



MARTIN[®] MOTOMAGNETIC[®]

Electric Vibrators



OPERATOR'S MANUAL

Important

Martin Engineering hereby disclaims any liability for injuries or damage resulting from use or application of this product contrary to instructions and specifications contained herein. Martin Engineering's liability shall be limited to repair or replacement of product shown to be defective.

Observe all safety rules given herein along with owner and Government standards and regulations. Know and understand lockout/tagout procedures as defined by American National Standards Institute (ANSI) z244.1-1982, *American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements* and Occupational Safety and Health Administration (OSHA) Federal Register, Part IV, 29 CFR Part 1910, *Control of Hazardous Energy Source (Lockout/Tagout); Final Rule*.

The following symbols may be used in this manual:



Danger: Immediate hazards that will result in severe personal injury or death.



Warning: Hazards or unsafe practices that could result in personal injury.



Caution: Hazards or unsafe practices that could result in product or property damages.



Important: Instructions that must be followed to ensure proper installation/operation of equipment.



Note: General statements to assist the reader.

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Introduction

General

MARTIN® MOTOMAGNETIC® Electric Vibrators (CD models) are designed and manufactured to ensure the best performance and reliability in severe-duty applications. The vibrator motor has a recommended operational ambient temperature and mounting surface temperature range of -22 to 104° F (-30 to 40° C). If operating the motor in environments beyond these temperatures, call Martin Engineering, as the vibrator may require rating reduction, more frequent lubrication, or lubrication substitution.

The explosion-proof MOTOMAGNETIC® Electric Vibrators (CDX models) have been tested and approved by Underwriters Laboratories Incorporated® (UL) and the Canadian Standards Association (CSA) for use in Class I, Groups C and D, and Class II, Groups E, F, and G hazardous locations. CDX Vibrators have been approved by KEMA for Gas Group IIB and have the flame-proof rating of EEx d IIB T4. CDX vibrators are rated for a maximum ambient temperature of 104°F (40°C).

This manual provides instructions for installation onto steel bins and hoppers only. For installation onto other structures, call Martin Engineering or a representative.

The vibrators in this manual may be referred to by their model numbers or part numbers. Table V in the “Part Numbers” section provides model numbers and part numbers together with frame size. The following letter designations are used throughout this manual:

- CD (continuous-duty three-phase).
- CDS (continuous-duty single-phase).
- CDX (continuous-duty explosion-proof).

References

The following documents are referenced in this manual:

- *The National Electrical Code (NEC)*, National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy MA 02269-9101.
- American National Standards Institute (ANSI) z244.1-1982, *American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements*, American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.
- Code of Federal Regulation (CFR) 29, Part 1910, *Control of Hazardous Energy Source (Lockout/Tagout); Final Rule*, Department of Labor, Occupational Safety and Health Administration (OSHA), 32nd Floor, Room 3244, 230 South Dearborn Street, Chicago, IL 60604.
- CFR 29, Part 1910.15, *Occupational Noise Exposure*, Department of Labor, OSHA, 32nd Floor, Room 3244, 230 South Dearborn Street, Chicago, IL 60604.

Safety

All safety rules defined in the above documents and all owner/employer safety rules must be strictly followed when working on the vibrator.

Materials required

In addition to metric hand tools, the following materials are required to install this equipment:

- Rigid beam or mounting plate.
- BBAC Cable Kit, P/N 32271, or equivalent.

(Mount Kit for Electric Vibrators, P/N 32401-XX includes W-Beam Mount, mounting hardware, and BBAC Safety Cable Kit.)

Storage

Store vibrator in an ambient temperature not less than 41°F (5°C) with a relative humidity not more than 60%. If the vibrator has been stored for 2 or more years, remove bearings, wash them, and repack them with new grease (see “Lubricating vibrator”).

Before Installing Vibrator

IMPORTANT

The delivery service is responsible for damage occurring in transit. Martin Engineering CANNOT enter claims for damages. Contact your transportation agent for more information.

1. Inspect shipping container/pallet for damage. Report damage to delivery service immediately and fill out delivery service's claim form. Keep any damaged goods subject to examination.
2. Remove vibrator from shipping container/pallet.
3. If anything is missing contact Martin Engineering or a representative.

⚠ WARNING

Turn off and lock out/tag out all energy sources to conveyor/loading systems to mounting structure.

4. Before installing vibrator, turn off and lock out/tag out all energy sources to conveyor/loading systems to mounting structure according to ANSI standards (see "References").

⚠ WARNING

If equipment will be installed in an enclosed area, gas level or dust content must be tested before using a cutting torch or welding. Using a cutting torch or welding in an area with gas or dust may cause an explosion.

5. If using a cutting torch or welding, test atmosphere for gas level or dust content.
6. Mounting surface must be strong and flat, 0.01 in. (0.25 mm) across vibrator feet. (This will minimize internal stress to vibrator casting when tightening mount bolts. Welding in the area of the mounting surface could affect its flatness.)
7. Make sure mounting surface is free of paint and debris, and foot of vibrator is clean.

Installing Vibrator

IMPORTANT

Read entire section before beginning work. This manual provides instructions for installations onto steel bins and hoppers only. For other installations, call Martin Engineering or a representative.

⚠ CAUTION

If installation instructions are not followed, structure and vibrator can be damaged. Abusing or handling vibrator carelessly will accelerate wear and shorten bearing life.

Mounting vibrator onto structure

1. See Figure 1. Locate vibrator in lower 1/4 to 1/3 of structure slope length. If second vibrator is required, mount 180° from first vibrator and halfway up slope.

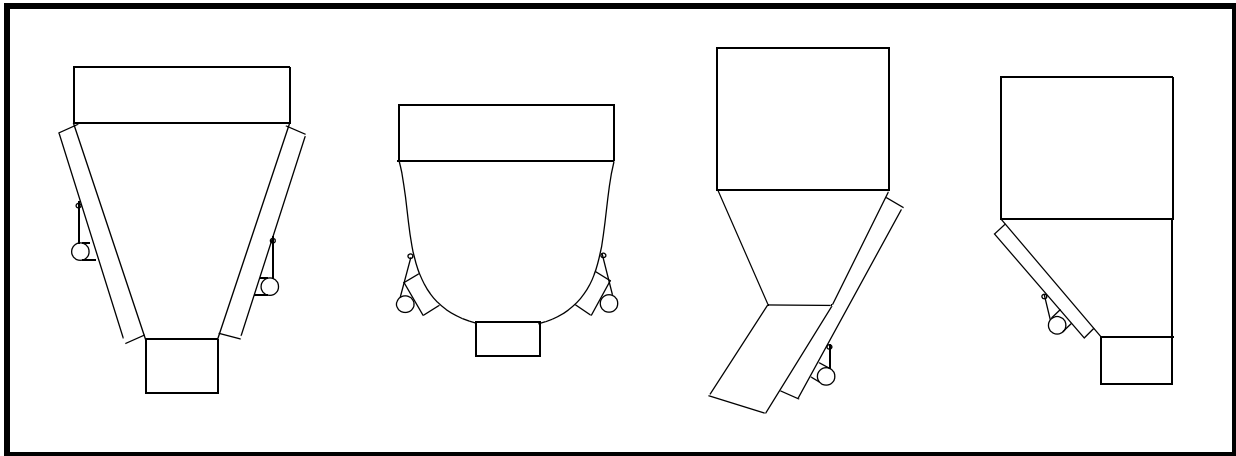


Figure 1. Locating Vibrator on Hoppers

⚠ CAUTION

Never weld structure with vibrator mounted and wired. Welding may cause damage to motor windings and bearings.

IMPORTANT

The object of rotary vibration on bins, hoppers, and chutes is to transmit vibration through the wall into the product contained inside. If structure is not made rigid, vibrator may draw high amperage and move material less efficiently.

Make sure structure is free of paint before mounting vibrator.

2. If using customer-supplied mounting plate to mount vibrator onto structure, do the following:
 - a. Make sure plate is at least the size of vibrator base.
 - b. Locate plate so that vibrator can be positioned as shown in Figure 1.
 - c. Weld mounting plate onto structure.

3. If using MARTIN® W-Beam Mount (or equivalent) or T-beam to mount vibrator onto structure (see Figure 2), do the following:
 - a. Locate beam so that vibrator can be positioned as shown in Figure 1.
 - b. Extend beam at least 3/4 the length of sloped wall. Cut off end(s) of beam if necessary to fit on structure.
 - c. Skip-weld beam in place: Weld 3 in. (76 mm), then skip 2 in. (51 mm). Repeat for entire perimeter of beam. Do not weld last 1 in. (25 mm) of either end of beam or any corner.
 - d. Install vibrator onto W-beam mount or ECF bracket.

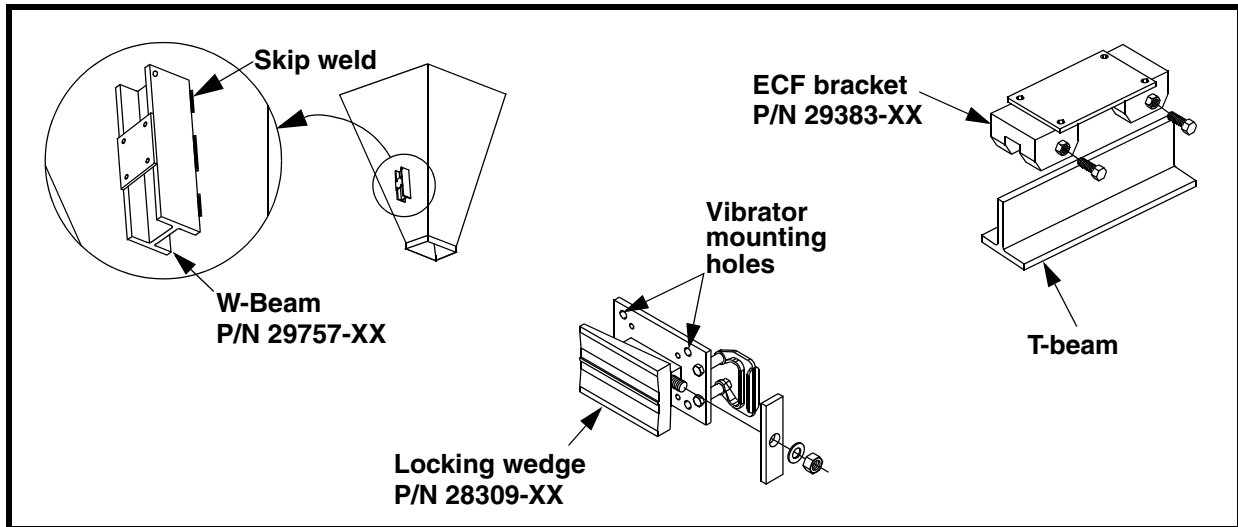


Figure 2. W-Beam, ECF Bracket, and Locking Wedge Mounts

4. If installing vibrator onto hopper with female wedge mount already in place, use MARTIN® Locking Wedge (Figure 2) or equivalent to mount vibrator.

⚠ CAUTION

Never weld structure with vibrator mounted and wired. Welding may cause damage to motor windings and bearings.

Use only new Grade 5 bolts and lock nuts to install vibrator. Old fasteners can break and cause damage to vibrator or structure.

Do not use split lock washers to install vibrator onto mount. Damage to vibrator could result.

Tighten mounting bolts in sequence shown in Figure 3. If not tightened in order, vibrator casting could be damaged.

5. Before installing vibrator onto mount, apply thread sealing compound to all bolts.
6. Install vibrator onto mount with new lock nuts, compression washers, and bolts according to Table I. Tighten bolts in order given in Figure 3 to avoid damaging vibrator casting. (Contact fastener manufacturer for specific information regarding bolt torque.)

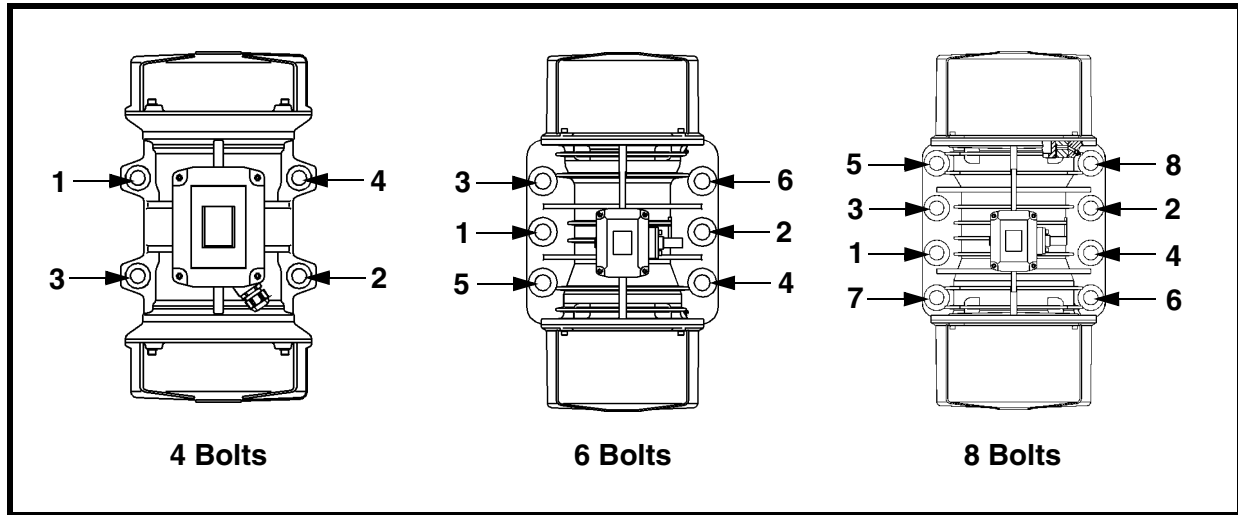


Figure 3. Mounting Bolt Tightening Sequence

7. After the vibrator has been operated for 10 to 20 minutes, check bolt torque. Tighten if necessary.

Table I. Mounting Bolts and Torque Requirements*

Vibrator Type	Frame Size*	English		Metric	
		Bolt Size (Gr 5)	Dry Torque (ft-lb)	Bolt Size	Dry Torque (kgm)
CD, CDS	00, 01	5/16 in. -18NC	17	M8	2
CD, CDS	10, 20	1/2 in. -13NC	76	M12	8
CD, CDS, CDX	30, 35, 40, 50 [†]	5/8 in. -11NC	137	M16	19
CD, CDX	50 ^{††} , 60	3/4 in. -10NC	288	M20	38
CD, CDX	70	7/8 in. -9NC	430	M22	56
CD	80	1 in. -8NC	644	M24	71
CD	90, 95	1 in. -8NC	644	M25	89
CD	97	1-1/2 in. -8NC	1950	M36	190
CD	100, 105, 110	1-3/4 in. -8NC	N/A	M42	**290

*See "Part Numbers" section for specific model numbers.

