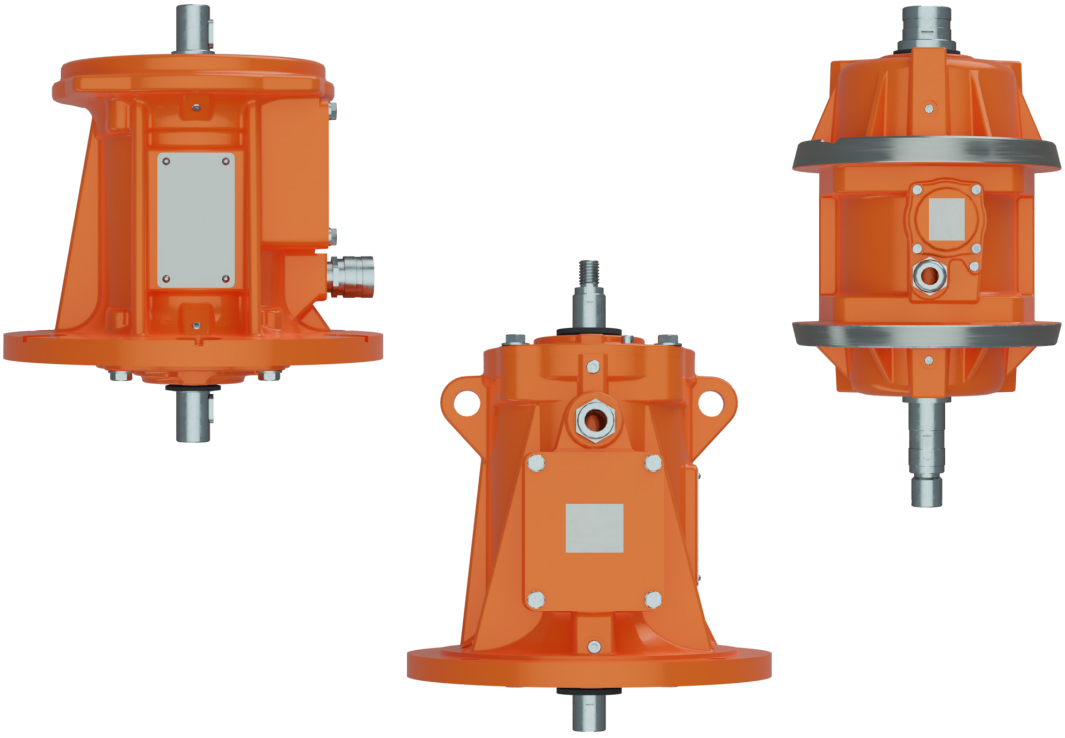
Martin® Flanged Electric Vibrators

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Operator's Manual
M3900

Important

MARTIN ENGINEERING HEREBY DISCLAIMS ANY LIABILITY FOR: DAMAGE DUE TO CONTAMINATION OF THE MATERIAL; USER'S FAILURE TO INSPECT, MAINTAIN AND TAKE REASONABLE CARE OF THE EQUIPMENT; 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 EQUIPMENT 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) ANSI/ ASSP z244.1-2024, *The Control of Hazardous Energy Lockout, Tagout And Alternative Methods and Occupational Safety* and Health Administration (OSHA) Federal Register, Title 29 Subtitle B Chapter XVII Subpart J 1910.147, *Control of Hazardous Energy Source (Lockout/Tagout);* Final Rule.

The following symbols may be used in this manual:

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

IMPORTANT

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

NOTE

Note: General statements to assist the reader.

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Introduction

General

Martin® Flanged Electric Vibrators are designed and manufactured for use with vibrating machines such as circular screens or sifters. 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.

References

The following documents are referenced in this manual:

- American National Standards Institute ANSI/ASSP Z244.1-2024, *The Control of Hazardous Energy Lockout, Tagout and Alternative Methods* American National Standards Institute, Inc., 1180 6th Ave, 10th Floor New York, NY 10036.
- Federal Register, Title 29 Subtitle B Chapter XVII Subpart J 1910.147, *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.
- The National Electrical Code (NEC), National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy MA 02269-9101
- 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

Only hand tools are required to install this equipment.

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 incurred during transportation. Martin Engineering CANNOT enter claims for damages. Contact your transportation agent for more information.

1. Inspect shipping container/pallet for damage. If damage has occurred, 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.
3. If anything is missing, contact Martin Engineering or a representative.



