

AUTOTRANSFORMERS



HPS Autotransformers General Purpose Autotransformers

HPS three phase autotransformers are available for applications where small voltage corrections are necessary in a distribution system. They are frequently used as an economical alternative to general purpose distribution isolation transformers to adjust the supply voltage to match specific load requirements when load isolation from the supply line is not required. Autotransformers can be used as either a step-up or step-down transformer.

Standard Specifications



3 TO (15) (30) (45) kVA



(30)(45)(75) to 500 kVA



Three Phase Standard Specifications

UL Listed:	File: E258346 (UL1604, Class I, Division 2)
CSA Certified:	File: LR3902
ABS Type Approval:	Certificate No.: 04-HS435190/1-PDA
Frequency:	60 Hz
Insulation System:	130°C (80°C rise) standard on all units 180°C (115°C rise) standard on all encapsulated units
Encapsulation:	Select units are encapsulated with electrical grade silica sand and resin compounds
Enclosure Type:	Heavy duty type 3R Optional type 4, 4X (Stainless steel) and 12
Termination:	Top accessible separate high and low voltage lead wires or copper tabs
Conduit Knock-Outs:	Standard side and rear knock-outs on all units (no knock-outs on Stainless Steel enclosures)
Impedance:	Less than 3%
Mounting:	Refer to tables on the next page
Sound Level:	Meets NEMA ST-20 standards (Optional low noise available on request)

Three Phase Standard Specifications

UL Listed:	File: E112313
CSA Certified:	File: LR3902
ABS Type Approval:	Optional
Frequency:	60 Hz
Insulation System:	200°C (130°C rise) or 220°C (150°C rise) available
Encapsulation:	Not Applicable (ventilated core and coil)
Enclosure Type:	Heavy duty type 3R Optional type 4, 4X (Stainless steel) and 12
Termination:	Front accessible compartment with high and low voltage terminals; connectors suitable for copper cables provided where indicated
Conduit Knock-Outs:	Standard side knock-outs on all units (no knock-outs on Stainless Steel enclosures)
Impedance:	Less than 3%
Mounting:	Refer to tables on next page
Sound Level:	Meets NEMA ST-20 standards (Optional low noise available on request)

Other voltages not listed are available upon request. Please contact customer service for details, price and availability.
Note: Autotransformers incorporate a single winding design without isolation in a Wye configuration.

SELECTION TABLES

THREE PHASE, NEMA 3R STYLE ENCLOSURES

600Y - 480Y VOLTS

480Y - 380Y VOLTS** (ALTERNATE RATING)

60 HZ

50/60 HZ**

kVA		Catalog Number	Case Style	Approx. Dimensions (Inches)			Approx. Weight Lbs. [kg]	Mtg Type W - Wall F - Floor	Wiring Diagram
60 Hz	50/60 Hz			Width	Depth	Height			
3	2.4	Y003PKCB3LOU	NQT2	9.38 [238]	4.94 [125]	8.63 [219]	19 [9]	W	SCD 24
6	4.8	Y006PKCB3LOU	NQT2	9.38 [238]	4.94 [125]	8.63 [219]	26 [12]	W	SCD 24
9	7.2	Y009PKCB3LOU	NQT3	12.38 [314]	5.44 [138]	11.13 [283]	50 [23]	W	SCD 24
15	12	Y015PKCB3LOU	NQT3	12.38 [314]	5.44 [138]	11.13 [283]	60 [27]	W	SCD 24
30	24	Y030PKCF3LOU	NQT4	15.19 [386]	6.94 [176]	16.39 [416]	135 [61]	W	SCD 24
45	36	Y045PKCN3LOU	NH5	19.40 [493]	20.20 [513]	21.50 [546]	130 [59]	F or W*	SCD 24
75	60	Y075PKCN3LOU	NH5	19.40 [493]	20.20 [513]	21.50 [546]	170 [77]	F or W*	SCD 24
112.5	90	Y112PKCH3LOU	NH6	23.90 [607]	25.00 [635]	28.75 [730]	245 [111]	F or W*	SCD 24
150	120	Y150PKCH3LOU	NH6	23.90 [607]	25.00 [635]	28.75 [730]	285 [129]	F or W*	SCD 24
225	180	Y225PKCH3LOU	NH6	23.90 [607]	25.00 [635]	28.75 [730]	360 [163]	F or W*	SCD 24
300	240	Y300PKCH3LOU	NH3	26.00 [660]	21.00 [533]	38.00 [965]	500 [227]	F or W*	SCD 24
500	400	Y500PKCH3LOU	NH3	26.00 [660]	21.00 [533]	38.00 [965]	650 [295]	F or W*	SCD 24

**Note: The kVA rating must be reduced for operation at the alternate rating 480Y, 380Y (50/60Hz).

Please refer to the 50/60 Hz column under kVA in the above table. 50/60 Hz only available at 480-380Y rating.

