Compact. Fast. Productive.

DRL Lift/Swivel Unit

Compact lift/swivel unit consisting of a strong short-stroke cylinder and a rack pinion swivel drive.

Field of Application

For use in clean and slightly polluted environment. For quick transfer and simultaneous turning of workpieces in high-speed assembly.

Advantages – Your benefits

Short cycle time therefore a high productivity is achieved

Handling and turning in one unit no need for additional rotary modules in pick & place units

Adjustable swivel angle and vertical stroke for compensating the set-up tolerances

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

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

Compact dimensions for minimum interfering contours in handling

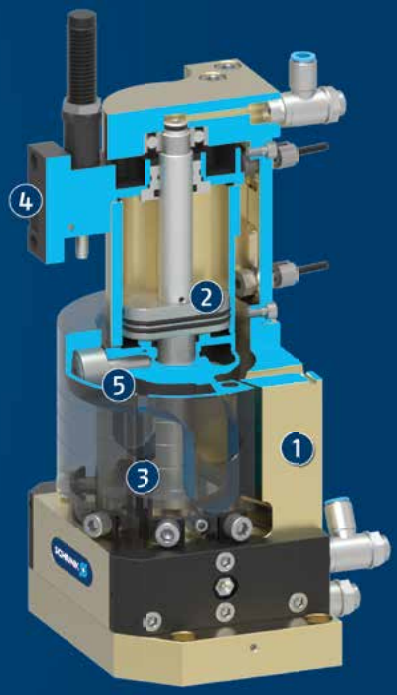
Rod lock by means of clamping cartridge for process reliability during system downtime

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

Sizes	max. swivel angle	Vertical stroke	Stroke force	Torque
Quantity: 2	90 .. 180°	33 .. 40 mm	245 .. 321 N	2.26 .. 3.7 Nm

Functional Description

The lift/swivel unit is driven via a double-acting pneumatic cylinder and a swivel unit. The two movements are smoothed by a cam roller that is positively driven in a curve.



① **Housing**
Weight-optimized due to the use of high-strength aluminum alloy

② **Vertical drive**
Double-acting pneumatic cylinder

③ **Rotary drive**
Pneumatic, rack and pinion principle

④ **Attachment connection**
for attaching the parts to be moved

⑤ **Curved roller**
Lubricated for life. Is positively driven in the hardened cam plates.

CAD data, operating manuals and other current product documents are available at **schunk.com**

General Notes on the Series

Guidance: Z-axis: robust guidance, with roller bearings in cam plate

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 target position after 100 consecutive positioning cycles.

Cycle times: The cycle times refer to a typical pick & place movement of the lift/swivel unit. Please note that the actual cycle time is influenced by the hose length and/or hose diameter and valve switching or PLC response times.

Stroke: The 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.

Nominal load or mass moment of inertia: The values refer to the total load attached to the flange. Please note that the life time of the modules is shortened if the maximum values are exceeded and that SCHUNK cannot provide any warranty in such cases.

Application Example

Pneumatically driven, two axis pick and place unit with simultaneous rotation of the workpieces.

1. DRL Pneumatic Lift/Swivel Unit
2. MPG-plus 2-Finger Parallel Gripper

SCHUNK offers more ...

The following components make the product DRL 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

