



WITTENSTEIN

motion control

Stainless Steel Rotary Servo Actuator in Hygienic Design

More resistant
More compact
More compatible

axenia value



axenia

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Hygienic Design

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Overview - axenia value

The compact axenia servo actuator was specially developed and produced for challenging applications. It is made from highly resistant stainless steel and is therefore durably resistant against numerous aggressive media such as cleaning agents and disinfectants. Furthermore, it provides a highly precise and dynamic connection between motor and gearhead.

Your technical benefits

- Hygienic design: Cavity-free design
- Long service life through use of CIP-compatible materials
- Integrated, optimized actuator sealing concept
- Resistant against aggressive cleaning agents and disinfectants
- Foodstuff-compatible lubrication
- Powerful motor performance
- Low gearhead torsional backlash

Your benefits

- Simple and hygienic cleaning
- Smaller machines possible
- No complicated encapsulation
- Fewer wearing parts in the machine
- Low drive failure probability
- Low maintenance and repair costs

Fields of application

Suitable for any field of application where hygiene is the highest priority, aggressive cleaning agents are used and precise drives are required.

Particularly in the following industries, the stainless steel servo actuator shows its strengths:

- Food industry
- Pharmaceutical industry
- Textile industry
- Medical industry
- Packaging industry

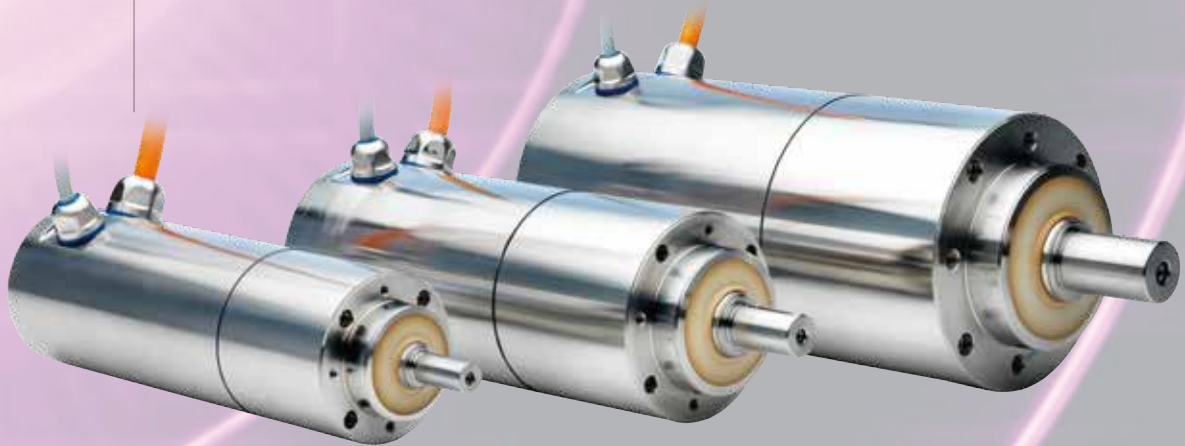


axenia value

More resistant - More compact - More compatible

At a glance:

- Three sizes
- Max. acceleration torque up to 200 Nm
- Ratios: 16 to 100
- Large selection of encoder systems
- With or without brake
- Protection class IP69K (at 30 bar)



axenia value 060

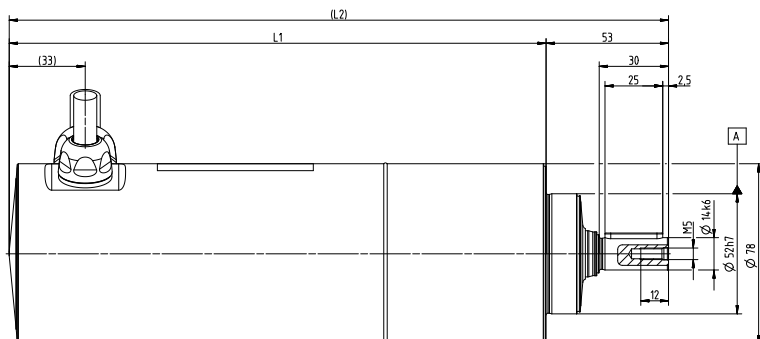
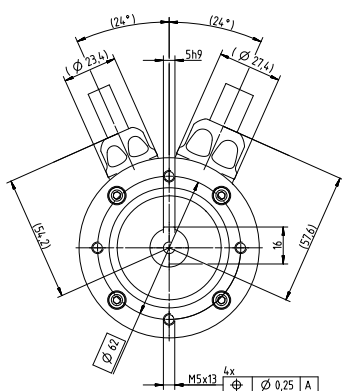
Technical data

