Rotary modules

ROTARY MODULES

The rotary module program from SCHUNK offers a complete spectrum of compact rotary and swivel units, swivel heads and swivel fingers. Please consult our main catalog for further information about SCHUNK rotary modules. Here is an extract from our range of products.

Rotary modules, pneumatic

Rotor with high torque

Swivel heads with integrated fluid and electrical feed-through

Universal swivel units up to 180°

Swivel finger for turning workpieces

Rotary modules, electric

GAS miniature swivel units system

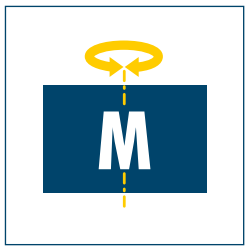
Flat swivel unit with torque motor

Servo-electric swivel units, PowerCube system

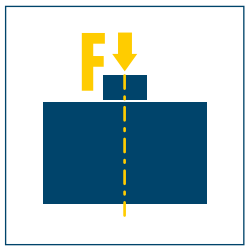
Servo-electric rotary pan-tilt actuator, PowerCube system

Sizes
08 .. 21

Mass
0.091 kg .. 1.6 kg



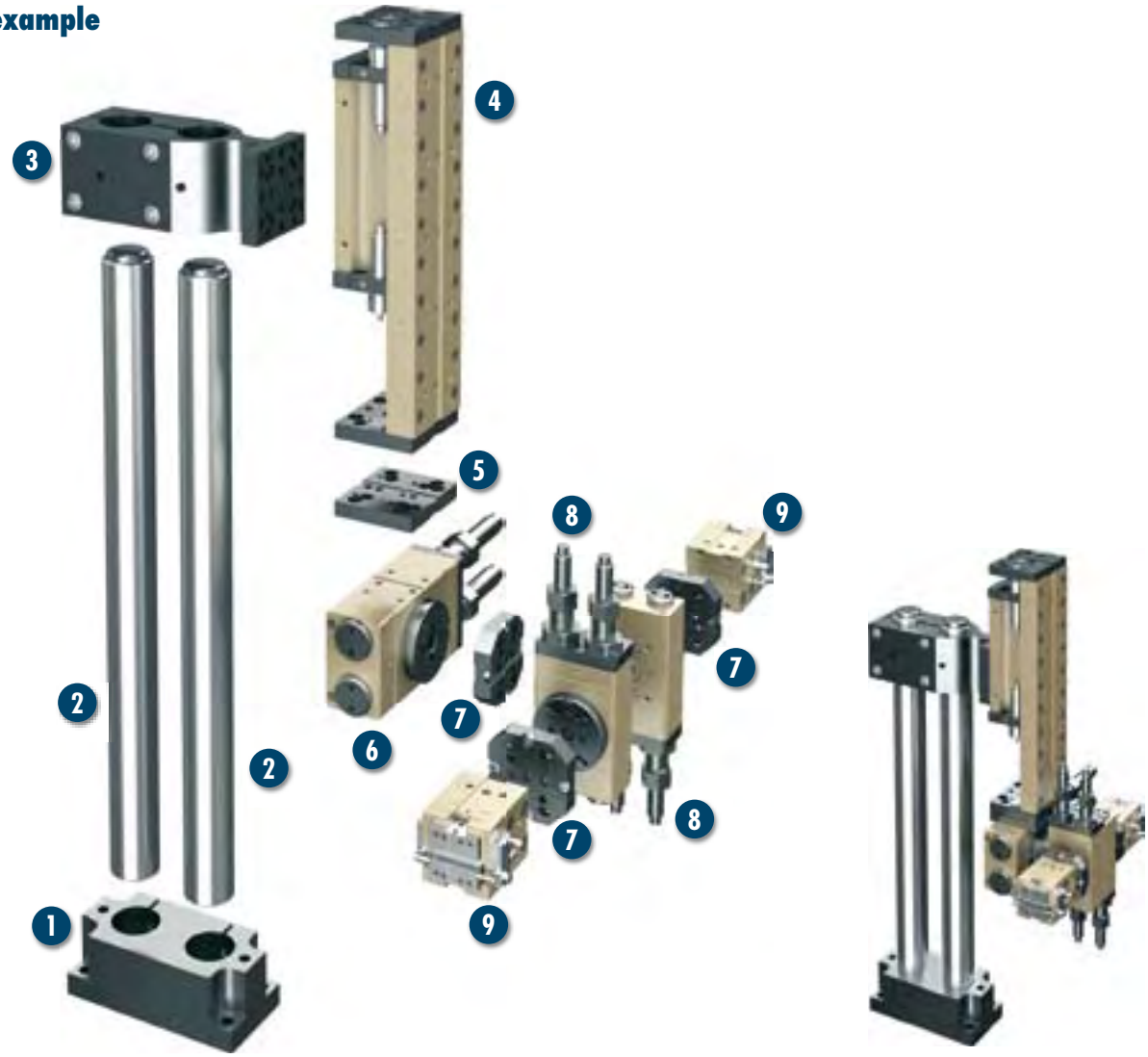
Torque
0.107 Nm .. 1.9 Nm



Axial force
120 N .. 950 N

Bending moment
3 Nm .. 39 Nm

Application example



Pneumatic loading and unloading with three swivel units for small workpieces

1. Double socket, SOD 035
2. Hollow pillar, SLH 035-0450
3. Double mounting plate, APDV 035
4. Linear module, LM 100-H075
5. Adapter plate, APL 120
6. Rotary module, RM 21
7. Adapter plate, APL 300
8. Rotary module, RM 15
9. Parallel gripping module, GM 80

Swivel unit

Light and fast swivel unit

Area of application

Use in clean environments such as assembly or packaging areas as well as fast movement cycles. To reach any point in space in any combination with linear modules or for rotating or turning over workpieces.

Advantages – your benefits

Continuous angle of rotation adjustment
Over the entire range of rotation

Double piston principle
For elimination of backlash at the end positions and high repeat accuracy

Integrated shock absorbers with adjustable absorption characteristic
For optimal dampening

"Continuously adjustable intermediate position" option
Can be done using an intermediate stop which can be integrated

End-position monitoring
Using an optional standardized monitoring set

Standardized mounting bores
For numerous combinations with other GEMOTEC system elements

General information about the series

Working principle
Double piston rack and pinion principle

Housing material
Aluminum alloy, hard-anodized

Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

Scope of delivery
Completely ready for operation without bracket for proximity switch and without proximity switch

Warranty
24 months

For production reasons, the colors may vary from those shown in the catalog.

Cross-section of function

1 Drive
Pneumatic, powerful double piston drive

2 Pinion/kinematics
Rack and pinion principle for transmission of driving force in rotary movements with minimal backlash

3 Modular design hole pattern
Completely integrated in the module system

4 End position dampening
Adjusting of the dampening characteristic by dampening stroke adjustment

5 Rotating angle adjustment
For a flexible end position

Description of function

When pressure is applied to their end faces, the two pneumatic piston racks move in a straight line in their bore holes and turn the pinion by way of the teeth machined on the side of the racks.

Options and special information

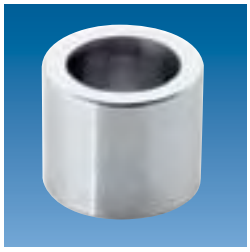
This module can be combined as standard with many elements from the modular system. You can find more information in the “Accessories” chapter.

Accessories

Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

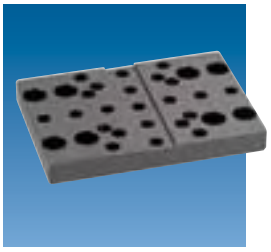
Intermediate stop, RZ

Centering sleeves



Fittings

Adapter plates



Inductive proximity switch, NI

Sensor cable

Pillar assembly systems

Centering strips

Pressure maintenance valve

ⓘ Please see the side views at the end of the respective size for information concerning specific sizes, accessories availability for that size, designation, and ID numbers. You can find more information about our accessories program in the "Accessories" part of the catalog.

General information about the series

Repeat accuracy

Repeat accuracy is defined as the distribution of the end positions for 100 consecutive swiveling cycles.

Pinion position

The position of the pinion is always shown in the left end position. The pinion rotates from here to the right in the clockwise direction. The arrow makes the direction of rotation clear.

Screw connection diagram at the pinion

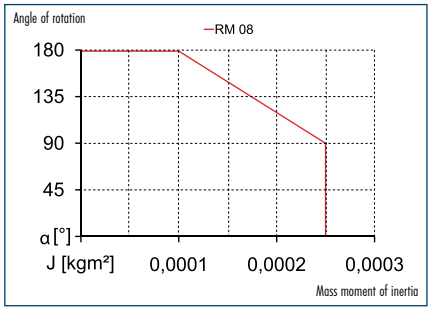
Please note that when the rotating angle is to be set for less than 90°, the left stop will generally be completely turned in. The left end position therefore has a screw connection diagram which has been rotated by 90° in the clockwise direction in relation to the drawing, which is shown at a 180° angle of rotation.

Layout or sizing

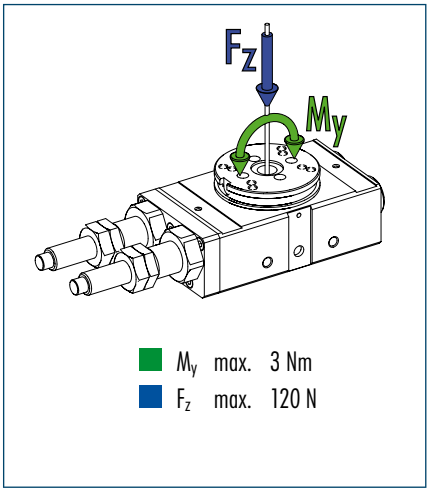
For layout or sizing of rotary modules, we recommend using our TOOLBOX sizing software, which can be obtained at www.schunk.com. Sizing the selected unit is absolutely necessary, since otherwise overloading can result.

RM 08

Range of use for dampening



Moment load

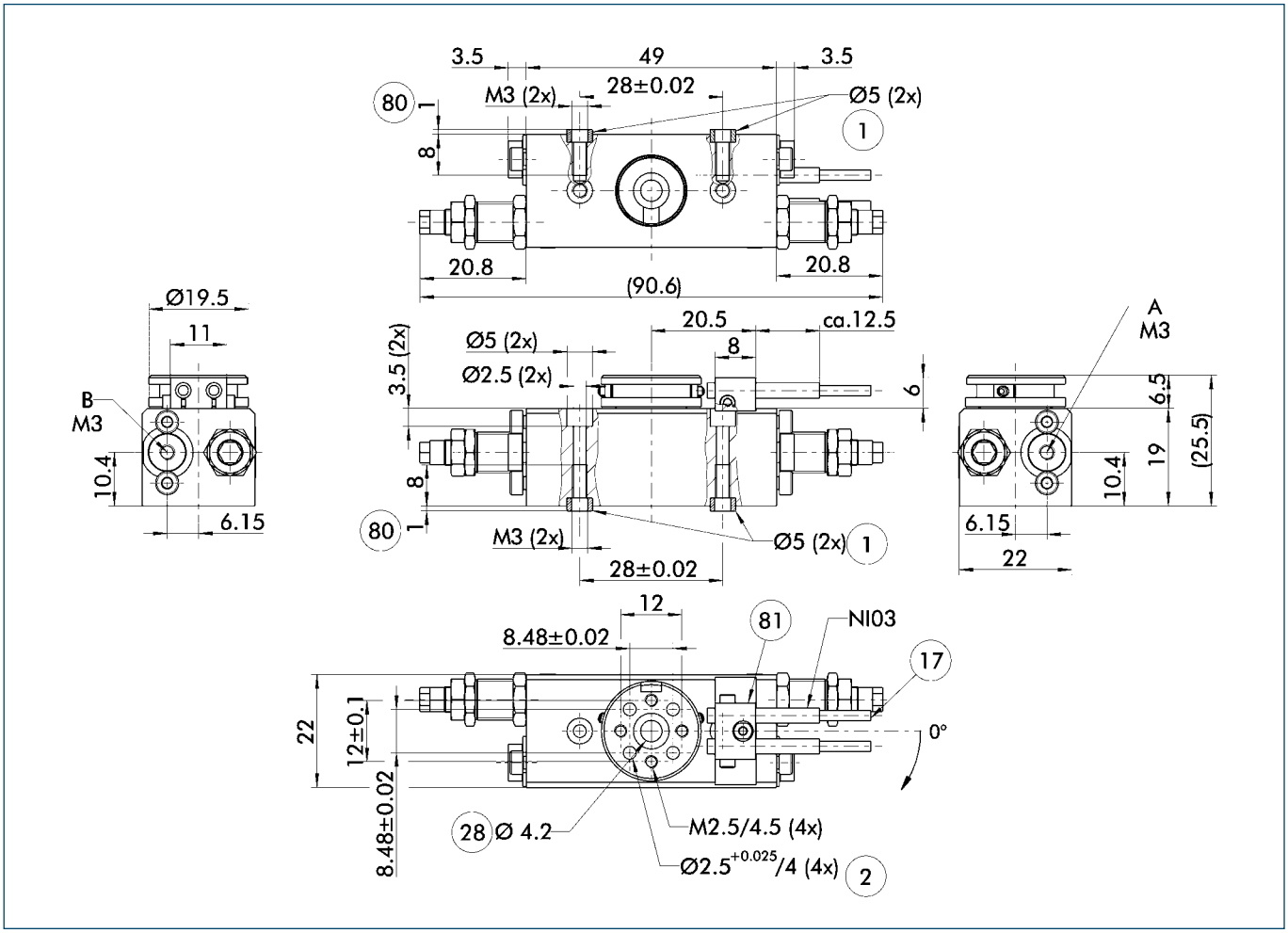


ⓘ Moments and forces may occur simultaneously. When using heavy attachments or ones with high mass moments of inertia, the speed must be restricted to ensure that the rotary movement occurs without any hitting or bouncing. oments and forces may occur at the same time. For heavy structures or superstructures with high mass moment of inertia, limiting is necessary to ensure that rotary movement takes place without striking or bouncing.

Technical data

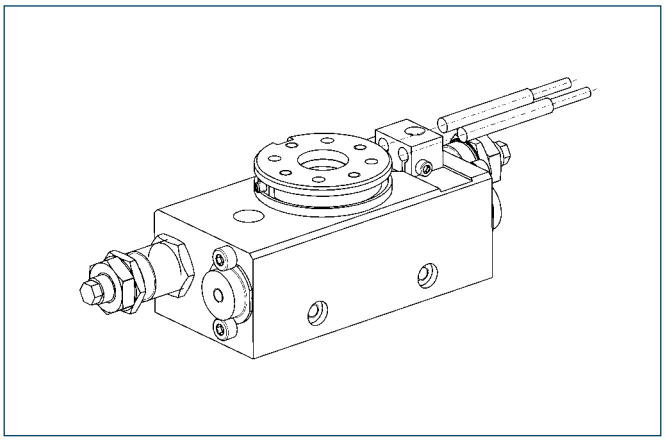
Designation		RM 08
	ID	0313013
Torque	[Nm]	0.107
Angle of rotation	[°]	185
End position adjustability	[°]	Continuous
IP rating		40
Mass	[kg]	0.091
Fluid use per cycle	[cm³]	1.4
Nominal operating pressure	[bar]	6
Minimum pressure	[bar]	3
Maximum pressure	[bar]	8
Min. ambient temperature	[°C]	5
Max. ambient temperature	[°C]	60
Repeat accuracy	[°]	± 0.042

Main views



A,a Main and direct connections, swivel unit, rotating to the right
B,b Main and direct connections, swivel unit, rotating to the left
(1) Connection, swivel unit
(1) Connection of the assembly
(17) Cable outlet
(28) Through-bore
(80) Depth of the centering sleeve in the counter piece
(81) Not included in the scope of delivery

Sensor systems



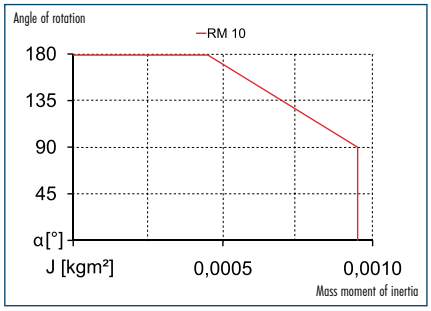
End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
RMNS 08-X	0313049	1 x bracket, 2 x sensors, 2 x operating targets	
RMNS 08-G	0313050	1 x bracket, 2 x sensors, 2 x operating targets, 2 x straight cable extensions	•
RMNS 08-W	0313051	1 x bracket, 2 x sensors, 2 x operating targets, 2 x angled cable extensions	

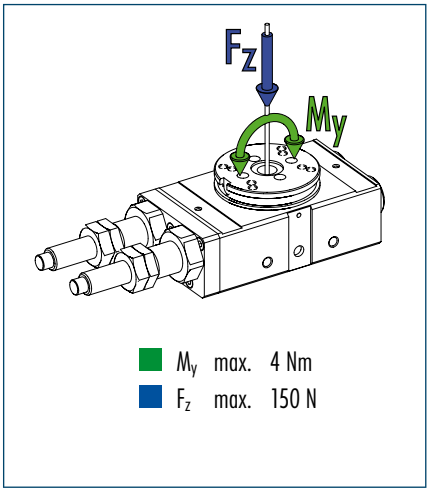
You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

RM 10

Range of use for dampening



Moment load

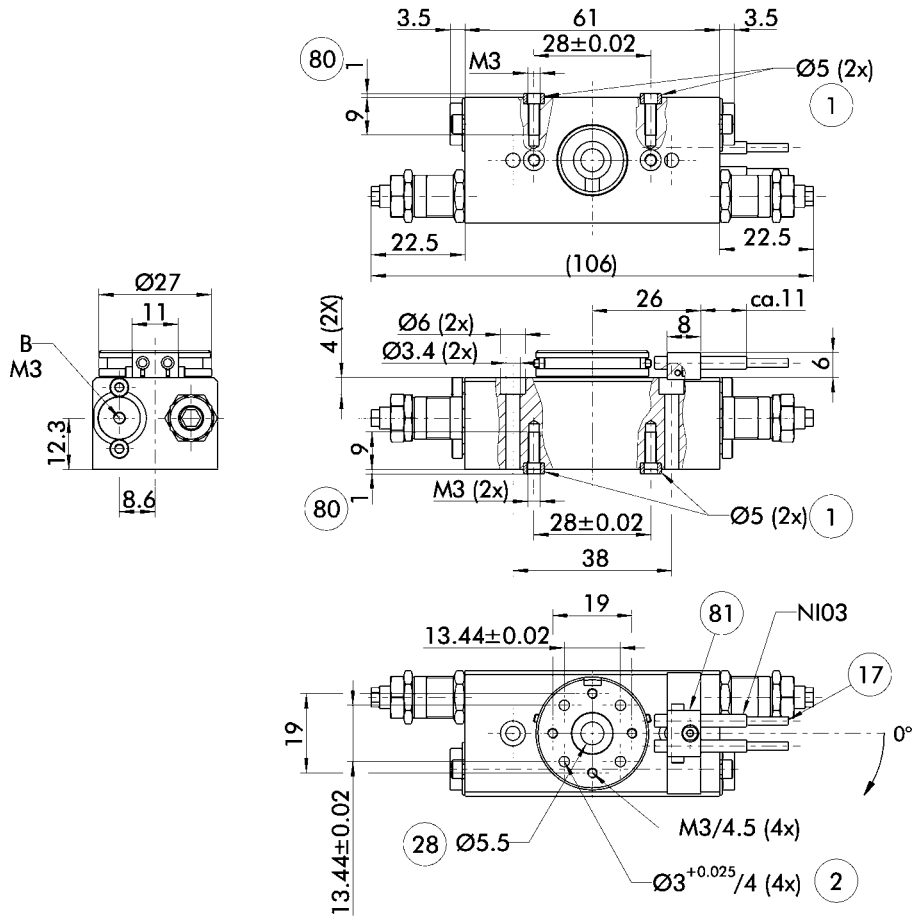


ⓘ Moments and forces may occur simultaneously. When using heavy attachments or ones with high mass moments of inertia, the speed must be restricted to ensure that the rotary movement occurs without any hitting or bouncing. oments and forces may occur at the same time. For heavy structures or superstructures with high mass moment of inertia, limiting is necessary to ensure that rotary movement takes place without striking or bouncing.

Technical data

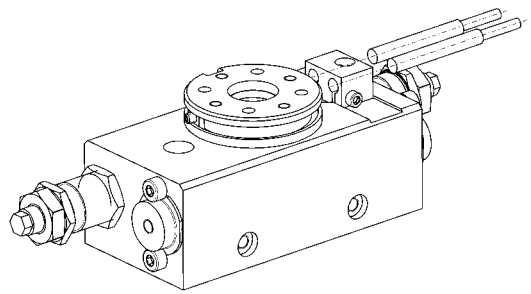
Designation		RM 10
	ID	0313019
Torque	[Nm]	0.224
Angle of rotation	[°]	185
End position adjustability	[°]	Continuous
IP rating		40
Mass	[kg]	0.178
Fluid use per cycle	[cm³]	2.9
Nominal operating pressure	[bar]	6
Minimum pressure	[bar]	3
Maximum pressure	[bar]	8
Min. ambient temperature	[°C]	5
Max. ambient temperature	[°C]	60
Repeat accuracy	[°]	± 0.044

Main views



A,a Main and direct connections, swivel unit, rotating to the right
B,b Main and direct connections, swivel unit, rotating to the left
① Connection, swivel unit
① Connection of the assembly
⑰ Cable outlet
㉘ Through-bore
㉚ Depth of the centering sleeve in the counter piece
㉛ Not included in the scope of delivery

Sensor systems



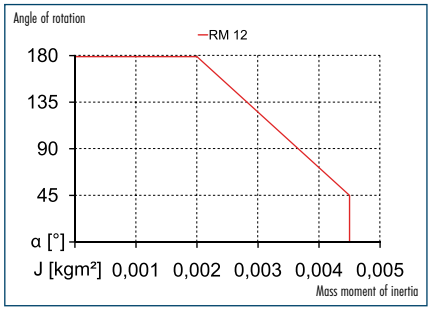
End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
RMNS 08-X	0313049	1 x bracket, 2 x sensors, 2 x operating targets	
RMNS 08-G	0313050	1 x bracket, 2 x sensors, 2 x operating targets, 2 x straight cable extensions	•
RMNS 08-W	0313051	1 x bracket, 2 x sensors, 2 x operating targets, 2 x angled cable extensions	

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

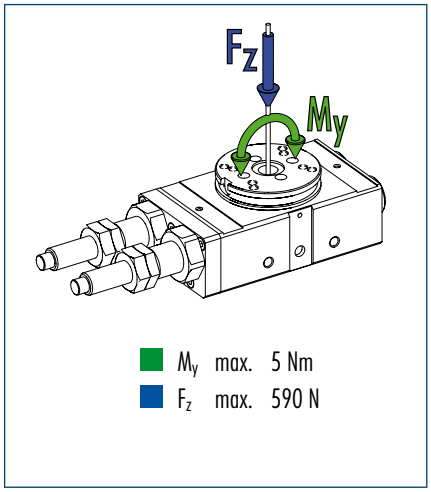
RM 12

Range of use for dampening



ⓘ For layout of the rotary module, we recommend using our TOOLBOX sizing software, which can be obtained at www.schunk.com. Sizing the selected unit is absolutely necessary, since otherwise overloading can result.

Moment load

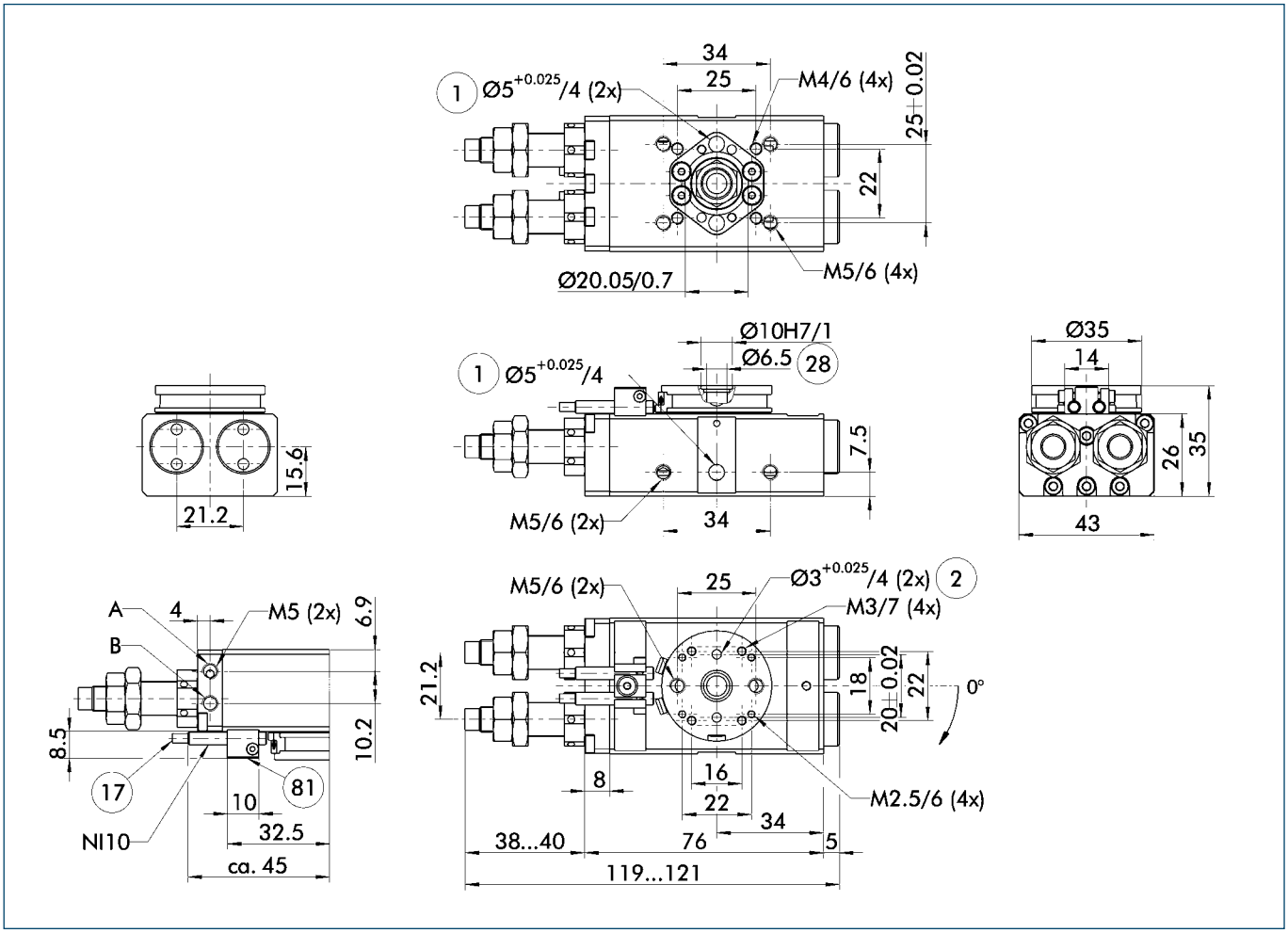


ⓘ Moments and forces may occur simultaneously. When using heavy attachments or ones with high mass moments of inertia, the speed must be restricted to ensure that the rotary movement occurs without any hitting or bouncing. oments and forces may occur at the same time. For heavy structures or superstructures with high mass moment of inertia, limiting is necessary to ensure that rotary movement takes place without striking or bouncing.

Technical data

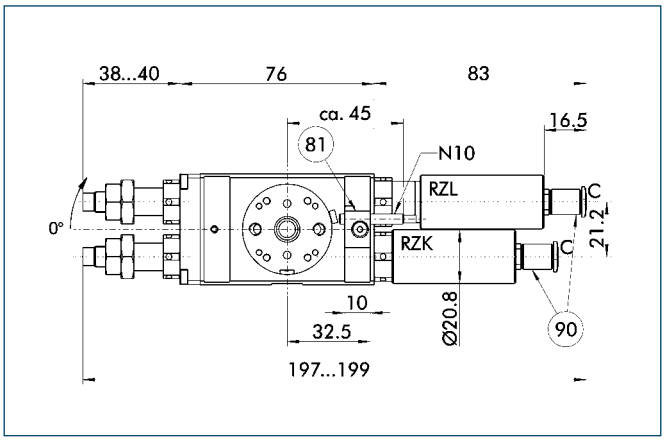
Designation		RM 12
	ID	0313000
Torque	[Nm]	0.38
Angle of rotation	[°]	190
End position adjustability	[°]	Continuous
IP rating		40
Mass	[kg]	0.36
Fluid use per cycle	[cm³]	4.8
Nominal operating pressure	[bar]	6
Minimum pressure	[bar]	3
Maximum pressure	[bar]	8
Min. ambient temperature	[°C]	5
Max. ambient temperature	[°C]	60
Repeat accuracy	[°]	±0.049
OPTIONS and their characteristics		
Intermediate position version		RM 12-RZ
	ID	0313013
Intermediate position, adjustability	[°]	Continuous
Mass	[kg]	0.48
Repeat accuracy (from one direction)	[°]	± 0.15
Repeat accuracy (difference of both directions)	[°]	± 0.35
Max. permissible mass moment of inertia	[kgm²]	0.00045

Main views



A,a Main and direct connections, swivel unit, rotating to the right
B,b Main and direct connections, swivel unit, rotating to the left
(1) Connection, swivel unit
(1) Connection of the assembly
(17) Cable outlet
(28) Through-bore
(81) Not included in the scope of delivery

Intermediate position, RZ



(81) Not included in the scope of delivery
(90) Additional air connection "C" for intermediate position (see table for actuation)

Control, intermediate position, RZ

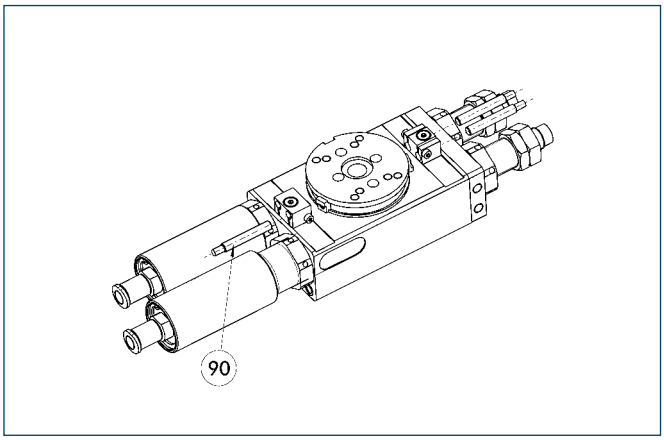
Rotating motion	A	B	C
0 °→ 180°	1	0	0
180°→ 0°	0	1	0
0° → 90°	0	1	1
90° → 0°	0	1	0
0° → 90°	0	1	1
90° → 180°	1	0	0*
180°→ 90°	1	0	1
90° → 180°	1	0	0
180°→ 90°	1	0	1
90° → 0°	0	1	0*

* after about 0.1 s

Example, intermediate position at 90°

The intermediate position can be adjusted over the entire range of rotation. Thereby the two main pistons have to be locked against each other to get the intermediate position free from play. For intermediate positions up to 90°, the stop cylinders (RZK and RZL) are to be installed as shown. For intermediate positions greater than 90°, these are to be swapped.

Sensor systems



90 Additional proximity switch is only needed for the RZ version

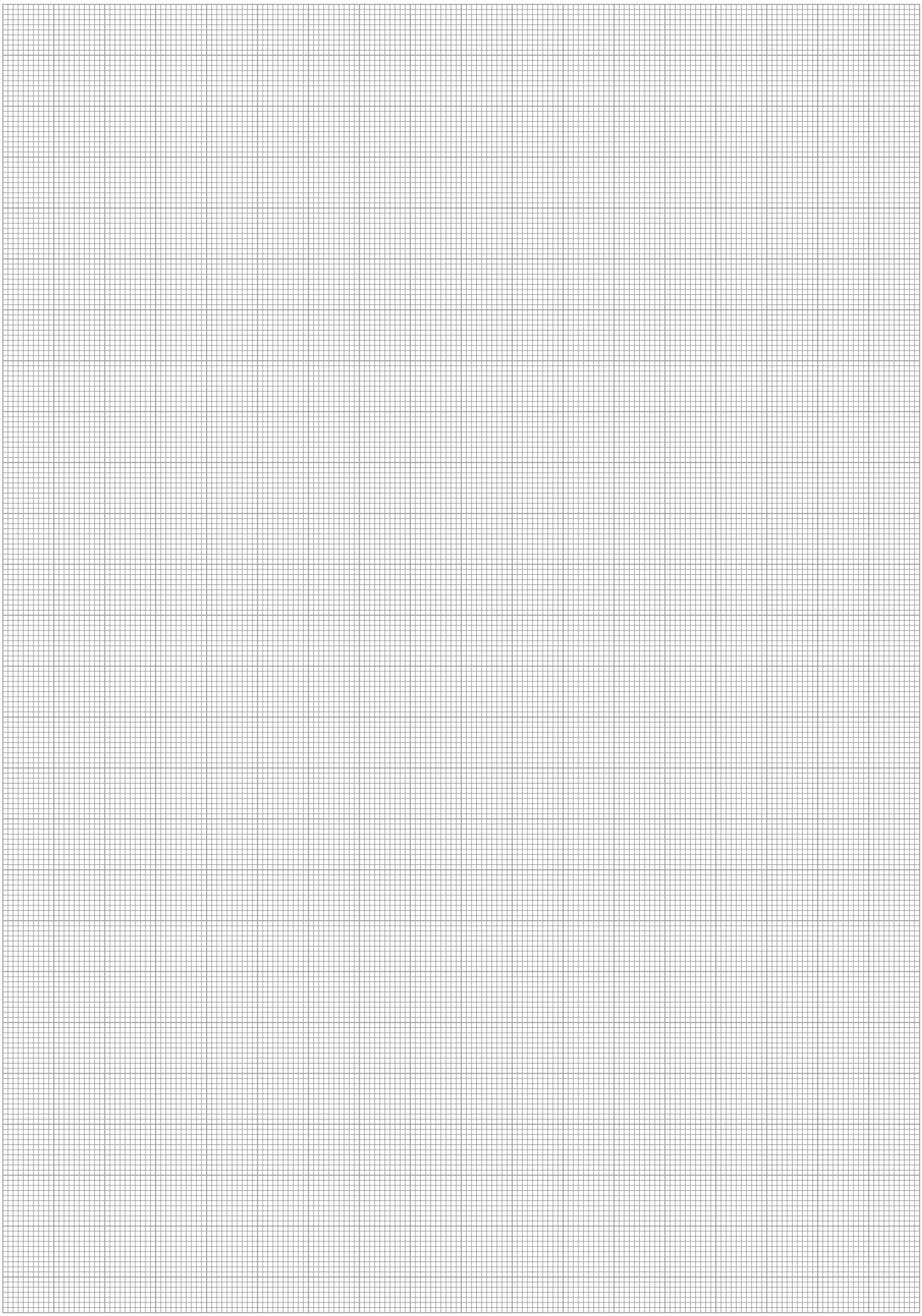
End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
RMNS 12-X	0313041	1 x bracket, 2 x sensors, 2 x operating targets	
RMNS 12-G	0313042	1 x bracket, 2 x sensors, 2 x operating targets, 2 x straight cable extensions	•
RMNS 12-W	0313043	1 x bracket, 2 x sensors, 2 x operating targets, 2 x angled cable extensions	

Intermediate position monitoring:
Inductive proximity switch, can be directly mounted

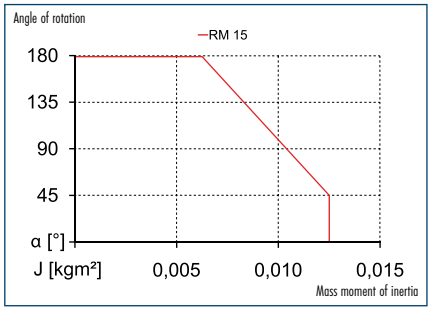
Designation	ID	Scope of delivery	Recommended product
RMNZ 12-X	0313041	1 x bracket, 1 x sensors, 1 x operating targets	
RMNZ 12-G	0313042	1 x bracket, 1 x sensors, 1 x operating targets, 1 x straight cable extensions	•
RMNZ 12-W	0313043	1 x bracket, 1 x sensors, 1 x operating targets, 1 x angled cable extensions	

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.



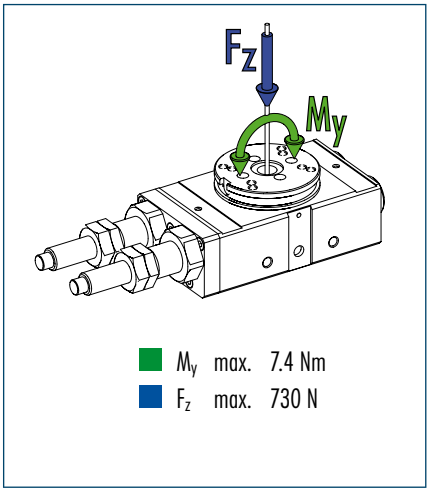
RM 15

Range of use for dampening



ⓘ For layout of the rotary module, we recommend using our TOOLBOX sizing software, which can be obtained at www.schunk.com. Sizing the selected unit is absolutely necessary, since otherwise overloading can result.

Moment load

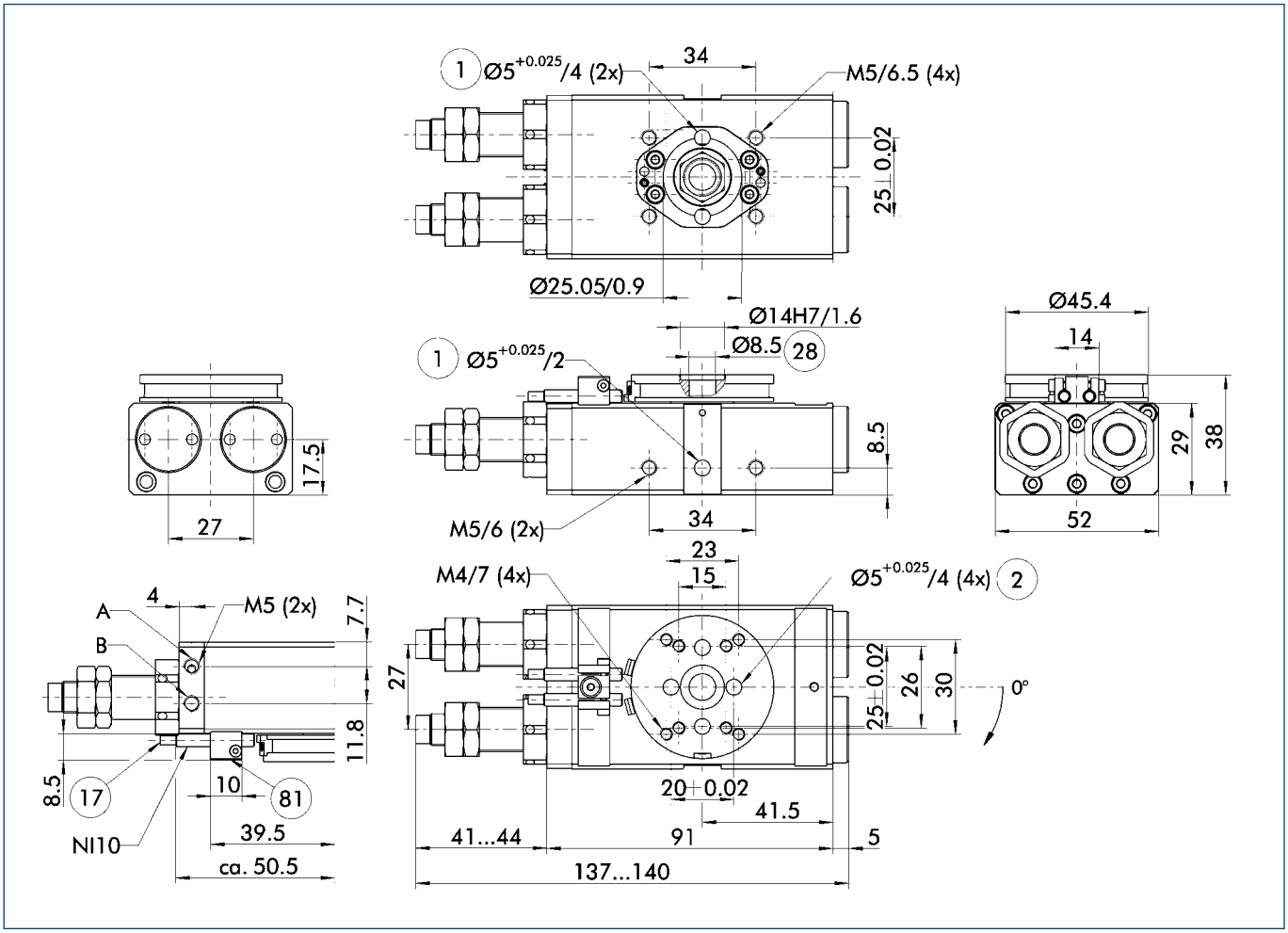


ⓘ Moments and forces may occur simultaneously. When using heavy attachments or ones with high mass moments of inertia, the speed must be restricted to ensure that the rotary movement occurs without any hitting or bouncing. oments and forces may occur at the same time. For heavy structures or superstructures with high mass moment of inertia, limiting is necessary to ensure that rotary movement takes place without striking or bouncing.

Technical data

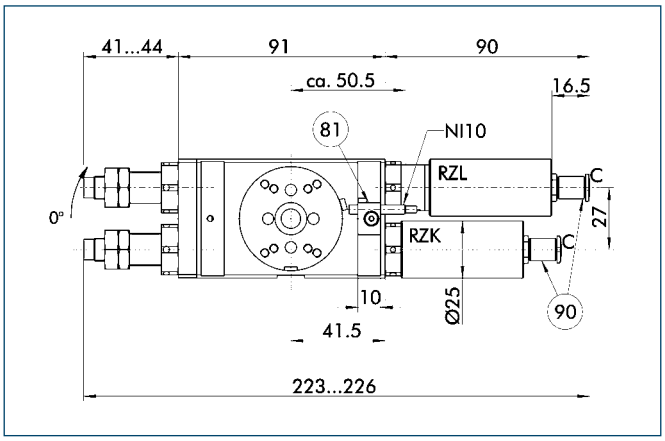
Designation		RM 15
	ID	0313001
Torque	[Nm]	0.76
Angle of rotation	[°]	190
End position adjustability	[°]	Continuous
IP rating		40
Mass	[kg]	0.58
Fluid use per cycle	[cm³]	9.6
Nominal operating pressure	[bar]	6
Minimum pressure	[bar]	3
Maximum pressure	[bar]	8
Min. ambient temperature	[°C]	5
Max. ambient temperature	[°C]	60
Repeat accuracy	[°]	±0.05
OPTIONS and their characteristics		
Intermediate position version		RM 15-RZ
	ID	0313014
Intermediate position, adjustability	[°]	Continuous
Mass	[kg]	0.78
Repeat accuracy (from one direction)	[°]	± 0.15
Repeat accuracy (difference of both directions)	[°]	± 0.30
Max. permissible mass moment of inertia	[kgm²]	0.002

Main views



A,a Main and direct connections, swivel unit, rotating to the right
B,b Main and direct connections, swivel unit, rotating to the left
(1) Connection, swivel unit
(1) Connection of the assembly
(17) Cable outlet
(28) Through-bore
(81) Not included in the scope of delivery

Intermediate position, RZ



(81) Not included in the scope of delivery
(90) Additional air connection "C" for intermediate position (see table for actuation)

Control, intermediate position, RZ

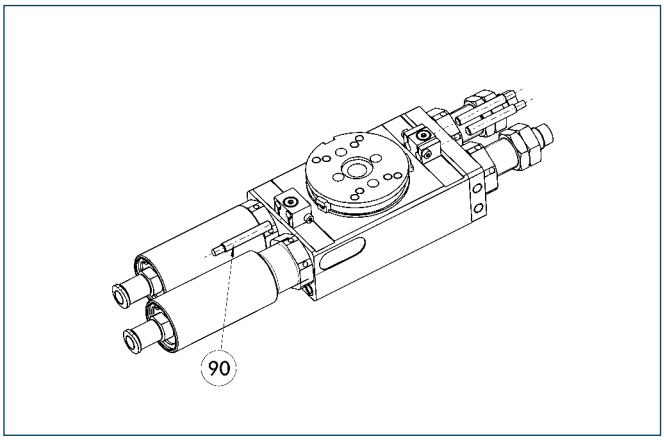
Rotating motion	A	B	C
0 °→ 180°	1	0	0
180°→ 0°	0	1	0
0° → 90°	0	1	1
90° → 0°	0	1	0
0° → 90°	0	1	1
90° → 180°	1	0	0*
180°→ 90°	1	0	1
90° → 180°	1	0	0
180°→ 90°	1	0	1
90° → 0°	0	1	0*

* after about 0.1 s

Example, intermediate position at 90°

The intermediate position can be adjusted over the entire range of rotation. Thereby the two main pistons have to be locked against each other to get the intermediate position free from play. For intermediate positions up to 90°, the stop cylinders (RZK and RZL) are to be installed as shown. For intermediate positions greater than 90°, these are to be swapped.

Sensor systems



90 Additional proximity switch is only needed for the RZ version

End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
RMNS 12-X	0313041	1 x bracket, 2 x sensors, 2 x operating targets	
RMNS 12-G	0313042	1 x bracket, 2 x sensors, 2 x operating targets, 2 x straight cable extensions	•
RMNS 12-W	0313043	1 x bracket, 2 x sensors, 2 x operating targets, 2 x angled cable extensions	

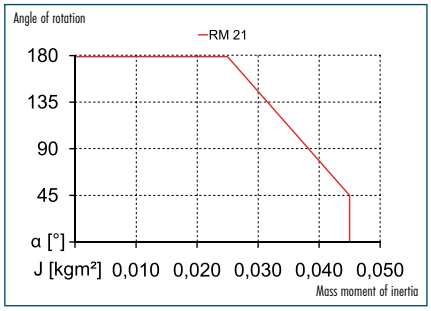
Intermediate position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
RMNZ 12-X	0313041	1 x bracket, 1 x sensors, 1 x operating targets	
RMNZ 12-G	0313042	1 x bracket, 1 x sensors, 1 x operating targets, 1 x straight cable extensions	•
RMNZ 12-W	0313043	1 x bracket, 1 x sensors, 1 x operating targets, 1 x angled cable extensions	

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

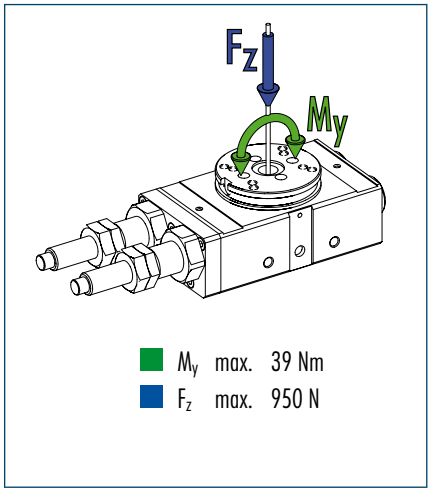
RM 21

Range of use for dampening



ⓘ For layout of the rotary module, we recommend using our TOOLBOX sizing software, which can be obtained at www.schunk.com. Sizing the selected unit is absolutely necessary, since otherwise overloading can result.

Moment load

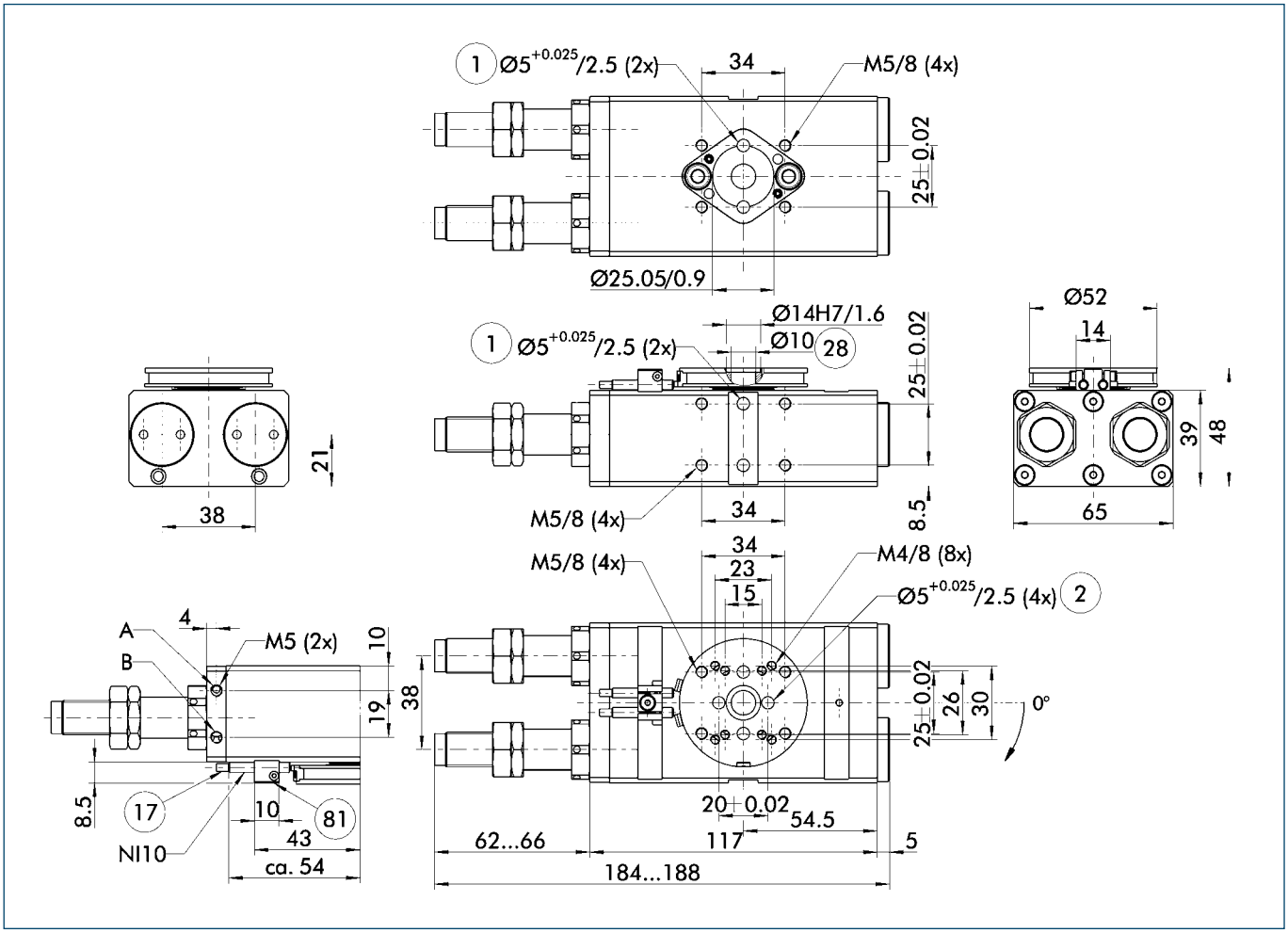


ⓘ Moments and forces may occur simultaneously. When using heavy attachments or ones with high mass moments of inertia, the speed must be restricted to ensure that the rotary movement occurs without any hitting or bouncing. oments and forces may occur at the same time. For heavy structures or superstructures with high mass moment of inertia, limiting is necessary to ensure that rotary movement takes place without striking or bouncing.

Technical data

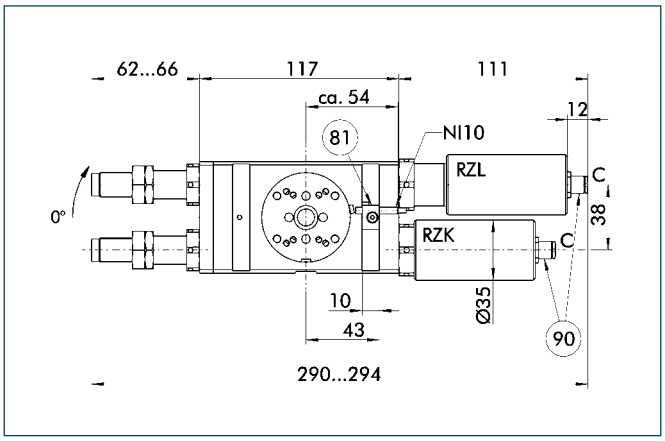
Designation		RM 21
	ID	0313002
Torque	[Nm]	1.9
Angle of rotation	[°]	190
End position adjustability	[°]	Continuous
IP rating		40
Mass	[kg]	1.16
Fluid use per cycle	[cm³]	23.8
Nominal operating pressure	[bar]	6
Minimum pressure	[bar]	3
Maximum pressure	[bar]	8
Min. ambient temperature	[°C]	5
Max. ambient temperature	[°C]	60
Repeat accuracy	[°]	±0.044
OPTIONS and their characteristics		
Intermediate position version		RM 21-RZ
	ID	0313015
Intermediate position, adjustability	[°]	Continuous
Mass	[kg]	1.6
Repeat accuracy (from one direction)	[°]	± 0.12
Repeat accuracy (difference of both directions)	[°]	± 0.25
Max. permissible mass moment of inertia	[kgm²]	0.02

Main views



A,a Main and direct connections, swivel unit, rotating to the right
B,b Main and direct connections, swivel unit, rotating to the left
(1) Connection, swivel unit
(1) Connection of the assembly
(17) Cable outlet
(28) Through-bore
(81) Not included in the scope of delivery

Intermediate position, RZ



(81) Not included in the scope of delivery
(90) Additional air connection "C" for intermediate position (see table for actuation)

Control, intermediate position, RZ

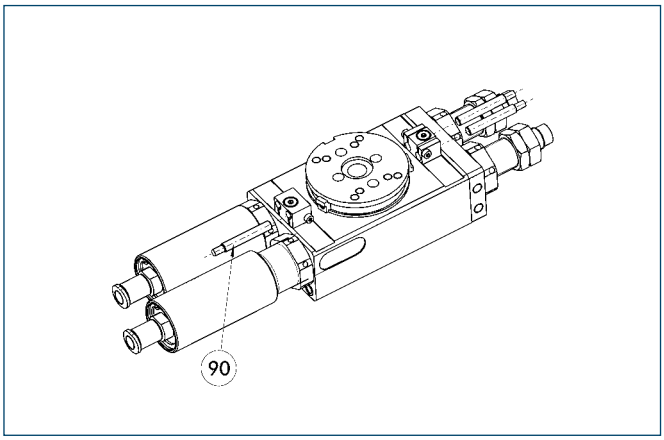
Rotating motion	A	B	C
0 °→ 180°	1	0	0
180°→ 0°	0	1	0
0° → 90°	0	1	1
90° → 0°	0	1	0
0° → 90°	0	1	1
90° → 180°	1	0	0*
180°→ 90°	1	0	1
90° → 180°	1	0	0
180°→ 90°	1	0	1
90° → 0°	0	1	0*

* after about 0.1 s

Example, intermediate position at 90°

The intermediate position can be adjusted over the entire range of rotation. Thereby the two main pistons have to be locked against each other to get the intermediate position free from play. For intermediate positions up to 90°, the stop cylinders (RZK and RZL) are to be installed as shown. For intermediate positions greater than 90°, these are to be swapped.

