

Rotary axes RA-40

RA-40-2F & RA-40-4F

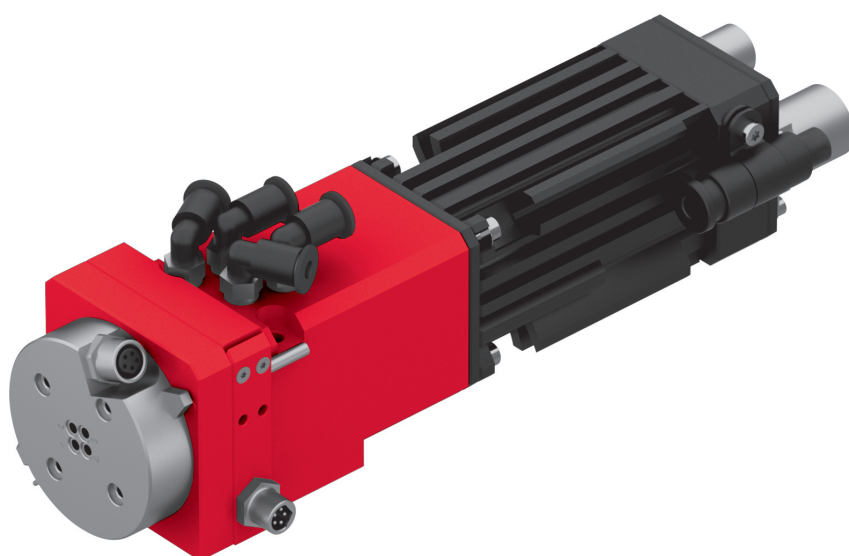
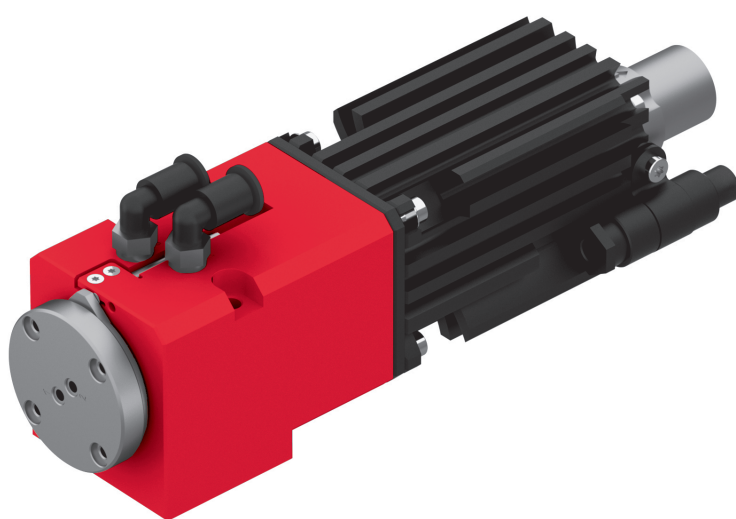
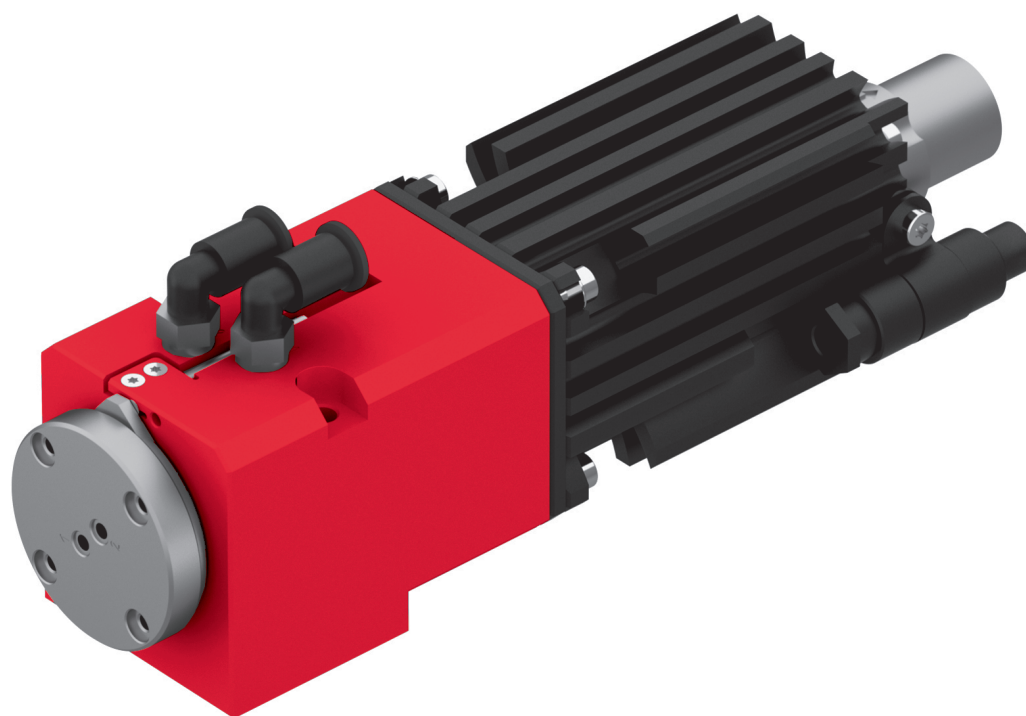