Ratio	i	16	20	25	50	70	100	
Intermediate circuit voltage	V DC	560						
Max. acceleration torque at output	Nm	21	26	32	30	32	29	
Static output torque	Nm	7.5	9.4	11.8	8.2	11.5	15	
Brake holding torque at output (100°C)	Nm	17.6	22	27.5	55 (1)	77 (1)	–	
Max. speed	rpm	375	300	240	120	86	60	
Max. motor acceleration torque	Nm	1.4			0.7			
Max. motor acceleration current	A	2.3			1.7			
Actuator mass moment of inertia at MS	kgcm ²	0.35			0.28			
Backlash	arcmin	≤ 15						
Torsional rigidity	Nm/arcmin	2.3					2	
Max. axial force	N	1000						
Max. radial force (relative to shaft center at 100 rpm)	N	1600						
Bearing lifespan	h	20000						
Weight (with resolver, without brake)	kg	6						
Operating noise (at n1 = 3000 rpm)	dB(A)	≤ 60						
Max. perm. motor surface temperature	°C	135						
Max. perm. gearhead surface temperature	°C	90						
Insulating material class		F						
Ambient temperature	°C	0 to +40						
Protection class		IP69K (2)						
Lubrication		Lubricated for life H1						
Mount. pos.		Any (3)						

(1) greater than T2B of the gearhead. In an emergency, can be used approx. 1000 times while the motor is rotating.

(2) at 30 bar, based on DIN40050-9.

(3) preferably horizontal mounting position with cable outlet facing downwards.

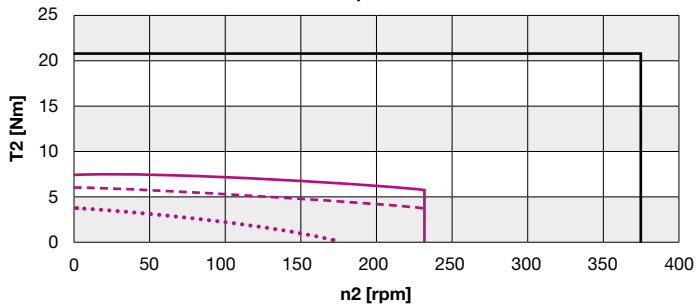




Char. curves

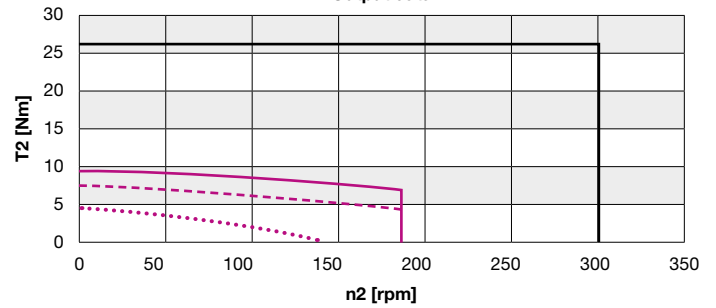
AXV 060_-016_-6__1-053B-K_-000

Output data



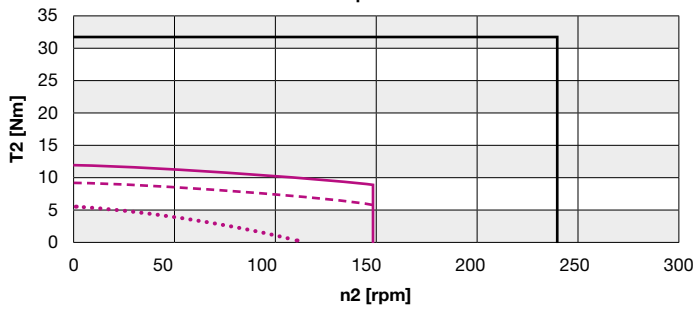
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Output data