Sensor systems



90 Additional proximity switch is only needed for the RZ version

End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
RMNS 12-X	0313041	1 x bracket, 2 x sensors, 2 x operating targets	
RMNS 12-G	0313042	1 x bracket, 2 x sensors, 2 x operating targets, 2 x straight cable extensions	•
RMNS 12-W	0313043	1 x bracket, 2 x sensors, 2 x operating targets, 2 x angled cable extensions	

Intermediate position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
RMNZ 12-X	0313041	1 x bracket, 1 x sensors, 1 x operating targets	
RMNZ 12-G	0313042	1 x bracket, 1 x sensors, 1 x operating targets, 1 x straight cable extensions	•
RMNZ 12-W	0313043	1 x bracket, 1 x sensors, 1 x operating targets, 1 x angled cable extensions	

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

Sizes
50 .. 310

Mass
0.65 kg .. 8.3 kg

Torque
0.7 Nm .. 22 Nm

Axial force
800 N .. 2600 N

Bending moment
8 Nm .. 380 Nm

Application example

Pneumatic dual-axis pick-and-place machine with two rotations of the workpiece in two axes

1. Rotary module, RM 310-W180-2
2. Adapter plate, APL 330
3. Linear module, LM 200-H075
4. Linear module, KLM 100-H050
5. Adapter plate, APL 120
6. Rotary module, RM 110-W180-1
7. Adapter plate, APL 310
8. Parallel gripping module, GM 105

Rotor

With high torque for fast rotation tasks

Area of application

Use in clean environments such as assembly or packaging areas as well as fast movement cycles. To reach any point in a space in free combination with linear modules or for rotating or turning over workpieces.

Advantages – your benefits

Stop system with integrated fine adjustment of rotation angle
For sensitive adjustment of end positions

Direct drive of the rotary table with integrated rotor cylinder
Guaranteed highest repeat accuracies

Extremely compact design
For minimum interfering contours

Solid axial and radial bearings for the rotary table
For high load bearing capacity in all directions

End-position monitoring
Using an optional standardized monitoring set

Integrated shock absorbers with adjustable absorption characteristic
For optimal dampening

Standardized mounting bores
For numerous combinations with other GEMOTEC system elements

General information about the series

Working principle
Rotor

Housing material
Aluminum alloy, hard-anodized

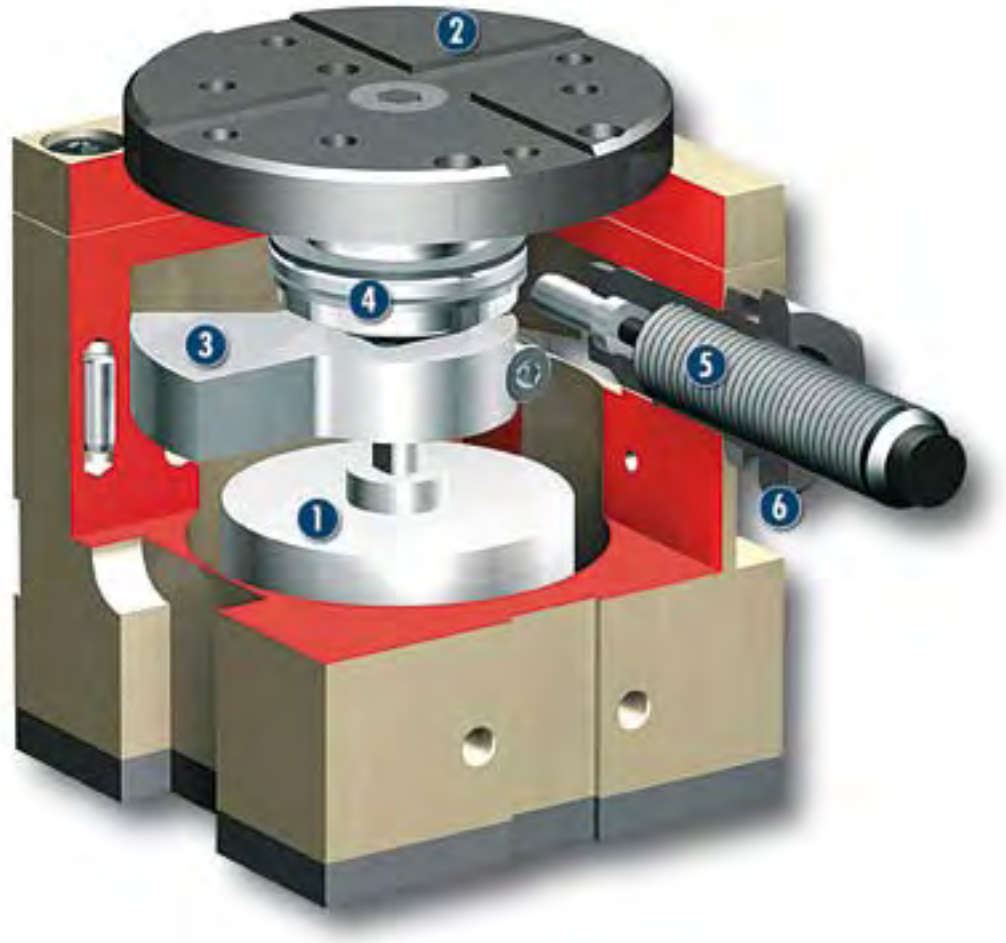
Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

Scope of delivery
Completely ready for operation without bracket for proximity switch and without proximity switch

Warranty
24 months

For production reasons, the colors may vary from those shown in the catalog.

Cross-section of function



1 Drive
Rotor as compact, powerful drive

2 Modular design hole pattern
Completely integrated in the module system

3 Stop lever
Hardened stop, aligned with the rotating angle (can be set between 10° - 180°)

4 Robust bearings
Highly precise bearing through the use of axial and radial rolling-contact bearing

5 End position dampening
Adjusting of the dampening characteristic by dampening stroke adjustment

6 Rotating angle fine adjustment
By adjusting the shock absorber

Description of function

The drive is done pneumatically using the rotor principle. The rotary table is very robust thanks to axial and radial bearings.

Options and special information

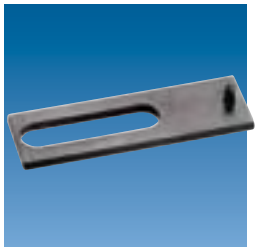
This module can be combined as standard with many elements from the modular system. You can find more information in the “Accessories” chapter.

Accessories

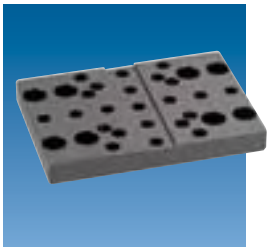
Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

Fittings

Centering strips



Adapter plates



Inductive proximity switch, NI

Sensor cable

Pressure maintenance valve

Pillar assembly systems

ⓘ Please see the side views at the end of the respective size for information concerning specific sizes, accessories availability for that size, designation, and ID numbers. You can find more information about our accessories program in the "Accessories" part of the catalog.

General information about the series

Repeat accuracy

Repeat accuracy is defined as the distribution of the end positions for 100 consecutive swiveling cycles.

Flange position

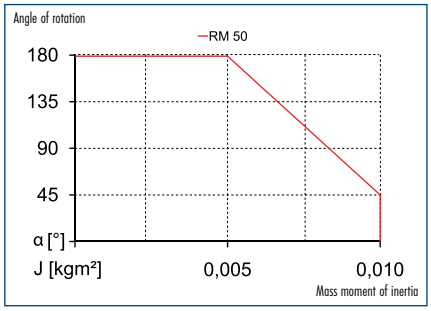
The position of the drive flange is always shown in the left end position. It rotates from here to the right in the clockwise direction. The arrow makes the direction of rotation clear.

Layout or sizing

For layout or sizing of rotary modules, we recommend using our TOOLBOX sizing software, which can be obtained at www.schunk.com. Sizing the selected unit is absolutely necessary, since otherwise overloading can result.

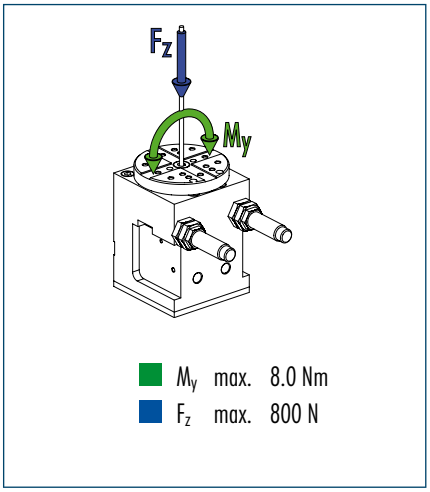
RM 50

Range of use for dampening



ⓘ For layout of the rotary module, we recommend using our TOOLBOX sizing software, which can be obtained at www.schunk.com. Sizing the selected unit is absolutely necessary, since otherwise overloading can result.

Moment load

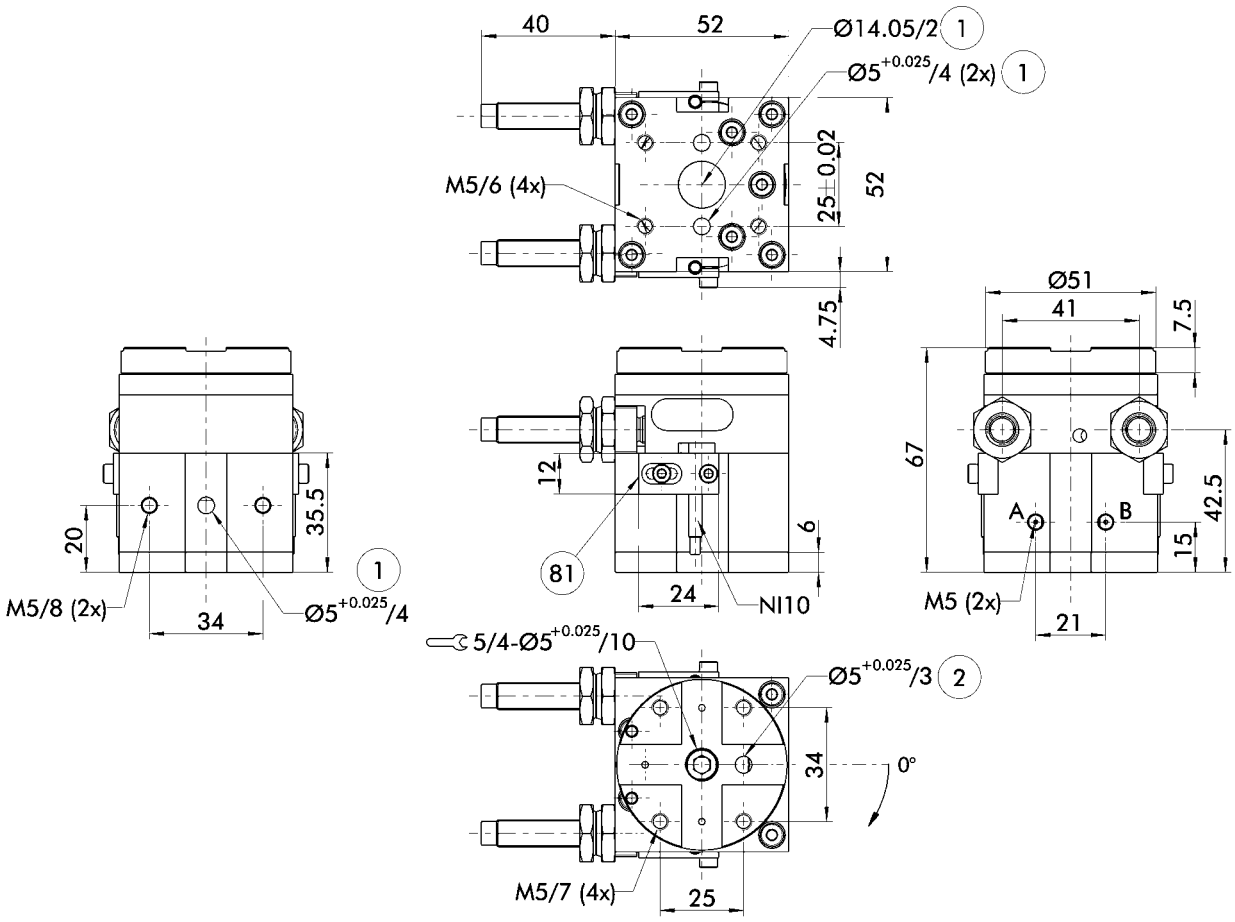


ⓘ Moments and forces may occur at the same time. For heavy structures or superstructures with high mass moment of inertia, limiting is necessary to ensure that rotary movement takes place without striking or bouncing.

Technical data

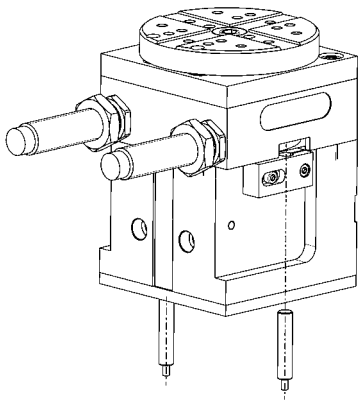
Designation		RM 50-W90-1	RM 50-W180-1
	ID	0313003	0313004
Torque	[Nm]	0.7	0.7
Angle of rotation	[°]	90	180
End position adjustability	[°]	± 5	± 5
IP rating		40	40
Mass	[kg]	0.65	0.65
Fluid use per cycle	[cm³]	12.1	12.1
Nominal operating pressure	[bar]	6	6
Minimum pressure	[bar]	3	3
Maximum pressure	[bar]	7	7
Min. ambient temperature	[°C]	5	5
Max. ambient temperature	[°C]	60	60
Repeat accuracy	[°]	± 0.022	± 0.022
OPTIONS and their characteristics			
Special angle of rotation version			
Designation		RM 50-W...-1	
Angle of rotation	[°]	Optional between 10 and 180	
Sample order for 45° angle of rotation		RM 50-W045-1	

Main views



A, a Main and direct connections, swivel unit, rotating to the right
B, b Main and direct connections, swivel unit, rotating to the left
(1) Connection, swivel unit
(1) Connection of the assembly
(81) Not included in the scope of delivery

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

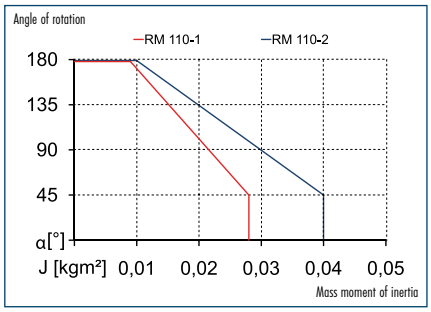
Designation	ID	Scope of delivery	Recommended product
GMNS 50-X	0313339	Bracket, sensor	
GMNS 50-G	0313340	Bracket, sensor,straight cable extension	•
GMNS 50-W	0313341	Bracket, sensor,angled cable extension	

ⓘ Two sensors are needed for each rotor

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

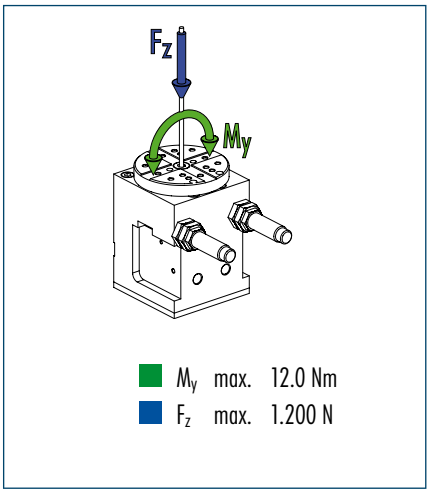
RM 110

Range of use for dampening



ⓘ For layout of the rotary module, we recommend using our TOOLBOX sizing software, which can be obtained at www.schunk.com. Sizing the selected unit is absolutely necessary, since otherwise overloading can result.

Moment load

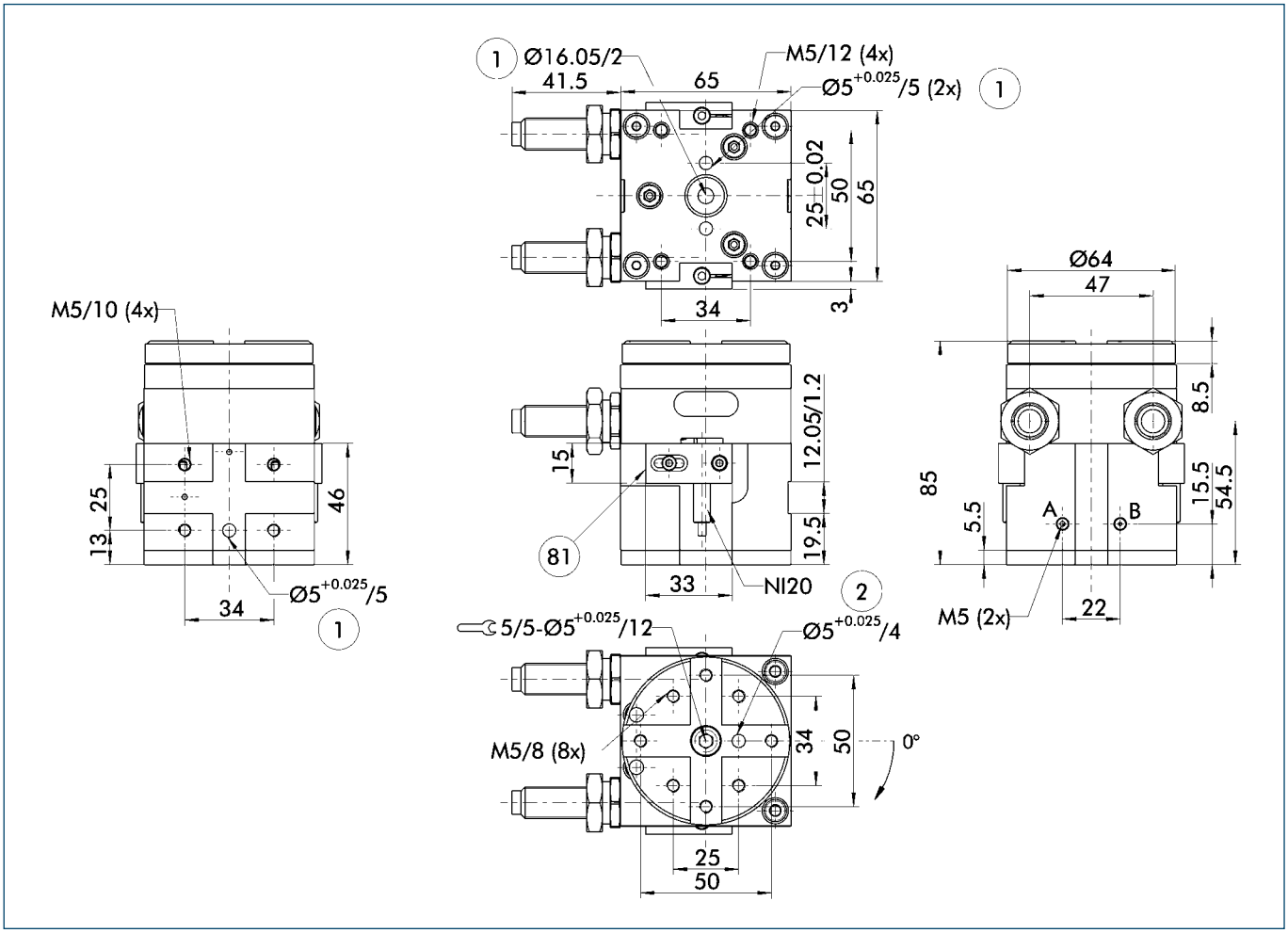


ⓘ Moments and forces may occur at the same time. For heavy structures or superstructures with high mass moment of inertia, limiting is necessary to ensure that rotary movement takes place without striking or bouncing.

Technical data

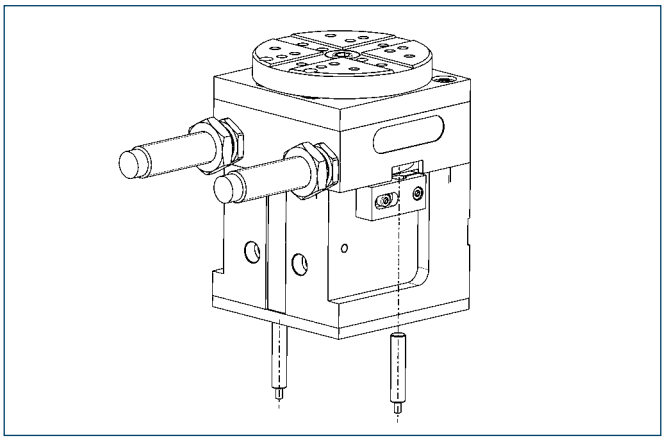
Designation		RM 110-W90-1	RM 110-W90-2	RM 110-W180-1	RM 110-W180-2
	ID	0313005	0313992	0313006	0313993
Torque	[Nm]	1.95	1.95	1.95	1.95
Angle of rotation	[°]	90	90	180	180
End position adjustability	[°]	± 5	± 5	± 5	± 5
IP rating		40	40	40	40
Mass	[kg]	1.12	1.12	1.12	1.12
Fluid use per cycle	[cm³]	30	30	30	30
Nominal operating pressure	[bar]	6	6	6	6
Minimum pressure	[bar]	3	3	3	3
Maximum pressure	[bar]	8	8	8	8
Min. ambient temperature	[°C]	5	5	5	5
Max. ambient temperature	[°C]	60	60	60	60
Repeat accuracy	[°]	± 0.018	± 0.018	± 0.018	± 0.018
OPTIONS and their characteristics					
Special angle of rotation version					
Designation			RM 110-W...-1		RM 110-W...-2
Angle of rotation	[°]		Optional between 10 and 180		Optional between 10 and 180
Sample order for 45° angle of rotation			RM 110-W045-1		RM 110-W045-2

Main views



A, a Main and direct connections, swivel unit, rotating to the right
B, b Main and direct connections, swivel unit, rotating to the left
(1) Connection, swivel unit
(1) Connection of the assembly
(81) Not included in the scope of delivery

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

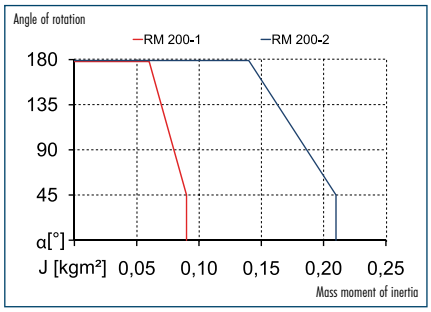
Designation	ID	Scope of delivery	Recommended product
GMNS 100-X	0313342	Bracket, sensor	
GMNS 100-G	0313343	Bracket, sensor,straight cable extension	•
GMNS 100-W	0313344	Bracket, sensor,angled cable extension	

ⓘ Two sensors are needed for each rotor

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

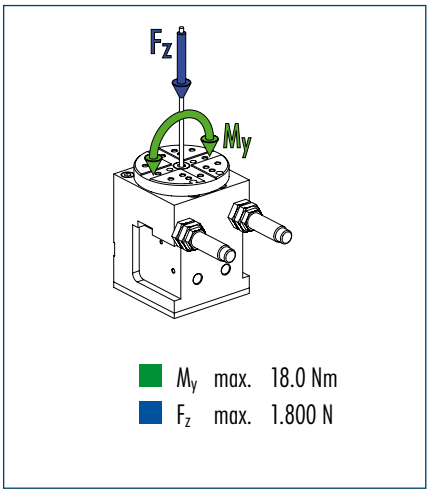
RM 200

Range of use for dampening



ⓘ For layout of the rotary module, we recommend using our TOOLBOX sizing software, which can be obtained at www.schunk.com. Sizing the selected unit is absolutely necessary, since otherwise overloading can result.

Moment load

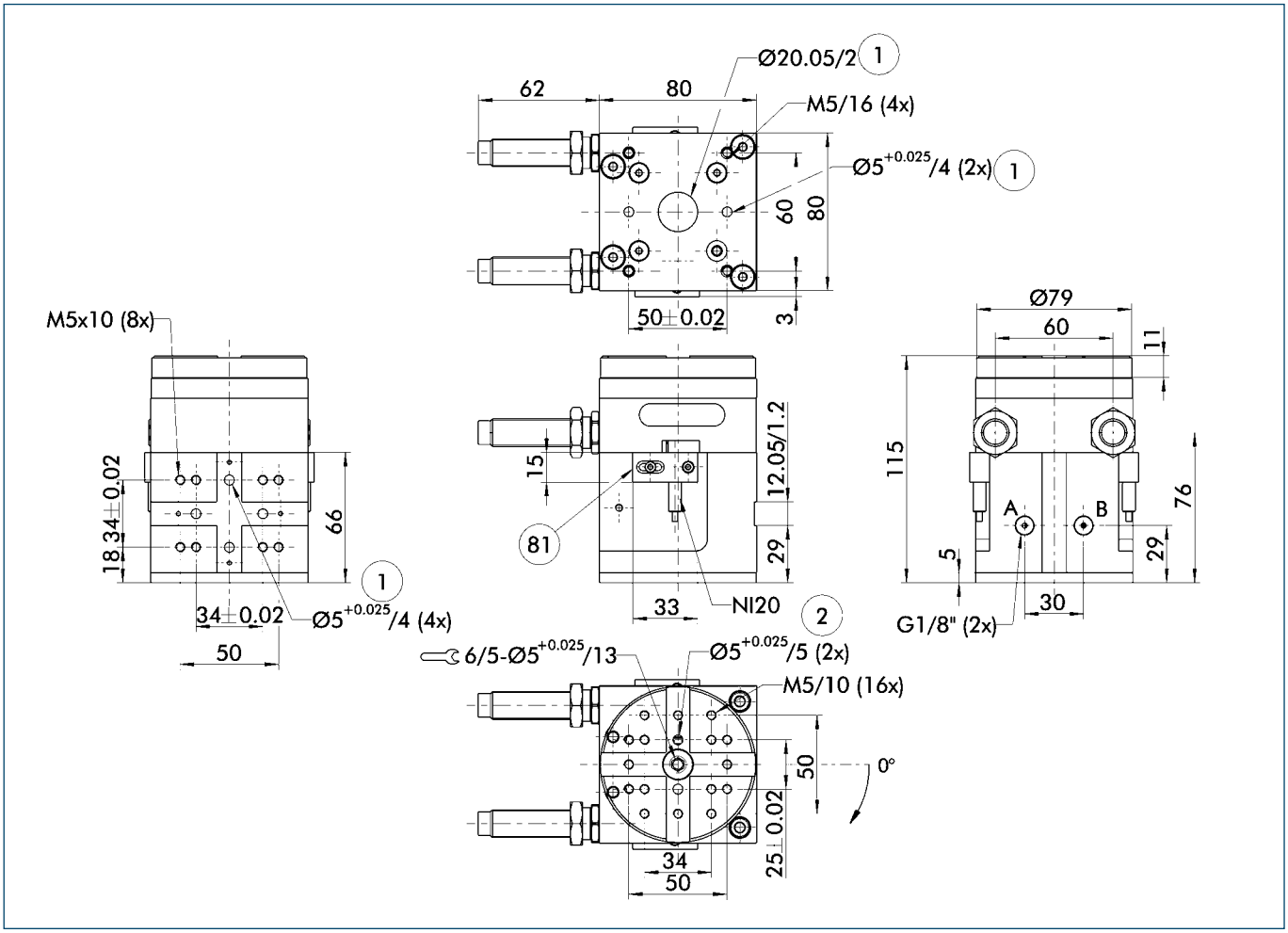


ⓘ Moments and forces may occur at the same time. For heavy structures or superstructures with high mass moment of inertia, limiting is necessary to ensure that rotary movement takes place without striking or bouncing.

Technical data

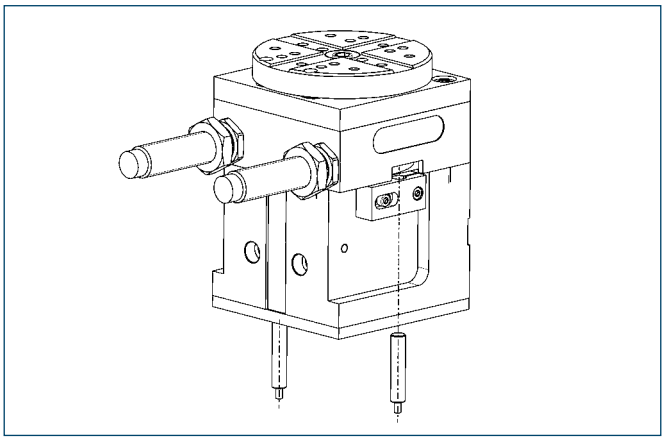
Designation		RM 200-W90-1	RM 200-W90-2	RM 200-W180-1	RM 200-W180-2
	ID	0313007	0313994	0313008	0313995
Torque	[Nm]	4	4	4	4
Angle of rotation	[°]	90	90	180	180
End position adjustability	[°]	± 5	± 5	± 5	± 5
IP rating		40	40	40	40
Mass	[kg]	2.1	2.1	2.1	2.1
Fluid use per cycle	[cm³]	74	74	74	74
Nominal operating pressure	[bar]	6	6	6	6
Minimum pressure	[bar]	3	3	3	3
Maximum pressure	[bar]	8	8	8	8
Min. ambient temperature	[°C]	5	5	5	5
Max. ambient temperature	[°C]	60	60	60	60
Repeat accuracy	[°]	± 0.022	± 0.022	± 0.022	± 0.022
OPTIONS and their characteristics					
Special angle of rotation version					
Designation			RM 200-W...-1		RM 200-W...-2
Angle of rotation	[°]		Optional between 10 and 180		Optional between 10 and 180
Sample order for 45° angle of rotation			RM 200-W045-1		RM 200-W045-2

Main views



A, a Main and direct connections, swivel unit, rotating to the right
B, b Main and direct connections, swivel unit, rotating to the left
(1) Connection, swivel unit
(1) Connection of the assembly
(81) Not included in the scope of delivery

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

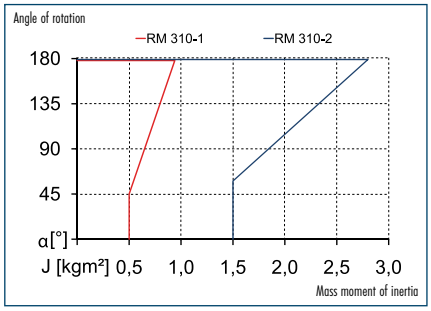
Designation	ID	Scope of delivery	Recommended product
GMNS 100-X	0313342	Bracket, sensor	
GMNS 100-G	0313343	Bracket, sensor,straight cable extension	•
GMNS 100-W	0313344	Bracket, sensor,angled cable extension	

ⓘ Two sensors are needed for each rotor

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

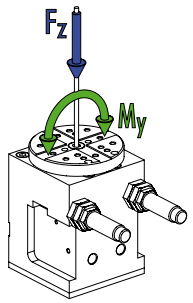
RM 310

Range of use for dampening



ⓘ For layout of the rotary module, we recommend using our TOOLBOX sizing software, which can be obtained at www.schunk.com. Sizing the selected unit is absolutely necessary, since otherwise overloading can result.

Moment load



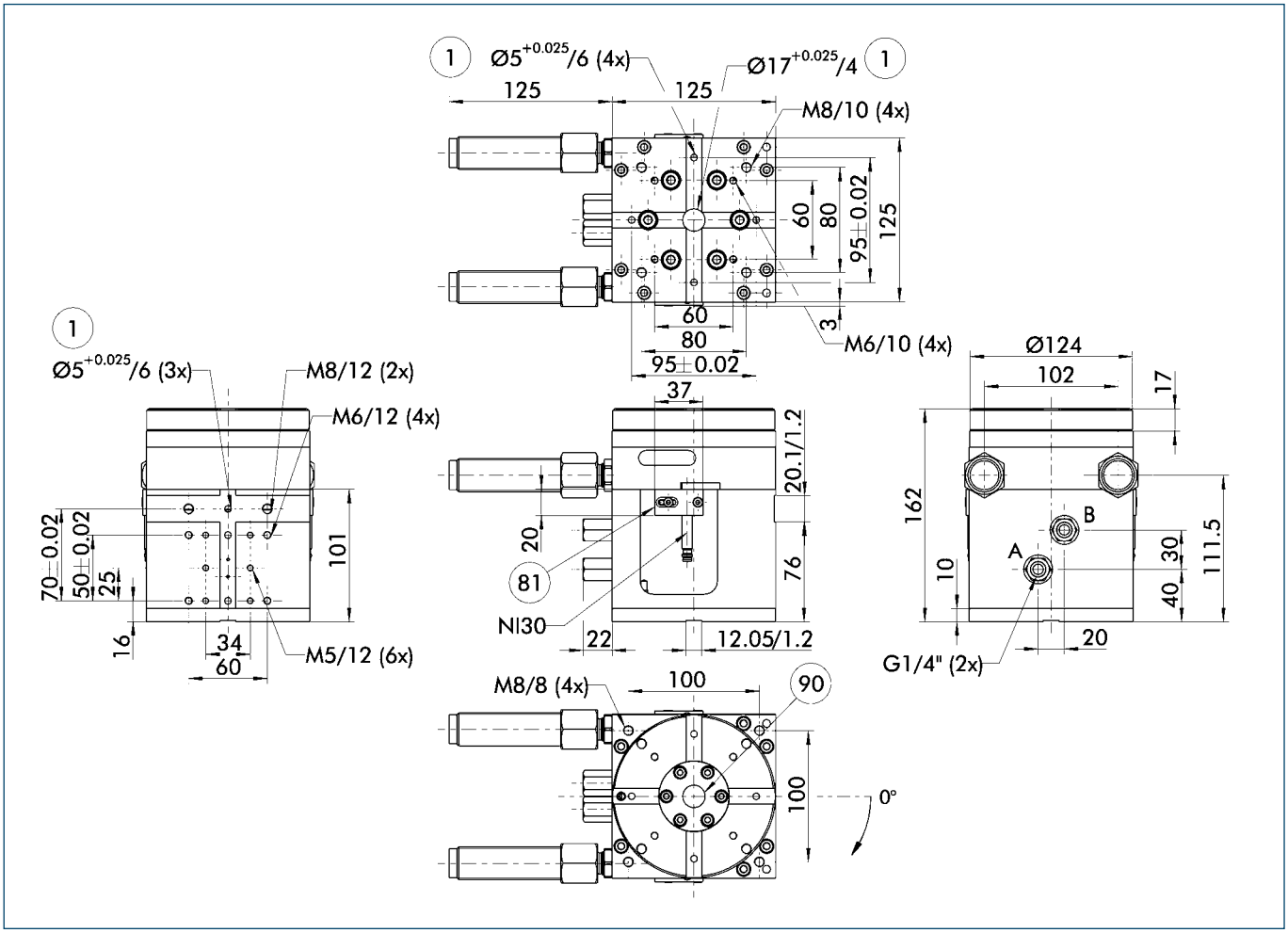
M_y max. 380 Nm
F_z max. 2.600 N

ⓘ Moments and forces may occur at the same time. For heavy structures or superstructures with high mass moment of inertia, limiting is necessary to ensure that rotary movement takes place without striking or bouncing.

Technical data

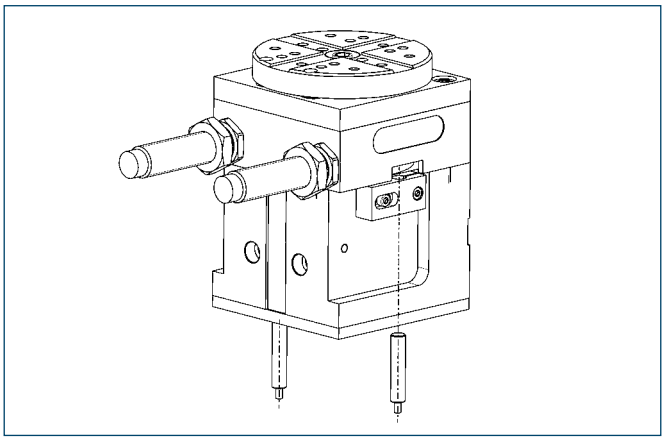
Designation		RM 310-W90-1	RM 310-W90-2	RM 310-W180-1	RM 310-W180-2
	ID	0313009	0313996	0313010	0313997
Torque	[Nm]	22	22	22	22
Angle of rotation	[°]	90	90	180	180
End position adjustability	[°]	± 5	± 5	± 5	± 5
IP rating		40	40	40	40
Mass	[kg]	8.3	8.3	8.3	8.3
Fluid use per cycle	[cm³]	251	251	251	251
Nominal operating pressure	[bar]	6	6	6	6
Minimum pressure	[bar]	3	3	3	3
Maximum pressure	[bar]	8	8	8	8
Min. ambient temperature	[°C]	5	5	5	5
Max. ambient temperature	[°C]	60	60	60	60
Repeat accuracy	[°]	± 0.023	± 0.023	± 0.023	± 0.023
OPTIONS and their characteristics					
Special angle of rotation version					
Designation			RM 310-W...-1		RM 310-W...-2
Angle of rotation	[°]		Optional between 10 and 180		Optional between 10 and 180
Sample order for 45° angle of rotation			RM 310-W045-1		RM 310-W045-2

Main views



A, a Main and direct connections, swivel unit, rotating to the right
B, b Main and direct connections, swivel unit, rotating to the left
(1) Connection, swivel unit
(1) Connection of the assembly
(81) Not included in the scope of delivery
(90) Connection diagram on the rotary table is identical to the bottom

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 200-X	0313345	Bracket, sensor	
GMNS 200-W	0313347	Bracket, sensor,angled cable extension	•

ⓘ Two sensors are needed for each rotor

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

Gripping modules

GRIPPING MODULES

SCHUNK offers you the most extensive program of gripping modules. From pneumatically or electrically driven grippers to small-component, universal, and long-stroke grippers and industry-specific gripping solutions. Please consult our main catalog for further information about SCHUNK gripping modules. Here is an extract from our range of products.

Gripping modules, pneumatic

2-finger gripper for small components

3-finger universal gripper with multi-tooth guide

2-finger universal gripper with multi-tooth guide

2-finger radial gripper, GWB

Gripping modules, electric

2-finger universal gripper, PowerCube system

2-finger gripper for small components, MEG

Special gripper

2-finger clean-room gripper, DKG-RR

O-ring gripper for external and internal assembly

Sizes
80/81 .. 200/201

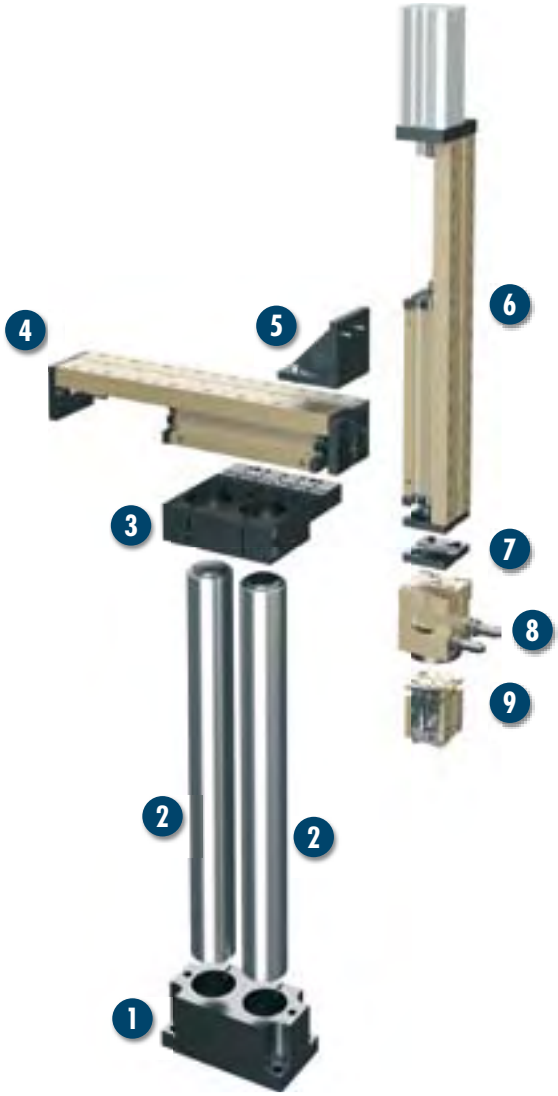
Mass
0.32 kg .. 1.75 kg

Gripping force
120 N .. 600 N

Stroke per finger
2.5 mm .. 10 mm

Workpiece weight, force-fit gripping
Up to 3.0 kg

Application example



Pneumatic pick & place unit with additional third vertical position and workpiece turning

1. Double socket, SOD 055
2. Hollow pillar, SLH 055-0500
3. Double mounting plate, APDH 085
4. Linear module, LM 200-H150
5. Reinforcing bracket, VW 100
6. Linear module with intermediate stop, LM 100-H175-ZZA101-H50
7. Adapter plate, APL 120
8. Rotary module, RM 110-W090-2
9. Parallel gripping module, GM 101-K

Short-stroke gripper for small components

2-finger parallel grippers with circular guide

Area of application

Griping and moving small to medium workpieces in low-contamination areas; for example, in assembly, testing, labs, pharmaceuticals, and many others.

Advantages – your benefits

Compact design
For minimum interfering contours in use

Round rod guidance of the base jaws
For excellent guidance characteristics

Special set screws
For the limiting of the adjustable stroke in both directions

Integration of a gripping force safety device without additional parts is optional
For firm grip even in the event of power failure

End-position monitoring
Using an optional standardized monitoring set

Standardized mounting bores
For numerous combinations with other GEMOTEC system elements

General information about the series

Working principle
Wedge-hook kinematics

Housing material
Aluminum alloy, hard-anodized

Guidance
Circular guide, ground and hardened

Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

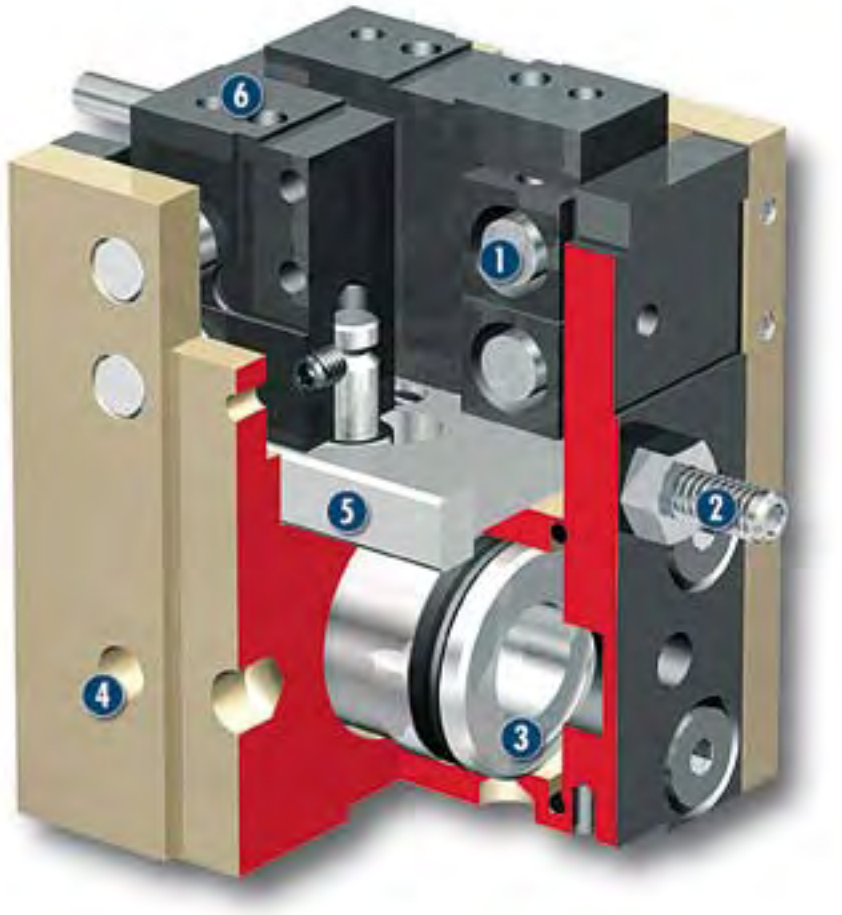
Scope of delivery
Completely ready for operation
without bracket for proximity switch and without proximity switch

Warranty
24 months

Gripping force retaining device
Can be integrated without additional interfering contour in the standard gripper

For production reasons, the colors may vary from those shown in the catalog.

Cross-section of function



1 **Circular guide**
Simple and yet non-elastic

2 **Stroke limitation**
For limiting the opening or closing stroke

3 **Drive**
No piston rod, so the effective surface is the same in both directions

4 **Modular design hole pattern**
Completely integrated in the module system

5 **Kinematics**
Inside, power transmission via line contact

6 **Base jaws**
For adaptation of the workpiece-specific gripper fingers

Description of function

The application of pressure to the opposite piston surfaces guides the movement through a connecting member to the base jaws.

Options and special information

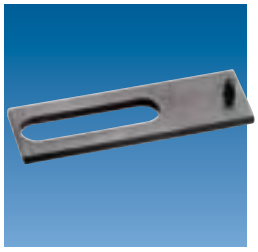
This module can be combined as standard with many elements from the modular system. You can find more information in the “Accessories” chapter.

Accessories

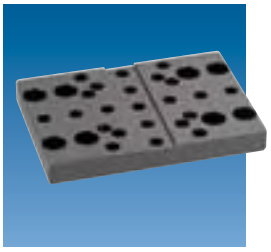
Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

Fittings

Centering strips



Adapter plates



Inductive proximity switch, NI

Sensor cable

Pillar assembly systems

Pressure maintenance valve

ⓘ Please see the side views at the end of the respective size for information concerning specific sizes, accessories availability for that size, designation, and ID numbers. You can find more information about our accessories program in the “Accessories” part of the catalog.

General information about the series

Gripping force

This is the arithmetic sum of the gripping forces applied to each claw jaw, measured at a distance of 20 mm from the upper edge of the gripper.

Finger length

The finger length is measured from the upper edge of the base jaw in the direction of the main axis.

Repeat accuracy

This is defined as the distribution of the end positions of 100 successive strokes.

Workpiece weight

The recommended workpiece weight is calculated for friction grip with a coefficient of static friction of 0.1 and a safety factor of 2 against workpiece slippage at acceleration due to gravity only. For form-fit or capture gripping, there are significantly higher permissible workpiece weights.

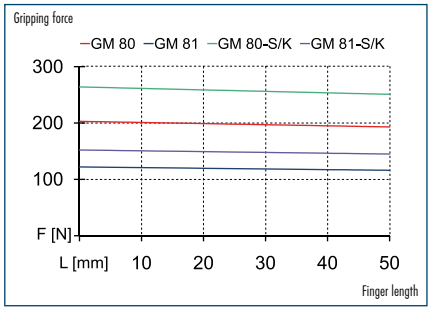
Closing and opening times

Closing and opening times are only movement times of the base jaws or fingers. Valve switching times, hose filling times, or PLC reaction times are not a part of this and are to be considered when cycle times are calculated.

