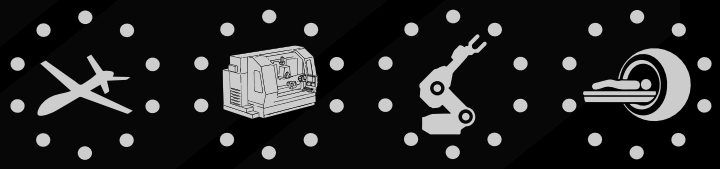
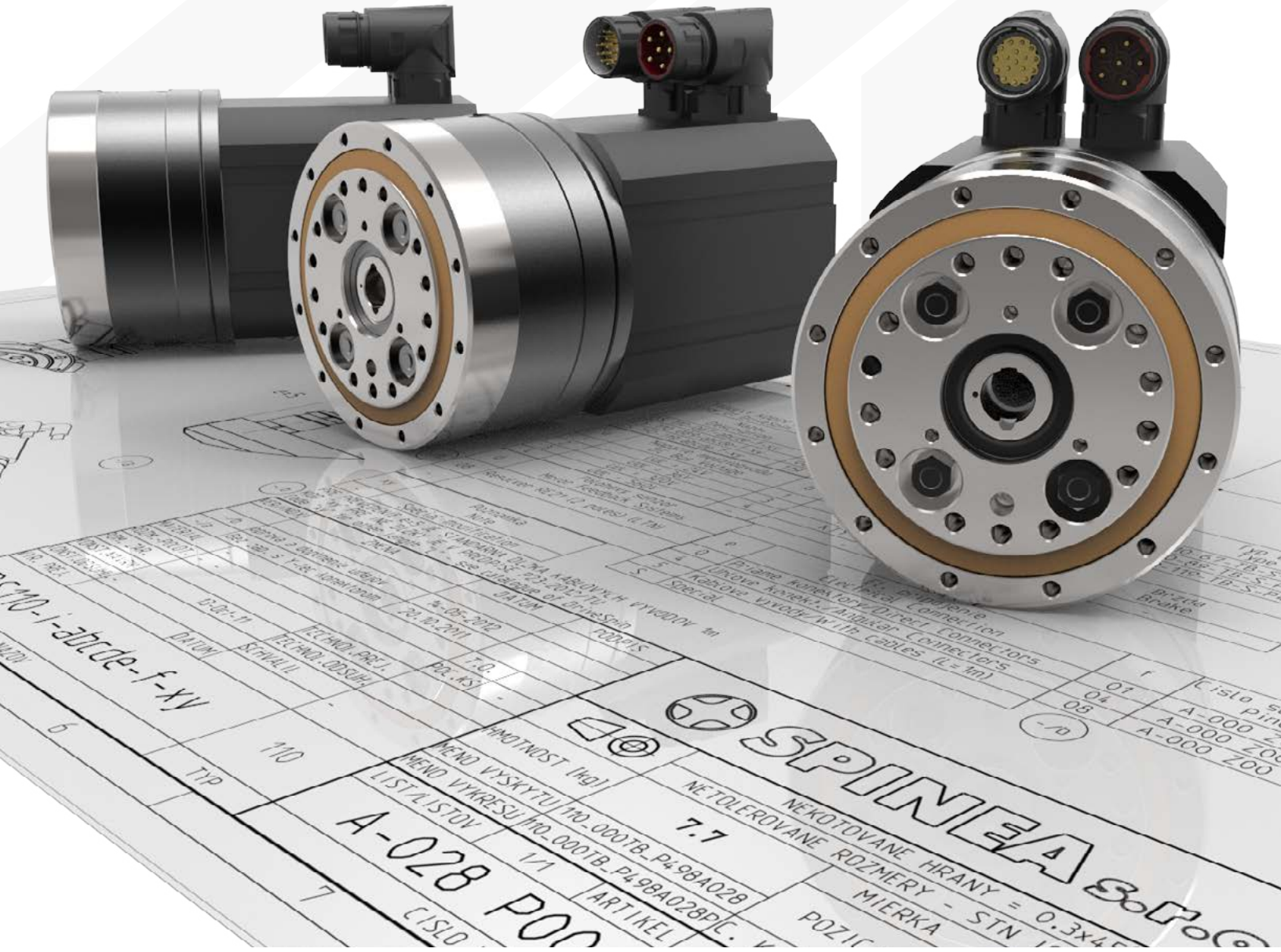
DriveSpin DS/DSH/DSM 110

