AC RI

SSD DRIVES

Servo motors

Product Manual

03-01-02-E-V1105.doc

Further descriptions, that relate to this document:

UL: 05 	Planetary Gearbox - Product-manual
UL: 12-01 	Plugs - Product description
UL: 12-02 	Cables - Product description

Made in Germany, 2005

Contents

The most important thing first

Thanks for your confidence choosing our product.

These operating instructions present themselves as an overview of the technical data and features.

Please read the operating instructions before operating the product.

If you have any questions, please contact your nearest SSD Drives representative.
Improper application of the product in combination with dangerous voltage can lead to injuries.
In addition, damage can also occur to motors or other products.
Therefore please observe our safety precautions strictly.

Safety precautions

We assume that, as an expert, you are familiar with the relevant safety regulations, especially in accordance with VDE 0100, VDE 0113,VDE 0160, EN 50178, the accident prevention regulations of the employers liability insurance company and the DIN regulations and that you are able to use and apply them.
As well, relevant European Directives must be observed.

Depending on the kind of application, additional regulations e.g. UL, DIN are subject to be observed.
If our products are operated in connection with components from other manufacturers, their operating instructions are also subject to be observed strictly.

1 General

1.1 Description

By using high-energy magnetic materials it is possible to design small diameter disk motors. For this reason and due to a carefully optimized technical construction of the rotor, the motors have a low moment of inertia.

The stability of the magnetic material and the design of the magnetic field in the face of demagnetization allow maximum currents of up to **3- 4 times the rated current.**

The high acceleration capacity of the low-inertia three-phase AC servo drives is the result of this.

Through the excitation of the permanent magnets, no heat losses due to current occur in the rotor.

With the three-phase AC-servomotors heat losses due to current occur only in the stator, which then can be directly drawn off.

These favorable cooling conditions allow high-capacity windings.

Since all the current heat losses are drawn off directly via the surface, the motors are designed at low cost with the enclosure type providing protection in accordance with **IP xx** and they are thus very insensitive to liquids and dirt.

The resolver is built into the B-side bearing bracket.

The signals of this integrated measuring system for the actual speed value, the rotor position and the indirect position are taken at the motor over a 12-pin connector.

Synchronous three-phase AC servo drives have a series of advantages over the DC drives:

- no electromechanical parts to wear out, therefore "maintenance-free".
- a low moment of inertia of the rotor due to power density, therefore high acceleration capacity.
- no commutation limit curve, therefore high acceleration moments, also in higher speed ranges.
- no losses in the rotor of the motor, therefore favorable thermal characteristics and a high degree of protection due to the closed construction.

Three-phase AC servomotors built in the way described, are specifically more efficient (higher rated torque) than DC servomotors and also have a small inertia. Therefore the size necessary for an application will, for this reason, be smaller with three-phase AC servos than with DC servos.

Important !

- The motor series AC G is not attachment- or pin-compatible to our drives AC M or AC R.
- Motor design AC G only in standard.

General

1.2 Type code

	Standard						Optional	
Marking	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**
Type:	AC	XXX	XXXX	-X	/X	-X	XXX	+ ...

Marking	Description
a	AC = Three-phase
b	Motor types: G = Motor without cases M = Motor series (old) Mn = Motor series new M2n = Motor series 2. new version MHS = Motor series Hiperface Singleturn (being prepared) MHM = Motor series Hiperface Multiturn (4096) R = Motor series R R(L) = Motor series R with separate fan
c	xxxx = approx. rated torque in Ncm
d	-4 = 4000 1/min. at motor types: **AC G; AC Mn; AC M2n; AC M2K, AC MHx** -1..6 = *1000 1/min. at motor types: **AC R** -X = Further on request (designation does not apply with motor / gearbox systems)
e	Motor size /1…/4 = Motor size 1 … 4 (designation does not apply with motor / gearbox systems)
f	-3 = 325 V DC link voltage (≅ 230 VAC) -6 = 565 V DC link voltage (≅ 400 VAC)
g	Identification for options and special design: XXX = see chapter 1.3
h	+ ... = With attached gear-box: (for short description for inserted gearbox types see gearbox documentation)

Note:
Up to marking "**g**" it is only necessary with options or custom features.
No options are possible for the AC G drive

1.2.1 Typical example

A typical example of an order corresponding to the type code:

Type: **AC G 0090-4/01-3**	Type: **AC M2n0320-4/2-6**	Type: **AC R 0095-6/1-3**
AC = Three-phase	AC = Three-phase	AC = Three-phase
G = Motor series G	M2n = Motor series 2 new version	R = Motor series R
0090 = rated torque in Ncm	0320 = rated torque in Ncm	0095 = rated torque in Ncm
–4 = 4000 1/min.	–4 = 4000 1/min.	–6 = 6000 1/min.
/01 = Motor size	/2 = Motor size	/1 = Motor size
–3 = 325V DC (230 VAC)	–6 = 565V DC (230 VAC)	-3 = 325V DC (230 VAC)

1.3 Possible options (Marking: g)

Code	Options	AC G	AC M2n	AC R (L)
GW0	Smooth shaft	□	○	○
GWS	Special shaft diameter smooth motor shaft	□	○	□
BR0	Holding brake, 24V DC	□	○	○
BBR	Holding brake Type B, 24V DC	□	○	○
P65	Degree of protection IP 65	□	○	●
BG0	Holding brake, 24V DC smooth motor shaft	□	○	○
BBG	Holding brake Type B, 24V DC smooth motor shaft	□	○	○
AI0	Absolute- or incremental encoder preparation of attachment	□	○	□
BI0	Holding brake, 24V DC absolute- or incremental encoder preparation of attachment	□	○	□
PL0	Electrical connections via PG-couplings and cable ends	□	○	□
2P0	Second keyway	□	○	□
6P0	Degree of protection IP 65 second keyway	□	○	□
F90	Flange receptacle for motor- and resolver 90° angled	□	●	□
GP0	Smooth motor shaft electrical connections via PG-couplings and cable ends	□	○	□
G60	Smooth motor shaft degree of protection IP 65	□	○	○
MS0	Mech. special construction	□	○	○
PU0	Motor without varnish electrical connections via PG-couplings and cable ends	□	○	○
PS0	Motor without varnish electrical connections via PG-couplings and cable ends smooth motor shaft	□	○	□
SL0	Special varnish	□	○	□
GK0	Smooth motor shaft motor shaft shorted	□	○	□
VA0	Holding brake, 24V DC smooth motor shaft electrical connections via PG-couplings and cable ends	□	○	□
R60	Stainless shaft degree of protection IP 65	□	○	□
P60	Degree of protection electrical connections via PG-couplings and cable ends	□	○	□
B60	Holding brake, 24V DC degree of protection IP 65	□	○	□

● standard design
○ optional
□ not possible

General

Possible options (Marking: g)

Code	Options	AC G	AC M2n	AC R (L)
F60	Flange receptacle B-side degree of protection IP 65	□	o	□
VI0	Smooth motor shaft holding brake, 24V DC absolute- or incremental encoder preparation of attachment	□	o	□
GI0	Smooth motor shaft absolute- or incremental encoder preparation of attachment	□	o	□
V60	Holding brake, 24V DC smooth motor shaft degree of protection IP 65	□	o	o
L60	Smooth motor shaft degree of protection IP 65 electrical connections via PG-couplings and cable ends	□	o	□
BL0	Holding brake, 24V DC degree of protection IP 65 electrical connections via PG-couplings and cable ends	□	o	□
B40	Holding brake, 24V DC flange B 14	□	o	□
VR0	Smooth motor shaft stainless shaft absolute- or incremental encoder preparation of attachment electrical connections via PG-couplings and cable ends degree of protection IP 65	□	o	□
S60	Second keyway stainless shaft degree of protection IP 65 electrical connections via PG-couplings and cable ends	□	o	□
GZ0	Smooth motor shaft With centre hole	□	o	□
N60	Smooth motor shaft degree of protection IP 65 with special rotation speed about software (6000)	□	o	□
HW0	Hollow shaft smooth motor shaft	□	o	□
T60	Tropicalized degree of protection IP 65	□	o	□
X60	Flange receptacle B-side degree of protection IP 65 second keyway	□	o	□
TMN	Thermal protection NTC special shaft diameter smooth motor shaft	□	o	□

● standard design
o optional
□ not possible

2 General technical data

		AC	
		R	RL
Degree of protection: With mounted mating connectors and built-on motors	IP44 (with separate fan)	☐	●
	IP54	●	-
	IP65	⊙	●
Magnetice material:	NdFeB	●	●
	SE	☐	☐
Electrical connections:	Straight flanged sockets	●	●
	rotatable 90° angled for motor-, resolver- and thermal connection-flanged sockets	☐	☐
	PG couplings with cable ends	☐	☐
Thermal protection of motor:	Thermal detector PTC	●	●
Power:	In accordance with DIN VDE 0530 installation site: 1000 ASL T = 100K, Tu 40°C measured with attached cooling surface	●	●
Voltage:	325 V DC	●	●
	565 V DC	●	●
	Other windings are possible.	☐	☐
Cooling:	Self cooling	●	●
	Separate cooling	☐	●
Operating mode:	Continuous operation S1	●	●
Bearings:	Ball bearings, service life approx. 15.000 h	●	●
Motor shaft: (Standard)	With key, in accordance with DIN 6885	●	●
Rotational accuracy:	N, in acc. with DIN ISO 2373	●	●
Number of pole pairs:	2	★	★
	3	★	★
Resolver type:	2 pole SSD Drives – transmitter resolver	☐	☐
	2 pole standard transmitter resolver	●	●
Insulation class:	F (VDE 0530) 155° C, heating 100° K	●	●
Varnish: (standard)	Similar RAL 9005 (black)	●	●

● standard design
⊙ optional
☐ not possible
★ dependent on size

3 Technical data

3.1 AC R; motor size 1

AC-servo motor Type:	Size	Rated power	Rated torque	Rated speed	Rated current at 325V DC	Rated current at 565V DC	Static- torque	Static- maximum torque	Static- current	Moment of inertia with resolver
	(-)	P_N (KW)	M_N (Nm)	n_N (min^{-1})	I_{N325} (A)	I_{N565} (A)	M_0 (Nm)	M_{0max} (Nm)	I_0 (A)	J_M ($kgcm^2$)
AC R 0068-2/1-3	1.1	0,14	0,68	2000	0,60	-	0,75	3,00	0,60	0,70
AC R 0068-2/1-6		0,14	0,68	2000	-	0,30	0,75	3,00	0,35	0,70
AC R 0066-3/1-3		0,21	0,66	3000	0,80	-	0,75	3,00	0,90	0,70
AC R 0066-3/1-6		0,21	0,66	3000	-	0,50	0,75	3,00	0,50	0,70
AC R 0064-4/1-3		0,27	0,64	4000	1,10	-	0,75	3,00	1,30	0,70
AC R 0064-4/1-6		0,27	0,64	4000	-	0,60	0,75	3,00	0,70	0,70
AC R 0060-6/1-3		0,38	0,60	6000	1,50	-	0,75	3,00	1,90	0,70
AC R 0060-6/1-6		0,38	0,60	6000	-	0,80	0,75	3,00	1,00	0,70
AC R 0110-2/1-3	1.2	0,23	1,10	2000	0,90	-	1,20	4,80	1,00	1,00
AC R 0110-2/1-6		0,23	1,10	2000	-	0,50	1,20	4,80	0,60	1,00
AC R 0105-3/1-3		0,33	1,05	3000	1,30	-	1,20	4,80	1,50	1,00
AC R 0105-3/1-6		0,33	1,05	3000	-	0,70	1,20	4,80	0,80	1,00
AC R 0100-4/1-3		0,43	1,00	4000	1,70	-	1,20	4,80	2,00	1,00
AC R 0100-4/1-6		0,43	1,00	4000	-	0,90	1,20	4,80	1,10	1,00
AC R 0095-6/1-3		0,60	0,95	6000	2,40	-	1,20	4,80	3,00	1,00
AC R 0095-6/1-6		0,60	0,95	6000	-	1,30	1,20	4,80	1,60	1,00
AC R 0180-2/1-3	1.3	0,38	1,80	2000	1,50	-	2,00	8,00	1,60	1,35
AC R 0180-2/1-6		0,38	1,80	2000	-	0,90	2,00	8,00	0,70	1,35
AC R 0175-3/1-3		0,56	1,75	3000	2,10	-	2,00	8,00	2,40	1,35
AC R 0175-3/1-6		0,56	1,75	3000	-	1,20	2,00	8,00	1,40	1,35
AC R 0170-4/1-3		0,71	1,70	4000	2,80	-	2,00	8,00	3,25	1,35
AC R 0170-4/1-6		0,71	1,70	4000	-	1,60	2,00	8,00	1,80	1,35
AC R 0160-6/1-3		1,00	1,60	6000	3,90	-	2,00	8,00	4,90	1,35
AC R 0160-6/1-6		1,00	1,60	6000	-	2,20	2,00	8,00	2,75	1,35

Technical data

AC R; motor size 1

AC-servo motor Type:	Size	Mass	Motor- resistance	Motor- inductance	Thermal time constant at I_{Nenn}	Thermal time constant at I_{max}	Torque constant	E.M.F- constant "peak value"
	(-)	m (kg)	Rph/ph (Ω)	Lph/ph (mH)	T_{thN} (min)	T_{thmax} (s)	KT (Nm/A)	KE (V/1000 min.$^{-1}$)
AC R 0068-2/1-3	1.1	3,30	60,00	152,80			1,13	105
AC R 0068-2/1-6		3,30	191,40	487,20			2,27	188
AC R 0066-3/1-3		3,30	27,00	68,00			0,83	70
AC R 0066-3/1-6		3,30	86,00	216,80			1,32	125
AC R 0064-4/1-3		3,30	15,20	38,20			0,58	53
AC R 0064-4/1-6		3,30	48,40	121,80			1,07	94
AC R 0060-6/1-3		3,30	6,80	17,00			0,40	35
AC R 0060-6/1-6		3,30	21,60	54,20			0,75	63
AC R 0110-2/1-3	1.2	3,80	30,00	92,80			1,22	105
AC R 0110-2/1-6		3,80	95,60	296,00			2,20	188
AC R 0105-3/1-3		3,80	13,60	41,20			0,77	70
AC R 0105-3/1-6		3,80	43,40	131,40			1,50	125
AC R 0100-4/1-3		3,80	7,60	23,20			0,59	53
AC R 0100-4/1-6		3,80	24,20	74,00			1,11	94
AC R 0095-6/1-3		3,80	3,40	10,40			0,42	35
AC R 0095-6/1-6		3,80	10,80	33,20			0,73	63
AC R 0180-2/1-3	1.3	4,30	19,00	66,40			1,20	105
AC R 0180-2/1-6		4,30	60,60	211,80			2,00	188
AC R 0175-3/1-3		4,30	8,60	29,40			0,83	70
AC R 0175-3/1-6		4,30	27,40	93,40			1,46	125
AC R 0170-4/1-3		4,30	4,80	16,60			0,61	53
AC R 0170-4/1-6		4,30	15,40	53,00			1,06	94
AC R 0160-6/1-3		4,30	2,20	7,40			0,41	35
AC R 0160-6/1-6		4,30	7,00	23,60			0,73	63

