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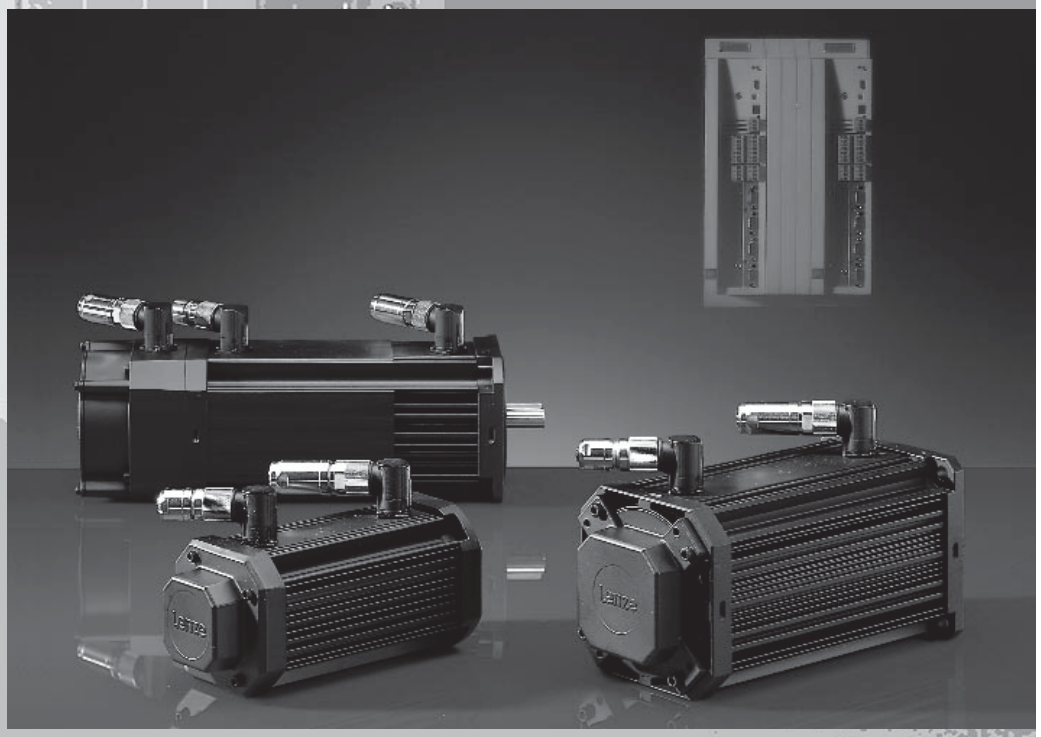
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405 619

Lenze



Global Drive

Servo motors
MDXK / MDFQA
synchronous / asynchronous

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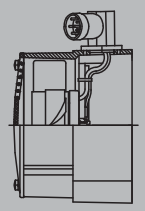
Servo motors

In the Global Drive System, asynchronous and synchronous motors perfectly match the controllers. Thanks to modular design and the planned options it is possible to select a suitable drive. Further assets of Global Drive servo motors are: small size, long life and high operational safety.

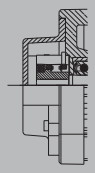
Comfortable system cables with plug-in connectors enable easy connection. Modern production processes ensure a good price / performance ratio.
This catalogue describes all preference types which are available within 15 working days as well as all industry types which require a delivery time of 30 working days. We would like to present further options of this modular design personally.



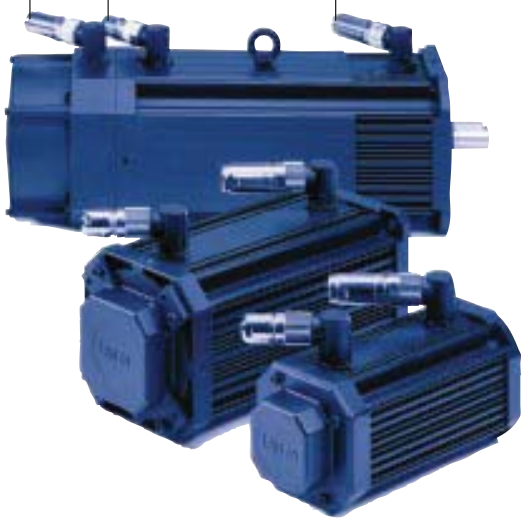


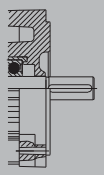


Separate fan

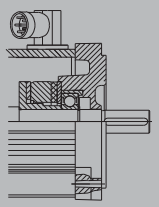


Resolver





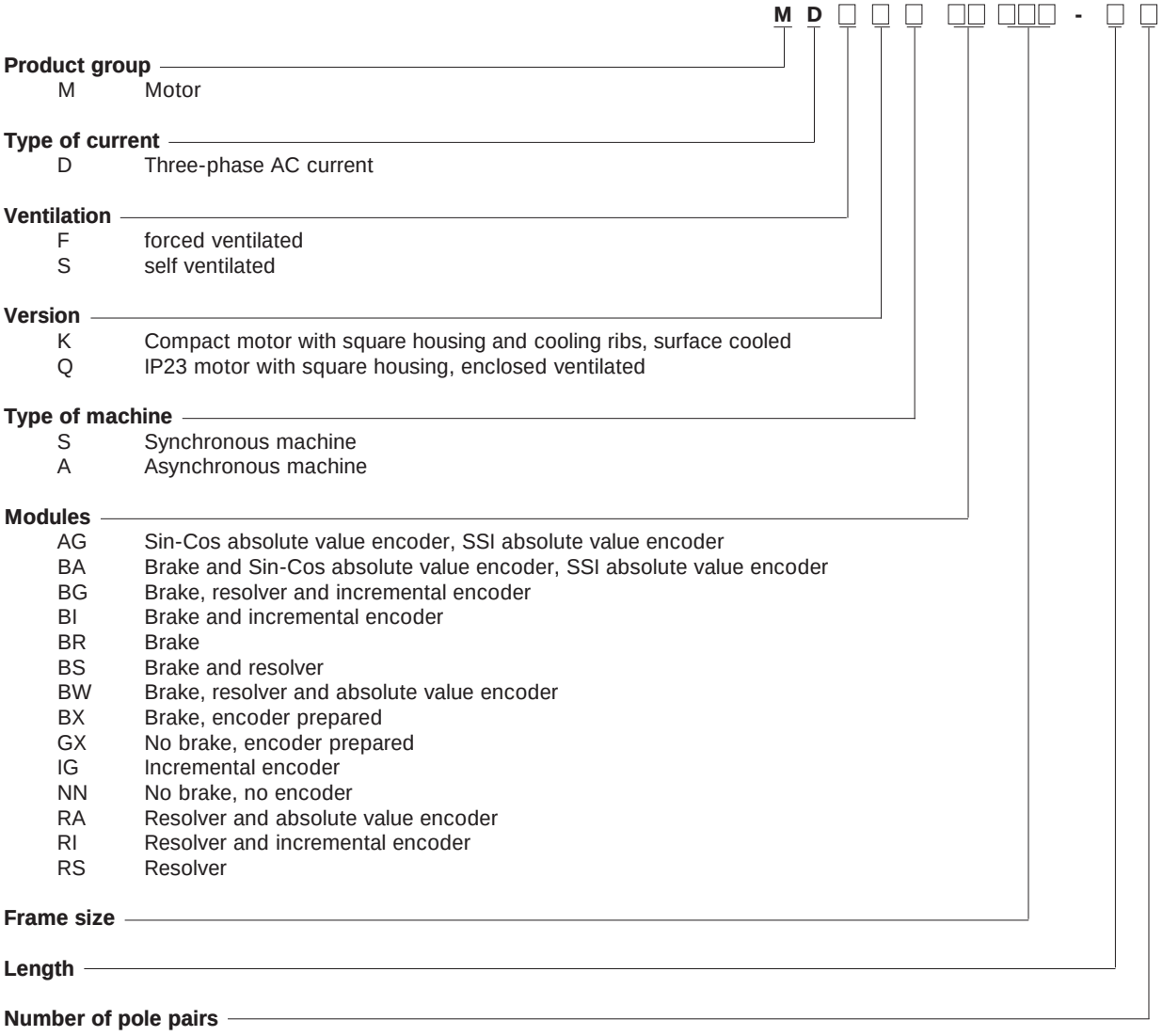
without holding brake



Holding brake

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Product code



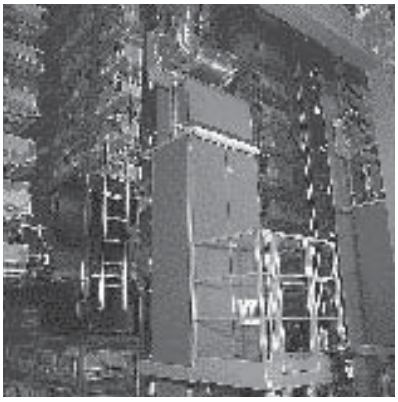
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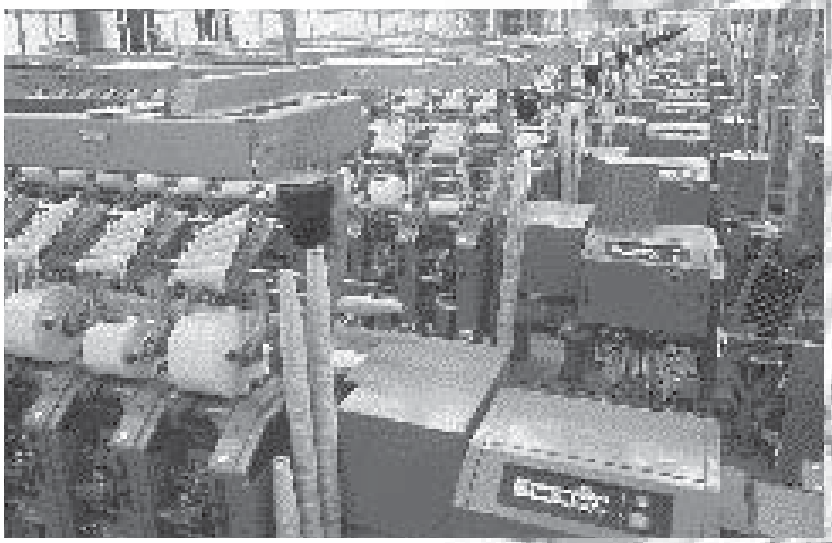
No matter which drive solution you imagine – we make your dreams come true.

According to our maxim „one stop shopping“ we offer you a complete programme of electronic and mechanical drive systems which are distinguished by reliability and efficiency.
Our supply range includes frequency inverters, speed controllers, variable speed drives, gearboxes and motors as well as clutches and brakes.
Lenze is thus the competent partner for your application – not only as supplier for single components but also for complete drive systems including planning, execution and commissioning. Furthermore, a world-wide service and distribution network allows a qualified customer advisory service on site and a fast and extensive after sales service. Our quality assurance system for development, production, sales and service is certified to DIN ISO 9001. Our customers set the scale for measuring the quality of our products. Our task is to meet your requirements. Customer orientation as a Lenze principle means the highest quality.

See for yourself.

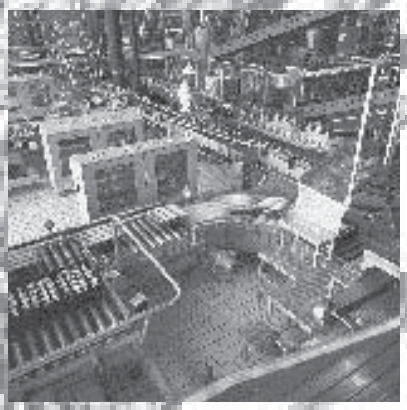




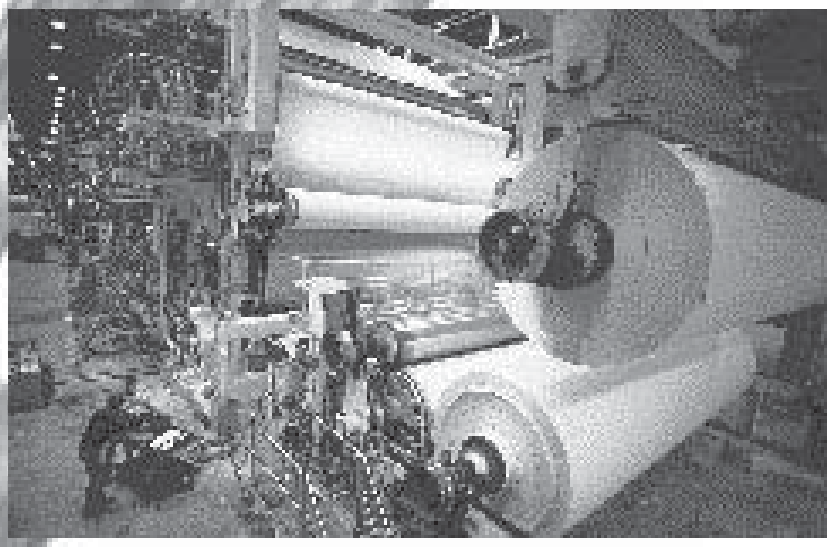


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List of abbreviations

Abbreviations used in this catalogue

h	[mm]	Axis height
n_{rated}	[min^{-1}]	Rated speed
M_{rated}	[Nm]	Rated torque
P_{rated}	[kW]	Rated power
I_{rated}	[A]	Rated current
I_0	[A]	Continuous current at standstill
f_{rated}	[Hz]	Rated frequency
M_{max}	[Nm]	Maximum torque
I_{max}	[A]	Maximum current
n_{max}	[min^{-1}]	Maximum speed
J_{load}	[$kgcm^2$]	Moment of inertia load machine
M_{load}	[Nm]	Torque load machine
M_0	[Nm]	Continuous torque at standstill
M_{cont}	[Nm]	Continuous torque
M_{perm}	[Nm]	Permissible torque
$\eta_{gearbox}$		Gearbox efficiency
J_{mot}	[$kgcm^2$]	Moment of inertia motor
m	[kg]	Mass
$\cos\varphi_N$		Power factor asynchronous motor
U_{rated}	[V]	Rated voltage
F_a	[N]	Permissible axial force
F_{r1}	[N]	Permissible radial force at shaft middle
F_{r2}	[N]	Permissible radial force at shaft end
i		Gearbox ratio
M_B	[Nm]	Holding torque brake
J_B	[$kgcm^2$]	Moment of inertia brake

MDFQA	Enclosed ventilated asynchronous servo motor, forced ventilated (MDFQA)
MDXKX	Asynchronous or synchronous servo motor, self or forced ventilated (MDSKA / MDSKS or MDFKA / MDFKS)
MDSKX	Asynchronous or synchronous servo motor self ventilated (MDSKA / MDFKA)
MDFKX	Asynchronous servo motor, self ventilated or forced ventilated (MDSKA / MDFKA)
MDXKA	Asynchronous servo motor, self ventilated or forced ventilated (MDSKA / MDFKA)
MDXKS	Synchronous servo motor, self ventilated or forced ventilated (MDXKS / MDFKS)
AC	AC voltage
DC	DC voltage
DIN	Deutsches Institut für Normung
EMC	Electromagnetic compatibility
EN	European Standard
IEC	International Electrotechnical Commission
IP	International Protection Code
NEMA	National Electrical Manufacturers Association
VDE	Verband deutscher Elektrotechniker
CE	Communauté Européene
IM	International Mounting Code

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Global Drive servo motors

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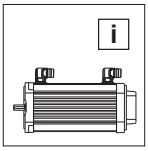
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Lenze worldwide

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Product information

Servo motors MDXK and MDFQA

Today, servo drive systems must fulfil highest demands. With Global Drive, Lenze succeeded in combining different drive components to form a perfectly matching system. The programme of servo motors for the power range up to 60.1 kW is completed by brushless synchronous servo motors for the lower power range from 0.25 to 4.2 kW. Compared with standard three-phase AC motors, these servo motors provide a very low moment of inertia, low weight, high maximum speed and a wide speed-setting range.

High dynamic response and accuracy
Servo motors provide a low moment of inertia and a high overloadability. Optimum temperature-independent control features are achieved by continuously measuring the temperature with an integrated temperature sensor. Together with servo inverters of series 9300, the motors ensure high speed accuracy, best concentricity and high angle acceleration.

Long service life
The high quality standard, Lenze sets for all components, meets the requirements of modern drive technology for operational safety and service life.
A reinforced isolation with thermal reserve (coated wire to thermal class H, class F temperature rise) ensures a long service life of the winding.
Prestressed rolling bearings with high temperature resistant lubrication ensure a long service life.

Operational safety
Enclosure IP54 of MDXK motors ensures good protection against dust and water ingress. MDFQA motors up to 60.1 kW are protected by enclosure IP23.

CE conformity
Of course, Lenze servo motors MDXK and MDFQA comply with the EC Directives:
– CE conformity to the Low Voltage Directive
– CE conformity to the Electromagnetic Compatibility of a typical drive configuration with inverter.

The electromagnetic compatibility can be easily guaranteed by using predetermined system cables.

No compromises with the output speed
The wide ratio range of gearboxes combined with the small ratio step of 1.12 enables the exact selection of the output speed range required.

Compact
The high power density of the motors facilitates small drive units.
Especially compact drives are formed by using geared servo motors with directly connected motors.

Adaptability
The modular motor design and the number of planned variants facilitate the selection of the motor for your application.
Thanks to the variety of output designs of motors and geared motors, the drives fulfil many application requirements:
– Servo motors with cylindrical shaft end with or without key
– Servo motors with flanges provided with through hole bores for mounting position B5, with threaded bores for mounting position B14.
– Geared servo motors with solid shaft, hollow shaft or hollow shaft with shrink disc.
– Geared servo motors with or without flange, foot or centring
– Different integrated angle encoders ensure the accuracy required:
  Resolver as standard solution, optimised characteristic because of internal improvement of the resolver accuracy. SinCos absolute value encoder as industry type for highest accuracy. Incremental encoder with 2048 pulses as preference type for MDFQA and as industry type for MDXK.

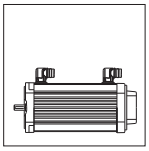
Low noise
High chopper frequency of the inverters (up to 16 kHz) result in a low noise generation.
In addition, optimised toothing geometry and internally ribbed cast iron housings of Lenze Gearboxes reduce the noise generated.

Reduced backlash
The application of backlash-free permanent magnet holding brakes enables a defined holding of a position even when no voltage is applied.
Compared with other gearboxes, backlash-free connection elements of Lenze Gearboxes and the high splining quality achieved by precise production ensure a low backlash at the output of geared servo motors.

Special types
Special applications require special motor designs.
Possible options are e.g.:
– incremental encoder as feedback with 4096 pulses
– second feedback.

We are prepared to give more detailed information.

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	Synchronous servo motors Series MDSKS, MDFKS	Asynchronous servo motors Series MDSKA, MDFKA	Asynchronous servo motors MDFQA
Enclosure	IP54 / IP65		IP23
Thermal class (VDE 0530)	To thermal class F Insulation (coated wire) To thermal class H		
UL-conformity	UL listed material for coated wire, brush leads, insulation material		
Dielectric strength	Max. voltage amplitude $\hat{V}$ = 1.5 kV Max. rate of voltage rise du/dt = 5 kV/µs		
Vibrational severity	N	N frame sizes 056 and 071, R as of frame size 80	N
Concentricity, eccentricity, coaxiality (DIN 42955)	N	N frame sizes 056 and 071, R as of frame size 80	N
Mechanical tolerance	Diameter shaft end d Ø11 to Ø38: k6, d Ø55: m6 Diameter centring flange b1 : J6		
Temperature monitoring (no complete protection)	Continuous temperature sensor (KTY 83-110)		
Connection	1 plug for each: Motor and brake Resolver and temperature sensor, separate fan (as of frame size 071) or terminal box		Motor connection as terminal box, encoder connection with plug
Temperature range	-20 to + 40 °C without power derating (without brake, non-ventilated) -10 to + 40 °C without power derating (with brake) -15 to +40 °C without power derating (separately ventilated)		
Surface temperature	Self ventilated motors (MDSK) up to 140 °C Forced ventilated motors (MDFK) up to 110 °C		to 110 °C
Installation height	up to 1000 m a. m. s. l. without power derating		
Demagnetising limit	$> 4 \cdot I_{rated}$ with self ventilation $> 2{,}9 \cdot I_{rated}$ with forced ventilation	Demagnetisation not possible	
Maximum torque	$> 4 \cdot M_{rated}$ with self ventilation $> 2{,}9 \cdot M_{rated}$ with forced ventilation	$> 5 \cdot M_{rated}$	
Rated speed	3000 min^{-1}	1635-4160 min^{-1}	550-2935 min^{-1}
Angle encoder	Resolver / Sin-Cos encoder	Resolver / incremental encoder / Sin-Cos absolute value encoder	
Mounting position	B5 / B14		B5 / B35
Bearing	Deep groove ball bearing with high-temperature resistant grease, 2 seals		
	Locating bearing at A-side		at B-side
Shaft end	with / without key		
Brake	with or without permanent magnet holding brake at A-side		with and without spring-operated brake
Fan	Axial fan as of frame size 071 possible		Radial fan
Colour	Black, RAL 9005		

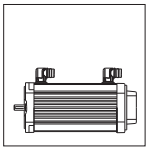
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Preference and industry type of servo motors

Motor type / Version		Motor series MDXKX													MDFQA		
		Synchronous motors							Asynchronous motors						Asynchr.-IP23		
		MDSKSXX 036-13	MDSKSXX 036-23	MDSKSXX 056-23	MDSKSXX 056-33	MDXKSXX 071-03	MDXKSXX 071-13	MDXKSXX 071-33	MDXKAXX 056-22	MDXKAXX 071-22	MDXKAXX 080-22	MDXKAXX 090-22	MDXKAXX 100-22	MDXKAXX 112-22	MDFQAXX 100-22	MDFQAXX 112-22	MDFQAXX 132-32
Ventilation	Self ventilation	●	●	●	●	●	●	●	●	●	●	○	○	○			
	Forced ventilated					●	●	●		●	●	●	●	●	●	●	●
Enclosure	IP54	●	●	●	●	●	●	●	●	●	●	●	●	●			
	IP65 (only with self ventilation)			○	○	○	○	○	○	○	○	○	○	○			
	IP23s														●	●	●
Frequency / speed	>100 Hz, >2800 min^{-1}	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	<100 Hz, <2500 min^{-1}										○	○	○	○	●	●	●
Mounting position	B14C105			●	●				●								
	B14C160					●	●	●		●	●	●	●	●			
	B5 FF75	●	●														
	B5A120 FF100			●	●				●								
	B5A160 FF130					●	●	●		●							
	B5A200 FF165										●	●					
	B5A250 FF215												●	●			
	B5A300 FF265													●	●		
	B5A400 FF350																●
	B35A250 FF215														●		
	B35A300 FF265															●	●
	directly connected gearbox B9			○	○	○	○	○	○	○	○	○	○	○			
Shaft end	11 x 23 MP with key	●	●														
	14 x 30 MP with key			●	●				●								
	19 x 40 MP with key					●	●	●		●							
	24 x 50 MP with key										●	●					
	28 x 60 MP with key												●				
	38 x 80 MP with key													●	●	●	
	55 x 110 MP with key																●
	11 x 23 OP without key	●	●														
	14 x 30 OP without key			●	●				●								
	19 x 40 OP without key					●	●	●		●							
	24 x 50 OP without key										●	●					
	28 x 60 OP without key												●				
	38 x 80 OP without key													●	●	●	
	55 x 110 OP without key																●
	conical shaft (B9)			○	○	○	○	○	○	○	○	○	○	○			
Brake	without brake	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	24V	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	205V			○	○	○	○	○	○	○	○	○	○	○	●	●	●
Encoder	Resolver	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	SinCos multi turn AM512			○	○	○	○	○	○	○	○	○	○	○	○	○	○
	SinCos single turn AS512			○	○	○	○	○	○	○	○	○	○	○	○	○	○
	ITD21, 2048IMP, TTL								○	○	○	○	○	○	○	○	○
Connection	Plug-in conn. (enc. a. power)	●	●	●	●	●	●	●	●	●	●	●	●	●			
	2 x KK (encoder and power)			○	○	○	○	○	○	○	○	○	○	○			
	1 x KK1 (power)			○	○	○	○	○	○	○	○	○	○	○	●	●	●
Temperature monitoring	Thermostat KTY	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Thermal encoder TKO														●	●	●

● = preference type
○ = industrial type

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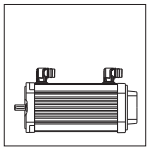


Synchronous servo motors series MDSKS / MDFKS (surface cooled)

Motor type	Axial height h [mm]	Torque with 3000/min $M_{rated\ 3000}$ [Nm]	Speed n_{rated} [min^{-1}]	Torque M_{rated} [Nm]	Power P_{rated} [kW]	Voltage $V_{rat.\ 3\sim}$ [V]	Current I_{rated} [A]	M_0 [Nm]	I_0 [A]	Maximum torque 6) M_{max} [Nm]	Maximum power I_{max} [A]	Frequency f_{rated} [Hz]	Inertia J [$kgcm^2$]	Weight m 1) [kg]	Gearbox connection corresp. to stand. motor d x l 3)
without fan															
MDSKS 036-13, 200	35		4000	0.6	0.25	245	0.9	0.65	0.9	3.1	5.4	200	0.22	1.5	
MDSKS 036-23, 200	35		4000	1.3	0.54	345	1.1	1.5	1.25	7.2	7.5	200	0.36	2.1	
MDSKS 056-23, 190	51	2.9	3800	2.8	1.1	330	2.3	3.2	2.6	11.6	10	190	1.2	5.3	071, C105
MDSKS 056-33, 200	51	4.3	4000	4.2	1.8	325	3.6	4.7	4.0	17.2	16	200	1.8	6.3	071, C105
MDSKS 071-03, 170	65	5.9	3400	5.7	2.0	330	4.2	6.7	4.9	23.6	19	170	6.0	8.9	080, C160
MDSKS 071-13, 185	65	8.8	3700	8.3	3.2	325	7.0	10.0	8.4	35.2	32	185	8.0	10.9	080, C160
MDSKS 071-33, 180	65	12.7	3600	12.3	4.6	325	10.0	14.7	11.9	52.0	45	180	10.0	13.0	080, C160
with separate fan															
MDFKS 071-03, 165	65	7.7	3300	7.5	2.6	330	5.6	8.8	6.6	23.6	19	165	6.0	10.2	080, C160
MDFKS 071-13, 180	65	11.7	3600	11.0	4.1	325	9.2	13.3	11.1	35.2	32	180	8.0	12.2	080, C160
MDFKS 071-33, 175	65	17.0	3500	16.2	5.9	325	13.1	19.3	15.6	52.0	45	175	10.0	14.3	080, C160

1) without fan, with resolver
3) frame size and flange of a standard motor with similar flange and shaft dimensions
6) magnetic / mechanical permissible torque

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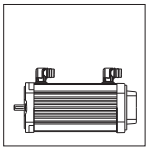


Asynchronous servo motors series MDSKA / MDFKA (surface ventilated)

Motor type	h [mm]	n_{rated} [min^{-1}]	M_{rated} [Nm]	P_{rated} 5) [kW]	V_{rated} 3~ [V]	I_{rated} [A]	M_0 [Nm]	I_0 [A]	M_{max} 6) [Nm]	$rated_{max}$ [min^{-1}]	f_{rated} [Hz]	$\cos\varphi_N$	$J^{1)}$ [$kgcm^2$]	$m^{1)}$ [kg]	Gearbox connection corresponds to standard motor 3)
self cooled															
MDSKA 056-22, 140	51	3950	2.0	0.8	390	2.4	2.3	2.55	10	8000	140	0.70	2.4	6.4	071, C105
MDSKA 071-22, 140	65	4050	4.0	1.7	390	4.4	4.6	4.6	32	8000	140	0.76	8.3	10.4	080, C160
MDSKA 080-22, 70	71	2000	6.7	1.4	390	3.3	8.0	3.85	60	8000	70	0.75	19.2	15.1	090, C160
MDSKA 080-22, 140		4100	5.4	2.3	390	5.8	8.0	7.7	60	8000	140	0.75			
MDSKA 090-22, 80	83	2300	10.8	2.6	390	5.5	12.8	6.0	100	8000	80	0.81	36	22.9	090,C160
MDSKA 090-22, 140		4110	9.5	4.1	350	10.2	12.8	12.0	100	8000	140	0.80			
MDSKA 100-22, 80	96	2340	16.3	4.0	390	8.2	22.5	9.85	180	8000	80	0.80	72	44.7	112, C160
MDSKA 100-22, 140		4150	12.0	5.2	330	14.0	22.5	19.7	180	8000	140	0.78			
MDSKA 112-22, 85	107	2490	24.6	6.4	390	13.5	39	15.9	300	8000	85	0.83	180	60	132, A300
MDSKA 112-22, 140		4160	17.0	7.4	320	19.8	39	31.8	300	8000	140	0.80			
with separate fan															
MDFKA 071-22, 120	65	3410	6.3	2.2	390	6.0	7.0	6.3	32	8000	120	0.75	8.3	12.0	080, C160
MDFKA 080-22, 60	71	1635	12.0	2.1	390	4.8	13.5	5.25	60	8000	60	0.81	19.2	16.9	090, C160
MDFKA 080-22, 120		3455	10.8	3.9	390	9.1	13.5	10.5	60	8000	120	0.80			
MDFKA 090-22, 60	83	1680	21.5	3.8	390	8.5	23.9	9.05	100	8000	60	0.80	36	25.5	090, C160
MDFKA 090-22, 120		3480	19.0	6.9	390	15.8	23.9	18.1	100	8000	120	0.80			
MDFKA 100-22, 60	96	1700	36.3	6.4	390	13.9	40.0	15.4	180	8000	60	0,83	72	48.2	112, C160
MDFKA 100-22, 120		3510	36.0	13.2	390	28.7	40.0	30.8	180	8000	120	0.80			
MDFKA 112-22, 60	107	1710	61.4	11.0	390	22.5	75	25.8	300	8000	60	0.85	180	63.5	132, A300
MDFKA 112-22, 120		3520	55.0	20.3	390	42.5	75	49.5	300	8000	120	0.80			

1) without brake, with resolver
2) with 390 V, idle running M = 0
3) frame size and flange of a standard motor with similar flange and shaft dimensions
5) when V_{rated}, $P = P_{rated}$ up to $2.3 \cdot n_{rated}$
6) magnetic / mechanical permissible torque

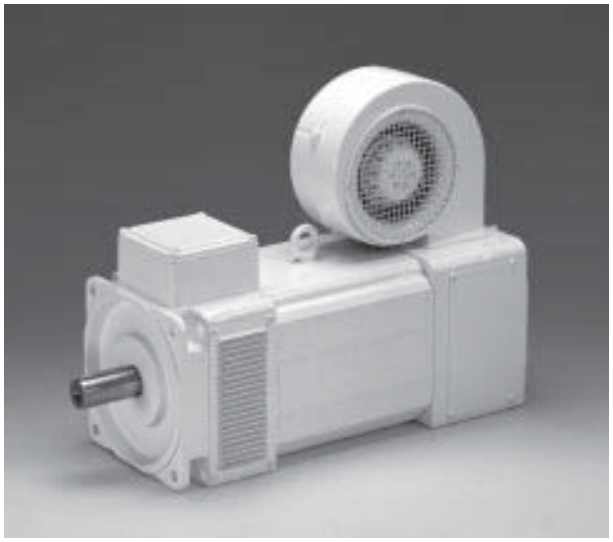
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Asynchronous servo motors series MDFQA (enclosed ventilated)

Motor type	Connec-tion	h [mm]	n_{rated} [min^{-1}]	M_{rated} [Nm]	P_{rated} 5) [kW]	V_{rated} 3~ [V]	I_{rated} [A]	M_0 [Nm]	I_0 [A]	M_{max} 6) [Nm]	f [Hz]	η	cosφ	n_{max} [min^{-1}]	J 1) [$kgcm^2$]	m 1) [kg]	Gearbox connection corresponds to standard motor 3)
MDFQA 100-22, 50	Y	100	1420	71.3	10.6	360	26.5	76	27.0	250	50	0.76	0.84	5000	180	65	132, A300
MDFQA 100-22, 100	Y	100	2930	66.2	20.3	360	46.9	76	54.0	250	100	0.87	0.80				
MDFQA 112-22, 50	Y	112	760	145	11.5	360	27.2	156	29.5	500	28	0.78	0.87	4500	470	115	132, A300
	Δ		1425	135	20.1	360	43.7	156	51.0	500	50	0.86	0.86				
MDFQA 112-22, 100	Y	112	1670	130	22.7	360	49.1	156	59.0	500	58	0.87	0.85				
	Δ		2935	125	38.4	360	81.9	156	102.0	500	100	0.90	0.83				
MDFQA 132-32, 36	Y	132	550	296	17.0	360	45.2	325	52.6	1100	20	0.74	0.81	4500	1310	170	200, A400
	Δ		1030	288	31.1	360	77.4	325	90.2	1100	36	0.84	0.77				
MDFQA 132-32, 76	Y	132	1200	282	35.4	360	88.8	325	109.0	1100	42	0.82	0.78				
	Δ		2235	257	60.1	340	144.8	325	196.5	1100	76	0.88	0.80				

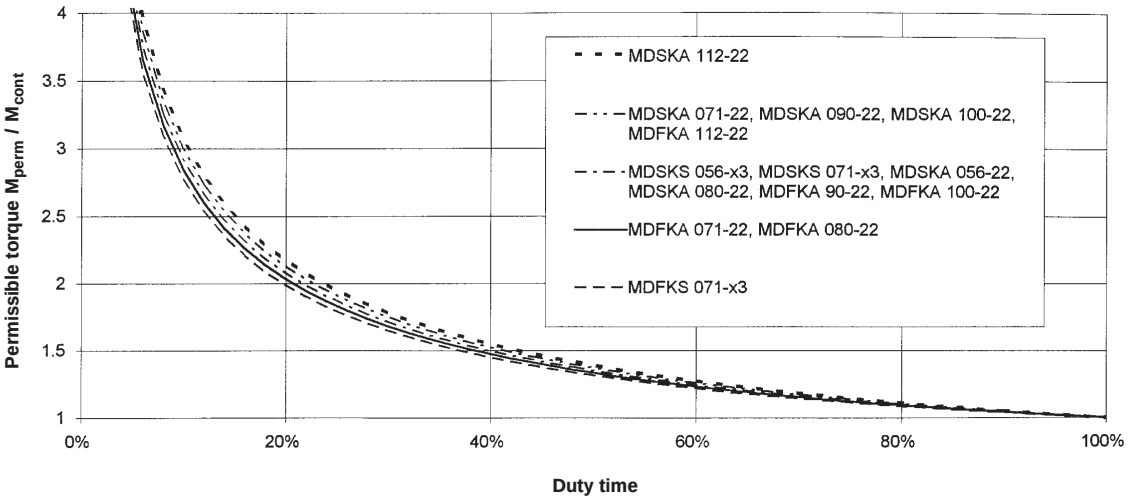
1) without brake, with resolver
2) with 390 V, idle running M = 0
3) frame size and flange of a standard motor with similar flange and shaft dimensions
5) when V_{rated}, $P = P_{rated}$ up to $2.3 \cdot n_{rated}$
6) magnetic / mechanical permissible torque



