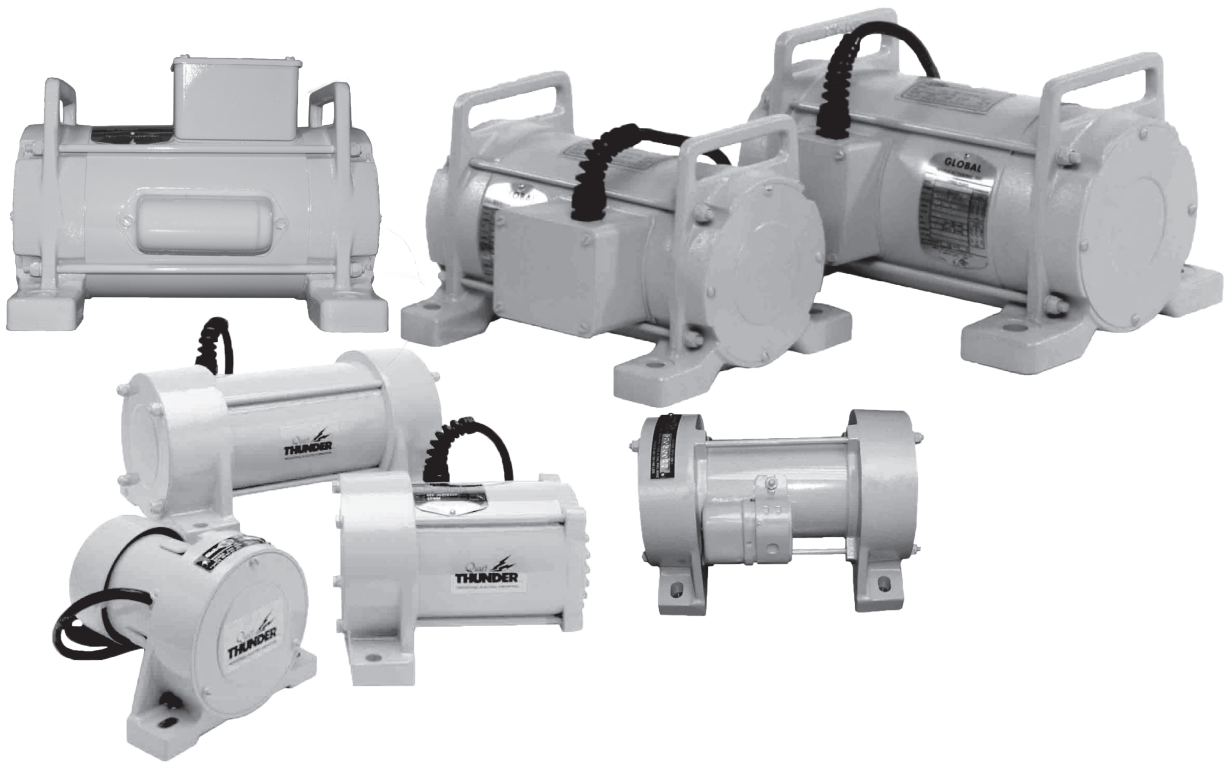


Quiet 
THUNDER[®]
Operating Instructions

Electric Vibrators

Models
Single and Three Phase
60 Hertz

QT2-60	DEG-900
QT2-80	DEG-1200
QT2-175	DEG-1300
QT2-250	DEG-2000
QT2-500	DEG-2500
QT2-800	DEG-3000
	DEG-3500



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NOTE: Parts lists are separate from Operations Manual.



SAFETY PRECAUTIONS

- Follow wiring and installation wiring instructions.
- A licensed electrician should adhere to all electrical codes when wiring three phase and direct wired single phase vibrators.
- Take amperage and voltage readings upon completion of installation. See page 9 for run and start amp draws for each vibrator and page 21 for more information on voltage drops.
- High amperage reading means something is wrong and the vibrator may be damaged or not mounted properly. Do **not** operate a vibrator that pulls high amps.
- Operate a 3-phase unit with proper overload protection. Failure to comply voids warranty.
- For single-phase, use properly grounded 3-prong receptacle and do not use an extension cord without knowing the voltage drop in order to use the correct gauge size. See page 21 for instructions on how to calculate what size of extension cord you should use.
- Make sure all electrical connections are secure and will not vibrate loose.
- Follow all mounting instructions.
- Bolt vibrator to a flat surface, across a long vertically oriented channel iron flush to the outside of the hopper wall.
- Contact factory if you are unable to closely follow all installation instructions or if amperage readings are high.
- Attach a safety cable or chain from vibrator to an independent stronghold.
- Prior to use, check vibrator for damage (twisted unit, cracked junction box, loose wires, missing end covers, etc.) Do not operate a damaged vibrator.
- Maximum ambient operating temperature is 104°F (40°C).
- Do not mount electrical control boxes onto structure (bin/hopper) wall to be vibrated.
- Do not operate vibrators when structure is empty.
- Do not operate vibrators when gate is closed or conveyor is stopped unless consolidation of material is desired.
- Wear ear protection for 90+ decibel levels.
- Do not operate vibrators without side covers.
- Always disconnect electricity before maintenance.
- Follow OSHA regulation Section 1910.145 for lockout program.

I. OPERATION

These electric vibrators are built for continuous duty, however the vibrators may be cycled on and off for intermittent duty. **The minimum time between consecutive starts is two (2) minutes.** Each time the vibrator starts it draws high amperage, therefore allow vibrator to cool or run for two minutes before starting again.

Do not operate the vibrator on an empty hopper. The vibration will vibrate the hopper and the vibrator causing damage if no bulk material is present. When the vibrator is mounted rigidly the vibration will pass through the structure and resonate the material inside the hopper.

Operate vibrators when discharge gates are open unless compaction of material is desired. The vibrator should appear motionless.

II. INSTALLATION PROCEDURES

The key to successful vibration is the proper installation of the vibrator.

The axis of rotation of the eccentric weights, which are found on the end(s) of the motor shaft, should rotate toward the desired direction of material flow. In hopper applications, the weights should rotate towards the bin wall and down. The shaft of the vibrator should ideally be in a horizontal position to prolong bearing life.

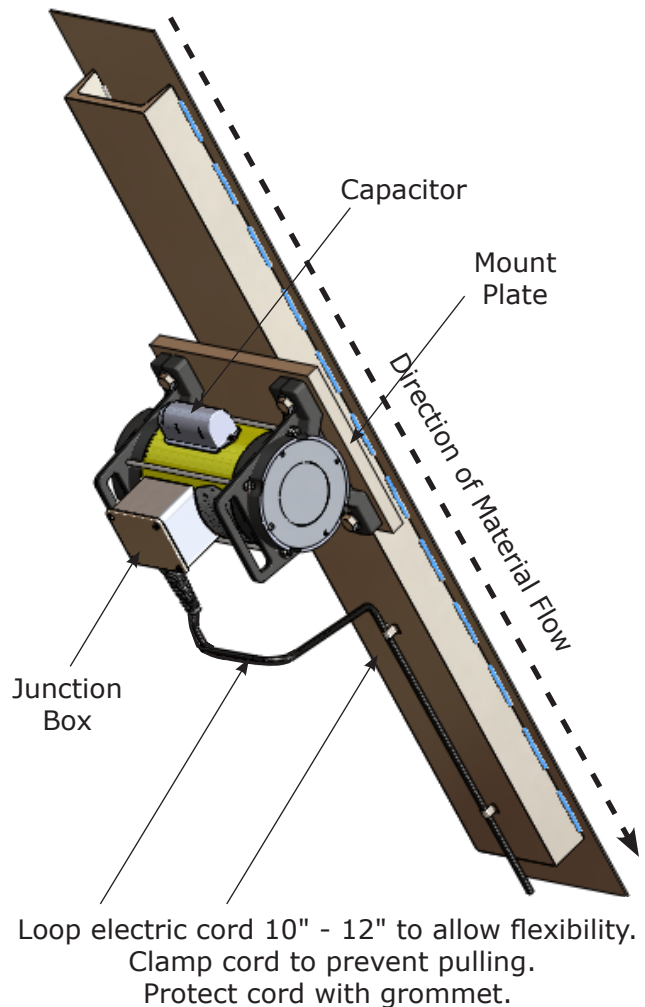
Guidelines for the mounting industrial vibrators:

1. All DEG Single Phase models and the QT2-800 Single Phase model: Mount vibrator with capacitor located on the upper side - **Figure 1.**
2. QT2-60-1 and QT2-80-1 - Single Phase models: Mount vibrator with motor on left side - **Figure 2.**
3. QT2-175, QT2-250, and QT2-500 - Single and Three Phase for all models: Mount with motor on right side - **Figure 3.**
4. All DEG Three Phase models - mount vibrator with junction box on the upper left side - **Figure 4.**
5. QT2-800-3 - Three Phase models: Mount vibrator with junction box located on the upper left side - **Figure 5.**

6. Direction of rotation for three phase vibrators cannot be set at the factory.
7. Remove draw bolts or round head screws from unit and pry off the weight cover.
8. "Bump" the starter just long enough to determine the direction of rotation.
9. If rotation is incorrect, switch connections on any two legs of the circuit.
10. Replace weight covers and draw bolts or screws. Tighten screws securely. Torque draw bolts to value indicated in the weight adjustment section on pages 14-17.

