SMART DRIVE SOLUTIONS

DESCH GC, GC-ECO

Gear Couplings

DESCH Gear Couplings GC

Type GC

- High quality heavy duty coupling
- Special types are possible in short delivery times

Gear Couplings GC

DESCH gear couplings GC are flexible shaft connections suitable for a positive torque transmission. They ensure to compensate radial, axial and angular shaft misalignments. The gear coupling is made of high quality tempered steel with grease lubrication and O-ring seal.

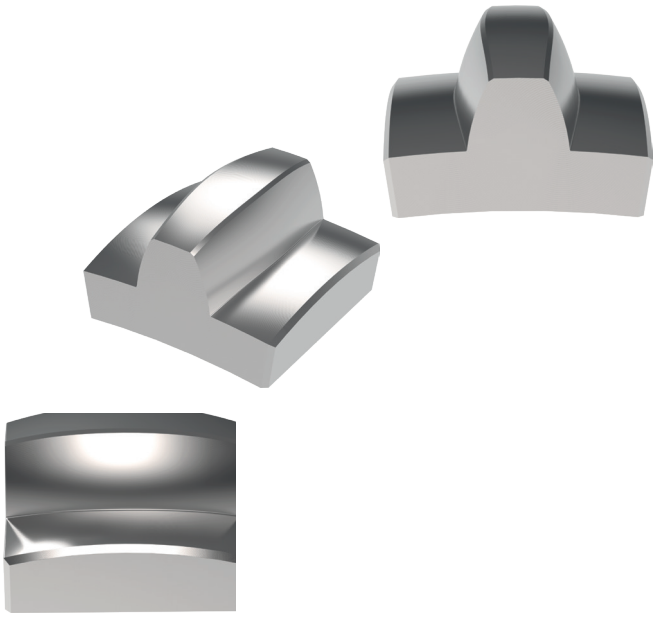
DESCH gear couplings GC are used in all areas of mechanical engineering and offers a long service life with maximum reliability, resulting from the optimal grease lubrication of the crowned spline. The couplings are generally suitable for a horizontal assembly. Special types are suitable for vertical assembly, too.

The range of gear couplings includes sizes from 50 to 1.000 with torque transmissions from 1.920 Nm to 8.000.000 Nm, these are suitable for shaft diameters from 20 mm to 1.000 mm.

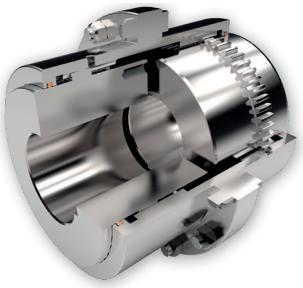
Special types, adapted to your application requirements, are possible in a short delivery time!

Tooth principle

The crowned spline principle results in case of angular and radial misalignment the avoidance of edge pressure in the spline. Optimal friction conditions of the spline with an almost wear-free operation, resulting due to the permanent grease lubrication, leads to a long service life expectancy of the coupling.



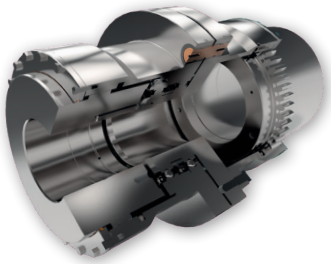
DESCH Gear Couplings GC - types



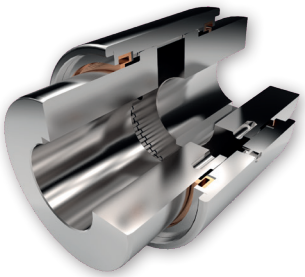
GC -
Standard coupling -
Small Sizes
GC 50 - GC 220

GCL -
with
extended hubs

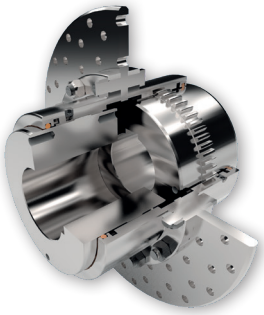
GC -
Standard coupling -
Large Sizes
GC 240 - GC 600