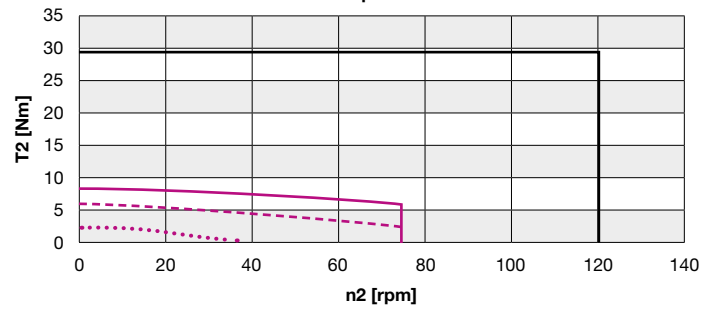
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Output data



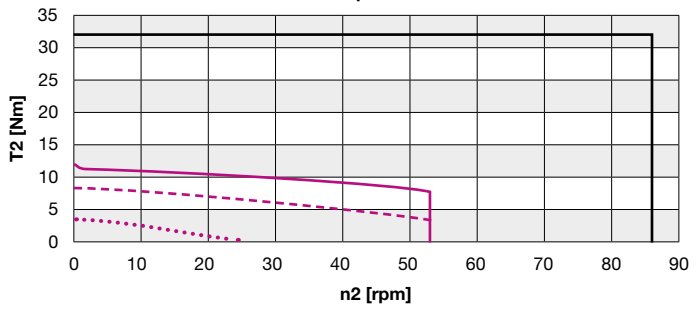
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Output data



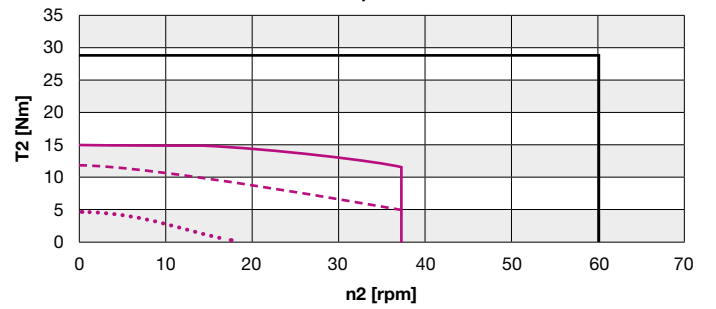
AXV 060_-070_-6__1-053A-K_-000

Output data



AXV 060_-100_-6__1-053A-K_-000

Output data



- Short-term maximum torque
- Permanent torque curve S1
- - - Permanent torque curve S1
50K over ambient temperature
at surface
- Permanent torque curve S1
30K over ambient temperature
at surface

Ratio	Length L1 [mm]	Length L2 [mm]
Dual-stage (16, 20, 25, 50, 70, 100)	229	282

axenia value 080

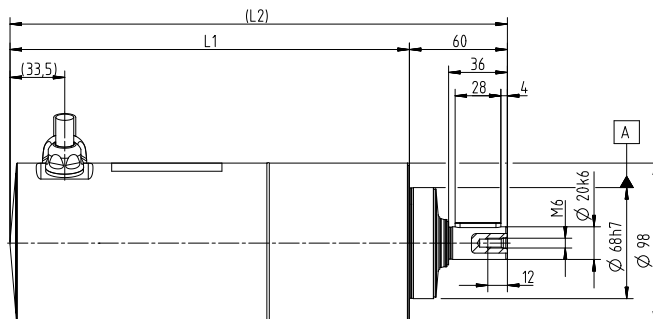
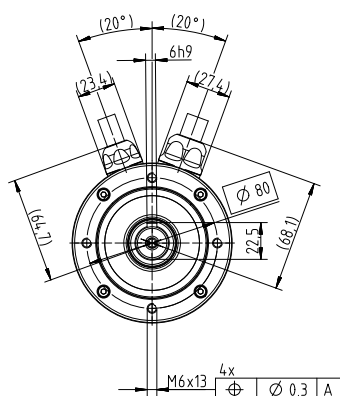
Technical data

Ratio	i	16	20	25	50	70	100	
Intermediate circuit voltage	V DC	560						
Max. acceleration torque at output	Nm	50	62	78	48	67	72	
Static output torque	Nm	21	26.2	32.8	15	21	30	
Brake holding torque at output (100°C)	Nm	18	17.6	27.5	55	77	110 (1)	
Max. speed	rpm	375	300	240	120	86	60	
Max. motor acceleration torque	Nm	3.4			1.24			
Max. motor acceleration current	A	4.4			1.77			
Actuator mass moment of inertia at MS	kgcm ²	0.98			0.7			
Backlash	arcmin	≤ 15						
Torsional rigidity	Nm/arcmin	7.5					5.5	
Max. axial force	N	1500						
Max. radial force (relative to shaft center at 100 rpm)	N	2500						
Bearing lifespan	h	20000						
Weight (with resolver, without brake)	kg	11.5						
Operating noise (at n1 = 3000 rpm)	dB(A)	≤ 63						
Max. perm. motor surface temperature	°C	135						
Max. perm. gearhead surface temperature	°C	90						
Insulating material class		F						
Ambient temperature	°C	0 to +40						
Protection class		IP69K (2)						
Lubrication		Lubricated for life H1						
Mount. pos.		Any (3)						

(1) greater than T2B of the gearhead. In an emergency, can be used approx. 1000 times while the motor is rotating.