Technical data

3.2 AC R; motor size 2

AC-servo motor Type:	Size	Rated power	Rated torque	Rated speed	Rated current at 325V DC	Rated current at 565V DC	Static- torque	Static- maximum torque	Static- current	Moment of inertia with resolver
	(-)	P_N (KW)	M_N (Nm)	n_N (min^{-1})	I_{N325} (A)	I_{N565} (A)	M_0 (Nm)	M_{0max} (Nm)	I_0 (A)	J_M ($kgcm^2$)
AC R 0210-2/2-3	2.1	0,44	2,10	2000	1,80	-	2,50	10,00	2,10	3,80
AC R 0210-2/2-6		0,44	2,10	2000	-	1,00	2,50	10,00	1,10	3,80
AC R 0205-3/2-3		0,65	2,05	3000	2,50	-	2,50	10,00	3,00	3,80
AC R 0205-3/2-6		0,65	2,05	3000	-	1,40	2,50	10,00	1,75	3,80
AC R 0200-4/2-3		0,84	2,00	4000	3,30	-	2,50	10,00	4,10	3,80
AC R 0200-4/2-6		0,84	2,00	4000	-	1,80	2,50	10,00	2,30	3,80
AC R 0190-6/2-3		1,20	1,90	6000	4,60	-	2,50	10,00	6,15	3,80
AC R 0190-6/2-6		1,20	1,90	6000	-	2,60	2,50	10,00	3,40	3,80
AC R 0320-2/2-3	2.2	0,68	3,20	2000	2,60	-	3,80	15,20	3,10	5,00
AC R 0320-2/2-6		0,68	3,20	2000	-	1,50	3,80	15,20	1,75	5,00
AC R 0310-3/2-3		0,98	3,10	3000	3,80	-	3,80	15,20	4,65	5,00
AC R 0310-3/2-6		0,98	3,10	3000	-	2,20	3,80	15,20	2,60	5,00
AC R 0300-4/2-3		1,28	3,00	4000	5,00	-	3,80	15,20	6,20	5,00
AC R 0300-4/2-6		1,28	3,00	4000	-	2,70	3,80	15,20	3,40	5,00
AC R 0290-6/2-3		1,80	2,90	6000	6,90	-	3,80	15,20	9,20	5,00
AC R 0290-6/2-6		1,80	2,90	6000	-	3,90	3,80	15,20	5,15	5,00
AC R 0510-2/2-3	2.3	1,07	5,10	2000	4,10	-	6,00	24,00	4,80	7,50
AC R 0510-2/2-6		1,07	5,10	2000	-	2,30	6,00	24,00	2,70	7,50
AC R 0500-3/2-3		1,56	5,00	3000	6,00	-	6,00	24,00	7,30	7,50
AC R 0500-3/2-6		1,56	5,00	3000	-	3,40	6,00	24,00	4,20	7,50
AC R 0480-4/2-3		2,00	4,80	4000	7,90	-	6,00	24,00	9,80	7,50
AC R 0480-4/2-6		2,00	4,80	4000	-	4,40	6,00	24,00	5,50	7,50
AC R 0450-6/2-3		2,83	4,50	6000	11,10	-	6,00	24,00	14,85	7,50
AC R 0450-6/2-6		2,83	4,50	6000	-	6,10	6,00	24,00	8,20	7,50

Technical data

AC R; motor size 2

AC-servo motor Type:	Size	Mass	Motor- resistance	Motor- inductance	Thermal time constant at I_{Nenn}	Thermal time constant at I_{max}	Torque constant	E.M.F- constant "peak value"
	(-)	m (kg)	Rph/ph (Ω)	Lph/ph (mH)	T_{thN} (min)	T_{thmax} (s)	KT (Nm/A)	KE (V/1000 min.$^{-1}$)
AC R 0210-2/2-3	2.1	6,60	9,60	45,60			1,17	105
AC R 0210-2/2-6		6,60	30,62	145,40			2,10	188
AC R 0205-3/2-3		6,60	4,20	20,00			0,82	70
AC R 0205-3/2-6		6,60	13,40	63,80			1,46	125
AC R 0200-4/2-3		6,60	2,40	11,40			0,60	53
AC R 0200-4/2-6		6,60	7,66	36,40			1,11	94
AC R 0190-6/2-3		6,60	1,06	5,00			0,41	35
AC R 0190-6/2-6		6,60	3,38	16,00			0,73	63
AC R 0320-2/2-3	2.2	7,60	5,90	32,00			1,23	105
AC R 0320-2/2-6		7,60	18,82	102,00			2,13	188
AC R 0310-3/2-3		7,60	2,62	14,20			0,82	70
AC R 0310-3/2-6		7,60	8,36	45,20			1,40	125
AC R 0300-4/2-3		7,60	1,48	8,00			0,60	53
AC R 0300-4/2-6		7,60	4,72	25,60			1,11	94
AC R 0290-6/2-3		7,60	0,66	3,60			0,42	35
AC R 0290-6/2-6		7,60	2,10	11,40			0,74	63
AC R 0510-2/2-3	2.3	9,40	3,04	22,80			1,24	105
AC R 0510-2/2-6		9,40	9,70	72,80			2,22	188
AC R 0500-3/2-3		9,40	1,36	10,20			0,83	70
AC R 0500-3/2-6		9,40	4,34	32,60			1,47	125
AC R 0480-4/2-3		9,40	0,76	5,80			0,60	53
AC R 0480-4/2-6		9,40	2,42	18,20			1,10	94
AC R 0450-6/2-3		9,40	0,34	2,60			0,40	35
AC R 0450-6/2-6		9,40	1,08	8,20			0,74	63

Technical data

3.2.1 AC RL (with separate fan); motor size 2

AC-servo motor Type:	Size	Rated power	Rated torque	Rated speed	Rated current at 325V DC	Rated current at 565V DC	Static- torque	Static- maximum torque	Static- current	Moment of inertia with resolver
	(-)	P_N (KW)	M_N (Nm)	n_N (min^{-1})	I_{N325} (A)	I_{N565} (A)	M_0 (Nm)	M_{0max} (Nm)	I_0 (A)	J_M ($kgcm^2$)
AC RL0300-2/2-3	2.1	0,63	3,00	2000	2,50	-	3,50	10,00	2,90	3,80
AC RL0300-2/2-6		0,63	3,00	2000	-	1,40	3,50	10,00	1,50	3,80
AC RL0290-3/2-3		0,91	2,90	3000	3,50	-	3,50	10,00	4,20	3,80
AC RL0290-3/2-6		0,91	2,90	3000	-	2,00	3,50	10,00	2,40	3,80
AC RL0280-4/2-3		1,17	2,80	4000	4,60	-	3,50	10,00	5,70	3,80
AC RL0280-4/2-6		1,17	2,80	4000	-	2,50	3,50	10,00	3,10	3,80
AC RL0260-6/2-3		1,63	2,60	6000	6,50	-	3,50	10,00	8,60	3,80
AC RL0260-6/2-6		1,63	2,60	6000	-	3,50	3,50	10,00	4,60	3,80
AC RL0450-2/2-3	2.2	0,94	4,50	2000	3,70	-	5,30	15,20	4,40	5,00
AC RL0450-2/2-6		0,94	4,50	2000	-	2,00	5,30	15,20	2,40	5,00
AC RL0440-3/2-3		1,38	4,40	3000	5,40	-	5,30	15,20	6,50	5,00
AC RL0440-3/2-6		1,38	4,40	3000	-	3,00	5,30	15,20	3,45	5,00
AC RL0430-4/2-3		1,80	4,30	4000	7,00	-	5,30	15,20	8,70	5,00
AC RL0430-4/2-6		1,80	4,30	4000	-	3,70	5,30	15,20	4,60	5,00
AC RL0400-6/2-3		2,50	4,00	6000	9,60	-	5,30	15,20	12,85	5,00
AC RL0400-6/2-6		2,50	4,00	6000	-	5,20	5,30	15,20	6,90	5,00
AC RL0710-2/2-3	2.3	1,50	7,10	2000	5,70	-	8,50	24,00	6,85	7,50
AC RL0710-2/2-6		1,50	7,10	2000	-	3,10	8,50	24,00	3,60	7,50
AC RL0690-3/2-3		2,20	6,90	3000	8,40	-	8,50	24,00	10,20	7,50
AC RL0690-3/2-6		2,20	6,90	3000	-	4,50	8,50	24,00	5,60	7,50
AC RL0670-4/2-3		2,80	6,70	4000	11,00	-	8,50	24,00	13,80	7,50
AC RL0670-4/2-6		2,80	6,70	4000	-	5,90	8,50	24,00	7,40	7,50
AC RL0630-6/2-3		4,00	6,30	6000	15,60	-	8,50	24,00	20,85	7,50
AC RL0630-6/2-6		4,00	6,30	6000	-	8,30	8,50	24,00	11,00	7,50

Technical data

AC RL (with separate fan); motor size 2

AC-servo motor Type:	Size	Mass	Motor- resistance	inductance	Thermal time constant at I_{Nenn}	I_{max}	Torque constant	E.M.F- constant "peak value"
	(-)	m (kg)	Rph/ph (Ω)	Lph/ph (mH)	T_{thN} (min)	T_{thmax} (s)	KT (Nm/A)	KE (V/1000 min.$^{-1}$)
AC RL0300-2/2-3	2.1	7,50	9,60	45,60			1,20	105
AC RL0300-2/2-6		7,50	30,62	145,40			2,14	188
AC RL0290-3/2-3		7,50	4,20	20,00			0,83	70
AC RL0290-3/2-6		7,50	13,40	63,80			1,45	125
AC RL0280-4/2-3		7,50	2,40	11,40			0,60	53
AC RL0280-4/2-6		7,50	7,66	36,40			1,12	94
AC RL0260-6/2-3		7,50	1,06	5,00			0,40	35
AC RL0260-6/2-6		7,50	3,38	16,00			0,74	63
AC RL0450-2/2-3	2.2	8,50	5,90	32,00			1,22	105
AC RL0450-2/2-6		8,50	18,82	102,00			2,25	188
AC RL0440-3/2-3		8,50	2,62	14,20			0,81	70
AC RL0440-3/2-6		8,50	8,36	45,20			1,47	125
AC RL0430-4/2-3		8,50	1,48	8,00			0,61	53
AC RL0430-4/2-6		8,50	4,72	25,60			1,16	94
AC RL0400-6/2-3		8,50	0,66	3,60			0,42	35
AC RL0400-6/2-6		8,50	2,10	11,40			0,77	63
AC RL0710-2/2-3	2.3	10,50	3,04	22,80			1,25	105
AC RL0710-2/2-6		10,50	9,70	72,80			2,29	188
AC RL0690-3/2-3		10,50	1,36	10,20			0,82	70
AC RL0690-3/2-6		10,50	4,34	32,60			1,53	125
AC RL0670-4/2-3		10,50	0,76	5,80			0,61	53
AC RL0670-4/2-6		10,50	2,42	18,20			1,14	94
AC RL0630-6/2-3		10,50	0,34	2,60			0,40	35
AC RL0630-6/2-6		10,50	1,08	8,20			0,76	63

Technical data

3.3 AC R; motor size 3

AC-servo motor Type:	Size	Rated power	Rated torque	Rated speed	Rated current at 325V DC	Rated current at 565V DC	Static-torque	Static-maximum torque	Static-current	Moment of inertia with resolver
	(-)	P_N (KW)	M_N (Nm)	n_N (min^{-1})	I_{N325} (A)	I_{N565} (A)	M_0 (Nm)	M_{0max} (Nm)	I_0 (A)	J_M ($kgcm^2$)
AC R 0600-2/3-3	3.1	1,26	6,00	2000	4,90	-	7,50	30,00	6,15	21,30
AC R 0600-2/3-6		1,26	6,00	2000	-	2,80	7,50	30,00	3,45	21,30
AC R 0560-3/3-3		1,80	5,60	3000	6,90	-	7,50	30,00	9,20	21,30
AC R 0560-3/3-6		1,80	5,60	3000	-	3,80	7,50	30,00	5,10	21,30
AC R 0530-4/3-3		2,20	5,30	4000	8,40	-	7,50	30,00	12,00	21,30
AC R 0530-4/3-6		2,20	5,30	4000	-	4,70	7,50	30,00	6,70	21,30
AC R 1000-2/3-3	3.2	2,10	10,80	2000	8,50	-	12,60	50,40	10,60	32,00
AC R 1000-2/3-6		2,10	10,80	2000	-	4,70	12,60	50,40	5,90	32,00
AC R 0950-3/3-3		2,90	9,50	3000	11,70	-	12,60	50,40	15,55	32,00
AC R 0950-3/3-6		2,90	9,50	3000	-	6,60	12,60	50,40	8,75	32,00
AC R 0880-4/3-3		3,70	8,80	4000	14,90	-	12,60	50,40	21,20	32,00
AC R 0880-4/3-6		3,70	8,80	4000	-	8,30	12,60	50,40	11,90	32,00
AC R 1280-2/3-3	3.3	2,60	12,80	2000	10,80	-	16,00	64,00	13,40	48,00
AC R 1280-2/3-6		2,60	12,80	2000	-	6,00	16,00	64,00	7,55	48,00
AC R 1200-3/3-3		3,80	12,00	3000	14,90	-	16,00	64,00	19,80	48,00
AC R 1200-3/3-6		3,80	12,00	3000	-	8,30	16,00	64,00	11,10	48,00
AC R 1120-4/3-3		4,70	11,20	4000	18,30	-	16,00	64,00	26,10	48,00
AC R 1120-4/3-6		4,70	11,20	4000	-	10,30	16,00	64,00	14,20	48,00

3.3.1 AC RL (with separate fan); motor size 3

AC-servo motor Type:	Size	Rated power	Rated torque	Rated speed	Rated current at 325V DC	Rated current at 565V DC	Static-torque	Static-maximum torque	Static-current	Moment of inertia with resolver
	(-)	P_N (KW)	M_N (Nm)	n_N (min^{-1})	I_{N325} (A)	I_{N565} (A)	M_0 (Nm)	M_{0max} (Nm)	I_0 (A)	J_M ($kgcm^2$)
AC RL0840-2/3-3	3.1	1,80	8,40	2000	6,90	-	10,50	30,00	8,60	21,30
AC RL0840-2/3-6		1,80	8,40	2000	-	3,70	10,50	30,00	4,65	21,30
AC RL0790-3/3-3		2,50	7,90	3000	9,70	-	10,50	30,00	12,85	21,30
AC RL0790-3/3-6		2,50	7,90	3000	-	5,20	10,50	30,00	6,70	21,30
AC RL0770-4/3-3		3,20	7,70	4000	11,80	-	10,50	30,00	16,90	21,30
AC RL0770-4/3-6		3,20	7,70	4000	-	6,30	10,50	30,00	8,90	21,30
AC RL1400-2/3-3	3.2	2,90	14,00	2000	11,90	-	17,50	50,40	14,80	32,00
AC RL1400-2/3-6		2,90	14,00	2000	-	6,30	17,50	50,40	7,90	32,00
AC RL1300-3/3-3		4,10	13,00	3000	16,30	-	17,50	50,40	21,90	32,00
AC RL1300-3/3-6		4,10	13,00	3000	-	8,70	17,50	50,40	11,60	32,00
AC RL1250-4/3-3		5,20	12,50	4000	21,00	-	17,50	50,40	29,70	32,00
AC RL1250-4/3-6		5,20	12,50	4000	-	11,00	17,50	50,40	15,80	32,00
AC RL1850-2/3-3	3.3	3,90	18,50	2000	15,50	-	22,50	64,00	19,00	48,00
AC RL1850-2/3-6		3,90	18,50	2000	-	8,20	22,50	64,00	9,90	48,00
AC RL1700-3/3-3		5,30	17,00	3000	21,00	-	22,50	64,00	27,55	48,00
AC RL1700-3/3-6		5,30	17,00	3000	-	11,20	22,50	64,00	14,80	48,00
AC RL1600-4/3-3		6,70	16,00	4000	26,00	-	22,50	64,00	36,75	48,00
AC RL1600-4/3-6		6,70	16,00	4000	-	13,80	22,50	64,00	19,80	48,00

