

# MS Sheave Design 2

## Installation & Maintenance Manual

P-5064-TBW  
Form 651H



**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 aircraft propeller or rotor drive systems, or on in-flight accessory drives. Wood's products are NOT designed or intended for aircraft use.**

## FEATURES

Wood's MS-type motion control variable speed sheaves incorporate a unique and proven lubrication system that eliminates the freezing and sticking of movable parts due to fretting corrosion. There are no keys between the flange and its sleeve to establish point contact and obstruct lubrication. Instead, the load is transmitted from the stationary flange to the adjustable flange through a series of torsionally resilient keys, which are located outside the bearing surfaces. These resilient keys assure a continuous, rotational pumping action of the adjustable flange on the sleeve which, along with centrifugal force, results in a constantly renewed and evenly distributed film of oil on the bearing surfaces. Two O-ring seals prevent the oil from escaping from the bearing surfaces.

Because of this positive lubrication, the only maintenance required for the sheave is a periodic check of the oil in the reservoir every 500 hours. Oil is added as needed through the oil fill plug in the end cap or the external Sight-Lube reservoir.

**Note that there are two basic designs** of MS-type sheaves now in service. Although this has no bearing on installation procedures and operation, it does affect maintenance. **Do not attempt to disassemble an MS sheave without positively identifying its design.** This instruction sheet covers design 2. The spring is contained within a cartridge, which may be removed for easy inspection and maintenance without placing the sheave under a press to contain the spring forces.

## IDENTIFICATION

**Do not disassemble this sheave unless you are certain that it is of the spring can type**, as shown in the photographs (Figure 1 and 2) and described below. If in doubt, contact TB Wood's Incorporated.



**FIGURE 1**



**FIGURE 2**

The spring cartridge design 2 MS sheave is identified by the legend TB WOOD'S, CHAMBERSBURG, PA die cast into the end of the spline cap in raised letters.

If the unit cannot be identified as a spring cartridge design 2 MS sheave DO NOT USE THESE INSTRUCTIONS, contact TB Wood's Incorporated for the correct instructions.

# INSTALLATION OF MS DRIVE (V-FLAT)

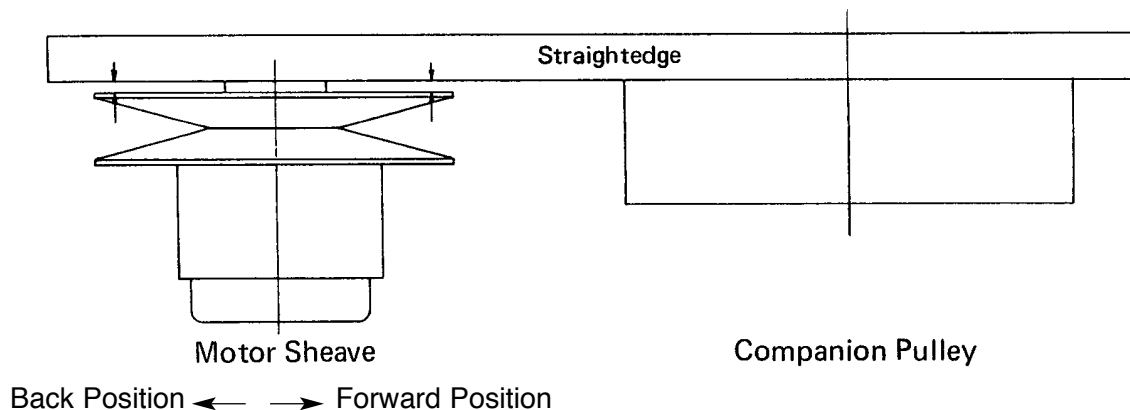
*Using flat companion and straight mounting the motor.*

1. Note instructions furnished with the bushing for installing companion pulley. If an outboard support is used, place belt over pulley or shaft before fastening bearing. Install and secure companion pulley.
2. Place motor base in its approximate position. To find its approximate position, place the belt in position over the companion pulley and hold its other end out at roughly the height of the motor. Place motor on the motor base and secure.
3. Mount MS sheave on motor shaft, leaving approximately 1/8" of usable shaft for final alignment. Secure the sheave to the shaft by: 1) Tightening the two setscrews on the hub or 2) torquing the clamp screw to 50 ft. lb. depending on the model of the sheave.



**FLAT COMPANION PULLEY**

4. Adjust base by turning handwheel to its furthest forward position, then adjust back approximately 3/4". This is the minimum center distance position. Slide the motor base on the floor to achieve the minimum shaft center distance given in the catalog drive tables for your drive or until the belt is tight when it is in position and the MS is at maximum P.D.
5. Position base by placing a straightedge along the side of the companion pulley and measuring in to the inboard flange of the MS. The straightedge should be 1/8" from the flange of the MS at two points across the flange (See Figure 3). Do this procedure both above shaft center **and** below shaft centers.



