

Disc-O-Flex couplings are fully metallic couplings, consisting of two adapters, one centre spacer member, and two sets of stainless steel flexible membranes bolted together with high tensile bolts. Replacement of flexible membranes is easy, simple and is possible without disturbing drive or driven equipment.

## FEATURES

- High power - to - weight ratio.
- No wearing parts, no lubrication required.
- Easy installation with 'drop out' spacer.
- Accommodates angular, parallel and axial misalignments.
- Non stainless steel parts coated with a durable anti-corrosive coating.
- High temperature application.
- Replaceable flexible membranes.
- Visual inspection possible without disassembling equipment.
- Inherently balanced.
- High torsional rigidity with low axial stiffness.
- Special options including spacer lengths, modified adapters, special materials are available.
- Floating shaft/cooling tower coupling available.
- Backlash free.
- High speed capacity.
- Dynamic balancing to customer specifications.
- Machined to high precision standards.

Disc-O-Flex couplings are available in three types LM, EM and AM series

## TYPE - LM

- Normal duty coupling
- Suitable for general industrial applications

## TYPE - EM

- High performance coupling.
- Specially suitable for petrochemical & fertilizer industries.
- Can be supplied in compliance with API-610.
- Couplings with antifly spacer.

## TYPE - AM

- Same in construction as that of type EM.
- Compliance with API-671 specification.
- Coupling with antifly spacer.

## SELECTION PROCEDURE

- 1) Select an appropriate SERVICE FACTOR from table given below.
- 2) Multiply the rated running power by the service factor. This gives DESIGN POWER at rated speed (RPM). Now convert this to design power at 100 RPM. This is used as a basis for coupling selection.
- 3) Refer to the rating column and read until the power greater than or equal to the design power at 100 RPM is found. The size of the Disc-O-Flex coupling is given in the corresponding first column.
- 4) Select either standard type 1 or type 2 adapters to suit shaft sizes.  
Select either type 3 or type 4 adapters in type EM/AM for larger shaft sizes.
- 5) Specify the distance between shaft ends (DBSE).

## SERVICE FACTORS

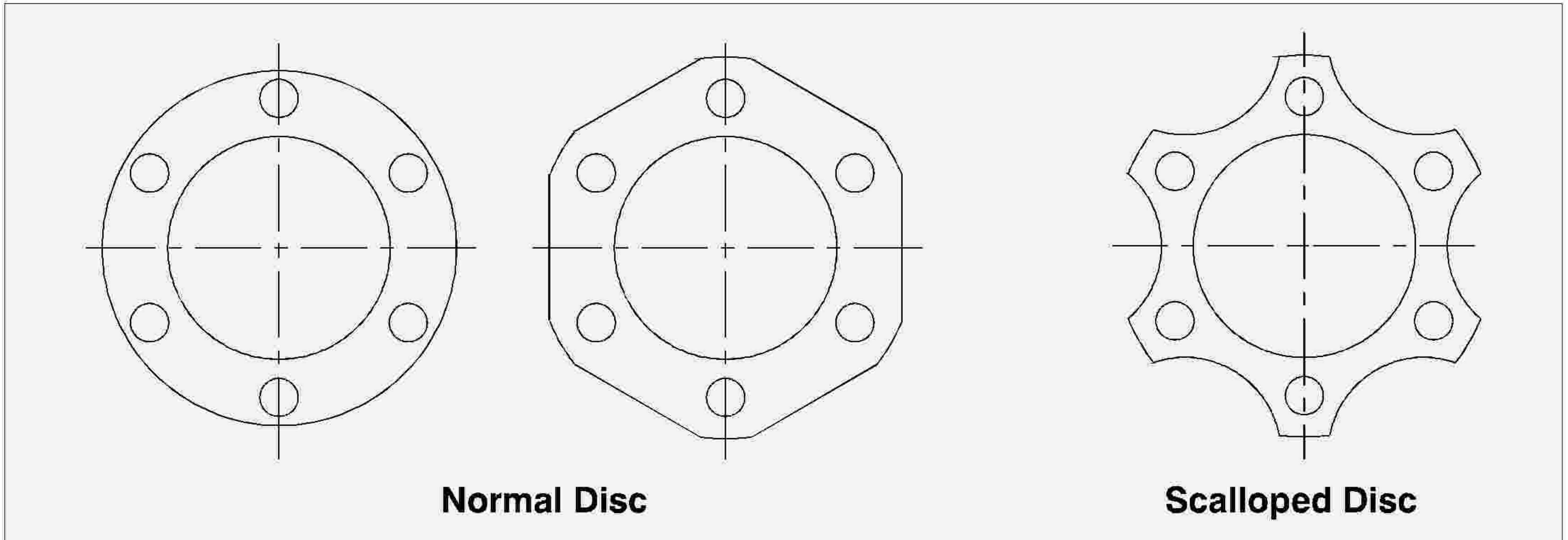
Duty	Prime Mover		
	Electric Motor Steam or Gas Turbine	Steam Engine or Water Turbine	Gas or Oil Engine
<b>Constant Torque</b> e.g. centrifugal pumps, compressors, light conveyors, alternators, light fans.	1.0	1.5	3.0
<b>Slight Torque Fluctuations</b> e.g. machine tools, screw compressors, screw pumps, liquid ring compressors, rotary dryers.	1.5	2.0	3.0
<b>Substantial Torque Fluctuations</b> e.g. reciprocating pumps, low viscosity mixers, cranes, winches.	2.0	2.5	4.0
<b>Exceptionally High Torque Fluctuations</b> e.g. rotary presses, reciprocating compressors, high viscosity mixers, marine propellers.	3.0	3.5	5.0



### THE DISCPACK - HEART OF THE COUPLING

The set of flexible discs is the heart of the Disc-O-Flex high performance couplings and transmits torque, while accommodating angular, parallel and axial misalignment (i.e. End float)

#### Design



Disc-O-Flex discs have a SCALLOPED link design as shown. This results in increased flexibility and subsequent lower reaction forces on the connected equipment bearings. This SCALLOPED shape of disc offers uniform stress distribution, increased misalignment capabilities and lower fatigue stresses on discs. While transmitting torque, the discpack is exposed to constant stresses due to torque, centrifugal force, axial misalignment and pre-stretch. It is also exposed to alternating stress due to angular misalignment.

