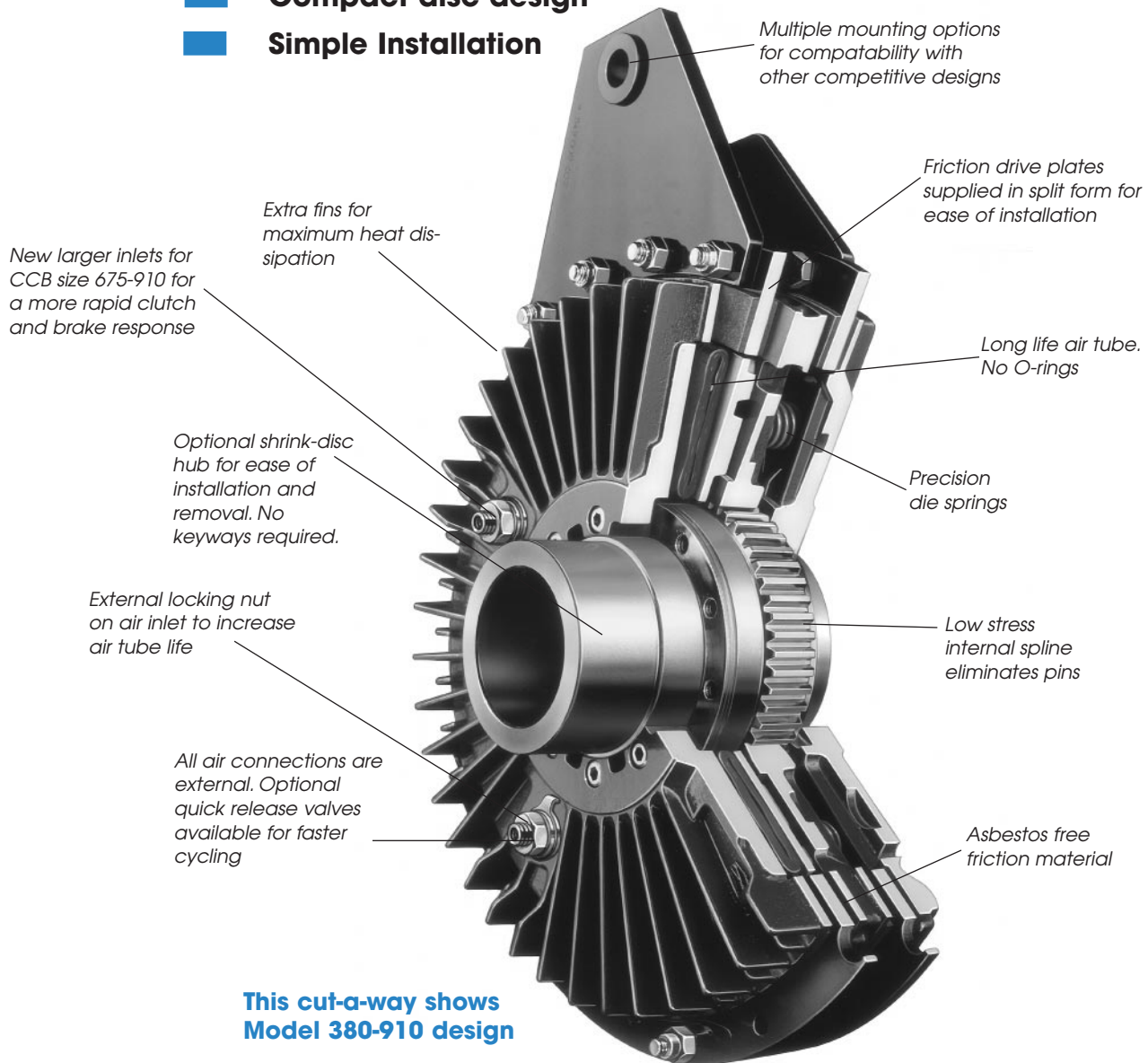


# Combination Clutch/Brake

- **For metalforming equipment**
- **Fast, smooth cycling**
- **Cool running with higher torque**
- **Compact disc design**
- **Simple Installation**



**This cut-a-way shows Model 380-910 design**

The Wichita combination Clutch-Brake provides fast, smooth cycling for stamping presses and metalforming equipment. The simple Wichita air tube concept combines an air actuated clutch and a spring-set brake in a compact disc design.

## Design Advantages

- No shaft seals for faster, lower cost installation
- Optional shrink disc mounting for simplified, easier installation
- Cool running for faster cycle rates, higher torques
- Models 380-910 have a single air-tube design that provides long life and high reliability



## Operation

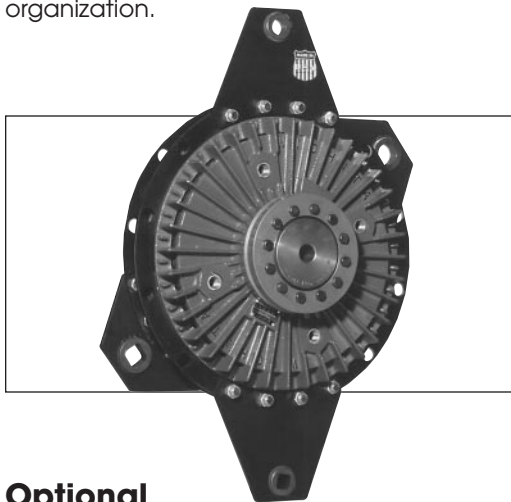
The Wichita Combination Clutch/Brake provides fast, smooth cycling for stamping presses and metalforming equipment.

The simple air-tube concept combines an air actuated clutch and spring-set brake in a compact, pancake assembly that prevents overlap. The extra fins and cooling slots allow for excellent heat dissipation. A low stress spline eliminates driving pins between the shaft and centerplate, while the precision die springs provide consistent long-life braking action.

The high performance air-tube design in sizes 380 and above, with optional quick air-release valves, provides faster cycling than piston and cylinder models. There are no o-rings or piston seals to wear-out and leak and no lubrication or adjustment is necessary. Worn friction plates can be relined at Wichita's factory on an exchange basis.

Installation of the CCB is also easy. The simple air system has external connections and requires no shaft seals. Metric mounting and SAE fasteners are standard. Available in eight sizes with an optional hub for shrink disc mounting. Clutch capacities through 340,000 lb/in and brake torque through 250,000 lb/in.

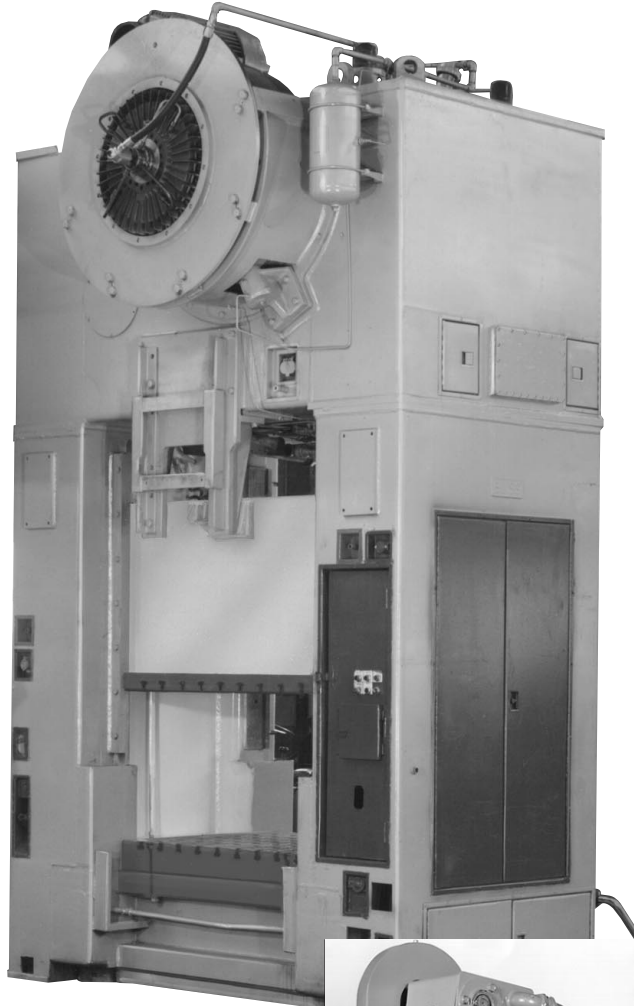
Wichita Combination Clutch/Brakes are manufactured and assembled in the United States and backed by a global sales, service and distributor organization.



## Optional

Optional shrink disc hub provides ease of mounting with no keyways.

