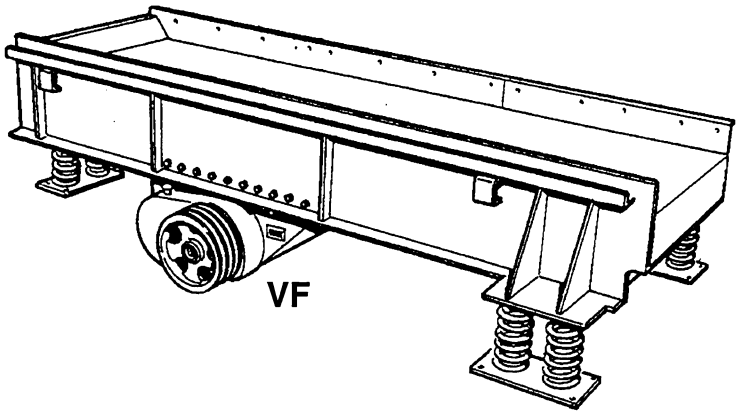
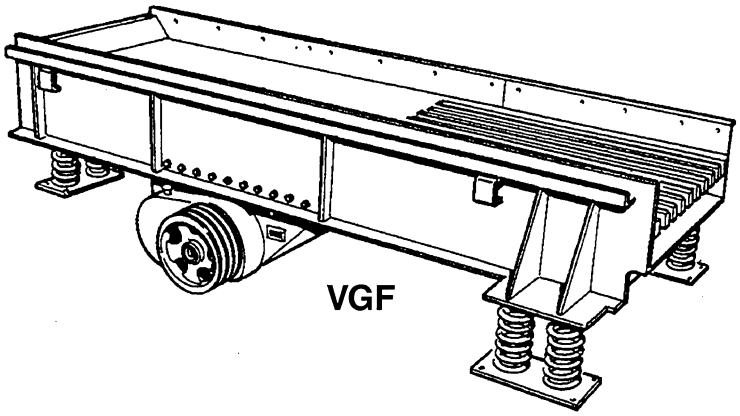
VF and VGF Vibrating Feeders

Operation, Maintenance & Parts





Issue Date: 1/94, Rev. 1

SAFETY

Read and fully understand the safety precautions in Chapter 1 before operating or servicing the feeder. Also refer to the inside cover for important quarry safety information.

Important Refer to Chapter 1 for important safety precautions. Also see the *Telsmith Quarry Equipment Safety Guide* for important quarry safety information. If your copy of the Safety Guide is missing, contact the Telsmith Parts Department at 1-800-688-6601 for a replacement copy.

All rotating power products are potentially dangerous and must be properly guarded. Placement of guards and other safety equipment is the user's responsibility. Such equipment must be installed wherever appropriate and maintained as required.

It is the responsibility of the purchaser to install and use quarry equipment in a safe and lawful manner. All quarry equipment must be operated in compliance with applicable health and safety laws and general standards of reasonable care.

Do not stand on, beside, or under the feeder while it is operating. Do not stand in area surrounding the feeder while it is being loaded. Stay clear of springs and other pinch points. Never reach in-between the feeder and its supporting structure.

Always tag and lock out the feeder drive controls before performing any inspections, adjustments, maintenance, or repairs. Always re-install drive guards after servicing the feeder.

Failure to follow these precautions may result in serious injury or death!

Foreword

INTRODUCTION

Refer to this manual as you install your Telsmith vibrating feeder. After installation is complete, save this manual for future use and refer to it for important inspection and maintenance procedures.

This manual contains general procedures common to most Telsmith vibrating feeders. Because there are many different sizes and configurations, some features described may not be present on your feeder. Some equipment may be optional and/or available only on selected models.

This manual is based on the latest information available at the time of publication. Due to Telsmith's policy of continuous improvement, features and specifications are subject to change without notice. Actual dimensions, clearances, weights and other specifications may vary due to fabrication variables, optional equipment or custom engineering.

HOW TO CONTACT TELSMITH

Use the following phone numbers when calling Telsmith:

- 414-242-6600 (Service Department)
- 800-688-6601 (Parts Department)
- 414-242-7861 (Fax)

Send all written correspondence to:

Telsmith, Inc.
10910 N. Industrial Drive
P.O. Box 539
Mequon, WI 53092-0539
U.S.A.

ORDERING REPLACEMENT PARTS

Refer to the parts list in Chapter 8 when ordering side plates, grizzly bars, or other feeder components.

Part numbers are not shown in Chapter 8. The Telsmith Parts Department, or your local dealer, will determine the exact parts needed by using your feeder's model and serial numbers.

Note: Chapter 8 does not contain parts information for the vibrating unit. For a list of vibrating unit parts, refer to the Vibrating Unit Parts Catalog.

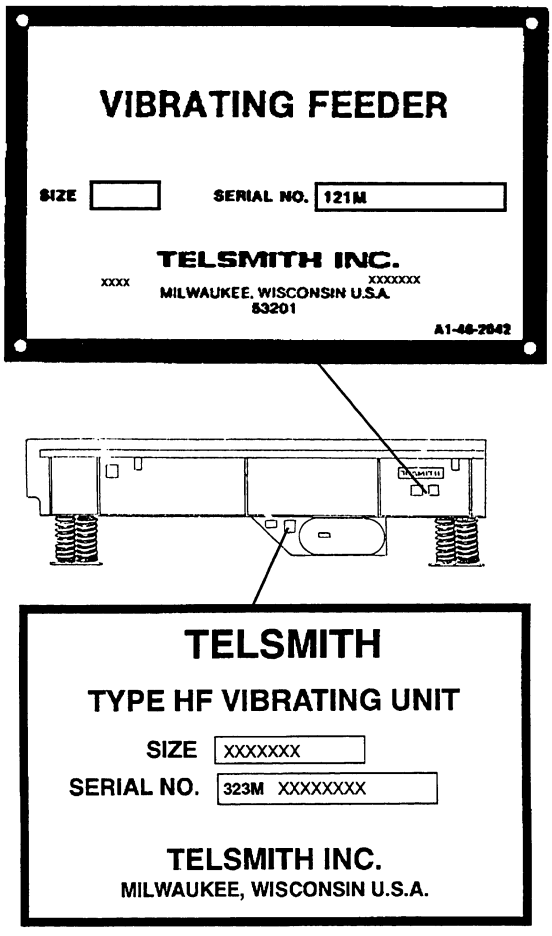
REQUESTING SERVICE ASSISTANCE

If you require service assistance or have questions about maintenance and repair procedures in this manual, please contact your local dealer. If additional assistance is necessary, contact the Telsmith Service Department.

Telsmith's factory trained service technicians are available from 8:00 a.m. to 4:30 p.m., Central Standard Time, Monday through Friday.

IDENTIFYING MODEL AND SERIAL NUMBERS

The feeder model number (size) and serial number are located on a plate attached to the feeder frame.



The vibrating unit model number (size) and serial number are located on a plate attached to the vibrating unit.

SERVICE BULLETINS

To inform customers of the latest repair and maintenance procedures, Telsmith periodically issues service bulletins. Some of these bulletins may have been included with this manual.

For information on the latest service bulletins that apply to your feeder, contact your dealer or the Telsmith Service Department.

DIMENSIONS AND OTHER SPECIFICATIONS

Refer to the assembly drawings furnished with your feeder for dimensions and other specifications. If these drawings are lost, replacement drawings are available from your dealer or the Telsmith Service Department.

SAFETY

Be sure all personnel operating or servicing the feeder read and fully understand the safety information discussed in Chapter 1 of this manual.

Also be sure that all personnel working around the feeder read and fully understand the T*elsmith Quarry Equipment Safety Guide*.

If your *Telsmith Quarry Equipment Safety Guide* is missing or incomplete, new copies are available from your dealer or the Telsmith Parts Department.

Chapter 1
SAFETY

1

SAFETY PRECAUTIONS

Safety is basically common sense. There are standard safety rules, but each situation has its own peculiarities which can not always be covered by rules. Therefore, always watch for possible safety hazards and correct any deficiencies promptly.

⚠ WARNING!!!

It is the responsibility of the equipment owner and operator to exercise safety practices and procedures in the operation of machinery. This responsibility includes placement of guards and other safety equipment, instructions to operators and other personnel in contact with the machinery, and operation in compliance with applicable health and safety laws, regulations and general standards of reasonable care.

A careful operator is the best insurance against an accident. The complete observance of the following precautions will prevent many serious injuries:

1. Be sure all personnel operating or servicing the machinery read and fully understand the contents of this manual, including the safety information discussed in this chapter. Be sure all personnel read and thoroughly understand the manuals for all other machinery which they operate and maintain.

2. Be sure that all personnel working around processing machinery read and fully understand the *Telsmith Quarry Equipment Safety Guide.* If your copy of the *Safety Guide* is missing or incomplete, new copies are available from your dealer by calling Telsmith at 1-800-688-6601.

3. Never make any checks, adjustments, or repairs of any kind while machinery is in operation.

4. Be sure all guards and other protective devices are in place, secured, and not damaged. Never tamper with safety devices or warning systems.

MAINTENANCE INSPECTIONS

Maintenance inspections and routine maintenance, such as lubrication, can often be conducted when you perform your safety inspections. Regular maintenance inspections will help you establish a proper service routine, and will help increase the efficiency of your operation.

PRECAUTIONARY STATEMENTS

Throughout this manual, the use of the following precautionary statements has been emphasized. These statements are based on five different levels of concern.

- Note
- Important
- CAUTION
- WARNING
- DANGER

Refer to Figure 1-1 for examples of typical precautionary statements used in this manual.

Note and Important Statements

The **Note** and **Important** statements are advisory statements relating to equipment maintenance, operation, and general service procedures. They are used to draw attention to procedures and practices.

A **Note** is a basic statement of procedures. An **Important** is used to draw attention to a procedure that needs to be followed to prevent machine damage.

1

⚠ DANGER !!!

Do not reach into or enter the crushing chamber if a jam is present. Failure to observe this precaution will likely result in serious injury or death.

Important: See Table 4-2 for allowable stroke and speed combinations. Failure to follow guidelines in Table 4-2 may result in excessive "G" forces, overheating, and failure of feeder components.

⚠ WARNING!!!

Stay clear of pinch points and moving parts while checking stroke. Failure to observe this precaution may result in serious injury or death.

Note: When replacing the V-belts, be certain that the new belts are a matched set. Never replace just one belt.

⚠ CAUTION !!!

Hot oil can cause burns. Allow time for oil to cool before checking level.

Figure 1-1. Sample Precautionary Statements

Statements

These statements are intended to notify workers of dangerous areas or situations. All of these notices are preceded by the SAFETY ALERT SYMBOL. The SAFETY ALERT SYMBOL is meant to draw attention to a dangerous situation.

Be sure to read and follow all instructions whenever the SAFETY ALERT SYMBOL is present. Failure to follow the instructions could result in SERIOUS PERSONAL INJURY or DEATH.

The CAUTION statement involves safe operating procedures. If the procedure associated with a CAUTION statement is ignored, personal injury may result.

The WARNING statement involves procedures which are potentially hazardous. Failure to follow a WARNING statement could result in SERIOUS INJURY or DEATH.

The DANGER statement involves procedures which are the most hazardous if not properly performed. Failure to follow the instructions associated with a DANGER statement will likely result in SERIOUS INJURY, or DEATH.

Maintenance inspection procedures are included throughout this manual. Although maintenance is not typically a safety concern, machinery that is maintained and in proper working condition will minimize the occurrence of safety hazards and emergency situations.

VIBRATING FEEDER SAFETY PRECAUTIONS

⚠WARNING!!!

Failure to observe the following precautions may result in serious injury or death!

- Do not stand on, beside, or under the feeder while it is operating.
- To avoid being hit by falling rock, never stand near the feeder when it is being loaded. Keep away from any other areas where falling rock is present.
- Stay clear of springs and other pinch points. Never reach in between the feeder and feeder supports.
- Never stand on top of an operating feeder, even for a brief period of time. The intense vibration may cause loss of balance. Reduced muscle control and loss of consciousness may also occur.
- Always tag and lock out feeder drive controls before performing any inspections, adjustments, maintenance, or repairs. Loosen and remove V-belts. Alert all personnel that the feeder is being serviced.
- Always re-install drive guards after servicing feeder. Never operate feeder without drive guards installed.

GENERAL QUARRY SAFETY PRECAUTIONS

Know Your Machinery

- Study the operator's manuals of all machinery that you operate. Become familiar with the controls, functions, and settings of each machine. Fully understand all phases of each machine's operation.
- Be sure that you completely understand all start-up procedures.
- In the event of an accident, be sure that you know the proper emergency shut-down procedures for the equipment you operate.
- Always inspect all plant-mounted machinery at the start of each shift. Refer to the appropriate operation and maintenance manuals for periodic inspection and maintenance procedures.
- Be sure that any defective equipment is repaired by a qualified technician before crushing begins.
- Before making repairs, always lock out the power supply and tag the controls.

Wear Proper Protection Equipment

Crushing rock can be a dangerous process. To reduce the risk of injury or death, observe the following precautions:

- Always wear proper protection for hearing and eyes whenever outside of an approved operator's enclosure.
- Use respirators in dusty locations.
- Wear steel-toe safety boots, hard-hats and heavy duty gloves.

Observe Personal Safety Precautions

- Never wear watches, jewelry or loose clothing when working on or around rotating power equipment such as conveyor belts, drive belts, or pulleys. These items can become caught or tangled in the equipment, resulting in severe personal injury or death.
- Keep hair short or tied-up. Do not have loose, long hair.
- Be aware of flammable liquids and other fire hazards. Do not smoke when refilling engines or using cleaning solvents.
- Before you assemble, operate, clean, lubricate, or adjust machinery, be sure to read and understand all procedures included in this manual.
- Be sure that all personnel know:
- Know where first aid equipment is stored.
- Know where emergency phone numbers are listed.
- Know how to report accidents. Report all accidents immediately.
- Contact the Safety Officer at your facility to receive the latest safety guidelines published by the Occupational, Safety and Health Administration (OSHA) and the Mine Safety and Health Administration (MSHA).

Keep Equipment and Site Clean

- Be sure that walkways, platforms and ramps are kept free of spilled material at all times. Small pieces of material can cause falls and injuries.

- Be especially careful whenever using wet walkways, platforms, or ramps. Rock dust and wet metal can become extremely slippery.
- Keep the areas around control panels, power supply panels and lubrication systems free of spilled material and obstructions. Free access must be maintained at all times. In the event of an emergency, quick access to controls could prevent injury or death.

EQUIPMENT INSTALLATION GUIDELINES

Foundations and Supports

Proper foundation and support structures are very important for the safe and efficient operation of all Telsmith equipment.

- Follow all Telsmith furnished engineering prints and specifications when constructing the base pads for permanent plants. If any questions arise about foundation requirements or modifications necessary for your installation, contact the Telsmith Service Department for further information.
- Crushing machinery needs a firm foundation on which to operate. This does not need to be a poured pad, but it cannot be on unstable ground. When selecting the location be sure that the entire area is as level as possible.
- All support structures that are designed in the field to support any Telsmith equipment must meet Telsmith's engineering requirements. All plans must be submitted to the Telsmith Service Department for approval.

Electrical Considerations

⚠WARNING!!!

When installing any electrical equipment, be sure to follow the manufacturer's instructions completely. Failure to do so could lead to a dangerous electrical shock hazard. Be sure that all electrically powered equipment has been properly grounded.

- Lay out the power lines, especially those for portable plants, to minimize contact with standing ground water.
- Do not allow the power lines to be placed in an area where they will be driven over by quarry equipment or transport vehicles.
- If it is necessary to cross a traffic area with an electrical cable, be sure to protect the cable with properly rated bridging.
- Inspect power cables and connections daily for signs of wear, cracked insulation, and worn or damaged connectors. Repair or replace as required.
- If auxiliary control panels or power supply panels are being installed, be sure that these can be securely locked out. This type of panel is mandatory.
- Adequate overhead clearance must be maintained from overhead power lines or other obstructions, particularity when planning to use stacking conveyors for stockpiles.
- Be sure that electrical power supplies are located in an area that will be safe from accidental contact during crushing operations.

⚠WARNING!!!

All Telsmith equipment has been designed with the proper size of electrical components. Any modifications to the power supplies or equipment on Telsmith machinery must be approved in writing by the Telsmith Service Department. Be sure to follow all electrical specifications when installing power supplies.

MAINTENANCE AND REPAIR SAFETY

⚠WARNING!!!

Always tag and lock out feeder drive controls before performing any adjustments, maintenance, or repairs. Loosen and remove V-belts. Failure to observe this precaution may result in serious injury or death!

Electrical System

- Always read, understand, and follow appropriate electrical system troubleshooting, maintenance and repair instructions in machinery manuals.
- Allow only trained and licensed electricians to service electrical equipment.
- Whenever troubleshooting or repairing the electrical system, work with the power tagged and locked out, if possible. See Figure 1-2.

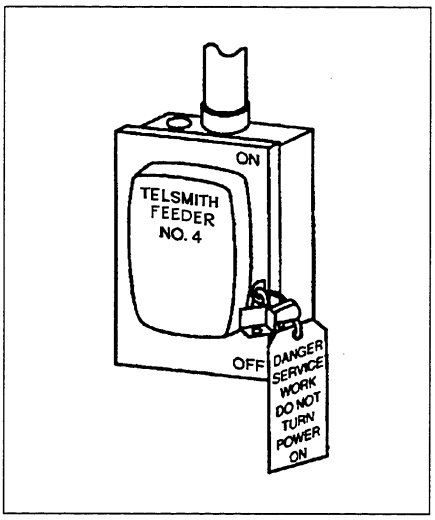


Figure 1-2. Tagged Controls

- If it is not possible to service the equipment with the power locked out, tag all controls and alert all personnel.

Hydraulic Systems

- Whenever service work is to be performed on any hydraulic system, be sure that all system pressure has been relieved. Be sure that all controls and the power supply have been locked out and tagged before beginning any service procedure. After the power has been shut off, cycle control levers in all direction to relieve system pressure.
- Never have your face near, or stand directly in front of a hydraulic line when cracking a fitting. Always assume that the line has pressure.
- Always clean up any spilled hydraulic fluid, especially if on an elevated metal work platform or walkway. Spilled hydraulic fluid is extremely slippery.
- The adjustments and settings of all hydraulic systems must be done according to the procedures outlined in this manual.

Welding On Machinery

- While all welding should be performed in a properly ventilated area, special concern should be exercised when welding chromium, manganese, cadmium, copper, cobalt, lead and nickel, as these materials are considered to be potentially carcinogenic.
- Be sure there is adequate ventilation when welding inside enclosed areas.
- Always follow all standard safety procedures if welding is necessary. Be sure that all systems are shut down, power is locked out, and controls are tagged.
- Do not weld near flammable liquids or hydraulic oils.
- Do not weld lifting eyes or hooks to manganese steel castings. If necessary, use a stainless steel or manganese weld rod. Use extreme caution to keep personnel clear of castings being lifted or supported by these devices.
- Never ground the welder so that the electrical power will flow through bearings, hydraulic components or electrical equipment.

Hazardous Materials

- To avoid potential health hazards, persons in regular contact with hydraulic oils must be aware of the importance of thorough hygiene, and the proper methods for handling mineral oils.
- Mineral-based hydraulic oils act as solvents on the natural oils of the skin. Frequent and prolonged skin contact can cause dermatitis or severe irritation.
- Always wear suitable protective clothing when handling hydraulic oil.
- Be sure protective clothing and proper wash-up facilities are available to all personnel that may come in contact with mineral based hydraulic fluids.
- Always dispose of rags or paper towels in the correct and safe fashion.

Disposal Of Excess Fuels, Lubricants And Liquids

- It the responsibility of the machine users to properly dispose of unused fuels, used lubricating oils, used hydraulic oils, and other toxic materials. DO NOT dump these materials in an unapproved manner.

PROPER HOISTING AND HANDLING OF EQUIPMENT

Wire Ropes

Wire ropes require careful use, handling, and maintenance to ensure long life and safe operation. Always observe the following precautions:

1

- Be sure that the correct wire rope is being used for the application.
- Be sure that the ropes are inspected regularly following the manufacturer's guidelines.
- Avoid sudden loading in cold weather.
- Never use frozen wire ropes.
- Use suitable padding to protect wire rope from sharp corners or edges.
- Avoid dragging the rope from under loads or over obstacles.
- Never use a wire rope that has been cut, badly kinked, frayed or crushed.
- Avoid reverse bends.
- Be sure that the rope ends are properly sized.
- Use thimbles in eye fittings at all times.
- Watch for local wear. Reposition or shorten rope to remove worn section from the area of lifting tension.
- Follow the manufacturer's instructions for lubrication if the wire ropes are used for lifting procedures.

Connecting Or Clamping Wire Ropes

When connecting or clamping wire ropes, use one of the following:

- **Clamp and thimble connections** combine both the clamp and thimble in one unit. Clamp and thimble connections are capable of supporting 80% rated wire rope load.
- **Cable clips** are the most common way to secure a rope to a piece of equipment or to make an eye. The cable clip or "Crosby Clip" is made of a U-bolt and saddle. If this type of clip is used to make an eye, the use of a properly sized thimble is mandatory. If not, the cable may kink, forming a permanent weak spot.

Chains

Chains require careful use, handling and maintenance to ensure long life and safe operation.