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Rotary axes RA-40

RA-40-2F

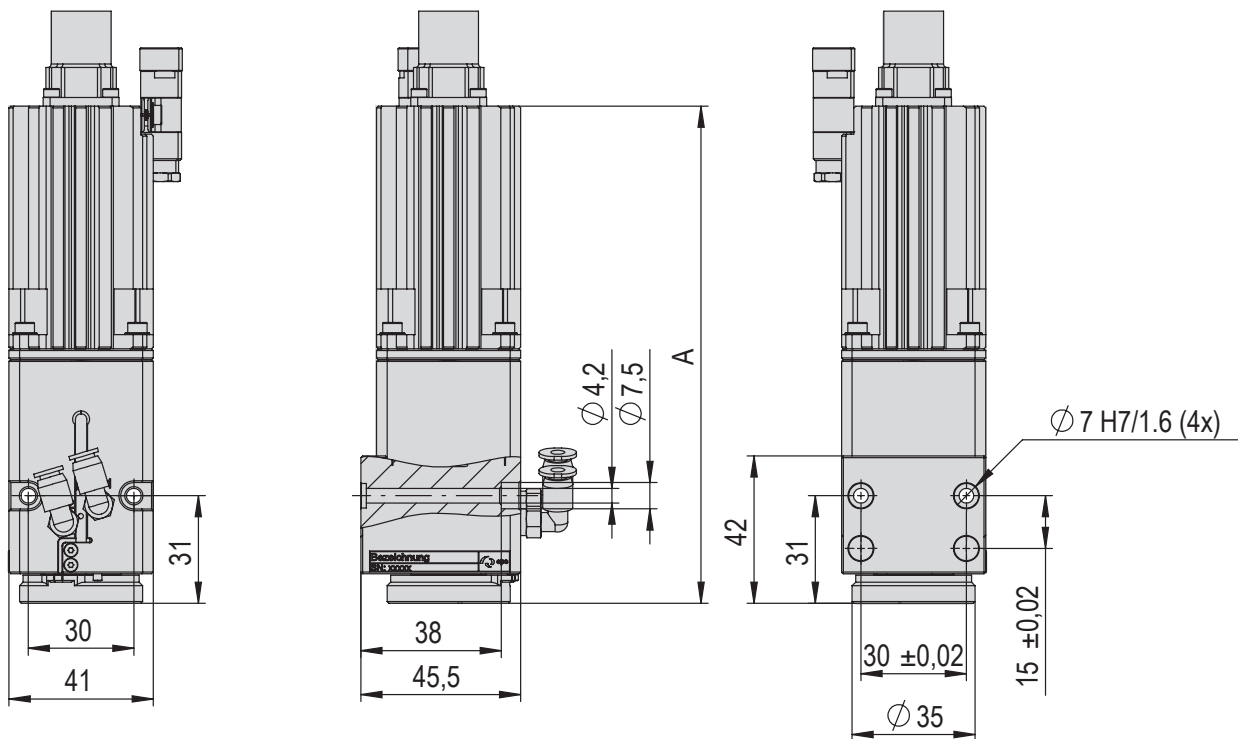
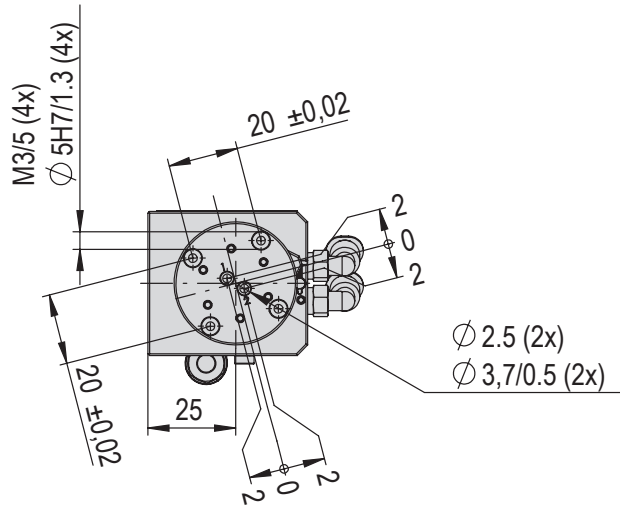


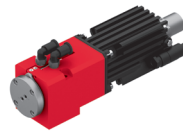
- Dynamic, electrical rotational axis with 4 Nm peak torque at just 690 g net weight
- Endless rotation without moving cables, due to integrated electrical and fluid passages
- High-quality, backlash-free harmonic drive gear for very high repeat accuracies

Dimensions and dimension drawings

RA-40-2F

Type	RA-40-2F	RA-40-2F (ZE)
A	141 mm	159 mm





RA-40-2F	
Operating temperature	0 - 50 °C
Storage temperature	0 - 50 °C
Humidity	< 90 %

Type	RA-40-2F-30-G	RA-40-2F-30-W	RA-40-2F-30-G-ZE	RA-40-2F-30-W-ZE
Order number	50473180	50473182	50473183	50473184
Net weight	0.69 kg	0.69 kg	0.74 kg	0.74 kg
Angle of rotation	∞	∞	∞	∞
Max. rotational speed	280 rpm	280 rpm	280 rpm	280 rpm
Fluid passages	2	2	2	2
Continuous torque	1.2 Nm	1.2 Nm	1.2 Nm	1.2 Nm
Max. output torque	2.4 Nm	2.4 Nm	2.4 Nm	2.4 Nm
Ratio	30:1	30:1	30:1	30:1
Repeat accuracy	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °
Encoder (optional)			SV-TLL ABZ, 61440 Inc/U	SV-TLL ABZ, 61440 Inc/U
Mounting position	✦	✦	✦	✦

Type	RA-40-2F-50-G	RA-40-2F-50-W	RA-40-2F-50-G-ZE	RA-40-2F-50-W-ZE
Order number	50473185	50473186	50473187	50473188
Net weight	0.69 kg	0.69 kg	0.74 kg	0.74 kg
Angle of rotation	∞	∞	∞	∞
Max. rotational speed	140 rpm	140 rpm	140 rpm	140 rpm
Fluid passages	2	2	2	2
Continuous torque	2 Nm	2 Nm	2 Nm	2 Nm
Max. output torque	4 Nm	4 Nm	4 Nm	4 Nm
Ratio	50:1	50:1	50:1	50:1
Repeat accuracy	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °
Encoder (optional)			SV-TLL ABZ, 102400 Inc/U	SV-TLL ABZ, 102400 Inc/U
Mounting position	✦	✦	✦	✦

The technical data pertains to Afag standard test conditions.
Air purity class 5 (ISO 14644-1)
Cleanroom class: 10 000 (Federal Standard 209E)

In the article description of a rotary axis the "F" stands for fluid passages and the "E" for electrical feed-through. There are two version of motor plugs. A „G" in the article description of the rotary axis stand for a straight and the „W" for an angular plug. Also see order key for RA-40.

Included in the delivery

(Catalogue HT accessories)

- 2x Centering bushing Ø7x3
- 2x O-ring 2.5x0.62 mm

Accessories

(Product-specific accessories)

- Adapters

(Catalogue HT accessories)

- Motor cable-M16
- Controller C1xxx-1S
- Plug kit for C1xxx-1S
- USB-RS232 Converter for controllers
- Power supply S01-72/500, 1-phase

Alternative accessories

(Catalogue HT accessories)

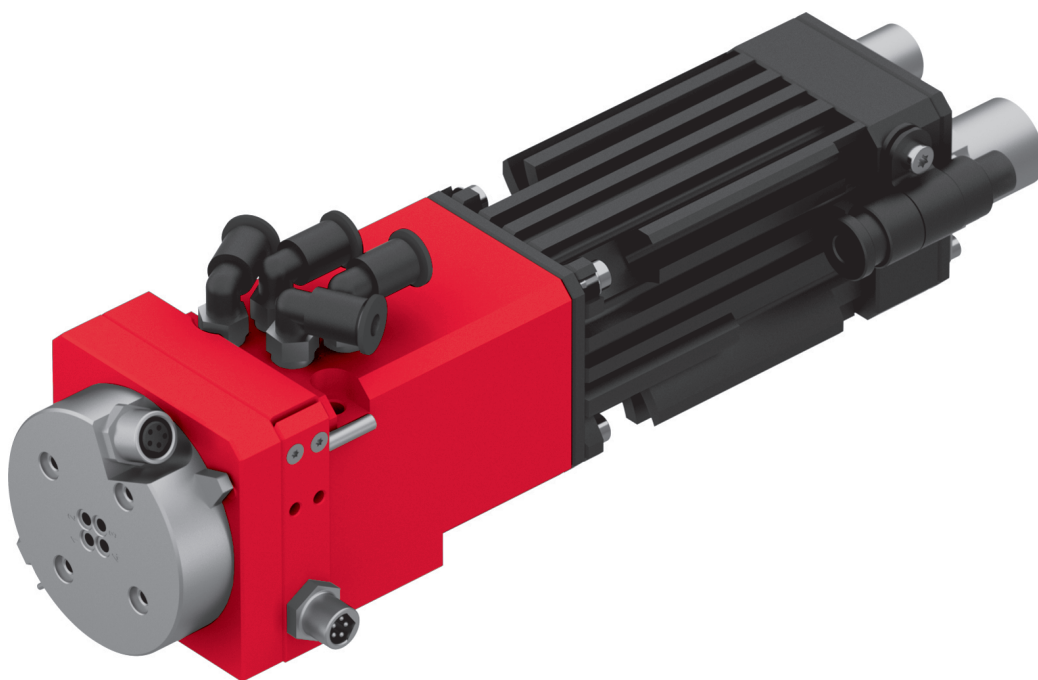
- Additional motor cables
- Additional controllers
- Additional power supplies

