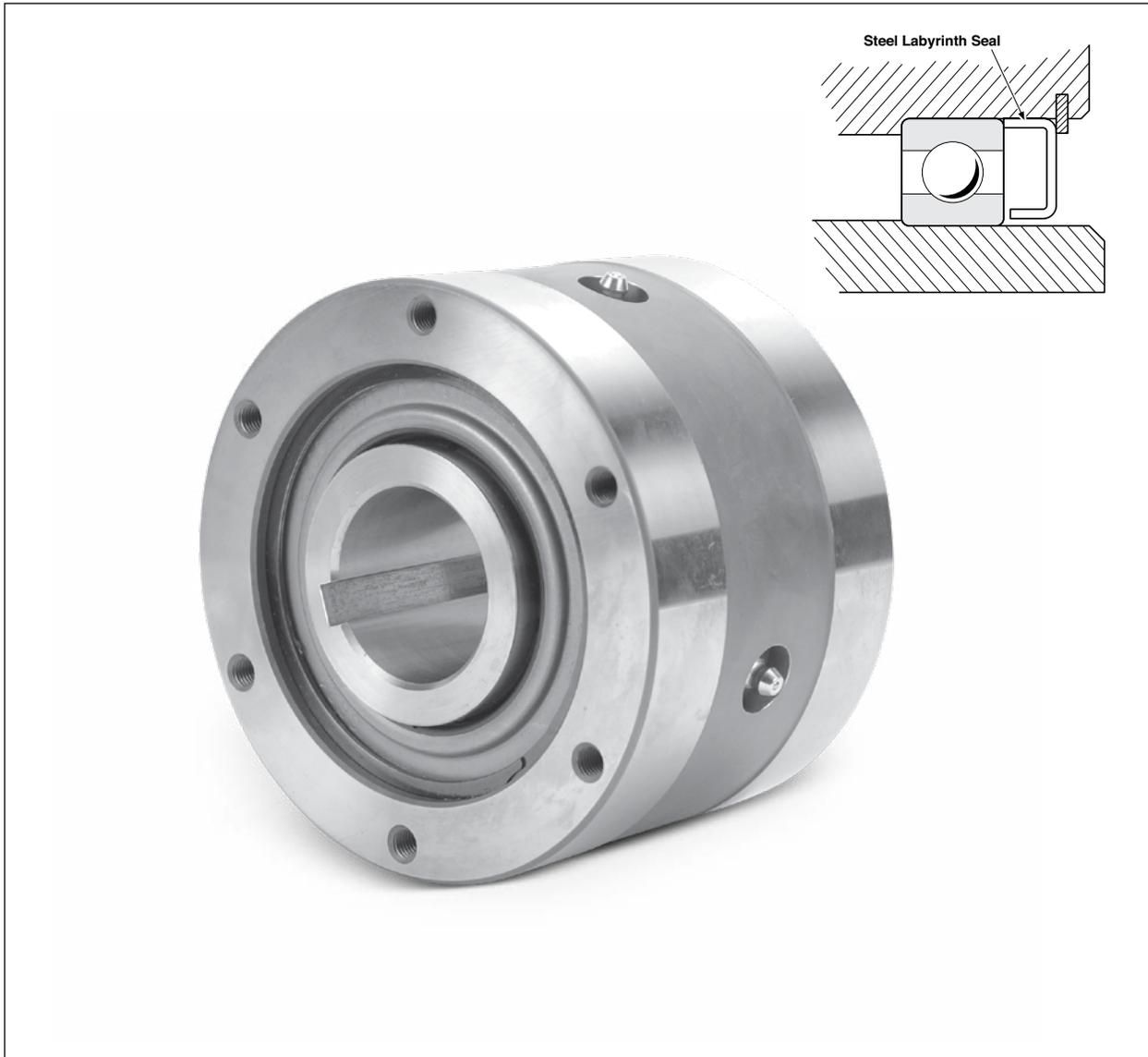


Models FSO 300 thru 1027

For High Ambient (300°F/150°C) Temperature Applications
Special Purpose Overrunning Clutches with Steel Labyrinth Seals

Service & Installation Instructions

P-222-11
Bulletin 2219-C



 **Formsprag Clutch**[®]
Altra Industrial Motion

Introduction

The FSO model special purpose ball bearing clutches are intended for overrunning, backstopping and light duty indexing applications where the clutch is exposed to high ambient temperature up to a maximum of 300°F/150°C. They feature Formchrome® sprags and Formsprag's exclusive "Free-Action" Retainer for long life and instant engagement.

- Formsprag ball bearing clutches mount on a through-shaft with the inner race driven by a key.
- The O.D. of the outer race is designed as a mounting surface or pilot for attaching the driven member.
- The O.D. of the outer race is ground to control concentricity with the bore and provide for proper alignment during installation.

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

Pre-installation Check

Before installing, check:

1. Shaft to Bore fit:

*If a press fit is necessary under special circumstances, do not exceed .001 in. tight.

Clutch Bore	Shaft Fit Guide*
to 2 inches dia.	line fit to .002 inches loose
2 to 4 inches dia.	line fit to .0025 inches loose
4 to 7 inches dia.	line fit to .003 inches loose

In some cases, builders of equipment in which a Formsprag clutch is used specify other shaft fit limits than those listed. In this event, direct questions concerning fit limits to the equipment manufacturer.

