

**High-precision slide
PS 16 mit ZA**

- **Declaration of Incorporation**
- **Module Information**
- **Montage Instructions**
- **Maintenance Instructions**



„Translation“ of the Original Montage Instructions

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These Montage Instructions apply to:

Type	Order No.	Type	Order No.
PS 16/50	50076867	PS 16/100	50076873
PS 16/150	50076874		

Version of this documentation: PS16-OI-vers. 3.9 gb. 20190314

Symbols: Assembly and initial start-up must be carried out by qualified Personnel only and according to these Montage Instructions.

 **DANGER**

	<p>Indicates an immediate threatening danger.</p> <p>Non-compliance with this information can result in death or serious personal injuries (invalidity).</p>
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 **WARNING**

	<p>Indicates a possible dangerous situation.</p> <p>Non-compliance with this information can result in death or serious personal injuries (invalidity).</p>
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 **CAUTION**

	<p>Indicates a possibly dangerous situation.</p> <p>Non-compliance with this information can result in damage to property or light to medium personal injuries.</p>
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NOTE

	<p>Indicates general notes, useful operator tips and operating recommendations which don't affect safety and health of the personnel.</p>
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1.0.0 EC Declaration for Incorporation (Document original)

1.1.0 According to: 2006/42/EC

Standard: EN ISO 12100:2010 (German Version)
hereby declares that the incomplete machine:

The manufacturer:

Afag Automation AG, Luzernstrasse 32, CH-6144 Zell

Designation: High-precision slide (pneumatic)
Type: PS 16/50; PS 16/100; PS 16/150
Sequential series No. 50xxxxxx

Machinery Directive: 2006/42/EG

- **Standard:** EN ISO 12100:2010 (German Version)
- Safety of machinery General principles for risk assessment and risk reduction.
- The special technical documents shall be sent to a reasoned request by national authorities in printed documents or electronically (pdf).

Applied and fulfilled essential requirements:

- 1.1; 1.1.1; 1.1.2; 1.2.3; 1.2.4.4; 1.3; 1.3.5; 1.3.6; 1.3.7; 1.3.9; 1.4.1; 1.5; 1.5.3; 1.6; 1.6.1; 1.6.3; 1.6.4; 1.7; 1.7.4; 1.7.4.1; 1.7.4.2; 1.7.4.3
-
- Who installs this incomplete machine or assemble with other machines, a risk assessment for its resulting machine which must make the provisions of the
- **EC directive: 2006/42 / EC.**
- **Norme:** EN ISO 12100:2010 (German Version)

Agent:

For the compilation of the technically relevant documents: Niklaus
Röthlisberger, Products Manager Afag Automation AG, CH-6144 Zell

Place, Date: Zell, 15.06.2021

Siegfried Egli



Managing Director
Afag Automation AG

Niklaus Röthlisberger



Producte Manager HT
Afag Automation AG

2.0.0 Module Information

2.1.0 Transport and storage (packing and unpacking)

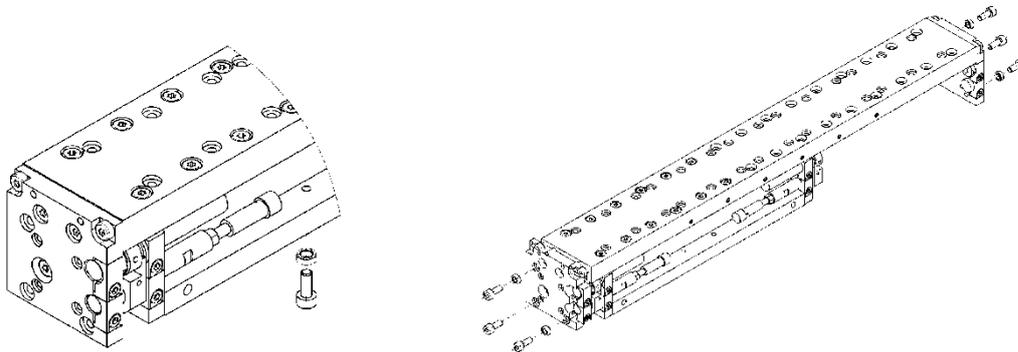
 CAUTION	
	<p>The PS 16 module is packed in the original cardboard box; if the module is not handled properly it may fall out of the box when unpacking and cause injuries to limbs or squeeze your fingers.</p>



NOTE	
	<p>Consider please! With each module security is settled a technical newspaper. This newspaper is to be read busily by each person with the module.</p>

2.1.1 Possibilities of fastening PS 16

Depending on the application either the base body or the slide can be mounted rigidly.



Installation of base body from below

Mounting of gantry model

Use the centering bushings included in the scope of supply to determine the position and insert these bushings in the opposite borings of the mounting grid.

 CAUTION	
	<p>In case of installation in a vertical position, the slide should always be moved, before the installation, into the lowermost position, since masses that move suddenly can cause injury.</p>

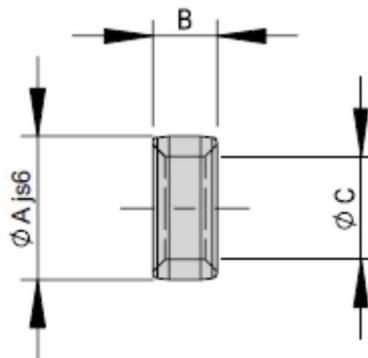
2.1.2 Centering bushings and hole matrix

Hole matrix at the PS 16 High-Precision slide

PS 16		
Hole matrix	30x30 mm	20x20 mm
Thead / bore hole	M4	M3
Centering bushings (H7)	Ø 7 mm	Ø 5 mm

Use the centering bushings included in the scope of supply for positioning and insert these centering bushings in the diagonally opposite bore holes of the mounting grid.

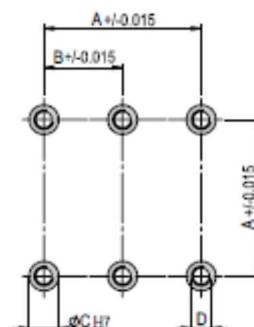
Centering bushings	Ø4x2	Ø5x2.5	Ø7x3	Ø8x3.5	Ø9x4	Ø12x4.8	Ø19x5.8
Order number	50332257	50035831	11016850	50263565	11004942	50187424	50189497
Net weight	0.001 kg	0.002 kg	0.006 kg				
A	4 mm	5 mm	7 mm	8 mm	9 mm	12 mm	19 mm
B	2 mm	2.5 mm	3 mm	3.5 mm	4 mm	4.8 mm	5.8 mm
C	2.6 mm	3.2 mm	4.3 mm	5.4 mm	6.5 mm	8.5 mm	13 mm



Attachment grid	16x16 mm	20x20 mm	30x30 mm	38x38 mm	48x48 mm	60x60 mm	75x75 mm	96x96 mm
A	16 mm	20 mm	30 mm	38 mm	48 mm	60 mm	75 mm	96 mm
B	8 mm	10 mm	15 mm	19 mm	24 mm	30 mm	37.5 mm	48 mm
C	4x1.1 mm	5x1.3 mm	7x1.6 mm	8x1.8 mm	9x2.1 mm	12x2.5 mm	15x2.7 mm	19x3 mm
D	M2.5	M3	M4	M5	M6	M8	M10	M12

Module-centering, centering bushings

In order to guarantee a high and repetitive fit accuracy during installation, operation or replacement of a module, all components of the entire program are consequently provided with a precise module centering. Centering bushings or pins are supplied as standard with each module.



2.1.3 Tightening moments for bolts

The screws to be used for assembly must at least satisfy the following conditions:

Standard: VDI 2230
 Strength: class 8.8
 Surface: galvanized blue, oiled or greased

Thread	Tightening moments
M3	1.1 ... 1.4 Nm
M4	2.6 ... 3.3 Nm
M5	5.2 ... 6.5 Nm
M6	9,0 ... 11.3 Nm
M8	21.6 ... 27.3 Nm

[This is an incomplete machine](#)

Assembly of the PS 16 High-precision slide in a system

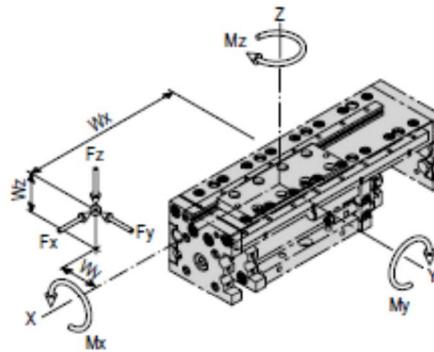
The series of the PS 16 module is used for the linear, smooth movement of rigidly mounted loads under the ambient and operating conditions defined for this module, see Technical data. The PS 16 module can be installed in the horizontal or vertical position.

