

# Fenner



## HRC Couplings

05

HRC  
Couplings

HRC Couplings are essentially general purpose couplings with a flexible element which can accommodate higher degree of misalignment.

- Parallel misalignment upto 0.5 mm
- Axial misalignment upto 1.7 mm

Because of their superior design HRC Couplings can accommodate larger shafts which make them a more economical proposition.

# F HRC Couplings

## Salient Features

**Economy:** The design of the HRC coupling has been optimised so that power capacities are balanced to the appropriate shaft diameters utilising Taper-Lock® Bush fixing.

**Resilience:** Transient peak loads are reduced by flexible component, deflection of which is a prime design consideration.

**Misalignment:** Incidental parallel, angular and axial displacement of the connected shafts can be accommodated.

**Installation:** Quick and easy without special tools, only an allen key is required.

**Maintenance :** Virtually eliminated and no lubricant is required.

**Environment:** The elastomeric component makes HRC coupling suitable for use in most conditions within a temperature range of - 40°C to + 100°C.

**Positive :** In the unlikely event of the flexible component being destroyed, the drive will be maintained by the interaction of dogs which are integral with the flanges.



**Table: 05-01 - Service Factors**

Special Cases	Types of Driving Unit					
	Electric Motors Steam Turbines			Internal Combustion Engines, Steam Engines Water Turbines		
For applications where substantial shock, vibration and torque fluctuation occur and for reciprocating machines, e.g. internal combustion engines, piston type pumps and compressors, refer to Fenner with full machine details for torsional analysis.	Operational hours per day					
	8 and under	Over 8 to 16 inclusive	Over 16	8 and under	Over 8 to 16 inclusive	Over 16
Driven Machine Class	8 and under	Over 8 to 16 inclusive	Over 16	8 and under	Over 8 to 16 inclusive	Over 16
<b>Uniform</b> Agitators, Brewing Machinery, Centrifugal Blower and Compressors, Conveyors, Centrifugal Fans and Pumps, Generators, Sewage Disposal Equipment.	1.00	1.12	1.25	1.25	1.40	1.60
<b>Moderate Shock*</b> Clay working machinery, Cranes Hoist, Laundry machinery, Wood working machinery, Machinery Tools, Rotary Mills, Paper Mill machinery, Textile machinery.	1.60	1.80	2.00	2.00	2.24	2.50
<b>Heavy Shock*</b> Reciprocating conveyors, Crushers, Shakers, Metal Mills, Rubber machinery, (Banbury Mixers and Mills), Reciprocating compressors.	2.50	2.80	3.12	3.12	3.55	4.00

\* It is recommended that keys (with top clearance if in Taper Lock Bushes) are fitted for applications where load fluctuation is expected.

