

Rapid. Productive. Modular.

PPU-P Pick & Place Unit

Compact 2-axis unit for a faster run of a typical pick & place motion.

Field of Application

For use in clean and slightly polluted environment. For a faster and precise shifting or controlled press-in operation of workpieces in the high-speed assembly

Advantages – Your benefits

Short cycle time therefore a high productivity is achieved

Pretensioned junction rollers that means absolutely scope-free

Adjustable horizontal and vertical stroke for compensating the set-up tolerances

Height of the front and rearward stop position can be adjusted independent from each other to be used for various pick up and deposit heights

Two waiting positions can be actuated with the control unit for maximum flexibility in applications

Compact dimensions for minimal interfering contours in handling

Rod lock by means of clamping cartridge for process reliability during system downtime

Adapter from the modular system for numerous standard combinations with products of the modular assembly automation



Sizes
Quantity: 2



Horizontal stroke
145 .. 210 mm



Vertical stroke
45 .. 60 mm



Repeat accuracy
 $\pm 0.01 .. 0.02$ mm



Max. payload
1 .. 3 kg

Functional Description

The pick & place module is actuated via two double-acting pneumatic cylinders which are integrated in the slide. The cylinders are 90° aligned to each other. The two

movements are smoothed by a cam roller that is positively driven in a curve.



- ① **Curved roller**
Lubricated for life. Is positively driven in the hardened cam plates.
- ② **Cross roller guidance**
Pretensioned and scope-free
- ③ **End position adjustment horizontally**
by shifting the cam plates to each other
- ④ **End position adjustment vertically**
Comfortable adjustment via a fine thread
- ⑤ **Driving cylinder vertical**
Double-acting pneumatic cylinder
- ⑥ **Driving cylinder horizontal**
Double-acting pneumatic cylinder

CAD data, operating manuals and other current product documents are available at [schunk.com](https://www.schunk.com)

General Notes on the Series

Guidance: Backlash-free, pre-loaded cross roller guide

Housing material: Aluminum

Material cover: Aluminum sheet, powder-coated

Actuation: pneumatic, with filtered compressed air as per ISO 8573-1:2010 [7:4:4].

Scope of delivery: Shock absorber, sensors, centering bushing, assembly and operating manual with declaration of incorporation

Warranty: 24 months

Repeat accuracy: is defined as the spread of the end position during 100 consecutive strokes.

Cycle times: refer to a typical pick & place motion. Please note that the actual cycle time is influenced by the hose length or hose diameter as well as valve switching or PLC response times.

Stroke: is the maximum nominal stroke per axis direction. It can be shortened for each side.

Ambient conditions: The modules are mainly designed for the use in clean ambient conditions. Please note that the life time of the modules can shorten if they are used in harsh ambient conditions, and that SCHUNK cannot assume liability in such cases. Please contact us for assistance.

Payload: is the weight of the total weight which is attached to the cantilever arm. Please consider if the maximum payload is exceeded, and if the area of payload is not respected, service life will shorten, and SCHUNK cannot assume any warranty for this.



Application Example

Pneumatically driven, dual axis placement machine for small components.

① RST-P Ring Indexing Table

② MPG 2-Finger Parallel Gripper

③ PPU-P Pick & Place Unit

④ VCU Valve Control Unit

SCHUNK offers more ...

The following components make the product PPU-P even more productive – the suitable addition for the highest functionality, flexibility, reliability, and controlled production.



Sensor System



Sensor Cables



Sensor Distributor



Adapter Plates



Micro Valves



Energy Hose



MPZ 3-Finger Centric Gripper



MPG-plus 2-Finger Parallel Gripper



Centering Sleeves



Fittings

① Additional information regarding the products can be found on the following product pages or at www.schunk.com. Please contact us for further information: SCHUNK technical hotline +49-7133-103-2696

Options and special Information

Version rod lock: Prevents the structure from falling in the event of a sudden loss of energy.

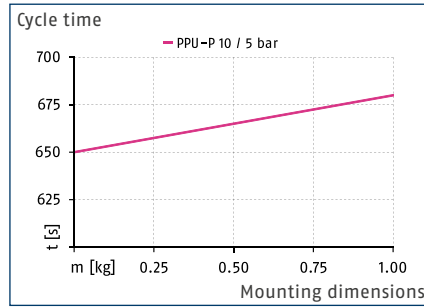
SCHUNK modular system: This module can be combined as standard with many elements from the modular system. Please contact us for further information.

PPU-P 10

Pick & Place Units | Linear Pick & Place Unit

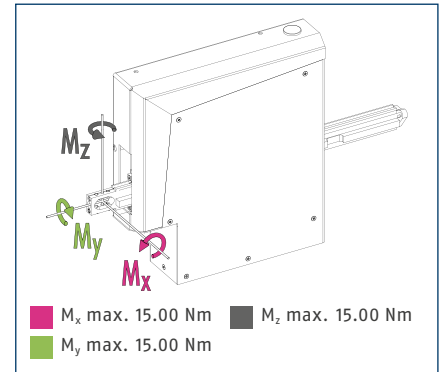


Cycle time



① The diagram is valid for table-mounting. A cycle consists of two horizontal movements (H), four vertical movements (V) and 2 x 60 ms gripping time. Verifying the sizing of the selected unit is absolutely necessary, since otherwise overloading can result. We will be happy to help you design other applications.

