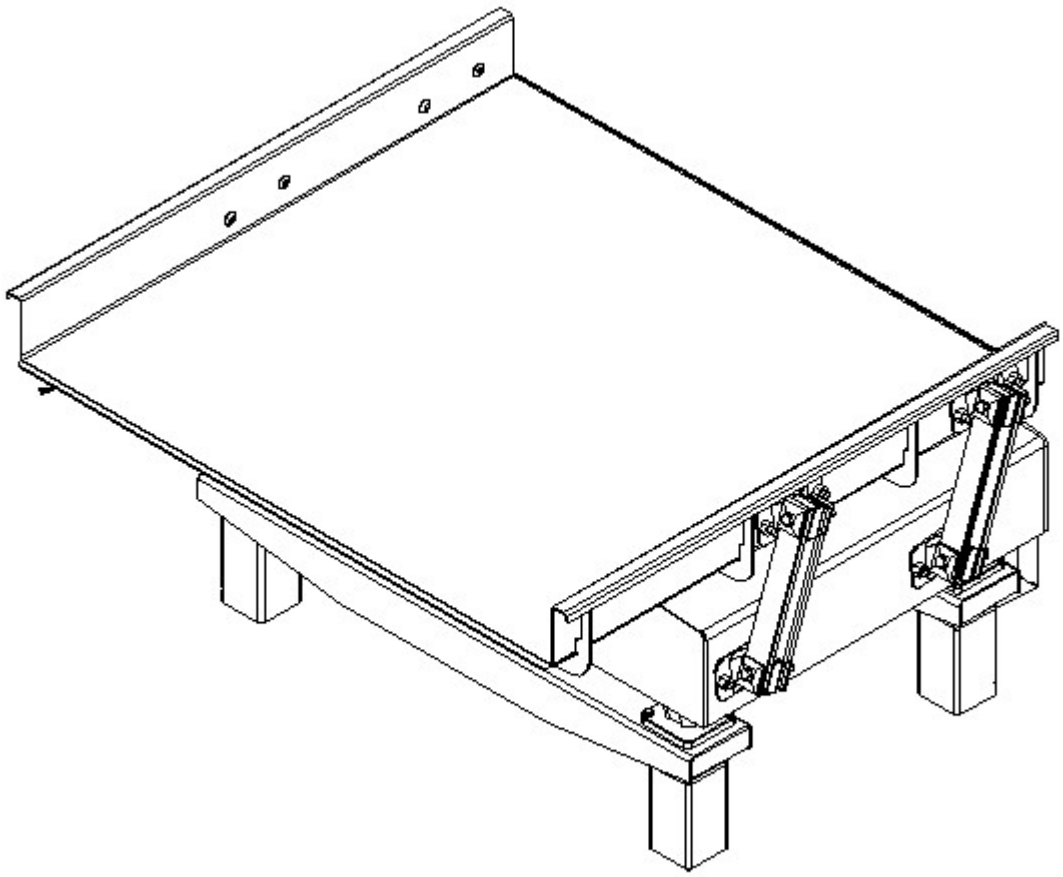
VF PREMIER/EXTREME CONVEYORS



Installation Operation and Maintenance Manual

PPM Contact information:

AMERICAS
PPM TECHNOLOGIES
500 E. Illinois St.
Newberg, OR 97132 | USA
(800) 523-8123 toll free in the US
(503) 538-8575 fax

EUROPE|MIDDLE EAST|AFRICA
PPM EMEA
Unit 10 Jones (GC) Way Great Yarmouth
Norfolk NR31 0DW | UK
+44 (0) 1493 658 801

Webpage: www.ppmtech.com
Email: parts.na@ppmtech.com

Printed in the USA

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3	02/06/08	Replaced FMC with PPM	All	DER
4	10/27/20	Added CD30 References	4,6,19,20,22,31,34	JMB

PPM Technologies reserves the right to alter at any time, without notice and without liability or other obligations on its part, materials, equipment specifications, and models. PPM Technologies also reserves the right to discontinue the manufacture of models, parts, and components thereof.

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1 INTRODUCTION - PPM VF PREMIER/EXTREME CONVEYORS

Thank you for buying your equipment from PPM Technologies. This service instruction manual will help you to understand how your equipment operates and what is required to maintain peak performance. Please read it thoroughly and keep it on file for reference. Your satisfaction is very important to us. Please direct any comments, questions or concerns to our Service Department.

Date Purchased: _____
Serial No.: _____
Factory Order No.: _____
General Arrangement Drawing No.: _____

1.1 SAFETY INSTRUCTIONS

WARNING: PPM/Technologies is not liable for any damage or reduced performance that may occur as a result of improper equipment assembly and installation, or due to unauthorized alterations. Such actions will void any and all warranties.

WARNING: These instructions and safety precautions must be followed. There is danger of electrical shock to the operator.

WARNING: The unit must be properly grounded and verified at installation.

WARNING: The electrical power supply connection to the PPM-supplied unit must be made through a customer-supplied safety disconnect switch. Incorporation of an emergency stop may also be required, according to local codes.

CAUTION: Local safety codes and regulations must be considered when installing and/or operating this equipment.

Product safety labels must be highly visible on the equipment. Check visibility regularly. If safety labels need replaced, contact PPM Technologies for an additional supply free of charge.

Supporting information that may be attached (e.g., drawings) takes precedence over corresponding information printed in this manual.

Safety is a basic factor in the maintenance and operation of VF PREMIER/EXTREME Vibrating Conveyors. Proper clothing, tools and methods of handling can prevent serious injury to you or a fellow worker. A number of safety precautions are listed throughout this manual. Please study and follow the precautions and insist that your coworkers to the same.

1.2 SPECIAL CONSIDERATIONS

Each conveyor by design has components or properties that may require special consideration. These items are noted here to avoid potential problems when operating or servicing VF PREMIER/EXTREME conveyors.

VF PREMIER/EXTREME conveyors are dynamically balanced machines; it is imperative that no weight be attached to the trough in any way as it may negatively affect performance and void the warranty. A one-inch (25 mm) clearance must be maintained at all points so that there is no contact while the conveyor is operating.

1.3 DESCRIPTION

PPM Technologies VF PREMIER/EXTREME Conveyors are dynamically balanced, electromagnetic vibrating conveyors. Material is conveyed along the trough in a rapid succession of short hops by the vibratory action of the conveyor. The vibration is generated by an electromagnetic coil drawing the conveyor trough rearward, storing energy in the fiberglass flexures and rubber spring canisters. Power to the coil is then cut, allowing the stored energy to be transferred back to the conveyor trough, resulting in forward motion of the trough. A feedback sensor mounted on the base monitors the location of the conveyor trough which allows the DMT/CD30 controller to regulate the trough stroke.

The trough on a **VF PREMIER/EXTREME** conveyor is supported and guided by a tuned fiberglass leaf spring system that is mounted on a base (see **Figure 1**.) An electromagnetic coil, along with one or more stainless steel spring canisters is also mounted on the base. The base is supported on a set of isolation springs. During normal operation, there is minimal motion of the base, and therefore, negligible forces transmitted to the support structure. The trough stroke of VF PREMIER/EXTREME conveyors is variable, while the operating speed remains constant. The trough stroke is adjustable through the DMT/CD30 controller either through the control knob on the face of the controller or through a PLC or other control program operating with the DMT/CD30 controller.

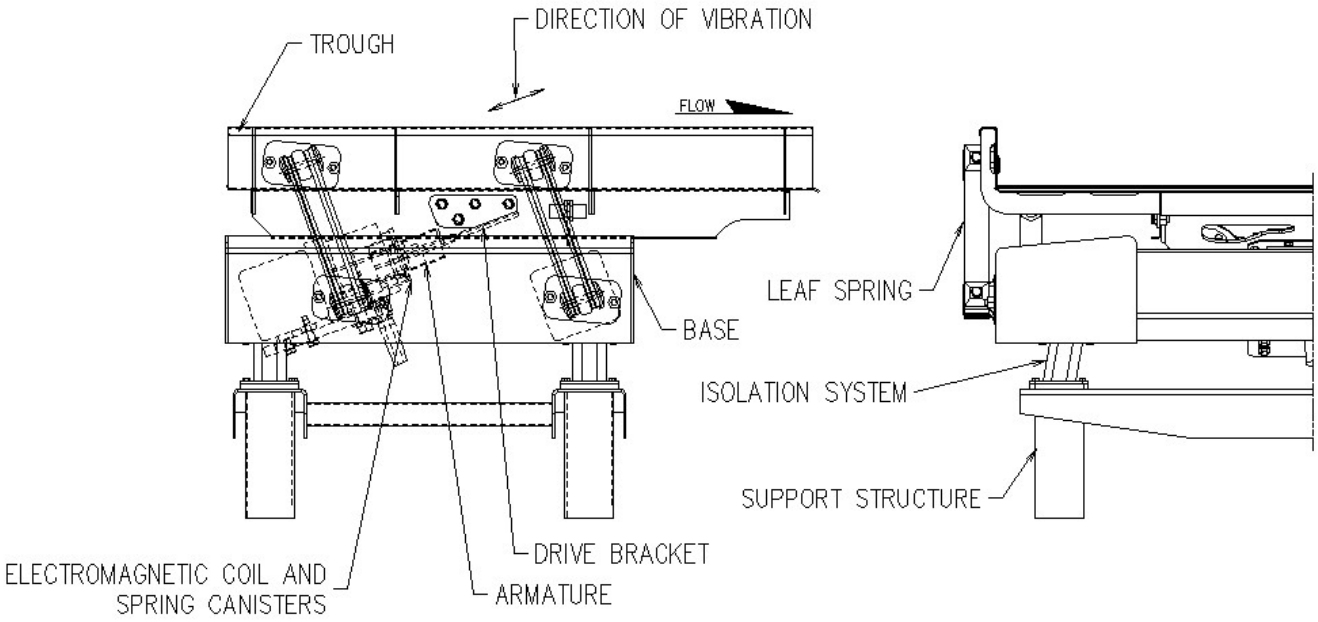

Figure 1: PPM Technologies VF PREMIER/EXTREME Conveyor

2 INSTALLATION

2.1 LONG TERM STORAGE

VF PREMIER/EXTREME Conveyors should be stored indoors. If stored off-site, place on cribbing and cover with plastic.