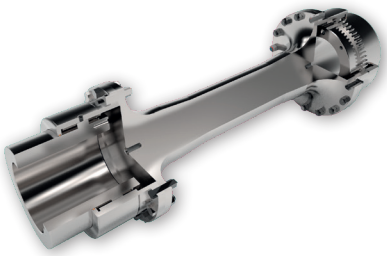
GCT -
with
shear pins



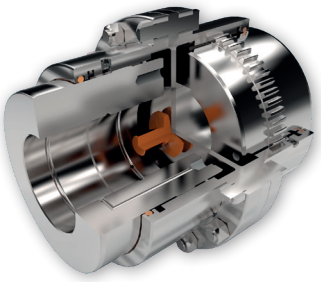
GCY -
with
one-piece sleeve



GCB -
with
brake disc



GCLE -
with
intermediate shaft



GCV -
for
vertical drives

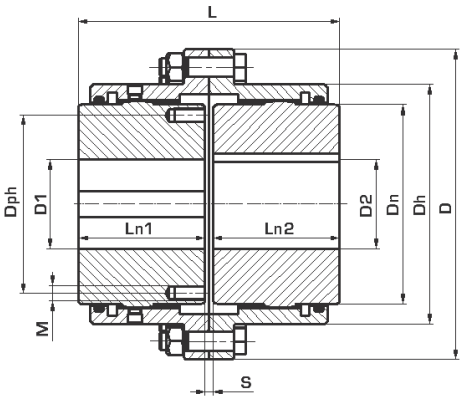
GCX -
with
spacer sleeve

GCTAM -
Special type
for winder

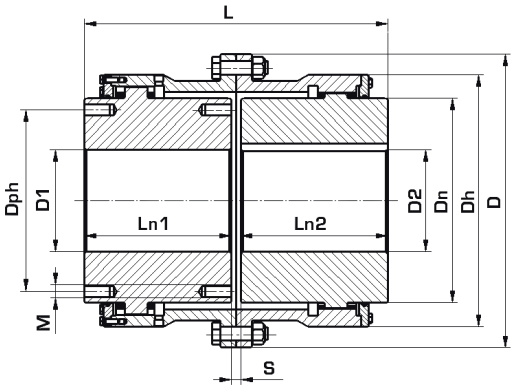
Further types available on request!

