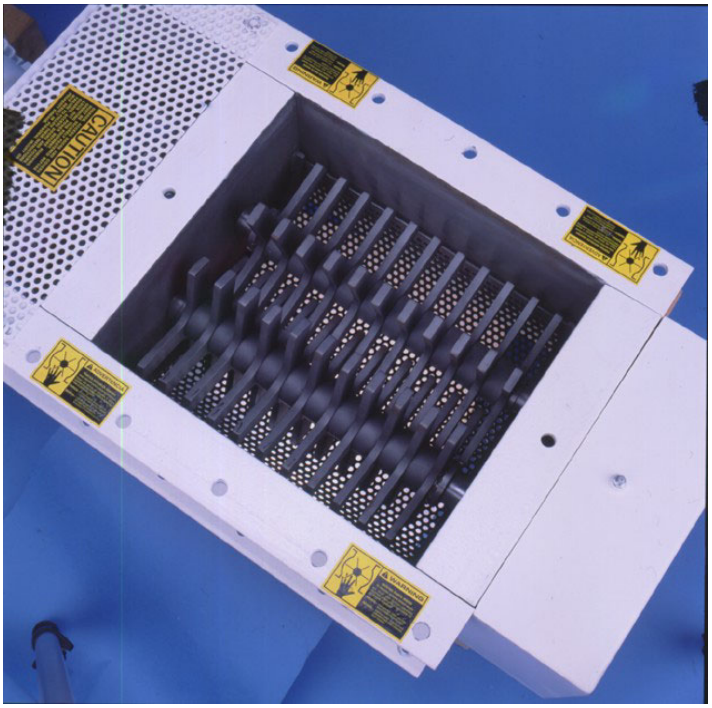
INSTALLATION/OPERATION AND MAINTENANCE MANUAL

DO NOT OPERATE THIS MACHINE WITHOUT FIRST READING THIS MANUAL COMPLETELY

PRATER® 1925® AIRLOCKS • MILLS • SEPARATORS

FLAKE/CAKE BREAKERS



MODEL: FB-6x8, FB-8x10, FB-10x12, FB-12x14, FB-13x15, FB-14x17, 17x20

SERIAL NUMBER: _____

PRATER® 1925® AIRLOCKS • MILLS • SEPARATORS

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Introduction

This manual contains complete instructions for the installation, operation, and maintenance of Prater equipment. Reliable operation, safety, and long service life of this equipment depends on 3 important considerations:

A. The care exercised during installation.
B. The quality and frequency of maintenance and periodic inspection.
C. A common sense approach to its operation.

Safety

Safety is basic, and must be considered through all facets of the operation and maintenance on any mechanical device. Using proper tools and methods can prevent serious accidents, which might result in serious injury to you or your fellow workers.

Proper operating procedures and safety precautions are listed throughout this manual. Study them carefully and follow instructions; insist that those working with you do the same. Almost all accidents are caused by someone's' carelessness or negligence

The precautions listed may not necessarily be all-inclusive and others might occur to the user, which are peculiar to a particular operation or industry. In addition, nearly all employers are now subject to the Federal Occupational Safety and Health Act of 1970, as amended, which require that an employer be kept abreast of the myriad of regulations, which will continue to be issued under its authority.

At all times – this equipment must be operated in accordance with the instructions and precautions in this manual and on the caution plates attached to the equipment. Only persons completely familiar with the instructions and precautions in this manual should thoroughly understand these instructions and precautions before attempting to operate this equipment

FAILURE TO OBSERVE AND FOLLOW THE PRECAUTIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR PROPERTY DAMAGE.

SAFETY CHECKLIST

_ **ALWAYS** operate Rotary Airlock Feeder in accordance with instructions in this manual.
_ **ALWAYS** have a clear view of unit loading and unloading points and all safety devices.
_ **ALWAYS** allow unit to stop naturally. DO NOT attempt to artificially brake or slow motion of unit.
_ **KEEP** area around unit, drive and control station free of debris and obstacles.
_ **AVOID** poking or prodding into unit openings with bar or stick
_ **DO NOT** open inspection doors while unit is in motion.
_ **DO NOT** use the Rotary Airlock Feeder for processing of material other than the specific application for which it was designed.
_ **NEVER** work on unit and related components unless electric power and motor drive have been locked out and tagged. The National Electrical Code requires a manually operable disconnect switch located within sight of motor, or a controller disconnecting means capable of being locked if not within sight of the motor.
_ **NEVER** operate unit without guards and all safety devices in position and functioning.
_ **NEVER** put your hand near, on, or in the inlet or outlet of the airlock while it is operating or stalled.

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SECTION 1: INTRODUCTION

This section provides an overview of the manual and indicates safety procedures to be followed when installing and operating a Flake/Cake Breaker

1.1 Safety

Basic safety must be considered through all facets of operation and maintenance on any mechanical device. Using proper tools and methods will help prevent accidents and serious injury to you and your fellow workers.

Proper operating procedures and safety precautions are listed throughout this manual. Study them carefully and follow instructions; insist that those working with you do the same. Almost all accidents are caused by carelessness or negligence.

The precautions listed may not necessarily be all-inclusive and others might occur to the user which are peculiar to a particular operation or industry. In addition, nearly all employers are now subject to the Federal Occupational Safety and Health Act of 1970, as amended, which requires that an employer be kept abreast of the myriad of regulations which will continue to be issued under its authority.

At all times - This equipment must be operated in accordance with the instructions and precautions in this manual and on the caution plates attached to the equipment. Only persons completely familiar with the instructions and precautions in this manual should be permitted to operate the unit. The operator should thoroughly understand these instructions and precautions before attempting to operate this equipment.

FAILURE TO OBSERVE AND FOLLOW THE PRECAUTIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR PROPERTY DAMAGE.

CAUTION

1. ALWAYS operate unit in accordance with instructions in this manual.

2. DO NOT open inspection doors while unit is in motion.

3. NEVER work on unit and related components unless electric power and motor drive has been locked out and tagged.

NOTE: The National Electrical Code requires a manually operable disconnect switch located within sight of motor, or a controller dis-connecting means capable of being locked if not within sight of motor.

4. DO NOT put unit to any use other than that for which it was designed.

5. AVOID poking or prodding into unit openings with bar or stick.

6. ALWAYS have a clear view of unit, loading and unloading points and all safety devices.

7. KEEP area around unit, drive and control station free of debris and obstacles.

8. NEVER operate unit without guards and all safety devices in position and functioning.

9. ALWAYS allow unit to stop naturally. DO NOT attempt to artificially break or slow motion of unit. CAUTION signs are attached near all openings and service panels and are illustrated throughout this manual.

Examples of the three types of safety notices (Warning, Caution and Note) in this manual are shown below:

WARNING ***INDICATES A SITUATION IN WHICH PERSONAL INJURY MAY OCCUR.***

CAUTION **INDICATES A SITUATION IN WHICH DAMAGE TO EQUIPMENT OR MATERIAL MAY OCCUR.**

NOTE: Provides helpful information for proper operation of the Flake Breaker.

1.1.1 Safety Precautions

WARNING ***OPERATORS MUST BE INSTRUCTED NOT TO PUT HANDS, FINGERS OR OTHER FOREIGN OBJECTS IN THE MACHINE, AND NOT TO REMOVE ANY COVER, DOOR, HATCH OR OTHER PROTECTIVE DEVICE. COVERS, DOORS, HATCHES AND OTHER PROTECTIVE DEVICES ARE PLACED ON THIS MACHINE FOR THE SAFETY OF THE OPERATOR. ANY ATTEMPT TO DEFEAT THESE SAFETY DEVICES COULD RESULT IN SERIOUS INJURY.***

WARNING ***ELECTRIC SERVICE TO THE MACHINE MUST BE LOCKED OUT WHILE ANY REPAIRS OR ADJUSTMENTS ARE BEING MADE OR WHILE ANY COVER, DOOR, HATCH OR OTHER PROTECTIVE DEVICE IS NOT IN PLACE.***

The precautions listed in this manual may not be all-inclusive and others might occur to you which are peculiar to your particular operation or industry. In addition, nearly all employers are not subject to the Federal Occupational Safety and Health Act of 1970, as amended, which requires that an employer be kept abreast of the regulations which will continue to be issued under its authority.

The Flake/Cake Breaker must always be operated in accordance with the instructions and precautions in this manual and on the caution plates attached to the equipment. Only workers completely familiar with the instructions and precautions in this manual should be permitted to operate the unit. The operator should thoroughly understand these instructions and precautions before attempting to operate this equipment.

- » ALWAYS operate the Flake/Cake Breaker in accordance with instructions in this manual.
- » NEVER work on unit and related components unless electric power and motor drive have been locked out and tagged. The National Electrical Code requires a manually operable disconnect switch located within sight of motor, or a controller disconnecting means capable of being locked out if not within sight of the motor.
- » DO NOT use the Flake/Cake Breaker for processing of material other than the specific application for which it was designed.
- » ALWAYS have a clear view of unit loading and unloading points and all safety devices.
- » KEEP area around unit, drive and control station free of debris and obstacles.
- » NEVER operate unit without guards and all safety devices in position and functioning.
- » ALWAYS allow unit to stop naturally. DO NOT attempt to artificially brake or slow motion of unit.

Illustration 1-1
Safety Checklist

1.2 Manual Overview

This manual describes the installation requirements, operational procedures and routine maintenance of Prater's Flake/Cake Breakers Models: FB-6/8, FB-8/10, FB-10/12, FB-12/14, FB-13/15, and FB-14/17. Each Flake/Cake Breaker is engineered for a specific application; there may be unique features in your particular machine that are not covered in this manual. Refer to this manual before beginning and during installation. Keep this manual available for future reference. Reliable operation, personnel safety, and long service life of this equipment depend on three important considerations:

- The care exercised during installation.
- The quality and frequency of maintenance and periodic inspections.
- A common sense approach to its operation.

To keep operating costs down and profits up, carefully follow the instructions in this manual for installation, operation, safety, and maintenance.

1.3 Receiving The Unit

When your shipment arrives, thoroughly inspect the Flake/Cake Breaker and all related equipment. If shipment has been damaged, detail damage in writing on the bill of lading or freight bill and obtain driver's signature for possible claim against delivering carrier.

NOTE: It is the receiver's obligation to file claims for shipping damage

1.4 Before Installation

Be sure the installation crew or millwrights are aware of installation requirements. If they have any questions or are unsure of proper procedures, clarify the matter to avoid improper installation. Section 2 of this manual covers important steps to ensure safe, vibration-free installation. Personnel responsible for installation should be familiar with these procedures.

In preparing for installation, make sure you provide for all appropriate safety devices. It is your responsibility to provide lockout switches, guards, and other safety devices and safety procedures to protect any and all personnel that come in contact with the machinery.

1.5 Before Operation

Make sure operating personnel are well-trained in procedures for operating and maintaining the Flake/Cake Breaker. In particular, make sure they understand all safety precautions described in Section 1.1.1.

1.6 Operating Principle

Coarse material is gravity or force fed (by air) into the Flake/Cake Breaker through the product inlet at the top of the chamber.

Inside the chamber are two electric motor driven shafts. These shafts are equipped with replaceable breaker bars. As the shafts rotate the breaker bars break up the coarse material.

At the bottom of the chamber (below the shafts) are optional screens. When the material is reduced to the desired size it passes from the chamber through the holes in the screens. Screens can be changed or eliminated to accommodate changing material size requirements.

The finished product is gravity discharged beneath the Flake/Cake Breaker.

1.7 Custom Applications

Prater Flake/Cake Breakers are used for a wide range of industrial and agricultural applications. A variety of construction materials as well as breaker bars, gears, and screens are available to meet virtually any material reducing need.

- When ordering parts or requesting information or service from Prater be sure to state the serial number of your unit.

SECTION 2: INSTALLATION

This section covers installation procedures to insure safe and efficient operation of the Flake/Cake Breaker.

2.1 Introduction

Proper installation of the Prater Flake/Cake Breaker is critical for efficient and productive operation of the breaker. The proper site preparation and placement of the breaker and related equipment will insure that the breaker operates safely and to its fullest capacity.

The following are important considerations in Flake/Cake Breaker installation:

- Location: Make sure the operating location will provide strong, vibration-free base support and allow easy access to all parts of the Flake/Cake Breaker. See Section 2.2.
- Leveling: The Flake/Cake Breaker must be level and must operate without vibration. Sections 2.3 and 2.4 explain how to check for proper leveling and prevent vibration damage during operation.

2.2 Location

Location and adequate support of the Flake/Cake Breaker is extremely important to breaker operation and mill worker safety.

Clearance and foundation are very important considerations when installing the Flake/Cake Breaker.

2.2.1 Foundation

The Flake/Cake Breaker must be placed in a vibration free location and supported by:

- Adequate structural support under floor of unit to prevent oscillation
- Heavy cross bracing if on legs.

2.2.2 Clearance

There should be sufficient open space in all directions around the mill to allow access for changing screens and other maintenance operations. No equipment can be resting on or supported by the Flake/Cake Breaker.

2.3 Leveling

The base of the unit must be level to prevent the following potentially damaging conditions:

- Misalignment of the coupling, breaker, and motor.
- Bending of one of the drive shafts.
- Bending or twisting of the breaker housing or base.

Any of these conditions can produce vibrations that will accelerate wear on the breaker bars and screens and cause possible damage to the Flake/Cake breaker.

Before tightening fasteners, check for correct unit leveling at the corners of the Flake/Cake Breaker.

To correct level:

1. Insert shims for proper alignment.
2. Re-check level at corners of the breaker housing.
3. Fill all gaps between the base of breaker housing and floor with grout.

CAUTION

TO PREVENT DAMAGE SUCH AS BOWING OR BENDING, OR TO AVOID DROPPING THE UNIT, USE PROPER SUPPORTS AND STRONG CROSS-BRACING WHEN RAISING THE BASE OF THE FLAKE/CAKE BREAKER.

2.4 Vibration

The Prater Flake/Cake Breaker is constructed to run without noticeable vibration. Vibration indicates a problem that must be found and corrected immediately. Left uncorrected, vibration will cause the following:

- Breaker damage
- Motor damage
- Structural Damage

There are several conditions that cause vibration, including:

- Uneven base (See Section 2.3)
- Base not contacting floor at all points (See Section 2.3)
- Breaker and motor improperly aligned
- Loose motor fasteners
- Defective motor, shaft bearings or coupling (See Section 5)
- Other equipment transferring vibration through contact with breaker (See Section 2.2)
- Worn, missing, or broken breaker bars or screens (See Section 4.4)
- Deviation from recommended balanced breaker bar set-up.
- Material build-up on shaft(s).

2.5 Feeding

CAUTION

A TIME DELAY IS ALWAYS REQUIRED BETWEEN START-UP OF THE FLAKE/CAKE BREAKER AND START-UP OF THE FEEDER, TO ALLOW BREAKER TO REACH FULL OPERATING SPEED BEFORE PRODUCT IN INTRODUCED.

A uniform constant feeding process is essential for best performance. If the feeding process is not by gravity, a volumetric feeder is recommended.

2.6 Electrical Requirements

Install connections to meet all national and local electrical codes. Consult with your local power company before installation.