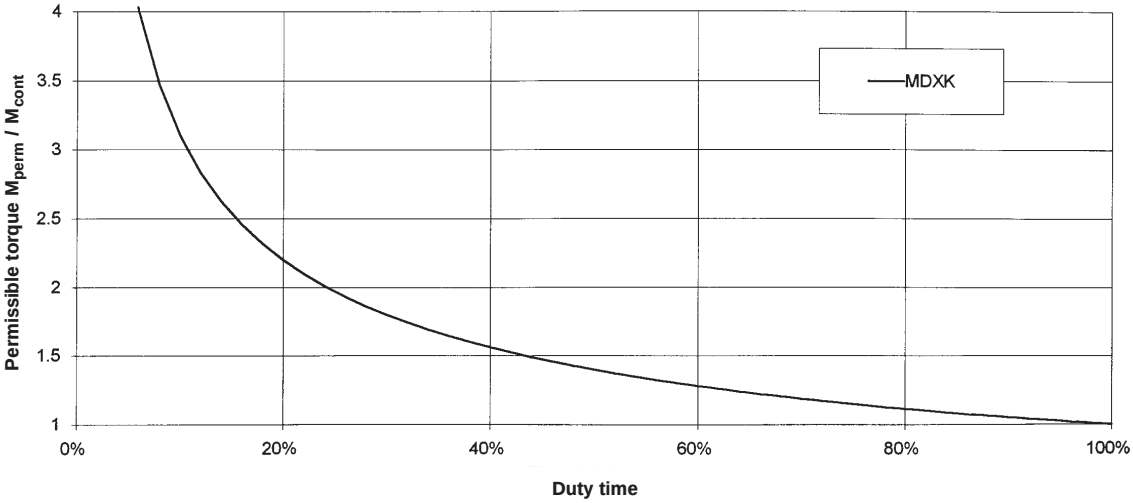
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Torque-limit characteristics

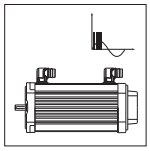
Duty type: Continuous operation S6, 10 min load cycle with terminal box connection



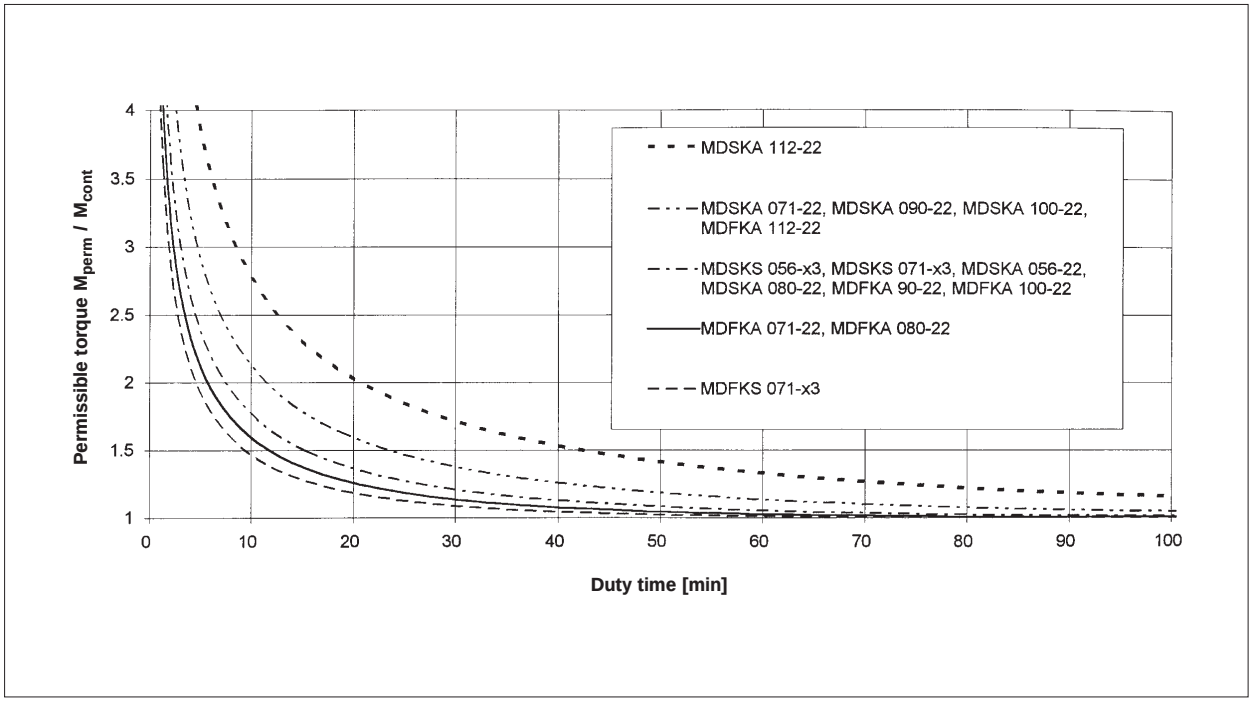
Duty type: Continuous operation S6, 1 min load cycle with terminal box connection



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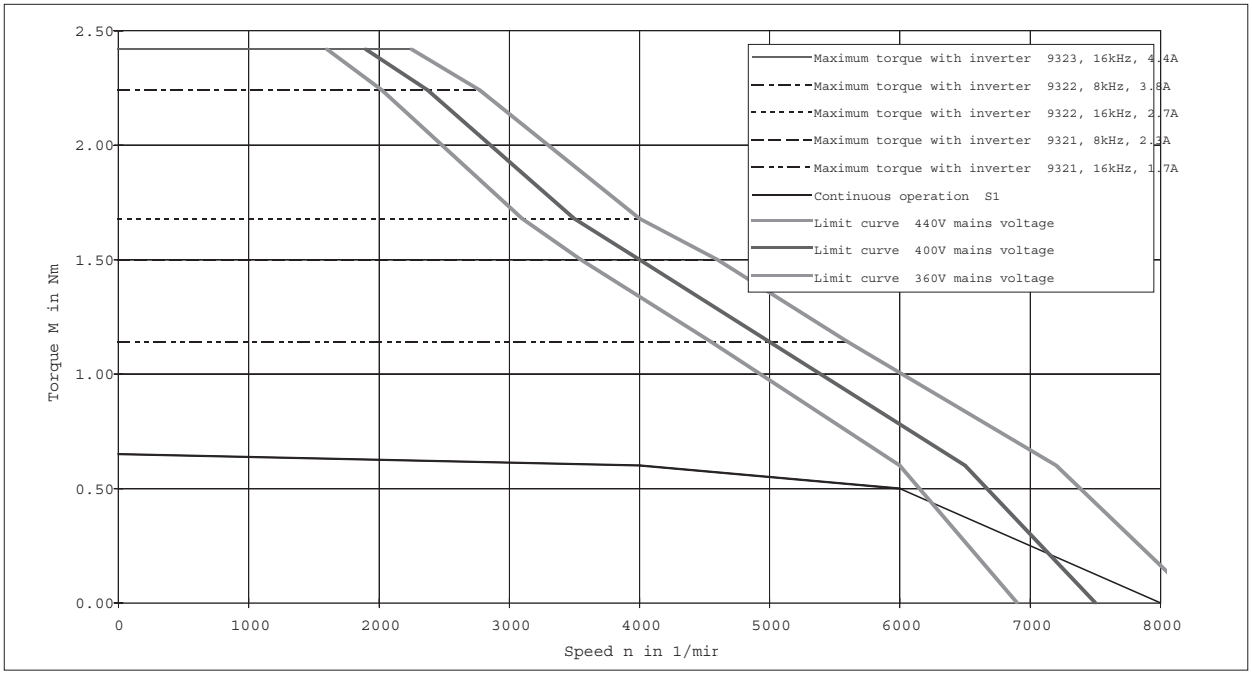


Duty type: Short time operation S2 with terminal box connection

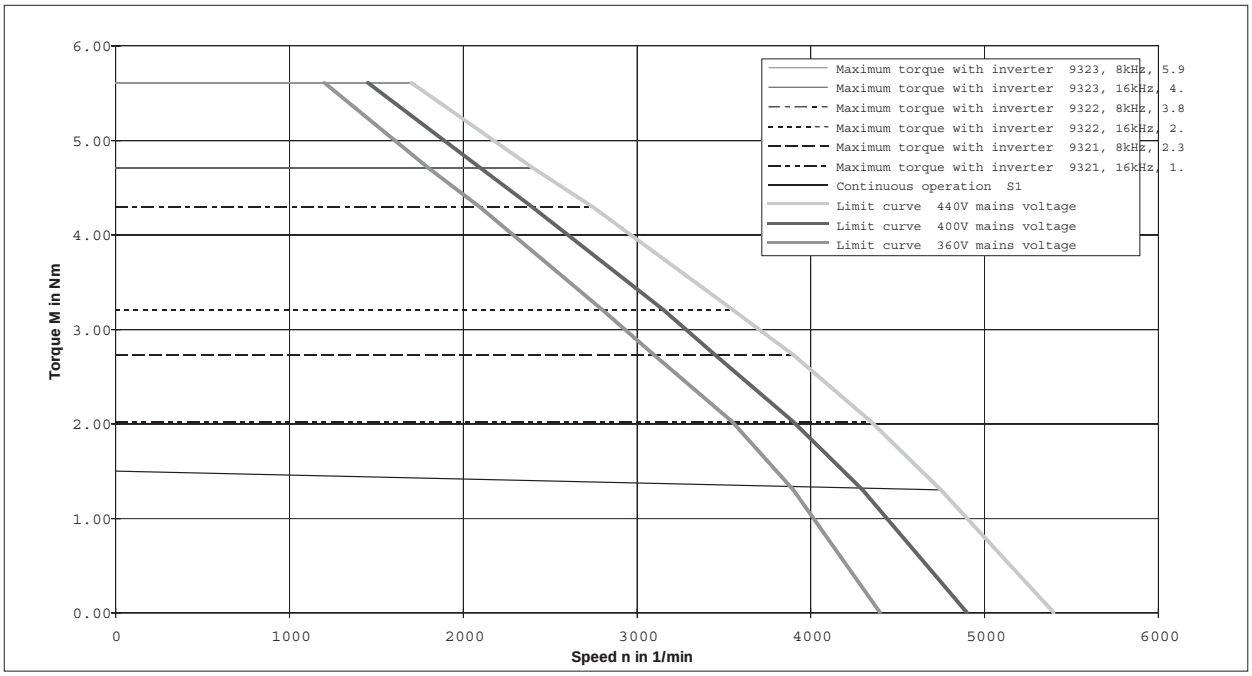


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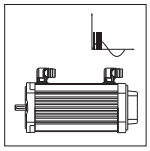
Motor-inverter combination:
Maximum and permanent torque synchronous servo motor MDSKS 036-13, 200 Hz without fan
Inverters 9321-9323



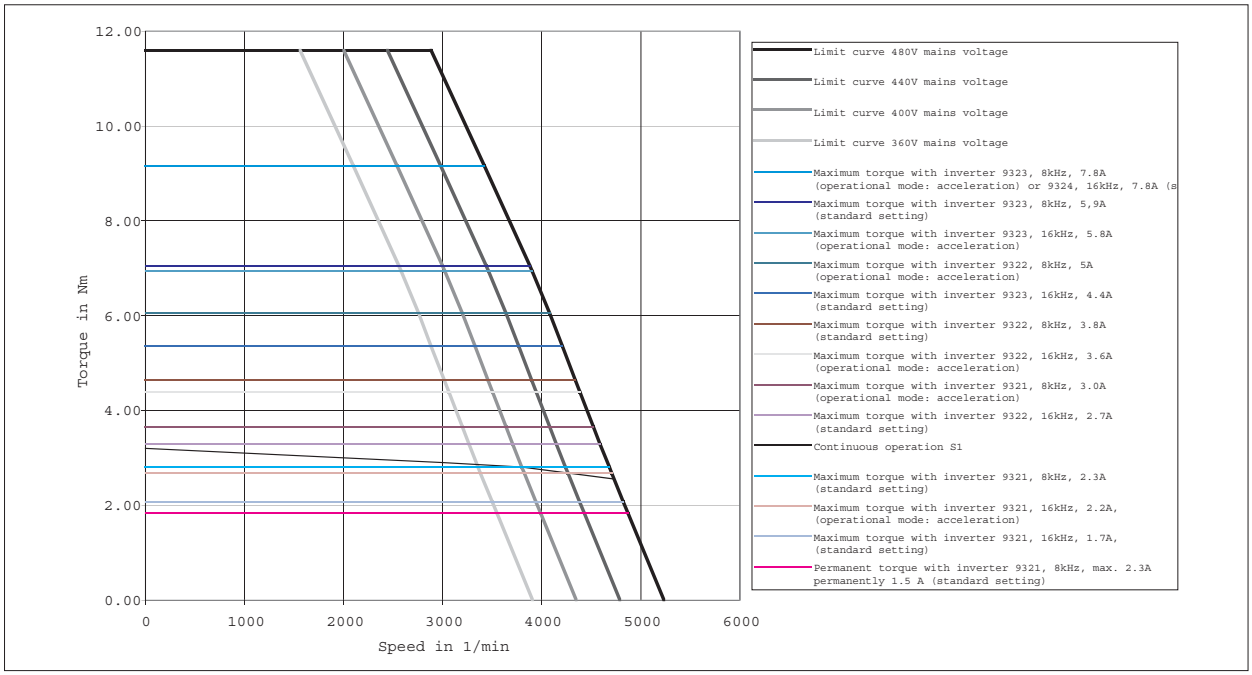
Motor-inverter combination:
Maximum and permanent torque synchronous servo motor MDSKS 036-23, 200 Hz without fan
Inverters 9321-9323



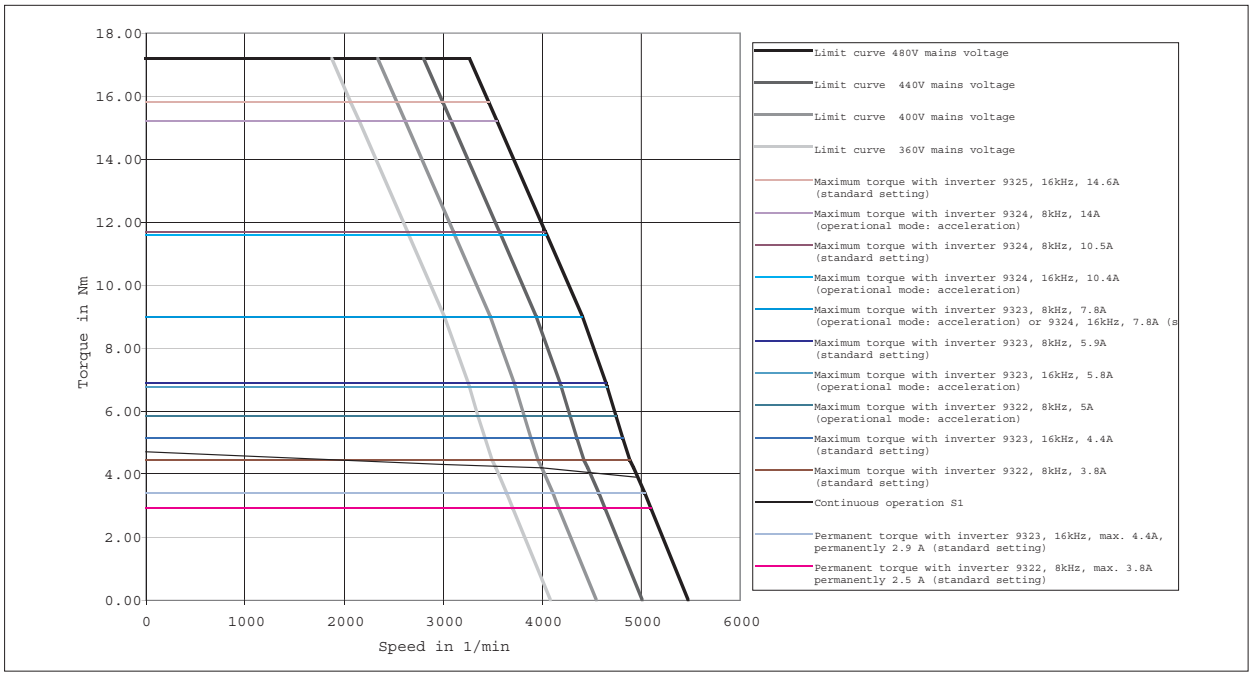
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Motor-inverter combination:
Maximum and permanent torque synchronous servo motor MDSKS 056-23, 190 Hz without fan
Inverters 9321-9323

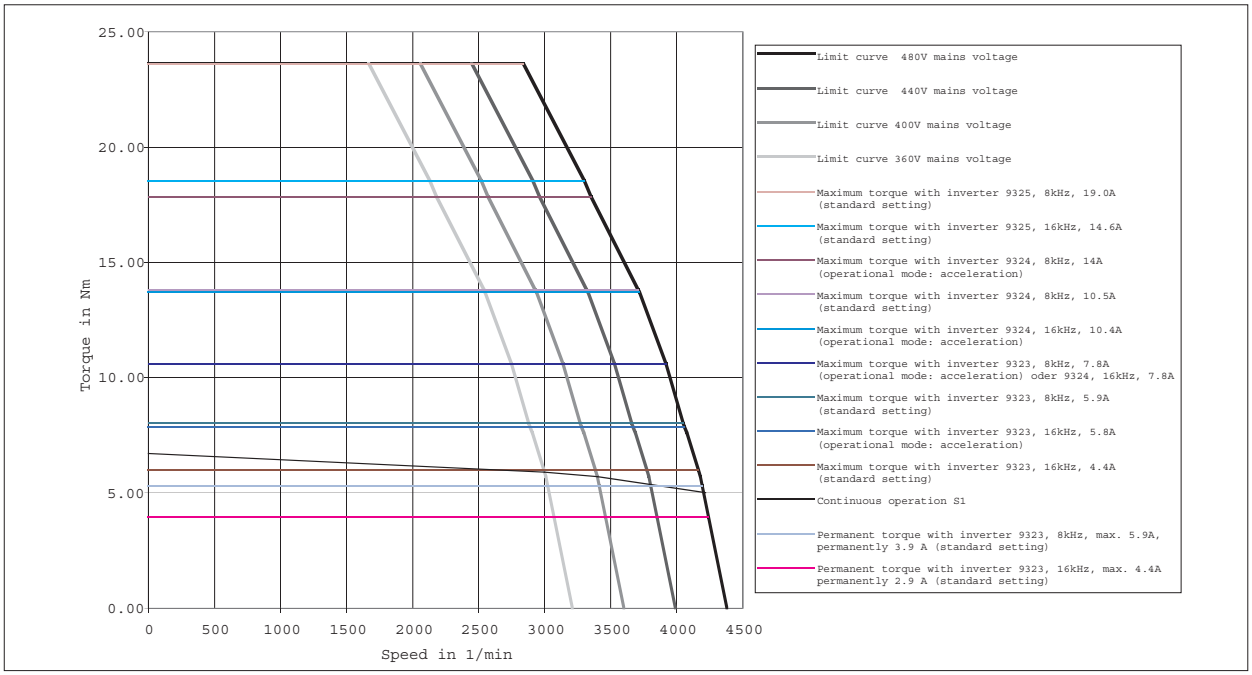


Motor-inverter combination:
Maximum and permanent torque synchronous servo motor MDSKS 056-33, 200 Hz without fan
Inverters 9322-9325

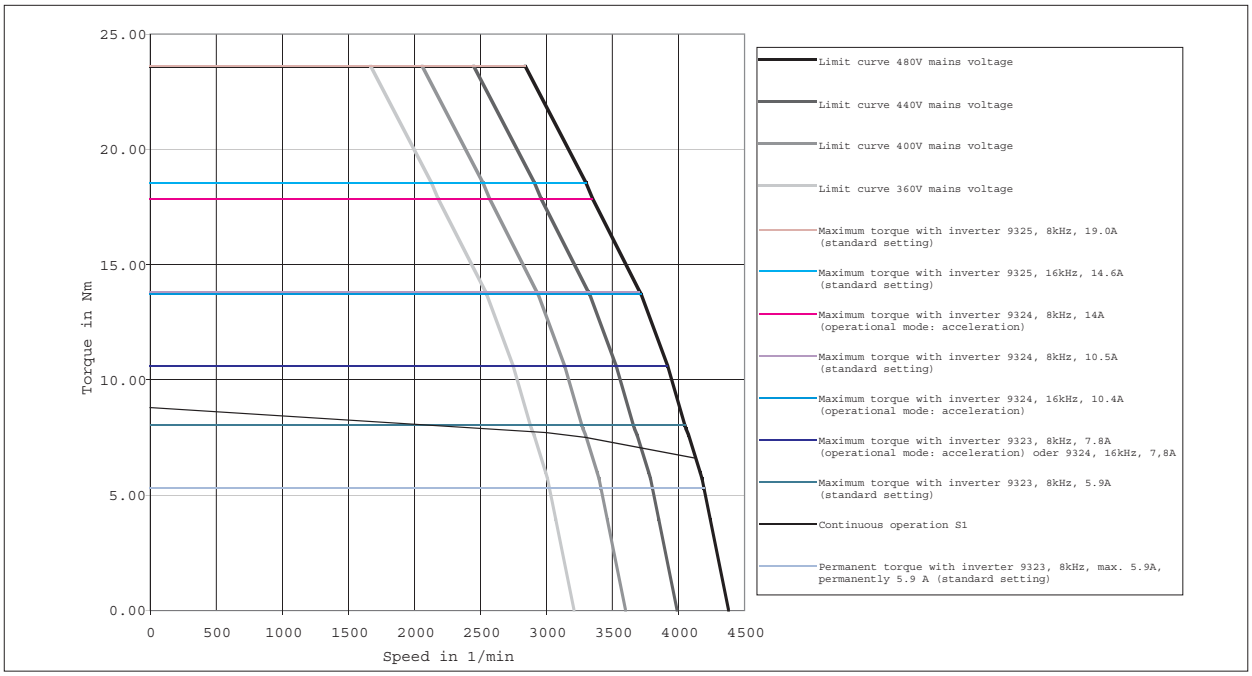


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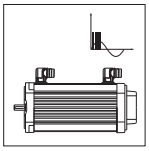
Motor-inverter combination:
Maximum and permanent torque synchronous servo motor MDSKS 071-03, 170 Hz without fan
Inverters 9323-9325



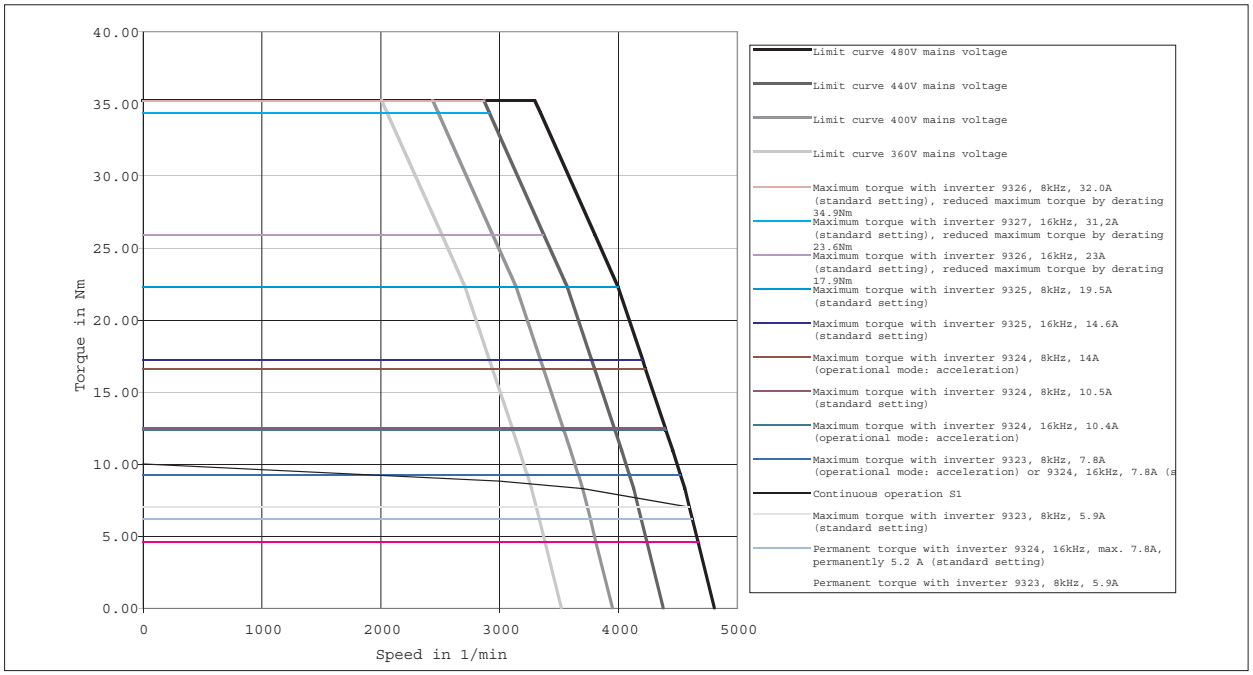
Motor-inverter combination:
Maximum and permanent torque synchronous servo motor MDFKS 071-03, 165 Hz with fan
Inverters 9323-9325



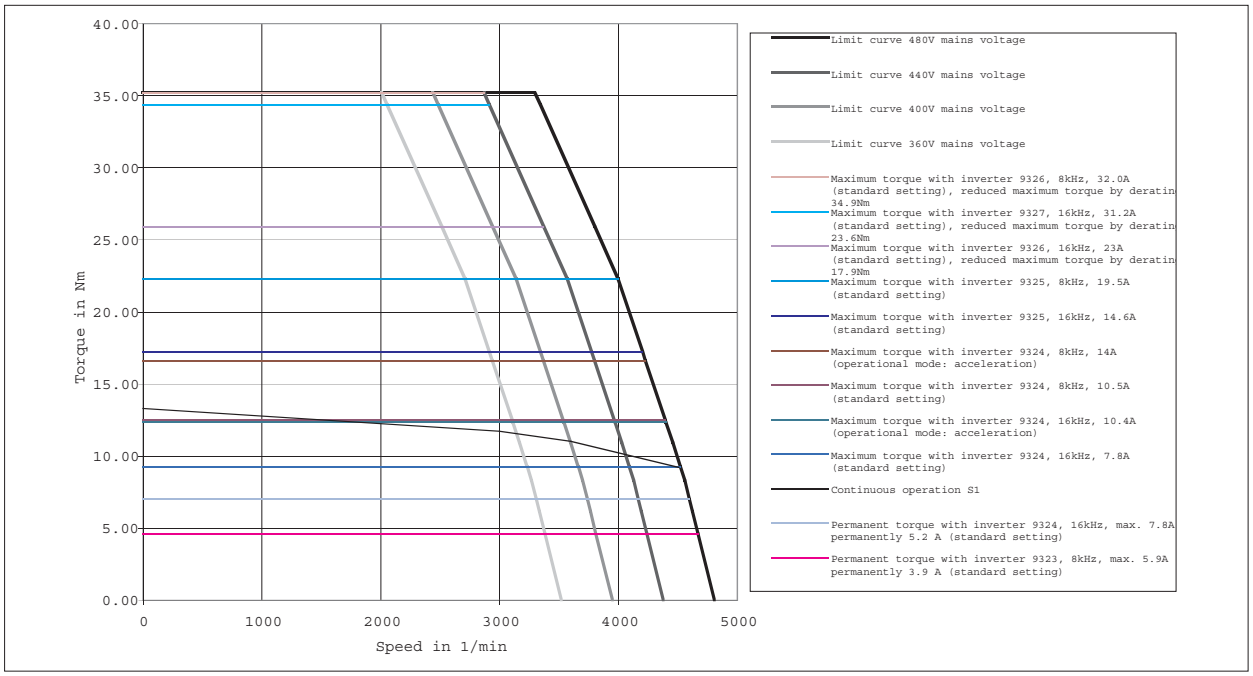
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Motor-inverter combination:
Maximum and permanent torque synchronous servo motor MDSKS 071-13, 185 Hz without fan
Inverters 9323-9327

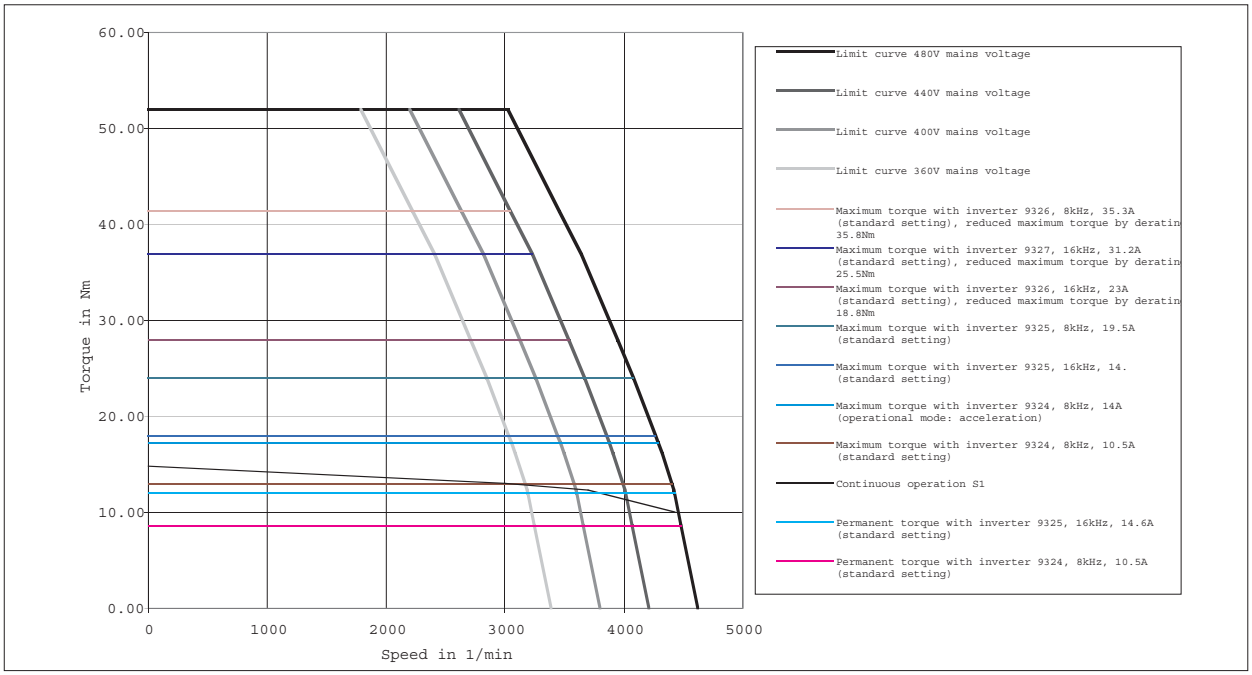


Motor-inverter combination:
Maximum and permanent torque synchronous servo motor MDFKS 071-13, 180 Hz with fan
Inverters 9323-9327

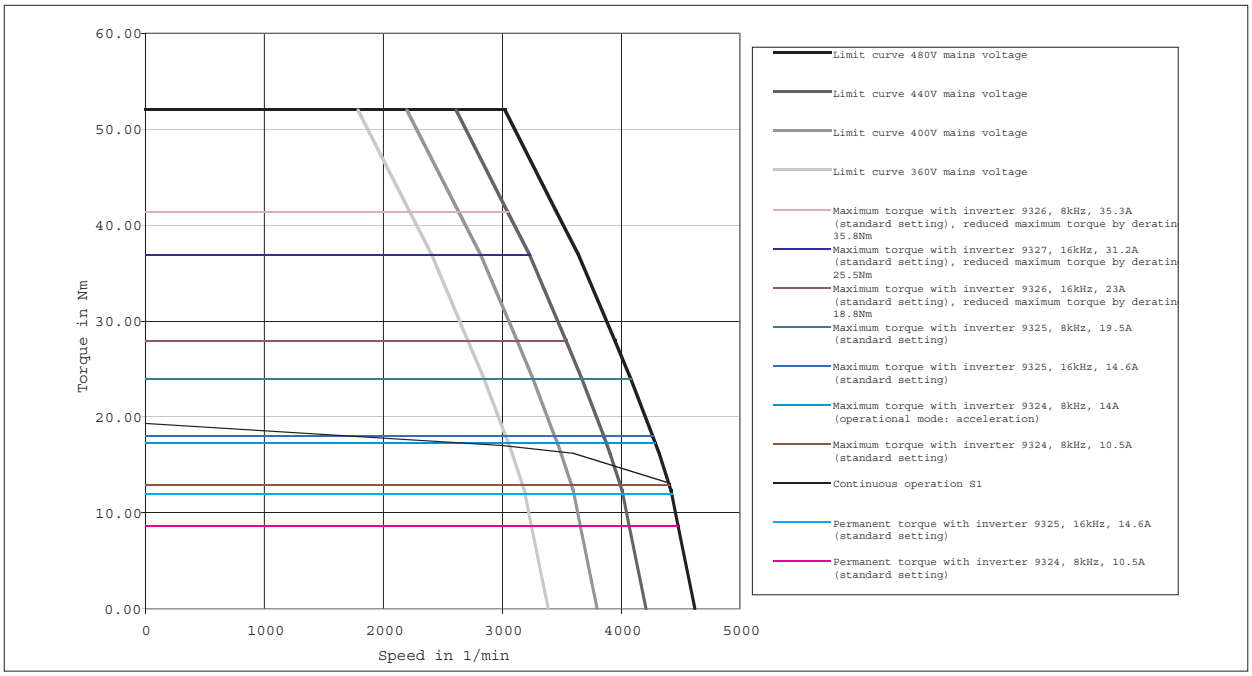


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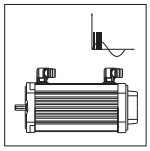
Motor-inverter combination:
Maximum and permanent torque synchronous servo motor MDSKS 071-33, 180 Hz without fan
Inverters 9324-9327



