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HRC

The flexible HRC coupling is a breakthrough safe claw coupling with a flexible element to provide a torsionally flexible connection of shafts. The flexible element, the coupling star, excels in its wear resistance, its oil, ozone and ageing resistance and its temperature resistance from –20 °C to +80 °C. Thanks to the coupling's flexibility, impacts, rotary vibrations and noises are effectively absorbed. The coupling star is dimensioned such that radial and axial movements between the two halves of the coupling are cancelled out. With the fixed position of the coupling star its deformability in axial direction is free, and so no damaging axial forces can act on the machine bearing even with alternating torque. HRC couplings are fail-safe up to the fracture moment of the cast iron transmission cam and this provides maximum operational safety. The coupling is of the plug-in type for installation and does not involve any particularly rigorous requirements with respect to alignment accuracy. The HRC coupling can be used in the whole of machine construction wherever a reliable shaft connection is needed between motor and working machine.



TYPE

- Standard coupling
- Taper bush type
- Combined type standard / taper
- Components can be combined as needed

WITH TAPER BUSH

The HRC coupling combines the outstanding features of the flexible couplings with the advantages of the taper bush system: fast and easy installation for a torsionally flexible connection between shafts and elimination of shaft alignment errors. HRC couplings with taper bush have the advantage that even with greater shaft tolerances there is a backlash-free and at the same time axial fixing of the shaft. In addition the close sliding fit makes axial alignment of the coupling easier. The coupling star can be replaced by a simple axial displacement of the coupling halves without having to disassemble the machines connected.

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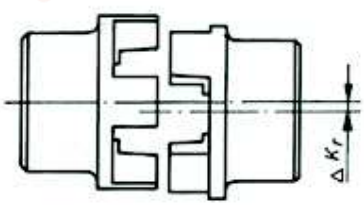
TECHNICAL DATA

Size	Max. rotation rpm	Torque[1] Nm		Torsion spring rigidity Nm/°	Moments of inertia[2] kgm²	Weight[2]	Max. shaft misalignment[3]		
		nominal T_{KN}	max. T_{kmax}				radial ▲ K_r mm	axial ▲ K_a mm	angular ▲ K_w degree
70	8100	31	72	–	0.00085	1.00	0.3	+0.2	1
90	6500	80	180	–	0.00115	1.17	0.3	+0.5	1
110	5200	160	360	65	0.00400	5.00	0.3	+0.6	1
130	4100	315	720	130	0.00780	5.46	0.4	+0.8	1
150	3600	600	1500	175	0.01810	7.11	0.4	+0.9	1
180	3000	950	2350	229	0.04340	16.6	0.4	+1.1	1
230	2600	2000	5000	587	0.12068	26.0	0.5	+1.3	1
280	2200	3150	7200	1025	0.44653	50.0	0.5	+1.7	1

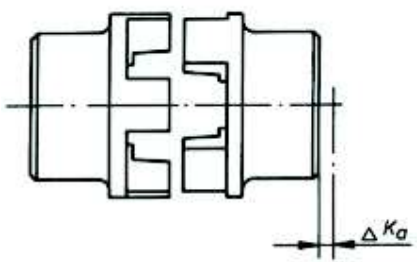
1) Torques for shaft fit with keyway
2) The information concerning weights and moments of inertia apply for medium holes per coupling; coupling half materials: EN-GJL-250 (GG-25) in accordance with DIN EN 1561.
3) The values mentioned are valid for n = 600 rpm and may occur only separately. At multiple misalignments or higher speeds the values must be reduced.

HRC

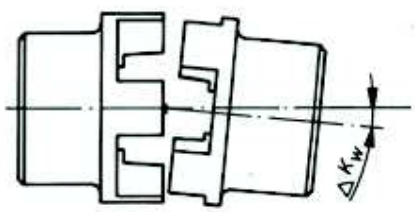
ALLOWABLE MISALIGNMENTS



Radial misalignment



Axial misalignment



Angular misalignment

> Reduction of the allowable values of misalignment when the combination of misalignments occur or at other rotational speeds:

$$\frac{\Delta W_r}{\Delta K_r} + \frac{\Delta W_a}{\Delta K_a} + \frac{\Delta W_w}{\Delta K_w} \leqq 1$$

< 1	= applies to speeds of 600 rpm
≦ 0.8	601 – 1000 rpm
≦ 0.65	1001 – 1500 rpm
≦ 0.50	1501 – 3000 rpm

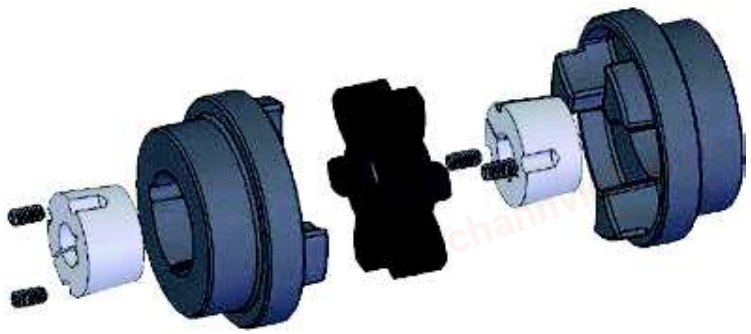
$\Delta K_{r/a/w}$ = allowable radial, axial or angular misalignment of the shafts resp. of the coupling halves

