

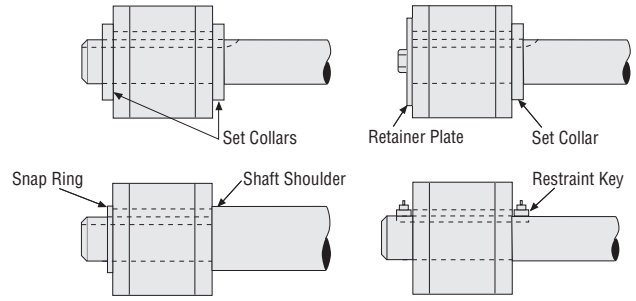
# Axial Restraint Set Collars

## Axial Restraint

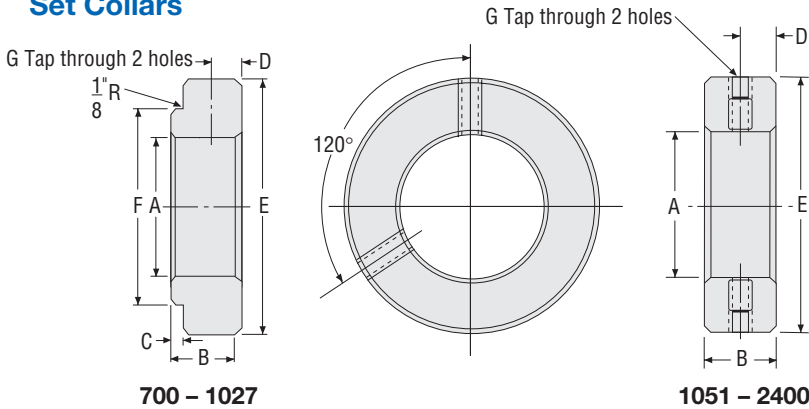
Formsprag requires that all clutches and holdbacks be axially restrained when mounted. Our recommended bore to shaft fits are loose to facilitate installation and removal, therefore, axial restraint must be provided by set collars, shoulders, restraining keys, retaining snap rings, retainer plates, or some other axial restraint device approved by Formsprag.

Holdback axial restraint is required to prevent the reaction end of the torque arm from imposing biasing loads on the bearings. Holdbacks installed without axial restraint can shift on the shaft, causing bearing loads which can significantly reduce bearing B-10 life.

For customers wishing to have a tolerance gap between the axial restraining device and the holdback inner race, a maximum gap of 1/8" per side is recommended.



## Set Collars



Model	Required Shaft Length	
	in.	mm
700	8.67	220.22
750	9.64	244.86
800	9.91	251.49
900	10.28	261.11
1027	11.03	280.16
1051	12.13	308.10
1250	13.25	336.55
1300	13.25	336.55
1375	14.50	368.30
2000	14.13	358.90
2400	14.88	377.95
3500	22.00	558.80
5000	22.00	558.80

Shaft Length Required to Mount LLH with Two Set Collars

## Dimensions inches (mm)

Size	Part No.	A Bore	B	C	D	E	F	G Bore	Screw
700	CL32136-1	1.938 to 2.938 (49.23 to 74.63)	1.625 (41.28)	.625 (15.88)	.500 (12.70)	4.000 (101.60)	3.500 (88.90)	.500-20	SC2206-N
750	CL32136-2	2.438 to 3.438 (61.93 to 87.33)	1.565 (39.70)	.563 (14.30)	.500 (12.70)	4.500 (114.30)	4.000 (101.60)	.500-20	SC2206-N
800	CL32136-3	2.938 to 4.438 (74.63 to 112.73)	1.688 (42.88)	.688 (17.48)	.500 (12.70)	5.500 (139.70)	5.000 (127.00)	.500-20	SC2206-N
900	CL32136-4	3.938 to 5.438 (100.03 to 138.13)	1.688 (42.88)	.688 (17.48)	.500 (12.70)	6.500 (165.10)	6.000 (152.40)	.500-20	SC2206-N
1027	CL32136-5	4.938 to 7.000 (125.43 to 177.80)	1.938 (49.23)	.688 (17.48)	.625 (15.88)	8.000 (203.20)	7.625 (193.68)	.500-20	SC2206-N
1051	CL32136-6	4.938 to 7.000 (125.43 to 177.80)	1.250 (31.75)	—	.625 (15.88)	8.000 (203.20)	—	.500-20	SC2206-N
1250	CL32136-8	6.750 to 9.000 (171.45 to 228.60)	1.500 (38.10)	—	.750 (19.05)	10.000 (254.00)	—	.625-18	SC2608-N
1300	CL32136-9	7.938 to 10.000 (201.64 to 254.00)	1.500 (38.10)	—	.750 (19.05)	11.250 (285.75)	—	.625-18	SC2608-N
1375	CL32136-15	8.938 to 11.000 (227.03 to 279.40)	1.750 (44.45)	—	.875 (22.23)	13.000 (330.20)	—	.750-10	SC2711-N
2000	CL32136-12	11.000 to 13.250 (279.40 to 336.55)	1.750 (44.45)	—	.875 (22.23)	15.500 (393.70)	—	.750-10	SC2711-N
2400	CL32136-13	13.250 to 15.500 (336.55 to 393.70)	2.000 (50.80)	—	1.000 (25.40)	19.563 (496.90)	—	.750-10	SC2711-N
3500									Built-in Set Collar
5000									Built-in Set Collar