**Plated bolt with antiseize.

[†]Frame size for CD model only.

^{††}Frame size for CDX model only.

*Torque specifications are for reference only. Contact fastener manufacturer for specific information regarding bolt torque.

⚠ WARNING

If vibrator is mounted more than 6 in. (152 mm) above ground, install cable securing vibrator to structure. Without cable, vibrator could fall and cause injury.

8. Secure vibrator to structure by installing MARTIN® BBAC Cable Kit, P/N 32271, or equivalent as follows (cable is included with Mount Kit for Electric Vibrators, P/N 32401-XX):
 - a. Weld D-ring (A, Figure 4) onto structure wall (B) above vibrator.

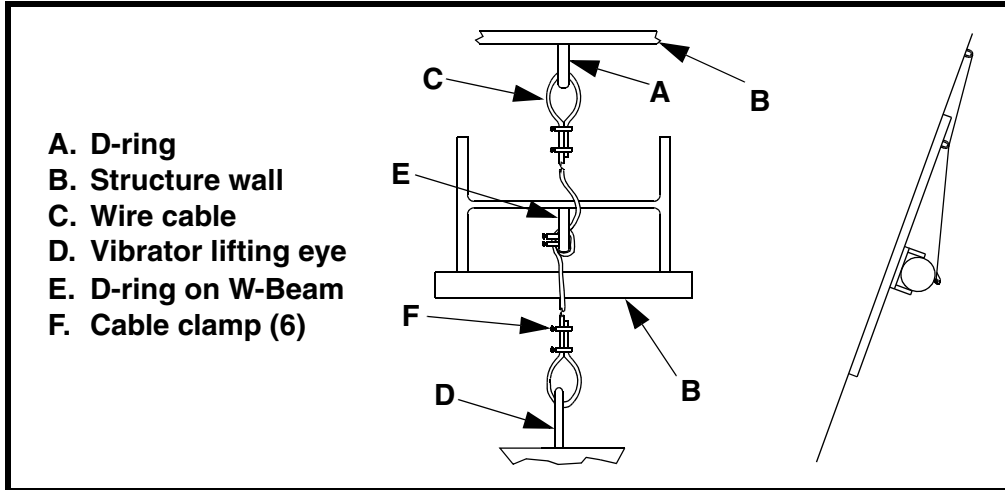


Figure 4. Installing Restraining Cable

- b. Loop 1/4-in. (6 mm) wire cable (C) through vibrator lifting eye (D) and D-ring on structure wall.
- c. If using a MARTIN® W-Beam Mount, also loop cable through D-ring on W-Beam (E) as shown. Take up slack so cable is taut.
- d. Apply thread-sealing compound to nuts on cable clamps (F). Install six cable clamps (two on each end and two on loop around D-ring on W-beam) to secure cable to vibrator eye and D-rings. Torque nuts on cable clamps according to drawing B-32401-XX supplied with Mount Kit for Electric Vibrators.
- e. Trim loose ends of wire cable.

Nut and cap screw torque

After removing any nuts or cap screws from vibrator assembly, re-install to the torque values specified in Table II.

Table II. Vibrator Nut and Cap Screw Torque Requirements

Cap Screws	ft/lb (kgm)	Shaft Nuts	ft/lb (kgm)	Terminal Block Nuts	ft/lb (kgm)
M6	7 (1)	M13x1	22 (3)	M4	0.87 (0.12)
M8	16.5 (2.3)	M15x1	36 (5)	M5	1.45 (0.20)
M10	35 (4.8)	M20x1	72 (10)	M6	2.17 (0.30)
M12	58 (8)	M25x1.5	123 (17)	M8	4.70 (0.65)
M14	94 (13)	M30x1.5	246 (34)	M10	9.80 (1.35)
M16	137 (19)	M45x1.5	360 (50)		
M18	195 (27)				
M20	275 (38)				



Connecting power to vibrator

Wire vibrator in accordance with National Electrical Code Article 430. Have wiring installed by a qualified electrician only.

1. Find wiring diagram number for your vibrator on vibrator nameplate, or see Table III.

Table III. Vibrators and Wiring Diagrams

Frame Size*	Wiring Diagrams
00 through 01 , single-phase, 3600 rpm	Diagram 1A
10 through 30 , single-phase, 3600 rpm	Diagram 1E
00 through 70 , three-phase, 1200, 1800, and 3600 rpm; CD9-570; and 575-volt 900 rpm	Diagram 2A
40 through 70 , three-phase, 900 rpm except 575V	Diagram 2C
80 through 110 , three-phase, 1200, 1800, and 3600 rpm; and 575V 900 rpm	Diagram 5A
80 through 110 , three-phase, 900 rpm except 575V	Diagram 5B
CDX models	CDX 6- or 9-Lead
*See "Part Numbers" section for specific model numbers.	

⚠ CAUTION

Before running cord to vibrator, make sure cord voltage rating equals or exceeds the voltage at which you will be operating the vibrator. It must have a minimum temperature rating of 221°F (105°C) and a minimum diameter as shown in Table IV. If wire is not proper diameter, cord grip will not tighten properly and vibrator could be damaged by moisture or material getting inside wiring compartment. If cord is damaged, it could short power supply or short to ground causing damage to vibrator.

2. See Table IV. Make sure wire diameter is within the range for your vibrator’s frame size and cord grip.

Table IV. Wire Diameter Range for Cord Grips

Vibrator Frame Size	Cord Grip Part Number	Wire Diameter Range mm (in.)
00 to 01	511546	9 to 11.5 (0.35 to 0.45)
10 to 60	511530	12.5 to 15 (0.49 to 0.59)
70 to 95	511513	16 to 19 (0.63 to 0.75)
97 to 110	504012	19 to 21 (0.75 to 0.83)

IMPORTANT

When wiring vibrator, leave slack in electrical cable so that cable does not become taut during vibration cycle and cause stress on wire connections. On applications where moisture is present, leave enough slack in power cable to prevent moisture from running down cable into vibrator.

3. Wire vibrator according to appropriate wiring diagram inside terminal box, or see Figure 5. **Use closed loop wire connectors only.**

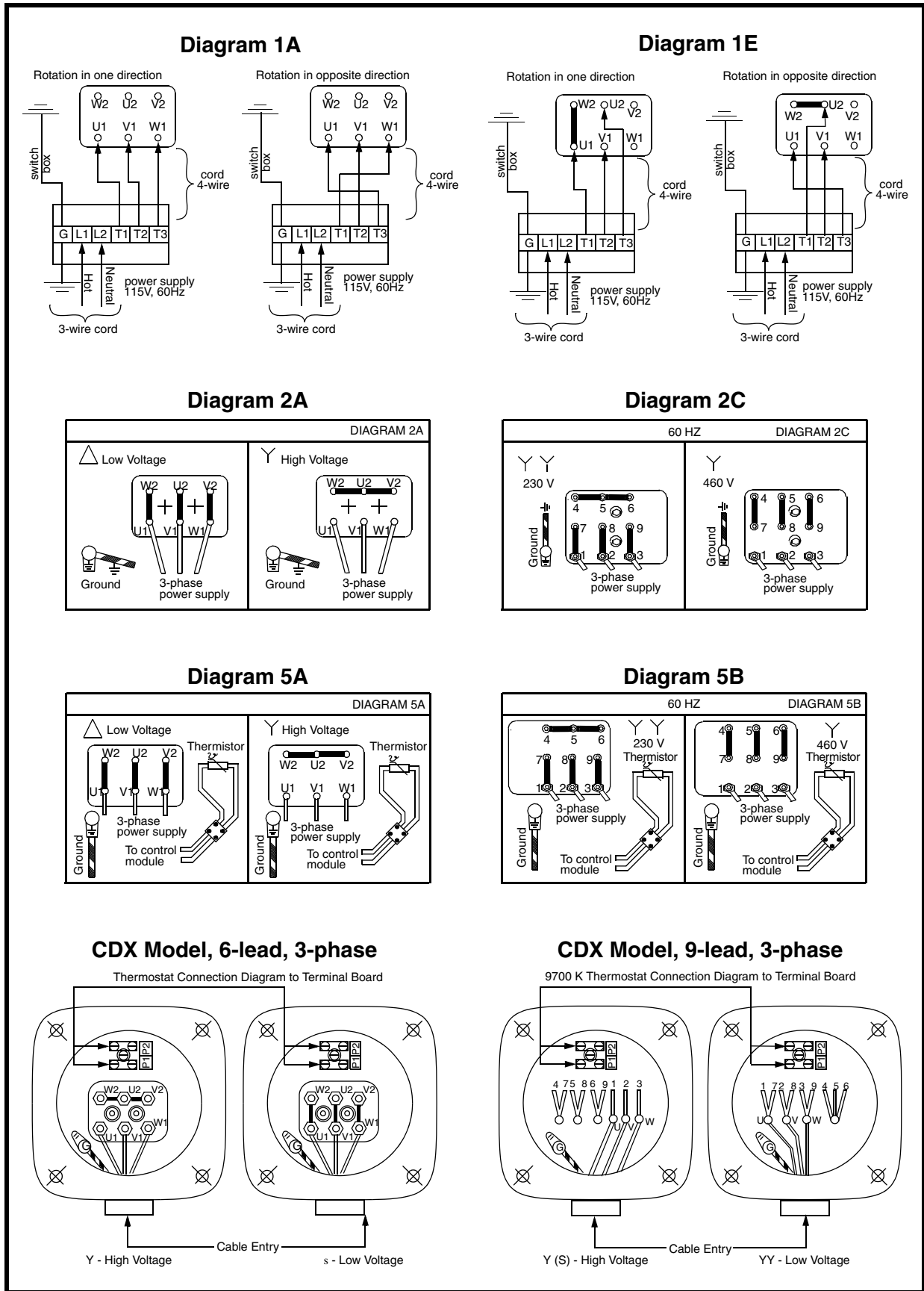


Figure 5. Wiring Diagrams

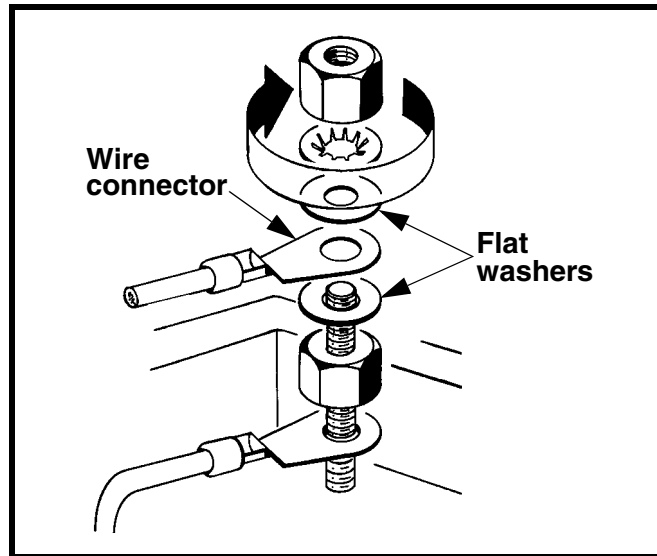


Figure 6. Installing Wire Connector

4. Install wire connector between the two flat washers. See Figure 6.

⚠ WARNING

Vibrator must be grounded using the power supply ground wire (or other if specified in the NEC). Failure to properly ground vibrator can cause severe injury or death.

5. Connect power supply ground wire (or other if specified in the NEC) to ground vibrator terminal. Use closed loop wire connector only.
6. Reassemble wiring cover, o-ring, and rubber compression block(s), taking care not to pinch the o-ring. Tighten cord grip around supply line(s).

⚠ WARNING

Thermistors and thermostats are intended for motor winding protection or to limit external motor surface temperatures. They do not replace overload protection. Always install overload protection. Failure to do so could result in severe injury or death.

⚠ CAUTION

If installing low-voltage line to vibrator's thermistor circuit (frame size 70 and larger), make sure you install cord grip, P/N 511546, on opening in wiring compartment. Without a cord grip, moisture or material could enter terminal block and damage vibrator. If cord is damaged, it could short power supply or short to ground causing damage to vibrator.

1. If applicable wiring codes specify that low and high voltage circuits are to be separated from each other, remove plug on back of wiring compartment and install cord grip, P/N 511546.
2. Run low-voltage line to thermistor circuit and tighten cord grip. Ensure wire is of proper voltage rating and size (see Table IV).

Thermistors and thermostats

- For diagrams 5A and 5B, wire thermistor to control module in accordance with Figure 7. (Martin Engineering recommends using the control module shown in Figure 7, but other suitable control modules may be used.)

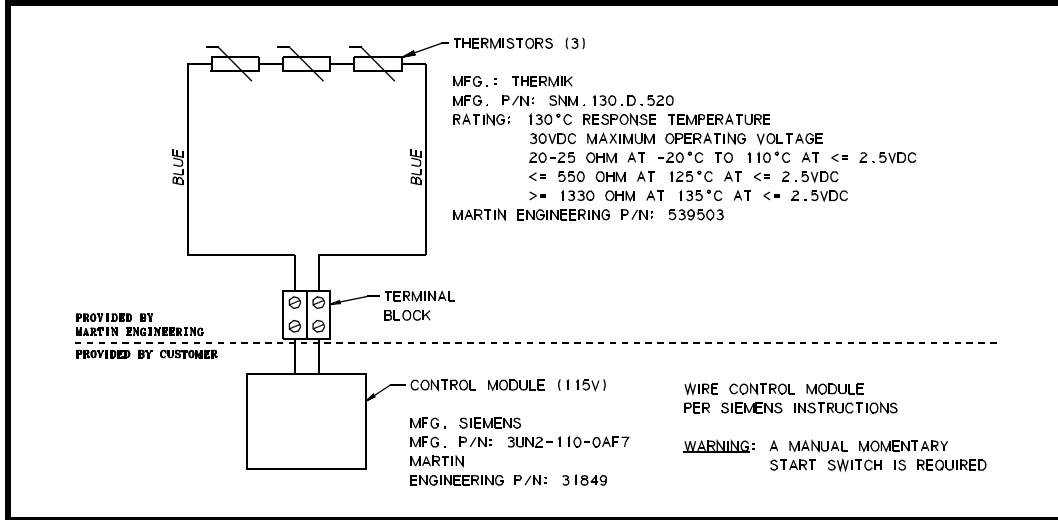


Figure 7. Thermistor Wiring Diagram

NOTE

The thermostat terminals on CDX units are identified as P1 and P2. The thermostat circuit is rated 600 Vac maximum and 720 VA. A manual momentary start switch must be used.