ⓘ 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

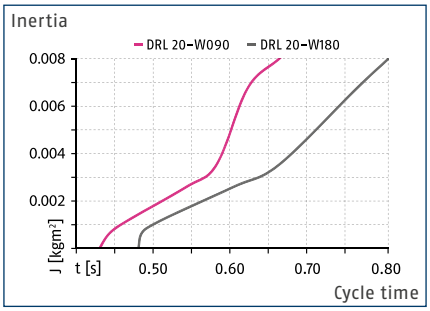
Options and special Information

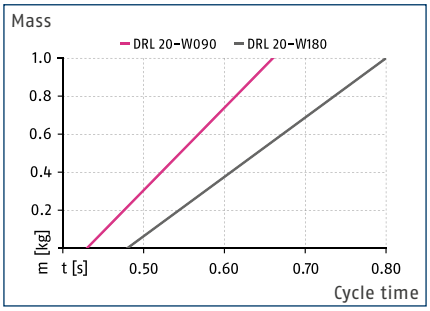
Version rod lock: prevents the structure from falling in the event of a sudden loss of energy.
SCHUNK modular system: This module can be combined as standard with many elements from the modular system.
Center position version: The optional center position is delivered completely mounted on the DRL. This is only possible for version DRL-W180. The option allows the DRL 25-W180 to approach a center position at 90°. This position cannot be adjusted.
PLC program module: PLC functional modules are available for the DRL and PPU-P pick & place modules. They contain a program sequence and are used for easier control and commissioning of products.
Please contact us for further information.

DRL 20

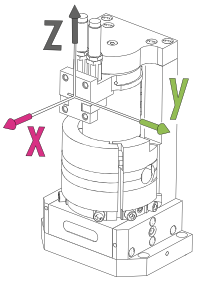
Pick & Place Units | Compact Lift/Swivel Unit

Cycle time





Axis definitions



For values see technical data table

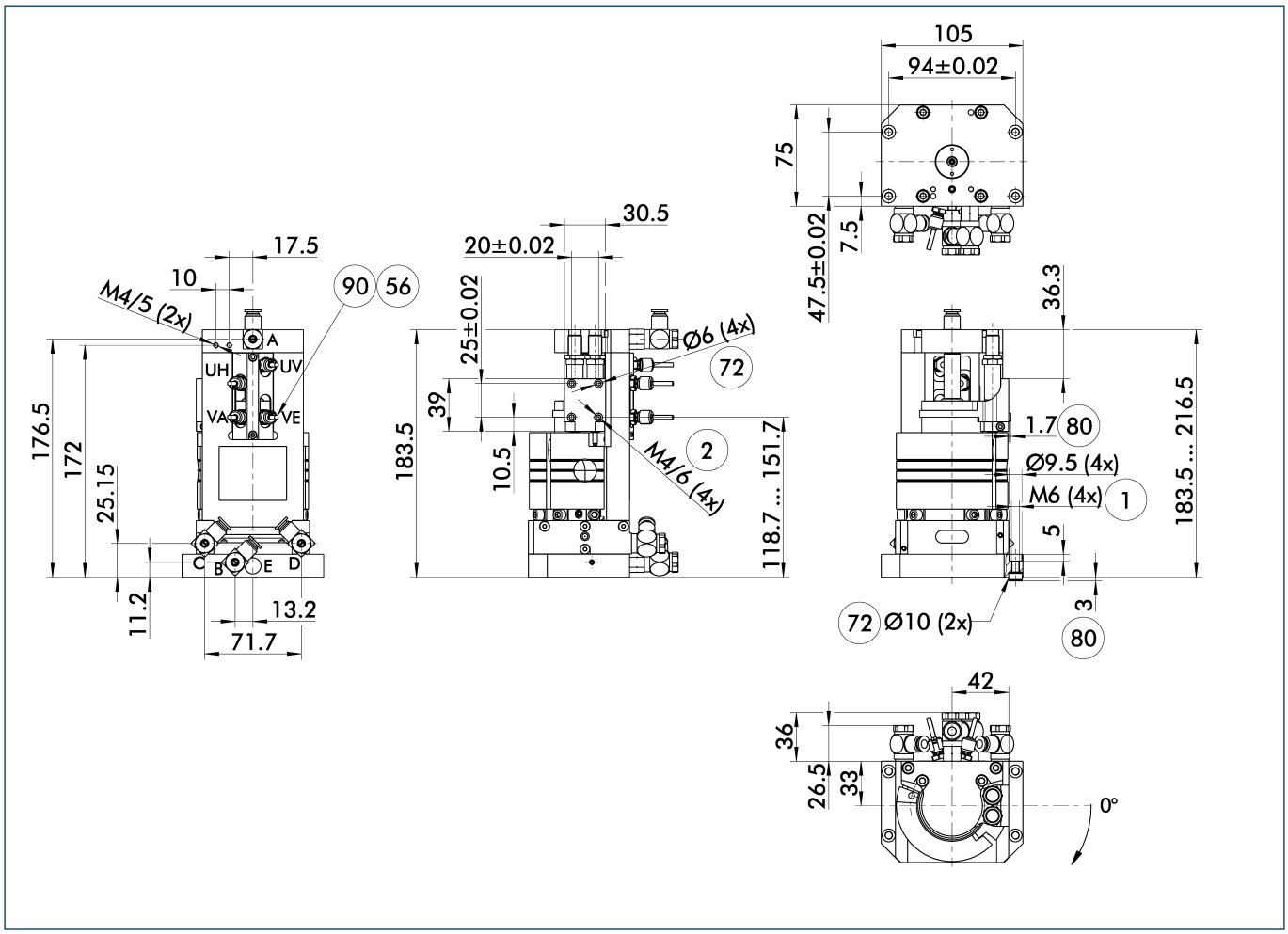
ⓘ No further loads above and beyond the loads due to handling the structure may arise.