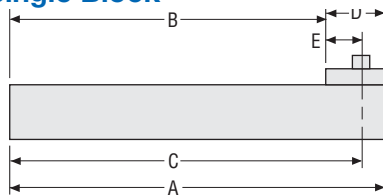
# Axial Restraint Set Collars

## Axial Restraint Keys Introduction

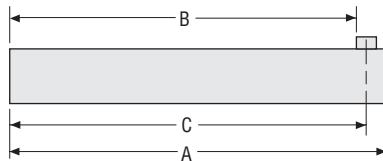
Restraint keys are a cost effective method of providing axial restraint for clutches and holdbacks. The restraint key is longer than the clutch through bore length or clutch width. The single block key will prevent axial movement in only one direction and must be used with some other means to prevent movement in the other direction such as a set collar or a step in the shaft.

The double block key will prevent axial movement of the clutch in either direction. All restraint keys must be secured in the shaft key seat. This can usually be accomplished by cutting the keyseat with an end mill without breaking out at the end of the shaft.

### Single Block

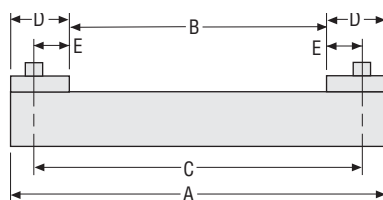


LLH-700 thru LLH-1027

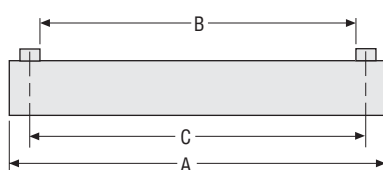


LLH-1051 thru LLH-5000

### Double Block



LLH-700 thru LLH-1027



LLH-1051 thru LLH-5000

### Single Block Style inches (mm)

Size	A	B	C	D	E	Screw Series
700	6.312 (160.32)	5.062 (128.57)	6.000 (152.40)	1.250 (31.75)	.937 (23.80)	SC1000
750	7.500 (190.50)	6.062 (153.97)	7.062 (179.37)	1.437 (36.50)	1.000 (25.40)	SC1000
800	7.625 (193.68)	6.062 (153.97)	7.187 (182.44)	1.562 (39.67)	1.125 (28.58)	SC1300
900	8.062 (204.77)	6.437 (163.50)	7.625 (193.68)	1.625 (41.28)	1.187 (30.15)	SC1500
1027	8.312 (211.12)	6.687 (169.85)	7.875 (200.03)	1.625 (41.28)	1.187 (30.15)	SC1500
1051	10.625 (269.88)	9.687 (246.05)	9.968 (253.19)	—	—	SC1700
1250	11.187 (284.15)	10.312 (261.92)	10.593 (269.06)	—	—	SC1700
1300	11.187 (284.15)	10.312 (261.92)	10.593 (269.06)	—	—	SC1700
1375	12.187 (309.55)	11.062 (280.97)	11.437 (290.50)	—	—	SC2100
2000	11.625 (295.28)	10.687 (271.45)	11.062 (280.97)	—	—	SC2100
2400	11.875 (301.63)	10.937 (277.80)	11.687 (296.85)	—	—	SC2100