## HRC Couplings

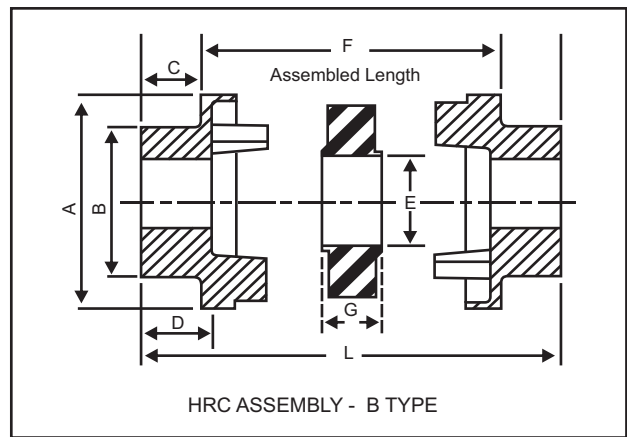
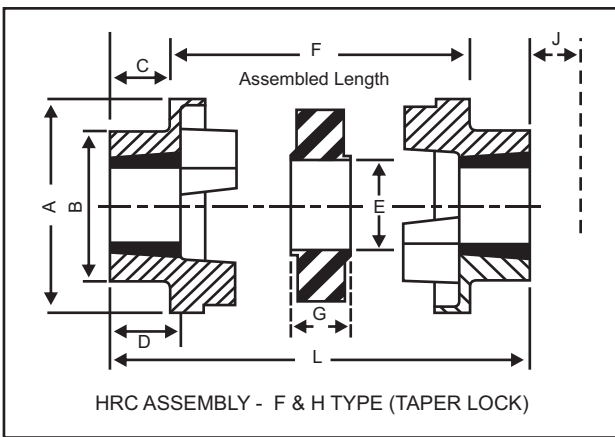
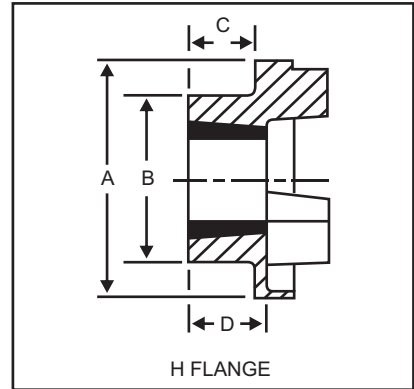
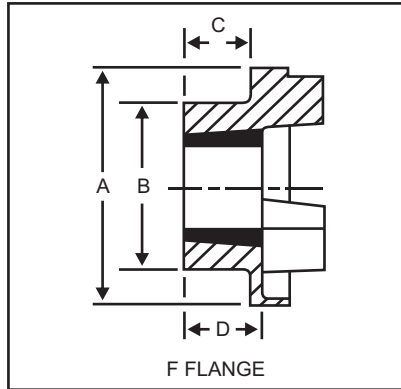
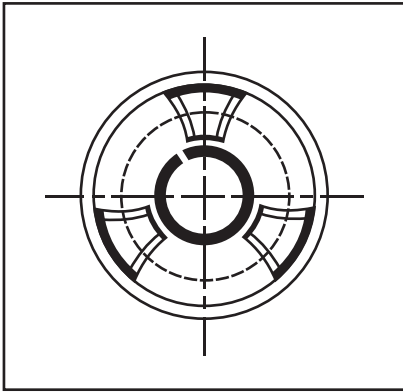


Table: 05-02 - Dimensions

Size	Power at 100rpm kW	Type F & H								Type B				A	B	E	G		
		TLB Size	Min. Bore	Max. Bore	C	D	F	L	J*	Min. Bore	Max. Bore	C	D					F	L
70	0.33	1008	09	25	20.0	24	26.0	66.0	29	10	32	20	24	26.0	66.0	69	60	31	18.0
90	0.84	1108	09	28	19.5	24	31.5	70.5	29	10	35	26	30	30.5	82.5	85	70	32	22.5
110	1.68	1210	11	32	18.5	27	46.0	83.0	38	10	55	37	45	45.0	119.0	112	100	45	29.0
110A	1.68	1610	14	42	18.5	27	46.0	83.0	38	-	-	-	-	-	-	112	100	45	29.0
130	3.30	1610	14	42	18.0	27	54.0	90.0	38	14	60	47	56	54.0	148.0	130	105	50	36.0
150	6.28	2012	14	50	23.5	34	61.0	108.0	44	19	70	50	60	60.0	160.0	150	115	62	40.0
180	9.95	2517	16	60	34.5	47	74.0	143.0	48	35	80	58	70	73.0	189.0	180	125	77	49.0
230	20.90	3020	25	75	39.5	53	86.5	165.5	55	38	100	77	90	85.5	239.5	225	155	99	59.5
280	33.00	3525	35	90	51.0	67	106.5	208.5	67	48	115	90	105	104.5	284.5	275	206	119	74.5

\* J - Wrench clearance to allow for tightening and loosening the bush on the shaft.

# F HRC Couplings

## Selection (Standard Electric Motors BS:3979 and IS : 1231)

1. Read across the table 3 from the appropriate motor frame size and find the applicable nominal motor speed column.
2. Read the appropriate coupling selection for either Taper-Lock® 'H' or 'F'