NOTE: The National Electrical Code requires a manually operable disconnect switch located within sight of the motor, or a controller disconnecting means capable of being locked if not within sight of motor.

Effective October 31, 1989, OSHA requires that all energy disconnect devices be capable of accepting a lock-out/tag-out device. This requirement is mandatory for any new equipment being installed or for replacement, repair or modification of older equipment. The employer must:

- Produce as written program explaining the procedure.
- Conduct an annual inspection to verify compliance.
- Provide documented employee training in these procedures.

The Prater Flake/Cake Breaker may be started "across the line" if such a procedure is acceptable to your local power company. In order to limit overload on the power supply, larger motors may require reduced voltage starters to "soft start" motors in many areas.

2.6.1 Electrical Interlocking

As a general guide, the last piece of process equipment is started first with subsequent starts working up to the Flake Breaker.

2.7 Coupling Installation

WARNING

BECAUSE OF THE POSSIBLE DANGER TO PERSON(s) OR PROPERTY FROM ACCIDENTS WHICH MAY RESULT FROM IMPROPER USE OR INSTALLATION OF PRODUCTS, IT IS EXTREMELY IMPORTANT TO FOLLOW THE PROPER INSTALLATION AND OPERATIONAL PROCEDURES.

All rotating power transmission products are potentially dangerous and can cause serious injury. They must be properly guarded in compliance with OSHA standards for the speeds and applications in which they are used. It is the responsibility of the user to provide proper guarding.

WARNING

FAILURE TO SECURE CAPSCREWS PROPERLY COULD CAUSE COUPLING COMPONENTS TO BECOME DISLODGED DURING OPERATION RESULTING IN PERSONAL INJURY.

1. Inspect both driving and driven shafts and hub bores making sure they are free from dirt and burrs. Be sure the keys fit shafts properly.
2. Mount both hubs to the shafts securing only one hub: the other hub should be loose for minor adjustment of spacing.

NOTE: Where tapered bushings are used, follow bushing manufacturer's instructions. If hub is bored for an interference fit, we recommend heating the hub in water, oil bath or an oven and quickly positioning it on the shaft. Do not spot heat hub as it may cause distortion.

3. Place half of the elastomer element around hubs and secure with self-locking capscrews. The elastomer element will space the other hub.

IMPORTANT

It is important to have capscrews properly tightened.

4. Repeat procedures to secure second hub.

IMPORTANT

Capscrews have self-locking patches which should not be reused more than twice. Do not lubricate capscrews threads.

NOTE: Shafts can be flush with the hub recessed below the face of the hub, or extended beyond the face.

CAUTION

DO NOT START MOTOR OR JOG WITHOUT THE COMPLETE COUPLING BEING PROPERLY SECURED TO DRIVING AND DRIVEN EQUIPMENT.

2.7.1 Equipment Alignment

Coupling alignment is directly related to equipment coupling life.

Although Omega couplings can withstand gross misalignment, care should be taken for best possible alignment to assure optimum performance. The calipers straightedge alignment procedure is described below.

NOTE: If greater alignment accuracy is desired, a dial indicator method is recommended. There are occasions when equipment manufacturers require more specific alignment tolerances, in which case the manufacturer's recommendations should be followed.

1. To correct for angular misalignment, use calipers to check the gap between hubs. Adjust or shim equipment until the gap is the same at all points around the hubs.
2. To correct parallel offset, place a straightedge across the hub flanges in two places at 90 degrees to each other. Adjust or shim equipment until the straightedge lays flat on both sides.
3. Tighten down connected equipment and recheck alignment.
4. Install elastomer element, lightening all capscrews to the values shown in Table 1 as described on the reverse side.
5. If practical, recheck and tighten capscrews after several hours of operation.

SECTION 3: OPERATION

This section describes machine operation and procedures to follow before starting the Flake/Cake Breaker.

3.1 Introduction

Pre-run inspections and safety checks throughout operation insure the Flake/Cake Breaker is in proper operating condition. Other aspects of operation covered on this section include: start-up and shut-down sequence, and motor rotation.

3.2 Pre-Run Inspection

Before starting a Flake/Cake Breaker check for:

- Foreign material i.e., nuts, bolts, wire, rags, paper, wood, etc. which may have been left in the breaker, or systems piping ahead of the breaker.
- Are all guards properly mounted?
- Are all inspection doors on chutes above or below the breaker closed and properly secured?
- Are all electrical starting equipment, meters, disconnect switches and other control devices clearly visible and readily accessible?
- Are all chutes to, and from the breaker constructed so that no one can reach into the breaker while operating and no material can fly out and hit someone?

3.3 Start-Up Sequence

This start-up sequence is intended as a general guide. The start-up sequence you use will depend on your specific operation and any unique characteristics of your installation.

CAUTION

A TIME DELAY IS ALWAYS REQUIRED BETWEEN START-UP OF THE FLAKE/CAKE BREAKER AND START-UP OF THE FEEDER TO ALLOW BREAKER TO REACH FULL OPERATING SPEED BEFORE PRODUCT IS INTRODUCED.

WARNING

ALWAYS WEAR SAFETY GLASSES WHEN OPERATING THIS MACHINE.

1. Check the motor as it starts for proper rotation and proper amperage.
2. Check interlocks to make sure they are working and in the proper sequence.
3. Begin product feed into the system at a low rate (always less than 50% of full rated capacity).
4. Check product for desired fineness.
5. Slowly increase feed to its maximum load condition (amperage). The maximum load for your motor is stamped on the motor nameplate. Use the amperage listed for the voltage you are using.

CAUTION

LOAD READING ON YOUR AMMETER SHOULD NEVER EXCEED THE VALUE STAMPED ON THE MOTOR.

NOTE: Under some circumstances, full load amperage may not always be attained. Due to the nature of some products, screen plugging may occur before full load conditions are reached.

7. Re-check the fineness of the material and the capacity after reaching the maximum load condition.

WARNING  ***DO NOT OPEN FLAKE BREAKER OR ATTEMPT ANY FORM OF INSPECTION UNTIL THE BREAKER HAS COME TO A COMPLETE STOP AND THE ELECTRICAL DISCONNECT HAS BEEN LOCKED INTO THE OPEN POSITION.***

3.4 Shut-Down Sequence

A typical flake breaker shut-down sequence will simply be the reverse of the start-up sequence. Check that you do not have special considerations in your installation that require different procedures.

1. Stop the product feed into the Flake/Cake Breaker.
2. Stop other inlet equipment.
3. Stop the flake breaker.
4. Stop outlet equipment.

SECTION 4: MAINTENANCE

This section describes the general maintenance and replacement procedures for the Prater Flake/Cake Breaker.

4.1 Introduction

The Flake/Cake breaker is designed to operate with little maintenance. Routine inspections and regular maintenance will identify any worn or broken parts before they become a problem. Worn or broken parts are damaging to the breaker and its output. When operated without vibration or foreign materials entering the breaker chamber, only those parts subject to the heavies wear, i.e. breaker bars and screens will require maintenance.

WARNING ***DO NOT OPEN THE FLAKE BREAKER OR ATTEMPT ANY FORM OF INSPECTION UNTIL THE BREAKER HAS COME TO A COMPLETE STOP AND THE ELECTRICAL DISCONNECT HAS BEEN LOCKED IN THE OPEN POSITION.**

4.2 Routine Inspection

Regular inspection is required to give advance warning of a problem. The simple, yet rugged design of the flake breaker provides easy access for maintenance, cleaning and service.

To decrease down-time, regularly inspect the machine output. The output of the breaker as well as regular inspections will determine when screens, breaker bars, or spacers need to be replaced, as well as give advance warning of a problem.

Maintain an inventory of standard wear items such as breaker bars, screens and spacers.

Regularly check and remove debris from magnets or other foreign material collection systems. If the magnet or other collection system is dirty it could allow damaging materials to enter the grinding chamber, as well as decrease the amount of material flowing into the breaker. The magnet or collection system should be cleaned before each start-up. If you find a large amount of foreign material getting into the grinding chamber or a product that is prone to contamination, you may need to clean the magnet or collection system more often.

4.3 Lubricatlon

4.3.1 Bearings

A grease fitting is provided for each of the four bearing assemblies as standard equipment. The bearings have been lubricated at the factory with NLGI grade #2 Lithium 12 hydroxysterate base grease. These bearings will require periodic lubrication.

4.3.2 Gear Box

The electric motor driven gear box is filled with 90 weight gear oil and will not require additional oil unless a leak develops.

4.4 Screens

The screens control the particle size of the final product. Inspect the screens frequently in maintain the desired output. The screens may rquire re-rolling or replacement if they are showing signs of wear. Worn screens cause:

- Lower capacity
- Increased power costs
- Non-uniform final product
- Coarser output

To check for signs of wear, visually inspect the output of the product as well as the screens themselves. Look for:

- Coarse final product
- Lower capacity
- Worn edges of the screen holes (rounded)
- Oval shaped screen holes

Excessive screen wear can be caused by:

- Extremely abrasive product
- Extremely fine product
- Excessively high feed rate
- Foreign material in breaker chamber

4.4.1 Screen Replacement

1. Turn off flake breaker and allow breaker to come to a complete stop.
2. Disconnect and lock out electrical power to the breaker.
3. Remove discharge chutes.
4. Remove capscrews, lockwashers, flatwashers, and screen retainers.
5. Remove screens from breaker chamber.
6. Seat new screens in breaker chamber.
7. Secure screens with screen retainers, flatwashers, lockwashers, and capscrews.

4.5 Bearings

1. Remove all guards.
2. Remove gears
3. Remove drive coupling
4. Remove shoulder bolt
5. Remove two set screws per bearing
6. Remove and replace bearing

4.6 Breaker Bars

If breaker bars require replacement, contact Prater.

SECTION 5: TROUBLESHOOTING

5.1 Introduction

This section covers the more common day-to-day operating problems for the Prater Flake Breaker. Possible causes are listed along with their suggested solutions.

5.2 Excessive Vibration

Excessive vibration is an indication that something has changed and needs correction. Stop and inspect the machine thoroughly.

5.3 Troubleshooting Chart

WARNING

DO NOT OPEN OR ATTEMPT ANY FORM OF INSPECTION UNTIL ALL MOTION HAS STOPPED AND THE ELECTRICAL DISCONNECT HAS BEEN PLACED IN THE OPEN POSITION AND LOCKED WITH A KEY LOCK. NEVER ATTEMPT TO ASSIST MILL SLOW DOWN BY ANY MEANS MECHANICAL OR OTHERWISE.

Symptom	Possible Cause	Suggested Solution
Final product is too coarse	1. Improper screen size 2. Worn or damaged screens 3. Feed rate too high 4. Worn bars 5. Improperly installed screens 6. Feed product change a. moisture b. size c. fat content d. chemical differences	1. Install proper screens 2. Rotate or replace screens 3. Adjust to proper feed rate 4. Rotate or replace bars 5. Install screens properly 6. Inspect feed product and adjust system as required
Final product is too fine	1. Improper screen size 2. Screens blinding a. hygroscopic material b. heat sensitive material c. high moisture d. high fat content	1. Install proper screens 2. Clear screens and check feed product. Contact your Prater representative if further assistance is required.

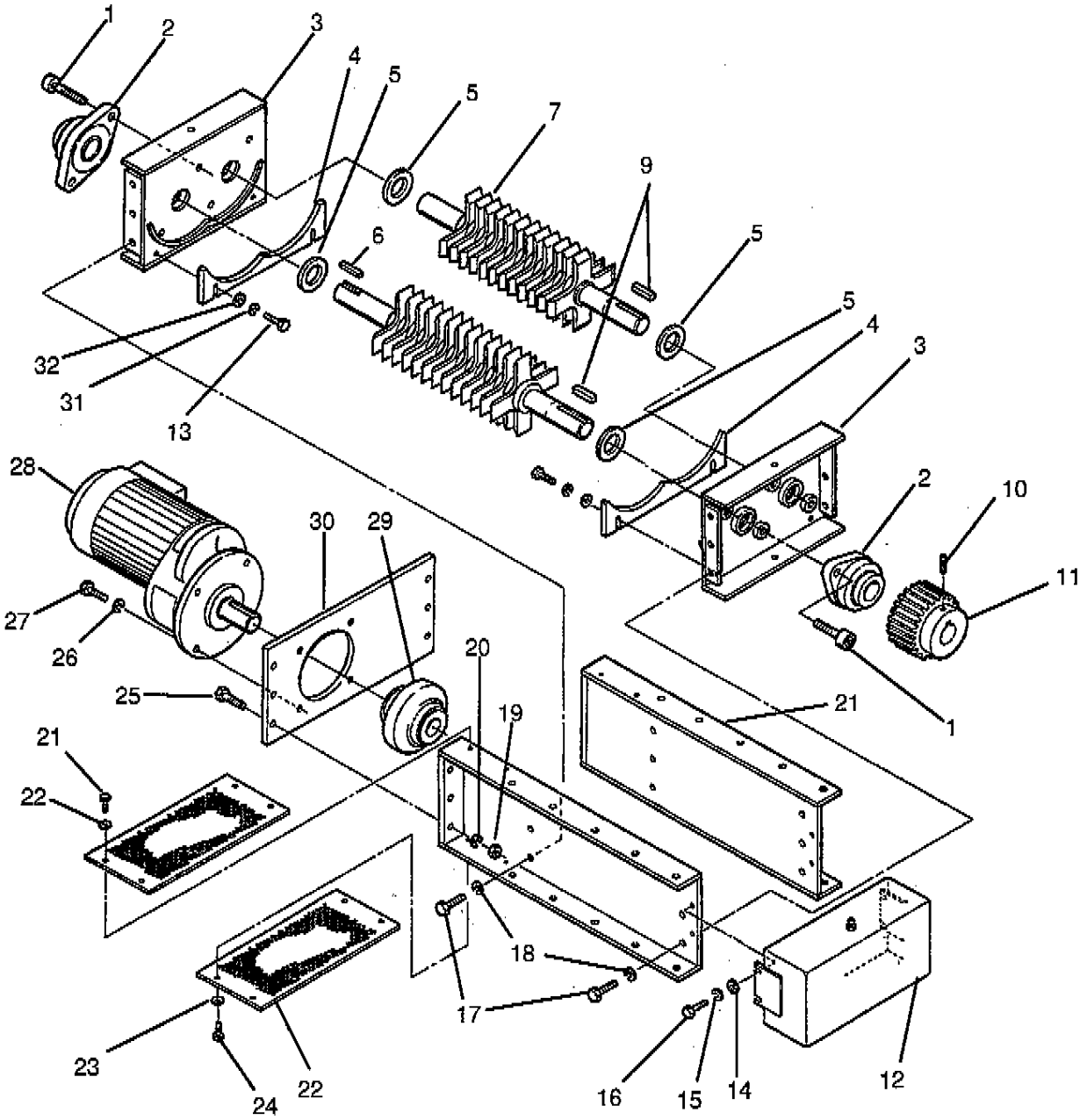
Symptom	Possible Cause	Suggested Solution
Low capacity	1. Screens worn a. Abrasive product b. Fiberous product c. Tramp materials	1. Rotate or replace screens
	2. Screen size too small	2. Install proper screens
	3. Non-uniform feed causing fluctuating motor amperage of more than 10%	3. Correct feed must be smooth and non-pulsating
Excessive vibration	1. Missing, broken, damaged or worn bars	1. Replace damaged or broken bars. Replace all if worn
	2. Material build-up in rotor	2. Clear rotor of obstruction
	3. Foreign material in grinding chamber	3. Remove foreign material - inspect magnet and collection system
	4. Mill or motor shaft bent	4. Replace shaft and related parts
	5. Bad bearings	5. Replace bearings
	6. Coupling misalignment	6. Readjust coupling
	7. Loose base bolts	7. Tighten bolts to original torques
	8. Weak base structure	8. Provide adequate base structure
Excessive Wear	1. Product very abrasive	1. Contact your Prater representative
	2. Product too fine	2. Contact your Prater representative
	3. Feed rate too high	3. Adjust feed rate to proper level
	4. Product contaminated with foreign matter	4. Clean product
Bearing Failure	1. Improper coupling alignment	1. Align coupling properly
	2. Excessive grease in bearing	2. Clean and grease bearing or replace
	3. Inadequate lubrication	3. Grease bearing
	4. Foreign materials in bearings	4. Clean and grease bearing or replace
	5. Improper bearing alignment	5. Install bearing properly
	6. High vibration	6. Correct vibration problem
	7. High ambient temperature	7. Use high temperature grease

5.4 Breaker Data

If problems cannot be diagnosed by using the Troubleshooting Guide, contact your Prater representative. Before calling for assistance, collect the data listed below. This information is essential in establishing the cause of problem conditions and determining solutions.