## Typical Applications



*Wichita CCB is ideal for retrofit applications.*



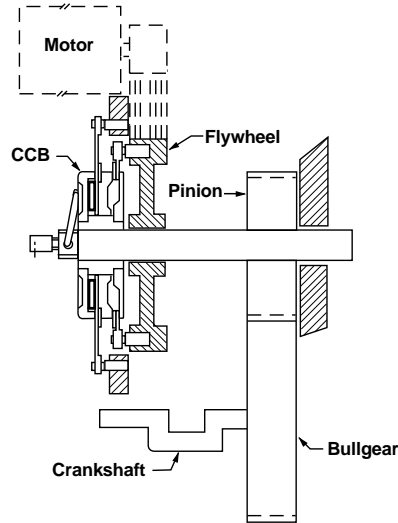
*The simple external air system with quick release valves provides smooth, fast cycling.*



# Combination Clutch/Brake

## Clutch/brake selection

A typical Combination Clutch/Brake application would be on a geared punch press. To properly select a CCB the following application information is needed.



### Application Data

Press Type . . . . . Geared Punch Press  
 Rated Tonnage . . . . . 200 tons  
 Crankshaft Speed . . . . . 30 rpm  
 Degrees of Crank to Start . . . . . 90°  
 Distance Above Bottom – x . . . . . .25 in.  
 1/2 of Press Stroke (throw) = a . . . . . 3 in.  
 WR<sup>2</sup> of Parts on Backshaft . . . . . 78 lb.ft.<sup>2</sup>  
 Required Clutch Torque. . . . . 73,529 lb.in.  
 Stroke . . . . . 6 in.  
 Clutch/Brake Shaft . . . . . 204 rpm  
 Degrees of Crank to Stop . . . . . 120  
 Connecting rod length = b . . . . . 36 in.  
 WR<sup>2</sup> of Parts on Crankshaft. . . . 39,091 lb.ft.<sup>2</sup>  
 Cycles/Minute . . . . . 7  
 Air Pressure Available. . . . . 100 psi  
 Shaft Size . . . . . 4.5 in.

### Selection

Press clutch and brake selection is based on:

1. Application Duty Factor
2. Application clutch torque.
3. Application brake torque necessary to stop.
4. Maximum Energy Input
5. Heat generated during cycling.
6. Bore size.

1. To determine the proper Application Duty Factor for a Geared Punch Press, consult page 16. Under Duty "B" or Normal, the Duty Factor is 1-1/2.

2. To determine the application clutch torque, the following information is needed:

a. Torque @ Crank  
 = (Rated Tonnage) (2000 lb./ton)  
 (Torque Arm)

b. Torque Arm = y = (c) (tan α)  
 c = a + b - x  
 = 3 + 36 - .25  
 = 38.75 in.

$$\cos \alpha = \frac{b^2 + c^2 - a^2}{2bc}$$

$$= \frac{(36)^2 + (38.75)^2 - (3)^2}{(2) (36) (38.75)}$$

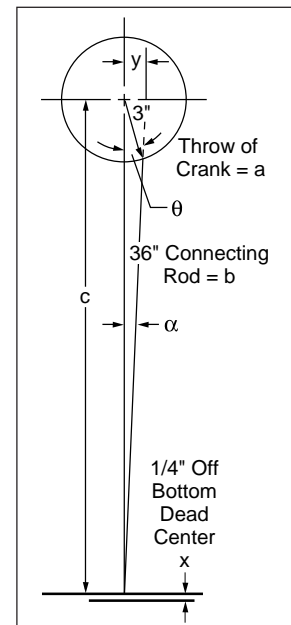
$$= .99948$$

$$= 1.8478^\circ$$

c. Torque Arm = y = (c) (tan α)  
 = (38.75) (tan 1.8478)  
 = (38.75) (.03226)  
 = 1.25 in.

Torque @ Crank  
 = (Rate Tonnage) (2000 lb./ton)(Torque Arm)  
 = (200) (2000) (1.25)  
 = 500,000 lb.in.

Required Torque @ Clutch  
 =  $\frac{(\text{Torque @ Crank}) \times (\text{Crankshaft rpm})}{\text{Clutch Shaft RPM}}$  lb.in.  
 =  $\frac{(500,000) (30)}{204}$  lb.in.  
 = 73,529 lb.in.



1/4" distance above bottom





Application selection torque = the required torque of 73,529 lb.in. x 1.5 = 110,294 lb.in. (Application Duty Factor for "Geared Punch Press", page 16.

Preliminary selection of CCB based on clutch torque is the CCB 600 with 50% spring compliment. The clutch torque for this model is 124,350 lb.in. @ 80 psi.

d. Maximum bore for CCB 600 is 5.0 in. bore acceptable.

3. To determine application brake torque necessary to stop the equipment the following information is needed:

a. The inertia of rotating parts referred to the backshaft. It is given in the application data that the inertia (WR<sup>2</sup>) of parts on the crankshaft is 39,091 lb.ft.<sup>2</sup> at 30 rpm. To calculate WR<sup>2</sup> referred to the backshaft:

$$\left( \frac{30 \text{ rpm of Crankshaft}}{204 \text{ rpm of Backshaft}} \right)^2 \times 39,091 \text{ lb.ft.}^2 = 845 \text{ lb.ft.}^2 @ 204 \text{ rpm}$$

Total WR<sup>2</sup> referred to backshaft is:

$$845 \text{ lb.ft.}^2 + 78 \text{ lb.ft.}^2 = 923 \text{ lb.ft.}^2$$

(WR<sup>2</sup> of parts on backshaft from application data)

Total WR<sup>2</sup> to start and stop is:

$$923 \text{ lb.ft.}^2 + 118 \text{ lb.ft.}^2 = 1041 \text{ lb.ft.}^2$$

(WR<sup>2</sup> of CCB-600 from page 15)

b. The brake stop time required is 120°. (Based on rotation at 30 rpm).

$$\text{Stop Time} = \frac{\text{Angle to Stop}}{360} \frac{60}{\text{crankshaft rpm}}$$
$$= \frac{120}{360} \frac{60}{30} = .5 \text{ sec}$$

c. Required deceleration torque =

$$\frac{(WR^2) (\text{CCB rpm})}{(23) (\text{Stop Time Sec.})} \text{ or } \frac{(1041) (204)}{(23)(.5)}$$
$$= 16,590 \text{ lb.in.}$$

d. Application brake torque = (18,466) (1.5) or 27,700 lb.in.

The CCB 600 has a rated brake torque capacity of 35,850 lb.in. with 50% spring compliment.

4. Calculate energy input required for the

combination clutch/brake.

$$a. \text{ Kinetic Energy} = \frac{(WR^2)(\text{CCB rpm})^2}{5,873}$$

$$KE = \frac{(1041)(204)^2}{5,873} = 7,365 \text{ ft.lbs.}$$

b. Maximum energy input to the CCB 600 is 14,229 ft.lbs. Therefore, CCB 600 has sufficient energy input capacity.

5. To determine the Heat Horsepower Capacity of the CCB at backshaft speed you need the following information:

a. Heat hp capacity of CCB 600 @ 200 rpm. (Look up capacity under the 200 rpm heading on page 16.)

$$\text{Heat hp} = 3.7 \text{ Heat hp @ 200 rpm.}$$

b. To determine the Cycles Per Minute Capacity you need the following information:

$$\frac{(\text{Heat hp @ CCB speed}) (1.9 \times 10^8)}{(WR^2) (\text{rpm})^2}$$

$$\text{or } \frac{3.7 (1.9 \times 10^8)}{(1041) (204)^2}$$

$$= 16 \text{ cpm}$$

### Final Selection:

CCB 600 with 1/2 spring compliment. Also available with shrink disc shaft mounting. (See pages 18–19 for various mounting arrangements).

### Note:

This application example is for preliminary sizing only. Contact a Wichita Sales Engineer or the factory for final selection.

# Combination Clutch/Brake

## Specifications Size 380 thru 910

CCB Model	Spring Compliment %	Clutch Dynamic Slip Torque Capacity @ 80 PSI**		Brake Dynamic Slip Torque Capacity		Swept Friction Area in <sup>2</sup> (cm <sup>2</sup> )	Maximum Energy Input ft.lbs. (Joules)	Maximum Speed (Balance) (Speed)* (Rpm)
		lb.in.	(Nm)	lb.in.	(Nm)			
380	100%	23,000	(2,600)	18,000	(2,030)	(387)	4,640 (6,290)	1,550 (895)
	75%	27,500	(3,100)	13,500	(1,525)			
	50%	32,000	(3,600)	9,000	(1,015)			
	25%	36,500	(4,120)	4,500	(505)			
470	100%	43,400	(4,900)	34,500	(3,890)	(774)	9,280 (12,581)	1,250 (725)
	75%	52,000	(5,870)	25,900	(2,920)			
	50%	60,650	(6,845)	17,250	(1,945)			
	25%	69,275	(7,800)	8,625	(975)			
550	100%	68,100	(7,685)	54,000	(6,095)	(1,187)	14,229 (19,291)	1,060 (620)
	75%	81,600	(9,210)	40,500	(4,570)			
	50%	95,100	(10,735)	27,000	(3,050)			
	25%	108,600	(12,260)	13,500	(1,525)			
600	100%	88,500	(9,900)	71,700	(8,090)	(1,187)	14,229 (19,291)	970 (570)
	75%	106,425	(12,000)	53,775	(6,070)			
	50%	124,350	(14,035)	35,850	(4,045)			
	25%	142,275	(16,060)	17,925	(2,220)			
675	100%	132,000	(14,900)	105,400	(11,910)	(1,987)	23,818 (32,291)	860 (500)
	75%	158,350	(17,875)	79,050	(8,930)			
	50%	184,700	(20,845)	52,700	(5,955)			
	25%	211,050	(23,820)	26,350	(2,975)			
760	100%	173,210	(19,570)	156,220	(17,652)	(2,323)	27,839 (37,743)	765 (450)
	75%	214,550	(24,240)	117,165	(13,236)			
	50%	255,900	(28,915)	78,110	(8,826)			
	25%	291,115	(32,890)	39,055	(4,415)			
830	100%	254,500	(28,750)	199,000	(22,480)	(2,606)	31,241 (42,356)	700 (410)
	75%	309,700	(34,990)	149,300	(16,870)			
	50%	337,300	(38,110)	124,400	(14,055)			
	25%	392,500	(44,345)	74,600	(8,430)			
910	100%	346,800	(39,150)	258,400	(29,160)	(2,981)	35,726 (48,437)	640 (375)
	75%	411,400	(46,430)	193,800	(21,870)			
	50%	476,000	(52,725)	129,200	(14,580)			
	25%	540,600	(66,000)	64,600	(7,290)			