**FIGURE 3**

6. Secure the motor base to the floor or machine base.
7. Adjust motor base to the extreme forward position and place belt over pulley and in sheave flanges. Rotate the drive by hand to seat the belt while adjusting the motor base to obtain the center distance associated with the maximum speed setting.
8. Check all setscrews and bolts for tightness.
9. Check oil level in sheave's reservoir to ensure that it is full (Refer to page 7).
10. Start drive. Adjust motor back until the MS is at its minimum pitch diameter position. Stop drive and check alignment. The distance from the straightedge to the MS flange should still be 1/8".
11. Start drive and reset to desired speed. Stop drive and install drive guards.

# INSTALLATION OF MS DRIVE (V-V)

Using grooved companion and angle mounted sliding plate motor base.

**Note: The sliding plate of an MC motor base used for this installation must be angle drilled and tapped specifically for your application.** Facing the handwheel end, if the motor shaft points to the right, the motor must travel to the left as the center distance is increased; if the shaft points to the left, the motor must travel to the right as the center distance is increased. This movement compensate for flange movement, keeping the belt aligned at all times.

- Note instructions furnished with the bushing for installing companion pulley. If an outboard support is used, place belt over pulley or shaft before fastening bearing. Install and secure the companion sheave.

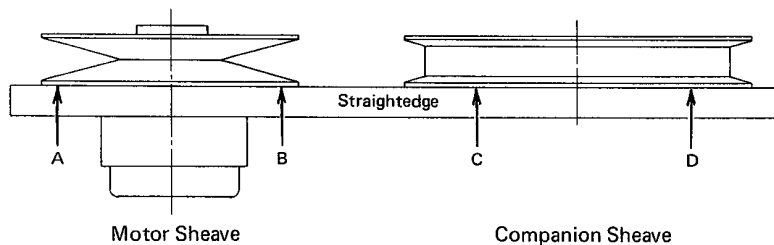


Grooved Companion Sheave

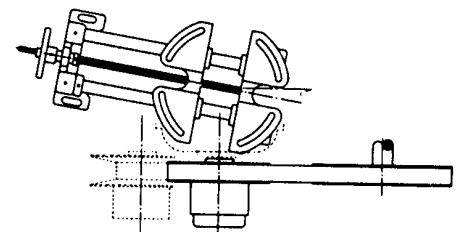


MC Motorbase (Sliding Plate Style)

- Place motor base in its approximate position. To find its approximate position, place the belt in position over the companion pulley and hold its other end out at roughly the height of the motor. Place motor on motor base and secure.
- Mount MS sheave on motor shaft, leaving approximately 1/8" of usable shaft for final alignment. Secure the sheave to the shaft by: 1) Tightening the two setscrews on the hub or 2) torquing the clamp screw to 50 ft. lb. depending on the model of your sheave.
- Adjust motor base by turning handwheel to its furthest forward position, then adjust back approximately 3/4". This is the minimum center distance position. Slide the motor base on the floor to achieve the minimum shaft center distance given in the catalog drive tables for your drive or until the belt is tight when it is in position and the MS is at maximum P.D.



Back Position ← → Forward Position **FIGURE 4**



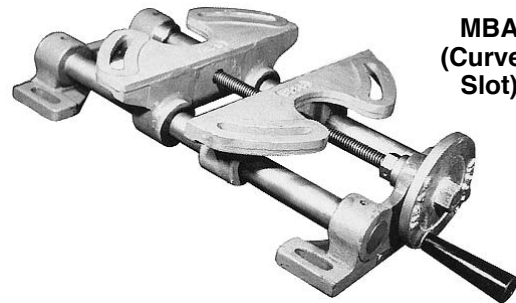
- Position base by placing a straightedge along the flange of the MS. The straightedge must touch the MS and the companion sheave at four points: A, B, C and D. The motor base will be at an angle to the driven shaft, but the motor shaft and the drive shaft will be parallel (see Figure 4).
- Fasten the motor base to the floor.
- Adjust motor base to the extreme forward position and place the belt over the sheaves. Rotate the drive by hand and adjust the motor base to seat the belt while adjusting the motor base to obtain the center distance required for the maximum speed setting.
- Check all bolts and setscrews for tightness.
- Check sheave's oil level to ensure that it is full (refer to page 7).
- Start the drive and adjust the motor back until the MS is in its minimum pitch diameter position. Recheck alignment as above and adjust as necessary.
- Start drive and reset to desired speed. Stop drive and install drive guards.