- Be sure that the correct size chain is being used for the application.
- Be sure that the chains are inspected regularly following the manufacturer's guidelines.
- Avoid sudden or shock loading (DO NOT jerk load upright).
- Use suitable padding to protect the chain from sharp corners or edges.
- Avoid dragging the chain from under loads or over obstacles.
- Use the proper fittings at all times.
- Watch for local wear. Reposition or shorten chain to move worn section from the area of tension.
- Inspect links to determine the amount of wear. Refer to manufacturer's specifications for wear tolerance ranges.
- Be sure that all connections between chain sections are completed with properly sized hardware and lifting hooks.

⚠ CAUTION !!!

Always follow proper rigging procedures as provided by the chain manufacturer. The angle of rigging may decrease the rated lifting capacity.

Fiber Or Synthetic Slings

Slings require careful use, handling and maintenance to ensure long life and safe operation.

- Be sure that the sling is rated or coded for the hitch or application.
- Be sure that the slings are inspected regularly following the manufacturer's guidelines.
- Do not use synthetic slings in temperatures exceeding 180 °F.
- Slings may be safely used in a temperature range of 20 to 180 °F without decreasing load limits. For temperatures beyond this range or for wet/frozen slings, follow manufacturer's instructions for load reductions.
- Avoid sudden or shock loading (DO NOT jerk load upright).

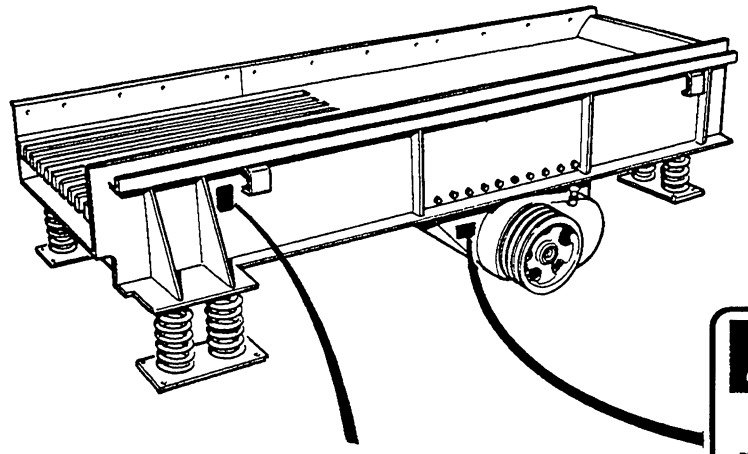
SAFETY SIGNS

There are numerous safety-related signs attached to your feeder.

Their purpose is to alert personnel of potential safety hazards and to encourage safe operating procedures.

It is the owner's responsibility to replace any signs that are worn or unreadable. Plates and signs must be replaced if the machinery configuration changes, or if the machinery is repainted.

Note: See Figure 1-3 for signs typically included on vibrating feeders. Your feeder may contain some or all of these signs. It may also include additional signs that are not shown. Actual locations may vary.



WARNING

AVOID PERSONAL INJURIES AND PROPERTY DAMAGE

BEFORE YOU ASSEMBLE, OPERATE, CLEAN, LUBRICATE, OR ADJUST MACHINERY, BE SURE TO READ AND CAREFULLY FOLLOW MANUFACTURER'S WRITTEN INSTRUCTIONS.

ATTENTION

Read and comply with these INSTRUCTIONS before connecting the screen motor, or installing the V-Belt drive.

All driveguards and other guards must be in place while operating. Keep all bolts tight; check periodically.

Do not let machine hit chutes or other stationary objects.

Do not weld on any part of machine except grizzly bars, or perforated plate. Attach ground to vibrating frame. Do not touch shaft with welding current.

Do not attach additional parts to vibrating frame.

Check lubricant daily. Refer to instructions for specifications and quantities.

Always give Serial Number when ordering parts.

Before you assemble; operate; clean; lubricate; or adjust this machine, be sure to read the Instruction Manual.

TELSMITH INC.

Milwaukee, Wisconsin, USA 53201

C1-46-2040

WARNING

THIS IS A ROLLER BEARING MACHINE. IF YOU HAVE TO WELD ON MACHINE BE SURE THAT ELECTRICAL CURRENT DOES NOT PASS THROUGH BEARINGS. GROUND DIRECTLY ON PART BEING WELDED.

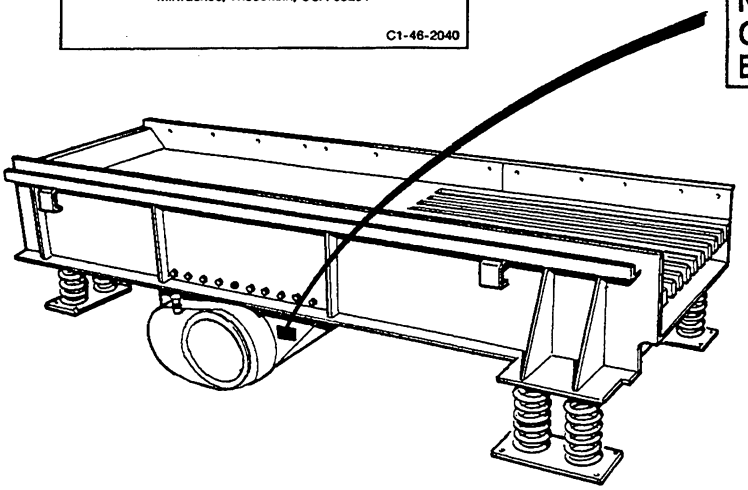


Figure 1-3. Safety Signs

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NOTES

Chapter 2

GENERAL INFORMATION AND SPECIFICATIONS

2

EQUIPMENT DESCRIPTION

Feeder and Vibrating Unit

The feeder assembly consists of a welded steel feeder pan suspended by heavy-duty compression springs. See Figure 2-1.

A self-contained vibrating unit provides the force required to rapidly move quarry material across the length of the feeder pan. The vibrating unit is bolted to the underside of the feeder pan and may be removed as a unit for easier servicing.

VGF models feature a manganese steel grizzly section located at the discharge end of the feeder. The grizzly section can be unbolted and replaced if worn. Most models feature replaceable side wear liners along the full length of the feeder pan sides.

Feeder Drive

Drive power may be supplied by an electric motor or a hydraulic motor. Power is transmitted to the vibrating unit by V-belts. See Figure 2-2.

On feeders with hydraulic motor drive, the hydraulic motor is mounted directly to the vibrating unit housing. On feeders with electric motor drive, the electric motor is separate from the vibrating unit and is mounted on a spring-loaded pivotal base.

An optional eddy current drive allows variable speed operation of feeders with electric motor drive. Feeders with hydraulic drive use a control valve to vary the speed of the hydraulic motor.

Lubrication

Oil contained inside the vibrating unit housing provides lubrication to the gears, bearings and other internal parts. Efficient "flow through" design reduces the number of oil seals, improves bearing lubrication and extends the time between oil changes.

An optional circulating oil system is available for especially demanding applications. It provides a continuous flow of filtered and cooled oil supplied by an external hydraulic power unit.

PRINCIPLES OF OPERATION

Principles of operation are summarized in Figures 2-3 and 2-4.

TYPICAL FEEDER INSTALLATIONS

The feeder may be stationary-mounted or installed on a portable aggregate processing plant. Refer to Figures 2-5, 2-6, and 2-7 for examples of typical installations.

VF & VGF FEEDER SPECIFICATIONS

VF and VGF feeder specifications are summarized in Tables 2-1, 2-2, and 2-3.

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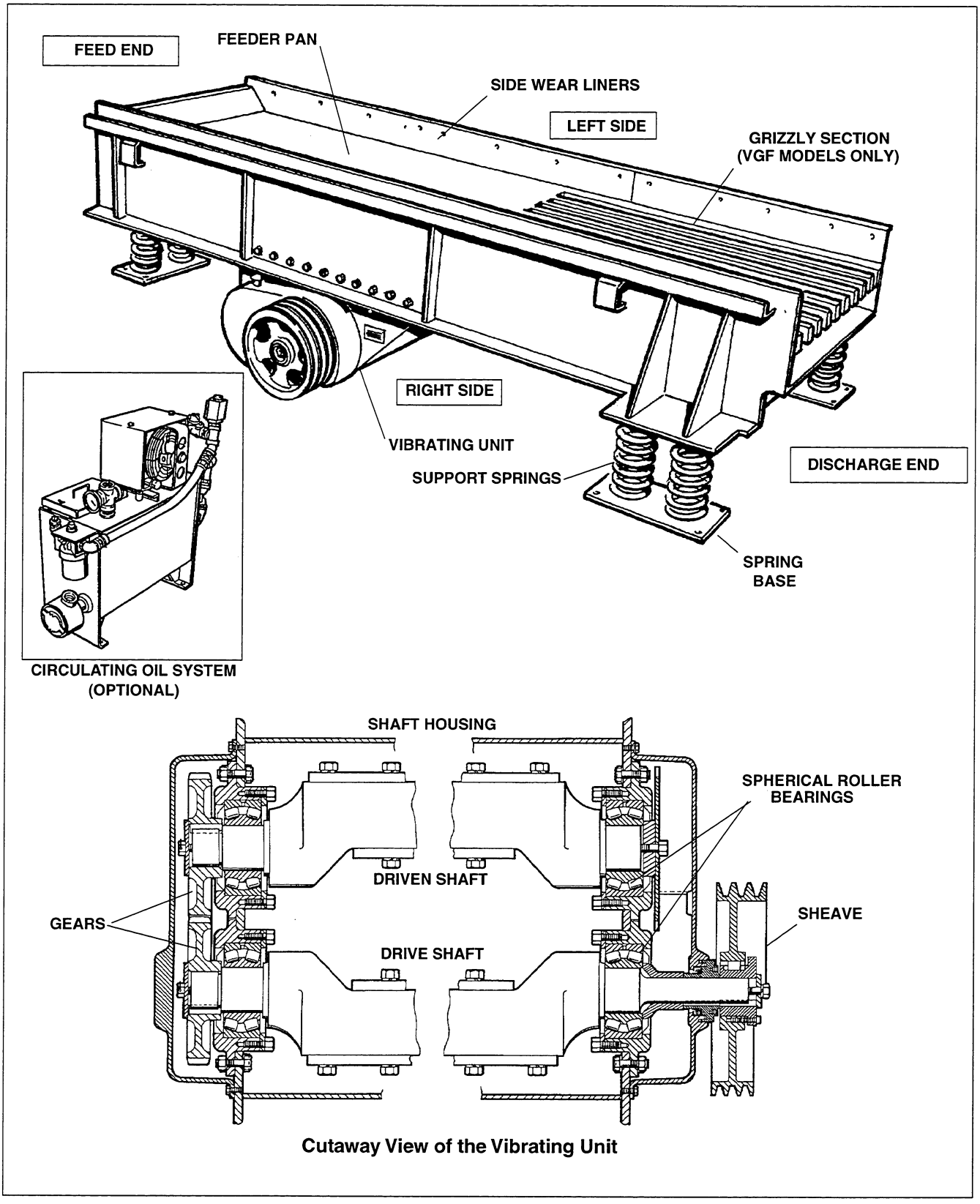


Figure 2-1. Major Components - VF and VGF Vibrating Feeders

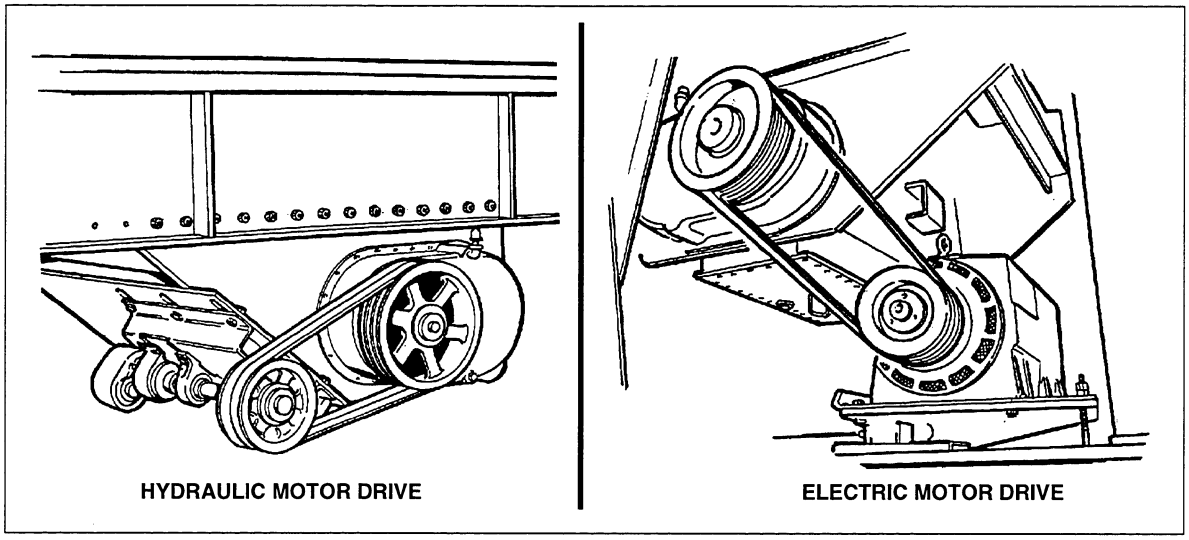
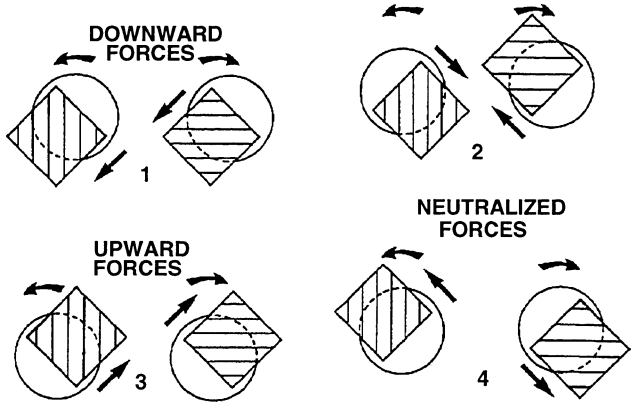


Figure 2-2. Feeder Drives



Vibrating motion is produced by two eccentric shafts geared together. (1) shows shafts exerting force in the same direction. (2) shows them rotated 90° so that the forces are neutralized. In (3), shafts have rotated another 90° and both are producing force but opposite in direction from (1). The forces are again neutralized as shafts turn another 90° as shown in (4). Thus one revolution produces a straight line reciprocating motion. By properly timing the gears, the plane of motion can be set at an angle (standard angle is 45°) to the vibrating deck. Material is then alternately lifted and conveyed.

Figure 2-3. Principles of Operation, Vibrating Unit

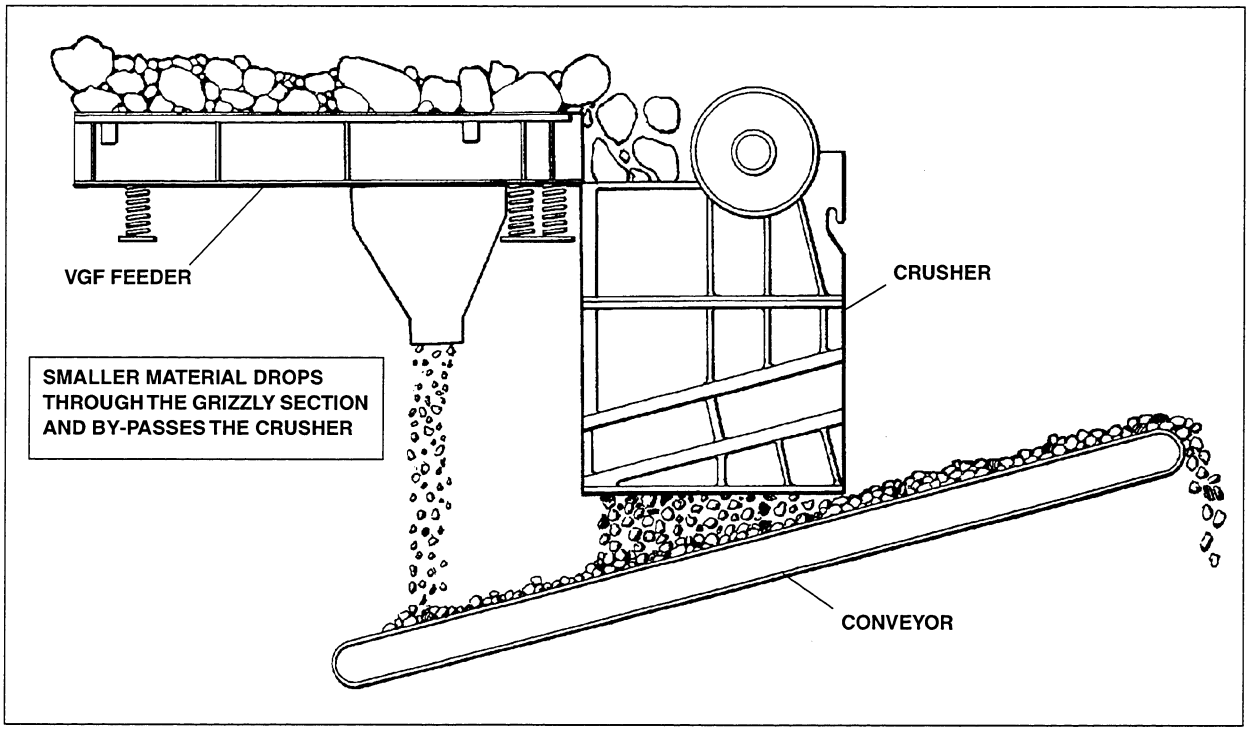


Figure 2-4. Material Flow, VGF Feeder

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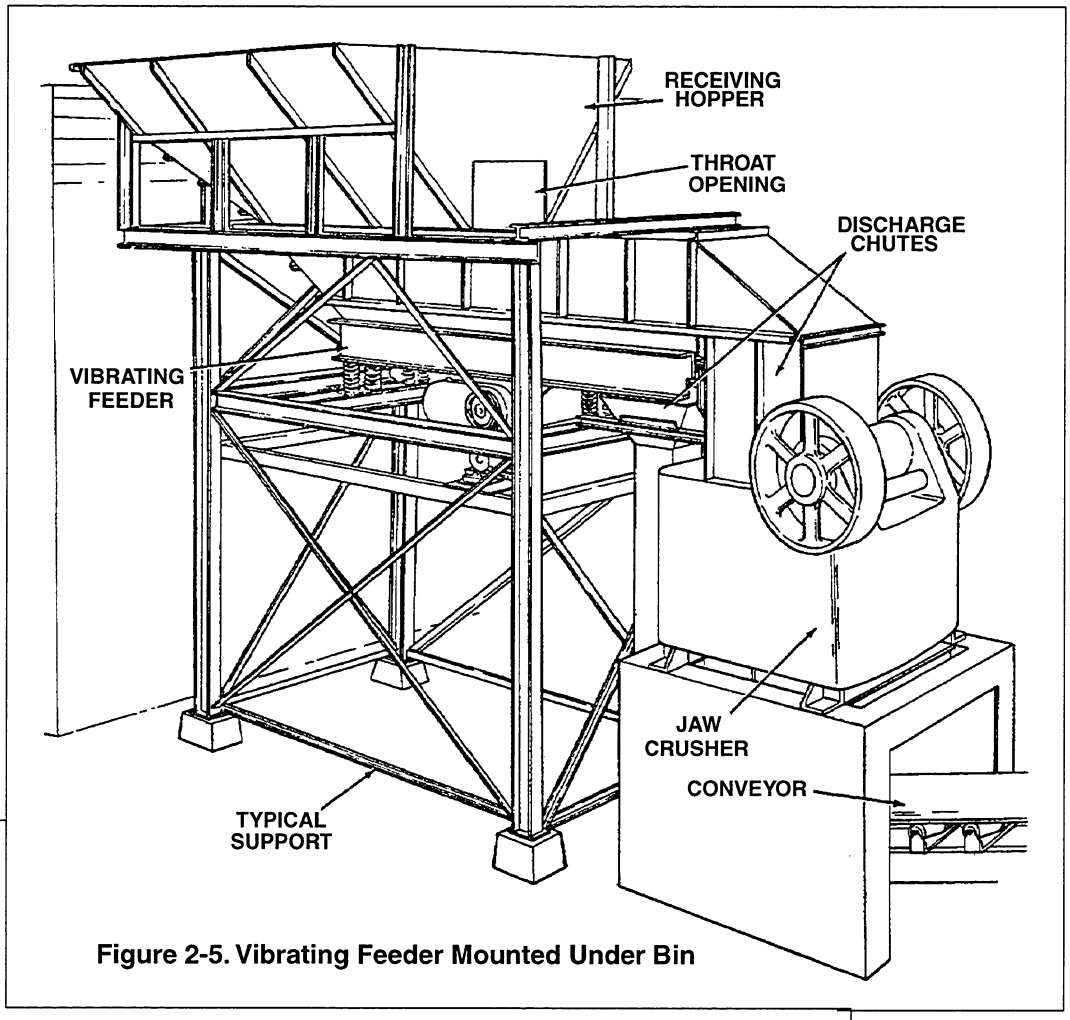


