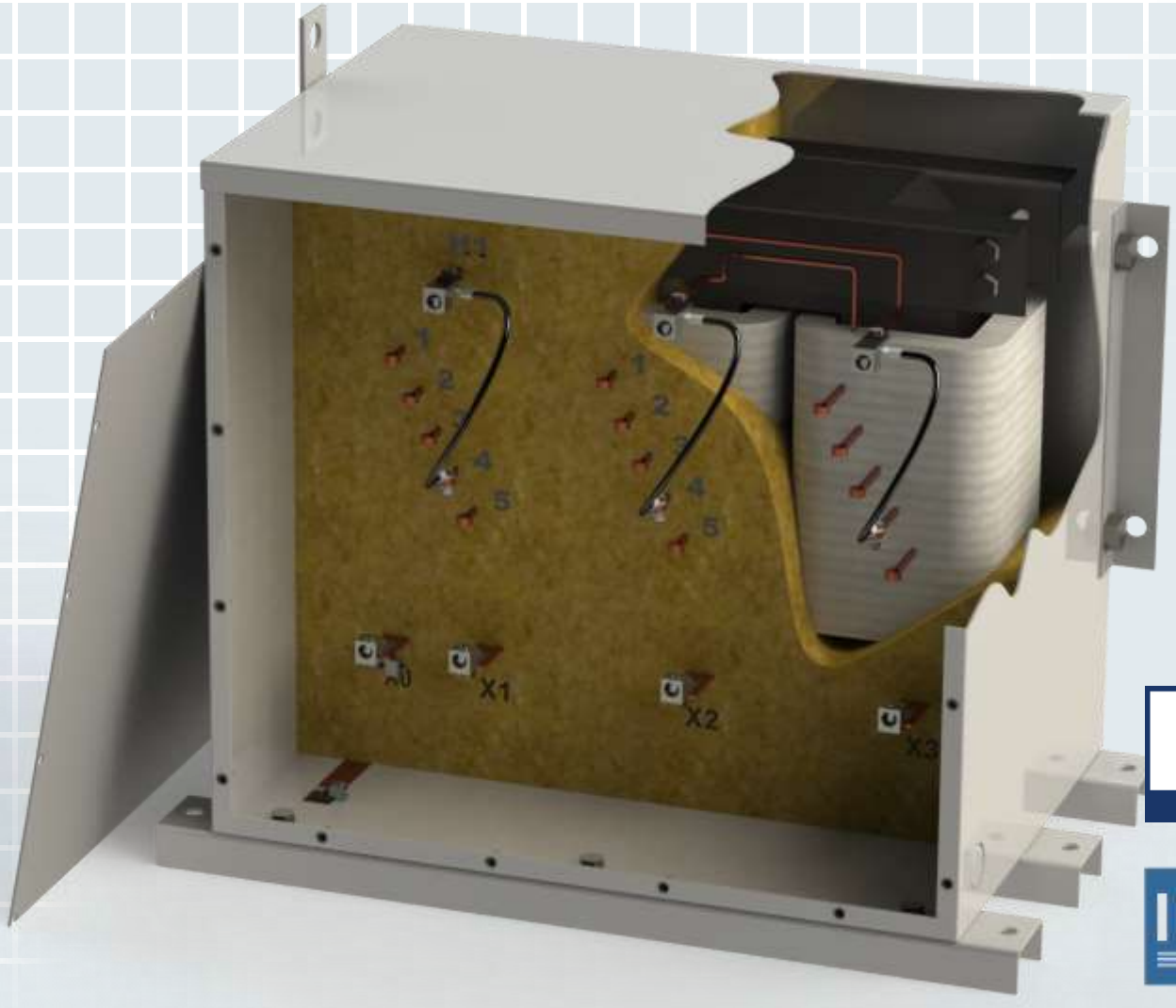
TRANSFORMERS FOR HAZARDOUS LOCATIONS

Ventilated & Encapsulated Designs

CLASS I, DIVISION 2 - GROUPS A, B, C, D
CLASS I, ZONE 2 - GROUPS IIA, IIB, IIC
TEMPERATURE CODE T2C, T3, T3C



ISO 9001:2015

REX POWER MAGNETICS

A Division of Transfactor Industries Inc.
Concord, Ontario, Canada

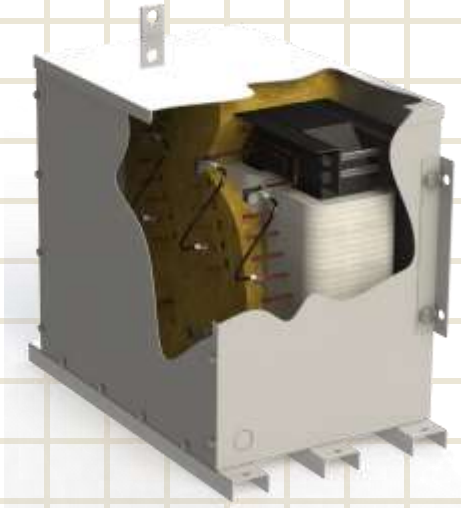
TRANSFORMERS FOR HAZARDOUS LOCATIONS ARE AVAILABLE FROM REX POWER MAGNETICS

REX POWER MAGNETICS

Rex Power Magnetics, established in 1972 is an ISO 9001 registered **leading manufacturer** of CSA certified and UL listed **custom dry type Transformers.** Rex is **driven by technology, innovation, and customer service,** and has a track record of sustained profitable growth**.** 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 46,000 Volts, 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,** new and automated equipment, and efficient processes Rex Power Magnetics continually expands and enhances its product and service offering.