Above units from 3 kVA to 30 kVA are encapsulated.

*W all mounting kit and drip plate kit required

600Y, 480Y - 400Y, 240Y, 208Y VOLTS

60 HZ

kVA		Catalog Number	Case Style	Approx. Dimensions (Inches)			Approx. Weight Lbs. [kg]	Mtg Type W - Wall F - Floor	Wiring Diagram
				Width	Depth	Height			
3		Y003QTCB3LOU	NQT3	12.38 [314]	5.44 [138]	11.13 [283]	49 [22]	W	SCD 14
6		Y006QTCB3LOU	NQT3	12.38 [314]	5.44 [138]	11.13 [283]	69 [31]	W	SCD 14
9		Y009QTCF3LOU	NQT4	15.19 [386]	6.94 [176]	16.39 [416]	138 [62]	W	SCD 14
15		Y015QTCF3LOU	NQT4	15.19 [386]	6.94 [176]	16.39 [416]	170 [77]	W	SCD 14
30		Y030QTCN3LOU	NH5	19.40 [493]	20.20 [513]	21.50 [546]	210 [95]	F or W*	SCD 14
45		Y045QTCN3LOU	NH6	23.90 [607]	25.00 [635]	28.75 [730]	305 [138]	F or W*	SCD 14
75		Y075 QTC H 3 LO U	NH6	23.90 [607]	25.00 [635]	28.75 [730]	400 [181]	F or W*	SCD 14
112.5		Y112QTCN3LOU	NH3	26.00 [660]	21.00 [533]	38.00 [965]	585 [270]	F or W*	SCD 14
150		Y150QTCN3LOU	NH3	26.00 [660]	21.00 [533]	38.00 [965]	685 [311]	F or W*	SCD 14
225		Y225QTCN3LOU	NH4	32.00 [813]	29.50 [749]	41.00 [1041]	980 [444]	F	SCD 14

Above units from 3 kVA to 15kVA are encapsulated.

*W all mounting kit and drip plate kit required

240Y, 216Y - 208Y VOLTS

60 HZ

kVA		Catalog Number	Case Style	Approx. Dimensions (Inches)			Approx. Weight Lbs. [kg]	Mtg Type W - Wall F - Floor	Wiring Diagram
				Width	Depth	Height			
3		Y003CECB3LOU	NQT2	9.38 [238]	4.94 [125]	8.63 [219]	19 [9]	W	SCD 15
6		Y006CECB3LOU	NQT2	9.38 [238]	4.94 [125]	8.63 [219]	28 [13]	W	SCD 15
9		Y009CECB3LOU	NQT3	12.38 [314]	5.44 [138]	11.13 [283]	49 [22]	W	SCD 15
15		Y015CECB3LOU	NQT3	12.38 [314]	5.44 [138]	11.13 [283]	58 [26]	W	SCD 15
30		Y030CECF3LOU	NQT4	15.19 [386]	6.94 [176]	16.39 [416]	115 [52]	W	SCD 15
45		Y045CECF3LOU	NQT4	15.19 [386]	6.94 [176]	16.39 [416]	130 [59]	W	SCD 15
75		Y075CECN3LOU	NH5	19.40 [493]	20.20 [513]	21.50 [546]	170 [77]	F or W*	SCD 15

Above units from 3 kVA to 15kVA are encapsulated.

*W all mounting kit and drip plate kit required

Units provided with neutral terminals. Autotransformers without Neutrals are available. Please contact your HPS Sales Representative.

Products listed on this page are available with optional 'CE Mark'. Please consult our sales office.