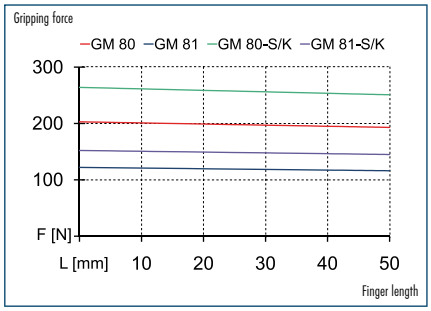
GM 80/81

Gripping modules · Pneumatic · 2-finger parallel gripper · Short-stroke gripper for small components

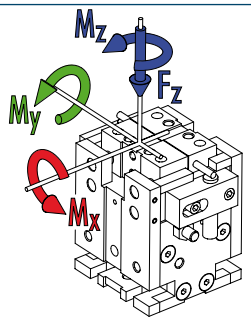
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load



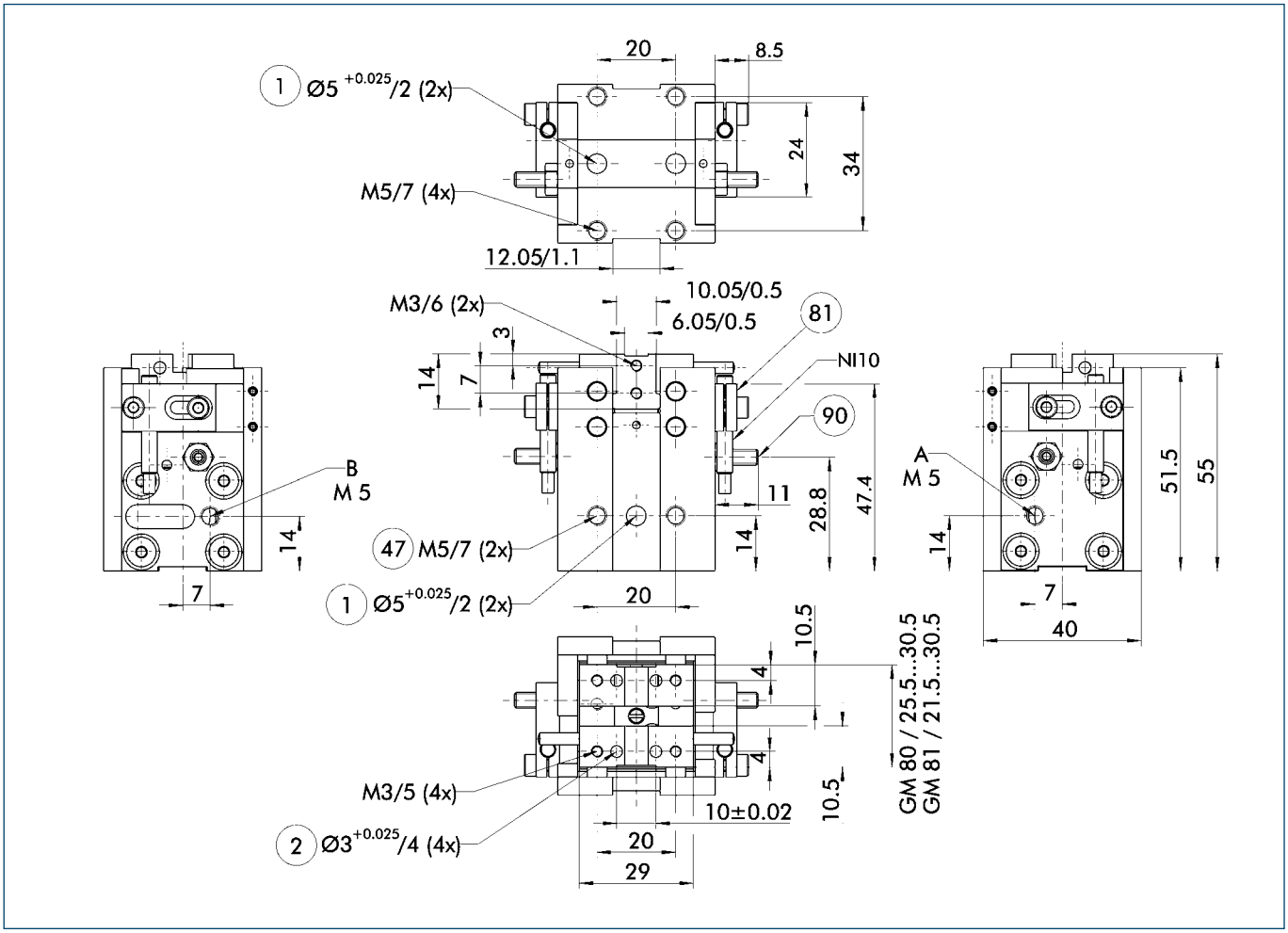
- M_x max. 8 Nm
- M_y max. 6 Nm
- M_z max. 8 Nm
- F_z max. 180 N

ⓘ Moments and forces apply per base jaw and may occur among themselves at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

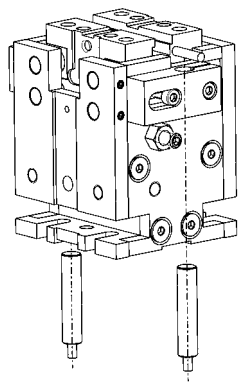
Designation		GM 80	GM 81	GM 80-K	GM 81-K	GM 80-S	GM 81-S
	ID	0313060	0313063	0313062	0313065	0313061	0313064
Stroke per jaw	[mm]	2.5	4.5	2.5	4.5	2.5	4.5
Closing grip force	[N]	200	120	260	150		
Opening grip force	[N]	200	120			260	150
Min. grip force applied by spring	[N]			60	30	60	30
Mass	[kg]	0.32	0.32	0.32	0.32	0.32	0.32
Recommended workpiece weight	[kg]	1.0	0.6	1.0	0.6	1.0	0.6
Fluid consumption for double stroke	[cm³]	3.86	3.86	3.86	3.86	3.86	3.86
Minimum pressure	[bar]	3	3	4.5	4.5	4.5	4.5
Maximum pressure	[bar]	8	8	8	8	8	8
Nominal operating pressure	[bar]	6	6	6	6	6	6
Closing time	[s]	0.02	0.02	0.015	0.015	0.025	0.025
Opening time	[s]	0.02	0.02	0.025	0.025	0.015	0.015
Max. permissible finger length	[mm]	50	50	50	50	50	50
IP rating		40	40	40	40	40	40
Min. ambient temperature	[°C]	5	5	5	5	5	5
Max. ambient temperature	[°C]	60	60	60	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02

Main views



A, a Main and direct connections, gripper open
B, b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(47) on both sides
(81) Not included in the scope of delivery
(90) Set screw for stroke limitation

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 50-X	0313339	Bracket, sensor	
GMNS 50-G	0313340	Bracket, sensor, straight cable extension	•
GMNS 50-W	0313341	Bracket, sensor, angled cable extension	

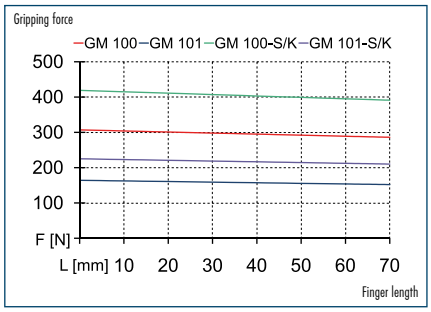
ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

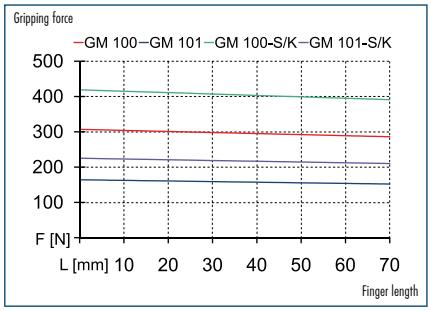
GM 100/101

Gripping modules · Pneumatic · 2-finger parallel gripper · Short-stroke gripper for small components

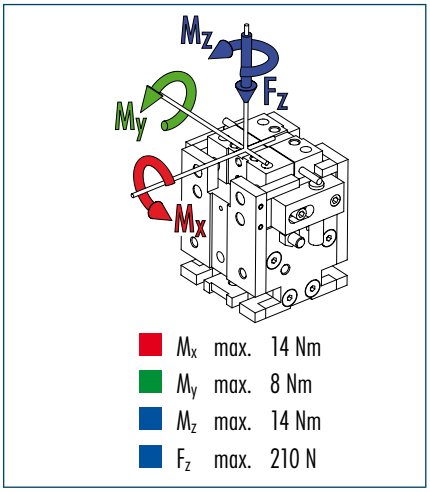
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

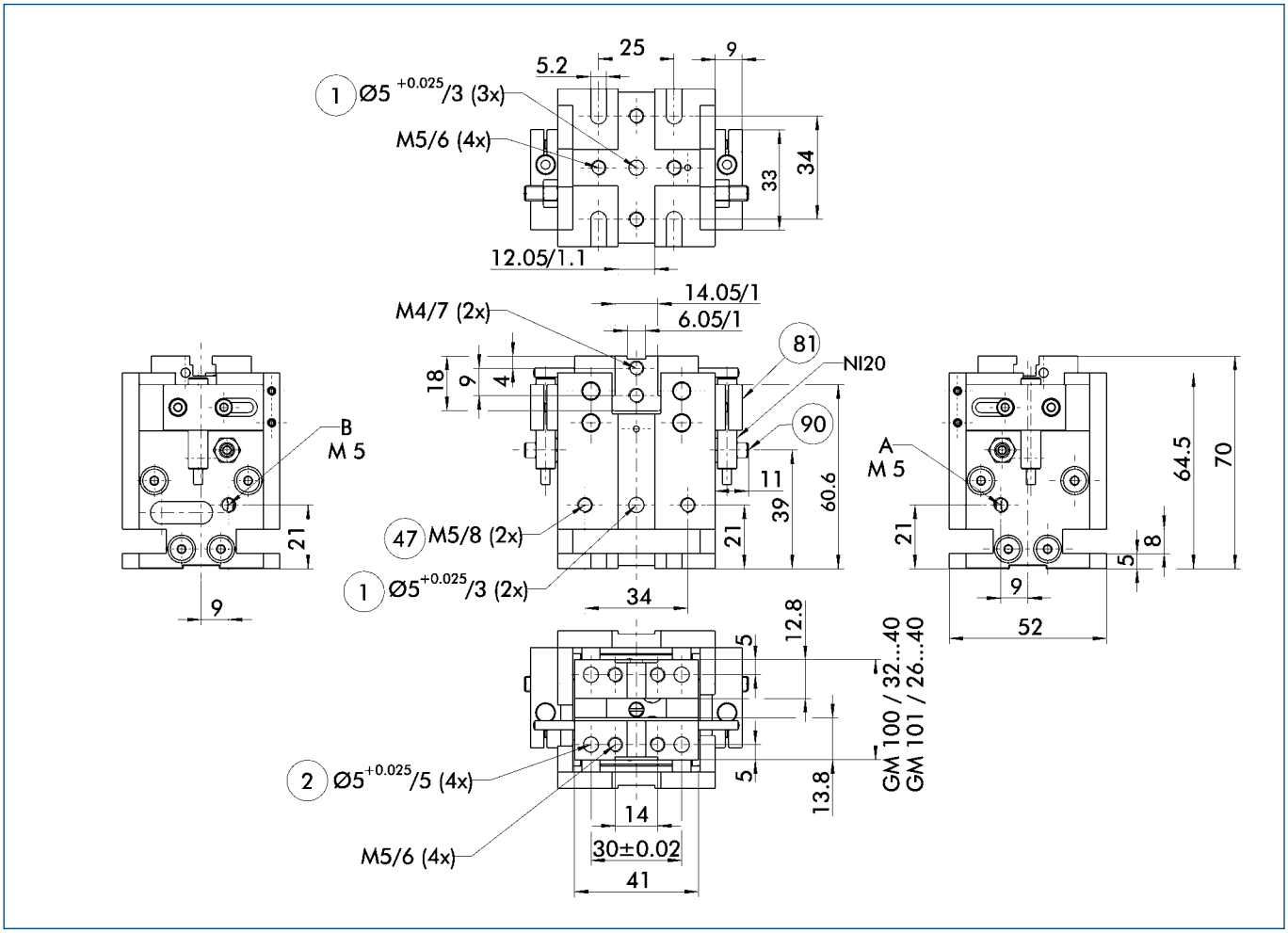


ⓘ Moments and forces apply per base jaw and may occur among themselves at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

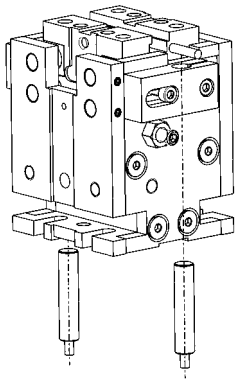
Designation		GM 100	GM 101	GM 100-K	GM 101-K	GM 100-S	GM 101-S
	ID	0313069	0313072	0313071	0313074	0313070	0313073
Stroke per jaw	[mm]	4	7	4	7	4	7
Closing grip force	[N]	300	160	410	220		
Opening grip force	[N]	300	160			410	220
Min. grip force applied by spring	[N]			110	60	110	60
Mass	[kg]	0.62	0.62	0.62	0.62	0.62	0.62
Recommended workpiece weight	[kg]	1.5	0.8	1.5	0.8	1.5	0.8
Fluid consumption for double stroke	[cm^3]	9.78	9.78	9.78	9.78	9.78	9.78
Minimum pressure	[bar]	3	3	4.5	4.5	4.5	4.5
Maximum pressure	[bar]	8	8	8	8	8	8
Nominal operating pressure	[bar]	6	6	6	6	6	6
Closing time	[s]	0.03	0.03	0.025	0.025	0.04	0.04
Opening time	[s]	0.03	0.03	0.04	0.04	0.025	0.025
Max. permissible finger length	[mm]	70	70	70	70	70	70
IP rating		40	40	40	40	40	40
Min. ambient temperature	[°C]	5	5	5	5	5	5
Max. ambient temperature	[°C]	60	60	60	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02

Main views



A, a Main and direct connections, gripper open
B, b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(47) on both sides
(81) Not included in the scope of delivery
(90) Set screw for stroke limitation

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 100-X	0313342	Bracket, sensor	
GMNS 100-G	0313343	Bracket, sensor, straight cable extension	•
GMNS 100-W	0313344	Bracket, sensor, angled cable extension	

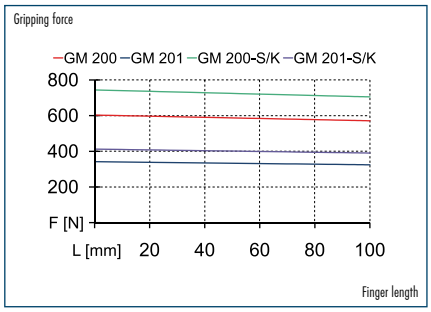
ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

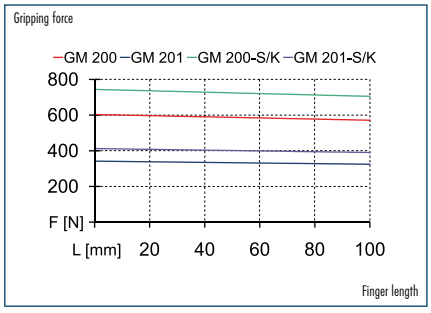
GM 200/201

Gripping modules · Pneumatic · 2-finger parallel gripper · Short-stroke gripper for small components

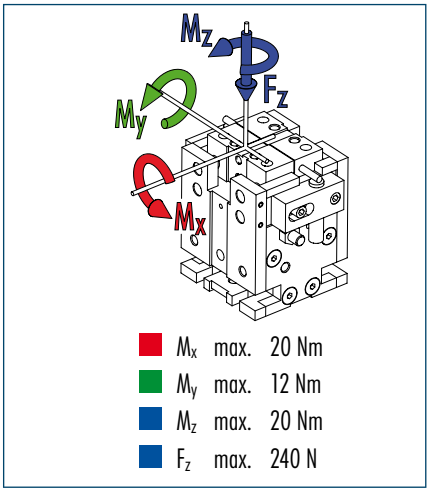
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

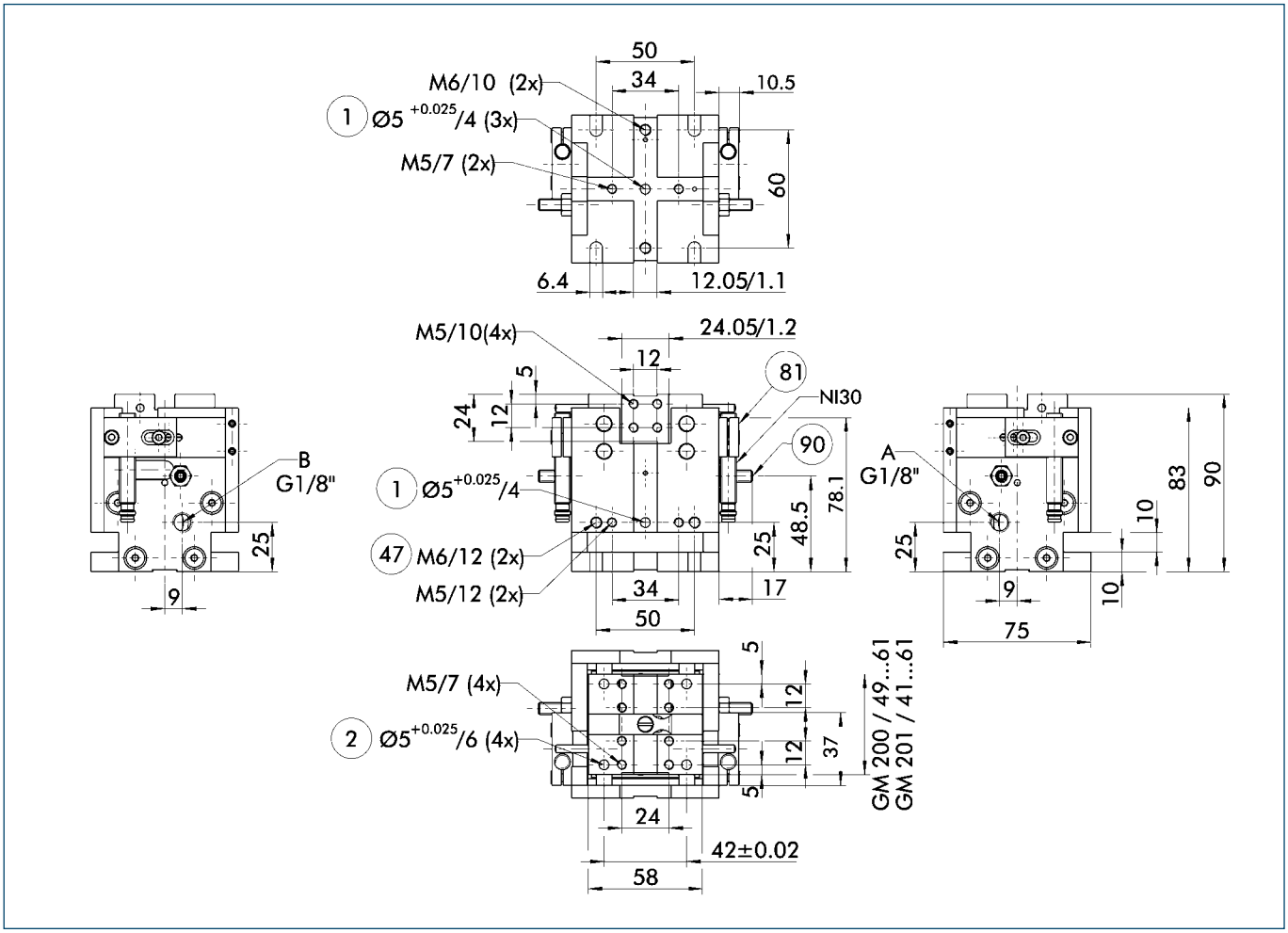


ⓘ Moments and forces apply per base jaw and may occur among themselves at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

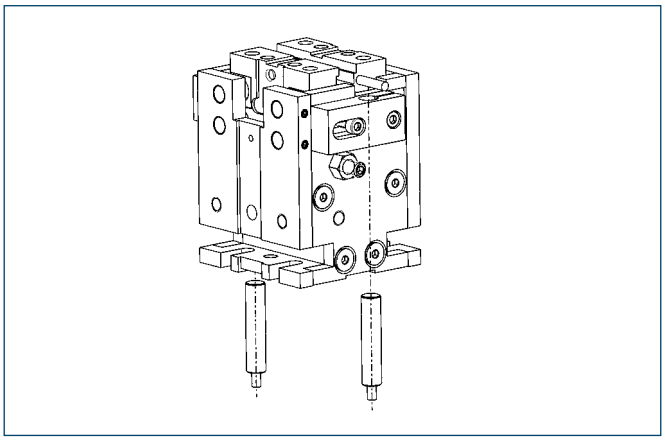
Designation		GM 200	GM 201	GM 200-K	GM 201-K	GM 200-S	GM 201-S
	ID	0313078	0313081	0313080	0313083	0313079	0313082
Stroke per jaw	[mm]	6	10	6	10	6	10
Closing grip force	[N]	600	340	740	410		
Opening grip force	[N]	600	340			740	410
Min. grip force applied by spring	[N]			140	70	140	70
Mass	[kg]	1.75	1.75	1.75	1.75	1.75	1.75
Recommended workpiece weight	[kg]	3.0	1.7	3.0	1.7	3.0	1.7
Fluid consumption for double stroke	[cm^3]	25.88	25.88	25.88	25.88	25.88	25.88
Minimum pressure	[bar]	3	3	4.5	4.5	4.5	4.5
Maximum pressure	[bar]	8	8	8	8	8	8
Nominal operating pressure	[bar]	6	6	6	6	6	6
Closing time	[s]	0.05	0.05	0.04	0.04	0.06	0.06
Opening time	[s]	0.05	0.05	0.06	0.06	0.04	0.04
Max. permissible finger length	[mm]	100	100	100	100	100	100
IP rating		40	40	40	40	40	40
Min. ambient temperature	[°C]	5	5	5	5	5	5
Max. ambient temperature	[°C]	60	60	60	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02

Main views



A, a Main and direct connections, gripper open
B, b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(47) on both sides
(81) Not included in the scope of delivery
(90) Set screw for stroke limitation

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 200-X	0313345	Bracket, sensor	
GMNS 200-G	0313346	Bracket, sensor, straight cable extension	•
GMNS 200-W	0313347	Bracket, sensor, angled cable extension	

ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

Sizes
85 .. 205

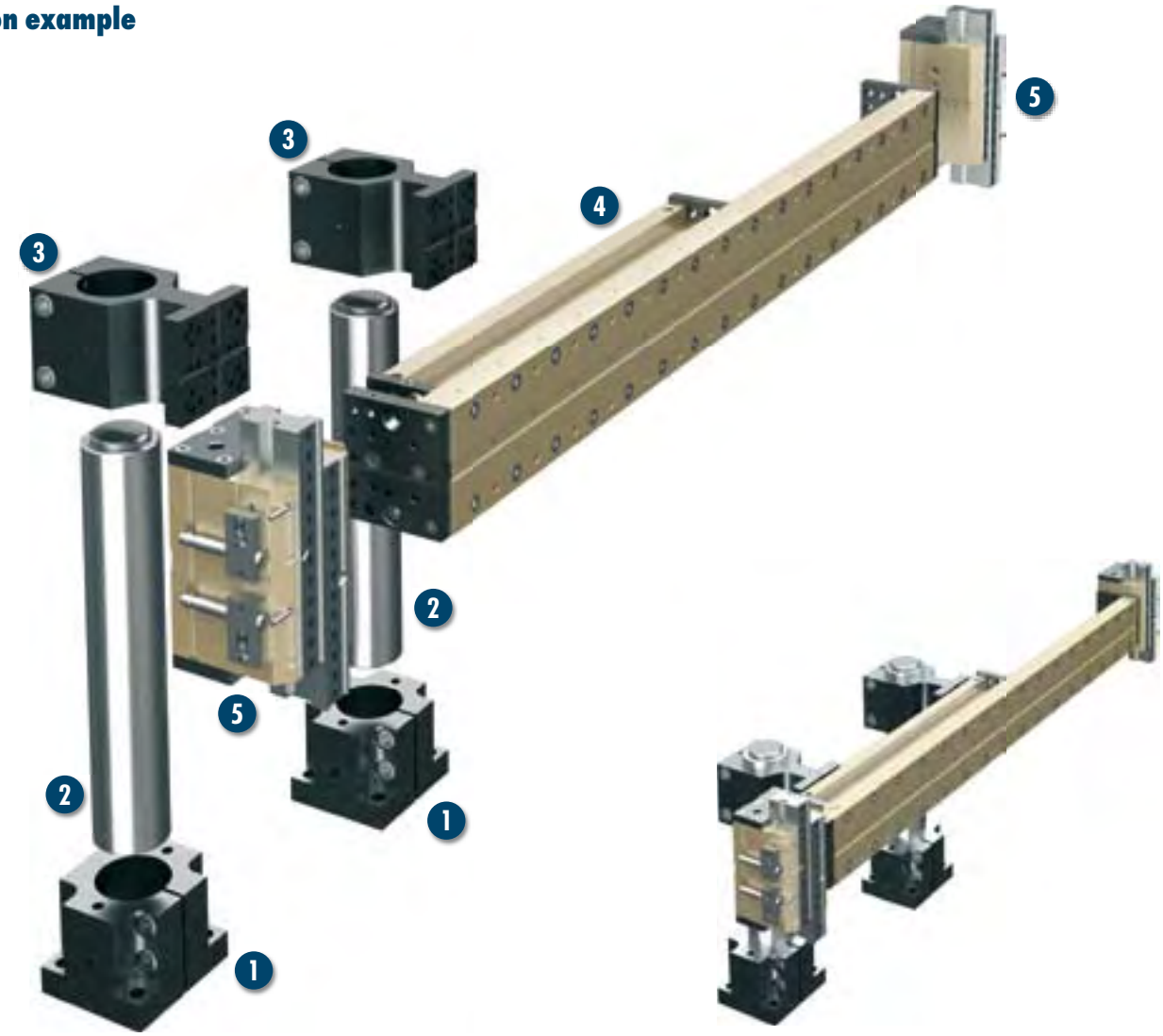
Mass
0.48 kg .. 2.7 kg

Gripping force
120 N .. 595 N

Stroke per finger
16 mm .. 30 mm

Workpiece weight, force-fit gripping
Up to 2.3 kg

Application example



Pneumatic double pick & place unit with pillar assembly for medium workpieces

1. Single base support, SOE 055
2. Hollow pillar, SLH 055-0300
3. Single mounting plate, APEV 085
4. Linear module, LM 200-H350
5. Parallel gripping module, GM 205-S

Long-stroke gripper for small components

2-finger parallel grippers with surface-guided base jaws

Area of application

Suitable for clean work environments as well as for large varieties of parts due to the relatively long jaw stroke and the high gripping forces.

Advantages – your benefits

Precise flat guidance
For very good guidance characteristics

Base jaw guide over the entire length of the housing
For high load bearing capacity and the attachment of longer gripper fingers

Large stroke with a compact design
For minimum interfering contours

Choice of I.D. or O.D. gripping
For maximum flexibility in applications

End-position monitoring
Using an optional standardized monitoring set

Integration of a gripping force safety device without additional parts is optional
For firm grip even in the event of power failure

Standardized mounting bores
For numerous combinations with other GEMOTEC system elements

General information about the series

Working principle
Pneumatic direct acting double piston drive principle with synchronizing lever

Housing material
Aluminum alloy, hard-anodized

Base jaw material
Steel

Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

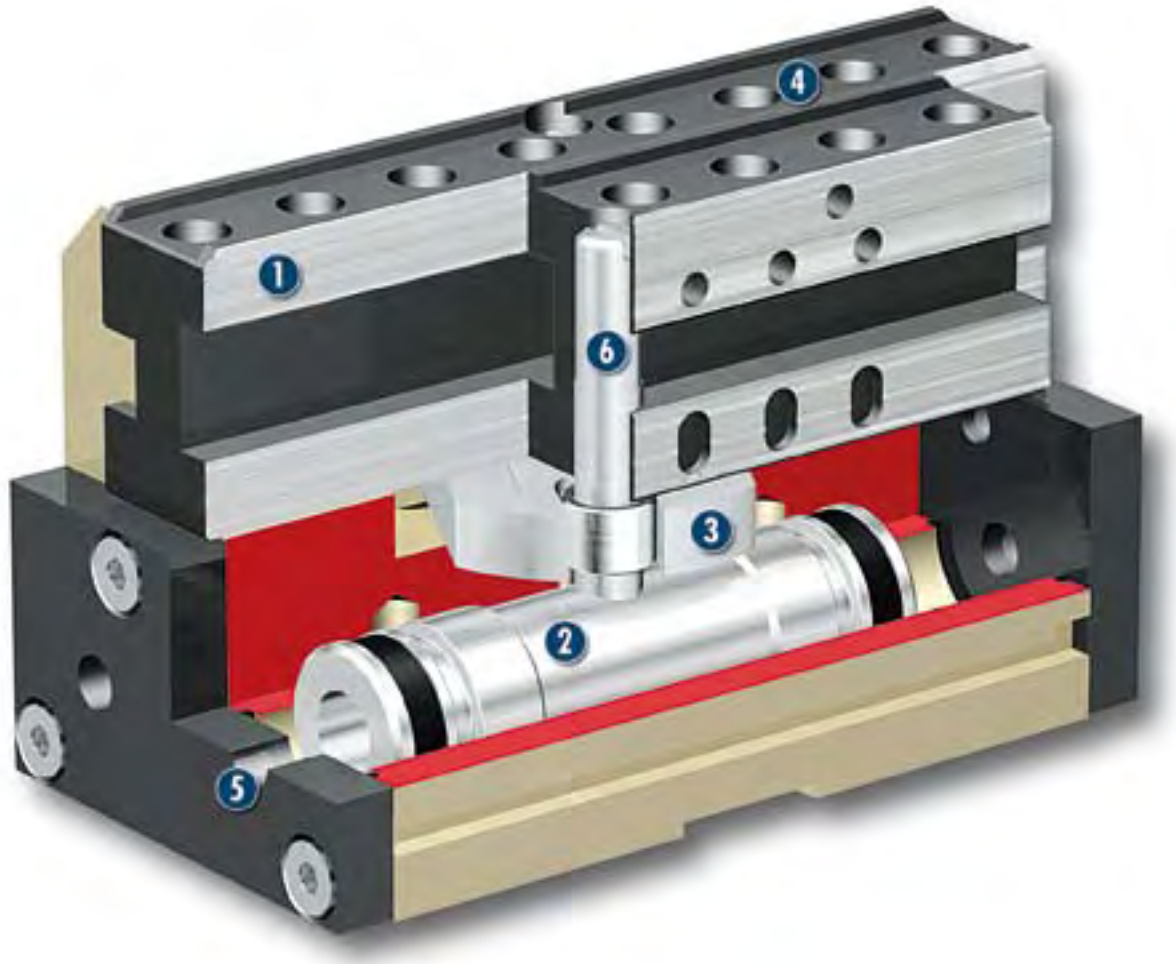
Scope of delivery
Completely ready for operation
without bracket for proximity switch and without proximity switch

Warranty
24 months

Gripping force retaining device
Can be integrated without additional interfering contour in the standard gripper

For production reasons, the colors may vary from those shown in the catalog.

Cross-section of function



1 Guidance
Precise gripper with minimal-backlash flat guide over the entire housing length

2 Drive
No piston rod, so the effective surface is the same in both directions

3 Kinematics
Synchronization by leverage principle for centric gripping

4 Base jaws
For adaptation of the workpiece-specific gripper fingers

5 Fluid connection
Possibility of connection on one side or on both sides

6 Driver
For transmission of the finger movement without any backlash

Description of function

By the application of pressure to the opposite pistons, each base jaw is moved by a driver on its guiding piston. The synchronization of the jaw stroke is done with a lever.

Options and special information

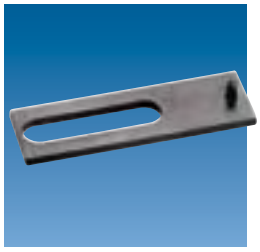
This module can be combined as standard with many elements from the modular system. You can find more information in the “Accessories” chapter.

Accessories

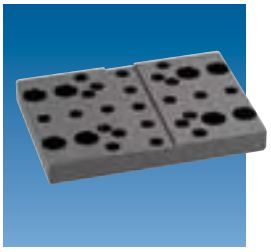
Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

Fittings

Centering strips



Adapter plates



Inductive proximity switch, NI

Sensor cable

Pillar assembly systems

Pressure maintenance valve

ⓘ Please see the side views at the end of the respective size for information concerning specific sizes, accessories availability for that size, designation, and ID numbers. You can find more information about our accessories program in the "Accessories" part of the catalog.

General information about the series

Gripping force

This is the arithmetic sum of the gripping forces applied to each claw jaw, measured at a distance of 20 mm from the upper edge of the gripper.

Finger length

The finger length is measured from the upper edge of the base jaw in the direction of the main axis.

Repeat accuracy

This is defined as the distribution of the end positions of 100 successive strokes.

Workpiece weight

The recommended workpiece weight is calculated for force-fit gripping with a coefficient of static friction of 0.1 and a safety factor of 2 against workpiece slippage at acceleration due to gravity only. For form-fit or capture gripping, there are significantly higher permissible workpiece weights.

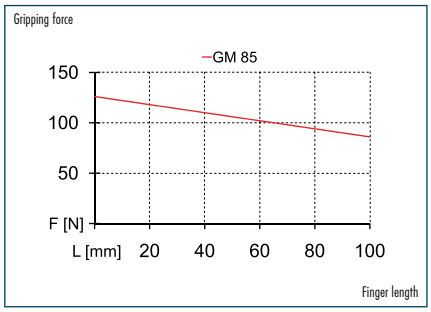
Closing and opening times

Closing and opening times are only movement times of the base jaws or fingers. Valve switching times, hose filling times, or PLC reaction times are not a part of this and are to be considered when cycle times are calculated.

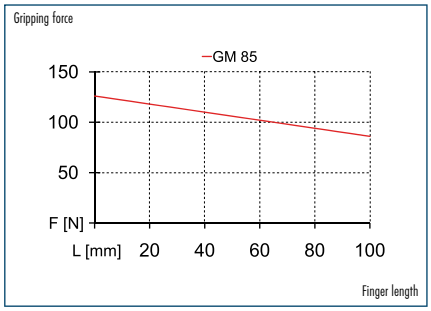
GM 85

Gripping modules · Pneumatic· 2-finger parallel gripper · Long-stroke gripper for small components

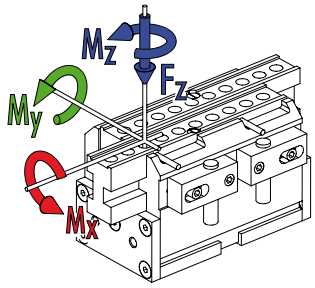
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load



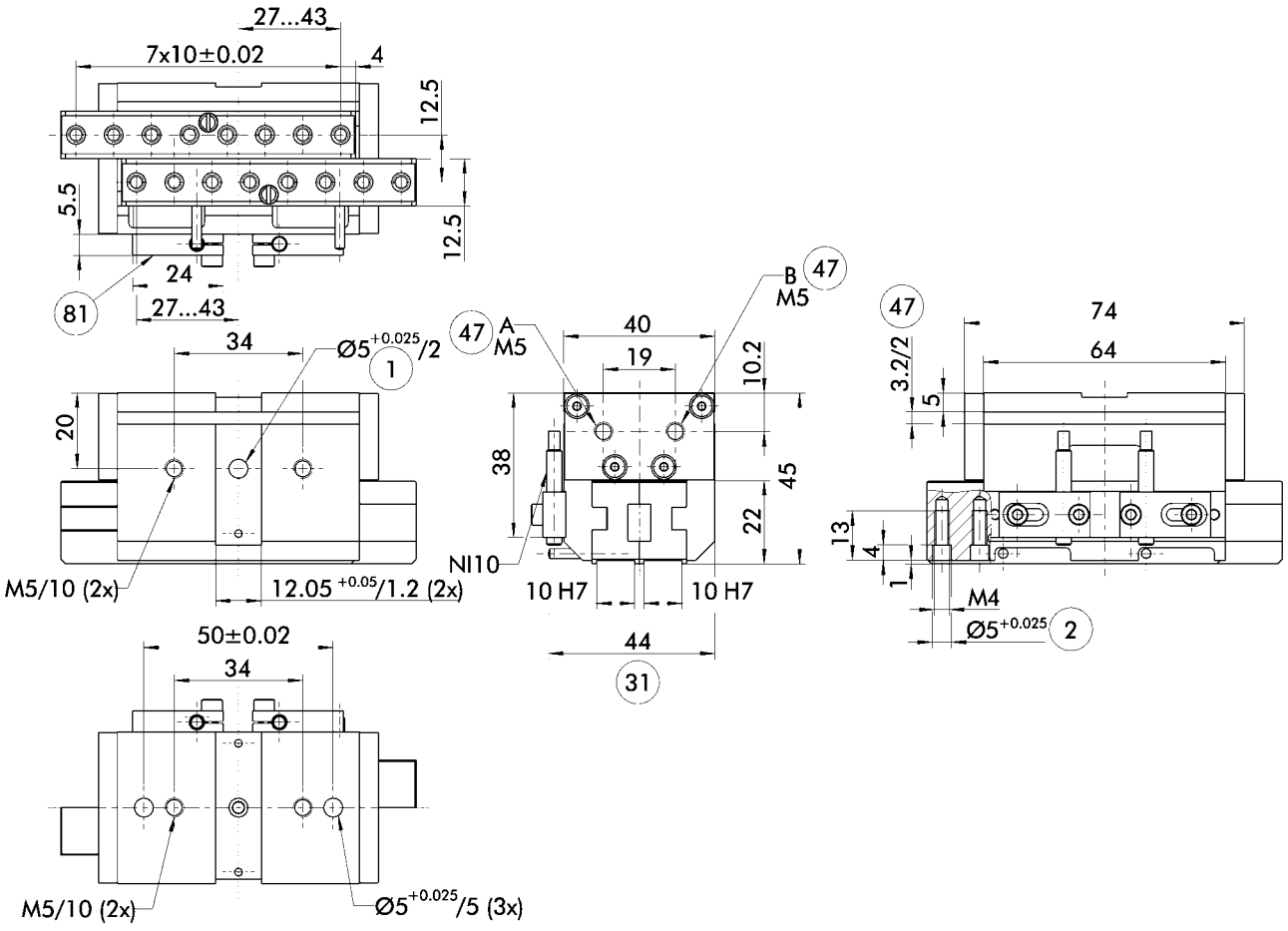
- M_x max. 4 Nm
- M_y max. 15 Nm
- M_z max. 12 Nm
- F_z max. 200 N

ⓘ Moments and forces apply per base jaw and may occur among themselves at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

Designation		GM 85
	ID	0313066
Stroke per jaw	[mm]	16
Closing grip force	[N]	120
Opening grip force	[N]	120
Min. grip force applied by spring	[N]	
Mass	[kg]	0.48
Recommended workpiece weight	[kg]	0.6
Fluid consumption for double stroke	[cm³]	11
Minimum pressure	[bar]	3
Maximum pressure	[bar]	8
Nominal operating pressure	[bar]	6
Closing time	[s]	0.1
Opening time	[s]	0.1
Max. permissible finger length	[mm]	100
IP rating		40
Min. ambient temperature	[°C]	5
Max. ambient temperature	[°C]	60
Repeat accuracy	[mm]	± 0.03

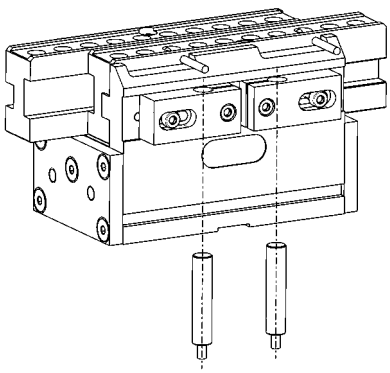
Main views



A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(31) Interfering contour, operating cam
(47) on both sides
(81) Not included in the scope of delivery

The gripper can be attached to the base side or to the side. Unused thread may not be used for other purposes, since this could lead to warping.

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 50-X	0313339	Bracket, sensor	
GMNS 50-G	0313340	Bracket, sensor, straight cable extension	•
GMNS 50-W	0313341	Bracket, sensor, angled cable extension	

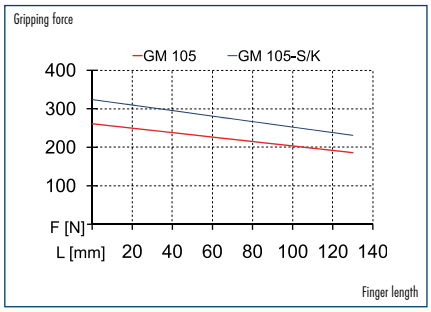
ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

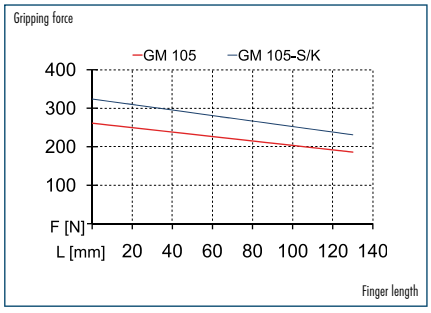
GM 105

Gripping modules · Pneumatic· 2-finger parallel gripper · Long-stroke gripper for small components

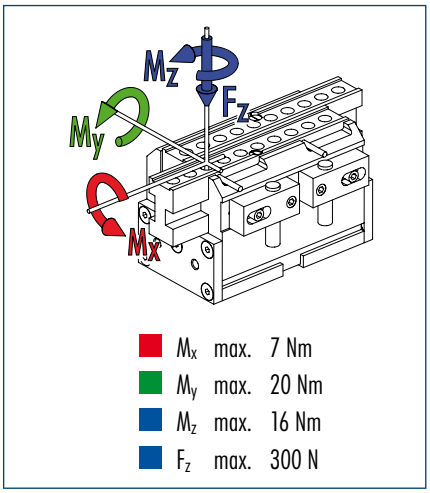
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

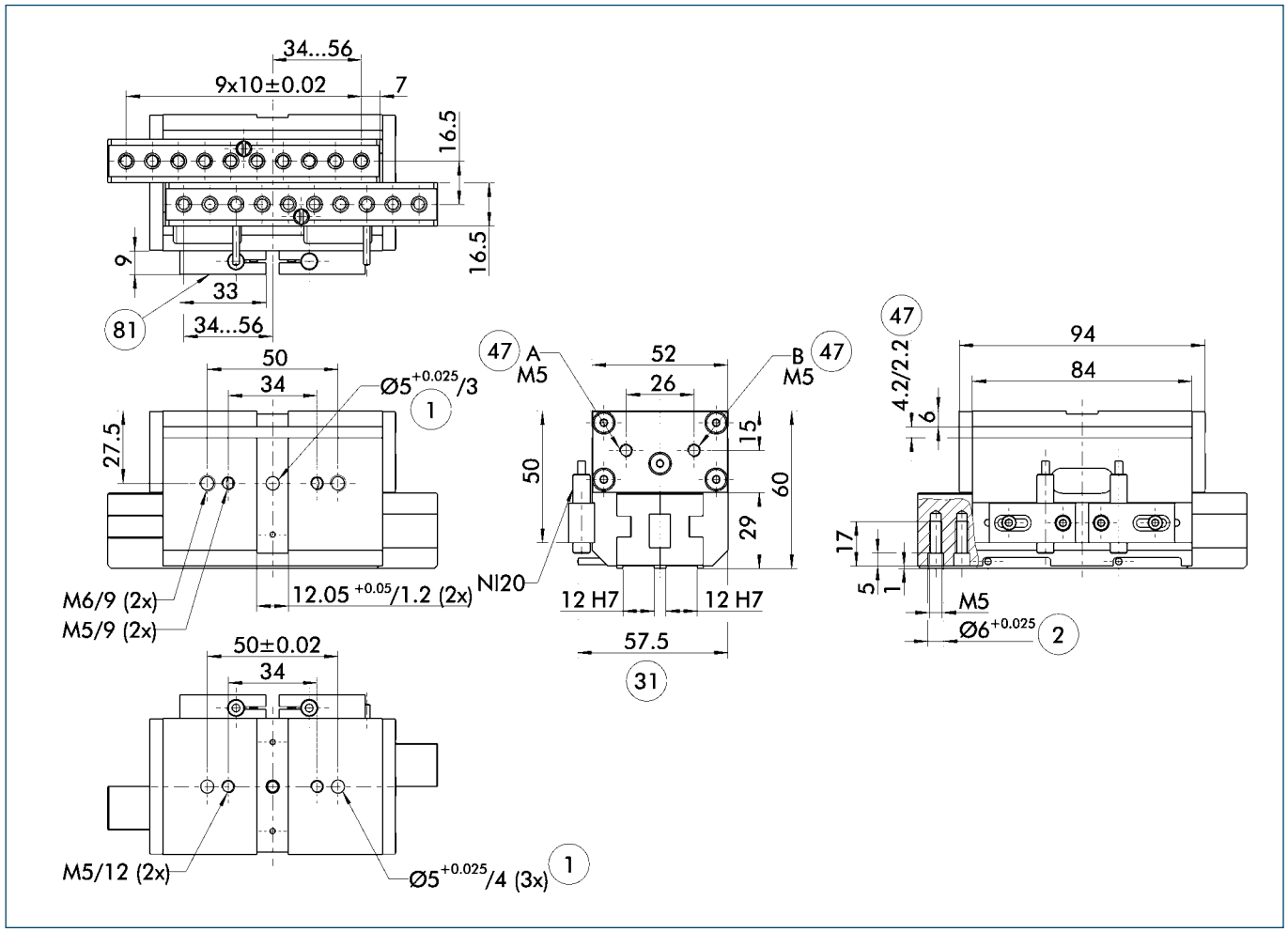


ⓘ Moments and forces apply per base jaw and may occur among themselves at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

Designation		GM 105	GM 105-K	GM 105-S
	ID	0313075	0313077	0313076
Stroke per jaw	[mm]	22	22	22
Closing grip force	[N]	250	310	
Opening grip force	[N]	250		310
Min. grip force applied by spring	[N]		60	60
Mass	[kg]	1.08	1.08	1.08
Recommended workpiece weight	[kg]	1.25	1.25	1.25
Fluid consumption for double stroke	[cm³]	30.56	30.56	30.56
Minimum pressure	[bar]	3	5.5	5.5
Maximum pressure	[bar]	8	8	8
Nominal operating pressure	[bar]	6	6	6
Closing time	[s]	0.15	0.15	0.15
Opening time	[s]	0.15	0.15	0.15
Max. permissible finger length	[mm]	130	130	130
IP rating		40	40	40
Min. ambient temperature	[°C]	5	5	5
Max. ambient temperature	[°C]	60	60	60
Repeat accuracy	[mm]	± 0.03	± 0.03	± 0.03

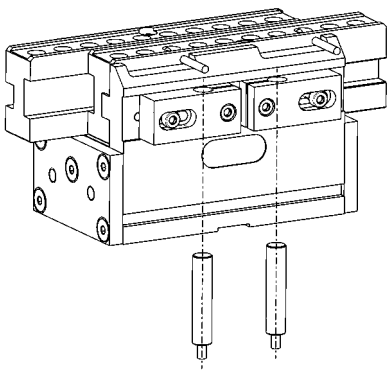
Main views



A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(31) Interfering contour, operating cam
(47) on both sides
(81) Not included in the scope of delivery

The gripper can be attached to the base side or to the side. Unused thread may not be used for other purposes, since this could lead to warping.

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 100-X	0313342	Bracket, sensor	
GMNS 100-G	0313343	Bracket, sensor, straight cable extension	•
GMNS 100-W	0313344	Bracket, sensor, angled cable extension	

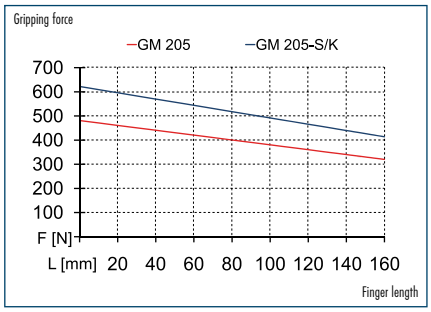
ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

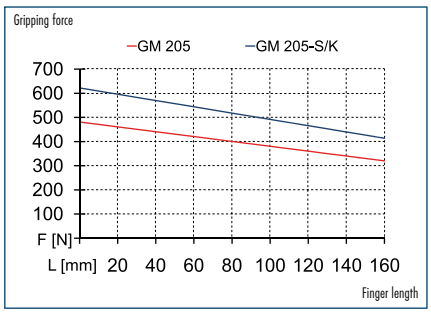
GM 205

Gripping modules · Pneumatic· 2-finger parallel gripper · Long-stroke gripper for small components

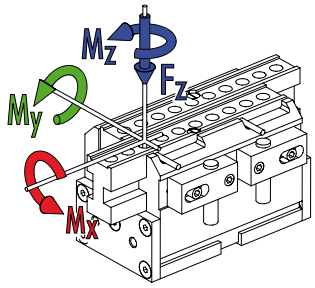
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load



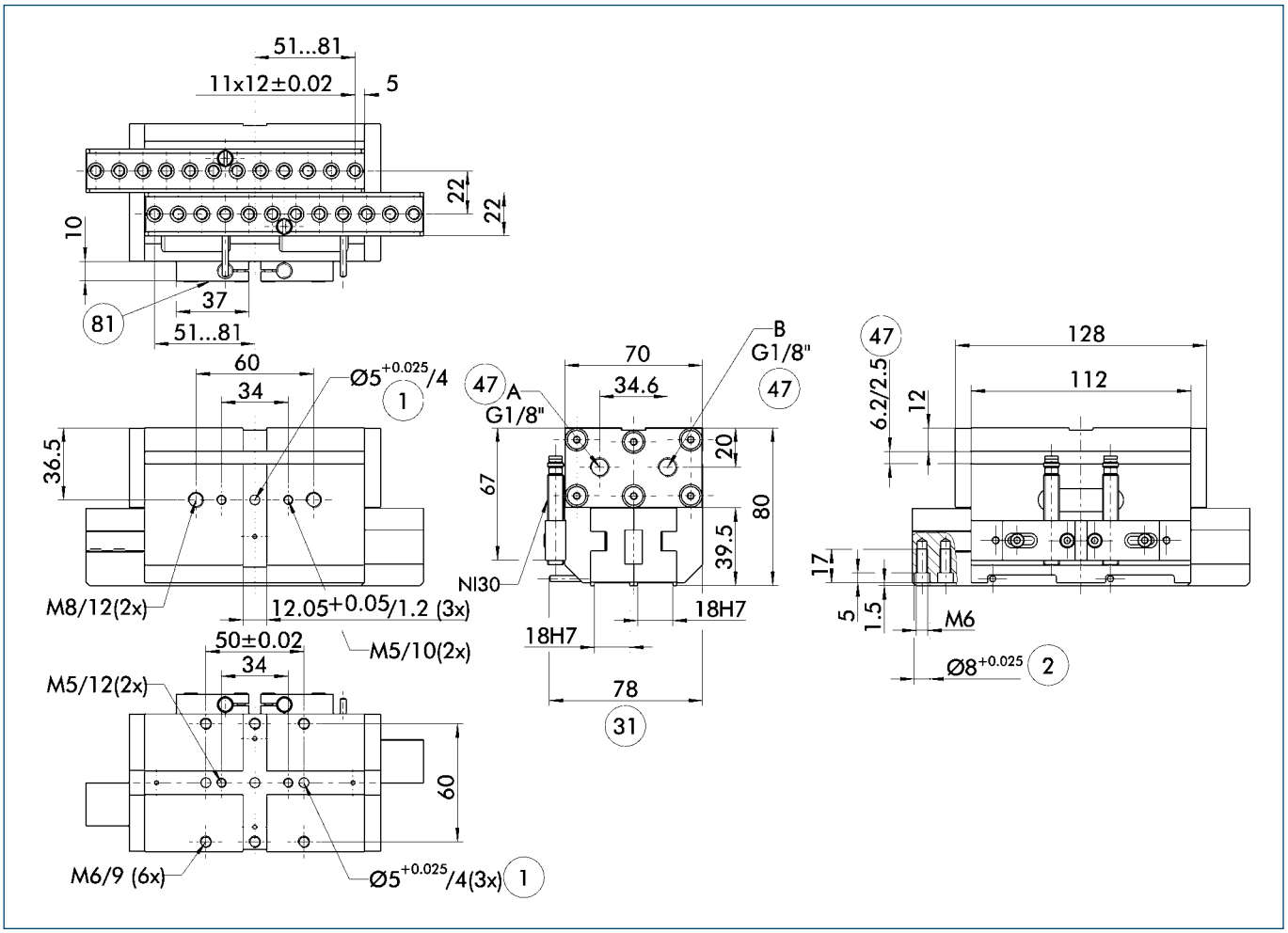
- M_x max. 12 Nm
- M_y max. 35 Nm
- M_z max. 30 Nm
- F_z max. 600 N

ⓘ Moments and forces apply per base jaw and may occur among themselves at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

Designation		GM 205	GM 205-K	GM 205-S
	ID	0313084	0313086	0313085
Stroke per jaw	[mm]	30	30	30
Closing grip force	[N]	460	595	
Opening grip force	[N]	460		595
Min. grip force applied by spring	[N]		135	135
Mass	[kg]	2.7	2.7	2.7
Recommended workpiece weight	[kg]	2.3	2.3	2.3
Fluid consumption for double stroke	[cm³]	82.68	82.68	82.68
Minimum pressure	[bar]	3	4.5	4.5
Maximum pressure	[bar]	8	8	8
Nominal operating pressure	[bar]	6	6	6
Closing time	[s]	0.25	0.25	0.25
Opening time	[s]	0.25	0.25	0.25
Max. permissible finger length	[mm]	160	160	160
IP rating		40	40	40
Min. ambient temperature	[°C]	5	5	5
Max. ambient temperature	[°C]	60	60	60
Repeat accuracy	[mm]	± 0.03	± 0.03	± 0.03

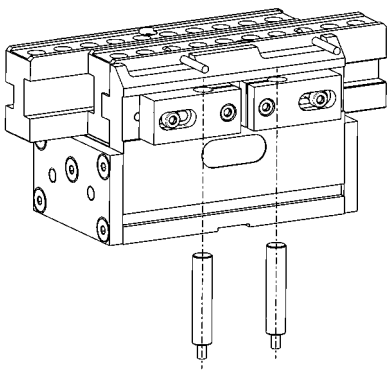
Main views



A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(31) Interfering contour, operating cam
(47) on both sides
(81) Not included in the scope of delivery

The gripper can be attached to the base side or to the side. Unused thread may not be used for other purposes, since this could lead to warping.

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 200-X	0313345	Bracket, sensor	
GMNS 200-G	0313346	Bracket, sensor, straight cable extension	•
GMNS 200-W	0313347	Bracket, sensor, angled cable extension	

ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

GMP

Sizes
12 .. 28

Mass
0.14 kg .. 0.86 kg

Gripping force
50 N .. 420 N

Stroke per finger
2.5 mm .. 8 mm

Workpiece weight, force-fit gripping
Up to 1.4 kg

Application example

Pneumatic cross gantry with double gripping unit for small components

1. Single base support, SOE 055
2. Hollow pillar, SLH 055-0700
3. Single mounting plate, APEV 085
4. Linear module, LM 200-H200
5. Adapter plate, APL 220
6. Linear module, KLM 100-H100
7. Adapter plate, APL 120
8. Parallel gripping module, GMP 28-K

Gripper for small components

2-finger parallel grippers with robust T-slot guidance

Area of application

Griping and moving small to medium workpieces in low-contamination areas; for example, in assembly, testing, labs, pharmaceuticals, and many others.

Advantages – your benefits

Constant clamping force
Over the entire range of stroke

Choice of I.D. or O.D. gripping
For maximum flexibility in applications

The gripping head for the drive unit can be continuously rotated

Integration of a gripping force retaining device is optional
For firm grip even in the event of power failure

End-position monitoring
Up to four monitoring sets possible

Standardized mounting bores
For numerous combinations with other GEMOTEC system elements

Combinations from the factory for gripping rotary modules without rotating power lines are possible

General information about the series

Working principle
Inside wedge kinematics

Housing material
Aluminum alloy, hard-anodized

Base jaw material
Steel

Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

Scope of delivery
Completely ready for operation
without bracket for proximity switch and without proximity switch

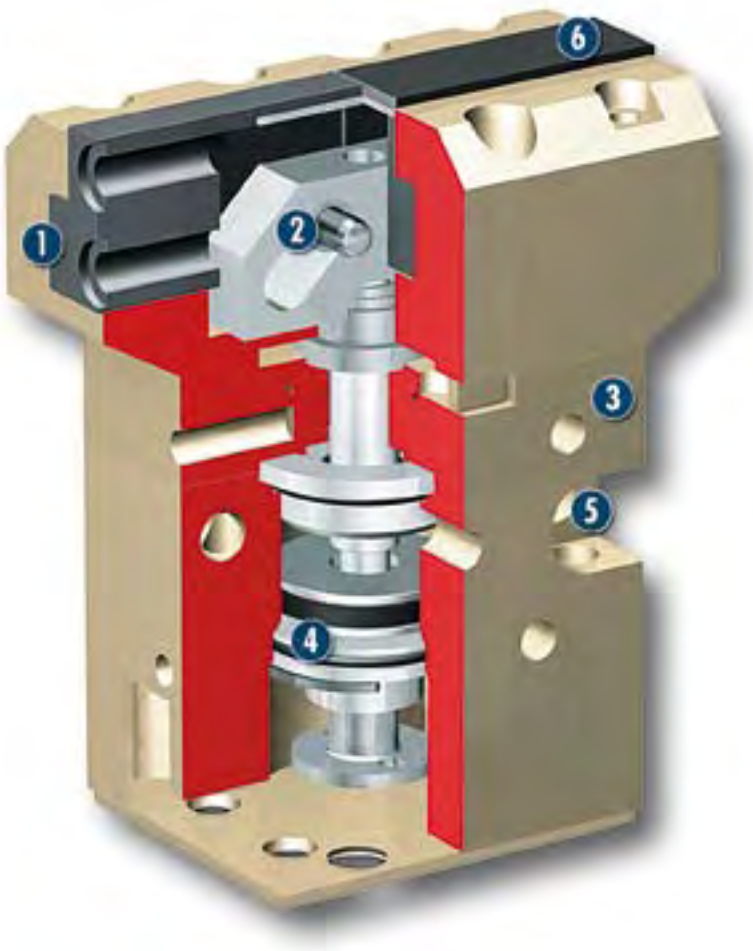
Warranty
24 months

Gripping force retaining device
Possible with variants with mechanical gripping force safety devices or pressure maintenance valves

Modular design
Grippers have modular designs and are a part of the RP gripping rotary modules

For production reasons, the colors may vary from those shown in the catalog.