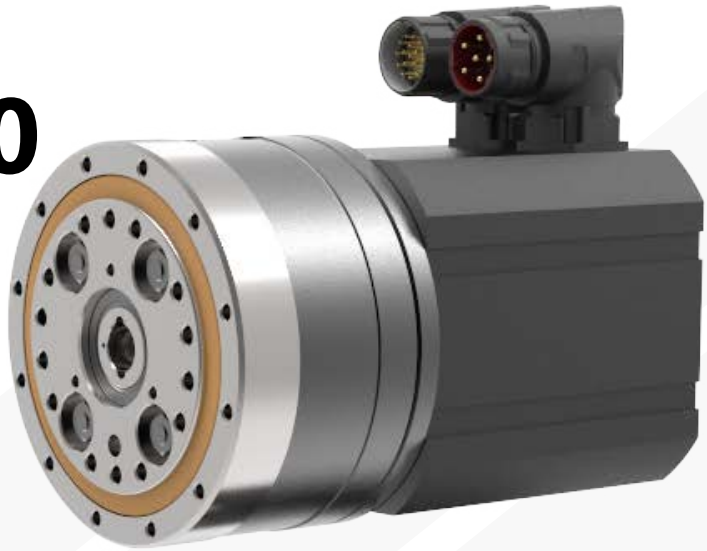
The high precision DriveSpin DS 110 actuators currently represent the largest serially produced member of the DriveSpin product range, meeting even the most demanding requirements of customers from all industries. With their optimal price/performance ratio, they reliably provide parameters such as high accuracy and precision, high tilting and torsional stiffness, low weight, compactness, low vibrations, and a wide range of suitable technical solutions.



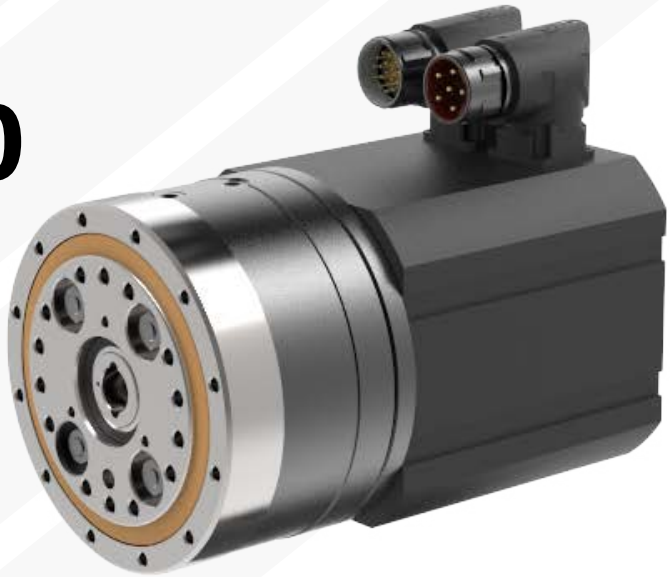
- LOW LOST MOTION,
- LOW MOMENT OF INERTIA,
- HIGH REDUCTION RATIO,
- HIGH KINEMATIC ACCURACY,
- HIGH MOMENT OVERLOAD CAPACITY,
- HIGH CAPACITY OF THE INTEGRATED RADIAL-AXIAL OUTPUT BEARINGS,
- HIGH DYNAMIC PERFORMANCE.


