



## MARLAND SPRAG CLUTCHES

### LUBRICATION, MAINTENANCE and INSTALLATION INSTRUCTIONS for MODELS RMS, RMS FG, RMT, RMI SB, and RMI HP.

#### I. LUBRICATION

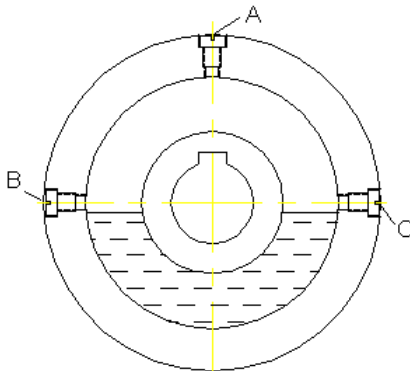
##### A. MODELS RMS AND RMT OIL LUBRICATION RECOMMENDATIONS:

1. **Oil lubricated clutches are shipped full of oil and ready to put into operation. They are filled with Automatic Transmission Fluid at the factory for freewheeling and backstopping use, see Item 6 on page 2 for indexing application instructions.**
2. Dexron III Automatic Transmission Fluid should be used for optimum results. **Do not use lubricants of the EP type**, or those containing slippery additives, such as Sulfur Phosphate or Graphite.
3. **Caution** ---The temperature range for DEXRON III Automatic Transmission Fluid is -15° to 250° F. Seal deterioration may occur at temperatures above 250° F which will adversely affect performance.
4. Recommended Lubricants:

Ambient Temperature Range		
0°F to 250°F	-20°F to 60°F	-50°F to 32°F
MOBIL Multi-Purpose ATF (Dexron III)	MOBIL DTE-15M	MOBIL Aereo HF
TEXACO Havoline ATF (Dexron III)	TEXACO Rando-HDZ 46	TEXACO Aircraft Hydraulic Oil 5606G
CHEVRON ATF (Dexron III)	CHEVRON Hydraulic Oil AW MV 46	CHEVRON Aviation Hydraulic Oil A

5. Oil lubrication filling procedures for **freewheeling** and **backstopping** applications. (See Figure a)

**Figure a (½ Full)**



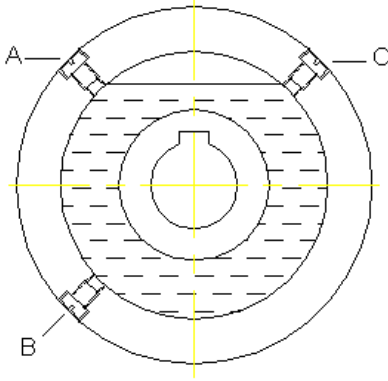
- a. Rotate clutch outer race to position oil fill holes as shown in Figure a.
- b. Remove all oil hole screws and add lubricant through oil hole A until lubricant flows out of oil holes B and C. Clutch is then ½ full of lubricant.
- c. Replace oil hole screws, making sure that the neoprene washer is in place under each screwhead and tighten to prevent leakage.

## I. LUBRICATION (Cont.)

### A. MODELS RMS AND RMT OIL LUBRICATION RECOMMENDATIONS: (Cont.)

6. Oil lubrication filling procedures for **indexing** applications. (See Figure b) **NOTE:** Clutches are shipped from the factory half filled for freewheeling and backstopping. You must fill as shown below for indexing.

**Figure b (Full)**



- a. Rotate clutch outer race to position oil fill holes as shown in Figure b.
- b. Remove oil hole screws A & C and add lubricant through one of the hole until lubricant flows out of the other. Clutch is now full of lubricant.
- c. Replace oil hole screws, making sure that the neoprene washer is in place under the screwhead and tighten to prevent leakage.

7. Oil level should be checked once a week, for the first month of operation, and then at least once a month thereafter. Add lubricant as necessary according to the procedures previously outlined. Indexing applications of 150 or more cycles per minute may require service at shorter intervals.

### B. MODEL RMS FG GREASE LUBRICATION RECOMMENDATIONS:

1. **Grease lubricated clutches are shipped full of grease and ready to put into operation.**

They are filled with Lubriplate AERO grease at the factory.

2. You should continue to re-lubricate with Lubriplate AERO grease if possible. **Do not use lubricants of the EP type**, or those containing slippery additives, such as Sulfur Phosphate or Graphite.

3. **Do not** attempt to substitute oil lubrication in clutches intended for grease lubrication. Substitution of oil for grease may result in clutch malfunction and will **void the warranty**.

4. Other recommended greases are:

- Mobil Lith SHC-100
- Shell Aeroshell No. 7
- Shell Aeroshell No. 16

5. **Caution** --- For grease lubricated clutches used in ambient temperatures **below -30° F consult factory.**

6. Grease should be added after the first week of operation and then once a month thereafter.

**Lubrication procedure:**

- a. Wipe the grease fittings on the clutch clean.
- b. Pump grease into the clutch until clean grease flows out completely around both sides of the clutch.
- c. Rotate both the inner and outer race at least 20 turns by hand to distribute the grease.