Technical data

AC R; motor size 3

AC-servo motor Type:	Size	Mass	Motor- resistance	Motor- inductance	Thermal time constant at I_{Nenn}	Thermal time constant at I_{max}	Torque constant	E.M.F- constant "peak value"
	(-)	m (kg)	Rph/ph (Ω)	Lph/ph (mH)	T_{thN} (min)	T_{thmax} (s)	KT (Nm/A)	KE (V/1000 min.$^{-1}$)
AC R 0600-2/3-3	3.1	11,50	1,96	14,00			1,22	105
AC R 0600-2/3-6		11,50	6,26	44,64			2,14	188
AC R 0560-3/3-3		11,50	0,88	6,20			0,81	70
AC R 0560-3/3-6		11,50	2,78	19,78			1,47	125
AC R 0530-4/3-3		11,50	0,50	3,50			0,63	53
AC R 0530-4/3-6		11,50	1,56	11,16			1,13	94
AC R 1000-2/3-3	3.2	14,50	1,04	8,80			1,27	105
AC R 1000-2/3-6		14,50	3,32	28,06			2,30	188
AC R 0950-3/3-3		14,50	0,46	3,92			0,81	70
AC R 0950-3/3-6		14,50	1,46	12,50			1,44	125
AC R 0880-4/3-3		14,50	0,26	2,20			0,59	53
AC R 0880-4/3-6		14,50	0,84	7,02			1,06	94
AC R 1280-2/3-3	3.3	18,50	0,58	5,60			1,18	105
AC R 1280-2/3-6		18,50	1,84	17,86			2,13	188
AC R 1200-3/3-3		18,50	0,38	2,50			0,80	70
AC R 1200-3/3-6		18,50	0,82	7,98			1,45	125
AC R 1120-4/3-3		18,50	0,14	1,40			0,61	53
AC R 1120-4/3-6		18,50	0,46	4,46			1,09	94

AC RL (with separate fan); motor size 3

AC-servo motor Type:	Size	Mass	Motor- resistance	Motor- inductance	Thermal time constant at I_{Nenn}	Thermal time constant at I_{max}	Torque constant	E.M.F- constant "peak value"
	(-)	m (kg)	Rph/ph (Ω)	Lph/ph (mH)	T_{thN} (min)	T_{thmax} (s)	KT (Nm/A)	KE (V/1000 min.$^{-1}$)
AC RL0840-2/3-3	3.1	13,00	1,96	14,00			1,22	105
AC RL0840-2/3-6		13,00	6,26	44,64			2,27	188
AC RL0790-3/3-3		13,00	0,88	6,20			0,81	70
AC RL0790-3/3-6		13,00	2,78	19,78			1,52	125
AC RL0770-4/3-3		13,00	0,50	3,50			0,65	53
AC RL0770-4/3-6		13,00	1,56	11,16			1,22	94
AC RL1400-2/3-3	3.2	16,00	1,04	8,80			1,18	105
AC RL1400-2/3-6		16,00	3,32	28,06			2,22	188
AC RL1300-3/3-3		16,00	0,46	3,92			0,80	70
AC RL1300-3/3-6		16,00	1,46	12,50			1,50	125
AC RL1250-4/3-3		16,00	0,26	2,20			0,60	53
AC RL1250-4/3-6		16,00	0,84	7,02			1,14	94
AC RL1850-2/3-3	3.3	20,00	0,58	5,60			1,20	105
AC RL1850-2/3-6		20,00	1,84	17,86			2,25	188
AC RL1700-3/3-3		20,00	0,38	2,50			0,80	70
AC RL1700-3/3-6		20,00	0,82	7,98			1,52	125
AC RL1600-4/3-3		20,00	0,14	1,40			0,62	53
AC RL1600-4/3-6		20,00	0,46	4,46			1,16	94

3.4 AC R; motor size 4

AC-servo motor Type:	Size	Rated power	Rated torque	Rated speed	Rated current at 325V DC	Rated current at 565V DC	Static-torque	Static-maximum torque	Static-current	Moment of inertia with resolver
	(-)	P_N (KW)	M_N (Nm)	n_N (min^{-1})	I_{N325} (A)	I_{N565} (A)	M_0 (Nm)	M_{0max} (Nm)	I_0 (A)	J_M ($kgcm^2$)
AC R 1750-1/4-3	4.1	1,80	17,50	1000	7,20	-	25,00	100,00	10,25	100,00
AC R 1750-1/4-6		1,80	17,50	1000	-	4,00	25,00	100,00	5,70	100,00
AC R 1500-2/4-3		3,10	15,00	2000	12,30	-	25,00	100,00	21,10	100,00
AC R 1500-2/4-6		3,10	15,00	2000	-	6,90	25,00	100,00	11,50	100,00
AC R 1250-3/4-3		3,90	12,50	3000	15,60	-	25,00	100,00	31,10	100,00
AC R 1250-3/4-6		3,90	12,50	3000	-	8,70	25,00	100,00	17,40	100,00
AC R 2800-1/4-3	4.2	2,90	28,00	1000	11,50	-	40,00	160,00	16,40	150,00
AC R 2800-1/4-6		2,90	28,00	1000	-	6,50	40,00	160,00	9,20	150,00
AC R 2400-2/4-3		5,00	24,00	2000	19,70	-	40,00	160,00	32,80	150,00
AC R 2400-2/4-6		5,00	24,00	2000	-	11,10	40,00	160,00	18,40	150,00
AC R 2000-3/4-3		6,30	20,00	3000	24,90	-	40,00	160,00	49,85	150,00
AC R 2000-3/4-6		6,30	20,00	3000	-	13,90	40,00	160,00	27,80	150,00
AC R 4400-1/4-3	4.3	4,60	44,10	1000	18,10	-	63,00	252,00	25,80	230,00
AC R 4400-1/4-6		4,60	44,10	1000	-	10,20	63,00	252,00	14,50	230,00
AC R 3800-2/4-3		8,00	37,80	2000	31,00	-	63,00	252,00	51,60	230,00
AC R 3800-2/4-6		8,00	37,80	2000	-	17,40	63,00	252,00	29,00	230,00
AC R 3150-3/4-6		10,00	31,50	3000	-	21,90	63,00	252,00	43,80	230,00

3.4.1 AC RL (with separate fan); motor size 4

AC-servo motor Type:	Size	Rated power	Rated torque	Rated speed	Rated current at 325V DC	Rated current at 565V DC	Static-torque	Static-maximum torque	Static-current	Moment of inertia with resolver
	(-)	P_N (KW)	M_N (Nm)	n_N (min^{-1})	I_{N325} (A)	I_{N565} (A)	M_0 (Nm)	M_{0max} (Nm)	I_0 (A)	J_M ($kgcm^2$)
AC RL2500-1/4-3	4.1	2,60	25,00	1000	10,00	-	35,00	100,00	14,10	100,00
AC RL2500-1/4-6		2,60	25,00	1000	-	5,40	35,00	100,00	7,60	100,00
AC RL2100-2/4-3		4,40	21,00	2000	17,00	-	35,00	100,00	29,70	100,00
AC RL2100-2/4-6		4,40	21,00	2000	-	9,30	35,00	100,00	15,30	100,00
AC RL1750-3/4-3		5,50	17,50	3000	22,00	-	35,00	100,00	43,80	100,00
AC RL1750-3/4-6		5,50	17,50	3000	-	11,50	35,00	100,00	23,30	100,00
AC RL3900-1/4-3	4.2	4,10	39,00	1000	16,00	-	56,00	160,00	23,00	150,00
AC RL3900-1/4-6		4,10	39,00	1000	-	8,60	56,00	160,00	12,40	150,00
AC RL3400-2/4-3		7,10	34,00	2000	28,00	-	56,00	160,00	45,90	150,00
AC RL3400-2/4-6		7,10	34,00	2000	-	14,70	56,00	160,00	24,70	150,00
AC RL2800-3/4-3		8,80	28,00	3000	35,00	-	56,00	160,00	70,70	150,00
AC RL2800-3/4-6		8,80	28,00	3000	-	18,50	56,00	160,00	37,10	150,00
AC RL6200-1/4-3	4.3	6,50	62,00	1000	25,00	-	88,00	252,00	36,00	230,00
AC RL6200-1/4-6		6,50	62,00	1000	-	13,50	88,00	252,00	19,80	230,00
AC RL5300-2/4-6		11,00	53,00	2000	-	23,10	88,00	252,00	38,90	230,00
AC RL4400-3/4-6		13,80	44,00	3000	-	29,40	88,00	252,00	58,70	230,00

Technical data

AC R; motor size 4

AC-servo motor Type:	Size	Mass	Motor- resistance	Motor- inductance	Thermal time constant at I_{Nenn}	Thermal time constant at I_{max}	Torque constant	E.M.F- constant "peak value"
	(-)	m (kg)	Rph/ph (Ω)	Lph/ph (mH)	T_{thN} (min)	T_{thmax} (s)	KT (Nm/A)	KE (V/1000 min.$^{-1}$)
AC R 1750-1/4-3	4.1	26,00	1,96	17,60			2,43	210
AC R 1750-1/4-6		26,00	6,26	56,12			4,38	375
AC R 1500-2/4-3		26,00	0,50	4,40			1,22	105
AC R 1500-2/4-6		26,00	1,56	14,04			2,17	188
AC R 1250-3/4-3		26,00	0,22	2,00			0,80	70
AC R 1250-3/4-6		26,00	0,7	6,38			1,44	125
AC R 2800-1/4-3	4.2	32,00	1,04	11,20			2,43	210
AC R 2800-1/4-6		32,00	3,32	35,72			4,30	375
AC R 2400-2/4-3		32,00	0,26	2,80			1,22	105
AC R 2400-2/4-6		32,00	0,84	8,92			2,16	188
AC R 2000-3/4-3		32,00	0,12	1,24			0,80	70
AC R 2000-3/4-6		32,00	0,38	3,96			1,44	125
AC R 4400-1/4-3	4.3	43,50	0,56	7,20			2,44	210
AC R 4400-1/4-6		43,50	1,78	22,96			4,32	375
AC R 3800-2/4-3		43,50	0,08	1,80			1,22	105
AC R 3800-2/4-6		43,50	0,44	5,74			2,17	188
AC R 3150-3/4-6		43,50	0,20	2,56			1,44	125

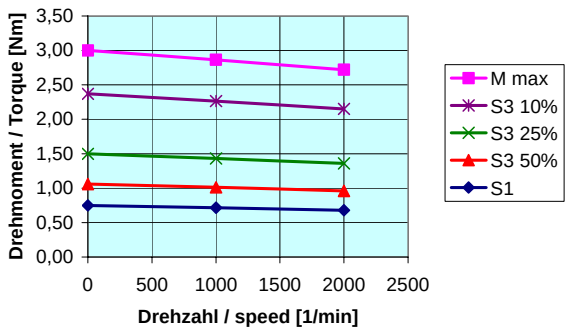
AC RL (with separate fan); motor size 4

AC-servo motor Type:	Size	Mass	Motor- resistance	Motor- inductance	Thermal time constant at I_{Nenn}	Thermal time constant at I_{max}	Torque constant	E.M.F- constant "peak value"
	(-)	m (kg)	Rph/ph (Ω)	Lph/ph (mH)	T_{thN} (min)	T_{thmax} (s)	KT (Nm/A)	KE (V/1000 min.$^{-1}$)
AC RL2500-1/4-3	4.1	27,50	1,96	17,60			2,50	210
AC RL2500-1/4-6		27,50	6,26	56,12			4,63	375
AC RL2100-2/4-3		27,50	0,50	4,40			1,24	105
AC RL2100-2/4-6		27,50	1,56	14,04			2,26	188
AC RL1750-3/4-3		27,50	0,22	2,00			0,80	70
AC RL1750-3/4-6		27,50	0,7	6,38			1,52	125
AC RL3900-1/4-3	4.2	34,00	1,04	11,20			2,44	210
AC RL3900-1/4-6		34,00	3,32	35,72			4,53	375
AC RL3400-2/4-3		34,00	0,26	2,80			1,21	105
AC RL3400-2/4-6		34,00	0,84	8,92			2,31	188
AC RL2800-3/4-3		34,00	0,12	1,24			0,80	70
AC RL2800-3/4-6		34,00	0,38	3,96			1,51	125
AC RL6200-1/4-3	4.3	45,50	0,56	7,20			2,48	210
AC RL6200-1/4-6		45,50	1,78	22,96			4,59	375
AC RL5300-2/4-6		45,50	0,44	5,74			2,29	188
AC RL4400-3/4-6		45,50	0,2	2,56			1,50	125