NEUTRAL TERMINALS

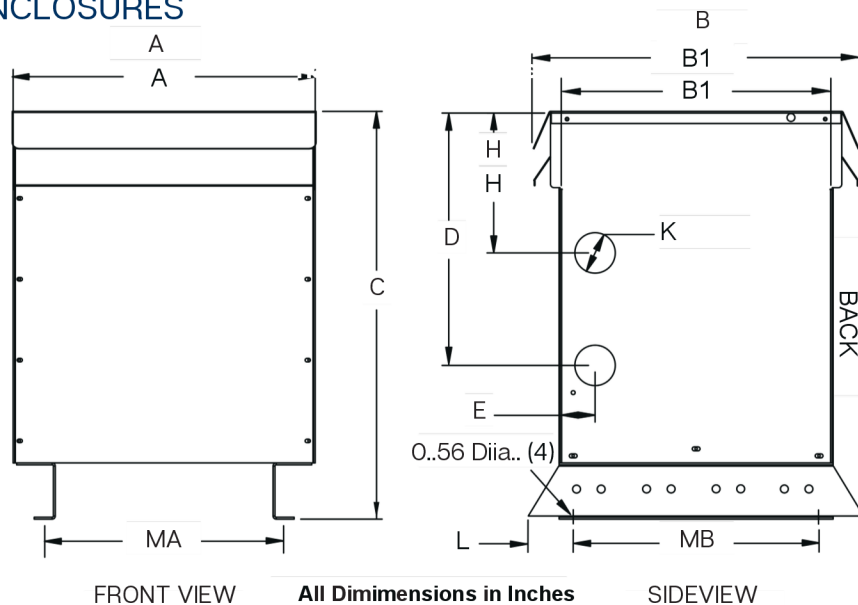
Neutral Terminals

The part numbers listed are provided with neutral terminals. Autotransformers without neutral terminals are available as a special order. Please consult your Hawk Power systems Sales Representative. Autotransformers with neutrals provide the customer with a common (H0/X0) neutral connection point that is connected by the factory to the middle point of the 'Y' winding configuration. When selecting this option, both the line and load side neutral cables must be connected to the neutral terminals in order to ensure the proper operation of the autotransformer. When installing the autotransformer special attention should be given to the neutral and grounding connections to comply with the above and also avoid possible multiple grounding situations. Please follow all applicable codes and standards and refer to the local electrical code requirements for grounding and short circuit protection of a three phase autotransformer. When necessary please review your specific application with the local inspection agency.

ENCLOSURE DRAWINGS

TYPE 3R ENCLOSURE DIMENSIONAL DRAWINGS

'NH' SERIES ENCLOSURES



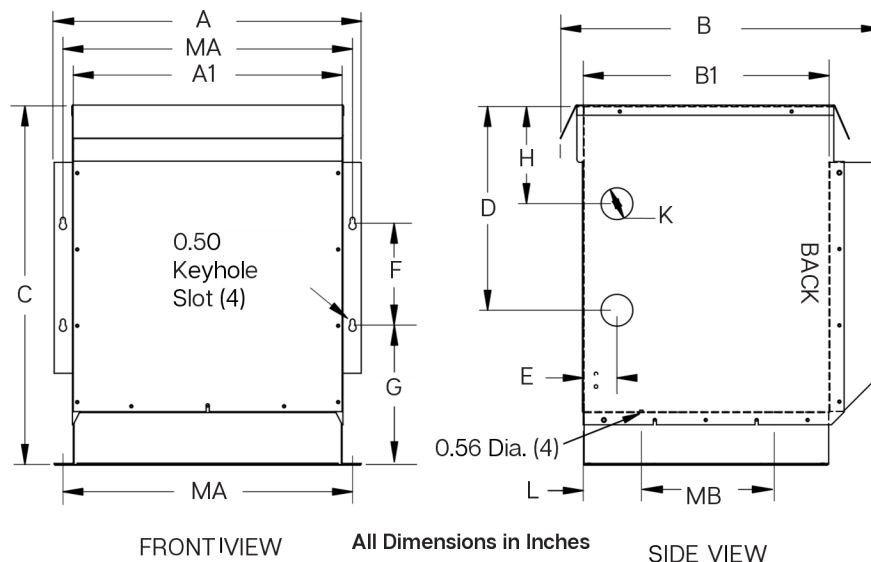
Case Style	Dimensions in Inches [Millimeter]										
	A	B	B1	C	D	E	H	K1	L	MA	MB
NH3	26.00 [660]	25.00 [635]	24.00 [610]	38.00 [965]	24.00 [610]	2.50 [63]	14.00 [356]	2.00 X 3.00 [51 X 76]	2.50 [63]	21.50 [546]	19.00 [483]
NH4	32.00 [813]	29.50 [749]	28.50 [724]	41.00 [1041]	24.00 [610]	2.50 [63]	12.00 [305]	2.00 X 3.00 [51 X 76]	2.50 [63]	23.50 [597]	23.50 [597]

Note: Mounting hole dimension is 0.56" diameter.

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

Refer to page 7 for conduit sizes.

OPTIONAL TYPE4, 12 AND STAINLESS STEEL ENCLOSURES ARE AVAILABLE.



Case Style	Dimensions in Inches [Millimeter]													
	A	A1	B	B1	C	D	E	F	G	H	K1	L	MA	MB
NH5	19.40 [493]	16.75 [425]	20.20 [513]	15.00 [381]	21.50 [546]	12.00 [305]	2.00 [51]	7.00 [178]	0.81 [198]	6.00 [152]	1.38 X 1.75 [35 X 44]	2.80 [71]	18.00 [457]	9.00 [229]
NH6	23.90 [607]	21.50 [546]	25.00 [635]	19.50 [495]	28.75 [730]	17.00 [432]	2.00 [51]	8.00 [203]	10.29 [261]	8.50 [216]	1.38 X 2.50 [35 X 63]	5.20 [132]	22.75 [578]	9.00 [229]

Note: Mounting hole dimension is 0.56" diameter.