Cross-section of function



1 Guidance
Precise gripping using a ground guide with minimal backlash

2 Kinematics
Inside, power transmission via line contact

3 Rotation adapter
Flexible; twisting of the gripping head to the drive unit

4 Drive
Double pressurized piston-actuated system

5 Modular design hole pattern
Completely integrated in the module system

6 Base jaws
For adaptation of the workpiece-specific gripper fingers

Description of function

The piston is moved up or down using compressed air. The wedge links the piston movement in a synchronized opening and closing together with the guidance of the base jaws.

Options and special information

Rotation adapter version
The gripping head can be continuously adjusted and indexed in relation to the drive.

This module can be combined as standard with many elements from the modular system. You can find more information in the “Accessories” chapter.

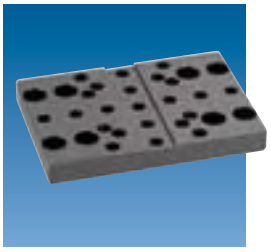
Accessories

Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

Fittings

Centering strips

Adapter plates



Inductive proximity switch, NI

Sensor cable

Pillar assembly systems

Pressure maintenance valve

ⓘ Please see the side views at the end of the respective size for information concerning specific sizes, accessories availability for that size, designation, and ID numbers. You can find more information about our accessories program in the “Accessories” part of the catalog.

General information about the series

Gripping force

This is the arithmetic sum of the gripping forces applied to each claw jaw, measured at a distance of 10 mm from the upper edge of the gripper.

Finger length

The finger length is measured from the upper edge of the gripper housing in the direction of the main axis.

Repeat accuracy

This is defined as the distribution of the end positions of 100 successive strokes.

Workpiece weight

The recommended workpiece weight is calculated for force-fit gripping with a coefficient of static friction of 0.1 and a safety factor of 2 against workpiece slippage at acceleration due to gravity only. For form-fit or capture gripping, there are significantly higher permissible workpiece weights.

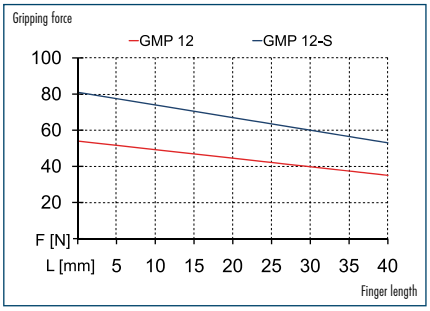
Closing and opening times

Closing and opening times are only movement times of the base jaws or fingers. Valve switching times, hose filling times, or PLC reaction times are not a part of this and are to be considered when cycle times are calculated.

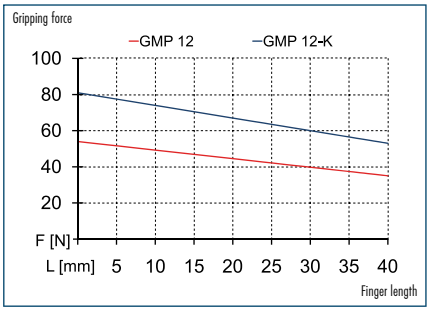
GMP 12

Gripping modules · Pneumatic · 2-finger parallel gripper · Gripper for small components

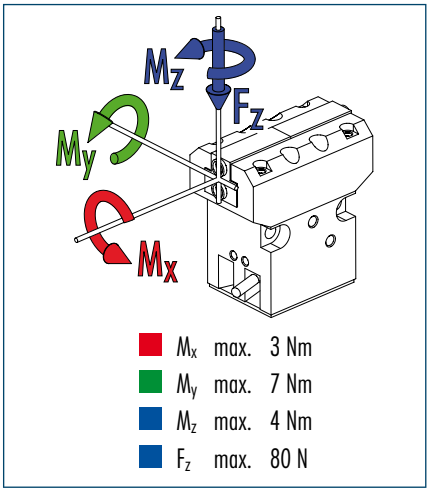
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

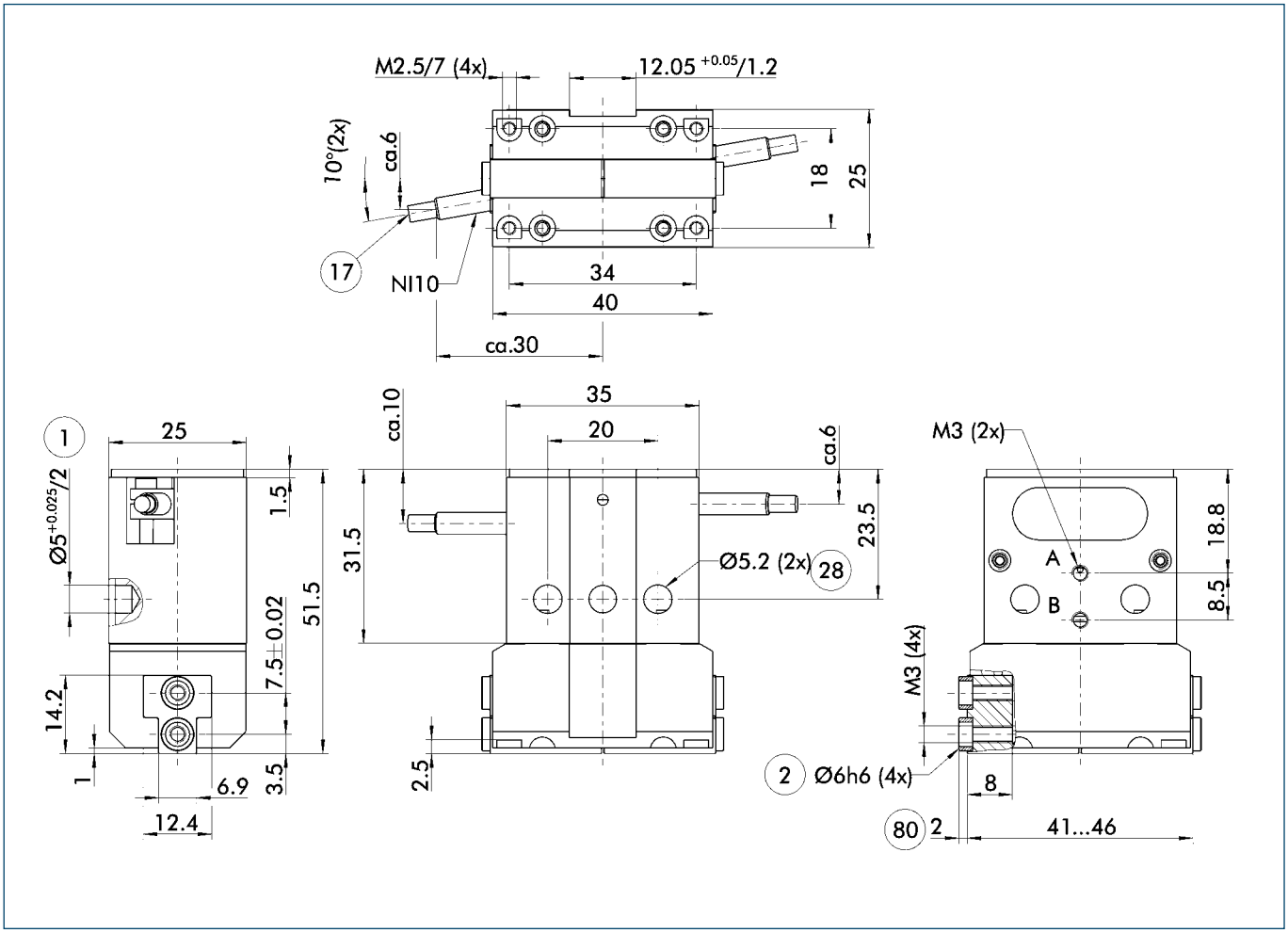


ⓘ Moments and forces apply per base jaw and may occur at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

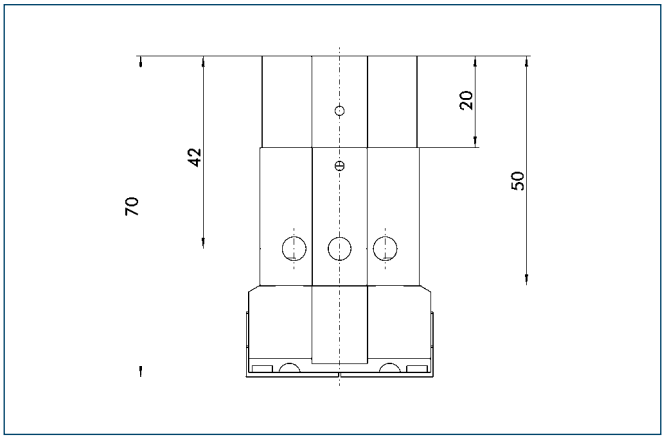
Designation		GMP 12	GMP 12-K	GMP 12-S
	ID	0313110	0313112	0313111
Stroke per jaw	[mm]	2.5	2.5	2.5
Closing grip force	[N]	50	75	
Opening grip force	[N]	50		75
Min. grip force applied by spring	[N]		25	25
Mass	[kg]	0.14	0.16	0.16
Recommended workpiece weight	[kg]	0.25	0.25	0.25
Fluid consumption for double stroke	[cm³]	0.87	0.87	0.87
Minimum pressure	[bar]	3	5	5
Maximum pressure	[bar]	8	8	8
Nominal operating pressure	[bar]	6	6	6
Closing time	[s]	0.02	0.015	0.025
Opening time	[s]	0.02	0.025	0.015
Max. permissible finger length	[mm]	40	40	40
IP rating		40	40	40
Min. ambient temperature	[°C]	5	5	5
Max. ambient temperature	[°C]	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02
OPTIONS and their characteristics				
Rotation adapter version		GMP 12-D	GMP 12-Z	GMP 12-X
	ID	0313113	0313115	0313114
Mass	[kg]	0.16	0.18	0.18

Main views



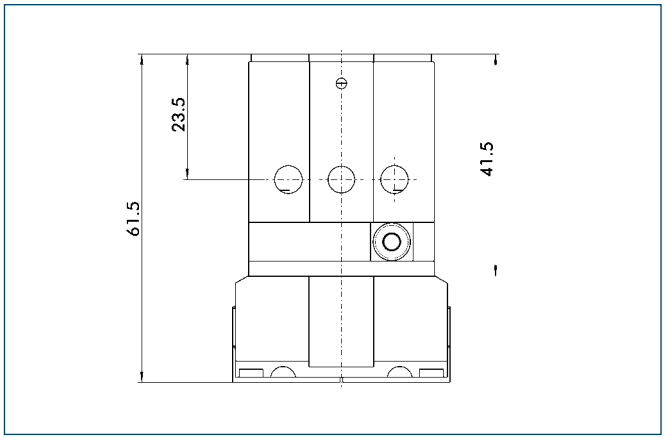
A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(28) Through-bore
(80) Depth of the centering sleeve in the counter piece

Gripping force safety device, K/S



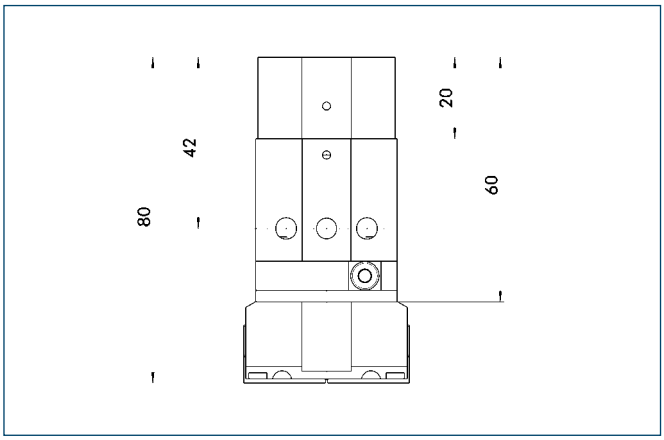
The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts as closing grip force for the K variant and as opening grip force for the S variant. The gripping force safety device can be installed without other components from the K variant into the S variant and vice versa. Besides this, the gripping force safety device can be used to increase gripping force or for single actuated gripping.

Rotation adapter D



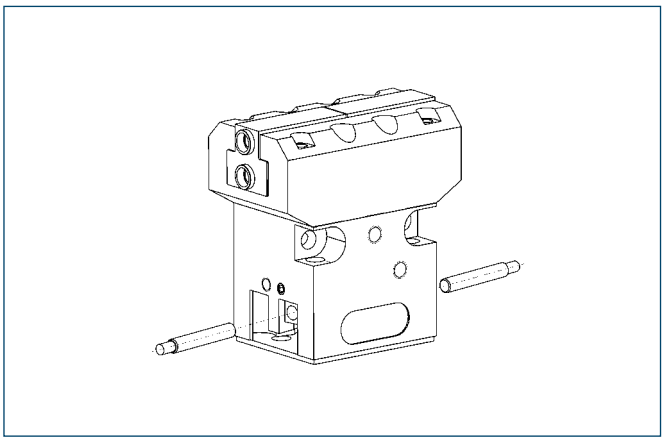
The two-part rotation adapter enables the gripping head to be continuously rotated in order to flexibly adjust the position of the gripper fingers on the workpiece. Only the clamping screw has to be released to do this. After the adjustment has been made, a hole can be drilled out to place a cylindrical pin or a fixing thread for clamping.

Gripping force safety device & rotation adapter Z/X



This variant combines the functions of the gripping force safety device with that of the rotation adapter. The gripping force safety device acts as closing grip force for the Z variant and as opening grip force for the X variant.

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 12-X	**0313330**	Bracket, sensor	
GMNS 12-G	**0313331**	Bracket, sensor, straight cable extension	•
GMNS 12-W	**0313332**	Bracket, sensor, angled cable extension	

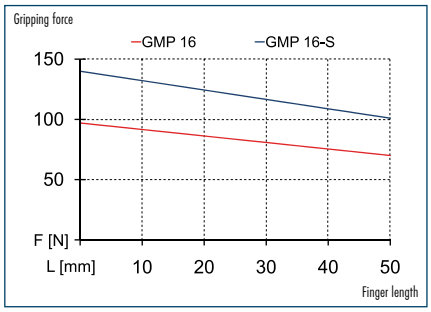
ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

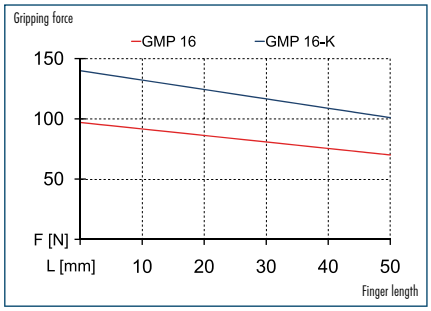
GMP 16

Gripping modules · Pneumatic · 2-finger parallel gripper · Gripper for small components

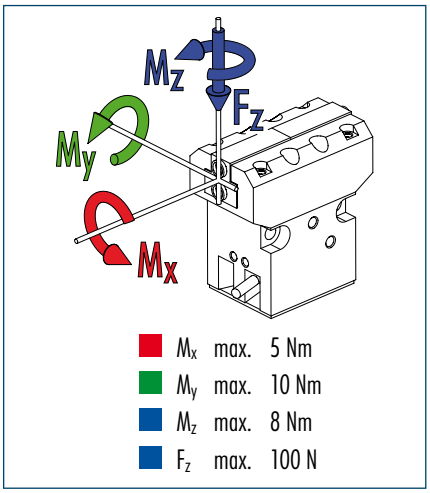
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

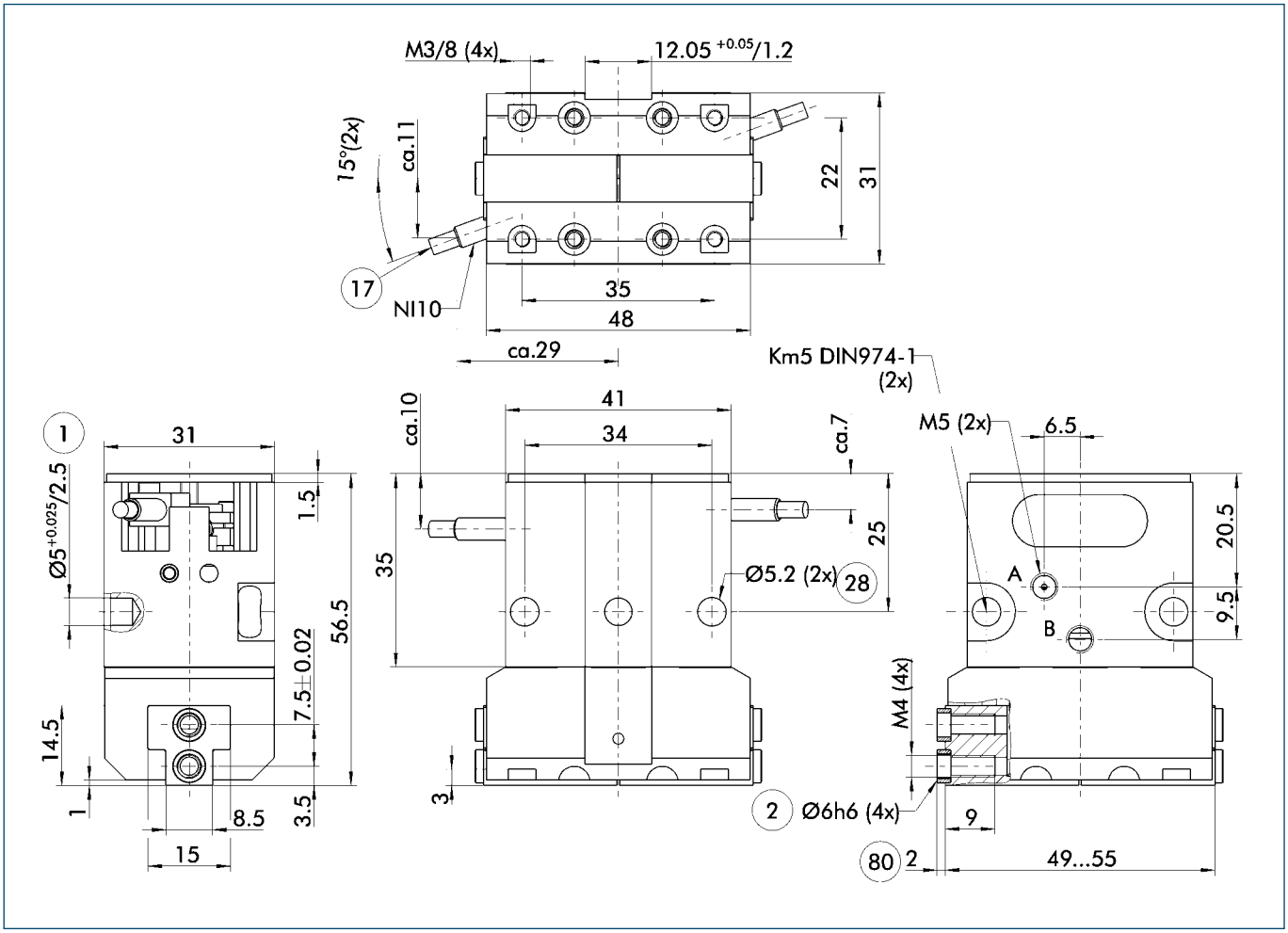


ⓘ Moments and forces apply per base jaw and may occur at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

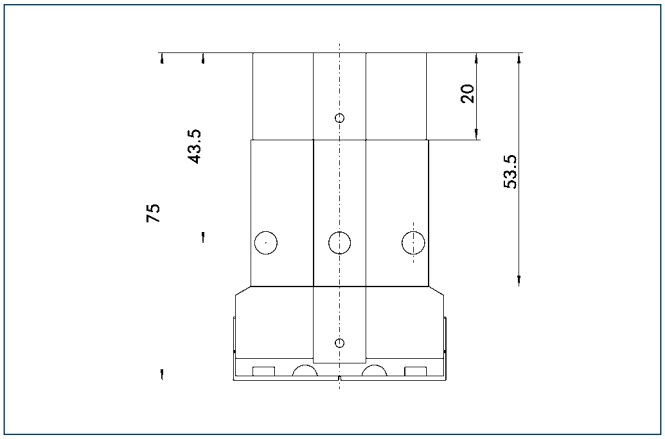
Designation		GMP 16	GMP 16-K	GMP 16-S
	ID	0313116	0313118	0313117
Stroke per jaw	[mm]	3	3	3
Closing grip force	[N]	90	130	
Opening grip force	[N]	90		130
Min. grip force applied by spring	[N]		40	40
Mass	[kg]	0.2	0.26	0.26
Recommended workpiece weight	[kg]	0.45	0.45	0.45
Fluid consumption for double stroke	[cm³]	1.1	1.1	1.1
Minimum pressure	[bar]	3	5	5
Maximum pressure	[bar]	8	8	8
Nominal operating pressure	[bar]	6	6	6
Closing time	[s]	0.02	0.015	0.025
Opening time	[s]	0.02	0.025	0.015
Max. permissible finger length	[mm]	50	50	50
IP rating		40	40	40
Min. ambient temperature	[°C]	5	5	5
Max. ambient temperature	[°C]	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02
OPTIONS and their characteristics				
Rotation adapter version		GMP 16-D	GMP 16-Z	GMP 16-X
	ID	0313119	0313121	0313120
Mass	[kg]	0.24	0.28	0.28

Main views



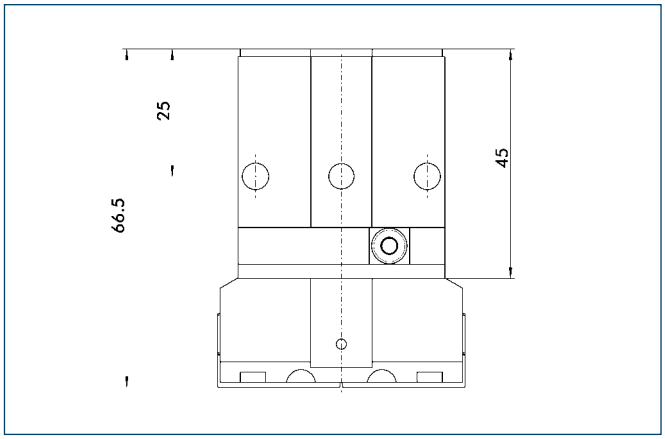
A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(28) Through-bore
(80) Depth of the centering sleeve in the counter piece

Gripping force safety device, K/S



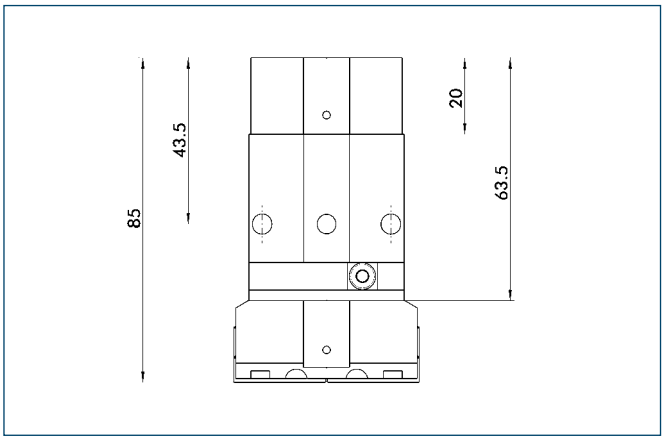
The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts as closing grip force for the K variant and as opening grip force for the S variant. The gripping force safety device can be installed without other components from the K variant into the S variant and vice versa. Besides this, the gripping force safety device can be used to increase gripping force or for single actuated gripping.

Rotation adapter D



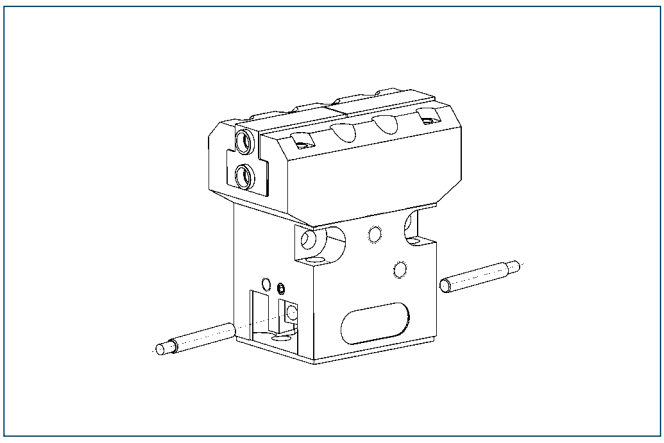
The two-part rotation adapter enables the gripping head to be continuously rotated in order to flexibly adjust the position of the gripper fingers on the workpiece. Only the clamping screw has to be released to do this. After the adjustment has been made, a hole can be drilled out to place a cylindrical pin or a fixing thread for clamping.

Gripping force safety device & rotation adapter Z/X



This variant combines the functions of the gripping force safety device with that of the rotation adapter. The gripping force safety device acts as closing grip force for the Z variant and as opening grip force for the X variant.

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 16-X	**0313333**	Bracket, sensor	
GMNS 16-G	**0313334**	Bracket, sensor, straight cable extension	•
GMNS 16-W	**0313335**	Bracket, sensor, angled cable extension	

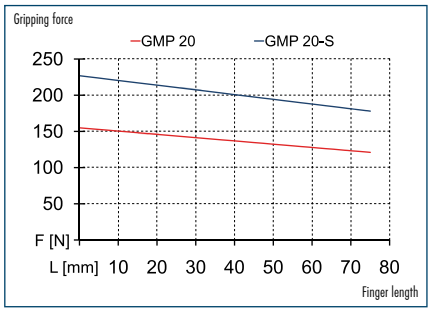
ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

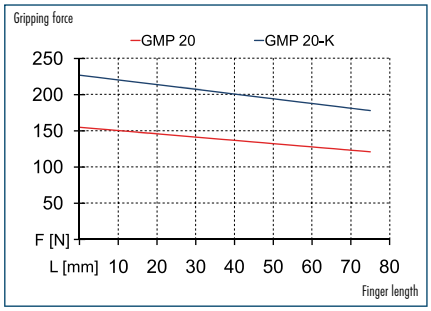
GMP 20

Gripping modules · Pneumatic · 2-finger parallel gripper · Gripper for small components

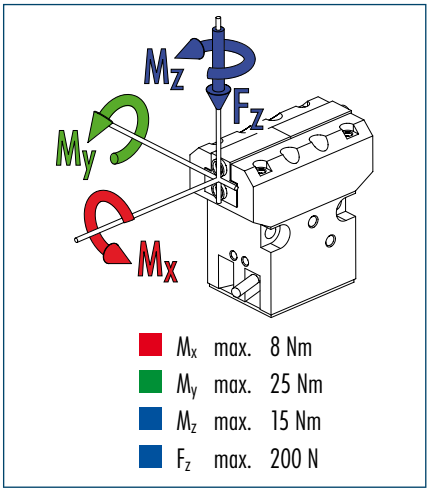
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

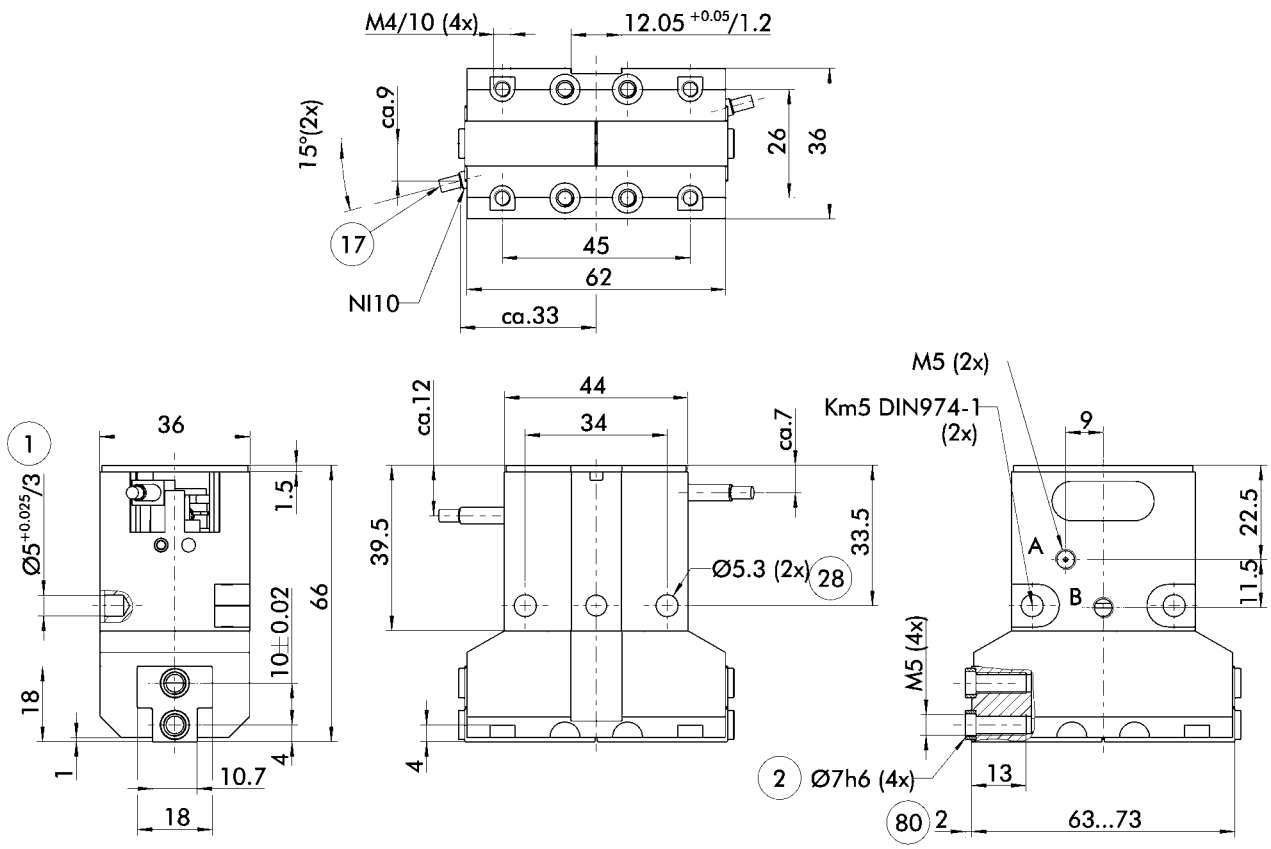


ⓘ Moments and forces apply per base jaw and may occur at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

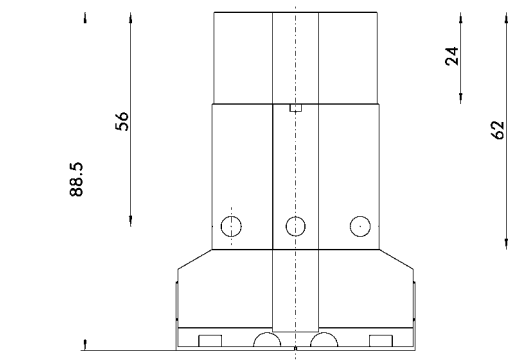
Designation		GMP 20	GMP 20-K	GMP 20-S
	ID	0313122	0313124	0313123
Stroke per jaw	[mm]	5	5	5
Closing grip force	[N]	150	220	
Opening grip force	[N]	150		220
Min. grip force applied by spring	[N]		70	70
Mass	[kg]	0.34	0.42	0.42
Recommended workpiece weight	[kg]	0.75	0.75	0.75
Fluid consumption for double stroke	[cm³]	2.86	2.86	2.86
Minimum pressure	[bar]	3	5	5
Maximum pressure	[bar]	8	8	8
Nominal operating pressure	[bar]	6	6	6
Closing time	[s]	0.03	0.025	0.04
Opening time	[s]	0.03	0.04	0.025
Max. permissible finger length	[mm]	75	75	75
IP rating		40	40	40
Min. ambient temperature	[°C]	5	5	5
Max. ambient temperature	[°C]	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02
OPTIONS and their characteristics				
Rotation adapter version		GMP 20-D	GMP 20-Z	GMP 20-X
	ID	0313125	0313127	0313126
Mass	[kg]	0.4	0.48	0.48

Main views



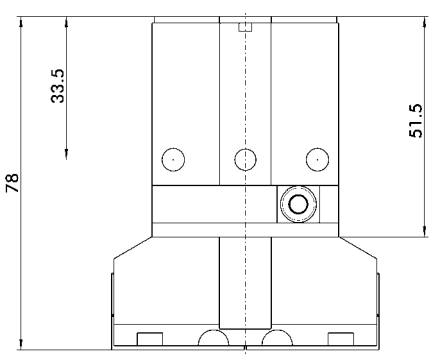
A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(28) Through-bore
(80) Depth of the centering sleeve in the counter piece

Gripping force safety device, K/S



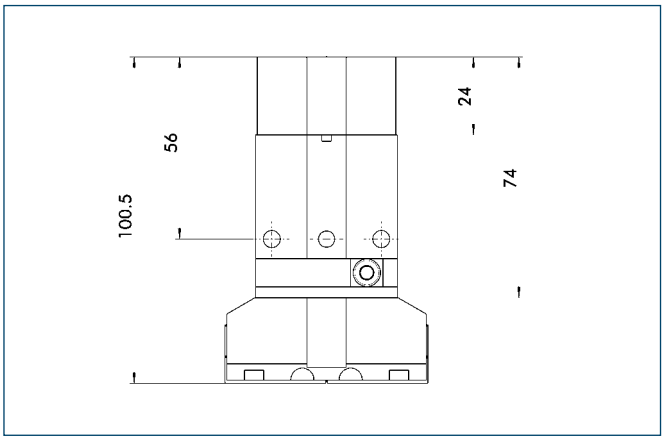
The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts as closing grip force for the K variant and as opening grip force for the S variant. The gripping force safety device can be installed without other components from the K variant into the S variant and vice versa. Besides this, the gripping force safety device can be used to increase gripping force or for single actuated gripping.

Rotation adapter D



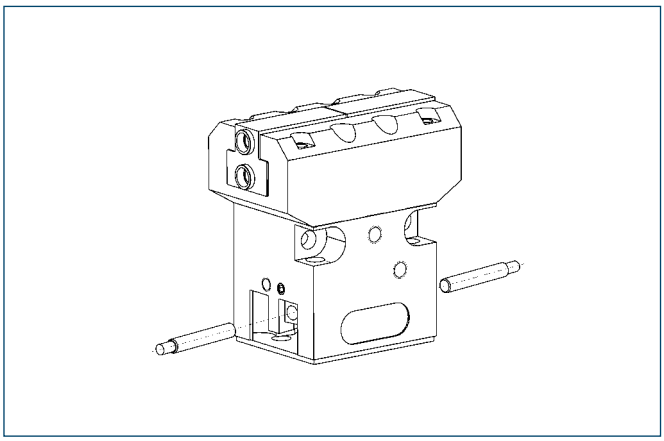
The two-part rotation adapter enables the gripping head to be continuously rotated in order to flexibly adjust the position of the gripper fingers on the workpiece. Only the clamping screw has to be released to do this. After the adjustment has been made, a hole can be drilled out to place a cylindrical pin or a fixing thread for clamping.

Gripping force safety device & rotation adapter Z/X



This variant combines the functions of the gripping force safety device with that of the rotation adapter. The gripping force safety device acts as closing grip force for the Z variant and as opening grip force for the X variant.

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 16-X	0313333	Bracket, sensor	
GMNS 16-G	0313334	Bracket, sensor, straight cable extension	•
GMNS 16-W	0313335	Bracket, sensor, angled cable extension	

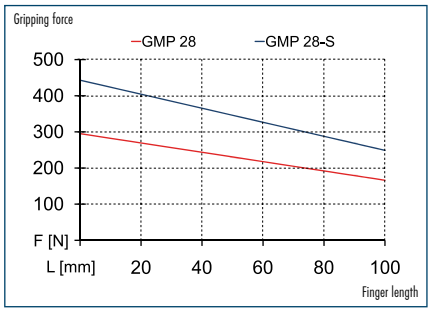
ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

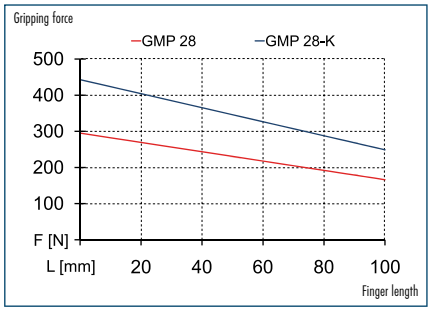
GMP 28

Gripping modules · Pneumatic · 2-finger parallel gripper · Gripper for small components

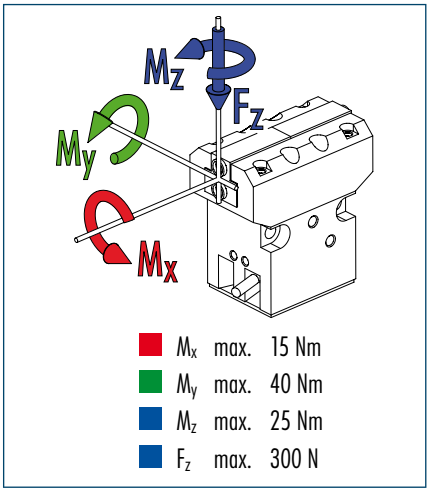
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

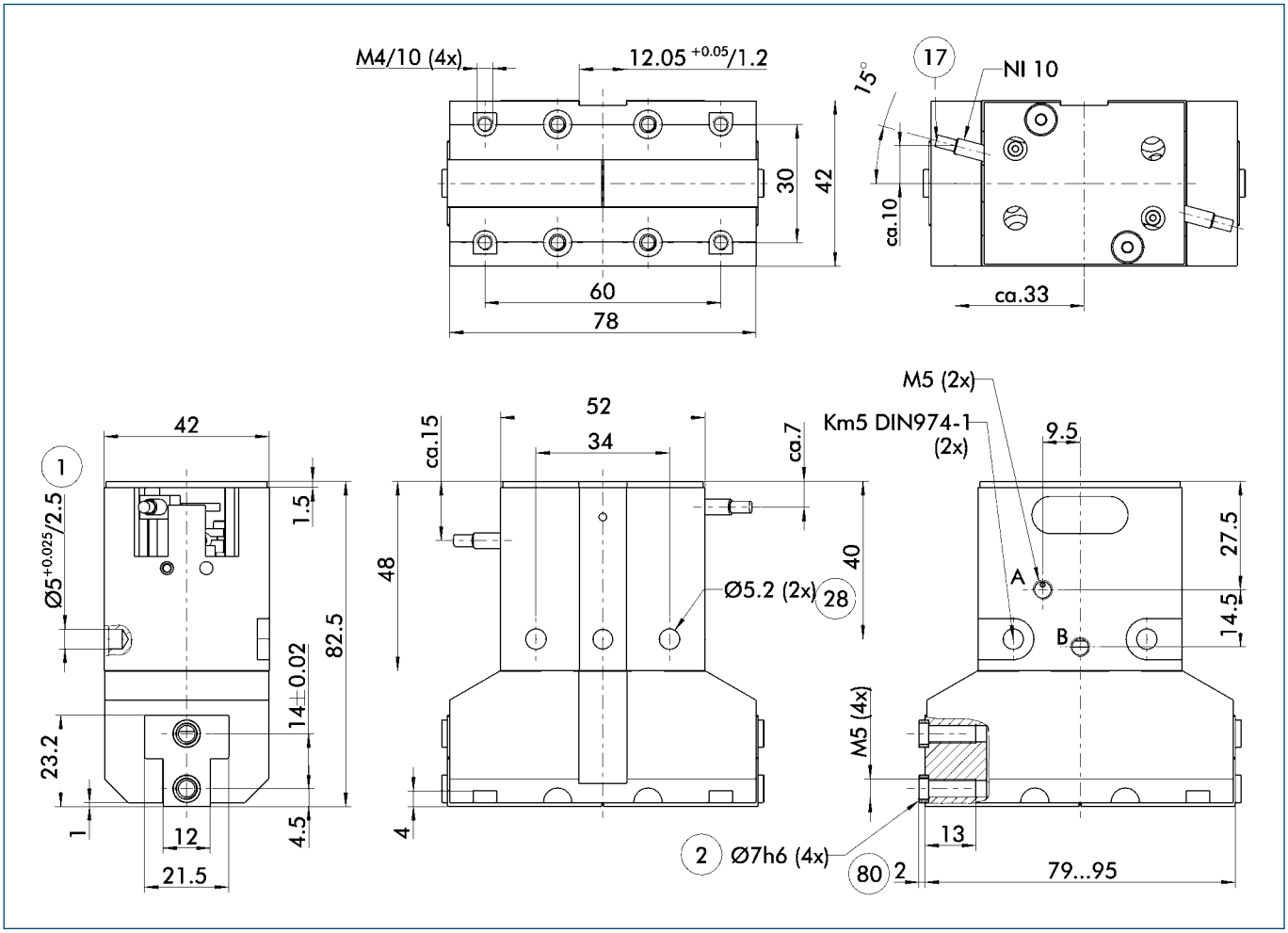


ⓘ Moments and forces apply per base jaw and may occur at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

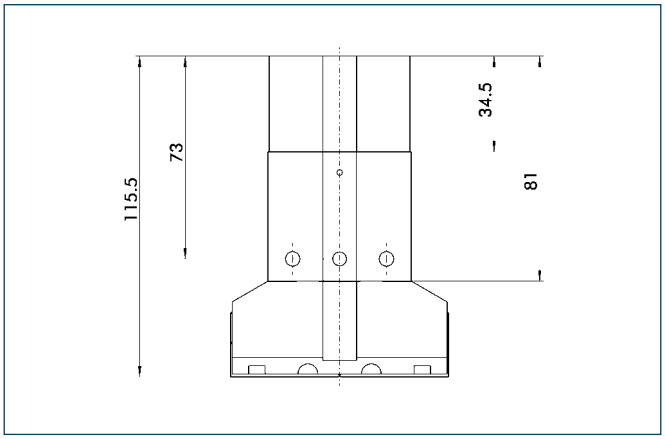
Designation		GMP 28	GMP 28-K	GMP 28-S
	ID	0313128	0313130	0313129
Stroke per jaw	[mm]	8	8	8
Closing grip force	[N]	280	420	
Opening grip force	[N]	280		420
Min. grip force applied by spring	[N]		140	140
Mass	[kg]	0.62	0.78	0.78
Recommended workpiece weight	[kg]	1.4	1.4	1.4
Fluid consumption for double stroke	[cm³]	9.05	9.05	9.05
Minimum pressure	[bar]	3	5	5
Maximum pressure	[bar]	8	8	8
Nominal operating pressure	[bar]	6	6	6
Closing time	[s]	0.05	0.04	0.06
Opening time	[s]	0.05	0.06	0.04
Max. permissible finger length	[mm]	100	100	100
IP rating		40	40	40
Min. ambient temperature	[°C]	5	5	5
Max. ambient temperature	[°C]	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02
OPTIONS and their characteristics				
Rotation adapter version		GMP 28-D	GMP 28-Z	GMP 28-X
	ID	0313131	0313133	0313132
Mass	[kg]	0.68	0.86	0.86

Main views



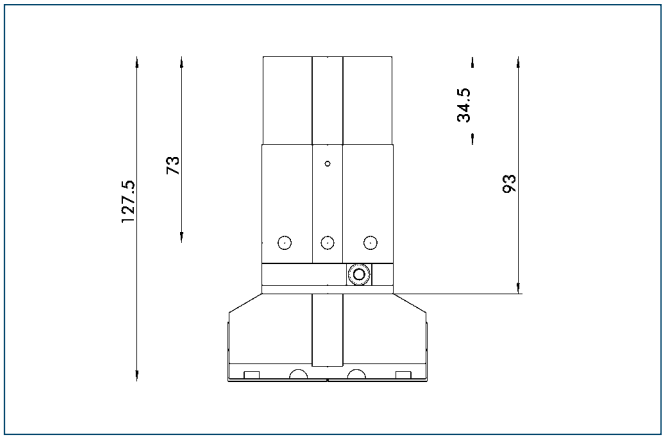
A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(28) Through-bore
(80) Depth of the centering sleeve in the counter piece

Gripping force safety device, K/S



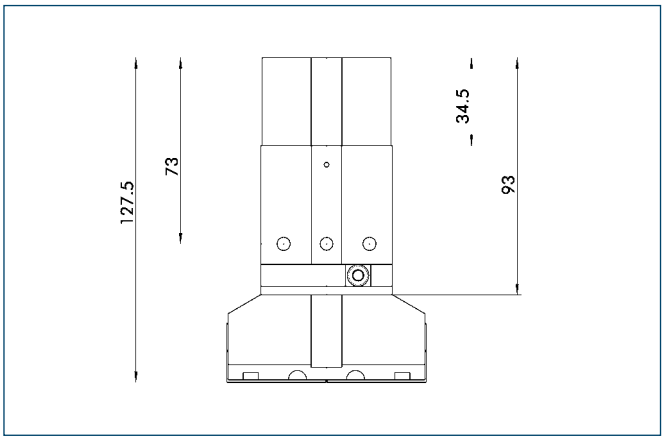
The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts as closing grip force for the K variant and as opening grip force for the S variant. The gripping force safety device can be installed without other components from the K variant into the S variant and vice versa. Besides this, the gripping force safety device can be used to increase gripping force or for single actuated gripping.

Rotation adapter D



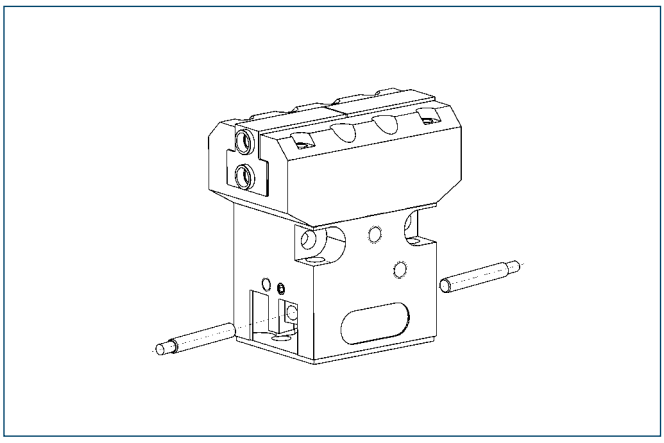
The two-part rotation adapter enables the gripping head to be continuously rotated in order to flexibly adjust the position of the gripper fingers on the workpiece. Only the clamping screw has to be released to do this. After the adjustment has been made, a hole can be drilled out to place a cylindrical pin or a fixing thread for clamping.

Gripping force safety device & rotation adapter Z/X



This variant combines the functions of the gripping force safety device with that of the rotation adapter. The gripping force safety device acts as closing grip force for the Z variant and as opening grip force for the X variant.

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 28-X	**0313336**	Bracket, sensor	
GMNS 28-G	**0313337**	Bracket, sensor, straight cable extension	•
GMNS 28-W	**0313338**	Bracket, sensor, angled cable extension	

ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

GMC

Gripping modules · Pneumatic · 3-finger centric gripper · Gripper for small components

Sizes
12 .. 28

Mass
0.18 kg .. 1.17 kg

Gripping force
50 N .. 420 N

Stroke per finger
2.5 mm .. 8 mm

Workpiece weight, force-fit gripping
Up to 1.4 kg

Application example

Pneumatic pick & place unit with additional third vertical position and pillar assembly

1. Double socket, SOD 055
2. Hollow pillar, SLH 055-0600
3. Double mounting plate, APDV 085
4. Linear module, LM 200-H100-ZZA202-H50
5. Adapter plate, APL 131
6. Linear module, LM 100-H100
7. Adapter plate, APL 123
8. 3-jaw gripping module, GMC 20-X

Gripper for small components

3-finger centric gripper with robust T-slot guidance

Area of application

Griping and moving small to medium workpieces in low-contamination areas; for example, in assembly, testing, labs, pharmaceuticals, and many others.

Advantages – your benefits

T-slot guidance
For precise gripping at high bearing load capacities

Constant clamping force
Over the entire range of stroke

Choice of I.D. or O.D. gripping
For maximum flexibility in applications

The gripping head for the drive unit can be continuously rotated

Integration of a gripping force retaining device is optional
For firm grip even in the event of power failure

End-position monitoring
Up to four monitoring sets possible

Standardized mounting bores
For numerous combinations with other GEMOTEC system elements

Combinations from the factory for gripping rotary modules without rotating power lines are possible

General information about the series

Working principle
Inside wedge kinematics

Housing material
Aluminum alloy, hard-anodized

Base jaw material
Steel

Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

Scope of delivery
Completely ready for operation
without bracket for proximity switch and without proximity switch

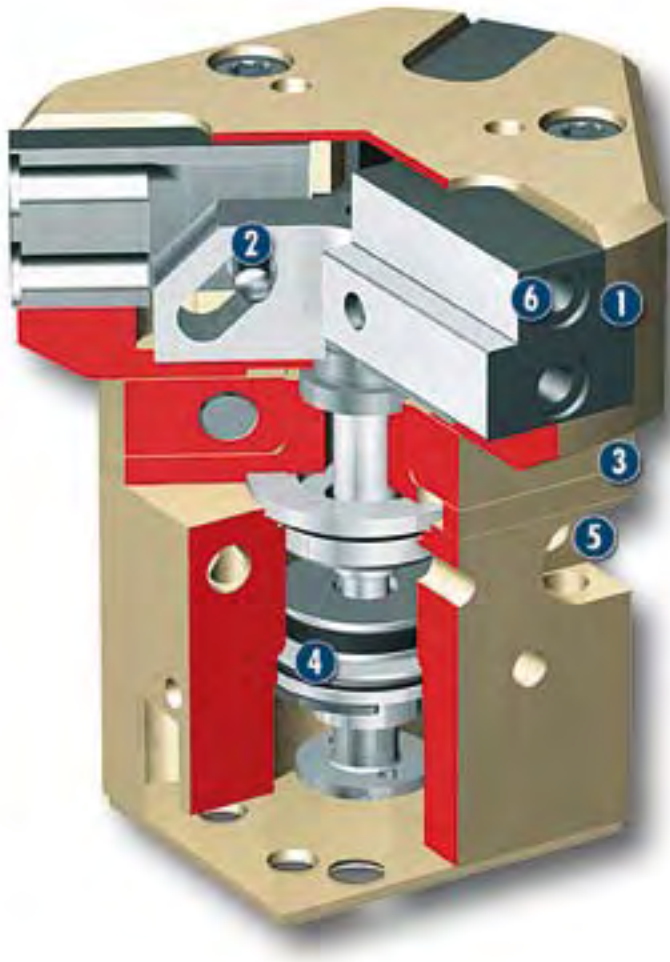
Warranty
24 months

Gripping force retaining device
Possible with variants with mechanical gripping force safety devices or pressure maintenance valves

Modular design
Grippers have modular designs and are a part of the RC gripping rotary modules

For production reasons, the colors may vary from those shown in the catalog.

Cross-section of function



1 **Guidance**
Precise gripping using a ground guide with minimal backlash

2 **Kinematics**
Inside, power transmission via line contact

3 **Rotation adapter**
Flexible; twisting of the gripping head to the drive unit

4 **Drive**
Double pressurized piston-actuated system

5 **Modular design hole pattern**
Completely integrated in the module system

6 **Base jaws**
For adaptation of the workpiece-specific gripper fingers

Description of function

The piston is moved up or down using compressed air. The wedge links the piston movement in a synchronized opening and closing together with the guidance of the base jaws.

Options and special information

Rotation adapter version

The gripping head can be continuously adjusted and indexed in relation to the drive.

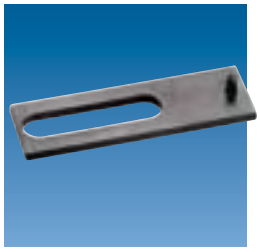
This module can be combined as standard with many elements from the modular system. You can find more information in the “Accessories” chapter.

Accessories

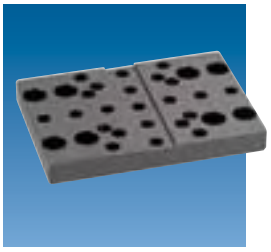
Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

Fittings

Centering strips



Adapter plates



Inductive proximity switch, NI

Sensor cable

Pillar assembly systems

Pressure maintenance valve

ⓘ Please see the side views at the end of the respective size for information concerning specific sizes, accessories availability for that size, designation, and ID numbers. You can find more information about our accessories program in the “Accessories” part of the catalog.

General information about the series

Gripping force

This is the arithmetic sum of the gripping forces applied to each claw jaw, measured at a distance of 10 mm from the upper edge of the gripper.

Finger length

The finger length is measured from the upper edge of the gripper housing in the direction of the main axis.

Repeat accuracy

This is defined as the distribution of the end positions of 100 successive strokes.

Workpiece weight

The recommended workpiece weight is calculated for force-fit gripping with a coefficient of static friction of 0.1 and a safety factor of 2 against workpiece slippage at acceleration due to gravity only. For form-fit or capture gripping, there are significantly higher permissible workpiece weights.

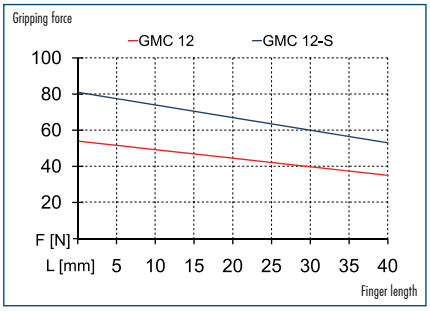
Closing and opening times

Closing and opening times are only movement times of the base jaws or fingers. Valve switching times, hose filling times, or PLC reaction times are not a part of this and are to be considered when cycle times are calculated.

