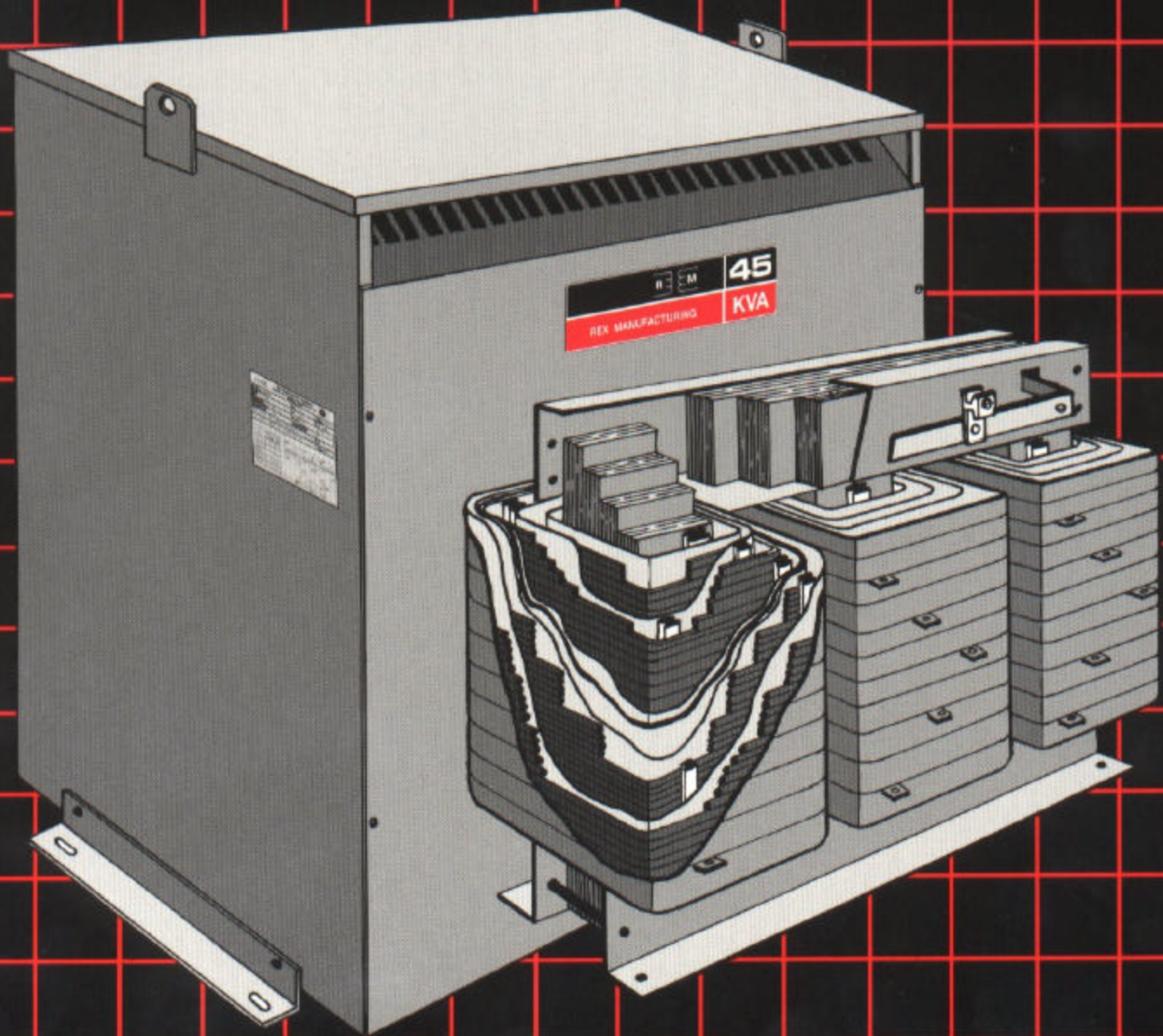


DRY TYPE TRANSFORMERS



- Distribution
- K-Factor Rated
- Energy Efficient
- Auto
- Shielded
- Encapsulated

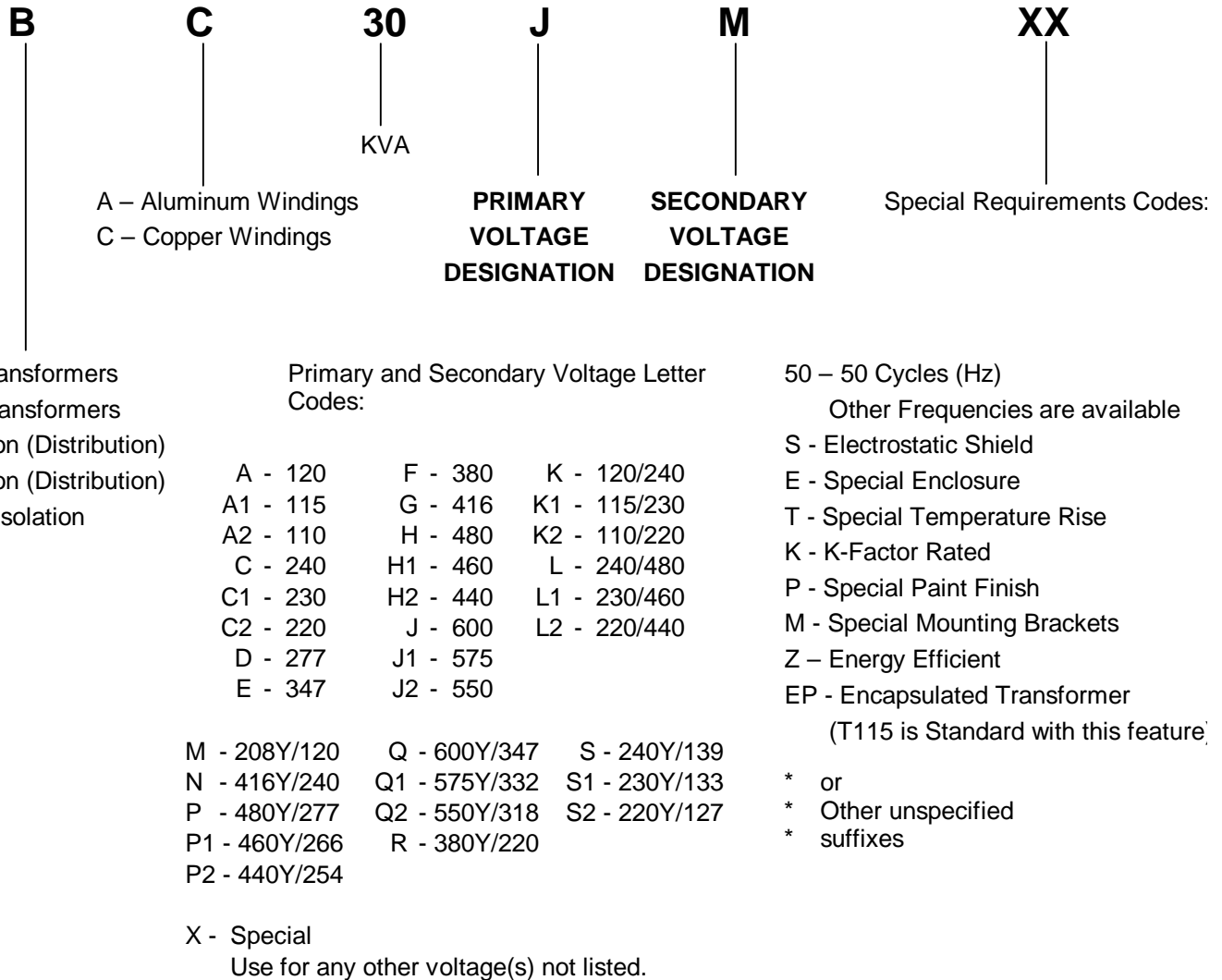


REX MANUFACTURING

DIVISION OF TRANSFACTOR INDUSTRIES INC.
REXDALE, ONTARIO



Catalogue Numbering System



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Steps for selecting transformers

Steps for selecting required single phase transformer

1. Determine primary or supply voltage
2. Select secondary or load voltage
3. Verify single phase operation
4. Standard transformers are suitable for operation on a 60 Hz (Hertz) (cycle) system. Refer to factory for other frequencies.
5. Determine KVA rating of load. Select a transformer having a standard KVA rating equal to or greater than that required by the load.
6. Select autotransformer or double-wound isolation type. Formula for calculating single phase KVA:

$$\text{KVA} = \frac{\text{Volts} \times \text{Amps}}{1000}$$

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

Transformer rating for motor H.P.