2.2 SITE PREPARATION

The VF PREMIER/EXTREME Conveyors' isolation system is designed to prevent transmission of dynamic loads to the support structure. However, the natural frequency of the support structure must not be close to the operating speed of the conveyor. If the natural (or resonant) frequency of the support structure is close to the operating speed of the conveyor, this condition will result in large support structure displacements and stresses that may cause failure of the support structure. **The natural frequency of the support structure must be greater than or equal to 1.5 times the operating speed of the unit. Also, the support structure design should limit the calculated dynamic deflections to ± 0.004 inches (0.1 mm) in all directions.** Static and dynamic forces for each conveyor can be obtained from the general arrangement drawing (G/A) of the unit.

WARNING: PPM Technologies is not responsible for damage or personal injury resulting from improperly designed or constructed supports. Installation of the conveyor on improperly designed or constructed supports will void any and all warranties.

Regardless of whether this equipment is installed at grade level, elevated, or on upper floors, the mounting surfaces at the location of the coil spring or rubber chevron isolators must be level or at a uniform slope, within ± 1/16 inches (1.6 mm). Grade 5 bolts (minimum) are recommended for connections to elevated steel work.

When designing the site layout for the conveyor system, it is important that a one-inch (25 mm) clearance be maintained at all points. It is also important to provide clearance in the layout for drive (and drive guard) removal and accessing the drive for maintenance. Avoid severe inclines that reduce the capacity of the conveyor, contact PPM for all applications requiring an incline of greater than three (3) degrees.

VF PREMIER/EXTREME Conveyors are designed to operate in wet or dry environments. The ambient temperature should be between 0°F (-18°C) and 110°F (43°C). **NOTE: Ambient and product temperatures must be specified when ordering a conveyor.**

The air supply (if required) must be clean, dry or slightly oily, and regulated. Normally 80 psi is more than adequate for accessory operation. (For additional information, see **ACCESSORIES.**) Refer to the drawings supplied with each order for specific air pressure recommendations.

2.3 EQUIPMENT INSTALLATION

WARNING: PPM Technologies is not responsible for damage or personal injury resulting from improperly designed or constructed supports. Installation of the conveyor upon improperly designed or constructed supports will avoid any and all warranties.

CAUTION: Do not make any alterations to the conveyor without first contacting PPM Technologies. PPM Technologies will not assume any responsibility for poor conveyor performance or mechanical failure as a result of unauthorized alterations to the equipment. Such actions will void any and all warranties.

CAUTION: Local safety codes and regulations must be considered when installing and/or operating this equipment.

NOTE: The natural frequency of the support structure must be greater than or equal to 1.5 times the operating speed of the unit. The support structure design should limit the calculated dynamic deflection to ± 0.004 inches (0.1 mm) in all directions. Isolation forces for each model can be obtained from the factory.

CAUTION: Isolation cables (where used) must not come into contact with the isolation bracket or any nearby structures. Do not exceed inclines or declines shown on the General Arrangement drawing provided with the conveyor.

If rubber seals are installed between the pans of in-line conveyor units, contact should not restrict the motion of the machines. **Freedom of motion should be checked in both the loaded and unloaded conditions.**

NOTE: Due to the short burst of high inrush current that occurs when starting VF PREMIER/EXTREME Conveyors, it is recommended that slow-blow type fuses be used to avoid nuisance tripping.

CAUTION: The conveyor must not come into contact with any rigid object or adjacent surface that could hamper its vibrating action. A one-inch (25 mm) clearance must be maintained.

CAUTION: The rubber components of the conveyor must not be exposed to oil or to an oil intense atmosphere.

2.3.1 INSTALLATION EQUIPMENT AND TOOLS

The following equipment and tools are required or recommended for conveyor installation:

- Transit
- Crane or forklift and come-along
- Lifting straps
- Digital level
- Tape measure
- Plumb bob
- Chalk line
- Heavy duty drill and masonry bits

2.3.2 SUPPORT ERECTION

Before starting, review all equipment drawings for specific installation instructions, support loads, and dimensions. Lay out conveyor centerlines first, and then lay out support centerlines with a chalk line. Position supports on centerlines and transfer hole locations from supports to the floor. Drill holes for anchor bolts based on recommendations by the anchor bolt manufacturer. Insert the anchor bolts in the holes, and place supports into position. Using a transit, place steel shims at each anchor bolt location to raise supports to the proper elevation, making sure to allow one inch for installation of grout. (See **Figure 2a.**) Plumb the supports with shims, using a plumb bob or digital level. Tighten anchor bolts and recheck plumbness and hole centers at the top of the supports. After all bolts are tightened, install non-shrinking grout between floor and bottom of support.