(2) at 30 bar, based on DIN40050-9.

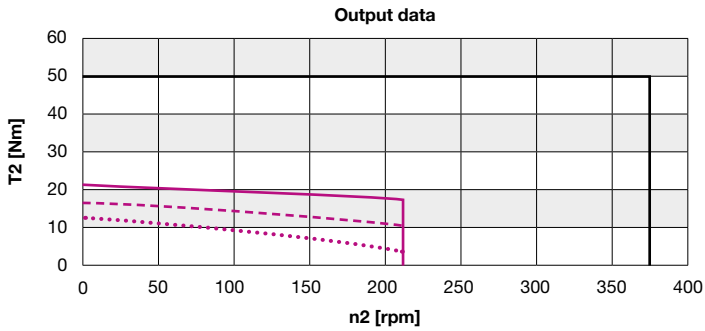
(3) preferably horizontal mounting position with cable outlet facing downwards.



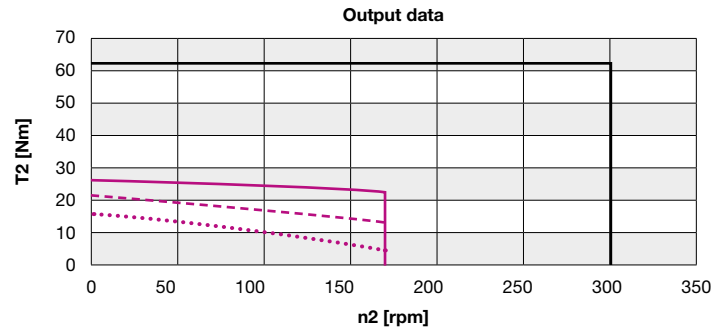


Char. curves

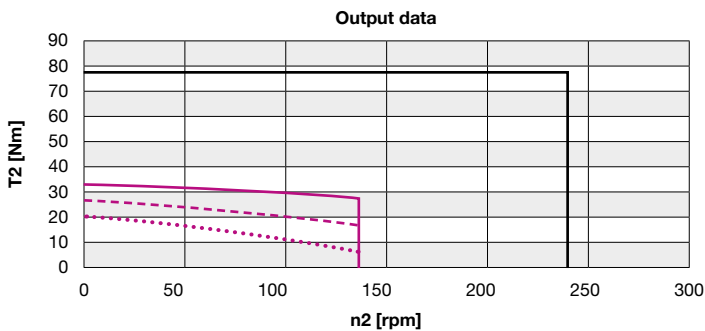
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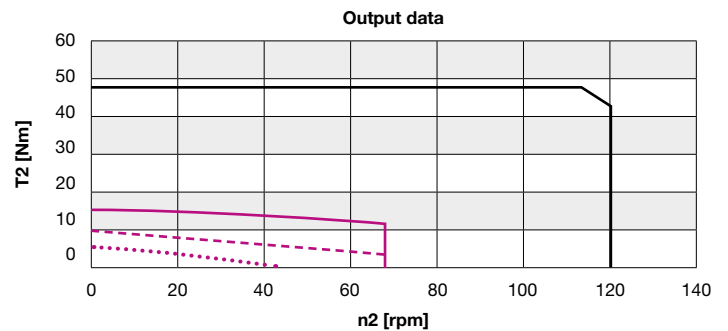
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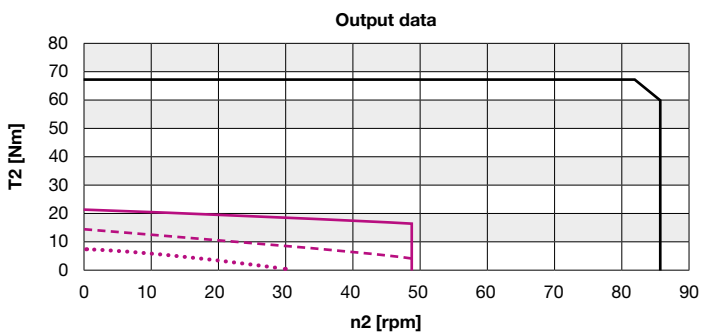
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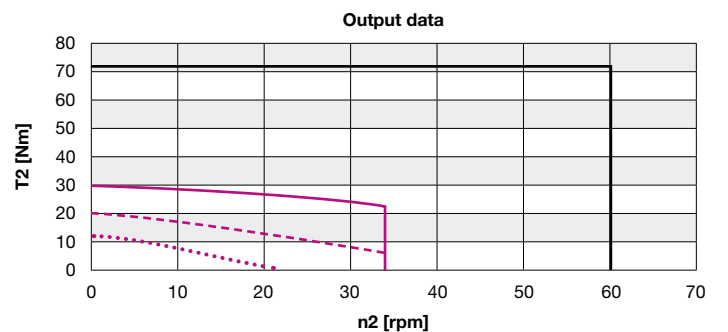
AXV 080_-050_-6_1-064A-K_-000