# INSTALLATION OF MS DRIVE (V-V)

Using grooved companion and curved slot motor base.



Grooved  
Companion  
Sheave



MBA  
(Curved  
Slot)

1. Mount the companion sheave according to the instructions furnished.
2. Set the motor base in its approximate position and perpendicular to the driveN shaft. To find its approximate position, place the belt in the groove of the companion sheave and hold its other end out at roughly the height of the motor.
3. In order to obtain the correct offset angle, place the motor on the motor base with its shaft parallel to the driveN shaft. Make sure motor is square with adjusting screw and motor base rails. Insert the motor bolts and nuts, and finger-tighten. Turning the handwheel, adjust the base until the motor is as close to the companion sheave as possible, then back it off 3/4 to 1". This is the minimum center distance position.
4. Slide the motor base on the floor to obtain the minimum shaft center distance given in the catalog drive tables for your drive. If you do not have this information, you can find the minimum center distance by placing the belt in position and sliding the motor base until the belt is tight but the MS sheave is at maximum P.D. Record the distance between shafts.
5. Place the MS on the motor shaft, allowing 1/8" of usable shaft for final alignment.
6. Temporarily align the two sheaves, using the four-point method shown in Figure 4. Secure the MS to the motor shaft by 1) tightening the two setscrews on the hub or 2) torquing the clamp screw to 50 ft. lb. depending on the model of your sheave.

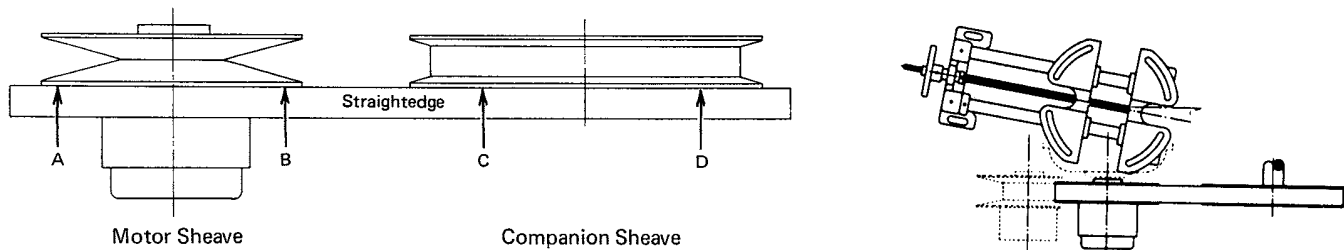


FIGURE 4

7. With a sharp crayon or chalk, draw an arrow on the floor at the points on the motor base's two aluminum index plates marked "O." These plates are located one at each end of the motor board.
8. Determine the correct offset angle for the base from the proper table on page 6. Pivot the motor base on the floor to correct angle. The markings on the index plates are the offset angles in degrees. **Make sure that both ends of the base are rotated correctly.** NOTE: When correctly angled, the motor will move laterally opposite the direction in which the motor shaft points while the position between shafts is being increased.

# INSTALLATION OF MS DRIVE (V-V)

Using grooved companion and curved slot motor base (continued).

To Find Offset Angle:

- a. Determine mean center distance from the catalog drive tables by using the formula below:

$$\text{Mean C.D.} = \frac{\text{Max. C.D.} + \text{Min. C.D.}}{2}$$

OR

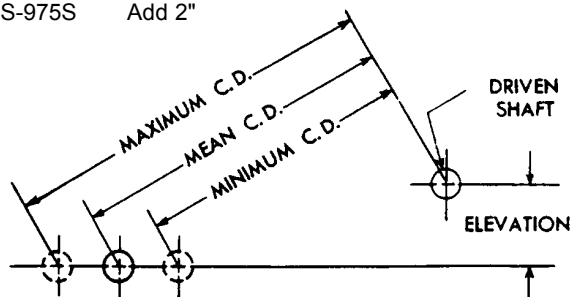
Add to the min. C.D. you found in step 4 according to the following table:

MS-77	Add 2"
MS-97	Add 3-1/4"
MS-100R	Add 2-3/8"
MS-100W	Add 2-1/2"
MS-127	Add 4-1/4"
MS-975S	Add 2"

- b. Measure the vertical heights of the driver and driven shafts. The difference is the centerline elevation.
- c. Using appropriate table below required elevation, read across until mean center is located; then read at bottom of table the offset angle. Interpolate for elevations or center distances not shown.

