

Rotary Module

RM 63

- **Declaration of Incorporation**
- **Assembly Instructions**
- **Operating Instructions**
- **Maintenance Instruction**



„Translation“ of the Original Operating Instructions

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These operating instructions apply to:

Type	Order No.
RM 63	11001837
RMZ 63/2	11001848

Version of this documentation: RM 63-OI-vers.2.2 gb. 16.01.12

Symbols: Assembly and initial start-up must be carried out by qualified personnel only and according to these operation 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 Declaration Installation for the incomplete machine

1.1.0 Declaration Installation according to the EC Machinery Directive 2006/42/EC, Appendix II B

Manufacturer: **Afag Automation AG, Fiechtenstrasse 32, CH-4950 Huttwil**

Herewith declares that for the Partly Completed:

Designation: **Rotary module**
Type: **RM 63; RMZ 63/2**
Consecutive serial: **Nr.50xxxxxx**

The following essential requirements of the Machinery Directive **2006/42/EG Appendix II B** are applied and fulfilled:

The incomplete machine further complies with the:

Applicable EC - Directives:	Machinery Directive 2006/42/EG
Harmonized standards applied:	
Specially :	EN ISO 12100-1; EN ISO 12100-2

The relevant technical documentation is compiled in accordance with part B of Annex VII and that this documentation or parts hereof will be transmitted by post or electronically in response to a reasoned request by the national authorities.

Name and address of the person authorised to compile the relevant technical documentation:

Name: **Lanz Beat**

Adress: **Afag Automation AG, Fiechtenstrasse 32, CH-4950 Huttwil, Switzerland**

This partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC, where appropriate.

Place, date: **Firma: Afag Automation AG**

Huttwil, 19. April. 2008

Name

Name

Mathias Schütz

Dr. Martin Daniel



Productmanager



Director the Company

Afag Automation AG

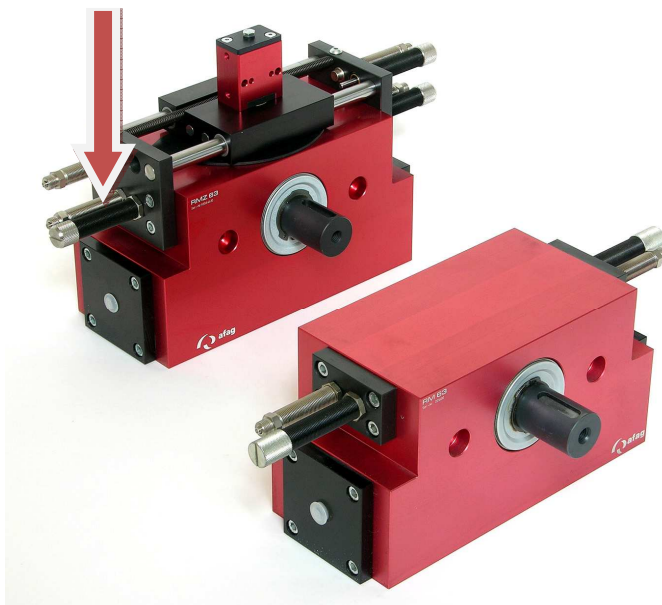
Afag Automation AG

2.0.0 Assembly Instructions

2.1.0 Transport and storage (packing and unpacking)

 CAUTION	
	<p>The RM module are not packed in a cardboard box, therefore, one should work with transport and with be careful, um to avoid damage in the modules. With wrong use the module could fall down and injure or squeeze feet /finger. (Weight: 8.4 to 9.8 kg)</p>

Squeeze danger



Case danger

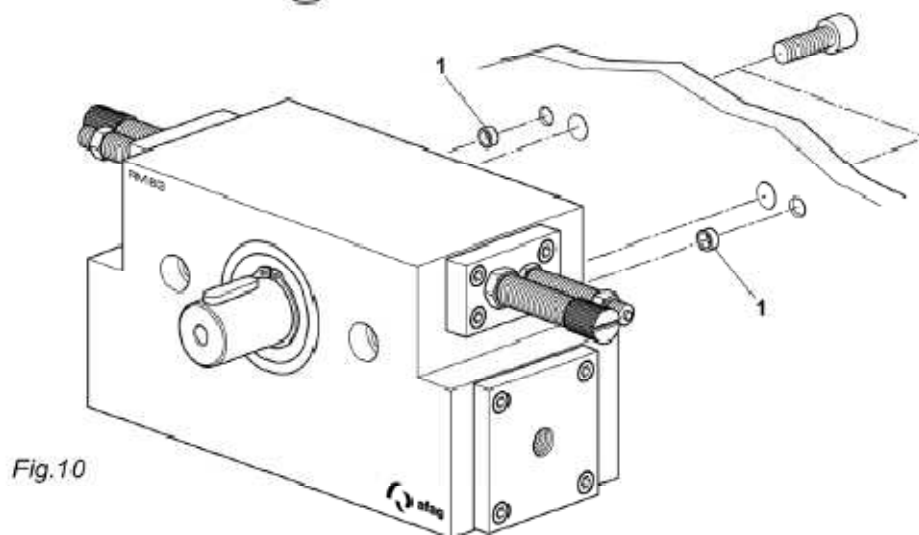
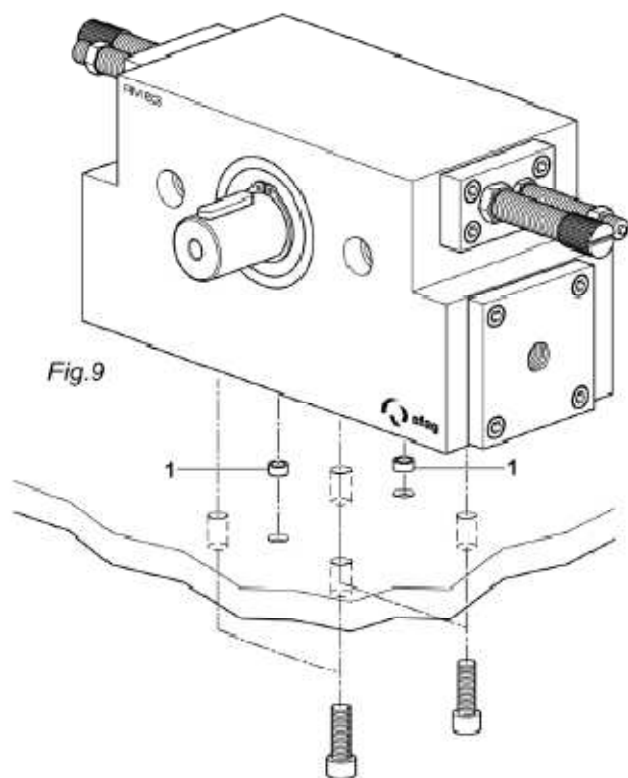


NOTE



Attention! These operating instructions should be read carefully before carrying out any activity on or with the module. The module may only deployed in accordance with the intended use.

2.1.1 Possibilities of fastening RM 63



NOTE



Use the centering bushings included in the scope of supply for positioning and insert these bushings in the bores of the mounting grid.

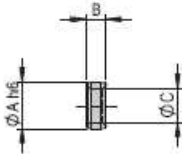
2.1.2 Centering bushings

Hole matrix RM 63 rotary module

RM 63	
Hole matrix	80x80mm
Thread/bore hole	4xM8
Centering bushings (H7)	9x4mm

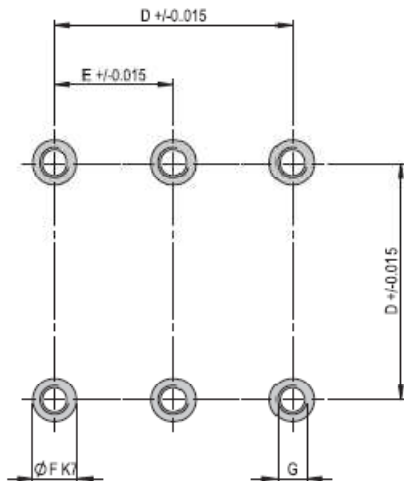
Use the centering bushings included in the scope of supply for positioning and insert these sleeves in the diagonally opposite bore holes of the mounting grid.

