



REX POWER MAGNETICS

DRY TYPE TRANSFORMERS



**DISTRIBUTION TRANSFORMERS
STANDARD & SPECIAL SPEC
K-FACTOR RATED
DRIVE ISOLATION
ELECTROSTATIC SHIELDED
AUTOTRANSFORMER
ENCAPSULATED**

Publication Date: 1/1/2022



About Rex Power Magnetics

Established in 1972, Rex Power Magnetics is an ISO 9001-2015 registered leading manufacturer of CSA certified and UL listed standard and custom specification dry type transformers.

Rex is driven by customer service, innovation, and technology. Rex has a solid track record for high quality and product support. With a central and integrated engineering, manufacturing, and customer service facility located just north of Toronto, Ontario, Canada and warehouses throughout Canada and the United States, the company offers a broad range of dry type power magnetic products to markets throughout North America and internationally.



The Rex product line includes custom designed specialty transformers, power transformers up to 15 MVA and 46 kV, distribution transformers, reactors, autotransformers, control and machine tool transformers, custom enclosures, custom cut electrical steel cores, and other power magnetic products and services. Supported by considerable and sustained investment in research and development, and the adoption of automation, Rex Power Magnetics continually expands and enhances its product and service offering.

Rex Power Magnetics is the industry leader in delivery responsiveness, supported by our vertically integrated in-house design, manufacturing, and testing capabilities. We pride ourselves on our technology leadership supported by our extensive R&D activities, engineering expertise, and manufacturing know-how.



For general information about Rex Power Magnetics, our complete product offering, and our general terms of sale, please visit our website: www.rexpowermagnetics.com

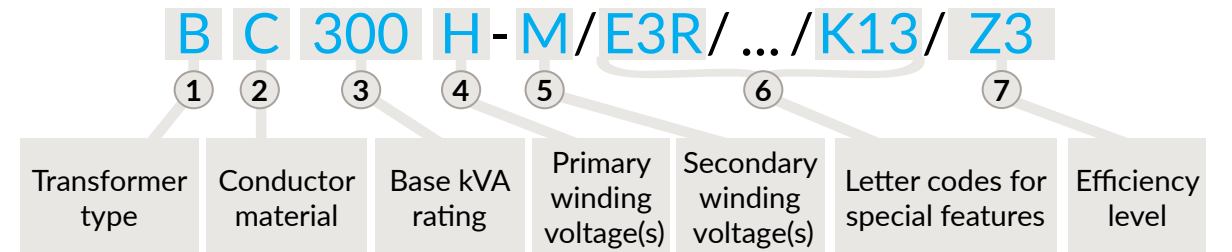
Rex has print/PDF catalogs available for:

- Power Transformers
- Transformers for Hazardous Locations
- Control Transformers
- Reactors
- Mini Power Centers

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Rex Part Numbering System



① - Transformer type

R	3 Phase Autotransformer
M	1 Phase Autotransformer
B	3 Phase Isolation Transformer
S	1 Phase Isolation Transformer
D	3 Phase Drive Isolation Transformer

② - Conductor Material

C	Copper
A	Aluminum (where available)

③ - Base kVA Rating

Standard 1 phase kVA levels:

1, 2, 3, 5, 7.5, 10, 15, 25, 37.5, 50, 75, 100, 150, 200, 250, 330

Standard 3 phase kVA levels:

3, 6, 9, 15, 30, 45, 75, 112.5, 150, 225, 300, 450, 500, 750

④&⑤ - Primary & Secondary Winding Voltage(s)

For Single Phase: Use Group 1. Use group 2 for split windings.

For Three Phase: Use Group 1 for delta windings; use group 3 for wye (star) windings.

For Autotransformer: Use Group 1 only.

For a voltage other than the ones indicated below, use **X** (under 1000 V).

Group 1		Group 2		Group 3	
A	120	H	480	M	208Y/120
A1	115	H1	460	N	416Y/240
A2	110	H2	440	N1	400Y/231
B	208	J	600	N2	415Y/240
B1	200	J1	575	P	480Y/277
C	240	J2	550	P1	460Y/266
C1	230	J3	690	P2	440Y/254
C2	220			Q	600Y/347
D	277			Q1	575Y/332
E	347			Q2	550Y/318
F	380			Q3	690Y/398
G	416			R	380Y/220
G1	400			S	240Y/139
G2	415			S1	230Y/133
				S2	220Y/127

⑥ - Letter Codes for Special Features

Add suffixes in order of appearance below, separated by slashes "/" as shown.

50	50 Hz
C&C	Core & coil only, no enclosure
E3R	Type 3R Outdoor enclosure
E4	Type 4 Enclosure (E4X for Stainless Steel)
E12	Type 12 Enclosure
EP	Encapsulated design (see pg 13)
ESP	Special Enclosure spec (eg: Special paint color, tamper proof, enclosure with doors, etc)
K13	K-Factor rated (K4, K9, K13, K20, K30)
M	Special markings, nameplate, tag, etc.
S1	Electrostatic Shielding (S1, S2, S3) (see pg 16)
T115	Temperature rise 115 °C
T80	Temperature rise 80 °C
W1	6 taps: 2 x 2.5% FCAN, 4 x 2.5% FCBN
X	Special feature (eg: Specified dimensions, inrush rating, impedance, vector diagram, etc.)
Y1	External neoprene anti-vibration pads supplied
Y2	Special Lugs (deviation from standard)

⑦ - Efficiency Level

For more information about transformer efficiency and the minimum efficiency levels, see page 6.

No suffix	For transformers which are excluded from minimum efficiency legislation.
Z3	Meets or exceeds current North American minimum efficiency standards, known as NRCAN 2019 (Canada) and DOE 2016 (USA).
ZX	Custom efficiency level, to be specified.

There exist a number of legacy efficiency levels that have been phased out (Z, Z2, ZCSL3, ZNP). Inquire with Rex sales if clarification is required on these levels.

Transformer Selection

For each of the products in this catalog, there are details about their intended application and purpose; Rex's standard specification is shown, and available alternate specifications are described. To select the rating for the desired transformer, a number of factors may be relevant: Provisions for future expansion, oversizing for purposes of efficiency or redundancy, etc. Fundamentally, however, the kVA rating is derived from the required Voltage [V] and Current [A]. The formulas and tables below may serve as a convenient reference.

Single Phase Applications

- Determine primary (supply) voltage and secondary (load) voltage. Determine currents.
- Confirm 1 phase, 60 Hz operation
- Determine kVA rating by formula or lookup table, to meet or exceed required current.
- Select a standard kVA rating equal to or greater than requirement.
- Make a determination of transformer type (IE Autotransformer, K-Factor Rated, Encapsulated, Isolation transformer, etc).

Line current [A] at rated Single Phase voltage

kVA	120 V	240 V	480 V	600 V
1	8.3	4.2	2.1	1.7
2	16.7	8.3	4.2	3.3
3	25.0	12.5	6.3	5.0
5	41.7	20.8	10.4	8.3
7.5	62.5	31.3	15.6	12.5
10	83.3	41.7	20.8	16.7
15	125.0	62.5	31.3	25.0
25	208.0	104.0	52.1	41.7
37.5	313.0	156.0	78.0	62.5
50	417.0	208.0	104.0	83.3
75	625.0	313.0	156.0	125.0
100	833.0	417.0	208.0	167.0
150	1250.0	625.0	313.0	250.0

Formula for calculating Single Phase kVA

$$kVA_{1\phi} = \frac{\text{Volts} \times \text{Amps}}{1000}$$

Transformer Rating for Motor Horsepower (HP, Single Phase)

Motor HP	0.5	1	1.5	2	3	5	7.5	10
Actual kVA Required	1.16	1.9	2.30	2.76	3.92	6.45	9.23	11.5
Closest Standard kVA	2.0	3.0	3.0	3.0	5.0	7.5	10.0	15.0

Three Phase Applications

- Determine primary (supply) voltage and secondary (load) voltage. Determine currents.
- Confirm 3 phase, 60 Hz operation
- Determine kVA rating by formula or lookup table, to meet or exceed required current.
- Select a standard kVA rating equal to or greater than requirement.
- Make a determination of transformer type (IE Autotransformer, K-Factor Rated, Encapsulated, Isolation transformer, etc).

Line current [A] at rated Three Phase voltage

kVA	208 V	240 V	480 V	600 V
3	8.3	7.2	3.6	2.9
6	16.6	14.4	7.2	5.8
9	25.0	21.7	10.7	8.7
15	41.7	36.1	18.1	14.5
30	83.4	72.3	36.1	28.9
45	125	108	54.2	43.4
75	208	181	90.3	72.3
112.5	313	271	135	108
150	417	361	181	145
225	625	542	271	217
300	834	723	361	289

Formula for calculating Three Phase kVA

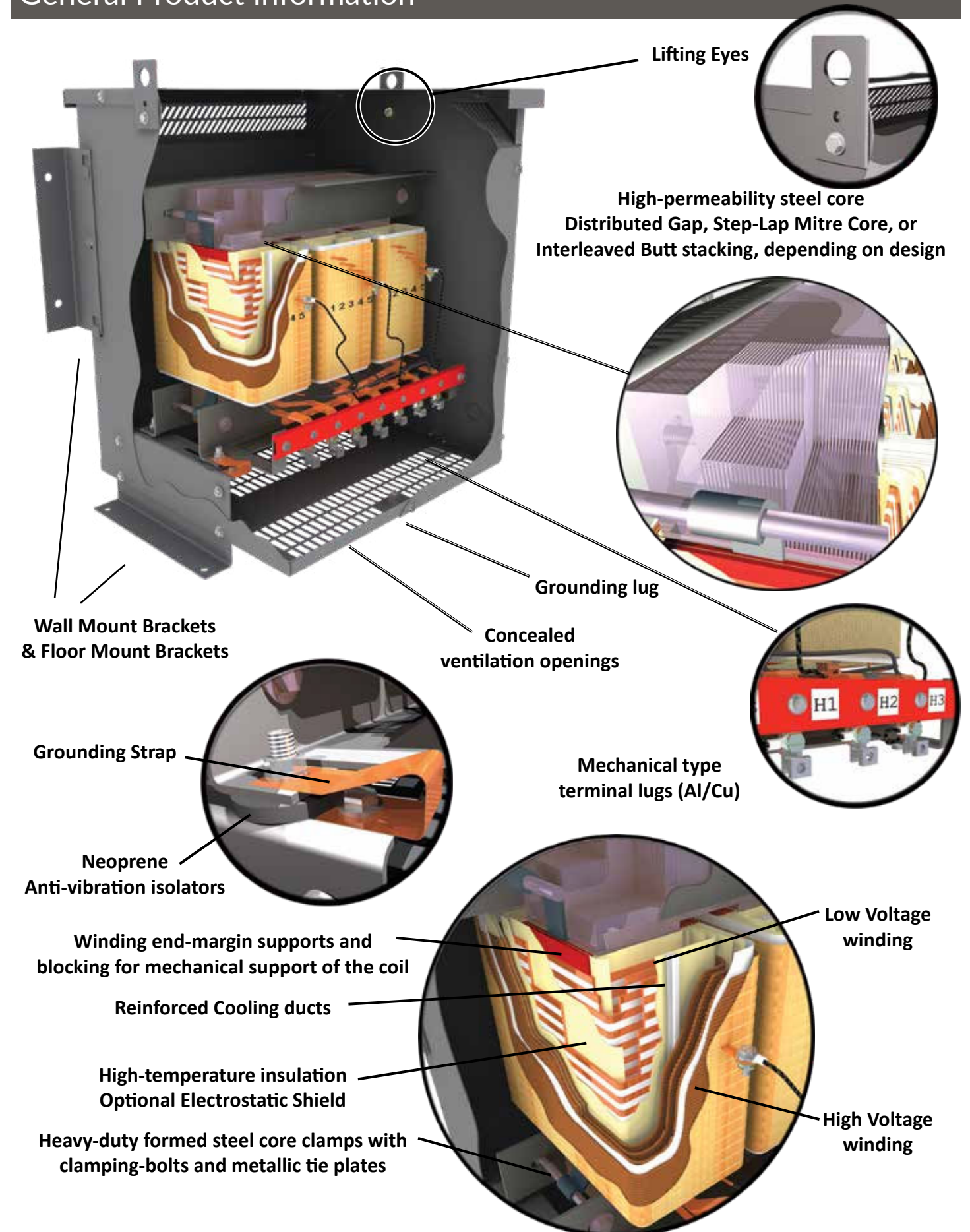
$$kVA_{3\phi} = \frac{\text{Volts} \times \text{Amps} \times 1.73}{1000}$$

*Use line-line volts

Transformer Rating for Motor Horsepower (HP, Three Phase)

Motor HP	2	3	5	7.5	10	15	20	25
Actual kVA Required	2.4	3.42	5.73	8.4	10.3	15	19.8	24.4
Closest Standard kVA	3.0	6.0	6.0	9.0	15	15	30	30

General Product Information



General Product Information

The following attributes are generally applicable to the each of the products detailed in this catalog. Specific details, exceptions, and variants are noted in each product's corresponding section.

Core

- Rex three-phase transformers utilize three-legged cores and single-phase transformers utilize two-legged cores, unless otherwise specified. Alternate constructions are available such as shell-type, four-leg, and five-leg.
- Only high-quality grain-oriented silicon steel is used. Core steel is precision cut and stacked for reduced noise and losses. Cores are clamped with heavy-duty steel brackets and metallic tie plates.
- A variety of core construction methods are available, such as "Step-lap miter-core," "Distributed-gap core," and "Interleaved butt-stacked core."

Coils

- All Rex windings (coils) are of high quality magnet wire (copper or aluminum are available).
- Class 220 °C insulation is used throughout the coil winding process. Class 220 is the highest insulation level recognized by the transformer industry.
- Coils are designed with reinforced cooling ducts.
- The complete core & coil assembly is impregnated in polyester resin and baked.
- Standard ±5% or ±2 x 2.5% primary voltage taps are provided on all isolation type transformers. Alternate tapping arrangements are available depending on product and size.
- Taps for supply voltage compensation are pre-cleaned and rated for the full-capacity of the transformer.

Vector Diagram

- For transformers where a Delta primary and a Wye secondary are specified, Rex's standard vector configuration is Dyn1 (30° phase shift, lagging).
- Rex is able to provide Dyn11, Dd, Yy, and a number of other vector configurations per specification. Please include **X** in the part number.

Testing

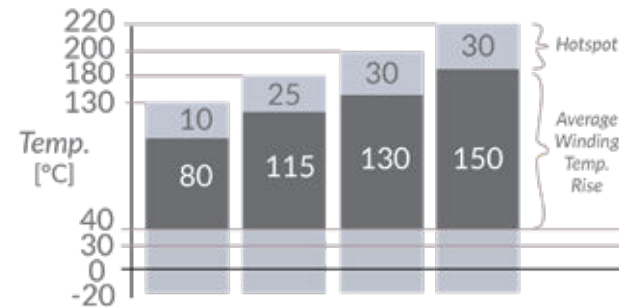
- Rex Power Magnetics produces and tests all products in full compliance with the requirements of its CSA and UL approvals.
- Reference test standards & documents include:
 - CSA C22.2 #47
 - UL 1561
 - UL 5085-2/CSA C66.2
 - CSA C66.1
 - CSA C9
 - IEEE C57.12.91
- The Rex test facility has been certified based on ISO/IEC 17025-17 (CSA Category Program)
- Witnessed testing is available (Toronto, Canada).

Design & Approvals

- CSA certified, File No. LR 34493
- UL Listed, File No. E108255
- Transformers are designed with sophisticated computerized modeling tools, based on years of research and test data. Designers are capable of exploiting the benefits of the latest in high performance materials that have become available, such as high-permeability laser-scribed grain-oriented silicone steel and high-temperature conductor insulation.
- Rex Standard Isolation transformers are manufactured with insulating materials that comply with CSA Winding Insulation System Class 220 °C as follows: Maximum acceptable temperature rise based on average ambient of 30 °C during any 24 hr period and a maximum ambient of 40 °C at any time. Altitude not to exceed 1000 m (3000 ft) above sea level. Rex can accommodate specs for special ambient and altitude.
- Unless otherwise specified, Rex follows applicable CSA/UL guidelines and internal engineering guidelines for electrical performance criteria such as X/R ratio, Voltage Regulation, Inrush Current, Impedance, Losses, Short Circuit Withstand Performance, and Electromagnetic Field Intensity.

Temperature Rise

- Rex transformers are designed with due consideration to ensure that the hottest spot in the coil does not exceed the temperature class of the insulation.
- Ordinary ambient conditions are defined to be ranging from -20 °C to +30 °C (daily average), with a max temporary ambient of 40 °C. CSA and UL provide guidelines for estimation of the hot spot relative to the average.
- Rex utilizes class 220 °C insulation throughout the coil for ventilated transformers that are designed with 150 °C rise. Specifying 115 °C or 80 °C rise is available as an option.



Packaging & Warranty

- Transformer ships on a suitably sized skid, with nylon covering, straps, and anti-stacking markers.
- Rex's standard warranty terms are online. Typical warranty duration is 1 year, or as specified.

General Product Information

Lugs, Terminals, Connections

- Transformers ship with suitably sized mechanical Cu-Al lugs and hardware for cable connection, or suitably sized and cleaned terminal pads with the appropriate NEMA hole pattern.
- As an option, special lugs and non-standard terminal locations may be specified and quoted.

Current Range	Lugs (per phase) supplied on Standard Units	Lugs (per phase) supplied on all other units (unless specified)
Up to 72 A	1 x 2-14 AWG	1 x 2-14 AWG
73 - 108 A	1 x 2/0-6 AWG	1 x 2/0-6 AWG
109 - 184 A	1 x 300 MCM - 6 AWG	1 x 300 MCM - 6 AWG
185 - 272 A	1 x 600 MCM - 2 AWG	1 x 600 MCM - 2 AWG
273 - 368 A	2 x 300 MCM - 6 AWG	PADS
369 - 544 A	2 x 600 MCM - 2 AWG	PADS
545 - 816 A	3 x 600 MCM - 2 AWG	PADS
817 - 1088 A	4 x 600 MCM - 2 AWG	PADS
1089 A +	PADS	PADS

Standard units include:

- 3-phase isolation transformers up to 300 kVA, with 600 V or 480 V primary, 208Y/120 V secondary, and
- 1-phase isolation transformers up to 100 kVA that have a 600 V or 480 V primary, and a 240/120 V secondary
- For all other transformers where lugs are to be supplied, refer to last column
- In this catalog, the following naming for lugs is used:

LA	2-14 AWG
LB	2/0 - 6 AWG
LC	300 MCM - 6 AWG
LD	600 MCM - 2 AWG

Sound Level

When energized, transformers emit a hum, largely due to the magnetization of the core. The tables below show the maximum audible sound levels for each kVA range. Rex transformers comply with these maximums; Modern high efficiency transformers operate with sound levels far below these levels. Further lower sound levels can be specified. Column 1 indicates the maximum for ventilated transformers. Column 2 indicates the maximum for sealed transformers, as well as encapsulated transformers.

