MCS Sheave

Installation & Maintenance Manual

P-5065-TBW
Form 656F

TB Wood's®
Altra Industrial Motion

⚠ **WARNING: Cancer - www.P65Warnings.ca.gov**

I. Installation Instructions

1. Remove MCS sheave from carton or wooden crate and inspect for any broken pieces. If broken, a claim should be filed with the freight company.

2. Hold sheave by both flanges and gently bump end of sheave against a wooden block on the floor to move flanges on sleeve. Because of sheave design and size this step should be omitted when installing an MCS-14Y or MCS-15Y.

3. Locate Wood's Motor Base on mounting surface in its approximate position, but do not fasten in place at this time. For specific motor base installation, follow instructions packaged with base.

4. Place motor on base with motor shaft at a right angle to the line of travel of motor base, and parallel to driveN shaft. Insert motor bolts and finger tighten.

5. Adjust the motor base to move motor as close to driveN shaft as possible; then back off 3/4 to 1 inch.

6. Install companion sheave on driveN shaft and tighten according to installation instructions packaged with the Sure-Grip bushing.

7. Inspect motor shaft and key for nicks or burrs, and remove if present. Place MCS sheave on motor shaft, but do not secure. Allow no more than 1/8" of usable shaft for final sheave alignment.

8. Without the belt in the groove, center MCS flanges so that the distance from the end cap to outboard flange agrees with the dimensions given in table next to Fig. 1. **THIS IS IMPORTANT TO ACHIEVE PROPER DRIVE ALIGNMENT.** Omit when MCS-14Y or MCS-15Y with central snap ring is being used.

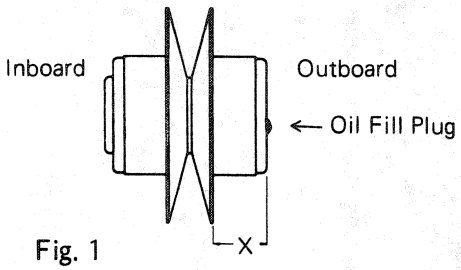


Fig. 1

Sheave Model	X Dimension Flange Thickness		
	1/8"	1/4"	3/8"
MCS-10R, MCS-10W MCS-12W	2-7/8	....	....
MCS-10W-HD, MCS-12W-HD MCS-11S, MCS-12S, MCS-13S	3-1/4	3-1/8	....
MCS-13Y	....	3-5/16	....
MCS-14Y, MCS-15Y	...	....	4-5/8

9. Align the sheaves using four point alignment method described below and shown in Figure 2. The alignment procedure will vary according to flange thickness.

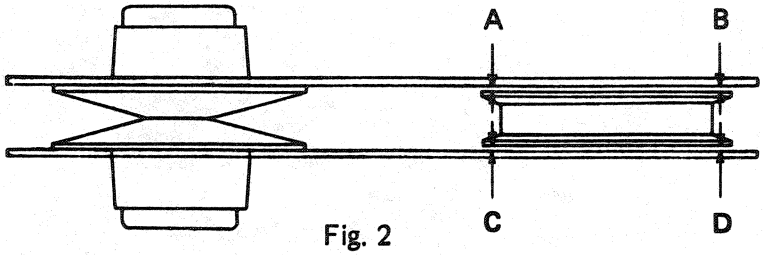


Fig. 2

If flanges measure 1/4 or 3/8-inch thick, place straightedge across the side of the MCS, making sure it touches both sides of rim. Measure distance from straightedge to companion sheave rim at points

A and B, then place straightedge on other side of sheaves and repeat the measurement for points C and D. The drive is aligned when all four points are the same distance from the companion sheave rim.

If flanges measure 1/8-inch thick, reverse the above procedure, placing straightedge across companion sheave and measuring to MCS flanges.

10. Being careful not to jar the motor base out of position adjust base to the maximum center distance position and recheck alignment. Good alignment verifies the base to be at right angles to the driveN shaft. Remember, misalignment will be reflected in drive performance in the form of accelerated sheave and belt deterioration.

11. Using a **TORQUE WRENCH** secure sheave to motor shaft with the **REQUIRED** clamping torque indicated in the chart below. Failure to do so will result in damaging the sheave.