Zentrierhülse	Douilles de centrage	Centering bushings	4h6x2.0 mm	5h6x2.5 mm	7h6x3.0 mm	8h6x3.5 mm
Bestellnummer	Article No.	Order No.	50332257	50035831	11016850	50263565
Mass A	Dimension A	Dimension A	4 mm	5 mm	7 mm	8 mm
Mass B	Dimension B	Dimension B	2 mm	2.5 mm	3 mm	3.5 mm
Mass C	Dimension C	Dimension C	2.6 mm	3.2 mm	4.3 mm	5.4 mm



9h6x4.0 mm	12h6x5.0 mm	15h6x5.2 mm	19h6x5.8 mm
11004942	50187424		50189497
9 mm	12 mm	15 mm	19 mm
4 mm	4.8 mm	5.2 mm	5.8 mm
6.5 mm	8.5 mm	10.5 mm	13 mm

Befestigungsraster	Treme de fixation	Fixing grid	16x16 mm	20x20 mm	30x30 mm	38x38 mm
Mass D	Dimension D	Dimension D	16 mm	20 mm	30 mm	38 mm
Mass E	Dimension E	Dimension E	16 mm	20 mm	30 mm	38 mm
Mass F	Dimension F	Dimension F	4x1.1 mm	7x1.6 mm	7x1.6 mm	8x3.5 mm
Mass G	Dimension G	Dimension G	M2.5	M3	M4	M5



48x48 mm	60x60 mm	75x75 mm	96x96 mm
48 mm	60 mm	75 mm	96 mm
24 mm	30 mm	75 mm	48 mm
9x2.1 mm	12x2.5 mm	15x2.7 mm	19x5.8 mm
M6	M8	M10	M12

2.1.3 Tighten torques for screws

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


Standard: VDI 2230
 Strenth: Classe 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
M 10	46,0 ... 49,0 Nm
M 12	70,0 ... 85,0 Nm

This is an incomplete machine


Assembly of the RM rotary module in a system

The series of the RM rotary 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 RM rotary module can be installed in the horizontal or vertical position.

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

NOTE	
	<p>Safety instructions</p> <p>Modifications on the RM rotary module that are not described in these operating 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 Preferred combinations RM 63



3	VF 407	2	LM 20
3	VF 407	2	LM 25
3	VF 407	2	LM 32
3	VF 407	2,3	PS 25
3	VF 407	2,3	PS 32
3	VF 407	2,3	LE-60

Beachten Sie die möglichen Anbaulagen der Module zueinander.

Erforderliche Verbindungselemente und das Ständerprogramm finden Sie im Register: «Verbindungselemente und Ständerprogramm.»

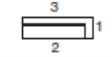
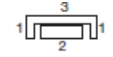
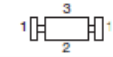
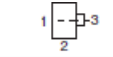
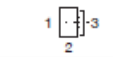





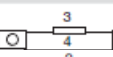
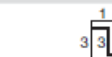
Noter que les situations de montage peuvent varier d'un module à l'autre.

Vous trouverez dans le registre «Éléments de jonction et supports/colonnes» les éléments de jonction nécessaires ainsi que notre gamme de montants.

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

The connection elements required and the range of pedestals are depicted in the «Connection elements and supports/columns» register.

➔ **Anbaufächen / areas de la montage / mounting areas** ➔

CS	PS	LM / LE	RM / RE	CR / RM32 / RME / RE	UG / GM / EG / SG / DG / PG
					
PMP / PMP-C	SA	PME / PME-C	UZ	PEZ / PUZ	HM
					

3.0.0 Operating instructions

3.1.0 Manufacturer address: Afag Automation AG
Fiechtenstrasse 32
CH-4950 Huttwil (Switzerland)

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

These operating instructions apply to:

Product name: **Rotary module**
Types: **RM 63**
RMZ 63/2

This documentation was written according to:



The applicable EC-Directive 2006/42/EG


Responsible person for the documentation:

Lanz Beat, PM & Marketing-Services
Afag Automation AG
Fiechtenstrasse 32
4950 Huttwil

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 RM 63 Rotary module is used for the rotation, smooth movement of rigidly mounted loads under the ambient and operating conditions defined, see Technical data.

The installation situation of the modules RM 63 can occur vertically as horizontally. Excluded with the module RMZ 63/2, this can be inserted only horizontally.

3.1.3 Description rotary module RM 63

Adjusting the RM 63

Afag achieves the following delivery conditions for the RM:

NOTE	
	Special mention is given to type-specific information.

RM 63

The RM 63 rotary module is a pneumatically powered module for the rotation of weights within extremely limited spaces. The module possesses torque rating of up to a max. of 27.5 Nm and can rotate weights from 0° to 180°. The end positions are damped and precision ad-justable throughout the stroke range by means of stop screws.

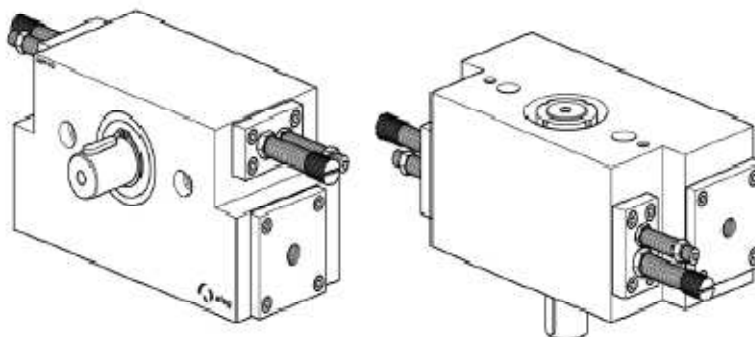
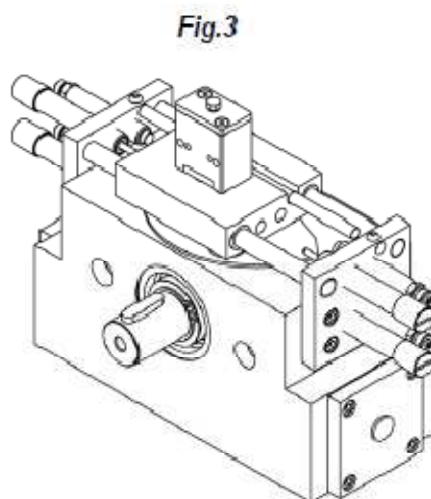
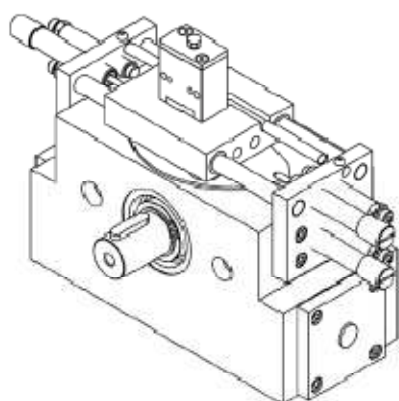
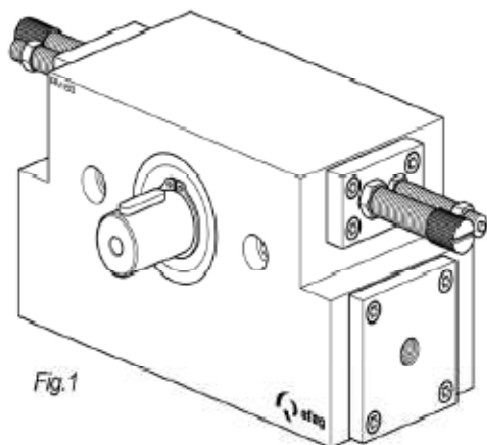
The rotary module of the RM63 series is available in three types.

RM 63 (Fig. 1)

180° module with two limiter screws AS 12/60 (1) and two shock absorbers SDS 14/16 (2).

RMZ 63/2 (Fig. 3)

180° module with four limiter screws AS 12/60 (1) and four shock absorbers SDS 14/16 (2).