- For CDX vibrators, wire thermostats to control circuit. See Figure 8.

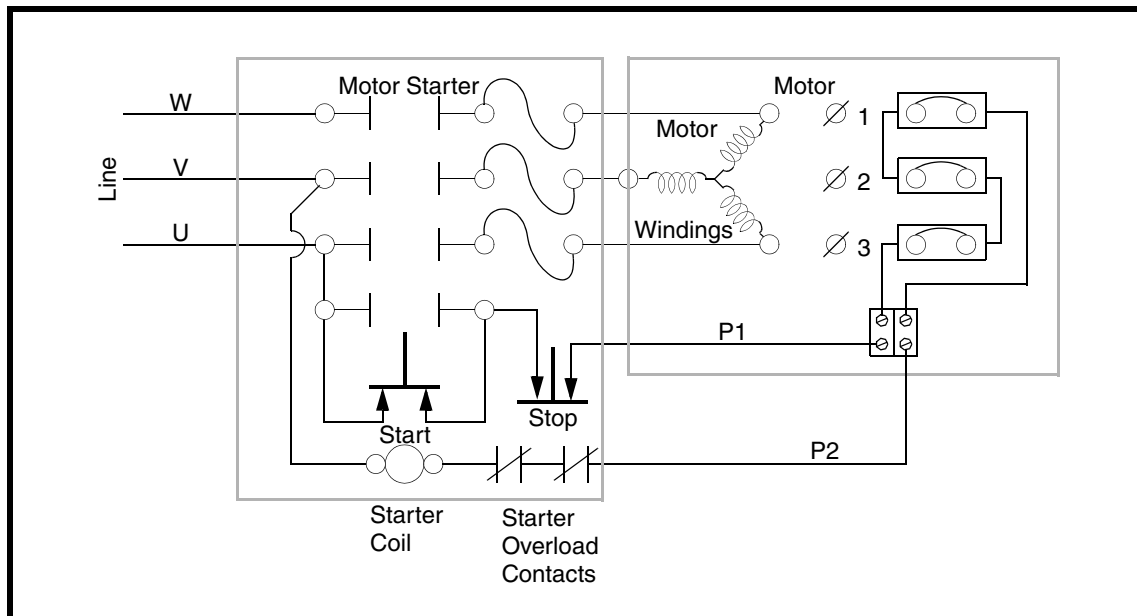


Figure 8. Manual Reset Connections

***Installing
overload, short-
circuit, and
ground-fault
protection***

⚠ CAUTION

Install overload protection for vibrator. If vibrator is not protected from overload, vibrator can be destroyed and warranty will be void. Determine size of overload protection according to NEC Article 430, and have it installed by a qualified electrician only.

1. Determine overload, short-circuit, and ground-fault protection according to NEC Article 430.

NOTE

All single-phase vibrators are supplied with overload protection.

2. Have qualified electrician install overload, short-circuit, and ground-fault protection.
3. If overload trips during operation, fix problem before resetting.

⚠ CAUTION

For equipment using two vibrators, the two motors must be electrically interlocked. If using a single contactor, each motor must be provided with separate overload protection. The motor control circuit must be arranged so that if one motor becomes de-energized, the other motor will automatically and immediately become de-energized. Failure to properly interlock motors could result in severe damage to equipment if one vibrator fails.

4. If using two vibrators, interlock the two vibrator motors and install separate overload protection for each.

After Installing Vibrator

Checking shaft rotation

IMPORTANT

Read entire section before beginning work.

1. Remove cap screws and washers, and remove vibrator end cap.

CAUTION

DO NOT run vibrator with eccentric weights removed. Running vibrator with eccentric weights removed will damage bearings.

WARNING

When checking shaft rotation with end cap removed, keep hands away from swinging weights. Weights can crush fingers.

2. Start vibrator for one second, then stop.
3. Observe direction of motor rotation. If motor is not rotating in correct direction, lock out/tag out energy source and reverse rotation. To reverse rotation of three-phase vibrator, reverse any two of the three power supply wires. To reverse rotation of single-phase vibrator, see Figure 5, diagram 1A or 1E.
4. Replace end cap, taking care not to pinch o-ring.

Adjusting eccentric weights

NOTE

All MOTOMAGNETIC® Electric Vibrators have one set of eccentric weights on each end of shaft. Eccentric weights are set at 50% at factory (model CD18-3850 is set at 70%, and models CD36-11000 and CD36-20000 are set at 100%). See Figure 10.

The percentage increments on the weight adjustment disks are percentages of the total force pounds listed on the nameplate. For example, if the nameplate shows 8340 lb, setting the weights to 50% would produce 4170 pounds of force.

IMPORTANT

For the most efficient operation, vibrator eccentric weights should be adjusted to the lowest force setting required to move the material. This will increase vibrator life and reduce energy costs.

⚠ WARNING

Before adjusting eccentric weights, turn off and lock out/tag out energy source to vibrator.

1. Turn off and lock out/tag out energy source to vibrator according to ANSI standards (see “References”).
2. Remove end cap.
3. Loosen nut or screw (A, Figure 9) so adjustable weight (B) will rotate around shaft (C).

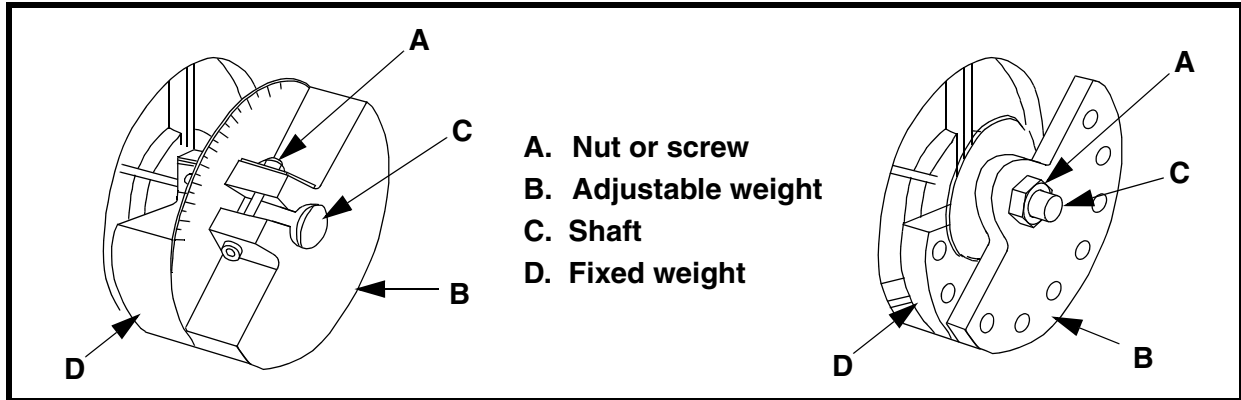


Figure 9. Adjusting Eccentric Weights

NOTE

The fixed weight is attached to the shaft. The adjustable weight rotates around the shaft. The weight adjustment disk will be attached to either the fixed or the adjustable weight.

4. See Figure 10. Rotate adjustable eccentric weight to proper setting. To produce more force, move weight to higher setting (i.e., higher number). When set, tighten cap screw or nut according to Table II.

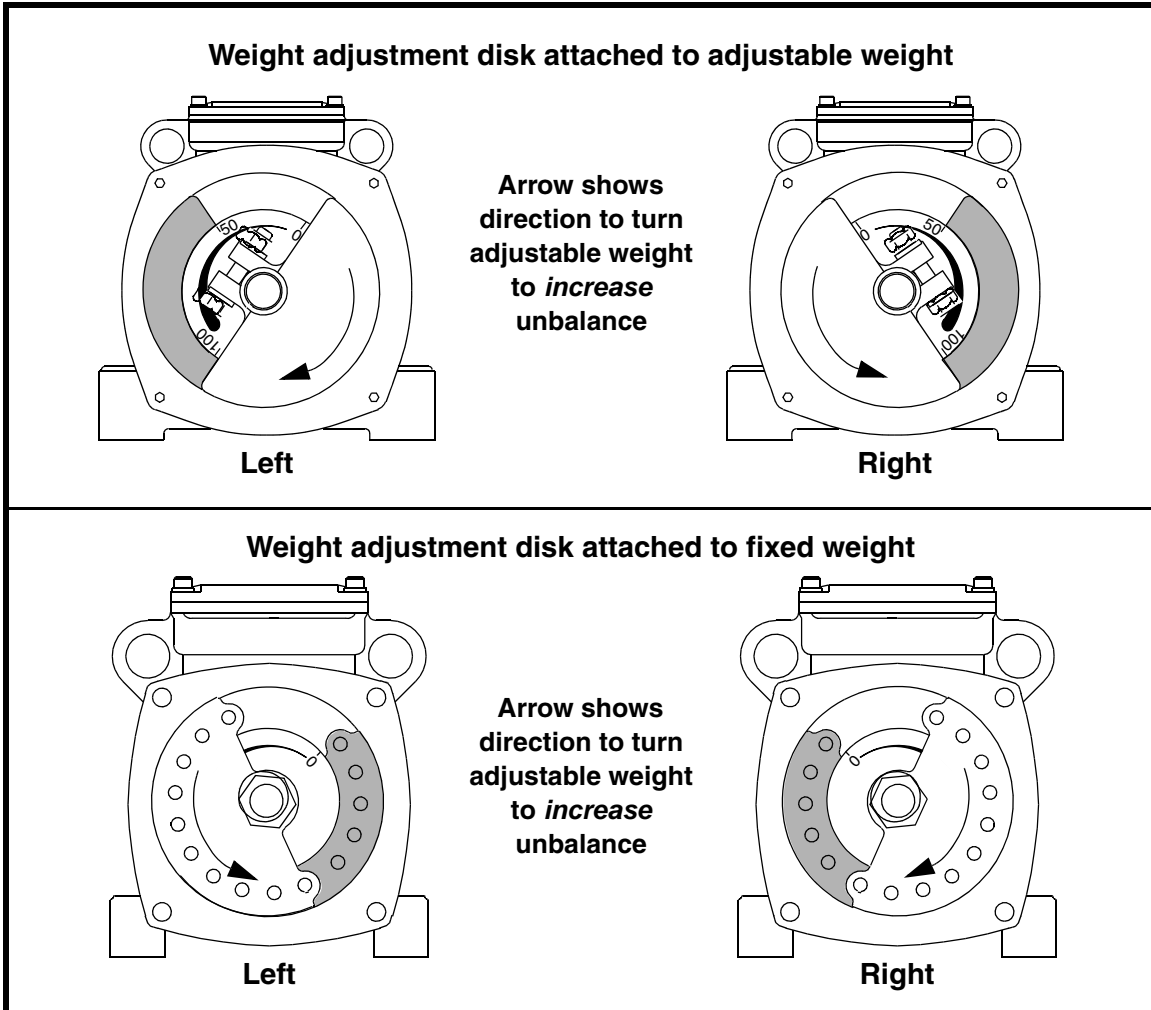


Figure 10. Adjustable Weights Set at 50% (fixed weight shaded)

5. Check o-rings for damage. Replace if damaged.

⚠ CAUTION

Do not operate vibrator with end caps removed. Dust accumulating around vibrator shaft could cause unit to fail.

6. Replace end caps.

⚠ CAUTION

Adjust both sets of eccentric weights to same setting number (mirror images), or force output will be uneven and damage vibrator.

7. Repeat steps 2 through 5 for second set of weights. Set both sets of weights to same setting number so they are mirror images, as shown in Figure 11.

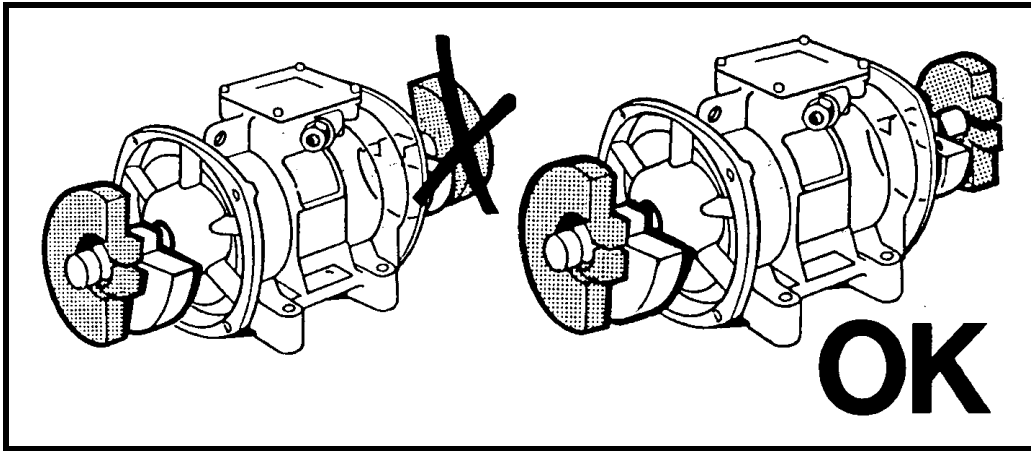


Figure 11. Setting Sets of Eccentric Weights to Mirror Images

***Initial start up/
checking line
current***

1. Close power supply disconnect switch and allow motor(s) to operate for 10 to 20 minutes.
2. If vibrator makes unusual or excessive noise, make sure mounting bolts are tight and mount welds are not damaged.

▲ WARNING

Vibrator may produce loud noise during operation when mounted on structure. See OSHA 1910.95 for guidelines. If required, wear ear protection to avoid impairment or loss of hearing.

3. Check decibel level of vibrator noise during operation. See OSHA 1910.95 to determine whether noise exceeds safe limits. If required, wear ear protection to avoid impairment or loss of hearing.

▲ CAUTION

Do not allow motor current to exceed nameplate rating. If vibrator is operated continuously with line current above nameplate rating, vibrator can be damaged.

