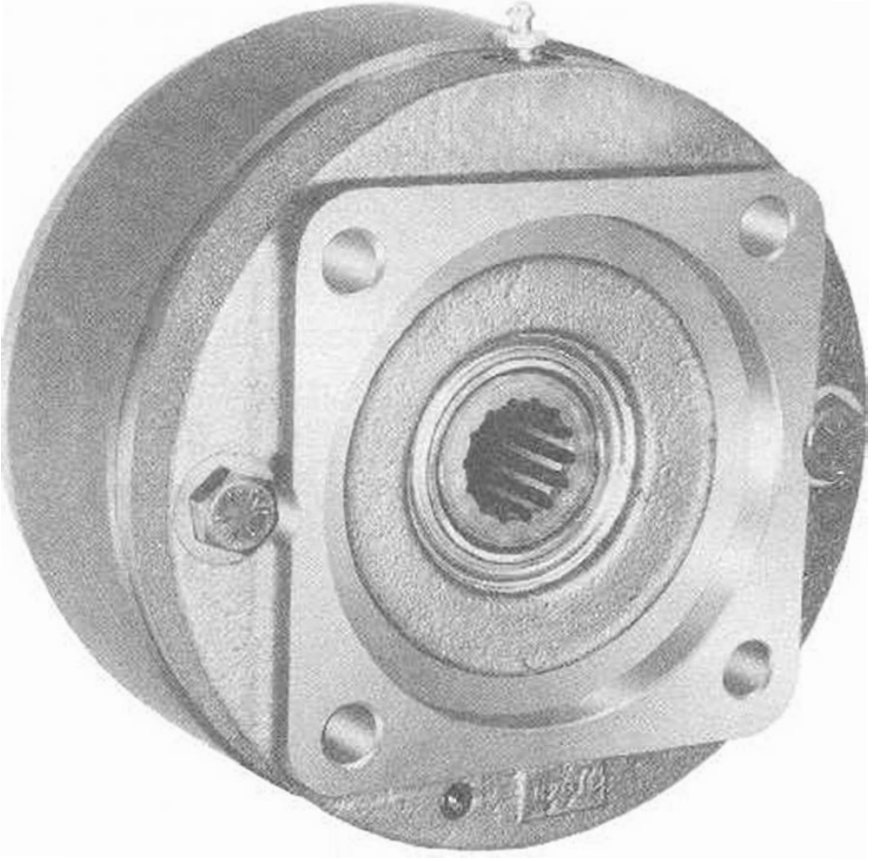
MULTIPLE DISC BRAKE

(dry design - SAE C size)

Service Instructions



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Form No. 81-556-002 1986-06-01

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TYPICAL MULTIPLE DISC BRAKE
(DRY DESIGN)

