

HPS Sentinel®
Energy Efficient
Distribution Transformer

power to conserve

Compliant to DOE 2016
Efficiency Standards

power to perform

TABLE OF CONTENTS

DOE 2016 Efficiency Guidelines	3
HPS DOE Compliant Products	3
Features & Benefits	4
Specifications & Accessories	6
Part Number Guide	7
Support & Resources	7
Selection Tables - HPS Sentinel G	8
Selection Tables - HPS Sentinel K	19
Selection Tables - HPS Sentinel H	25
Termination Details	27
Enclosure Dimensional Drawings	28
Enclosure Mounting Kits	32
Enclosure Wall Mounting Dimensions	33
Enclosure Ceiling Mounting Dimensions	34
Anti-Vibration Pads & Vibration Isolator Kits	35
Electrical Schematics & Connection Drawings	36

This catalog contains product information for DOE 2016 compliant energy efficient low voltage distribution transformers.
For product information pertaining to the Canadian efficiency regulation SOR/94-651 (CSA C802.2), please refer to the HTP-16 catalog.



Improved Efficiency For A Greener Tomorrow

Transformers have been and remain an essential part of our electrical infrastructure. Everywhere we look there is a transformer supplying power to industrial, commercial, or residential applications.

Improving the energy efficiency of new transformers is a primary goal of the U.S. Department of Energy (DOE). The DOE has established new and more stringent Energy Efficiency levels for transformers in the U.S. effective January 1st, 2016.

HPS proudly supports the new legislation and the environmental benefits resulting from using higher efficiency transformers.

2.9 additional acres of forest in one year

DOE 2016 Environmental Benefits

Upgrading one 75kVA transformer to a new DOE 2016 design translates to one of the following environmental benefits*:

403 gallons of gasoline consumed



*Estimated savings based on a pre TP-1 upgrade and a mix of energy sources. Calculations derived from www.epa.gov/cleanenergy/energy-resources/calculator.html

3,846 pounds of coal burned

DOE 2016 Efficiency Guidelines

The latest Department of Energy (DOE) 10 CFR Part 431 ruling, originally published on April 18th, 2013, mandates new efficiency levels effective January 1st, 2016 known as DOE 2016. DOE 2016 will require all liquid filled and dry-type distribution transformers manufactured on or after January 1st, 2016 and sold into any U.S. state after this date to comply with the new energy efficiency standards. This applies to:

Low Voltage Dry-type Distribution:

- 1PH 15-333kVA;
- 3PH 15-1000kVA

* Non-ventilated and potted transformers are exempt from these efficiency requirements



New Energy Efficiency Levels

The new energy efficiency levels for low voltage dry-type distribution transformers mandated as of January 1st, 2016 are as follows:

Single Phase		Three Phase	
kVA	Efficiency (%)	kVA	Efficiency (%)
15	97.70	15	97.89
25	98.00	30	98.23
37.5	98.20	45	98.40
50	98.30	75	98.60
75	98.50	112.5	98.74
100	98.60	150	98.83
167	98.70	225	98.94
250	98.80	300	99.02
333	98.90	500	99.14
		750	99.23
		1000	99.28

Note: All efficiency values are at 35% of nameplate-rated load, determined according to the DOE Test Method for Measuring the Energy Consumption of Distribution Transformers under Appendix A to Subpart K of 10 CFR part 431.

DOE 2016 Compliant HPS Distribution Transformers

The DOE 2016 product lines have been redesigned based on extensive customer input resulting in industry leading technologies and materials to meet your most demanding applications.

HPS has three lines of low voltage DOE 2016 compliant energy efficient distribution transformers:

Linear Load General Purpose Transformers - HPS Sentinel G:

Rated for 600 volts and below and are generally used for supplying appliance, lighting, heating, motorized machine and power loads from electrical distribution system.

K-Factor Transformers - HPS Sentinel K:

Specifically designed to handle the harmonics generated by non-linear loads such as computer and telecommunication equipment, drives and other power electronics.

Harmonic Mitigating Transformers - HPS Sentinel H:

Superior to k-rated transformers, they are designed to treat the harmonics generated by computer equipment and other non-linear, power electronic loads. HMT's combine zero sequence flux cancellation with phase shifting to mitigate 3rd, 5th, 7th, 9th, 15th, 17th, and 19th harmonics within their secondary windings.

BENEFITS

- HPS Sentinel G, K, and H product lines meet the efficiency standards outlined in DOE 10 CFR Part 431 offering significant energy savings to our customers and positive societal/environmental benefits.
- Standard Type 3R enclosure suitable for indoor or outdoor applications.
- For our customers, higher efficiency translates into:
 - Increased profitability due to lower operating costs
 - Decreased cost of ownership over the lifetime of the transformer
 - Less air conditioning cost due to lower heat emissions
- Expanded catalog low voltage product - up to 1000kVA
- Standard 10kV BIL rating on DOE 2016 low voltage distribution transformer products providing increased reliability and protection against critical equipment failure (including voltage spikes and other line transients).
- Standard integral floor and wall mounting brackets up to 45kVA allow for faster installation.
- All units utilize a uniform 220°C insulation system with a 80°C, 115°C, or 150°C temperature rise.
- Industry leading design solutions, technology and materials continue the legacy of quality and reliability in all HPS products.



FEATURES

Core & Coil Construction:

- Manufactured from quality non-aging, cold rolled, silicon steel laminations using state-of-the-art equipment
- Cores are precision cut to close tolerances which eliminates burrs and improves performance
- Core is coated to prevent the ingress of moisture
- Precision wound with copper or aluminum conductors that are electrically balanced to minimize axial forces during short-circuit conditions
- Robust interface between core & coils for better short circuit performance

Conductor material: Copper or Aluminum

Temperature rise: 150°C typical (low rise options avail.)