NOTE	
	<p>These Montage Instructions should be read carefully before carrying out any activity on or with the PS 16 module. The PS 16 module may only be deployed in accordance with the intended use.</p>

NOTE	
	<p>Safety instructions</p> <p>Modifications on the PS 16 module that are not described in these Montage Instructions or have not been approved in writing by Afag Automation AG are not permitted. In case of improper changes or assembly, installation, operation and maintenance or repairs Afag rejects all liability.</p>

2.1.4 Slide unit load factors PS 16

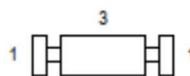
Type	PS 16/50	PS 16/100	PS 16/150
Max. static torque M_x	23 Nm	34.6 Nm	42.4 Nm
Max. static torque M_y	38.5 Nm	54.6 Nm	70.7 Nm
Max. static torque M_z	20.8 Nm	28.4 Nm	36.2 Nm
Max. dynamic torque M_x	8.9 Nm	13.3 Nm	16.3 Nm
Max. dynamic torque M_y	14.8 Nm	21.0 Nm	27.2 Nm
Max. dynamic torque M_z	8.0 Nm	10.9 Nm	13.9 Nm
Effective distance W_x	75 mm	100 mm	125 mm
Effective distance W_z	10 mm	10 mm	10 mm



Maximum payload/type	PS 16/50	PS 16/100	PS 16/150
Installation position (horizontal) for mounting side 1	3.5 kg	3 kg	2.5 kg
Installation position (horizontal) for mounting side 3	8 kg	7.5 kg	7 kg
Installation position (vertical) for mounting side 1	3.5 kg	3 kg	2.5 kg
Installation position (vertical) for mounting side 3	8 kg	7.5 kg	7 kg

Assembly sides
module mounting

horizontal:

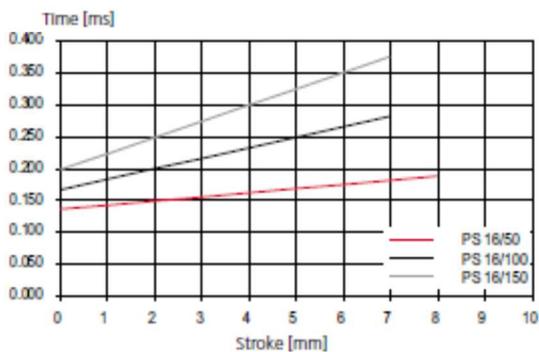


vertical:

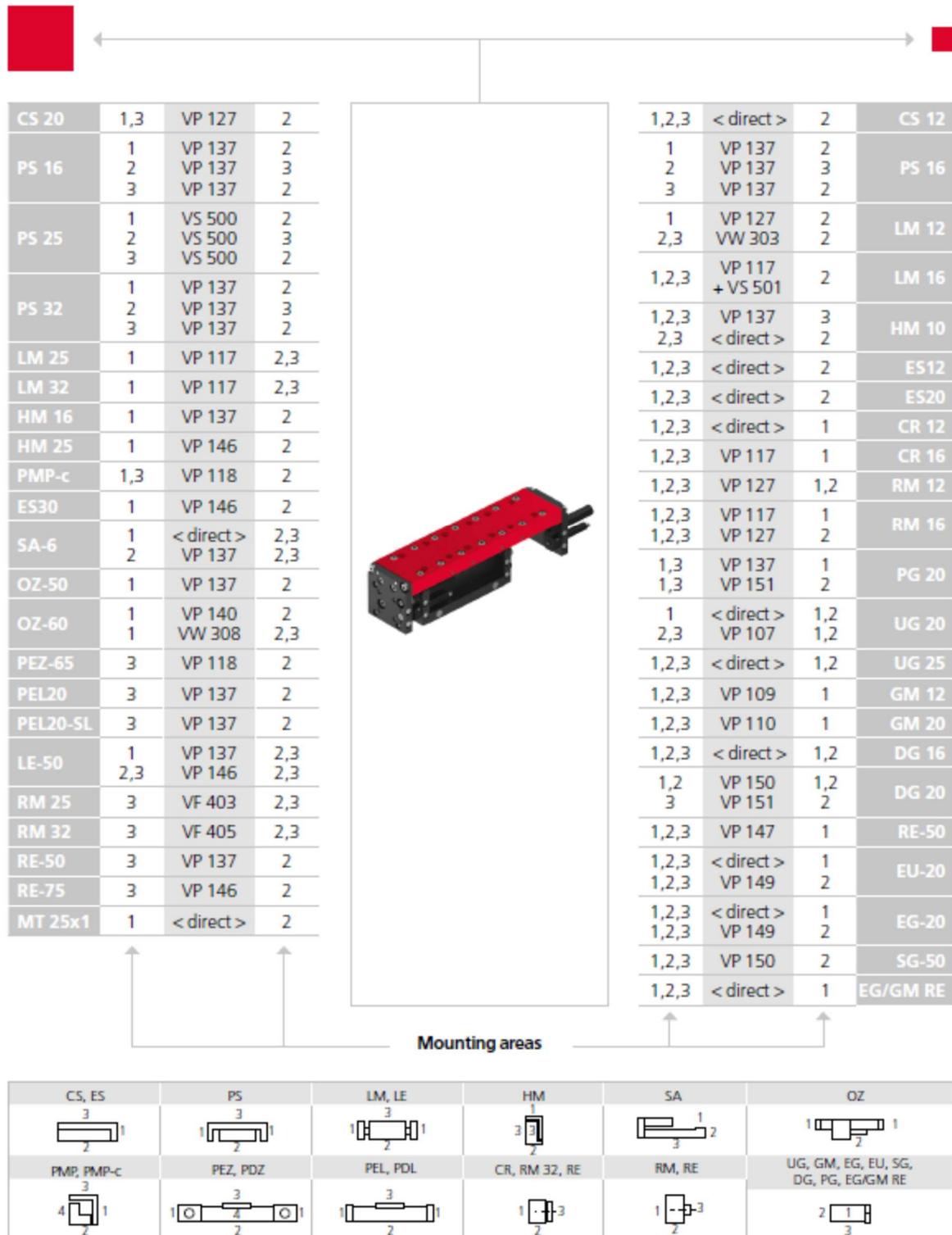


Operation time diagrams

Operation time PS 16



2.1.5 Preferred combinations PS 16



Note that there might be different mounting positions from one module to another one.

The required connection elements and the range of pedestals are depicted in the catalogue HT accessories.

3.0.0 Montage Instructions (Document Original)

3.1.0 Manufacturer address:

Afag Automation AG
Luzernstrasse 32
CH-6144 Zell

Sales Handling:
Tel. 0041 (0)62 959 87
02 www.afag.com

These operating instructions apply to:

Product name:	High-precision slide (pneumatic)
Types:	PS 16/50; PS 16/100; PS 16/150
Sequential series:	No. 50xxxxxx

This is an incomplete machine

Who installs this incomplete machine or assemble with other machines, a risk assessment for its resulting machine which must make the provisions of the

EC directive: 2006/42/EC

Standard: EN ISO 12100:2010 (German version)

Agent:

For the compilation of the technically relevant documents:

Niklaus Röthlisberger, Products Manager Afag Automation AG, CH-6144 Zell

3.1.1 Symbols

Assembly and initial start-up must be carried out by qualified personnel only and according to these instructions.

 CAUTION	
	<p>Indicates a possibly dangerous situation.</p> <p>Non-compliance with this information can result in damage to property or light to medium personal injuries.</p>

NOTE	
	<p>Indicates general notes, useful operator tips and operating recommendations which don't affect safety and health of the personnel.</p>

3.1.2 General description

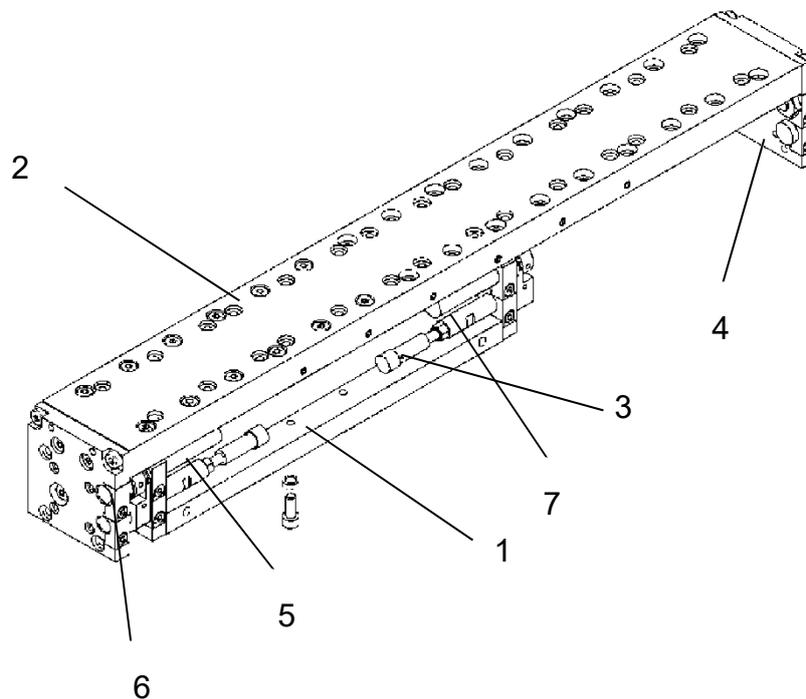
This is an incomplete machine

The series of the PS 16 High-precision slide is used for the linear, smooth movement of rigidly mounted loads under the ambient and Installation conditions defined, see Technical data.

The PS 16 High-precision slide can be installed in the horizontal or vertical position.

Modifications on the PS 16 High-precision slide that are not described in these Montage Instructions or have not been approved in writing by Afag Automation AG are not permitted. In case of improper changes or assembly, installation, operation, maintenance or repairs, Afag Automation AG rejects all liability.

3.1.3 Description of the module



- | | | | |
|---|-------------------------|---|--------------------------------|
| 1 | Body base | 4 | Counterpart (Proximity switch) |
| 2 | Slids | 5 | Shock absorber |
| 3 | Proximity switch holder | 6 | Counterpart (Shock absorber) |
| | | 7 | Adjusting stop screw |

The PS 16 consists of the base body (1) with pneumatic connections and cylinder and the slides (2).

The limit positions are set by a proximity switch holder (3) and the corresponding counterpart (8). To query the limit positions an inductive sensor with a diameter of 4 mm (not included in the scope of delivery) can be fixed in the Stop screws.

