

MGM TRANSFORMER COMPANY

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GENERAL PURPOSE DRY - TYPE DISTRIBUTION TRANSFORMER



INSTALLATION, OPERATION, AND MAINTENANCE MANUAL



MGM 100-10A-02-2012



C US

WARNING

Electrical potentials hazardous to human life can exist within this equipment when it is energized. Disconnect all input power before opening the case or touching the internal parts

The information contained herein may not cover all variations in equipment supplied or provide for all contingencies that might arise during the installation, operation or maintenance for this equipment. If there is any question regarding the above items, contact your supplier.

IT IS EXPECTED THAT ANY INSTALLATION OR MAINTENANCE WILL BE PERFORMED BY QUALIFIED PERSONNEL ACCORDING TO LOCAL, STATE, AND NATIONAL CODES.



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General

Read the entire manual before attempting to perform installation of this transformer. Dry type transformers are suitable for indoor or outdoor use depending upon the construction of the enclosure as well as the ability to protect the transformer from unwarranted access to live parts. They are cooled by the free circulation of air through the enclosures, the average ambient temperature over 24 hours should not exceed 30° C (86°F), the maximum ambient temperature should not exceed 40° C (104°F) or as otherwise specified in the specification. Overheating may occur if the air flow is restricted, the transformer is overloaded, it is supplied with over or under voltage, or operated at other than rated frequency.

Inspection upon Receipt

Units are shipped in upright position and should arrive that way. Upon arrival, all units should be inspected for damage during shipment. Unpack and examine for broken or loose parts. Careful inspection should be made of transformer coils, wiring and insulators. What appears to be minor damage in these areas may result in an open or short circuit. Claims for damage should be filed with the transportation company and an MGM Transformer Company representative must be notified immediately. For superficial or minor case part damage, spare parts may be available, contact an MGM Transformer Company representative.

Handling

Lifting with hand trucks or fork lift trucks is permissible if the blades or forks are long enough to pass completely under the case. Since most general purpose transformers have a high center of gravity, extreme caution should be exercised when lifting or moving the units.

If it is necessary to move ventilated dry-type transformers during inclement weather then they should be thoroughly protected against the entrance of moisture.

Storage

Storage areas should be as clean and dry as possible without extreme temperature variations. Protective wrappings should be left intact until the transformer is moved to its permanent location. Dry type transformers stored under extremely wet or dusty conditions must have cleaning and drying operations performed before the unit can be energized. (See Maintenance Section.)

Installation Location

Factors to be kept in mind when choosing a location for dry type transformers are: accessibility, ventilation, environmental conditions, and noise (see 'Reducing Sound Levels'). Installation should be made in an area reasonably free from dust, excessive moisture, fertilizers, chemicals and other corrosive fumes or vapors and separated from flammable materials in accordance with the NEC.

General purpose dry type transformers up to case GPC+ are supplied in dual rated enclosures suitable for indoor/outdoor installation and eliminates the need of a weather shield kit. Weather shield kits are for cases GPD and GPE which are available to convert these enclosures for UL listed outdoor NEMA 3R use. The appropriate kit can be obtained from a MGM Transformer representative. Even with a properly attached weathershield kit, no transformer should be hosed off, or placed in the catchment area of a water sprinkler. Wall-mount brackets are also available for units up to 75 KVA.

In all locations dry type transformers must be installed in the upright position in an area with free air circulation. Check NEC codes for minimum required clearances from adjacent structures. Fencing in the transformer to prevent unauthorized access is strongly recommended.

Room Requirements

Dry-type transformers located indoors should comply with the application requirements of NEC.

The room in which dry-type transformers are located should be sized to permit locating transformers with sufficient spacing between units and sufficient clearances to walls and other obstructions (as specified per NEC or as indicated below nameplate) to permit air circulation. Sufficient space should also be provided to permit routine inspection and maintenance.

Adequate ventilation is essential for the proper cooling of transformers. Clean, dry air is desirable. Filtered air at or above atmospheric pressure may reduce maintenance if dust or other contaminants present a particular problem. When transformers are located in rooms or other restricted spaces, sufficient ventilation should be provided to hold the air temperature within established limits when measured near the transformer inlets. This will usually require approximately 100 ft³/min of air per kilowatt of transformer loss. The area of ventilating opening required depends upon the height of the room, the location of openings, and the maximum loads to be carried by the transformer. Room ventilation should not impede normal circulation of air through the transformer.

When possible, the air inlet to the room should be near the floor with the outlet in the opposite upper end of the room. The exhausting air should not exceed 15°C over the inlet air temperature. When necessary, forced air exhaust should be used to maintain this maximum differential.

Connections

Cautions: Make only those connections shown on the nameplate or connection diagram. Before energizing, check all tap jumpers for proper locations, and all bolted connections for tightness. All three sets of taps on a three phase transformer must be connected in the same location for each phase. For instructions on how to read nameplates and connection diagrams, please visit the documentation section of our website at: <http://www.mgmtransformer.com>.

All transformers, with bottom connections are designed for easy accommodation of cable sizes in accordance with NEC. Cables which will carry less than 100 amperes may have a 60° C temperature rating or higher, and cables which will carry 100 amperes or more must have a 75° C temperature rating or higher. All cables should be in the lower part of the transformer enclosure in accordance with markings on the enclosure.

Use 90° C cable sized to 75° C ampacity for the units having terminals located above the coils. After the first thirty days of service, re-tighten all connecting lugs and bolts. Depending on the kVA rating, the transformer may have flexible leads with bolted type wire terminals, copper/aluminum (CU/AL) lug connectors, or simply termination pads for mounting your own crimp or lug type terminations. The table below shows required torque for installing bolted wire connectors and cables in lug type connectors.

BOLT SIZE	TYP TOL +/- NOM	ALUM		SIL BRONZE		STEEL	
		In-Lbs	Ft-Lbs	In-Lbs	Ft-Lbs	In-Lbs	Ft-Lbs
1/4-20	+/- 20%	50	4	60	5	75	6
5/16-18	+/- 20%	85	7	110	9	135	11
3/8-16	+/-20 %	145	12	195	16	240	20
1/2-13	+/-15 %	300	25	420	35	540	45
5/8-11	+/-15 %	480	40	840	70	1080	90
3/4-10	+/-15 %	720	60	1200	100	1560	130

NOTES:

1. Always use two wrenches when tightening or loosening bolted connections to prevent damage.
2. Tighten, wait several seconds, then re-tighten all connecting lugs and bolts.

Minimum electrical clearances in the installation of lugs and cables must be per ANSI and NEMA Standards. All electrical clearances that are questionable must be insulated for the applied voltage. Particular care should be taken with shielded cables, so that the ground termination of the cables has sufficient clearance from all the manufacturers installed live parts, including parts that appear to be insulated.