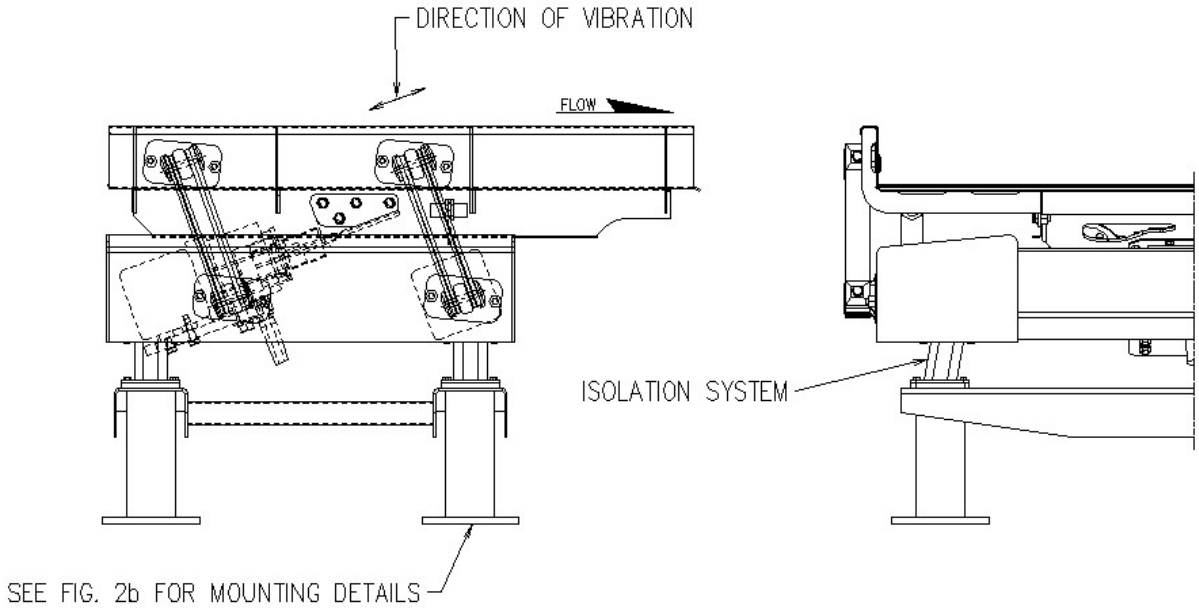

Figure 2a: Typical Floor-Mounted Installation

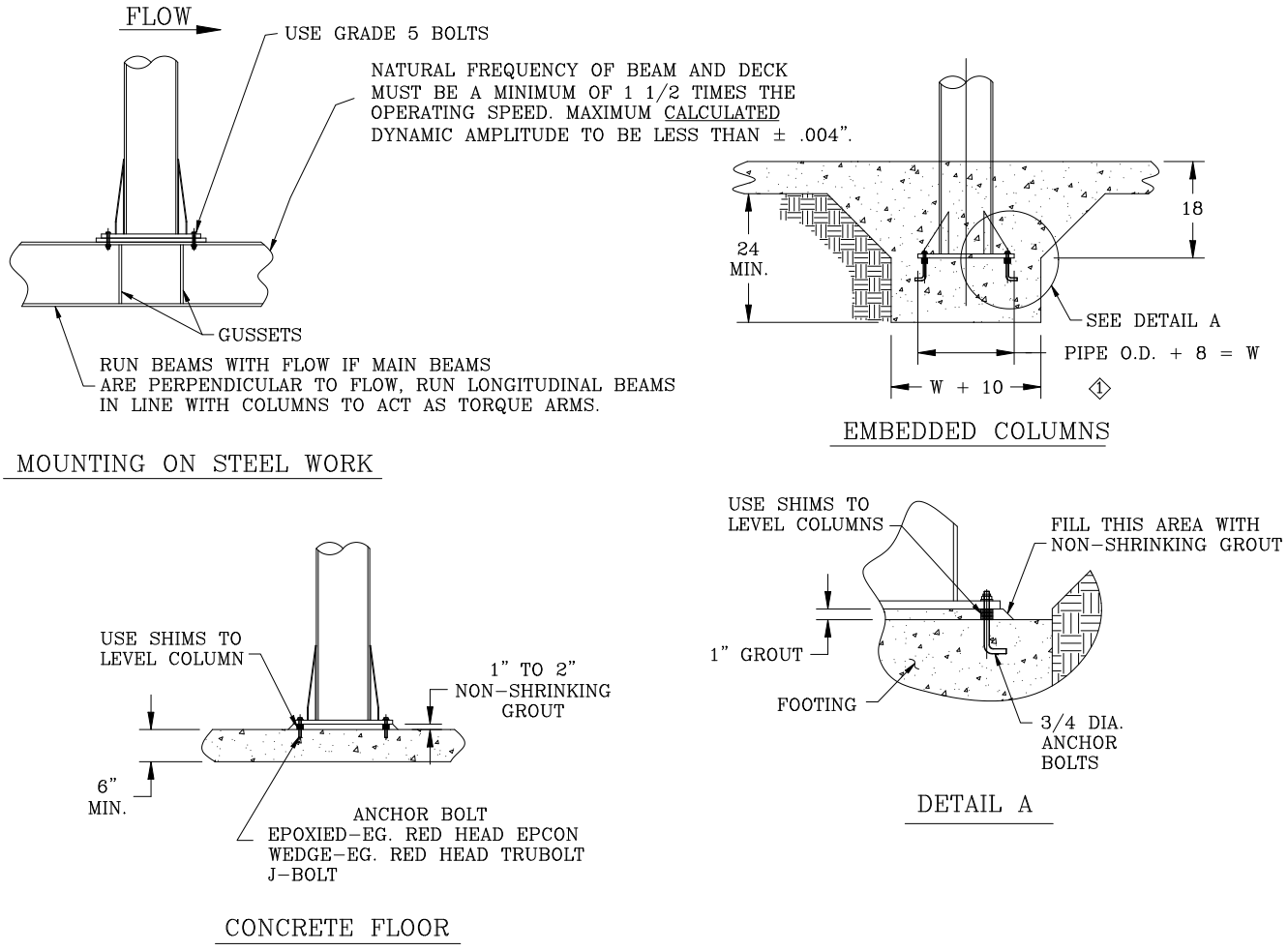

Figure 2b: Floor Mounting options

2.3.3 ISOLATORS AND ISOLATOR SUPPORT BRACKETS

The isolation system can be either floor-mounted or suspension-mounted. The base isolator bracket that is furnished for a floor-mounted isolation system is different from the suspension-mounted isolation system bracket. Therefore, the type of isolation system (floor-mounted or suspension-mounted) must be specified when the conveyor is ordered from PPM Technologies.

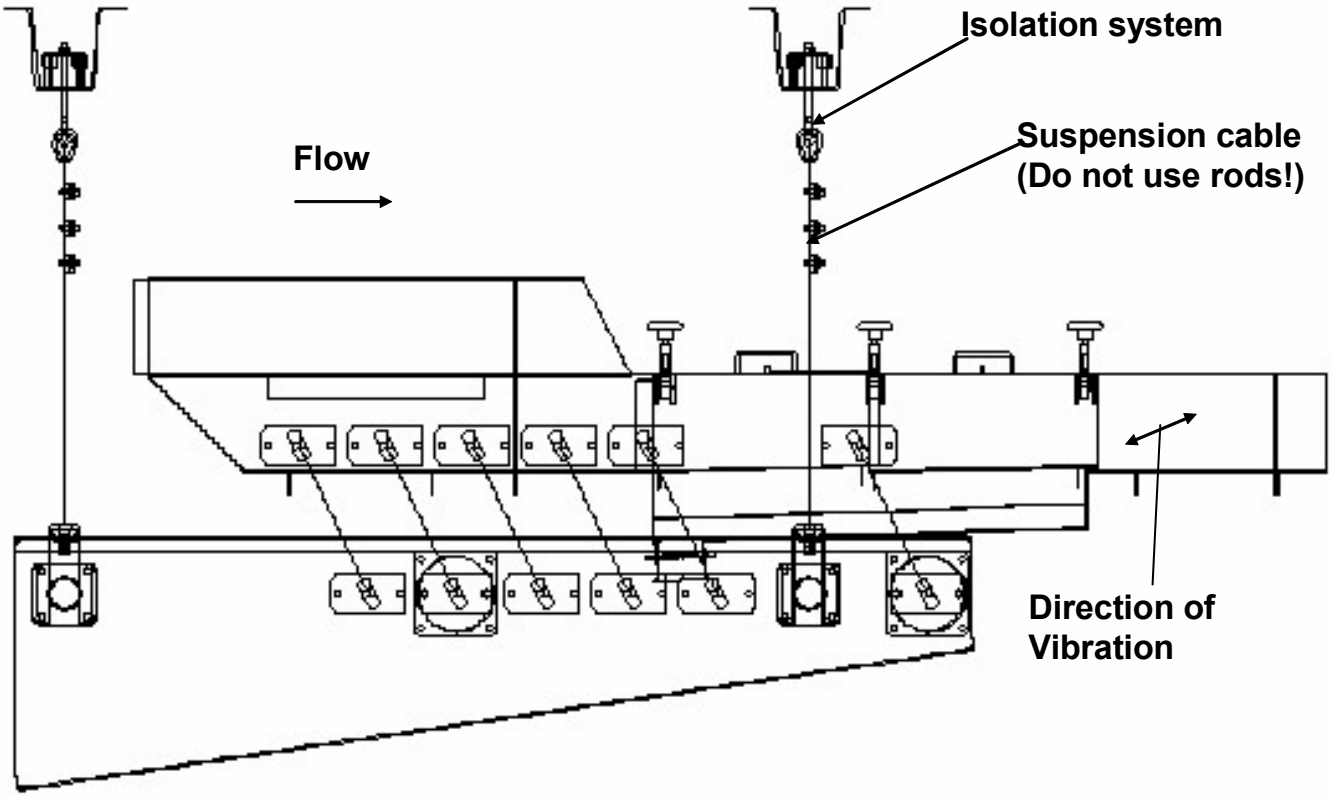

Figure 3: Typical Suspension-Mounted Installation

Figures 4 and 5 on the following pages illustrate typical cable isolation assemblies. If the cable isolation assembly is not as shown, contact PPM Technologies. The cable isolation assemblies are shipped loose and must be assembled. The coil springs and rubber springs must be seated in the spring retainers.

CAUTION: After the isolator is assembled, at least one full thread on the cable fitting must protrude through the locknut.

For both floor-mounted and suspended isolation systems, conveyor installation must include a final adjustment to ensure that the isolators are loaded equally on the left and right sides of the conveyor.

For suspended units, the top isolator bracket must be attached to a rigid structure. Clamp the top isolator bracket tight using a Grade 5 bolt (minimum).

Base-mounted conveyors may use rubber chevron springs for the isolation system. **Figure 6** shows side-mounted isolators. In this configuration, it is critical that the springs be installed with the word "TOP" on the side face and the arrow pointing upwards. **Figure 7** shows bottom-mounted isolators. In this configuration, it is critical that the springs be installed with the lean of the isolators opposing each other.

On most units, isolator stiffness corresponds to a specific location. The coil spring isolators have a color-coded stripe on them and the rubber isolators have the stiffness designation, K1 through K8, molded into the side of the rubber. Refer to the General Arrangement drawing (G/A) supplied with the conveyor to determine the proper location of each pair of isolators.

CAUTION – Safety cables should be installed on all units that are in areas where personnel can walk under suspended units. Failure to do so could result in severe injury.