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

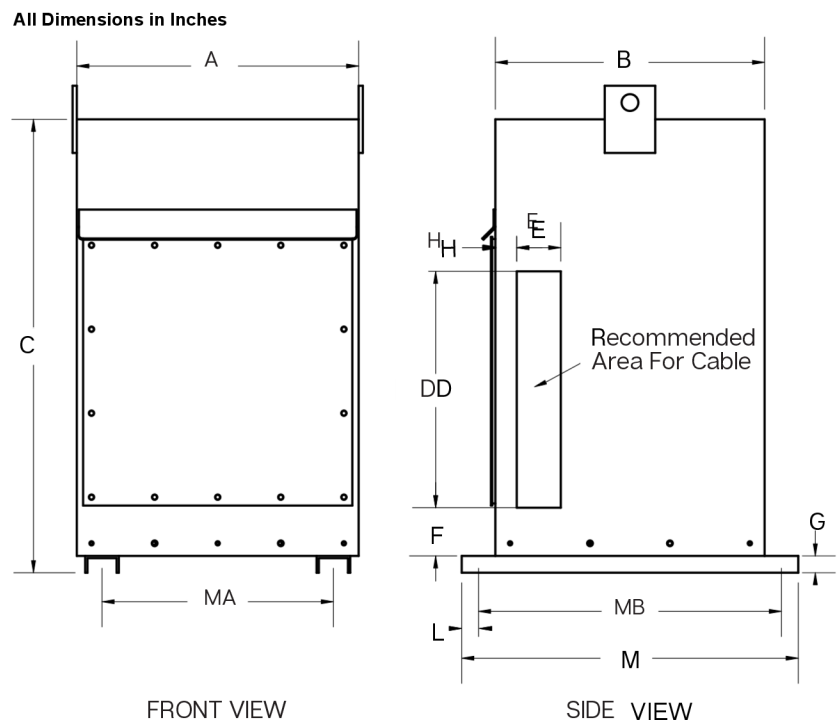
Refer to page 7 for conduit sizes.

OPTIONAL TYPE4, 12 AND STAINLESS STEEL ENCLOSURES ARE AVAILABLE.

ENCLOSURE DRAWINGS

OPTIONAL TYPE 4 & 12 ENCLOSURE DIMENSIONAL DRAWINGS

'NH-N4 & NH-N12' SERIES ENCLOSURES



All Dimensions in Inches

Case Style	Dimensions in Inches [Millimeter]											
	A	B	C	D	E	F	G	H	L	M	MA	MB
NH5-N4, NH5-N12	16.75 [425]	16.00 [406]	27.00 [686]	16.00 [406.00]	4.00 [102]	4.00 [102]	1.00 [25]	2.00 [51]	1.00 [25]	20.00 [508]	13.75 [349]	18.00 [457]
NH6-N4, NH6-N12	21.50 [546]	21.00 [533]	41.00 [1041]	24.00 [610]	5.00 [127]	4.00 [102]	1.00 [25]	2.00 [51]	1.00 [25]	25.00 [635]	17.00 [432]	23.00 [584]
NH3-N4, NH3-N12	28.00 [711]	23.00 [584]	55.50 [1410]	32.00 [813]	6.00 [152]	4.00 [102]	1.50 [38]	2.00 [51]	1.00 [25]	27.00 [686]	21.50 [546]	25.00 [635]
NH4-N4, NH4-N12	34.00 [864]	27.00 [686]	61.50 [1562]	36.00 [914]	7.00 [178]	4.00 [102]	1.50 [38]	2.00 [51]	1.00 [25]	31.00 [787]	23.50 [597]	29.00 [737]