3.1.4 Functional description RM 63

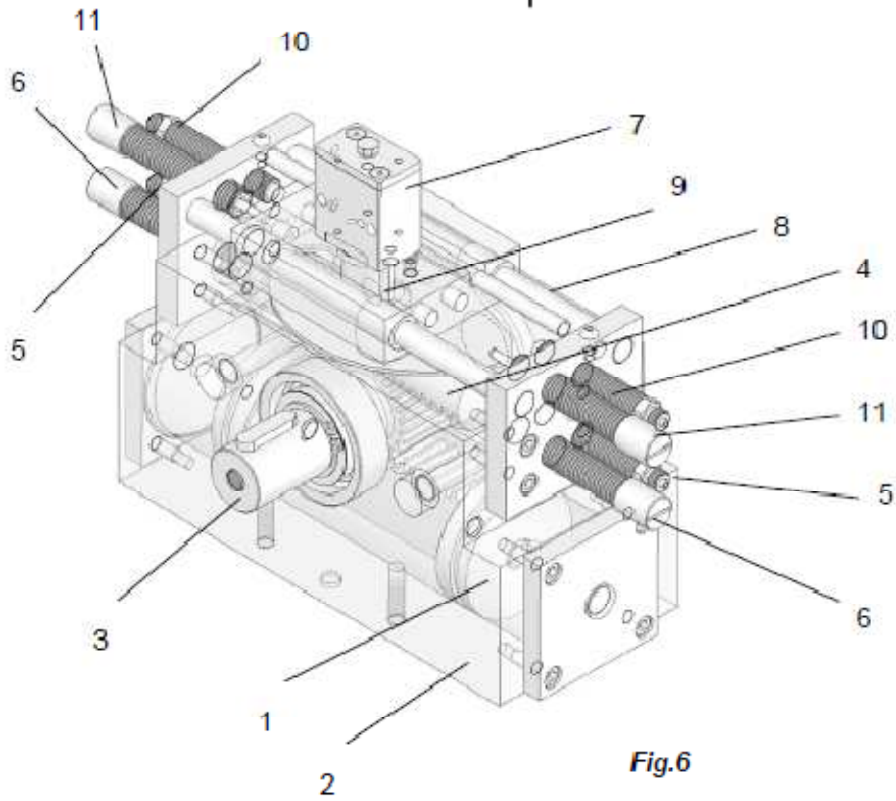
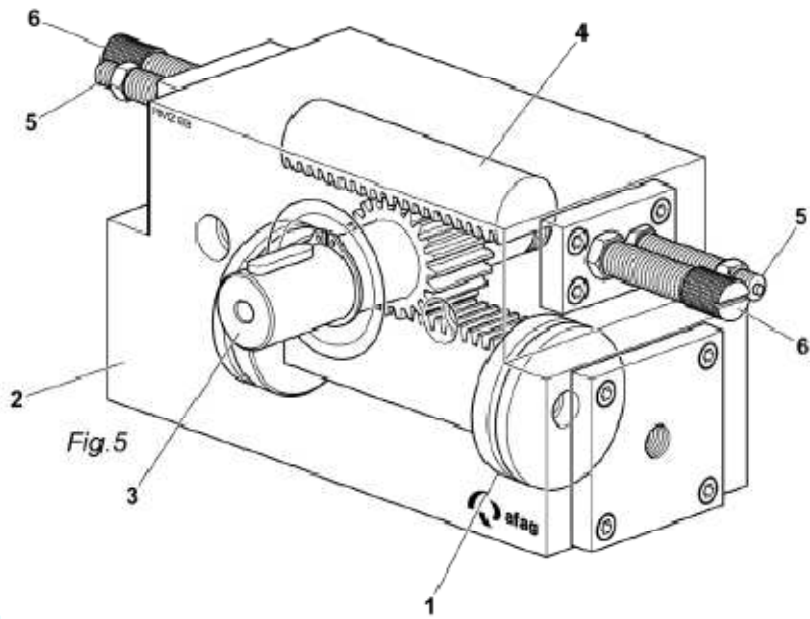
The RMs are pneumatically driven units for rotational movements from 0° bis 180°.

A double-acting piston (1) inside the housing (2) drives a pinion shaft with ball-bearing (3). This in turn moves a rack (4) backwards and forwards. The stroke of the rack and therefore the angle of rotation of the pinion shaft can be limited by means of two stop screws (5). The end positions are buffered with Afag shock absorbers (6) (Fig. 5,6).

For rotary modules RMZ with one intermediate position, an additional intermediate position cylinder (7) is located above the housing on a longitudinal guide (8). The piston (9) of the intermediate cylinder meshes an activation into the rack (4) and is then moved horizontal. The stroke limit of the intermediate position cylinder is adjusted by means of a second pair of stop screws (10) and buffered with one Afag shock absorber (11) (Fig.6).

Bezeichnung der Teile (Fig.5-6)

1. Piston
2. Housing
3. Pinion shaft
4. Rack
5. Stop screw
6. Afag shock-absorber
7. Intermediate position cylinder
8. Longitudinal guide
9. Piston
10. Stop screw
11. Afag shock-absorber






3.1.5 Included in the delivery

Qut.	Description
2	Centering bushings Ø 9x4 mm
1	Carrier

3.1.6 Intended use

The series of the RM rotary module is used for the rotary movement of rigidly mounted loads under the ambient and operating conditions defined for this module; see Technical catalogue.

NOTE	
	<p>These operating instructions should be read carefully before carrying out any activity on or with the module.</p> <p>The module may only be deployed in accordance with the intended use.</p> <p>Modifications on the module that are not described in these operating instructions or have not been approved in writing by Afag are not permitted. In case of improper changes or 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 throttles are closed. Aerate the system slowly.

3.1.7 Guarantee

The module is designed for 40 million load alternations* under the ambient conditions and conditions of use defined for this module, see catalogue. Wearing parts (shock absorbers and stop screws) are excluded from the guarantee. The guarantee includes repair or replacement of faulty Afag parts.


*whichever comes first

When repairs are carried out by the customer without prior training or instruction by Afag automation AG the warranty will become void. Any additional claims are excluded.

3.1.8 Areas of application

The RM rotary module are exclusive for rotations movements for pay load from: **RM63** radial 4400 N, axial 4400 N certainly. 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>

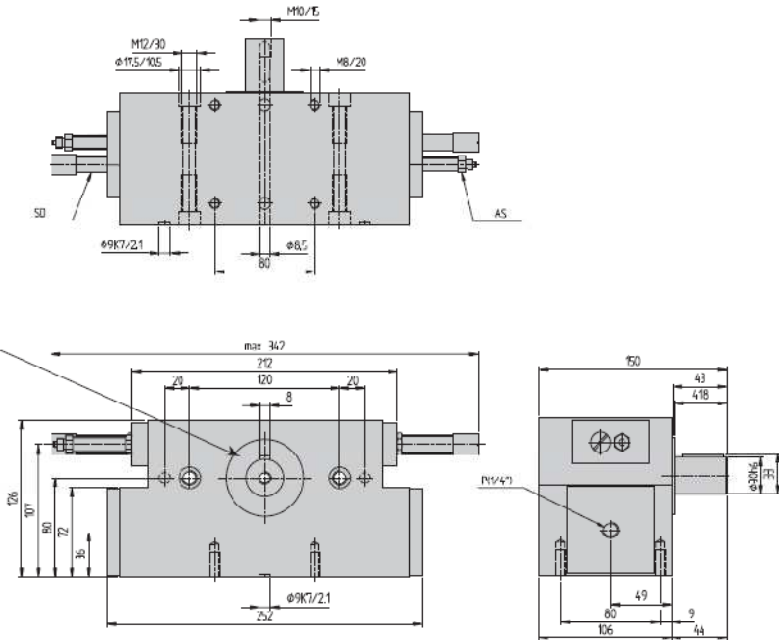
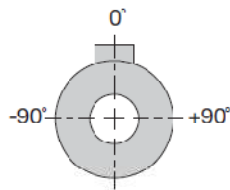
Intended use also includes paying attention to the operating instructions and observing the maintenance and repair instructions specified by the manufacturer.