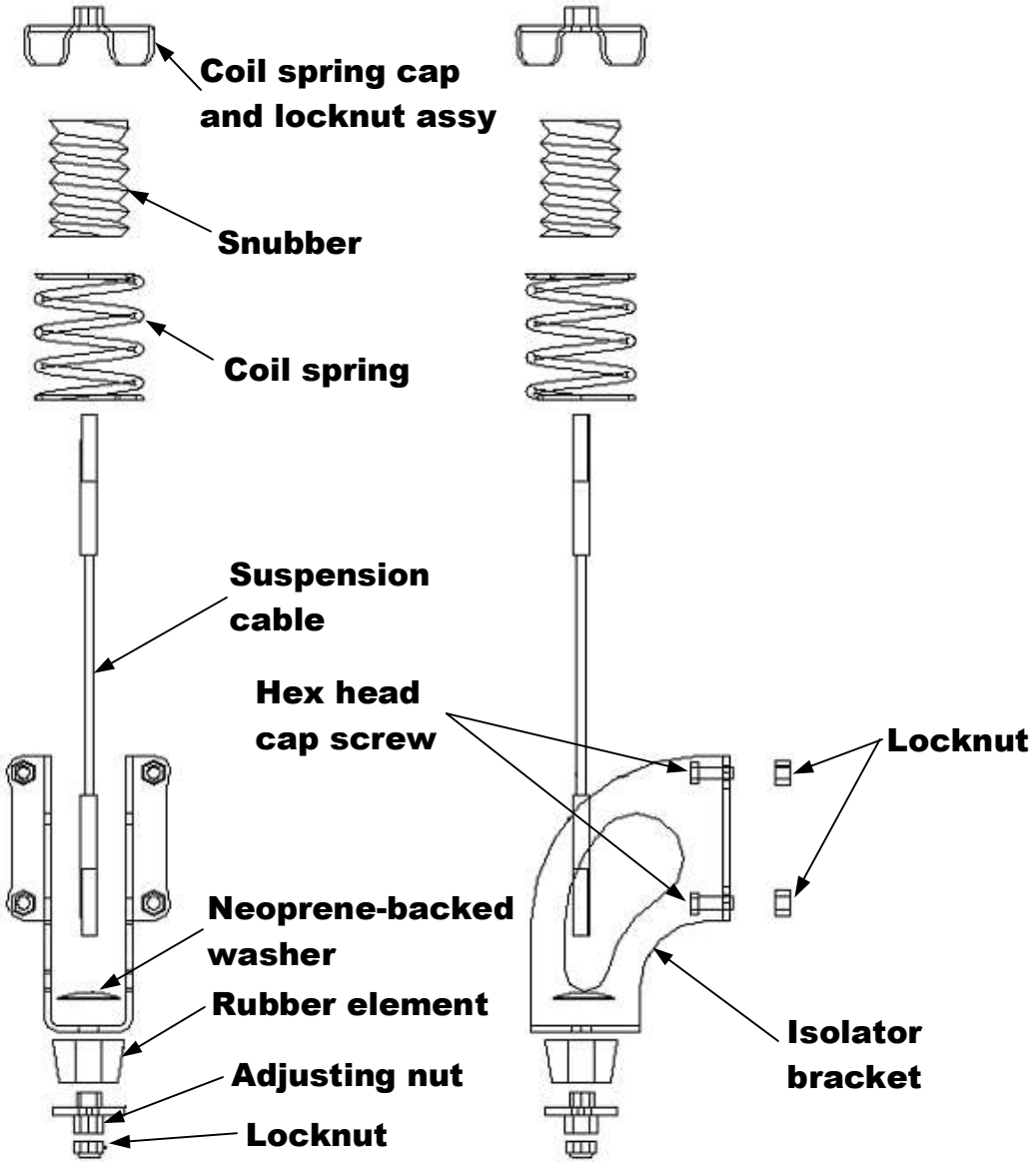

Figure 4: Typical Floor-Mounted Isolation Assembly

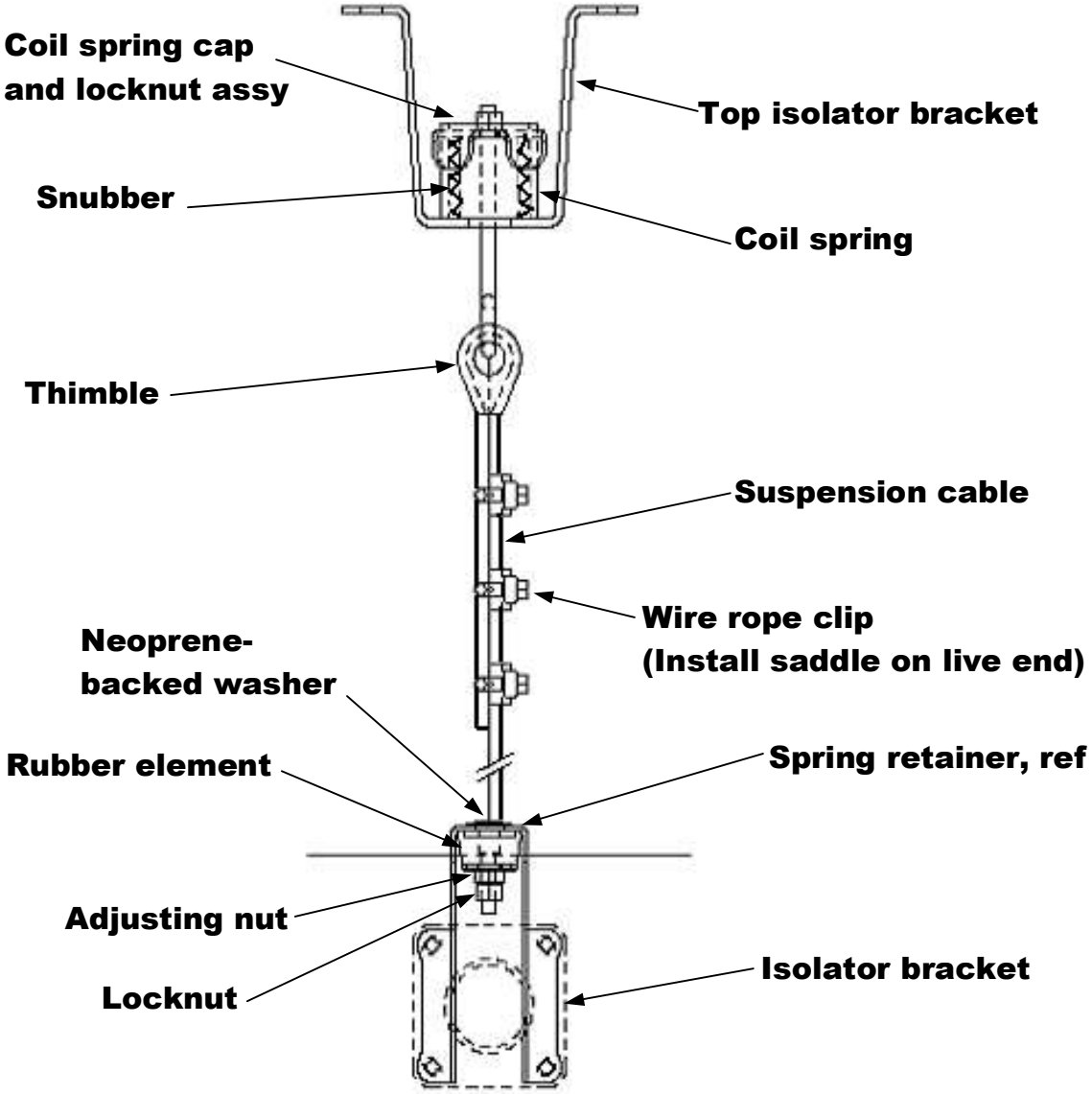

Figure 5: Typical Suspension-Mounted Isolation Assembly

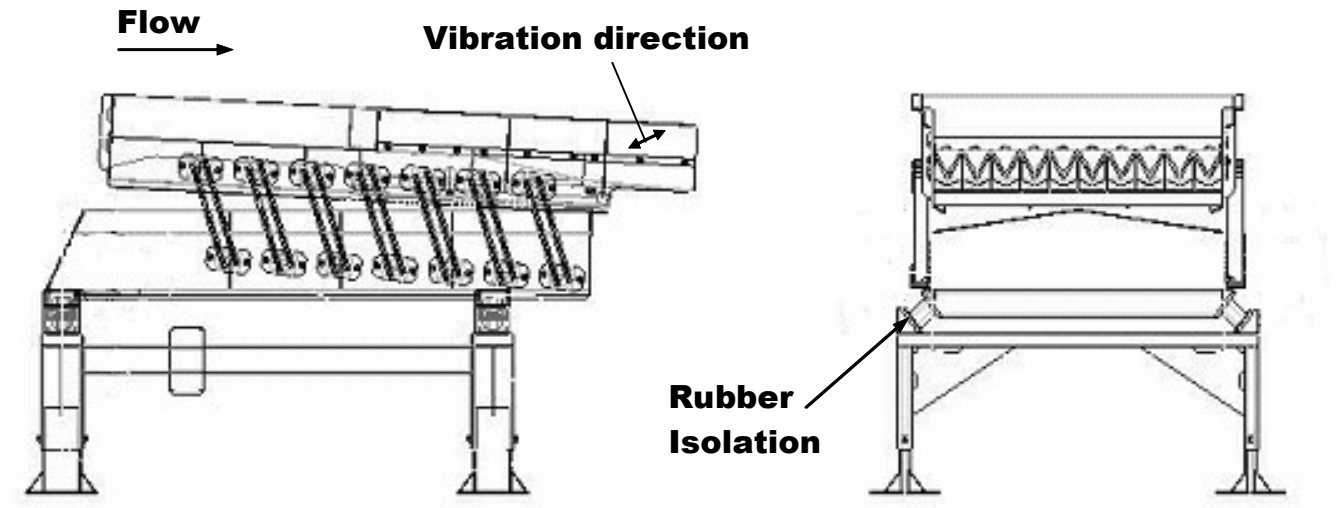

Figure 6: Side-mounted Isolators

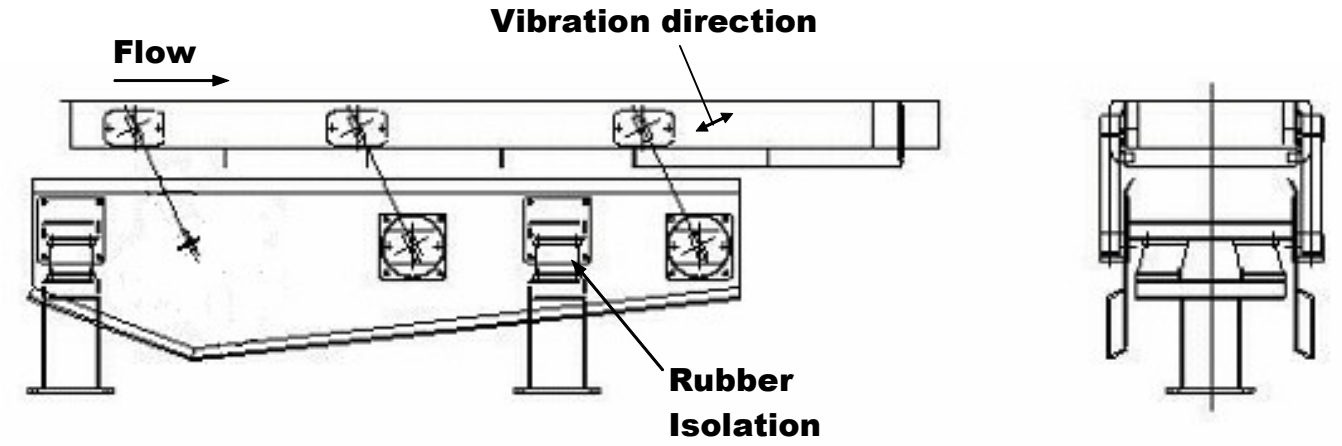

Figure 7: Bottom-mounted Isolators

2.3.4 CONVEYOR INSTALLATION AND ISOLATOR ADJUSTMENT

When lifting the conveyor, make sure that the lifting straps straddle the center of gravity of the conveyor to ensure a safe lift. To ensure a safe lift on cable-isolated conveyors, the unit can be lifted by wrapping a chain around the isolator bracket, as long as the chain angle is within 30° of vertical. **NOTE: Use edge protectors around sharp edges, and a spreader bar above the trough to prevent bending the sheet metal.** Lift the conveyor into position and install the isolators in the proper locations.

On cable-isolated conveyors, check for even loading on the isolators by measuring the compressed height of the coil springs. The height of the coil springs should be the same from one side of the conveyor to the other within 1/8 inch (3.2 mm). For each pair of suspension cables, the left-side cable should have the same tension as the right-side cable. This can be gauged by pushing and pulling laterally on the cables. Also, check the side-to-side levelness of the conveyor with a level. If adjustment is required, lift the conveyor off of the coil springs by an inch or two (25 or 50 mm), and adjust the effective length of the cable by turning the adjusting nut at the bottom of the cable. Set the conveyor back down on the coil springs. Re-check all isolator locations and repeat the process, if required.

IMPORTANT: For conveyors located above floor level that are suspension-mounted, PPM Technologies requires that safety cables be installed around the conveyor.

WARNING: Do not use rods for suspending the conveyor. PPM Technologies is not liable for any damage or reduced performance that may occur as a result of improper equipment installation, or due to unauthorized alterations. Such actions will void any and all warranties.

2.4 ELECTRICAL

WARNING: These instructions and safety precautions must be followed. There is danger of electrical shock to the operator. The unit must be properly grounded and verified at installation.

WARNING: The electrical power supply connection to the PPM-supplied unit must be made through a customer-supplied safety disconnect switch. Incorporation of an emergency stop may also be required, according to local codes.

WARNING: The electrical power supply must be of sufficient size to carry the current designated on the equipment nameplate.

WARNING: Do not attach electrical conduit to the conveyor. PPM Technologies is not responsible for poor conveyor performance as a result of unauthorized alterations. Such actions will void any and all warranties.

The electrical power supply must not vary beyond the standard IEEE tolerance of +10% / -6%.

NOTE: **Due to the short burst of high inrush current that occurs when starting VF PREMIER/EXTREME Conveyors, it is recommended that slow-blow type fuses be used to avoid nuisance tripping.**

2.4.1 DMT/CD30 Controller

Extra caution must be taken to ensure that the DMT/CD30 Control enclosure remains watertight. The controller is a self-contained unit. A possible water entry point is at the conduit fitting where the power or coil cables enter the conduit box. To keep this point water tight, the controller must be installed so that the conduit fittings are oriented so that they point towards the ground.

WARNING: Before performing any maintenance, the electrical power supply must be disconnected at the safety disconnect switch.

WARNING: Refer to the **DMT Controller manual sm1098 or CD30 Controller manual sm1222** prior to attempting to tune or adjust the internal settings on the controller.