Example: Sheave MS-100-W

C.D. Min. 18.0, Max. 22.0; mean C.D. = 20  
 Height of driver = 11., height of driven = 18  
 Elevation 7"  
 Offset angle – 9-1/2°



		MS-77										
Elevation – Inches	3	Main Center Distance – inches										9"
	4	Offset angle 7-1/2° for less than 3" elevation; all center distances.										12*
	5				9	10	11	12	13	14	15	15*
	6				9	10	11	12	13	14	15	18*
	7				9	10	11	12	13	14	15	21*
	8	9	10	10	11	12	13	14	15	16	17	24*
	10	12	12	13	14	15	17	21	21	29*		
12	14	14	15	16	18	21	25	35*				
14	16	17	18	19	21	24	29	41*				
16	18	19	20	22	24	27	33	47*				
Offset Angle	4°	4½°	5°	5½°	6°	6½°	7°	7½°				

		MS-100R												
Elevation – Inches	3	Main Center Distance – inches										13"		
	4	Offset angle 10° for less than 3" elevation; all center distances.										18*		
	5								10	11	13	16	22*	
	6								11	12	16	19	27*	
	7								11	12	14	18	22	31*
	8					11	12	13	14	17	21	25	36*	
	10	12	12	13	14	15	16	18	21	26	32	45*		
12	14	15	15	16	17	19	21	25	32	38	53*			
14	17	17	18	19	20	22	25	29	37	45	62*			
16	19	20	21	22	23	26	28	33	42	51*				
Offset Angle	5½°	6°	6½°	7°	7½°	8°	8½°	9°	9½°	9¾°	10°			

		MS-97										
Elevation – Inches	3	Main Center Distance – inches										10"
	4	Offset angle 9° for less than 3" elevation; all center distances.										13*
	5										11	16*
	6										11	19*
	7										11	22*
	8				11	12	13	15	18	25*		
	10	12	13	14	15	16	18	22	32*			
12	15	15	16	18	20	22	27	38*				
14	17	18	19	21	23	26	31	44*				
16	20	21	22	24	26	30	36	50*				
Offset Angle	5½°	6°	6½°	7°	7½°	8°	8½°	9°				

		MS-100W MS-127 MS-110R MS-975-S														
Elevation – Inches	3	Main Center Distance – inches										11	19"			
	4	Offset angle 10° for less than 3" elevation; all center distances.										12	15	23*		
	5										11	14	19	29*		
	6										11	13	17	22	35*	
	7										11	13	15	20	26	41*
	8					11	12	13	15	17	23	30	47*			
	10	12	12	13	14	15	16	18	21	28	37	58*				
12	14	15	16	17	18	19	22	26	34	44*						
14	17	17	18	19	21	23	25	30	40	50*						
16	19	20	21	22	24	26	29	34	46	57*						
Offset Angle	5½°	6°	6½°	7°	7½°	8°	8½°	9°	9½°	9¾°	10°					

\*Mean center distances and larger.

9. Loosen the motor bolts and swivel the motor on the base until it is parallel with the driven shaft. Place a straightedge across the driven sheave and measure the distance from the straightedge to the MS flange. **Do not** move the MS. Place a chalk mark on the floor this distance from the marks made in Step 7. Shift the entire base laterally until the required offset angle marks on both index plates are over the new points. Check the drive alignment as shown in Figure 4 both with the straight edge above **and** below the sheet centers.
10. Bolt motor base to floor. Realign the sheaves with the straightedge as above. Bolt the motor securely to the motor base and resecure the MS sheave to the shaft if you moved it for this final alignment.
11. Adjust the base forward beyond the minimum center distance position and place the belt in the companion sheave. Place the belt in the MS, and rotate the drive by hand to seat the belt until the top is flush with the edges of the flanges. The sheave is now at its maximum pitch diameter. Secure one of the set collars on the motor base rails to stop the base's travel at this position.
12. Check sheave's oil level to ensure that it is full (see page 7).
13. Start the drive and adjust the motor base back until the MS is in its minimum pitch diameter position. Stop drive and use the four-point alignment system to check the alignment of the drive. Secure the second set collar on the motor base rail at this position. (Set collars can be placed in any position where high-low speed limits are required.) Start drive and set to desired speed. Instead drive guards.

# LUBRICATION

When it is necessary to add oil, approved oil should be used. Wood's preferred oil, furnished in the sheaves initially, is SPARTAN EP460, sold by Exxon. Other acceptable commercial brands of oil which are readily available are:

- Amoco Oil Co. – Amogear EP460
- Ashland Oil Co. – Valvoline 831, SAE 80-85-90
- Chevron, USA – Chevron Ultragear SAE 85-140
- Continental Oil Co. – Conoco Gear Oil 460

Damage caused by the use of a non-recommended oil is not covered under Wood's warranty.

To check the oil level and refill the reservoir:

1. Rotate the sheave until the oil fill plug is in its uppermost (12:00) position. Remove the plug.
2. Slowly rotate the sheave until oil appears in the hole. If the reservoir is half full or less, add oil.
3. Rotate the sheave until the oil hole is at 12:00, and fill using a pump-type oil can and pumping slowly. When filled, replace the plug and wipe the end of the sheave.