Grounding

It is the responsibility of the installer to ground the transformer enclosure assembly to the ground system in accordance with the latest revision of the NEC Section 450-10, NEC Article 250 and ANSI/IEEE Std. 144.

Reverse Feed or Step-up Operation

Step-down transformers may be reverse fed for step-up operation to increase voltage. This means that the incoming power is connected to the low voltage (X's) and the load is connected to the high voltage (H's). If the low voltage is wye, the X0 terminal must NOT be connected in any way. Likewise, if the low voltage is a delta with a 120 volt lighting tap (high-leg), the X4 terminal must NOT be connected in any way.

CAUTION: Much higher than normal inrush currents may occur with reverse feed operation and may cause nuisance fuse blowing or breaker tripping. For this reason, fuses and breakers with time-delay characteristics must be used.

If a breaker is used for incoming over-current protection, it must be a thermal-magnetic type breaker, not a magnetic-only type breaker.

Tap Settings are for the high voltage side and when reverse fed the ability to adjust voltages is no longer available. This means some performance parameters may be affected.

Reducing Sound Levels

Transformer noise originates within the steel core. It is an inherent characteristic of all transformers and cannot be completely eliminated. Therefore, care should be exercised in the selection of the transformer location, particularly in buildings where the ambient sound level is quite low. A transformer's sound level is quite often unintentionally amplified by improper installation, which makes the transformer appear to be considerably louder than it actually is. Transformer sound levels are amplified by sound waves in the air being reflected from surrounding objects and resonance of mounting construction and electrical connections. This situation should be avoided wherever possible. Transformers should be connected for and energized at rated voltage and frequency at no load to determine the correct noise level. Transformer sound level problems can also be further minimized by following these installation suggestions:

1. The case may be installed on vibration mounts for additional reduction of sound levels.
2. Flexible conduit couplings should be used to reduce vibration transfer from the case to the incoming and outgoing conduit.
3. The installation should be in an area where the sound will be least objectionable.
4. Avoid stairway and hall areas or reflecting objects which resonate or echo. Concrete or masonry walls, floors and ceilings are excellent sounding boards. If these and other reflecting surfaces cannot be avoided, acoustic absorbing materials should be used to cover them.

5. Mounting the transformer on walls, balconies or floors which have relatively light mass should also be avoided. The possibility of amplifying the sound waves in the structure will be greatly reduced if the weight of the mounting surface corresponding to the projected area of the transformer is equal to, or greater than the weight of the transformer. Surfaces which may distort or strain the transformer case should be leveled or squared before installation.
6. Shrubbery can be planted near the unit on outdoor installations to break up the sound pattern. Make sure all sprinklers are aimed away from the transformer.
7. Incoming line over-voltage is higher than tap setting. Change the tap settings according to the incoming line voltage.
8. Transformer installed too close to other noise generating transformers. Check adjacent transformers and isolate with acoustical barriers.
9. Loose parts of transformer enclosure, such as panels or loose bolts. Check panels and parts and tighten loose bolts and nuts.
10. Loose parts on core & coils that may have dislodged or shifted during shipment or installation. May require torquing bolts, nuts and coil support blocks.
11. Imbalanced loads. All three phase loads should be balanced per ANSI tolerances.
12. Triplen harmonic generating loads. Third harmonic circulating in delta primary will add over excitation. Disconnect load from transformer and then check sound level.

Prior To Energizing

After the installation is completed, remove any debris from the bottom of the cable compartment and from under the transformer. After the transformer has been installed, but before it is energized, all shipping braces should be removed. Tighten securely all external bolts to eliminate any vibrations. Check tap jumpers for proper location, and all bolted connections for tightness. (use two wrenches).

Maintenance

Although dry type transformers require less maintenance than liquid filled transformers and other electrical devices, periodic cleaning and inspection on the average of at least once a year should be performed except under extraordinary conditions, in which case the inspections should be made more often.

The unit must be de-energized and properly grounded before checking for loose connections or parts, accumulations of dirt on insulating surfaces, and dust which tends to restrict air flow. The windings may be cleaned with a vacuum cleaner, a blower, or with compressed air. The use of a vacuum cleaner is preferred as the first step in cleaning followed by the use of compressed air or nitrogen. The

compressed air or nitrogen should be clean and dry and should be applied at not more than 25 psi. Lead supports, taps, terminal boards, bushings and other major insulation surfaces should be brushed or wiped with a dry cloth. The use of liquid cleaners is undesirable because some of them have a deteriorating effect on most insulating materials.

As long as the transformer is energized, humidity conditions are unimportant. In the event that a dry type transformer is de-energized and allowed to cool to ambient, consideration must be given to the possible effects of humidity. If moisture is noted, it should be removed by drying with heated air from a blower, with the maximum temperature of 110°C or 230°F. The heat must be distributed in the enclosure. Incandescent lamps or heaters may also be used if the same temperature limitations are observed.

Lighting Tap Applications

Most transformers with 240V delta secondaries have a 120V single-phase lighting tap. The maximum single-phase 120V load can not exceed 10% of the three-phase kVA rating. The load must also be balanced at 5% maximum between X1 and X4 and 5% between X2 and X4. The three-phase kVA rating will be reduced by 15% when lighting tap is used to maximum capacity.

Dielectric Insulation

Transformer insulation system is designed to protect the integrity of the transformer to the BIL rating on the nameplate. If exposed to lightning, switching surges or severe transients, additional protection such as surge arrestors, surge capacitors or a higher BIL rating should be provided.

Ambient Temperature

Limiting ambient temperatures for normal service conditions are specified in ANSI Standards for Transformers. Transformers depend entirely on the surrounding air for adequate ventilation. The ambient should not exceed 40° C (104° F) and the average temperature of the air for any 24 hour period should not exceed 30°C (86° F). For operation at higher ambient temperatures, transformer loading should be reduced 0.6% of rated kVA for each degree above 30° C average ambient to a maximum of 50° C (unless transformer is specifically designed for this temperature). The use of transformers in cooling air above 50° C is not covered by this guide, and the manufacturer should be consulted before such installations are made.

Altitude

Transformers are normally designed for operation at altitudes up to 1000 meters (3300 feet). To operate a transformer above 1000 meters requires special considerations in winding insulation. Consult your nearest sales office for additional details. Refer to the latest edition of NEMA ST20 for detailed guidelines.

Single Phase Three Wire Operation

Transformer is shipped from the factory with a link between X2 & X3 for single phase three wire operation. X2 & X3 link can be treated as neutral and can be solidly grounded. X1 to neutral and X4 to neutral can be loaded up to 50% of kVA each and will provide 120 Volts output. X1 & X4 will provide 240 Volts output.