Warranty: 24 months following commissioning, but a maximum of 27 months following delivery

Rotary axes RA-40

RA-40-4F

11

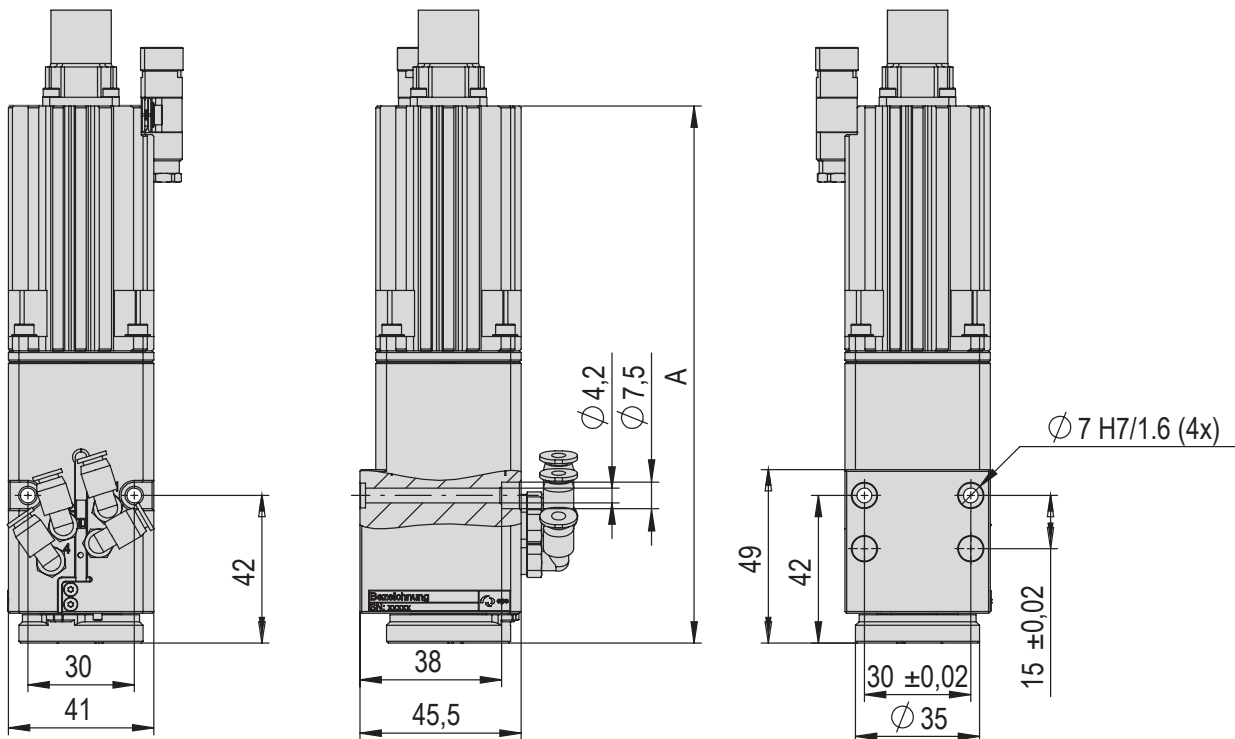
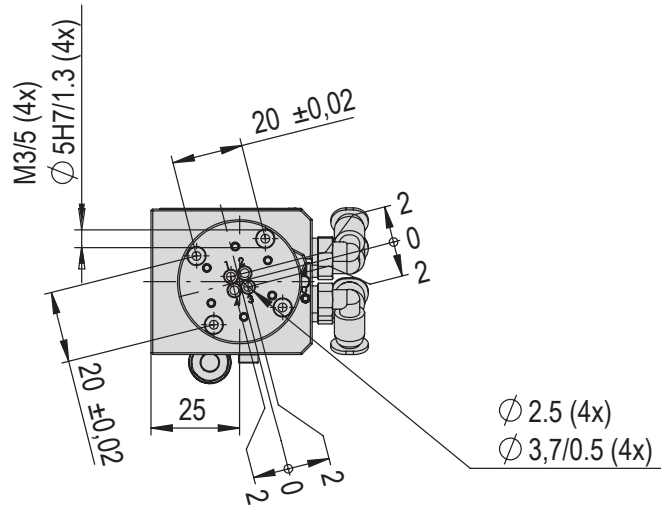


- Dynamic, electrical rotational axis with 4 Nm peak torque at just 690 g net weight
- Endless rotation without moving cables, due to integrated electrical and fluid passages
- High-quality, backlash-free harmonic drive gear for very high repeat accuracies

Dimensions and dimension drawings

RA-40-4F

Type	RA-40-4F	RA-40-4F (ZE)
A	151 mm	169 mm





RA-40-4F	
Operating temperature	0 - 50 °C
Storage temperature	0 - 50 °C
Humidity	< 90 %

Type	RA-40-4F-30-G	RA-40-4F-30-W	RA-40-4F-30-G-ZE	RA-40-4F-30-W-ZE
Order number	50473189	50473190	50473191	50473192
Net weight	0.74 kg	0.74 kg	0.79 kg	0.79 kg
Angle of rotation	∞	∞	∞	∞
Max. rotational speed	280 rpm	280 rpm	280 rpm	280 rpm
Fluid passages	4	4	4	4
Continuous torque	1.2 Nm	1.2 Nm	1.2 Nm	1.2 Nm
Max. output torque	2.4 Nm	2.4 Nm	2.4 Nm	2.4 Nm
Ratio	30:1	30:1	30:1	30:1
Repeat accuracy	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °
Encoder (optional)			SV-TLL ABZ, 61440 Inc/U	SV-TLL ABZ, 61440 Inc/U
Mounting position	✦	✦	✦	✦

Type	RA-40-4F-50-G	RA-40-4F-50-W	RA-40-4F-50-G-ZE	RA-40-4F-50-W-ZE
Order number	50473193	50473194	50473195	50473196
Net weight	0.74 kg	0.74 kg	0.79 kg	0.79 kg
Angle of rotation	∞	∞	∞	∞
Max. rotational speed	140 rpm	140 rpm	140 rpm	140 rpm
Fluid passages	4	4	4	4
Continuous torque	2 Nm	2 Nm	2 Nm	2 Nm
Max. output torque	4 Nm	4 Nm	4 Nm	4 Nm
Ratio	50:1	50:1	50:1	50:1
Repeat accuracy	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °
Encoder (optional)			SV-TLL ABZ, 102400 Inc/U	SV-TLL ABZ, 102400 Inc/U
Mounting position	✦	✦	✦	✦

The technical data pertains to Afag standard test conditions.
Air purity class 5 (ISO 14644-1)
Cleanroom class: 10 000 (Federal Standard 209E)

In the article description of a rotary axis the "F" stands for fluid passages and the "E" for electrical feed-through. There are two version of motor plugs. A „G" in the article description of the rotary axis stand for a straight and the „W" for an angular plug. Also see order key for RA-40.