MCS Sheave	Clamping Means	Clamp Torque
All MCS-S	Clamp Screw	50 ft. lbs.
MCS-13Y	Clamp Screw	50 ft. lbs.
MCS-14Y	Clamp Screw	125 ft. lbs.
MCS-15Y	Clamp Screw	125 ft. lbs.
All MCS-R	2 setscrews	275 in. lbs. (23 ft. lbs.)
MCS-W	2 setscrews	275 in. lbs. (23 ft. lbs.)
All MCS-W-HD	2 setscrews	275 in. lbs. (23 ft. lbs.)

12. Tighten motor to base and bolt base to floor or mounting surface as described in motor base installation instructions.

13. Adjust motor base to minimum center distance position and place the belt in grooves of both sheaves. Rotate the drive by hand and adjust base until belt is flush with O.D. of MCS flanges.

14. If the MCS is to be equipped with a Wood's Sight-Lube, attach this accessory as outlined in instructions boxed with Sight-Lube Reservoir Kit.

15. Start drive, run for 30 seconds and stop. Check drive alignment using four point method outlined in Step 9 of this section. **DO NOT** correct "X" dimension per Step 8. If realignment is necessary, loosen the MCS clamp screw or setscrews and move entire sheave on shaft (not just flanges) to achieve proper alignment. Retorque clamp screw or setscrews to required torque found in Step 11.

II. Maintenance

A. **Periodic** - Check oil every 500 hours of operation.

1. **Sheaves Without Sight-Lube:**

   a. To check oil, rotate MCS until oil fill plug is at the 12 o'clock position and remove plug.

   b. Add lubricant from list below to sheave's internal reservoir until oil overflows from fill plug hole. Use only **WOOD'S APPROVED** lubricant. Other oils may **ATTACK** the special O-ring seals in the sheave. (Suggest use of pump oil can). Replace fill plug.

2. **Sheaves With Sight-Lube:**

   a. If reservoir is at a low level or empty, fill the SR reservoir approximately 1/2 full with a **WOOD'S APPROVED** Lubricant. Other oils may **ATTACK** the special O-ring seals in the sheave.

b. Partially remove the hose from the sheave intake tube and allow air to bleed out until oil appears at the end of the hose. This prevents air locks and assures proper lubrication.

c. Quickly push hose onto the intake tube and tighten the hose clamp.

d. Operate the drive for a few minutes, then fill SR reservoir and replace the reservoir cap. Check to see that the hose and clamp are clear of the end of the sheave.

WOOD'S APPROVED LUBRICANTS

Amoco Oil Co.	Amogear EP460
Ashland Oil Co.	Valvoline 831, SAE 80-85-90
Chevron	Chevron Ultragear SAE 85-140
Continental Oil Co.	Conoco Gear Oil 460
Exxon Corporation	Spartan EP 460

B. **Overhauls** - Wood's recommends that each MCS sheave should be inspected and overhauled (1) after two years of operation or (2) when the sheave starts using an excessive amount of oil. For satisfactory repair, the following items are needed in conjunction with the inspection and repair procedures outlined in the rest of this manual.

1. Wood's MCS Repair Kit No. 1 for all MCS except MCS-14Y and MCS-15Y where MCS Kit No. 1A is used. (This is a reusable tool which is optional, but highly recommended).

2. Wood's MCS Repair Kit No. 2 for all MCS except, MCS-14Y and MCS-15Y where MCS Kit No. 2A is used. (One kit is required for each sheave.)

3. Arbor press. (24 inch minimum throat)

4. A 1/8-inch diameter rod approximately 12" long with cloth affixed to end.

5. A 3/16-inch hex key, 5/16-inch hex key, or 1/4-inch 12 pt. socket depending on sheave.

6. A cup to hold drained oil.

7. Wood's repair parts as required. (See Table 18)

8. One pint **Wood's approved** oil for all MCS, except MCS-14Y and MCS-15Y where two pints are required.

9. Special press fixture. (See Figures 20 and 21)

III. Inspection and Repair

A. **Removal** of MCS From Shaft

1. With the MCS drive in operation, adjust drive to move belt to its maximum pitch diameter position.

2. After **STOPPING** drive, decrease center distance until belt can be removed. If space or other operating factors will not allow belt removal in this manner, force flanges open with a soft pine block in order to lift belt out of grooves of the companion.