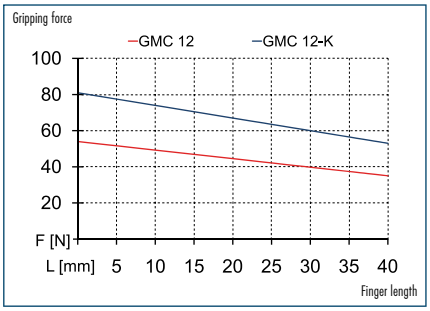
GMC 12

Gripping modules · Pneumatic · 3-finger centric gripper · Gripper for small components

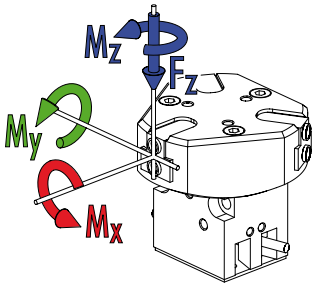
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load



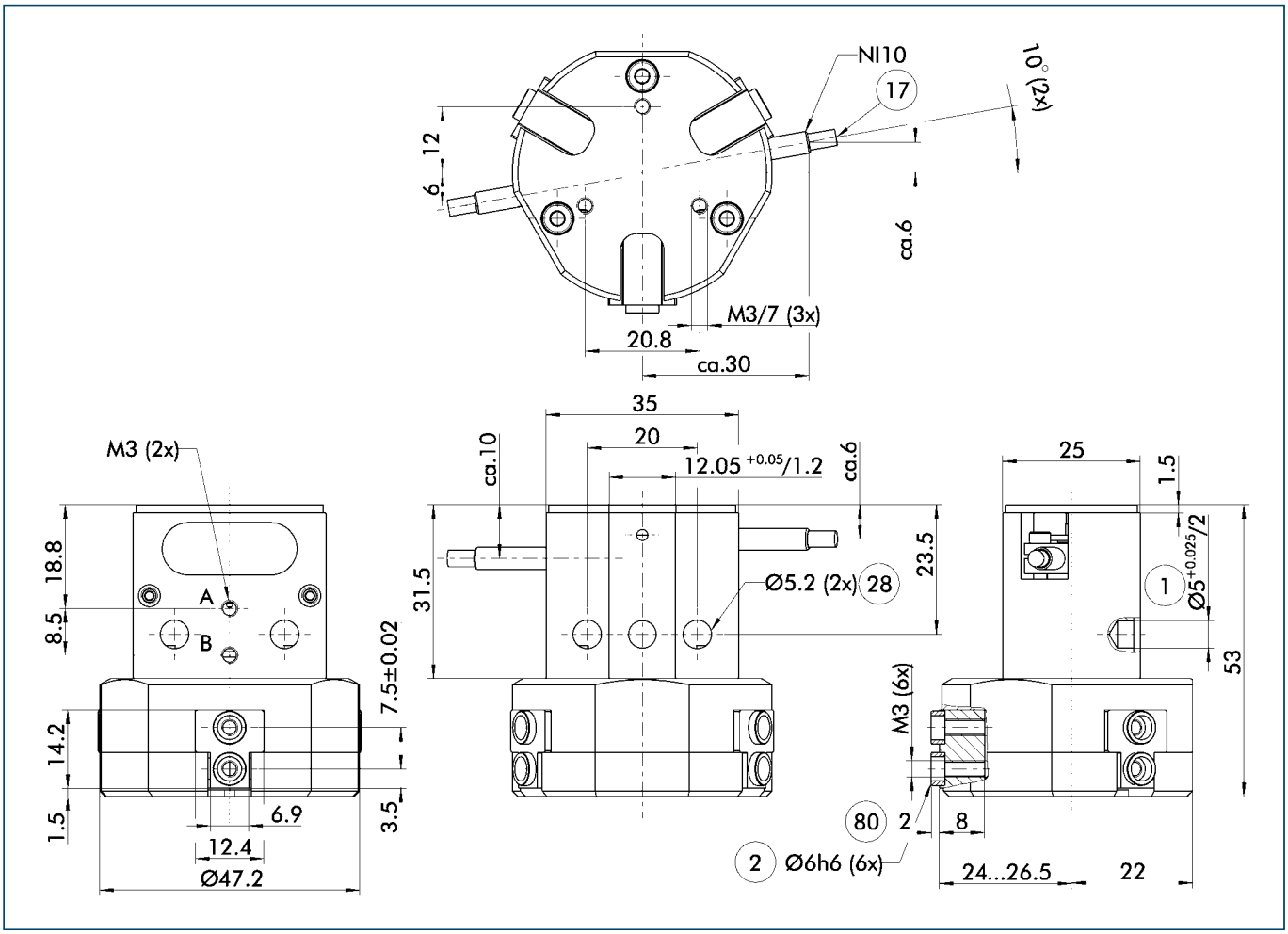
- M_x max. 3 Nm
- M_y max. 7 Nm
- M_z max. 4 Nm
- F_z max. 80 N

ⓘ Moments and forces apply per base jaw and may occur at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

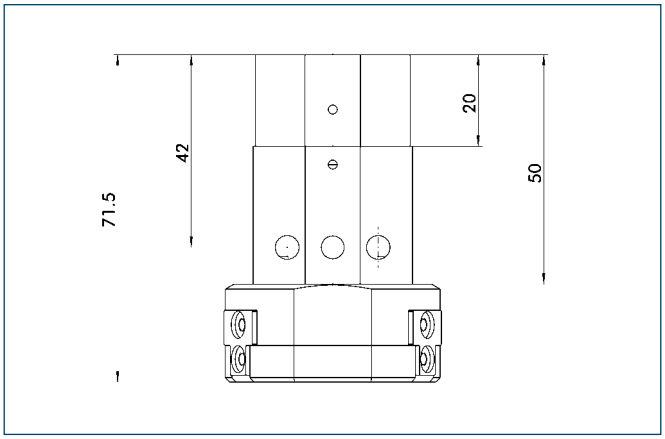
Designation		GMC 12	GMC 12-K	GMC 12-S
	ID	0313190	0313192	0313191
Stroke per jaw	[mm]	2.5	2.5	2.5
Closing grip force	[N]	50	75	
Opening grip force	[N]	50		75
Min. grip force applied by spring	[N]		25	25
Mass	[kg]	0.18	0.2	0.2
Recommended workpiece weight	[kg]	0.25	0.25	0.25
Fluid consumption for double stroke	[cm³]	0.87	0.87	0.87
Minimum pressure	[bar]	3	5	5
Maximum pressure	[bar]	8	8	8
Nominal operating pressure	[bar]	6	6	6
Closing time	[s]	0.02	0.015	0.025
Opening time	[s]	0.02	0.025	0.015
Max. permissible finger length	[mm]	40	40	40
IP rating		40	40	40
Min. ambient temperature	[°C]	5	5	5
Max. ambient temperature	[°C]	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02
OPTIONS and their characteristics				
Rotation adapter version		GMC 12-D	GMC 12-Z	GMC 12-X
	ID	0313193	0313195	0313194
Mass	[kg]	0.2	0.22	0.22

Main views



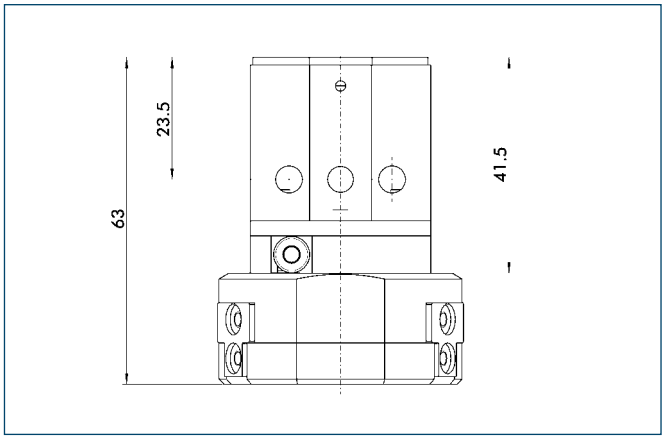
A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(28) Through-bore
(80) Depth of the centering sleeve in the counter piece

Gripping force safety device, K/S



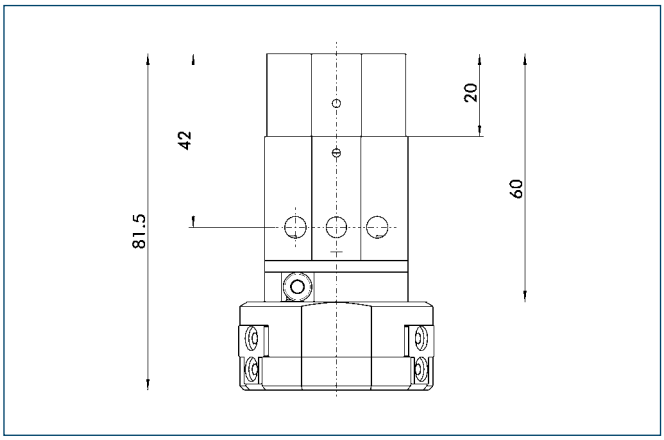
The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts as closing grip force for the K variant and as opening grip force for the S variant. The gripping force safety device can be installed without other components from the K variant into the S variant and vice versa. Besides this, the gripping force safety device can be used to increase gripping force or for single actuated gripping.

Rotation adapter D



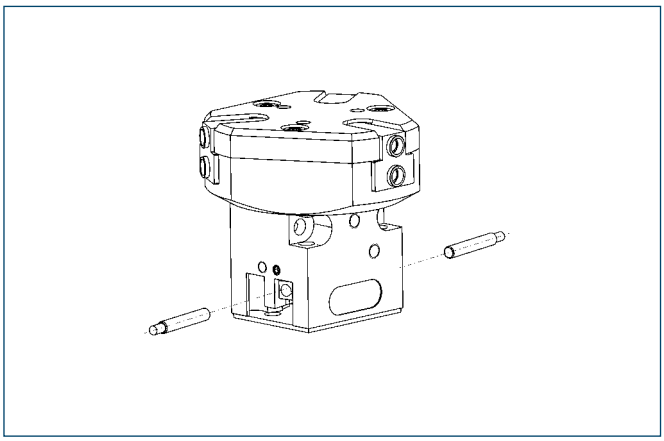
The two-part rotation adapter enables the gripping head to be continuously rotated in order to flexibly adjust the position of the gripper fingers on the workpiece. Only the clamping screw has to be released to do this. After the adjustment has been made, a hole can be drilled out to place a cylindrical pin or a fixing thread for clamping.

Gripping force safety device & rotation adapter Z/X



This variant combines the functions of the gripping force safety device with that of the rotation adapter. The gripping force safety device acts as closing grip force for the Z variant and as opening grip force for the X variant.

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 12-X	0313330	Bracket, sensor	
GMNS 12-G	0313331	Bracket, sensor, straight cable extension	•
GMNS 12-W	0313332	Bracket, sensor, angled cable extension	

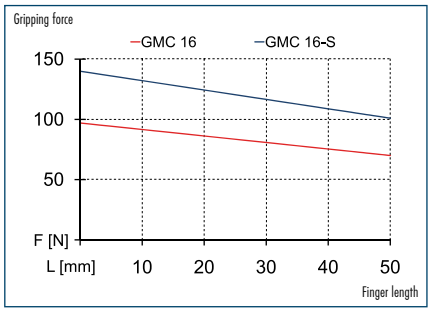
ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

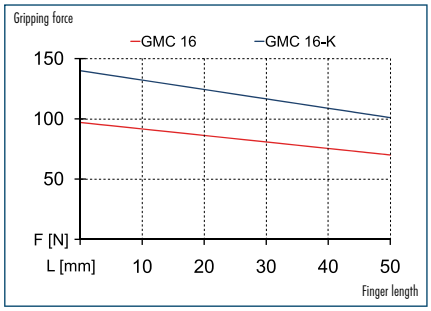
GMC 16

Gripping modules · Pneumatic · 3-finger centric gripper · Gripper for small components

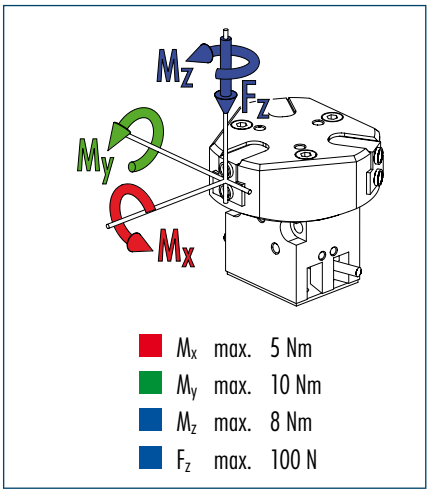
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

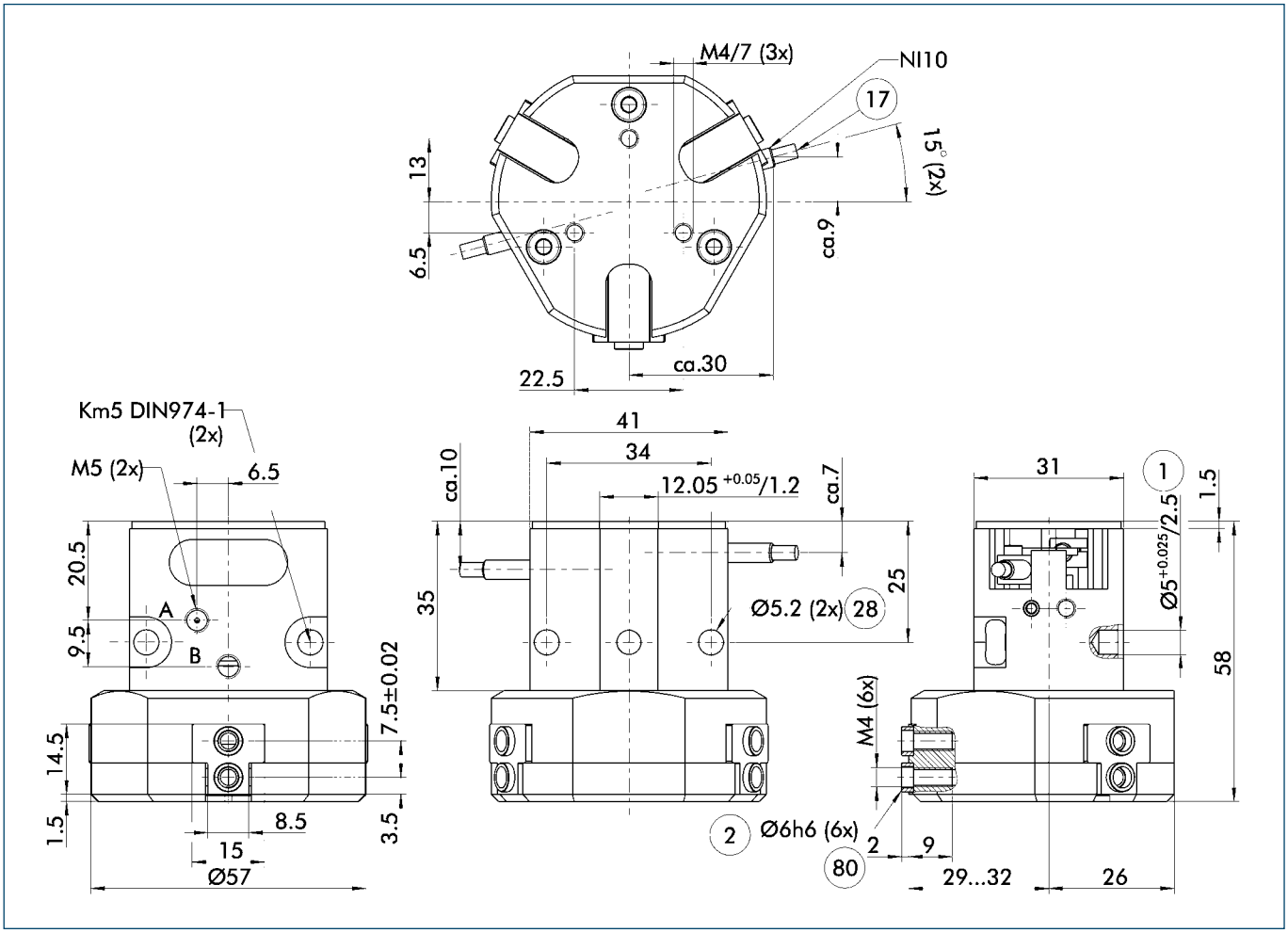


ⓘ Moments and forces apply per base jaw and may occur at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

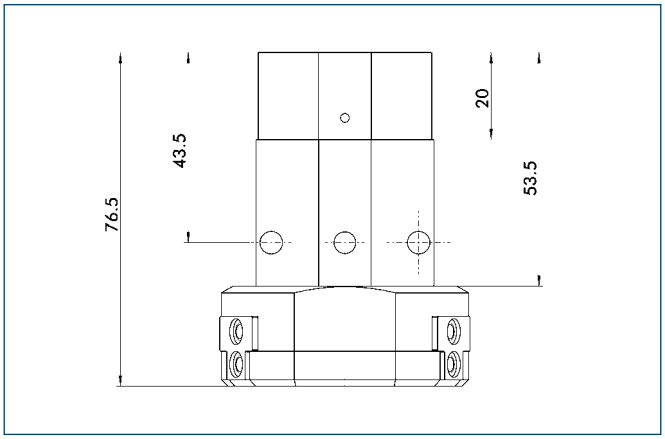
Designation		GMC 16	GMC 16-K	GMC 16-S
	ID	0313196	0313198	0313197
Stroke per jaw	[mm]	3	3	3
Closing grip force	[N]	90	130	
Opening grip force	[N]	90		130
Min. grip force applied by spring	[N]		40	40
Mass	[kg]	0.28	0.34	0.34
Recommended workpiece weight	[kg]	0.45	0.45	0.45
Fluid consumption for double stroke	[cm³]	1.1	1.1	1.1
Minimum pressure	[bar]	3	5	5
Maximum pressure	[bar]	8	8	8
Nominal operating pressure	[bar]	6	6	6
Closing time	[s]	0.02	0.015	0.025
Opening time	[s]	0.02	0.025	0.015
Max. permissible finger length	[mm]	50	50	50
IP rating		40	40	40
Min. ambient temperature	[°C]	5	5	5
Max. ambient temperature	[°C]	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02
OPTIONS and their characteristics				
Rotation adapter version		GMC 16-D	GMC 16-Z	GMC 16-X
	ID	0313199	0313201	0313200
Mass	[kg]	0.32	0.36	0.36

Main views



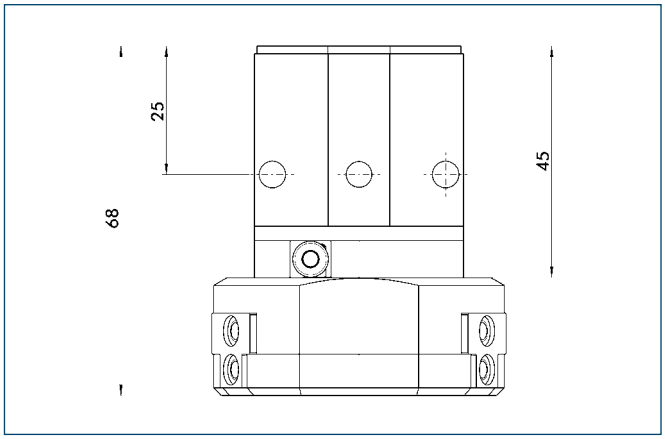
A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(28) Through-bore
(80) Depth of the centering sleeve in the counter piece

Gripping force safety device, K/S



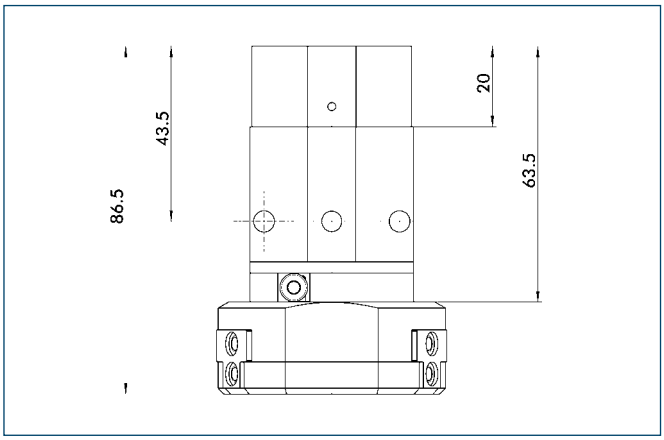
The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts as closing grip force for the K variant and as opening grip force for the S variant. The gripping force safety device can be installed without other components from the K variant into the S variant and vice versa. Besides this, the gripping force safety device can be used to increase gripping force or for single actuated gripping.

Rotation adapter D



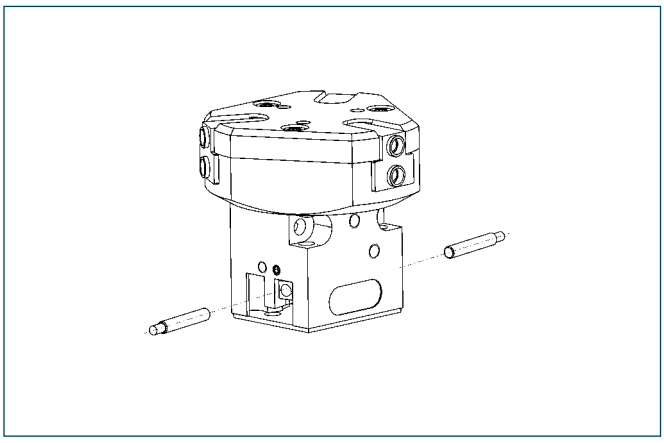
The two-part rotation adapter enables the gripping head to be continuously rotated in order to flexibly adjust the position of the gripper fingers on the workpiece. Only the clamping screw has to be released to do this. After the adjustment has been made, a hole can be drilled out to place a cylindrical pin or a fixing thread for clamping.

Gripping force safety device & rotation adapter Z/X



This variant combines the functions of the gripping force safety device with that of the rotation adapter. The gripping force safety device acts as closing grip force for the Z variant and as opening grip force for the X variant.

Sensor systems

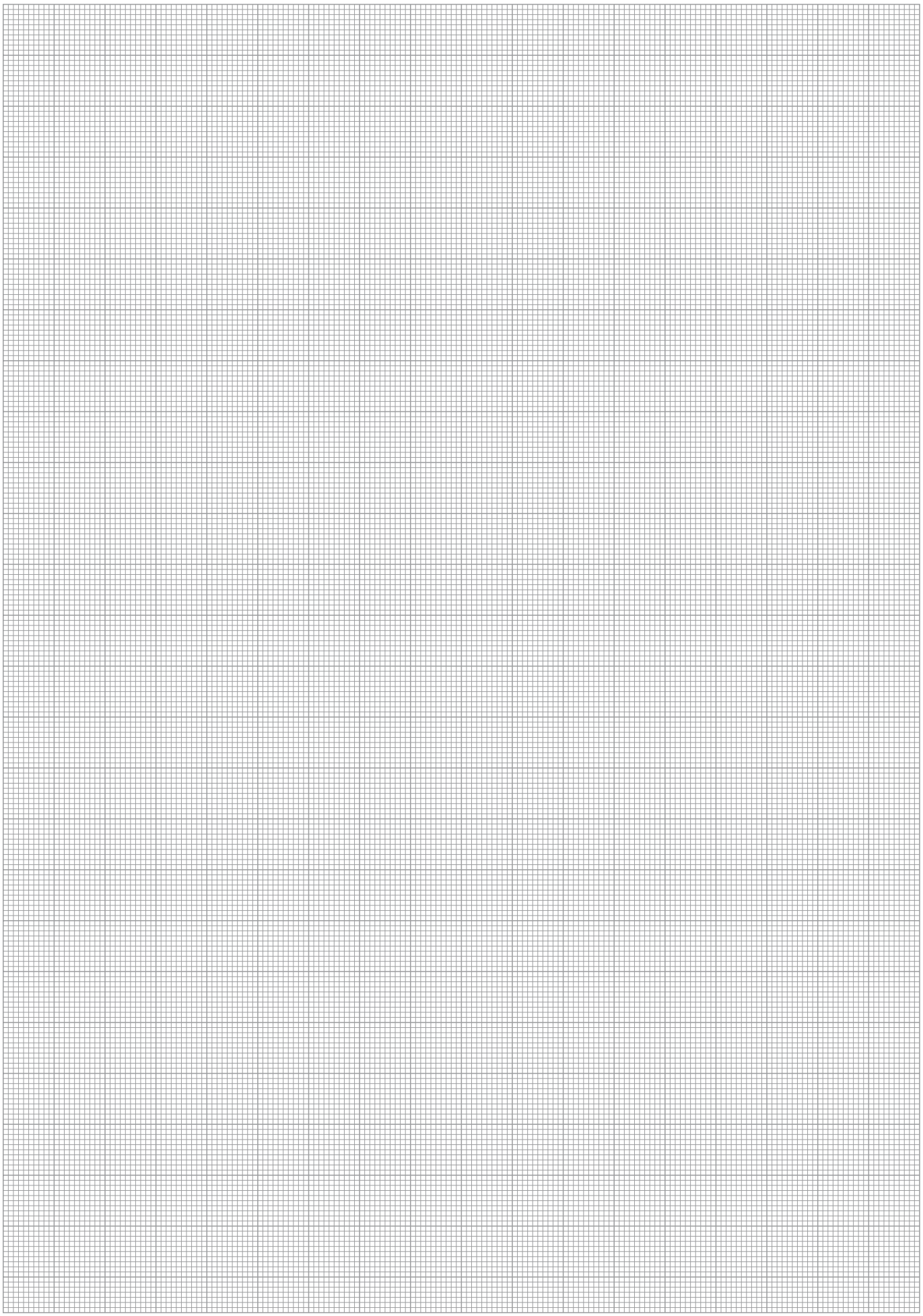


End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 16-X	0313333	Bracket, sensor	
GMNS 16-G	0313334	Bracket, sensor, straight cable extension	•
GMNS 16-W	0313335	Bracket, sensor, angled cable extension	

ⓘ Two sensors are needed for each gripper

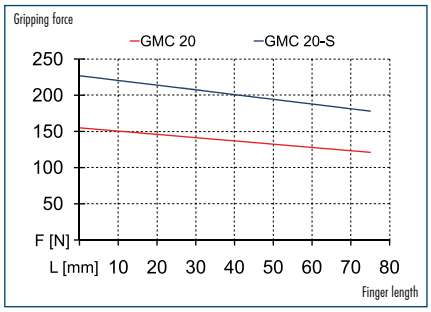
You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.



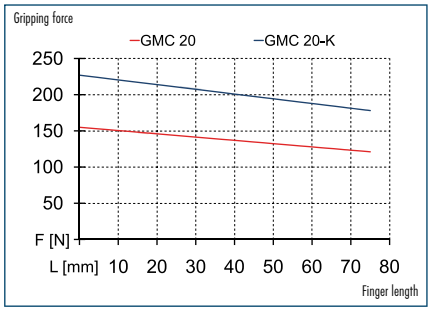
GMC 20

Gripping modules · Pneumatic · 3-finger centric gripper · Gripper for small components

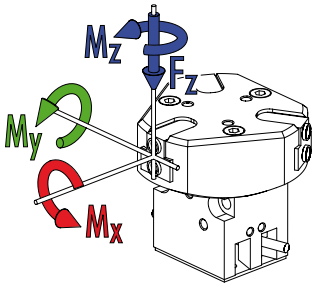
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load



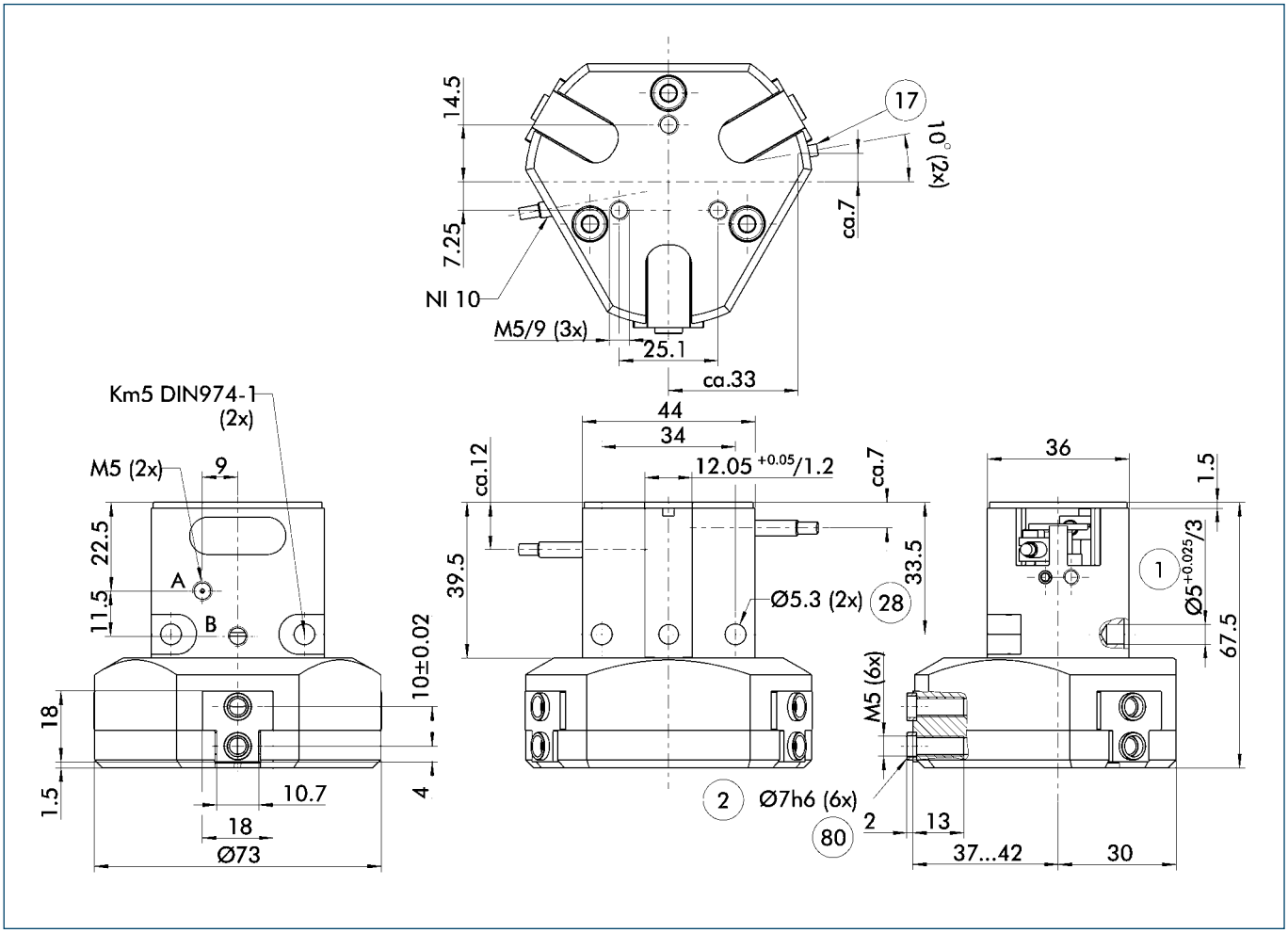
- M_x max. 8 Nm
- M_y max. 25 Nm
- M_z max. 15 Nm
- F_z max. 200 N

ⓘ Moments and forces apply per base jaw and may occur at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

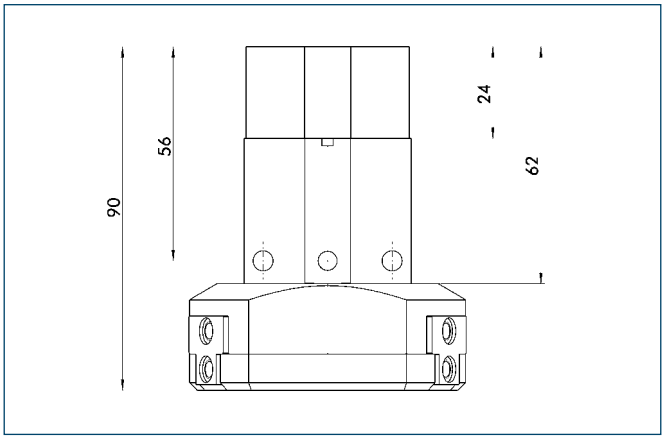
Designation		GMC 20	GMC 20-K	GMC 20-S
	ID	0313202	0313204	0313203
Stroke per jaw	[mm]	5	5	5
Closing grip force	[N]	150	220	
Opening grip force	[N]	150		220
Min. grip force applied by spring	[N]		70	70
Mass	[kg]	0.49	0.57	0.57
Recommended workpiece weight	[kg]	0.75	0.75	0.75
Fluid consumption for double stroke	[cm³]	2.86	2.86	2.86
Minimum pressure	[bar]	3	5	5
Maximum pressure	[bar]	8	8	8
Nominal operating pressure	[bar]	6	6	6
Closing time	[s]	0.03	0.025	0.04
Opening time	[s]	0.03	0.04	0.025
Max. permissible finger length	[mm]	75	75	75
IP rating		40	40	40
Min. ambient temperature	[°C]	5	5	5
Max. ambient temperature	[°C]	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02
OPTIONS and their characteristics				
Rotation adapter version		GMC 20-D	GMC 20-Z	GMC 20-X
	ID	0313205	0313207	0313206
Mass	[kg]	0.55	0.63	0.63

Main views



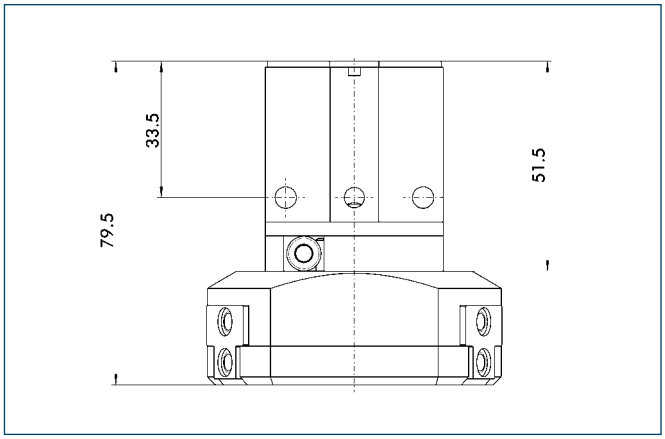
A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(28) Through-bore
(80) Depth of the centering sleeve in the counter piece

Gripping force safety device, K/S



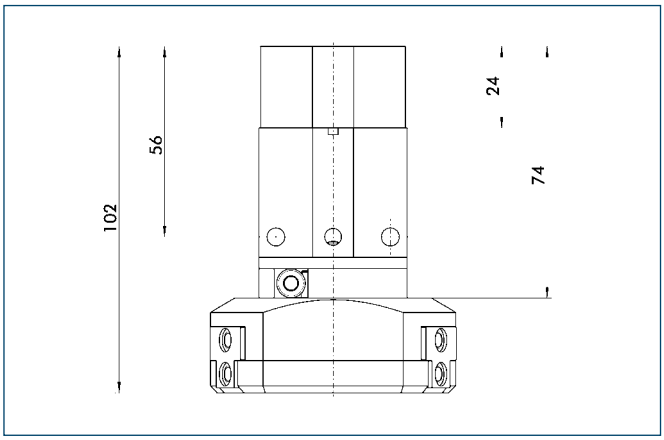
The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts as closing grip force for the K variant and as opening grip force for the S variant. The gripping force safety device can be installed without other components from the K variant into the S variant and vice versa. Besides this, the gripping force safety device can be used to increase gripping force or for single actuated gripping.

Rotation adapter D



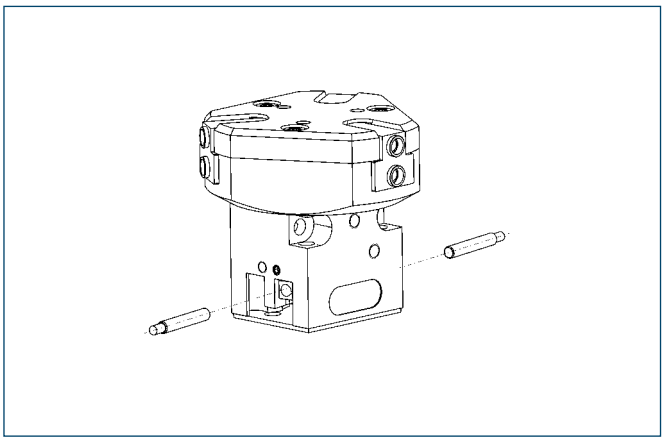
The two-part rotation adapter enables the gripping head to be continuously rotated in order to flexibly adjust the position of the gripper fingers on the workpiece. Only the clamping screw has to be released to do this. After the adjustment has been made, a hole can be drilled out to place a cylindrical pin or a fixing thread for clamping.

Gripping force safety device & rotation adapter Z/X



This variant combines the functions of the gripping force safety device with that of the rotation adapter. The gripping force safety device acts as closing grip force for the Z variant and as opening grip force for the X variant.

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 16-X	0313333	Bracket, sensor	
GMNS 16-G	0313334	Bracket, sensor, straight cable extension	•
GMNS 16-W	0313335	Bracket, sensor, angled cable extension	

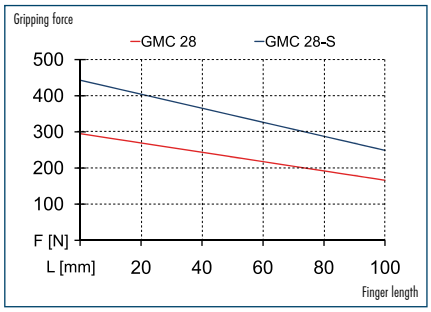
ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

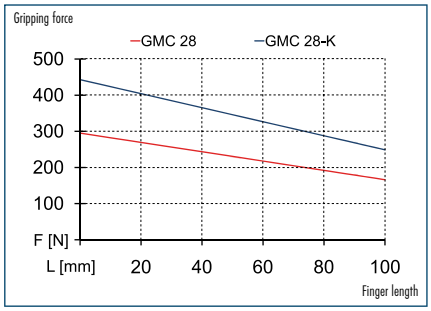
GMC 28

Gripping modules · Pneumatic · 3-finger centric gripper · Gripper for small components

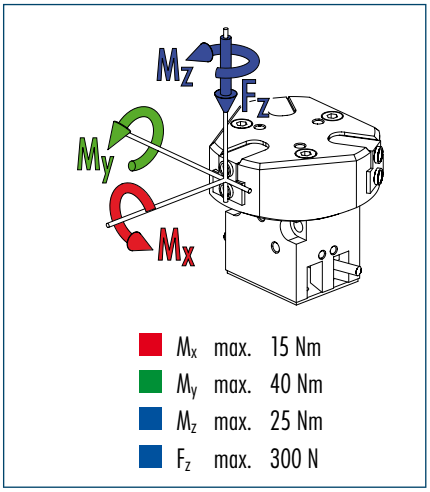
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

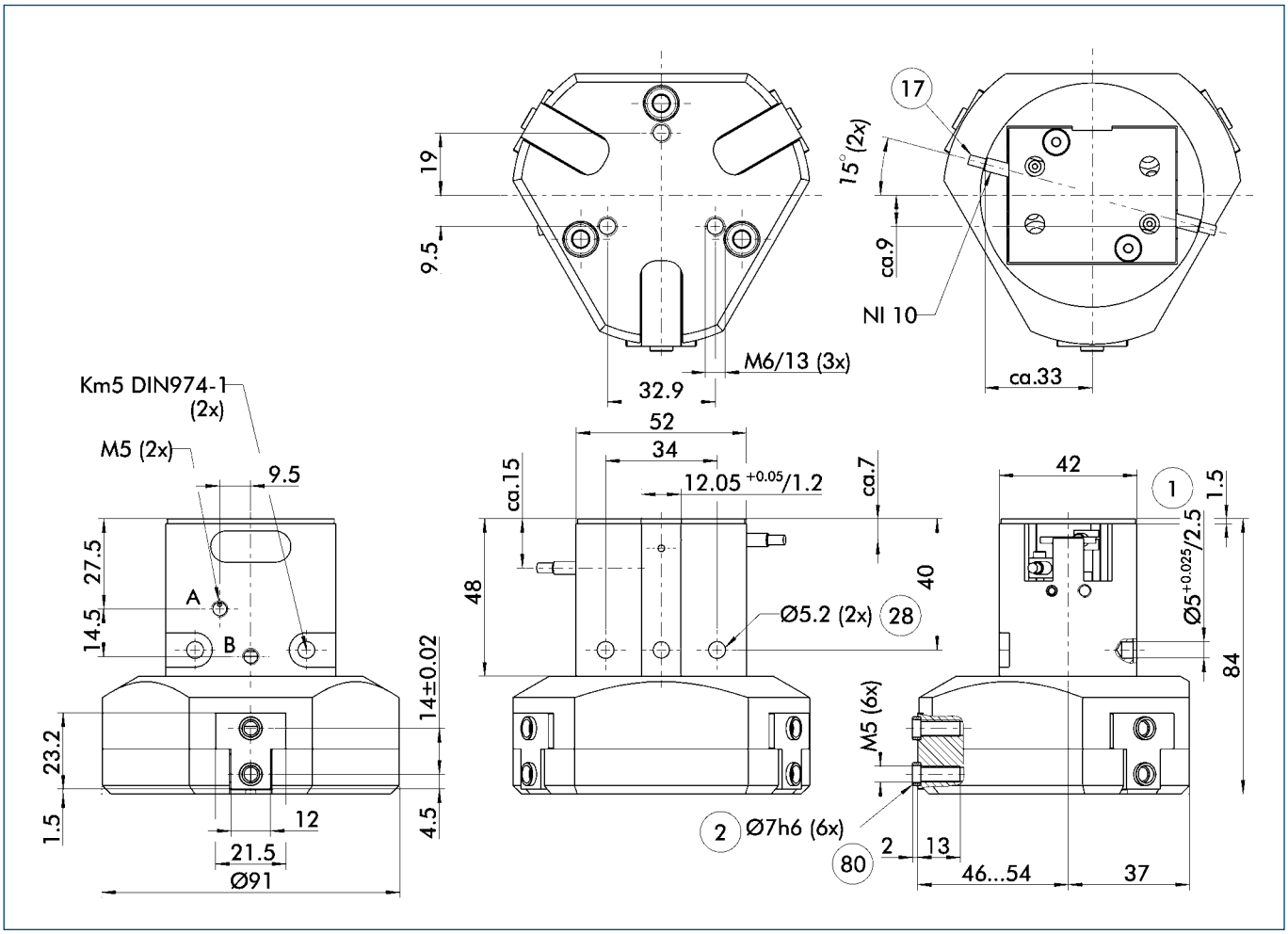


ⓘ Moments and forces apply per base jaw and may occur at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

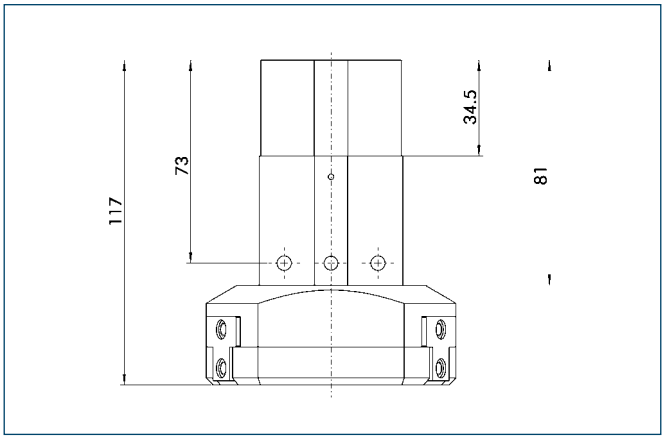
Designation		GMC 28	GMC 28-K	GMC 28-S
	ID	0313208	0313210	0313209
Stroke per jaw	[mm]	8	8	8
Closing grip force	[N]	280	420	
Opening grip force	[N]	280		420
Min. grip force applied by spring	[N]		140	140
Mass	[kg]	0.93	1.09	1.09
Recommended workpiece weight	[kg]	1.4	1.4	1.4
Fluid consumption for double stroke	[cm³]	9.05	9.05	9.05
Minimum pressure	[bar]	3	5	5
Maximum pressure	[bar]	8	8	8
Nominal operating pressure	[bar]	6	6	6
Closing time	[s]	0.05	0.04	0.06
Opening time	[s]	0.05	0.06	0.04
Max. permissible finger length		100	100	100
IP rating		40	40	40
Min. ambient temperature	[°C]	5	5	5
Max. ambient temperature	[°C]	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02
OPTIONS and their characteristics				
Rotation adapter version		GMC 28-D	GMC 28-Z	GMC 28-X
	ID	0313211	0313213	0313212
Mass	[kg]	0.99	1.17	1.17

Main views



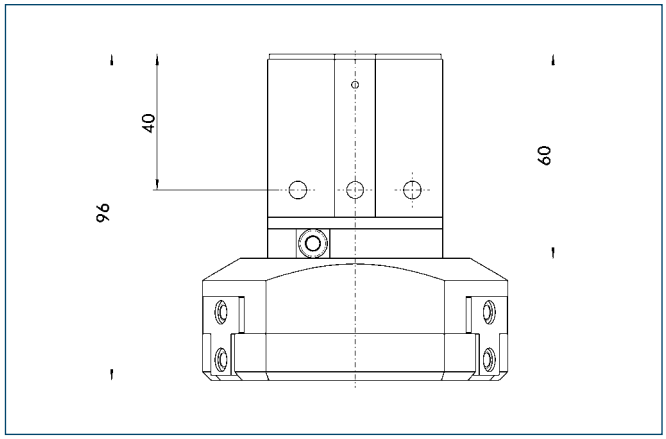
A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(28) Through-bore
(80) Depth of the centering sleeve in the counter piece

Gripping force safety device, K/S



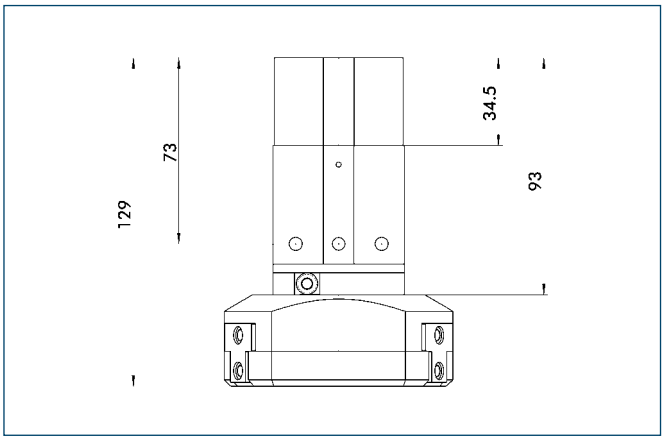
The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts as closing grip force for the K variant and as opening grip force for the S variant. The gripping force safety device can be installed without other components from the K variant into the S variant and vice versa. Besides this, the gripping force safety device can be used to increase gripping force or for single actuated gripping.

Rotation adapter D



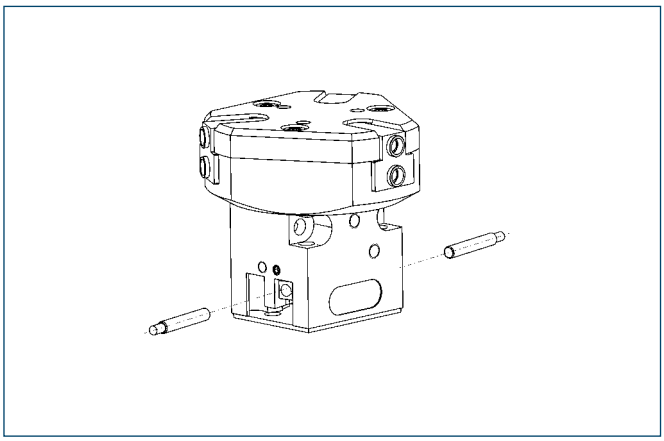
The two-part rotation adapter enables the gripping head to be continuously rotated in order to flexibly adjust the position of the gripper fingers on the workpiece. Only the clamping screw has to be released to do this. After the adjustment has been made, a hole can be drilled out to place a cylindrical pin or a fixing thread for clamping.

Gripping force safety device & rotation adapter Z/X



This variant combines the functions of the gripping force safety device with that of the rotation adapter. The gripping force safety device acts as closing grip force for the Z variant and as opening grip force for the X variant.

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 28-X	**0313336**	Bracket, sensor	
GMNS 28-G	**0313337**	Bracket, sensor, straight cable extension	•
GMNS 28-W	**0313338**	Bracket, sensor, angled cable extension	

ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

GMW

Sizes
12 .. 28

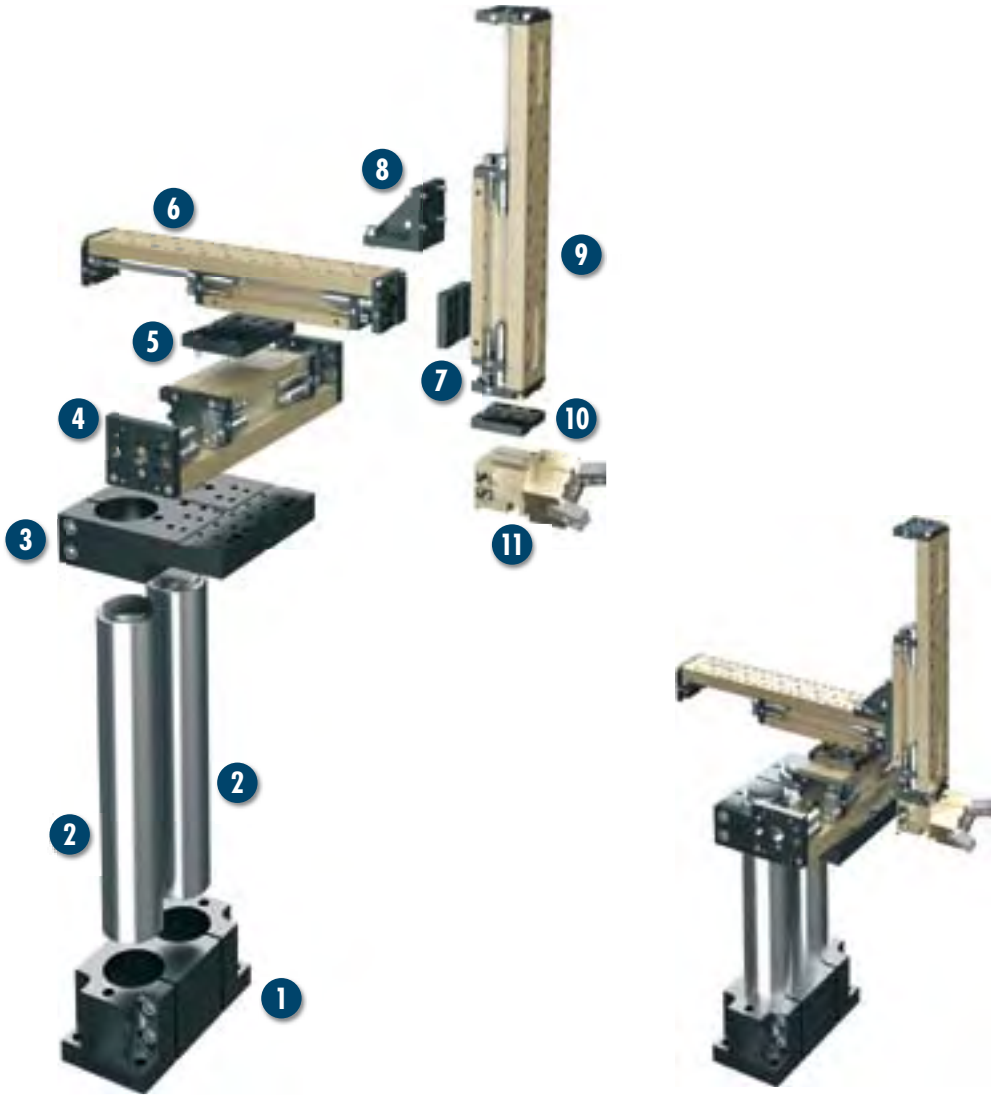
Mass
0.14 kg .. 0.76 kg

Gripping moment
0.6 Nm .. 6.0 Nm

Opening angle per finger
3° .. 16°

Repeat accuracy
± 0.02 mm

Application example



Pneumatic three-axis system featuring a gripper with flexible rotation and pillar assembly for small components

1. Double socket, SOD 055
2. Hollow pillar, SLH 055-0300
3. Double mounting plate, APDH 085
4. Linear module, LM 100-H050
5. Adapter plate, APL 210
6. Linear module, LM 50-H100
7. Adapter plate, APL 100
8. Reinforcing bracket, VW 50
9. Linear module, LM 50-H075
10. Adapter plate, APL 100
11. Angular gripping module, GMWA 20

Gripper for small components

2-finger angular gripper with stable kinematics for high power transmission

Area of application

Griping and moving small to medium workpieces in low-contamination areas; for example, in assembly, testing, labs, pharmaceuticals, and many others.

Advantages – your benefits

Stable kinematics
For high force transmission and synchronized gripping

Choice of I.D. or O.D. gripping
For maximum flexibility in applications

The gripping head for the drive unit can be continuously rotated

Integration of a gripping force retaining device is optional
For firm grip even in the event of power failure

End-position monitoring
Up to four monitoring sets possible

Standardized mounting bores
For numerous combinations with other GEMOTEC system elements

Combinations from the factory for gripping rotary modules without rotating power lines are possible

General information about the series

Working principle
Toggle drive system

Housing material
Aluminum alloy, hard-anodized

Base jaw material
Steel

Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

Scope of delivery
Completely ready for operation
without bracket for proximity switch and without proximity switch

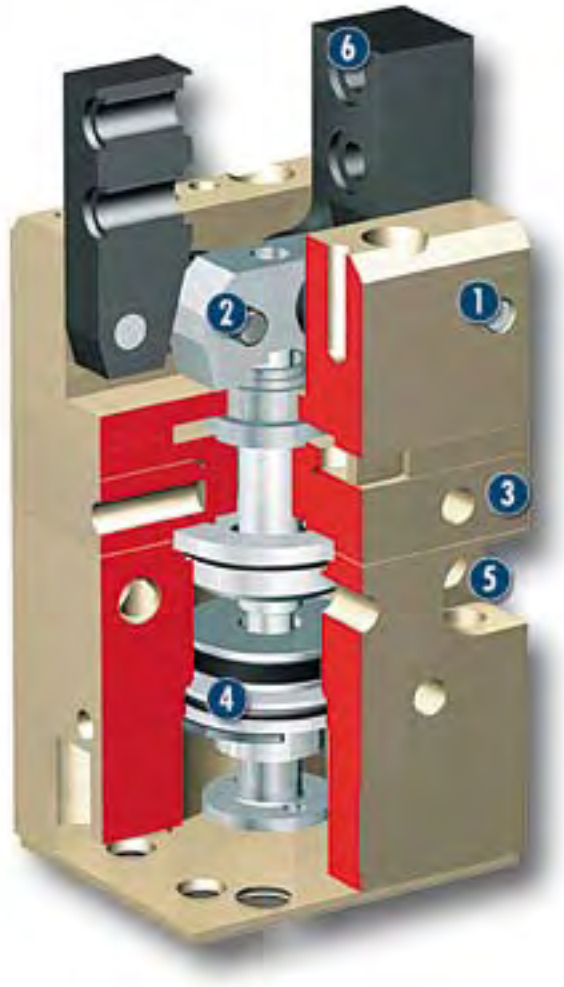
Warranty
24 months

Gripping force retaining device
Possible with variants with mechanical gripping force safety devices or pressure maintenance valves

Modular design
Grippers have modular designs and are a part of the RW gripping rotary modules

For production reasons, the colors may vary from those shown in the catalog.

