PIX-HRC Couplings

HRC Couplings offer a range of hub and element selection to meet the demand for a low cost, general purpose spacer type flexible coupling. They allow for incidental misalignment, absorb shock loads and dampen out small amplitude vibrations. They are offered in both pilot bore, finished bore, and taper bushed with both face and hub mount.

These semi-elastomeric couplings are designed for general purpose applications and permit quick and easy assembly by means of taper bush. Outside diameters are fully machined to allow alignment by simple straight edge methods. HRC Couplings require no lubrication and are virtually maintenance free, making them suitable for most environments.

DRIVE DESIGN

Service factor: Determine the required service factor from 'Table-1'.

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

Coupling size: Refer to power ratings from 'Table-2' and from the appropriate speed read across until a power greater than OR equal to that required design power is found. The size of the coupling required can be known from the header of the table.

Bore size: From 'Table-4', select the appropriate coupling size with available bore dimension details.

Table-1
Service factors

Special Cases For applications where substantial shock, vibration & torque fluctuations occur & for reciprocating machines (i.e. internal combustion engines, piston pumps & compressors) and compressors) machines vibration(e.g.and refer torque internal to	TYPE OF DRIVEN UNIT					
	Electric motors, steam turbines			+Internal combustion engines, steam engines, water turbines		
	Hours per day duty			Hours per day duty		
Type of Driven Machine	8 and under	over 8 to 16 incl.	Over 16	8 and under	over 8 to 16 incl.	over16
LIGHT Blowers, uniform or steady load never exceeding horsepower fans, generators, centrifugal pumps, stokers, rating, pumps ,infrequent starting, Agitators, blowers, conveyors, evaporators	1.00	1.12	1.25	1.25	1.40	1.60
MODERATE* Beaters, rotary pumps and compressors, cranes, elevators, mine and propeller fans, generators, pulp grinders, hoists, kilns, machine tools, mixers, gear pumps, woodworking machines, heavy inertia, moderate shock, frequent starting; peak loads do not exceed 125 percent average horsepower. Uneven load.	1.60	1.80	2.00	2.00	2.24	2.50
HEAVY* Uneven load. reciprocating pumps and compressors, crushers, freight and passenger elevators, mills (Hammer, ball, rolling, turf, flour), vibrating screens, winches, wire drawing machines, punches, shears heavy shock conditions or frequent reversing. Peak loads do not exceed 150 per cent. average horsepower.	2.50	2.80	3.12	3.12	3.55	4.00

*It is recommended that keys (with top clearance if in Taper bushes) are fitted on application where load fluctuations is expected.

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PIX-HRC Couplings

Table-2, Power ratings (kW)

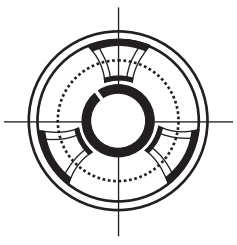
Speed Rev/Min	COUPLING SIZE							
	PHRC 070	PHRC 090	PHRC 110	PHRC 130	PHRC 150	PHRC 180	PHRC 230	PHRC 280
100	0.35	0.85	1.70	3.35	6.30	9.98	20.94	33.00
200	0.67	1.67	3.34	6.58	12.62	19.92	41.92	66.00
400	1.34	3.34	6.68	13.21	25.12	39.82	83.82	132.00
600	1.97	5.02	10.09	19.82	37.70	59.72	126.00	198.00
720	2.36	6.02	12.10	23.81	45.20	71.59	151.00	238.00
800	2.65	6.72	13.42	26.42	50.32	79.62	168.00	264.00
960	3.18	8.42	16.12	31.72	60.32	95.52	201.10	317.00
1200	3.97	10.12	20.12	39.62	75.42	119.00	251.00	396.00
1440	4.78	12.12	24.12	47.54	90.52	143.00	302.00	475.00
1600	5.30	13.42	26.82	52.82	101.00	159.00	335.00	528.00
1800	5.96	15.12	30.22	59.42	113.00	179.00	377.00	594.00
2000	6.62	16.82	33.52	66.00	126.00	199.00	419.00	660.00
2200	7.28	18.41	36.92	72.62	138.00	219.00	461.00	
2400	7.94	20.12	40.22	79.24	151.00	239.00	503.00	
2600	8.60	21.82	43.62	85.82	163.00	259.00	545.00	
2880	9.52	24.12	48.32	95.00	181.00	286.00		
3000	9.92	25.14	50.34	99.00	188.00	298.00		
3600	11.92	30.12	60.32	118.00	226.00			