4. After a few hours of operation, check each line current. If reading is higher than nameplate rating, reduce eccentric weight setting, stiffen vibrator mount, or move vibrator to more rigid location. After making adjustments, check line current again to ensure line current does not exceed nameplate rating.
5. After first 8 hours of use and periodically thereafter, check mounting bolts and tighten if necessary.

*Variable
frequency inverter*

▲ CAUTION

All motors can be supplied with a pulse-width modulated variable frequency inverter. NEVER operate the motor at a frequency higher than that specified on the nameplate. Damage to vibrator can result.

Do not operate vibrator motor at frequency higher than specified on nameplate. Throughout frequency range, verify that each line current does not exceed current rating on nameplate. If reading is higher than nameplate, consult inverter manual. If necessary, adjust inverter, reduce eccentric weight setting, stiffen vibrator mount location, or move vibrator to more rigid location. After making adjustment, check line current again to ensure line current does not exceed nameplate rating.

IMPORTANT

Read entire section before beginning work. Allow vibrator to cool to ambient temperature before working on it.

NOTE

All vibrators are lubricated at the factory.

⚠ CAUTION

Use only prescribed grease in vibrator. If a different grease is used, vibrator can be damaged and warranty will be void.

Use only prescribed amount of grease to lubricate vibrator. Too much grease will cause bearings to overheat and result in premature bearing failure.

Lubricating vibrator

1. See Table V for lubrication schedule and amount of grease required for your vibrator. Unless specified otherwise, lubricate the vibrator after each 2000 hours of operation.

⚠ CAUTION

For 3600 rpm machines operating continuously or for long periods of time, reduce lubrication time and amount as shown in step 2. Failure to do so could run bearings dry and destroy unit.

2. If motor housing temperatures exceed 194° F (90° C), cut lubrication time and amount in half for every 18° F (10° C) increment that meets or exceeds 194° F (90° C). For example, if CD9-1410 motor housing temperature is 204° F (96° C), use 4.5 grams of grease per bearing every 1000 hours. (Maximum bearing temperature allowed is 248° F [120° C].) For motor housing temperatures above 212° F (100° C), consult Martin Engineering or a representative.

NOTE

Kluber grease may be purchased from Martin Engineering by calling 800-544-2947 or from Kluber Lubrication by calling 603-434-7704.

3. **For CD9, CD12, and CD18 model vibrators**, lubricate frame size 35 and larger vibrators with Kluber Isoflex NBU 8EP grease only. **For CD36 model vibrators**, lubricate with Kluber Isoflex NBU15 grease only. Lubricate as follows:
 - a. Clean vibrator case around grease fitting with clean shop towel.
 - b. Insert grease gun into grease fitting. Add grease.

Table V. Lubrication Schedule For Each Bearing*

00 Frame		01 Frame		10 Frame		20 Frame		30 Frame		33 Frame	
Model	Lube g	Model	Lube g	Model	Lube g	Model	Lube g	Model	Lube g	Model	Lube g
CD18-80	Life	CD18-170	Life	CD12-90	Life	CD9-330	Life	CD9-570	Life	CD36-2900	9
CD36-210	Life	CD36-390	Life	CD12-220	Life	CD12-575	Life	CD12-750	Life		
CDS36-210	Life	CDS18-170	Life	CD18-470	Life	CD18-910	Life	CD18-1670	Life		
		CDS36-390	Life	CD36-650	Life	CD18-1300	Life	CD36-1660	Life		
				CDS18-470	Life	CD36-1040	Life	CDS36-1660	Life		
				CDS36-650	Life	CDS18-910	Life	CDX9-700	Life		
						CDS36-1040	Life	CDX12-1200	Life		
								CDX18-2100	Life		
								CDX36-2000	Life		

35 Frame		40 Frame		50 Frame		60 Frame		70 Frame		80 Frame	
Model	Lube g	Model	Lube g	Model	Lube g	Model	Lube g	Model	Lube g	Model	Lube g
CD9-910	7	CD9-1440	9	CD9-2020	16	CD9-2920	14	CD9-4640	18	CD9-6830	30
CD12-1630	7	CD12-1990	9	CD12-2530	16	CD12-3410	14	CD12-6050	18	CD12-8450	30
CD18-2150	7	CD18-2160	9	CD18-3870	16	CD18-5380	19	CD18-8300	26	CD18-10900	40
		CD18-3190	9	CD36-3280	9	CDX9-2880	14	CD36-6860	26		
		CDX9-1600	12	CD36-4100	16	CDX12-3400	14	CD36-8240	26		
		CDX12-2300	12	CD36-4910	16	CDX18-5950	19	CD36-11000	30†		
		CDX18-3500	12	CDX9-2300	16	CDX36-5070	19	CDX9-4610	18		
		CDX36-3500	12	CDX12-3000	16			CDX12-5740	18		
				CDX18-4600	16			CDX18-8340	26		
				CDX18-5140	16			CDX36-7060	26		
		CDX36-4400	16								

90 Frame		95 Frame		97 Frame**		100 Frame**		105 Frame**		110 Frame**	
Model	Lube g	Model	Lube g	Model	Lube g	Model	Lube g	Model	Lube g	Model	Lube g
CD9-9310	50	CD9-14400	80	CD9-21900	90	CD9-24800	130	CD9-31000	150	CD9-49000	220
CD9-11700	60	CD9-15500	80	CD12-14200	90	CD12-26500	130	CD9-38000	180	CD12-44000	220
CD12-11700	50	CD12-17600	80	CD12-20100	90	CD18-25300	130	CD12-31000	150		
CD12-14400	60	CD12-19100	80	CD18-19700	90			CD12-37000	180		
CD18-14500	60**	CD18-17600	80**								
		CD36-20000	30††								

*Unless otherwise noted, lubricate every 2000 hours.

**Lubricate every 1000 hours.

†Lubricate every 750 hours.

††Lubricate every 100 hours.

4. **For explosion-proof CDX model vibrators**, lubricate frame size 40 and larger with Kluber Isoflex Topas NB52 grease only, as follows:
 - a. For frame size 40 and 50 CDX models, remove each weight cover, all eccentric weights, and each pipe plug in flange. Insert grease fitting. Add grease. Remove grease fitting, and replace pipe plugs, eccentric weights, and weight covers, taking care not to pinch o-rings.
 - b. For frame size 60 and 70 CDX models, remove pipe plug in each flange. Insert grease fitting. Add grease. Remove grease fitting, replace pipe plugs.

Repairing motor and replacing bearings

⚠ CAUTION

Do not attempt to repair vibrator motor or replace bearings yourself. If you attempt to do so during the warranty period, the warranty may be void.

If vibrator motor needs repair or if bearings need to be replaced, call Martin Engineering at **800-544-2947** for instructions.

Inspecting vibrator

At least quarterly, inspect vibrator, cable and connections as follows:

⚠ WARNING

Before inspecting vibrator, turn off and lock out/tag out energy source to vibrator.

1. Turn off and lock out/tag out energy source to vibrator according to ANSI standards (see “References”).
2. Inspect end caps for cracks and check cap screws for tightness.
3. Inspect cable for damage including cuts and abrasions. Replace if damaged.
4. Inspect ground connection. Make sure ground connection to motor enclosure does not exceed 0.1 ohm. Ensure screw on ground terminal is tightened to proper torque (see Table II).
5. Make sure all nuts on connections on terminal block are tightened to proper torque. Do not overtighten (see Table II).

Part Numbers

This section provides part numbers for the S90 Series MOTOMAGNETIC® Electric Vibrators and related equipment. Please reference part numbers when ordering parts.

Table VI. MOTOMAGNETIC® Electric Vibrator Model Numbers and Part Numbers

00 Frame		01 Frame		10 Frame		20 Frame		30 Frame		33 Frame	
Model	Part No.	Model	Part No.	Model	Part No.	Model	Part No.	Model	Part No.	Model	Part No.
CD18-80	601144	CD18-170	601145	CD12-90	602169	CD9-330	602883	CD9-570	602816	CD36-2900	600243
CD36-210	600177	CD36-390	600178	CD12-220	602170	CD12-575	602098	CD12-750	602082		
CDS36-210	600177	CDS18-170	601145	CD18-470	601146	CD18-910	601147	CD18-1670	601148		
		CDS36-390	600178	CD36-650	600179	CD18-1300	601198	CD36-1660	600181		
				CDS36-470	601146	CD36-1040	600180	CDS36-1660	600181		
				CDS36-650	600179	CDS18-910	601147	CDX9-700	602817		
						CDS36-1040	600180	CDX12-1200	602083		
								CDX18-2100	601149		
								CDX36-2000	600182		

35 Frame		40 Frame		50 Frame		60 Frame		70 Frame	
Model	Part No.	Model	Part No.	Model	Part No.	Model	Part No.	Model	Part No.
CD9-910	602865	CD9-1440	602888	CD9-2020	602889	CD9-2920	602890	CD9-4640	602891
CD12-1630	602150	CD12-1990	602161	CD12-2530	602162	CD12-3410	602165	CD12-6050	602167
CD18-2150	601201	CD18-2160	601227	CD18-3870	601219	CD18-5380	601220	CD18-8300	601221
		CD18-3190	601217	CD36-3280	600254	CDX9-2880	602853	CD36-6860	600199
		CDX9-1600	602818	CD36-4100	600256	CDX12-3400	602122	CD36-8240	600219
		CDX12-2300	602084	CD36-4910	600257	CDX18-5950	601187	CD36-11000*	600200*
		CDX18-3500	601150	CDX9-2300	602819	CDX36-5070	600215	CD36-11000*	600212*
		CDX36-3500	600183	CDX12-3000	602085			CDX9-4610	602854
				CDX18-4600	601151			CDX12-5740	602123
				CDX18-5140	601196			CDX18-8340	601188
				CDX36-4400	600184			CDX36-7060	600216

80 Frame		90 Frame		95 Frame		97 Frame	
Model	Part No.	Model	Part No.	Model	Part No.	Model	Part No.
CD9-6830	602884	CD9-9310	602862	CD9-14400	602827	CD9-21900	602870
CD12-8450	602154	CD9-11700	602826	CD9-15500	602828	CD12-14200	602136
CD18-10900	601211	CD12-11700	602138	CD12-17600	602092	CD12-20100	602137
		CD12-14400	602091	CD12-19100	602093	CD18-19700	601204
		CD18-14500	601165	CD18-17600	601166		
				CD36-20000	600201		

100 Frame		105 Frame		110 Frame	
Model	Part No.	Model	Part No.	Model	Part No.
CD9-24800	602863	CD9-31000	602871	CD9-49000	602873
CD12-26500	602134	CD9-38000	602872	CD12-44000	602144
CD18-25300	601205	CD12-31000	602142		
		CD12-37000	602143		

*Use Part Number 600200 for 50 Hz CD36-11000 and Part Number 600212 for 60 Hz CD36-11000.

Vibrator mounts

Cradle Lug Bracket: P/N 28732.

Locking Wedge Bracket for CD36-210, CD36-390, CD36-1040, CDS36-210, CDS36-390, and CDS36-1040: P/N 28309-01.

Locking Wedge Bracket for CD36-650, CD36-1660, CDS36-650, and CDS36-1660: P/N 28309-02.

ECF Bracket for CD36-210, CD36-390, CD36-1040, CDS36-210, CDS36-390, and CDS36-1040: P/N 29383-01.

ECF Bracket for CD36-650, CD36-1660, CDS36-650, and CDS36-1660: P/N 29383-02.

W-Beam Mount: P/N 29757-XX. XX indicates vibrator frame size (see chart below).

Mount Kit for Electric Vibrators: P/N 32401-XX. (Kit includes W-Beam Mount, mounting hardware, and BBAC Cable Kit.) XX indicates vibrator frame size (see chart below).

Frame Size	Part No.
00	32401-00
01	32401-01
10	32401-10
20	32401-20
30	32401-30
40	32401-40
50	32401-50

Miscellaneous

BBAC Cable Kit: P/N 32271. (Kit includes D-ring, cable, cable clamps, and clamp hardware.)

The following reducers and adapters can be used to adjust the size of the cord grip opening to ensure the grip seals tightly around the power supply cord.

Reducer, PG16M to PG13.5F: P/N 34526.

Reducer, PG21M to PG16F: P/N 34092.

Adapter, PG21M to 3/4 NPTF: P/N 35059.

Adapter, PG16M to 1/2 NPTF: P/N 35058.

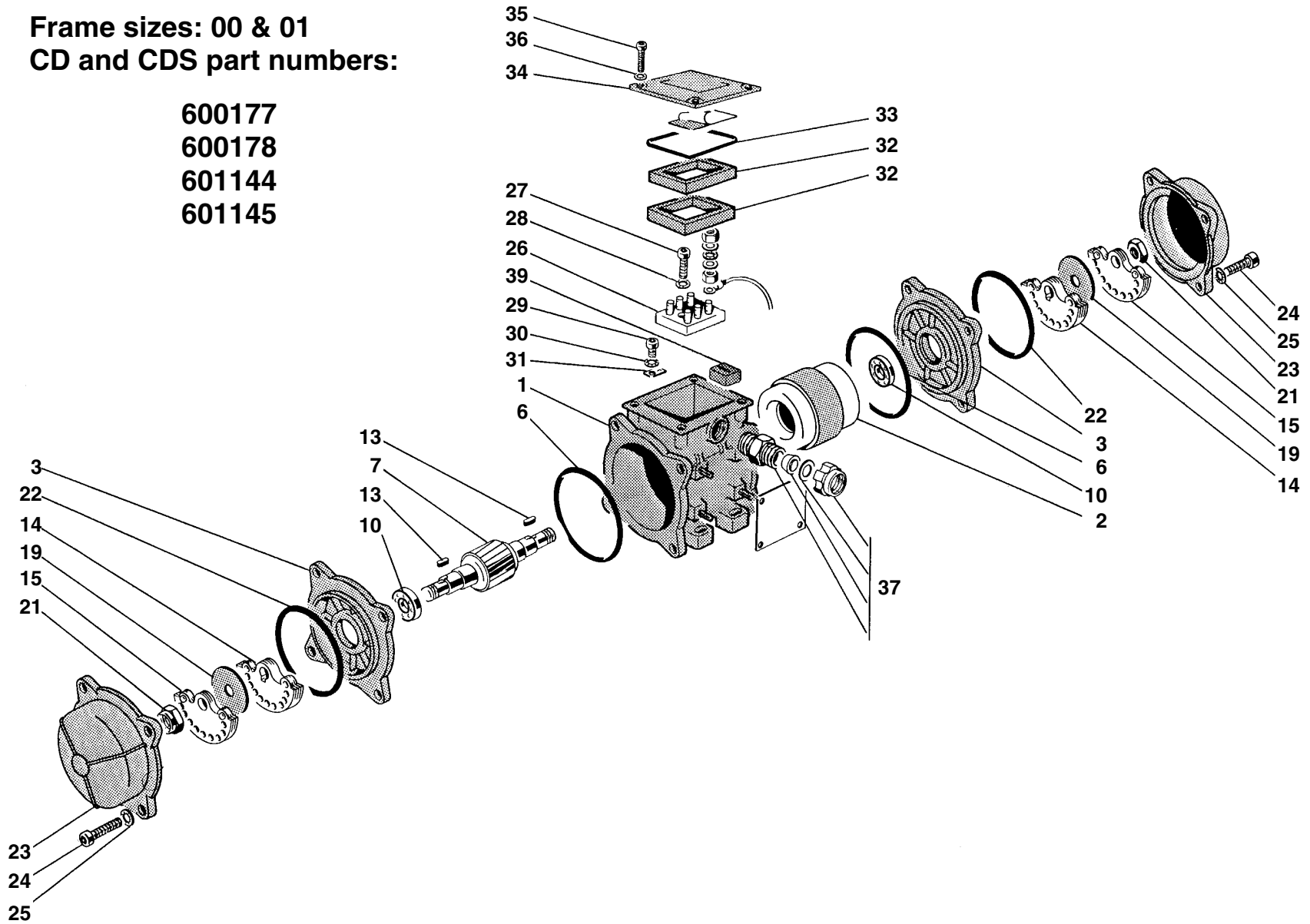
Adapter, PG13.5M to 1/2 NPTF: P/N 35057.