AXV 080_-070_-6_1-064A-K_-000



AXV 080_-100_-6_1-064A-K_-000



- Short-term maximum torque
- Permanent torque curve S1
- - - Permanent torque curve S1
- 50K over ambient temperature at surface
- Permanent torque curve S1
- 30K over ambient temperature at surface

Ratio	Length L1 [mm]	Length L2 [mm]
Dual-stage (16, 20, 25, 50, 70, 100)	244.5	304.5

axenia value 115

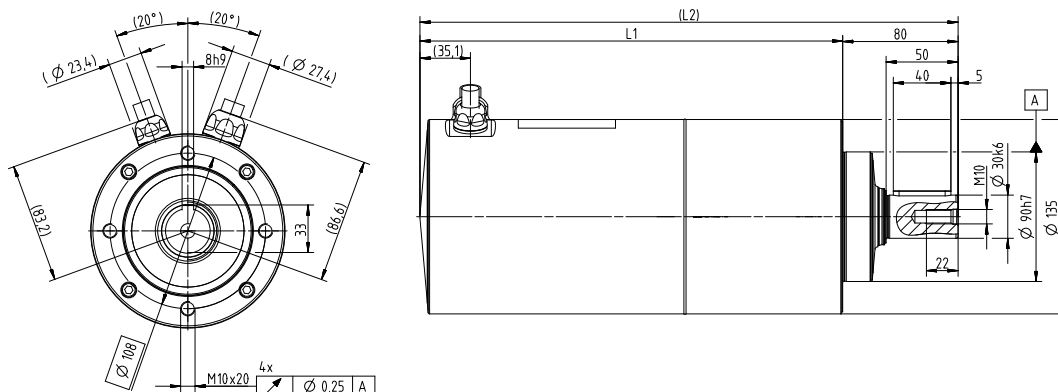
Technical data

Ratio	i	16	20	25	50	70	100	
Intermediate circuit voltage	V DC	560						
Max. acceleration torque at output	Nm	145	181	200	152	200	180	
Static output torque	Nm	57	71	88	42	58	83	
Brake holding torque at output (100°C)	Nm	72	90	113	225 (1)	315 (1)	450 (1)	
Max. speed	rpm	300	240	192	96	69	48	
Max. motor acceleration torque	Nm	9.55			3.53			
Max. motor acceleration current	A	12.9			4.8			
Actuator mass moment of inertia at MS	kgcm ²	3.73			2.51			
Backlash	arcmin	≤ 15						
Torsional rigidity	Nm/arcmin	24					22	
Max. axial force	N	3000						
Max. radial force (relative to shaft center at 100 rpm)	N	4250						
Bearing lifespan	h	20000						
Weight (with resolver, without brake)	kg	21						
Operating noise (at n1 = 3000 rpm)	dB(A)	≤ 68						
Max. perm. motor surface temperature	°C	135						
Max. perm. gearhead surface temperature	°C	90						
Insulating material class		F						
Ambient temperature	°C	0 to +40						
Protection class		IP69K (2)						
Lubrication		Lubricated for life H1						
Mount. pos.		Any (3)						

(1) greater than T2B of the gearhead. In an emergency, can be used approx. 1000 times while the motor is rotating.

(2) at 30 bar, based on DIN40050-9.

