Disc-O-Torque Hydraulic Clutches D5

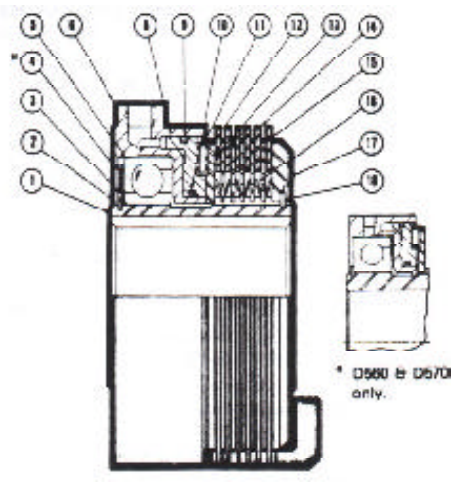
Installation & Maintenance Manual

P-5055-TBW
Form 1384

TB Wood's®
Altra Industrial Motion

WARNING:
Rotating equipment must be properly guarded.
It is the responsibility of the user to properly guard all rotating equipment to comply with OSHA or any applicable regulations. Failure to properly guard may contribute to severe injury should someone come in contact with the rotating parts or should the rotating part fail.

WARNING:
DO NOT use Wood's products on any primary aircraft drive or any other drive which could endanger human life should a drive component fail.



Rebuild Kits					
Disc Kit D5xxDK		**Seal Kit** D5xxSK		**Bearing Kit ***** D5xxBK	
Item	Description	Item	Description	Item	Description
14	Friction Disc	9	Outer Piston Ring	5	Cylinder Bearing
15	Separator Disc	10	Inner Piston Ring	11	Piston Bearing
16	Separator Spring			12	Thrust Race
17	Snap Ring			2	Snap Ring
				3	Shim(s)
				4	Shield
					Spacer (for D560 and D570 only)

Components not included in rebuild kits.		
Item	Description	Notes
1	Hub	When and if these parts require replacement, it is usually a sign unseen damage may have occurred to other components in the clutch assembly. It is recommended that the entire clutch assembly be replaced.
6	Cylinder	
8	Piston	
13	Pressure Plate	
17	Back Plate	
19	Plug (not shown)	

INSTALLATION

Friction disc lugs must be slip fit in driven cup slots. When installing the cup, align lugs and slots carefully. Do not force during assembly; bent lugs will cause the clutch to malfunction.

When installing the clutch, be sure the oil line connection to the clutch is aligned correctly and flexibility or "float" is provided to prevent cocking loads on the clutch bearings.

ACTUATING FLUID & LUBRICATING OIL

Standard D5 models are provided with a separate inlet for lubricating oil, to provide a continuous oil flow to the bearings. Adjacent to the cylinder bearing (5) is located a shield (4) which contains the lubricant. For models D560 & D570, the shield is located between the bearing (5) and the cylinder (6).

NOTE: Non-Standard models have this separate port plugged at the factory. The ball bearing will be open at the outer end (shield removed). External oil must be directed into this area. (mist, spray, or splash). The piston will incorporate a bleed hole for actuation oil to seep through to the piston bearing.

TYPES OF OIL

Secony-Mobil DTE 24 oil or equivalent. For others, contact TB Wood's.

IMPORTANT: The actuating oil must have a viscosity of at least 70 SUS at operating temperature.

TABLE OF FLOW RATE REQUIREMENT FOR AUXILIARY LUBRICATION

Model	Lube Flow*	Model	Lube Flow*
D530	0.05	***D560***	0.40
D535	0.07	***D570***	0.50
D545	0.13	***D580***	0.70
D555	0.25		

*Gallons per minute required using a lubricant having a viscosity of about 150 SUS @ 100 degrees F and 20 psi. Recommended maximum lubrication oil pressure = 50 psi.

MAINTENANCE

The Model D5 DISC-O-TORQUE clutch, when properly applied and installed, will operate for a long period of time without attention. However, at equipment overhaul time, or when clutch repairs are necessary, all worn parts should be replaced. In addition, all parts subject to cyclic fatigue should be replaced to restore the clutch to "like-new" condition. Rebuild Kits are available for rebuilding clutches in the field.

HOW TO SELECT AND ORDER THE DISC-O-TORQUE REBUILD KITS:

Disc-O-Torque rebuild kits can be easily ordered by specifying the proper kit number, series, model number and bore size of the clutch.