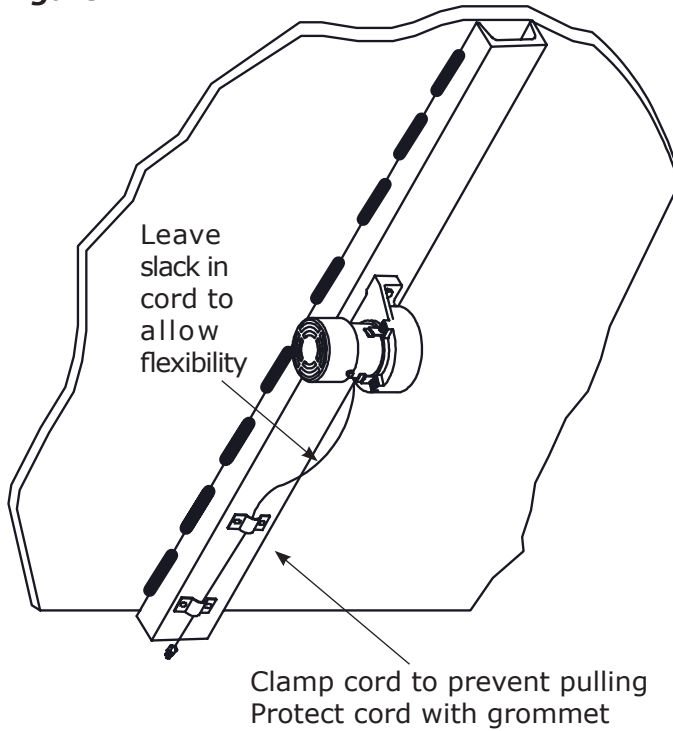
DEG-1PH & QT2-800-1PH

Figure 1



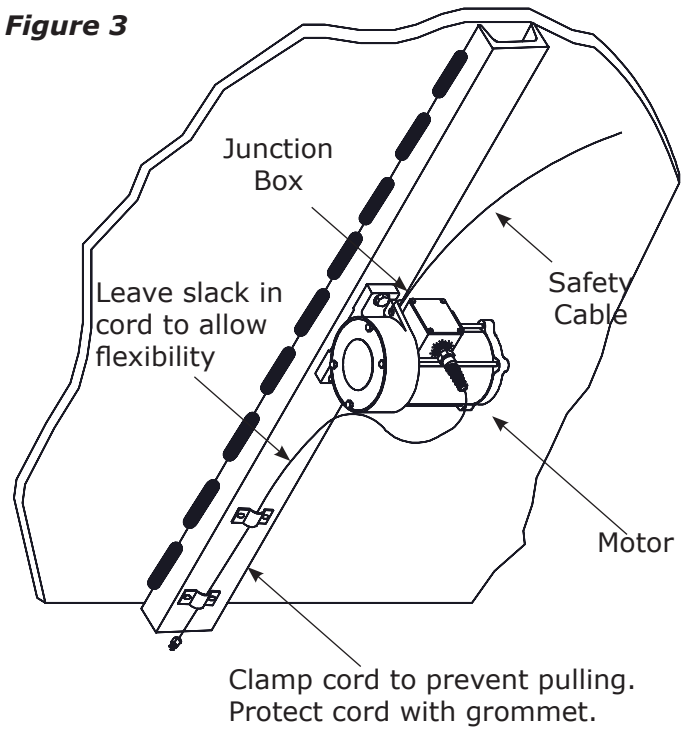
QT2-60-1PH
QT2-80-1PH

Figure 2



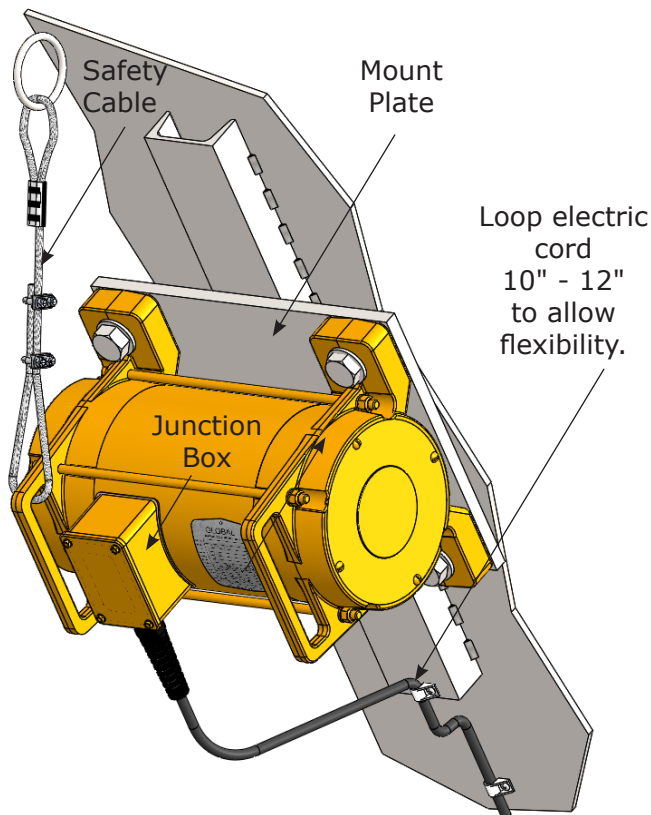
QT2-175-1PH & 3PH
QT2-250-1PH & 3PH
QT2-500-1PH & 3PH

Figure 3



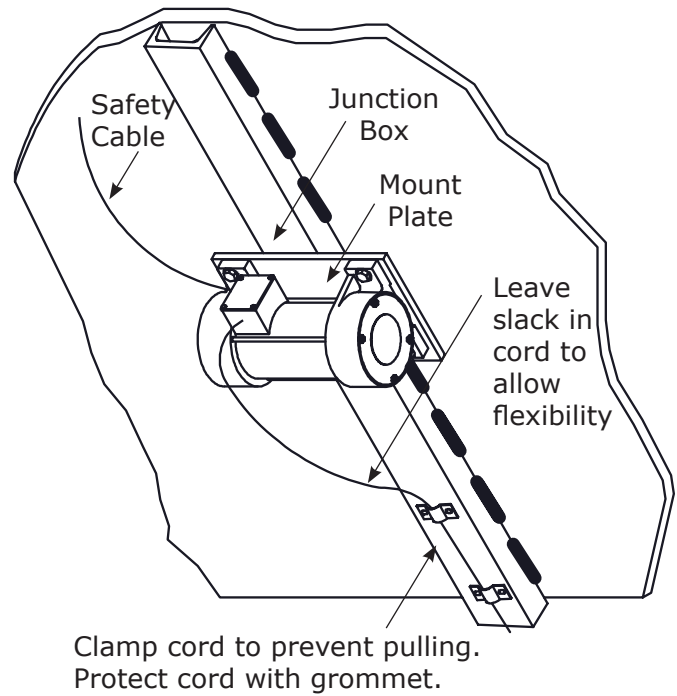
DEG Models -3PH

Figure 4



QT2-800-3PH

Figure 4



Clamp cord to prevent pulling.
Protect cord with grommet.

⚠ Caution!

Do not mount the vibrator directly to the structure wall. Use a channel iron stiffener for proper mount rigidity and as the transducer of the vibrational energy.

The key to successful vibration is a proper mount because rotary vibration resonates the material *inside* the structure. The vibrator should appear motionless. There should not be a large amount of motion or noise. Follow the instructions on how to mount the vibrator and you will get great results.

Important!

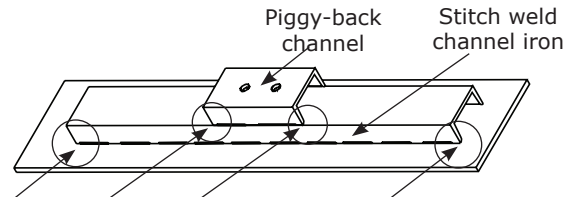
The channel iron should be at least two-thirds of the height of the sloped portion of the hopper but no greater than 10 feet (3 m).

Channel Irons - How to Mount

The channel iron should be at least two-thirds the height of the sloped portion of the hopper, but not less than 6' (1.8 m) or greater than 10' (3 m) in length. The channel iron width should not be less than the base width of the vibrator. However, a mount plate of 3/4" (19.05 mm) thick, sized to fit the foot pattern of the vibrator, may be skip welded to the channel. 3/4" plate thickness prevents warpage when welding plate to channel. **The mount plate must allow the vibrator to sit FLAT on the plate with no detectable rocking.** If the vibrator does not sit flat, the plate may be warped. Shim the vibrator prior to mounting to compensate for any warping. **See Table on page 8 for recommended channel iron and mount plate sizes.** DO NOT install more than one vibrator on the same channel iron or use a channel iron shorter than the recommended length. A short channel may flex the bin wall.

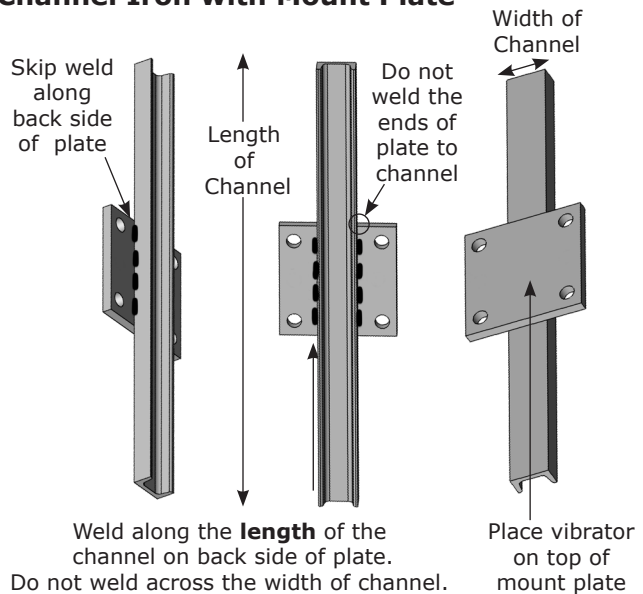
Attach the vibrator to the channel iron. Stitch weld nuts to the back of the channel iron or the channel iron may be drilled and tapped to accept the mounting bolts. An alternate method is to cut a second channel iron slightly longer than the footprint of the vibrator. Stitch weld the second channel iron to the first. Do not weld the ends. Mount the vibrator to the second channel iron.

Channel Iron with Piggy-back Channel



Do not weld the ends of the channel iron. This allows the vibrational force to "escape". Solid welded ends trap the force, which can cause stress cracks.

Channel Iron with Mount Plate



Stitch weld the channel iron vertically to the slope portion of the bin wall. Weld 3 inches (7.5 cm), skip 1 inch (2.5 cm), weld 3 inches (7.5 cm), etc... Leave 1 inch (2.5 cm) un-welded on the ends and corners. This allows the vibration to dissipate out the ends of channel without causing stress cracks to the hopper or bin. By doing so, should the weld fail, the entire mount will not fall off. Do not mount the channel iron horizontally.

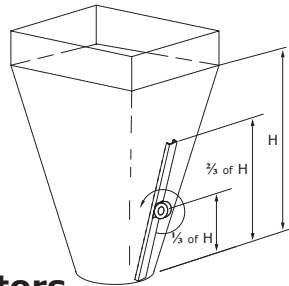
Secure the vibrator to the channel iron with SAE coarse thread grade 8 plated bolts with lock washers or an adhesive such as Loctite[®] 262. Tighten bolts in a sequential process. At least two passes are required in most situations. Give all bolts the same torque value. Grade 8 bolts can handle more torque than standard bolts. If Loctite[®] is not used, torque the bolt after the vibrator has operated for a few minutes and check tightness often. If Loctite[®] is used do not torque the bolts a second time as this will break the Loctite[®] bond.

Attach a safety cable to a stronghold (not the channel iron mount), which is higher than the mounted vibrator and capable of holding the vibrator's weight.

III. MOUNTING LOCATIONS

Single Vibrator

Install a channel iron stiffener on the outside of the sloping wall 1/3 the distance above the discharge opening.

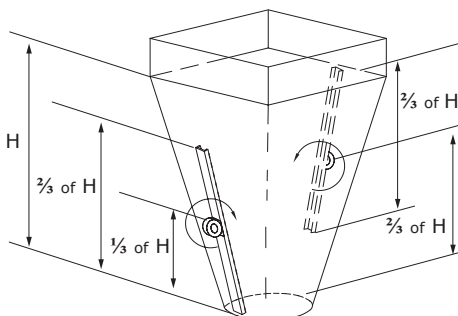


Multiple Vibrators

Use more than one vibrator when the diameter or width of any wall is greater than 12 feet (3.66 m). Always mount the vibrators on different planes.

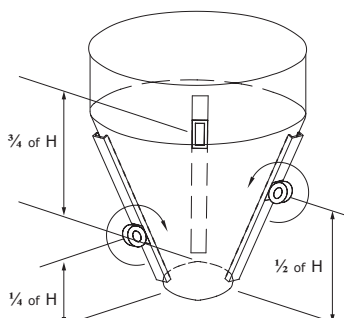
Two Vibrators on Round or Square Hoppers

Install channel iron stiffeners 180° apart. Install one vibrator on the outside of the sloping wall 1/3 the distance above the discharge opening. Install the second vibrator on the outside of the opposite sloping wall 2/3 the distance above the discharge opening.



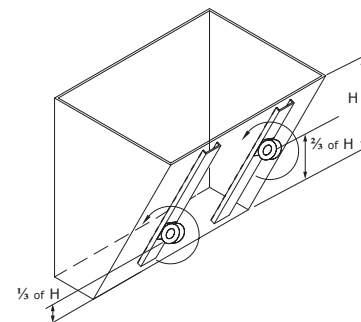
Three Vibrators

Install channel iron stiffeners mounted 120° apart. Install the first vibrator on the outside of the sloping wall 1/4 the distance above the discharge opening. Install the second vibrator on a separate channel iron at 1/2 the distance above the discharge opening. Install the third vibrator on the remaining channel iron at 3/4 the distance above the discharge opening.