Motor H.P. up to	.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

Steps for selecting required three phase transformer

1. Determine primary or supply voltage
2. Select secondary or load voltage
3. Verify three phase operation
4. Standard transformers are suitable for operation on a 60 Hz (Hertz) (cycle) system. Refer to factory for other frequencies.
5. Determine KVA capacity of load. Select a transformer having a standard KVA rating equal to or greater than that required by the load.
6. Select autotransformer or double wound isolation type. Formula for calculating three phase KVA:

$$\text{KVA} = \frac{\text{Volts} \times \text{Amps} \times 1.73}{1000}$$

KVA	120 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

Transformer rating for motor H.P.

Motor H.P.	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

Construction

Core

- All Rex three phase transformers utilize three legged cores
- 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 steel brackets

Coils

- All coil windings are of high quality magnet wire (copper or aluminum is available)
- Class H 220 deg. C. insulation is utilized throughout the coil winding process
- All Rex transformers are designed with substantial cooling ducts for effective cooling
- Every coil is impregnated and baked in polyester resin varnish
- Standard + 5% or + 2X2.5% taps are provided on all isolation type transformers

Enclosures

- Standard enclosures are constructed of heavy gauge steel
- Ventilation openings are arranged so that each standard enclosure is suitable for either **NEMA** or **CSA** type 1 or type 2 applications
- All enclosures are designed to minimize the possibility of accidental contact with live parts and to restrict the access of falling particles into the transformer
- All Rex standard enclosures are finished in ASA 61 grey powder coating

UL Approval

Rex transformers are **UL Listed File No. E108255**.

CSA Approval

Rex transformers are manufactured in accordance with the requirements of CSA Standard C22.2 No 47 and certified under file number LR 34493.

Insulation System

Rex transformers are manufactured with insulating materials complying with CSA Winding Insulation System Class 220 as follows:

Maximum acceptable temperature rise based on an average ambient of 30C during any 24 h period and a maximum ambient of 40C at any time.

Average winding temperature 150C measured by rise of resistance

Hottest spot temperature rise 180C winding

Altitude not to exceed 1000m (3000 ft)

Maximum acceptable winding 220C Temperature

Class 220 is the highest insulation level recognized by the transformer industry.

Quality Assurance and Testing

Rex Manufacturing produces and tests all products in full compliance with the requirements of CSA Z299.3 and ISO 9002 quality assurance programs. All Rex Manufacturing transformers are tested as per the requirements of CSA standard C9 M1981.

Optional tests Available

- Temperature rise test
- Partial discharge (Corona) test
- Basic insulation impulse (BIL) test
- Sound level test

Available Options

Enclosures: NEMA and CSA

Type 2: ventilated, indoor, driproof (Rex Std.)

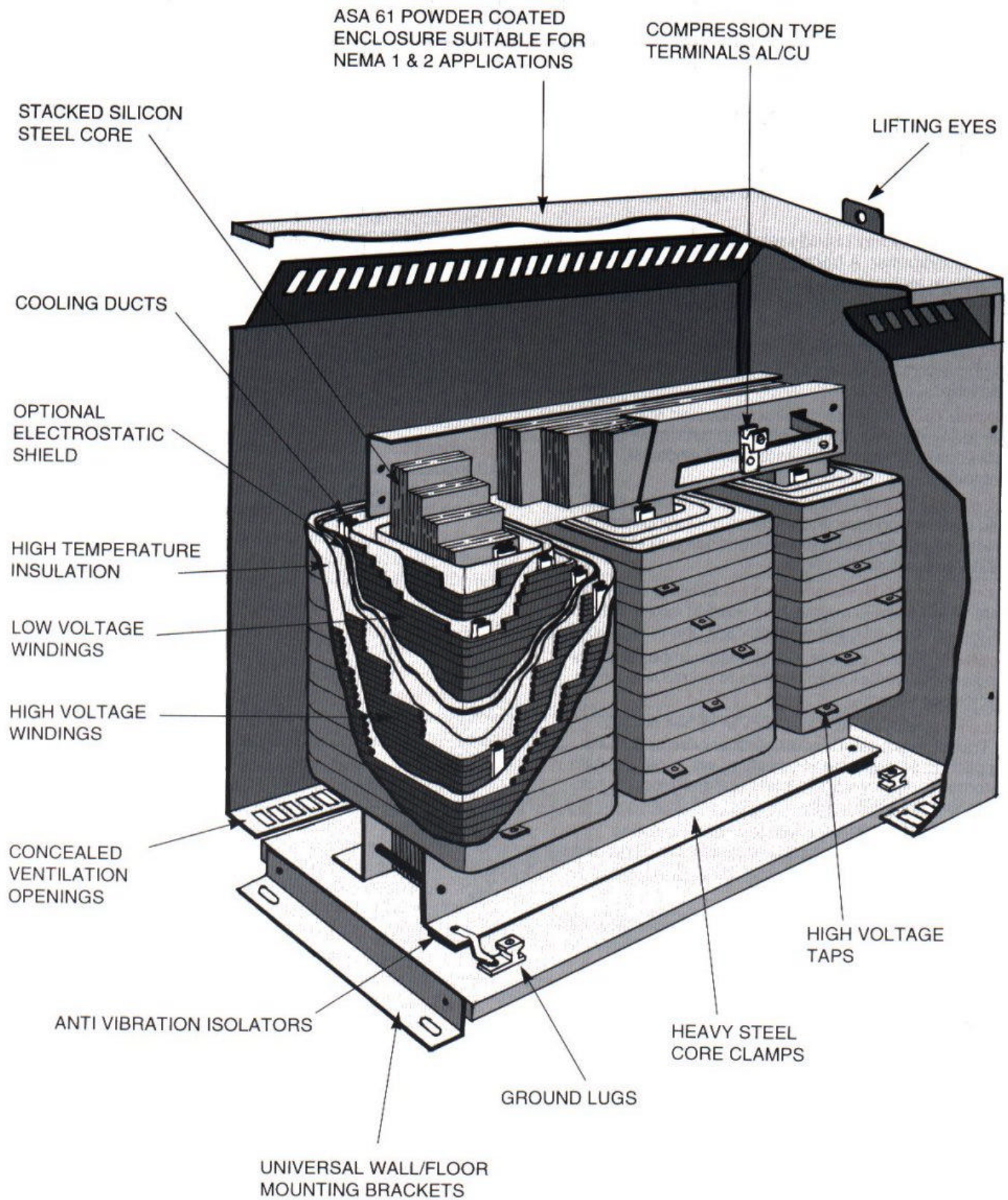
Type 3: ventilated indoor or outdoor weather resistant

Type 4: non ventilated indoor or outdoor watertight (protection against splashing and hose directed water)

Type 12: non ventilated indoor industrial dusttight and driproof

- Epoxy impregnated windings
- Epoxy cast coil designs
- 50 Hz designs (or other frequencies when specified)
- All non standard voltages
- Special configurations: delta - delta, delta or wye zig-zag
- Special impedance designs
- Temperature sensing devices
- Multiple windings
- Special tap arrangements
- Low audible noise designs
- Tropicalization
- Special paint available upon request
- Anti-vibration pads: all transformers have standard internal vibration isolators, external pads are available
- Lightning and surge arrestors
- Non sinusoidal load designs

Standard specifications, 600 V Class, single and three phase



Transformer Terms and Conditions

Ambient temperature The inherent or existing temperature of the atmosphere surrounding a transformer installation.

Auto-Transformer A transformer which has only one winding per phase, part of which is common to both primary and secondary circuits.

BIL Basic impulse level is a means to express the ability of the insulation system to withstand high voltage surges.

Control Transformer Usually referred to as an industrial Control Transformer. A transformer which is designed for good voltage regulation characteristics when low power factor, large inrush currents are drawn (5 to 15 times normal).

Delta (Δ) A standard three-phase connection in which each phase winding is connected in series to form a closed loop.

Dielectric Tests A series of tests conducted at much higher than rated nameplate voltage to determine the effectiveness of insulating materials and electrical clearances.

Electrostatic Shield Copper or other conducting sheet placed between primary and secondary winding and grounded to prevent electrical interference and to provide additional protection.

Exciting Current (No-Load Current) Existing current is current which flows in any winding used to excite the transformer when all other windings are open-circuited.

Frequency On AC circuits, designates number of times that polarity alternates from positive to negative such as 60 cycles per second.

Hertz (Hz) A term for AC frequency in cycles per second. Transformers rated for 60 hertz service should not be applied to 50 hertz, as overheating will occur. Certain transformers are rated 50/60 hertz and therefore, suitable for either frequency.

Hi Pot A standard dielectric test to check insulating materials and clearances between windings and ground.

Impulse Tests The test employed to determine Basic Insulation Level (BIL).

Impedance The vector sum of resistance and reactance which limits the current flow in an AC circuit. Impedance is identified in percentage and is used to determine the interrupting capacity of circuit breakers which protect the primary circuit.

Induced Potential Test A standard dielectric test which verifies the integrity of insulating materials and electrical clearances between turns and layers of a transformer winding.

Isolating Transformer A transformer which insulates the primary circuit from secondary circuit.

