

NRCAN – CSA C802.2 2018



These units are designed to the latest Industry Standards and are **CSA & UL certified**. Transformers must qualify to **High Efficiency Values for dry-type transformers as NRCAN – CSA C802.2 2018**.

The **warranty** provided with these products offers our guarantee against defects and workmanship for up to 12 months after receipt of the product.

- The available transformer sizes are:
 - Single-phase: **15, 25, 37.5, 50, 75, 100, 150, 200 & 250kVA**
 - Three-phase: **15, 30, 45, 75, 112.5, 150, 225, 300 & 450kVA**
- **Primary Tension 480 & 600 volts three phase, 480 & 600 volts single phase**
- **Secondary Tension 208Y/120 volts, three phase, 120/240 volts, single phase**
- All winding conductors are in **aluminum**
- **150°C Temperature Rise**
- Standard impedance at 60 Hz.
- Standard audible sound level
- Lugs up to 225 kVA
- Wall mounting brackets up to 45 kVA for three phase

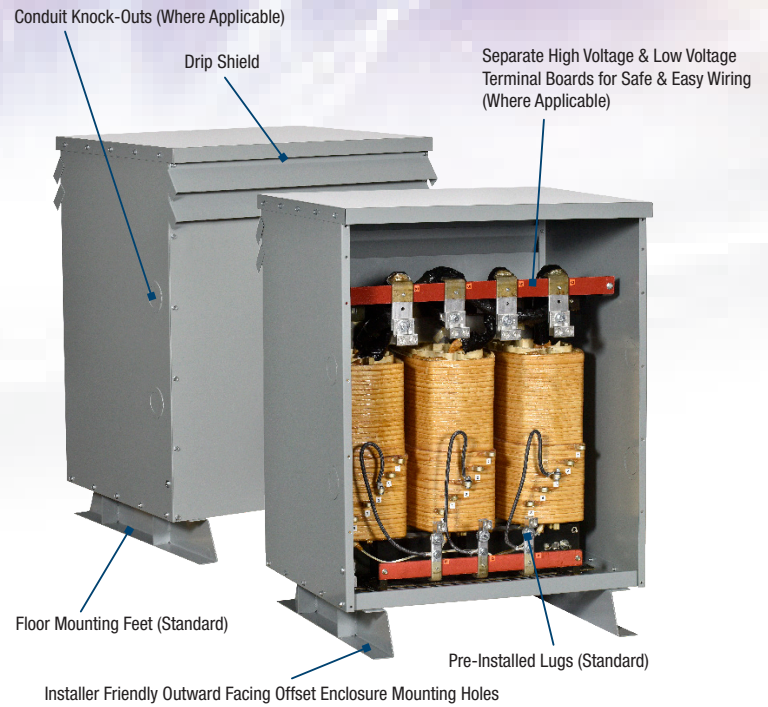
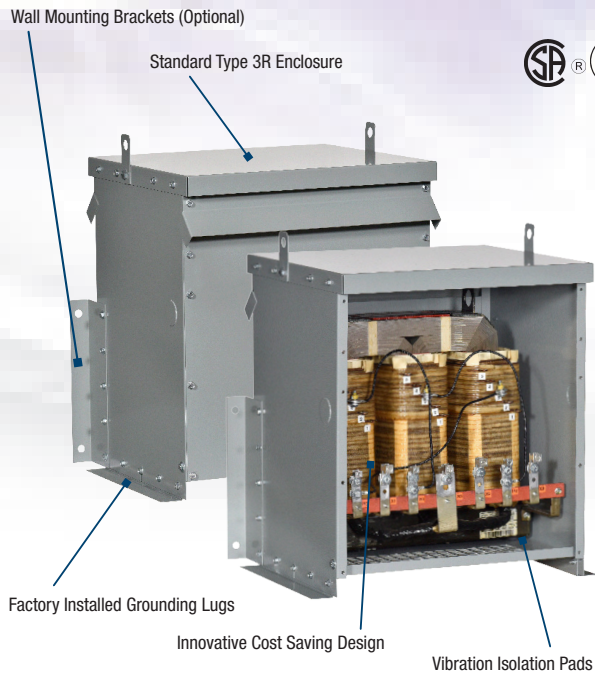
Commercial Series Distribution Transformers

Building on our years of experience in engineering and design of transformers we have created a product that is guaranteed to provide **high efficiency** in an economical package.



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Installation made fast and easy!



