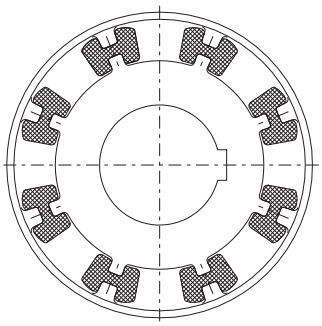
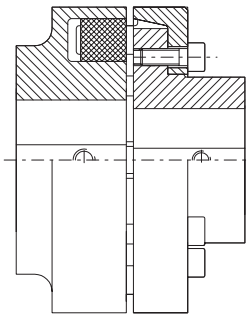
Operating Instructions

BA 3100 EN 07.03

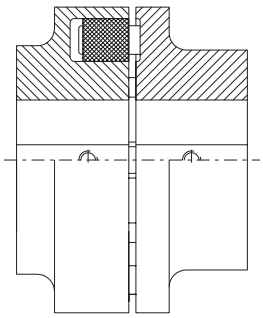
Flexible **N-EUPEX** and **N-EUPEX-DS** couplings
Types **A, B** and **ADS, BDS**



N-EUPEX



A



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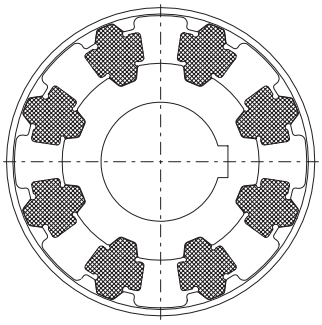
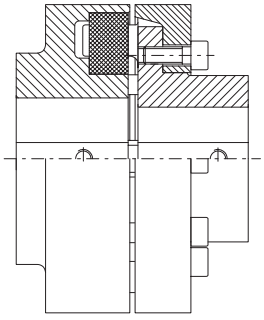


N-EUPEX-DS



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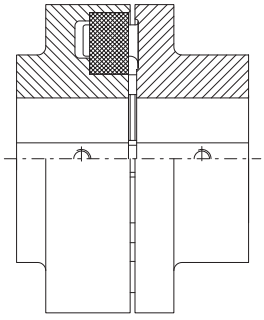

BDS

FLENDER

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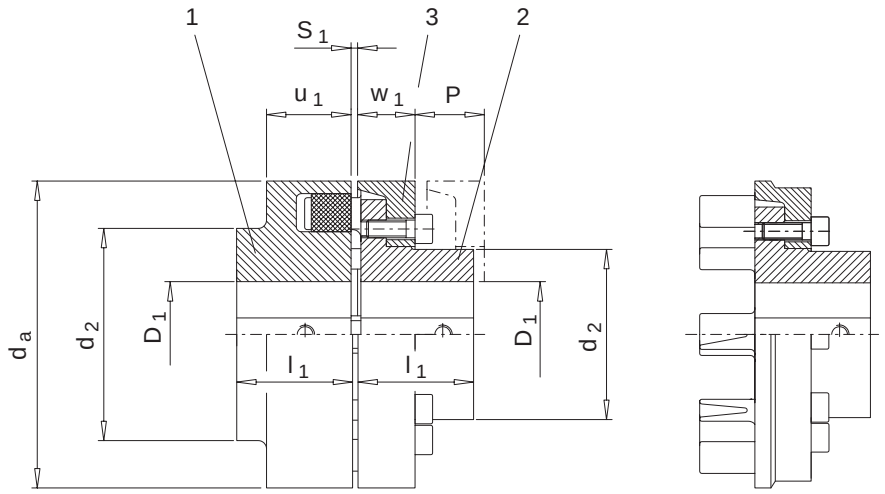
Contents

1. Technical data

1.1 N-EUPEX coupling, Types A and B

1.1.1 Geometric data

Type A



Sizes 110 to 350

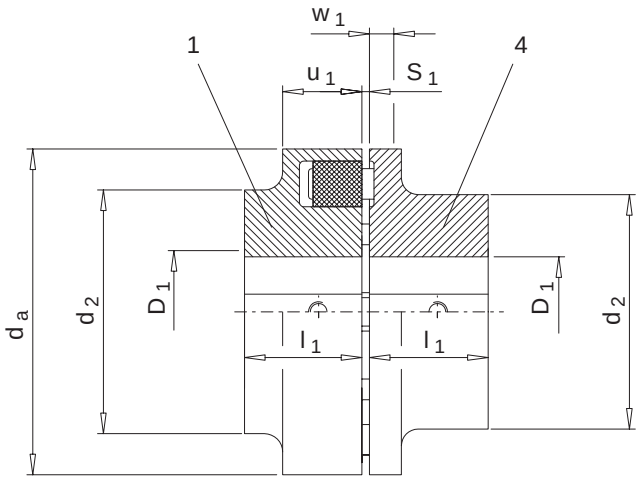
Sizes 400 to 710

Size	Bore D_1 Part 1 from mm	Part 1 to mm	Part 2 from mm	Part 2 to mm	d_a mm	d_2 Part 1 mm	d_2 Part 2 mm	w_1 mm	l_1 mm	u_1 mm	P mm	S_1 mm	Weight 1) Part 1 kg	Weight 1) Part 2+3 kg	Mass moment of inertia 1) Part 1 kgm^2	Mass moment of inertia 1) Part 2+3 kgm^2
110		48		38	110	86	62	20	40	34	33	2.... 4	1.9	1.6	0.0027	0.002
125		55		45	125	100	75	23	50	36	38	2.... 4	2.9	2.7	0.005	0.0045
140		60		50	140	100	82	28	55	34	43	2.... 4	3.3	3.7	0.007	0.008
160		65		58	160	108	95	28	60	39	47	2.... 6	4.7	5.1	0.013	0.015
180		75		65	180	125	108	30	70	42	50	2.... 6	6.9	7.3	0.023	0.026
200		85		75	200	140	122	32	80	47	53	2.... 6	9.5	10.3	0.04	0.045
225		90		85	225	150	138	38	90	52	61	2.... 6	13	14	0.07	0.08
250	46	100	32	95	250	165	155	42	100	60	69	3.... 8	17.5	19.5	0.12	0.13
280	49	110	54	105	280	180	172	42	110	65	73	3.... 8	24	24	0.2	0.2
315	49 90	100 120	46 90	100 120	315	165 200	165 200	47	125	70	78	3.... 8	31 32	32 34	0.31 0.34	0.33 0.37
350	61 90	110 140	61 90	110 140	350	180 230	180 230	51	140	74	83	3.... 8	43 45	43 47	0.54 0.60	0.54 0.63
400	66 100	120 150	66 100	120 150	400	200 250	200 250	56	160	78	88	3.... 8	63 66	59 64	1 1.2	0.9 1
440	80 120	130 160	80 120	130 160	440	215 265	215 265	64	180	86	99	5...10	79 82	80 85	1.5 1.7	1.5 1.7
480	90 136	145 180	90 136	145 180	480	240 300	240 300	65	190	90	104	5...10	100 105	100 110	2.3 2.6	2.3 2.6
520	100 140	150 190	100 140	150 190	520	250 315	250 315	68	210	102	115	5...10	130 140	120 135	3.5 3.8	3.2 3.6
560	120	200	120	200	560	320	320	80	220	115	125	6...12	180	185	5.9	6
610	130	220	130	220	610	352	352	88	240	121	135	6...12	225	240	8.6	9.3
660	140	240	140	240	660	384	384	96	260	132	145	6...12	290	320	13	14
710	140	260	140	260	710	416	416	102	290	138	155	6...12	370	400	18.5	20

Table 1.1.1 a : Dimensions, weights and mass moments of inertia of Type A

1) Weights and mass moments of inertia apply to mean bores

Type B



Size	Bore D_1				d_a	d_2		w_1	l_1	u_1	S_1	Weight 1)		Mass moment of inertia 1)	
	Part 1		Part 4			Part						Part		Part	
	from	to	from	to		1	4					1	4	1	4
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg	kgm^2	kgm^2
58		19		24	58	–	40	8	20	20	2...4	0.22	0.23	0.0001	0.0001
68		24		28	68	–	50	8	20	20	2...4	0.31	0.32	0.0002	0.0001
80		30		38	80	–	68	10	30	30	2...4	0.79	0.72	0.0006	0.0006
95		42		42	95	76	76	12	35	30	2...4	1.2	1.4	0.0013	0.0014
110		48		48	110	86	86	14	40	34	2...4	1.9	2.0	0.0027	0.0028
125		55		55	125	100	100	18	50	36	2...4	2.9	3.3	0.005	0.0057
140		60		60	140	100	100	20	55	34	2...4	3.3	3.6	0.007	0.007
160		65		65	160	108	108	20	60	39	2...6	4.7	4.7	0.013	0.012
180		75		75	180	125	125	20	70	42	2...6	6.9	7.1	0.023	0.022
200		85		85	200	140	140	24	80	47	2...6	9.5	10.5	0.04	0.04
225		90		90	225	150	150	18	90	52	2...6	11.5	13	0.07	0.065
250	46	100	46	100	250	165	165	18	100	60	3...8	17.5	16.5	0.12	0.11
280	49	110	54	110	280	180	180	20	110	65	3...8	24	21	0.2	0.17

Table 1.1.1 b : Dimensions, weights and mass moments of inertia of Type B

1) Weights and mass moments of inertia apply to mean bores

1.1.2 Performance data

Note: For identification marking of the individual flexible elements, refer to section 5.

