NPX Couplings

NPX Coupling selection procedure

Based on Power and Speed

1] **Service Factor**
From Table 1 on page 255, select the service factor that is appropriate for the application

2] **Design Power**
Multiply the absorbed power, kW, of the driven machine by the service factor, from step 1) to obtain the design power.
If the absorbed power is not known, use the prime mover power.

3] **NPX coupling size selection**

Refer to Table 2 on page 255.

Read down the left hand vertical column to the required speed.
Interpolate if the exact speed is not listed
Read horizontally across on the speed line until a power equal to or in excess of the design power, from step 2), is reached.
Read vertically to the top of the column to obtain the correct size of NPX coupling.

4] **Bore dimensions**
From the dimension Tables on pages 257 and 258, check that the selected coupling will fit the shafts.

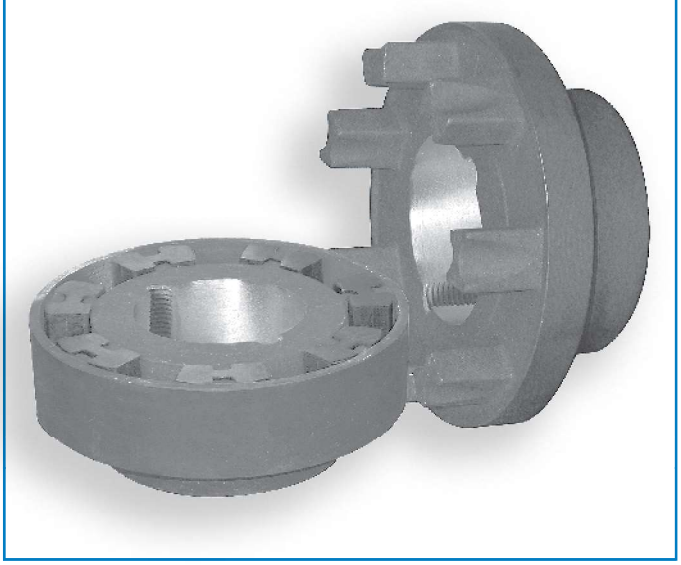
Based on IEC Electric Motors (page 256)

1] Note the frame size of the motor, power, speed (or number of poles)

2] Read across to the column headed by the motor speed (or number of poles)

3] The next column to the motor power gives the size of NPX coupling required
Pilot bore flange sizes are in normal type face. Taper bore flanges are in italic

NPX Coupling



NPX coupling selection example

Select a Challenge NPX coupling to couple a 15.0 kW, 1460 rev/min motor to a pulveriser which absorbs 13.2 kW.

Both shaft diameters are 42 mm and Taper bush flanges are required for both shafts.

1] **Service factor**
from Table 1 on page 255, the service factor for this application is 1.75

2] **Design power**
using the absorbed power of the pulveriser, the design power is 13.2 x 1.75 = 23.1 kW

3] **NPX coupling size selection**
Refer to Table 2 on page 255
By reading down and interpolating for the required speed of 1460 rev/min, it is seen that an NPX size 110 will transmit 24.5 kW which is in excess of the 23.1 kW required from step 2)

4] **Bore dimensions**
from the dimension Table on page 258, the flanges on an NPX 110 take a 1610 taper bush which are available with bores to suit the shaft requirements of the application

All dimensions in millimetres unless otherwise stated. Every effort has been taken to ensure that the data listed in this catalogue is correct. Challenge accepts no liability for any inaccuracies or damage caused.