The movement at the limit positions is absorbed by a hydraulic shock absorber (5) and is counterpart (6). Stop screws and shock absorbers can be installed at the base body or the slide.

Thus there are various design possibilities so that the PS 16 can be adapted to the space conditions within your system in the best possible way.

3.1.4 Scope of supply

Quantit.	Description
1	Module PS 16
2	Proximity switch holder
2	Shock absorber ASSD M10x1-1
2	Centering bushings Ø 7x3 mm
2	Centering bushings Ø 5x2.5 mm

3.1.5 Designated Use

The series of the high-precision slides PS 16 is used for the linear movement of rigidly mounted loads in non-explosion hazardous ambient and operating conditions that are specified for this module; see catalogue technical.

NOTE	
	<p>Safety Instructions</p> <p>These Montage Instructions should be read carefully before carrying out any activity on or with the module.</p> <p>The module may only be used in accordance with the intended purpose.</p> <p>Modifications on the module that are not described in these Montage Instructions or have not been approved in writing by Afag are not permitted. In case of inexpert changes or improper assembly, installation, operation, maintenance or repairs, Afag rejects all liability.</p>

 CAUTION	
	<p>Connection of compressed air and operation of pneumatic systems may cause unpredictable movements which may result in personal injury or damage to property.</p>

When connecting compressed air for the first time make sure that all air chokes are closed. Ventilate the system slowly.

3.1.6 Warranty

The term of the warranty on Afag handling components and systems is:

- 24 months following commissioning, but a maximum of 27 months following delivery.
- Wear parts (e.g. shock absorbers) are not covered by the warranty. *

The warranty covers the replacement or repair of defective Afag parts. No further claims will be accepted.

The warranty will be voided in event of the following:

- Use for other than the intended purpose
- Failure to observe the notes on installation, commissioning, operation and maintenance in the operating manual
- Improper installation, commissioning, operation and maintenance
- Independent repairs and constructional changes without prior instruction by Afag Automation AG
- Removal of the serial number on the product
- Using the module without shock absorbers, or with defective shock absorbers
- Inadequate monitoring of wear parts

*A customer has the right to a defect-free product. This is also applicable for accessories and wear parts, if they are defective. However, wear does not fall within the scope of the warranty.

3.1.7 Areas of application

The PS 16 High-precision slides are exclusively designed for the linear movement of load capacities of up to 7.0 – 8.0 kg in any position on the slide and maximum 2.5-3.5 kg at the face side of the module; the load capacities should not affect persons, property or the environment. They can also be used in combination with other modules than Pick & Place machines, the permissible load capacities should, however, not be exceeded.

Any other use is regarded as inadequate.

NOTE	
	<p>The manufacturer does not accept any liability for damage resulting from such use. The risk is that of the user alone.</p>

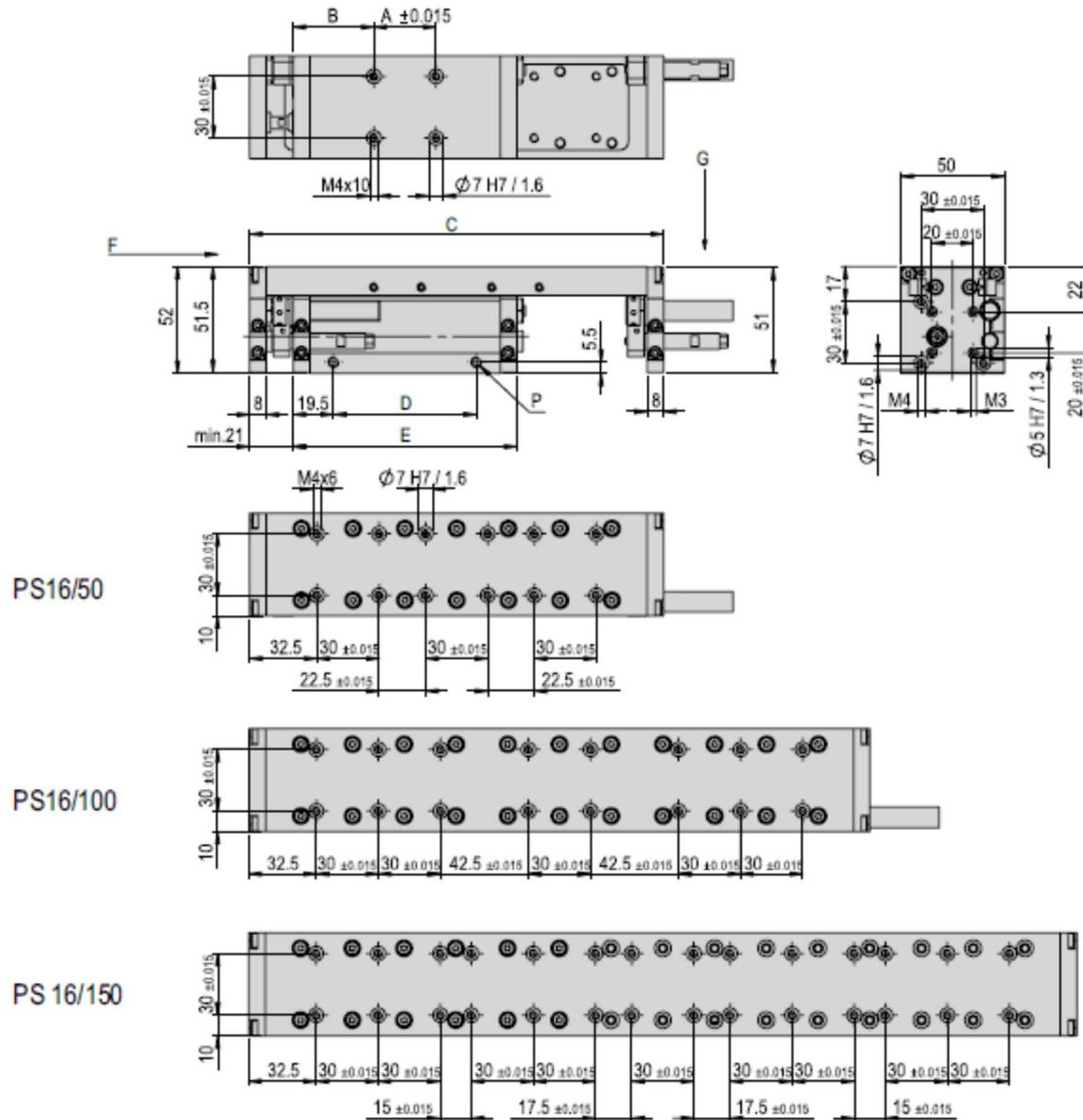
Intended use also includes paying attention to the operating instructions and observing the maintenance and repair instructions specified by the manufacturer.

The PS 16 module may only be operated and serviced by correspondingly trained personnel who have also profound knowledge of the dangers.

 CAUTION	
	<p>The applicable regulations for prevention of accidents and the other generally accepted safety-relevant and occupational safety and health regulations are to be followed.</p>

3.1.8 Dimensions drawing PS 16

Type	PS 16/50	PS 16/100	PS 16/150
A	1 x 30 mm	3 x 30 mm	5 x 30 mm
B	39 mm	34 mm	29 mm
C	200 mm	300 mm	400 mm
D	69 mm	119 mm	169 mm
E	108 mm	158 mm	208 mm
F	Front	Front	Front
G	Top slide	Top slide	Top slide
P	M5	M5	M5



3.1.9 Technical data of the PS 16

PS 16	
Attachment grid	30 x 30 mm
Attachment grid alternative	20 x 20 mm
Attachment thread	M4
Attachment thread alternative	M3
Operating pressure	6 +/- 2 bar
Air connection P	M5
Cylinder Ø	16 mm
Retract piston force	104 N
Extend piston force	121 N
Operating temperature	0 - 50 °C
Bearing temperature	0 - 50 °C
Humidity	< 90 %
Medium filtered compressed air	10 - 40 µm

Type	PS 16/50	PS 16/100	PS 16/150
Order number	50076867	50076873	50076874
Stroke H	50 mm	100 mm	150 mm
Stroke limitation	2 x 25 mm	2 x 25 mm	2 x 25 mm
Net weight	1.407 kg	1.85 kg	2.282 kg
Moving weight	0.75 kg	0.97 kg	1.18 kg
Air consumption/cycle	0.0859 NL	0.1719 NL	0.2578 NL
Noise level	60 dB (A)	60 dB (A)	60 dB (A)
Repeat accuracy	+/- 0.01 mm	+/- 0.01 mm	+/- 0.01 mm
Maximum speed	0.2 m/s	0.3 m/s	0.4 m/s
Minimum speed	0.05 m/s	0.05 m/s	0.05 m/s
Mounting position	✦	✦	✦

The technical data refers to a nominal pressure of 6 bar under Afag standard test conditions. The maximum payloads are listed in the payloads table in the slide loads section. The module can be operated with lubricated or dry air. Cleanroom class: 10 000 (Federal Standard 209E)

Included in the delivery

(Catalogue HT accessories)

- 2x Centering bushing Ø5x2.5
- 2x Centering bushing Ø7x3
- 2x Shock absorber ASSD M10x1 -1
- 2x Stop screw AS 08/14