KVA Kilovolt Ampere rating designates the output which a transformer can deliver at rated voltage and frequency without exceeding a specified temperature rise.

Load Losses Load losses are those losses in a trans-

former which are incident to load carrying. Load losses include I²R loss in the windings due to load current, stray loss due to stray fluxes in the winding, core clamps, etc... and to circulating currents (if any), in parallel windings.

No-Load Losses The losses incurred when a transformer is excited but without a load connected to the secondary. These include core loss, dielectric loss, and exciting current I²R loss.

Polarity A designation of the relative instantaneous direction of the current in a secondary lead as compared with a primary lead.

Power Factor The relation of watts to volt amps in a circuit. Ratio A reference to either the primary to secondary winding turns ratio or to the voltage ratio of the transformer.

Reactor A device for introducing inductive reactance into a circuit.

Rectifier Transformer A transformer designed to supply AC input to a rectifier to obtain the desired DC output and have the ability to withstand the heating effects caused by rectifier commutation or ripple.

Scott Connection A transformer connection usually used to get a two-phase output from the secondary of a transformer with a three-phase input to the primary, or vice versa.

Step Down Transformer One in which the high voltage winding is connected to the input or power source and the low voltage winding to the output or load.

Step Up Transformer A transformer in which the low voltage winding is connected to the power source or input and the high voltage winding is connected to the output load.

Tap A connection provided in a transformer winding which has the effect of changing the nominal voltage ratio of the transformer. The taps are usually placed on the high voltage winding to correct for high or low voltage conditions found on the low voltage output side. Taps are expressed as either full capacity above normal (FCAN) or full capacity below normal (FCBN).

T-CONNECTION A Scott connected three phase transformer utilizing two primary and two secondary coils called the main and teaser coils.

Temperature Rise The temperature increase over ambient due to load. This is measured as either average rise by resistance or as hot-spot.

Thermals Over temperature protection devices.

Volt-Amperes The current flowing in a circuit multiplied by the voltage of that circuit. An expression of the output rating of a transformer.

Wye Connection A three-phase connection in which similar ends of each phase winding are connected together at a common point which forms the electrical neutral and is often grounded.

Single phase isolation (double wound) transformers

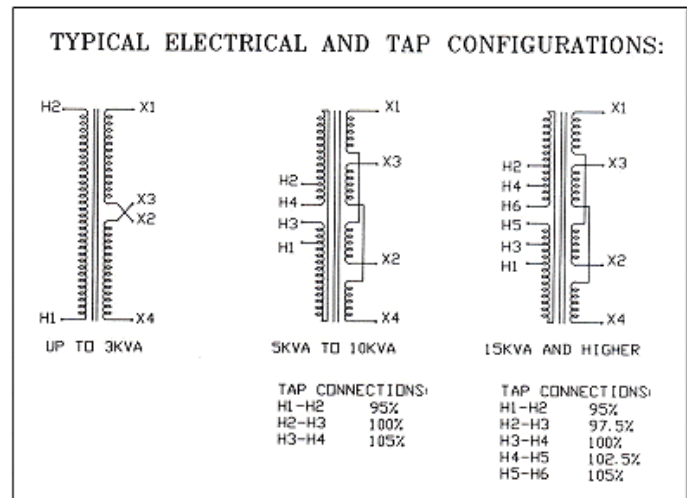
Application

Isolation transformers should be used on all systems which require grounding of the load. Rex single phase distribution transformers are ideal for supplying auxiliary lighting circuits from 600 V and lower supplies, and electric heating equipment.

Features

- General purpose ventilated steel enclosure suitable for indoor, dry locations. After fabrication, alt metal is finished in ASA 61 gray powder coating suitable for most industrial and commercial installations.
- Transformers up to 75 KVA capacity may be readily hung on H-columns, walls, shelves or floor mounted to suit each installation. Most units have lifting lugs, conduit KOs and a removable front cover for convenient access to terminals.
- Transformers rated above 75 KVA are suitable for floor or platform mounting and complete with integral lifting lugs and removable front panels for convenient access to terminals.
- Transformer terminations rated below 330 amps are supplied with suitable hardware and lugs for cable connection. Terminations above 330 amps are supplied with terminal pads only.

- Primary windings have full capacity taps for supply voltage compensation and split secondaries for flexibility.
- Class 220 insulation used throughout.
- **CSA certified, File No. LR 34493**
- **UL listed, File No. E108265**



VOLTAGE: 600 – 120 / 240		480 – 120 / 240				
KVA	Cat. No.	Cat. No.	Taps	Encl. Size*	WT. (lb.)	
5	SC5JK	SC5HK	0	2	80	
7.5	SC7JK	SC7HK	5%	4	100	
10	SC10JK	SC10HK	5%	4	110	
15	SC15JK	SC15HK	5%	4	155	
25	SC25JK	SC25HK	2X2.5	6	200	
37.5	SC37JK	SC37HK	2X2.5	6	325	
50	SC50JK	SC50HK	2X2.5	6	365	
75	SC75JK	SC75HK	2X2.5	7	540	
100	SC100JK	SC100HK	2X2.5	8	720	
150	SC150JK	SC150HK	2X2.5	9	998	
167	SC167JK	SC167HK	2X2.5	9	1080	
250	SC250JK	SC250HK	2X2.5	9	1370	

* For enclosure dimensions refer to the table on the following page

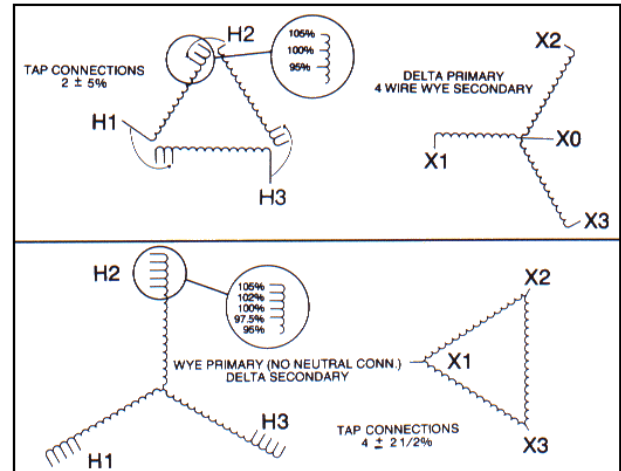
Single phase isolation (double wound) transformers

Application

Designed for indoor installation in hotels, schools, factories and industrial and commercial buildings where a reliable power source is required for lighting and other low voltage equipment and machinery

Features

- Using computer aided design techniques and modern materials, Rex engineers have created a range of highly efficient transformers having long trouble-free life with reduced weight, size and cost
- Ventilation openings in the enclosure are coordinated with the cooling ducts in the coils to ensure proper natural circulation of the cooling air for long life and minimum losses
- General purpose ventilated steel enclosure, suitable for indoor locations. After fabrication, they are finished in ASA 61 gray powder coating, suitable for most industrial and commercial installations
- **CSA certified, File No. LR 34493**
- **UL listed, File No. E108255**
- Transformers up to 75 KVA capacity may be readily hung on H-columns, walls, shelves or floor mounted to suit each installation. All units have lifting lugs, conduit KOs and a removable front cover for convenient access to terminals.
- Transformers rated 112.5- 300 KVA are suitable for floor or platform mounting and complete with integral lifting lugs, and removable top, front and rear panels for convenient access to the terminals.
- Class 220 insulation used throughout range.
- Transformer terminations rated below 330 amps are supplied with suitable hardware and lugs for cable connection. Terminations above 330 amps are supplied with terminal pads only.



TYPICAL ELECTRICAL and TAP CONFIGURATIONS

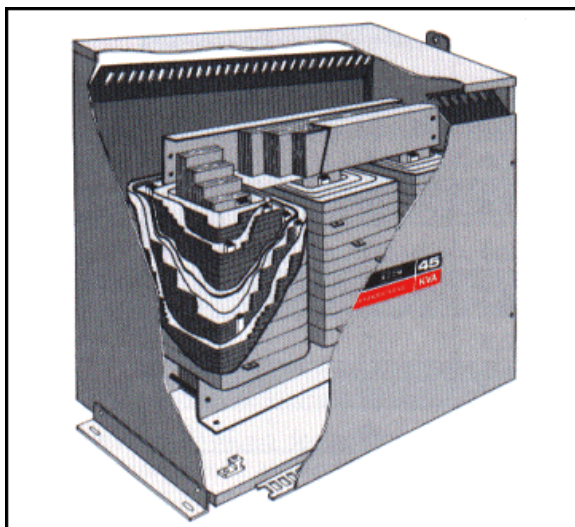
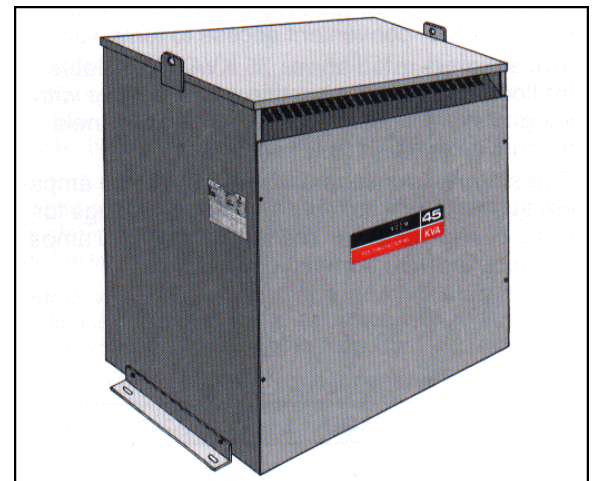


Table of Enclosure Dimensions

Dimensions are in (in.)