If only 120 Volts is desired then remove the links (there will be 2 links) between X2 and X3 and connect X1 to X3 and X2 to X4 to make windings in parallel.

References

All transformers are manufactured per NEMA and ANSI/IEEE standards. Where the UL Label is affixed, the transformer conforms to UL requirements. Further information may be found in ANSI/IEEE Standard C57.94. Recommended Practice For Installation, Application, Operation And Maintenance Of Dry Type General Purpose Distribution And Power Transformers.

When you need Service

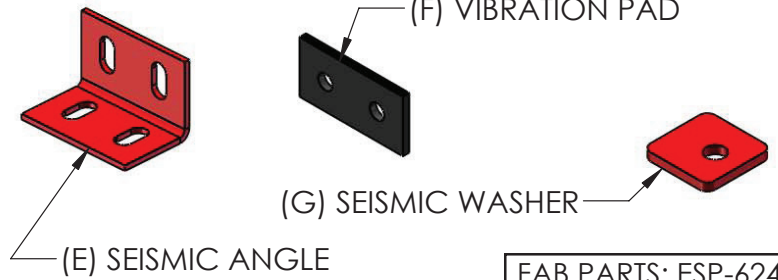
If you need service on products manufactured by MGM Transformer we are ready to serve you. Contact the nearest sales office for more information.

Terms and Conditions

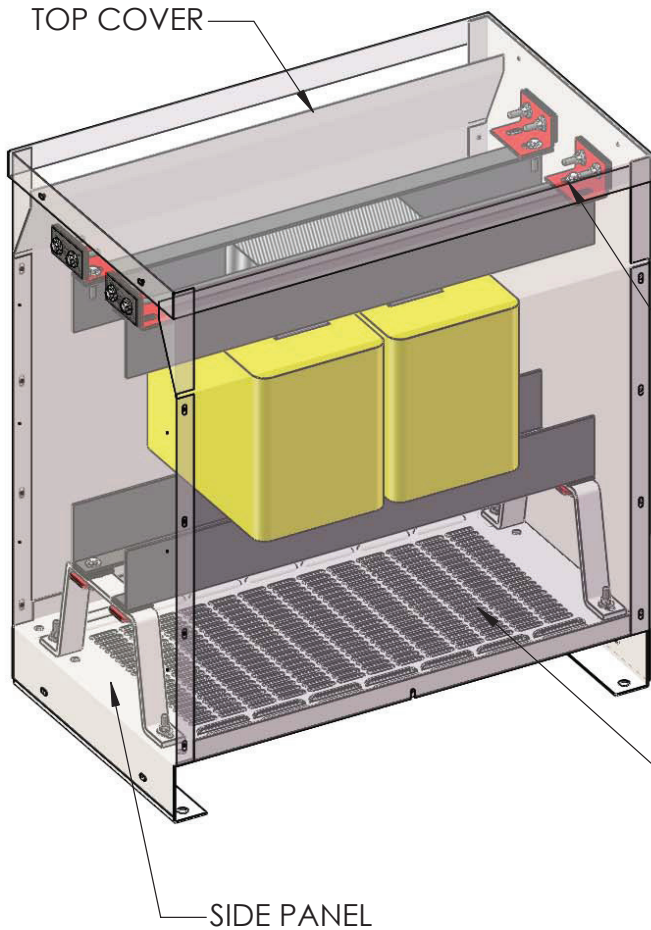
Please refer to your copy of the "Terms and Conditions" for warranty and product liability information. The "Terms and Conditions" arrived along with your order acknowledgment, are printed on the reverse page, and are available online at www.mgmtransformer.com.

APPENDIX A - SEISMIC KIT INSTALLATION INSTRUCTIONS (CASES A, B, B+, C, C+)

INCLUDED HARDWARE		
ITEM	DESCRIPTION	QTY.
A	3/8"-16 X 2.00" BOLT	20
B	3/8" FLAT WASHER	32
C	3/8" LOCK WASHER	20
D	3/8" NUT	20
E	SEISMIC ANGLE	4
F	VIBRATION PAD	4
G	SEISMIC WASHER	8



FAB PARTS: ESP-624-1



1) DE-ENERGIZE TRANSFORMER.

2) REMOVE TOP COVER AND FRONT & REAR PANELS.

3) BOLT SEISMIC ANGLE TO TOP CLAMP AS SHOWN. (SEE CUTAWAY VIEW 1 ON NEXT PAGE)

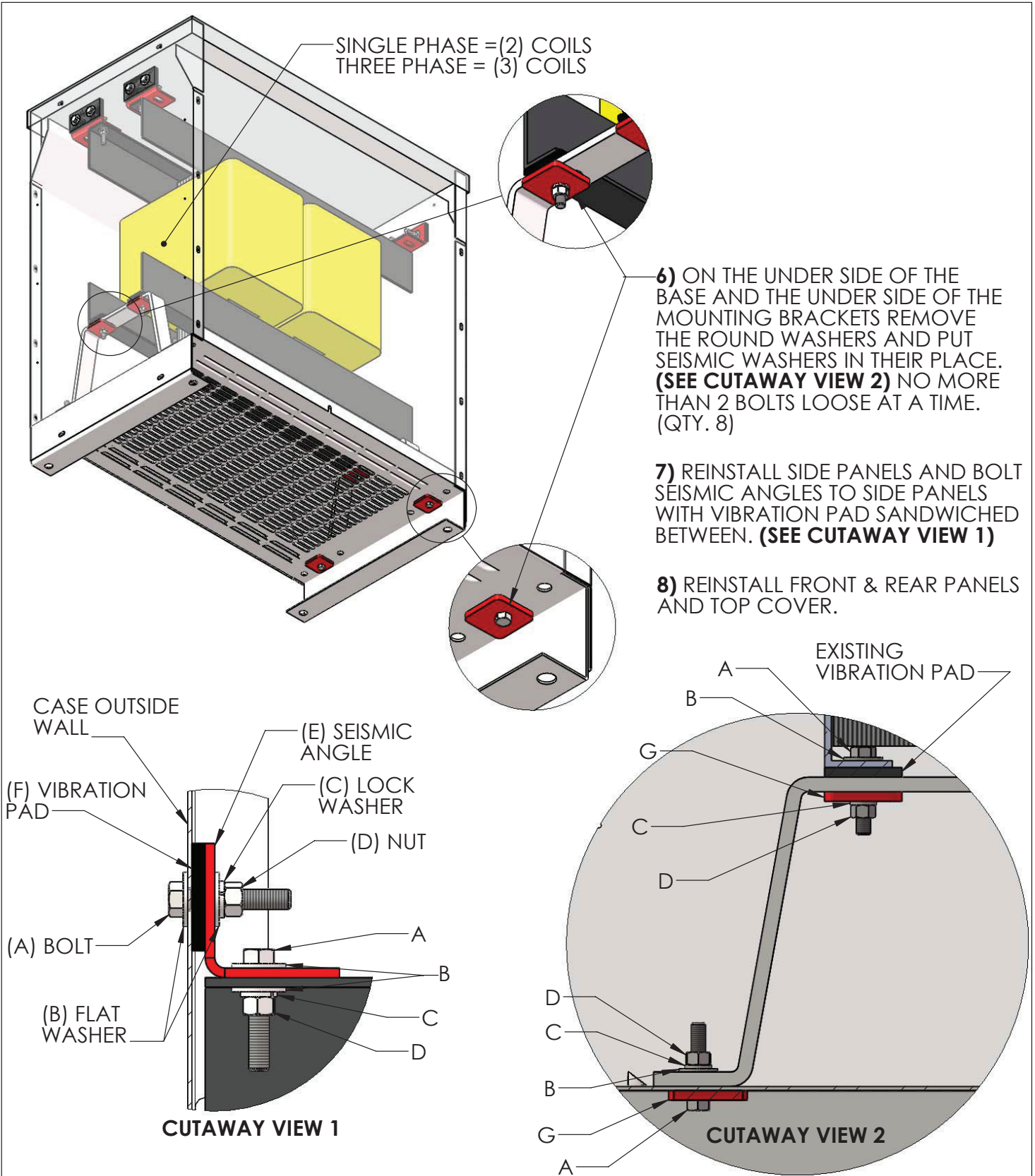
4) MARK HOLE LOCATIONS ON SIDE PANELS. (QTY. 4 PER SIDE) SEISMIC ANGLE MAY NOT BE CENTERED ON PANEL DUE TO CORE & COIL OFFSET.

