



502-250-008

SERVICE MANUAL

AND

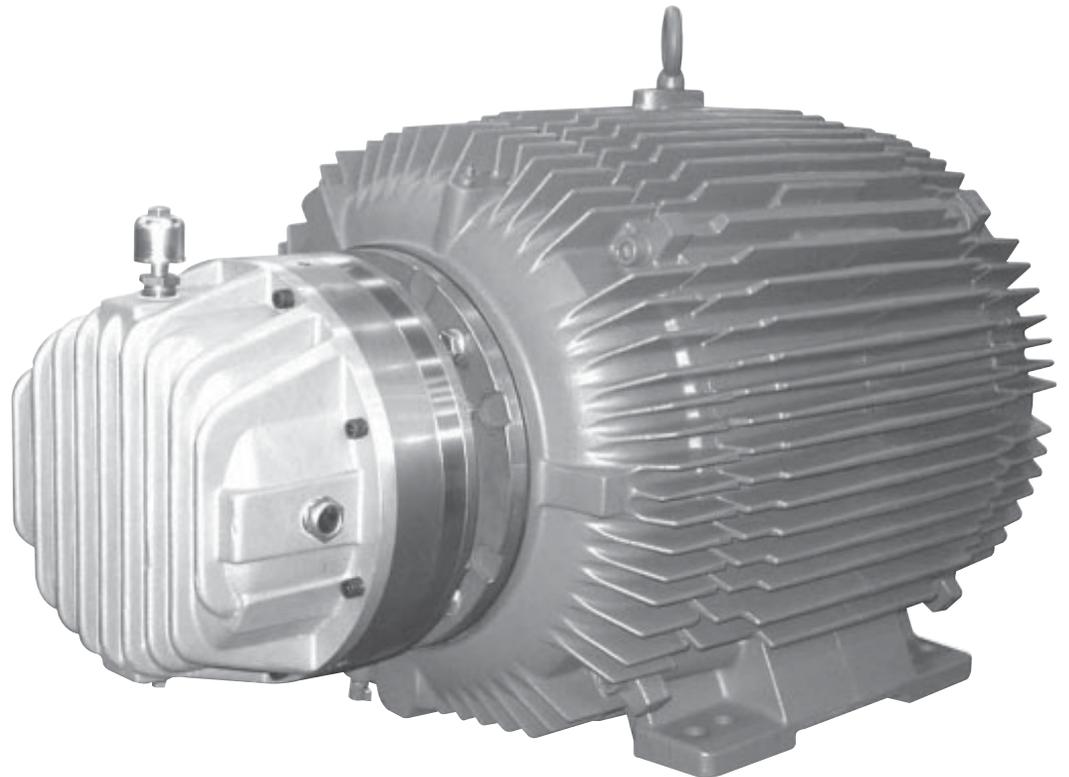
REPAIR PARTS

FOR

Models: MB-250, MB-280

and MB-320

Posistop[®] MOTOR BRAKE



FORCE CONTROL INDUSTRIES, INC.

WARNING - Read this manual before any installation, maintenance and operation.

**MANUFACTURERS OF MECHANICAL
POWER TRANSMISSION EQUIPMENT**

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Section 1

DESCRIPTION and OPERATION

1-1 THE OIL SHEAR PRINCIPAL

Conventional clutches and brakes depend on the friction between solid surfaces operating in air to transmit torque. Friction does the job, but produces a great amount of *HEAT and WEAR*, causing an increase in replacement parts, breakdown and maintenance time.

OIL SHEAR TECHNOLOGY was pioneered by Force Control in 1959 and resulted in one of the most energy efficient Brake/Clutch/Variable Speed Drive Systems available today.

In 1970 Force Control introduced an Integral Oil Pump, which requires no additional parts. This oil pump forces a positive oil feed from the center of the brake disc stack to "Float" the friction surfaces in a continuously circulating bath of oil.

The oil molecules tend to cling to each other and also to the friction surfaces. As moving and stationary surfaces are brought together, a thin but positive film of oil is maintained between them and is controlled by the clamping pressure and grooves designed into the braking surfaces.

TORQUE is transmitted from one surface to the other through the viscous shear of the oil film. The braking surfaces are protected by this oil film, which reduces wear and effectively transmits heat away from the braking surfaces.

...thus brake wear is greatly reduced along with all routine maintenance common to conventional dry motor brakes.

A PERIODIC OIL CHANGE IS ALL THAT IS REQUIRED FOR NORMAL MAINTENANCE.

1-2 DESCRIPTION

Posistop Motor Brakes are multiple surface, spring activated, pneumatic release braking devices that effectively dissipate the heat generated from electric motors requiring frequent starting and stopping,

FORCE CONTROL provides 6 models of *Posistop* Motor Brakes to meet your individual requirements for deceleration torque, thermal dissipation and static torque.

This Manual covers the 3 largest sizes or models MB-250, MB-280 and MB-320. For information on other sizes and models not covered in this manual, contact Force Control Factory or your Force Control Representative

1-3 FEATURES (See Figure 1.1)

1. NEMA-C STANDARD FLANGE MOUNTING to any suitable double shaft drive motor.
2. "COLLET" LOCKING ELEMENT for a positive self locking, keyless hub mounting with high torque transmitting capabilities.
3. "COLLET" ADVANTAGES:
 - a. CONVENIENT EASY MOUNTING - No press fits or costly machining necessary. Allows use of commercial tolerance motor shafts.
 - b. EASY RELEASING AT DISASSEMBLY.
 - c. TOTALLY SELF CENTERING.
 - d. FULL SHAFT STRENGTH - Since no metal is removed, stress concentrations are avoided permitting shafts to retain their full strength.
4. INTERNAL CENTRIFUGAL TYPE OIL PUMP - Maintains positive oil film between braking surfaces without external pumping devices.
5. MULTIPLE BRAKING DISC STACK - At the heart of your *Posistop* Motor Brake is a multiple braking disc stack consisting of drive plates, keyed to the piston housing and friction discs, splined to the drive hub.

ASA RESULT, THE TORQUE is distributed along the hub rather than on a single braking surface reducing the heat and wear on each brake disc.

1-4 OPERATION

The *Posistop* Motor Brake Cross Section (Figure 1.1) shows the brake in the normally spring loaded braking position.

Compressed air, controlled by external valving, enters the piston housing and moves the piston to disengage the multiple braking disc stack, allowing the drive motor to rotate freely.

When the air pressure is released the piston (spring loaded) returns to the normal braking position.