Size No.	Length	Depth	Height
0	9.5	7	8
1	12	9	10
2	11	11	14.25
3	15.5	11	14.25
4	15.5	13.5	18.25
5	20.25	13.5	18.25
6	20.25	18.25	24.75
7	24.25	19.75	25.5
8	30.75	27.75	30.75
9	40	31	44
10	46	40	62

Three phase isolation (double wound) transformers

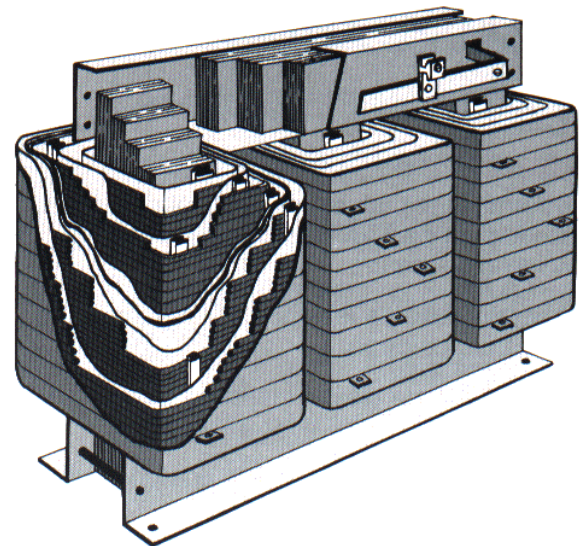
Taps

0 – No Taps
1 - ± 5% FC

2 - ± 2.5% FC
± 5% FC

PRI	SEC	KVA	CAT.NO. *	TAPS	HZ	SIZE	lb.	Kg.
600 △	208 _y 120	3	BC3JM	0	60	3	85	39
		6	BC6JM	1		4	130	59
		9	BC9JM	1		4	143	65
		15	BC15JM	1		5	188	85
		30	BC30JM	2		6	275	124
		45	BC45JM	2		6	360	163
		75	BC75JM	2		7	515	234
		112.5	BC112JM	2		8	780	354
		150	BC150JM	2		8	970	437
		225	BC225JM	2		9	1460	662
		300	BC300JM	2		9	1835	832
480 △	108 _y 120	3	BC3HM	0	60	3	85	39
		6	BC6HM	1		4	130	59
		9	BC9HM	1		4	143	65
		15	BC15HM	1		5	188	85
		30	BC30HM	2		6	275	124
		45	BC45HM	2		6	360	163
		75	BC75HM	2		7	515	234
		112.5	BC112HM	2		8	740	333
		150	BC150HM	2		8	970	437
		225	BC225HM	2		9	1460	662
		300	BC300HM	2		9	1835	832
416 △	208 _y 120	3	BC3GM	0	60	3	85	39
		6	BC6GM	1		4	130	59
		9	BC9GM	1		4	143	65
		15	BC15GM	1		5	188	85
		30	BC30GM	2		6	275	124
		45	BC45GM	2		6	360	163
		75	BC75GM	2		7	515	234
		112.5	BC112GM	2		8	740	333
		150	BC150GM	2		8	970	437
		225	BC225GM	2		9	1460	662
		300	BC300GM	2		9	1835	832
480 △	1240	3	BC3QC	0	60	3	85	39
		6	BC6CQ	1		4	130	59
		9	BC9QC	1		4	143	65
		15	BC15QC	1		5	188	85
		30	BC30QC	2		6	275	124
		45	BC45QC	2		6	360	163
		75	BC75QC	2		7	515	234
		112.5	BC112QC	2		8	740	333
		150	BC150QC	2		8	970	437
		225	BC225QC	2		9	1460	662
		300	BC300QC	2		9	1835	832

* BC – Copper or
BA – Aluminum
See Catalogue Numbering System



For transformers up to 5MVA in size and 35,000 Volts consult the head office

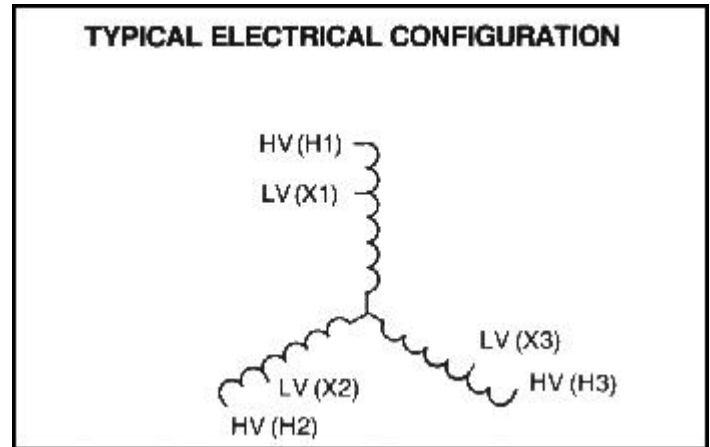
Notes

- Other primary and secondary voltage available
- Refer to factory for other frequencies.
- All enclosures listed are indoor type.
- Outdoor enclosures available, refer to factory.
- All dimensions are subject to change and should not be used for construction purposes. Certified drawings supplied upon request.
- Shipping weights are approximate. Actual weights may be higher due to packing and crating.
- Open type, core and coil transformers are available, refer to factory.

Three phase autotransformers

Application

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 primary and secondary circuits so there is no isolation between the two. This may not be acceptable on some power systems which do not have a grounded neutral on the secondary side of the main power transformer. Typical applications include motor loads of industrial machinery, electric heating, air conditioners, etc.



Features

- Performs same function as an isolation transformer of same KVA and voltage rating without the isolation feature.
- Generally radiates less noise than equivalent isolation transformer
- All terminals are clearly identified and easy to connect
- May be used in either step-up or step-down configuration
- Low regulation; less than three percent
- Class 220 insulation used throughout range
- **CSA certified, File No. LR 34493**
- **UL listed, File No. E108255**
- General purpose ventilated steel enclosure suitable for indoor location. After fabrication all metal is finished in ASA 61 gray powder coating suitable for most industrial and commercial installations.
- Transformers in up to #7 Enclosure may be readily hung on H-columns, walls, shelves or floor mounted to suit each installation. All units have lifting lugs, conduit KOs and a removable front cover for convenient access to terminals.
- Transformers in #8 or larger enclosures are suitable for floor or platform mounting and complete with integral lifting lugs, and removable top, front and rear panels for convenient access to the terminals.
- Transformer terminations rated below 330 amps are supplied with suitable hardware and lugs for cable connection. Terminations above 330 amps are supplied with terminal pads only.

Table of Enclosure Dimensions

Dimensions are in (in.)

Size No.	Length	Depth	Height
0	9.5	7	8
1	12	9	10
2	11	11	14.25
3	15.5	11	14.25
4	15.5	13.5	18.25
5	20.25	13.5	18.25
6	20.25	18.25	24.75
7	24.25	19.75	25.5
8	30.75	27.75	30.75
9	40	31	44
10	46	40	62

Notes

- Other primary and secondary voltages available.
- Standard units do not have primary taps.
- Taps available on special order, refer to factory.
- Refer to factory for other frequencies.
- All enclosures listed are indoor type.
- Outdoor enclosures available, refer to factory.
- All dimensions are subject to change and should not be used for construction purposes. Certified drawings supplied upon request.
- Shipping weights are approximate. Actual weights may be higher due to packing and crating.
- Open type, core and coil transformers available, refer to factory.