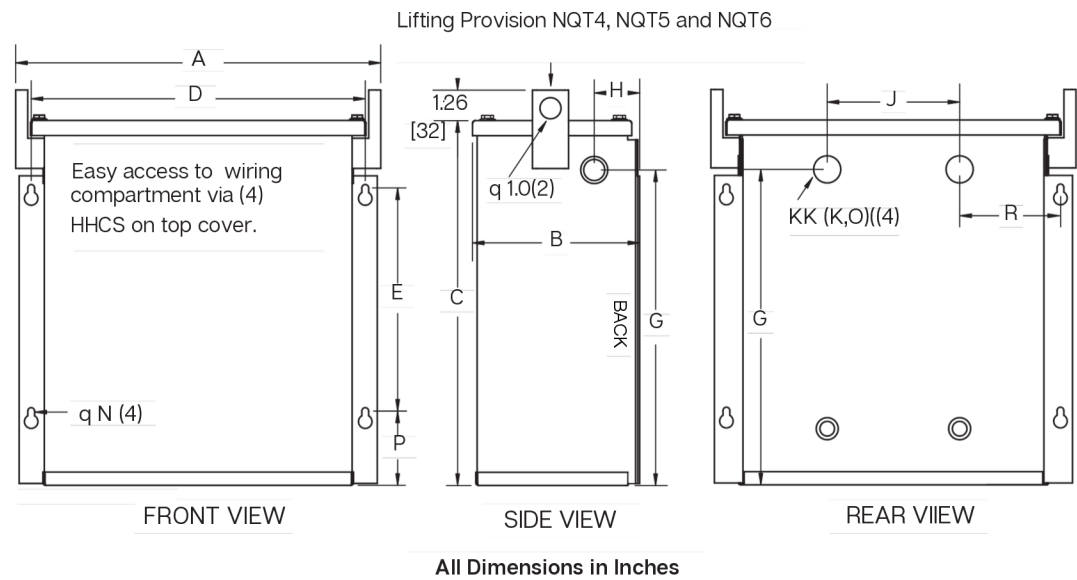
Note: Mounting hole dimension is 0.69" diameter.

Optional Type 4 & 12 Stainless Steel Enclosures

Optional type 4 and 12 rated stainless steel enclosures are available and are designed using either type 304 or 316 stainless steel in accordance with ANSI, NEMA, UL and ABS requirements for indoor, outdoor and marine duty applications.

ENCLOSURE DRAWINGS

TYPE 3R ENCLOSURE DIMENSIONAL DRAWINGS
'NQT' SERIES ENCLOSURES



Case Style	Fig #	Dimensions in Inches [Millimeter]															
		A	B	C	D	E	F	G	H	J	K1	L	M	N	P	R	
NQT2		9.38	4.94	8.63	8.38	4.00	-	7.06	2.38	4.50	0.88 X 1.13	-	-	0.28	1.81	2.44	
		[238]	[125]	[219]	[213]	[102]	-	[179]	[60]	[114]	[22 X 287]	-	-	[7]	[46]	[62]	
NQT3		12.38	5.44	11.13	11.38	6.50	-	9.50	2.38	5.50	0.88 X 1.13	-	-	0.28	1.81	3.44	
		[314]	[138]	[283]	[289]	[165]	-	[241]	[60]	[140]	[22 X 287]	-	-	[7]	[46]	[87]	
NQT4		15.19	6.94	15.13	13.88	9.25	-	13.56	1.88	5.50	0.88 X 1.13	-	-	0.28	3.06	4.19	
		[386]	[176]	[384]	[353]	[235]	-	[344]	[48]	[140]	[22 X 287]	-	-	[7]	[78]	[106]	

Knockout (K) sizes are actual diameters of knockout, not conduit sizes.
Refer to the table below for conduit sizes.

OPTIONAL STAINLESS STEEL ENCLOSURES ARE AVAILABLE.

Optional Stainless Steel Enclosures

Optional type4 and 12rated stainless steel enclosures forencapsulated transformers are identical to the standard steel enclosure designs but are designed using either type 304 or 316 stainless steel in accordance with ANSI, NEMA, UL and ABS requirements for indoor, outdoor and marine duty applications.

Conduit Size vs. Actual Knockout Size Reference Table

Standard Conduit Size	Actual Knockout Diameter
1/2"	7/8"
3/4"	1 1/8"
1"	1 3/8"
1 1/4"	1 3/4"
1 1/2"	2"
2"	2 1/2"
2 1/2"	3"
3"	3 5/8"
3 1/2"	4 1/8"

Please note the above table is not applicable for Stainless Steel enclosures.