Flexible elements: 80 Shore A									
Size	Rated torque	Maximum torque	Fatigue torque	Speed	dynamic torsional stiffness $C_{T\,dyn}$				
	T_{KN}	T_{Kmax}	T_{KW}	n_{max}	$1xT_{KN}$	$0.75xT_{KN}$	$0.5xT_{KN}$	$0.25xT_{KN}$	$0xT_{KN}$
	Nm	Nm	Nm	1/min	Nm/rad	Nm/rad	Nm/rad	Nm/rad	Nm/rad
58	19	57	7.6	5000	1200	850	600	430	300
68	34	102	13.6	5000	1300	930	670	480	350
80	60	180	24	5000	2750	1950	1400	980	700
95	100	300	40	5000	4200	3100	2300	1700	1280
110	160	480	64	5000	5700	4200	3100	2250	1670
125	240	720	96	5000	16000	10000	6200	3800	2400
140	360	1080	144	4900	24000	15000	9600	6200	4000
160	560	1680	224	4250	49000	34000	23000	16000	11000
180	880	2640	352	3800	78000	51000	33000	21500	14000
200	1340	4020	536	3400	127000	80000	51000	32000	20500
225	2000	6000	800	3000	210000	136000	87000	56000	36000
250	2800	8400	1120	2750	290000	176000	107000	65000	40000
280	3900	11700	1560	2450	365000	233000	149000	94000	60000
315	5500	16500	2200	2150	840000	540000	340000	215000	138000
350	7700	23100	3080	1950	920000	590000	380000	245000	160000
400	10300	30900	4120	1700	1350000	840000	530000	335000	210000
440	13500	40500	5400	1550	1830000	1180000	760000	490000	315000
480	16600	49800	6640	1400	2000000	1300000	830000	530000	340000
520	21200	63600	8480	1300	2700000	1770000	1150000	740000	480000
560	29000	87000	11600	1200	3600000	2300000	1500000	960000	620000
610	38000	114000	15200	1100	5000000	3200000	2070000	1330000	850000
660	49000	147000	19600	1000	6800000	4350000	2800000	1800000	1150000
710	62000	186000	24800	950	9300000	6000000	3900000	2500000	1600000

damping coefficient Ψ = 1.1

Flexible elements: 60 Shore A									
Size	Rated torque	Maximum torque	Fatigue torque	Speed	dynamic torsional stiffness $C_{T\,dyn}$				
	T_{KN}	T_{Kmax}	T_{KW}	n_{max}	$1xT_{KN}$	$0.75xT_{KN}$	$0.5xT_{KN}$	$0.25xT_{KN}$	$0xT_{KN}$
	Nm	Nm	Nm	1/min	Nm/rad	Nm/rad	Nm/rad	Nm/rad	Nm/rad
58	11	35	4	5000	360	290	235	190	150
68	21	64	8	5000	400	325	260	210	175
80	37	113	15	5000	830	670	540	430	350
95	63	190	25	5000	1340	1110	920	760	640
110	100	300	40	5000	1800	1500	1200	1000	830
125	150	450	60	5000	4000	3000	2150	1600	1200
140	230	680	90	4900	6000	4600	3500	2600	2000
160	350	1060	140	4250	14000	11000	8800	7000	5500
180	550	1660	220	3800	20700	15700	12000	9200	7000
200	850	2530	337	3400	32200	24300	18000	13400	10200
225	1260	3780	504	3000	55000	41400	31500	24000	18000
250	1760	5300	705	2750	69000	50600	37000	27000	20000
280	2460	7400	980	2450	94000	71000	53000	39500	30000
315	3500	10500	1400	2150	216500	161500	121000	91000	69000
350	4850	14500	1940	1950	239000	181000	137000	104000	80000
400	6500	19500	2600	1700	336000	252000	189000	141000	105000
440	8500	25500	3400	1550	478000	362000	275000	208000	158000
480	10500	31400	4200	1400	525000	395000	298000	225000	170000
520	13300	40000	5300	1300	720000	548000	415000	314000	240000
560	18300	54800	7300	1200	936000	715000	541000	404000	310000
610	24000	71800	9600	1100	1297000	987000	747000	562000	425000
660	30900	92600	12350	1000	1759000	1334000	1010000	763000	575000
710	39000	117000	15600	950	2440000	1860000	1400000	1050000	800000

damping coefficient Ψ = 1.1

The performance data for Types A and B are valid for:

- max. 25 starts per hour
- daily operating cycle of up to 24 h
- operation within the specified alignment
- Operation in the temperature range -30 °C to +80 °C in the immediate vicinity of the coupling

Caution!

For sustained faultfree operation the coupling must be designed with a service factor f_1 in accordance with item 1.3 and appropriate to the application. In the event of a change in operating conditions (e.g. output, speed, starting frequency, changes to the prime mover and driven machine) the design must always be checked (see item 1.1.3).

1.1.3 Checking the selected coupling size

The following must apply to the coupling:

$T_{KN} \geq T_N \times f_1$

T_{KN} = rated coupling torque
T_N = rated system torque - rated drive torque acting on the coupling
f_1 = service factor in accordance with item 1.3

During starting or operation torque impulses up to 25 times per hour are permissible. The following applies:

$T_{Kmax} \geq T_{max}$

T_{Kmax} = maximum coupling torque
T_{max} = maximum system torque - peak drive torque acting on the coupling

The following must apply to the alternating torques occurring during operation:

$T_{KW} \geq T_W \times S_f \times f_1$

T_{KW} = fatigue torque load on the coupling
T_W = alternating torque load on the coupling
f_1 = service factor in accordance with item 1.3

$S_f = \sqrt{\frac{f_{Err}}{10Hz}}$ for $f_{Err} > 10$ Hz

$S_f = 1.0$ for $f_{Err} \leq 10$ Hz

f_{Err} = excitation frequency of the alternating torque load in Hz

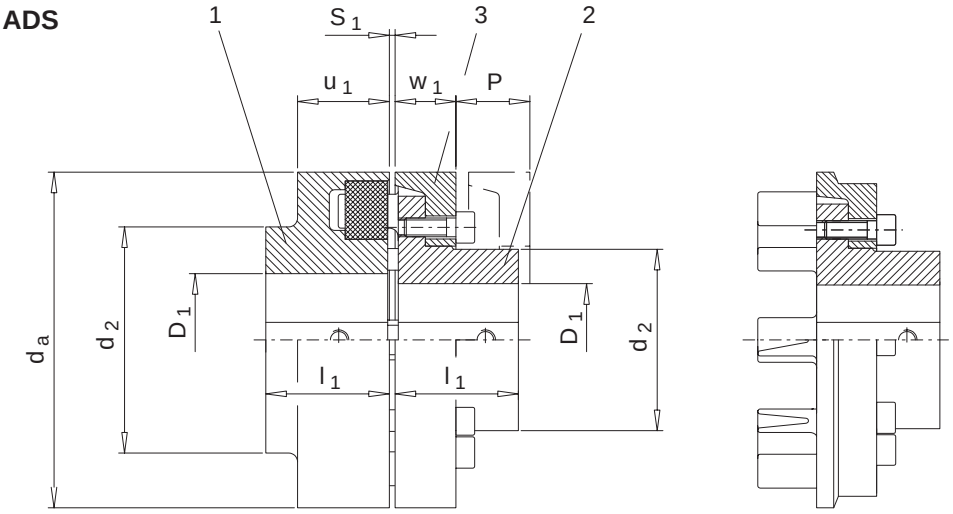
Caution! **When selecting the coupling, the permissible maximum speed and the permissible maximum bore must also be taken into consideration. Selection of bore fit in accordance with section 6. item 6.1.1.**

Caution! **The shaft displacement values specified in section 6, item 6.5.4, must not be exceeded.**

