



**POWER TRANSMISSION
RIGID COUPLINGS**

**GC
GC-ECO**



GC

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.

Gear couplings GC are used in all areas of mechanical engineering and offer 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 1000 with torque transmissions from 1920 Nm to 8 000 000 Nm, these are suitable for shaft diameters from 20 mm to 1000 mm.

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

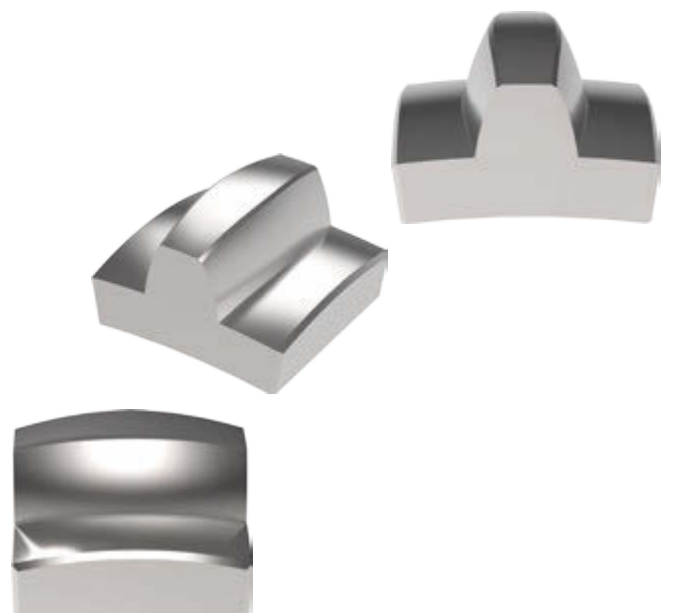


TYPE

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

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, lead to a long service life expectancy of the coupling.



GEAR COUPLINGS GC TYPES



GC –
standard coupling
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 assembly



GCX –
with spacer sleeve

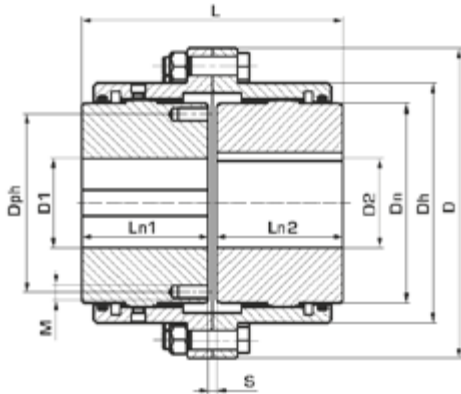


GCTAM –
special type for
assembly in winder

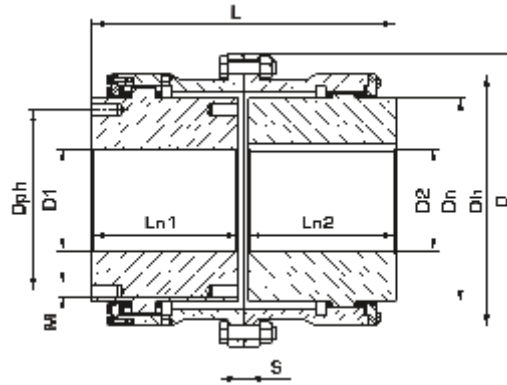
FURTHER TYPES AVAILABLE ON REQUEST!

GEAR COUPLINGS GC

SIZE 50–220



SIZE 240–600

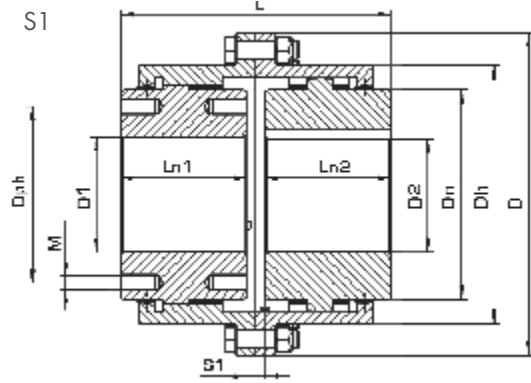
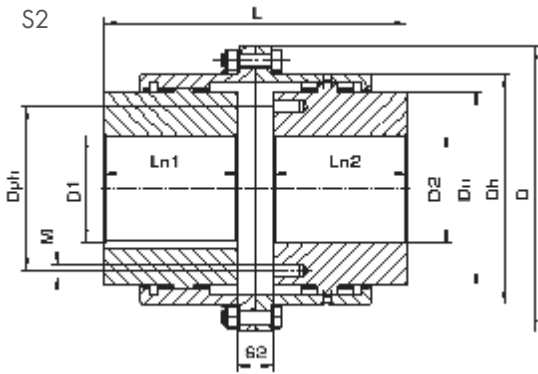