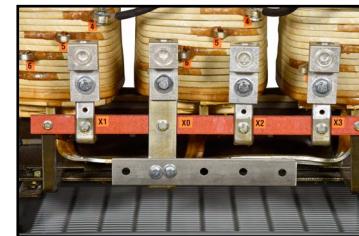
Insulation system: 220°C



4 Standard type 3R enclosure on all low voltage HPS transformers



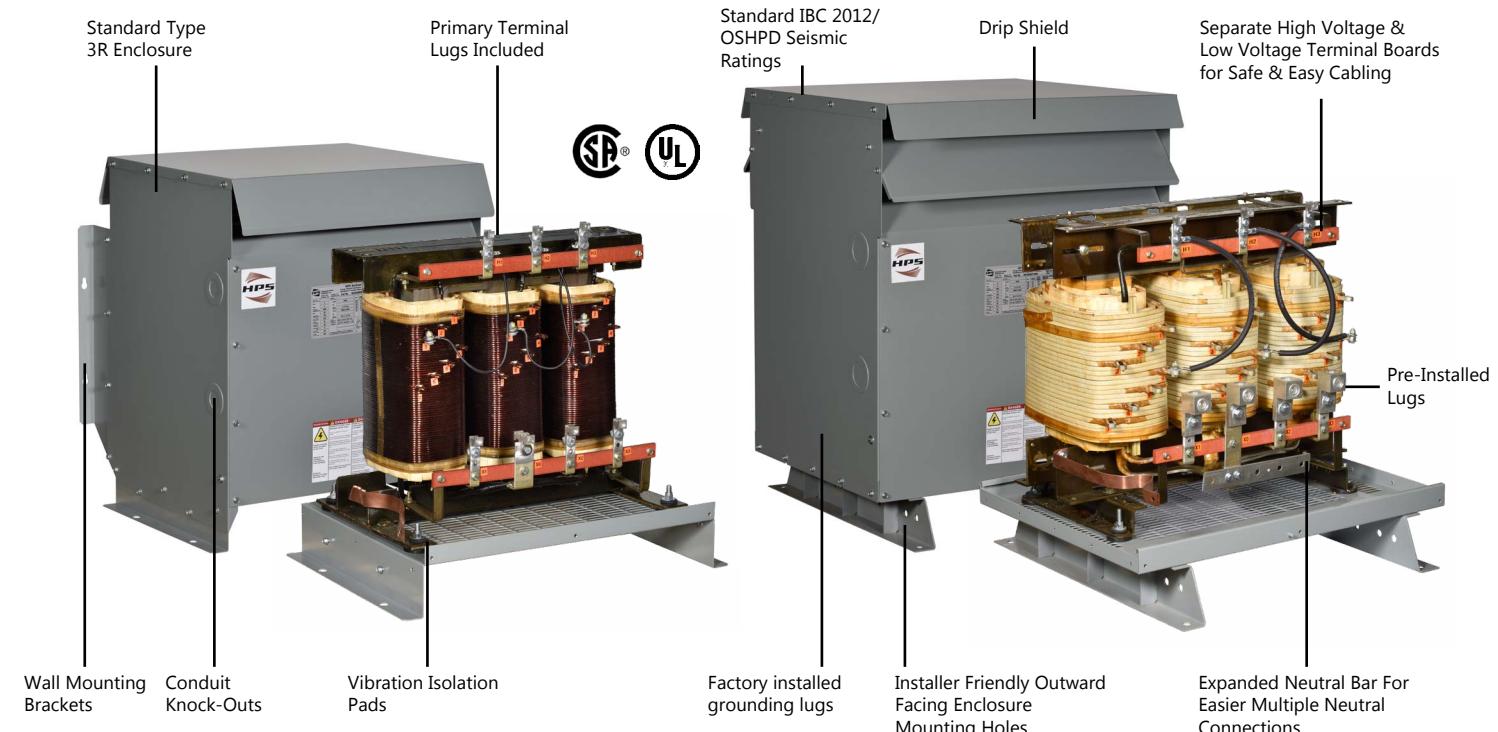
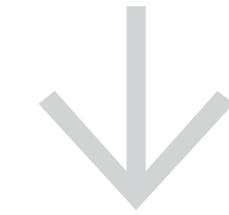
Integrated wall mounting brackets for added convenience at no extra cost



Expanded neutral bar for multiple customer connections

Installation made fast & easy!

Tired of spending extra money on labour and material to install optional transformer features? Purchasing an HPS Sentinel Transformer will save you all these additional costs. HPS Sentinel has these optional features pre-installed as part of our standard product line.



Factory installed main grounding lugs



Bottom cable entry area where applicable



Offset outward facing floor installation holes for easy power tool access

Testing

All HPS transformers are tested at HPS prior to shipment. They must meet very stringent quality criteria prior to release.



Specifications & Accessories - Copper or Aluminum



15 to 45 kVA



75 to 150 kVA



225 to 1000 kVA

STANDARD SPECIFICATIONS

kVA:	15-1000kVA
UL Listed:	File: E112313
CSA Certified:	File: LR3902
Frequency:	60 Hz (optional 50/60 Hz available)
Insulation System:	220°C (150°C rise) (optional 115°C & 80°C rise available)
BIL Rating	10 kV (on all 3PH low voltage products)
Enclosure Type:	Heavy duty ventilated Type 3R standard (optional Type 4, 4X (stainless steel) & 12
Enclosure Finish:	ANSI 61 Grey, UL50
Neutral:	Neutral terminal for field connection (on applicable units)
Standard Primary Taps:	Refer to wiring diagrams for details

Optional Accessories:	
• Thermal sensing & indication	
• Thermocouples	
• Thermometers (analog/digital)	
• Thermostat alarm / trip (N.O. /N.C. contacts)	
• Electrostatic shielding	
• Rated to handle current harmonics [K4] [K9] [K13]	
• Strip heater (space heater to prevent condensation)	
• Surge protection devices	
• Type 3R or 4X available in stainless steel	
• Type 3R enhanced with baffling for horizontal blowing rain and snow	

HPS Sentinel Part Number Guide

Example	Family	Type	Generation	Phase	kVA				Pri. Volt.	Sec. Volt.	K Rating	Winding Material/Electrostatic Shield	Temp. Rise & Insul. Class	Enclosure
	S	G	3	A	0	0	4	5	K	B	0	K	F	K
	Family: S - Sentinel				kVA: kVA Rating				K Rating:					
	Type: G - General K - K Rated H - Harmonic Mitigation				Primary Voltage:				K Rating:					
					1PH	3PH			0 = None					
					B 208	208D, 208Y/120			4 = K4					
					D 240	240D			9 = K9					
					F 277	416D			3 = K13					
					H 416	416D			2 = K20					
					K 480	480D, 480Y/277			Winding Material/Electrostatic Shield:					
					L 240x480	240D, 240Y/139			A - Aluminum S - AL + Shield C - Copper K - CU + Shield					
					P 600	600D, 600Y/347			Temperature Rise at standard 220°C Insulation Class:					
					X multiple				B - 80°C F - 115°C G - 130°C H - 150°C					
	Generation:				Secondary Voltage:				Enclosure:					
	2 - current designs 3 - current designs				1PH	3PH			A - Type 1 B - Type 2 C - Type 3R D - Type 3RE E - Type 3RX					
					B 208	208D or 208Y/120			F - Type 4 G - Type 4X (304SS) H - Type 4X (316SS) K - Type 12 X - None (Core & Coil)					
					D 240	240D, 240Y/120CT or 240Y/139								
					E 120/240									
					K 480	480D or 480Y/277								
					P 600	600D or 600Y/347								
					Y	380Y/220V w taps at 400Y, 416Y and 430Y								

Support & Resources

No other transformer company can offer our service and quality in a full range of products.

