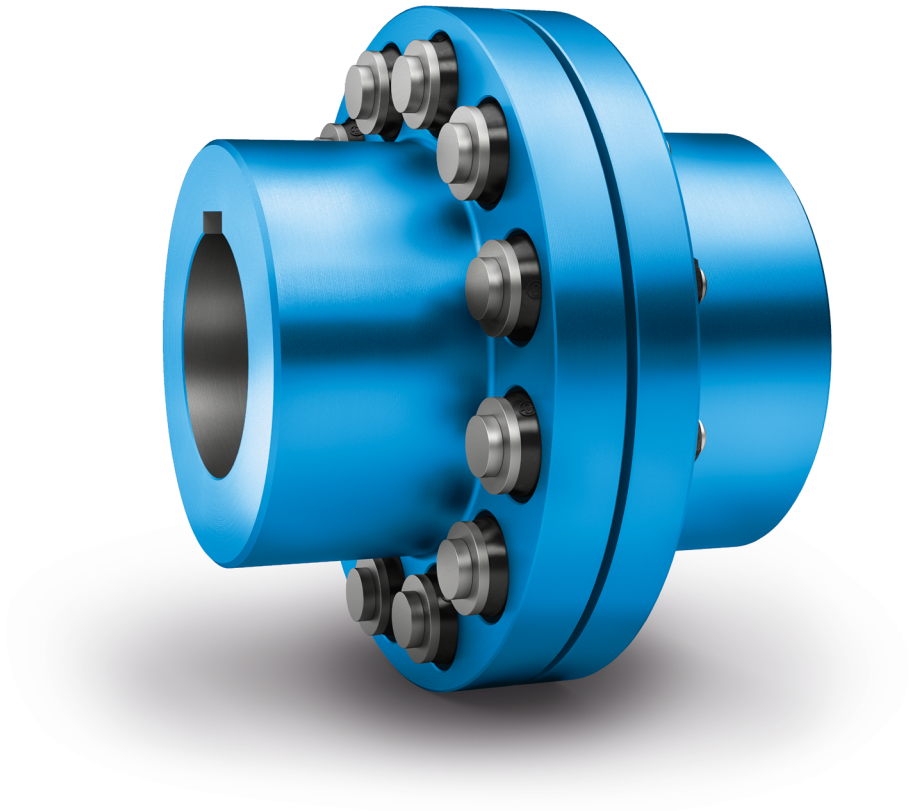
JENS S.



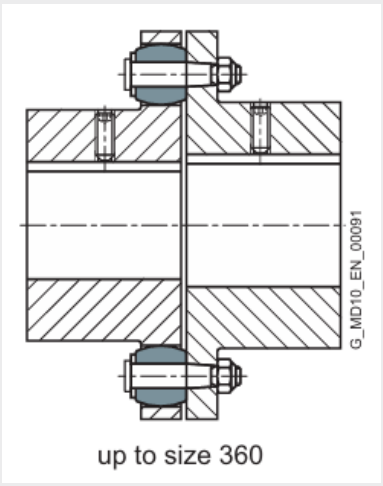
RUPEX

A pin and bush coupling - robust and proven a million times

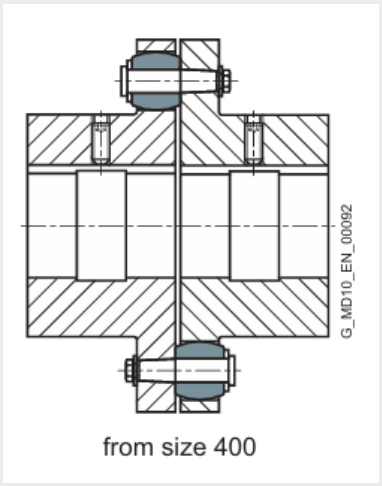
RUPEX pin and bush couplings link machine shafts and compensate for shaft misalignment with weak restorative forces. The torque is conducted through elastomer buffers, so the coupling has typically flexible rubber properties.