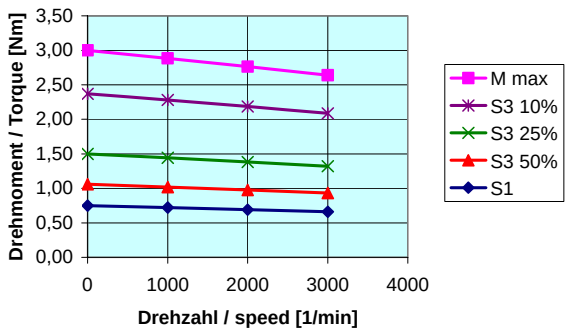
3.5 Torque/Speed Diagrams

3.5.1 AC R; motor size 1

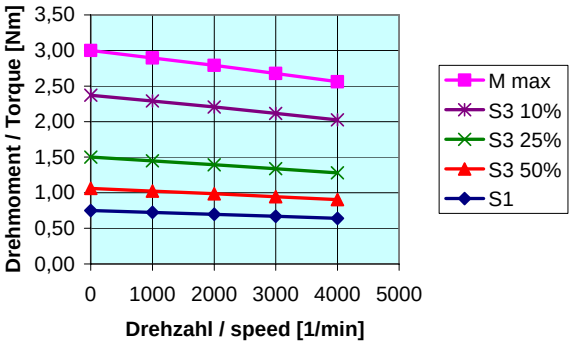
AC R 0068



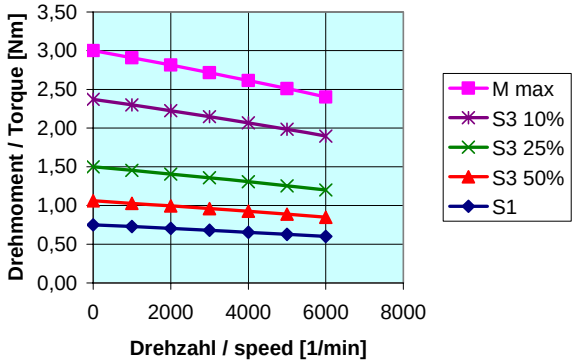
AC R 0066



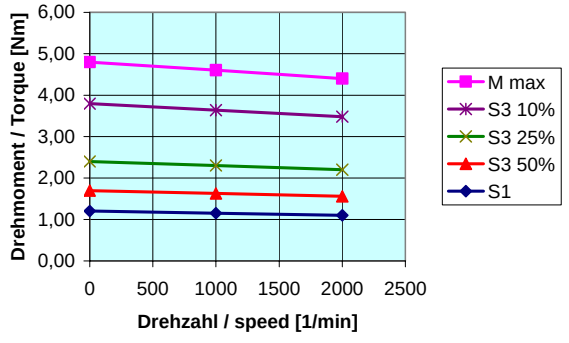
AC R 0064



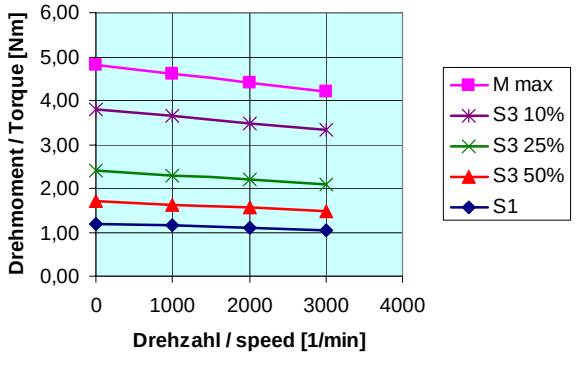
AC R 0060



AC R 0110



AC R 0105

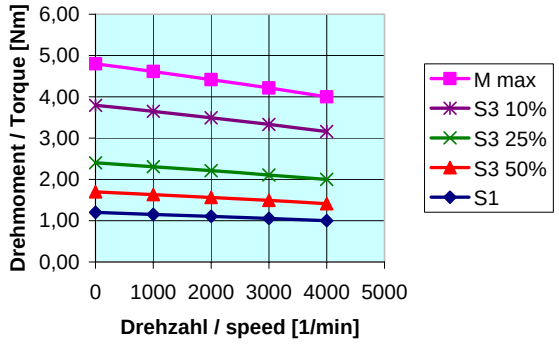


Technical data

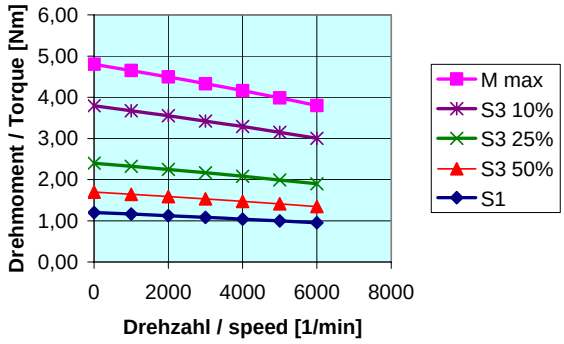
Torque/Speed Diagrams

AC R; motor size 1

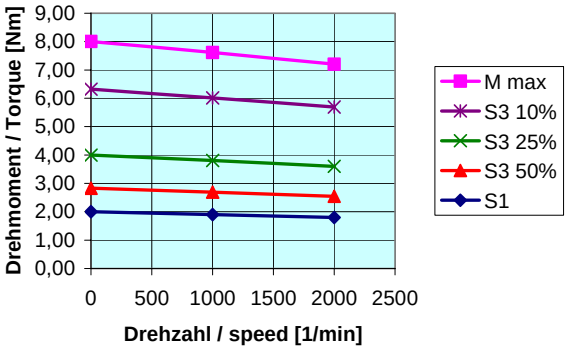
AC R 0100



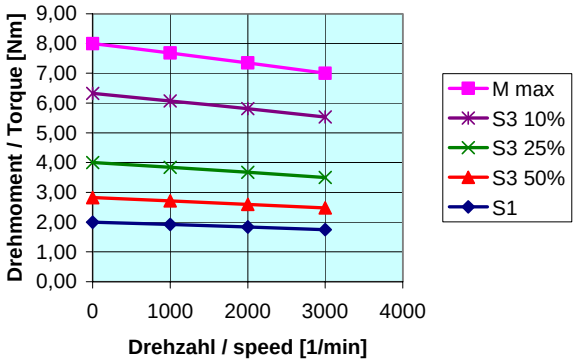
AC R 0095



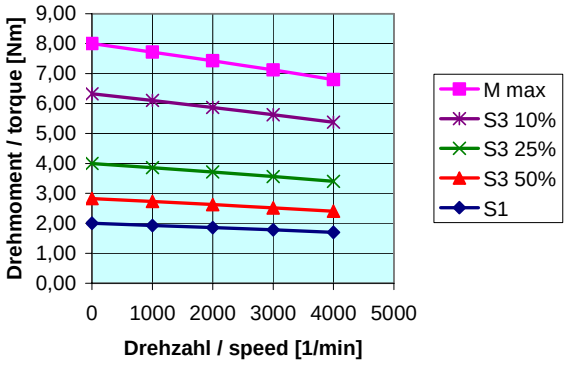
AC R 0180



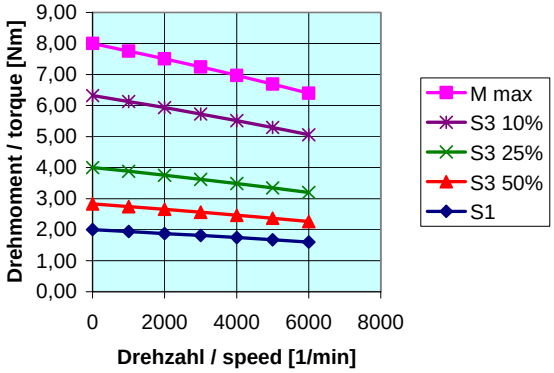
AC R 0175



AC R 0170



AC R 0160

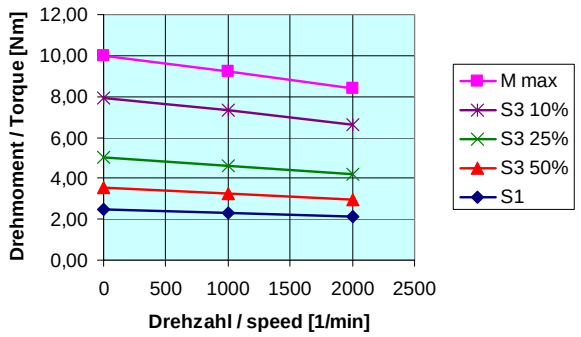


Technical data

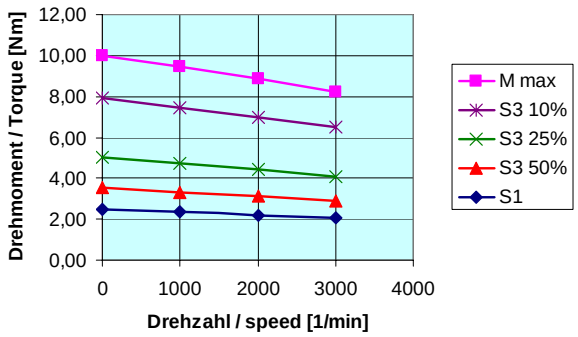
Torque/Speed Diagrams

3.5.2 AC R; motor size 2

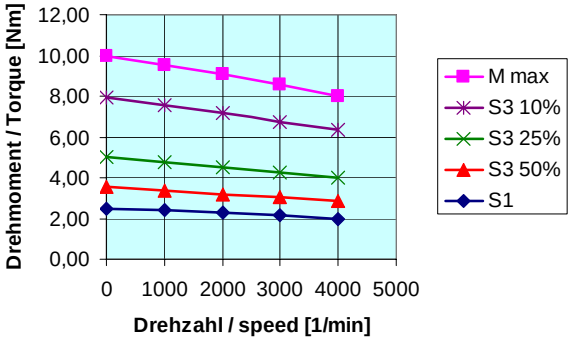
AC R 0210



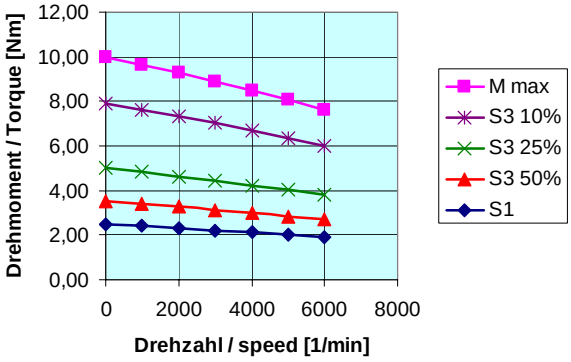
AC R 0205



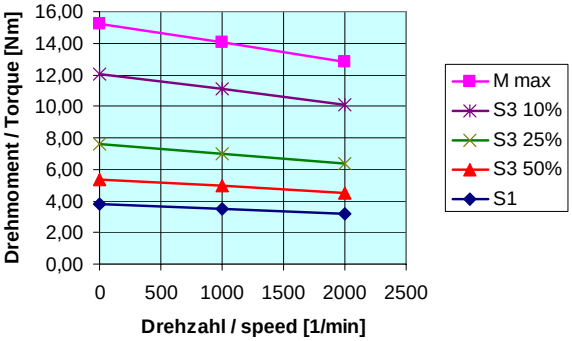
AC R 0200



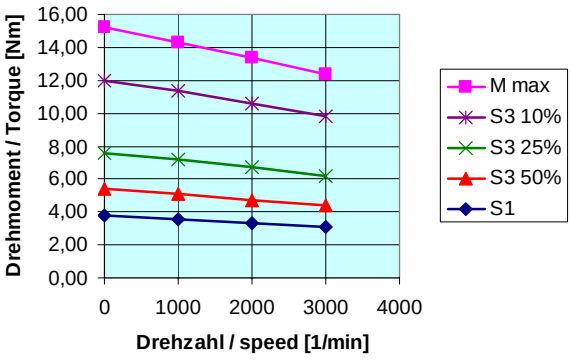
AC R 0190



AC R 0320



AC R 0310

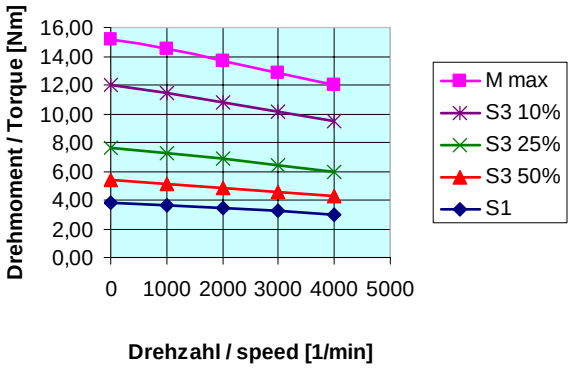


Technical data

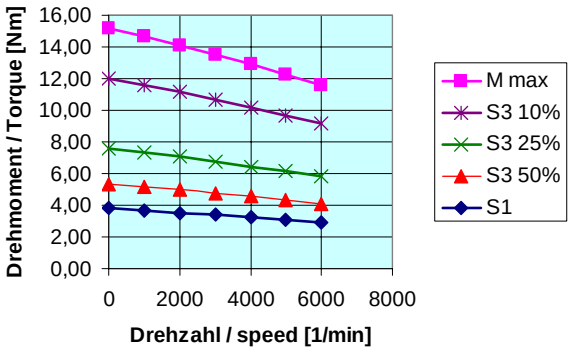
Torque/Speed Diagrams

AC R; motor size 2

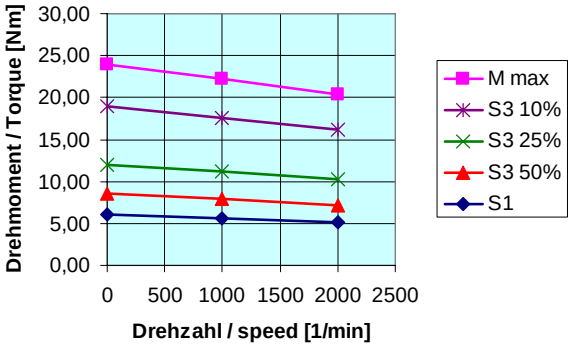
AC R 0300



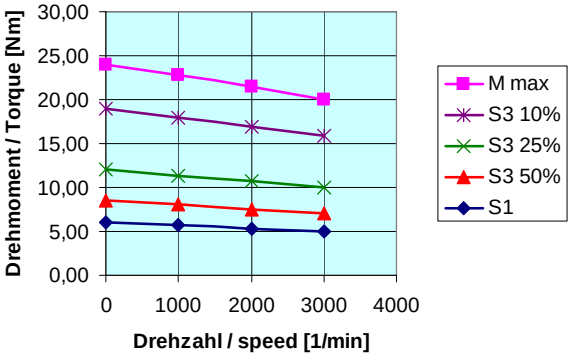
AC R 0290



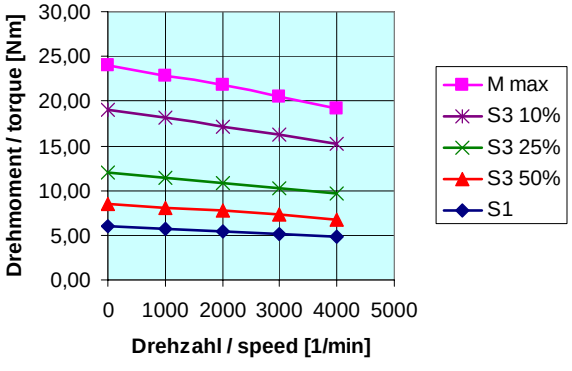
AC R 0510



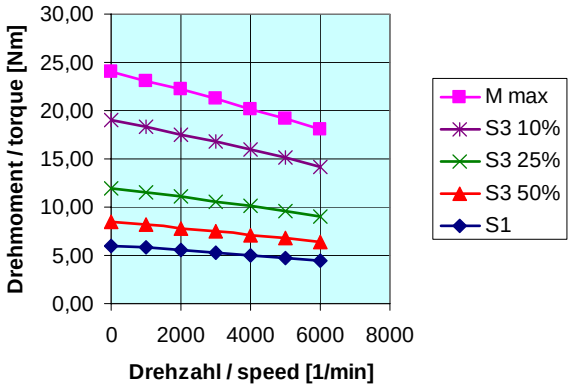
AC R 0500



AC R 0480



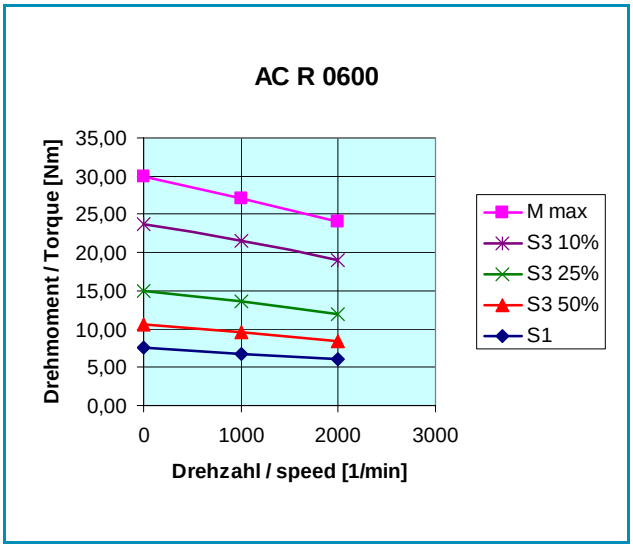
AC R 0450

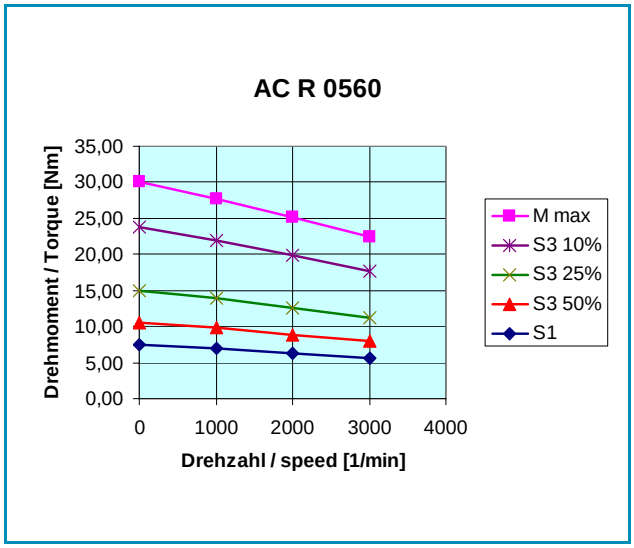


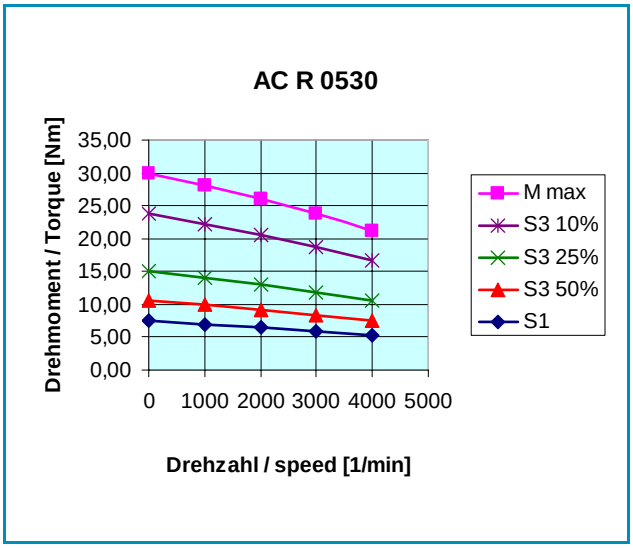
Technical data

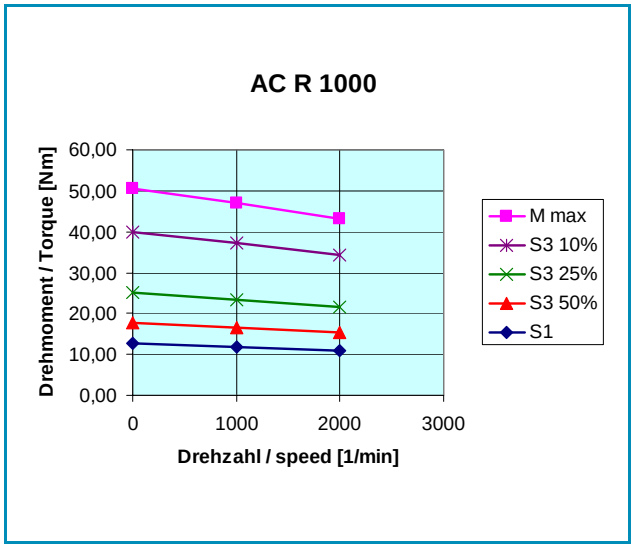
Torque/Speed Diagrams

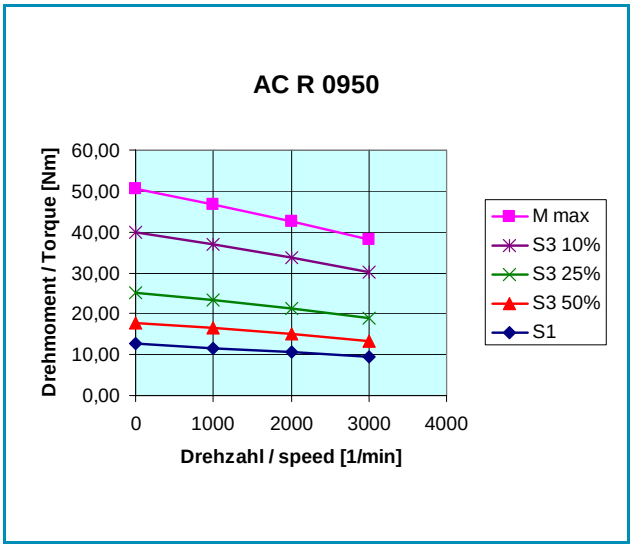
3.5.3 AC R; motor size 3

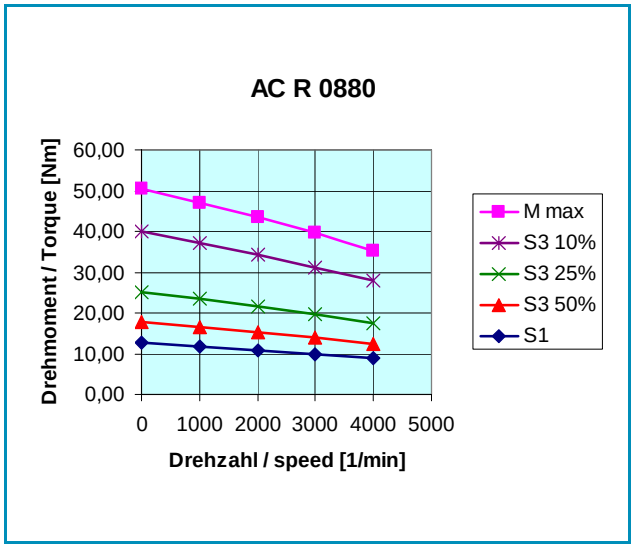








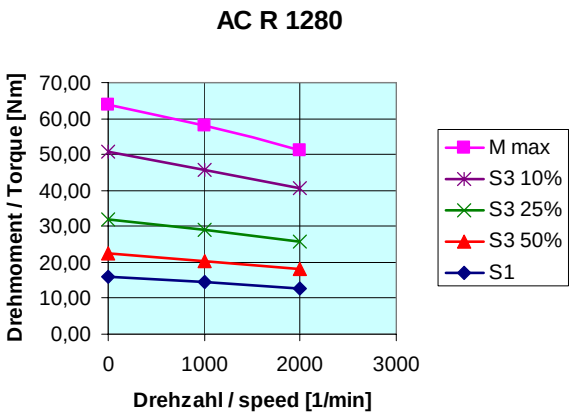


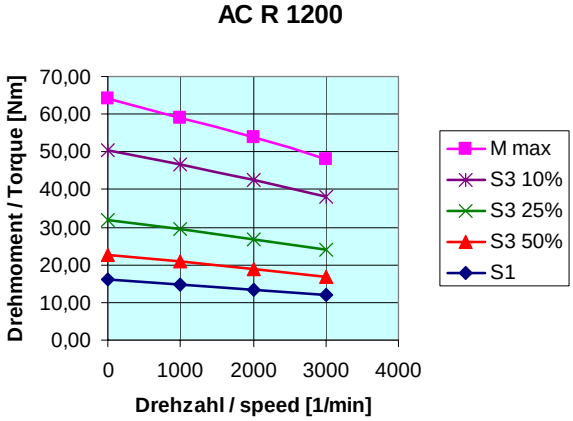