### Double Block Style inches (mm)

Size	A	B	C	D	E	Screw Series
700	7.625 (193.68)	5.125 (130.18)	7.000 (177.80)	1.250 (31.75)	.938 (23.83)	SC1000
750	9.000 (228.60)	6.125 (155.58)	8.125 (206.38)	1.438 (36.53)	1.000 (25.40)	SC1000
800	9.250 (234.95)	6.125 (155.58)	8.375 (212.73)	1.563 (39.70)	1.125 (28.58)	SC1300
900	9.750 (247.65)	6.500 (165.10)	8.875 (225.43)	1.625 (41.28)	1.188 (30.18)	SC1500
1027	10.000 (254.00)	6.750 (171.45)	9.125 (231.78)	1.625 (41.28)	1.188 (30.18)	SC1500
1051	11.625 (295.28)	9.750 (247.65)	10.313 (261.95)	—	—	SC1700
1250	12.062 (306.37)	10.375 (263.53)	10.938 (277.83)	—	—	SC1700
1300	12.062 (306.37)	10.375 (263.53)	10.938 (277.83)	—	—	SC1700
1375	13.375 (339.73)	11.125 (282.58)	11.875 (301.63)	—	—	SC2100
2000	12.625 (320.68)	10.750 (273.05)	11.500 (292.10)	—	—	SC2100
2400	13.000 (330.20)	11.000 (279.40)	11.750 (298.45)	—	—	SC2100

3500 to 5000 as required

**Note:** Restraint keys must be secured in shaft keyseat.

# Stub Shaft Adapters

## For Clutch Sizes 400 through 1027 Mount Gears, Pulleys, and Similar Attachments



Stub shaft adapters are available to fit clutches from size 400 through 1027. They are secured to the clutch by fastening to the tapped holes at the end face of the outer race. The stub shaft adapters may be used to mount gears, pulleys or similar attachments when the item to be mounted is too small to mount on the O.D. of the clutch, and to mount couplings when the customer desires to use a coupling other than the Formsprag-Formflex clutch coupling assembly.

Hardened bolts are supplied by Formsprag at no additional charge with purchased adapters.

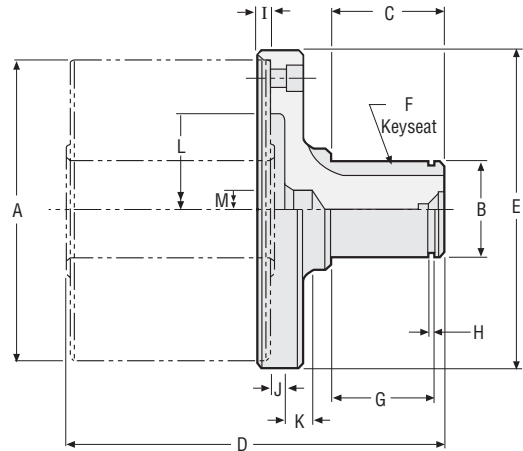
### Selection

Size	Adapter No.	Kit No.
400	A-4	AC-30156
500	A-5	AC-30157
600	A-6	AC-30158
700	A-7	AC-30159-4
750	A-7.5	AC-30161-5
800	A-8	AC-30160-6
900	A-9	AC-30162-4
1027	A-10	AC-30163-A

Consult Formsprag for other stub shaft adapter sizes.