RUPEX couplings can also hold loads when overloaded and are therefore especially suitable for drives for special safety and reliability requirements. Torque shock loads and changing loads are no problem for robust, compact flexible RUPEX couplings. The steel variant is also especially suitable for high-speed drives.

RUPEX couplings are available as a catalog standard in 26 sizes with a rated torque of between 200 Nm and 1690000 Nm. The coupling is suitable for use at ambient temperatures between -50 °C and +80 °C. By using alternative elastomer buffers, the permissible ambient temperature range can be extended to between -60 °C and +100 °C.



Type RWN/RWS - alternate-sided arrangement of pins and buffers



Type RWN/RWS - one-sided arrangement of pins and buffers

Benefits

- Compact design; Low weights and mass moments of inertia
- Independent of direction of rotation (suitable for reversing operation)
- Suitable for plug-in assembly (blind assembly, bell housing installation)
- Suitable for use in potentially explosive environments; Certified according to 2014/34/EU (ATEX)

Technical specifications

ATEX



Coupling suitable for use in potentially explosive atmospheres. Complies with the current ATEX Directive for:

II 2G Ex h IIC T6 ... T4 Gb X

II 2D Ex h IIIC T85 °C ... 110 °C Db X

I M2 Ex h Mb X

Coupling selection

Application factor F_B				
Torque characteristic of the driving machine	**Torque characteristic of the driven machine**			
	uniform	**uniform with moderate shock loads**	**non uniform**	**very rough**
uniform	1,0	1,25	1,5	1,75
uniform with moderate shock loads	1,25	1,5	1,75	2,0
non uniform	1,5	1,75	2,0	2,5

Examples of torque characteristic of driving machines:

- uniform: Electric motors with soft starting, steam turbines
- uniform with moderate shock loads: Electric motors without soft starting, hydraulic motors, gas and water turbines
- non uniform: Internal-combustion engines

Examples of torque characteristic in driven machines:

- uniform: Generators, centrifugal pumps for light fluids
- uniform with moderate shock loads: Centrifugal pumps for viscous fluids, elevators, machine tool drives, centrifuges, extruders, blowers, crane drives
- non uniform: Excavators, kneaders, conveyor systems, presses, mills
- very rough: Crushers, excavators, shredders, iron/smelting machinery

Technical specifications

Temperature factor F_T									
Coupling	Elastomer material	Low temperature °C	Coupling temperature °C						
			under -30	-30 up to 50	up to 60	up to 70	up to 80	up to 90	up to 100
RUPEX	NBR	-50	1,0	1,0	1,0	1,0	1,0	-	-
RUPEX	NR	-60	1,0	1,0	-	-	-	-	-
RUPEX	HNBR	-10	-	1,0	1,0	1,0	1,0	1,25	1,25

NR = natural rubber, natural-synthetic rubber mixture
NBR = nitril-butadiene-rubber (Perbunan)
HNBR= hydrated acrylonitrile butadiene rubber

Coupling size $T_{KN} \geq T_N \bullet F_B \bullet F_T$

TKmax $\geq T_{Ma}x \bullet F_T$

- T_{KN} : Rated coupling torque
- T_N : Rated torque as nominal load on the coupling
- T_{Kmax} : Torque which can be frequently transmitted (up to 25 time an hour) as maximum torque by the coupling
- T_{Max} : Maximum torque applied to the coupling
- F_B : Service factor
- F_T : Temperature factor

Buffer material

Material/description	Hardness	Marking	Ambient temperature
NBR standard type	80 ShoreA	Buffer black	-50 °C ... +80 °C
NBR electrically insulating	80 ShoreA	Buffer green	-30 °C ... +80 °C
NBR soft	65 ShoreA	Buffer black with green dot	-50 °C ... +80 °C
NBR hard	90 ShoreA	Buffer black with magenta dot	-50 °C ... +80 °C
NR for low temperature	80 ShoreA	Buffer black with white dot	-60 °C ... +50 °C
HNBR high temperature	80 ShoreA	Buffer black with red dot	-10 °C ... +100 °C