Example: (Seal Kit)	**Kit No.**	**Series**	**Model No.**	**Bore**
	D545SK	**D5**	**45**	**1 1/2**

Kits should be obtained from the manufacturer of the machine in which the clutch is used, i.e., the original equipment manufacturer, or from the local **TB Wood's** distributor.

DISASSEMBLY

1. Compress the disc pack by depressing the clutch backplate (17).

2. With the backplate depressed, remove the snap ring (18).

3. Remove friction discs, separator plates and separator springs as a pack (14,15, and 16). If removing parts individually, note order of assembly.

4. Remove pressure plate (13), thrust bearing and thrust races (11 and 12).

5. If any of the above parts are worn, overheated or warped, they should be replaced. Compare each part to a new part to determine degree of wear or distortion.

6. If necessary, disassemble the remainder of the clutch as follows:
   A. Remove the hub (1) from the assembly by removing the snap ring (2), shims (3), and shield (4). Then block the cylinder and press-out the hub. The bearing will stay in the cylinder. It can be removed by tapping on the other end of the cylinder with a soft mallet. For 60 & 70 models, the shield is removed after the bearing.

   B. Remove the piston (8) from the cylinder (6). This can be accomplished by a short burst of compressed air in the inlet to push the piston out. Cover the piston with a cloth to prevent damage during this operation.

   C. Examine the piston quadrings (9 & 10), cylinder, and bearings (6,5, & 11) for wear. Replace parts as required. NOTE: The seal diameters in the cylinder must be smooth and undamaged to prevent damage to the quadrings and leakage of oil.

REASSEMBLY

1. For 60 & 70 models, install shield (4) into cylinder.

2. Install new bearing in cylinder. It will slide into the pocket without difficulty. Be sure the thrust shoulder is to the inside.

3. Block the inner race of the bearing and press the hub into position from the opposite end of the clutch.

4. Install the shield, shims, and snap ring to retain the bearing in the hub.

5. If necessary, install new quadrings on the piston. Do not stretch them anymore than necessary. Apply a small amount of grease to the sealing edges.

6. Slide the piston into the cylinder.

7. Install the inner thrust washer, thrust bearing, and outer thrust washer.

8. Install the pressure plate.

9. Install the disc pack (friction discs, separator plates, and separator springs) in the original manner.

10. Place the backplate over the disc pack. With an arbor press, compress the disc pack and install the snap ring.

CAUTION: *The discs should be centered in the pack before pressing to avoid damage.*

TEST THE CLUTCH

After assembly is completed, the unit should be checked in two ways:

1. Check clearance in the disc pack. All discs should be free with no binding. There should be .054-.155" total clearance in the pack. This can be measured by pressing on the backplate until it just bottoms (using an indicator on the backplate face). Clearance is adjusted by the shims (3).

2. Check leakage. Apply normal operating pressure to the clutch and see if oil leaks out. There should be only a minimum amount--about one drop per minute. If excessive leakage is experienced, reinspect the quadrings and seal diameters in the cylinder.

Altra Industrial Motion

All Customer Service phone numbers shown in bold

Belted Drives and Sheaves

TB Wood's

Belted Drives

Chambersburg, PA - USA
1-888-829-6637 – Press #5

For application assistance:
1-888-829-6637 – Press #7

Couplings

Ameridrives

Mill Spindles, Ameriflex, Ameridisc

Erie, PA - USA
1-814-480-5000

Gear Couplings

San Marcos, TX - USA
1 -800-458-0887

Universal Joints, Drive Shafts, Mill Gear Couplings

Erie, PA - USA
1-920-593-2444

Bibby Turboflex

Disc, Gear, Grid Couplings, Overload Clutches

Dewsbury, England
+44 (0) 1924 460801

Boksburg, South Africa
+27(0) 11 918 4270

Guardian Couplings

Engineered Flywheel Couplings, Engine Housings and Pump Mounts, Flexible Shaft Couplings

Michigan City, IN - USA
1-219-874-5248

Huco

Precision Couplings and Air Motors

Hertford, England
+44 (0) 1992 501900

Chambersburg, PA - USA
1-888-829-6637

Lamiflex Couplings

Flexible Couplings, Bearing Isolators, and Coupling Guards

Cotia, SP - Brasil
+55 (11) 4615-6300

Couplings Cont.

