










Best choice.

Bystronic Tools

MBC - Gripper Units



Overview about the icons used in this catalogue

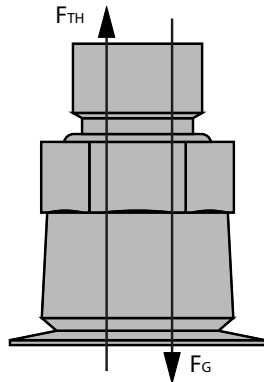
	availability / delivery time
	material number
	weight
	suction force
	vertical suction force
	max diameter suction cup (sucked)
	gripping force
	maximum stroke
	material
	magnetical force

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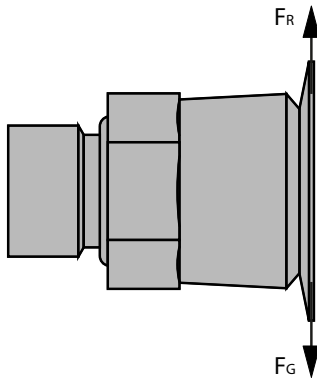
Suction cups

Theoretical suction force



The theoretical suction force is the force which is applicable in the vertical direction to the sucked area.
All data inside this catalogue is calculated values in Newtons.

Transverse force



The transverse force describes the force which appears in the transverse direction to the sucked area.
All data inside this catalogue is calculated values in Newtons.

Storage and cleaning of suction cups

Because of the sensitive elastomer material on the suction cup please consider the following advices.

Suction cups should be stored in an area with following characteristics:

- cold (0°C - 15°C)
- dark
- dry
- low-dust
- weather-protected
- guarded against ozone
- protected against draft and
- stressless

The impact of the above stated points can shorten the working life of a suction cup.

Suction cups

Weight calculation of a bending part

To perform the following calculations on the next pages it is important to know the mass each bending part has. With the following formula you are able to calculate the mass.

$$m = L \times B \times H \times \rho$$

m = Mass [kg]
 L = Length [m]
 B = Width [m]
 H = height [m]
 ρ = density / concentration [kg/m³]

Example values for density

Aluminium	2.698 kg/m ³
Mild steel	7.856 kg/m ³
Stainless steel	8.000 kg/m ³

Example:

m = 0,5 m x 0,5 m x 0,004 m x 7.850 kg/m³
 m = 19,625 kg

Theoretical holding force of suction cup

To calculate the theoretical holding force, we show and describe the three most important and most frequently occurring load cases (handling sequences).

Important

For the following, simplified representations of the load cases the calculation must be based on the worst load case scenario with the highest, theoretical holding force. This is the only way to ensure that the suction cup grips the workpiece safely during the entire handling process.

Safety factor S

The safety factor S must be adjusted in accordance with the condition of the workpiece surface . The safety factor has a minimum value of 1.5 for smooth and dense workpieces.

Friction coefficient μ

The friction coefficient μ describes the relationship between friction force and normal force. We cannot issue generally valid specifications for the friction coefficient between the suction cup and the workpiece. The friction coefficient μ therefore has to be determined correctly through tests.

The following can be used as reference values.

0,2 ... 0,3	for wet surfaces
0,5	for metal
0,6	for rough surfaces

Calculation for oiled surfaces

For standard suction cups without specified lateral force, the recommended reference value is μ = 0.1 to 0.3. To obtain a more precise value, tests must be completed on the original workpiece.

For suction cups that have an explicitly specified lateral force on a dry or oiled surface, the friction coefficient μ can be calculated using the following formula:

$$\mu = F_R / F_N$$

Lateral force on a dry or oiled surface/suction force

The calculated μ value can then be used in the formula of the respective load case (I to III).

Suction cups

Load case I – Suction cup horizontal, direction of force vertical

The workpiece (in this case the steel sheet with the dimensions 0,5 m x 0,5 m x 0,004 m) is lifted from a pallet. The workpiece is lifted with an acceleration of 5 m/s² (no transverse movement).

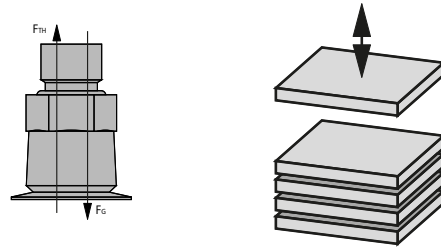
$$F_{TH} = m \times (g + a) \times S \quad [N]$$

m	= mass/weight	[kg]
g	= gravity	[9,81 m/s ²]
a	= acceleration	[m/s ²] of the system
S	= safety factor	

Our example:

$$F_{TH} = 19,625 \text{ kg} \times (9,81 \text{ m/s}^2 + 5 \text{ m/s}^2) \times 1,5$$

$$F_{TH} = 436 \text{ N}$$



The suction cups land on a workpiece vertically that is to be lifted up

Load case II – Suction cup horizontal, direction of force horizontal

The workpiece (in this case the steel sheet with the dimensions 0,5 m x 0,5 m x 0,004 m) is lifted up vertically and transported horizontally. The acceleration is 5 m/s².

$$F_{TH} = m \times (g + a/\mu) \times S \quad [N]$$

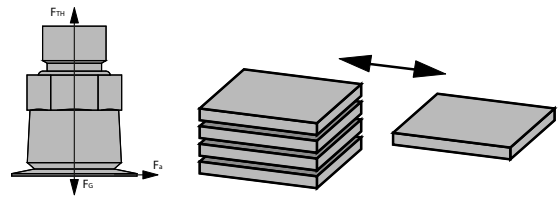
m	= mass/weight	[kg]
g	= gravity	[9,81 m/s ²]
a	= acceleration	[m/s ²] of the system
μ	= friction coefficient	
S	= safety factor	

$$F_a = \text{acceleration force} = m \times a$$

Our example:

$$F_{TH} = 19,625 \text{ kg} \times [9,81 \text{ m/s}^2 + (5 \text{ m/s}^2 / 0,5)] \times 1,5$$

$$F_{TH} = 583 \text{ N}$$



The suction cups land on a workpiece horizontally that is to be moved to the side

Load case III – Suction cup vertical, direction of force vertical

Description of load case: The workpiece (in this case the steel sheet with the dimensions 0,5 m x 0,5 m x 0,004 m) is picked up from a pallet and moved with a rotary motion at an acceleration of 5 m/s².

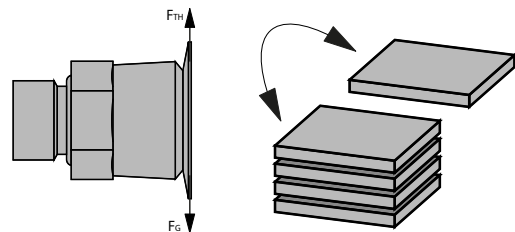
$$F_{TH} = (m/\mu) \times (g + a) \times S \quad [N]$$

m	= mass/weight	[kg]
g	= gravity	[9,81 m/s ²]
a	= acceleration	[m/s ²] of the system
μ	= friction coefficient	
S	= safety factor	

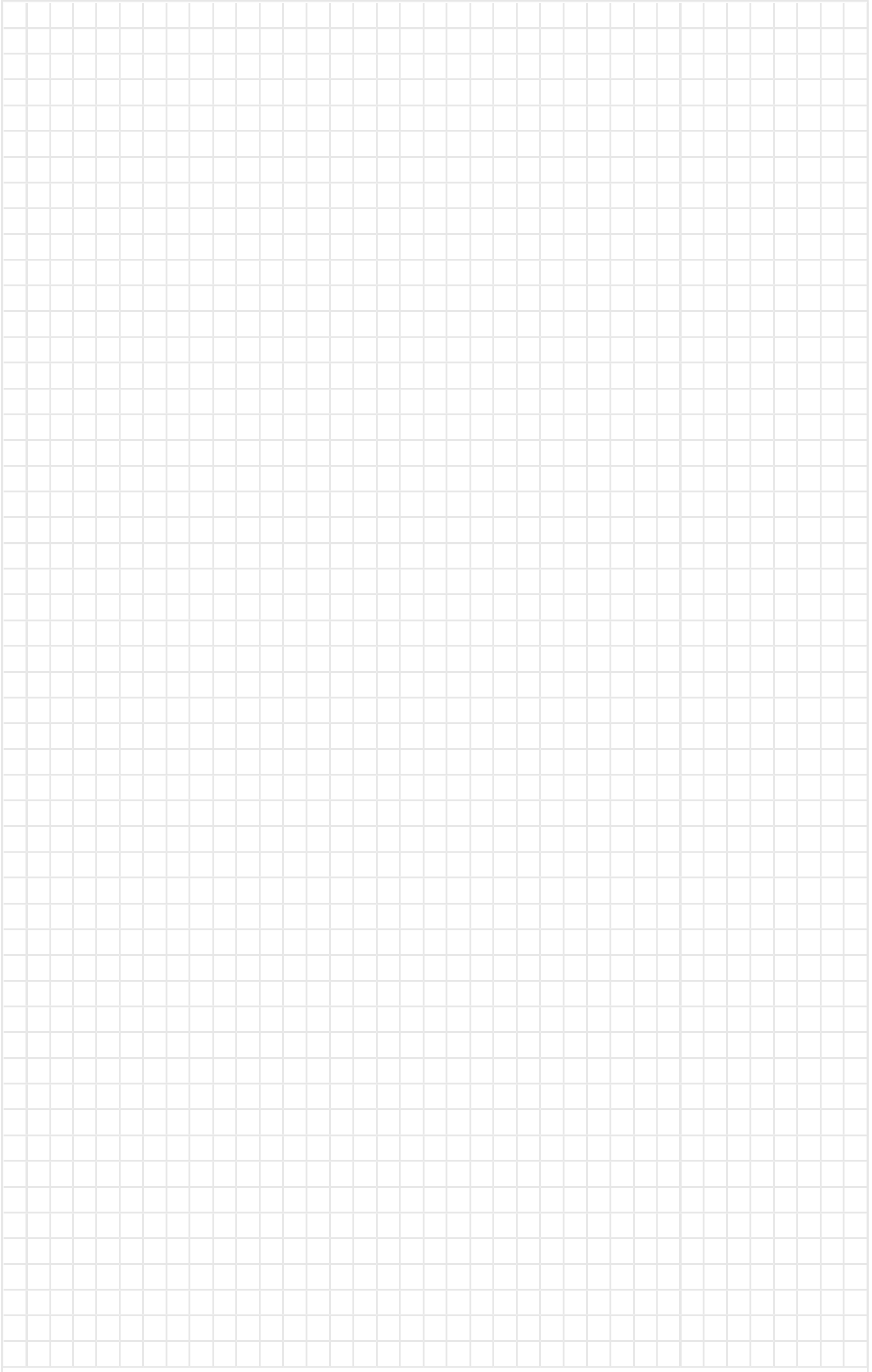
Our example:

$$F_{TH} = (19,625 \text{ kg} / 0,5) \times (9,81 \text{ m/s}^2 + 5 \text{ m/s}^2) \times 2$$

$$F_{TH} = 1.163 \text{ N}$$



On a robot controlled bending application we need to calculate each time with a load case III !



Gripper

Necessary information for gripper calculation and dimensioning

- Part weight
- Orientation of the gripper/fingers -> to the bottom, to the side etc.
- Acceleration direction (X,Y,Z)
- Value of acceleration in m/s^2 (100% on MBR = $6 m/s^2$)
- Gripping the part with friction or tight fitting
- Centroidal distance
- Finger length
- Offset of the fingers (if yes -> in which direction and how much)
- Weight of finger (each)
- Dimensions of the part
- Conditions around the gripper/part (dust, dirt, cooling liquid etc.)
- a sketch or STEP-file with the gripper and the part

Structure of our gripping unit

1 Clamp gripper

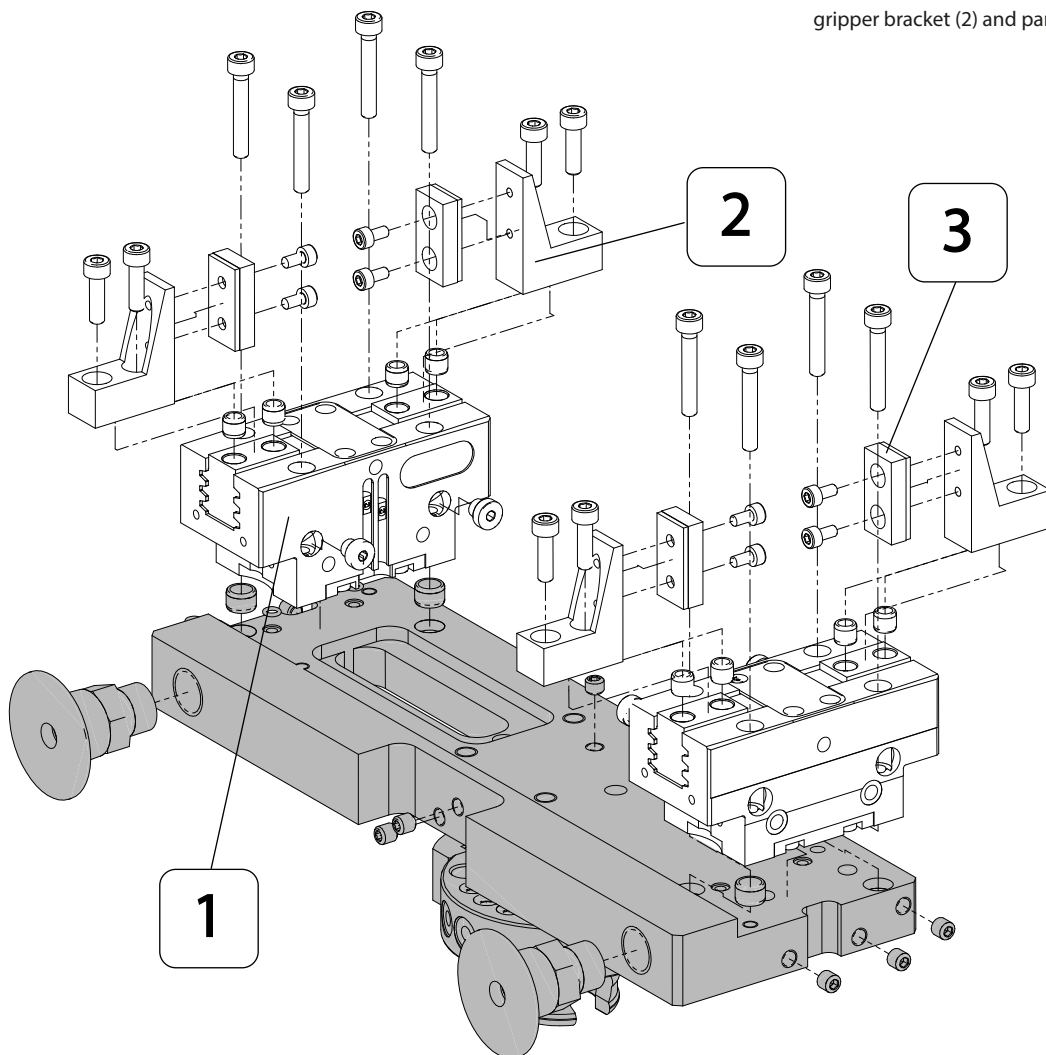
is responsible for the movement of the gripper brackets

2 Gripper bracket

is responsible for holding the part

3 Pads for finger

create a better friction between gripper bracket (2) and part



Gripper

Load case I – gripping force calculation in Z direction (holding the workpiece)

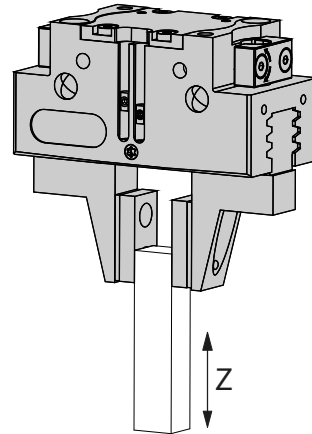
$$F_{gf} = [m \times (g + a) \times 2] / 0,1 \quad [\text{N}]$$

m	= mass/weight	[kg]
g	= gravity	[9,81 m/s ²]
a	= acceleration	[m/s ²] of the system
2	= safety factor	
0,1	= value of friction	(steel on steel)
F _{gf}	= needed gripping force	[N]

Our example:

$$F_{gf} = (5 \text{ kg} \times [9,81 \text{ m/s}^2 + 3 \text{ m/s}^2] \times 2) / 0,1$$

$$F_{gf} = 1281 \text{ N}$$



Load case II – gripping force calculation in X direction (holding the workpiece)

$$F_{gf} = (m \times a \times 2) / 0,1 \quad [\text{N}]$$

m	= mass/weight	[kg]
g	= gravity	[9,81 m/s ²]
a	= acceleration	[m/s ²] of the system
2	= safety factor	
0,1	= value of friction	(steel on steel)
F _{gf}	= needed gripping force	[N]

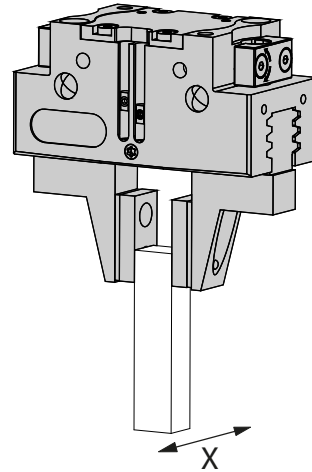
Additionally we need to consider the gravity in Z:

$$(5 \text{ kg} \times 9,81 \text{ m/s}^2 \times 2) / 0,1 = 1000 \text{ N}$$

Our example:

$$F_{gf} = (5 \text{ kg} \times 3 \text{ m/s}^2 \times 2) / 0,1$$

$$F_{gf} = 300 \text{ N}$$



Load case III – gripping force calculation in Y direction (holding the workpiece)

$$F_{gf} = m \times a \times 2 \quad [\text{N}]$$

m	= mass/weight	[kg]
g	= gravity	[9,81 m/s ²]
a	= acceleration	[m/s ²] of the system
2	= safety factor	
0,1	= value of friction	(steel on steel)
F _{gf}	= needed gripping force	[N]

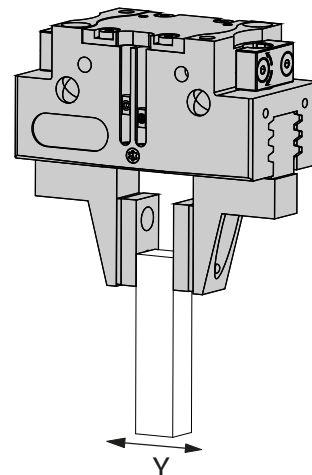
Additionally we need to consider the gravity in Z:

$$(5 \text{ kg} \times 9,81 \text{ m/s}^2 \times 2) / 0,1 = 1000 \text{ N}$$

Our example:

$$F_{gf} = 5 \text{ kg} \times 3 \text{ m/s}^2 \times 2$$

$$F_{gf} = 30 \text{ N}$$



The overall holding force of our clamp gripper unit = 350 N.
For further information contact your local subsidiary.

Gripper denomination

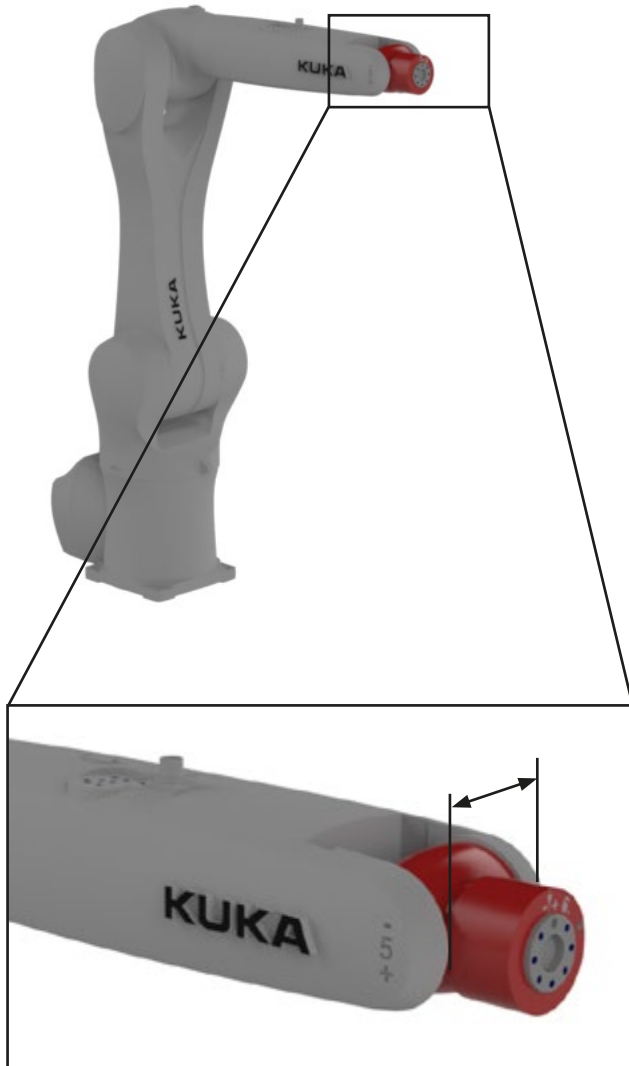
The grippers should have in their denomination text the important information about affiliation to a machine and their own characteristics.

Please see below how we breakdown out gripper naming structure:

Machine type Tool holder type	Characteristic
In that catalogue all grippers are grippers for MBR' s. (Series 1 - 3 = M03...) (Series 2.0 = M03.1...)	- Diameter of suction cup - Amount of suction cup - Length of Finger - Amount of Finger

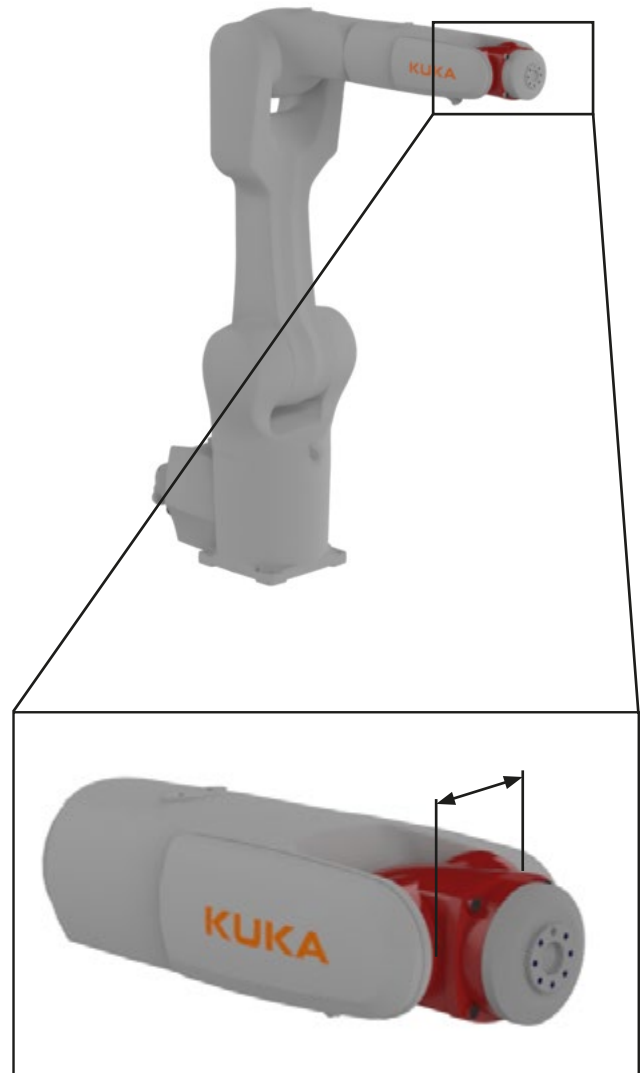
Which MBR is M03 and which one is M03.1?

M03



Distance: ~ 73 mm -> MB03
Machine number up to: 20501020

M03.1



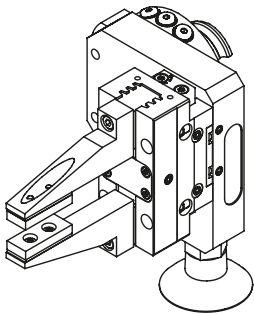
Distance: ~ 92,5 mm -> MB03.1
Machine number starting from: 20501021

-> Page: 20 up to 59

-> Page: 60 up to 99

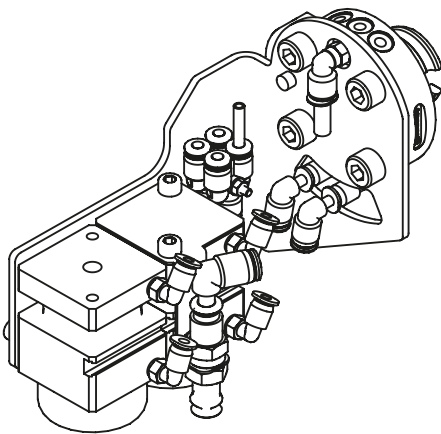
	Description	Frame size	Code tooling denomination		
			Number of gripper included	Type	Code for frame size
Suction	Suction cup (round)	Expl. Ø 20 mm	1-99	S	20
	Suction cup (oval)	Expl. Ø 60 x 20mm	1-99	S	6020
Magnet	Magnet	Expl. Ø 40 mm	1-99	M	40
Finger	Finger	Parallel gripper with finger	1-99	F or PF	34

Examples:



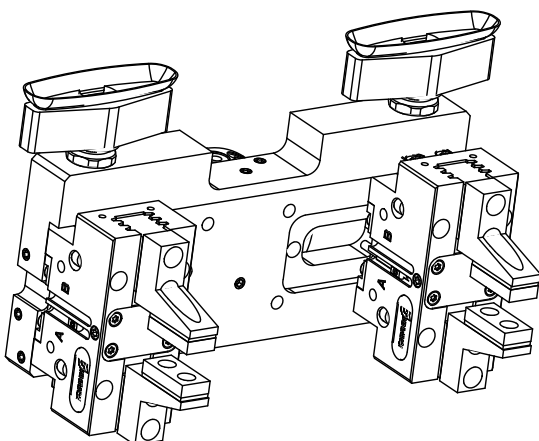
Hybrid gripper for MBR series 3 with a 40 mm suction cup and finger pair (pad fingers) with length of 70 mm.

-> **M03-1S40-1PF70**



Magnet gripper for MBR series 2.0 with 2 magnets with a diameter of 40 mm each.

-> **M03.1-2M40**

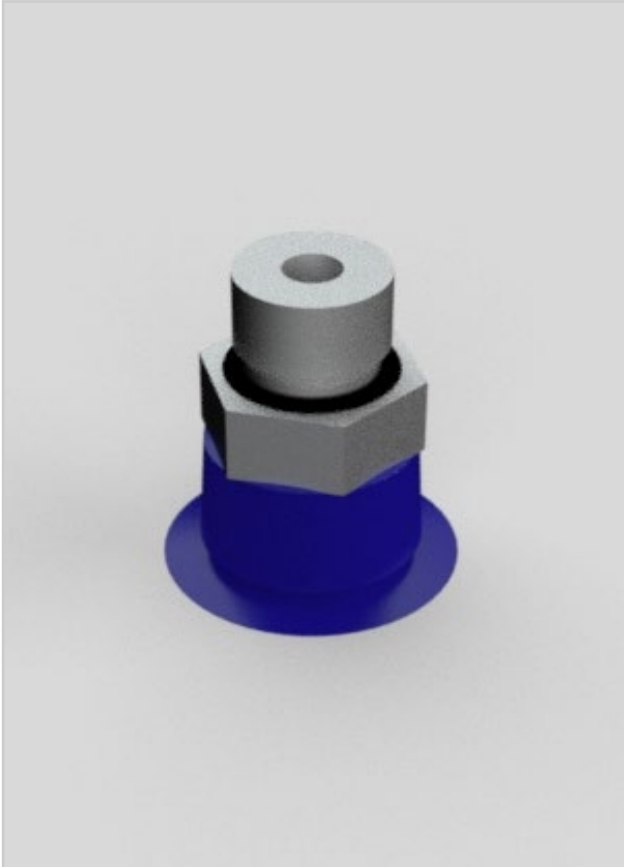


Double gripper for MBR series 3 with an adapter plate of 140mm between the middle of both cups, two 60 x 20 mm oval suction cups and two 34 mm pairs of fingers with pads.

-> **M03-140-2S6020-2PF34**

Suction cups

S - Ø 20 - 1/4" AG



 24 h

 58000.8000.0002

 14,5 g

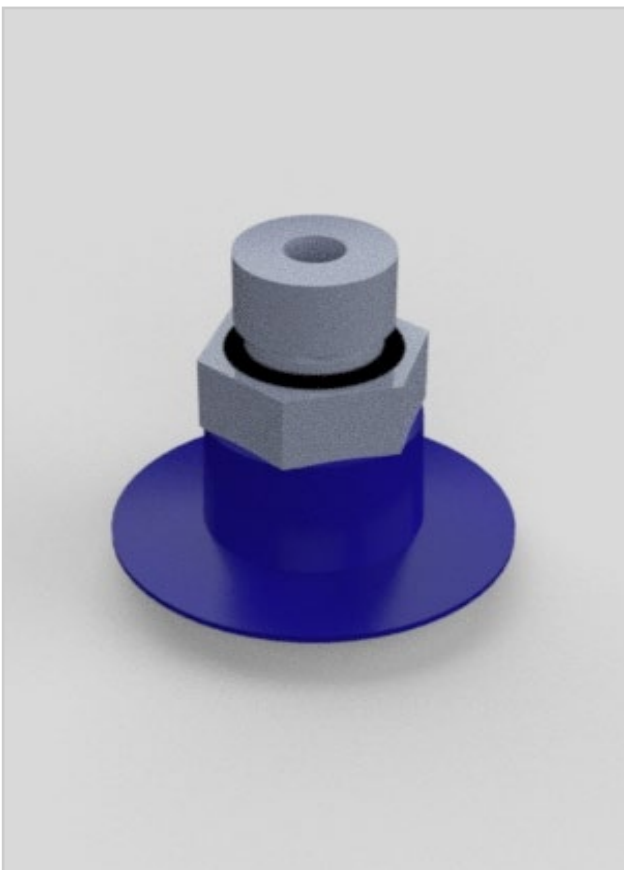
 20 N

 15 N

 20 N on oiled surfaces

 26,0 mm

S - Ø 30 - 1/4" AG



 24 h

 10085865

 14,5g

 39 N

 32 N

 41 N on oiled surfaces

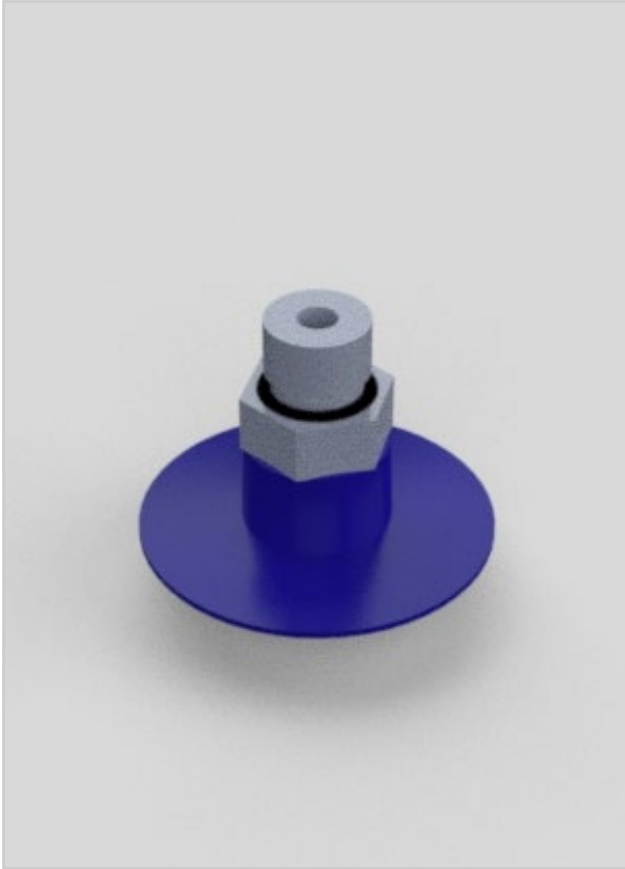
 35,2 mm

Mounted on the machine as standard



(\emptyset is the diameter in relaxed state)

Suction cups

S - Ø 40 - 1/4" AG










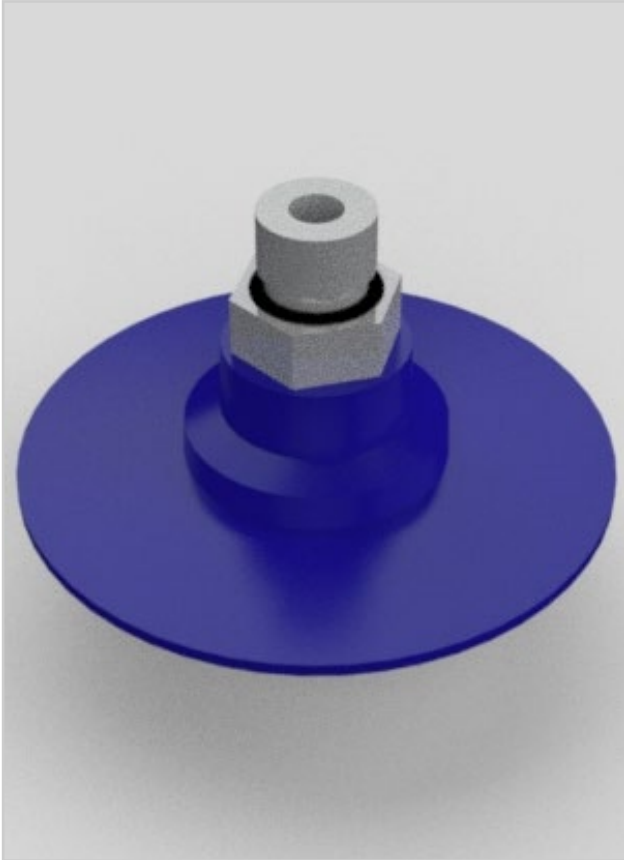
(\emptyset is the diameter in relaxed state)