⚠WARNING

Before installing equipment, turn off and lockout / tagout / blockout / testout all energy sources according to ANSI standards (see "References") or country specific standards (DIN, ISO, etc.).

4. Turn off and lockout / tagout / blockout / testout all energy sources to equipment according to ANSI standards (see "References") or country specific standards (DIN, ISO, etc.).



⚠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. Make sure mounting surface is strong and flat, within ±0.01 in. (±0.25 mm) across mounting surface. (This will minimize internal stress to vibrator casting when tightening mount bolts. Welding in the area of the mounting surface could affect flatness.)
7. Make sure mounting surface and vibrator are clean and free of debris, paint, and oxidation.

Installing Vibrator

IMPORTANT

Read entire section before beginning work. This manual provides instructions for installations onto steel equipment only. For other installations, call Martin Engineering or a representative. See Appendix for overall dimensions and mounting dimensions.

⚠ CAUTION

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

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

Nut and cap screw torque

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

Table I. 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

⚠WARNING

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

⚠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 diameter as shown in Table II. 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.

1. Table II provides information on securing the electric vibrator cord grip when installing power supply and thermistor circuit cords. The frame size of the electric vibrator will define the size of the cord grip. Each cord grip is designed for a specific cord diameter range. When installed at the factory, the cord used is noted in Table II.

IMPORTANT

See Figure 1. The compression nut must be tightened to a position that will provide proper strain relief for the cord. If the compression nut is not tight enough, the electrical connections may be stressed. If the compression nut is too tight, the cord may be damaged. When using a factory cord, tighten the compression nut to a position that meets the specified "Distance Between Flats."

Table II. Cord Grip Specifications

Model No.	Part No.	Size	Part No.	Suitable Cord Diameter Range in. (mm)	Distance Between Flats, in.
MFS18-760 MFS12-760	MFS20X04 MFS20X06	1/2 NPT	194856	.38–.50 (10–13)	1/8 to 3/16
MFS18-1000 MFS12-1000	MFS30X04 MFS30X06	PG13.5	823005	.44–.50 (11–13)	1/8 to 3/16
			823006	.56–.63 (14–16)	
MFD18-2510 MFD12-2510	MFD70X04 MFD70X06	PG21	823001-PG	.51–.71 (13–18)	1/8 to 3/16

