

Electric drives for industry and e-mobility applications

DIRECT CURRENT MOTORS

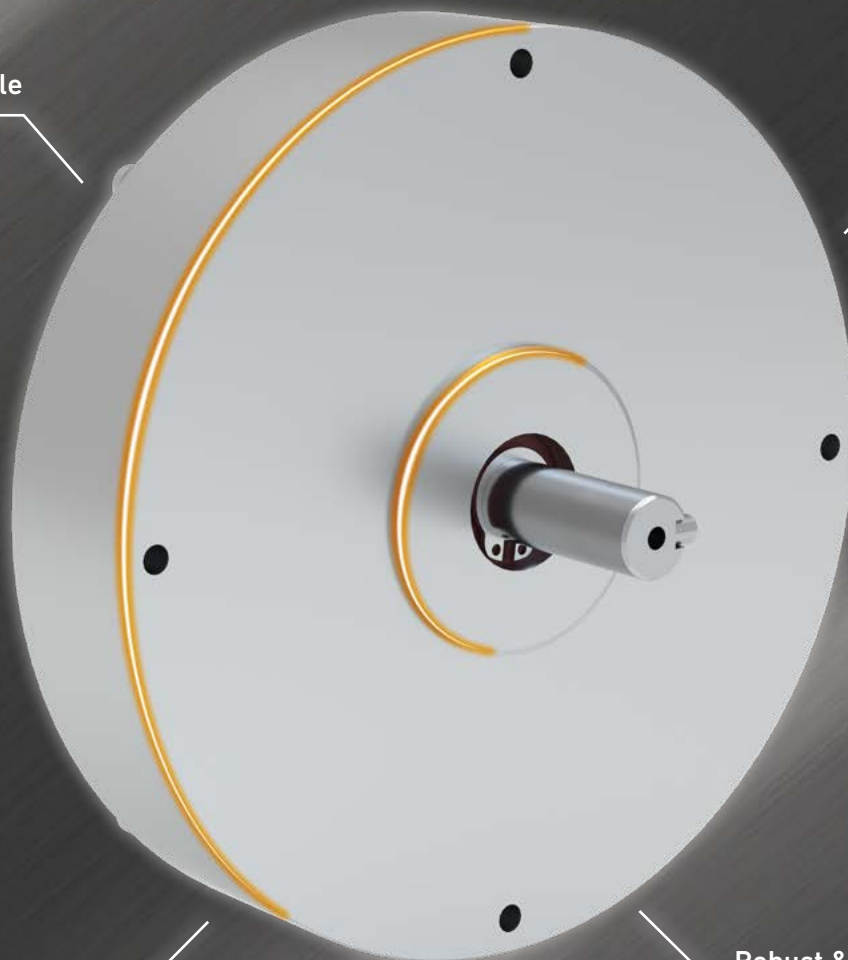
Ideal drives for limited installation space

Flexible & adaptable

Flat

Dynamic

Robust & compact



DIRECT CURRENT MOTORS

Flat, dynamic and extremely adaptable: HEINZMANN DC disc motors. Because of their streamlined design, which distinguishes them from other electric motors, they constitute the best solution for a customer, seeking a drive that can be easily and precisely controlled and can fit in a restricted installation space.

Disc motors have proven themselves in many applications within machinery and equipment manufacture and also medical engineering, reliably performing a wide variety of drive tasks with quiet synchronous operation.

The „disc rotor“ is thus a drive solution that not only provides the aforementioned benefits, but also offers an impressive price-performance ratio.



FEATURES

- ▶ Flat
- ▶ Dynamic
- ▶ Adaptable
- ▶ Robust
- ▶ Fast rotation
- ▶ Instantaneous torque with low inertia
- ▶ Smooth rotation without cogging
- ▶ Compact size when space is a premium

RANGE OF APPLICATIONS

- ▶ Automation and robotics
- ▶ Positioning and actuation systems in all industries
- ▶ Industrial and individual transport systems with greater range than electric vehicles, guided warehouse vehicles or disabled person assistance systems
- ▶ Delivery systems or handling units
- ▶ Machine tools, winding devices
- ▶ Pumps
- ▶ Replacement for hydraulic systems in agricultural vehicles and machinery
- ▶ Medical engineering, e.g. hose and metering pumps, centrifuges
- ▶ Fans and ventilators