Moment loading

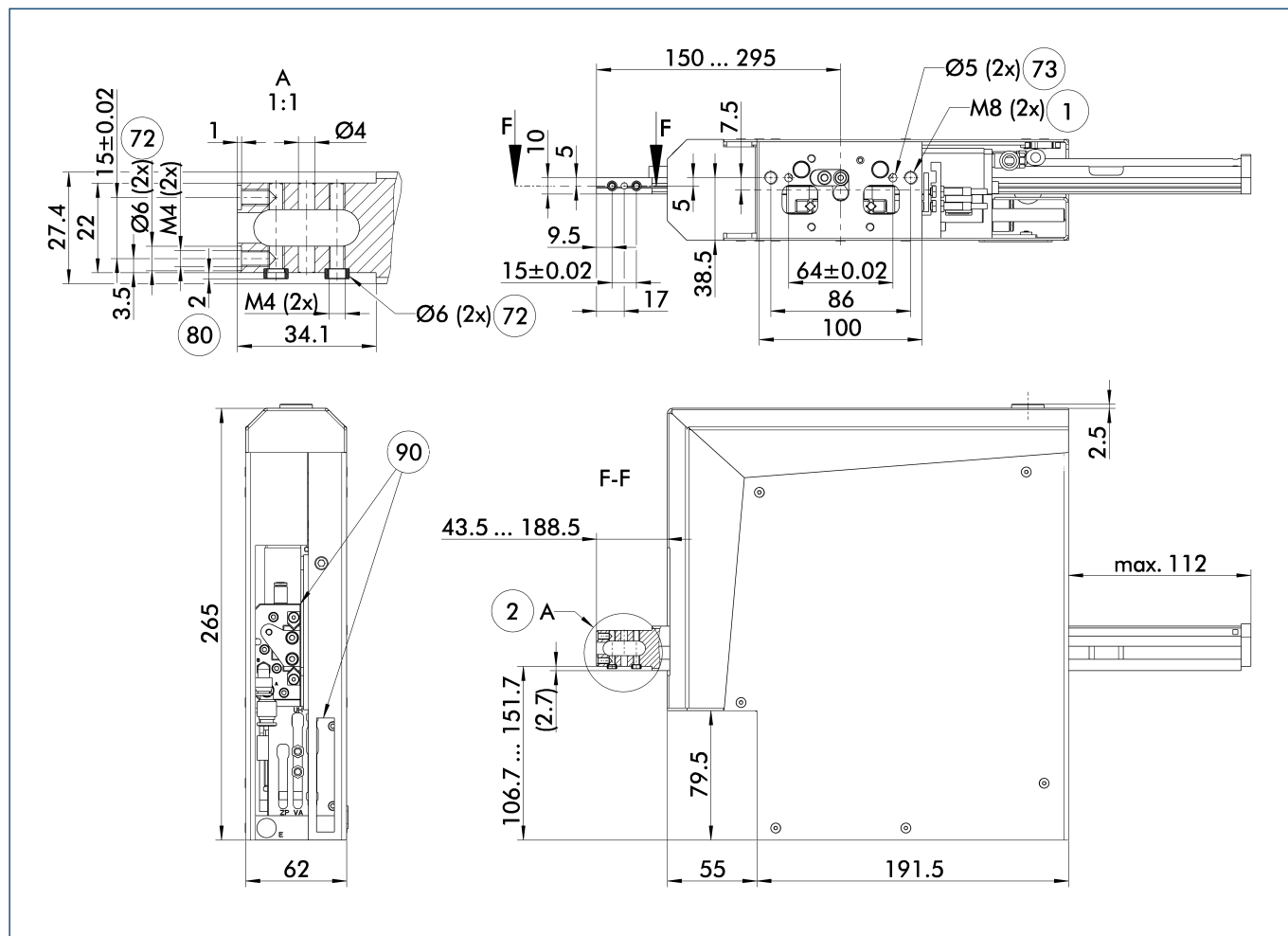


① The indicated moments are maximum values and may only occur statically. For determining the dynamic payload please consider the area of the load's center of gravity.

Technical data

Description		PPU-P 10-H145-V045
ID		0314710
Stroke horizontal [Y-axis]	[mm]	145
Stroke horizontal adjustment per side [Y-axis]	[mm]	12
Stroke vertical [Z-axis]	[mm]	45
Stroke vertical linear [Z-axis]	[mm]	20
Stroke adjustment vertical per side [Z-axis]	[mm]	15
Max. difference in height between the end positions	[mm]	8
Force extended/retracted	[N]	47/57
Force lifting/lowering	[N]	100/86
Repeat accuracy per axis	[mm]	±0.01
Piston diameter [Y-axis]	[mm]	12
Piston diameter [Z-axis]	[mm]	16
Min./max. operating pressure	[bar]	4/5
Nominal operating pressure	[bar]	5
Fluid consumption per cycle	[cm³]	63.6
Min./max. ambient temperature	[°C]	5/60
Max. payload	[kg]	1
Maximum admissible cycle time per minute	[1/min]	95
Weight	[kg]	4.5
Options and their characteristics		
Rod lock version		PPU-P 10-H145-V045-ASP
ID		0314711
Weight	[kg]	4.5
Static holding force	[N]	80
Max. axial backlash of the clamping	[mm]	0.2
Min. release air pressure	[bar]	3