The RM 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>

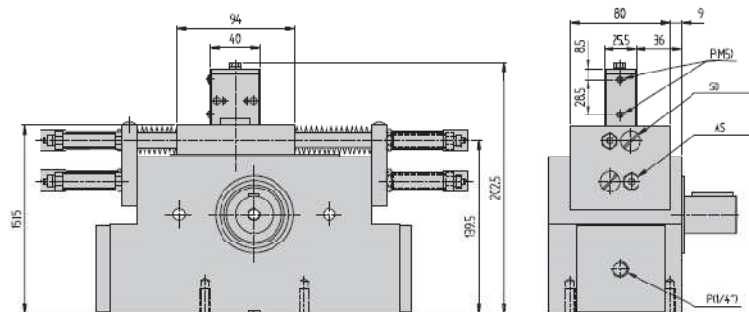
3.1.9 Dimensions RM 63

Lage der Kellrut
Position de ccin
Position of the carrier



RM 63

RMZ 63/2
mit 2 Zwischenpositionen
avec 2 positions intermédiaires
with 2 intermediate positions



3.2.0 Technical data RM 63

Typ	Type	Type	RM 63	RMZ 63/2
Bestellnummer	Article No.	Order No.	11001837	11001848
Drehwinkel	Angle de rotation	Rotation angle	0-180°	0-180°
Drehmoment	Couple de rotation	Torque	27.5 Nm	27.5 Nm
Minimale Drehzeit	Temps de rotation minimal	Min. rotating time	90° = 0.38 s 180° = 0.53 s	90° = 0.38 s 180° = 0.53 s
Positionen	Positions	Positions	2	4
Betriebsdruck Luftanschluss = P Luftverbrauch (180°)	Pression d'alimentation Raccords d'air = P Consommation d'air (180°)	Working pressure Air connectors = P Air consumption (180°)	6 bar +/-2 G1/4" 1.34 NI	6 bar +/-2 G1/4" 1.39 NI
Einbaulage	Position de montage	Mounting position	+	++
Modulgewicht	Poids du module	Weight of module	8.400 kg	9.800 kg
*Max. Nutzlast radial *Max. Nutzlast axial	*Charge radiale max. *Charge axiale max.	*Max. radial load *Max. axial load	4400 N 4400 N	4400 N 4400 N
Winkelgenauigkeit	Précision angulaire	Angle precision	< 3'	< 3'
Stossdämpfer	Amortisseurs	Shock absorbers	SD M14x1-2	SD M14x1-2
Anschlagschrauben	Vis d'arrêt	Adjusting	AS 12/60	SD 12/60
Zwischenposition	Position intermédiaire	Intermediate position	-	2
Lärmpegel bei 6 bar max. Nutzlast	Niveau de bruit à 6 bar sous charge utile max.	Decibel level, at 6 bar at max. effective weight	62 dB (A)	62 dB (A)
Befestigungsraster Befestigungsgewinde	Trame de fixation Filet de montage	Fixing grid Mounting thread	80 x 80 mm 4 x M8	80 x 80 mm 4 x M8
Temperatur: - Lager - Betrieb - Luftfeuchtigkeit nicht kondensierend	Température: - de stockage - d'utilisation - Humidité sans condensation	Temperature: - Storage - Operation - Humidity non condensing	0 °C...+50 °C 0 °C...+50 °C < 90%	0 °C...+50 °C 0 °C...+50 °C < 90%
Medium: gefiltrierte Druckluft	Fluide: Air comprimé filtre	Medium: filtered compressed air	10..40 µm	10..40 µm

Die technischen Daten beziehen sich auf einen Nenndruck von 6 bar und Afag Standard-Testbedingungen.

*Schwenkzeit-Diagramm beachten.

Im Lieferumfang inbegriffen:
Stossdämpfer SD M14x1-2
Anschlagschrauben AS 12/60
2 Zentrierhülsen Ø9x4 mm
1 Passfeder

Das RM 63 kann mit geölter oder ölfreier Luft betrieben werden.
Reinraumklasse:
10 000 (Federal Standard 209E)

Betriebsanleitung: www.afag.com
Garantie: 40 Mio. Lastwechsel/2 Jahre

Les caractéristiques techniques se basent sur une pression de consigne de 6 bar et les tests standard Afag.

*Rotation du temps diagr. de noter.

La livraison comprend:
Amortisseurs SD M14x1-2
Vis d'arrêt AS 12/60
2 Douilles de centrage Ø9x4 mm
1 Coin entraîneur

Pour la commande du module RM 63 on peut utiliser aussi bien de l'air huilé que de l'air exempt d'huile.
Classe de salle blanche:
10 000 (Federal Standard 209E)

Instruction de service: www.afag.com
Garantie: 40 millions de cycles/2 ans

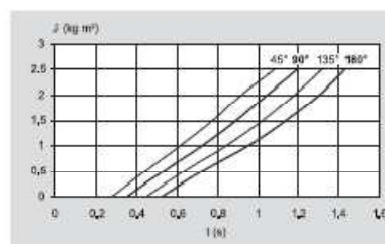
The technical data refer to a nominal pressure of 6 bar under Afag standard test conditions.

*Rotation time diagramm note.

Included in the delivery:
Shock absorbers SD M14x1-2
Adjusting stop AS 12/60
2 Centering bushings Ø9x4 mm
1 Carrier

The RM 63 may be operated with oil-containing or oil-free air.
Clean room class:
10 000 (Federal Standard 209E)

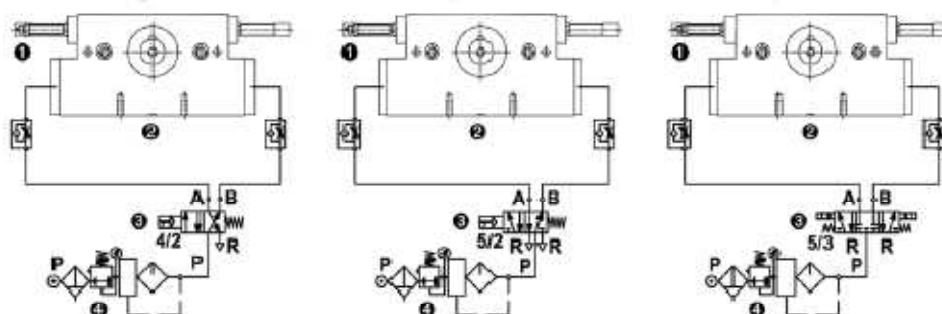
Operating instruction: www.afag.com
Warranty: 40 Mio load cycles/2 years



Schwenkzeit
Messung bei 6 bar
Rotation du temps
Pression mesuré avec 6 bar
Rotation time
Mesurage by 6 bar

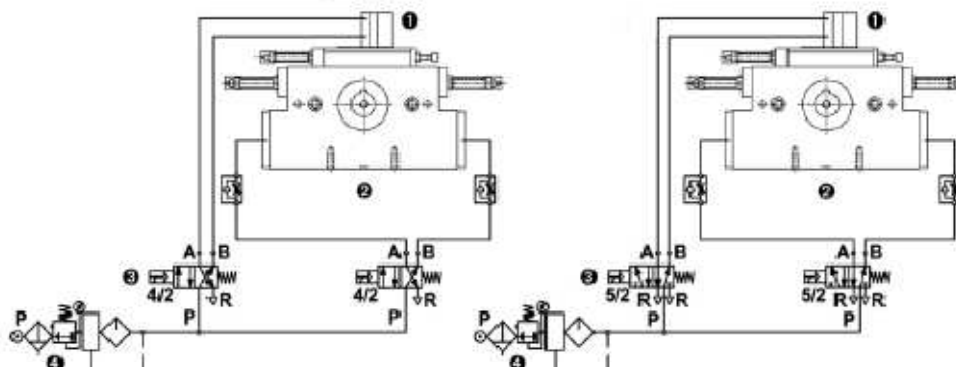
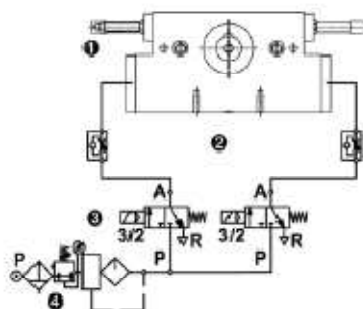
Legende/légende/legend:
mit SD
avec SD
with SD

3.2.1 Pneumatic schematically RM 63 without ZA



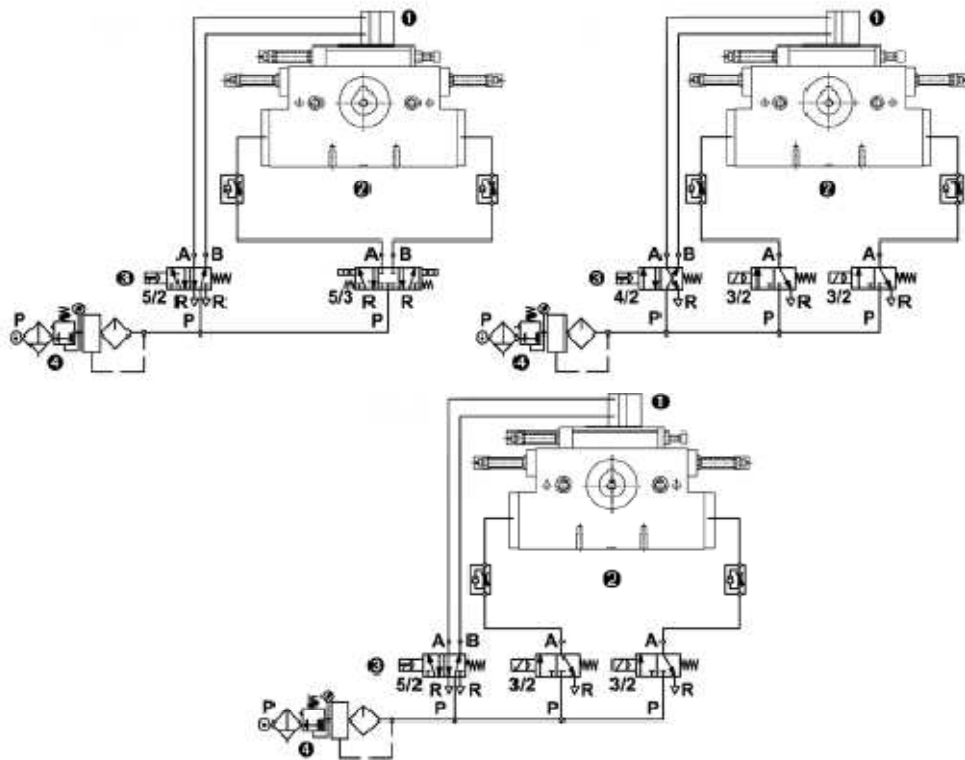
mit Zwischen pos.