APPLICATIONS

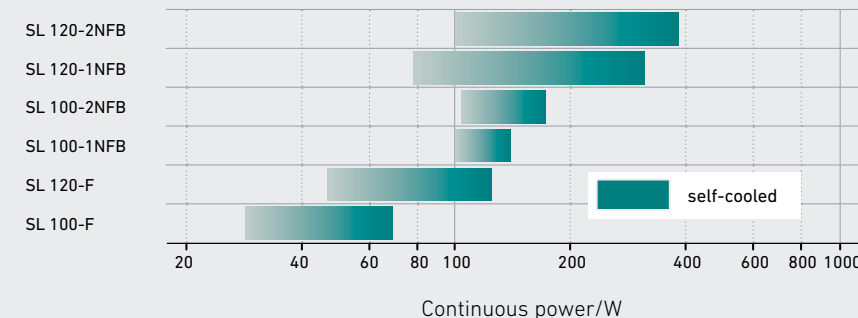
DC disc motors with brushes have been used for several decades now in rough environments in HEINZMANN actuators for medium and large combustion engines.

They are also deployed in other industrial applications wherever reliable operation at the supply voltage itself is required, without any need for a controller. However, an optional controller does allow torque and speed to be regulated as well.

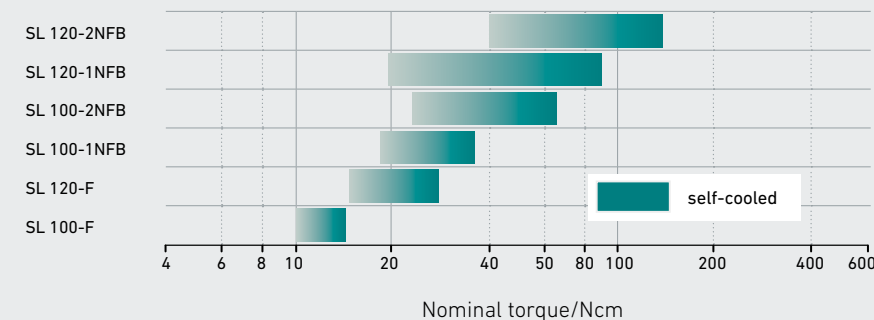


Cross section of a disc motor
SL 120-2NFB

POWER RANGE SL MOTORS



TORQUE RANGE SL MOTORS



APPLICATION EXAMPLES



A typical application in the agricultural sector is the deployment of HEINZMANN electric drives in a **seeder**. In this machine, direct current brush motors from the SL product line are used to drive the sowing

mechanism. Over the course of many years, the SL motors have proven to be robust and reliable drives for challenging environments.



The innovative, **mobile electric lift system** from the Swiss company HighStep is easy to transport while providing the full functionality of a climbing system. It is equipped with HEINZMANN disc-type motors with brushes. These are power-

ful, light, small and thus the ideal solution for this application.



AAT Alber Antriebstechnik GmbH is a manufacturer of stair climbing systems and auxiliary drives in the fields of transport and rehabilitation technology. For its CargoMaster C120, AAT Alber relies on the