DESCH Gear Couplings GC

Size 50 - 220



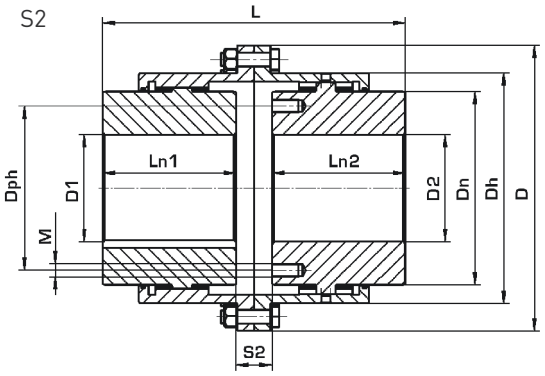
Size 240 - 600

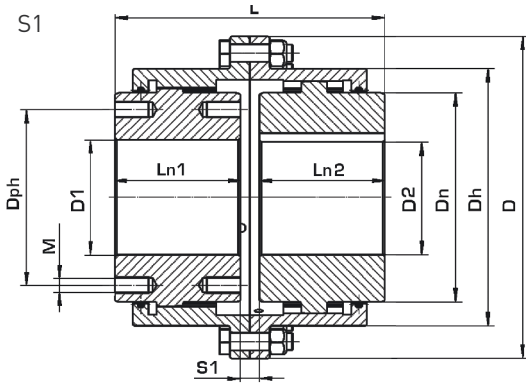


Size	D	D_{max}	D_h	D_n	D1/D2 min.	D1/D2 max.	L_{min}	L	L_{max}	$L_{n\,min}$	L_n1/L_n2	$L_{n\,max}$	S	S1	S2	D_{ph}	M
	mm		mm	mm	mm		mm			mm			mm	mm	mm	mm	mm
50	111	250	83	64	20	50	91	93	208	43	45	100	3	8	10	57	M5
65	148	250	105	83	20	65	131	136	316	50	65	150	6	20	26	72	M8
75	169	250	126	100	20	75	151	156	316	62	75	150	6	18	23	88	M8
100	209	300	162	135	30	100	171	176	316	76	85	150	6	17	23	120	M10
120	233	300	186	160	40	120	211	216	416	90	105	200	6	24	34	144	M10
135	254	300	204	175	40	135	231	236	418	100	115	200	6	24	44	156	M12
150	308	400	246	200	50	150	241	246	618	105	120	300	6	27	44	168	M16
165	336	500	262	220	60	165	301	310	628	120	150	300	10	58	83	196	M16
190	366	500	303	255	80	190	341	350	828	150	170	400	10	47	83	228	M20
220	428	600	345	290	80	220	401	410	828	175	200	400	10	50	94	246	M20
240	458	600	394	320	80	240	463	476	844	190	230	400	16	99	170	284	M20
270	490	600	436	360	120	270	503	516	844	220	250	400	16	94	162	314	M24
285	534	800	474	380	120	285	563	576	844	250	280	400	16	121	213	330	M24
330	580	800	518	431	160	330	603	616	844	280	300	400	16	101	173	390	M30
365	668	800	586	480	180	365	705	730	858	325	350	400	30	137	233	422	M30
400	730	1.000	642	530	200	400	805	830	358	345	400	450	30	131	213	478	M30
450	830	1.000	720	621	200	450	805	830	358	400	400	450	30	131	213	560	M30
500	882	1.000	742	651	200	500	905	930	1.058	410	450	500	30	141	230	600	M30
600	970	1.000	867	761	300	600	1.005	1.030	1.070	470	500	500	30	151	230	680	M30
700	1.220	2.000	1.064	921	300	700	1.405	1.440	1.710	580	700	800	40	-	-	830	M42
800	1.440	2.000	1.240	1.061	300	800	1.405	1.440	1.710	600	700	800	40	-	-	920	M48
900	1.600	2.000	1.416	1.190	400	900	1.505	1.540	1.710	680	750	800	40	-	-	1.100	M48
1000	1.814	2.000	1.630	1.350	500	1.000	1.660	1.700	2.380	740	800	1.100	100	-	-	1.160	M48

The diameters Dn and Dh are locked.
Other dimensions can be chosen according to the range given.

Technical data



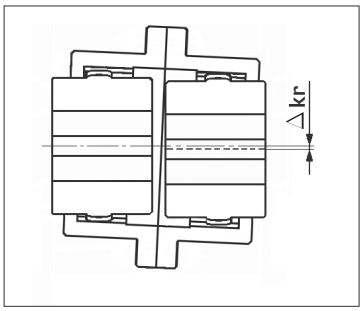


Size	Torque Nm		Max. speed	Weight[1]	Moments of inertia[1]	Max. shaft misalignment[2]		S_{min}	S_{max}	$S1_{min}$	$S1_{max}$	$S2_{min}$	$S2_{max}$
	Nominal- T_{KN}	Max T_{kmax}	rpm	kg	J kgm²	radial ΔK_r mm	angular ΔK_w Grad	mm		mm		mm	
50	1.920	3.840	8.700	3,60	0,005	0,45	1	1	8	5	10	7	12
65	3.550	7.100	6.700	8,70	0,022	0,69	1	1	16	15	24	20	32
75	6.100	12.200	5.200	13	0,044	0,76	1	1	16	13	22	18	28
100	13.600	27.200	4.200	25	0,139	0,84	1	1	16	12	21	18	28
120	18.900	37.800	3.600	37	0,270	1,10	1	1	16	17	31	24	44
135	25.300	50.600	3.250	47	0,380	1,23	1	1	18	15	33	24	64
150	35.500	71.000	2.800	70	0,868	1,23	1	1	18	20	33	24	64
165	38.600	77.200	2.600	103	1,50	1,73	1	1	28	52	63	58	108
190	78.000	156.000	2.200	148	2,74	1,85	1	1	28	36	58	58	108
220	110.600	221.200	1.950	215	5,32	2,27	1	1	28	33	66	64	124
240	156.000	312.000	1.750	324	9,68	2,73	1	3	44	86	111	155	185
270	186.000	372.000	1.600	415	14,9	2,92	1	3	44	81	106	148	176
285	219.000	438.000	1.450	540	23,7	3,43	1	3	44	111	131	198	228
330	250.500	501.000	1.300	717	36,8	3,61	1	3	44	91	111	158	188
365	345.000	690.000	1.150	927	61	4,19	1	5	58	124	150	216	250
400	470.000	940.000	1.050	1.299	102	6,68	1,5	5	58	112	150	192	234
450	661.000	1.322.000	950	1.712	172	6,68	1,5	5	58	112	150	192	234
500	790.000	1.580.000	900	2.214	252	7,46	1,5	5	58	122	160	210	250
600	1.250.000	2.500.000	775	3.242	488	8,25	1,5	5	70	131	170	230	270
700	2.150.000	4.300.000	650	6.054	1.358	9,00	2	5	110	-		-	
800	3.600.000	7.200.000	550	9.014	2.744	9,00	2	5	110	-		-	
900	5.300.000	10.600.000	475	11.866	4.574	9,00	2	5	110	-		-	
1000	8.000.000	16.000.000	425	13.500	6.691	9,00	2	60	180	-		-	