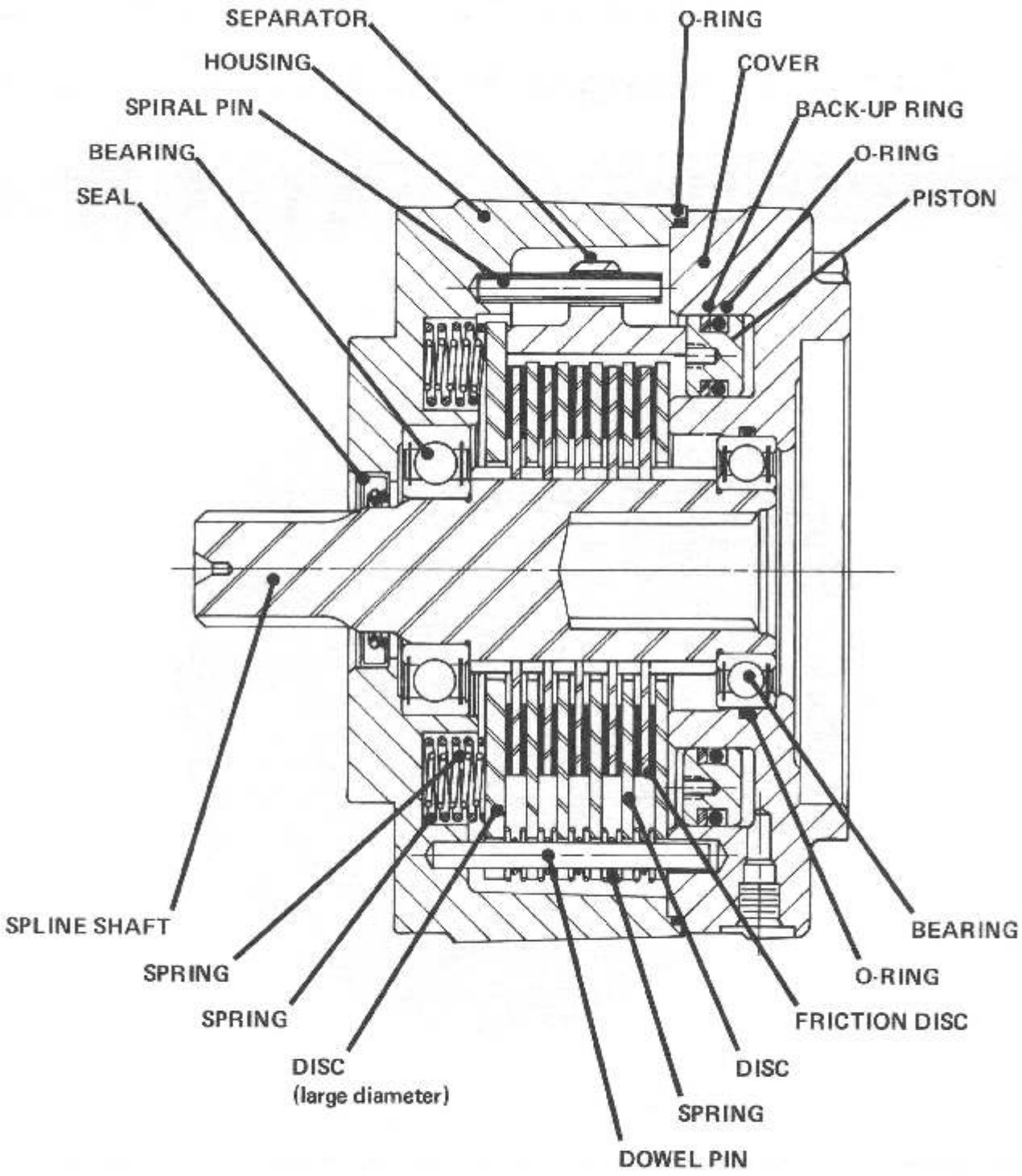

FIGURE 1

DESCRIPTION AND OPERATION OF THE MICO MULTIPLE DISC BRAKE

The Multiple Disc Brake (dry design) is designed specifically for use with heavy duty machinery, off-highway vehicles, construction, materials handling, mining equipment and in a multitude of winching applications. Models are available in S.A.E. mounting flange styles. Other special mountings are also available. Contact MICO for your requirements.

This Multiple Disc Brake provides consistent braking torque, positive hold, and long life in rugged environments.

The Brake will reduce maintenance and downtime, because contaminants which cause brake lining wear are prevented from entering the brake.

Braking is provided by a pack of rotating friction discs splined to the shaft, and stationary separator plates restrained by pins in the housing. Force is transmitted to the disc pack through a hydraulic piston and a series of preloaded springs. The brake is released by hydraulic pressure applied to the piston to compress the springs. Separator springs are also used between the plates to minimize heat buildup in the released free running mode of operation. The brake is self-applying since any function which reduces the hydraulic system pressure below the release pressure of the brake will start to initiate a brake application. Zero pressure produces maximum brake torque.

REPAIR KITS ('C' MOUNT)

MODEL NUMBER	LINING KIT	BEARING KIT	O-RING KIT
02-556-200	20-060-070	02-500-118	02-500-122
02-556-202	20-060-071	02-500-119	02-500-123
02-556-204	20-060-072	02-500-120	02-500-124
02-556-206	20-060-071	02-500-119	02-500-123
02-556-210	20-060-070	02-500-118	02-500-122
02-556-212	20-060-070	02-500-121	02-500-125

DISASSEMBLY

1. Remove end cover (item 4) from housing (item 25) by removing cap screws (items 1) and flat washers (items 2).

   CAUTION: End cover is under spring tension of approximately 2300 pounds. The two cap screws should be loosened evenly to relieve this force. If a hydraulic press is available (5000 lbs. max.) the cover can be held in position while removing the cap screws and lockwashers.

2. Tap cover with a soft mallet in order to dislodge bearing (item 7) from cover (item 4).
3. Remove o-ring (item 6), o-ring (item 5), pipe plug (item 3) and bleeder screw (item 13) from end cover (item 4).
4. Remove piston (item 10) from end cover (item 4) by inserting two 1/4-20 UNC bolts into threaded holes in piston. By turning and pulling, piston can be removed from bore.
5. Remove o-ring (item 8), back-up ring (item 9), o-ring (item 11) and back-up ring (item 12) from piston (item 10).
6. Remove separators (items 18) from housing (item 25).
7. Remove shaft assembly, consisting of shaft (item 14), discs (items 15 & 19), friction discs (item 17), springs (items 16) and bearings (items 7 & 23), from housing (item 25) by pressing or using a soft mallet on male end of shaft (item 14).
8. Remove springs (items 16) from between tabs of discs (items 15 & 19).
9. Remove bearings (items 7 & 23) from shaft (item 14) with appropriate bearing puller. The discs (items 15 & 19) and friction discs (items 17) will then slide off either end of shaft (item 14).
10. Remove dowel pins (items 22), springs (items 20 & 21) and o-rings (items 24) from housing (item 25).
11. Press rotary oil seal (item 26) from housing (item 25).