1.2 N-EUPEX-DS coupling, Types ADS and BDS

1.2.1 Geometric data

Type ADS



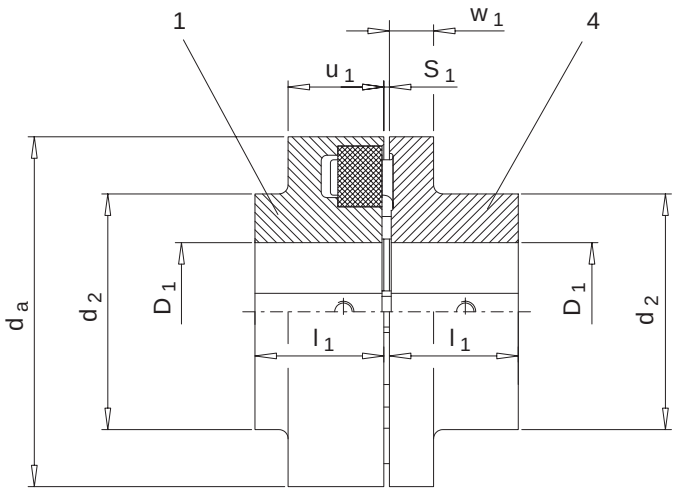
Sizes 118 to 380 Sizes 430 to 556

Size	Bore D_1				d_a	d_2		w_1	l_1	u_1	P	S_1	Weight 1) Part		Mass moment of inertia 1) Part	
	Part 1		Part 2			Part							1	2+3	1	2+3
	from	to	from	to		1	2									
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg	kgm^2	kgm^2
118		48		38	118	86	62	20	40	34	33	2.... 4	1.9	1.94	0.003	0.003
135		55		45	135	100	75	23	50	36	38	2.... 4	3.1	3.1	0.006	0.006
152		60		50	152	108	82	28	55	36	43	2.... 4	4.2	4.5	0.011	0.012
172		65		58	172	118	95	28	60	41	47	2.... 6	5.8	6	0.019	0.020
194		75		65	194	135	108	30	70	44	50	2.... 6	8.8	8.5	0.037	0.035
218		85		75	218	150	122	32	80	47	53	2.... 6	12	12	0.062	0.062
245		90		85	245	150	138	38	90	52	61	2.... 6	14.5	17.7	0.09	0.115
272	46	100	32	95	272	165	155	42	100	60	69	3.... 8	20	24.7	0.16	0.2
305	49	110	54	105	305	180	172	42	110	65	73	3.... 8	27	29.1	0.26	0.3
340	49	120	46 90	100 120	340	200	165 200	47	125	70	78	3.... 8	38	39.3 40.3	0.41 0.44	0.49 0.53
380	61	140	61 90	110 140	380	230	180 230	51	140	74	83	3.... 8	54	53.5 57.5	0.71 0.77	0.84 0.93
430	66	150	66 100	120 150	430	250	200 250	56	160	78	88	3.... 8	76	69 74	1.2 1.4	1.26 1.4
472	80	160	80 120	130 160	472	265	215 265	64	180	86	99	5...10	95	91 97	1.9 2.1	2 2.1
514	90	180	90 136	145 180	514	300	240 300	65	190	90	104	5...10	119	115 122	2.8 3.1	3 3.3
556	100	190	100 140	150 190	556	315	250 315	68	210	102	115	5...10	159	138 152	4.4 4.7	4.1 4.6

Table 1.2.1 a : Dimensions, weights and mass moments of inertia of Type ADS

1) Weights and mass moments of inertia apply to mean bores

Type BDS



Size	Bore D_1				d_a	d_2		w_1	l_1	u_1	S_1	Weight 1)		Mass moment of inertia 1)	
	Part 1		Part 4			Part						Part		Part	
	from	to	from	to		1	4					1	4	1	4
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg	kgm^2	kgm^2
66		19		24	66		40	8	20	20	2.... 4	0.24	0.31	0.0001	0.0002
76		24		28	76		50	8	20	20	2.... 4	0.33	0.42	0.0002	0.0003
88		30		38	88		68	10	30	30	2.... 4	1	0.92	0.0007	0.0006
103		42		42	103	76	76	12	35	30	2.... 4	1.6	1.5	0.0015	0.0014
118		48		48	118	86	86	14	40	34	2.... 4	1.9	2.1	0.003	0.0031
135		55		55	135	100	100	18	50	36	2.... 4	3.1	3.5	0.006	0.007
152		60		60	152	108	100	20	55	36	2.... 4	4.2	4.4	0.011	0.011
172		65		65	172	118	108	20	60	41	2.... 6	5.8	5.7	0.019	0.018
194		75		75	194	135	125	20	70	44	2.... 6	8.8	8.2	0.037	0.032
218		85		85	218	150	140	24	80	47	2.... 6	12	12.1	0.062	0.059
245		90		90	245	150	150	18	90	52	2.... 6	14.5	14.6	0.09	0.082
272	46	100	46	100	272	165	165	18	100	60	3.... 8	20	19.1	0.16	0.132
305	49	110	54	110	305	180	180	20	110	65	3.... 8	27	24.3	0.26	0.208

Table 1.2.1 b : Dimensions, weights and mass moments of inertia of Type BDS

1) Weights and mass moments of inertia apply to mean bores

1.2.2 Performance data

Size	Rated torque T_{KN} Nm	Maximum torque T_{Kmax} Nm	Fatigue torque T_{KW} Nm	Speed n_{max} 1/min	dynamic torsional stiffness $C_{T\,dyn}$ 1) Nm/rad
66	19	57	7.6	5000	–
76	34	102	13.6	5000	–
88	60	180	24	5000	5600
103	100	300	40	5000	9350
118	160	480	64	5000	15000
135	240	720	96	5000	22450
152	360	1080	144	4900	33650
172	560	1680	224	4250	52350
194	880	2640	352	3800	82250
218	1340	4020	536	3400	125250
245	2000	6000	800	3000	187000
272	2800	8400	1120	2750	114000
305	3900	11700	1560	2450	165000
340	5500	16500	2200	2150	239000
380	7700	23100	3080	1950	340000
430	10300	30900	4120	1700	460000
472	13500	40500	5400	1550	607000
514	16600	49800	6640	1400	750000
556	21200	63600	8480	1300	961000

damping coefficient Ψ = 1.1

1) The dynamic torsional stiffness applies at an ambient temperature of -30 °C to +40 °C

The performance data for the Types ADS and BDS are valid for:

- max. 25 starts per hour
- daily operating cycle of up to 24 h
- operation within the specified alignment
- Operation in the temperature range -30 °C to +80 °C in the immediate vicinity of the coupling

Caution!

For sustained faultfree operation the coupling must be designed with a service factor f_1 in accordance with item 1.3 and a temperature factor S_ϑ appropriate to the application. In the event of a change in operating conditions (e.g. output, speed, starting frequency, changes to the prime mover and driven machine) the design must always be checked (see item 1.2.3).

1.2.3 Checking the selected coupling size

The following must apply to the coupling:

$T_{KN} \geq T_N \times f_1 \times S_\vartheta$

T_{KN} = rated coupling torque
T_N = rated system torque - rated drive torque acting on the coupling
f_1 = service factor in accordance with item 1.3
S_ϑ = temperature factor

The highest temperature in the immediate vicinity of the coupling must be applied

T_U	from -30 °C to +40 °C	from +40 °C to +60 °C	from +60 °C to +80 °C
S_ϑ	1	1.4	1.8

Table 1.2.3: Temperature factor S_ϑ

During starting or operation torque impulses up to 25 times per hour are permissible. The following applies:

$T_{Kmax} \geq T_{max} \times S_\vartheta$

T_{Kmax} = maximum coupling torque
T_{max} = maximum system torque - peak drive torque acting on the coupling
S_ϑ = temperature factor

The following must apply to the alternating torques occurring during operation:

$T_{KW} \geq T_W \times S_f \times S_\vartheta \times f_1$

T_{KW} = fatigue torque load on the coupling
T_W = alternating torque load on the coupling
S_ϑ = temperature factor
f_1 = service factor in accordance with item 1.3

$S_f = \sqrt{\frac{f_{Err}}{10Hz}}$ for $f_{Err} > 10$ Hz

$S_f = 1.0$ for $f_{Err} \leq 10$ Hz

f_{Err} = excitation frequency of the alternating torque load in Hz

Caution! **When selecting the coupling, the permissible maximum speed and the permissible maximum bore must also be taken into consideration. Selection of bore fit in accordance with section 6. item 6.1.1.**

Caution! **The shaft displacement values specified in section 6, item 6.5.4, must not be exceeded.**

1.3 Determining the service factor

The service factors taken as basis are based on empirical values which generally estimate the output of in- and output combinations in service.

Service factor f_1 (daily operating cycle of up to 24 h)

Prime mover	Load characteristic of driven machine		
	G	M	S
Electric motors, Turbines, Hydraulic motors	1	1.25	1.75
Piston engines 4 - 6 cylinders Coefficient of cyclic variation up to 1 : 100 to 1 : 200	1.25	1.5	2
Piston engines 1 - 3 cylinders Coefficient of cyclic variation up to 1 : 100	1.5	2	2.5

Load characteristics of driven machines listed by area of application

Dredgers
- S Bucket-chain conveyors
- S Travelling gear (caterpillar)
- M Travelling gear (rails)
- M Manoeuvring winches
- M Lift pumps
- S Bucket wheels
- S Cutter heads
- M Slewing gear

Building machinery
- M Hoists
- M Concrete mixers
- M Road construction machinery

Chemical industry
- M Cooling drums
- M Mixers
- G Agitators (light liquids)
- M Agitators (semi-liquid material)
- M Drying drums
- G Centrifuges (light)
- M Centrifuges (heavy)

Mineral oil extraction
- M Pipeline pumps
- S Rotary drilling equipment

Conveyor systems
- M Hauling winches
- S Hoists
- M Link conveyors
- M Belt conveyors (bulk material)
- S Belt conveyors (piece goods)
- M Band pocket conveyors
- M Endless chain transporters
- M Rotary conveyors
- M Goods lifts
- G Bucket-type flour conveyors
- M Passenger lifts
- M Apron conveyors
- M Screw conveyors
- M Ballast elevators
- S Inclined hoists
- M Steel belt conveyors
- M Trough chain conveyors