Included in the delivery
(Catalogue HT accessories)

- 2x Centering bushing Ø7x3
- 4x O-ring 2.5x0.62 mm

Accessories
(Product-specific accessories)

- Adapters

(Catalogue HT accessories)

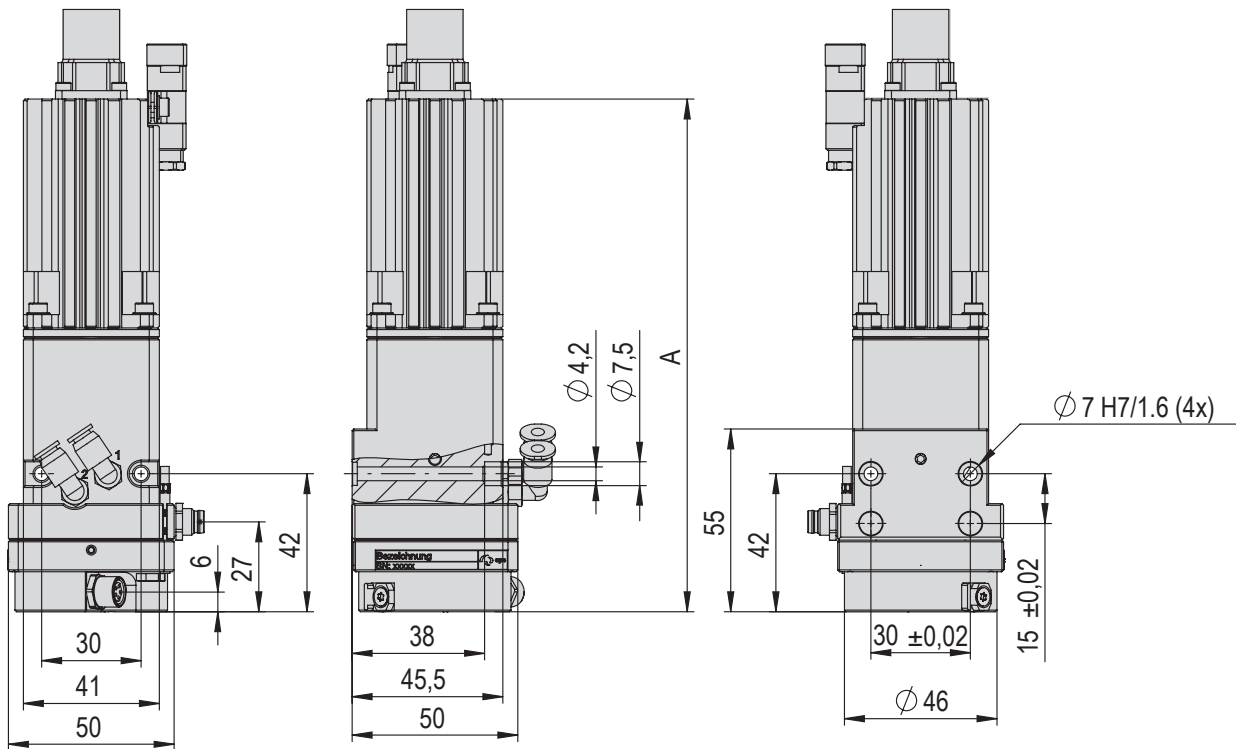
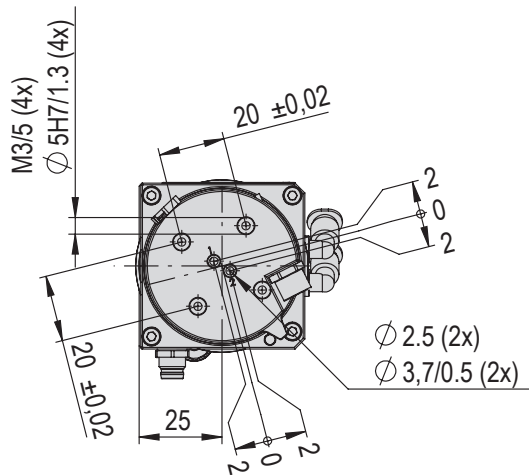
- Motor cable-M16
- Controller C1xxx-1S
- Plug kit for C1xxx-1S
- USB-RS232 Converter for controllers
- Power supply S01-72/500, 1-phase

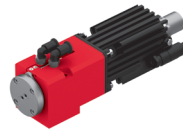
Alternative accessories
(Catalogue HT accessories)

- Additional motor cables
- Additional controllers
- Additional power supplies

Warranty: 24 months following commissioning, but a maximum of 27 months following delivery

Type	RA-40-2F-5E	RA-40-2F-5E (ZE)
A	155 mm	173 mm





RA-40-2F-5E	
Operating temperature	0 - 50 °C
Storage temperature	0 - 50 °C
Humidity	< 90 %

Type	RA-40-2F-5E-30-G	RA-40-2F-5E-30-W	RA-40-2F-5E-30-G-ZE	RA-40-2F-5E-30-W-ZE
Order number	50473197	50473198	50473200	50473201
Net weight	0.84 kg	0.84 kg	0.89 kg	0.89 kg
Angle of rotation	∞	∞	∞	∞
Max. rotational speed	280 rpm	280 rpm	280 rpm	280 rpm
Electrical feed-through	5 x 2 A	5 x 2 A	5 x 2 A	5 x 2 A
Fluid passages	2	2	2	2
Continuous torque	1.2 Nm	1.2 Nm	1.2 Nm	1.2 Nm
Max. output torque	2.4 Nm	2.4 Nm	2.4 Nm	2.4 Nm
Ratio	30:1	30:1	30:1	30:1
Repeat accuracy	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °
Encoder (optional)			SV-TLL ABZ, 61440 Inc/U	SV-TLL ABZ, 61440 Inc/U
Mounting position	✦	✦	✦	✦

Type	RA-40-2F-5E-50-G	RA-40-2F-5E-50-W	RA-40-2F-5E-50-G-ZE	RA-40-2F-5E-50-W-ZE
Order number	50473202	50473203	50473204	50473205
Net weight	0.84 kg	0.84 kg	0.89 kg	0.89 kg
Angle of rotation	∞	∞	∞	∞
Max. rotational speed	140 rpm	140 rpm	140 rpm	140 rpm
Electrical feed-through	5 x 2 A	5 x 2 A	5 x 2 A	5 x 2 A
Fluid passages	2	2	2	2
Continuous torque	2 Nm	2 Nm	2 Nm	2 Nm
Max. output torque	4 Nm	4 Nm	4 Nm	4 Nm
Ratio	50:1	50:1	50:1	50:1
Repeat accuracy	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °
Encoder (optional)			SV-TLL ABZ, 102400 Inc/U	SV-TLL ABZ, 102400 Inc/U
Mounting position	✦	✦	✦	✦

The technical data pertains to Afag standard test conditions.
Air purity class 5 (ISO 14644-1)
Cleanroom class: 10.000 (Federal Standard 209E)

In the article description of a rotary axis the "F" stands for fluid passages and the "E" for electrical feed-through. There are two version of motor plugs. A „G“ in the article description of the rotary axis stand for a straight and the „W“ for an angular plug. Also see order key for RA-40.