5) REMOVE SIDE PANELS OR COVER COILS TO SHIELD FROM METAL SHAVINGS AND DRILL HOLES. CAUTION: METAL SHAVINGS CAN CAUSE ELECTRICAL FAILURE AND SERIOUS INJURY SHOULD THEY FALL INTO THE COILS.

****DRAWINGS ARE FOR ILLUSTRATION PURPOSE ONLY. TRANSFORMER MODELS MAY VARY.****

REVISIONS				NAME	DATE	DESCRIPTION: PART NAME:	REV.
D	UPDATED DESCRIPTION AND NOTES.	BSB, 02/02/12	DRAWN	BSB	01/07/11	OSHPD (SEISMIC) RETROFIT GP CASE (A, B, B+, C, C+)	D
C	FINALIZED AND APPROVED BY ALL.	BSB, 01/11/12	CHKD				
B	FORMAT WAS 11 X 17" & REVISED HARDWARE.	BSB, 12/21/11	APPVD			MGM TRANSFORMER 5701 SMITHWAY ST. CITY OF COMMERCE CA. 90040 (323)726-0888	DRAWING NAME: ESP-621
A	REVISED HARDWARE TO 3/8" PER MI.	BSB, 11/01/11			SHEET 1 OF 2		

APPENDIX A - SEISMIC KIT INSTALLATION INSTRUCTIONS (CASES A, B, B+, C, C+) (CON'T.)

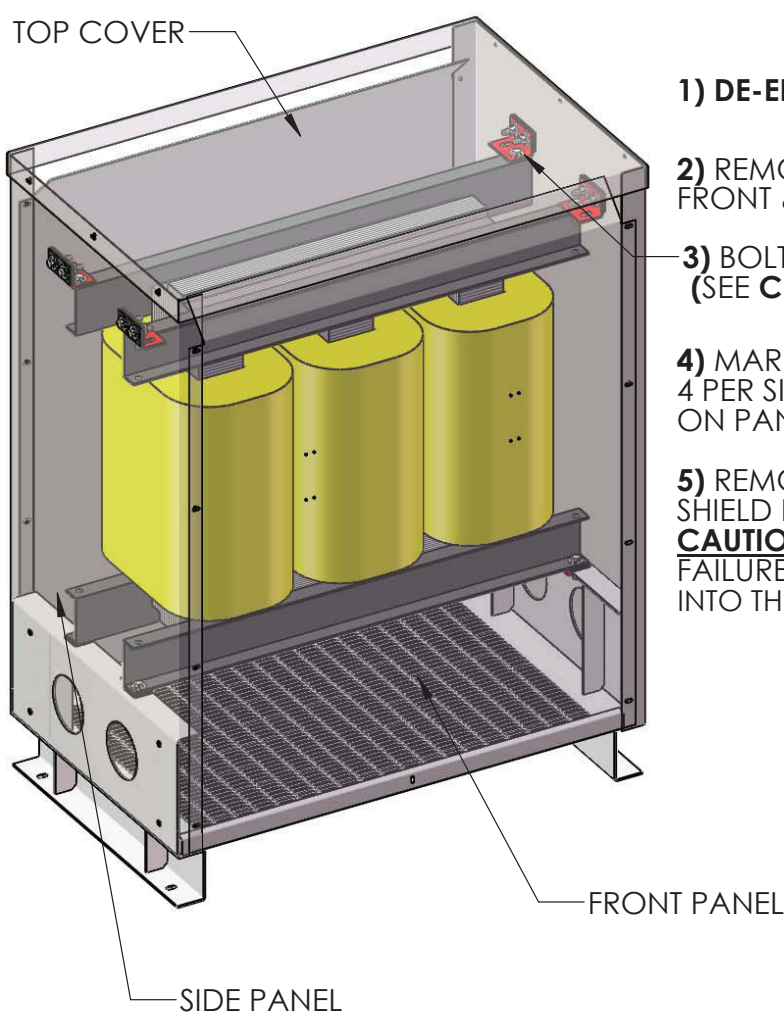
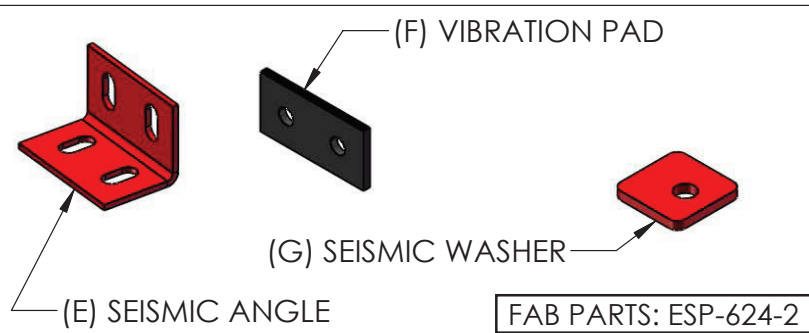