Technical data

Description		DRL 20-W090	DRL 20-W180
ID		0314772	0314782
Angle of rotation	[°]	90	180
Angular setting per side	[°]	2	2
Stroke vertical [Z-axis]	[mm]	33	33
Stroke vertical linear [Z-axis]	[mm]	18	18
Stroke adjustment vertical per side [Z-axis]	[mm]	10	10
Max. difference in height between the end positions	[mm]	10	10
Torque	[Nm]	2.26	2.26
Force lifting/lowering	[N]	245/220	245/220
Repeat accuracy [Z-axis]	[mm]	±0.01	±0.01
Repeat accuracy, rotary	[°]	0.02	0.02
Min./max. operating pressure	[bar]	3/6	3/6
Nominal operating pressure	[bar]	6	6
Fluid consumption per cycle	[cm³]	75	99
Min./max. ambient temperature	[°C]	5/60	5/60
Max. payload	[kg]	1	1
Maximum admissible cycle time per minute	[1/min]	63	63
Weight	[kg]	2.7	2.7
Options and their characteristics			
Rod lock version		DRL 20-W090-ASP	DRL 20-W180-ASP
ID		0314773	0314783
Weight	[kg]	2.7	2.7
Static holding force	[N]	80	80
Max. axial backlash of the clamping	[mm]	0.2	0.2

ⓘ To determine the permissible cycle time, the time for the existing mass moment of inertia and the existing mass must be determined using the diagrams. The higher value of the determined cycle time is decisive. The times must be observed via throttling, otherwise the life span can decrease. We will be happy to help you design other applications.

Main view



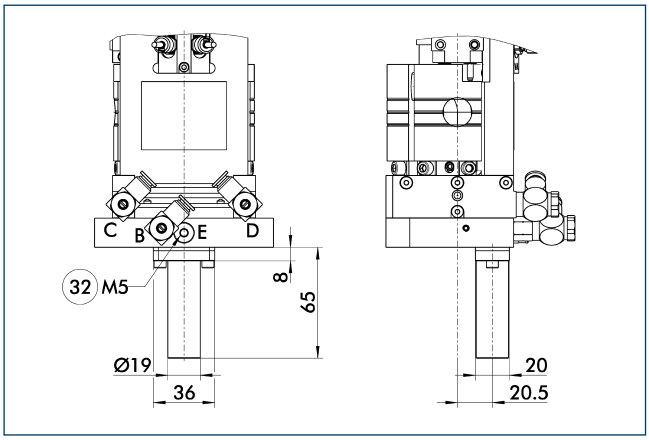
The drawing shows the unit in standard design, without considering any dimensions of the options described below.