1. Size of breaker
2. Perforations of screen
3. Motor horsepower
4. Idle amperage
5. Amperage with product load
6. Capacity at full load
7. Fineness analysis of feed and ground product - anticipated and actual - moisture content
8. Problem - requirements of product
9. RPM of Breaker
10. Direction of rotation and location of inlet diverter

SECTION 6:
PARTS

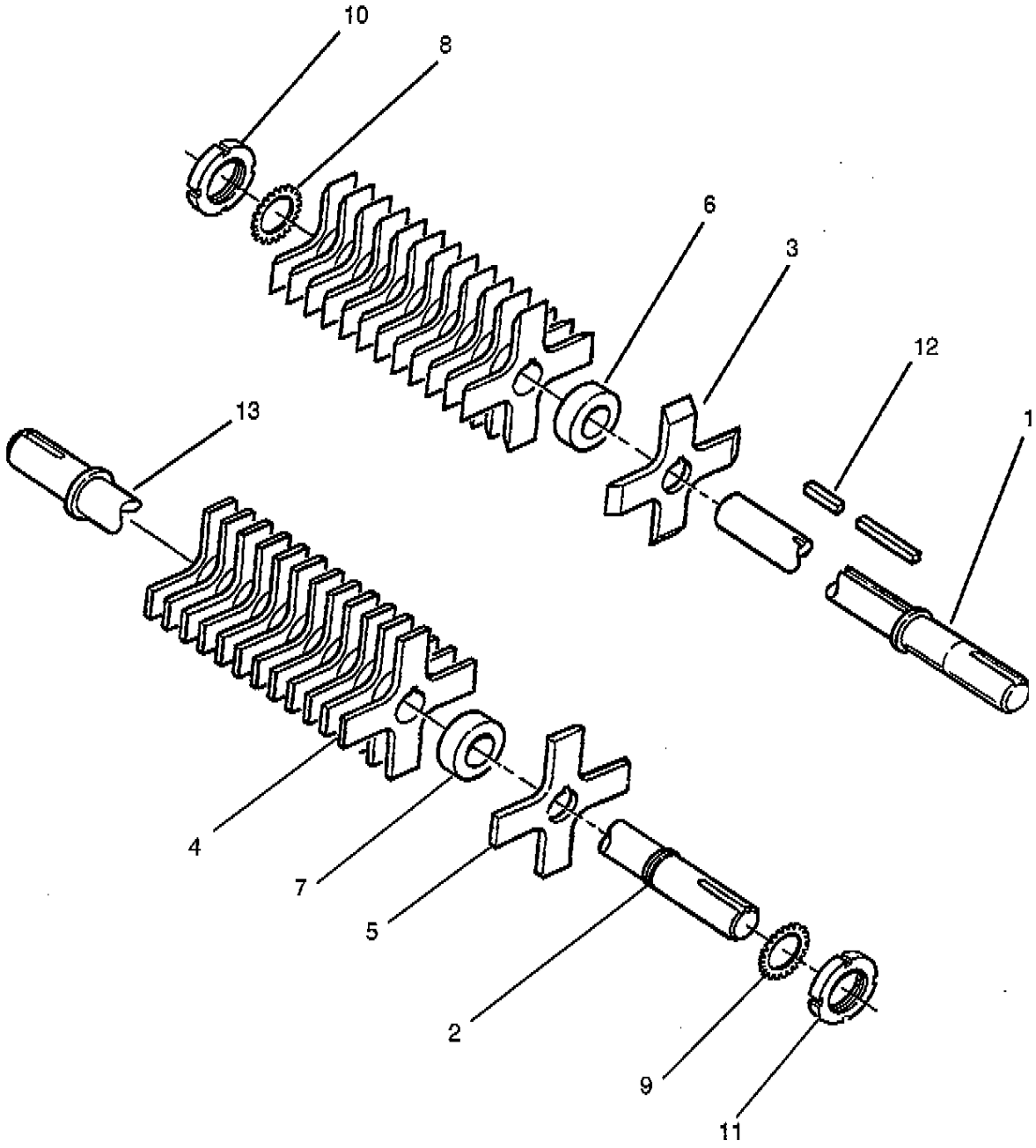


MAIN ASSEMBLY

ITEM	QTY.	DESCRIPTION
1	8	Shoulder Bolt
2	4	Bearing
3	2	End Plate Assembly/Seal Housing
4	2	Screen Retainer
5	4	Seal
6	1	Drive Key
7	1	Driven Shaft Assy (Complete)*
8	1	Drive Shaft Assy (Complete)*
9	2	Gear Key
10	4	Set Screw
11	2	Gear
12	1	Gear Guard Assy
13	4	HHCS
14	4	Flat Washer
15	4	Lock Washer
16	4	HHCS
17	12	HHCS
18	12	Lock Washer
19	6	Hex Nut
20	6	Lock Washer
21	2	Side Plate Assy
22	2	Coupling Guard
23	8	Flat Washer
24	8	HHCS
25	6	HHCS
26	4	Lock Washer
27	4	HHCS
28	1	Gear Motor
29	1	Drive Coupling
30	1	Motor Mounting Plate
31	4	Lock Washer
32	4	Flat Washer

* See pages 18 & 19 for replaceable shaft components.

PARTS



SHAFT ASSEMBLY - DRIVER & DRIVEN

ITEM	QTY.	DESCRIPTION
1	1	Shaft, Driven
2	1	Shaft, Driver
3	*	Blade, Rotor
4	*	Blade, Long
5	*	Blade, Short
6	*	Spacer, Rotor
7	*	Spacer, Rotor
8	1	Lockwasher
9	1	Lockwasher
10	1	Locknut
11	1	Locknut
12	1	Key
13	1	Key

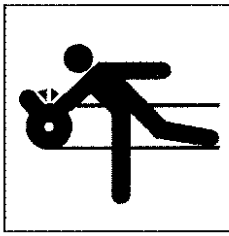
* As Required

TORQUE LIMITERS
INSTALLATION AND TORQUE SETTING INSTRUCTIONS

BROWNING® Torque Limiters provide overload protection on light drives by supplying a controlled and adjustable slip level.

INSTALLATION

1. Clean shaft and Torque Limiter bore to remove any foreign matter.
   Make sure the shaft, sheave bore, keys and keyways are free of burrs, paint, etc.
   Slide Torque Limiter onto shaft. (While Torque Limiter can be mounted in either direction, mounting with collar away from machine housing permits easier adjustment.)
   Insert key and tighten setscrew "A" to the values in Table 1.
2. Remove collar, one backing plate, and one friction disc.
   Place Torque Limiter sprocket over bronze bearing.
   Slip friction disc and backing plate over barrel until they rest against sprocket.
   Make sure cap screws B are backed off until points are recessed in collar.
   Screw collar on barrel until it is finger-tight against backing plate.



⚠WARNING

Disconnect power before installation and maintenance. Failure to do so can result in severe injury or death.

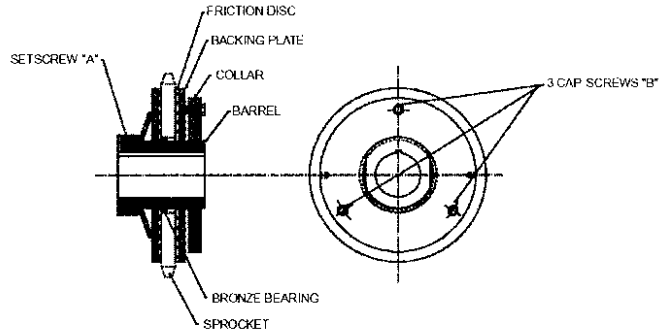


Table 1

SET SCREW TORQUE (IN-LBS)	
Size	**Torque**
1/4 - 20	87
5/16 - 18	165
3/8 - 16	250

Table 2
Minimum Recommended Number of Teeth and Number of Bearings Required for Torque Limiters

Torque Limiter	Chain Size											
	35		41		40		50		60		80	
	Min. Teeth	No. Brgs.	Min. Teeth	No. Brgs.	Min. Teeth	No. Brgs.	Min. Teeth	No. Brgs.	Min. Teeth	No. Brgs.	Min. Teeth	No. Brgs.
T25L	25	1	20	1	20	1	—	—	—	—	—	—
T35L	—	—	26	1	26	1	21	2	—	—	—	—
T45L	—	—	—	—	32	1	26	1	22	2	—	—
T55L	—	—	—	—	—	—	32	1	27	2	21	2
T65L	—	—	—	—	—	—	—	—	32	1	24	2

One bronze bearing is packaged with each Stock Torque Limiter.
Where an extra bearing is required, it is packaged with the Stock Torque Limiter Sprocket.

ADJUSTMENT

To adjust the torque limiter to its maximum torque:

1. Back off the three cap screws "B" until the points are recessed in the threaded adjusting collar.
2. Tighten the collar by hand and then tighten the cap screws until the heads bottom against the collar.
3. The torque limiter can be adjusted to a lesser torque by loosening the cap screws and the collar, and then re-tightening the cap screws until the heads bottom against the collar. The torque may be checked in application, or by using a spring scale or other means as shown in the sketch.

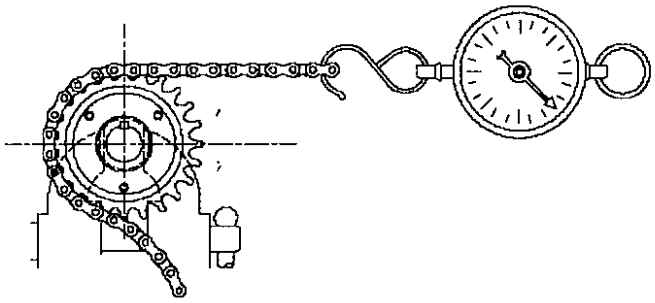
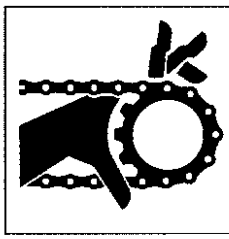


Table 3
Approximate MaximumTorque Ratings in Inch-Pounds

Part Number	With One Spring	With Two Springs
T25L	800	1100
T35L	1800	3000
T45L	2800	4900
T55L	3800	6800
T65L	4800	8800



⚠WARNING

Operating drives without guards in place can result in severe injury or death.

Have questions? Contact Technical Services at 1-800-626-2093.

Form No. 4601-F 4/20/99
Printed in U.S.A.

BROWNING
Emerson Power Transmission
MAYSVILLE, KENTUCKY 41056

Gearmotors and Gear Reducers

OPERATING INSTRUCTIONS

01 805 12 US

GENERAL

These operating instructions are intended to help you install and operate the drive. For trouble free service, proper installation and operation are essential. Additionally, these instructions contain important recommendations on maintenance.

Before shipment every SEW-Eurodrive gear unit is thoroughly tested, checked and properly packed. However, please inspect the drive immediately upon arrival for shortage or transit damage. Note the damage or shortage on the freight bill of lading and file a claim with the carrier. Also, notify SEW-Eurodrive of the shortage or damage.

LUBRICANTS

All gearmotors and gear reducers are supplied with the correct grade and quantity of lubricating oil for the specified mounting position. Exceptions include reducers shipped without input assemblies. The recommended lubricants are found on page 5.

LONG TERM STORAGE

If the drive is not installed immediately, it should be stored in a dry, protected area. If the drive is to be stored for an extended period of time and was not ordered from SEW for long term storage, contact your nearest SEW assembly plant for information on Long Term Storage.

Drives which are used for standby service should be stored as a sealed gearcase.

INSTALLATION OF COMPONENTS ON DRIVE SHAFTS

Do not hammer on the shafts. Hammering can cause brinelling of the reducer's bearings shortening the bearing life. We recommend heating the components to approximately 175°F (when possible) and sliding them on the shaft. This will reduce possible damage to the reducer's bearings.

Table 1. Standard Shaft Tolerances

Diameter (inch)	Solid Shaft Tolerances (inch)	Hollowshaft Tolerance (inch)
1.500 and smaller	+0.0000/-0.0005	+0.0005/-0.0000
Larger than 1.500	+0.000/-0.001	+0.001/-0.000
For metric shafts consult our catalogs		

Shaft couplings should be properly aligned to prevent vibration, coupling wear, and premature failure of the shaft bearings.

To prevent the output shaft and bearings from being subjected to excessive loads, the maximum overhung load, as shown in SEW-Eurodrive catalogs, should not be exceeded. Please consult our engineering department if the load may exceed the recommended figure given or where there are combined radial and axial loads. In such cases, the exact operating conditions must be stated including speed, direction of rotation, position, magnitude and direction of the external radial and axial loads being applied.

SHAFT MOUNTED REDUCERS

SEW-Eurodrive recommends the use of a light coating of Never-Seez® (or equivalent) on the keyed output shaft. The Never-Seez® lubricant may prevent rusting and fretting corrosion between the reducer hollowshaft and the shaft of the driven machine. The lubricant will aid in shaft removal when necessary.

For additional information on shaft mounted reducers, drive shaft configuration and tolerances, ask for SEW-Eurodrive Tech Sheets K-003-01, K-003-02, K-003-03.

INSTALLATION AND OPERATION

The drive installation site should be selected to ensure:

- Ambient temperatures below 40°C (104°F).
- Unimpeded flow of air to the motor and variable speed units.
- Accessibility to the drain, level and breather plugs.
- Adequate space for removal of brakemotor fanguard for brake adjustment and maintenance.

The drive unit should be mounted on a flat, vibration damping, and torsionally rigid structure. Careful alignment is critical. Mounting to an uneven surface will cause housing distortion. The flatness tolerance of the supporting surface should not exceed:

- For gear units size 80 and smaller — 0.004 inch.
- For gear units above size 80 — 0.008 inch.