SPINEA
A-028
7.7

DS 110

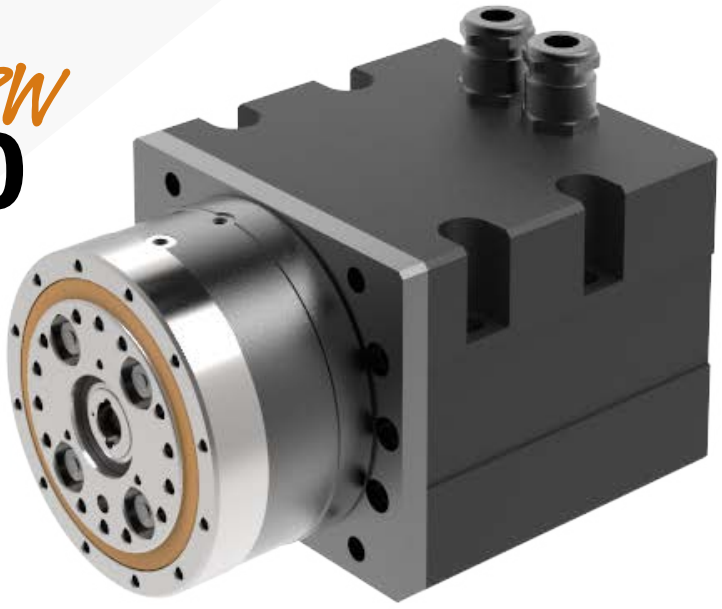


DSH 110



New

DSM 110



DS - DriveSpin Standard

The DriveSpin electric rotary actuators, as the basic type of actuators, provide rotary motion and the transfer of output torque with a high radial-axial load capacity and are the most accurate and precise solution in their category. The DS actuators are characterized by high dynamics, guaranteed by an AC servomotor, and high robustness and overload capacity of their reduction gears. The voltage and feedback variability will widely satisfy all of customers' requirements.