Max. operating pressure Pmax= 100 PSI/7 bar. 1 bar=14.5 psig.

\* For continuous running only. In the case of high speeds, it is necessary to balance the unit.

\*\* For dry running only, it is essential to keep the friction surfaces free of lubricants.



CCB Model	Maximum Bores			Internal Parts Inertia		'R' External Parts Inertia		Total Weight	
	Square Key in.	Twin Rect. Keys in.	Shrink Disc in.	lb.ft. <sup>2</sup>	(kgm <sup>2</sup> )	lb.ft. <sup>2</sup>	(kgm <sup>2</sup> )	(RR Style)	
	(mm)	(mm)	(mm)					lb.	(kg)
380	2-7/8 (73)	3-3/16 (81)	3-1/8 (80)	12.4	(.52)	4	(0.17)	99	(45)
470	3-3/8 (86)	3-3/4 (95)	4-1/8 (105)	33.3	(1.4)	16	(0.67)	190	(86)
550	4-1/2 (114)	4-3/4 (121)	5-1/2 (140)	70.2	(3.0)	23	(0.97)	290	(132)
600	5 (127)	5 (127)	6-3/32 (155)	118	(5.0)	72	(3.0)	380	(172)
675	5 (127)	5-1/2 (140)	6-3/32 (155)	209	(8.8)	80	(3.4)	530	(240)
760	6-3/10 (160)	6-7/8 (175)	7-7/8 (200)	370	(15.6)	154	(6.5)	760	(345)
830	6-7/8 (175)	7-1/2 (191)	8-15/32 (215)	455	(19.2)	226	(9.5)	635	(288)
910	7-1/8 (181)	8-3/8 (213)	9-1/4 (235)	820	(34.5)	280	(11.8)	1190	(540)

# Combination Clutch/Brake

## Application Duty Factors

Field of Application	Duty B Normal – Factor 1-1/2	Duty C Heavy – Factor 3-1/4	Duty D Extra Heavy – Factor 5-1/2
Metal Production & Forming	Press Brake	Shear	Forming Press
	Non-Geared Punch Press	Back Geared Punch Press	Forging Press
	Flywheel Drive*	Double Back Shaft Drive*	Header Press
	Geared Punch Press	Deep Draw Press	Knuckle Press
	Single Back Shaft Drive*		
	Single Reduction Drive*	Transfer Press	
	Single Gear Drive*	Toggle Press	

\* Alternate common industry name for above machine type

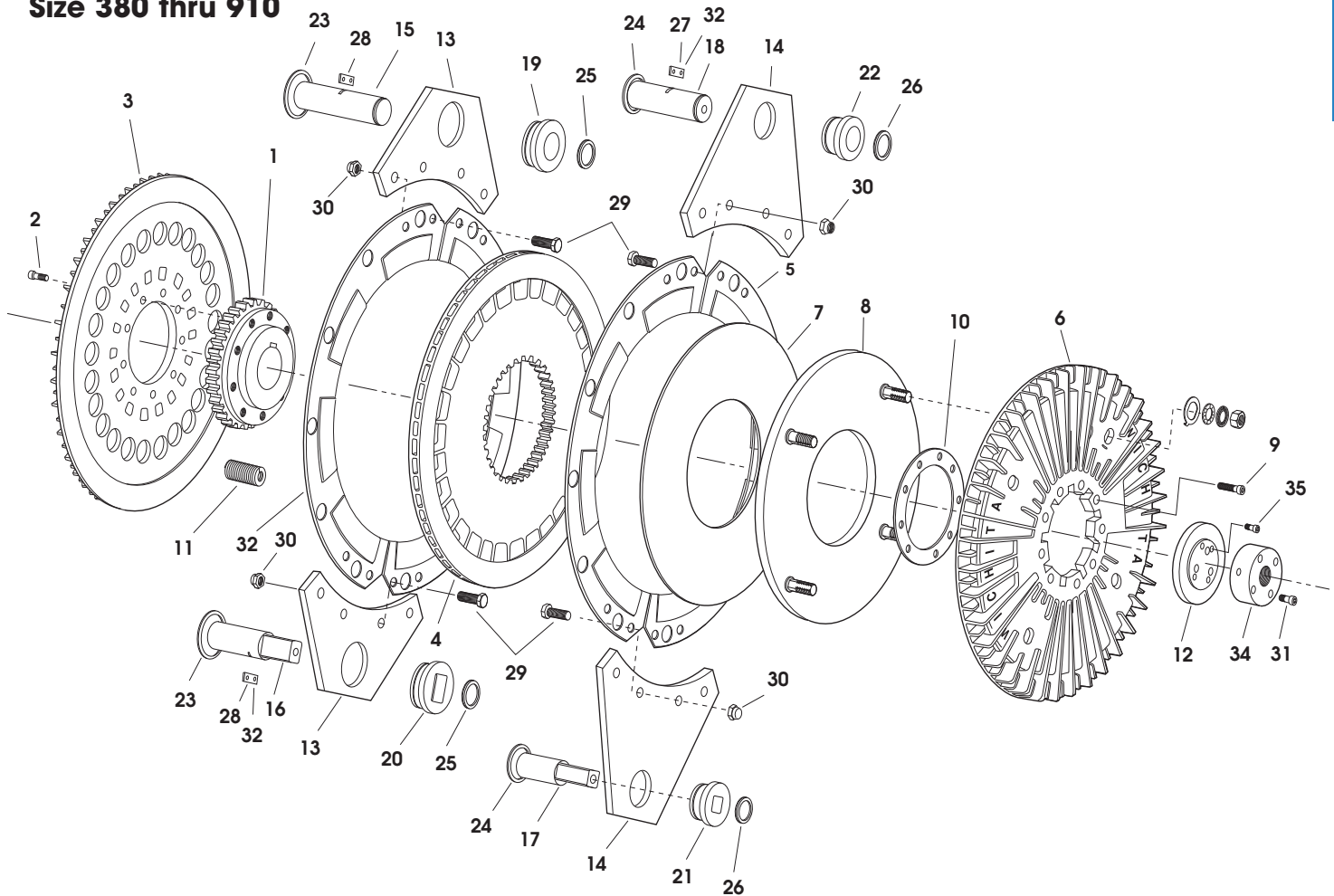
## Heat Horsepower Capacity

CCB	Speed – RPM								
	100	200	300	400	500	600	700	800	900
170	.12	.16	.20	.23	.25	.27	.28	.30	.31
190	.16	.21	.25	.28	.30	.32	.34	.35	.36
230	.28	.35	.42	.45	.48	.51	.54	.58	.61
310	.51	.63	.74	.84	.93	.98	1	1.07	1.12
380	1	1.3	1.6	1.8	1.9	2	2	2.4	2.7
470	1.7	2.1	2.4	2.8	3.1	3.4	3.6	3.9	4.2
550	2.5	3.0	3.5	3.9	4.3	4.7	5.1	5.6	6
600	3	3.7	4.3	4.9	5.5	5.9	6.2	6.6	7
675	3.7	4.4	5	5.8	6.5	7.1	7.6	8.1	*
760	5	6.1	7.1	7.7	8.3	8.9	9.5	*	*
830	6.5	7.9	9.3	10.2	11.1	11.9	12.7	*	*
910	8	9.8	11.5	12.8	14	15.2	*	*	*