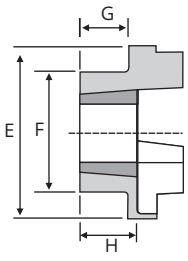
Table-3
Physical characteristics

Characteristics	Unit	COUPLING SIZE							
		PHRC 070	PHRC 090	PHRC 110	PHRC 130	PHRC 150	PHRC 180	PHRC 230	PHRC 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
	inch	1/85	1/85	1/85	1/63	1/63	1/63	1/51	1/51
Maximum axial misalignment	mm	0.2	0.5	0.6	0.8	0.9	1.1	1.3	1.7
	inch	1/127	1/51	2/85	3/95	1/28	1/23	2/39	1/15

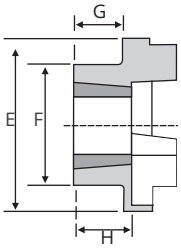
*Allowable peripheral speed for hub material has been used for calculating maximum coupling speeds.

Schematic drawing

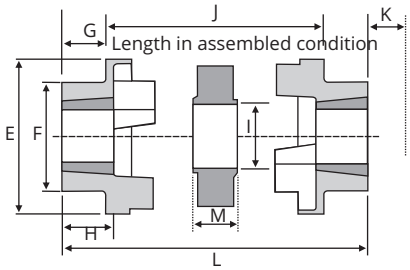




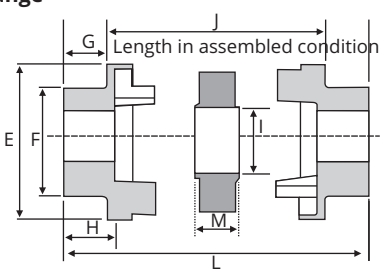
'F' Flange



'H' Flange



HRC Assembly - F&H Type (Taper)



HRC Assembly - 'B' Type

Table-4
Product range:

Size	Unit	Type B						Type F & H								E	F	I	M	Power rating (Kw) at 100 RPM
		Min Bore	Max Bore	G	H	J	L	TLB Size	Min Bore	Max Bore	G	H	J	L	K*					
PHRC-070	mm	10	32	20	24	26	66	1008	9	25	20	24	26	66	29	69	60	31	18	0.35
	inch	2/5	1 1/4	4/5	1	1	2 3/5		1/3	1	4/5	1	1	2 3/5	1 1/7	2 5/7	2 1/3	1 2/9	5/7	
PHRC-090	mm	10	35	26	30	30.5	82.5	1108	9	28	19.5	24	31.5	70.5	29	85	70	32	22.5	0.85
	inch	2/5	1 3/8	1	1 1/6	1 1/5	3 1/4		1/3	1 1/9	3/4	1	1 1/4	2 7/9	1 1/7	3 1/3	2 3/4	1 1/4	8/9	
PHRC-110	mm	10	55	37	45	45	119	1210	11	32	18.5	27	46	83	38	112	100	45	29	1.70
	inch	2/5	2 1/6	1 1/2	1 7/9	1 7/9	4 2/3		3/7	1 1/4	3/4	1	1 4/5	3 1/4	1 1/2	4 2/5	4	1 7/9	1 1/7	
PHRC-130	mm	14	60	47	56	54	148	1610	14	42	18	27	54	90	39	130	105	50	36	3.35
	inch	5/9	2 1/3	1 6/7	2 1/5	2 1/8	5 5/6		5/9	1 2/3	5/7	1	2 1/8	3 1/2	1 1/2	5 1/8	4 1/7	2	1 3/7	
PHRC-150	mm	19	70	50	60	60	160	2012	14	50	23.5	34	61	108	44	150	115	62	40	6.35
	inch	3/4	2 3/4	2	2 1/3	2 1/3	6 2/7		5/9	2	1	1 1/3	2 2/5	4 1/4	1 3/4	6	4 1/2	2 4/9	1 4/7	
PHRC-180	mm	35	80	58	70	73	189	2517	16	60	34.5	47	74	163	48	180	125	77	49	10.0
	inch	1 3/8	3 1/7	2 2/7	2 3/4	2 7/8	7 4/9		5/8	2 1/3	1 1/3	1 6/7	3	6 3/7	1 8/9	7	5	3	2	
PHRC-230	mm	38	100	77	90	85.5	239.5	3020	25	75	39.5	53	86.5	165.5	55	225	155	99	59.5	21.0
	inch	1 1/2	4	3	3 1/2	3 3/8	9 3/7		1	3	1 5/9	2	3 2/5	6 1/2	2 1/6	8 6/7	6 1/9	3 8/9	2 1/3	
PHRC-280	mm	48	115	90	105	104.5	284.5	3525	35	90	51	67	106.5	208.5	67	275	206	119	74.5	33.0
	inch	1 8/9	4 1/2	3 1/2	4 1/7	4 1/9	11 1/5		1 3/8	3 1/2	2	2 2/3	4 1/5	8 1/5	2 2/3	10 5/6	8 1/9	4 2/3	3	