3. **Loosen clamping mechanism** (setscrews or clamp screw) on inboard end cap and remove sheave from shaft. **Note:** Units fastened to shaft by means of setscrews may in some instances be frozen to the shaft. To free, introduce penetrating oil into setscrew holes and allow time for penetration. Then remove by applying a small amount of force to a portion of inboard end cap in a direction towards end of shaft. **DO NOT** use long pry bars which could damage sheave.

B. **Inspection** - inspect sheave for any of the following visible conditions which, if present, will require replacement of the MCS.

1. Major parts such as a flange, end cap or sleeve is broken.

2. The adjustable flanges to see if they are frozen to sleeve. This can be done by holding the sheave by both flanges and gently bumping end of sheave against a wooden block on floor. The two flanges must move axially on the sleeve. Because of sheave design and size, inspection for frozen flanges on MCS-14Y and MCS-15Y size sheaves must be done during disassembly.

3. Sleeve condition is important. Unfortunately, it can only be inspected after disassembly of sheave. The sleeve may not be worn, pitted or galled.

4. Bore may not be worn or wallowed out.

5. Flange wobble is an indication of excessive clearances in bearing areas. Flange wobble can be detected by setting the sheave on inboard end, placing palms of hands on outboard end cap, grasping flanges with fingers and attempting to rock flanges up and down. Any visible amount of movement is too much. Again, the size of MCS-14Y and MCS-15Y sheaves prohibits the sheave from being inspected in this manner.

6. Adjustable flanges may not be excessively worn (grooves in the flange belt surfaces).

7. Cam surfaces may not be excessively worn. Badly worn cam surfaces caused by metal-to-metal contact resulting from cam pad failure can be inspected by forcing both flanges to one side and looking behind dust cover into spring cavity. This method of inspection is not possible with the MCS-14Y and MCS-15Y sheaves.

C. **Disassembly** - before disassembly, determine the year of manufacture and modification letter (see Figure 19 for identification marking codes).

1. Remove Sight-Lube Adapter if unit was equipped with one. Remove oil fill plug on standard units. Drain oil from sheave into cup, then discard oil.

2. Using a marker or chalk to reference flanges and end caps, match-mark sheave as shown in Figure 3. This is **IMPORTANT** so that all parts can be reassembled in their original positions to maintain correct balance.

3. If present, peel off circular nameplate on outboard end cap. Six capscrews hold the spring-loaded unit together. Remove ONLY FOUR of the six screws, leaving two at 180°.

WARNING: Do not remove these two screws without placing sheave under an arbor press. Failure to do so may result in injury.

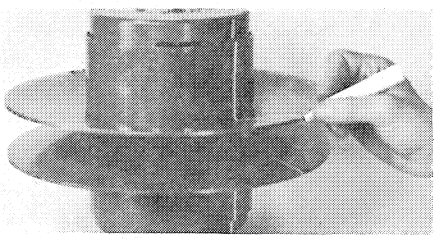


Fig. 3

If the sheave has an "E" stamped on it, apply heat to capscrews to soften epoxy locking compound with which they were secured. (See Figure 19 for identification coding).

4. Place MCS under arbor press (24" minimum throat required). Holding the arbor firmly against the outboard end cap, remove two remaining capscrews, (See Fig. 4). Allow sheave assembly to expand by relieving arbor press force. Reference **BOTH** springs with match-marks as in Step 2. Distinguish between the end cap and flange ends of springs as well as which is the outboard and which is the inboard spring.

   MCS-14Y and MCS-15Y sheaves built after 1982 must be dismantled in halves, (outboard end, then inboard end). After outboard half has been expanded and match-marked as described, remove outboard end cap, spring and flange. Using special fixture shown in Fig. 21, compress inboard half of sheave. **CAREFULLY** remove snap ring from center of sleeve (do not scratch sleeve). Relieve press force and allow inboard half to expand. Match-mark spring and remove unit from under press.

5. Completely dismantle MCS, removing springs and flanges from sleeve. **DO NOT** remove inboard end cap from sleeve.

6. Degrease all parts and flush out oil reservoir. Clean oil passageway by using 1/8" diameter rod with cloth affixed to one end as shown in Fig. 5. Some MCS units will have two oil passageways.

7. **CAREFULLY** clean and completely dry all parts. **DO NOT** scratch machined surfaces as this could damage the new seals.