TB Wood's

Elastomeric Couplings

Chambersburg, PA - USA
1-888-829-6637– Press #5

For application assistance:
1-888-829-6637 – Press #7

General Purpose Disc Couplings

San Marcos, TX - USA
1-888-449-9439

Electromagnetic Clutches and Brakes

Inertia Dynamics

Spring Set Brakes; Power On and Wrap Spring Clutch/Brakes

New Hartford, CT - USA
1-800-800-6445

Matrix

Electromagnetic Clutches and Brakes, Pressure Operated Clutches and Brakes

Brechin, Scotland
+44 (0) 1356 602000

New Hartford, CT - USA
1-800-825-6544

Warner Electric

Electromagnetic Clutches and Brakes

New Hartford, CT - USA
1-800-825-6544

For application assistance:
1-800-825-9050

Saint Barthélémy d'Anjou, France
+33 (0)2 41 21 24 24

Precision Electric Coils and Electromagnetic Clutches and Brakes

Columbia City, IN - USA
1-260-244-6183

Engineered Bearing Assemblies

Kilian

Engineered Bearing Assemblies

Syracuse, NY - USA
1-315-432-0700

Gearing

Bauer Gear Motor

Geared Motors

Esslingen, Germany
+49 (711) 3518-0

Middlesex, NJ - USA
1-732-469-8770

Boston Gear

Enclosed and Open Gearing, Electrical and Mechanical P.T. Components

Charlotte, NC - USA
1-800-825-6544

For application assistance:
1-800-816-5608

Nuttall Gear and Delroyd Worm Gear

Worm Gear and Helical Speed Reducers

Niagara Falls, NY - USA
1-716-298-4100

Heavy Duty Clutches and Brakes

Industrial Clutch

Pneumatic and Oil Immersed Clutches and Brakes

Waukesha, WI - USA
1-262-547-3357

Svendborg Brakes

Industrial Brakes and Brake Systems

Vejstrup, Denmark
+45 63 255 255

Twiflex

Caliper Brakes and Thrusters

Wichita Falls, TX - USA
1-844-723-3483

Twickenham, England
+44 (0) 20 8894 1161

Wichita Clutch

Pneumatic Clutches and Brakes

Wichita Falls, TX - USA
1-800-964-3262

Bedford, England
+44 (0) 1234 350311

Linear Products

Warner Linear

Linear Actuators

New Hartford, CT - USA
1-800-825-6544

For application assistance:
1-800-825-9050

Saint Barthélémy d'Anjou, France
+33 (0)2 41 21 24 24

Overrunning Clutches

Formsprag Clutch

Overrunning Clutches and Holdbacks

Warren, MI - USA
1-800-348-0881– Press #1

For application assistance:
1-800-348-0881 – Press #2

Marland Clutch

Roller Ramp and Sprag Type Overrunning Clutches and Backstops

Warren, MI - USA
1-800-216-3515

Stieber Clutch

Overrunning Clutches and Holdbacks

Heidelberg, Germany
+49 (0) 6221-30470

For information concerning our sales offices in Asia Pacific check our website www.altramotion.com.cn

TB Wood's®
Altra Industrial Motion

www.tbwoods.com

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512-353-4000

Disc-O-Torque Hydraulic Clutches D4

Installation & Maintenance Manual

P-5057-TBW
Form 1385

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Altra Industrial Motion

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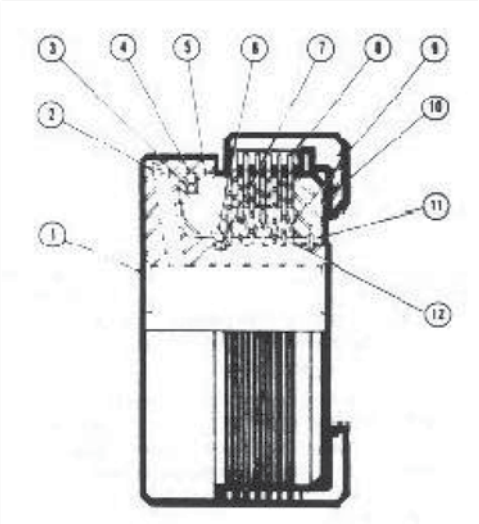

Rebuild Kits			
Disc Kit D4xxDK		**Seal Kit** D4xxSK	
Item	**Description**	**Item**	**Description**
8	Friction Disc	4	Outer Piston Ring
12	Separator Disc	6	Inner Piston Ring
9	Separator Spring	3	Outer O-Ring
11	Snap Ring	7	Inner O-Ring