\*Beyond maximum speed limit

## Component Parts Size 380 thru 910

A

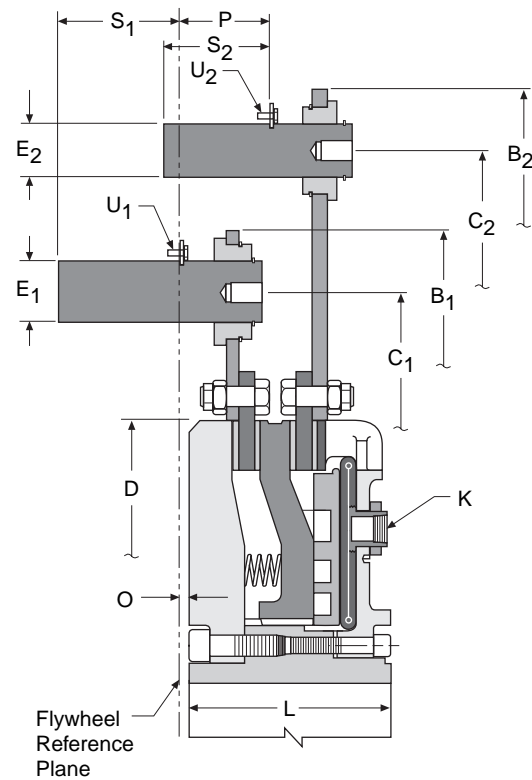
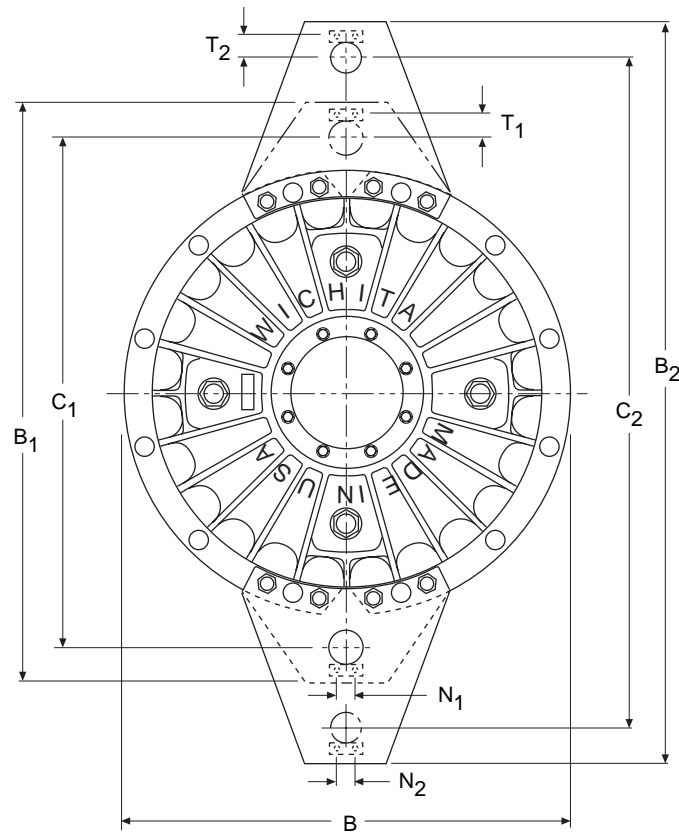


- |                                 |                                       |  |
|---------------------------------|---------------------------------------|--|
| 1. Hub                          | 15. Drive Pin (Round Clutch)          | 29. Hex Head Cap Screw (HHCS)                        |
| 2. Bolt                         | 16. Drive Pin (Square Clutch)         | 30. Flex Lock Nuts                                   |
| 3. Back Plate                   | 17. Drive Pin (Square Brake)          | 31. Socket Head Cap Screw (SHCS)                     |
| 4. Center Plate                 | 18. Drive Pin (Round Brake)           | 32. Hex Head Cap Screw                               |
| 5. Drive Plate                  | 19. Drive Bushing (Round Clutch)      | 33. Air Spud   |
| 6. Air-Tube Holding Plate       | 20. Drive Bushing (Square Clutch)     | 34. Air Manifold                                     |
| 7. Pressure Plate               | 21. Drive Bushing (Square Brake)      | 35. Socket Head Cap Screw (SHCS)                     |
| 8. Air-Tube                     | 22. Drive Bushing (Round Brake)       |  |
| 9. Air-Tube Holding Plate Bolts | 23. Snap Ring                         | Not Shown:   |
| 10. Shim                        | 24. Snap Ring                         | • Bolt & Nut between Pressure Plate and Center Plate |
| 11. Brake Springs               | 25. Snap Ring                         | • Clip, Bolt & Nut on Ring Mount                     |
| 12. End Cap                     | 26. Snap Ring                         |  |
| 13. Short Mounting Bracket      | 27. Retainer Plate (Brake Drive Pin)  |  |
| 14. Long Mounting Bracket       | 28. Retainer Plate (Clutch Drive Pin) |  |



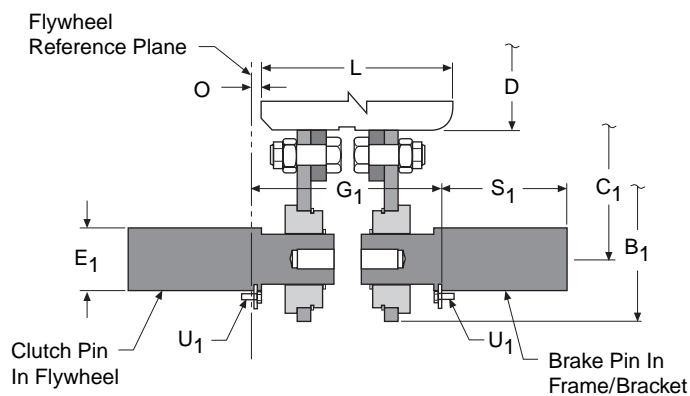


**Size 380 thru 910**



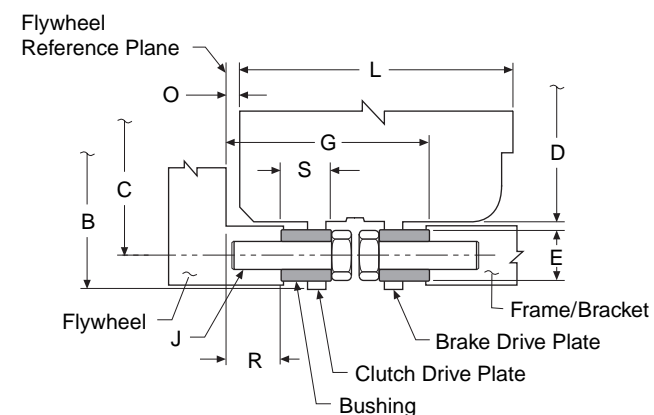
**PEP**

**(Pin to Extended Pin)**



**PP**

**(Pin to Pin)**



**RR**

**(Ring to Ring)**

**RP (Ring to Pin)**

**RR (Ring to Ring)\***

**PP (Pin to Pin)\***

\* Dimensions same as RP design  
 All ring drives to have pins located  
 in pin size counterbores 0.13" deep.

**Dimensions (mm)**

Model No.	A Max Bore*	C, C1, C2 dimensions are ± .007 (.18)											
		B	B <sub>1</sub>	B <sub>2</sub>	C	C <sub>1</sub>	C <sub>2</sub>	D	E +0.000/ -0.002	E <sub>1</sub> +0.001/ -0.000	E <sub>2</sub> +0.001/ -0.000	G RR	G <sub>1</sub> PP
380	3.543 (90)	17.13 (435)	22.05 (560)	26.77 (680)	16.063 (408)	19.488 (495)	25.000 (635)	14.94 (380)	0.709 (18)	1.181 (30)	0.866 (22)	3.24 (82.2)	4.32 (109.7)
470	3.740 (95)	21.06 (535)	27.36 (695)	33.66 (855)	19.685 (500)	24.016 (610)	31.102 (790)	18.50 (470)	0.984 (25)	1.575 (40)	1.181 (30)	4.02 (102.1)	4.88 (124.0)
550	4.331 (110)	24.41 (620)	30.71 (780)	37.40 (950)	22.992 (584)	27.362 (695)	34.843 (885)	21.65 (550)	0.984 (25)	1.575 (40)	1.181 (30)	5.06 (128.4)	6.42 (163.1)
600	4.921 (125)	26.77 (680)	34.25 (870)	42.32 (1075)	25.197 (640)	30.315 (770)	38.976 (990)	23.62 (600)	1.181 (30)	1.772 (45)	1.575 (40)	4.83 (122.6)	6.22 (158.0)
675	5.519 (140)	30.51 (775)	39.37 (1000)	48.56 (1235)	28.543 (725)	34.646 (880)	44.685 (1135)	26.57 (675)	1.378 (35)	2.165 (55)	1.772 (45)	5.39 (136.9)	6.98 (177.3)
760	6.299 (160)	34.06 (865)	42.91 (1090)	52.56 (1335)	31.890 (810)	38.189 (970)	48.622 (1235)	29.92 (760)	1.575 (40)	2.165 (55)	1.772 (45)	5.96 (151.4)	7.50 (190.5)
830	7.087 (180)	37.50 (953)	49.31 (1252)	63.09 (1602)	—	43.307 (1100)	57.087 (1450)	32.68 (830)	1.772 (45)	2.954 (75)	2.560 (65)	7.19 (182.6)	8.75 (222.3)
910	7.087 (180)	40.35 (1025)	52.76 (1340)	65.75 (1670)	37.992 (965)	46.457 (1180)	60.039 (1525)	35.82 (910)	1.772 (45)	2.953 (75)	2.559 (65)	7.43 (188.7)	9.61 (244.1)