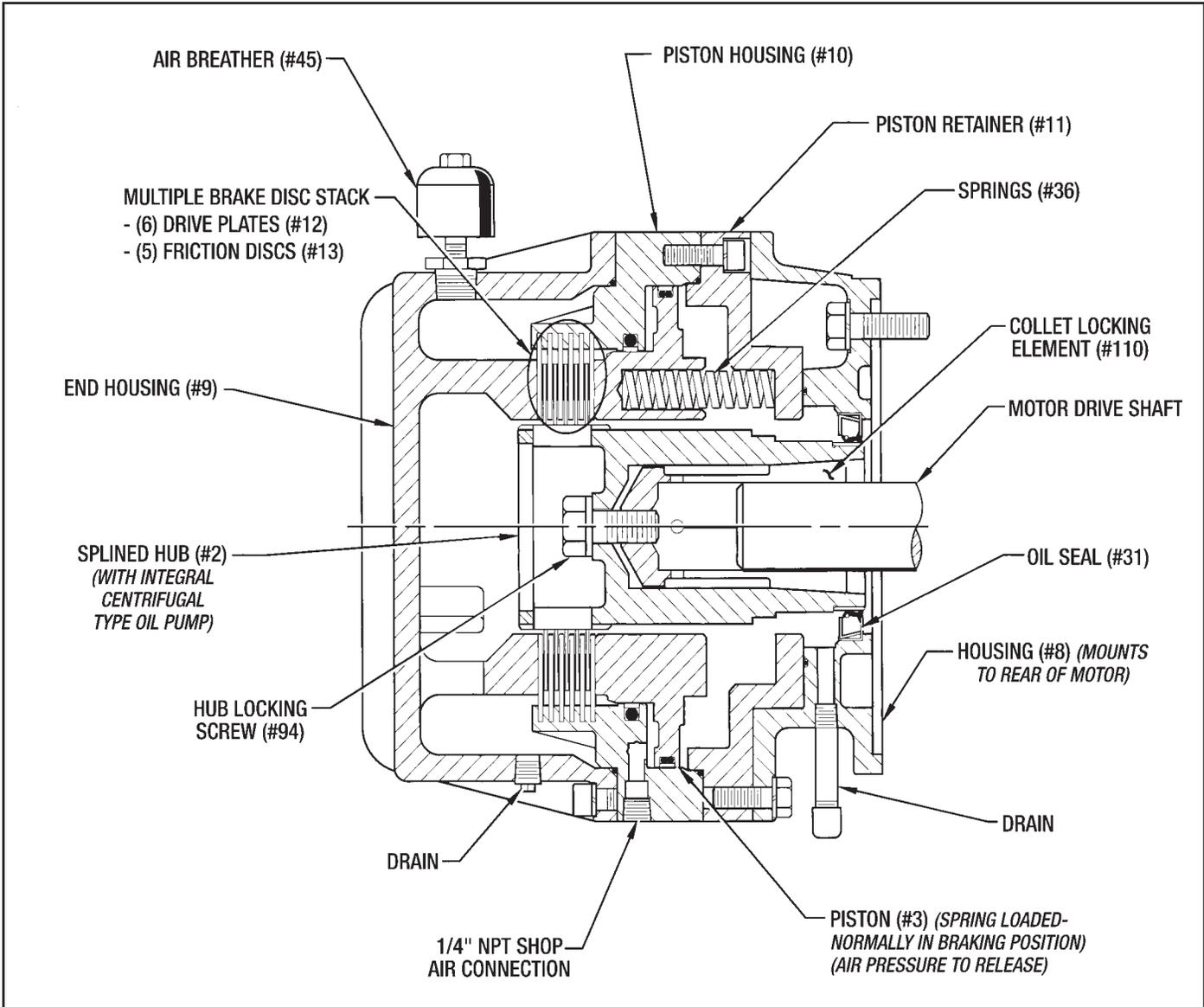


Figure 1.1
MOTOR BRAKE CROSS SECTION

Section 2 SPECIFICATIONS

2-1 DIMENSIONAL SPECIFICATIONS

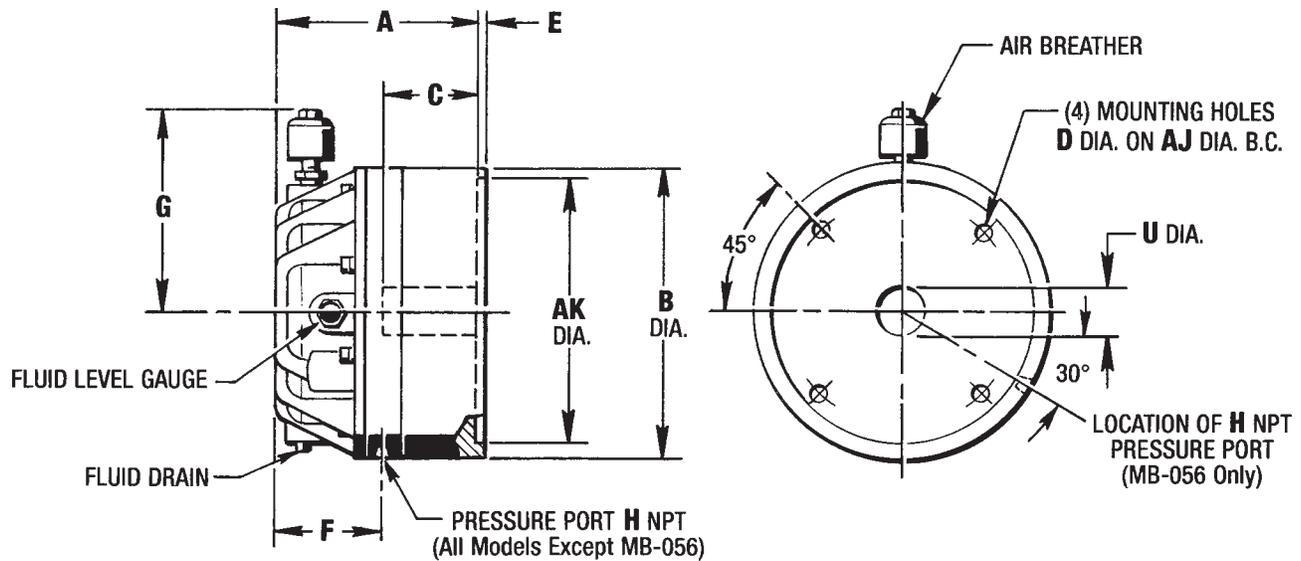


Figure 2.1
DIMENSIONAL DRAWING

MODEL NUMBER	DIMENSIONS (Inches)											APPROX OIL CAP Qts.	WEIGHT Lbs.
	A	B	C		D	E	F	G	U	AJ	AK		
			MIN.	MAX.									
MB-250	10	10 7/8	2	4 1/8	1/2-13	3/16	5 3/8	6 3/4	1 1/8	7 1/4	8 1/2	2	100
									*1 3/8				
									1 5/8				
MB-280	10	10 7/8	2	4 1/8	1/2-13	3/16	5 7/16	6 3/4	1 3/8	9	10 1/2	2	108
									*1 5/8				
									1 7/8				
MB-320	10 5/8	12 7/8	2 1/2	4 5/8	5/8-11	3/16	6 1/16	7 1/2	1 3/8	11	12 1/2	3	160
									*1 5/8				
									1 7/8				

Table 2.1

NOTES :

Consult the Force Control Factory or your Force Control Representative for Non-Standard Bore Sizes not listed and for Thru Shaft Configurations.

Dimensions are subject to change without notice. Certified Installation Drawings are available upon request.

* - Standard Shaft Diameter.

2-2 TORQUE SPECIFICATIONS

TORQUE CAPACITY

Given are 2 different Assembly Configurations (A and B) for the Drive Plates #12 or #18 and the Friction Discs #13. Different Assembly Configurations are used to obtain different Torque Capacity Requirements. Refer to Table 2.2 below for your Torque Requirements and other related specifications.

See 3-6 INSTALLATION OF DRIVE PLATES AND FRICTION DISCS located in Section 3, Page 8 for assembly procedure.

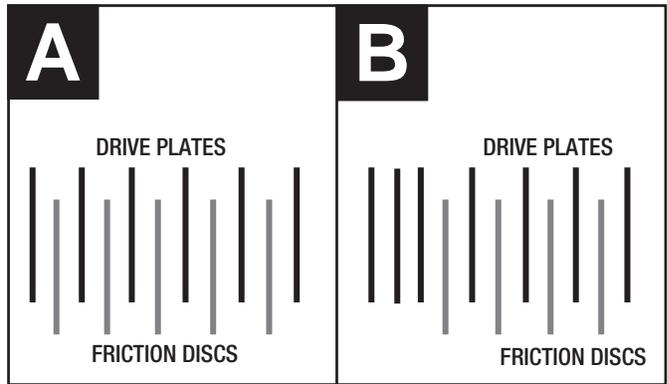


Figure 2.2
TORQUE ASSEMBLY CONFIGURATIONS

MOTOR BRAKE TORQUE SPECIFICATIONS

MODEL NUMBER	NOMINAL STATIC TORQUE Lb. Ft.	NOMINAL DYNAMIC TORQUE Lb. Ft.	PRESSURE TO RELEASE PSI	NUMBER OF SPRINGS	TORQUE ASS'Y. CONFIG. Above	THERMAL RATING HP Sec/Min	CYCLE WK ² Lb.Ft. ²	PISTON VOLUME Cu. In.
MB-250	75	65	18	2	A	45	.215	5
	150	130	32	4				
	225	194	46	6				
	300	259	60	8				
MB-280	75	65	18	2	A	50	.215	5
	150	130	32	4				
	225	194	46	6				
	300	259	60	8				
MB-320	**120	104	23	3	B	70	.215	6
	**150	130	23	3	A			
	**200	173	30	4				
	*300	259	42	6				
	*450	388	62	9				

Table 2.2

** - 5 1/4" O.D. Friction Disc

* - 6 1/4" O.D. Friction Disc

Contact the Force Control Factory or your Force Control Representative for additional information on different torque ratings and assembly configurations not listed in this manual.