Single Phase			Three Phase		
Rating [kVA]	Col 1 [dB]	Col 2 [dB]	Rating [kVA]	Col 1 [dB]	Col 2 [dB]
0 - 9	40	45	0 - 9	40	45
10 - 50	45	50	10 - 50	45	50
51 - 100	50	55	51 - 150	50	55
101 - 150	50	57	151 - 300	55	57
151 - 333	55	59	301 - 500	60	59
334 - 500	60	59	501 - 700	62	61
501 - 1000	64	61	701 - 1000	64	63

Seismic Rating

- Rex transformers were shake table tested for seismic withstand capability in accordance with the combined requirements of the International Building Code 2018 (IBC 2018), The California Building Code 2013 (CBC 2013), and the National Building Code of Canada 2010 (NBC 2010). As required by these codes, Rex transformers demonstrated their ability to function after the seismic tests, when suitably bolted & anchored to a fixed structure.
- Rex Power Magnetics cannot provide seismic engineering consulting services. Rex's seismic approval, combined with information about transformer mass and center of gravity can simplify the work of the seismic engineer, reducing overall project costs.
- Rex has available a variety of vibration absorbing materials, and can supply seismic spring/snubber assemblies, where specified by outside engineer.

Transformer Efficiency

- Transformers must meet regulations for minimum efficiency levels. The rules are applicable for kVA levels 15 kVA and up (1 and 3 phase). Some transformer types are excluded. For transformers where compliance is required, the transformer bears the "Green Line" trademark.



- Canadian and US minimum efficiency levels are harmonized. They are commonly referred to as "NRCan 2019" and "DOE 2016," respectively.
- In Canada, the NRCan 2019 refers to Natural Resources Canada "SOR/2018-201, Amendment 14." Provincial rules are harmonized so as to make the rule enforceable for interprovincial trade. In Ontario, the rule is known as "ON Reg. 404/12."
- In USA, the DOE 2016 refers to CFR 10 part 431.
- In forming the Rex Part Number for your transformer, use suffix **Z3** where efficiency levels are applicable.
- Excluded transformer types:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Transformers with a nominal frequency other than 60 Hz • Autotransformers • Drive (isolation) transformers that have two or more output windings or a nominal low-voltage line current of more than 1500 A; • Grounding transformers • Rectifier transformers • Sealed transformers | <ul style="list-style-type: none"> • Non-ventilated transformers (incl. encapsulated transformers) • testing transformers • furnace transformers • welding transformers • Special impedance transformers • Transformers that have a nominal low-voltage line current of 4000 A or more; • On-load regulating transformers • Resistance grounding transformers |
|--|---|

- Additionally, The US DOE exempts the following types:
 - Drive (isolation) transformers
 - Uninterruptible power supply transformers
 - Transformers with a tap range of 20 percent or more

General Product Information

Enclosures

- Standard enclosures are constructed of formed sheet steel. After fabrication, all enclosure panels are finished in ASA 61 gray powder coating, suitable for most industrial and commercial installations. Knock-Outs (KOs) for conduit are provided where typically required. Removable front cover allows access to terminals. Ventilation openings are coordinated with coil cooling ducts to permit natural air circulation.
- Enclosures E1-2 through E3R-7 can be wall mounted in addition to floor mounting. Wall mount brackets are shipped already attached and do not require removal of floor mount brackets; simply turn the wall mount brackets outwards and use.
- Wall mountable transformers do not require additional structural support or catch-pan underneath, for most installations. Catch pan is available if required.
- Floor or platform mount enclosures are equipped with integral lifting lugs, and can be suspension mounted using the floor mounting points.

Available kits and components

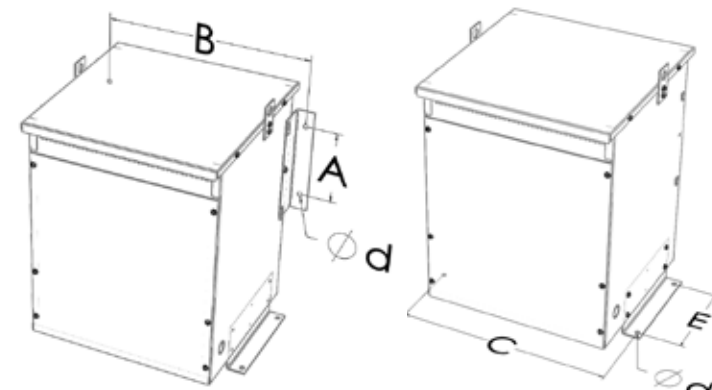
- Weather kit:** Convert Type 1 or Type 3R indoor enclosures to Type 3R outdoor. To include this kit with your transformer, add suffix **E3R** to part number.
- Tray or catch pan:** For use if transformer may be mounted above or near combustible items.
- Wall Mount bracket:** For wall mounting E3R-8. Note, bolting hardware not included.
- Metallic Skid Base (with or without cage).** Intended for applications where frequent forklift or crane handling is expected (IE mobile power duty).



Type 3R Indoor enclosure (left) versus the same enclosure equipped with optional weather kit for Type 3R Outdoor (right)

Enclosure Types

- Rex transformers are available with a variety of different enclosure types:
- Type 1 (NEMA 1):** Enclosures are constructed for indoor use to provide a degree of protection to personnel against access to hazardous parts and to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt). **Rex enclosure name: E1-#**
- Type 2 (NEMA 2):** Similar to type 1; additionally, provides a degree of protection with respect to harmful effects on the equipment due to the ingress of water (dripping and light splashing). **Rex enclosure name: E2-#**
- Type 3R Indoor (NEMA 3R):** Sprinkler-proof, when the angle between sprinkler heads and the opening does not exceed 45° from vertical. Most Rex standard enclosures are Type 3R Indoor as a standard, without any need for additional kits or hardware. **Rex enclosure name: E3R-#**
- Type 3R Outdoor (NEMA 3R):** While there is no distinction in the definition of the technical requirements of Type 3R Indoor vs outdoor, Rex's outdoor variant includes additional covers and protection against snow and rain. This is recommended for outdoor units; for more severe exposure conditions (wind blown snow & rain, rodents, etc) further protection should be specified. **Rex enclosure name: E3R-#-W.** To specify this type of enclosure, include suffix **E3R** in part number.
- Type 4 (NEMA 4):** Indoor or outdoor, Water tight, dust tight, sleet resistant. Provides ultimate level of protection. **Rex enclosure name: E4-#.** To specify in part number: **E4.** For Stainless Steel Type 304, use **E4X.** Type 316L is available.
- Type 12 (NEMA 12):** Commonly referred to as "dust-tight" and compared to IP 52. Rex can meet this requirement by supplying a Type 4 (which exceeds the requirement), or a ventilated (filtered) construction. **Rex enclosure name: E12-#.** To specify in part number: **E12.**



Wireframe illustration of enclosure, with dimension labels for wall mounting and floor mounting (see page 8)

Special Features and Customization

Rex can meet most requests for special features. Ex:

- Special paint color, process, or finishing
- Special dimensions, special mounting
- Access doors instead of panels, padlock-able
- Tamper-proof hardware
- Anti-Condensation coating inside top cover
- Special materials (Stainless 304, 316L, Aluminum)

General Product Information

Reference Charts - Standard Enclosure Details

The tables below provide details on Rex's Standard Enclosures.

- Each products page specifies which enclosure is used; Rex can supply customized enclosures where required.

Standard Ventilated Enclosures (Type 1 and 3R)

Standard Indoor Enclosure (Type 1 or Type 3R Indoor)								Type 3R Outdoor (with kit installed)	
Enclosure Name	Mounting	Type	Width [inch]	Depth [inch]	Height [inch]	Wall Mounting* d, A x B [inch]	Floor Mounting* d, C x E [inch]	Depth [inch]	Enclosure Name
E1-0	Floor	Type 1	9.50	7.00	8.00	n/a	3/16", 5" x 8"	n/a	n/a
E1-1	Floor	Type 1	12.00	9.00	9.30	n/a	5/16", 6" x 12.94	n/a	n/a
E1-2	Floor/Wall	Type 1	11.00	11.00	14.00	5/8", 8" x 13.25"	5/8", 13.25" x 8"	16.07	E3R-2-W
E1-3	Floor/Wall	Type 1	15.50	11.00	14.00	5/8", 8" x 17.75"	5/8", 17.75" x 8"	16.07	E3R-3-W
E3R-4	Floor/Wall	Type 3R indoor	15.75	16.00	21.00	1/2", 8" x 17.75"	1/2", 17.99" x 7.5"	21.12	E3R-4-W
E3R-5	Floor/Wall	Type 3R indoor	20.50	16.00	25.00	1/2", 8" x 22.50"	1/2", 22.74" x 7.5"	21.62	E3R-5-W
E3R-6	Floor/Wall	Type 3R indoor	20.50	20.75	30.00	1/2", 8" x 22.50"	1/2", 22.74" x 10"	26.39	E3R-6-W
E3R-7	Floor/Wall	Type 3R indoor	24.50	21.75	36.00	1/2", 11" x 26.50"	1/2", 26.11" x 11.5"	29.37	E3R-7-W
E3R-8	Floor	Type 3R indoor	30.75	33.40	44.00	n/a	5/8", 23.19" x 25"	37.49	E3R-8-W
E3R-8S	Floor	Type 3R indoor	27.00	29.00	47.00	n/a	5/8", 17.13" x 20"	29.00	E3R-8S-W
E3R-9	Floor	Type 3R indoor	40.00	38.00	52.00	n/a	5/8", 27.50" x 29"	41.75	E3R-9-W
E3R-9S	Floor	Type 3R indoor	32.00	32.00	52.00	n/a	5/8", 20.15" x 25"	32.00	E3R-9S-W
E3R-10	Floor	Type 3R indoor	46.00	50.00	66.00	n/a	5/8", 36" x 30"	50.00	E3R-10-W
E3R-11	Floor	Type 3R indoor	60.00	55.00	70.70	n/a	5/8", 37" x 30"	55.00	E3R-11-W
E3R-12	Floor	Type 3R indoor	73.00	56.00	79.50	n/a	5/8", 37" x 30"	56.00	E3R-12-W

* See diagram at bottom of page 7 for illustrations of A, B, C, d, E

Type 12 enclosures

Enclosure Name	Mounting	Width [inch]	Depth [inch]	Height [inch]	Floor Mounting* d, C x E [inch]
E12-6	Floor	20.50	25.40	30.00	1/2", 22.74" x 10"
E12-7	Floor	24.50	26.40	36.00	1/2", 26.11" x 11.5"
E12-8	Floor	30.75	34.50	44.00	5/8", 23.19" x 25"
E12-9	Floor	40.00	37.70	52.00	5/8", 27" x 29"
E12-10	Floor	46.00	46.30	66.00	5/8", 36" x 30"
E12-11	Floor	60.00	51.30	70.70	5/8", 37" x 30"
E12-12	Floor	73.00	51.70	79.50	5/8", 37" x 30"



* See diagram at bottom of page 7 for illustrations of C, d, E

Type 4 enclosures

Enclosure Name	Mounting	Width [inch]	Depth [inch]	Height [inch]	Floor Mounting* d, C x E [inch]
E4-4	Floor	15.50	16.50	18.00	5/8", 11.25" x 18.375"
E4-5	Floor	21.50	16.75	20.50	5/8", 15.25" x 19.50"
E4-6	Floor	21.50	22.00	27.00	5/8", 15.25" x 24.00"
E4-7	Floor	24.50	22.25	31.50	5/8", 19.00" x 24.25"
E4-8	Floor	30.75	30.50	32.00	5/8", 25.00" x 32.50"
E4-9	Floor	40.00	34.00	46.00	5/8", 29.00" x 36.00"
E4-10	Floor	46.50	43.25	64.50	5/8", 30.00" x 45.25"
E4-11	Floor	60.00	50.50	71.00	5/8", 30.00" x 52.50"
E4-12	Floor	73.00	48.50	79.50	5/8", 30.00" x 52.50"



* See diagram at bottom of page 7 for illustrations of C, d, E

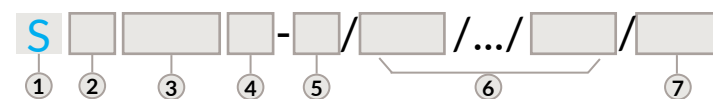
Isolation Transformer - Single Phase - Type S

Background

Rex Single Phase Isolation Transformers are manufactured under CSA file number LR34493, and UL Listed under File number E108255.

These general purpose transformers are ideal for supplying auxiliary lighting circuits and other commercial/industrial circuits from primary supply voltages under 1000V. In all cases where the load is grounded, isolation transformers should be used.

Catalog Number & Application Notes



① - 'S' Single Phase Isolation Transformer

② - Conductor Material

C	Copper
A	Aluminum (available 15 kVA and up)

③ - Base kVA Rating

- Select from standard 1 phase kVA levels below, or any other level 1 - 1000 kVA: **1, 2, 3, 5, 7.5, 10, 15, 25, 37.5, 50, 75, 100, 150, 200, 250, 330.**
- Note: Use **7** for 7.5, and **37** for 37.5.

④&⑤ - Primary & Secondary Winding Voltage(s)

- See page 2; select letter codes corresponding to the primary voltage from group 1.
- Secondary connection is commonly split. Select secondary from group 2.
- For a special voltage, use **X** and specify voltage.
- Standard connection diagram is shown to the right. For special connection or tapping, use **X** in ⑥

⑥ - Optional Special Features

- A variety of optional special features exist. Page 2 lists many of the most commonly specified options. Page 10 offers additional information.

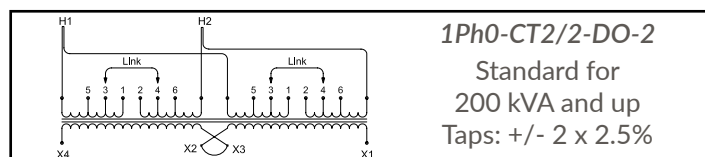
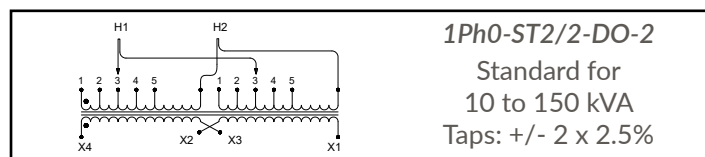
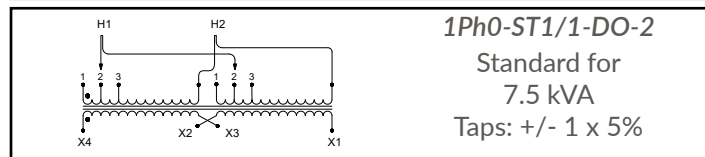
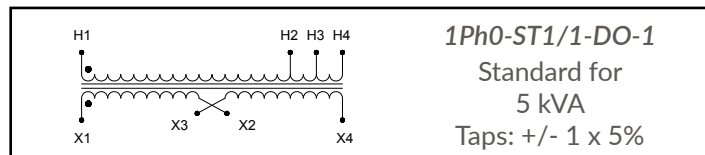
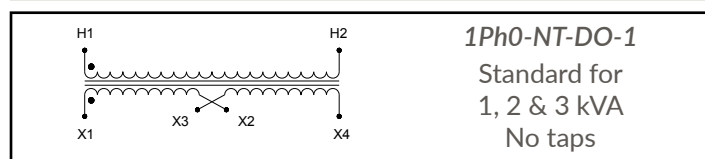
⑦ - Efficiency Level

- The table on the right shows the efficiency levels for single phase dry type transformers (Canada & USA).
- Transformers rated <15 kVA are excluded. Other excluded types are listed on page 6. In such cases, leave ⑦ blank.
- In forming the Rex Part Number for your transformer, use suffix **Z3** where efficiency levels are applicable.
- If a special efficiency level is required, use **ZX**, and specify efficiency with request.



Photos: Single Phase Transformer - Enclosed or Core & Coil

Connection diagrams



Efficiency Reference Table (Single Phase)

kVA	Efficiency [%]
15	97.70
25	98.00
37.5	98.20
50	98.30
75	98.50
100	98.60
150	98.70
250	98.80
330	98.90

Efficiency is reported at

- 35% load,
- purely sinusoidal,
- power factor of 1,
- Average winding temperature of 75 C.

For non standard kVA, use linear interpolation.