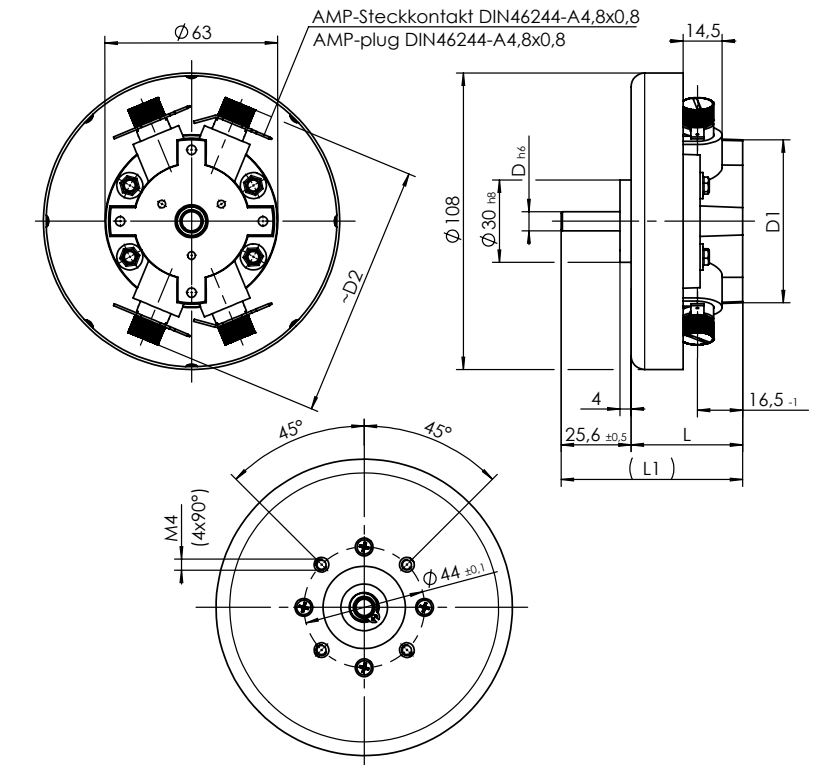
reliable, extremely flat designed SL120 brushed disc motor. A specially adapted gearbox in cooperation with the SL allows AAT to produce a very compact **staircase drive**. It proves to be the ideal solution for the innovative stair climber system, as it is extremely robust and ideally suited for harsh industrial environments.

SL 100-F

The brushed disc motor SL 100-F is equipped with ferrite magnets.



DIMENSIONS



TECHNICAL DATA

	Rated voltage	Rated power	Rated speed	Rated load	Rated current	Back-EMF constant (25 °C)	Torque constant (25 °C)
Coil	U [VDC]	P [W]	n [min ⁻¹]	M [Ncm]	I [A]	K _E [V/1000 min ⁻¹]	K _T [Ncm/A]
6/63	12	59	4700	12	7.8	2.1	2.0
	15	68	6500	10	6.8		
10/50	18	50	4000	12	4.6	3.5	3.4
	24	70	6100	11	4.4		
14/45	24	57	3900	14	3.8	5.0	4.7
	27	64	4700	13	3.6		
18/40	24	37	2500	14	2.9	6.4	6.1
	30	52	3800	13	2.8		
21/37.5	36	67	4900	13	2.8	7.4	7.1
	24	30	1900	15	2.7		
26/31.5	36	57	3900	14	2.6	9.2	8.8
	42	68	5000	13	2.4		
26/31.5	36	44	2800	15	2.2		
	42	54	3700	14	2.0		
26/31.5	48	65	4400	14	2.1		

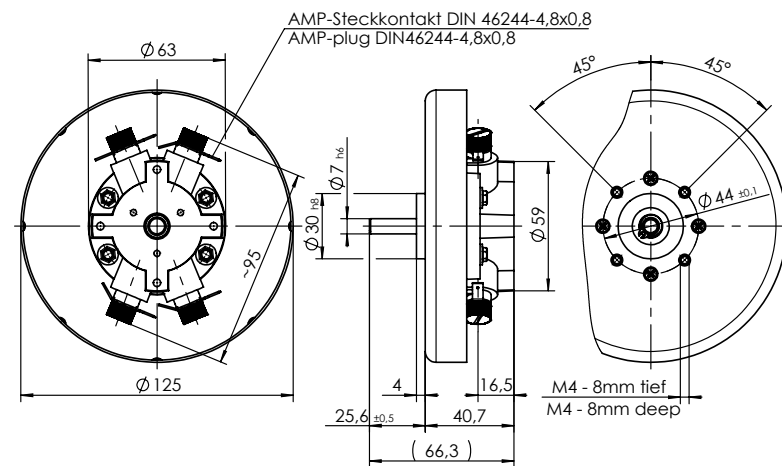
► m = 0.9 kg ► J = 1.2 kg · cm²

SL 120-F

The SL 120-F is the largest brushed disc motor in the SL range equipped with ferrite magnets.