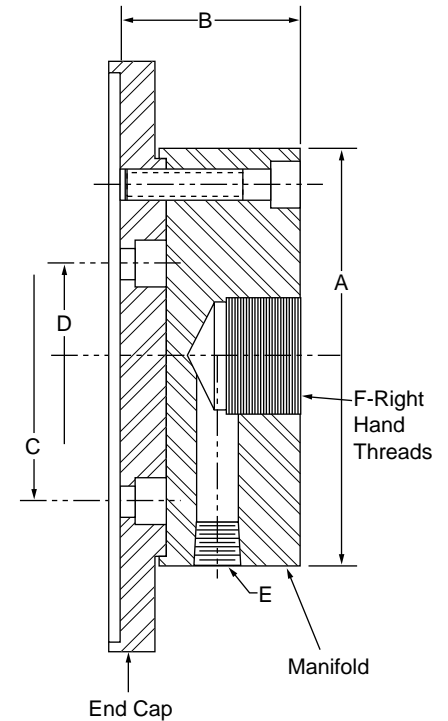
Model No.	Qty.	K Size	Lengths (mm)										Thread			
			L	N <sub>1</sub>	N <sub>2</sub>	O	P	R	S	S <sub>1</sub>	S <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	J	U <sub>1</sub>	U <sub>2</sub>
380	4	1/2" NPT	4.41 (112)	1.00 (25)	1.00 (25)	0.47 (12)	2.05 (52.0)	0.96 (45.5)	0.75 (19)	2.36 (60)	1.77 (45)	0.79 (20)	0.63 (16)	3/8-16 NC	#10-24 NC	#10-24 NC
470	4	1/2" NPT	5.50 (140)	1.378 (35)	1.00 (25)	0.41 (10.5)	2.60 (66.5)	1.12 (28.5)	0.87 (22)	3.15 (80)	2.36 (60)	1.06 (27)	0.79 (20)	1/2-13 NC	1/4-20 NC	#10-24 NC
550	4	1/2" NPT	6.30 (160)	1.378 (35)	0.984 (25)	0.51 (13.0)	3.17 (80.5)	1.34 (34)	1.18 (30)	3.15 (80)	2.36 (60)	1.06 (27)	0.79 (20)	1/2-13 NC	1/4-20 NC	#10-24 NC
600	4	1/2" NPT	7.28 (185)	1.378 (35)	1.378 (35)	0.49 (12.5)	3.19 (81.0)	1.32 (33.5)	1.06 (27)	3.54 (90)	3.15 (80)	1.16 (29.5)	1.06 (27)	5/8-11 NC	5/16-18 NC	1/4-20 NC
675	4	1" NPT	8.00 (203)	1.772 (45)	1.378 (35)	0.49 (12.5)	3.88 (98.5)	1.42 (36)	1.25 (32)	4.33 (110)	3.54 (90)	1.52 (38.5)	1.16 (29.5)	3/4-10 NC	5/16-18 NC	1/4-20 NC
760	4	1" NPT	9.06 (230)	1.772 (45)	1.378 (35)	0.49 (12.5)	4.23 (107.5)	1.59 (40.5)	1.50 (38)	4.33 (110)	3.54 (90)	1.52 (38.5)	1.16 (29.5)	7/8-9 NC	5/16-18 NC	1/4-20 NC
830	4	1" NPT	8.00 (203)	1.75 (45)	1.75 (45)	0.50 (12.7)	4.32 (109.7)	1.94 (49.3)	1.75 (44.5)	5.91 (150.1)	5.12 (130)	1.71 (43.5)	1.71 (43.5)	1-8 NC	5/16-18 NC	5/16-18 NC
910	3	1" NPT	10.24 (260)	2.362 (60)	1.772 (45)	0.89 (22.5)	4.90 (124.5)	2.10 (53.5)	1.75 (44.5)	5.91 (150)	5.12 (130)	2.07 (52.5)	1.71 (43.5)	1-8 NC	3/8-16 NC	5/16-18 NC

\* Maximum bores with square key. Larger bores available with shallow keys.  
 Note: For mounting, use socket head cap screws conforming to the ASTM-574-97a.

## Combination Clutch/Brake

### End Cap Air Manifold

Model	Kit No.	A	B	C	D	E	F
380	8-546-021-000-1	4.188	3.12	N/A	.875 H.C. 13/32 Drill 3 at 120°	1/2 NPT 4 at 90°	1" - 14 NF
470	8-547-021-000-1	4.188	3.12	N/A	1.250 H.C. 13/32 Drill 3 at 120°	1/2 NPT 4 at 90°	1" - 14 NF
550	8-549-021-000-1	4.937 / 4.935	3.12	3.000 H.C. 13/32 Drill 3 at 120°	2.000 H.C. 13/32 Drill 3 at 120°	1/2 NPT 4 at 90°	1-1/2" - 12 NF
600	8-552-021-000-1	4.938	3.12	2.875 H.C. 13/32 Drill 3 at 120°	N/A	1/2 NPT 4 at 90°	1-1/2"-12 NF
675	8-552-021-000-1	4.938	3.12	2.875 H.C. 13/32 Drill 3 at 120°	N/A	1/2 NPT 4 at 90°	1-1/2"-12 NF
760	8-553-021-000-1	7.000	3.12	N/A	3.500 H.C. 13/32 Drill 3 at 120°	1/2 NPT 4 at 90°	1-1/2"-12 NF
830	4-555-021-000-3	9.50	4.06	N/A	4.000 H.C. 9/16 Drill 4 at 90°	1" NPT 4 at 90°	1-1/2"-12 NF
910	8-554-021-000-1	7.255 / 7.250	3.12	5.000 H.C. 17/32 Drill 3 at 120°	3.250 H.C. 17/32 Drill 3 at 120°	1/2 NPT 6 at 60°	2"-12 NF



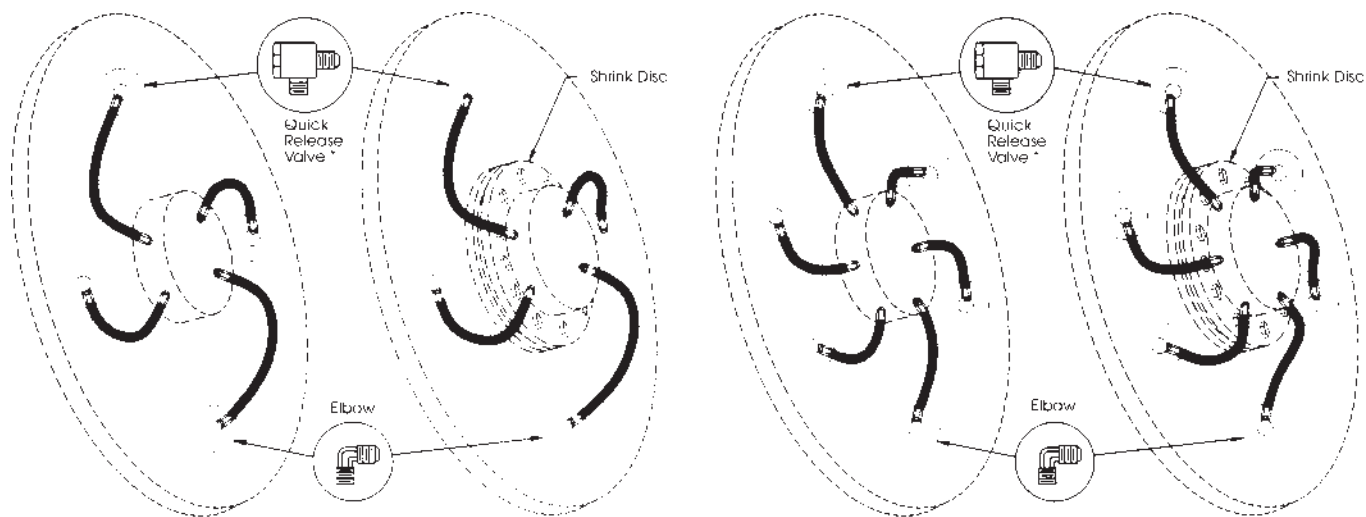
### Clearance & Wear Chart

Model	Minimum Clearance		W+			Maximum Wear		Tank Vol.		Pipe Size		Roto-Coupling* Part No.
	in.	mm	in.	mm	K+	in.	mm	in. <sup>3</sup>	liters	in.	mm	
380	1/32	0.8	0.1	2.5	86	0.12	3	100	1.6	3/4	19	8-240-708-001-1
470	1/32	0.8	0.1	2.5	134	0.16	4	155	2.5	3/4	19	8-240-708-001-1
550	3/64	1.2	0.11	2.8	196	0.20	5	250	4.1	1	32	8-240-710-002-1
600	3/64	1.2	0.11	2.8	215	0.20	5	275	4.5	1	32	8-240-710-002-1
675	1/16	1.6	0.12	3.2	280	0.25	6	390	6.4	1	32	8-240-710-002-1
760	1/16	1.6	0.12	3.2	360	0.25	6	500	8.2	1	32	8-240-710-002-1
830	3/32	2.4	0.16	4	489	0.25	6	800	13.1	1-1/2	38	8-240-710-002-1
910	3/32	2.4	0.16	4	530	0.28	7	1000	16.4	1-1/2	38	8-240-712-001-1

\*See page 27 for dimensions



## Air Hose Kits for Sizes 380 thru 910



\* Optional Quick Release Valves can replace elbows on most units.