### TORQUE TRANSMISSION

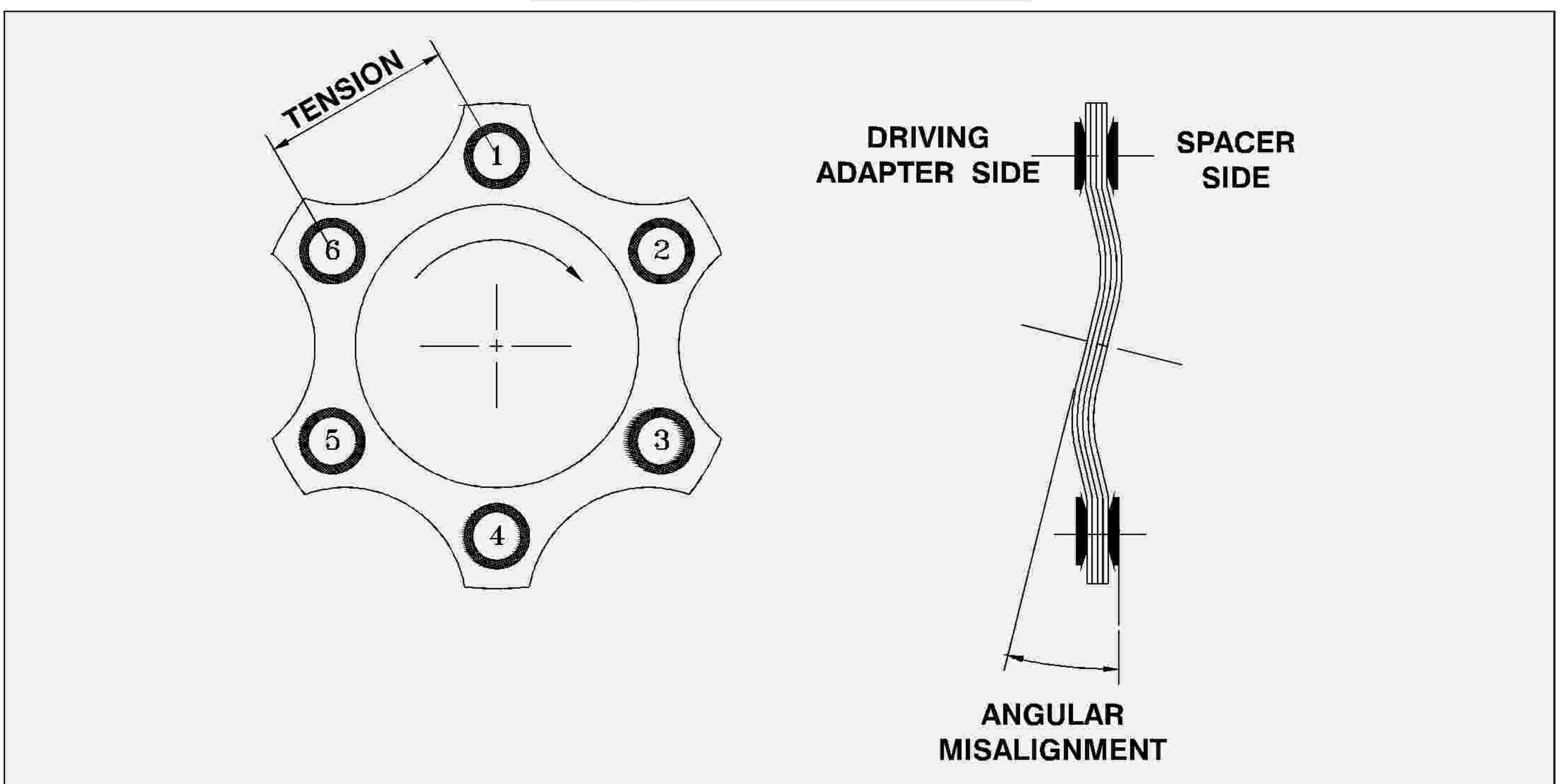
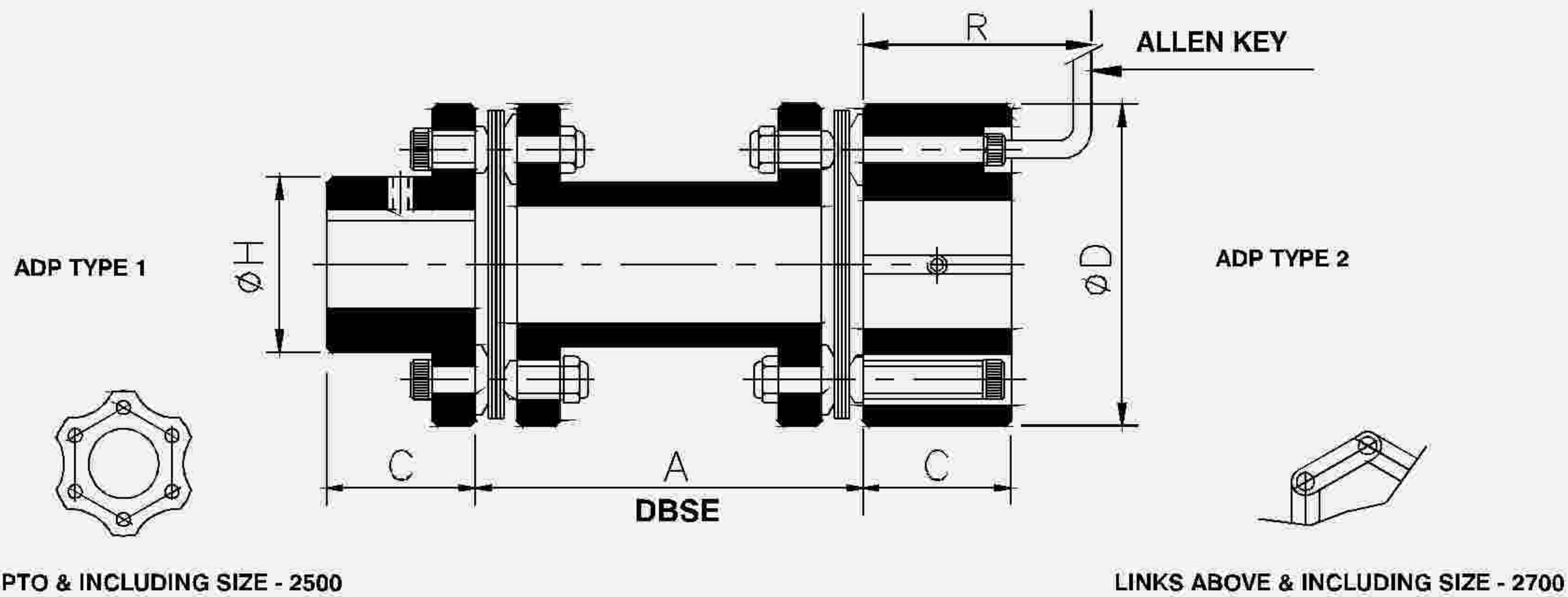


Figure shows holes 1, 3 and 5 in the discpack are bolted to the driving adapter and are free in the clear holes either in spacer or in driven adapter, while holes 2, 4 and 6 are bolted either to the driven adapter or to the spacer and are free in the clear holes of driving adapter. The torque path is from holes 1 to 6, 5 to 4 and 3 to 2.