Adapter, PG13.5M to PG16F: P/N 511543.

Part Numbers

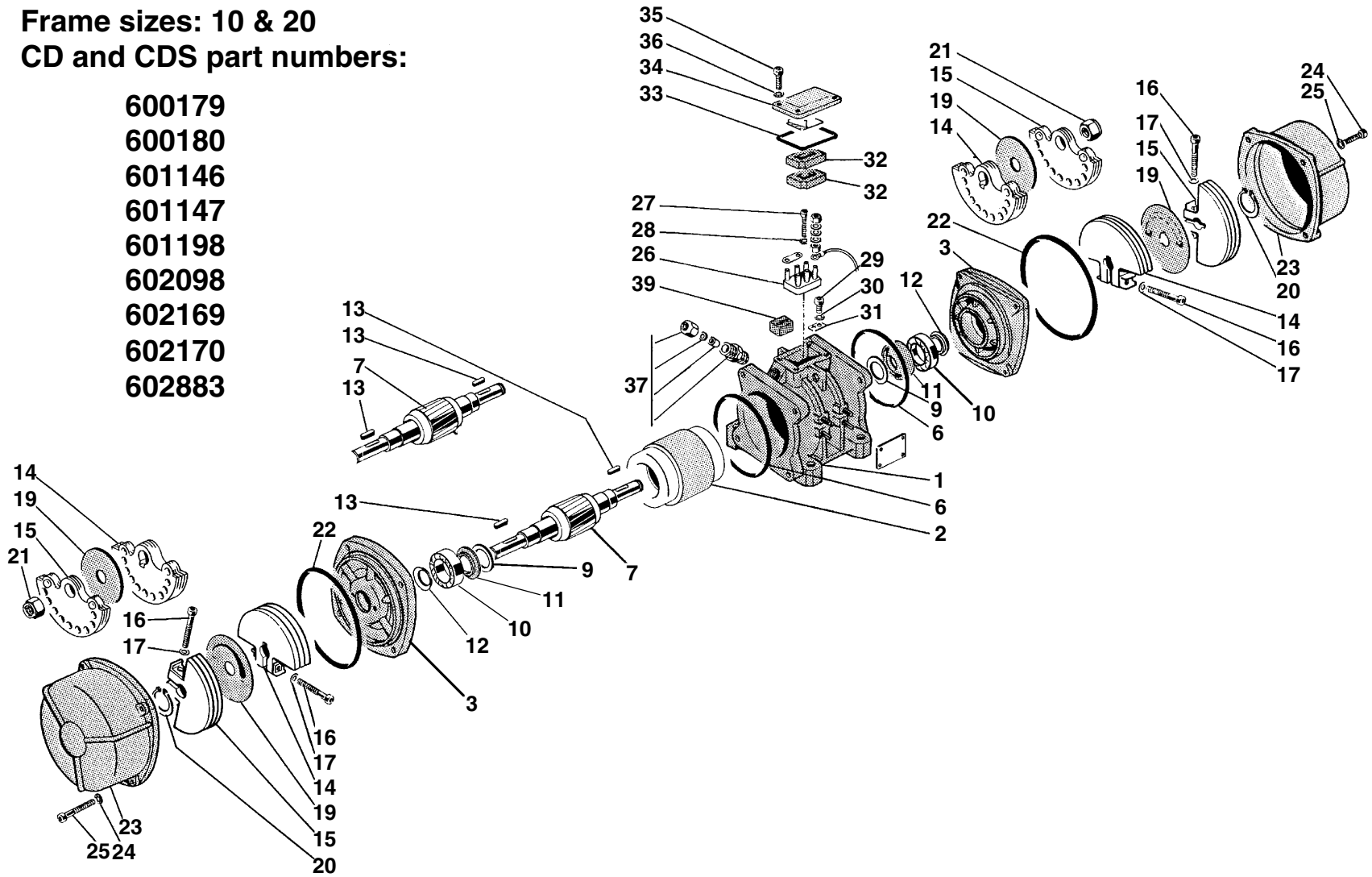
Frame sizes: 00 & 01
CD and CDS part numbers:

- 600177
- 600178
- 601144
- 601145



Frame sizes: 10 & 20
CD and CDS part numbers:

- 600179
- 600180
- 601146
- 601147
- 601198
- 602098
- 602169
- 602170
- 602883



Part Numbers

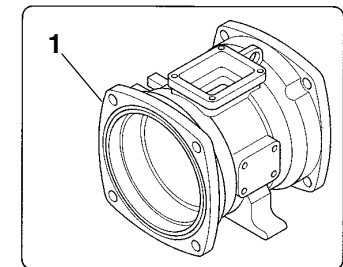
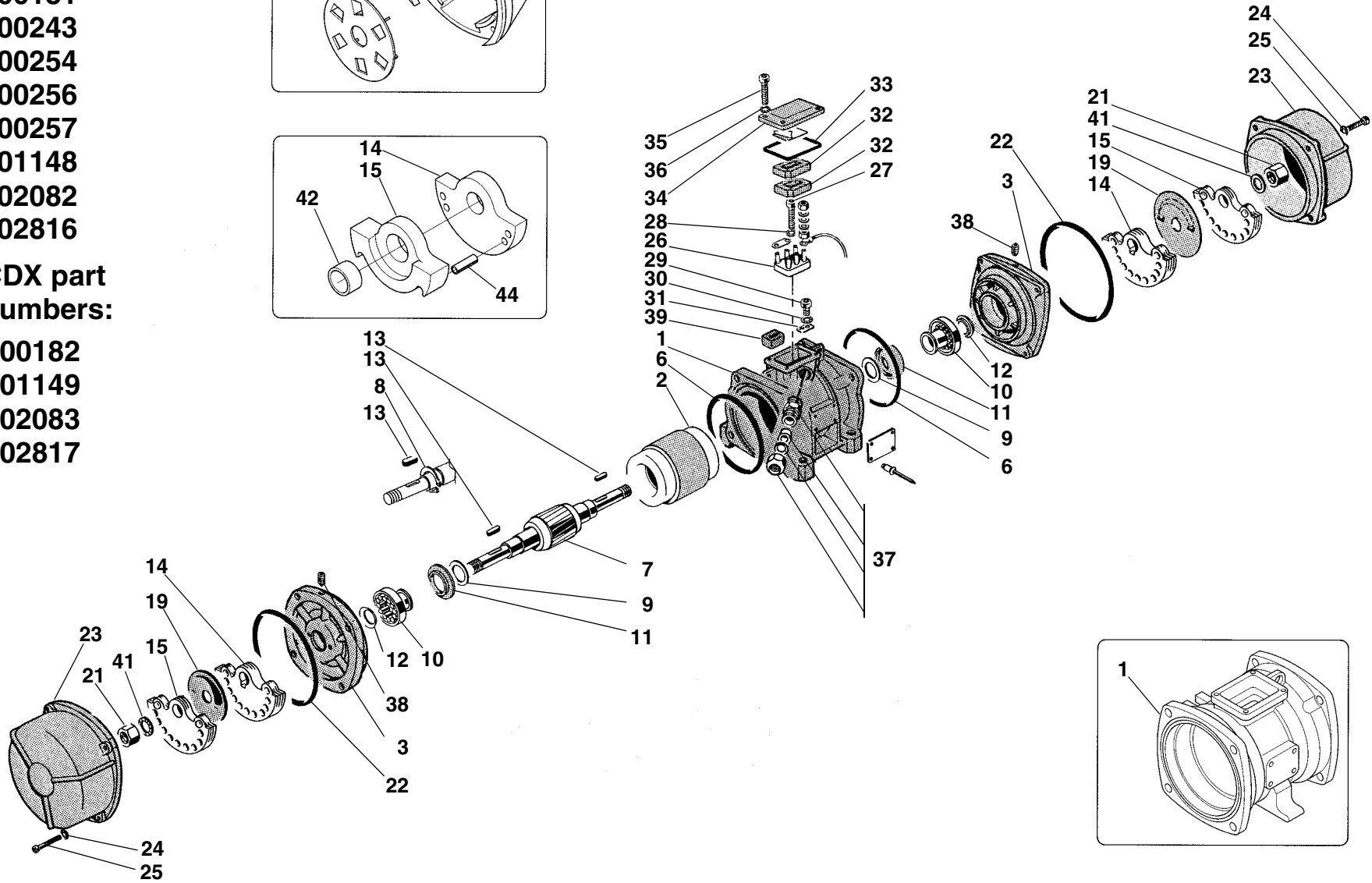
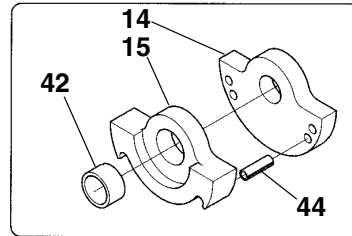
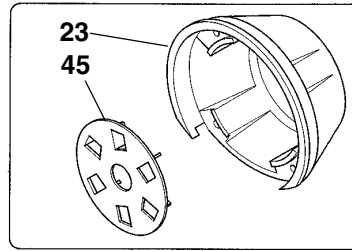
Frame sizes: 30, 33, & 50

CD and CDS
part numbers:

- 600181
- 600243
- 600254
- 600256
- 600257
- 601148
- 602082
- 602816

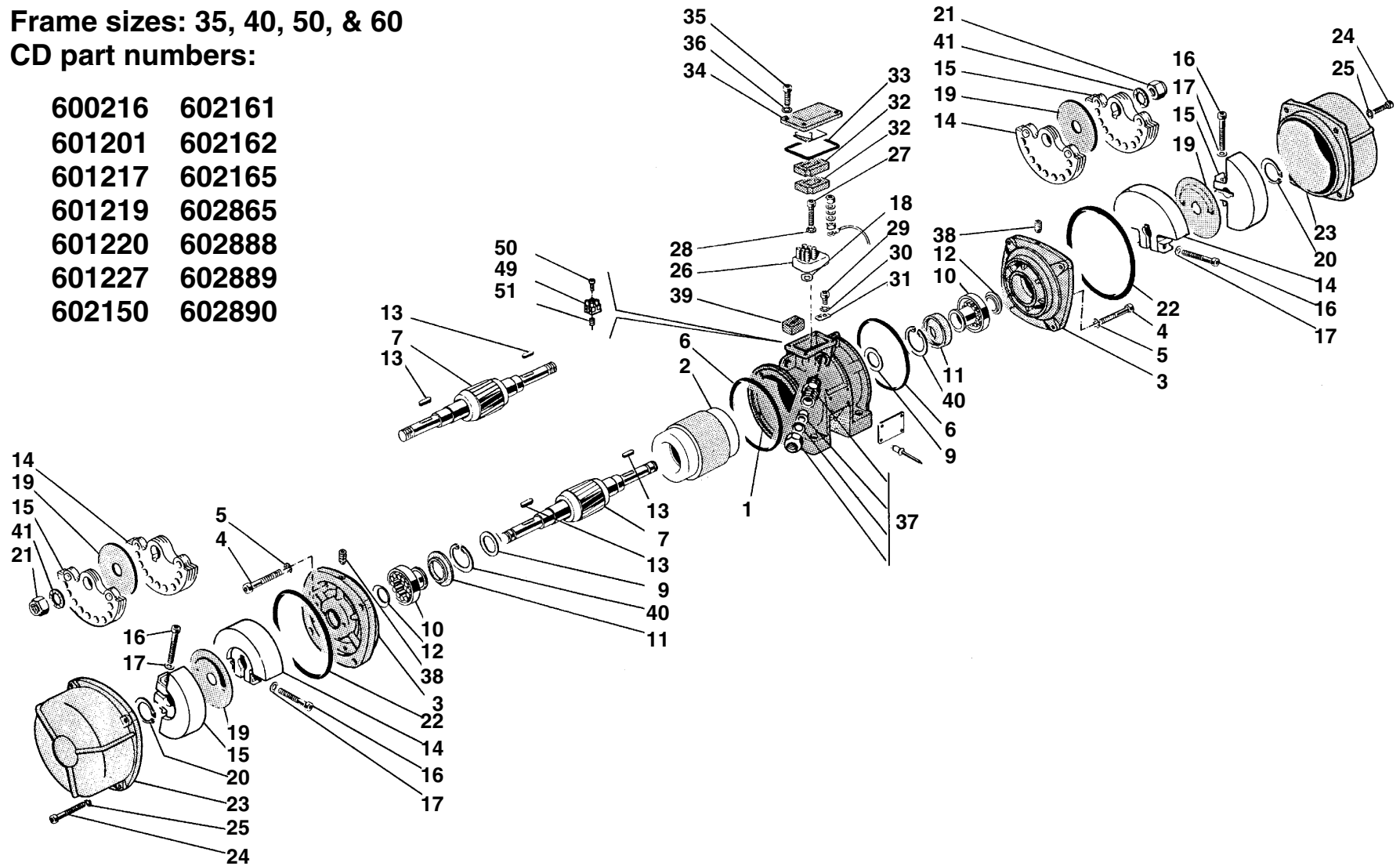
CDX part
numbers:

- 600182
- 601149
- 602083
- 602817



Frame sizes: 35, 40, 50, & 60
CD part numbers:

600216	602161
601201	602162
601217	602165
601219	602865
601220	602888
601227	602889
602150	602890

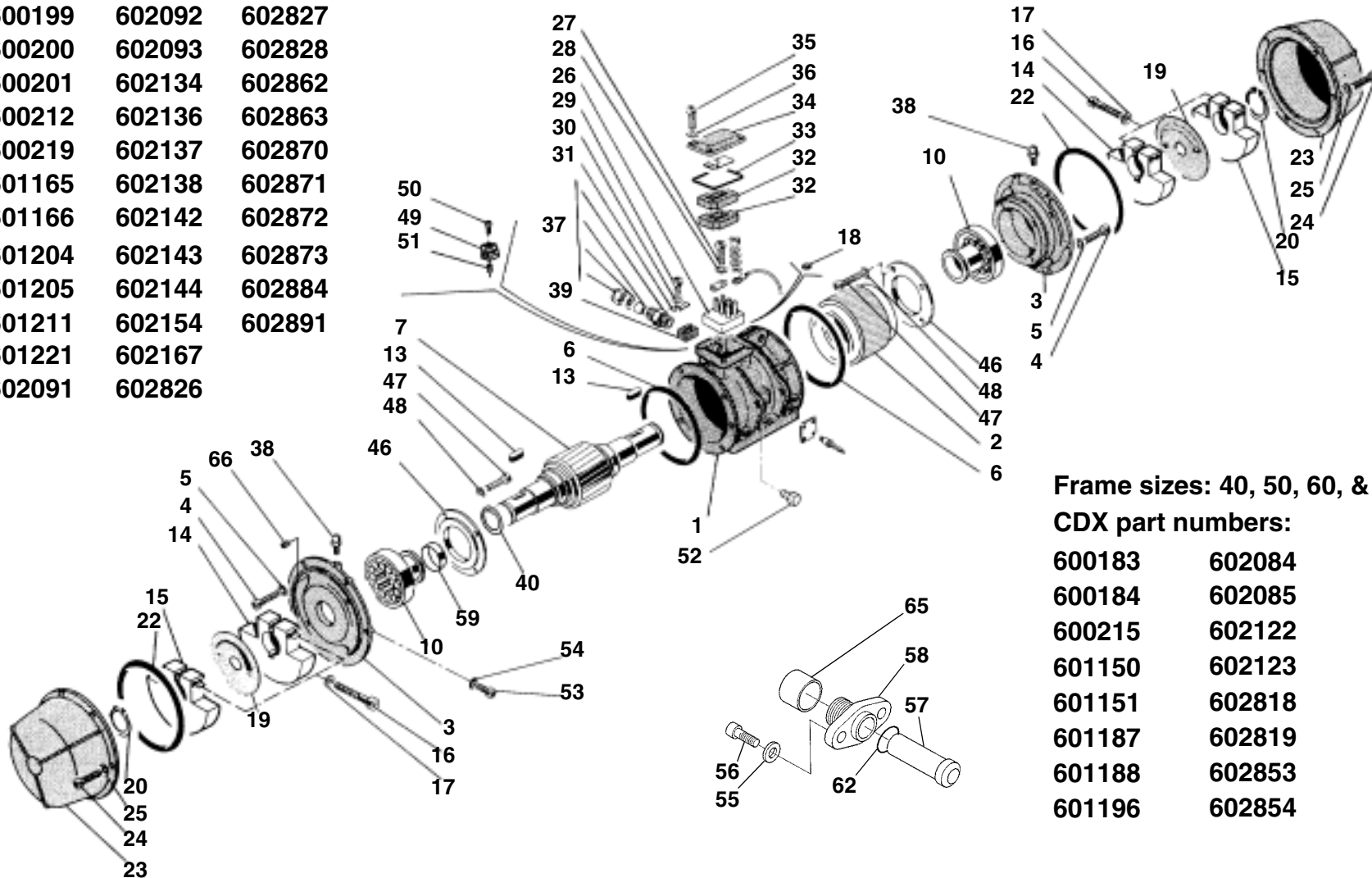


Part Numbers

Frame sizes: 70, 80, 90, 95, 97, 100, 105, & 110

CD part numbers:

600199	602092	602827
600200	602093	602828
600201	602134	602862
600212	602136	602863
600219	602137	602870
601165	602138	602871
601166	602142	602872
601204	602143	602873
601205	602144	602884
601211	602154	602891
601221	602167	
602091	602826	



Frame sizes: 40, 50, 60, & 70

CDX part numbers:

600183	602084
600184	602085
600215	602122
601150	602123
601151	602818
601187	602819
601188	602853
601196	602854

S90 Vibrator (CD, CDS)		Frame Size and Part Number																	
		00		01		10				20				30				33	
Description	Item	600177	601144	600178	601145	600179	601146	602169	602170	600180	601147	601198	602098	602883	600181	601148	602082	602816	600243
Case	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Flange	3	301140	301140	301141	301141	301142	301142	301142	301142	301143	301143	301143	301143	301143	301144	301144	301144	301144	301207
O-Ring	6	508630	508630	508615	508615	508555	508555	508555	508555	508566	508566	508566	508566	508566	508618	508618	508618	508618	
Shaft	7	400201	400201	400202	400202	400203	400204	400203	400204	400205	400206	400263	400239	400239	400257	400208	400209	400209	400310
Bushing, Shaft	9											513528			513528	513528	513528	513528	508052
Bearing	10	507002	507002	507029	507029	507026	507026	507026	507026	507025	507025	506533	507025	507025	506533	506533	506533	506533	506531
Seal, Grease	11											502078			502057	502057	502057	502057	
Seal, Shaft	12											502079			502065	502065	502065	502065	
Key	13	506000	506000	506000	506000	506000	506024	506000	506024	506024	506028	506028	506028	506028	506024	506002	506002	506002	506029
Weight, Fixed 50 Hz	14	517500	517500	517580	517580	517503	517627	517503	517627	517581	304286	304317	304286	304286	517505	304288	304288	304288	517603
Weight, Fixed 60 Hz	14	517500	517500	517580	517580	517503	517627	517503	517627	517581	304287	304286	304287	304286	517505	304289	304289	304288	517603
Weight, Adj 50 Hz	15	517500	517500	517580	517580	517503	517628	517503	517629	517581	305210	305242	305210	305210	517505	305212	305212	305212	517603
Weight, Adj 60 Hz	15	517500	517500	517580	517580	517503	517629	517503	517629	517581	305211	305210	305211	305211	517505	305213	305213	305212	517603
Screw	16						515613		515613		515509	515509	515509	515509		515514	515514	515514	
Washer, Schnorr	17						513004				513004	513004	513004	513004		513005	513005	513005	
Disc, Weight Adj 50 Hz	19	518119/20	518129/30	518121/2	518131/2	518123/4	518205/6	518123/4	518205/6	518125/6	518154/5	518154/5	518154/5	518154/5	518127/8	518156/7	518156/7	518156/7	518150/1
Disc, Weight Adj 60 Hz	19	518119/20	518129/30	518121/2	518131/2	518123/4	518205/6	518123/4	518205/6	518125/6	518154/5	518154/5	518154/5	518154/5	518127/8	518156/7	518156/7	518156/7	518150/1
Ring, Snap	20						500049		500049		500056	500056	500056	500056		500059	500059	500059	500078
Nut, Shaft	21	509011	509011	509011	509011	509009				509005					509005				509051
O-Ring	22	508615	508615	508616	508616	508562	508562	508562	508562	508617	508617	508617	508617	508617	508548	508548	508548	508548	508548
Cover, Weight 50 Hz	23	517042	517042	517043	517043	517044	517045	517044	517045	517046	517047	517069	517047	517047	517048	517049	517049	517049	517084
Cover, Weight 60 Hz	23	517042	517042	517043	517043	517044	517045	517044	517045	517046	517047	517069	517047	517047	517048	517049	517049	517049	517050
Screw	24	515554	515554	515554	515554	515509	515509	515509	515509	515510	515510	515510	515510	515510	515511	515511	515511	515511	515508
Washer, Schnorr	25	513003	513003	513003	513003	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004
Terminal Block	26	510503	510503	510503	510503	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501
Terminal Block U.S.	26	510503	510503	510503	510503	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501
Screw	27	M5x12	M5x12	M5x12	M5x12	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502
Screw, U.S.	27	M5x12	M5x12	M5x12	M5x12	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502
Washer, Schnorr	28	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002
Screw, Ground	29	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533
Washer, Schnorr	30	513002	513002	513002	513002	513002	513002			513002	513002	513002	513002	513002	513002	513002	513002	513002	513002
Tag, Ground	31	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025
Cushion, Foam	32	514014	514014	514014	514014	514015	514015	514015	514015	514015	514015	514015	514015	514015	514015	514015	514015	514015	514015
O-Ring	33	508555	508555	508555	508555	508612	508612	508612	508612	508612	508612	508612	508612	508612	508612	508612	508612	508612	508612
Cover, Wiring Box	34	502501	502501	502501	502501	502500	502500	502500	502500	502500	502500	502500	502500	502500	502500	502500	502500	502500	502500
Screw	35	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611
Washer, Schnorr	36	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003
Fitting, Cord	37	511546	511546	511546	511546	511530	511530	511530	511530	511530	511530	511530	511530	511530	511530	511530	511530	511530	511530
Fitting, Grease	38																		510000
Protector, Lead	39	514016	514016	514016	514016	514016	514016	514016	514016	514016	514016	514016	514016	514016	514016	514016	514016	514016	514016
Washer, Schnorr	41																		513012
Cover, Bearing	46																		502805

*Encapsulated stator and case. Contact Martin Engineering for Part Number specific to electrical rating.

**Use part number 400256 with single-phase models.

Part Numbers

S90 Vibrator (CD, CDS)		Frame Size and Part number															
		35			40				50						60		
Description	Item	601201	602150	602865	601217	601227	602161	602888	600254	600256	600257	601219	602162	602889	601220	602165	602890
Case	1	*	*	*	*	*	*	*	*	*	*	*	*	*	300238	300238	300238
Flange	3	301195	301195	301195	301196	301196	301196	301196	301196	301197	301197	301197	301197	301197	301198	301198	301198
Screw	4	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515538	515538	515538
Washer, Schnorr	5	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513005	513005	513005
O-Ring	6																
Shaft	7	400285	400285	400285	400286	400286	400286	400286	400311	400312	400312	400287	400287	400287	400295	400295	400295
Bushing, Shaft	9	508048	508048	508048	508049	508049	508049	508049	508049	508049	508049	508049	508049	508049	508050	508050	508050
Bearing	10	506561	506561	506561	506535	506535	506535	506535	506535	506538	506538	506538	506547	506547	506553	506552	506552
Key	13	506029	506029	506029	506044	506044	506044	506044	506029	506029	506029	506044	506044	506044	506044	506044	506044
Weight, Fixed 50 Hz	14	304347	304349	304349	304351	304354	304351	304351	517609	517609	517609	304357	304357	304357	304363	304363	304363
Weight, Fixed 60 Hz	14	304348	304349	304349	304354	304362	304351	304351	517609	517609	517609	304358	304357	304357	304364	304363	304363
Weight, Adj 50 Hz	15	305375	305377	305377	305380	305385	305386	305386	517609	517609	517609	305387	305387	305389	305392	305394	305394
Weight, Adj 60 Hz	15	305376	305377	305377	305385	305391	305380	305386	517609	517609	517609	305388	305387	305389	305393	305392	305394
Screw	16	515539	515539	515539	515559	515559	515559	515559				515559	515559	515559	515612	515612	515612
Washer, Schnorr	17	513005	513005	513005	513005	513005	513005	513005				513005	513005	513005	513006	513006	513006
Disc, Weight Adj 50 Hz	19	518156/7	518156/7	518156/7	518174/5	518174/5	518191/2	518191/2	518135/6	518135/6	518137/8	518174/5	518193/4	518193/4	518174/5	518174/5	518241/2
Disc, Weight Adj 60 Hz	19	518156/7	518156/7	518156/7	518174/5	518174/5	518174/5	518191/2	518135/6	518137/8	518135/6	518174/5	518174/5	518194/5	518174/5	518174/5	518241/2
Ring, Snap	20	500041	500041	500041	500055	500055	500055	500055				500055	500055	500055	500058	500058	500058
Nut, Shaft	21								509053	509053	509053						
O-Ring	22	508556	508556	508556	508621	508621	508621	508621	508556	508556	508556	508621	508621	508621	508619	508619	508619
Cover, Weight 50 Hz	23	517075	517075	517075	517076	517076	517055	517055	517085	517086	517086	517055	517077	517077	517078	517079	517079
Cover, Weight 60 Hz	23	517075	517075	517075	517076	517076	517076	517055	517085	517086	517086	517055	517055	517077	517078	517078	517079
Screw	24	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508
Washer, Schnorr	25	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004
Terminal Block	26	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510508
Terminal Block U.S.	26	510501	510501	510501	510501	510501	510501	510508	510501	510501	510501	510501	510501	510508	510501	510501	510508
Screw	27	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502	515502
Screw, U.S.	27	515502	515502	515502	515502	515502	515502	515534	515502	515502	515502	515502	515502	515534	515502	515502	515534
Washer, Schnorr	28	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002
Screw, Ground	29	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533	515533
Washer, Schnorr	30	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002
Tag, Ground	31	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025	518025
Cushion, Foam	32	514015	514015	514015	514015	514015	514015	514015	514015	514015	514015	514015	514015	514015	514015	514015	514015
O-Ring	33	508612	508612	508612	508612	508612	508612	508612	508612	508612	508612	508612	508612	508612	508612	508612	508612
Cover, Wiring Box	34	502500	502500	502500	502500	502500	502500	502500	502500	502500	502500	502500	502500	502500	502500	502500	502500
Screw	35	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611	515611
Washer, Schnorr	36	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003
Fitting, Cord	37	511530	511530	511530	511530	511530	511530	511530	511530	511530	511530	511530	511530	511530	511530	511530	511530
Fitting, Grease	38	510000	510000	510000	510000	510000	510000	510000	510000	510000	510000	510000	510000	510000	510007	510007	510007
Protector, Lead	39				514023	514023			514023	514023	514023	514023	514023	514023	514026	514026	514026
Ring, Snap	40	500073	500073	500073	500015	500015	500015	500015	500015	500015	500015	500015	500015	500015	500076	500076	500076
Washer, Schnorr	41								513010	513010	513010						
Cover, Bearing	46	502800	502800	502800	502801	502801	502801	502801	502801	502801	502801	502801	502801	502801	502802	502802	502802

*Encapsulated stator and case. Contact Martin Engineering for Part Number specific to electrical rating.