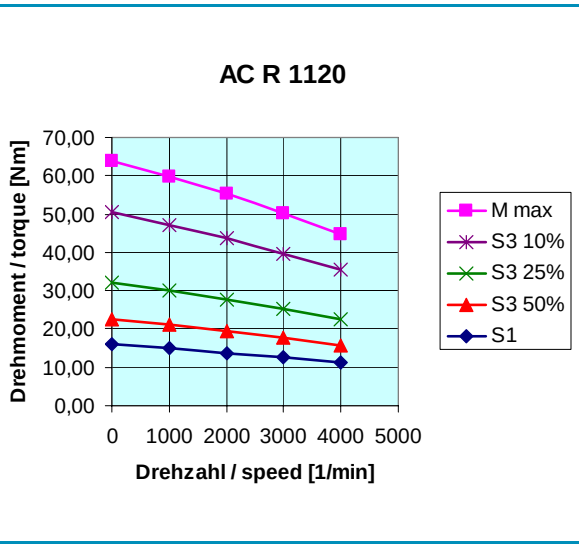
Technical data

Torque/Speed Diagrams

AC R; motor size 3



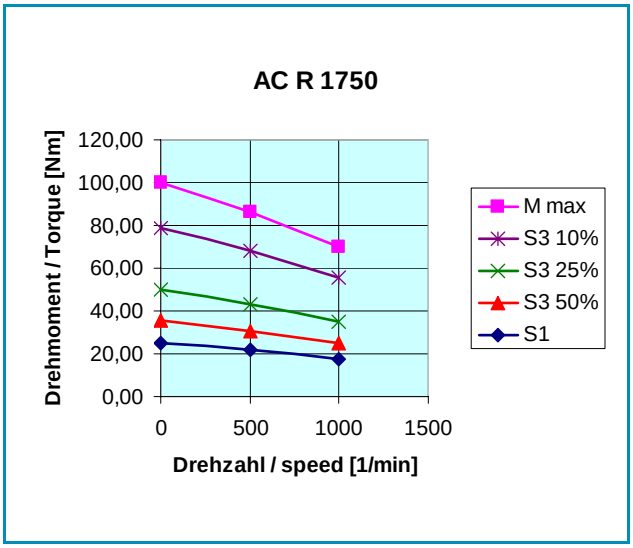


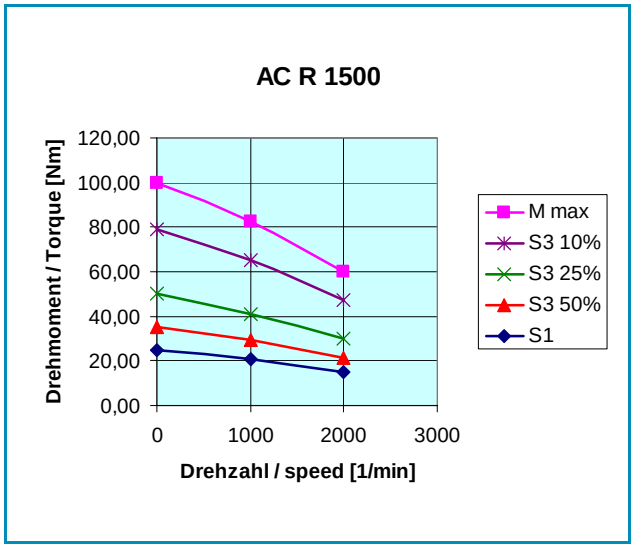


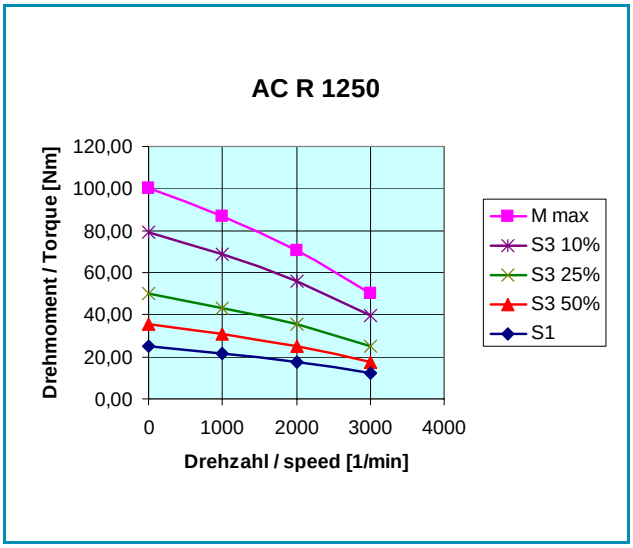
Technical data

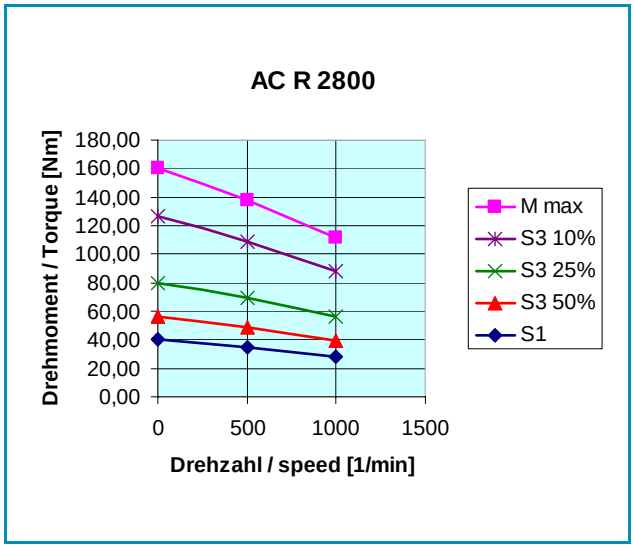
Torque/Speed Diagrams

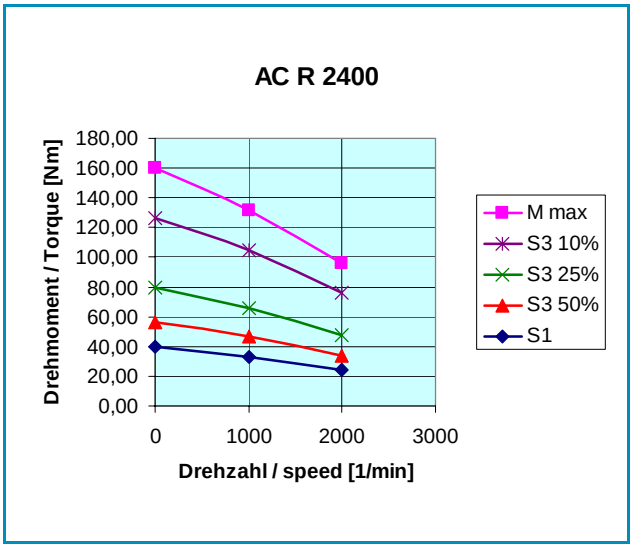
3.5.4 AC R; motor size 4

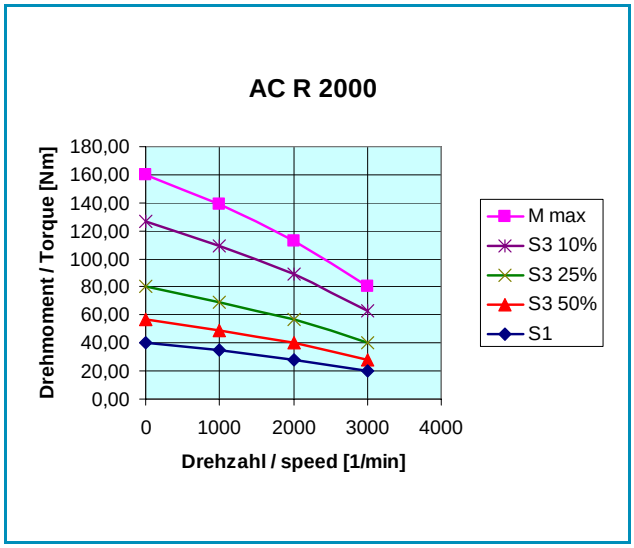








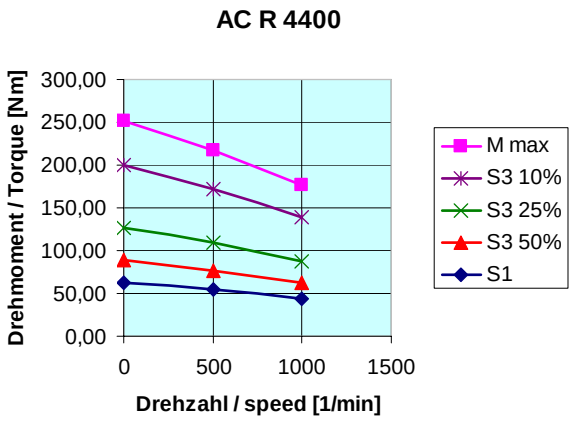


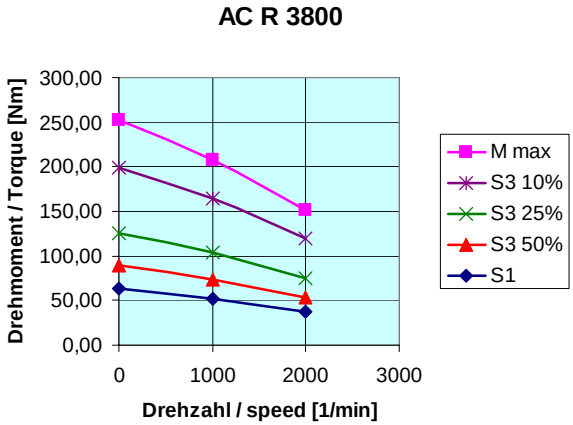


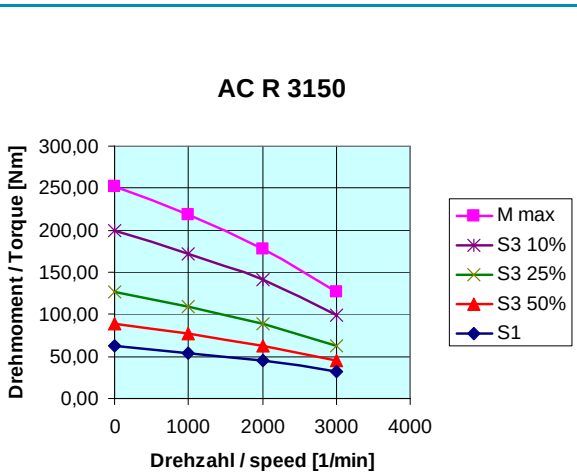
Technical data

Torque/Speed Diagrams

AC R; motor size 4





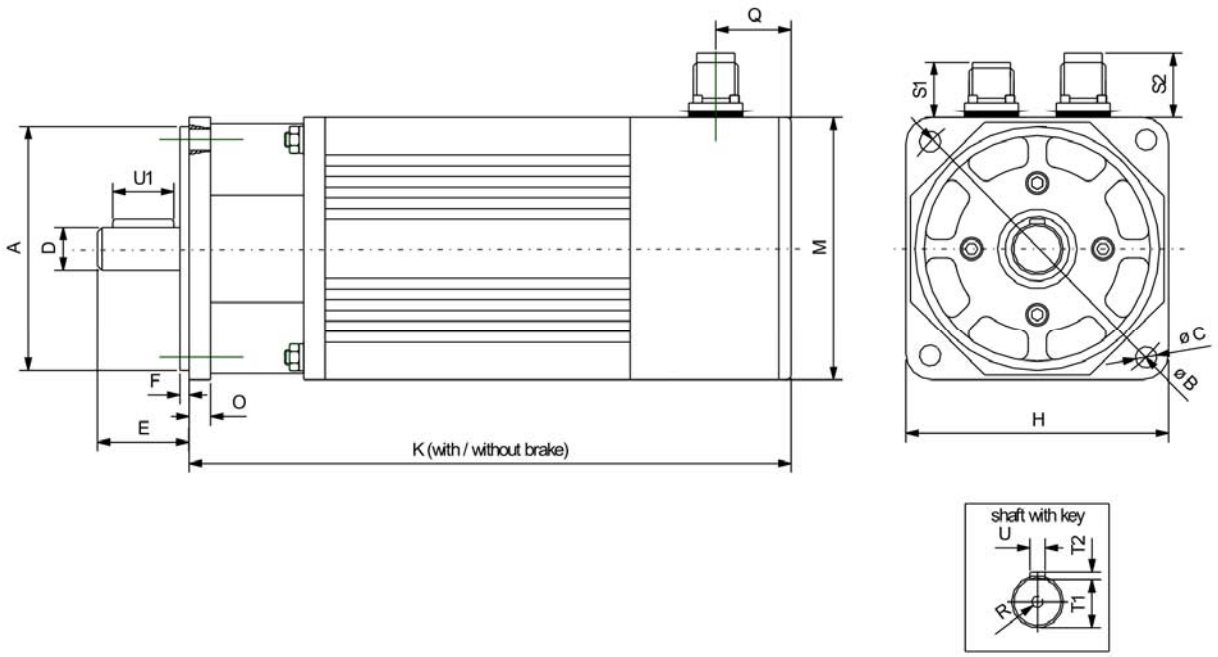


3.5.5 AC RL; motor size 2 - 4

On request !

4 Dimensions

4.1 Motor size 1 – 4 without separate fan (AC R)

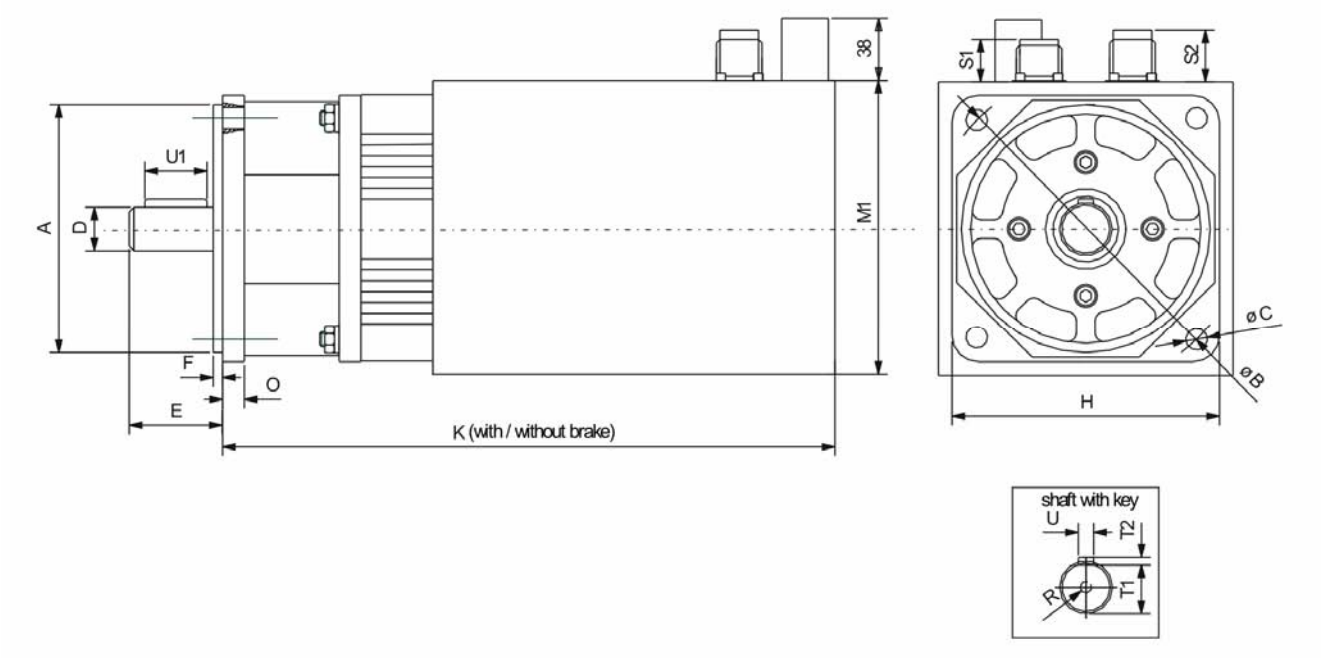


AC R Size	A (j6)	B	C	D (k6)	E	F	H ± 2	K	M ± 2	O	Q	R	S1	S2	T1	T2	U	u1
1.1	80	100	7	14	30	3,0	86	200	88	6	28	M4x15	16	21	11,1	5h9	5h9	20
1.2	80	100	7	14	30	3,0	86	215	88	6	28	M4x15	16	21	11,1	5h9	5h9	20
1.3	80	100	7	14	30	3,0	86	230	88	6	28	M4x15	16	21	11,1	5h9	5h9	20
2.1	95	115	9	19	40	3,0	105	240	115	8	33	M6x20	18	21	15,5	6h9	6h9	30
2.2	95	115	9	19	40	3,0	105	255	115	8	33	M6x20	18	21	15,5	6h9	6h9	30
2.3	95	115	9	19	40	3,0	105	285	115	8	33	M6x20	18	21	15,5	6h9	6h9	30
3.1	130	165	11	24	50	3,5	145	270	145	12	33	M8x25	25	21	19,9	7h11	8h11	40
3.2	130	165	11	24	50	3,5	145	300	145	12	33	M8x25	25	21	19,9	7h11	8h11	40
3.3	130	165	11	24	50	3,5	145	345	145	12	33	M8x25	25	21	19,9	7h11	8h11	40
4.1	180	215	14	32	58	4,0	185	350	187	13	42	M10x25	25	21	27,3	8h11	10h11	50
4.2	180	215	14	32	58	4,0	185	395	187	13	42	M10x25	25	21	27,3	8h11	10h11	50
4.3	180	215	14	32	58	4,0	185	470	187	13	42	M10x25	25	21	27,3	8h11	10h11	50

All dimensions in "mm"

Dimensions

4.2 Motor size 2 - 4 with separate fan (AC RL)



AC RL Size	A (j6)	B	C	D (k6)	E	F	H ± 2	K	M1 ± 3	O	R	S3	S4	T1	T2	U	u1