We pride ourselves: firstly in our **superior delivery responsiveness** supported by our passion for customer service and our vertically integrated in-house design, manufacture, and testing capabilities; and secondly in our **Technology leadership** supported by our industry leading R&D effort, engineering expertise, technical competence, and manufacturing know-how.

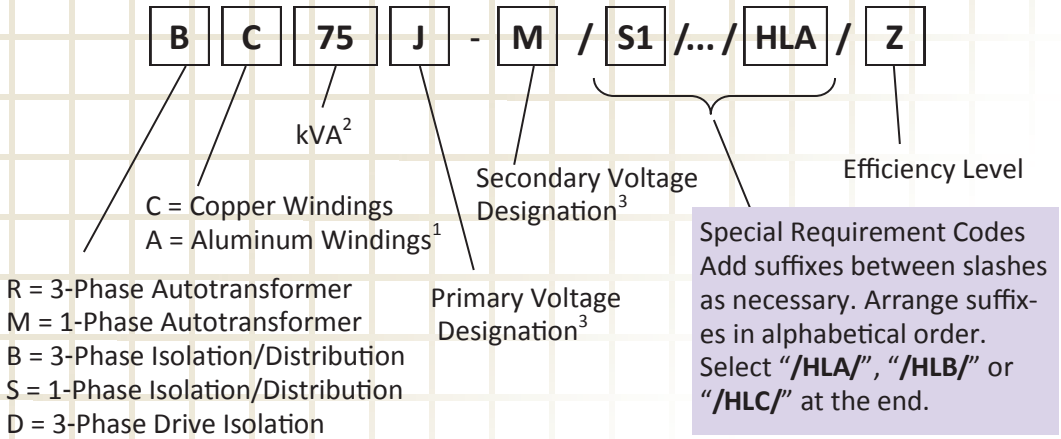


Since 2001, Rex Power Magnetics has been designing and producing a line of dry type transformers for Hazardous Locations and Harsh Industrial Environments. Rex's product offering in this category includes three varieties, known as the HLA, HLB & HLC product lines, which are explained in detail in this catalog.

"Hazardous Locations and Harsh Industrial Environments" typically refers to areas which may contain dangerous and corrosive, explosive or combustible gasses, liquids, or dusts. Typical applications include the mining, petrochemical, and pulp and paper industries.

For harsh environments that are not formally classified has a Hazardous Location, as defined by IEC or other standards, Rex's conventional encapsulated transformers may be used, which are detailed in Rex's main distribution transformer Catalog.