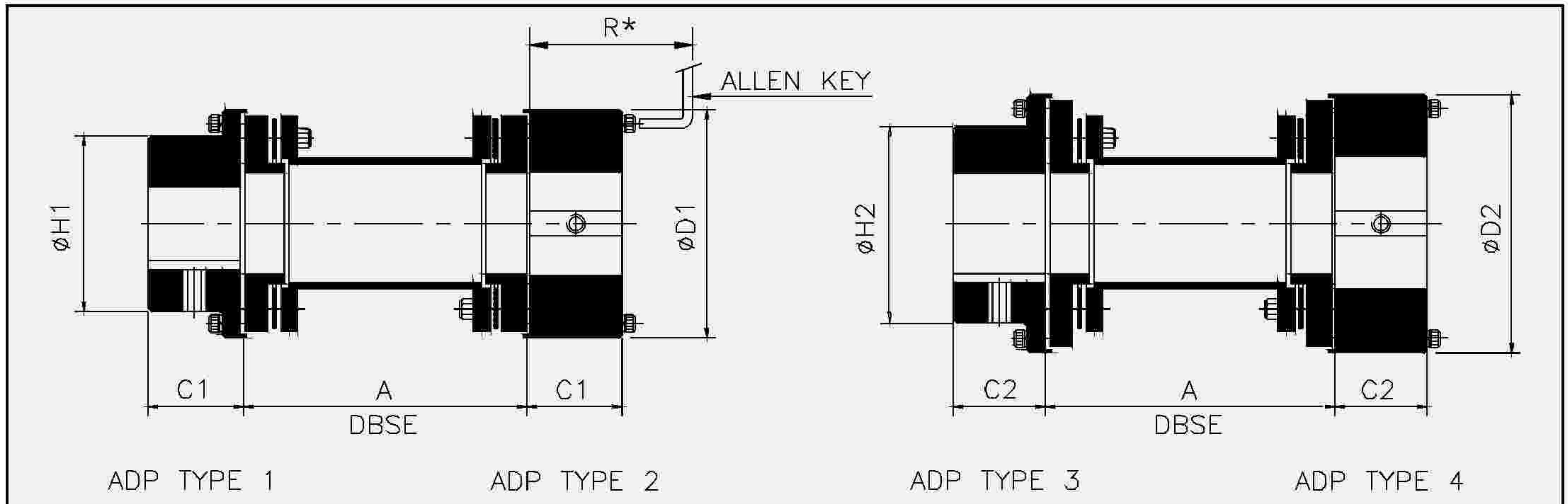


### DIMENSIONAL DATA

Coupling Size	Torque Nm	kW at 100 RPM	Max Speed RPM #	Bore			Std. DBSE 'A'	C	ØD	ØH	R	Weight in kg. Approx.		M. I. (WR) in kgm Approx.		Tors. Stiff. Mnm Rad Approx.
				Min.	Max.							Min. Std. 'A'	Per Mtr Extra 'A'	Min. Std. 'A'	Per Mtr Extra 'A'	
					Type 1	Type 2										
5	33	0.35	7500	8	20	22	100	25	55	30	65	0.7	1.6	0.0002	0.0001	0.016
10	64	0.67	7500	10	24	25	140	30	63	35	75	1.1	2.2	0.0003	0.0001	0.031
20	109	1.14	7000	12	28	38	100	40	79	42	85	2.1	3.1	0.0010	0.0002	0.025
35	160	1.67	7000	12	30	38		40	82	45	85	2.6	3.1	0.0012	0.0002	0.025
55	286	3.00	6000	17	38	48	140	45	98	55	95	3.9	6.4	0.0035	0.0008	0.040
95	515	5.4	6000	17	40	50		45	102	57	95	4.5	6.4	0.0040	0.0008	0.040
120	640	6.7	5200	17	48	62	180	55	124	74	110	7.3	7.0	0.011	0.001	0.098
170	860	9.0	5200	17	52	70		55	128	77	110	8.3	7.0	0.012	0.001	0.099
220	1337	14.0	4800	22	65	80	180	60	146	94	120	10.6	11.0	0.025	0.003	0.176
360	1815	19.0	4400	27	78	100		70	173	112	140	16.5	16.2	0.054	0.006	0.311
400	2388	25.0	4400	27	80	100	180	70	176	115	140	17.6	16.2	0.06	0.006	0.305
520	3342	35.0	4200	32	90	115		90	197	132	170	27.7	23.0	0.10	0.011	0.432
800	4010	42.0	4000	42	102	130	140	95	222	145	165	36.5	34.0	0.21	0.024	0.617
1000	5060	53.0	4000	42	105	130	180	95	225	147	165	39.0	34.0	0.22	0.024	0.600
1100	5347	56.0	3800	47	112	140	250	105	247	160	195	54.0	45.3	0.36	0.042	0.886
1300	7161	75.0	3800	47	115	140	180	105	250	162	195	57.0	45.3	0.38	0.042	0.800
1500	8020	84.0	3700	52	118	155		115	272	175	195	76.0	56.6	0.60	0.065	1.191
2000	10025	105.0	3700	52	120	155	250	115	275	178	195	79.0	56.6	0.63	0.065	1.500
2250	10694	112.0	3600	62	132	165		130	297	186	235	100.0	68.0	0.96	0.094	1.493
2500	13367	140.0	3600	62	135	165	300	130	300	190	235	102.0	68.0	0.98	0.094	1.400
2700	17664	185.0	2400	82	160	200	250	145	370	235	265	175.0	88.0	2.5	0.16	1.550
3400	22915	240.0	2200	92	180	225		165	400	255	310	219.0	106.0	3.6	0.23	1.610
4400	28644	300.0	2000	102	200	250	300	175	440	300	295	293.0	134.0	5.7	0.37	1.720
5000	34373	360.0	1900	112	220	280	350	185	460	320	300	321.0	175.0	6.9	0.62	1.780
5800	40102	420.0	1800	122	240	310	300	200	500	350	330	420.0	212.0	10.4	0.90	2.450
6800	57288	600.0	1700	132	260	330		220	530	380	335	505.0	229.0	14.4	1.06	2.430
7800	71610	750.0	1600	137	280	360	350	230	560	410	345	602.0	335.0	19.4	2.28	3.260
9000	85932	900.0	1500	142	310	390		240	600	450	380	722.0	394.0	26.8	3.15	4.200
10500	114577	1200.0	1300	152	335	430	350	250	650	490	390	883.0	450.0	38.9	4.11	4.900
12500	143221	1500.0	1000	162	375	460		270	700	550	410	1061.0	662.0	59.4	7.84	5.800