The DMT and CD30 Control enclosure is rated NEMA 4X. The control circuit board **MUST NOT** be operated outside of the enclosure supplied. Refer to **sm1098** for the placement of the mounting holes of the DMT Controller.

The controller must be mounted on a static framework with no vibration, or warranty will be void.

NOTE: Separate conduit entries are provided for: Power Input, Coil cable, and Low Voltage Control (Sensor etc.) Do not conduit the low voltage control wires with either Power Input or MAGII Coil wires.

2.4.2 Feedback Sensor

To achieve control of the stroke, the DMT controller needs to know the position and direction of movement of the conveyor trough. This is done using an analog feedback sensor. Refer to fig. 8 for fitting details. Note that the spacing between the end of the sensor and the target is optimally 1/2" (12mm) to 5/8" (16mm).

The Feedback Sensor is normally supplied with up to 12ft (3.6M) of cable. This cable is not to be extended beyond 12 feet under any circumstances. If longer cable runs are necessary, contact PPM. The sensor cable must be separated or shielded from all power lines.

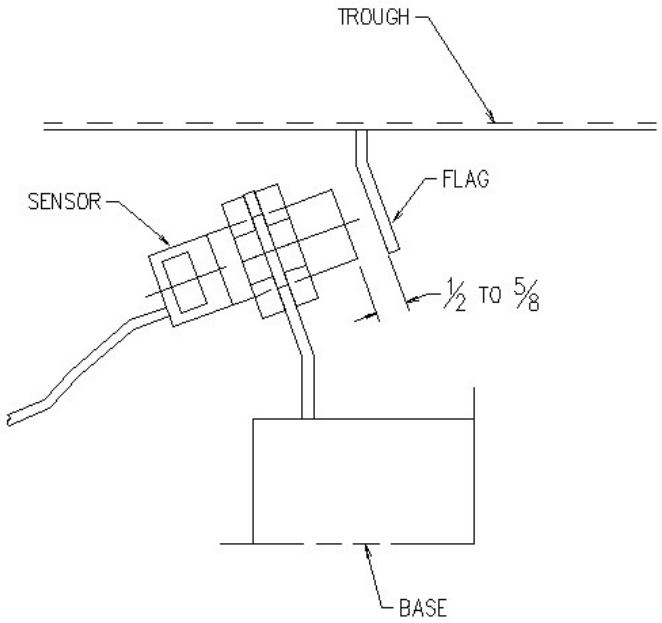

Figure 8: POSITION FEEDBACK SENSOR – TYPICAL INSTALLATION

The CD30 is setup to operate with the standard DMT & Mag II sensor (Gordon p/n 06A578) as well as PPM's own accelerometer. It gets wired into the terminal strip on the CD30/35, so the existing DMT connector on the end of the sensor wire must be cut off if replacing an existing DMT or Mag II with a CD30/35.

Wiring connections for DMT/Mag II sensor:

- Black (ground) – terminal 1
- Red (+24v) – terminal 3
- White/grey (sensor) – terminal 12
- Black (large wire) (shield) – terminal 16

3 OPERATION

3.1 OPERATIONAL LIMITS

WARNING: PPM Technologies is not responsible for any damage or injuries that may occur as a result of improper use of unauthorized alterations to the conveyor. Such actions will void any and all warranties.

The speed of the conveyor is preset at the factory and should not need to be adjusted. Over time, variations in material handling characteristics, and leaf spring fatigue may require an adjustment of the operating speed. The allowable variations from the nameplate settings are:

Speed: ± 100 cpm

If greater deviation is required, contact the factory.

3.2 UNUSUAL MOTION

During initial operation, observe the conveyor for any unusual motion. Unusual motion is any motion that does not correspond to basic conveyor operation. Examples of unusual motion associated with an improperly tuned conveyor would be:

- Speed not within the design speed tolerance.
- Base motion that occurs across the conveyor width. (Check for side-to side motion by observing the end of a base member in the product flow direction.)
- Base motion that occurs along the direction of flow greater than 1/8-inch (3.2 mm) total stroke. (This can be measured by placing a piece of masking tape on the base member face and turning on the machine. Once the machine is running, place the tip of a ballpoint pen on the tape only long enough to produce a mark. This mark can be measured and compared to the maximum allowable base stroke. Please note that this measurement does not apply to machines that are running at multiple speeds.
- Isolation cable whip during steady-state operation. (This type of motion is only observed in suspension mounted isolation systems. Please note that cable whip could be produced by excessive base motion. The amount of base motion should be determined before further investigation.)

WARNING: Cable whipping will result in rapid deterioration of the cable. This condition must be corrected immediately to prevent failure of the cable. Cable failure could result in damage to the equipment or serious bodily injury.

