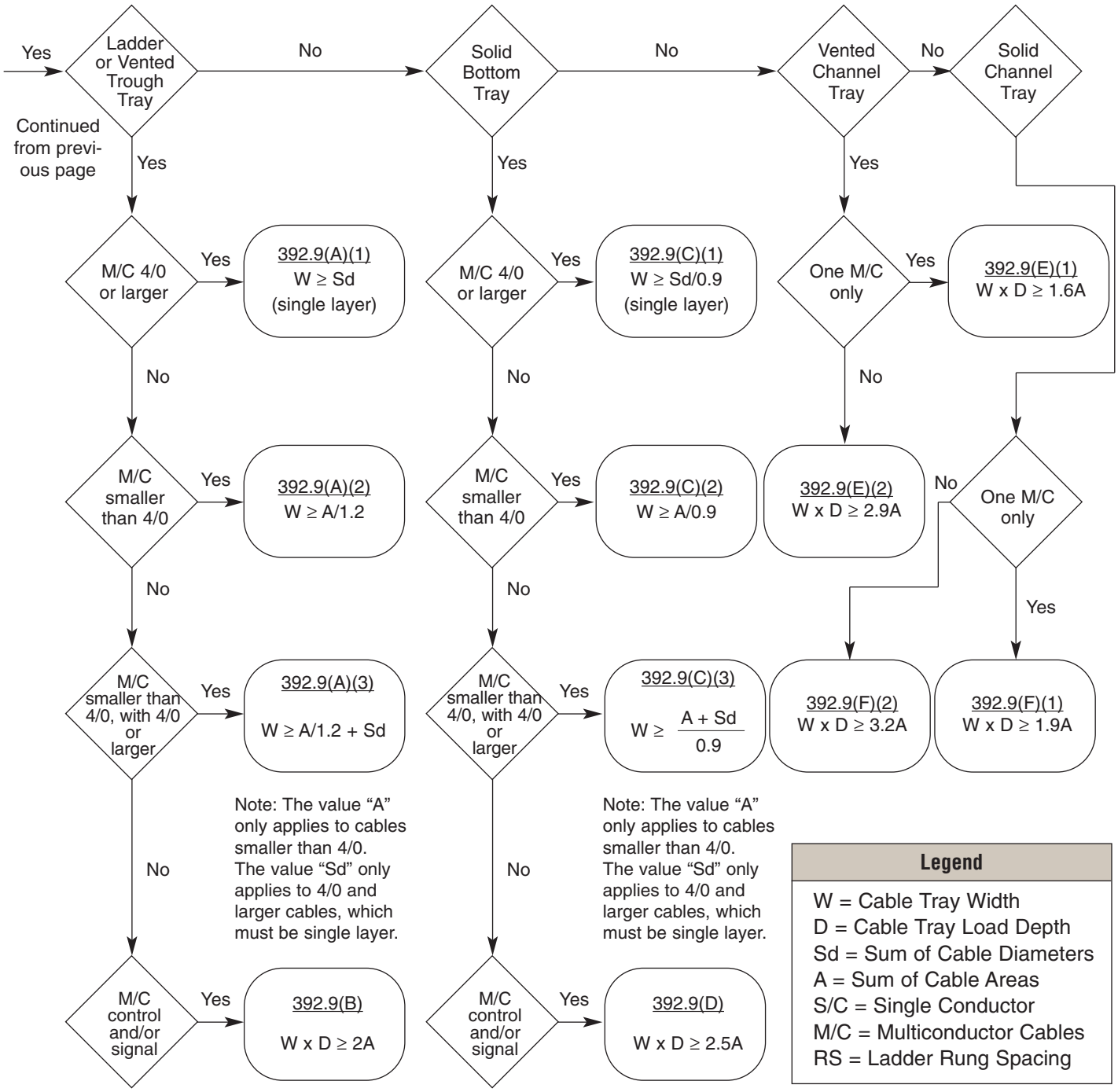
Note: Use when mixing 250 thru 1000 kcmil cables with cables larger than 1000 kcmil.