If the MS is fitted with the optional "Sight-Lube" Oil System, merely check the level in the sight gauge reservoir, refilling it through the top. It is not necessary to shut down the drive if this system is used.

## SIGHT-LUBE LUBRICATION SYSTEM



Reservoir Kit

The ADAPTER KIT, shown at right, consisting of the sheave adapter, gasket and three cap screws is available to fit the Wood's oil lubricated variable speed sheaves (listed below).

The RESERVOIR KIT, at left, is included with all Sight-Lube systems unless specified otherwise. The reservoir is of clear polycarbonate plastic permanently attached to a durable plastic bracket with holes for mounting to any vertical or horizontal surface. This kit also includes a 36" section of hose with the necessary clamps for connecting to the rotating joint on the sheave.



Sheave Adapter Kit

### Kits Available

For Use With Variable Sheave No.	Adapter Kit	Reservoir Kit
	Kit No.	Kit No.
MS-97	SL2K	SR2K
MS-127, MS-100W, MS-975-S	SL3K	SR2K

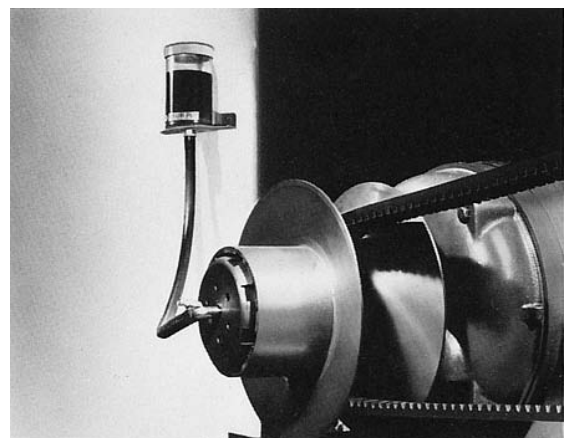


FIGURE 5

# O-RING REPLACEMENT

**Do not disassemble this sheave unless you are certain that it is of the spring cartridge Design 2, as described on page 1 of this manual.**

The following items are recommended for O-ring replacement.

1. Wood's MS seal replacement kit (MS Kit No. 1), consisting of two O-rings, one plastic gasket, one fill plug washer, and one-2cc tube of Loctite® locking compound (see repair parts).
2. Allen hex wrench or 12 pt.
3. A cup or can to hold drained oil.
4. One pint recommended oil.

## DISASSEMBLY

After making sure that your sheave is the spring cartridge Design 2, proceed with the disassembly. The sheave may be easily disassembled for inspection and service without removing it from the motor shaft. In extremely dirty atmospheres or poorly lighted areas, however, better service could be given if the sheave is removed and taken to a better work area. In either case, the work area should be clean, and care should be taken to keep dirt from the machined parts of the sheave and the O-ring seals.

1. Stop the drive and rotate by hand and decrease center distance until the belt can be removed from the sheaves. If space or other operating factors do not allow belt removal by this method, use a soft pine block to force the flanges of the MS sheave open to remove the belt.
2. If you wish to remove the sheave from the motor for service, loosen the two setscrews or the clamp screw in the inboard hub. If the sheave is difficult to move, remove the setscrews and drip penetrating oil into the setscrew holes or put penetrating oil in the slots of the sleeve. When left to penetrate, this should loosen the sheave. **Do not apply force to the flanges other than that which can be applied with the bare hands.** If you remove the sheave, it is not necessary to drain the sheave as in step 3 unless it is fitted with Sight-Lube.

### FOR STANDARD MS SHEAVES

3. Remove the oil fill plug and drain the oil into a cup. Rotate the sheave until the oil fill hole is in its lowest position (6:00) to drain as much as possible.
4. Use a marking pen or quick-drying paint to reference all parts as shown in Figure 6. **This is important**, as all parts must be reassembled in their original positions to maintain the sheave's balance.

### FOR MS SHEAVES WITH SIGHT-LUBE

- 3A. Disconnect the Sight-Lube hose from the sheave and drain the reservoir and hose into a cup. Turn the elbow on the sheave downward, and holding it in this position, rotate the sheave slowly to drain it.