Transformer Efficiency Calculator

The HPS Efficiency Calculator allows you to determine how much money and energy you can save by switching to a HPS Sentinel G, K, or H transformer. Visit the "Online Tools" area of the HPS website.

Current Calculator

Calculate the Amps, Volts, or kVA of a transformer. Visit the "Online Tools" area of the HPS website.

Fast On-Site Response

On-site technicians are available to assist with any technical problems or issues that cannot be resolved over the phone.

Extensive Inventory

We carry a complete inventory of Distribution Transformers throughout North America to quickly meet your needs.

Live Telephone Technical Support

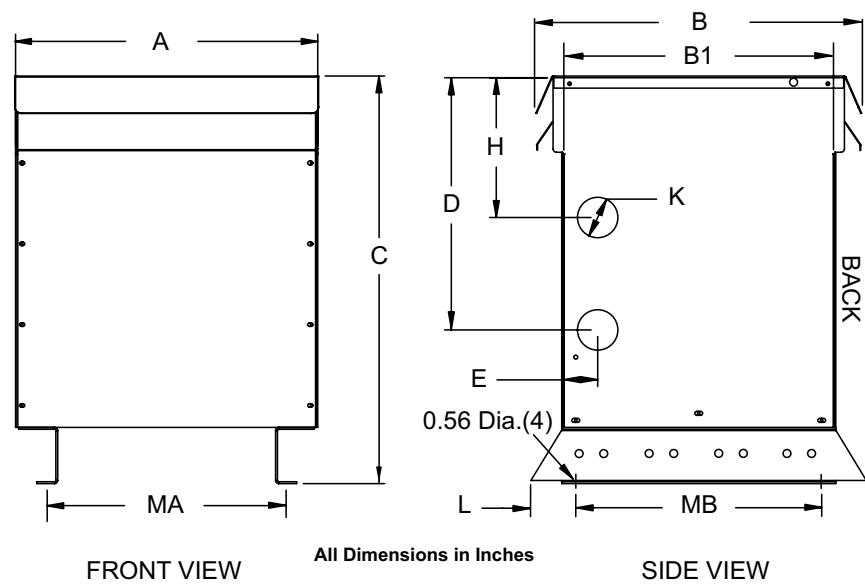
Our inside sales team is available to quickly answer your questions. They are technically trained and able to answer most questions right over the phone.

Easy-To-Access Installation Manuals

All transformer installation manuals are conveniently located on our website so you can access them anywhere, anytime.

Enclosure Drawings

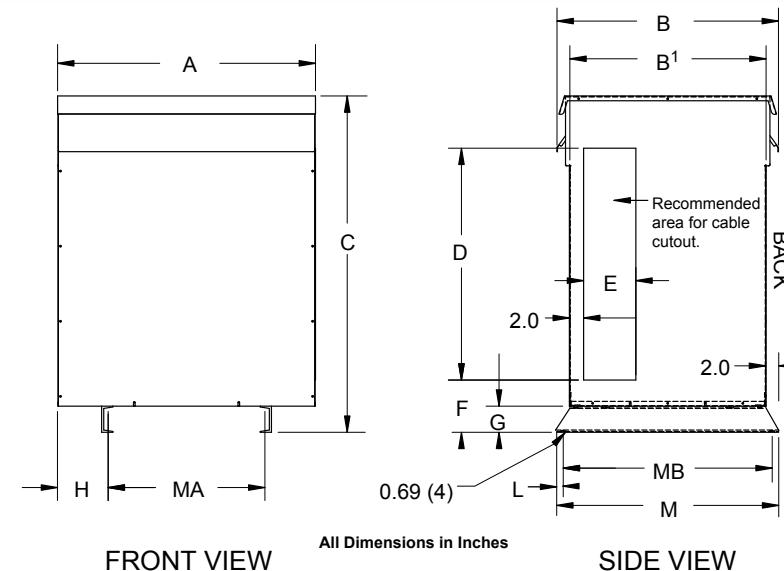
NH, NJ Series



Case Style	Dimensions in Inches											
	A	B	B1	C	D	E	H	K ¹	L	MA	MB	
NH3	26.00	25.00	24.00	38.00	24.00	2.50	14.00	2.00 X 3.00	2.50	21.50	19.00	
NH4	32.00	29.50	28.50	41.00	24.00	2.50	12.00	2.00 X 3.00	2.50	23.50	23.50	

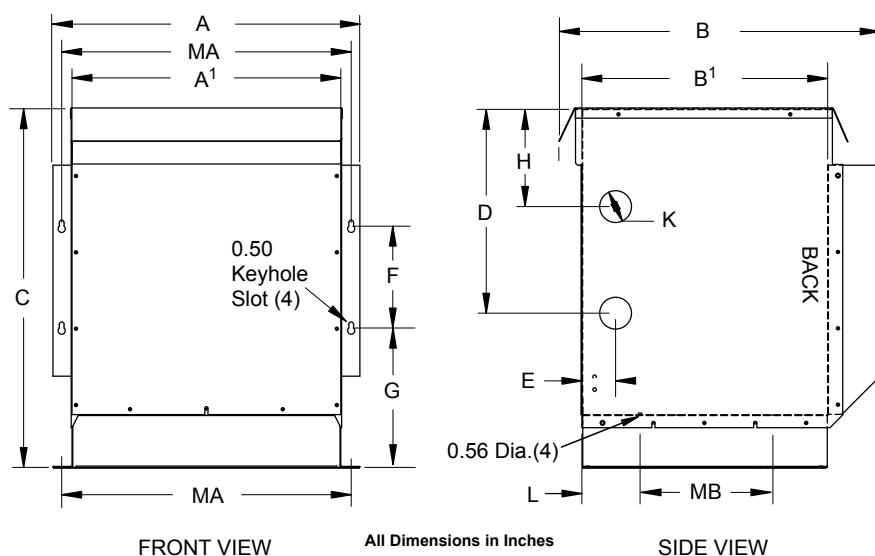
Note: Mounting hole dimension is 0.56" diameter.

¹ Knockout (K) sizes are actual diameters of knockout, not conduit sizes.



Case Style	Dimensions in Inches												
	A	B	B ¹	C	D	E	F	G	H	L	M	MA	MB
NJ4	32.00	32.50	28.50	50.00	34.00	8.00	8.00	4.00	5.00	1.00	32.50	22.00	30.50

Note: Mounting hole dimension is 0.69" diameter.