Ventile: 4/2 od. 5/2 (3/2)



- 1 Rotary module
- 2 One-way restrictor
- 3 Directional valve (standard 5/2)
- 4 Maintenance unit
- 5 P Air supply



3.2.2 Pneumatic schematically RM 63 wiht ZA



1. Rotary module
2. One-way restrictor
3. Directional valve (standard 5/2)
4. Maintenance unit
5. P Air supply



3.2.3 Preparation for start-up

If they put before the start up shock absorber and adjusting stop screw in such a way that intended rotary fishes is properly absorbed.

 CAUTION	
	The RM rotary module is fine mechanical unit and must be handled with the necessary care and cleanliness during transport and storage as well as when handling, setting-up and assembling.

Sart-up

- Aerate the total system slowly.
- Pay attention to the permissible values (technical data) regarding:
 - load capacity
 - 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 operating range of the module.
- Carry out a test run
 - at first at slow traverse speed,
 - afterwards under operating conditions.

3.2.4 Rotary angle adjust RM 63

The angle of rotation for the RM can be adjusted from 0°-180° by means of the stop screws.

Stop screw AS 12/60

These stop screws can be combined with a proximity switch holder and proximity switch 6.5mm or with an angle proximity switch holder and 8x8mm proximity switch for end of travel interrogation.

Exemple: RM 63 with 160° rotation angle

1. Unscrew the shock-absorbers (1).
2. Apply compressed air to (P1). The pinion shaft (2) turns in anti-clockwise direction as far as the limit determined by the stop screw (3) (Fig.15).
3. Screw in the left –hand stop screw (3). The pinion shaft (2) turns in clockwise direction. Finely adjust the stop screw (one turn=1mm travel) until the pinion shaft has turned to the desired position. Now secure the stop screw with the lock nut (4) (Fig15-1)
4. Isolate the compressed air to (P1) and apply compressed air to (P2). The pinion shaft (2) turns in clockwise direction as fast as the limit determined by the stop screw (5) (Fig.15-2).
5. Screw in the right-hand stop screw (5). The pinion shaft (2) turns in anti-clockwise direction. Finely adjust the stop screw until the pinion shaft has turned to the desired position. Now secure the stop screw with the lock nut (6) (Fig.15-3).

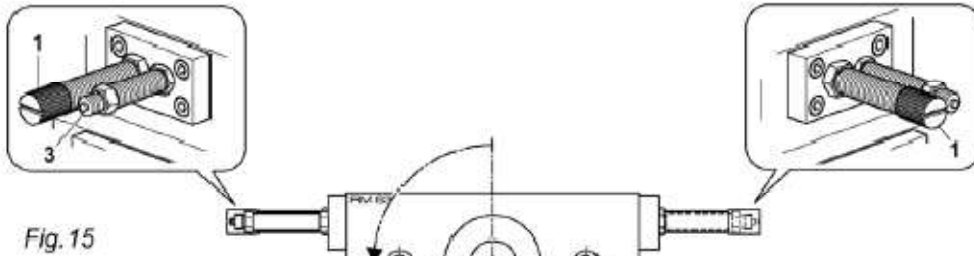


Fig. 15

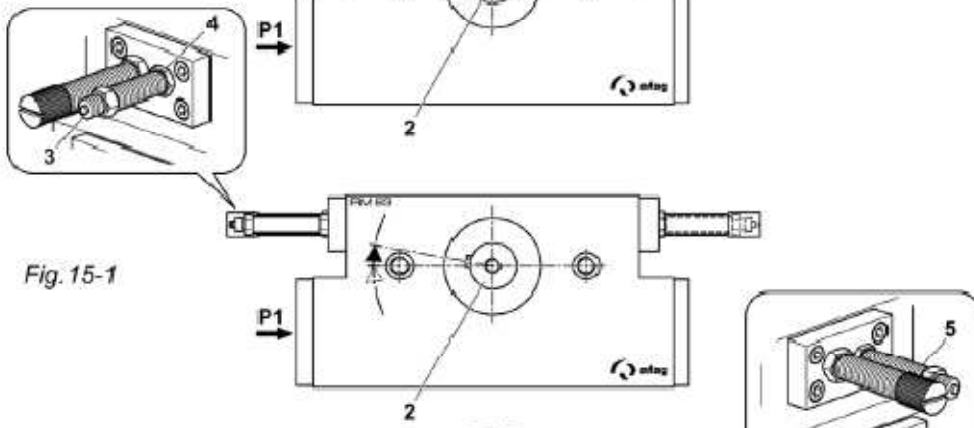


Fig. 15-1

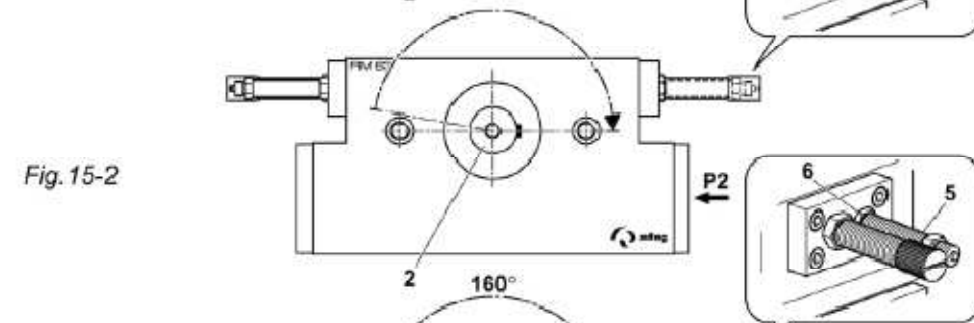


Fig. 15-2

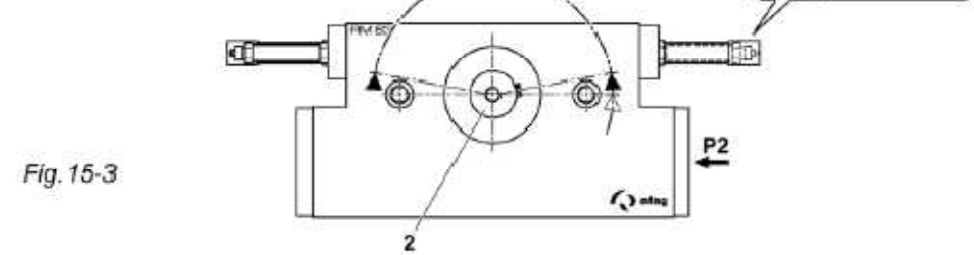


Fig. 15-3

3.2.5 Shock absorber adjust

The angle of rotation of the RM is dampend towards the stop screws by means of shock absorbers.