Isolation Transformer - Single Phase - Type S

Features & Specifications

Specification	Rex Standard	Optionally Available
Capacity	1, 2, 3, 5, 7.5, 10, 15, 25, 37.5, 50, 75, 100, 150, 200, 250, 330	Smaller kVA's are classified as control transformers. Larger kVA's are classified as power transformers.
Voltage class	1.2 kV (CSA), 600 V (UL)	Higher voltage classes are classified as power transformers
Conductor	C - Copper or A - Aluminum	n/a
Cooling	Self cooled (ANN)	ANC (Non ventilated units)
Frequency	60 Hz	50/60 Hz (use 50).
Insulation System	Class 220 (220 °C at hottest spot, 150 °C average rise)	n/a
Temperature Rise	150 °C average rise	115 °C (use T115), 80 °C (use T80)
K Factor Rating	K1 - No K-Factor	Available K4, K9, K13, K20 (see page 32)
Impregnation	Polyester Resin Dipped and Baked	<ul style="list-style-type: none"> Epoxy dipped and Baked Other custom specifications available
Efficiency level	Meets North American Energy Efficiency Standards: U.S. DOE 2016, NRCAN 2019	Higher levels may be specified (use ZX)
Taps	See Connection diagrams (p.9)	+2 FCAN, -4 FCBN taps (use W1) Other primary or secondary tap configurations (use X)
Connection diagram	See Connection diagrams (p.9)	Tertiary windings, alternate configurations (use X)
Terminations	Lugs or pads - see table (p.6)	Specific Cu-Al lugs available. (Use Y2)
Wiring	Terminals are on front or front/back.	Pad or lug location may be specified (use X)
Electrical Performance	Per page 5.	Special X/R ratio, Inrush current, Short Circuit Withstand capability, EMF intensity, etc. (use X)
Impedance	Per CSA C9	Special impedance may be specified (use X)
Sound Level	Per CSA C9 and NEMA ST-20 (see p.6)	3 dB below CSA level, or other (use X)
Enclosure Type	CSA Type 1 or 3R indoor, depending on kVA, see chart	<ul style="list-style-type: none"> No enclosure, Core & Coil only (use C&C) CSA Type 3R Outdoor (use E3R) Type 4, non-ventilated (use E4) Type 12, ventilated (use E12) Special dimensions and construction (use X)
Enclosure Material	Steel panels, Combination of 12, 14, & 16 ga	Other gauge, Stainless Steel 304, Stainless Steel 316L, Galvanneal, Aluminum.
Enclosure Finish	ASA 61 Gray Powder Coat	Bare Stainless, special color/finish (use ESP)
Approvals	CSA Certified and UL Listed CSA File # LR34493 (5kV Max, 900kVA Max) UL File # E108255 (600V Max, 750kVA Max)	IEC (use CE), European or other spec, ABS , Lloyds Registry, Canadian Coast Guard, and more. Also see Hazardous Location Catalog
Thermostat	Not supplied	Available NC 185, NC 200, or other (use X)
Mounting	Floor only, or floor/wall, depending on size. See tables (p. 12)	Special mounting available
Nameplate	Metallic Foil, English/French	Aluminum, Stainless Steel (use M)
Seismic	Canada Zone 6, USA Zone 4. See page 6 for more detail.	Rex can facilitate site specific Seismic approvals. Mason Super W pads, or other specified snubbers.
Testing	See page 5	Optional tests available, such as temperature-rise test, sound level, EMF, etc. (Ordered separately)
Shipping	Bolted to skid, with nylon cover	Shrink wrap, special skid, export crating
Optional Features	Special ambient temperature, Special altitude, Anti-Condensation Strip Heaters, Thermal Sensing and Indication (analog/digital), Surge protection, Breaker Integration, Power Monitoring, etc.	

Isolation Transformer - Single Phase - Type S

Reference Charts - Electrical Performance - Type 1 and 3R enclosures

The tables below provide typical standard values for three phase transformers with standard specification.

- Sample catalog numbers are shown for 600 V to 120/240 V. For other voltage codes, please see page 2
- The values reported below will not vary with the selection of special voltages, shielding, and some other options
- Special specifications such as K-Factor Rating and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.

Copper windings (Type SC)

kVA	Efficiency (35% load, 75 °C)	Impedance	Average Sound Level [dB]	Primary Taps	Standard Connection Diagram	600 V : 120/240	
						Lugs (HV/LV)	Catalog # <i>Refer to page 2 for voltage codes</i>
5	n/a	5.5% - 7%	40	+/- 1 x 5%	1Ph0-ST1/1-DO-1	LA / LA	SC5J-K
7.5	n/a	5.5% - 7%	40	+/- 1 x 5%	1Ph0-ST1/1-DO-2	LA / LA	SC7J-K
10	n/a	5% - 6.5%	40	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LA / LA	SC10J-K
15	97.70%	3.5% - 5.5%	45	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LA / LA	SC15J-K/Z3
25	98.00%	3.5% - 5.5%	45	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LA / LB	SC25J-K/Z3
37.5	98.20%	3.5% - 5%	45	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LA / LC	SC37J-K/Z3
50	98.30%	3.5% - 5%	50	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LB / LC	SC50J-K/Z3
75	98.50%	3.5% - 5%	50	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LC / 2 x LC	SC75J-K/Z3
100	98.60%	3.5% - 5%	50	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LC / 2 x LD	SC100J-K/Z3
150	98.70%	3.5% - 5%	55	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LD / PADS	SC150J-K/Z3
200	98.75%	4% - 6%	55	+/- 2 x 2.5%	1Ph0-CT2/2-DO-2	PADS	SC200J-K/Z3
250	98.80%	4% - 6%	55	+/- 2 x 2.5%	1Ph0-CT2/2-DO-2	PADS	SC250J-K/Z3
330	98.90%	4% - 6%	60	+/- 2 x 2.5%	1Ph0-CT2/2-DO-2	PADS	SC330J-K/Z3

Aluminum Windings (Type SA)

kVA	Efficiency (35% load, 75 °C)	Impedance	Average Sound Level [dB]	Primary Taps	Standard Connection Diagram	600 V : 120/240	
						Lugs (HV/LV)	Catalog # <i>Refer to page 2 for voltage codes</i>
5	n/a	5.5% - 7%	40	+/- 1 x 5%	1Ph0-ST1/1-DO-1	LA / LA	SA5J-K
7.5	n/a	5.5% - 7%	40	+/- 1 x 5%	1Ph0-ST1/1-DO-2	LA / LA	SA7J-K
10	n/a	5% - 6.5%	40	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LA / LA	SA10J-K
15	97.70%	3.5% - 5.5%	45	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LA / LA	SA15J-K/Z3
25	98.00%	3.5% - 5.5%	45	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LA / LB	SA25J-K/Z3
37.5	98.20%	3.5% - 5%	45	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LA / LC	SA37J-K/Z3
50	98.30%	3.5% - 5%	50	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LB / LC	SA50J-K/Z3
75	98.50%	3.5% - 5%	50	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LC / 2 x LC	SA75J-K/Z3
100	98.60%	3.5% - 5%	50	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LC / 2 x LD	SA100J-K/Z3
150	98.70%	3.5% - 5%	55	+/- 2 x 2.5%	1Ph0-ST2/2-DO-2	LD / PADS	SA150J-K/Z3
200	98.75%	4% - 6%	55	+/- 2 x 2.5%	1Ph0-CT2/2-DO-2	PADS	SA200J-K/Z3
250	98.80%	4% - 6%	55	+/- 2 x 2.5%	1Ph0-CT2/2-DO-2	PADS	SA250J-K/Z3
330	98.90%	4% - 6%	60	+/- 2 x 2.5%	1Ph0-CT2/2-DO-2	PADS	SA330J-K/Z3

Isolation Transformer - Single Phase - Type S

Reference Charts - Dimensions - Type 1 and 3R enclosures

The tables below provide typical standard values for three phase transformers with standard specification.

- The values reported below will not vary with the selection of special voltages, shielding, and some other options
- Special specifications such as K-Factor Rating and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.

For additional enclosure details (such as mounting), consult page 8.

Copper windings (Type SC)

kVA	Standard Indoor Enclosure (Type 1 or Type 3R Indoor)								Type 3R Outdoor (with kit installed)	
	Mounting	Width [inch]	Depth [inch]	Height [inch]	Weight [lbs]	Enclosure Name	Type	Depth [inch]	Enclosure Name	
5	Floor/Wall	11.00	11.00	14.00	80	E1-2	Type 1	16.07	E3R-2-W	
7.5	Floor/Wall	15.75	16.00	21.00	128	E3R-4	Type 3R indoor	21.12	E3R-4-W	
10	Floor/Wall	15.75	16.00	21.00	135	E3R-4	Type 3R indoor	21.12	E3R-4-W	
15	Floor/Wall	15.75	16.00	21.00	150	E3R-4	Type 3R indoor	21.12	E3R-4-W	
25	Floor/Wall	20.50	20.75	30.00	225	E3R-6	Type 3R indoor	26.39	E3R-6-W	
37.5	Floor/Wall	20.50	20.75	30.00	272	E3R-6	Type 3R indoor	26.39	E3R-6-W	
50	Floor/Wall	20.50	20.75	30.00	348	E3R-6	Type 3R indoor	26.39	E3R-6-W	
75	Floor/Wall	24.50	21.75	36.00	444	E3R-7	Type 3R indoor	29.37	E3R-7-W	
100	Floor	27.00	29.00	47.00	711	E3R-8S	Type 3R indoor	29.00	E3R-8S-W	
150	Floor	27.00	29.00	47.00	851	E3R-8S	Type 3R indoor	29.00	E3R-8S-W	
200	Floor	32.00	32.00	52.00	1170	E3R-9S	Type 3R indoor	32.00	E3R-9S-W	
250	Floor	32.00	32.00	52.00	1308	E3R-9S	Type 3R indoor	32.00	E3R-9S-W	
330	Floor	32.00	32.00	52.00	1720	E3R-9S	Type 3R indoor	32.00	E3R-9S-W	

Aluminum Windings (Type SA)

kVA	Standard Indoor Enclosure (Type 1 or Type 3R Indoor)								Type 3R Outdoor (with kit installed)	
	Mounting	Width [inch]	Depth [inch]	Height [inch]	Weight [lbs]	Enclosure Name	Type	Depth [inch]	Enclosure Name	
5	Floor/Wall	11.00	11.00	14.00	n/a	E1-2	Type 1	16.07	E3R-2-W	
7.5	Floor/Wall	15.75	16.00	21.00	n/a	E3R-4	Type 3R indoor	21.12	E3R-4-W	
10	Floor/Wall	15.75	16.00	21.00	127	E3R-4	Type 3R indoor	21.12	E3R-4-W	
15	Floor/Wall	15.75	16.00	21.00	143	E3R-4	Type 3R indoor	21.12	E3R-4-W	
25	Floor/Wall	20.50	20.75	30.00	208	E3R-6	Type 3R indoor	26.39	E3R-6-W	
37.5	Floor/Wall	20.50	20.75	30.00	234	E3R-6	Type 3R indoor	26.39	E3R-6-W	
50	Floor/Wall	20.50	20.75	30.00	308	E3R-6	Type 3R indoor	26.39	E3R-6-W	
75	Floor	24.50	21.75	36.00	405	E3R-7	Type 3R indoor	29.37	E3R-7-W	
100	Floor	27.00	29.00	47.00	684	E3R-8S	Type 3R indoor	29.00	E3R-8S-W	
150	Floor	27.00	29.00	47.00	800	E3R-8S	Type 3R indoor	29.00	E3R-8S-W	
200	Floor	32.00	32.00	52.00	1015	E3R-9S	Type 3R indoor	32.00	E3R-9S-W	
250	Floor	32.00	32.00	52.00	1225	E3R-9S	Type 3R indoor	32.00	E3R-9S-W	
330	Floor	32.00	32.00	52.00	1550	E3R-9S	Type 3R indoor	32.00	E3R-9S-W	

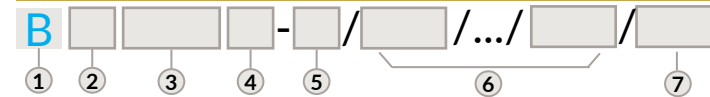
Isolation Transformer - Three Phase - Type B

Background

General Purpose Three Phase Isolation Transformers are intended for most commercial and industrial settings where robust and reliable power transformation is required. Hotels, schools, factories, and other such buildings will use transformers to feed lighting, heating, and general power distribution panels, rated 600 V and below.

- Transformers are available in a variety of enclosed types or as a Core & Coil.
- These transformers are intended for linear loads. Various options and features available on these transformers can be specified to accommodate electrical system requirements. For non-linear loads with a harmonic component in the power, consult the sections of this catalog for K-Factor Rating (p. 28) and Drive Isolation Transformers (p. 29)

Catalog Number & Application Notes



① - 'B' Three Phase Isolation Transformer

② - Conductor Material

C	Copper
A	Aluminum (available 15 kVA and up)

③ - Base kVA Rating

- Select from standard 3 phase kVA levels below, or any other level 3 - 1000 kVA: **3, 6, 9, 15, 30, 45, 75, 112.5, 150, 225, 300, 450, 500, 750.** (Note: Use 112 for 112.5)

④&⑤ - Primary & Secondary Winding Voltage(s)

- See page 2; select letter codes corresponding to the primary and secondary voltage from group 1 (delta connected) and/or group 3 (wye or star connected).
- For a special voltage, use **X** and specify voltage.
- Standard connection diagram is shown to the right. For special connection or tapping, use **X** in ⑥

⑥ - Optional Special Features

- A variety of optional special features exist. These are noted in the specification (p.14). Some of the most commonly specified ones are noted on p.2.

⑦- Efficiency Level

- The table on the right shows the efficiency levels for three phase dry type transformers (Canada & USA).
- Transformers rated <15 kVA are excluded. Other excluded types are listed on page 6. In such cases, leave ⑦ blank.
- For the part number, use suffix **Z3**; If a special efficiency level is required, use **ZX**, and specify efficiency level.



Photos: Three Phase Transformer - Enclosed or Core & Coil

Connection diagrams

	3PDyn1-NT Standard for 3 kVA No Taps
	3PDyn1-ST1/1 Standard for 6&9 kVA Taps: +/- 1 x 5%
	3PDyn1-ST2/2 Standard 15-150 kVA Taps: +/- 2 x 2.5%
	3PDyn1-ST2/4 Optional 15-150 kVA use W1 Taps: +2 x 2.5%, -4 x 2.5%
	3PDyn1-CT2/2 Standard for 225 kVA and up Taps: +/- 2 x 2.5%
	3PDyn1-CT2/4 Optional 225 kVA and up; use W1 Taps: +2 x 2.5%, -4 x 2.5%

Efficiency Reference Table (Three Phase)

kVA	Efficiency [%]
15	97.89
30	98.23
45	98.40
75	98.60
112.5	98.74
150	98.83
225	98.94
300	99.02
500	99.14
750	99.23
1000	99.28

Efficiency is reported at

- 35% load,
- purely sinusoidal,
- power factor of 1,
- Average winding temperature of 75 C.

For non standard kVA, use linear interpolation.

Isolation Transformer - Three Phase - Type B

Features & Specifications

Specification	Rex Standard	Optionally Available
Capacity	3, 6, 9, 15, 30, 45, 75, 112.5, 150, 225, 300, 450, 500, 750.	Larger kVA's are classified as power transformers.
Voltage class	1.2 kV (CSA), 600 V (UL)	Higher voltage classes are classified as power transformers
Conductor	C - Copper or A - Aluminum	n/a
Cooling	Self cooled (ANN)	ANC (Non ventilated units)
Frequency	60 Hz	50/60 Hz (use 50).
Insulation System	Class 220 (220 °C at hottest spot, 150 °C average rise)	n/a
Temperature Rise	150 °C average rise	• 115 °C (use T115), 80 °C (use T80)
K Factor Rating	K1 - No K-Factor	• Available K4, K9, K13, K20 (see page 32)
Impregnation	Polyester Resin Dipped and Baked	• Epoxy dipped and Baked • Other custom specifications available
Efficiency level	Meets North American Energy Efficiency Standards: U.S. DOE 2016, NRCAN 2019	Higher levels may be specified (use ZX)
Taps	See Connection diagrams (p.13)	+2 FCAN, -4 FCBN taps (use W1) Other primary or secondary tap configurations (use X)
Connection diagram	See Connection diagrams (p.13)	Tertiary windings, alternate configurations (use X)
Terminations	Lugs or pads - see table (p.6)	Specific Cu-Al lugs available. (Use Y2)
Wiring	Terminals are on front or front/back.	Pad or lug location may be specified (use X)
Electrical Performance	Per page 5.	Special X/R ratio, Inrush current, Short Circuit Withstand capability, EMF intensity, etc. (use X)
Impedance	Per CSA C9	Special impedance may be specified (use X)
Sound Level	Per CSA C9 and NEMA ST-20 (see p.6)	3 dB below CSA level, or other (use X)
Enclosure Type	CSA Type 1 or 3R indoor, depending on kVA, see chart (p. 15 - 18)	• No enclosure, Core & Coil only (use C&C) • CSA Type 3R Outdoor (use E3R) • Type 4, non-ventilated (use E4) • Type 12, ventilated dust-tight (use E12) • Special dimensions and construction (use X)
Enclosure Material	Steel panels, Combination of 12, 14, & 16 ga	Other gauges, Stainless Steel 304, Stainless Steel 316L, Galvanneal, Aluminum.
Enclosure Finish	ASA 61 Gray Powder Coat	Bare Stainless, special color/finish (use ESP)
Approvals	CSA Certified and UL Listed CSA File # LR34493 (5kV Max, 900kVA Max) UL File # E108255 (600V Max, 750kVA Max)	IEC (use CE), European or other spec, ABS , Lloyds Registry, Canadian Coast Guard, and more. Also see Hazardous Location Catalog
Thermostat	Not supplied	Available N.C.-185, N.C.-200, or other (use X)
Mounting	Floor only, or floor/wall, depending on size. See tables (p. 16, 18)	Special mounting available
Nameplate	Metallic Foil, English/French	Aluminum, Stainless Steel (use M)
Seismic	Canada Zone 6, USA Zone 4. See page 6 for more detail.	Rex can facilitate site specific Seismic approvals. Mason Super W pads, or other specified snubbers.
Testing	See page 5	Optional tests available, such as temperature-rise test, sound level, EMF, etc. (Ordered separately)
Shipping	Bolted to skid, with nylon cover	Shrink wrap, special skid, export crating
Optional Features	Special ambient temperature, Special altitude, Anti-Condensation Strip Heaters, Thermal Sensing and Indication (analog/digital), Surge protection, Breaker Integration, Power Monitoring, etc.	

Isolation Transformer - Three Phase - Type B

Reference Charts - Electrical Performance - Type 1 and 3R enclosures

- The tables below provide typical standard values for three phase transformers with standard specification.
- Sample catalog numbers are shown for 600 V delta to 208Y/120 V. For other voltage codes, please see page 2
 - The values reported below will not vary with the selection of special voltages, shielding, and some other options
 - Special specifications such as K-Factor ratings and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.

Copper windings (Type BC)

kVA	Efficiency (35% load, 75 °C)	Impedance	Average Sound Level [dB]	Primary Taps	Standard Connection Diagram	600 V : 208Y/120	
						Lugs (HV/LV)	Catalog # <i>Refer to page 2 for voltage codes</i>
3	n/a	5.5% - 7%	40	none	3PDyn1-NT	LA / LA	BC3J-M
6	n/a	5.5% - 7%	40	+/- 1 x 5%	3PDyn1-ST1/1	LA / LA	BC6J-M
9	n/a	5% - 6.5%	40	+/- 1 x 5%	3PDyn1-ST1/1	LA / LA	BC9J-M
15	97.89%	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	BC15J-M/Z3
30	98.23%	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LB	BC30J-M/Z3
45	98.40%	3.5% - 5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LC	BC45J-M/Z3
75	98.60%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LB / LD	BC75J-M/Z3
112.5	98.74%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / 2 x LC	BC112J-M/Z3
150	98.83%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / 2 x LD	BC150J-M/Z3
225	98.94%	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LD / 3 x LD	BC225J-M/Z3
300	99.02%	4% - 6%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	2 x LC / 4 x LD	BC300J-M/Z3
450	99.11%	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC450J-M/Z3
500	99.23%	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC500J-M/Z3
750	99.28%	4% - 6%	64	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC750J-M/Z3

Isolation Transformer - Three Phase - Type B

Reference Charts - Dimensions - Type 1 and 3R enclosures

- The tables below provide typical standard values for three phase transformers with standard specification.
- The values reported below will not vary with the selection of special voltages, shielding, and some other options
 - Special specifications such as K-Factor Rating and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.
- For additional enclosure details (such as mounting), consult page 8.