Specifications - Copper or Aluminum

kVA:	15-250kVA single phase; 15-450kVA three phase
UL Listed:	File: E112313
CSA Certified:	File: LR3902
Frequency:	60 Hz
Insulation System:	220°C (150°C rise)
Enclosure Type:	Heavy duty ventilated Type 3R standard
Enclosure Finish:	ANSI 61 Grey, UL50
Neutral:	Neutral terminal for field connection (on applicable units)
Standard Primary Taps:	Refer to wiring diagrams for details

Termination:	Front accessible high and low voltage terminals; lugs provided standard; connectors suitable for aluminum and copper are provided for easy cable installation.
Conduit Entry:	Side knock-outs provided where applicable
Impedance:	Typically 3% to 6.5%
Mounting:	Floor mounting standard/wall mounting optional. Refer to selection tables for details.
Sound Level:	Meets NEMA ST-20 standards
Warranty:	1 year



Single-phase - Aluminum winding - DA2 Series

Aluminum Series DA2, Type 3R Single-phase, Primary 600 V, Secondary 120 / 240V, 150° C

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Enclosure	Wiring diagram
			Height		Width		Depth					
			In	mm	In	mm	In	mm	lb	kg		
15	*W/F	DA2015V	24	600	22	561	18	457	160	73	Fig 2	WD1
25	*W/F	DA2025V	26	650	25	632	19	483	225	102	Fig 3	WD1
37.5	F	DA2037V	31	790	26	668	23	584	310	141	Fig 4	WD1
50	F	DA2050V	31	790	26	668	23	584	370	168	Fig 4	WD1
75	F	DA2075V	39	993	29	737	27	686	450	205	Fig 5	WD1
100	F	DA2100V	39	993	29	737	27	686	560	255	Fig 5	WD1
150	F	DA2150V	48	1219	38	960	30	762	820	373	Fig 6	WD2
200	F	DA2200V	48	1219	38	960	30	762	1000	455	Fig 6	WD2
250	F	DA2250V	56	1425	42	1062	36	914	1300	591	Fig 7	WD2

(1) W = Wall mount F = Floor mount

(2) Catalog number

SINGLE-PHASE: 15 - 200 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) The dimensions are applicable for Type 3 enclosure only

All weights and dimensions are approximate and subject to change without notice.

* Wall mount brackets are optional

Aluminum Series DA2, Type 3R Single-phase, Primary 480 V, Secondary 120 / 240V, 150° C

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Enclosure	Wiring diagram
			Height		Width		Depth					
			In	mm	In	mm	In	mm	lb	kg		
15	*W/F	DA2015R	24	600	22	561	18	457	160	73	Fig 2	WD1
25	*W/F	DA2025R	26	650	25	632	19	483	225	102	Fig 3	WD1
37.5	F	DA2037R	31	790	26	668	23	584	310	141	Fig 4	WD1
50	F	DA2050R	31	790	26	668	23	584	370	168	Fig 4	WD1
75	F	DA2075R	39	993	29	737	27	686	450	205	Fig 5	WD1
100	F	DA2100R	39	993	29	737	27	686	560	255	Fig 6	WD1
150	F	DA2150R	48	1219	38	960	30	762	820	373	Fig 6	WD2
200	F	DA2200R	48	1219	38	960	30	762	1000	455	Fig 6	WD2

(1) W = Wall mount F = Floor mount

(2) Catalog number

SINGLE-PHASE: 15 - 200 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) The dimensions are applicable for Type 3 enclosure only

All weights and dimensions are approximate and subject to change without notice.

* Wall mount brackets are optional

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Three-phase - Aluminum winding - DA6 Series

Aluminum Series DA6, Type 3R Three-phase, Primary 600 V, Secondary 208Y/120 V, 150° C

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Enclosure	Wiring diagram
			Height		Width		Depth		lb	kg		
			In	mm	In	mm	In	mm				
15	*W/F	DA6015V	18	447	20	511	18	457	165	75	Fig 1	WD3
30	*W/F	DA6030V	24	600	22	561	18	457	285	130	Fig 2	WD3
45	*W/F	DA6045V	26	650	25	635	19	483	345	157	Fig 3	WD3
75	F	DA6075V	31	993	26	668	23	584	540	245	Fig 4	WD3
112.5	F	DA6112V	39	993	29	737	27	686	750	341	Fig 5	WD3
150	F	DA6150V	39	993	29	737	27	686	885	403	Fig 5	WD3
225	F	DA6225V	49	1229	38	960	30	762	1500	682	Fig 6	WD3
300	F	DA6300V	49	1229	38	960	30	762	1750	795	Fig 6	WD3
450	F	DA6450V	56	1422	42	1067	36	914	2400	1091	Fig 7	WD4

(1) W = Wall mount F = Floor mount

(2) Catalog number

THREE-PHASE: 15 - 450 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) The dimensions are applicable for Type 3R enclosure only

All weights and dimensions are approximate and subject to change without notice.