Blowers, Ventilators
- G Rotary piston blowers $T_N \leq 75$ Nm
- M Rotary piston blowers $T_N \leq 750$ Nm
- S Rotary piston blowers $T_N > 750$ Nm
- G Blowers (axial/radial) $T_N \leq 75$ Nm
- M Blowers (axial/radial) $T_N \leq 750$ Nm
- S Blowers (axial/radial) $T_N > 750$ Nm
- G Cooling tower fans $T_N \leq 75$ Nm
- M Cooling tower fans $T_N \leq 750$ Nm
- S Cooling tower fans $T_N > 750$ Nm
- G Induced draught fans $T_N \leq 75$ Nm
- M Induced draught fans $T_N \leq 750$ Nm
- S Induced draught fans $T_N > 750$ Nm
- G Turbo blowers $T_N \leq 75$ Nm
- M Turbo blowers $T_N \leq 750$ Nm
- S Turbo blowers $T_N > 750$ Nm

Generators, transformers
- S Frequency transformers
- S Generators
- S Welding generators

Rubber processing machines
- S Extruders
- M Calenders
- S Pug mills
- M Mixers
- S Rolling mills

Wood working machines
- S Barkers
- M Planing machines
- G Wood working machines
- S Saw frames

Cranes
- G Luffing gear
- S Travelling gear
- S Hoisting gear
- M Slewing gear
- M Derricking jib gear

Plastics processing machines
- M Extruders
- M Calenders
- M Mixers
- M Crushers

Metal working machines
- M Sheet bending machines
- S Sheet straightening machines
- S Hammers
- S Planing machines
- S Presses
- M Shears
- S Forging presses
- S Punch presses
- G Countershafts, shaft trains
- M Machine tools, main drives
- G Machine tools, auxiliary drives

Food processing machines
- G Bottling and container filling machines
- M Kneading machines
- M Mash tubs, crystallizers
- G Packaging machines
- M Cane crushers
- M Cane knives
- S Cane mills
- M Sugar beet cutters
- M Sugar beet washing machines

Paper processing machines
- S Couches
- S Glazing cylinders
- S Pulpers
- S Pulp grinders
- S Calenders
- S Wet presses
- S Willows
- S Suction presses
- S Suction rolls
- S Drying cylinders

Pumps
- S Piston pumps
- G Centrifugal pumps (light liquids)
- M Centrifugal pumps (heavy liquids)
- S Plunger pumps
- S Pressure pumps

Stone and clay working machines
- S Crushers
- S Rotary kilns
- S Hammer mills
- S Ball mills
- S Tube mills
- S Beater mills
- S Brick presses

Textile machines
- M Batchers
- M Printing and dyeing machines
- M Tanning vats
- M Willows
- M Looms

Compressors
- S Piston compressors
- M Turbo compressors

Rolling mills
- S Sheet shears
- M Sheet tilters
- S Ingot pushers
- S Blooming and slabbing mills
- S Ingot conveying systems
- M Wire drawing benches
- S Descaling machines
- S Thin sheet mills
- S Heavy sheet mills
- M Winding machines (strip and wire)
- S Cold rolling mills
- M Chain transfers
- S Billet shears
- M Cooling beds
- M Cross transfers
- M Roller tables (light)
- S Roller tables (heavy)
- M Roller straighteners
- S Tube welding machines
- M Trimming shears
- S Cropping shears
- S Continuous casting plant
- M Roller adjustment drives
- S Shifting devices

Laundry machines
- M Tumble driers
- M Washing machines

Water treatment
- M Rotary aerators
- G Screw pumps

G = uniform load M = medium load S = heavy load

2. General notes

2.1 Introduction

These Operating Instructions (BA) are an integral part of the coupling delivery and must be kept in its vicinity for reference at all times.

Caution!

All persons involved in the installation, operation, maintenance and repair of the coupling must have read and understood these Operating Instructions and must comply with them at all times. We accept no responsibility for damage or disruption caused by disregard of these Instructions.

The **"Coupling"** described in these operating instructions has been developed for stationary use in general engineering applications. The coupling serves to transmit power and torque between two shafts or flanges connected by this coupling.

The coupling is designed only for the application described in section 1. "Technical data". Other operating conditions must be contractually agreed.

The coupling described in these Instructions reflects the state of technical development at the time these Instructions went to print.

In the interest of technical progress we reserve the right to make changes to the individual assemblies and accessories which we regard as necessary to preserve their essential characteristics and improve their efficiency and safety.

2.2 Copyright

Technical enquiries should be addressed to the following works

FLENDER AG
D 46393 Bocholt

Telefon: 02871/92-2868
Telefax: 02871/92-2579

or to one of our customer-service addresses. A list of our customer-service addresses is given in section 11. "Spare parts, customer-service addresses".

3. Safety notes

3.1 Proper use

- The coupling has been manufactured in accordance with the state of the art and is delivered in a condition for safe and reliable use. Any changes on the part of the user which may affect safety and reliability are prohibited. This applies equally to safety features designed to prevent accidental contact.
- The coupling must be used and operated strictly in accordance with the conditions laid down in the contract governing performance and supply.

3.2 Obligations of the user

- The operator must ensure that all persons involved in installation, operation, maintenance and repair have read and understood these Operating Instructions and comply with them at all times in order to:

  – avoid injury or damage,

  – ensure the safety and reliability of the coupling,

  and

  – avoid disruptions and environmental damage through incorrect use.

- During transport, assembly, installation, dismantling, operation and maintenance of the unit, the relevant safety and environmental regulations must be complied with at all times.
- The coupling must be operated, maintained or repaired only by authorised, duly trained and qualified personnel.
- All work must be carried out with great care and with due regard to safety.
- All work on the coupling must be carried out only when it is at a standstill.
  The drive unit must be secured against being switched on accidentally (e.g. by locking the key switch or removing the fuses from the power supply). A notice should be attached to the ON switch stating clearly that work is in progress.
- The coupling must be fitted with suitable safeguards to prevent accidental contact. The operation of the coupling must not be impaired by the safeguard.
- The drive unit must be shut down as soon as changes to the coupling are detected during operation.
- If the coupling is intended for installation in plant or equipment, the manufacturer of such plant or equipment must ensure that the contents of the present Operating Instructions are incorporated in his own instructions.
- All spare parts must be obtained from FLENDER.

3.3 Warnings and symbols used in these Instructions

This symbol indicates safety measures which must be observed to avoid **personal injury.**

Caution! This symbol indicates safety measures which must be observed to avoid **damaging the coupling.**

Note: This symbol indicates general **operating instructions** which are of particular importance.

4. Handling and storage

4.1 Scope of supply

The products supplied are listed in the despatch papers. Check immediately on receipt to ensure that all the products listed have actually been delivered. Parts damaged during transport or missing parts must be reported in writing immediately.

The parts must be provided with explosion protection marking in accordance with section 5.

4.2 Handling

When handling FLENDER products, use only lifting and handling equipment of sufficient load-bearing capacity!

Note: The coupling must be transported using suitable transport equipment only.

Different forms of packaging may be used depending on the size of the coupling and method of transport. Unless otherwise agreed, the packaging complies with the **HPE Packaging Guidelines.**

The symbols marked on the packaging must be observed at all times. These have the following meanings:

bild-transport

4.3 Storage of the coupling

4.3.1 Storage of the coupling parts

Unless otherwise expressly agreed, the coupling is delivered in a preserved condition and can be stored in a covered, dry place for up to 3 months. If the coupling is to be stored for a protracted period, it should be treated with a long-term preservative agent (FLENDER must be consulted).

Caution! **Before cleaning the coupling parts and applying the long-term preservative agent, the flexible elements (12) must be removed.**

4.3.2 Storing the flexible elements

4.3.2.1 General

Correctly stored flexible elements (12) retain their properties unchanged for up to five years. Unfavourable storage conditions and improper treatment will negatively affect the physical properties of the flexible elements (12). Such negative effects may be caused by e.g. the action of ozone, extreme temperatures, light, moisture, or solvents.

4.3.2.2 Storage area

The storage area must be dry and free from dust. The flexible elements (12) must not be stored with chemicals, solvents, motor fuels, acids, etc. Furthermore, they should be protected against light, in particular direct sunlight and bright artificial light with a high ultraviolet content.