Section 3 INSTALLATION

IMPORTANT SAFETY PRECAUTIONS

The brake units described in this manual must not be installed in any manner except as specified herein, and must not be operated at speeds, torque loads or temperatures other than those specified in this manual. Failure to limit operation of the brakes to the conditions specified could damage the units and may cause malfunction or damage to interconnecting equipment.

WARNING

The following precautions must be taken if the installation of the *Posistop* Motor Brake is to be a retrofit for an existing application. Before attempting installation, open the motor disconnect, shut off the control electrical supply and shut off the air supply then lock them out to avoid the possibility of personal injury.

NOTE

The *Posistop* Motor Brake has been partially assembled at the factory for ease of shipment. Partial disassembly will be necessary to assemble the brake to the motor.

The installation text covers the complete assembly in the event the brake must be completely disassembled and reassembled. The sections of the installation procedures that do not apply to initial installation of the motor brake are noted as being pre-assembled.

During installation see *Figures 8.1 and 8.2* for a visual reference of parts.

3-1 HOUSING TO DRIVE MOTOR

1. First check the motor shaft for any nicks or burrs. Cleanup and de-burr as necessary. Place a piece of masking tape over the motor shaft keyway to protect the Oil Seal (#31) during installation of the Housing (#8).
2. Place the Housing (#8) onto the Motor Pilot Flange with the Drain Pipe (#77) located at the bottom.

CAUTION:

Do not rest the weight of the Housing (#8) on the motor shaft. The sealing lip of the Oil Seal (#31) could be damaged causing leakage and premature failure of the motor brake.

3. Assemble the (4) Hex Hd. Cap Screws (#150) and Lockwashers (#128) into tapped holes on the motor flange face (See *Figure 3.1*). Torque 1/2"-13 hex hd. cap screws to 60 lb. ft. or 5/8"-11 hex hd. cap screws to 120 lb. ft.

Check visually to make sure the sealing lip of the Oil Seal (#31) is undamaged.

Remove tape from keyway.

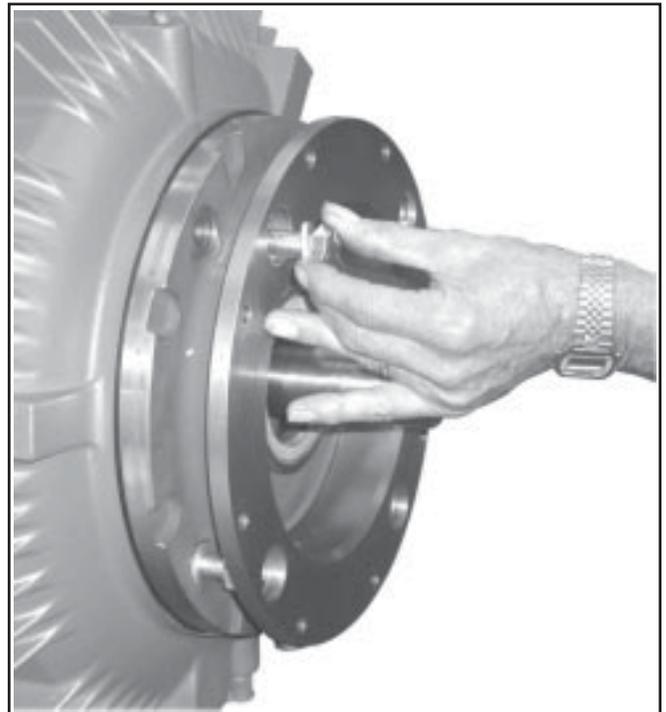


Figure 3.1
INSTALLING HOUSING (#8) TO MOTOR FLANGE

3-2 HUB ASSEMBLY TO MOTOR SHAFT

CAUTION:

Do not use molybdenum disulfide "MOLYKOTE" or any other similar lubricant on the shaft. The collet hub locking element is keyless and depends on friction to transmit torque from the brake to the shaft.

1. The Collet (#110) is installed in Hub (#2) with a Hex Hd Cap Screw (#94) at the factory. To install the hub onto the shaft, remove Hex Hd. Cap Screw (#94) and Washer (#81) and coat the threaded end with Loctite Threadlocker #271 (or equal), and reinstall Screw and Sealwasher (#81), but do not tighten. The collet must be loose in its bore.
2. Apply a light coat of Vaseline or equivalent to the Wear Ring (#32). This will facilitate sliding the hub into the seal.

IMPORTANT:

Again use special care not to damage the sealing lip of the oil seal when placing the hub assembly on the motor shaft.

3. Make sure the collet is loose in its bore, if not, back the Hex Hd Cap Screw (#94) out slightly and push it forward to push the collet toward the end of the hub, this will dislodge the collet from the tapered bore.

3-3 HUB ALIGNMENT

1. Tape a steel straightedge to the outer face of the housing as shown in *Figure 3.2*.
2. Tap the hub lightly to align the proper shoulder of the hub with the housing face (straightedge). This alignment should be within plus or minus 1/64" (*See Figure 3.3*).

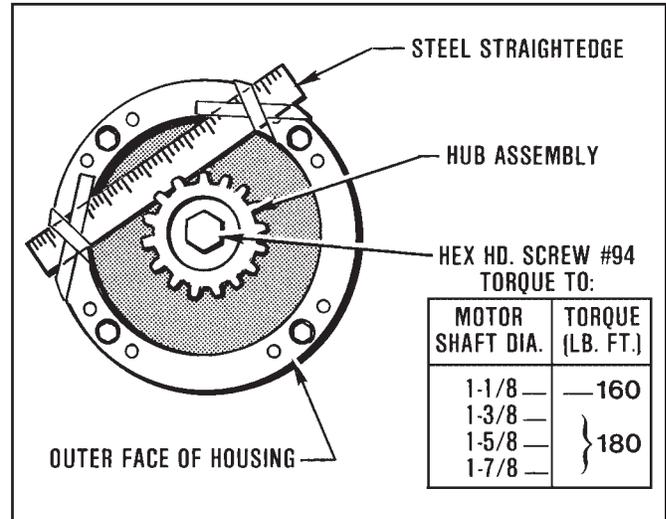


Figure 3.2
HUB ALIGNMENT - STEP 1

3. After the Hub has been properly positioned, tightened the Hex Hd Cap Screw (#94) to specified torque. (*See Figure 3.2*).

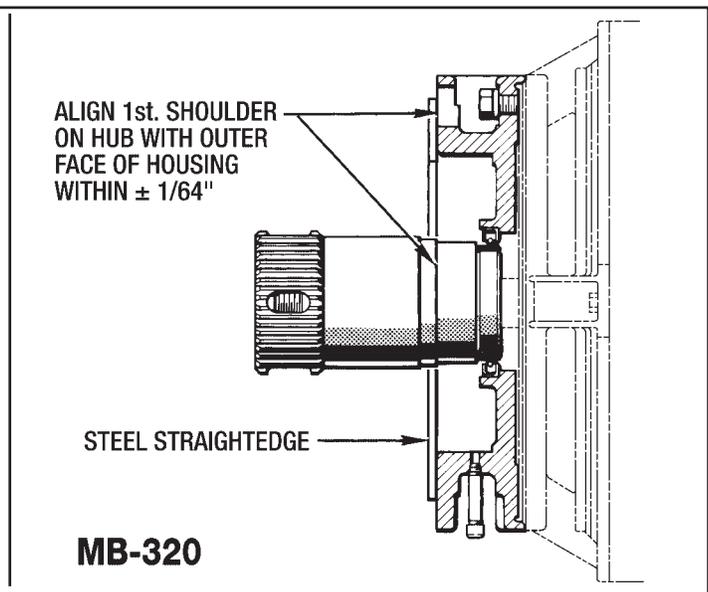
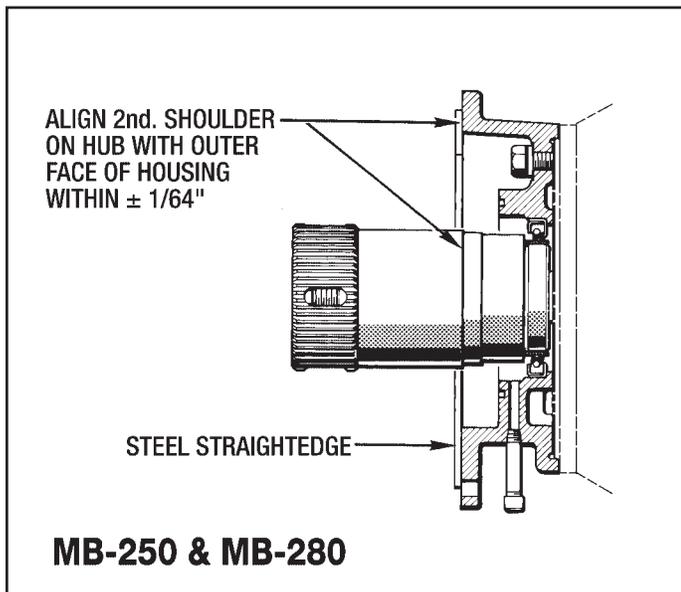


Figure 3.3
HUB ALIGNMENT - STEP 2

4. Recheck the alignment - if it is within tolerance, remove the straightedge.

3-4 PISTON HOUSING ASSEMBLY

Pre-Assembled (See Figure 8.2)

NOTE

This part of the brake is pre-assembled and does not need to be taken apart. At initial installation skip to 3-5 PISTON HOUSING ASSEMBLY TO HOUSING.