Legend

W = Cable Tray Width
D = Cable Tray Load Depth
Sd = Sum of Cable Diameters
A = Sum of Cable Areas
S/C = Single Conductor
M/C = Multiconductor Cables
RS = Ladder Rung Spacing

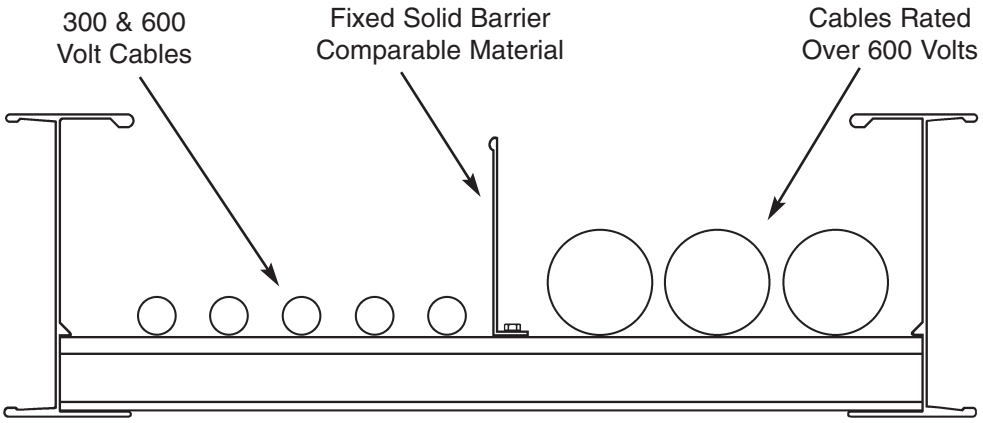
Cable Ladder Selection - Width and Available Loading Depth

Note: See National Electrical Code for additional information regarding cable ampacity and hazardous (classified) location requirements which might affect the cable tray sizing flow chart.



Barrier Requirements

Barrier strips are used to separate cable systems, such as when cables above and below 600 volts per NEC 392.6(F) are installed in the same cable tray. However, when MC type cables rated over 600 volts are installed in the same cable tray with cables rated 600 volts or less, no barriers are required. The barriers should be made of the same material type as the cable tray. When ordering the barrier, the height must match the *loading depth* of the cable tray into which it is being installed.



Future Expansion Requirements

One of the many features of cable tray is the ease of adding cables to an existing system. Future expansion should always be considered when selecting a cable tray, and allowance should be made for additional *fill area* and *load capacity*. A minimum of 50% expansion allowance is recommended.

Space Limitations

Any obstacles which could interfere with a cable tray installation should be considered when selecting a cable tray width and height. Adequate clearances should be allowed for installation of supports and for cable accessibility.
Note: The overall cable tray dimensions typically exceed the nominal tray width and loading depth.

Lengths Available

The current Cable Tray Standard, NEMA VE 1 and C22.2 No. 126.1-98, lists typical lengths as 3000 mm (10 ft), 3660 mm (12 ft), 6000 mm (20 ft), and 7320 mm (24 ft). It is impractical to manufacture either lighter systems in the longer lengths or heavier systems in the shorter lengths. For that reason, Cooper B-Line has introduced a primary and secondary length for each system. These straight section lengths were selected to direct the user to lengths that best suit support span demands and practical loading requirements. The primary length is the one that is the most appropriate for the strength of the system and that will provide the fastest service levels. The secondary lengths will be made available to service additional requirements. Special lengths are available with extended lead times.

For additional information please review the information contained on the Cooper B-Line website at www.cooperbline.com/product/CableTray/LengthSelection.asp.

Support Span

Per the NEMA VE 2, the support span on which a cable tray is installed should not exceed the length of the unspliced straight section. Thus installations with support spans greater than 12 feet should use 240" (20 feet) or 288" (24 feet) cable tray lengths.

Space Limitations

Consideration should be given to the space available for moving the cable tray from delivery to it's final installation location. Obviously, shorter cable tray allows for more maneuverability in tight spaces.

Installation

Shorter cable tray lengths are typically easier to maneuver on the job site during installation. Two people may be needed to manipulate longer cable tray sections, while shorter sections might be handled by one person. Although longer cable tray lengths are more difficult to maneuver, they can reduce installation time due to the fact that there are fewer splice connections. This trade-off should be evaluated for each set of job site restrictions.