Hose Kit for Air Manifold or Cross Drilled Shaft Mounting	
Model	Part Number
380	8-938-812-402-5 ELB 8-938-820-401-5 QRV
470	8-947-812-402-5 ELB 8-947-820-401-5 QRV
550	8-955-812-402-5 ELB 8-955-820-401-5 QRV
600	8-960-812-402-5 ELB 8-960-820-401-5 QRV
675	8-967-812-402-5 ELB 8-967-820-401-5 QRV
760	8-976-812-402-5 ELB 8-976-820-401-5 QRV
830	8-983-813-401-5 ELB 8-983-831-401-5 QRV

Hose Kit for Shrink Disc Mid-Shaft Mounting	
Model	Part Number
380	8-938-812-401-5 ELB 8-938-822-401-5 QRV
470	8-947-812-401-5 ELB 8-947-822-401-5 QRV
550	8-955-812-401-5 ELB 8-955-822-401-5 QRV
600	8-960-812-401-5 ELB 8-960-822-401-5 QRV
675	8-967-812-401-5 ELB 8-967-822-401-5 QRV
760	8-976-812-401-5 ELB 8-976-822-401-5 QRV
830	8-983-813-402-5 ELB 8-983-831-402-5 QRV

Hose Kit for Air Manifold or Cross Drilled Shaft Mounting	
Model	Part Number
910	8-991-812-502-5 ELB 8-991-820-501-5 QRV

Hose Kit for Shrink Disc Mid-Shaft Mounting	
Model	Part Number
910	8-991-812-503-5 ELB 8-991-822-503-5 QRV

Wichita Air Hose Kits contain all the necessary parts (fittings, hoses and extensions) to completely plumb the brake air system. The Hose Kit part number is determined by model number, type of shaft mounting and whether or not a quick release valve is needed.



# Combination Clutch/Brake

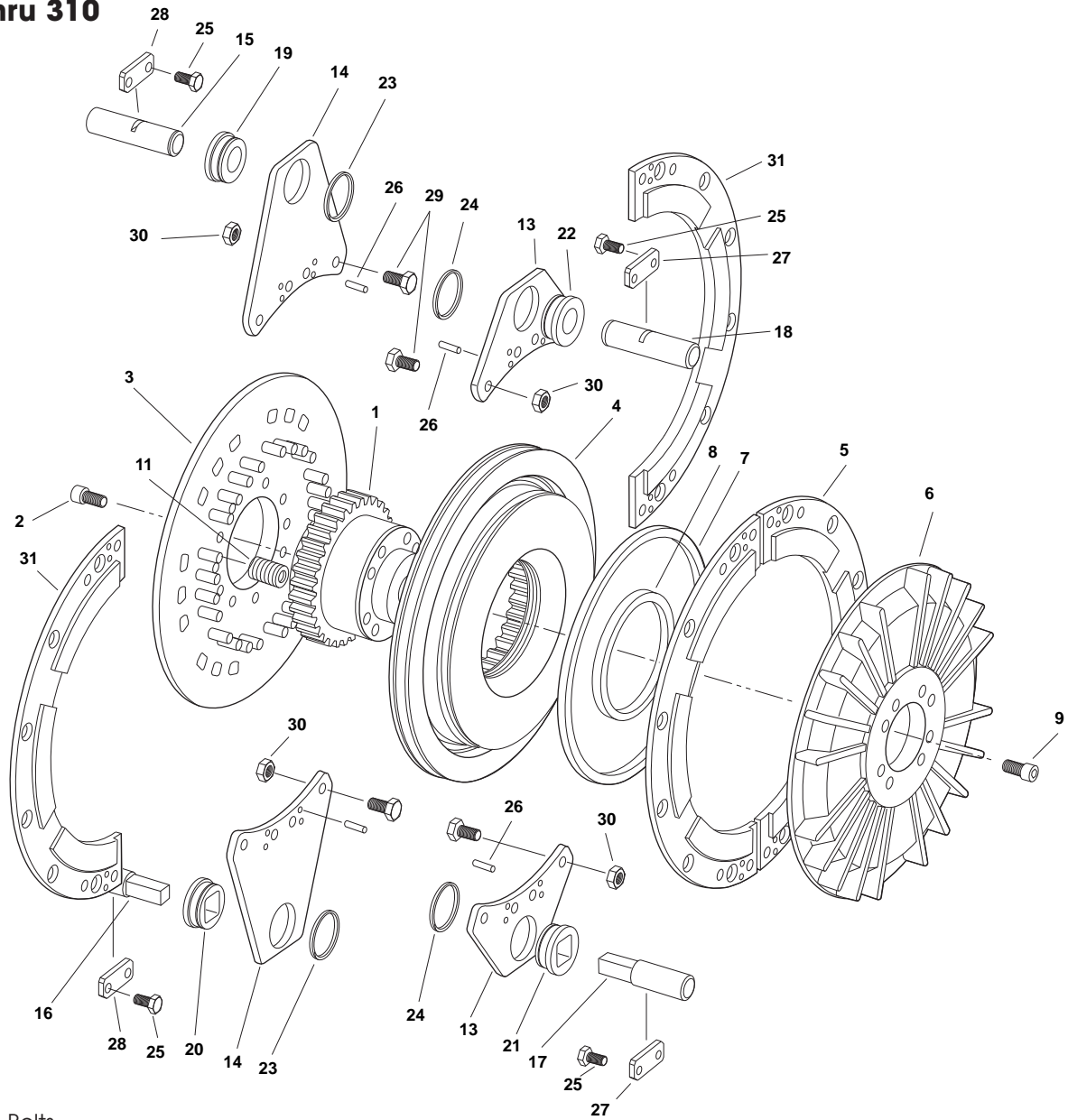
## Specifications Size 170 thru 310

CCB Model	Clutch Dynamic Slip Torque Capacity @ 80 PSI		Brake Dynamic Slip Torque Capacity		Maximum Speed (RPM)	Internal Parts Inertia		'R' External Parts Inertia		Total Weight (RR Style)		Cylinder Volume	
	lb.in.	(Nm)	lb.in.	(Nm)		lb.ft. <sup>2</sup>	(kgm <sup>2</sup> )	lb.ft. <sup>2</sup>	(kgm <sup>2</sup> )	lb.	(kg)	in <sup>3</sup>	(cm <sup>3</sup> )
170/13	1150	(130)	1330	(150)									
170/17	1505	(170)	975	(110)	3450	0.31	(0.013)	0.095	(0.004)	11.9	(5.4)	<u>2.45</u>	<u>(40)</u>
170/21	1815	(205)	665	(75)								3.65	(60)
170/25	2170	(245)	310	(35)									
190/21	1815	(205)	2125	(240)									
190/27	2345	(265)	1595	(180)	3050	0.57	(0.024)	0.14	(0.006)	17.0	(7.7)	<u>3.35</u>	<u>(55)</u>
190/33	2880	(325)	1060	(120)								5.20	(85)
190/39	3410	(385)	530	(60)									
230/41	3630	(410)	4120	(465)									
230/53	4650	(525)	3100	(350)	2425	1.78	(0.075)	0.47	(0.020)	31.1	(14.1)	<u>5.50</u>	<u>(90)</u>
230/64	5670	(640)	2080	(235)								8.85	(145)
230/76	6690	(755)	1060	(120)									
310/92	8100	(915)	9300	(1050)									
310/118	10,450	(1180)	6950	(785)	1875	5.24	(0.221)	1.42	(0.060)	61.1	(27.7)	<u>10.10</u>	<u>(165)</u>
310/144	12,750	(1440)	4650	(525)								16.80	(275)
310/171	15,100	(1705)	2300	(260)									

For cyclic applications use 60% of torque rating.