*Wall mount brackets are optional

Aluminum Series DA6, Three-phase, Primary 480V, Secondary 208Y/120 V, 150° C

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Enclosure	Wiring diagram
			Height		Width		Depth		lb	kg		
			In	mm	In	mm	In	mm				
15	*W/F	DA6015R	18	447	20	511	18	457	165	75	Fig 1	WD3
30	*W/F	DA6030R	24	600	22	561	18	457	285	130	Fig 2	WD3
45	*W/F	DA6045R	26	650	25	635	19	483	345	157	Fig 3	WD3
75	F	DA6075R	31	790	26	668	23	584	540	245	Fig 4	WD3
112.5	F	DA6112R	39	993	29	737	27	686	750	341	Fig 5	WD3
150	F	DA6150R	39	993	29	737	27	686	885	403	Fig 5	WD3
225	F	DA6225R	49	1229	38	960	30	762	1500	682	Fig 6	WD3
300	F	DA6300R	49	1229	38	960	30	762	1750	795	Fig 6	WD3

(1) W = Wall mount F = Floor mount

(2) Catalog number

THREE-PHASE: 15 - 300 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) The dimensions are applicable for Type 3R enclosure only

All weights and dimensions are approximate and subject to change without notice.

*Wall mount brackets are optional

Single-phase - Copper winding - DC2 Series

Copper Series DC2, Type 3R Single-phase, Primary 600 V, Secondary 120 / 240V, 150° C

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Enclosure	Wiring diagram
			Height		Width		Depth		lb	kg		
			In	mm	In	mm	In	mm	lb	kg		
15	*W/F	DC2015V	24	600	22	561	18	457	165	75	Fig 2	WD1
25	*W/F	DC2025V	26	650	25	632	19	483	240	109	Fig 3	WD1
37.5	F	DC2037V	31	790	26	668	23	584	340	155	Fig 4	WD1
50	F	DC2050V	31	790	26	668	23	584	390	177	Fig 4	WD1
75	F	DC2075V	39	993	29	737	27	686	540	245	Fig 5	WD1
100	F	DC2100V	39	993	29	737	27	686	650	295	Fig 5	WD1
150	F	DC2150V	48	1219	38	960	30	762	960	436	Fig 6	WD2
200	F	DC2200V	48	1219	38	960	30	762	1080	491	Fig 6	WD2
250	F	DC2250V	56	1425	42	1062	36	914	1440	655	Fig 7	WD2

(1) W = Wall mount F = Floor mount

(2) Catalog number

SINGLE-PHASE: 15 - 250 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) The dimensions are applicable for Type 3 enclosure only

All weights and dimensions are approximate and subject to change without notice.

*Wall mount brackets are optional

Copper Series DC2, Type 3R Single-phase, Primary 480 V, Secondary 120 / 240V, 150° C

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Enclosure	Wiring diagram
			Height		Width		Depth		lb	kg		
			In	mm	In	mm	In	mm				
15	*W/F	DC2015R	24	600	22	561	18	457	165	75	Fig 2	WD1
25	*W/F	DC2025R	26	650	25	632	19	483	240	109	Fig 3	WD1
37.5	F	DC2037R	31	790	26	668	23	584	340	155	Fig 4	WD1
50	F	DC2050R	31	790	26	668	23	584	390	177	Fig 4	WD1
75	F	DC2075R	39	993	29	737	27	686	540	245	Fig 5	WD1
100	F	DC2100R	39	993	39	737	27	686	650	295	Fig 5	WD1
150	F	DC2150R	48	1219	38	960	30	762	960	436	Fig 6	WD2
200	F	DC2200R	48	1219	38	960	30	762	1080	491	Fig 6	WD2

(1) W = Wall mount F = Floor mount

(2) Catalog number

SINGLE-PHASE: 15 - 200 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) The dimensions are applicable for Type 3 enclosure only

All weights and dimensions are approximate and subject to change without notice.

