

## **Installation Instructions**

### **Form-Lock® Bi-Directional Driving/Backstopping Clutches**

### **Models FL-35 thru FL-115 FL-47A thru FL-110A**



Introduction

The Form-Lock Clutch is a bi-directional no-back which permits transmission of driving torque from input to output shaft in both directions of rotation, but which restrains any feed-back torque of the driven load from rotating the output shaft in either direction.

**⚠ 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

Flange Models	Cylindrical Models
line fit to .003" loose or H8	line fit to .003" loose or f7

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 material AISI 1141, 1045 or 4130.

**Length:** The key must be equal to the length of the keyseat for proper engagement.

**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.**

**Note:** Check to be sure the proper clutch member is aligned with the input before installing. The clutch input member is marked “INPUT”.

## O.D. Housing Fits

Form-Lock clutch outside diameters are machined to fit in housings of standard ball bearing housing bores. Refer to ball bearing manufacturers recommendation. If housing bores are not prepared to ball bearing dimensions, a line fit to .002 inches loose (H7) is recommended. See Table 2, reference dimension A.

## Outer Race Key (Pin) Fits

A clearance fit from .001 to .002 inches (0.025 to 0.051 mm) loose is recommended for outer race keys. **Do not use force fit.**

Install input and output shafts and keys on each side of the Form-Lock clutch. When radial or thrust loads are present due to misalignment, gearing, hand-wheels, sprockets, etc., sufficient external bearing support must be utilized to accommodate these loads so that they will not be transformed to the clutch. (See Figures 3 & 4) on page 6.

## Alignment

In shaft to shaft connections, the angular alignment of the shafts must be within .001" per inch (.25 mm per 25.4 mm) of shaft length. Parallel alignment must be within .001" per inch of nominal shaft diameter. These figures must not be exceeded.

## Lubrication

Formsprag Form-Lock clutches are factory grease lubricated with Mobiltemp SHC 32 and sealed for life. Mobiltemp SHC 32 is suitable for ambient temperature of -65°F (-54°C) to +180°F (+82°C). No further lubrication is required.

## Input Backlash

The total input shaft backlash under a no load condition is four (4) degrees maximum.

## Output Backlash

The total output shaft backlash under a no load condition is four (4) degrees maximum.

## Overhauling Loads

When operating a Form-Lock clutch under overhauling conditions (i.e. turning a ballscrew in the same direction it is loaded) the energy absorbing shoes will decelerate the output rather than stop it suddenly. This enables the clutch to operate without a "chatter" condition. An additional suitable friction device (i.e. brake) which absorbs and diverts the dynamic torque and energy may be added between the load and the Form-Lock clutch when very large overhauling loads are present.

## Speed

Form-Lock clutches are primarily used in slow speed or manually driven systems. Contact Formsprag Clutch for applications that require a higher speed.

## 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.

## Packaging

Your Formsprag clutch, 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.

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.

For additional technical information on Form-Lock clutches contact Formsprag Clutch  
1-800-927-3262.