Main view



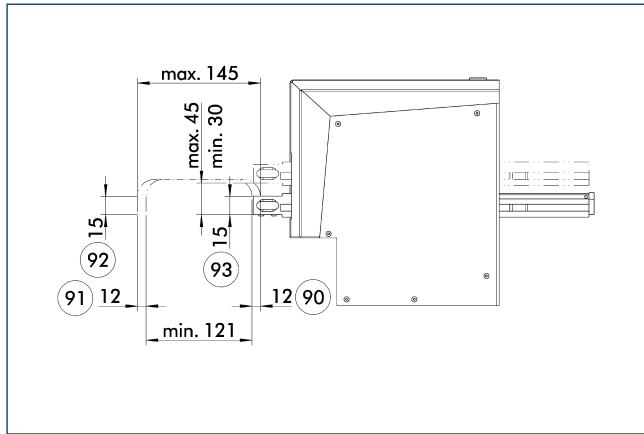
The drawing shows the unit in standard design, without considering any dimensions of the options described below.

- ① Connection pick & place unit
- ② Attachment connection
- ⑦② Fit for centering sleeves
- ⑦③ Fit for centering pins
- ⑧① Depth of the centering sleeve hole in the counter part
- ⑨① Opening for all air hoses and sensor system

PPU-P 10

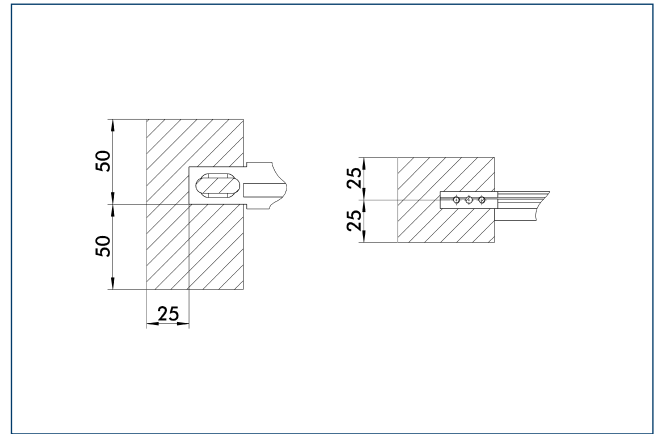
Pick & Place Units | Linear Pick & Place Unit

Stroke adjustment



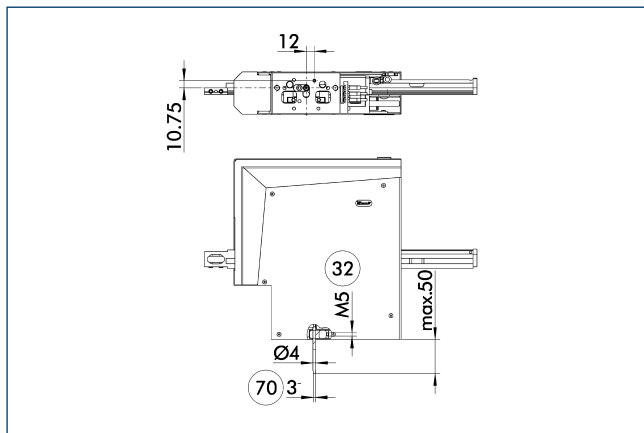
- ⑨⑩ Stroke adjustment range of the end position – horizontally retracted
 - ⑨① Stroke adjustment range of the end position – horizontally extended
 - ⑨② Stroke adjustment range of the end position – vertically extended
 - ⑨③ Stroke adjustment range of the end position – vertically retracted
- ⓘ The maximum difference in height of the end positions (vertical) should not exceed 8 mm.

Load center area



The center of mass of the attached payloads have to be located in the indicated areas only.

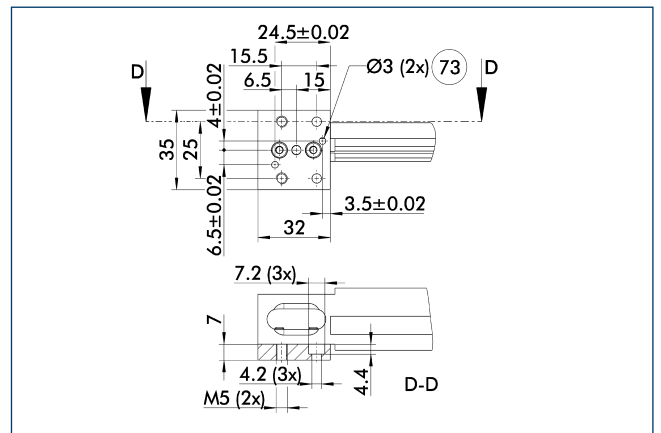
Rod lock



- ③② Pneumatic connection for holding brake
- ⑦⑩ Wrench size

The rod lock prevents weights from falling in the event of energy loss, such as emergency stop scenarios.