ASSEMBLY

LUBRICATE ALL RUBBER COMPONENTS FROM REPAIR KIT WITH CLEAN TYPE FLUID USED IN THE SYSTEM.

1. Clean all parts thoroughly before assembly.
2. Press new seal (item 26) into housing (item 25).
3. Insert new o-rings (items 24), dowel pins (items 22) and springs (items 20 & 21) in housing (item 25).
4. Install new bearing (item 23) on male end of shaft (item 14) and press until it shoulders on shaft.
5. Insert shaft (item 14) and bearing (item 23) in housing (item 25) and press until bearing bottoms on shoulder in housing.
6. Position new large diameter disc (item 19) in housing with tabs guided by dowel pins (items 22) until disc rests on springs (items 20 & 21).

   NOTE: Discs (items 15 & 19) and friction discs (item 17) should remain dry during installation. No oil residue should be allowed to contaminate disc surfaces.

7. Place a new friction disc (item 17) on shaft (item 14) until it contacts bottom disc (item 19). Insert one spring (item 16) on each dowel pin (item 22).
8. Add additional new discs (items 15), new friction discs (items 17), and springs (items 16) as required to complete assembly.
9. Insert separators (items 18) over spiral pins in housing (item 25). Separators (items 18) will contact top of bottom disc (item 19) when properly installed.
10. Install new o-ring (item 8), new back-up ring (item 9), new o-ring (item 11) and new back-up ring (item 12) on piston (item 10). Insert piston (item 10) into end cover (item 4) being careful not to shear o-rings or back-up rings. Inserting 1/4-20 UNC bolts in piston may simplify installation.
11. Install new o-ring (item 6), new bearing (item 7), new o-ring (item 5), pipe plug (item 3) and bleeder screw (item 13) in end cover (item 4).
12. Position end cover (item 4) on housing (item 25) aligning dowel pins (items 22) with holes in end cover and push end cover until top friction disc (item 17) aligns with spline shaft (item 14).
13. Install cap screws (items 1) and flatwashers (items 2). Tighten evenly to draw end cover (item 4) to housing (item 25) and bearing (item 7) onto shaft (item 14). Torque cap screws to 85 ft. lbs.

    NOTE: If available a hydraulic press will simplify installation of end cover on housing. Clamp cover in position while tightening the cap screws.

14. Press on inner ring of bearing (item 7) until it shoulders on shaft (item 14) to eliminate binding on bearings. Be certain to restrain opposite end of shaft to avoid excessive thrust loading on bearing (item 23).
15. If hydrostatic bench testing is performed on the brake assembly, release pressure should not exceed 1200 psi unless four additional bolts are used for supplemental clamping.