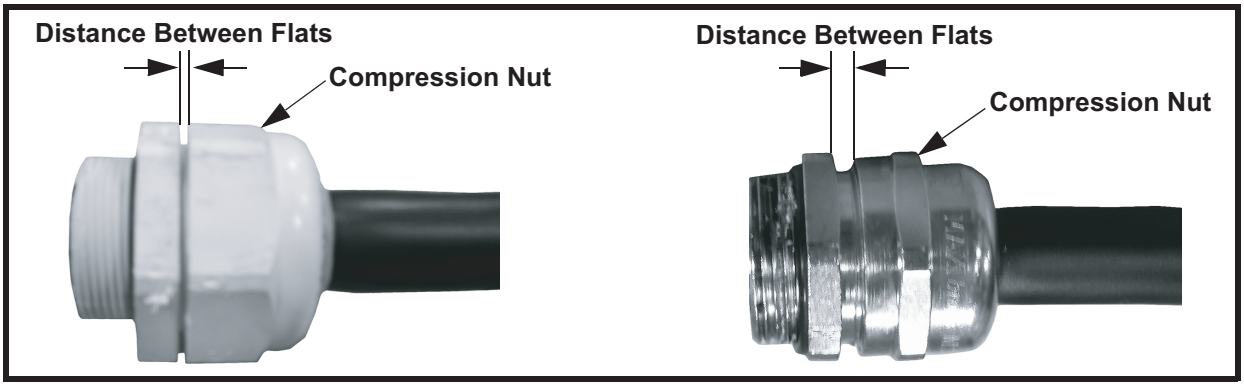


Figure 1. Cord Grip Installation

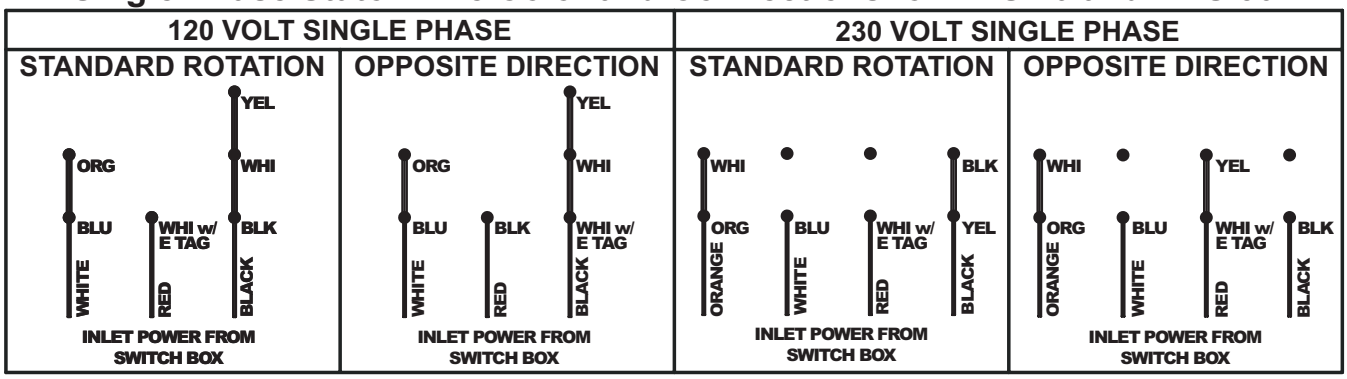
IMPORTANT

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.

2. Wire vibrator according to appropriate wiring diagram inside terminal box or see Figure 2. **Use closed loop wire connectors only.**