ⓘ VE: Sensor for right end position, VA: Sensor for left end position, UH: Switching point for horizontal drive, UV: Switching point for vertical drive, MA: Center position counter-clockwise rotation inactive MB: Center position counter-clockwise rotation active, MC: Center position clockwise rotation inactive (not shown), MD: Center position clockwise rotation active (not shown)

A, a Lift air connection pick & place unit
B, b Lower air connection pick & place unit
C, c Retracted air connection pick & place unit
D, d Extended air connection pick & place unit
E, e Air connection, rod lock

(1) Connection pick & place unit
(2) Attachment connection
(56) Included in the scope of delivery
(72) Fit for centering sleeves
(80) Depth of the centering sleeve hole in the counter part
(90) Inductive sensor with cable outlet

Rod lock



B, b Lower air connection pick & place unit

C, c Retracted air connection pick & place unit

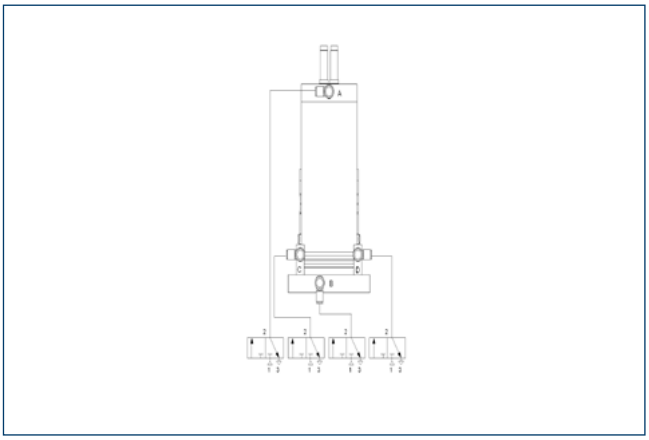
D, d Extended air connection pick & place unit

E, e Air connection, rod lock

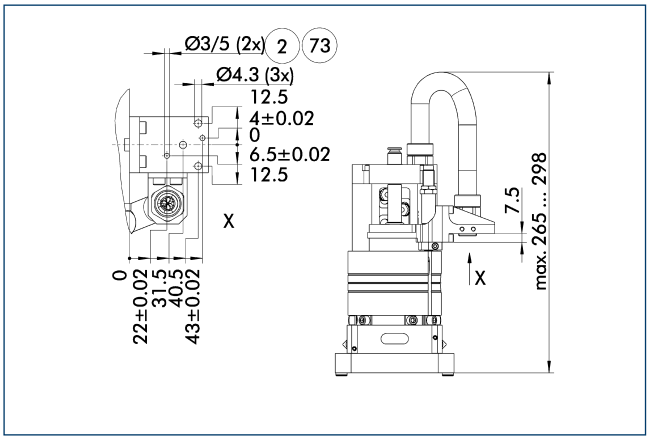
(32) Pneumatic connection for holding brake