- All dimensions are in mm unless otherwise specified.
  - Non Standard DBSE available on request.
  - Please specify type of adapters (1/1, 1/2 or 2/2).
  - Weight, M.I. & Stiffness are at max bores with min. Std. DBSE with one type 1 and one type 2 adpt.
  - Available for non-sparking applications on request.
- # Specified max speeds are without balancing. With balancing, speeds can be increased. Consult Arrow.



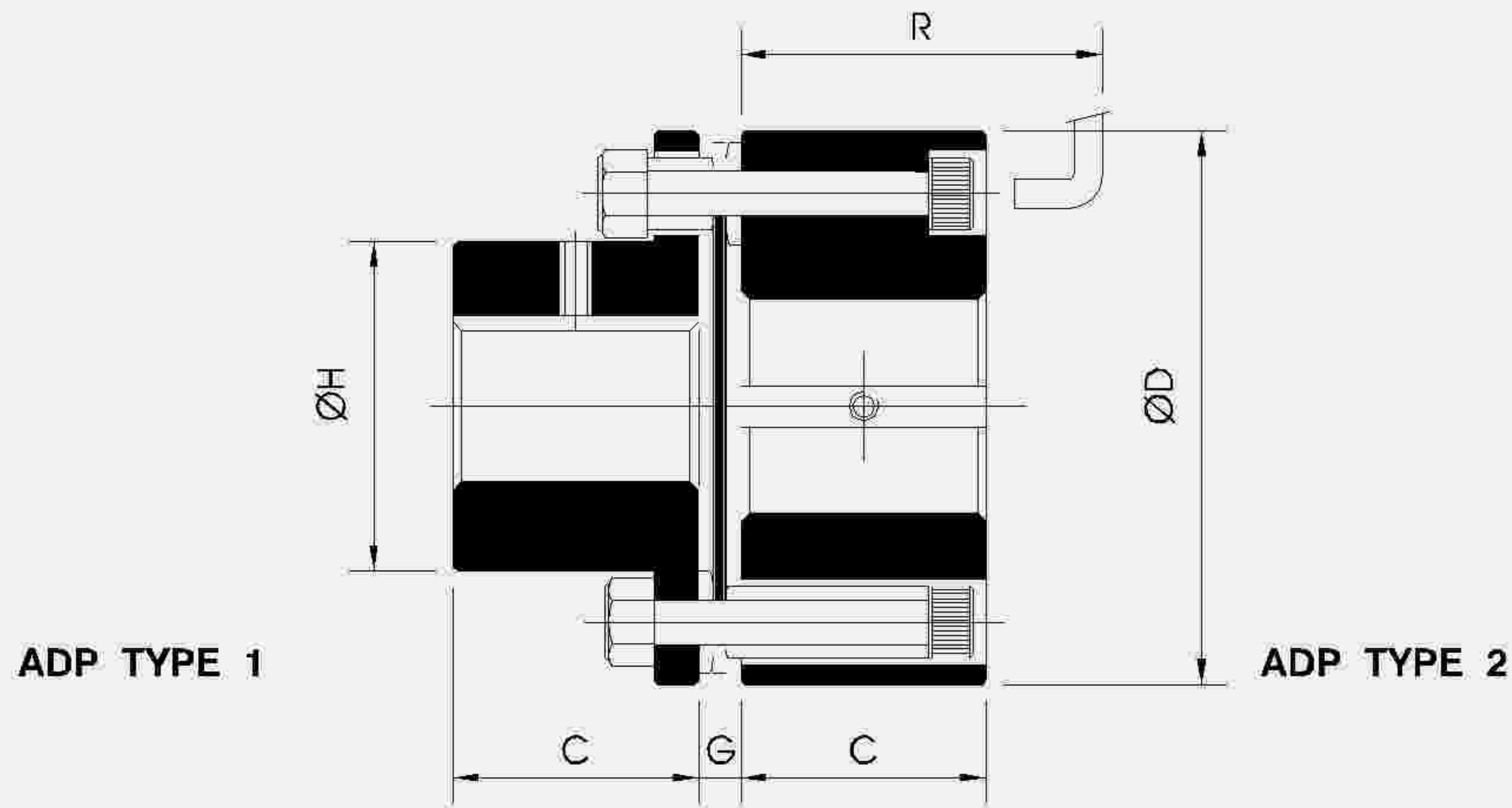


### DIMENSIONAL DATA

Coup Size	Torque Nm	kW at 100 RPM	Max Speed RPM #	Bore				Std. DBSE 'A'	C1	C2	ØD1	ØD2	ØH1	ØH2	* R	Weight in kg. Approx.		M. I. (WR) in kgm Approx.		Tors Stiff. M nm Rad Approx.	
				Min.	Max											Min. Std. 'A'	Per Mtr Extra 'A'	Min. Std. 'A'	Per Mtr Extra 'A'		
					Type 1	Type 2	Type 3														Type 4
4	33	0.35	7500	5	19	32	24	42	100	25	30	61	69	32	40	70	1.5	1.2	0.0004	0.00002	0.016
8	64	0.67	7500	8	24	42	38	48	100	30	40	69	86	40	55	80	2.2	1.3	0.0009	0.00003	0.030
15	109	1.14	7000	10	38	48	48	70	100	40	45	86	105	55	70	90	3.9	2.3	0.0023	0.00011	0.025
25	160	1.67	7000	10	38	50	48	72	140	40	45	90	108	55	70	90	3.9	2.3	0.0023	0.00011	0.025
40	286	3.00	6000	15	48	70	65	90	180	45	55	105	130	70	86	105	6.4	4.4	0.0054	0.00038	0.040
65	515	5.4	6000	15	48	72	65	92	180	45	55	108	135	70	86	105	6.5	4.4	0.0054	0.00038	0.040
90	640	6.7	5200	20	65	90	80	102	180	55	60	130	152	86	108	120	11.6	6.0	0.0148	0.00071	0.095
125	860	9.0	5200	20	65	92	80	104	180	55	60	135	157	86	108	120	11.7	6.0	0.0148	0.00071	0.095
165	1337	14.0	4800	25	80	102	90	120	140	60	70	152	179	108	130	125	18.3	9.0	0.0319	0.00164	0.17
270	1815	19.0	4400	30	90	120	108	140	140	70	90	179	197	130	158	135	30.0	13.2	0.0714	0.00352	0.30
370	2388	25.0	4400	30	90	122	108	142	140	70	90	182	200	130	158	135	30.0	13.2	0.0716	0.00352	0.30
390	3342	35.0	4200	45	108	140	127	155	180	90	95	197	222	158	181	155	41.5	16.2	0.117	0.0053	0.43
600	4010	42.0	4000	55	127	155	140	175	250	95	105	222	247	181	206	160	56.0	22.7	0.210	0.0105	0.6
790	5060	53.0	4000	55	127	158	140	178	250	95	105	225	250	181	206	160	58.0	22.7	0.210	0.0105	0.6
825	5347	56.0	3800	65	140	175	155	190	250	105	115	247	272	206	223	170	79.0	28.7	0.353	0.0167	0.8
1025	7161	75.0	3800	65	140	178	155	192	250	105	115	250	275	206	223	170	80.0	28.7	0.386	0.0167	0.8
1125	8020	84.0	3700	70	155	190	170	210	180	115	130	272	297	223	248	190	103.0	34.8	0.576	0.0246	1.1
1425	10025	105.0	3700	70	155	192	170	212	180	115	130	275	300	223	248	190	105.0	34.8	0.585	0.0246	1.1
1680	10694	112.0	3600	75	170	210	190	250	250	130	145	297	370	248	280	215	135.0	41.3	0.884	0.0345	1.5
1880	13367	140.0	3600	75	170	215	190	255	250	130	145	300	375	248	280	215	137.0	41.3	0.921	0.0345	1.5
2015	17664	185.0	2400	80	190	250	205	265	300	145	165	370	400	280	300	245	245.0	55.4	2.40	0.062	1.5
2535	22915	240.0	2200	85	205	265	235	290	350	165	175	400	440	300	340	265	338.0	66.0	3.92	0.089	1.6
3280	28644	300.0	2000	96	235	290	245	315	400	175	185	440	460	340	360	275	454.0	81.5	6.51	0.135	1.7
3730	34373	360.0	1900	100	245	315	265	330	450	185	200	460	500	360	385	285	489.0	104.2	7.25	0.22	1.7
4250	40102	420.0	1800	105	265	330	285	345	450	200	210	500	530	385	415	310	654.0	125.2	11.9	0.318	2.3
5075	57288	600.0	1700	110	285	345	300	370	450	210	225	530	560	415	440	320	784.0	153.0	15.7	0.475	2.3