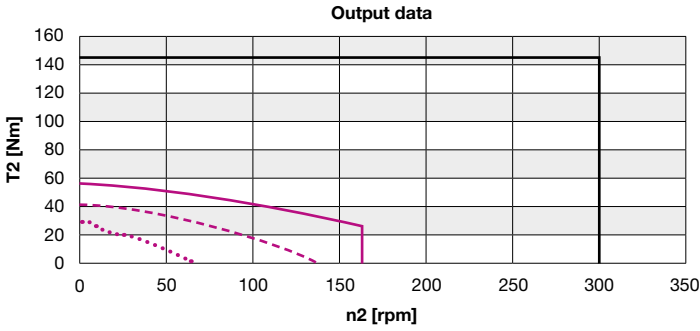
(3) preferably horizontal mounting position with cable outlet facing downwards.



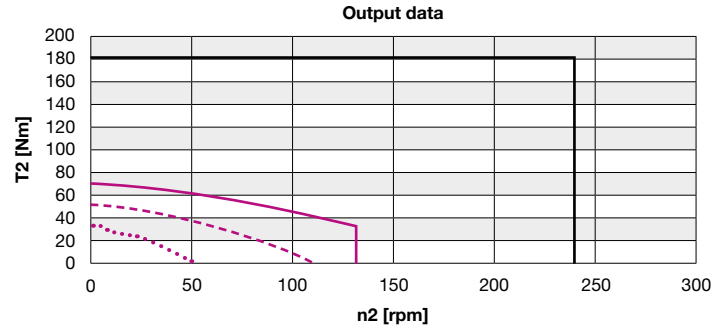


Char. curves

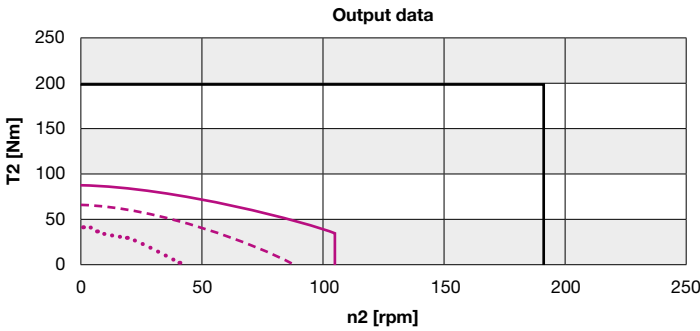
AXV 115_-016_-6__1-094C-K_-000



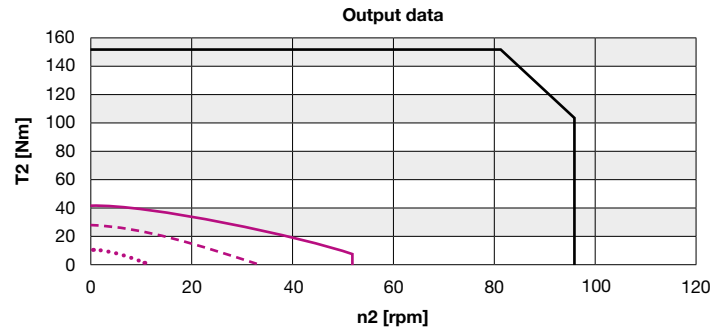
AXV 115_-020_-6__1-094C-K_-000



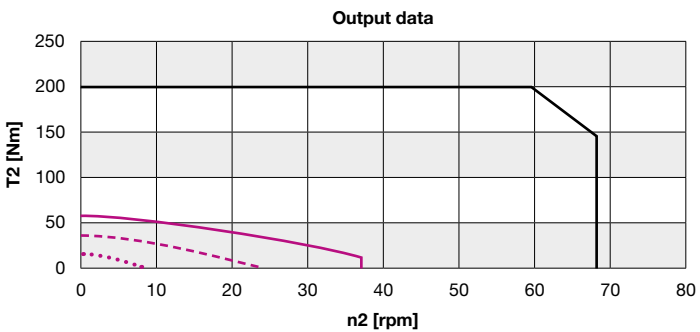
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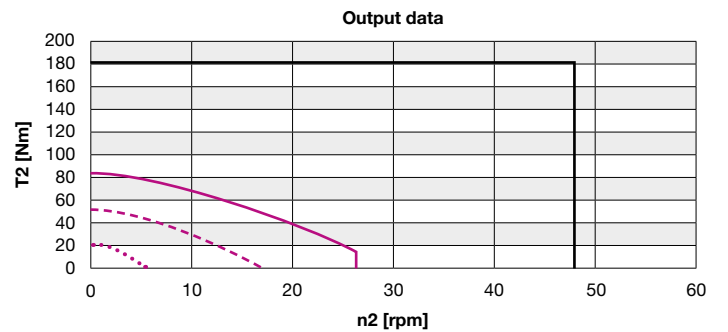
AXV 115_-050_-6__1-094A-K_-000