WARNING

The Piston Housing Assembly is under spring pressure and care must be taken at disassembly to remove the (8) Soc. Hd. Cap Screws (#72) evenly until the spring pressure is relieved.

1. Lubricate the O-rings (#39) and the Liner (#42) with Vaseline or equivalent and install them into the Piston Housing (#10).
2. Lubricate the (2) O-rings (#40) and the Liner (#43) and install them on the Piston (#3).
3. Place the Piston (#3) into the Piston Housing (#10).
4. Place correct number of Springs (#36) into Piston (#3) (See **Table 2.2** for the number of springs and *Figure 3.4* for placement of springs).

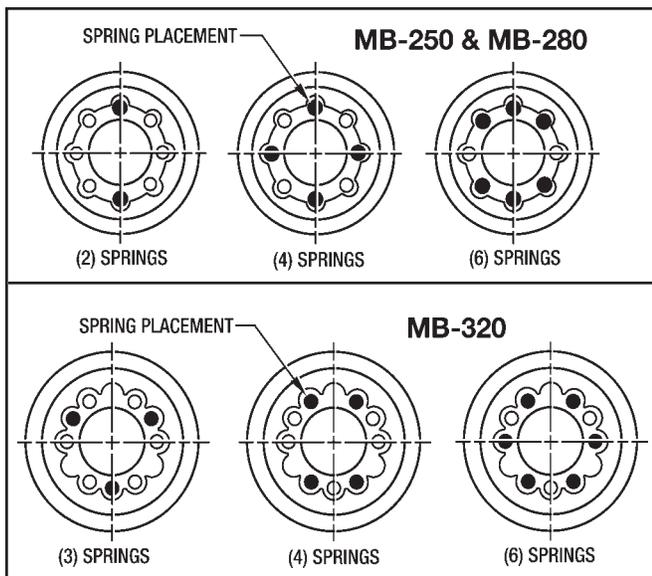


Figure 3.4
PLACEMENT OF SPRINGS (#36)

5. Lubricate the O-Ring (#30) with vaseline, or equivalent, and place it on the Piston Retainer (#11) lip.
6. Bolt the Piston Retainer (#11), with the 1/4" N.P.T. shop air connection at the bottom to prevent condensation from accumulating in the air chamber, to the Piston Housing (#10) with (8) Soc. Hd. Cap Screws (#72) and Lockwashers (#127). Torque Screws (#72) to 37 lb. ft.

3-5 PISTON HOUSING ASSEMBLY TO HOUSING (#8)

1. (**MB-250**) Lubricate the O-ring (#33) with Vaseline or equivalent and install into the O-ring groove in Housing (#8). (**MB-280, MB-320**) Lubricate the O-ring (#33) with Vaseline or equivalent and install it onto the Piston Assembly (See *Figure 3.5*).

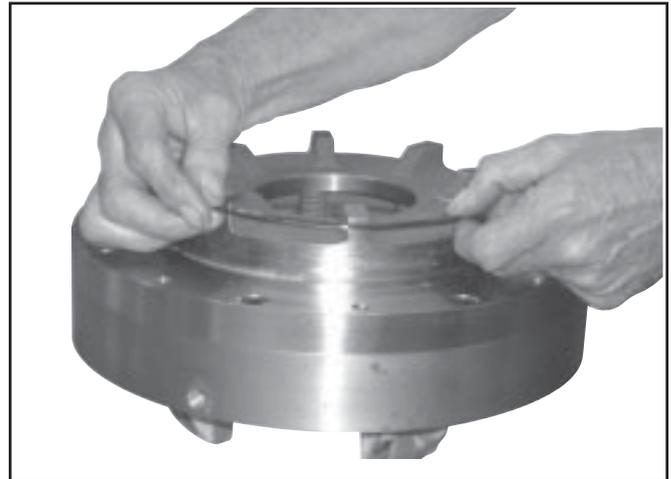


Figure 3.5
INSTALLING O-RING (#33)

2. Carefully guide the Piston Housing Assembly into the mating diameter of the Housing (#8). See *Figure 3.6* for the position of the brake lugs and the 1/4" NPT brake port
3. Using (8) Hex Hd. Cap Screws (#151) and Lockwashers (#129) bolt the Piston Housing Assembly to the Housing (#8).

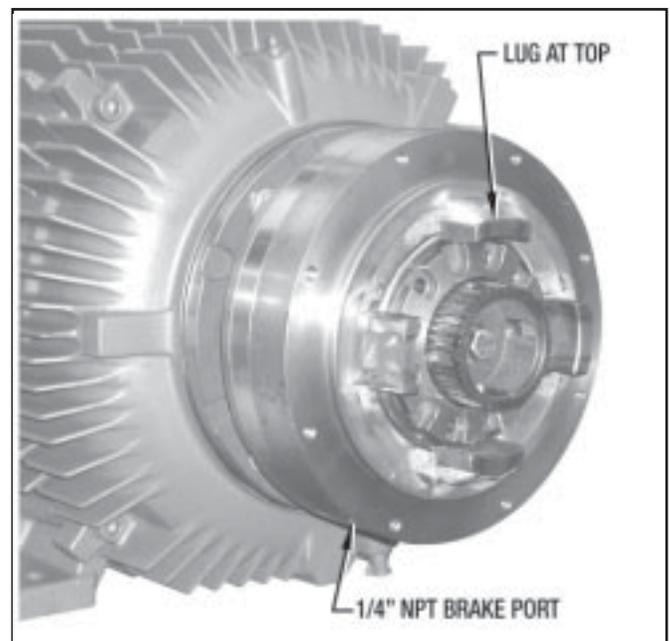


Figure 3.6
CORRECT POSITION OF PISTON HOUSING ASSEMBLY

3-6 INSTALLATION OF DRIVE PLATES AND FRICTION DISCS

USE THE ASSEMBLY SEQUENCE SHOWN BELOW FOR THE STATIC TORQUE (Lb. Ft.) REQUIRED.

MOTOR BRAKE TORQUE ASSEMBLY CONFIGURATIONS

A		B	
DRIVE PLATES		DRIVE PLATES	
FRICION DISCS		FRICION DISCS	
MODEL NUMBER	NOMINAL STATIC TORQUE (Lb. Ft.)	NUMBER OF SPRINGS	TORQUE ASS'Y CONFIG. (Above)
MB-250	75	2	A
	150	4	
	225	6	
	300	8	
MB-280	75	2	B
	150	4	
	225	6	
	300	8	
MB-320	120	3	B
	150	3	A
	200	4	
	300	6	
	450	8	

Table 3.1

1. Apply shop air to the 1/4" N.P.T. connection at the bottom of the Piston Housing Assembly so the piston will retract fully. See **Table 2.2 for release pressure.**
2. While air pressure is being applied, install Drive Plates (#12) and Friction Discs (#13) as determined by the Torque Assembly Configurations Chart (**Table 3.1**) above and as shown in *Figure 3.7*.

ASSEMBLY TIPS:

One side of the Steel Drive Plates has a slight radius on all edges due to the manufacturing process.

Install the radius side first, tilting the Drive Plate slightly to get it started.

The Friction Discs will also start onto the Splined Hub more easily if tilted slightly (*See Figure 3.6*).