NPX Coupling Selection

Table 1, Service Factors

Special cases For applications where shock, vibration and torque fluctuations occur – consult Challenge	**Type of prime mover**		
Type of driven machine	Electric motors and other smooth running devices	Internal combustion engines with 4 or more cylinders	Internal combustion engines with less than 4 cylinders
Uniform load Light duty agitators, belt conveyors for sand etc., fans upto 7.5 kW, centrifugal compressors and pumps, generators	**1.00**	**1.25**	**1.50**
Moderate load Variable density agitators, belt conveyors (non-uniform loads), fans over 7.5 kW, other rotary compressors and pumps, machine tools, printing machinery, laundry machinery, rotary screens, rotary woodworking machinery	**1.25**	**1.50**	**2.00**
Heavy load Reciprocating compressors and pumps, positive displacement blowers, heavy duty conveyors such as screw, bucket etc., hammer mills, pulverisers, presses, shears, punches, rubber machinery, crushers, metal mills	**1.75**	**2.00**	**2.50**

The above Service Factors are based on 24 hours/day duty

Table 2, Power Ratings (kW)

Rotational speed in rev/min	58	68	80	95	110	125	140	160	180	200	225	250
100	0.20	0.36	0.63	1.05	1.68	2.51	3.77	5.86	9.22	14.0	20.9	29.3
500	1.00	1.80	3.15	5.25	8.40	12.6	18.9	29.3	46.1	70.2	105	147
700	1.40	2.52	4.41	7.35	11.8	17.6	26.4	41.0	64.5	98.2	147	205
720	1.44	2.59	4.54	7.56	12.1	18.1	27.1	42.2	66.4	101	151	211
800	1.60	2.88	5.04	8.40	13.4	20.1	30.2	46.9	73.8	112	168	235
900	1.80	3.24	5.67	9.45	15.1	22.6	33.9	52.7	83.0	126	188	264
960	1.92	3.46	6.05	10.1	16.1	24.1	36.2	56.3	88.5	135	201	281
1000	2.00	3.60	6.30	10.5	16.8	25.1	37.7	58.6	92.2	140	209	293
1200	2.40	4.32	7.56	12.6	20.2	30.1	45.2	70.3	111	168	251	352
1400	2.80	5.04	8.82	14.7	23.5	35.1	52.8	82.0	129	196	293	410
1440	2.88	5.18	9.07	15.1	24.2	36.1	54.3	84.4	133	202	302	422
1500	3.00	5.40	9.45	15.8	25.2	37.7	56.6	87.9	138	210	314	440
1800	3.60	6.48	11.3	18.9	30.2	45.2	67.9	105	166	253	377	528
2000	4.00	7.20	12.6	21.0	33.6	50.2	75.4	117	184	281	419	586
2500	5.00	9.00	15.8	26.3	42.0	62.8	94.3	147	231	351	524	733
2880	5.76	10.4	18.1	30.2	48.4	72.3	109	169	266	404	603	-
3000	6.00	10.8	18.9	31.5	50.4	75.3	113	176	277	421	628	-
3500	7.00	12.6	22.1	36.8	58.8	87.9	132	205	323	-	-	-
4000	8.00	14.4	25.2	42.0	67.2	100	151	234	-	-	-	-
4500	9.00	16.2	28.4	47.3	75.6	113	170	-	-	-	-	-
5000	10.0	18.0	31.5	52.5	84.0	126	-	-	-	-	-	-

All power ratings are constant torque
Interpolate for speeds not listed

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NPX Coupling Selection

IEC motor selection Table (50Hz)