Caution! **The storage areas must not contain any ozone-generating equipment, e.g. fluorescent light sources, mercury vapour lamps, high-voltage electrical equipment. Damp storage areas are unsuitable. Ensure that no condensation occurs. The most favourable atmospheric humidity is below 65 %.**

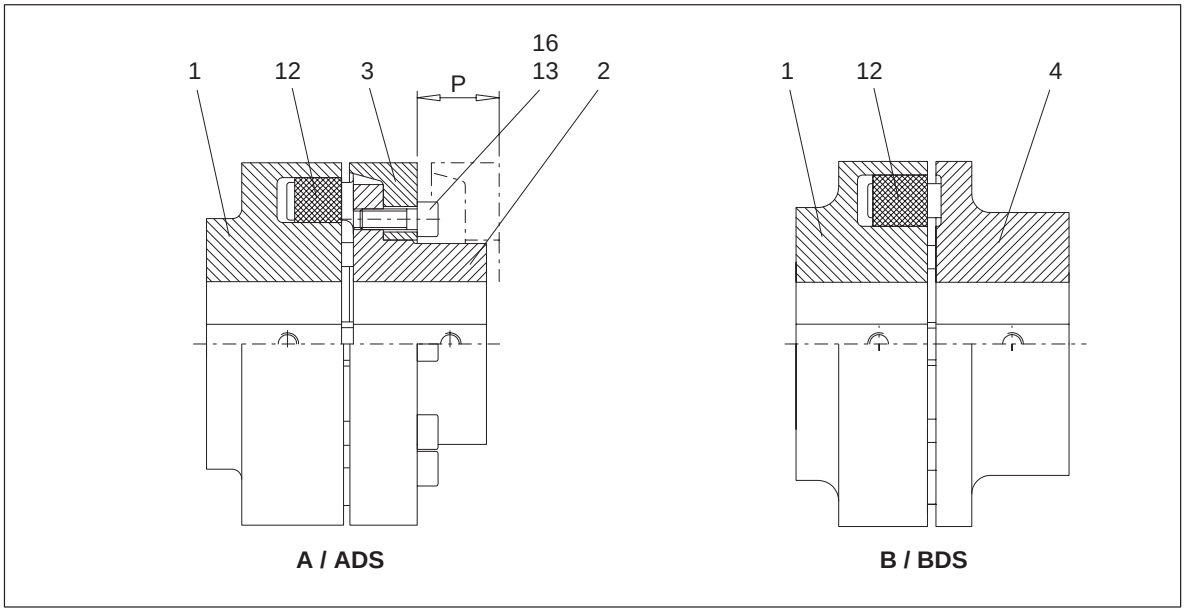
5. Technical description

5.1 General description

N-EUPEX couplings are torsionally flexible claw couplings. They are suitable for linking machines and can compensate for small shaft misalignment caused by manufacturing inaccuracies, heat expansion, and the like.

The N-EUPEX coupling Type A / ADS comprises the coupling part 1 with the inserted flexible elements (12), the cam part 3 and the coupling part 2 which is bolted to part 3. If dimension P in section 1 is taken into consideration, the screw connection of part 2/3 enables the machines to be connected to be disconnected without shifting them axially.
On Type A size 560 to 710 Part 2 and part 3 are additionally fastened with 2 parallel pins (16).

The N-EUPEX coupling Type B / BDS comprises the coupling part 1 with the inserted flexible elements (12) and the cam part 4.



Because of the form-fitting design of the metal parts, types A and B enable an ”emergency operation” even after the flexible elements have been irreparably damaged.
The flexible elements (12) are subjected primarily to pressure loads, so that the wear on the flexible elements (12) is relatively low with infrequent, substantial overload moments.

Where overload moments are excessively high, the result may be breakage of the coupling or irreparable damage to the connected machine.

On Types ADS and BDS there is no metal contact when the flexible elements (12) are irreparably damaged, and the metal parts are not of a form-fitting design. These coupling types have no ”emergency running capability” in the above described sense. The flexible elements (12) are subjected to shear and pressure loads, so that with substantial overload the flexible elements (12) are irreparably damaged and the torque transmission interrupted.

5.2 Flexible elements

As well as in standard hardness 80 Shore A, the H-shaped flexible elements (12) of Types A and B are also available in the softer 60 Shore A version.
This enables to move critical speeds of the drive train out of normal operating conditions.
When using these flexible elements (12), the reduction of the transmissible torque must be noted (see section 1. ”Technical Data”).
For reversing operation and drives with very high masses to accelerate and strong shock loads N-EUPEX couplings, Types A and B, may be fitted with higher flexible elements packs (12) with reduced torsional backlash.

The flexible elements (12) of Type ADS and BDS are available in 90 Shore A and 95 Shore A hardnesses.

The different flexible elements (12) are distinguished as follows:

Type	Size	Material	Hardness	Configuration	Identification marking
A, B	all sizes	Perbunan	80 Shore A	normal	blue stripe
	225 ... 480	Perbunan	60 Shore A	normal	green strip
	58 ... 200	Perbunan	80 Shore A	oversized	yellow stripe
	58 ... 200	Perbunan	60 Shore A	oversized	white stripe
ADS, BDS	all sizes	Polyurethan	90 Shore A	normal	blue flexible elements
	all sizes	Polyurethan	95 Shore A	normal	white flexible elements
	66 ... 272	Perbunan 2K	80/92 Shore A	normal	black flexible elements

Caution! **Only identical flexible elements (12) may be used in one coupling.**

6. Assembly

At the customer’s request FLENDER also delivers unbored or prebored coupling parts.

The necessary refinishing must be carried out in strict compliance with the following specifications and with particular care!

Caution! **Responsibility for carrying out the refinishing is borne by the orderer. FLENDER can accept no guarantee claims arising from unsatisfactory refinishing!**

6.1 Instructions for machining the finished bore, parallel keyway, axial retaining means, set screws and balancing

6.1.1 Finish bore

- Remove flexible elements
- Depreserve and, if necessary, clean coupling parts

Note manufacturer’s instructions for handling solvent.

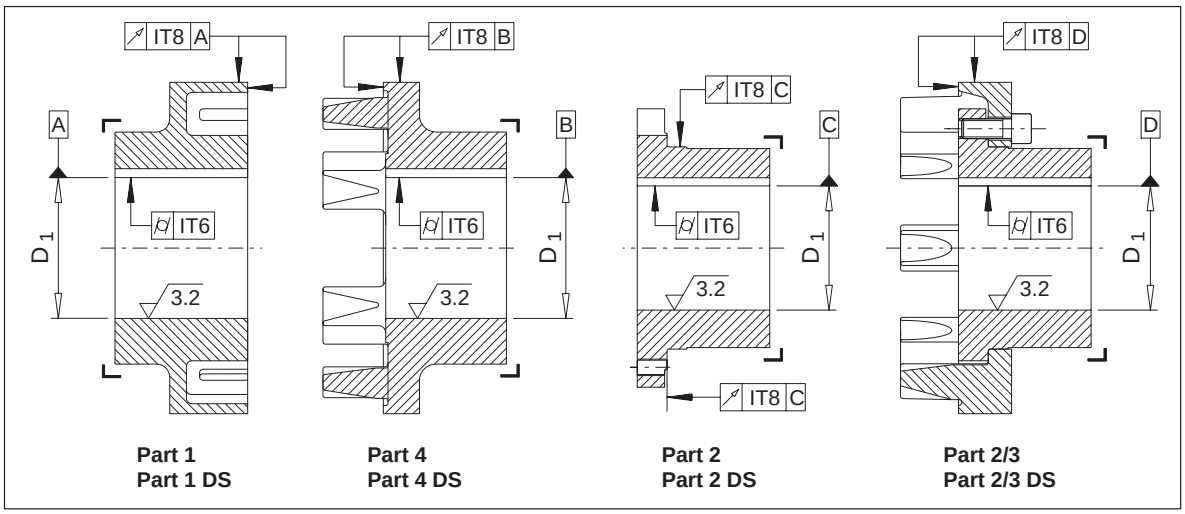
When machining the finished bore the parts must be carefully aligned. For the permissible radial and axial runout errors and the permissible cylindricity tolerances, refer to DIN ISO 286. The parts must be mounted on the marked faces (⌜).

In the case of part 2/3 and part 4 great caution is necessary owing to the rotating cams.

Caution!

The maximum permissible bore diameters (see section 1.) are designed for drive-type fastenings without taper action to DIN 6885/1 and must not under any circumstances be exceeded. The finish-machined bores must be 100% checked with suitable measuring equipment.

If other shaft - hub connections (e.g. taper or stepped bore, etc.) are to be used instead of the flanged sleeve connections provided for, FLENDER must be consulted.
Flanged sleeve connections with taper action are not permissible.



For drive by means of parallel keys the following fit pairs are prescribed for the bores:

Selection of fit	Bore D_1 over mm	Bore D_1 to mm	Shaft tolerances	Bore tolerances
Shaft tolerances to FLENDER standard		25	k6	H7
	25	100	m6	
	100		n6	
Shaft tolerances to DIN 748/1		50	k6	H7
	50		m6	
System standard shaft		50	h6	K7
	50			M7
	all		h8	N7

Table 6.1.1: Fit pairs

Caution!

The assigned fits must be adhered to in order, on the one hand, to keep the play in the shaft-hub connection as low as possible, depending on utilisation of the tolerance zones, or, on the other, to keep the hub tension arising from the oversize within the permissible load limit. Failure to adhere to the fits may impair the shaft-hub connection.
If the tolerance values of the shafts deviate from those in table 6.1.1 above, FLENDER must be consulted.

Failure to observe these instructions may result in breakage of the coupling. Danger from flying fragments!