Technical specifications

Power Ratings

Power ratings										
Size	Rated torque for buffer type		Maximum torque for buffer type		Torsional stiffness at 50% capacity utilization for buffer type			Assembly gap dimension ΔS, mm	Permitted shaft misalignment at 1500 rpm	
	65 ShoreA [T_{KN}] Nm	80/90 ShoreA [T_{KN}] Nm	65 ShoreA [T_{Kmax}] Nm	80/90 ShoreA [T_{Kmax}] Nm	65 ShoreA [$C_{Tdyn\ 50\ \%}$] kNm/rad	80 ShoreA [$C_{Tdyn\ 50\ \%}$] kNm/rad	90 ShoreA [$C_{Tdyn\ 50\ \%}$] kNm/rad		Radial ΔK_r mm	Angle ΔK_v °
105	120	200	360	600	5	13	21	1	0,21	0,12
125	210	350	630	1050	9	25	37	1	0,23	0,11
144	300	500	900	1500	15	43	64	1	0,25	0,1
162	450	750	1350	2250	20	55	83	1,5	0,27	0,1
178	570	950	1710	2850	31	85	130	1,5	0,29	0,09
198	780	1300	2340	3900	43	123	187	1,5	0,3	0,09
228	1300	2200	3900	6600	65	184	270	1,5	0,34	0,09
252	1650	2750	4950	8250	92	256	380	1,5	0,36	0,08
285	2600	4300	7800	12900	141	390	560	1,5	0,4	0,08
320	3300	5500	9900	16500	195	540	790	1,5	0,43	0,08
360	4700	7800	14100	23400	276	610	940	1,5	0,48	0,08
400	7500	12500	22500	37500	410	1130	1710	1,5	0,52	0,07
450	11000	18500	33000	55500	570	1600	2380	1,5	0,57	0,07
500	15000	25000	45000	75000	860	2350	3600	1,5	0,62	0,07
560	23500	39000	70500	117000	1130	3070	4700	2	0,68	0,07
630	31000	52000	93000	156000	1640	4600	7400	2	0,75	0,07
710	50000	84000	150000	252000	2560	7200	10900	2	0,84	0,07
800	66000	110000	198000	330000	3900	10700	16700	2	0,93	0,07
900	90000	150000	270000	450000	5200	14300	22500	2,5	1,03	0,07
1000	115000	195000	345000	585000	7700	21300	33000	2,5	1,14	0,07
1120	160000	270000	480000	810000	9800	27300	44000	2,5	1,26	0,06
1250	205000	345000	615000	1035000	14000	39000	62000	2,5	1,39	0,06
1400	320000	530000	960000	1590000	22800	62000	97000	3	1,55	0,06
1600	450000	750000	1350000	2250000	37000	103000	160000	3	1,76	0,06
1800	585000	975000	1755000	2925000	48000	133000	208000	4	1,96	0,06
2000	780000	1300000	2340000	3900000	73000	201000	314000	4	2,17	0,06

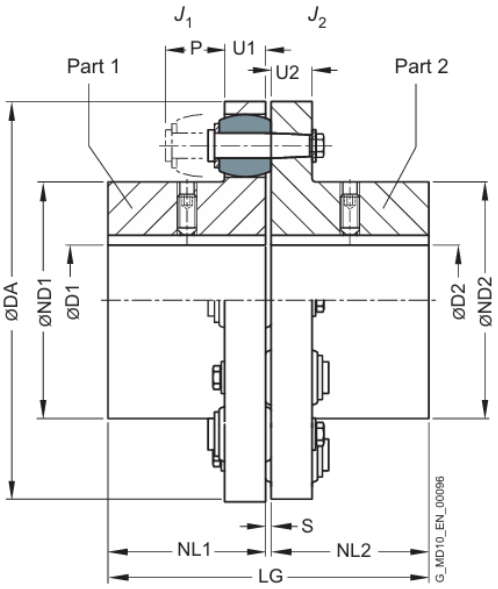
Permitted shaft misalignment
The permitted shaft misalignment depends on the operating speed. As the speed increases, lower shaft misalignment values are permitted. The correction factors for different speeds are specified in the following table. The maximum speed for the respective coupling size and type must be noted!