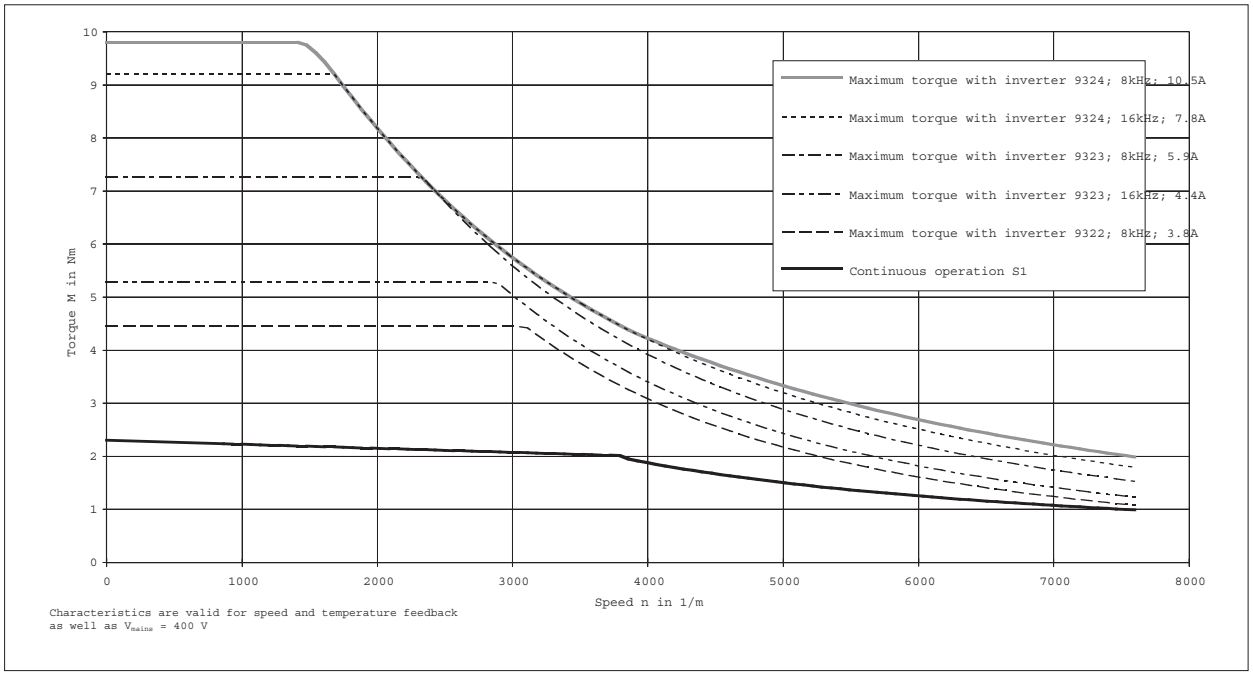
Motor-inverter combination:
Maximum and permanent torque synchronous servo motor MDFKS 071-33, 175 Hz with fan
Inverters 9324-9327



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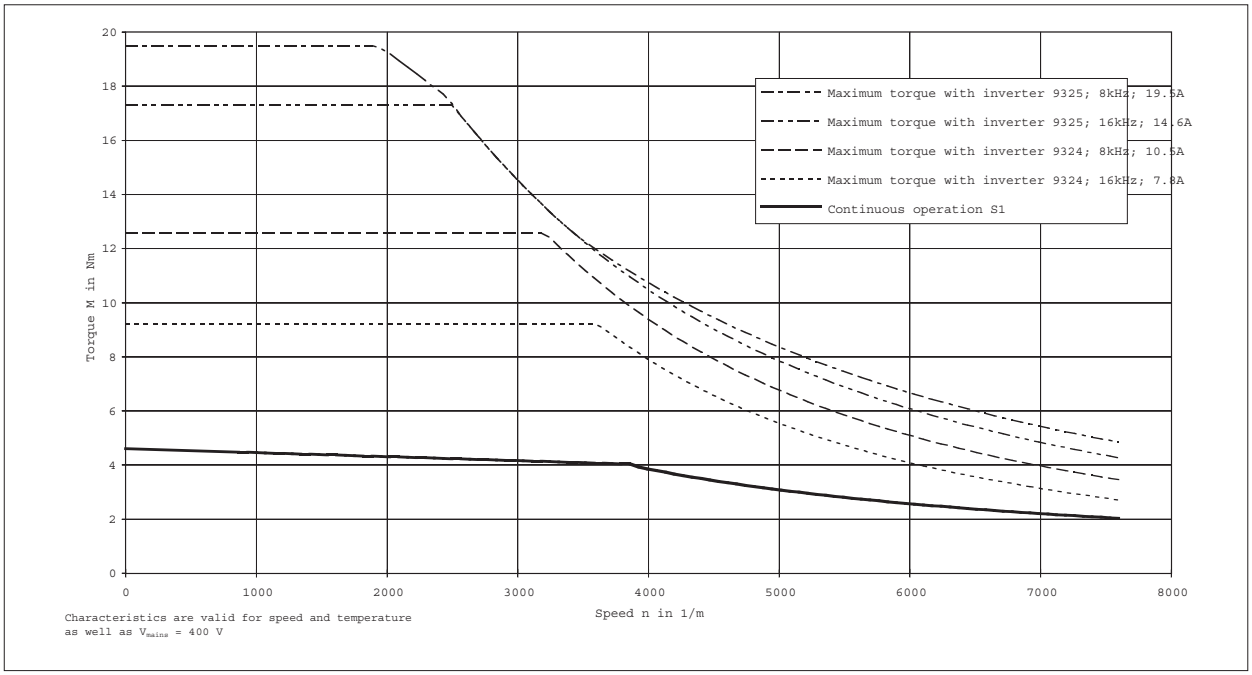


Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDSKA 056, 140 Hz without fan
Inverters 9322-9324

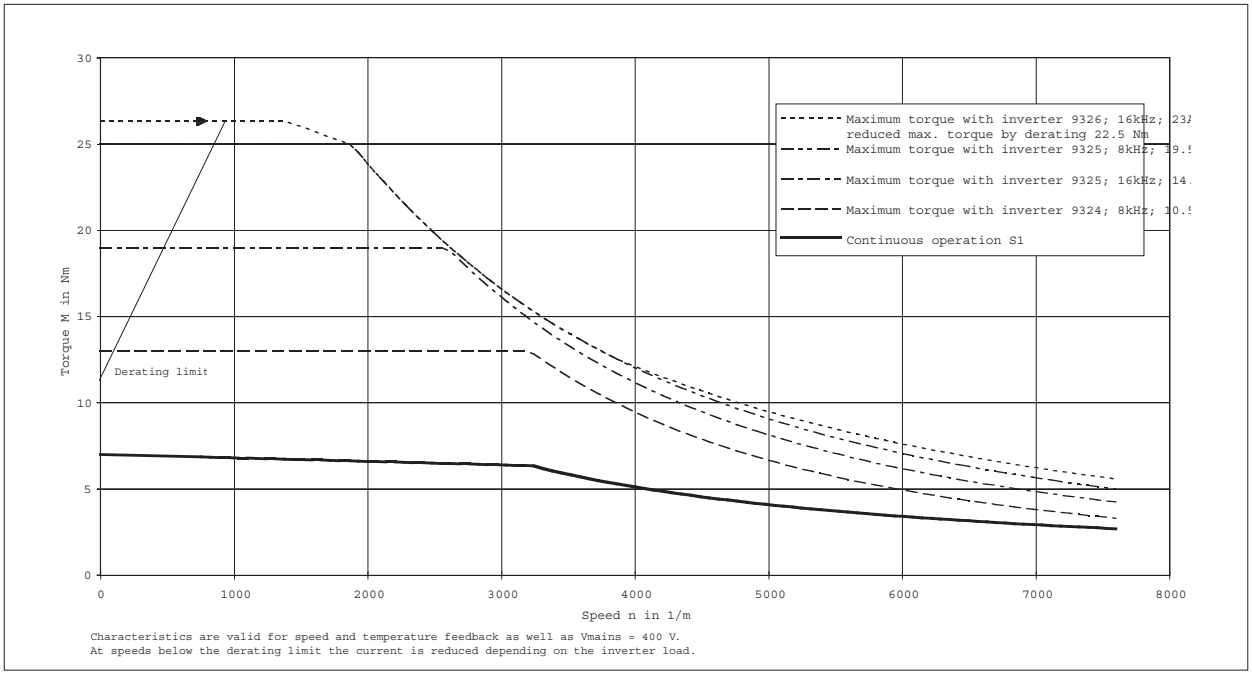


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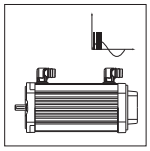
Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDSKA 071, 140 Hz without separate fan
Inverters 9324-9325



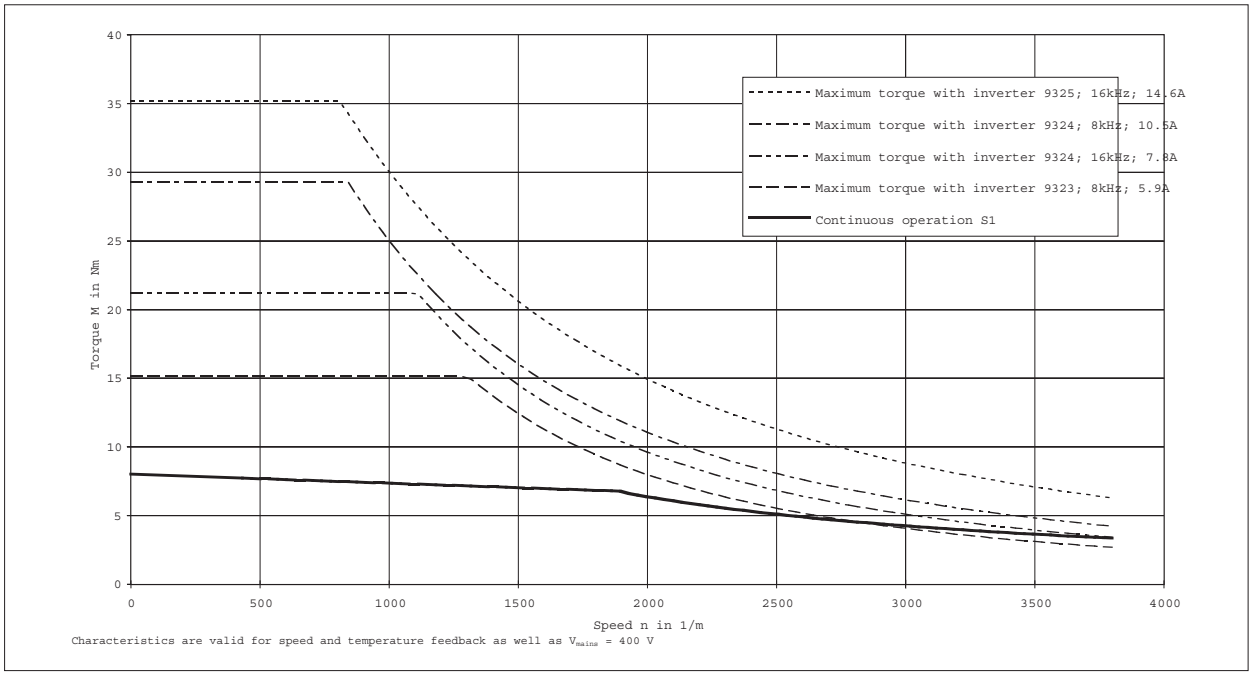
Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFKA 071, 120 Hz with fan
Inverters 9324-9326



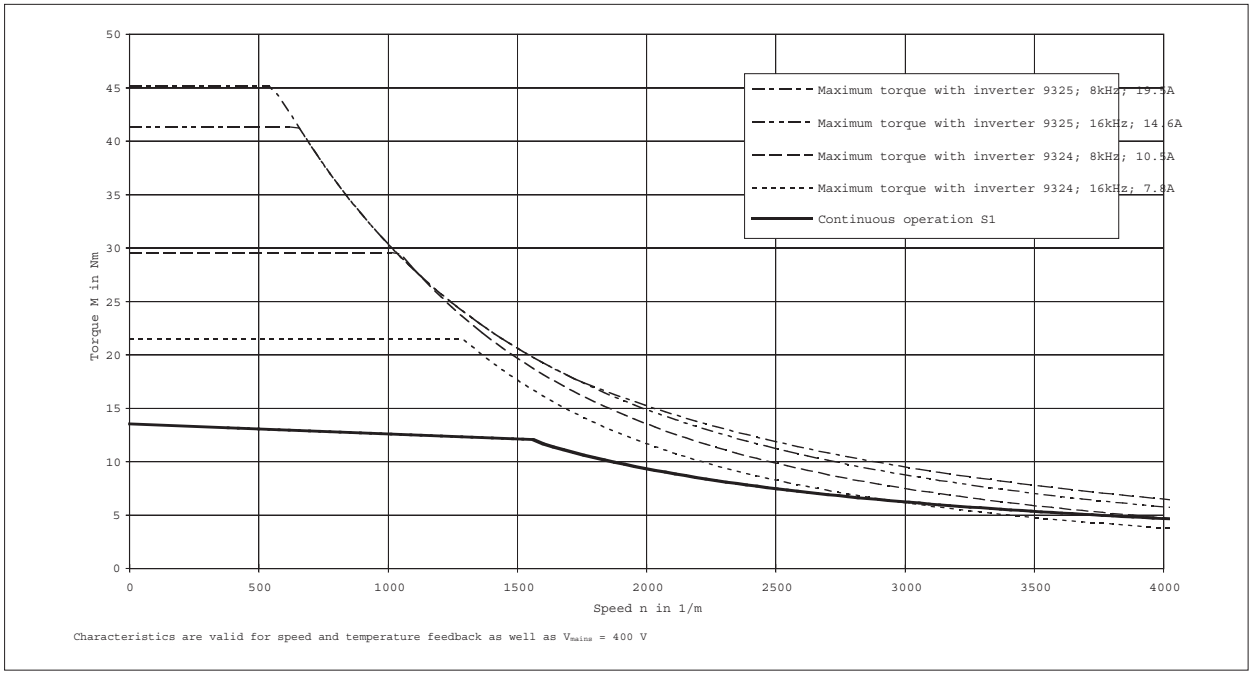
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Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDSKA 080, 70 Hz without fan
Inverters 9323-9325

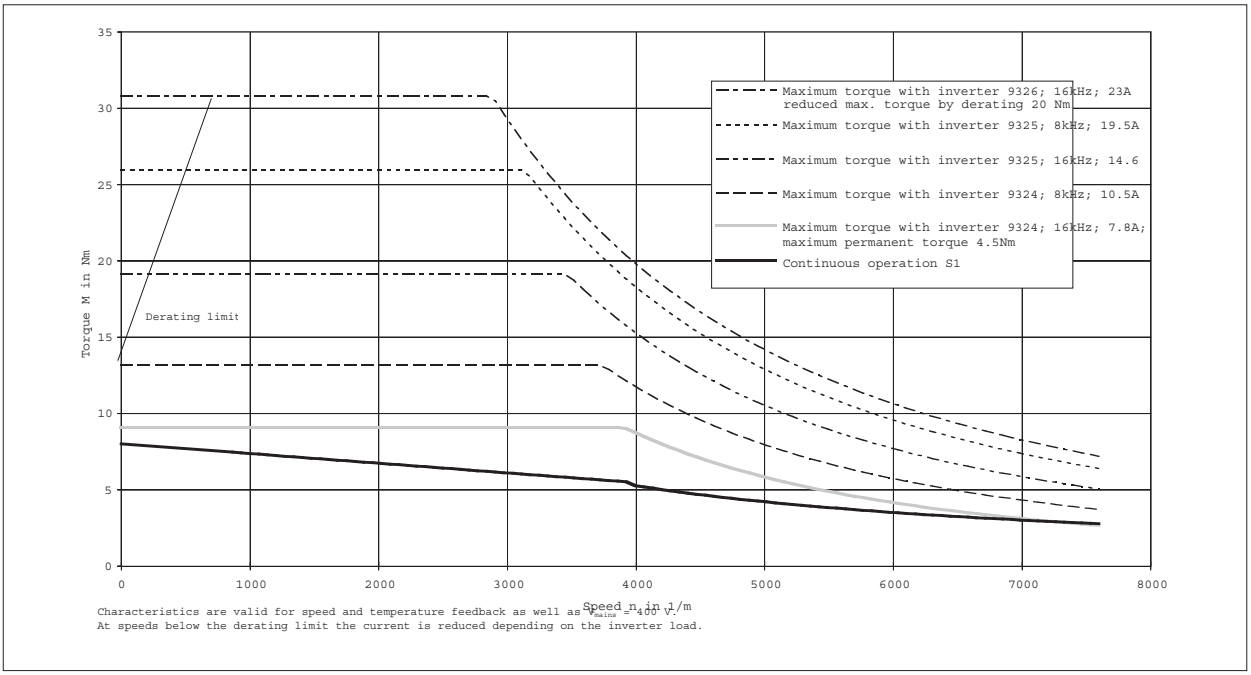


Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFKA 080, 60 Hz with separate fan
Inverters 9324-9325

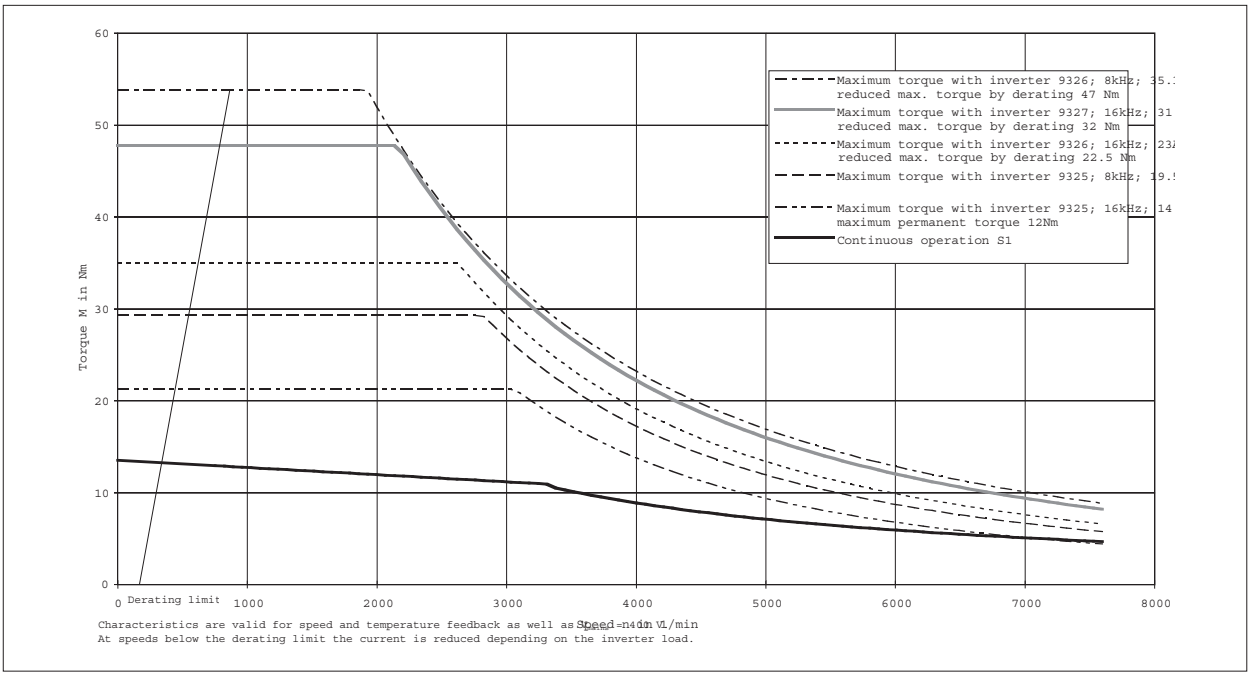


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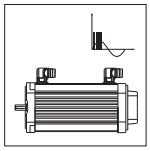
Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDSKA 080, 140 Hz without fan
Inverters 9324-9326



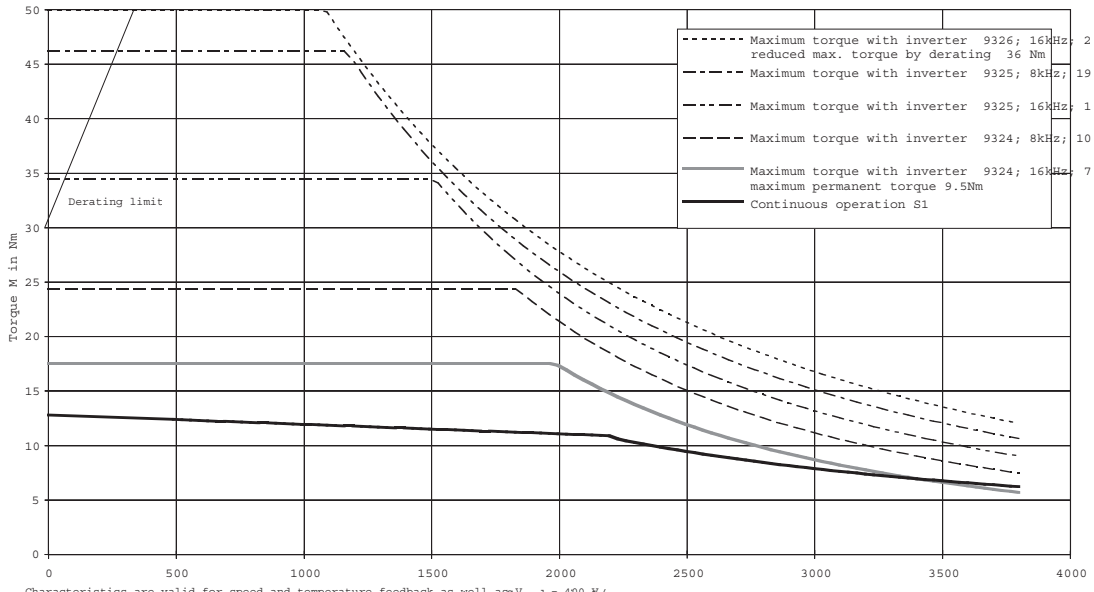
Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFKA 080, 120 Hz with separate fan
Inverters 9325-9327



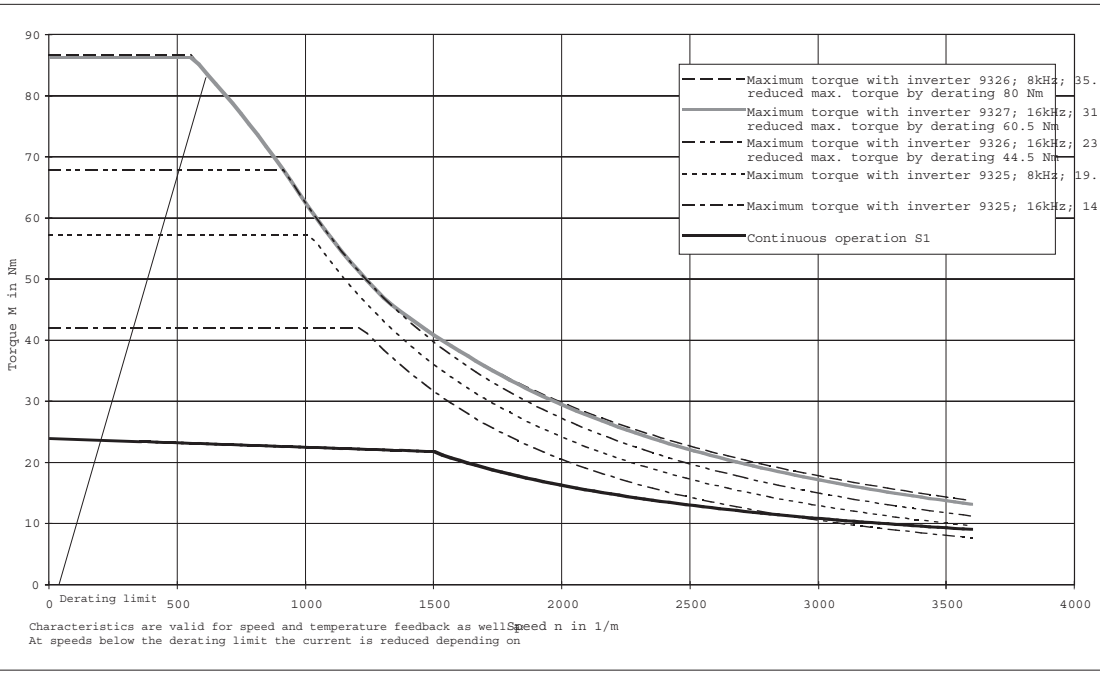
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Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDSKA 090, 80 Hz without fan
Inverters 9324-9326

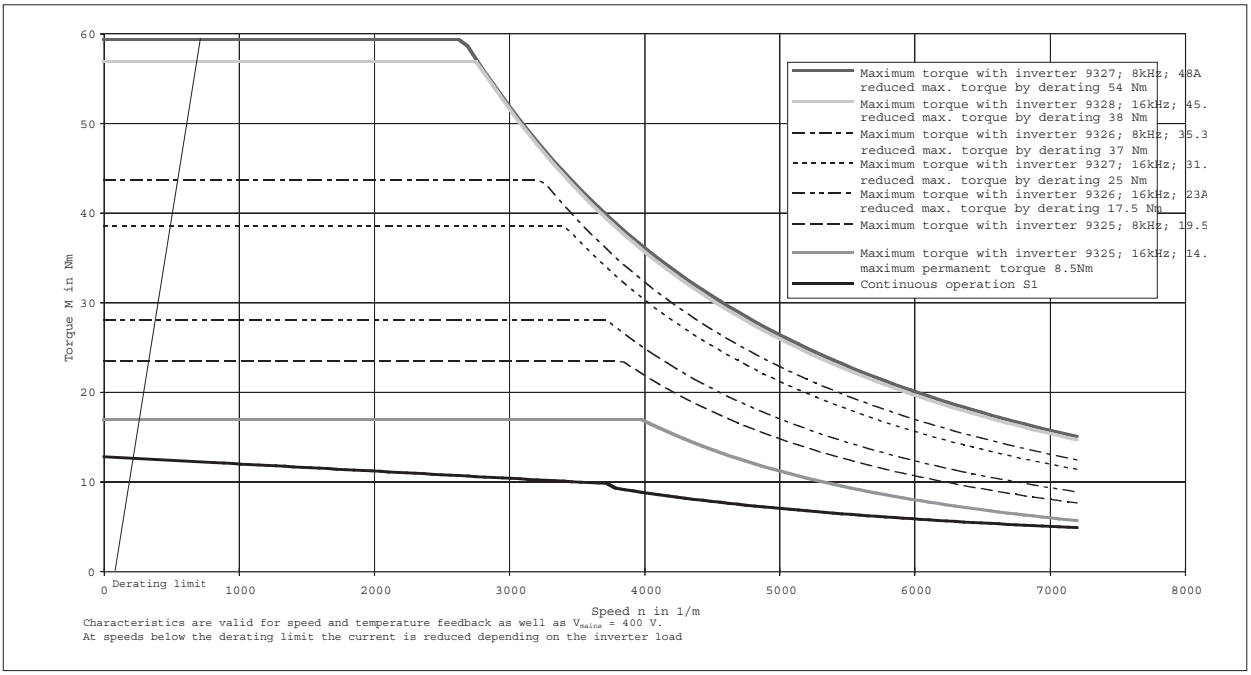


Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFKA 090, 60 Hz with separate fan
Inverters 9325-9327



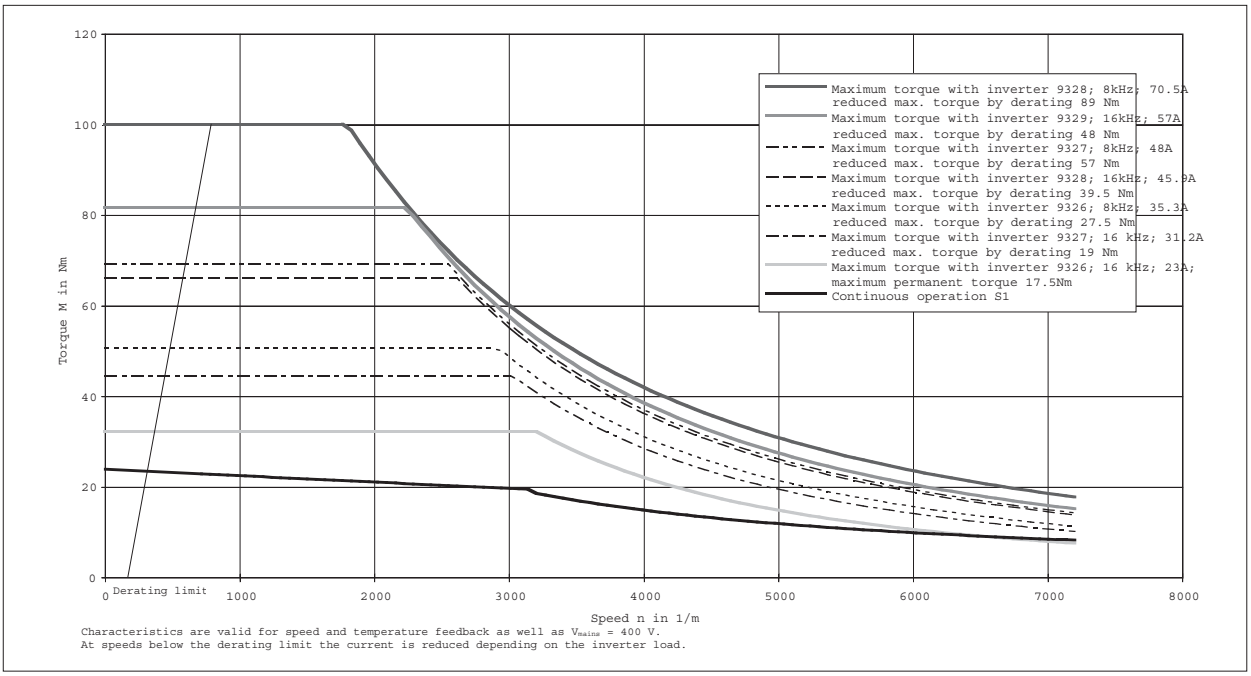
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Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDSKA 090, 140 Hz without fan
Inverters 9325-9328



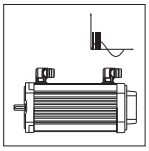
Characteristics are valid for speed and temperature feedback as well as V_{mains} = 400 V.
At speeds below the derating limit the current is reduced depending on the inverter load

Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFKA 090, 120 Hz with separate fan
Inverters 9326-9329

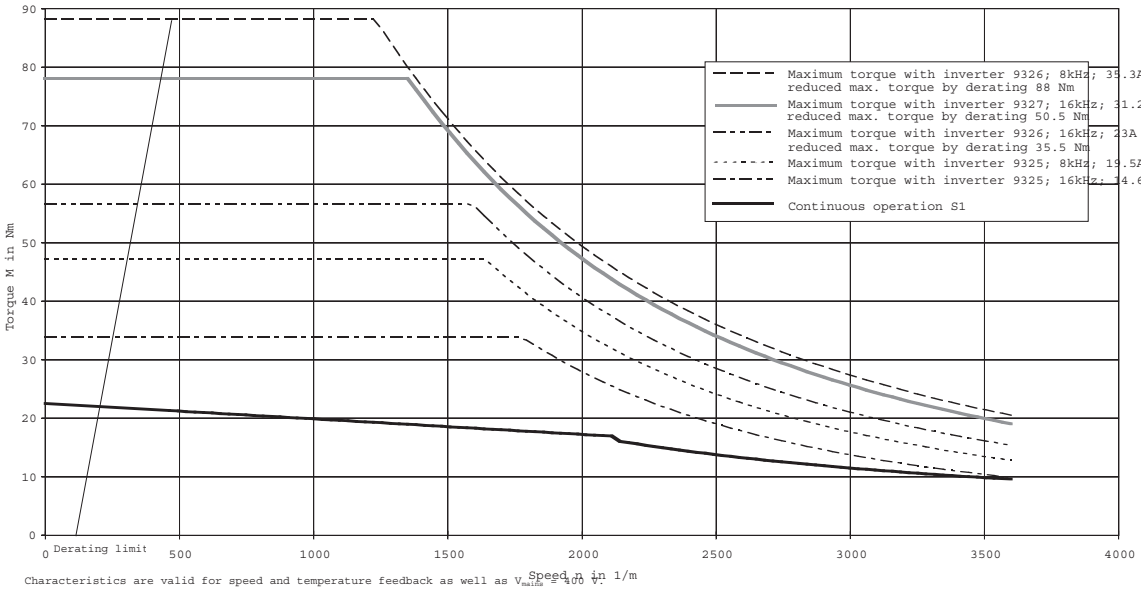


Characteristics are valid for speed and temperature feedback as well as V_{mains} = 400 V.
At speeds below the derating limit the current is reduced depending on the inverter load.