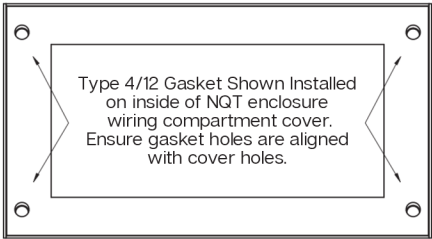
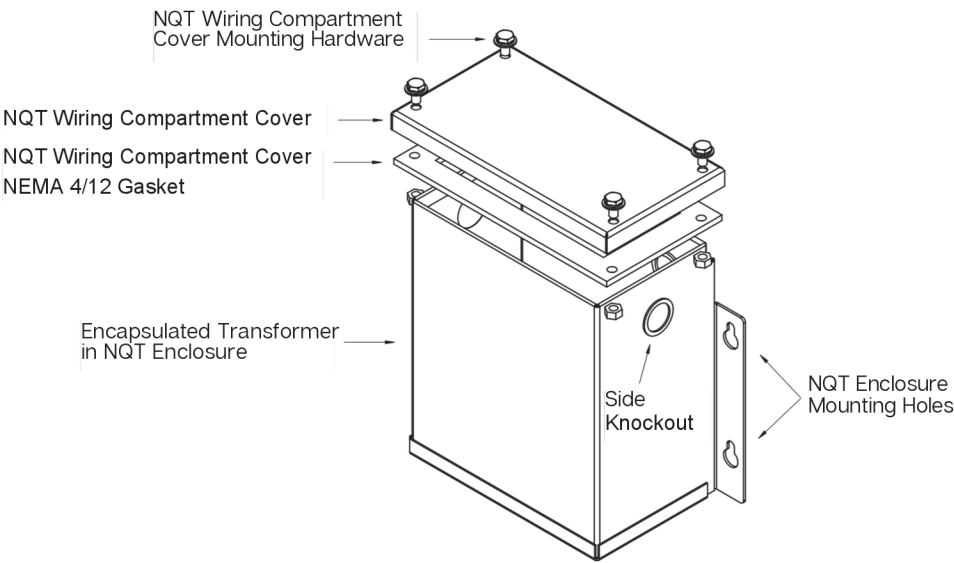
ENCLOSURE MOUNTING KITS

NQT ENCLOSURE SERIES TYPE 4/12 GASKET KITS

Optional Type 4/12 Gasket Kits

Standard type 3R rated NQT enclosures can easily be converted to a type 4 or 12 rating by ordering and installing the appropriate gasket kit as listed in the table below.

Enclosure Style	Gasket Kit P/N
NQT2	N QT2G K
NQT3	NQT3GK
NQT4	NQT4GK



ENCLOSURE MOUNTING KITS

ACCESORIES

Enclosure Mounting Kits

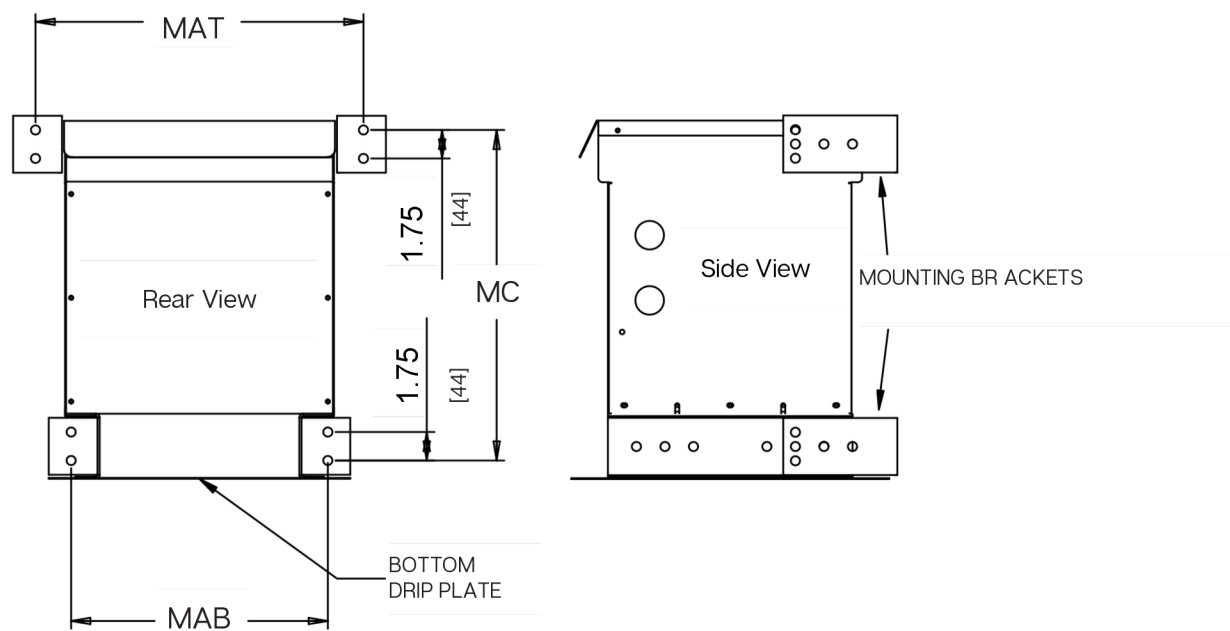
If wall and/or ceiling mounting is desired for a transformer, optional mounting kits can be ordered separately. These mounting kits are NOT available for all enclosure case styles. Therefore, it is important that you confirm your enclosure case style, then use the selection table to the right to determine 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: 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.