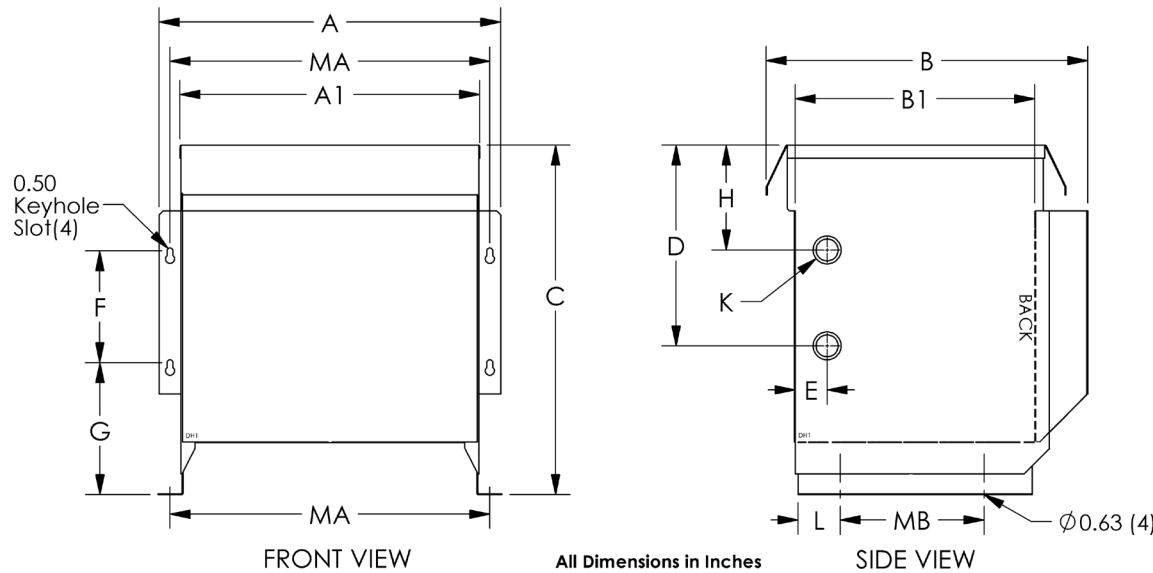
Case Style	Dimensions in Inches													
	A	A ¹	B	B ¹	C	D	E	F	G	H	K ¹	L	MA	MB
NH5	19.40	16.75	20.20	15.00	21.50	12.00	2.00	7.00	7.81	6.00	1.38 X 1.75	2.80	18.00	9.00
NH6	23.90	21.50	25.00	19.50	28.75	17.00	2.00	8.00	10.29	8.50	1.38 X 2.50	5.20	22.75	9.00

Note: Mounting hole dimension is 0.56" diameter.

¹ Knockout (K) sizes are actual diameters of knockout, not conduit sizes.

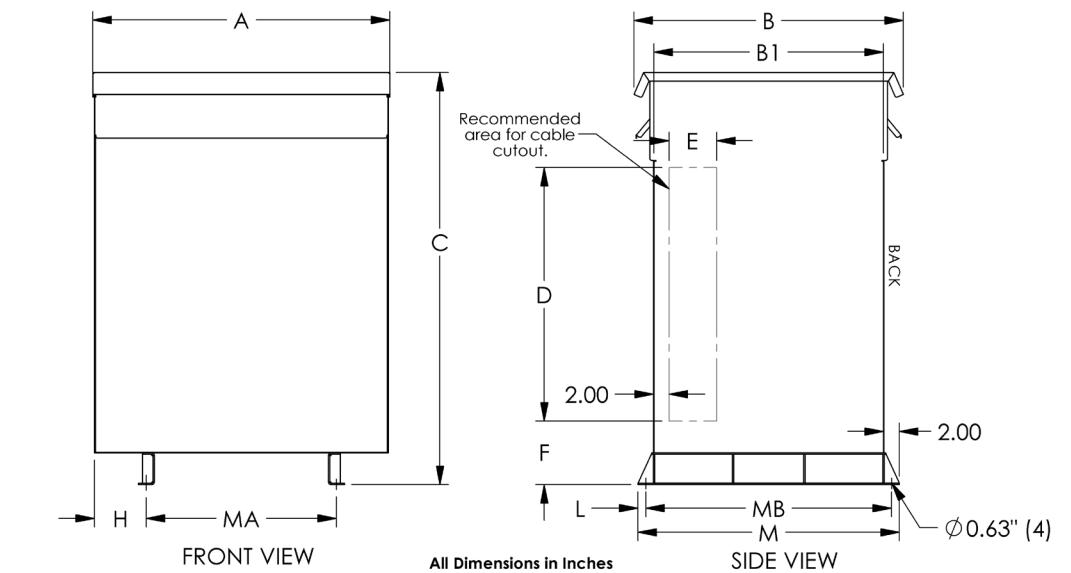
Enclosure Drawings

DH Series



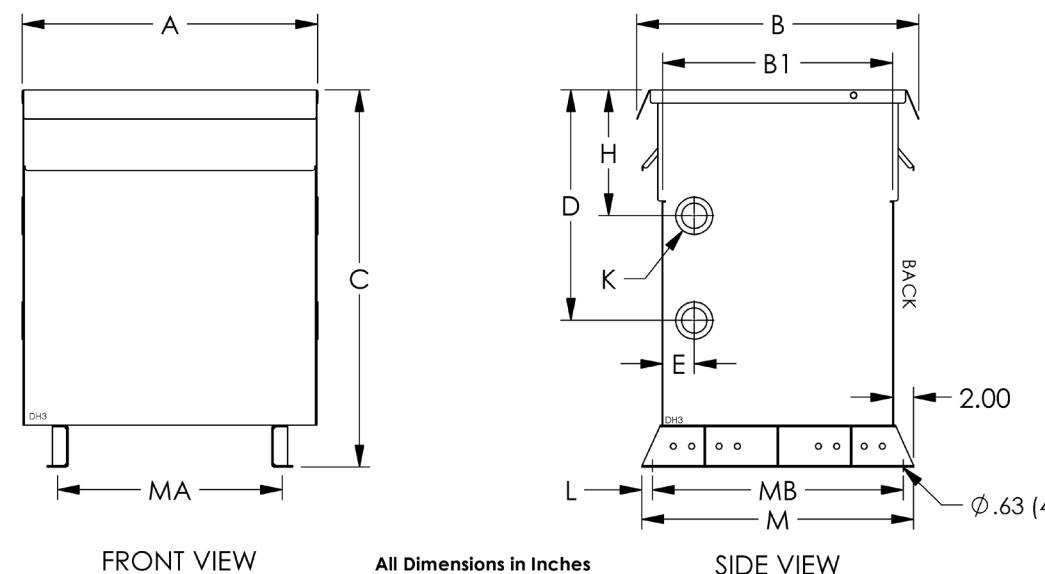
Case Style	Dimensions in Inches													
	A	A1	B	B1	C	D	E	F	G	H	K	L	MA	MB
DH1	21.5	18.8	20.1	15	22	12.6	2	7	8.3	6.6	1.38 X 1.75 K.O.	2.6	20	9
DH2	25.8	23.3	23.8	18	28.8	17	2	8	10.3	8.6	1.75 X 2.50 K.O.	3.8	24.6	9

¹ Knockout (K) sizes are actual diameters of knockout, not conduit sizes.