5820	71610	750.0	1600	115	300	370	315	390	450	225	245	560	600	440	460	335	837.0	195.0	17.7	0.765	3.0
6710	85932	900.0	1500	120	315	390	345	420	450	245	270	600	650	460	500	355	1078.0	223.0	27.5	1.005	4.2
7835	114577	1200.0	1300	125	345	420	385	460	500	270	290	650	700	500	560	400	1340.0	240.0	40.8	1.262	4.5
9930	143221	1500.0	1000	130	385	460	410	500	500	290	310	700	770	560	600	420	1518.0	313.0	50.5	1.976	5.5

- All dimensions are in mm unless otherwise specified.
  - Non Standard DBSE available on request.
  - Please specify type of adapter. Possible combinations of adapters are adpt. Type 1/1, 1/2, 2/2, 3/3, 3/4, 4/4 only.
  - Weight, M.I. & Stiffness are at max bores with min. Std. DBSE with one type 1 and one type 2 adpt.
  - Available for non-sparking applications on request.
  - For API 671 specifications for AM series, consult Arrow.
- # Specified max speeds are without balancing. With balancing, speeds can be increased. Consult Arrow.
- \* 'R' is only for adapter type 2. In case of adapter 4, consult Arrow.





### DIMENSIONAL DATA

Coupling Size	Torque Nm	kW at 100 RPM	Max Speed RPM #	Bore		DBSE G	C	ØD	ØH	R	Weight in kg. Approx.	M. I. (WR) in kgm Approx.	Tors. Stiff. Mnm/Rad Approx.
				Min.	Max. Type 1   Type 2								
5	33	0.35	7500	8	20   22	5.2	25	55	30	65	0.7	0.0002	0.036
10	64	0.67	7500	10	24   25	6.5	30	63	35	75	1.0	0.0003	0.043
20	109	1.14	7000	12	28   38	6.5	40	79	42	85	2.0	0.001	0.053
35	160	1.67	7000	12	30   38	7.5	40	82	45	85	2.5	0.0012	0.062
55	286	3.00	6000	17	38   48	8	45	98	55	95	3.3	0.0029	0.112
95	515	5.4	6000	17	40   50	8	45	102	57	95	3.9	0.0033	0.118
120	640	6.7	5200	17	48   62	9.5	55	124	74	110	6.5	0.0091	0.254
170	860	9.0	5200	17	52   70	9.5	55	128	77	110	7.4	0.0101	0.260
220	1337	14.0	4800	22	65   80	12	60	146	94	120	9.0	0.0186	0.492
360	1815	19.0	4400	27	78   100	13	70	173	112	140	14.1	0.0409	0.819
400	2388	25.0	4400	27	80   100	13	70	176	115	140	15.2	0.0444	1.228
520	3342	35.0	4200	32	90   115	14.4	90	197	132	170	24.1	0.0778	1.926
800	4010	42.0	4000	42	102   130	16.2	95	222	145	165	30.5	0.168	2.78
1000	5060	53.0	4000	42	105   130	16.2	95	225	147	165	32.5	0.172	3.613
1100	5347	56.0	3800	47	112   140	19.5	105	247	160	195	45.3	0.285	5.400
1300	7161	75.0	3800	47	115   140	19.5	105	250	162	195	47.6	0.295	ON REQUEST
1500	8020	84.0	3700	52	118   155	21.5	115	272	175	195	63.0	0.449	
2000	10025	105.0	3700	52	120   155	21.5	115	275	178	195	66.0	0.474	
2250	10694	112.0	3600	62	132   165	23.5	130	297	186	235	82.0	0.733	
2500	13367	140.0	3600	62	135   165	23.5	130	300	190	235	84.0	0.753	
2700	17664	185.0	2400	82	160   200	34	145	370	235	265	145.0	1.95	
3400	22915	240.0	2200	92	180   225	38	165	400	255	310	180.0	2.83	
4400	28644	300.0	2000	102	200   250	34	175	440	300	295	235.0	4.51	
5000	34373	360.0	1900	112	220   280	34	185	460	320	300	261.0	5.41	
5800	40102	420.0	1800	122	240   310	38	200	500	350	330	334.0	8.16	
6800	57288	600.0	1700	132	260   330	34	220	530	380	335	406.0	11.25	
7800	71610	750.0	1600	137	280   360	34	230	560	410	345	478.0	14.84	
9000	85932	900.0	1500	142	310   390	38	240	600	450	380	556.0	20.32	
10500	114577	1200.0	1300	152	335   430	38	250	650	490	390	660.0	29.21	
12500	143221	1500.0	1000	162	375   460	38	270	700	550	410	775.0	44.55	