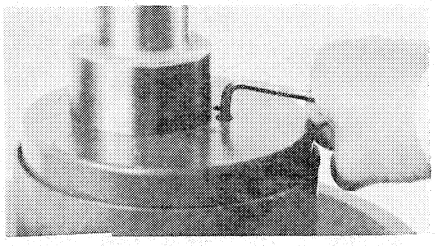


Fig. 4

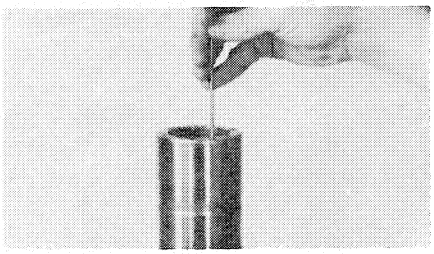


Fig. 5

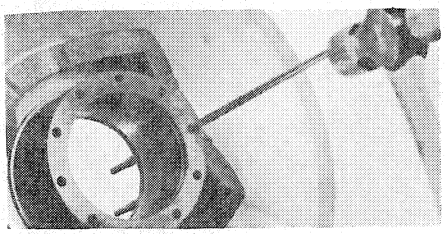


Fig. 6

D. **Bore Plug Repair** - If sheave was leaking oil through bore, or bore plug has been punched out, it should be replaced.

   1. Order proper bore plug as listed in Table 18.

   2. Expand the soft metal replacement plug by seating it with a plug or shaft nearly as large in diameter as the oil reservoir.

E. **Stabilizer Pin Bushing Repair** - If more than three stabilizer pins are sheared off, replace entire set of pins. If bushings are worn, they may be ordered separately. For most MCS-10R and MCS-W sheaves built before January, 1970, (see coding in Fig. 19) and MCS-14Y and MCS-15Y sheaves, the stabilizer pins are not field replaceable. These sheaves should be reassembled and returned to the factory for repair.

   1. Order proper Replacement Stabilizer Pin Kit found in Table 18.

   2. Using a 1/8" drift pin, drive broken pin stubs from tapered holes as shown in Fig. 6.

3. Place new pin in tapered hole and rap top of pin sharply three times with hammer. **DO NOT** "smash" pin. Bent pins will cause sheave to bind and prohibit proper flange movement.

4. Place plastic bushing supplied with kit on tip of stabilizer pin and tap to seat. Some MCS units will have two short bushings per pin, but a one piece, longer replacement will be supplied with kit.

F. **Cam Pad Repair (Epoxied Pads)** - common method for most sheaves built after 1970.

1. Select proper Cam Pad Kit from Table 18, and order.

2. Using 1/4" or 3/8" rubber stock, cut eight pieces measuring to dimensions indicated in table below, corresponding to proper sheave size.

MCS Sheave	Pad Width	Pad Length
MCS-W	3/8"	1-1/2"
MCS-R	3/8	1-1/2
MCS-S	9/16	2
MCS-W-HD	9/16	2
MCS-13Y	9/16	2
MCS-14Y	15/16	3
MCS-14Y Mod. C	3/4	4
MCS-15Y	15/16	3
MCS-15Y Mod. C	3/4	4

3. Using screwdriver or chisel, pry off all old cam pads. Chisel **ALL** old epoxy from cast iron surfaces to allow proper seating of new pads. Be careful not to damage dust covers.

4. Abrade one side of new urethane cam pad surfaces and cast iron cams. Blow all dust from these surfaces; these surfaces **MUST** be clean for bonding process.

5. Mix the needed amount of plastic steel epoxy supplied, as instructed on epoxy package.

6. Working with **ONE** flange at a time, apply a bead of mixed epoxy to its cam surfaces. Then apply a bead of epoxy to the abraded surface of each cam pad. Press cam pads onto flange cam surfaces.

7. Using 1/4" or 3/8" rubber blocks as spacers, place outboard end cap over cam pads and rubber blocks. Place assembly in arbor press, or use C clamps and apply a slight clamping force. (See Fig. 7.)