*Wall mount brackets are optional

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Three-phase - Coper winding - DC6 Series

Copper Series DC6, Type 3R Three-phase, Primary 600 V, Secondary 208Y/120 V, 150° C

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Enclosure	Wiring diagram
			Height		Width		Depth		lb	kg		
			In	mm	In	mm	In	mm				
15	*W/F	DC6015V	18	447	20	508	18	457	185	84	Fig 1	WD3
30	*W/F	DC6030V	24	600	22	559	18	457	300	136	Fig 2	WD3
45	*W/F	DC6045V	26	650	25	635	19	483	390	177	Fig 3	WD3
75	F	DC6075V	31	787	26	660	23	584	635	289	Fig 4	WD3
112.5	F	DC6112V	39	991	29	737	27	686	815	370	Fig 5	WD3
150	F	DC6150V	39	991	29	737	27	686	980	445	Fig 5	WD3
225	F	DC6225V	48	1219	38	952	30	762	1600	727	Fig 6	WD3
300	F	DC6300V	48	1219	38	952	30	762	1850	841	Fig 6	WD3
450	F	DC6450V	56	1422	42	1067	36	914	3000	1364	Fig 7	WD4

(1) W = Wall mount F = Floor mount

(2) Catalog number

THREE-PHASE: 15 - 450 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) The dimensions are applicable for Type 3R enclosure only

All weights and dimensions are approximate and subject to change without notice.

*Wall mount brackets are optional

Copper Series DC6, Three-phase, Primary 480V, Secondary 208Y/120 V, 150° C

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Enclosure	Wiring diagram
			Height		Width		Depth		lb	kg		
			In	mm	In	mm	In	mm				
15	*W/F	DC6015R	18	447	20	508	18	457	185	84	Fig 1	WD3
30	*W/F	DC6030R	24	600	22	559	18	457	300	136	Fig 2	WD3
45	*W/F	DC6045R	26	650	25	635	19	483	390	177	Fig 3	WD3
75	F	DC6075R	31	787	26	660	23	584	635	289	Fig 4	WD3
112.5	F	DC6112R	39	991	29	737	27	686	815	370	Fig 5	WD3
150	F	DC6150R	39	991	29	737	27	686	980	445	Fig 5	WD3
225	F	DC6225R	48	1219	38	952	30	762	1600	727	Fig 6	WD3
300	F	DC6300R	48	1219	38	952	30	762	1850	841	Fig 6	WD3

(1) W = Wall mount F = Floor mount

(2) Catalog number

THREE-PHASE: 15 - 300 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) The dimensions are applicable for Type 3R enclosure only

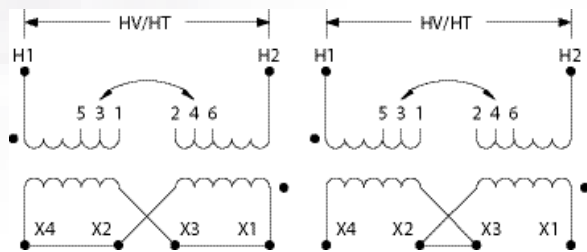
All weights and dimensions are approximate and subject to change without notice.

*Wall mount brackets are optional

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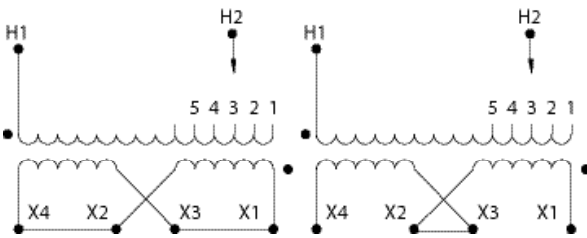
Wiring diagram

WD1 Wiring Diagram



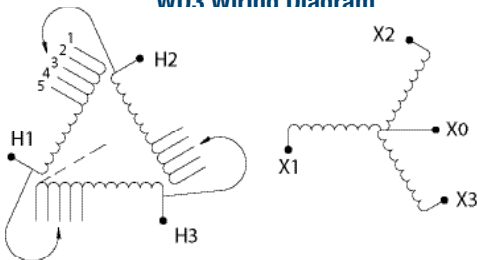
% Voltage	Primary Volts	Connect lines to	Inter-connect
105.0%	504 630	H1, H2	1-2
102.5%	492 615	H1, H2	2-3
100.0%	480 600	H1, H2	3-4
97.5%	468 585	H1, H2	4-5
95.0%	456 570	H1, H2	5-6
Secondary Volts		Connect lines to	Inter-connect
240		X1, X4	X2-X3
120		X1 & X3, X2 & X4	X2-X4, X1-X3
120/240		X1, X2, X4	X2-X3