****DRAWINGS ARE FOR ILLUSTRATION PURPOSE ONLY. TRANSFORMER MODELS MAY VARY.****

REVISIONS		NAME	DATE	DESCRIPTION: PART NAME:	REV.
		DRAWN	BSB	01/07/11	D
		CHK'D			
		APPV'D			
				DESCRIPTION: OSHPD (SEISMIC) RETROFIT GP CASE (A, B, B+, C, C+)	
				MGM TRANSFORMER 5701 SMITHWAY ST. CITY OF COMMERCE CA. 90040 (323)726-0888	DRAWING NAME: ESP-621
				SHEET 2 OF 2	

APPENDIX B - SEISMIC KIT INSTALLATION INSTRUCTIONS (CASES D & E)

INCLUDED HARDWARE		
ITEM	DESCRIPTION	QTY.
A	1/2"-13 X 2" BOLT	16
B	1/2" FLAT WASHER	28
C	1/2" LOCK WASHER	16
D	1/2" NUT	16
E	SEISMIC ANGLE	4
F	VIBRATION PAD	4
G	SEISMIC WASHER	4



- 1) DE-ENERGIZE TRANSFORMER.
- 2) REMOVE TOP COVER AND FRONT & REAR PANELS
- 3) BOLT SEISMIC ANGLES TO TOP CLAMP AS SHOWN. (SEE **CUTAWAY VIEW 1** ON NEXT PAGE)
- 4) MARK HOLE LOCATIONS ON SIDE PANELS. (QTY. 4 PER SIDE) SEISMIC ANGLE MAY NOT BE CENTERED ON PANEL DUE TO CORE & COIL OFFSET.
- 5) REMOVE SIDE PANELS OR COVER COILS TO SHIELD FROM METAL SHAVINGS AND DRILL HOLES. **CAUTION:** METAL SHAVINGS CAN CAUSE ELECTRICAL FAILURE AND SERIOUS INJURY SHOULD THEY FALL INTO THE COILS.

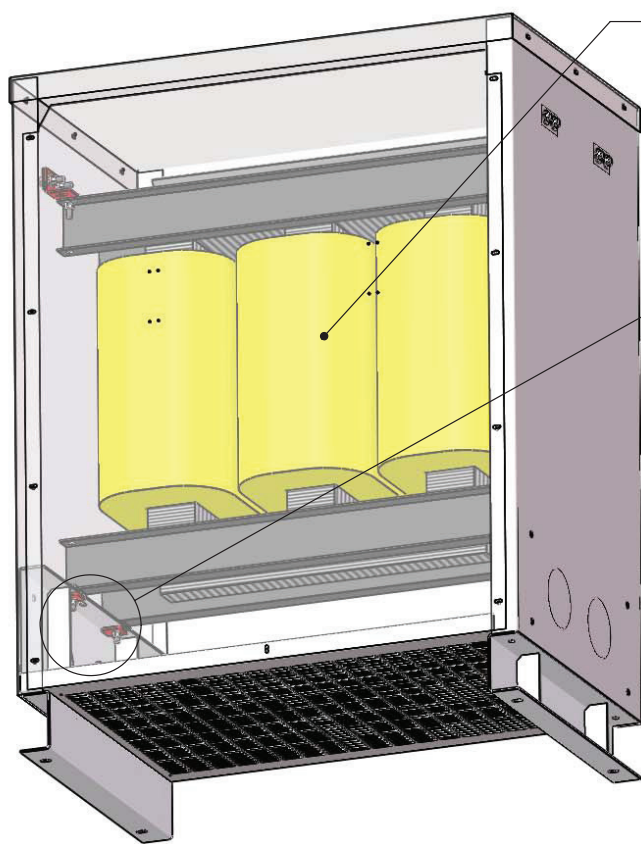
****DRAWINGS ARE FOR ILLUSTRATION PURPOSE ONLY. TRANSFORMER MODELS MAY VARY.****

REVISIONS		NAME	DATE	DESCRIPTION:	REV.
		DRAWN	BSB	01/10/11	OSHPD (SEISMIC) RETROFIT GP CASE (D & E) MGM TRANSFORMER DRAWING NAME: ESP-622
C	UPDATED DESCRIPTION AND NOTES.	CHK'D			
B	FINALIZED AND APPROVED BY ALL.	APP'VD			
A	FORMAT WAS 11 X 17" & REVISED HARDWARE.		BSB	12/21/11	

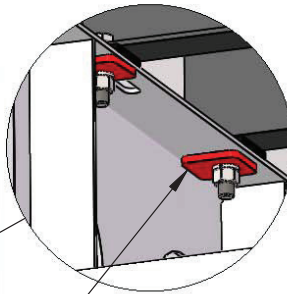
5701 SMITHWAY ST.
CITY OF COMMERCE
CA. 90040 (323)726-0888

SHEET 1 OF 2

APPENDIX B - SEISMIC KIT INSTALLATION INSTRUCTIONS (CASES D & E) (CON'T.)



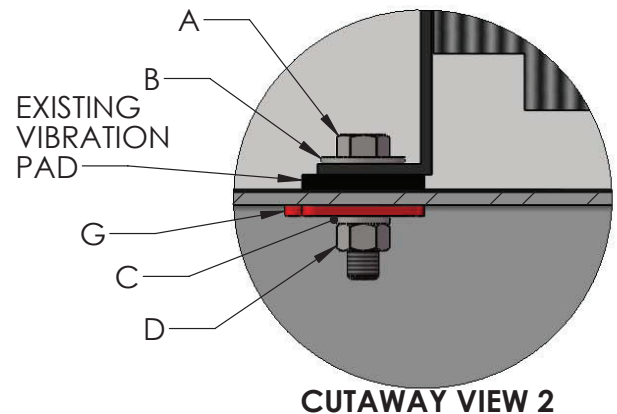
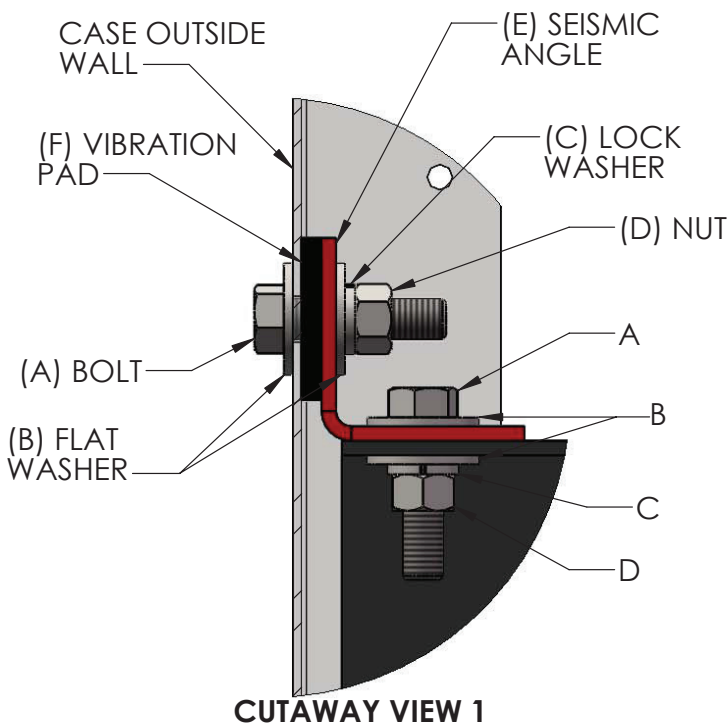
SINGLE PHASE = (2) COILS
THREE PHASE = (3) COILS