Copper windings (Type BC)

kVA	Standard Indoor Enclosure (Type 1 or Type 3R Indoor)							Type 3R Outdoor (with kit installed)	
	Mounting	Width [inch]	Depth [inch]	Height [inch]	Weight [lbs]	Enclosure Name	Type	Depth [inch]	Enclosure Name
3	Floor/Wall	15.50	11.00	14.00	73	E1-3	Type 1	16.07	E3R-3-W
6	Floor/Wall	15.75	16.00	21.00	116	E3R-4	Type 3R indoor	21.12	E3R-4-W
9	Floor/Wall	15.75	16.00	21.00	132	E3R-4	Type 3R indoor	21.12	E3R-4-W
15	Floor/Wall	20.50	16.00	25.00	215	E3R-5	Type 3R indoor	21.62	E3R-5-W
30	Floor/Wall	20.50	20.75	30.00	308	E3R-6	Type 3R indoor	26.39	E3R-6-W
45	Floor/Wall	20.50	20.75	30.00	397	E3R-6	Type 3R indoor	26.39	E3R-6-W
75	Floor/Wall	24.50	21.75	36.00	580	E3R-7	Type 3R indoor	29.37	E3R-7-W
112.5	Floor	30.75	33.40	44.00	890	E3R-8	Type 3R indoor	37.49	E3R-8-W
150	Floor	30.75	33.40	44.00	1040	E3R-8	Type 3R indoor	37.49	E3R-8-W
225	Floor	40.00	38.00	52.00	1680	E3R-9	Type 3R indoor	41.75	E3R-9-W
300	Floor	40.00	38.00	52.00	2055	E3R-9	Type 3R indoor	41.75	E3R-9-W
450	Floor	46.00	50.00	66.00	3350	E3R-10	Type 3R indoor	50.00	E3R-10-W
500	Floor	46.00	50.00	66.00	3500	E3R-10	Type 3R indoor	50.00	E3R-10-W
750	Floor	60.00	55.00	70.67	4795	E3R-11	Type 3R indoor	55.00	E3R-11-W

Aluminum Windings (Type BA)

kVA	Efficiency (35% load, 75 °C)	Impedance	Average Sound Level [dB]	Primary Taps	Standard Connection Diagram	600 V : 208Y/120	
						Lugs (HV/LV)	Catalog # <i>Refer to page 2 for voltage codes</i>
15	97.89%	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	BA15J-M/Z3
30	98.23%	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LB	BA30J-M/Z3
45	98.40%	3.5% - 5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LC	BA45J-M/Z3
75	98.60%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LB / LD	BA75J-M/Z3
112.5	98.74%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / 2 x LC	BA112J-M/Z3
150	98.83%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / 2 x LD	BA150J-M/Z3
225	98.94%	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LD / 3 x LD	BA225J-M/Z3
300	99.02%	4% - 6%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	2 x LC / 4 x LD	BA300J-M/Z3
450	99.11%	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BA450J-M/Z3
500	99.23%	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BA500J-M/Z3
750	99.28%	4% - 6%	64	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BA750J-M/Z3

Aluminum Windings (Type BA)

kVA	Standard Indoor Enclosure (Type 1 or Type 3R Indoor)							Type 3R Outdoor (with kit installed)	
	Mounting	Width [inch]	Depth [inch]	Height [inch]	Weight [lbs]	Enclosure Name	Type	Depth [inch]	Enclosure Name
15	Floor/Wall	20.50	16.00	25.00	230	E3R-5	Type 3R indoor	21.62	E3R-5-W
30	Floor/Wall	20.50	20.75	30.00	298	E3R-6	Type 3R indoor	26.39	E3R-6-W
45	Floor/Wall	20.50	20.75	30.00	390	E3R-6	Type 3R indoor	26.39	E3R-6-W
75	Floor/Wall	24.50	21.75	36.00	607	E3R-7	Type 3R indoor	29.37	E3R-7-W
112.5	Floor	30.75	33.40	44.00	990	E3R-8	Type 3R indoor	37.49	E3R-8-W
150	Floor	30.75	33.40	44.00	1100	E3R-8	Type 3R indoor	37.49	E3R-8-W
225	Floor	40.00	38.00	52.00	1750	E3R-9	Type 3R indoor	41.75	E3R-9-W
300	Floor	40.00	38.00	52.00	2100	E3R-9	Type 3R indoor	41.75	E3R-9-W
450	Floor	46.00	50.00	66.00	3640	E3R-10	Type 3R indoor	50.00	E3R-10-W
500	Floor	46.00	50.00	66.00	4098	E3R-10	Type 3R indoor	50.00	E3R-10-W
750	Floor	60.00	55.00	70.67	5000	E3R-11	Type 3R indoor	55.00	E3R-11-W

Isolation Transformer - Three Phase - Type B

Reference Charts - Electrical Performance - Type 12 and Type 4 enclosures

The tables below provide typical standard values for three phase transformers with standard specification.

- Sample catalog numbers are shown for 600 V delta to 208Y/120 V. For other voltage codes, please see page 2
- The values reported below will not vary with the selection of special voltages, shielding, and some other options
- Special specifications such as K-Factor Rating and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.

Copper windings, Type 12 ventilated (Type BC.../E12)

kVA	Efficiency (35% load, 75 °C)	Impedance	Average Sound Level [dB]	Primary Taps	Standard Connection Diagram	600 V : 208Y/120		kVA	Standard Enclosure (Type 12)					
						Lugs (HV/LV)	Catalog # <i>Refer to page 2 for voltage codes</i>		Mounting	Width [inch]	Depth [inch]	Height [inch]	Weight [lbs]	Enclosure Name
15	97.89	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	BC15J-M/E12/Z3	15	Floor	20.50	25.40	30.00	271	E12-6
30	98.23	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LB	BC30J-M/E12/Z3	30	Floor	20.50	25.40	30.00	340	E12-6
45	98.40	3.5% - 5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LC	BC45J-M/E12/Z3	45	Floor	20.50	25.40	30.00	437	E12-6
75	98.60	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LB / LD	BC75J-M/E12/Z3	75	Floor	24.50	26.40	36.00	625	E12-7
112.5	98.74	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / 2 x LC	BC112J-M/E12/Z3	112.5	Floor	30.75	34.50	44.00	960	E12-8
150	98.83	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / 2 x LD	BC150J-M/E12/Z3	150	Floor	30.75	34.50	44.00	1115	E12-8
225	98.94	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LD / 3 x LD	BC225J-M/E12/Z3	225	Floor	40.00	37.64	52.00	1700	E12-9
300	99.02	4% - 6%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	2 x LC / 4 x LD	BC300J-M/E12/Z3	300	Floor	40.00	37.64	52.00	2095	E12-9
450	99.11	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC450J-M/E12/Z3	450	Floor	46.00	46.25	66.00	3460	E12-10
500	99.23	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC500J-M/E12/Z3	500	Floor	46.00	46.25	66.00	3640	E12-10
750	99.28	4% - 6%	64	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC750J-M/E12/Z3	750	Floor	60.00	55.00	70.67	4995	E12-11

Copper windings, Type 4 Totally Enclosed, Non Ventilated (Type BC.../E4)

kVA	Efficiency (35% load, 75 °C)	Impedance	Average Sound Level [dB]	Primary Taps	Standard Connection Diagram	600 V : 208Y/120		kVA	Standard Enclosure (Type 4)					
						Lugs (HV/LV)	Catalog # <i>Refer to page 2 for voltage codes</i>		Mounting	Width [inch]	Depth [inch]	Height [inch]	Weight [lbs]	Enclosure Name
15	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	BC15J-M/E4	15	Floor	21.50	22.00	27.00	310	E4-6
30	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LB	BC30J-M/E4	30	Floor	21.50	22.00	27.00	376	E4-6
45	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LC	BC45J-M/E4	45	Floor	24.50	22.25	31.50	525	E4-7
75	n/a	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LB / LD	BC75J-M/E4	75	Floor	30.75	30.40	32.00	850	E4-8
112.5	n/a	4% - 6%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LC / 2 x LC	BC112J-M/E4	112.5	Floor	30.75	30.50	32.00	995	E4-8
150	n/a	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	LC / 2 x LD	BC150J-M/E4	150	Floor	40.00	34.00	46.00	1700	E4-9
225	n/a	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	LD / 3 x LD	BC225J-M/E4	225	Floor	46.50	43.25	64.50	2300	E4-10
300	n/a	4% - 6%	64	+/- 2 x 2.5%	3PDyn1-CT2/2	2 x LC / 4 x LD	BC300J-M/E4	300	Floor	46.50	43.25	64.50	2700	E4-10
450	n/a	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC450J-M/E4	450	Floor	60.00	50.50	71.00	4160	E4-11
500	n/a	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC500J-M/E4	500	Floor	60.00	50.50	71.00	4400	E4-11
750	n/a	4% - 6%	64	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC750J-M/E4	750	Floor	73.00	48.50	80.00	6400	E4-12

Isolation Transformer - Three Phase - Type B

Reference Charts - Dimensions - Type 12 and Type 4 enclosures

The tables below provide typical standard values for three phase transformers with standard specification.

- The values reported below will not vary with the selection of special voltages, shielding, and some other options
- Special specifications such as K-Factor Rating and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.

For additional enclosure details (such as mounting), consult page 8.

Copper windings, Type 12 ventilated (Type BC.../E12)

kVA	Efficiency (35% load, 75 °C)	Impedance	Average Sound Level [dB]	Primary Taps	Standard Connection Diagram	600 V : 208Y/120		kVA	Standard Enclosure (Type 12)					
						Lugs (HV/LV)	Catalog # <i>Refer to page 2 for voltage codes</i>		Mounting	Width [inch]	Depth [inch]	Height [inch]	Weight [lbs]	Enclosure Name
15	97.89	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	BC15J-M/E12/Z3	15	Floor	20.50	25.40	30.00	271	E12-6
30	98.23	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LB	BC30J-M/E12/Z3	30	Floor	20.50	25.40	30.00	340	E12-6
45	98.40	3.5% - 5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LC	BC45J-M/E12/Z3	45	Floor	20.50	25.40	30.00	437	E12-6
75	98.60	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LB / LD	BC75J-M/E12/Z3	75	Floor	24.50	26.40	36.00	625	E12-7
112.5	98.74	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / 2 x LC	BC112J-M/E12/Z3	112.5	Floor	30.75	34.50	44.00	960	E12-8
150	98.83	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / 2 x LD	BC150J-M/E12/Z3	150	Floor	30.75	34.50	44.00	1115	E12-8
225	98.94	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LD / 3 x LD	BC225J-M/E12/Z3	225	Floor	40.00	37.64	52.00	1700	E12-9
300	99.02	4% - 6%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	2 x LC / 4 x LD	BC300J-M/E12/Z3	300	Floor	40.00	37.64	52.00	2095	E12-9
450	99.11	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC450J-M/E12/Z3	450	Floor	46.00	46.25	66.00	3460	E12-10
500	99.23	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC500J-M/E12/Z3	500	Floor	46.00	46.25	66.00	3640	E12-10
750	99.28	4% - 6%	64	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC750J-M/E12/Z3	750	Floor	60.00	55.00	70.67	4995	E12-11

Copper windings, Type 4 Totally Enclosed, Non Ventilated (Type BC.../E4)

kVA	Efficiency (35% load, 75 °C)	Impedance	Average Sound Level [dB]	Primary Taps	Standard Connection Diagram	600 V : 208Y/120		kVA	Standard Enclosure (Type 4)					
						Lugs (HV/LV)	Catalog # <i>Refer to page 2 for voltage codes</i>		Mounting	Width [inch]	Depth [inch]	Height [inch]	Weight [lbs]	Enclosure Name
15	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	BC15J-M/E4	15	Floor	21.50	22.00	27.00	310	E4-6
30	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LB	BC30J-M/E4	30	Floor	21.50	22.00	27.00	376	E4-6
45	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LC	BC45J-M/E4	45	Floor	24.50	22.25	31.50	525	E4-7
75	n/a	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LB / LD	BC75J-M/E4	75	Floor	30.75	30.40	32.00	850	E4-8
112.5	n/a	4% - 6%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LC / 2 x LC	BC112J-M/E4	112.5	Floor	30.75	30.50	32.00	995	E4-8
150	n/a	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	LC / 2 x LD	BC150J-M/E4	150	Floor	40.00	34.00	46.00	1700	E4-9
225	n/a	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	LD / 3 x LD	BC225J-M/E4	225	Floor	46.50	43.25	64.50	2300	E4-10
300	n/a	4% - 6%	64	+/- 2 x 2.5%	3PDyn1-CT2/2	2 x LC / 4 x LD	BC300J-M/E4	300	Floor	46.50	43.25	64.50	2700	E4-10
450	n/a	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC450J-M/E4	450	Floor	60.00	50.50	71.00	4160	E4-11
500	n/a	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC500J-M/E4	500	Floor	60.00	50.50	71.00	4400	E4-11
750	n/a	4% - 6%	64	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	BC750J-M/E4	750	Floor	73.00	48.50	80.00	6400	E4-12

Autotransformer - Single & Three Phase - Type M & R

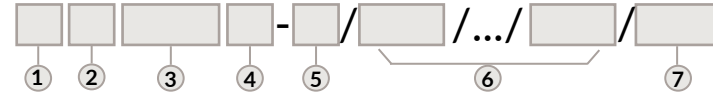
Background

Autotransformers are an economical and compact means of connecting electrical equipment to a power supply of a different voltage. Part of the winding is common to both the primary and secondary circuits. This means there is no isolation between the two, which may not be acceptable on some power systems where isolation is required, or if there is no grounded neutral on the secondary side of the upstream transformer. Typical applications include motor loads of industrial machinery, electric heating, and air conditioners. Specialty autotransformers are also available, such as:

- Autotransformer for motor-starters
- Autotransformer for battery-chargers
- Zig-Zag Grounding autotransformers

Contact our inside sales department for more information

Catalog Number & Application Notes



① - Autotransformer Type

M	Single Phase Autotransformer
R	Three Phase Autotransformer

② - Conductor Material

C	Copper
A	Aluminum (available in some cases - See p.22)

③ - Base kVA Rating

- For Single Phase: Select from standard kVA levels below, or any other level 3 - 1000+ kVA: **3, 5, 7.5, 10, 15, 25, 37.5, 50, 75, 100, 150, 225** (Note: Use **7** for 7.5, and **37** for 37.5).
- For Three Phase: Select from standard kVA levels below, or any other level 1.5 - 1000+ kVA: **3, 6, 9, 15, 30, 45, 75, 112.5, 150, 225, 300** (Note: Use 112 for 112.5)

④&⑤ - Primary & Secondary Winding Voltage(s)

- See page 2; select letter codes corresponding to the primary and secondary voltage from group 1.
- For a special voltage, use **X** and specify voltage.
- Standard connection diagram is shown to the right. For special connection or tapping, use **X** in ⑥

⑥ - Optional Special Features

- A variety of optional special features exist. These are noted in the specification (p.20). Some of the most commonly specified ones are noted on p.2.
- Autotransformers are exempt from North American Efficiency regulation.

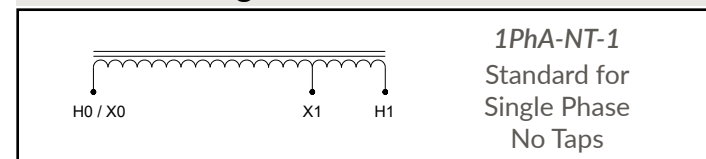


Photo: Three Phase Autotransformers
Left: 240 Y to 208 Y in chalk white enclosure
Right: 600 Y to 480 Y in standard enclosure

Application Notes

- As can be seen in the connection diagram below, the typical configuration is without taps. Taps are optionally available (use suffix **X**).
- See page 21 & 22 for the enclosure and weight for some of the most commonly specified voltage pairs. Other primary and secondary voltages are available.
- The details of page 21 & 22 are for the more commonly specified copper wound autotransformers. Aluminum wound autotransformers are available for some ratings, and they can represent an economical alternative.
- Autotransformers may also be specified as encapsulated types using suffix **EP**.
- May be used in step-up or step-down configuration.
- Low voltage Regulation; Less than 3%.
- Built with the same demanding specification as our isolation transformers.
- Rugged bracing, spacious and practically arranged wiring compartment, versatile and tough enclosure.
- Class 220 insulation is used.
- Autotransformers can be supplied in Type 12 and Type 4 boxes as well (use suffix **E12** or **E4**, respectively).
- For three phase autotransformers, there is no connection point to the neutral, unless specifically requested as an optional feature (use suffix **N**).