2.1	95	115	9	19	40	3,0	105	340	135	8	M6x20	18	21	15,5	6h9	6h9	30
2.2	95	115	9	19	40	3,0	105	355	135	8	M6x20	18	21	15,5	6h9	6h9	30
2.3	95	115	9	19	40	3,0	105	385	135	8	M6x20	18	21	15,5	6h9	6h9	30
3.1	130	165	11	24	50	3,5	145	370	165	12	M8x25	25	21	19,9	7h11	8h11	40
3.2	130	165	11	24	50	3,5	145	400	165	12	M8x25	25	21	19,9	7h11	8h11	40
3.3	130	165	11	24	50	3,5	145	445	165	12	M8x25	25	21	19,9	7h11	8h11	40
4.1	180	215	14	32	58	4,0	185	463	210	13	M10x25	25	21	27,3	8h11	10h11	50
4.2	180	215	14	32	58	4,0	185	508	210	13	M10x25	25	21	27,3	8h11	10h11	50
4.3	180	215	14	32	58	4,0	185	583	210	13	M10x25	25	21	27,3	8h11	10h11	50

All dimensions in "mm"

5 Connector assignment

5.1 Power connector

5.1.1 Motor size 1 to 2

Power connector

motor side

SSD Drives - motor size 1...2

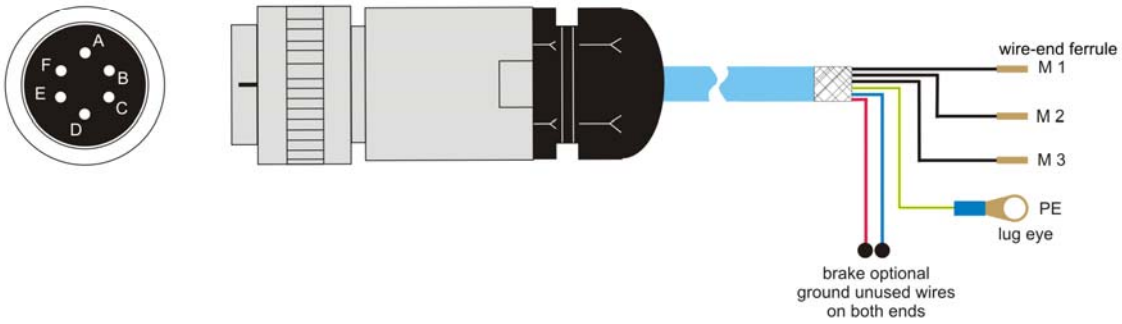
Type: AC R / AC RL

regulator side

SSD Drives - Servo drives

Type: 635 and 637/637+/637f
in the compact enclosure

view solder / crimp connector - side



S MB RPM BG0/2-L ST.0100.0001		KMB BG0/2-B KA.0003.6304			wire-end ferrule
PIN - Nr.		colour	function		-
A		black 3	motor connection		M3 (W)
B		black 2	motor connection		M2 (V)
C		black 1	motor connection		M1 (U)
D	1)	yellow / green	ground connection		PE
E		red	brake +24V DC	2)	connection not on terminal
F		blue	brake 0V DC		
case	1)				case

1)
The screen is connected at the connector pin and also to the connector shell

2)
Attention ! Safety and insulation:
The brake must be insulated for protective separation (PELV). Otherwise the insulation class of the drive becomes reduced or the use of an additional galvanic seperation is required

					Scale:	
					Type: KK MB RPM 0/2.K - XX.X / B	
				Create. 08.12.04 DL	Designation: Blue motor cable (compact enclosure) for SSD Drives AC R motors and drives	
				Check. 08.12.04 EH		
				Norm		
					Drawing No: Z-MK.6300.xxxx	Sheet 1
Rev.	Amendment	Date	Name	Source	File name: Z-MK.6300-E.cdr	