DIMENSIONS



TECHNICAL DATA

	Rated voltage	Rated power	Rated speed	Rated load	Rated current	Back-EMF constant (25 °C)	Torque constant (25 °C)
Coil	U [VDC]	P [W]	n [min ⁻¹]	M [Ncm]	I [A]	K _E [V/1000 min ⁻¹]	K _T [Ncm/A]
8/63	12	44	1600	26	7.8		
	15	63	2500	24	7.3	4.4	4.2
	24	110	5000	20	6.5		
10/56	18	63	2400	25	6.1		
	24	89	3700	23	5.8	5.5	5.3
	36	110	6600	16	4.4		
12/53	24	79	2900	26	5.3		
	36	110	5200	21	4.5	6.6	6.3
	42	120	6400	18	4.1		
14/50	24	70	2300	29	5.0		
	36	110	4300	25	4.6	7.7	7.4
	48	125	6300	19	3.6		
16/45	24	53	1800	28	4.2		
	36	95	3500	26	4.0		
	48	120	5200	22	3.5	8.8	8.4
	60	120	7100	16	2.8		
22/40	36	64	2100	29	3.2		
	48	96	3400	27	3.0	12.0	11.5
	60	120	4700	24	2.8		
	72	130	5900	21	2.5		

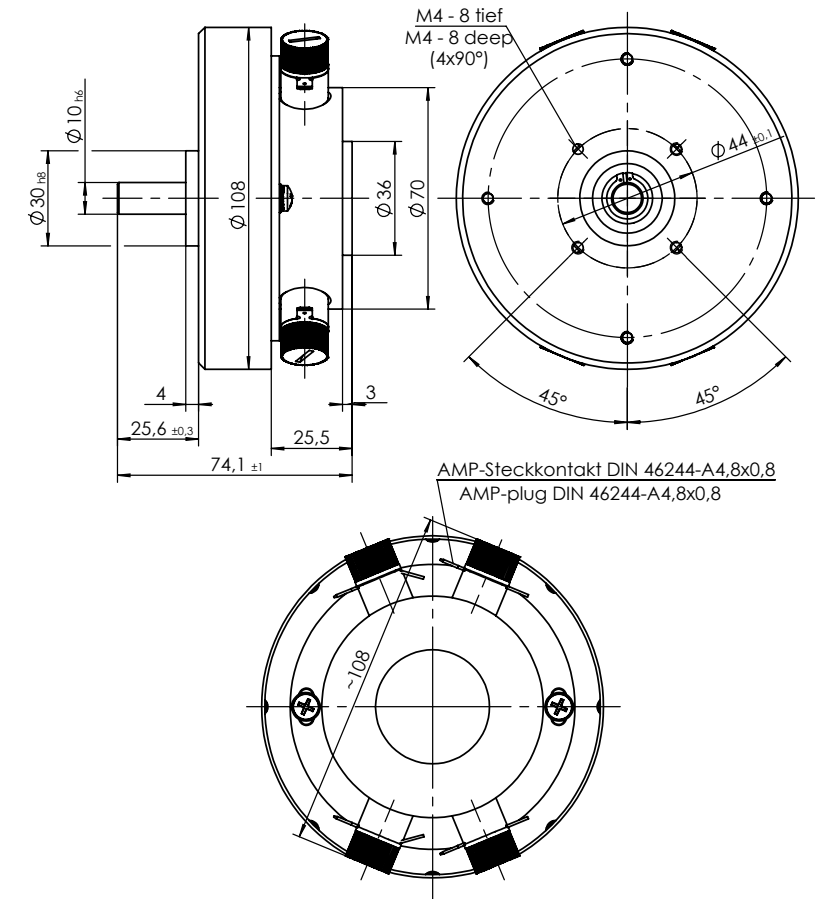
► m = 1.2 kg ► J = 2.5 kg · cm²

SL 100-1NFB

The SL 100-1NFB is the smallest DC disc motor with brushes of the SL series equipped with neodymium iron boron magnets.



DIMENSIONS



TECHNICAL DATA

	Rated voltage	Rated power	Rated speed	Rated load	Rated current	Back-EMF constant (25 °C)	Torque constant (25 °C)
Coil	U [VDC]	P [W]	n [min ⁻¹]	M [Ncm]	I [A]	K _E [V/1000 min ⁻¹]	K _T [Ncm/A]
4/90	12	100	4000	24	13		
	15	100	5400	18	10	2.6	2.5
5/85	12	100	3000	32	13		
	18	120	5200	22	10	3.2	3.1
7/71	18	110	3200	33	9.6		
	24	120	4900	24	7.6	4.5	4.3
	27	110	5700	18	6.2		
10/60	24	120	3100	36	7.2		
	30	140	4200	31	6.5	6.4	6.1
	36	130	5300	24	5.3		