Cable Ladder Selection - Loading Possibilities

Power Application:

Power application can create the heaviest loading. The heaviest cable combination found was for large diameter cables (i.e. steel armor, 600V, 4 conductor 750 kcmil). The cables weigh less than 3.8 lbs. per inch width of cable tray. As power cables are installed in a single layer, the width of the cable affects the possible loading.

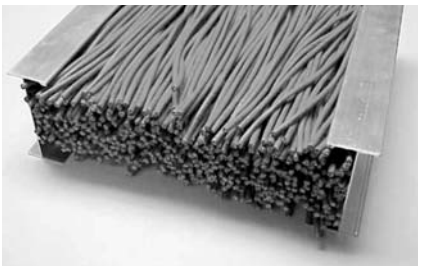
36" Wide	30" Wide	24" Wide	18" Wide	12" Wide	9" Wide	6" Wide
140 lbs/ft	115 lbs/ft	90 lbs/ft	70 lbs/ft	45 lbs/ft	35 lbs/ft	23 lbs/ft

Data/Communication Cabling:

Low voltage cables can be stacked as there is no heat generation problems. The NEC employs a calculation of the total cross sectional area of the cables not exceeding 50% of the fill area of the cable tray. As the cable fill area of the cable tray system affects the possible loading, both the loading depth and width of the systems must be considered. For this example 4UTP category 5 cable (O.D. = .21, .026 lbs./ft.) were used.

Calculated Cable Weight in Lbs/Ft

	36" Wide	30" Wide	24" Wide	18" Wide	12" Wide	9" Wide	6" Wide
6" Fill	81	64	52	41	27	20	14
5" Fill	68	53	43	34	23	17	12
4" Fill	54	43	35	27	18	13	9
3" Fill	41	32	26	21	14	10	7



The picture shows a 12" cable tray with a 3" load depth. The tray contains 520 4 UTP Category 5 cables with a .21" diameter.

The National Electrical Code allows for 50% fill of ventilated and ladder cable tray for control or signal wiring (Article 392.9(B)). ANSI/EIA/TIA 569-A Section 4.5* also requires that the fill ratio of cable tray is not to exceed 50%.

Calculation Example:
Tray Area = 12 in. x 3 in. = 36 sq. in.
50% Fill = 36 sq. in. x .5 = 18 sq. in.
Cable Area = $(.21 \text{ in.})^2 \times 3.14/4 = .0346$ sq. in.
Number of Cables = 18 sq. in. / .0346 sq. in. = 520 cables

*Section 4.5 is currently under review.

Other Factors To Consider

- **Support Span -** The distance between the supports affects the loading capabilities exponentially. To calculate loading values not cataloged use:

$W_1 L_1^2 = W_2 L^2_2$
W_1 - tested loading
L_1 - span in feet, a tested span
W_2 - loading in question
L_2 - known span for new loading

- **Other Loads -** Ice, wind, snow for outdoor systems see page 26 and 27 for information. A 200 lb. concentrated load for industrial systems. The affect of a concentrated load can be calculated as follows

$$\frac{2 \times (\text{concentrated static load})}{\text{span in feet}}$$

When considering concentrated loads the rung strength should be considered.

- **Length Of The Straight Sections:**
The VE 2, Cable Tray Installation Guide, states that the support span shall not be greater than the straight section length. If a 20C system is manufactured in 12 foot sections the greatest span for supports would be 12 feet. This dramatically affects the loading of the system.

$W_1 L_1^2 = W_2 L^2_2$
$100 (20^2) = W_2 (12^2)$
$40{,}000 = 144 W_2$
$W_2 = 277$ lbs. per foot

Cable Ladder Selection - Bottom Type

Type of Cable

According to NEC Article 392, multiconductor tray cable may be installed in any standard cable tray bottom type. According to the 2005 NEC Article 392.11(8)(3), single conductor tray cable may be installed in any standard cable tray bottom type. Solid bottom cable trays are not allowed to be installed in Class II, Division 2 locations (2002 NEC Section 502.4(B)). In general, small, highly flexible cables should be installed in solid bottom, vented bottom or 6" rung spacing ladder type cable trays. Sensitive cables (e.g. fiberoptic) are typically installed in flat, solid bottom cable trays, instead of corrugated trough bottoms. Larger, less flexible cables are typically installed in ladder type cable trays having 9" or 12" rung spacing. Ladder type cable trays having 18" rung spacing should be used for large, stiff cables to reduce cost and facilitate cable drop-outs.