Components not included in rebuild kits		
Item	**Description**	**Notes**
1	Hub	When and if these parts require replacement, it is usually a sign unseen damage may have occurred to other components in the clutch assembly. It is recommended that the entire clutch assembly be replaced
5	Piston	
10	Back Plate	
2	Plug	

INSTALLATION
Friction disc lugs must be slip fit in driven cup slots. When installing the cup, align lugs and slots carefully. Do not force during assembly; bent lugs will cause the clutch to malfunction. When installing the clutch, be sure the actuation hole in your rifle drilled shaft is properly located in relation to the actuation port in the clutch bore

ACTUATING FLUID & LUBRICATING OIL
Standard D4 models do not have bearings and therefore require no internal lubrication. Disc pack cooling can be accomplished with external spray, mist or splash.

TYPES OF OIL
Use any high grade ATF (automatic transmission fluid) or Socony-Mobile DTE 24 oil (or equivalent).

MAINTENANCE
Model D4 Disc-O-Torque clutch, when properly applied and installed, will operate for a long period of time without attention. However, at equipment overhaul time, or when clutch repairs are necessary, all worn parts should be replaced. Rebuild kits are available for rebuilding clutches in the field.

HOW TO SELECT AND ORDER THE DISC-O-TORQUE REBUILD KITS:
Disc-O-Torque rebuild kits can be easily ordered by specifying the proper kit number, series, model number and bore size of the clutch.

Example: (Seal Kit)	Kit No.	Series	Model No.	Bore
	D445SK	D4	45	1 3/8

Kits should be obtained from the manufacturer of the machine in which the clutch is used, i.e., the original equipment manufacturer, or from the local **TB Woods** distributor.

DISASSEMBLY
1. Compress the disc pack by depressing the clutch backplate (10).
2. With the backplate depressed, remove the snap ring (11).
3. Remove friction discs, separator plates and separator springs as a pack (8,12, and 9). If removing parts individually, note order of assembly.
4. Remove the piston (5) from the hub (1). Cover the piston with a cloth to prevent damage after this operation.
5. If any of the above parts are worn, overheated or warped, they should be replaced. Compare each part to a new part to determine degree of wear or distortion.
6. Examine the teflon seals (4 & 6) and "O" rings (3 & 7); remove if badly worn.

REASSEMBLY
1. Install the "O" ring (8) and teflon seal (6) into the hub groove.

NOTE: Teflon seals must be installed with a proper tool, such as an automotive type piston ring compressor.

2. Place the piston ring compressor over the teflon seal and tighten. This will compress the teflon seal to allow installation of the piston.
3. Install the "O" ring (3) and the teflon seal (4) into the piston groove in the same manner outlined above.
4. Install the disc pack (friction discs, separator plates, and separator springs) in the original order of assembly.
5. Place the backplate over the disc pack. With an arbor press, compress the disc pack and install the snap ring (11).

CAUTION: The discs should be centered in the pack before pressing to avoid damage.

TEST THE CLUTCH
After assembly is completed, the unit should be checked in two ways:

1. Check clearance in the disc pack. All discs should be free with no binding. Following is clearance required in the disc pack:

SIZE	AVERAGE	MAXIMUM
D430	.072"	.105"
D435	.096"	.130"
D445	.096"	.134"
D455	.108"	.142"
D460	.114"	.149"
D470	.126"	.161"

This can be measured with a dial test indicator by depressing the backplate (10) until all discs are engaged. .

2. Check leakage. Apply normal operating pressure to the clutch and see if oil leaks out. There should be only a minimum amount--about one drop per minute. If excessive leakage is experienced, reinspect the teflon seals and seal diameters in the hub and piston.

All Customer Service phone numbers shown in bold

Belted Drives and Sheaves

TB Wood's

Belted Drives

Chambersburg, PA - USA
1-888-829-6637 – Press #5

For application assistance: 1-888-829-6637 – Press #7

Couplings

Ameridrives

Mill Spindles, Ameriflex, Ameridisc

Erie, PA - USA
1-814-480-5000

Gear Couplings

San Marcos, TX - USA
1 -800-458-0887

Universal Joints, Drive Shafts, Mill Gear Couplings

Erie, PA - USA
1-920-593-2444

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Boksburg, South Africa
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Chambersburg, PA - USA
1-888-829-6637

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Couplings Cont.