1) Weight and moments of inertia apply for max. bore diameter.
2) The values mentioned are valid for n max. = 1500 rpm

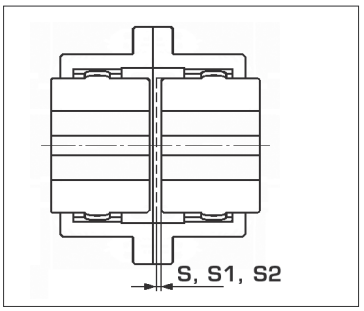
DESCH Gear couplings GC

Misalignment

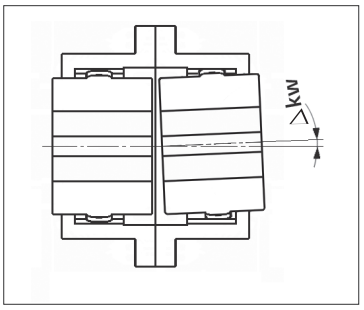


Radial misalignment is given at the maximum allowed angular misalignment and according to the shortest value S, S1, S2 - table page 4.

Radial misalignment

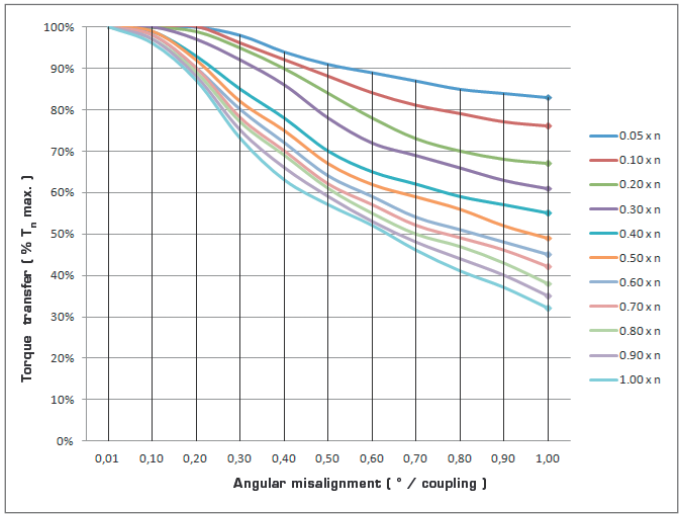


Axial misalignment



Angular misalignment

The size of a coupling for a specific drive depends not only on the driving power and the rotational speed, also on the angular misaligment and the type of machine to be connected.



Torque transfer of the coupling in relation to increasing angular misalignment and rotational speed.

DESCH Gear couplings GC-ECO

Type GC-ECO

- Economic standard coupling
- Special types are possible in short delivery times

Gear Couplings GC-ECO

DESCH gear couplings GC-ECO are economic and torsionally stiff shaft connections suitable for a positive torque transmission. They ensure the flexible compensation of shaft misalignments as well. The gear coupling is made of high tensile steel with grease lubrication and O-ring seal.