Adapter plate

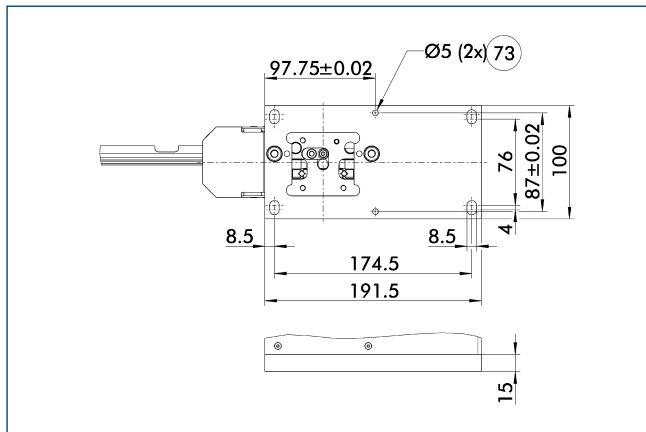


- ⑦③ Fit for centering pins

By using adapter plates, grippers, rotary modules, and gripper swivel modules from the modular system for modular assembly automation can be attached by default.

Description	ID
Adapter plate	
AS-PPU-P 10-APL	0314701

Base plate

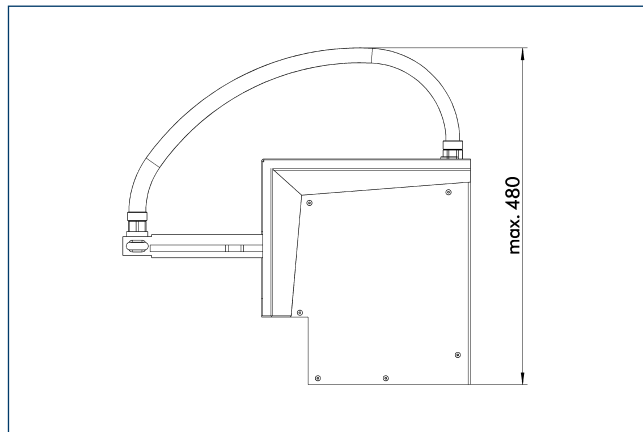


73 Fit for centering pins

By using the base plate, the unit can be comfortably screw-connected from the top.

Description	ID
Base plate	
AS-PPU-P 10-GPL	0314702

Energy hose



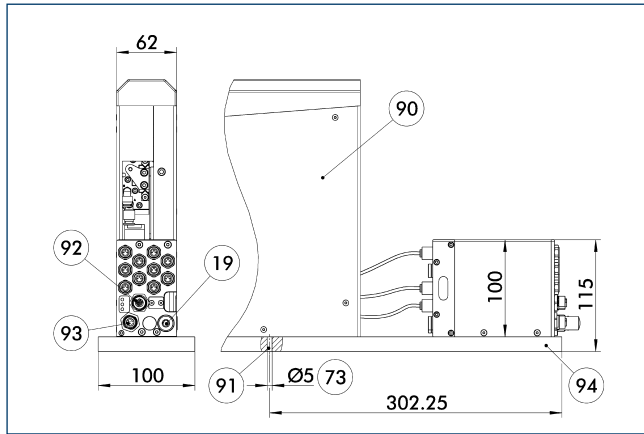
The energy hose allows hose or cable guidance to the handling component (e.g. gripper).

Description	ID
Energy hose	
AS-PPU-P 10-ES	0314700

PPU-P 10

Pick & Place Units | Linear Pick & Place Unit

VCU valve control unit

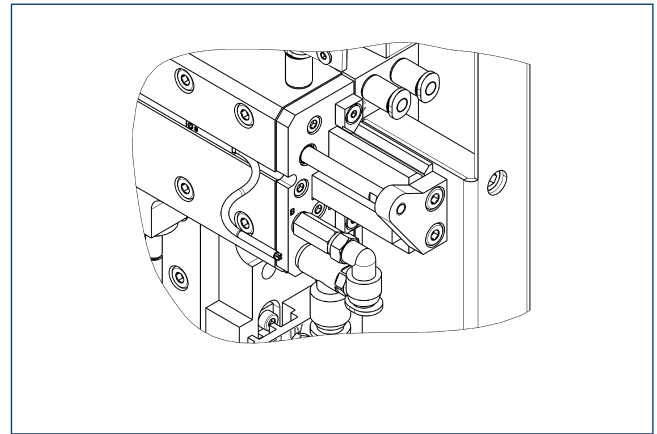


- 19 Air connection
- 73 Fit for centering pins
- 90 PPU-P pick & place unit
- 91 The position of the center bore is the same as on the base plate; AS-PPU-P 10, Gpl
- 92 Connection field bus
- 93 Connection performance and I/Os
- 94 AS-PPU-P 10 base plate, VCU

With the VCU valve control unit, the PPU-P can be directly driven, optionally including grippers or rotary gripper modules. For this, the sequence programs are already stored on the VCU and can be accessed via a simple command.