 24 h
 58000.8000.0003
 15,6 g
 69 N
 38 N
 71 N on oiled surfaces
 45,4 mm

S - Ø 50 - 1/4" AG



 24 h
 58000.8000.0004
 27,8 g
 109 N
 58 N
 110 N on oiled surfaces
 58,4 mm

Suction cups**S - Ø 60 - 1/4" AG**

 24 h

MAT No. 58000.8000.0005

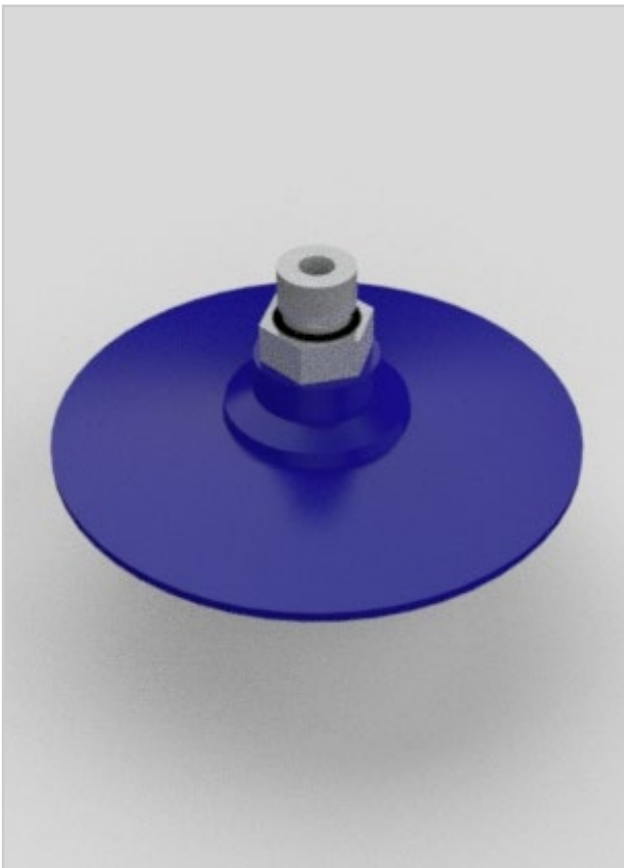
 30,8 g

 154 N

 85 N

 155 N on oiled surfaces

 69,7 mm

S - Ø 80 - 1/4" AG

 24 h

MAT No. 58000.8000.0006

 39,7 g

 270 N

 150 N

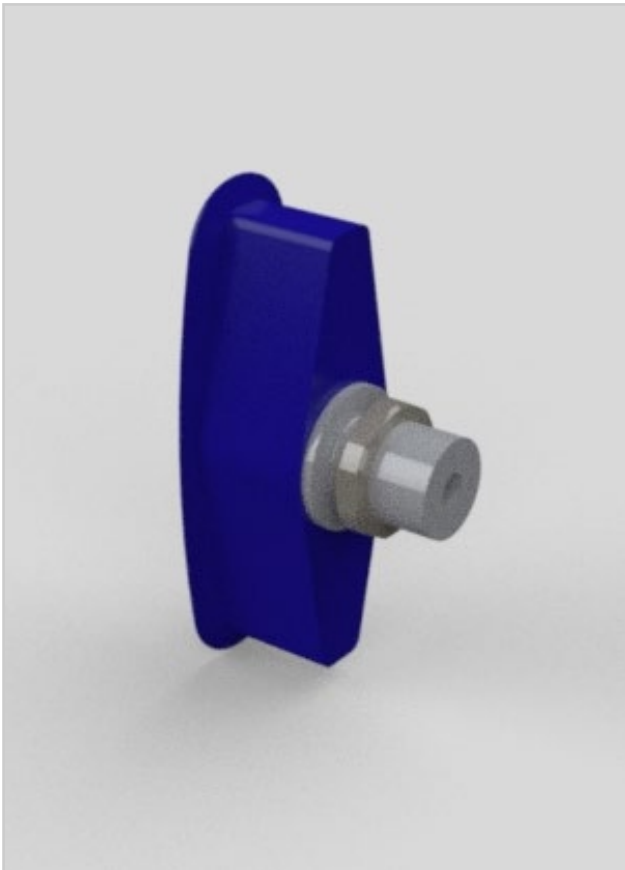
 269 N on oiled surfaces

 92,2 mm

(\emptyset is the diameter in relaxed state)

Suction cups

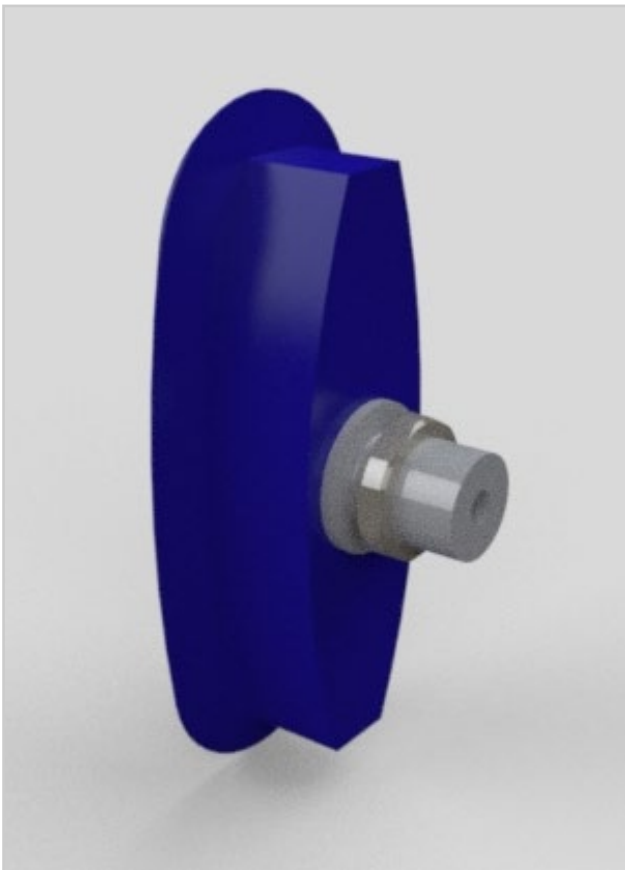
SO - 60 x 20 - 1/4" AG










(\emptyset is the diameter in relaxed state)

 24 h
 58000.8000.0009
 27,0 g
 56 N
 44 N
 62 N on oiled surfaces
 67,0 x 24,0 mm

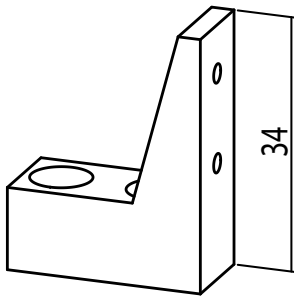
SO - 80 x 30 - 1/4" AG



 24 h
 58000.8000.0008
 64,1 g
 173 N
 135 N
 156 N on oiled surfaces
 109,0 x 51,0 mm

Finger

PF - 34 mm



24 h



62612.5000.0017



300 g



350 N



max. 12,0 mm between fingers

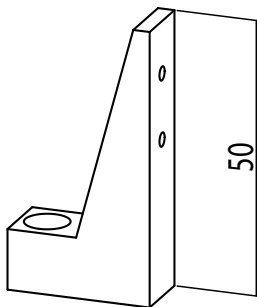


Aluminium (3.4365)

Delivery includes pads on the fingers

Will be delivered as a pair.

PF - 50 mm



24 h



62612.5000.0018



350,0 g



350 N



max. 12,0 mm between fingers



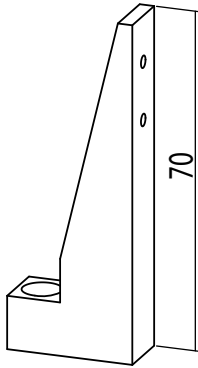
Aluminium (3.4365)

Delivery includes pads on the fingers

Will be delivered as a pair.

Finger

PF - 70 mm



24 h



62612.5000.0019



400,0 g



350 N



max. 12,0 mm between fingers

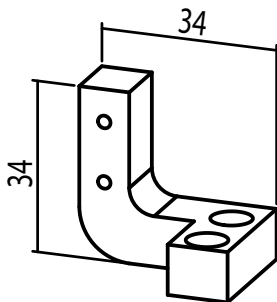


Aluminium (3.4365)

Delivery includes pads on the fingers

Will be delivered as a pair.

CPF - 34 x 34 mm



24 h



62612.5000.0015



300,0 g



350 N



max. 12,0 mm between fingers



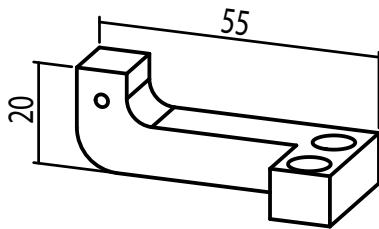
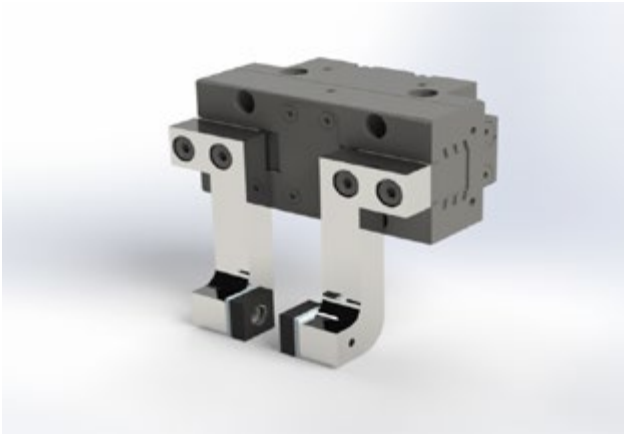
Aluminium (3.4365)

Delivery includes pads on the fingers

Will be delivered as a pair.

Finger

CPF - 55 x 20 mm



24 h



62612.5000.0016



300 g



350 N



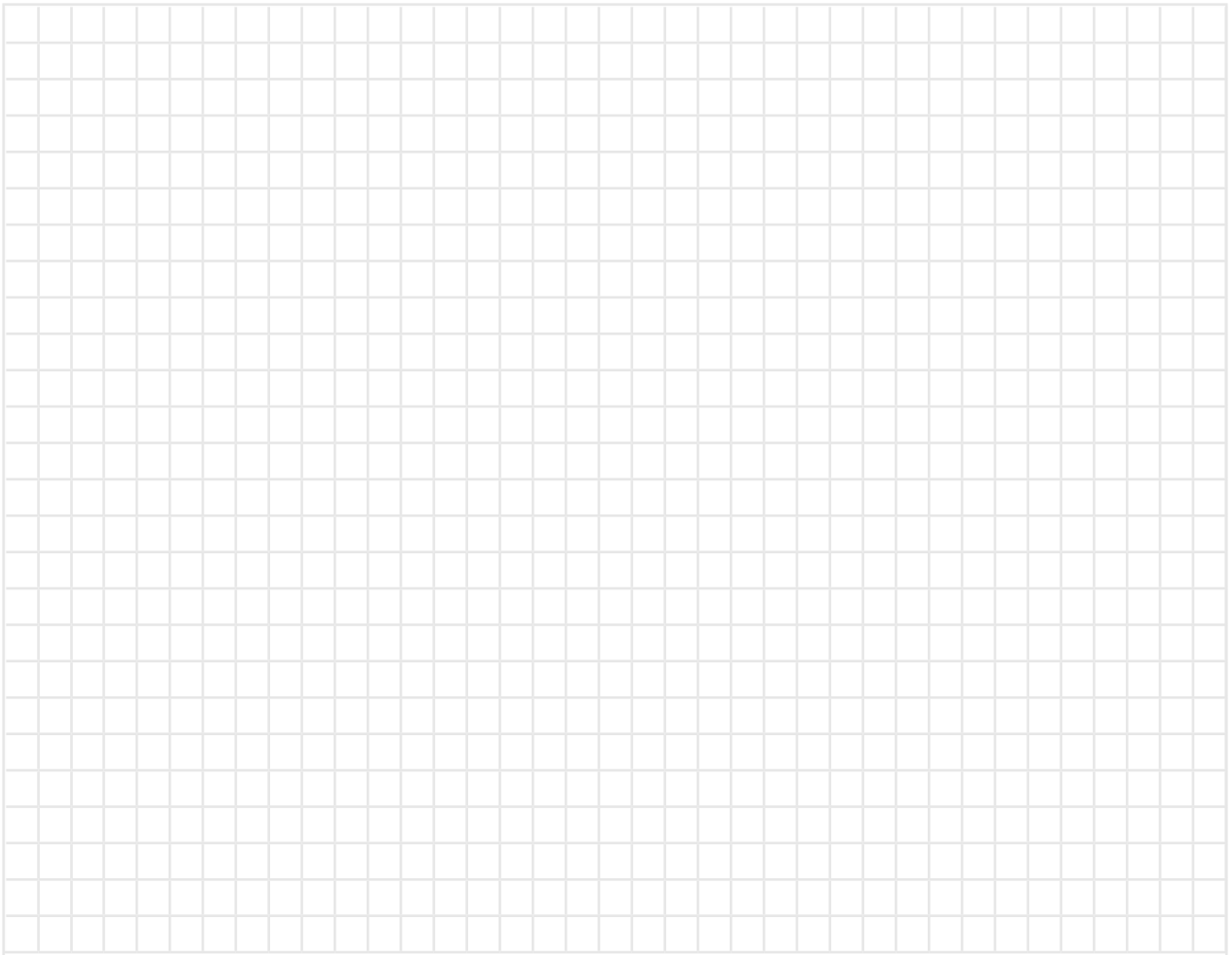
max. 12,0 mm between fingers



Aluminium

Delivery includes pads on the fingers

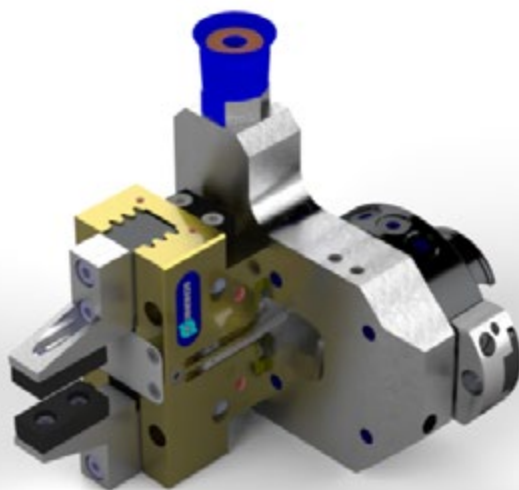
Will be delivered as a pair.





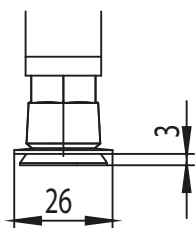
Hybrid - Gripper M03

M03-1S20-1PF34



Order number: 10167036

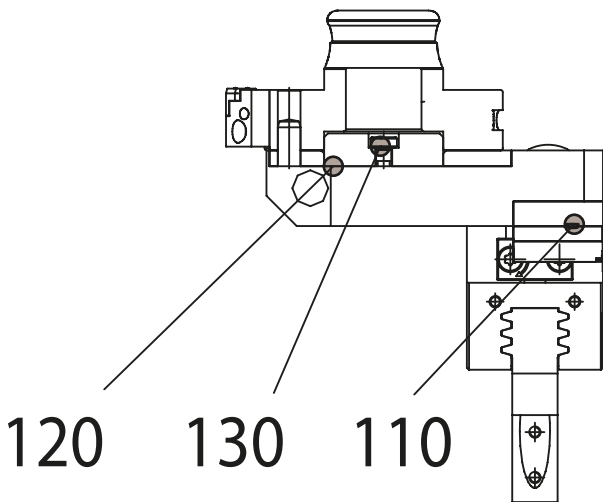
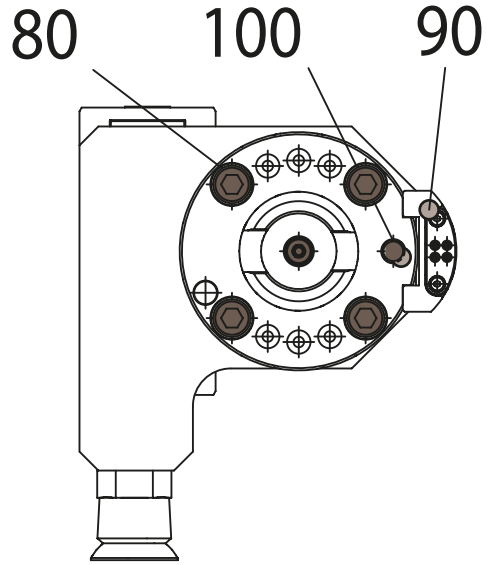
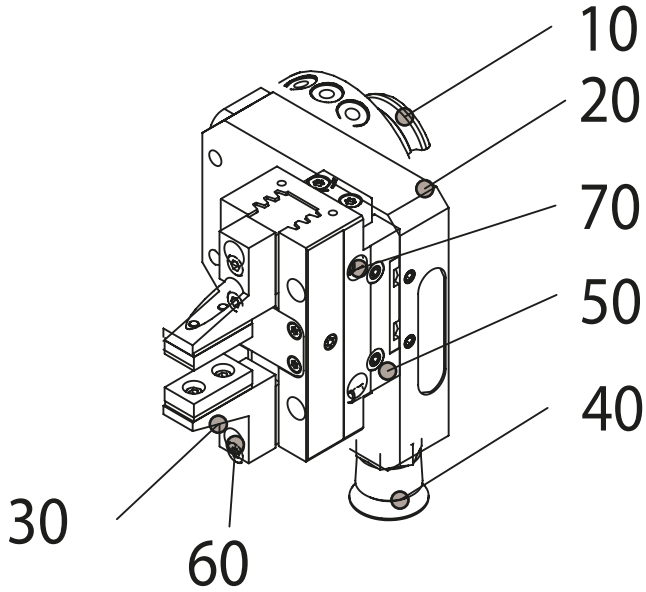
Technical specifications



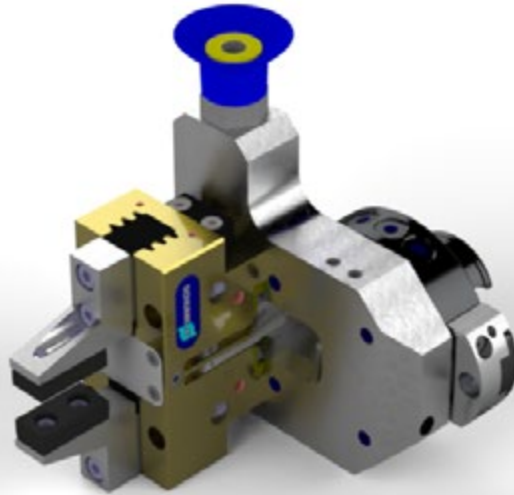
Stroke of vacuum cup = 3,0 mm

	24 h
	20 N
	15 N
	26,0 mm
	350 N
	max. 12,0 mm between fingers
	2,1 kg

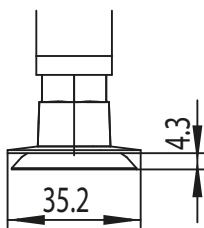
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0017	Gripper (gerade)L=34mm
40	10085866	Vacuum cup Ø20 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

Hybrid - Gripper M03**M03-1S30-1PF34**

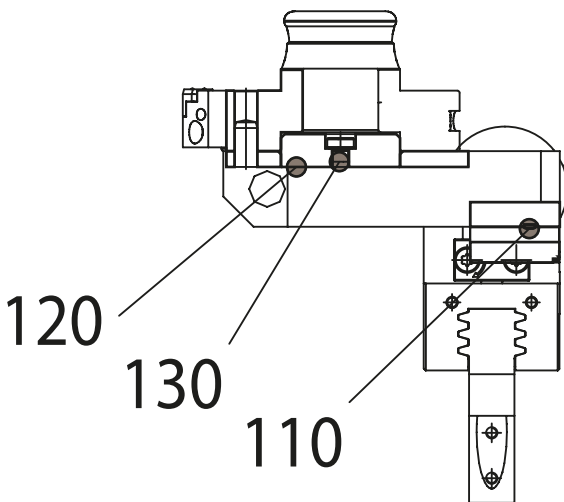
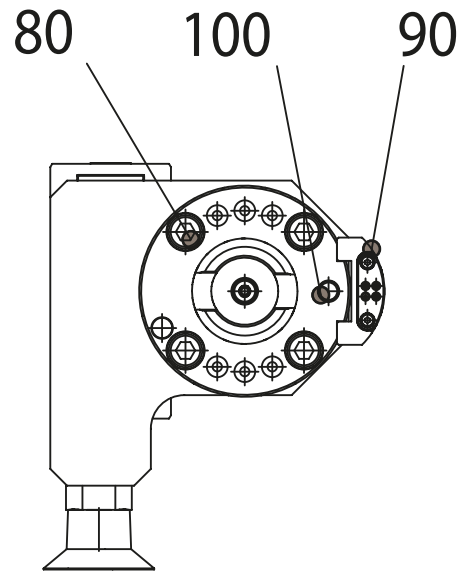
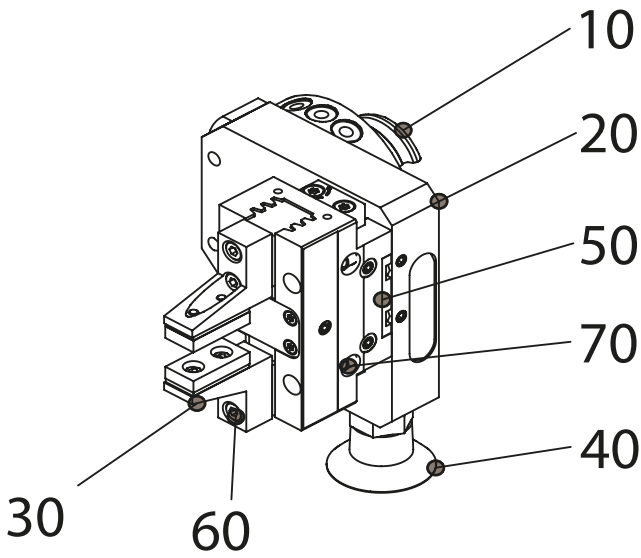
Order number: 10167038

Technical specifications

Stroke of vacuum cup = 4,3 mm

	24 h
	39 N
	32 N
	35,2 mm
	350 N
	max. 12,0 mm between fingers
	2,1 kg

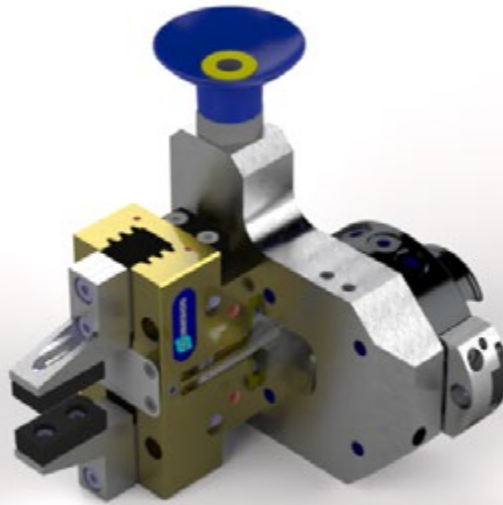
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0017	Gripper (gerade)L=34mm
40	10085865	Vacuum cup Ø30 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

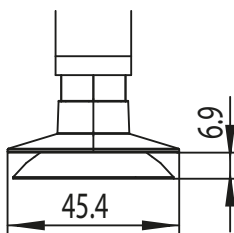
Hybrid - Gripper M03

M03-1S40-1PF34



Order number: 10167060

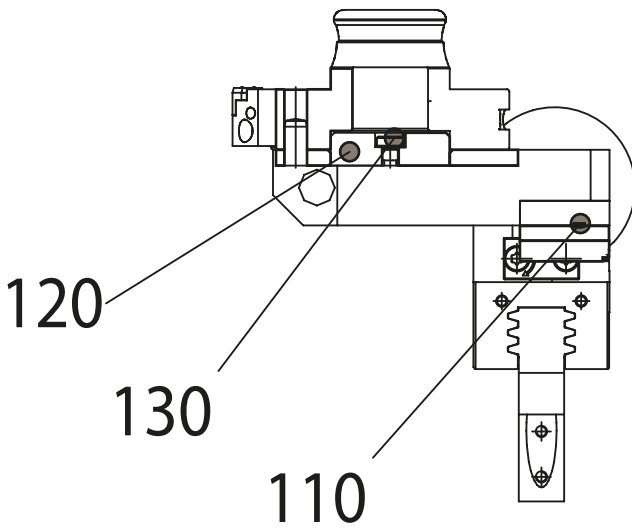
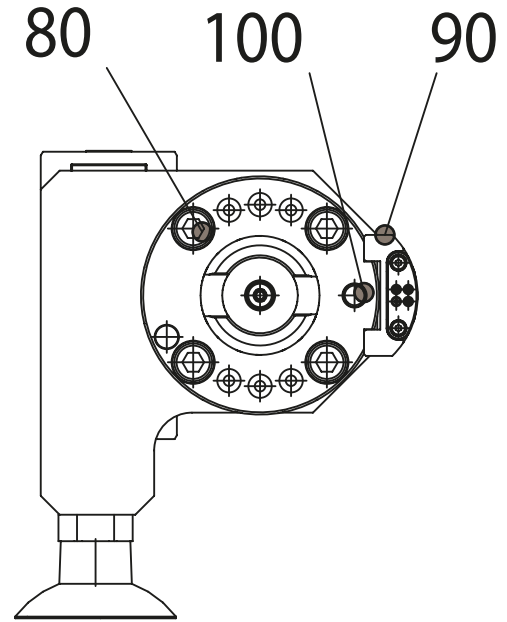
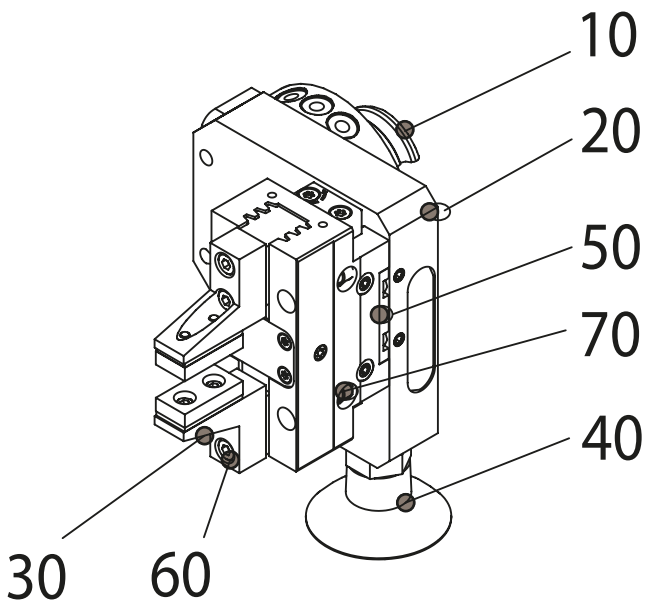
Technical specifications



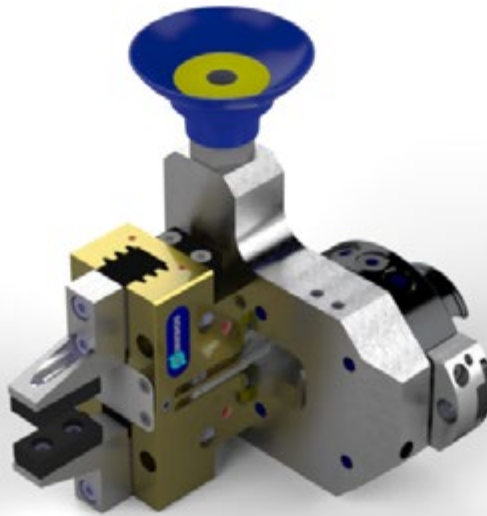
Stroke of vacuum cup = 6,9 mm

	24 h
	69 N
	38 N
	45,4 mm
	350 N
	max. 12,0 mm between fingers
	2,1 kg

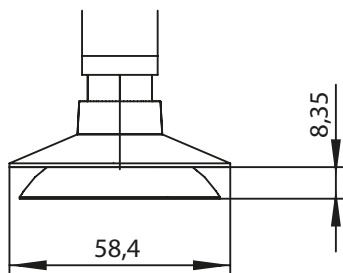
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0017	Gripper (gerade)L=34mm
40	10085864	Vacuum cup Ø40 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

Hybrid - Gripper M03**M03-1S50-1PF34**

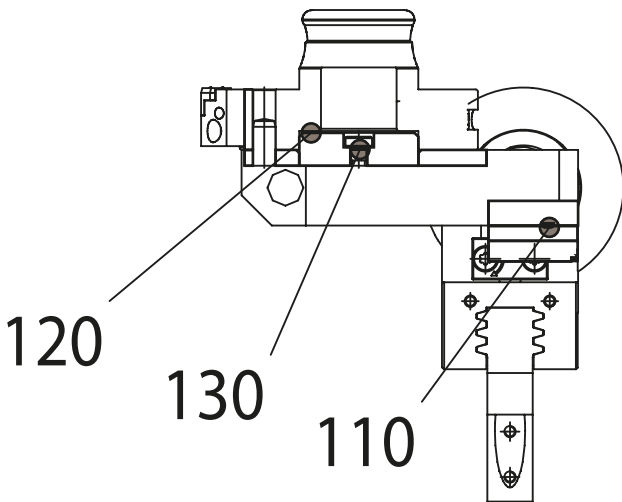
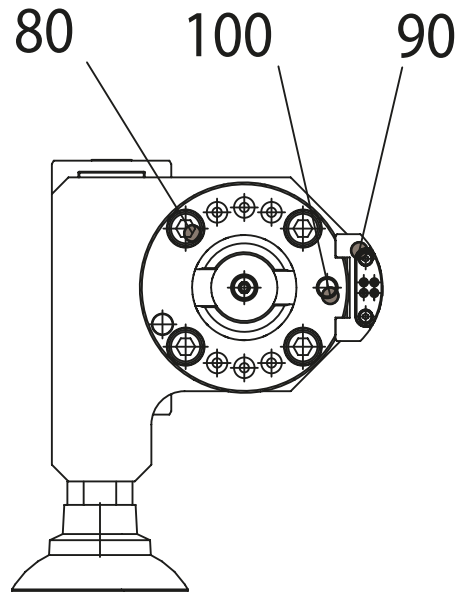
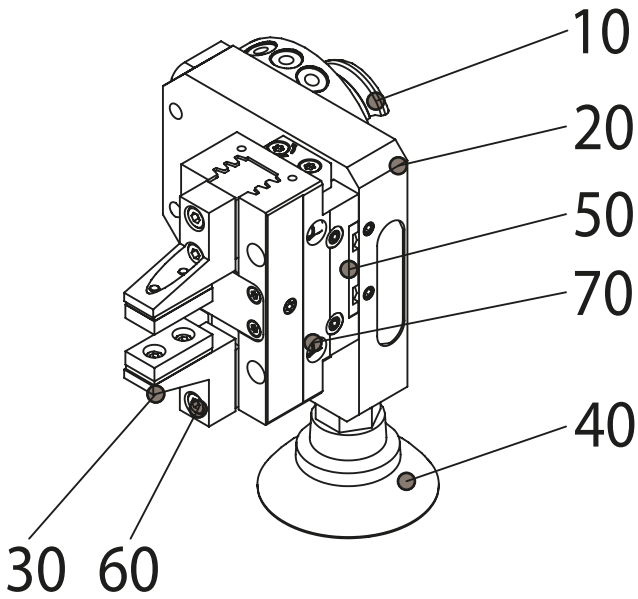
Order number: 10167058

Technical specifications

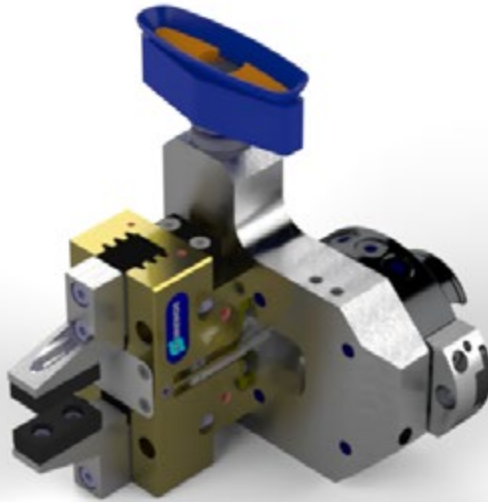
Stroke of vacuum cup = 8,35 mm

	24 h
	109 N
	58 N
	58,4 mm
	350 N
	max. 12,0 mm between fingers
	2,1 kg

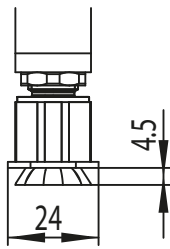
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0017	Gripper (gerade)L=34mm
40	10085858	Vacuum cup Ø50 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

Hybrid - Gripper M03**M03-1S60x20-1PF34**

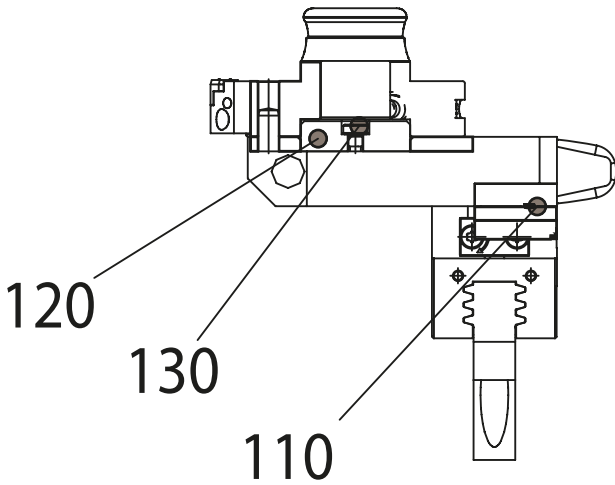
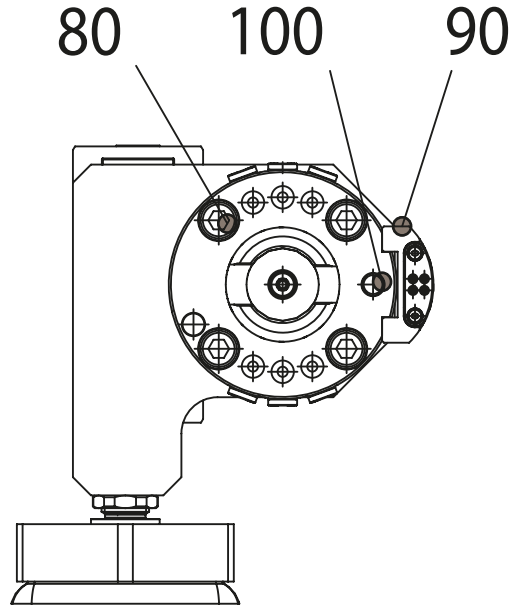
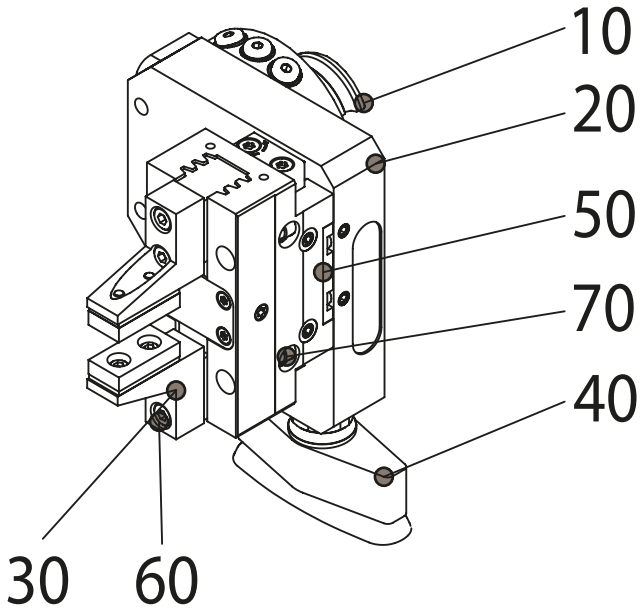
Order number: 10167062

Technical specifications

Stroke of vacuum cup = 4,5 mm

	24 h
	56 N
	44 N
	67,0 x 24,0 mm
	350 N
	max. 12,0 mm between fingers
	2,1 kg

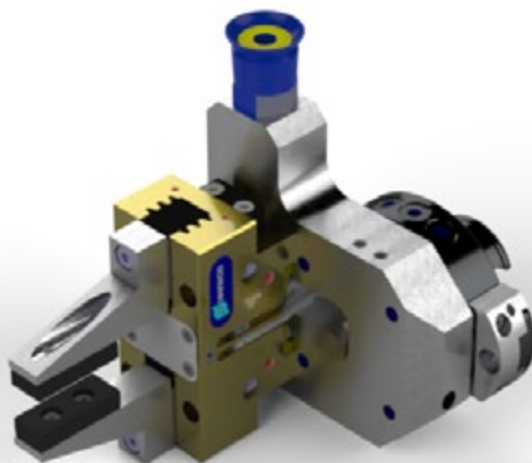
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0017	Gripper (gerade)L=34mm
40	10085858	Vacuum cup 60x20 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