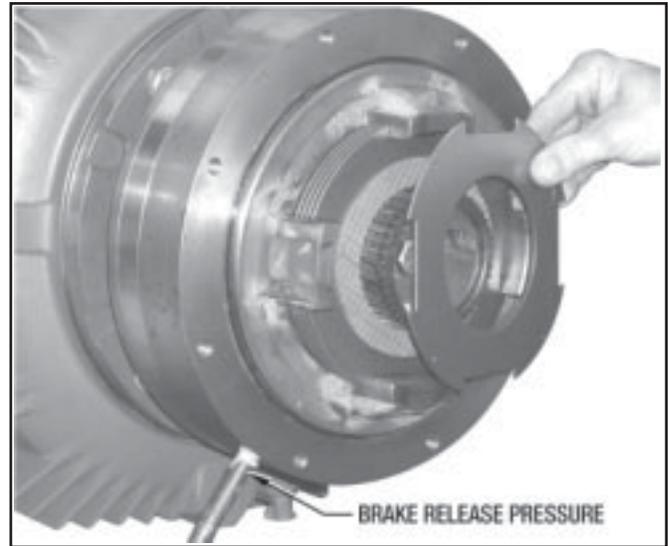


Figure 3.7
INSTALLING BRAKE STACK

3-7 INSTALLATION OF SEPARATOR SPRINGS

Vertically mounted motor brakes require the use of Separator Springs. The separator springs are used to prevent residual drag and improve cooling.

1. Vertically mounted motor brakes have Drive Plates with rivets (#18), the number of plates with rivets depends on the Torque Configuration. Torque Configuration "A" has five drive plates with rivets and Torque Configuration "B" has six drive plates with rivets.

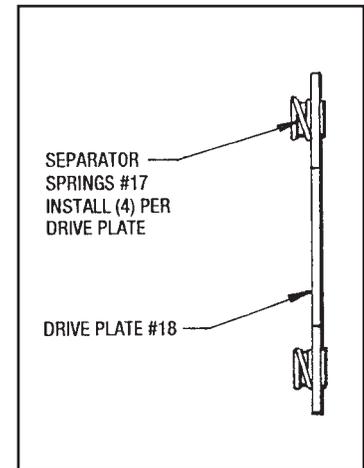


Figure 3.8
SEPARATOR SPRINGS

Both torque configurations have one Drive Plate without rivets (#12). (*See Figure 8.2*)

2. Install Separator Springs (#17) on Drive Plates (#18) (*See Figure 3.8*). Simply snap the springs over the large end of the rivets in the Drive Plates (#18). Install four springs per drive plate.
3. Do not install separator springs on the first Drive Plate (#12) (*See Figure 8.2*). When installing the drive plates, place Drive Plate (#12) in the brake first.

3-8 END HOUSING TO BRAKE ASSEMBLY

1. Lubricate O-ring (#30) with a light coating of Vaseline or equivalent and place it on the Piston Assembly. (See Figure 3.9).
2. Place the End Housing (#9) onto the Piston Housing Assembly. (See Figure 3.9)

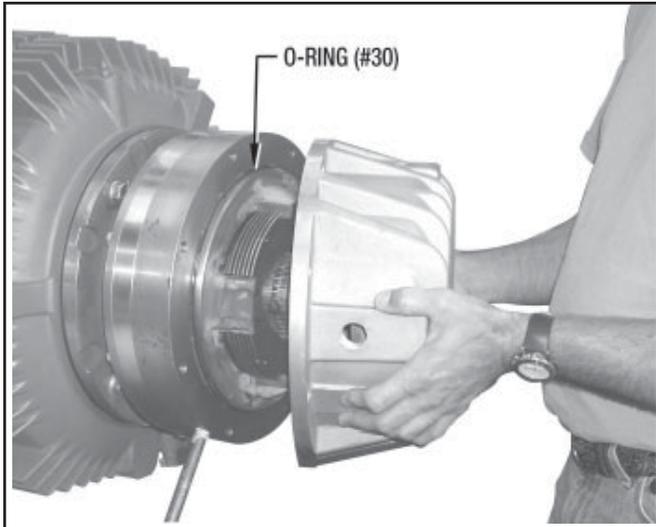


Figure 3.9
INSTALLING END HOUSING

NOTE

The Breather (#45) is to be located on the top as shown in Figure 3.10.

Attach the End Housing with (8) Soc. Hd. Cap Screws (#72) and Lockwashers (#128) to a torque reading of **37 lb. ft.** (See Figure 3.10)

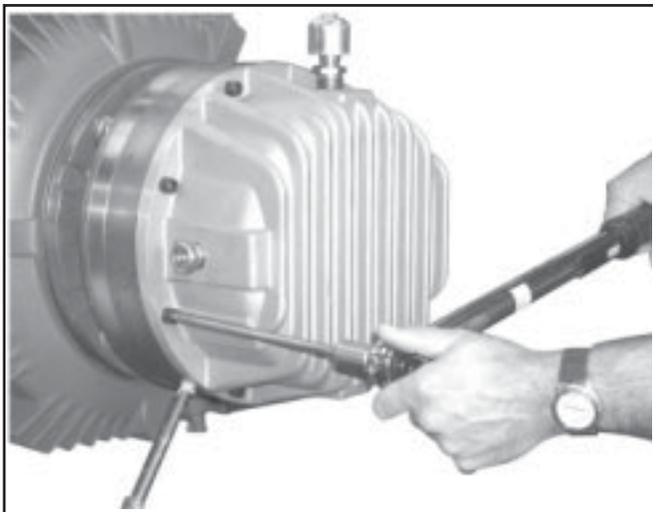


Figure 3.10
ATTACHING END HOUSING

IT IS NOW SAFE TO RELEASE THE PISTON AIR PRESSURE.

3. Check the End Housing to see if Sight Gauge (#46), Air Breather (#45), Drain Plug (#74) and Pipe Plug (#73) are installed tightly.

NOTE

For vertical mounting of your motor brake See Page 10.

4. Add automatic transmission oil (**Mobil ATF-210**) until oil level is in the center of the Sight Gauge (#46).
5. Install appropriate external pneumatic valving (See this page for Control Valve Schematic and Logic).

The Solenoid Operated Air Valve used to control the operation of the *Posistop* Brake should be located as close as possible to the brake. Air lines should be no less than 3/8" diameter minimum. A mounting kit has been developed, which is shown in Figure 8.1.

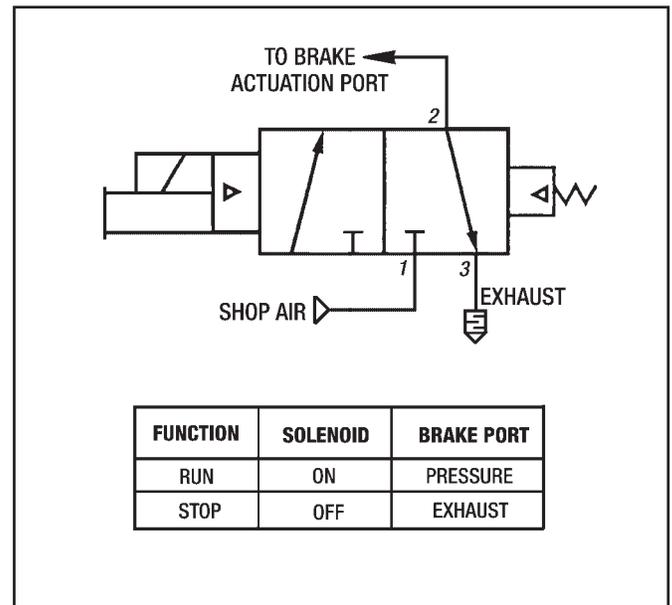


Figure 3.11
CONTROL VALVE SCHEMATIC AND LOGIC

YOUR *Posistop* MOTOR BRAKE IS NOW READY TO OPERATE.