Description	ID	
Base plate		
AS-PPU-P 10-GPL-VCU	0314704	
Valve control unit		
VCU 025-04-CN-P	0314756	
VCU 025-04-PB-P	0314750	
VCU 025-05-CN-P	0314757	
VCU 025-05-PB-P	0314751	
VCU 025-06-CN-P	0314758	
VCU 025-06-PB-P	0314752	
VCU 025-07-CN-P	0314759	
VCU 025-07-PB-P	0314753	
VCU 025-08-CN-P	0314760	
VCU 025-08-PB-P	0314754	
VCU 025-09-CN-P	0314761	
VCU 025-09-PB-P	0314755	

MMS electronic magnetic switches

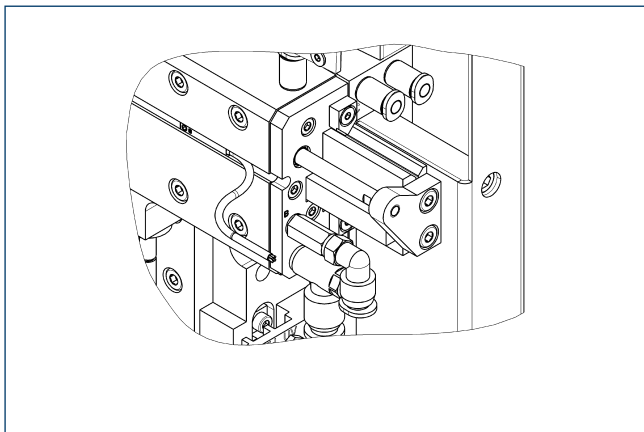


The supplied sensors provide sufficient monitoring for the unit. When the pick up and deposit height are the same, the horizontal axis can also be monitored in order to allow clear monitoring results.

Description	ID	Often combined
Electronic magnetic switches MMS		
MMS 22-S-M8-PNP	0301032	●
MMSK 22-S-PNP	0301034	
Cable extension		
KV BW08-SG08 3P-0030-PNP	0301495	
KV BW08-SG08 3P-0100-PNP	0301496	
KV BW08-SG08 3P-0200-PNP	0301497	●
Clip for plug/socket		
CLI-M8	0301463	
Connection cables		
KA BG08-L 3P-0300-PNP	0301622	●
KA BG08-L 3P-0500-PNP	0301623	
KA BW08-L 3P-0300-PNP	0301594	
KA BW08-L 3P-0500-PNP	0301502	
Sensor distributor		
V2-M8	0301775	●
V4-M8	0301746	
V8-M8	0301751	

- ① Two sensors (closer/S) are required for each unit and extension cables are available as an option. For sensor cables, note the minimum permissible bending radii. These are generally 35 mm.

MMS PI1 programmable magnetic switches



Position monitoring with one programmable position per sensor and electronics integrated in the sensor. Can be programmed using MT magnetic teaching tool (included in scope of delivery) or ST plug teaching tool (optional). End position monitoring is mounted in the C-slot. If the ST plug teaching tools are listed in the table provided, teaching is only possible with the ST teaching tools.

Description	ID	Often combined
Programmable magnetic switches MMS PI1		
MMS 22-PI1-S-M8-PNP	0301160	●
MMSK 22-PI1-S-PNP	0301162	
Programmable magnetic switches MMS PI1 with stainless steel housing		
MMS 22-PI1-S-M8-PNP-HD	0301110	●
MMSK 22-PI1-S-PNP-HD	0301112	

- ① Two sensors (closer/S) are required for each unit and extension cables are available as an option. For sensor cables, note the minimum permissible bending radii. These are generally 35 mm. For connection cable, cable extensions, as well as sensor distributor see table for MMS 22.

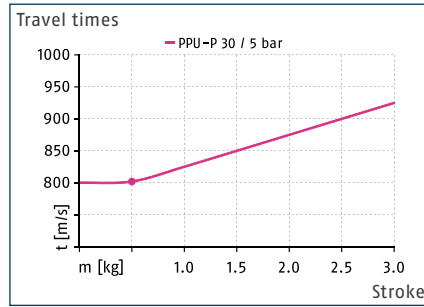


PPU-P 30

Pick & Place Units | Linear Pick & Place Unit

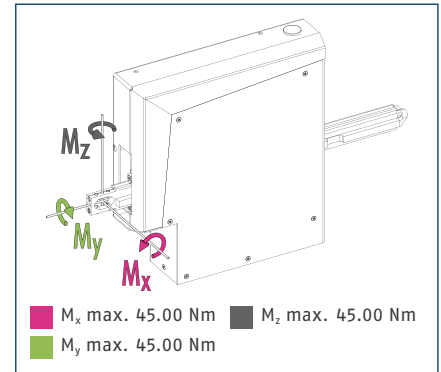


Cycle time



① The diagram is valid for table-mounting. A cycle consists of two horizontal movements (H), four vertical movements (V) and 2 x 60 ms gripping time. Verifying the sizing of the selected unit is absolutely necessary, since otherwise overloading can result. We will be happy to help you design other applications.