FIGURE 6



## O-RING REPLACEMENT (*continued*)

### FOR STANDARD MS SHEAVES

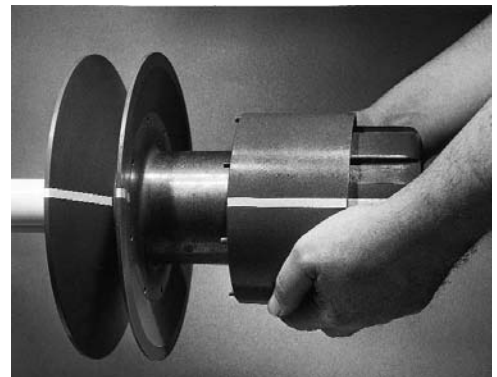
5. Remove all socket head capscrews from the spline cap. The cartridge made up of the spline cap, spring and splined rim may now be removed. See Figure 7.

### FOR MS SHEAVES WITH SIGHT-LUBE

- 5A. Remove the three capscrews which hold the Sight-Lube adapter in place, and remove the adapter and rubber gasket. Wipe the end dry and remove the remaining three capscrews. The cartridge may now be removed.

**CAUTION: DO NOT DISASSEMBLE THE SPRING CARTRIDGE.** It is not necessary for routine maintenance. The cartridge contains a spring under high pressure.

6. If you have removed the sheave from its shaft for service, hold both flanges together and pour the oil in it into a cup.
7. Slide the adjustable flange from the stationary flanged hub (Figure 7).
8. Remove the old O-rings from the bore of the adjustable flange and discard them. Discard the gasket from the inside of the cartridge assembly. Using a degreaser-soaked rag, clean the inside of the oil reservoir; the bore of the adjustable flange and the sleeve portion of the stationary flanged hub. Flush out the inside of the spring cartridge with cleaning solvent and dry it thoroughly. Take care not to scratch the ground surface of the stationary flanged hub, as this could damage the new O-ring seals and cause leakage.



**FIGURE 7**

## INSPECTION

1. Carefully inspect the bore of the adjustable flange and the ground surface of the sleeve of the stationary flanged hub for wear or pitting. If the sheave was operated at any time without oil, there is a possibility that these bearing surfaces will show signs of fretting corrosion. If the adjustable flange is frozen to the stationary flange, or if there is any wear or corrosion, the sheave must be replaced.
2. Check the resilient keys in the spring cartridge. If they are worn or deformed, replace the entire set. (MS-Kit No. 2). See replacement parts on page 12.
3. If the pegs on the bottom of the spring cartridge assembly are worn or partially sheared, order a new cartridge assembly (MS-Kit No. 3). See replacement parts on page 12.

## PARTS REPLACEMENT

### RESILIENT KEY REPLACEMENT

**(Use extreme caution when working with the spring cartridge assembly.)**

To replace the keys, place the spring can assembly under an arbor press with the pegs down, and press the splined cap into the splined rim far enough to free the snap ring in the splined rim. Use a screw driver to remove the snap ring. Release the ram of the press only enough to expose the keys. Remove the old keys and replace with new ones. Press the cap back into the rim and install the snap ring. Release the press slowly, making sure the ring is seated.

## O-RING REPLACEMENT (*continued*)

### BORE PLUG SEAL REPLACEMENT

1. If any leakage of oil from the bore was observed, the bore plug should be replaced. See Replacement Parts List (page 12) for the correct size. To replace:
  - a. Remove the stationary flanged hub from the motor as in Step 2, page 8.
  - b. Stand the flanged hub with its flanged end up. Using a bar or large screwdriver, drive the plug out through the oil reservoir. Note: MS sheaves with bores 1-3/8" and larger have a snap ring in the bore to protect the plug. Do not damage this while removing the plug.
  - c. Stand the flanged hub on its flanged end. Place the new plug in the oil reservoir with its concave face down. Using a piece of shafting or a round bar 1/8" smaller than the plug, push the plug down until it is seated. With a sharp hammer blow, expand the plug until the upper face is dimpled slightly. Plug is now seated properly.

### MODIFICATION OF OLDER MS100W AND MS127W SHEAVES FOR A NEW SPRING CARTRIDGE

**NOTE:** To replace the spring cartridge on sheaves built prior to June 1971, the adjustable flange of your sheave must be redrilled to accept the larger (5/16" dia.) pegs on the bottom of this assembly. If this is the case, please follow these instructions carefully.

