

# Type HBG Freewheeling Clutches For Use With Hydromatic Brakes

P-1346-10-MC

Installation Instructions



**▲WARNING** Failure to follow these instructions may result in product damage, equipment damage, and serious or fatal injury to personnel.

## General

Marland One Way Type HBG clutches are engineered to meet the toughest draw works requirements with a minimum of maintenance. To be assured of reliable performance and the longest possible service life, it is important that the following recommendations be observed for the installation, lubrication and maintenance of Type HBG clutches.

As soon as the unit has been received, examine it carefully for damage in transit, and report at once to the transit company any breakage discovered. All tags and bulletins attached to the unit should be carefully read before placing the unit in operation and then file this bulletin for future reference.

**▲CAUTION** All units are shipped without oil. Care must be taken not to place the unit into operation until it has been filled with oil of the proper specification and quantity.

The various component parts referred to in this bulletin may be readily identified on the diagrams and parts list.

## Installation

Marland One Way clutches Type HBG are shipped completely assembled, ready to mount on the shaft.

### A. Check direction of freewheeling rotation.

Arrows on each face of the cam (Part No. 7) indicate direction of free shaft rotation while outer race (Part No. 5) is stationary.

To check factory assembly of clutch for correct direction of rotation, hold outer race stationary while trying to rotate the cam first in one direction, then in the opposite direction. For straight bore units, the clutch may already be assembled for proper rotation but if not, this can easily be changed in the field as per instructions on Page 4.

### B. Mount clutch on shaft.

Push the clutch on the shaft, taking care to **push only on the cam face**, thus eliminating

undue abuse on the clutch bearings. Evidence of damage during assembly caused by disregard of the above instructions is readily traceable and we cannot be held responsible for failure of such affected part or parts. Do not use tapered keys. Key must be straight and fit snug on the sides only and must not be tight on top or bottom. To provide for adequate top of key clearance, the straight keyway(s) in the bore of the clutch has been made 1/32" deeper than standard. Overall length of key in cam should not exceed length of cam. Shafts should be smooth and free of burrs. Coat end of shaft with oil, white lead, grease, or powdered graphite for easy mounting of the clutch.

## Initial Lubrication

**All units are shipped without oil** and must not be placed in operation until filled with oil of the recommended grade and quantity. The clutch units have been coated internally with a preservative oil to protect the internal working parts from corrosion during shipment and storage. It is not necessary to flush out the preservative oil as this oil will be diluted by introduction of the regular oil supply. HBG type units are provided with 3 oil hole plugs, spaced 120° apart, located on the O.D. of the clutch coverplate (Part No. 1).

**To fill with oil**, place one oil hole at the 12 o'clock position. This will place remaining oil holes at 4 o'clock and 8 o'clock positions. Remove plug from 12 o'clock oil hole for filling and from either the 4 or 8 o'clock location to serve as oil level indicator and vent. **Slowly** pour DEXRON III Automatic Transmission Oil only or approved equal into the 12 o'clock oil hole until it runs out the 4 or 8 o'clock hole. **Do Not Overfill.** Replace and tighten all oil hole plugs. DEXRON III oil is an all-weather, all-purpose lubricant suitable for year round use in Marland One Way Automatic Freewheeling Clutches. This oil is readily obtainable from industrial oil suppliers.

**For low temperature locations, the oil used must have a pour point below the lowest expected ambient temperature.**

Oils containing EP (extreme pressure) additives must not be used in Marland One Way Clutches. Never use grease for internal lubrication of the clutch.

## Lubrication Maintenance

**▲CAUTION** Retighten all capscrews after a short period of operation to take up for possible bolt stretch and thus avoid oil leakage. To obtain the longest possible service life from your Marland One Way Clutch, it is of utmost importance that systematic lubrication maintenance be observed. Regular inspection of the condition of the oil within the clutch is desirable and the frequency of such inspection will depend upon surrounding atmosphere, whether dusty or humid.

After 1 to 2 weeks of operation, drain and closely examine a sample of the oil from one of the clutch coverplate oil holes to detect the presence of contamination. The condition of the oil so examined will determine the frequency of future inspections and when the clutch will require draining, flushing and refilling with fresh oil. Every 3 to 6 months grease should be applied to the gear teeth in the engaging/disengaging sleeve.

To completely drain clutch of oil, remove one oil hole plug at 6 o'clock or bottom position. Remove oil hole plugs at 2 and 10 o'clock positions to release vacuum and permit oil to drain. Flush thoroughly with clean, light oil until clean oil drains without sign of contamination. For flushing use a good grade light flushing oil or mineral spirits.