Cost vs Strength

Often more than one bottom type is acceptable. In this case the economic difference should be considered. Ladder cable trays have a lower cost than either non-ventilated or ventilated bottom configurations. Typically, the cost of ladder type cable tray decreases as rung spacing increases. However, the effect of rung spacing on load capacity for ladder type cable trays with 18" rung spacing should be evaluated, since NEMA published load capacities are based on 12" rung spacing. Rung spacing can affect individual rung and side rail loading as well as system load capacity. Rung loads applied during cable installation should also be considered.
(See page 237 for Cooper B-Line rung load capacities)

Cable Exposure

Tray cables are manufactured to withstand the environment without additional protection, favoring the use of the ladder type cable tray. Some areas may benefit from the limited exposure of solid or vented bottom cable tray. Solid Bottom metal cable tray with solid metal covers can be utilized in other spaces used for environmental air to support non plenum rated tray cables (2002 NEC® 300.22(C)(1))

Cable Attachment

The major advantage of ladder type cable tray is the freedom of entry and exit of the cables. Another advantage of ladder type cable tray is the ability to secure cables in the cable tray. With standard rungs the cables may be attached with either cable ties or cable clamps. The ladder type cable tray is also available with special purpose, slotted marine or strut rungs to facilitate banding or clamping cables. Cable attachment is particularly important on vertical runs or when the tray is installed on its side. Ladder rung spacing should be chosen to provide adequate cable attachment points while allowing the cables to exit the system.

Cable Ladder Selection - Fitting Radius

Cable Flexibility

The proper bend radius for cable tray fittings is usually determined by the bend radius and stiffness of the tray cables to be installed. Typically, the tray cable manufacturer will recommend a minimum bend allowance for each cable. The fitting radius should be equal to or larger than the minimum bend radius of the largest cable which may ever be installed in the system. When several cables are to be installed in the same cable tray, a larger bend radius may be desirable to ease cable installation.

Space Limitations

The overall dimensions for a cable tray fitting will increase as the bend radius increases. Size and cost make the smallest acceptable fitting radius most desirable. When large radius fittings are required, the system layout must be designed to allow adequate space.

Index - Straight Sections

Cable Tray Straight Sections

Prefix
Example: 24 A 12 - 24 - 144
① ② ③ ④ ⑤

① Series
② Material
③ Rung Spacing
④ Width
⑤ Length

Catalog No.	Page

Series 2, 3, 4, & 5 Aluminum Cable Ladder

Material
A = Aluminum

Prefix
Example: T 050 V * 12 - 100 - 3
① ② ③ ④ ⑤ ⑥

① Series Height
② Tray Type
③ Material
④ Thickness
⑤ Width
⑥ Length

Catalog No.	Page

Steel Pan Cable Tray

Materials
G = Hot Dipped Galvanized Steel
P = Pre-Galvanized Steel
SS4 = 304 Stainless Steel
SS6 = 316 Stainless Steel
A = Aluminum

Prefix
Example: 148 * 12 - 24 - 144
① ② ③ ④ ⑤

① Series
② Material
③ Rung Spacing
④ Width
⑤ Length

Catalog No.	Page

Series 1 Steel Cable Ladder

Materials
G = Hot Dipped Galvanized Steel
P = Pre-Galvanized Steel

Prefix
Example: 356 * 09 SL DN - 24 - 144
① ② ③ ④ ⑤ ⑥ ⑦

① Series
② Material
③ Rung Spacing
④ Rung Type
⑤ Rung Orientation
⑥ Width
⑦ Length

Catalog No.	Page

Series 2, 3, 4, & 5 Steel Cable Ladder

Materials
G = Hot Dipped Galvanized Steel
P = Pre-Galvanized Steel

Prefix
Example: 348 * 09 SL DN - 24 - 144
① ② ③ ④ ⑤ ⑥ ⑦

① Series
② Material
③ Rung Spacing
④ Rung Type
⑤ Rung Orientation
⑥ Width
⑦ Length