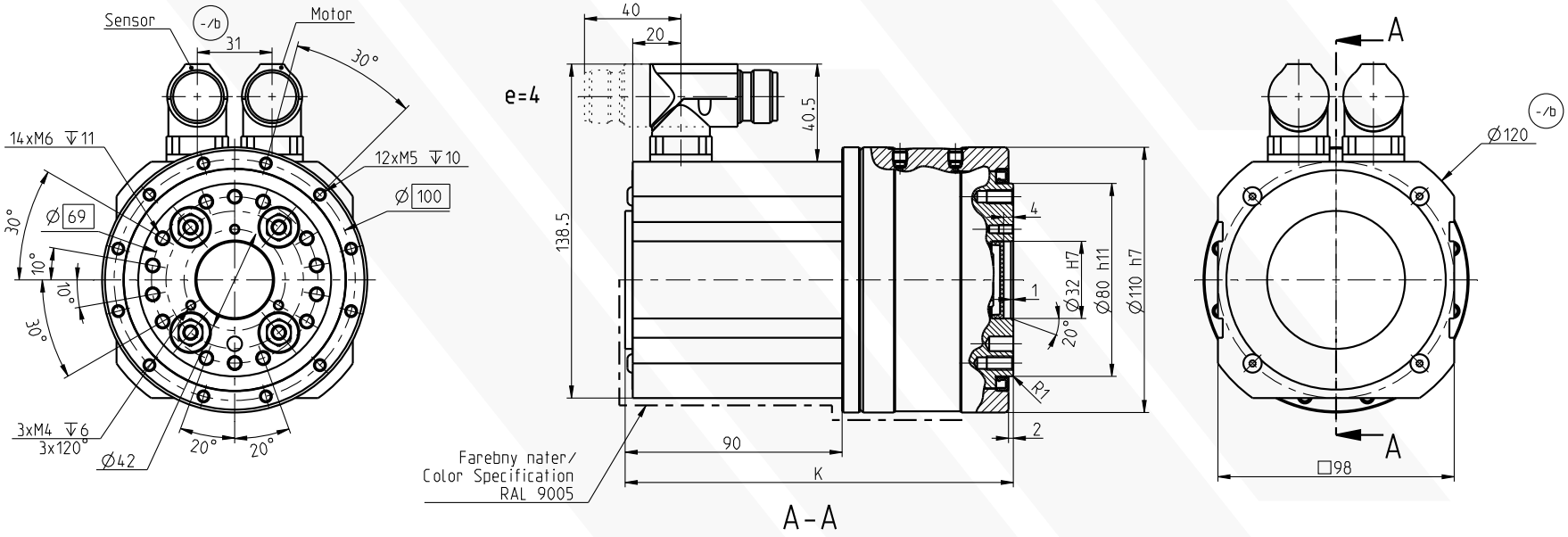
DSH - DriveSpin Hollowshaft

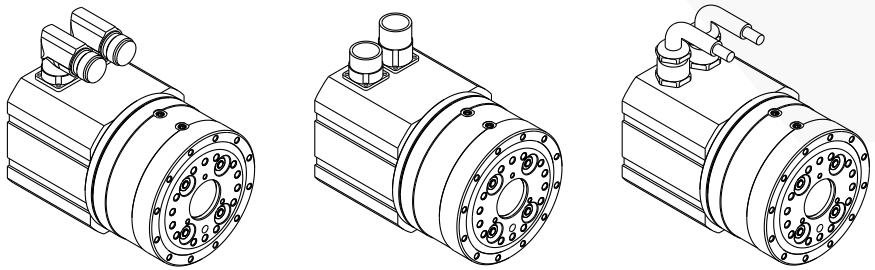
The DSH electric actuators are characterized by the possibility to use a through hole for routing cables, pipes, and drive shafts while maintaining the radial-axial and torque load capacity and the characteristic high overload capacity of the reduction gear and of the AC servomotor, featuring high dynamics. The voltage and feedback variability will widely satisfy all of customers' requirements.

DSM - DriveSpin Modular

The DSM modular rotary positioning modules provide controlled rotary motion and transfer of torque with a high positioning accuracy and precision. The output flange of the module allows to capture both radial and axial forces. The modules feature a special design of the case, which allows versatile connections, also without additional devices. The good design integration ability and small dimensions allow to create kinematic assemblies from DSM modules for end effectors, but also for additional devices and positioners. The selection of a module size depends on the required load-carrying capacity and the number of degrees of freedom of the motion axis.