Moment loading

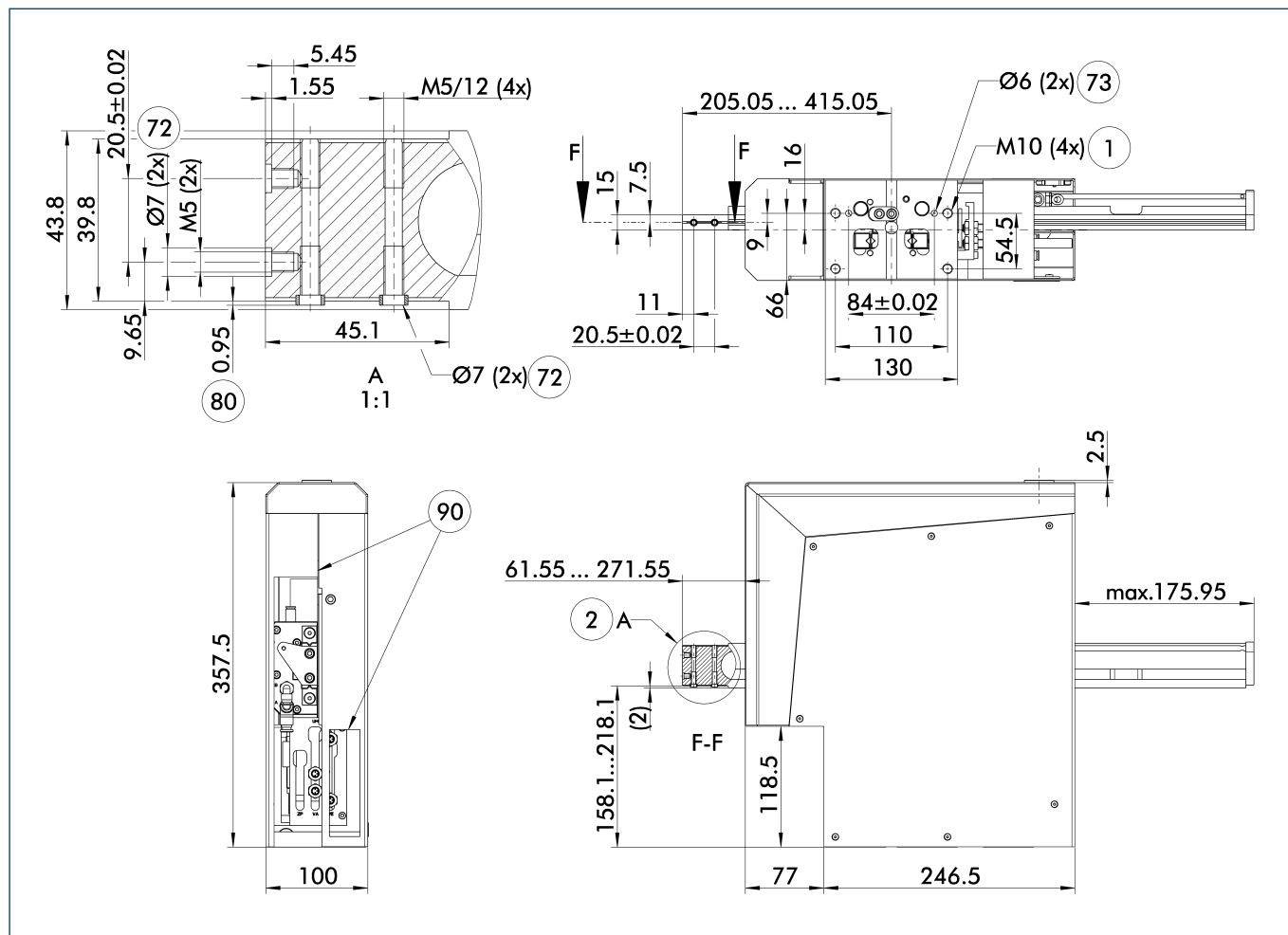


① The indicated moments are maximum values and may only occur statically. For determining the dynamic payload please consider the area of the load's center of gravity.

Technical data

Description		PPU-P 30-H210-V060
ID		0314730
Stroke horizontal [Y-axis]	[mm]	210
Stroke horizontal adjustment per side [Y-axis]	[mm]	18
Stroke vertical [Z-axis]	[mm]	60
Stroke vertical linear [Z-axis]	[mm]	30
Stroke adjustment vertical per side [Z-axis]	[mm]	20
Max. difference in height between the end positions	[mm]	10
Force extended/retracted	[N]	86/100
Force lifting/lowering	[N]	245/188
Repeat accuracy per axis	[mm]	±0.02
Piston diameter [Y-axis]	[mm]	16
Piston diameter [Z-axis]	[mm]	25
Min./max. operating pressure	[bar]	4/5
Nominal operating pressure	[bar]	5
Fluid consumption per cycle	[cm³]	184.56
Min./max. ambient temperature	[°C]	5/60
Max. payload	[kg]	3
Maximum admissible cycle time per minute	[1/min]	75
Weight	[kg]	15.5
Options and their characteristics		
Rod lock version		PPU-P 30-H210-V060-ASP
ID		0314731
Weight	[kg]	15.5
Static holding force	[kN]	180
Max. axial backlash of the clamping	[mm]	0.2
Min. release air pressure	[bar]	3

Main view



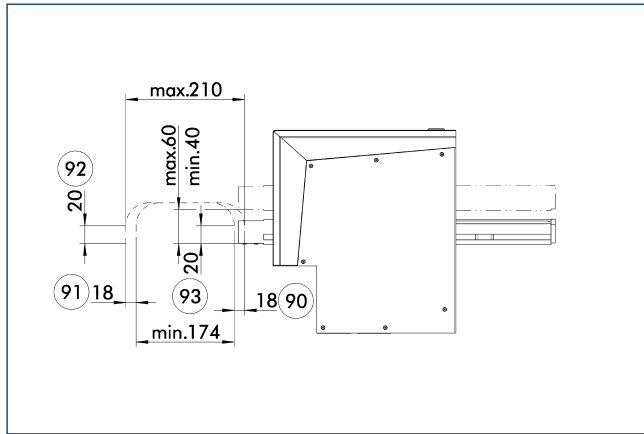
The drawing shows the unit in standard design, without considering any dimensions of the options described below.