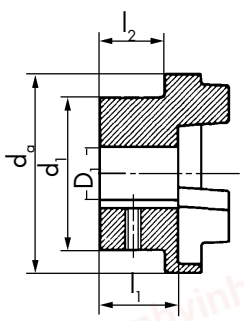
$\Delta W_{r/a/w}$ = measured radial, axial or angular misalignment of the shafts resp. of the coupling halves

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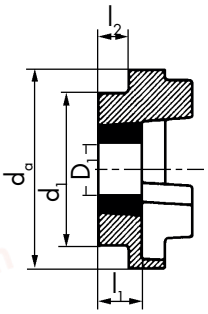
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HRC FLANGE B, F, H

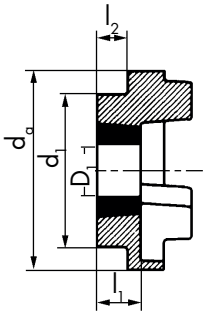




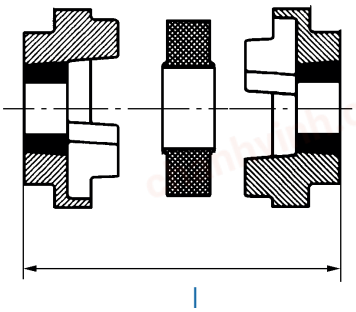
B flange



F flange



H flange



Size	B flange				F and H flange					d_a	d_1	Installation length		
		D_1 (H7)[1]	l_1	l_2		D_1		l_1	l_2			l		
	pre. mm	max. mm	mm	mm	bush	min. mm	max. mm	mm	mm	mm	mm	FF FH HH mm	FB HB mm	BB mm
70	8	32	23.5	20	1008	10	25	23.5	20	69	60	65	65	65
90	10	42	30.0	26	1108	10	25	23.5	19.5	85	70	69.5	76	82.5
110	10	55	45.0	37	1610	14	40	26.5	18.5	112	100	82	100.5	119
130	15	60	47.5	39	1610	14	40	26.5	18.0	130	105	89	118	147
150	20	70	56.0	46	2012	14	50	33.5	23.5	150	115	107	133.5	160
180	25	80	70.0	58	2517	16	60	46.5	34.5	180	125	142	165.5	189
230	25	100	90.0	77	3020	25	75	52.5	39.5	225	155	164.5	202	239.5
280	30	115	105.5	90	3525	35	100	66.5	51.0	275	206	207.5	246.5	285.5

1) Drill holes H7 with keyway in accordance with DIN 6885/1; tolerance zone JS9 and set screws on the keyway

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TAPER BUSHES WITH KEYWAY ACC. TO DIN 6885/1

TOLERANCE JS9

Taper bush no.	Bore ø of available Taper bushes mm											
1008	10	11	12	14	16	18	19	20	22	24	25	
1108	10	11	12	14	16	18	19	20	22	24	25	28*
1610 / 1615	14	16	18	19	20	22	24	25	28	30	32	35
	38	40	42*									
2012	14	16	18	19	20	22	24	25	28	30	32	35
	38	40	42	45	48	50						
2517	16	18	19	20	22	24	25	28	30	32	35	38
	40	42	45	48	50	55	60					
3020	25	28	30	32	35	38	40	42	45	48	50	55
	60	65	70	75								
3525	35	38	40	42	45	48	50	55	60	65	70	75
	80	85	90	95	100							

* These bore holes are with flat keyway in accordance with DIN 6885/3.

SELECTION

The torque of the machine T_{AN} is determined by: $T_{AN}\ [Nm] = 9550 \times \frac{P_{Motor}\ [kW]}{n\ [rpm]}$

This torque T_{AN} multiplied by a safety factor S depending on the application and the temperature factor S_T (see table page 7) gives the required nominal coupling torque T_{KN}.

Result: $T_{KN} \geqq S \times S_T \times T_{AN}$

> In case that bigger shock or changing loads occur we recommend a revision according to DIN 740. An adequate calculation program is available. For such a revision the following information is required:

1. Kind of the driving machine
2. Kind of the driven machine
3. Power of driving and driven machines
4. Rotational speed of operation
5. Shock loads
6. Exciting loads
7. Moments of inertia of load- and driving sides
8. Starts per hour
9. Ambient temperature

DESIGN EXAMPLE FOR IEC STANDARD MOTORS

Dates of the plant

Driving machine:
Three-phase motor: 225 M
Power of the motor: P = 45 kW
Rotation at speed: n = 1500 rpm
Driven machine: mixer
Ambient temperature: +50 °C

$T_{AN}\ [Nm] = 9550 \times \frac{45\ kW}{1500\ rpm} = 287\ Nm$

$T_{KN} = 1.75 \times 1.5 \times 287\ Nm = 753\ Nm$

Selection: HRC size 180

$T_{KN} = 950\ Nm$

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