Frame size, shaft diameter and length			Motor power (kW) 2-pole 3000 rev/min	*NPX size* *	Motor power (kW) 4-pole 1500 rev/min	*NPX size* *	Motor power (kW) 6-pole 1000 rev/min	*NPX size* *	Motor power (kW) 8-pole 750 rev/min	*NPX size* *
	2 pole	4, 6, 8 pole								
80	19 x 40		0.75	**58** / *80*	0.55	**58** / *80*	0.37	**58** / *80*	0.18	
			1.1	**58** / *80*	0.75	**58** / *80*	0.55	**58** / *80*	0.25	
90S	24 x 50		1.5	**68** / *80*	1.1	**68** / *80*	0.75	**68** / *80*	0.37	
90L			2.2	**68** / *80*	1.5	**68** / *80*	1.1	**68** / *80*	0.55	
100L	28 x 60		3.0	**80** / *80*	2.2	**80** / *80*	1.5	**80** / *80*	0.75	**80** / *80*
					3.0				1.1	**80** / *80*
112M			4.0	**80** / *80*	4.0	**80** / *80*	2.2	**80** / *80*	1.5	**80** / *80*
132S	38 x 80		5.5	**95** / *110*	5.5	**95** / *110*	3.0	**95** / *110*	2.2	**95** / *110*
			7.5	**95** / *110*		**95** / *110*				
132M					7.5		4.0	**95** / *110*	3.0	**95** / *110*
							5.5	**95** / *110*		
160M	42 x 110		11	**95** / *110*	11	**95** / *110*	7.5	**95** / *110*	4.0	**95** / *110*
			15	**95** / *110*					5.5	**95** / *110*
160L			18.5	**95** / *110*	15	**110** / *110*	11	**110** / *110*	7.5	**110** / *110*
180M	48 x 110		22	**110** / *125*	18.5	**110** / *125*				
180L					22	**125** / *125*	15	**125** / *125*	11	**125** / *125*
200L	55 x 110		30	**125** / *160*	30	**125** / *160*	18.5	**125** / *160*	15	**125** / *160*
			37	**125** / *160*			22	**140** / *160*		
225S	55 x 110	60 x 140		**125** / *160*	37	**140** / *160*			18.5	**140** / *160*
225M			45	**125** / *160*	45	**140** / *160*	30	**140** / *160*	22	**140** / *160*
250M	60 x 140	65 x 140	55	**140** / *160*	55	**160** / *160*	37	**160** / *160*	30	**160** / *160*
280S		75 x 140	75	**160** / *160*	75	*200*	45	*200*	37	*250*
280M			90	**160** / *160*	90	*200*	55	*200*	45	*250*
315S		80 x 170	110	**160** / *160*	110	*250*	75	*250*	55	*250*
315M			132	**160** / *160*	132		90	*250*	75	*250*
	65 x 140		160	**160** / *160*	160		110	*250*	90	*250*
315L			200		200		132	*250*	110	*250*
							160	*250*	132	*250*
315		85 x 170	250		250	*250*	200			

The above selection procedure is based on the following parameters:-

- *Service factor of 1.25*
- *No more than 25 starts per hour*

If the parameters differ from the above, the selection should be based on power and speed

* Pilot bore flanges are in **bold normal** type face

* Taper bore flanges are in *light italic* type face

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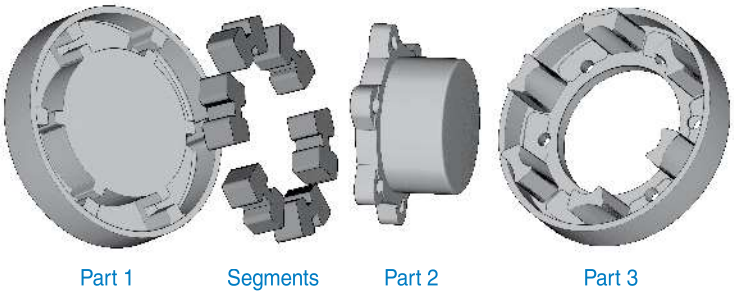
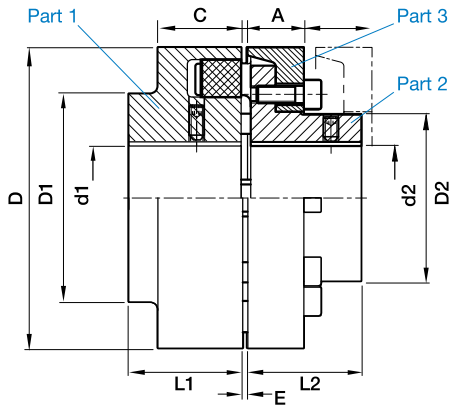
NPX Couplings

