

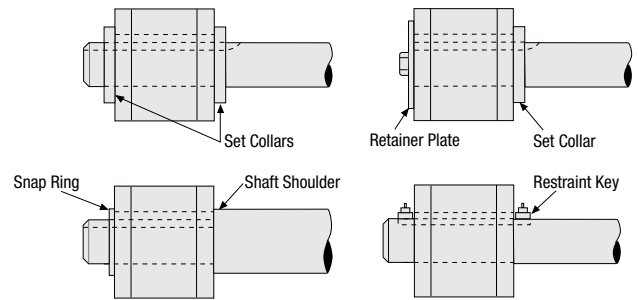
Axial Restraint Set Collars

Axial Restraint

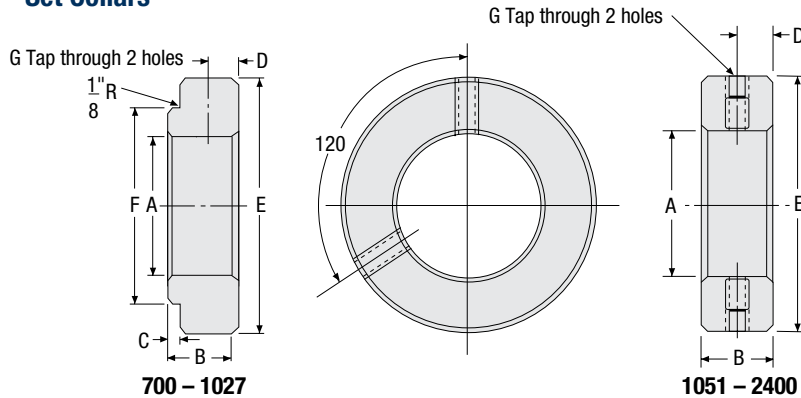
Formsprag requires that all clutches and holdbacks be axially restrained when mounted. Our recommended bore to shaft fits are loose to facilitate installation and removal, therefore, axial restraint must be provided by set collars, shoulders, restraining keys, retaining snap rings, retainer plates, or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



Shaft Length Required to Mount LLH with Two 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 |

Dimensions inches (mm)

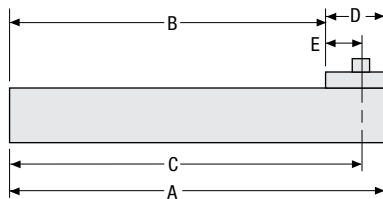
| Size | Part No. | A Bore | B | C | D | E | F | G Bore | Screw |
|------|---------------------|--|------------------|-----------------|------------------|--------------------|-------------------|---------|----------|
| 700 | CL32136-1 | 1.938 to 2.938 (49.23 to 74.63) | 1.625 (41.28) | .625 (15.88) | .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 Keys Introduction

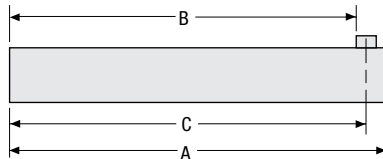
Restraint keys are a cost effective method of providing axial restraint for clutches and holdbacks. The restraint key is longer than the clutch through bore length or clutch width. The single block key will prevent axial movement in only one direction and must be used with some other means to prevent 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 keyseat. This can usually be accomplished by cutting the keyseat with an end mill without breaking out at the end of the shaft.

Single Block

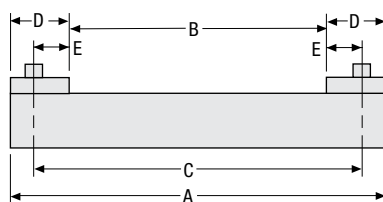


LLH-700 thru LLH-1027

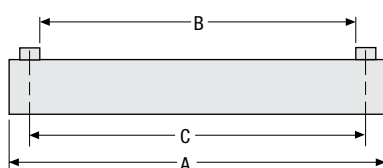


LLH-1051 thru LLH-5000

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.

Accessories

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.

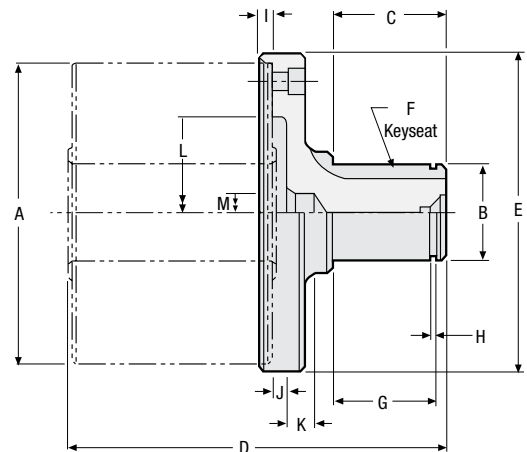
Selection

| Size | Adapter No. | Kit No. |
|------|-------------|-----------|
| 400 | A-4 | AC30156 |
| 500 | A-5 | AC30157 |
| 600 | A-6 | AC30158 |
| 700 | A-7 | AC30159-4 |
| 750 | A-7.5 | AC30161-5 |
| 800 | A-8 | AC30160-6 |
| 900 | A-9 | AC30162-4 |
| 1027 | A-10 | AC30163-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, HPI, FRB OSHA Cover Kits