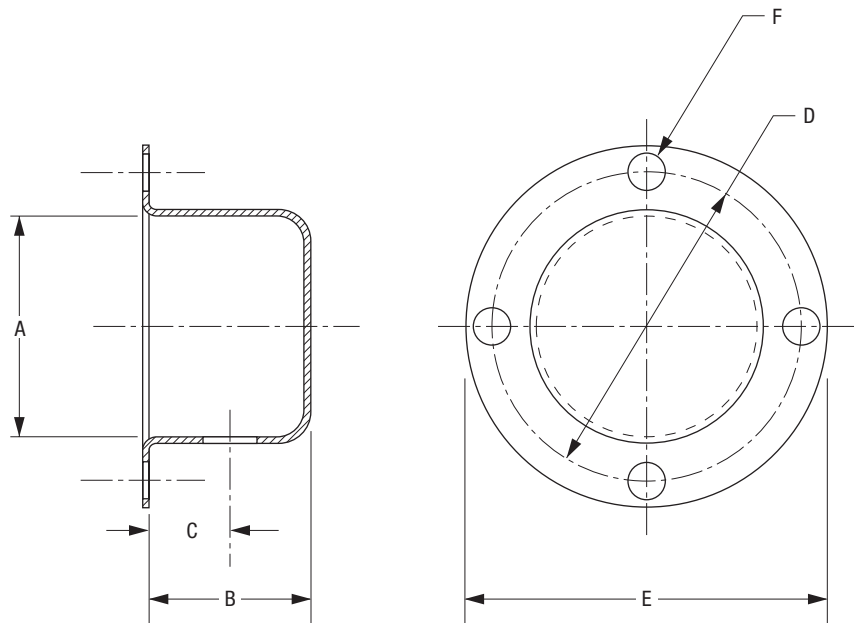
### Dimensions inches (mm)

Model No.	A	B	C	D
400	3.500/3.501 (88.90/88.85)	.751/1.750 (19.07/19.05)	1.50 (38.10)	5.09 (129.36)
500	4.250/4.251 (107.95/107.90)	1.251/1.250 (31.77/31.75)	1.75 (44.45)	6.19 (157.15)
600	5.375/5.376 (136.52/136.47)	1.751/1.750 (44.47/44.45)	2.00 (50.80)	6.75 (171.45)
700	7.125/7.126 (180.97/180.92)	2.752/2.750 (69.90/69.85)	2.50 (63.50)	8.44 (214.30)
750	8.750/8.751 (222.25/222.20)	3.252/3.250 (82.60/82.55)	3.00 (76.20)	10.50 (266.70)
800	10.000/10.001 (254.00/253.95)	4.252/4.250 (108.00/107.95)	3.75 (95.25)	11.13 (282.57)
900	12.000/12.001 (304.80/304.72)	5.252/5.250 (133.40/133.35)	4.50 (114.30)	12.25 (311.15)
1027	15.000/15.002 (381.00/380.92)	6.252/6.250 (158.80/158.75)	5.50 (139.70)	13.56 (344.42)



Detail drawings sufficient to manufacture stub shaft adapters are available on request for those who would prefer to manufacture their own.

Size	E	F	G	H	I	J	K	L	M	Weight lb. (kg)
400	3.88 (98.42)	.250 x .13 (6.35 x 3.18)	1.347/1.351 (34.21/34.31)	.033/.043 (.84/1.09)	0.250 (6.35)	0.188 (4.76)	0.438 (11.11)	1.875 (47.63)	0.563 (14.29)	1.6 (.73)
500	4.63 (117.47)	.312 x .16 (7.92 x 3.96)	1.579/1.584 (40.11/40.23)	.045/.055 (1.14/1.40)	0.250 (6.35)	0.250 (6.35)	0.500 (12.70)	2.625 (66.68)	0.625 (15.88)	3.2 (1.45)
600	5.75 (146.05)	.375 x .19 (9.52 x 4.75)	1.835/1.840 (46.61/46.99)	.055/.065 (1.40/1.65)	0.250 (6.35)	0.250 (6.35)	0.500 (12.70)	3.500 (88.90)	0.625 (15.88)	5.8 (2.63)
700	7.63 (193.67)	.625 x .31 (15.87 x 7.92)	2.335/2.340 (59.31/59.44)	.103/.113 (2.62/2.87)	0.250 (6.35)	0.250 (6.35)	0.500 (12.70)	5.000 (127.00)	0.625 (15.88)	12.6 (5.72)
750	9.50 (241.30)	.750 x .38 (19.05 x 9.52)	2.804/2.809 (71.22/71.35)	.103/.113 (2.62/2.87)	0.375 (9.53)	0.250 (6.35)	0.625 (15.88)	5.500 (139.70)	1.000 (25.40)	23.8 (10.79)
800	10.75 (273.05)	1.000 x .50 (25.40 x 12.70)	3.566/3.571 (90.57/90.70)	.120/.130 (3.05/3.30)	0.320 (8.13)	0.375 (9.53)	0.750 (19.05)	7.500 (190.50)	1.500 (38.10)	40.5 (18.37)
900	12.75 (323.85)	1.250 x .63 (31.75 x 15.87)	4.316/4.321 (109.63/109.75)	.139/.149 (3.53/3.78)	0.375 (9.53)	0.313 (7.94)	0.870 (22.10)	7.750 (196.85)	1.250 (31.75)	62.8 (28.49)
1027	15.75 (400.05)	1.250 x .63 (31.75 x 15.87)	5.140/5.145 (130.56/130.68)	.094/.104 (2.34/2.64)	0.375 (9.53)	0.310 (7.87)	0.875 (22.23)	10.000 (254.00)	1.250 (31.75)	103.4 (46.90)