**Important:** Never use carbon tetrachloride which is detrimental to neoprene seals.

## Disassembly and Assembly

**▲CAUTION** Keep all parts thoroughly clean. Do not allow grit or dirt to enter during disassembly or assembly operations.

### To Disassemble

- A. Drain oil from the clutch.
- B. Remove clutch unit from shaft using pull-off holes provided in cam end. **Do not** hammer, pry or pull on clutch coverplate or outer race.
- C. Place clutch unit flat on bench, coverplate with gear facing up. Remove cap screws attaching geared coverplate (Part No. 10) to outer race (Part No. 5). Coverplates are provided with threaded jack-bolt holes for removal.

**Note:** The bearings are a slide fit on the cam journal and a tight fit in the coverplate bore. The bearing, therefore, will be removed with the coverplate. Lift off the coverplate, taking care not to damage the oil seal, bearing, or gasket. For Type HBG, observe the geared coverplate (Part No. 10) is located at small end of cam taper bore; plain coverplate (Part No. 1) at large end of cam taper bore.

- D. It is not necessary to disconnect the springs or remove the stop lugs. Cam and roller assembly **as a complete unit** may now be lifted from the outer race. Using the pull-off holes in the cam end, and with a slight twisting motion in the direction to move the rollers toward the deeper end of the cam flats, lift out the cam and roller assembly as a unit. Stand it on end on bench in exactly the same relative position as when assembled in the clutch, taking care not to damage or crush the springs.
- E. To change direction of rotation for straight bore units only, turn cam unit with roller assembly over end for end. Complete assembly of clutch as per instructions, starting with **To Assemble** operation (d).
- F. Turn remaining unit over and remove capscrews attaching plain coverplate (Part No. 1) to outer race (Part No. 5). Lift off coverplate, using jack-bolt holes provided, taking care not to damage the bearing, oil seal or gasket.
- G. Bearings (Part No. 3) or oil seals (Part No. 4) may now be replaced in the coverplate, if necessary. When replacing bearings, take care to **press only on bearing outer member**. Be sure bearing outer member is properly seated in the coverplate bearing bore. When replacing oil seals, be sure spring side of seal **faces toward the bearing**. To avoid seal damage during installation, a radius is provided at the cam journal ends. Lubricate the oil seal lips with a film of oil, same as used in the clutch, to make it easier to apply the seal over the journal. This will also furnish lubrication to the seal lips during initial period of clutch operation.

## To Assemble

- A. Place outer race (Part No. 5) flat on bench.
- B. Place gasket (Part No. 2) in position on plain coverplate (Part No. 1) using light cup grease on gasket face to hold in place.
- C. Place plain coverplate on Outer Race. Insert capscrews and securely tighten. Turn assembly over end for end.
- D. Insert cam and roller assembly into the outer race. For tapered bores, observe that the small end of the cam taper bore will be at the geared coverplate end of the clutch. When inserting, slowly rotate the cam in direction to move rollers toward the deeper end of the cam flats.  
**Do not force the assembly into the outer race.** The cam journal will slide into the ball bearing in the plain coverplate. Make certain the oil seal lips have passed over the cam journal end and are properly seated.
- E. Make certain the spring tension is sufficient to cause the roller assembly, when well lubricated, to move quickly to the high cam position when the cam is rotated by hand toward the deep part of the cam flats and released.
- F. Place gasket (Part No. 2) in position on geared coverplate (Part No. 10) using light cup grease to hold gasket in place. Place coverplate on Outer Race and line up bolt holes. Make certain the bearing is properly seated and the oil seal lips have passed over the cam journal end and are properly seated. Insert and tighten all capscrews.
- G. Check unit for free rotation without binding and correct direction of freewheeling rotation.

## Cam and Roller Cage Assembly

### To Disassemble

- A. The Roller Cage Assembly (Part No. 6) is held in position on the Cam (Part No. 7) by skirted stop lugs. The hardened tips of the skirted stop lugs engage in milled slots in the cam and permit the cam and roller cage assembly to be handled as a complete unit.
- B. To remove the roller cage assembly from the cam, it is necessary to remove the skirted