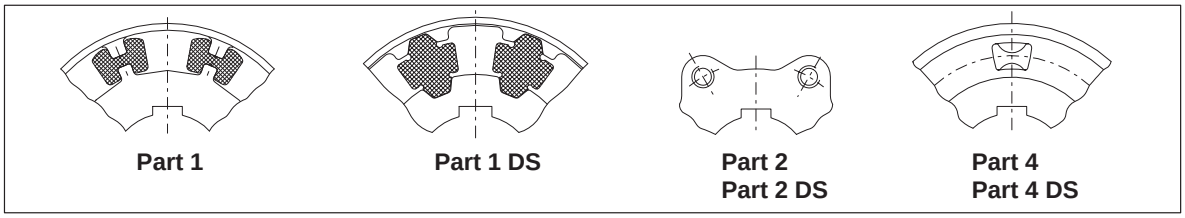
6.1.2 Parallel keyway

The parallel keyways must be designed in accordance with DIN 6885/1. If the keyway geometry deviates, FLENDER must be consulted. Taper keys or nose keys (gib headed keys) are not permissible.

The parallel keyways must be designed to suit the available parallel keys. For parallel keyways the tolerance zone of the hub keyway width **ISO JS 9** must be adhered to.

For **more difficult operating conditions** of the kind arising e.g. with reversing operation or operation with impulses the hub keyway tolerance zone **ISO P9** is specified.

Caution! **On part 1 the parallel keyway must be applied midway between the lands or pockets of the flexible elements, on part 2 midway between the through-holes and on part 4 below a cam.**



6.1.3 Axial securing device

A set screw or end plate must be provided to secure the coupling parts axially. If end plates are used, FLENDER must be consulted with regard to machining the recesses in the coupling parts.

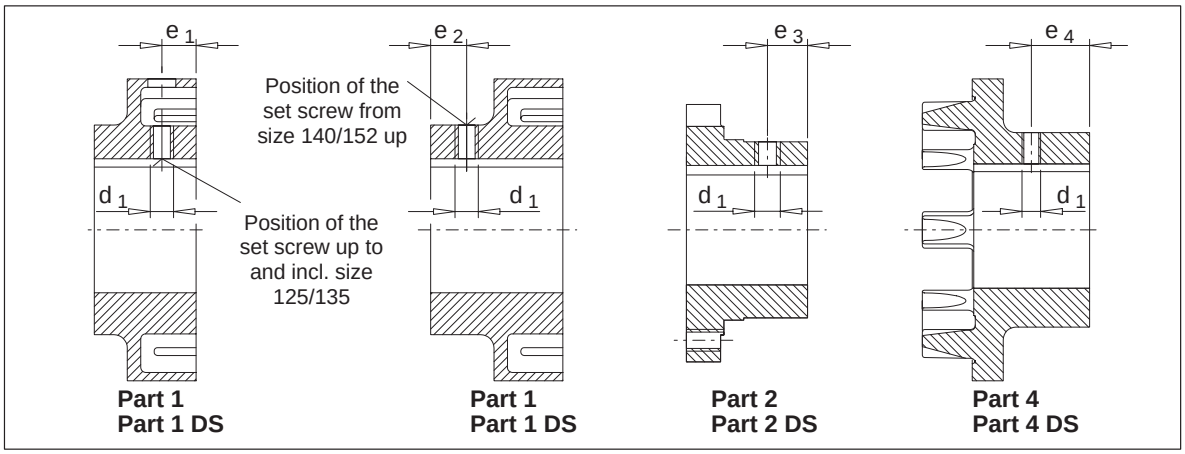
If the coupling part mounted on the shaft does not lie up against the shaft shoulder, we recommend using grooved spacer rings.

6.1.4 Set screws

Hexagon socket set screws with cup points to DIN 916 must be used for set screws.

The following guidelines must be observed!

⚠ **The length of the set screw must be selected so that it fills the tapped hole, but does not project from the hub ($L_{min} = d_1 \times 1.2$).**



Size	58	68	80	95	110	125	140	160	180	200	225	250	280	315	350	400	440	480	520	560	610	660	710
	66	76	88	103	118	135	152	172	194	218	245	272	305	340	380	430	472	514	556	–	–	–	–
d_1	M5	M6	M6	M6	M6	M8	M8	M10	M12	M12	M12	M16	M16	M16	M20	M20	M24	M24	M24	M24	M24	M24	M24
e_1	*10	*10	*11	*15	18	20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
e_2	–	–	–	–	–	–	13	13	16	20	22	24	28	35	40	50	60	70	80	75	85	100	115
e_3	–	–	–	–	*9	12	15	20	30	30	35	40	45	50	60	70	80	90	100	100	110	130	140
e_4	*8	*8	12	15	18	20	22	25	32	40	40	45	45	–	–	–	–	–	–	–	–	–	–
1)	3	4	4	4	4	8	8	15	25	25	25	70	70	70	130	130	230	230	230	230	230	230	230

Table 6.1.4: Set screw assignment and tightening torques of the set screws

1) Tightening torques of the set screws in Nm

*) Note following position of the set screw!

Caution! **The set screws must always be positioned on the keyway. An exception are the following coupling parts:**

Part 1: Size 58 / 66 : Bore $D_1 \geq$ 15 mm set screw displaced by 180° relative to the keyway.
Size 68 / 76 : Bore $D_1 \geq$ 20 mm set screw displaced by 144° relative to the keyway.
Size 80 / 88 : Bore $D_1 \geq$ 25 mm set screw displaced by 180° relative to the keyway.
Size 95 /103 : Bore $D_1 \geq$ 38 mm set screw displaced by 180° relative to the keyway.

Part 2: Size 110 /118 : Bore $D_1 \geq$ 30 mm set screw displaced by 180° relative to the keyway.

Part 4: Size 58 / 66 : Bore $D_1 \geq$ 18 mm set screw displaced by 180° relative to the keyway.
Size 68 / 76 : Bore $D_1 \geq$ 20 mm set screw displaced by 180° relative to the keyway.

6.1.5 Balancing

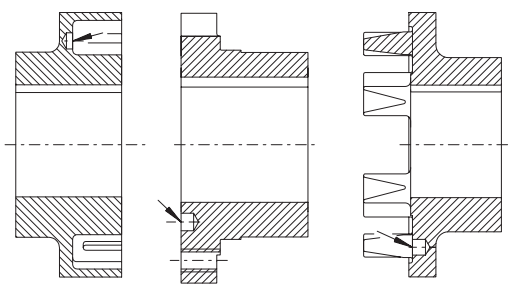
Prebored couplings or prebored coupling parts are delivered unbalanced. It is recommended that these parts are balanced to suit the application after finish-boring (see DIN ISO 1940 and DIN 740/2), but to min. balancing quality G16.

Balancing is normally done by drilling material away.

Caution! **On part 1 the material must be removed between the lands or pockets of the flexible elements without drilling right through the base and without damaging the pockets of the flexible elements.**
On part 4 the material must be removed from the end face between the cams. Sufficient space must be left between the balancing hole and the cam to avoid weakening the cam connection.

Since the coupling part 3, the cam part is always in a balanced condition, the coupling part 2 can be balanced individually or together with the fitted part 3.

Finish-bored couplings or coupling parts are balanced according to the customer's specifications.

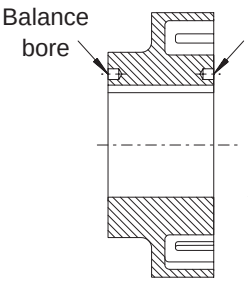


Part 1
Part 1 DS

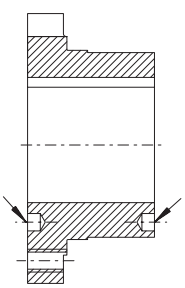
Part 2
Part 2 DS

Part 4
Part 4 DS

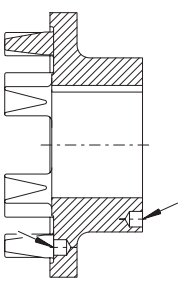
Arrangement of the balancing bore with one-level balancing



Part 1
Part 1 DS



Part 2
Part 2 DS



Part 4
Part 4 DS

Arrangement of the balancing bore with two-level balancing

6.2 General information on installation

During assembly, Section 3. ”Safety Instructions” must be observed.

Assembly and installation work must be done with great care by trained and qualified personnel.

As early as during the planning phase it must be ensured that sufficient space is available for installation and subsequent care and maintenance work.

Adequate lifting equipment must be available before beginning the installation and assembly work.

6.3 Mounting the coupling parts

Before beginning installation, the shaft ends and the coupling parts must be carefully cleaned. Before cleaning the coupling parts with solvent the flexible elements (12) must be removed.

Note manufacturer’s instructions for handling solvent.

Before fitting coupling part 2 the cam part 3 must be located on the shaft.

If necessary, heating the coupling parts (to max. +150 °C) will facilitate fitting. With temperatures over +80 °C the flexible elements (12) must be removed from the coupling parts before heating.

Take precautions to avoid burns from hot components!

Caution! **The coupling parts must be fitted with the aid of suitable equipment to avoid damaging the shaft bearings through axial joining forces.**
Always use suitable lifting equipment.

The shaft ends must not project from the inner sides of the hub. Axial securing is effected by means of the set screw or end plate.

Caution! **Tightening the set screws to a tightening torque in accordance with item 6.1.4.**

Failure to observe these instructions may result in breakage of the coupling.
Danger from flying fragments!

After fitting the coupling parts, the flexible elements (12), if previously removed, must be fitted. Previously heated coupling parts must have cooled down again to a temperature below +80 °C. It must be ensured that the flexible elements (12) are of identical size and have identical markings.