Figure 2-5. Vibrating Feeder Mounted Under Bin

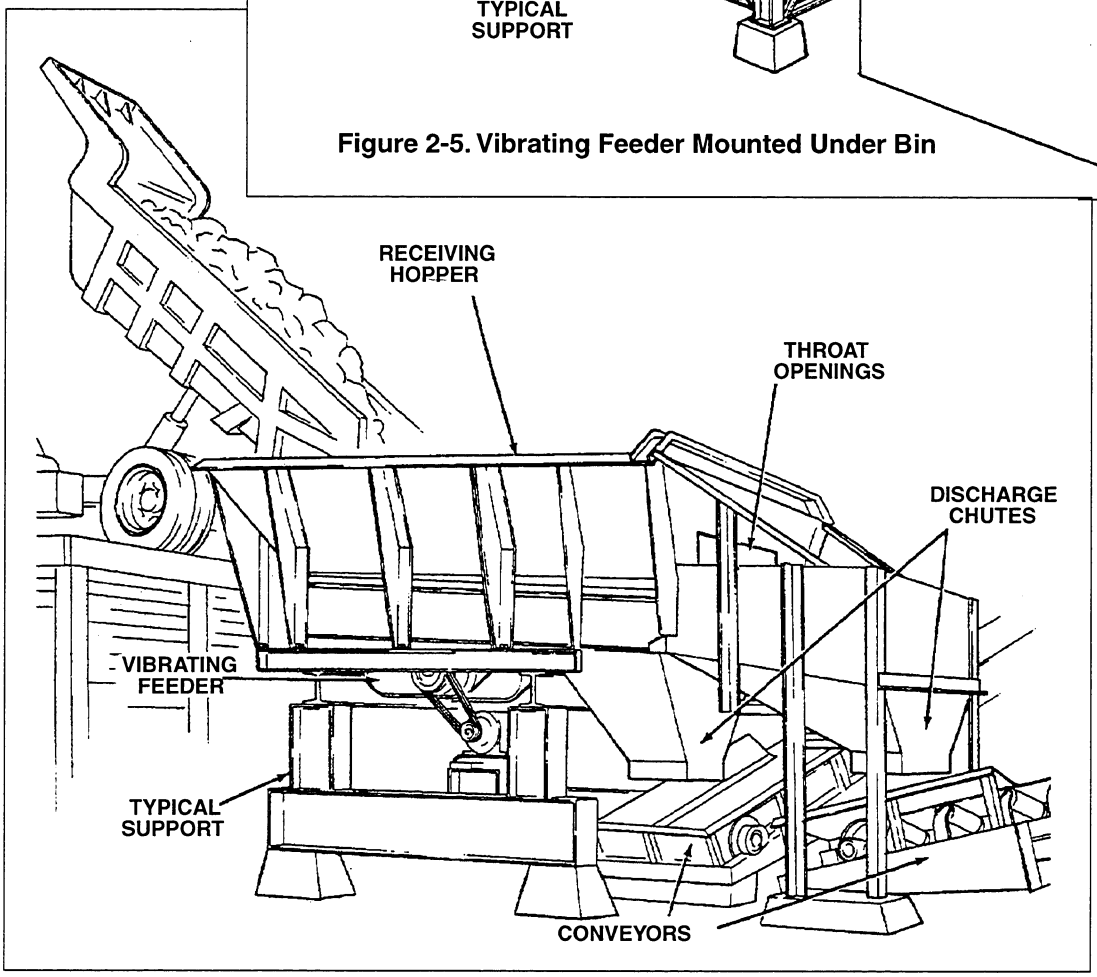


Figure 2-6. Vibrating Feeder Mounted Under a Truck Dumping Hopper

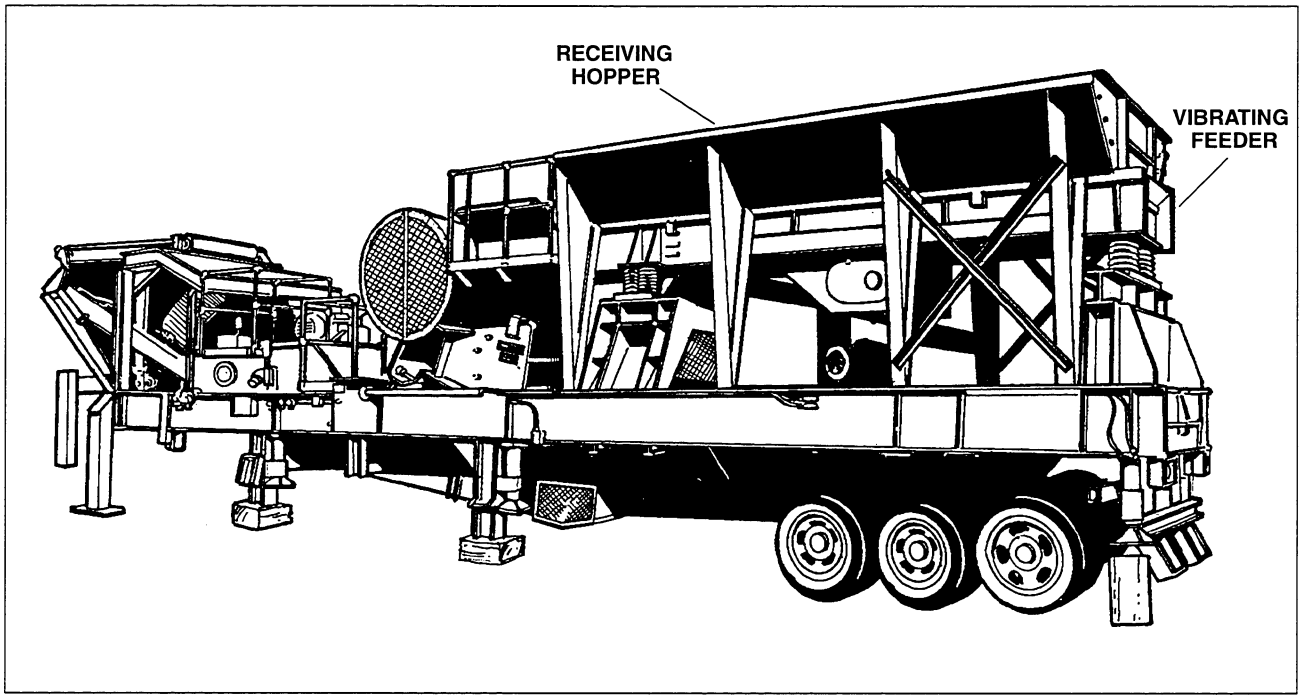


Figure 2-7. Vibrating Feeder Mounted on a Portable Aggregate Processing Plant

WIDTH & MODEL	LENGTH				
	14'	16'	18'	20'	22'
36" WIDE VF	6,910	8,145	◊	◊	◊
42" WIDE VF	7,390	8,260	◊	◊	◊
48" WIDE VF	7,765	9,340	19,000	20,400	◊
54" WIDE VF	◊	◊	20,175	21,700	23,225
60" WIDE VF	◊	◊	21,350	22,600	24,300
72" WIDE VF	◊	◊	24,350	24,750	25,850
36" WIDE VGF w/5' GRIZZLY	7,005	8,310	◊	◊	◊
42" WIDE VGF w/5' GRIZZLY	7,625	8,550	◊	◊	◊
48" WIDE VGF w/5' GRIZZLY	8,015	9,625	19,350	20,750	◊
54" WIDE VGF w/5' GRIZZLY	◊	◊	20,575	21,900	23,475
60" WIDE VGF w/5' GRIZZLY	◊	◊	21,800	23,050	24,750
72" WIDE VGF w/5' GRIZZLY	◊	◊	24,550	25,750	26,300
36" WIDE VGF w/8' STEP GRIZZLY	◊	8,900	◊	◊	◊
42" WIDE VGF w/8' STEP GRIZZLY	◊	9,270	◊	◊	◊
48" WIDE VGF w/8' STEP GRIZZLY	◊	11,420	◊	◊	◊
54" WIDE VGF w/8' STEP GRIZZLY	◊	◊	20,965	◊	◊
60" WIDE VGF w/8' STEP GRIZZLY	◊	◊	23,200	◊	◊
36" WIDE VGF w/9' STEP GRIZZLY	◊	◊	◊	◊	◊
42" WIDE VGF w/9' STEP GRIZZLY	◊	◊	◊	◊	◊
48" WIDE VGF w/9' STEP GRIZZLY	◊	◊	19,900	21,650	◊
54" WIDE VGF w/9' STEP GRIZZLY	◊	◊	21,375	23,175	◊
60" WIDE VGF w/9' STEP GRIZZLY	◊	◊	22,850	24,700	◊
72" WIDE VGF w/9' STEP GRIZZLY	◊	◊	25,250	27,000	◊
54" WIDE VGF w/10' STEP GRIZZLY	◊	◊	◊	◊	23,775
60" WIDE VGF w/10' STEP GRIZZLY	◊	◊	◊	◊	25,300
72" WIDE VGF w/10' STEP GRIZZLY	◊	◊	◊	◊	28,000

Note: Weight is of entire vibrating feeder, including vibrating unit. Actual weight may vary by ±5%
◊ Feeder not available in this length or width.

Table 2-1. Approximate Weights (in pounds)

LENGTH & MODEL	WIDTH					
	36"	42"	48"	54"	60"	72"
14 FT VF (NO GRIZZLY)	20 HP	30 HP	30 HP	◊	◊	◊
14 FT VGF w/5' GRIZZLY	20 HP	30 HP	30 HP	◊	◊	◊
16 FT VF (NO GRIZZLY)	30 HP	30 HP	30 HP	◊	◊	◊
16 FT VGF w/5' GRIZZLY	30 HP	30 HP	30 HP	◊	◊	◊
16 FT VGF w/8' GRIZZLY	30 HP	30 HP	30 HP	◊	◊	◊
18 FT VF (NO GRIZZLY)	◊	◊	40 HP	40 HP	40 HP	50 HP
18 FT VGF w/5' GRIZZLY	◊	◊	40 HP	40 HP	40 HP	50 HP
18 FT VGF w/8' GRIZZLY	◊	◊	◊	40 HP	40 HP	◊
18 FT VGF w/9 GRIZZLY	◊	◊	40 HP	50 HP	50 HP	60 HP
20 FT VF (NO GRIZZLY)	◊	◊	40 HP	50 HP	50 HP	60 HP
20 FT VGF w/5' GRIZZLY	◊	◊	40 HP	50 HP	50 HP	60 HP
20 FT VGF w/9' GRIZZLY	◊	◊	40 HP	50 HP	50 HP	60 HP
22 FT VF (NO GRIZZLY)	◊	◊	◊	50 HP	50 HP	60 HP
22 FT VGF w/5' GRIZZLY	◊	◊	◊	50 HP	50 HP	60 HP
22 FT VGF w/10' STEP GRIZZLY	◊	◊	◊	50 HP	50 HP	60 HP

Note: Horsepower of vibrating feeders (VF) based on closed end hopper, 12" depth of bed on pan, material weighing 100 lbs per cubic foot, and feeder installed in horizontal position.

Note: Horsepower of vibrating grizzly feeders (VGF) based on open end hoppers, material weighing 100 lbs per cubic foot, and feeder installed in horizontal position.

◊ Feeder not available in this length or width.

Table 2-2. Horsepower Required

	WIDTH					
	36"	42"	48"	54"	60"	72"
TONS PER HOUR	325	400	450	500	575	700

Note: Capacities shown are for horizontally mounted feeders only. Contact Telsmith Service department for capacities of feeders mounted at other angles.

Table 2-3. Maximum Feeder Capacities (Horizontally Mounted Feeders)

Chapter 3
INSTALLATION

INSPECTION AND UNLOADING

Electric motors, support springs, V-belts and other unassembled parts often are shipped separately in crates. Remove these parts from crates, and check the bill of lading against the parts received before beginning installation.

If any parts are missing or damaged, alert the shipping company immediately. Be sure all claims are in writing. File all claims promptly.

FEEDER INSTALLATION

The degree of assembly required will vary depending on feeder configuration and method of shipment. Be sure to complete all steps that apply. Skip any steps that have been done prior to shipment.

⚠ WARNING!!!

Lifting heavy components with inadequate hoisting apparatus can result in serious injury or death. Always use suitable rigging and hoisting equipment to stabilize and lift heavy objects. Refer to Table 2-1 for weights.

1. Place the feeder on the ground near the structure upon which it will be installed. Use blocking under the feeder pan to prevent weight of the feeder from being supported by the vibrating unit. Remove metal straps and other shipping materials as required. See Figure 3-1 for lifting points.

Note: If your feeder is equipped with the optional circulating oil system, skip step 2 and go to step 3.

2. Check oil level by loosening a petcock on each side of the vibrating unit (Figure 3-2). Close the petcock immediately if oil flow is present.

Note: If oil does not flow from **both** petcocks in step 2, the oil level is low. Remove one of the oil fill plugs and add oil until it just begins to flow from both petcocks. DO NOT OVERFILL. Close petcocks and

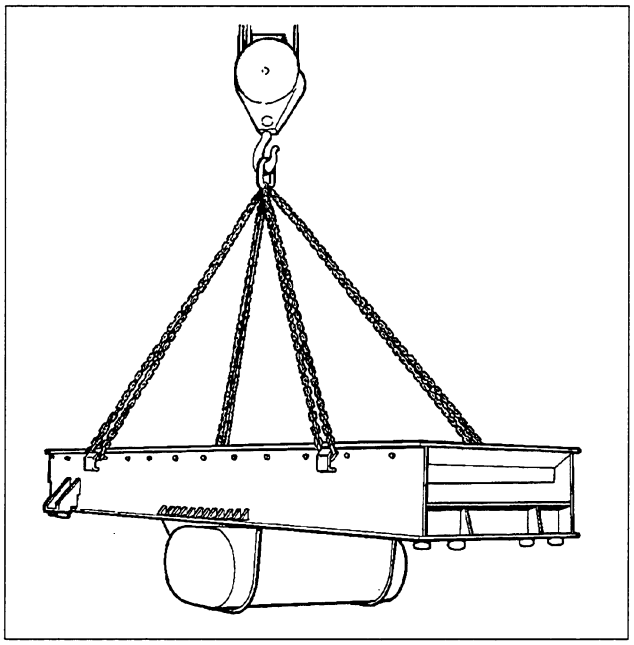


Figure 3-1. Feeder Lifting Points

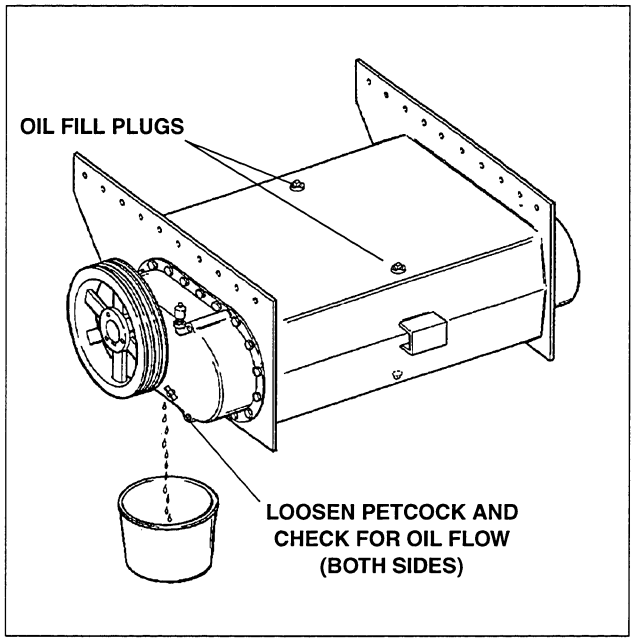


Figure 3-2. Checking Oil Level

reinstall after adding oil. See Chapter 5 for oil specifications and capacities.

3. Place support springs on spring bases. Refer to the support spring location tag (attached to the vibrating unit) for spring locations. See Figure 3-3.

Note: Add shims under the spring bases, as required, so that the feeder is level when installed.

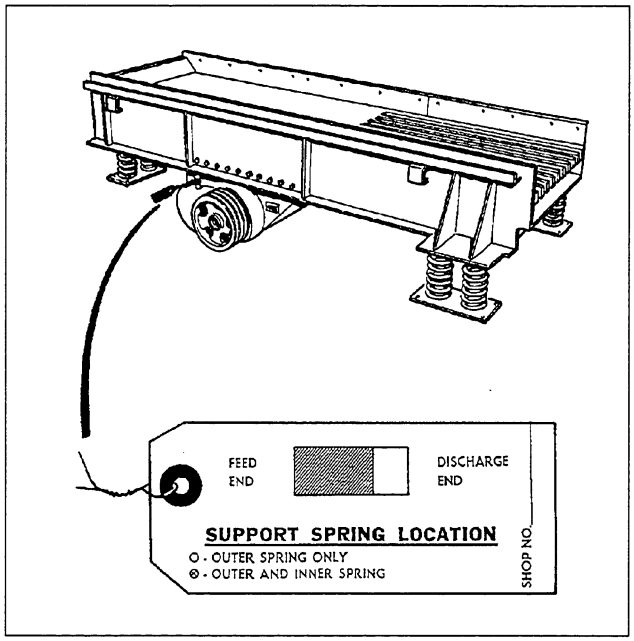


Figure 3-3. Support Spring Location Tag

4. Lift the feeder above the support structure. Carefully align and lower the feeder until it is supported by the springs. See Figure 3-1 for lifting points.

Important: Be sure springs are not twisted or cocked. Springs must be centered on spring washers.

5. If installing a pre-assembled feeder and support structure on a portable plant:

- Lift entire feeder and support structure assembly above portable plant frame. Align bolt holes and carefully lower the assembly onto the frame.
- Remove all shipping brackets (painted RED). See Figure 3-4.
- Secure the support structure to the portable plant frame with bolts, washers, and nuts.

6. On feeders with electric motor drive, install motor base and electric motor. Install V-belts and tighten tension spring until belts are snug in sheave grooves. See Figure 3-5.

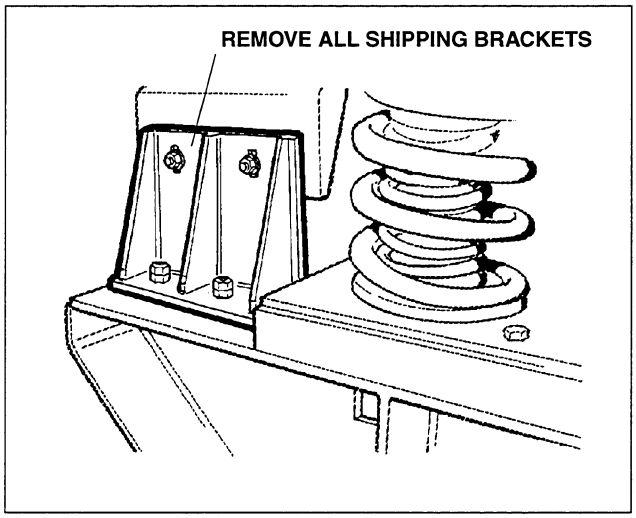


Figure 3-4. Shipping Brackets (Painted Red)

7. On feeders with hydraulic drive, connect hydraulic hoses as shown in the Telsmith hydraulic schematic provided with your feeder. Also see Figure 3-6.

8. Install feeder hopper and discharge chutes as required. Refer to the Telsmith assembly drawing provided with your feeder.

9. If your feeder is equipped with the optional circulating oil system, see CIRCULATING OIL SYSTEM INSTALLATION section. If your feeder is not equipped with this system, go to FEEDER INITIAL STARTUP section.

CIRCULATING OIL SYSTEM INSTALLATION

Refer to Figure 3-7 and proceed as follows:

1. Connect oil feed and return lines as shown in Figure 3-7.

2. Check power unit oil level. If necessary, remove cover and add oil until oil level is near top of site gauge. See Figure 3-8. Refer to Chapter 5 for oil specifications and capacities.

⚠ WARNING!!!

Allow only trained electricians to make electrical connections. Failure to observe this precaution may result in a dangerous electrical shock hazard, serious personal injury or death!

Note: Make connections to oil system electrical control box in steps 3 and 4. Location of control box varies. It may be mounted on the power unit or installed in a remote location.

Important: Too little tension will cause V-belts to slip. Too much tension will damage motor and feeder bearings. Adjust tension until until deflection of each V-belt (measured at center of the span length) is about equal to the thickness of the adjacent V-belt.