Size	D	D _{max}	D _h	D _n	D1/D2 min.	D1/D2 max.	L _{min}	L	L _{max}	L _{n min}	L _{n1/L_{n2}}	L _{n max}	S	S1	S2	D _{ph}	M
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
50	111	250	83	64	20	50	91	93	208	43	45	100	3	8	10	57	M5
65	148	250	105	83	20	65	131	136	316	50	65	150	6	20	26	72	M8
75	169	250	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	1000	642	530	200	400	805	830	358	345	400	450	30	131	213	478	M30
450	830	1000	720	621	200	450	805	830	358	400	400	450	30	131	213	560	M30
500	882	1000	742	651	200	500	905	930	1058	410	450	500	30	141	230	600	M30
600	970	1000	867	761	300	600	1005	1030	1070	470	500	500	30	151	230	680	M30
700	1220	2000	1064	921	300	700	1405	1440	1710	580	700	800	40	–	–	830	M42
800	1440	2000	1240	1061	300	800	1405	1440	1710	600	700	800	40	–	–	920	M48
900	1600	2000	1416	1190	400	900	1505	1540	1710	680	750	800	40	–	–	1100	M48
1000	1814	2000	1630	1350	500	1000	1660	1700	2380	740	800	1100	100	–	–	1160	M48

The diameters D_n and D_h are locked.

Other dimensions can be chosen for special types according to the range given.

TECHNICAL DATA



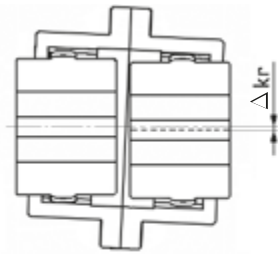
Size	Torque Nm		Max. speed rpm	Weight ¹⁾ kg	Moments of inertia ¹⁾ J kgm ²	Max. shaft misalignment ²⁾		S _{min} S _{max}		S1 _{min} S1 _{max}		S2 _{min} S2 _{max}	
	nominal T _{KN}	max. T _{kmax}				radial ▲ K _r mm	angular ▲ K _w degree	mm		mm		mm	
50	1920	3840	8700	3.60	0.005	0.45	1	1	8	5	10	7	12
65	3550	7100	6700	8.70	0.022	0.69	1	1	16	15	24	20	32
75	6100	12200	5200	13	0.044	0.76	1	1	16	13	22	18	28
100	13600	27200	4200	25	0.139	0.84	1	1	16	12	21	18	28
120	18900	37800	3600	37	0.270	1.10	1	1	16	17	31	24	44
135	25300	50600	3250	47	0.380	1.23	1	1	18	15	33	24	64
150	35500	71000	2800	70	0.868	1.23	1	1	18	20	33	24	64
165	38600	77200	2600	103	1.50	1.73	1	1	28	52	63	58	108
190	78000	156000	2200	148	2.74	1.85	1	1	28	36	58	58	108
220	110600	221200	1950	215	5.32	2.27	1	1	28	33	66	64	124
240	156000	312000	1750	324	9.68	2.73	1	3	44	86	111	155	185
270	186000	372000	1600	415	14.9	2.92	1	3	44	81	106	148	176
285	219000	438000	1450	540	23.7	3.43	1	3	44	111	131	198	228
330	250500	501000	1300	717	36.8	3.61	1	3	44	91	111	158	188
365	345000	690000	1150	927	61	4.19	1	5	58	124	150	216	250
400	470000	940000	1050	1299	102	6.68	1.5	5	58	112	150	192	234
450	661000	1322000	950	1712	172	6.68	1.5	5	58	112	150	192	234
500	790000	1580000	900	2214	252	7.46	1.5	5	58	122	160	210	250
600	1250000	2500000	775	3242	488	8.25	1.5	5	70	131	170	230	270
700	2150000	4300000	650	6054	1358	9.00	2	5	110	-	-	-	-
800	3600000	7200000	550	9014	2744	9.00	2	5	110	-	-	-	-
900	5300000	10600000	475	11866	4574	9.00	2	5	110	-	-	-	-
1000	8000000	16000000	425	13500	6691	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.