Catalog No.	Page

Series 2, 3, 4, & 5 Stainless Steel Cable Ladder

Materials
SS4 = Stainless Steel 304
SS6 = Stainless Steel 316

Cable Ladder Straight Sections

Prefix
Example: 24 * 09 - 24 - 144
① ② ③ ④ ⑤

① Series
② Material
③ Rung Spacing
④ Width
⑤ Length

Catalog No. Page

Fiberglass Cable Ladder

Materials
F = Polyester Resin
FA = Zero Halogen/Dis-Stat Resin
FV = Vinyl Ester Resin

Cable Channel Straight Sections

Prefix
Example: F CC - 06 - 144
① ② ③ ④

① Material
② Series
③ Width
④ Length

Catalog No. Page

Fiberglass Cable Channel

Materials
FCC* = Polyester Resin
FCCA* = Zero Halogen/Dis-Stat Resin
FCCV* = Vinyl Ester Resin

CC = Ventilated
* Added N = Non-Ventilated

Flextray

Prefix
Example: FT 2 X 12 X 10
① ② ③ ④

① Flextray
② loading Height
③ Width
④ Length 118”

Catalog No. Page

Flextray Straight Sections

Cable Tray Fittings

Prefix

Example: **4 A - 24 - 90 HB 24**
① ② ③ ④ ⑤ ⑥

① Series/Height
② Material
③ Width
④ Angle
⑤ Type (HB, VI, VO)
⑥ Radius

Catalog No. Page

Series 2, 3, 4, & 5 Aluminum Cable Ladder Fittings

Materials
A = Aluminum
(†) = Insert 4 for 4", 5 for 5", 6 for 6" or 7 for 7" side rail heights

Prefix

Example: **T 050 V G 15 - 300 - 90 HB 300**
① ②③④ ⑤ ⑥ ⑦ ⑧

① Tray Height
② Tray Type
③ Material
④ Thickness
⑤ Width
⑥ Angle
⑦ Type (HB, VI, VO)
⑧ Radius

Catalog No. Page

Steel Pan Cable Tray Fittings

Materials
G = Hot Dipped Galvanized Steel
P = Pre-Galvanized Steel
SS4 = 304 Stainless Steel
SS6 = 316 Stainless Steel
A = Aluminum

Prefix

Example: **1 4 P SL - 24 - 90 HB 24**
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Series
② Height
③ Material
④ Rung Type
⑤ Width
⑥ Angle
⑦ Type (HB, VI, VO)
⑧ Radius

Catalog No. Page

Steel Light Duty Ladder Fittings

Materials
G = Hot-Dipped Galvanized Steel
P = Pre-Galvanized Steel
(†) = Insert 4 for 4", 5 for 5", or 6 for 6" side rail heights

Cable Ladder Fittings

Prefix
Example: **4 G SLDN - 24 - 90 HB 24**
① ② ③ ④ ⑤ ⑥ ⑦

① Height
② Material
③ Rung Type & Orientation
④ Width
⑤ Angle
⑥ Type (HB, VI, VO)
⑦ Radius

Prefix
Example: **4 SS4 SLDN - 24 - 90 HB 24**
① ② ③ ④ ⑤ ⑥ ⑦

① Height
② Material
③ Rung Type & Orientation
④ Width
⑤ Angle
⑥ Type (HB, VI, VO)
⑦ Radius

Catalog No.	Page

Series 2, 3, 4, & 5 Steel Cable Ladder Fittings

Materials
G = Hot-Dipped Galvanized Steel
P = Pre-Galvanized Steel

① = Insert 4 for 4", 5 for 5", 6 for 6" or 7 for 7" side rail heights

Catalog No.	Page

Series 2, 3, 4, & 5 Stainless Steel Cable Ladder Fittings

Materials
SS4 = Stainless Steel 304
SS6 = Stainless Steel 316

① = Insert 4 for 4", 5 for 5", 6 for 6" or 7 for 7" side rail heights

Index - Fittings

Cable Tray Fittings

Prefix
Example: **4 F - 12 - 90 HB 12**
① ② ③ ④ ⑤ ⑥

① Series/Height
② Material
③ Width
④ Angle
⑤ Type (HB, VI, VO)
⑥ Radius

Catalog No. **Page**

Fiberglass Cable Ladder Fittings

Materials
F = Polyester Resin
FA = Zero Halogen/ Dis-Stat Resin
FV = Vinyl Ester Resin