Included in the delivery

(Catalogue HT accessories)

- 2x Centering bushing Ø7x3
- 2x O-ring 2.5x0.62 mm

Accessories

(Product-specific accessories)

- Adapters
 - Proximity switch cables/-extensions
- (Catalogue HT accessories)
- Motor cable-M16
 - Controller C1xxx-1S
 - Plug kit for C1xxx-1S
 - USB-RS232 Converter for controllers
 - Power supply S01-72/500, 1-phase

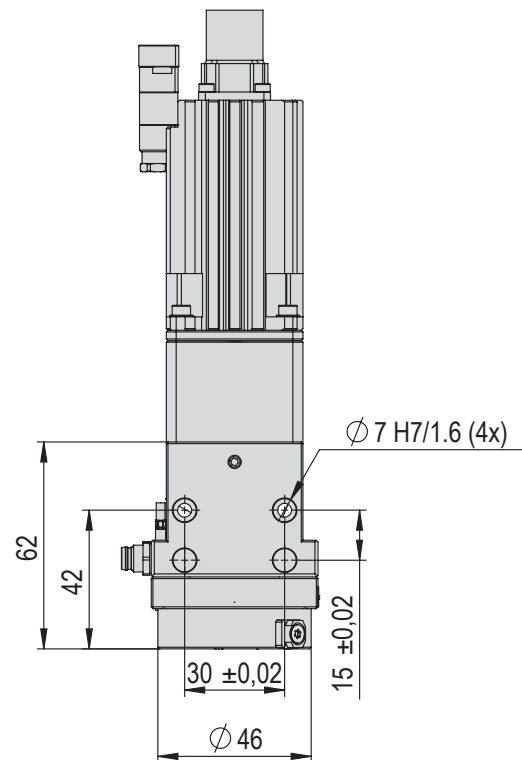
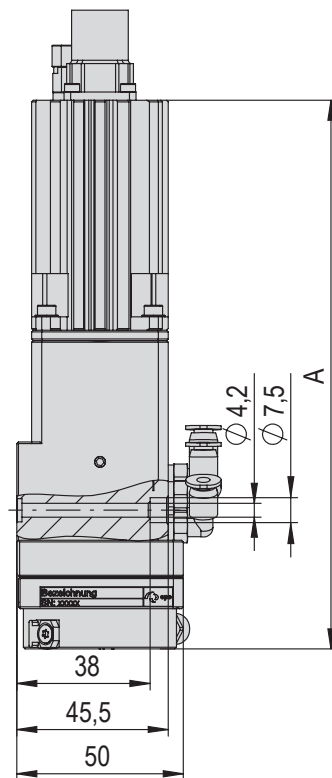
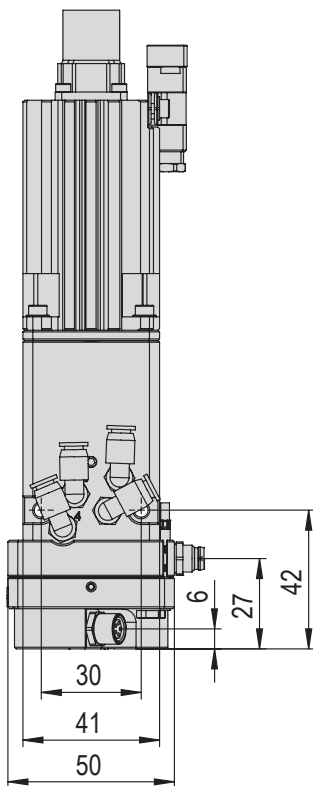
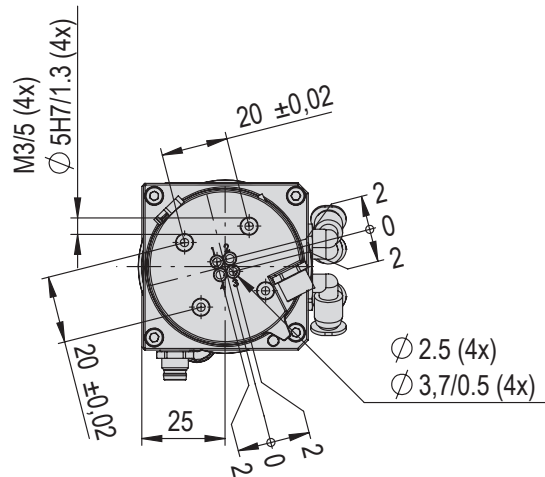
Alternative accessories

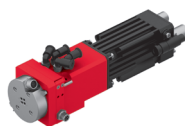
(Catalogue HT accessories)

- Additional motor cables
- Additional controllers
- Additional power supplies

Warranty: 24 months following commissioning, but a maximum of 27 months following delivery

Type	RA-40-4F-5E	RA-40-4F-5E (ZE)
A	165 mm	183 mm





RA-40-4F-5E	
Operating temperature	0 - 50 °C
Storage temperature	0 - 50 °C
Humidity	< 90 %

Type	RA-40-4F-5E-30-G	RA-40-4F-5E-30-W	RA-40-4F-5E-30-G-ZE	RA-40-4F-5E-30-W-ZE
Order number	50473206	50473207	50473208	50473209
Net weight	0.89 kg	0.89 kg	0.94 kg	0.94 kg
Angle of rotation	∞	∞	∞	∞
Max. rotational speed	280 rpm	280 rpm	280 rpm	280 rpm
Electrical feed-through	5 x 2 A	5 x 2 A	5 x 2 A	5 x 2 A
Fluid passages	4	4	4	4
Continuous torque	1.2 Nm	1.2 Nm	1.2 Nm	1.2 Nm
Max. output torque	2.4 Nm	2.4 Nm	2.4 Nm	2.4 Nm
Ratio	30:1	30:1	30:1	30:1
Repeat accuracy	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °
Encoder (optional)			SV-TLL ABZ, 61440 Inc/U	SV-TLL ABZ, 61440 Inc/U
Mounting position	✦	✦	✦	✦