8. Leave in press for eight hours minimum, then disassemble fixture. Repeat entire process for other flange.

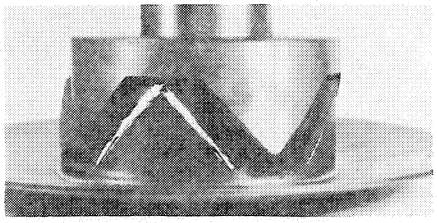


Fig. 7

G. **Cam Pad Repair (mechanical clips)** - common method for most sheaves built before 1970.

1. Select proper mechanical Cam Pad Kit from Table 18, and order.

2. Remove screws, cam clips, and old pads. **DO NOT** remove the angled clips pinned between cams.

3. Insert new cam pads, ensuring that angled clips are firmly seated in cam pad slots. See Fig. 8.

4. Place cam clips in slots of cam pads. Insert and tighten screws.

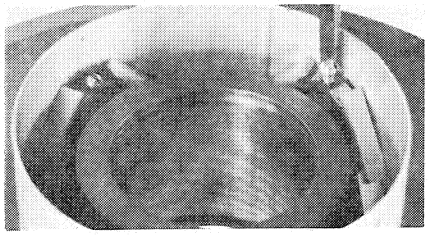


Fig. 8

H. Assembly

1. Insert the four new O-ring seals in flange O-ring grooves, along with old back-up rings. The back-up rings always go to the outside of the O-ring. See Figure 9.

2. Assemble two flanges with match-marks in line. Be careful **NOT** to cock or twist stabilizer pins as they are entering holes in mating flanges. See Fig. 10.

   MCS-14Y and MCS-15Y sheaves with central snap ring on sleeve **CANNOT** be pre-assembled. They must be mated together on the sleeve with snap ring in place.

3. Place reusable O-ring ramp on top of sleeve as shown in Fig. 11. The ramp will prevent O-rings from being damaged during assembly.

4. Smear bore of flanges and outside of sleeve with a Wood's approved oil.

5. Place **INBOARD** spring over sleeve, making sure all referenced surfaces are in line and flange end of spring is up. See Fig. 12.

6. Slide flange assembly over O-ring ramp, down onto sleeve. **DO NOT** bounce flange assembly on spring. Line up all match-marks as shown in Fig. 12.

   When assembling MCS-14Y and MCS-15Y sheaves with central snap rings, place **INBOARD flange** onto sleeve as described. Using press fixture shown in Fig. 21, force flange down far enough to **CAREFULLY** install central snap ring and then release press force. Slide outboard flange onto sleeve and mate with inboard flange.

   Steps 7 and 11 can be disregarded when assembling sheaves with central snap ring.

7. Using press and fixture (see Fig. 13) depress flange assembly until top flange is flush with end of sleeve. While holding flange assembly in place, remove O-ring ramp. Thread special keeper screw in one of the tapped holes in end of sleeve, see Fig. 14. This will hold flange assembly in place for other operations.

   If flange assembly should slip off sleeve end, far enough to expose any O-rings, remove flanges and repeat instructions from Step 3 with NEW O-rings. This is **IMPORTANT** as previous ones may have been damaged.