WD2 Wiring Diagram



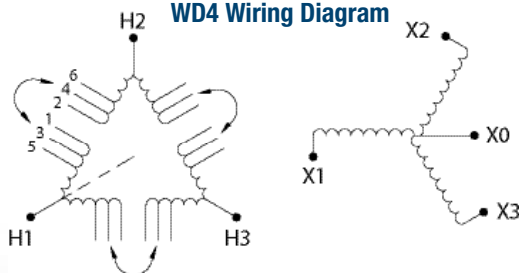
% Voltage	Primary Volts	Connect lines to	Inter-connect
105.0%	504 630	H1, H2	1
102.5%	492 615	H1, H2	2
100.0%	480 600	H1, H2	3
97.5%	468 585	H1, H2	4
95.0%	456 570	H1, H2	5
Secondary Volts		Connect lines to	Inter-connect
240		X1, X4	X2-X3
120		X1 & X3, X2 & X4	X2-X4, X1-X3
120/240		X1, X2, X4	X2-X3

WD3 Wiring Diagram



% Voltage	Primary Volts	Connect lines to	Inter-connect
105.0%	504 630	H1, H2, H3	1
102.5%	492 615	H1, H2, H3	2
100.0%	480 600	H1, H2, H3	3
97.5%	468 585	H1, H2, H3	4
95.0%	456 570	H1, H2, H3	5
Secondary Volts		Connect lines to	
208		X1, X2, X3	
120		X1,X0 X2,X0 X3,X0	

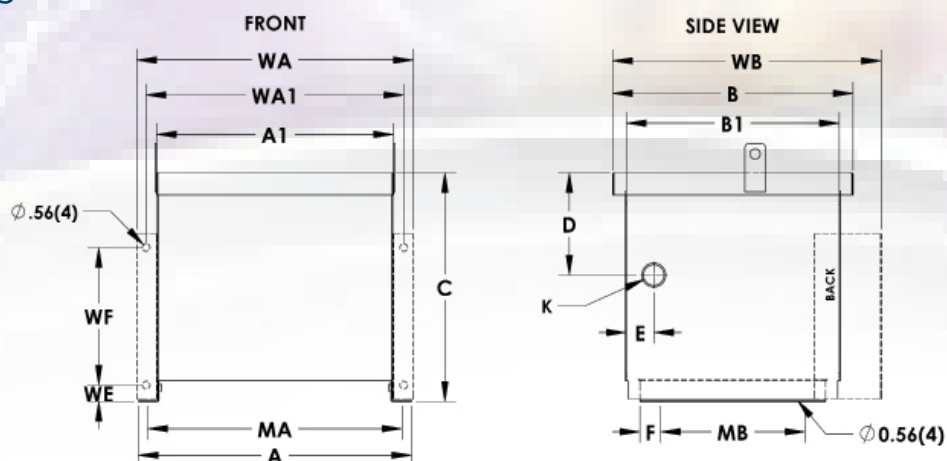
WD4 Wiring Diagram



% 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
Secondary Volts		Connect lines to	
208		X1, X2, X3	
120		X1,X0 X2,X0 X3,X0	

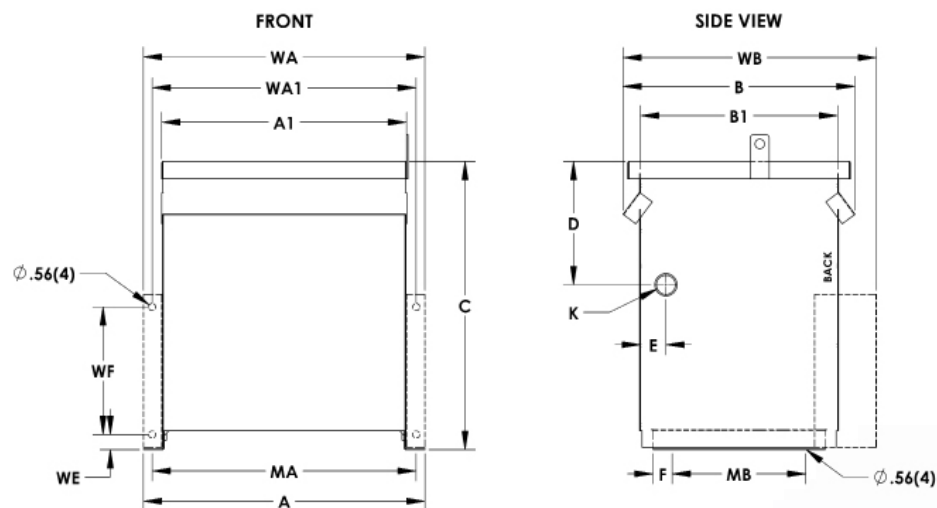
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Enclosure figures