TB Wood's

Elastomeric Couplings

Chambersburg, PA - USA
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For application assistance: 1-888-829-6637 – Press #7

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Matrix

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New Hartford, CT - USA
1-800-825-6544

Warner Electric

Electromagnetic Clutches and Brakes

New Hartford, CT - USA
1-800-825-6544

For application assistance: 1-800-825-9050

Saint Barthélémy d'Anjou, France
+33 (0)2 41 21 24 24

Precision Electric Coils and Electromagnetic Clutches and Brakes

Columbia City, IN - USA
1-260-244-6183

Engineered Bearing Assemblies

Kilian

Engineered Bearing Assemblies

Syracuse, NY - USA
1-315-432-0700

Gearing

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Geared Motors

Esslingen, Germany
+49 (711) 3518-0

Middlesex, NJ - USA
1-732-469-8770

Boston Gear

Enclosed and Open Gearing, Electrical and Mechanical P.T. Components

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1-800-825-6544

For application assistance: 1-800-816-5608

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Worm Gear and Helical Speed Reducers

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1-716-298-4100

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Industrial Clutch

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1-262-547-3357

Svendborg Brakes

Industrial Brakes and Brake Systems

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Twiflex

Caliper Brakes and Thrusters

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Twickenham, England
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Wichita Clutch

Pneumatic Clutches and Brakes

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1-800-964-3262

Bedford, England
+44 (0) 1234 350311

Linear Products

Warner Linear

Linear Actuators

New Hartford, CT - USA
1-800-825-6544

For application assistance: 1-800-825-9050

Saint Barthélémy d'Anjou, France
+33 (0)2 41 21 24 24

Overrunning Clutches

Formsprag Clutch

Overrunning Clutches and Holdbacks

Warren, MI - USA
1-800-348-0881– Press #1

For application assistance: 1-800-348-0881 – Press #2

Marland Clutch

Roller Ramp and Sprag Type Overrunning Clutches and Backstops

Warren, MI - USA
1-800-216-3515

Stieber Clutch

Overrunning Clutches and Holdbacks

Heidelberg, Germany
+49 (0) 6221-30470

For information concerning our sales offices in Asia Pacific check our website www.altramotion.com.cn

TB Wood's®
Altra Industrial Motion

www.tbwoods.com

2000 Clovis Barker Road
San Marcos, TX 78666
512-353-4000

Disc-O-Torque Hydraulic Clutches D2 & D3

Installation & Maintenance Manual

P-5052-TBW
Form 1386

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Altra Industrial Motion

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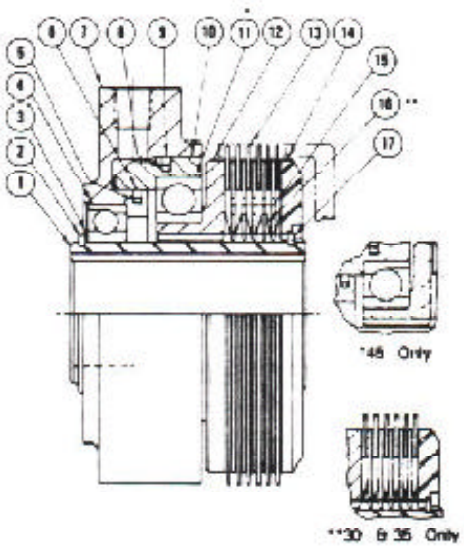
WARNING: DO NOT use Wood's products on any primary aircraft drive or any other drive which could endanger human life should a drive component fail.



Rebuild Kits					
Disc Kit D2xxDK		**Seal Kit** D2xxSK		**Bearing Kit ***** D2xxBK or D3xxBK	
Item	Description	Item	Description	Item	Description
13	Friction Disc	9	Outer Piston Ring	4	Cylinder Bearing
15	Separator Disc	6	Inner Piston Ring	11	Piston Bearing
16	Separator Spring	8	Outer O-Ring	2	Snap Ring
17	Snap Ring	5	Inner O-Ring	3	Shim(s)

*** D2 and D3 are made of the same parts, except for bearings.
All kits can be called out by the D2 number except bearing kits are called out by D2 and D3 prefixes respectfully.

Components not included in rebuild kits.