FSO OSHA cover kits are designed for shaft end mounted FSO or HPI clutches and available from Formsprag from size 400 through 1027. These cover kits provide not only the stationary cover enclosure required by OSHA, but provide additional protection for the clutch from abrasive environments as well.

**Note:** OSHA requires that a stationary guard must enclose clutches with rotating projecting parts and operating seven (7) feet or less above the floor.

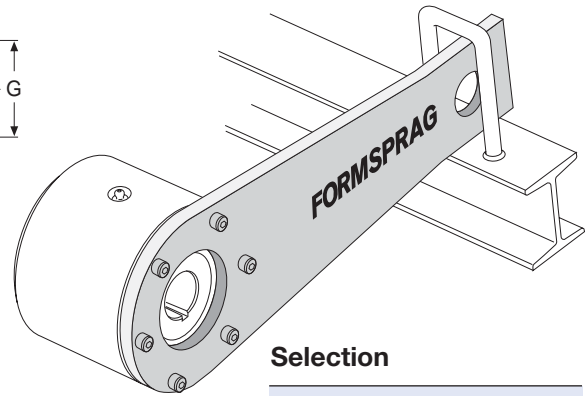
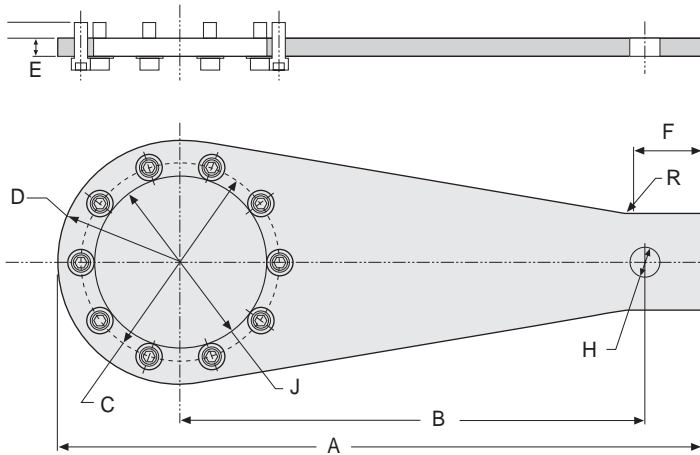
**Dimensions** inches (mm)

Size	A	B	C	D	E	F	F dia.
400	2.06 (58.32)	1.50 (38.1)	0.75 (19.05)	2.88 (73.15)	3.38 (85.85)	4 @ 90°	0.34 (8.64)
500	2.75 (69.85)	1.50 (38.1)	0.75 (19.05)	3.63 (92.20)	4.13 (104.90)	4 @ 90°	0.34 (8.64)
550	2.25 (57.1)	1.50 (38.1)	1.50 (38.1)	4.25 (107.9)	4.75 (120.6)	6 @ 60°	0.34 (8.64)
600	3.88 (98.55)	1.50 (38.1)	0.75 (19.05)	4.75 (120.65)	5.25 (133.35)	6 @ 60°	0.34 (8.64)
650	3.25 (82.5)	1.50 (38.1)	2.00 (50.8)	5.75 (146)	6.50 (165.1)	8 @ 45°	0.40 (10.2)
700	5.25 (133.35)	1.50 (38.1)	0.75 (19.05)	6.25 (158.75)	7.00 (177.80)	4 @ 90°	0.44 (11.18)
750	5.88 (149)	2.00 (50.8)	1.00 (25.4)	7.00 (177.80)	8.00 (203.20)	4 @ 90°	0.56 (14.22)
800	7.50 (190.5)	2.00 (50.8)	1.00 (25.4)	8.94 (227.08)	9.88 (250.95)	4 @ 90°	0.56 (14.22)
900	8.56 (217.4)	2.00 (50.8)	1.00 (25.4)	9.75 (247.65)	11.00 (279.40)	6 @ 60°	0.69 (17.53)
1027	10.23 (259.84)	3.00 (76.2)	1.50 (38.1)	11.75 (298.45)	13.50 (342.90)	4 @ 90°	0.75 (19.05)