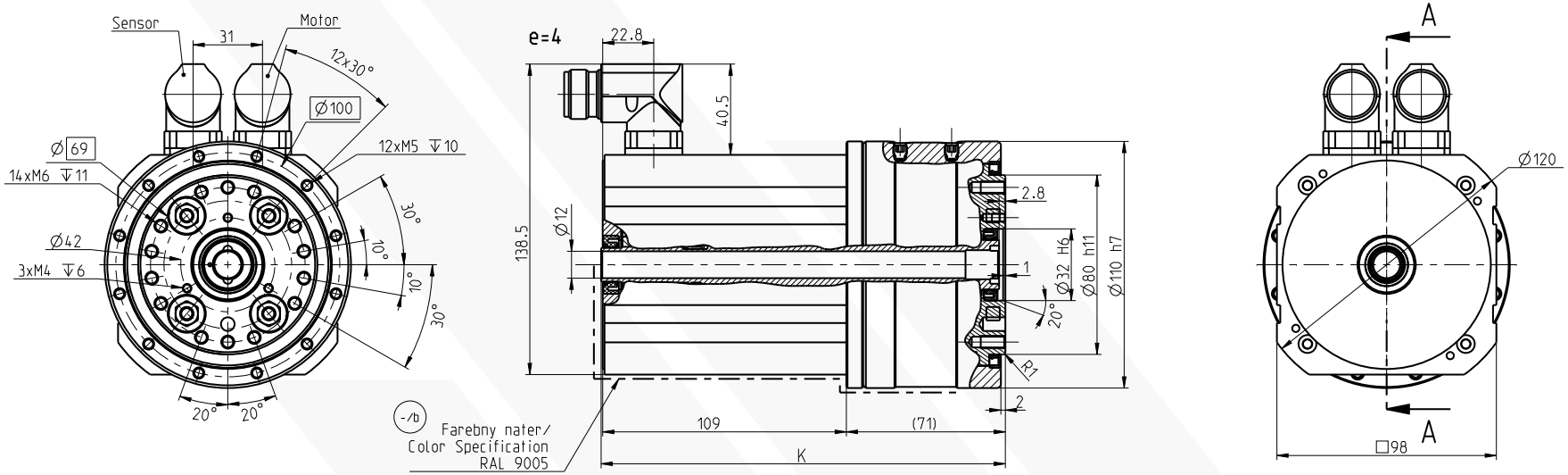
DS 110

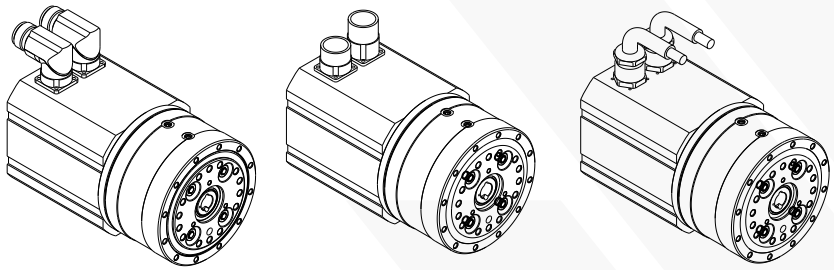




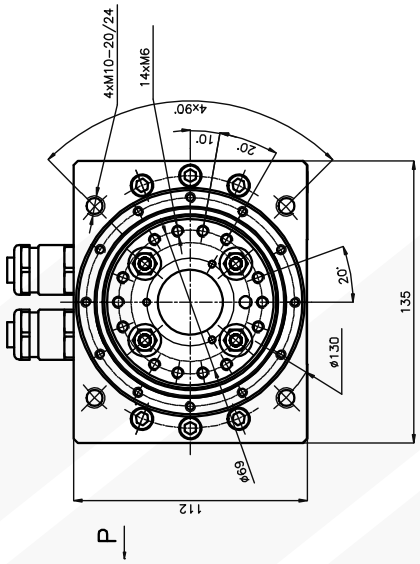
Dimension K	Without brake	With brake
Resolver	161 mm	212.3 mm
Sin/Cos	202.4 mm	241.2 mm
EnDat	202.4 mm	241.2 mm
HIPERFACE	193 mm	244.5 mm

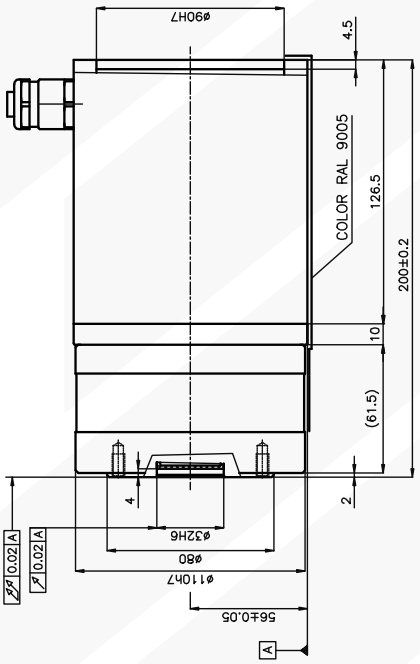
DSH 110

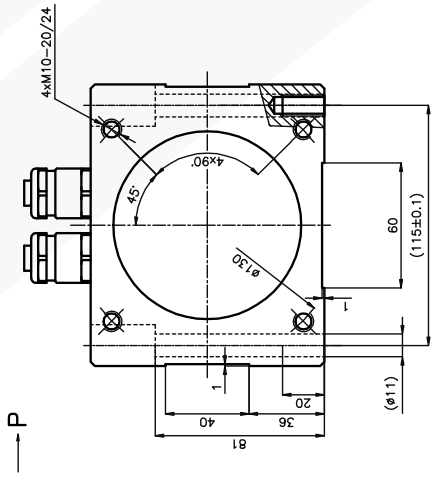


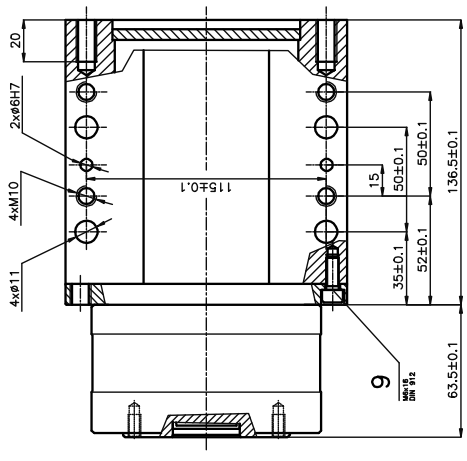


Dimension K	Without brake	With brake
Resolver	180.5 mm	-









DSM 110

SPINEA TECHNOLOGIES

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
D	S	*	-	1	1	0	-	0	6	7	-	3	1	B	0	7	6	-	1	2	-	X	X