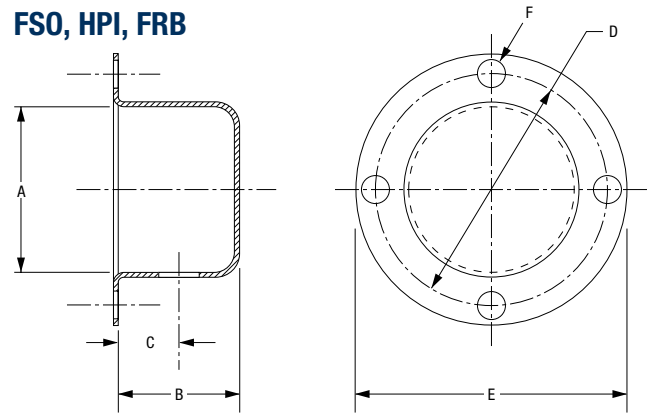


FSO, HPI, FRB OSHA cover kits are designed for shaft end mounted FSO, FRB, HPI or FHB clutches and available from Formsprag from size 400 through 1027. These cover kits provide not only the stationary cover enclosure required by OSHA, but provide additional protection for the clutch from abrasive environments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

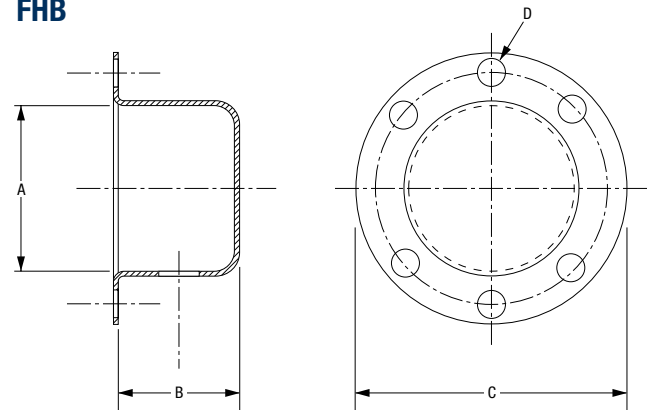
The OSHA cover kit includes the cover and required fasteners.

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

FSO, HPI, FRB



FHB



FSO, HPI, FRB Cover & Dimensions inches (mm)

| Size | Kit No. | A | B | C | D | E | F | F dia. |
|------|-----------|-------------------|----------------|-----------------|-------------------|-------------------|---------|-----------------|
| 400 | AC33594 | 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 | AC33595 | 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 | AC33713-1 | 2.25 (57.1) | 1.50 (38.1) | 0.75 (19.05) | 4.25 (107.9) | 4.75 (120.6) | 6 @ 60° | 0.34 (8.64) |
| 600 | AC33596 | 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 | AC33714-1 | 3.25 (82.5) | 1.50 (38.1) | 1.00 (25.4) | 5.75 (146) | 6.50 (165.1) | 8 @ 45° | 0.40 (10.2) |
| 700 | AC33597 | 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 | AC33600 | 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 | AC33598 | 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 | AC33599 | 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 | AC33601 | 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) |

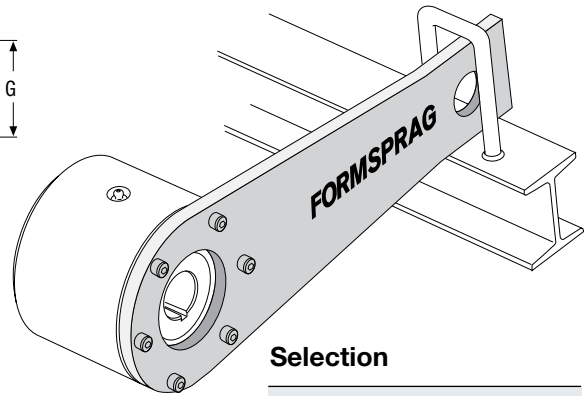
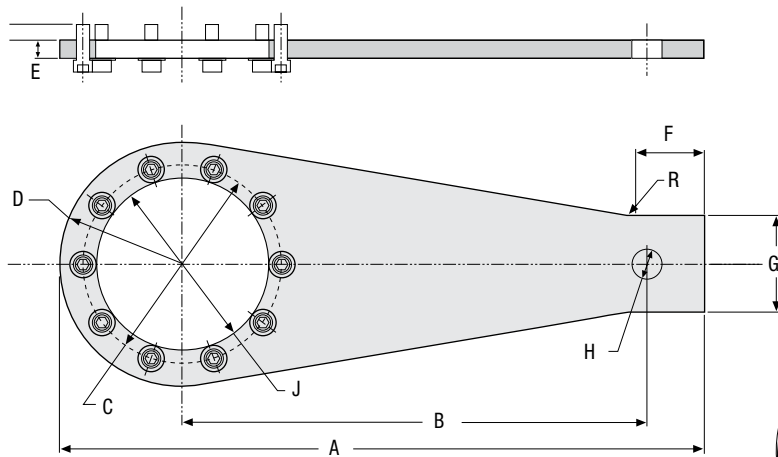
FHB Cover & Dimensions inches (mm)

| Size | Kit No. | A | B | C | D* | |
|------|---------|----------------|---------------|----------------|--------------|----------------|
| | | | | | No. of Holes | Dia. |
| 10 | CL70139 | 2.8 (69.9) | 1.5 (38.1) | 4.8 (120.7) | 6 @ 60° | 4.3 (109.2) |
| 20 | CL70140 | 3.9 (98.6) | 1.5 (38.1) | 5.3 (133.4) | 6 @ 60° | 4.8 (120.7) |
| 60 | CL70141 | 5.9 (149.4) | 2.0 (50.8) | 8.0 (203.2) | 4 @ 90° | 7.0 (177.8) |

* These covers can be used on other Formsprag clutches so there may be additional mounting holes, not required for the FHB Backstops.

Accessories

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 |

Dimensions inches (mm)

| 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 (36.5) | 2.50 (36.5) | 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 |