6) ON THE UNDER SIDE OF THE MOUNTING CHANNEL REMOVE THE ROUND WASHERS AND PUT SEISMIC WASHERS IN THEIR PLACE. **(SEE CUTAWAY VIEW 2)** NO MORE THAN 2 BOLTS LOOSE AT A TIME. (QTY. 4)

7) REINSTALL SIDE PANELS AND BOLT SEISMIC ANGLES TO SIDE PANELS WITH VIBRATION PAD SANDWICHED BETWEEN. **(SEE CUTAWAY VIEW 1)**

8) REINSTALL FRONT & REAR PANELS AND TOP COVER.



****DRAWINGS ARE FOR ILLUSTRATION PURPOSE ONLY. TRANSFORMER MODELS MAY VARY.****

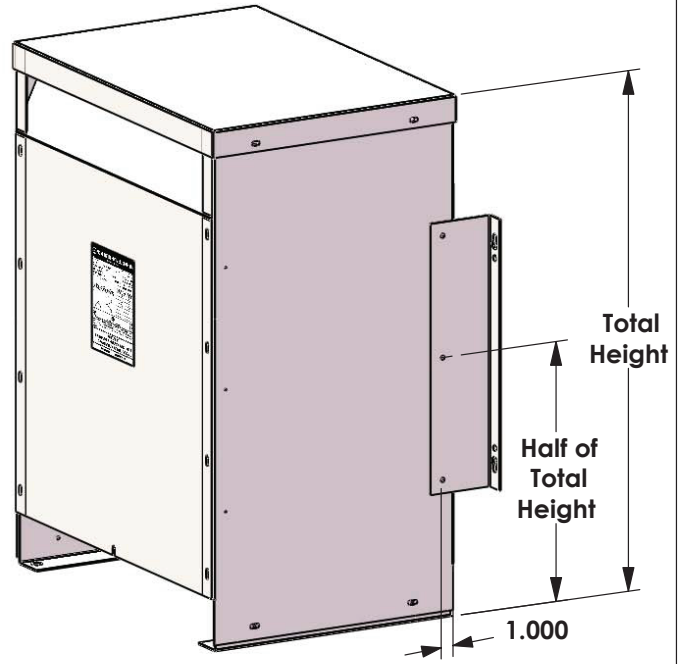
REVISIONS		NAME	DATE	DESCRIPTION: PART NAME:	REV.
		DRAWN	BSB	01/10/11	OSHPD (SEISMIC) RETROFIT GP CASE (D & E) C
		CHK'D			
		APPV'D			
				MGM TRANSFORMER 5701 SMITHWAY ST. CITY OF COMMERCE CA. 90040 (323)726-0888	DRAWING NAME: ESP-622
				SHEET 2 OF 2	

APPENDIX C - WALL MOUNT BRACKET INSTALLATION INSTRUCTIONS

KIT CONTENTS:

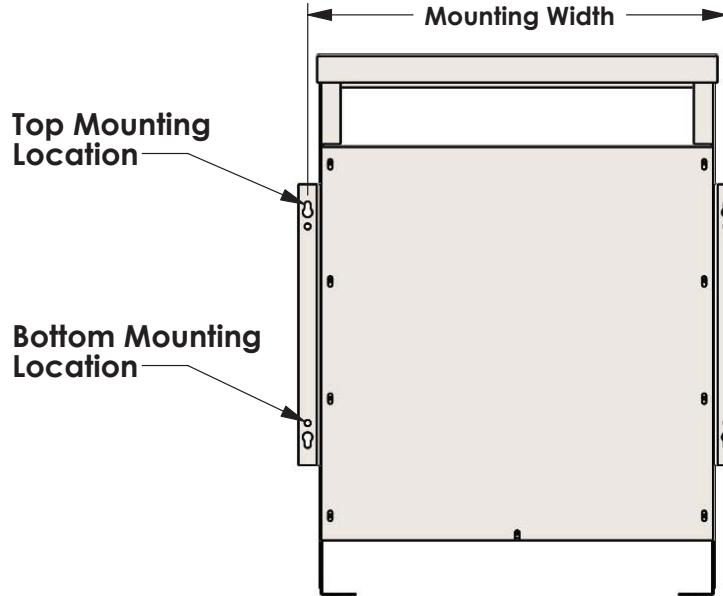
1. (Qty 6) 5/16 X 1" Self-drilling/tapping screws
2. (Qty 2) Wall mount brackets

FAB PARTS ESP-628



To attach wall mount brackets, put one of the included 5/16 x 1" self-drilling/tapping screws through the center hole of the wall mount bracket and through the case. It should be 1" from the rear of the case to the hole and at the centerline of the cases vertical height. Then add the other 2 adjacent screws. Repeat for other side.

*If the side panel has pre-marked locations simply line up the bracket with these dimples.



To mount the unit on the wall, first install two bolts (not included) on the desired wall at the correct mounting width apart and at your desired height (Minimum bolt size is 5/16" and of a suitable length and type for the intended mounting surface). Hang the transformer like a picture from these bolts at the top mounting locations. Next install two bolts with washers at the bottom mounting locations. Then (ONE AT A TIME) remove the top bolts to add a washer and re-install them.

REVISIONS		NAME	DATE	GP WALL MOUNT INSTALLATION CASES (A, B, B+)	REV.	
		DRAWN	BSB		10/31/11	A
		CHK'D				
		APPV'D				
A FINALIZED AND APPROVED BY ALL.		BSB, 01/11/12		MGM TRANSFORMER 5701 SMITHWAY ST. CITY OF COMMERCE CA. 90040 (323)726-0888		
			SHEET 1 OF 1	DRAWING NAME:	ESP-627	

WEATHERPROOF KIT INSTALLATION INSTRUCTIONS

ITEMS SUPPLIED WITH WEATHERPROOF KIT

QTY:	DESCRIPTION
2	RAINHOODS
2	RAIN DEFLECTORS
1	INSTRUCTION SHEET

1) Read and understand all the instructions before beginning installation.