Type	RA-40-4F-5E-50-G	RA-40-4F-5E-50-W	RA-40-4F-5E-50-G-ZE	RA-40-4F-5E-50-W-ZE
Order number	50473210	50473211	50473212	50473213
Net weight	0.89 kg	0.89 kg	0.94 kg	0.94 kg
Angle of rotation	∞	∞	∞	∞
Max. rotational speed	140 rpm	140 rpm	140 rpm	140 rpm
Electrical feed-through	5 x 2 A	5 x 2 A	5 x 2 A	5 x 2 A
Fluid passages	4	4	4	4
Continuous torque	2 Nm	2 Nm	2 Nm	2 Nm
Max. output torque	4 Nm	4 Nm	4 Nm	4 Nm
Ratio	50:1	50:1	50:1	50:1
Repeat accuracy	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °	+/- 0.0017 °
Encoder (optional)			SV-TLL ABZ, 102400 Inc/U	SV-TLL ABZ, 102400 Inc/U
Mounting position	✦	✦	✦	✦

The technical data pertains to Afag standard test conditions.
Air purity class 5 (ISO 14644-1)
Cleanroom class: 10 000 (Federal Standard 209E)

In the article description of a rotary axis the "F" stands for fluid passages and the "E" for electrical feed-through. There are two version of motor plugs. A „G" in the article description of the rotary axis stand for a straight and the „W" for an angular plug. Also see order key for RA-40.

Included in the delivery

(Catalogue HT accessories)

- 2x Centering bushing Ø7x3
- 4x O-ring 2.5x0.62 mm

Accessories

(Product-specific accessories)

- Adapters
 - Proximity switch cables/-extensions
- (Catalogue HT accessories)
- Motor cable-M16
 - Controller C1xxx-1S
 - Plug kit for C1xxx-1S
 - USB-RS232 Converter for controllers
 - Power supply S01-72/500, 1-phase

Alternative accessories

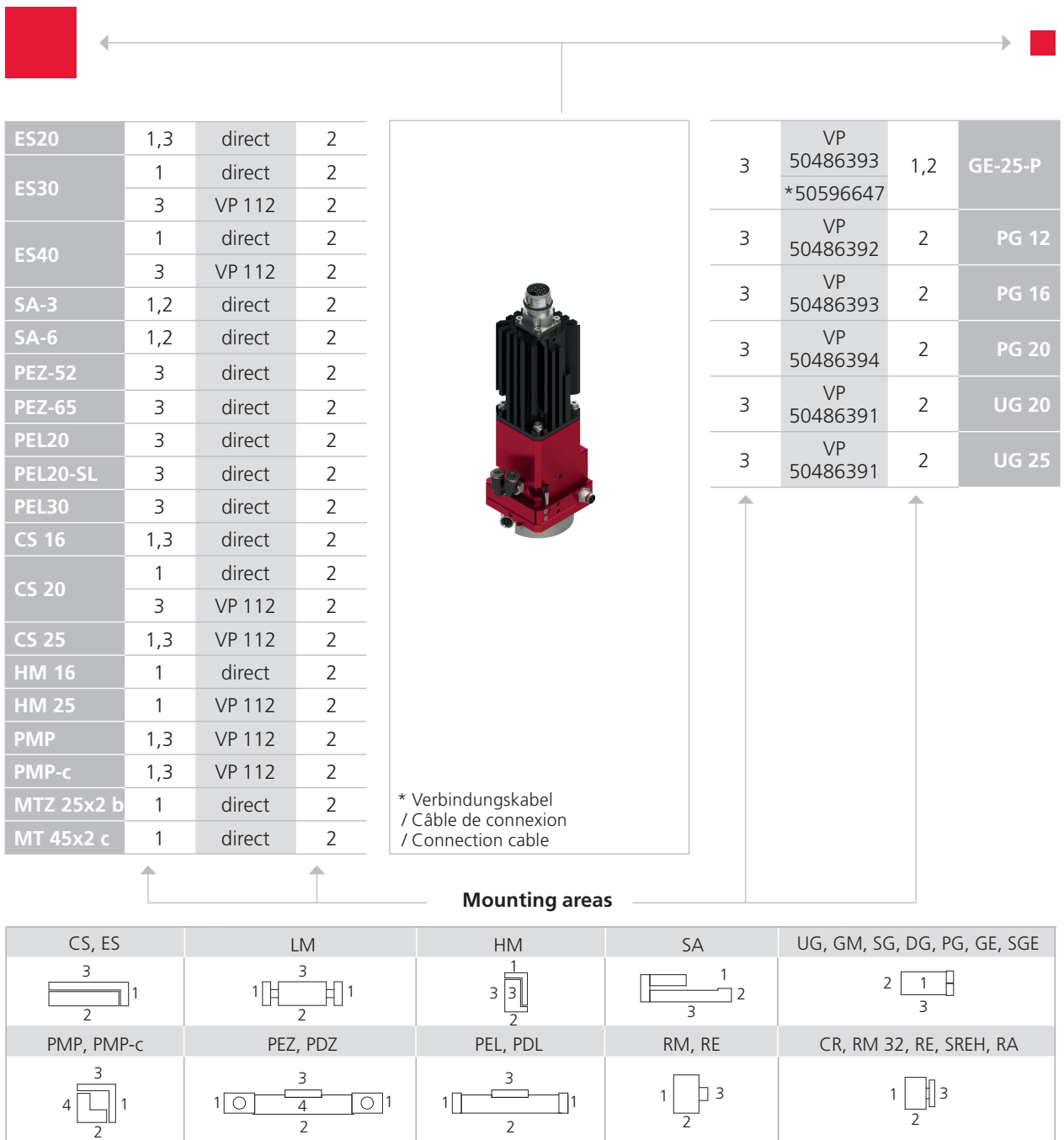
(Catalogue HT accessories)

- Additional motor cables
- Additional controllers
- Additional power supplies

Warranty: 24 months following commissioning, but a maximum of 27 months following delivery

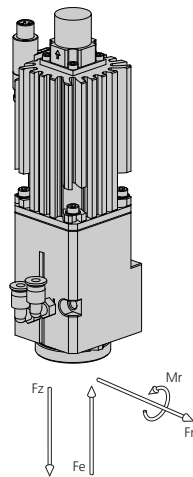
afag.com

Handling technology HT Components gripping/turning



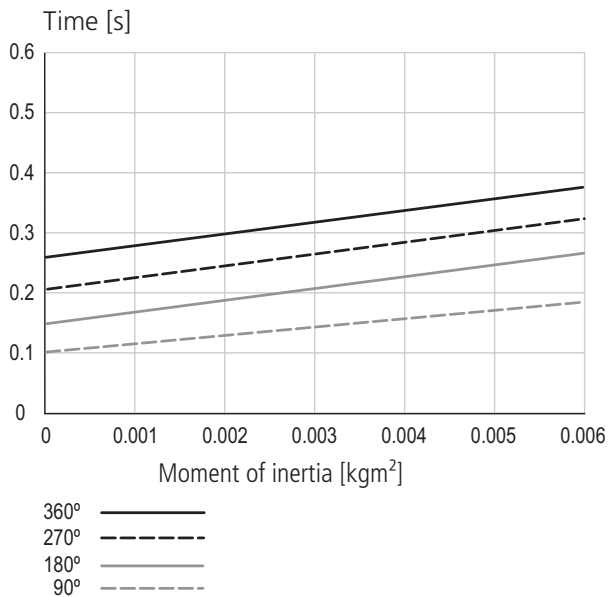
Note that there might be different mounting positions from one module to another one.
The required connection elements and the range of support columns are depicted in the catalogue HT accessories.