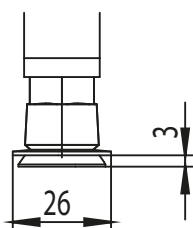
Hybrid - Gripper M03

M03-1S20-1PF50



Order number: 10167199

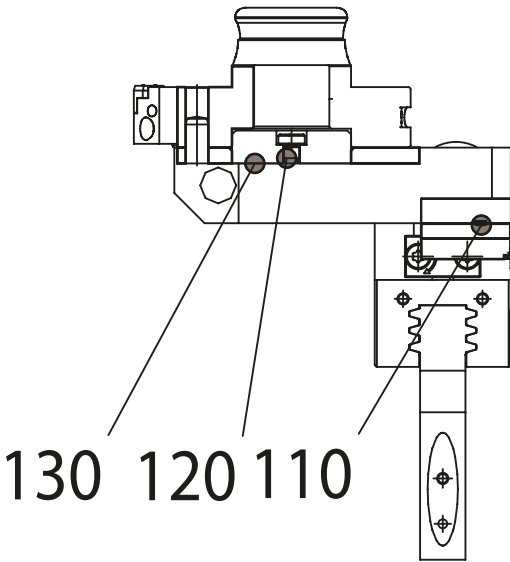
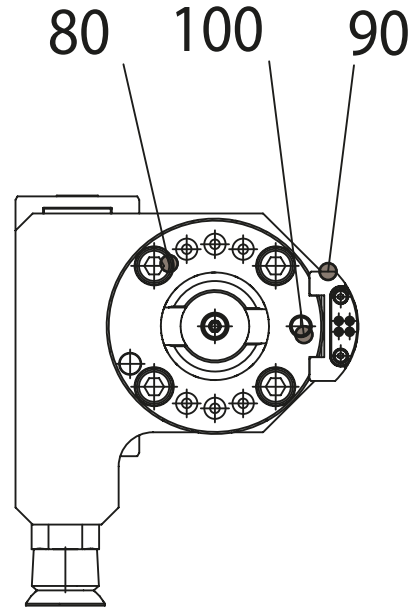
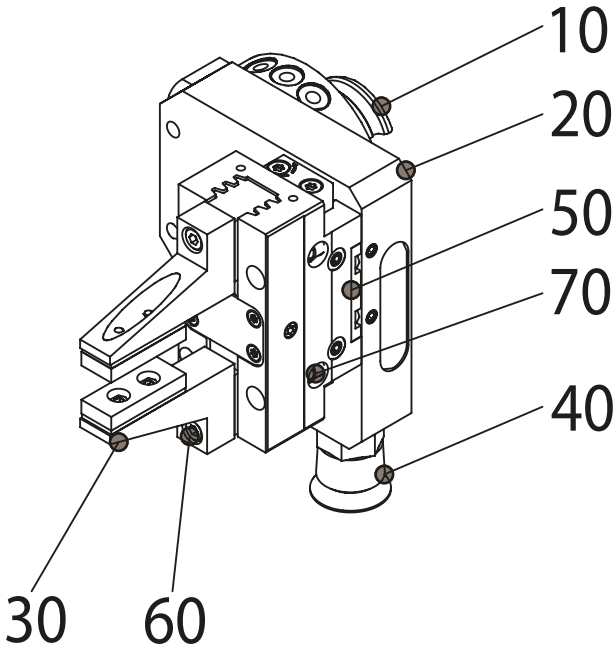
Technical specifications



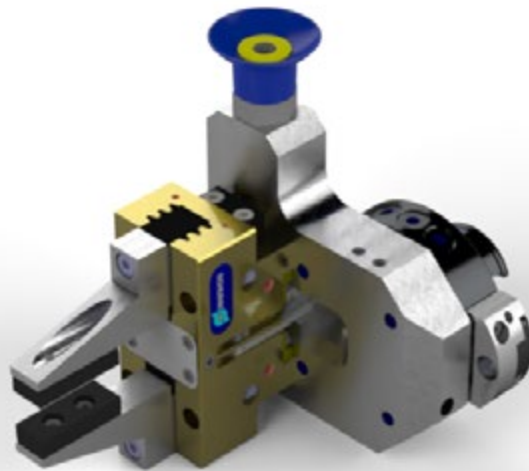
Stroke of vacuum cup = 3,0 mm

	24 h
	20 N
	15 N
	26,0 mm
	350 N
	max. 12,0 mm between fingers
	2,16 kg

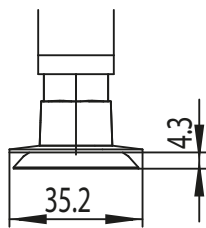
Partlist and order numbers





Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0018	Gripper (gerade)L=50mm
40	10085866	Vacuum cup Ø20 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

Hybrid - Gripper M03**M03-1S30-1PF50**

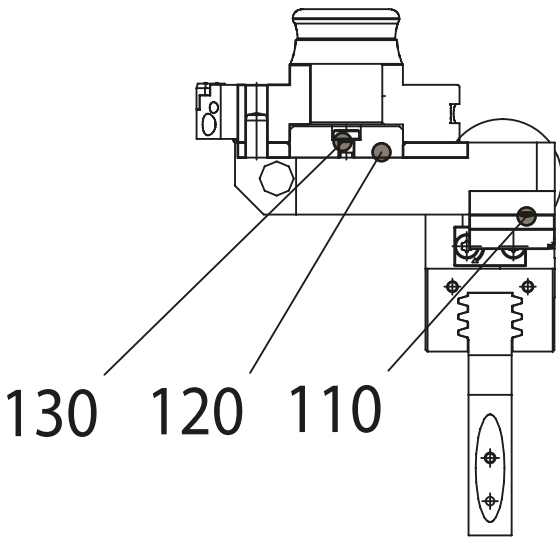
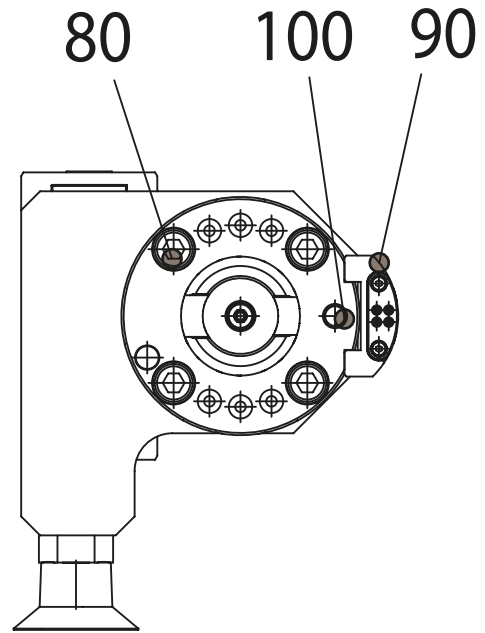
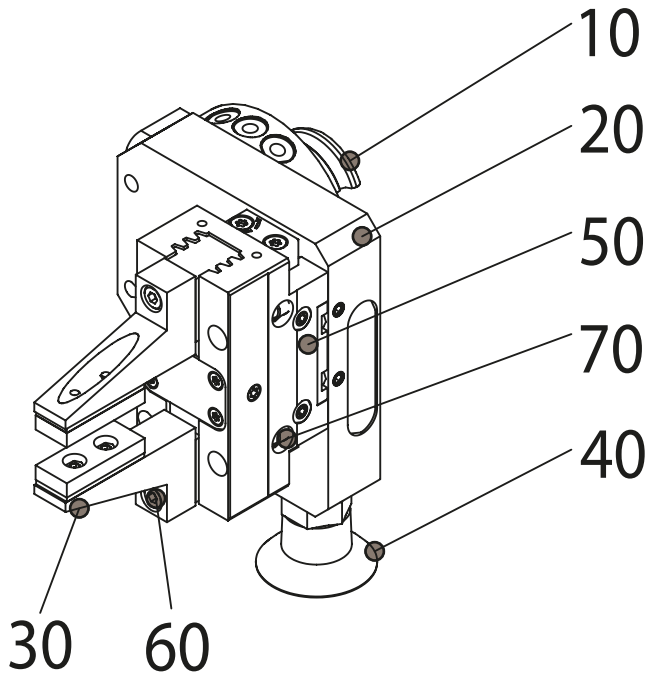
Order number: 10167197

Technical specifications

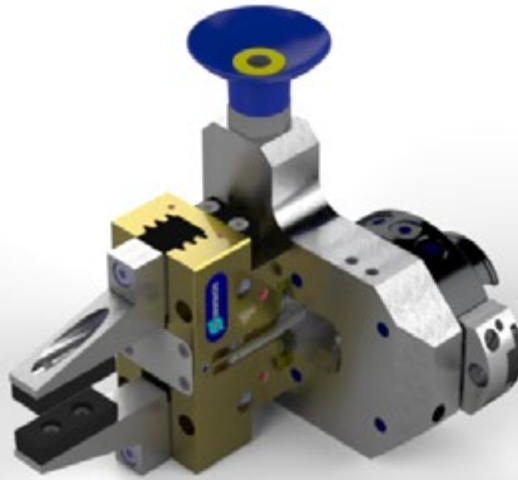
Stroke of vacuum cup = 4,3 mm

	24 h
	39 N
	32 N
	35,2 mm
	350 N
	max. 12,0 mm between fingers
	2,16 kg

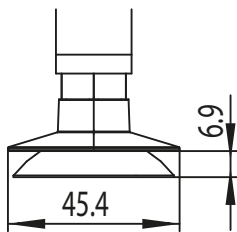
Partlist and order numbers







Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0018	Gripper (gerade)L=50mm
40	10085865	Vacuum cup Ø30 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

Hybrid - Gripper M03**M03-1S40-1PF50**

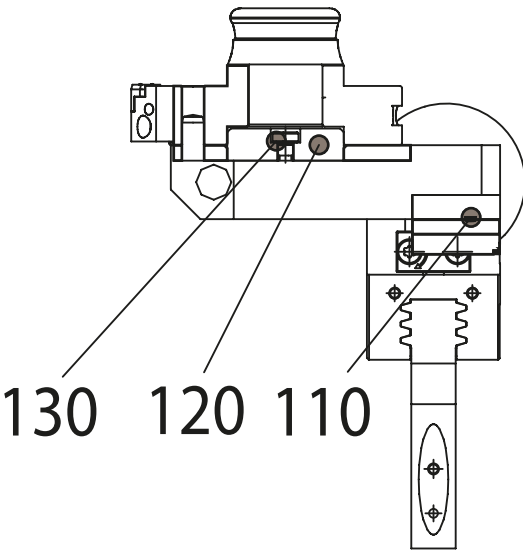
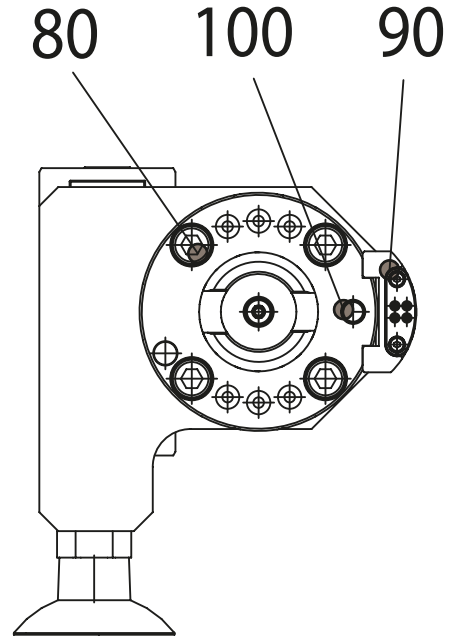
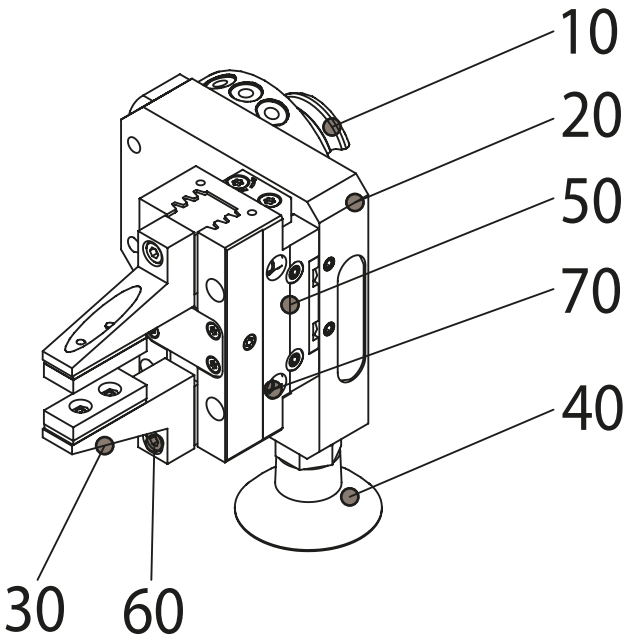
Order number: 10167195

Technical specifications

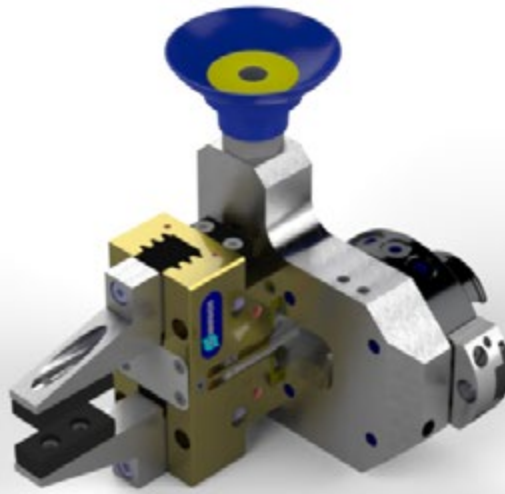
Stroke of vacuum cup = 6,9 mm

	24 h
	69 N
	38 N
	45,4 mm
	350 N
	max. 12,0 mm between fingers
	2,16 kg

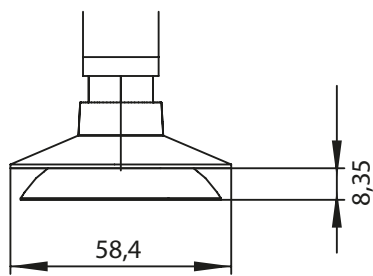
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0018	Gripper (gerade)L=50mm
40	10085864	Vacuum cup Ø40 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

Hybrid - Gripper M03**M03-1S50-1PF50**

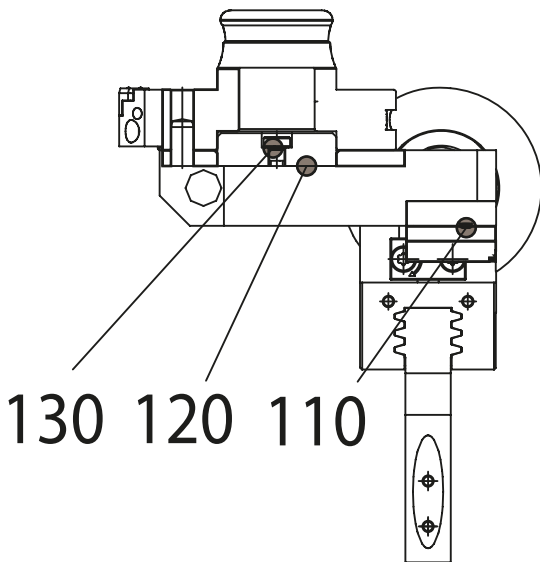
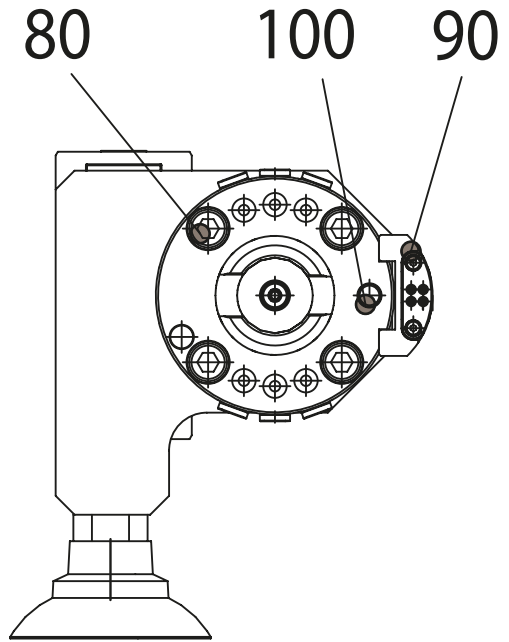
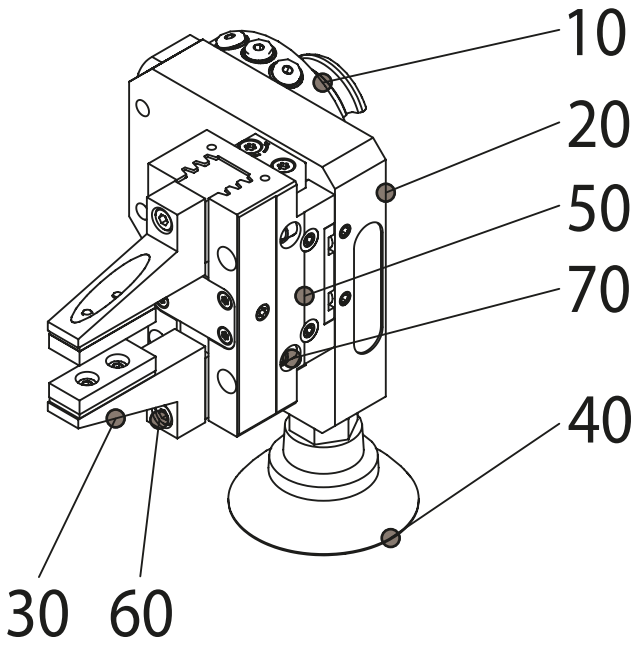
Order number: 10167194

Technical specifications

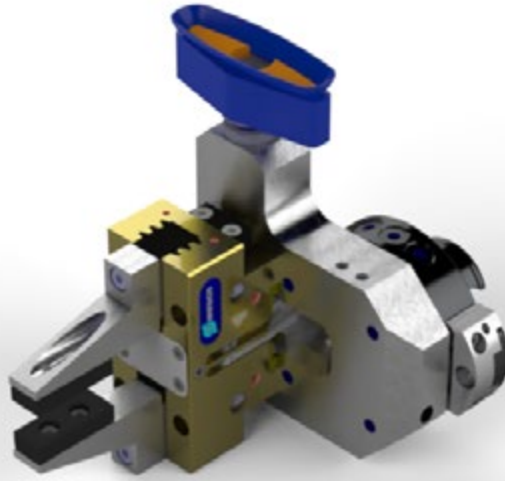
Stroke of vacuum cup = 8,35 mm

	24 h
	109 N
	58 N
	58,4 mm
	350 N
	max. 12,0 mm between fingers
	2,16 kg

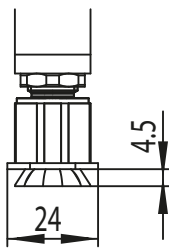
Partlist and order numbers






Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0018	Gripper (gerade)L=50mm
40	10085858	Vacuum cup Ø50 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

Hybrid - Gripper M03**M03-1S60x20-1PF50**

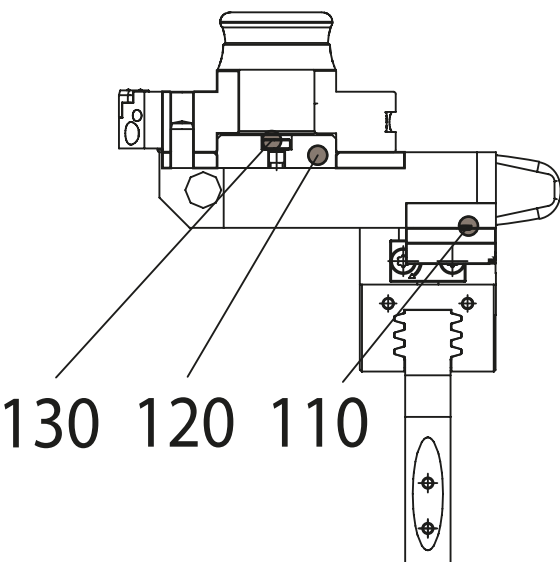
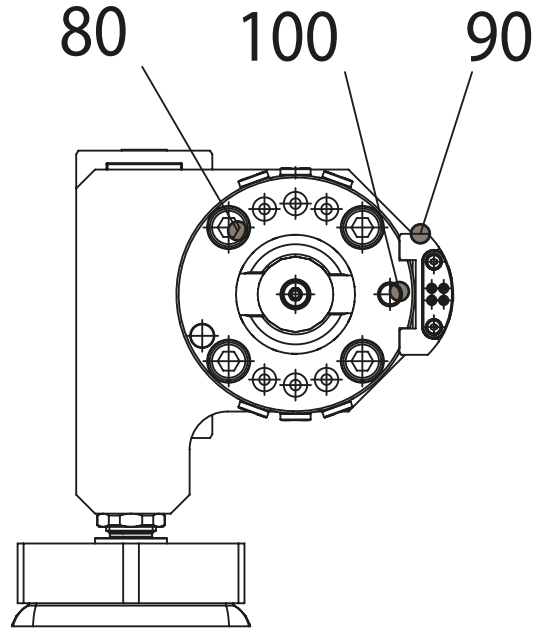
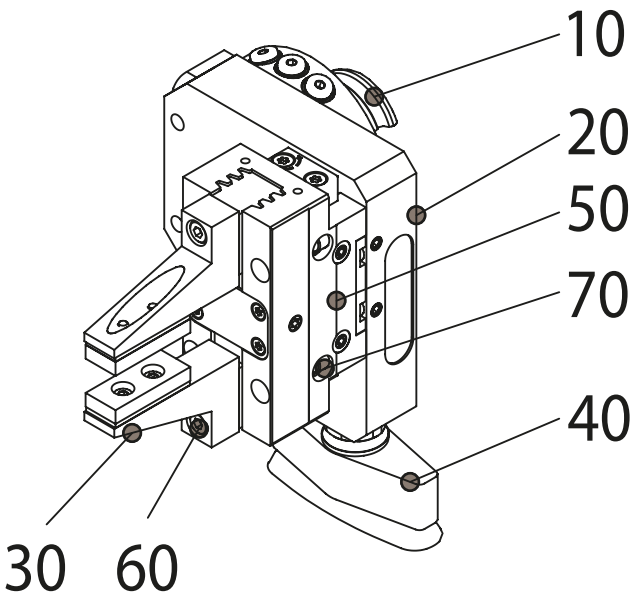
Order number: 10167192

Technical specifications

Stroke of vacuum cup = 4,5 mm

	24 h
	56 N
	44 N
	67,0 x 24,0 mm
	350 N
	max. 12,0 mm between fingers
	2,16 kg

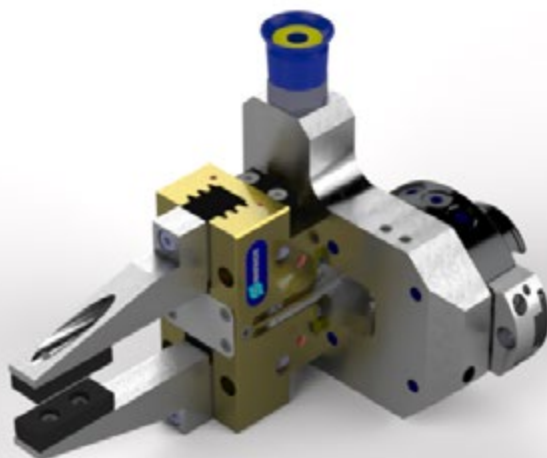
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0018	Gripper (gerade)L=50mm
40	10085858	Vacuum cup 60x20 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

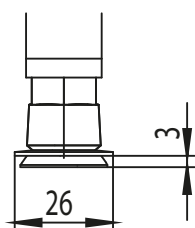
Hybrid - Gripper M03

M03-1S20-1PF70



Order number: 10167198

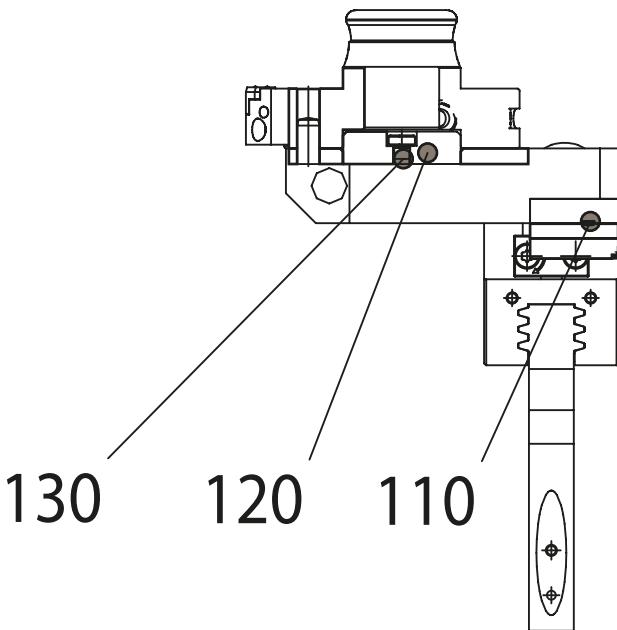
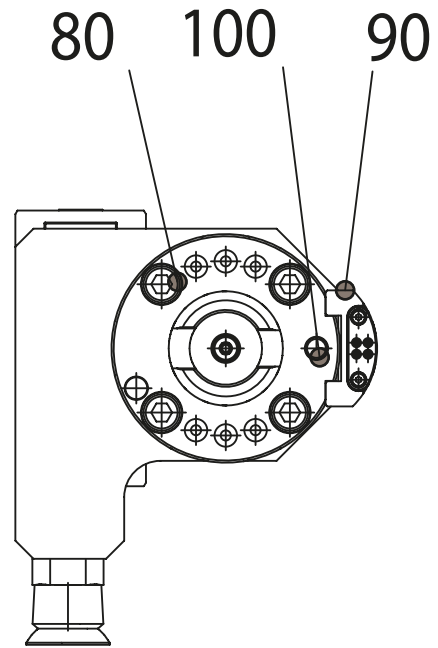
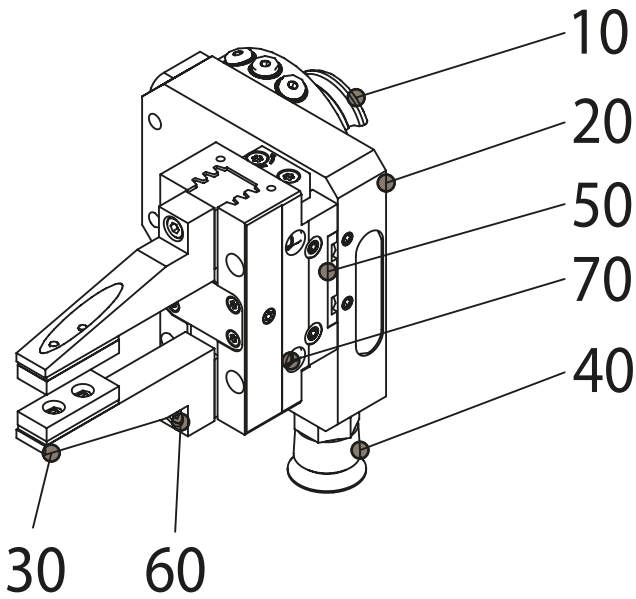
Technical specifications



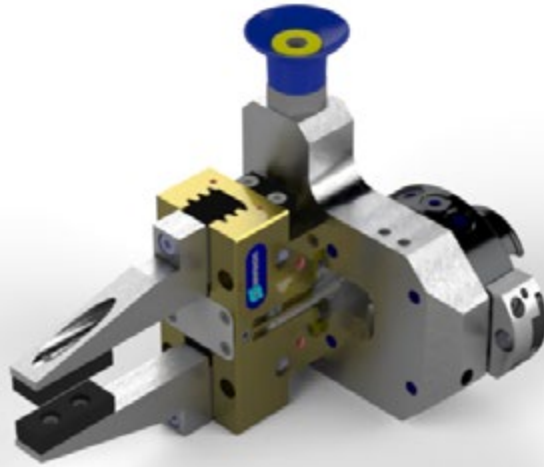
Stroke of vacuum cup = 3,0 mm

	24 h
	20 N
	15 N
	26,0 mm
	350 N
	max. 12,0 mm between fingers
	2,3 kg

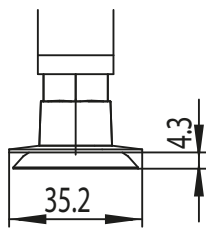
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0019	Gripper (gerade)L=70mm
40	10085866	Vacuum cup Ø20 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

Hybrid - Gripper M03**M03-1S30-1PF70**

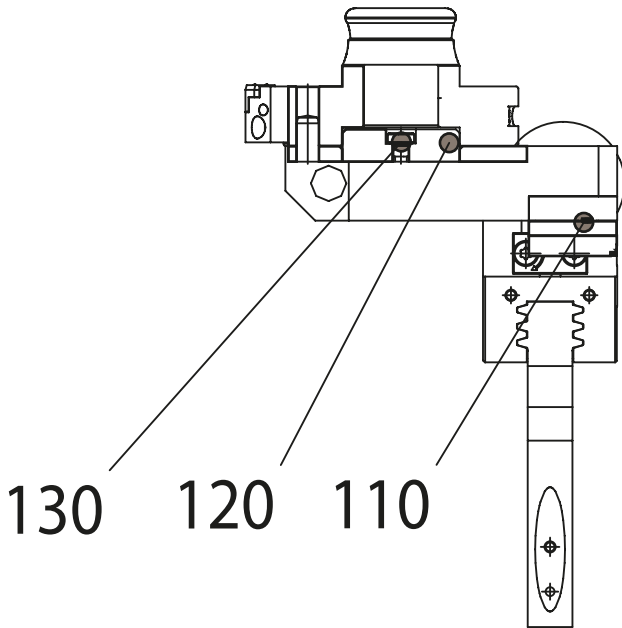
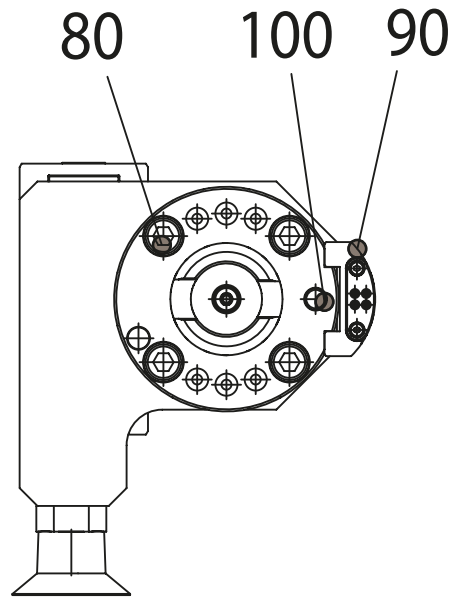
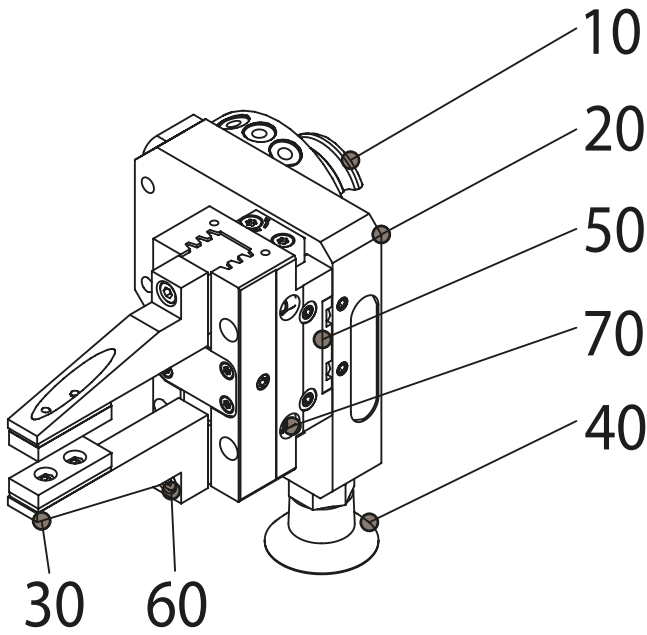
Order number: 10167193

Technical specifications

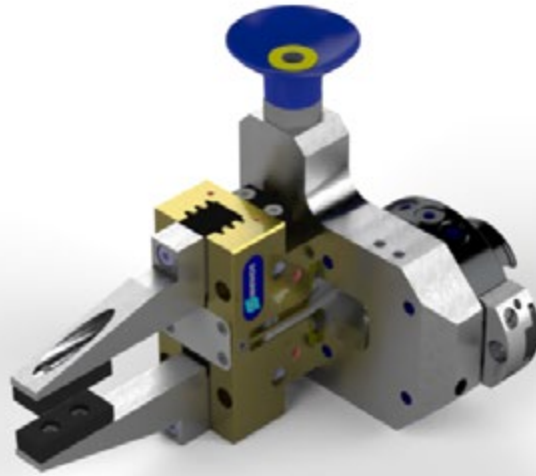
Stroke of vacuum cup = 4,3 mm

	24 h
	39 N
	32 N
	35,2 mm
	350 N
	max. 12,0 mm between fingers
	2,3 kg

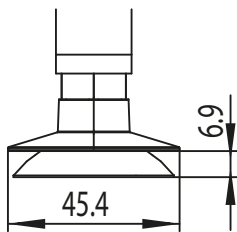
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0019	Gripper (gerade)L=70mm
40	10085865	Vacuum cup Ø30 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

Hybrid - Gripper M03**M03-1S40-1PF70**

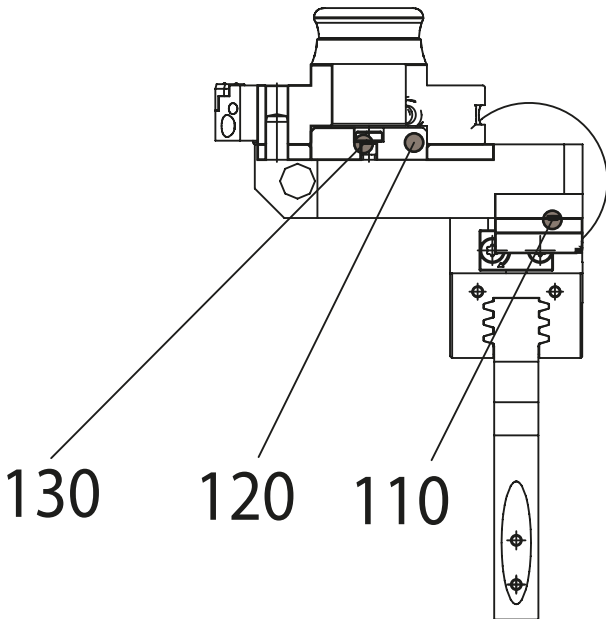
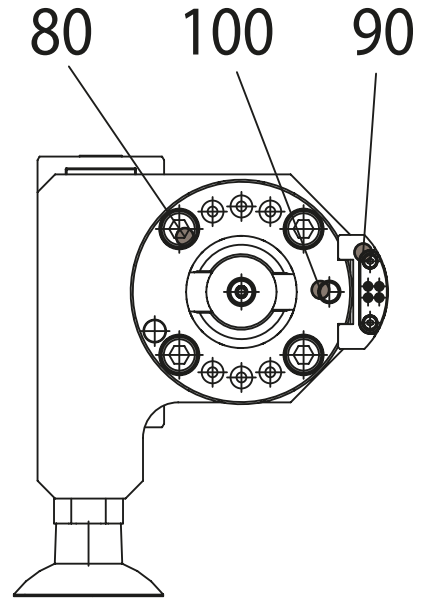
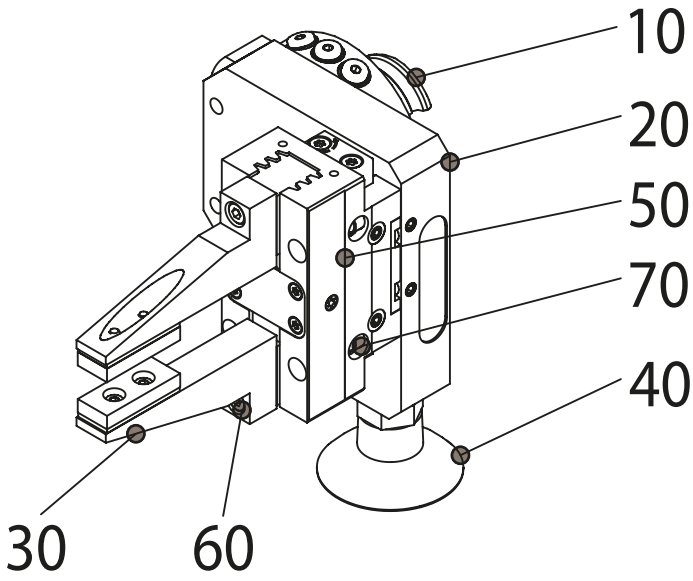
Order number: 10167196