- Vertical motion in the isolation coil spring during steady-state operation greater than 1/8 inch (3 mm). This motion can be observed by holding a small ruler beside the coil spring while the conveyor is running. **Do not place fingers near the coil spring coils when taking this measurement because serious bodily injury could result.**

If any of these unusual motions (or any other motion that does not correspond with basic conveyor operation) occurs, please contact PPM Technologies.

VF PREMIER/EXTREME Conveyors are dynamically balanced machines; **it is imperative that no weight be attached to the conveyor trough in any way, as it will negatively affect performance and void the warranty.** A one-inch (25 mm) clearance must be maintained at all points so that accessories do not contact the conveyor while it is operating.

3.3 TUNING

Tuning is the process of matching the operating speed of the conveyor with the leaf spring system as well as the weight of the conveyor. If any of these three parameters change, at least one of the other parameters must change to compensate. Over time, the leaf springs will lose stiffness due to fatigue and loss of clamping in the connection. This will cause the operating speed to gradually decrease. If unchecked, this process can result in poor product speed or throughput. **Therefore, the speed should be monitored and recorded semi-annually in a logbook for early detection of any changes in the operating characteristics of the conveyor.**

Verify

1. **The stroke matches the nameplate value.**

2. **The base of the conveyor has little vibration (less than 1/8 inch (3.2 mm) in the direction of flow.)**

If both of these conditions cannot be met, contact PPM Technologies for assistance.

If the speed starts to decrease at a noticeable rate, it is time to either replace the entire spring system or the DMT/CD30 controller. (Refer to **PREVENTATIVE MAINTENANCE.**)

3.3.1 MEASURING THE STROKE

Stroke is the overall dynamic displacement of the trough. The stroke of a VF PREMIER/EXTREME Conveyor is measured on the stroke gauge provided with the unit. When the conveyor is running, the stroke of the unit is determined by the intersection of the inner lines, as indicated in **Figure 9**. When the inner lines appear as an **"X"**, the stroke should be read at the intersection of the **"X"**. The actual stroke should match the nameplate stroke. Position and age of the individual stroke gauge may cause a variance of as much as ± 0.010 inches (0.25 mm); this is a generally acceptable reading.

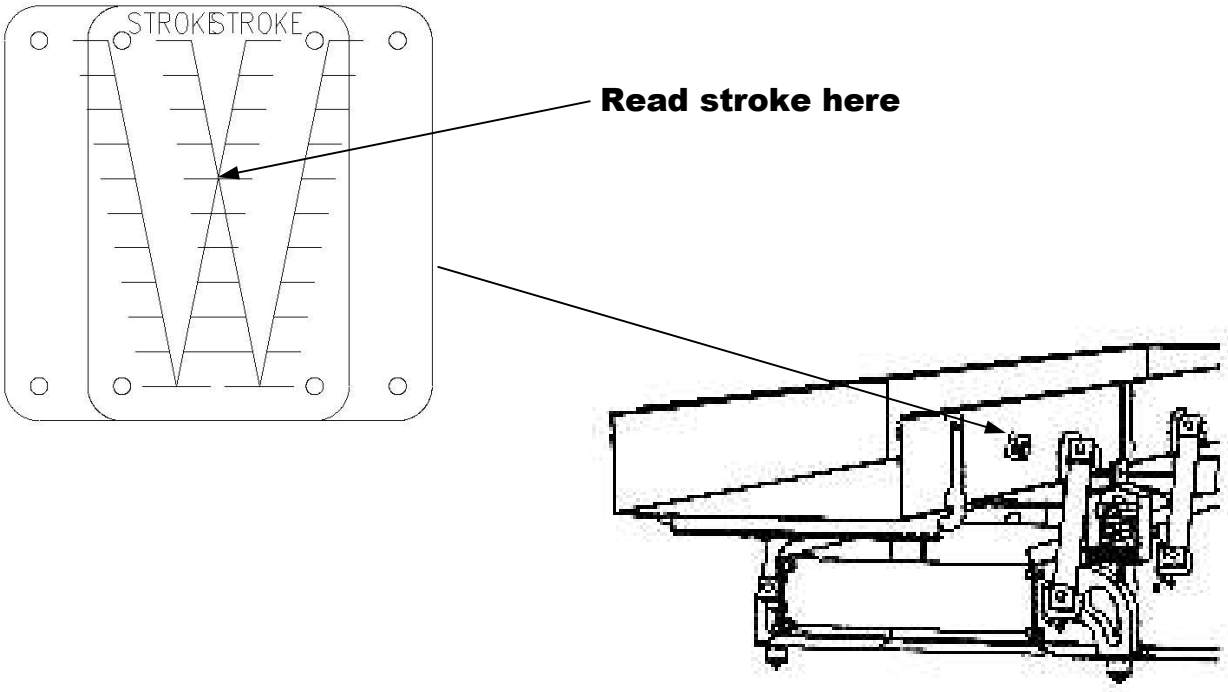

Figure 9: Reading the Stroke Gauge

3.3.2 CHECKING THE SPEED

To check the speed of the conveyor, aim the light beam of a digital tachometer at a vertical or near-vertical edge of the trough while the conveyor is running. (See **Figure 10**) Hold the tachometer steady until a consistent readout is obtained.

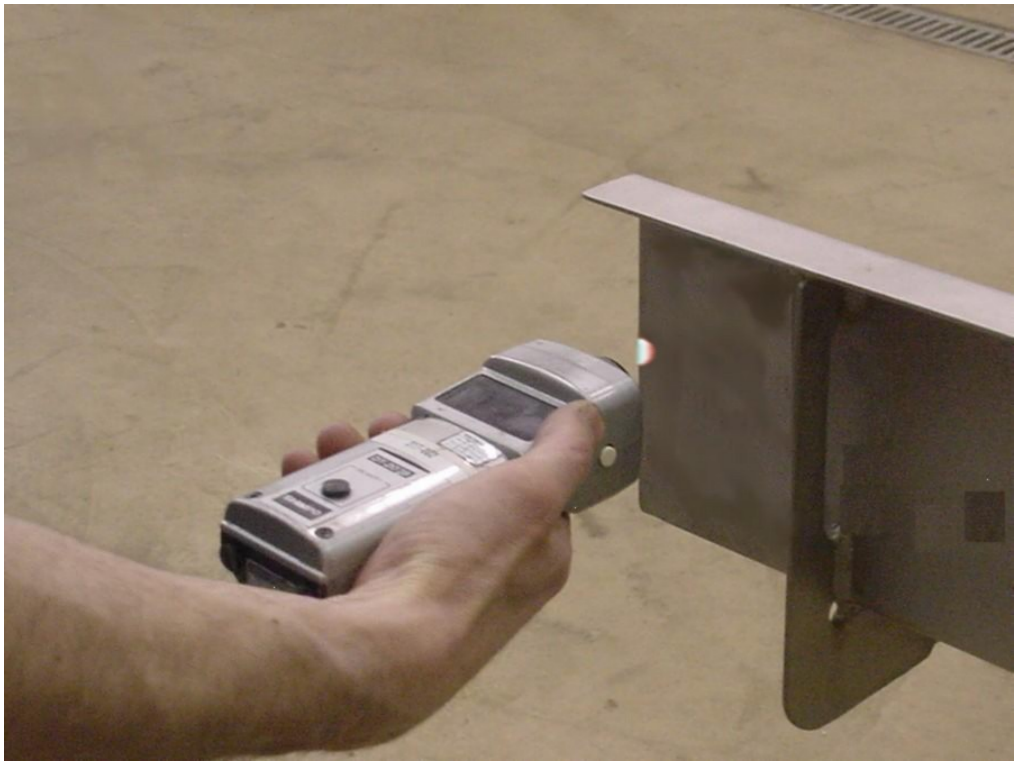

Figure 10: Checking Conveyor Speed with a Digital Tachometer

3.4 ACCESSORIES

There are several accessories available for VF PREMIER/EXTREME Conveyors. All accessories are optional and must be specified when the order is placed.

3.4.1 COVERS

Covers are available for VF PREMIER/EXTREME Conveyors. Since covers become a part of the vibrating weight of the conveyor, the unit should not be operated with a cover removed. If covers or any accessories need to be removed or added, consult PPM Technologies.

3.4.2 PNEUMATIC GATES

The normal operating pressure for pneumatic gates is 60 psi. All gates are preset at the factory. Flow control valves are provided, however, for adjusting the actuation speed of the gate as required for changes in friction characteristics and wear over the life of the gate. The closing speed should be set so that the gate plate accelerates past the product to avoid pinching the product, but not so fast as to slam shut. The opening speed should be just fast enough to provide a clean discharge into the takeaway chute without spilling product.

If excessive airflow is needed, check for material build-up that may be causing an interference condition. For slide gates, check that the gate springs are properly adjusted. Gate springs should be adjusted to take up the clearance between the rail and the gate plate, and provide enough force to prevent rattling, but no more. Never replace the air cylinders with a different type, bore, or stroke from the original cylinders.

3.4.3 SCREEN CLOTH

Screen cloth can be stretched quickly to the required tension by tightening the tension wing nuts. Tighten nuts uniformly, working from the center of the screen panel out towards the ends. The panel should be approximately centered between the side plates. When replacing the screen cloth, make sure that the rubber channels are installed on the bucking bars and they are in good condition.