① = Insert 3 for 3", 4 for 4", 6 for 6" or 8 for 8" side rail heights

Cable Channel Fittings

Prefix
Example: **FCC * N - 04 - 45 VI 12**
① ② ③ ④ ⑤ ⑥

① Series
② Material
③ Width
④ Angle
⑤ Type (HB, VI, VO)
⑥ Radius

Catalog No. **Page**

Fiberglass Cable Channel Fittings

Materials ②
Leave Blank for Polyester Resin
Insert A for Zero Halogen/ Dis-Stat
Insert V for Vinyl Ester Resin

Widths ④
Insert 03 for 3", 04 for 4",
06 for 6" or 08 for 8" side rail heights

Cable Ladder Covers

Prefix
Example: **806 A 40 - 24 - 144**
① ② ③ ④ ⑤

① Series
② Material
③ Thickness
④ Width
⑤ Length or Fitting Type

Catalog No.	Page

Series 2, 3, 4, & 5 Aluminum Cable Ladder Covers

Materials
A = Aluminum
Contact Cooper B-Line Engineering for fitting cover information.
See page 149 for fitting cover examples.

Prefix
Example: **TC F L G 15 - 300 - 3**
① ② ③ ④ ⑤ ⑥

① Cover Edge
② Cover Style
③ Material
④ Thickness
⑤ Width
⑥ Cover Type

Catalog No.	Page

Steel Pan Cable Ladder Covers

Materials
G = Hot Dipped Galvanized Steel
P = Pre-Galvanized Steel
SS4 = Stainless Steel 304
SS6 = Stainless Steel 316
A = Aluminum
Contact Cooper B-Line Engineering for fitting cover information.
See page 63 for fitting cover examples.

Prefix
Example: **801 G 18 - 24 - 144**
① ② ③ ④ ⑤

① Series
② Material
③ Thickness
④ Width
⑤ Length or Fitting Type

Catalog No.	Page

Steel Light Duty Cable Ladder Covers

Materials
G = Hot Dipped Galvanized Steel
P = Pre-Galvanized Steel
Contact Cooper B-Line Engineering for fitting cover information.
See page 77 for fitting cover examples.

Prefix
Example: **802 P 20 - 24 - 144**
① ② ③ ④ ⑤

① Series
② Material
③ Thickness
④ Width
⑤ Length or Fitting Type

Catalog No.	Page

Series 2, 3, 4, & 5 Steel Cable Ladder Covers

Materials
G = Hot Dipped Galvanized Steel
P = Pre-Galvanized Steel
Contact Cooper B-Line Engineering for fitting cover information.
See page 103 for fitting cover examples.

Cable Ladder Covers

Prefix
Example: **802** * **20** - **24** - **144**
① ② ③ ④ ⑤

① Series
② Material
③ Thickness
④ Width
⑤ Length or Fitting Type

Prefix
Example: **FA** - * - **24** - **144**
① ② ③ ④

① Series & Material
② Rail Design
③ Width
④ Length or Fitting Type

Catalog No.	Page

Series 2, 3, 4, & 5 Stainless Steel Cable Ladder Covers

Materials
SS4 = 304 Stainless Steel
SS6 = 316 Stainless Steel

Contact Cooper B-Line Engineering for fitting cover information.
See page 116 for fitting cover examples.

Catalog No.	Page

Flextray Covers

Catalog No.	Page

Fiberglass Cable Ladder Covers

Materials
F = Polyester Resin
FA = Zero Halogen/Dis-Stat Resin
FV = Vinyl Ester Resin

C = Cover
Covers are flat unless a P is added to part number P = Peaked Cover

Contact Cooper B-Line Engineering for fitting cover information.
See page 212 for fitting cover examples.