Technical specifications

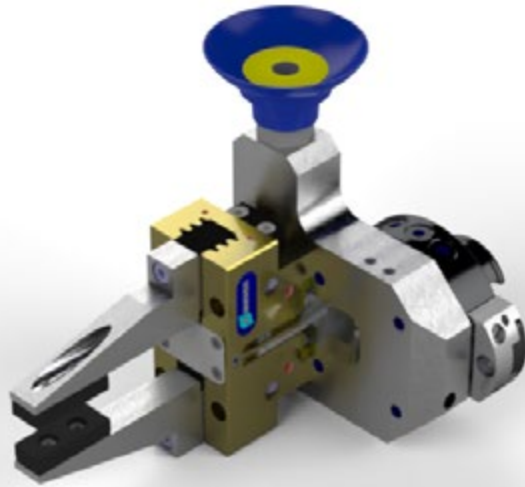
Stroke of vacuum cup = 6,9 mm

	24 h
	69 N
	38 N
	45,4 mm
	350 N
	max. 12,0 mm between fingers
	2,3 kg

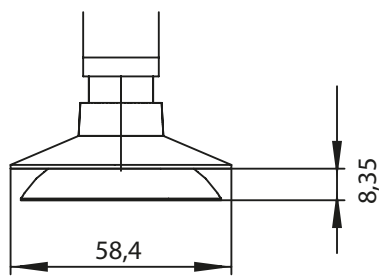
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0019	Gripper (gerade)L=70mm
40	10085864	Vacuum cup Ø40 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

Hybrid - Gripper M03**M03-1S50-1PF70**

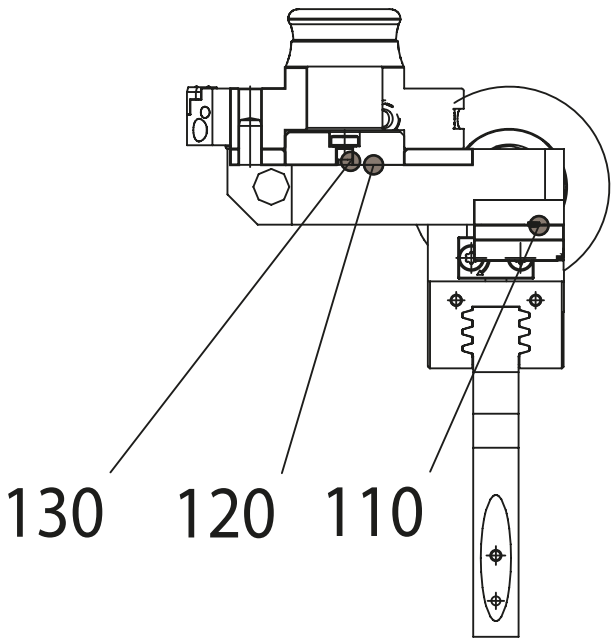
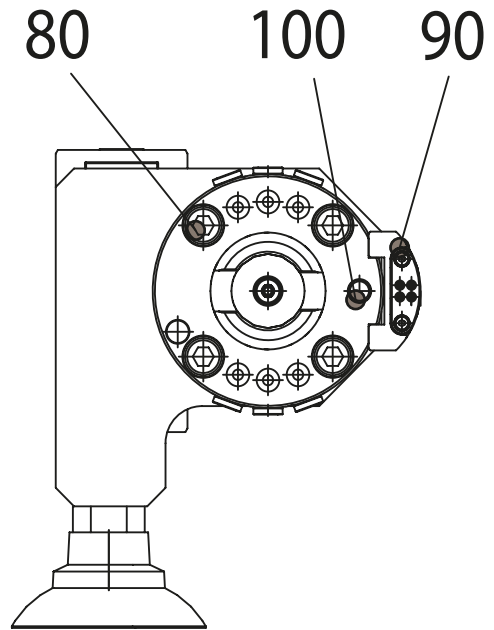
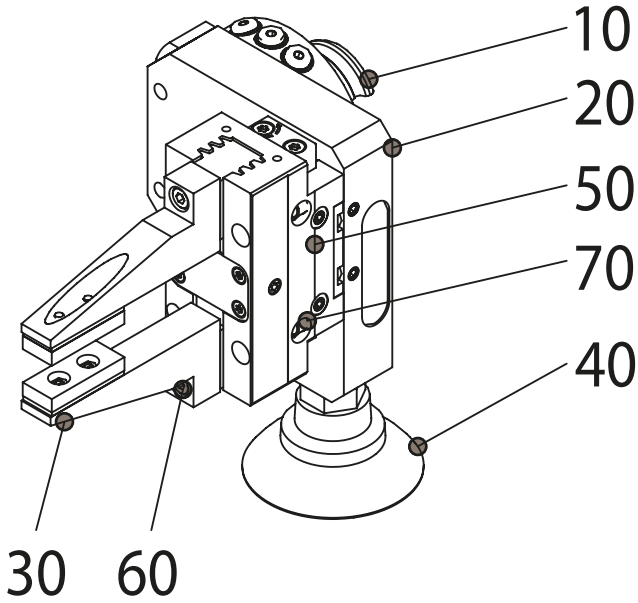
Order number: 10167208

Technical specifications

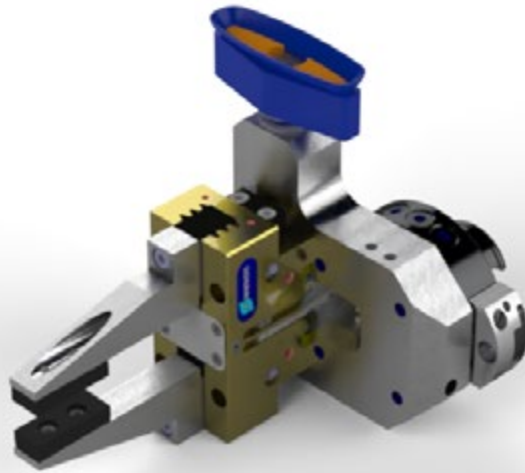
Stroke of vacuum cup = 8,35 mm

	24 h
	109 N
	58 N
	58,4 mm
	350 N
	max. 12,0 mm between fingers
	2,3 kg

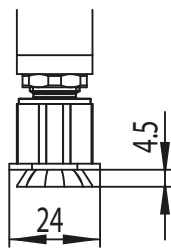
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0019	Gripper (gerade)L=70mm
40	10085858	Vacuum cup Ø50 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

Hybrid - Gripper M03**M03-1S60x20-1PF70**

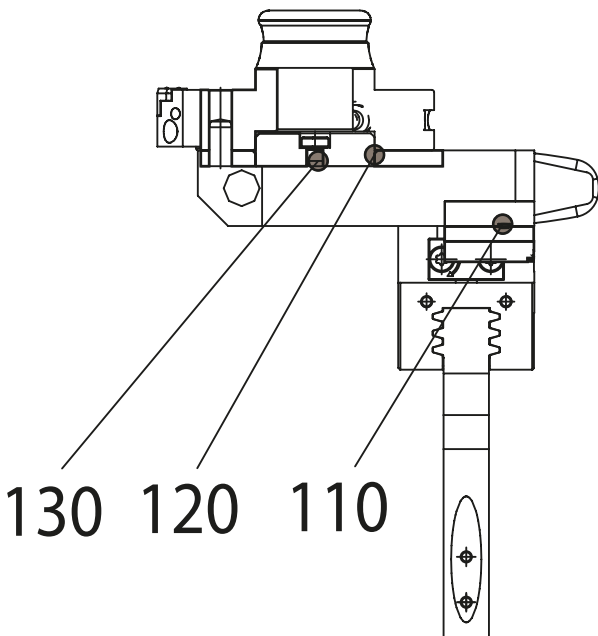
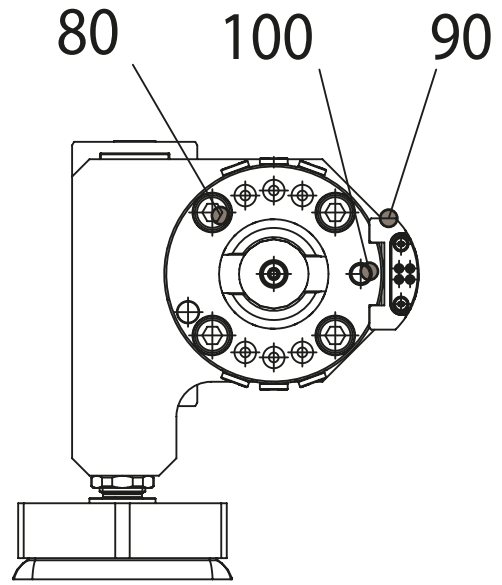
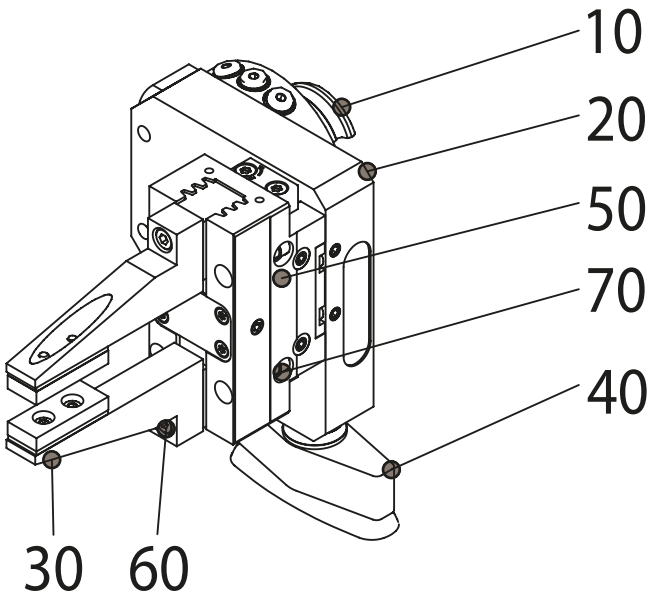
Order number: 10167210

Technical specifications

Stroke of vacuum cup = 4,5 mm

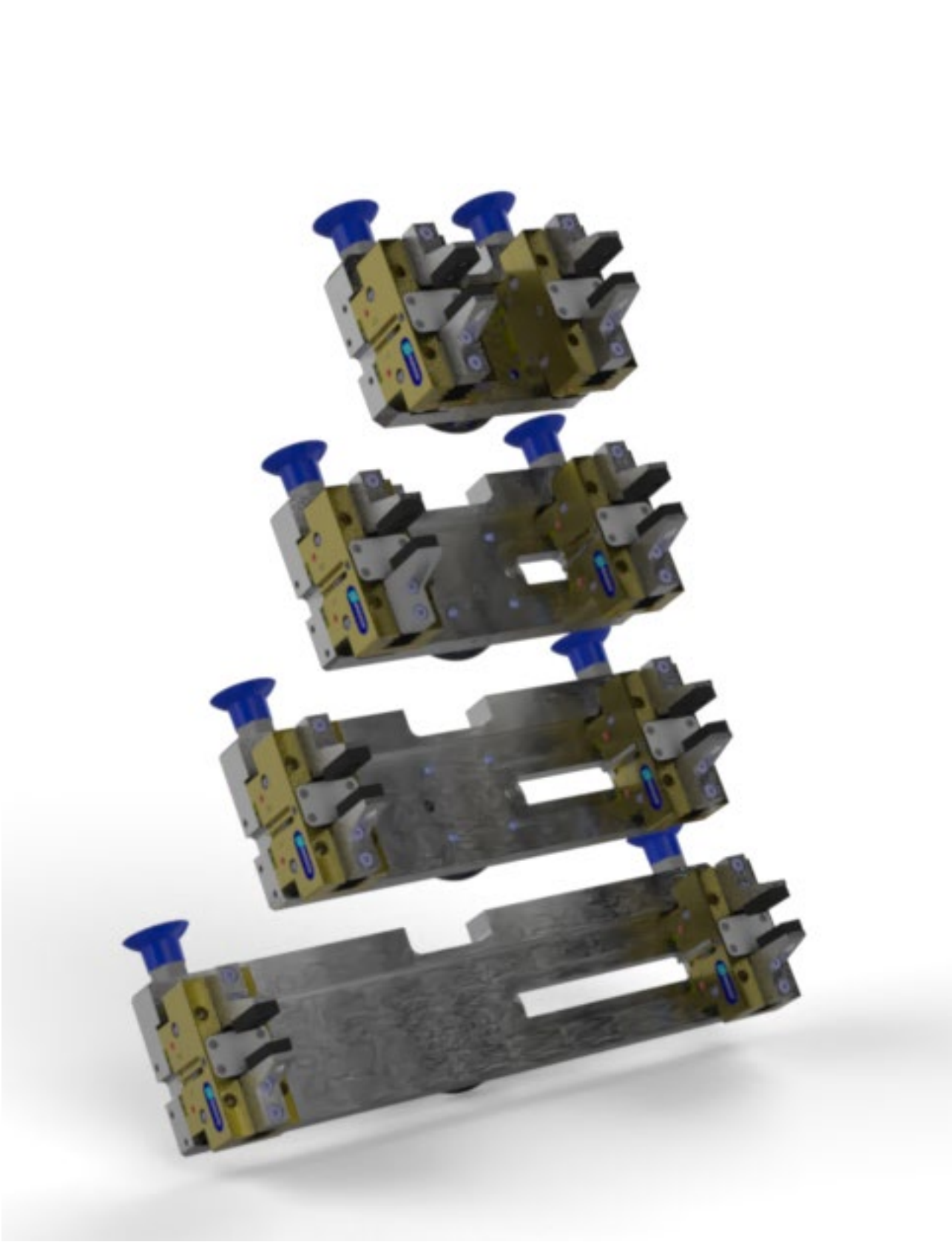
	24 h
	56 N
	44 N
	67,0 x 24,0 mm
	350 N
	max. 12,0 mm between fingers
	2,3 kg

Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	62612.5000.0023	Adapter plate G02-multi gripper
30	62612.5000.0019	Gripper (gerade)L=70mm
40	10085858	Vacuum cup 60x20 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	2200046	Cap screw ISO4762 M4x16 8.8 A2K
70	2200054	Cap screw ISO4762 M4x25 8.8 A2K
80	2200154	Cap screw ISO4762 M6x20 8.8 A2K
90	10113063	Switch MMSK 22-S-PNP E04 SHA-050
100	2500281	Straight pin ISO8734 6m6x16
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
120	10167039	Centering flange
130	71011.0040.0028	Cap screw M4x10 DIN 6912-8.8

Double -Gripper M03



Double - Gripper M03

What are double grippers good for?

Each application is not always feasible using for our multi grippers which are shown on the previous pages. The maximum dimension we recommend to bend in our Mobile Bending Robot is **300x600mm**.

For parts which are not possible to handle, we created our double grippers. With these grippers it makes it much easier to be able to handle bigger parts where our standard grippers wouldn't work.

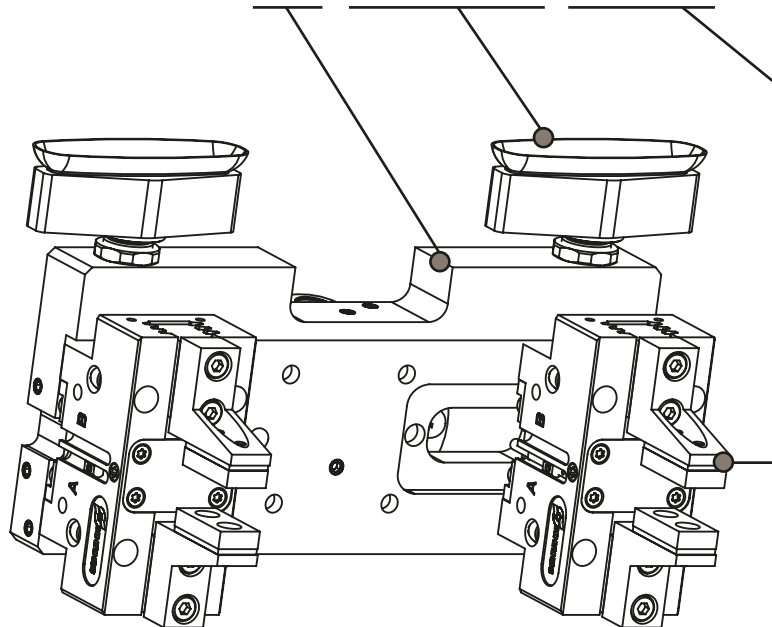
The difference between our standard grippers and dual grippers is a bigger plate with more channels to support more than one suction cup or pair of fingers. On the following pages you can find an overview with all possible combinations of all single parts in that catalogue and double gripper plates.

Below you can see an explanation to use the following tables.

- > We defined four different plate sizes:
 - 80 mm
 - 140 mm
 - 200 mm
 - 300 mm
- > If the serial number of your Mobile Bending Robot goes up to **20501020** your gripper description starts with: **M03**
- > After the first part of the description (M03) we added the distance between the fingers and suction cups: (for example 140mm: **140**)
- > Additionally we add the amount and the diameter of suction cups behind the size of the plate: (for example we add two suction cups with a diameter of 30mm: **2S60x20**)
- > Last but not least we add the amount of finger pairs with length at the end: (for example we put two pairs of fingers with a length of 34mm on our gripper: **2PF34**)

In total we will get the following short description:

M03-140-2S60x20-2PF34



Double -Gripper M03**Adapter plate 80mm**

Gripper description	Order number
M03-80-2S20-PF34	10160517
M03-80-2S30-PF34	10164771
M03-80-2S40-PF34	10164746
M03-80-2S50-PF34	10164760
M03-80-2S60x20-PF34	10164850
M03-80-2S20-PF50	10164736
M03-80-2S30-PF50	10164758
M03-80-2S40-PF50	10164844
M03-80-2S50-PF50	10164761
M03-80-2S60x20-PF50	10164848
M03-80-2S20-PF70	10164743
M03-80-2S30-PF70	10164759
M03-80-2S40-PF70	10164851
M03-80-2S50-PF70	10164762
M03-80-2S60x20-PF70	10164849

Adapter plate 140mm

Gripper description	Order number
M03-140-2S20-PF34	10164774
M03-140-2S30-PF34	10164767
M03-140-2S40-PF34	10164781
M03-140-2S50-PF34	10164784
M03-140-2S60x20-PF34	10164879
M03-140-2S20-PF50	10164780
M03-140-2S30-PF50	10164770
M03-140-2S40-PF50	10164869
M03-140-2S50-PF50	10164870
M03-140-2S60x20-PF50	10164858
M03-140-2S20-PF70	10164775
M03-140-2S30-PF70	10164769
M03-140-2S40-PF70	10164791
M03-140-2S50-PF70	10164872
M03-140-2S60x20-PF70	10164856

Double -Gripper M03**Adapter plate 200mm**

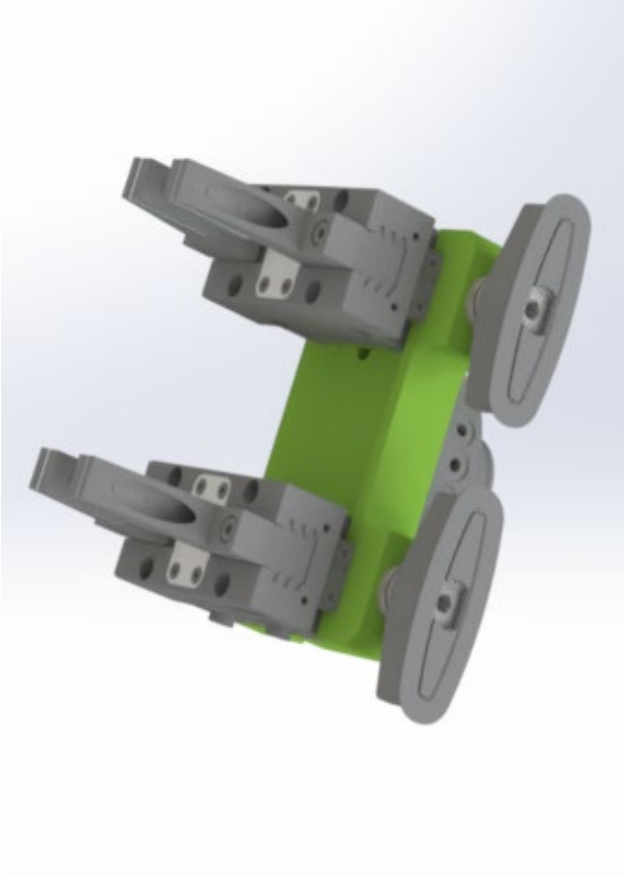
Gripper description	Order number
M03-200-2S20-PF34	10164802
M03-200-2S30-PF34	10164818
M03-200-2S40-PF34	10164821
M03-200-2S50-PF34	10164873
M03-200-2S60x20-PF34	10164876
M03-200-2S20-PF50	10164812
M03-200-2S30-PF50	10164772
M03-200-2S40-PF50	10164820
M03-200-2S50-PF50	10164875
M03-200-2S60x20-PF50	10164878
M03-200-2S20-PF70	10164810
M03-200-2S30-PF70	10164773
M03-200-2S40-PF70	10164819
M03-200-2S50-PF70	10164874
M03-200-2S60x20-PF70	10164877

Adapter plate 300mm

Gripper description	Order number
M03-300-2S20-PF34	10164882
M03-300-2S30-PF34	10164880
M03-300-2S40-PF34	10164905
M03-300-2S50-PF34	10164904
M03-300-2S60x20-PF34	10164906
M03-300-2S20-PF50	10164949
M03-300-2S30-PF50	10164950
M03-300-2S40-PF50	10164951
M03-300-2S50-PF50	10164934
M03-300-2S60x20-PF50	10164944
M03-300-2S20-PF70	10164939
M03-300-2S30-PF70	10164938
M03-300-2S40-PF70	10164940
M03-300-2S50-PF70	10164945
M03-300-2S60x20-PF70	10164946

Double -Gripper M03

Adapter plate 80mm



24 h



62612.5000.0007

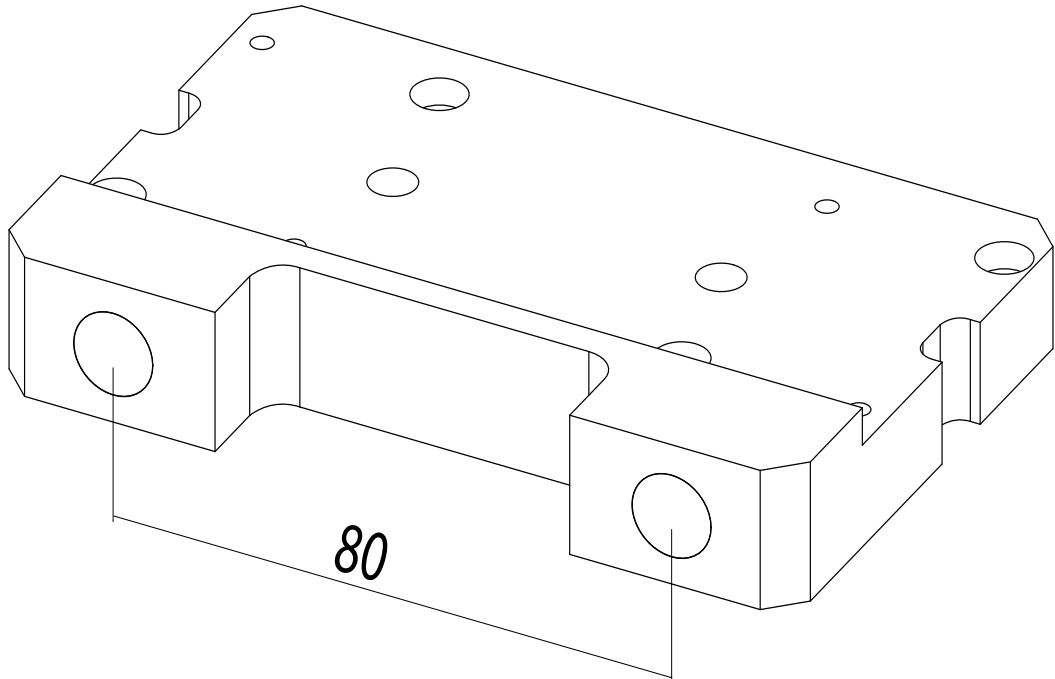


0,8 kg

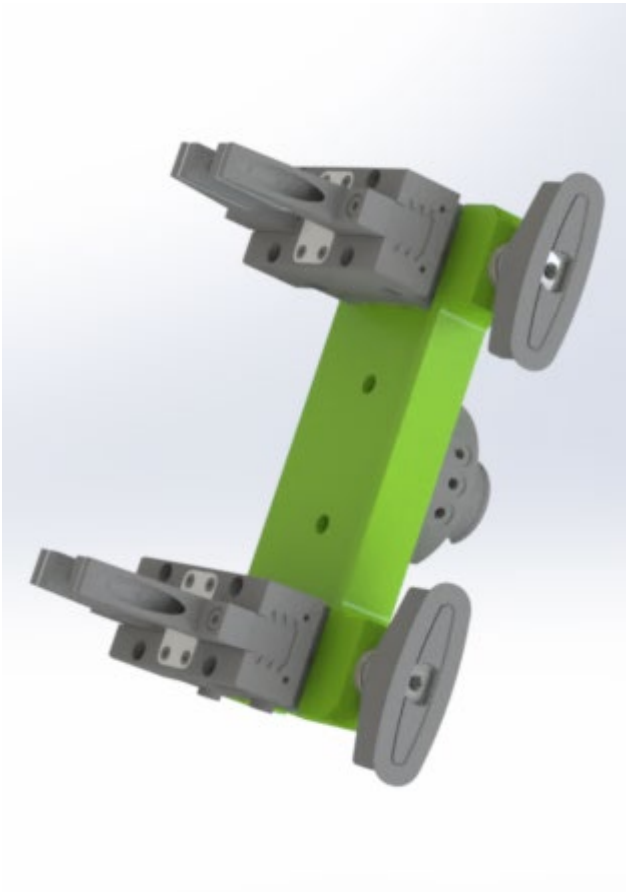






Aluminium (3.4365)

Application example

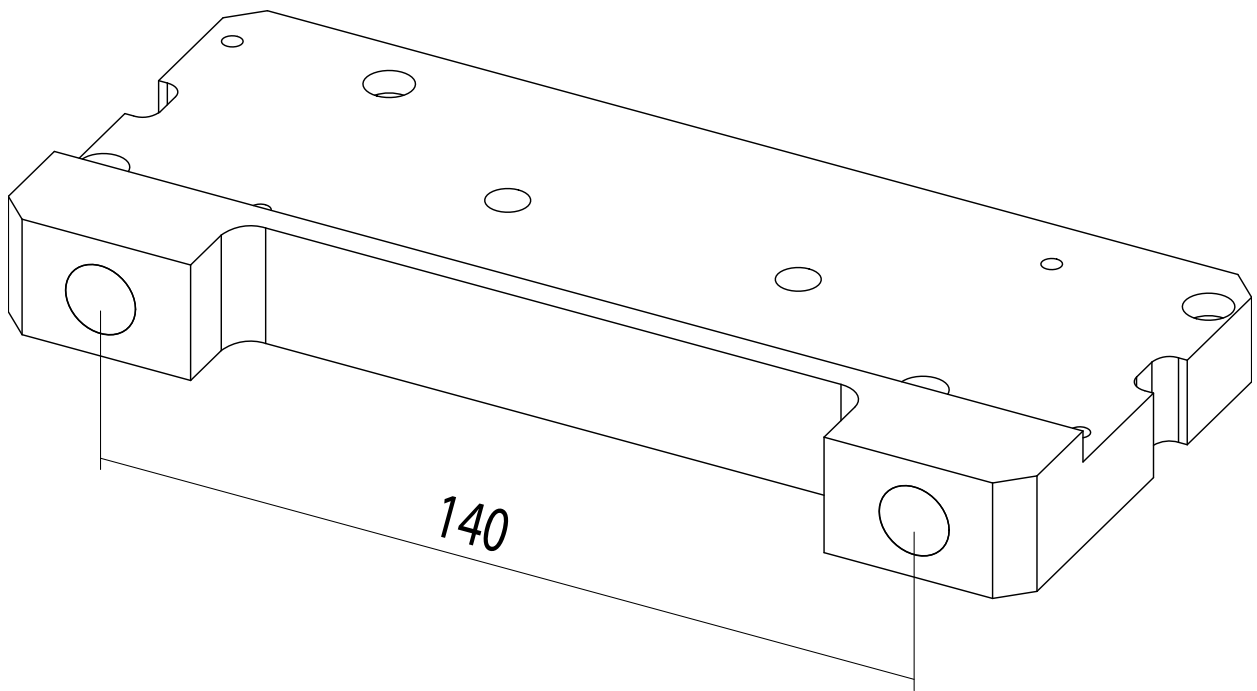


Adapter plate 140mm



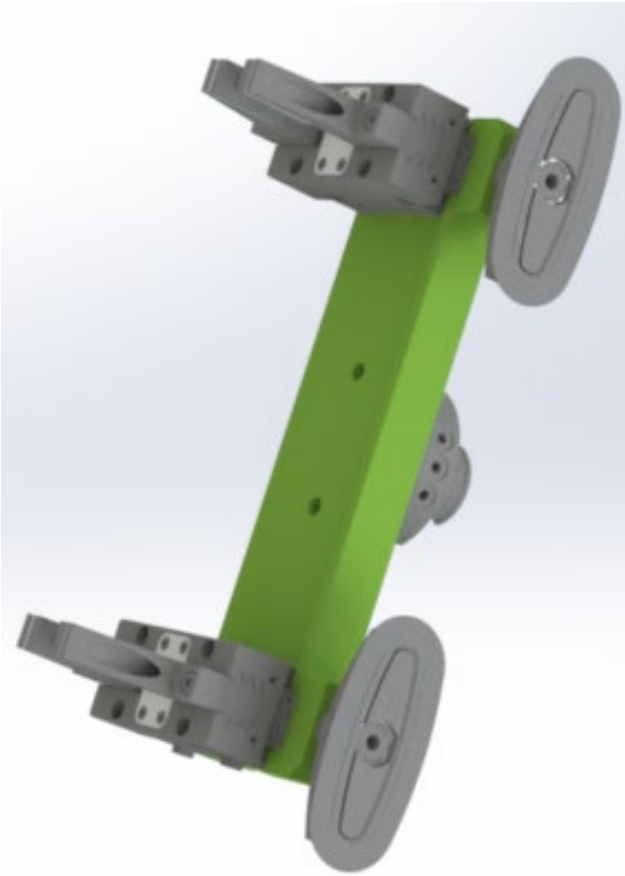
 24 h
 62612.5000.0008
 0,6 kg
 Aluminium (3.4365)

Application example



Double -Gripper M03

Adapter plate 200mm



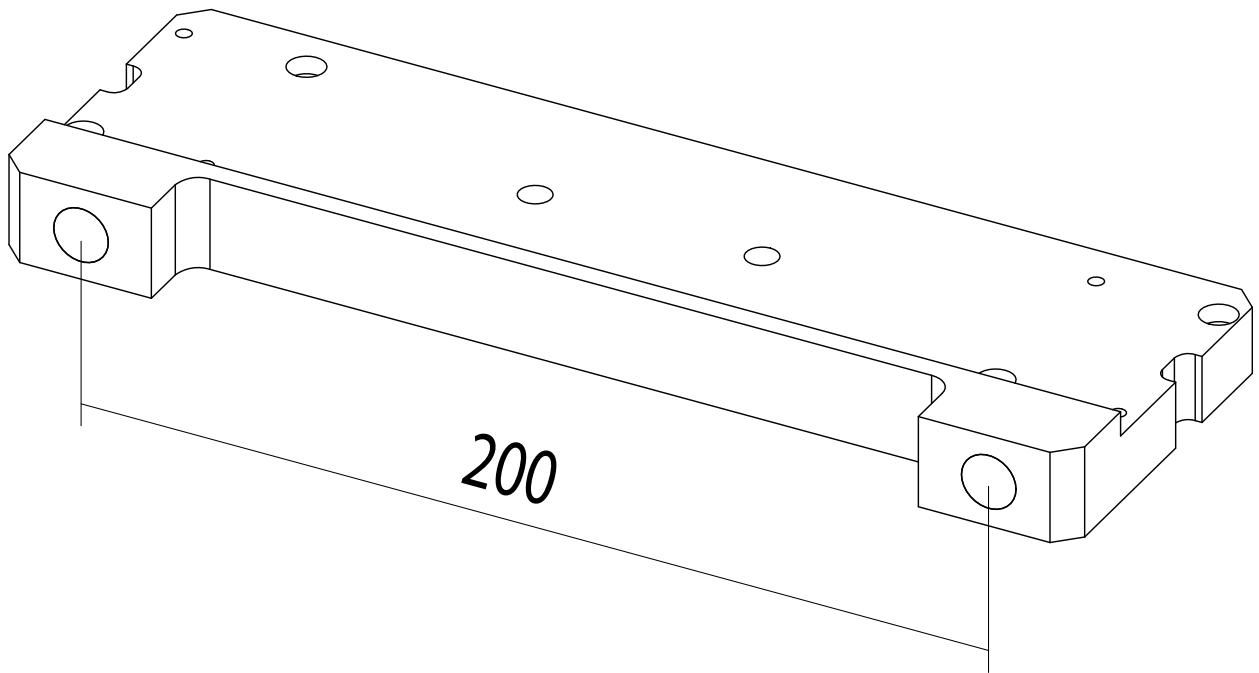
 24 h

 62612.5000.0020

 0,9 kg





 Aluminium (3.4365)