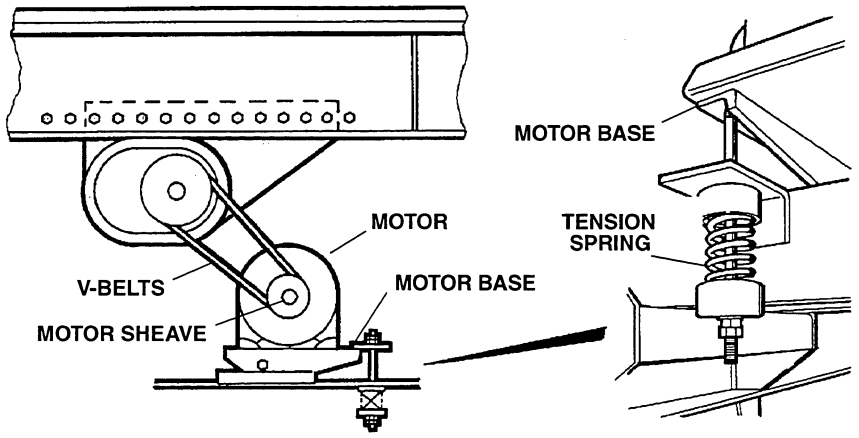


Figure 3-5. Adjusting Belt Tension (Electric Motor Drive)

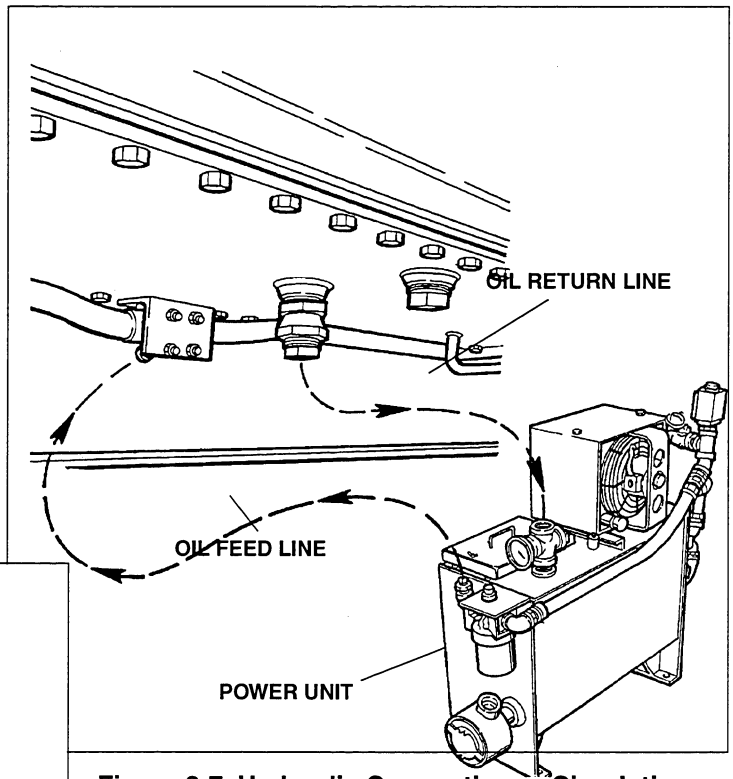


Figure 3-7. Hydraulic Connections - Circulating Oil System

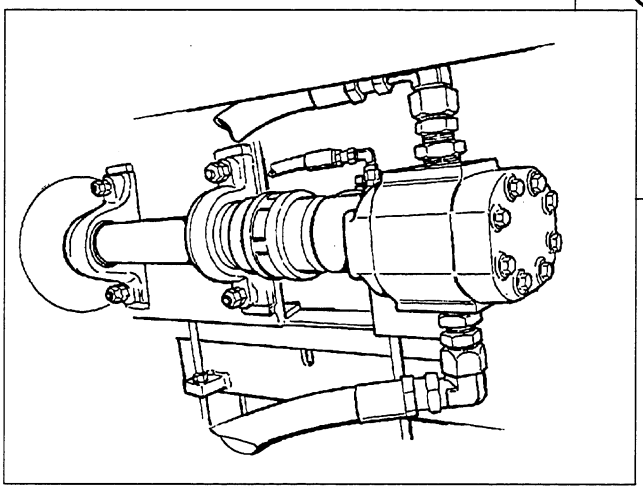


Figure 3-6. Hydraulic Hoses - Hydraulic Motor Drive

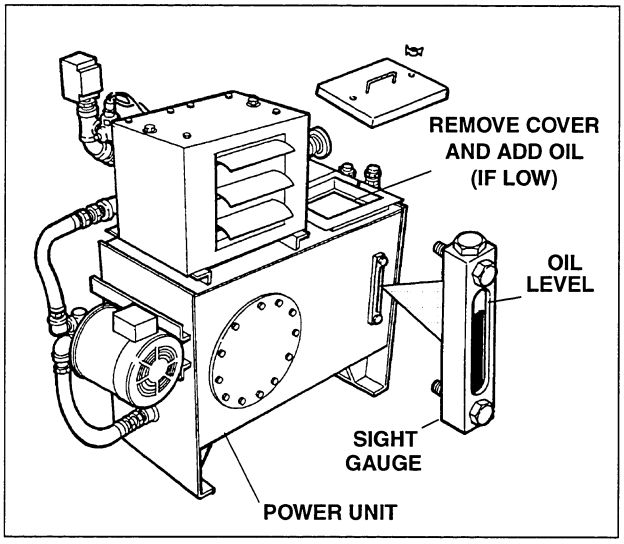


Figure 3-8. Checking Oil Level - Circulating Oil System

3. Connect the flow switch interlock. See Figure 3-9.

4. Connect oil system electrical power. See Figure 3-9.

5. Move power unit power switch to ON position. Perform the following checks WITHOUT starting the feeder drive motor.

- Check direction of pump motor fan. It must turn COUNTERCLOCKWISE. If motor fan is turning in the wrong direction, reverse electrical leads. See Figure 3-10.
- Remove cover and check for return oil flow. See Figure 3-10. If there is no return oil flow, check pump motor fan direction again. Motor fan must turn COUNTERCLOCKWISE.

6. Refer to FEEDER INITIAL STARTUP section.

FEEDER INITIAL STARTUP

⚠ WARNING!!!

Allow only trained electricians to make electrical connections. Failure to observe this precaution may result in a dangerous electrical shock hazard, serious personal injury, or death!

1. If feeder is equipped with electric drive motor, connect electrical power. Refer to Telsmith electrical schematic provided with your feeder for additional information.

2. If feeder is equipped with circulating oil system, be sure it is ON.

3. Start feeder and check for leaks, unusual noises or loose parts. Stop feeder immediately if any problems are noticed. Be sure feeder sheave is turning in the direction shown in Figure 3-11.

Note: If feeder sheave is turning in the wrong direction, stop the feeder immediately and reverse the electrical leads or hydraulic hoses.

4. If feeder is equipped with circulating oil system, check oil temperature frequently after initial startup. Temperature must not exceed 160 °F. See Chapter 4 for additional circulating oil system information.

5. Complete the initial startup checklist at the front of this manual. Mail the checklist to Telsmith within 10 days of initial startup.

Note: Failure to complete and return initial startup checklist may void warranty.

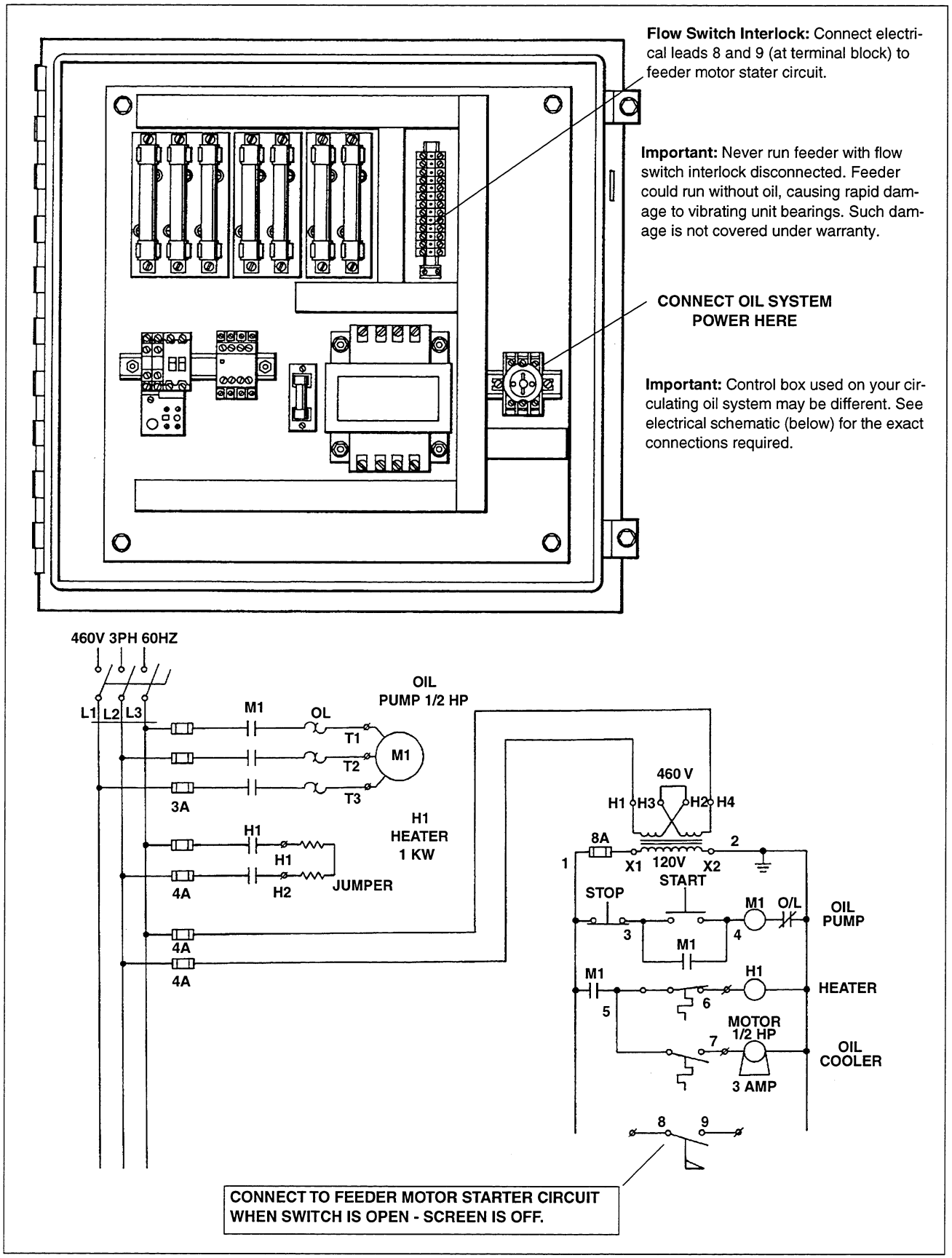


Figure 3-9. Electrical Control Box Connections - Circulating Oil System

3

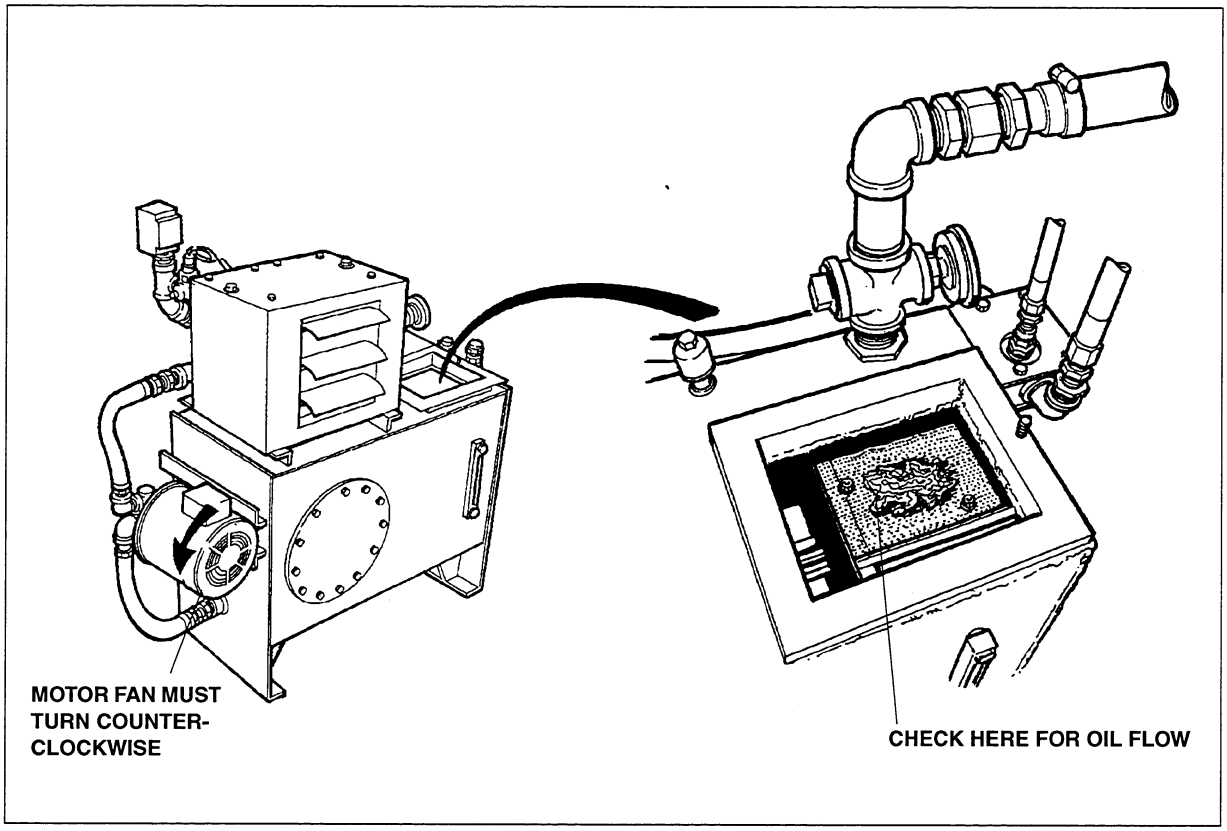


Figure 3-10. Startup Checks - Circulating Oil System

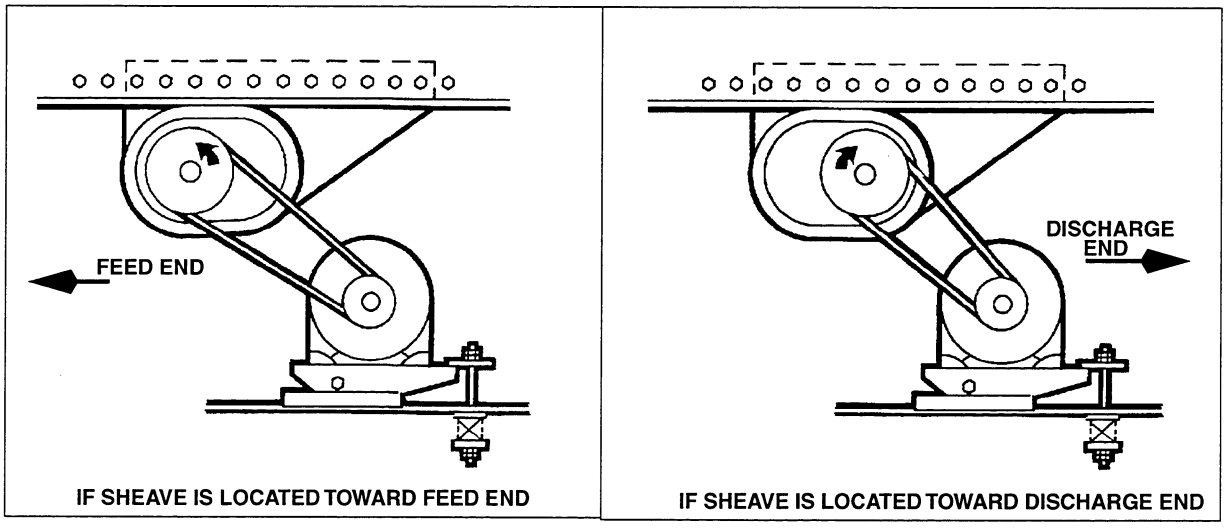


Figure 3-11. Sheave Rotation

Chapter 4

FEEDER OPERATION AND ROUTINE MAINTENANCE

⚠ WARNING!!!

Always lock out and tag the controls for the feeder drive before performing any adjustments, maintenance, or repairs. Loosen and remove V-belts. Alert all personnel that the feeder is being serviced. Failure to observe these precautions may result in serious injury or death.

GENERAL OPERATION GUIDELINES

- Read and understand the safety precautions in Chapter 1 before operating or servicing the feeder.
- Perform all inspections and scheduled maintenance as described in Table 5-1. Keep a log of the maintenance performed.
- Be alert for any unusual noises or changes in operation that may indicate trouble. Stop feeder immediately if there are any obvious problems.
- Don't delay any scheduled maintenance or necessary repairs. Replace any obviously worn or broken parts immediately. Prompt corrective action will help prevent unexpected breakdowns and may prolong the life of your feeder.
- Do not weld or attach anything to the feeder body.
- Never allow the feeder to operate at excessive "G" Forces. See Table 4-2 for acceptable speed and stroke combinations.
- Watch for material spilling over the sides of the feeder. This condition may indicate that the feeder is not level. To ensure efficient operation and minimal spillage, feeder must be level both crosswise and lengthwise.
- Use only the recommended lubricants described in Chapter 5.

FEEDER STARTUP AND SHUTDOWN

- Perform all daily startup checks and procedures as described in Table 5-1 when starting the feeder for the first time each day.
- Before starting feeder, be sure no one is standing on, under, or beside the feeder. Alert all personnel that the feeder is about to be started.
- After startup, listen for any unusual sounds or noises that may indicate trouble.
- Always wait for feeder to achieve normal operating speed before starting material flow.
- Before daily shutdown, run the feeder until there is no material on the feeder pan.
- Perform all daily shutdown checks and procedures as described in Table 5-1 before stopping the feeder at the end of the day.

FEEDER CONTROLS

Appearance and location of the feeder controls will vary depending on whether the feeder is powered by a hydraulic motor or an electric motor.

Typical feeder controls are shown in Figures 4-1 and 4-2. The actual controls used on your feeder may be different due to design variations or special equipment.

Important: On feeders equipped with variable speed (eddy-current) drive, be sure that all enclosures for electronic motor controls and circuit boards are shock mounted. This will help prevent damage caused by excessive vibration.

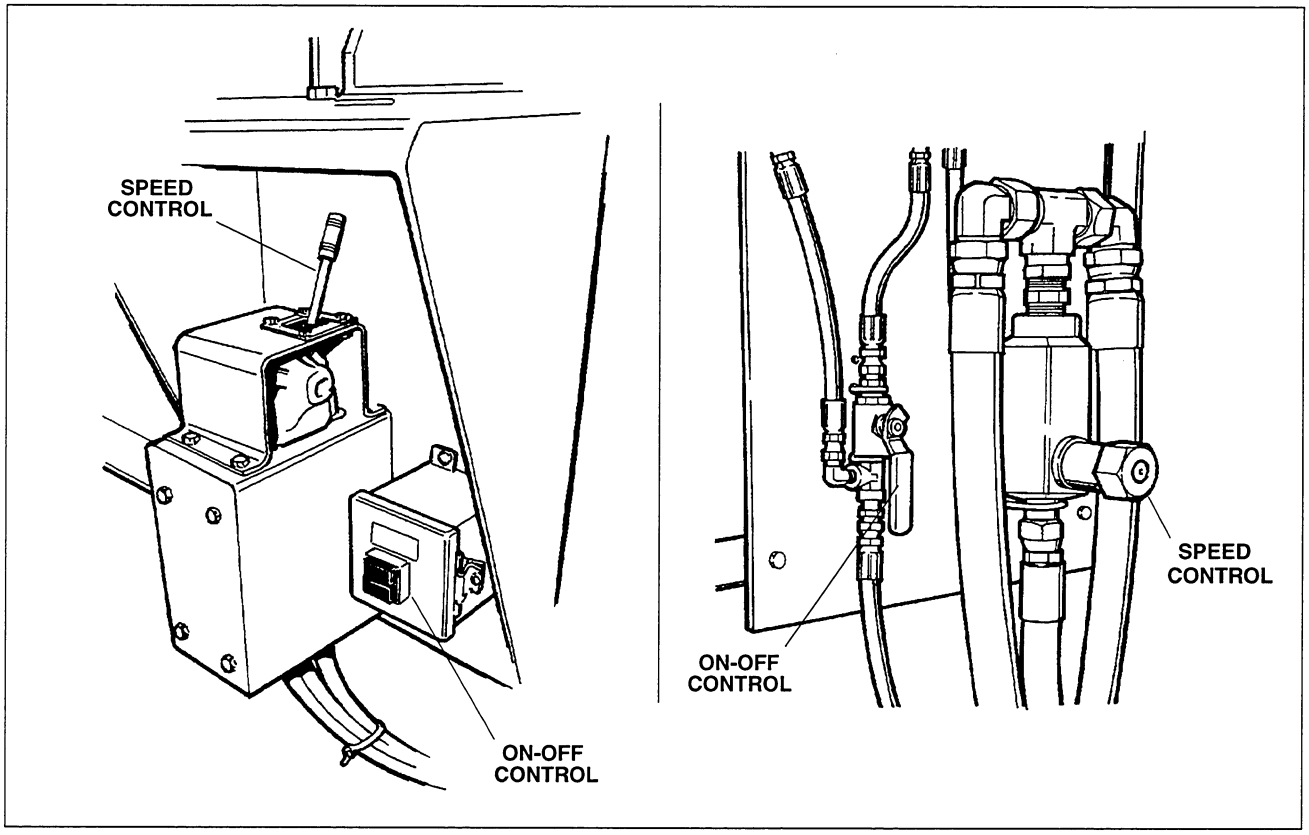


Figure 4-1. Typical Controls - Feeders with Hydraulic Motor Drive.

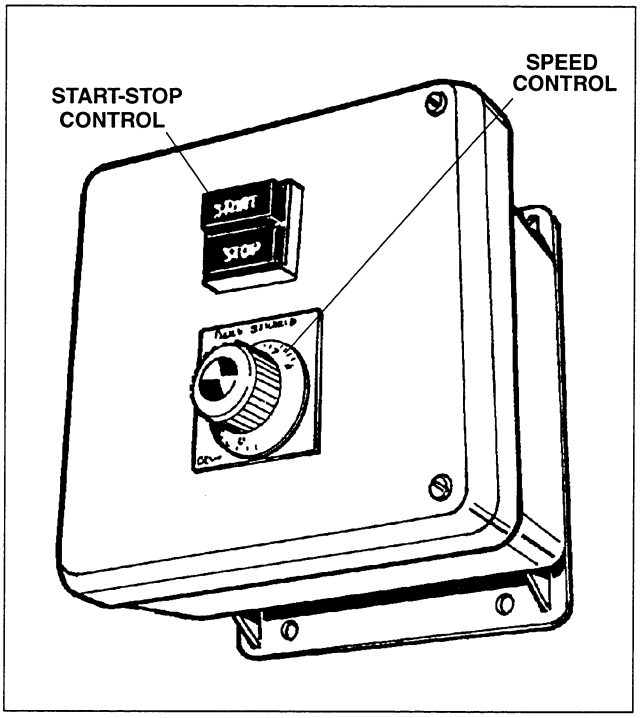


Figure 4-2. Typical Controls—Feeders with Electric Motor Drive.