The following diagram explains how to form a Catalog Number for a Rex HLA, HLB or HLC transformer.



Primary and Secondary Voltage Letter Codes:

A – 120	**E** – 347	**J1** – 575
A1 – 115	**F** – 380	**J2** – 550
A2 – 110	**G** – 416	**K** – 120/240
B – 208	**G1** – 400	**K1** – 115/230
C – 240	**H** – 480	**K2** – 110/220
C1 – 230	**H1** – 460	**L** – 240/480
C2 – 220	**H2** – 440	**L1** – 230/460
D – 277	**J** – 600	**L2** – 220/440
M – 208Y/120	**P1** – 460Y/266	**R** – 380Y/220
N – 416Y/240	**P2** – 440Y/254	**S** – 240Y/139
N1– 400Y/231	**Q** – 600Y/347	**S1** – 230Y/133
P – 480Y/277	**Q1**– 575Y/332	**S2** – 220Y/127
	Q2– 550Y/318	

*For an unlisted or special voltage, use '**X**'*

Only use letters M to S2 for "wye" (star) connections. For all single phase voltages, delta connections, and autotransformer voltages, use letter codes A to L2

Special Requirement Codes:

50 – 50 cycles (Hz) (Other frequencies also available)
E – Special Enclosure
EP – Encapsulated Transformer
K – K-Factor Rated (K4, K13, K20 or other)
M – Special Mounting Brackets
P – Special Paint
S – Electrostatic Shield
T – Special Temperature Rise (eg T80 or T115)
Many other options exist. Consult our sales team!
*For an unlisted requirement, use '**X**'*

Efficiency Level:

Most common efficiency levels:
Z – Standard efficiency (CSA C802.2, NEMA TP-1)
Z2 – Green Line Premium (CSL-2 efficiency)
Z3 – Green Line Ultra Premium (2016 DOE Level)
Other common efficiencies:
ZNP - ***NEMA Premium*** level
ZCSL3 - Candidate Standard Level 3 (CSL 3) efficiency
X - Specified losses/efficiency

***Notes: 1** - Not all kVA levels are available with aluminum conductor. **2** - For HLA & HLB transformers, maximum kVA is 112.5 kVA (3 phase). For HLC, Max 900 kVA depending on product type. **3** - Highest available voltage is 5 kV. For UL approved Div. 2,*

CERTIFICATION DETAILS

Rex HLA, HLB, and HLC type transformers (detailed in the following pages) are CSA and UL approved for CLASS I, DIVISION 2, GROUPS A, B, C, & D

CSA FILE NUMBER: LR34493 UL LISTING: E348963

Group A: Atmospheres containing acetylene;
Group B: Atmospheres containing butadiene, ethylene oxide, hydrogen (or gases of vapours equivalent in hazard to hydrogen, such as manufactured gas) or propylene oxide
Group C: Atmospheres containing acetaldehyde, cyclopropane, diethyl ether, ethylene, hydrogen sulphide, or unsymmetrical dimethyl hydrazine (UDHM), or other gases or vapours of equivalent hazard
Group D: Atmospheres containing acetone, acrylonitrile, alcohol, ammonia, benzene, benzol, butane, ethylene, dichloride, gasoline, hexane, isoprene, lacquer solvent vapours, naphtha, natural gas, propane, propylene, styrene, vinyl acetate, vinyl chloride, xylenes, or other gases or vapours of equivalent hazard

****NEW* A variant of Rex's HLA & HLB transformers is available with IECEx approved Zone 2 certification***

Please contact our sales office for more information on IECEx approved transformers

ZONE 2, GROUPS IIA, IIB, IIC — IECEx CSA 12.0019X

Group II A: Atmospheres containing acetaldehyde, acetone, cyclopropane, alcohol, ammonia, benzene, benzol, butane, ethylene, dichloride, gasoline, hexane, isoprene, lacquer solvent vapours
Group II B: Atmospheres containing acrylonitrile, butadiene, diethyl ether, ethylene, ethylene oxide, hydrogen sulphide, propylene oxide, or unsymmetrical dimethyl hydrazine (UDHM), or other gases or vapours of equivalent hazard
Group II C: Atmospheres containing acetylene, carbon disulphide, or hydrogen or other gases or vapours of equivalent hazard.