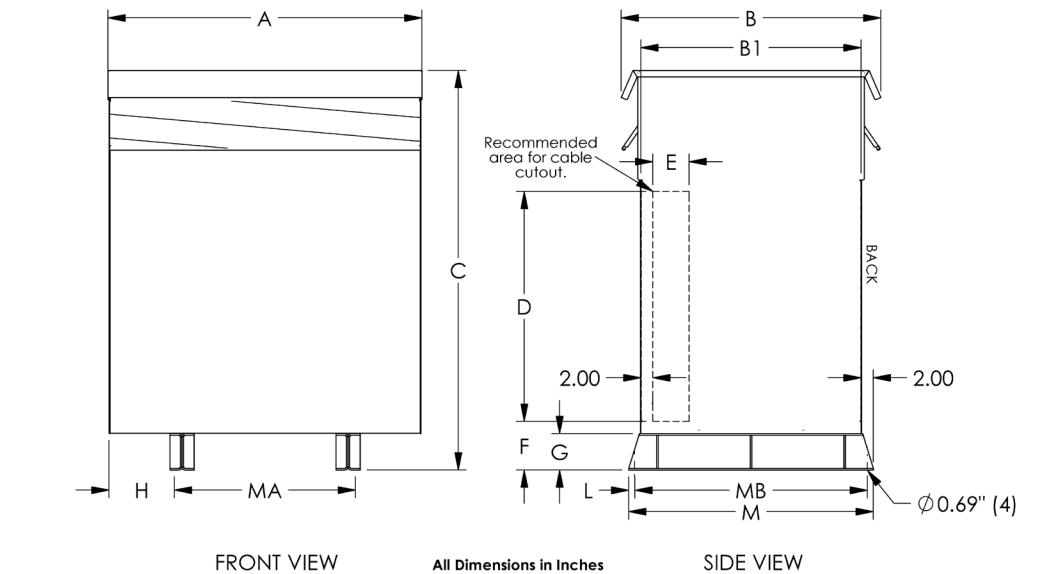
Case Style	Dimensions in Inches											
	A	B	B1	C	D	E	F	H	L	M	MA	MB
DH5	37.5	34	29	52	32	6	8	6.6	1	33	24	31

¹ Knockout (K) sizes are actual diameters of knockout, not conduit sizes.



Case Style	Dimensions in Inches											
	A	B	B1	C	D	E	H	K	L	M	MA	MB
DH3	28.3	27	22	36	22	3	12	2.00 X 3.00 K.O.	1	26	21.5	24
DH4	31.5	29.5	24.5	44.5	27.5	3	14.5	2.00 X 3.00 K.O.	1	28.5	23.5	26.5

¹ Knockout (K) sizes are actual diameters of knockout, not conduit sizes.



Case Style	Dimensions in Inches												
	A	B	B1	C	D	E	F	G	H	L	M	MA	MB
DH6	49	41.5	35	64	32	6	10	6	9.3	1	39	30	37
DH7	54	46.5	40	72	40	8	10	6	8.8	1	44	36	42
DH8	60	49.5	43	82	50	10	10	6	9.8	1	47	40	45
DH9	68	49.5	43	72	40	10	10	6	11.8	1	47	44	45
DH10	78	54.5	48	78	46	10	10	6	14.8	1	52	48	50

¹ Knockout (K) sizes are actual diameters of knockout, not conduit sizes.

ENCLOSURE MOUNTING KITS

If wall and/or ceiling mounting is desired for a transformer, optional mounting kits can be ordered separately. These mounting kits are NOT available for all enclosure case styles. Therefore, it is important that you confirm your enclosure case style, then use the selection table to the right to determine if A) a mounting kit is available and B) determine the correct HPS "Mounting Kit" part number that you must order. One kit is required for each transformer. NOTE: Seismic qualification available for floor mounting only.

Note: Some of the mounting kits can be used for both wall and ceiling mount, while others are for wall mounting only. The table indicates which mounting methods are available for each kit. The DW3, NW2 wall/ceiling mounting kit also includes a drip plate.

The DW3 and NW2 wall/ceiling mounting kit is only designed for units up to 800 pounds (341 kg) maximum.

If it is intended to wall and/or ceiling mount an enclosure that does not have a wall/ceiling mount kit available, considerations must be made to mechanically support the transformer safely and to install per the local building code. A drip plate must be provided beneath the enclosure per UL 1561 and CSA C22.2 No. 47.

Enclosure Case Style	Wall Mount Available	Ceiling Mount Available	HPS Mounting Kit P/N
DH1	Yes	Yes	DH1DP
DH2	Yes	Yes	DH2DP
DH3	Yes	Yes	DW3
DH4	No	No	N/A
DH5	No	No	N/A
DH6	No	No	N/A
DH7	No	No	N/A
DH8	No	No	N/A
NJ4	No	No	N/A
NH3	Yes	Yes	NW2
NH4	No	No	N/A
NH5	Yes	Yes	NH5DP
NH6	Yes	Yes	NH6DP

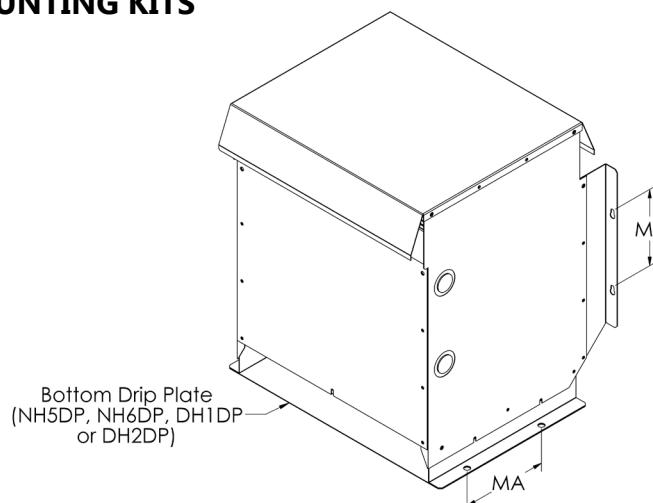
NH5DP, NH6DP, DH1DP, DH2DP WALL/CEILING MOUNTING KITS

The DH1, DH2, NH5 and NH6 enclosures are designed with integral wall mounting capabilities. However, when you wall mount them, you must also install the bottom drip plate as shown below. The "MB" dimensions listed in the table below indicate the location for the wall mounting hardware.

For ceiling mounting of the DH1, DH2, NH5 and NH6, refer to the "MA" dimensions listed in the table below and hang the enclosure using appropriate sized ceiling hanger rods. However, you must be sure to install the bottom drip plate to the bottom of the enclosure, then bring the hanger rod down through both the enclosure bottom mounting holes, through the drip plate mounting holes, and install mounting hardware.