Type	RA-40
Max. torque M_r	10 Nm
Max. press-in force F_e	800 N
Max. radial force	± 700 N
Max. pulling force F_z	350 N

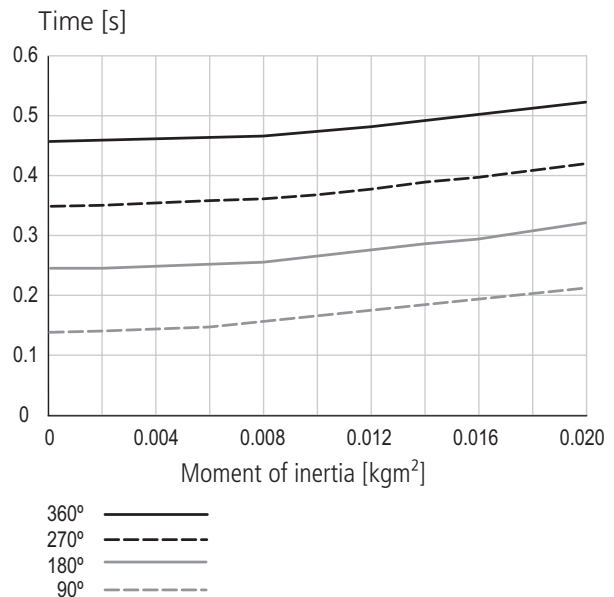


Rotation time diagrams

RA-40 with 30:1-gear



RA-40 with 50:1-gear



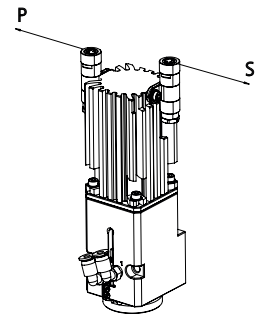
The times refer to break times of 600 ms.

Order form	RA-40	xxxxxxxx	x	x
		Rotary axis	Rotation limiter	Plug holder reference sensor

Coordinate system

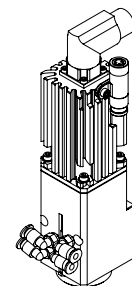
The coordinate system allows you to define the position of the plug holder of the reference sensor.

- P= left
- S= right



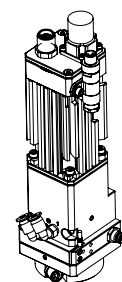
Ordering example 1 with 4-fold fluid passages, angular motor plug, gear ratio $i=50$ and rotation limiter

RA-40	50473194	D	S
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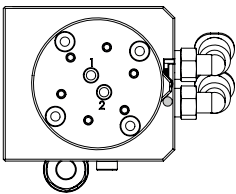
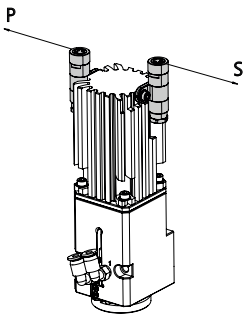
Ordering example 2 with 2-fold fluid passages, straight motor plug, 5-fold electrical rotary feed-through, additional encoder and gear ratio $i=30$

RA-40	50473200	x	S
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Ordering process

- Select the desired rotary axis from the order key.
- Enter the corresponding red order numbers in the order form in the place of the cross.
- If you want an rotation limiter select the order number in the order form in the place of the cross.
- To define the position of the plug connection and the reference sensor, enter the corresponding red order number in the order form in the place of the cross.

	RA-40		i		i-ZE		x	x		
	Fluid passages	Plug type	30	50	30-ZE	50-ZE				
Rotary axis	2-fold fluid passages	Straight	50473180	50473185	50473183	50473187				
		Angular	50473182	50473186	50473184	50473188				
	4-fold fluid passages	Straight	50473189	50473193	50473191	50473195				
		Angular	50473190	50473194	50473192	50473196				
	Additional 5-fold electrical rotary feed-through (5E)		5E-i		5E-i-ZE					
	Fluid passages	Plug type	5E-30	5E-50	5E-30-ZE	5E-50-ZE				
	2-fold fluid passages	Straight	50473197	50473202	50473200	50473204				
		Angular	50473198	50473203	50473201	50473205				
4-fold fluid passages	Straight	50473206	50473210	50473208	50473212					
	Angular	50473207	50473211	50473209	50473213					
Rotation limiter	Without						x			
										
With rotation limiter (rotational angle approx. 330°)							D			
Plug holder reference sensor										
							P	S		

i= Gear ratio E= Electrical rotary feed-through G= Straight plug W= Angular plug
 ZE= Additional encoder

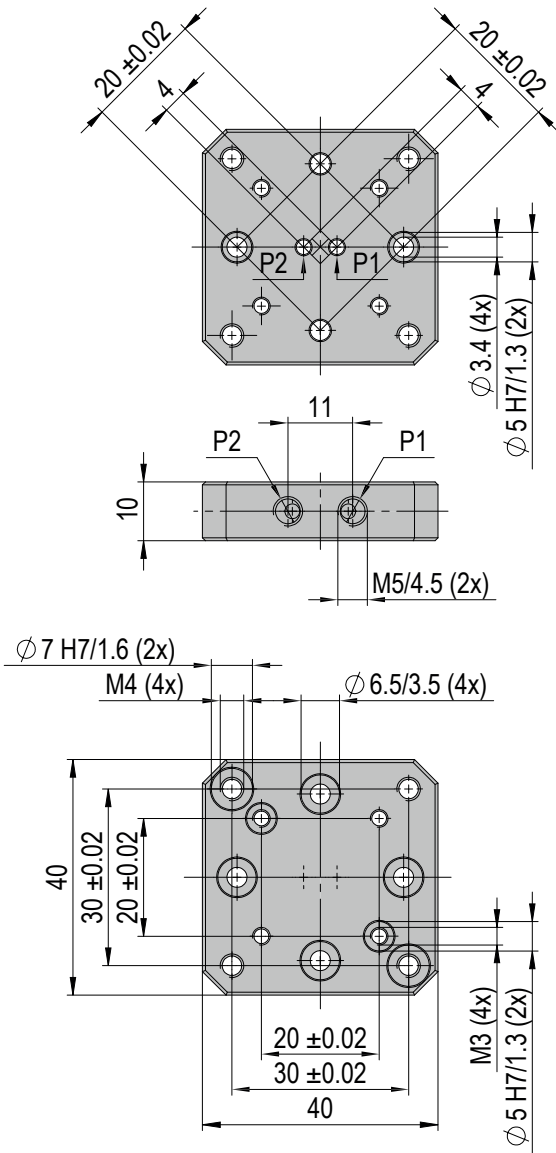
A rotation limiter is recommended when extensions to the rotary axis have to be supplied with additional cables. This will avoid a shearing and ripping of the wire.