Move together the machines to be coupled.

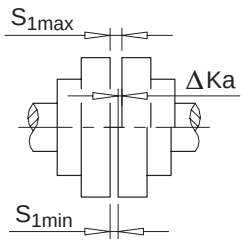
Danger of squeezing!

Dimension S_1 must be adhered to. On Types A and ADS the connection between parts 2 and 3 must be remade and the tightening torque of the screw connection to parts 2 and 3 checked before alignment (for tightening torques and gap dimension S_1, see item 6.6 and section 1.).

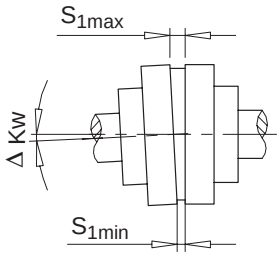
6.4 Alignment

The couplings pick up positional errors in the shaft ends to be connected up to the data shown in item 6.5.
When aligning, the radial and angular misalignment of the shaft ends must be kept as small as possible, because, other conditions being equal, this increases the service life of the flexible elements.

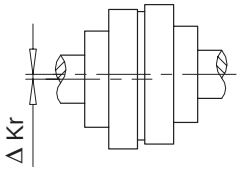
6.5 Possible misalignments



Axial misalignment
Figure 6.5.1



Angular misalignment
Figure 6.5.2



Radial misalignment
Figure 6.5.3

Misalignments of the coupling parts in relation to each other can be caused by inaccurate alignment during assembly, but also by actual operation of the equipment (expansion due to heat, shaft deflection, insufficiently rigid machine frames, etc.).

Caution! **The following maximum permissible misalignments must by no means be exceeded during operation.**

6.5.1 Axial misalignment

Axial misalignment ΔKa (Fig. 6.5.1) of the coupling parts relative to one another is possible within the "permissible error" for dimension S_1 (see section 1.).

6.5.2 Angular misalignment

The angular misalignment ΔKw (Fig. 6.5.2) can usefully be measured as the difference in the gap dimension ($\Delta S_1 = S_{1max} - S_{1min}$). For the permissible values for the difference in the gap dimension, refer to item 6.5.4.

If required, the permissible angular misalignment ΔKw can be calculated as follows:

$$\Delta Kw_{perm} \text{ in Rad} = \frac{\Delta S_{1\,perm}}{d_a}$$

$$\Delta Kw_{perm} \text{ in Degrees} = \frac{180}{\pi} \times \frac{\Delta S_{1\,perm}}{d_a}$$

$\Delta S_{1\,perm.}$ see item 6.5.4

for d_a, see section 1., item 1.1.1 or item 1.2.1

6.5.3 Radial misalignment

For the permissible radial misalignment $\Delta Kr_{perm.}$ (Fig. 6.5.3), - depending upon the operating speed -, refer to item 6.5.4.

6.5.4 Permissible shaft misalignment values for radial misalignment $\Delta Kr_{perm.}$ and difference in gap dimension ΔS_{1perm}

Values given in mm, rounded off

Type / Size		Coupling speed in 1/min								
A, B	ADS, BDS	250	500	750	1000	1500	2000	3000	4000	5000
58	66	0.4	0.3	0.25	0.2	0.2	0.15	0.15	0.1	0.1
68	76	0.4	0.3	0.25	0.2	0.2	0.15	0.15	0.1	0.1
80	88	0.4	0.3	0.25	0.2	0.2	0.15	0.15	0.1	0.1
95	103	0.5	0.35	0.25	0.25	0.2	0.2	0.15	0.1	0.1
110	118	0.5	0.35	0.3	0.25	0.2	0.2	0.15	0.1	0.1
125	135	0.5	0.4	0.3	0.25	0.25	0.2	0.15	0.15	0.1
140	152	0.6	0.4	0.35	0.3	0.25	0.2	0.2	0.15	
160	172	0.6	0.5	0.4	0.35	0.3	0.25	0.2	0.15	
180	194	0.6	0.5	0.4	0.35	0.3	0.25	0.2		
200	218	0.8	0.55	0.45	0.4	0.3	0.3	0.2		
225	245	0.8	0.55	0.5	0.4	0.35	0.3	0.25		
250	272	0.8	0.6	0.5	0.4	0.35	0.3			
280	305	1	0.7	0.6	0.5	0.4	0.35			
315	340	1	0.7	0.6	0.5	0.4	0.35			
350	380	1	0.8	0.6	0.6	0.5				
400	430	1.2	0.9	0.7	0.6	0.5				
440	472	1.3	1	0.7	0.7	0.6				
480	514	1.4	1	0.8	0.7					
520	556	1.5	1.1	0.9	0.8					
560		1.6	1.2	1	0.8					
610		1.8	1.3	1	0.9					
660		1.9	1.4	1.1	1					
710		2	1.5	1.2						

The numerical values of the table can be calculated as follows:

$$\Delta Kr_{perm} = \Delta S_{1\,perm} = \left(0.1 + \frac{d_a}{1000}\right) \times \frac{40}{\sqrt{n}}$$

Coupling speed n in 1/min

Coupling size designation d_a in mm (see section 1, item 1.1.1 or item 1.2.1)

Radial misalignment Kr_{perm} in mm

Caution! **Angular and radial misalignment may occur simultaneously.**

6.6 Tightening torques

N-EUPEX Coupling	**N-EUPEX-DS Coupling**	Tightening torque T_A and spanner size S_W for hexagon socket screws to DIN EN ISO 4762	
		T_A	**S_W**
Size	**Size**	Nm	mm
110	**118**	14	6
125	**135**	17.5	6
140	**152**	29	8
160	**172**	35	8
180	**194**	44	8

200	**218**	67.5	10
225	**245**	86	10
250	**272**	145	14
280	**305**	185	14
315	**340**	200	14
350	**380**	260	17
400	**430**	340	17
440	**472**	410	17
480	**514**	550	19
520	**556**	670	19
560		710	19
610		1450	22
660		1450	22
710		1450	22

Table 6.6: Tightening torques for part 13 of Types A and ADS

Note: Tightening torques apply to screws with untreated surfaces which are not or only lightly oiled (coefficient of friction $\mu = 0.14$). The use of lubricant paint or the like, which affects the coefficient of friction μ, is not permitted.

Note: The tightening torques of the set screws are specified in item 6.1.4.

7. Start-up

7.1 Procedure before start-up

Before starting up check the flexible elements (12) for correct seating, i.e. the flexible elements (12) must sit flush with the end face of the hub, and the set screws for tightness, check and, if necessary, adjust the alignment and the gap dimension S_1 and check all screw connections for the specified tightening torques (see section 6.).

Then fit the coupling guard to prevent unintentional contact.

8. Operation

8.1 General operating data

During operation of the coupling watch for:

– changes in running noise

– sudden shocks

Caution!

If any irregularities are noticed during operation, switch the drive assembly off at once. Determine the cause of the fault, using the table in section 9.
This table contains a list of possible faults, their causes and suggested remedies.
If the cause cannot be identified or the unit repaired with the facilities available, you are advised to contact one of our customer-service offices for specialist assistance (see section 11.).

9. Faults, causes and remedy

9.1 General

The following irregularities can serve as a guide for fault tracing.

Where the system is a complex one, all the other component units must be included when tracing faults.

The coupling must run with little noise and without vibration in all operating phases. Irregular behaviour must be treated as a fault requiring immediate remedy.

Caution!

FLENDER will not be bound by the terms of the guarantee or otherwise be responsible in cases of improper use of the coupling, modifications carried out without FLENDER's agreement, or use of spare parts not supplied by FLENDER.

When remedying faults and malfunctions, the coupling must always be taken out of service.
Secure the drive unit to prevent it from being started up unintentionally.
Attach a warning notice to the start switch.

9.2 Possible faults

Malfunctions	Causes	Remedy
Sudden changes in the noise level and/or sudden vibrations	Change of alignment	take the system out of service if necessary, rectify causes of alignment change (e.g. tighten loose foundation bolts) Check and, if necessary, adjust alignment (see section 6). Wear check, procedure as described in section 10
	Flexible elements (12) worn	take the system out of service Demount coupling and remove remains of flexible elements (12) Check and replace damaged coupling parts Flexible elements (12) must be changed in sets; use only identical N-EUPEX flexible elements (12) Assembly of coupling according to section 6. and section 7.

Table 9.2: Possible faults

9.3 Incorrect use

Experience has shown that the following faults can result in incorrect use of the N-EUPEX coupling. In addition to observing the other instructions in this BA, care must therefore be taken to avoid these faults.

Failure to observe these instructions may result in breakage of the coupling. Danger from flying fragments!