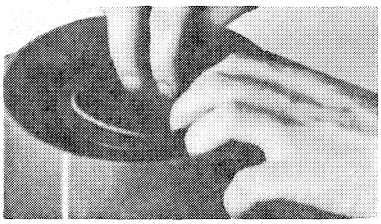


Fig. 9

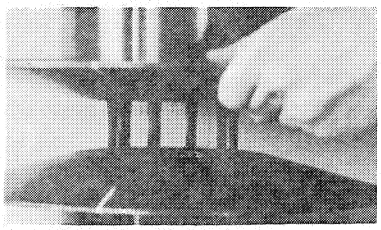


Fig. 10

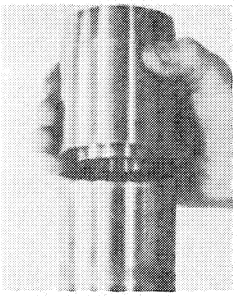


Fig. 11

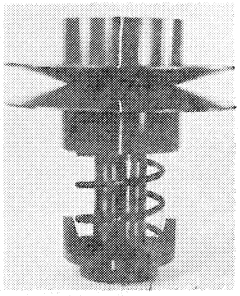


Fig. 12

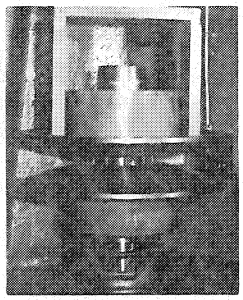


Fig. 13

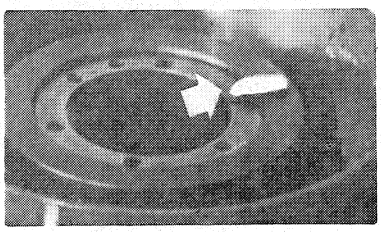


Fig. 14

8. Fill oil reservoir with one of Wood's APPROVED LUBRICANTS. Pint cans can be procured from Wood's distributors. Insert clean 1/8" rod into oil passageway and purge (force out) entrapped air. See Fig. 5.

9. Insert **outboard** spring into flange with referenced flange end down and line up match-marks. See Fig. 15.

10. Replace plastic gasket in outboard end cap, keeping it in place with a small dab of grease and place end cap on top of spring. **MAKE SURE ALL REFERENCE MARKS LINE UP.** Failure to do so will alter balance of sheave. Move entire assembly under arbor press as shown in Fig. 16.

11. Depress assembly slowly until both flanges start moving downward on sleeve and remove keeper screw. See Fig. 17.

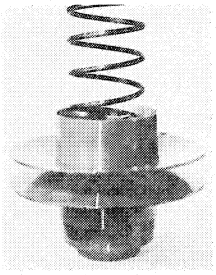


Fig. 15

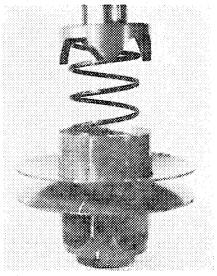


Fig. 16

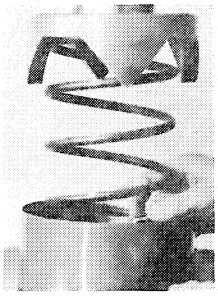


Fig. 17

12. Apply force to seat end cap. Spread three or four drops of Loctite compound (supplied) on threads of capscrews. Insert and tighten **AT LEAST TWO** capscrews at 180° apart. This will be sufficient to hold MCS **TEMPORARILY** together, so MCS can be removed from under press.

13. Apply Loctite to remaining capscrews, insert and tighten securely. Torque 1/4-20NC capscrews to 15 ft. lbs. and 3/8-16NC capscrews to 48 ft. lbs.

14. Unless a Sight-Lube adapter is used, replace oil fill plug washer with one supplied with MCS Repair Seal Kit. Insert fill plug and washer.

15. If Sight-Lube is used, replace by securing a new adapter and gasket to end cap with three 1/4-20NC capscrews.

16. For maintenance records, scribe or stamp repair date on end cap of sheave.

17. Install sheave on motor per installation instructions in Section I of this manual.

TABLE 18 - REPLACEMENT PARTS FOR MCS SHEAVES

Sheave	Seal Kit	Cam Pad Kit	Stabilizer Pin Kit	Stabilizer Bushings Only	Bore Plug	O-Ring Ramp Reusable	Sight Lube
MCS-10R thru Mod. A	MCS Kit - 2	MCS Kit - 3A	MCS Kit - M326	10 - M331	M303	MCS Kit - 1	SL-3
MCS-10R Mod. B	"	MCS-W Kit - 3B	"	"		"	"
MCS-10W thru Mod. A	"	MCS Kit - 3A	"	"	"	"	"
MCS-10W Mod. B	"	"	MCS Kit - M328	10 - M333	"	"	"
MCS-10W Mod. C	"	MCS-W Kit - 3B	"	"	"	"	"
MCS-10W-HD	"	MCS-S Kit - 3B	MCS Kit - M329	"	"	"	"
MCS-10W-HD Mod. A	"	"	MCS Kit - M329	"	"	"	"
MCS-11S	"	"	MCS Kit - M328	"	"	"	"
MCS-12S	"	"	"	"	"	"	"
MCS-12W thru Mod. A	"	MCS Kit - 3A	MCS Kit - M326	10 - M331	"	"	"
MCS-12W Mod. B	"	"	MCS Kit - M328	10 - M333	"	"	"
MCS-12W Mod. C	"	MCS-W Kit - 3B	"	"	"	"	"
MCS-12W-HD	"	MCS-S Kit - 3B	MCS Kit - M329	"	"	"	"
MCS-13-S	"	"	MCS Kit - M328	"	"	"	"
MCS-13-Y	"	"	MCS Kit - M330	"	"	"	"
MCS-14-Y	MCS Kit - 2A	MCS-Y Kit - 3B	----	8 - M334	M306	MCS Kit - 1A	----
MCS-14Y Mod. C	MCS Kit - 2A	MCS-Y Kit - 3C	----	"	M300	MCS Kit - 3A	----
MCS-15-Y	"	MCS-Y Kit - 3B	----	16 - M334	M306	MCS Kit - 1A	----
MCS-15Y Mod. C	"	MCS-Y Kit - 3C	----	"	M300	MCS Kit - 1A	----