Connection diagrams



Autotransformer - Single & Three Phase - Type M & R

Features & Specifications

Specification	Rex Standard	Optionally Available
Capacity	Single Phase: 3, 5, 7.5, 10, 15, 25, 37.5, 50, 75, 100, 150, 225 Three Phase: 3, 6, 9, 15, 30, 45, 75, 112.5, 150, 225, 300	Larger kVA's are available and may be classified as power transformers
Voltage class	1.2 kV (CSA), 600 V (UL)	Higher voltage classes are classified as power transformers
Conductor	C - Copper or A - Aluminum	n/a
Cooling	Self cooled (ANN)	ANC (Non ventilated units)
Frequency	60 Hz	50/60 Hz (use 50) .
Insulation System	Class 220 (220 °C at hottest spot, 150 °C average rise)	n/a
Temperature Rise	150 °C average rise	115 °C (use T115), 80 °C (use T80)
K Factor Rating	K1 - No K-Factor	Available K4, K9, K13, K20 (see page 32)
Impregnation	Polyester Resin Dipped and Baked	Epoxy dipped and Baked Other custom specifications available
Efficiency level	No applicable efficiency compliance required	Higher levels may be specified (use ZX)
Taps	None. See Connection diagrams (p.19)	+1 FCAN, -1 FCBN taps (use W1) Other primary or secondary tap configurations (use X)
Connection diagram	See Connection diagrams (p.19)	Tertiary windings, alternate configurations (use X)
Terminations	Lugs or pads - see table (p.6)	Specific Cu-Al lugs available (use Y2) Accessible Neutral terminal (use N)
Wiring	Terminals are on front or front/back.	Pad or lug location may be specified (use X)
Electrical Performance	Per page 5.	Special X/R ratio, Inrush current, Short Circuit Withstand capability, EMF intensity, etc. (use X)
Impedance	Autotransformers typically have a lower impedance value than isolation transformers (approximately 1 - 4%)	Special impedance may be specified (use X)
Sound Level	Per CSA C9 and NEMA ST-20 (see p.6)	3 dB below CSA level, or other (use X)
Enclosure Type	CSA Type 1 or 3R indoor, depending on kVA, see charts (p. 21, 22)	<ul style="list-style-type: none"> • No enclosure, Core & Coil only (use C&C) • CSA Type 3R Outdoor (use E3R) • Type 4, non-ventilated (use E4) • Type 12, ventilated (use E12) • Special dimensions and construction (use X)
Enclosure Material	Steel panels, Combination of 12, 14, & 16 ga	Other gauges, Stainless Steel 304, Stainless Steel 316L, Galvanneal, Aluminum.
Enclosure Finish	ASA 61 Gray Powder Coat	Bare Stainless, special color/finish (use ESP)
Approvals	CSA Certified and UL Listed CSA File # LR34493 UL File # E108255	IEC (use CE), European or other spec, ABS , Lloyds Registry, Canadian Coast Guard, and more. Also see Hazardous Location Catalog
Thermostat	Not supplied	Available N.C.-185, N.C.-200, or other (use X)
Mounting	Floor only, or floor/wall, depending on size. See tables (p. 21, 22)	Special mounting available
Nameplate	Metallic Foil, English/French	Aluminum, Stainless Steel (use M)
Seismic	Canada Zone 6, USA Zone 4. See page 6 for more detail.	Rex can facilitate site specific Seismic approvals. Mason Super W pads, or other specified snubbers.
Testing	See page 5	Optional tests available, such as temperature-rise test, sound level, EMF, etc. (Ordered separately)
Shipping	Bolted to skid, strapped, with nylon cover	Shrink wrap, special skid, export crating
Optional Features	Special ambient temperature, Special altitude, Anti-Condensation Strip Heaters, Thermal Sensing and Indication (analog/digital), Surge protection, Breaker Integration, Power Monitoring, etc.	

Autotransformer - Single Phase, Copper - Type MC

Reference Charts - Enclosure & Weight - Single Phase Autotransformer

The tables below provides the weight and enclosure number for single phase autotransformers with standard specification. Contact Rex Sales for for application specific information.

kVA	600 V : 480 V			600 V : 416 V			600 V : 380 V		
	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name
3	MC3J-H	31	E1-0	MC3J-G	40	E1-0	MC3J-F	40	E1-0
5	MC5J-H	33	E1-0	MC5J-G	47	E1-1	MC5J-F	45	E1-1
7.5	MC7J-H	35	E1-1	MC7J-G	50	E1-1	MC7J-F	50	E1-1
10	MC10J-H	40	E1-1	MC10J-G	65	E1-1	MC10J-F	70	E1-2
15	MC15J-H	65	E1-1	MC15J-G	80	E1-2	MC15J-F	85	E1-2
25	MC25J-H	70	E1-2	MC25J-G	140	E3R-4	MC25J-F	140	E3R-4
37.5	MC37J-H	117	E3R-4	MC37J-G	145	E3R-4	MC37J-F	165	E3R-4
50	MC50J-H	143	E3R-4	MC50J-G	200	E3R-6	MC50J-F	205	E3R-6
75	MC75J-H	156	E3R-4	MC75J-G	225	E3R-6	MC75J-F	265	E3R-6
100	MC100J-H	222	E3R-6	MC100J-G	282	E3R-6	MC100J-F	320	E3R-6
150	MC150J-H	291	E3R-6	MC150J-G	360	E3R-6	MC150J-F	410	E3R-6
225	MC225J-H	379	E3R-6	MC225J-G	580	E3R-7	MC225J-F	680	E3R-8S

kVA	600 V : 240 V			480 V : 240 V			240 V : 208 V		
	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name
3	MC3J-C	45	E1-0	MC3H-C	50	E1-0	MC3C-B	30	E1-0
5	MC5J-C	65	E1-1	MC5H-C	60	E1-1	MC5C-B	36	E1-0
7.5	MC7J-C	81	E1-2	MC7H-C	75	E1-2	MC7C-B	45	E1-0
10	MC10J-C	92	E3R-4	MC10H-C	85	E1-2	MC10C-B	50	E1-0
15	MC15J-C	130	E3R-4	MC15H-C	105	E3R-4	MC15C-B	60	E1-0
25	MC25J-C	165	E3R-4	MC25H-C	182	E3R-4	MC25C-B	70	E1-1
37.5	MC37J-C	220	E3R-6	MC37H-C	212	E3R-4	MC37C-B	63	E3R-4
50	MC50J-C	250	E3R-6	MC50H-C	240	E3R-6	MC50C-B	112	E3R-6
75	MC75J-C	370	E3R-7	MC75H-C	326	E3R-6	MC75C-B	132	E3R-6
100	MC100J-C	440	E3R-7	MC100H-C	360	E3R-6	MC100C-B	181	E3R-6
150	MC150J-C	665	E3R-8S	MC150H-C	585	E3R-7	MC150C-B	218	E3R-6
225	MC225J-C	1060	E3R-8S	MC225H-C	932	E3R-8S	MC225C-B	350	E3R-7

kVA	240 V : 120 V		
	Catalog #	Weight [lbs]	Enclosure Name
3	MC3C-A	40	E1-0
5	MC5C-A	45	E1-1
7.5	MC7C-A	70	E1-2
10	MC10C-A	80	E1-2
15	MC15C-A	122	E3R-4
25	MC25C-A	152	E3R-4
37.5	MC37C-A	184	E3R-4
50	MC50C-A	240	E3R-6
75	MC75C-A	330	E3R-6
100	MC100C-A	400	E3R-6
150	MC150C-A	532	E3R-7
225	MC225C-A	874	E3R-8S

Autotransformer - Three Phase, Copper - Type RC

Reference Charts - Enclosure & Weight - Three Phase Autotransformer - Copper

The tables below provides the weight and enclosure number for three phase autotransformers with standard specification. Contact Rex Sales for for application specific information.

kVA	600 V : 480 V			600 V : 416 V			600 V : 380 V		
	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name
3	RC3J-H	21	E1-0	RC3J-G	32	E1-0	RC3J-F	38	E1-0
6	RC6J-H	34	E1-1	RC6J-G	70	E1-1	RC6J-F	75	E1-1
9	RC9J-H	45	E1-1	RC9J-G	85	E1-1	RC9J-F	110	E1-3
15	RC15J-H	65	E1-1	RC15J-G	120	E1-3	RC15J-F	140	E1-3
30*	RC30J-H	115	E1-3	RC30J-G	135	E1-3	RC30J-F	187	E3R-5
45*	RC45J-H	135	E1-3	RC45J-G	180	E3R-5	RC45J-F	206	E3R-5
75*	RC75J-H	225	E3R-5	RC75J-G	285	E3R-5	RC75J-F	293	E3R-5
112.5*	RC112J-H	250	E3R-5	RC112J-G	314	E3R-5	RC112J-F	425	E3R-6
150*	RC150J-H	271	E3R-6	RC150J-G	497	E3R-7	RC150J-F	530	E3R-7
225*	RC225J-H	381	E3R-6	RC225J-G	510	E3R-7	RC225J-F	687	E3R-7
300*	RC300J-H	479	E3R-7	RC300J-G	935	E3R-8	RC300J-F	833	E3R-8

kVA	600 V : 240 V			600 V : 208 V			480 V : 240 V		
	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name
3	RC3J-C	50	E1-1	RC3J-B	55	E1-1	RC3H-C	55	E1-1
6	RC6J-C	75	E1-1	RC6J-B	70	E1-1	RC6H-C	75	E1-1
9	RC9J-C	120	E1-3	RC9J-B	110	E1-3	RC9H-C	95	E1-3
15*	RC15J-C	155	E1-3	RC15J-B	135	E1-3	RC15H-C	110	E1-3
30*	RC30J-C	225	E3R-5	RC30J-B	225	E3R-5	RC30H-C	200	E3R-5
45*	RC45J-C	287	E3R-5	RC45J-B	271	E3R-5	RC45H-C	250	E3R-5
75*	RC75J-C	345	E3R-6	RC75J-B	390	E3R-6	RC75H-C	360	E3R-6
112.5*	RC112J-C	480	E3R-7	RC112J-B	610	E3R-7	RC112H-C	500	E3R-6
150*	RC150J-C	620	E3R-7	RC150J-B	791	E3R-8	RC150H-C	641	E3R-7
225*	RC225J-C	995	E3R-8	RC225J-B	1008	E3R-8	RC225H-C	947	E3R-8
300*	RC300J-C	1300	E3R-8	RC300J-B	1426	E3R-8	RC300H-C	1076	E3R-8

kVA	480 V : 208 V			240 V : 208 V		
	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name
3	RC3H-B	60	E1-1	RC3C-B	31	E1-0
6	RC6H-B	80	E1-1	RC6C-B	45	E1-0
9	RC9H-B	100	E1-3	RC9C-B	50	E1-1
15*	RC15H-B	110	E1-3	RC15C-B	60	E1-1
30*	RC30H-B	235	E3R-5	RC30C-B	85	E1-1
45*	RC45H-B	290	E3R-5	RC45C-B	90	E3R-3
75*	RC75H-B	350	E3R-6	RC75C-B	171	E3R-5
112.5*	RC112H-B	550	E3R-7	RC112C-B	228	E3R-5
150*	RC150H-B	700	E3R-7	RC150C-B	277	E3R-6
225*	RC225H-B	887	E3R-8	RC225C-B	338	E3R-6
300*	RC300H-B	1217	E3R-8	RC300C-B	358	E3R-6

* Catalog numbers shown in **bold italics** are available with aluminum windings. See Pg. 23.

Autotransformer - Three Phase, Aluminum - Type RA

Reference Charts - Enclosure & Weight - Three Phase Autotransformer - Aluminum

The tables below provides the weight and enclosure number for three phase autotransformers with standard specification. Contact Rex Sales for for application specific information.

kVA	600 V : 480 V			600 V : 416 V			600 V : 380 V		
	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name
15	n/a	n/a	n/a	RA15J-G	100	E1-3	RA15J-F	105	E1-3
30	RA30J-H	105	E1-3	RA30J-G	170	E3R-5	RA30J-F	180	E3R-5
45	RA45J-H	150	E3R-4	RA45J-G	210	E3R-6	RA45J-F	220	E3R-6
75	RA75J-H	190	E3R-5	RA75J-G	250	E3R-6	RA75J-F	270	E3R-6
112.5	RA112J-H	255	E3R-6	RA112J-G	320	E3R-6	RA112J-F	345	E3R-6
150	RA150J-H	310	E3R-6	RA150J-G	370	E3R-6	RA150J-F	490	E3R-7
225	RA225J-H	360	E3R-6	RA225J-G	520	E3R-7	RA225J-F	690	E3R-8
300	RA300J-H	500	E3R-7	RA300J-G	680	E3R-8	RA300J-F	825	E3R-8

kVA	600 V : 240 V			600 V : 208 V			480 V : 240 V		
	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name
15	RA15J-C	120	E1-3	RA15J-B	170	E3R-5	RA15H-C	110	E1-3
30	RA30J-C	190	E3R-5	RA30J-B	250	E3R-6	RA30H-C	180	E3R-5
45	RA45J-C	260	E3R-6	RA45J-B	270	E3R-6	RA45H-C	240	E3R-6
75	RA75J-C	365	E3R-6	RA75J-B	345	E3R-6	RA75H-C	305	E3R-6
112.5	RA112J-C	500	E3R-7	RA112J-B	520	E3R-7	RA112H-C	440	E3R-7
150	RA150J-C	690	E3R-8	RA150J-B	710	E3R-8	RA150H-C	515	E3R-7
225	RA225J-C	840	E3R-8	RA225J-B	920	E3R-8	RA225H-C	790	E3R-8
300	RA300J-C	1265	E3R-9	RA300J-B	1275	E3R-9	RA300H-C	995	E3R-8

kVA	480 V : 208 V			240 V : 208 V		
	Catalog #	Weight [lbs]	Enclosure Name	Catalog #	Weight [lbs]	Enclosure Name
15	RA15H-B	160	E3R-5	RA15C-B	60	E1-2
30	RA30H-B	195	E3R-5	RA30C-B	80	E1-3
45	RA45H-B	240	E3R-6	RA45C-B	95	E1-3
75	RA75H-B	260	E3R-6	RA75C-B	155	E3R-5
112.5	RA112H-B	480	E3R-7	RA112C-B	195	E3R-6
150	RA150H-B	700	E3R-8	RA150C-B	220	E3R-6
225	RA225H-B	850	E3R-8	RA225C-B	260	E3R-6
300	RA300H-B	1210	E3R-9	RA300C-B	320	E3R-6

Autotransformer, Encapsulated - Three Phase RA.../EP and RC.../EP

Reference Charts - Enclosure & Weight - Three Phase Encapsulated Autotransformer

The tables below provides the weight and enclosure number for three phase *encapsulated* autotransformers with standard specification. Contact Rex Sales for for application specific information.

Copper windings, Type 3R Outdoor (Type RC.../EP)

kVA	600 V : 480 V			
	Catalog #	Lugs (HV/LV)	Weight [lbs]	Enclosure Name
3	RC3J-H/EP	LA / LA	97	E3R-3PEP-1
6	RC6J-H/EP	LA / LA	100	E3R-3PEP-1
9	RC9J-H/EP	LA / LA	156	E3R-3PEP-1
15	RC15J-H/EP	LA / LA	189	E3R-3PEP-2
30	RC30J-H/EP	LA / LA	240	E3R-3PEP-2
45	RC45J-H/EP	LA / LA	394	E3R-3PEP-3
75	RC75J-H/EP	LB / LB	559	E3R-3PEP-4
112.5	RC112J-H/EP	LC / LC	630	E3R-3PEP-5
150	RC150J-H/EP	LC / LC	742	E3R-3PEP-5
225	RC225J-H/EP	LD / LD	867	E3R-3PEP-6
300	RC300J-H/EP	Pads	1205	E3R-3PEP-7

Aluminum windings, Type 3R Outdoor (Type RA.../EP)

kVA	600 V : 480 V			
	Catalog #	Lugs (HV/LV)	Weight [lbs]	Enclosure Name
15	RA15J-H/EP	LA / LA	194	E3R-3PEP-2
30	RA30J-H/EP	LA / LA	256	E3R-3PEP-2
45	RA45J-H/EP	LA / LA	375	E3R-3PEP-3
75	RA75J-H/EP	LB / LB	492	E3R-3PEP-4
112.5	RA112J-H/EP	LC / LC	657	E3R-3PEP-5
150	RA150J-H/EP	LC / LC	737	E3R-3PEP-5
225	RA225J-H/EP	LD / LD	829	E3R-3PEP-6
300	RA300J-H/EP	Pads	1152	E3R-3PEP-7

Reference Chart - Enclosure details for Encapsulated Transformers

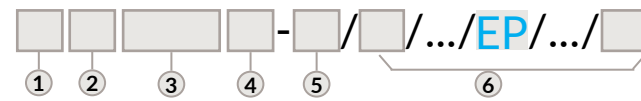
Type 3R Outdoor							Type 4	
Enclosure Name	Mounting	Width [inch]	Depth [inch]	Height [inch]	Wall Mounting* d, A x B [inch]	Floor Mounting* d, C x E [inch]	Enclosure Name	Depth [inch]
E3R-3PEP-1	Floor/Wall	11.00	10.00	15.25	1/2", 12.50" x 8"	7/16", 12.5" x 7"	E4-3PEP-1	12.00
E3R-3PEP-2	Floor/Wall	15.00	11.00	15.25	1/2", 16.50" x 8"	1/2", 16.5" x 8"	E4-3PEP-2	13.00
E3R-3PEP-3	Floor/Wall	18.00	12.50	17.00	1/2", 19.50" x 8"	1/2", 19.5" x 9.5"	E4-3PEP-3	14.50
E3R-3PEP-4	Floor/Wall	21.00	14.00	17.50	5/8", 22.50" x 10"	1/2", 22.5" x 10"	E4-3PEP-4	16.00
E3R-3PEP-5	Floor/Wall	21.00	18.00	20.00	5/8", 22.50" x 10"	1/2", 22.5" x 14.5"	E4-3PEP-5	20.00
E3R-3PEP-6	Floor	26.00	18.00	25.00	n/a	1/2", 28.5" x 15"	E4-3PEP-6	20.00
E3R-3PEP-7	Floor	32.00	18.00	30.00	n/a	1/2", 34.5" x 15"	E4-3PEP-7	20.00

Encapsulated Transformer - Single & Three Phase - Option EP

Background

Standard dry type ventilated transformers are cooled by circulating the surrounding air through the windings. For trouble-free operation and long life expectancy, the ambient air must be reasonably free of dust, moisture, corrosive gasses, or loose debris that may clog the inlets and outlets. For environments where this requirement cannot be met, polyester resin encapsulated transformers are ideal. Typical Applications include: abnormally corrosive, damp, or dusty indoor or outdoor installations (industrial, commercial, residential). Examples include mining duty, pump house, pulp and paper, petrochemical, and steel industries, as well as mobile power assemblies.

Catalog Number & Application Notes



① - Encapsulated Transformer Type

S	Single Phase
B	Three Phase

② - Conductor Material

C	Copper
A	Aluminum (available 15 kVA and up)

③ - Base kVA Rating

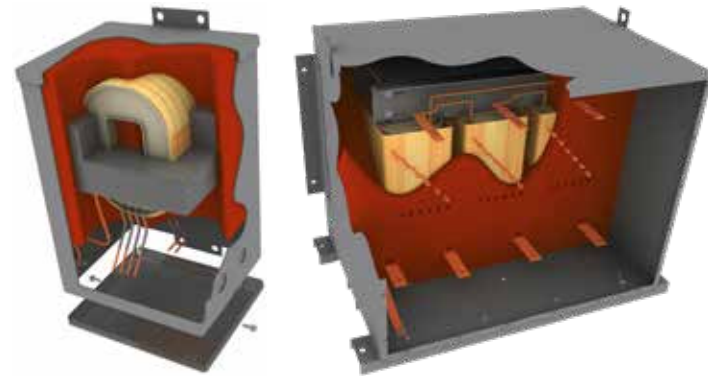
- For Single Phase: Select from standard kVA levels below, or any other level 0.25 - 125 kVA: **0.25, 0.5, 0.75, 1, 1.5, 2, 3, 5, 7.5, 10, 15, 25, 37.5, 50, 75, 100** (Note: Use 7 for 7.5, and 37 for 37.5.)
- For Three Phase: Select from standard kVA levels below, or any other level 1 - 150 kVA: **1, 2, 3, 6, 9, 15, 30, 45, 75, 112.5**. (Note: Use 112 for 112.5)

④&⑤ - Primary & Secondary Winding Voltage(s)

- Single phase: See page 2. Select letter code corresponding to the primary voltage from group 1. Secondary connection is commonly split; Select from group 2.
- Three phase: See page 2. Select letter codes corresponding to the primary and secondary voltages from group 1 (delta connected) and/or group 3 (wye or star connected).
- For a special voltage, use X and specify voltage.
- Standard connection diagrams are the same as with non encapsulated transformers. For special connection or tapping, use X in ⑥.