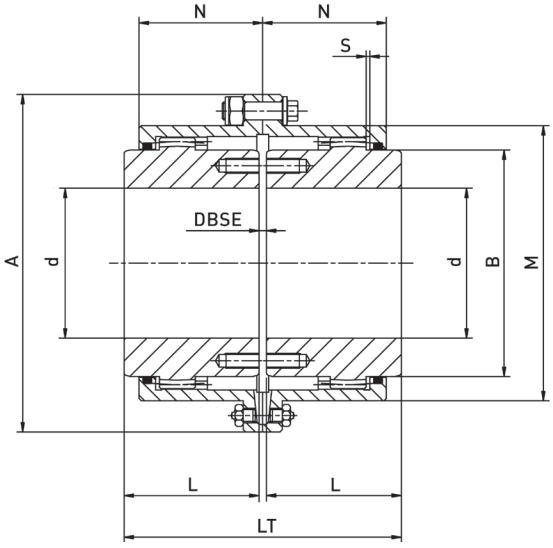
DESCH gear couplings GC-ECO are used in all areas of mechanical engineering and offers a long service life with maximum reliability, resulting from the optimal grease lubrication of the crowned spline. The couplings are generally suitable for a horizontal assembly. Special types are suitable for vertical assembly, too.

The range of gear couplings ECO includes standard sizes from 52 to 280 with torque transmissions from 1.900 Nm to 200.000 Nm, these are suitable for shaft diameters from 20 mm to 280 mm.

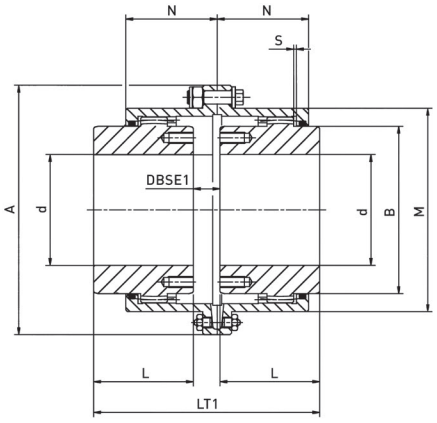
Bigger shaft diameters and higher torques are possible on request.

Special types, adapted to your application requirements, are possible in a short delivery time!