**Selection**

Size	Kit No.
400	AC-33594
500	AC-33595
550	AC-33713-1
600	AC-33596
650	AC-33714-1
700	AC-33597
750	AC-33600
800	AC-33598
900	AC-33599
1027	AC-33601

# FSO Torque Arm



FSO Torque Arms are used to help facilitate the installation of the clutch when used as a backstop. The FSO Torque Arms are available to fit clutches from size 300 through 1027. These arms are designed to work with Clutch Models FSO, HPI, and HSB.

The torque arm must be secured to the clutch and must not be rigidly fastened at the reaction point. Rotation of the clutch must be restricted at the reaction point by either a pin or angle iron. Torque arm reaction point clearance is required on all sides of the arm to prevent binding, which could cause uneven loading of the clutch bearing, resulting in reduced clutch life.

### Selection

Size	Kit No.
300	TA300
400	TA400
500	TA500
550	TA550
600	TA600
650	TA650
700	TA700
750	TA750
800	TA800
900	TA900
1027	TA1027

Size	A	B	C	D	E	F	G	H	J	No. of Bolts
300	9.63 (244.6)	7.13 (181.1)	2.62 (66.5)	1.50 (38.1)	0.38 (9.6)	1.50 (38.1)	1.50 (38.1)	0.75 (19)	1.25 (31.8)	4
400	9.63 (244.6)	7.13 (181.1)	2.87 (72.8)	1.75 (44.4)	0.38 (9.6)	1.50 (38.1)	1.50 (38.1)	0.75 (19)	1.25 (31.8)	4
500	13.00 (330.2)	9.63 (244.6)	3.62 (91.9)	2.13 (54.1)	0.38 (9.6)	2.25 (57.1)	2.25 (57.1)	1.00 (25.4)	1.80 (45.7)	4
550	10.13 (257.3)	7 (177.8)	4.25 (107.9)	2.5 (63.5)	0.38 (9.6)	1.37 (34.9)	2.25 (57.1)	0.78 (19.8)	2.43 (61.7)	12
600	16.00 (406.4)	11.88 (301.7)	4.75 (120.6)	2.68 (68)	0.38 (9.6)	2.50 (63.5)	2.50 (63.5)	1.00 (25.4)	2.81 (71.1)	6
650	13.63 (346)	9.5 (241)	5.75 (146)	3.25 (82.5)	0.38 (9.6)	1.75 (44.4)	3.0 (76.2)	0.78 (19.8)	3.4 (87.3)	16
700	21.00 (533.4)	15.75 (400)	6.25 (158.7)	3.56 (90.4)	0.50 (12.7)	3.00 (76.2)	3.00 (76.2)	1.25 (31.8)	4.25 (107.9)	8
750	22.31 (566.6)	15.25 (387.4)	7.00 (177.8)	4.38 (111.2)	0.50 (12.7)	2.91 (73.9)	4.38 (111.2)	1.25 (31.8)	5.50 (139.7)	8
800	26.41 (670.8)	18.63 (473.2)	8.94 (227)	5.00 (127)	0.50 (12.7)	3.56 (90.4)	4.75 (120.7)	1.25 (31.8)	6.75 (171.5)	8
900	31.72 (805.6)	22.88 (581.1)	9.75 (247.6)	6.00 (152.4)	0.88 (22.3)	3.38 (85.9)	4.75 (120.7)	1.50 (38.1)	8.50 (215.9)	10
1027	33.50 (850.9)	23.00 (584.2)	11.75 (298.5)	7.50 (190.5)	0.88 (22.3)	3.38 (85.9)	5.25 (133.3)	1.75 (44.5)	10.50 (266.7)	10