- All dimensions are in mm unless otherwise specified.
  - Please specify type of adapters (1/1 or 1/2). In case of combination of adapters type 2/2 consult Arrow.
  - Weight, M.I. & Stiffness are at max bores with one type 1 and one type 2 adpts.
  - Available for non-sparking applications on request.
- # Specified max speeds are without balancing. With balancing, speeds can be increased. Consult Arrow.

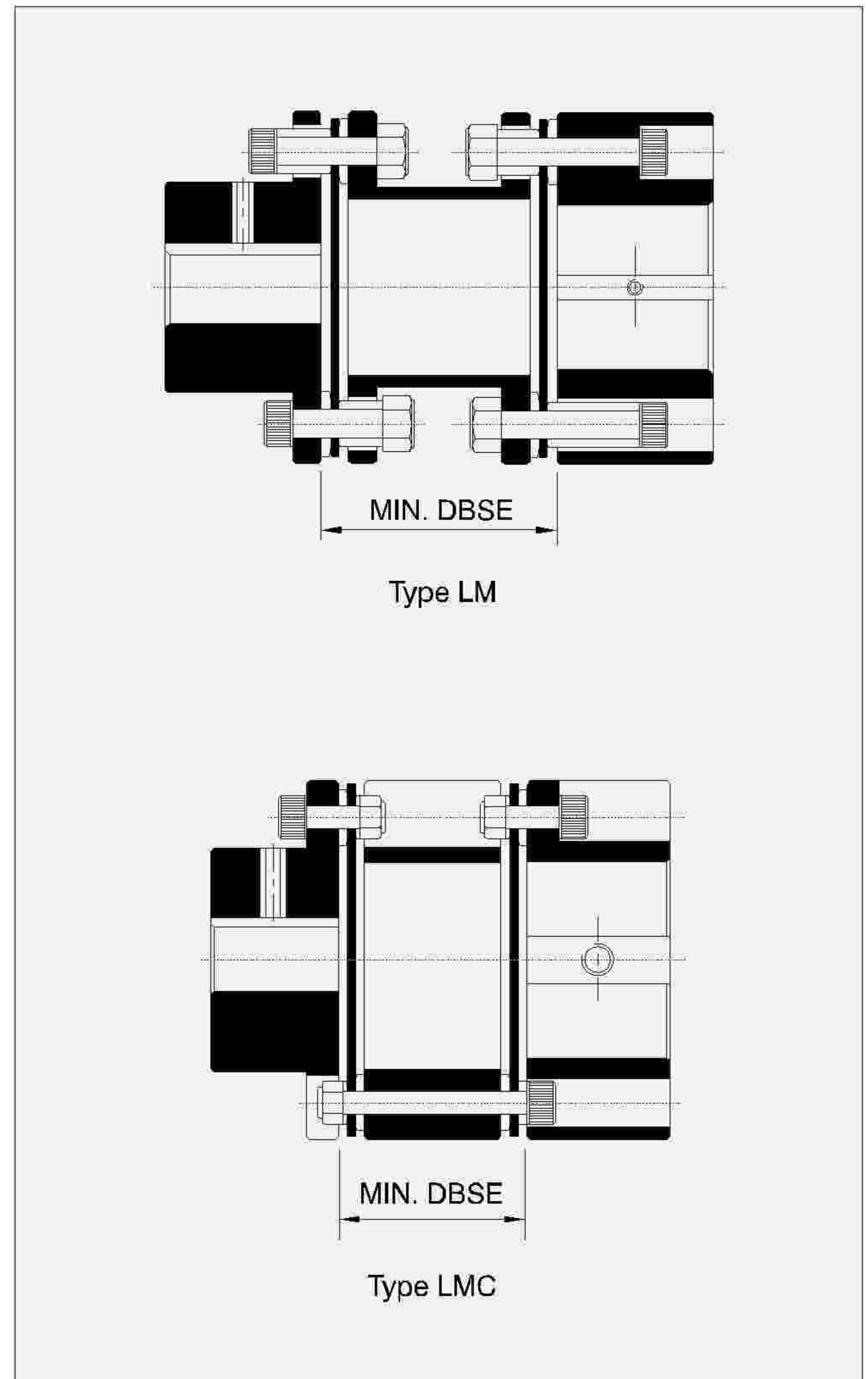
**These couplings can't take parallel misalignment.**



