

**BULLETIN 2220**

**P-222-12**

**Installation Instructions**

**Continuous Drive Units  
with Tubular Housing**

**Models CDU-500  
thru CDU-800**



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## Introduction

Formsprag continuous drive unit models CDU-500 thru 800 are specially designed for continuous high performance over-running and driving. All models should be installed, operation and maintained according to the instructions in this bulletin for optimum performance and life.

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

## Foundation

A good foundation is required to support the CDU in line with other components in the system. The foundation must be rigid and level. The mounting surface must be flat so the CDU base will not be distorted when the mounting nuts are tightened. Elongated or oversized mounting bolt holes in the foundation will simplify movement for shaft alignment.

## Installing

1. **Rotation:** Before installation, check driving rotation by hand turning to be sure direction is correct. See marking on input end. If unit has the same shaft diameter at each end it is recommended that an assembly drawing be reviewed to ensure that the proper clutch race over-runs. Contact Formsprag for assistance.
2. Couplings are used on the input or output shafts they should be the flexible type. The coupling halves should be properly aligned to prevent abnormal loading on the CDU bearings. Couplings should be balanced in accordance with the manufacturer's requirements. Vertical lift type flexible couplings are recommended for easy installation and removal.

**Important:** Do not install coupling hubs by pounding or pressing directly against the CDU shaft extensions. The load could damage bearings within the CDU. Shrinking, instead of pressing, is preferred to prevent clutch bearing damage. This is accomplished by cooling the shaft extension and/or heating the coupling half to 250°F/111°C maximum.

3. **Alignment:** Follow flexible coupling manufacturer's instructions to establish and maintain alignment. During the subsequent operation, alignment must be maintained. It may be necessary to dowel the motor and reducer as well as the CDU, to prevent loss of alignment.

## Before Operating

1. Check oil level. Remove oil plug (21) to check oil level.  
**Note:** Operating level is important. Do not over-fill, as damage to CDU can occur. Add oil until it runs out of oil level hole. Re-install oil hole plug.
2. Grease shaft seals. See list on page 2 or tag on CDU for proper grease. Pump grease into fittings at each end until clean grease comes out around the shaft.

## Operating

1. Do not operate at speeds or torque higher than those approved by Formsprag. See Catalog P-956.
2. **Operating:** After first 15 minutes of running, check that all mounting bolts and CDU lubrication plugs are tight. Also check for any leakage.

## Maintenance

1. Remove breather and oil level lug.
2. With CDU stopped add oil at breather hole until it runs out of oil level hole. Re-install oil level plug. Change oil every six (6) months under normal conditions (8 hours per day) and, every four (4) months under severe conditions (24 hours per day).
3. Pump grease in fittings at each end every (3) months, or as conditions warrant. Pump grease into fittings (20) until clean grease comes out around the shaft.
4. **Breather:** Breather is to be removed at least every six (6) months, or as conditions warrant, and cleansed in solvent. Re-install or replace element as required.
5. **Clutch Renewal or Replacement:** To remove clutch and install new or rebuild clutch, lift the CDU from foundation and drain oil. Remove end cap from housing. Puller screw holes are provided. Remove adapter screws (15). Remove external snap ring (17) from shaft. Remove output shaft (16) from clutch.

Replace clutch and parts in reverse order of removal; check that clutch rotation is correct. Fill with oil in accordance with above instructions.

6. **Oil Seal and Gasket Removal:** To replace sealing elements, remove seal carrier (2). Remove seals (3) from carrier. Carefully install new oil seals using arbor press. Use only Formsprag replacement seals. (Inboard seal must have lip inward and contain garter spring, while outboard seal must have lip outward and contain no garter spring.)

Hand pack grease in area outside seals. (Do not use EP type.)

Use        Mobilux No. 2 (Mobil Oil Co.)  
             Aero shell No. 7 (Shell Oil Co.)  
             Rykon No. 2 (Amoco Oil Co.)

Position gaskets and slip oil seal carrier over shaft, and into place. Do not cock carrier while disassembling and installing. Install screws.

Alternate Construction with Flexible Coupling: Position shims and slip carrier over shaft. Install screws and tighten. Check end play in shaft. There should be no end play present. There should also be no preload (excessive drag) on the shaft.

Care must be taken not to damage oil seal lip during installation. Cover keyway with tape and remove after seal installation.

**Note:** Before operating the CDU, re-check coupling alignments and specified oil level.

7. Recommended Lubricants:

Oils -Use one of the following:

Mobil 220 ATF Fluid.

Amoco Dextron ATF Fluid.

Exxon 1956 ATF Fluid.

Any Automatic Transmission Fluid (High Grade)

**▲CAUTION** Do not use lubricants of the EP type (extreme pressure characteristics) or those containing slippery additives.