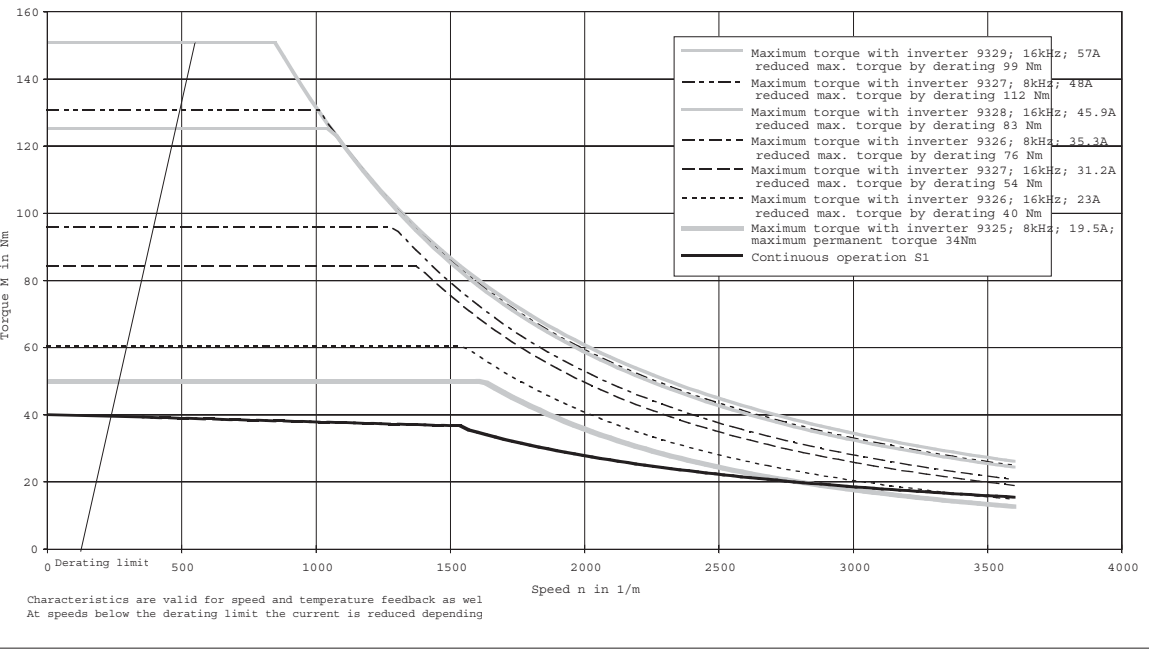
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Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDSKA 100, 80 Hz without fan
Inverters 9325-9327



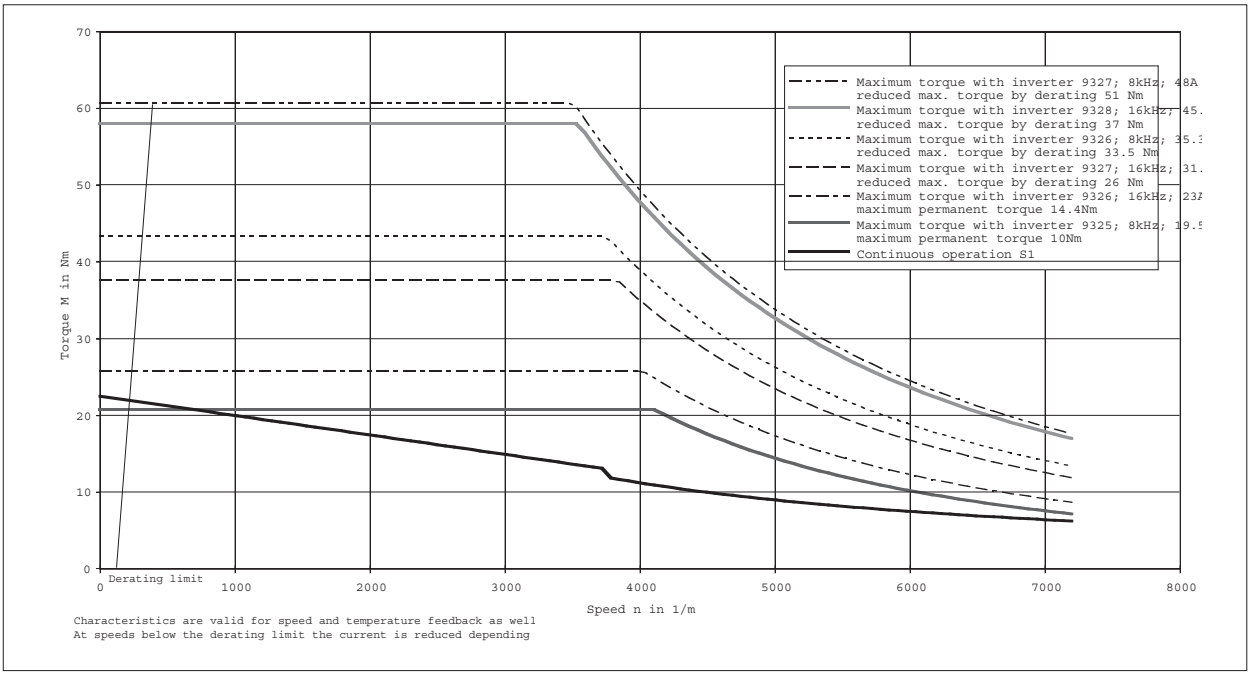
Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFKA 100, 60 Hz with separate fan
Inverters 9325-9329



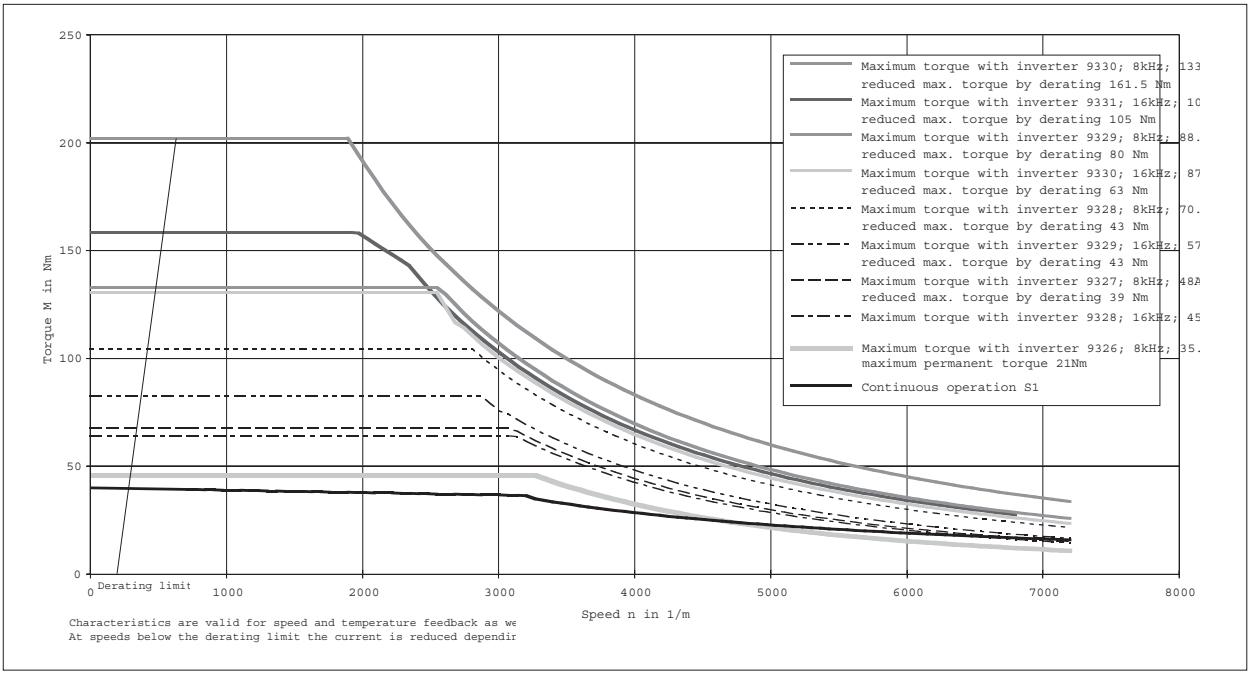
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Torque-limit characteristics

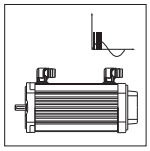
Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDSKA 100, 140 Hz without fan
Inverters 9325-9328



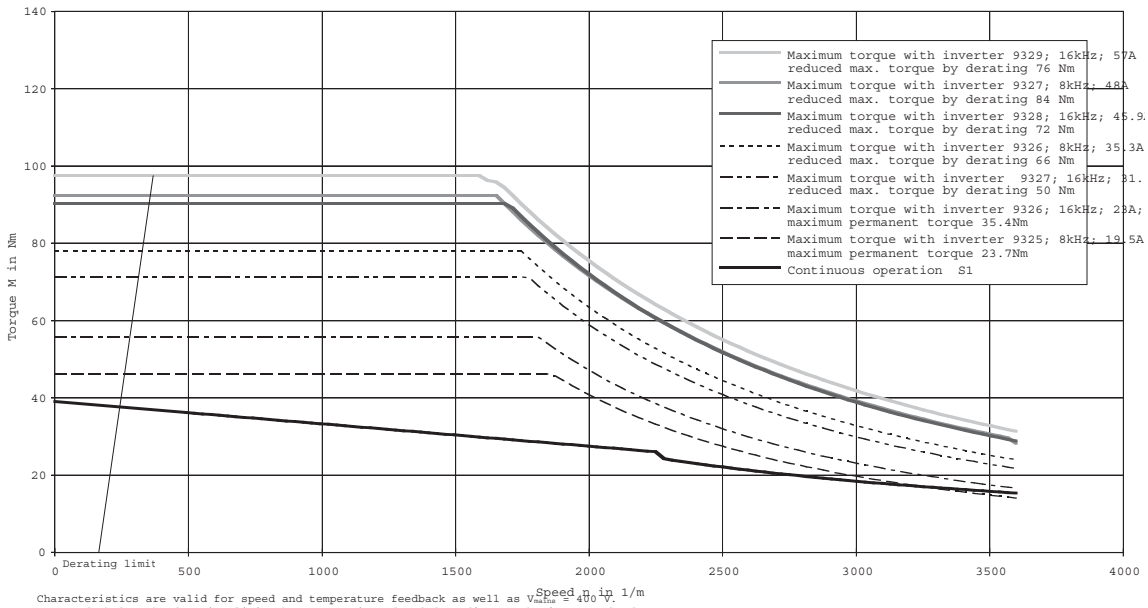
Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFKA 100, 120 Hz with separate fan
Inverters 9326-9331



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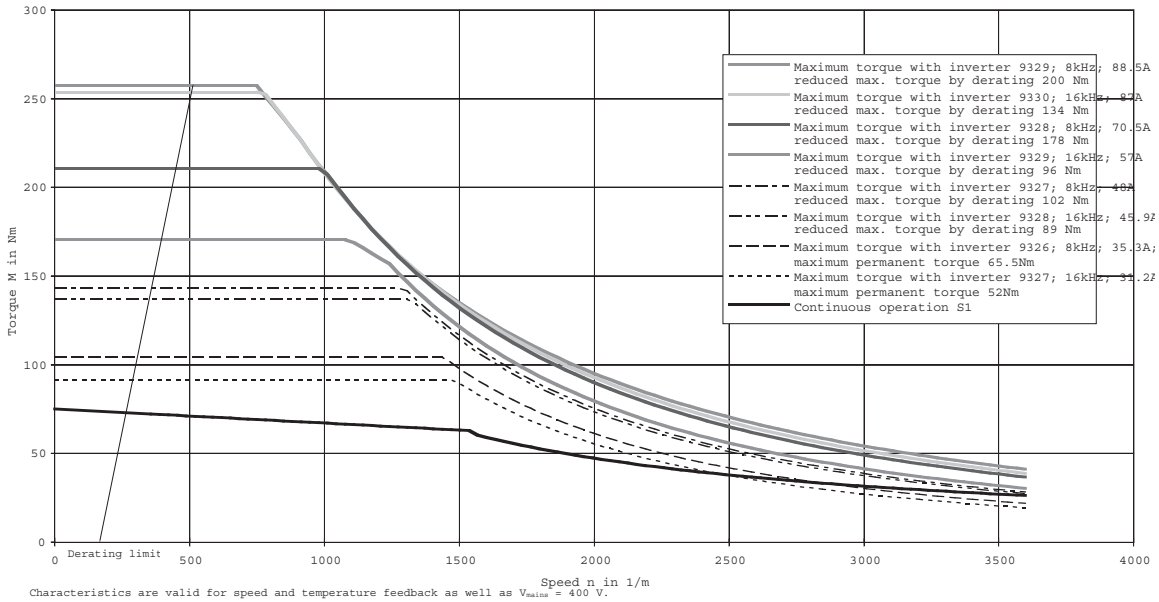


Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDSKA 112, 85 Hz without fan
Inverters 9325-9329



Characteristics are valid for speed and temperature feedback as well as V_{mains} = 400 V.
At speeds below the derating limit the current is reduced depending on the inverter load.

Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFKA 112, 60 Hz with separate fan
Inverters 9326-9330

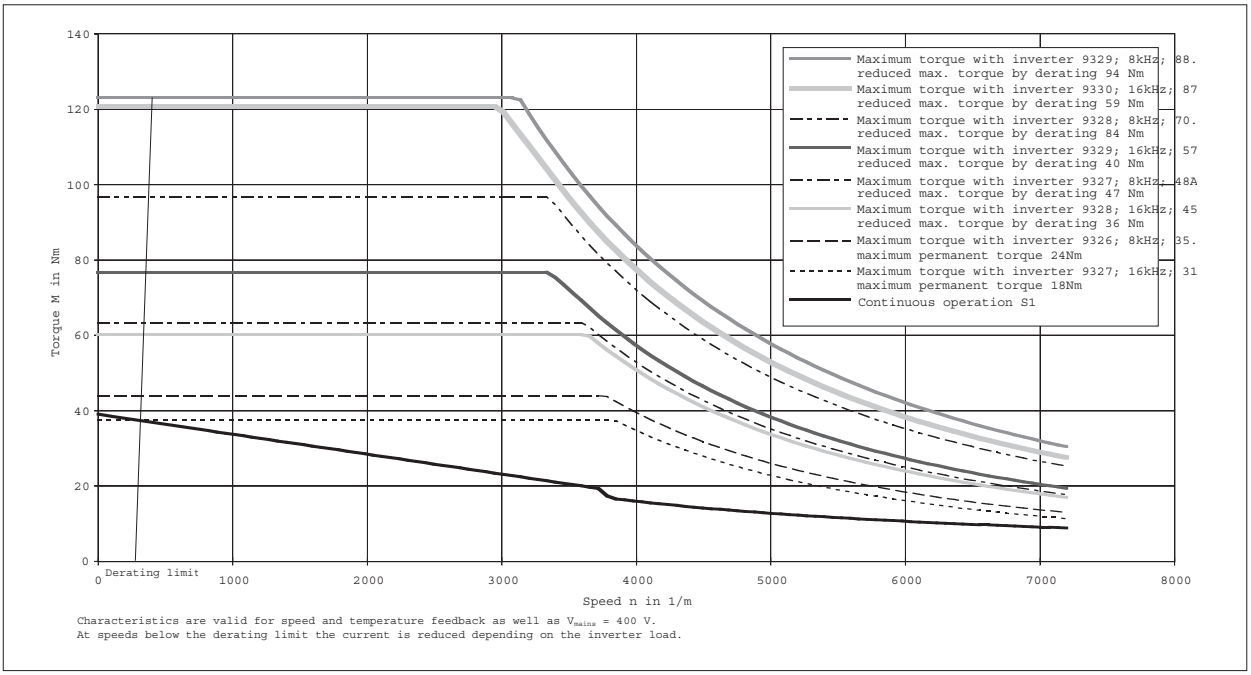


Characteristics are valid for speed and temperature feedback as well as V_{mains} = 400 V.
At speeds below the derating limit the current is reduced depending on the inverter load.

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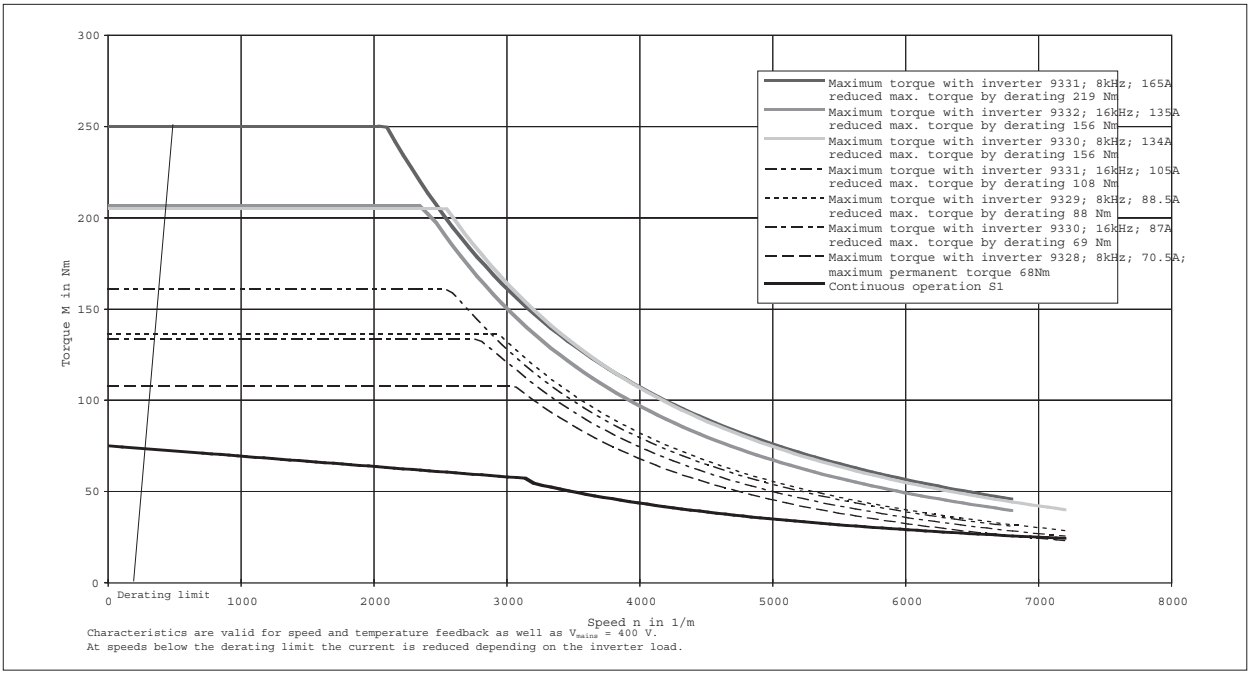
Torque-limit characteristics

Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDSKA 112, 140 Hz without fan
Inverters 9326-9330



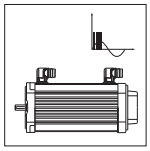
Characteristics are valid for speed and temperature feedback as well as V_{mains} = 400 V.
At speeds below the derating limit the current is reduced depending on the inverter load.

Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFKA 112, 120 Hz with separate fan
Inverters 9328-9332

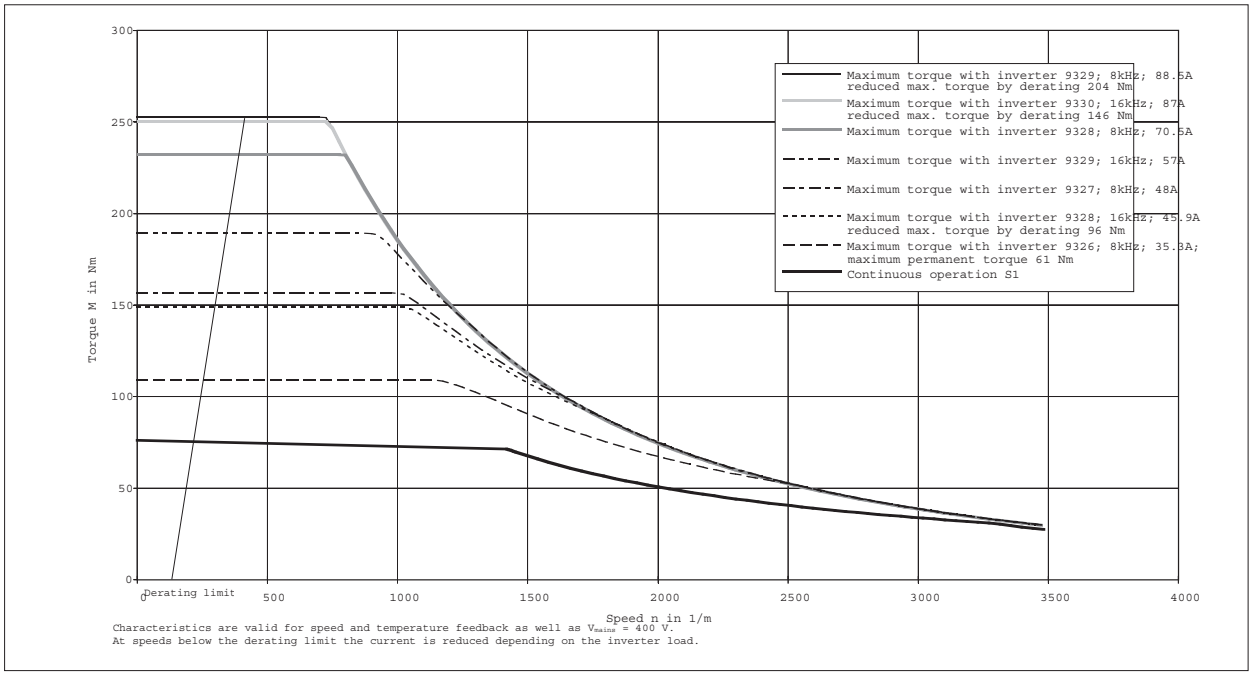


Characteristics are valid for speed and temperature feedback as well as V_{mains} = 400 V.
At speeds below the derating limit the current is reduced depending on the inverter load.

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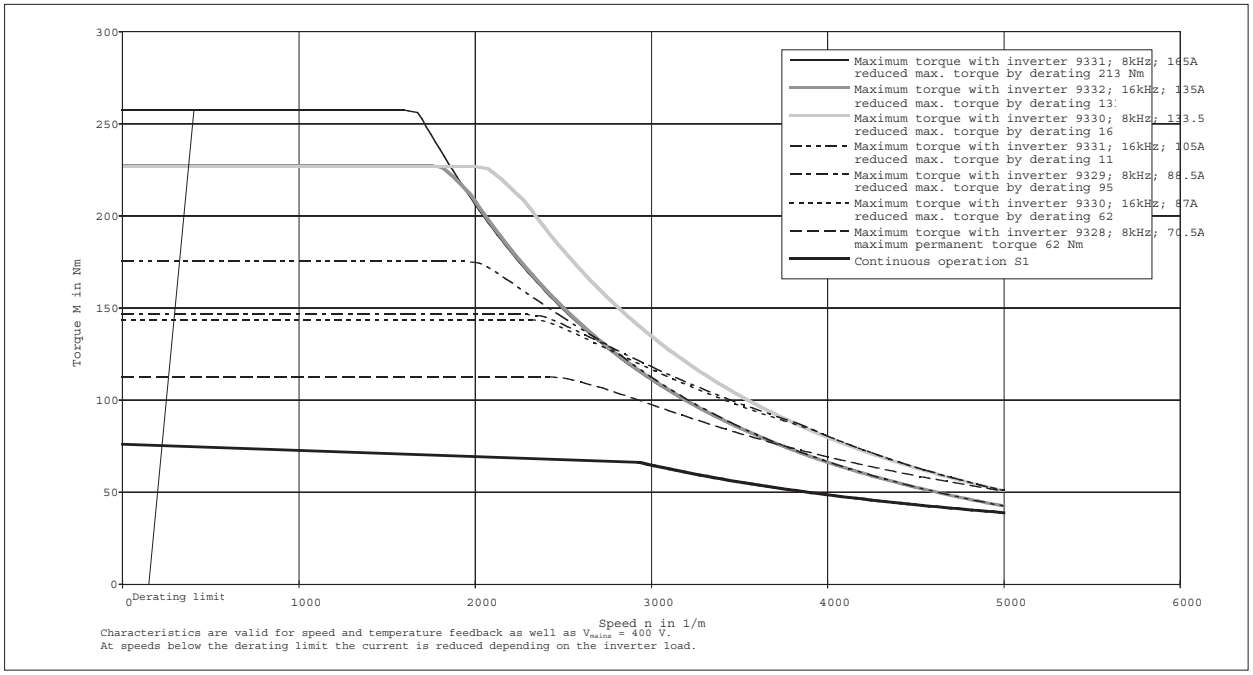


Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFQA 100-22, 50 Hz with separate fan in star connection
Inverters 9326-9330



Characteristics are valid for speed and temperature feedback as well as V_{mains} = 400 V.
At speeds below the derating limit the current is reduced depending on the inverter load.

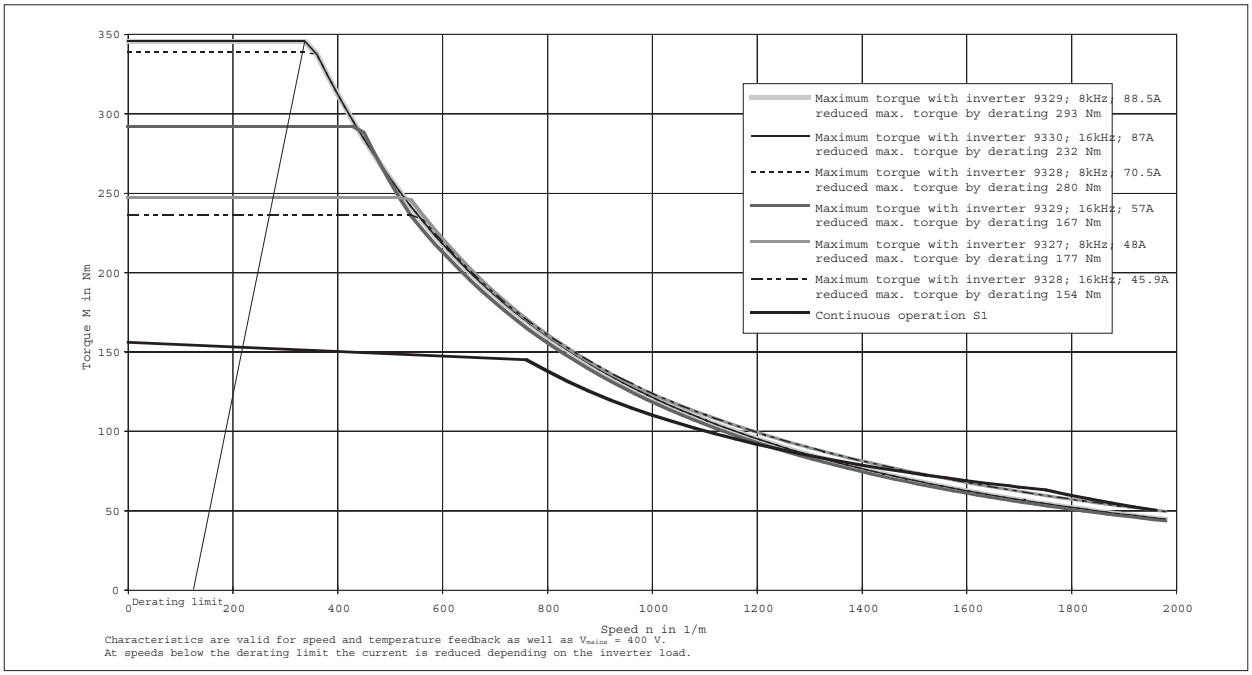
Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFQA 100-22, 100 Hz with separate fan in star connection
Inverters 9328-9332



Characteristics are valid for speed and temperature feedback as well as V_{mains} = 400 V.
At speeds below the derating limit the current is reduced depending on the inverter load.

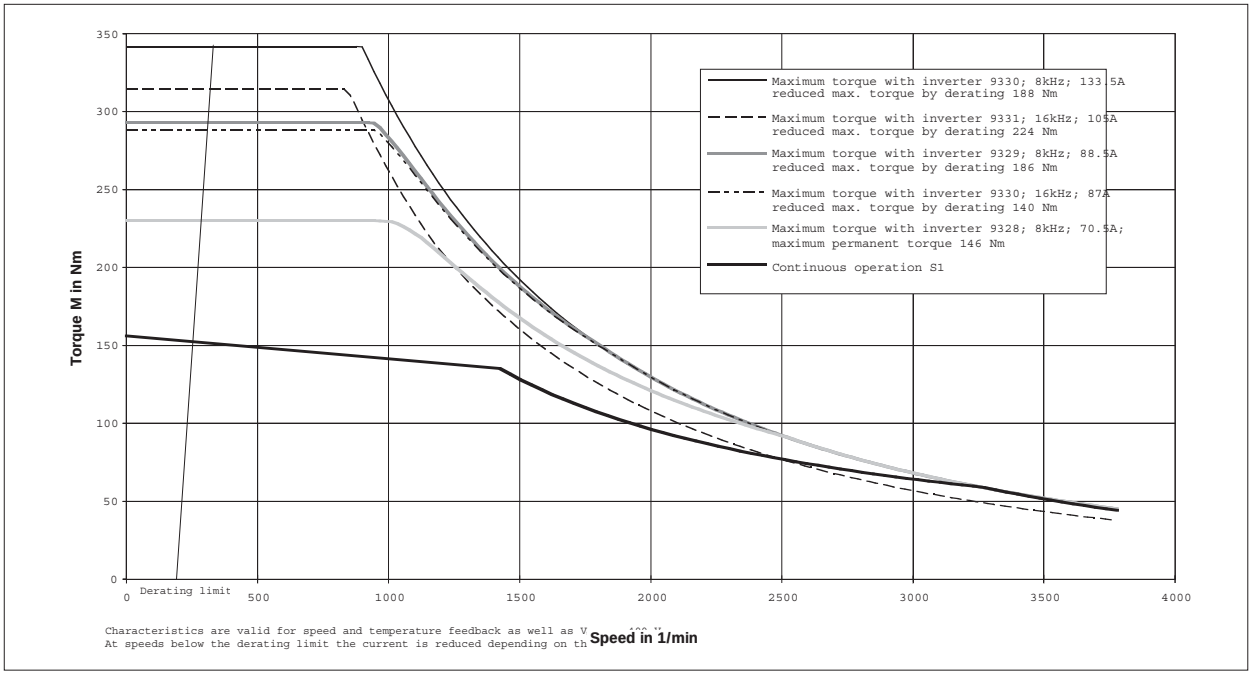
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Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFQA 112-22, 50 Hz with separate fan in star connection
Inverters 9327-9330



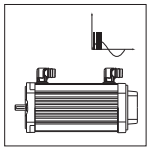
Characteristics are valid for speed and temperature feedback as well as V_{mains} = 400 V.
At speeds below the derating limit the current is reduced depending on the inverter load.

Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFQA 112-22, 50 Hz with separate fan in delta connection
Inverters 9328-9331

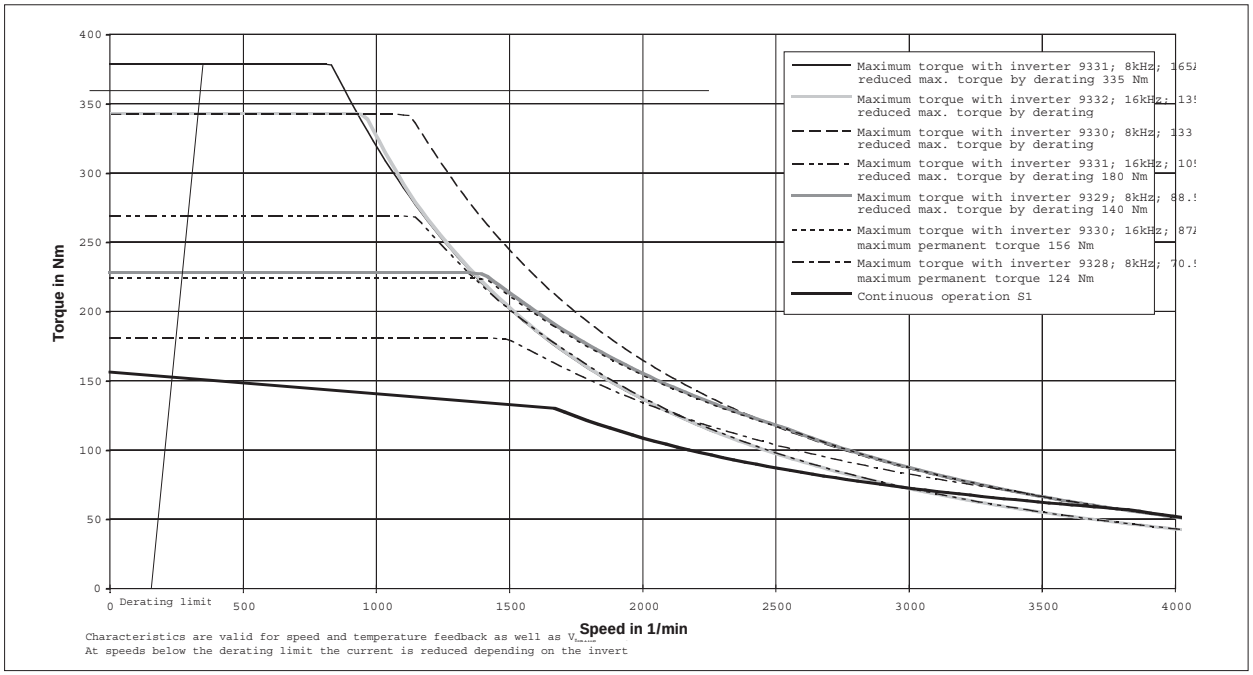


Characteristics are valid for speed and temperature feedback as well as V
At speeds below the derating limit the current is reduced depending on th

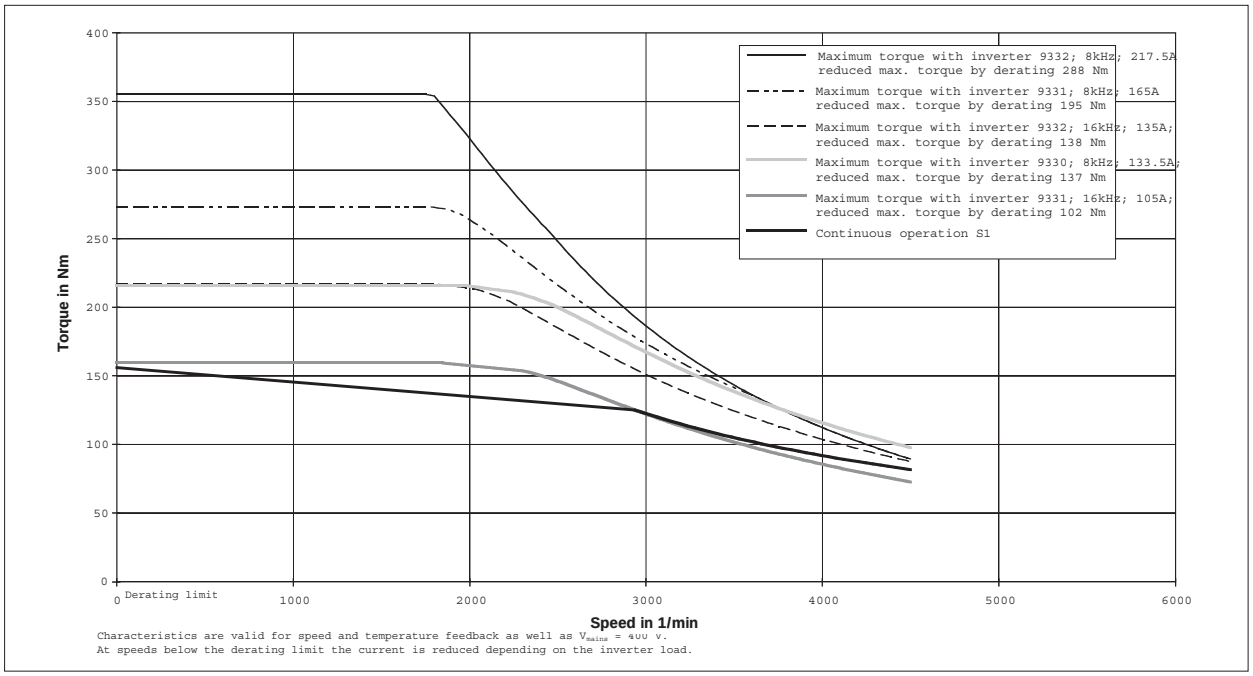
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Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFQA 112-22, 100 Hz with separate fan in star connection
Inverters 9328-9332

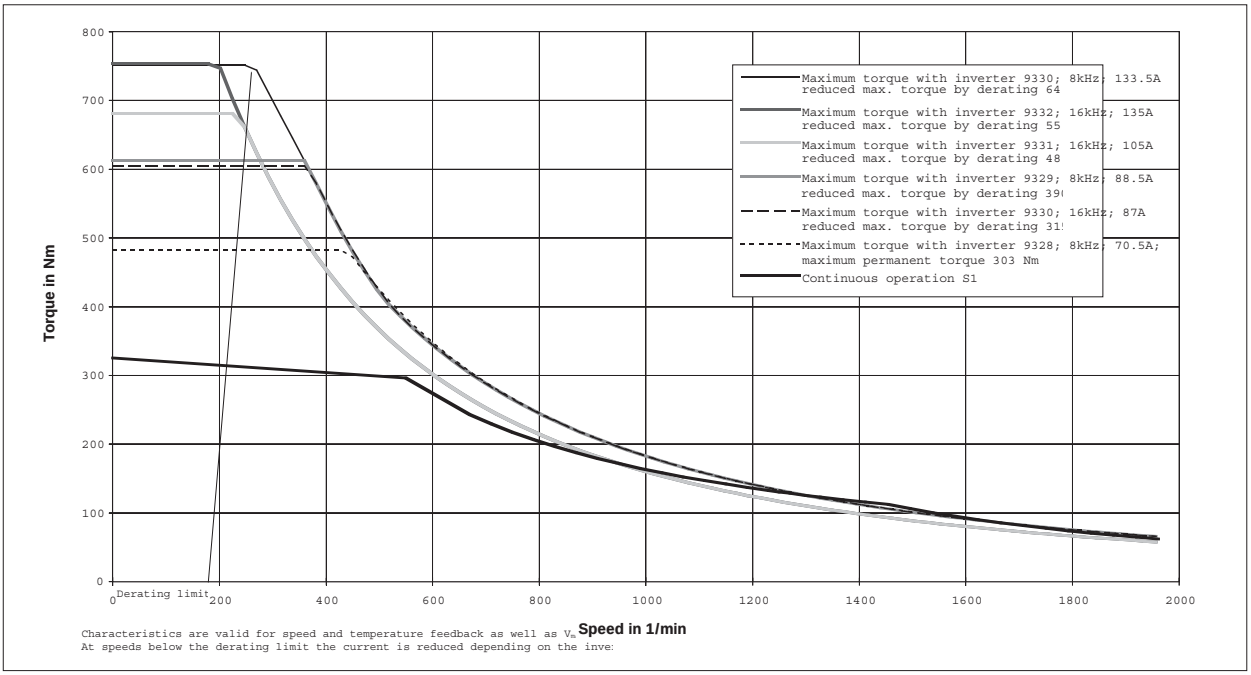


Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFQA 112-22, 100 Hz with separate fan in delta connection
Inverters 9330-9332