**Table 05-03 - Service Factors not less than 1.6**

Motor Frame Size	Shaft Dia. mm.	3000 rev/min		1500 rev/min		1000 rev/min		750 rev/min	
		Motor Power (kW)	Coupling Size	Motor Power (kW)	Coupling Size	Motor Power (kW)	Coupling Size	Motor Power (kW)	Coupling Size
90 S	24	1.5	70	1.1	70	0.75	70	-	-
90 L	24	2.2	70	1.5	70	1.1	70	-	-
112 M	28	4.0	90	4.0	90	2.2	90	-	-
132 S	38	5.5	110 A	5.5	110 A	3.0	110 A	2.2	110 A
		7.5	110 A						
132 M	38			7.5	110 A	4.0	110 A	3.0	110 A
						5.5	110 A		
160 M	42	11.0	110 A	11.0	110 A	7.5	110 A	4.0	110 A
		15.0	110 A					5.5	110 A
160 L	42	18.5	110 A	15.0	110 A	11.0	130	7.5	110 A
180 M	48	22.0	150	18.5	150				
180 L	48			22.0	150	15.0	150	11.0	150
200 L	55	30.0	180						
		37.0	180			22.0	180		
225 S	60			37.0	180			18.5	180
225 M	55 *	45.0	180	45.0	180	30.0	180	22.0	180
	60								
250 M	60 *	55.0	180	55.0	230	37.0	230	30.0	230
	65								
280 S	75			75.0	230	45.0	230	37.0	230
280 M	75			90.0	230	55.0	230	37.0	230
315 S	80			110.0	280	75.0	280	55.0	280
315 M	80			132.0	280	90.0	280	75.0	280

\* 3000 rev/min only.

®Registered Trade Mark

### a. Service Factor

Determine the required service factor from Table:05-01.

### b. Design Power

Multiply the normal running power by the service factor. This gives the Design Power which is used as a basis for coupling selection.

### c. Coupling Size

Refer to Table 05-04 (page 05-05) and from the appropriate speed in the speed column, read across until a power equal to or greater than the design power required is found.

### d. Bore Size

From the dimension Table: 05-02 check that the chosen flanges can accommodate the required bores.

**Example :** A shaft coupling is required to transmit 70Kw between a 1440 rev/min electric motor and a hoist running over 16 hours/day. The motor shaft is 70 mm. and the hoist shaft is 75 mm.

**Service Factor-**From Table: 05-01, the Service Factor is 2.

**Design Power-**Design Power : 70 x 2 : 140 Kw

**Coupling Size-** By reading across from 1440 rev/min in the speed column of Table: 05-04 (Power Rating Table) 143 Kw is the first power to exceed the required 140 Kw (design power). The size of coupling at the head of this column is 180.

**Bore Size-** By referring to the Dimension Table: 05-02 it can be seen that for HRC - 180B type both shaft diameters fall within the bore range available. However in case the coupling selection is required in F&H type then select HRC-230 F&H type.

## HRC Couplings

Table 05-04: Power Rating(kw)

Speed Rev/Min.	COUPLING SIZE							
	70	90	110/110A	130	150	180	230	280
100	0.33	0.84	1.68	3.30	6.28	9.95	20.90	33.00
200	0.66	1.68	3.35	6.60	12.60	19.90	41.90	66.00
400	1.32	3.35	6.70	13.20	25.10	39.80	83.80	132.00
600	1.98	5.03	10.10	19.80	37.70	59.70	126.00	198.00
720	2.37	6.03	12.10	23.80	45.20	71.60	151.00	238.00
800	2.64	6.70	13.40	26.40	50.30	79.60	168.00	264.00
960	3.17	8.40	16.10	31.70	60.30	95.50	201.00	317.00
1200	3.96	10.10	20.10	39.60	75.40	119.00	251.00	396.00
1440	4.75	12.10	24.10	47.50	90.50	143.00	302.00	475.00
1600	5.28	13.40	26.80	52.80	101.00	159.00	335.00	528.00
1800	5.94	15.10	30.20	59.40	113.00	179.00	377.00	594.00
2000	6.60	16.80	33.50	66.00	126.00	199.00	419.00	660.00
2200	7.26	18.40	36.90	72.60	138.00	219.00	461.00	
2400	7.92	20.10	40.20	79.20	151.00	239.00	503.00	
2600	8.58	21.80	43.60	85.80	163.00	259.00	545.00	
2880	9.50	24.10	48.30	95.00	181.00	286.00		
3000	9.90	25.10	50.30	99.00	188.00	298.00		
3600	11.90	30.10	60.30	118.00	226.00			

Table 05-05 - Physical Characteristics

Characteristic	COUPLING SIZE							
	70	90	110/110A	130	150	180	230	280
Maximum Speed* rev/min	8300	6740	5110	4400	3800	3180	2540	2080
Nominal Torque (Nm)	31.5	80	160	315	600	950	2000	3150
Maximum Parallel Misalignment (mm)	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5
Maximum axial Misalignment (mm)	0.2	0.5	0.6	0.8	0.9	1.1	1.3	1.7

\*Maximum coupling speeds are calculated using an allowable peripheral speed for the hub material. For selection of small sizes above 3600 rev/min - consult Fenner.