Cross-section of function



1 **Base jaw guide**
For rotary movement over hardened cylindrical pivot pins

2 **Kinematics**
Synchronization by leverage principle for centric gripping

3 **Rotation adapter**
Flexible; twisting of the gripping head to the drive unit

4 **Drive**
Double pressurized piston-actuated system

5 **Modular design hole pattern**
Completely integrated in the module system

6 **Base jaws**
For adaptation of the workpiece-specific gripper fingers

Description of function

The piston is moved up or down using compressed air. The kinematics links the piston movement in a synchronized, rotatory opening and closing together with the bolt bearings of the base jaws.

Options and special information

Rotation adapter version

The gripping head can be continuously adjusted and indexed in relation to the drive.

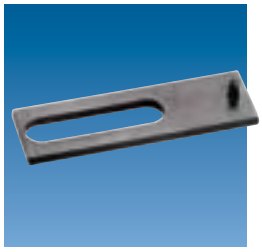
This module can be combined as standard with many elements from the modular system. You can find more information in the “Accessories” chapter.

Accessories

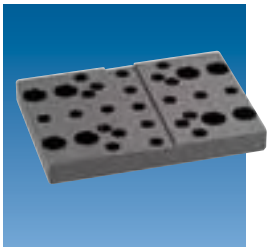
Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

Fittings

Centering strips



Adapter plates



Inductive proximity switch, NI

Sensor cable

Pillar assembly systems

Pressure maintenance valve

ⓘ Please see the side views at the end of the respective size for information concerning specific sizes, accessories availability for that size, designation, and ID numbers. You can find more information about our accessories program in the “Accessories” part of the catalog.

General information about the series

Gripping moment

Gripping moment is the arithmetic sum of the gripping moments per claw jaw.

Finger length

The finger length is measured from the upper edge of the gripper housing in the direction of the main axis.
If the maximum permissible finger length is exceeded, a limiting of the jaws' freedom of movement and/or a reduction of the opening angle must be made, just as is the case if the fingers are heavy. The life span of the gripper can be shortened.

Repeat accuracy

This is defined as the distribution of the end positions of 100 successive strokes.

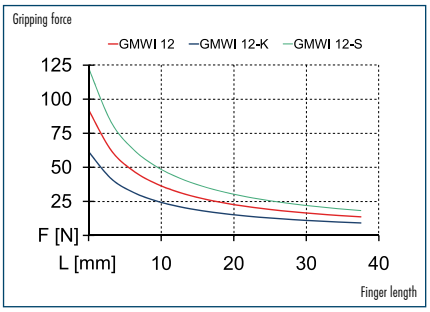
Closing and opening times

Closing and opening times are only movement times of the base jaws or fingers. Valve switching times, hose filling times, or PLC reaction times are not a part of this and are to be considered when cycle times are calculated.

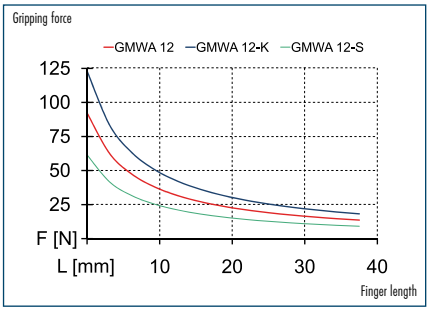
GMW 12

Gripping modules · Pneumatic · Angular gripper · Gripper for small components

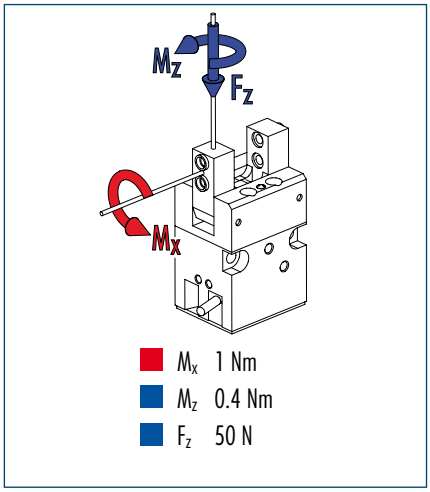
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

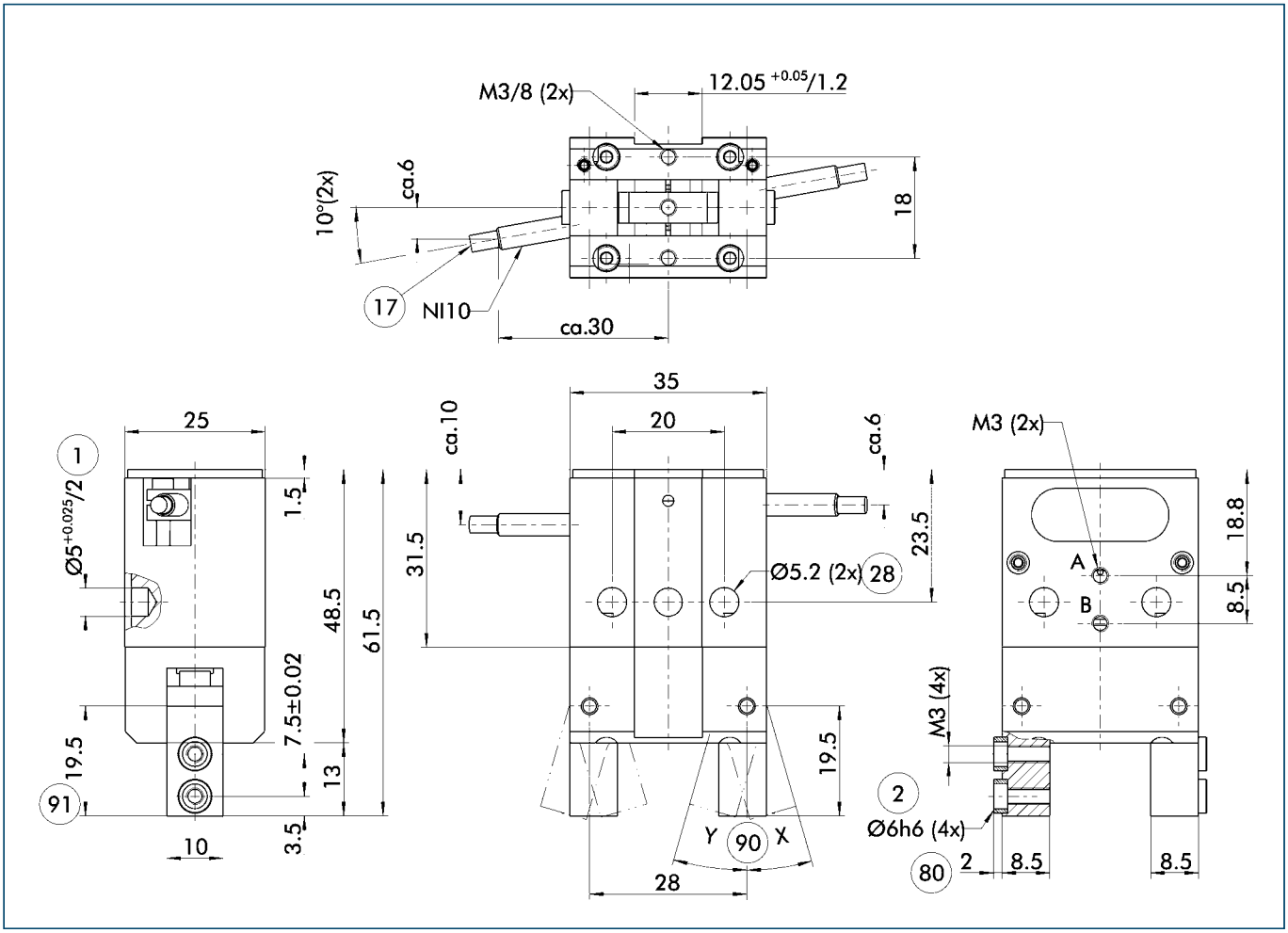


ⓘ Moments and forces apply per base jaw and may occur at the same time.

Technical data

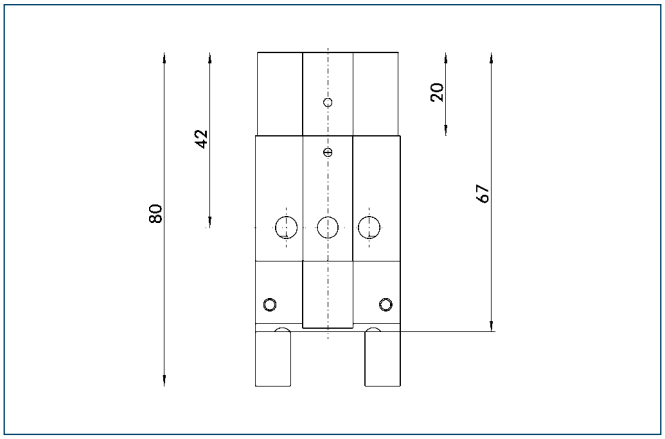
Designation		GMWA 12	GMWA 12-K	GMWA 12-S	GMWI 12	GMWI 12-K	GMWI 12-S
	ID	0313140	0313142	0313141	0313158	0313160	0313159
Closing angle per jaw:	[°]	3	3	3	16	16	16
Opening angle per jaw	[°]	16	16	16	3	3	3
Closing moment	[Nm]	0.6	0.8		0.6	0.8	
Opening moment	[Nm]	0.6		0.8	0.6		0.8
Protected by spring against closing moment	[Nm]		0.2			0.2	
Protected by spring against opening moment	[Nm]			0.2			0.2
Mass	[kg]	0.14	0.16	0.16	0.14	0.16	0.16
Fluid consumption for double stroke	[cm³]	0.87	0.87	0.87	0.87	0.87	0.87
Minimum pressure	[bar]	3	5	5	3	5	5
Maximum pressure	[bar]	8	8	8	8	8	8
Nominal operating pressure	[bar]	6	6	6	6	6	6
Closing time	[s]	0.02	0.015	0.025	0.02	0.015	0.025
Opening time	[s]	0.02	0.025	0.015	0.02	0.015	0.025
Max. permissible finger length	[mm]	25	25	25	25	25	25
IP rating		40	40	40	40	40	40
Min. ambient temperature	[°C]	5	5	5	5	5	5
Max. ambient temperature	[°C]	60	60	60	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02
OPTIONS and their characteristics							
Rotation adapter version		GMWA 12-D	GMWA 12-Z	GMWA 12-X	GMWI 12-D	GMWI 12-Z	GMWI 12-X
	ID	0313143	0313145	0313144	0313161	0313163	0313162
Mass	[kg]	0.16	0.18	0.18	0.16	0.18	0.18

Main views



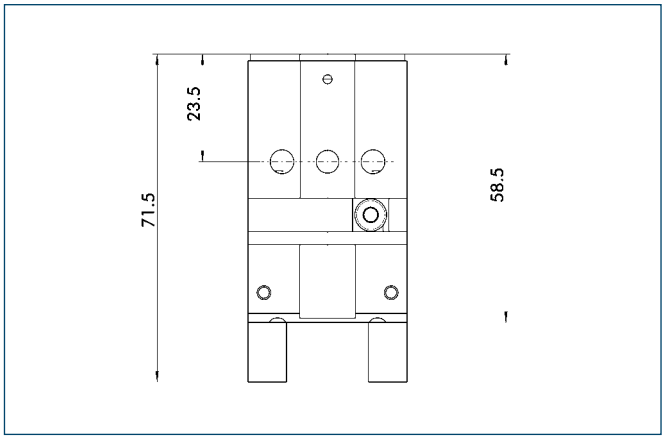
A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(28) Through-bore
(80) Depth of the centering sleeve in the counter piece
(90) See technical data for closing angle "Y" and opening angle "X" per jaw
(91) Length of the usable jaw screwing surface

Gripping force safety device, K/S



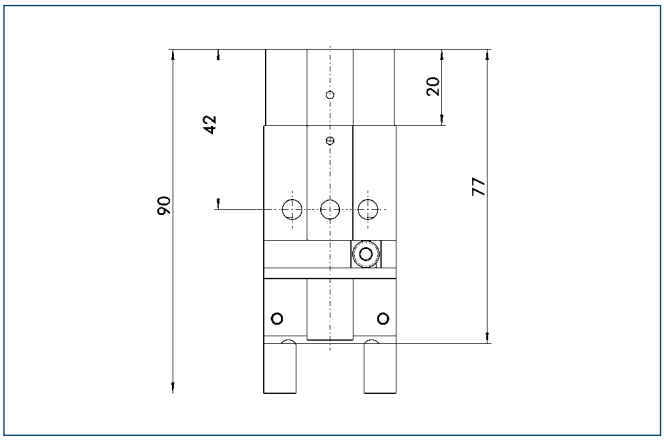
The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts as closing grip force for the K variant and as opening grip force for the S variant. The gripping force safety device can be installed without other components from the K variant into the S variant and vice versa. Besides this, the gripping force safety device can be used to increase gripping force or for single actuated gripping.

Rotation adapter D



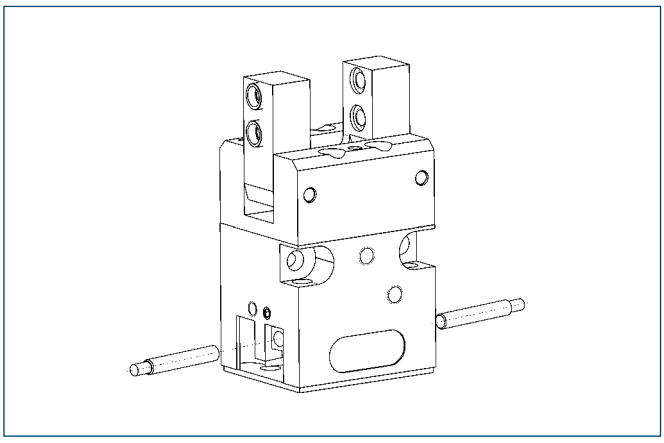
The two-part rotation adapter enables the gripping head to be continuously rotated in order to flexibly adjust the position of the gripper fingers on the workpiece. Only the clamping screw has to be released to do this. After the adjustment has been made, a hole can be drilled out to place a cylindrical pin or a fixing thread for clamping.

Gripping force safety device & rotation adapter Z/X



This variant combines the functions of the gripping force safety device with that of the rotation adapter. The gripping force safety device acts as closing grip force for the Z variant and as opening grip force for the X variant.

Sensor systems

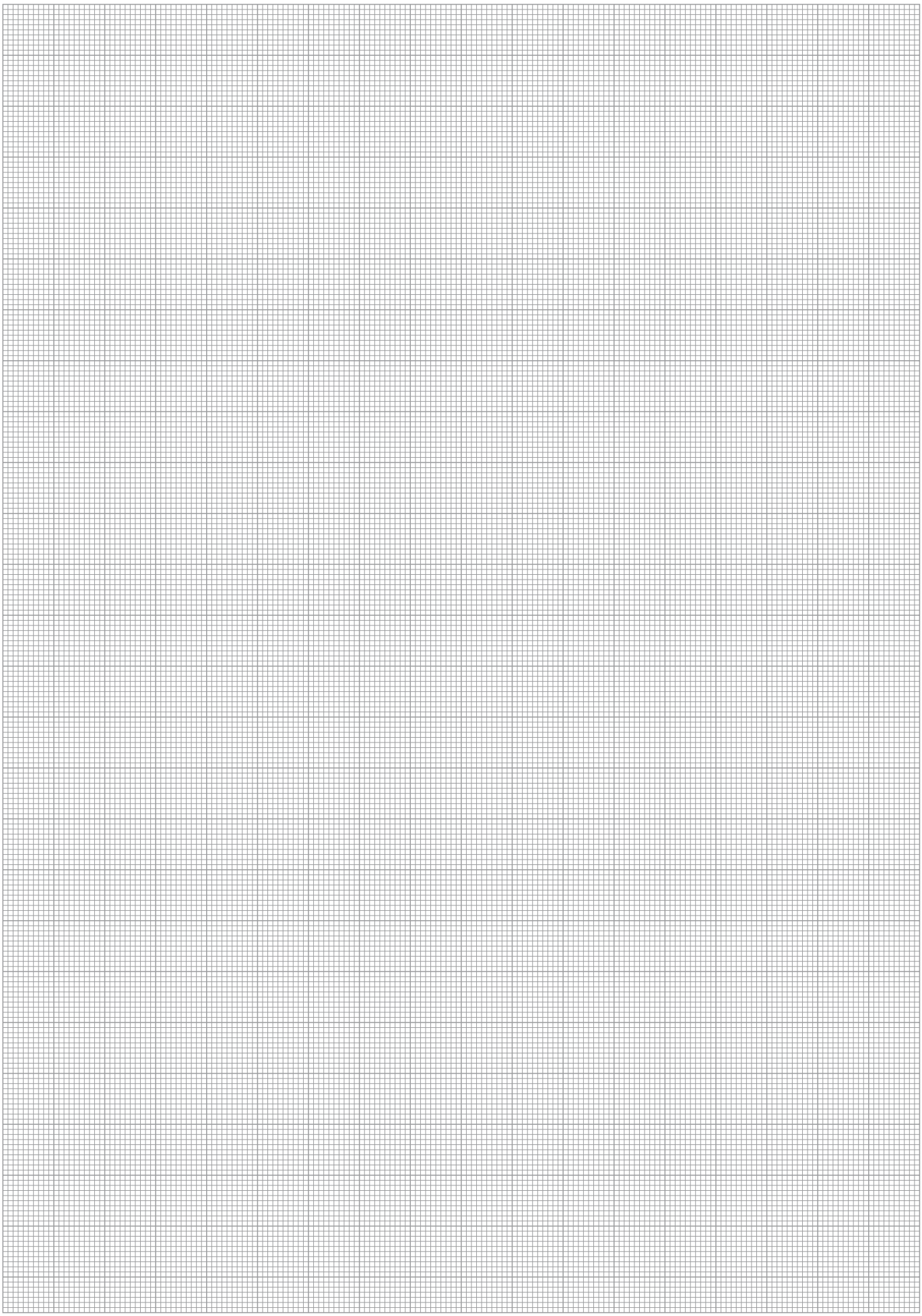


End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 12-X	**0313330**	Bracket, sensor	
GMNS 12-G	**0313331**	Bracket, sensor, straight cable extension	•
GMNS 12-W	**0313332**	Bracket, sensor, angled cable extension	

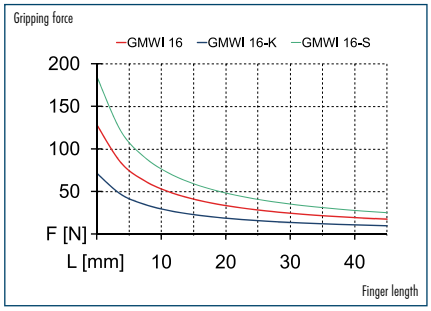
ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

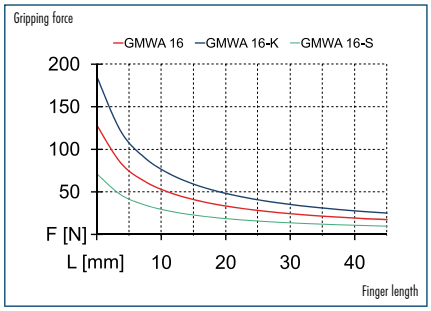


GMW 16

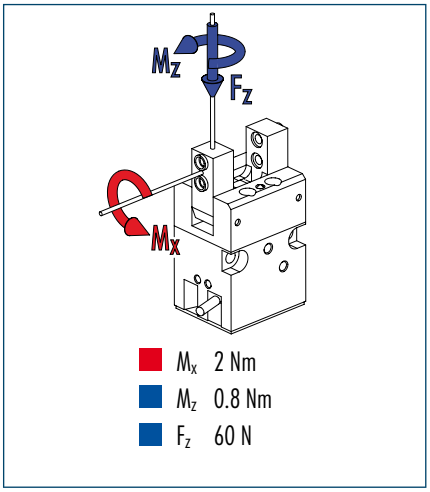
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

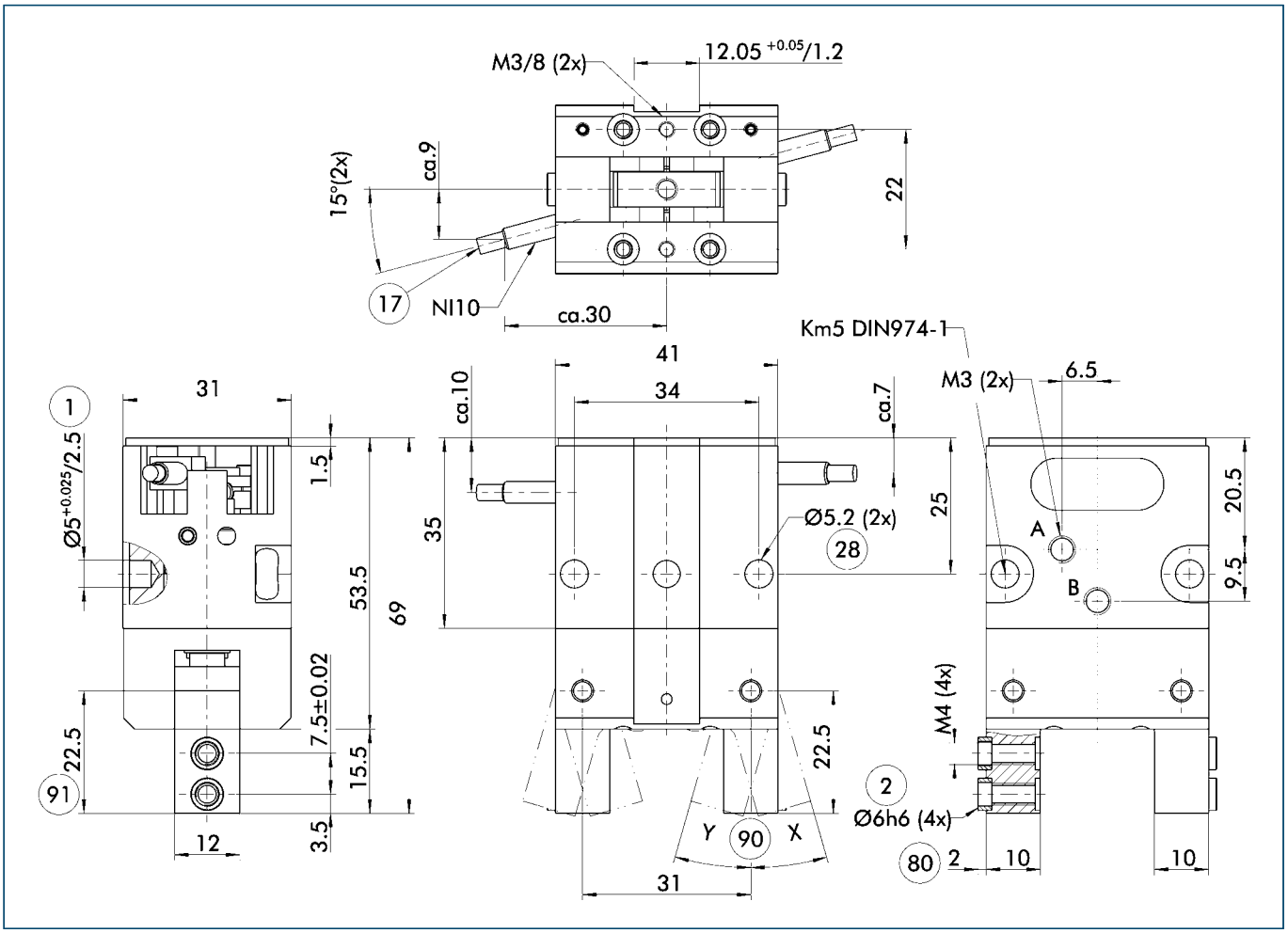


ⓘ Moments and forces apply per base jaw and may occur at the same time.

Technical data

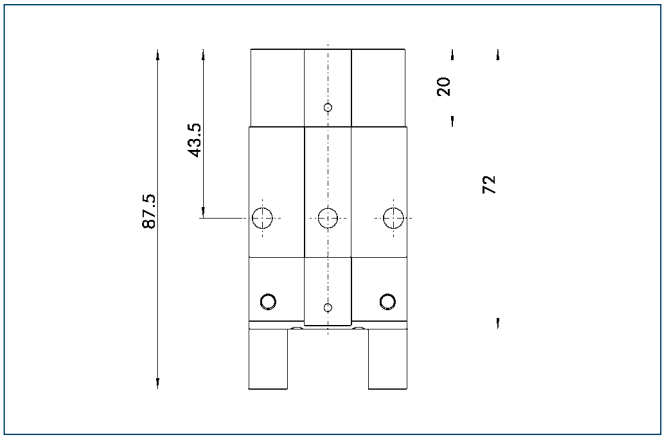
Designation		GMWA 16	GMWA 16-K	GMWA 16-S	GMWI 16	GMWI 16-K	GMWI 16-S
	ID	0313146	0313148	0313147	0313164	0313166	0313165
Closing angle per jaw:	[°]	3	3	3	14	14	14
Opening angle per jaw	[°]	14	14	14	3	3	3
Closing moment	[Nm]	0.9	1.3		0.9	1.3	
Opening moment	[Nm]	0.9		1.3	0.9		1.3
Protected by spring against closing moment	[Nm]		0.4			0.4	
Protected by spring against opening moment	[Nm]			0.4			0.4
Mass	[kg]	0.2	0.26	0.26	0.2	0.26	0.26
Fluid consumption for double stroke	[cm³]	1.1	1.1	1.1	1.1	1.1	1.1
Minimum pressure	[bar]	3	5	5	3	5	5
Maximum pressure	[bar]	8	8	8	8	8	8
Nominal operating pressure	[bar]	6	6	6	6	6	6
Closing time	[s]	0.02	0.015	0.025	0.02	0.015	0.025
Opening time	[s]	0.02	0.025	0.015	0.02	0.025	0.015
Max. permissible finger length	[mm]	30	30	30	30	30	30
IP rating		40	40	40	40	40	40
Min. ambient temperature	[°C]	5	5	5	5	5	5
Max. ambient temperature	[°C]	60	60	60	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02
OPTIONS and their characteristics							
Rotation adapter version		GMWA 16-D	GMWA 16-Z	GMWA 16-X	GMWI 16-D	GMWI 16-Z	GMWI 16-X
	ID	0313149	0313151	0313150	0313167	0313169	0313168
Mass	[kg]	0.24	0.28	0.28	0.24	0.28	0.28

Main views



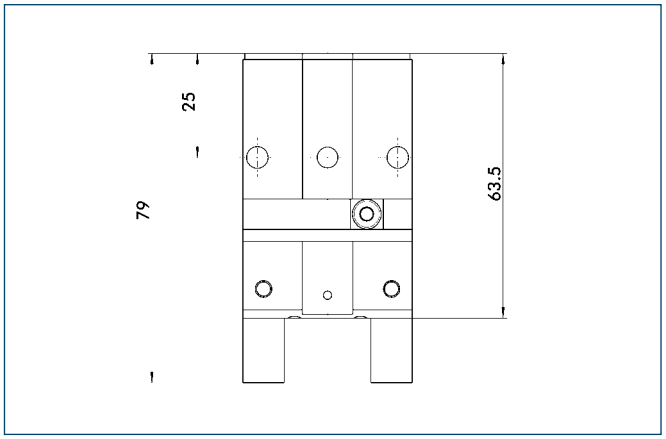
A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(28) Through-bore
(80) Depth of the centering sleeve in the counter piece
(90) See technical data for closing angle "Y" and opening angle "X" per jaw
(91) Length of the usable jaw screwing surface

Gripping force safety device, K/S



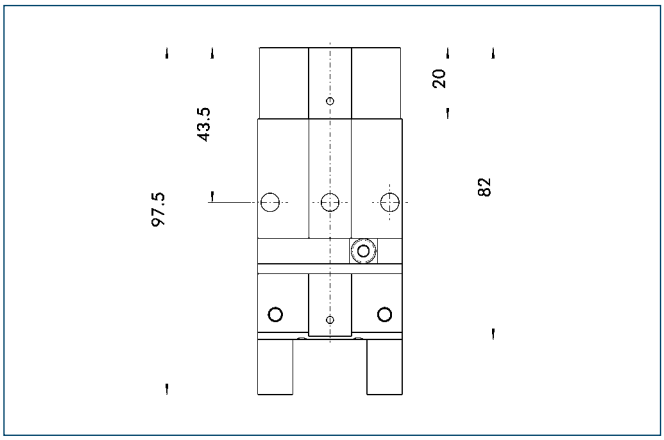
The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts as closing grip force for the K variant and as opening grip force for the S variant. The gripping force safety device can be installed without other components from the K variant into the S variant and vice versa. Besides this, the gripping force safety device can be used to increase gripping force or for single actuated gripping.

Rotation adapter D



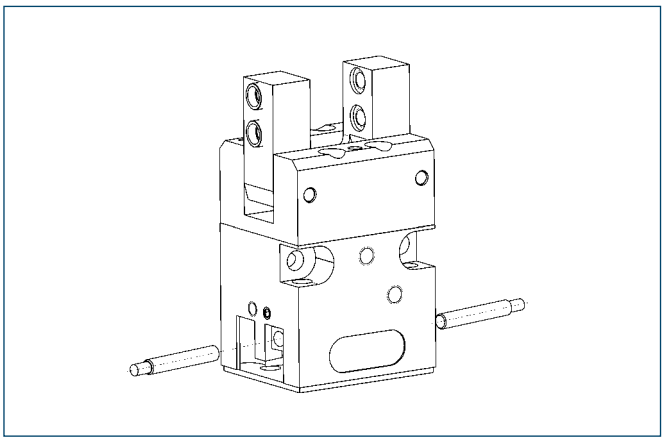
The two-part rotation adapter enables the gripping head to be continuously rotated in order to flexibly adjust the position of the gripper fingers on the workpiece. Only the clamping screw has to be released to do this. After the adjustment has been made, a hole can be drilled out to place a cylindrical pin or a fixing thread for clamping.

Gripping force safety device & rotation adapter Z/X



This variant combines the functions of the gripping force safety device with that of the rotation adapter. The gripping force safety device acts as closing grip force for the Z variant and as opening grip force for the X variant.

Sensor systems

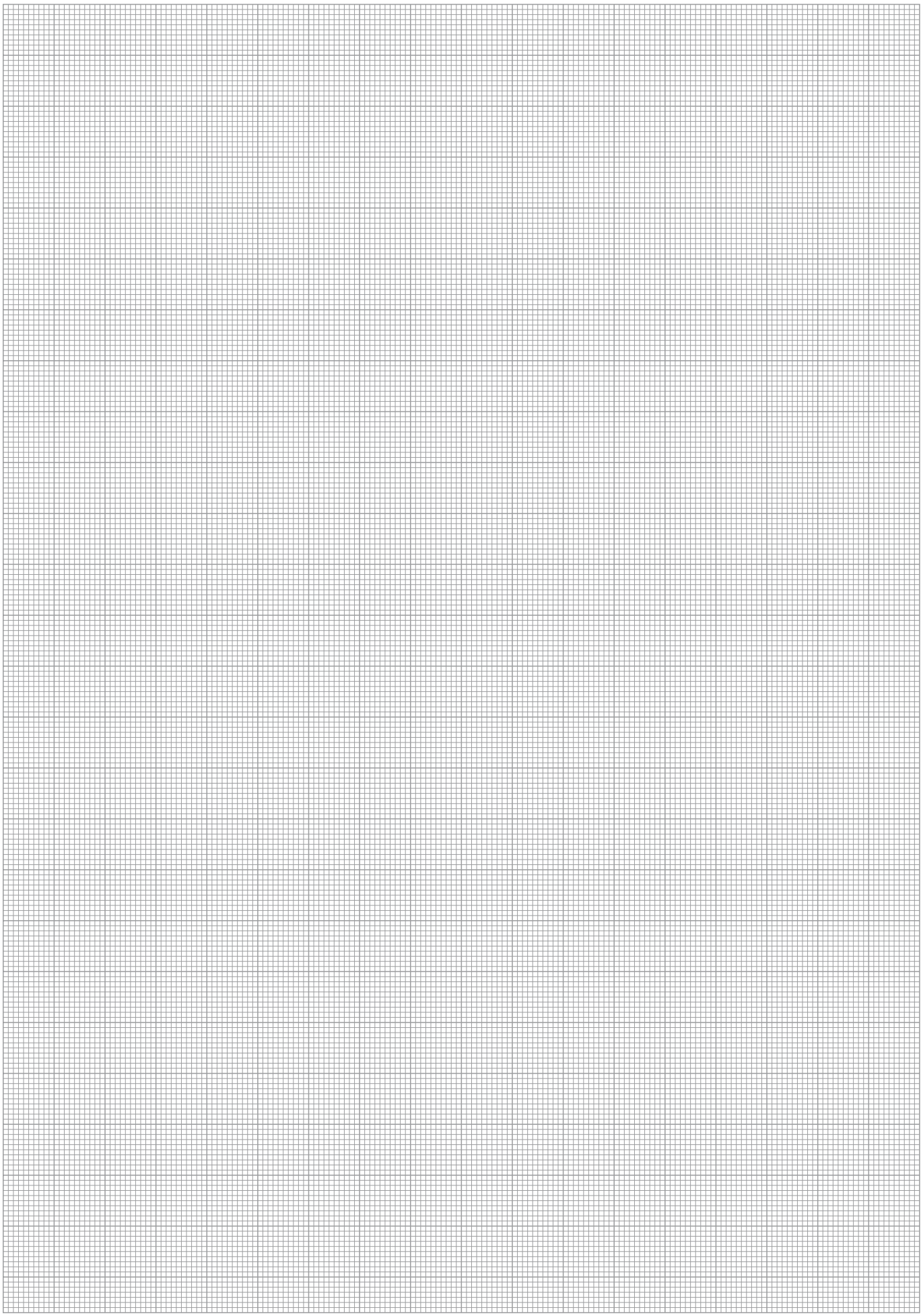


End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 16-X	**0313333**	Bracket, sensor	
GMNS 16-G	**0313334**	Bracket, sensor, straight cable extension	•
GMNS 16-W	**0313335**	Bracket, sensor,angled cable extension	

ⓘ Two sensors are needed for each gripper

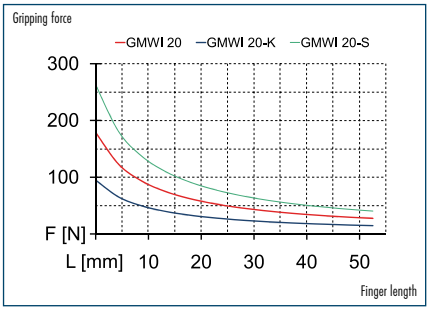
You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.



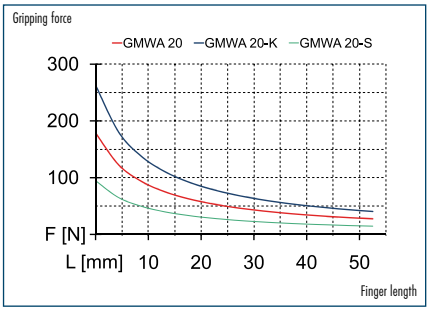
GMW 20

Gripping modules · Pneumatic · Angular gripper · Gripper for small components

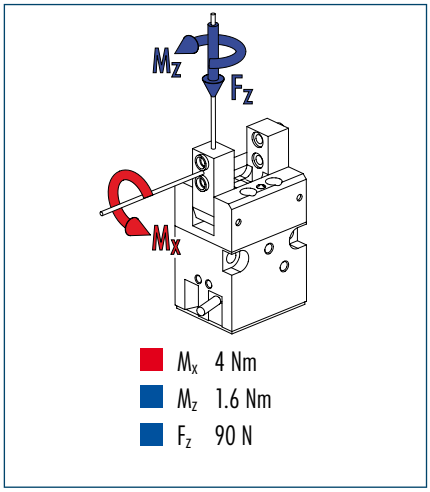
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

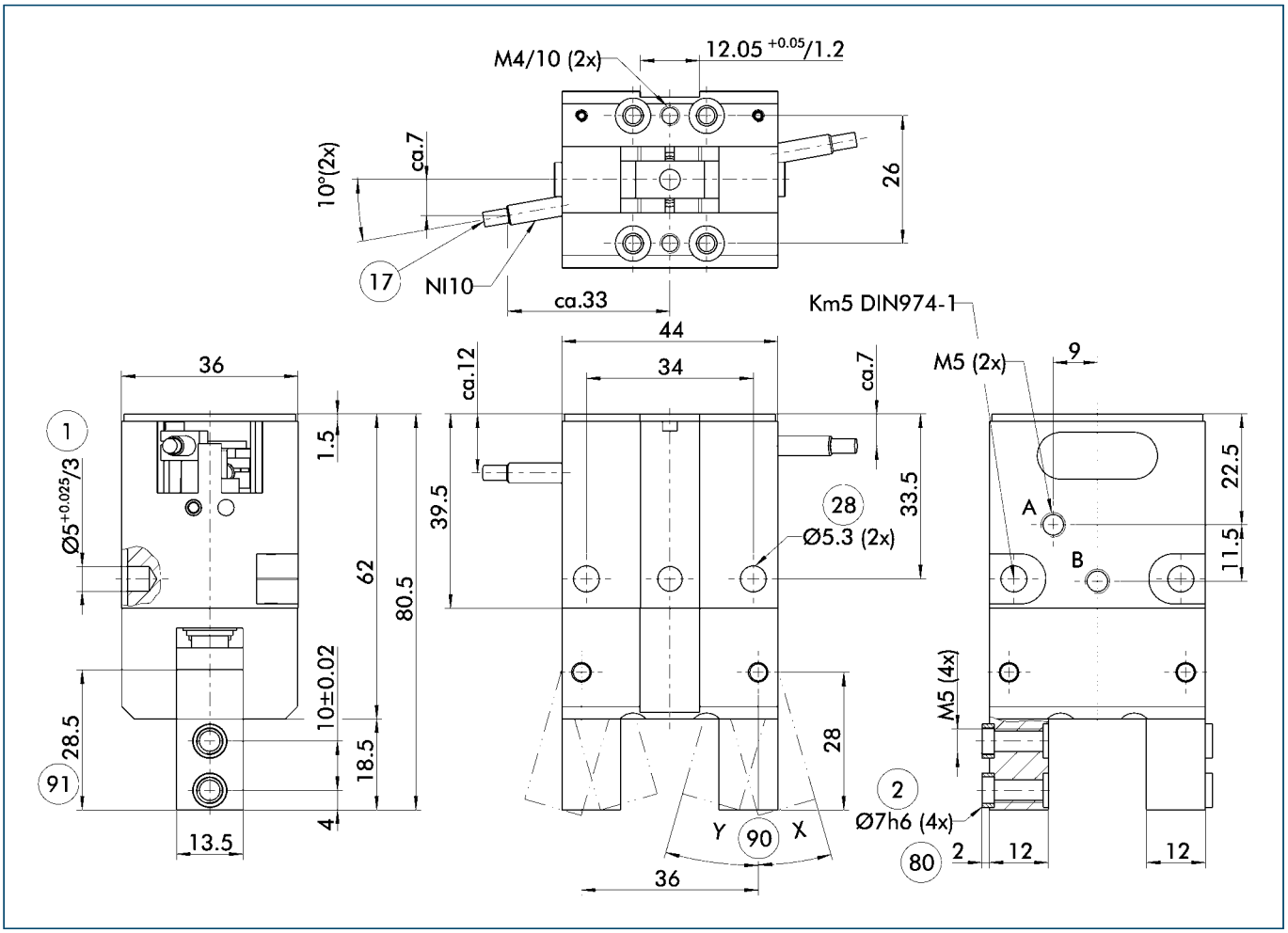


ⓘ Moments and forces apply per base jaw and may occur at the same time.

Technical data

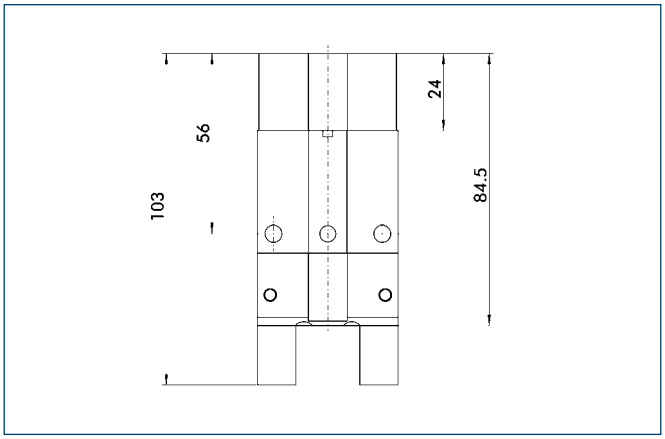
Designation		GMWA 20	GMWA 20-K	GMWA 20-S	GMWI 20	GMWI 20-K	GMWI 20-S
	ID	0313152	0313154	0313153	0313170	0313172	0313171
Closing angle per jaw:	[°]	7	7	7	16	16	16
Opening angle per jaw	[°]	16	16	16	7	7	7
Closing moment	[Nm]	1.7	2.5		1.7	2.5	
Opening moment	[Nm]	1.7		2.5	1.7		2.5
Protected by spring against closing moment	[Nm]		0.8			0.8	
Protected by spring against opening moment	[Nm]			0.8			0.8
Mass	[kg]	0.3	0.38	0.38	0.3	0.38	0.38
Fluid consumption for double stroke	[cm³]	2.86	2.86	2.86	2.86	2.86	2.86
Minimum pressure	[bar]	3	5	5	3	5	5
Maximum pressure	[bar]	8	8	8	8	8	8
Nominal operating pressure	[bar]	6	6	6	6	6	6
Closing time	[s]	0.03	0.025	0.04	0.03	0.025	0.04
Opening time	[s]	0.03	0.04	0.025	0.03	0.04	0.025
Max. permissible finger length	[mm]	35	35	35	35	35	35
IP rating		40	40	40	40	40	40
Min. ambient temperature	[°C]	5	5	5	5	5	5
Max. ambient temperature	[°C]	60	60	60	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02
OPTIONS and their characteristics							
Rotation adapter version		GMWA 20-D	GMWA 20-Z	GMWA 20-X	GMWI 20-D	GMWI 20-Z	GMWI 20-X
	ID	0313155	0313157	0313156	0313173	0313175	0313174
Mass	[kg]	0.36	0.44	0.44	0.36	0.44	0.44

Main views



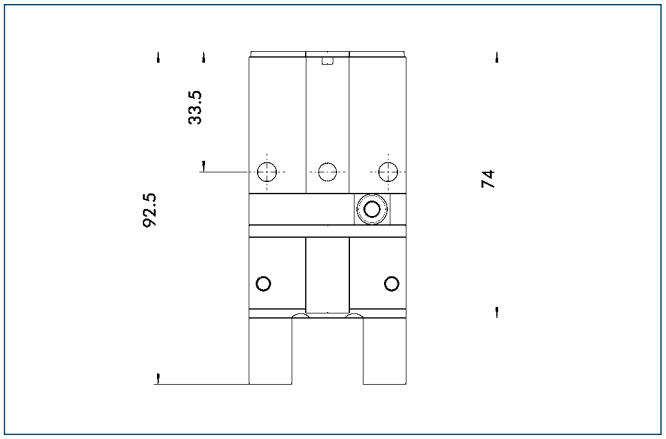
A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(28) Through-bore
(80) Depth of the centering sleeve in the counter piece
(90) See technical data for closing angle "Y" and opening angle "X" per jaw
(91) Length of the usable jaw screwing surface

Gripping force safety device, K/S



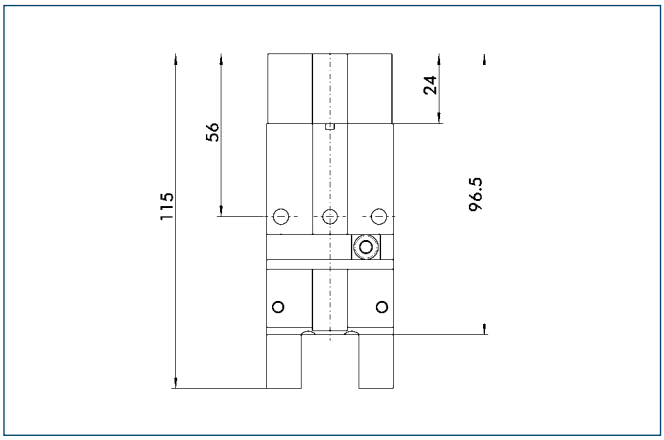
The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts as closing grip force for the K variant and as opening grip force for the S variant. The gripping force safety device can be installed without other components from the K variant into the S variant and vice versa. Besides this, the gripping force safety device can be used to increase gripping force or for single actuated gripping.

Rotation adapter D



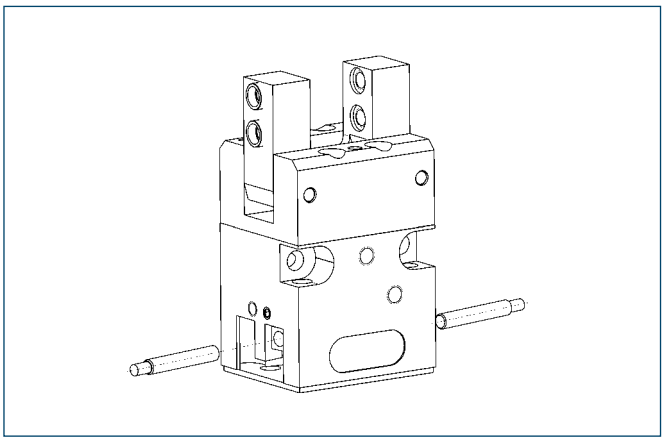
The two-part rotation adapter enables the gripping head to be continuously rotated in order to flexibly adjust the position of the gripper fingers on the workpiece. Only the clamping screw has to be released to do this. After the adjustment has been made, a hole can be drilled out to place a cylindrical pin or a fixing thread for clamping.

Gripping force safety device & rotation adapter Z/X



This variant combines the functions of the gripping force safety device with that of the rotation adapter. The gripping force safety device acts as closing grip force for the Z variant and as opening grip force for the X variant.

Sensor systems

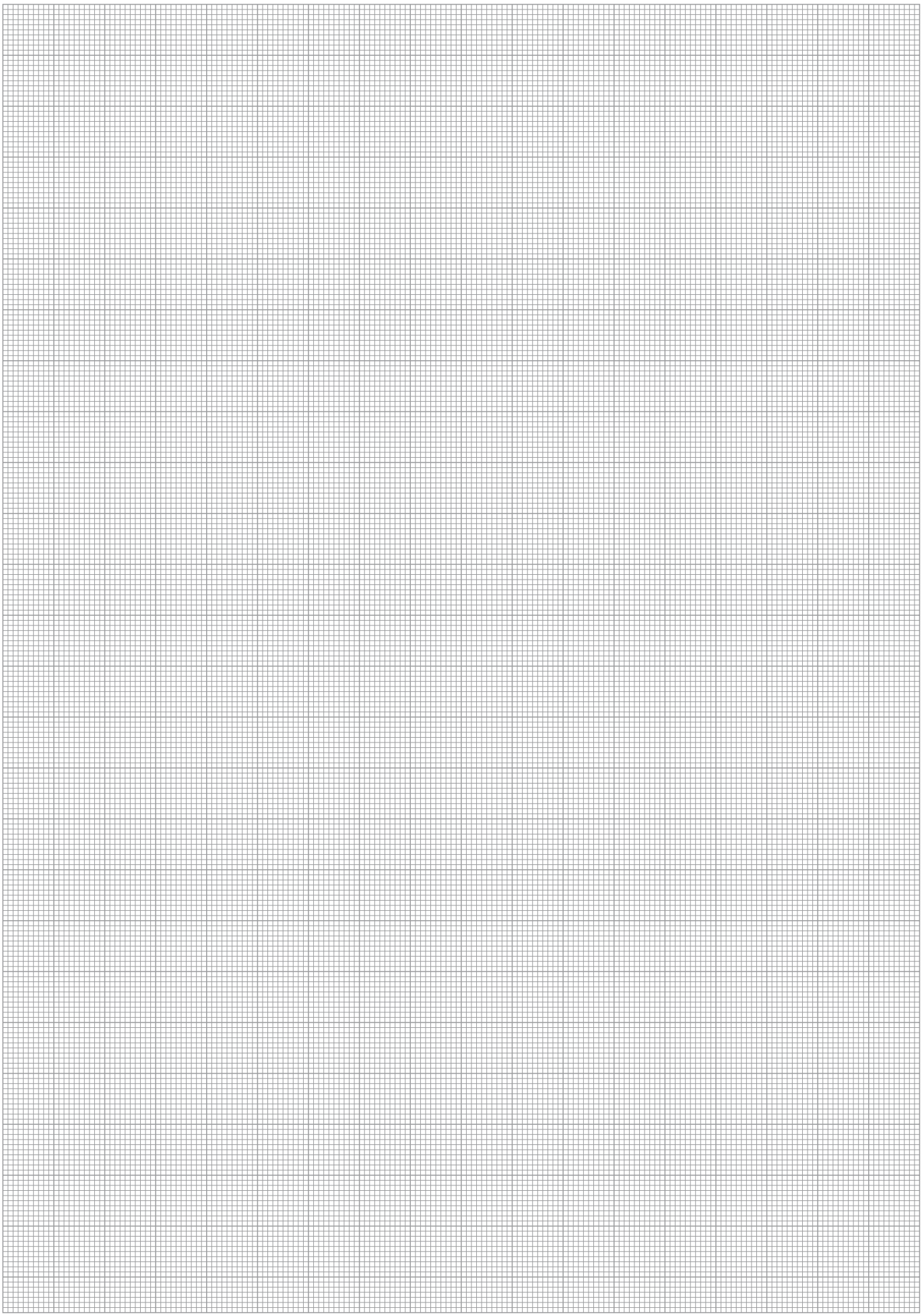


End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 16-X	0313333	Bracket, sensor	
GMNS 16-G	0313334	Bracket, sensor, straight cable extension	•
GMNS 16-W	0313335	Bracket, sensor, angled cable extension	

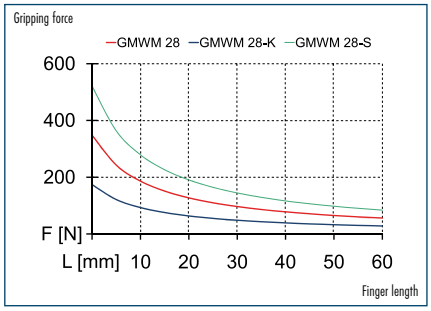
ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

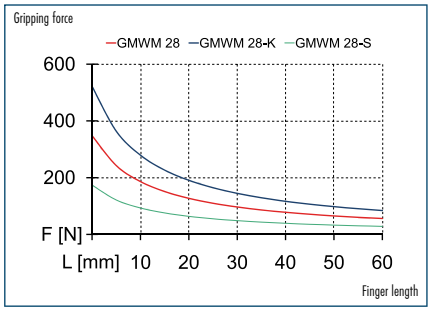


GMW 28

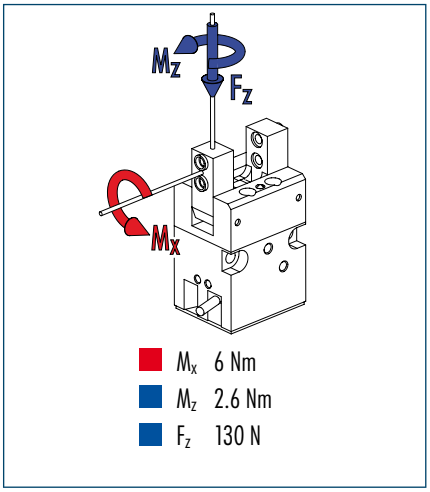
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

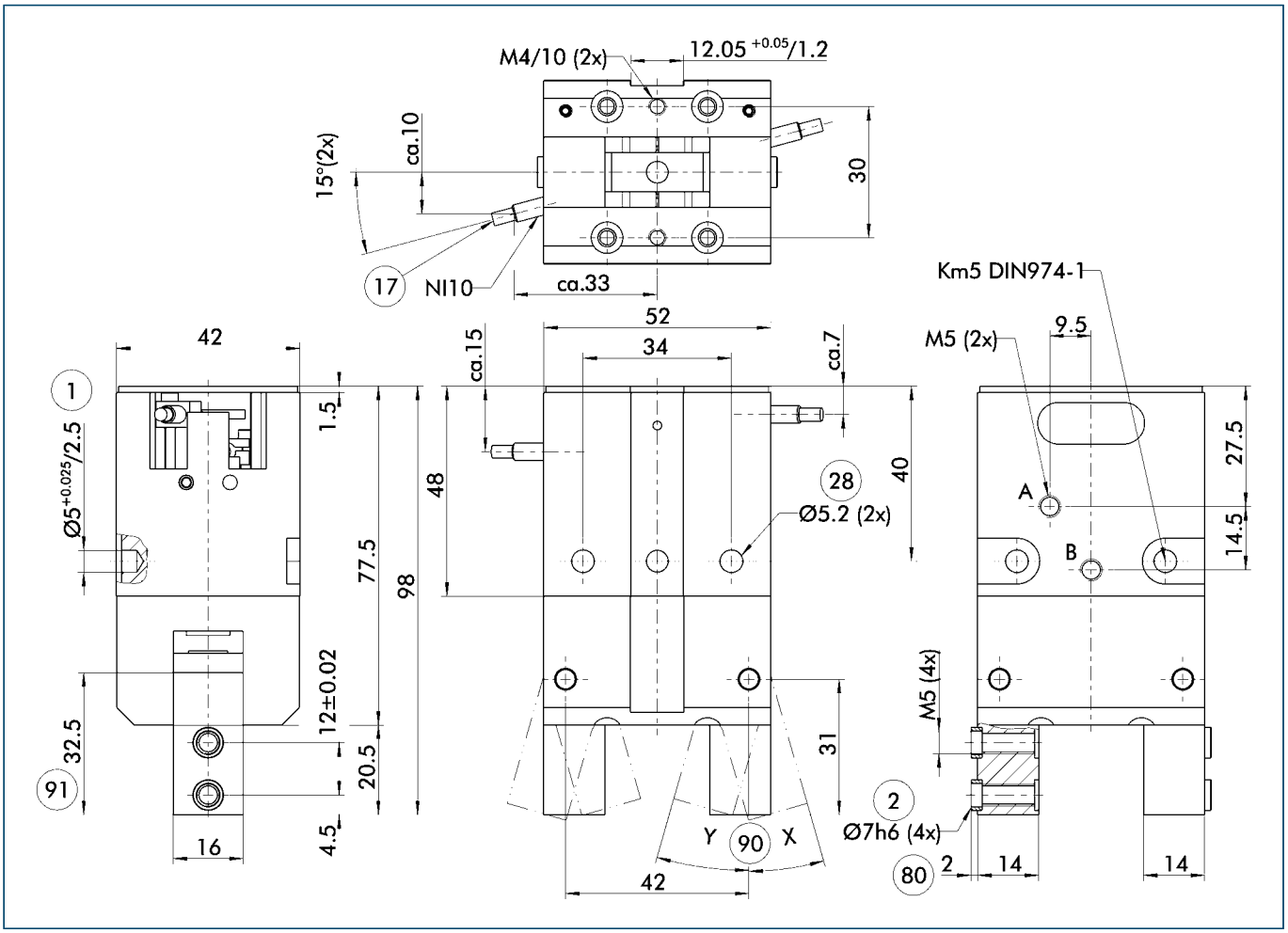


ⓘ Moments and forces apply per base jaw and may occur at the same time.