1. Construct a drill jig or template with 8 evenly spaced 21/64 holes on a 5.625 bolt circle which will fit over the hub of the adjustable flange (3-21/32 hole in center).
2. Place your jig or template over the hub of the adjustable flange and align the holes in the template with the holes in the flange (the old holes in the flange are on a 5.75 bolt circle; so even when the holes are aligned, those in the template will not be directly over those in the flange).
3. Hold the flange stationary, and rotate the jig or template exactly 60°. Mark holes and drill 21/64 x 1/4 deep. NOTE: 60° rotation keeps two flanges aligned at final assembly.
4. Replace old O-rings and reassemble the sheave as follows. **Be certain that the match marks are aligned.**

## O-RING REPLACEMENT (*continued*)

### ASSEMBLY

1. Moisten the bore of the adjustable flange and the bearing surface of the flanged hub with a light coat of oil. Spread a light coat of oil on the O-rings. Insert the two new O-rings into the grooves in the bore, as in Figure 8.
2. Place the adjustable flange over the stationary flanged hub, taking care not to pinch the O-rings. **Do not bounce the adjustable flange on the sleeve to start it.** Line up the location marks.
3. If the sheave was removed from the motor for service, fill the oil reservoir to within 1/2" of the top with fresh oil.
4. Place the new plastic gasket over its pilot inside the spring can, and align the holes. It is helpful to spread two or three dabs of grease on the gasket to hold it in place.
5. Place spring cartridge over the adjustable flange and align all location marks. Guide the studs on the bottom of the can into the holes in the adjustable flange, as in Figure 9.



FIGURE 8



FIGURE 9

#### FOR STANDARD MS SHEAVES

6. Spread two or three drops of the Loctite® locking compound supplied with the kit on the threads of the capscrews. Insert them and tighten them to the torque values below.
7. If you did not remove the sheave from the shaft, use a pump-type oil can to fill the sheave with oil, with the oil fill hole in the uppermost position.
8. Remove and discard the old oil fill plug gasket and replace it with the new one in the repair kit. Replace and tighten the oil fill plug.

#### FOR MS SHEAVES WITH SIGHT-LUBE

- 6A. Spread Loctite® locking compound on the threads of the three **short** capscrews. Insert them in every other hole and tighten them to the values given below.
- 8A. Place the rubber gasket and Sight-Lube adapter on the end of the sheave. Loctite the long capscrews, insert to the values below.

#### NOTE: Capscrews must be tightened with a torque wrench to these values:

No. 10-24NC	95 to 100 in.-lbs.
1/4-20NC	170 to 175 in.-lbs.

9. For preventative maintenance record, scribe or stamp the date of repair on the spline cap. If you replaced the spring cartridge assembly, stamp all the information that was on your old splined cap onto the new one.
10. Sheave is now ready to be returned to service.

# REPLACEMENT PARTS

TB Wood's Incorporated will supply **no** rotating cast iron parts for field replacement. Should such a part require replacement, it must be replaced at our factory where your sheave will be completely rebuilt and rebalanced before it is returned to you.

**All other** parts are available in individual or kit form as listed below.

## KIT DESCRIPTION

### Seal Kit (Kit #1)

Contains two o-rings, one gasket, one fill plug washer, and one 2cc tube Loctite locking compound.

### Resilient Key Kit (Kit #2)

Contains six or eight keys (pads) depending on the number required.

### Spring Can Assembly (Kit #3)

Complete assembly used on all Design II sheaves.

Sheave	Seal Kit (Kit #1)	Resilient Key Kit (Kit #2)	Spring Can Assembly (Kit #3)	Bore Plug
MS-58	MS58K1	MS58K2	MS58K3	M304
MS-72	MS58K1	MS58K2	MS72K3	M304
MS-77 Design II	MS58K1	MS58K2	MS77K3	M304
MS-97 Design II	MS97K1	MS97K2	MS97K3	M302
MS-975-S	MS100K1	MS100K2	MS100K3A	M303
MS-100-W	MS100K1	MS100K2	MS100K3A	M303
MS-127 Design II	MS100K1	MS100K2	MS127K3A	M303