S90 Vibrator (CD, CDS)		Frame Size and Part Number															
		70						80				90					
		Description	Item	600199	600219	600200	600212	601221	602167	602891	601211	602154	602884	601165	602138	602091	602862
Case	1	300194	300194	300194	300194	300239	300239	300239	300239	300220	300220	300220	300215	300215	300215	300215	300215
Flange	3	301168	301168	301165	301165	301199	301199	301199	301199	301188	301188	301188	301173	301180	301173	301180	301173
Screw	4	515514	515514	515514	515514	515558	515558	515558	515558	515517	515517	515517	515518	515518	515518	515518	515518
Washer, Schnorr	5	513005	513005	513005	513005	513006	513006	513006	513006	513006	513006	513006	513007	513007	513007	513007	513007
O-Ring	6	508603	508603	508603	508603												
Shaft	7	400247	400247	400242	400242	400296	400296	400296	400273	400274	400274	400261	400267	400259	400267	400259	400259
Bushing, Shaft	9	513516	513516	513525	513525	508051	508051	508051									
Bearing	10	506536	506536	506518	506518	506536	506555	506555	506551	506557	506557	506556	506539	506556	506539	506556	506556
Seal, Grease	11	502055	502055	502052	502052												
Seal, Shaft	12	502043	502043	502069	502069												
Key	13	506045	506045	506045	506045	506046	506046	506046	506046	506046	506046	506032	506032	506032	506032	506032	506032
Weight, Fixed 50 Hz	14	517630	517630	517630		304292	304292	304292	304265	304267	304267	304315	304327	304309	304327	304309	304309
Weight, Fixed 60 Hz	14	517630	517630		517630	304293	304292	304292	304266	304268	304267	304316	304328	304314	304327	304309	304309
Weight, Adj 50 Hz	15	517630	517630	517630		305217	305395	305395	305190	305192	305192	305240	305252	305232	305252	305232	305232
Weight, Adj 60 Hz	15	517630	517630		517630	305218	305396	305396	305191	305193	305192	305241	305253	305239	305252	305232	305232
Screw	16					515588	515588	515588	515602	515602	515602	515614	515621	515614	515614	515614	515614
Washer, Schnorr	17											513007	513008	513007	513007	513007	513007
Washer, Brass	18															513514	513514
Disc, Weight Adj 50 Hz	19	518211/2	518211/2	518211/2		518203/4	518241/2	518241/2	518203/4	518203/4	518203/4	518207/8	518207/8	518207/8	518207/8	518207/8	518207/8
Disc, Weight Adj 60 Hz	19	518211/2	518211/2		518211/2	518203/4	518241/2	518241/2	518203/4	518203/4	518203/4	518207/8	518207/8	518207/8	518207/8	518207/8	518207/8
Ring, Snap	20					500063	500063	500063	500061	500061	500061	500022	500022	500022	500022	500022	500022
Nut, Shaft	21	509057	509057	509057	509057												
O-Ring	22	508619	508619	508619	508619	508629	508629	508629	508628	508628	508628	508632	508632	508632	508632	508632	508632
Cover, Weight 50 Hz	23	517057	517057	517057		517062	517080	517080	517060	517070	517070	517063	517073	517064	517073	517064	517064
Cover, Weight 60 Hz	23	517057	517057		517057	517062	517080	517080	517060	517070	517070	517063	517073	517064	517073	517064	517064
Screw	24	515508	515508	515508	515508	515508	515508	515508	515538	515538	515538	515514	515514	515514	515514	515514	515514
Washer, Schnorr	25	513004	513004	513004	513004	513004	513004	513004	513005	513005	513005	513005	513005	513005	513005	513005	513005
Terminal Block	26	510502	510502	510502	510502	510502	510502	510502	510502	510502	510502	510507	510502	510502	510502	510502	510502
Terminal Block U.S.	26	510502	510502	510507	510502	510502	510502	510502	510507	510502	510502	510502	510502	510502	510502	502507	502507
Screw	27	515504	515504	515504	515504	515504	515504	515504	515505	515504	515504	515505	515504	515504	515504	515504	515504
Screw, U.S.	27	515504	515504	515504	515504	515504	515504	515504	515505	515504	515504	515505	515504	515504	515504	515554	515554
Washer, Schnorr	28	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003
Screw, Ground	29	515601	515601	515601	515601	515601	515601	515601	515601	515601	515601	515601	515601	515601	515601	515601	515601
Washer, Schnorr	30	513003	513003	513003	513003	513003	513003	513003				513003	513003	513003	513003	513003	513003
Tag, Ground	31	518026	518026	518026	518026	518026	518026	518026	518026	518026	518026	518026	518026	518026	518026	518026	518026
Cushion, Foam	32	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025
O-Ring	33	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588
Cover, Wiring Box	34	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503
Screw	35	515508	515508	515508	515508				515508	515508	515508	515508	515508	515508	515508	515508	515508
Washer, Schnorr	36	513004	513004	513004	513004				513004	513004	513004	513004	513004	513004	513004	513004	513004
Fitting, Cord	37	511513	511513	511513	511513	511513	511513	511513	511513	511513	511513	511513	511513	511513	511513	511513	511513
Fitting, Grease	38	509029	509029	509029	509029	510007	510007	510007	510007	510007	510007	510007	510007	510007	510007	510007	510007
Protector, Lead	39	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026
Ring, Snap	40					500008	500008	500008	500009	500009	500009	500064	500064	500064	500064	500064	500064
Washer, Schnorr	41	513533	513533	513533	513533												
Cover, Bearing	46					502803	502803	502803	303063	303063	303063	303053	303059	303053	303059	303053	303053
Thermistor Term. Block	49	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510
Screw, Terminal Block	50	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609
Screw Insert	51	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056
Plug	52					514515	514515	514515	514515	514515	514515	514515	514515	514515	514515	514515	514515
Screw	53											515566		515566		515566	515566
Washer, Schnorr	54											513002		513002		513002	513002

Part Numbers

S90 Vibrator (CD, CDS)		Frame Size and Part Number																			
		95						97				100			105				110		
Description	Item	600201	601166	602092	602093	602827	602828	601204	602136	602137	602870	601205	602134	602863	602142	602143	602871	602872	602144	602873	
Case	1	300210	300210	300210	300210	300210	300210	300219	300219	300219	300219	300219	300216	300216	300216	300222	300222	300222	300222	300234	300234
Flange	3	301192	301192	301192	301192	301192	301192	301179	301179	301179	301179	301175	301175	301175	301193	301194	301193	301194	301191	301191	
Screw	4	515518	515518	515518	515518	515518	515518	515610	515610	515610	515610	515610	515610	515610	515608	515608	515608	515608	516559	516559	
Washer, Schnorr	5	513007	513007	513007	513007	513007	513007	513008	513008	513008	513008	513008	513008	513008	513014	513014	513014	513014	513012	513012	
Shaft	7	400297	400299	400300	400300	400300	400300	400265	400266	400265	400269	400264	400264	400268	400281	400280	400282	400280	400290	400289	
Shaft, 60 Hz	7													400264							
Bearing	10	506554	506537	506537	506537	506537	506537	506558	506556	506558	506558	506544	506544	506544	506559	506560	506559	506560	506550	506550	
Key	13	506032	506032	506032	506032	506032	506032	506032	506032	506032	506032	506048	506048	506048	506048	506048	506048	506048	506048	506048	
Weight, Fixed 50 Hz	14	304296	304297	304299	304301	304299	304299	304332	304324	304323	304334	304318	304320	304320	304339	304342	304342	304342	304352	304352	
Weight, Fixed 60 Hz	14	304273	304298	304300	304302	304299	304299	304333	304324	304325	304335	304319	304321	304320	304340	304341	304342	304342	304353	304352	
Weight, Adj 50 Hz	15	305221	305222	305224	305226	305224	305224	305358	305249	305248	305360	305243	305245	305357	305367	305372	305369	305373	305381	305383	
Weight, Adj 60 Hz	15	305197	305223	305225	305227	305224	305224	305359	305249	305250	305361	305244	305246	305356	305368	305372	305370	305374	305382	305384	
Screw	16	515600	515600	515600	515600	515600	515600	515619	515619	515619	515619	515619	515619	515619	515623	515623	515623	515623	515623	515623	
Washer, Schnorr	17	513007	513007	513007	513007	513007	513007	513008	513008	513008	513008	513008	513008	513008	513014	513014	513014	513014	513014	513014	
Washer, Brass	18					513514	513514				513514			513514			513514	513514			
Disc, Weight Adj 50 Hz	19	518207/8	518207/8	518207/8	518207/8	518207/8	518207/8	518220/1	518220/1	518220/1	518220/1	518220/1	518220/1	518220/1	518220/1	518220/1	518228/9	518228/9	518220/1	518232/3	
Disc, Weight Adj 60 Hz	19	518207/8	518207/8	518207/8	518207/8	518207/8	518207/8	518220/1	518220/1	518220/1	518220/1	518220/1	518220/1	518220/1	518220/1	518220/1	518220/1	518228/9	518220/1	518232/3	
Ring, Snap	20	500062	500062	500062	500062	500062	500062	500017	500022	500017	500017	500065	500065	500065	500069	500069	500069	500069	500060	500060	
O-Ring	22	508631	508631	508631	508631	508631	508631	508559	508559	508559	508559	508635	508635	508635	508636	508636	508636	508636	508641	508641	
Cover, Weight 50 Hz	23	517067	517067	517068	517068	517068	517068	306089	306090	306089	306093	306087	306087	306092	306094	306096	306096	306098	306101	306101	
Cover, Weight 60 Hz	23	517067	517067	517068	517068	517068	517068	306089	306090	306089	306093	306087	306087	306092	306094	306096	306096	306098	306101	306101	
Screw	24	515514	515514	515514	515514	515514	515514	515514	515514	515514	515514	515514	515514	515514	515514	515514	515514	515514	515612	515612	
Washer, Schnorr	25	513005	513005	513005	513005	513005	513005	513005	513005	513005	513005	513005	513005	513005	513005	513005	513005	513005	513006	513006	
Terminal Block	26	510502	510502	510502	510502	510502	510502	510515	510515	510515	510515	510515	510515	510515	510515	510515	510515	510515	510512	510512	
Terminal Block U.S.	26	510502	510502	510502	510502	510507	510507	510515	510515	510515	510507	510515	510515	510507	510515	510515	510507	510507	510512	510512	
Screw	27	515504	515504	515504	515504	515504	515504	515505	515504	515504	515504	515504	515504	515504	515504	515504	515504	515504	515508	515508	
Screw, U.S.	27	515504	515504	515504	515504	515554	515505	515504	515504	515504	515554	515504	515504	515554	515504	515504	515505	515505	515508	515508	
Washer, Schnorr	28	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513004	513004	
Screw, Ground	29	515601	515601	515601	515601	515601	515601	515618	515618	515618	515618	515618	515618	515618	515618	515618	515618	515618	516558	516558	
Washer, Schnorr	30	513003	513003	513003	513003	513003	513003	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513005	513005	
Tag, Ground	31	518026	518026	518026	518026	518026	518026	518223	518223	518223	518223	518223	518223	518223	518223	518223	518223	518223	518181	518181	
Cushion, Foam	32	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514025	514024	514024	
O-Ring	33	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508588	508619	508619	
Cover, Wiring Box	34	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	502503	309033	309033	
Screw	35	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515508	515538	515538	
Washer, Schnorr	36	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513005	513005	
Fitting, Cord	37	511513	511513	511513	511513	511513	511513														
Fitting, Grease	38	510007	510007	510007	510007	510007	510007	510007	510007	510007	510007	510007	510007	510007	510007	510007	510007	510007	510007	510007	
Protector, Lead	39	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	514026	
Ring, Snap	40	500034	500034	500034	500034	500034	500034	500068	500013	500068	500068	500067	500067	500067	500070	500072	500070	500072			
Shaft Spacer	42														508646	508046	508046	508046	508047	508047	
Cover, Bearing	46	303068	303068	303068	303068	303068	303068	303057	303058	303057	303057	303056	303056	303056	303060	303064	303060	303064	303065	303065	
Screw	47																		515538	515538	
Washer, Schnorr	48																		513005	513005	
Thermistor Term. Block	49	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	
Screw, Terminal Block	50	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515609	515605	515605	
Screw Insert	51	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	
Plug	52	514515	514515	514515	514515	514515	514515	514515	514515	514515	514515	514515	514515	514515	514515	514515	514515	514515	514515	514515	
Screw	53	515566	515566	515566	515566	515566	515566														
Washer, Schnorr	54	513002	513002	513002	513002	513002	513002														
Washer, Schnorr	55							513005	513005	513005	513005	513005	513005	513005	513005	513005	513005	513005	513005	513005	
Screw	56							509061	515620	509061	509061	509061	509061	509061	515620	515620	515620	515620	515620	515620	
Tube, Cord	57							504012	504012	504012	504012	504012	504012	504012	504012	504012	504012	504012	504012	504012	
Cord Cover	58							309035	309035	309035	309035	309035	309035	309035	309035	309035	309035	309035	309035	309035	
Shaft Bushing	59											308520	308520	308520	308521	308522	308521	308522			
O-Ring	62							508639	508639	508639	508639	508639	508639	508639	508639	508639	508639	508639	508639	508639	
Screw, Special	64														509062	509062	509062	509062	509064		