For transportation the units are supplied as sealed gearcases, i.e., in place of the breather plug, a plastic capped socket head plug is installed. The breather plug accompanies the unit in a poly bag. After final installation, install the breather plug in place of the plastic capped plug. In addition, the oil level should be checked. Remove the red painted oil level plug. The oil level is correct when the surface of the oil is level with the lowest point of that tapped hole. The exceptions are the units R30/32 and S30/31 which remain sealed in any position.

After installation, the actual mounting position should be confirmed (with the diagrams on pages 2 - 4) against the mounting position shown on the gear reducer nameplate. The locations of the breather plug and oil level plug must agree with these diagrams for the specified mounting position. Adequate lubrication is only guaranteed if the unit is mounted in the specific nameplated mounting position and it agrees with the pictures on Pages 2 - 4.

Please refer also to the Motors and Brakemotors; VARIMOT®; or VARIGEAR® operating instructions for additional information on those units.

MAINTENANCE

Oil levels and oil quality should be checked at regular intervals, determined by usage and the environment. Grease and oil should be changed per the recommendations on page 5.

Check coupling alignment, chain or belt tension, and mounting bolt torque periodically. Keep the drive relatively free of dust and dirt.

SEW EURODRIVE

SOUTHEAST MANUFACTURING & ASSEMBLY CENTER
1295 Old Spartanburg Highway/Lyman SC 29365
(803) 439-7537 Fax: (803) 439-0568

SOUTHWEST ASSEMBLY CENTER
3950 Platinum Way/Dallas TX 75237
(214) 330-4824 Fax: (214) 330-4724

MIDWEST ASSEMBLY CENTER
2001 West Main Street/Troy OH 45373
(513) 335-0036 Fax: (513) 222-4104

EAST COAST ASSEMBLY CENTER
200 High Hill Road/Bridgeport NJ 08014
(609) 467-2277 Fax: (609) 845-3179

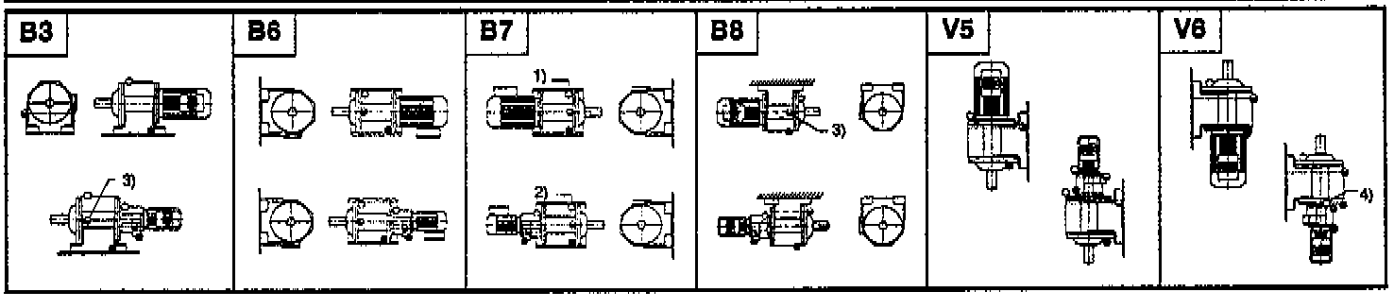
WEST COAST ASSEMBLY CENTER
30599 San Antonio Road/Hayward CA 94544
(510) 487-3560 Fax: (510) 487-6381

MOUNTING POSITIONS

For proper lubrication, be sure that the orientation of the gear reducer, as installed, matches the diagram shown for the mounting positions as specified on the gear reducer's nameplate.

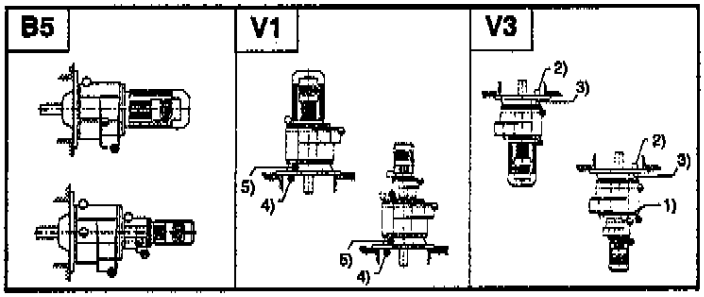
Mounting Surface
Mounting Surface of the Torque Arm
Breather Plug
Oil Level Plug
Oil Drain Plug

R40 - R163, R63R42 - R163R102



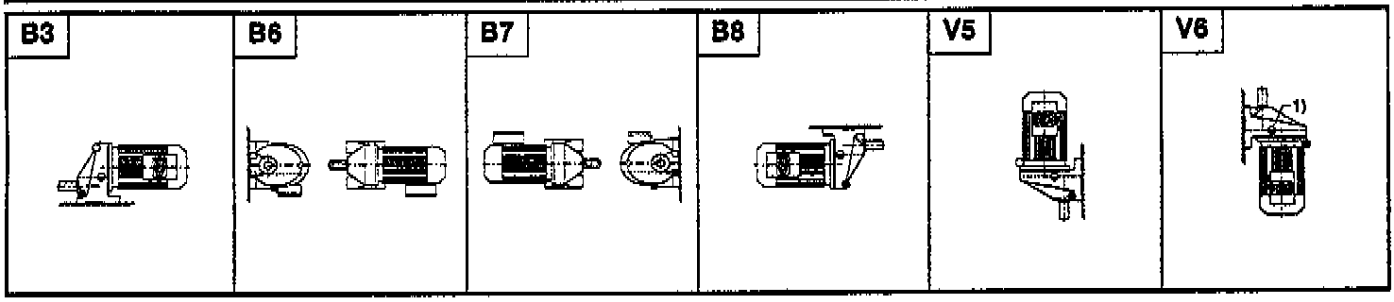
1) Breather plug provided only on R132-R163
2) Breather plug provided only on R133R72/73 - R163R102
3) Level plug on opposite side for R60, R80
4) Breather plug provided only on R62/63R42/43, R133R82

RF40 - RF163, RF63R42 - RF163R102



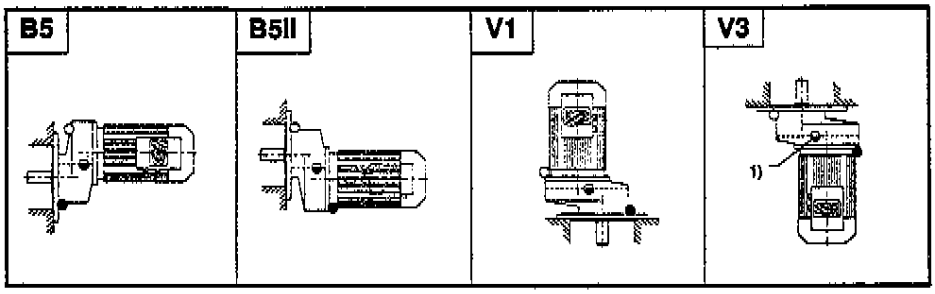
1) Breather plug provided only on RF62/63R42/43, RF133R82
2) Fig. I Flange breather plug
3) Fig. II Flange breather plug
4) Fig. I Flange drain plug
5) Fig. II Flange drain plug

RX61 - RX101



1) Oil level plug on opposite side

RXF61 - RXF101



1) Oil level plug on opposite side

LUBRICANTS

LUBRICATION SCHEDULE FOR SEW-EURODRIVE GEAR UNITS									
[1]Gear Reducer Type	Lubrication Type	Ambient air temperature range ° F	kin viscosity at 40°C (cSt) approx.	GULF Oil Co.	CHEVRON Oil Co.	AMERICAN Oil Co.	MOBIL Oil Co.	SHELL Oil Co.	TEXACO Oil Co.
R40 - R163 FA K	Oil	+104 to +32	220	Gulf EP. Lubricant S100	Chevron Non-Leaded Gear Compound 220	Permagear EP220	Mobilgear 630	Shell Omala Oil 220	Meropa 220
		+77 to +5	155	Gulf EP. Lubricant S60	Chevron Non-Leaded Gear Compound 150	Permagear EP150	Mobilgear 629	Shell Omala Oil 100	Meropa 150
S32	Oil	+140 to +32	430				SHC 634 (Synthetic)		
S42 - S92	Oil	+104 to +32	680	Gulf EP. Lubricant HD 680	Chevron Non-Leaded Gear Compound 680	Permagear EP680	Mobilgear 636	Shell Omala Oil 680	Meropa 680
		+77 to +5	220	Gulf EP. Lubricant HD 220	Chevron Non-Leaded Gear Compound 220	Permagear EP 220	Mobilgear 630	Shell Omala Oil 220	Meropa 220
General	Synth. Oil	+176 to +5	Consult Factory For Use of Synthetic Oils						
	Synth. Grease	+200 to -40	Consult Factory For Use of Grease Filled Reducers						
Ball & Roller Bearings	Grease Used for normal application Temp. range—20°F to 250°F			Gulfcrown Grease EP. No.2	Chevron Dura-Lith EP2	Amolith Grease No. 2 EP	Mobilux EP2	Alvania Grease R3	Multifak EP2

1)Applies to all reducers with or without motor and input shaft.

Oil levels and oil quality should be checked at frequent intervals, depending on usage. Oil changes are required at intervals of 10,000 operating hours or every two years, whichever comes first. If a synthetic oil lubricant is used then this period can be extended to 20,000 operating hours or every four years, whichever comes first. In applications where hostile operating conditions exist, such as high humidity, corrosive environment, or large temperature changes, the lubricant should be changed at more frequent interval

The gear units R30/32 and S30/31 are supplied with a synthetic oil which is good for the life of the reducer.

Grease packed bearings should be cleaned and regreased every 10,000 hours or 20,000 hours for synthetic grease. Input (high speed) bearings should not be overgreased. They should be filled with grease not to exceed 1/3 of the bearing's free volume. For output bearings and bearings with replaceable grease shields, fill to 2/3 of their free volume.

ATTENTION

When the recommended lubricant is not available, it is permissible to use a lubricant having equivalent characteristics but we do not recommend that lubricants of different brands be mixed. Under no circumstances should synthetic lubricants be mixed with one another, or with one having a mineral base.

LUBRICANTS

Oil Capacities in (US) Gallons

Parallel Helical Gear Units "R"

Gear Unit	Mounting Position									
	B3 [1]	B5 [1]	B5II	B6 [2]	B7 [2]	B8 [2], [3]	V1	V3	V5	V6
RX/RXF61	0.21	0.11	0.18	0.11	0.13	0.18	0.16	0.13	0.24	0.13
RX/RXF71	0.42	0.21	0.37	0.26	0.26	0.42	0.32	0.24	0.53	0.26
RX/RXF81	0.66	0.34	0.66	0.42	0.42	0.71	0.58	0.40	0.82	0.48
RX/RXF101	1.6	0.92	1.6	1.1	1.0	2.0	1.2	0.95	2.3	1.1
RUF63	—	0.13	—	—	—	—	0.53	—	—	—
RUF73	—	0.32	—	—	—	—	0.98	—	—	—
RUF83	—	0.69	—	—	—	—	2.1	—	—	—
RUF92/93	—	1.1	—	—	—	—	3.4	—	—	—
RUF102/103	—	1.1	—	—	—	—	5.4	—	—	—
RUF132/133	—	2.5	—	—	—	—	8.3	—	—	—
RUF142/143	—	3.3	—	—	—	—	13	—	—	—
RUF152	—	4.2	—	—	—	—	16	—	—	—
RUF163	—	4.8	—	—	—	—	21	—	—	—
R/RF32	0.29 gallon									
R/RF40	0.08	0.08	—	0.16	0.18	0.16	0.26	0.26	0.26	0.26
R/RF42/43	0.08	0.08	—	0.16	0.16	0.18	0.26	0.24	0.29	0.24
R/RF60	0.16	0.16	—	0.42	0.40	0.29	0.53	0.50	0.53	0.55
R/RF62/63	0.16	0.13	—	0.32	0.34	0.29	0.53	0.50	0.58	0.50
R/RF70	0.34	0.32	—	0.55	0.61	0.55	0.98	0.92	0.98	0.95
R/RF72/73	0.34	0.32	—	0.55	0.61	0.55	0.98	0.92	0.98	0.95
R/RF80	0.74	0.69	—	1.2	1.3	1.1	2.1	2.0	2.1	2.0
R/RF82/83	0.74	0.69	—	1.2	1.3	1.1	2.1	2.0	2.1	2.0
R/RF92/93	1.3	1.1	—	2.0	2.2	2.0	3.4	3.3	3.6	3.4
R/RF102/103	1.8	1.6	—	3.1	3.3	3.0	5.4	5.0	5.7	5.3
R/RF132/133	2.7	2.5	—	5.0	5.3	5.0	8.3	8.5	8.6	8.7
R/RF142/143	4.0	3.3	—	7.7	8.2	7.5	13	13	14	14
R/RF152	5.2	4.2	—	12	13	11	16	16	20	21
R/RF163	5.7	4.8	—	13	14	13	21	22	23	23

1) On compound gear units having mounting position B3 or B5, the larger gear unit is to be provided with the oil filling of the B7 mounting position.
2) On compound gear units having mounting positions B6, B7, or B8 the smaller gear unit is to be provided with the oil filling of the B5 mounting position.
3) On compound gear units having mounting position B8, consult SEW Engineering for oil capacity of the larger (output) gear unit.

theSNUGGLER® Shaft Mounted Helical Gear Units "FA"

Gear Unit	Mounting Position					
	H1	H2	H3	H4	H5	H6
FA/FAF40	0.40	0.26	0.45	0.37	0.50	0.55
FA/FAF60	0.82	0.58	0.95	0.82	1.2	1.0
FA/FAF70	1.9	1.2	1.8	1.6	2.2	2.0
FA/FAF80	3.0	1.9	3.2	2.7	3.7	3.6
FA/FAF90	5.0	3.4	5.9	4.6	6.3	6.9
FA/FAF100	9.3	5.6	8.9	7.8	12	11.8

Right Angle Helical-Bevel Gear Units "K"

Gear Unit [1]	Mounting Position													
	B3, H1, B5I	B3I, B6II	B5	B5II	B5III	B6	B8	V1, V1I	V5	V6	H2	H3	H4	H5, H6
K46	0.16	0.53	0.32	0.48	0.37	0.32	0.40	0.34	0.40	0.40	0.37	0.48	0.32	0.34
K66	0.24	0.85	0.63	0.87	0.74	0.61	0.69	0.82	0.79	0.82	0.66	0.79	0.58	0.79
K76	0.50	1.5	1.1	1.6	1.3	1.1	1.3	1.7	1.6	1.6	1.2	1.5	1.1	1.6
K86	0.69	2.4	1.9	2.6	2.3	1.9	2.2	2.6	2.5	2.5	2.1	2.4	1.9	2.5
K96	1.4	4.9	3.8	5.2	4.3	3.7	4.2	5.3	5.2	5.2	4.1	4.9	3.7	5.2
K106	2.4	8.5	6.2	8.9	7.4	6.1	7.1	8.7	8.5	8.5	6.9	8.3	6.1	8.5
K126	3.6	14	10	14	13	11	13	15	15	15	13	14	11	15
K156	7.0	24	18	25	22	17	21	26	26	26	21	24	18	26
K/KH166	8.2	31	—	31	—	—	—	25	—	—	—	—	—	—
K/KH186	15	51	—	51	—	—	—	41	—	—	—	—	—	—