Do you have an application that requires other Hazardous Location certifications?
Contact us: sales@rexpowermagnetics.com

TEMPERATURE CODES AND CORRESPONDING SURFACE AND WINDING TEMPERATURE

AVERAGE TEMPERATURE RISE OF WINDINGS (ABOVE AMBIENT)	*TEMPERATURE CODE*	*MAXIMUM WINDING TEMPERATURE*
150 °C	T2C	230 °C
115 °C	T3	200 °C
80 °C	T3C	160 °C

REX POWER MAGNETICS' TECHNICAL CAPABILITY

Rex Power Magnetics has the engineering capability to design, manufacture, and test all standard and specialty dry type transformers, related magnetic products, and power transformers rated up to 10 MVA and 200 kV BIL. All Rex products are CSA certified and most are UL listed, including power transformers. CE marking and ABS marking are also available.

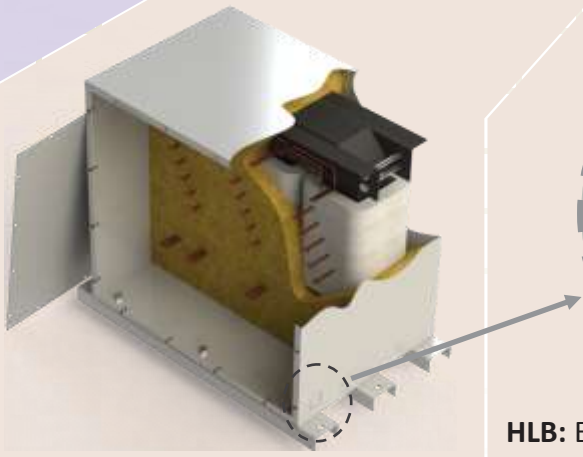
Rex Power Magnetics operates its own fully independent, complete sheet metal fabrication and paint facility to produce its own transformer enclosures, core clamps, brackets, and accessories, as well as manufactured custom enclosures. The Rex engineering and design team consists of highly competent and qualified individuals with many years of transformer design experience.

REX TRANSFORMERS CONSTRUCTED FOR HAZARDOUS LOCATIONS

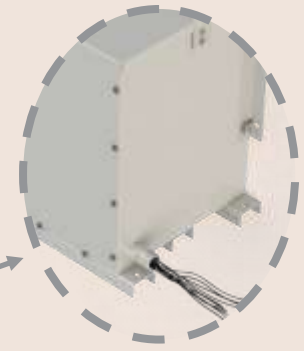
Rex offers three transformer options that are suitable for hazardous locations.

FEATURES	*Type HLA*	*Type HLB*	*Type HLC*
Construction Features	• ANC Design • Epoxy Encapsulated • Bottom access (Figure 8) • Front access (Figure 9) • Conduit K/O on sides • Nameplate marking	• ANC Design • Epoxy Encapsulated • Bottom access (Figure 8) • Front access (Figure 9) • Conduit K/O on sides • Nameplate marking	• ANN Design • Bottom access (Figure 8) • Front access (Figure 9) • Conduit K/O on sides
Insulation Class	185 °C	185 °C	185 °C or 220 °C
Temperature Rise	115 °C Maximum	115 °C Maximum	80 °C, 115 °C, or 150 °C
Temperature Code	T3	T3	T3C, T3, or T2C
Enclosure	• ASA #61 Grey paint • Type 3R Outdoor	• ASA #61 Grey paint • Type 3R Outdoor	• ASA #61 Grey paint • Type 3R Outdoor
	Optionally available, for HLA, HLB, & HLC enclosures: • Type 4 Non-Vented (When used with CSA certified watertight conduit hubs) • IP 66 (When used with specified IEC certified watertight conduit hubs) • Stainless Steel 304 or 316 / Other materials, finishes, colors.		
Certification	CSA and UL approval for Class I, Division 2	CSA and UL approval for Class I, Division 2	CSA and UL approval for Class I, Division 2
Application	Windings are encapsulated in epoxy, preventing airborne contaminants from reaching the coils, and thus preventing damage to electrical insulation.	As with HLA, the windings are encapsulated. Additionally, the connection between the leads and the coils are encapsulated. Wiring to the rest of the system is done at the leads	Conventional construction: non-encapsulated, vented design. Designed to conform to specified temperature code.