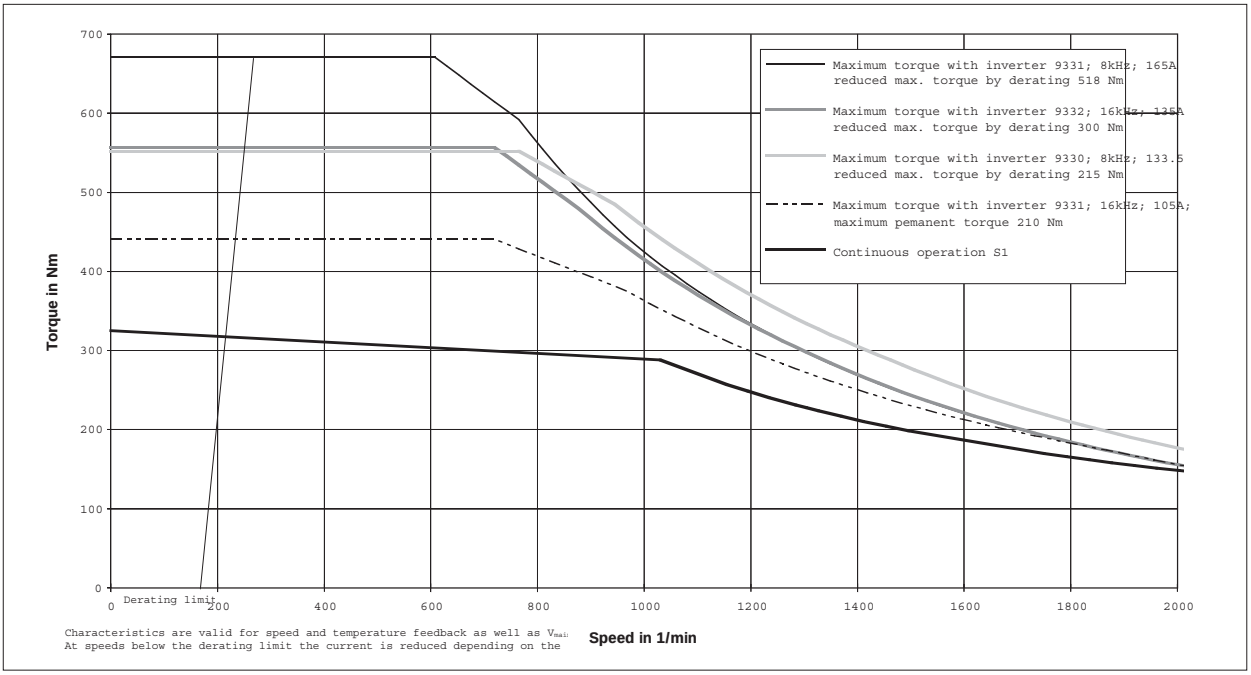


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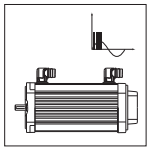
Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFQA 132-32, 36 Hz with separate fan in star connection
Inverters 9328-9332



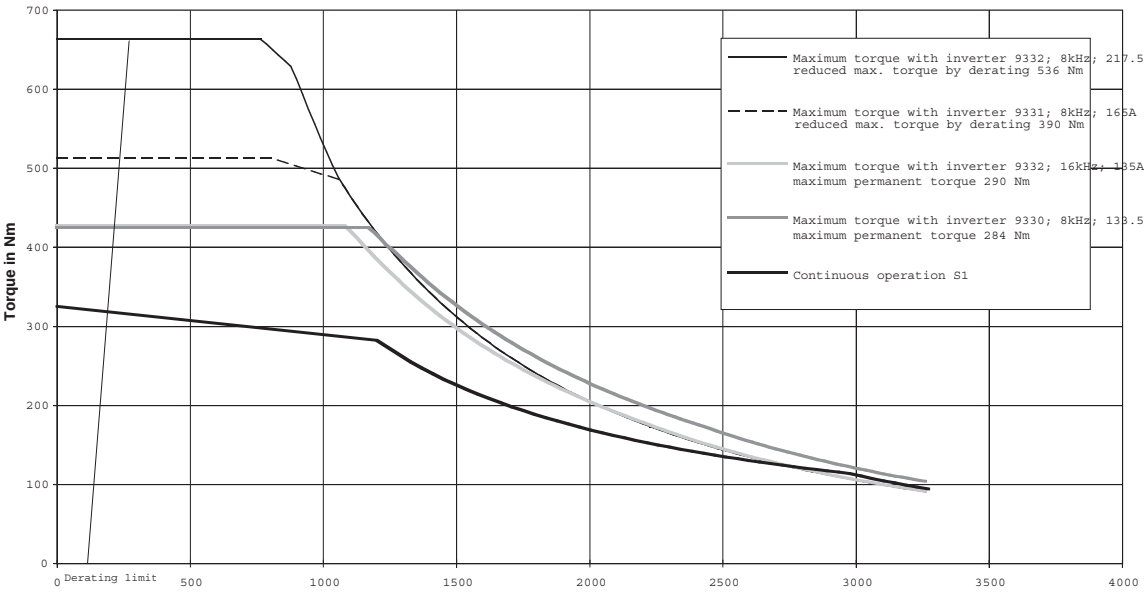
Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFQA 132-32, 36 Hz with separate fan in delta connection
Inverters 9330-9332



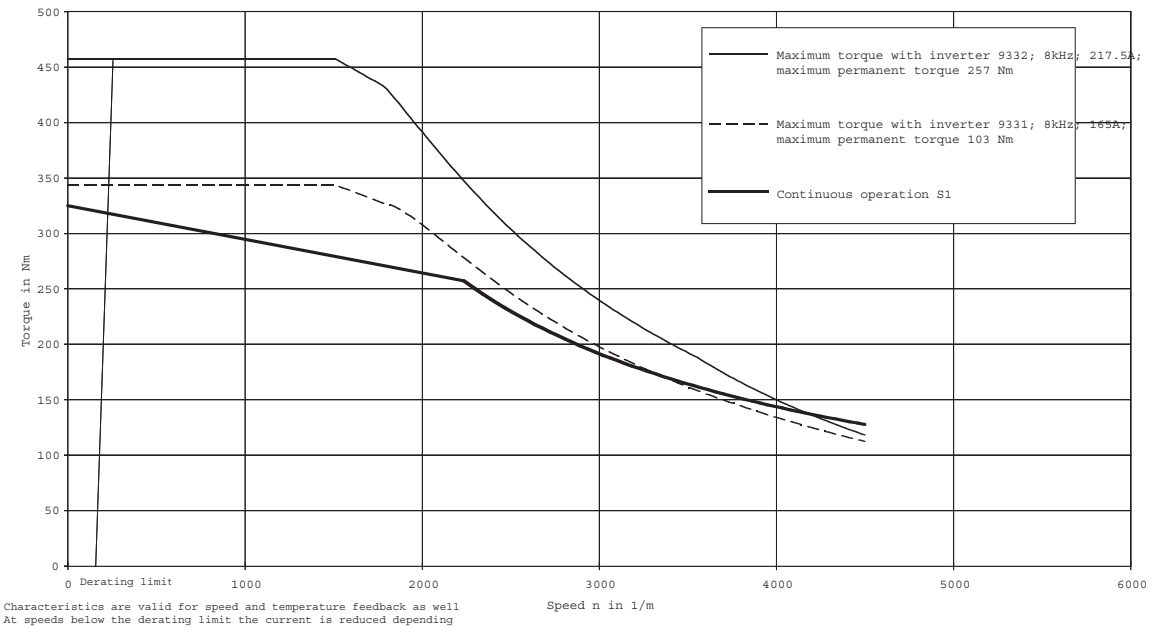
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Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFQA 132-32, 76 Hz with separate fan in star connection
Inverters 9330-9332



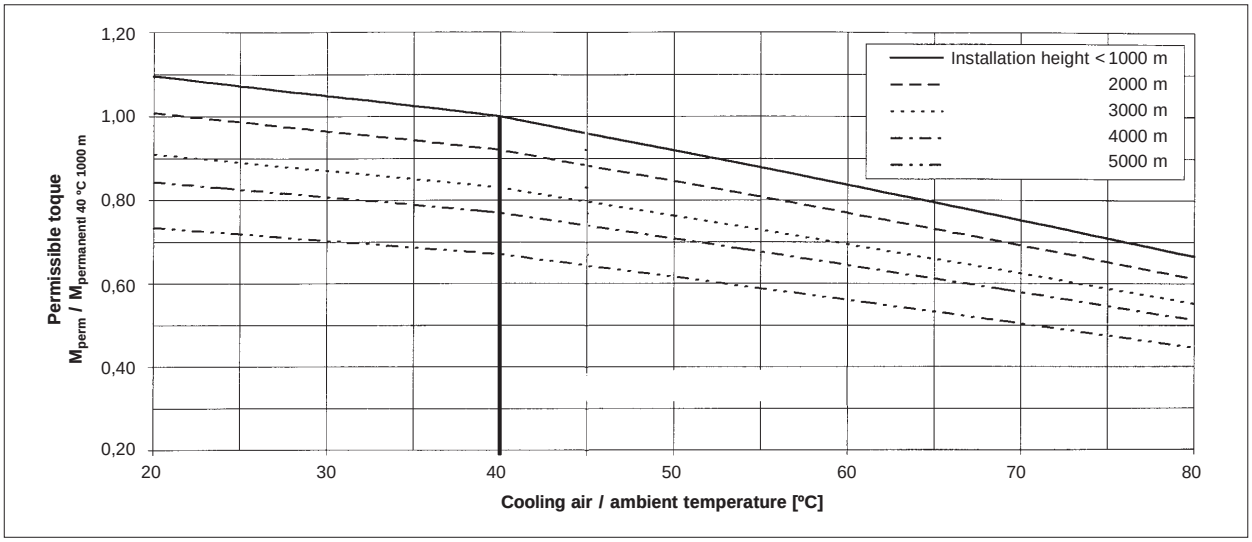
Motor-inverter combination:
Maximum and permanent torque asynchronous servo motor MDFQA 132-32, 76 Hz with separate fan in delta connection
Inverters 9330-9332



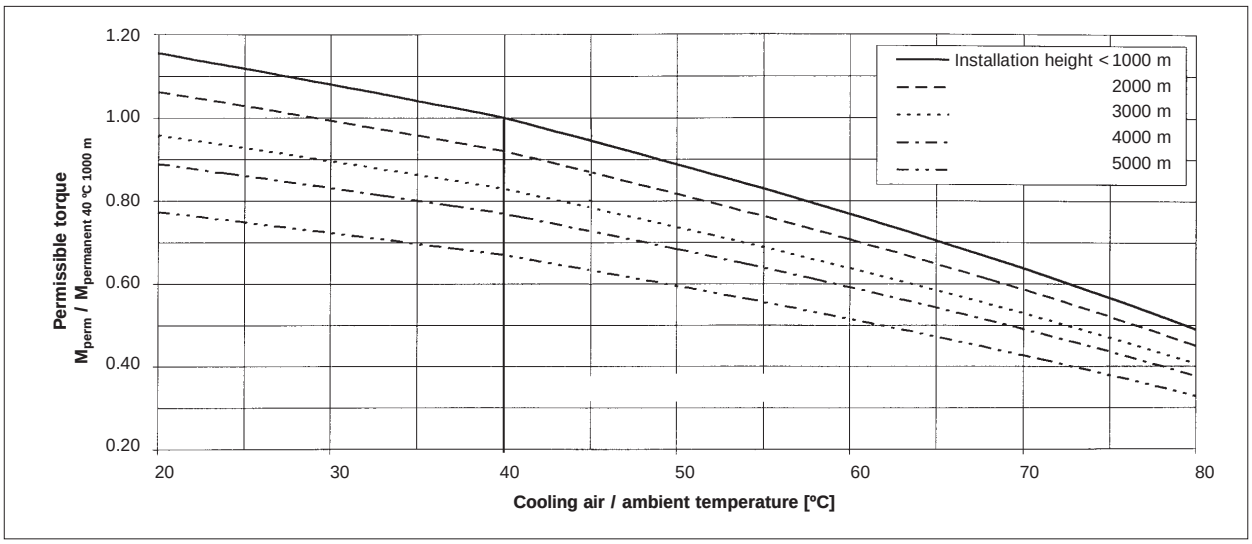
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Influence of ambient temperature and installation height

Synchronous servo motors MDXKS, for motors with separate fan MDFKS maximum ambient temperature 40° C



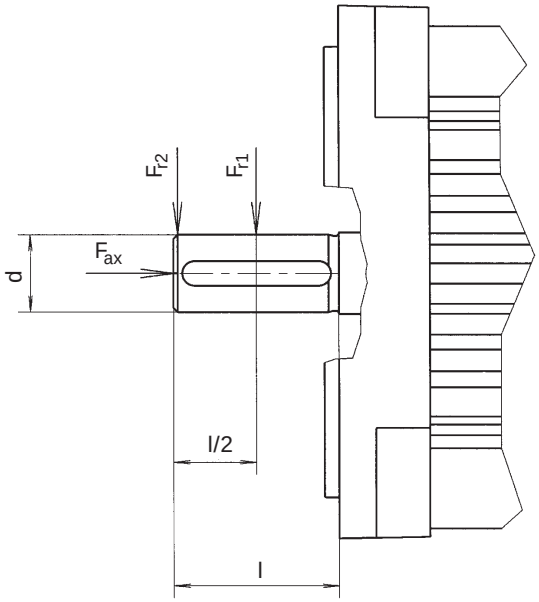
Asynchronous servo motors MDXKA and MDFQA, for motors with separate fan MDFKA and MDFQA maximum ambient temperature 40° C



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Permissible shaft load



Series MDXKX (surface ventilated)

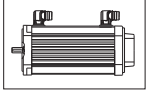
Motor type	d x l [mm]	F_a [N]	F_{r1} [N]	F_{r2} [N]
MDXKS 036	11 x 23	70	250	180
MDXKX 056	14 x 30	100	330	250
MDXKX 071	19 x 40	150	600	400
MDXKX 080	24 x 50	200	700	600
MDXKX 090	24 x 50	260	1000	900
MDXKX 100	28 x 60	500	1500	1400
MDXKX 112	38 x 80	700	2000	1700

Series MDFQA (enclosed ventilated)

Motor type	d x l [mm]	F_a [N]	F_{r1} [N]	F_{r2} [N]
MDFQA 100	38 x 80	900	2300	1000
MDFQA 112	38 x 80	1300	2300	1350
MDFQA 132	55 x 110	3500	4950	3580

Calculation basis:
Bearing life: L_{h10} = 20.000 h, torque M = 2.5 M_{rated}
Linear interpolation between F_{r1} and F_{r2} possible.

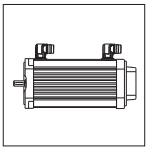
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Fans

Motor type	Fan type	V_{rated} [V]	f_{rated} [Hz]	I_{rated} [A]	P_{rated} [W]
MDFK 071		210...240, 1~	50/60	0.12	19
MDFK 080		210...240, 1~	50/60	0.12	19
MDFK 090		210...240, 1~	50/60	0.32	46
MDFK 100		210...240, 1~	50/60	0.32	46
MDFK 112		210...240, 1~	50/60	0.26	60
MDFQA 100	G2D 120	380...460, 3~	50/60	0.11	60
MDFQA 100	G2D 140 with filter	380...460, 3~	50/60	0.25	150
MDFQA 100	DNG 3-4,5 with or without filter with large voltage range	350...540, 3~	50/60	0.25	100
MDFQA 112	G2D 160 with filter	380...460, 3~	50/60	0.5	320
MDFQA 112	DNG 5-12,5 with or without filter with large voltage range	350...540, 3~	50/60	0.75	390
MDFQA 132	G2D 180	380...460, 3~	50/60	0.66	415
MDFQA 132	DNG 8-12 with or without filter with large voltage range	350...540, 3~	50/60	1.4	660

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Brake

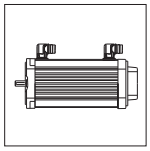
The servo motors MDXKX can be equipped with integrated permanent magnet holding brakes for 24 V DC (industrial type 205 V).
The enclosed ventilated asynchronous servo motors MDFQA can be equipped with a 205 V or 24 V spring operated brake.

The brakes are active after switching off the power supply (normally on principle).
When using the brakes for holding applications only, the friction linings are virtually resistant to wear. If the permissible friction work is not exceeded, at least 150 emergency stop operations are possible.

Motor type	M_B [Nm]	V_{rated} 24 [V]	I 24 [A]	V_{rated} 205 [V]	I 205 [A]
MDSKXBX 036	2.5	24 (+5%. –10%)	0.50	205 (+5%, –10%)	0.06
MDSKXBX 056	2.5	24 (+5%, –10%)	0.50	205 (+5%, –10%)	0.06
with direct gearbox connection	5	24 (+5%, –10%)	0.67	205 (+5%, –10%)	0.08
MDXKXBX 071	10	24 (+5%, –10%)	0.67	205 (+5%, –10%)	0.08
with direct gearbox connection	12	24 (+5%, –10%)	0.75	205 (+5%, –10%)	0.09
MDXKABX 080	12	24 (+5%, –10%)	0.75	205 (+5%, –10%)	0.09
with direct gearbox connection	20	24 (+5%, –10%)	1.00	205 (+5%, –10%)	0.12
MDXKABX 090	20	24 (+5%, –10%)	0.75	205 (+5%, –10%)	0.09
with direct gearbox connection	20	24 (+5%, –10%)	1.00	205 (+5%, –10%)	0.12
MDXKABX 100	40	24 (+5%, –10%)	1.00	205 (+5%, –10%)	0.12
with direct gearbox connection	40	24 (+5%, –10%)	1.46	205 (+5%, –10%)	0.18
MDXKABX 112	80	24 (+5%, –10%)	1.46	205 (+5%, –10%)	0.18
with direct gearbox connection	80	24 (+5%, –10%)	1.46	205 (+5%, –10%)	0.18
MDFQABX 100	80	24 (+5%, –10%)	2.29	205 (+5%, –10%)	0.27
	150	24 (+5%, –10%)	3.54	205 (+5%, –10%)	0.41
MDFQABX 112	150	24 (+5%, –10%)	3.54	205 (+5%, –10%)	0.41
	240	24 (+5%, –10%)	4.17	205 (+5%, –10%)	0.49
MDFQABX 132	240	24 (+5%, –10%)	4.17	205 (+5%, –10%)	0.49
	360	24 (+5%, –10%)	4.58	205 (+5%, –10%)	0.54

The employed brakes are no safety brakes in the real sense of the word, i.e. in case of disruption by not influencable factors, like penetration of oil or failure of the A-side shaft seal, a reduction of torque may occur.

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Motor type	t_1, t_{is}[1)] [ms]	t_2, t_{auf} [ms]	Q_E[2)] [kJ]	$S_{hü}$[3)] [1/h]	J_B [kgcm^2]	m [kg]
MDSKXBX 036	8	18	3.2	31	0.38	0.85
MDSKXBX 056	8	18	3.2	31	0.38	0.85
with direct gearbox connection	13	22	6.5	23	1.06	0.75
MDXKXBX 071	20	29	6.5	23	1.06	0.83
with direct gearbox connection	24	30	12.0	17	3.60	1.38
MDXKABX 080	24	30	12.0	17	3.60	1.45
with direct gearbox connection	28	55	25.0	12	3.60	1.45
MDXKABX 090	25	50	12.0	17	3.60	1.54
with direct gearbox connection	28	55	25.0	12	9.50	2.42
MDXKABX 100	28	73	25.0	12	9.50	2.72
with direct gearbox connection	40	100	50.0	9	31.80	4.79
MDXKABX 112	53	97	50.0	9	31.80	4.98
with direct gearbox connection	53	97	50.0	9	31.80	4.98
MDFQABX 100	90	180	37	27	15.00	13.5
	110	300	60	20	29.00	20
MDFQABX 112	110	300	60	20	29.00	21.5
	200	400	80	19	73.00	31
MDFQABX 132	200	400	80	19	73.00	32.5
	270	500	120	17	200.00	46

1) Engagement time for DC switching, for AC switching t_{is} prolonged by approx. factor 4
2) Max. friction work per switching operation with n = 1500 min^{-1}
3) Transference operating frequency to VDI 2241 to detect the permissible operating frequency or friction work

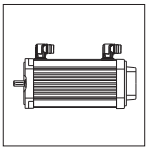
With long motor cables and especially with 24V brakes, the ohmic voltage drop along the cable must be observed and compensated by a higher voltage input – otherwise, the voltage applied to the brake will not be high enough (24V or 205V).

For Lenze system cables the following applies:

$\Delta V_B = 0.08 \cdot I_{cable}$ [m] $\cdot I_B$ [A]

If the voltage applied to the brake is not correct (too high, too low, wrong polarity), the brake is activated immediately and can be overheated and destroyed by the still rotating motor.
Shortest switching times of the brake can be reached by DC switching of the voltage. A spark suppresser avoids voltage peaks.

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Angle and speed encoder for servo motors MDXK and MDXQ

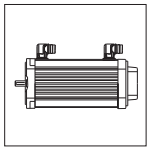
Encoder	Resolver	Incremental encoder	Sin-Cosen encoder single turn	Sin-Cos encoder multi turn
Available for				
Synchronous servo motor MDXKS	●		●	●
Asynchronous servo motor MDXKA (surface cooled)	●	●	●	●
Asynchronous servo motor MDXQA (enclosed ventilated)	●	●	●	●
Designation	RS	IT2048	AS512	AM512
Type		ITD21	SCS70	SCM70
Signals		2048 bars TTL signals	512 periods, sine signals 1 Vss asynchronous half-duplex interface RS485 for transmission of the absolute position	
Resolution	0.8′	2.6′	0.4′	0.4′
Accuracy	+- 10′ bzw. +- 4′ when entering the correction code	+- 2′ depending on no. of bars	+- 0.8′	+- 0.8′
Absolute positioning	1 revolution	no	1 revolution	4096 rev.
Note	**Standard solution** for most applications	Incremental encoder instead of resolver	Sin-Cos encoder instead of resolver current position via interface of the 9300. Operation only possible after encoder selection at 9300 (encoder type and voltage supply), values saves, and unit switched off and on again.	

Resolver (built-in encoder)

Stator-fed resolver with 2 stator windings turned by 90° and a rotor winding with transformer winding.

Design		Brushless hollow shaft resolver in pancake-design
Max. speed (permanent)		8000 min^{-1}
Max. speed (short time)		10000 min^{-1}
Input voltage		10 V amplitude
Input frequency		4 kHz
Ratio stator / rotor		0.3 ± 5 %
Rotor impedance	Zro	51Ω + j90 Ω
Stator impedance	Zs0	102 Ω + j150 Ω
Impedance	Zrs	44 Ω + j76 Ω
Insulation resistance		> 10 MΩ with 500 V DC
No. of pole pairs		1
Max. phase error		± 10 angular minutes

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Sin-Cos absolute value encoder (built-in encoder)

Absolute value encoder with 2 sine-wave signals displaced by 90° with 512 periods per revolution and serial interface RS 485 for the transmission of parameters and the absolute position within one or 4096 revolutions.

Type	SCS 70
Design	Brushless hollow shaft encoder
Maximum torque	12000 min^{-1}
No. of revolutions absolutely resolved	1 (single turn)
No. of periods	512 periods / rev.
Output signals	2 sine-wave signals displaced by 90° with 1 V_{SS}, serial interface RS 485, asynchronous, half duplex
Limit frequency	100 kHz
Voltage supply	7 ... 12 V
Current consumption	100 ... 130 mA

Type	SCM 70
Design	Brushless hollow shaft encoder
Maximum torque	12000 min^{-1}
No. of revolutions absolutely resolved	4096 (multi turn)
No. of periods	512 periods / rev.
Output signals	2 sine-wave signals displaced by 90° with 1 V_{SS}, serial interface RS 485, asynchronous, half duplex
Limit frequency	100 kHz
Versorgung	7 ... 12 V
Current consumption	100 ... 130 mA

Incremental encoder (built-in encoder)

Encoder with 2 TTL square-wave signals displaced by 90° with 2048 pulses per revolution and additional zero track.

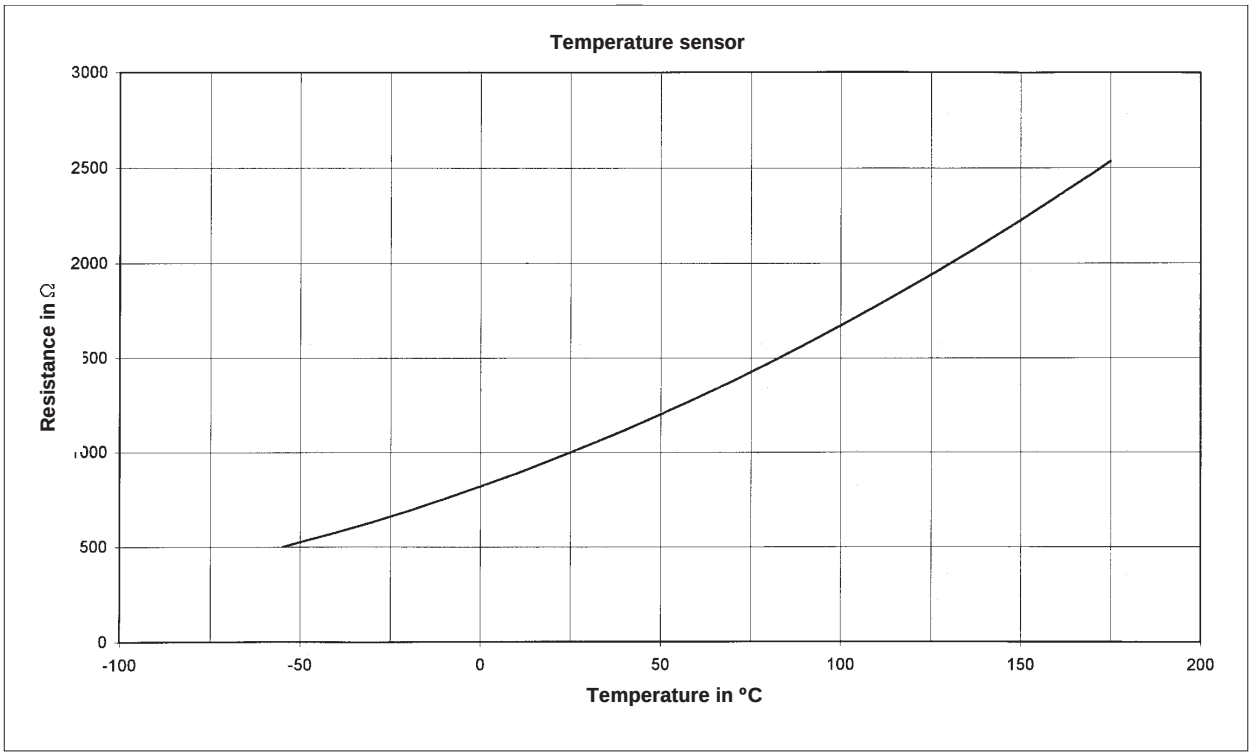
This encoder is optionally available as preference feedback to the resolver for motor series MDFQA.

Type	ITD 21
Design	Brushless hollow shaft encoder
Maximum torque	8000 min^{-1}
No. of pulses	2048 pulses / rev.
Output signals	2 square-wave signals displaced by 90°, zero pulse, complementary TTL signals, $V_{low} \leq 0.5$ V, $V_{high}, \geq 2.5$ V
Voltage supply	5 V ± 5 %, protect against polarity reversal
Current consumption	≤ 150 mA
Limit frequency	300 kHz

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Temperature sensor KTY 83-110 (integrated)

The KTY temperature sensor continuously measures the motor temperature. It represents, though, no complete protection. The signals are fed back to the servo inverter 9300 via the system feedback cable. When feeding the encoder with a measuring current of 1 mA, temperature and resistance show the following characteristic:



Temperature switch – normally closed contact

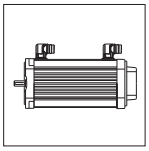
As alternative to the continuous sensor KTY, with the MDFQA it is also possible to use a temperature contact to monitor the windings.

Asynchronous motors of the series MDFQA are equipped with both temperature monitoring.

Technical data

	AC connection	DC connection		
Release temperature	150 °C ± 5 °C			
Reset temperature	90…135 °C			
Connection voltage	250 V ≈	60 V	48 V	24 V
Rated current [A]	2.5 A	1.0 A	1.25 A	1.6 A

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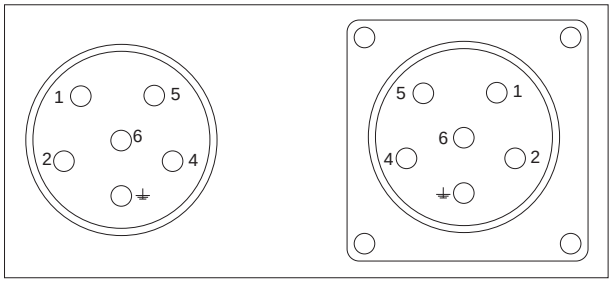


Plug-in connectors for motor connection

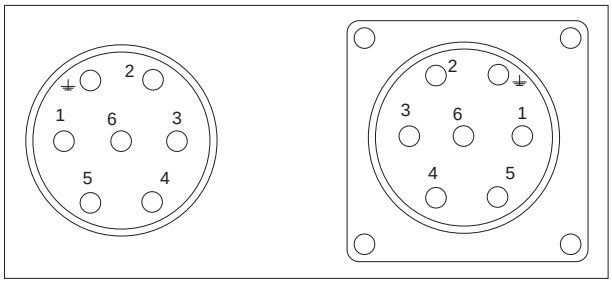
Power connection, brake connection

	Pin no.	Terminal designation
Holding brake +UB	1	Y1
Holding brake -UB	2	Y2
Earth PE	⏚	⏚
Motor power phase U	4	1, U1
Motor power phase V	5	2, V1
Motor power phase W	6	3, W1
Global Drive system cables		
Standard cable	EWLMxxxGM-015C MDXK036...090	
	EWLMxxxGM-025 MDXK036...090	
	EWLMxxxGM-040 MDXKA100...112	
	EWLMxxxGM-100 MDXKA100...112	
Trailing cable	EWLMxxxGMS025 MDXKA036...090	
	EWLMxxxGMS040 MDXKA100...112	
Intermediate cable	EWLMxxxZM-015 MDXKA036...090	

MDXK 036...090



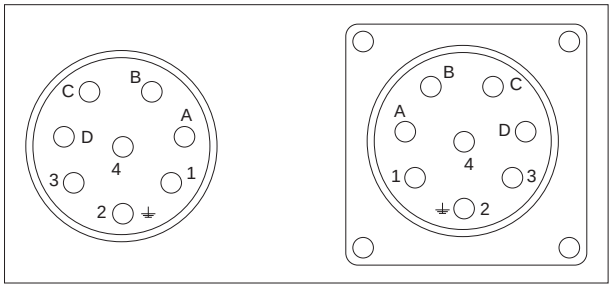
MDXKA 100...112



Fan connection

	Pin no.	Terminal designation
Earth PE	2	⏚
Fan power L1	A	U1
Fan power N	B	U2
Global Drive system cables		
Standard cable	EWLLxxxGM	
Trailing cable	EWLLxxxGMS	
Intermediate cable	EWLLxxxZM	

MDXK



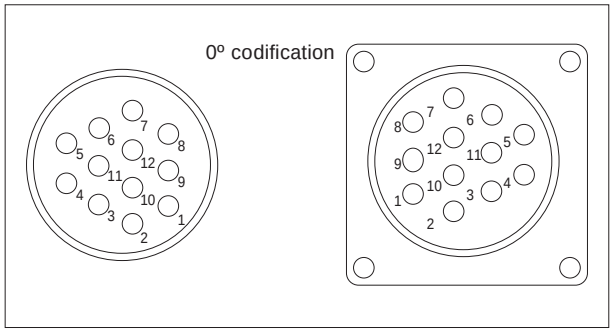
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Plug-in connectors for motor connection

Resolver connection

MDXK, MDFQA

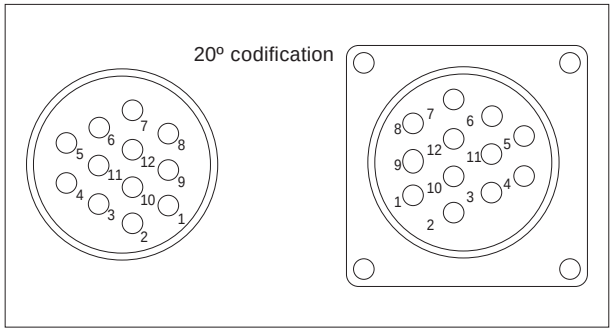
	Pin no.	Terminal designation
+Ref., transformer / reference winding	1	B1
-Ref., transformer / reference winding	2	B2
+Cos, stator winding	4	B4
-Cos, stator winding	5	B5
+Sin, stator winding	6	B6
-Sin, stator winding	7	B7
Temperature sensor +KTY	11	T1
Temperature sensor -KTY	12	T2
Global Drive system cables		
Standard cable	EWLRxxxGM-T	
Intermediate cable for trailing	EWLRxxxZMST	
Intermediate cable	EWLRxxxZM-T	



Connection of Sin-Cos absolute value and incremental encoder

MDXK, MDFQA

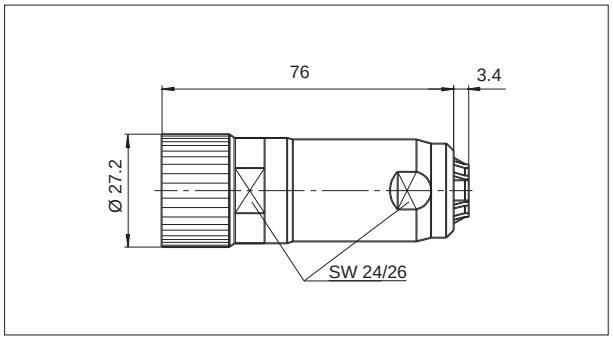
	Pin no.	Terminal designation
Track +B / +SIN	1	B5
Track -A / -COS	2	B4
Track +A / +COS	3	B3
Supply VCC	4	B1
Mass GND	5	B2
Track -0, -Z / -RS485	6	B8
Track +0, +Z / +RS485	7	B7
Track -B / -SIN	9	B6
Temperature sensor +KTY	11	T1
Temperature sensor -KTY	12	T2
Global Drive system cables		
Standard cable	EWLExxxGM-T	