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

Wiring diagram



Energy hose



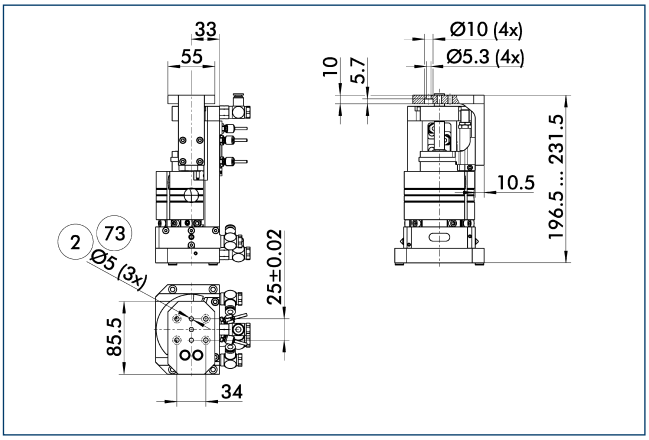
(2) Attachment connection

(73) Fit for centering pins

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

Description	ID	
Energy hose		
AS-DRL 20-ES	0314765	

Angle adapter



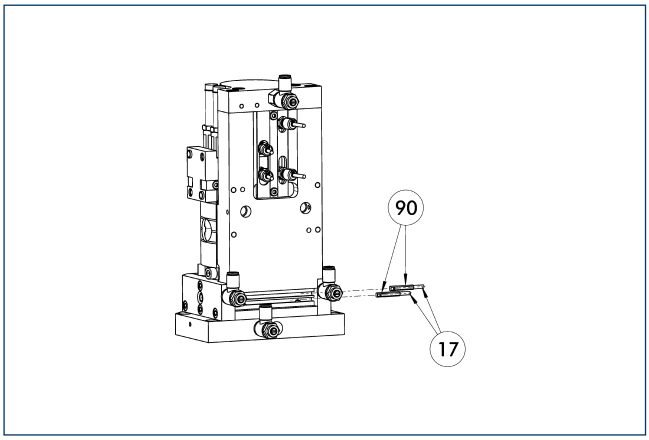
(2) Attachment connection

(73) Fit for centering pins

The angle adapter moves the screw-in component for handling the swivel axis.

Description	ID	
Adapter plate		
AS-DRL 20-WA	0314766	

Electronic magnetic switches MMS

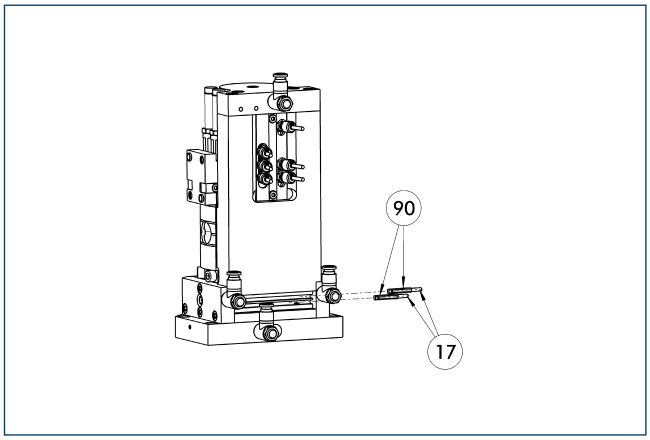


(17) Cable outlet (90) Sensor MMS 22..

The unit can be efficiently monitored by the provided sensors. To determine the actual position of the module, it is recommended to query the rotational end positions by additional MMS sensors.

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	

Programmable magnetic switches MMS PI1



(17) Cable outlet (90) Sensor MMS 22..

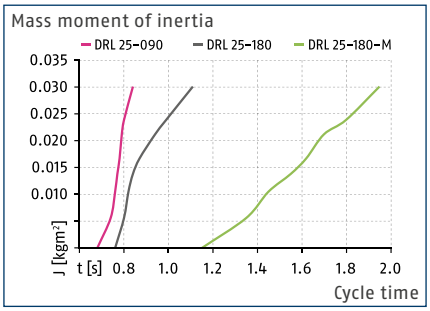
The unit can be efficiently monitored by the provided sensors. To determine the actual position of the module, it is recommended to query the rotational end positions by additional MMS sensors.