Application example

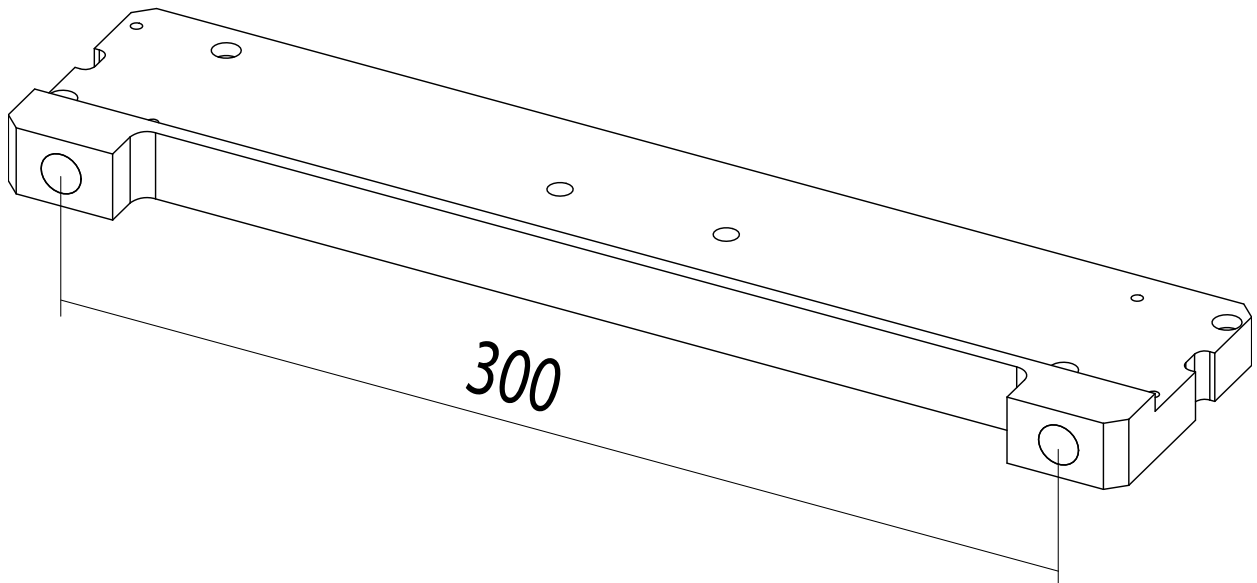


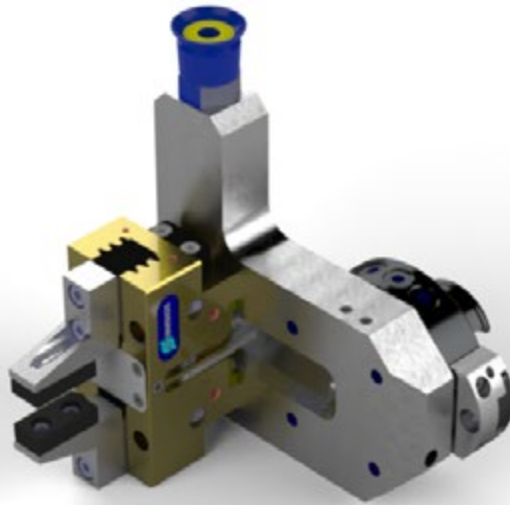
Adapter plate 300mm



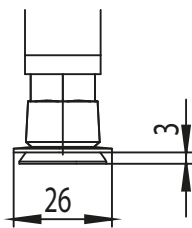
 24 h
 62612.5000.0021
 1,2 kg
 Aluminium (3.4365)

Application example



Hybrid - Gripper M03.1**M03.1-1S20-1PF34**

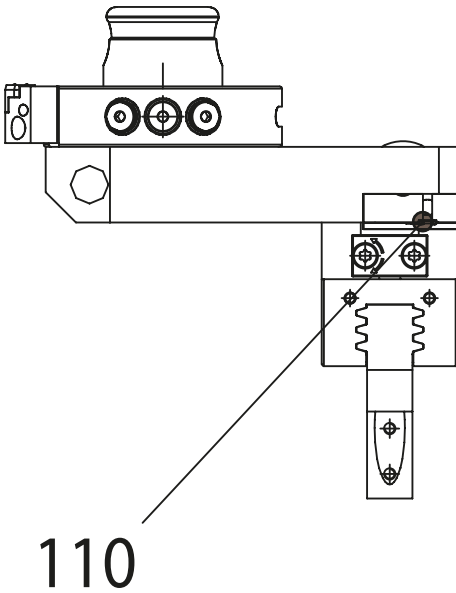
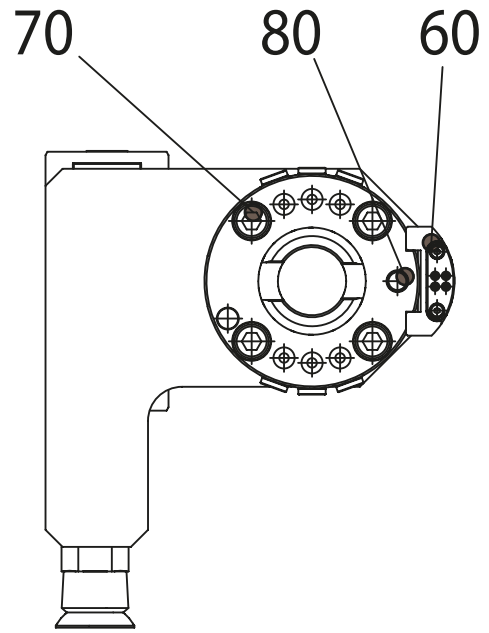
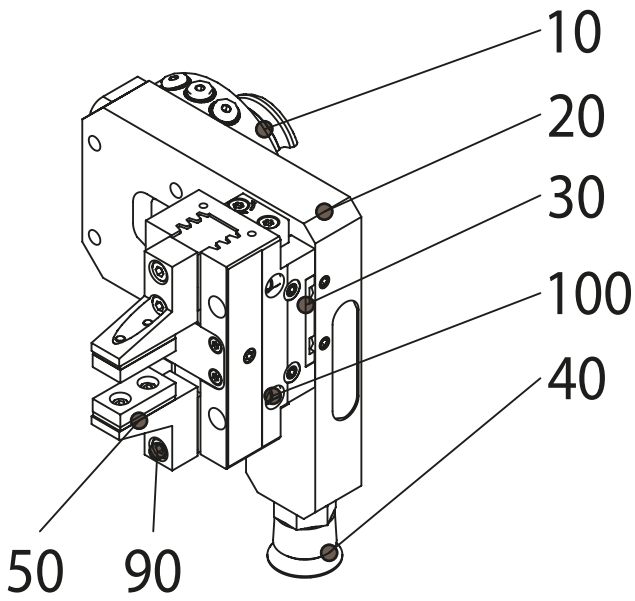
Order number: 10173365

Technical specifications

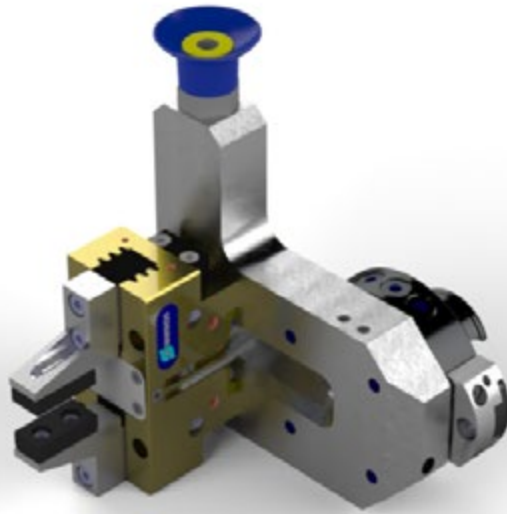
Stroke of vacuum cup = 3,0 mm

	24 h
	20 N
	15 N
	26,0 mm
	350 N
	max. 12,0 mm between fingers
	2,33 kg

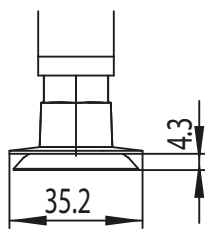
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	10167583	Adapter panel MBR 2.0 MGR
30	10102512	Gripper PGN-plus-P 64-1
40	10085866	Vacuum cup Ø20 1/4-AG
50	62612.5000.0017	Gripper (gerade) L=34mm
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	2200154	Cap screw ISO4762 M6x20 8.8
80	2500281	Straight pin ISO8734 6m6x16
90	2200046	Cap screw ISO4762 M4x16 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5

Hybrid - Gripper M03.1**M03.1-1S30-1PF34**

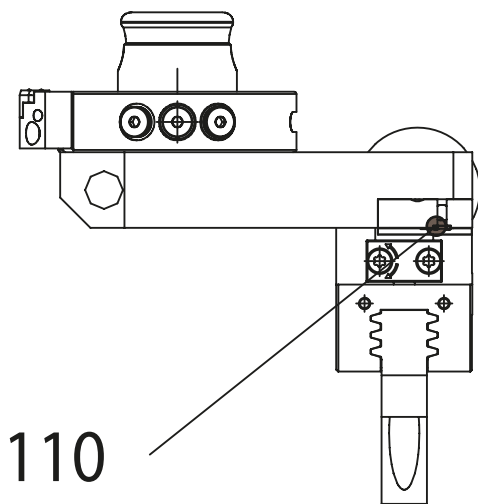
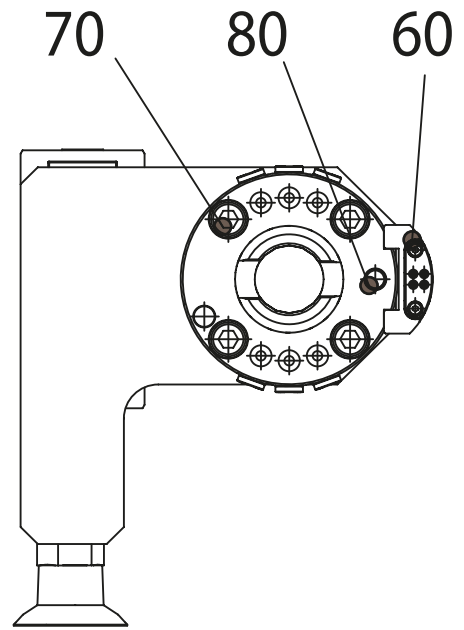
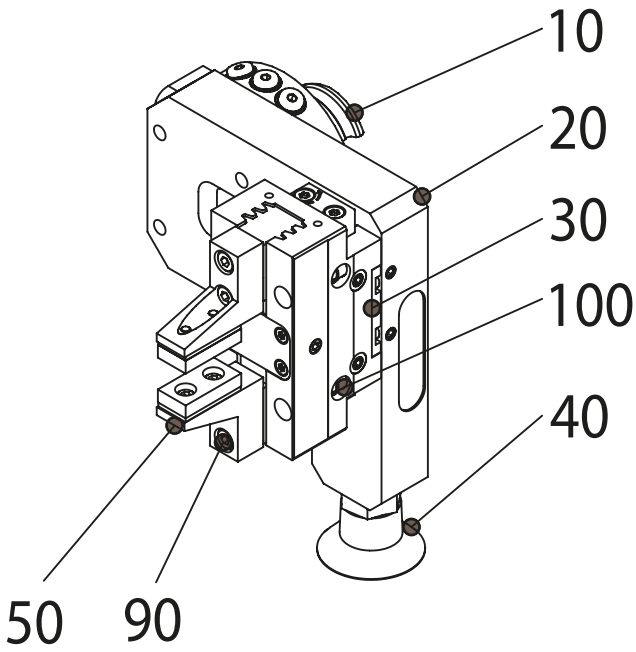
Order number: 10173980

Technical specifications

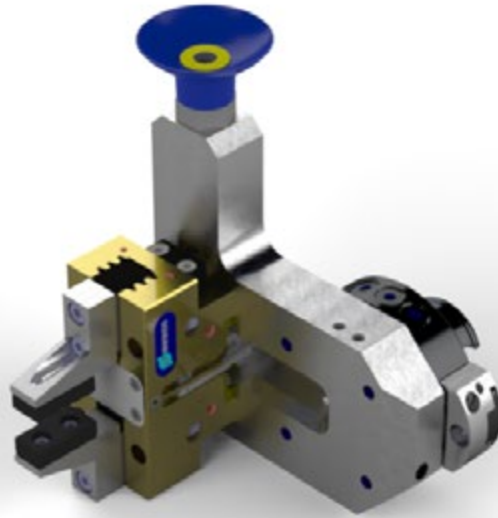
Stroke of vacuum cup = 4,3 mm

	24 h
	39 N
	32 N
	35,2 mm
	350 N
	max. 12,0 mm between fingers
	2,36 kg

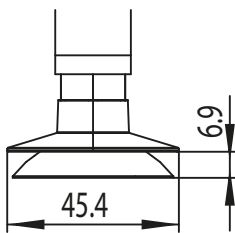
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	10167583	Adapter panel MBR 2.0 MGR
30	10102512	Gripper PGN-plus-P 64-1
40	10085865	Vacuum cup Ø30 1/4-AG
50	62612.5000.0017	Gripper (gerade) L=34mm
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	2200154	Cap screw ISO4762 M6x20 8.8
80	2500281	Straight pin ISO8734 6m6x16
90	2200046	Cap screw ISO4762 M4x16 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5

Hybrid - Gripper M03.1**M03.1-1S40-1PF34**

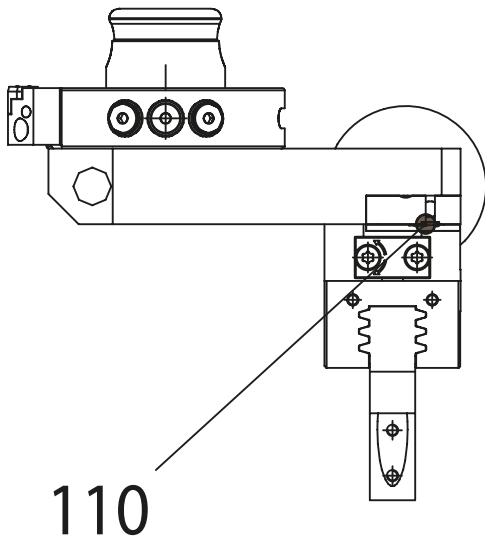
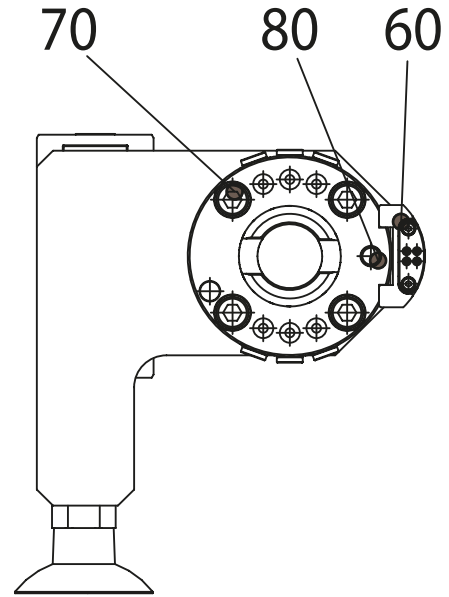
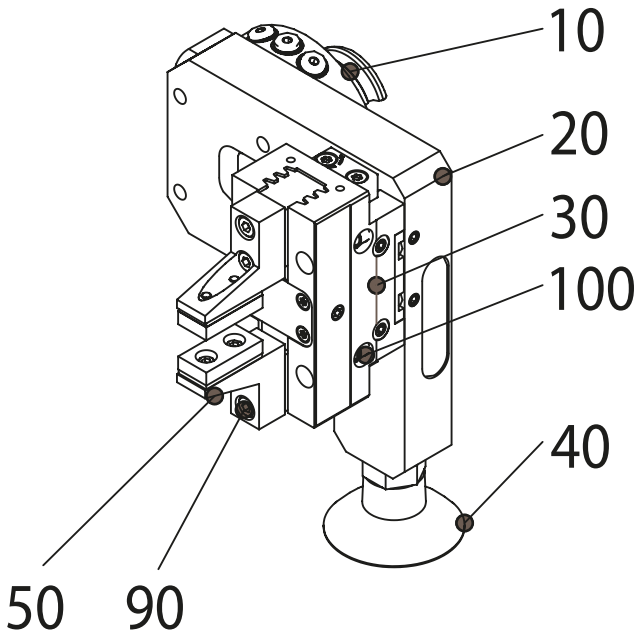
Order number: 10168444

Technical specifications

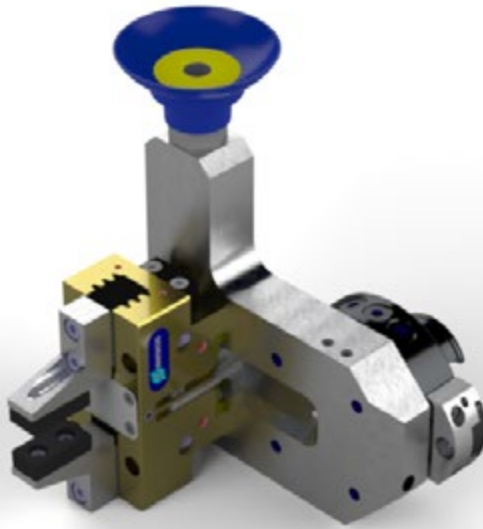
Stroke of vacuum cup = 6,9 mm

	24 h
	69 N
	38 N
	45,4 mm
	350 N
	max. 12,0 mm between fingers
	2,36 kg

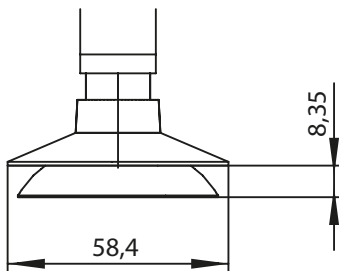
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	10167583	Adapter panel MBR 2.0 MGR
30	10102512	Gripper PGN-plus-P 64-1
40	10085864	Vacuum cup Ø40 1/4-AG
50	62612.5000.0017	Gripper (gerade) L=34mm
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	2200154	Cap screw ISO4762 M6x20 8.8
80	2500281	Straight pin ISO8734 6m6x16
90	2200046	Cap screw ISO4762 M4x16 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5

Hybrid - Gripper M03.1**M03.1-1S50-1PF34**

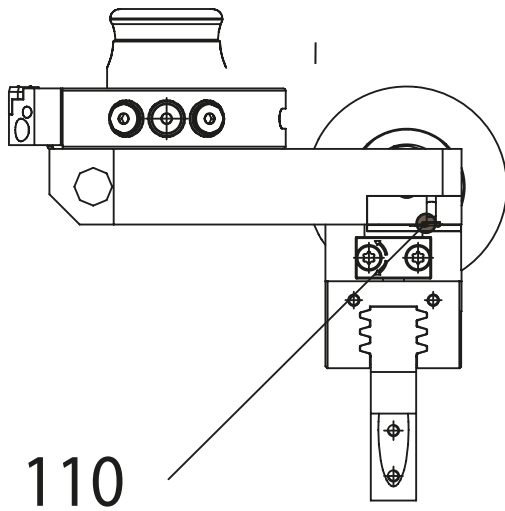
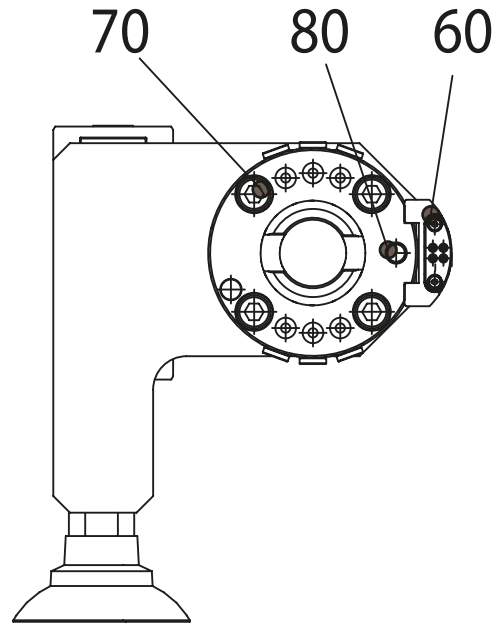
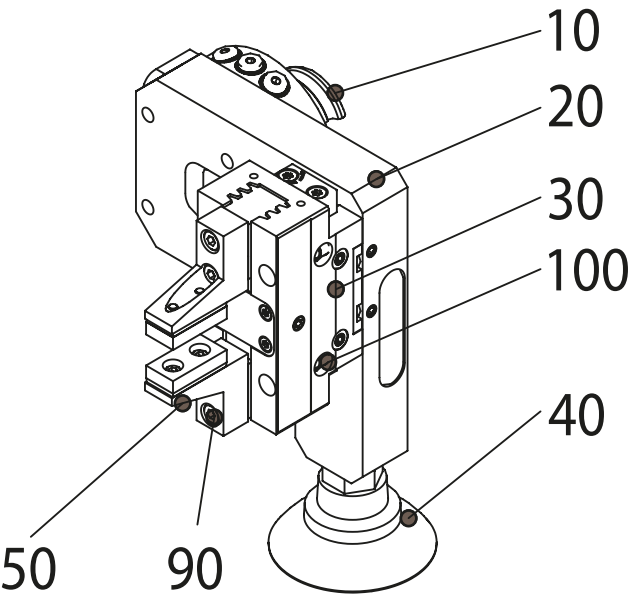
Order number: 10168372

Technical specifications

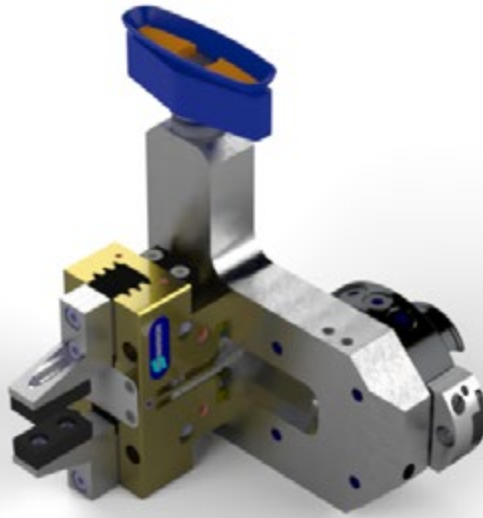
Stroke of vacuum cup = 8,35 mm

	24 h
	109 N
	58 N
	58,4 mm
	350 N
	max. 12,0 mm between fingers
	2,36 kg

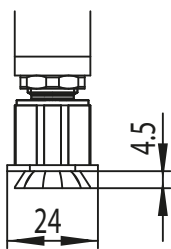
Partlist and order numbers




Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	10167583	Adapter panel MBR 2.0 MGR
30	10102512	Gripper PGN-plus-P 64-1
40	10085858	Vacuum cup Ø50 1/4-AG
50	62612.5000.0017	Gripper (gerade) L=34mm
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	2200154	Cap screw ISO4762 M6x20 8.8
80	2500281	Straight pin ISO8734 6m6x16
90	2200046	Cap screw ISO4762 M4x16 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5

Hybrid - Gripper M03.1**M03.1-1S60x20-1PF34**

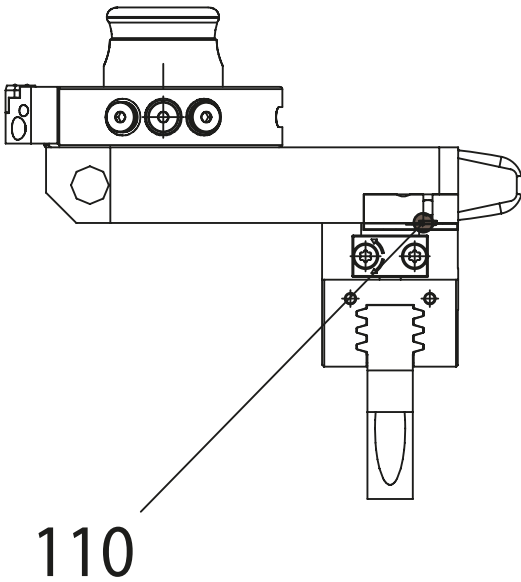
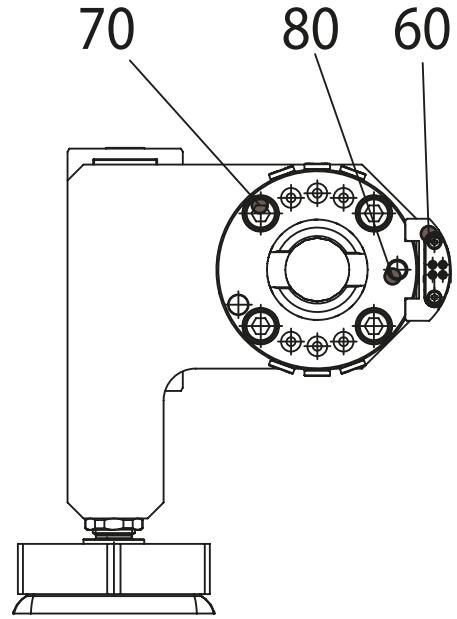
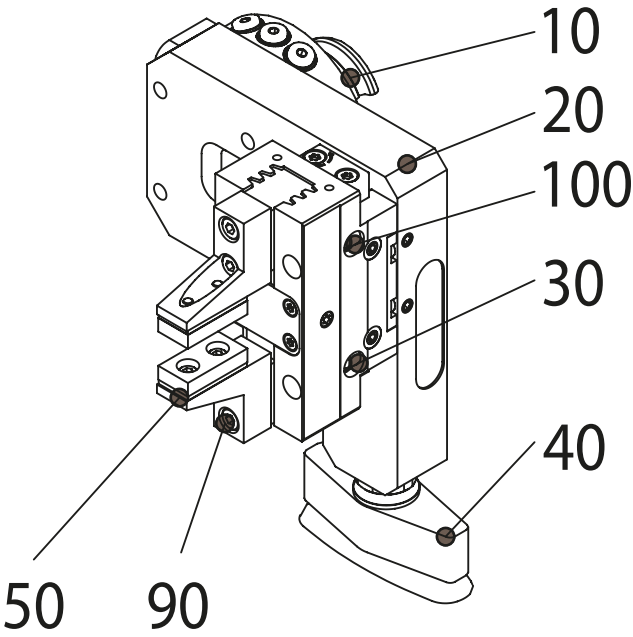
Order number: 10177419

Technical specifications

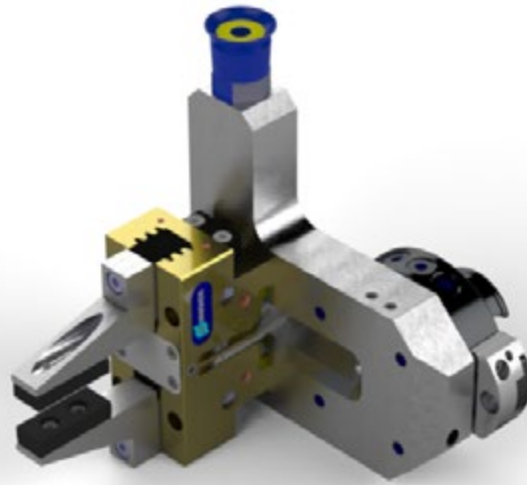
Stroke of vacuum cup = 4,5 mm

	24 h
	56 N
	44 N
	67,0 x 24,0 mm
	350 N
	max. 12,0 mm between fingers
	2,36 kg

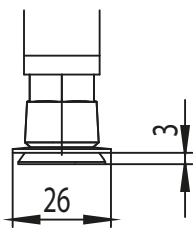
Partlist and order numbers



Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	10167583	Adapter panel MBR 2.0 MGR
30	10102512	Gripper PGN-plus-P 64-1
40	10102394	Vacuum cup 60x20 1/4-AG
50	62612.5000.0017	Gripper (gerade) L=34mm
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	2200154	Cap screw ISO4762 M6x20 8.8
80	2500281	Straight pin ISO8734 6m6x16
90	2200046	Cap screw ISO4762 M4x16 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5

Hybrid - Gripper M03.1**M03.1-1S20-1PF50**

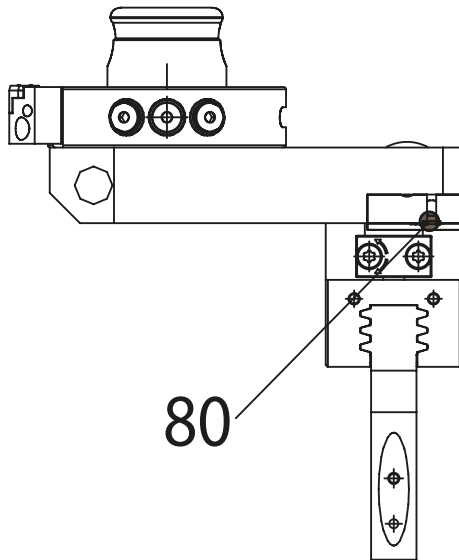
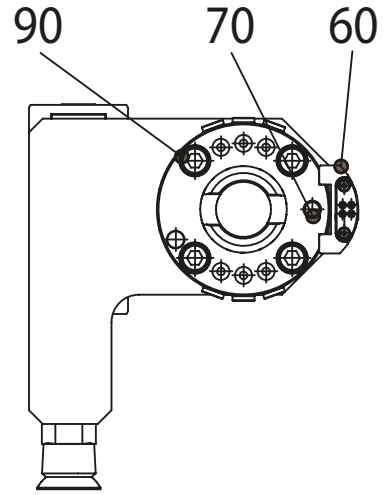
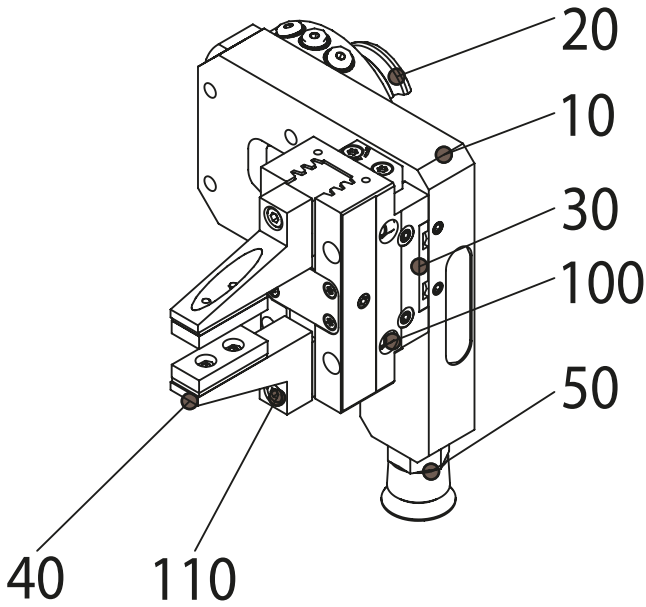
Order number: 10174019

Technical specifications

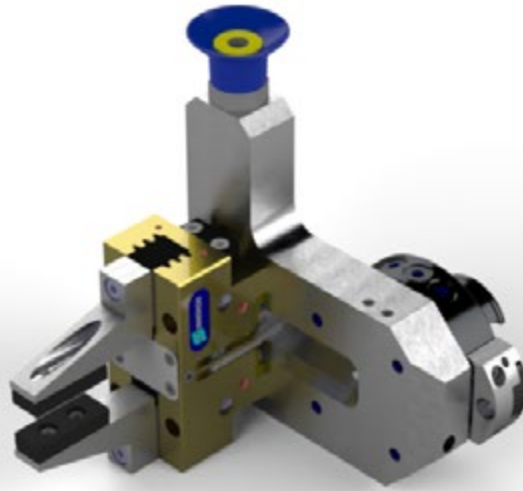
Stroke of vacuum cup = 3 mm

	24 h
	20 N
	15 N
	26,0 mm
	350 N
	max. 12,0 mm between fingers
	2,37 kg

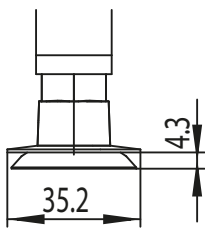
Partlist and order numbers



Pos.	Material number	Description
10	10167583	Adapter panel MBR 2.0 MGR
20	10113076	Tool holder SHA-050
30	10102512	Gripper PGN-plus-P 64-1
40	62612.5000.0018	Gripper (gerade) L=50mm
50	10085866	Vacuum cup Ø20 1/4-AG
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	2500281	Straight pin ISO8734 6m6x16
80	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
90	2200154	Cap screw ISO4762 M6x20 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	2200046	Cap screw ISO4762 M4x16 8.8

Hybrid - Gripper M03.1**M03.1-1S30-1PF50**

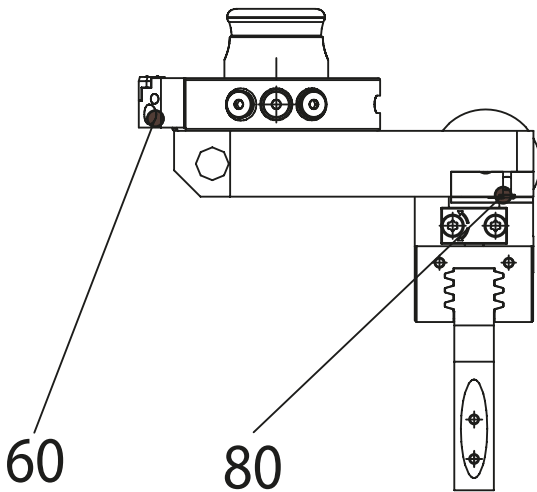
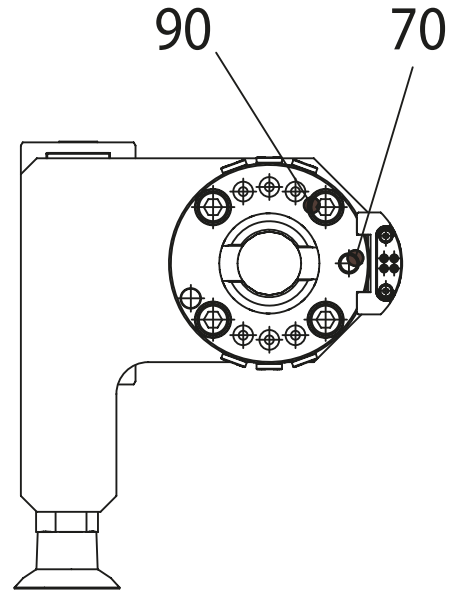
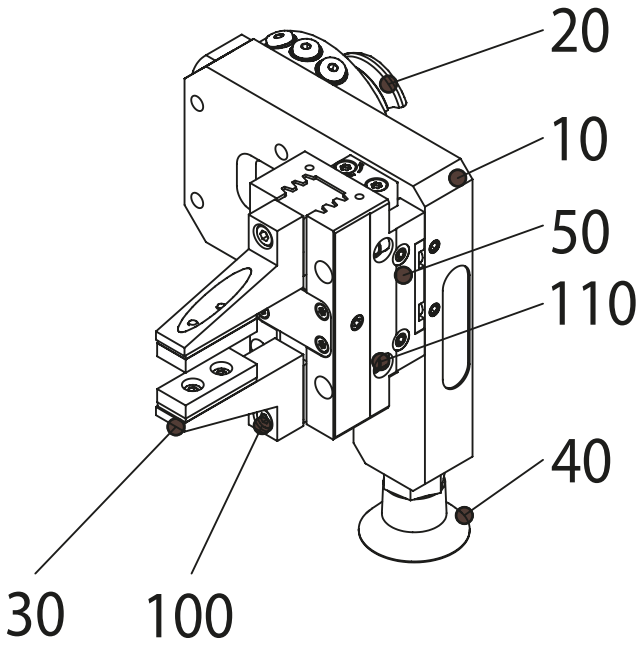
Order number: 10171317

Technical specifications

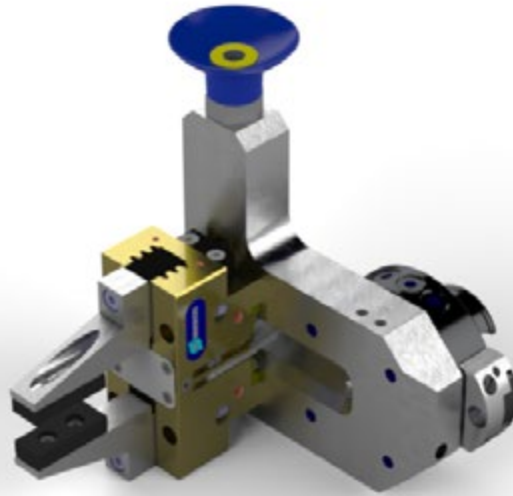
Stroke of vacuum cup = 4,3 mm

	24 h
	39 N
	32 N
	35,2 mm
	350 N
	max. 12,0 mm between fingers
	2,37 kg

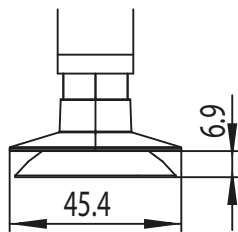
Partlist and order numbers




Pos.	Material number	Description
10	10167583	Adapter panel MBR 2.0 MGR
20	10113076	Tool holder SHA-050
30	62612.5000.0018	Gripper (gerade) L=50mm
40	10085865	Vacuum cup Ø30 1/4-AG
50	10102512	Gripper PGN-plus-P 64-1
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	2500281	Straight pin ISO8734 6m6x16
80	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
90	2200154	Cap screw ISO4762 M6x20 8.8
100	2200046	Cap screw ISO4762 M4x16 8.8
110	2200054	Cap screw ISO4762 M4x25 8.8