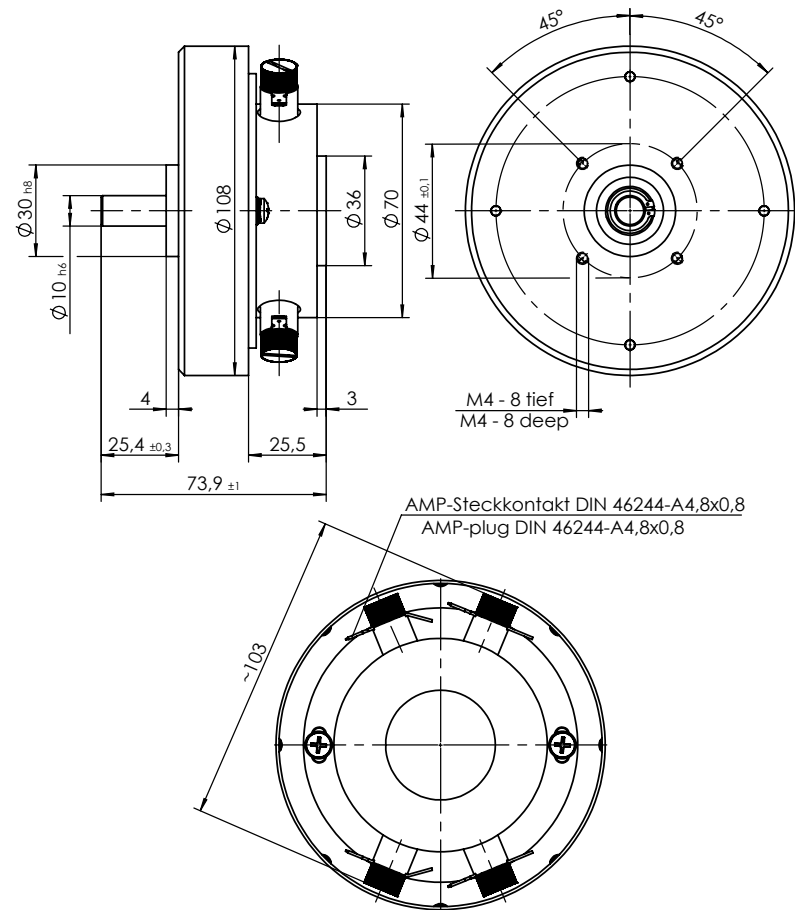
► m = 0.9 kg ► J = 1.6 kg · cm²

SL 100-2NFB

In comparison, the SL 100-2NFB disc motor with brushes contains larger neodymium iron boron magnets.



DIMENSIONS



TECHNICAL DATA

	Rated voltage	Rated power	Rated speed	Rated load	Rated current	Back-EMF constant (25 °C)	Torque constant (25 °C)
Coil	U [VDC]	P [W]	n [min ⁻¹]	M [Ncm]	I [A]	K _E [V/1000 min ⁻¹]	K _T [Ncm/A]
4/90	12	110	2800	36	13.0	3.6	3.5
	15	140	3700	35	13.0		
5/85	18	160	3600	42	12.0	4.5	4.3
	24	130	5200	24	8.0		
7/71	18	120	2300	51	10.0	6.3	6.1
	24	160	3400	44	8.9		
	27	160	3900	40	8.3		
10/60	24	120	2100	56	7.6	9.0	8.6
	36	170	3600	46	6.5		
	48	140	5300	26	4.2		