Accessories

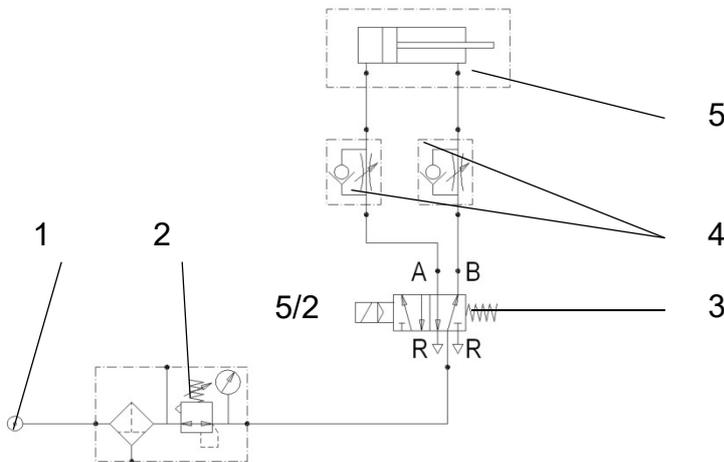
- Intermediate stop ZA-PS 16 [p. 69]
- Stop extension [p. 72]
- Shock absorber ASSD M10x1 -1 [p. 72]
- Proximity switch holder AS 08/14 [p. 73]

(Catalogue HT accessories)

- INI d4/6.5x45-Sn1.0-PNP-NO-M8x1
- INI d4x25-Sn1.0-PNP-NO-M8x1

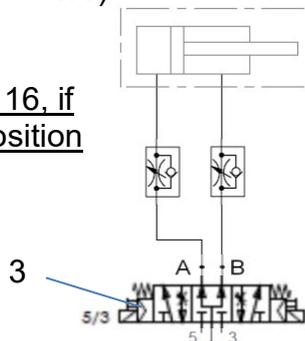
3.2.0 Pneumatic connection PS Module

The pneumatic connections (M5) are located on the left and right side of the base body. Pneumatic connections that are not used must be closed airtight with the locking screws included in the scope of supply.

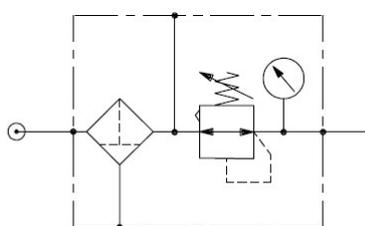


- | | | | |
|---|---|---|---------------------------------|
| 1 | Compressed air connection | 4 | One-way restrictor |
| 2 | Maintenance unit | 5 | High-precision slides PS 16 |
| 3 | Directional valve
(Standard 5/2, if ZA-PS 5/3) | 6 | Intermediate positions cylindre |

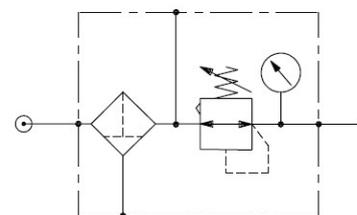
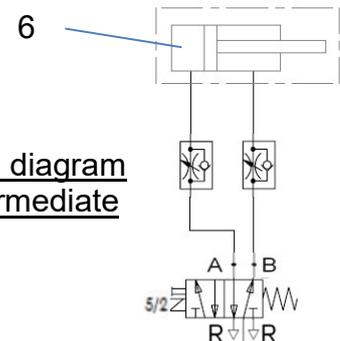
Connection diagram PS 16, if a ZA-PS intermediate position is additionally attached



Connection diagram PS 16



Connection diagram ZA-PS intermediate position



NOTE



Minimal compressed air quality according to ISO 8573-1; 2010 (7-4-4)

3.2.1 Preparation for start-up

Before commissioning the shock absorber with stopper and the initiator holder must be set in such a way that the stroke provided is attenuated correctly.

Commissioning

- Ventilate the total system slowly.
- Note the permissible values (see catalogue) regarding:
 - useful load
 - motion frequency
 - moment loads on the guide system

 CAUTION	
	Limbs may be squeezed by moving components.

- Make sure that there are no persons or tools within the operative range of the module.
- Carry out a test run
 - first of all with slow travel movements,
 - afterwards under operating conditions.

Maintenance and Upkeep

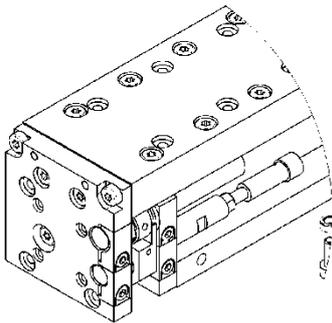
Under the following conditions the PS 16 is maintenance-free:

- clean workshop atmosphere
- no splash water
- no dust and fumes caused by abrasion or processes
- ambient conditions according to the technical catalogue

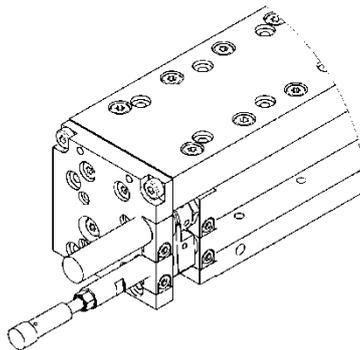
The module should be cleaned with a dry cloth at regular intervals.

The module must not be washed down; do not use any aggressive cleaners.

3.2.2 Setting the shock absorbers and the stop screw



Inside installation

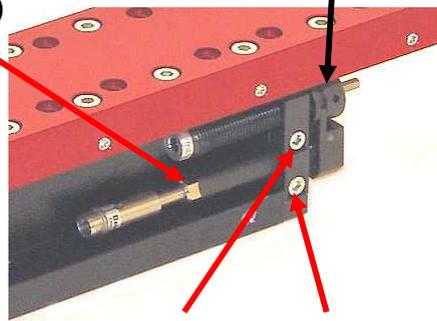


Outside installation

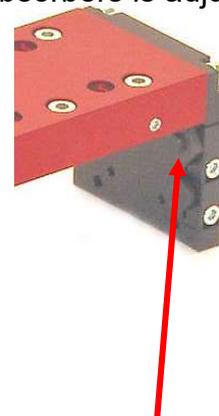
(up to a stroke of 100 mm)

The sensor holder is pulled along when the shock absorbers is adjusted

Sensor is fastened to the circumference by means of a tensioning nut (no grub screw)



Shock absorber and sensor can be exchanged separately while maintaining their position



Fine adjustment of the shock absorber via the clamping screw on the stopper bolt

CAUTION	
	The PS 16 module must not be operated without shock absorbers installed as it may be damaged due to missing damping.

3.2.3 Inquiry of the sensor

Clamping proximity switches are used to query the PS 16 stop positions.

Polling of the stop positions is monitored by an LED on the initiator. If the LED switch status does not change during inquiry of the stop positions the sensor is faulty and must be replaced.

 CAUTION	
	The PS 16 with proximity switch and initiators must not be used in an explosion-hazardous area.
NOTE	
	Initiators and proximity switches are not included in the scope of supply (please see “Accessories” in the Technical Catalogue). Only the specified proximity switches and initiators are to be used.

3.2.4 Accessories

INI d4x25-Sa1.0-PNP-close-M8x1

Order Nr. 11016714

(Alternative) INI d4/6.5x45-Sn1.0-PNP-close-M8x1

Order. Nr.11009034

INI d4x25-Sn1.0-PNP-NO-M8x1			
Initiator (SCHLIESSER)	Détecteur (FERMETURE)	Proximity switch (CLOSING)	
Bestellnummer	Article No.	Order No.	11016714
Betriebsspannung	Tension d'emploi	Normal voltage	10 - 30 VDC
Schaltabstand	Connecter distance	Distance to connect	1.0 mm

Einsetzbar bei / Poser prés / Insert prep:
CS 12, CS 16, CS 20, CS 25 (alternativ)
UG 20, UG 25 (alternativ)
PS 16, PS 25, PS 32

Zylindersensor ZA-PS			
Initiator (SCHLIESSER)	Détecteur (FERMETURE)	Cylinder sensor ZA-PS	
Bestellnummer	Article No.	Order No.	50253315
Betriebsspannung	Tension d'emploi	Normal voltage	10 - 30 VDC
Schaltabstand	Connecter distance	Distance to connect	0.8 mm

Einsetzbar bei / Poser prés / Insert prep:
ZA-PS

INI d4/6.5x45-Sn1.0-PNP-NO-M8x1			
Initiator (SCHLIESSER)	Détecteur (FERMETURE)	Proximity switch (CLOSING)	
Bestellnummer	Article No.	Order No.	11009034
Betriebsspannung	Tension d'emploi	Normal voltage	10 - 30 VDC
Schaltabstand	Connecter distance	Distance to connect	0.8 mm

Einsetzbar bei / Poser prés / Insert prep:
PS 16, PS 25, PS 32 (alternativ)

INI 6.3x4.7x26.3-Em-PNP-NO-M8x1			
Initiator zu Zwischenposition	Interrupteur à pos. intermédiaire	Initiator prep intermediate pos.	
Bestellnummer	Article No.	Order No.	11010759
Betriebsspannung	Tension d'emploi	Normal voltage	10-30 VDC

Einsetzbar bei / Poser prés / Insert prep:
ZA-PS 16, ZA-PS 25, ZA-PS 32, (ZA axial)

3.2.5 Optional module with intermediate stopp ZA-PS

The precision slides PS 16 can be retrofitted with the ZA-PS 16.

The ZA intermediate positions for the PS modules distinguish themselves through their compact size and their design which is adapted to the module.

This intermediate stop can be fitted onto the slide plate for extending and retracting depending on the module stroke length. The intermediate positions can thus be freely selected and offer the great benefit of a continued movement in the moving direction after an intermediate position and without return stroke.



Type: **ZA-PS 16**

Order No.: **50222736**

Module weight: 0,5 kg

Operating pressure: 4-8 bar

Air connections: M5

Damping: hydr.