Type designation
DS - standard
DSH - hollowshaft
DSM - modular

Actuator size

Reduction ratio
067
089
119

DC bus voltage
1: 24 VDC
2: 36 VDC
3: 320 VDC
4: 560 VDC
S: Special upon request

Temperature sensor
1: PTC 11-K13
3: KTY 83-110
4: KTY 84-130

Sensor type
01: Resolver RE15-1-A14 (2-pole) LTN
02: Multi-turn absolute encoder EQN 1325 (8192 x 4096) Heidenhain
03: Incremental encoder, ~1Vpp, ERN 1387 (2048) Heidenhain
04: Absolute encoder ECN 1313 (2048) Heidenhain
08: Resolver (2-pole) (only for Hollowshaft version)
09: Multi-turn absolute encoder Hiperface SRM50 - Sick/Stegman
10: Single-turn absolute encoder Hiperface SRS50 - Sick/Stegman
21: Multi-turn absolute encoder HIPERFACE DSL
22: Single-turn absolute encoder HIPERFACE DSL

Brake
0: No
B: Yes

Type of electrical connection
0: Straight connectors, perpendicular to center line
4: Angled rotable connectors
5: With terminal cable (L = 1 m)
S: Special upon request

Wiring diagram

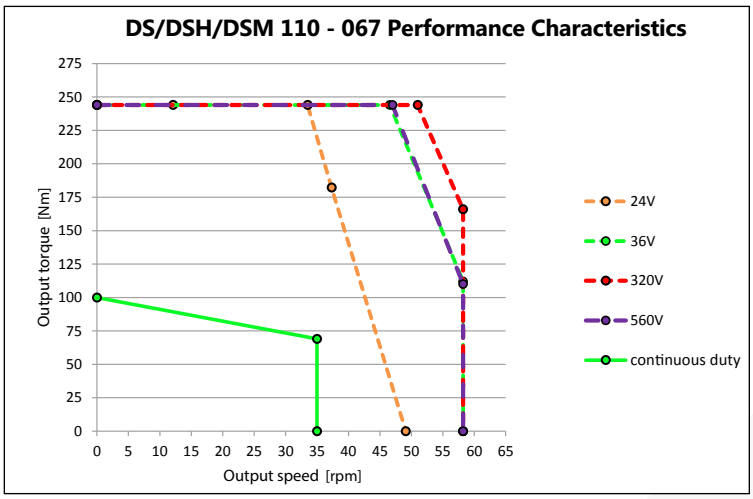
Special modification
Terminal cable length