Technical data

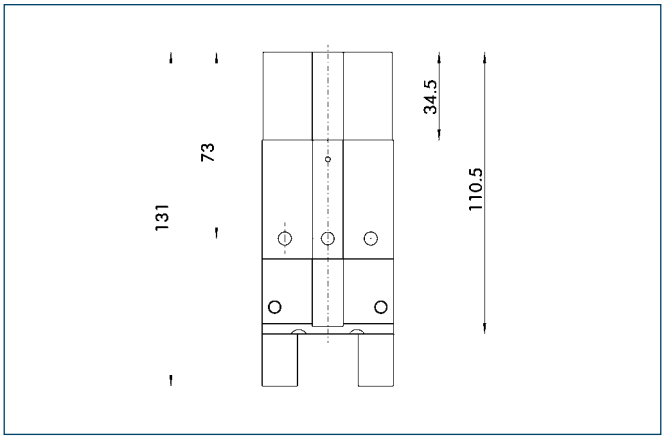
Designation		GMWM 28	GMWM 28-K	GMWM 28-S
	ID	0313176	0313178	0313177
Closing angle per jaw:	[°]	16	16	16
Opening angle per jaw	[°]	16	16	16
Closing moment	[Nm]	4.0	6.0	
Opening moment	[Nm]	4.0		6.0
Protected by spring against closing moment	[Nm]		2.0	
Protected by spring against opening moment	[Nm]			2.0
Mass	[kg]	0.52	0.68	0.68
Fluid consumption for double stroke	[cm³]	9.05	9.05	9.05
Minimum pressure	[bar]	3	5	5
Maximum pressure	[bar]	8	8	8
Nominal operating pressure	[bar]	6	6	6
Closing time	[s]	0.05	0.04	0.06
Opening time	[s]	0.05	0.06	0.04
Max. permissible finger length	[mm]	40	40	40
IP rating		40	40	40
Min. ambient temperature	[°C]	5	5	5
Max. ambient temperature	[°C]	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02
OPTIONS and their characteristics				
Rotation adapter version		GMWM 28-D	GMWM 28-Z	GMWM 28-X
	ID	0313179	0313181	0313180
Mass	[kg]	0.58	0.76	0.76

Main views



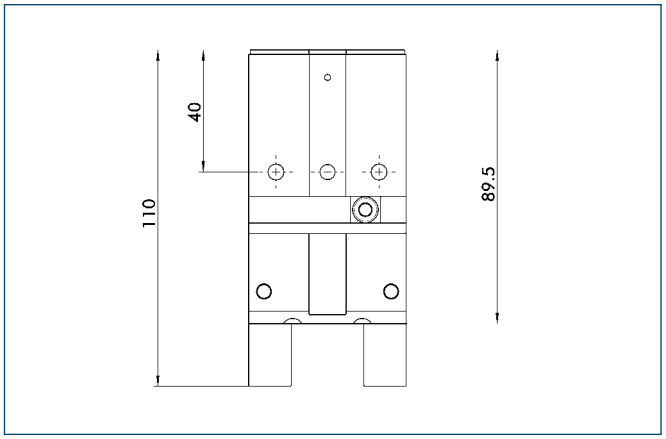
A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(28) Through-bore
(80) Depth of the centering sleeve in the counter piece
(90) See technical data for closing angle "Y" and opening angle "X" per jaw
(91) Length of the usable jaw screwing surface

Gripping force safety device, K/S



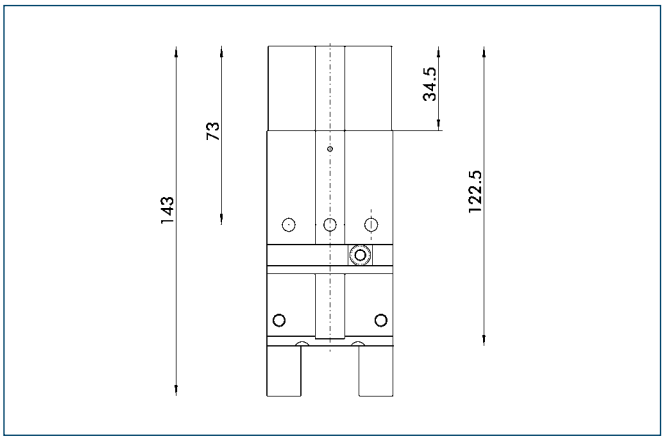
The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts as closing grip force for the K variant and as opening grip force for the S variant. The gripping force safety device can be installed without other components from the K variant into the S variant and vice versa. Besides this, the gripping force safety device can be used to increase gripping force or for single actuated gripping.

Rotation adapter D



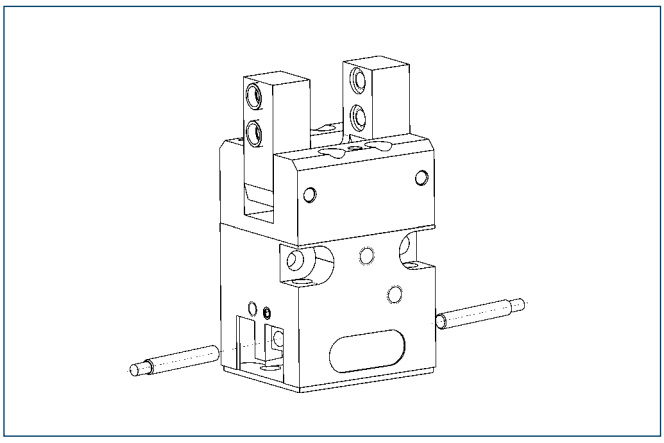
The two-part rotation adapter enables the gripping head to be continuously rotated in order to flexibly adjust the position of the gripper fingers on the workpiece. Only the clamping screw has to be released to do this. After the adjustment has been made, a hole can be drilled out to place a cylindrical pin or a fixing thread for clamping.

Gripping force safety device & rotation adapter Z/X



This variant combines the functions of the gripping force safety device with that of the rotation adapter. The gripping force safety device acts as closing grip force for the Z variant and as opening grip force for the X variant.

Sensor systems

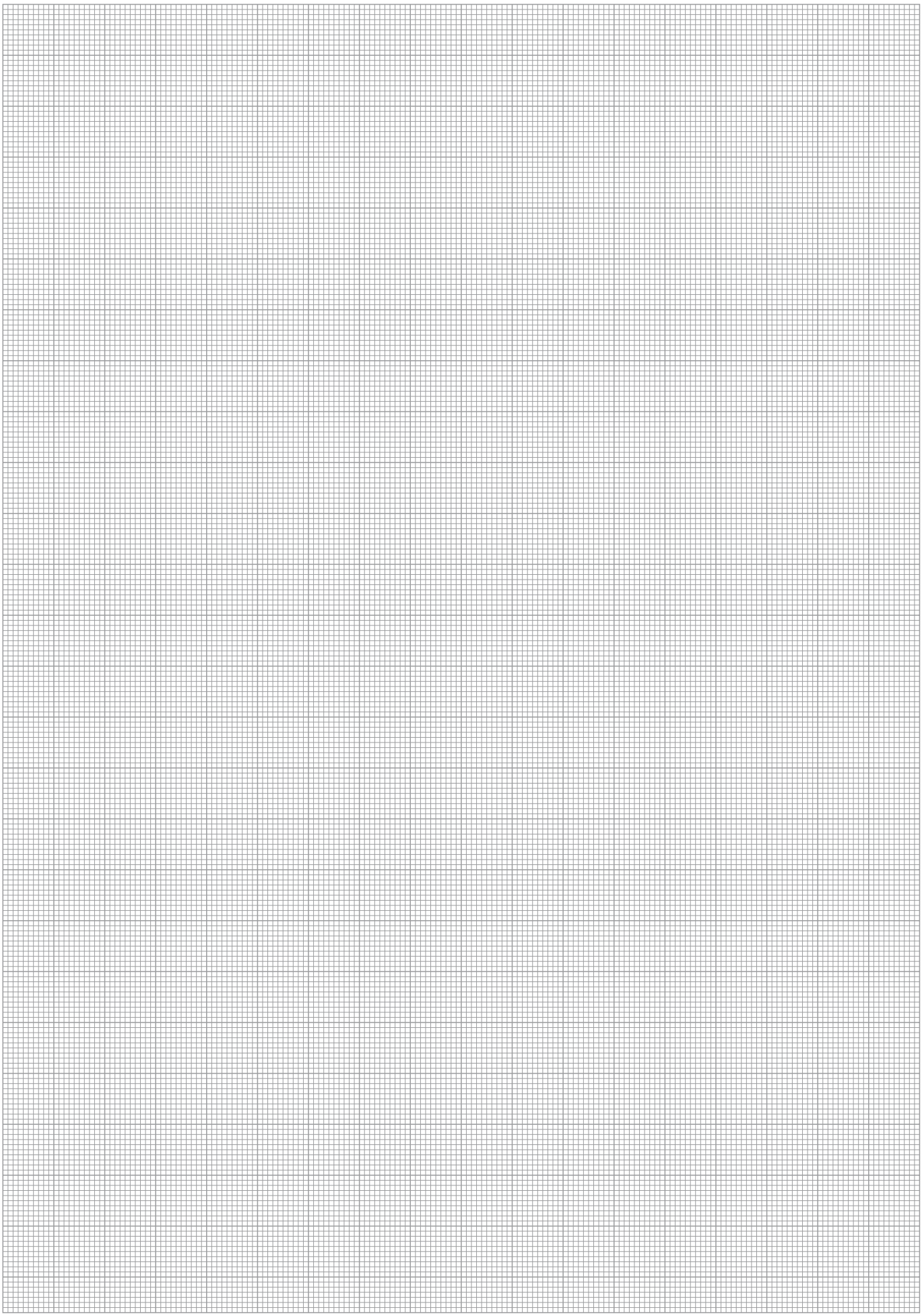


End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 28-X	**0313336**	Bracket, sensor	
GMNS 28-G	**0313337**	Bracket, sensor, straight cable extension	•
GMNS 28-W	**0313338**	Bracket, sensor, angled cable extension	

ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.



Sizes
280 .. 400

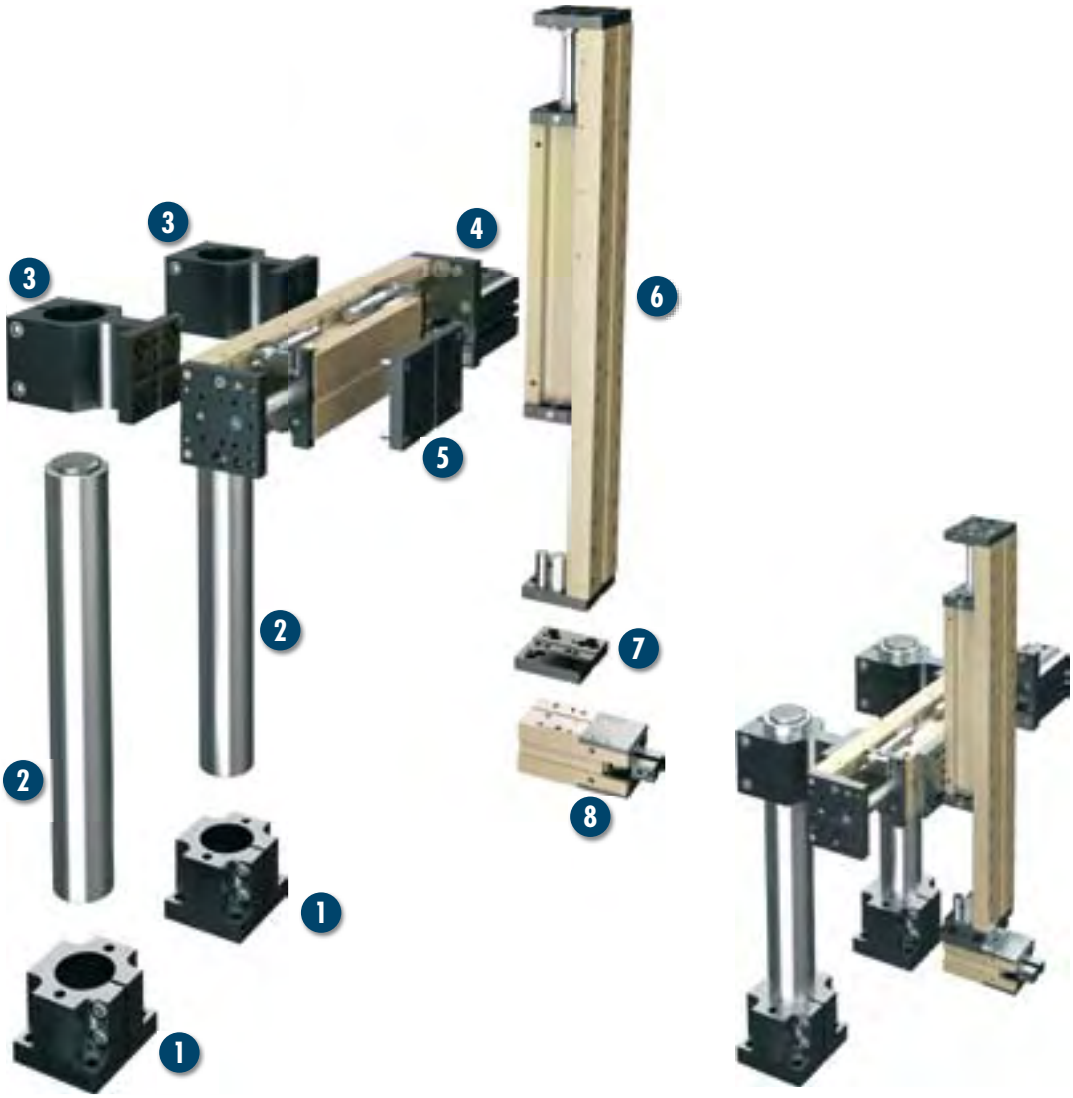
Mass
0.32 kg .. 1.66 kg

Gripping force
90 N .. 340 N

Stroke per finger
1.0 mm .. 2.0 mm

Opening angle per finger
30° .. 90°

Application example



Pneumatic cross gantry with third horizontal position and pillar assembly

1. Single base support, SOE 055
2. Hollow pillar, SLH 055-0400
3. Single mounting plate, APEV 085
4. Linear module with intermediate stop, LM 200-H100-ZZA201-100
5. Adapter plate, APL 200
6. Linear module, LM 100-H200
7. Adapter plate, APL 120
8. Parallel gripping module, GM 300-180

Gripper for small components

2-finger angular/parallel gripper with gripper finger actuation of up to 90 degrees per jaw.

Area of application

Gripping and moving small to medium workpieces in low-contamination environments

Advantages – your benefits

Positively driven angle and parallel stroke
In one function unit

Absolutely clamping in parallel stroke
For the highest positioning accuracy

Stable kinematics
For high force transmission and synchronized gripping

High gripping force
In parallel stroke

Opening angle of jaws up to 180°
For maximum flexibility in applications

Integration of a gripping force retaining device is optional
For firm grip even in the event of power failure

End-position monitoring
Using an optional standardized monitoring set

Standardized mounting bores
For numerous combinations with other GEMOTEC system elements

General information about the series

Working principle
Positively driven toggle-joint kinematics

Housing material
Aluminum alloy, hard-anodized

Base jaw material
Steel

Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

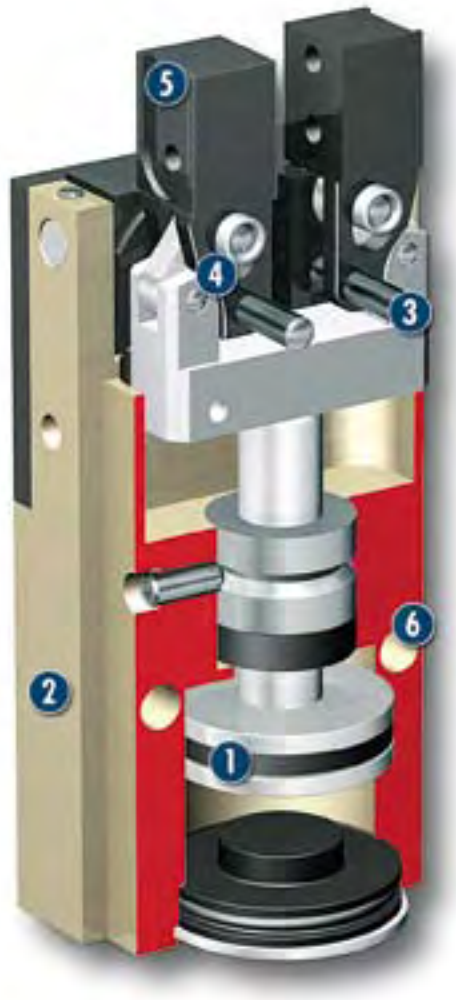
Scope of delivery
Completely ready for operation
without bracket for proximity switch and without proximity switch

Warranty
24 months

Gripping force retaining device
Possible with variants with mechanical gripping force safety devices or pressure maintenance valves

For production reasons, the colors may vary from those shown in the catalog.

Cross-section of function



1 Drive
Double pressurized piston-actuated system

2 Housing
Weight-reduced through the use of a hard-anodized, high-strength aluminum alloy

3 Base jaw guide
For rotary movement over hardened cylindrical pivot pins

4 Kinematics
Positively driven toggle-joint kinematics for rotating and parallel movement

5 Base jaws
For adaptation of the workpiece-specific gripper fingers

6 Modular design hole pattern
Completely integrated in the module system

Description of function

The piston is moved up or down using compressed air. The base jaws are first put into a rotating and then in a parallel movement via the toggle-joint kinematics.

Options and special information

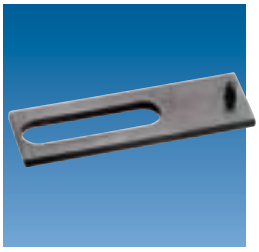
This module can be combined as standard with many elements from the modular system. You can find more information in the “Accessories” chapter.

Accessories

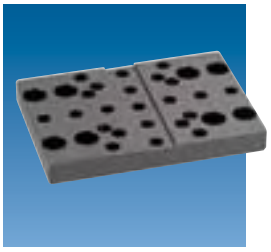
Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

Fittings

Centering strips



Adapter plates



Inductive proximity switch, NI

Sensor cable

Pillar assembly systems

Pressure maintenance valve

ⓘ Please see the side views at the end of the respective size for information concerning specific sizes, accessories availability for that size, designation, and ID numbers. You can find more information about our accessories program in the “Accessories” part of the catalog.

General information about the series

Gripping force

This is the arithmetic sum of the gripping forces applied to each claw jaw, measured at a distance of 0 mm from the upper edge of the gripper.

Finger length

The finger length is measured from the upper edge of the gripper housing in the direction of the main axis.

Repeat accuracy

This is defined as the distribution of the end positions of 100 successive strokes.

Workpiece weight

The recommended workpiece weight is calculated for force-fit gripping with a coefficient of static friction of 0.1 and a safety factor of 2 against workpiece slippage at acceleration due to gravity only. For form-fit or capture gripping, there are significantly higher permissible workpiece weights.

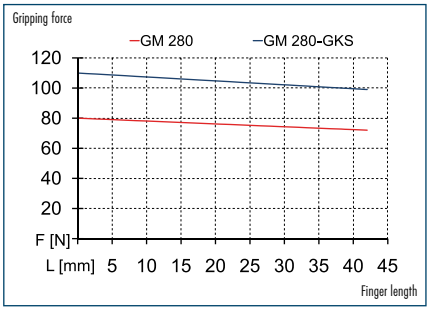
Closing and opening times

Closing and opening times are only movement times of the base jaws or fingers. Valve switching times, hose filling times, or PLC reaction times are not a part of this and are to be considered when cycle times are calculated.

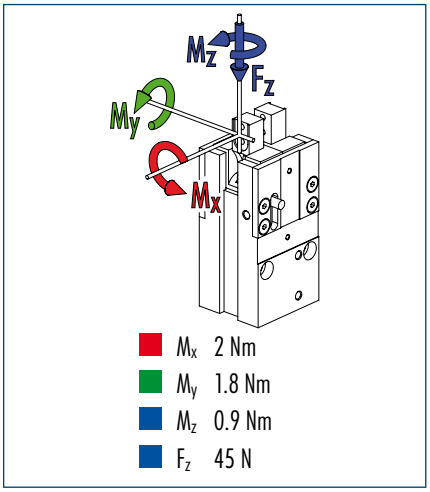
GM 280

Gripping modules · Pneumatic · Angular parallel gripper · Gripper for small components

Gripping force, O.D. gripping



Finger load

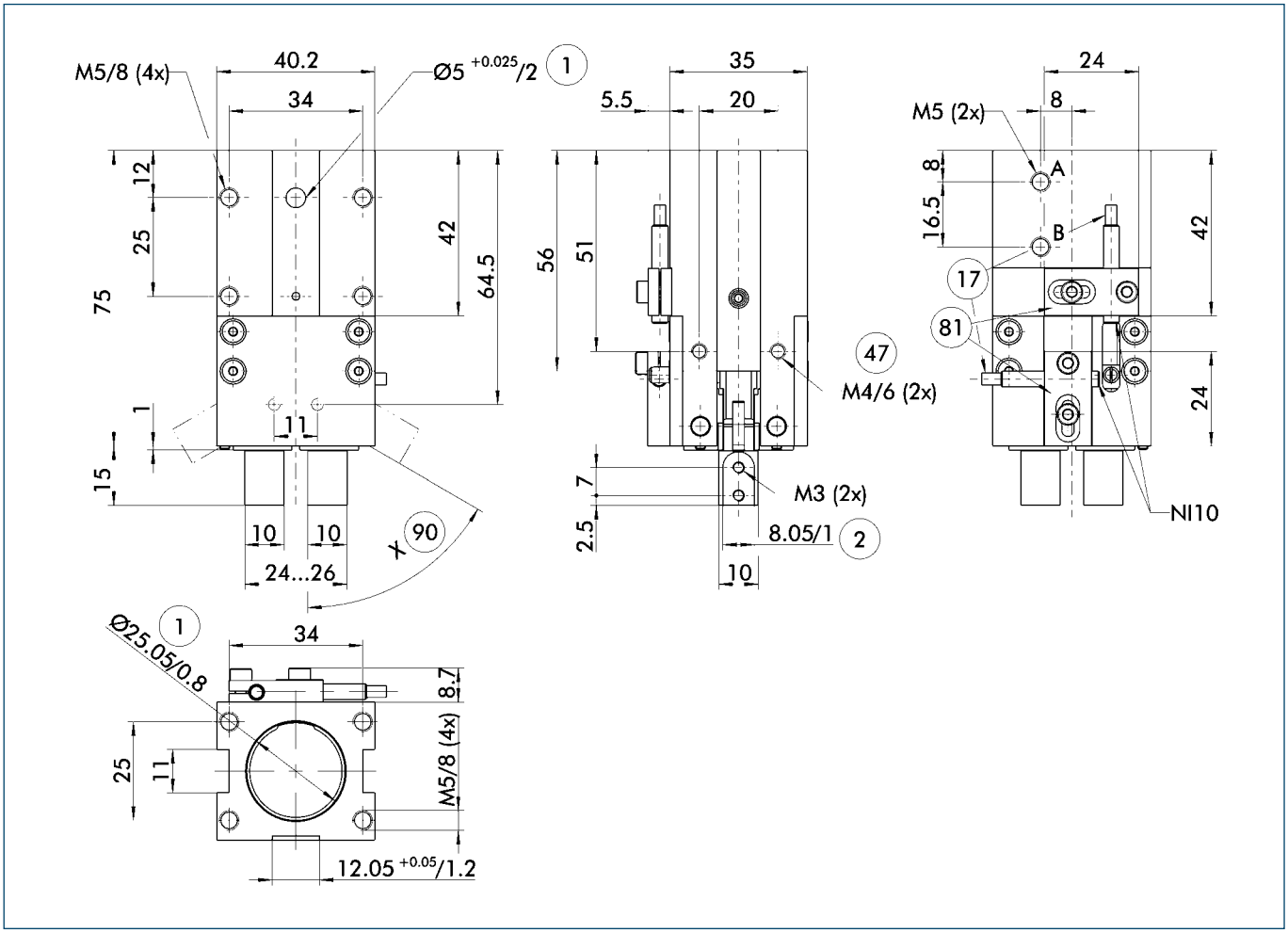


ⓘ Moments and forces apply per base jaw and may occur among themselves at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

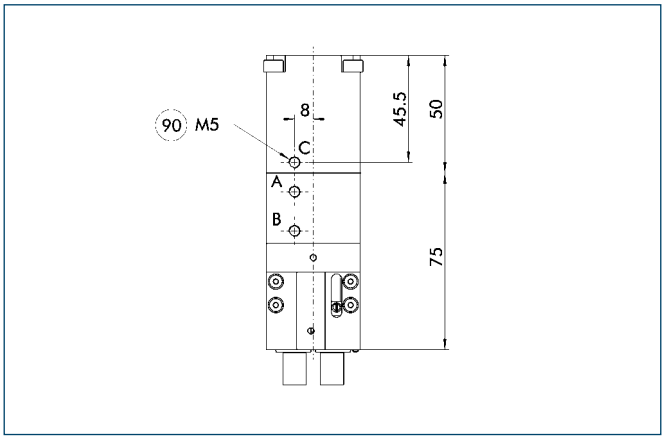
Designation		GM 280-060	GM 280-120	GM 280-180	GM 280-060-GKS	GM 280-060-GKS	GM 280-180-GKS
	ID	0313087	0313088	0313089	0313520	0313521	0313522
Stroke per jaw	[mm]	1	1	1	1	1	1
Opening angle per jaw	[°]	30	60	90	30	60	90
Closing grip force	[N]	80	80	80	110	110	110
Min. grip force applied by spring	[N]				30	30	30
Mass	[kg]	0.32	0.32	0.32	0.52	0.52	0.52
Recommended workpiece weight	[kg]	0.4	0.4	0.4	0.4	0.4	0.4
Fluid consumption for double stroke	[cm³]	7.51	7.51	7.51	12.29	12.29	12.29
Minimum pressure	[bar]	4.5	4.5	4.5	4.5	4.5	4.5
Maximum pressure	[bar]	7	7	7	7	7	7
Nominal operating pressure	[bar]	6	6	6	6	6	6
Closing time	[s]	0.2	0.25	0.3	0.2	0.25	0.3
Opening time	[s]	0.2	0.25	0.3	0.2	0.25	0.3
Max. permissible finger length	[mm]	40	40	40	40	40	40
IP rating		40	40	40	40	40	40
Min. ambient temperature	[°C]	5	5	5	5	5	5
Max. ambient temperature	[°C]	60	60	60	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02

Main views



A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(47) on both sides
(81) Not included in the scope of delivery
(90) Opening angle "X", see technical data

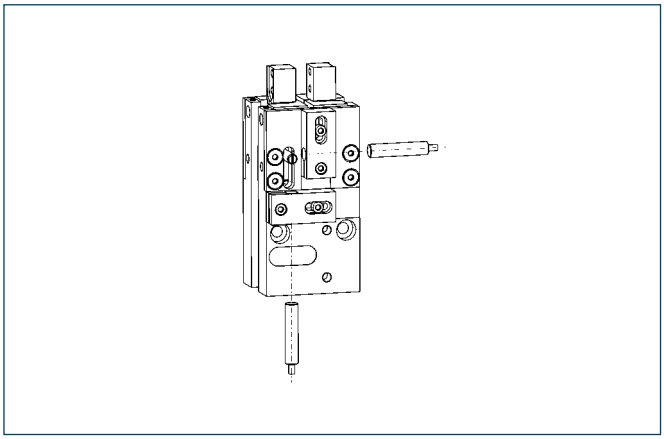
Gripping force safety device, GKS



(90) Additional air connection "C" for gripping force safety device (see operating manual for connection diagram)

The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts on the closing force. The gripping force safety device can also be used to increase gripping force or for single actuated gripping.

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 50-X	**0313339**	Bracket, sensor	
GMNS 50-G	**0313340**	Bracket, sensor, straight cable extension	•
GMNS 50-W	**0313341**	Bracket, sensor, angled cable extension	

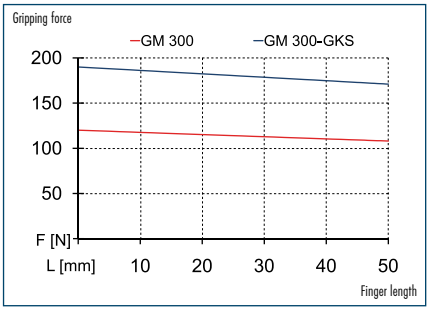
ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

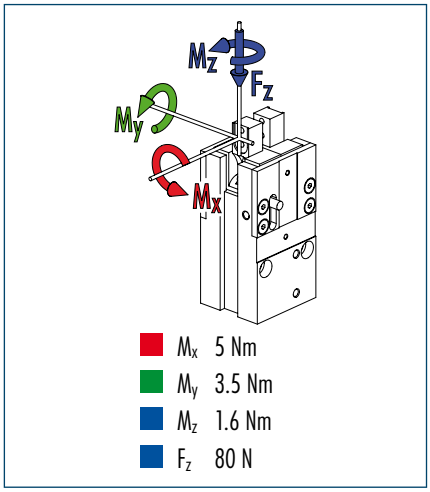
GM 300

Gripping modules · Pneumatic · Angular parallel gripper · Gripper for small components

Gripping force, O.D. gripping



Finger load

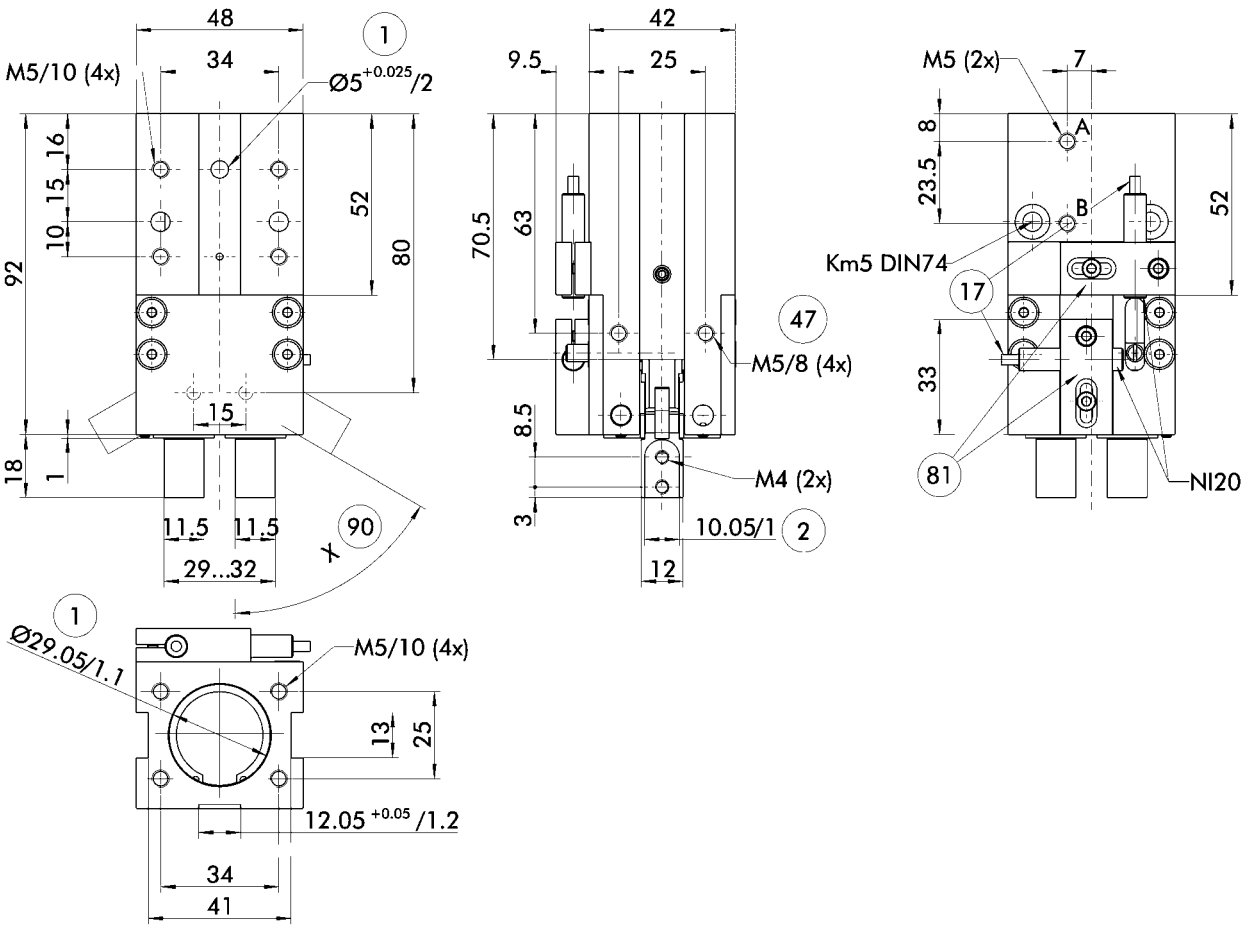


ⓘ Moments and forces apply per base jaw and may occur among themselves at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

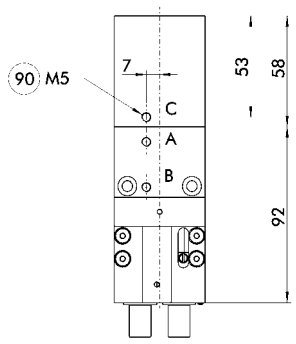
Designation		GM 300-060	GM 300-120	GM 300-180	GM 300-060-GKS	GM 300-120-GKS	GM 300-180-GKS
	ID	0313090	0313091	0313092	0313523	0313524	0313525
Stroke per jaw	[mm]	1.5	1.5	1.5	1.5	1.5	1.5
Opening angle per jaw	[°]	30	60	90	30	60	90
Closing grip force	[N]	120	120	120	190	190	190
Min. grip force applied by spring	[N]				70	70	70
Mass	[kg]	0.62	0.62	0.62	0.98	0.98	0.98
Recommended workpiece weight	[kg]	0.4	0.4	0.4	0.4	0.4	0.4
Fluid consumption for double stroke	[cm³]	16.02	16.02	16.02	25.36	25.36	25.36
Minimum pressure	[bar]	4.5	4.5	4.5	4.5	4.5	4.5
Maximum pressure	[bar]	7	7	7	7	7	7
Nominal operating pressure	[bar]	6	6	6	6	6	6
Closing time	[s]	0.2	0.3	0.4	0.2	0.3	0.4
Opening time	[s]	0.2	0.3	0.4	0.2	0.3	0.4
Max. permissible finger length	[mm]	50	50	50	50	50	50
IP rating		40	40	40	40	40	40
Min. ambient temperature	[°C]	5	5	5	5	5	5
Max. ambient temperature	[°C]	60	60	60	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02

Main views



A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(47) on both sides
(81) Not included in the scope of delivery
(90) Opening angle "X", see technical data

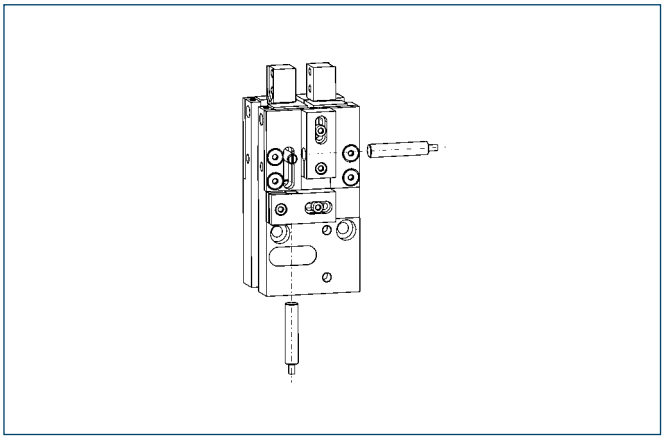
Gripping force safety device, GKS



(90) Additional air connection "C" for gripping force safety device (see operating manual for connection diagram)

The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts on the closing force. The gripping force safety device can also be used to increase gripping force or for single actuated gripping.

Sensor systems

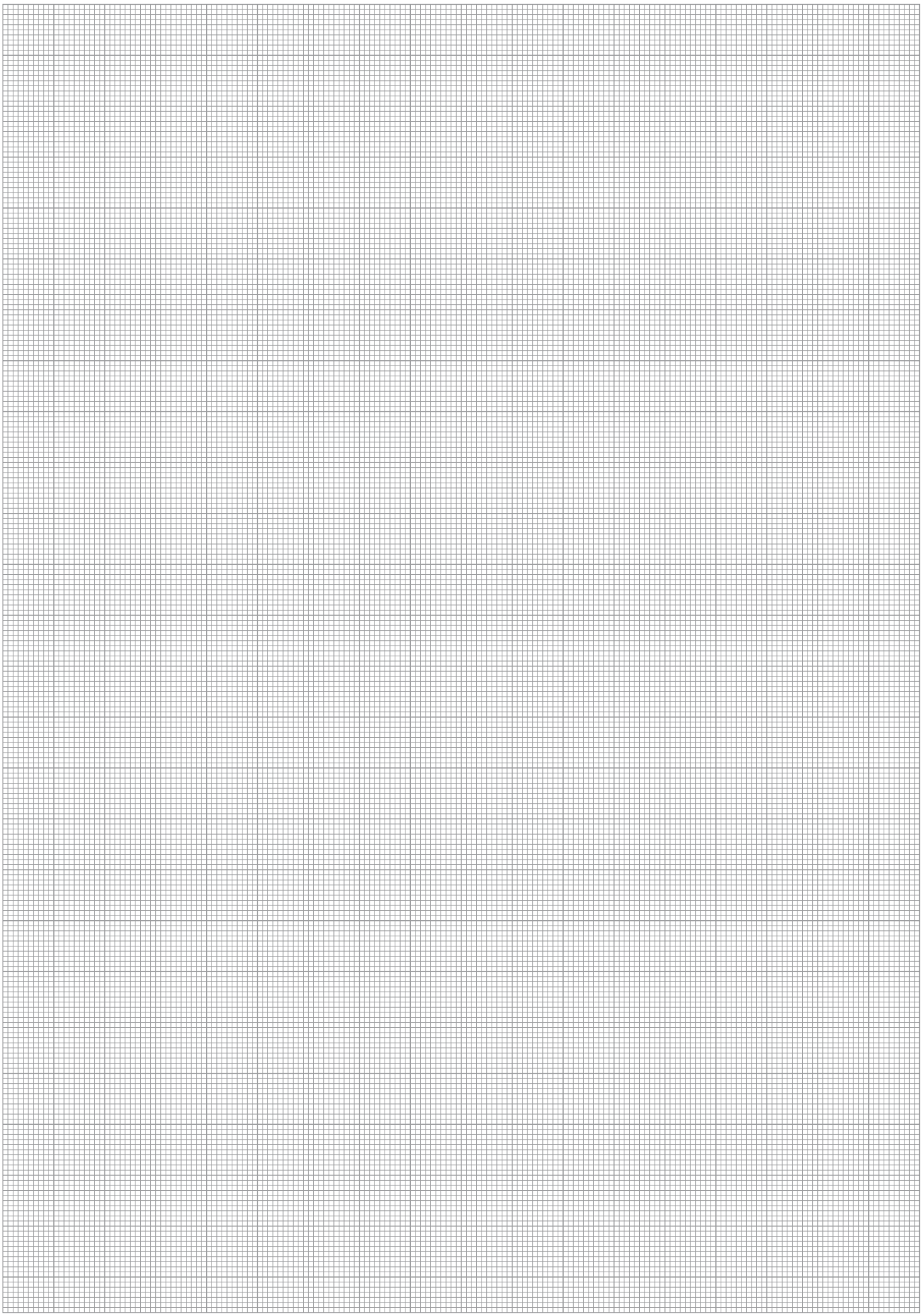


End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 100-X	**0313342**	Bracket, sensor	
GMNS 100-G	**0313343**	Bracket, sensor, straight cable extension	•
GMNS 100-W	**0313344**	Bracket, sensor, angled cable extension	

ⓘ Two sensors are needed for each gripper

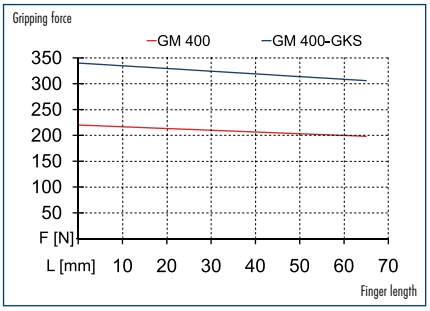
You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.



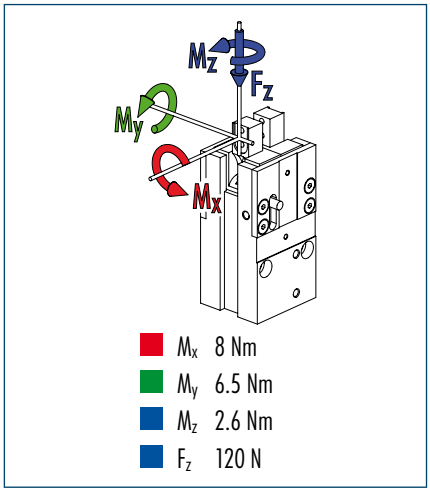
GM 400

Gripping modules · Pneumatic · Angular parallel gripper · Gripper for small components

Gripping force, O.D. gripping



Finger load

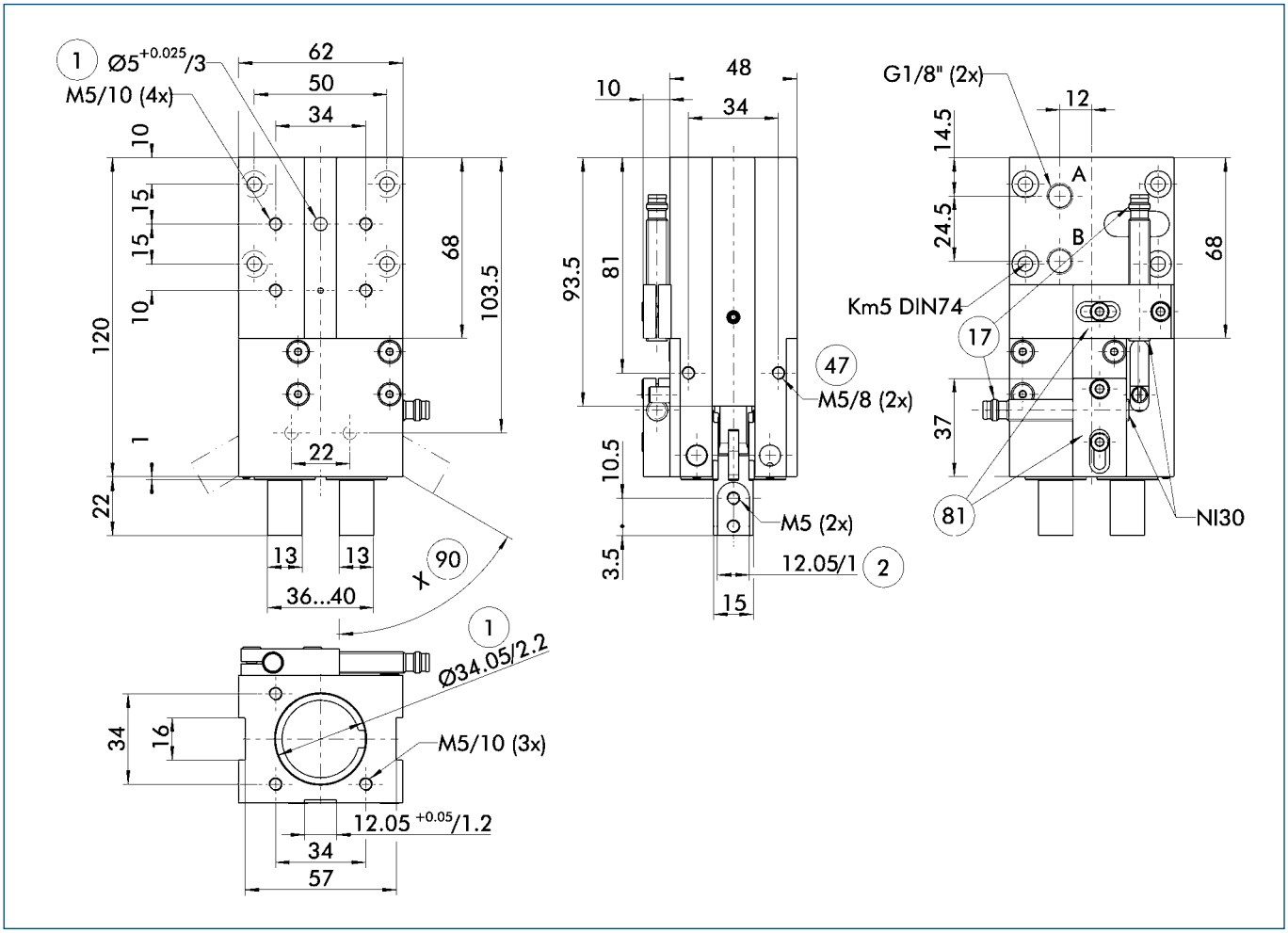


ⓘ Moments and forces apply per base jaw and may occur among themselves at the same time. M_y may occur additionally to the moment produced by the gripping force itself.

Technical data

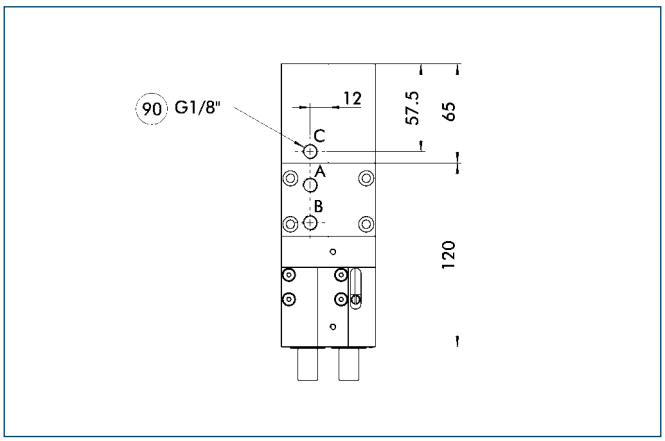
Designation		GM 400-060	GM 400-120	GM 400-180	GM 400-060-GKS	GM 400-120-GKS	GM 400-180-GKS
	ID	0313096	0313097	0313098	0313526	0313527	0313528
Stroke per jaw	[mm]	2	2	2	2	2	2
Opening angle per jaw	[°]	30	60	90	30	60	90
Closing grip force	[N]	220	220	220	340	340	340
Min. grip force applied by spring	[N]				120	120	120
Mass	[kg]	1.16	1.16	1.16	1.66	1.66	1.66
Recommended workpiece weight	[kg]	1.1	1.1	1.1	1.1	1.1	1.1
Fluid consumption for double stroke	[cm³]	29.2	29.2	29.2	44.19	44.19	44.19
Minimum pressure	[bar]	4.5	4.5	4.5	4.5	4.5	4.5
Maximum pressure	[bar]	7	7	7	7	7	7
Nominal operating pressure	[bar]	6	6	6	6	6	6
Closing time	[s]	0.25	0.35	0.5	0.25	0.35	0.5
Opening time	[s]	0.25	0.35	0.5	0.25	0.35	0.5
Max. permissible finger length	[mm]	65	65	65	65	65	65
IP rating		40	40	40	40	40	40
Min. ambient temperature	[°C]	5	5	5	5	5	5
Max. ambient temperature	[°C]	60	60	60	60	60	60
Repeat accuracy	[mm]	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02

Main views



A,a Main and direct connections, gripper open
B,b Main and direct connections, gripper close
(1) Gripper connection
(2) Finger connection
(17) Cable outlet
(47) on both sides
(81) Not included in the scope of delivery
(90) Opening angle "X", see technical data

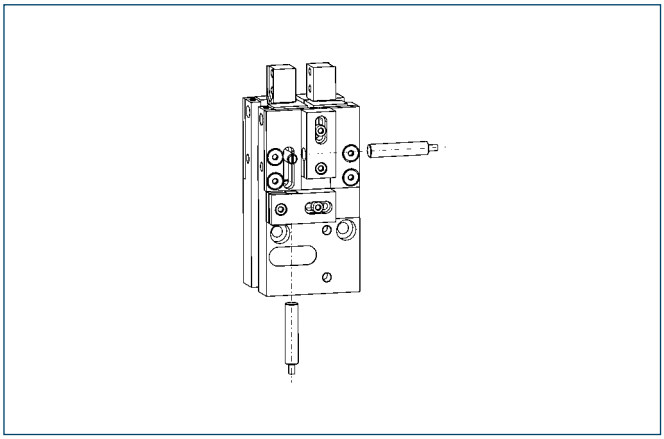
Gripping force safety device, GKS



(90) Additional air connection "C" for gripping force safety device (see operating manual for connection diagram)

The mechanical gripping force safety device ensures that a minimum clamping force will be applied even if there is a drop in pressure. This acts on the closing force. The gripping force safety device can also be used to increase gripping force or for single actuated gripping.

Sensor systems



End-position monitoring:
Inductive proximity switch, can be directly mounted

Designation	ID	Scope of delivery	Recommended product
GMNS 200-X	**0313345**	Bracket, sensor	
GMNS 200-G	**0313346**	Bracket, sensor, straight cable extension	•
GMNS 200-W	**0313347**	Bracket, sensor, angled cable extension	

ⓘ Two sensors are needed for each gripper

You can find further information and components for the accessories mentioned here in the “Accessories” part of the catalog.

SCHUNK gripping modules

SCHUNK GRIPPING MODULES

SCHUNK offers you the most extensive program of gripping modules. With more than 400 possible combinations, SCHUNK gripping modules make a broad spectrum of individual solutions possible with the GEMOTEC program. On the following pages, we will give you an overview of the most current SCHUNK grippers which are compatible with the GEMOTEC system.

Please consult our main catalog for technical data and further information about SCHUNK gripping modules.