Included in the scope of supply:

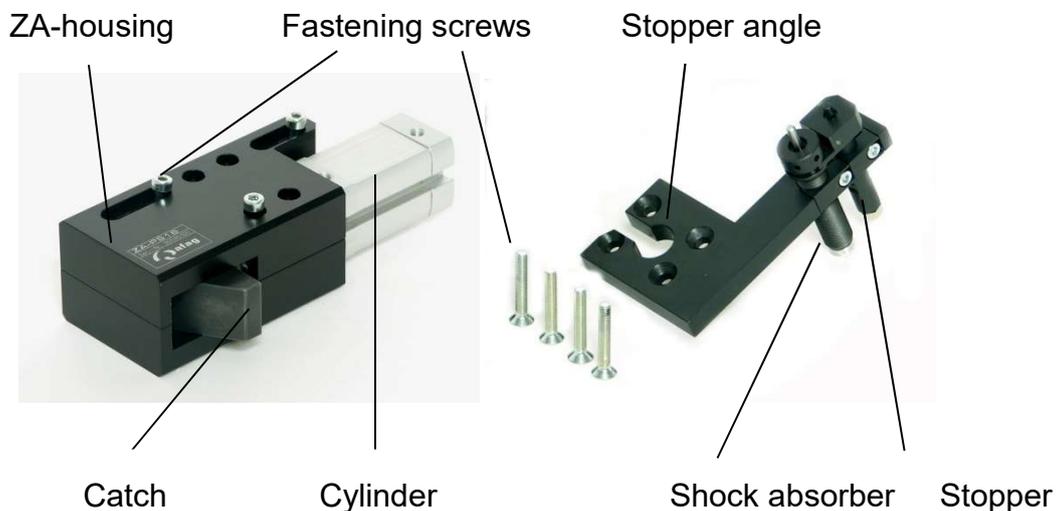
Module ZA with fastening screws

Stopper clamp with shock absorber and stopper screw and fastening screws

Mounted ZA on the PS module (effective for the extension stroke)

The ZA is mounted in an intermediate position for an extension stroke and is fine adjusted by adjusting the shock absorber and the stop screw (range of adjustment: PS 16 (20 mm))

2 ZAs can be fitted for module strokes from 100 mm onward (1x for the extension stroke and 1x for the retraction stroke). The stopper angle plate can be mounted at the front or rear base body plate, please ensure, however, that the intermediate stop bounds in the direction of the base body.



3.2.6 Mounting the stopper angle

Undo the 4 Torx screws at the front (rear) base body plate, as these threaded holes are required for mounting the stopper angle!



Mount the stopper angle and tighten with countersunk screws.



3.2.7 Description of the intermediate stop (effective stroke of the extending)

The ZA intermediate stop is a compact module which can be fitted on the PS module with effortless ease. Depending on the module length 1 or 2 intermediate stops can be mounted.

The ZA intermediate stops can be fitted to the front, rear, left- or right hand side.

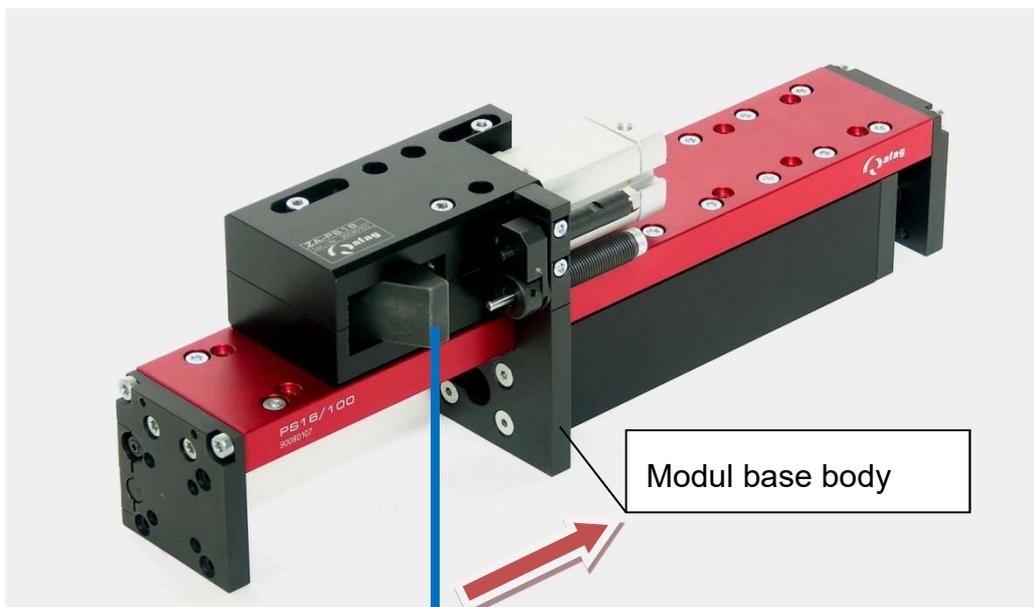
Mounting procedure for the ZA intermediate stop (effective for the extension stroke)

- Determine the intermediate position on the module slide plate
- Fasten the ZA with screws on the module slide plate



Mounted ZA on the PS 16

The ZA intermediate stops can be fitted to the rear and front of the module slide. Ensure that the catch always bounds in direction of the module base body.



3.2.8 Setting the ZA shock absorber and stop screw

The shock absorber and stop screw are always adjusted parallel to each other so that the desired stroke position can be set precisely.

Procedure: (Undo screws, set shock absorber and stop screw in the desired intermediate position).



Position for effective action of the ZA on the catch



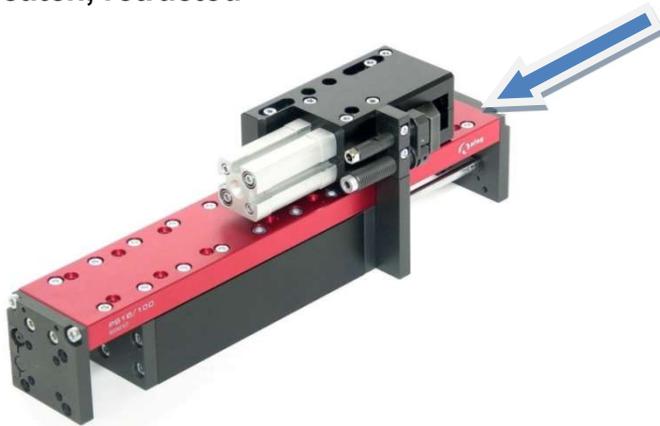
Position for effective action of the ZA retracting

Mounted ZA on the PS module (effective for the extension stroke)

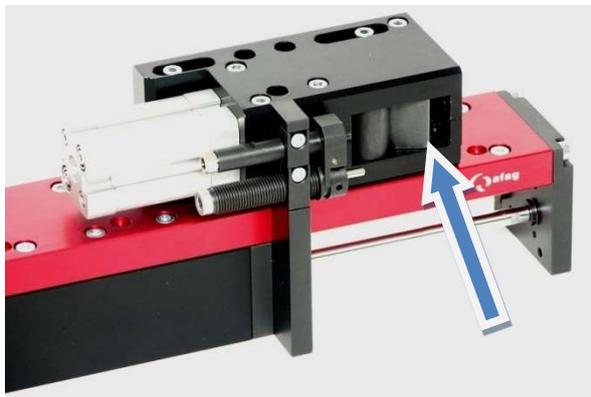
The ZA is mounted in an intermediate position for an extension stroke and is fine adjusted by adjusting the shock absorber and the stop screw (range of adjustment: PS 16 (25mm))

2 ZAs can be fitted for module strokes from 100 mm onward (1x for the extension stroke and 1x for the retraction stroke). The stopper angle can be mounted at the front or rear base body plate, please ensure, however, that the catch bounds in the direction of the base body.

ZA catch, retracted



ZA catch, retracted



ZA intermediate position, overrun (module retracted)



With this ZA installation

The cylinder must be rotated so that the air connections are on top.



Rotating the ZA cylinder

Undo the 4 screws at the cylinder and pull cylinder backward until it can be rotated through 180°. (Afterwards push cylinder back and tighten the 4 screws again).



⚠ CAUTION

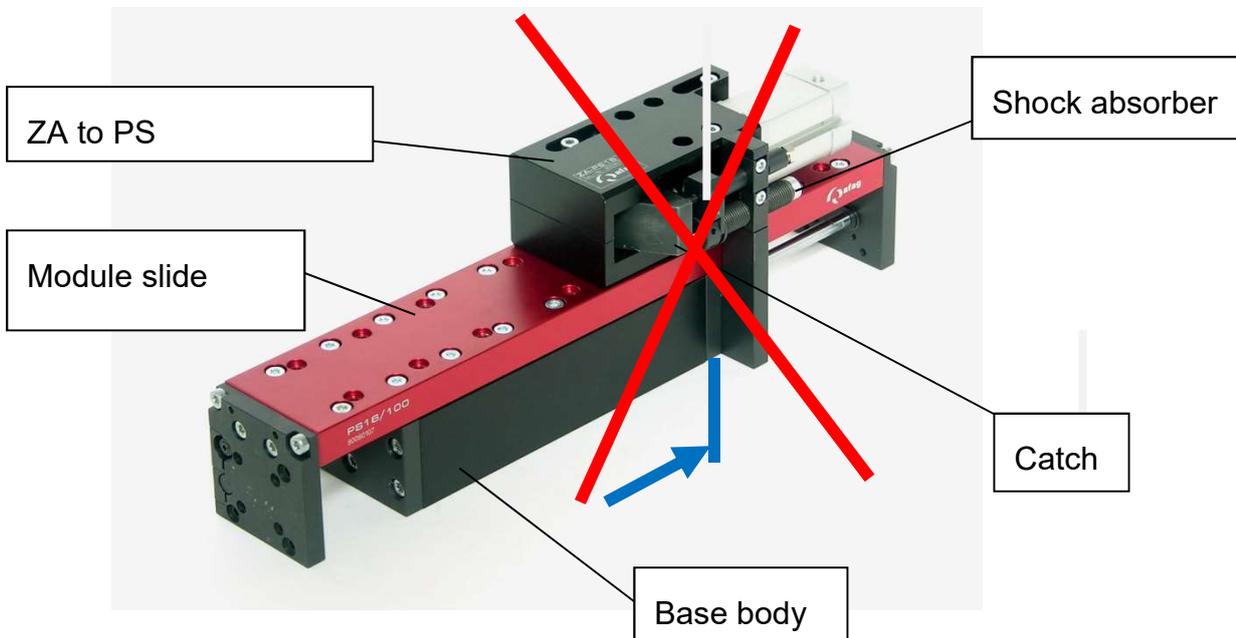


The ZA intermediate stop must not be mounted in such a way that the ZA catch on the module slide acts on the shock absorber and the screws of the retaining clip when the slide moves away from the base body. In the case of a failure of the shock absorber the screws would be overloaded after some 10.000 cycles and would break.