Adjusting shock absorbers

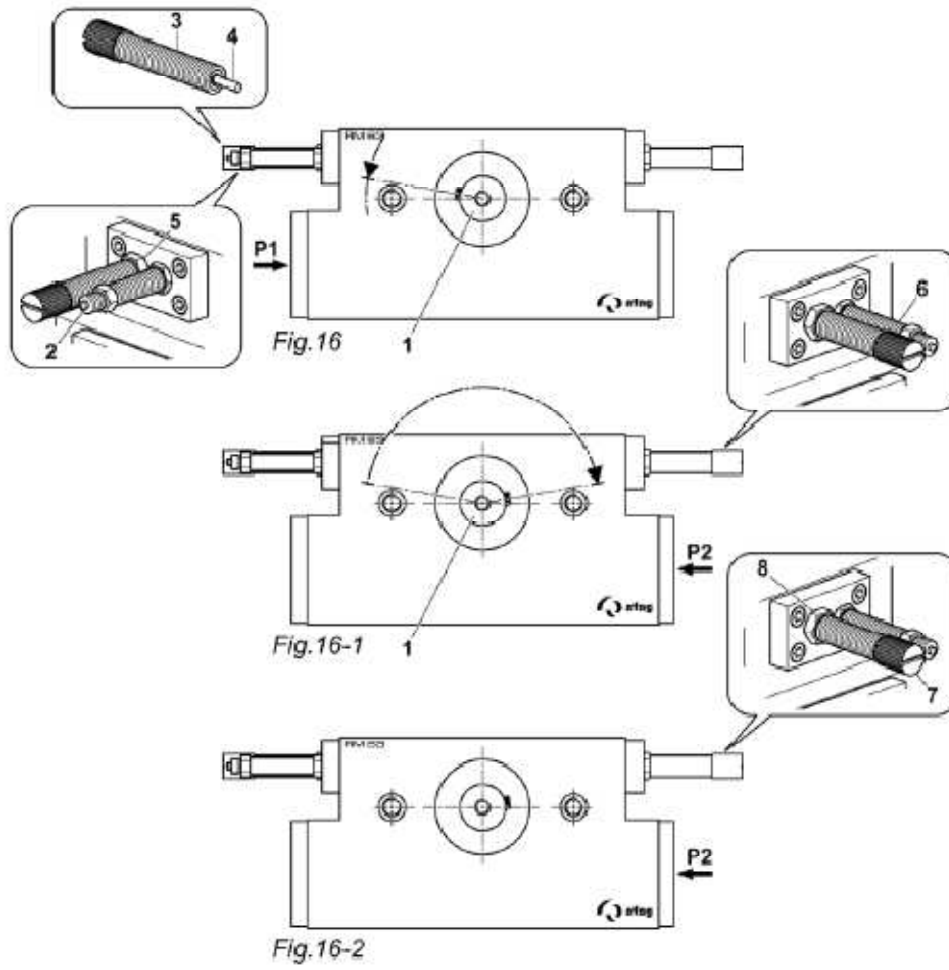
1. Apply compressed air to (P1). The pinion shaft (1) turns in anti-clockwise direction as far as the limits et by the stop screw (2) (Fig.16).
2. Screw in the left-hand shock absorber (3) in clockwise direction as far as the stop (the shock absorber pin (4) is pushed into the shock absorber). Now screw out the shock absorber two turns in anti-clockwise direction (One turn = 1mm travel) and secure with the lock nut (5) (Fig.16).
3. Apply compressed air to (P2). The pinion shaft (1) turns in clockwise direction as far as the limit set by the stop screw (6) (Fig.16-1).
4. Screw in shock absorber (7) completely. Now screw out the shock absorber two turns and secure with the lock nut (8) (Fig.16-2)

CAUTION



The stop screws (2,6) must limit the angle of rotation and not the shock absorbers (3,7)!



If the shock absorbers are used as a stop, they may be damaged and become unusable.

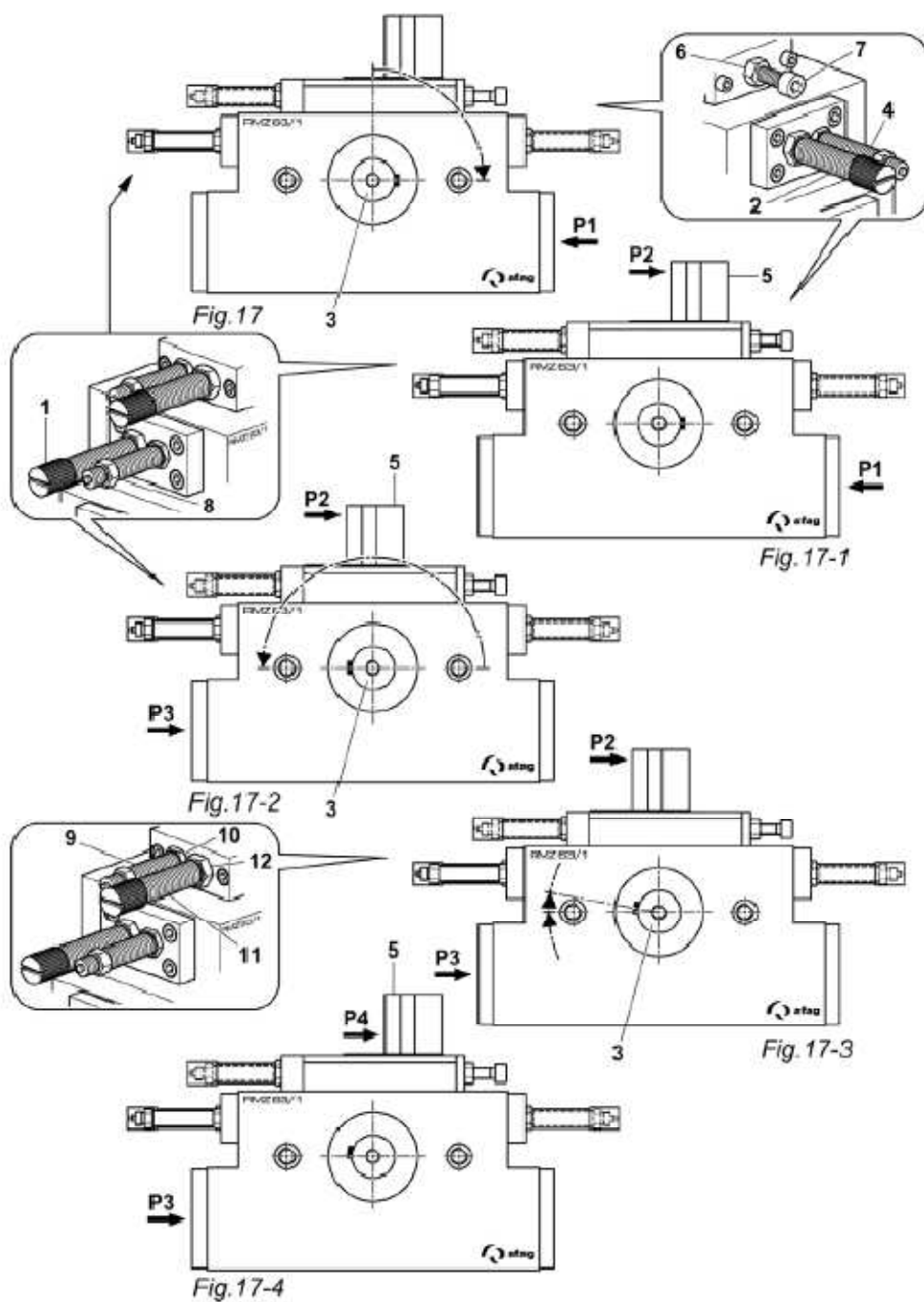


3.2.6 RMZ with one intermediate position

Example: **RMZ 63/2**

1. Adjust the angle of rotation according.
2. Adjust the shock absorbers (1,2) according.
3. Apply compressed air to (P1). The pinion shaft (3) turns in clockwise direction as far as the limit set by the stop screw (4) (Fig.17).
4. Apply compressed air to (P2). The intermediate position cylinder (5) is coupled with the RM. If not, adjust the stop screw (7) until the intermediate position cylinder and RM are coupled and secure with lock nut (6) (Fig.17-1).
5. Isolate the compressed air to (P3). The pinion shaft (3) turns in anti-clockwise direction as far as the limit set by the stop screw (8). The intermediate position cylinder (5) is shifted to the left (Fig.17-2).
6. Screw in the stop screw (9). The pinion shaft (3) is turned in anti-clockwise direction. After positioning the stop screw, secure with lock nut (10) (Fig.17-3).
7. Screw in the shock absorber (11) completely. Now screw out the shock absorber two turns and secure with lock nut (12) (Fig.17-3).
8. Isolate the compressed air to (P2) and apply compressed air to (P4): The intermediate position cylinder (5) uncouples and returns to its initial position (Fig.17-4).