2) Check that no parts are missing from the weatherproof kit.

3) If the transformer is energized, de-energize and lock out power supplying the transformer before proceeding.

4) Remove the top two front panel screws that secure the front panel to the enclosure. Save the screws for re-use.

5) Slip the rainhood lip up under the top cover flange.

6) Line up the rainhood mounting holes with the existing holes in the enclosure. Using the screws removed in step 4, secure the rainhood to the enclosure - see figure 1.

7) Install the other rainhood by repeating steps 4 thru 6 on the opposite side.

8) Remove the bottom two front panel screws that secure the front panel to the enclosure. Save the screws for re-use.

9) Line up the rain deflector mounting holes with the existing holes in the enclosure. Using the screws removed in step 8, secure the rain deflector to the enclosure - see figure 2.

10) Install the other rain deflector by repeating steps 8 and 9 on the opposite side.

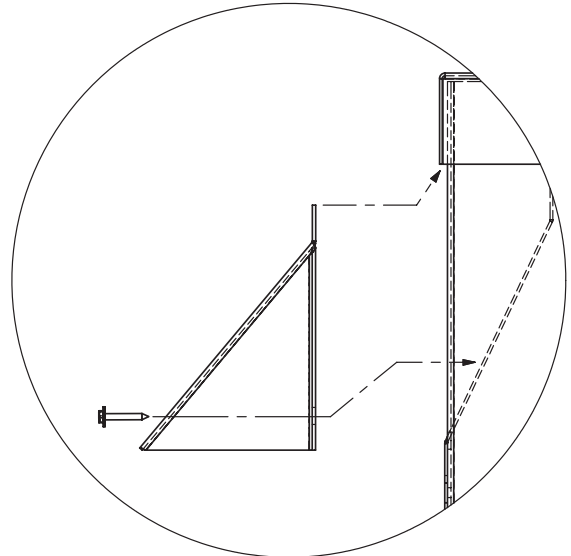


FIGURE 1 - RAINHOOD

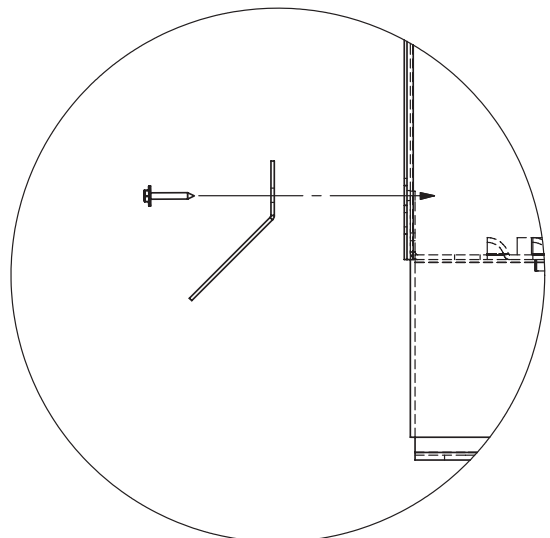


FIGURE 2 - RAIN DEFLECTOR

REVISIONS		NAME	DATE	DESCRIPTION: PART NAME:	REV.
		DRAWN	BSB	12/23/11	
		CHK'D			
		APP'VD			
A	FINALIZED AND APPROVED BY ALL.	BSB	01/11/12	WEATHERPROOF KIT INSTALLATION INSTRUCTIONS	A
				MGM TRANSFORMER 5701 SMITHWAY ST. CITY OF COMMERCE CA. 90040 (323)726-0888	DRAWING NAME: ESP-629
			SHEET 1 OF 1		

RODENT / BIRD SCREEN KIT INSTALLATION INSTRUCTIONS

ITEMS SUPPLIED WITH WEATHERPROOF KIT

QTY:	DESCRIPTION
2	RODENT / BIRD SCREENS
1	INSTRUCTION SHEET

- 1) Read and understand all the instructions before beginning installation.
- 2) Check that no parts are missing from the rodent/bird screen kit.
- 3) If the transformer is energized, de-energize and lock out power supplying the transformer before proceeding.
- 4) Center the screen on the open vented area of the transformer. With the mounting slots on the top side, use two self drilling/tapping screws to mount the screen on the transformer.
- 5) Repeat step 4 on opposite side.

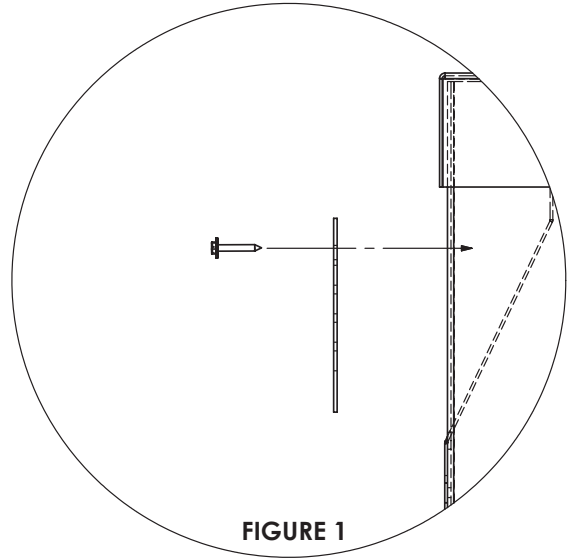
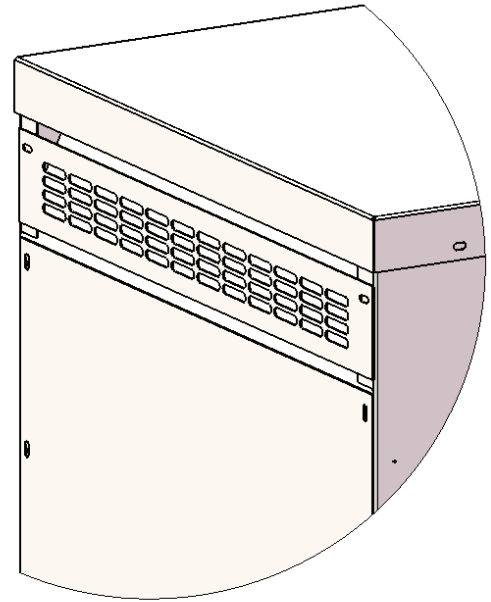


FIGURE 1



REVISIONS		NAME	DATE	DESCRIPTION: PART NAME:	REV.
		DRAWN	BSB	01/13/12	
		CHK'D			
		APPV'D			
A	FINALIZED AND APPROVED.	BSB	01/16/12	MGM TRANSFORMER 5701 SMITHWAY ST. CITY OF COMMERCE CA. 90040 (323)726-0888	A
				DRAWING NAME:	ESP-631



MGM TRANSFORMER COMPANY

5701 SMITHWAY STREET • COMMERCE, CA 90040
(323) 726-0888 • (800) 423-4366 • FAX (323) 726-8224

www.mgmtransformer.com

Terms and Conditions

APPLICABLE LAW: MGM Transformer is a California corporation doing business in California and as such requires that any litigation brought against the company have **exclusive venue in California**. Applicable law may be either the laws of the state of California, or the U.C.C. This requirement of California jurisdiction is mandatory despite the fact that MGM ships products nationwide.