Series 2, 3, 4, & 5 Aluminum Cable Ladder Accessories

Not all accessories for aluminum cable tray are aluminum only. Those finishes and part numbers will be listed in this section.

continued on next page

Index - Accessories

Aluminum Cable Ladder Accessories

Materials

A = Aluminum
G = Hot-Dipped Galvanized
GRN = Dura-Green Painted
P = Pre-Galvanized Steel
SS = Stainless Steel 304
SS4 = Stainless Steel 304
SS6 = Stainless Steel 316
ZN = Zinc Plated

Pan Cable Tray Accessories

Pan Cable Tray Accessories

Materials

A = Aluminum
G = Hot-Dipped Galvanized
P = Pre-Galvanized Steel
SS4 = Stainless Steel 304
SS6 = Stainless Steel 316

Steel Light Duty Cable Ladder Accessories

Not all accessories for steel cable ladder are steel only. Those finishes and part numbers will be listed in this section.

Materials

A = Aluminum
G = Hot-Dipped Galvanized
P = Pre-Galvanized Steel
SS4 = Stainless Steel 304
ZN = Zinc Plated

Series 2, 3, 4, & 5 Steel Cable Ladder Accessories

Not all accessories for steel cable ladder are steel only. Those finishes and part numbers will be listed in this section.

Series 2, 3, 4, & 5 Steel Cable Tray Accessories

Series 2, 3, 4, & 5 Steel Cable Ladder Accessories

Not all accessories for steel cable ladder are steel only. Those finishes and part numbers will be listed in this section.

Materials

A = Aluminum
G = Hot-Dipped Galvanized
GRN = Dura-Green Painted
P = Pre-Galvanized Steel
SS4 = Stainless Steel 304
SS6 = Stainless Steel 316
ZN = Zinc Plated

Series 2, 3, 4, & 5 Stainless Steel Cable Ladder Accessories

Not all accessories for steel cable ladder are steel only. Those finishes and part numbers will be listed in this section.

Series 2, 3, 4, & 5 Stainless Steel Cable Tray Accessories

Series 2, 3, 4, & 5 Stainless Steel Cable Ladder Accessories

Not all accessories for steel cable ladder are steel only. Those finishes and part numbers will be listed in this section.

Materials

G = Hot-Dipped Galvanized
SS4 = Stainless Steel 304
SS6 = Stainless Steel 316

Fiberglass Cable Ladder Accessories

Fiberglass Cable Tray Accessories

Materials

(x) = Insert F for Polyester Resin
Insert FA for Zero Halogen/ Dis-Stat Resin
Insert FV for Vinyl Ester Resin

Cable Channel Accessories

Fiberglass Cable Channel Accessories

Materials

SS6 = Stainless Steel 316

(x) = Insert F for Polyester Resin
Insert FA for Zero Halogen/ Dis-Stat Resin
Insert FV for Vinyl Ester Resin

Flextray Accessories

Cable Cleats & Accessories

Conversion Charts

METRIC CONVERSION CHART

To Convert From	To	Multiply By
Angle		
degree	radian (rad)	0.01745329
radian (rad)	degree	57.29578
Area		
foot^2	square meter (m^2)	0.09290304
inch^2	square meter (m^2)	0.00064516
circular mil	square meter (m^2)	0.0000000005067075
sq. centimeter (cm^2)	square inch (in^2)	0.1550003
square meter (m^2)	foot^2	10.76391
square meter (m^2)	inch^2	1550.003
square meter (m^2)	circular mil	1973523000.0
Temperature		
degree Fahrenheit	degree Celsius	t^{oC}=(t^{oF} -32)/1.8
degree Celsius	degree Fahrenheit	t^{oF}=1.8t^{oC}+32
Force		
pounds-force (lbf)	newtons (N)	4.448222

To Convert From	To	Multiply By
Length		
foot (ft)	meter (m)	0.3048
inch (in)	meter (m)	0.0254
mil	meter (m)	0.0000254
inch (in)	micrometer (µm)	25400.00
meter (m)	foot (ft)	3.280840
meter (m)	inch (in)	39.37008
meter (m)	mil	39370.08
micrometer (µm)	inch (in)	0.00003937008
Volume		
foot^3	cubic meter (m^3)	0.02831685
inch^3	cubic meter (m^3)	0.00001638706
cubic centimeter (cm^2)	cubic inch (in^3)	0.06102374
cubic meter (m^3)	foot^3	35.31466
cubic meter (m^3)	inch^3	61023.76
gallon (U.S. liquid)	cubic meter (m^3)	0.003785412
Section Properties		
section modulus S (in^3)	S (m^3)	0.00001638706
moment of inertia I (in^4)	I (m^4)	0.0000004162314
modulus of elasticity E (psi)	E (Pa)	6894.757
section modulus S (m^3)	S (in^3)	61023.74
moment of inertia I (m^4)	I (in^4)	2402510.0
modulus of elasticity E (Pa)	E (psi)	0.0001450377