3-9 VERTICAL MOUNTING INSTRUCTIONS

A. VERTICAL MOUNTING (Brake Up)

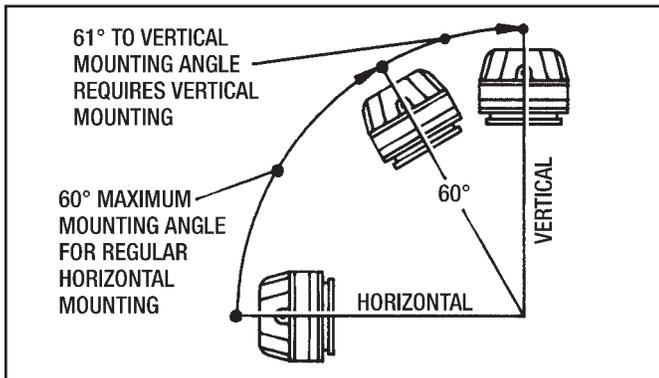


Figure 3.12
MOUNTING ANGLE (Brake Up)

1. See page 8, Section 3-7 for Installation of Separator Springs (#17) on the Drive Plates (#18).
2. Remove one Pipe Plug (#73) from End Housing (#9) (See Figure 8.2).
3. Remove Air Breather (#45) and Reducing Bushing (#76) from End Housing. (See Figure 8.2)
4. Install Pipe Nipple (#263) in place of Pipe Plug (#73). In the installation of a 250 or 280 motor brake thread Bell Reducer (#262) onto nipple. Or for a 320 motor brake thread Coupling (#256) onto the nipple. Then reinstall Air Breather (#45). (See Figure 3.13)

NOTES

Reducer Bushing (#76) is not used for vertical mounting. Parts (#78), (#79), (#262) and (#263) are furnished in a Vertical Mounting Kit.

Use pipe sealant with Teflon (59241) on all pipe threads.

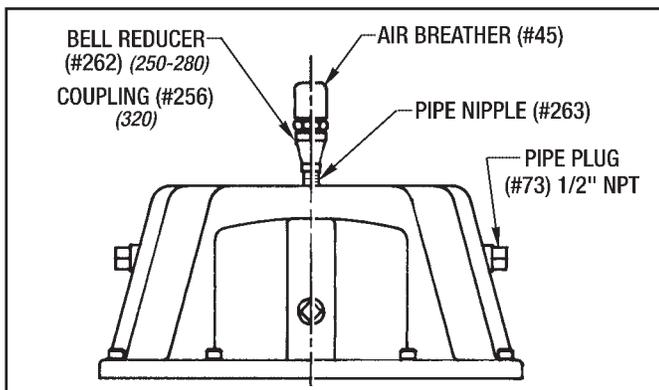


Figure 3.13
AIR BREATHER INSTALLATION (Brake Up)

B. VERTICAL MOUNTING (Brake Down)

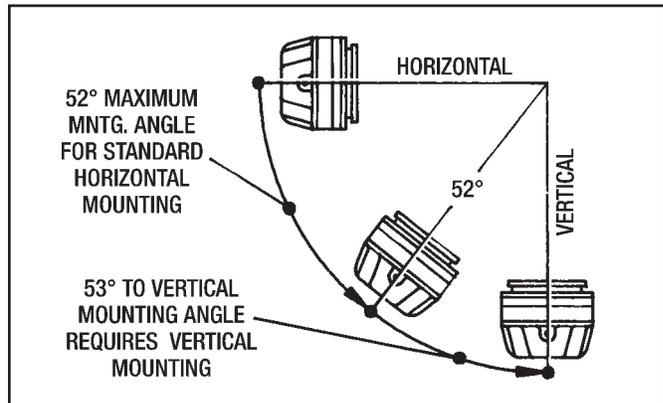


Figure 3.14
MOUNTING ANGLE (Brake Down)

1. See page 8, Section 3-7 for Installation of Separator Springs (#17) on the Drive Plates (#18).
2. Remove Oil Sight Gauge (#46). (See Figure 8.2) Install the 1/2" N.P.T. x 2" long Nipple (#254) into hole. Screw Nipple (#253) into Elbow (#259) and screw Cap (#269) onto nipple. Screw this Assembly onto Nipple (#254). (See Figure 3.14)
3. Remove Nipple (#77) and Pipe Cap (#67) from Housing (#8). Make sure this hole will be on the top side as the brake goes from horizontal to vertical. Rotate Housing (#8) to achieve this if necessary. (See Figure 3.15)
4. Install Nipple (#263) along with 45 degree Elbow (#258) and Breather (#266) into the hole in Housing (#8). (See Figure 3.15)
5. Remove Air Breather (#45) and Reducer Bushing (#76) from End Housing (#9). (See Figure 8.2) Install 1/2" N.P.T. Pipe Plug (#267) in the vacated breather hole (See Figure 3.15) **NOTE:** Reducer Bushing (#76), Air Breather (#45) and Sight Gauge (#46) are not used.

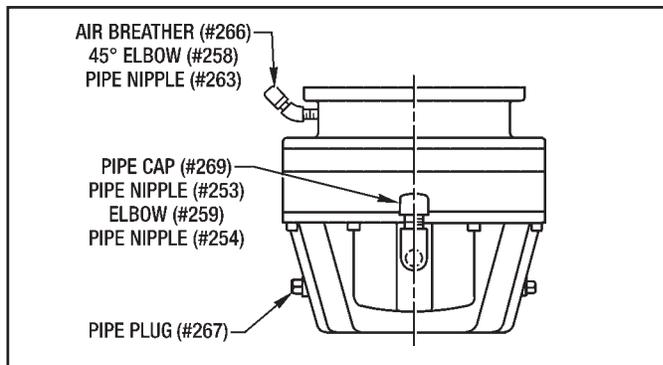


Figure 3.15
AIR BREATHER INSTALLATION (Brake Down)

Section 4 LUBRICATION

4-1 CHECKING THE OIL LEVEL

Check the oil level when the drive is installed and weekly thereafter (until experience dictates otherwise). Always check the oil level with the unit stationary (not running).

NOTE

Oil Gauge (#46) and Pipe Plug (#75) may be reversed so that level is visible from other side

4-2 CHANGING THE OIL

Every three (3) months remove Drain Plug (#74) and (#64) at the bottom of the End Housing (#9) and Housing (#8). Drain all oil before refilling. More frequent oil change may be required on high kinetic energy applications or in extremely dirty environments.

Check the Oil Sight Gauge (#46) for dirt. Remove and clean if necessary. Replace the drain plugs. Refill unit with clean oil up to the center of the sight gauge. Approximate capacities are listed on Page 4 in Table 2.1.

CAUTION

Do not over fill with oil. Excess oil will cause the unit to overheat

4-3 TYPE OF OIL

Use Automatic Transmission Fluid, Mobile ATF-210 (type F) only.

Section 5 OPERATIONAL CHECKS

WARNING

Make Operational Checks only when the drive motor and motor brake are not in operation. Open motor disconnect and lock it out to avoid personal injury.

5-1 OPERATIONAL CHECKS

1. Make provisions for manual operation if automatic controls are used.
2. Remove Air Breather (#45) and Reducer Bushing (#76) from End Housing (#9). **Do not remove this Air Breather while the motor is operating.**
3. Apply air pressure to the brake (60 P.S.I. for MB -250 and MB - 280, 80 P.S.I. for MB - 320) and observe

the action of the piston through the air breather port. If the piston action is irregular, or if it tends to stick or bind, internal damage may be indicated.

Listen and look for air bubbles in the oil which would indicate piston leakage

If the piston moves slowly and leaks are evident, the piston seals may be damaged.

4. Exhaust the air pressure and observe that the piston returns quickly and smoothly back to the normal braking position.
5. Reinstall the Reducer Bushing (#76) and the Breather (#45) back into the End Housing (#9).

Section 6 TROUBLESHOOTING

TROUBLE	POSSIBLE CAUSE	REMEDY
A. Brake fails to engage properly.	<p>Piston sticking or binding.</p> <p>Weak or broken spring.</p> <p>Air pressure not exhausting or slow in exhausting.</p>	<p>Disassemble to the extent necessary and inspect for damaged parts.</p> <p>Replace as needed.</p> <p>Check air regulator valve and replace if necessary.</p>
B. Brake engages too quickly.	Low oil level.	Check oil level and correct.
C. Noise and vibration.	Improper or loose mounting on motor.	Check mounting and correct. If partial disassembly is required, refer to Installation Section.
D. Brake fails to disengage properly.	<p>Low air pressure.</p> <p>Piston sticking or binding.</p> <p>Air regulator valve not functioning properly.</p>	<p>Increase pressure (<i>See Table 2.2</i>).</p> <p>Disassemble to the extent necessary and inspect for damaged parts.</p> <p>Check valve operation and replace if necessary.</p>
E. Unit overheats. (Temperature over 225 °F).	<p>Brake not engaging or disengaging properly causing excessive slippage.</p> <p>Improper oil level.</p>	<p>Refer to troubles A and D.</p> <p>Check level and add or drain as necessary.</p>
F. Oil leakage.	<p>Lip seal damaged.</p> <p>O-ring seals.</p>	<p>Check for oil leaking around the shaft. Replace if necessary.</p> <p>Tighten all external bolts.</p>
G. Oil leakage at breather.	<p>Damaged seal around piston.</p> <p>Oil level too high.</p>	<p>Disassemble and replace.</p> <p>Drain excess oil.</p>
H. Brake does not repeat.	<p>Air pressure changed.</p> <p>* Oil temperature changed.</p>	<p>Check and adjust air pressure.</p> <p>Check temperature.</p>

* **NOTE** - For installations requiring precise starting and stopping, operating temperatures are important. Operating temperatures between 116° F and 165° F are recommended.