## Standard Flange Models

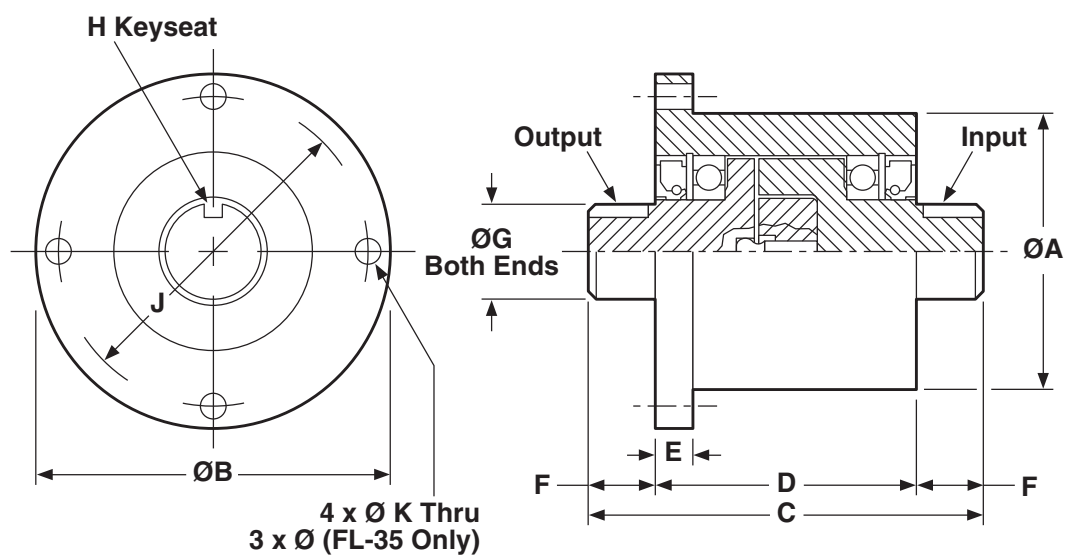


Figure 1

Table 1 English (Metric) ( ) denotes mm

Model No.	Torque in.-lb. (Nm)	A	A	B	C	D	E	F	G	G	H	J	K	Wt. Lbs. (Kg)
FL-35	100 (11.5)	1.388	(35,26)	2.00	2.35	1.35	.13	.50	.3745	(9,51 h8)	.094 dia. (2,39)	1.750	.141	.5
		1.378	(35,00)	(50,8)	(59,7)	(34,3)	(3,3)	(12,7)	.3740		pin hole	(44,45)	(3,58)	(.24)
FL-42	250 (28.5)	1.663	(42,24)	2.50	3.00	2.00	.25	.50	.500	(12,7 h8)	.125x.06 (3,18x1,52)	2.125	.190	1.2
		1.653	(42,00)	(63,5)	(76,2)	(50,8)	(6,4)	(12,7)	.499			(53,98)	(4,83)	(.54)
FL-55	600 (68)	2.175	(55,25)	2.88	3.31	2.31	.36	.50	.500	(12,7 h8)	.125x.06 (3,18x1,52)	2.560	.219	2.2
		2.165	(55,00)	(73,2)	(84,1)	(58,7)	(9,1)	(12,7)	.499			(65,02)	(5,56)	(1.01)
FL-75	1200 (136)	2.963	(75,26)	3.88	4.34	2.84	.40	.75	1.000	(25,4 h8)	.187x.09 (4,75x2,3)	3.380	.250	5.2
		2.953	(75,00)	(98,6)	(110,2)	(72,1)	(10,2)	(19,1)	.999			(85,85)	(6,35)	(2.36)
FL-90	2400 (271)	3.553	(90,25)	4.50	4.98	2.98	.44	1.00	1.125	(28,58 h6)	.250x.13 (6,35x3,3)	4.000	.281	7.9
		3.543	(90,00)	(114,3)	(126,5)	(75,7)	(11,2)	(25,4)	1.124			(101,60)	(7,14)	(3.57)
FL-115	4800 (542)	4.538	(115,27)	6.00	5.31	3.31	.50	1.00	1.250	(31,75 h6)	.250x.13 (6,35x3,3)	5.250	.312	14.3
		4.528	(115,00)	(152,4)	(134,9)	(84,1)	(12,7)	(25,4)	1.249			(133,35)	(7,92)	(6.47)

Special housing and shaft ends may have been provided for custom design.