Item	Description	Notes
1	Hub	When and if these parts require replacement, it is usually a sign unseen damage may have occurred to other components in the clutch assembly. It is recommended that the entire clutch assembly be replaced.
7	Cylinder	
10	Piston	
12	Pressure Plate	
14	Back Plate	

Installation

Friction disc lugs must be slip fit in the drive cup slots. When installing the cup, align lugs and slots carefully. Do not force during assembly; bent lugs will cause the disc to drag.

When installing the clutch, be sure the oil line connection to the clutch is aligned correctly and flexibility or "float" is provided to prevent cocking loads on the clutch bearings.

MAINTENANCE

The Disc-O-Torque clutch, when properly applied and installed, will operate for a long period of time without attention. However, at equipment overhaul time, or when clutch repairs are necessary, all worn parts should be replaced. In addition, all parts subject to cyclic fatigue should be replaced to restore the clutch to "like-new" condition.

Rebuild Kits are available for rebuilding clutches in the field.

HOW TO SELECT AND ORDER THE DISC-O-TORQUE REBUILD KITS:

DISC-O-TORQUE Rebuild Kits can be easily ordered by specifying the proper kit number, series, model number, and bore size of the clutch.

Example: (Seal Kit)	Kit No.	Series	Model No.	Bore
	D245SK	D2	45	1 1/8

NOTE: *Disc Kits and Seal Kits are used for MINOR rebuilds. Bearing Kits will always be used with Disc Kits and Seal Kits for MAJOR rebuilds. It is important to include all above information when ordering the rebuild kit. Neither kit incorporates cylinders, pistons, hubs, pressure plates or back plate. If any of these parts need replacement, the entire assembly should be replaced.*

KITS SHOULD BE OBTAINED FROM THE MANUFACTURER OF THE MACHINE IN WHICH THE CLUTCH IS USED, i.e., THE ORIGINAL EQUIPMENT MANUFACTURER, OR FROM THE LOCAL **TB WOODS** DISTRIBUTOR.

DISASSEMBLY

1. Compress the disc pack by depressing the clutch backplate (14).

2. With the backplate depressed, remove the snap ring (17).

3. Remove friction disc, separator plates and separator springs as a pack (13, 15, & 16). If removing parts individually, note order of assembly.

4. Remove pressure plate (12), piston bearing (11), piston (10), and cylinder (7) from the hub.

5. If any of the above parts are worn, overheated or warped, they should be replaced. Compare each part to a new part to determine degree of wear or distortion.

6. Press the ball bearing (4) from the cylinder (7).

7. Push the cylinder (7) off the piston (10).

8. Check the Teflon seals (6 & 9) and “O” rings (5 & 8) and remove if they are badly worn.

9. If the piston ball bearing is worn and needs replacement, separate the piston (10) and the pressure plate (12). Do not separate these components unless it is necessary to replace parts since the ball bearing could be damaged in the process.

REASSEMBLY

1. Press a new ball bearing (4) into the cylinder, pressing on the outer race of the bearing.

2. Assemble the ball bearing (11) into the piston (10), pressing on the outer race of the bearing.

3. Press the piston and ball bearing onto the pressure plate (12), pressing on the inner race of the bearing.

4. Install the cylinder (7) and ball bearing (4) sub-assembly onto the hub (1).

5. Install the shim (3) and the snap ring (2) onto the hub. Use the same shim originally installed, if it is undamaged.

6. Install the “O” ring (5) and Teflon seal (6) into the cylinder groove. Apply a small amount of oil to assist in assemblyl. NOTE: Teflon seals must be installed with a proper tool, such as an automotive type piston ring compressor.

7. Place the piston ring compressor over the Teflon seal and tighten. This will compress the Teflon seal to allow installation of the piston.

8. Install the “O” ring (8) and the Teflon seal (9) in the piston groove in the same manner outlined above.

9. With both Teflon seals in position, carefully press the piston into the cylinder. As the piston is started into the cylinder, the chamfer should allow it to slide over the Teflon seal without hanging-up and causing damage. At the same time, the outer Teflon seal must be guided into the cylinder with the fingers or a suitable tool.
NOTE: *Damaged Teflon seals will cause leakage.*

10. Proceed to reassemble the remaining parts of the clutch as illustrated on the parts list. Use shims (3) as necessary to provide proper clearance between discs (13) and separators (15). With proper clearance, discs will be free without excessive play.