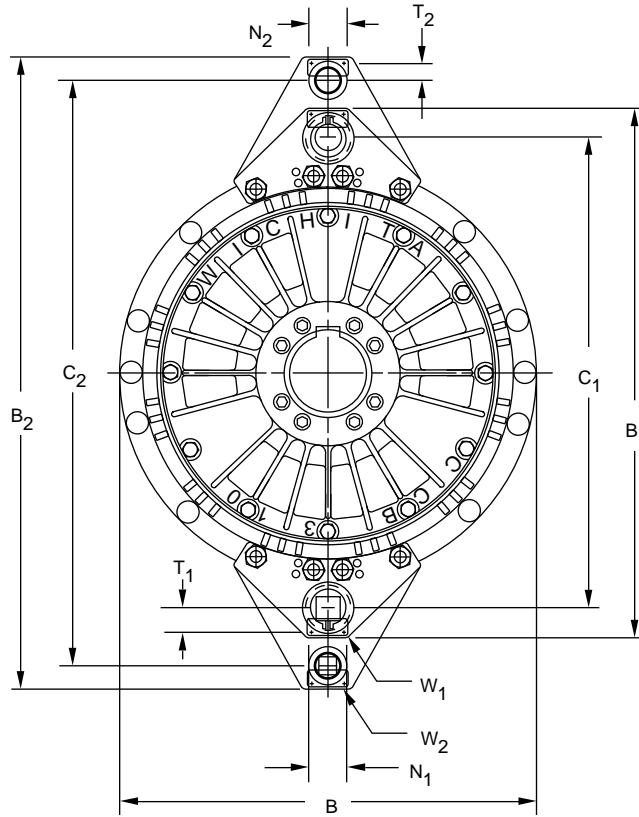
## Component Parts Size 170 thru 310



- |                                 |                                   |                                       |
|---------------------------------|-----------------------------------|---------------------------------------|
| 1. Hub                          | 14. Long Mounting Ears            | 24. Snap Ring                         |
| 2. Back Plate Bolts             | 15. Drive Pin (Round Clutch)      | 25. Bolt                              |
| 3. Back Plate                   | 16. Drive Pin (Square Clutch)     | 26. Roll Pin                          |
| 4. Center Plate                 | 17. Drive Pin (Square Brake)      | 27. Retainer Plate (Brake Drive Pin)  |
| 5. Brake Friction Plate         | 18. Drive Pin (Round Brake)       | 28. Retainer Plate (Clutch Drive Pin) |
| 6. Air-Tube Holding Plate       | 19. Drive Bushing (Round Clutch)  | 29. Hex Head Cap Screw (HHCS)         |
| 7. Piston Seal O.D.             | 20. Drive Bushing (Square Clutch) | 30. Flex Lock Nuts                    |
| 8. Piston Seal I.D.             | 21. Drive Bushing (Square Brake)  | 31. Clutch Friction Plate             |
| 9. Air-Tube Holding Plate Bolts | 22. Drive Bushing (Round Brake)   |                                       |
| 10. Seal (see page 27)          | 23. Snap Ring                     |                                       |
| 11. Brake Springs               |                                   |                                       |
| 12. Seal Plate (see page 27)    |                                   |                                       |
| 13. Short Mounting Ears         |                                   |                                       |

# Combination Clutch/Brake

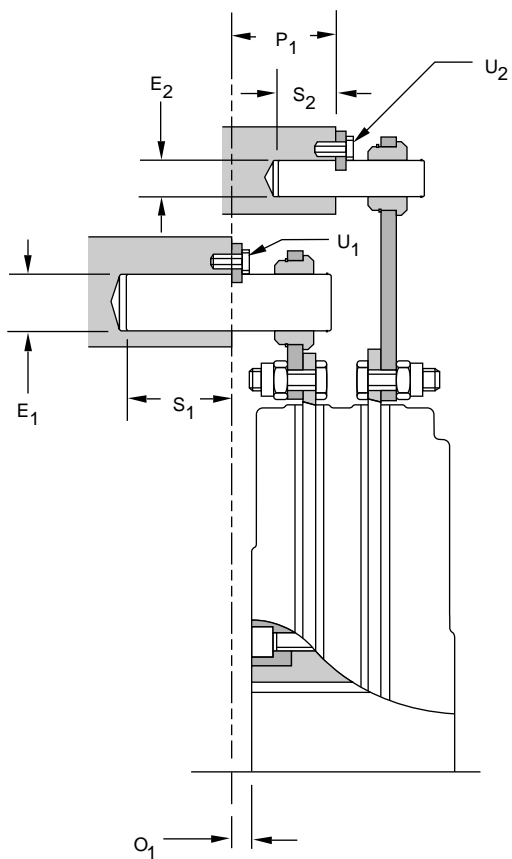
## Size 170 thru 310



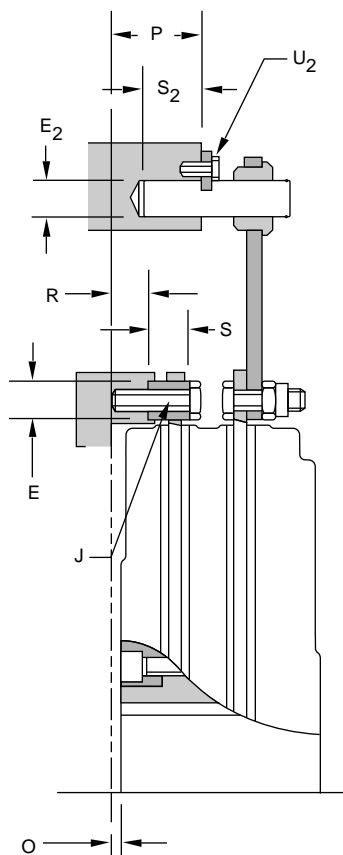
### Dimensions (mm)

Model No.	A Max Bore	C, C <sub>1</sub> , C <sub>2</sub> dimensions are ± .007 (.18)												Lengths (mm)		
		B	B <sub>1</sub>	B <sub>2</sub>	C	C <sub>1</sub>	C <sub>2</sub>	D	E	E <sub>1</sub>	E <sub>2</sub>	W <sub>1</sub>	W <sub>2</sub>	L	N <sub>1</sub>	N <sub>2</sub>
170	1.38 (35)	7.80 (198)	10.32 (262)	13.27 (337)	7.165 (182)	9.055 (230)	12.008 (305)	6.54 (166)	0.394 (10)	0.551 (14)	0.551 (14)	0.18 (4.5)	0.18 (4.5)	1.811 (46)	0.787 (20)	0.787 (20)
190	1.38 (35)	8.66 (220)	11.10 (282)	14.06 (357)	8.071 (205)	9.843 (250)	12.795 (325)	7.40 (188)	0.394 (10)	0.551 (14)	0.551 (14)	0.18 (4.5)	0.18 (4.5)	2.283 (58)	0.787 (20)	0.787 (20)
230	1.77 (45)	10.83 (275)	14.17 (360)	17.40 (442)	10.039 (255)	12.402 (315)	16.142 (410)	9.29 (236)	0.472 (12)	0.866 (22)	0.551 (14)	0.22 (5.5)	0.18 (4.5)	2.598 (66)	0.984 (25)	0.787 (20)
310	2.56 (65)	13.66 (347)	17.13 (435)	21.73 (522)	12.795 (325)	15.354 (390)	19.291 (490)	11.97 (304)	0.591 (15)	0.866 (22)	0.551 (14)	0.22 (5.5)	0.88 (4.5)	3.228 (82)	0.984 (25)	0.787 (20)

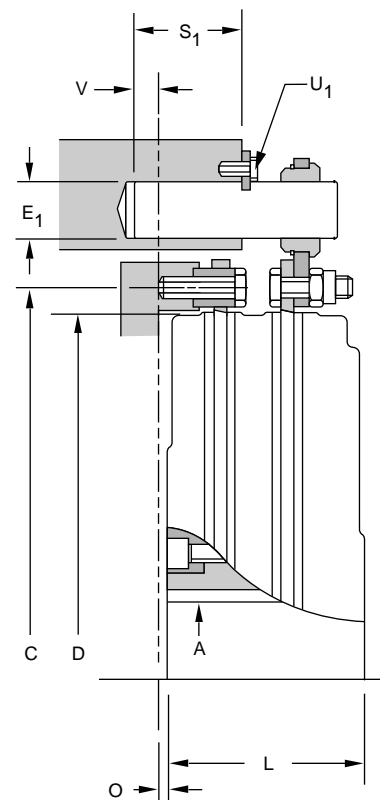
Note: For mounting, use socket head cap screws conforming to the ASTM-574-97a.