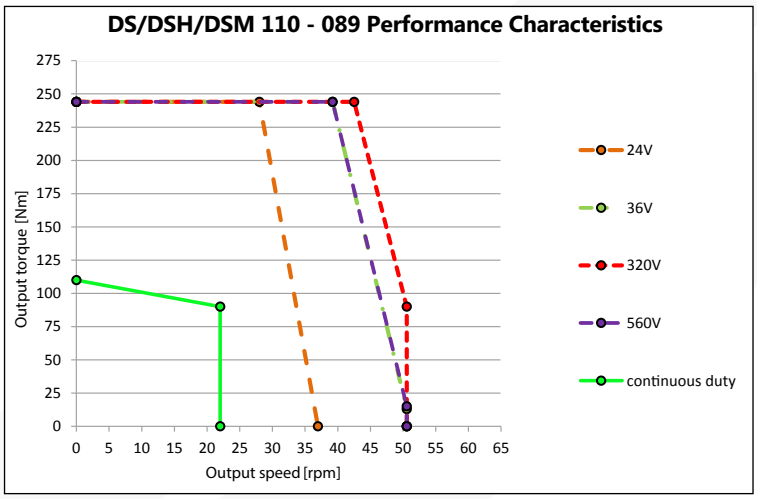
DS Actuator			DS 110/DSH 110/DSM 110			
Reduction ratio	I		67, 89, 119			
Rated output torque	T_r	Nm	122			
Acceleration/braking output torque	T_{max}	Nm	244			
Rated input speed of the reduction gear	n_r	min^{-1}	2000			
Maximum allowed input speed of the reduction gear	n_{max}	min^{-1}	3900/4500*			
Tilting stiffness 1) 5)	M_t	Nm/arcmin	150			
Torsional stiffness 1) 6)	k_t	Nm/arcmin	22			
Maximum lost motion	LM	arcmin	<1.0			
Hysteresis	H	arcmin	<1.0			
Maximum tilting moment 2) 3)	$M_{c\,max}$	Nm	740			
Rated radial force 2)	F_{rR}	kN	9.3			
Maximum axial force 2) 4)	$F_{a\,max}$	kN	13.1			
Allowed temperature range		°C	-10 °C to +40 °C			
Reduction gear maximum allowed temperature		°C	65 °C			
Servo inverter DC bus voltage	U_{dc}	V	24	36	320	560
Servomotor rated speed	n_n	min^{-1}	2500	3000	3000	3000
Servomotor rated output torque	M_n	Nm	3.4	3.2	3.2	3.2
Servomotor rated current	I_n	A	38.5	40.1	5	2.8
Servomotor brake holding torque	M_o	Nm	4.1	4.1	4.1	4.1
Servomotor brake holding current	I_o	A	44.9	48.6	6	3.4
Servomotor maximum torque	M_{max}	Nm	11.1	11.1	11.1	11.1
Servomotor maximum current	I_{max}	A	179	194	24.1	13.6
Servomotor EMF constant	K_E	V/1000	5.5	5	40.5	72
Servomotor torque constant	K_T	Nm/A	0.09	0.08	0.67	1.19
Terminal resistance	R_{2ph}	Ω	0.02	0.02	1.24	4.0
Terminal inductance	L_{2ph}	mH	0.20	0.17	10.6	34.0
Number of poles	2p	pol	10	10	10	10
Electrical time constant	T_{el}	ms	10	8.5	8.5	8.5
Mechanical time constant	T_{mech}	ms	0.71	0.86	0.81	0.83
Thermal time constant	T_{th}	min	29			
Nominal brake voltage		V	24			
Electromagnetic brake braking torque		Nm	4.5			
Protection class			IP64 as standard			
Lubricant			Grease Castrol Optitemp TT1			
Paint			black RAL 9005			
Insulation class			F			

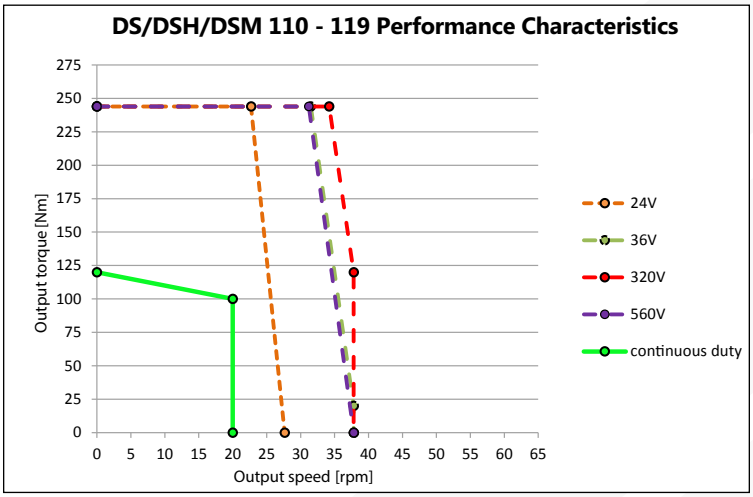
**3900 min^{-1} for reduction ratio 67, 4500 min^{-1} for reduction ratio 89 and 119.*

