

Non-Metallic Sheathed Cable Fittings

Non-Metallic Sheathed Cable

Ref. NEC Article 336

Code defines non-metallic sheathed cable as, "A factory assembly of two or more insulated conductors having an outer sheath of moisture resistant, flame retardant, non-metallic material."

Non-metallic sheathed cable is constructed of insulated conductors (14 to 2 AWG Copper or 12 to 2 AWG Aluminum or Copperclad Aluminum), and an outer non-metallic sheath classified as Type NM or Type NMC.

Non-metallic sheathed cable is provided with or without a bare or insulated equipment grounding conductor. Non-metallic sheathed cable is rated for 60° C service with voltage limitation of 600 volts.

Type NM — has flame-retardant moisture resistant sheath.

Type NMC — has flame-retardant, moisture-resistant, fungus-resistant and corrosion-resistant sheath.

Non-metallic sheathed cable is permitted by code to be used exposed or concealed in one, two or multifamily dwellings or other structures not exceeding three floors. Use of Type NM cable is restricted to dry locations where as Type NMC can be used in dry, moist, damp or corrosive environments.

Non-metallic sheathed cable (both Type NM & NMC) is not permitted to be used as a service conductor, in commercial garages, in hoists or cannot be embedded in cement, concrete or aggregate. With minor exceptions use of non-metallic sheathed cable is also prohibited in theaters or any hazardous locations.

NEC Section 336-5 requires that cable be secured in place by suitable means so as not to injure the cable. Adequate protection for cable is also required when run is exposed, through joists or rafters, through floors, in unfinished basements and accessible attics.

Cable bends are limited to a minimum of five times the diameter of the cable.

NEC 300-4(b) requires that cable be protected from physical damage when it passes through factory or field punched, cut or drilled holes in metal members. A bushing or grommet firmly secured in place is recommended.

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Please refer to the following for further details and complete information:

1. NEC Article 336...Non-Metallic Sheathed Cable (Type NM & NMC)
2. NEC Article 300...Wiring Methods
3. UL 719, ANSI C33.56...Safety Standards for Non-Metallic Sheathed Cable
4. UL 514B, Safety Standards for Outlet Boxes and Fittings
5. NEMA FB-1...Standards Publication. Fittings and Supports for Conduit and Cable Assemblies
6. CEC Section 12-600...Wiring methods (Non-Metallic Sheathed Cable)
7. CSA C22.2 No. 48...Safety Standards for Non-Metallic Sheathed Cable
8. CSA C22.2 No. 18...Safety Standards for Outlet Boxes, Conduit Boxes and Fittings

NOTE:

The materials herein, whether relating to the National Electrical Code, the Underwriters Laboratories, Inc. listing, to industry practice or otherwise, are not intended to provide all relevant information required for use and installation of our products. Refer to applicable codes, instructions and industry specifications prior to installation or use.

Non-Metallic Sheathed Cable Fittings



Suggested Specifications for Non-Metallic Sheathed Cable

- Where non-metallic sheathed cable or flexible cord terminates into a threaded or threadless opening, terminating fittings used shall be approved for the purpose by nationally recognized laboratory, inspection agency or product evaluation organization.
- Terminating fittings shall be of malleable iron, steel or thermoplastic construction designed to provide adequate strain relief and positively prevent damage to jacket or conductor insulation such as series 3300 or 3302M manufactured by Thomas & Betts.

Ferrous metal fittings shall be electro zinc plated inside/outside including threads and bushed with a nylon insulated throat.

Thermoplastic material used for connector construction shall be of high impact strength suitable for 105° C/221° F service with a UL flammability rating of 94V-1.

- Where non-metallic sheathed cable passes through either factory or field punched, cut or drilled holes in metallic members, the cable shall be protected by thermoplastic bushing such as series 3210 manufactured by Thomas & Betts. Bushing shall be firmly secured in opening. Nylon bushed metallic fittings such as Thomas & Betts series 1942 may be substituted as required.

Series 3300
Non-Metallic Sheathed
Cable and Flexible Cord
Connectors (All Plastic)



T&B Fittings



Series 3302M
Non-Metallic Sheathed Cable and
Flexible Cord Connectors (Steel)



Series 3210
Knockout Bushings



Series 1942
Insulated Nipples

Non-Metallic Sheathed Cable Fittings

Non-Metallic Sheathed Cable and Flexible Cord Connectors (All Plastic)

Application

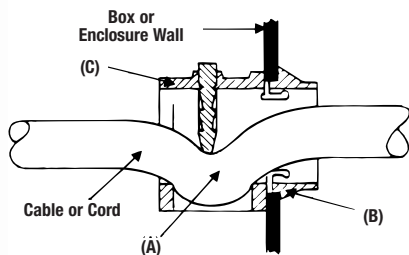
- To connect non-metallic sheathed cable and flexible cord to a box or an enclosure