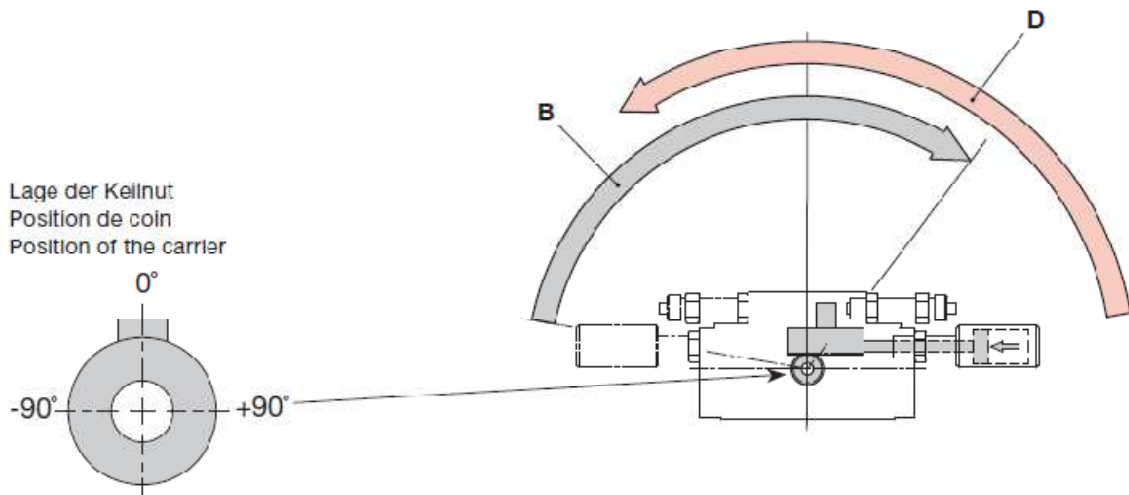
 CAUTION	
	The stop screws must limit the angle of rotation and not the shock absorbers!



Zwischenposition mit
Zusatzzylinder

Position intermédiaires
avec cylindre complémen-
taire

Intermediate position with
additional cylinder



B	Einstellbereich Zwischenposition, rechts drehend	Plage de réglage position intermédiaire, tourner sur la droite	Setting range intermediate position, clockwise rotation
D	Einstellbereich Zwischenposition, links drehend	Plage de réglage position intermédiaire, tourner sur la gauche	Setting range intermediate position, counter-clockwise rotation

Typ / Type	RMZ 12	RMZ 16	RMZ 16/360°
Positionen / Positions	2	2	2
B	10° – 105°	10° – 95°	10° – 95°
D	170° – 75°	170° – 85°	350° – 265°

Hinweis:
Zwischenposition B muss rechts
von Zwischenposition D liegen.

Indication:
La position intermédiaire B doit
se trouver à droite de la position
intermédiaire D.

Note:
Intermediate position B must be
on the right side of intermediate
position D.

Zwischenposition mit Zylinderstift

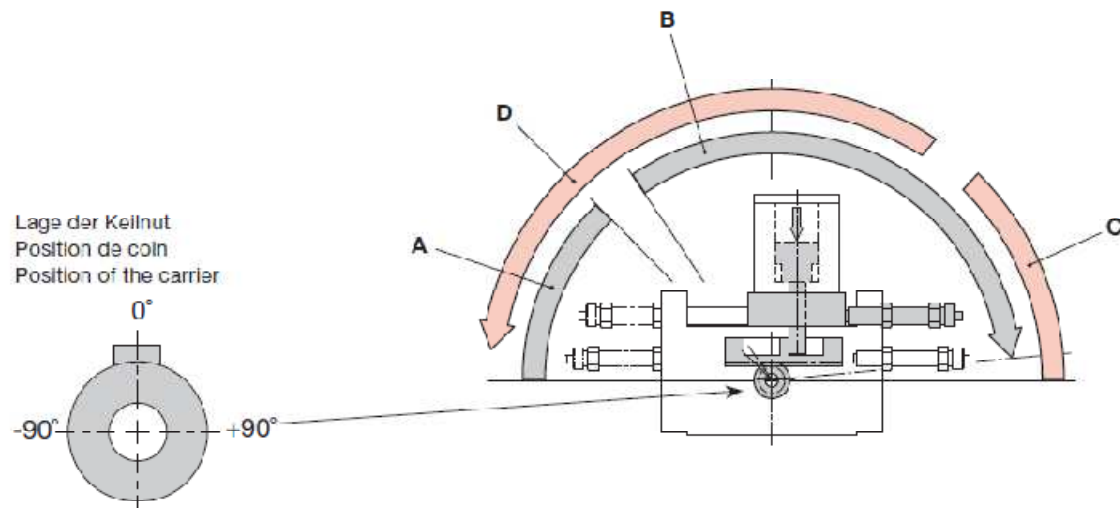
Zwischenposition gedämpft und quitiert

Position intermédiaire avec cylindre

Position intermédiaire amortie et acquittée

Intermediate position with cylinder pin

Intermediate position damped and acknowledged



A	Einstellbereich Zylinderstift, rechts drehend	Plage de réglage cylindre, tourner sur la droite	Setting range cylinder, clockwise rotation
B	Einstellbereich Zwischenposition rechts drehend	Plage de réglage position intermédiaire tourner sur la droite	Setting range intermediate position clockwise rotation
C	Einstellbereich Zwischenposition links drehend	Plage de réglage position intermédiaire tourner sur la droite	Setting range intermediate position clockwise rotation
D	Einstellbereich Zylinderstift, links drehend	Plage de réglage cylindre, tourner sur la droite	Setting range cylinder, clockwise rotation

Typ / Type	RMZ 16/2	RMZ 25/1	RMZ 25/2	RMZ 32/1	RMZ 32/2	RMZ 63/1	RMZ 63/2
Positionen / Positions	2	1	2	1	2	1	2
A	0° - 30°	0° - 30°	0° - 30°	0° - 30°	0° - 30°	0° - 30°	0° - 30°
B	45° - 170°	40° - 160°	44° - 160°	45° - 160°	45° - 160°	65° - 115°	85° - 115°
C	180° - 150°	-	180° - 150°	-	180° - 150°	-	180° - 150°
D	135° - 10°	-	140° - 20°	-	135° - 20°	-	115° - 65°

Hinweis:
Zwischenposition B muss rechts von Zwischenposition D liegen.
Das RMZ 16/2 ist nicht gedämpft.


Indication:
La position intermédiaire B doit se trouver à droite de la position intermédiaire D.
Le modul RMZ 16/2 ne pas amortie.



Note:
Intermediate position B must be on the right side of intermediate position D.
The module RMZ 16/2 is not damped.

3.2.7 Proximity switches

Plug-in and screw-in 6,5mm (1) or 8x8mm (2) proximity switches with proximity switch holders (3) are used for interrogation of the end of travel (see Fig.18,19)

 WARNING	
	RMs and proximity switches must not be used in an explosive environment!

NOTE	
	. Proximity switches and holders are not included in the RM scope of delivery (see sales material).

 CAUTION	
	The proximity switches can only be used with series AS stop screws.

Depending on the type of control, switch type PNP or NPN should be defined. An LED on the proximity switch serves function monitoring on end travel interrogation. If the LED does not change its switching condition on end of travel interrogation, then the proximity switch is faulty and must be replaced!

Technical data:

- Operating voltage range 10-30 VDC
- Switching interval 1,5 mm
- Protected against short-circuit and polarity reversal