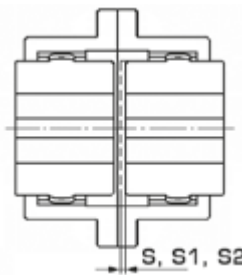
GEAR COUPLINGS GC

MISALIGNMENT

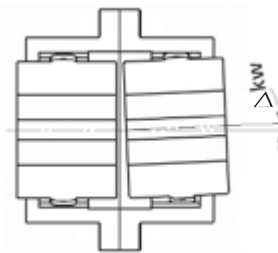


> Radial misalignment is given at the maximum allowed angular misalignment and according to the shortest value S, S1, S2 – table page 4.

> Radial misalignment

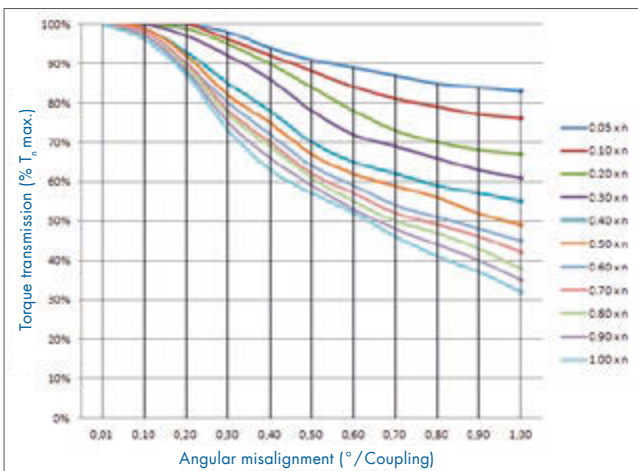


> Axial misalignment



> Angular misalignment

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



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

GC-ECO

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.

Gear couplings GC-ECO are used in all areas of mechanical engineering and offer 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 1900 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.

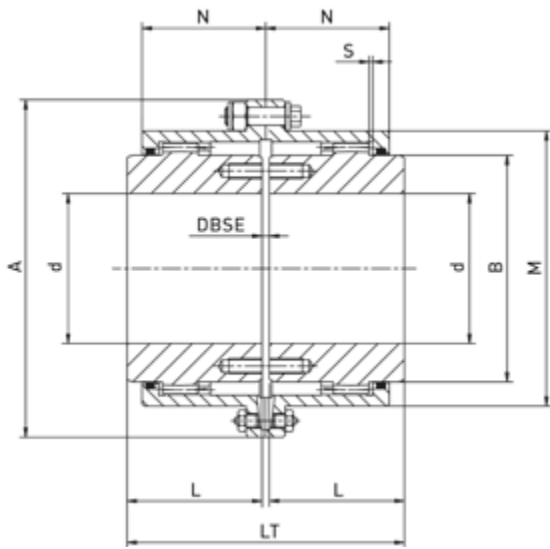
Special types, adapted to your application requirements, are possible in a short delivery time!