Three phase autotransformers

Taps

0 – No Taps

1 - ± 5% FC

2 - ± 2.5% FC

± 5% FC

H.V.	L.V.	KVA	CAT.NO. *	TAPS	HZ	SIZE	lb.	Kg.
600Y	480Y	3	R3JH	0	60	0	21	10
		6	R6JH			1	34	16
		9	R9JH			1	45	21
		15	R15JH			1	65	29
		30	R30JH			3	115	52
		45	R45JH			3	135	61
		75	R75JH			4	200	90
		112.5	R112JH			6	225	102
		150	R150JH			6	265	120
		225	R225JH			7	385	175
300	R300JH			7	525	237		
600Y	416Y	3	R3JG	0	60	0	32	15
		6	R6JG			1	70	32
		9	R9JG			1	85	39
		15	R15JG			3	120	54
		30	R30JG			3	135	61
		45	R45JG			5	180	81
		75	R75JG			6	220	102
		112.5	R112JG			7	300	135
		150	R150JG			8	400	180
		225	R225JG			8	540	243
300	R300JG			9	615	277		
600Y	380Y	3	R3JF	0	60	1	38	18
		6	R6JF			1	75	34
		9	R9JF			3	110	50
		15	R15JF			3	140	63
		30	R30JF			5	170	77
		45	R45JF			5	210	95
		75	R75JF			6	285	129
		112.5	R112JF			7	425	192
		150	R150JF			8	525	237
		225	R225JF			8	635	286
300	R300JF			9	900	405		
600Y	240Y	3	R3JC	0	60	1	40	18
		6	R6JC			1	75	34
		9	R9JC			3	120	54
		15	R15JC			3	155	70
		30	R30JC			5	220	99
		45	R45JC			6	265	120
		75	R75JC			6	400	181
		112.5	R112JC			7	550	248
		150	R150JC			7	610	277
		225	R225JC			8	970	437
300	R300JC			9	1300	585		

H.V.	L.V.	KVA	CAT.NO. *	TAPS	HZ	SIZE	lb.	Kg.
600Y	208Y	3	R3JB	0	60	1	45	21
		6	R6JB			1	70	32
		9	R9JB			3	130	59
		15	R15JB			3	130	59
		30	R30JB			5	210	95
		45	R45JB			6	250	113
		75	R75JB			6	360	163
		112.5	R112JB			7	555	250
		150	R150JB			8	650	293
		225	R225JB			8	920	414
300	R300JB			9	1330	499		
480Y	240Y	3	R3HC	0	60	1	65	30
		6	R6HC			1	85	39
		9	R9HC			3	110	50
		15	R15HC			3	120	57
		30	R30HC			5	200	90
		45	R45HC			5	225	102
		75	R75HC			6	325	147
		112.5	R112HC			7	450	203
		150	R150HC			7	550	203
		225	R225HC			8	675	304
300	R300HC			8	900	405		
480Y	208Y	3	R3HB	0	60	1	65	30
		6	R6HB			1	85	39
		9	R9HB			3	110	50
		15	R15HB			3	130	59
		30	R30HB			5	200	90
		45	R45HB			5	225	102
		75	R75HB			6	325	147
		112.5	R112HB			7	450	203
		150	R150HB			7	550	248
		225	R225HB			8	675	304
300	R300HB			8	900	405		
240Y	208Y	3	R3CB	0	60	0	18	8
		6	R6CB			0	21	10
		9	R9CB			1	30	14
		15	R15CB			1	52	24
		30	R30CB			3	70	32
		45	R45CB			3	125	57
		75	R75CB			5	135	61
		112.5	R112CB			5	180	81
		150	R150CB			6	200	90
		225	R225CB			6	240	108
300	R300CB			7	300	405		

Encapsulated transformers

Standard dry type ventilated transformers are free of dust, moisture or other damaging corrosive fumes. For this reason, standard Dry Type ventilated transformers are normally installed in suitable, indoor locations where they are protected from damaging elements.

Some specifications require installation of transformers in hazardous surroundings where the above mentioned conditions can not be met.

Resin encapsulated transformers are designed for such surroundings.

Typical Applications

Abnormally corrosive, damp or dusty, indoor or out- door, industrial, commercial and residential, harsh environments, such as:

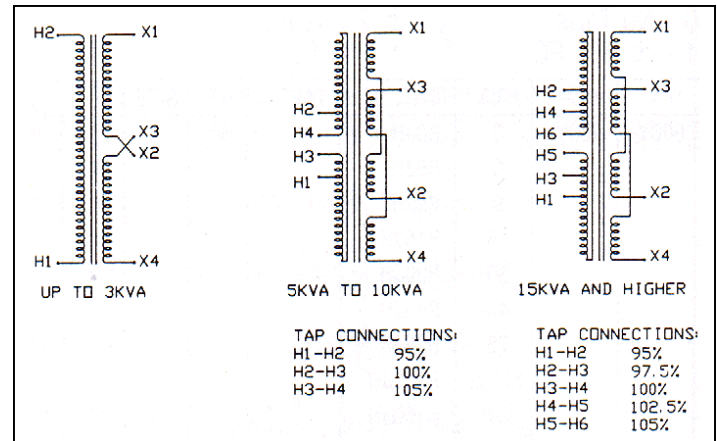
- Corrosive environments: Petro-chemical, steel, pulp and paper industries.
- Damp locations: Mines, pump-houses, under- ground or rooftop service areas.
- Airborne dust, conductive particles: Textile, woodworking industries.

Resin Encapsulated Type Transformer Construction

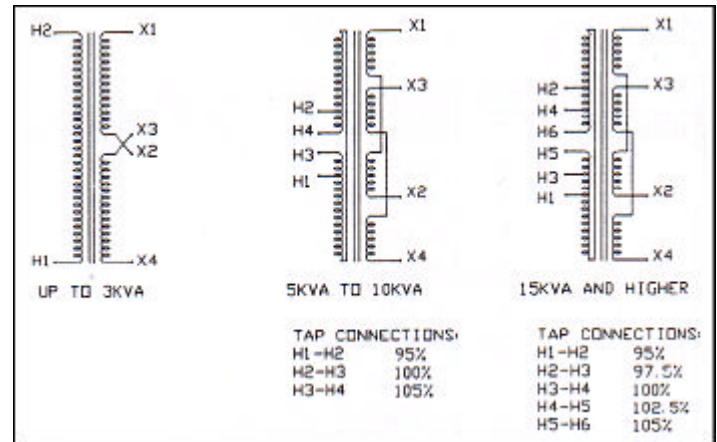
- Mixture of silica sand and resin, forming a solid mass completely encloses and protects the core and coil, also significantly reduces audible noise.
- Windings utilize class 220 C. insulation rated for 150 C. rise, but designed to operate at 115 C. max.
- Core is solidly grounded.
- Enclosure constructed of heavy gauge steel, coated with powder coating, suitable for type 3R, and type 4 applications, indoor or outdoor. Optional stainless steel enclosures are recommended where the enclosure is exposed to severe corrosive environments.
- Wiring compartment, spacious, cool and easily accessible (bottom access for smaller units, front access for large units).

Note

Cat. # in Chart are for 600 volt transformers.
For 480 volt see Cat. numbering System Page 1



TYPICAL ELECTRICAL and TAP CONFIGURATIONS



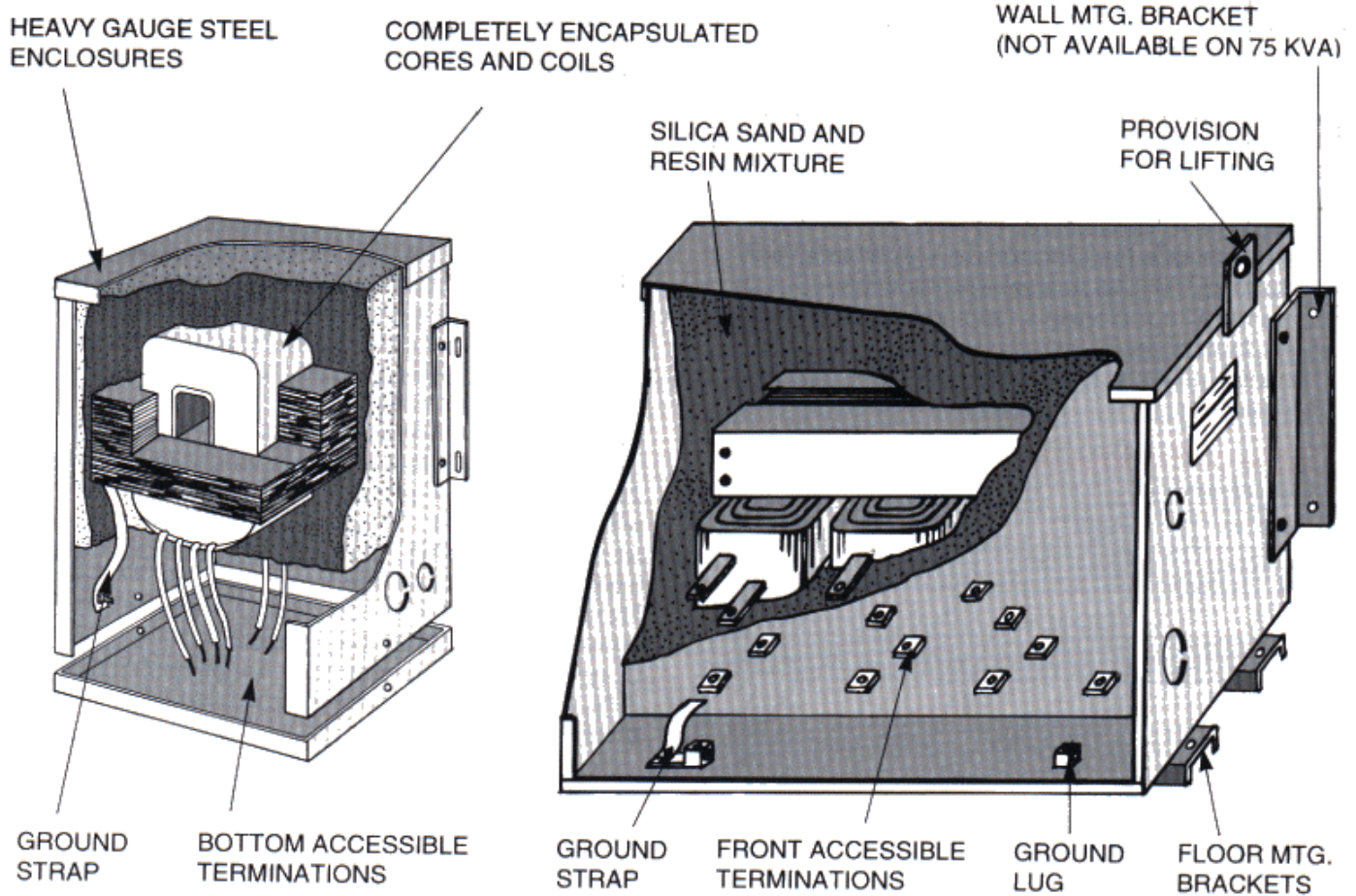
**TYPICAL ELECTRICAL and TAP CONFIGURATIONS
1 Phase Type EP**