CHECKING OIL LEVEL

Note: This procedure applies to all feeders, **except if equipped with the optional circulating oil system.**

1. Lock out power to feeder drive. Tag controls and alert all personnel that feeder is being serviced.

⚠ CAUTION !!!

Hot oil can cause burns. Allow time for oil to cool before checking level.

2. Open petcocks (one on each side) and check for oil flow. If oil flow is present, close the petcocks immediately. Oil level is OK if oil flows from **both** petcocks. See Figure 4-3.

Note: If oil flows from only one petcock, feeder is not level. Feeder must be level crosswise and lengthwise to accurately check oil level.

3. If oil did not flow from either petcock in step 2, remove one of the oil fill plugs from the top of the vibrating unit. Add oil until it just begins to flow from both petcocks. DO NOT OVERFILL! See Chapter 5 for oil specifications.

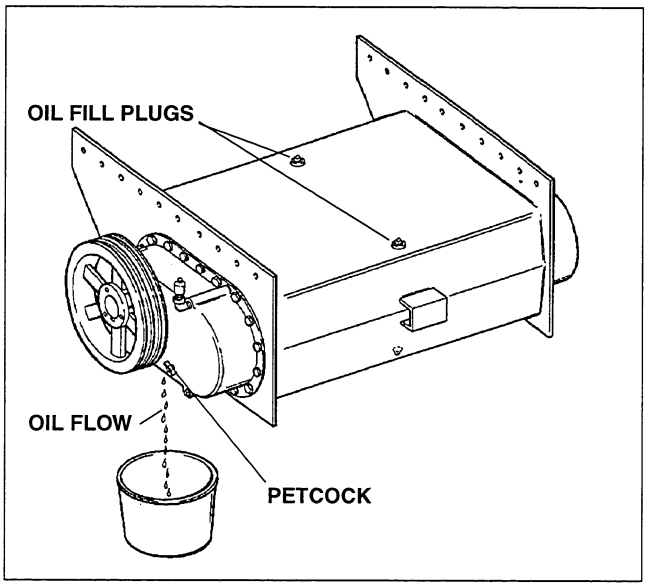


Figure 4-3. Checking Oil Level

4. Close petcocks while oil is still flowing. Reinstall oil fill plug.

CHANGING OIL

Note: This procedure applies to all feeders, **except if equipped with the optional circulating oil system.**

1. Lock out power to feeder drive. Tag controls and alert all personnel that feeder is being serviced.

⚠ CAUTION !!!

Hot oil can cause burns. Allow time for oil to cool before draining.

2. Remove oil drain plug and allow oil to drain into a suitable container. Reinstall oil drain plug. See Figure 4-4.

3. Remove magnetic plugs (one on each side) and allow oil to drain into suitable containers. Remove any metal shavings from plugs and reinstall.

4. Remove breathers, (one on each side). Clean and reinstall breathers.

5. Remove one of the oil fill plugs and add oil until it just begins to flow from both petcocks. DO NOT OVERFILL! See Chapter 5 for oil specifications and capacities.

6. Close petcocks while oil is still flowing. Reinstall oil fill plug.

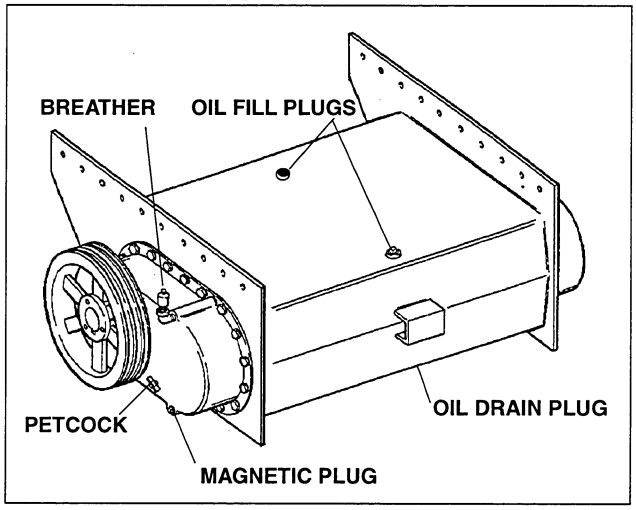


Figure 4-4. Changing Oil

CIRCULATING OIL SYSTEM OPERATION AND MAINTENANCE

System Description

The optional circulating oil system provides a continuous supply of cooled and filtered oil to the vibrating feeder. See Figure 4-5.

Its self-contained power unit includes an oil reservoir, air-to-oil cooler, oil filter and electrically-powered oil pump.

An optional oil immersion heater warms the oil to safe operating temperatures in cold climates.

A flow switch stops the feeder if the oil flow rate falls below 1 gpm. It is wired to the crusher drive motor starter. An interlock prevents the feeder from starting unless the oil system pump is ON.

The oil system electrical control box may be mounted on the pumping unit or in a remote location. It includes an on-off power switch, fuses, and various other electrical components.

Operating Guidelines

- Never attempt to defeat the interlock that prevents the feeder from running if the oil system is OFF. Never attempt to defeat the flow switch interlock that stops the feeder if oil pressure drops below safe limits. Defeating these interlocks may allow the feeder to run without oil, causing severe damage to the vibrating unit.
- Always check oil level with oil system OFF. If oil system has been running, allow time for oil to drain

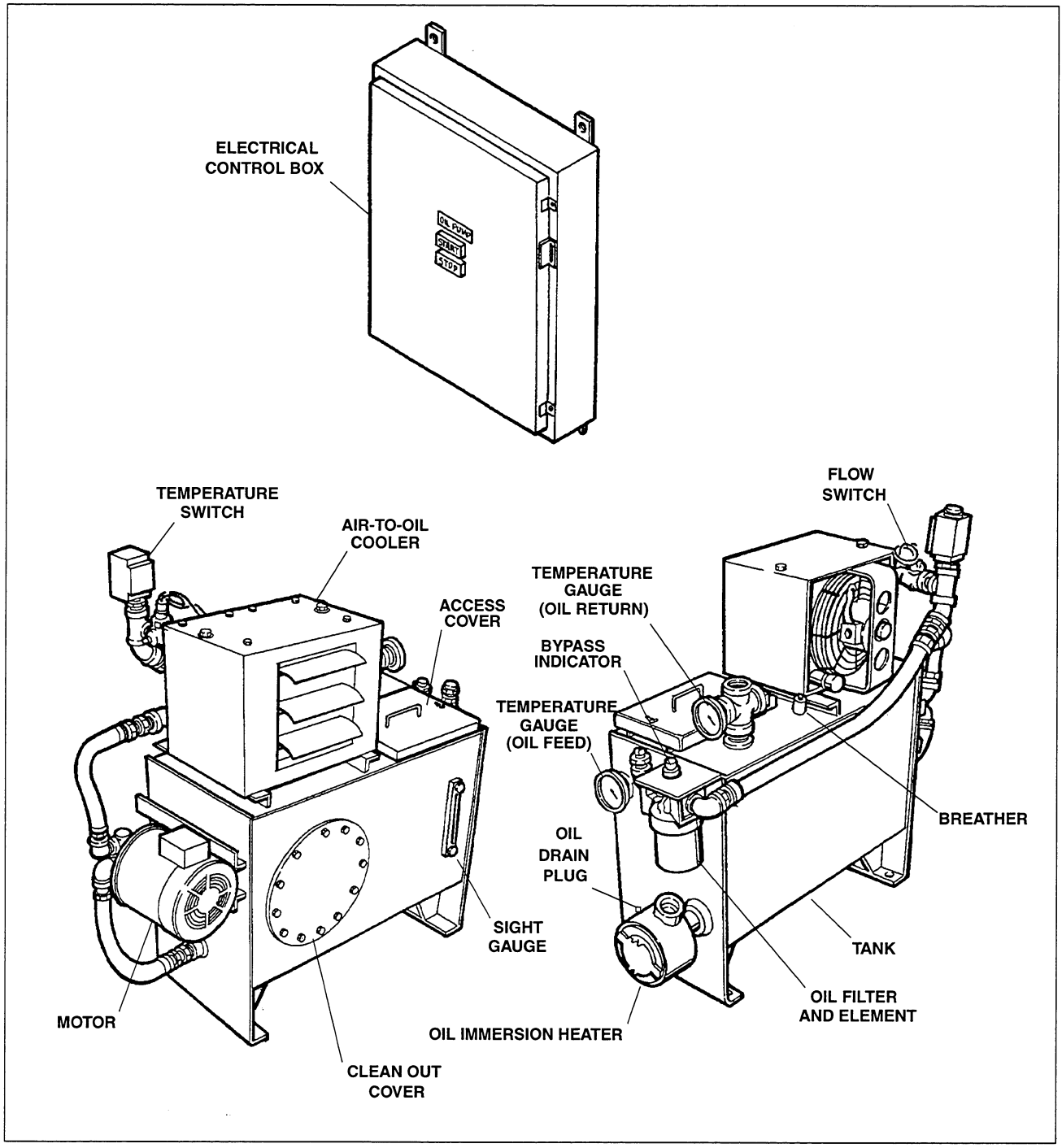


Figure 4-5. Major Components and Maintenance Points - Circulating Oil System

from vibrator. Sight gauge should show at least 3/4 full.

- Check the oil filter bypass indicator daily at startup. Replace filter element immediately if indicator shows oil bypass.
- Keep the air-to-oil cooler fan openings free of dirt and dust. If these areas become blocked, overheating may result.
- The air to oil cooler is activated by a temperature switch whenever oil temperature reaches 120 °F. Never attempt to adjust or disable the temperature switch. Overheating may result.
- The immersion heater (optional) keeps the oil at safe minimum operating temperatures in cold climates. Set the heater thermostat to between 70 and 100°F.

- The oil system has two temperature gauges. One gauge is located in the oil feed line and the other is in the oil return line. Monitor both gauges daily to determine the normal operating temperature of your feeder. Do not start the feeder if oil temperature in either gauge is under 70 °F. Stop feeder if oil temperature in either gauge exceeds 160 °F.
- Unusually high temperature readings in both gauges, or a major difference between the readings of the two gauges may indicate feeder overloading or other problems. Always stop the feeder if the oil temperature rises beyond normal limits. Perform the following checks:

1. Check that the air-to-oil cooler openings are not clogged, and that the fan is ON.

2. Be sure the oil feed and return lines are not crushed or bent.

3. Remove the access cover from the top of the power unit and check that oil is returning to the tank.

4. Stop the oil system and allow time for the oil to drain from the vibrating unit into the tank. Check the oil level in the tank site gauge. It should be at least 3/4 full.

5. If the oil system appears to be operating properly, and the feeder is not being overloaded, check the vibrating unit for worn bearings or other mechanical problems. Make repairs as required.

Changing Oil

⚠ WARNING!!!

Lock out power to oil system and feeder drive. Tag controls and alert all personnel that feeder is being serviced. Failure to observe this precaution may result in serious personal injury or death.

⚠ CAUTION !!!

Hot oil can cause burns. Allow time for oil to cool before draining.

1. Remove oil drain plug from tank and allow oil to drain into suitable container. Reinstall plug.

2. Remove access cover and add fresh oil through access hole. See Chapter 5 for oil specifications and capacities. Reinstall access cover.

Note: Oil level in sight gauge should be at least 3/4 full, but not above top of gauge.

3. Replace oil filter element.

4. Start oil system WITHOUT feeder running. Check for leaks.

SPEED AND STROKE REQUIREMENTS

Check the speed (RPM) at the vibrating unit sheave with a tachometer. Normal operating speed is 500 to 800 RPM. Never operate feeder above 850 RPM.

	WIDTH					
	36"	42"	48"	54"	60"	72"
FEEDER SPEED	500-800 RPM (Max. Speed 850 RPM)					

Table 4-1. Vibrating Feeder Recommended Speeds (RPM)

FEEDER STROKE	VIBRATING UNIT SPEED (RPM)							
	500	550	600	650	700	750	800	850
5/16"	1.1G	1.3G	1.6G	1.9G	2.2G	2.5G	2.8G	3.2G
3/8"	1.3G	1.6G	1.9G	2.2G	2.6G	3.0G	3.4G	3.8G
7/16"	1.6G	1.9G	2.2G	2.6G	3.0G	3.5G	4.0G	4.5G
1/2"	1.8G	2.1G	2.6G	3.0G	3.5G	4.0G	4.5G	5.1G

Table 4-2. Vibrating Feeder "G" Forces

Important: See Table 4-2. for allowable stroke and speed combinations. Failure to follow guidelines in Table 4-2 may result in excessive "G" forces, overheating, and failure of feeder components.

CHECKING STROKE

⚠ WARNING!!!

Stay clear of pinch points and moving parts while checking stroke. Failure to observe this precaution may result in serious injury or death.

1. Start the feeder and allow it to reach normal operating speed.

2. View the "Stroke Indicator" decal. Note the intersection point at which the two triangles meet. This is the feeder stroke. See Figure 4-6 for examples.

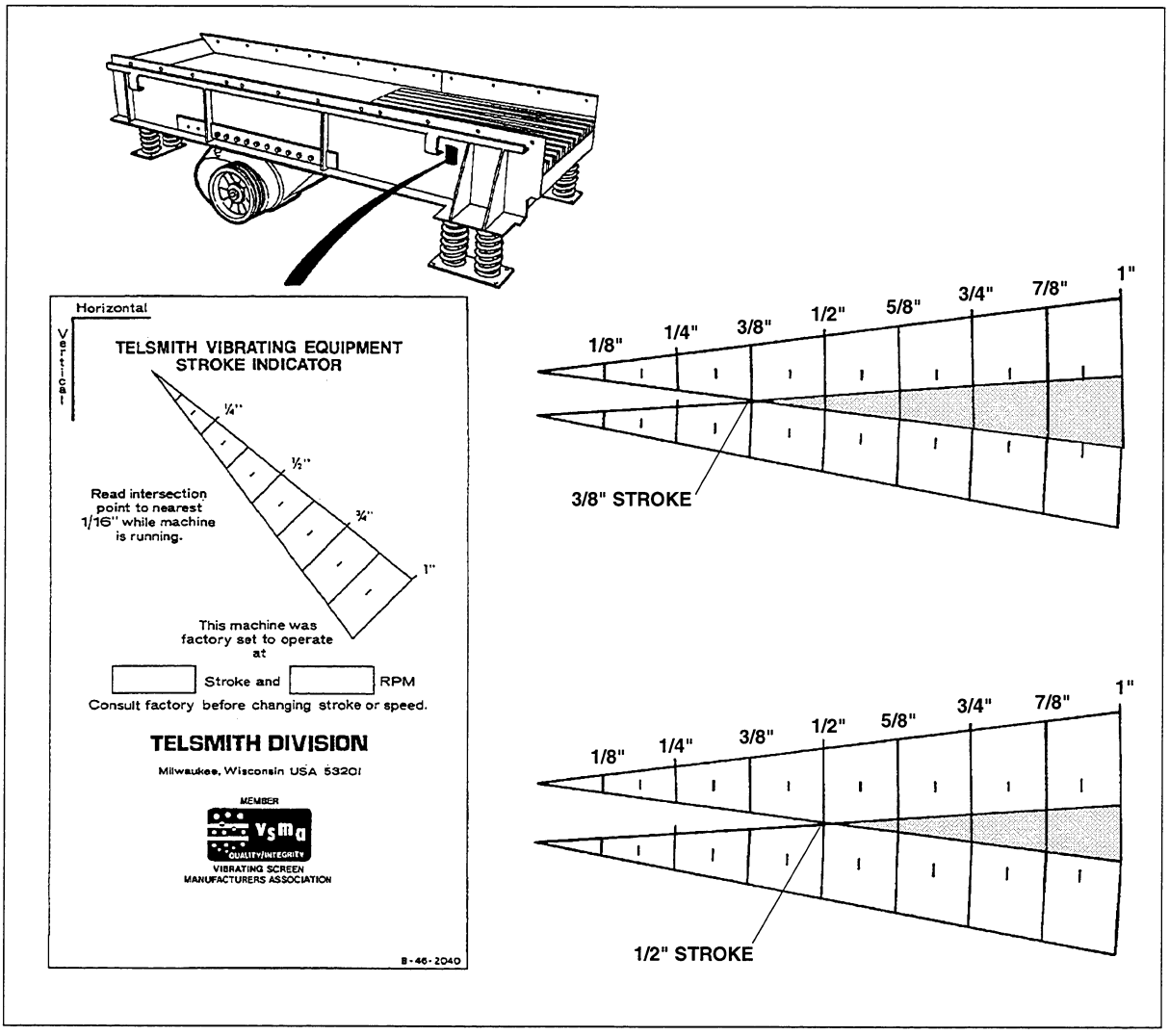


Figure 4-6. Checking Stroke

Chapter 5

PERIODIC MAINTENANCE AND LUBRICATION SCHEDULE

INTRODUCTION

Perform periodic maintenance and lubrication procedures as described in Table 5-1. See Figure 5-1 for the location of each service item.

Always perform procedures in the same order as listed in Table 5-1. Never skip any procedures that apply. Failure to perform the procedures at the specified intervals may result in reduced efficiency, premature wear and component failure.

⚠ WARNING!!!

Failure to follow the precautions below may result in serious injury or death!

- Be sure to follow all safety precautions as described in Chapter 1 of this manual. Alert all personnel that the feeder is being inspected.
- If it is necessary to run the feeder during inspections, be sure no one is on, beside or under the feeder. Stay a safe distance from the feeder when observing operation or listening for noises.
- Inspection procedures may reveal problems that need immediate attention. Always tag and lock out feeder drive controls before performing any adjustments, maintenance or repairs. Loosen and remove V-belts. Be sure pressure is relieved in all hydraulic and air systems. Alert all personnel that the feeder is being serviced.

GENERAL MAINTENANCE GUIDELINES

Dirt and spilled material: Serious problems, such as cracked welds and leaks, may be hidden from view. Remove dirt or spilled materials when making inspections. Always clear the work area of any obstructions or debris.

Bolts, nuts, screws, and other fasteners: Tighten any loose fasteners. Inspect all fasteners as removed during maintenance and repair procedures. Replace fasteners if bent, worn or broken.

Hydraulic hoses and air lines: Look for leaks and tighten any loose fittings. Replace any worn hoses, cracked lines or damaged fittings. Be sure that hoses and lines are not pinched, bent or rubbing. Always relieve system pressure before making any repairs.

Electric wire and connectors: Check for loose or broken connectors and damaged insulation around wires. Make repairs as required. Always lock out power and tag controls to prevent electric shock hazard.

Welds: Look for chipped paint, rust, or gaps where parts are welded together. Repair any cracked welds immediately. Always follow guidelines contained in the "Welding On Machinery" section of Chapter 1.

LUBRICANT SPECIFICATIONS

Lubricant specifications and oil capacities are summarized in Tables 5-2, 5-3, 5-4, and 5-5.

INTERVAL	CHECK, SERVICE OR LUBRICATE AS REQUIRED	REF (SEE FIGURE 5-1)
Daily - Before Startup (Feeders NOT Equipped with Circulating Oil System)	• Loosen petcocks and check vibrating unit oil level. Add oil if required. See Chapter 4 for procedure. See Table 5-3 for oil specifications. See Table 5-4 for oil capacities.	H
Daily - Before Startup (Feeders Equipped with Circulating Oil System Only)	• Check power unit oil level. Sight gauge must show 3/4 full with pump OFF and all drained from vibrating unit. Add oil if necessary. See Chapter 4 for procedure. • Start circulating oil system WITHOUT starting feeder. Check oil filter bypass indicator. Replace filter element if indicator shows bypass. • Check for leaking hoses and fittings. Tighten or repair as required.	D
Daily - Before Startup	• Clean vibrating unit breathers. Replace if not cleanable.	I
Daily - Before Startup	• Check V- belts for wear or looseness. Replace or adjust V-belts as required.	F
Daily - Before Startup	• Clean dirt and dust from drive motor. • Clean motor ventilation openings (if equipped with electric drive motor).	--
Daily - Before Startup	• Check that feeder moves freely without obstructions. • Check for broken or sagging springs.	E
Daily - During Startup	• Check for any unusual noises or vibration.	--
Daily - After Shutdown	• Clean any built-up material from feeder pan and grizzly bars.	C
Daily - After Shutdown	• Remove any dust or spillage from on or around feeder.	--
Weekly	• Check that all capscrews, nuts and bolts are tight. See Appendix A for Recommended Torque Values (Use Dry-Grade 5 Values).	B
Weekly	• Check that stroke and RPM are correct for your application. Do not operate below 500 or above 800 RPM.	--
Weekly	• Check for wear on side wear liners, grizzly bars, and pan liners. Replace components as required.	C
Weekly (Feeders Equipped with Electric Motor Drive Only)	• Apply grease to motor base fittings	G
Weekly (Feeders Equipped with Hydraulic Motor Drive Only)	• Apply grease to fittings on hydraulic motor. See Table 5-2 for grease specifications.	J
Weekly (Feeders Equipped with Circulating Oil System Only)	• Clean or replace breather on power unit. • Check that air-to-oil cooler fan openings are clean.	D
Every 300 hours (Feeders NOT Equipped with Circulating Oil System)	• Drain and refill vibrating unit with oil. See Chapter 4 for procedure. See Table 5-3 for oil specifications. See Table 5-4 for oil capacities.	H

Table 5-1. Vibrating Feeder Periodic Maintenance and Lubrication Schedule

INTERVAL	CHECK, SERVICE OR LUBRICATE AS REQUIRED	REF (SEE FIGURE 5-1)
Every 500 hours (Feeders Equipped with Circulating Oil System Only)	• Drain and refill power unit with oil. Change oil filter element. See Chapter 4 for procedure. See Table 5-3 for oil specifications. See Table 5-5 for oil capacities.	D
Monthly	• Inspect entire feeder for any obvious damage, unusual wear or loose members.	--
Yearly (Or as recommended by motor manufacturer)	Lubricate the following electric motors: • Feeder drive motor (Feeders equipped with electric drive motor only). • Pump motor (Feeders equipped with circulating oil system only). • Fan motor - air-to-oil cooler (Feeders equipped with circulating oil system only). **Important:** Follow motor manufacturer's lubrication instructions. See data plate on motor for manufacturer.	--

Table 5-1. Vibrating Feeder Periodic Maintenance and Lubrication Schedule (Continued)

5

SPECIFICATION	
NLGI Grade Number	2
Worked Penetration @ 77 °F (60 Strokes)	285
Worked Penetration @ 77 °F (100,000 Strokes)	300
Dropping Point, °F	365
Copper Corrosion Test, 14 Days	Pass
Wheel Bearing Test @ 275 °F	Pass
Timken OK Load	50 lbs
Note: The above grease must contain an extreme pressure (EP) agent that is not harmful to bronze, brass or lead. For satisfactory lubrication, grease must be absolutely free from any ingredients which could cause corrosion, and from gritty material which could produce wear. Grease should also be uniform in texture, consistency, structure, stability, flow characteristics and lubricating characteristics.	