Section 7

REPAIR

7-1 GENERAL INFORMATION

Unless the brake is to be completely overhauled, it should be disassembled only to the extent necessary to gain access to the worn or damaged parts.

Follow the sequence and procedures set forth in **Section 3 - INSTALLATION** for both disassembly and reassembly of the Motor Brake, noting the following for hub removal.

When hub removal is required use a standard gear puller to disengage the collet. Loosen the Hex Hd. Cap Screw (#94), and back off about 3 turns. It may be necessary to apply heat to screw to release the bond from the sealant. Hook the legs of the puller over the shoulder of the hub (Locate the puller legs approx. two thirds the way back on the hub). Run the screw of the puller down into the drilled point of Screw (#94). Tighten the gear puller until the collet relieves its grip on the shaft.

7-2 CLEANING AND INSPECTION

Clean metal parts in a suitable solvent and dry with low pressure compressed air. Clean drive plates and friction discs one at a time, keeping parts in the same order as they were when removed. After cleaning, inspect parts for cracks, distortion, scoring, nicks, burrs or any other damage that would affect the operation of the brake.

Pay particular attention to the following:

1. Check the friction discs for wear, surfaces for scoring, galling or evidence of uneven wear.
2. Check the brake drive plates for scoring or galling. Make sure they are flat. If a perceptible ridge is worn in the drive plate where it mates with the friction disc, it should be replaced.
3. Carefully check the piston and bore surfaces for nicks, scratches, scoring or other damage which would affect operation or cause leakage.
4. Pay particular attention to the Wear Ring (#32) and Oil Seal (#31), checking for any nicks, scratches or any damage that would cause leakage.

WARNING

Petroleum based cleaning solvents are extremely flammable. Open flames or smoking by any personnel in the vicinity of these solvents is extremely hazardous and MUST NOT BE PERMITTED.

7-3 REPAIR OR REPLACEMENT

A fine stone or crocus cloth may be used to remove minor surface defects from parts, if the operation or sealing action of the part is not affected. The use of coarser abrasives or other machining methods should not be attempted. Otherwise, damaged parts should be replaced.

Replacement is recommended for the following parts when needed.

1. Replace all O-rings, Liners and Oil Seals removed during disassembly.
2. Replace Brake Discs and Drive Plates as a complete set.

7-4 REASSEMBLY

Note the following general reassembly instructions as applicable:

1. Lubricate O-rings, liners and the lip of the oil seal with a light coating of Vaseline or equivalent immediately before reassembly and installation of mating parts.
2. External O-ring liners will be easier to install if heated in an oven to approx. 200 ° F max.
3. The installation of press-fitted parts can also be made easier by heating the outside part in an oven.

CAUTION

Use suitable gloves when handling heated parts.

4. Immediately before assembly, thoroughly clean screw threads with Loctite Safety Solvent. At assembly apply Loctite 242 (or equivalent) to all screw threads. Use this adhesive sparingly and wipe off any excess.

Section 8

ORDERING REPAIR PARTS

8-1 GENERAL INFORMATION

This section lists, describes and illustrates all available repair parts for the Force Control *Posistop* Motor Brake.

The models covered in this manual are:

MB-250, MB-280 and MB-320

Parts are identified on the exploded view drawings (*Figure 8.1 and 8.2*) with Reference Numbers. These numbers are the same as used in the parts listing.

8-2 ORDERING REPAIR PARTS

When ordering any repair parts, please specify all of the following information:

1. COMPLETE MODEL NUMBER (On Name plate).
2. SERIAL NUMBER (On Name plate).
3. PART REFERENCE NUMBER (From Parts List and Exploded View Drawing).
4. PART NAME (From Parts List).
5. QUANTITY (As Required).
6. COMPLETE SHIPPING INFORMATION

8-3 NAME PLATE INFORMATION

(This Name Plate is located on the piston housing.)

IMPORTANT

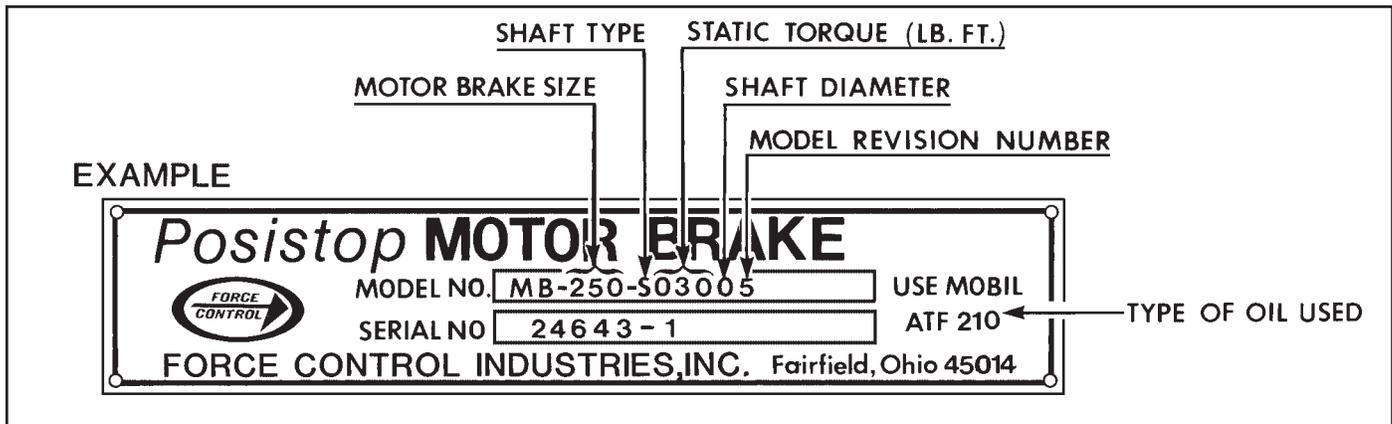
Failure to include all of the specified information will only delay your parts order. Unless another method is specified for Shipping Information, parts weighing less than 70 lbs. will be shipped United Parcel Service. Parts weighing over 70 lbs. will be shipped Motor Freight. Air freight and other transportation services are available but only if specified on your order.

8-4 FACTORY REBUILD SERVICE

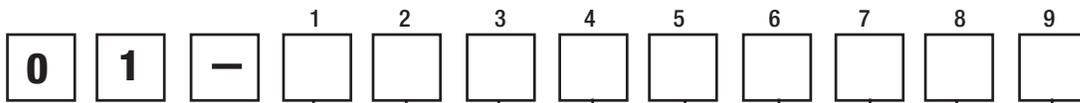
Reconditioning Service is offered by Force Control Industries at the factory. Before returning a unit for this service, be sure to first contact the Service Sales Department at Force Control Industries for authorization and shipping instructions. Force Control cannot be responsible for any units returned to the factory without prior notice and authorization.

Care must be given to the packaging of returned units. Always protect mounting feet and flanges by attaching to a suitable skid. Shipment-damaged units always delay repairs. It usually impossible to recover damage costs from the carrier. Whenever possible describe the problems you are having with your motor brake on your shipping papers.

Return to: Force Control Industries, Inc.
 3660 Dixie Highway
 Fairfield, Ohio 45014
 Telephone: 513-868-0900
 Fax: 513-868-2105
 E-Mail: info@forcecontrol.com



8-5 Posistop MODEL NUMBERS



BRAKE SIZE (1, 2, 3)

2	5	0	= Size 250
2	8	0	= Size 280
3	2	0	= Size 320

TYPE (4)

S	= Standard
T	= Thru Shaft

Posistop Mounting Dimensions conform to U-Frame double NEMA Standards. For T-Frame and double equal Motor Check Shaft Dia. (FU), Tenon Dia. (FAK) and Shaft Length (FAH).