AXV 115_-070_-6__1-094A-K_-000



AXV 115_-100_-6__1-094A-K_-000



- Short-term maximum torque
- Permanent torque curve S1
50K over ambient temperature at surface
- - - Permanent torque curve S1
30K over ambient temperature at surface
- Permanent torque curve S1
30K over ambient temperature at surface

Ratio	Length L1 [mm]	Length L2 [mm]
Dual-stage (16, 20, 25, 50, 70, 100)	293.6	373.6

Options

Design (lubrication)

All gearheads are lubricated for life with a foodstuff-compatible synthetic grease (hydrocarbon oil, aluminum complex soap, type UH1 14-151, Klüber) or with a mineral oil-based lithium soap grease (type Longtime PD 1, Castrol).

Feedback systems

A selection of encoder systems is available for positioning and speed measurement.

Standard:

- Resolver, 2-pin, 1 sin/cos cycle per rotation

Optional:

- Single-turn, EnDat 2.1 with 1V_{SS}, 512 S/R
- Multi-turn, EnDat 2.1 with 1V_{SS}, 512 S/R, 4096 R
- Hiperface, single-turn, 128 S/R
- Hiperface, multi-turn, 128 S/R, 4096 R
- TTL incremental encoder with hall signals and rectangular incremental signals 2048 S/R
- other encoder types available on request

Operating voltage

The technical data on pages 6, 8, and 10 are based on an intermediate circuit voltage of 560 V DC. Other voltages are available on request.

Temperature sensors

Different sensors are available to protect the motor coil from overheating.

Standard:

- PTC resistor, type STM 160 according to DIN 44081/82
- KTY resistor, type KTY 84-130

Holding brake

A compact permanent magnet brake is fitted to secure the motor shaft when the actuator is disconnected from the power. Characteristics include no torsional backlash, no residual torque when the brake is released, unlimited duty cycles at zero speed and a constant torque at high operating temperatures.

Size		060 and 080	115
Holding torque at 100°C	Nm	1.1	4.5
Power supply	V DC	24 +6% / -10%	
Current	A	0.42	0.42

Please refer to our project planning note on page 14.

Backlash

The standard backlash of the gearheads is ≤ 15 arcmin.

Motor size

The motor sizes are defined in accordance with the selected ratios.

Size	060	080	115
Ratio: 16, 20, 25	053A	064C	094C
Ratio: 50, 70, 100	053B	064A	094A

Cables

The actuators are equipped with a cable as standard (1 meter length, clean cut end). The cable can optionally be ordered in 3, 5, 10, 15, 20, 25 and 30 meter lengths. The termination of the cables on the controller side can be implemented to customer requirements.

Please refer to our Instructions for Use for further information on cables and their color assignments.

axenia value mounting kit

A special mounting kit is available for all sizes. This comprises:

- O-rings for the output shaft, inner and outer shoulder of the gearhead housing
- Stainless steel screws and washers for housing and output shaft

Article codes:

Size 060: 20058221

Size 080: 20058222

Size 115: 20058220

Order code

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0									
A	X	V	-	0	8	0	H	-	0	1	6	R	-	6	P	B	1	-	0	6	4	C	-	K	1	-	0	0	0									
Actuator type 3 characters: AXV = axenia value			Subtype _ = space			Size 3 characters: value: 060, 080, 115			Ratio 3 characters: 016 to 100			Version G = Grease filling H = Food grade Grease X = Special model			Operating voltage 6 = 560 V			Temperature sensor P = PTC K = KTY			Brake B = with brake O = without brake			Backlash 1 = Standard			Stator length A = 15 mm B = 30 mm C = 45 mm			Electr. connection K = Cable gland			Special model 3 characters, consecutive			Pin/cable assignment 1 = Temperature sensor in signal cable 4 = Temperature sensor in power cable		
Return system R = Resolver, 2-pole I = Incremental encoder, optical S = EnDat absolute encoder, single turn M = EnDat absolute encoder, multi-turn N = Hiperface absolute encoder, single-turn K = Hiperface absolute encoder, multi-turn T = Incremental encoder with hall signal												Motor size 53 mm 64 mm 94 mm																										

Project planning

Project planning note on brakes

The holding brakes installed in the actuators are subject to various influencing factors, e.g. the oxidation of abrasion particles, the flattening of friction surfaces in the case of frequent brake action at the same position, or the wear-dependent changes to the air gap. This can result in a reduction of the available holding torques.