1) Gear unit size 46-166 also applies for KF, KA and KAF

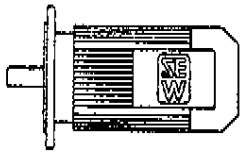
Right Angle Helical-Worm Gear Units "S"

Gear Unit [1]	Mounting Position															
	B3, B6I	B3I, B6II	B5	B5I	B5II	B5III	B6, B8I	B8	V1A, V1IB	V1B, VIA	V5, V5I	H1	H2	H3	H4	H5, H6
S31	0.07	0.07	0.09	0.09	0.09	0.09	0.07	0.07	0.09	0.09	0.07	0.07	0.07	0.07	0.07	0.07
S32	0.07	0.16	0.11	0.07	0.16	0.14	0.11	0.14	0.11	0.11	0.11	0.07	0.14	0.16	0.11	0.11
S42	0.05	0.26	0.21	0.11	0.32	0.21	0.29	0.16	0.21	0.16	0.16	0.11	0.21	0.29	0.20	0.18
S52	0.08	0.40	0.26	0.12	0.45	0.32	0.42	0.29	0.29	0.21	0.24	0.12	0.29	0.40	0.26	0.24
S62	0.16	0.74	0.61	0.24	1.0	0.61	0.66	0.42	0.61	0.55	0.42	0.24	0.61	0.92	0.55	0.53
S72	0.29	1.3	1.1	0.40	2.0	1.3	1.4	0.87	1.2	1.1	0.82	0.40	1.1	1.6	0.92	0.95
S82	0.55	2.6	1.7	0.87	2.9	1.6	2.9	1.6	1.8	1.5	1.5	0.87	1.5	2.7	1.6	1.6
S92	1.0	5.2	3.3	1.5	5.9	3.6	5.4	2.9	3.1	2.8	2.8	1.5	3.3	5.4	3.1	3.2

1) Gear Unit sizes 31-92 also applies for SF, SA and SAF

SEW EURODRIVE

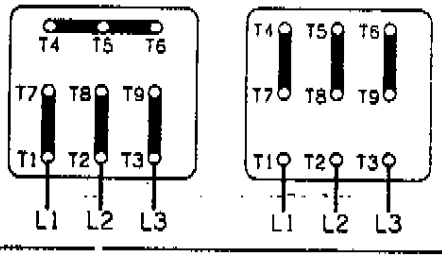
Motor Connection Diagrams



Dual Voltage Motors

FRAME	LOW VOLTAGE YY	HIGH VOLTAGE Y
DT71 thru DV180	230V - 60Hz	460V - 60Hz

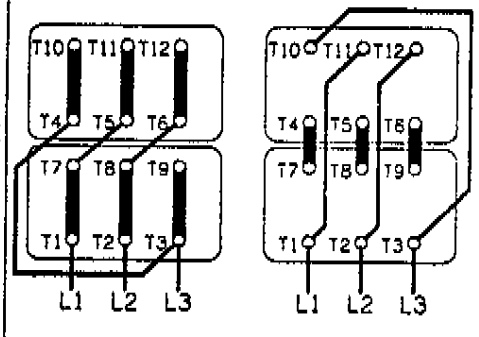
SINGLE SPEED



①

FRAME	LOW VOLTAGE ΔΔ	HIGH VOLTAGE Δ
DV200 thru DV225	230V - 60Hz	460V - 60Hz

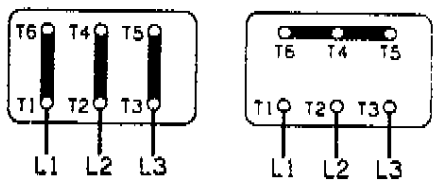
SINGLE SPEED



②

FRAME	LOW VOLTAGE Δ	HIGH VOLTAGE Y
DT71 thru DV225	200V - 50Hz 208V - 60Hz 220V - 50Hz 230V - 50Hz 240V - 50Hz 330V - 60Hz	346V - 50Hz 360V - 60Hz 380V - 50Hz 400V - 50Hz 415V - 50Hz 575V - 60Hz

SINGLE SPEED

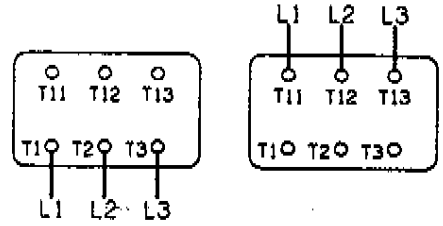


③

Single Voltage Motors

FRAME	TWO WINDING	
DT71 thru DV225	LOW SPEED Y	HIGH SPEED Y

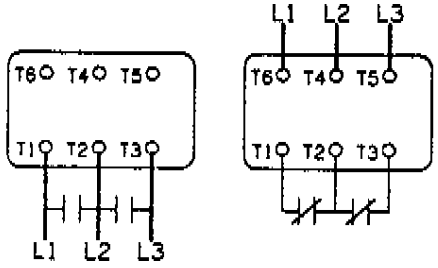
TWO SPEED



④

FRAME	SINGLE WINDING	
DT71 thru DV132S	LOW SPEED Δ	HIGH SPEED YY

TWO SPEED

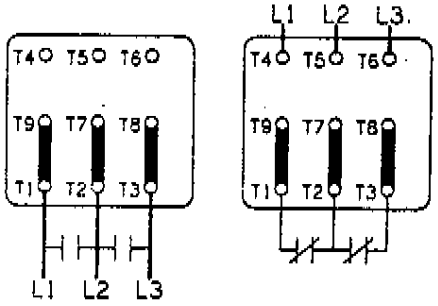


CONTACTS INCORPORATED IN MOTOR STARTER

⑤

FRAME	SINGLE WINDING	
DV132M thru DV225	LOW SPEED Δ	HIGH SPEED YY

TWO SPEED



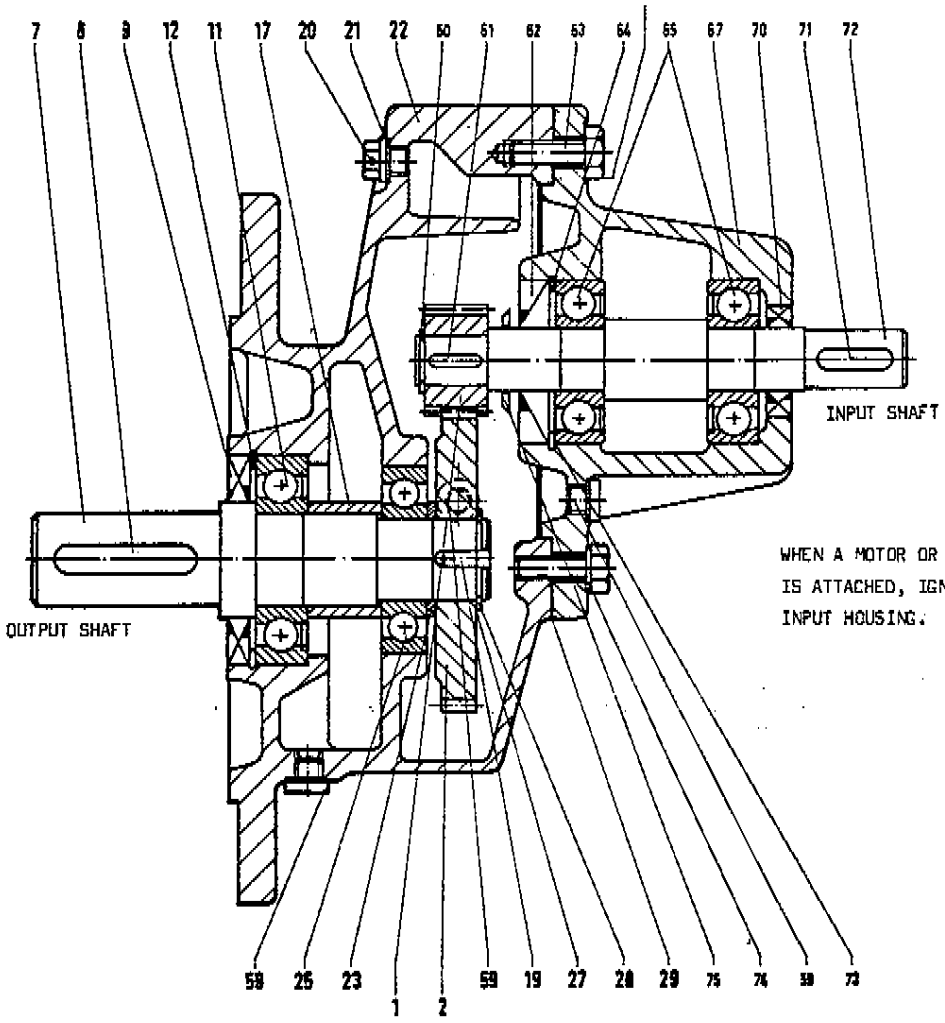
CONTACTS INCORPORATED IN MOTOR STARTER

⑥

Parallel (Helical) Reducers

RXF 61

PARTS LIST # 2045-A



WHEN A MOTOR OR A SECOND GEAR UNIT IS ATTACHED, IGNORE ALL PARTS FOR THE INPUT HOUSING.

ITEM	PART NAME	DIMENSIONS	PART NO.	QTY	PRICE
60	SNAPRING 12mm SH.	SW11X1mm	011 520 7	1	.05
60	SNAPRING 10mm SH.	SW10X1mm	011 519 3	1	.05
59	PLUG	M10X1mm	011 426 X	3	.30
29	GASKET		101 211 8	1	.20
28	SNAPRING	20X1.2mm	010 271 7	1	.15
27	SHIM	20X28X.3mm	010 392 6	X	.05
27*	SHIM	20X28X.1mm	010 368 3	X	.05
25*	BALL BEARING	6304	010 508 2	1	6.00
23	SPACER	S20X18X2mm	010 343 8	1	.30
..	HOUSING		108 580 8	1	102.00
20	VENT PLUG	M10X1mm	010 466 3	1	1.00
19	KEY	B6X6X16mm	011 601 7	1	.20
17	SPACER		108 597 2	1	1.50
12	SNAPRING	62X2mm	010 321 7	1	.70
11*	BALL BEARING	6305-Z	010 522 8	1	8.50
9*	OIL SEAL W/SPRING	AS30X62X7mm	011 521 5	1	4.00
8	KEY	1/4X1/4X1 5/16 in.	92001003	1	.45
7	OUTPUT SHAFT	1.000 in. Dia	114 015 9	1	26.00
2	GEAR			1	
1	PINION GEAR			1	

*RECOMMENDED SPARE PARTS

ITEM	PART NAME	DIMENSIONS	PART NO.	QTY	PRICE
110	LOCKWASHER	88mm	010 991 6	3	.05
75	OIL SLINGER	20mm	011 661 0	1	1.00
74	COPPER WASHER	8.2mm	011 386 7	1	.15
73	SHIM	42X52X.3mm	010 399 3	X	.10
73	SHIM	42X52X.1mm	010 375 6	X	.05
72	INPUT SHAFT	16mm SH.	107 700 7	1	30.00
72	INPUT SHAFT	14mm SH.	107 699 X	1	30.00
72	INPUT SHAFT	12mm SH.	107 698 1	1	30.00
71	KEY	3/16X3/16X1 1/4 in.	92001002	1	.40
70*	OIL SEAL	AS20X35X7mm	010 652 6	1	3.50
67	INPUT COVER		101 247 9	1	23.00
65*	BALL BEARING	6304-2Z	010 531 7	2	7.00
64	SNAPRING	52X2mm	010 319 5	1	.50
63	BOLT	M8X20mm	011 025 6	4	.05
62*	OIL SEAL	A20X52X10mm	011 315 8	1	3.50
61	KEY 16mm SH.	A4X4X18mm	011 438 3	1	.10
61	KEY 14mm SH.	A3X3X14mm	010 069 2	1	.25
61	KEY 12mm SH.	A3X3X14mm	010 069 2	1	.25
61	KEY 10mm SH.	A2X2X12mm	010 000 5	1	.25
60	SNAPRING 16mm SH.	16X1mm	010 268 7	1	.10
60	SNAPRING 14mm SH.	14X1mm	010 266 0	1	.10

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EURODRIVE INC.

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PHONE 513-335-0036 TELEX 28-8282 SEW TROY

☐ 30599 SAN ANTONIO ROAD, HAYWARD, CA. 94544
PHONE 415-487-3560

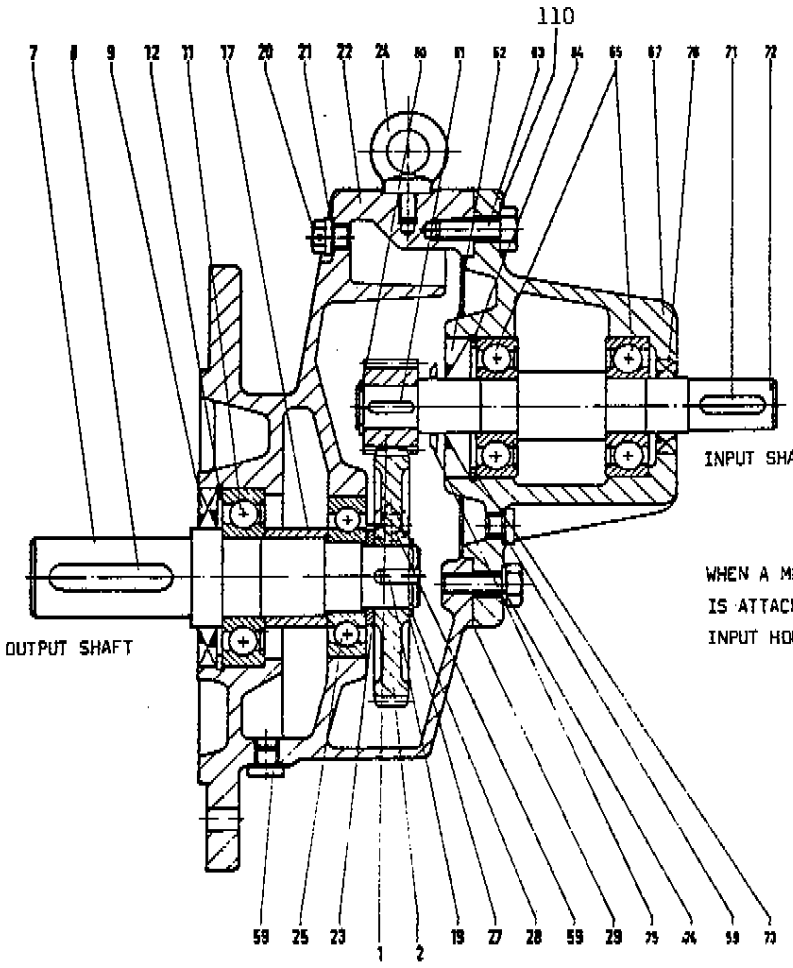
IMPORTANT:
WHEN ORDERING PARTS, SUPPLY NAMEPLATE DATA:

1. S.O.# OR SERIAL #.
2. MODEL #.

Parallel (Helical) Reducers

RXF 71

PARTS LIST #
2047-A



WHEN A MOTOR OR A SECOND GEAR UNIT IS ATTACHED, IGNORE ALL PARTS FOR THE INPUT HOUSING.