Caution! **Incorrect use of the N-EUPEX coupling may result in damage to the coupling.**

Caution! **Coupling damage may result in stoppage of the drive and the entire system.**

9.3.1 Possible faults when selecting the coupling or coupling size

- Important information for describing the drive and the environment will not be communicated to others
- System torque too high
- System speed too high
- Application factor not correctly selected
- Chemically aggressive environment not taken into consideration
- The ambient temperature is not permissible. See also section 1.
- Finished bore with impermissible diameter (see section 1) and/or impermissible fit classification (see section 6.)
- The transmission capacity of the shaft-hub connection is not appropriate to the operating conditions

9.3.2 Possible faults when installing the coupling

- Components with transport or other damage are being fitted
- When mounting coupling parts in a heated condition, already mounted N-EUPEX flexible elements (12) are being excessively heated
- The shaft diameter is outside the specified tolerance range
- Coupling parts are being interchanged, i.e. their assignment to the specified shaft is incorrect
- Prescribed tightening torques are not being adhered to
- Alignment or shaft misalignment values do not match the operating instructions
- The coupled machines are not correctly fastened to the foundation, so a shifting of the machines e.g. through loosening of the foundation screw connection is causing excessive displacement of the coupling parts
- N-EUPEX flexible elements (12) are being omitted or incorrectly positioned
- Operating instructions are being changed without authorisation

9.3.3 Possible faults in maintenance

- Maintenance intervals are not being adhered to
- Original FLENDER N-EUPEX flexible elements (12) are not being used
- Old or damaged N-EUPEX flexible elements (12) are being used
- Different N-EUPEX flexible elements (12) are being used (see section 5.)
- Leakage in the vicinity of the coupling is not being identified and as a result chemically aggressive media are damaging the coupling

10. Maintenance and repair

All work on the coupling must be carried out only when it is at a standstill. The drive unit must be secured against being switched on accidentally (e.g. by locking the key switch or removing the fuses from the power supply). A notice should be attached to the ON switch stating clearly that work is in progress.

10.1 Maintenance interval

On Types A and B the torsional backlash between the two coupling parts must be checked after three months, then at least once a year.
In the case of types ADS and BDS checking the torsional backlash at regular intervals is recommended in terms of preventive maintenance.

If an increased coupling backlash does not impair the operation of the coupling, the flexible elements (12) can continue to be used up to a specified wear limit before being replaced. To assess wear, the permitted circumferential backlash, converted to the chord dimension ΔS_V on the outer coupling diameter, is shown in table 10.1a. and table 10.1b. To obtain the dimension ΔS_V, one coupling part is rotated without torque as far as the stop and a mark applied to a coupling part (see Fig. 10.1). If the coupling part is rotated in the opposite direction of rotation as far as the stop, the marks move apart. The distance between the marks is the chord dimension ΔS_V. If the dimension ΔS_V exceeds the value in table 10.1a or table 10.1b, the flexible elements (12) must be replaced.

Caution! **The flexible elements (12) must be replaced in sets.**
Only identically marked flexible elements (12) must be used.

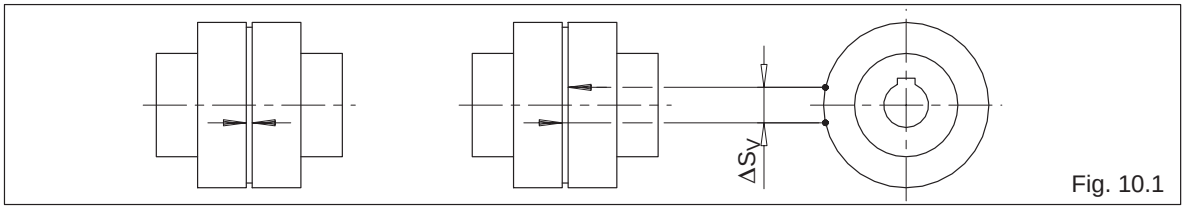


Fig. 10.1

Size	58	68	80	95	110	125	140	160	180	200	225	250	280	315	350	400	440	480	520	560	610	660	710
Wear mark ΔS_V (mm)	5.5	5.5	5.0	6.0	7.0	8.0	8.0	8.0	8.0	8.5	9.0	10.0	11.5	10.5	11.5	13.0	14.0	15.5	17.5	17.5	19.5	21.0	22.5

Table 10.1 a: Wear mark of N-EUPEX coupling

Size	66	76	88	103	118	135	152	172	194	218	245	272	305	340	380	430	472	514	556
Wear mark ΔS_V (mm)	6.0	7.0	5.0	7.0	9.0	10.5	11.5	9.0	8.0	7.0	6.5	7.0	8.0	6.5	7.0	10.0	12.0	14.0	16.0

Table 10.1 b : Wear mark of the N-EUPEX-DS coupling

10.2 Replacement of wearing parts

Only **original N-EUPEX flexible elements** must be used for replacement to guarantee troublefree torque transmission and faultfree operation.

Note: Replacement of the flexible elements (12) is possible without shifting the coupled machines only on Types A and ADS.

After releasing the connection of parts 2 and 3, part 3 is shifted axially. The flexible elements (12) will then be made freely accessible by rotating part 2. To facilitate the release of part 3, on sizes 225 - 430 forcing-off threads are provided in part 1. From size 440 up the forcing-off threads are located in part 3 (see Figures 10.2 a and 10.2 b).


Fig. 10.2 a

Fig. 10.2 b

For re-assembly, the instructions in section 6. ”Assembly” and section 7. ”Start-up” must be carefully observed.

11. Spare parts, customer-service addresses

By stocking the most important spare and wearing parts on site, you can ensure that the coupling is ready for use at any time.

When ordering spare parts, always state the following:

– Original order no.

– Part no. (see item 11.1)

– Specification / size (the size designation corresponds to the outside diameter da in mm)

– Quantity

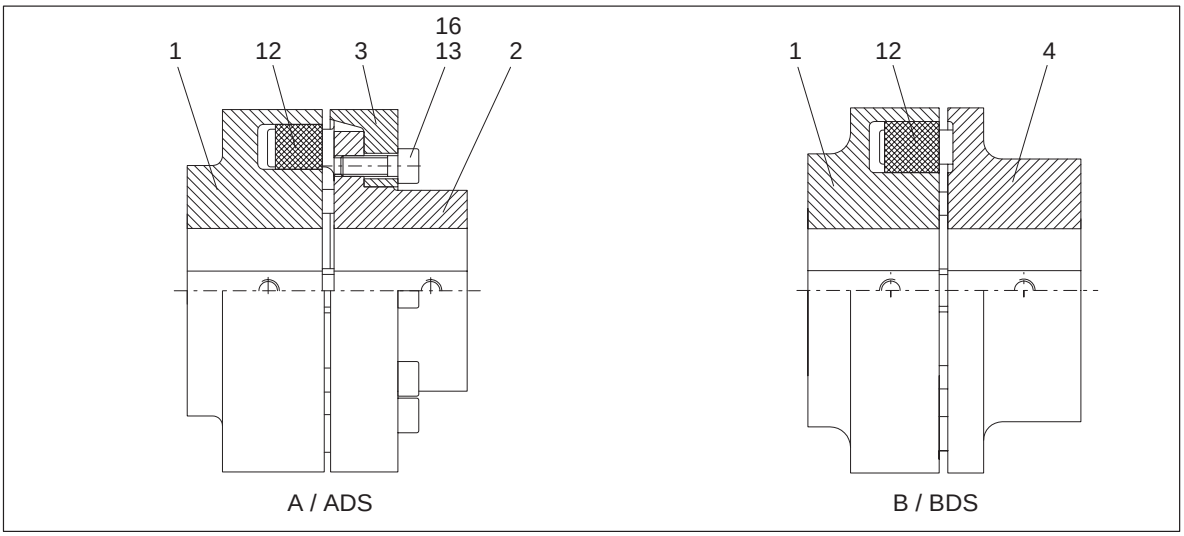
We guarantee only the original spare parts supplied by us.

Caution!

Please note that spare parts and accessories not supplied by us have not been tested or approved by us. The installation or use of such products may therefore impair essential characteristics of the coupling under certain circumstances and so pose an active or passive hazard. FLENDER will assume no liability or guarantee for damage caused by spare parts and accessories not supplied by FLENDER.

Please note that certain components often have special production and supply specifications and that we supply you with spare parts which comply fully with the current state of technical development as well as current legislation.

11.1 Spare parts list



Spare parts Type A, ADS		Spare parts Type B, BDS	
Part no.	Description	Part no.	Description
1	Part 1	1	Part 1
2	Part 2	4	Part 4
3	Part 3	12	Flexible elements
12	Flexible elements		
13	Cheese head screw		
16	Parallel pin only on Type A Size 560 to 710		

Table 11.1: Spare parts list, Types A, ADS, B and BDS

11.2 Spare-part and customer service addresses

When ordering spare parts or requesting the services of our specialist engineers, please apply first to FLENDER AG.

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12. Declaration by the manufacturer

Declaration by the manufacturer

in accordance with EC Engineering Guideline 98/37/EC, Appendix II B

We hereby declare that the

Flexible **N-EUPEX** and **N-EUPEX-DS** couplings
Types **A, B** and **ADS, BDS**

described in these Operating Instructions are intended for incorporation in a machine, and that it is prohibited to put them into service before verifying that the machine into which they are incorporated complies with the EC Guidelines (original edition 98/37/EC including any subsequent amendments thereto).

This Manufacturer's Declaration takes into account all the unified standards (inasmuch as they apply to our products) published by the European Commission in the Official Journal of the European Community.

Bocholt, 2003-07-10

Signature (person responible for products)