## MINIMUM DBSE FOR TYPE LM AND TYPE LMC COUPLINGS

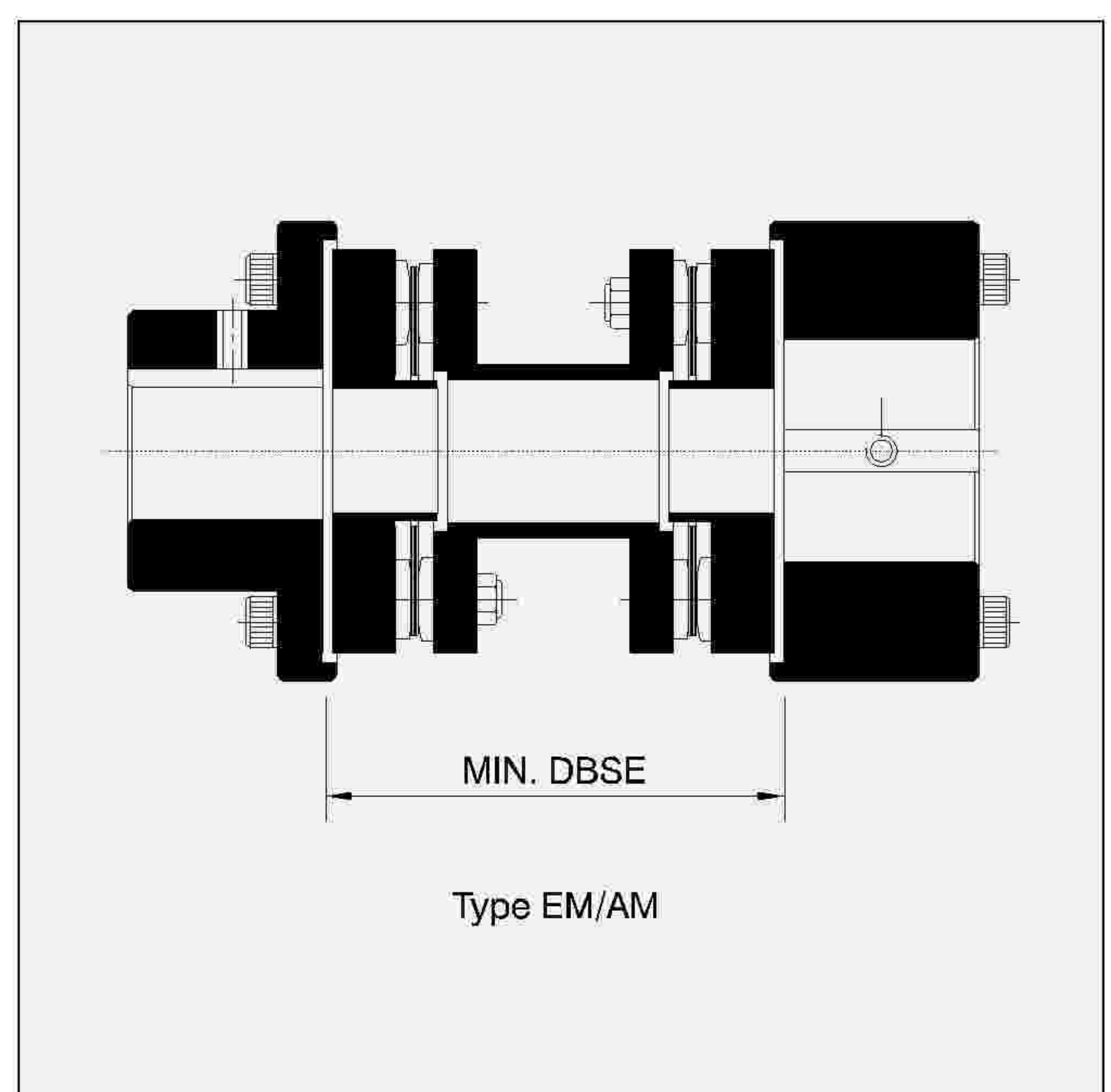
In case of type LM couplings, still smaller DBSEs may be possible with a different construction type LMC, as shown below. Overall dimensions & ratings of type LMC couplings are the same as that of the standard construction type LM..

Size LM / LMC	Min. DBSE (mm)	
	For LM	For LMC
5	40	30
10	48	35
20	48	35
35	50	40
55	62	40
95	64	45
120	74	55
170	76	55
220	78	70
360	85	75
400	90	75
520	115	85
800	120	90
1000	130	90
1100	140	100
1300	150	100
1500	160	110
2000	165	110
2250	175	120
2500	180	120
2700	220	170
3400	250	200
4400	230	170
5000	240	170
5800	270	200
6800	250	170
7800	260	170
9000	290	200
10500	300	200
12500	310	200



## MINIMUM DBSE FOR TYPE EM / AM COUPLINGS

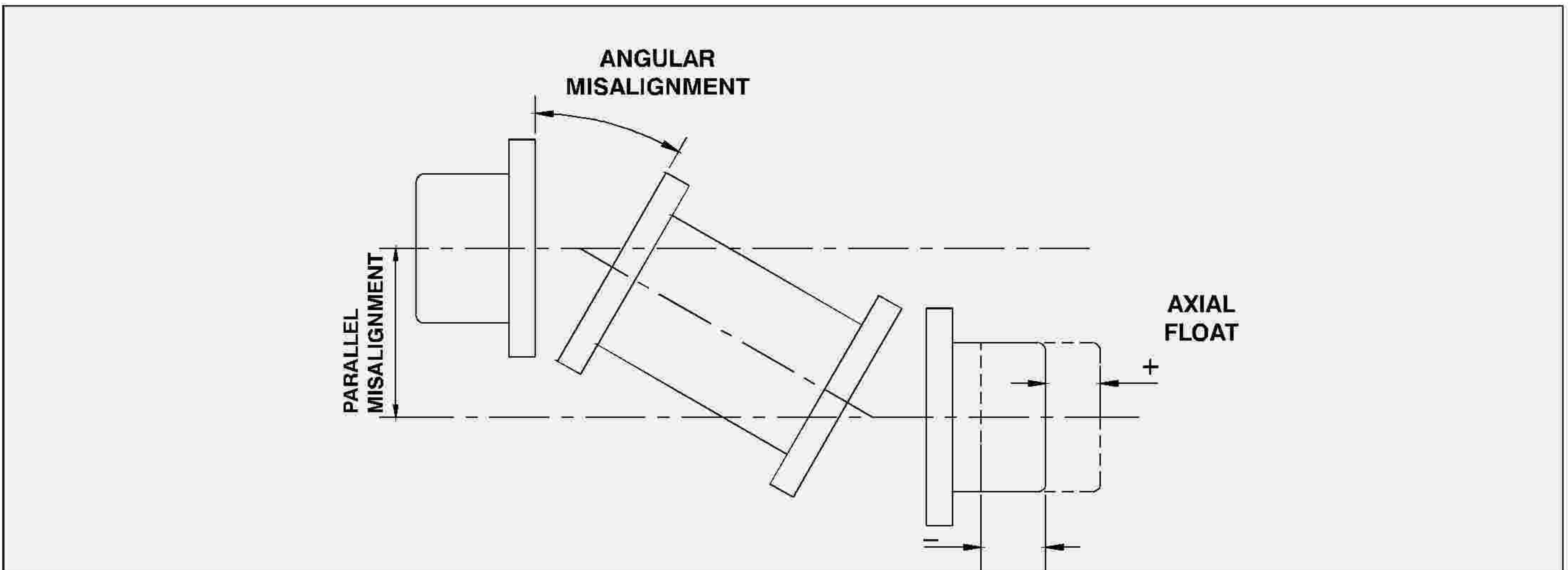
Size EM / AM	Min. DBSE (mm)	Size EM / AM	Min. DBSE (mm)
4	53	1025	138
8	61	1125	148
15	70	1425	148
25	70	1680	171
40	79	1880	171
65	79	2015	300
90	89	2335	350
125	89	3280	365
165	120	3730	370
270	130	4250	400
370	130	5075	415
390	130	5820	420
600	133	6710	450
790	133	7835	465
825	138	9330	470