# Fenner Taper-Lock® Bushes

## Advantages :

- No re-boring and keywaying costs.
- Saves time and cost in fitting.
- Eliminates precision taper fitting keys.
- 239 bush size/bore combinations are available.
- Interchangeable between many products.
- Taper bored components can be transferred to other diameter shafts by fitting alternative bore bushes.
- Convenience in dismantling for maintenance and component replacement.
- Accommodates shaft limits of +0.051 mm /- 0.127mm.

The benefits of using Taper-Lock® Bushes can be extended to include components which have a parallel bore by incorporating Taper-Lock® Adaptors, Taper-Lock® Bolt-on-Hubs or Taper-Lock® Weld-on-Hubs.

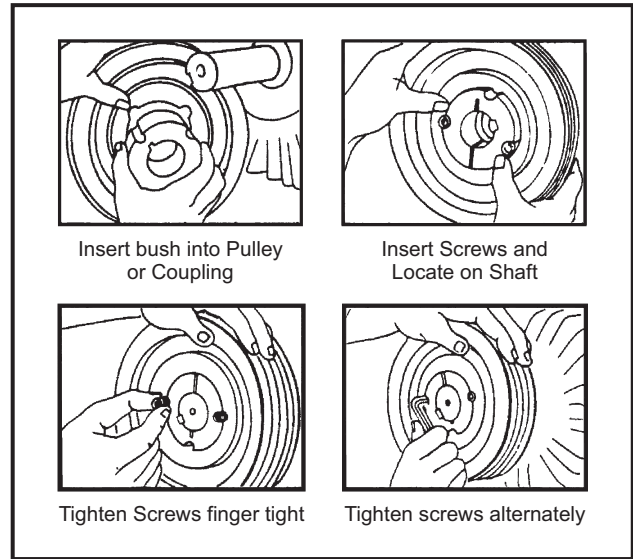
## Installation Instructions

### To Install

1. Remove the protective coating from the bore, outside of bush and bore of hub. After ensuring that the mating tapered surfaces are completely clean and free from oil and dirt, insert bush in hub, so that the holes line up.
2. Oil thread and point of grub screws, or thread and under-head of cap screws. Place screws loosely in holes threaded in hub, shown thus @ in diagram.
3. Clean shaft and fit hub and bush to shaft as one unit. Locate in position desired, remembering that the bush will grip the shaft first and then the hub will be slightly drawn on to the bush.
4. Using a hexagon wrench tighten screws gradually and alternately until they are fully secured. Use a piece of pipe on wrench to increase leverage.

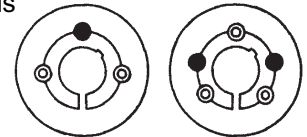
### To Remove

1. Slacken all screws by several turns. Remove one or two according to number of jacking-off holes, shown thus in diagram. Insert screws in jacking off holes after oiling thread and point of grub screws or thread and under-head of cap screws.



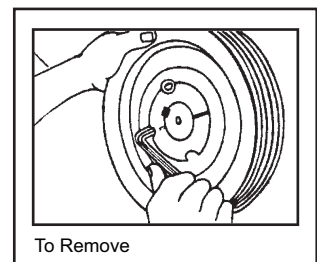
2. Tighten screws alternately until bush is loosened in the hub and assembly is free on the shaft.

3. Remove assembly from shaft.



4. For normal drives a key is not necessary. But when a key is not used hammer against large end of bush using a block or sleeve to prevent damage. (This will ensure that the bush is seated squarely in the bore). Screws will now turn a little more. Repeat this alternate hammering and screw tightening once or twice until correct tightening torque is obtained.

5. If a key is to be fitted, place it in the shaft keyway before fitting the bush. It is essential that only a side-fitting parallel key with TOP CLEARANCE be used.



6. After drive has been running under load for a short time stop and check tightness of screws.
7. Fill empty holes with grease to exclude dirt.

Bush		1008 1108	1310	1210 1215	1510 1615	2012	2517 2525	3020 3030	3525 3535	4040	4545	5050
Screw tightening torque	(Nm.)	56	20	20	20	31	48	90	113	170	192	271
Screw	Qty.	2	2	2	2	2	2	2	3	3	3	3
	Size (BSW)	1/4"	3/8"	3/8"	3/8"	7/16"	1/2"	5/8"	1/2"	5/8"	3/4"	7/8"