The gauging of proper tension is a matter of good judgment and experience. A properly mounted fine mesh screen cloth when struck between the deck supports with the open hand will be resilient and cause the hand to rebound. Heavier cloths, when struck with the side of the fist, should not slap against the supports. Relative motion between the screen cloth and supporting deck structure will decrease the screening efficiency and also shorten screen life.

3.4.4 ADJUSTABLE DIVERTERS, CLAMPED-IN SCREEN PANELS, ETC.

Periodically check to make sure that clamps are tight and in good working order. Loose panels will fatigue and crack and may also cause failures in the main trough structure.

4 MAINTAINENCE

4.1 PREVENTATIVE MAINTENANCE

WARNING: Before performing any maintenance, the electrical power supply must be disconnected at the safety disconnect switch.

WARNING: Each unit is factory tuned. Consult PPM Technologies prior to performing any modifications. PPM Technologies is not responsible for poor conveyor performance that results from unauthorized modifications. Such actions will void any and all warranties.

Some materials adhere to the trough surface that will affect the tuning and balance of the conveyor.

4.1.1 RECOMMENDED TOOLS

The following special tools and instruments are recommended for working on VF PREMIER/EXTREME Conveyors:

- Torque wrenches (See **TORQUE SPECIFICATIONS**)
- Digital level (for installation)
- Tachometer, digital, non-contact

4.1.2 MAINTENANCE SCHEDULE

The VF PREMIER/EXTREME conveyors are basically maintenance free. However, operators should conduct the following checks and preventative maintenance in accordance with the VF Drive and VF maintenance manuals. This quick reference sheet is not intended to replace the operator's manual. When conducting preventative maintenance checks, please refer the operator's manual for proper maintenance procedures.

Model	Frequency	Maintenance Check	Action required
VF PREMIER/EXTREME	Monthly	Check speed of machine with an optical tachometer. It should not be more than 50 cpm off the value on the nameplate	On VF PREMIER/EXTREME conveyors, add additional fiberglass springs per the maintenance manual to bring speed within tolerance.
VF PREMIER/EXTREME	Monthly	Inspect all leaf springs (fiberglass flexures) for wear, damage or fatigue	If springs show signs of wear (black or gray residue originating from springs or cracks under the clamp bar), replace all worn leaf springs and re-torque ½" bolts to 75 ft-lbs using a torque wrench. Refer to operator's manual for proper spring replacement procedure.
VF PREMIER/EXTREME	Monthly	Inspect all suspension/isolation members. Inspect cables for fraying or splitting. Inspect rubber chevron isolators for damage or degradation.	Replace all frayed cables. Determine and correct the cause of the fraying. Replace all damaged or degraded isolators.
VF PREMIER/EXTREME	Yearly	Inspect all fasteners.	Torque all fasteners to required value (Ref Table 3)
VF PREMIER/EXTREME	Yearly	Inspect conveyor for cracking or damage	Contact PPM if any cracking or damage is found.

4.1.3 LEAF SPRINGS

WARNING: Defective springs must be replaced immediately.

Inspect the leaf springs periodically. Worn springs are characterized by delamination of the fibers, discoloration and/or small cracks near the clamp bar. The springs must be removed from the conveyor to obtain a good check. If the springs are cracked at several locations, it is likely that all of the springs need replaced.

NOTE: **Leaf springs must be replaced with springs of the same size and thickness. Replacement leaf springs must be obtained through the PPM Technologies Service Department.**

IMPORTANT: **When replacing leaf springs, it is important to note the arrangement of the spring stack. The stack must be reassembled in the same order and same location on the conveyor. Figure 11 illustrates typical spring arrangements. Tighten to a torque of 75 ft-lb (102 N-m).**

Spring quantities must always be symmetrical about the centerline of the conveyor.

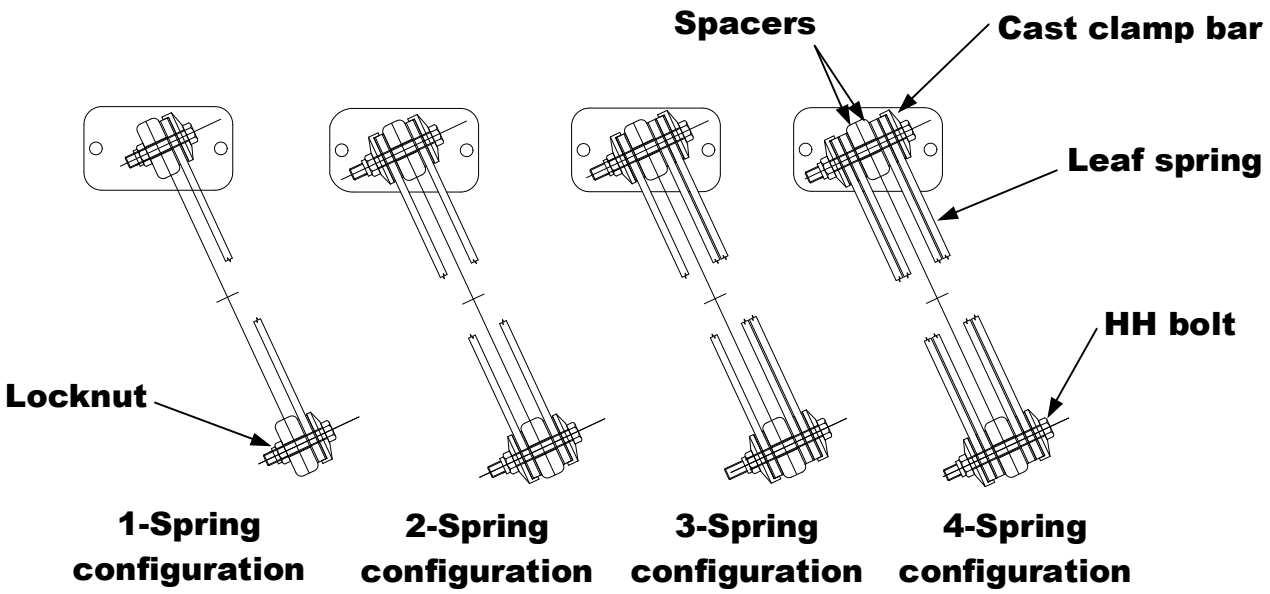

Figure 11: Typical Spring Arrangements

The maximum number of standard springs that can be used per bracket on the cast stainless steel brackets are listed below.

TABLE 1
SPRING USAGE ON CAST SPRING BRACKETS

Trough stroke (Inch)	Springs per bracket
0.25 or less	4

The spring quantity on each face of the bracket must be as even as possible. The difference between the front and back faces must never be more than one spring. Make sure that each face of each leaf spring has a spacer in contact with it and that all spacers are the same thickness. Clamp bars must be installed square with the leaf springs. The leaf springs should be evenly distributed on corresponding left to right spring brackets. Failure to do so could result in structural damage.

4.1.4 SPRING CANISTERS

WARNING: Defective spring canisters must be replaced immediately.

Inspect the canister springs periodically. Worn springs are characterized by tearing of the rubber away from the wall of the canister. Some peeling of the rubber away from the mounting boss is not indicative of damage or a failed spring canister. Fig 12 shows the basic components of the rubber spring canister. The spring canister stocked as a complete item, replacement of only the rubber component is neither feasible nor recommended.

Spring canisters are installed as matched sets with tested spring rates differing by no more than 5%. In the event of one spring canister requiring replacement, it is required that both canisters be replaced with a matched set to insure proper balance of the spring force.

Spring canisters are manufactured in multiple sizes. Refer to the conveyor's general assembly drawing (G/A) for the correct size of spring canister.