High Voltage	Low Voltage	KVA	Cat. #	Const. Type	Encl. Size	Weight (lb.)
60 Hz.		¼	SCO .250JK/EP	1	1	17
		½	SCO .500JK/EP	1	1	20
		¾	SCO .750JK/EP	1	1	23
600	120/240 OR	1.0	SC1JK/EP	1	2	27
		1.5	SC1.5K/EP	1	3	40
		2.0	SC2JK/EP	1	4	45
480	120/240	3.0	SC3JK/EP	1	3	55
		5.0	SC5K/EP	2	3	170
		7.5	SC7JK/EP	2	4	180
		10	SC10JK/EP	2	5	235
		15	SC15JK/EP	2	5	296
		25	SC25JK/EP	2	6	355
		327.5	SC37JK/EP	2	6	395

3 Phase Type EP

High Voltage	Low Voltage	KVA	Cat. #	Const. Type	Encl. Size	Weight (lb.)
60 Hz.		6	BC6JM/EP	2	7	130
		9	BC9M/EP	2	7	200
600DELTA 208Y/120 OR 480DELTA 208Y/120		15	BC15JM/EP	2	8	415
		30	BC30JM/EP	2	9	536
		45	BC45M/EP	2	9	645
		75	BC75JM/EP	2	10	1300

Encapsulated transformers



CONST. TYPE 1

CONST. TYPE 1

Table of Enclosure Dimensions

Dimensions are in (in.)

Encl. Size	Length	Depth	Height	Cnst. Type
1	5	4.25	9.75	1
2	5.875	4.875	10.25	1
3	7.5	3.125	11	1
4	9.75	8.75	16.25	1
5	15.5	10.5	19.25	1
6	14.5	11.75	25.5	1
7	15	11	15	2
8	21	14	17.5	2
9	21	18	20	2
10	32	18	25	2

Energy Efficient Transformers (80 Deg. C. and 115 Deg. C. Temperature Rise)

Application

As energy prices rise it is desirable to reduce the operating costs of electrical systems. Transformers manufactured with temperature rises of 80 deg. C. or 115 deg. C. are designed with lower than normal conductor and total losses which results in greater life expectancy, lower operating costs and significant overload capabilities.

The losses of a transformer are a very small percentage of the total power which flows through it. However all transformers have losses which appear in the form of heat.

The total losses are the sum of the core loss and the load loss

Table of Enclosure Dimensions

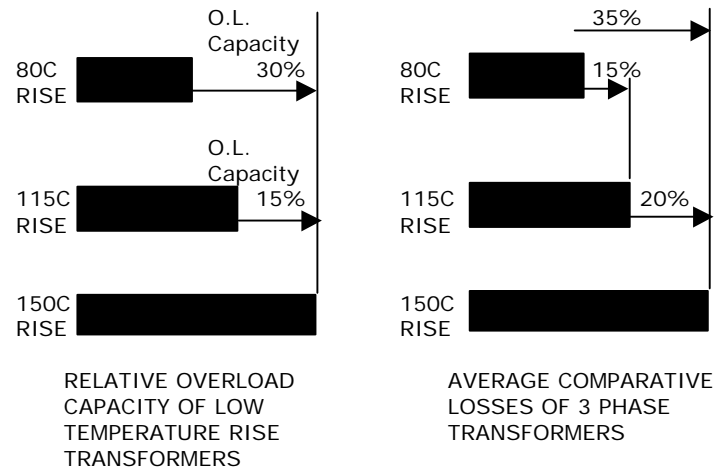
Dimensions are in (in.)

Size No.	Length	Depth	Width
0	9.5	7	8
1	12	9	10
2	11	11	14.25
3	15.5	11	14.25
4	15.5	13.5	18.25
5	20.25	13.5	18.25
6	20.25	18.25	24.75
7	25.25	19.75	25.5
8	30.75	27.75	30.75
9	40	31	44
10	46	40	62

Core loss: losses that are mainly caused by the resistance of the iron core to the magnetic flux magnetizing it. These losses can be reduced by lowering the flux density, using higher grade steel and careful assembly procedures.

Load loss: losses that are caused primarily by the resistance of the winding conductors to the current which flows through them. These losses can be reduced by lowering the resistance of the windings and by lowering the temperature rise of the transformer. Rex energy efficient transformers are designed with reduced core losses and reduced operating temperatures (Temp. rise).

Each transformer operating at a temperature rise of 115 deg.C. or 80 deg. C. will have approximately 20% and 35% lower losses respectively compared with conventional 150 deg. C. rise units. An additional benefit of Rex energy efficient transformers is enhanced overload capability. Transformers rated at 115 deg. C. or 80 deg. C. temperature rises can be operated at as a 150 deg. C. unit and yield an overload capability of 15% or 30% without reducing the life expectancy or service reliability.



TEMPERATURE RISE 115°C VOLTAGE 600-120Y208					TEMPERATURE RISE 80°C VOLTAGE 600-120Y208				
KVA	Cat. No.	Taps	Encl. Size	WT. (lb.)	KVA	Cat. No.	Taps	Encl. Size	WT. (lb.)
3	BC3JM/T115	0	4	105	3	BC3JM/T80	0	4	120
6	BC6JM/T115	1	4	135	6	BC6JM/T80	1	4	160
9	BC9JM/T115	1	5	168	9	BC9JM/T80	1	5	185
15	BC15JM/T115	1	6	230	15	BC15JM/T80	1	6	260
30	BC30JM/T115	2	6	290	30	BC30JM/T80	2	7	360
45	BC45JM/T115	2	7	430	45	BC45JM/T80	2	8	500
75	BC75JM/T115	2	8	610	75	BC75JM/T80	2	9	780
112.5	BC112JM/T115	2	9	920	112.5	BC112JM/T80	2	9	1140
150	BC150JM/T115	2	9	1230	150	BC150JM/T80	2	9	1460
225	BC225JM/T115	2	9	1650	225	BC225JM/T80	2	9	1850
300	BC300JM/T115	2	10	2600	300	BC300JM/T80	2	10	2800

Electrostatically Shielded Transformers

Application

Electrostatically (faraday) shielded transformers are designed to protect sensitive electrical and electronic devices and systems from high frequency voltages (electrical noise) or transients that occur due to switching and loading on distribution lines.

Electrical noise and transients are classified two ways.

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

Common mode: Noise which appears between the ground wire and hot and neutral current carrying conductors.

Common mode noise is more prevalent and should be the key criterion for any noise suppression device.