Hybrid - Gripper M03.1**M03.1-1S40-1PF50**

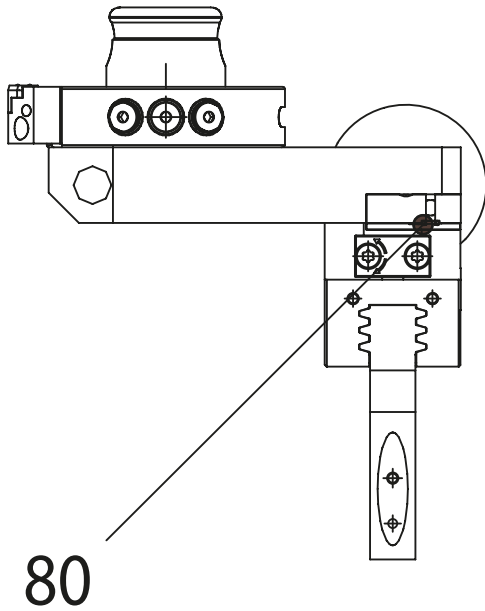
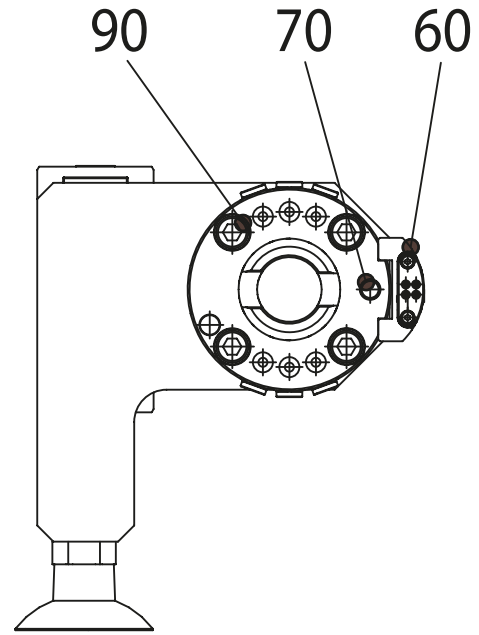
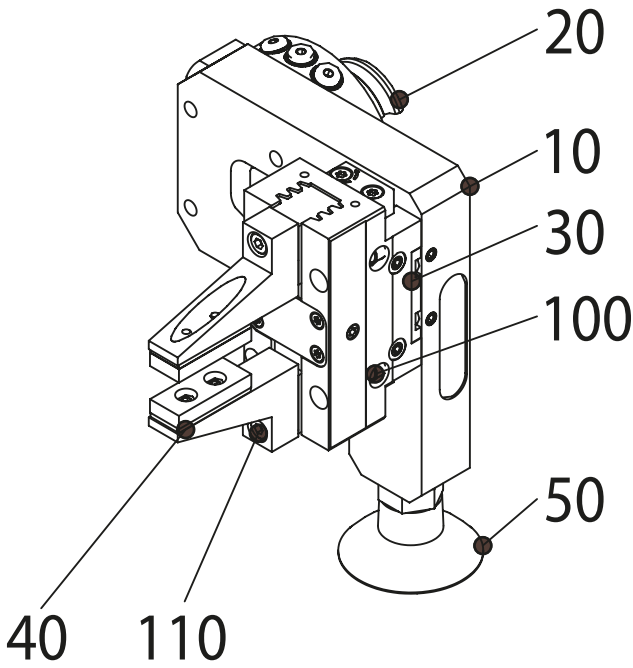
Order number: 10177417

Technical specifications

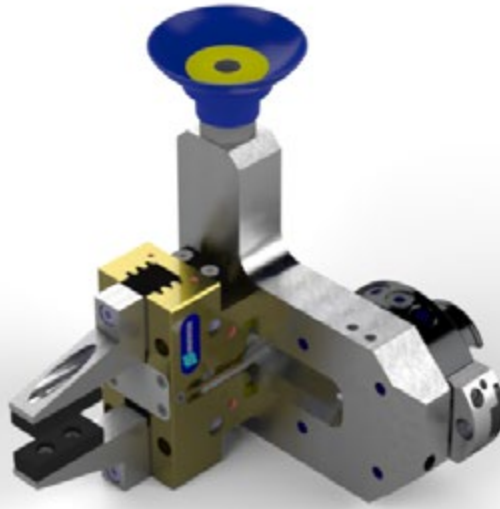
Stroke of vacuum cup = 6,9 mm

	24 h
	69 N
	38 N
	45,4 mm
	350 N
	max. 12,0 mm between fingers
	2,37 kg

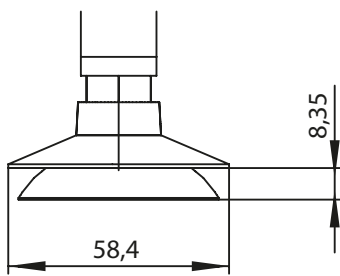
Partlist and order numbers



Pos.	Material number	Description
10	10167583	Adapter panel MBR 2.0 MGR
20	10113076	Tool holder SHA-050
30	10102512	Gripper PGN-plus-P 64-1
40	62612.5000.0018	Gripper (gerade) L=50mm
50	10085864	Vacuum cup Ø40 1/4-AG
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	2500281	Straight pin ISO8734 6m6x16
80	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
90	2200154	Cap screw ISO4762 M6x20 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	2200046	Cap screw ISO4762 M4x16 8.8

Hybrid - Gripper M03.1**M03.1-1S50-1PF50**

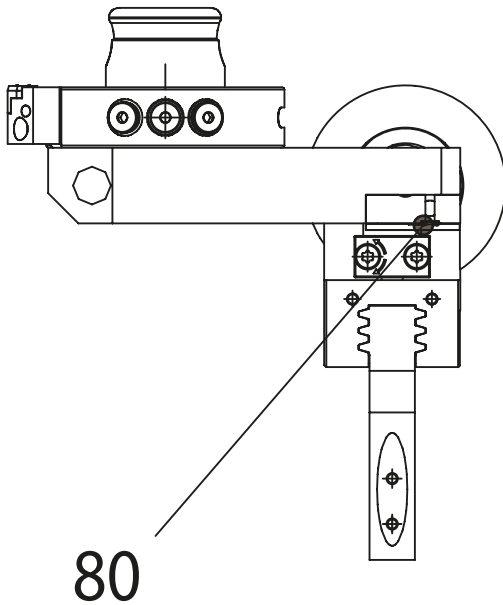
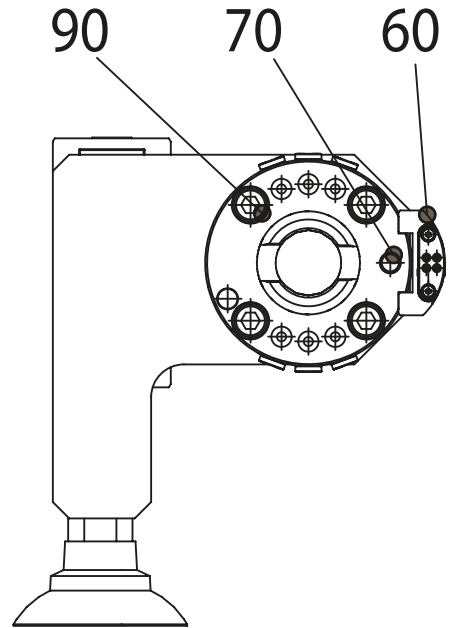
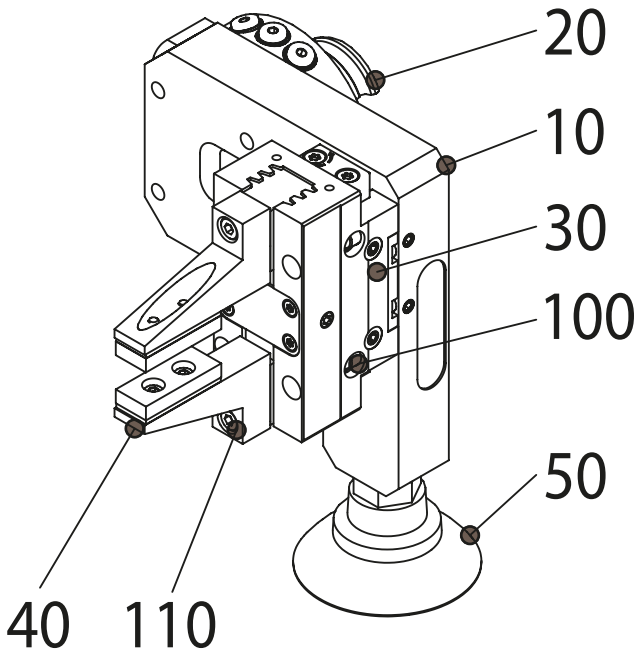
Order number: 10177418

Technical specifications

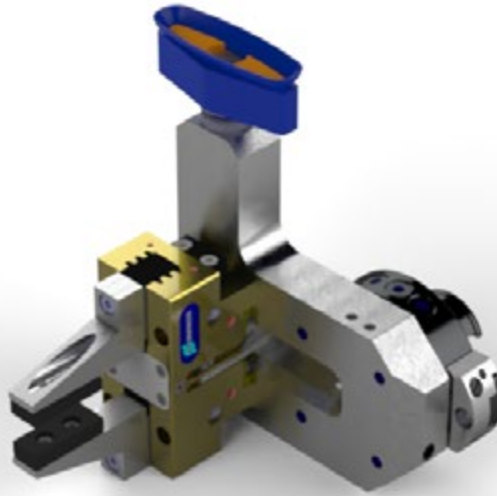
Stroke of vacuum cup = 8,35 mm

	24 h
	109 N
	58 N
	58,4 mm
	350 N
	max. 12,0 mm between fingers
	2,38 kg

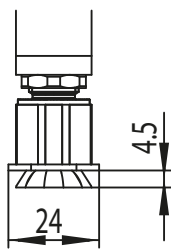
Partlist and order numbers



Pos.	Material number	Description
10	10167583	Adapter panel MBR 2.0 MGR
20	10113076	Tool holder SHA-050
30	10102512	Gripper PGN-plus-P 64-1
40	62612.5000.0018	Gripper (gerade) L=50mm
50	10085858	Vacuum cup Ø50 1/4-AG
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	2500281	Straight pin ISO8734 6m6x16
80	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
90	2200154	Cap screw ISO4762 M6x20 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	2200046	Cap screw ISO4762 M4x16 8.8

Hybrid - Gripper M03.1**M03.1-1S60x20-1PF50**

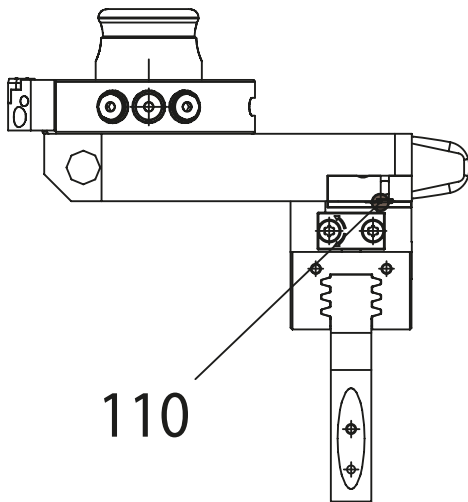
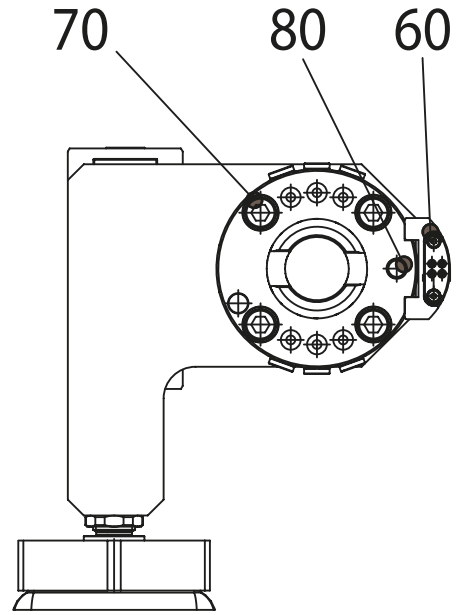
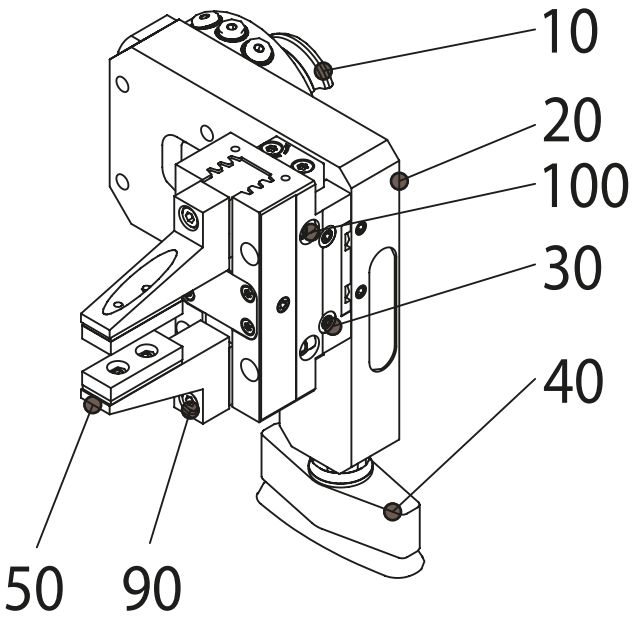
Order number: 10177877

Technical specifications

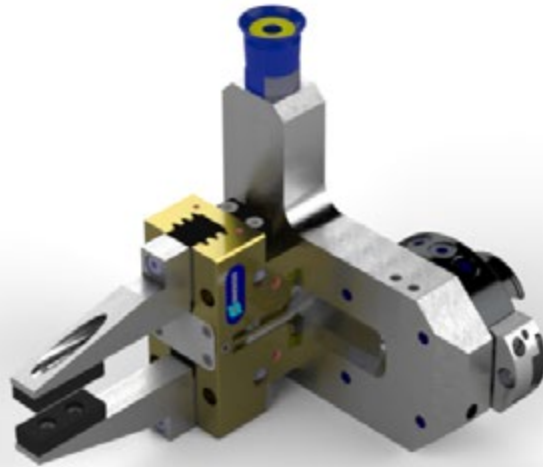
Stroke of vacuum cup = 4,5 mm

	24 h
	56 N
	44 N
	67,0 x 24,0 mm
	350 N
	max. 12,0 mm between fingers
	2,38 kg

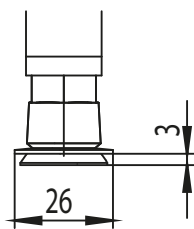
Partlist and order numbers




Pos.	Material number	Description
10	10113076	Tool holder SHA-050
20	10167583	Adapter panel MBR 2.0 MGR
30	10102512	Gripper PGN-plus-P 64-1
40	10102394	Vacuum cup 60x20 1/4-AG
50	62612.5000.0018	Gripper (gerade) L=50mm
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	2200154	Cap screw ISO4762 M6x20 8.8
80	2500281	Straight pin ISO8734 6m6x16
90	2200046	Cap screw ISO4762 M4x16 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	10038137	O-ring ID3.00x1.00 NBR 70.5/P5

Hybrid - Gripper M03.1**M03.1-1S20-1PF70**

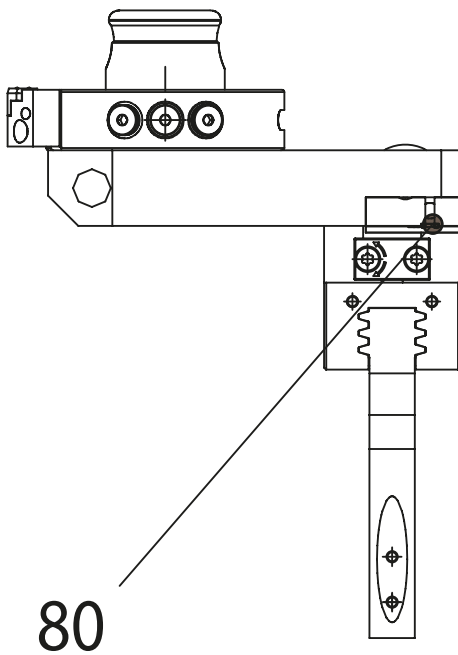
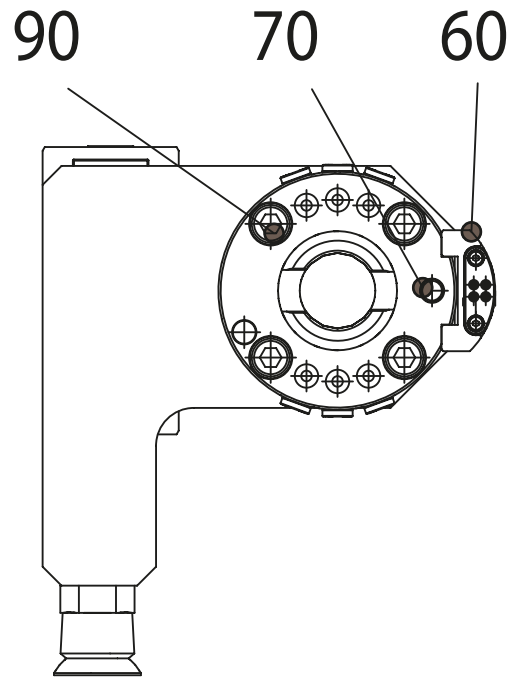
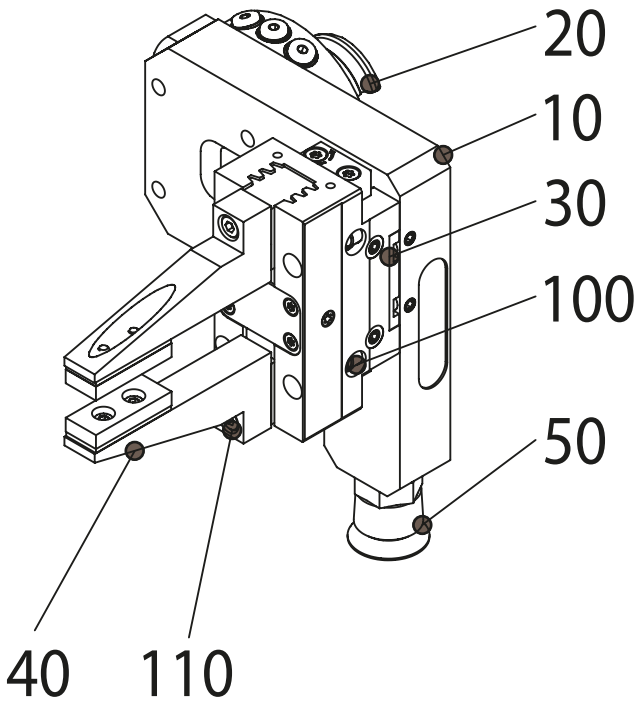
Order number: 10177470

Technical specifications

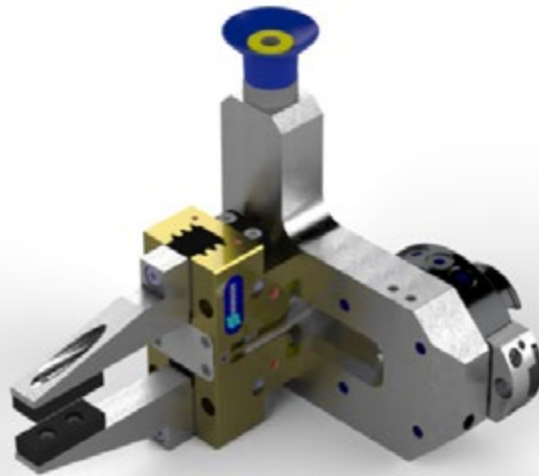
Stroke of vacuum cup = 3,0 mm

	24 h
	20 N
	15 N
	26,0 mm
	350 N
	max. 12,0 mm between fingers
	2,4 kg

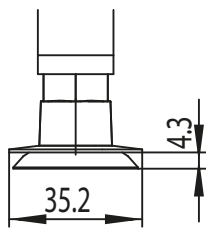
Partlist and order numbers






Pos.	Material number	Description
10	10167583	Adapter panel MBR 2.0 MGR
20	10113076	Tool holder SHA-050
30	10102512	Gripper PGN-plus-P 64-1
40	62612.5000.0019	Gripper (gerade) L=70mm
50	10085866	Vacuum cup Ø20 1/4-AG
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	2500281	Straight pin ISO8734 6m6x16
80	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
90	2200154	Cap screw ISO4762 M6x20 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	2200046	Cap screw ISO4762 M4x16 8.8

Hybrid - Gripper M03.1**M03.1-1S30-1PF70**

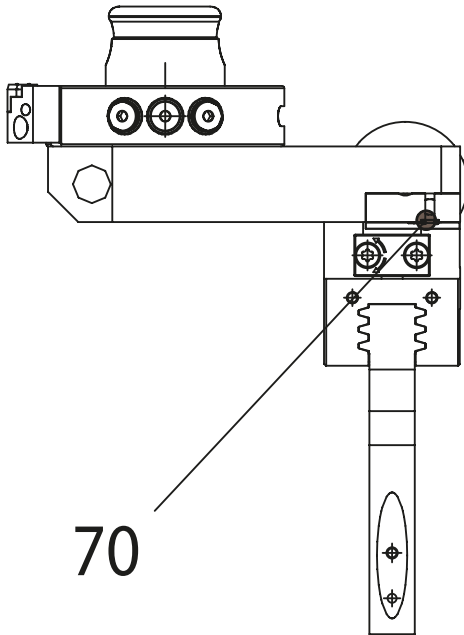
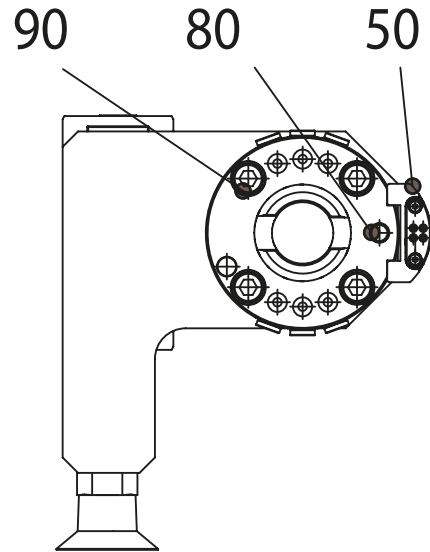
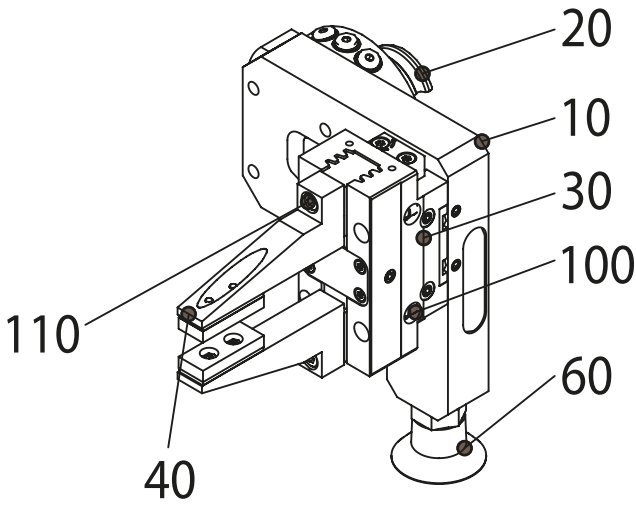
Order number: 10177471

Technical specifications

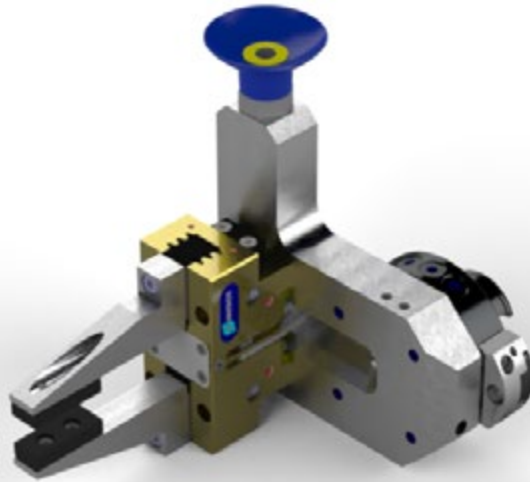
Stroke of vacuum cup = 4,3 mm

	24 h
	39 N
	32 N
	35,2 mm
	350 N
	max. 12,0 mm between fingers
	2,4 kg

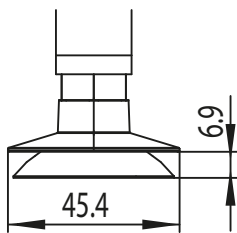
Partlist and order numbers



Pos.	Material number	Description
10	10167583	Adapter panel MBR 2.0 MGR
20	10113076	Tool holder SHA-050
30	10102512	Gripper PGN-plus-P 64-1
40	62612.5000.0019	Gripper (gerade) L=70mm
50	10113063	Switch MMSK 22-S-PNP E04 SHA-050
60	10085865	Vacuum cup Ø30 1/4-AG
70	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
80	2500281	Straight pin ISO8734 6m6x16
90	2200154	Cap screw ISO4762 M6x20 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	2200046	Cap screw ISO4762 M4x16 8.8

Hybrid - Gripper M03.1**M03.1-1S40-1PF70**

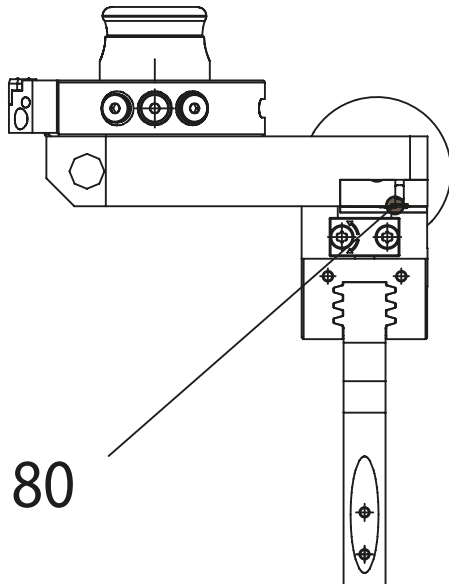
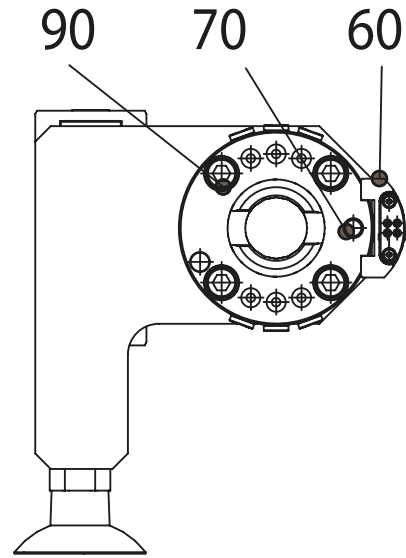
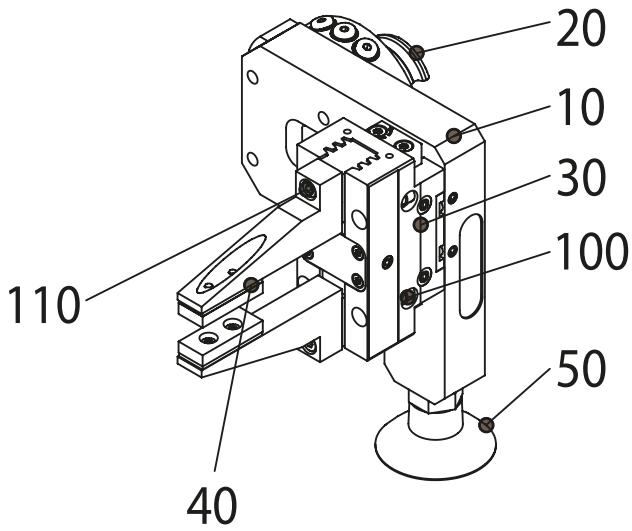
Order number: 10177472

Technical specifications

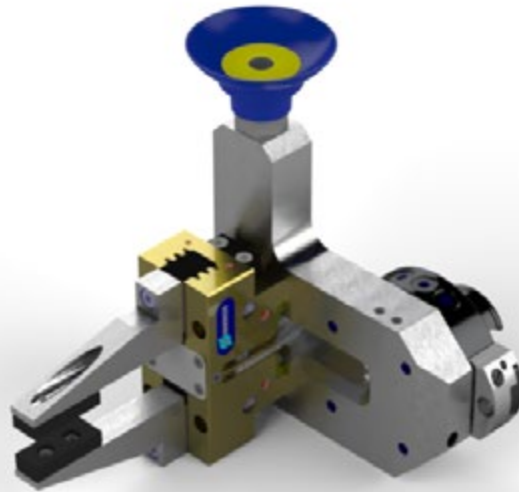
Stroke of vacuum cup = 6,9 mm

	24 h
	69 N
	38 N
	45,4 mm
	350 N
	max. 12,0 mm between fingers
	2,4 kg

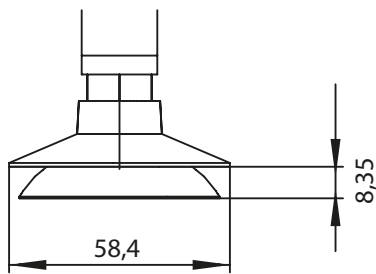
Partlist and order numbers



Pos.	Material number	Description
10	10167583	Adapter panel MBR 2.0 MGR
20	10113076	Tool holder SHA-050
30	10102512	Gripper PGN-plus-P 64-1
40	62612.5000.0019	Gripper (gerade) L=70mm
50	10085864	Vacuum cup Ø40 1/4-AG
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	2500281	Straight pin ISO8734 6m6x16
80	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
90	2200154	Cap screw ISO4762 M6x20 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	2200046	Cap screw ISO4762 M4x16 8.8

Hybrid - Gripper M03.1**M03.1-1S50-1PF70**

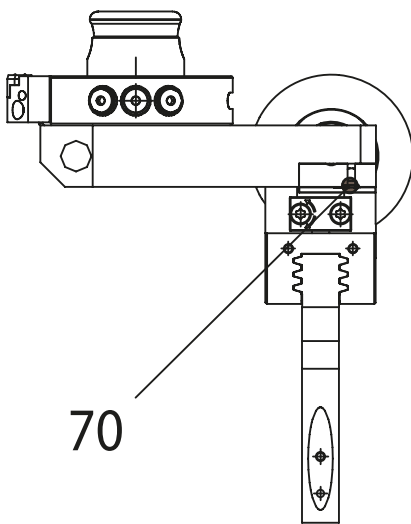
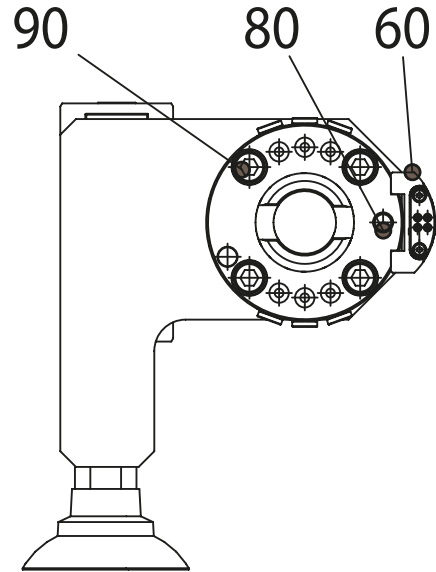
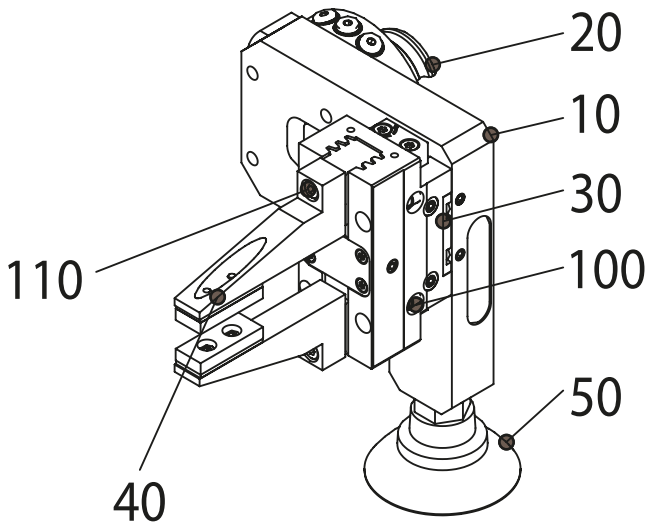
Order number: 10177473

Technical specifications

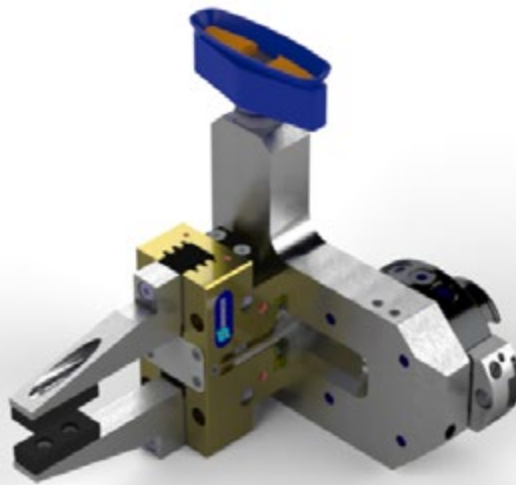
Stroke of vacuum cup = 8,35 mm

	24 h
	109 N
	58 N
	58,4 mm
	350 N
	max. 12,0 mm between fingers
	2,4 kg

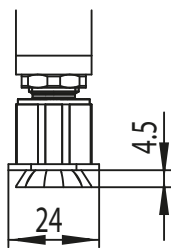
Partlist and order numbers



Pos.	Material number	Description
10	10167583	Adapter panel MBR 2.0 MGR
20	10113076	Tool holder SHA-050
30	10102512	Gripper PGN-plus-P 64-1
40	62612.5000.0019	Gripper (gerade) L=70mm
50	10085858	Vacuum cup Ø50 1/4-AG
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
80	2500281	Straight pin ISO8734 6m6x16
90	2200154	Cap screw ISO4762 M6x20 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	2200046	Cap screw ISO4762 M4x16 8.8