All Customer Service phone numbers shown in bold

Belted Drives and Sheaves	Couplings Cont.	Gearing	Linear Products
<p><b>TB Wood's</b> <i>Belted Drives</i> Chambersburg, PA - USA <b>1-888-829-6637</b> – Press #5 <i>For application assistance:</i> <i>1-888-829-6637 – Press #7</i></p>	<p><b>TB Wood's</b> <i>Elastomeric Couplings</i> Chambersburg, PA - USA <b>1-888-829-6637</b> – Press #5 <i>For application assistance:</i> <i>1-888-829-6637 – Press #7</i> <i>General Purpose Disc Couplings</i> San Marcos, TX - USA <b>1-888-449-9439</b></p>	<p><b>Bauer Gear Motor</b> <i>Gearred Motors</i> Esslingen, Germany <b>+49 (711) 3518-0</b> Middlesex, NJ - USA <b>1-732-469-8770</b></p>	<p><b>Warner Linear</b> <i>Linear Actuators</i> New Hartford, CT - USA <b>1-800-825-6544</b> <i>For application assistance:</i> <i>1-800-825-9050</i> Saint Barthélemy d'Anjou, France <b>+33 (0)2 41 21 24 24</b></p>
<p><b>Couplings</b></p>	<p><b>Electromagnetic Clutches and Brakes</b></p>	<p><b>Boston Gear</b> <i>Enclosed and Open Gearing, Electrical and Mechanical P.T. Components</i> Charlotte, NC - USA <b>1-800-825-6544</b> <i>For application assistance:</i> <i>1-800-816-5608</i></p>	<p><b>Overrunning Clutches</b></p>
<p><b>Ameridrives</b> <i>Mill Spindles, Ameriflex, Ameridisc</i> Erie, PA - USA <b>1-814-480-5000</b> <i>Gear Couplings</i> San Marcos, TX - USA <b>1-800-458-0887</b> <i>Universal Joints, Drive Shafts, Mill Gear Couplings</i> Erie, PA - USA <b>1-920-593-2444</b></p>	<p><b>Inertia Dynamics</b> <i>Spring Set Brakes; Power On and Wrap Spring Clutch/Brakes</i> New Hartford, CT - USA <b>1-800-800-6445</b></p>	<p><b>Nuttall Gear and Delroyd Worm Gear</b> <i>Worm Gear and Helical Speed Reducers</i> Niagara Falls, NY - USA <b>1-716-298-4100</b></p>	<p><b>Formsprag Clutch</b> <i>Overrunning Clutches and Holdbacks</i> Warren, MI - USA <b>1-800-348-0881</b> – Press #1 <i>For application assistance:</i> <i>1-800-348-0881 – Press #2</i></p>
<p><b>Bibby Turboplex</b> <i>Disc, Gear, Grid Couplings, Overload Clutches</i> Dewsbury, England <b>+44 (0) 1924 460801</b> Boksburg, South Africa <b>+27(0) 11 918 4270</b></p>	<p><b>Matrix</b> <i>Electromagnetic Clutches and Brakes, Pressure Operated Clutches and Brakes</i> Brechin, Scotland <b>+44 (0) 1356 602000</b> New Hartford, CT - USA <b>1-800-825-6544</b></p>	<p><b>Heavy Duty Clutches and Brakes</b></p>	<p><b>Marland Clutch</b> <i>Roller Ramp and Sprag Type Overrunning Clutches and Backstops</i> Warren, MI - USA <b>1-800-216-3515</b></p>
<p><b>Guardian Couplings</b> <i>Engineered Flywheel Couplings, Engine Housings and Pump Mounts, Flexible Shaft Couplings</i> Michigan City, IN - USA <b>1-219-874-5248</b></p>	<p><b>Warner Electric</b> <i>Electromagnetic Clutches and Brakes</i> New Hartford, CT - USA <b>1-800-825-6544</b> <i>For application assistance:</i> <i>1-800-825-9050</i> Saint Barthélemy d'Anjou, France <b>+33 (0)2 41 21 24 24</b> <i>Precision Electric Coils and Electromagnetic Clutches and Brakes</i> Columbia City, IN - USA <b>1-260-244-6183</b></p>	<p><b>Industrial Clutch</b> <i>Pneumatic and Oil Immersed Clutches and Brakes</i> Waukesha, WI - USA <b>1-262-547-3357</b></p>	<p><b>Stieber Clutch</b> <i>Overrunning Clutches and Holdbacks</i> Heidelberg, Germany <b>+49 (0) 6221-30470</b></p>
<p><b>Huco</b> <i>Precision Couplings and Air Motors</i> Hertford, England <b>+44 (0) 1992 501900</b> Chambersburg, PA - USA <b>1-888-829-6637</b></p>	<p><b>Engineered Bearing Assemblies</b></p>	<p><b>Svendborg Brakes</b> <i>Industrial Brakes and Brake Systems</i> Vejrstrup, Denmark <b>+45 63 255 255</b></p>	<p><b>Wichita Clutch</b> <i>Pneumatic Clutches and Brakes</i> Wichita Falls, TX - USA <b>1-800-964-3262</b> Bedford, England <b>+44 (0) 1234 350311</b></p>
<p><b>Lamiflex Couplings</b> <i>Flexible Couplings, Bearing Isolators, and Coupling Guards</i> Cotia, SP - Brasil <b>+55 (11) 4615-6300</b></p>	<p><b>Kilian</b> <i>Engineered Bearing Assemblies</i> Syracuse, NY - USA <b>1-315-432-0700</b></p>	<p><b>Twiflex</b> <i>Caliper Brakes and Thrusters</i> Wichita Falls, TX - USA <b>1-844-723-3483</b> Twickenham, England <b>+44 (0) 20 8894 1161</b></p>	<p><i>For information concerning our sales offices in Asia Pacific check our website www.altramotion.com.cn</i></p>



[www.tbwoods.com](http://www.tbwoods.com)

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