Table 5-2. Lubricant Specifications - Grease

SPECIFICATION	AMBIENT TEMPERATURE		
	BELOW 40 °F (4.5 °C)	40 to 80 °F (4.5 to 27 °C)	ABOVE 80 °F (27 °C)
ISO Grade (International Standards Organization)	C-100	C-150	C-220
AGMA Grade #250.04 (American Gear Manufacturer's Association)	3EP	4EP	5EP
Viscosity SUS @ 100 °F	469-575	709-871	1047-1283
Viscosity SUS @ 210 °F	61-67	74-82	90-101
Viscosity Index (V.I.)	95+	95+	95+
Timken OK Load (lbs)	60+	60+	60+
Extreme Pressure (EP) Agent	Yes	Yes	Yes
Rust and Oxidation Agent	Yes	Yes	Yes
Anti-Foaming Agent	Yes	Yes	Yes
Copper Strip Corrosion Test	Pass	Pass	Pass
• Oil must not be corrosive to metals generally used in bearings, gears, shaftings, pumps, and housings. • Oil must have no effect on rubber seals, synthetic seals, packings and hoses.			

Table 5-3. Lubricant Specifications - Oil

5

APPROXIMATE OIL CAPACITIES GALLONS		
SIZE OF VIBRATING UNIT	WIDTH IN FEET	APPROXIMATE OIL CAPACITIES (GALLONS)
180HF	3	9
	3.5	10
	4	16
	5	◊
	6	◊
220HF	3	13
	3.5	15
	4	17-1/2
	4.5	20
	5	22
	6	26
280HF	4	22-1/2
	5	28
	6	33
Note: Actual oil capacities may be different. To ensure proper oil level, always fill vibrating unit only oil just flows from petcocks on both sides. Do not overfill. **Important:** Oil capacities in this table apply only to standard HF vibrating units without the circulating oil system. Do not add oil to the vibrating unit if equipped with the circulating oil system. See Table 5-5.		

Table 5-4. Vibrating Unit Oil Capacities

Approximate Oil Capacity Power Unit Oil Tank
15 Gallons
Important: On feeders equipped with the circulating oil system, always add oil to the power unit only. Do not add oil to the vibrating unit. See Table 5-3 for oil specifications. Refer to Chapter 4 for additional information. **Note:** After stopping feeder, allow at least 5 minutes for oil to drain from vibrating unit before checking or adding oil. If necessary, add oil until sight gauge shows 3/4 full.

Table 5-5. Power Unit Oil Capacity (Feeders equipped with optional circulating oil system only)

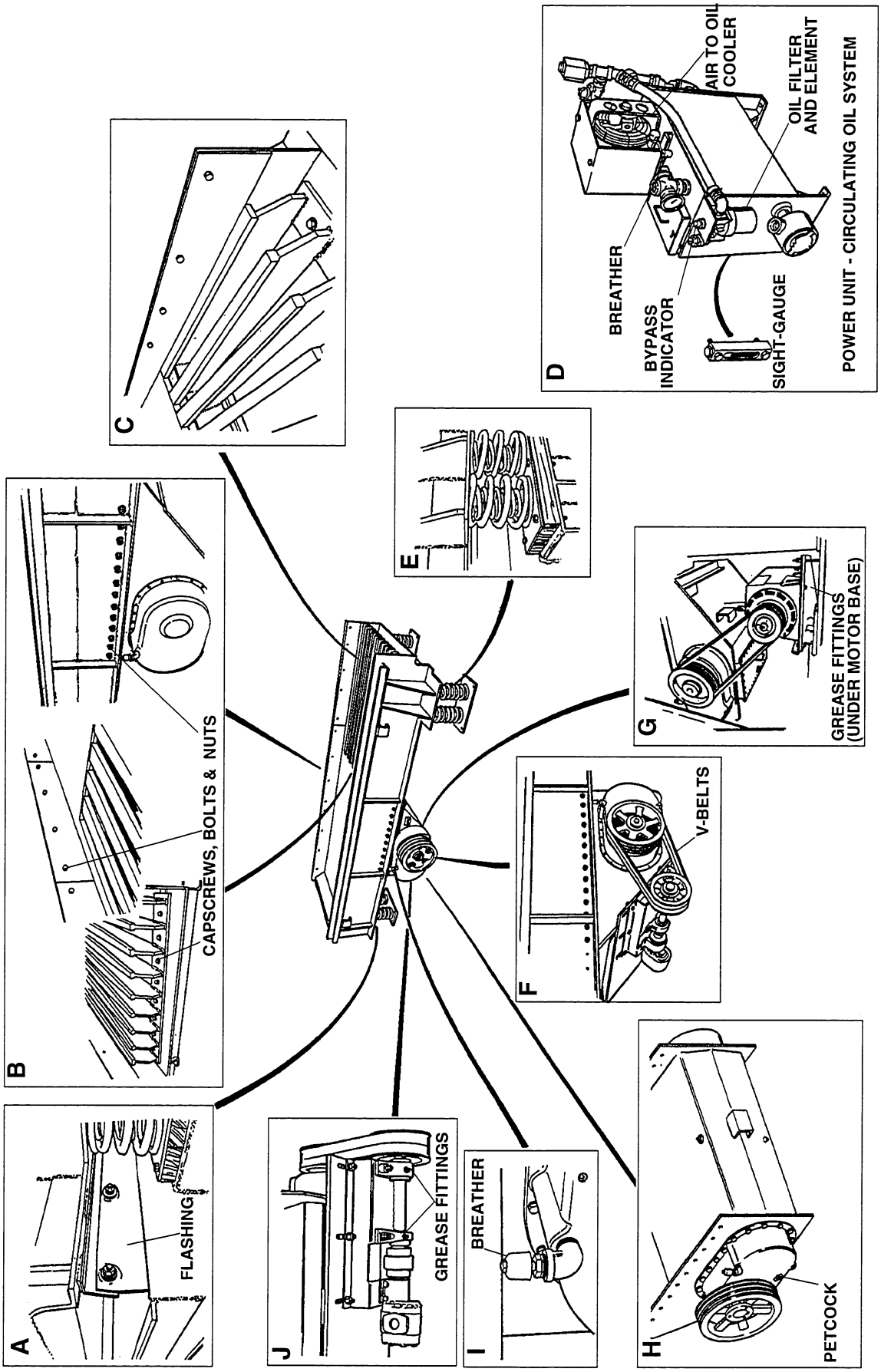


Figure 5-1. Vibrating Feeder Maintenance Points

5

NOTES

Chapter 6
TROUBLESHOOTING

⚠ WARNING!!!

Failure to follow the precautions below may result in serious injury or death.

- During troubleshooting, be sure to follow all safety precautions as described in Chapter 1 of this manual. Alert all personnel that the feeder is being inspected.
- If it is necessary to run the feeder during troubleshooting, be sure no one is standing on, beside or under the feeder. Stay a safe distance from the feeder when observing feeder operation or listening for noises.
- Troubleshooting procedures may reveal problems that need immediate attention. Always tag and lockout feeder drive controls before performing any adjustments, maintenance or repairs. Loosen and remove V-belts. Be sure pressure is relieved in all hydraulic and air systems. Alert all personnel that the feeder is being serviced.
- Allow only trained electricians to troubleshoot electrical components.

SYMPTOM	POSSIBLE CAUSE	REMEDY
FEEDER STOPS OR WILL NOT OPERATE	a. Failed vibrating unit bearing(s).	Replace bearing(s) as required. **Note:** Before disassembling vibrating unit, rotate drive sheave by hand and check for signs of bearing failure. Replace bearings(s) as required. If one or more bearings has failed, check for the following possible causes: • Excessive temperature and/or imbalance caused by improperly assembled counterweights. • Low oil level. • Disconnected flow switch (feeders with circulating oil system only). • Pump failure (feeders with circulating oil system only). • Unchanged oil (Check maintenance records). **Important:** Determine cause of failure and make repairs as required to prevent new bearings from failing.
	b. V-belt loose, turning, worn or broken.	Check V-belts for looseness, turning, wear or breakage. **Important:** Replace belts in matched sets to maintain uniform belt stretch.

Table 6-1. Vibrating Feeder Troubleshooting

SYMPTOM	POSSIBLE CAUSE	REMEDY
FEEDER STOPS OR WILL NOT OPERATE (CONTINUED)	c. Oil on V-belts and sheaves.	Remove any oil from sheave grooves and V-belts. Thoroughly clean V-belts and sheave grooves using cloth moistened with alcohol, benzene or gasoline. **Important:** Check vibrating unit for source of leaks and make repairs as required.
	d. Motor loose or out of alignment.	Check motor mounting bolts for looseness. Align sheaves, adjust V-belt tension and tighten motor mounting bolts.
	e. No power or motor is "single phasing."	Check power and motor leads. Check fuses and replace if blown. Check thermal cutouts and reset or replace. Check motor for defective starter coil.
FEEDER DIFFICULT TO START	a. Motor too small.	Motor must have sufficient horsepower to start feeder under all weather conditions. A high torque motor is recommended. See Table 2-2 for horsepower recommendations.
	b. Incorrect oil viscosity.	Refer to Table 5-3 for oil specifications. Be sure oil viscosity is correct for ambient temperature.
	c. No power or drive motor is "single phasing."	Check power and motor leads. Check fuses and replace if blown. Check thermal cutouts and reset or replace. Check motor for defective starter coil.
	d. Vibrating unit jammed.	Check for worn or defective vibrating unit parts. Replace parts and make repairs as required. **Note:** If bearings or other parts are worn, check for the following possible causes: • Excessive temperature and/or imbalance caused by improperly assembled counterweights. • Low oil level. • Disconnected flow switch (feeders with circulating oil system only). • Pump failure (feeders with circulating oil system only). • Unchanged oil (Check maintenance records). **Important:** Determine cause of failure and make repairs as required to prevent new parts from failing.
OVERHEATING	a. Wrong oil viscosity.	Drain and refill vibrating unit (or power unit) with proper oil. Refer to Table 5-3 for vibrating unit oil specifications.
	b. Oil level too high or too low.	Check oil level. Add or drain oil as required. Refer to Chapter 4 for oil level check procedures.

Table 6-1. Vibrating Feeder Troubleshooting (Continued)

SYMPTOM	POSSIBLE CAUSE	REMEDY
OVERHEATING (CONTINUED)	c. Counterweights of different thickness installed	Install counterweights of the same thickness must be the same for both shafts. **Important:** Counterweight thicknesses must be the same for both shafts.
	d. Both negative and positive counterweights installed.	Remove all negative counterweights or all positive counterweights. **Important:** Never install both negative and positive counterweights on the same shaft. Only install negative **or** positive counterweights.
	e. Speed too low or too high.	Check drive sheave speed with tachometer. Adjust speed until it is within acceptable limits. **Important:** Speed must be between 500 and 800 RPM.
	f. Incorrect stroke.	Stroke must not exceed 1/2".
	g. Loose vibrating unit bolts.	Check for loose vibrator housing bolts, end cover bolts, and bearing housing bolts. If loose, tighten as required. See Appendix A for torque values (use Dry-Grade 5 Values).
UNUSUAL NOISES	a. Worn and/or misaligned vibrating unit gears.	Check gears for wear and misalignment. Replace gears if they are worn or have any broken teeth. If gears are misaligned, rotate shaft a full 360 ° and check for runout. Replace shaft if necessary.
	b. Loose vibrating unit bolts.	Check for loose vibrator housing bolts, end cover bolts, and bearing housing bolts. If loose, tighten as required. See Appendix A for torque values (use Dry-Grade 5 Values).
	c. Insufficient feeder frame clearance.	Check clearance of feeder and hopper. Maintain 3" vertical clearance.
	d. Damaged bearings.	Check oil for bearing debris. Replace bearings as required. **Important:** Determine cause of bearing damage. See "Overheating" section for typical causes.
UNEVEN FEEDER MOTION	a. Broken springs.	Replace broken springs as required.
	b. Material build-up around springs.	Remove material from around springs.
	c. Foundation settling.	Check for possible settling of foundation support beams. Check level of all support coils. THE FEEDER MUST BE MOUNTED ON A SQUARE, PLUMB AND LEVEL STRUCTURE.
	d. Springs unevenly compressed.	Check that spring compression is equal at all four corners and that the feeder is level. Uneven compression of the springs may cause distortion of the feeder pan.

Table 6-1. Vibrating Feeder Troubleshooting (Continued)

SYMPTOM	POSSIBLE CAUSE	REMEDY
UNEVEN FEEDER MOTION (CONTINUED)	e. Counterweight thickness different on each shaft.	Install counterweights of the same thickness on each shaft. **Important:** Counterweight thickness must be the same for both shafts.
	f. Both negative and positive counterweights installed.	Remove all negative counterweights or all positive counterweights. **Important:** Never install both negative and positive counterweights on the same shaft. Only install negative or positive counterweights.
	g. Material build-up.	Remove material build-up from feeder pan, grizzly bars, feed boxes and discharge chutes as required. **Note:** Excessive material build-up acts as dead weight and will affect both stroke and motion.
	h. V-belts slipping.	Tighten V-belts.
	i. Broken or deformed spring(s).	Replace any broken or badly deformed springs.
	j. Loose vibrating unit bolts.	Check for loose vibrator housing bolts, end cover bolts, and bearing housing bolts. If loose, tighten as required. See Appendix A for torque values (use Dry-Grade 5 Values).
SPRING BREAKAGE	a. Uneven loading.	Check that feed load is evenly distributed.
	b. Feeder not level.	Check that screen is level crosswise and lengthwise.
	c. Poor quality springs.	Replace broken springs only with genuine Telsmith springs.
	d. Rocks or other material jammed in spring coils.	Check for sources of spilled material. Improve housekeeping.

Table 6-1. Vibrating Feeder Troubleshooting (Continued)

Chapter 7

FEEDER REPAIR

GENERAL

⚠WARNING!!!

Always lock out and tag the feeder drive controls before performing any adjustments, maintenance, or repairs. Loosen and remove V-belts. Alert all personnel that the feeder is being serviced. Failure to observe these precautions may result in serious injury or death.

⚠WARNING!!!

Gasoline, naphtha, and other highly flammable fluids will burn if ignited and may explode if the fumes are ignited in a confined space, resulting in burns, severe bodily injury and/or death. Do not use these materials to clean, or for any other maintenance procedure.

⚠WARNING!!!

Lifting heavy components with inadequate hoisting apparatus can injure personnel and/or damage equipment. Use suitable slings and hoisting equipment to stabilize and lift heavy objects.

SIDE WEAR LINERS - REPLACEMENT

The feeder pan may be equipped with replaceable side wear liners. The liners are installed in short sections on both sides of the pan over its full length.

Removal

Remove the side wear liners as follows (see Figure 7-1):

1. Remove the flat-head machine screws, lockwashers, and nuts from the wear liners and feeder pan.

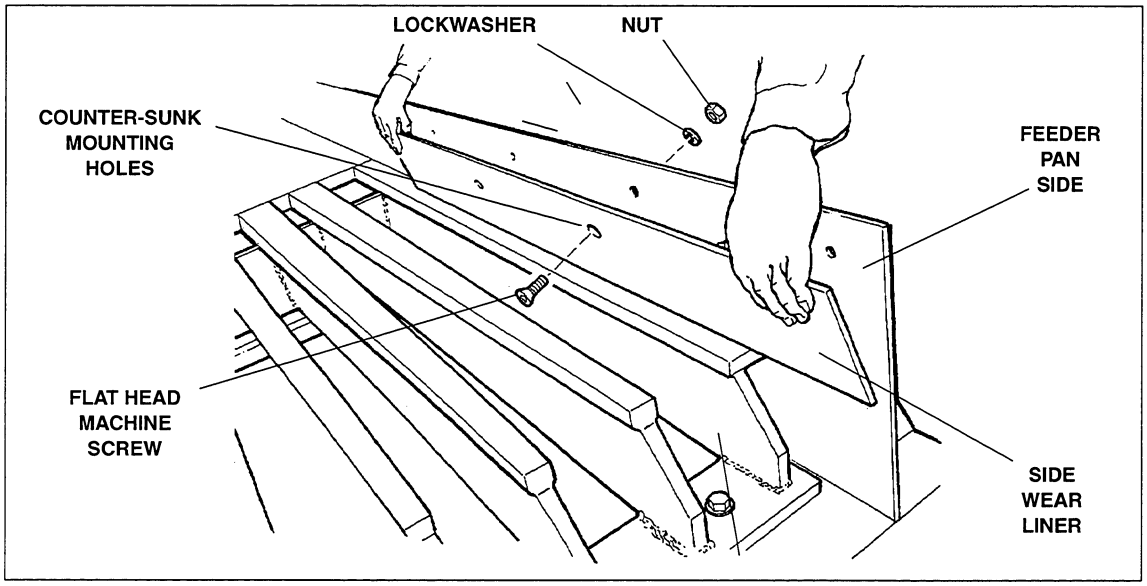


Figure 7-1. Side Wear Liner and Grizzly Assemblies

2. Remove the wear liners from the feeder pan.

Installation

Install the side wear liners on the feeder pan as follows (see Figure 7-1) :

1. Position one wear liner against the side of the feeder pan with the countersunk mounting holes facing the center of the feeder pan. Align the holes in the liner with those in the pan, and install the flat head machine screws, lock washers, and nuts finger tight.

2. Install the remaining wear liners as in Step 1.

3. Shift the liners as necessary for best alignment, then torque the flat-head machine screws and nuts securely.

GRIZZLY ASSEMBLY - REPLACEMENT

The feeder pan on a vibrating grizzly feeder (VGF) is equipped with a replaceable one-piece grizzly assembly at the discharge end of the feeder.

⚠ WARNING!!!

Always lock out and tag the feeder drive controls before performing any adjustments, maintenance or repairs. Loosen and remove V-belts. Alert all personnel that the feeder is being serviced. Failure to observe these precautions may result in serious injury or death.

Removal

Remove the grizzly assembly from the feeder pan as follows (see Figure 7-2):

1. Attach suitable hoisting equipment to the grizzly assembly and take up slack to support the weight of the grizzly.

2. Remove capscrews, backup plates, and nuts. Lift the grizzly from the feeder pan.

Installation

Install the grizzly assembly as follows (see Figure 7-2):

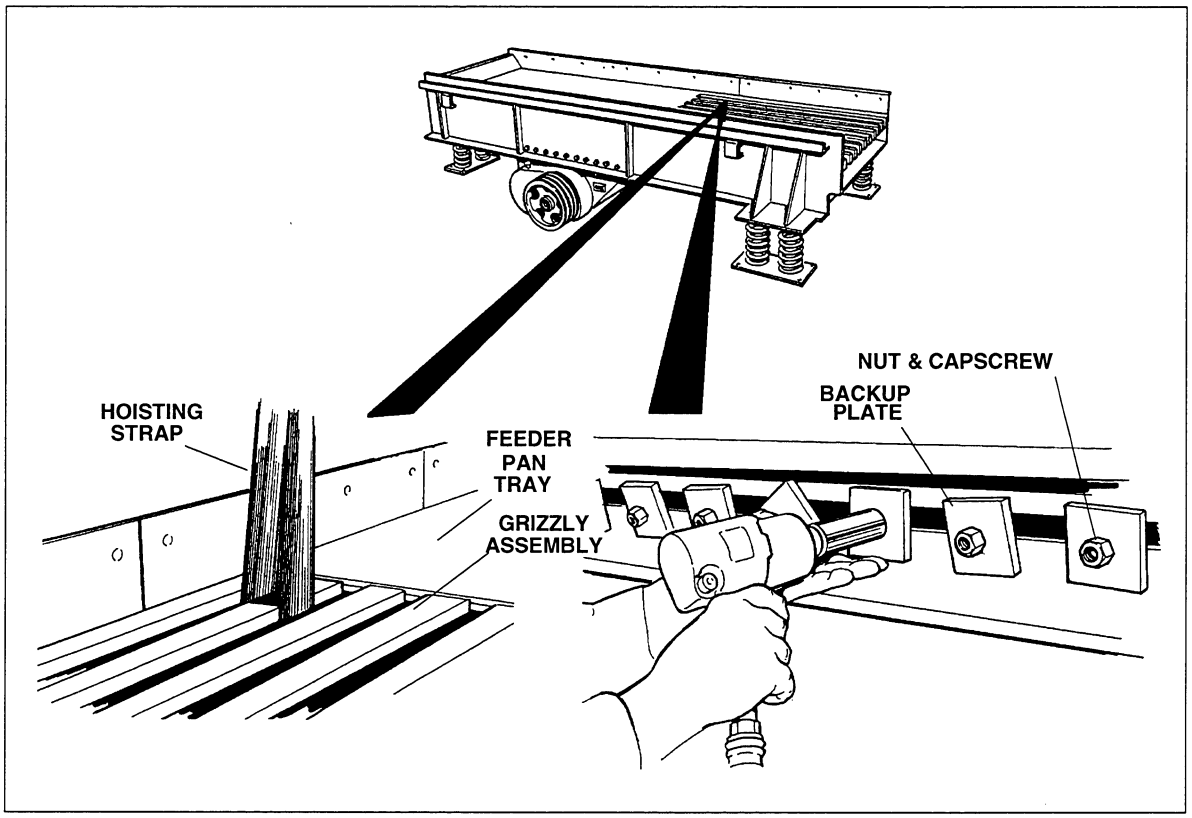


Figure 7-2. Grizzly Installation and Leveling

1. Attach suitable hoisting equipment to the grizzly assembly and lift it into position on the feeder pan.

2. Center the grizzly assembly as closely as possible between the sides of the feeder pan.

3. Loosely install the **center** capscrew, backup plate, and nut in the forward- and discharge-end mounts.

4. Level the top of the grizzly assembly with the top surface of the feeder pan tray. Be sure the leading edge of the grizzly assembly does not project above the feeder pan tray at any point, then tighten the center capscrews, backup plates, and nuts.