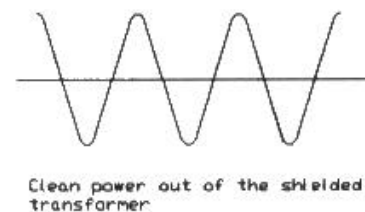
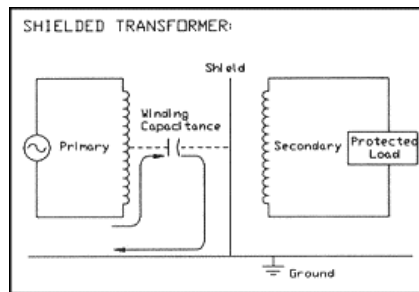
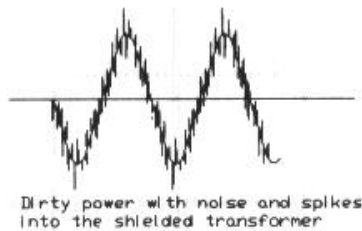
Typical Applications

- Hospital operating rooms & X-ray equipment
- Computer installations
- Data processing
- Programmable controllers

Features

- Shielded transformers are available with copper or aluminum windings
- Knock outs provided for simplified wiring
- Class 220 insulation is used throughout entire range
- General purpose ventilated steel enclosure, suitable for indoor locations finished in ASA 61 powder epoxy paint.
- Transformers rated up to 75 KVA may be readily hung on H columns, walls, shelves or floor mounted to suit each installation. All units come complete with provisions for lifting.
- Transformers rated 112.5 KVA and over are suitable for floor or platform mounting and come complete with provisions for lifting.
- Internal ground lugs
- CSA certified, file no. LR 34493
- UL listed, file no. E108255

Effects of Electrostatic Shielding



The shielded transformer suppresses common mode noise by introducing a grounded shield (copper or aluminum) between its primary and secondary windings. The grounded shield provides a low resistance path to ground by the effect of capacitive coupling which 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 regard to harmonic current or voltage distortion of waveforms. By redirecting unwanted common mode electrical noise and transients generated on the source side of the transformer to ground the shield is extremely valuable in protecting sensitive equipment connected to the transformer output.

3 Phase Isolation Transformer Common Mode Noise Attenuation	Attenuation Ratio Range
Transformer with no shield: Minimum attenuation 12 dB Range: 12 dB – 20 dB	10:1
Single Shield: Minimum attenuation 50 dB Range: 50 dB – 65 dB	1000:1
Double Shield: Minimum attenuation 65 dB Range: 65 dB – 90 dB	10,000:1
Triple Shield: Minimum attenuation 90 dB Range: 90 dB – 120 dB	100,000:1
Ultra Isolating: Minimum attenuation 120 dB Range: 120 dB – 150 dB	1,000,000:1

Several types of electrostatically shielded transformers are available providing the option of various degrees of common mode noise attenuation.

The ratio of the common mode noise attenuation on the input to that of the output is expressed in Decibels (dB). Isolation transformers with electrostatic shields installed can have input noise to output noise ratios within the range of 10:1 to 1,000,000 or higher.

K – Factor Rated transformers for Non-Linear Loads

Application

Today's modern electronic, electrical components and circuitry such as computers, copiers, printers, fax machines and display terminals utilize switching mode power supplies for their operation. These switching mode power supplies are non-linear in nature and cause significant power system problems.

- Circuit breakers and fuses blowing far below their current ratings.
- Neutrals in transformers and panelboards are much hotter than their ratings.
- Distribution transformers are overheating even when operating well within their specified name-plate ratings.

These problems are the result of harmonics. Solid state switching elements such as SCR's, transistors and capacitors which are found in computers, fax machines, solid state drives energy efficient ballasts etc. Continuously switch on an off producing non-linear or non sinusoidal waveshapes in the current supplied from the power source.

A linear load uses current from the power source continuously over the sinusoidal cycle. A non linear load uses current in large pulses from the power source which creates harmonic distortion.

Harmonic components are represented by periodic waves that has a frequency that is a multiple of the fundamental frequency.

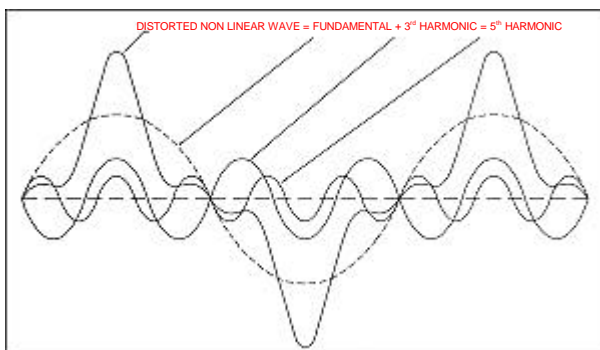
Example: fundamental frequency 60 Hz.

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 changing its magnitude.

Effects of Harmonic Components on the Sinusoidal Cycle



Effects on Transformers

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 high 180 HZ current flowing through the transformer neutral terminal. The core steel of the transformer has stray losses which will increase dramatically with harmonic distortion. These effects cause the transformers to operate at significantly higher temperatures.

K – Ratings

A K-factor rating applied to a transformer is an index of the transformers 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 load specified. The neutral of the transformer is sized at 200% of the current rating of the phase connections.

Selecting transformer K-rating by load type

- K-factor 1: Motors
Incandescent Lighting
Resistance Heating Motor Generators
(without solid state drives)
- K-factor 4: Hid Lighting
Induction Heaters
Welders
UPS with optional input filtering
PLC's and solid state controls
- K-factor 13: Multiple receptacle circuits in health care facilities
UPS without input filtering
Production or assembly line equipment
Facilities and classrooms of schools
- K-factor 20: SCR variable speed drives
Circuits with exclusively data processing equip.
Main-frame computers
Critical care areas and operating rooms of hospitals

Rex Manufacturing can calculate and supply k-factor ratings of any magnitude when harmonic values are given.

Drive Isolation Transformers (DIT's)

Applications

Rex Manufacturing drive isolation transformers are specifically designed to meet the requirements of AC and DC variable speed drives or rectifier outputs. Rex DIT type transformers are manufactured and rated to match standard motor horsepower and voltage ratings.

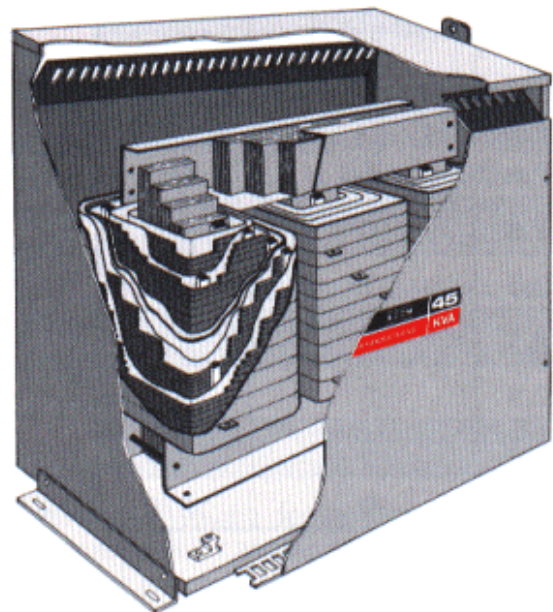
Features

- Anticipating that harmonics generated by the rectifiers will be present the steel core is increased to operate the transformer at a lower flux density to prevent saturation.
- Standard k-factor 4 rating. All k-factor ratings are available.
- Available in either high quality copper or aluminum windings
- Braced to withstand the mechanical stresses of the current reversals and short circuits associated with SCR drives.
- Isolates the power source from low frequency noise generated by SCR voltage spikes and transient feedback.
- Reduces short circuit currents
- Lower than normal losses and temperature rise for greater life expectancy and overload capability.
- Full current neutral
- Standard taps supplied, 8 – 175 KVA 5% FCAN & FCBN 220 KVA and over 2x2.5% FCAN & FCBN

- Class 220 insulation is used throughout entire range
- Thermal protectors (thermostats) for overtemperature tripping are supplied standard.
- CSA certified, file number IR 34493
- UI listed, file number E108255

Standard Voltage Combinations Available

575 DELTA - 575Y332	460 DELTA - 460Y266
575 DELTA - 460Y266	460 DELTA - 230Y133
575 DELTA - 230Y133	230 DELTA - 230Y133



Dimensions and Weight

Drive HP.	KVA Rating	Encl. Size	WT. (lb.)
5	8	4	135
8	11	4	150
10	13	5	182
15	20	6	247
20	27	6	275
25	34	6	310
30	40	6	336
40	51	7	455
50	63	7	485
60	75	7	565
75	93	8	755
100	118	8	820
125	140	8	890
150	175	9	1250
200	220	9	1470
250	275	9	1750
300	330	9	1990
400	440	10	2700
500	550	10	3100

Table of Enclosure Dimensions

Dimensions are in (in.)

Size No.	Length	Depth	Height
0	9.5	7	8
1	12	9	10
2	11	11	14.25
3	15.5	11	14.25
4	15.5	13.5	18.25
5	20.25	13.5	18.25
6	20.25	18.25	24.75
7	24.25	19.75	25.5
8	30.75	27.75	30.75
9	40	31	44
10	46	40	62

General Terms

All orders are subject to approval by the Head Office Sales Department. Written quotations are subject to change at any time and are void after 30 days.