⑥ - Optional Special Features

- EP** must be listed in the part number
- A variety of optional special features exist. These are noted in the specification (p.24). Some of the most commonly specified ones are noted on p.2.
- There is no need for a suffix to denote efficiency level - Encapsulated transformers are exempt.



Construction Type 1
Single Phase units
Wiring Compartment is
located at underside

Construction Type 2
Three Phase units
Wiring Compartment is located at front

Construction

- A mixture of silica sand and polyester resin forms a solid block, encasing and protecting the core & coil, while significantly reducing audible noise.
- The polyester resin has a temperature class of 200. Class 220 insulation is used for coil insulation, however the temperature class must be considered to be Class 200 due to the presence of the polyester resin. Thus, the transformer is designed for 130 °C temperature rise. 115 °C rise, 80 °C rise, or other temperature rise levels may be specified.
- The core is solidly grounded (brought out to ground lug)
- Enclosure is constructed of heavy gauge steel with powder coated finish, suitable for type 3R or type 4 applications, indoor or outdoor. Optional stainless steel enclosures are recommended where the enclosure is exposed to severe corrosive environments.
- Transformer core & coil is designed and wound with unique attributes to optimize thermal performance.
- Wiring compartment is spacious, cool, and easily accessible. Bottom access is provided on smaller units (see type 1), and front access for larger units (see type 2).
- These epoxy transformers are considered suitable for "ordinary locations"; Transformers for "Hazardous Locations" as defined by IEC or CSA are available as well: Please see our catalog "Transformers for Hazardous Locations"
- Encapsulated transformers can be mated to primary & secondary protection, in a factory-wired and CSA/UL approved assembly: "Mini Power Center" - A dedicated brochure can be found at www.rexpowermagnetics.com
- Encapsulated transformers are exempt from DOE and NRCan requirements for efficiency level, however, encapsulated transformers are very efficient and most designs meet and exceed the requirements.

Encapsulated Transformer - Single & Three Phase - Option EP

Features & Specifications

Specification	Rex Standard	Optionally Available
Capacity	Single Phase: 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 5, 7.5, 10, 15, 25, 37.5, 50, 75, 100 Three Phase: 1, 2, 3, 6, 9, 15, 30, 45, 75, 112.5, 150	For larger kVA, consider Totally Enclosed Non-Ventilated transformers, or Cast Coil Transformers.
Voltage class	1.2 kV (CSA), 600 V (UL)	Up to 5 kV available (CSA only)
Conductor	C - Copper or A - Aluminum	n/a
Cooling	Self cooled (ANC)	n/a
Frequency	60 Hz	50/60 Hz (use 50) .
Insulation System	Class 200 (200 °C at hottest spot, 130 °C average rise)	n/a
Temperature Rise	130 °C average rise	115 °C (use T115), 80 °C (use T80)
K Factor Rating	K1 - No K-Factor	Available K4, K9, K13, K20 (see page 32)
Impregnation	Encapsulated in silica sand and polyester resin	n/a
Efficiency level	No applicable efficiency compliance required	Efficiency levels may be specified (use ZX)
Taps	See Connection diagrams (Single Phase: p.9, Three Phase: p.13)	+2 FCAN, -4 FCBN taps (use W1) Other primary or secondary tap configurations (use X)
Connection diagram	See Connection diagrams (Single Phase: p.9, Three Phase: p.13)	Tertiary windings, alternate configurations (use X)
Terminations	Lugs or pads - see table (p.6)	Specific Cu-Al lugs available. (Use Y2)
Wiring	Wiring compartment located at underside or front. See construction diagrams, p. 25	Pad or lug location may be specified. Wiring compartment location may be specified. (use X)
Electrical Performance	Per page 5. Note: Encapsulated transformers typically have a higher inrush current (startup current) versus ventilated transformers	Special X/R ratio, Minimum Inrush current, Short Circuit Withstand capability, EMF intensity, etc. (use X)
Impedance	Encapsulated transformers normally have a lower impedance value than ventilated transformers (approximately 1 - 2%)	Special impedance may be specified (use X)
Sound Level	Per CSA C9 and NEMA ST-20 (see p.6)	3 dB below CSA level, or other (use X)
Enclosure Type	CSA Type 3R outdoor	Type 4, non-ventilated (use E4)
Enclosure Material	Steel panels, Combination of 12, 14, & 16 ga	Other gauges, Stainless Steel 304, Stainless Steel 316L, Galvanneal
Enclosure Finish	ASA 61 Gray Powder Coat	Bare Stainless, special color/finish (use ESP)
Approvals	CSA Certified and UL Listed CSA File # LR34493 UL File # E108255	IEC (use CE), European or other spec, ABS , Lloyds Registry, Canadian Coast Guard, and more. Also see Hazardous Location Catalog
Thermostat	Not supplied	Available N.C.-185, N.C.-200, or other (use X)
Mounting	Floor only, or floor/wall, depending on size. See tables (p. 27, 28)	Special mounting available
Nameplate	Metallic Foil, English/French	Aluminum, Stainless Steel (use M)
Seismic	No approval (not tested as with ventilated transformers), however due to their fully encapsulated construction, they are well suited for environments where vibration may be present.	Rex can facilitate site specific Seismic approvals. Mason Super W pads, or other specified snubbers.
Testing	See page 5	Optional tests available, such as temperature-rise test, sound level, EMF, etc. (Ordered separately)
Shipping	Bolted to skid, with nylon cover	Shrink wrap, special skid, export crating
Optional Features	Special ambient temperature, Special altitude, Anti-Condensation Strip Heaters, Thermal Sensing and Indication (analog/digital), Surge protection, Breaker Integration, Power Monitoring, etc.	

Encapsulated Transformer - Single Phase - Option EP

Reference Charts - Electrical Performance - Type 3R and Type 4 enclosures

The tables below provide typical standard values for encapsulated transformers with standard specification.

- Sample catalog numbers are shown for 600 V to 120/240 V. For other voltage codes, please see page 2.
- The values reported below will not vary with the selection of special voltages, shielding, and some other options.
- Special specifications such as higher K-Factor ratings and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.

Copper windings (Type SC.../EP) - No efficiency spec - Electrical Performance

kVA	Const. Type (see p.25)	Primary Taps	Standard Connection Diagram	Weight [lbs]	Enclosure Name	600 V : 120/240	
						Lugs (HV/LV)	Catalog # <i>Refer to page 2 for voltage codes</i>
0.25	Type 1	none	1Ph0-NT-D0-1	17	E3R-1PEP-1	Leads	SC0.25J-K/EP
0.5	Type 1	none	1Ph0-NT-D0-1	20	E3R-1PEP-1	Leads	SC0.5J-K/EP
0.75	Type 1	none	1Ph0-NT-D0-1	23	E3R-1PEP-2	Leads	SC0.75J-K/EP
1	Type 1	none	1Ph0-NT-D0-1	27	E3R-1PEP-2	Leads	SC1J-K/EP
1.5	Type 1	none	1Ph0-NT-D0-1	40	E3R-1PEP-3	Leads	SC1.5J-K/EP
2	Type 1	+/- 1 x 5%	1Ph0-NT-D0-1	45	E3R-1PEP-3	Leads	SC2J-K/EP
3	Type 1	+/- 1 x 5%	1Ph0-NT-D0-1	55	E3R-1PEP-3	Leads	SC3J-K/EP
5	Type 2	+/- 1 x 5%	1Ph0-ST1/1-D0-1	155	E3R-1PEP-4	LA / LA	SC5J-K/EP
7.5	Type 2	+/- 1 x 5%	1Ph0-ST1/1-D0-1	210	E3R-1PEP-4	LA / LA	SC7.5J-K/EP
10	Type 2	+/- 2 x 2.5%	1Ph0-ST2/2-D0-2	230	E3R-1PEP-5	LA / LA	SC10J-K/EP
15	Type 2	+/- 2 x 2.5%	1Ph0-ST2/2-D0-2	296	E3R-1PEP-5	LA / LA	SC15J-K/EP
25	Type 2	+/- 2 x 2.5%	1Ph0-ST2/2-D0-2	310	E3R-1PEP-6	LA / LB	SC25J-K/EP
37.5	Type 2	+/- 2 x 2.5%	1Ph0-ST2/2-D0-2	625	E3R-1PEP-6	LA / LC	SC37.5J-K/EP
50	Type 2	+/- 2 x 2.5%	1Ph0-ST2/2-D0-2	750	E3R-1PEP-7	LB / LD	SC50J-K/EP
75	Type 2	+/- 2 x 2.5%	1Ph0-ST2/2-D0-2	960	E3R-1PEP-8	LC / PADS	SC75J-K/EP
100	Type 2	+/- 2 x 2.5%	1Ph0-ST2/2-D0-2	1460	E3R-1PEP-8	LC / PADS	SC100J-K/EP

Aluminum windings (Type SA.../EP) - No efficiency spec - Electrical Performance

kVA	Const. Type (see p.25)	Primary Taps	Standard Connection Diagram	Weight [lbs]	Enclosure Name	600 V : 120/240	
						Lugs (HV/LV)	Catalog # <i>Refer to page 2 for voltage codes</i>
15	Type 2	+/- 2 x 2.5%	1Ph0-ST2/2-D0-2	296	E3R-1PEP-5	LA / LA	SA15J-K/EP
25	Type 2	+/- 2 x 2.5%	1Ph0-ST2/2-D0-2	310	E3R-1PEP-6	LA / LB	SA25J-K/EP
37.5	Type 2	+/- 2 x 2.5%	1Ph0-ST2/2-D0-2	625	E3R-1PEP-6	LA / LC	SA37.5J-K/EP
50	Type 2	+/- 2 x 2.5%	1Ph0-ST2/2-D0-2	750	E3R-1PEP-7	LB / LD	SA50J-K/EP
75	Type 2	+/- 2 x 2.5%	1Ph0-ST2/2-D0-2	960	E3R-1PEP-8	LC / PADS	SA75J-K/EP
100	Type 2	+/- 2 x 2.5%	1Ph0-ST2/2-D0-2	1460	E3R-1PEP-8	LC / PADS	SA100J-K/EP

Encapsulated Transformer - Single Phase - Option EP

Reference Charts - Dimensions - Type 3R and Type 4 enclosures

The tables below provide typical standard values for three phase transformers with standard specification.

- The values reported below will not vary with the selection of special voltages, shielding, and some other options
- Special specifications such as K-Factor Rating and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.

Copper windings (Type SC.../EP) - No efficiency spec - Dimensions

kVA	Type 3R Outdoor						Type 4
	Mounting	Width [inch]	Depth [inch]	Height [inch]	Wall Mounting* d, A x B [inch]	Floor Mounting* d, C x E [inch]	Enclosure Name (Dimensions avail. online)
0.25	Wall	5.25	4.50	8.75	7/16", 10.0" x 2"	n/a	E4-1PEP-1
0.5	Wall	5.25	4.50	8.75	7/16", 10.0" x 2"	n/a	E4-1PEP-1
0.75	Wall	6.00	5.25	9.75	7/16", 11.0" x 2"	n/a	E4-1PEP-2
1	Wall	6.00	5.25	9.75	7/16", 11.0" x 2"	n/a	E4-1PEP-2
1.5	Wall	7.50	6.50	11.25	7/16", 12.5" x 2"	n/a	E4-1PEP-3
2	Wall	7.50	6.50	11.25	7/16", 12.5" x 2"	n/a	E4-1PEP-3
3	Wall	7.50	6.50	11.25	7/16", 12.5" x 2"	n/a	E4-1PEP-3
5	Floor/Wall	12.50	12.50	15.00	1/2", 14.0" x 8"	1/2", 9.5" x 14.0"	E4-1PEP-4
7.5	Floor/Wall	12.50	12.50	15.00	1/2", 14.0" x 8"	1/2", 9.5" x 14.0"	E4-1PEP-4
10	Floor/Wall	15.00	15.00	18.00	1/2", 10.0" x 16.5"	1/2", 16.5" x 10.0"	E4-1PEP-5
15	Floor/Wall	15.00	15.00	18.00	1/2", 10.0" x 16.5"	1/2", 16.5" x 10.0"	E4-1PEP-5
25	Floor/Wall	18.00	14.00	25.00	1/2", 14.0" x 19.5"	1/2", 19.5" x 11.0"	E4-1PEP-6
37.5	Floor/Wall	18.00	14.00	25.00	1/2", 14.0" x 19.5"	1/2", 19.5" x 11.0"	E4-1PEP-6
50	Floor	19.00	16.00	28.00	n/a	1/2", 20.5" x 13.0"	E4-1PEP-7
75	Floor	25.00	20.00	33.00	n/a	1/2", 26.5" x 17.0"	E4-1PEP-8
100	Floor	25.00	20.00	33.00	n/a	1/2", 26.5" x 17.0"	E4-1PEP-8

Aluminum windings (Type SA.../EP) - No efficiency spec - Dimensions

kVA	Type 3R Outdoor						Type 4
	Mounting	Width [inch]	Depth [inch]	Height [inch]	Wall Mounting* d, A x B [inch]	Floor Mounting* d, C x E [inch]	Enclosure Name (Dimensions avail. online)
15	Floor/Wall	15.00	15.00	18.00	1/2", 10.0" x 16.5"	1/2", 16.5" x 10.0"	E4-1PEP-5
25	Floor/Wall	18.00	14.00	25.00	1/2", 14.0" x 19.5"	1/2", 19.5" x 11.0"	E4-1PEP-6
37.5	Floor/Wall	18.00	14.00	25.00	1/2", 14.0" x 19.5"	1/2", 19.5" x 11.0"	E4-1PEP-6
50	Floor	19.00	16.00	28.00	n/a	1/2", 20.5" x 13.0"	E4-1PEP-7
75	Floor	25.00	20.00	33.00	n/a	1/2", 26.5" x 17.0"	E4-1PEP-8
100	Floor	25.00	20.00	33.00	n/a	1/2", 26.5" x 17.0"	E4-1PEP-8

* See diagrams at right for illustration of wall and floor mounting points.

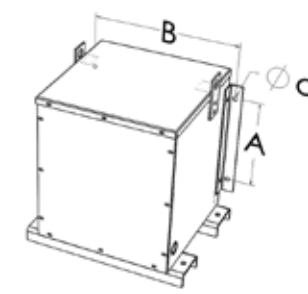


Diagram: Wall Mounting

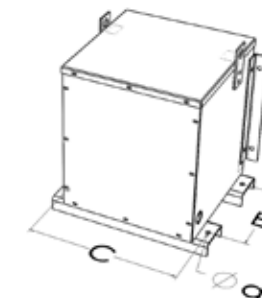


Diagram: Floor Mounting

Encapsulated Transformer - Three Phase - Option EP

Reference Charts - Electrical Performance - Type 3R and 4 enclosures

The tables below provide typical standard values for encapsulated transformers with standard specification.

- Sample catalog numbers are shown for 600 V delta to 208Y/120 V. For other voltage codes, please see page 2.
- The values reported below will not vary with the selection of special voltages, shielding, and some other options.
- Special specifications such as higher K-Factor ratings and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.

Copper windings (Type BC.../EP) - No efficiency spec - Electrical Performance

kVA	Const. Type (see p.25)	Primary Taps	Standard Connection Diagram	Weight [lbs]	Enclosure Name	600 V : 208Y/120	
						Lugs (HV/LV)	Catalog # <i>Refer to page 2 for voltage codes</i>
1.5	Type 2	none	3PDyn1-ST1/1	145	E3R-3PEP-1	LA / LA	BC1.5J-M/EP
2	Type 2	none	3PDyn1-ST1/1	150	E3R-3PEP-1	LA / LA	BC2J-M/EP
3	Type 2	+/- 1 x 5%	3PDyn1-ST1/1	175	E3R-3PEP-2	LA / LA	BC3J-M/EP
6	Type 2	+/- 1 x 5%	3PDyn1-ST1/1	185	E3R-3PEP-2	LA / LA	BC6J-M/EP
9	Type 2	+/- 1 x 5%	3PDyn1-ST1/1	240	E3R-3PEP-3	LA / LA	BC9J-M/EP
15	Type 2	+/- 2 x 2.5%	3PDyn1-ST2/2	350	E3R-3PEP-4	LA / LA	BC15J-M/EP
30	Type 2	+/- 2 x 2.5%	3PDyn1-ST2/2	520	E3R-3PEP-5	LA / LB	BC30J-M/EP
45	Type 2	+/- 2 x 2.5%	3PDyn1-ST2/2	775	E3R-3PEP-6	LA / LC	BC45J-M/EP
75	Type 2	+/- 2 x 2.5%	3PDyn1-ST2/2	1298	E3R-3PEP-7	LB / LD	BC75J-M/EP
112.5	Type 2	+/- 2 x 2.5%	3PDyn1-CT2/2	1365	E3R-3PEP-8	LC / PADS	BC112J-M/EP
150	Type 2	+/- 2 x 2.5%	3PDyn1-CT2/2	2020	E3R-3PEP-9	LC / PADS	BC150J-M/EP

Aluminum windings (Type BA.../EP) - No efficiency spec - Electrical Performance

kVA	Const. Type (see p.25)	Primary Taps	Standard Connection Diagram	Weight [lbs]	Enclosure Name	600 V : 208Y/120	
						Lugs (HV/LV)	Catalog # <i>Refer to page 2 for voltage codes</i>
15	Type 2	+/- 2 x 2.5%	3PDyn1-ST2/2	350	E3R-3PEP-4	LA / LA	BA15J-M/EP
30	Type 2	+/- 2 x 2.5%	3PDyn1-ST2/2	520	E3R-3PEP-5	LA / LB	BA30J-M/EP
45	Type 2	+/- 2 x 2.5%	3PDyn1-ST2/2	775	E3R-3PEP-6	LA / LC	BA45J-M/EP
75	Type 2	+/- 2 x 2.5%	3PDyn1-ST2/2	1298	E3R-3PEP-7	LB / LD	BA75J-M/EP
112.5	Type 2	+/- 2 x 2.5%	3PDyn1-CT2/2	1365	E3R-3PEP-8	LC / PADS	BA112J-M/EP
150	Type 2	+/- 2 x 2.5%	3PDyn1-CT2/2	2100	E3R-3PEP-9	LC / PADS	BA150J-M/EP

Encapsulated Transformer - Three Phase - Option EP

Reference Charts - Dimensions - Type 3R and Type 4 enclosures

The tables below provide typical standard values for three phase transformers with standard specification.