Important: The grizzly assembly must be level with the top of the feeder pan tray.

5. Install the remaining capscrews, backup plates, and nuts, and torque securely with an impact wrench.

VIBRATING UNIT - REPLACEMENT

This section describes the removal and replacement of the vibrating unit from an installed vibrating feeder assembly. Refer to Figures 7-3 and 7-4.

⚠ WARNING!!!

Always lock out and tag the feeder drive controls before performing any adjustments, maintenance or repairs. Loosen and remove V-belts. Alert all personnel that the feeder is being serviced. Failure to observe these precautions may result in serious injury or death.

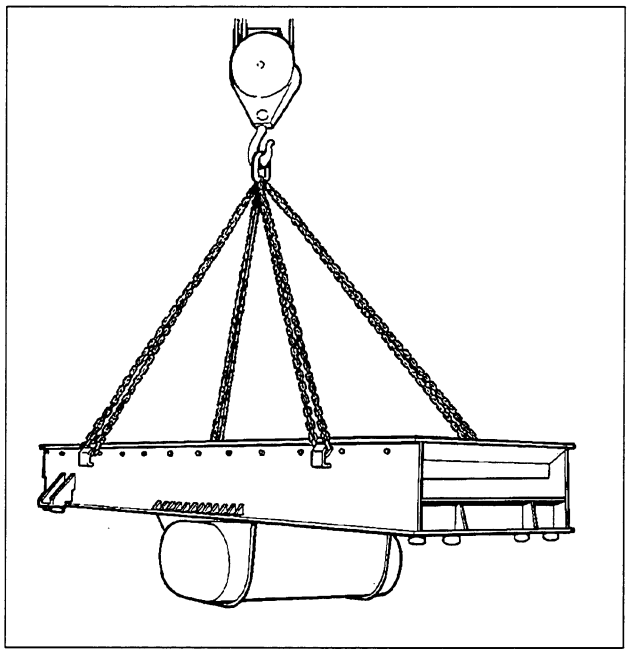


Figure 7-3. Lifting the Feeder

Removal

1. Remove all peripheral machinery, hoppers, and any structural supports that could interfere with removal of the feeder from the support frame.

2. If the feeder is driven by an electric motor, remove the V-belts from the motor and vibrator sheaves (see "Electric Drive Motor - Replacement," for procedures).

Note: It is not necessary at this time to remove the V-belts from a hydraulically driven feeder.

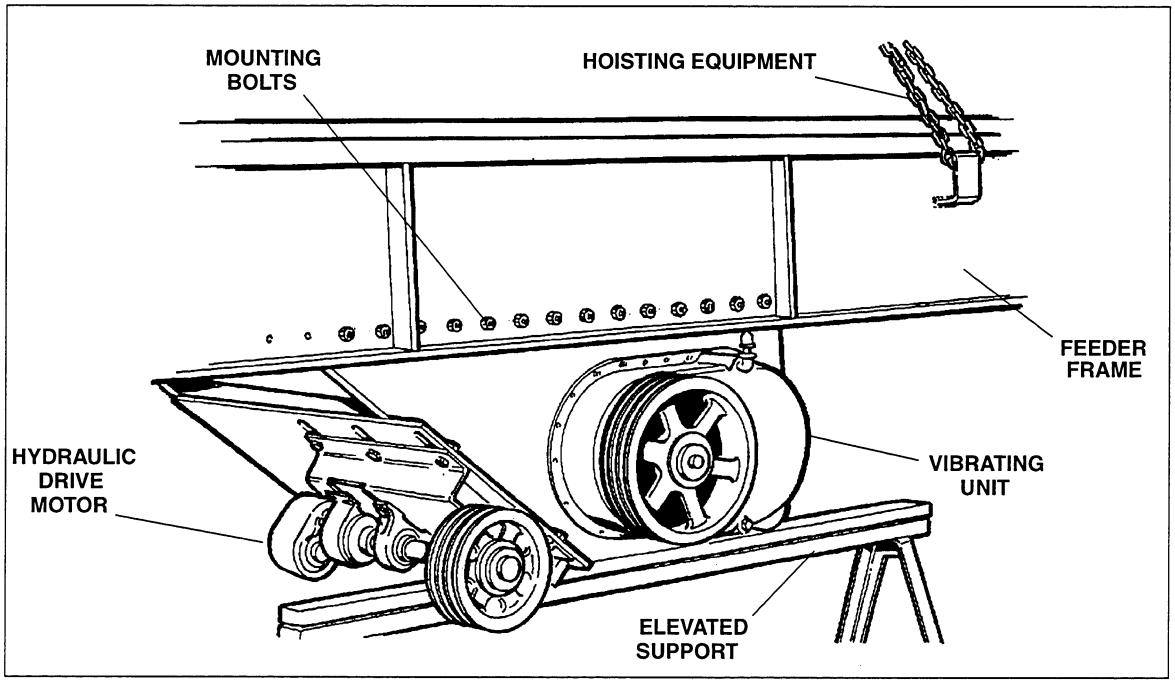


Figure 7-4. Vibrating Unit Removal and Installation

7

⚠ WARNING!!!

Hot hydraulic oil can spray with extreme force and volume causing serious injury or death. Allow hydraulic system to cool before beginning maintenance or repair procedures. Slowly release pressure or vent circuits before disconnecting hydraulic lines. Wear appropriate face and body protective devices while carefully loosening any connection or fitting.

3. If the feeder is driven by an hydraulic motor, tag and disconnect the hydraulic hose assemblies from the motor (see, "Hydraulic Drive Assembly-Replacement" for procedures).

4. If required, tag and disconnect the circulating oil system hoses from the vibrating unit.

5. Attach suitable hoisting equipment to the lifting lugs on the feeder (see Figure 7-3).

6. Lift and remove the feeder from the support frame.

7. Place the feeder on level blocking, or other supports, as shown in Figure 7-4. Do not disconnect the hoisting equipment.

Important: Support the vibrating unit only on its side frame members, not on the housing or covers.

Remove the vibrating unit from the feeder frame as follows:

8. Match-mark the mounting bolt locations on the vibrating unit and the feeder frame for later reassembly.

9. Raise the hoist slightly to support the weight of the feeder frame, then remove all mounting bolts from both sides of the vibrating unit.

10. Lift the feeder frame slightly to assure that the feeder separates from the vibrating unit.

11. When completely loosened, lift the feeder frame directly upward until it is clear of the vibrating unit.

12. Move and lower the feeder frame onto suitable blocking for temporary storage.

Note: See the vibrating unit repair and overhaul manual for disassembly procedures.

Installation

1. Attach suitable hoisting equipment to the vibrating unit and position it on level supports with the mounting rails up. Refer to Figure 7-4.

2. Attach suitable hoisting equipment to the lifting lugs on the feeder frame. Refer to Figure 7-3.

Important: Adjust the hoisting slings so that the feeder pan frame will be horizontal when lifted.

3. Position the feeder frame directly above the vibrating unit.

4. Be sure that any burrs or other obstructions on the mounting surfaces of the vibrating unit and the feeder frame have been removed.

5. Adjust the feeder frame so that it is positioned correctly above the vibrating unit. Use match-marks (made during disassembly) for correct hole position selection.

6. Carefully lower the feeder frame over the vibrator mounting rails until the bolt holes are aligned. Use tapered drift pins in the holes to align the four corner-bolt holes.

7. Install all bolts, lockwashers, and nuts with the nuts positioned outside the mounting rails. Torque the nuts securely with an impact wrench. See Appendix A for recommended torque values (use Dry Grade 5 Values).

8. Check that all compression springs are located correctly on the support frame mounts, are completely seated over the lower spring washers, and have the same free length.

⚠ WARNING!!!

Lifting heavy components with inadequate hoisting apparatus can injure personnel and/or damage equipment. Use suitable slings and hoisting equipment to stabilize and lift heavy objects.

9. Lift and move the feeder into position above the support frame. Carefully lower the feeder onto the inner and outer compression springs, being sure that the springs are correctly seated over the upper spring washers.

10. If feeder is equipped with optical circulating oil system, connect oil hoses to vibrating unit.

Note: Perform Step 11 for all feeders with the standard lubrication system. Skip Step 11 and go to Step 12 if your feeder is equipped with the optional circulating oil system.

11. Add lubricating oil to the vibrating unit. Refer to Chapter 4 for procedures and to Chapter 5 for oil specifications and capacities.

12. If the feeder is driven by an electric motor, install the V-belts on the motor and vibrator sheaves. Refer to the section, "Electric Drive Motor - Replacement," for procedures.

13. If the feeder is driven from a hydraulic motor, install the hydraulic hose assemblies to the motor as previously tagged.

14. Install the feed hopper and structural members previously removed to provide clearance.

15. Inspect the entire feeder assembly and test operate the machine as described under "Feeder Initial Startup" in Chapter 3.

ELECTRIC DRIVE MOTOR - REPLACEMENT

This section describes the procedures for motor replacement, belt replacement, and belt adjustment on feeders equipped with an electric drive motor.

⚠ WARNING!!!

Always lock out and tag the feeder drive controls before performing any adjustments, maintenance or repairs. Loosen and remove V-belts. Alert all personnel that the feeder is being serviced. Failure to observe these precautions may result in serious injury or death.

Removal

Remove the electric drive motor as follows (see Figure 7-5):

1. Lock out and tag the operator controls to prevent accidental machine startup.

2. Remove the V-belts from the motor and vibrator sheaves as follows:

   A. Remove the upper jam nut and adjusting nut from the belt tensioner rod, then remove the tensioner assembly.

   B. Pivot the motor upward to loosen the V-belts, then remove the V-belts from the motor and vibrator sheaves.

3. Remove the motor sheave and shaft key from the motor shaft.

4. Tag and disconnect the wiring and conduit from the motor terminal box (not shown).

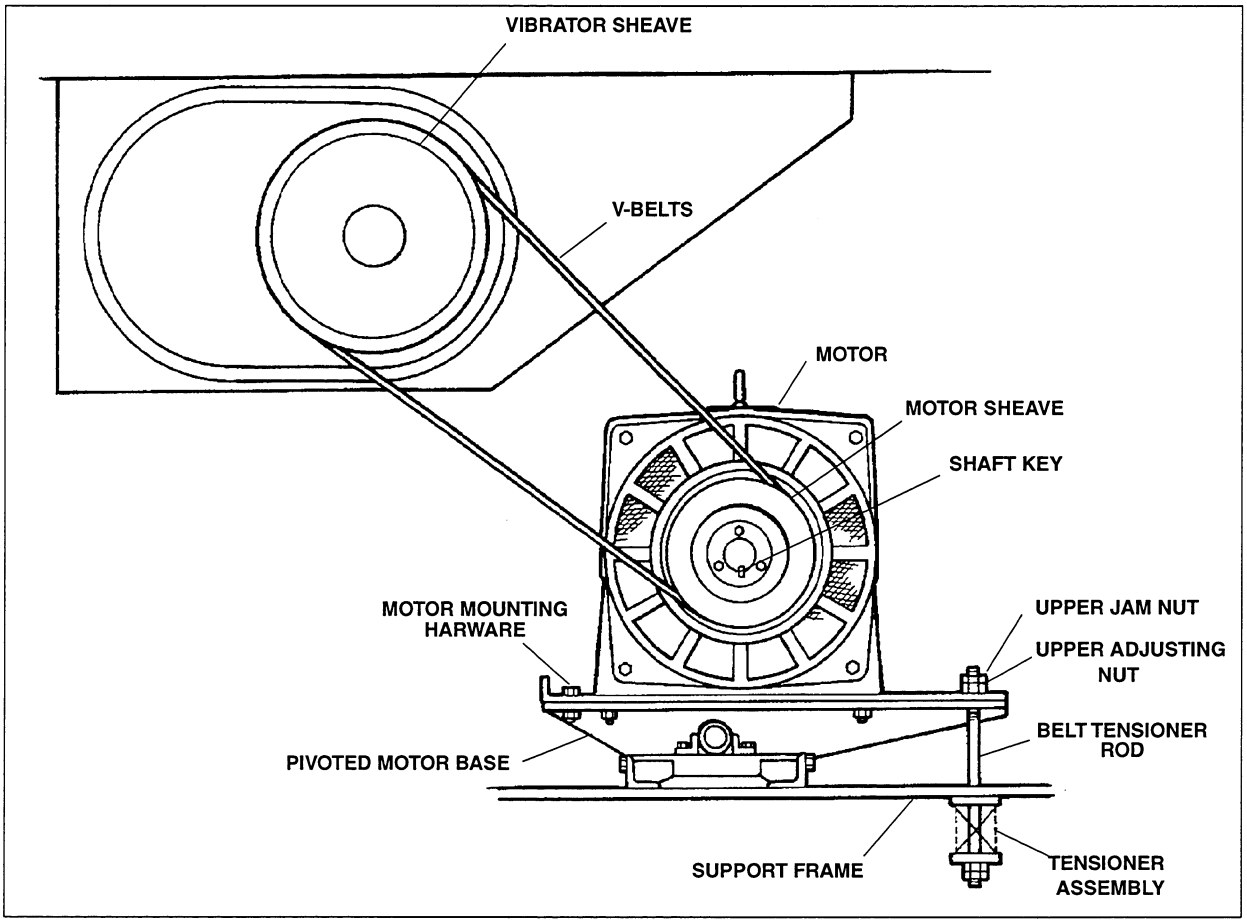


Figure 7-5. Electric Drive Motor Assembly

7

5. Attach suitable hoisting equipment to the motor.

6. Remove motor mounting hardware. Remove the motor from the pivoted motor base.

Installation

Install the electric drive motor as follows (see Figure 7-5):

1. Attach suitable hoisting equipment to the motor, and position the motor on the pivoted motor base.

2. Install and tighten the motor mounting hardware.

3. Install the key in the motor shaft. Remove any burrs from the key and keyway with a fine file. Be sure that the key fits snugly and is completely seated in the shaft keyway.

4. Install the motor sheave on the motor shaft. Torque the fasteners securely.

5. Check the face alignment of the motor and vibrator sheaves with a straight-edge or straight bar. If necessary, loosen motor mounting hardware and adjust the position of the motor on the motor base. Tighten motor mounting hardware after making adjustments.

6. Lubricate the pivoted motor base bearings. Refer to Chapter 5 for grease specifications.

⚠ WARNING!!!

Always lock out and tag the feeder drive controls before performing any adjustments, maintenance, or repairs. Always loosen and remove V-belts. Alert all personnel that the feeder is being serviced. Failure to observe these precautions may result in serious injury or death.

7. Pivot the motor base upward to enable installation of the V-belts, and install the belts.

8. Install the tensioner assembly onto the pivoted motor base and the support frame. Secure with upper adjusting nut.

9. Adjust the V-belt tension as follows:

Note: When replacing the V-belts, be certain that the new belts are a matched set. Never replace just one belt.

A. Tighten the V-belts by tightening the upper adjusting nut on the tensioner assembly until the spring begins to compress.

B. Check belt tension by depressing one of the belts firmly by hand at the mid-point between the two belt sheaves. Tension is correct when the belt depresses an amount equal to the thickness of the non-depressed belts.

C. When belt tension is correct, install and tighten the upper jam nut.

10. Re-check sheave alignment. If necessary, loosen the motor mounting hardware and adjust the position of the motor and motor base. Tighten the motor mounting hardware after making adjustments.

11. Install electrical wiring and conduit to the motor, and check for correct rotational direction. Refer to Figure 7-6.

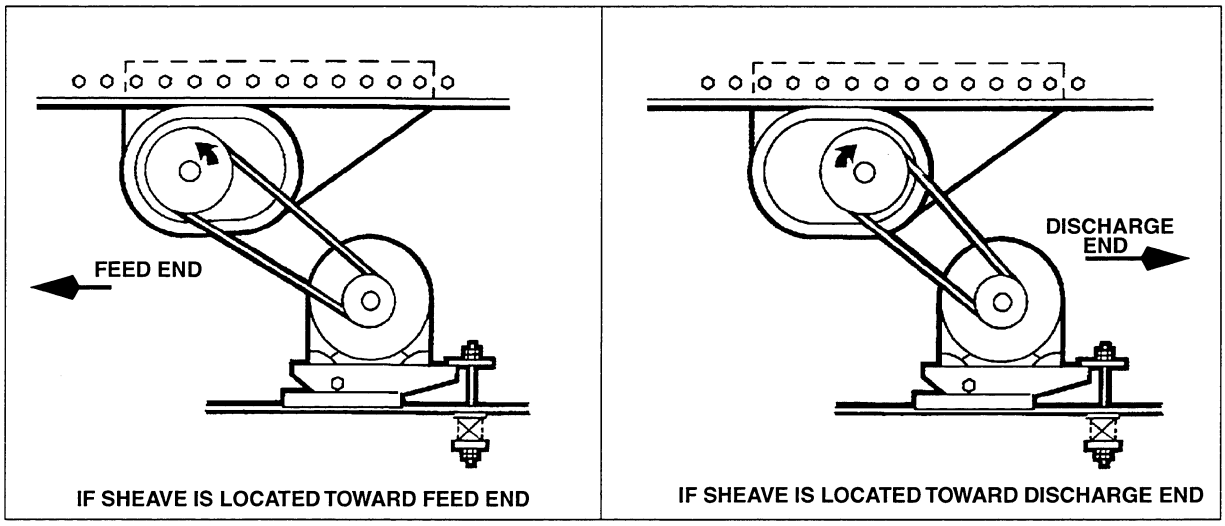


Figure 7-6. Sheave Rotation

HYDRAULIC DRIVE ASSEMBLY - REPLACEMENT

This section provides the procedures for removal and repair of the hydraulic drive assembly, including V-belt replacement and adjustment.

⚠ WARNING!!!

Always lock out and tag the feeder drive controls before performing any adjustments, maintenance or repairs. Loosen and remove V-belts. Alert all personnel that the feeder is being serviced. Failure to observe these precautions may result in serious injury or death.

Removal

Remove the hydraulic drive assembly as follows (see Figure 7-7):

1. Lock out and tag the operator controls to prevent accidental machine startup.

2. Loosen nuts and capscrews (items 3 and 5). Lower the drive slide (2) to loosen the V-belts (8).

3. Remove the V-belts (8) from the drive sheave (9) and vibrator sheave (7).

⚠ WARNING!!!

Hot hydraulic oil can spray with extreme force and volume causing serious injury or death. Allow the hydraulic system to cool before beginning maintenance or repair procedures. Slowly release pressure or vent circuits before disconnecting hydraulic lines. Wear appropriate face and body protective devices while carefully loosening any connection or fitting.

4. Be certain that the hydraulic pressure is completely relieved from the motor control system.

5. Tag and disconnect all hydraulic hoses from the motor (23). Cap or plug all hose fittings and motor ports.

6. Attach suitable hoisting equipment to the hydraulic drive assembly, and support the drive.

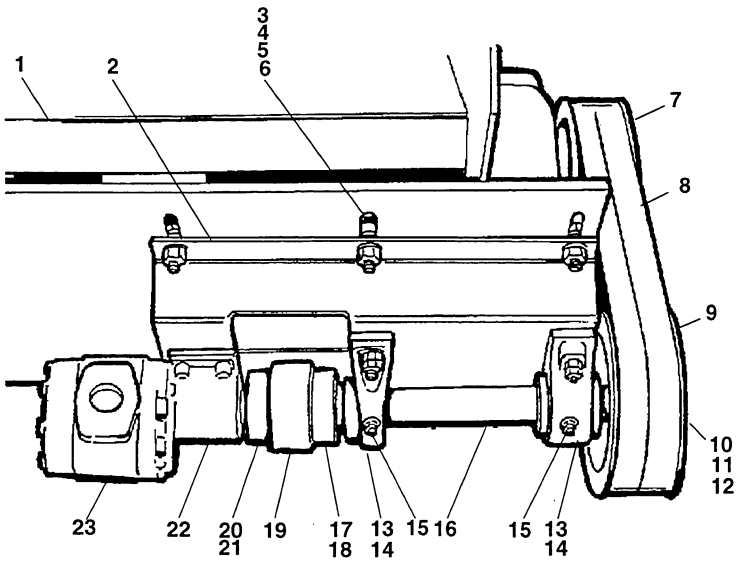
7. Remove the six capscrews, lockwashers, and nuts (3,4, 5, and 6) from the drive slide (2), then remove the hydraulic drive assembly from the vibrator.