11. Install the disc pack (13, 15, & 16).
NOTE: *The splined separator discs should slide freely on the hub*.

12. Install the backplate (14) and snap ring (17). The disc pack must be compressed to install the snap ring.

13. Check clearance between the discs. Discs should be evenly spaced with no evidence of binding.

14. Rotate the hub to make sure it is free in all positions.

Altra Industrial Motion

All Customer Service phone numbers shown in bold

Belted Drives and Sheaves

TB Wood's
Belted Drives
Chambersburg, PA - USA
1-888-829-6637 – Press #5
For application assistance: 1-888-829-6637 – Press #7

Couplings

Ameridrives
Mill Spindles, Ameriflex, Ameridisc
Erie, PA - USA
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Gear Couplings
San Marcos, TX - USA
1 -800-458-0887

Universal Joints, Drive Shafts, Mill Gear Couplings
Erie, PA - USA
1-920-593-2444

Bibby Turboflex
Disc, Gear, Grid Couplings, Overload Clutches
Dewsbury, England
+44 (0) 1924 460801
Boksburg, South Africa
+27(0) 11 918 4270

Guardian Couplings
Engineered Flywheel Couplings, Engine Housings and Pump Mounts, Flexible Shaft Couplings
Michigan City, IN - USA
1-219-874-5248

Huco
Precision Couplings and Air Motors
Hertford, England
+44 (0) 1992 501900
Chambersburg, PA - USA
1-888-829-6637

Lamiflex Couplings
Flexible Couplings, Bearing Isolators, and Coupling Guards
Cotia, SP - Brasil
+55 (11) 4615-6300

Couplings Cont.

TB Wood's
Elastomeric Couplings
Chambersburg, PA - USA
1-888-829-6637– Press #5
For application assistance: 1-888-829-6637 – Press #7

General Purpose Disc Couplings
San Marcos, TX - USA
1-888-449-9439

Electromagnetic Clutches and Brakes

Inertia Dynamics
Spring Set Brakes; Power On and Wrap Spring Clutch/Brakes
New Hartford, CT - USA
1-800-800-6445

Matrix
Electromagnetic Clutches and Brakes, Pressure Operated Clutches and Brakes
Brechin, Scotland
+44 (0) 1356 602000
New Hartford, CT - USA
1-800-825-6544

Warner Electric
Electromagnetic Clutches and Brakes
New Hartford, CT - USA
1-800-825-6544
For application assistance: 1-800-825-9050

Saint Barthélémy d'Anjou, France
+33 (0)2 41 21 24 24
Precision Electric Coils and Electromagnetic Clutches and Brakes
Columbia City, IN - USA
1-260-244-6183

Engineered Bearing Assemblies

Kilian
Engineered Bearing Assemblies
Syracuse, NY - USA
1-315-432-0700

Gearing

Bauer Gear Motor
Geared Motors
Esslingen, Germany
+49 (711) 3518-0
Middlesex, NJ - USA
1-732-469-8770

Boston Gear
Enclosed and Open Gearing, Electrical and Mechanical P.T. Components
Charlotte, NC - USA
1-800-825-6544
For application assistance: 1-800-816-5608

Nuttall Gear and Delroyd Worm Gear
Worm Gear and Helical Speed Reducers
Niagara Falls, NY - USA
1-716-298-4100

Heavy Duty Clutches and Brakes

Industrial Clutch
Pneumatic and Oil Immersed Clutches and Brakes
Waukesha, WI - USA
1-262-547-3357

Svendborg Brakes
Industrial Brakes and Brake Systems
Vejstrup, Denmark
+45 63 255 255

Twiflex
Caliper Brakes and Thrusters
Wichita Falls, TX - USA
1-844-723-3483
Twickenham, England
+44 (0) 20 8894 1161

Wichita Clutch
Pneumatic Clutches and Brakes
Wichita Falls, TX - USA
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Bedford, England
+44 (0) 1234 350311

Linear Products

Warner Linear
Linear Actuators
New Hartford, CT - USA
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For application assistance: 1-800-825-9050
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Overrunning Clutches

Formsprag Clutch
Overrunning Clutches and Holdbacks
Warren, MI - USA
1-800-348-0881– Press #1
For application assistance: 1-800-348-0881 – Press #2

Marland Clutch
Roller Ramp and Sprag Type Overrunning Clutches and Backstops
Warren, MI - USA
1-800-216-3515

Stieber Clutch
Overrunning Clutches and Holdbacks
Heidelberg, Germany
+49 (0) 6221-30470

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