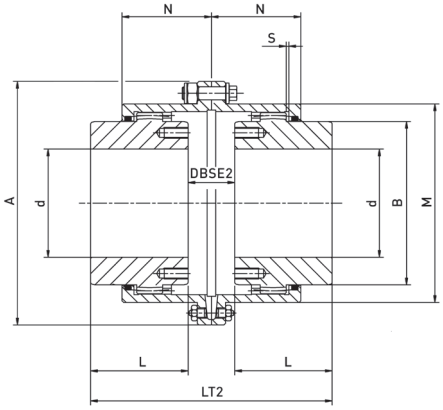
DESCH Gear couplings GC-ECO



GCE



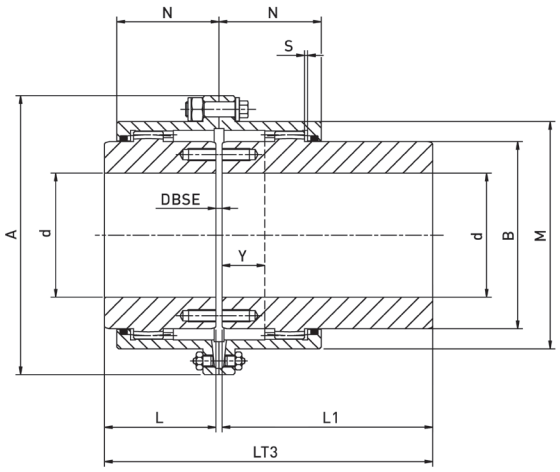
GCER



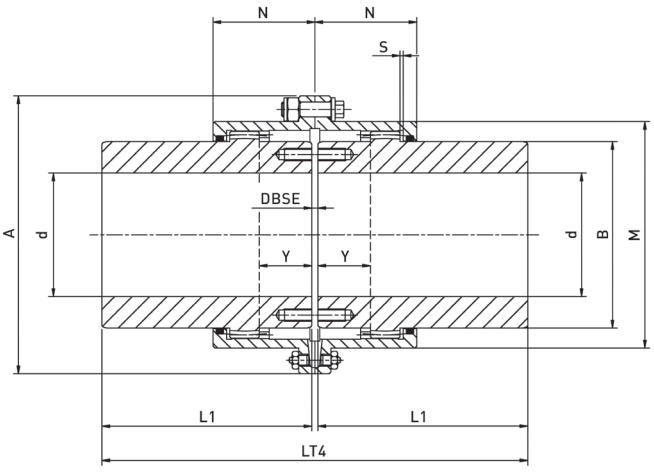
GCERR

Size	d_{max} mm	A mm	M mm	B mm	L mm	L1 mm	LT mm	LT1 mm	LT2 mm	LT3 mm	LT4 mm	N mm	Y mm	DBSE mm	DBSE1 mm	DBSE2 mm
52	52	111	82,5	68	43	105	89	91	93	151	213	39	12	3	5	7
62	62	142	104,6	86	50	115	103	108	113	168	233	45,5	16	3	8	13
78	78	168	130,5	105	62	130	127	138	149	195	263	59	22	3	14	25
98	98	200	158,4	132	76	150	157	170	184	231	305	68	26	5	18	32
112	112	225	183,4	151	90	170	185	204	223	265	345	82,5	38	5	24	43
132	132	265	211,5	179	105	185	216	237	258	296	376	93	45	6	27	48
156	156	300	245,5	209	120	215	246	272	298	296	436	106	50	6	32	58
174	174	330	275	234	135	245	278	307	336	341	498	118	58	8	37	66
190	190	370	307	255	150	295	308	350	392	388	598	138	70	8	50	92
210	210	406	335	280	175	300	358	403	448	453	608	154	80	8	53	98
233	233	439	367	306	190	305	388	438	488	483	618	166	86	8	58	108
280	280	505	423	356	220	310	450	512	574	540	630	193	96	10	72	134

Technical data



GCEL



GCELL

Size	Torque T_k Nm	Torque $T_{max.}$ Nm	Max. speed rpm	GCE / GCER / GCERR weight kg	GCEL weight kg	GCELL weight kg
52	1.900	3.800	6000	4,2	6,15	8
62	2.900	5.800	4550	7,6	10,2	13
78	5.700	11.400	4000	13,5	18,2	23
98	9.000	18.000	3900	25	33	41
112	14.500	29.000	3700	37	48,5	60
132	22.800	45.600	3550	60	56,5	91
156	34.800	69.600	3000	90	115	141
174	45.800	91.600	2750	124	161	199
190	70.800	141.600	2420	170	227	285
210	85.400	170.800	2270	233	292	352
233	150.000	300.000	1950	298	363	428
280	200.000	400.000	1730	457	526	596

Selection

For the selection of a GC - Coupling following information are required:

- P_N Motor power respectively input power (kW)
- n Operating speed (rpm)
- L, d Length and diameter of the shafts (mm)
- S Safety factor, table page 11

Where required other geometrical or environmental restrictions.

The torque of the machine TAN is determind by:

$$T_{AN}\,[Nm] = 9550 \times \frac{P_N\,[kW]}{n\,[rpm]}$$

This torque TAN mutiplied by a safty factor S depending on the application gives the required nominal coupling torque TKN.

Result: T_{KN} S x T_{AN}

The coupling must be selected with a nominal torque TKN higher then the calculated value.
Furthermore must be checked that the peak torque of the application is lower then the max. torque TKmax of the coupling.

Torque transfer regarding angular misalignment and rotational speed acc. to diagram page 6 must be checked.

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

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

Selection example for IEC standard motors

Given Data of the application

Driving machine:	Electric motor
Power of the motor:	P = 400 kW
Speed:	n = 500 rpm
Driven maschine:	Rotary furnace