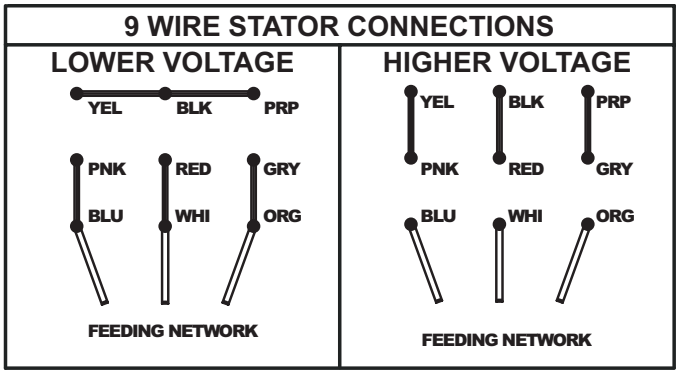
Single Phase Wiring Diagrams

Single Phase Stator Wire Color and Connections for MFS 20 and MFS 30

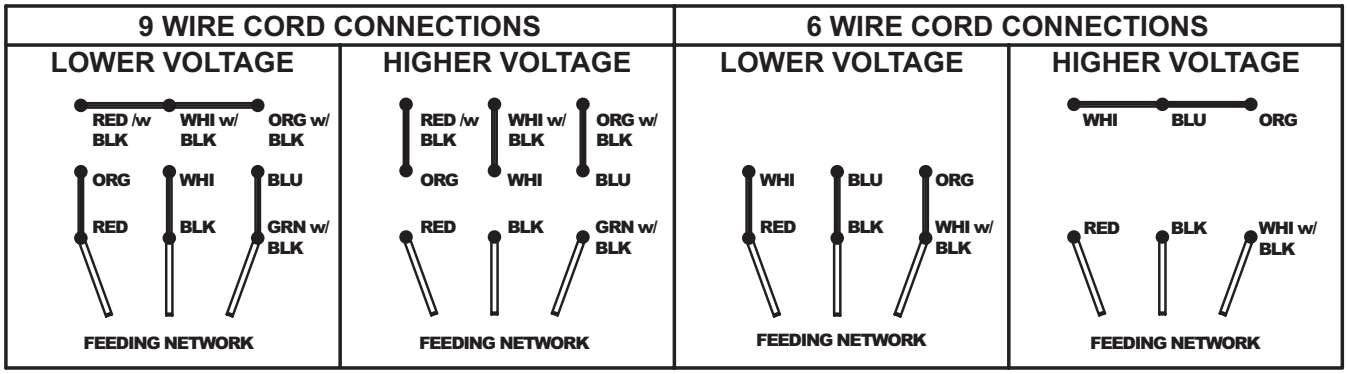


Three Phase Wiring Diagrams

Three Phase Stator Wire Color and Connections for MFS 20



Three Phase Stator Wire Color and Connections for MFS 30 and MFD



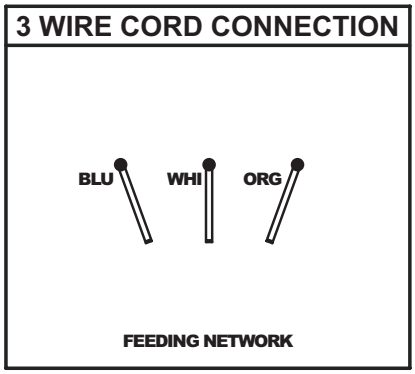


Figure 2. Wiring Diagrams

Table III. Single Phase Capacitor Chart

Part Number	Model	Martin® P/N	Capacitance, µF
MFS20U06	MFS12-760	193809	189-227
MFS20W06			
MFS30U06	MFS12-1000	193810	270-324
MFS30W06			

⚠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.

3. Connect power supply ground wire (or other if specified in the NEC) to vibrator ground terminal. **Use closed loop wire connectors only.**
4. 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).

⚠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.

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

1. Determine overload, short-circuit, and ground-fault protection according to NEC Article 430.
2. Have qualified electrician install overload, short-circuit, and ground-fault protection.
3. If overload trips during operation, fix problem before resetting.

After Installing Vibrator

IMPORTANT

Read entire section before beginning work.

⚠WARNING

Checking shaft rotation

Before checking shaft rotation, make sure area is known to be non-hazardous. When checking shaft rotation, keep hands away from swinging weights. Weights can crush fingers.

1. Start vibrator for one second only, then stop.
2. Observe direction of motor rotation. If motor is not rotating in correct direction, lockout / tagout / blockout / testout energy source and reverse rotation. To reverse rotation of three-phase vibrator, reverse any two of the three power supply wires. For single phase, see wiring diagrams in Figure 2.

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.

Maintenance

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 IV for lubrication schedule and amount of grease required for your vibrator.

NOTE

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

2. Lubricate vibrator with Klüber Staburags NBU 8EP 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 IV. Lubrication Schedule For Each Bearing

Model	Frame Size	Lubrication Frequency hours	Klüber Grease Type	Amount Grams
MFD12-2510	70	1000	Klüber Staburags NBU 8EP	50 (top bearing) 25 (lower bearing)
MFD18-2510	70	1000	Klüber Staburags NBU 8EP	50 (top bearing) 25 (lower bearing)
MFS18-760	20	1000	Klüber Staburags NBU 8EP	7
MFS12-760	20	1000	Klüber Staburags NBU 8EP	7
MFS18-1000	30	1000	Klüber Staburags NBU 8EP	7
MFS12-1000	30	1000	Klüber Staburags NBU 8EP	7

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 cable and connections as follows:



⚠WARNING

Before installing equipment, turn off and lockout / tagout / blockout / testout all energy sources according to ANSI standards (see "References") or country specific standards (DIN, ISO, etc.).

1. Turn off and lockout/ tagout / blockout / testout energy source to vibrator according to ANSI standards (see "References").
2. Inspect weight covers if applicable 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 I).
5. Make sure all nuts on connections on terminal block are tightened to proper torque. Do not over tighten (See Table I).