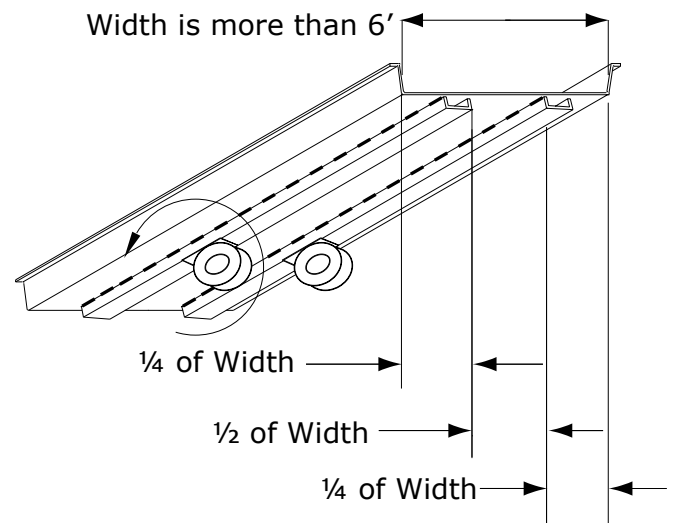
Two Vibrators on Rectangular Hoppers

Install channel iron stiffeners on opposite sides of the long walls. Install one vibrator on the outside of the sloping wall 1/3 the distance from the discharge opening. Install the second vibrator on the outside of the opposite sloping wall 2/3 the distance above the discharge opening. When only one wall slopes, mount both stiffeners on it. Equally space the stiffeners on the wall. Place one vibrator 1/3 above the discharge opening on one channel iron and the other vibrator 2/3 above the bin's discharge opening on the second channel.



Installation on Chutes and Flow Pipes

Mount channel iron stiffeners vertically or in the direction of material flow. Center the channel if the chute is less than 6 feet (1.83 m) in width. If the chute is greater than 6 feet in width, use two vibrators on separate channel irons. To maximize each vibrator's radius of influence; center each channel iron in each half of the chute. Each channel iron should be located 1/4 of the chute width from the edge and 1/2 of the chute width apart. (e.g. - for a chute 8' wide, the channel iron locations would be 2' from each edge and 4' apart.) When chute thickness is less than 1/8", additional reinforcement may be required.



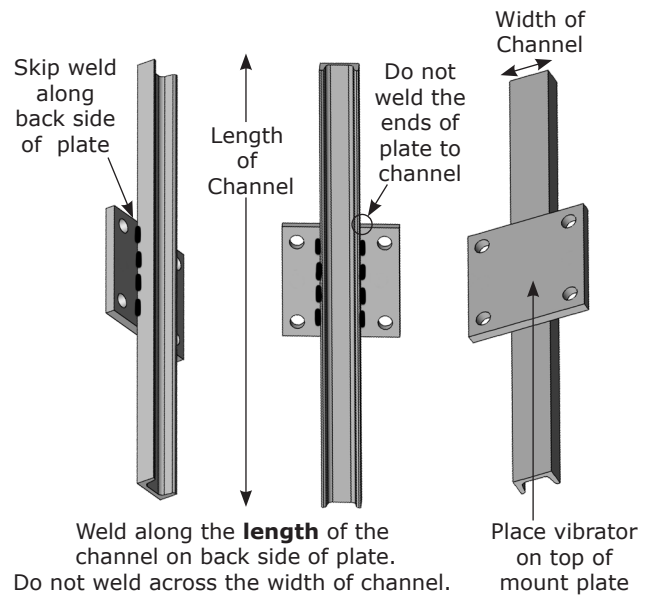
IV. CHANNEL IRONS, MOUNT PLATES, AND BOLT SIZES

Channel Iron Dimensions for Electric Vibrators				
Vibrator Model - 1 and 3 Phase	Width	Minimum Web Thickness	Minimum Length	Weight Per Length
	inch	inch	feet	lb/ft
	mm	mm	mm	kg/m
QT2-60, QT2-80	3.0	.17	2	4.1
	75	4	609	6.1
QT2-175, QT2-250, QT2-500, QT2-800	5.0	.325	6	9.0
	127	8	1829	13.4
DEG-900, DEG-1200,	6.0	.437	6	13.0
	152	11	1829	19.3
DEG-1300, DEG-2000, DEG-2500, DEG-3000, DEG-3500	8.0	.487	6	18.75
	293	12	1829	27.9

Make channel iron length at least 2/3 the height of the slope section of the bin without exceeding 10' (3 M) in length.

Mount Plate Dimensions for Electric Vibrators			
Vibrator Model 1 and 3 Phase	Width	Length	Minimum ¹ Thickness
	inch	inch	inch
	mm	mm	mm
QT2-800	7.5	11.25	3/4
	191	286	19
DEG-900, DEG-1200	10	12	3/4
	255	305	19
DEG-1300, DEG-2000, DEG-2500, DEG-3000, DEG-3500	11	14	3/4
	280	355	19

¹ Plate thickness is important. Thickness helps resist welding warpage when welding the plate to the channel.



Vibrator Bolts and Required Torque - Single and Three Phase		
Model	Bolt	Torque
QT2-60, QT2-80	3/8"-16 UNC Grade 8 Plated	33 lb-ft (45 N-m)
QT2-175, QT2-250, QT2-500, QT2-800	1/2"-13 UNC Grade 8 Plated	80 lb-ft (107 N-m)
DEG-900, DEG-1200	1/2"-13 UNC Grade 8 Plated	80 lb-ft (107 N-m)
DEG-1300, DEG-2000, DEG-2500, DEG-3000, DEG-3500	3/4"-10 UNC Grade 8 Plated	282 lb-ft (383 N-m)



V. WIRING ELECTRIC VIBRATORS

Only a qualified electrician should connect an electric vibrator to a power source. Using power of incorrect voltage or phase or inadequate wire size will damage the vibrator and void the manufacturer's warranty.

Always measure the amperage on all legs of the supplied power after installing the vibrator. If the amp draw exceeds that specified on the motor nameplate, turn off the vibrator immediately. Operating an electric vibrator with an excessive amp draw will lead to premature motor failure that is not covered by the manufacturer's warranty.

The cause for a high amp draw must be determined and corrected before operating the vibrator.

Possible causes of high amp draw:

1. a non-rigid mount
2. mount plate too thin
3. warped mount plate
4. low voltage (from power source or due to inadequate wiring or extension cord)
5. incorrect voltage

It is recommended that the initial amperage readings be recorded for future reference. If you cannot determine the cause of a high amp draw, **Do Not Operate the Vibrator.** Call Global Manufacturing customer support at 1-800-551-3569. When seeking customer technical support, please provide the product serial number, voltage and phase of the power source, and the initial amperage readings. If you periodically check the amperage, an increase in the amp draw will indicate the onset of a problem such as decreased or fluctuating voltage, loose mount bolts, or a loss in rigidity of the mount. **High amp readings should never be ignored.**

All three phase vibrators must have overload protection to validate the warranty. These vibrators do **not** come with overload protection. Use the correct heater size recommended by the manufacturer of the overload protector. **Never use a higher rated heater.** If the wrong overload protection is used the warranty will be void. Consult a qualified electrician.

Most Global Vibrators have a dual voltage motor which can be wired for either single phase 115V or 230V or three phase 230V or 460V. Electric vibrators are normally wired at the factory for the voltage desired by the customer. If the voltage

needs to be switched have a qualified electrician change the connections in the junction box on the vibrator following the wiring instructions included in this manual. Keep in mind that a single phase motor **cannot** be changed to a three phase motor and visa versa. If you need to change the phase of the motor, please contact the distributor from whom you purchased the electric vibrator. **Exceptions:** All 575V 3 Phase DEG models and all QT2-60-1, QT2-80-1, and QT2-160 vibrators are Single Voltage motors and cannot be wired for a different voltage.

Wiring diagrams on pages 10 -13.

Maximum Allowable Current Draw:

115 Volt - Single Phase		
Model #	Part #	Amps-Max Run (Start)
QT2-175-1	6211001	2.6 (37)
QT2-250-1	6211002	2.6 (37)
QT2-500-1	6211005	2.6 (37)
QT2-800-1	6211008	5.1 (42)
DEG-900-1	6811009	5.2 (44)
DEG-1200-1	6811012	5.2 (44)
230 Volt - Single Phase		
QT2-175-1	6212001	1.3 (16)
QT2-250-1	6212002	1.3 (16)
QT2-500-1	6212005	1.3 (16)
QT2-800-1	6212008	2.6 (22)
DEG-900-1	6212009	2.6 (31)
DEG-1200-1	6812012	2.6 (31)

Chart continued on the next page.

Wiring diagrams on pages 10 -13.

...Continued from previous page
Maximum Allowable Current Draw:

230 Volt - Three Phase		
Model #	Part #	Amps-Max Run (Start)
QT2-175-3	6232001	0.8 (3)
QT2-250-3	6232002	0.8 (3)
QT2-500-3	6232005	0.8 (3)
QT2-800-3	6232008	1.0 (6.0)
DEG-900-3	6832009	4.6 (37)
DEG-1200-3	6832012	4.6 (37)
DEG-1300-3	6932013	2.8 (22)
DEG-2000-3	6932020	2.8 (22)
DEG-2500-3	6932025	2.8 (22)
DEG-3000-3	6932030	2.8 (22)
DEG-3500-3	6932035	2.8 (22)
460 Volt - Three Phase		
QT2-175-3	6234001	0.4 (1.5)
QT2-250-3	6234002	0.4 (1.5)
QT2-500-3	6234005	0.4 (1.5)
QT2-800-3	6234008	0.6 (3)
DEG-900-3	6834009	2.3 (18)
DEG-1200-3	6834012	2.3 (18)
DEG-1300-3	6934013	1.4 (11)
DEG-2000-3	6934020	1.4 (11)
DEG-2500-3	6934025	1.4 (11)
DEG-3000-3	6934030	1.4 (11)
DEG-3500-3	6934035	1.4 (11)
575 Volt - Three Phase		
DEG-900-3	6835009	1.8 (14)
DEG-1200-3	6835012	1.8 (14)
DEG-1300-3	6835013	1.1 (8)
DEG-2000-3	6835020	1.1 (8)
DEG-2500-3	6835025	1.1 (8)
DEG-3000-3	6835030	1.1 (8)
DEG-3500-3	6835035	1.1 (8)

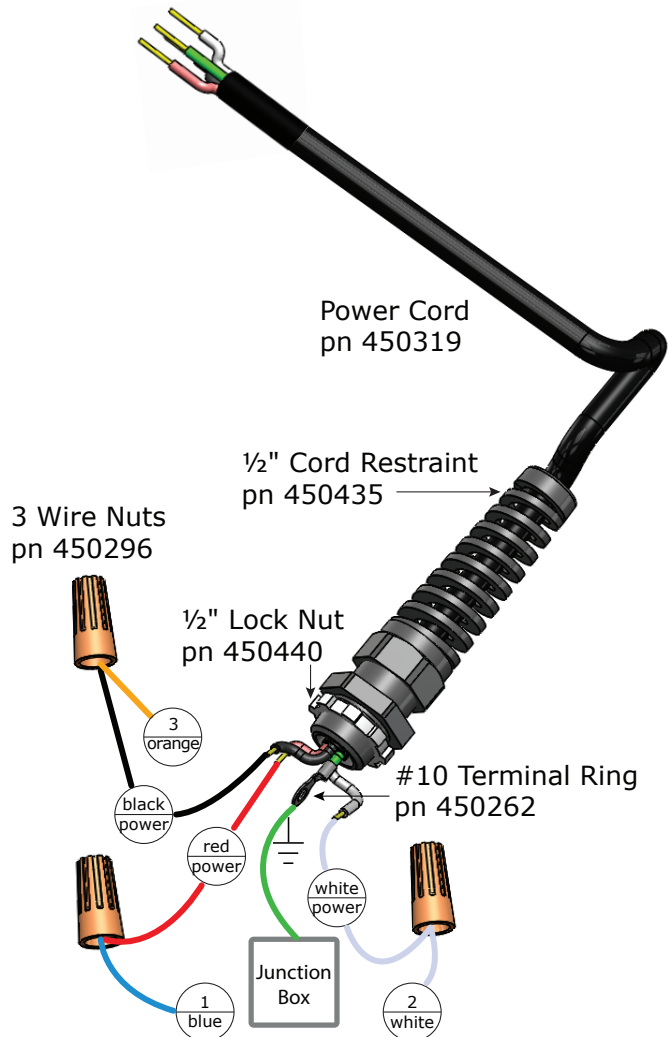
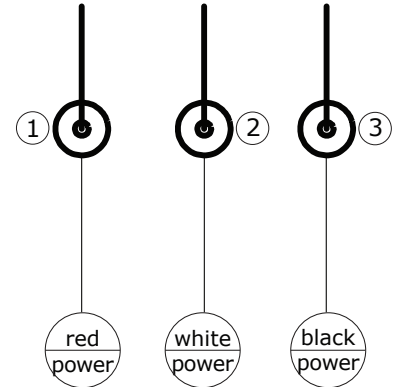
Wiring Diagrams