- ① Connection pick & place unit
- ② Attachment connection
- ⑦② Fit for centering sleeves
- ⑦③ Fit for centering pins
- ⑧① Depth of the centering sleeve hole in the counter part
- ⑨① Opening for all air hoses and sensor system

PPU-P 30

Pick & Place Units | Linear Pick & Place Unit

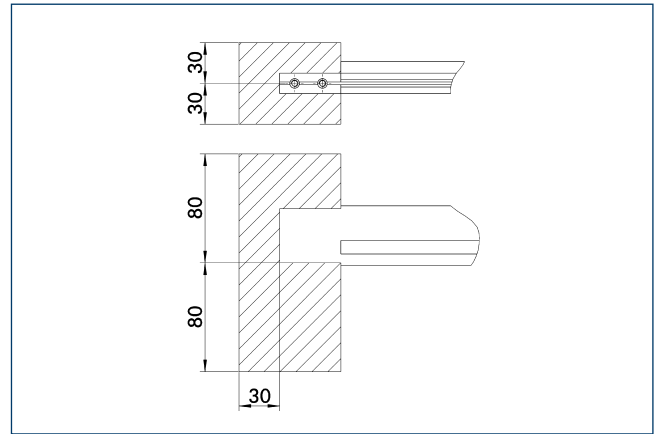
Stroke adjustment



- 90 Stroke adjustment range of the end position – horizontally retracted
- 91 Stroke adjustment range of the end position – horizontally extended
- 92 Stroke adjustment range of the end position – vertically extended
- 93 Stroke adjustment range of the end position – vertically retracted

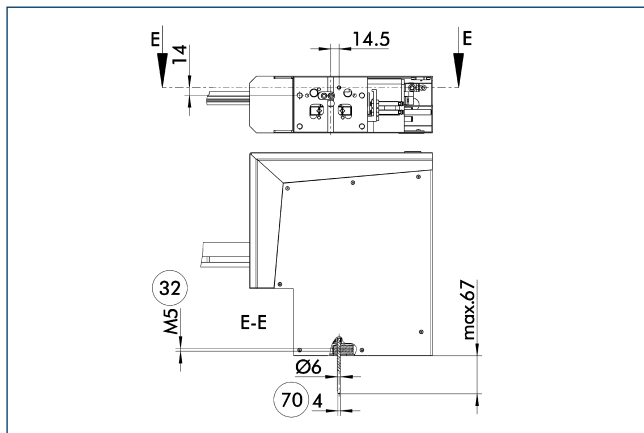
The height difference between the vertical end positions can be a maximum of 10 mm

Load center area



The center of mass of the attached payloads have to be located in the indicated areas only.

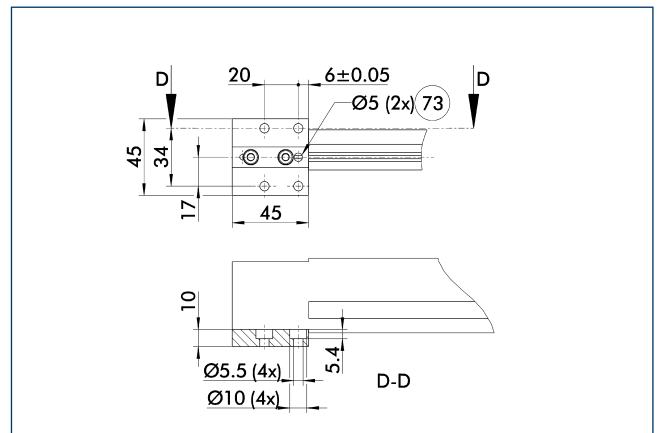
Rod lock



- 32 Pneumatic connection for holding brake
- 70 Wrench size

The rod lock prevents weights from falling in the event of energy loss, such as emergency stop scenarios.

Adapter plate

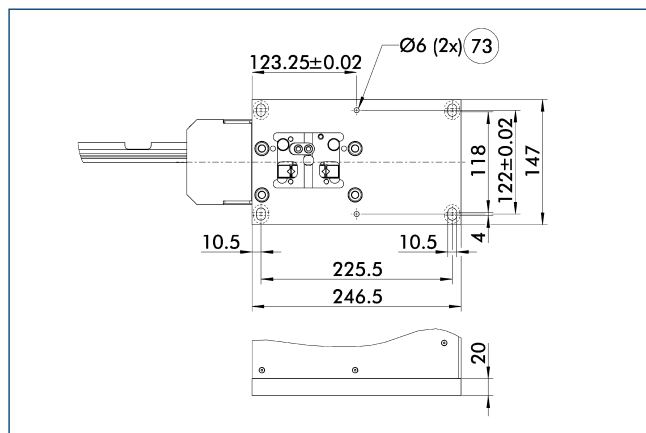


- 73 Fit for centering pins

By using adapter plates, grippers, rotary modules, and gripper swivel modules from the modular system for modular assembly automation can be attached by default.