**▲WARNING** The use of lubricants in clutch assemblies, other than those shown, can result in improper sprag engagement. Improper sprag engagement may cause personal injury or property damage.

Formsprag Clutch is not responsible for any changes made by the manufacturers in their lubricants.

The use of any lubricants, other than those listed in this bulletin, will automatically void any warranty.

## Clutch Rebuilding Service

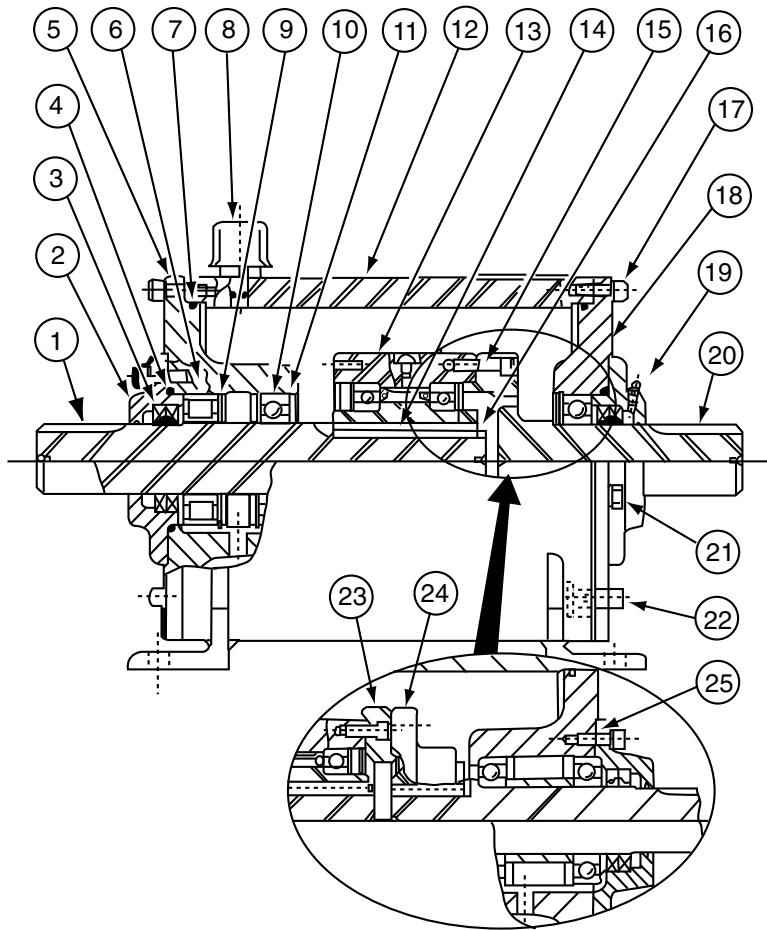
**Note:** Disassembly and repair of Formsprag clutches in the field is not recommended.

Formsprag clutches are precision devices. When reconditioning is required, clutches can be returned to the Formsprag Company directly, through the distributor or through the original equipment manufacturer.

These instructions cannot cover all details or variations of equipment and applications nor provide every possible contingency which may be met in installation, operation or maintenance. Should further information be needed, contact Formsprag Clutch.

## Rotating Equipment

Rotating equipment is potentially dangerous and should be properly guarded. The user should check for all applicable safety codes in his area and provide a suitable guard.



**Parts List**

- |                      |                         |
|----------------------|-------------------------|
| 1. Inner Race Shaft  | 14. Key                 |
| 2. Seal Carrier      | 15. Screw               |
| 3. Oil Seal          | 16. Snap Ring           |
| 4. Gasket            | 17. Screw/Lockwasher    |
| 5. End Cap           | 18. End Cap             |
| 6. Bearing           | 19. Grease Fitting      |
| 7. 'O' Ring          | 20. Outer Race Shaft    |
| 8. Breather          | 21. Oil Level Plug      |
| 9. Snap Ring         | 22. Magnetic Drain Plug |
| 10. Bearing          | 23. Adapter             |
| 11. Snap Ring        | 24. Coupling            |
| 12. Housing Assembly | 25. Shims               |
| 13. Clutch Assembly  |                         |



## Warranty

Formsprag LLC warrants that it will repair or replace (whichever in its sole discretion it deems advisable) any product it manufactured and sold which proves to be defective in material or workmanship within a period of one (1) year 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 Formsprag LLC's prior consent.

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

Formsprag LLC's obligation under this warranty is limited to the repair or replacement of the defective product. In no event shall Formsprag LLC be liable for consequential, indirect or incidental damages of any kind incurred by reason of manufacture, sale or use of any defective product. Formsprag LLC neither 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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