ITEM	PART NAME	DIMENSIONS	PART NO.	QTY	PRICE
60	SNAPRING 16mm SH.	16X1mm	010 268 7	1	.10
60	SNAPRING 14mm SH.	14X1mm	010 266 0	1	.10
59	PLUG	M12X1.5mm	011 430 8	3	.50
29	GASKET		100 643 6	1	.45
28	SNAPRING	25X1.2mm	010 274 1	1	.15
27	SHIM	25X35X.3mm	010 393 4	X	.05
27	SHIM	25X35X.1mm	010 369 1	X	.05
25*	BALL BEARING	6307	010 511 2	1	14.00
24	EYE BOLT	M10 thread	010 229 6	1	1.25
23	SPACER	S25X45X2mm	012 401 X	1	1.00
22	HOUSING		108 584 0	1	135.00
20	VENT PLUG	M12X1.5mm	010 467 1	1	1.25
19	KEY	B8X7X16mm	010 053 6	1	.20
17	SPACER		108 598 0	1	4.00
12	SNAPRING	90X3mm	010 326 8	1	1.50
11*	BALL BEARING	6308-Z	010 525 2	1	19.00
9*	OIL SEAL W/SPRING	AS50X90X10mm	011 526 6	1	7.00
8	KEY	3/8X3/8X2 1/4 in.	92001007	1	.60
7	OUTPUT SHAFT	1.625 in. Dia	114 016 7	1	40.00
2	GEAR			1	
1	PINION GEAR			1	

*RECOMMENDED SPARE PARTS

ITEM	PART NAME	DIMENSIONS	PART NO.	QTY	PRICE
110	LOCKWASHER	B10mm	010 992 4	3	.05
75	OIL SLINGER	25mm	011 662 9	1	1.00
74	COPPER WASHER	10.2mm	011 387 5	1	.20
73	SHIM	50X62X.3mm	010 400 0	X	.10
73	SHIM	50X62X.1mm	010 376 4	X	.10
72	INPUT SHAFT	22mm SH.	107 697 3	1	23.00
72	INPUT SHAFT	18mm SH.	107 696 5	1	23.00
72	INPUT SHAFT	16mm SH.	107 711 2	1	23.00
72	INPUT SHAFT	14mm SH.	107 703 1	1	23.00
71	KEY	3/16X3/16X1 1/4 in.	92001002	1	.40
70*	OIL SEAL	AS25X35X7mm	010 654 2	1	2.50
67	INPUT COVER		101 332 7	1	58.00
65*	BALL BEARING	6305-2Z	010 532 5	2	9.00
64	SNAPRING	62X2mm	010 321 7	1	.70
63	BOLT	M10X25mm	010 116 8	4	.20
62*	OIL SEAL	A25X62X10mm	010 613 5	1	4.00
61	KEY 22mm SH.	A5X5X25mm	010 008 0	1	.30
61	KEY 18mm SH.	A4X4X20mm	010 003 X	1	.10
61	KEY 16mm SH.	A4X4X18mm	011 438 3	1	.10
61	KEY 14mm SH.	A3X3X14mm	010 069 2	1	.25
60	SNAPRING 22mm SH.	22X1.2mm	010 272 5	1	.15
60	SNAPRING 18mm SH.	18X1.2mm	010 270 9	1	.15

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☐ 30999 SAN ANTONIO ROAD, HAYWARD, CA 94544
PHONE 415-487-3560

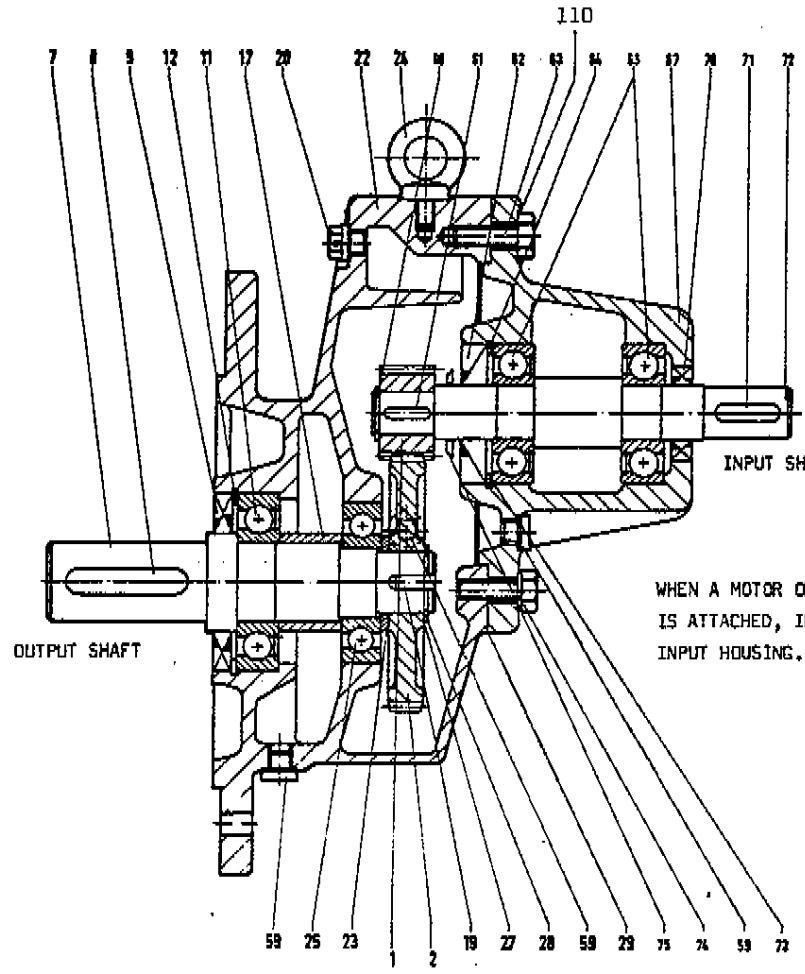
IMPORTANT:
WHEN ORDERING PARTS, SUPPLY NAMEPLATE DATA:

1. S.O.# OR SERIAL #.
2. MODEL #.

Parallel (Helical) Reducers

RXF 81

PARTS LIST # 2049-A



ITEM	PART NAME	DIMENSIONS	PART NO.	QTY	PRICE
60	SNAPRING 18mm SH.	18X1.2mm	010 270 9	1	.15
60	SNAPRING 16mm SH.	16X1mm	010 268 7	1	.10
60	SNAPRING 14mm SH.	14X1mm	010 266 0	1	.10
59	PLUG	M12X1.5mm	011 430 8	3	.50
29	GASKET		100 678 9	1	.45
28	SNAPRING	30X1.5mm	010 277 6	1	.20
27	SHIM	30X42X.3mm	010 409 4	X	.05
27	SHIM	30X42X.1mm	010 385 3	X	.05
25*	BALL BEARING	6308	010 512 0	1	17.50
24	EYE BOLT	M10 thread	010 229 6	1	1.25
23	SPACER	S30X50X2.5mm	012 402 8	1	1.00
22	HOUSING		108 588 3	1	189.00
20	VENT PLUG	M12X1.5mm	010 467 1	1	1.25
19	KEY	B8X7X25mm	010 055 2	1	.45
17	SPACER		108 599 9	1	4.00
12	SNAPRING	100X3mm	010 327 6	1	2.00
11*	BALL BEARING	6309-Z	010 526 0	1	22.00
9*	OIL SEAL W/SPRING	AS55X100X10mm	011 530 4	1	9.00
8	KEY	3/8X3/8X2 3/4 in.	92001008	1	.60
7	OUTPUT SHAFT	1.750 in. Dia	114 017 5	1	47.00
2	GEAR			1	
1	PINION GEAR			1	

ITEM	PART NAME	DIMENSIONS	PART NO.	QTY	PRICE
110	LOCKWASHER	B12mm	010 933 2	3	.05
75	OIL SLINGER	30mm	011 663 7	1	1.00
74	COPPER WASHER	12.2mm	011 388 3	1	.70
73	SHIM	63X72X.3mm	012 052 9	X	.75
73	SHIM	63X72X.1mm	012 051 0	X	1.25
72	INPUT SHAFT	28mm SH.	107 695 7	1	35.00
72	INPUT SHAFT	22mm SH.	107 694 9	1	35.00
72	INPUT SHAFT	18mm SH.	107 693 0	1	35.00
72	INPUT SHAFT	16mm SH.	107 712 0	1	35.00
72	INPUT SHAFT	14mm SH.	107 704 X	1	35.00
71	KEY	1/4X1/4X1 11/16 in.	92001004	1	.45
70*	OIL SEAL	AS30X42X7mm	010 655 0	1	3.25
67	INPUT COVER		101 972 4	1	68.50
65*	BALL BEARING	6306-2Z	010 533 3	2	13.00
64	SNAPRING	72X2.5mm	010 322 5	1	1.00
63	BOLT	M12X30mm	010 122 2	4	.30
62	OIL SEAL	A30X72X10mm	010 620 8	1	4.00
61	KEY 28mm SH.	A6X6X28mm	010 014 5	1	.25
61	KEY 18mm SH.	A4X4X20mm	010 003 X	1	.10
61	KEY 16mm SH.	A4X4X18mm	011 438 3	1	.10
61	KEY 14mm SH.	A3X3X14mm	010 069 2	1	.25
60	SNAPRING 28mm SH.	28X1.5mm	010 276 8	1	.20

*RECOMMENDED SPARE PARTS

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PHONE 415-487-3560

IMPORTANT:

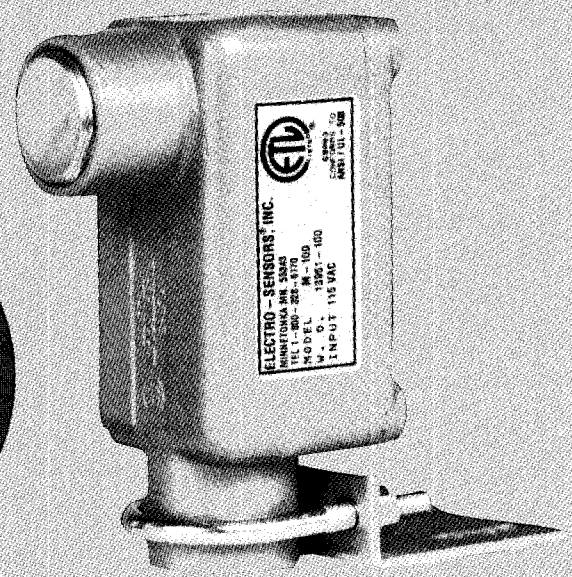
WHEN ORDERING PARTS, SUPPLY NAMEPLATE DATA:

1. S.O.# OR SERIAL #.
2. MODEL #.

MINIATURE Speed Switch M100/M5000

ELECTRO•SENSORS

Self-Contained System with Sensor and Switch



Features:

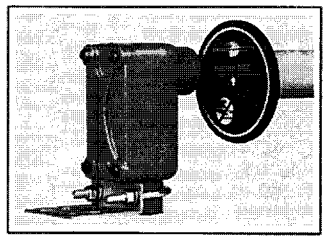
- **Easy Installation**
- **Dust, Dirt, Grease Proof**
- **Cast Aluminum Explosionproof Housing, UL, CSA Rated**
- **Fail-Safe Wiring**
- **Optional Split Collar Pulser Wrap**
- **Corrosion Resistant Switches Model M100/M5000-PVC also Available**
- **ETL® Approved to UL® 508 Standard**

Description:

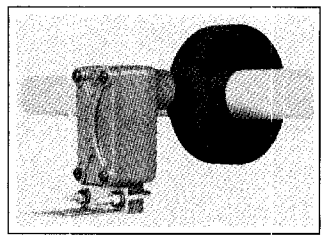
The M100/M5000 Miniature Set Point Slow Down Switches are self-contained rotation monitoring systems that are ideal for detecting the unwanted slow down of process equipment. The M-Series system is commonly applied to: drive trains, power driven components, crushers, exhaust fans, screw conveyors, or to monitor tail pulleys on belt conveyors and elevators. In the event of rotational failure, such as broken drives, belt slippage, overloads, clogs and jams, the SPDT 5-Amp control relay can be used to provide equipment shut down and/or alarm. This detection of a developing problem helps prevent equipment damage, product waste, and excess down time. Electro-Sensors switches are the simple way to detect problems and trouble early.

Principle of Operation:

The M-Series Switches contain a sensor and switching electronics within the same heavy-duty explosionproof housing. A pulser disc, or an optional pulser wrap, rotating in front of the sensing surface produces a control signal which increases with advancing shaft speed. When the control signal is above the set point setting, the control relay is energized. When the control signal drops below the set point setting, the relay deenergizes. The relay has Form C Dry Contacts rated at 5 amps 115 Vac resistive, so the M100/M5000 may be used for switching motors and/or alarms.



Speed Switch and Pulser Disc



Speed Switch and Optional Pulser Wrap

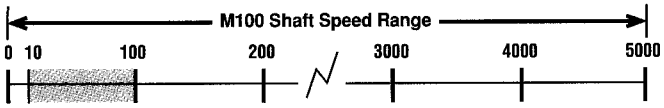
Pulser Disc:

The end of the shaft to be monitored must be center drilled to a depth of 1/2-inch with a No. 21 drill and tapped for 10-32UNF. After applying Loctite® or a similar adhesive on the threads to keep the pulser disc tight, the pulser disc should be attached, decal side out, with the supplied 10-32UNF machine screw and lock washer.

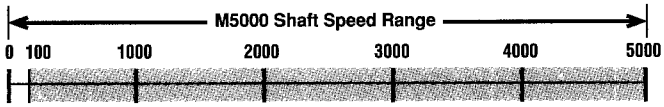
Pulser Wrap (optional):

Pulser Wraps are custom manufactured to fit the shaft they will be mounted on. When the wrap is shipped, four allen-head cap screws hold the two halves of the wrap together. These screws must be removed so that the wrap is in two halves. Place the halves around the shaft, reinsert the screws and torque them to 8 foot pounds.

Switch Selection Table:
Table 1



M100 Adjustable Set Point Range 10 – 100 RPM



M5000 Adjustable Set Point Range 100 – 5000 RPM

Sensing Surface Gap Distance Table:
(See Figures 1 and 2, below)

Model No.	Dimension "A" (inches)	Dimension "B" (inches)
M100	1/16 to 1/4	1-3/4
M5000	1/16 to 1/4	7/8

Note that the pulser disc supplied with the M100 switch is 4 inches in diameter, and the M5000 disc is 2-1/2 inches in diameter.

Switch Selection Guide:

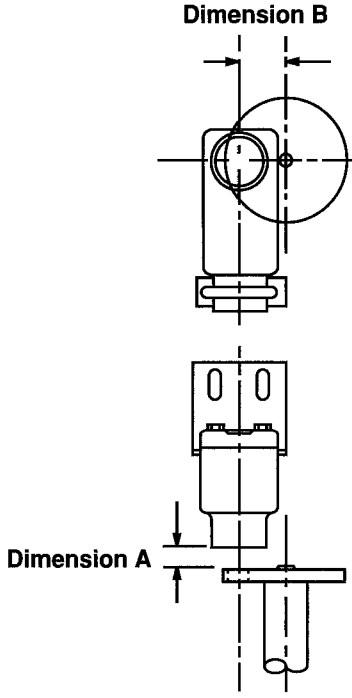
Refer to the Switch Selection Table, to determine which model is appropriate for your application. The primary difference between the M100 and the M5000 is the set point range. The actual operating speed of the monitored shaft can range from 10 to 5000 rpm with either switch. The main criteria for selecting a speed switch is the speed at which the relay energizes and deenergizes.