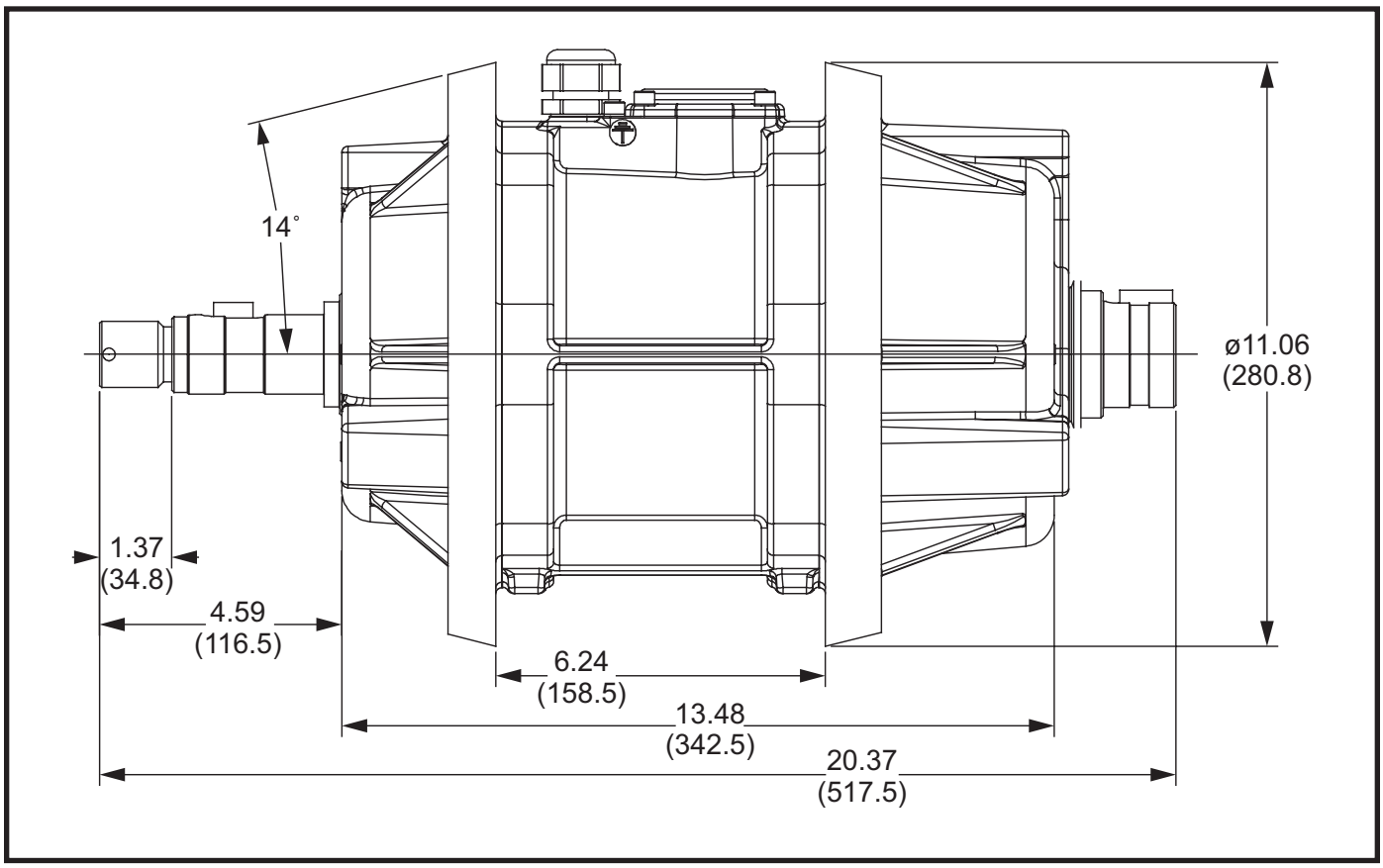
Part Numbers

This section provides model numbers and part numbers for the Martin® Flanged Electric Vibrators and related equipment. Please reference part numbers when ordering parts. Please call Martin Engineering at 800-544-2947 for replacement parts.