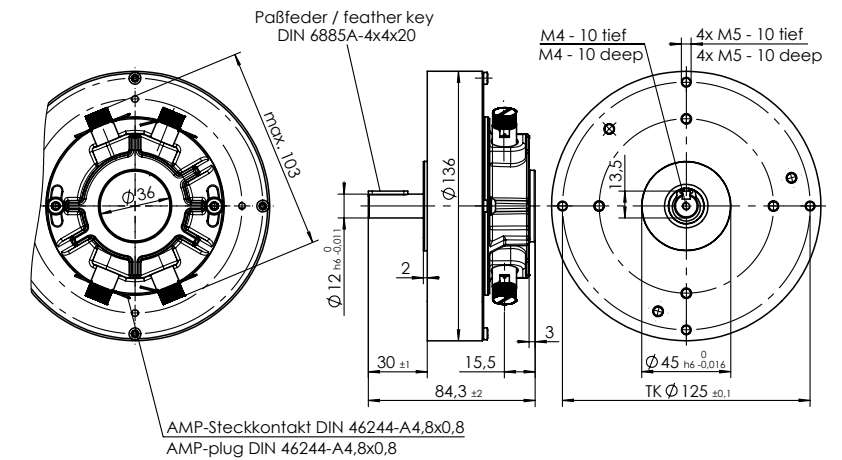
► m = 1.0 kg ► J = 1.6 kg · cm²

SL 120-1NFB

DC disc motor with brushes equipped with neodymium iron boron magnets.



DIMENSIONS



TECHNICAL DATA

	Rated voltage	Rated power	Rated speed	Rated load	Rated current	Back-EMF constant (25 °C)	Torque constant (25 °C)
Coil	U [VDC]	P [W]	n [min ⁻¹]	M [Ncm]	I [A]	K _E [V/1000 min ⁻¹]	K _T [Ncm/A]
3/106	12	77	3700	20	9.9	3.0	2.9
	15	96	4800	19	10.0		
5/100	18	140	3400	38	10.0	5.0	4.7
	24	180	4700	37	10.0		
7/90	27	200	5400	36	10.0	6.9	6.6
	36	270	5100	50	9.4		
10/75	24	160	1900	82	9.7	9.9	9.5
	48	300	4700	60	7.7		
15/63	36	180	1900	90	7.2	15.0	14.0
	48	250	2800	84	6.8		
17/56	72	310	4700	63	5.4	17.0	16.0
	36	140	1600	85	6.0		
22/47,5	48	200	2400	80	5.7	22.0	21.0
	60	250	3200	75	5.4		
22/47,5	72	280	4000	67	4.9	22.0	21.0
	48	140	1600	84	4.6		
	60	190	2300	80	4.4		
22/47,5	72	230	2900	76	4.2	22.0	21.0
	80	250	3300	73	4.1		

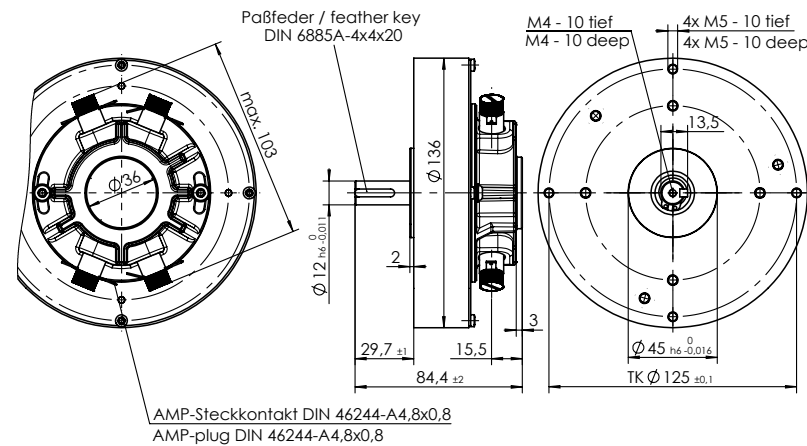
► m = 1.8 kg ► J = 3.5 kg · cm²

SL 120-2NFB

Disc motor variant 120-2NFB with brushes is equipped with enlarged neodymium iron boron magnets.



DIMENSIONS



TECHNICAL DATA

	Rated voltage	Rated power	Rated speed	Rated load	Rated current	Back-EMF constant (25 °C)	Torque constant (25 °C)
Coil	U [VDC]	P [W]	n [min ⁻¹]	M [Ncm]	I [A]	K _E [V/1000 min ⁻¹]	K _T [Ncm/A]
3/106	12	100	2300	41	11.0	4.8	4.6
	18	150	3600	40	12.0		
	24	210	2900	70	11.0		
5/100	30	270	3700	70	11.0	8.1	7.7
	36	240	4500	50	8.7		
7/90	24	180	1900	90	9.7	11.0	10.0
	36	280	3100	85	9.7		
	48	290	4300	65	7.7		
10/75	36	270	2000	130	9.6	16.0	15.0
	48	340	2800	115	8.7		
	60	350	3700	90	7.1		
	72	290	4600	60	5.1		
15/63	48	260	1700	145	7.1	24.0	23.0
	60	320	2300	135	6.7		
	72	360	2900	120	6.0		
	80	380	3200	114	5.8		
17/56	48	200	1400	138	5.9	27.0	26.0
	60	270	2000	130	5.6		
	72	310	2400	122	5.4		
	80	340	2800	116	5.2		
22/47,5	48	150	1000	140	4.6	35.0	34.0
	60	200	1400	135	4.5		
	72	250	1800	133	4.5		
	80	260	2000	126	4.3		