2. **Key and Keyseat**

Hardness: Use a hardened key, from 30 to 40 Rockwell "C" scale. Use materials AISI 1141, 1045 or 4130.

Length: The key must be equal to the length of the inner race for proper engagement.

Overrunning – Backstopping

Fit: Break edges of the key before installing to prevent any bearing at these points. Install with a push fit. Be sure the key seats squarely. Do not use a force fit.

Indexing

Fit: Fit the key up to .001 inch interference on WIDTH dimension to prevent loosening in indexing service. Do not exceed .001 inch tight.

3. **Rotation**

Check the clutch for the proper rotation in each application. Turn the inner race to check overrunning direction.

Installing

1. Mount the clutch and key on the shaft.
2. Apply pressure to end face of the clutch inner race only.

Applications of pressure to the outer race could load the bearings excessively causing permanent damage. To simplify mounting if a .001 inch tight fit is required place a heat lamp inside the bore of the inner race for 1/2 hour before mounting. Care should be taken to insure that the bore of the inner race does not exceed 200°F (93°C).

3. Secure the clutch in position on the shaft.

Use a lock washer and nut, a flat washer fastened to the shaft end with a screw, snap rings, collars, etc. to keep the clutch in position on the shaft.

4. Mount attaching parts to the clutch outer race as required by the application.

1. All fasteners are recommended to be grade 8 bolts

If a torque arm is to be mounted to the clutch, allow .25 inch to .50 inch clearance between stops and torque arm.

Tapped mounting holes are provided in each end of the outer race. Center the gear, pulley or sheave on the outer race.

Avoid excessive over-hung loads. Check with Formsprag if the clutch must support large side loads during overrunning cycle of the operation.

5. All Formsprag clutches are lubricated before leaving the factory. However, check the clutch for proper lubrication before installation. Add grease if required.
6. Check for proper installation by overrunning (freewheeling) the clutch by hand.

Lubrication

Proper lubrication and lubricant maintenance are the most important maintenance factors for long, effective, trouble-free clutch operation. Read the following instructions and follow them carefully for maximum performance and utilization of Formsprag overrunning clutches.

Grease Lubrication

Use greases selected from the following table:

Shell Aeroshell #7
Shell Aeroshell #22
Mobilith SCH 100

Important: Lubrication Manufacturers may change the composition of the lubricants by adding EP additives and this change will make the lubricant unacceptable for use in overrunning clutches. Therefore it is recommended that you review the most current lubricant data sheet before using. Do not mix the above greases, they are not compatible. When switching from one brand to another, pump a sufficient amount

of grease into the clutch to insure that all the previous grease has been purged out.

- Use no other greases unless a specific recommendation has been made by Formsprag.
- Do not attempt to substitute grease lubrication in a standard oil lubricated clutch. The use of grease lubrication in a clutch intended for oil could cause a malfunction.
- Formsprag can convert in-service clutches from oil to grease lubrication. Changes in internal construction are usually required. Consult Formsprag Service Department, giving the complete model number.

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

The use of unsuitable 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 manual, will automatically void any warranty.

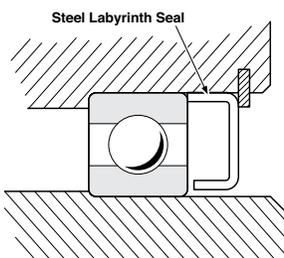
Grease Lubrication Maintenance

Clutches must be grease lubricated every two weeks.

Grease Lubrication Procedure

Use Recommended Greases Only

1. Relubrication should be done with the clutch at normal operating temperature.
2. Wipe all the grease fittings clean. Pump new grease into all fittings until clean new grease flows out completely around the seals on both sides of the clutch.
3. After each relubrication, the clutch should be overrun for 5 minutes to properly distribute the grease.



Note: It is normal for a clutch to leak or sling grease from around the seals for a short period of time (approximately 1/2 to 1 hour) during operation after lubrication. Amount of Grease Required (Approximate)

FSO-300	.25 oz	FSO-750	7.5 oz
FSO-400	.33 oz	FSO-800	15.0 oz
FSO-500	.75 oz	FSO-900	16.0 oz
FSO-600	1.75 oz	FSO-1027	32.0 oz
FSO-700	6.00 oz		

Packaging

Your Formsprag clutch is carefully wrapped in Vapor Inhibitor type activated paper for corrosion protection and packed in a shipping box conforming to the requirements of Rule 41, Uniform Freight classification, may be stored for up to two (2) years and reshipped without added packaging.

Models 300 through 400 are packed in corrugated board shipping boxes and models 750 through 1027 in wooden, style 4 shipping boxes with integral skids. To store in an unprotected area or if the original packaging is opened, wrap the box with a waterproof covering.

Clutch Rebuilding Service

Disassembly and repair of Formsprag clutches in the field is not recommended. Formsprag clutches are precision devices manufactured under careful controls to meet exacting standards. When reconditioning is required, clutches should be returned to Formsprag Clutch (Purchase Orders must go directly or through your local Warner Electric Distributor or through the Original Equipment Manufacturer.

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

For additional technical and dimensional information on FSO clutches refer to Formsprag Overrunning Clutch Catalog P-956 or call 1-800-927-3262

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.

Warranty

Formsprag Clutch 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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