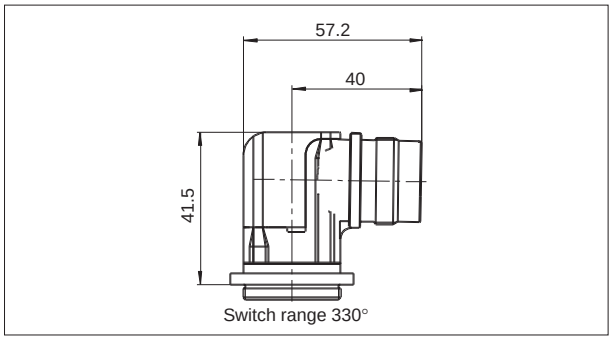
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Dimensions of plugs and sockets

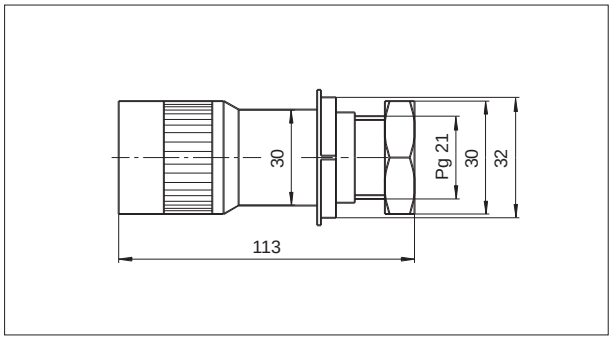
Power plug size 036 ... 090



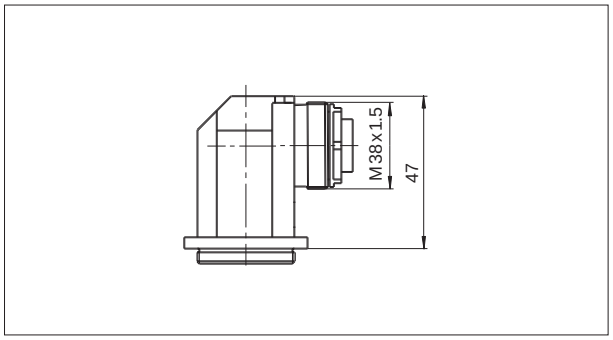
Right angle socket motor size 036 ... 090



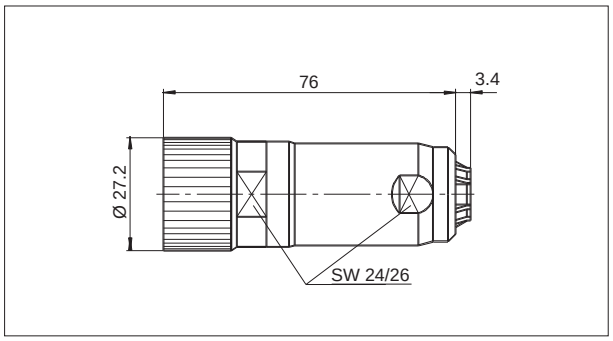
Power plug size 100 ... 112



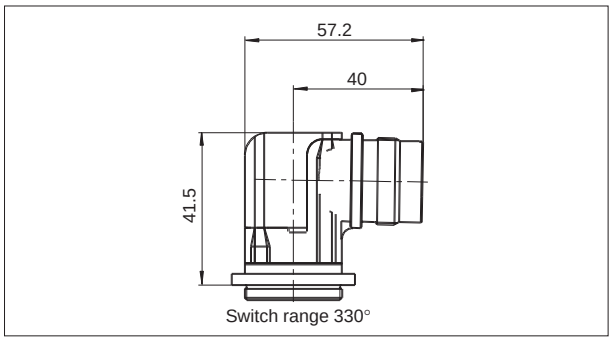
Right angle socket motor size 100 ... 112



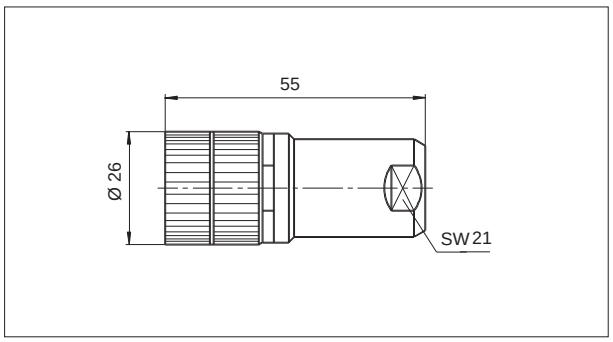
Fan plug



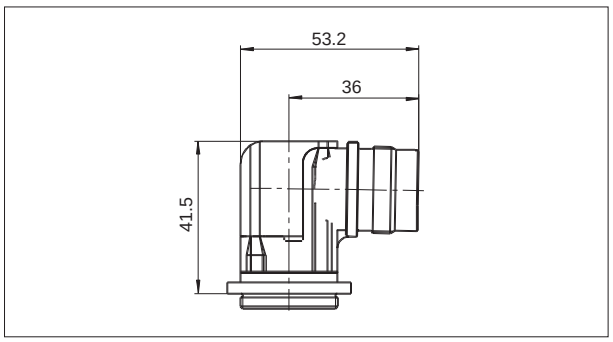
Right-angle socket fan



Encoder plug (resolver / Sin-Cos / incremental encoder)



Right-angle socket encoder



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Terminal box

As alternative to plug-in connectors, servo motors MDXK can be equipped with terminal boxes for power connection and brake.

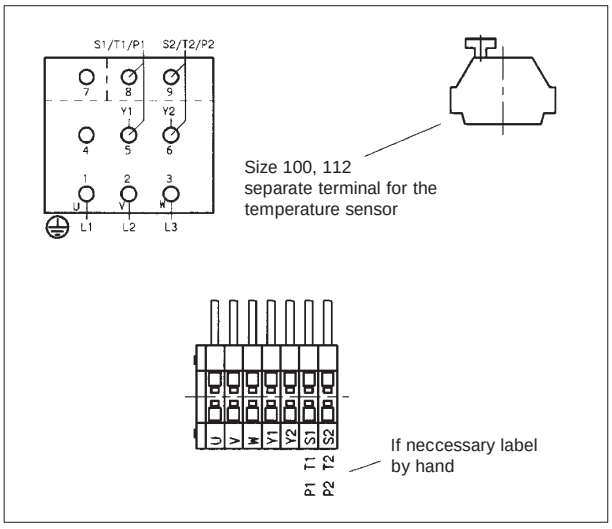
The power connection of servo motors MDFQA (enclosed ventilated) is always equipped with a terminal box.

a) Motor MDXK

Connections

	Pin no.	Terminal designation
Brake	5	Y1
Brake	6	Y2
Protective earth	PE	PE
Motor phase	1	U
Motor phase	2	V
Motor phase	3	W

Terminals



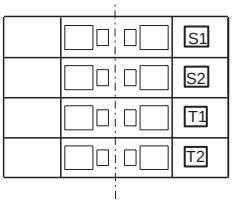
b) Motor MDFQA

Connections

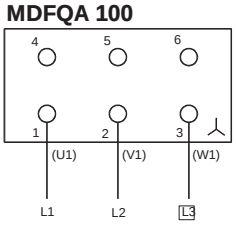
	Terminal designation
Protective earth	PE
Motor phase	U
Motor phase	V
Motor phase	W
Thermostat, connection T1 with 9300	S1
Thermostat, connection T2 with 9300	S2
Temperature sensor*, KTY, con. through encoder	T1
Temperature sensor*, KTY, con. through encoder	T2

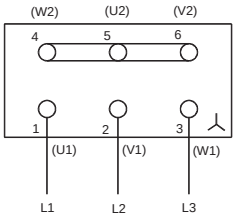
* Motors with feedback have the temperature sensor connected to the encoder plug.

Terminals



MDFQA 100

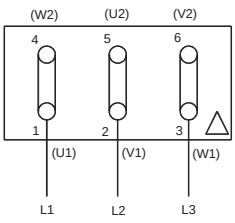




MDFQA 112/132

Star connection

Delta connection



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Feedbacks and fans can be connected to a second terminal box.

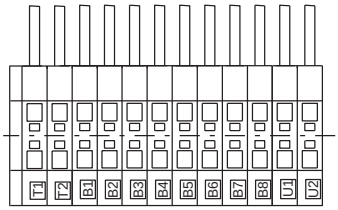
The feedback of servo motors MDFQA (enclosed ventilated) is always equipped with plug-in connectors.

Resolver as feedback

Connections

	Pin no.	Terminal designation
Temperature sensor	T1	+ KTY
Temperature sensor	T2	– KTY
Resolver	B1	+ Ref
Resolver	B2	– Ref
	B3	
Resolver	B4	+ cos
Resolver	B5	– cos
Resolver	B6	+ sin
Resolver	B7	– sin
	B8	
Separate fan	U1	L1
Separate fan	U2	N

Terminals

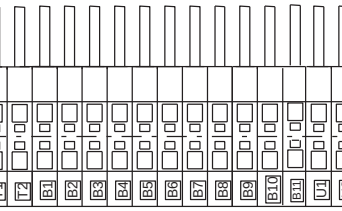


Incremental encoder of SinCos-encoder as feedback

Connections

	Pin no.	Terminal designation
Temperature sensor	T1	+ KTY
Temperature sensor	T2	– KTY
Incremental encoder supply +	B1	+ UB
Incremental encoder supply –	B2	± ov
Incremental encoder track A	B3	A
Incremental encoder track A invers	B4	– A
Incremental encoder track B	B5	B
Incremental encoder track B invers	B6	– B
Inc. encoder track C (zero track)	B7	N
Inc. encoder track C (zero track invers)	B8	N
Incremental encoder mass / sensor	B9	± ov
Incremental encoder screen	B10	Screen
Incremental encoder screen +	B11	+ U sensor
Separate fan	U1	L1
Separate fan	U2	N

Terminals



PG glands and bolts

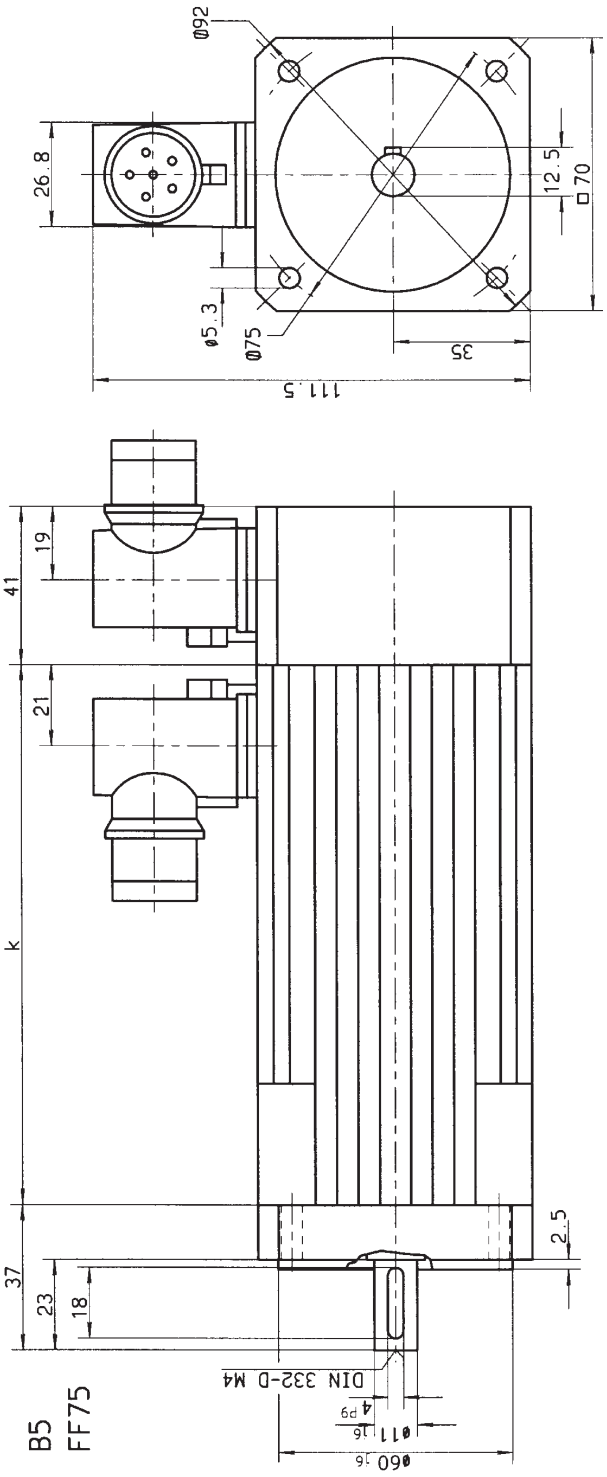
Motor type	Power connection		Encoder / fan connection
	PG glands	Bolts	PG glands
MDSK 056	1xPG13.5 + 1xPG11	M4 bzw. 0.08...2.5 mm^2	1xPG13.5 + 1xPG11 + 3xPG7
MDXK 071	1xPG13.5 + 1xPG11	M4 bzw. 0.08...2.5 mm^2	1xPG13.5 + 1xPG11 + 3xPG7
MDXK 080	1xPG13.5 + 1xPG11	M4 bzw. 0.08...2.5 mm^2	1xPG13.5 + 1xPG11 + 3xPG7
MDSK 090	1xPG13.5 + 1xPG11	M4 bzw. 0.08...2.5 mm^2	1xPG13.5 + 1xPG11 + 3xPG7
MDXK 100	2x PG16	M5	2xPG16 + 3x PG7
MDXK 112	1xPG21 + 1xPG16	M5	2xPG16 + 3x PG7
	Power connection		**Fan connection**
MDFQ 100	2xPG29 + 1xPG9 *	M6	1xPG9
MDFQ 112	2xPG36 + 2xPG9 *	M8	1xPG9
MDFQ 132	4xPG29 + 2xPG9 *	M12	1xPG9

* For connection of parallel screened cables, e.g. 3 St 4 x 35 mm^2 or 4 St 4 x 25 mm^2

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Synchronous servo motors MDSKS 036, mounting position B5

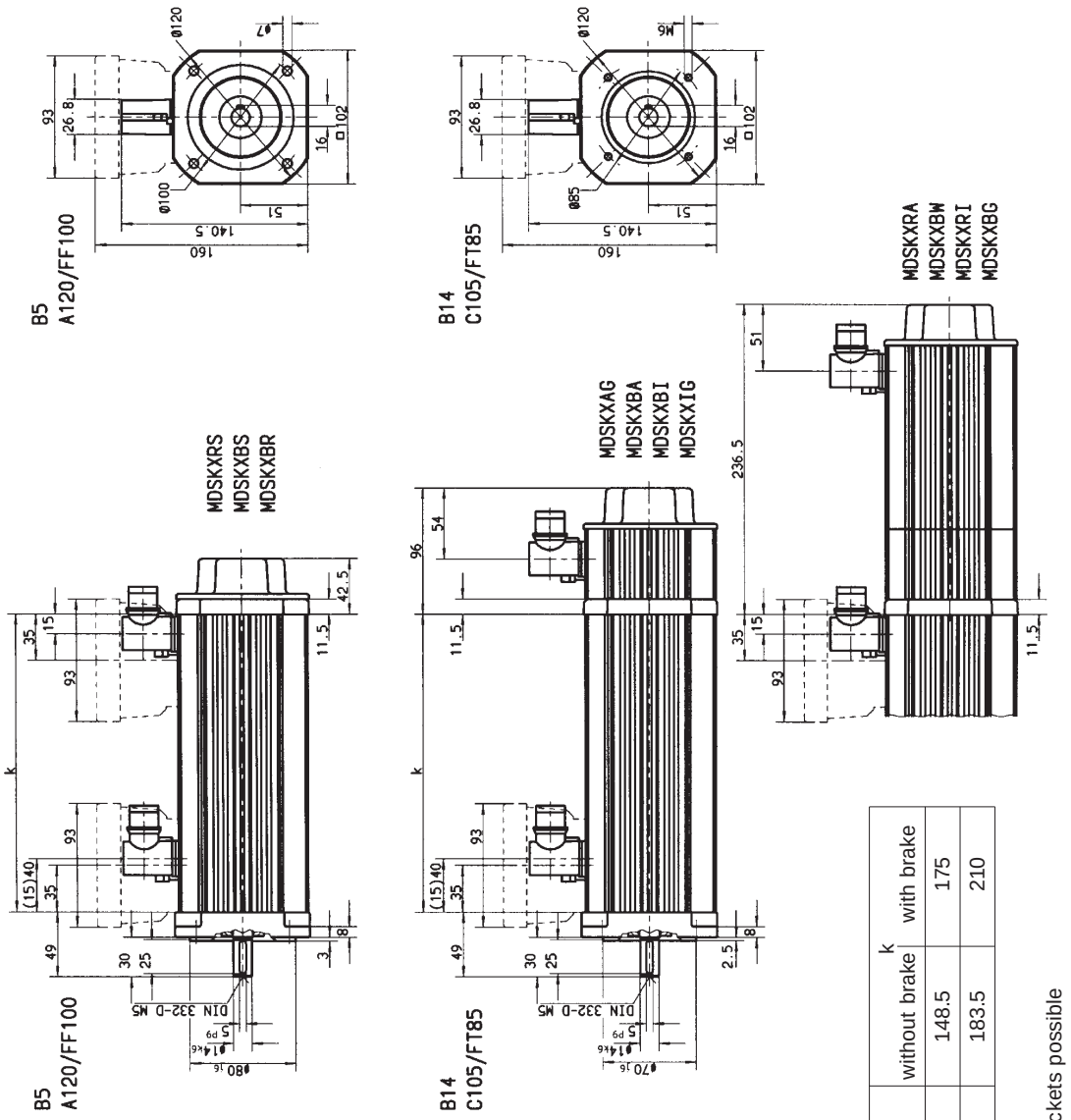


Motor type	k	
	without brake	with brake
MDSKSXS036-13	87	115
MDSKSXS036-23	111	139

X-variable
Rotation of right-angle sockets possible

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Synchronous servo motors MDSKS 056, mounting position B5/B14

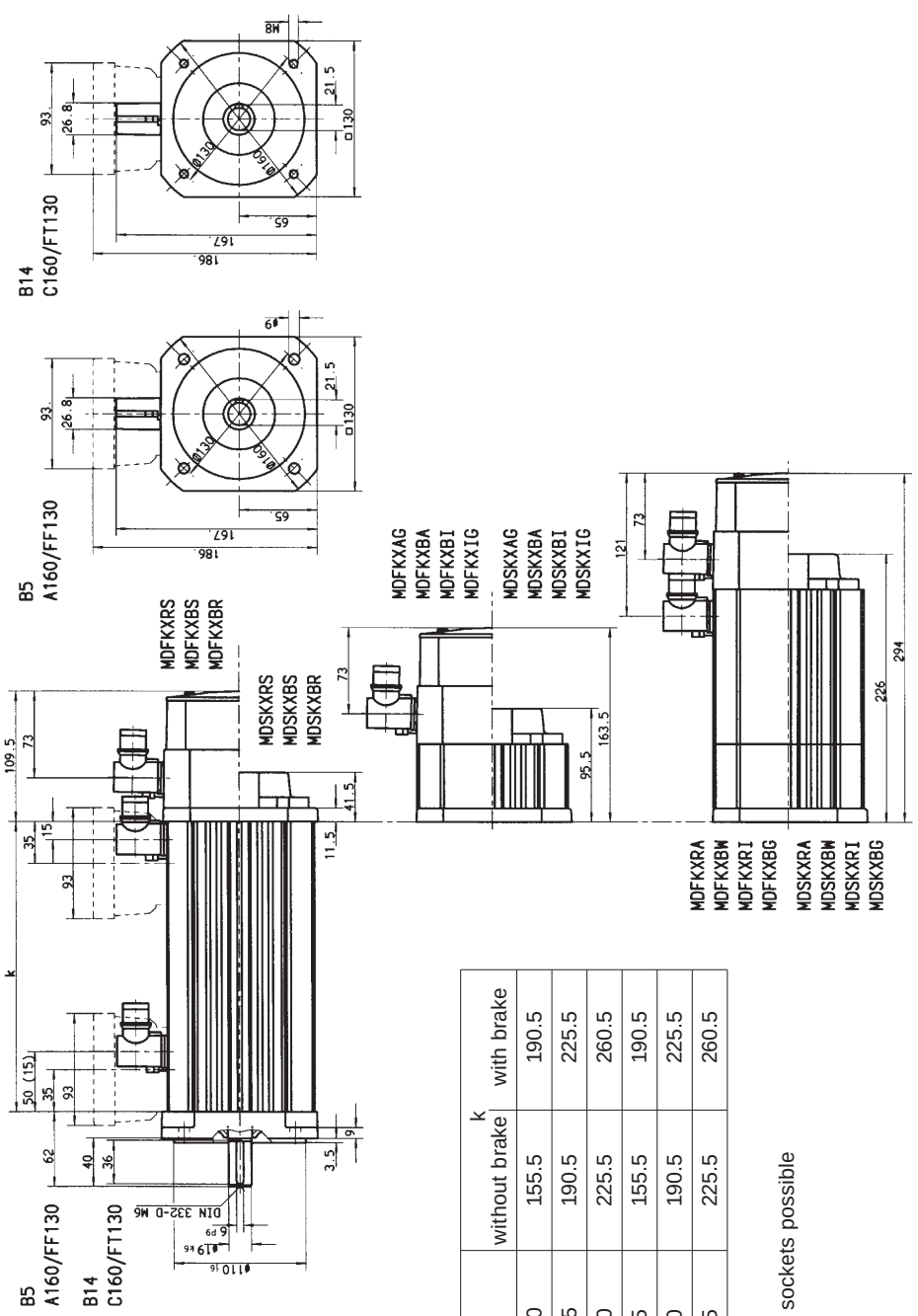


Motor type	k without brake	k with brake
MDSKSXS056-23, 190	148.5	175
MDSKSXS056-33, 200	183.5	210

( ) -without brake
X-variable
Rotation of right-angle sockets possible

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Synchronous servo motors MDXKS 071, mounting position B5/B14

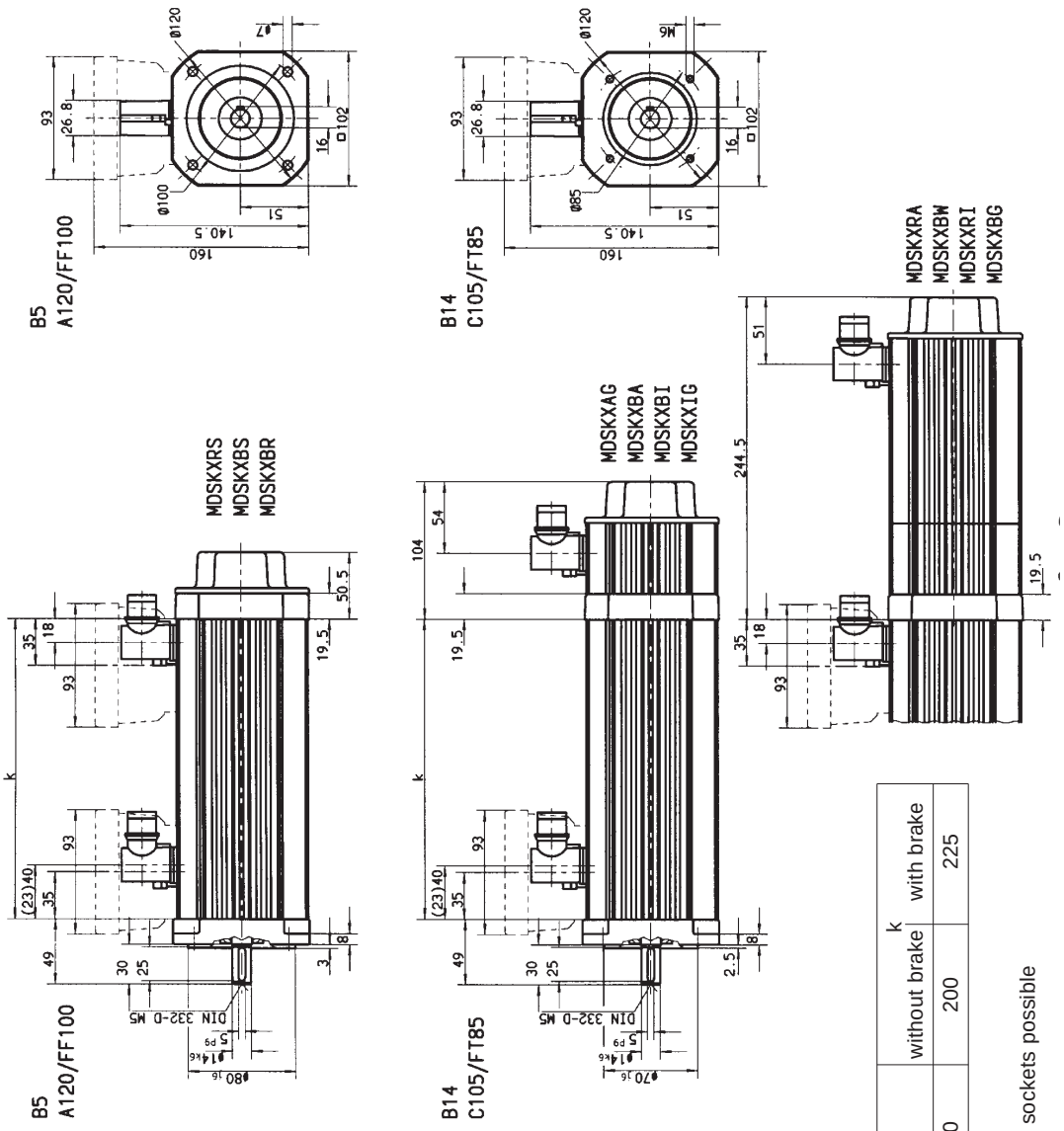


Motor type	k without brake	k with brake
MDSKSXX071-03, 170	155.5	190.5
MDSKSXX071-13, 185	190.5	225.5
MDSKSXX071-33, 180	225.5	260.5
MDFKSXX071-03, 165	155.5	190.5
MDFKSXX071-13, 180	190.5	225.5
MDFKSXX071-33, 175	225.5	260.5

( ) -without brake
X-variable
Rotation of right-angle sockets possible

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Asynchronous servo motors MDSKA 056, mounting position B5/B14

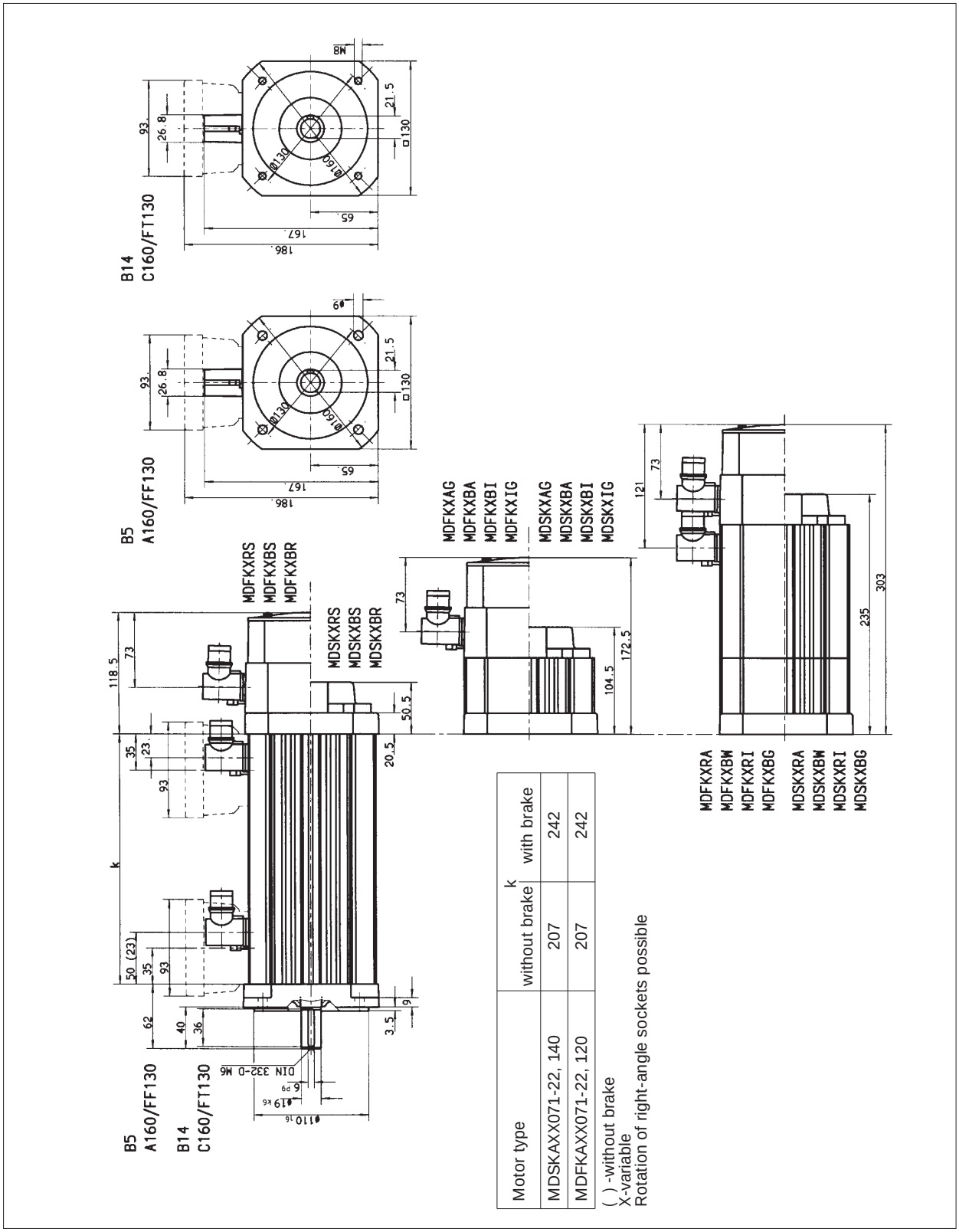


Motor type	k	
	without brake	with brake
MDSKAXX056-22, 140	200	225

( ) -without brake
X-variable
Rotation of right-angle sockets possible

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Asynchronous servo motors MDXKS 071, mounting position B5/B14

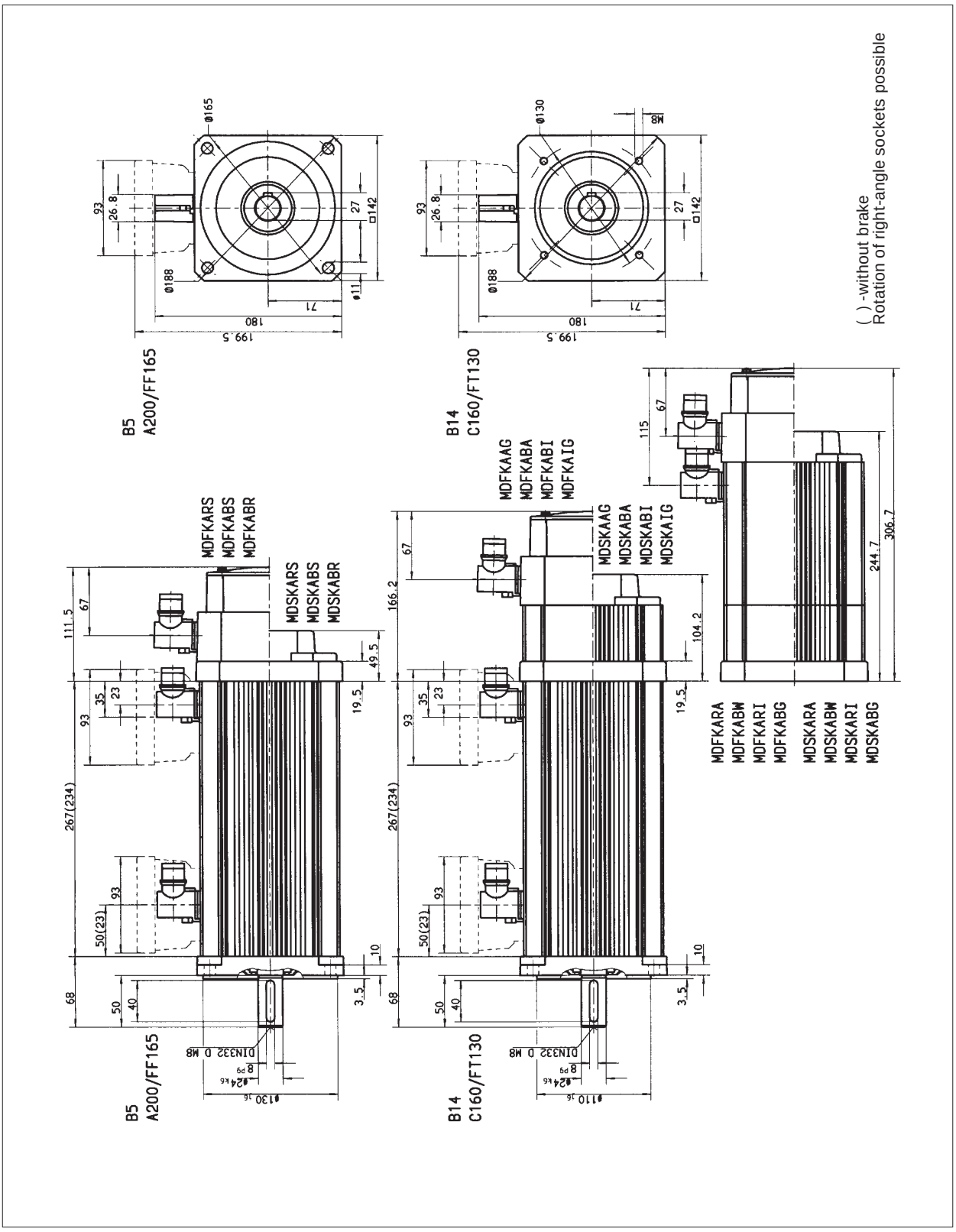


Motor type	k without brake	k with brake
MDSKAXX071-22, 140	207	242
MDFKAXX071-22, 120	207	242