Enclosure	Dimensions in Inches															
	A	A1	B	B1	C	D	E	F	K	MA	MB	WA*	WA1*	WB*	WE*	WF*
FIG1	19.9	17.3	17.5	15.5	17.6	7.4	2.0	1.5	1.75 K.O.	18.5	10.5	20.1	18.7	19.5	2.2	10.0

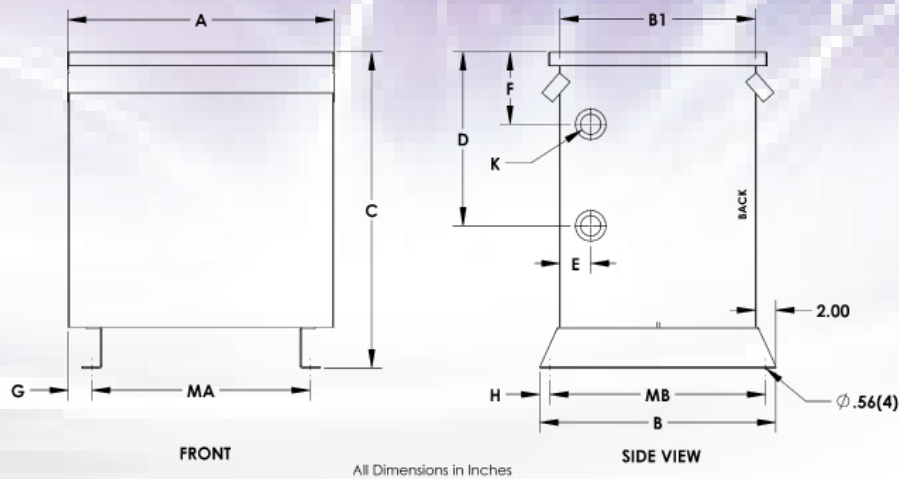
*Dimensionsofenclosurewhenwall-mountingbracketinstalled(optionalaccessorycomponent).



Enclosure	Dimensions in Inches															
	A	A1	B	B1	C	D	E	F	K	MA	MB	WA*	WA1*	WB*	WE*	WF*
FIG2	22.1	19.2	18.2	15.5	23.6	9.7	2.0	1.5	1.75 K.O.	20.8	10.5	22.1	20.8	19.9	2.2	10.0
FIG3	24.9	22.0	19.4	16.5	25.6	12.0	2.0	2.0	1.75 K.O.	23.5	10.5	24.9	23.5	21.0	2.2	10.0

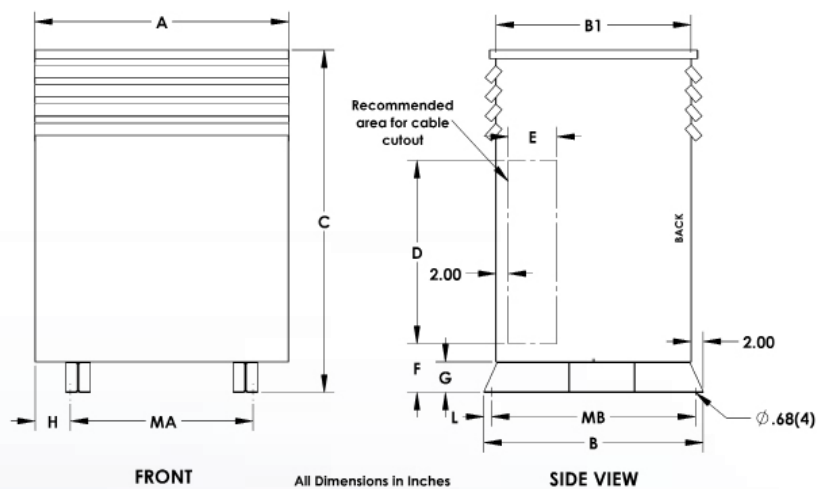
*Dimensionsofenclosurewhenwall-mountingbracketinstalled(optionalaccessorycomponent).