MCS KIT CONTENTS: Seal Kits - 4 O-Rings, one gasket, one fill plug gasket, one tube Loctite
Cam Pad Kits - 16 Cam Pads and epoxy or mechanical fastening means
Stabilizer Pin Kit - one set Stabilizer Pins with Bushings

MCS SHEAVE OIL - M475-9 for 1 pt. can

IV. Troubleshooting

WHAT TO DO IF:

1. **The sheave slips severely or the flanges open up, allowing the belt to bottom on the sleeve.**

   A. Check alignment (Step No. 9, Section I). A misaligned MCS **WILL NOT** transmit its rated load.

   B. Check amp reading of motor at the point of slipping. Make sure the load is within the capacity of the unit. (See Wood's catalog). Remember that sheave is constant torque, not constant horsepower device. Horsepower ratings are lower at minimum pitch diameter than maximum pitch diameter.

   C. Run unit through speed range. If one flange does not adjust, causing misalignment, consult the factory.

   D. Remove belt from groove. Manually force adjustable flanges to one side (not possible with sheaves that employ central snap ring on sleeve). Observe cam pads between spring and dust cover. If cam pads are worn, or missing, replace.

   E. Check for oil on belt. If present, replace O-rings in MCS and belt.

2. **The MCS will not adjust.**

   A. Check oil reservoir. If dry, the bearing surfaces are probably ruined and adjustable flanges frozen; sheave will require replacement.

   B. Remove belt from groove. Manually move flange assembly axially on sleeve. If sluggish, overhaul MCS. Check one flange at a time for sheaves built with central snap ring on sleeve.

3. **The sheave is leaking profusely.**

   A. Overhaul the MCS per instructions. Replace all O-ring seals.

4. **The stabilizer pins are all broken.**

   A. This is a sign of excessive belt misalignment or failure of cam pads. Overhaul MCS replacing pins (and pads).

5. **The MCS "walks" on the shaft.**

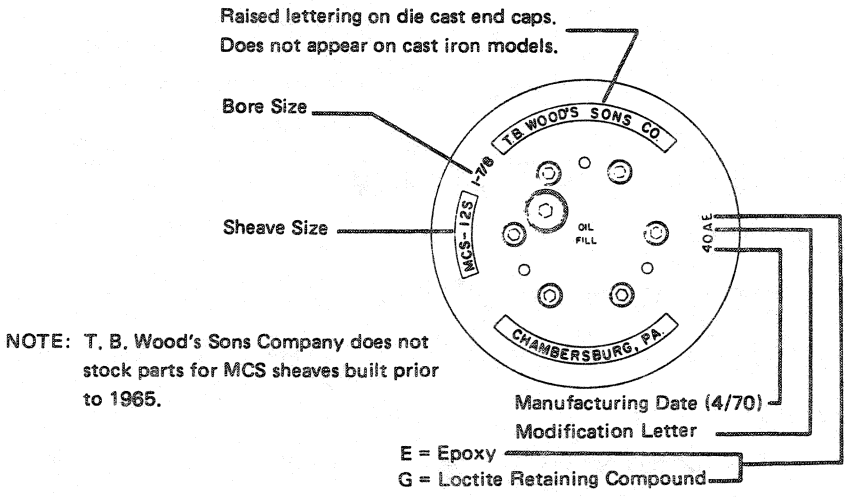
   A. If an MCS-S or MCS-Y, ensure clamp hub screw is torqued to the proper value. (Step No. 11, Section I).