Hybrid - Gripper M03.1**M03.1-1S60x20-1PF70**

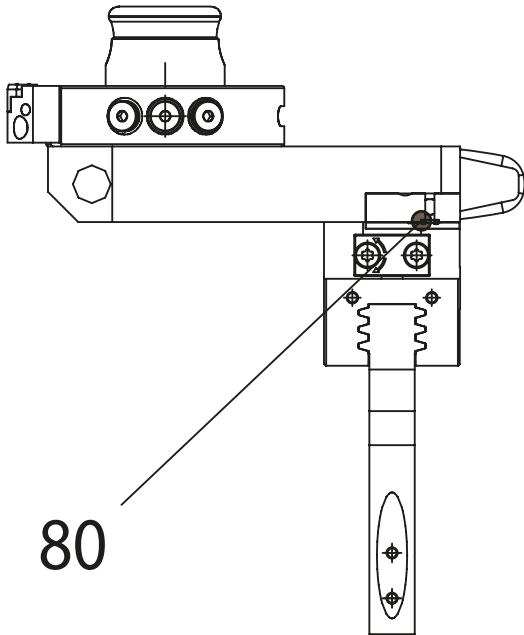
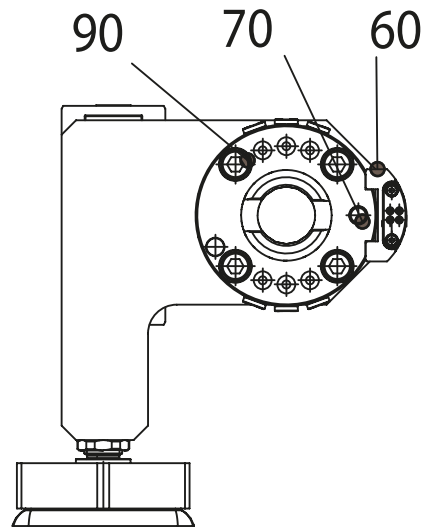
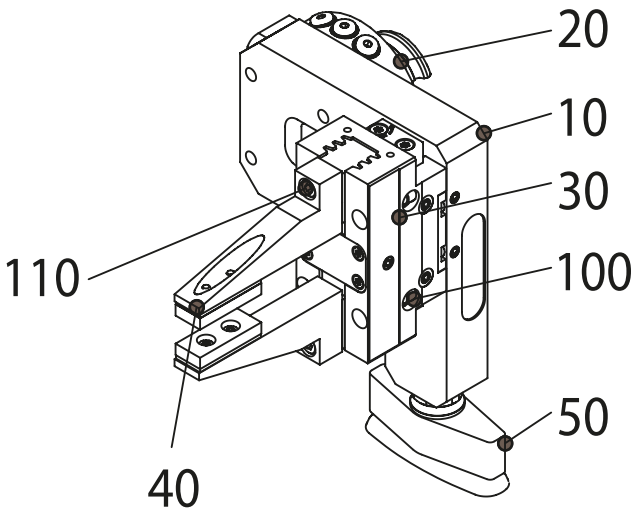
Order number: 10177681

Technical specifications

Stroke of vacuum cup = 4,5 mm

	24 h
	56 N
	44 N
	67,0 x 24,0 mm
	350 N
	max. 12,0 mm between fingers
	2,4 kg

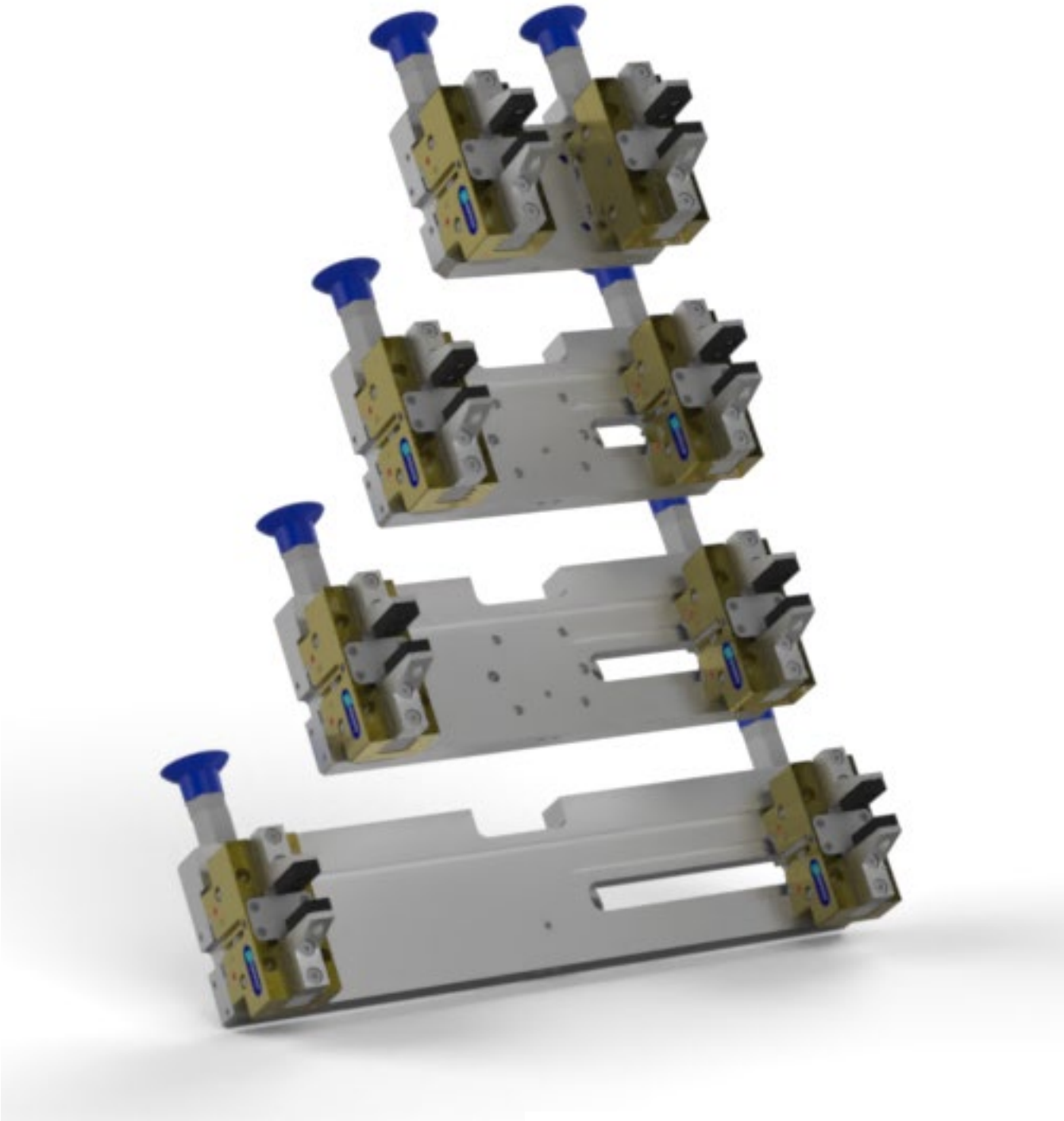
Partlist and order numbers



Pos.	Material number	Description
10	10167583	Adapter panel MBR 2.0 MGR
20	10113076	Tool holder SHA-050
30	10102512	Gripper PGN-plus-P 64-1
40	62612.5000.0019	Gripper (gerade) L=70mm
50	10102394	Vacuum cup 60x20 1/4-AG
60	10113063	Switch MMSK 22-S-PNP E04 SHA-050
70	2500281	Straight pin ISO8734 6m6x16
80	10038137	O-ring ID3.00x1.00 NBR 70.5/P5
90	2200154	Cap screw ISO4762 M6x20 8.8
100	2200054	Cap screw ISO4762 M4x25 8.8
110	2200046	Cap screw ISO4762 M4x16 8.8

Double - Gripper M03.1

Double - Gripper M03.1



On all M03.1 double grippers are extensions of 18mm. This is due to the 5th axis on the robot.



Double - Gripper M03.1

What are double grippers good for?

Each application is not always feasible using for our multi grippers which are shown on the previous pages. The maximum dimension we recommend to bend in our Mobile Bending Robot is **300x600mm**.

For parts which are not possible to handle, we created our double grippers. With these grippers it makes it much easier to be able to handle bigger parts where our standard grippers wouldn't work.

The difference between our standard grippers and dual grippers is a bigger plate with more channels to support more than one suction cup or pair of fingers. On the following pages you can find an overview with all possible combinations of all single parts in that catalogue and double gripper plates.

Below you can see an explanation to use the following tables.

- > We defined four different plate sizes:
 - 80 mm
 - 140 mm
 - 200 mm
 - 300 mm

- > If the serial number of your Mobile Bending Robot starts with **20501021** or is higher your gripper description starts with: **M03**

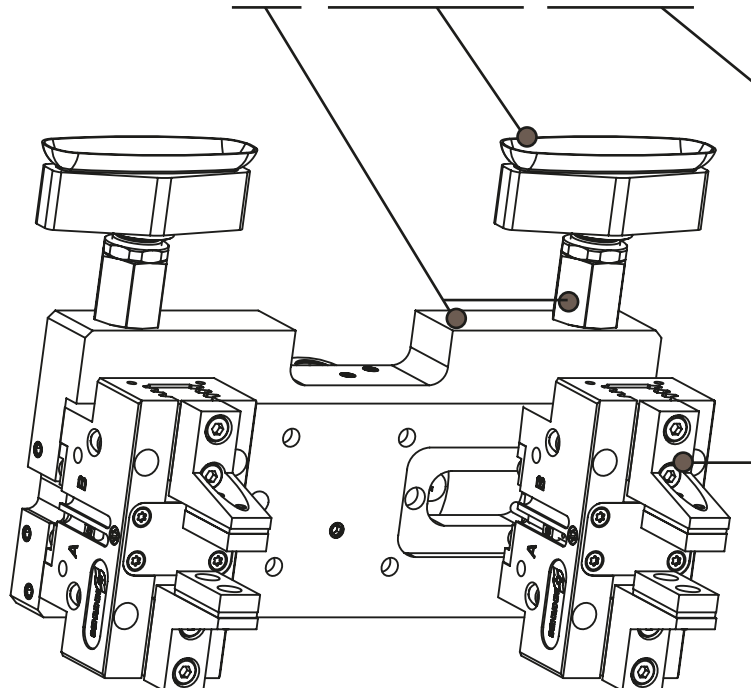
- > After the first part of the description (M03) we added the distance between the fingers and suction cups: (for example 140mm: **140**)

- > Additionally we add the amount and the diameter of suction cups behind the size of the plate: (for example we add two suction cups with a diameter of 30mm: **2S60x20**)

- > Last but not least we add the amount of finger pairs with length at the end: (for example we put two pairs of fingers with a length of 34mm on our gripper: **2PF34**)

In total we will get the following short description:

M03.1-140-2S60x20-2PF34



Double -Gripper M03.1**Adapter plate 80mm**

Gripper description	Order number
M03.1-80-2S20-PF34	10179183
M03.1-80-2S30-PF34	10169947
M03.1-80-2S40-PF34	10179192
M03.1-80-2S50-PF34	10179223
M03.1-80-2S60x20-PF34	10174918
M03.1-80-2S20-PF50	10179231
M03.1-80-2S30-PF50	10179225
M03.1-80-2S40-PF50	10179232
M03.1-80-2S50-PF50	10179234
M03.1-80-2S60x20-PF50	10179235
M03.1-80-2S20-PF70	10179236
M03.1-80-2S30-PF70	10179225
M03.1-80-2S40-PF70	10179237
M03.1-80-2S50-PF70	10179238
M03.1-80-2S60x20-PF70	10179239

Adapter plate 140mm

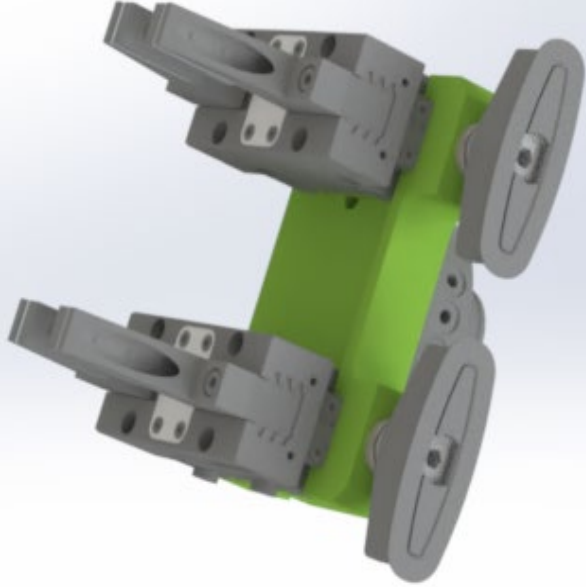
Gripper description	Order number
M03.1-140-2S20-PF34	10173419
M03.1-140-2S30-PF34	10178122
M03.1-140-2S40-PF34	10178696
M03.1-140-2S50-PF34	10179039
M03.1-140-2S60x20-PF34	10169986
M03.1-140-2S20-PF50	10179044
M03.1-140-2S30-PF50	10179045
M03.1-140-2S40-PF50	10179047
M03.1-140-2S50-PF50	10175494
M03.1-140-2S60x20-PF50	10174160
M03.1-140-2S20-PF70	10179056
M03.1-140-2S30-PF70	10179078
M03.1-140-2S40-PF70	10179080
M03.1-140-2S50-PF70	10179081
M03.1-140-2S60x20-PF70	10179038

Double -Gripper M03.1**Adapter plate 200mm**

Gripper description	Order number
M03.1-200-2S20-PF34	10179046
M03.1-200-2S30-PF34	10179254
M03.1-200-2S40-PF34	10179256
M03.1-200-2S50-PF34	10179258
M03.1-200-2S60x20-PF34	10174251
M03.1-200-2S20-PF50	10179262
M03.1-200-2S30-PF50	10179267
M03.1-200-2S40-PF50	10179268
M03.1-200-2S50-PF50	10179269
M03.1-200-2S60x20-PF50	10179270
M03.1-200-2S20-PF70	10178904
M03.1-200-2S30-PF70	10178909
M03.1-200-2S40-PF70	10179272
M03.1-200-2S50-PF70	10179273
M03.1-200-2S60x20-PF70	10179274

Adapter plate 300mm

Gripper description	Order number
M03.1-300-2S20-PF34	10179454
M03.1-300-2S30-PF34	10169908
M03.1-300-2S40-PF34	10179455
M03.1-300-2S50-PF34	10179456
M03.1-300-2S60x20-PF34	10179457
M03.1-300-2S20-PF50	10179458
M03.1-300-2S30-PF50	10179459
M03.1-300-2S40-PF50	10179460
M03.1-300-2S50-PF50	10174166
M03.1-300-2S60x20-PF50	10179461
M03.1-300-2S20-PF70	10179462
M03.1-300-2S30-PF70	10179463
M03.1-300-2S40-PF70	10179464
M03.1-300-2S50-PF70	10179465
M03.1-300-2S60x20-PF70	10179466

Double -Gripper M03.1**Adapter plate 80mm**

24 h



62612.5000.0007

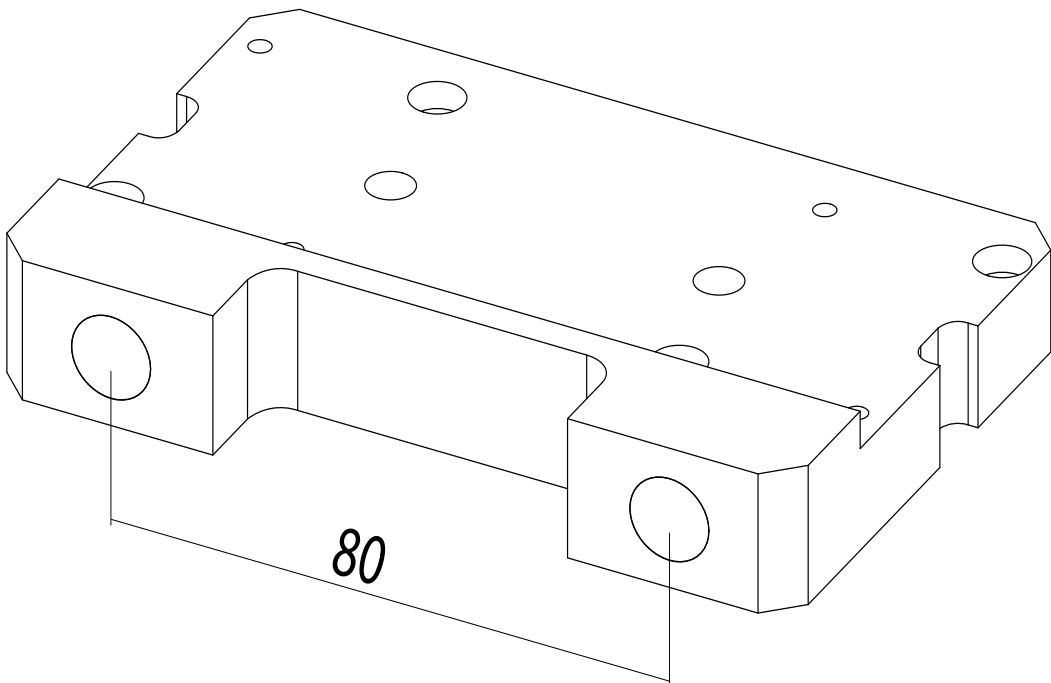


0,8 kg

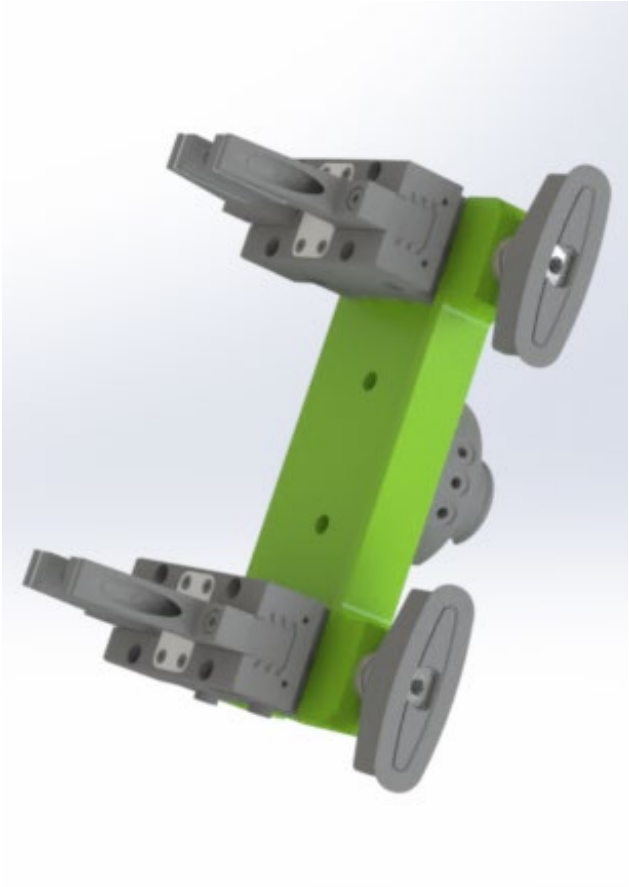






Aluminium (3.4365)

Application example

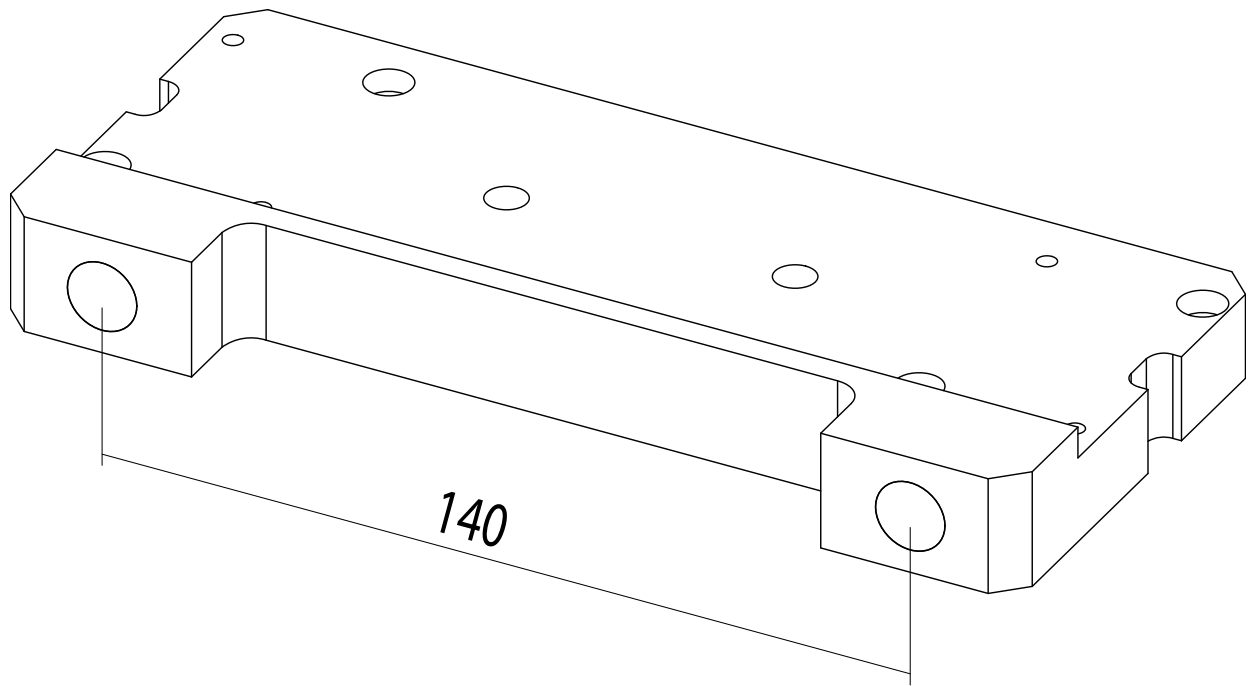


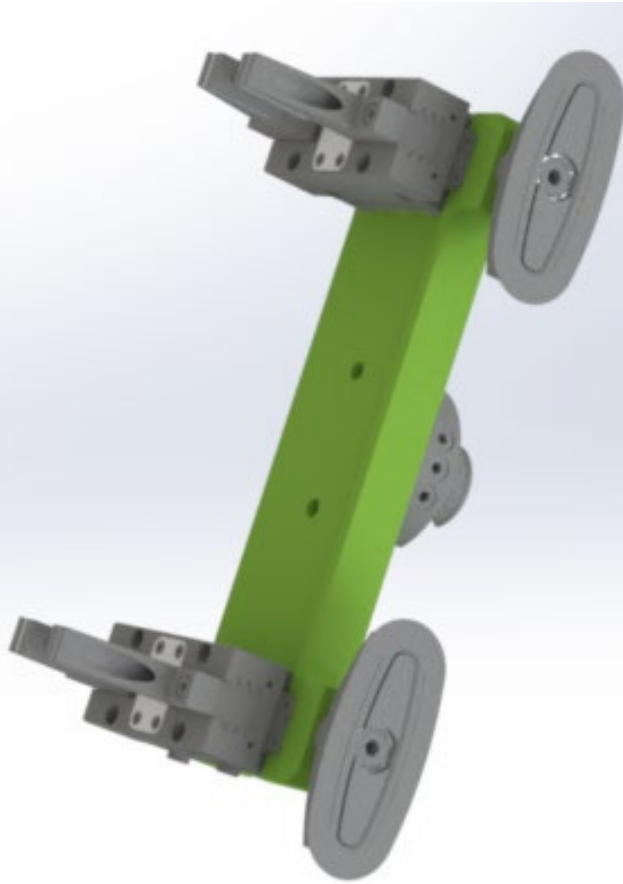
Adapter plate 140mm



 24 h
 62612.5000.0008
 0,6 kg
 Aluminium (3.4365)

Application example



Double -Gripper M03.1**Adapter plate 200mm**

24 h



62612.5000.0020

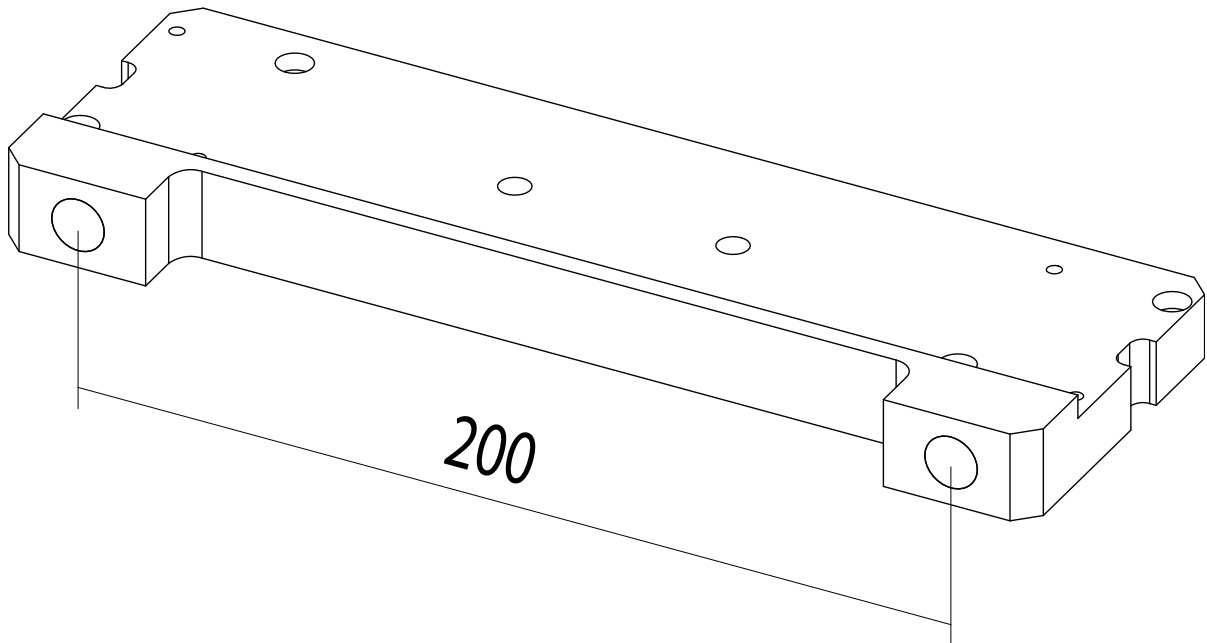


0,9 kg







Aluminium (3.4365)

Application example

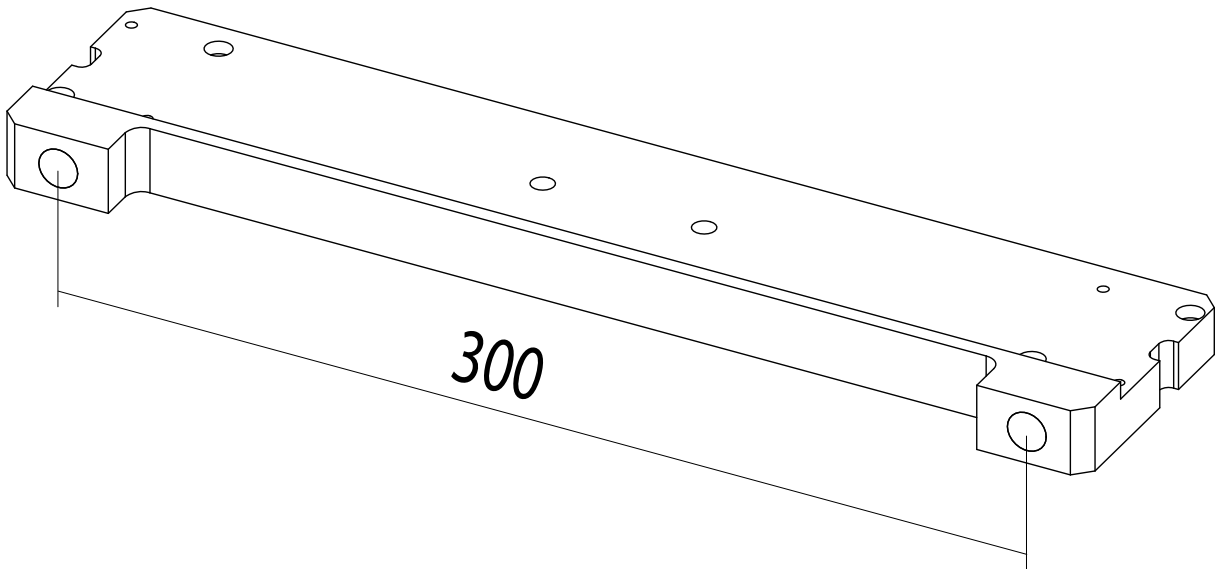


Adapter plate 300mm



 24 h
 62612.5000.0021
 1,2 kg
 Aluminium (3.4365)


Application example





Magnet -Gripper

M03.1-2M40

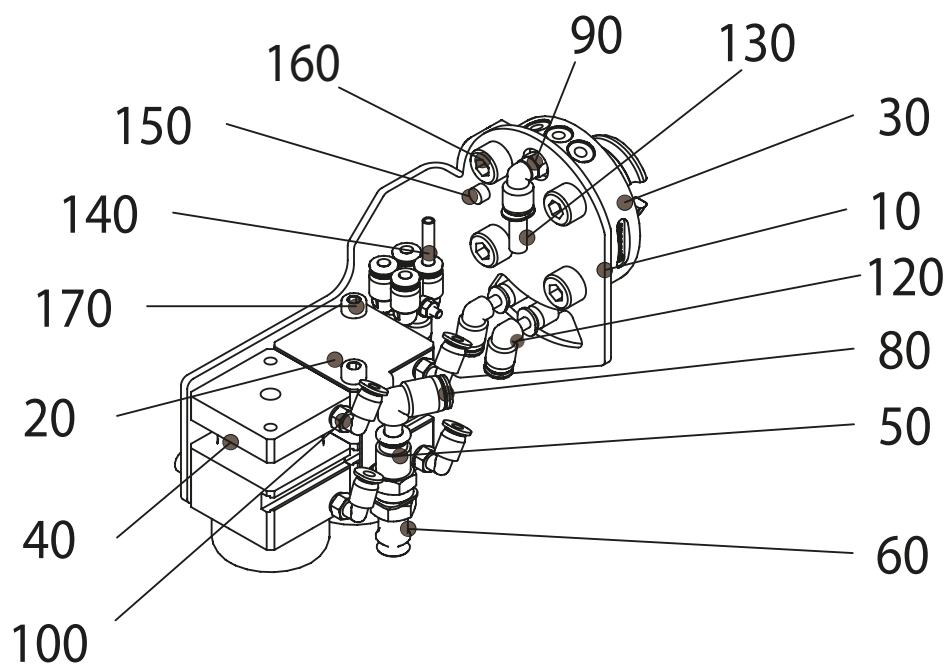
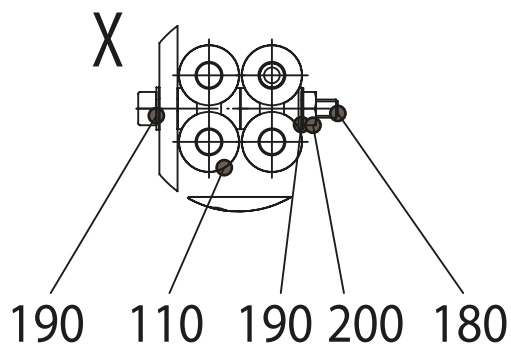
Pos.	Material number	Description
10	10171044	Holder
20	10166983	Holder part present suction cup
30	10113076	Tool holder SHA-050
40	10108588	Magnet Ø40mm
50	10142768	Connector screw fitting
60	10102330	Suction Cup Ø11mm
70	10113062	Cover
80	10086233	Connector
90	10041877	Connector screw fitting M5-6
100	10036349	Connector screw fitting M5-4
110	10089910	Y-fitting - 4
120	10171018	Plug-type connector - 4
130	10032520	Plastic hose 6x1
140	10032519	Plastic hose 4x0,75
150	2500281	Straight pin ISO8734
160	2200198	Cap screw ISO4762 M8x12
170	71011.0050.0003	Cheese-head screw M5x10 DIN 912
180	2200026	Cap screw ISO4762 M3x30
190	2550071	Plain washer ISO7089 M3
200	2250224	Hex nut ISO4032 M3

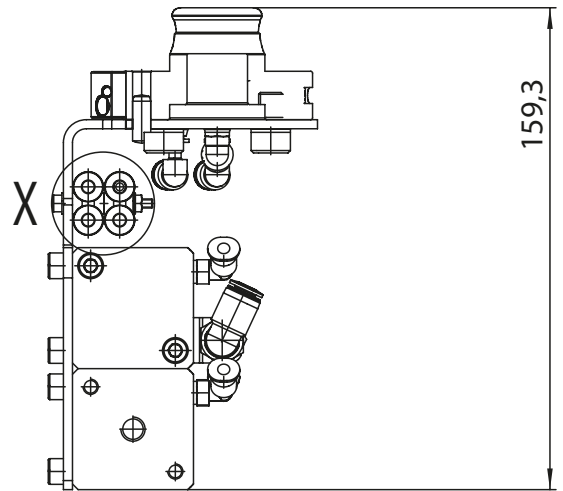
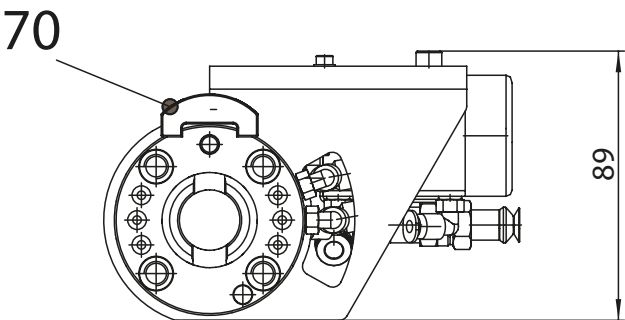
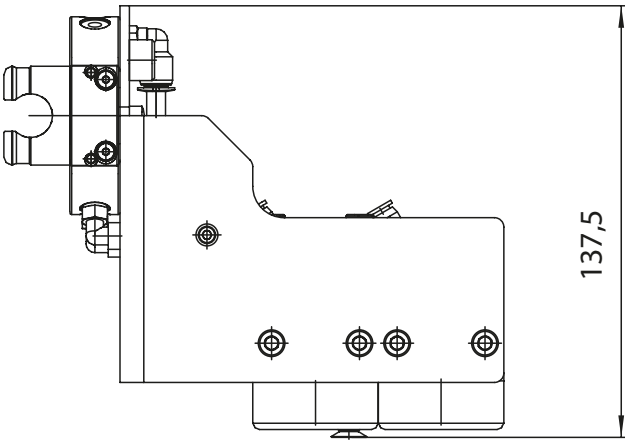
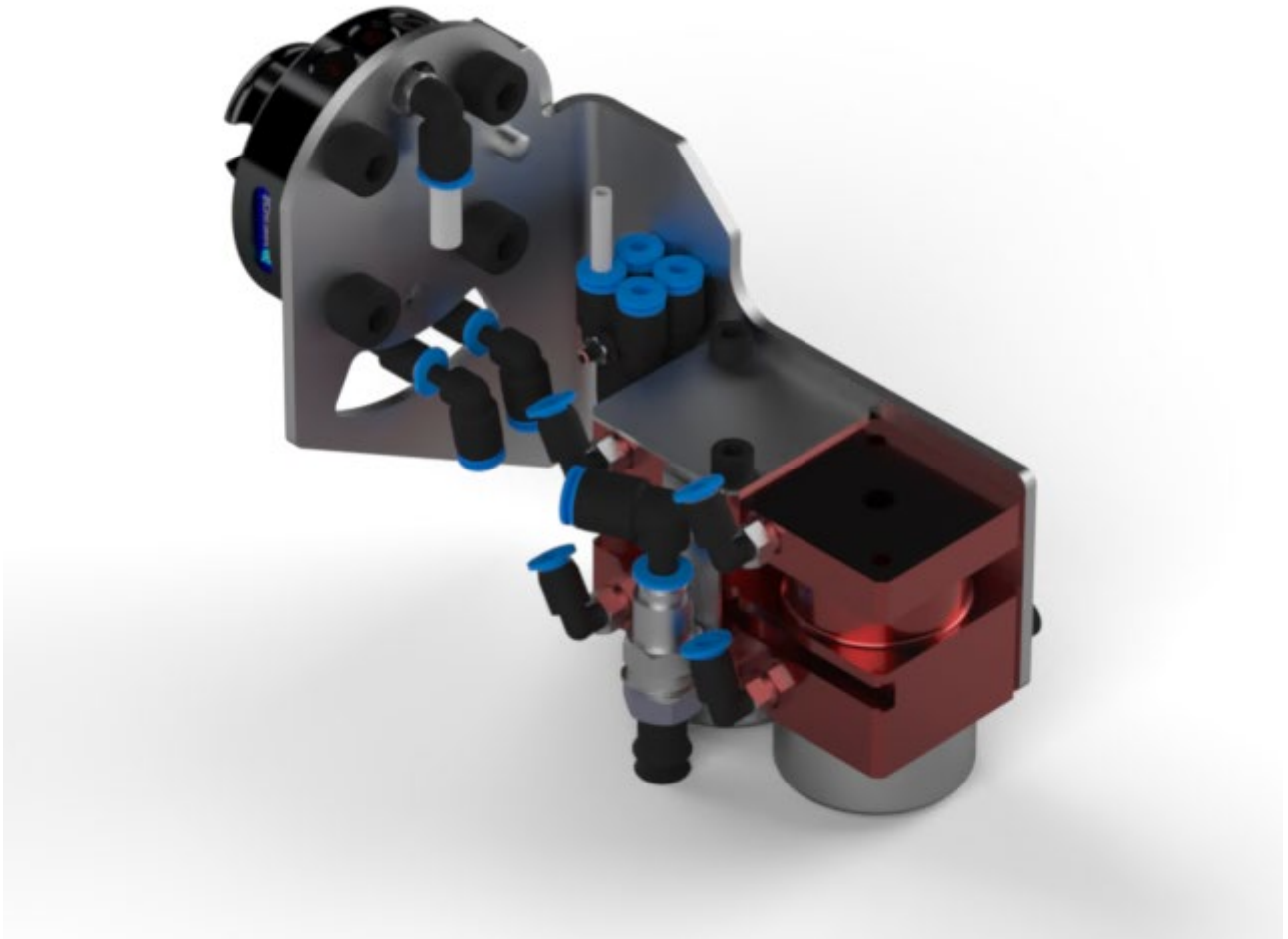
 24 h