All the holding torques indicated therefore apply for the ideal state under optimal conditions, without damaging influences. Such influences can be countered by means of a regular brake refresh cycle. For detailed information on the recommended refresh cycles, please refer to our Instructions for Use.

For critical applications, it is recommended to ensure sufficient design safeguards with regard to holding torque in order to take into account the above-mentioned uncertainty factors. Our in-house engineering department will be pleased to assist you with the application sizing.

Material information

The axenia value actuator is made from the following stainless steel materials:

- Gearhead output shaft: 1.4418
- Motor/gearhead housing, cover: 1.4404
- The surfaces are electropolished, surface roughness < Ra 0.8 (µm)
- Cable gland: 1.4404

The seals in the actuator are designed as follows:

- Gearhead output: PTFE
- Cover sealing ring: PUR
- O-ring between motor and gearhead: Fluoroprene
- Cable gland seal: TPU

Protection class information

The actuator complies with protection class IP69K.
IP69K: Dustproof and water resistant at high pressure / steam jet cleaning (max. 30 bar)

All of the axenia value actuator materials which come into contact with the environment are highly resistant against a wide variety of aggressive CIP cleaning agents.



Servo controllers

The axenia actuator can be operated using a wide selection of different servo controllers. The table below contains a selection of servo controllers already tested with the axenia, and provides information to assist in selecting the correct options. You can request a set of quick start instructions containing all the most important information for parametrizing the servo controller. Please take the current consumption of the actuator during selection of the servo controller used.

Manufacturer	Version/Type	Motor feedback				Temperature sensor		DC bus voltage		
		Resolver	EnDat	Hiperface	TTL encoder	PTC	KTY	48 V DC	320 V DC	560 V DC
Bosch Rexroth	IndraDrive	x	x	x	-	x	x	-	x	x
Beckhoff	AX5000	x	x	x	-	x	x	-	x	x
B & R	AcoPos	x	x	x ¹	-	x	x	-	x ²	x
Control techniques	UniDrive SP	x	x	x	x	x	-	-	-	x
Kollmorgen	Servostar 300	x	x	x	x	x	-	-	x	x
	Servostar 700	x	x	x	x	x	-	-	x	x
	AKD	x	x	x	-	x	-	-	x	x
ESR Pollmeier	TrioDrive D/xS	x	x	x	-	x	x	-	x	-
	MidiDrive D/xS	x	x	x	-	x	x	-	-	x
Parker	Compax 3	x	x	x	x	x	-	-	x	x
KEB	Combivert F5-Servo	x	x	x	-	x	-	-	x	x
	Combivert F5-A Servo	x	-	-	-	x	-	-	x	x
Lenze	Global Drive 93xxx	x	-	x	-	x	x	-	-	x
	Global Drive 94xx	x	x	x	-	x	x	-	x	x
	ECS Servosystem	x	-	x	-	x	-	-	x	x
NUM	MDLU 3	-	-	x	-	x	-	-	-	x
Rockwell	Ultra 3000	-	-	x	-	x	-	-	x	x
	Kinetix 6000	-	-	x	-	x	-	-	x	x
	Kinetix 6200	-	-	x	-	x	-	-	x	x
	Kinetix 6500	-	-	x	-	x	-	-	x	x
Siemens	SimoDrive 611U	x	x	-	-	-	x	-	-	x
	SimoDrive 611D	-	x	-	-	-	x	-	-	x
	Masterdrive MC	x	x	-	-	x	x	-	-	x
	Sinamics S120	x	x	-	-	-	x	-	-	x
Schneider Electric	PacDrive MC-4	-	-	x	-	x	-	-	x	x
	PacDrive 3	-	-	x	-	x	-	-	x	x
WITTENSTEIN motion control	simco	x	x	-	-	-	x	x ³	-	-

¹ No programming of the electronic nameplate possible

² up to 3.6 A_{eff} rated current

³ up to 10 A_{eff} rated current



| motion control

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WITTENSTEIN – one with the future

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