Description	ID
Adapter plate	
AS-PPU-P 30-APL	0314706

Base plate

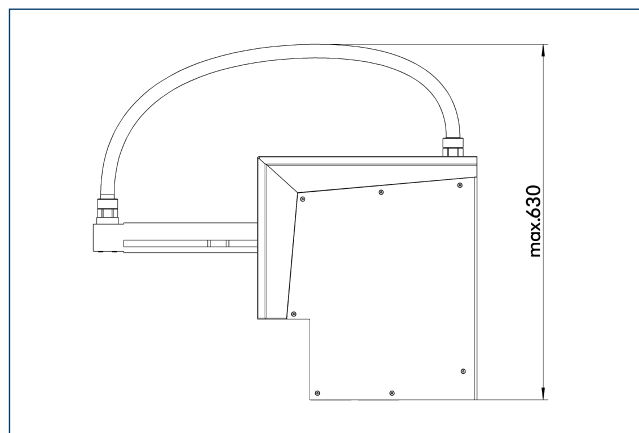


73 Fit for centering pins

By using the base plate, the unit can be comfortably screw-connected from the top.

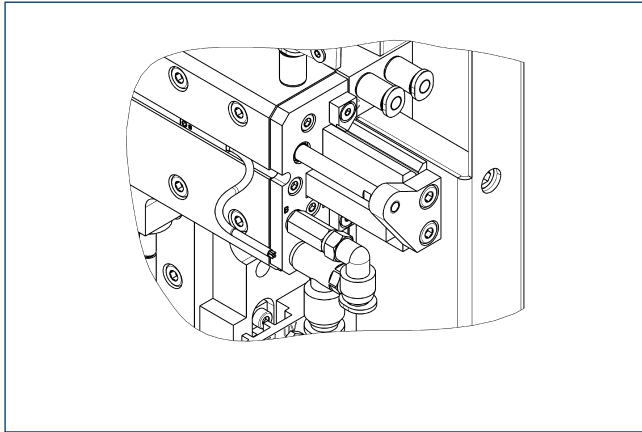
Description	ID
Base plate	
AS-PPU-P 30-GPL	0314707

Energy hose



Description	ID
Energy hose	
AS-PPU-P 30-ES	0314705

MMS electronic magnetic switches

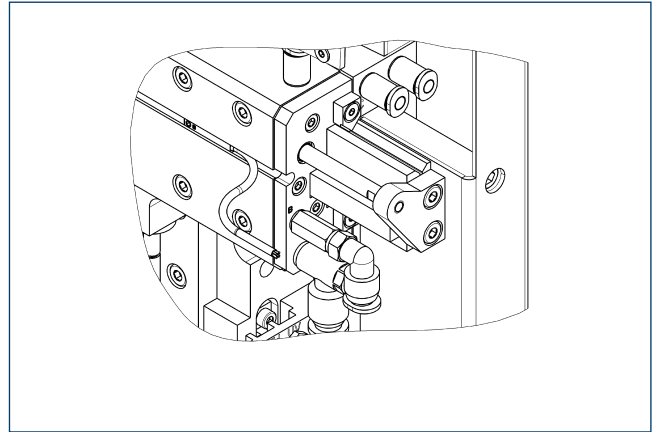


The supplied sensors provide sufficient monitoring for the unit. When the pick up and deposit height are the same, the horizontal axis can also be monitored in order to allow clear monitoring results.

Description	ID	Often combined
Electronic magnetic switches MMS		
MMS 22-S-M8-PNP	0301032	●
MMSK 22-S-PNP	0301034	
Cable extension		
KV BW08-SG08 3P-0030-PNP	0301495	
KV BW08-SG08 3P-0100-PNP	0301496	
KV BW08-SG08 3P-0200-PNP	0301497	●
Clip for plug/socket		
CLI-M8	0301463	
Connection cables		
KA BG08-L 3P-0300-PNP	0301622	●
KA BG08-L 3P-0500-PNP	0301623	
KA BW08-L 3P-0300-PNP	0301594	
KA BW08-L 3P-0500-PNP	0301502	
Sensor distributor		
V2-M8	0301775	●
V4-M8	0301746	
V8-M8	0301751	

① Two sensors (closer/S) are required for each unit and extension cables are available as an option. For sensor cables, note the minimum permissible bending radii. These are generally 35 mm.

MMS PI1 programmable magnetic switches



Position monitoring with one programmable position per sensor and electronics integrated in the sensor. Can be programmed using MT magnetic teaching tool (included in scope of delivery) or ST plug teaching tool (optional). End position monitoring is mounted in the C-slot. If the ST plug teaching tools are listed in the table provided, teaching is only possible with the ST teaching tools.

Description	ID	Often combined
Programmable magnetic switches MMS PI1		
MMS 22-PI1-S-M8-PNP	0301160	●
MMSK 22-PI1-S-PNP	0301162	
Programmable magnetic switches MMS PI1 with stainless steel housing		
MMS 22-PI1-S-M8-PNP-HD	0301110	●
MMSK 22-PI1-S-PNP-HD	0301112	

① Two sensors (closer/S) are required for each unit and extension cables are available as an option. For sensor cables, note the minimum permissible bending radii. These are generally 35 mm. For connection cable, cable extensions, as well as sensor distributor see table for MMS 22.