Construction



HLA: Encapsulated transformer, with terminals and taps accessible at the front-access wiring chamber.



HLB: Encapsulated transformer *and connections*; Leads for terminations and taps brought out.

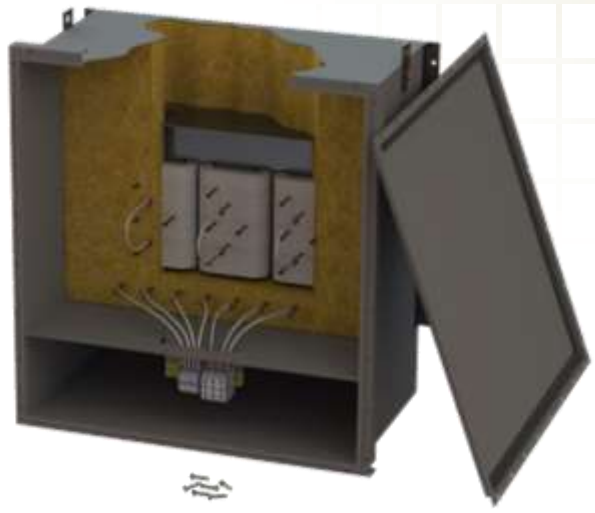
HLC: Ventilated transformer (no encapsulation), meeting Div. 2 requirements.

TYPICAL DIMENSIONS AND WEIGHTS - SINGLE PHASE HAZ LOC TRANSFORMERS

Part Number	kVA	Figure	Mounting	Width		Depth		Height		Weight
				inches	mm	inches	mm	inches	mm	
SC0.25J-K/HLA	0.25	1 & 8	Wall/Floor	5¼	133	4½	114	9	229	17
SC0.5J-K/HLA	0.5	1 & 8	Wall/Floor	5¼	133	4½	114	9	229	20
SC0.75J-K/HLA	0.75	1 & 8	Wall/Floor	6	152	5	127	10	254	23
SC1J-K/HLA	1	1 & 8	Wall/Floor	6	152	5	127	10	254	27
SC1.5J-K/HLA	1.5	1 & 8	Wall/Floor	7 ⅝	191	6½	165	11¼	286	40
SC2J-K/HLA	2	1 & 8	Wall/Floor	7 ⅝	191	6½	165	11¼	286	45
SC3J-K/HLA	3	2 & 8	Wall/Floor	7 ⅝	191	6½	165	11¼	286	55
SC5J-K/HLA	5	3 & 9	Wall/Floor	12½	318	12½	318	15	381	100
SC7J-K/HLA	7	3 & 9	Wall/Floor	12½	318	12½	318	15	381	117
SC10J-K/HLA	10	4 & 9	Wall/Floor	15	381	14¾	375	18	457	141
SC15J-K/HLA	15	4 & 9	Wall/Floor	15	381	14¾	375	18	457	210
SC25J-K/HLA	25	4 & 9	Wall/Floor	18	457	14	356	24¾	629	300
SC37J-K/HLA	37.5	4 & 9	Floor	19	483	16	407	28¼	718	685
SC50J-K/HLA	50	4 & 10	Floor	19	483	16	407	28¼	718	750

Notes:

- See following page for referenced figures
- HLB variants of the above transformers will have the same outside appearance as HLA transformers, with the addition of permanent cable glands.
- Dimensions provided are for the standard HLA product, with Type 3R outdoor enclosure.
- A specification drawing for your requested configuration may be available online, or by requesting it from our engineering department.