$\Delta K_{perm} = \Delta K_{1500} \cdot FKV$

	Speed in rpm			
	500	1000	1500	3000
Correction factor FKV	1,7	1,2	1,0	0,7

Type RWN

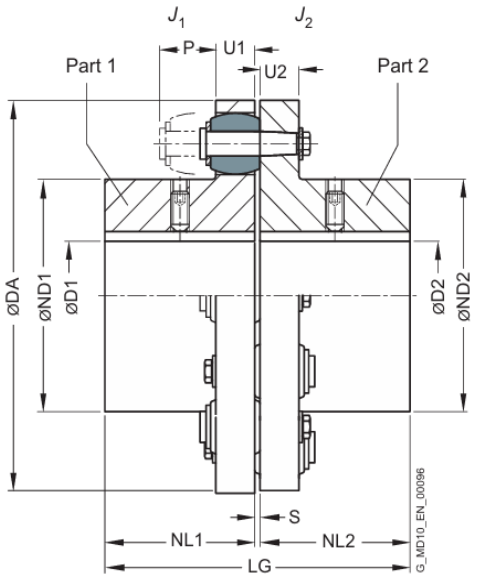
Hub material cast iron



Size	Rated torque T_{KN} buffer 80 Shore A [Nm]	Speed n_{Kmax} [rpm]	Bore D1 min [mm]	Bore D1 max [mm]	Bore D2 min [mm]	Bore D2 max [mm]	DA [mm]	ND1 [mm]	ND2 [mm]	NL1/ NL2 [mm]	S [mm]	U1 [mm]	U2 [mm]	P [mm]	LG [mm]	J1 [kgm²]	J2 [kgm²]	Weight [kg]
105	200	7000		35		42	105	53	59	45	3	13	12	30	93	0,00	0,00	1,9
125	350	6000		42		48	125	65	68	50	3	16	15	35	103	0,00	0,00	3,2
144	500	5250		48		60	144	76	84	55	3	16	15	35	113	0,00	0,01	4,5
162	750	4650		55		65	162	85	92	60	3,5	20	18	40	123,5	0,01	0,01	6,5
178	950	4200		70		75	178	102	108	70	3,5	20	18	40	143,5	0,01	0,02	8,6
198	1300	3750		80		90	198	120	128	80	3,5	20	18	40	163,5	0,02	0,03	12
228	2200	3300		90		95	228	129	140	90	3,5	26	24	50	183,5	0,04	0,07	18
252	2750	3000		100		110	252	150	160	100	3,5	26	24	50	203,5	0,07	0,11	24
285	4300	2650	48	110	48	120	285	164	175	110	4,5	32	30	60	224,5	0,12	0,21	36
320	5500	2350	55	120	55	130	320	180	192	125	4,5	32	30	60	254,5	0,21	0,34	48
360	7800	2100	65	130	65	140	360	200	210	140	4,5	42	42	75	284,5	0,39	0,69	74
400	12500	2050	75	150	75	150	400	230	230	160	4,5	42	42	75	324,5	0,85	0,85	99
450	18500	1800	85	170	85	170	450	260	260	180	5,5	52	52	90	365,5	1,6	1,6	146
500	25000	1600	95	190	95	190	500	290	290	200	5,5	52	52	90	405,5	2,6	2,6	192
560	39000	1500	100	140	100	140	560	250	250	220	6	68	68	120	446	4,5	4,5	275
			140	180	140	180	560	300	300							4,9	4,9	290
			180	200	180	200	560	320	320							5	5	292
630	52000	1280	100	140	100	140	630	250	250	240	6	68	68	120	486	7,1	7,1	345
			140	180	140	180	630	300	300							7,5	7,5	363
			180	220	180	220	630	355	355							8,2	8,2	389
710	84000	1150	110	160	110	160	710	290	290	260	7	80	80	140	527	13	13	504
			160	200	160	200	710	330	330							14	14	512
			200	240	200	240	710	385	385							15	15	540
800	110000	1000	125	180	125	180	800	320,00	320,00	290	7	80	80	140	587	22	22	660
			180	220	180	220										22	22	670
			220	260	220	260										24	24	720
900	150000	900	140	220	140	220	900	360	360	320	7,5	90	90	160	648	39	39	900
			220	260	220	260										41	41	960
			260	290	260	290										42	42	1000
1000	195000	810	150	240	150	240	1000	395	395	350	7,5	90	90	160	708	59	59	1150
			240	280	240	280										63	63	1230
			280	320	280	320										66	66	1300