### C. MODEL RMI SB AND RMI HP LUBRICATION RECOMMENDATIONS:

1. RMI SB and RMI HP sealed bearing clutches **DO NOT REQUIRE LUBRICATION**, they have a **maintenance free** sealed for life design that **does not require lubrication**. No attempt to re-grease

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clutch should be made, as additional grease or oil in the sprag assembly can cause the clutch to fail, and will **void the warranty**.

## II. MAINTENANCE

### A. MODELS RMS AND RMT MAINTENANCE RECOMMENDATIONS:

1. Oil lubricated clutches should be flushed periodically (at least every 6 months) with mineral spirits, such as SOLVASOL (Mobil Oil Co.) or its equivalent. **Do not use carbon tetrachloride.** More frequent flushing may be required if clutch is subjected to severe duty or abrasive dust.
2. **Flushing procedure** is as follows:
  - a. Rotate the clutch outer race until oil holes, which are 180° apart, are in a vertical position.
  - b. Remove both of the screws (make sure you do not lose the washer) and drain lubricant.
  - c. Reinstall bottom screw and washer and fill unit with mineral spirits.
  - d. Reinstall top screw and washer and then rotate clutch slowly for several minutes to break up and dissolve oily residue which may have formed.
  - e. Repeat steps a & b to drain mineral spirits.
3. **Re-lubricate** the clutch according to recommendations and procedures previously outlined.

### B. MODEL RMS FG MAINTENANCE RECOMMENDATIONS:

1. Grease lubricated clutches should be flushed every 2 to 6 months, depending upon the severity of the operation. Use mineral spirits as described in paragraph A - 1 above.
2. **Flush** the units using the same procedures as shown in paragraph A - 2 above.
3. **Re-lubricate** the clutch according to recommendations and procedures previously outlined.

### C. MODEL RMI SB AND RMI HP MAINTENANCE RECOMMENDATIONS:

1. RMI SB and RMI HP sealed bearing clutches have a **lubrication free** sealed for life design that **does not require lubrication.** No attempt to perform maintenance on this clutch should be made. Any attempt to flush or re-grease may cause the clutch to fail, and will **void the warranty.**

## III. INSTALLATION - ALL MODELS

### A. PRE-INSTALLATION CHECK:

#### 1. Shaft and Bore Diameters

- a. It is important that the clutch fits the shaft properly. The following are the recommended shaft tolerances for **freewheeling** and **indexing** applications:

Clutch Bore	Shaft Tolerance
Up to 2"	-.0010 to -.0020
2" to 4"	-.0015 to -.0025
over 4"	-.0020 to -.0030

- b. **Backstopping** applications permit or require looser fits and the following tolerances are applicable:

Clutch Bore	Shaft Tolerance
Up to 2"	-.0010 to -.0030
2" to 4"	-.0015 to -.0055
4" to 6"	-.0020 to -.0060
over 6"	-.0020 to -.0070

- c. On applications where a press fit is necessary, do not exceed .001" tight fit.

### III. INSTALLATION (Cont.)

#### A. PRE-INSTALLATION CHECK: (Cont.)

##### 2. Key and Keyseat

- a. A hardened key, 30 to 40 Rockwell C, equal in length to the clutch inner race must be used for proper support.
  - b. For **freewheeling** and **backstopping** applications, break the edges of the key before installing, to prevent any interference at these points. Be sure the key seats squarely and installs with a push fit. **Do not use a force fit.**
  - c. On **indexing** applications fit the key up to .001" tight on the width to prevent loosening. **Do not exceed .001" tight.**
3. Check the clutch for the proper rotation in each application.
  4. Oil lubricated clutches should be mounted on **horizontal** shafts only. For vertical shaft installation, grease lubricated clutches are recommended.
  5. **Never use a clutch as a coupling.** When the connection of two in line shafts is required in conjunction with a clutch, use a combination clutch-coupling. It is **not recommended** that resilient, torsionally flexible type couplings be used in conjunction with the freewheel clutch.

#### B. INSTALLATION

1. To mount the clutch and key on the shaft, **apply pressure to the end face of the inner race only.** Pressure applied to the outer race could result in bearing damage.
2. Secure clutch in position on the shaft. Use lockwasher and nut, flat washer fastened to the end of the shaft with a screw, snap-rings, collars, adjacent components, or similar items to keep clutch in position on the shaft.
3. Freewheel the clutch **by hand** before subjecting the clutch to test operation.
4. Tightly mount attaching parts to the outer clutch race as required by the application using SAE Grade 5 bolts or better. When mounting gears or pulleys always center them over the outer race to **avoid excessive overhung loads.**
5. When installing torque arms for **backstopping** applications the torque arm must not be rigidly anchored. Rotation must be restricted by either a pin or angle iron. **The torque arm must be free to move axially to prevent damage to the bearings in the clutch.** When a pin is used, the diameter of the pin must be 1/32" smaller than the pin hole in the torque arm. **A threaded pin should not be used.**

#### C. GENERAL INFORMATION

1. **Do not operate the clutch above its rated speed or torque capacity.**
2. **Do not attempt to disassemble or repair** the Marland Sprag Clutch in the field. These are precision products manufactured under careful supervision to meet exacting quality control standards, and should only be repaired by the factory.

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