IP 65 & IP 66 CONSTRUCTION

For applications where enclosure type is specified using the IP system rather than the CSA / NEMA enclosure type code, Rex is able to provide transformers with enclosures marked in accordance to the IP system.

IP 65: Rex has an approved bolted panel construction that is approved for non-hazardous applications, and Class I, Division 2 applications.

IP 66: Rex has an approved welded construction with removable cover, that can be floor or wall mounted depending on the size and weight. This construction employs a securely bolted lip-in-gasket design.

For IECEx Zone 2 applications, this enclosure can be built with a specialty gasket that allows it retain its IP66 rating.

TYPICAL DIMENSIONS AND WEIGHTS - THREE PHASE HAZ LOC TRANSFORMERS

Part Number	kVA	Figure	Mounting	Width		Depth		Height		Weight
				inches	mm	inches	mm	inches	mm	lbs.
BC3J-M/HLA	3	5 & 9	Wall/Floor	15	381	11	279	15 1/8	384	152
BC6J-M/HLA	6	6 & 9	Wall/Floor	15	381	11	279	15 1/8	384	210
BC9J-M/HLA	9	6 & 9	Wall/Floor	18	457	12½	318	17	432	282
BC15J-M/HLA	15	7 & 9	Wall/Floor	21	533	14	356	17 ½	432	380
BC30J-M/HLA	30	7 & 9	Wall/Floor	21	533	18	457	19 7/8	505	540
BC45J-M/HLA	45	7 & 10	Floor	26	660	18	457	25	635	820
BC75J-M/HLA	75	7 & 10	Floor	32	813	18	457	25	635	1100
BC112J-M/HLA	112.5	7 & 10	Floor	36	915	25	635	31½	800	1500

Part Number	kVA	Figure	Mounting	Width		Depth		Height		Weight
				inches	mm	inches	mm	inches	mm	lbs.
BC3J-M/HLB	3	5 & 9	Wall/Floor	15	381	11	279	15 1/8	384	152
BC6J-M/HLB	6	6 & 9	Wall/Floor	15	381	11	279	15 1/8	384	236
BC9J-M/HLB	9	6 & 9	Wall/Floor	18	457	12½	318	17	432	310
BC15J-M/HLB	15	7 & 9	Wall/Floor	21	533	14	356	17 ½	446	410
BC30J-M/HLB	30	7 & 9	Wall/Floor	21	533	18	457	19 7/8	505	630
BC45J-M/HLB	45	7 & 10	Floor	26	660	18	457	25	635	970
BC75J-M/HLB	75	7 & 10	Floor	32	813	18	457	25	635	1200
BC112J-M/HLB	112.5	7 & 10	Floor	36	915	25	635	31½	800	1620

Part Number	kVA	Figure	Mounting	Width		Depth		Height		Weight
				inches	mm	inches	mm	inches	mm	lbs.
BC15J-M/HLC	15	7 & 11	Wall/Floor	20 ½	521	21 5/8	549	21	533	188
BC30J-M/HLC	30	7 & 11	Wall/Floor	20 ½	521	26 ¼	667	26 ¼	667	285
BC45J-M/HLC	45	7 & 11	Wall/Floor	20 ½	521	26 ¼	667	26 ¼	667	360
BC75J-M/HLC	75	7 & 11	Wall/Floor	24 ½	622	29 ¼	743	31 ½	800	540
BC112J-M/HLC	112.5	7 & 12	Floor	30 ¾	781	37 ½	953	31 ¾	806	1085

Notes:

- See following page for referenced figures
- HLB variants of the above transformers will have the same outside appearance as HLA transformers, with the addition of permanent cable glands.
- Dimensions provided are for the standard HLA product, with Type 3R outdoor enclosure.
- A specification drawing for your requested configuration may be available online, or by requesting it from our engineering department.