Connector assignment

Power connector

5.1.2 Motor size 3

Power connector

motor side

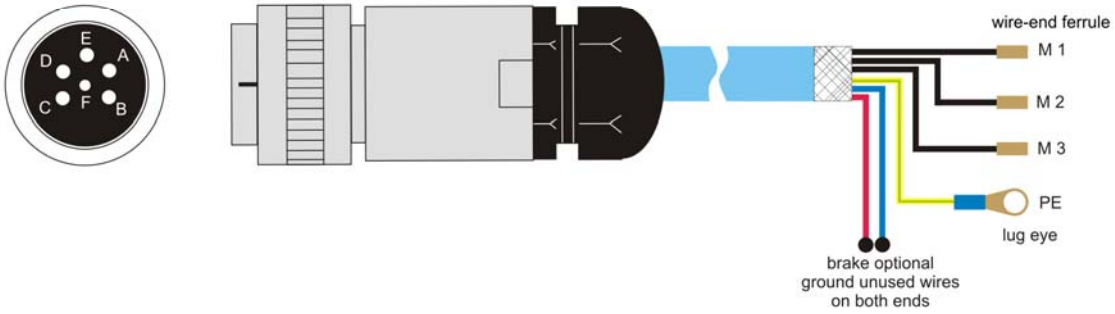
SSD Drives - motor size 3
Type: AC R / AC RL

regulator side

SSD Drives - Servo drives

Type: 635 and 637/637+/637f
in the compact enclosure

view solder / crimp connector - side



S MB RPM BG3-L ST.0100.1001		KMB BG3-B KA.0003.6302			wire-end ferrule
PIN - Nr.		colour	function		-
A		black 3	motor connection		M3 (W)
B		black 2	motor connection		M2 (V)
C		black 1	motor connection		M1 (U)
D	1)	yellow / green	ground connection		PE
E		red	brake +24V DC	2)	connection not on terminal
F		blue	brake 0V DC		
case	1)				case

1)
The screen is connected at the connector pin and also to the connector shell

2)
Attention ! Safety and insulation:
The brake must be insulated for protective separation (PELV).
Otherwise the insulation class of the drive becomes reduced or the use of an additional galvanic seperation is required

SSD DRIVES					Scale:	
					Type: KK MB RPM 3.K - XX.X / B	
				Create. 08.12.04 DL	Designation:	
				Check. 08.12.04 EH	Blue motor cable (compact enclosure) for SSD Drives AC R motors and drives	
				Norm		
					Drawing No: Z-MK.6303.xxxx	Sheet 1
Rev.	Amendment	Date	Name	Source	File name: Z-MK.6303-E.cdr	

Connector assignment

Power connector

5.1.3 Motor size 4

Power connector

motor side

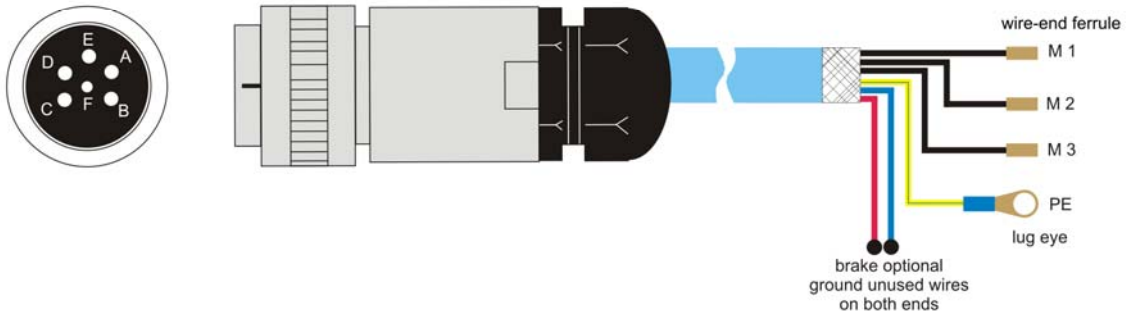
SSD Drives - motor size 4
Type: AC R / AC RL

regulator side

SSD Drives - Servo drives

Type: 635 and 637/637+/637f
in the compact enclosure

view solder / crimp connector - side



S MB R BG4-L ST.0100.2001		KMB BG4-B KA.0003.6303			wire-end ferrule
PIN - Nr.		colour	function		-
A		black 3	motor connection		M3 (W)
B		black 2	motor connection		M2 (V)
C		black 1	motor connection		M1 (U)
D	1)	yellow / green	ground connection		PE
E		red	brake +24V DC	2)	connection not on terminal
F		blue	brake 0V DC		
case	1)				case

1)
The screen is connected at the connector pin and also to the connector shell

2)
Attention ! Safety and insulation:
The brake must be insulated for protective separation (PELV).
Otherwise the insulation class of the drive becomes reduced or the use of an additional galvanic seperation is required

SSD DRIVES					Scale:	
					Type: KK MB 4.K - XX.X / B	
				Create. 08.12.04 DL	Designation: Blue motor cable (compact enclosure) for SSD Drives AC R motors and drives	
				Check. 08.12.04 EH		
				Norm		
					Drawing No: Z-MK.6304.xxxx	Sheet 1
Rev.	Amendment	Date	Name	Source	File name: Z-MK.6304-E.cdr	

Connector assignment

5.2 X50 - connector

5.2.1 Motor size 1 to 2

X50 - connector

motor side

SSD Drives - motor size 1...2

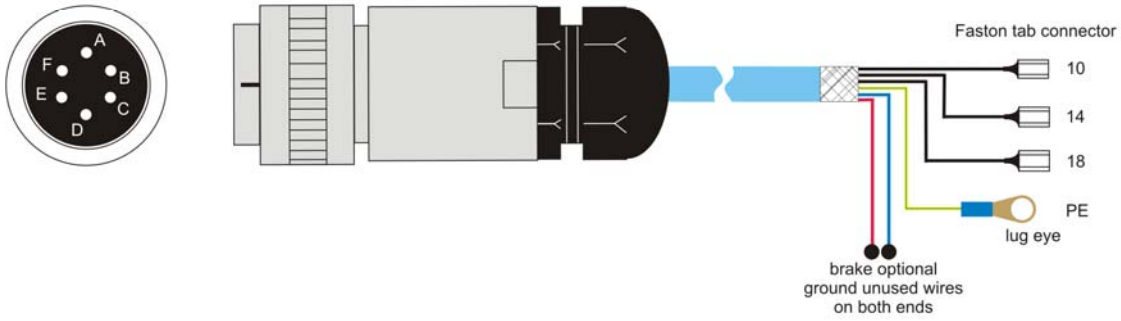
Type: AC R / AC RL

drive side

SSD Drives - servo drives

Type: 635 and 637/637+/637f
in the rack

view solder / crimp connector - side



S MB RPM BG0/2-L ST.0100.0001		KMB BG0/2-B KA.0003.6304			X50 connector strip	3)
PIN - Nr.		colour	function		-	
A		black 3	motor connection		18 20	
B		black 2	motor connection		14 16	
C		black 1	motor connection		10 12	
D	1)	yellow / green	ground connection		case	
E		red	brake +24V DC	2)	-	
F		blue	brake 0V DC		-	
case	1)				case	

1)
The screen is connected
at the connector pin and
also to the connector shell

2)
Attention ! Safety and insulation:
The brake must be insulated for protective separation (PELV).
Otherwise the insulation class of the drive becomes reduced
or the use of an additional galvanic seperation is required

3)
not in the scope of delivery

SSD DRIVES						Scale:	
						Type: KK MB RPM 0/2.R - XX.X / B	
				Create.	08.12.04	DL	Designation: Blue motor cable (plugs/terminal strip) for SSD Drives AC R motors and drives
				Check.	08.12.04	EH	
				Norm			
							Drawing No: Z-MK.0600.xxxx — Sheet 1
Rev.	Amendment	Date	Name	Source			File name: Z-MK.0600-E.cdr

Connector assignment

X50 - connector

5.2.2 Motor size 3

X50 - connector

motor side

SSD Drives - motor size 3

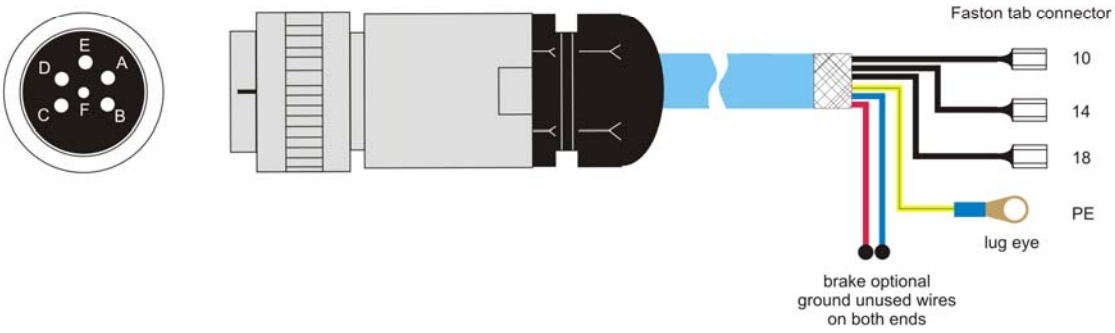
Type: AC R / AC RL

drive side

SSD Drives - servo drives

Type: 635 and 637/637+/637f
in the rack

view solder / crimp connector - side



S MB RPM BG3-L ST.0100.0001		KMB BG3-B KA.0003.6302			X50 connector strip 3)
PIN - Nr.		colour	function		-
A		black 3	motor connection		18 / 20
B		black 2	motor connection		14 / 16
C		black 1	motor connection		10 / 12
D	1)	yellow / green	ground connection		case
E		red	brake +24V DC	2)	-
F		blue	brake 0V DC		-
case	1)				case

1)
The screen is connected at the connector pin and also to the connector shell

2)
Attention ! Safety and insulation:
The brake must be insulated for protective separation (PELV). Otherwise the insulation class of the drive becomes reduced or the use of an additional galvanic seperation is required

3)
not in the scope of delivery

					Scale:	
					Type: KK MB RPM 3.R - XX.X / B	
				Create. 08.12.04	DL	Designation: Blue motor cable (plugs/terminal strip) for SSD Drives AC R motors and drives
				Check. 08.12.04	EH	
				Norm		
						Drawing No: Z-MK.0603.xxxx — Sheet 1
Rev.	Amendment	Date	Name	Source		File name: Z-MK.0603-E.cdr

Connector assignment

X50 - connector

5.2.3 Motor size 4

X50 - connector

motor side

SSD Drives - motor size 4

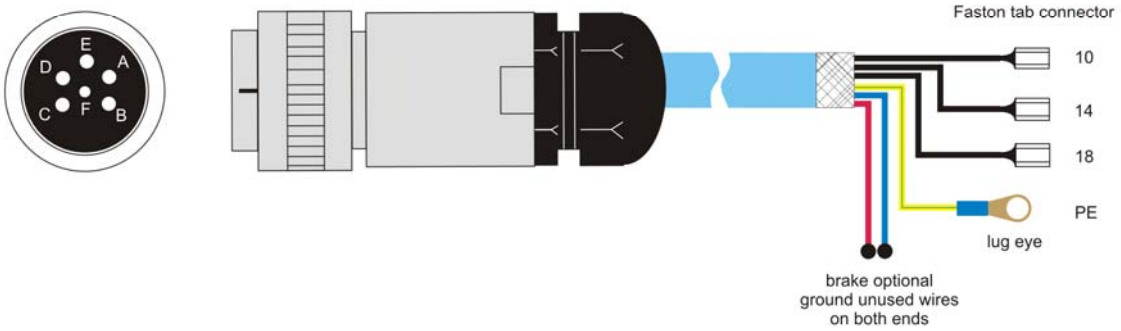
Type: AC R / AC RL

drive side

SSD Drives - servo drives

Type: 635 and 637/637+/637f
in the rack

view solder / crimp connector - side



S MB R BG4-L ST.0100.2001		KMB R BG4-B KA.0003.6303			X50 connector strip	3)
PIN - Nr.		colour	function		-	
A		black 3	motor connection		18 20	
B		black 2	motor connection		14 16	
C		black 1	motor connection		10 12	
D	1)	yellow / green	ground connection		case	
E		red	brake +24V DC	2)	-	
F		blue	brake 0V DC		-	
case	1)				case	

1)
The screen is connected at the connector pin and also to the connector shell

2)
Attention ! Safety and insulation:
The brake must be insulated for protective separation (PELV). Otherwise the insulation class of the drive becomes reduced or the use of an additional galvanic seperation is required

3)
not in the scope of delivery

SSD DRIVES						Scale:	
				Create.	08.12.04	DL	Type: KK MB 4.R - XX.X / B
				Check.	08.12.04	EH	Designation: Blue motor cable (plugs/terminal strip) for SSD Drives AC R motors and drives
				Norm			
							Drawing No: Z-MK.0604.xxxx — Sheet 1
Rev.	Amendment	Date	Name	Source			File name: Z-MK.0604-E.cdr

Connector assignment

5.3 Resolver connector

Resolver connector

motor side

SSD Drives - motor size 0...4

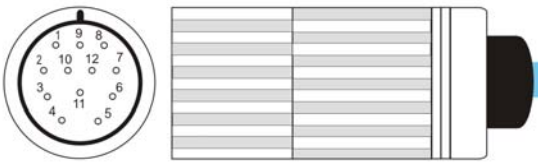
Type: AC G, AC R, AC Mn,
AC M2n, AC M2K; ACM2G
AC MRW, AC MRL

regulator side

SSD Drives - servo drives

Model: 631/635 and 637/637+/637f

view solderside



view solderside

SIR ST.0200.0001	KIR -B KA.0003.6301		SUB - D 09 S/M ST.1002.2001
PIN - Nr.	colour	function	PIN - Nr.
1	white	sin +	4
2	brown	sin -	8
3	green	cos +	3
4	yellow	cos -	7
5	red	PTC optional	2
6	blue	PTC optional	6
7	pink	carrier -	9
8	gray	carrier +	5
case		screen	case

Zust	Änderung	Datum	Name	Ursprung
05	ACM2K	10.08.04	DL	Bear. 09.05.01 DL
04	ACMRL	27.11.03	DL	Gep. 10.05.01 EH
03	ACMRW	02.10.03	DL	Norm
02	ACM2G	15.08.03	DL	
01	637f	16.04.03	DL	

Maßstab / scale:

Typ / model:
KK RT GMR-xx.x/B

Bezeichnung / designation:
Blue resolver cable
for SSD Drives standard motors and servo drives

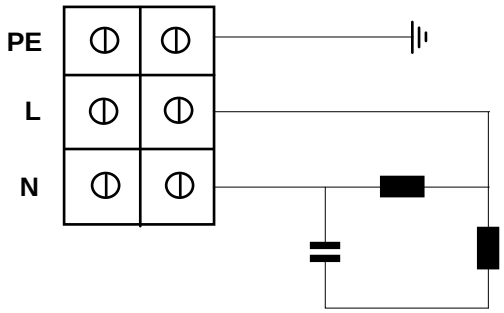
Zeichnungsnummer / drawing No:
Z-RK.6300.xxxx

Blatt sheet 1

Dateiname / File name: Z-R-.6300-E.cdr

5.4 Fan connection

Motor size 2..4



Supply voltage: 1 * 230VAC, 50..60Hz

fan - power supply capacity

Motor size BG	P_{fan} (W)	I_{fan} (A)
2	17	ca. 0,10
3	20	ca. 0,10
4	27	ca. 0,12

5.5 Cabling instructions

Important rules when operating servo regulators and servomotors:

1. A radio interference suppression level cannot be maintained without an interference suppression filter at the line input. Moreover, line filter increase the immunity of the system to interference.