8. Locate the hydraulic drive assembly in a clean, dry area suitable for disassembly.

Disassembly

Disassemble the hydraulic drive assembly as follows (See Figure 7-7):

1. Remove the hydraulic motor (23) by removing the capscrews and lockwashers from beneath the motor mounting slide, then separate the motor (23) from the drive shaft (16) at the coupling.



1. VIBRATING UNIT
2. DRIVE SLIDE
3. CAPSCREW
4. WASHER
5. NUT
6. JAM NUT
7. VIBRATOR SHEAVE
8. V-BELTS
9. DRIVE SHEAVE
10. CAPSCREW
11. TAPER-LOCK HUB
12. DRIVE KEY
13. BEARING SCREW
14. PILLOW BLOCK BEARING
15. GREASE FITTING
16. DRIVE SHAFT
17. HALF COUPLING
18. DRIVE KEY
19. COUPLING SPIDER
20. HALF COUPLING
21. DRIVE KEY
22. MOTOR SHAFT
23. HYDRAULIC MOTOR
24. ADJUSTING BOLTS (NOT SHOWN - LOCATED BELOW ITEM 2)

Figure 7-7. Hydraulic Drive Assembly

Note: Attach the coupling spider (19) to the shaft half-coupling (17) to prevent loss.

2. Use a suitable puller to remove the half-coupling from the hydraulic motor shaft (22).

3. Remove the drive key (21) from the shaft (22).

4. Remove the drive sheave (9) from drive shaft (16) by removing the capscrews (10) from the Taper-lock hub (11). Insert and tighten the capscrews (10) in the adjacent threaded holes in the hub to loosen the hub on the shaft.

5. Remove the sheave drive key (12) from the shaft (16).

6. Loosen the locking setscrews (13) in the two pillow block bearings (14), and remove the drive shaft (16) from the bearings (14).

7. Match-mark the pillow blocks (14) and the mounting slide (2) for re-assembly, then remove the pillow blocks.

8. If the drive shaft (16) needs to be replaced, remove the half-coupling (17) with a suitable puller.

9. Remove the coupling key (18) with a suitable puller.

Assembly

Assemble the hydraulic motor drive unit as follows (see Figure 7-7):

1. Install the drive key (18) in the coupling end of the drive shaft (16). Remove any burrs from the key and/or the shaft with a fine file. Be certain that the key (18) is fully seated in the shaft keyway.

2. Install the half-coupling (17) on the drive shaft (16). Position the inside end of the coupling even with the end of the drive shaft (16).

3. Install the two pillow block bearings (14) on the drive slide (2). Position the pillow blocks, as previously match-marked, between the shear bars on the drive slide (2).

4. Position the drive shaft (16) in the two pillow block bearings (14), and temporarily tighten the bearing setscrews (13) against the drive shaft (16).

5. Install the sheave drive key (12) in the shaft keyway.

6. Install the drive sheave (9) on the drive shaft (16). Position the hub (11) so that its face is even with the end of the drive key (12). Torque the Taper-Lock hub capscrews (10) securely.

7. Install the drive key (21) in the motor shaft (22).

8. Install the motor half-coupling (20) on the motor shaft (22). Position the inside end of the coupling (20) even with the end of the shaft (22).

9. Install the hydraulic drive motor (23) on the drive slide (2). Be sure the spider (19) for the drive coupling is installed and fully seated.

10. Loosen the shaft retainer setscrews (13) in the pillow block bearings (14), and adjust the shaft end position at the drive coupling.

Installation

Install the hydraulic drive assembly on the vibrator as follows (see Figure 7-7):

⚠ WARNING!!!

Lifting heavy components with inadequate hoisting apparatus can injure personnel and/or damage equipment. Use suitable slings and hoisting equipment to stabilize and lift heavy objects.

1. Attach suitable hoisting equipment to the hydraulic drive assembly, and position the drive slide on the vibrating unit (1).

2. Attach the drive slide to the vibrating unit (1) with capscrews, lockwashers, and nuts (3, 4, 5, and 6). Leave the nuts loose.

3. Check the face alignment of the drive and vibrating sheaves (9 and 7) with a straight-edge or straight bar. Adjust the position of the drive sheave (9) on the shaft to bring the sheaves into correct alignment.

4. Lubricate the pillow block bearings at grease fittings (15). Refer to Chapter 5 for grease specifications.

5. Install the V-belts (8) on the drive sheave (9) and vibrator sheave (7). Adjust the V-belt tension as follows:

6. Install the hydraulic hose assemblies to the hydraulic motor as previously tagged.

7. Operate the hydraulic motor circuit to check the drive components and bleed all air from the hydraulic system.

Note: When replacing the V-belts, be certain that the new belts are a matched set. Never replace just one belt.

A. Tighten the V-belts (8) by adjusting the position of the drive slide (2) on the base with the adjusting bolts (24).

B. Check belt tension by depressing one of the belts firmly by hand at the mid-point between the two belt sheaves. Tension is correct when the belt depresses an amount equal to the thickness of a non-depressed belt.

C. When belt tension is correct, securely tighten the drive slide (2) to the base with the previously installed capscrews, lockwashers, and nuts (3, 4, 5, and 6).

8. Re-check sheave alignment. Adjust the position of the drive sheave (9) as necessary.

NOTES

Chapter 8

ORDERING PARTS

TELSMITH "SAFE-BET" REPAIR PARTS

When you require parts for your Telsmith equipment, don't gamble with "will fits" or anything other than genuine Telsmith parts.

Nobody knows your Telsmith equipment better than Telsmith. And, nobody makes better replacement parts for Telsmith equipment than Telsmith. Because only Telsmith tests each "Safe-Bet" part to assure that it matches the exact specifications of your equipment.

Where To Buy "Safe-Bet" Repair Parts

Depending upon your location, you may find it more convenient to order parts from your local distributor or from one of Telsmith's factory parts distribution centers.

If in doubt, just call the Telsmith Parts Hotline at 1-800-688-6601, and we will guide you to the closest source.

BUY GENUINE TELSMITH PARTS
FROM YOUR LOCAL DISTRIBUTOR

OR

CALL 1-800-688-6601

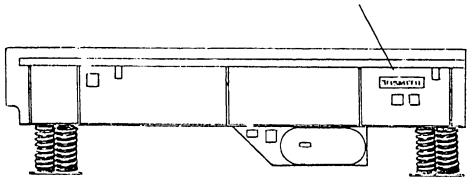
How To Order "Safe-Bet" Repair Parts

This parts catalog covers most replacement parts required for your feeder. To ensure accuracy and prompt service, please have the following information available when placing your order.

1. Identify the feeder model number or size.

2. Identify the feeder serial number.

FEEDER MODEL & SERIAL NUMBERS



3. Use the parts list on page 8-2 to identify the parts needed. Check part item number and part name.

Note: Parts are identified by item numbers only. The Telsmith Parts Department (or your local distributor) will determine the exact parts required based on the item numbers that you provide, and your feeder's model and serial numbers.

4. Check quantity required.

5. Order parts from Telsmith or your local Telsmith distributor. Advise preferred type of shipping service when calling.

Transportation Damage or Loss Claims

All shipments are carefully inspected and delivered to the carrier in good order. However, upon receipt of shipment, always check for any loss or damage that may have occurred during transit.

Refuse to accept any shipment with lost or damaged items until the carrier provides a written acknowledgment of the problem. In the event of concealed damage, notify the carrier as soon as possible.

By following these suggestions you will encounter less difficulty in collecting your claim. Remember, with most carriers, freight claims must be filed with the destination carrier by the consignee.

Return of Parts

Telsmith cannot accept return of parts unless the return is accompanied by a material return authorization (MRA) from the company.

If you wish to return any item to the factory, you must call the Parts Department to obtain an authorization form. This will serve to identify your shipment at our factory and assure proper disposition.

Careful attention to proper ordering procedures will eliminate most errors and shipment of incorrect parts.

However, if incorrect parts are ordered or shipped, they may be returned upon receiving authorization. As return parts must be totally inspected prior to resale, there may be a return charge which will be quoted when the authorization is given.

If a repair part design has been improved, or bears a revised part number other than ordered, such parts will be interchanged with the part order. Orders of obsolete parts requiring fabrication are not subject to cancellation or return. Supplier items are specially ordered and not subject to cancellation or return.

ITEM NO.	DESCRIPTION
1	Spring Base, Rear
2	Bolts - Unit to Live Frame
3	Pan Wear Bars (Optional)
4	Pan Liner (Optional)
5	Feeder Pan Assembly
6	Grizzly Bar Retaining Bolt, Short
7	Grizzly Bar Retaining Bolt, Long
8	Grizzly Bar Assembly
9	Compression Spring, Outer
10	Compression Spring, Inner
11	Spring Base, Front
12	Compression Spring Washer and Bolt
13	Grizzly Bar Retaining Bolt Plate
14	Electric Motor
15	V-Belt
16	Motor Sheave
17	Pivoted Motor Base
18	Motor Base Spring
19	Motor Base Spring Bolt
20	Hydraulic Motor
21	Drive Shaft Assembly
22	Drive Sheave
23	V-Belt
24	Vibrating Unit Sheave

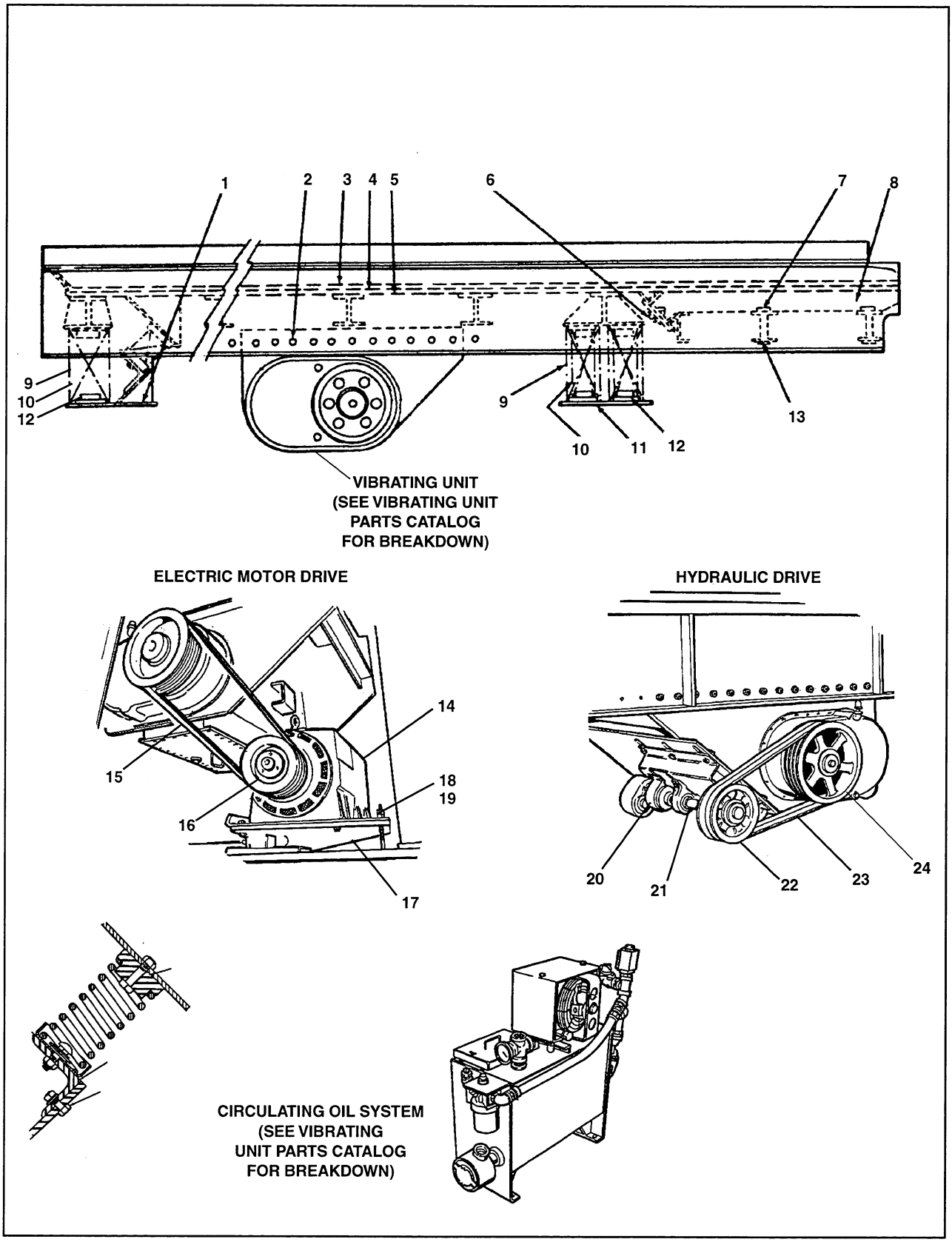


Figure 8-1. Vibrating Feeder Assembly

8

NOTES

APPENDICES

TORQUE CHART (APPENDIX A)

COVERSION TABLES (APPENDIX B)

RECOMMENDED MAXIMUM TORQUE VALUES ±5%

Identification Mark														
Grade			2			5			7			8		
ASTM/SAE Spec.			SAE J429			ASTM A449			SAE J429			ASTM A354		
ISO Designation			R898 Class 4.6			R898 Class 8.8			———			R898 Class 10.9		
Dia	Thr'd.	Series	Torque** Dry	Torque** Lube	Clamp* Load #	Torque** Dry	Torque** Lube	Clamp* Load #	Torque** Dry	Torque** Lube	Clamp* Load #	Torque** Dry	Torque** Lube	Clamp* Load #
1/4	20	UNC	5	4	1.31	8	6	2.02	10	8	2.49	12	9	2.86
1/4	28	UNF	6	5	1.50	10	7	2.31	12	9	2.85	14	11	3.26
5/16	18	UNF	11	8	2.16	17	13	3.33	21	16	4.11	24	18	4.70
5/16	24	UNF	13	10	2.39	19	15	3.69	24	18	4.56	27	21	5.21
3/8	16	UNC	20	15	3.19	31	24	4.93	38	29	6.08	44	34	6.95
3/8	24	UNF	23	17	3.61	35	27	5.58	43	33	6.90	49	38	7.88
7/16	14	UNC	32	25	4.37	49	38	6.76	61	47	8.35	70	54	9.55
7/16	20	UNF	36	27	4.89	55	42	7.55	68	52	9.33	78	60	10.68
1/2	13	UNC	49	38	5.83	75	58	9.03	93	72	11.15	105	82	12.75
1/2	20	UNF	55	42	6.59	85	65	10.20	105	80	12.58	120	90	14.38
9/16	12	UNC	70	54	7.07	110	84	11.58	135	105	14.30	155	120	16.35
9/16	18	UNF	78	60	7.90	120	93	12.93	150	115	15.95	170	132	18.25
5/8	11	UNC	92	71	8.79	150	115	14.40	185	145	17.75	210	165	20.30
5/8	18	UNF	105	81	9.95	170	130	16.30	210	160	20.10	240	185	23.00
3/4	10	UNC	165	125	13.20	270	205	21.31	330	250	26.30	375	290	30.00
3/4	16	UNF	180	140	14.52	295	230	23.75	365	280	29.30	420	320	33.50
7/8	9	UNC	200	155	13.82	395	305	27.00	530	405	36.30	605	455	41.50
7/8	14	UNF	225	170	15.25	435	335	29.80	585	450	40.00	670	515	45.80
1	8	UNC	300	230	18.15	590	455	35.40	795	610	47.70	905	695	54.50
1	12	UNF	340	260	20.35	660	510	39.70	890	685	53.50	1030	785	61.20
1 1/8	7	UNC	430	330	22.85	795	610	42.30	1125	865	60.00	1285	990	68.70
1 1/8	12	UNF	480	370	25.60	890	685	47.50	1260	970	67.30	1440	1110	77.00
1 1/4	7	UNC	605	465	29.00	1120	860	53.80	1590	1225	76.30	1820	1400	87.20
1 1/4	12	UNF	670	515	32.10	1240	955	59.59	1765	1355	84.40	2010	1550	96.50
1 3/8	6	UNC	795	610	34.60	1470	1130	64.20	2085	1600	91.00	2380	1830	104.00
1 3/8	12	UNF	905	670	39.40	1670	1290	73.00	2370	1830	103.50	2710	2085	118.30
1 1/2	6	UNC	1050	810	42.20	1950	1500	78.00	2765	2130	110.80	3160	2430	126.50
1 1/2	12	UNF	1186	915	47.30	2190	1690	87.70	3110	2400	124.50	3555	2730	142.20
1 3/4	5	UNC	1660	1280	56.80	3075	2370	105.50	4370	3360	149.50	4980	3810	171.00
2	4 1/2	UNC	2500	1920	75.00	4620	3550	138.50	6550	5050	196.70	7480	5760	225.00

* Clamp loads are shown in 1000 pounds ** All torque values are given in foot–pounds

APPENDIX B - CONVERSION TABLES

LINEAR MEASURE		
To Convert	**Into**	**Multiply By**
Inches	Centimeters	2.54
Feet	Meters	0.3048
Centimeters	Inches	0.3937
Millimeters	Inches	.0394
Meters	Inches	39.37
Meters	Feet	3.2808

SQUARE MEASURE		
To Convert	**Into**	**Multiply By**
Sq. Inches	Sq. Centimeters	6.452
Sq. Miles	Sq. Kilometers	2.59
Sq. Centimeters	Sq. Inches	0.15499
Sq. Meters	Sq. Inches	1549.9
Sq. Meters	Sq. Feet	10.763

CUBIC MEASURE		
To Convert	**INTO**	**Multiply By**
Cu. Inches	Cu. Centimeters	16.387
Cu. Feet	Cu. Meters	0.0283
Cu. Centimeters	Cu. Inches	0.06102
Cu. Meters	Cu. Inches	610233779.0
Cu. Meters	Cu. Feet	35.314

WEIGHT		
To Convert	**Into**	**Multiply By**
Kilograms	Pounds	2.2046
Pounds	Kilograms	0.4536
Pounds/Sq. Inch	Kilograms/Sq. Centimeter	0.0703
Pounds/Sq. Foot	Kilograms/Sq. Meter	4.8824

DEGREES FAHRENHEIT TO DEGREES CENTIGRADE

F	C	F	C	F	C	F	C	F	C
-30	-34.44	+20	-6.67	+55	+12.78	+90	+32.22	+225	+107.22
-28	-33.33	21	-6.11	56	13.33	91	32.78	230	110.00
-26	-32.22	22	-5.56	57	13.89	92	33.33	235	112.78
-24	-31.11	23	-5.00	58	14.44	93	33.89	240	115.56
-22	-30.00	24	-4.44	59	15.00	94	34.44	245	118.33
-20	-28.89	25	-.3.89	60	15.56	95	35.00	250	121.11
-18	-27.78	26	-3.33	61	16.11	96	35.56	255	123.89
-16	-26.67	27	-2.78	62	16.67	97	36.11	260	126.67
-14	-25.56	28	-2.22	63	17.22	98	36.67	265	129.44
-12	-24.44	29	-1.67	64	17.78	99	37.22	270	132.22
-10	-23.33	30	-1.11	65	18.33	100	37.78	275	135.00
-8	-22.22	31	-0.56	66	18.89	105	40.55	280	137.78
-6	-21.11	32	0.00	67	19.44	110	43.33	285	140.55
-4	-20.00	33	+0.56	68	20.00	115	46.11	290	143.33
-2	-18.89	34	1.11	69	20.56	120	48.89	295	146.11
0	-17.78	35	1.67	70	21.11	125	51.67	300	148.89
+1	-17.22	36	2.22	71	21.67	130	54.44	305	151.67
2	-16.67	37	2.78	72	22.22	135	57.22	310	154.44
3	-16.11	38	3.33	73	22.78	140	60.00	315	157.22
4	-15.56	39	3.89	74	23.33	145	62.78	320	160.00
5	-15.00	40	4.44	75	23.89	150	65.56	325	162.78
6	-14.44	41	5.00	76	24.44	155	68.33	330	165.56
7	-13.89	42	5.56	77	25.00	160	71.11	335	168.33
8	-13.33	43	6.11	78	25.56	165	73.89	340	171.11
9	-12.78	44	6.67	79	26.11	170	76.67	345	173.89
10	-12.22	45	7.22	80	26.67	175	79.44	350	176.67
11	-11.67	46	7.78	81	27.22	180	82.22	355	179.44
12	-11.11	47	8.33	82	27.78	185	85.00	360	182.22
13	-10.56	48	8.89	83	28.33	190	87.78	365	185.00
14	-10.00	49	9.44	84	28.89	195	90.55	370	187.78
15	-9.44	50	10.00	85	29.44	200	93.33	375	190.55
16	-8.89	51	10.56	86	30.00	205	96.11	380	193.33
17	-8.33	52	11.11	87	30.56	210	98.89	385	196.11
18	-7.78	53	11.67	88	31.11	215	101.67	390	198.89
19	-7.22	54	12.22	89	31.67	220	104.44	395	201.67