Note: Do not ceiling mount either the DH1, DH2, NH5 or NH6 enclosures without installing the bottom drip plate. All mounting hardware should be rated Grade 8 or higher.

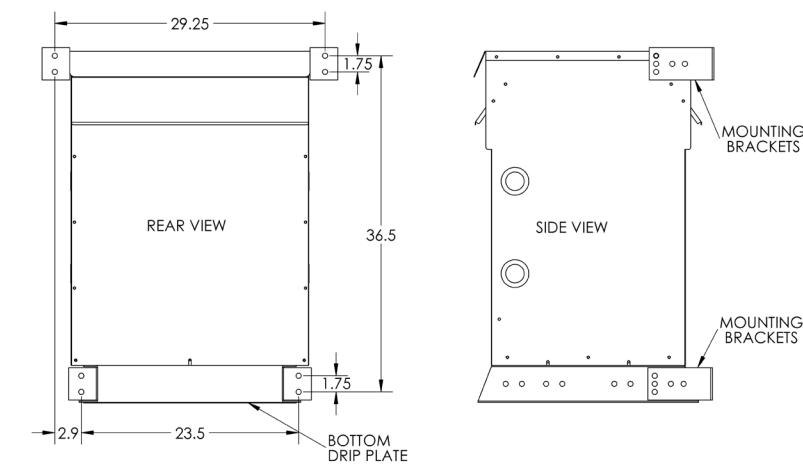
Mounting Kit P/N	Enclosure Style	MA Dimension	MB Dimension
NH5DP	NH5	9.00	7.00
NH6DP	NH6	9.00	8.00
DH1DP	DH1	9.00	7.00
DH2DP	DH2	9.00	8.00



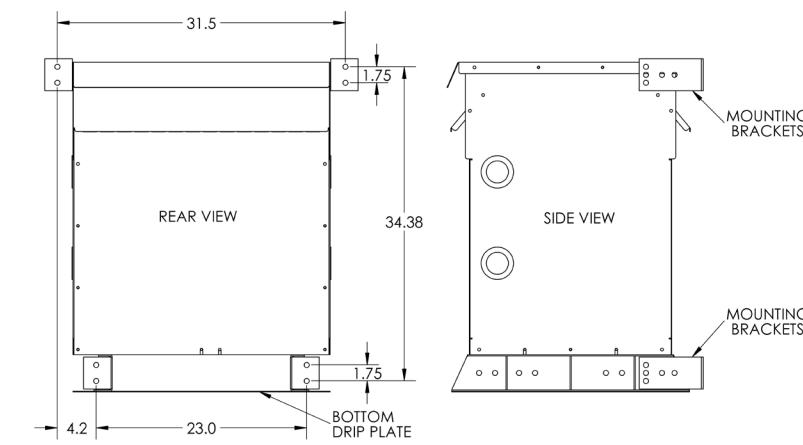
NW2, DW3 WALL MOUNTING KIT DIMENSIONS

The following drawings detail the wall mounting dimensions required and method by which the NW2 and DW3 kits are installed on their respective enclosures, NH3 and DH3. The DW3 wall mounting kit also includes a drip plate.

NW2 Wall Mount Dimensions



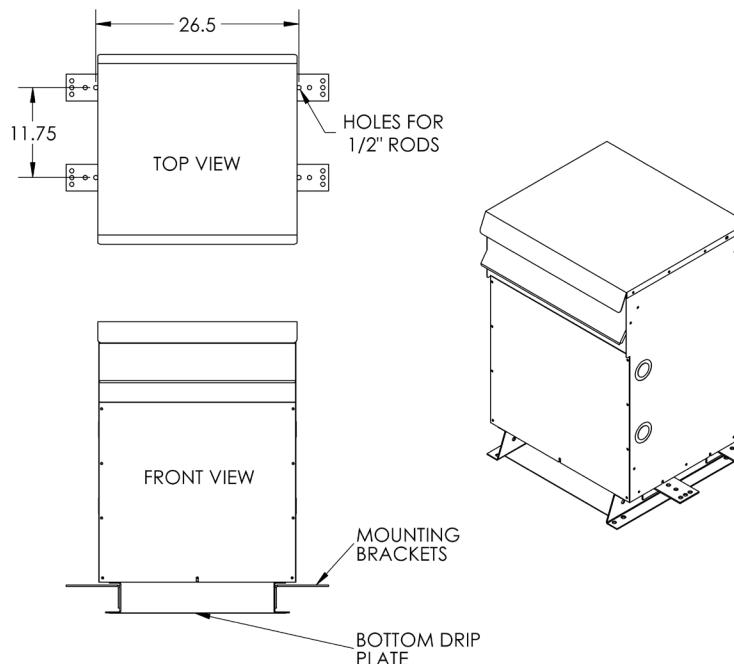
DW3 Wall Mount Dimensions



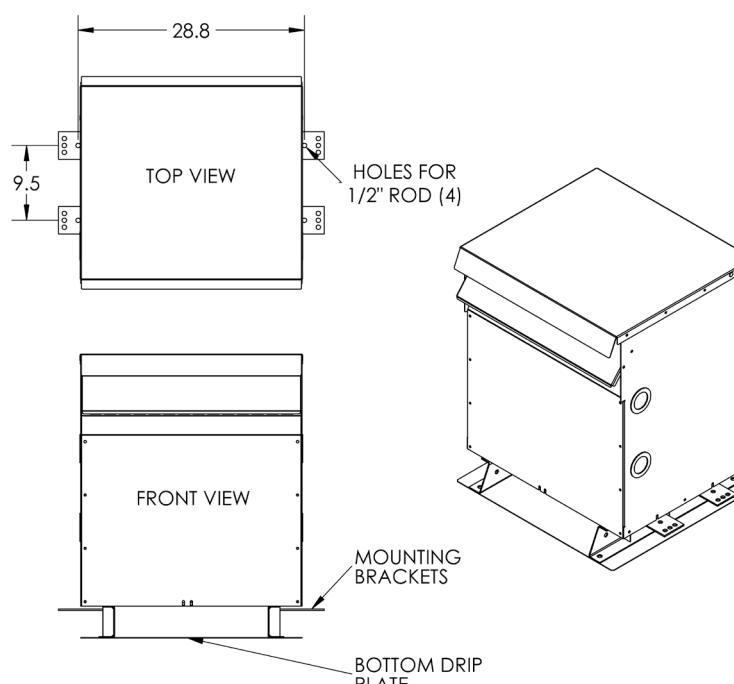
NW2, DW3 CEILING MOUNTING KIT DIMENSIONS

The following drawings detail the ceiling mounting dimensions required and method by which the NW2, DW3 kits are installed on the NH3, DH3 enclosures

NW2 Ceiling Mount - Mounting Dimensions for NH3 Enclosure



DW3 Ceiling Mount - Mounting Dimensions for DH3 Enclosures



ANTI-VIBRATION PAD AND VIBRATION ISOLATOR KITS

All standard transformers come with installed internal vibration absorbing pads to minimize noise during operation. Optional external "anti-vibration" pad and "vibration isolator" (for higher noise dampening) kits can be used to reduce operating noise even further. All are resistant to industrial contaminants like oil, acids and alkalines.