2. The cable between the power electronics and the motor must be shielded as YCY. A SY shield is not suitable. The shield support for the power cable (motor cable) must be on both ends.
We recommend using SSD Drives motor cables K M BG xx – B!

3. Metal parts in the switching cabinet must be connected with each other having large areas of contact and must carry high frequencies very well. Avoid anodized, yellow-passivized and painted surfaces which can have very high resistance values based on the frequency!
Make sure that the metals lie close together in the chemical circuit voltage class! Use the good conductivity and the large surface of the galvanized mounting plate as earth potential!

4. Relays, contactors and solenoid values build into the same circuit must be connected with spark-suppressing combinations or components limiting over voltage, respectively. This applies also if these parts are not mounted in the same cabinet as the servo regulator.

5. The shield for the analog signal lines must be installed on one end and, if possible, in the switching cabinet. Ensure a connection which provides extensive contact and which is low-resistant! The shield for the digital signal lines must be installed on both ends, must have extensive contact and must be low resistance. An additional equalizer is to be laid parallel when there are potential differences. It is necessary to use plugs with metal enclosures with separable connections.

6. Avoid unnecessary extra loops on all connecting cables. All measures regarding filtering and shielding can be short cicuited on them with high frequency. Connect unused litz wires in cables on both ends to the equipment ground conductor.

7. Unshielded cables of a cicuit, the conductors going out and returning, should be twisted due to symmetrical interferences.

8. Separate physically "live" and "dead" wires even in the planning phase. Give special attention to the motor cables. The area of the common terminal strip-line input and motor output is especially endangered.

9. Relays, contactors and solenoid values. The cables should be laid in the switching cabinet as close as possible to the ground; wires hanging freely in the air are preferred EMC victims as well as active and passive aerials.

10. When operating with more than one line component in a common network, EMC problems are to be expected. From the start, the installation planer must integrate in his concept high frequency emitted interference as well as the electromagnetic susceptibility of the components to one another and take measures against it.

11. It is absolutely necessary to run cable shields completely up to the connectors. The connection of the cable shields to ground must be in the near field of the servo regulator (10 - 50 cm). Sensitive measuring leads should be removed as far as possible from this area; this applies also when they are shielded!

12. It is mandatory to run the motor cables in a separate cable channel and to lay flexible cable shielding also when these are shielded. This channel must be separated by at least 30 - 40 cm from the channel for the signal lines.

Connector assignment

5.6 Plug designation

5.6.1 Mating plugs for motor- and brake connections

Size	Plug designation
1 - 2	SMB RPM BG 0/2
3	SMB R BG 3
4	SMB R BG 4

5.6.2 Mating plugs for resolver- and thermal connection

Size	Plug designation
1 - 2	SIR

5.7 Cable designation

5.7.1 Motor cable

Size	Cable designation
1 - 2	K MB BG 0/2 – B
3	K MB BG 3 – B
4	K MB R BG 4 – B

5.7.2 Resolver cable

Size	Cable designation
1 - 4	K IR – B

6 Technical data of the holding brake

optional

Motor size		Static brake Type:	Holding torque	Current input	Switching time on[1)]	Switching time off[1)]	Moment of inertia	Mass
(-)		(-)	M_{Br} (Nm)	I_{NBr} (A)	T_{on} (ms)	T_{off} (ms)	J ($kgcm^2$)	m_{Br} (kg)
1		BR R BG 1	2,0	0,40	7	20	0,45	0,4
2		BB R BG 2	10,0	-	20	29	1,10	0,6
3		BB R BG 3	19,0	-	25	50	3,60	2,0
4		BB R BG 4.3	80,0	1,20	30	90	32,00	3,8

[1)] Brake open

Supply voltage:

BB U_S = 24 V DC, ± 10% of the rated voltage to DIN IEC 38

Principle regulated and adjustable 24 V of power supply should be devoted around mains power supply variations to suppress or to compensate for voltage drops on cable and contacts.
The voltage drop along the motor cable can be calculated with the following formula.

$$\Delta U_B = X^* I_{cable}(m) * I_{NBR} (A)$$

X for SSD Drives cable:
KMB BG0/2, KMB BG3, KMB BG4 = 0,106
KMB BG0/2-B, KMB BG4/4 = 0,072
KMB BG-B, KMB BG-B = 0,036

Motor length:
The brake is build into the A flange and has no effect on the total length of the motors.

The inserted brake is not characterized for the general slowing-down the drives, but is merely a standstill and/or holding brake.

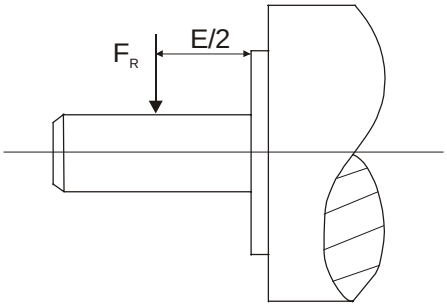
Therefore, it must become guaranteed by the customer, that the drive stands, before that brake comes in. Should that brake not only become employed in the case of standing drives, so it`s generally the wear and therefore the holding torque of the brake depending on:

- the speed of the drive with which the brake will be switched
- the load moment of inertia on the drive
- environmental conditions as temperature and so forth.
- the number of braking and so forth

7 Shaft loads

7.1 Radial shaft load

7.1.1 Representation of the definition

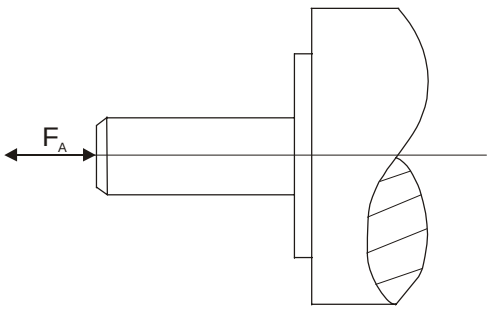


7.1.2 Technical data of the max. radial shaft load FR (N)

Motor size	Rated speed	Maximum radial shaft load
(-)	n_N (1/min)	FR (N)
1	2000	675
	3000	610
	4000	575
	6000	540
2	2000	680
	3000	620
	4000	580
	6000	540
3	2000	850
	3000	750
	4000	680
4	1000	2450
	2000	1950
	3000	1700

7.2 Axiale shaft load

7.2.1 Representation of the definition

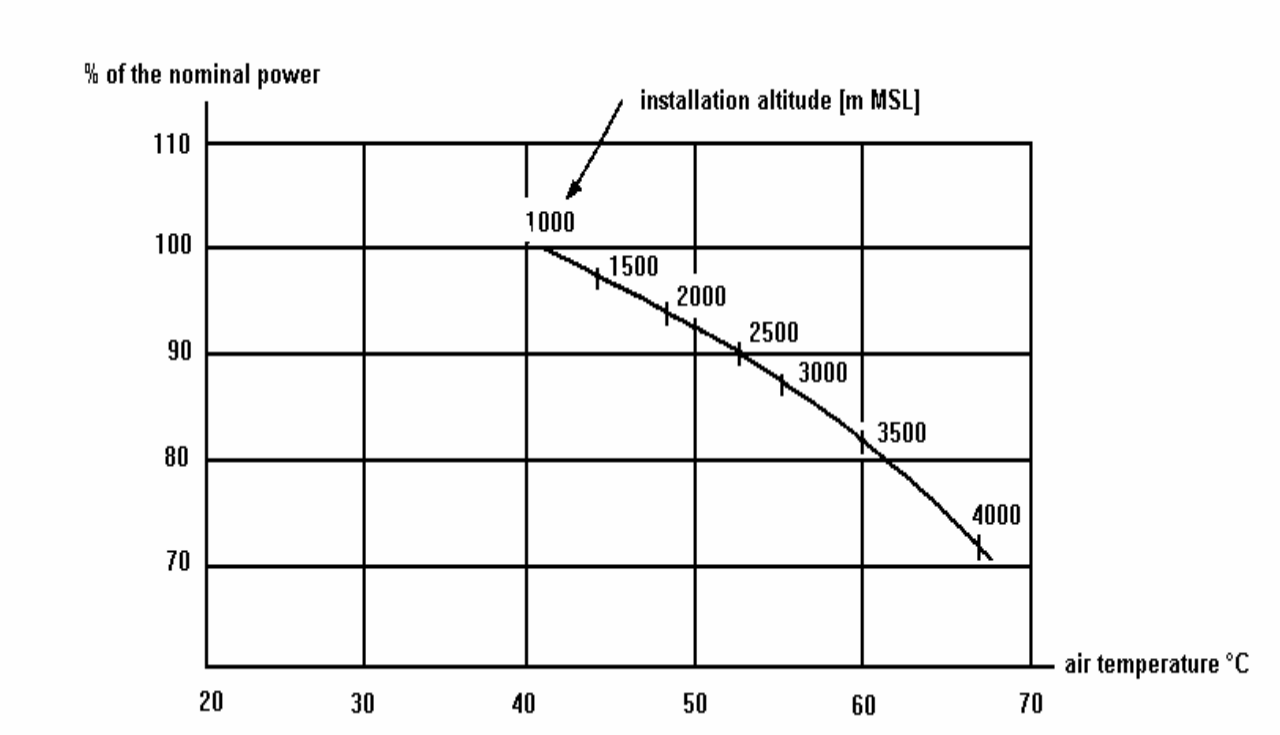


7.2.2 Technical data of the max. axial shaft load FA (N)

only slight force permitted, specific values only on request!

8 Nominal dependent on installation altitude and air temperature

When selecting an adequate motor the following is to be considered:
Workload (power), operating mode, starting, braking and by-passing processes, additional moment of inertia, moment curve of the operating machine, speed control if necessary, net ratios, coolant temperature, installation altitude etc.
The nominal power is the power which is mechanically available at the shaft, if the installation site is not situated above 1000 m MSL, the air temperature does not exceed 40° C, and the net ratios are normal.
With deviating conditions concerning installation altitude and air temperature, the permissible power must be corrected corresponding to the following graph.



Check the air temperature and the installation altitude separately. Should there be different air temperatures and installation altitude at the same time, the factors for the permissible power must be multiplied.

9 Appendix special motor

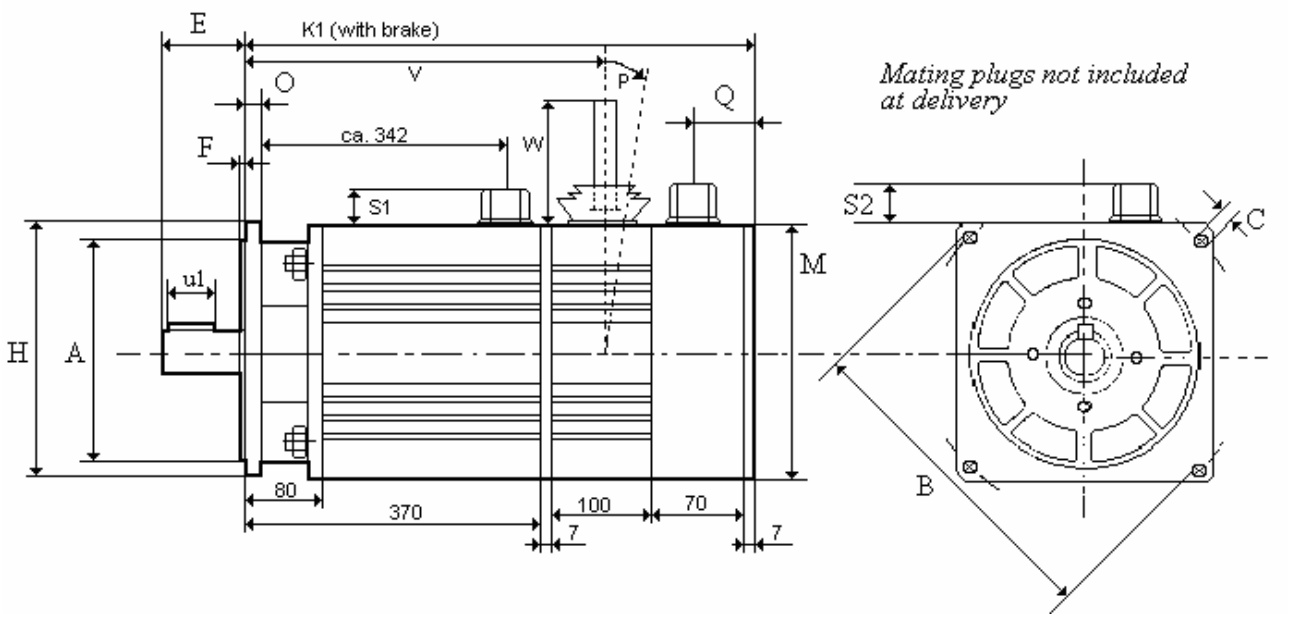
9.1 Special motor AC R 2000-3/4-6

Motor size 4.2, Special brake with additional hand operation

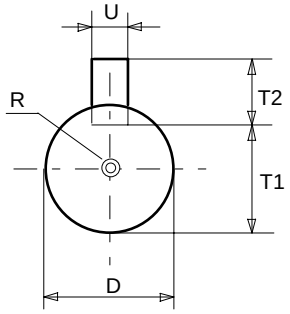
Note:

Hand lever operation only hand-held toward motor end ➔ (approx. 5°).

Dimensions:



Standard: shaft with key



AC R .. Size	A (j6)	B	C	D (k6)	E	F	H	K1 ca.	M	O	P ca. (°)	Q	R	S1	S2	T1	T2	u	u1	V ca.	W ca.
4.2	180	215	14	32	58	4	185	554	187	13	5	42	M10·25	25	21	27,3	8h11	10h11	50	450	80

All dimensions in "mm", except "P"

Remark:

With flanged on gearbox the output shaft (due to the gear reduction) is hardly rotable also with released brake.

10 Update list

Version	Amendment	Chapter	Date	Name	Remarks
V08.08EH99	changed chapter new technical data new chapter new technical data text addition text modification new chapter	1.2/1.3 2 2.5 + 2.6 4.2 5.3 6 8	08.03.1999	K. Stadler	ET - Format
V0901	Separation German / English and complements correct dimensions	alle 4.1 + 4.2	14.02.2001 09.01.2003	N. Dreilich N. Dreilich	
V1004	SSD Drives	-	10.11.2004	N. Dreilich	Logos
V1105	Possible options Torque/Speed Diagrams new drawing connector drawing Appendix special motor	1.3 3.5 4.1 5 9	 24.01.2005	 N. Dreilich	Expansion New New New

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