Enclosure Case Style	Wall Mount Available	Ceiling Mount Available	HPS Mounting Kit P/N
NH3	Yes	Yes	NW2
NH4	No	No	N/A
NH5	Yes	Yes	NH5DP
NH6	Yes	Yes	NH6DP

NW2 Wall/Ceiling Mounting Kits

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



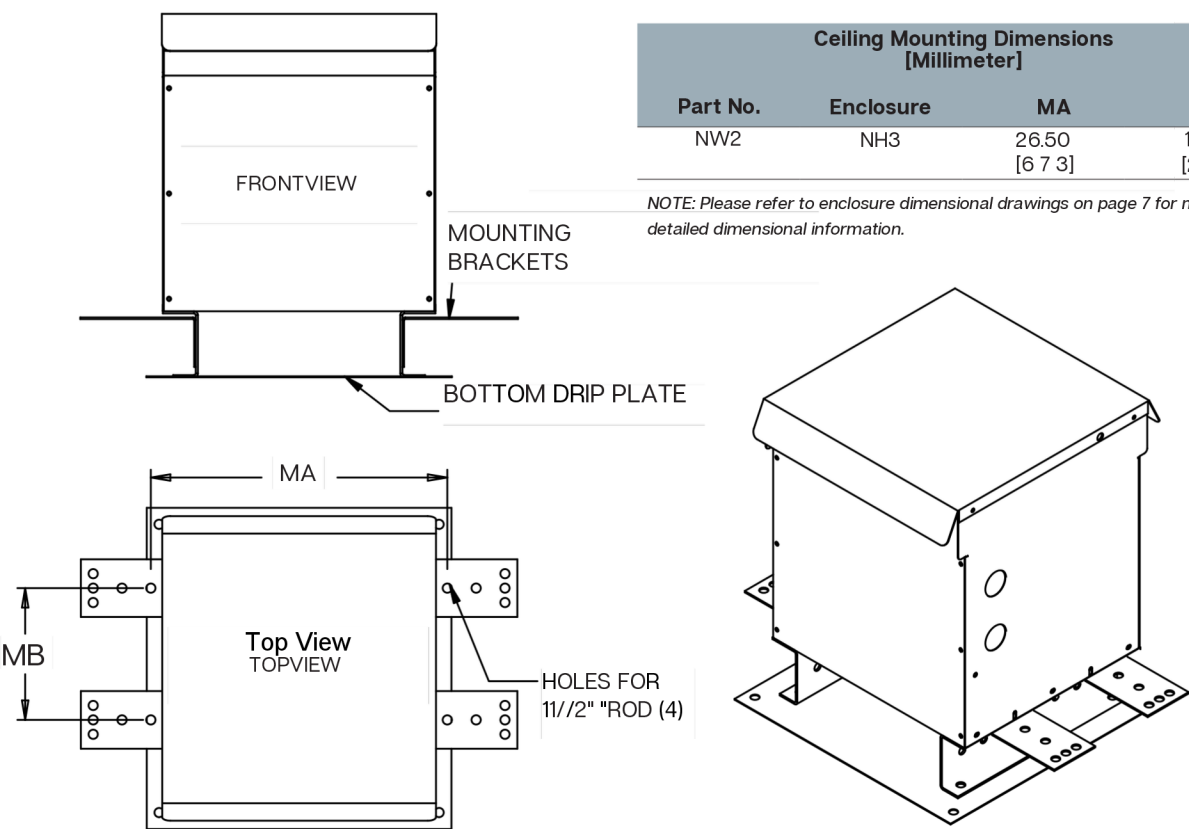
Dimensions in Inches [mm]

Wall Mounting Dimensions [Millimeters]				
Part No.	Enclosure	MAT	MAB	MC
NW2	NH3	29.375 [746]	23.50 [597]	36.50 [927]

NOTE: Please refer to enclosure dimensional drawings on page 7 for more detailed dimensional information.

NW2 CEILING MOUNT - MOUNTING DIMENSIONS

NW2 CEILING MOUNT - MOUNTING DIMENSIONS



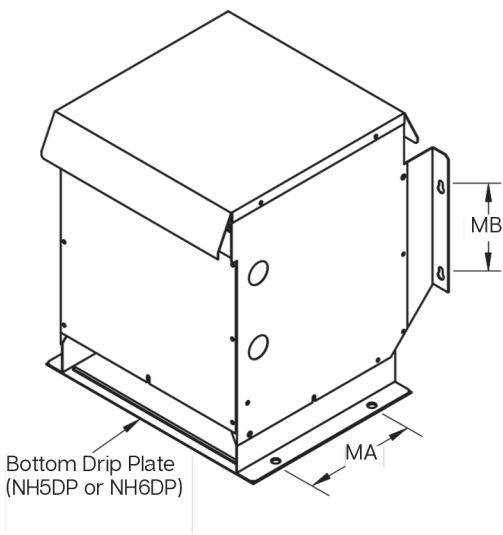
CEILING MOUNTING DIMENSIONS

NH5DP & NH6DP Wall/Ceiling Mounting Kits

The 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 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 and through the drip plate mounting holes and install mounting hardware.