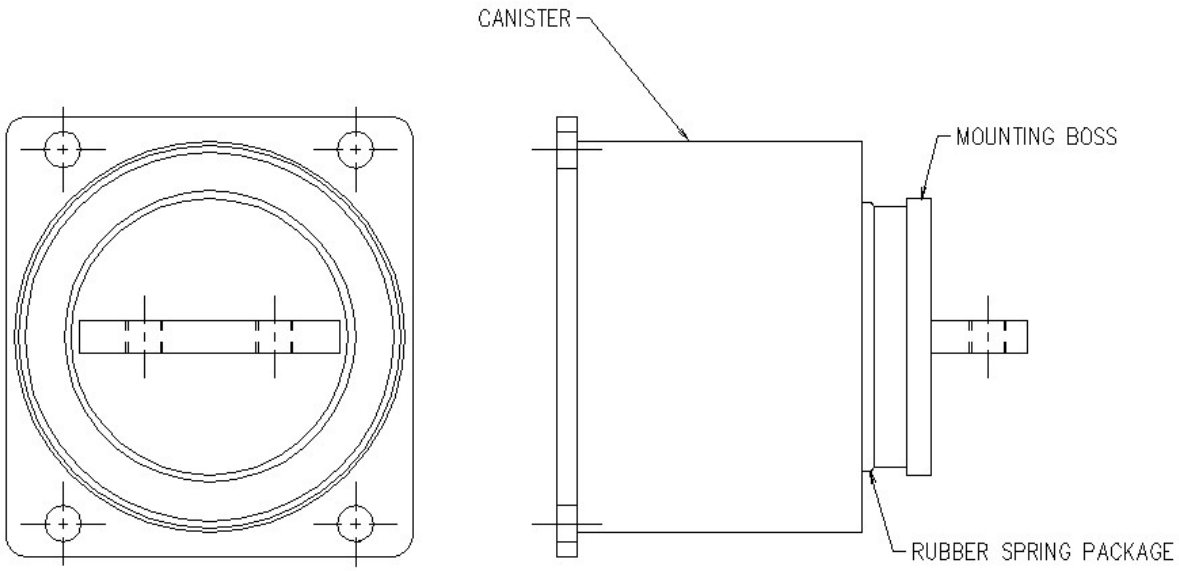

Figure 12: Typical Spring Canister

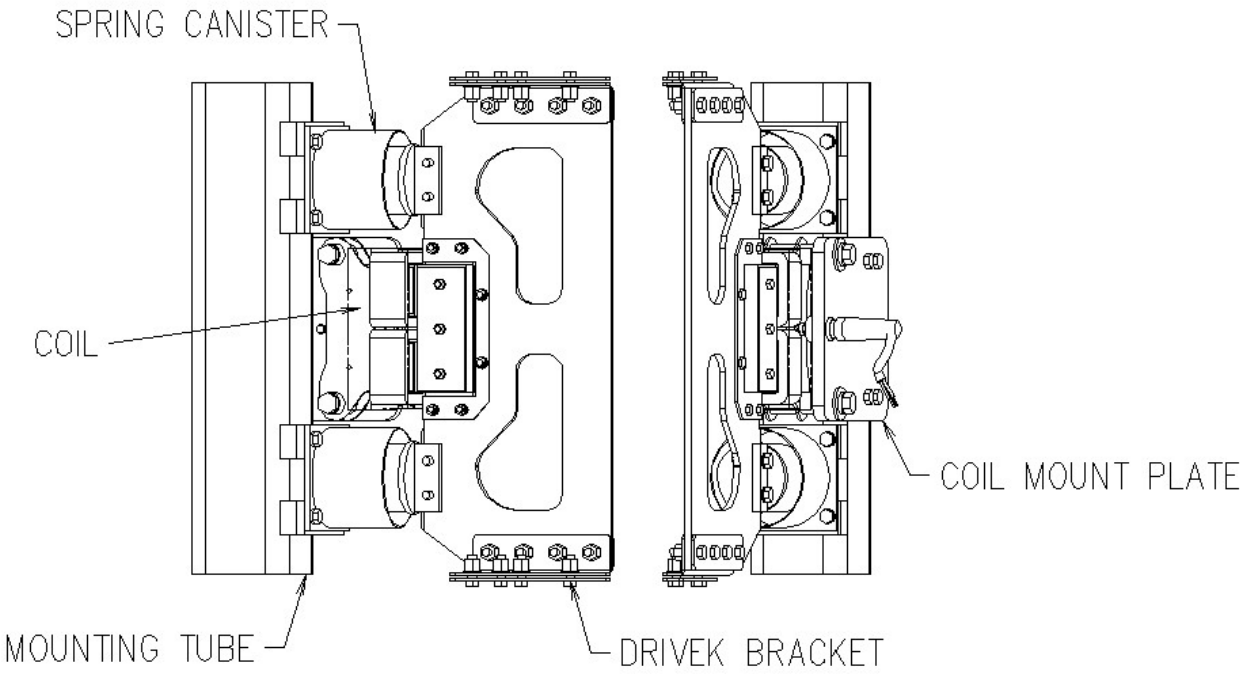

Figure 13: Typical VF PREMIER/EXTREME Drive Assembly

4.2 Troubleshooting – VF PREMIER/EXTREME Conveyor

TROUBLESHOOTING - VF PREMIER/EXTREME Conveyor:		
PROBLEM	**CAUSE**	**CORRECTION**
Conveyor does not run, no vibration.	1. Blown fuse/circuit breaker.	Replace fuse/reset circuit breaker.
	2. Broken wire/loose connection.	Repair wiring.
	3. Component has failed.	Replace.
Overstroking (high amplitude).	1. Loose or misadjusted feedback sensor or accelerometer	Adjust feedback sensor to ½" to 5/8" gap. Tighten lock nuts securely. Be careful not to over-tighten.
	2. DMT/CD30 Controller misadjusted	Adjust DMT/CD30 controller accordingly (refer to DMT manual sm11??)
	3. DMT/CD30 Controller failure.	Replace
Understroking (low amplitude).	1. Loose or misadjusted feedback sensor	Adjust feedback sensor to ½" to 5/8" gap. Tighten lock nuts securely. Be careful not to over-tighten.
	2. DMT/CD30 Controller misadjusted	Adjust DMT/CD30 controller accordingly (refer to DMT manual sm11??)
	3. DMT/CD30 Controller failure.	Replace

TROUBLESHOOTING - VF PREMIER/EXTREME Conveyor: (*Continued*)		
PROBLEM	**CAUSE**	**CORRECTION**
Excessive base motion.	1. Improper isolation installation 2. Excessive support structure motion. .	Review section on isolation and check isolation supports. Modify support structure to eliminate resonance.
Side motion.	1. Broken isolation springs. 2. Excessive support structure motion.	Replace. Modify support structure to eliminate resonance.
NOTES: 1. The number designation under **CAUSE** indicates probability. That is, No. 1 should be investigated first because it is the most likely cause of the problem. 2. Support structure is defined as any item that supports the conveyor (i.e., pipes, tubes, cables, mezzanines, etc.)		

4.3 MECHANICAL DISASSEMBLY/ASSEMBLY

4.3.1 REMOVAL AND REPLACEMENT OF THE DRIVE

WARNING: Before performing any maintenance work, the electrical power supply must be disconnected at the safety disconnect switch.

1. Before removing a coil, take note of the wiring connections in the controller.
2. Disconnect the wires.
3. Remove the four mounting bolts securing the coil mounting plate to the cross tube.
4. Remove pigtail strain relief from the coil mounting plate where the coil wire penetrates the plate.
5. Remove the two mounting bolts securing the coil to the coil mounting plate.
6. Remove the spacer from the coil wire
7. Remove the two plug bolts from the top of the coil.

8. Install the plug bolts on the new coil. These bolts are not load bearing and do not need to be torqued. A firm tightening to compress the lock washer is all that is required.

9. Install the spacer on the coil wire.

10. Mount the new coil to the coil mounting plate taking care to assure that the face of the coil is perpendicular to the centerline of the plate. Tighten the coil mounting bolts according to the torque values specified in the General arrangement drawing or in Table 3.

11. Install the coil mount plate and new coil to the cross member and tighten the bolts to the torque specified on the General Arrangement drawing or in Table 3.

12. Install the pigtail strain relief to the coil mount plate

13. recheck torque of coil bolts

14. Re-connect the wires in the same pattern that they were originally connected.

WARNING: It is important to replace the coil with the same type and model number as the original.

4.4 ELECTRICAL DISASSEMBLY/ASSEMBLY

WARNING: Before performing any maintenance work, the electrical power supply must be disconnected at the safety disconnect switch.

WARNING: The electrical power supply conductor must be of sufficient size to carry the current designated on the equipment nameplate.

Always replace the coil with a coil of matching specifications. After each disassembly of the equipment, always restore the strain relief to the cable just as it was installed initially to ensure the continued protection of the coil from vibration wear.

4.5 RECOMMENDED SPARE PARTS

TABLE 2 SPARE PARTS LIST		
ITEM #	**PART #**	**Description**
1	400792-BP	VF-10 COIL, 460 VOLT, PAINTED (1 PER EVERY 5 UNITS)
2	0102X080	STRAIN RELIEF (1 PER EVERY 5 UNITS)
3	702779-6	BRACKET CUSHION
4	VARIES BY MODEL	ISOLATORS, COIL SPRING OR RUBBER (1 PER EVERY 5 UNITS)
5	VARIES BY MODEL	SPACERS
6	VARIES BY MODEL	LEAF SPRINGS (13.75”), (5% OF TOTAL ON UNIT)
7	VARIES BY MODEL	MATCHED SET OF SPRING CANNISTERS (1 PER EVERY 5 UNITS)
8	VARIES BY MODEL	ISOLATION CABLE (IF SUPPLIED, 1 PER 5 UNITS)
9	ASYDMT07-1	DMT CONTROLLER
10	VARIES BY MODEL	CD30/35 CONTROLLER

NOTES

Please furnish complete nameplate information when order parts.

NOTE: The torque rating for class 2, grade B8 stainless steel bolts is the same as for grade 5 bolts. Use a small amount of anti-seize when using stainless steel bolts.

TABLE 3 TORQUE SPECIFICATIONS		
Size	**Torque**	
	Ft-lb	**N-m**
1/2 - 13, GR5	75	102
1/2 - 13, SUPERTAINIUM	118	163
9/16-12, GR5	110	149
58/-11, GR5	150	203
3/4-10, GR5	260	353
7/8-9, GR5	430	483
1-8, GR5	640	868

WARNING: Always replace bolts with bolts of the same grade as indicated by the head marking. For class 2, grade B8 stainless steel bolts the B8 head marking must be underlined. Failure to use underlined bolts will result in serious machine damage and/or personal injury.