 2,0 kg

 42 N (magnets are not suitable on torsion)

Order number: 10171045





Magnet -Gripper

M03.1-3M24

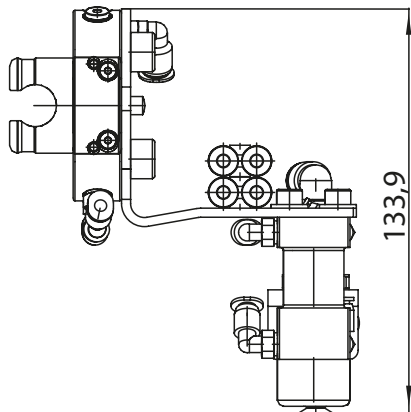
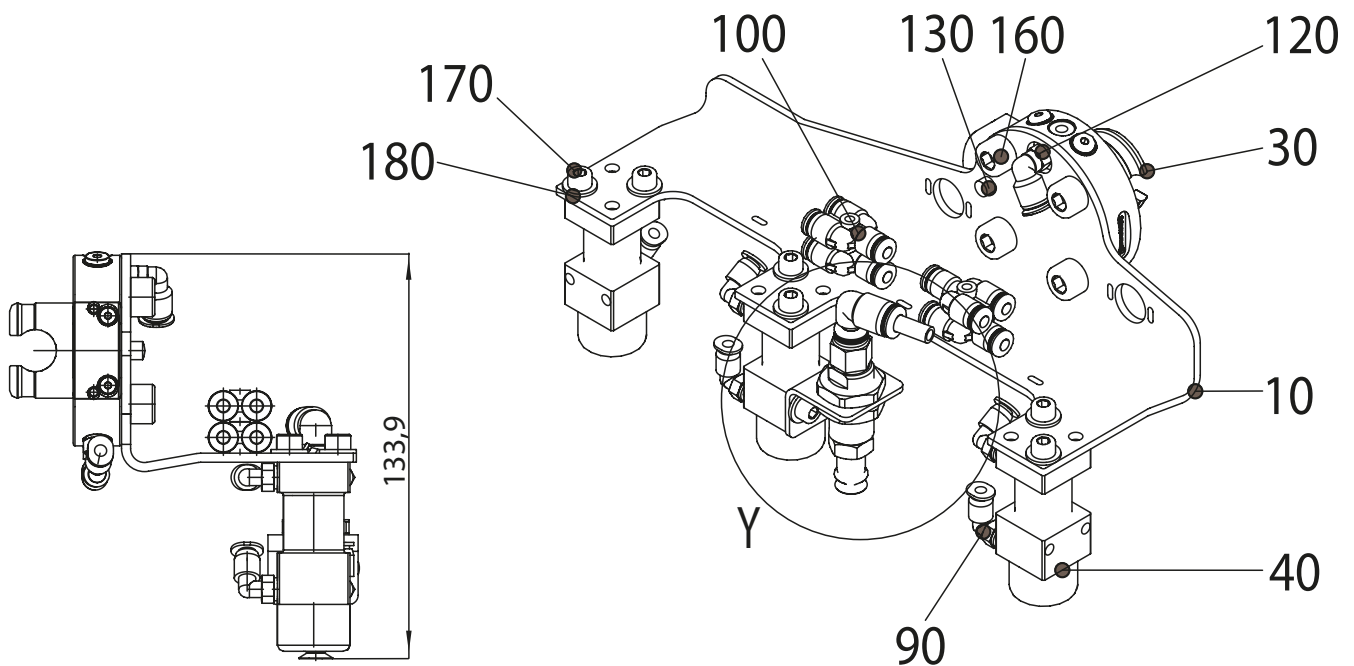
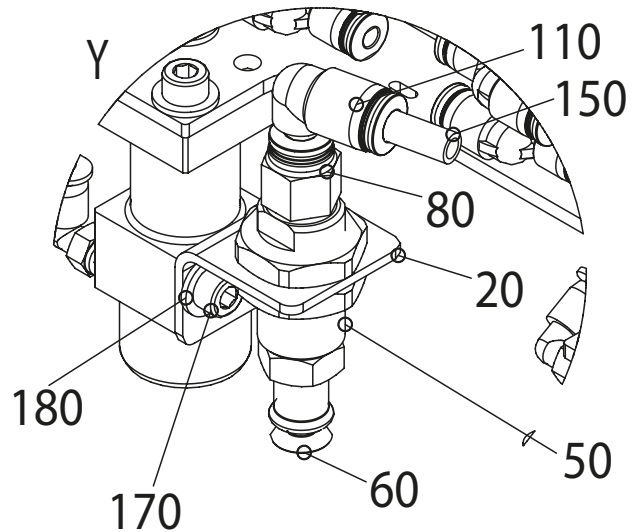
Pos.	Material number	Description
10	10171325	Holder
20	10170268	Holder part present suction cup
30	10113076	Tool holder SHA-050
40	10108587	Magnet Ø24mm
50	10112689	Connector screw fitting
60	10102330	Suction Cup Ø11mm
70	10113062	Cover
80	10042232	Connector screw fitting 8-6
90	10036349	Connector screw fitting M5-4
100	10089910	Y-fitting - 4
110	10086233	Connector
120	10041877	Connector screw fitting M5-6
130	2500281	Straight pin ISO8734
140	10032519	Plastic hose 4x0,75
150	10032520	Plastic hose 6x1
160	2200198	Cap screw ISO4762 M8x12
170	71011.0050.0003	Cheese-head screw M5x10 DIN 912
180	500031	Detent edge disk M M5

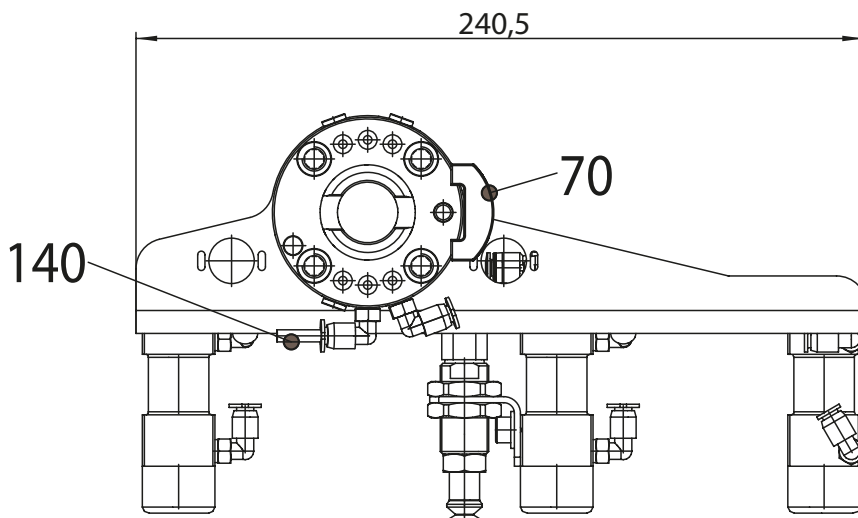
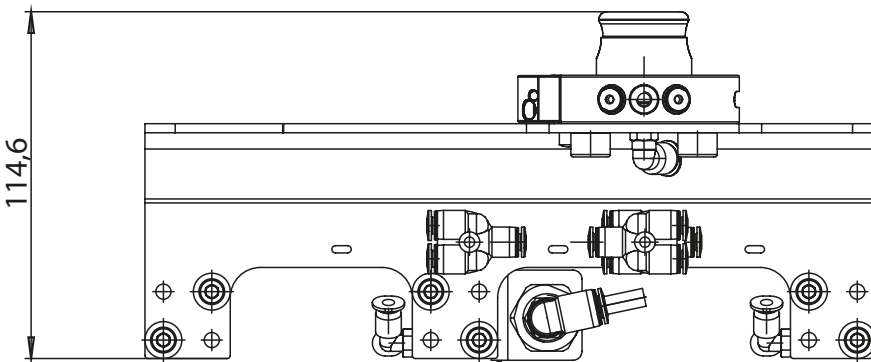
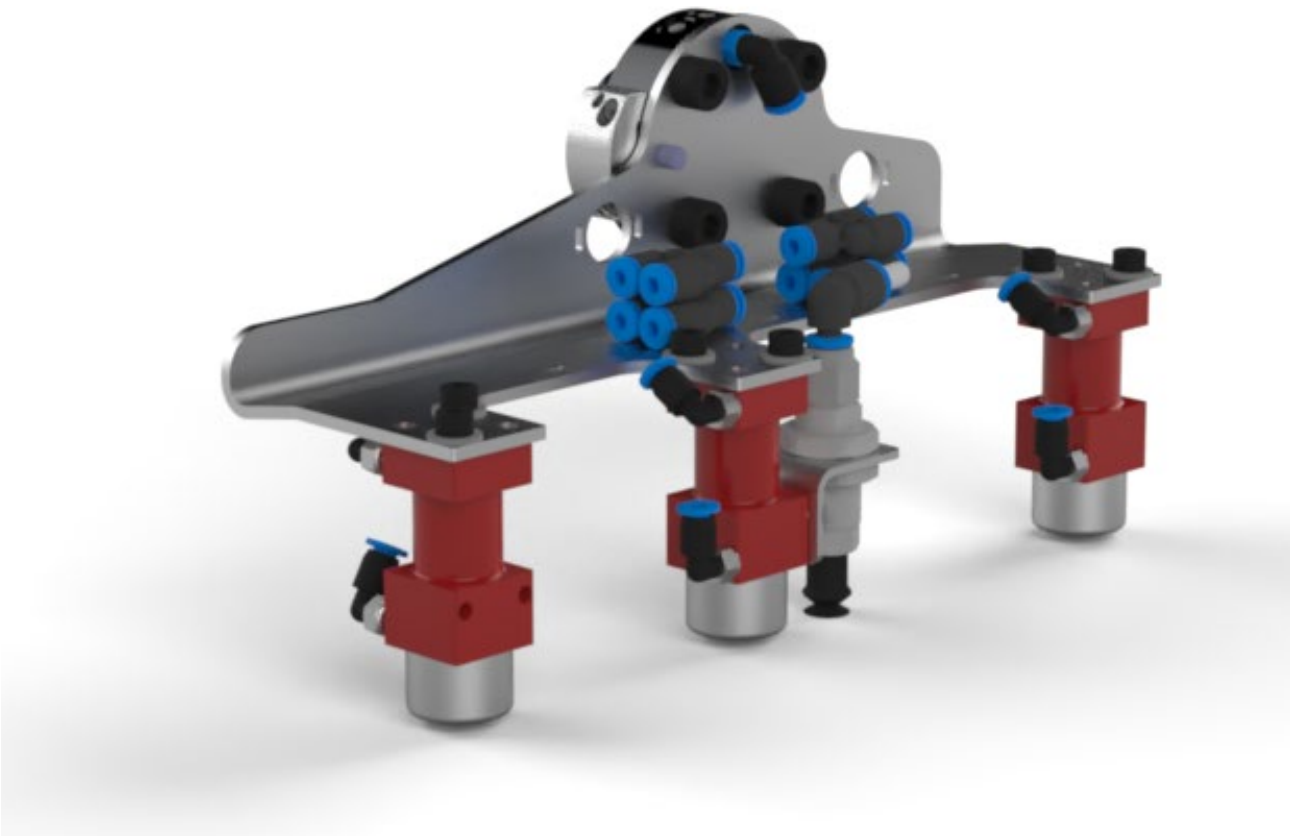
 24h

 2,48 kg

 33 N (magnets are not suitable on torsion)

Order number: 10171326





Magnet -Gripper

M03.1-4M24

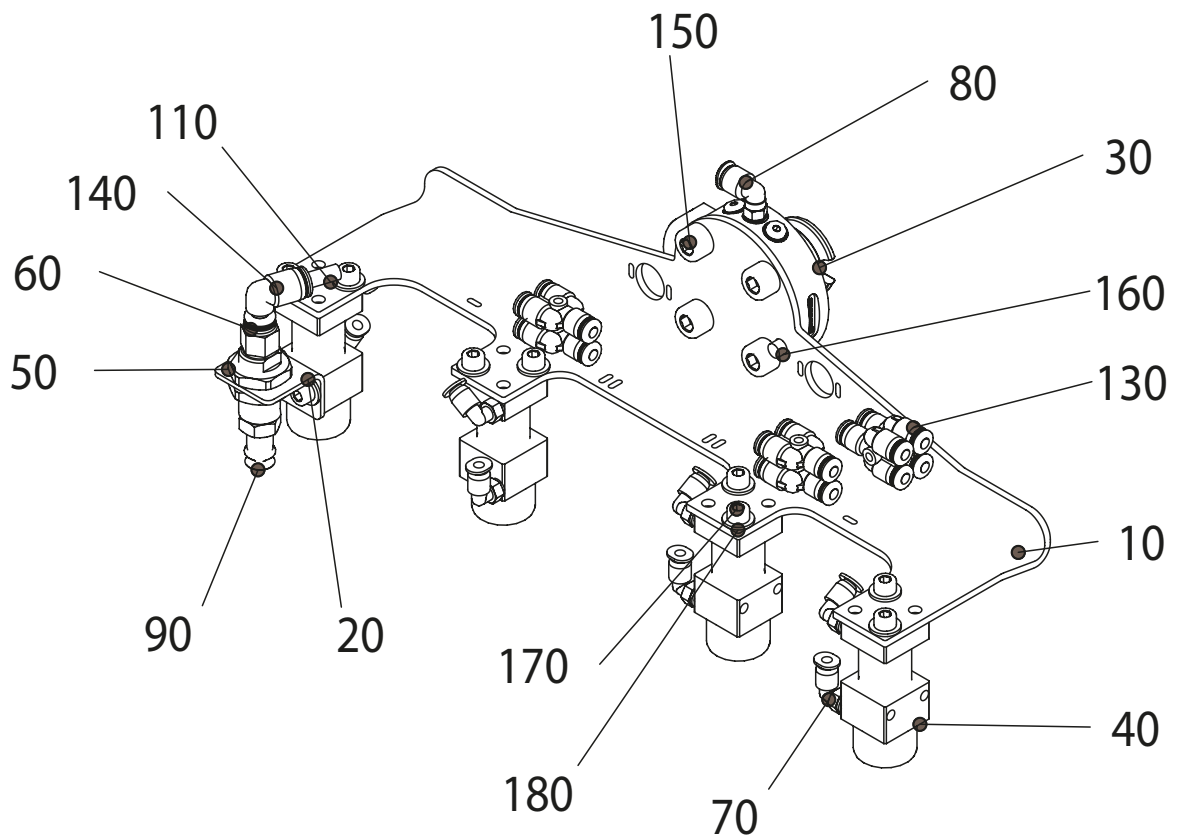
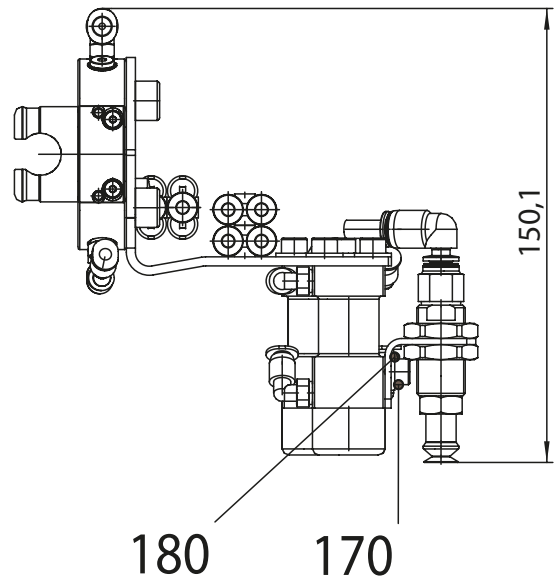
Pos.	Material number	Description
10	10170267	Holder
20	10170268	Holder part present suction cup
30	10113076	Tool holder SHA-050
40	10108587	Magnet Ø24mm
50	10112689	Connector screw fitting
60	10042232	Connector screw fitting 8-6
70	10036349	Connector screw fitting M5-4
80	10041877	Connector screw fitting M5-6
90	10102330	Suction Cup Ø11mm
100	10113062	Cover
110	10032520	Plastic hose 6x1
120	10032519	Plastic hose 4x0,75
130	10089910	Y-fitting - 4
140	10086233	Connector
150	2200198	Cap screw ISO4762 M8x12
160	2500281	Straight pin ISO8734
170	71011.0050.0003	Cheese-head screw M5x10 DIN 912
180	500031	Detent edge disk M M5

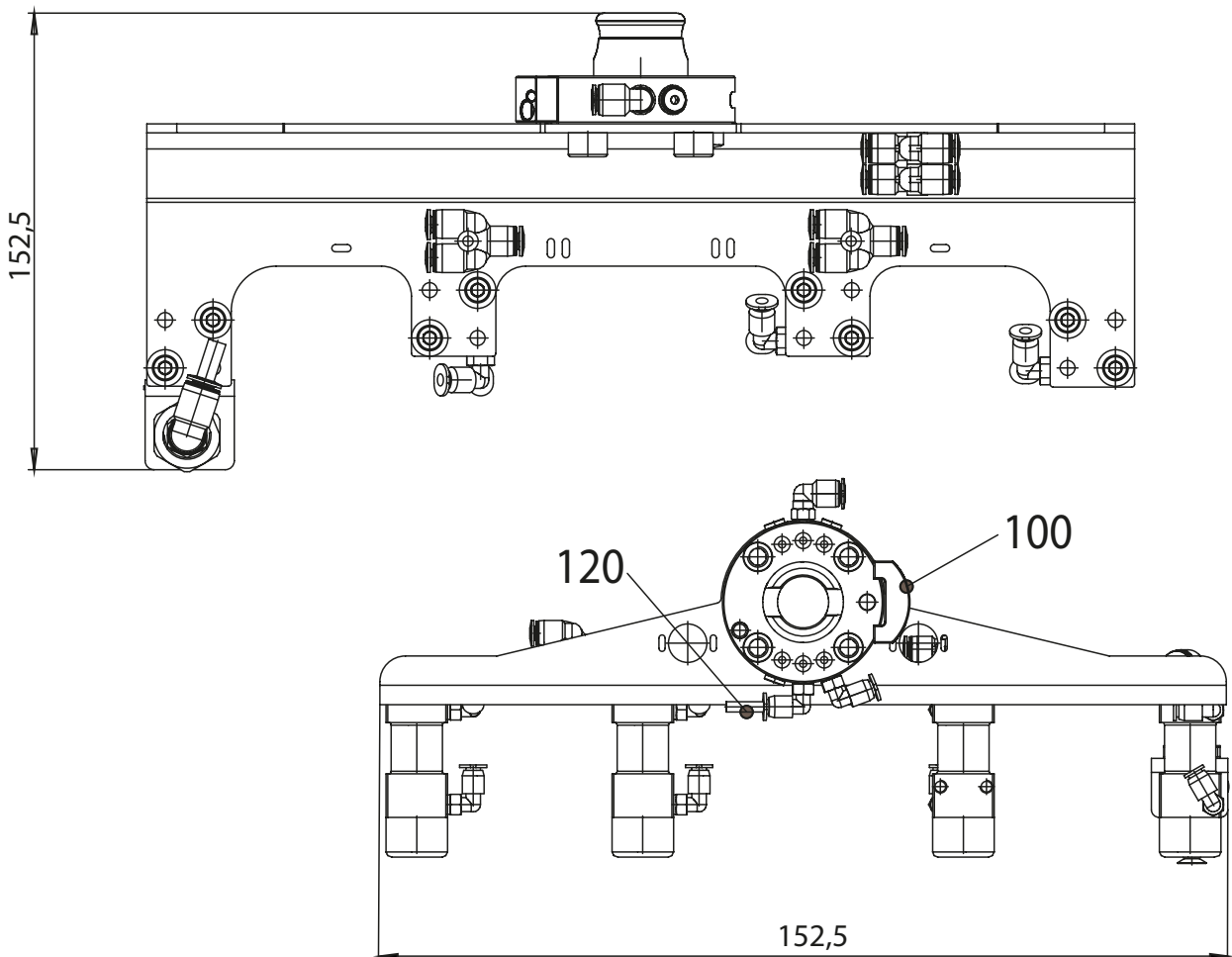
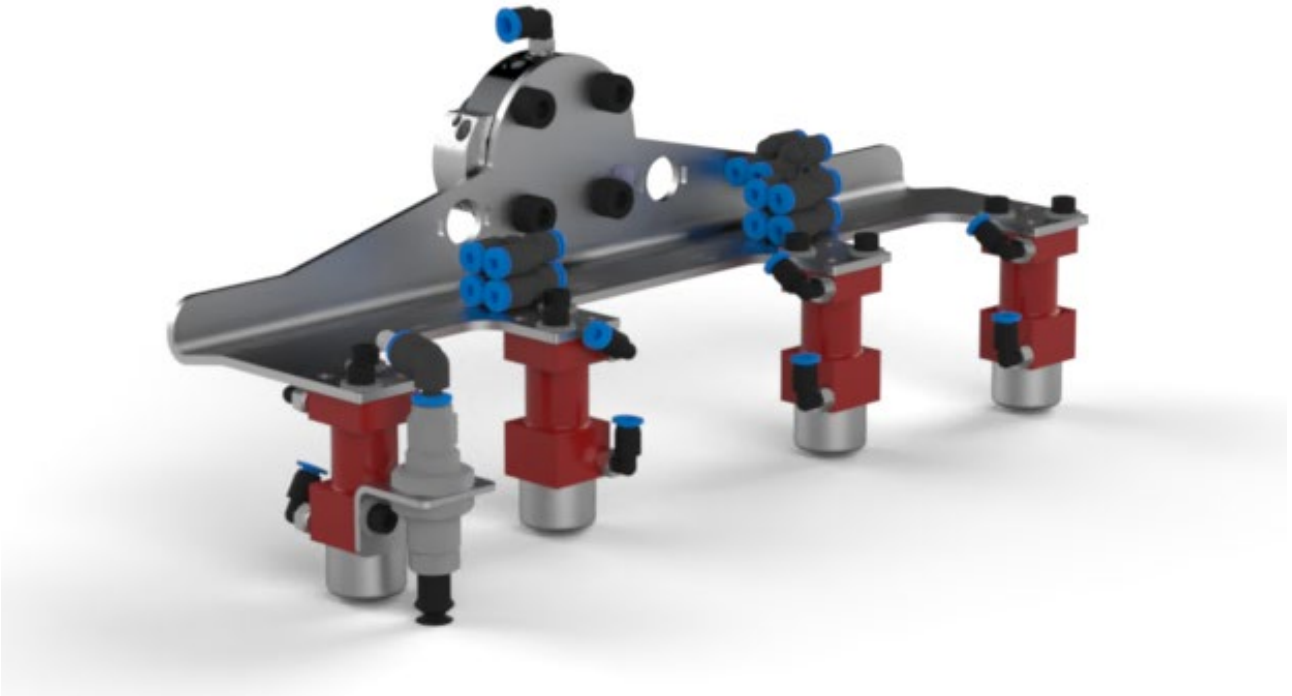
 24h

 2,8 kg

 44 N (magnets are not suitable on torsion)

Order number: 10170269





Magnet - Gripper**Magnet Ø 24 mm**

24h

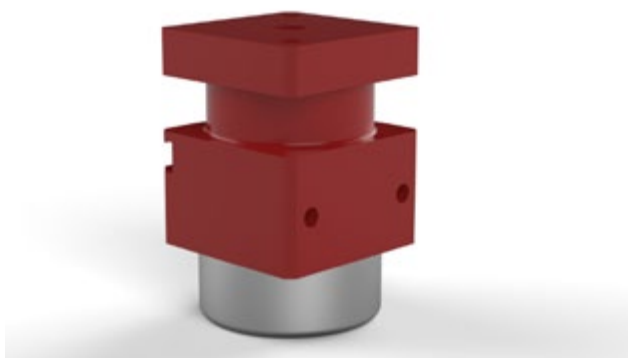


0,1 kg



11N

Order number: 10108587

Magnet Ø 40 mm

24h



0,22 kg

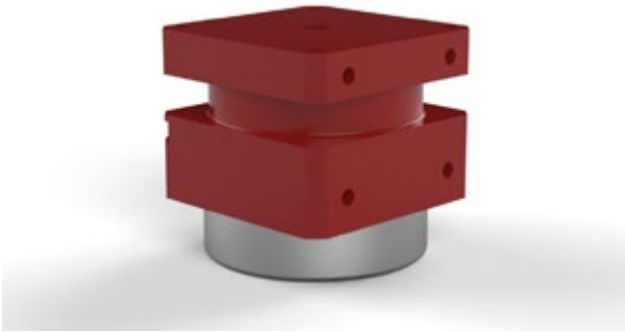


63N

Order number: 10108588

Magnet - Gripper

Magnet Ø 70 mm



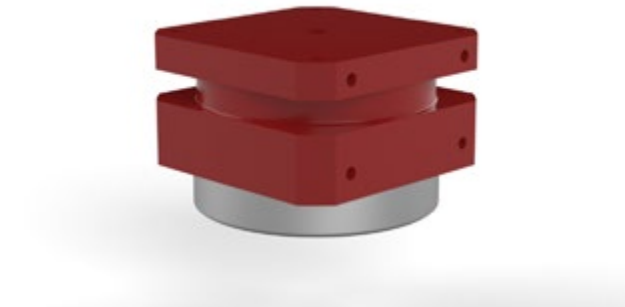
 24h

 0,72 kg

 140N

Order number: 10108589

Magnet Ø 100 mm



 24h

 1,5 kg

 450N

Order number: 10106777

Magnet - Gripper**Magnet Ø 24 mm**

24h

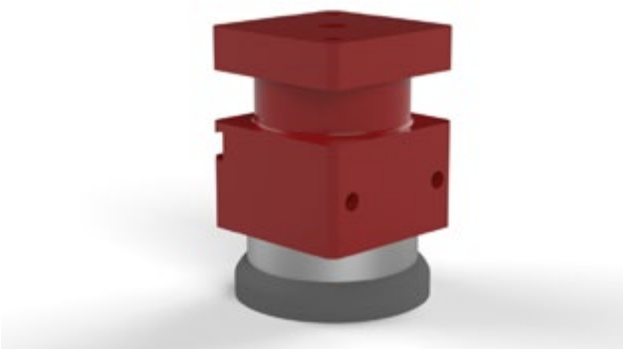


0,1 kg



8N

Order number: 10128279

Magnet Ø 40 mm

24h



0,22 kg

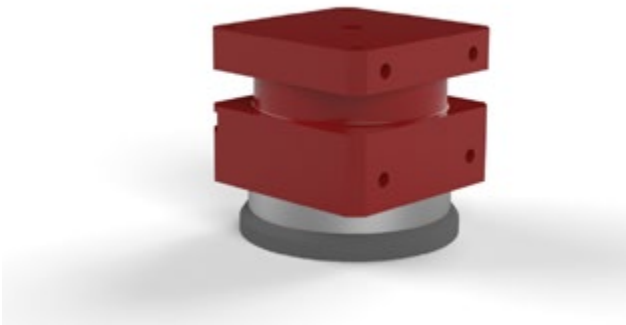


47N

Order number: 10125886

Magnet - Gripper

Magnet Ø 70 mm



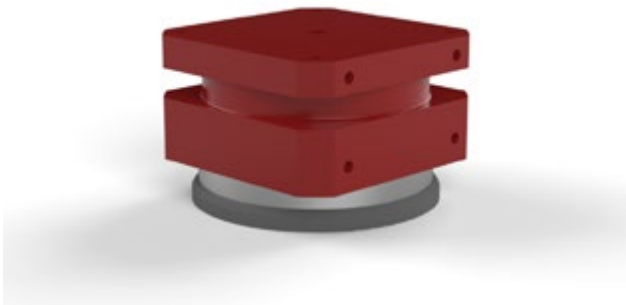
 24h

 0,72 kg

 128N

Order number: 10130711

Magnet Ø 100 mm



 24h

 1,5 kg

 390N

Order number: 10120267

All-round carefree package - Our Starter-kit

Order number: SK100038

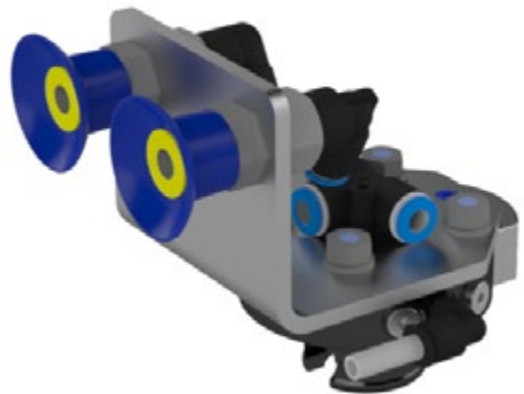
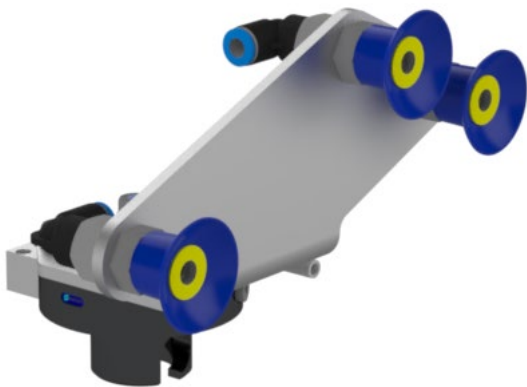
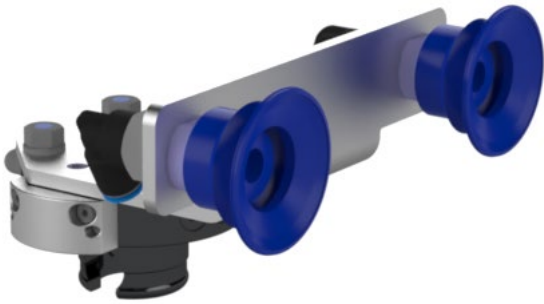
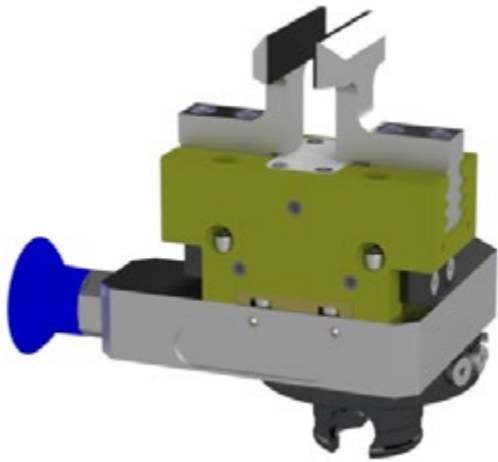
Part of the delivery are the following components:

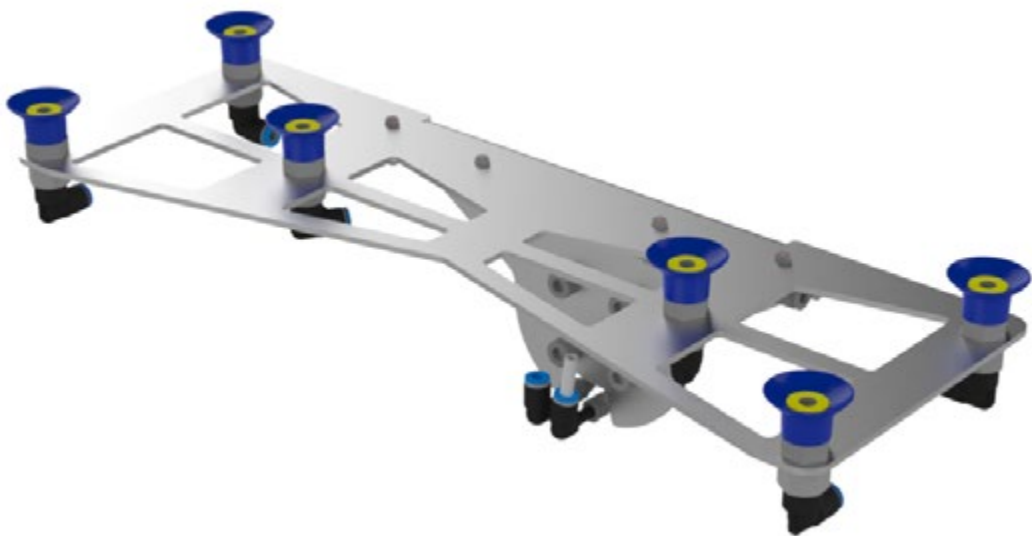
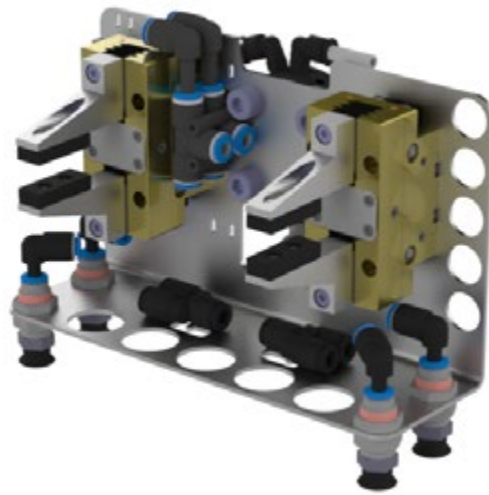
Part	Quantity
Suction Cup Ø20 mm (see page 10)	1
Suction Cup Ø30 mm (see page 10)	1
Suction Cup Ø40 mm (see page 11)	1
Suction Cup Ø50 mm (see page 11)	1
Suction Cup Ø60 mm	1
Suction Cup Ø80 mm	1
Suction Cup 60x20 mm (see page 13)	1
Pad finger pair length = 34mm (see page 14)	1
Pad finger pair length = 50mm (see page 14)	1
Pad finger pair length = 70mm (see page 15)	1
Pad finger pair length = 34 x 34mm (see page 15)	1
Pad finger pair length = 55 x 20mm (see page 16)	1
Foam insert (like on the belwo pictures)	2
Foam insert (for grippers like on the right site)*	1
Screw M8x16	9
USB-Stick incl. gripper files for Robot Manager	1
Jaw spanner HOLEX SW17	1
Hexagon screw driver	1
Instructions	1



* The shown grippers are part of the delivery of the MBR. They are not included in the starter kit.







please contact your local Bystronic contact for full details,
SAP numbers and prices



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