STANDARD CONDITIONS OF SALE: The information contained herein covers the terms and conditions under which MGM Transformer Company products are sold. Any modifications of these terms and conditions, unless agreed to in writing, will not be recognized.

CHANGES: Prices, conditions and terms of sale are subject to change without notice.

TERMS: Terms are 1% ten days, net thirty (30) days from date of invoice. The Company may at any time require full or partial payment in advance. If the purchaser delays shipments, payment shall become due from the date when the Company is prepared to make shipment. Apparatus held for the purchaser shall be at the risk and expense of the purchaser.

QUOTATIONS: Quotations, written or verbal, are subject to the conditions of sale listed herein. Written quotations automatically expire thirty (30) calendar days from the date issued and are subject to withdrawal by notice within that period. Verbal quotations automatically expire twenty-four (24) hours from the time issued.

ACCEPTANCE OF ORDERS: All orders shall be written and are subject to acceptance at the factory.

EQUIPMENT DESTINED FOR FEDERAL, STATE, OR LOCAL GOVERNMENT: MGM is not bound to honor quotations for equipment destined for Federal, State, or Local Government unless MGM knows at the time of quoting that it is a government job as these orders frequently involve higher administration costs.

TAXES: Prices do not include sales, use, excise, or other taxes. If any products or materials delivered hereunder are determined to be taxable under any sales, use, excise, or other taxes applicable to the sale or delivery of personal property, Purchaser shall be liable for and pay the same without recourse against Seller, or in lieu thereof furnish Seller with a tax-exemption certificate acceptable to taxing authorities.

ERRORS: All stenographic and clerical errors are subject to correction.

DELIVERY: MGM can arrange for apparatus to be sold F.O.B. point of shipment; or freight prepaid.

UNLOADING AND DEMURRAGE: Unless stated otherwise in our quote, it is the customer's responsibility to unload all shipments whether by

rail or truck. All demurrage charges are customer responsibility.

MGM recognizes that sometimes the size or weight of shipments requires the customer to make prior unloading arrangements. In such cases the customer shall advise MGM prior to shipment the hours during which shipments can be received and the notice required before delivery. MGM will then reflect these arrangements on the bill of lading.

Origin method of shipment and routing: The company will determine the point of origin, method of transportation, and the routing of shipment. Purchasers requiring other routings will be billed any excess in transportation charges.

PENALTY CLAUSES: The Company will **not pay or be liable for any penalty, either liquidated or otherwise, for late delivery or installation**. Shipping dates are estimated and are dependent upon prompt receipt of all information and material necessary. The Company shall also not be liable for any unforeseen delay, i.e. acts of God or inability to obtain necessary labor, materials, or manufacturing facilities due to such causes.

CANCELLATION: Buyer shall not have the right to cancel purchase orders because of reasonable delays in deliveries. Any order or contract if cancelled requires payment based on the following table:

Purchase Order Released.....	20%
Engineering Complete.....	50%
Purchasing Complete.....	100%

Changes: The customer has the right to change their order, in writing, if agreed upon by seller. Should such changes alter the amount due or time required for production, an equitable adjustment of price and/or time shall be made. Changes affecting function or performance of item ordered may not be made without prior written consent from MGM.

Warranty: MGM transformers are guaranteed to be of the highest quality. They are further guaranteed, when used for the purpose intended and operated under normal conditions to give continuous and efficient service. MGM Transformer Company agrees to correct any defect in workmanship or material, which may develop under proper or normal use during the period of one year from date of shipment. Should a transformer fail within the warranty period, MGM will issue authorization to return the failed transformer to one of MGM's plants, freight prepaid. At MGM's option the failed transformer will be repaired, replaced or credit will be issued depending on the nature of the failure. A repaired transformer or replacement will be delivered to the purchaser F.O.B. point of shipment with freight prepaid. Repair, replacement or issuance of credit with regards to the defective transformer will constitute fulfillment of all MGM's liabilities in respect to said transformer. This guarantee **does not include incidental expenses**, such as expense of removing and replacing the transformers from service. This

warranty is exclusive and in lieu of all other warranties of quality whether written, oral or implied (including any warranty of merchantability or fitness for purpose.)

LIMITATION OF LIABILITY: MGM shall not be liable in contract or in tort for special, indirect, incidental, or consequential damages, such as but not limited to, loss of profits or revenue, loss of use of power system, cost of capital, cost of purchased or replacement power, or claim of customers of purchaser for service interruptions set forth herein are exclusive, and the liability of MGM with respect to any contract, or anything done in connection therewith such as the performance of breach thereof, or from the manufacture, sale, delivery, re-sale, installation, repair or use of any equipment covered by of furnished under this contract whether in contract, in tort, or otherwise, shall not exceed the price of the equipment or part on which such liability is based.

RETURNING APPARATUS:

- In no case are goods to be returned without first obtaining the Company's written permission.
- Any material returned and not authorized will not be signed for and will be returned back deadhead to the sender.
- Material accepted for credit is subject to a MINIMUM restocking charge of 20% plus all transportation charges.
- Material built to order is not subject for credit under any circumstances.
- If return is caused by fault of the Company, full credit will be allowed.

EXPORT PACKING: Refer to factory for additional cost of export packing.

SPECIAL CONDITIONS FOR POWER TRANSFORMERS: Because of their nature, size, and weight, the following additional policies apply to power transformers:

- MGM Transformer Company reserves the right to determine the best mode of shipping. All shipments will be made by truck unless size or weight makes this impossible.
 - Prices quoted for power transformers do not include high voltage or low voltage bushing connectors unless specified in the inquiry and quotation.
 - Field inspection or supervision is not included
 - Standard testing is included. Special testing or witness testing are extra cost items.
- In the event of default by buyer of any obligation buyer agrees to pay costs and expenses including attorney fees, costs of suit and interest at 0.83% per month.