**PEP Design  
Pin to  
Extended Pin**



**RP Design  
Ring to  
Extended Pin**



**RP Design  
Ring to Pin**

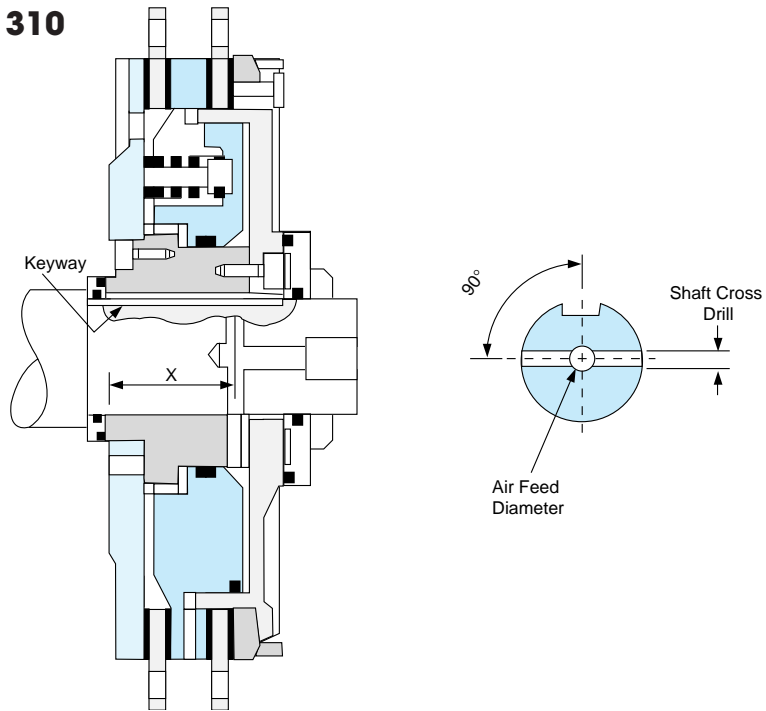
Model No.	Lengths (mm)										Thread			
	O	O <sub>1</sub>	P	P <sub>1</sub>	R	S	S <sub>1</sub>	S <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	V	J	U <sub>1</sub>	U <sub>2</sub>
170	0.079 (2)	0.217 (5.5)	0.866 (22)	1.004 (25.5)	0.236 (6)	0.433 (11)	0.984 (25)	0.984 (25)	0.433 (11)	0.433 (11)	0.118 (3)	M5 (M5)	M4 (M4)	M4 (M4)
190	0.118 (3)	0.217 (5.5)	1.063 (27)	1.161 (29.5)	0.394 (10)	0.433 (11)	1.103 (28)	1.103 (28)	0.433 (11)	0.433 (11)	0 (0)	M5 (M5)	M4 (M4)	M4 (M4)
230	0.158 (4)	0.335 (8.5)	1.260 (32)	1.437 (36.5)	0.512 (13)	0.512 (13)	1.772 (45)	1.103 (28)	0.630 (16)	0.433 (11)	0.512 (13)	M6 (M6)	M5 (M5)	M4 (M4)
310	0.158 (4)	0.394 (10)	1.535 (39)	1.772 (45)	0.591 (15)	0.630 (16)	1.772 (45)	1.103 (28)	0.630 (16)	0.433 (11)	0.394 (10)	M8 (M8)	M5 (M5)	M4 (M4)

All ring mountings use 12 bushings 'E' diameter, equally spaced on 'C' pitch circle diameter.  
 Non standard suspension plates may be available on request.

# Combination Clutch/Brake

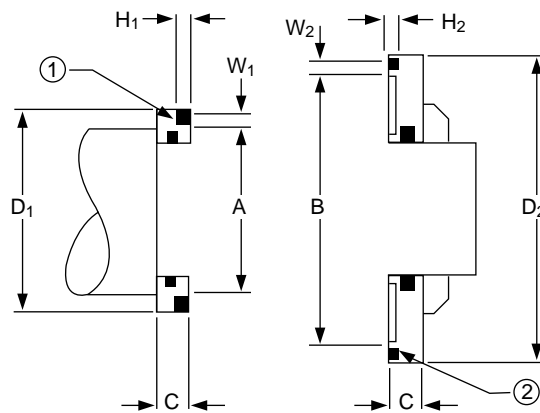
## Size 170 thru 310

### Air Supply Dimensions



	Dimension X (mm)	Shaft Cross Drill (mm)	Air Feed Dia (mm)	Shaft End Tapping
CCB 170	31	4	7	5/8"-18NF
CCB 190	41	5	9	5/8"-18NF
CCB 230	47.5	6	9	5/8"-18NF
CCB 310	50	6	13	1"-14NF

### Seal Plate Dimensions (mm)

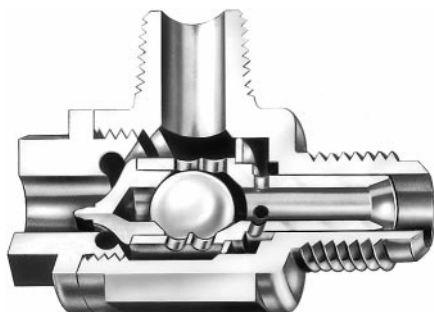


Seals and seal plates supplied by customer

	A	B	C	D <sub>1</sub>	D <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	W <sub>1</sub>	W <sub>2</sub>	"O" Ring to BS 4518
CCB 170	44.5	69.4	10	52	80	1.8	2.3	2.4	3	0446-24 0695-30
CCB 190	44.5	69.4	10	52	80	1.8	2.3	2.4	3	0446-24 0695-30
CCB 230	57.5	89.4	10	65	100	1.8	2.3	2.4	3	0576-24 0695-30
CCB 310	79.4	109.4	10	88	120	2.3	2.3	3	3	0795-30 1095-30



## Quick Release Valve



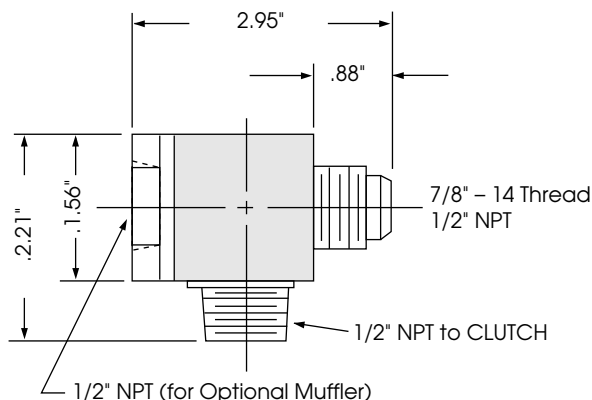
8-263-610-011-1 7/8" - 14 Thread  
 8-263-610-021-1 1/2" NPT

The Wichita Springless Quick Release Valve discharges twice as fast as any other valve tested in our laboratory and is four to five times faster than some common makes of valves.

This valve will close and seal with less than 20 lbs. pressure. Most others require 25 to 30 lbs. to definitely seal. In actual tests, the Wichita Valve made many hundreds of thousands of engagements and disengagements before the slightest leak occurred, or any parts needed replacement. Other valves which were tested required major replacement in fewer than 20,000 cycles.

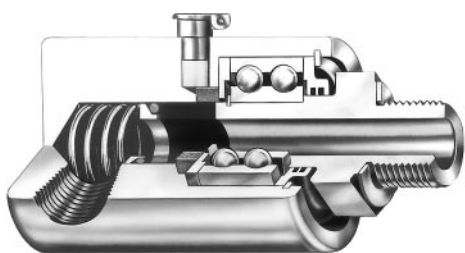
## Quality Material

- Body and Cap: High strength aluminum alloy
- Stem: Moulded nylon
- Check Valve: Nylon ball
- "O" Ring: Neoprene



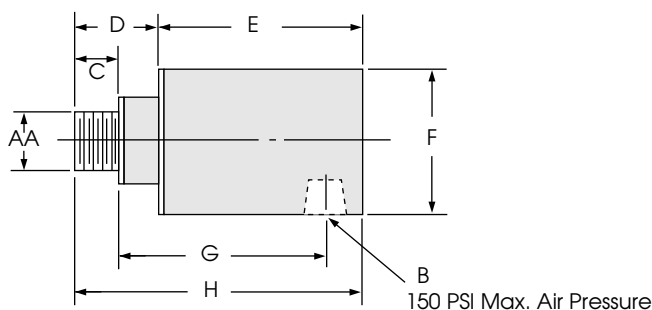
Standard thread arrangement of 1/2" size. 1/2" pipe thread on the tube connection and choice of 1/2" pipe thread, or standard 7/8-14NF thread for flared fitting thread on inlet connection. (Fits standard No. 10 high-pressure hose fitting.)

## Roto-couplings



The Wichita Roto-coupling is a device to connect, or couple, a non-rotating air, gas, or fluid line to a rotating shaft.

- Long life, no maintenance.
- Felt seal eliminates bearing contamination.
- Fast, easy installation.



Wichita Part No.	AA	B	C	D	E	F	G	H	Max. R.P.M.
8-240-701-003-1	5/8-18NF	1/4" NPT	.40	1.046	2.250	1.500	2.13	3.297	3500
8-240-705-001-1	1"-14 NF	1/2" NPT	.75	1.250	3.188	2.500	3.00	4.438	3500
8-240-708-001-1	1"-14 NF	3/4" NPT	.75	1.313	4.688	2.875	3.69	5.440	3500
8-240-710-002-1	1-1/2"-12 NF	1" NPT	1.13	1.937	4.875	3.250	3.44	6.812	2500
8-240-712-001-1	2"-12 NF	1-1/2" NPT	1.13	2.813	5.250	4.250	5.38	8.062	2500
8-240-714-001-3	2" NPT	2" NPT	1.50	3.000	7.062	4.625	7.00	10.062	1000
8-240-716-000-3	2-1/2" NPT	2-1/2" NPT	1.88	3.250	9.375	7.000	7.75	12.625	750

Note: All measurements are in inches.