Pages 10 - 13

575 Volt 3 Phase

For Models:

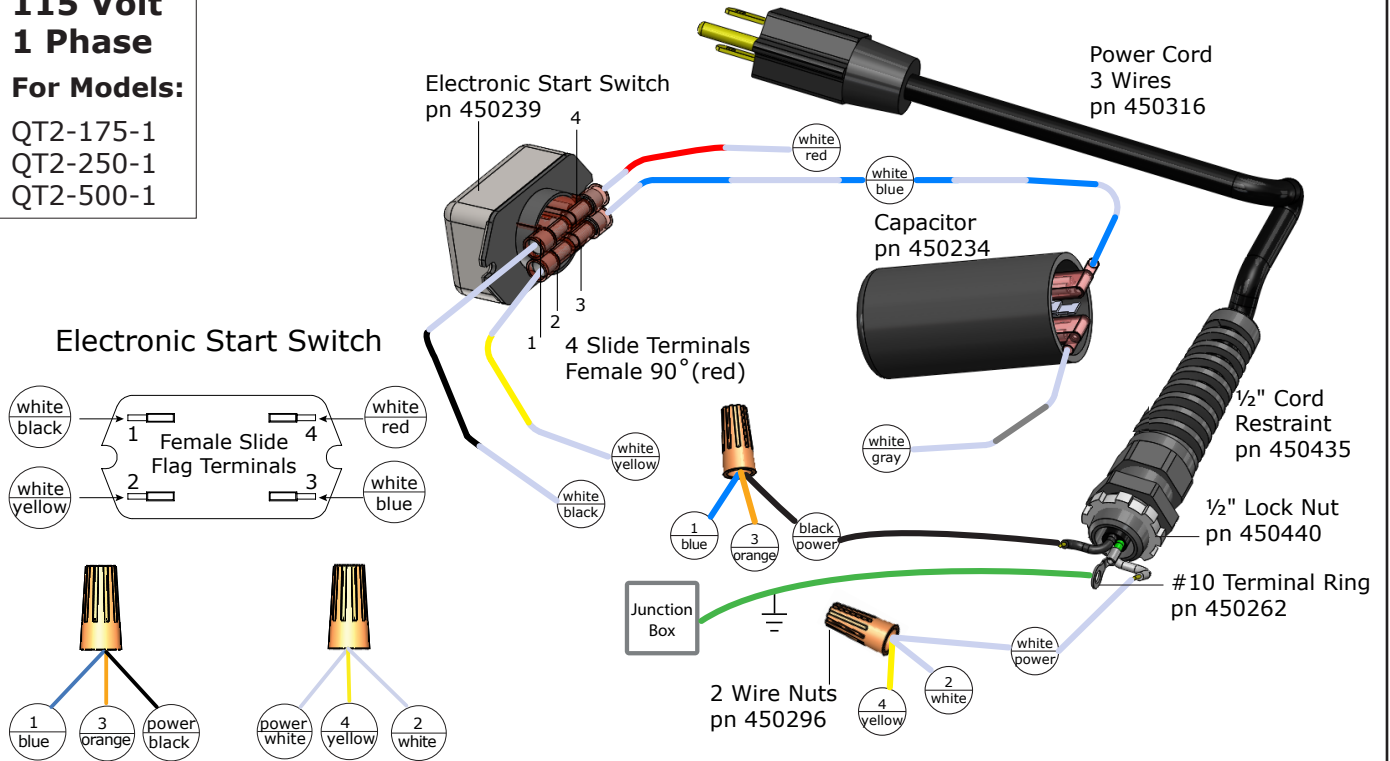
- DEG-900-3
- DEG-1200-3
- DEG-1300-3
- DEG-2000-3
- DEG-2500-3
- DEG-3000-3
- DEG-3500-3



115 Volt 1 Phase

For Models:

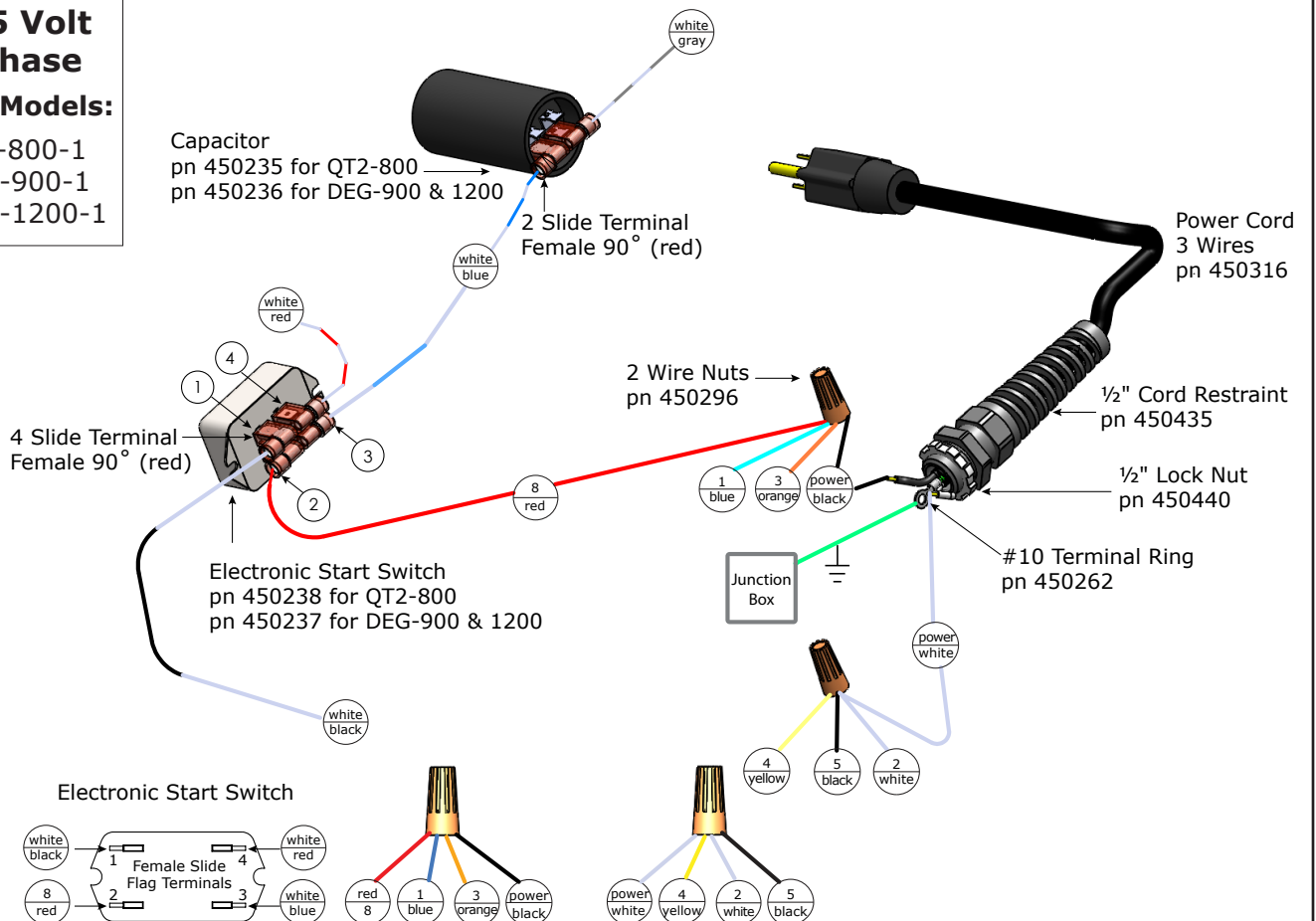
QT2-175-1
 QT2-250-1
 QT2-500-1



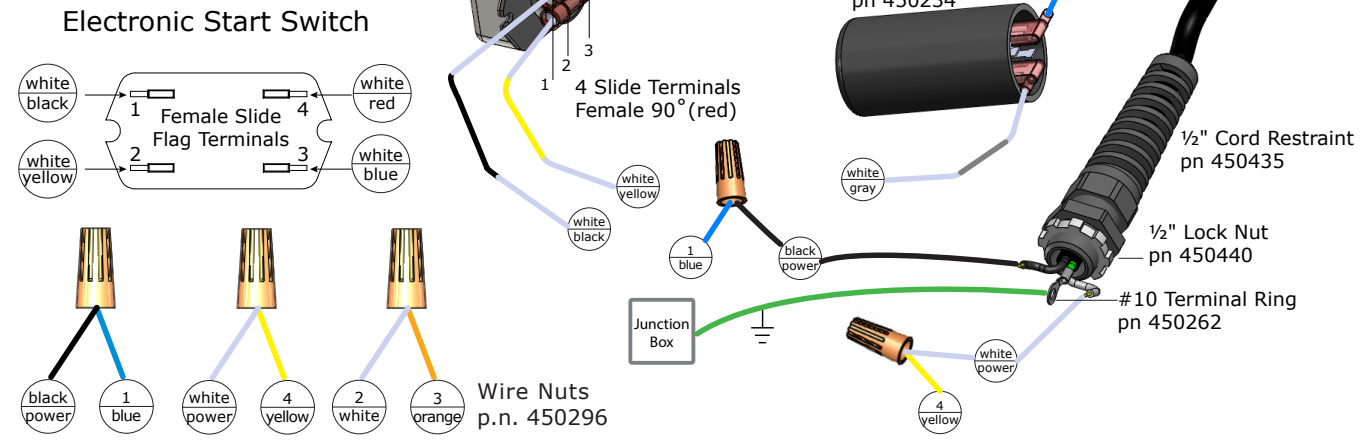
115 Volt 1 Phase

For Models:

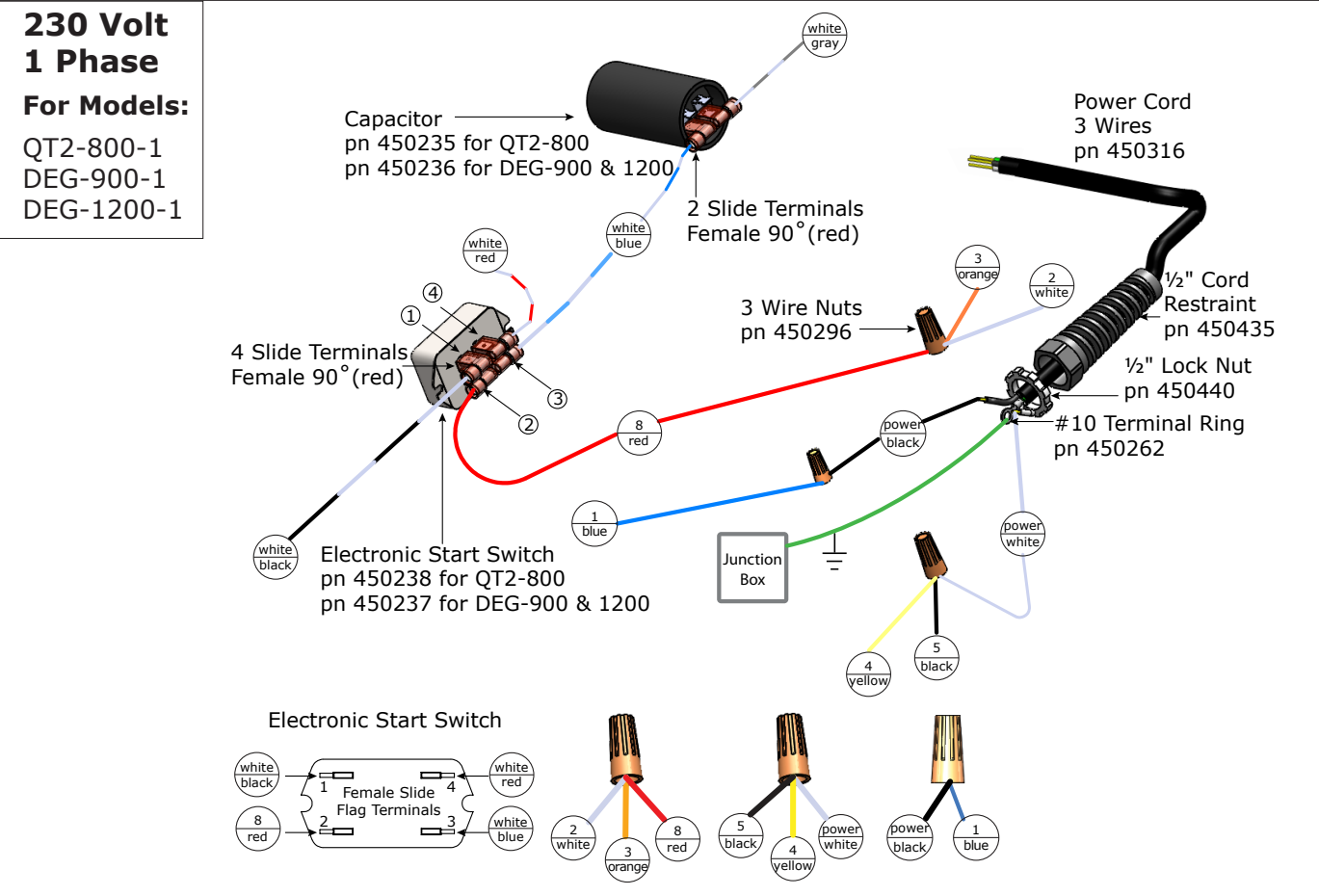
QT2-800-1
 DEG-900-1
 DEG-1200-1



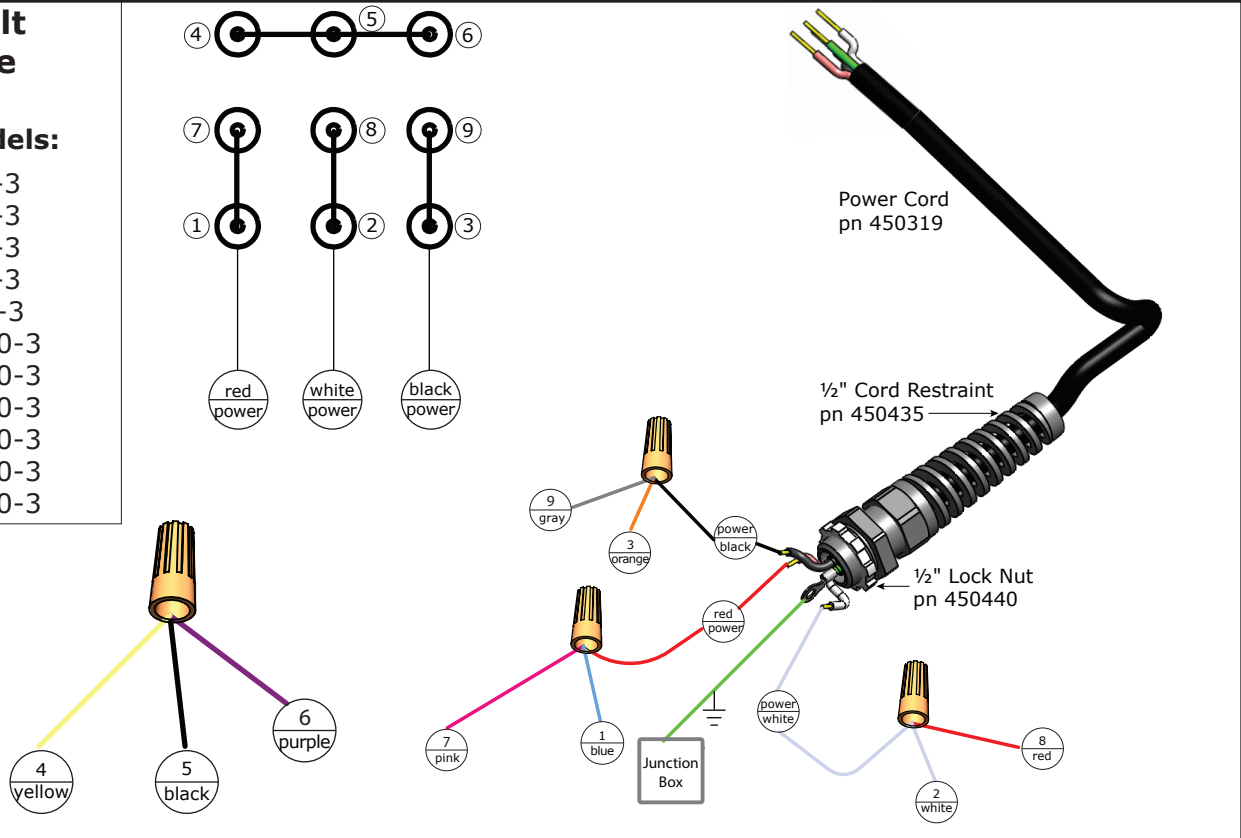
**230 Volt
 1 Phase**
For Models:
 QT2-175-1
 QT2-250-1
 QT2-500-1



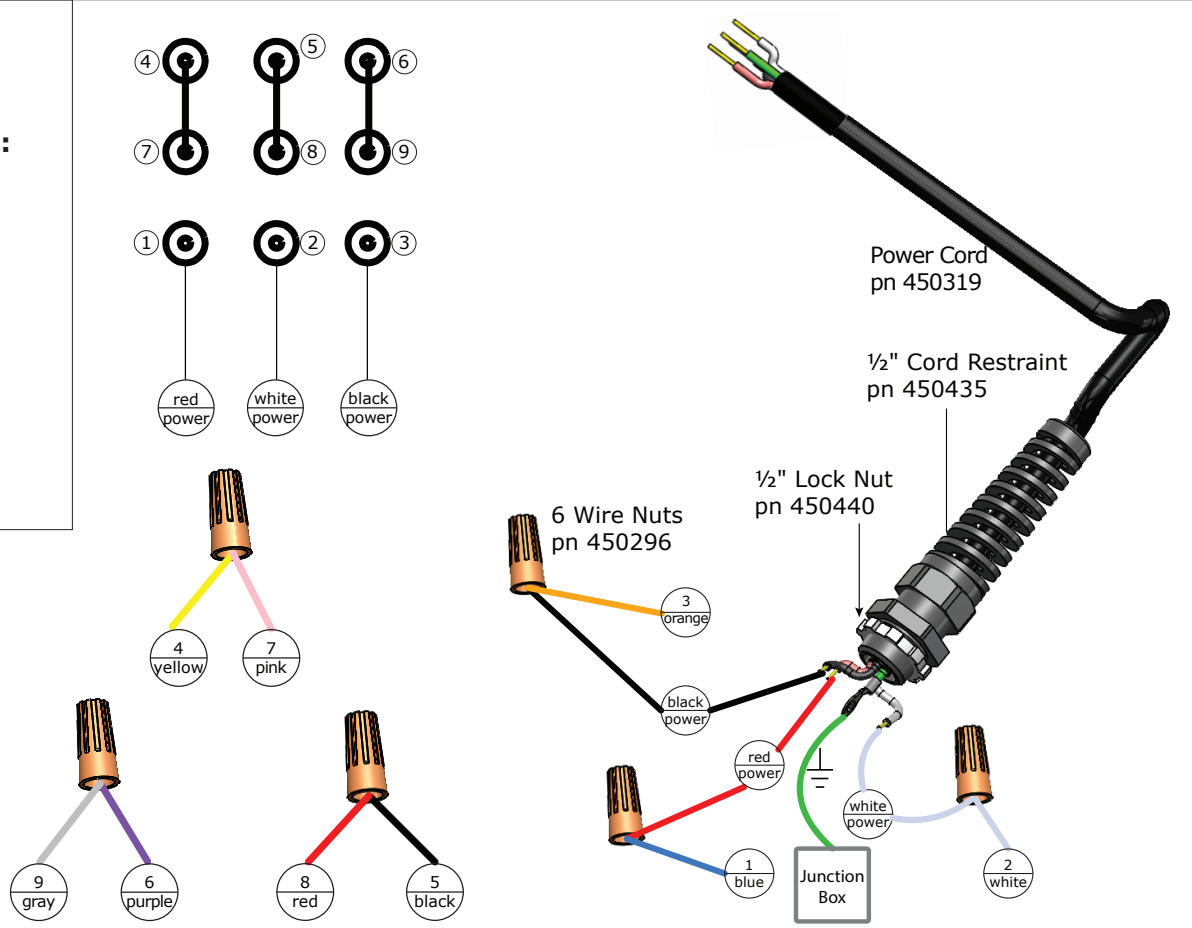
**230 Volt
 1 Phase**
For Models:
 QT2-800-1
 DEG-900-1
 DEG-1200-1



**230 Volt
 3 Phase**
**For all
 3PH Models:**
 QT2-175-3
 QT2-250-3
 QT2-500-3
 QT2-800-3
 DEG-900-3
 DEG-1200-3
 DEG-1300-3
 DEG-2000-3
 DEG-2500-3
 DEG-3000-3
 DEG-3500-3



**460 Volt
 3 Phase**
**For all
 3PH Models:**
 QT2-175-3
 QT2-250-3
 QT2-500-3
 QT2-800-3
 DEG-900-3
 DEG-1200-3
 DEG-1300-3
 DEG-2000-3
 DEG-2500-3
 DEG-3000-3
 DEG-3500-3



VI. THREE LEADING CAUSES OF ELECTRIC VIBRATOR FAILURE

1) Single Phasing:

A leading cause of failure in three phase motors is losing one of the three phases, called single phasing. Single phasing can be caused by blowing only one of the three fuses that protect the circuit, by a faulty contact in the motor starter, by losing a phase from the local electric utility, and numerous other ways. A vibrator that burns up due to single phasing is not covered under warranty. While heaters do an excellent job of protecting a motor from overload conditions, they often do not protect a three phase motor from single phasing.

Global Manufacturing strongly recommends using a motor starter that is designed to detect a missing phase. The Furnas[®] ESP100 series is a heaterless design which detects phase loss in 3 seconds and shuts the motor off.

2) Low Voltage:

Another failure point is low voltage caused by high starting current. An electric vibrator will take 2 to 3 seconds to reach full running speed. During this starting period, the vibrator draws more current than it draws at full running speed. The high starting current may cause the voltage to sag or drop below 80% of the rated voltage when measured at the vibrator. If **inadequate** voltage is provided initially, a voltage drop will cause problems. Low voltage may prevent the vibrator from reaching its rated speed, and cause the motor to continue to draw high starting current for a prolonged period until it burns up. The electric power circuit must be able to handle the high starting current without dropping below 80% of the rated voltage. The most common problems are using a long extension cord with the wire gauge undersized or an undersized transformer which cannot handle the high amp draw on start up.