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

Application

Agitators, brewing machinery, centrifugal blower, compressors, generators, conveyor position type pumps, wood working machinery, crane hoist, crushers, reciprocating conveyors etc.

PIX-HRC Couplings

DRIVE DESIGN EXAMPLE
An HRC Coupling is required to transmit 20kW from electric motor running at 720RPM. To a rotary pump working 16 hours per day. The shaft diameter of the motor is 25mm & the shaft diameter of the pump is 20mm.

Step1:
Determine the required service factor from 'Table-1'
Service factor selected = 1.80

Step 2:
Determine the design power, multiply motor power with service factor
Design power = P x SF
=20 x 1.8
= 36 kW

Step3:
To determine the coupling size, search for 720RPM in power rating 'Table-2' and choose the first power figure, which exceeds the required 36kW from 'Table-2', coupling size PHRC-150 can be used.

Installation
HRC Coupling allows for incidental misalignment, it absorbs shock loads, and is able to dampen out small amplitude vibrations, making the HRC Coupling specially suited to hydraulic or combustion engine applications.

The various different hub arrangements, in either 'F' (Face), 'H' (Hub), or 'B' (finished Bore) allows the Taper Bush to enter the hub from two different directions. Firstly, the bush may enter the hub from inside the coupling (F flange), which allows the coupling hub to be mounted against the bearing on a shaft, reducing overhung loads. Secondly, it is able to enter the hub from outside the coupling (H flange), which assists with ease of installation. Please refer below figures.

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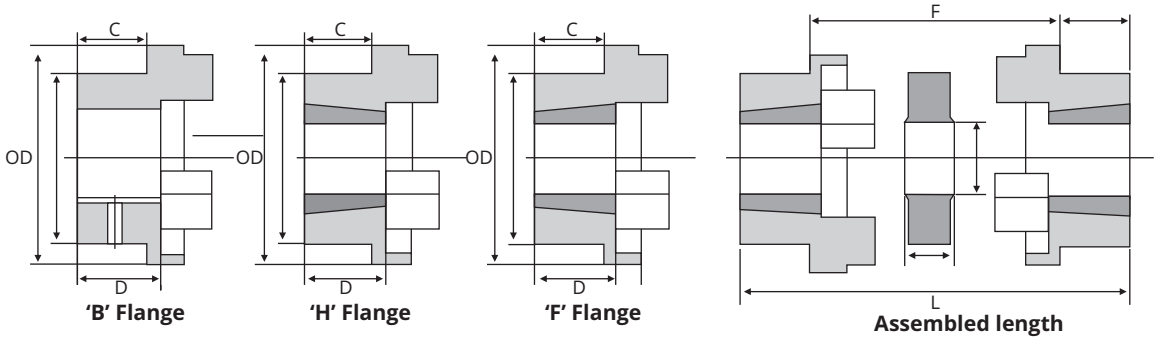


PIX-HRC Couplings

Installation

HRC Coupling is a semi-elastomeric coupling and is designed for general purpose applications. It permits quick and easy assembly by means of a taper bush.