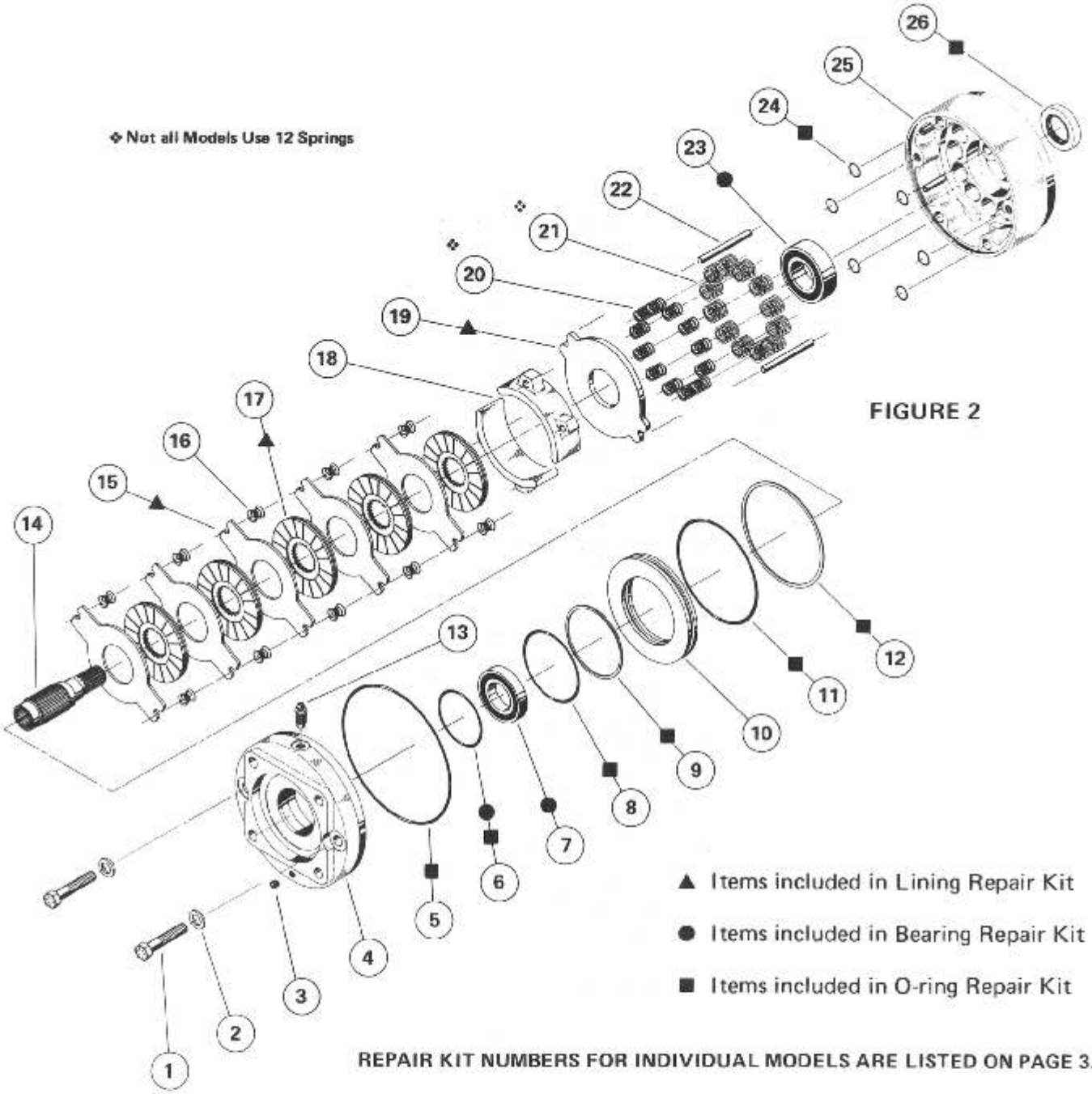

FIGURE 2

REPAIR KIT NUMBERS FOR INDIVIDUAL MODELS ARE LISTED ON PAGE 3.

PARTS LIST

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	CAP SCREW (2)	14	SHAFT
2	FLAT WASHER (2)	▲15	DISC (5)
3	PIPE PLUG	16	SPRING (10)
4	COVER	▲17	FRICTION DISC (5)
■ 5	O-RING	18	SEPARATOR
●■ 6	O-RING	▲19	DISC (large diameter)
● 7	BEARING	20	SPRING (12)
■ 8	O-RING	21	SPRING (12)
■ 9	BACK-UP RING	22	DOWEL PIN
10	PISTON	●23	BEARING
■ 11	O-RING	■24	O-RING (6)
■ 12	BACK-UP RING	25	HOUSING
13	BLEEDER SCREW	■26	SEAL

▲●■ MOUNTING GASKET (NOT SHOWN)

BLEEDING

1. Install brake in system and connect pressure lines.
2. Bleed pressure release section of brake by pressurizing side inlet port and allowing air to escape from top port. Pressure should not exceed 100 psi during bleeding.
3. Apply sufficient pressure to release brake and check for proper operation in system.

SERVICE DIAGNOSIS

(Numbers shown refer to Figure 2)

BRAKE WON'T RELEASE

1. Insufficient release oil pressure
2. Damaged o-rings (items 8 or 11)
3. Damaged piston (item 10)
4. Damaged bearings (items 7 or 23)
5. Discs (items 15 and 17) warped or welded together due to excessive heat

BRAKE WON'T APPLY

1. Residual oil pressure in release section of brake
2. Damaged springs (items 20 and 21)
3. Damaged piston (item 10)
4. Broken bolts (items 1) allowing cover (item 4) to move away from housing (item 25)

BRAKE APPLIES BUT TORQUE LOW

1. Residual oil pressure in release section of brake
2. Springs (items 20 and 21) have taken permanent set due to excessive heat
3. Friction discs (items 17) worn out
4. Oil leakage into plate area of brake