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	

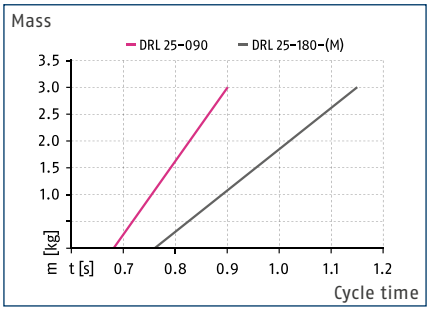
DRL 25

Pick & Place Units | Compact Lift/Swivel Unit

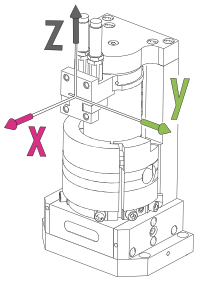
Cycle time



Cycle time



Axis definitions



For values see technical data table

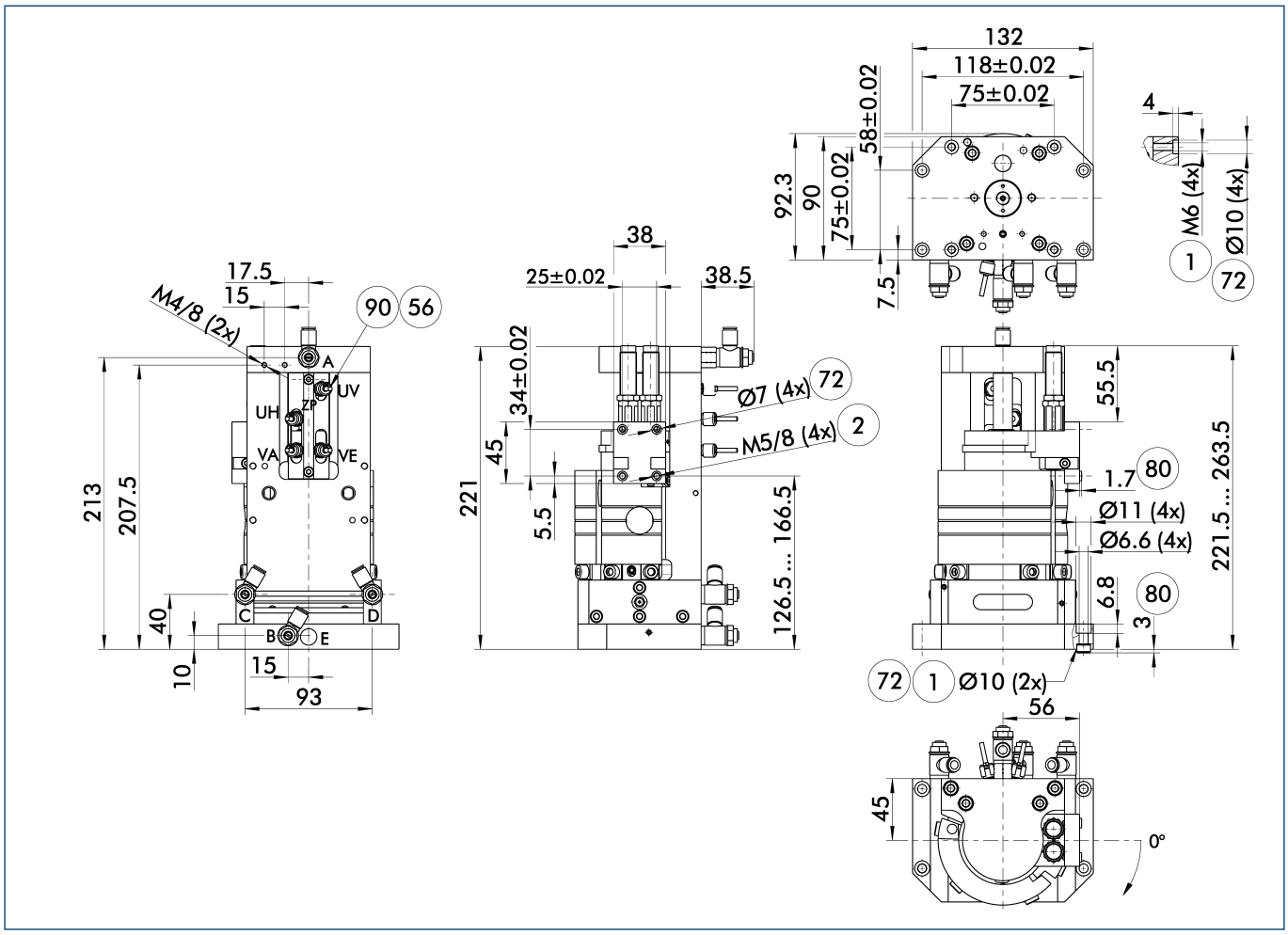
ⓘ No further loads above and beyond the loads due to handling the structure may arise.