► m = 1.9 kg ► J = 3.5 kg · cm²

SL TECHNICAL DATA

TECHNICAL DATA AND INFORMATION

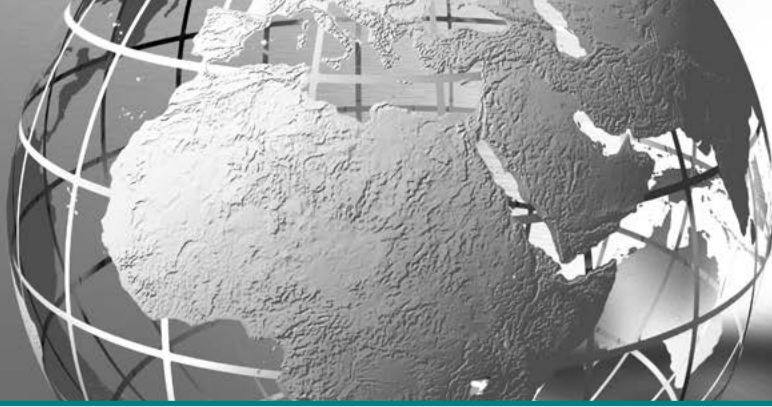
Motor type	Permanently excited DC motor in disc armature technology
General regulations	Complying with IEC 60034
Operational mode	S1 (continuous duty)
Cooling	Without cooling fan, without cooling circuit, mounting at adequate cooling surface is recommended
Permissible ambient temperature	-10 ... +40 °C
Pairs of poles	4
Magnetic material	Ferrite (F) Neodymium iron boron (1 NFB, 2 NFB), 1, 2 indicates size of magnets
Electrical connection	According to motor size and customer's request: flat connectors, free cable
Electric strength	According to DIN EN 60034
Thermal class	F (155 °C)
Degree of protection	IP44, alternatives obtainable on request
Mounting orientation	Arbitrary
Shaft	Customised, shaft end on request
Optional extensions	Gearbox, tachometer generator, encoder, holding break
Temperature sensor	On request
Kind of surface	Steel: zinc coating Aluminium: uncoated

PERMISSIBLE FORCES

for 20,000 hours lifespan.

Radial force FR [N] at n rpm					
Speed	1500	3000	4500	6000	7000
Motor type					
SL 100-F / SL 120-F / SL 100-1NFB	303	263	223	183	156
SL 100-2NFB	360	300	260	230	220
SL 120-1NFB	303	263	223	183	156
SL 120-2NFB	360	300	260	230	220

Axial force FA [N] at n rpm					
Speed	1500	3000	4500	6000	7000
Motor type					
SL 100-F / SL 120-F / SL 100-1NFB	61	53	45	37	31
SL 100-2NFB	87	75	64	52	45
SL 120-1NFB / SL 120-2NFB	104	90	77	63	54



HEINZMANN GROUP – THINKING IN DRIVE AND CONTROL

HEINZMANN is a globally active family business founded in 1897 with its headquarters in Schöna u (Germany), in the Black Forest.

Today, in the field of engine management HEINZMANN is one of the leading suppliers of components and systems for industrial combustion engines, generators and turbines. As a specialist and development partner, HEINZMANN is committed to developing exactly the right solution for increasing efficiency and reducing emissions.

In the Electric Drives division, HEINZMANN also demonstrates innovative strength and development expertise in engine technologies of the future. The company has established itself as a reliable partner and system provider for electric drive systems.

Our collaborative interaction with more than 40 globally active subsidiaries and sales companies characterizes the spirit within the HEINZMANN group of companies and makes us a reliable partner.

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