$$T_{AN}\,[Nm] = 9.550 \times \frac{400\ kW}{500\ rpm} = 7.640\ Nm$$

T_{KN} = 2,5 x 7.640 Nm = 19.100 Nm

Selection: DESCH GC size 150

T_{KN} = 35.500 Nm

Safety factors „S“

Assignment of load characteristics according to type of working machine

	DREDGERS		**RUBBER MACHINERY**		**PUMPS**
S	Bucket conveyor	S	Extruders	S	Piston pumps
S	Landing gear (caterpillar)	M	Calenders	G	Centrifugal pumps (light liquids)
M	Landing gear (rail)	S	Kneading mill	M	Centrifugal pumps (viscous liquids)
M	Manoeuvring winches	M	Mixers	S	Plunger pumps
M	Pumps	S	Rolling mills	S	Press pumps
S	Impellers				
S	Cutter heads		**WOOD WORKING MACHINES**		**STONE AND CLAY WORKING MACHINES**
M	Slewing gear	S	Barkers	S	Crusher
		M	Planing machines	S	Rotary furnace
	GENERATORS, TRANSFORMERS	G	Wood working machines	S	Hammer mills
M	Frequency transformers	S	Saw frames	S	Ball mills
M	Generators			S	Tube mills
M	Welding generators		**CRANES**	S	Beater mills
		G	Luffing gear block	S	Brick presses
	CHEMICAL INDUSTRY	S	Travelling gear		
M	Cooling drums	G	Hoist gear		**TEXTILE MACHINES**
M	Mixers	M	Slewing gear	M	Batchers
G	Agitators (liquid material)	M	Derricking jib gear	M	Printing and dyeing machines
M	Agitators (semi-liquid material)			M	Tanning vats
M	Drying drums		**PLASIC INDUSTRY MACHINES**	M	Willows
G	Centrifuges (light)	M	Extruders	M	Looms
M	Centrifuges (heavy	M	Calenders		
		M	Mixers		**COMPRESSORS**
	OIL INDUSTRY	M	Crushers	S	Piston compressors
M	Pipeline pumps			M	Turbo compressors
S	Rotary drilling equipment		**METAL WORKING MACHINES**		
		M	Plate bending machines		**METAL ROLLING MILLS**
	CONVEYORS	S	Plate straightening machines	S	Plate shears
M	Pit-head winches	S	Hammers	M	Manipulator for turning sheets
S	Winding engines	S	Metal planning machines	S	Ingot pushers
M	jointed-band conveyors	S	Presses	S	Ingot and slabbing-mill train
G	Belt conveyors (bulk material)	M	Shears	S	Ingot handling machinery
M	Belt conveyors (piece goods)	S	Forging presses	M	Wire drawing benches
M	Band pocket conveyors	S	Punch presses	S	Descaling machines
M	Chain conveyors	G	Countershafts, line shafts	S	Thin plate mills
M	Circular conveyors	M	Machine tools (main drives)	S	Heavy and medium plate mills
M	Load elevators	G	Machine tools (auxiliary drives)	M	Winding machines (strip and wire)
G	Bucket conveyors for flour			S	Cold rolling mills
M	Passenger lifts		**FOOD INDUSTRY MACHINERY**	M	Chain tractor
M	Plate conveyors	G	Bottling and container filling machines	S	Billet shears
M	Screw conveyors	M	Kneading machines	M	Cooling beds
M	Ballast elevators	M	Mash tubs	M	Cross tractor
S	Inclined hoists	G	Packaging machines	M	Roller tables (light)
M	Steel belt conveyors	M	Cane crushers	S	Roller tables (heavy)
M	Drag chain conveyors	M	Cane cutters	M	Roller straighteners
		S	Cane mills	S	Tube welding machines
	BLOWERS,VENTILATORS	M	Sugar beet cutters	M	Trimming shears
M	Rotary piston blowers	M	Sugar beet washing machines	S	Cropping shears
G	Blowers (axial/radial)			S	Continuous casting plant
M	Cooling tower fans		**PAPER MACHINES**	M	Rollers adjustment drive
M	Induced draught fans	S	Couches	S	Manipulators
G	Turbo blowers	S	Glazing cylinders		
		M	Pulper		**LAUNDRIES**
	BUILDING MACHINERY	S	Pulp grinders	M	Tumblers
S	Hoists	M	Calenders	M	Washing machines
G	Concrete mixers	S	Wet presses		
S	Road construction machinery	S	Willows		**WATER TREATMENT**
		S	Suction presses	M	Aerators
		S	Suction rolls	M	Screw pumps
		S	Drying cylinders		

Driving machines	Safety factors „S”		
	Load characteristics of the working machine		
	G	M	S
Electric motors, turbines	1,5	2	2,5
Hydraulic motors	2	2,5	3
Combustion motors	2,5	3	3,5

SMART DRIVE SOLUTIONS

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