S90 Vibrator (CDX)		Frame Size and Part Number																
		30X				40X				50X				60X				
Description	Item	600182	601149	602083	602817	600183	601150	602084	602818	600184	601151	601196	602085	602819	600215	601187	602122	602853
Case	1	300177	300177	300177	300177	300178	300178	300178	300178	300179	300179	300179	300179	300179	300212	300212	300212	300212
Flange	3	301148	301148	301148	301148	301149	301149	301149	301149	301150	301150	301150	301150	301150	301174	301174	301174	301174
Screw	4	515507	515507	515507	515507	515593	515593	515593	515593	515513	515513	515513	515513	515513	515538	515538	515538	515538
Washer, Schnorr	5	513004	513004	513004	513004	513004	513004	513004	513004	513005	513005	513005	513005	513005	513005	513005	513005	513005
O-Ring	6	508560	508560	508560	508560	508588	508588	508588	508588	508588	508588	508588	508588	508588	508601	508601	508601	508601
Shaft	7	400214	400214	400214	400214	400215	400215	400215	400215	400216	400216	400216	400216	400216	400260	400260	400260	400260
Bushing, Shaft	9														513532	513532	513532	513532
Bearing	10	506531	506531	506531	506531	506547	506547	506547	506547	506538	506538	506538	506538	506538	506553	506553	506553	506553
Key	13	506029	506029	506029	506029	506044	506044	506044	506044	506044	506044	506044	506044	506044	506044	506044	506044	506044
Weight, Fixed 50 Hz	14	304244	304246	304246	304246	304248	304250	304250	304250	304252	304254	304261	304254	304254		304261	304269	
Weight, Fixed 60 Hz	14	304245	304247	304246	304246	304249	304251	304250	304250	304253	304255	304262	304254	304254		304262	304261	
Weight, Adj 50 Hz	15	305165	305167	305167	305167	305169	305171	305173	305173	305174	305176	305185	305178	305178		305185	305187	
Weight, Adj 60 Hz	15	305166	305168	305167	305167	305170	305172	305171	305173	305175	305177	305186	305176	305178		305186	305185	
Screw	16	516544	516556	516556	516566	516557	516544	516544	516544	515519	516557	516557	516557	516557	515612	515612	515612	515612
Washer, Schnorr	17	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513006	513006	513006	513006
Washer, Brass	18	513514	513514	513514	513514	513514	513514	513514	513514	513514	513514	513514	513514	513514				
Disc, Weight Adj 50 Hz	19	518156/7	518156/7	518156/7	518156/7	518156/7	518174/5	518191/2	518191/2	518174/5	518174/5	518174/5	518195/6	518195/6	518174/5	518174/5	518174/5	518195/6
Disc, Weight Adj 60 Hz	19	518156/7	518156/7	518156/7	518156/7	518156/7	518174/5	518174/5	518191/2	518174/5	518174/5	518174/5	518195/6	518195/6	518174/5	518174/5	518195/6	518195/6
Ring, Snap	20	500041	500041	500041	500041	500058	500058	500058	500058	500058	500058	500058	500058	500058	500058	500058	500058	500058
O-Ring	22	508576	508576	508576	508576	508621	508621	508621	508621	508622	508622	508622	508622	508622	508624	508624	508624	508624
Cover, Weight	23	306076	306076	306076	306076	306077	306077	306077	306077	306108	306108	306108	306108	306078	306086	306086	306086	306086
Screw	24	515505	515505	515505	515505	515506	515506	515506	515506	515506	515506	515506	515506	515506	515508	515508	515508	515508
Washer, Schnorr	25	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513004	513004	513004	513004
Terminal Block 50 Hz	26	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510501	510514	510514	510514	510514
Terminal Block 60Hz	26	510501	510501	510501		510501	510501	510501		510501	510501	510501	510501		510514	510514	510514	
Screw	27	515501	515501	515501	515501	515501	515501	515501	515501	515501	515501	515501	515501	515501	515504	515504	515504	515504
Washer, Schnorr	28	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513002	513003	513003	513003	513003
Screw, Ground	29	516555	516555	516555	516555	516555	516555	516555	516555	516555	516555	516555	516555	516555	516555	516555	516555	516555
Washer, Schnorr	30	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003	513003
Tag, Ground	31	518026	518026	518026	518026	518026	518026	518026	518026	518026	518126	518126	518026	518026	518026	518026	518026	518026
Cushion, Foam	32	514021	514021	514021	514021	514021	514021	514021	514021	514021	514021	514021	514021	514021	514030	514030	514030	514030
O-Ring	33	508620	508620	508620	508620	508620	508620	508620	508620	508620	508620	508620	508620	508620	508588	508588	508588	508588
Cover, Wiring Box	34	309031	309031	309031	309031	309031	309031	309031	309031	309031	309031	309031	309031	309031	309034	309034	309034	309034
Screw	35	515509	515509	515509	515509	515509	515509	515509	515509	515509	515509	515509	515509	515509	515538	515538	515538	515538
Washer, Schnorr	36	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513004	513005	513005	513005	513005
Fitting, Grease	38					509050	509050	509050	509050	509050	509050	509050	509050	509050	510000	510000	510000	510000
Protector, Lead	39	514022	514022	514022	514022	514022	514022	514022	514022	514022	514022	514022	514022	514022	514031	514031	514031	514031
Cover, Bearing	46					303048	303048	303048	303048	303048	303048	303048	303048	303048	303054	303054	303054	303054
Screw	47					515505	515505	515505	515505	515505	515505	515505	515505	515505	515507	515507	515507	515507
Washer, Schnorr	48					513003	513003	513003	513003	513003	513003	513003	513003	513003	513004	513004	513004	513004
Thermostat Term. Block	49	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510	510510
Screw, Terminal Block	50	515605	515605	515605	515605	515605	515605	515605	515605	515605	515605	515605	515605	515605	515609	515609	515609	515609
Screw Insert	51	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056	509056

Part Numbers

S90 Vibrator (CDX)		Frame Size and Part Number			
		70X			
Description	Item	600216	601188	602123	602854
Case	1	300209	300209	300209	300209
Flange	3	301150	301150	301171	301171
Screw	4	515558	515558	515558	515558
Washer, Schnorr	5	513006	513006	513006	513006
O-Ring	6	508622	508622	508622	508622
Shaft	7	400254	400254	400254	400254
Bushing, Shaft	9	513516	513516	513516	513516
Bearing	10	506536	506536	506536	506536
Seal, Shaft	12	502043	502043	502043	502043
Key	13	506046	506046	506046	506046
Weight, Fixed 50 Hz	14		304292	304294	304294
Weight, Fixed 60 Hz	14		304293	304295	304294
Weight, Adj 50 Hz	15		305217	305219	305219
Weight, Adj 60 Hz	15		305218	305220	305219
Screw	16	515588	515588	515588	515588
Washer, Schnorr	17	513006	513006	513006	513006
Washer, Brass	18				
Disc, Weight Adj 50 Hz	19	518203/4	518203/4	518203/4	518203/4
Disc, Weight Adj 60 Hz	19	518203/4	518203/4	518203/4	518203/4
Ring, Snap	20	500063	500063	500063	500063
O-Ring	22	508629	508629	508629	508629
Cover, Weight	23	306082	306082	306082	306082
Screw	24	515509	515509	515509	515509
Washer, Schnorr	25	513004	513004	513004	513004
Terminal Block 50 Hz	26	510514	510514	510514	510514
Terminal Block 60 Hz	26	510514	510514	510514	
Screw	27	515504	515504	515504	515504
Washer, Schnorr	28	513003	513003	513003	513003
Screw, Ground	29	516555	516555	516555	516555
Washer, Schnorr	30	513003	513003	513003	513003
Tag, Ground	31	518026	518026	518026	518026
Cushion, Foam	32	514030	514030	514030	514030
O-Ring	33	508588	508588	508588	508588
Cover, Wiring Box	34	309034	309034	309034	309034
Screw	35	515538	515538	515538	515538
Washer, Schnorr	36	513005	513005	513005	513005
Fitting, Grease	38	509059	509059	509059	509059
Protector, Lead	39	514031	514031	514031	514031
Cover, Bearing	46	303052	303052	303052	303052
Screw	47	515507	515507	515507	515507
Washer, Schnorr	48	513004	513004	513004	513004
Thermostat Term. Block	49	510510	510510	510510	510510
Screw, Terminal Block	50	515609	515609	515605	515605
Screw Insert	51	509056	509056	509056	509056
Plug	66	509010	509010	509010	509010

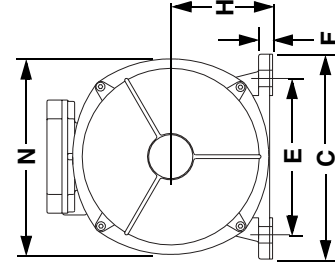
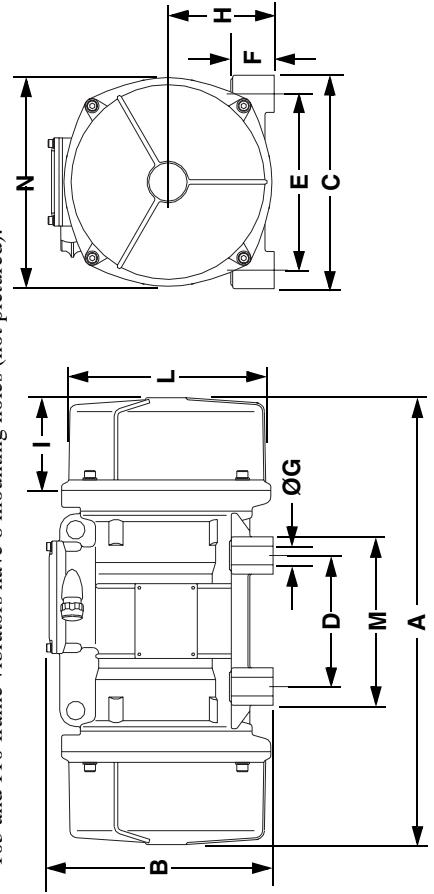
Appendix
MOTOMAGNETIC® Electric Vibrator Dimensions

MOTOMAGNETIC® Electric Vibrator Dimensions (in. [mm])*

Frame Size	A	B	C	D	E	F	Foot Holes		H	I	L	M	N
							ØG	No.					
00	8.27 (210)	5.55 (141)	4.92 (125)	2.44-2.91 (62-74)	4.17 (106)	0.59 (15)	0.35 (9)	4	2.17 (55)	1.57 (40)	3.54 (90)	4.02 (102)	4.02 (102)
01	8.66 (220)	5.94 (151)	4.92 (125)	2.44-2.91 (62-74)	4.17 (106)	0.94 (24)	0.35 (9)	4	2.52 (64)	1.77 (45)	4.41 (112)	4.02 (102)	4.69 (119)
10	11.73 (298)	7.13 (181)	5.98 (152)	3.54 (90)	4.92 (125)	1.16 (29)	0.51 (13)	4	2.87 (73)	2.95 (75)	5.00 (127)	4.61 (117)	5.31 (135)
20	15.00 (381)	7.80 (198)	6.57 (167)	4.13 (105)	5.51 (140)	1.12 (28)	0.51 (13)	4	3.15 (80)	4.25 (108)	5.75 (146)	5.39 (137)	6.02 (153)
30	15.00 (381)	8.27 (210)	8.07 (205)	4.72 (120)	6.69 (170)	1.77 (45)	0.67 (17)	4	3.60 (91)	3.46 (88)	6.61 (168)	6.30 (160)	6.93 (176)
33	14.21 (361)	8.39 (213)	8.46 (215)	3.94 (100)	7.09 (180)	1.54 (39)	0.67 (17)	4	3.60 (91)	2.56 (65)	6.30 (160)	5.51 (140)	6.89 (175)
35	17.13 (435)	9.17 (233)	8.07 (205)	4.72 (120)	6.69 (170)	2.13 (54)	0.67 (17)	4	4.11 (104)	4.63 (118)	7.36 (187)	6.38 (162)	7.99 (203)
40	19.69 (500)	9.69 (246)	9.06 (230)	5.51 (140)	7.48 (190)	2.13 (54)	0.67 (17)	4	4.57 (116)	5.28 (134)	8.27 (210)	7.09 (180)	8.86 (225)
50	22.36 (568)	9.69 (246)	9.06 (230)	5.51 (140)	7.48 (190)	2.13 (54)	0.67 (17)	4	4.57 (116)	6.61 (168)	8.27 (210)	7.09 (180)	8.86 (225)
60	24.29 (617)	10.59 (269)	10.83 (275)	6.10 (155)	8.86 (225)	2.76 (70)	0.87 (22)	4	5.16 (131)	6.97 (177)	9.37 (238)	8.07 (205)	9.96 (253)
70	26.22 (666)	12.95 (329)	12.20 (310)	6.10 (155)	10.04 (255)	3.54 (90)	0.93 (24)	4	6.10 (155)	7.01 (178)	11.02 (280)	8.46 (215)	11.61 (295)
80	28.74 (730)	14.17 (360)	13.39 (340)	7.09 (180)	11.02 (280)	3.15 (80)	1.02 (26)	4	6.50 (165)	7.87 (200)	12.01 (305)	9.45 (240)	12.60 (320)
90	29.13 (740)	14.57 (370)	15.35 (390)	7.87 (200)	12.60 (320)	3.78 (96)	1.10 (28)	4	7.56 (192)	9.45 (240)	12.99 (330)	10.63 (270)	13.78 (350)
95	34.25 (870)	15.55 (395)	15.43 (392)	7.87 (200)	12.60 (320)	4.13 (105)	1.10 (28)	4	7.56 (192)	10.04 (255)	13.98 (355)	10.63 (270)	14.76 (375)
97	39.45 (1002)	17.17 (436)	18.11 (460)	4.92 (125)	14.96 (380)	1.38 (35)	1.50 (38)	6	8.46 (215)	11.81 (300)	16.30 (414)	12.60 (320)	17.52 (445)
100	42.13 (1070)	17.87 (454)	20.87 (530)	5.51 (140)	17.32 (440)	1.50 (38)	1.73 (44)	6	9.06 (230)	11.02 (280)	17.64 (448)	14.57 (370)	18.39 (467)
105	44.09 (1120)	20.71 (526)	22.44 (570)	5.51 (140)	18.90 (480)	1.61 (41)	1.77 (45)	8**	10.55 (265)	11.02 (280)	19.49 (495)	20.08 (510)	20.31 (516)
110	45.28 (1150)	23.90 (607)	24.02 (610)	5.51 (140)	20.47 (520)	1.50 (38)	1.77 (45)	8**	11.69 (297)	11.71 (297)	21.34 (542)	21.85 (555)	22.91 (582)

*Dimensions given are maximum for each frame size and will vary depending on the rpm of the vibrator.

**105 and 110 frame vibrators have 8 mounting holes (not pictured).



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