ELECTRICAL CONFIGURATION[1]

FIG. 1

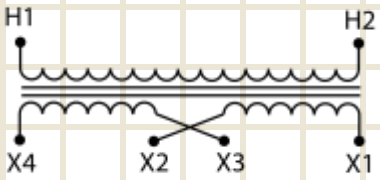


FIG. 2

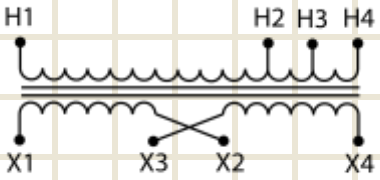


FIG. 3

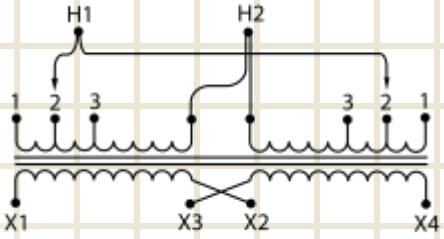


FIG. 4

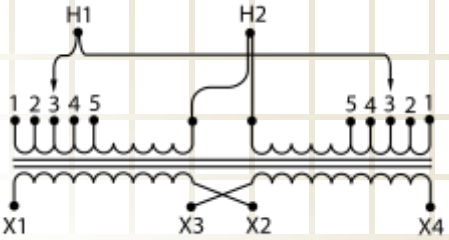


FIG. 5

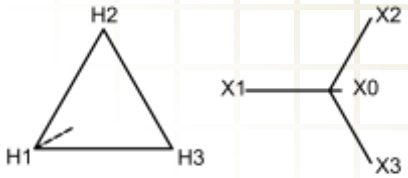


FIG. 6

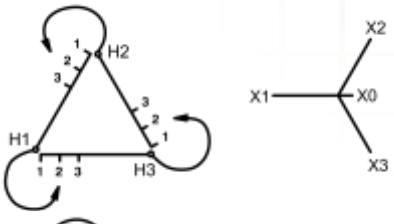
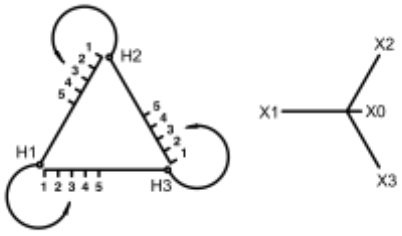


FIG. 7



1 - Electrical configurations shown are the standard configurations. Alternate configurations can be specified with your order. Standard configurations are subject to change without notice.

OUTLINE VIEW[2]