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Enclosure	Dimensions in Inches											
	A	B	B1	C	D	E	F	G	H	K	MA	MB
Fig 4	26.3	23.3	19.3	31.1	17.1	3.0	7.1	2.3	1.0	2.0 x 3.0 K.O.	21.5	21.3
Fig 5	29.0	26.5	22.5	39.1	24.1	3.0	14.1	2.7	1.0	2.0 x 3.0 K.O.	23.5	24.5
Fig 6	37.8	30.0	26.0	48.4	33.4	3.0	23.4	6.8	1.0	2.0 x 3.0 K.O.	24.0	28.0

*Dimension of enclosure when wall-mounting bracket is installed (optional accessory component).



Enclosure	Dimensions in Inches											
	A	B	B1	C	D	E	F	G	H	L	MA	MB
Fig 7	41.8	36.0	32.0	56.1	30.0	8.0	8.0	5.0	5.9	0.8	30.0	34.5

*Dimension of enclosure when wall-mounting bracket is installed (optional accessory component).

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Termination details - Type 3R

SINGLE PHASE

kVA	VOLTAGE		
	120/240	480	600
15	Lugs	Lugs	Lugs
25	Lugs	Lugs	Lugs
37	Lugs	Lugs	Lugs
50	Lugs	Lugs	Lugs
75	Lugs	Lugs	Lugs
100	Lugs	Lugs	Lugs
150	Lugs	Lugs	Lugs
200	Lugs	Lugs	Lugs
250	Lugs	Lugs	Lugs

THREE PHASE

kVA	VOLTAGE		
	208	480	600
15	Lugs	Lugs	Lugs
30	Lugs	Lugs	Lugs
45	Lugs	Lugs	Lugs
75	Lugs	Lugs	Lugs
112.5	Lugs	Lugs	Lugs
150	Lugs	Lugs	Lugs
225	Lugs	Lugs	Lugs
300	Dia 2	Dia 1B	Dia 1B
450	Dia 3	Dia 2	Dia 2

DIAGRAM 1

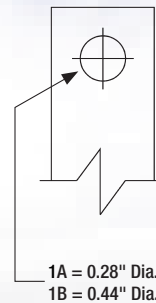


DIAGRAM 2

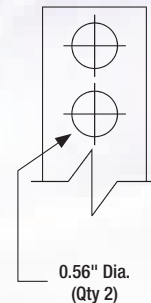
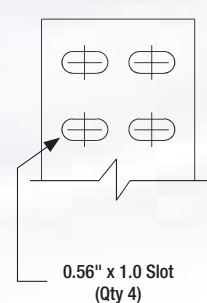


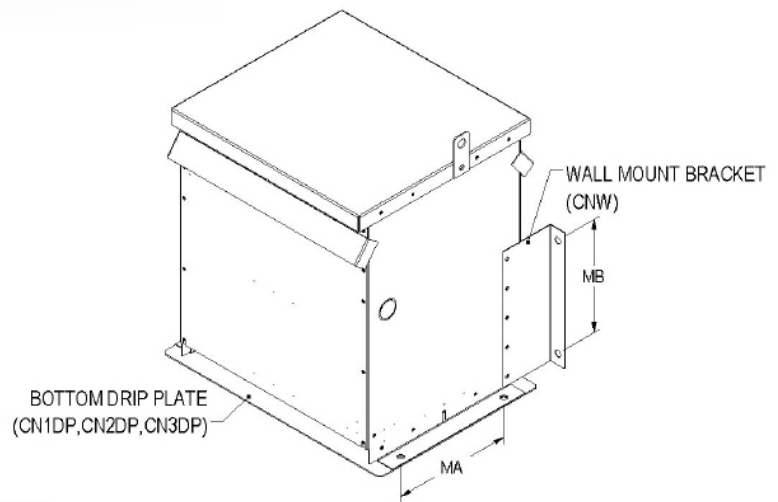
DIAGRAM 3



Wall mounting kits

The FIG1, FIG2 and FIG3 enclosures are designed with optional wall mounting capabilities. The "MB" dimensions listed in the table below indicate the location for the wall mounting hardware. The "MA" dimensions shown in the figure indicate the locations for the drip plate mounting hardware.