Technical data

Description		DRL 25-W090	DRL 25-W180
ID		0314770	0314780
Angle of rotation	[°]	90	180
Angular setting per side	[°]	2	2
Stroke vertical [Z-axis]	[mm]	40	40
Stroke vertical linear [Z-axis]	[mm]	20	20
Stroke adjustment vertical per side [Z-axis]	[mm]	10	10
Max. difference in height between the end positions	[mm]	10	10
Torque	[Nm]	3.7	3.7
Force lifting/lowering	[N]	321/298	321/298
Repeat accuracy [Z-axis]	[mm]	±0.01	±0.01
Repeat accuracy, rotary	[°]	0.02	0.02
Min./max. operating pressure	[bar]	3/5	3/5
Nominal operating pressure	[bar]	5	5
Fluid consumption per cycle	[cm³]	176	200
Min./max. ambient temperature	[°C]	5/60	5/60
Max. payload	[kg]	3	3
Maximum admissible cycle time per minute	[1/min]	63	63
Weight	[kg]	5	5
Options and their characteristics			
Rod lock version		DRL 25-W090-ASP	DRL 25-W180-ASP
ID		0314771	0314781
Weight	[kg]	5	5
Static holding force	[N]	80	80
Max. axial backlash of the clamping	[mm]	0.2	0.2
Version with center position			DRL 25-W180-M
ID			0314784
Angle of rotation at center position	[°]		90
Repeat accuracy, center position	[°]		±2

ⓘ To determine the permissible cycle time, the time for the existing mass moment of inertia and the existing mass must be determined using the diagrams. The higher value of the determined cycle time is decisive. The times must be observed via throttling, otherwise the life span can decrease. We will be happy to help you design other applications.

Main view



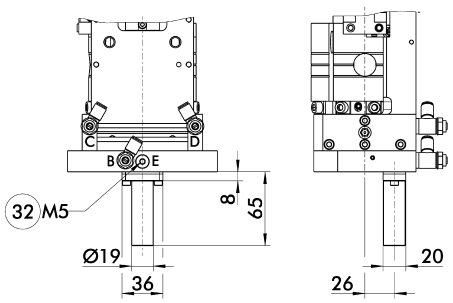
The drawing shows the unit in standard design, without considering any dimensions of the options described below.

ⓘ VE: Sensor for right end position, VA: Sensor for left end position, UH: Switching point for horizontal drive, UV: Switching point for vertical drive, MA: Center position counter-clockwise rotation inactive, MB: Center position counter-clockwise rotation active, MC: Center position clockwise rotation inactive (not shown), MD: Center position clockwise rotation active (not shown)

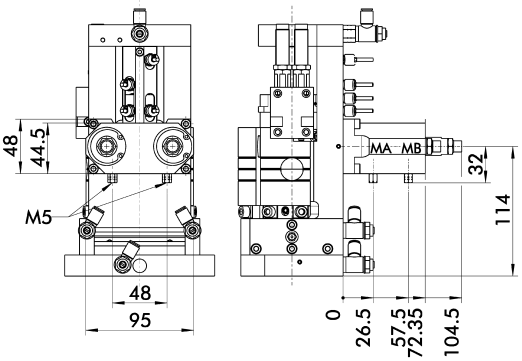
A, a Lift air connection pick & place unit
B, b Lower air connection pick & place unit
C, c Retracted air connection pick & place unit
D, d Extended air connection pick & place unit
E, e Air connection, rod lock