FIG. 8

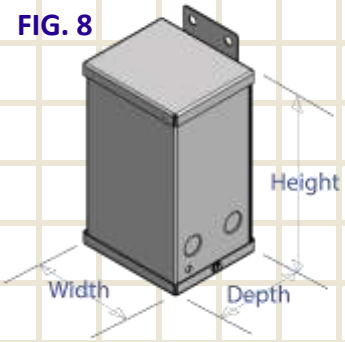


FIG. 9

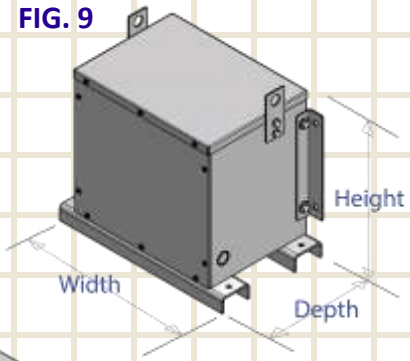


FIG. 10

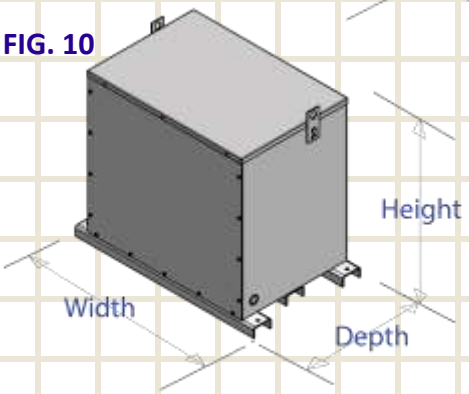


FIG. 11

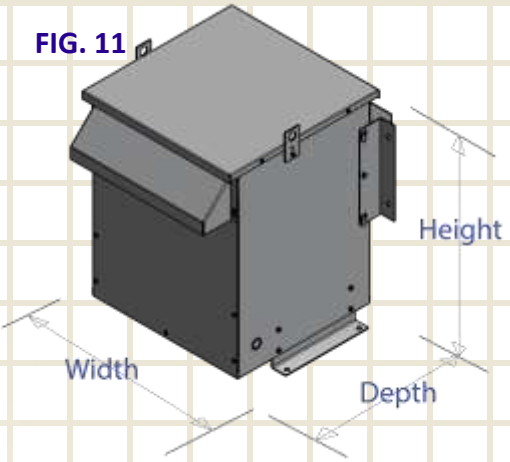
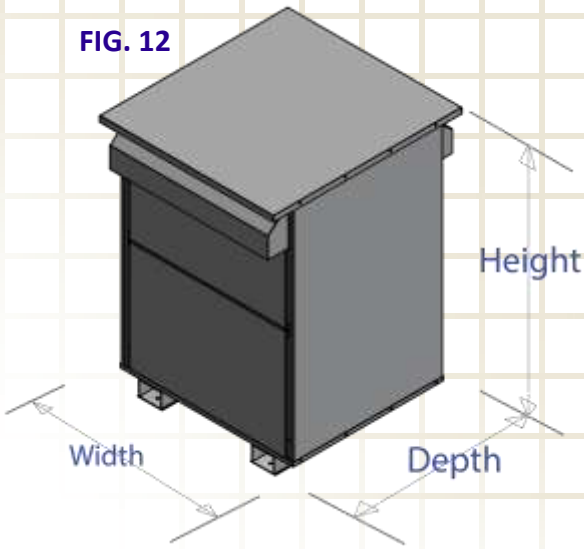


FIG. 12



2 - Outline dimensions and features shown are the standard specification. Alternate dimensions and features can be specified with your order. Standard specifications are subject to change without notice.

View or download all of our product catalogs and brochures from our website:

www.rexpowermagnetics.com

Contains up to date information on:

- *Drawings and engineering specifications*
- *Selection and efficiency calculation tools*
- *Ordering information*
- *Warranty and terms & conditions*

Contact and Sales info:
Tel 905.695.8844 or Fax 905.695.8855
TOLL FREE USA/CANADA 1-800-387-2840
E-mail: sales@rexpowermagnetics.com
65 Basaltic Rd., Concord, ON, L4K 1G4

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Substation Type complete with primary disconnects
Traction Power, Rectifier, Crane duty, Special Regulation, Service station distribution

- **Specialty Type and Special Voltage Transformers**

K-Rated, Electrostatically shielded
Ultra Isolating Multiple Shielded
Harmonic Mitigating
Electromagnetic Field Shielded
Epoxy Potted, Hazardous location
Marine duty types (with applicable certificates)
Mini Power Centres
High Efficiency and Ultra High Efficiency
On line Tap switching and Auto Voltage Regulating units
Hazardous-Location Transformers (Class 1, Div 2 & Zone 2)

- **Control & Machine Tool Transformers (50 VA to 7500 VA)**

Enclosed, open style, or potted
DIN rail mountable units

- **General Purpose Transformers**

Distribution/Isolation, CE marked transformers
Autotransformers
Drive Isolation
Motor Starting

- **Reactors**

Input and Output reactors
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DC chokes, Saturable-core reactors
Inter-bridge reactors
High Voltage Iron Core or Air Core Reactors

- **Enclosures**

NEMA -1, -2, -3R, -4, -4x, -12
Stainless Steel and Special Paint
Custom switchgear and specialty industrial enclosures

- **Switchgear Components**

Low and High voltage standoffs and insulators
Surge (lightning) Arresters

- **Transformer Testing, Refurbishment, and Repair**

Replacement of windings, core, insulation, etc.

Our 145,000 sq. ft. design, manufacturing, and customer service facility in Concord, north of Toronto, Ontario

CAT DATE: 11/15