STATIC TORQUE (5, 6, 7)

0	7	5	= 75 Lb. Ft.
0	9	0	= 90 Lb. Ft.
1	2	0	= 120 Lb. Ft.
1	5	0	= 150 Lb. Ft.
2	0	0	= 200 Lb. Ft.
2	2	5	= 225 Lb. Ft.
3	0	0	= 300 Lb. Ft.
4	5	0	= 450 Lb. Ft.

REVISION (9)
By Force Control

SHAFT DIA. (8)

1	= 1-1/8"
3	= 1-3/8"
5	= 1-5/8"
7	= 1-7/8"

8-6 Repair Parts

MB-250, MB-280 and MB-320

Posistop MOTOR BRAKE

Ref. No.	Part Name	Qty.	Ref. No.	Part Name	Qty.
2	Hub	1	74	Sq. Hd. Pipe Plug	1
3	Piston	1	75	Pipe Plug	1
8	Housing	1	76	Reducer Bushing	1
9	End Housing	1	77	Pipe Nipple	1
10	Piston Housing	1	*81	O-Ring.....	1
11	Piston Retainer	1	94	Hub Locking Screw	1
*12	Drive Plate	6	110	Collet.....	1
*13	Friction Disc	5	127	Lockwasher	16
*17	Separator Spring.....	Δ	128	Lockwasher	4
*18	Drive Plate with rivet	Δ	129	Lockwasher	8
*30	O-Ring.....	2	150	Hex Hd. Cap Screw	4
*31	Oil Seal	1	151	Hex Hd. Cap Screw	8
*32	Wear Sleeve	1	270	Control Valve	1
*33	O-Ring.....	1	271	Mounting Bracket	1
*36	Spring	ΔΔ	272	Soc. Hd. Cap Screw	2
*39	O-Ring.....	1	273	Soc. Hd. Cap Screw	2
*40	O-Ring.....	2	274	Lockwasher	2
*42	Liner	1	275	Lockwasher	2
*43	Liner	1	276	Hose	1
**45	Air Breather	1	277	Hose Fitting	1
**46	Sight Gauge	1	278	Hose Fitting	1
67	Pipe Cap	1	280	Swivel Adapter	1
72	Soc Hd. Cap Screw	16	281	Street Elbow	1
73	Pipe Plug	1	282	Bronze Muffler	1

- * - Indicates Parts on Minor Overhaul Kit.
- ** - Indicates Parts on Major Overhaul Kit plus all parts on Minor Overhaul Kit.
- Δ - See 3-8 INSTALLATION OF SEPARATOR SPRINGS on Page 8.
- ΔΔ - See Figure 3.4 SPRING PLACEMENT on Page 7.

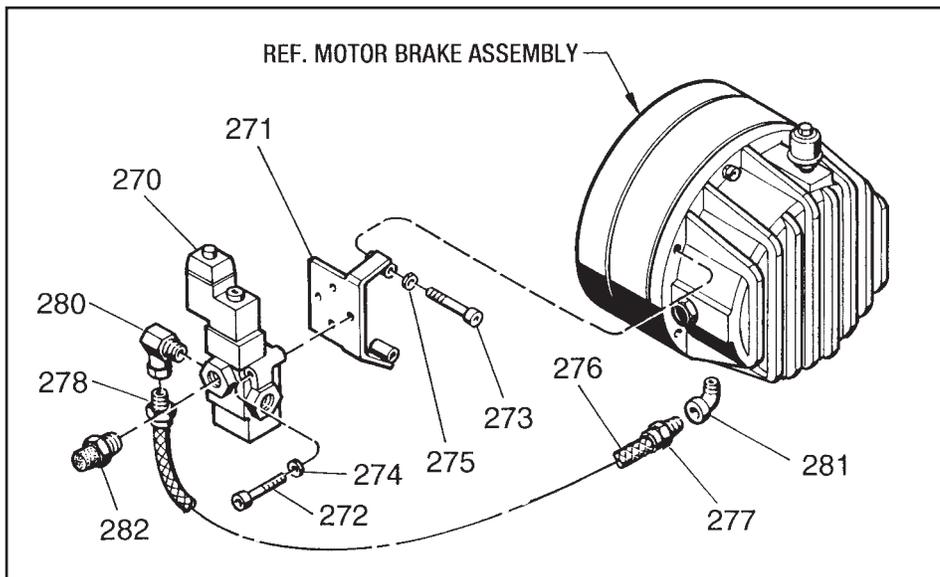


Figure 8.1
CONTROL VALVE MOUNTING KIT

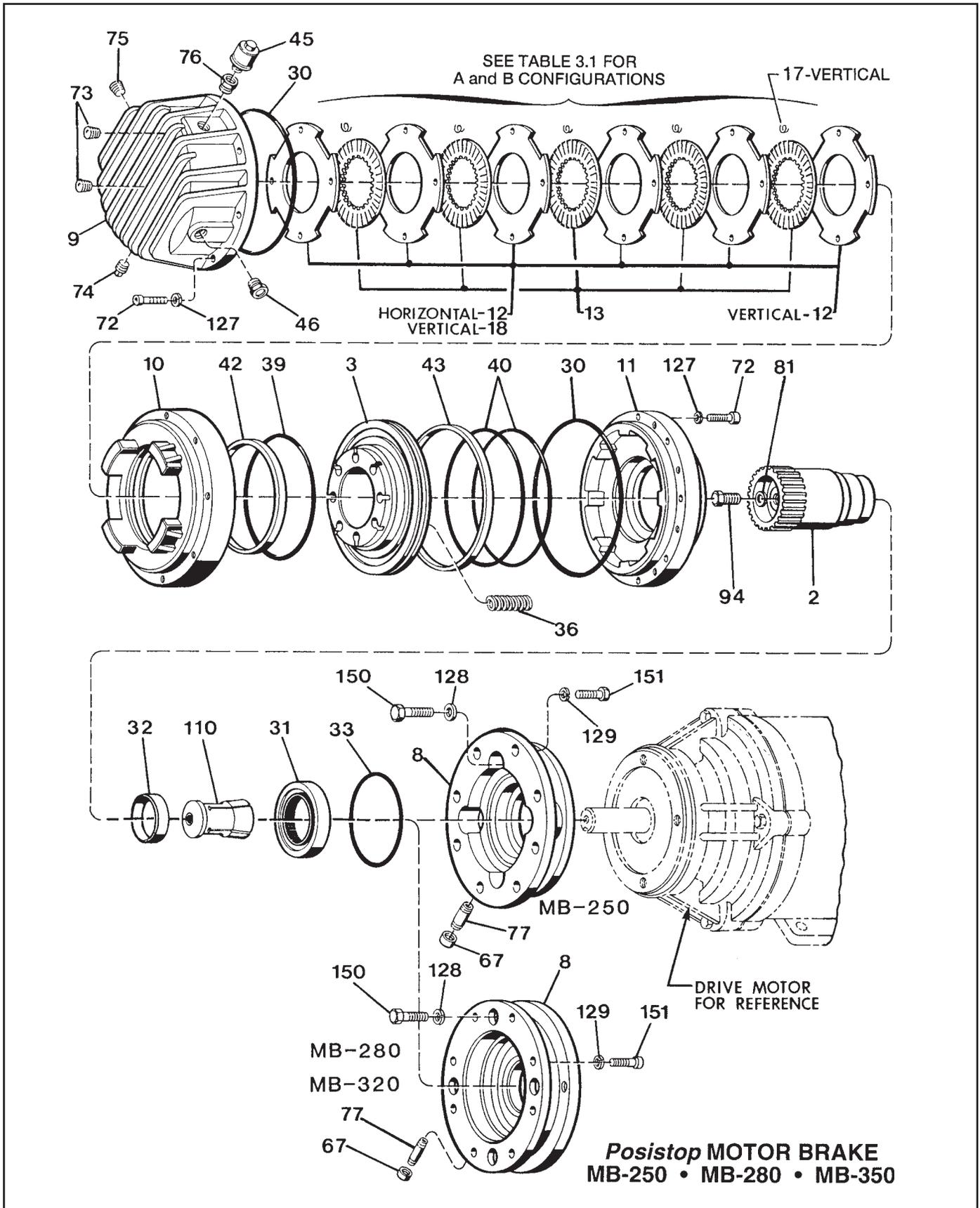


Figure 8.2
MOTOR BRAKE EXPLODE

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