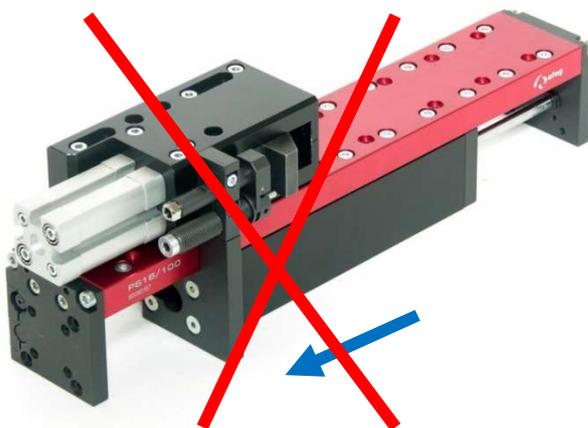
Please note the following picture

This application is not permitted!

ZA acts on the stopper angle when retracted (not permitted)



ZA catch on the stopper angle when retracted (not permitted)!

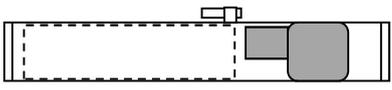
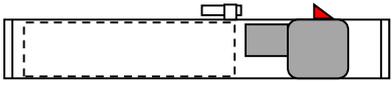
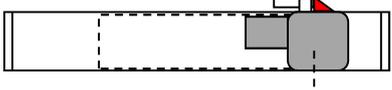
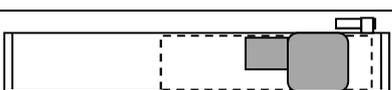


3.2.9 Operating sequence of the intermediate position with axial intermediate stop (e. g. cylinder mounted on right-hand side)

1. Pressure on P1 (left module and pressure on P3 (rear intermediate position cylinder)
2. Pressure on P2 (module moves to the right) and pressure on P3 (rear intermediate position cylinder)
3. Pressure on P4 (intermediate position cylinder moves to the front) and Pressure left on P2 Module moves to intermediate position.
4. Pressure on P1 (module moves to the left)
5. Pressure on P3 (intermediate position cylinder moves back)

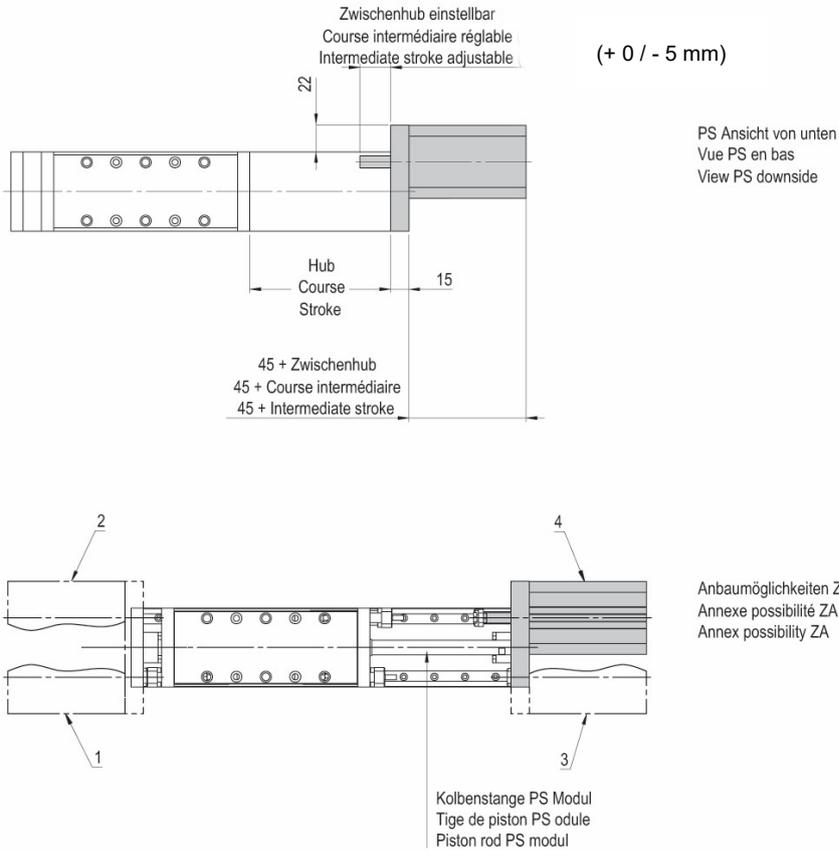
Attention: If the intermediate position cylinder is moved to directly from one side, module damage must be expected.

Operating sequence of the intermediate position using intermediate stop

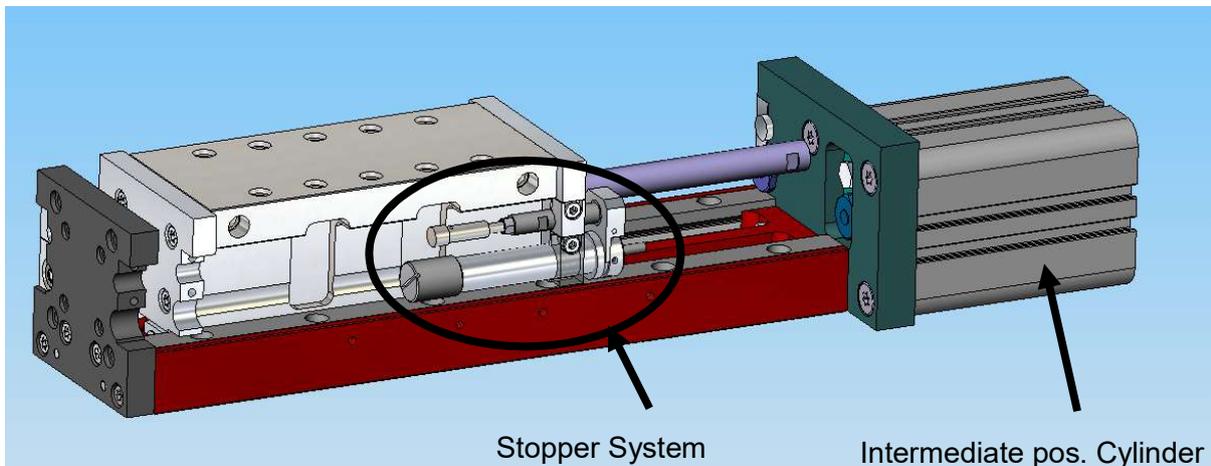
	Positions	Pressure on	Description
1		P2 P3	Slide completely right Catch of the ZA off
2		P2 P4	Slide completely right Catch of the ZA on
3		P1 P4	Slide moves to intermediate position Catch of the ZA on
4		P1 Pulse on P2 (approx.0.2sec veting)	Before starting from the middle position, both air chambers must absolutely be vented so that the empty air chambers are not moved to and the exhaust air flow control can function. Otherwise module damage must be expected.
5		P3	Catch of the ZA off
6		P1 P3	Slide moves to the left Catch of the left Catch of the ZA off
7		P2 P3	Slide returns to the home position (slide completely right) Catch of the ZA off

3.3.0 Optional ZA-intermediate stop

The precision slides PS 16 are available with one or two intermediate stops. The Cylinder strokes are 5 to 50 mm maximum (in increments of 5 mm). The intermediate stop can be mounted on the right front and /or the right rear side.