NPX Coupling - Pilot bored Type A



Material: Flanges - GG25 Cast Iron, Segments - Nitrile

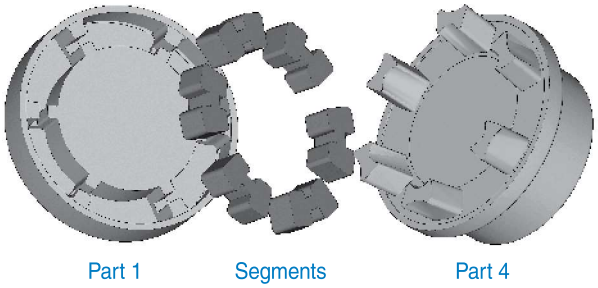
NPX Coupling - Pilot bored Type A



Pilot bored Type A

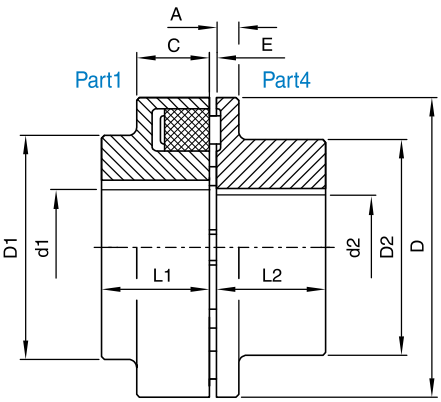
Size	Power at 100 rev/min kW	Torque		Max Speed rev/min	Maximum bore		D parts 1 and 3	L1 part 1	L2 part 2	D1 part 1	D2 part 2	A part 3	C part 1	E	Weight of flange kg		
		Rated Nm	Max Nm		d1 part 1	d2 part 2									flange part 1	flange part 2	flange part 3
110	1.68	160	480	5000	48	38	110	40	40	86	62	20.0	34	2 - 4	1.95	1.38	1.97
125	2.51	240	720	5000	55	45	125	50	50	100	75	23.5	36	2 - 4	3.05	2.42	1.97
140	3.77	360	1080	4900	60	50	140	55	55	100	82	28.0	34	2 - 4	3.65	3.04	2.50
160	5.86	560	1680	4250	65	58	160	60	60	108	95	28.0	40	2 - 6	5.05	4.19	3.49
180	9.22	880	2640	3800	75	65	180	70	70	125	108	30.0	42	2 - 6	7.80	5.94	4.41
200	14.03	1340	4020	3400	85	75	200	80	80	140	122	32.5	47	2 - 6	11.0	8.61	6.02
225	20.94	2000	6000	3000	90	85	225	90	90	150	138	38.0	52	2 - 6	15.0	12.06	8.93
250	29.32	2800	8400	2750	100	95	250	100	100	165	155	42.0	60	3 - 8	19.5	17.41	11.70

NPX Coupling - Pilot bored Type B



Material: Flanges - GG25 Cast Iron, Segments - Nitrile

NPX Coupling - Pilot bored Type B



Pilot bored Type B

Size	Power at 100 rev/min kW	Torque		Max Speed rev/min	Maximum bore		D parts 1 and 4	L1 part 1	L2 part 4	D1 part 1	D2 part 4	A part 4	C part 1	E	Weight of flange kg	
		Rated Nm	Max Nm		d1 part 1	d2 part 4									part 1	part 4
58	0.20	19	57	5000	19	24	58	20	20	-	40	8	20	2 - 4	0.24	0.28
68	0.36	34	102	5000	24	28	68	20	20	-	49	8	20	2 - 4	0.32	0.45
80	0.63	60	180	5000	30	38	80	30	30	-	68	10	30	2 - 4	0.75	0.94
95	1.05	100	300	5000	42	42	95	35	36	76	76	13	30	2 - 4	1.30	1.55
110	1.68	160	480	5000	48	48	110	40	40	86	86	14	34	2 - 4	1.95	2.25
125	2.51	240	720	5000	55	55	125	50	50	100	100	18	36	2 - 4	3.05	3.60
140	3.77	360	1080	4900	60	60	140	55	55	100	100	20	34	2 - 4	3.65	4.50
160	5.86	560	1680	4250	65	65	160	60	60	108	108	20	40	2 - 6	5.05	5.95
180	9.22	880	2640	3800	75	75	180	70	70	125	125	20	42	2 - 6	7.80	8.50
200	14.03	1340	4020	3400	85	85	200	80	80	140	140	24	47	2 - 6	11.0	12.4
225	20.94	2000	6000	3000	90	90	225	90	90	150	150	18	52	2 - 6	15.0	15.5
250	29.32	2800	8400	2750	100	100	250	100	100	165	165	18	60	3 - 8	19.5	19.5