(1) Connection pick & place unit
(2) Attachment connection
(56) Included in the scope of delivery
(72) Fit for centering sleeves
(80) Depth of the centering sleeve hole in the counter part
(90) Inductive sensor with cable outlet

Rod lock



Middle position



B, b Lower air connection pick & place unit

C, c Retracted air connection pick & place unit

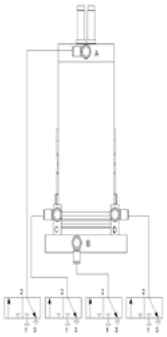
D, d Extended air connection pick & place unit

E, e Air connection, rod lock

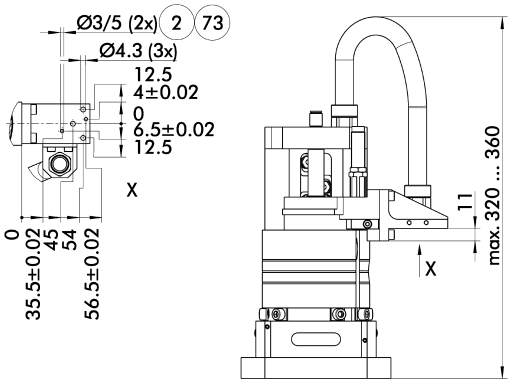
(32) Pneumatic connection for holding brake

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

Wiring diagram



Energy hose



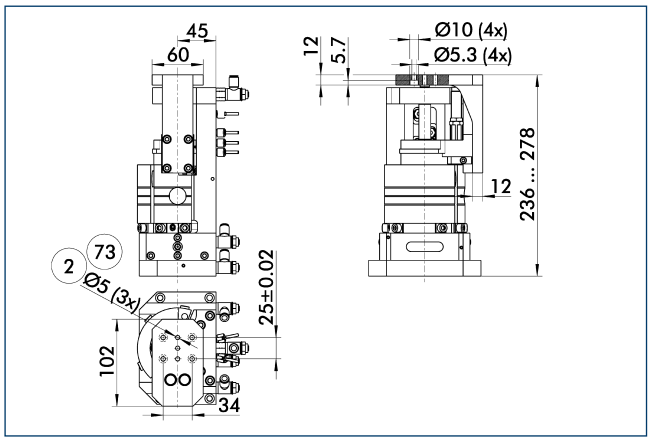
(2) Attachment connection

(73) Fit for centering pins

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

Description	ID	
Energy hose		
AS-DRL 25-ES	0314762	

Angle adapter

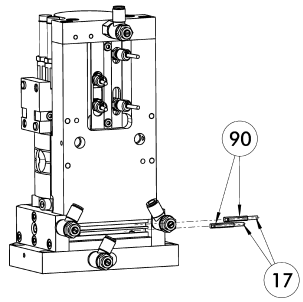


(2) Attachment connection (73) Fit for centering pins

The angle adapter moves the screw-in component for handling the swivel axis.

Description	ID	
Adapter plate		
AS-DRL 25-WA	0314763	

MMS electronic magnetic switches

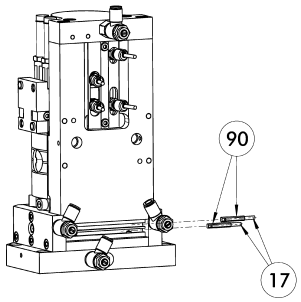


(17) Cable outlet (90) Sensor MMS 22..

The unit can be efficiently monitored by the provided sensors. To determine the actual position of the module, it is recommended to query the rotational end positions by additional MMS sensors.

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	

Programmable magnetic switches MMS PI1



(17) Cable outlet

(90) Sensor MMS 22..

The unit can be efficiently monitored by the provided sensors. To determine the actual position of the module, it is recommended to query the rotational end positions by additional MMS sensors.

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	