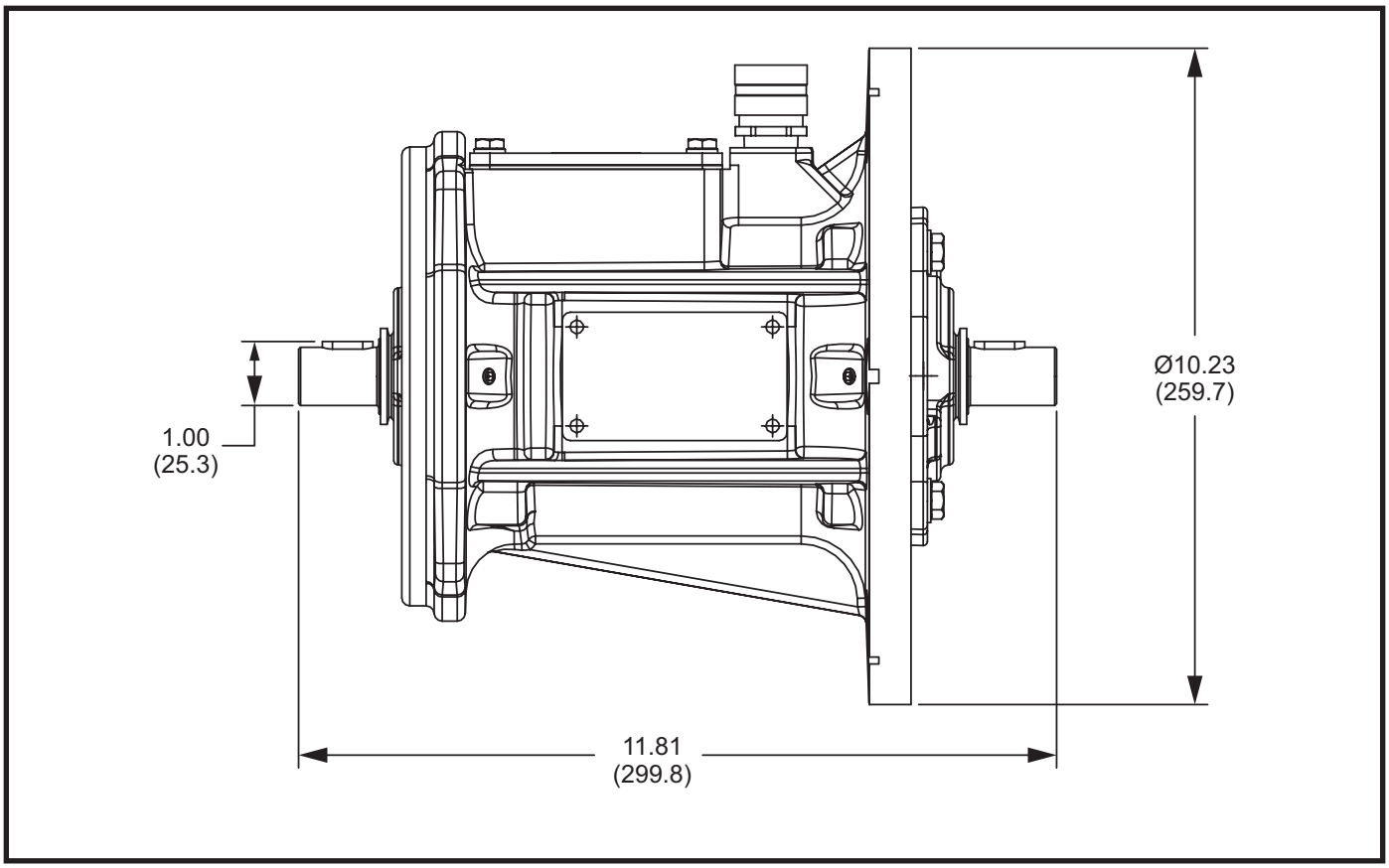
Table V. Martin® Flanged Electric Vibrator
Model Numbers and Part Numbers

Model No.	Part No.
MFD18-2510	MFD70X04
MFD12-2510	MFD70X06
MFS18-760	MFS20X04
MFS12-760	MFS20X06
MFS18-1000	MFS30X04
MFS12-1000	MFS30X06

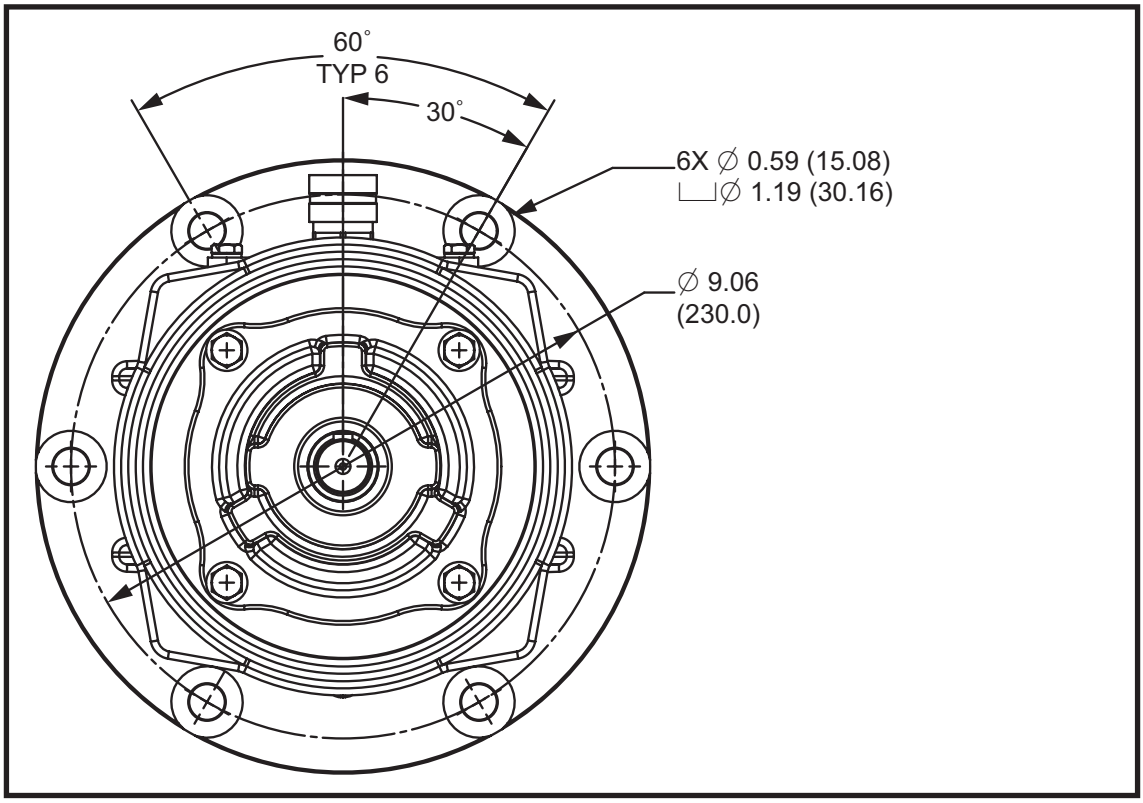
Appendix
Martin® Flanged Electric Vibrator Dimensions