Features

- Design provides strain relief by partially deflecting cable (A); therefore:
 - Connector will not damage outer covering or jacket of cable, or conductor insulation; designed to give safe trouble free installation
 - Holding power and cable strain relief are not affected by surface finish of outer covering or cable jacket
 - Connector provides superior holding power far in excess of listing agency requirements
- Snap-in one piece design; accommodates variation in knockout dimensions, saves installation time (B).
- All high-impact thermoplastic construction provides:
 - Insulated throat; conductors are protected from abrasion
 - Improved dielectric strength, and eliminates potential shorts
 - Corrosion resistance



3300 Series



- Wide range — reduces inventories
- Connector may be pre-installed in box K.O. or on cable

Standard Material

All high-impact polycarbonate — UL Class 94V-1 suitable for 105° C application

Standard Finish

As molded

Listed/Certified by

UL (UL File No: E-23017)

CSA (Cat. #3201, 3350) for factory installation

(LR-589, LR-2884)

Conforms to

UL 514B

CSA C22.2 #18 (Where applicable)

ANSI C33.84, NFPA 70

Range

CAT. NO.	CABLE/ KNOCKOUT SIZE	CORD RANGE
3300	½"	10-2, 12-2 & 14-2 type NM Cable; .125" to .300" outside diameter cord
3201 & 3350	½"	10-3, 12-3, 14-3, 10-2, 12-2, 14-2 Type NM Cable; also multiple (2) 12-2 and 14-2 Type NM Cable; .300" to .600" outside diameter cord
3202	¾"	8-3 and 6-3 type NM cables; also Multiple (2) 14-3 and 10-2 Type NM Cable; .500" to .850" outside diameter cord

Typical Installation

<p>1. Remove sheath from end of cable (4" or more as required). Insert cable through connector as shown (Cable under button).</p>	<p>2. Insert button into cavity.</p>	<p>3. With grooved pliers, or parallel jaw type pliers (commercially available) squeeze button into cord or wires as far into connector body as possible. NOTE: It may be necessary to re-adjust pliers to ensure button is properly installed.</p>
<p>4. Snap connector into knockout box. If desired, this step can be done prior to Step 1.</p>	<p>5. To remove from knockout box depress ears.</p>	<p>6. To remove from cable cut connector as shown.</p>

No locknut required!

Snap-In Connector for Flexible Metal Conduit

- No special tools required
- High-impact polycarbonate construction with steel insert



CAT. NO.	CONDUIT SIZE	K.O. SIZE	DIMENSIONS (IN.)			UNIT QUAN.
			A	B	C	
100-TB	¾"	½"	27/32	1 13/32	1 31/32	50
100BP	¾"	½"	27/32	1 13/32	1 31/32	250

100BP sold in multiples of unit package.

Temperature Rating: 105° C

UL 94-V1

CSA File No. 0589



Non-Metallic Sheathed Cable Fittings

Non-Metallic Sheathed Cable & Flexible Cord Connectors (Steel)



3302M Series
Non-Metallic Sheathed Cable Connector

Application

- To connect non-metallic sheathed cable and flexible cord to a box or an enclosure

Features

- Rugged all-steel/malleable iron construction (A)
- Rounded cable clamp grip provides superior mechanical holding power without damaging conductor insulation or outer jacket (B)
- Clamp designed to cover body opening for a neat and safe installation
- Screws thread into clamp and not body; screw heads are snug with body and ends of screws do not project beyond the body (C)

- Insulator firmly secured in place protects conductors and reduces wire pulling effort; protects threads from damaging during handling (D)
- Locknut designed to secure connector to a box or enclosure; will not vibrate loose

Standard Material

Body	1/2" thru 1" Steel; 1 1/4" thru 2" Malleable Iron
Clamp	1/2" thru 1 1/4" Steel; 1 1/4" thru 2" Malleable Iron
Locknut	All Steel
Insulator	Thermoplastic

Standard Finish

All steel and malleable iron parts — Electro Zinc Plated & Chromate Coated

Range

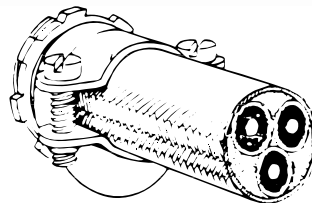
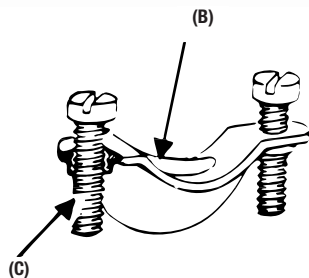
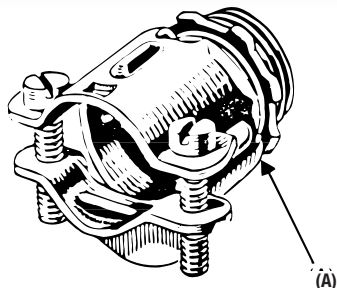
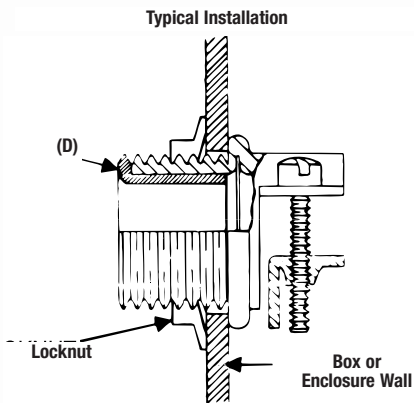
Hub Size	1/2" thru 2" Hubs provided with straight pipe threads (NPS.)
Cable	2 #14 thru 4 #4 Type NM
Cable Outside Diameter	.250" to 1.150"