Weight and inertia figures are for a mid range bore. **Temperature range -30°C to 75°C**

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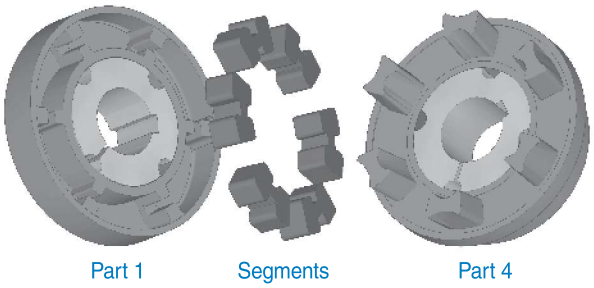
NPX Couplings

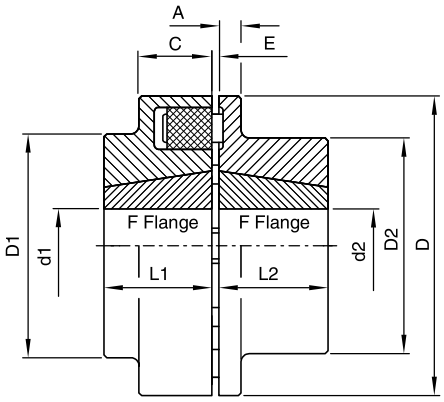
NPX Coupling - Taper bored



Part 1 Segments Part 4

Material: Flanges - GG25 Cast Iron, Segments - Nitrile

NPX Coupling Taper bored



Taper bored

Size	Power at 100 rev/min kW	Torque rated Nm	Torque max Nm	Max speed rev/min	Bush for F flange	Max bore d1/d2 parts 1 and 4	D parts 1 and 4	L1 part 1	L2 part 4	D1 part 1	D2 part 4	A part 4	C part 1	E	Weight of flange kg flange part 1	Weight of flange kg flange part 4
80	0.63	60	180	5000	1108	28	80	22.5	22.5	0	0	22.5	22.5	2 - 4	0.75	0.94
95	1.05	100	300	5000	1210	32	95	26.5	26.5	0	76	13.0	26.5	2 - 4	1.30	1.55
110	1.68	160	480	5000	1615	42	110	38.5	38.5	86	86	14.0	34.0	2 - 4	1.95	2.25
125	2.51	240	720	5000	2012	50	125	32.5	32.5	0	100	18.0	32.5	2 - 4	3.05	3.60
140	3.77	360	1080	4900	2012	50	140	32.5	32.5	0	100	20.0	32.5	2 - 4	3.65	4.50
160	5.86	560	1680	4250	2517	65	160	46.0	46.0	108	108	20.0	40.0	2 - 6	5.05	5.95
180	9.22	880	2640	3800	2517	65	180	46.0	46.0	125	125	20.0	42.0	2 - 6	7.80	8.50
200	14.03	1340	4020	3400	3020	75	200	52.0	52.0	140	140	24.0	47.0	2 - 6	11.0	12.4
225	20.94	2000	6000	3000	3020	75	225	52.0	52.0	150	150	18.0	52.0	2 - 6	15.0	15.5
250	29.32	2800	8400	2750	3535	90	250	90.0	90.0	165	165	18.0	60.0	3 - 8	19.5	19.5

Weight and inertia figures are for a mid range bore.
Temperature range -30°C to 75°C

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