The M100 can be adjusted to trip from 10 rpm to 100 rpm. The M5000 can be adjusted to trip from 100 rpm to 5000 rpm. For further help in selecting a switch appropriate to a specific application, consult an Electro-Sensors, Inc. Application Specialist.

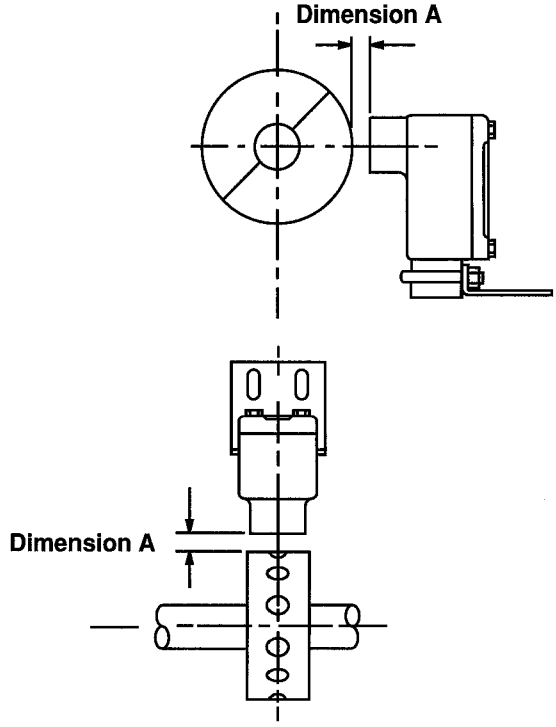
Set Point Adjustment:

Complete the installation of the pulser disc or wrap and the speed switch with the correct gap distance "A" before adjusting the set point. The unit is shipped with the circuit potentiometer set for its lowest set point speed (turned all the way counterclockwise). The potentiometer is a single-turn type; turning it will make the device trip at speeds above the lowest setting (See fig. 3).

Speed Switch and Disc:
Figure 1



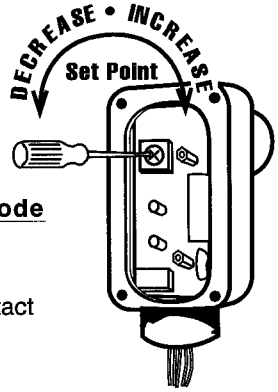
Speed Switch and Wrap:
Figure 2



Calibration:

Remove the back cover of the speed switch. Apply 115 Vac power to the speed switch on the black and white leads. With the shaft turning at normal operating speed, turn the potentiometer clockwise until the relay deenergizes. Turn the potentiometer counterclockwise 1/4-turn, which will energize the relay. With this setting, the M-Series Switch will deenergize its relay when the shaft speed slows below normal operating speed. Turning the potentiometer further counterclockwise will make the unit less sensitive to a slowdown in speed. The green LED is illuminated when the relay is energized.

Set Point Adjustment:
Figure 3



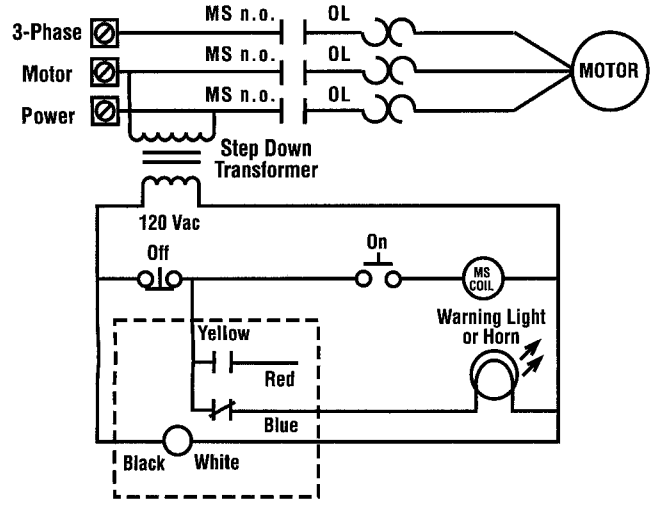
Lead Wire Color Code

Black	115 Vac
White	115 Neutral
Yellow	Common Contact
Red	N.O. Contact
Blue	N.C. Contact

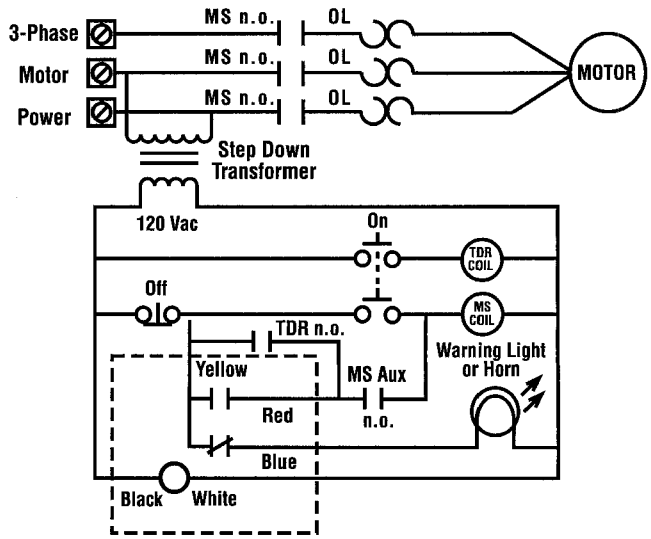
Wiring Diagrams:

These are typical wiring diagrams. Other circuits may be used and some equipment may require different wiring.

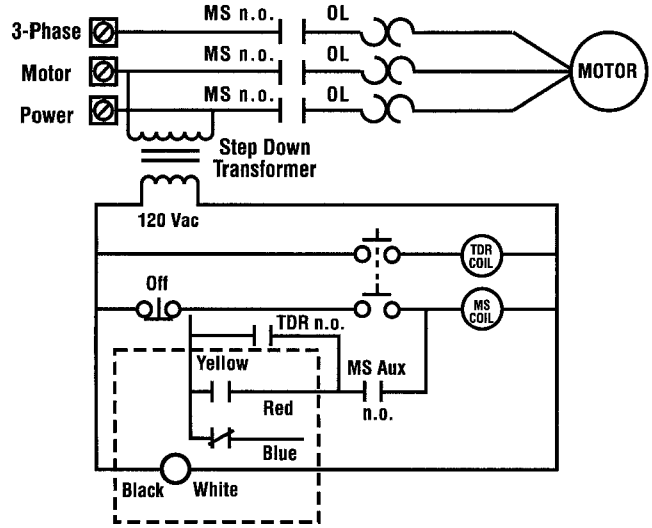
Alarm only Circuit
Miniature Speed Switch • M100/M5000



Motor Shutdown with Alarm
Miniature Speed Switch • M100/M5000



Motor Shutdown Control, No Alarm
Miniature Speed Switch • M100/M5000



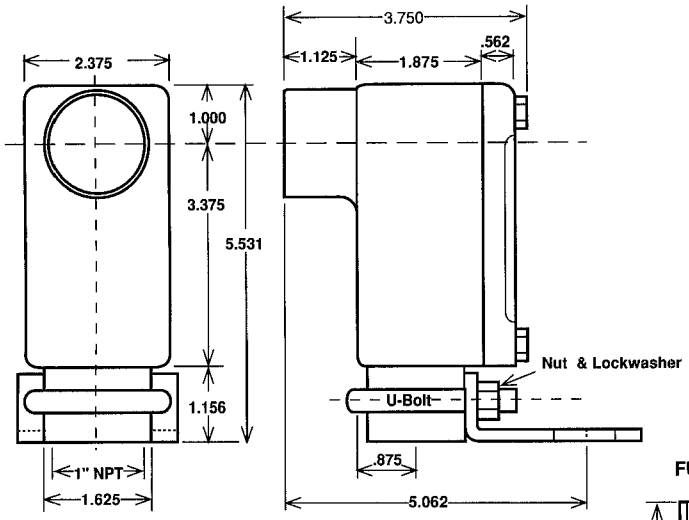
Wiring Diagram Key:

MS Motor Starter (not supplied)
OL Overload contacts
n.o. Normally open (relay is in a deenergized state).
TDR Time Delay "OFF" Relay not supplied)
If the shaft being monitored comes up to speed slowly, a TDR can be used so the operator will not have to hold the START button in.

WARNING

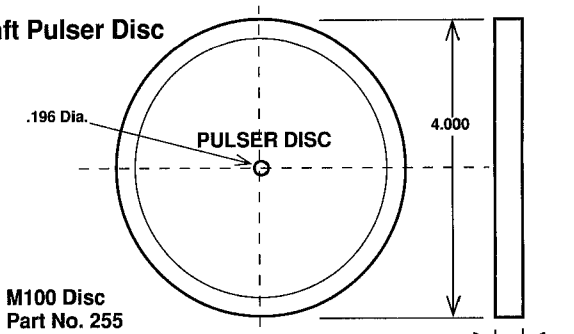
During a stopped condition, even a slight movement of the shaft or magnetic disc could energize the control relay and start the motor if the Motor Auxiliary Normally Open Contact (MS Aux n.o.) is not wired in series as shown in these typical wiring diagrams. This situation could cause equipment damage or PERSONAL INJURY! To prevent starting the motor accidentally, ALWAYS USE PROPER LOCK-OUT – TAG-OUT PROCEDURES.

M100/M5000 Dimensional Drawings: Dimensions in Inches

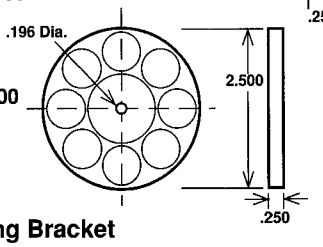


Speed Switch Dimensions are ±.062

End of Shaft Pulser Disc

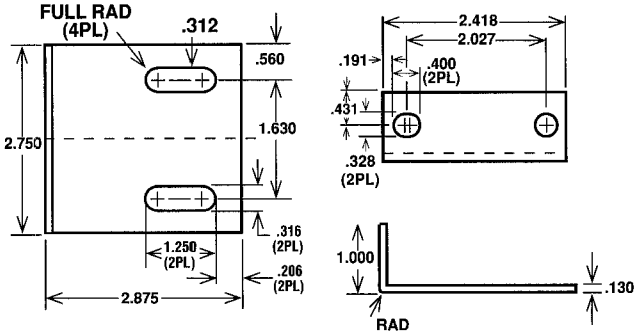


M100 Disc
Part No. 255
Stock No. 700-000200



M5000 Disc
Part No. 256
Stock No. 700-000300

Mounting Bracket



M-Series Speed Switch

M100
Part No. M100 Switch Only
Stock No. 775-007700

M5000
Part No. M5000 Switch Only
Stock No. 775-007800

M100/M5000 General Specifications:

Power Required	115 Vac, 60 Hz
Set Point Relay	SPDT, isolated, 5 amp, 115 Vac, resistive
Mounting	Bracket furnished
Pulser Disc	M100: 4-inch diameter, Ferrous Nylon® M5000: 2.5-inch diameter, PVC
Sensing Head	Integral
Electrical Connections	Hand Splice, 12-inch length
Housing and Cover	Cast Aluminum, C.S.A. approved, U.L. rated: Class I Group D. Class II Group E, F, G. Class III.
Set Point Range	M100: 10 – 100 rpm, M5000: 100 – 5000 rpm
Set Point Accuracy	±0.5%
Set Point Adjustment	1-turn potentiometer
Gasket (optional)*	Provided for Waterproofing
Operating Temperature	-40°C to 60°C
Storage Temperature	-65°C to 60°C
Electronics	ETL® Approved to UL® 508 Standard
Shipping Weight (System)	3 lb.

Spare Parts List	Stock No.	Part No.
Pulser Disc (M100)	700-000200	255
Pulser Disc (M5000)	700-000300	256
Internal Electronics (M100)	750-041300	951
Internal Electronics (M5000)	750-041310	952
Waterproofing Gasket*	295-000500	
Pulser Wraps	Consult Factory	

**Negates Explosionproof Rating*

Specifications Subject to Change Without Notice.

Troubleshooting Guide:

Symptom: Relay will not Energize

Probable Causes:	Possible Solutions:
1. AC power is not applied to the M100/M5000 correctly.	See page 3, Figure 3
2. Switch is not aligned, or gapped properly.	See page 2, Figures 1 and 2
3. The set point potentiometer is not turned fully counterclockwise.	See page 3, Calibration
4. Shaft is not turning faster than the set point.	Check actual RPM

CALL TOLL FREE FOR MORE INFORMATION
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FAX. NO. 612/930-0130

INSTRUCTION MANUAL FOR DODGE® SETSCREW, ECCENTRIC COLLAR, D-LOK, H, H-E SERIES & EZ-KLEEN MOUNTED BALL BEARINGS

INSTALLATION

WARNING

To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Failure to observe these precautions could result in bodily injury.

Under certain operating conditions it is possible for a static electric charge to build-up on E-Z KLEEN® Polymer Housings. Do not operate these bearings in any environment where a sudden static discharge may cause either an operating hazard or personnel discomfort.

1. Clean shaft and bearing bore thoroughly. Measure and confirm shaft size and tolerance. File flats on shaft at setscrew locations to permit easy removal of bearing.
2. Slip bearing into position. Be sure that bearing is not on a worn section of the shaft. For tighter fits, tap inner ring face only with soft driver. DO NOT HAMMER ON HOUSING.
3. The bearing outer ring OD is spherical and swivels in the housing to accommodate misalignment. Snug hold-down bolts and use shaft to swivel each bearing until its final position is in the center of free movement top to bottom as well as side to side. Pass shaft through both bearings without forcing. This will prevent preloading of the bearings. Housing slippage depends on the mounting hold-down bolt tightening torque, number of bolts and friction characteristics between mounting surfaces. Auxiliary load carrying devices such as shear bars are advisable for side or end loading of pillow blocks and radial loads for flange units where normal to heavy loading or shock loading is encountered.
   NOTE: On coated and non-metallic housings, hold-down bolts should be tightened carefully with flat washers to prevent damage to the coating. Coated housings have reduced friction characteristics, so auxiliary load carrying devices are even more important in those applications.
4. Tighten hold-down bolts to proper torque (Table 1). Turn shaft by hand. Resistance to turning should be the same as before full tightening of hold-down bolts.
5. For setscrew mounted bearings: **After final alignment of the shaft, tighten both setscrews hand tight**, then the setscrews should be tightened alternately and in small increments to the torque specified in Table 1. After 24 hours operation, the setscrews should be retightened to the torque in Table 1 to assure full locking of the inner race to the shaft. Care should be taken that the socket key or driver is in good condition with no rounded corners and the key is fully engaged in the setscrew and held square with the setscrew to prevent rounding out of the setscrew socket when applying maximum torque. Do not drill through the setscrew holes for spot drilling of the shaft. (Some inner rings have tempered setscrew threads and can be damaged by a drill.) If spot drilling is required, locate bearings on the shaft and center punch through the setscrew hole. Remove bearing and spot drill the shaft, then reassemble over the spot drilled position and assemble as above. Milled or filed flats are preferable to spot drilling.
   NOTE: On all SC Product the setscrews can be re-torqued many times without damage to the bearing system. To achieve maximum shaft holding power it is highly recommended that setscrews be replaced with new hardware after any disassembly operation.
6. For eccentric collar mounted bearings, slide collar against cam end of inner race. Use a punch in the hole provided in the collar, tap collar smartly in the direction of shaft rotation. Tighten setscrews to proper torque (Table 1). To remove bearings, loosen setscrew and tap collar in the direction opposite of shaft rotation.
7. For D-LOK mounted bearings, be sure collar is square and tight against shoulder on inner ring. Tighten cap screw to recommended torque shown in Table 1.
8. For expansion bearings (H-E Series), locate inner unit in housing to allow expansion in the desired direction before locking to the shaft.