Listed/Certified by

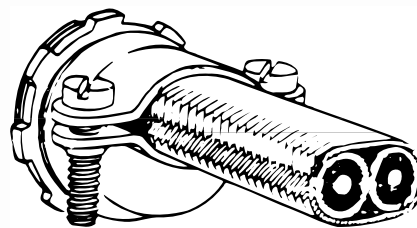
UL (UL File No: E-23017)
CSA (LR-589, LR-2884)

Conforms to

UL 514B
CSA C22.2 No. 18
NFPA 70
NEMA FB1
Federal Standard H-28 (Threads)



Typical Installation (Flexible Cord)



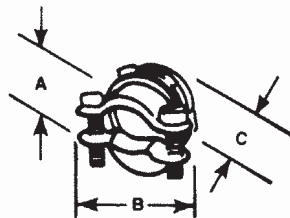
Typical Installation (NM-Sheathed Cable)

Non-Metallic Sheathed Cable Fittings

Steel or malleable iron. Two-Screw Connectors

Rounded cable grip and smooth bushing protect the cable sheath and wire insulation. Because saddle is threaded, screws do not travel or extend beyond the connector body as it is clamped to the cable. An extra lip on the saddle closes the unused part of the connector opening.

- Threaded saddle means screws don't travel or extend beyond connector body as it's clamped to cable
- Extra lip on saddle closes unused part of connector opening
- Steel or malleable iron construction
- Look for the unique T&B blue color ensuring the highest quality fitting



NON-INSULATED CAT. NO.	INSULATED CAT. NO.	K.O. SIZE	UL LISTED & CSA CERTIFIED FOR THE FOLLOWING SINGLE (1) AND PAIRS OF (2) NM & NMC CABLE	UL LISTED & CSA CERTIFIED FOR THE FOLLOWING SERVICE ENTRANCE CABLES	CABLE OPENING			MAX.	MIN.
					A	B	C		
3302-TB*	3302M-TB	1/2"	(1) 2#14, 2#12, 2#10, 3#14, 3#12, 3#10, (2) 2#14, 2#12	2#12 thru 2#4, 3#12, 3#10	3/32	1 1/8	1	.590	.250
3303-TB	3303M	3/4"	(1) 2#8, 2#6, 3#8 (2) 2#12, 2#10, 2#8, 3#14	2#8 thru 2#1/0, 3#8, 3#6, 2#6 + #8 GND	1/4	1 1/8	1 1/16	.750	.530
3304	3304M	1"	(1) 3#8, 3#6, 3#4 (2) 2#8, 3#10	2#1, 2#1/0, 3#6 thru 3#2, 2#4 + #6 GND, 2#3 + #5 GND, 2#2 + #4 GND	1 1/32	1 1/8	1/4	.990	.690
3305	3305M	1 1/4"	(1) 3#8, 3#6, 3#4 (2) 2#8, 2#6, 2#4, 3#8	3#2 thru 3#2/0, 2#1 + #3 GND, 2#1/0 + #2 GND, 2#2/0 + #1 GND	1 1/16	2 1/32	1 1/2	1.320	.850
3306	3306M	1 1/2"	(1) 3#4	3#3/0, 3#4/0, 2#3/0 + #1/0 GND, 2#4/0 + #2/0 GND	2 5/32	2 27/32	1 1/8	1.515	.930
3307	3307M	2"	Max. 1.98", Min. 1.15"	—	—	—	—	—	—
3308†	—	2 1/2"	Max. 2.38", Min. 1.5"	—	—	—	—	—	—
3309†	—	3"	Max. 2.88", Min. 1.75"	—	2 25/32	3 5/16	1 1/8	1.980	1.150
3310†	—	3 1/2"	Max. 3.38", Min. 2.25"	—	—	—	—	—	—
3311†	—	4"	Max. 3.88", Min. 2.5"	—	—	—	—	—	—

*UL Listed for use with rubber and thermoplastic flexible cords (both single and multiple cords and 2 oval cables).

†Not UL Listed or CSA certified.

UL Listed for multiple cords and cables.

CSA File No. 2884

UL File No. E-23013 - 1/2" - 1 1/2"; U.L. File No. E-15170 - 2"