3) Improper Mounting:

When an electric motor runs slower than its rated speed, it will draw excessive current and eventually burn up. A non-rigid mount hinders the vibrator from reaching full running speed. In screen and feeder applications, the vibrator may get "trapped" in the resonant frequency of the structure and not have enough power to reach full running speed. Adjust the springs if possible to change resonant frequency. **Improper mounting of the electric vibrator will cause it to fail.**

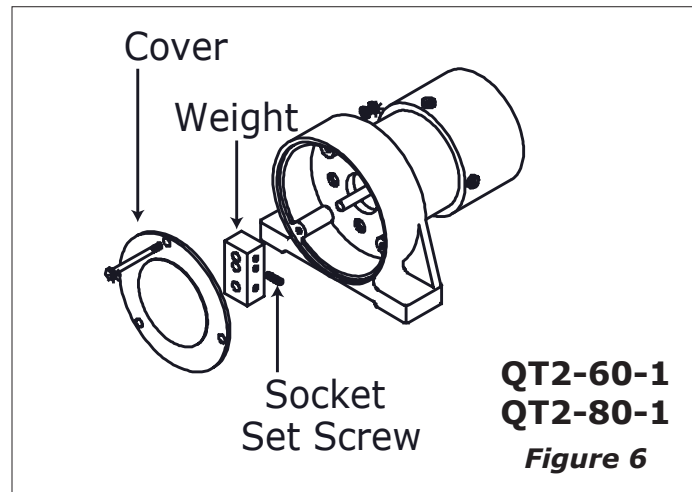
VII. WEIGHT SETTING ADJUSTMENTS

The centrifugal force of the vibrator may be controlled by adjusting the eccentric weights. The **speed** of the vibrator is not affected by the adjustment of the eccentric weights. See Performance Data on page 20 for force produced at each setting.

There are single and double ended shafts. It is **very important to adjust eccentric weights on both ends of the double ended shaft identically.**

QT2-60-1 and QT2-80-1

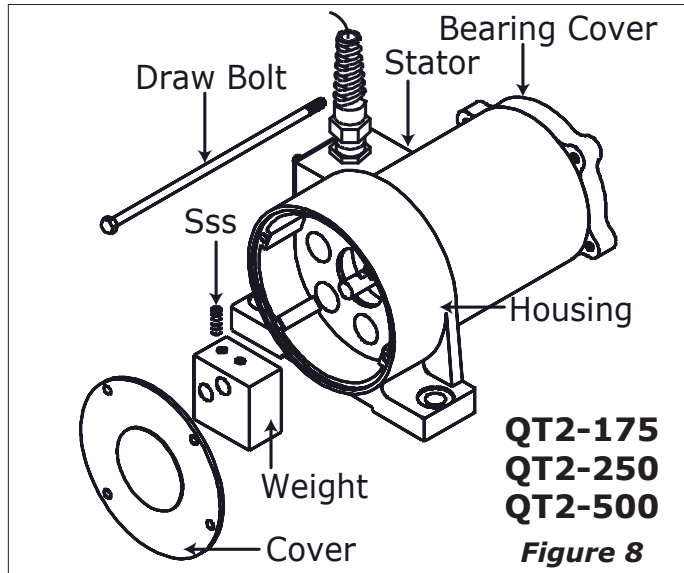
The QT2-60-1 has only one adjustable weight. Each weight has 3 settings marked 25, 40, and 60 force pounds. The factory setting is 40 force pounds. The QT2-80-1 has only one adjustable weight. Each weight has 3 settings marked 40, 60, and 80 force pounds. The factory setting is 60 force pounds.



1. Loosen and remove the 3 bolts from the housing cover.
2. Remove the cover. This may require tapping the empty bolt holes with an object causing the cover to rotate, and the holes to misalign. Tap cover out with an object through empty bolt hole on motor side.
3. Loosen the set screw securing the weight to the motor shaft.
4. Slide the weight off of the shaft and install the set screw into the desired hole.
5. Replace the weight on the motor shaft and tighten the set screw securely. The set screw must engage the flat on the motor shaft.
6. Check to verify that the weight rotates freely within the housing - adjust if necessary.
7. Reinstall the cover using Loctite[®] 515 Gasket Eliminator. Tighten screws securely.
8. Run the unit to verify proper operation.

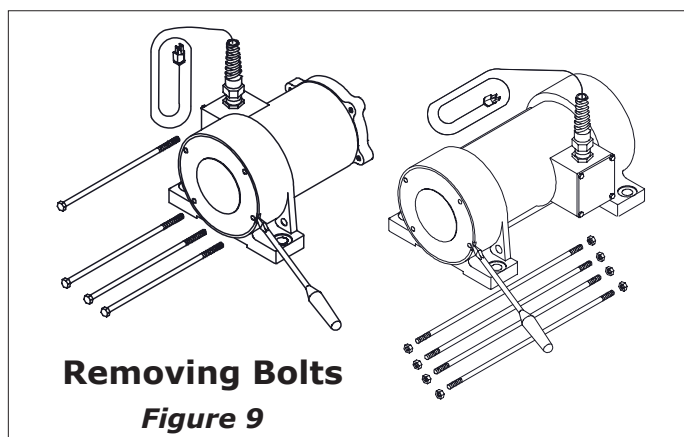
QT2-175, QT2-250, QT2-500 -1 & 3PH

These models have one adjustable weight with two settings. The QT2-175 has settings marked 118 and 175 force pounds (factory setting is 118). The QT2-250 has settings marked 173 and 250 force pounds (factory setting is 173). The QT2-500 has settings marked 318 and 500 force pounds (factory setting is 318).



1. Loosen and remove the four draw bolts holding the assembly together.
2. Remove the weight cover.
3. Loosen the set screw and slide the weight from the motor shaft.
4. Install the set screw into the desired hole.
5. Replace the weight back onto the motor shaft.
6. Tighten the set screw securely. Be certain the set screw engages the flat machined surface on the motor shaft.
7. Reinstall the cover using Loctite 515[®] Gasket Eliminator. Torque the draw bolts to 9 ft-lb (12.2 N-m).
8. Run the vibrator to verify proper operation.

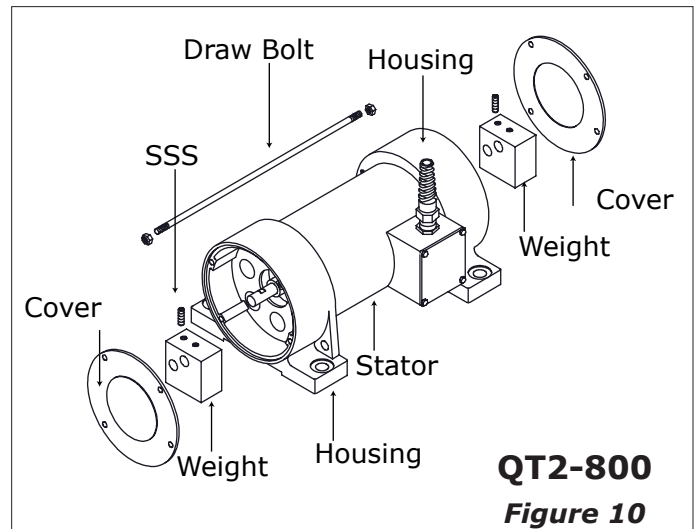
How to remove the cover on the QT2-175, QT2-250, QT2-500 and QT2-800



1. Remove draw bolts.
2. Pry off covers with a screwdriver using the milled-in access slot as shown below.
3. Upon re-assembly, install draw bolts and torque to 9 ft-lb (12.2 N-m). *Figure 9.*

QT-800-1 & 3 Phase

The QT2-800 has two adjustable weights. Each weight has a setting marked 279 and 400 force pounds. The factory setting on each weight is 279 for a total of 558 force pounds. Adjust weight to the 400 force pound setting for 800 pounds of force output.



1. Using locking pliers, anchor the draw bolts at any point between the housing ends, while the nuts are removed from one end of the draw bolts.
2. Remove the draw bolts and weight covers from the housings, exposing the weights. To remove the cover, it may require tapping the empty bolt holes with an object causing the cover to rotate, and the holes to misalign. Tap cover out with an object through empty bolt hole on motor side.
3. Loosen the set screw from each weight and slide the weight from the motor shaft.
4. Replace the set screws into the desired hole and replace the weight on the motor shaft. The set screw must engage the flat milled into the motor shaft. Tighten set screws securely.
5. Verify that the weights rotate freely within the housing.
6. Reinstall the covers using Loctite 515[®] Gasket Eliminator. Torque the draw bolts to 9 ft-lb (12.2 N-m).
7. Run the unit to verify proper operation.

DEG-900 & DEG-1200 Models

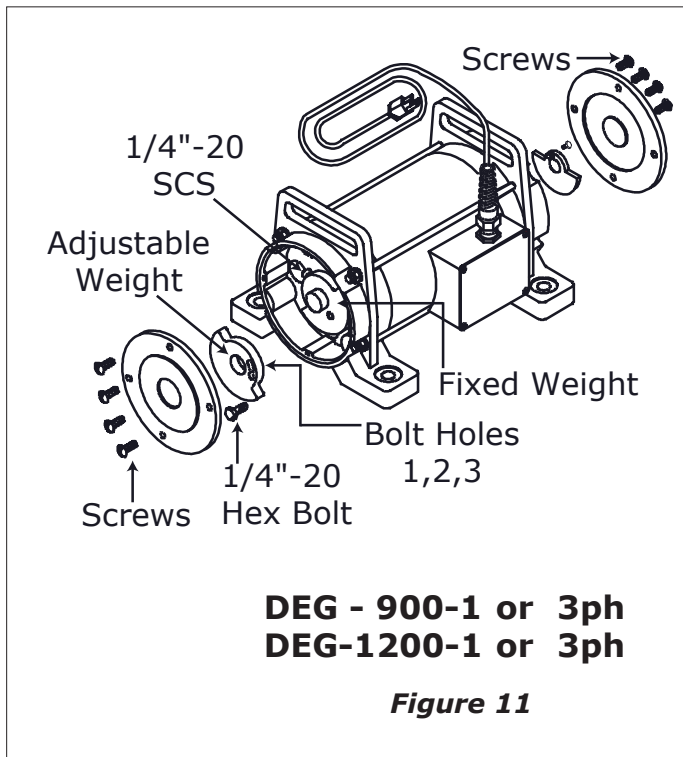
1 & 3 Phase

There are two adjustable weights with four settings (positions).