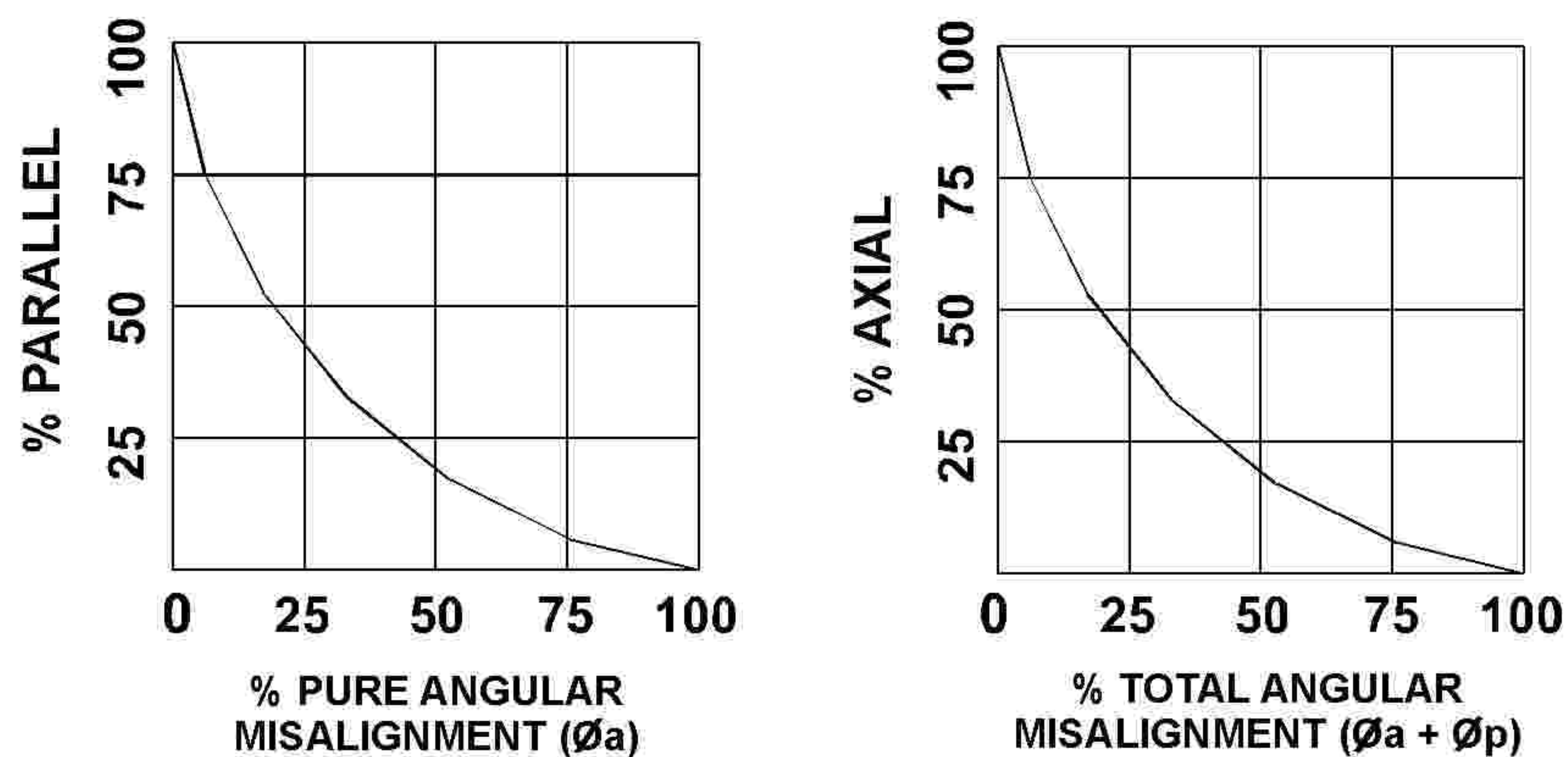
## FLEXIBILITY

Flexibility depends upon the span between driving and driven bolts and thickness of the diskpack. The flexibility of the coupling is more for longer span and smaller thickness. Increase in no of bolts with same PCD reduces the span resulting in less flexibility. However, increasing the no of bolts on same PCD increases the torque capacity. Therefore for larger diameter couplings, it is necessary to increase no of bolts and/or thickness of the diskpack to achieve required torque carrying capacity, without allowing the power to weight ratio to decrease. Hence, larger size couplings are generally less flexible.



Each discpack can only accept angular and axial misalignment. Therefore two discpacks are required to accommodate parallel misalignment as shown.

## PERMISSIBLE RELATIONSHIP BETWEEN ANGULAR, PARALLEL & AXIAL MISALIGNMENT



TOTAL ANGULAR MISALIGNMENT = PURE ANGULAR MISALIGNMENT ( $\varnothing_a$ )  
+ ANGULAR DEFLECTION DUE TO PARALLEL MISALIGNMENT ( $\varnothing_p$ ).

$$\varnothing_p = \text{TAN}^{-1} \left( \frac{\text{PARALLEL MISALIGNMENT}}{\text{DBSE}} \right)$$

**Note: Misalignment data for individual couplings are available. Consult Arrow.**

## **Arrow Engineering Components Ltd**

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