Anti-Vibration Pad Kits

Part No.	Case Style	Description
P1	NH Series	
P2	NJ Series	
PD1	DH1-DH5	
PD2	DH6-DH8	Set of four (4) rubber anti-vibration pads which replace the standard steel enclosure washers.



All anti-vibration pad kits and vibration isolator kits contain a set of four (4) pads or isolators. Therefore only one kit is required per transformer.

Vibration Isolator Kits

Part No.	Transformer Weight (Lb)	Description
NMP1	Up to 340 lbs	
NMP2	341 to 680 lbs	
NMP3	681 to 1040 lbs	
NMP4	1041 to 1740 lbs	
NMP5	1741 to 2330 lbs	
NMP6	2331 to 3450 lbs	
NMP7	3451 to 4690 lbs	Set of four (4) molded neoprene and steel plate assemblies that virtually eliminate vibration noise between the transformer and the mounting surface.



All anti-vibration pad kits and vibration isolator kits contain a set of four (4) pads or isolators. Therefore only one kit is required per transformer.

SCD 2

SCHEMATIC		CONNECTIONS			
		Primary Volts	Connect lines to	Inter-connect	
		504 440 218	H1, H2	1-2	
		492 416 213	H1, H2	2-3	
		480 400 208	H1, H2	3-4	
		468 380 203	H1, H2	4-5	
		456 220 198	H1, H2	5-6	
		444 208 192	H1, H2	6-7	
		432 200 187	H1, H2	7-8	
		240 190	H1, H2	H1-2, H2-1	
		228	H1, H2	H1-4, H2-3	
		216	H1, H2	H1-6, H2-5	
			H1, H2	H1-8, H2-7	
		Secondary Volts	Connect lines to	Inter-connect	
		240	X1, X4	X2-X3	
		120	X1, X2	X2-X4, X1-X3	
		120/240	X1, X2, X4	X2-X3	

SCD 10

SCHEMATIC		CONNECTIONS			
		% Voltage	Primary Volts	Connect lines to	Inter-connect
		105.0%	218 242 252 437 483 504 604 630 2520 4368	H1, H2, H3	1-2
		102.5%	213 236 246 426 472 492 589 615 2460 4264	H1, H2, H3	2-3
		100.0%	208 230 240 416 460 480 575 600 2400 4160	H1, H2, H3	3-4
		97.5%	203 224 234 406 449 468 561 585 2340 4056	H1, H2, H3	4-5
		95.0%	198 219 228 395 437 456 546 570 2280 3952	H1, H2, H3	5-6
		Secondary Volts	Connect lines to		
		208 380 416 480 600	X1, X2, X3		
		120 220 240 277 347	X1, X0 X2, X0 X3, X0	X1, X0 X2, X0 X3, X0	

SCD 7A

SCHEMATIC		CONNECTIONS			
		% Voltage	Primary Volts	Connect lines to	Inter-connect
		105.0%	218 242 252 437 483 504 604 630	H1, H2, H3	1
		100.0%	208 230 240 416 460 480 575 600	H1, H2, H3	2
		95.0%	198 219 228 395 437 456 546 570	H1, H2, H3	3
		Secondary Volts	Connect lines to		
		208 230 240 380 416 460 480 600	X1, X2, X3		
		120 133 139 220 240 265 277 347	X1, X0 X2, X0 X3, X0	X1, X0 X2, X0 X3, X0	

SCD 7B

SCHEMATIC		CONNECTIONS			
		% Voltage	Primary Volts	Connect lines to	Inter-connect
		100.0%	208 480	H1, H2, H3	1
		95.0%	198 456	H1, H2, H3	2
		90.0%	187 432	H1, H2, H3	3
		Secondary Volts	Connect lines to		
		208 230 240 380 416 460 480 600	X1, X2, X3		
		120 133 139 220 240 265 277 347	X1, X0 X2, X0 X3, X0	X1, X0 X2, X0 X3, X0	

SCD 8

SCHEMATIC		CONNECTIONS			
		% Voltage	Primary Volts	Connect lines to	Inter-connect
		105.0%	218 242 252 437 483 504 604 630 2520 4368	H1, H2, H3	1-2
		100.0%	208 230 240 416 460 480 575 600 2400 4160	H1, H2, H3	2-3
		95.0%	198 219 228 395 437 456 546 570 2280 3952	H1, H2, H3	3-4
		Secondary Volts	Connect lines to		
		208 230 240 380 416 460 480 600	X1, X2, X3		
		120 133 139 220 240 265 277 347	X1, X0 X2, X0 X3, X0	X1, X0 X2, X0 X3, X0	

Tap arrangements shown are for catalog products only. May not be applicable for other products.

SCD 19

SCHEMATIC		CONNECTIONS			
		% Voltage	Primary Volts	Connect lines to	Inter-connect
		105.0%	218 252 504 630	H1, H2, H3	1-2
		102.5%	213 246 492 615	H1, H2, H3	2-3
		100.0%	208 240 480 600	H1, H2, H3	3-4
		97.5%	203 234 468 585	H1, H2, H3	4-5
		95.0%	198 228 456 570	H1, H2, H3	5-6
		92.5%	193 222 444 556	H1, H2, H3	6-7
		90.0%	188 216 432 542	H1, H2, H3	7-8
		Secondary Volts	Connect lines to		
		208 480	X1, X2, X3		
		120 277	X1, X0 X2, X0 X3, X0	X1, X0 X2, X0 X3, X0	

Tap arrangements shown are for catalog products only. May not be applicable for other products.