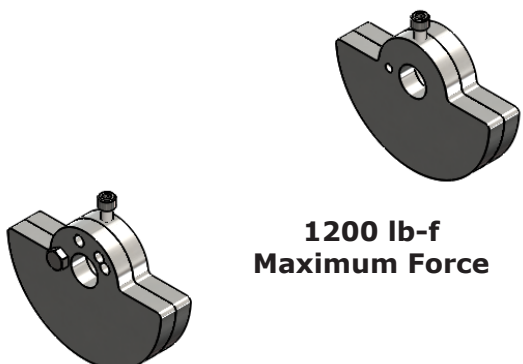
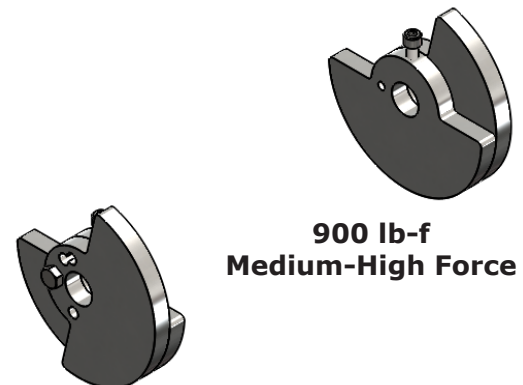
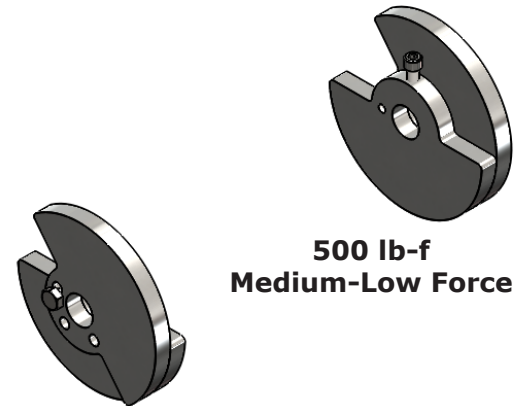
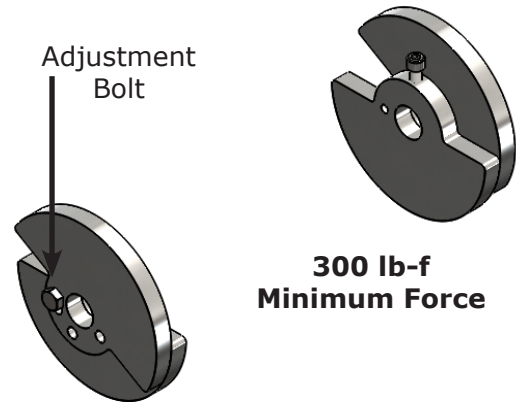
- Position 1 - produces the maximum force
- Position 2 - produces the medium-high force
- Position 3 - produces the medium-low force
- Position 4 - produces the minimum force

Unless otherwise requested, Global will preset the eccentric weights at position 2, the "medium-high" setting.

1. Remove both covers.
2. There are two weights on each side of the vibrator - an inside and outside. Remove the adjustment bolt to allow outside weight to rotate on the shaft. The outside weight (adjustable weight) is attached to the fixed weight with the "adjustment bolt". The fixed weight is fixed to the shaft with a set screw and a key (Do not loosen the set screw on the fixed weight.).
3. Rotate the outside weight until the tapped hole lines up under the desired bolt hole of the fixed weight and reinstall the adjustment bolt.
4. Repeat process to the weights on the opposite side of the vibrator.
5. **It is very important that the weights on both sides are set the same.**
6. Reinstall the covers using Loctite[®] 515 Gasket Eliminator to seat and seal each cover to the housing.



DEG-900 and DEG-1200 - Weight Positions


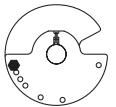
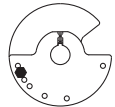
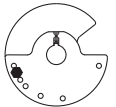
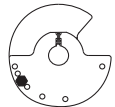
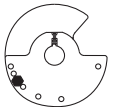
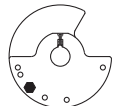
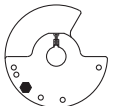
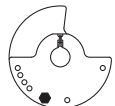

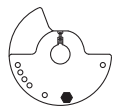

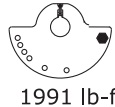



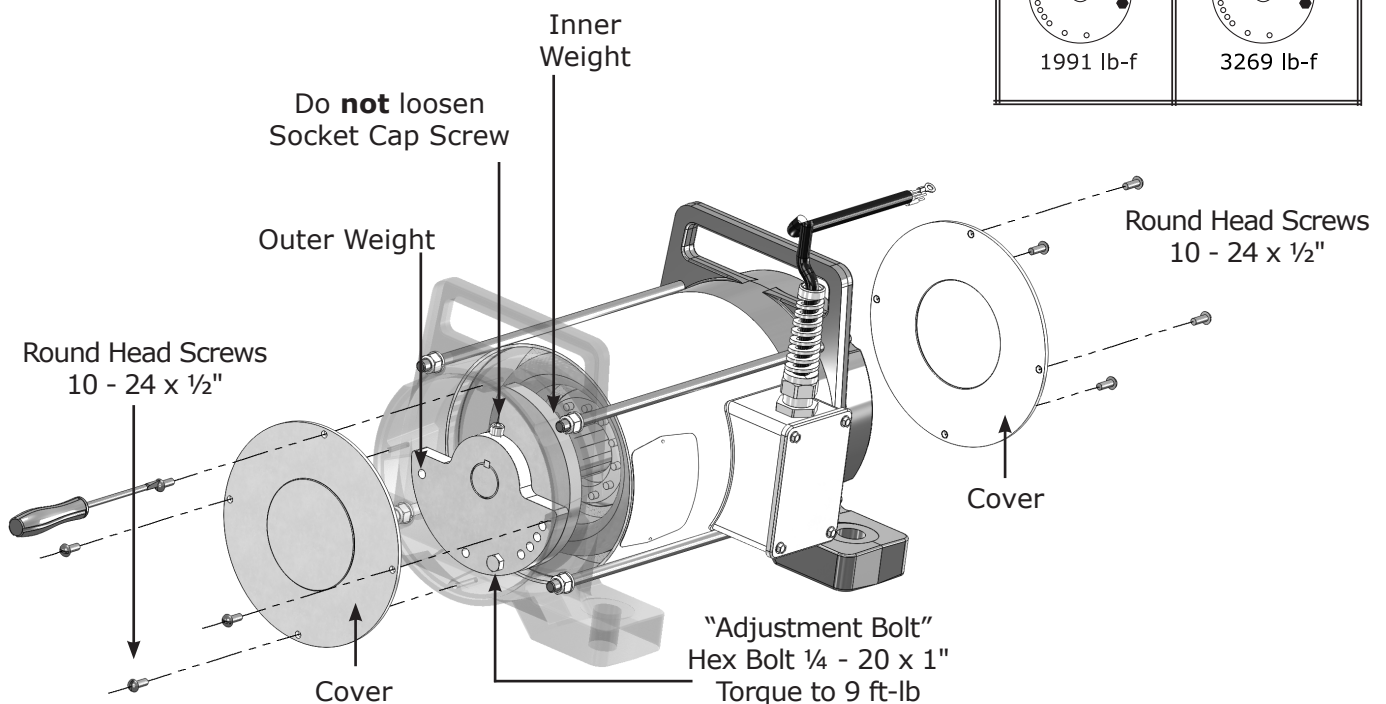
DEG-1300-3, DEG-2000-3, DEG-2500-3, Weight Position Guide DEG-3000-3, and DEG-3500-3

To change the force of the vibration, reposition the weights on the shaft, by removing and reinstalling the adjustment bolt as follows:

1. Remove both covers.
2. There are two weights on each side of the vibrator - an inside and outside. Remove the adjustment bolt to allow inside weight to rotate on the shaft. The inside weight (adjustable weight) is attached to the outside weight with the "adjustment bolt". The outside weight is fixed to the shaft with a set screw and a key (Do not loosen the set screw on the outside weight.).
3. Rotate the inside weight until the tapped hole lines up under the desired bolt hole of the outside weight and reinstall the adjustment bolt.
4. Repeat process to the weights on the opposite side of the vibrator.
5. **It is very important that the weights on both sides are set the same.**

Notice the position of the adjustment bolt (black in color) at each weight setting.

DEG-1300 DEG-2000	DEG-2500 DEG-3000 DEG-3500
 507 lb-f	 1785 lb-f
 676 lb-f	 1954 lb-f
 845 lb-f	 2123 lb-f
 1014 lb-f	 2292 lb-f
 1352 lb-f	 2630 lb-f
 1690 lb-f	 2968 lb-f
 1991 lb-f	 3269 lb-f

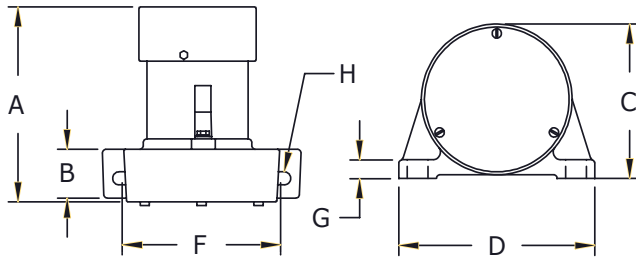




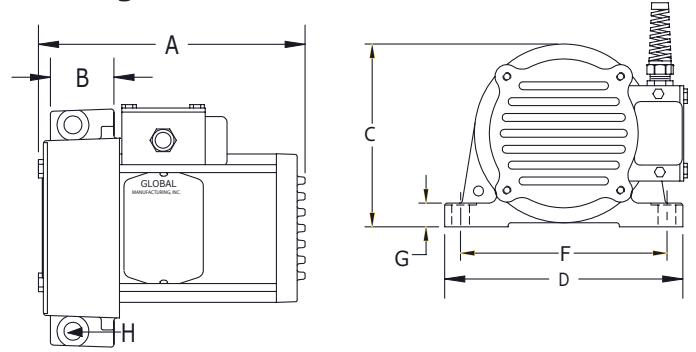
VIII. DIMENSIONS

DIMENSIONS - QT & DEG QUIET THUNDER [®] VIBRATORS										
Vibrator Model	DWG	Weight	A	B	C	D	E	F	G	H
			Total Length	Foot Width	Total Height	Total Width	Bolt Hole Center Length	Bolt Hole Center Width	Foot Thickness	Bolt Hole Size
		lb	in	in	in	in	in	in	in	in
		kg	mm	mm	mm	mm	mm	mm	mm	mm
QT2-60 QT2-80	1	8.0	6.62	1.63	5.07	6.50	n/a	5.25	0.68	0.44 X 0.68
		3.6	168	41	129	165		133	17	11 X 17
QT2-175 QT2-250	2	15.0	8.46	2.00	5.77	7.50	n/a	6.50	0.75	.56
		6.8	215	51	147	191		165	406 X 51	14
QT2-500	2	16.0	8.46	2.00	5.77	7.50	n/a	6.50	0.75	.56
		7.3	215	51	147	191		165	406 X 51	14
QT2-800	3	26.0	11.96	2.00	5.77	7.50	9.81	6.50	0.75	.56
		11.8	304	51	147	191	249	165	19	14
DEG-900 1 PH 3 PH	4	49.0	11.48	2.00	8.43 ^{1PH} 7.64 ^{3PH}	9.25	9.05	7.50	.85	.56
		22.2	292	51	214 ^{1PH} 194 ^{3PH}	235	230	191	22	14
DEG-1200 1 PH 3 PH	4	49.0	11.48	2.00	8.43 ^{1PH} 7.64 ^{3PH}	9.25	9.05	7.50	.85	.56
		22.2	292	51	214 ^{1PH} 194 ^{3PH}	235	230	191	22	14
DEG-1300 DEG-2000	5	77.0	13.30	2.80	8.40	10.80	10.20	8.50	1.00	.78
		34	338	71	213	274	259	216	25	20
DEG-2500	5	81.4	13.30	2.80	8.40	10.80	10.20	8.50	1.00	.78
		36	338	71	213	274	259	216	25	20
DEG-3000 DEG-3500	5	81.4	13.30	2.80	8.40	10.80	10.20	8.50	1.00	.78
		36	338	71	213	274	259	216	25	20