- The values reported below will not vary with the selection of special voltages, shielding, and some other options
- Special specifications such as K-Factor Rating and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.

Copper windings (Type BC.../EP) - No efficiency spec - Dimensions

kVA	Type 3R Outdoor						Type 4	
	Mounting	Width [inch]	Depth [inch]	Height [inch]	Wall Mounting* d, A x B [inch]	Floor Mounting* d, C x E [inch]	Enclosure Name	Depth [inch]
1.5	Floor/Wall	11.00	10.00	15.25	1/2", 12.50" x 8"	7/16", 12.5" x 7"	E4-3PEP-1	12.00
2	Floor/Wall	11.00	10.00	15.25	1/2", 12.50" x 8"	7/16", 12.5" x 7"	E4-3PEP-1	12.00
3	Floor/Wall	15.00	11.00	15.25	1/2", 16.50" x 8"	1/2", 16.5" x 8"	E4-3PEP-2	13.00
6	Floor/Wall	15.00	11.00	15.25	1/2", 16.50" x 8"	1/2", 16.5" x 8"	E4-3PEP-2	13.00
9	Floor/Wall	18.00	12.50	17.00	1/2", 19.50" x 8"	5/8", 19.5" x 9.5"	E4-3PEP-3	14.50
15	Floor/Wall	21.00	14.00	17.50	5/8", 22.50" x 10.0"	1/2", 22.5" x 10.0"	E4-3PEP-4	16.00
30	Floor/Wall	21.00	18.00	20.00	5/8", 22.50" x 10.0"	1/2", 22.5" x 14.5"	E4-3PEP-5	20.00
45	Floor	26.00	18.00	25.00	n/a	1/2", 28.5" x 15.0"	E4-3PEP-6	20.00
75	Floor	32.00	18.00	30.00	n/a	1/2", 34.5" x 15.0"	E4-3PEP-7	20.00
112.5	Floor	36.00	25.00	32.00	n/a	1/2", 38.5" x 20.0"	E4-3PEP-8	27.00
150	Floor	36.00	25.00	36.00	n/a	1/2", 38.5" x 20.0"	E4-3PEP-9	27.00

Aluminum windings (Type BA.../EP) - No efficiency spec - Dimensions

kVA	Type 3R Outdoor						Type 4	
	Mounting	Width [inch]	Depth [inch]	Height [inch]	Wall Mounting* d, A x B [inch]	Floor Mounting* d, C x E [inch]	Enclosure Name	Depth [inch]
15	Floor/Wall	21.00	14.00	17.50	5/8", 22.50" x 10.0"	1/2", 22.5" x 10.0"	E4-3PEP-4	16.00
30	Floor/Wall	21.00	18.00	20.00	5/8", 22.50" x 10.0"	1/2", 22.5" x 14.5"	E4-3PEP-5	20.00
45	Floor	26.00	18.00	25.00	n/a	1/2", 28.5" x 15.0"	E4-3PEP-6	20.00
75	Floor	32.00	18.00	30.00	n/a	1/2", 34.5" x 14.5"	E4-3PEP-7	20.00
112.5	Floor	36.00	25.00	32.00	n/a	1/2", 38.5" x 20.0"	E4-3PEP-8	27.00
150	Floor	36.00	25.00	36.00	n/a	1/2", 38.5" x 20.0"	E4-3PEP-9	27.00

* See diagrams at right for illustration of wall and floor mounting points.

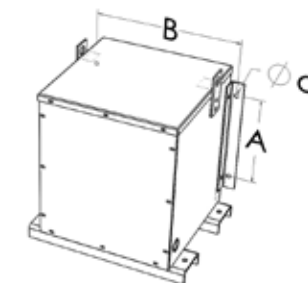


Diagram: Wall Mounting

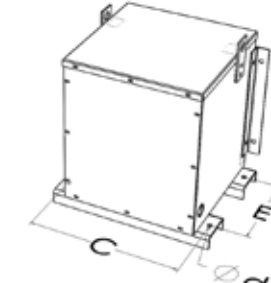


Diagram: Floor Mounting

Electrostatic Shielding - Option S1, S2, S3

Background

Electrostatic (Faraday) Shielding is an optional feature for transformers which provides a degree of protection for sensitive electrical and electronic equipment from high frequency voltages (electrical noise) or transients. This feature is available on most isolation type transformers, including encapsulated & K-factor rated transformers. It is a relatively low cost means of protection from this type of power quality problem. Typical applications include computer and electronic loads, instrumentation, medical equipment, and industrial equipment (PLC, Process Control). Electrical noise is comprised of two types:

Normal mode: Noise which appears between the hot and neutral current carrying conductors.

Common mode: Noise which appears between both the hot and neutral conductor, relative to the ground. Common mode noise is more prevalent and should be the key criterion for any noise suppression device.

Features & Specifications

- The shielded transformer suppresses common mode noise thanks to the presence of a broad (full height) foil conductor that is wound in between the primary and secondary windings.
- The conductor material is typically selected to be the same as the winding material; copper or aluminum.
- The grounded shield provides a low-resistance path to ground by the effect of capacitive coupling. This prevents high frequency signals present in the source voltage from reaching the secondary of the transformer, and subsequently, the connected load.
- The electrostatic shield will not perform any function with regards to harmonic current or voltage distortion of waveforms.

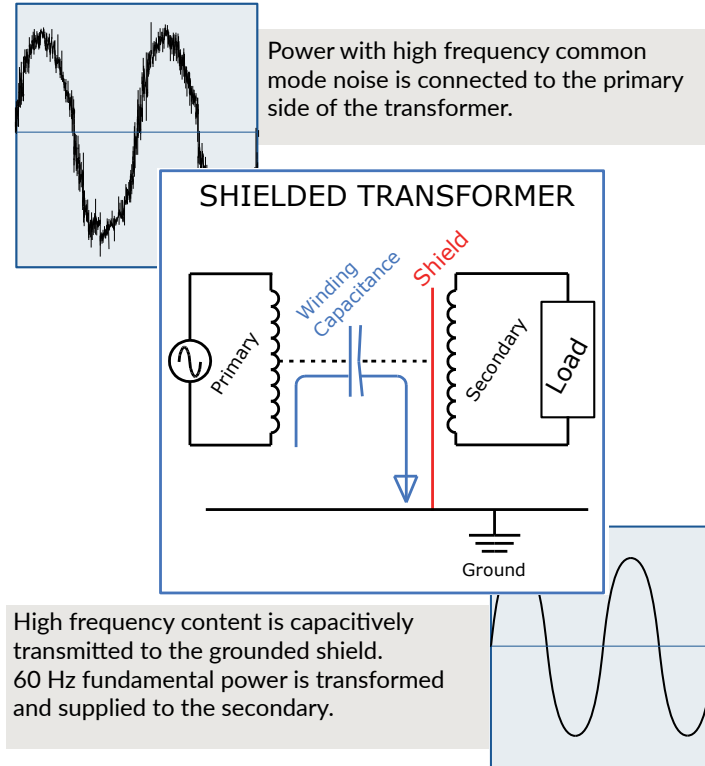
Construction	Suffix	Typical Attenuation range [dB] and [Ratio]
Transformer with no shield		12 dB min, 20 dB max 10:1
Single Shield - Between primary & secondary windings	S1	50 dB min, 65 dB max 1,000:1
Double Shield - As with S1, plus a shield between secondary and core	S2	60 dB min, 90 dB max 10,000:1
Triple Shield - As with S2, plus a shield surrounding primary	S3	90 dB min, 120 dB max 100,000:1
Ultra Isolating - Special shielding	X	120 dB min, 150 dB max 1,000,000:1



Photo: Electrostatic shield connection to the ground lug

Application Notes

- Four types of electrostatic shielding are available, offering incrementally greater degrees of common-mode noise attenuation.
- The ratio of the common mode noise attenuation is expressed in decibels (dB) or as a ratio.
- Use suffix "S1" or "S2" or "S3" or "X" in part number, as per Rex Catalog Number system
- The table below provides the typical attenuation with each type of shield.



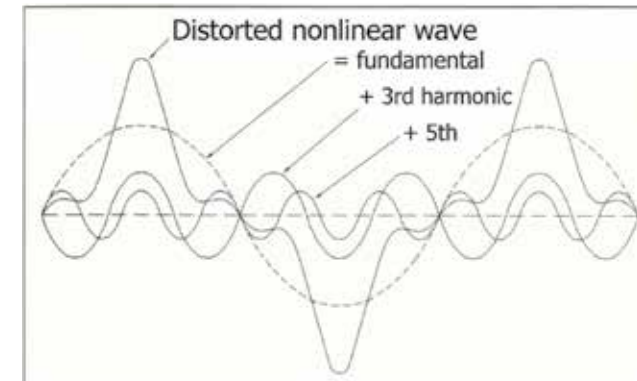
K-Factor Rated Transformer - Option K4, K9, K13, etc.

Background

Today's modern electronic devices, such as computers, copiers, printers, and display terminals utilize switching-mode power supplies, which are non-linear in the loading placed on the transformer. Systems designed without due consideration tend to exhibit significant power system problems, such as:

- Circuit breakers and fuses tripping far below their current ratings
- Neutrals in transformers and panel boards are much hotter than their ratings.
- Distribution transformers overheat, even when operating well within their specified nameplate ratings.

These problems are often the result of harmonics. The solid-state switching elements (SCRs, transistors, and capacitors) continually switch on and off to extract a Direct Current (DC) from the sinusoid. This reflects a higher frequency waveform on the supply line, which is a multiple of the fundamental frequency. These reflected signals become added to the original (fundamental) frequency. The result is a distorted voltage and current signal, with taller peaks and irregular shapes. The diagram below illustrates the typical distorted wave shape that is produced with the addition of 3rd order and 5th order harmonics



Example:

Fundamental frequency = 60 Hz

3rd Harmonic frequency = $3 \times 60 = 180$ Hz

5th Harmonic frequency = $5 \times 60 = 300$ Hz

Harmonic frequencies superimpose themselves upon the fundamental waveform, distorting it, and affecting the magnitude of its peaks.

The major components in the harmonic currents of switching mode power supplies are the third and the fifth harmonics. Harmonics which are even multiples of 3, such as the 3rd, 6th, 9th, etc are called triplen harmonics. When triplen harmonics are present in a 3 phase system, they add together in the neutral conductor. Third harmonics result in a large current flowing through the transformer neutral terminal. Furthermore, the harmonics amplify the eddy and stray losses in the transformer's core and coils. These effects cause the transformer to operate at significantly higher temperature, and at a lower efficiency.

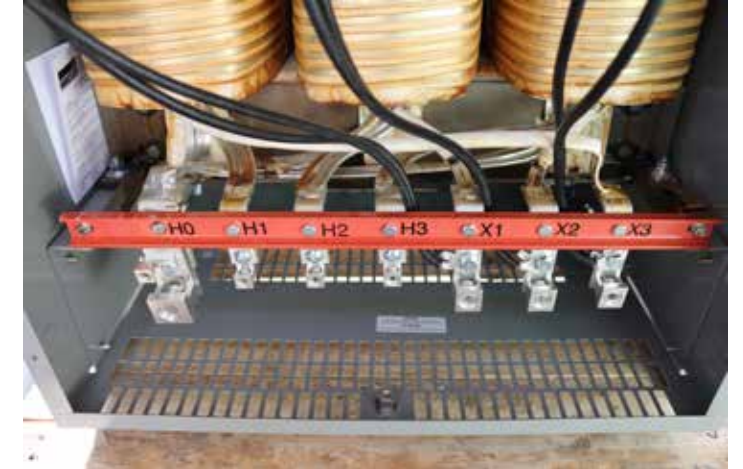


Photo: Double-Rated Neutral

Features & Specifications

The K-Factor rating of a transformer is an index of the transformer's ability to supply harmonic content in its load current while operating within its temperature limits. For dry type transformers, a "K-Factor" calculation is made to determine the amount of harmonic content present in a power system. K-Rated transformers are sized to handle 100% of the fundamental 60 Hz load, plus the non-linear loading level denoted by the K factor. The neutral of the transformer is sized at 200% of the current rating of the phase connections.

Application Notes

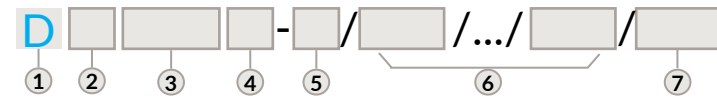
- A K-Factor may be specified on an isolation transformer, or encapsulated transformer
- Commonly specified K factors are K4, K9, K13, and K20.
- Use suffix "K4" or "K9" or "K13" or "K13" in part number, as per Rex Catalog Number system on page 2.

Drive Isolation Transformer (DIT) - Type D

Background

Drive Isolation Transformers (DIT) are specifically designed to meet the requirements of AC and DC variable speed drives or rectifier outputs. Standard DIT ratings are matched to standard motor horsepower ratings.

Catalog Number & Application Notes



① - 'D' Three Phase Isolation Transformer

② - Conductor Material

C	Copper
A	Aluminum (available 20 kVA and up)

③ - Base kVA Rating

- Select from standard 3 phase kVA levels below, or any other level 9 - 990 kVA: **9, 11, 14, 20, 27, 34, 40, 51, 63, 75, 93, 118, 145, 175, 220, 275, 330, 440, 550.**

④&⑤ - Primary & Secondary Winding Voltage(s)

- See page 2: Select letter codes corresponding to the primary and secondary voltage from group 1 (delta connected) and/or group 3 (wye or star connected).
- For a special voltage, use **X** and specify voltage.
- Standard connection diagrams are the same as with 3 phase distribution transformers - See Page 13. For special connection or tapping, use **X** in ⑥

⑥ - Optional Special Features

- There is no need to specify **K4** in the part number; For Drive isolation transformers, a K Factor Rating of 4 is standard. If **K9, K13**, or other is required, please specify.
- A variety of optional special features exist. These are noted in the specification (p.30). Some of the most commonly specified ones are noted on p.2.

⑦ - Efficiency Level

- For drive isolation transformers that are intended for use in Canada, the suffix **Z3** must be used to indicate compliance to NRCAN 2019.
- Drive isolation transformers that are intended for use in USA are exempted from DOE 2016 efficiency. **Z3** may still be included, if higher efficiency is voluntarily required.



Photo: Enclosed Drive Isolation Transformer (Enclosure size E3R-8)

Features & Specifications

- Designed with due consideration to harmonics that are typical for drives. K Factor 4 is standard, with higher K Factor ratings available
- Braced to withstand the mechanical stresses associated with the current levels of SCR drives.
- Isolates the power source from noise generated by SCR voltage spikes and transient feedback.
- One Normally-Closed thermal contact is embedded into center coil, and brought out to a terminal block on the core frame. The thermal contact is 185 C for 115 C rise, and 200 C for 150 C rise.
- Limits the short circuit current of the system
- The neutral of the transformer is sized at 200% of the current rating of the phase connections.
- In USA, drive isolation transformers are exempt from minimum efficiency regulations. In Canada, drive isolation transformers are not exempt.

Drive Isolation Transformer (DIT) - Type D

Features & Specifications

Specification	Rex Standard	Optionally Available
Capacity	9, 11, 14, 20, 27, 34, 40, 51, 63, 75, 93, 118, 145, 175, 220, 275, 330, 440, 550	kVA's greater than 990 kVA are classified as power transformers.
Voltage class	1.2 kV (CSA), 600 V (UL)	Higher voltage classes are classified as power transformers
Conductor	C - Copper or A - Aluminum	n/a
Cooling	Self cooled (ANN)	ANC (Non ventilated units)
Frequency	60 Hz	50/60 Hz (use 50) .
Insulation System	Class 220 (220 °C at hottest spot, 150 °C average rise)	n/a
Temperature Rise	150 °C average rise	115 °C (use T115), 80 °C (use T80)
K Factor Rating	K4	Available K9, K13, K20 (see page 32)
Impregnation	Polyester Resin Dipped and Baked	Epoxy dipped and Baked Other custom specifications available
Efficiency level	DIT for Canada meet the NRCAN 2019. For USA, DIT are exempted from DOE 2016	Higher levels may be specified (use ZX)
Taps	See connection diagrams for 3 phase isolation transformers (p.13)	+2 FCAN, -4 FCBN taps (use W1) Other primary or secondary tap configurations (use X)
Connection diagram	See connection diagrams (p.13)	Tertiary windings, alternate configurations (use X)
Terminations	Lugs or pads - see table (p.6). The neutral of the transformer is sized at 200% of the current rating of the phase connections	Specific Cu-Al lugs available. (Use Y2)
Wiring	Terminals are on front or front/back.	Pad or lug location may be specified (use X)
Electrical Performance	Per page 5.	Special X/R ratio, Inrush current, Short Circuit Withstand capability, EMF intensity, etc. (use X)
Impedance	Per CSA C9	Special impedance may be specified (use X)
Sound Level	Per CSA C9 and NEMA ST-20 (see p.5, 31-34)	3 dB below CSA level, or other (use X)
Enclosure Type	CSA Type 3R indoor, see chart (p. 31 - 34)	<ul style="list-style-type: none"> No enclosure, Core & Coil only (use C&C) CSA Type 3R Outdoor (use E3R) Type 4, non-ventilated (use E4) Type 12, ventilated dust-tight (use E12) Special dimensions and construction (use X)
Enclosure Material	Steel panels, Combination of 12, 14, & 16 ga	Other gauges, Stainless Steel 304, Stainless Steel 316L, Galvanneal, Aluminum.
Enclosure Finish	ASA 61 Gray Powder Coat	Bare Stainless, special color/finish (use ESP)
Approvals	CSA Certified and UL Listed CSA File # LR34493 (5kV Max, 900kVA Max) UL File # E108255 (600V Max, 750kVA Max)	IEC (use CE), European or other spec, ABS , Lloyds Registry, Canadian Coast Guard, and more. Also see Hazardous Location Catalog
Thermostat	One Normally-Closed thermal contact is embedded into center coil, and brought out to a terminal block on the core frame. The thermal contact is 185 C for 115 C rise, and 200 C for 150 C rise	Additional contacts, other temp levels (use X)
Mounting	Floor only, or floor/wall, depending on size. See tables (p. 31-34)	Special mounting available
Nameplate	Metallic Foil, English/French	Aluminum, Stainless Steel (use M)
Seismic	Canada Zone 6, USA Zone 4. See page 6 for more detail.	Rex can facilitate site specific Seismic approvals. Mason Super W pads, or other specified snubbers.
Testing	See page 5	Optional tests available, such as temperature-rise test, sound level, EMF, etc. (Ordered separately)
Shipping	Bolted to skid, with nylon cover	Shrink wrap, special skid, export crating
Optional Features	Special ambient temperature, Special altitude, Anti-Condensation Strip Heaters, Thermal Sensing and Indication (analog/digital), Surge protection, Breaker Integration, Power Monitoring, etc.	