   B. If an MCS-R, MCS-W, or MCS-W-HD, ensure both setscrews on inboard hub are tightened. (See Step No. 11, Section I).

6. **The dust covers are distorted or broken.**

   A. Cam pads have probably failed. Overhaul MCS per instructions and replace all worn parts.

MCS END CAP MARKING IDENTIFICATION

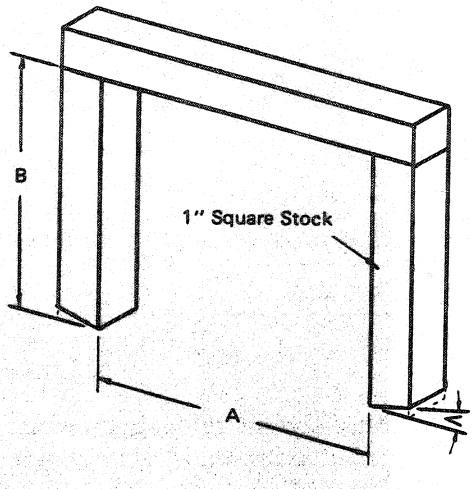


NOTE: T. B. Wood's Sons Company does not stock parts for MCS sheaves built prior to 1965.

Fig. 19

PRESS FIXTURE DIMENSIONS FOR REASSEMBLY OF MCS SHEAVES

For ALL MCS Sheaves
(Except MCS-14Y & 15Y with central snap ring)



SHEAVE	DIMENSIONS		
	A	B	<
ALL MCS SHEAVES (Except 14Y, 15Y)	6.75	6.0	13°
MCS-14Y, MCS-15Y (Without Central Snap Ring)	8.38	6.0	0°

Fig. 20

For MCS-14Y & MCS-15Y Sheaves
(With central snap ring)

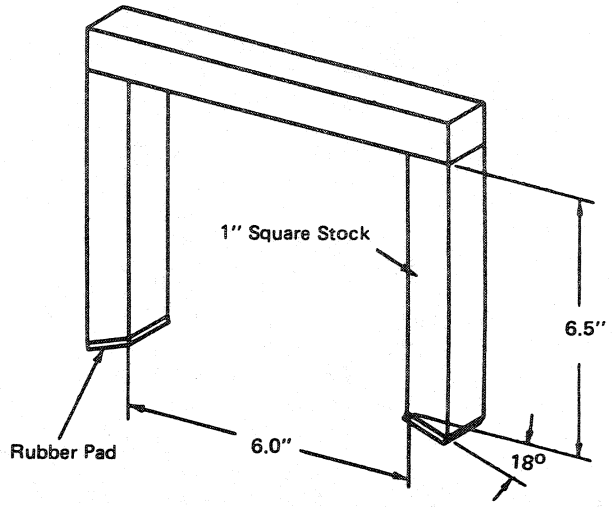


Fig. 21

Note: The fixtures shown in Figures 20 and 21 are not available through T. B. Wood's.

TB Wood's Facilities

North America

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440 North Fifth Avenue
Chambersburg, PA 17201 - USA
888-829-6637 * 717-264-7161
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1-888-829-6637 (Press #5)

For Application Support
1-888-829-6637 (Press #7)

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San Marcos, TX 78666 - USA
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General Purpose Disc Couplings

Customer Service
1-888-449-9439

4970 Joule St
Reno, NV 89502 - USA
775-857-1800

Canada

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Edmonton, AB T6E 5V8 - Canada
+1 780-439-7979

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1-800-829-6631

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+1 514-332-4812

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Industrial San Luis,
San Luis, S.L.P., 78395 - Mexico
+52 444 137 1500

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Hertfordshire SG13 7BL - England
+44(0)1992 501900
Elastomeric Couplings

The Brands of Altra Motion

Couplings

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www.huco.com

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www.lamiflexcouplings.com

Stromag
www.stromag.com

TB Wood's
www.tbwoods.com

Linear Systems

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www.thomsonlinear.com

Warner Linear
www.warnerlinear.com

Geared Cam Limit Switches

Stromag
www.stromag.com

Engineered Bearing Assemblies

Kilian
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Electric Clutches & Brakes

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Stromag
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Warner Electric
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Belted Drives

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Heavy Duty Clutches & Brakes

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Stromag
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Svendborg Brakes
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Wichita Clutch
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