## Standard Cylindrical Models (A)

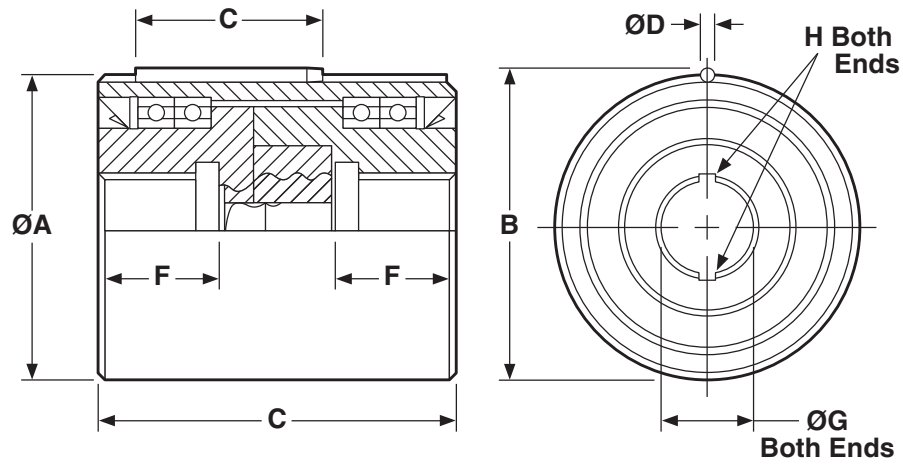


Figure 2

Table 2 English (Metric) ( ) denotes mm

Model No.	Torque in.-lb. (Nm)	A	B	C	D	E	F	G	H Woodruff Key	Wt. Lbs. (Kg)
FL-47A	310 (35)	<u>1.8504</u> 1.8494 (47 h6)	1.8971 (48,19)	2.438 (61,93)	.0937 (2,38)	1.25 (31,75)	.835 (21,21)	<u>.5635</u> .5625 (14,3 H6)	405	1.5 (.68)
FL-52A	400 (45)	<u>2.0472</u> 2.0467 (52 h6)	2.0941 (53,19)	2.620 (66,55)	.0937 (2,38)	1.25 (31,75)	.890 (22,61)	<u>.626</u> .625 (15,9 H6)	405 (.86)	1.9
FL-62A	800 (90)	<u>2.4409</u> 2.4404 (62 h6)	2.5034 (63,59)	2.870 (72,90)	.1250 (3,18)	1.50 (38,1)	.937 (23,80)	<u>.751</u> .750 (19,05 H6)	406	3.0 (1.36)
FL-72A	1325 (150)	<u>2.8346</u> 2.8341 (72 h6)	2.8971 (73,59)	3.245 (82,42)	.1250 (3,18)	1.75 (44,45)	1.045 (26,54)	<u>.876</u> .875 (22,23 H6)	507	4.6 (2.1)
FL-80A	2200 (249)	<u>3.1496</u> 3.1491 (80 h6)	3.2277 (81,98)	3.620 (91,95)	.1562 (3,97)	2.00 (50,8)	1.156 (29,36)	<u>1.001</u> 1.000 (25,4 H7)	608	6.3 (2.86)
FL-90A	2650 (300)	<u>3.5433</u> 3.5428 (90 h6)	3.6214 (91,98)	3.870 (98,30)	.1562 (3,97)	2.25 (57,15)	1.189 (30,20)	<u>1.126</u> 1.125 (28,58 H7)	609	8.5 (3.86)
FL-110A	4425 (500)	<u>4.3307</u> 4.3297 (110 h6)	4.4244 (112,38)	4.495 (114,17)	.1876 (4,77)	2.25 (57,15)	1.322 (33,58)	<u>1.376</u> 1.375 (34,92 H7)	810	14.8 (6.71)

Special shaft ends may have been provided for custom design.

## Typical Installations

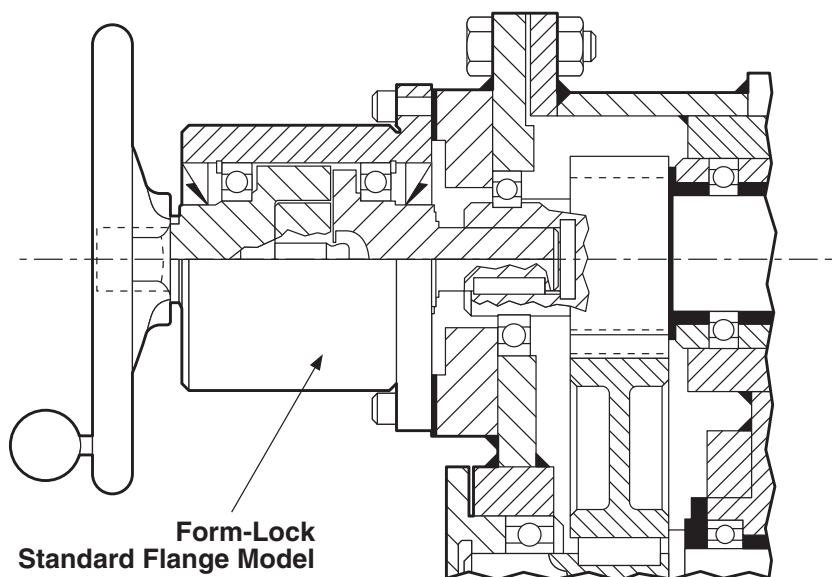


Figure 3

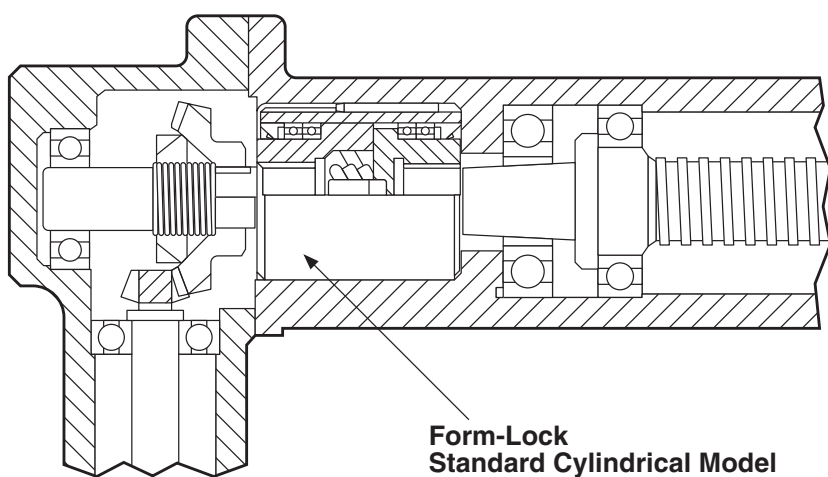


Figure 4



## 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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