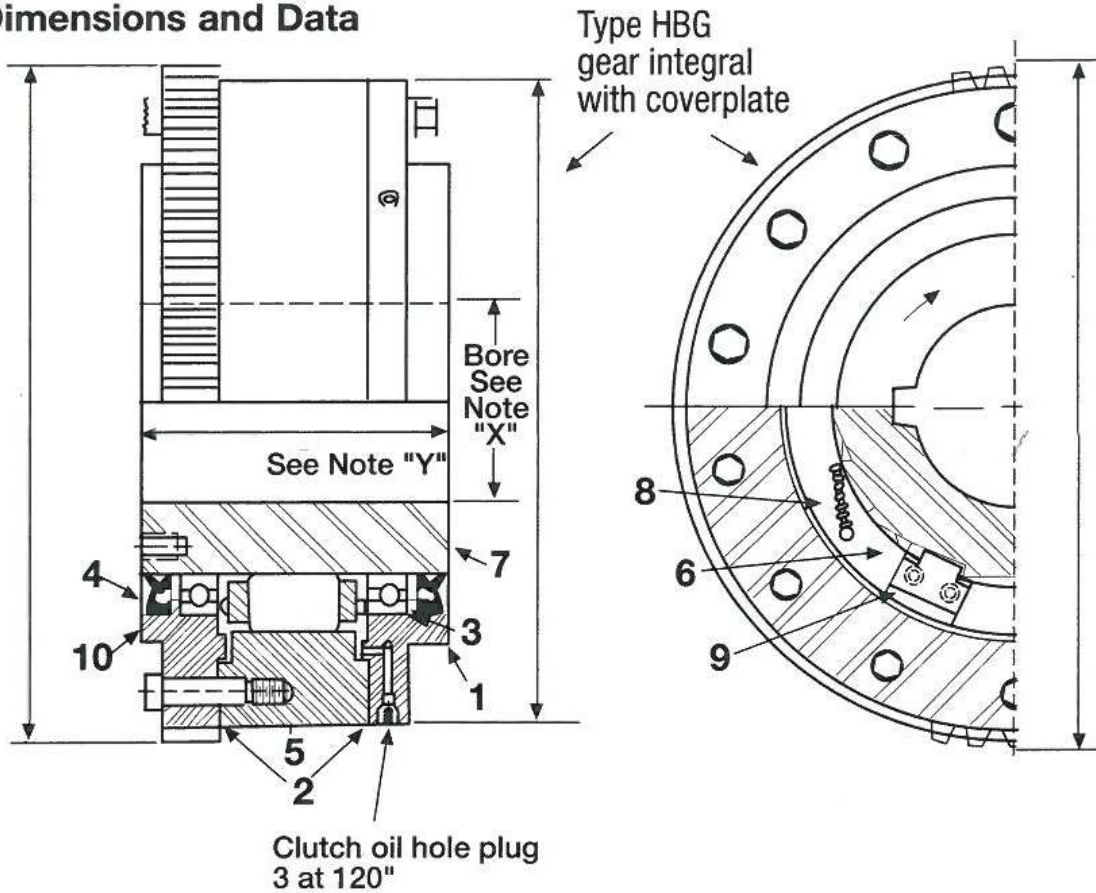
stop lugs, observing match marks for proper re-assembly. Disconnect the spring ends from the cam, carefully observing spring tension (stretch length of spring) as set at the factory. It is not necessary to remove the springs from the roller cage assembly.

- C. In removing the roller cage assembly, observe position of plain stop lug tips in the deeper part of the cam flats.

### To Assemble

- A. Replacement of spare roller cage assemblies are shipped from the factory complete with skirted and plain stop lugs and springs.
- B. To assemble roller cage on cam, it is necessary to remove the skirted stop lugs observing the match marks for proper re-assembly.
- C. Place roller cage on the cam, making certain milled slots for skirted stop lugs are in proper position.
- D. Replace skirted stop lugs with tips in milled slots, observing match marks. Securely tighten and wire-lock the socket-head capscrews.
- E. Reconnect spring ends in same hole position in cam as set at the factory and as observed above.

## Dimensions and Data



| Part | Description       |
|------|-------------------|
| 1    | Coverplate        |
| 2    | Gasket            |
| 3    | Ball Bearing      |
| 4    | Oil Seal          |
| 5    | Outer Race        |
| 6    | Roller Assembly   |
| 7    | Cam               |
| 8    | Spring            |
| 9    | Stop Lug          |
| 10   | Geared Coverplate |

### Notes:

X—Taper or straight bore furnished as required.

Y—Single or double keyway as specified.

## Warranty

Marland Clutch warrants that it will repair or replace (whichever it deems advisable) any product manufactured and sold by it which proves to be defective in material or workmanship within a period of two (2) years from date of original purchase for consumer, commercial or industrial use. This warranty extends only to the original purchaser and is not transferable or assignable without Marland Clutch's prior consent.

This warranty covers normal use and does not cover damage or defect which results from alteration, accident, neglect, or improper installation, operation, or maintenance.

Marland Clutch's obligation under this warranty is limited to the repair or replacement of the defective product and in no event shall Marland Clutch be liable for consequential, indirect or incidental damages of any kind incurred by reasons of manufacture, sale or use of any defective product. Marland Clutch either assumes nor authorizes any other person to give any other warranty or to assume any other obligation or liability on its behalf.



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