Part designation

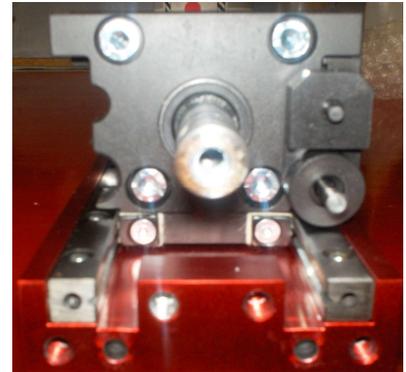


3.3.1 Mounting instructions for the ZA intermediate stop at the PS 16 module

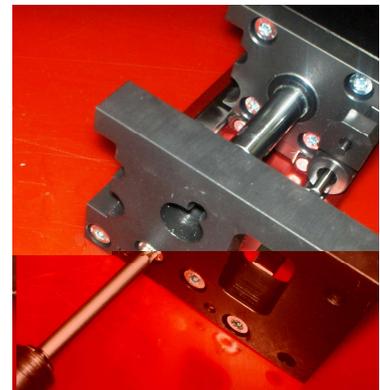
Refers to the installation of positions 1 and 2 (pages 8 and 9)

Procedure:

1. Remove side plate incl. stop systems
(these are attached to the new side plate)



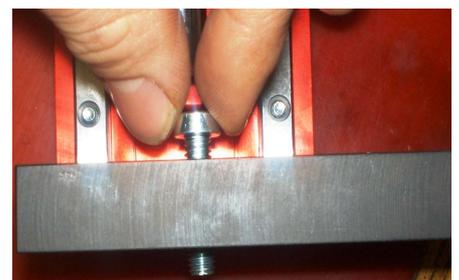
2. Fit new side plate, slightly grease screws,
and insert and tighten screws according to
their size (M4 to PS 16)



3. Mount stop on the intermediate position
Cylinder. Please note: Moisten fastening
Screw with (Lock washer).
Align according to figure



4. Insert fastening screws (with lock washer)
For the intermediate position cylinder from
The Inside of the side plate.



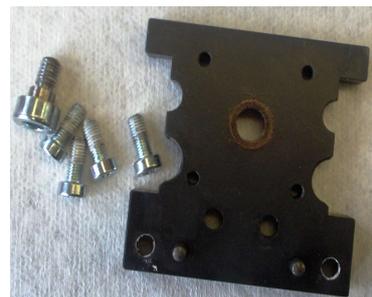
5. Fasten intermediate position cylinder with screws to the side plate. These screws must also be provided with lock washers.



6. Attach stop system to the side plate or the base body.



7. These parts are not used again.



Mounting instructions for the ZA intermediate stop at the PS-module

Refers to the positions 3 or 4 (piston rod side)

Procedure:

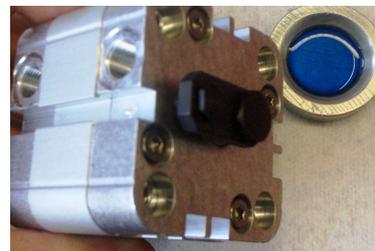
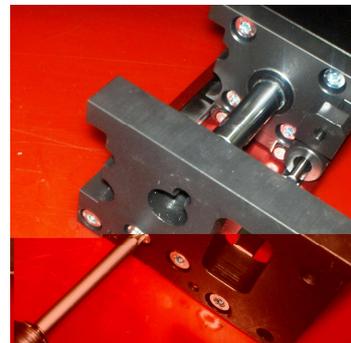
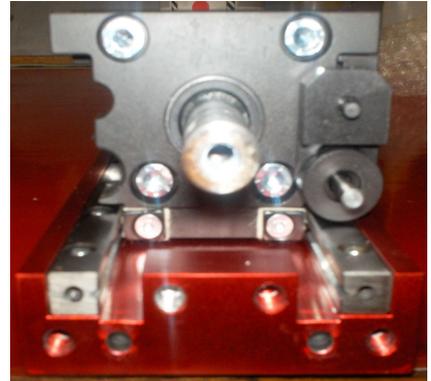
1. Remove side plate incl. Stop systems
(these are attached to the new side plate).

2. Mount new side plate. Slightly greas screws,
and insert and tighten screws according to
their size (M4 to PS 16).

3. Mount stop on the intermediate position
Cylinder. Moisten fastening screws with
(lock washer). Align according to figure.

4. Insert fastening screws (with lock washer)
for the intermediate position cylinder
from the inside of the side plate..

5. fasten piston rod with special screws to
the side plate.
Please note: (lock washer) at the screw.
Grease screw shaft. Hold on to piston rod at
the size of the jaw for tightening the screw.
Tighten screw with 5 Nm.



6. Intermediate position cylinder with screws to the side plate.

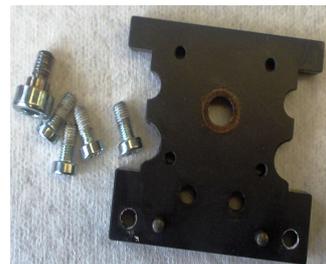
These screws must also be provided with lock washer.