( ) -without brake
X-variable
Rotation of right-angle sockets possible

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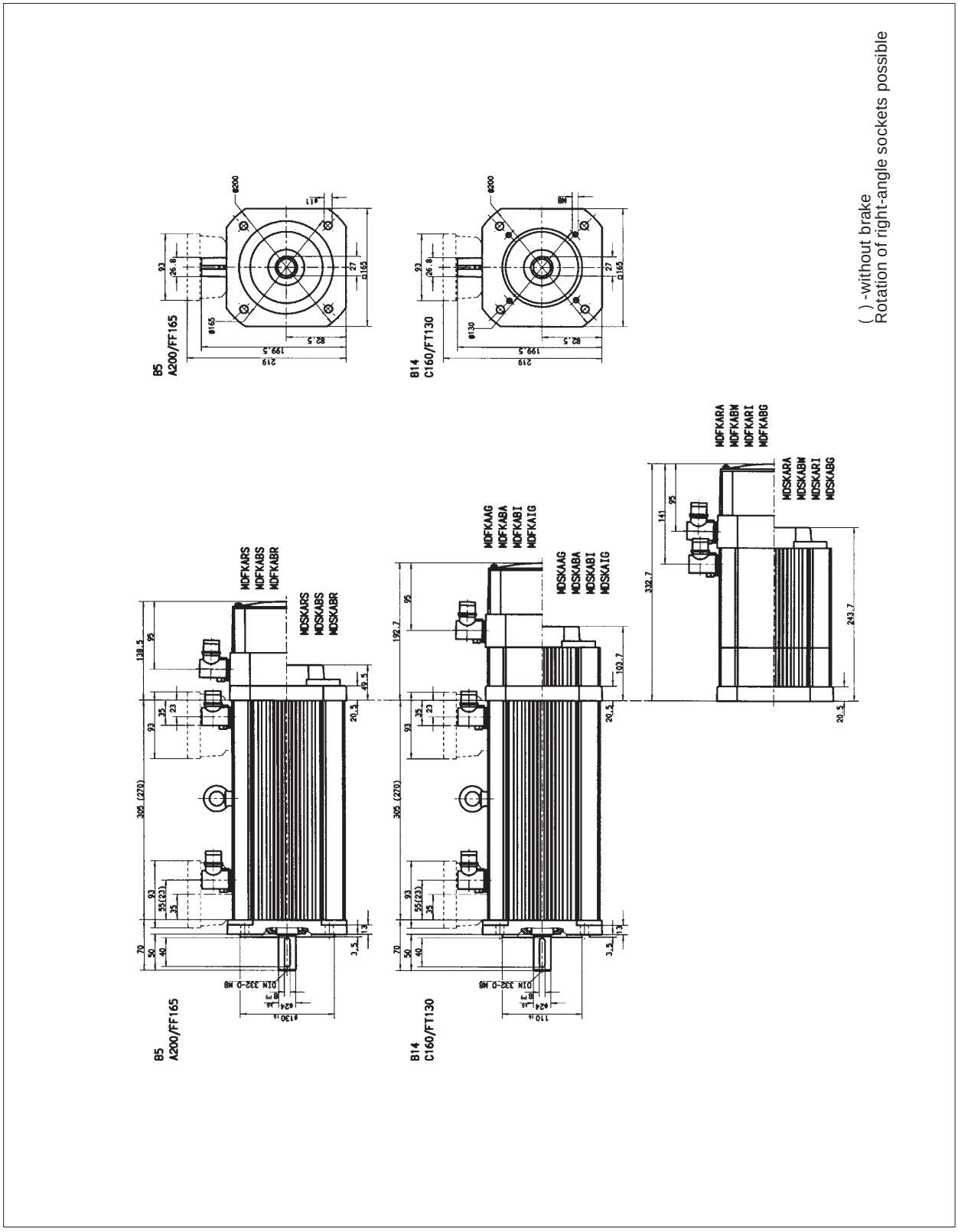
Asynchronous servo motors MDXKA 080, mounting position B5/B14



Lenze

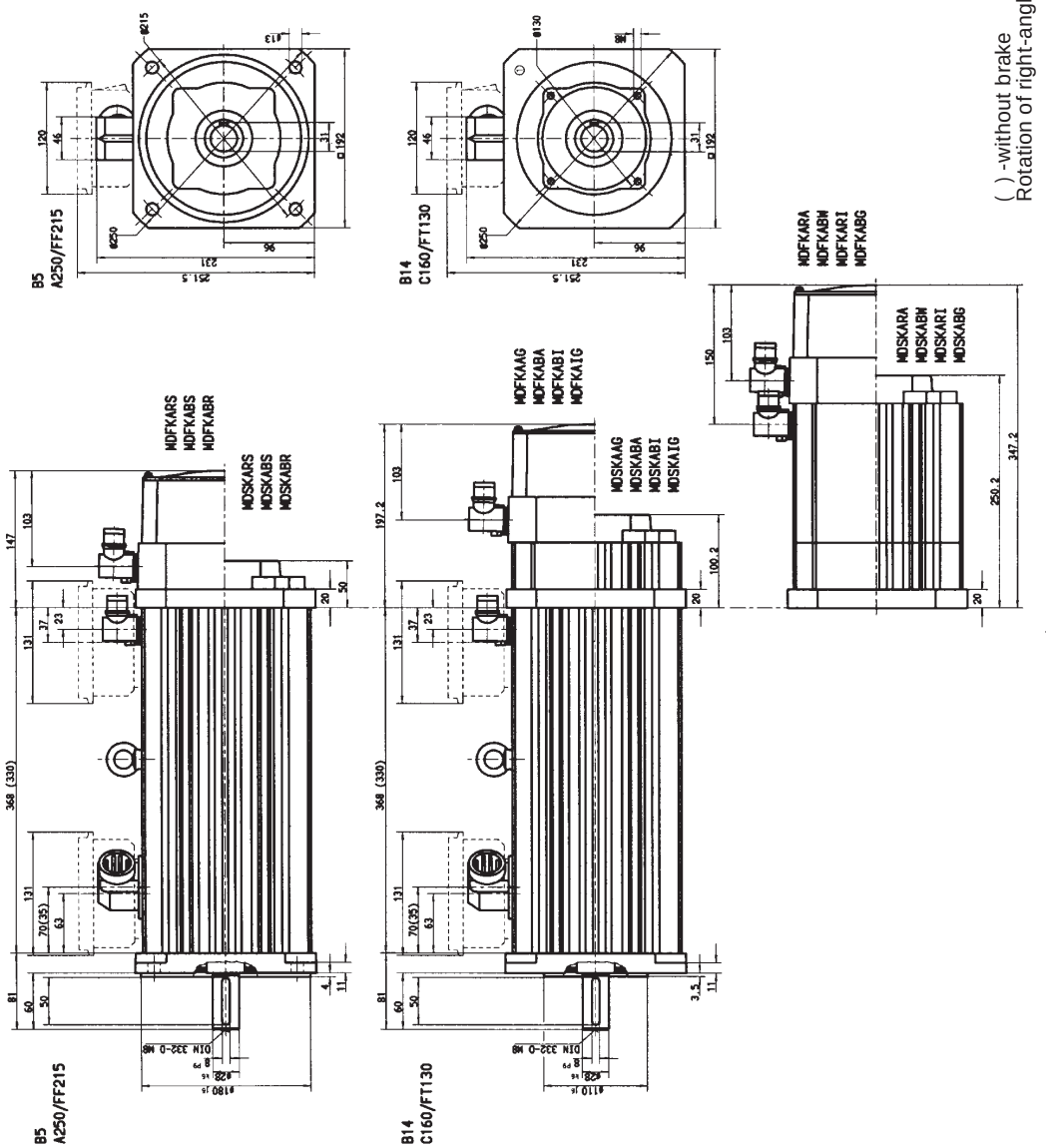
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Asynchronous servo motors MDXKA 090, mounting position B5/B14



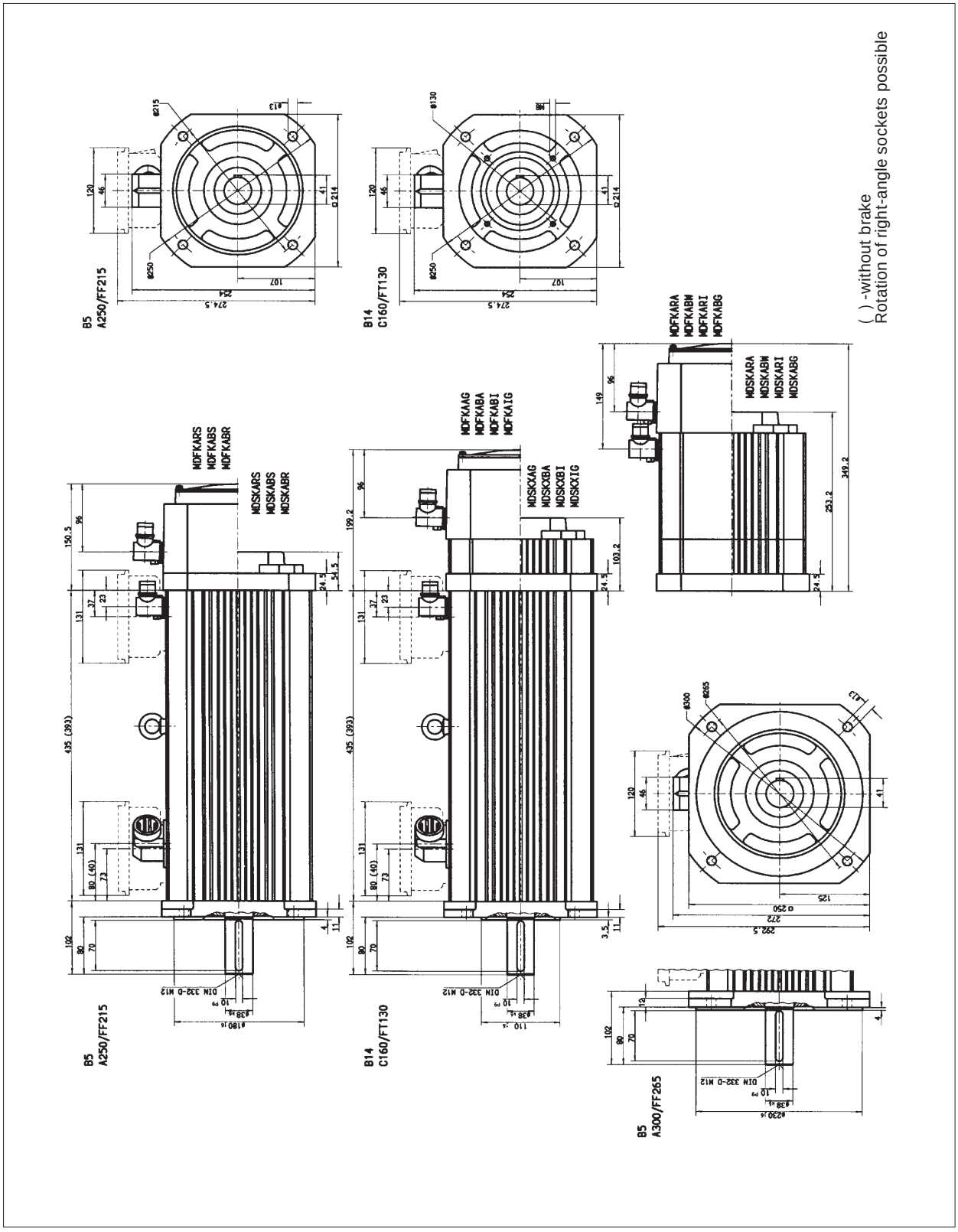
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Asynchronous servo motors MDXKA 100, mounting position B5/B14

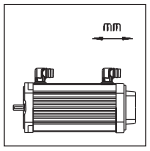


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Asynchronous servo motors MDXKA 112, mounting position B5/B14

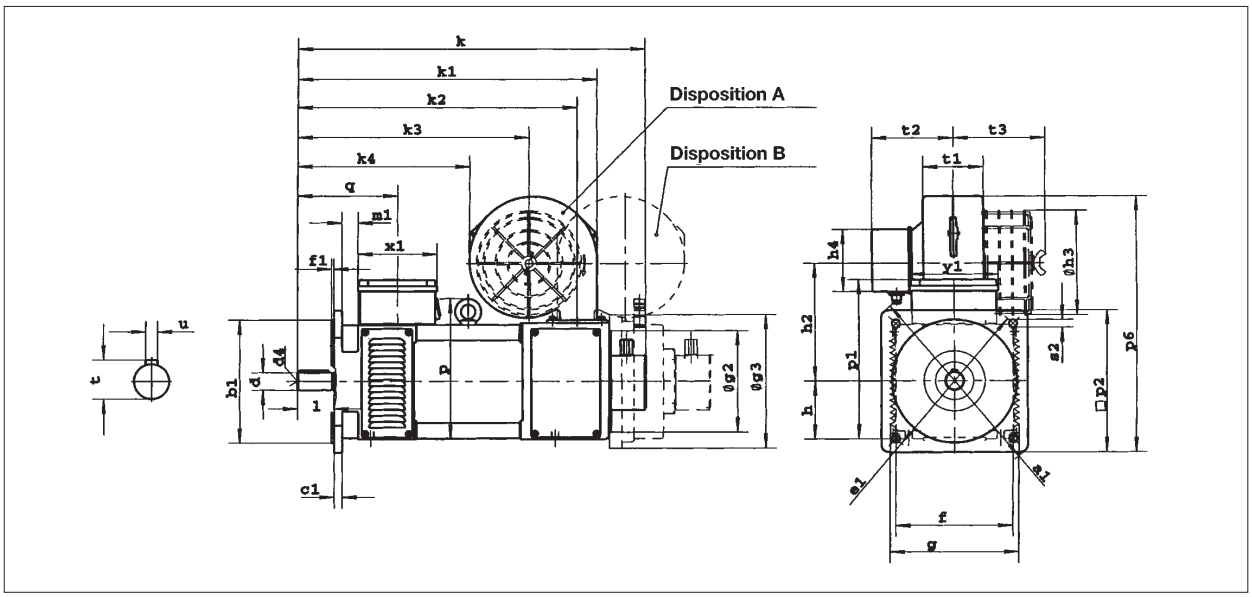


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Dimensions

Asynchronous servo motors MDFQA 100...132, mounting position B5



Motor type	Flange to DIN 42948	Flange to IEC 72	a1 P	b1 N	c HA	c1 LA	e1 M	f AB	f1 T	g AC	g2 –	h H	k2 –	m1 –	p –	p1 –	p2 –	q –
MDFQA 100-22	A300	FF265	300	230	14	12	265	196	4	212	163	100	452	25	243	282	220	181
MDFQA 132-32	A400	FF350	400	300	18	20	350	260	5	275	238	132	673	25	315	353	320	257

Motor type	s2 S	x1 –	y1 –	d D	l E	t GA	u F	d4 –	h2 –	h3 –	h4	k1 –	k3 –	k4 –	p6	t1 –	t2 –	t3 –	Separate fan
MDFQA 100-22	14	134	131	38	80	41	10	M12	180	–	94	480	386	304	385	82	111	124	G2D 120
	14	134	131	38	80	41	10	M12	214	185	94	489	348	240	447	100	97	142	G2D 140
	14	134	131	38	80	41	10	M12	204	187	110	487	367	275	421	52	158	64	DNG 3-4.5
MDFQA 132-32	18	261	160	55	110	59	16	M20	250	–	94	730	572	450	553	92	113	–	G2D 180
	18	261	160	55	110	59	16	M20	280	285	140	708	549	413	566	87	255	73	DNG 8-12

Dimensions k

Motor type	Encoder		
	without	Resolver	ITD 21
MDFQA 100-22	540	572	572
MDFQA 132-32	790	822	822

Dimensions k

Motor type	Brake 14.450					
	16	18	20	25	Resolver	ITD 21
MDFQA 100-22	666	666	–	–	696	696
MDFQA 132-32	–	–	901	901	933	933
MDFQA 100-132 *	214	243	278	330	–	–

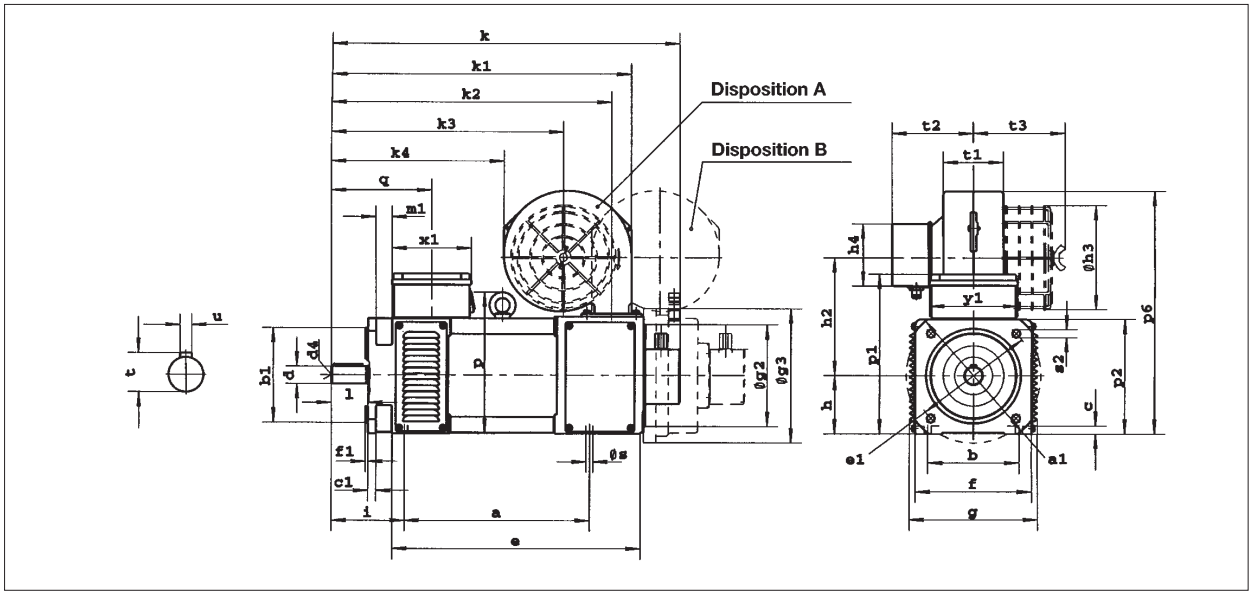
* = Dimension g3 (outer brake diameter)

Terminal box at top (standard)
Shaft end fits to DIN 748T3

Key to DIN 6885, p. 1
Designations to DIN (a, b, c…), IEC (B, A, HA…)

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Asynchronous servo motors MDFQA 100...132, mounting position B35



Motor type	Flange to DIN 42948	Flange to IEC 72	a B	a1 P	b A	b1 N	c HA	c1 LA	e BB	e1 M	f AB	f1 T	g AC	g2 –	h H	i –	k2 –	m1 –	p –	p1 –	p2 –
MDFQA 100-22	A250	FF215	295	250	160	180	14	12	382	215	196	4	212	163	100	143	452	25	243	270	198
MDFQA 112-22	A300	FF265	385	300	190	230	16	12	504	265	220	4	235	198	112	150	555	25	267	297	222
MDFQA 132-32	A300	FF265	460	300	215	230	18	12	604	265	260	4	275	238	132	199	673	25	315	353	262

Motor type	q –	s K	s2 S	x1 –	y1 –	d D	l E	t GA	u F	d4 –	h2 –	h3 –	h4 –	k1 –	k3 –	k4 –	p6 –	t1 –	t2 –	t3 –	Separate fan
MDFQA 100-22	181	12	14	134	131	38	80	41	10	M12	180	–	94	–	386	304	375	82	111	–	G2D 120
	181	12	14	134	131	38	80	41	10	M12	214	185	94	489	240	437	100	97	97	142	G2D 140 filter
	181	12	14	134	131	38	80	41	10	M12	204	187	110	487	367	275	411	52	158	64	DNG 3-4.5 wide range
MDFQA 112-22	168	12	14	157	155	38	80	41	10	M12	213	185	94	602	461	354	451	100	97	141	G2D 160
	168	12	14	157	155	38	80	41	10	M12	224	237	q123	590	430	322	466	87	234	96	DNG 5-12.5 Filter and wide range
MDFQA 132-32	257	15	18	261	160	55	110	59	16	M20	250	–	94	730	572	450	525	92	113	–	G2D 180
	257	15	18	261	160	55	110	59	16	M20	280	285	140	708	549	413	558	87	255	73	DNG 8-12 Filter and wide range

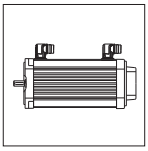
Dimensions k

Motor type	Encoder		
	without	Resolver	ITD 21
MDFQA 100-22	540	572	572
MDFQA 112-22	660	692	692
MDFQA 132-32	790	822	822

Motor type	Brake 14.450					
	16	18	20	25	Resolver	ITD 21
MDFQA 100-22	666	666	–	–	698	698
MDFQA 112-22	–	786	786	–	818	818
MDFQA 132-32	–	–	931	931	963	963
MDFQA 100-132 *	214	243	278	330	–	–

* = Dimension g3 (outer brake diameter)

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Basic data

When installing a servo drive, normally a dynamic operation is required.

The essential data for the appropriate size of the motor are the following:

- Maximum torque M_{max}, Maximum speed n_{max}, efficient torque M_{eff} and if necessary transmission i

a) Transmission:
– for **perfect dynamic response**

$$i \approx \sqrt{\frac{J_{load}}{J_{motor}}}$$

b) – for a good use while **continuous operation**

$$i \approx \frac{n_{rated}}{n_{load}}$$

Efficient torque:

$$M_{rms} = \sqrt{\frac{1}{T}\sum_i M_i^2 t_i}$$

Maximum torque:

$$M_{max} = M_{accel} + \frac{1}{i}\frac{1}{\eta_{gearbox}} M_{load}$$

$$M_{accel} = 2 \cdot \pi \frac{\Delta n}{\Delta t}\left(J_{motor} + \frac{1}{i^2} J_{load}\right)$$

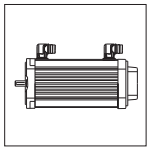
Selection of the motor

After having detected the technical data one may choose between synchronous and asynchronous motors, on the one hand and, on the other hand, between self ventilated and forced ventilated motors. The main characteristics of the different motor types are listed below:

Select motor according to $\mathbf{M_{rated} > M_{rms}}$ and $\mathbf{n_{max} > M_{max}}$ and take into consideration:

– **no stream** of air allowed	→	Motor without fan MDSK
– **fluffs** or something similar, that might block the air channels	→	Motor without fan MDSK
– **high enclosure** required	→	Motor without fan MDSK
– **high dynamic response** required	→	Motor with fan MDFK,
	→	Synchr. servo motor MDXKS
– operation with **constant power** with high speed (operation with weak field)	→	Asynchr. servo motor MDXKA
– very high **power density**	→	Synchr. servo motor MDXKS
	→	enclosed ventilated asynchr. motors MDFQA
– **parallel operation** of servo mot. with one single inverter	→	Asynchr. servo motor MDXKA, MDFQA

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Operational mode: acceleration

Selecting the size of the drives according to the limit characteristics.

If you select the drive according to n_{max} and M_{max}, the following has to be taken into account:

– Low noise → selection of 16 kHz chopp. fre.

– Check permanent current → especially with accelerating drive ($I_{max} > 1.5\ I_{rated\ inverter}$)

$$I_{perm} > I_{medium} \frac{= 1}{T_i} \Sigma\ I_{rated\ motor} \cdot \frac{M_i}{M_{rated}} \cdot t_i$$

with synchr. motors

The mean is always below net value.

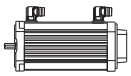
In the case of the continuous operation S6 and $M_{efficient} < M_{rated}$ the current medium value Imedium is smaller than the permanent current of the installation.

The following data are important for the operational mode acceleration drive:

Permanent current $\approx 0.7 \cdot I_{rated\ inverter}$

Maximum current $\approx 2 \cdot I_{rated\ inverter}$

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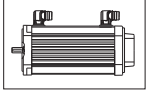
Selection

Possible combinations with controllers

Motor-inverter combination servo motor – servo inverter series 9300, 16 kHz chopper frequency

					Possible combinations and standard setting Imax = 1.5 In, maximum torque in Nm Chopper frequency f_{chopp} f_{chopp} = 8 KHz												Possible combinations and operational mode acceleration controller Maximum torque in Nm Chopper frequency f_{chopp} = 8 KHz			
Inverter type					9321	9322	9323	9324	9325	9326	9327	9328	9329	9330	9331	9332	9321	9322	9323	9324
Continuous current				[A]	1.5	2.5	3.9	7.0	13	23.5	32	47	59	89	110	145	1.05	1.7	2.6	4.7
Maximum current				[A]	2.3	3.8	5.9	10.5	19.5	35.25	48	70.5	88.5	133.5	165	217.5	3	5	7.8	14
Motor type	h [mm]	M_{rated}3000 [Nm]	I_{rated} [A]	M_{rated} [Nm]																
Synchr. servo motors without fan																				
MDSKS 036-13, 200	35		0.9	0.6	1.5	2.2											1.9			
MDSKS 036-23, 200	35		1.1	1.3	2.7	4.3	5.6										3.5	5.0		
MDSKS 056-23, 190	51	2.9	2.3	2.8	2.8	4.6	7.0										3.7	6.0	9.2	
MDSKS 036-33, 200	51	4.3	3.6	4.2		4.4	6.9	11.7										5.8	9.0	15.2
MDSKS 071-03, 170	65	5.9	4.2	5.7			8.0	13.8	23.6										10.6	17.8
MDSKS 071-13, 185	65	8.8	7	8.3			7.0	12.5	22.3	35.2									9.2	16.6
MDSKS 071-33, 180	65	13	10	12.3				12.9	24.0	41.4										17.2
with separate fan																				
MDFKS 071-03, 165	65	7.7	5.6	7.5			8.0	13.8	23.5										10.6	17.8
MDFKS 071-13, 180	65	11.7	9.2	11.0				12.5	21.8	35.2										16.6
MDFKS 071-33, 175	65	17	13.1	16.2				12.9	24.0	41.4										17.2

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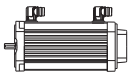


Possible combinations with controllers

Motor-inverter combination servo motor – servo inverter series 9300, 8 kHz chopper frequency

			Inverter type Continuous current [A] Maximum current [A]					Possible combinations and maximum torque in Nm Chopper frequency f_{chopp} = 8 KHz											
								9321 1.5 2.3	9322 2.5 3.8	9323 3.9 5.9	9324 7.0 10.5	9325 13 19.5	9326 23.5 35.3	9327 32 48	9328 47 70.5	9329 59 88.5	9330 89 133.5	9331 110 165	9332 145 217.5
Motor type	h [mm]		M_{rated} [Nm]	P_{rated} [kW]	I_{rated} [A]	I_{max}[1] [A]	f_{rated} [Hz]												
Asynchronous servo motors surface cooled without fan																			
MDSKA 056-22, 140	51		2.0	0.8	2.4		140		4.45	7.3	9.8								
MDSKA 071-22, 140	65		4.0	1.7	4.4		140				12.6	19.5							
MDSKA 080-22, 70	71		6.7	1.4	3.3		70			15.1	29.3								
MDSKA 080-22, 140	71		5.4	2.3	5.8		140				13.2	26.0							
MDSKA 090-22, 80	83		10.8	2.6	5.5		80				24.4	46.2							
MDSKA 090-22, 140	83		9.5	4.1	10.2		140					23.4	43.7	59.4					
MDSKA 100-22, 80	96		16.3	4.0	8.2		80					47.2	88.2						
MDSKA 100-22, 140	96		12.0	5.2	14.0		140					20.7	43.3	60.7					
MDSKA 112-22, 85	107		24.6	6.4	13.5		85					46.2	78.0	92.4					
MDSKA 112-22, 140	107		17.0	7.4	19.8		140						43.9	63.3	96.8	123.0			
with separate fan																			
MDFKA 071-22, 120	65		6.3	2.2	6.0		120				13.0	25.0							
MDFKA 080-22, 60	71		12.0	2.1	4.8		60				29.6	45.2							
MDFKA 080-22, 120	71		10.8	3.9	9.1		120					29.3	53.8						
MDFKA 090-22, 60	83		21.5	3.8	8.5		60					57.2	86.7						
MDFKA 090-22, 120	83		19.0	6.9	15.8		120						50.7	69.2	100.2				
MDFKA 100-22, 60	96		36.3	6.4	13.9		60					50.1	95.9	130.8					
MDFKA 100-22, 120	96		36.0	13.2	28.7		120						45.7	67.6	104.3	132.9	202.0		
MDFKA 112-22, 60	107		61.4	11.0	22.5		60						104.1	143.3	211.0	257.0			
MDFKA 112-22, 120	107		55.0	20.3	42.5		120								107.7	135.9	205.0	250.0	
Asynchronous servo motors. enclosed ventilated																			
MDFQA 100-22, 50	100	λ	71.3	10.6	26.5		50						109.3	156.7	232.0	253.0			
MDFQA 100-22, 100	100	λ	66.2	20.3	46.9		100								112.5	146.4	227.0	257.0	
MDFQA 112-22, 50	112	λ	145	11.5	27,2		28							247.0	339.0	346.0			
MDFQA 112-22, 50	112	Δ	135	20.1	43.7		50								230.1	292.9	341.8		
MDFQA 112-22, 100	112	λ	130	22.7	49.1		58								180.5	228.0	342.0	378.0	
MDFQA 112-22, 100	112	Δ	125	38.4	81.9		100										216.0	273.0	355.0
MDFQA 132-32, 36	132	λ	296	17.0	45.2		20								482.0	612.0	751.0		
MDFQA 132-32, 36	132	Δ	288	31.1	77.4		36										552.0	671.0	
MDFQA 132-32, 76	132	λ	282	35.4	88.8		42										424.0	512.0	663.0
MDFQA 132-32, 76	132	Δ	257	60.1	144.8		76											344.0	458.0

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Selection

Possible combinations with controllers

Motor-inverter combination servo motor – servo inverter series 9300, 16 kHz chopper frequency (low noise)

				Possible combinations and standard setting Imax = 1.5 In Maximum torque in Nm Chopper frequency f_{chopp} f_{chopp} = 16 KHz							Possible combinations and controller for the operational mode acceleration Maximum torque in Nm Chopper frequency f_{chopp} = 16 KHz			
Inverter type				9321	9322	9323	9324	9325	9326	9327	9321	9322	9323	9324
Continuous current			[A]	1.1	1.8	2.9	5.2	9.7	15.3	20.8	0.77	1.26	2.03	3.64
Maximum current			[A]	2.7	2.7	4.4	7.8	14.6	23	31.2	2.2	3.6	5.8	10.4
Motor type	h [mm]	I_{rated} [A]	M_{rated} [Nm]											
Synchronous servo motors without fan														
MDSKS 036-13, 200	35	0.9	0.6	1.1	1.7	2.4					1.4	2.1		
MDSKS 036-23, 200	35	1.1	1.3	2.0	3.2	4.7					2.6	4.0	5.5	
MDSKS 056-23, 190	51	2.3	2.8	2.1	3.3	5.4	9.2				2.7	4.4	6.9	
MDSKS 036-33, 200	51	3.6	4.2			5.1	9.0	15.8					6.8	11.6
MDSKS 071-03, 170	65	4.2	5.7			6.0	10.6	18.5					7.9	13.7
MDSKS 071-13, 185	65	7	8.3				9.2	17.2	25.9	34.4				12.3
MDSKS 071-33, 180	65	10	12.3					18.0	27.9	36.9				
with separate fan														
MDFKS 071-03, 165	65	5.6	7.5				10.6	18.5						13.7
MDFKS 071-13, 180	65	9.2	11.0				9.2	17.2	25.9	34.4				12.3
MDFKS 071-33, 175	65	13.1	16.2					18.0	27.9	36.9				

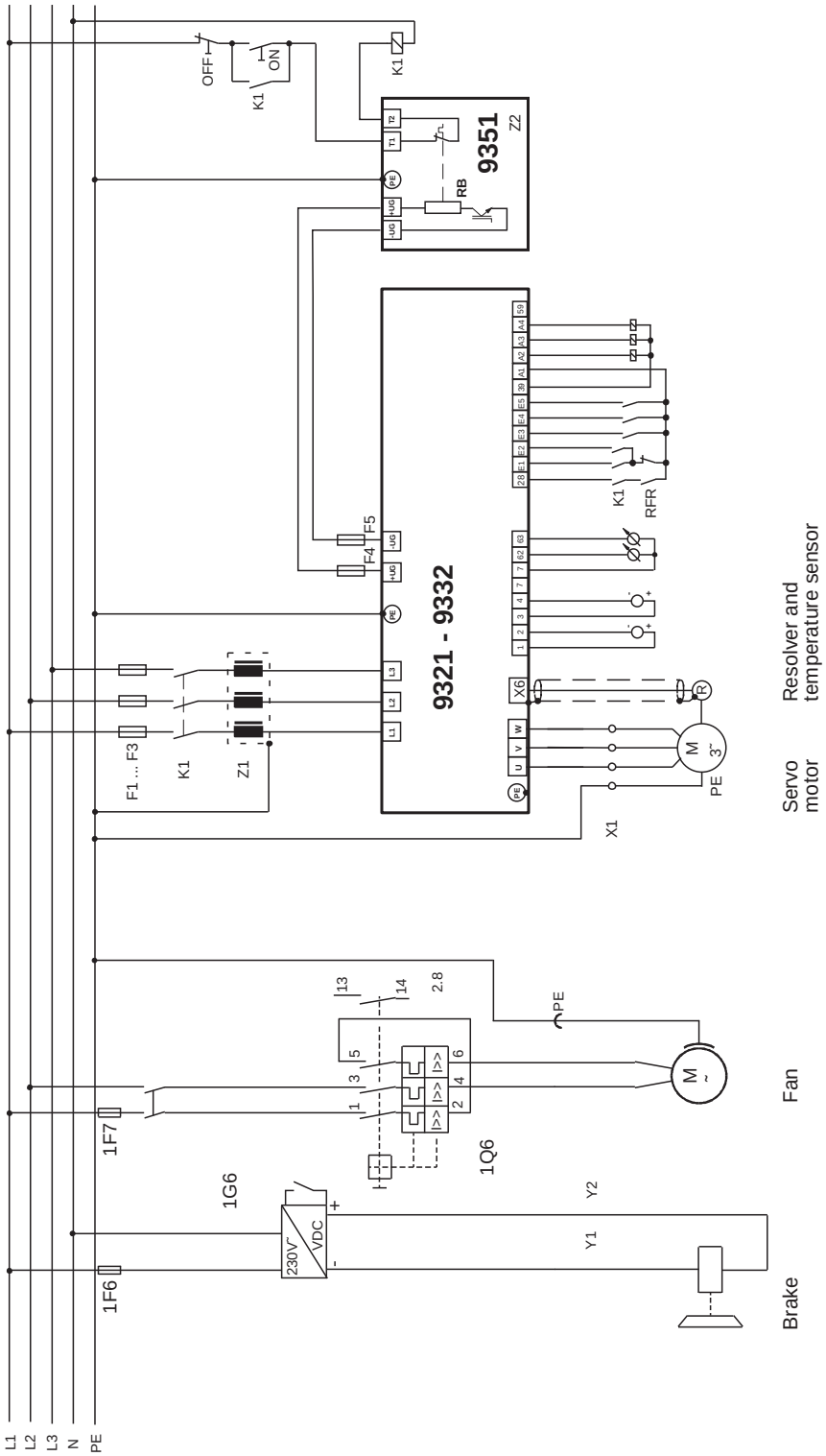
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Motor-inverter combination servo motor – servo inverter series 9300, 16 kHz chopper frequency (low noise)

			Inverter type Continuous current [A] Maximum current [A]				Possible combinations and maximum torque in Nm Chopper frequency f_{chopp} = 16 KHz											
							9321 1.1 1.7	9322 1.8 2.7	9323 2.9 4.4	9324 5.2 7.8	9325 9.7 14.6	9326 15.3 23	9327 20.8 31.2	9328 30.6 45.9	9329 38 57	9330 58 87	9331 70 105	9332 90 135
Motor type	h [mm]		M_{rated} [Nm]	P_{rated} [kW]	I_{rated} [A]	f_{rated} [Hz]												
Asynchronous servo motors. surface cooled without fan																		
MDSKA 056-22, 140	51		2.0	0.8	2.4	140			5.3	9.2								
MDSKA 071-22, 140	65		4.0	1.7	4.4	140				9.2	17.3							
MDSKA 080-22, 70	71		6.7	1.4	3.3	70				21.2	35.1							
MDSKA 080-22, 140	71		5.4	2.3	5.8	140				9.1	19.1	30.8						
MDSKA 090-22, 80	83		10.8	2.6	5.5	80				17.5	34.5	50.0						
MDSKA 090-22, 140	83		9.5	4.1	10.2	140					16.9	28.0	38.6	56.9				
MDSKA 100-22, 80	96		16.3	4.0	8.2	80					33.8	56.7	78.1					
MDSKA 100-22, 140	96		12.0	5.2	14.0	140						25.8	37.6	57.9				
MDSKA 112-22, 85	107		24.6	6.4	13.5	85						55.8	71.4	90.3	97.5			
MDSKA 112-22, 140	107		17.0	7.4	19.8	140							37.5	60.1	76.8	120.8		
with separate fan																		
MDFKA 071-22, 120	65		6.3	2.2	6.0	120					19.0	26.3						
MDFKA 080-22, 60	71		12.0	2.1	4.8	60				21.5	41.3							
MDFKA 080-22, 120	71		10.8	3.9	9.1	120					21.2	34.9	47.7					
MDFKA 090-22, 60	83		21.5	3.8	8.5	60					42.0	67.9	86.2					
MDFKA 090-22, 120	83		19.0	6.9	15.8	120							44.6	66.1	81.7			
MDFKA 100-22, 60	96		36.3	6.4	13.9	60						60.5	84.3	125.2	150.7			
MDFKA 100-22, 120	96		36.0	13.2	28.7	120								64.0	75.4	130.5	158.3	
MDFKA 112-22, 60	107		61.4	11.0	22.5	60							91.2	136.9	170.4	254.0		
MDFKA 112-22, 120	107		55.0	20.3	42.5	120										133.6	161.1	206.0
Asynchronous servo motors, enclosed ventilated																		
MDFQA 100-22, 50	100	λ	71.3	10.6	26.5	50								149.0	189.2	250.0		
MDFQA 100-22, 100	100	λ	66.2	20.3	46.9	100										143.6	175.2	227.2
MDFQA 112-22, 50	112	λ	145	11.5	27.2	28								236.0	292.0	346.0		
MDFQA 112-22, 50	112	Δ	135	20.1	43.7	50										288.5	314.3	
MDFQA 112-22, 100	112	λ	130	22.7	49.1	58										224.0	269.0	343.0
MDFQA 112-22, 100	112	Δ	125	38.4	81.9	100											159.4	217.0
MDFQA 132-32, 36	132	λ	296	17.0	45.2	20										605.0	681.0	753.0
MDFQA 132-32, 36	132	Δ	288	31.1	77.4	36											440.0	556.0
MDFQA 132-32, 76	132	λ	282	35.4	88.8	42												428.0
MDFQA 132-32, 76	132	Δ	257	60.1	144.8	76												

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Connection diagram



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EC-Declaration – Low-voltage Directive (73/23/EEC)

Lenze

Electonic drives

Lenze GmbH & Co KG
Postfach 10 13 52
D-31763 Hameln

Site: Groß Berkel
Hans-Lenze-Straße 1
D-31855 Aerzen
Telephone (05154) 82-0
Telefax (05154) 82-26 11

EC-Declaration of Conformity '96

for the purpose of the
EC Low-Voltage Directive (73/23/EEC)
amended by: CE- mark directive (93/68/EEC)

The following products were developed, designed, and manufactured in compliance with the above-mentioned EC directive under the sole responsibility of
Lenze GmbH & Co KG, Postfach 10 13 52, D-31763 Hameln

Product:	Type:
DC motors	MGFRK, MGFQU, MGFQK MGERK, MGEQU, MGEQK MGSRK, MGSQU, MGSQK 13.12○ , 13.53○ , 13.55○ 43.55○
Asynchronous motors	13.71○ , 13.74○ , 13.75○ 13.81○ , 13.84○ , 13.85○ DFRA, DERA, DSRA 43.71○ , 43.75○
Servo motors	DFVA, DSVA, MDFQA MDFKA, MDSKA MDFKS, MDSKS
Three-phase AC winder motors	○ ○L12, ○ ○F12 ○ ○S8, ○ ○S6 ○ ○S4, ○ ○F4 ○ ○MF4, ○ ○SF4 ○ ○LF4

Standards:
EN 60204-1, IEC 204-1
EN 60034, VDE 0530, IEC34

Declaration about EMC directive (89/336/EEC)
Asynchronous motors comply with the requirements of the EC directive „Electromagnetic Compatibility“ 89/336/EEC under consideration of the standards EN 80081-1 and EN 50082-2 when connected to a sinusoidal AC mains voltage.