Rex Manufacturing reserves the right to change the design and/or construction of any transformer in any manner in keeping with its policy of constant product improvement.

Terms are net 30 days, subject to credit approval.

Shipping Method

Shipment will be made by any method and routing specified by the customer, but any additional cost over our standard method must be paid by the customer.

Shipping Damage

Responsibility for the product is transferred to the customer when it leaves the factory. The customer is responsible for damage or loss in transit. Therefore it is recommended that the customer carefully examine the shipment before accepting delivery from the carrier. In the event of shortage or damage, the customer must note loss or damage on the transportation receipt and immediately file a claim with the carrier, and at the same time send a copy to Rex.

Warranty

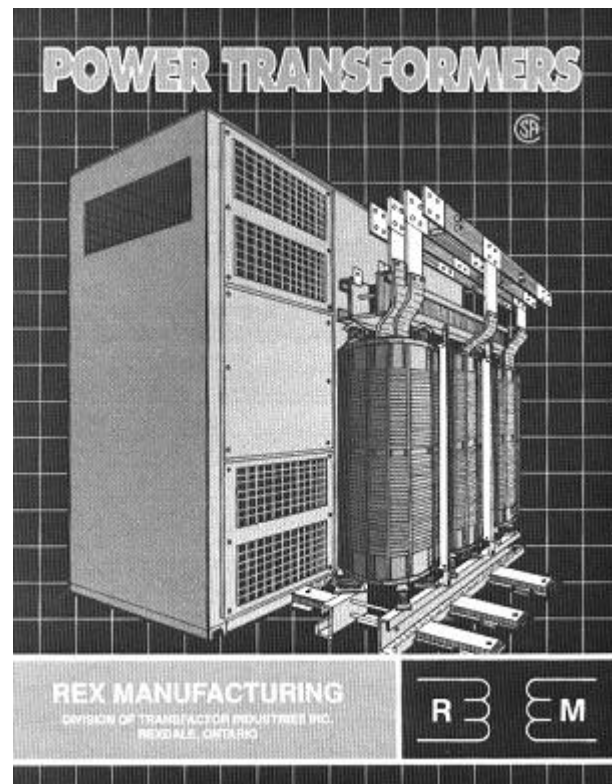
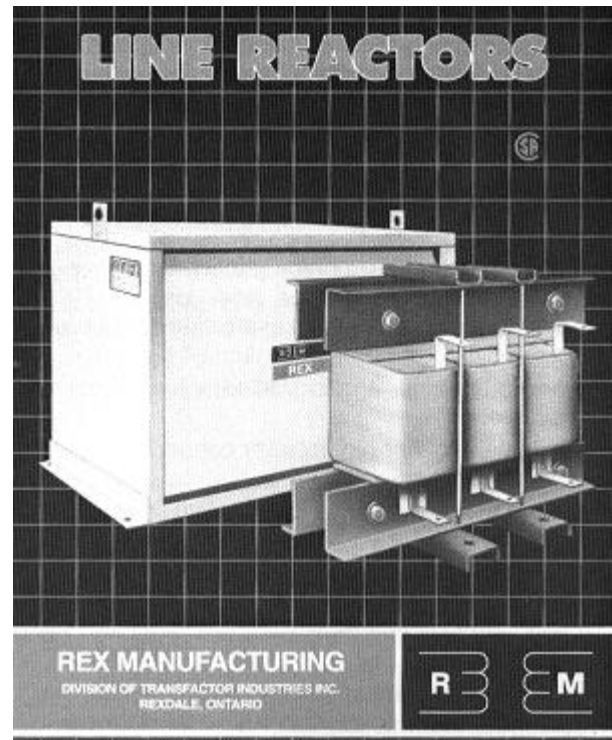
Rex Manufacturing warrants to its customers that the products delivered conform to the specifications and are free from defects in material and workmanship for a period of one year.

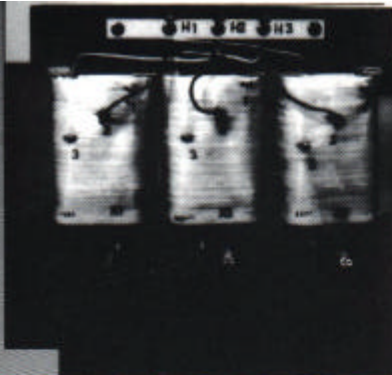
Defects

If any defect in material or workmanship develops within one year from the date of shipment, Rex will (at its opinion) replace or repair the defective part, F.O.B. factory, if (a) Rex has been notified in writing immediately upon the defect coming to light, (b) it has been shipped prepaid to Rex without delay, and (c) the product has not been misused, abused, altered, neglected, improperly installed or damaged.

Limitations

No other warranty is intended or is to be implied. Rex shall not be liable for any indirect damages or damages in excess of the price of the product.





Sales Support:

Our fully qualified inside sales personnel are available to answer any questions that a customer may have. We believe that time waiting for a quote is time wasted. Rex makes it easy for the customer to receive a quotation rapidly. For immediate response call 1-800-387-2840. For same day response fax 416-747-1956.

Engineering:

No task is too difficult and no transformer is too special for our engineering department. All drawings and specifications are produced quickly and efficiently, usually on the same day. With these people a one or two day turnaround for a breakdown situation is not an impossible task.

After Sales Customer Service:

Rex Manufacturing's Customer Service Department is available to answer all questions pertaining to our customer's existing orders. Whether you are seeking shipping information, technical information or have a problem in the field, these people are here to help. Customer Service is available immediately at: 1-800-387-2840.

Competitive Pricing:

At Rex we promise our customers that we will keep them competitive in a very competitive market. This is a strong statement to make and we stand behind it. We now offer our customers a choice of high quality transformers with either copper or aluminum windings, just another way to keep a competitive edge.

Product Availability:

Some say that our product delivery is the best in the industry. We work hard to receive such comments by maintaining a large inventory of stock transformers for immediate delivery. Due to complete inhouse fabrication facilities and engineering experience, we are able to produce most specialty transformers in the minimal amount of time usually ready for shipment within two to three weeks. Large power transformers 6-8 weeks.

Representation:

To service the industry efficiently, Rex Manufacturing utilizes local sales representative throughout Canada, the United States and abroad.

The Company:

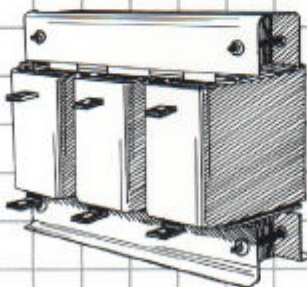
Rex Manufacturing has served the North American Transformer industry for the past 20 years. Success and growth in this very competitive industry is achieved by a company wide recognition that our customers must have their transformer Requirements satisfied quickly, efficiently and with minimal effort.

The Philosophy:

At Rex Manufacturing we understand that our customers primary goal is to satisfy their clients requirements in the most prosperous and customer pleasing manner possible. From management to shipping, Rex is committed to supplying the right product, at the right place and time, at the right price and with a high degree of quality that you can have confidence in.

Service Excellence.

**DEPENDABILITY AND RELIABILITY
WHEN EVERYONE ELSE FALLS SHORT.**



In an industry with little differentiation, our customer-orientation sets us apart.

When you need support, technical advice, planning or delivery schedules to fulfill your transformer requirements, you can depend on Rex.

REX MANUFACTURING

Customer satisfaction is engineered into every transformer we build.

DRY TYPE TRANSFORMERS:

- DISTRIBUTION
- AUTO
- CONTROL

COMPLETE PRODUCT RANGE

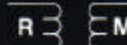
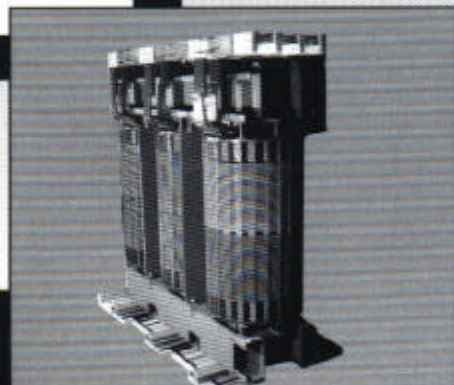
- Control Transformers (25VA - 5000 VA all voltages)
- General purpose Isolation Transformers
- Drive Isolation Transformers
- Power Transformers (up to 5 MVA - 35,000 volts)
- Electrostatically Shielded Transformers
- Auto Transformers (all voltages)
- 80°C and 115°C Temperature Rise Transformers
- Reactors (single and three phase)
- Motor starting Auto Transformers and Reactors
- Ultra Isolating Transformers (Multiple Shielded)
- All Specialty Type Transformers
- Low Electromagnetic Emission Transformers (reduced stray magnetic field by 95%)



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*You must be able to trust your
Transformer Supplier to deliver
Complete customer satisfaction
requires a multileveled commitment*



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