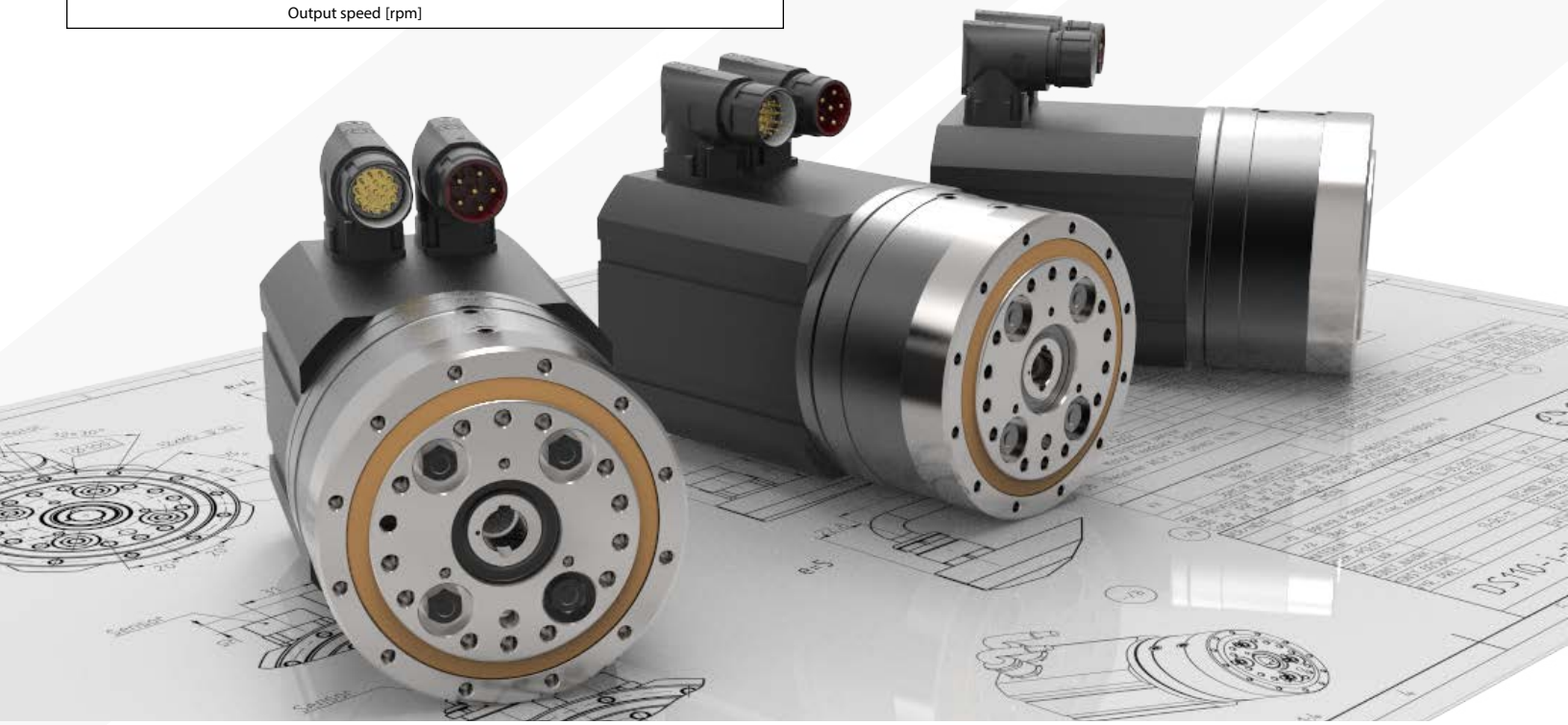
SUBJECT TO CHANGES WITHOUT PRIOR NOTICE

1) *Mean statistical value. For further information, see Chapter 9, Tilting Stiffness and Torsional Stiffness.*
2) *Load at output speed 15 rpm.*
3) *Tilting moment $M_{c\,max}$ value at F_a=0. If F_a≠0 see Chapter 9, Tilting Moment, of this document.*
4) *Axial force $F_{a\,max}$ value at M_c=0. If Mc≠0 see Chapter 9, Tilting Moment, of this document.*
5) *The parameter depends on the high precision reduction gear model.*
6) *The parameter depends on the high precision reduction gear model, reduction ratio, and lost motion value.*
7) *Moment of inertia and Weight. For further information, see Chapter 9, Moment of inertia and Weight, of this document.*


DS/DSH/DSM 110 - 067 Performance Characteristics
Output torque [Nm]
Output speed [rpm]
24V
36V
320V
560V
continuous duty


DS/DSH/DSM 110 - 089 Performance Characteristics
Output torque [Nm]
Output speed [rpm]
24V
36V
320V
560V
continuous duty


DS/DSH/DSM 110 - 119 Performance Characteristics
Output torque [Nm]
Output speed [rpm]
24V
36V
320V
560V
continuous duty



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