SCD 20

SCHEMATIC		CONNECTIONS			
% Voltage	Primary Volts	Connect lines to	Inter-connect		
105.0%	218	504	630	H1, H2, H3	1-2
102.5%	213	492	615	H1, H2, H3	2-3
100.0%	208	480	600	H1, H2, H3	3-4
97.5%	203	468	585	H1, H2, H3	4-5
95.0%	198	456	570	H1, H2, H3	5-6
92.5%	193	444	556	H1, H2, H3	6-7
90.0%	188	432	542	H1, H2, H3	7-8
Secondary Volts		Connect lines to			
208	480		X1, X2, X3		
120	277	X1, X0	X2, X0	X3, X0	

SCD 21

SCHEMATIC		CONNECTIONS			
% Voltage	Primary Volts	Connect lines to	Inter-connect		
105.0%	504	H1, H2, H3	1		
102.5%	492	H1, H2, H3	2		
100.0%	480	H1, H2, H3	3		
97.5%	468	H1, H2, H3	4		
95.0%	456	H1, H2, H3	5		
92.5%	444	H1, H2, H3	6		
90.0%	432	H1, H2, H3	7		
Secondary Volts		Connect lines to			
240		X1, X2, X3			
120		X1, X6	X3, X6		

SCD 22

SCHEMATIC		CONNECTIONS			
% Voltage	Primary Volts	Connect lines to	Inter-connect		
105.0%	504	H1, H2, H3	1-2		
102.5%	492	H1, H2, H3	2-3		
100.0%	480	H1, H2, H3	3-4		
97.5%	468	H1, H2, H3	4-5		
95.0%	456	H1, H2, H3	5-6		
92.5%	444	H1, H2, H3	6-7		
90.0%	432	H1, H2, H3	7-8		
Secondary Volts		Connect lines to			
240		X1, X2, X3			
120		X1, X6	X3, X6		

SCD 23A

SCHEMATIC		CONNECTIONS			
% Voltage	Primary Volts	Connect lines to	Inter-connect		
105.0%	218	252	X1, X2, X3	1-2	
100.0%	208	240	X1, X2, X3	2-3	
95.0%	198	228	X1, X2, X3	3-4	
Secondary Volts		Connect lines to			
480		H1, H2, H3			
277		H1, H0	H2, H0	H3, H0	

SCD 23B

SCHEMATIC		CONNECTIONS				
% Voltage	Primary Volts	Connect lines to	Inter-connect			
100.0%	208	240	X1, X2, X3	1-2		
95.0%	198	228	X1, X2, X3	2-3		
90.0%	188	216	X1, X2, X3	3-4		
Secondary Volts		Connect lines to				
230	260	460	480	H1, H2, H3		
133	139	265	277	H1, H0	H2, H0	H3, H0

SCD 29

SCHEMATIC		CONNECTIONS			
% Voltage	Primary Volts	Connect lines to	Inter-connect		
105.0%	630	504	H1, H2, H3	1-2	
102.5%	615	492	H1, H2, H3	2-3	
100.0%	600	480	H1, H2, H3	3-4	
97.5%	585	468	H1, H2, H3	4-5	
95.0%	570	456	H1, H2, H3	5-6	
Secondary Volts		Connect lines to			
240		X1, X2, X3			

SCD 30

SCHEMATIC		CONNECTIONS			
Primary Volts	Connect lines to	Inter-connect			
440	H1, H4	1-H2, 2-H3, H2-H3			
416	H1, H4	3-H2, 4-H3, H2-H3			
400	H1, H4	5-H2, 6-H3, H2-H3			
380	H1, H4	7-H2, 8-H3, H2-H3			
220	H1, H4	1-H2, 2-H3, H1-H3, H2-H4			
208	H1, H4	3-H2, 4-H3, H1-H3, H2-H4			
200	H1, H4	5-H2, 6-H3, H1-H3, H2-H4			
190	H1, H4	7-H2, 8-H3, H1-H3, H2-H4			
Secondary Volts		Connect lines to			
240	X1, X4	X2-X3			
120	X1, X2	X2-X4, X1-X3			
120/240	X1, X2, X4	X2-X3			

Tap arrangements shown are for catalog products only. May not be applicable for other products.

Tap arrangements shown are for catalog products only. May not be applicable for other products.

Electrical Schematics & Connection Drawings

SCD 56

SCHEMATIC		CONNECTIONS			
		% Voltage	Primary Volts	Connect lines to	Inter-connect
		105.0%	218	252	X1, X2, X3
		100.0%	208	240	X1, X2, X3
		95.0%	198	228	X1, X2, X3
					1
					2
					3
		Secondary Volts		Connect lines to	
		480		H1, H2, H3	
		277		H1,H0 H2,H0 H3,H0	

SCD 61

SCHEMATIC		CONNECTIONS			
		% Voltage	Primary Volts	Connect lines to	Inter-connect
		100.0%	208	240	X1, X2, X3
		Secondary Volts		Connect lines to	
		208		H1, H2, H3	
		277		H1,H0 H2,H0 H3,H0	

SCD 58

SCHEMATIC		CONNECTIONS			
		% Voltage	Primary Volts	Connect lines to	Inter-connect
		105.0%	630	H1, H2, H3	1-2
		102.5%	615	H1, H2, H3	2-3
		100.0%	600	H1, H2, H3	3-4
		97.5%	585	H1, H2, H3	4-5
		95.0%	570	H1, H2, H3	5-6
		92.5%	555	H1, H2, H3	6-7
		90.0%	540	H1, H2, H3	7-8
		Secondary Volts		Connect lines to	
		240		X1, X2, X3	

SCD 59

SCHEMATIC		CONNECTIONS			
		% Voltage	Primary Volts	Connect lines to	Inter-connect
		105.0%	504	H1, H2, H3	1-2
		102.5%	492	H1, H2, H3	2-3
		100.0%	480	H1, H2, H3	3-4
		97.5%	468	H1, H2, H3	4-5
		95.0%	456	H1, H2, H3	5-6
		Secondary Volts		Connect lines to	
		240		X1, X2, X3	
		120		X1,X6 X3,X6	

SCD 60

SCHEMATIC		CONNECTIONS			
		% Voltage	Primary Volts	Connect lines to	Inter-connect
		100.0%	208	240	H1, H2, H3
		Secondary Volts		Connect lines to	
		208		X1, X2, X3	
		120		X1,X0 X2,X0 X3,X0	

Tap arrangements shown are for catalog products only. May not be applicable for other products.

Tap arrangements shown are for catalog products only. May not be applicable for other products.



Hammond
Power Solutions



CANADA



EUROPE



UNITED STATES



INDIA

CANADA

HPS
595 Southgate Drive
Guelph, Ontario N1G 3W6
Tel: (519) 822-2441
Fax: (519) 822-9701
Toll Free: 1-888-798-8882
sales@hammondpowersolutions.com

EUROPE

Hammond Power Solutions
Via Angelo Schiatti, 12
36040 Meledo di Sarego (VI) Italy
Tel: +39 0444 822 000
Fax: +39 0444 822 065
info@hpseurope.eu

UNITED STATES

HPS
1100 Lake Street
Baraboo, Wisconsin 53913-2866
Tel: (608) 356-3921
Fax: (608) 355-7623
Toll Free: 1-866-705-4684
sales@hammondpowersolutions.com

INDIA

PETE - Hammond Power Solutions Pvt. Ltd.
G-9 to 11, Bhavya's Sree Arcade
Erragadda, Hyderabad, A.P. - 500 018
Tel: 040-23813593, 23812291
Fax: 040-23706741
marketing@petetransformers.com



Distributed by:

DOSEL15-1
Oct 2015