Note: When mounting the FIG1, FIG2, or FIG3 type enclosures on the wall, a bottom drip plate must also be installed as shown in the attached drawing. Please refer to CSA 22.2 No. 47-2013 requirements. The installation of these transformers above floor level without a bottom drip plate is not permitted. All mounting hardware should be rated Grade 8 or higher.



Mounting Kit P/N	Enclosure Style	MB Dimension
CNW	FIG1, FIG2, FIG3	10.00

Drip Plate Kit P/N	Enclosure Style	MA Dimension
CN1DP	FIG1	10.50
CN2DP	FIG2	10.50
CN3DP	FIG3	10.50

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 pads are resistant to industrial contaminants like oil, acids and alkalines.

Anti-vibration pad kits

Part No.	Case Style	Description
PD1	FIG1-FIG6	Set of four (4) rubber anti-vibration pads which replace the standard steel enclosure washers.
PD2	FIG7	



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	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	
NMP3	681 to 1,040 lbs	
NMP4	1,041 to 1,740 lbs	
NMP5	1,741 to 2,330 lbs	
NMP6	2,331 to 3,450 lbs	
NMP7	3,451 to 4,690 lbs	



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.

SYNONYMOUS WITH QUALITY

PART 1 - GENERAL

1.1 SECTIONS

A. This section includes Dry-Type Distribution Transformers.

1.2 REFERENCES

A. CSA C22.2 N° 47. The most recent NRCAN.

1.3 SUBMITTALS

A. Products Data: Include data on features, components, ratings and performance for each type of transformer specified. Include dimensioned plans, sections, elevation and side views.

B. Wiring diagrams will identify, detail wiring and terminals for tap changing and connecting field-installed wiring.

1.4 STANDARDS

A. Listing and Labeling: Transformers specified in the section are certified by CSA & UL.

B. Transformers shall meet relevant recent NRCAN.

1.5 DELIVERY, STORAGE AND HANDLING

A. Section 01600, Material and equipment will address, transport, handling, storage and protection of products.

B. Deliver transformers individually wrapped for protection.

C. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or plastic cover to protect units from dirt, water, construction debris and traffic.

D. Do not stack transformers.

E. Temporary Heating: If transformer can not be stored in a space that is continuously under normal control of temperature and humidity, apply temporary heat according to manufacturer's written instructions until evidence of condensation is no longer visible.

1.6 WARRANTY

A. Provide a 12 month warranty against defects in materials and workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer : Delta Transformers.

B. Alternative manufacturer and product are subject to full compliance with this specification and must be approved by engineer at least 10 days prior to bid closing.

C. The transformers must be a standard item in manufacturer's published catalog. A custom product, one that requires design and/or packaging modifications to meet this specification, is not acceptable.

D. All transformers in the project must be provided by the same manufacturer.

2.2 CONSTRUCTION

THREE-PHASE AND SINGLE-PHASE TRANSFORMERS

A. Transformer shall be [15, 30, 45, 75, 112,5, 150, 225, 450] kVA, three-phase, 3 coils or [25, 37,5, 50, 75, 100, 150, 200, 250] kVA, single-phase, 2 coils with a common core constructions, 60 Hz.

B. Primary winding shall be 600 or 480 volts, three-phase, delta connected, or 600 volts, single-phase, complete with 4 full capacity 2.5% adjustment taps, 2 below (FCBN) and 2 above (FCAN) the rated voltage.

C. Secondary winding shall be 208Y/120 volts, three-phases, wye connected, with a 30° angular displacement (lagging) with respect to the primary winding or 120/240 volts, single-phase.

D. All winding conductors shall be of copper or aluminum.

E. Temperature rise at full load shall not exceed 150°C, with a class 220 insulation system.

F. Transformers to qualify to High Efficiency Values for dry-type transformers per CSA C802.2 2018.

G. Standard impedance at 60 Hz.

H. Standard audible sound level.

I. Windings shall be wound with the secondary winding nearest to the core.

J. The core shall be constructed of high grade, silicon steel laminations.

K. The impregnation process for the core-and-coil assembly shall include a period under vacuum, followed by pressure impregnation.

L. The transformer shall be isolated from the enclosure to reduce noise and vibration by means of anti-vibration pads.

M. The transformer enclosure shall be fabricated from sheet steel and shall be of Type 3R.

N. The enclosure coating shall be grey ASA 61.