Drive Isolation Transformer (DIT) - Type D - For U.S.A.

Reference Charts - Electrical Performance - Type 3R enclosures

The tables below provide typical standard values for drive isolation transformers with standard specification.

- Sample catalog numbers are shown for 460 V delta to 460Y/266 V. For other voltage codes, please see page 2.
- The values reported below will not vary with the selection of special voltages, shielding, and some other options.
- Special specifications such as higher K-Factor ratings and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.

Copper windings (Type DC) - No efficiency spec (for USA installation only)

Drive HP	kVA	Efficiency (35% load, 75 °C)	Impedance	Average Sound Level [dB]	Primary Taps	Standard Connection Diagram	460 V : 460Y/266 V	
							Lugs (HV/LV)	Sample Catalog # <small>Refer to page 2 for voltage codes</small>
5	9	n/a	5% - 6.5%	40	+/- 1 x 5%	3PDyn1-ST1/1	Terminal Block	DC9H1-P1
8	11	n/a	5% - 6.5%	45	+/- 1 x 5%	3PDyn1-ST1/1	LA / LA	DC11H1-P1
10	14	n/a	5% - 6.5%	45	+/- 1 x 5%	3PDyn1-ST1/1	LA / LA	DC14H1-P1
15	20	n/a	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DC20H1-P1
20	27	n/a	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DC27H1-P1
25	34	n/a	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DC34H1-P1
30	40	n/a	3.5% - 5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DC40H1-P1
40	51	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DC51H1-P1
50	63	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LB / LB	DC63H1-P1
60	75	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LB / LB	DC75H1-P1
75	93	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / LC	DC93H1-P1
100	118	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / LC	DC118H1-P1
125	145	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / LC	DC145H1-P1
150	175	n/a	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LD / LD	DC175H1-P1
200	220	n/a	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DC220H1-P1
250	275	n/a	4% - 6%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DC275H1-P1
300	330	n/a	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DC330H1-P1
400	440	n/a	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DC440H1-P1
500	550	n/a	4% - 6%	62	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DC550H1-P1

Aluminum windings (Type DA) - No efficiency spec (for USA installation only)

Drive HP	kVA	Efficiency (35% load, 75 °C)	Impedance	Average Sound Level [dB]	Primary Taps	Standard Connection Diagram	460 V : 460Y/266 V	
							Lugs (HV/LV)	Sample Catalog # <small>Refer to page 2 for voltage codes</small>
15	20	n/a	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DA20H1-P1
20	27	n/a	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DA27H1-P1
25	34	n/a	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DA34H1-P1
30	40	n/a	3.5% - 5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DA40H1-P1
40	51	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DA51H1-P1
50	63	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LB / LB	DA63H1-P1
60	75	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LB / LB	DA75H1-P1
75	93	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / LC	DA93H1-P1
100	118	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / LC	DA118H1-P1
125	145	n/a	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / LC	DA145H1-P1
150	175	n/a	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LD / LD	DA175H1-P1
200	220	n/a	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DA220H1-P1
250	275	n/a	4% - 6%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DA275H1-P1
300	330	n/a	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DA330H1-P1
400	440	n/a	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DA440H1-P1
500	550	n/a	4% - 6%	62	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DA550H1-P1

Drive Isolation Transformer (DIT) - Type D - For U.S.A.

Reference Charts - Dimensions - Type 3R enclosures

The tables below provide typical standard values for drive isolation transformers with standard specification.

- The values reported below will not vary with the selection of special voltages, shielding, and some other options
- Special specifications such as higher K-Factor ratings and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.

For additional enclosure details (such as mounting), consult page 8.

Copper windings (Type DC) - No efficiency spec (for USA installation only)

kVA	Standard Indoor Enclosure (Type 1 or Type 3R Indoor)							Type 3R Outdoor	
	Mounting	Width [inch]	Depth [inch]	Height [inch]	Weight [lbs]	Enclosure Name	Type	Depth [inch]	Enclosure Name
9	Floor/Wall	15.75	16.00	21.00	150	E3R-4	Type 3R indoor	21.12	E3R-4-W
11	Floor/Wall	20.50	16.00	25.00	175	E3R-5	Type 3R indoor	21.62	E3R-5-W
14	Floor/Wall	20.50	16.00	25.00	205	E3R-5	Type 3R indoor	21.62	E3R-5-W
20	Floor/Wall	20.50	16.00	25.00	240	E3R-5	Type 3R indoor	21.62	E3R-5-W
27	Floor/Wall	20.50	20.75	30.00	270	E3R-6	Type 3R indoor	26.39	E3R-6-W
34	Floor/Wall	20.50	20.75	30.00	310	E3R-6	Type 3R indoor	26.39	E3R-6-W
40	Floor/Wall	20.50	20.75	30.00	350	E3R-6	Type 3R indoor	26.39	E3R-6-W
51	Floor/Wall	20.50	20.75	30.00	460	E3R-6	Type 3R indoor	26.39	E3R-6-W
63	Floor/Wall	24.50	21.75	36.00	515	E3R-7	Type 3R indoor	29.37	E3R-7-W
75	Floor/Wall	24.50	21.75	36.00	605	E3R-7	Type 3R indoor	29.37	E3R-7-W
93	Floor	30.75	33.40	44.00	790	E3R-8	Type 3R indoor	37.49	E3R-8-W
118	Floor	30.75	33.40	44.00	865	E3R-8	Type 3R indoor	37.49	E3R-8-W
145	Floor	30.75	33.40	44.00	980	E3R-8	Type 3R indoor	37.49	E3R-8-W
175	Floor	40.00	38.00	52.00	1310	E3R-9	Type 3R indoor	41.75	E3R-9-W
220	Floor	40.00	38.00	52.00	1420	E3R-9	Type 3R indoor	41.75	E3R-9-W
275	Floor	40.00	38.00	52.00	1745	E3R-9	Type 3R indoor	41.75	E3R-9-W
330	Floor	40.00	38.00	52.00	1895	E3R-9	Type 3R indoor	41.75	E3R-9-W
440	Floor	46.00	50.00	66.00	2495	E3R-10	Type 3R indoor	50.00	E3R-10-W
550	Floor	46.00	50.00	66.00	2665	E3R-10	Type 3R indoor	50.00	E3R-10-W

Aluminum windings (Type DA) - No efficiency spec (for USA installation only)

kVA	Standard Indoor Enclosure (Type 1 or Type 3R Indoor)							Type 3R Outdoor	
	Mounting	Width [inch]	Depth [inch]	Height [inch]	Weight [lbs]	Enclosure Name	Type	Depth [inch]	Enclosure Name
20	Floor/Wall	20.50	16.00	25.00	250	E3R-5	Type 3R indoor	21.62	E3R-5-W
27	Floor/Wall	20.50	20.75	30.00	250	E3R-6	Type 3R indoor	26.39	E3R-6-W
34	Floor/Wall	20.50	20.75	30.00	280	E3R-6	Type 3R indoor	26.39	E3R-6-W
40	Floor/Wall	20.50	20.75	30.00	305	E3R-6	Type 3R indoor	26.39	E3R-6-W
51	Floor/Wall	20.50	20.75	30.00	400	E3R-6	Type 3R indoor	26.39	E3R-6-W
63	Floor/Wall	24.50	21.75	36.00	470	E3R-7	Type 3R indoor	29.37	E3R-7-W
75	Floor/Wall	24.50	21.75	36.00	510	E3R-7	Type 3R indoor	29.37	E3R-7-W
93	Floor	30.75	33.40	44.00	770	E3R-8	Type 3R indoor	37.49	E3R-8-W
118	Floor	30.75	33.40	44.00	825	E3R-8	Type 3R indoor	37.49	E3R-8-W
145	Floor	30.75	33.40	44.00	915	E3R-8	Type 3R indoor	37.49	E3R-8-W
175	Floor	40.00	38.00	52.00	1230	E3R-9	Type 3R indoor	41.75	E3R-9-W
220	Floor	40.00	38.00	52.00	1335	E3R-9	Type 3R indoor	41.75	E3R-9-W
275	Floor	40.00	38.00	52.00	1475	E3R-9	Type 3R indoor	41.75	E3R-9-W
330	Floor	40.00	38.00	52.00	1540	E3R-9	Type 3R indoor	41.75	E3R-9-W
440	Floor	46.00	50.00	66.00	2405	E3R-10	Type 3R indoor	50.00	E3R-10-W
550	Floor	46.00	50.00	66.00	2670	E3R-10	Type 3R indoor	50.00	E3R-10-W

Drive Isolation Transformer (DIT) - Type D - Canada

Reference Charts - Electrical Performance - Type 3R enclosures

The tables below provide typical standard values for drive isolation transformers with standard specification.

- Sample catalog numbers are shown for 575 V delta to 460Y/266 V. For other voltage codes, please see page 2.
- The values reported below will not vary with the selection of special voltages, shielding, and some other options.
- Special specifications such as higher K-Factor ratings and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.

Copper windings (Type DC) - NRCAN 2019 (Canada) compliant

Drive HP	kVA	Efficiency (35% load, 75 °C)	Impedance	Average Sound Level [dB]	Primary Taps	Standard Connection Diagram	575 V : 460Y/266 V	
							Lugs (HV/LV)	Sample Catalog # <small>Refer to page 2 for voltage codes</small>
5	9	n/a	5% - 6.5%	40	+/- 1 x 5%	3PDyn1-ST1/1	Terminal Block	DC9J1-P1
8	11	n/a	5% - 6.5%	45	+/- 1 x 5%	3PDyn1-ST1/1	LA / LA	DC11J1-P1
10	14	n/a	5% - 6.5%	45	+/- 1 x 5%	3PDyn1-ST1/1	LA / LA	DC14J1-P1
15	20	98.00%	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DC20J1-P1/Z3
20	27	98.16%	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DC27J1-P1/Z3
25	34	98.28%	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DC34J1-P1/Z3
30	40	98.34%	3.5% - 5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DC40J1-P1/Z3
40	51	98.44%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DC51J1-P1/Z3
50	63	98.52%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LB	DC63J1-P1/Z3
60	75	98.60%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LB / LB	DC75J1-P1/Z3
75	93	98.67%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LB / LC	DC93J1-P1/Z3
100	118	98.75%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / LC	DC118J1-P1/Z3
125	145	98.82%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / LC	DC145J1-P1/Z3
150	175	98.87%	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LC / LD	DC175J1-P1/Z3
200	220	98.93%	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LC / PADS	DC220J1-P1/Z3
250	275	98.99%	4% - 6%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DC275J1-P1/Z3
300	330	99.04%	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DC330J1-P1/Z3
400	440	99.10%	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DC440J1-P1/Z3
500	550	99.16%	4% - 6%	62	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DC550J1-P1/Z3

Aluminum windings (Type DA) - NRCAN 2019 (Canada) compliant

Drive HP	kVA	Efficiency (35% load, 75 °C)	Impedance	Average Sound Level [dB]	Primary Taps	Standard Connection Diagram	575 V : 460Y/266 V	
							Lugs (HV/LV)	Sample Catalog # <small>Refer to page 2 for voltage codes</small>
15	20	98.00%	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DA20J1-P1/Z3
20	27	98.16%	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DA27J1-P1/Z3
25	34	98.28%	3.5% - 5.5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DA34J1-P1/Z3
30	40	98.34%	3.5% - 5%	45	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DA40J1-P1/Z3
40	51	98.44%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LA	DA51J1-P1/Z3
50	63	98.52%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LA / LB	DA63J1-P1/Z3
60	75	98.60%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LB / LB	DA75J1-P1/Z3
75	93	98.67%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LB / LC	DA93J1-P1/Z3
100	118	98.75%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / LC	DA118J1-P1/Z3
125	145	98.82%	3.5% - 5%	50	+/- 2 x 2.5%	3PDyn1-ST2/2	LC / LC	DA145J1-P1/Z3
150	175	98.87%	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LC / LD	DA175J1-P1/Z3
200	220	98.93%	3.5% - 5%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	LC / PADS	DA220J1-P1/Z3
250	275	98.99%	4% - 6%	55	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DA275J1-P1/Z3
300	330	99.04%	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DA330J1-P1/Z3
400	440	99.10%	4% - 6%	60	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DA440J1-P1/Z3
500	550	99.16%	4% - 6%	62	+/- 2 x 2.5%	3PDyn1-CT2/2	PADS	DA550J1-P1/Z3

Drive Isolation Transformer (DIT) - Type D - For Canada

Reference Charts - Dimensions - Type 3R enclosures

The tables below provide typical standard values for drive isolation transformers with standard specification.

- The values reported below will not vary with the selection of special voltages, shielding, and some other options
- Special specifications such as higher K-Factor ratings and Temperature Rise may affect dimensions and the values below; Contact Rex Sales for application specific information.

For additional enclosure details (such as mounting), consult page 8.

Copper windings (Type DC) - NRCAN 2019 (Canada) compliant

kVA	Standard Indoor Enclosure (Type 1 or Type 3R Indoor)							Type 3R Outdoor	
	Mounting	Width [inch]	Depth [inch]	Height [inch]	Weight [lbs]	Enclosure Name	Type	Depth [inch]	Enclosure Name
9	Floor/Wall	15.75	16.00	21.00	150	E3R-4	Type 3R indoor	21.12	E3R-4-W
11	Floor/Wall	20.50	16.00	25.00	175	E3R-5	Type 3R indoor	21.62	E3R-5-W
14	Floor/Wall	20.50	16.00	25.00	205	E3R-5	Type 3R indoor	21.62	E3R-5-W
20	Floor/Wall	20.50	16.00	25.00	290	E3R-5	Type 3R indoor	21.62	E3R-5-W
27	Floor/Wall	20.50	20.75	30.00	320	E3R-6	Type 3R indoor	26.39	E3R-6-W
34	Floor/Wall	20.50	20.75	30.00	355	E3R-6	Type 3R indoor	26.39	E3R-6-W
40	Floor/Wall	20.50	20.75	30.00	370	E3R-6	Type 3R indoor	26.39	E3R-6-W
51	Floor/Wall	20.50	20.75	30.00	450	E3R-6	Type 3R indoor	26.39	E3R-6-W
63	Floor/Wall	24.50	21.75	36.00	635	E3R-7	Type 3R indoor	29.37	E3R-7-W
75	Floor/Wall	24.50	21.75	36.00	585	E3R-7	Type 3R indoor	29.37	E3R-7-W
93	Floor	30.75	33.40	44.00	880	E3R-8	Type 3R indoor	37.49	E3R-8-W
118	Floor	30.75	33.40	44.00	930	E3R-8	Type 3R indoor	37.49	E3R-8-W
145	Floor	30.75	33.40	44.00	1080	E3R-8	Type 3R indoor	37.49	E3R-8-W
175	Floor	40.00	38.00	52.00	1350	E3R-9	Type 3R indoor	41.75	E3R-9-W
220	Floor	40.00	38.00	52.00	1630	E3R-9	Type 3R indoor	41.75	E3R-9-W
275	Floor	40.00	38.00	52.00	1985	E3R-9	Type 3R indoor	41.75	E3R-9-W
330	Floor	40.00	38.00	52.00	2340	E3R-9	Type 3R indoor	41.75	E3R-9-W
440	Floor	46.00	50.00	66.00	2925	E3R-10	Type 3R indoor	50.00	E3R-10-W
550	Floor	46.00	50.00	66.00	3595	E3R-10	Type 3R indoor	50.00	E3R-10-W

Aluminum windings (Type DA) - NRCAN 2019 (Canada) compliant

kVA	Standard Indoor Enclosure (Type 1 or Type 3R Indoor)							Type 3R Outdoor	
	Mounting	Width [inch]	Depth [inch]	Height [inch]	Weight [lbs]	Enclosure Name	Type	Depth [inch]	Enclosure Name
20	Floor/Wall	20.50	16.00	25.00	260	E3R-5	Type 3R indoor	21.62	E3R-5-W
27	Floor/Wall	20.50	20.75	30.00	305	E3R-6	Type 3R indoor	26.39	E3R-6-W
34	Floor/Wall	20.50	20.75	30.00	350	E3R-6	Type 3R indoor	26.39	E3R-6-W
40	Floor/Wall	20.50	20.75	30.00	370	E3R-6	Type 3R indoor	26.39	E3R-6-W
51	Floor/Wall	20.50	20.75	30.00	435	E3R-6	Type 3R indoor	26.39	E3R-6-W
63	Floor/Wall	24.50	21.75	36.00	565	E3R-7	Type 3R indoor	29.37	E3R-7-W
75	Floor/Wall	24.50	21.75	36.00	620	E3R-7	Type 3R indoor	29.37	E3R-7-W
93	Floor	30.75	33.40	44.00	825	E3R-8	Type 3R indoor	37.49	E3R-8-W
118	Floor	30.75	33.40	44.00	965	E3R-8	Type 3R indoor	37.49	E3R-8-W
145	Floor	30.75	33.40	44.00	1090	E3R-8	Type 3R indoor	37.49	E3R-8-W
175	Floor	40.00	38.00	52.00	1650	E3R-9	Type 3R indoor	41.75	E3R-9-W
220	Floor	40.00	38.00	52.00	1960	E3R-9	Type 3R indoor	41.75	E3R-9-W
275	Floor	40.00	38.00	52.00	2070	E3R-9	Type 3R indoor	41.75	E3R-9-W
330	Floor	40.00	38.00	52.00	2600	E3R-9	Type 3R indoor	41.75	E3R-9-W
440	Floor	46.00	50.00	66.00	3100	E3R-10	Type 3R indoor	50.00	E3R-10-W
550	Floor	46.00	50.00	66.00	3840	E3R-10	Type 3R indoor	50.00	E3R-10-W



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