Type RWS

Hub material steel



Size	Rated torque T_{KN} buffer 80 Shore A [Nm]	Speed n_{Kmax} [rpm]	Bore D1 min [mm]	Bore D1 max [mm]	Bore D2 min [mm]	Bore D2 max [mm]	DA [mm]	ND1 [mm]	ND2 [mm]	NL1/ NL2 [mm]	S [mm]	U1 [mm]	U2 [mm]	P [mm]	LG [mm]	J1 [kgm²]	J2 [kgm²]	Weight [kg]
105	200	7000		35		42	105	53	59	45	3	13	12	30	93	0,00	0,00	1,9
125	350	6000		42		48	125	65	68	50	3	16	15	35	103	0,00	0,00	3,2
144	500	5250		48		60	144	76	84	55	3	16	15	35	113	0,00	0,01	4,5
162	750	4650		55		65	162	85	92	60	3,5	20	18	40	123,5	0,01	0,01	6,5
178	950	4200		70		75	178	102	108	70	3,5	20	18	40	143,5	0,01	0,02	8,6
198	1300	3750		80		90	198	120	128	80	3,5	20	18	40	163,5	0,02	0,03	12
228	2200	3300		90		95	228	129	140	90	3,5	26	24	50	183,5	0,04	0,07	18
252	2750	3000		100		110	252	150	160	100	3,5	26	24	50	203,5	0,07	0,11	24
285	4300	2650	48	110	48	120	285	164	175	110	4,5	32	30	60	224,5	0,12	0,21	36
320	5500	2350	55	120	55	130	320	180	192	125	4,5	32	30	60	254,5	0,21	0,34	48
360	7800	2100	65	130	65	140	360	200	210	140	4,5	42	42	75	284,5	0,39	0,69	74
400	12500	2050	75	150	75	150	400	230	230	160	4,5	42	42	75	324,5	0,85	0,85	99
450	18500	1800	85	170	85	170	450	260	260	180	5,5	52	52	90	365,5	1,6	1,6	146
500	25000	1600	95	190	95	190	500	290	290	200	5,5	52	52	90	405,5	2,6	2,6	192
560	39000	1500	100	140	100	140	560	250	250	220	6	68	68	120	446	4,5	4,5	275
			140	180	140	180	560	300	300							4,9	4,9	290
			180	200	180	200	560	320	320							5	5	292
630	52000	1280	100	140	100	140	630	250	250	240	6	68	68	120	486	7,1	7,1	345
			140	180	140	180	630	300	300							7,5	7,5	363
			180	220	180	220	630	355	355							8,2	8,2	389
710	84000	1150	110	160	110	160	710	290	290	260	7	80	80	140	527	13	13	504
			160	200	160	200	710	330	330							14	14	512
			200	240	200	240	710	385	385							15	15	540
800	110000	1000	125	180	125	180	800	320,00	320,00	290	7	80	80	140	587	22	22	660
			180	220	180	220										22	22	670
			220	260	220	260										24	24	720
900	150000	900	140	220	140	220	900	360	360	320	7,5	90	90	160	648	39	39	900
			220	260	220	260										41	41	960
			260	290	260	290										42	42	1000
1000	195000	810	150	240	150	240	1000	395	395	350	7,5	90	90	160	708	59	59	1150
			240	280	240	280										63	63	1230
			280	320	280	320										66	66	1300