Accessories RA

Adapter RA-40-UG20 UG25

Order number 50486391

Net weight 0.037 kg



Included in the delivery

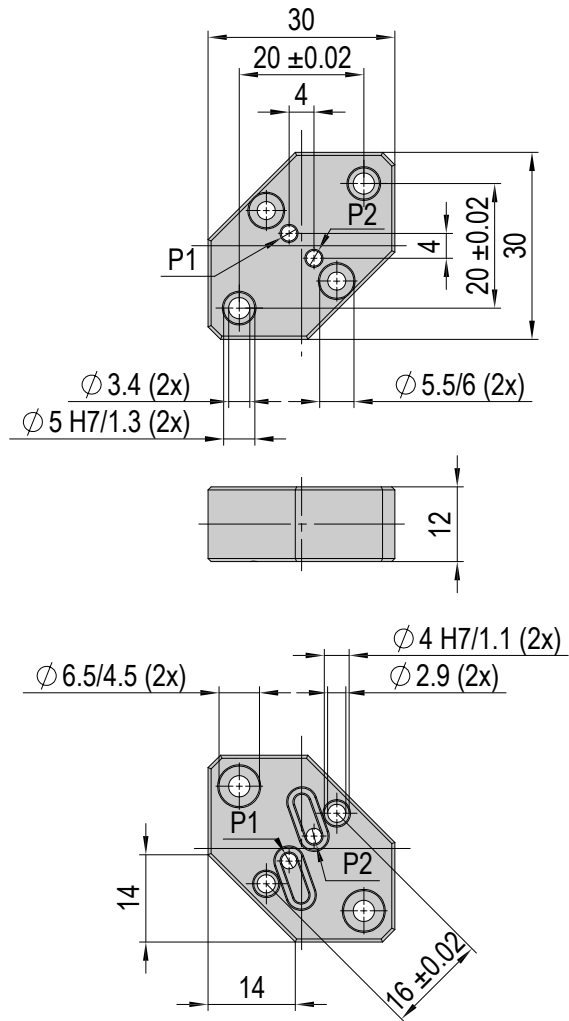
(Catalogue HT accessories)

- 2x Mounting screw M3x10
- 2x Centering bushing Ø5x2.5

Adapter RA-40-PG 12

Order number 50486392

Net weight 0.02 kg



Included in the delivery

(Catalogue HT accessories)

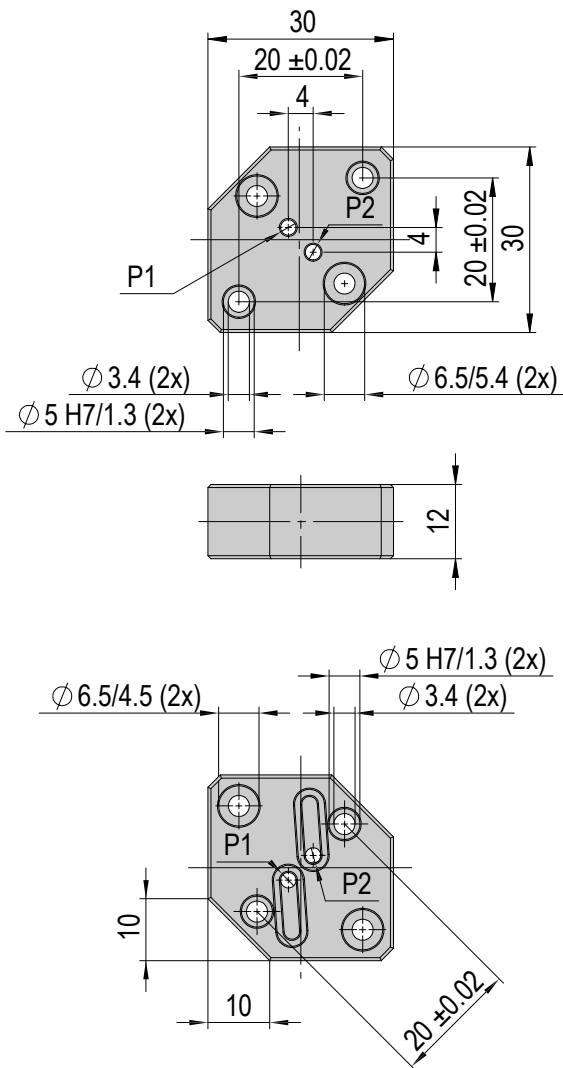
- 2x Mounting screw M3x12
- 2x Centering bushing Ø5x2.5
- 2x O-ring 6x1 mm

Accessories RA

Adapter RA-40-PG 16

Order number 50486393

Net weight 0.022 kg



Included in the delivery

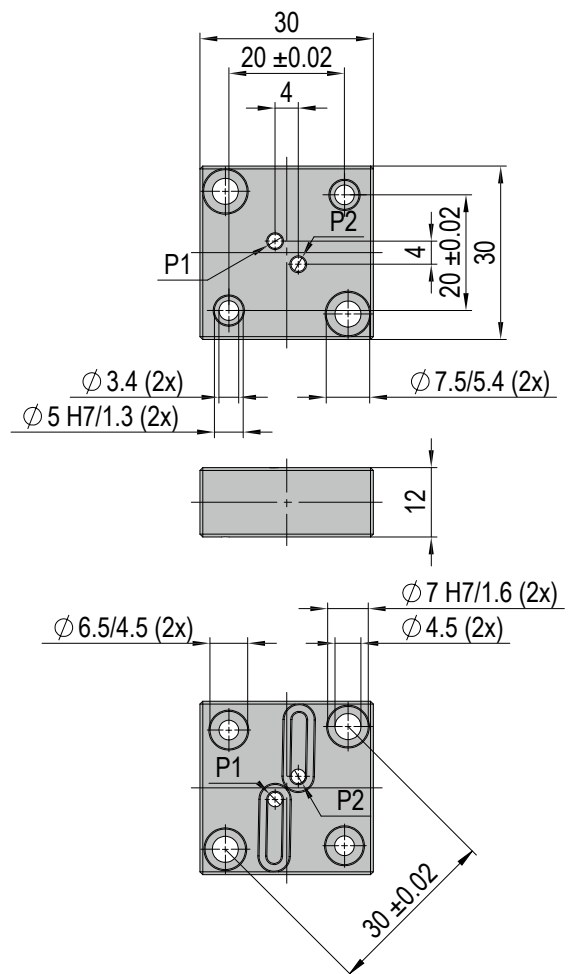
(Catalogue HT accessories)

- 2x Mounting screw M3x12
- 2x Centering bushing $\phi 5 \times 2.5$
- 2x O-ring 8x1 mm

Adapter RA-40-PG 20

Order number 50486394

Net weight 0.025 kg



Included in the delivery

(Catalogue HT accessories)

- 2x Mounting screw M3x12
- 2x Centering bushing $\phi 5 \times 2.5$
- 2x O-ring 10x1 mm

Accessories RA

Connection cable RA-40-GE-25-P

Order number 50596647

Net weight 0.036 kg