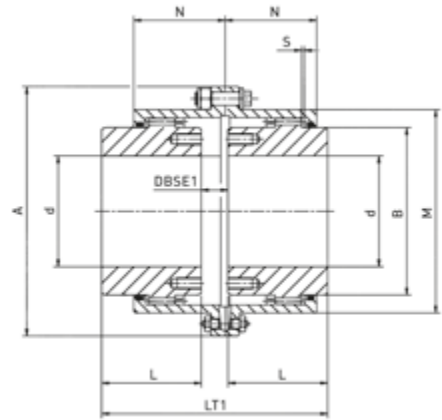
TYPE

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

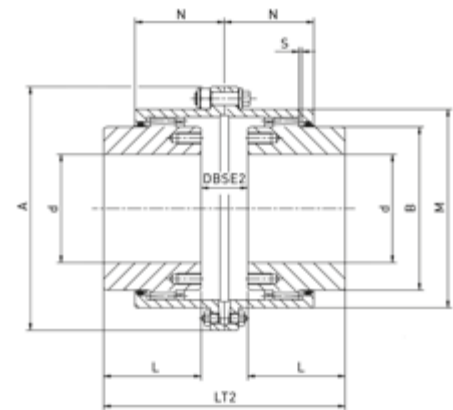
GEAR COUPLINGS GC-ECO



GCE



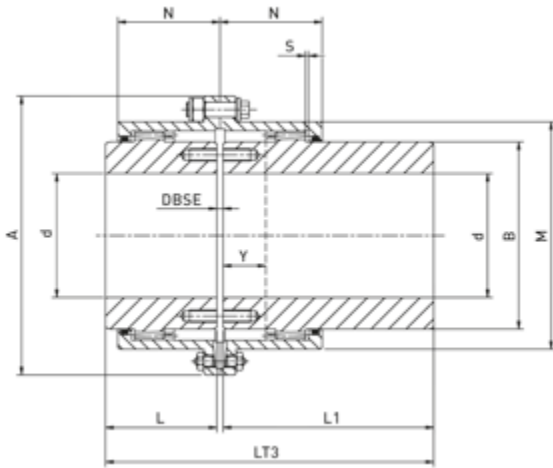
GCER



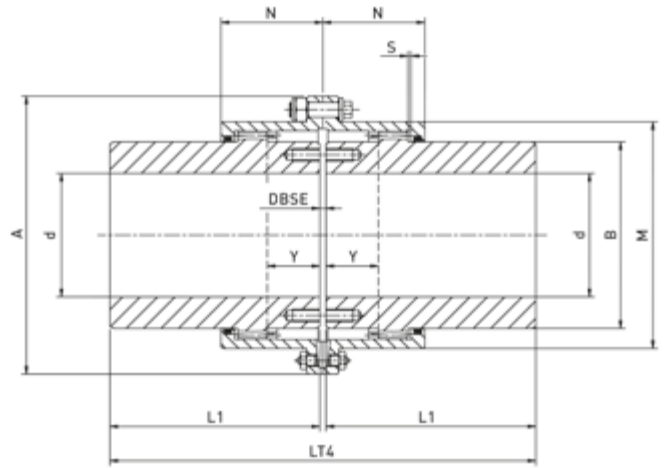
GCERR

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		Max. speed rpm	GCE weight kg	GCEL weight kg	GCELL weight kg
	T_k Nm	$T_{max.}$ Nm				
52	1900	3800	6000	4.2	6.15	8
62	2900	5800	4550	7.6	10.2	13
78	5700	11400	4000	13.5	18.2	23
98	9000	18000	3900	25	33	41
112	14500	29000	3700	37	48.5	60
132	22800	45600	3550	60	56.5	91
156	34800	69600	3000	90	115	141
174	45800	91600	2750	124	161	199
190	70800	141600	2420	170	227	285
210	85400	170800	2270	233	292	352
233	150000	300000	1950	298	363	428
280	200000	400000	1730	457	526	596

SELECTION

> For the selection of a GC coupling the following information is required:

- PN 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 T_{AN} is determined by:

$$T_{AN} [\text{Nm}] = 9550 \times \frac{P_{\text{Motor}} [\text{kW}]}{n [\text{rpm}]}$$

This torque T_{AN} multiplied by a safety factor S depending on the application and the temperature factor S_T (see table page 11) gives the required nominal coupling torque T_{KN} .

$$\text{Result: } T_{KN} \geq S \times S_T \times T_{AN}$$

> The coupling must be selected with a nominal torque T_{KN} higher than the calculated value. Furthermore must be checked that the peak torque of the application is lower than the max. torque T_{Kmax} 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 loads occur we recommend a revision according to DIN 740. An adequate calculation program 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. Rotational speed of operation
5. Shock loads
6. Exciting loads
7. Moments of inertia of load- and driving sides
8. Starts per hour
9. Ambient temperature