7. Attach stop system to the side plate or the base body.

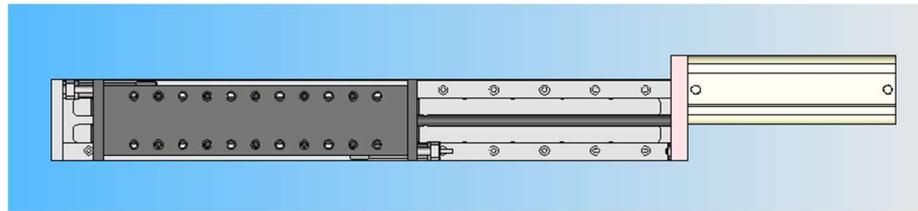


8. These parts are not used again.

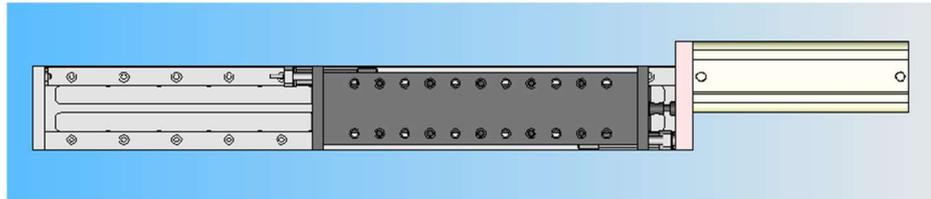


3.3.1 Basic stroke of the module

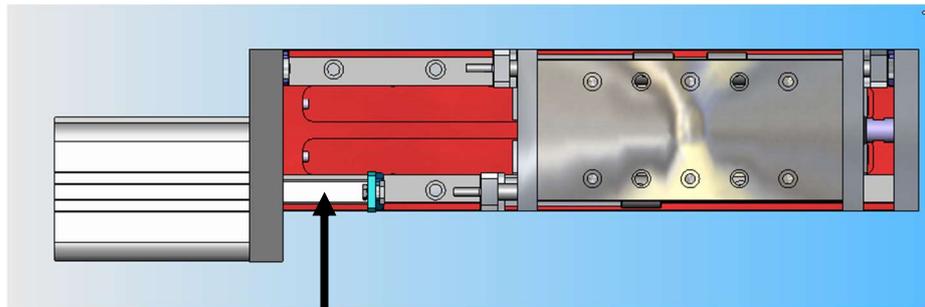
Position 0mm



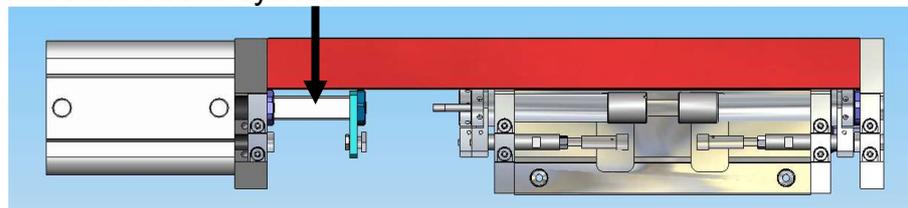
Position 200mm



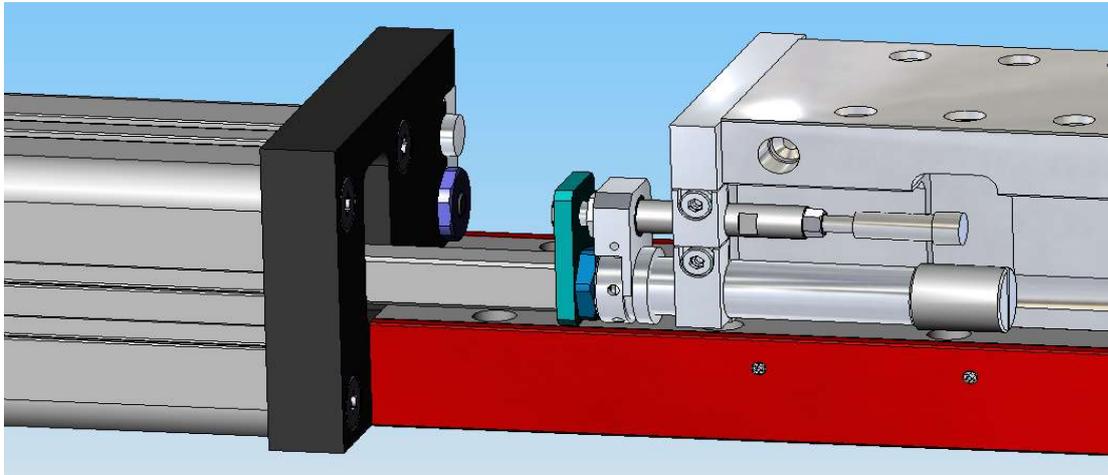
Intermediate stroke



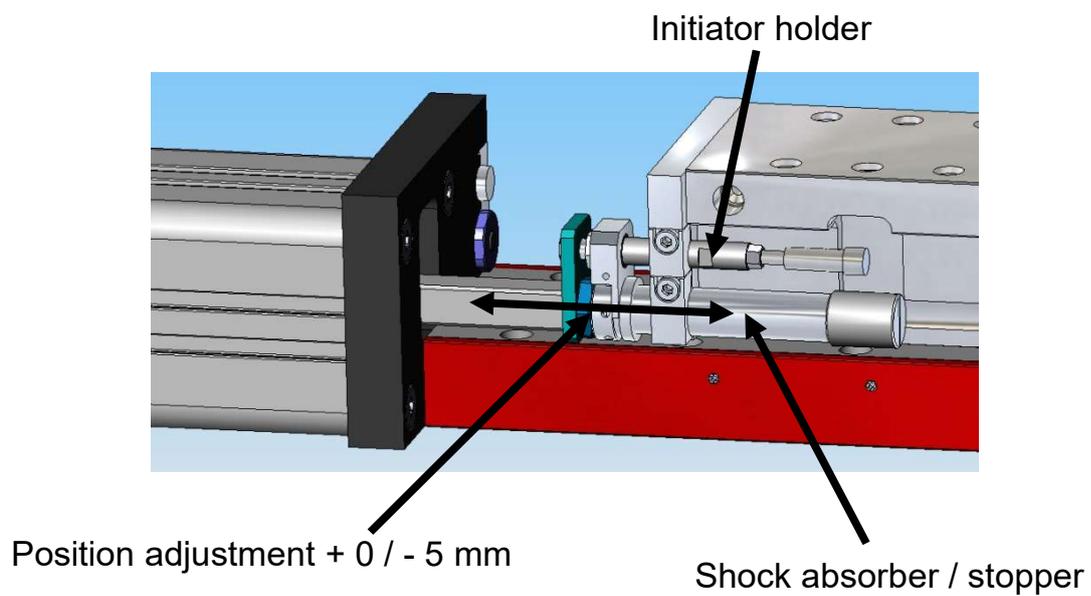
Extracting the intermediate stroke cylinder



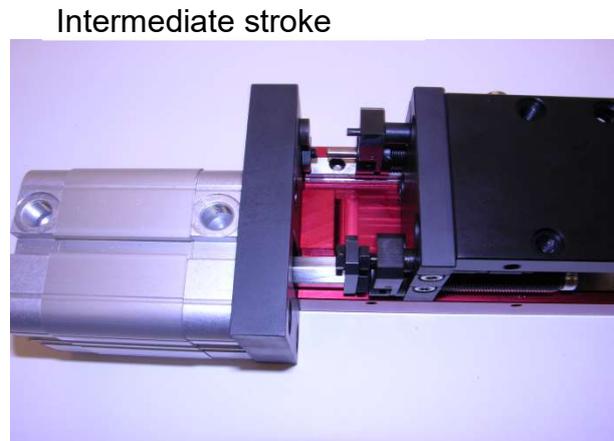
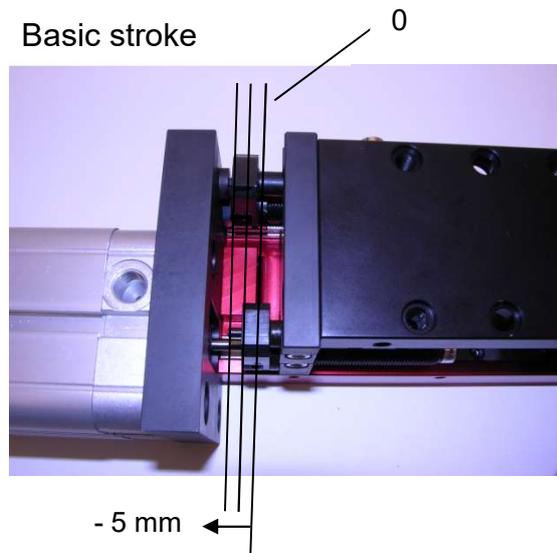
3.3.2 Movement to intermediate position



Setting the intermediate position



Properly set positions



Improperly set positions

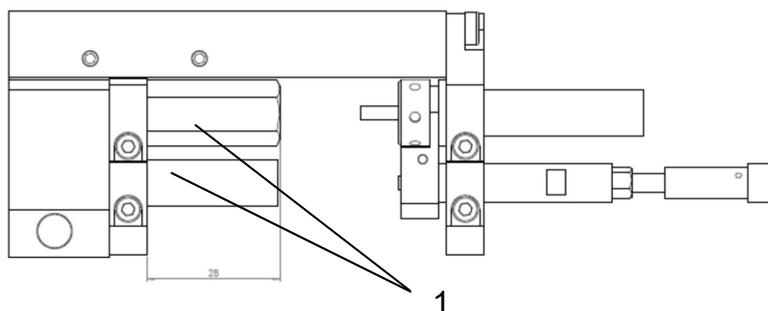
The intermediate stroke is not reached since the stopper of the intermediate stroke is extended too much.



Set stop position with extension to Module PS

Stop position with extension

Procedure: Disconnect compressed air from module, loosen and remove the two stop in (1), screw in and tighten new stop ins.



4.0.0 Maintenance Instructions

The shock absorbers and stop screws must undergo regular functionality checks, and be replaced if required. We recommend replacing the shock absorber after a maximum of 5 million load cycles. If shock absorbers are missing, defective or incorrectly set up, the functionality of the module will be compromised and may lead to its destruction!

4.1.0 Maintenance and servicing of the PS 16 High-precision slide

 CAUTION	
	The module may only be disassembled when the system is aerated and deactivated. If pneumatic connections are disconnected when they are under pressure, this may result in serious personal injury due to fast movements of moving parts.

Maintenance interval	Service measures
As required	<ul style="list-style-type: none"> ▪ Clean the module with a dry, lint-free cloth. The module must not be washed down; do not use any aggressive cleaners.
1 Montly	<ul style="list-style-type: none"> ▪ Check the safety labels for damage, readability and cleanliness.

Further maintenance

Under the following conditions is the PS linear module maintenance free:

- Clean workshop atmosphere
- No splash water
- No dust and fumes caused by abraision or processes
- Ambient conditions according the technical cataloge

4.1.1 Servicing

The PS 16 High-precision slide is lubricated for-life and can be operated with oiled and unoiled air.

 CAUTION	
	Never operate the PS high-precision slide with unoiled air after it was operated with oiled air!

Air characteristics:

- Dry (free from condensation water)
- Filtered (40µm filter for oiled air)
- Filtered (5µm filter for unoiled air)

If the PS 16 module is operated with oiled air, the oil types listed below should be used:

- Festo special oil
- Avia Avilub RSL 10
- BP Energol HPL 10
- Esso Spinesso 10
- Shell Tellus Oil C 10
- Mobil DTE 21
- Blaser Blasol 154

Oil quantity: 5 – 10 oil drops per 1000 l air

Viscosity range:

9 to 11 mm²/s (= cST) at 40°C, ISO-class VG 10 according to ISO 3448

NOTE	
	<p>Module inserts for ionized air environments (e.g. in case of high-voltage procedures such as corona processes)</p> <p>Open guides and piston rods should be covered with a grease layer to avoid formation of rust.</p> <p>Afag standard greasing: - Staburax NBU8EP (flat guides) - Blasolube 301 (piston rods)</p>

4.1.2 Accessories PS 16- Module

Accessories	PS 16
Article	Order No.
Shock absorber ASSD M10x1-1	50105233
Adjusting stop screw AS 08/14	50138506
Set stop position with extension	50138720
INI d4/6.5x45-Sn1.0-PNP-close-M8x1	11009034
Option intermediate stop ZA (Position 2)	50100321
Intermediate stop ZA (Position 4)	50100325

NOTE



They find other accessories in the technical catalogue or in the WEB.

www.afag.com

4.1.3 Trouble-shooting

Fault	Possible cause	Fault clearance
Side moves to hard too the final position	Useful load too high	Reduce useful load
	Pressure too low	Increase pressure to max. 8 bar
	Module wrongly connected	Check pneumatic connection
	One-way restrictor completely closed	Open one-way restrictor
	Module defective	Return module to Afag
Slide moves too hard to the final position	Shock absorber wrongly adjusted	Readjust schock absorber
	Shock absorber faulty	Replace shock absorber
	Max. useful load exceeded	Reduce useful load
	Slide speed too high	Reduce speed by means of one-way restrictor
Air escapes from module	Compressed air connection leaky	Check seals of all air connections and tighten if necessary
	Cylinder leaky	Replace seal set

4.1.4 Disassembly and repair

When the module is damaged it can be returned to Afag automation AG for repair.

 CAUTION	
	The module may only be disassembled when the system is aerated and deactivated. If pneumatic connections are disconnected when they are under pressure, this may result in serious personal injury due to fast movements of moving parts.

When can the modules be repaired by the customer?

Wearing parts can be exchanged by the customer itself when the warranty has expired.

NOTE	
	All the other faulty parts must exclusively be replaced by company Afag automation AG!

When the customer detects that the respective module is still under warranty:

- he returns the module to company Afag automation AG for repair.
- If the warranty has already expired, the customer must decide whether he repairs the module by himself and orders the wearing parts kit or whether he returns the module to company Afag automation AG for repair.

NOTE	
	Afag offers a reliable repair service. Please note that Afag does not warranty for parts which were not repaired by Afag automation AG.

4.1.5 Expendable parts

PS 16

Article	Order No.
Shock absorber ASSD 10/9	50105233
Clamping support SD	50138571
Screw the support M3x10	11000395
Clamping support the proximity switch	50138572
Clamping support incl. Spring pince. 6Kt. Mu.	50138506
Shock attachment for SD	50138561
Switch pin	50138564
Seal set	50111821

Switch pin



Clamping support incl. spring pince



Shock attachment for SD

Shock absorber ASSD



Clamping support SD

5.0.0 Disposal

NOTE



PS modules which cannot be used any more must not be disposed of as a complete unit, but must be disassembled and recycled according to the type of material.

Materials than cannot be recycled must be disposed of in accordance with the legal regulations.



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