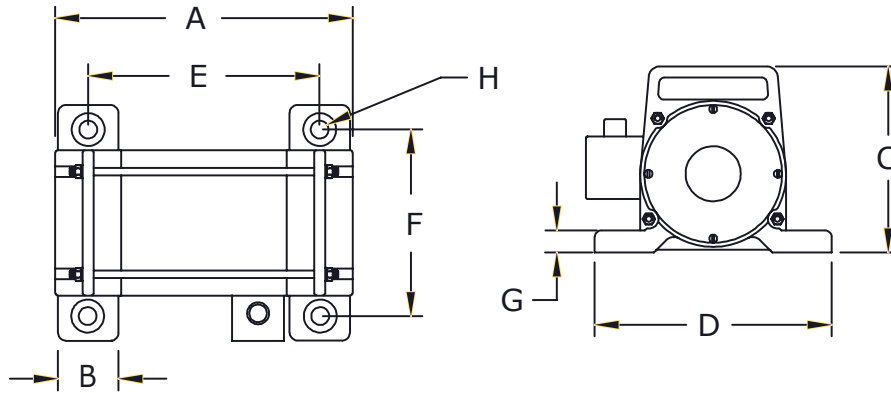
Drawing 1



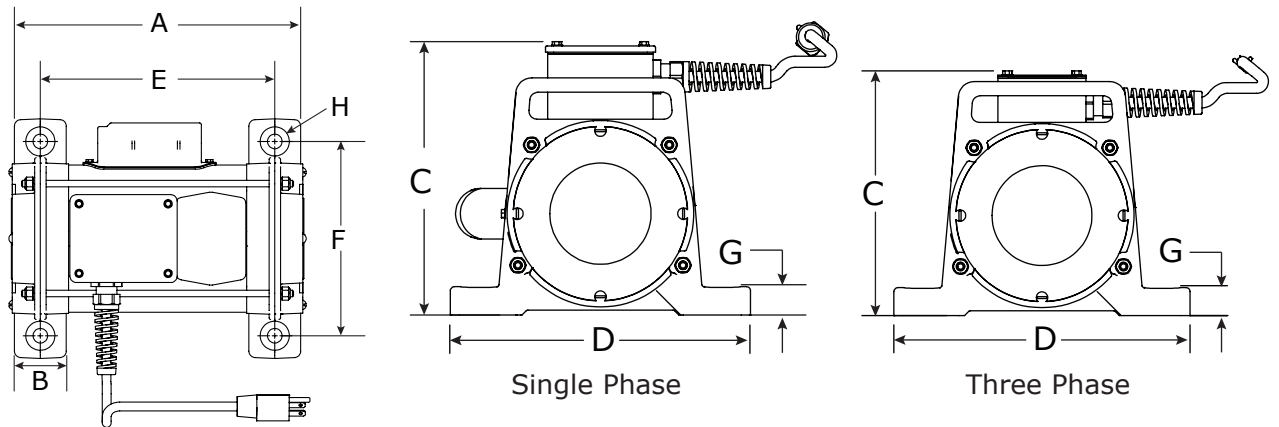
Drawing 2



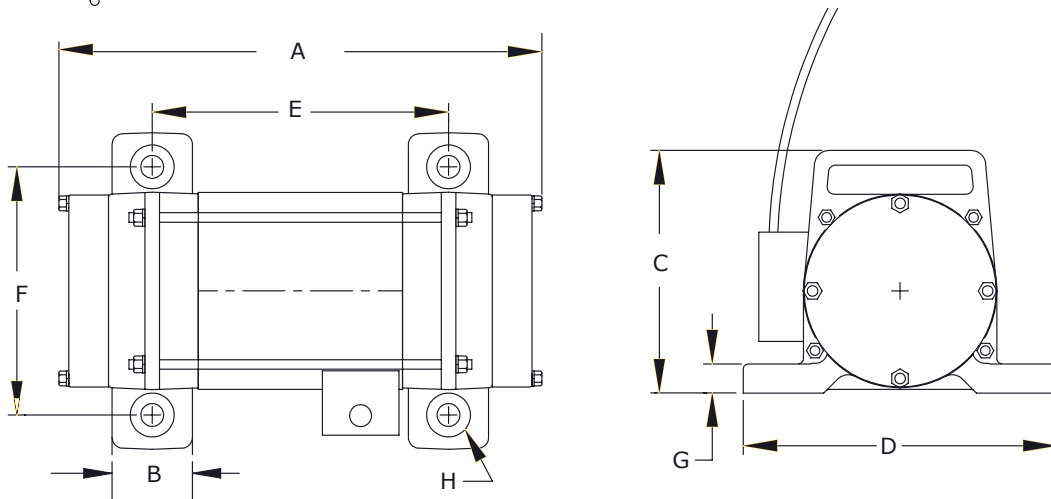
Drawing 3



Drawing 4



Drawing 5





IX. PERFORMANCE DATA

Vibrator Performance Data									
Vibrator Model 60 Hertz		Unbalance			Speed RPM	Centrifugal Force Pounds			Maximum Material in Slope
		Minimum	Medium	Maximum		Minimum	Medium	Maximum	
		lb-in	lb-in	lb-in		lbf	lbf	lbf	
Single Phase	Three Phase	kg-mm	kg-mm	kg-mm		kN	kN	kN	Kilograms
QT2-60-1		.07	.12	.18	3450	24	41	61	600
		.8	1.4	2.1		.11	.18	.27	272
QT2-80-1		.12	.18	.24	3450	41	61	81	800
		1.4	2.1	2.8		.18	.27	.36	360
QT2-175-1	QT2-175-3	.35	n/a	.52	3450	118	n/a	175	1,750
		4.0	n/a	6.0		.53	n/a	.78	793
QT2-250-1	QT2-250-3	.51	n/a	.75	3450	173	n/a	253	2,500
		5.9	n/a	8.6		.77	n/a	1.13	1,135
QT2-500-1	QT2-500-3	.94	n/a	1.36	3450	318	n/a	459	5,000
		10.9	n/a	15.7		1.42	n/a	2.04	2,270
QT2-800-1	QT2-800-3	1.65	n/a	2.37	3450	558	n/a	800	8,000
		19.0	n/a	27.3		2.48	n/a	3.56	3,632
DEG-900-1	DEG-900-3	.89	1.48	2.66	3450	300	500	900	9,000
		10.2	17.0	30.7		1.33	2.22	4.00	4,080
DEG-1200-1	DEG-1200-3	1.48	2.66	3.42	3450	500	900	1155	12,000
		17.0	30.7	39.4		2.22	4.0	5.14	5,440
	DEG-1300-3	2.50	3.00	4.00	3450	845	1014	1352	13,000
		29	35	46		3.76	4.51	6.01	5,900
	DEG-2000-3	4.00	5.00	5.89	3450	1352	1690	1991	20,000
		46	58	68		6.01	7.52	8.86	9,071
	DEG-2500-3	6.28	6.78	7.78	3450	2123	2292	2630	25,000
		72	78	90		9.44	10.20	11.70	11,350
	DEG-3000-3	6.78	7.78	8.78	3450	2292	2630	2968	30,000
		78	90	101		10.20	11.70	13.20	13,607
	DEG-3500-3	7.78	8.78	9.67	3450	2630	2968	3269	33,000
		90	101	111		11.70	13.20	14.54	14,968



X. Voltage & Amperage Readings must be done prior to operating Vibrator

Important!

Typically, motors can tolerate a 10% drop in voltage while running. Since start-up lasts only 1 to 2 seconds, a 20% drop should be tolerated for that short period of time when the motor is pulling higher amps. The best way to check this is to use a voltage meter at the motor. Check minimum voltage during **start-up** and the **running voltage** once the motor has reached its running speed. Assuming 120 volt motor, it needs at least 96 volts during start-up, and once the motor reaches its operational speed it needs 108 volts. When **sizing an extension cord** one must be careful because the extension cord is only one source of voltage drop. The power source might also fluctuate. It is best to assume the power source could fluctuate by 5%. Thus the 120 volt source might at times only provide 114 volts. Therefore, the extension cord cannot cause more than a 15% voltage drop during start-up and only a 5% drop after reaching operational speed. With a 100' 14AWG copper wire extension cord, one would get a 20.231 voltage (16.86%) drop during motor start-up when pulling 39 amps. This means the voltage at the vibrator might be as low as 93.77 volts, too low for proper starting. Once the vibrator reaches full speed it pulls only 2.6 amps. The voltage drop here would be 1.349 volts leaving 112.65 volts, which should be sufficient to keep the unit running. HOWEVER, the low voltage during start-up causes excess heat that degrades the motor insulation. This effect is cumulative, so even though the vibrator starts the first, second, or third time the damage done by low voltage is building. Eventually the insulation fails and the motor will burn up. In this example only the start windings will fail prematurely, which will leave the vibrator inoperable.

To further explain voltage drops pertaining to the above example:

If a 12AWG cord is used the voltage drops will be:

Start-up=12.733 volts giving a net of 101.3 volts

Run=0.849 volts giving a net of 113.2 volts

This extension cord would be adequate.

If a 10AWG cord is used the voltage drops will be:

Start-up=8 volts giving a net of 106 volts

Run=0.534 volts giving a net of 113.5 volts

This extension cord would be better.

There is a good website with a nice voltage drop calculator. If you have the wire size, length, power source voltage, and amp draw it will calculate the voltage drop.

http://www.powerstream.com/Wire_Size.htm

YOU MUST ALSO CHECK THE AMP DRAW.

It the amp draw exceeds the manufacturer's specifications then the vibrator is probably not properly mounted. The mount may not be level or lack proper rigidity. Please follow the mounting instructions in this manual.



XI. TROUBLESHOOTING

Problem	Probable Cause	Solution
Single phasing 3 phase vibrators only	Circuit breaker is tripped or fuse is blown.	Correct the problem that caused the overload to occur. See pages 9 and 14. Reset breaker or replace fuse.
	Switch or starter contact is not closing properly.	Replace or repair starter.
	Conductor or wiring to vibrator is defective.	Repair or replace conductor.
	Power supply malfunctions, such as the loss of one phase of a distribution transformer caused by lightning, wind, ice storms, etc.	Replace damaged wiring. Replace transformer. You may have to contact local electric utility to repair their circuits.
Excessive noise	Vibrator mount is not rigid.	Make sure mount is rigid and the vibrator is perpendicular to channel iron See pages 6 - 8. Tighten all bolts. Check for cracked welds or broken housing.
Vibrator will not start	Single phase circuit breaker (purchased separately) is tripped.	Correct the problem that caused the overload. Reset breaker. See pages 9 & 14.
	Circuit is interrupted.	Make sure all leads are "hot".
	Single phase vibrator has a damaged electronic starting switch.	Replace electronic starting switch.
Vibrator runs hot or overheats <i>(Check voltage and amp draw on start-up and on run.)</i>	Vibrator mount is not rigid	Make sure mount is rigid. See pages 6 - 8. Tighten all bolts. Check for cracked welds or a broken housing.
	Single phase vibrator has damaged electronic starting switch.	Replace electronic starting switch.
	Voltage is low. Conductor gauge or extension cord is inadequate or too small.	Use a heavier gauge when using extension cords or conductor. See page 21 for voltage/amp information and how to size an extension cord.
	Stop-Start time intervals too short. The motor is restarted quickly again after stopping.	The time between start-ups needs to be at least two minutes. The amperage draw at start-up is high and creates heat. A two minute time delay allows motor to cool down.
	Ambient temperature is too hot for vibrator.	Protect vibrator from ambient temperature above 104°F (40°C).
	Mounting surface is not flat and motor is binding.	Check mount plate surface. Must be flat. Use shims to level the vibrator mount if necessary.
Excessive current <i>(Check voltage and amp draw on start-up and on run.)</i>	Vibrator mount is not rigid and/or vibrator is operated on an empty bin.	Make sure mount is rigid and the vibrator is perpendicular to channel iron. Tighten all bolts. Do not operate vibrator on an empty bin. See pages 6 - 8.
	Single phase units - conductor wires may be inadequate, keeping start switch from disengaging starter coils.	See Voltage and Amperage information on page 9-10 and 21.
	Mounting surface is not flat and motor is binding.	Check mount plate surface. Must be flat. Use shims to level the vibrator mount if necessary.