SETSCREWS					D-LOK			MOUNTING BOLTS					
		Recommended Torque						Metal Housings		EZ-KLEEN Housed Bearings			
Setscrew Size	Key Hex Across Flats	Standard Ball Bearing Insert Min	Standard Ball Bearing Insert Max	Corrosion Resistant-Stainless Steel	Cap Screw Size	Recommended Torque	E-Z Kleen Recommended Torque	Bolt Size	Recommended Dry Torque (Grade 2)	2-Bolt PB, 2 & 4-Bolt Fig. And Fig. Brackets Bolt Size	2-Bolt PB, 2 & 4-Bolt Fig. And Fig. Brackets Torque*	Tapped-Base PB Bolt Size	Tapped-Base PB Torque**
(in.)	(in.)	(in-lbs.)	(in-lbs.)	(in-lbs.)	(in.)	(in-lbs.)	(in-lbs.)	(in.)	(in-lbs.)	(in.)	(in-lbs.)	(in.)	(in-lbs.)
#10	3/32	28	33	25	#8-32	58	46	3/8-16	240	3/8-16	225	3/8-16	175
1/4	1/8	66	80	60	#10-32	90	72	7/16-14	384	7/16-14	350	7/16-14	350
5/16	5/32	126	156	117	1/4-28	180	144	1/2-13	600	1/2-13	500	1/2-13	400
3/8	3/16	228	275	206	5/16-24	400	320	5/8-11	1200	9/16-12	650		
7/16	7/32	342	428	321	3/8-24	750	600	3/4-10	1950	5/8-11	1000		
								7/8-9	2890				
(mm)	(mm)	(N-m)	(N-m)	(N-m)	(mm)	(N-m)	(N-m)	(mm)	(N-m)	(mm)	(N-m)		
M5	2.5	3.2	3.7	2.8	M4	5.85	4.68	M10	29	M8	15		
M6	3	6.2	7.7	5.8	M5	10.75	8.6	M12	50	M10	25		
M8	4	14.2	17.8	13.4	M6	20.5	16.4	M16	124	M12	50		
M10	5	26	31	23	M8	45	36	M20	238	M14	75		
M12	6	46	57	43				M22	322	M16	125		

*Torque for Austenitic (18-8) Stainless

**Max. torque values published. Do not exceed.

LUBRICATION

High Speed Operation — In the higher speed ranges, too much grease will cause over-heating. The amount of grease that the bearing will take for a particular high speed application can only be determined by experience. If excess grease in the bearing causes overheating, it will be necessary to remove grease fitting to permit excess grease to escape. The bearing has been greased at the factory and is ready to run. When establishing a relubrication schedule, note that a small amount of grease at frequent intervals is preferable to a large amount at infrequent intervals.

Lubrication Guide

Use a No. 2 Lithium complex base grease or equivalent.*

Hours Run per Day	Suggested Lubrication Period in Weeks							
	1 to 250 RPM	251 to 500 RPM	501 to 750 RPM	751 to 1000 RPM	1001 to 1500 RPM	1501 to 2000 RPM	2001 to 2500 RPM	2501 to 3000 RPM
8	12	12	10	7	5	4	3	2
16	12	7	5	4	2	2	1	1
24	10	5	3	2	1	1	1	1

* For H and H-E series bearings, use Exxon Unirex N3 or equivalent suitable to 300° F.

Lubrication recommendations are intended for standard products applied in general operating conditions. For modified products, high temperature applications, and other anomalous applications contact product engineering at 864-284-5700

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2/05

IM 499498

REPLACEMENT PARTS FOR DODGE® MOUNTED BALL BEARINGS

Series	203	204	205	206	207	208	209	210	211	212	214	215	216	218	Series
Lube Fitting	405020★	405020★	405015★	405015★	405015★	405015★	405015★	405015★	405015★	405015★	405015★	405015★	405015★	405015★	Lube Fitting
Locking Screw @	—	—	400080	400655	400655	—	—	—	—	—	—	—	—	—	Locking Screw @
Pil Blk Hsg	123840	131826	131827	044060	123844	123845	044067	044062	044063	044064	126825	126826	126827	044104	Pil Blk Hsg
Ni Pl Pil Hsg	—	131823	131824	123850	123851	123852	—	123853	—	—	—	—	—	—	Ni Pl Pil Hsg
U Pil Blk Hsg	—	—	—	123876	—	—	—	—	—	—	—	—	—	—	U Pil Blk Hsg
B Pil Blk Hsg	—	131828	131829	123889	123890	123884	123890	123891	123892	123893	—	—	—	—	B Pil Blk Hsg
Tapped Base Pb Hsg	—	124485	124486	124487	124488	—	—	—	—	—	—	—	—	—	Tapped Base Pb Hsg
CC Fan & Blower PB Hsg	—	—	134150	134151	134152	—	134153	134154	134155	—	—	—	—	—	CC Fan & Blower PB Hsg
Snap Wire for CC F & B Hsg	—	—	134180	134181	134182	—	134183	134184	134185	—	—	—	—	—	Snap Wire for CC F & B Hsg
SL & SLX Pil Blk Hsg Strap	—	128020	128022	128024	128026	—	—	—	—	—	—	—	—	—	SL & SLX Pil Blk Hsg Strap
SL & SLX Pil Blk Hsg Base	—	128021	128023	128025	128027	—	—	—	—	—	—	—	—	—	SL & SLX Pil Blk Hsg Base
SC & SCM Pil Flg Hsg	—	—	—	126266	124222	126210	044079	044080	044081	126213	126214	—	126215	044082	SC & SCM Pil Flg Hsg
SC, VSC, SCM 4B Flg Hsg	124200	044070	124302	044072	124304	124305	044074	044096	044077	124309	126220	126223	126221	044078	SC, VSC, SCM 4B Flg Hsg
SC, Ni. Pl. 4B Flg Hsg	—	124379	124380	124381	124382	124383	—	124384	—	—	—	—	—	—	SC, Ni. Pl. 4B Flg Hsg
SXR & SXV 4B Flg Hsg	131292	131293	131294	131295	131296	131297	131298	131299	131300	131301	—	—	—	—	SXR & SXV 4B Flg Hsg
SCLF 3B Flg Hsg	124690	124681	124682	124683	124684	—	—	—	—	—	—	—	—	—	SCLF 3B Flg Hsg
SL & SLX 3B & 4B Flg Hsg (2 req)	—	128010	128011	128012	128013	128014	—	128015	128016	—	—	—	—	—	SL & SLX 3B & 4B Flg Hsg (2 req)
SCFB Flg Bkt Hsg	—	124494	124495	124496	124497	—	—	—	—	—	—	—	—	—	SCFB Flg Bkt Hsg
SC & SCM 2B Flg Hsg	124314	044069	124318	044071	124318	124319	044073	044075	044459	—	—	—	—	—	SC & SCM 2B Flg Hsg
SC Ni. Pl. 2B Flg Hsg	—	124355	124356	124357	124367	124368	—	124369	—	—	—	—	—	—	SC Ni. Pl. 2B Flg Hsg
SXR & SXV 2B Flg Hsg	131280	131281	131282	131283	131284	131285	131286	131284	—	—	—	—	—	—	SXR & SXV 2B Flg Hsg
SCLFT 2B Flg Hsg	124700	124701	124702	124703	124704	—	—	—	—	—	—	—	—	—	SCLFT 2B Flg Hsg
SL & SLX 2B Flg Hsg (2 req)	—	128100	128101	128102	128104	—	—	—	—	—	—	—	—	—	SL & SLX 2B Flg Hsg (2 req)
Reg. TU Hsg	—	125300	125301	125302	125303	125304	044083	044085	044105	044087	—	—	—	—	Reg. TU Hsg
Ni. Pl. TU Hsg	—	125285	125286	125287	125288	125289	—	125290	—	—	—	—	—	—	Ni. Pl. TU Hsg
Wide Slot TU Hsg	—	125314	125315	125316	125317	125318	044084	044086	044106	044088	135160	125323	135061	—	Wide Slot TU Hsg
Top Angle TU Hsg	—	—	—	—	—	—	—	044085	044066	044067	136050	012283	136061	044068	Top Angle TU Hsg
Hanger Hsg Brg	—	—	—	044089	124334	—	—	044103	—	—	—	—	—	—	Hanger Hsg Brg
Screw Conv Hsg	—	—	—	—	—	124348	—	124349	—	124352	—	—	124353	—	Screw Conv Hsg
Cyl Unit Hsg	—	—	044107	044108	044109	—	—	—	—	—	—	—	—	—	Cyl Unit Hsg

★ One required for PB, Flgs., & Hgr Bgs. Cylindrical Units, SCLF and SCLFT require 1 Part No. 405020. T.U. Bigs require 1 Part No. 405016.
@ One required for Cylindrical Units only.

INSERTS Series	203			204				205				206				207					208			INSERTS Series
SC	½	⅝	17 mm	½	⅝	¾	20 mm	⅞	15/16	1	25 mm	1 1/16	1⅛	1 3/16	1¼	30 mm	1 1/16	1 1/16	1⅛	1 3/16	35 mm	1½	1⅝	40 mm	SC
Part No.	123253	123254	125800	123330	123331	123332	125802	123333	123334	123335	125804	123336	123337	123338	123459	125806	123339	123340	123341	123358	125808	123342	123343	125810	Part No.
VSC/SL	—	—	—	—	—	¾	—	—	—	1	—	—	—	1 3/16	1 1/16	—	1 1/16	—	—	1 3/16	—	1 1/16	—	—	VSC SL
Part No.	—	—	—	—	—	389925	—	—	—	389926	—	—	—	389927	389934	—	389928	—	—	389929	—	389930	—	—	Part No.
SCM	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	25 mm	—	—	—	—	30 mm	1 1/16	1 1/16	35 mm	SCM
Part No.	—	—	—	—	—	—	—	—	—	—	—	—	—	123419	—	125824	—	—	—	—	125826	123353	123342	125828	Part No.
CC F & B	—	—	—	—	—	—	—	—	15/16	1	—	—	1 1/16	1 1/16	—	—	1 1/16	—	1 3/16	1 1/16	—	—	—	—	CC F & B
Part No.	—	—	—	—	—	—	—	—	134161	134162	—	—	134164	134165	—	—	134166	—	134168	134169	—	—	—	—	Part No.
SXR	½	⅝	—	—	—	¾	—	⅞	15/16	1	—	1 1/16	1 1/16	1 1/16	—	—	1 1/16	1 1/16	1 3/16	1 1/16	—	1 1/16	—	—	SXR
Part No.	131900	131902	—	—	—	131904	—	131906	131907	131908	—	131909	131910	131911	—	—	131912	131913	131914	131915	—	131916	—	—	Part No.
SXV/SLX	—	—	—	—	—	¾	—	⅞	15/16	1	—	1 1/16	1 1/16	1 1/16	1¼	—	1 1/16	1 1/16	1⅜	1 3/16	—	1 1/16	—	—	SXV SLX
Part No.	—	—	—	—	—	131435	—	131436	131437	131438	—	131439	131440	131441	131442	—	131443	131444	131445	131446	—	131447	—	—	Part No.

Series	209			210			211			212			214			215			216			218			Series
SC	—	1 1/16	1⅛	45 mm	1 3/16	2	50 mm	2 1/16	2 1/16	55 mm	—	2 1/16	60 mm	—	2 3/16	65 mm	2 5/16	70 mm	—	—	—	—	—	—	SC
Part No.	—	123344	123345	125812	123346	123347	125814	123348	123349	125816	—	123350	125818	—	123326	125820	123352	125822	—	—	—	—	—	—	Part No.
VSC/SL	—	—	—	—	1 3/16	2	—	2 1/16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	VSC SL
Part No.	—	—	—	—	389931	389932	—	389933	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Part No.
SCM	—	1 1/16	—	40 mm	1 3/16	1¾	45 mm	1 3/16	2	50 mm	2 1/16	2 1/16	55 mm	2 1/16	2 1/16	60 mm	2 1/16	65 mm	2 5/16	3	75 mm	3 1/16	3 1/16	85 mm	SCM
Part No.	—	123354	—	125830	123355	123356	125832	123357	123358	125834	123359	123360	125836	123361	123362	125838	123363	125840	123364	123365	125842	123366	123367	125844	Part No.
CC F & B	—	1 1/16	1¼	—	1 3/16	—	—	2 1/16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	CC F & B
Part No.	—	134170	134171	—	134172	—	—	134174	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Part No.
SXR	1⅛	1 1/16	1 1/16	—	1 3/16	2	—	2 1/16	—	—	2 1/16	2 1/16	—	—	—	—	—	—	—	—	—	—	—	—	SXR
Part No.	131918	131919	131920	—	131923	131924	—	131927	—	—	131928	131931	—	—	—	—	—	—	—	—	—	—	—	—	Part No.
SXV/SLX	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	SXV SLX
Part No.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Part No.

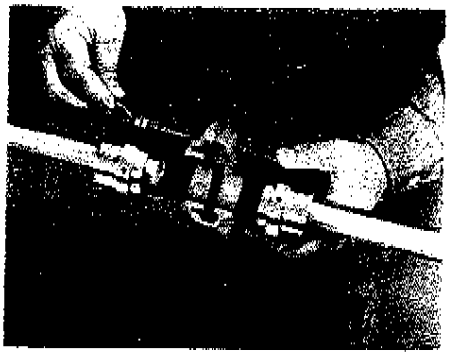
SC Screw Conv	1 1/16	1 3/16	1 5/16	1 7/16	1 1/16	2	2 3/16	2 1/16	2 3/16	3
Hanger Bigs	123445	123076	123409	123077	123447	123448	123413	123451	123452	123416	123456	123457

* 1⅛ SCM Piloted Flange uses 123342.
◆ 1⅛ Piloted Flange only.

REX OMEGA COUPLINGS

INSTALLATION . . . AS SIMPLE AS PEELING AN ORANGE

Mount one hub to shaft, leave other hub loose for adjustment of spacing.



Place half of the elastomer element around hubs and secure with self-locking cap screws. Elastomer element will space the other hub. Now secure hub.

Mount other half of the elastomer element. Tighten all cap screws and you're done!

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