2-finger parallel gripper, MPG

3-finger centric gripper, MPZ

Angular gripper, SWG

MPG

SCHUNK gripping modules · Pneumatic · 2-finger parallel gripper · Gripper for small components

Sizes
12 .. 64

Mass
0.008 kg .. 1.1 kg

Gripping force
8 N .. 270 N

Stroke per finger
1.2 mm .. 10 mm

Workpiece weight, force-fit gripping
0.05 kg .. 1.0 kg

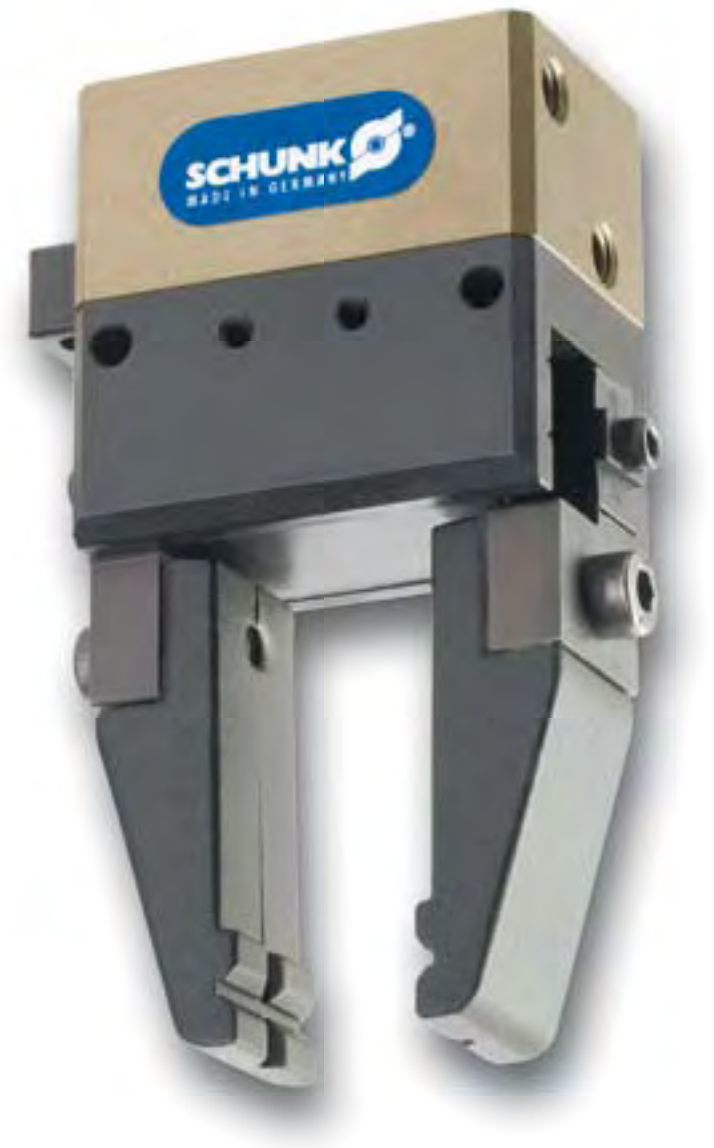
Application example

Miniature pick & place combination for very small components

1. Single base support, SOE 020
2. Hollow pillar, SLH 020-0200
3. Single mounting plate, APEH 020
4. Miniature linear module, CLM 10-H048
5. Adapter plate, APL 30
6. Miniature linear module, CLM 08-H034
7. Adapter plate, ASG 0850
8. Miniature parallel gripper, MPG 16

Gripper for small components

2-finger parallel gripper with smooth roller guides on the base jaws



Area of application

Griping and moving small to medium workpieces in low-contamination areas; for example, in assembly, testing, labs, pharmaceuticals, and many others.

Advantages – your benefits

Roller guide
For precise gripping using a base jaw guide with minimal backlash

Base jaws, double roller anti-friction guided
This reduces friction and is smooth running

Mounting on three sides
For universal and versatile assembly of the gripper

Energy supply via hose-free direct connection or via fittings
For versatile pressure supply in all automated systems

General information about the series

Working principle
Wedge-hook kinematics

Housing material
Aluminum alloy, hard-anodized

Material, covering housing
Steel

Base jaw material
Steel

Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

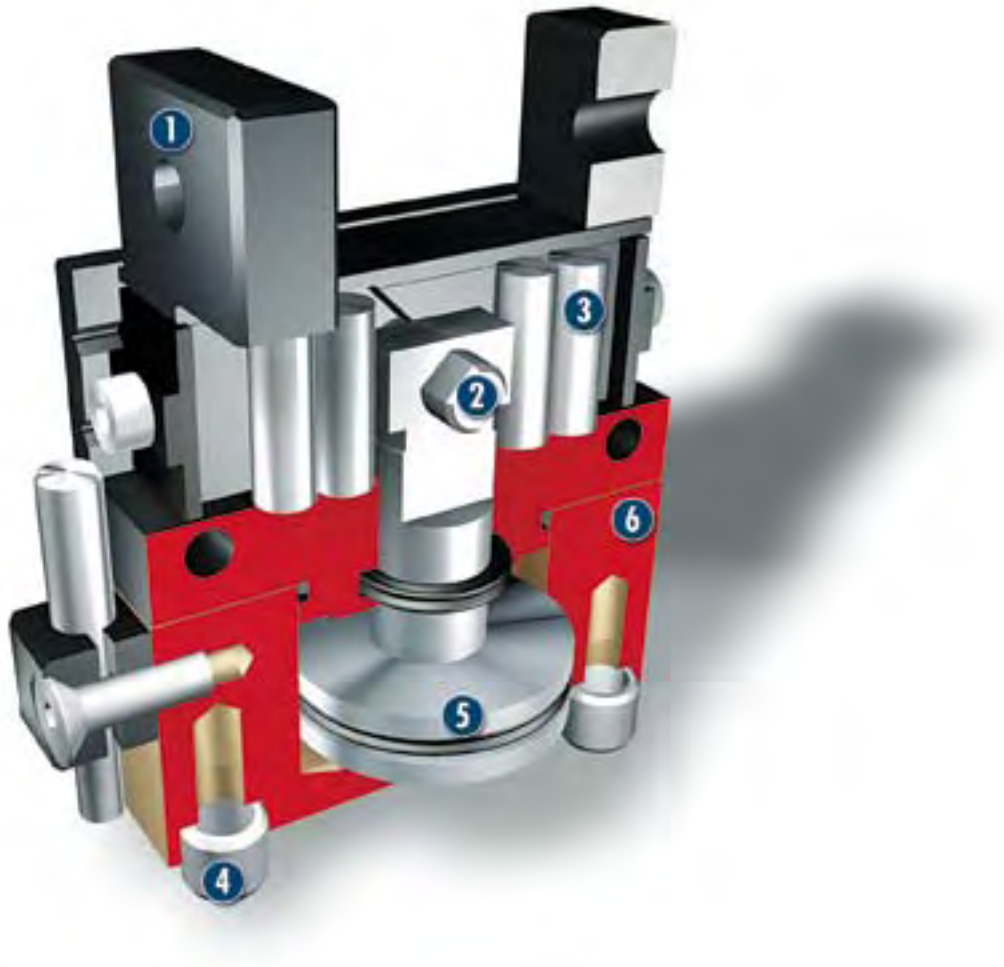
Warranty
24 months

Scope of delivery
Bracket for proximity switch, centering bushings, O-rings for direct connection, Assembly and Operating Manual with manufacturer's declaration

Gripping force retaining device
Possible with variants with mechanical gripping force safety devices or SDV-P pressure maintenance valves

For production reasons, the colors may vary from those shown in the catalog.

Cross-section of function



1 Base jaws
For adaptation of the workpiece-specific gripper fingers

2 Wedge-hook design
For high force transmission and centric gripping

3 Roller guide
Precise gripping using a base jaw guide with minimal backlash

4 Centering and mounting options
For assembly of the gripper to the base surfaces and the long side

5 Drive
Double pressurized piston-actuated system

6 Housing
Weight-reduced through the use of a hard-anodized, high-strength aluminum alloy

Description of function

The piston is moved up or down using compressed air. The hooks at the side on the upper end of the piston rod engage in the slanted grooves on both base jaws and convert this movement into a synchronized opening or closing of the base fingers.

Options and special information

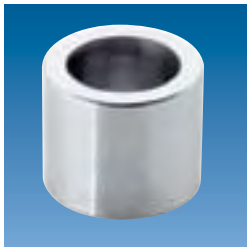
Additional fitting bores
For centering the finger using bushings instead of the normal fitting surfaces; available as a special design on request.

Please consult “SCHUNK gripping modules” in the main catalog for further technical information.

Accessories

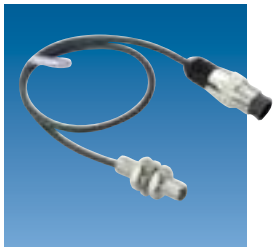
Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

Centering sleeves



Fittings

Inductive proximity switch, IN



Sensor cable W/WK/KV/GK

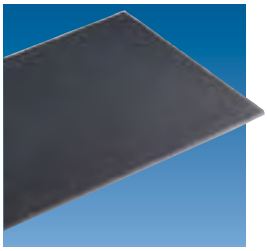
Carbide clamping inserts, HM

Sensor distributor, V

Plastic inserts Quentes

Flexible position sensor, FPS

Gripper pad, HKI



Pressure maintenance valve, SDV-P

Finger blanks

ⓘ Please see the side views at the end of the respective size in "SCHUNK gripping modules" in the main catalog for information concerning specific sizes, accessories availability for that size, designation, and ID numbers. You can find more information about our accessories program in the "Accessories" part of the catalog.

General information about the series

Gripping force

This is the arithmetic sum of the gripping forces applied to each claw jaw, measured at a distance of P (see drawing) from the upper edge of the gripper.

Finger length

The finger length is measured from the upper edge of the gripper housing in the direction of the main axis.

Repeat accuracy

This is defined as the distribution of the end positions of 100 successive strokes.

Workpiece weight

The recommended workpiece weight is calculated for force-fit gripping with a coefficient of static friction of 0.1 and a safety factor of 2 against workpiece slippage at acceleration due to gravity only. For form-fit or capture gripping, there are significantly higher permissible workpiece weights.

Closing and opening times

Closing and opening times are only movement times of the base jaws or fingers. Valve switching times, hose filling times, or PLC reaction times are not a part of this and are to be considered when cycle times are calculated.

KGG

SCHUNK gripping modules · Pneumatic · 2-finger parallel gripper · Gripper for small components

Sizes
80 .. 140

Mass
0.25 kg .. 0.72 kg

Gripping force
88 N .. 260 N

Stroke per finger
15 mm .. 30 mm

Workpiece weight, force-fit gripping
0.44 kg .. 1.3 kg

Application example

Discharging unit for small components which require an especially large gripper stroke because of the variety of their sizes.

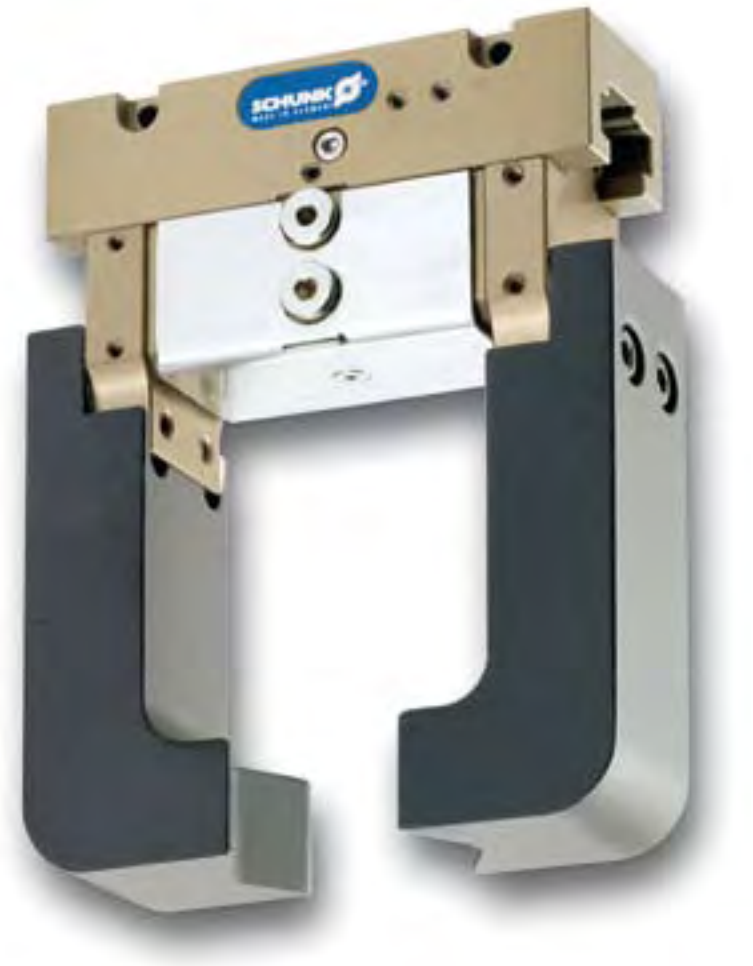
1. Single base support, SOE 035
2. Hollow pillar, SLH 035-0300
3. Single mounting plate, APEH 035
4. Linear module, KLM 50-H050
5. Adapter plate, APL 110
6. Linear module, KLM 50-H038
7. Adapter plate, ASG 0280
8. 2-finger parallel gripper, KGG 80

Gripper for small components

Narrow 2-finger parallel gripper with large stroke

Area of application

Universal application in clean environments for light to medium workpiece weights and large range of stroke



Advantages – your benefits

Robust T-slot guide
For a high maximum moments

Pneumatic 2-piston drive design
For direct force transmission and high efficiency

Rack and pinion design
for centric clamping: also for large strokes

Mounting on two sides of the gripper in three screwing directions
For universal and versatile assembly of the gripper

Energy supply via hose-free direct connection or via fittings
For versatile pressure supply in all automated systems

General information about the series

Working principle
Directly driven base jaws; synchronized by rack and pinion

Housing material
Aluminum alloy, hard-anodized

Base jaw material
Aluminum alloy, hard-anodized

Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

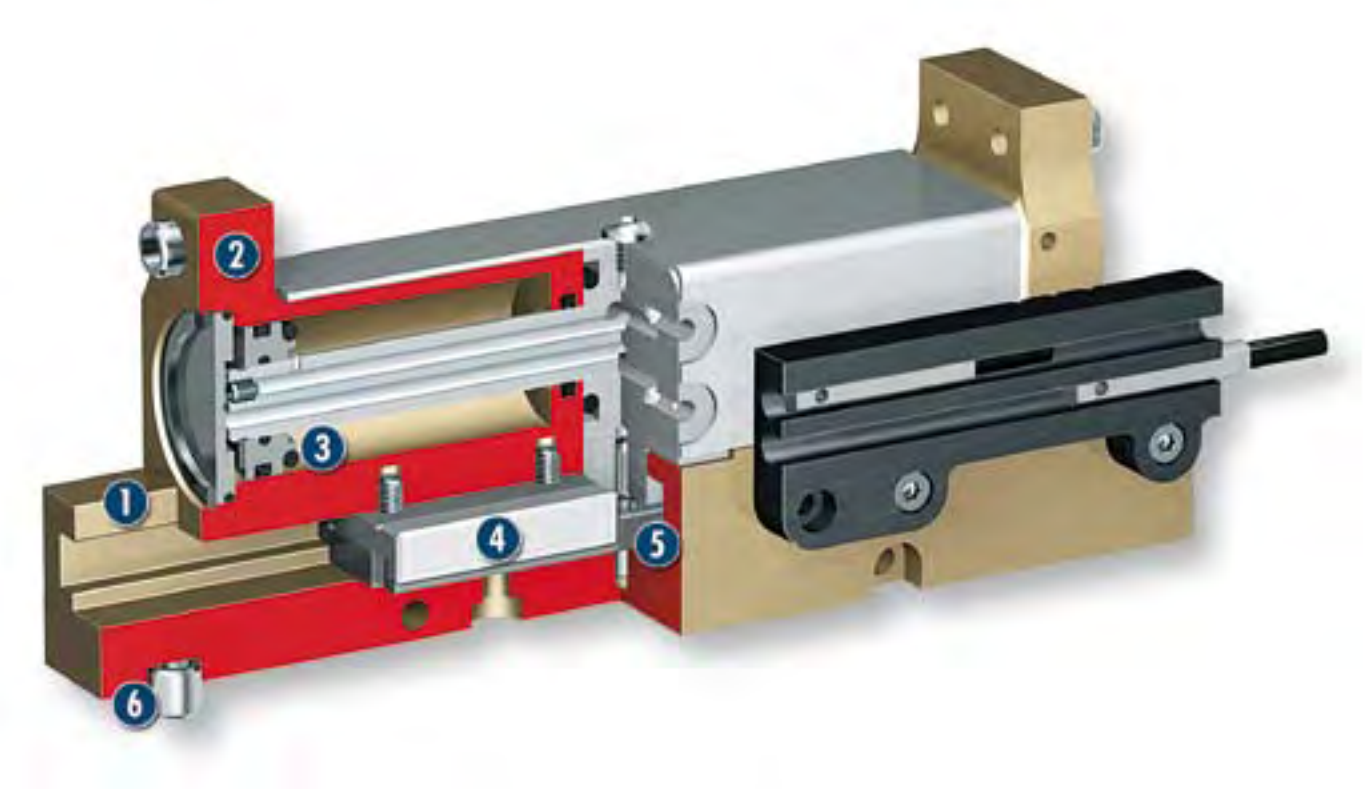
Warranty
24 months

Scope of delivery
Bracket for proximity switch, centering bushings, O-rings for direct connection, Assembly and Operating Manual with manufacturer's declaration

Maintenance of gripping force
Possible via SDV-P pressure maintenance valve

For production reasons, the colors may vary from those shown in the catalog.

Cross-section of function



1 Housing
Weight-reduced through the use of a hard-anodized, high-strength aluminum alloy

2 Base jaws
For adaptation of the workpiece-specific gripper fingers

3 Drive
Pneumatic 2-piston system

4 Guidance
High maximum moments due to robust T-slot guide

5 Kinematics
Rack and pinion design for centric clamping: also for large strokes

6 Centering and mounting options
For assembly of the gripper to the base surfaces and the long side

Description of function

The base jaws are arranged in-line and are pressurised directly by the stationary piston with internal compressed air and in this way opened or closed.
The base jaws are synchronized by the internal rack and pinion arrangement.

Options and special information

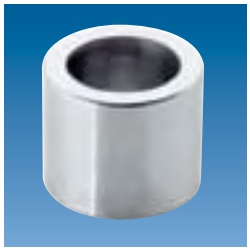
Please note that the mass moment of inertia of the gripper fingers for long-stroke grippers should be as low as possible.

Please consult “SCHUNK gripping modules” in the main catalog for further technical information.

Accessories

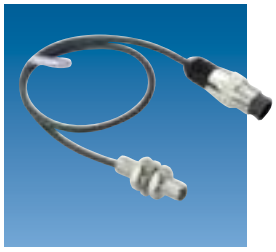
Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

Centering sleeves



Fittings

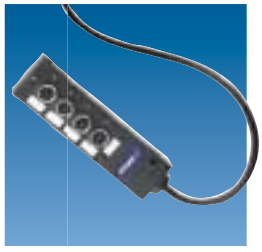
Inductive proximity switch, IN



Sensor cable W/WK/KV/GK

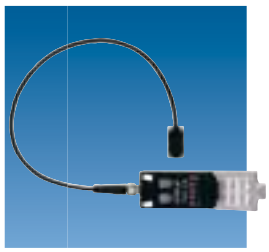
Carbide clamping inserts, HM

Sensor distributor, V

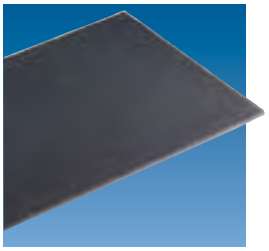


Plastic inserts Quentes

Flexible position sensor, FPS



Gripper pad, HKI



Pressure maintenance valve, SDV-P

Finger blanks

ⓘ Please see the side views at the end of the respective size in “SCHUNK gripping modules” in the main catalog for information concerning specific sizes, accessories availability for that size, designation, and ID numbers. You can find more information about our accessories program in the “Accessories” part of the catalog.

General information about the series

Gripping force

This is the arithmetic sum of the gripping forces applied to each claw jaw, measured at a distance of P (see drawing) from the upper edge of the gripper.

Finger length

The finger length is measured from the upper edge of the gripper housing in the direction of the main axis.

Repeat accuracy

This is defined as the distribution of the end positions of 100 successive strokes.

Workpiece weight

The recommended workpiece weight is calculated for force-fit gripping with a coefficient of static friction of 0.1 and a safety factor of 2 against workpiece slippage at acceleration due to gravity only. For form-fit or capture gripping, there are significantly higher permissible workpiece weights.

Closing and opening times

Closing and opening times are only movement times of the base jaws or fingers. Valve switching times, hose filling times, or PLC reaction times are not a part of this and are to be considered when cycle times are calculated.

PGN plus

SCHUNK gripping modules · Pneumatic · 2-finger parallel gripper · Universal gripper

Sizes
40 .. 125

Mass
0.08 kg .. 1.35 kg

Gripping force
123 N .. 2.240 N

Stroke per finger
2 mm .. 13 mm

Workpiece weight, force-fit gripping
0.62 kg .. 11.2 kg

Application example

Pick-and-place unit for light to medium weight components

1. Double socket, SOD 055
2. Hollow pillar, SLH 055-0300
3. Double mounting plate, APDH 085
4. Linear module, LM 200-H150
5. Adapter plate, APL 220
6. Linear module, LM 100-H100
7. Adapter plate, ASG 0490
8. 2-finger parallel gripper, PGN plus 80

Universal gripper

Universal 2-finger parallel gripper with large gripping force and high maximum moments due to multi-tooth guidance

Area of application

Optimal standard solution for many applications. Universal use in clean to slightly dirty environments as well as in special variants for contaminated environments

Advantages – your benefits

Robust multi-tooth guidance
For precise handling

Large maximum moments are possible
Suitable for use of longer gripper fingers

Oval piston drive design
For maximum gripping force

Mounting on two sides of the gripper in three screwing directions
For universal and versatile assembly of the gripper

Energy supply via hose-free direct connection or via fittings
For versatile pressure supply in all automated systems

Extensive sensor accessories
For a variety of monitoring possibilities, including stroke position

Compact dimensions
For minimum interfering contours for handling

Numerous options
(Dust protection, high temperature, corrosion-protected, and many more) for special optimization to fit your particular application

General information about the series

Working principle
Wedge-hook kinematics

Housing material
Aluminum alloy, hard-anodized

Base jaw material
Steel

Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

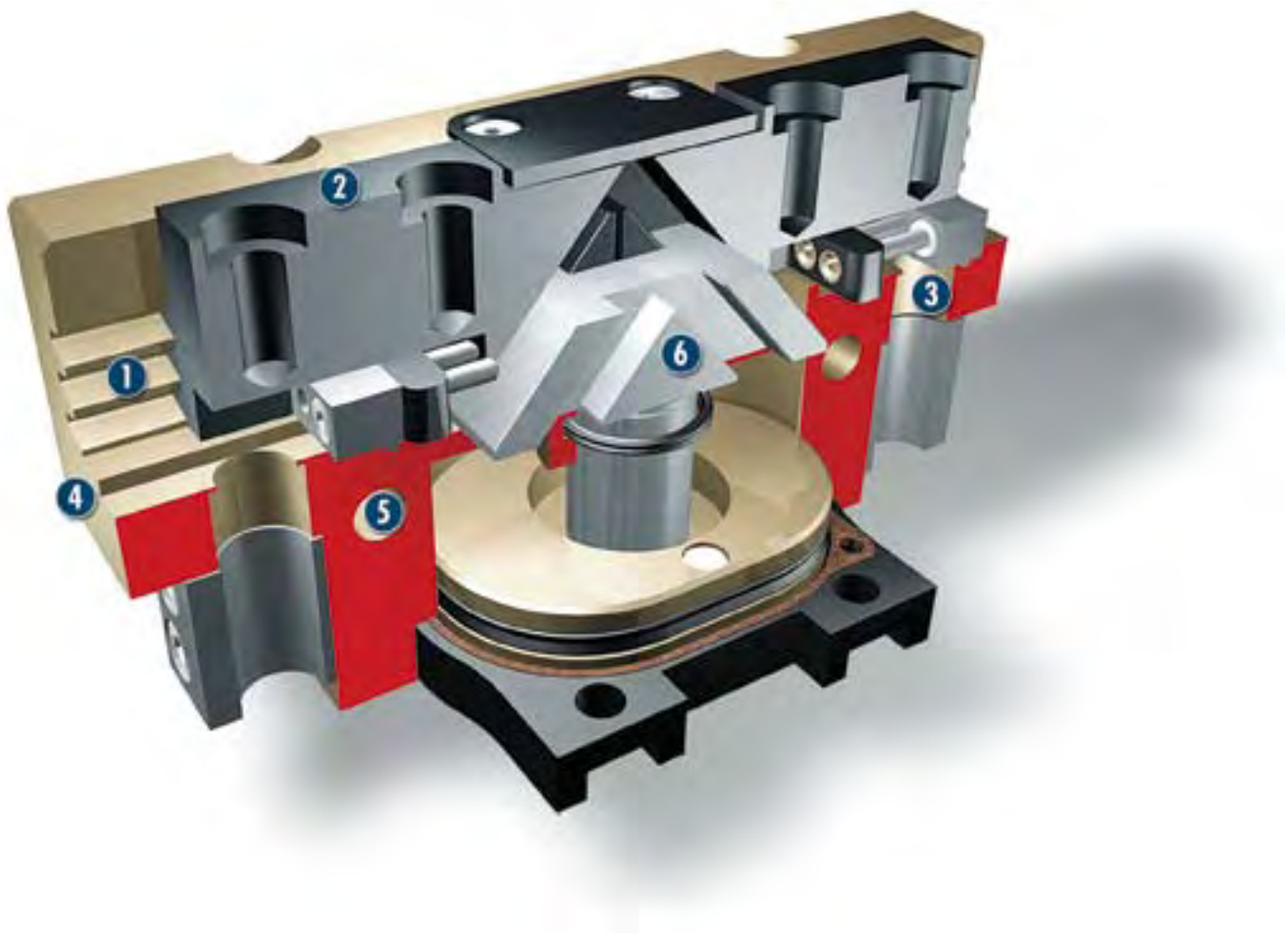
Warranty
24 months

Scope of delivery
Bracket for proximity switch, centering bushings, O-rings for direct connection, Assembly and Operating Manual with manufacturer's declaration

Gripping force retaining device
Possible with variants with mechanical gripping force safety devices or SDV-P pressure maintenance valves

For production reasons, the colors may vary from those shown in the catalog.

Cross-section of function



1 Multi-tooth guidance
Base jaw guide for long finger lengths; with high load capacity and minimal backlash

2 Base jaws
For adaptation of the workpiece-specific gripper fingers

3 Sensor systems
Brackets for proximity switches and adjustable operating cams in the housing

4 Housing
Weight-reduced through the use of a hard-anodized, high-strength aluminum alloy

5 Centering and mounting options
For universal assembly of the gripper

6 Kinematics
Wedge-hook design for high force transmission and synchronized gripping

Description of function

The oval piston is pressed up or down using compressed air.
The wedge hook converts this movement via wedges into a lateral synchronous gripping movement of both base jaws.

Options and special information

Dust protection version
Absolutely dust tight; increased degree of protection against penetrating materials; for use in dusty environments

Corrosion-protected version
For use in corrosive environments

High-temperature version
For use in hot environments

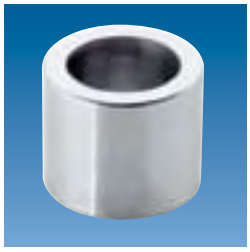
Increased force version
When more gripping force is needed

Please consult “SCHUNK gripping modules” in the main catalog for further technical information.

Accessories

Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

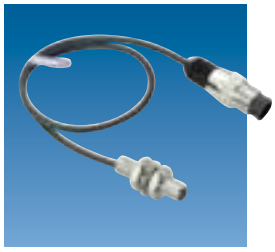
Centering sleeves



Fittings

Magnetic switch, MMS

Inductive proximity switch, IN



Dust cover, HUE

Sensor cable W/WK/KV/GK

Quick-change jaw system, BSWS

Sensor distributor, V

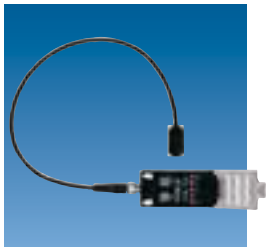
Pressure maintenance valve, SDV-P

Finger blanks

Force measuring system, FMS

Analog position sensor, APS

Flexible position sensor, FPS



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General information about the series

Gripping force

This is the arithmetic sum of the gripping forces applied to each claw jaw, measured at a distance of P (see drawing) from the upper edge of the gripper.

Finger length

The finger length is measured from the upper edge of the gripper housing in the direction of the main axis.

Repeat accuracy

This is defined as the distribution of the end positions of 100 successive strokes.

Workpiece weight

The recommended workpiece weight is calculated for force-fit gripping with a coefficient of static friction of 0.1 and a safety factor of 2 against workpiece slippage at acceleration due to gravity only. For form-fit or capture gripping, there are significantly higher permissible workpiece weights.

Closing and opening times

Closing and opening times are only movement times of the base jaws or fingers. Valve switching times, hose filling times, or PLC reaction times are not a part of this and are to be considered when cycle times are calculated.

MPZ

SCHUNK Gripping modules • Pneumatic • 3-finger centric gripper • Gripper for small components

Sizes
30 .. 45

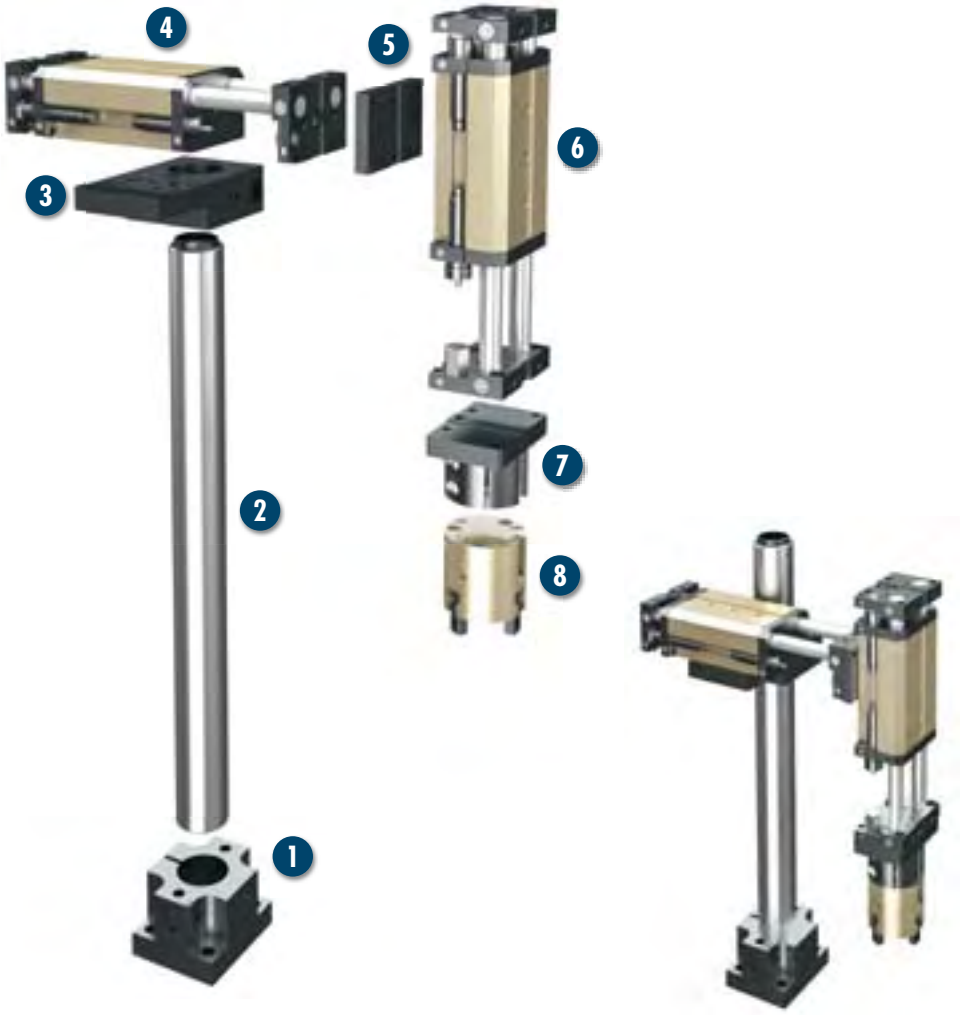
Mass
0.075 kg .. 0.29 kg

Gripping force
55 N .. 310 N

Stroke per finger
3 mm .. 5 mm

Workpiece weight, force-fit gripping
0.25 kg .. 1.1 kg

Application example



Pneumatic pick & place unit for small, round components

1. Single base support, SOE 035
2. Hollow pillar, SLH 035-0300
3. Single mounting plate, APEH 035
4. Linear module, KLM 50-H050
5. Adapter plate, APL 110
6. Linear module, KLM 50-H038
7. Adapter plate, ASG 0370
8. 3-finger centric gripper, MPZ 45

Gripper for small components

Small 3-finger centric gripper with T-slot guidance base jaws

Area of application

Universal use in clean and slightly dirty work environments; especially suitable for gripping small workpieces

Advantages – your benefits

T-slot guidance
For precise gripping at high bearing load capacities

Monitoring of finger positions
Also possible via FPS

Energy supply via hose-free direct connection or via fittings
For versatile pressure supply in all automated systems

General information about the series

Working principle
Wedge-hook kinematics

Housing material
Aluminum alloy, hard-anodized

Base jaw material
Steel

Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

Warranty
24 months

Scope of delivery
Centering bushings, O-rings for direct connection, Assembly and Operating Manual with manufacturer's declaration

Gripping force retaining device
Possible with variants with mechanical gripping force safety devices or SDV-P pressure maintenance valves

For production reasons, the colors may vary from those shown in the catalog.

Cross-section of function

1 T-slot guidance
For precise gripping at high bearing load capacities

2 Kinematics
Wedge-hook design for high force transmission and synchronized gripping

3 Housing
Weight-reduced through the use of a hard-anodized, high-strength aluminum alloy

4 Drive
Pneumatic and high performance for simple handling

Description of function

The piston is moved up or down by means of compressed air. Through its angled active surfaces, the wedge hook transforms this motion into the lateral, synchronous movement of the 3 base fingers.

Options and special information

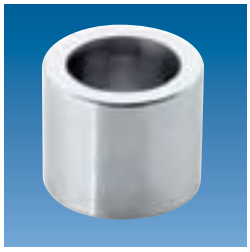
Small and compact 3-finger centric gripper for fast gripping tasks.
Monitoring of the smallest stroke differences is possible via the FPS system

Please consult “SCHUNK gripping modules” in the main catalog for further technical information.

Accessories

Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

Centering sleeves



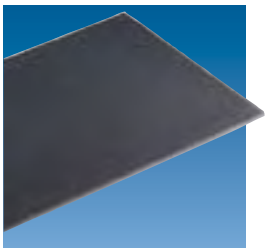
Fittings

Magnetic switch, MMS

Plastic inserts Quentes

Sensor cable W/WK/KV/GK

Gripper pad, HKI

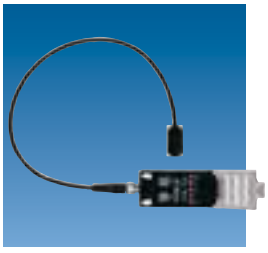


Sensor distributor, V

Pressure maintenance valve, SDV-P

Finger blanks

Flexible position sensor, FPS



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General information about the series

Gripping force

This is the arithmetic sum of the gripping forces applied to each base jaw, measured at a distance of P (see drawing) from the upper edge of the gripper.

Finger length

The finger length is measured from the upper edge of the gripper housing in the direction of the main axis.

Repeat accuracy

This is defined as the distribution of the end positions of 100 successive strokes.

Workpiece weight

The recommended workpiece weight is calculated for force-fit gripping with a coefficient of static friction of 0.1 and a safety factor of 2 against workpiece slippage at acceleration due to gravity only. For form-fit or capture gripping, there are significantly higher permissible workpiece weights.

Closing and opening times

Closing and opening times are only movement times of the base jaws or fingers. Valve switching times, hose filling times, or PLC reaction times are not a part of this and are to be considered when cycle times are calculated.

PZN-plus

SCHUNK Gripping modules • Pneumatic • 3-finger centric gripper • Universal gripper

Sizes
50 .. 100

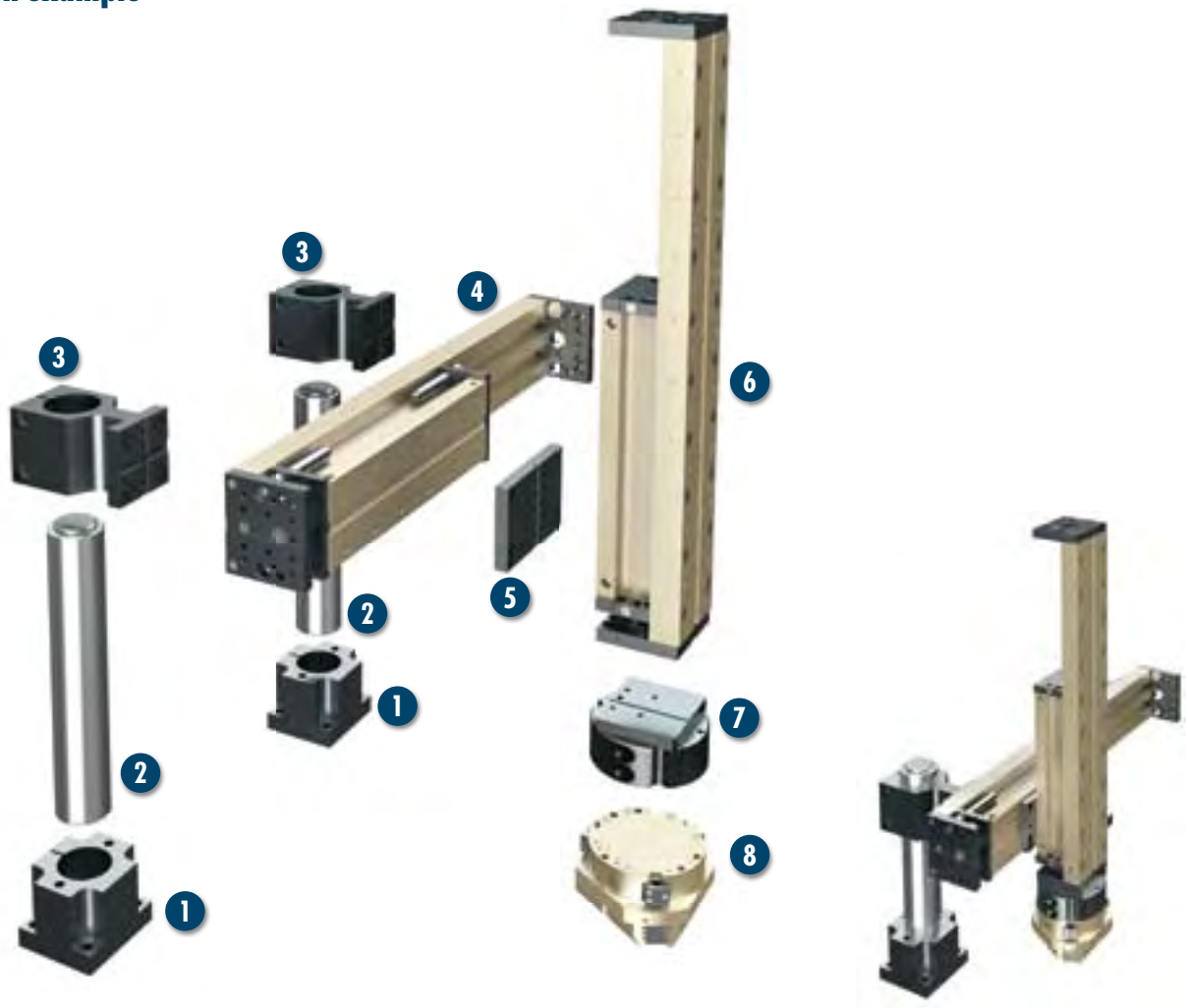
Mass
0.27 kg .. 1.41 kg

Gripping force
325 N .. 4.000 N

Stroke per finger
2 mm .. 10 mm

Workpiece weight, force-fit gripping
1.6 kg .. 20 kg

Application example



Pneumatic cross gantry
For medium-weight components

1. Single base support, SOE 055
2. Hollow pillar, SLH 055-0300
3. Single mounting plate, APEV 085
4. Linear module, LM 300-H250
5. Adapter plate, APL 220
6. Linear module, LM 200-H200
7. Adapter plate, ASG 0730
8. 3-finger centric gripper, PZN-plus 100

Universal gripper

Universal centric gripper with large gripping force and high maximum moments due to multi-tooth guidance

Area of application

Universal use due to numerous product variants; also in areas where there are special demands on the gripper (temperature, chemical durability, contamination, and much more)

Advantages – your benefits

Robust multi-tooth guidance
For precise handling

Large maximum moments are possible
Suitable for use of longer gripper fingers

Wedge-hook design
For high force transmission and synchronized gripping

Energy supply via hose-free direct connection or via fittings
For versatile pressure supply in all automated systems

Extensive sensor accessories
For a variety of monitoring possibilities, including stroke position

Numerous options
(Dust protection, high temperature, corrosion-protected, and many more) for special optimization to fit your particular application

General information about the series

Working principle
Wedge-hook kinematics

Housing material
Aluminum alloy, hard-anodized

Base jaw material
Steel, hardened

Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

Warranty
36 months

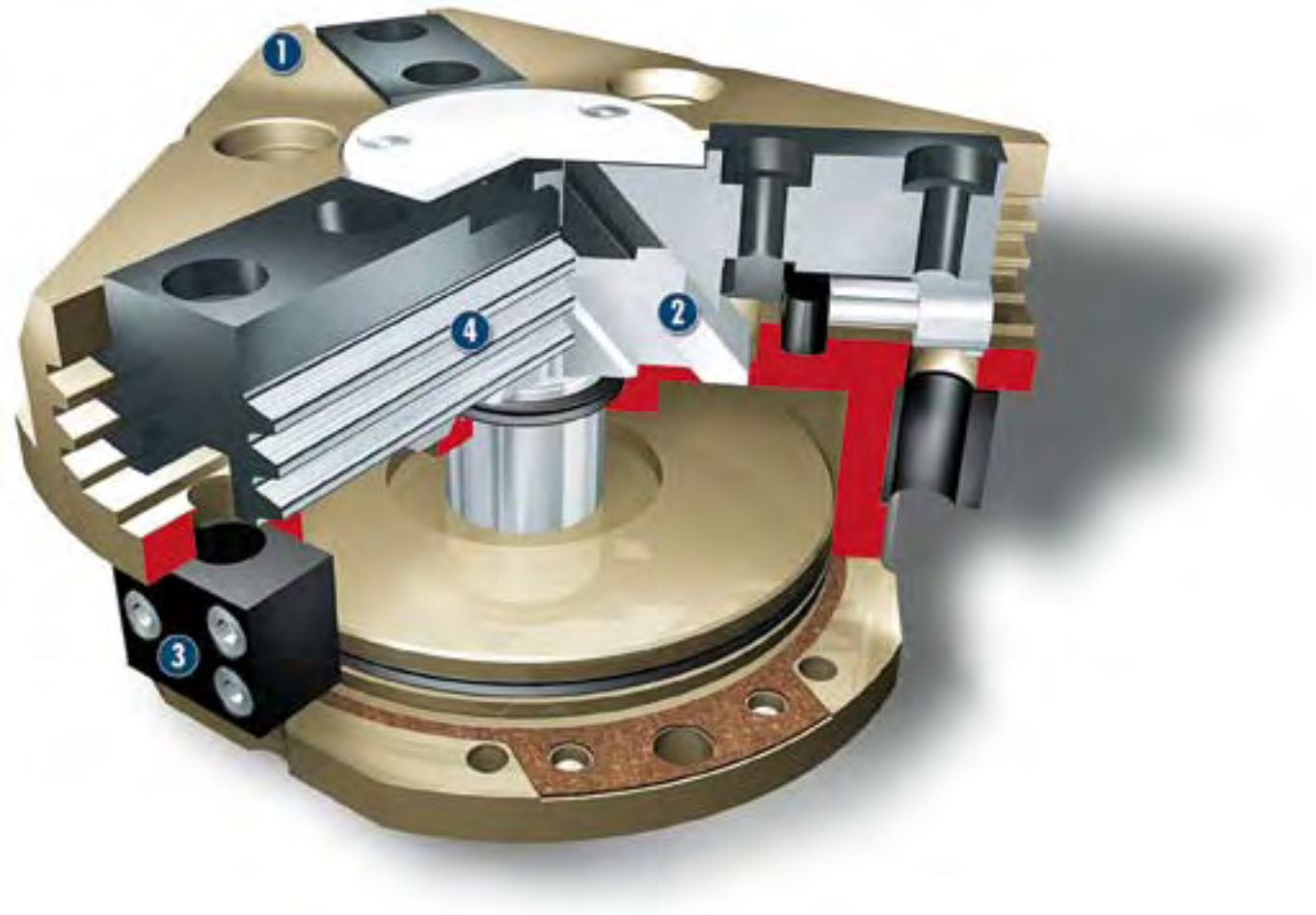
Scope of delivery
Bracket for proximity switch, centering bushings, O-rings for direct connection, Assembly and Operating Manual with manufacturer's declaration

Gripping force retaining device
Possible with variants with mechanical gripping force safety devices or SDV-P pressure maintenance valves

For production reasons, the colors may vary from those shown in the catalog.

PZN-plus

Cross-section of function



1 Housing
Weight-reduced through the use of a hard-anodized, high-strength aluminum alloy

2 Kinematics
Wedge-hook design for high force transmission and synchronized gripping

3 Sensor systems
Brackets for proximity switches and adjustable operating cams in the housing

4 Multi-tooth guidance
Precise gripping using a base jaw guide with minimal backlash and high load bearing capacity

Description of function

The piston is pressed up or down using compressed air. The wedge hook converts this movement over its slanted effective surfaces into a centric, synchronous gripping movement of the three base jaws.

Options and special information

Dust protection version
Absolutely dust tight; increased degree of protection against penetrating materials; for use in dusty environments

Corrosion-protected version
For use in corrosive environments

High-temperature version
For use in hot environments

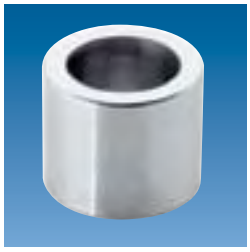
Increased force version
When more gripping force is needed

Please consult “SCHUNK gripping modules” in the main catalog for further technical information.

Accessories

Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

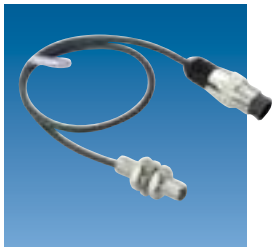
Centering sleeves



Fittings

Magnetic switch, MMS

Inductive proximity switch, IN



Dust cover, HUE

Sensor cable W/WK/KV/GK

Quick-change jaw system, BSWS

Sensor distributor, V

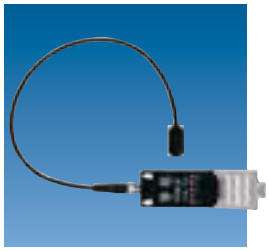
Pressure maintenance valve, SDV-P

Finger blanks

Force measuring system, FMS

Analog position sensor, APS

Flexible position sensor, FPS



ⓘ Please see the side views at the end of the respective size in "SCHUNK gripping modules" in the main catalog for information concerning specific sizes, accessories availability for that size, designation, and ID numbers. You can find more information about our accessories program in the "Accessories" part of the catalog.

General information about the series

Gripping force
This is the arithmetic sum of the gripping forces applied to each claw jaw, measured at a distance of P (see drawing) from the upper edge of the gripper.

Finger length
The finger length is measured from the upper edge of the gripper housing in the direction of the main axis.

Repeat accuracy
This is defined as the distribution of the end positions of 100 successive strokes.

Pressure piece
The pressure piece can not be combined with the dust protection option. Please talk to us about a special pressure piece.

Workpiece weight
The recommended workpiece weight is calculated for force-fit gripping with a coefficient of static friction of 0.1 and a safety factor of 2 against workpiece slippage at acceleration due to gravity only. For form-fit or capture gripping, there are significantly higher permissible workpiece weights.

Closing and opening times
Closing and opening times are only movement times of the base jaws or fingers. Valve switching times, hose filling times, or PLC reaction times are not a part of this and are to be considered when cycle times are calculated.

SWG

Sizes
16 .. 50

Mass
0.011 kg .. 0.213 g

Gripping moment
0.058 Nm .. 2.8 Nm

Opening angle per finger
15°

Workpiece weight, force-fit gripping
0.028 kg .. 0.45 kg

Application example

Miniature pick & place combination for very small components

1. Single base support, SOE 020
2. Hollow pillar, SLH 020-0200
3. Single mounting plate, APEH 020
4. Miniature linear module, CLM 10-H048
5. Adapter plate, APL 30
6. Miniature linear module, CLM 08-H034
7. Adapter plate, ASG 0860
8. Miniature angular gripper, SWG 16

Small-component angular gripper

Narrow, double pressurized 2-finger angular gripper

Area of application

Universal application in clean and slightly dirty environments.
Suitable for applications which require a stacked, space-optimized gripper arrangement

Advantages – your benefits

Narrow design
This makes it possible to arrange the grippers in a stack

Spring-supported maintenance of gripping force
Holds the workpiece in the event of pressure loss

Kinematics
For high force transmission and synchronized gripping

Light and compact design
For space-saving handling without interfering contours

Monitoring via electronic magnetic switch
Done in the housing groove to save space

General information about the series

Working principle
Double pressurized, guided kinematics

Housing material
Aluminum alloy, hard-anodized

Base jaw material
Aluminum alloy, hard-anodized

Actuation
Pneumatic, via filtered compressed air (10 µm): dry, lubricated, or non-lubricated
Pressurizing medium: requirements for compressed air quality class according to DIN ISO 8573-1: Quality class 4

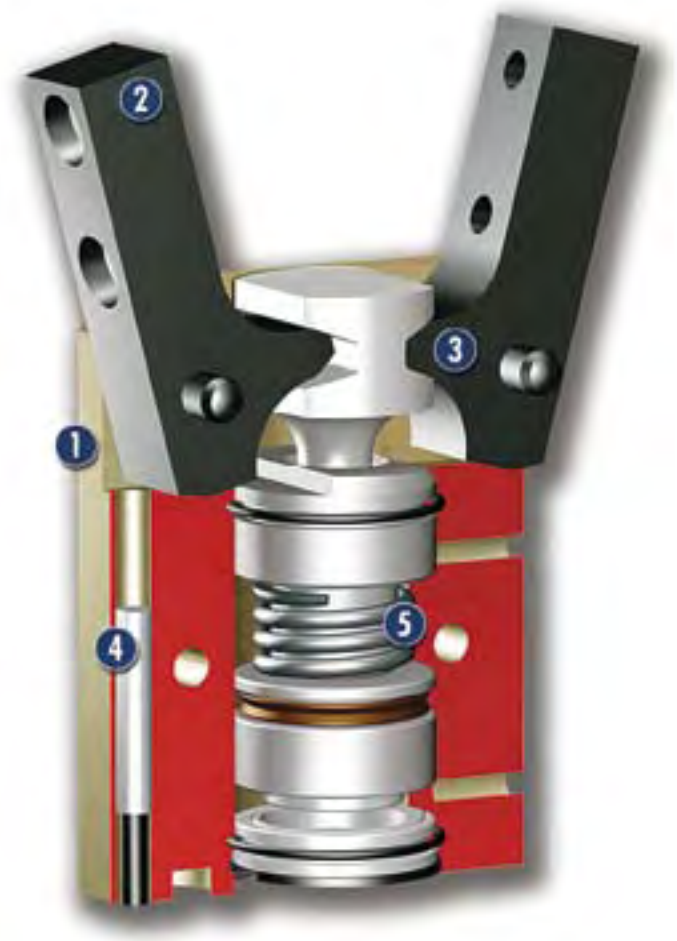
Warranty
24 months

Scope of delivery
Swivel fittings, centering bushings, Assembly and Operating Manual with manufacturer's declaration

Gripping force retaining device
Always integrated and additionally possible via SDV-P pressure maintenance valve

For production reasons, the colors may vary from those shown in the catalog.

Cross-section of function



1 **Housing**
Weight-reduced through the use of a hard-anodized, high-strength aluminum alloy

2 **Base finger**
For adaptation of the workpiece-specific gripper fingers

3 **Kinematics**
Precise gears for centric gripping

4 **Monitoring**
Electronic magnetic switch; in the housing groove to save space

5 **Gripping force retaining device**
Mechanical maintenance of gripping force for O.D. gripping

Description of function

The piston is pressed up or down using compressed air. The kinematics use the leverage system to convert the vertical movement into a synchronous, rotatory movement of the base jaws.

Options and special information

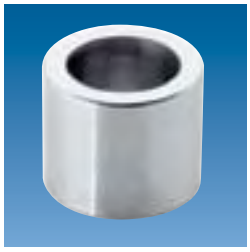
The SWG angular grippers can be mounted directly on top of each other to minimize interfering contours.

Please consult “SCHUNK gripping modules” in the main catalog for further technical information.

Accessories

Accessories from SCHUNK – the ideal components for the best functionality, reliability, and controlled production for all automation modules.

Centering sleeves



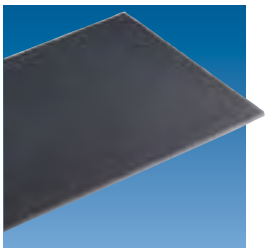
Fittings

Magnetic switch, MMS

Plastic inserts Quentes

Sensor cable W/WK/KV/GK

Gripper pad, HKI



Sensor distributor, V

Pressure maintenance valve, SDV-P

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General information about the series

Gripping moment

Gripping moment is the arithmetic sum of the gripping moments per claw jaw.

Finger length

The finger length is measured from the upper edge of the gripper housing in the direction of the main axis.
If the maximum permissible finger length is exceeded, a limiting of the jaws' freedom of movement and/or a reduction of the opening angle must be made, just as is the case if the fingers are heavy. The life span of the gripper can be shortened.

Repeat accuracy

This is defined as the distribution of the end positions of 100 successive strokes.

Workpiece weight

The recommended workpiece weight is calculated for force-fit gripping with a coefficient of static friction of 0.1 and a safety factor of 2 against workpiece slippage at acceleration due to gravity only. For form-fit or capture gripping, there are significantly higher permissible workpiece weights.

Closing and opening times

Closing and opening times are only movement times of the base jaws or fingers. Valve switching times, hose filling times, or PLC reaction times are not a part of this and are to be considered when cycle times are calculated.