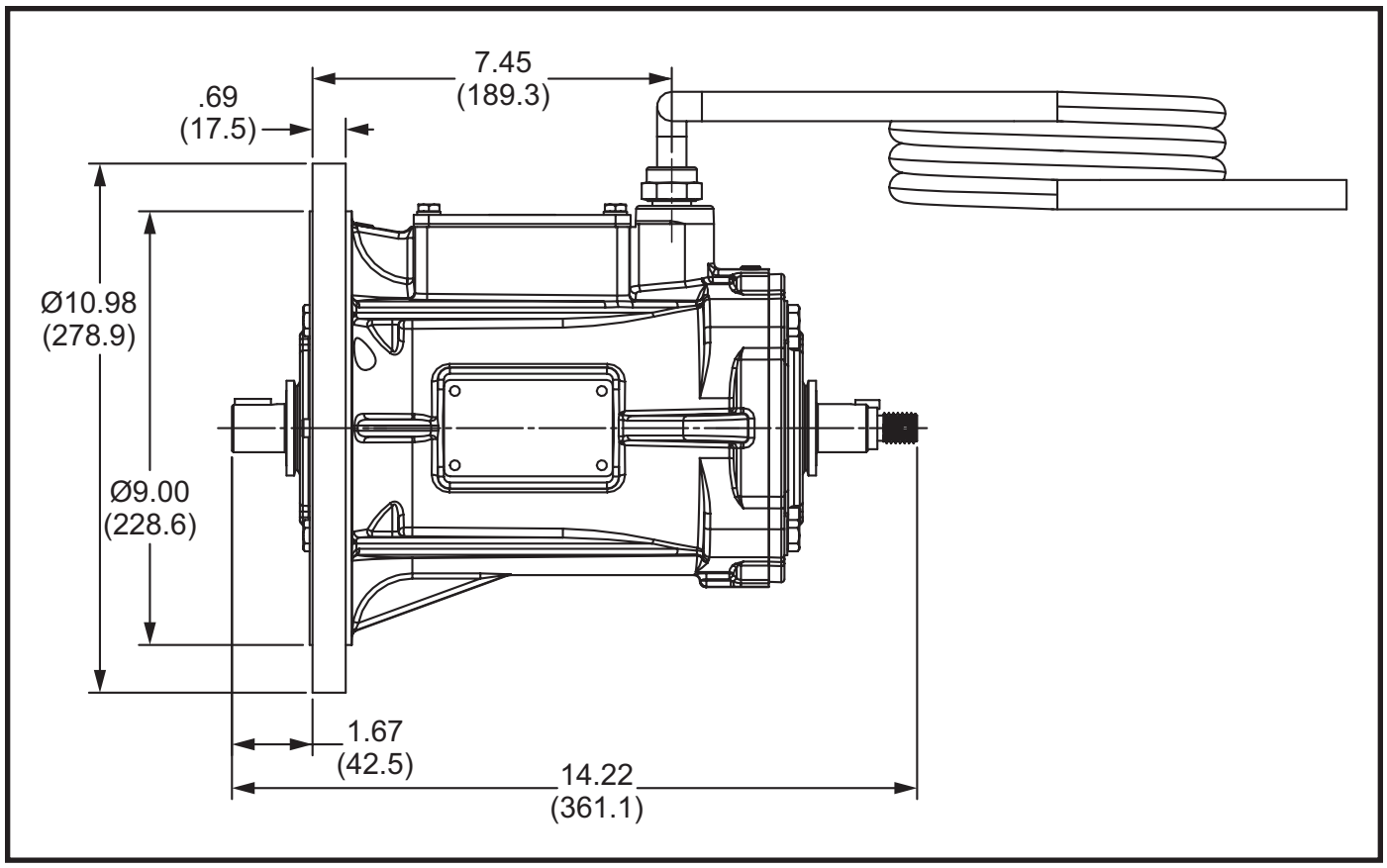
Martin® Flanged Electric Vibrator Dimensions, P/N's MFD70X04 and MFD70X06