SELECTION EXAMPLE FOR IEC STANDARD MOTORS

GIVEN DATA OF THE APPLICATION

Driving machine: electric motor
 Power of the motor: $P = 400 \text{ kW}$
 Rotation at speed: $n = 500 \text{ rpm}$
 Driven machine: rotary furnace

$$T_{AN} [\text{Nm}] = 9550 \times \frac{400 \text{ kW}}{500 \text{ rpm}} = 7640 \text{ Nm}$$

$$T_{KN} = 2.5 \times 7640 \text{ Nm} = 19100 \text{ Nm}$$

Selection: GC size 150

$$T_{KN} = 35500 \text{ Nm}$$

SAFETY FACTOR S

Assignment of load characteristics according to type of working machine			
S	DREDGERS	S	RUBBER MACHINERY
S	Bucket conveyor	M	Extruders
M	Landing gear (caterpillar)	S	Calenders
M	Landing gear (rail)	M	Kneading mills
M	Manoeuvring winches	M	Mixers
M	Pumps	S	Rolling mills
S	Impellers		
S	Cutter heads		
M	Slewing gear		
		S	WOOD WORKING MACHINES
		M	Barkers
		G	Planing machines
		S	Wood working machines
		S	Saw frames
M	BUILDING MACHINERY		
M	Hoists		
M	Concrete mixers		
M	Road construction machinery		
		G	CRANES
		S	Luffing gear block
		G	Travelling gear
		M	Hoist gear
		M	Slewing gear
		M	Derricking jib gear
		M	PLASTIC INDUSTRY MACHINES
		M	Extruders
		M	Calenders
		M	Mixers
		M	Crushers
		M	METAL WORKING MACHINES
		S	Plate bending machines
		S	Plate straightening machines
		S	Hammers
		S	Metal planning machines
		S	Presses
		M	Shears
		S	Forging presses
		S	Punch presses
		G	Countershafts, line shafts
		M	Machine tools (main drives)
		G	Machine tools (auxiliary drives)
		G	FOOD INDUSTRY MACHINERY
		M	Bottling and container filling machines
		M	Kneading machines
		M	Mash tubs
		G	Packaging machines
		M	Cane crushers
		M	Cane cutters
		S	Cane mills
		M	Sugar beet cutters
		M	Sugar beet washing machines
		S	PAPER MACHINES
		S	Couches
		M	Glazing cylinders
		S	Pulper
		M	Pulp grinders
		S	Calenders
		S	Wet presses
		S	Willows
		S	Suction presses
		S	Suction rolls
		S	Drying cylinders
		S	PUMPS
		G	Piston pumps
		M	Centrifugal pumps (light liquids)
		S	Centrifugal pumps (viscous liquids)
		S	Plunger pumps
		S	Press pumps
		S	STONE AND CLAY WORKING MACHINES
		S	Crusher
		S	Rotary furnace
		S	Hammer mills
		S	Ball mills
		S	Tube mills
		S	Beater mills
		S	Brick presses
		M	TEXTILE MACHINES
		M	Batchers
		M	Printing and dyeing machines
		M	Tanning vats
		M	Willows
		M	Looms
		S	COMPRESSORS
		M	Piston compressors
		M	Turbo compressors
		S	METAL ROLLING MILLS
		M	Plate shears
		S	Manipulator for turning sheets
		S	Ingot pushers
		S	Ingot and slabbing-mill train
		M	Ingot handling machinery
		S	Wire drawing benches
		S	Descaling machines
		S	Thin plate mills
		S	Heavy and medium plate mills
		M	Winding machines (strip and wire)
		S	Cold rolling mills
		M	Chain tractor
		S	Billet shears
		M	Cooling beds
		M	Cross tractor
		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	Rollers adjustment drive
		S	Manipulators
		M	LAUNDRIES
		M	Tumblers
		M	Washing machines
		M	WATER TREATMENT
		M	Aerators
		M	Screw pumps

Driving machines	Operating factor 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