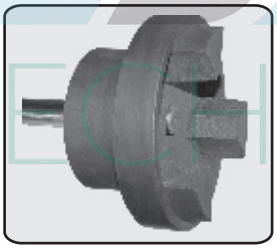
All outside diameters are fully machined, which allows for a high degree of accuracy via simple alignment methods, such as using a straight edge or the 6 inch rule method. HRC Couplings are also a fail-safe design due to their interacting jaw design & often referred to as a capacity balanced coupling' because, if the shaft fits, it will do the job.

- Before installation, check all components for suitability, particularly where, components previously in service, are being reused. Check taper bushes and the HRC coupling hubs are free of contaminants, lubricants, nicks, burns, and fatigue damage. Any type of contaminant or damage can affect the seating of the taper bush, both on the shaft and in the female bore of the coupling hub (Applicable for Taper Bush Coupling Installation).

- When placing the taper bush into the HRC coupling hub, half holes should be matched to make complete holes. The taper bush should be oriented in order that each complete hole has thread on one side only (Applicable for Taper Bush Coupling Installation).

- Before inserting the screws, ensure all threads are lubricated with oil. The screws should be started, but not tightened, in the threads in the HRC coupling hub (Applicable for Taper Bush Coupling Installation).

- Slide one of the HRC coupling hubs and taper bush assemblies into position.



- Place the HRC coupling (rubber) element into the other hub and taper bush assembly.

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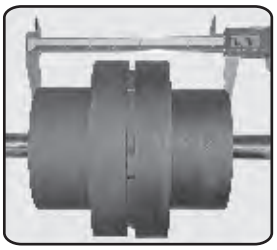
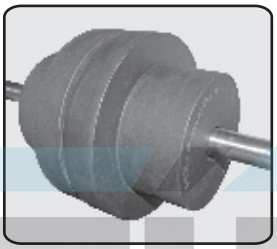
PIX-HRC Couplings

• To ensure correct mating of the two hubs, ensure that coupling-assembled, total length is correct.



• Locate the coupling halves and element assembly approximately in the desired position. HRC couplings are required to be mounted with an allowance for a small amount of float. This internal float allows for any linear expansion and maintains the coupling's misalignment capability.



• To ensure the tapers are seated correctly, it is recommended to tap the front face of the taper bush with a nylon hammer or suitable soft drift to ensure no damage occurs to the taper bush. A torque wrench must then be used to achieve the correct tension on the screws as defined in the 'Table-5'. This procedure should be carried out a number of times to ensure the tapers are correctly seated. After setting the screws to the correct torque, they may require tightening again after tapping with the nylon hammer (Applicable for Taper Bush Coupling Installation).

Table-5

Bush size		1008	1108	1210	1610	1615	2012	2517	3020	3030	3525	3535	4030	4040	4535	4545	5040	5050
Screw tightening torque (Nm)		5.6	5.6	20	20	20	30	50	90	90	115	115	170	170	190	190	270	270
Screw Details	Qty	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3
	Size (BSW)	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3
	Max Socket size (mm)	3	3	5	5	5	6	8	8	8	10	10	12	12	14	14	14	14
Large end Dia.(mm)		35.0	38.0	47.5	57.0	57.0	70.0	85.5	108.0	108.0	127.0	127.0	146.0	146.0	162.0	162.0	177.5	177.5
Approx. mass (Kg)		0.1	0.1	0.2	0.3	0.3	0.7	1.5	2.7	3.6	3.8	5.0	5.6	7.7	7.5	10.0	11.1	14.0

• HRC couplings have a maximum misalignment capability of 1° degree. Correct attention to accurate alignment of the coupling halves is, therefore, essential. Many methods of aligning shaft couplings are available, all with varying degrees of resultant accuracy and skills required. Laser alignment is the most effective and efficient in achieving accurate alignment (Applicable for Taper Bush Coupling Installation).

• After a period of normal running, it is often prudent to recheck the torque settings on the taper lock bushing screws and re-tighten as necessary (Applicable for Taper Bush Coupling Installation).

• It is recommended that unfilled holes in the taper bush are filled with grease or silicon sealant to prevent the entrance of contaminants and facilitate future removal requirements (Applicable for Taper Lock Bush Coupling Installation).

• After the mounting, affix a safety cover. Touching this product during operation, may cause injury (Applicable for Taper Bush Coupling Installation).

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