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



Part No.	Enclosure	MA Inches [mm]	MB Inches [mm]
NH5DP	NH5	9.00 [229]	7.00 [178]
NH6DP	NH6	9.00 [229]	8.00 [203]

NOTE: Please refer to enclosure dimensional drawings on page 5 for more detailed dimensional information.

ANTI-VIBRATIONPAD

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	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 Lbs [kg]	Description
NMP1	Up to 340 lbs [160]	Set of four (4) molded neoprene and steel plate assemblies that virtually eliminate vibration noise between the transformer and the mounting surface.
NMP2	341 to 680 lbs [161 to 310]	
NMP3	681 to 1040 lbs [311 to 480]	
NMP4	1041 to 1740 lbs [481 to 790]	
NMP5	1741 to 2330 lbs [791 to 1060]	
NMP6	2331 to 3450 lbs [1061 to 1570]	
NMP7	3451 to 4690 lbs [1571 to 2130]	



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.

ACCESSORIES

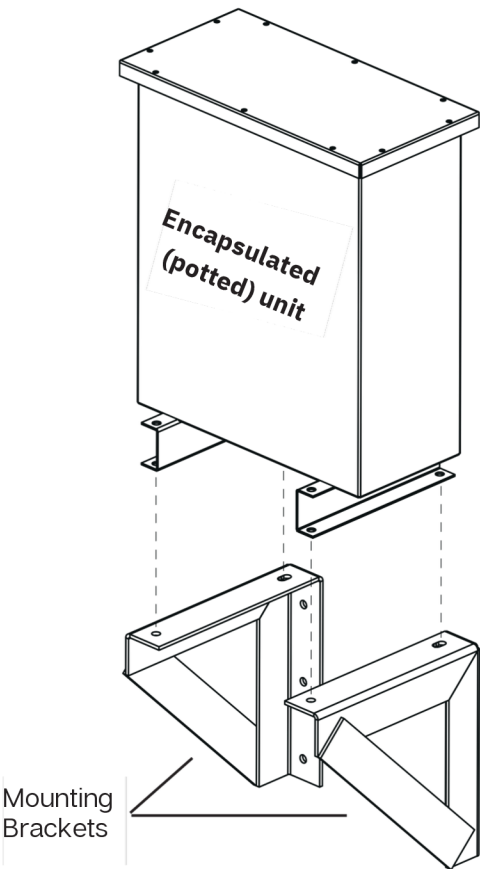
NQTW1 AND NQTW2 WALL MOUNTING KITS

The **NQTW1** and **NQTW2** wall mounting kits are specifically designed for HPS commercial or industrial encapsulated (potted) distribution transformer units up to a maximum of 45kVA or 800 pounds (363 kg). These mounting kits are designed for encapsulated (potted) units only, no drip plate is included/required. Please contact HPS customer service if you have any questions.

Note: Always measure and secure mounting brackets to the wall surface first, then lift the transformer (using appropriate lifting equipment) onto the brackets and attach using minimum Grade 8 hardware.

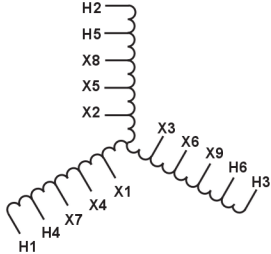
Enclosure Case Style	Mounting Type	Wall Mounting Kit Part Number
NQT3 - NQT4	Wall	Included

**Applies to HPS Fortress line only*

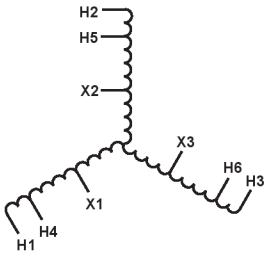


ELECTRICAL SCHEMATICS & CONNECTION DRAWINGS

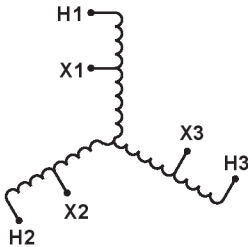
SCD 14

Schematic	Connections		
	Connect to	Step Down	Step Up
	Lines from Supply	H1, H2, H3	X1, X2, X3
	Lines to Load	X1, X2, X3	H1, H2, H3

SCD 15

Schematic	Connections		
	Connect to	Step Down	Step Up
	Lines from Supply	H1, H2, H3	X1, X2, X3
	Lines to Load	X1, X2, X3	H1, H2, H3

SCD 24

Schematic	Connections		
	Connect to	Step Down	Step Up
	Lines from Supply	H1, H2, H3	X1, X2, X3
	Lines to Load	X1, X2, X3	H1, H2, H3

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