To Convert From	To	Multiply By
Bending Moment or Torque		
lbf • ft	newton meter (N•m)	1.355818
lbf • in	newton meter (N•m)	0.1129848
N•m	lbf • ft	0.7375621
N•m	lbf • in	8.850748
Mass		
ounce (avoirdupois)	kilogram (kg)	0.02834952
pound (avoirdupois)	kilogram (kg)	0.4535924
ton (short, 2000 lb)	kilogram (kg)	907.1847
ton (long, 2240 lb)	kilogram (kg)	1016.047
kilogram (kg)	ounce (avoirdupois)	35.27396
kilogram (kg)	pound (avoirdupois)	2.204622
kilogram (kg)	ton (short, 2000 lb)	0.001102311
kilogram (kg)	ton (long, 2240 lb)	0.0009842064
Mass Per Unit Length		
lb/ft	kilogram per meter (kg/m)	1.488164
lb/in	kilogram per meter (kg/m)	17.85797
kg/m	lb/ft	0.6719689
kg/m	lb/in	0.5599741
Mass Per Unit Volume		
lb/ft^3	kilogram per cubic meter (kg/m^3)	16.01846
lb/in^3	kilogram per cubic meter (kg/m^3)	27679.9
kg/m^3	lb/ft^3	0.06242797
kg/m^3	lb/in^3	0.0000361273
lbs/ft^3	lbs/in^3	1728.0
Mass Per Unit Area		
lb/ft^2	kilogram per square meter (kg/m^2)	4.882428
kg/m^2	pound per square foot (lb/ft^2)	0.2048161
Pressure or Stress		
lbf/in^2 (psi)	pascal (Pa)	6894.757
kip/in^2 (ksi)	pascal (Pa)	6894757.0
lbf/in^2 (psi)	megapascals (MPa)	0.006894757
pascal (Pa)	pound-force per square inch (psi)	0.0001450377
pascal (Pa)	kip per square inch (ksi)	0.0000001450377
megapascals (MPa)	lbf/in^2 (psi)	145.0377

Abbreviations

Defl. = Deflection

S.F. = Safety Factor

Ft. = Feet

Pre-galv. = Pre-galvanized Steel

K Factor = Deflection ÷ load in Lbs./Ft.

o.c. = On Center

PVC = Poly Vinyl Chloride

In. = Inch

psi = Pounds per Square Inch

wt./c = Weight pre 100 pieces

Metric Symbols

m = meter

cm = centimeter

mm = millimeter

µm = micrometer

kg = kilogram

N = newton

kN = kilonewton

Pa = pascal

MPa = megapascal

Notes

Notes

Ask The Experts!

1-800-851-7415 ext. 366

CABLE HOOK SYSTEM

Cooper B-Line's cable hook system is a user friendly, cost effective means to support communications cabling. The cable hooks are designed to maximize cable-bearing surface, eliminate stress and optimize cable performance. Cable hooks are available in three convenient sizes: $1^{5}/_{16}$", 2", and 4", and will accommodate most support applications.

CABLE RUNWAY

Traditional telecom cabling support system offered in solid bar, tubular, C-Channel and our new aluminum design. No side rail design allows system to be installed in limited spaces without fittings.

FLEXTRAY CABLE SUPPORT SYSTEMS

Cooper B-Line's Flextray cable support system is a low profile, rugged wire mesh design, which provides an economical cable support system that is field adaptable. The unique field control eliminates the need to special order clumsy fittings.

CENT-R-RAIL® SYSTEMS

Four separate systems created to match installation needs. The best systems for cable to freely enter and exit the system. Strong, NEMA 12C, aluminum construction. System assembles with couplings and connectors and is UL Classified. The fastest system to install.

Global Locations

Cooper B-Line's U.S. Customer Service Center is staffed Monday through Friday from 7 a.m. to 5:00 p.m. Central Standard Time. If a situation requires that you have to contact us after hours, please leave a message via phone or E-mail so we can give it immediate attention the following business day.

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