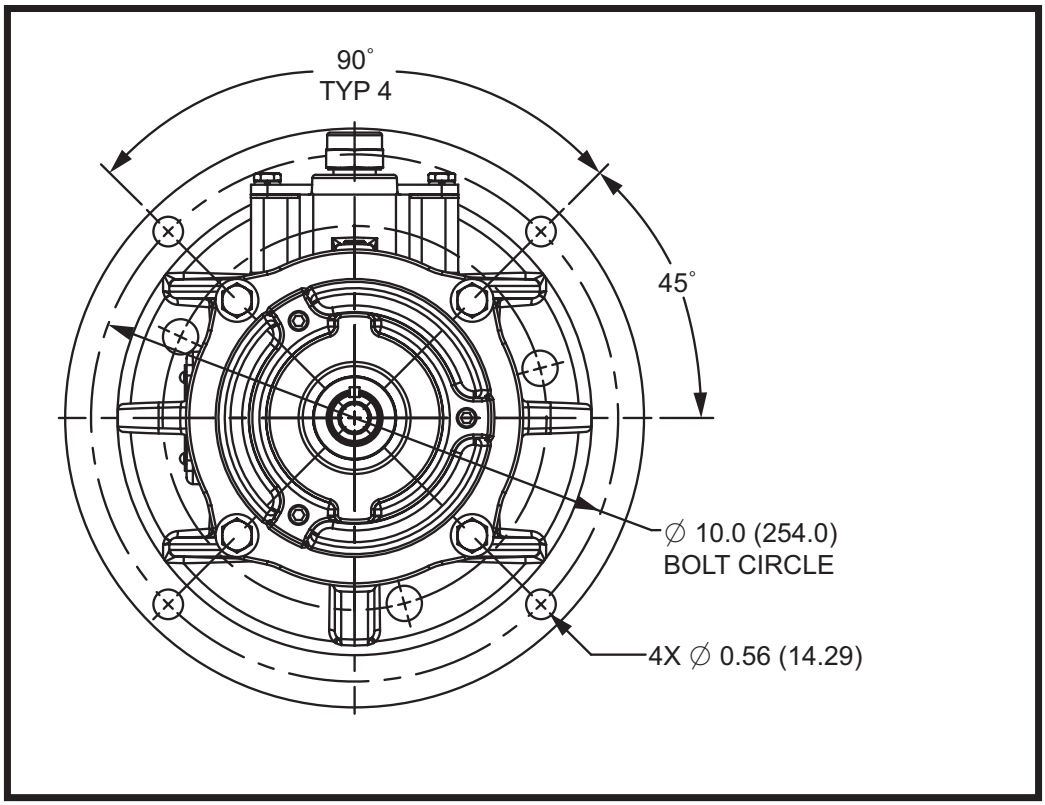
Martin® Flanged Electric Vibrator Dimensions, P/N's MFS20X04 and MFS20X06



Martin® Flanged Electric Vibrator Bolt Pattern, P/N's MFS20X04 and MFS20X06



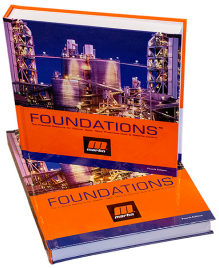
Martin® Flanged Electric Vibrator Dimensions, P/N's MFS30X04 and MFS30X06



Martin® Flanged Electric Vibrator Bolt Pattern, P/N's MFS30X04 and MFS30X06

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