For inverter or DC-controller operation, the EMC notes of the manufacturers must be observed.
When using screened motor cables, the screening is most effective with a conductive connection with as large an area as possible between the screen and the earth potential of the motor (e.g. metal cable gland).

Hameln, February 20, 1996

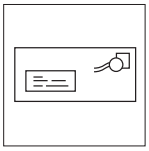
Pankow

(i. V. Pankow)
Head of R&D Department

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Servo motors series MDXKA/MDXKS – preference types

Expedient

Company _____ Customer No. _____

Street / P.O. box _____ Order No. _____

Postal Code / City _____ Issuer _____

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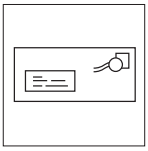
* Please fill out if not expedient Date _____ Signature _____

☐ MDSKAXX056-22 0.8 KW 3950 RPM 390 V 140 Hz	☐ MDSKAXX071-22 1.7 KW 4050 RPM 390 V 140 Hz	☐ MDSKAXX080-22 2.3 KW 4100 RPM 390 V 140 Hz	☐ MDSKAXX090-22 4.1 KW 4110 RPM 350 V 140 Hz
☐ MDSKAXX100-22 5.2 KW 4150 RPM 330 V 140 Hz	☐ MDSKAXX112-22 7.4KW 4160 RPM 320 V 140 Hz		Self-ventilated motors
☐ MDFKAXX071-22 2.2 KW 3410 RPM 390 V 120 Hz	☐ MDFKAXX080-22 3.9 KW 3455 RPM 390 V 120 Hz	☐ MDFKAXX090-22 6.9 KW 3480 RPM 390 V 120 Hz	☐ MDFKAXX100-22 13.2 KW 3510 RPM 390 V 120 Hz
☐ MDFKAXX112-22 20.3 KW 3520 RPM 390 V 120 Hz			Forced-ventilated motors
☐ MDSKSXX036-13 0.25 KW 4000 RPM 245 V 200 Hz	☐ MDSKSXX036-23 0.54 KW 4000 RPM 345 V 200 Hz	☐ MDSKSXX0056-23 1.1 KW 3800 RPM 330 V 190 Hz	☐ MDSKSXX056-33 1.8 KW 4000 RPM 325 V 200 Hz
☐ MDSKSXX071-03 2.0 KW 3900 RPM 330 V 170 HZ	☐ MDSKSXX071-13 3.2 KW 3700 RPM 325 V 185 Hz	☐ MDSKSXX071-33 4.6 KW 3600 RPM 325 V 180 Hz	Self-ventilated motors
☐ MDFKSXX071-03 2.6 KW 3300 RPM 320 V 165 HZ	☐ MDFKSXX071-13 4.1 KW 3600 RPM 325 V 180 Hz	☐ MDFKSXX071-33 5.9 KW 3500 RPM 325 V 175 Hz	Forced-ventilated motors

Motor power connect		[X] Plug				
Mounting	☐ B5 FF75 Only size 36	☐ B5A120 Only size 56	☐ B5A160 Only size 71	☐ B5A200 Only size 80/90	☐ B5A250 Only size 100/112	☐ B5A300 Only size 112
A-side	[X] without key					
Temperature monitor	[X] KTY cont. temperature sensor					
Enclosure	[X] IP54					
Brake	☐ **without brake**	☐ **with brake**				
Brake voltage (if selected)	[X] 24V DC					
Encoder	☐ Resolver					
Gearbox mounting	[X] without gearbox					
Colour	[X] RAL 9005 black					

One cross only for each range! Price motor _____ DM

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Servo motors series MDFKS/MDSKS – industrial types

Expedient

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Delivery address* _____ Phone _____

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☐ MDSKSXX0056-23
1.1 KW
3800 RPM
330 V
190 Hz

☐ MDSKSXX056-33
1.8 KW
4000 RPM
345 V
200 Hz

☐ MDSKSXX071-03
2.0 KW
3900 RPM
330 V
170 HZ

☐ MDSKSXX071-13
3.2 KW
3700 RPM
325 V
185 Hz

☐ MDSKSXX071-33
4.6 KW
3600 RPM
325 V
180 Hz

Self-ventilated motors

☐ MDFKSXX071-03
2.6 KW
3300 RPM
320 V
165 HZ

☐ MDFKSXX071-13
4.1 KW
3600 RPM
325 V
180 Hz

☐ MDFKSXX071-33
5.9 KW
3500 RPM
325 V
175 Hz

Forced-ventilated motors

Motor power connect ☐ Plug ☐ Terminal box (Only for size 56 and 71 !)

Mounting ☐ B5A120 (Only size 56) ☐ B5A160 (Only size 71)
☐ B14C105 (Only size 56) ☐ B14C160 (Only size 71)

B9 drive size ☐ B9 - 1C (Only size 56) ☐ B9 - 1D (Only size 71)

A-side ☐ without key ☐ with key (not for B9 – direct mounting of gearbox!)

Temperature monitor ☐ KTY cont. temperature sensor

Enclosure ☐ IP54 ☐ IP65 (only for self-cooled motors, size 56 and 71)

Brake ☐ withour brake ☐ with brake

Brake voltage (if selected) ☐ 24V DC ☐ 205V DC (only for size 56 / 71!)

Encoder ☐ Resolver ☐ SinCos-encoder Single Turn (only for motor size 56 and 71!) ☐ SinCos-encoder Multi Turn ☐ ITD21 TTL 2048 pulses / rev. (only for motor sizes 56 and 71!)

Gearbox mounting ☐ without gearbox
☐ with "old" gearbox ☐ KKL-1- (right) ☐ KKL-2- (top) ☐ KKL-3- (left) ☐ KKL-4- (bottom)
☐ with GNG gearbox ☐ KKL-5- (left) ☐ KKL-2- (top) ☐ KKL-3- (left) ☐ KKL-4- (bottom)

Colour ☐ RAL 9005 black

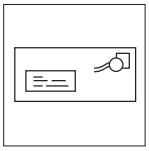
Preference drives are written in bold and are underligned
One cross only for each range!

Price motor + gearbox _____ DM

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Servo motors series MDFKA/MDSKA – industrial types

Expedient

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Postal Code / City _____ Issuer _____

Delivery address* _____ Phone _____

_____ Fax _____

Invoice addressee* _____ Date of delivery _____

* Please fill out if not expedient Date _____ Signature _____

☐ MDSKAXX056-22
0.8 KW
3950 RPM
390 V
140 Hz

☐ MDSKAXX071-22
1.7 KW
4050 RPM
390 V
140 Hz

☐ MDSKAXX080-22
1.4 KW
2000 RPM
390 V
70 Hz

☐ MDSKAXX080-22
2.3 KW
4100 RPM
390 V
140 Hz

☐ MDSKAXX090-22
2.6 KW
2300 RPM
390 V
80 HZ

☐ MDSKAXX090-22
4.1 KW
4110 RPM
350 V
140 Hz

☐ MDSKAXX100-22
4.0 KW
2340 RPM
390 V
80 Hz

☐ MDSKAXX100-22
5.2 KW
4150 RPM
330 V
140 Hz

☐ MDSKAXX112-22
6.4 KW
2490 RPM
390 V
85 HZ

☐ MDSKAXX112-22
7.4KW
4160 RPM
320 V
140 Hz

Self-cooled motors

☐ MDFKAXX071-22
2.2 KW
3410 RPM
390 V
120 Hz

☐ MDFKAXX080-22
2.1 KW
1635 RPM
390 V
60 Hz

☐ MDFKAXX080-22
3.9 KW
3455 RPM
390 V
120 Hz

☐ MDFKAXX090-22
3.8 KW
1680 RPM
390 V
60 HZ

☐ MDFKAXX090-22
6.9 KW
3480 RPM
390 V
120 Hz

☐ MDFKAXX100-22
6.4 KW
1700 RPM
390 V
60 Hz

☐ MDFKAXX100-22
13.2 KW
3510 RPM
390 V
120 Hz

☐ MDFKAXX112-22
11.0 KW
1710 RPM
390 V
60 HZ

☐ MDFKAXX112-22
20.3 KW
3520 RPM
390 V
120 Hz

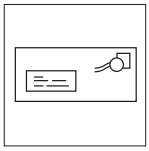
Forced-ventilated motors

Motor power connect		☐ Plug	☐ Terminal box			
Mounting	☐ B5A120 Only size 36	☐ B5A160 Only size 71	☐ B5A200 Only size 80/90	☐ B5A250 Only size 100/112	☐ B5A300 Only size 112	
	☐ B14C105 Only size 56	☐ B14C160 Only size 71/80/90/100/112				
B9 drive size	☐ B9 - 1C Only size 56	☐ B9 - 1D Only size 71	☐ B9 - 1E Only size 80	☐ B9 - 1F Only size 90	☐ B9 - 1G Only size 100	☐ B9 - 1H Only size 112
A-side	☐ without key	☐ with key	(not for B9 – direct mounting of gearbox!)			
Temperature monitor	☐ KTY cont. temperature sensor					
Enclosure	☐ IP54	☐ IP65 only for self-cooled motors!				
Brake	☐ without brake	☐ with brake				
Brake voltage (if selected)		☐ 24V DC	☐ 205V DC			
Encoder	☐ Resolver	☐ SinCos-encoder Single-turn	☐ SinCos-encoder Multi-turn	☐ ITD21 TTL 2048 pulses/rev.		
Gearbox mounting	☐ without gearbox	☐ with "old" gearbox	☐ KKL-1- (right)	☐ KKL-2- (top)	☐ KKL-3- (left)	☐ KKL-4- (bottom)
		☐ with GNG gearbox	☐ KKL-5- (right)	☐ KKL-2- (top)	☐ KKL-3- (left)	☐ KKL-4- (bottom)
Colour	☐ RAL 9005 black					

Preference drives are written in bold and are underligned
One cross only for each range!

Price motor + gearbox _____ DM

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Servo motor MDFQA – preference type

Expedient

Company _____ Customer No. _____

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Postal Code / City _____ Issuer _____

Delivery address* _____ Phone _____

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MDFQA xx 100-22

☐ 10.6 KW, 1420 RPM, 360 V, 50 Hz

☐ 20.3 KW, 2930 RPM, 360 V, 100 Hz

MDFQA xx 112-22

☐ 20.1 / 11.5 KW, 1425 / 760 RPM, 360 V, 50 / 28 HZ

☐ 38.4 / 22.7 KW, 2935 / 1670 RPM, 360V, 100 / 58 Hz

MDFQA xx 132-32

☐ 31.1 / 17.0 KW, 1030 / 550 RPM, 360 V, 36 / 20 HZ

☐ 60.1 / 35.4 KW, 2235 / 1200 RPM, 340 / 360 V, 76 / 42 Hz

Operation mode: [X] S1 continuous operation

Mounting:
☐ B3/B5 ☐ B6/B5 ☐ B7/B5 ☐ B8/B5 ☐ V1/V5 ☐ V3/V6
Flange combination mountings MDFQA100 = A250 MDFQA112 = A300 MDFQA132 = A300
☐ B5 ☐ V1 ☐ V3 B5 , V1 , V3 are not possible with size 112.
Flange single mountings MDFQA100 = A300 MDFQA132 = A400

A-side: [X] with key

B-side: ☐ Motor for encoder mounting ☐ Motor for brake/encoder mounting

Temperature montitoring: [X] Thermal contact normally-closed + KTY contact sensor

Enclosure: [X] IP23s

Terminal box position (referring to B3 mounting, * Looking on motor drive-end):
[X] -2- (on top)

Brakes: ☐ without brake ☐ 14.450._____
☐ 24V DC ☐ 205V DC ☐ 230V AC incl rectifier

Encoder: ☐ without encoder ☐ Resolver

only mounting device (all motors are suitable to munt A4 tachos (with hollo

External fan for :

	380 ... 460 V without filter	380 ... 460 V with filter	350 ... 540 V with filter
size 100	☐ G2D120	☐ G2D140	
size 112	☐ G2D160	☐ G2D160	
size 132	☐ G2D180		☐ DNG 8 -12

Fan position: ☐ -2- on top ☐ -1- right side ☐ -3- left side ☐ -4- bottom (only for gearbox mounting) ☐ without fan

Fan housing position: ☐ front-sided ☐ back-sided

Gearbox attachment:
☐ without gearbox ☐ with "old" gearbox ☐ KKL-1- (right) ☐ KKL-2- (top) ☐ KKL-3- (left) ☐ KKL-4- (bottom)
☐ with GnG gearbox ☐ KKL-5- (right) ☐ KKL-2- (top) ☐ KKL-3- (left) ☐ KKL-4- (bottom)

Colour:
☐ RAL 9005 black ☐ RAL 6011 reseda green ☐ RAL 2000 yellow orange ☐ coated signal grey ☐ RAL 9018 papyrus white

2nd nameplate: ☐ attached to termin

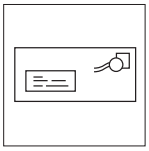
Preference types are written in bold and are underligned
One cross only for each range!

Price motor + gearbox _____ DM

Lenze

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Fax _____

Servo motor MDFQA – industrial type

Expedient

Company _____ Customer No. _____

Street / P.O. box _____ Order No. _____

Postal Code / City _____ Issuer _____

Delivery address* _____ Phone _____

_____ Fax _____

Invoice addressee* _____ Date of delivery _____

* Please fill out if not expedient Date _____ Signature _____

MDFQA xx 100-22

☐ 10.6 KW, 1420 RPM, 360 V, 50 Hz

☐ 20.3 KW, 2930 RPM, 360 V, 100 Hz

MDFQA xx 112-22

☐ 20.1 / 11.5 KW, 1425 / 760 RPM, 360 V, 50 / 28 HZ

☐ 38.4 / 22.7 KW, 2935 / 1670 RPM, 360V, 100 / 58 Hz

MDFQA xx 132-32

☐ 31.1 / 17.0 KW, 1030 / 550 RPM, 360 V, 36 / 20 HZ

☐ 60.1 / 35.4 KW, 2235 / 1200 RPM, 340 / 360 V, 76 / 42 Hz

Operation mode: [X] S1 continuous operation

Mounting:
☐ B3/B5 ☐ B6/B5 ☐ B7/B5 ☐ B8/B5 ☐ V1/V5 ☐ V3/V6
Flange combination mountings: MDFQA100 = A250; MDFQA112 = A300; MDFQA132 = A300
☐ B5 ☐ V1 ☐ V3
Flange single mountings: MDFQA100 = A300; MDFQA132 = A400
B5 , V1 , V3 are not possible with size 112.

A-side: ☐ with key ☐ without key

B-side: ☐ Motor for encoder mounting ☐ Motor for brake/encoder mounting

Temperature montitoring: [X] Thermal contact normally-closed + KTY contact sensor

Enclosure: [X] IP23s

Terminal box position: referring to B3 mounting
[X] -2- (on top) * Looking on motor drive-end

Brakes: ☐ without brake ☐ 14.450._____
☐ 24V DC ☐ 205V DC ☐ 230V AC incl rectifier

Encoder: ☐ without encoder ☐ Resolver ☐ IDT21 TTL 4096 pulses ☐ IDT21 TTL 2048 pulses ☐ SinCos endocer Single turn ☐ SinCos encoder Multi turn

only mounting device (all motors are suitable to munt A4 tachos (with hollo

External fan for :	380 ... 460 V without filter	380 ... 460 V with filter	350 ... 540 V without filter	350 ... 540 V with filter
size 100	☐ G2D120	☐ G2D140	☐ DNG 3 - 4.5	☐ DNG 3 - 4.5
size 112	☐ G2D160	☐ G2D160	☐ DNG 5 - 12.5	☐ DNG 5 - 12.5
size 132	☐ G2D180		☐ DNG 8 - 12	☐ DNG 8 - 12

Fan position: ☐ -2- on top ☐ -1- right side ☐ -3- left side ☐ -4- bottom (only for gearbox mounting) ☐ without fan

Fan housing position: ☐ front-sided ☐ back-sided

Gearbox attachment:
☐ without gearbox ☐ with "old" gearbox ☐ KKL-1- (right) ☐ KKL-2- (top) ☐ KKL-3- (left) ☐ KKL-4- (bottom)
☐ with GnG gearbox ☐ KKL-5- (right) ☐ KKL-2- (top) ☐ KKL-3- (left) ☐ KKL-4- (bottom)

Colour: ☐ RAL 9005 black ☐ RAL 6011 reseda green ☐ RAL 2000 yellow orange ☐ coated signal grey ☐ RAL 9018 papyrus white

2nd nameplate: ☐ attached to termin

Preference types are written in bold and are underligned
One cross only for each range!

Price motor + gearbox _____ DM

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Stammwerk
Head office

Lenze GmbH & Co KG
Postfach 10 13 52
D-31763 Hameln
Telefon ++49 (0)5154 / 82-0
Telefax ++49 (0)5154 / 82-28 00
E-Mail: Lenze@Lenze.de

Kundendienst / Service

Mechanical Drives
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Breslauer Straße 3
D-32699 Extertal
Telefon ++49 (0)5154 / 82-16 26
Telefax ++49 (0)5154 / 82-13 96

Electronic Drives
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Breslauer Straße 3
D-32699 Extertal
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Telefax ++49 (0)5154 / 82-11 12

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Telefax ++49 (0)5154 / 82-21 00

Lenze GmbH & Co KG Kleinantriebe
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Telefax ++49 (0)5154 / 82-14 85

Lenze GmbH & Co KG Südtechnik
Verbindungstechnik
Schänzle 8
D-71332 Waiblingen
Telefon ++49 (0) 71 51 / 9 52 10
Telefax ++49 (0) 71 51 / 1 85 86

Deutschland
Germany

Werksniederlassung Nord

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Telefax (0 51 52) 90 36-33/44/55

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Telefax (0 40) 67 56 11 01

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Berlin
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Bielefeld
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Telefax (05 21) 8 75 27 20

Bielefeld
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Telefax (05 21) 98 68 55

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Telefax (0 51 54) 9 65 40

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Telefax (0 54 02) 9 61 25

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Kelvinstraße 7
47506 Neukirchen-Vluyn
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Telefax (0 28 45) 95 93 93

Recklinghausen / Borken / Coesfeld
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Telefax (0 23 62) 9 80 12

Wuppertal / Ennepe-Ruhr-Kreis / Oberberg.-Kreis
Telefon (0 23 39) 91 29 40
Telefax (0 23 39) 91 29 41

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Telefax (0 28 45) 95 93 93

Neukirchen-Vluyn
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Telefax (0 28 45) 95 93 93

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Telefax (0 24 21) 95 17 31

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Westerwaldstraße 36, 35745 Herborn
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Telefax (0 27 72) 5 30 79

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Telefax (0 62 53) 93 21 18

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Telefax (0 27 79) 9 10 22

Herborn
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Telefax (0 27 72) 5 30 79

Karlsruhe
Telefon (0 72 46) 94 20 30
Telefax (0 72 46) 94 20 31

Kassel
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Telefax (0 56 65) 92 10 15

Koblenz
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Telefax (0 27 79) 9 10 63

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Telefax (0 26 63) 96 90 92

Landau
Telefon (0 63 45) 91 90 30
Telefax (0 63 45) 91 90 31

Neunkirchen
Telefon (0 68 21) 14 00 94
Telefax (0 68 21) 14 00 95

Service:
Herborn
Telefon (0 27 72) 95 94 21
Telefax (0 27 72) 5 30 79

Sinsheim
Telefon (0 72 61) 91 30 50
Telefax (0 72 61) 91 30 51

Verbindungstechnik:
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Telefax (0 66 82) 14 08

Werksniederlassung Südwest

Lenze GmbH & Co KG Vertrieb
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Schänzle 8
71332 Waiblingen
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Telefax (0 71 51) 9 59 81 50

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Telefax (0 71 91) 97 05 80

Esslingen
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Telefax (0 71 51) 9 59 81 50

Leonberg
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Telefax (07 41) 9 30 13

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Telefax (0 74 28) 9 10 77

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Telefax (0 76 65) 91 20 45

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Telefax (0 71 51) 9 59 81 50

Werksniederlassung Süd

Lenze GmbH & Co KG Vertrieb
Fraunhoferstraße 16
82152 Martinsried
Postfach 11 26
82141 Planegg
Telefon (0 89) 89 56 14-0
Telefax (0 89) 89 56 14 14

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Allgäu / Key-Account-Vertrieb
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Telefax (08 21) 24 30 44

Ansbach
Telefon (0 98 03) 9 40 11
Telefax (0 98 03) 9 40 12

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Telefax (0 80 65) 91 23

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Telefax (0 93 67) 9 91 12

Service:
München
Telefon (0 86 31) 37 96 15
Telefax (0 86 31) 37 96 16

Nürnberg
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Telefax (09 11) 4 62 50 81

Werksniederlassung Ost

Lenze GmbH & Co KG Vertrieb
Grimmaische Straße 78
04720 Döbeln
Telefon (0 34 31) 66 06-0
Telefax (0 34 31) 66 06 66

Vertriebsbüro:

Sömmerda
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Telefax (0 36 34) 60 18 60

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Telefax ++54 (0)1 / 55 23 61 1

Australia
FCR Motion Technology Pty. Ltd.
Automation Place
23 McArthur's Road
P.O. Box 359
Altona North
3025 Melbourne
Australia
Phone ++61 (0)3 / 93 99 15 11
Telefax ++61 (0)3 / 93 99 14 31

Austria
Lenze Antriebstechnik Ges.m.b.H.
Postfach 21
Mühlenstraße 3
A-4470 Enns
Phone ++43 (0)7223 / 88 6-0
Telefax ++43 (0)7223 / 88 66 6

Büro Vorarlberg:
Wiesenweg 1
A-6960 Wolfurt
Phone ++43 (0)5574 / 67 89-0
Telefax ++43 (0)5574 / 67 89 66

Büro Wien:
Triester Straße 14/109
A-2351 Wr. Neudorf
Phone ++43 (0)2236 / 2 53 33-0
Telefax ++43 (0)2236 / 2 53 33-66

Belgium
Lenze b.v.b.a
Noorderlaan 133, bus 15
B-2030 Antwerpen
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Telefax ++32 (0)3 / 54 13 75 4

Bosnia-Herzogovina
see Austria

Brazil
IMETEX Comércio e Participações Ltda.
Rua Alexandre Dumas 001213
CEP 04717-902
Chácara St. Antonio - Santo Amaro - SP
Brazil
Phone ++55 (0)11 / 51 82-79 11
Telefax++55 (0)11 / 51 81-17 77

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see Macedonia

Canada
see USA

Chile
Sargent S.A.
Tecnica Thomas C. Sargent
S.A.C.é.I., Casilla 166-D
Santiago, Chile
Phone ++56 (0)2 / 69 91 52 5
Telefax ++56 (0)2 / 69 83 98 9

Aupi Ltda.
Automation y Proceso Industrial
Camino a Melipilla No. 262
Santiago, Chile
Phone ++56 (0)2 / 81 11 80 4
Telefax ++56 (0)2 / 81 11 10 2

China
Lenze GmbH & Co KG
Beijing Representative Office
Rm. 401, Huaxin Mansion
No. 33, An Ding Road
Chaoyang District
Beijing 100029
China
Phone ++86-10-6441 1470/71/72/73
Telefax ++86-10-6441 1467

Croatia
see Austria

Czech Republic
Lenze Antriebstechnik GmbH
informační a poradenské středisko
17. listopadu 510
CZ-549 41 Červený Kostelec
Phone ++420 (0)441 / 467-111
Telefax ++420 (0)441 / 467-166

Denmark
Leomotor A/S
Ingenior- & Handelsfirma
Stubmøllevej 35-37, Postbox 438
DK-2450 København SV
Phone ++45 / 36 30 66 66
Telefax ++45 / 36 30 64 33

Büro Jylland:
Leomotor A/S
Enebærvej 11, DK-8653 Them
Phone ++45 / 86 84 75 33
Telefax ++45 / 86 84 83 53

Egypt
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Mohamed Farid Hassanen & Co
1349 Kornish El Nile
Cairo - El Sahel, Egypt
Phone ++20 (0)2 / 20 56 26-7/8/9/0
Telefax ++20 (0)2 / 20 56 27 1

Estland
see Finland

Finland
Refimex Drives Oy
P.O. Box 35
FIN-02271 Espoo
Hannuksentie 1
FIN-02270 Espoo
Phone ++358 (0)9 / 80 48 61
Telefax ++358 (0)9 / 88 40 94 1

France
Lenze S.A.
Z.A. de Chanteloup
Rue Albert Einstein
F-93603 Aulnay s/s Bois Cedex
Phone ++33 (0)1 / 48 79 62 00
Telefax ++33 (0)1 / 48 69 40 99

Succ. Rhône-Alpes:
42, Chemin des Pivolles
F-69150 Décines-Charpieu
Phone ++33 (0)4 / 72 15 40 20
Telefax ++33 (0)4 / 78 26 88 36

Agence Sud-Ouest:
14, rue Capus
F-31400 Toulouse
Phone ++33 (0)5 / 61 14 85 37
Telefax ++33 (0)5 / 61 14 85 38

Agence Est:
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F-67870 Griesheim-pres-Moisheim
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Telefax ++33 (0)3 / 88 38 17 24

Greece
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K. Mavromichali Str. 12
P.O. Box 86 009
GR-185.03 Piräus
Phone ++30 (0)1 / 41 11 84 1
Telefax ++30 (0)1 / 41 27 05 8

Georg P. Alexandris AG
Monastiriou Str. 153
GR-546.27 Thessaloniki
Phone ++30 (0)31 / 52 75 21 2
Telefax ++30 (0)31 / 51 18 15

Hungary
Lenze Antriebstechnik GmbH.
Szerviz és Informácios Iroda
Bognár u. 3/B II.3
H-1021 Budapest
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Telefax ++36 (0)1 / 39 45 49 6

Iceland
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India
Emco Lenze Pvt. Ltd.
106 Sion Koliwada Road
Sion (East)
India-Mumbai 400 022
Phone ++91 (0)22 / 40 71 81 6 / 40 76 37 1
40 76 43 2 / 40 77 45 3
Telefax ++91 (0)22 / 40 90 42 3

Indonesia
P.T. Temasindo Division Lenze
Jl. Hariangbanga 5
Bandung 40116
Indonesia
Phone ++62 (0)22 / 43 00 35
Telefax ++62 (0)22 / 43 11 18

Kompl. Kota Grogol Permai / A-35
Jakarta 11460
Indonesia
Phone ++62 (0)21 / 56 79 63 1
56 79 63 2
Telefax ++62 (0)21 / 56 68 75 0

Iran
Tavan Ressan Co.,
P.O. Box 19395-5177
Ayatollah-Sadr Exp.Way,
South Dastour Ave., Habibi Str. No. 44
Tehran 19396, Iran
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Telefax ++98 (0)21 / 20 02 88 3

Israel
Greenshpon Eng., Works Ltd.
20 Haamelim St', P.O. Box 10 108
Haifa-Bay 26110, Israel
Phone ++972 (0)4 / 87 21 18 7
Telefax ++972 (0)4 / 87 26 23 1

Italy
Gerit Trasmissioni S.p.A.
Viale Monza 338, I-20128 Milano
Phone ++39 (0)02 / 27 09 81
Telefax ++39 (0)02 / 27 09 82 92

Japan
Miki Pulley Co., Ltd.
461 Imai-Minami-Cho
Nakahara-Ku, Kawasaki-City, Kanagawa
Japan
Phone ++81 (0)44 / 733-4371
Telefax ++81 (0)44 / 711-3934

Luxembourg
see Belgium

Macedonia
Lenze Antriebstechnik GmbH
Pretstavnistov Skopje
Nikola Rusinski str. III/A/2
MAZ-91000 Skopje
Phone ++389 (0)91 / 39 00 90
Telefax ++389 (0)91 / 39 00 91

Malaysia
D.S.C. Engineering SDN. BHD.
40B, Jalan SS 21/58
Damansara Utama, 47400 Petaling Jaya
Selangor, Malaysia
Phone ++60 (0)3 / 718 6530
Telefax ++60 (0)3 / 719 5031

Mexico
see USA

Netherlands
Lenze B.V.
Postbus 31 01
5203 DC`s-Hertogenbosch
Netherlands
Ploegweg 15
5232 BR`s-Hertogenbosch
Netherlands
Phone ++31 (0)73 / 64 56 50 0
Telefax ++31 (0)73 / 64 56 51 0

New Zealand
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P.O. Box 12-320, Penrose
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Telefax ++64 (0)9 / 63 45 51 8

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Telefax ++47 / 67 97 20 25

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Jupp & Company Inc.
Unit 2111, Cityland 10, Tower II
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Telefax ++63 (0)2 / 89 32 07 4

Poland
Rotiw Sp. z o.o.
ul. Rozdzienskiego 188b
40-203 Katowice, Poland
Phone ++48 (0)32 / 2 03 03 15
Telefax ++48 (0)32 / 75 72 73 4

Portugal
COSTA, LEAL E VICTOR, LDA
R. Augusto Lessa 269 - Apartado 2060
P-4201 Porto Codex
Phone ++351 (0)2 / 5 02 90 95
5 02 91 18
5 02 99 73
Telefax ++351 (0)2 / 5 02 40 05

Romania
see Austria

Russia
Inteldrive, Leningradskoye Shosse 58
Building 21, Floor 3, # 3
Moscow 125212, Russia
Phone ++7 095 / 459 97 65
Telefax ++7 095 / 452 47 45

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Slovenia
Lenze pogonska tehnika GmbH
Podruznica Ljubljana, C.A. Bitenca 68
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E-08205 Sabadell (Barcelona)
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Telefax ++34 93 / 71 22 54 1

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Telefax ++46 (0)13 / 10 36 23

Switzerland
Lenze Bachofen AG, Ackerstraße 42,
Postfach, CH-8610 Uster-Zürich
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Telefax ++41 (0)1 / 94 41 23 3

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Telefax ++41 (0)21 / 63 72 19 9

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Thailand
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Tambol Theparak, Amphur Muang
Samutprakarn 10270, Thailand
Phone ++66 (0)2 / 38 35 13 4 / 38 35 63 36
38 36 60 68 / 38 36 57 6
Telefax ++66 (0)2 / 38 35 63 7

Turkey
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Mumhane Cad. Eltem Han. No:62
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Telefax++90 (0)212 / 249 13 21

United Kingdom/Eire
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Bedford MK 41 OHT, United Kingdom/Eire
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Telefax ++44 (0)1234 / 26 18 15

USA
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Telefax ++1 973 / 227-7423

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