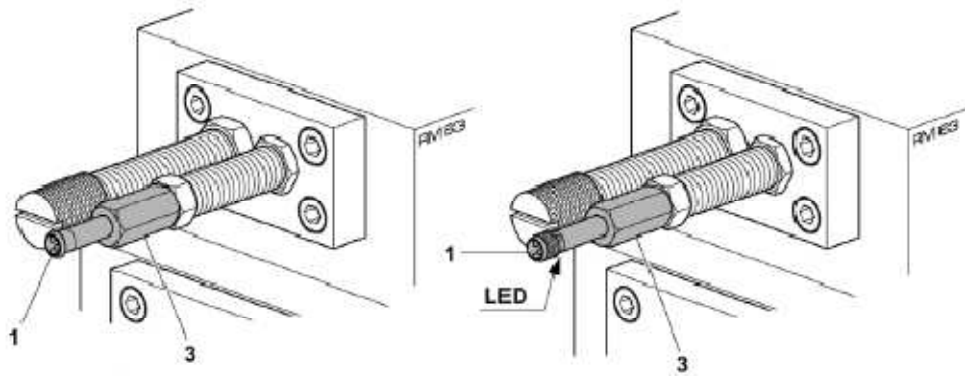


Fig.18

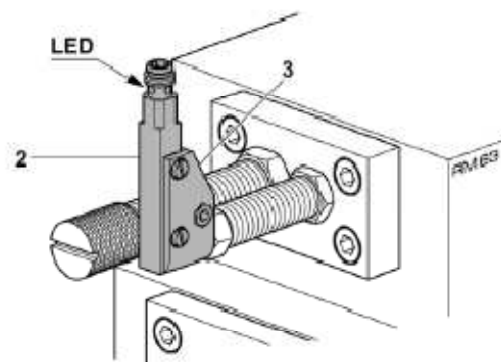


Fig.19

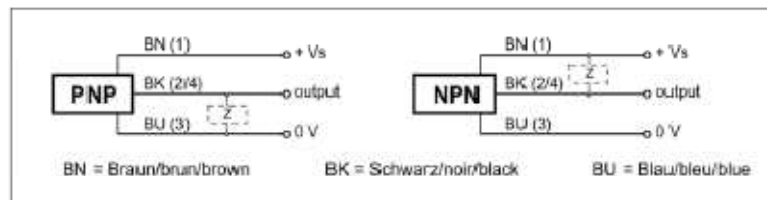


Fig.20



3.2.8 Mounting for the Sensor

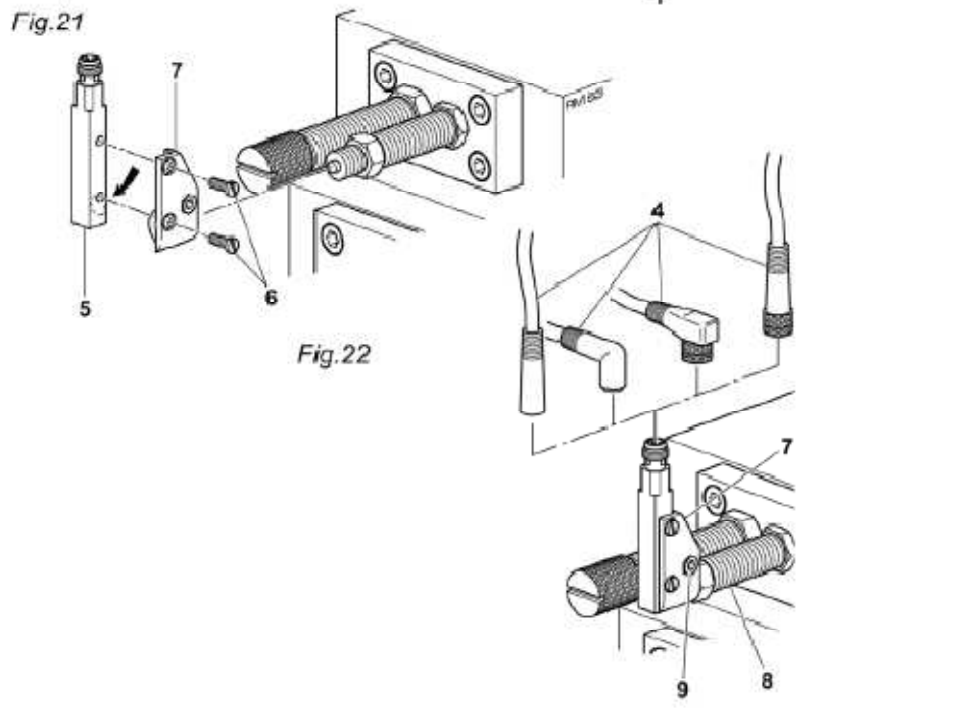
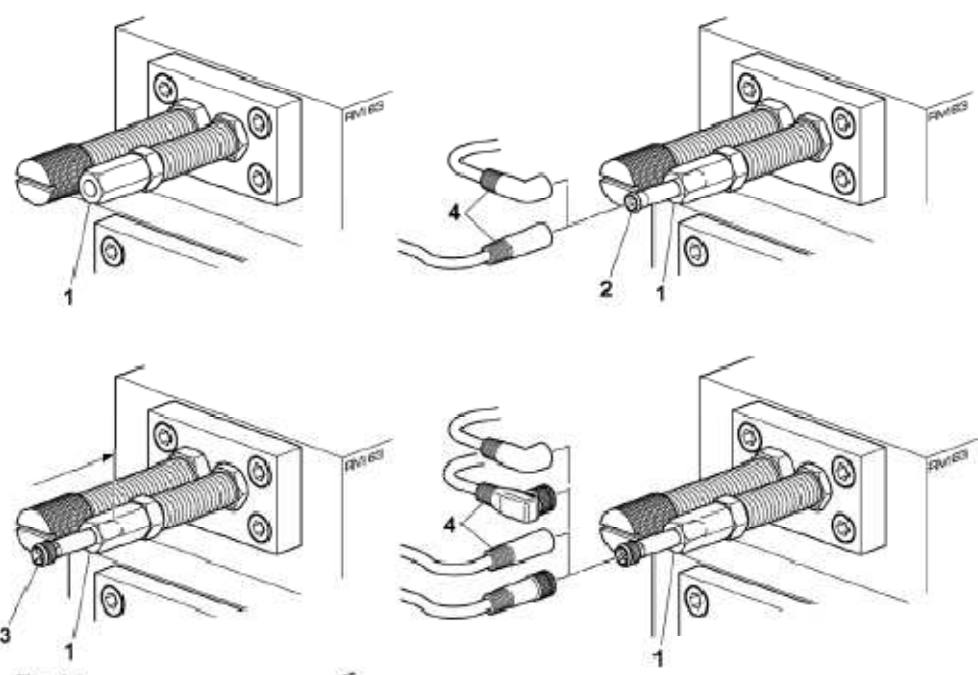
Mounting for Proximity switch holder IH / 6.5 mm (Fig.47).

1. Screw the proximity switch holder (1) onto the stop screw.
2. Plug the proximity switch (2+3) as far as it will go into the proximity switch holder.
3. Slightly tighten the proximity switch holder (1).
4. Mount the plug (4).
5. Functional check.

Mounting proximity switch 8x8mm (Fig.48)

1. Screw the proximity switch (5) onto the proximity switch holder (7) with screws (6).
2. Plug the proximity switch holder (7) with proximity switch as far as it will go onto the stop screw (8) and clamp with screw (9).
3. Mount the plug (4).
4. Functional check.

 CAUTION	
	The switching point of the proximity switch must cover the drill hole of the proximity switch holder! (see arrow)

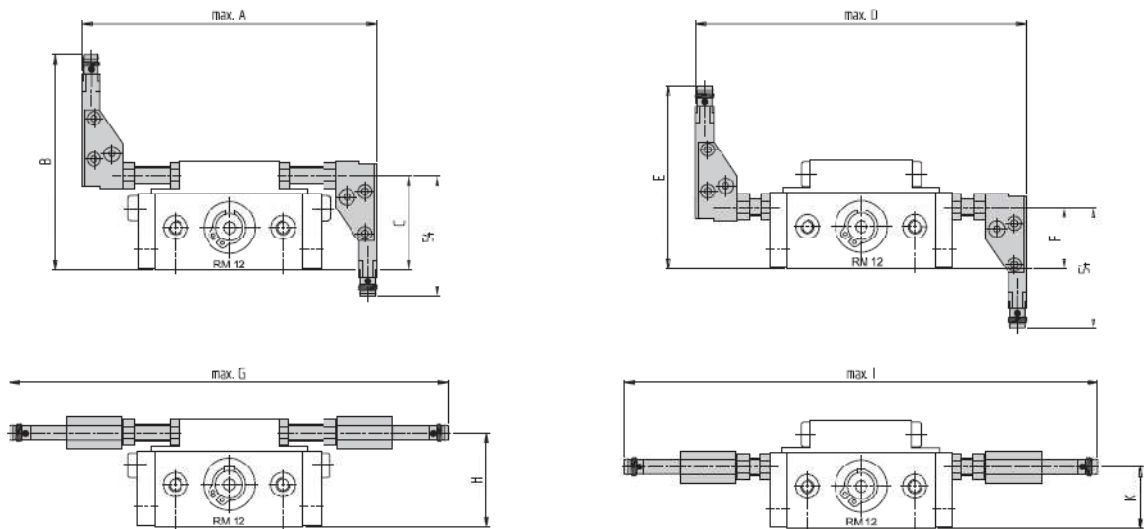


3.2.9 Dimensions for the sensors

Abmessungen beim Einsatz von abgewinkelten und geraden Sensoren (mm).

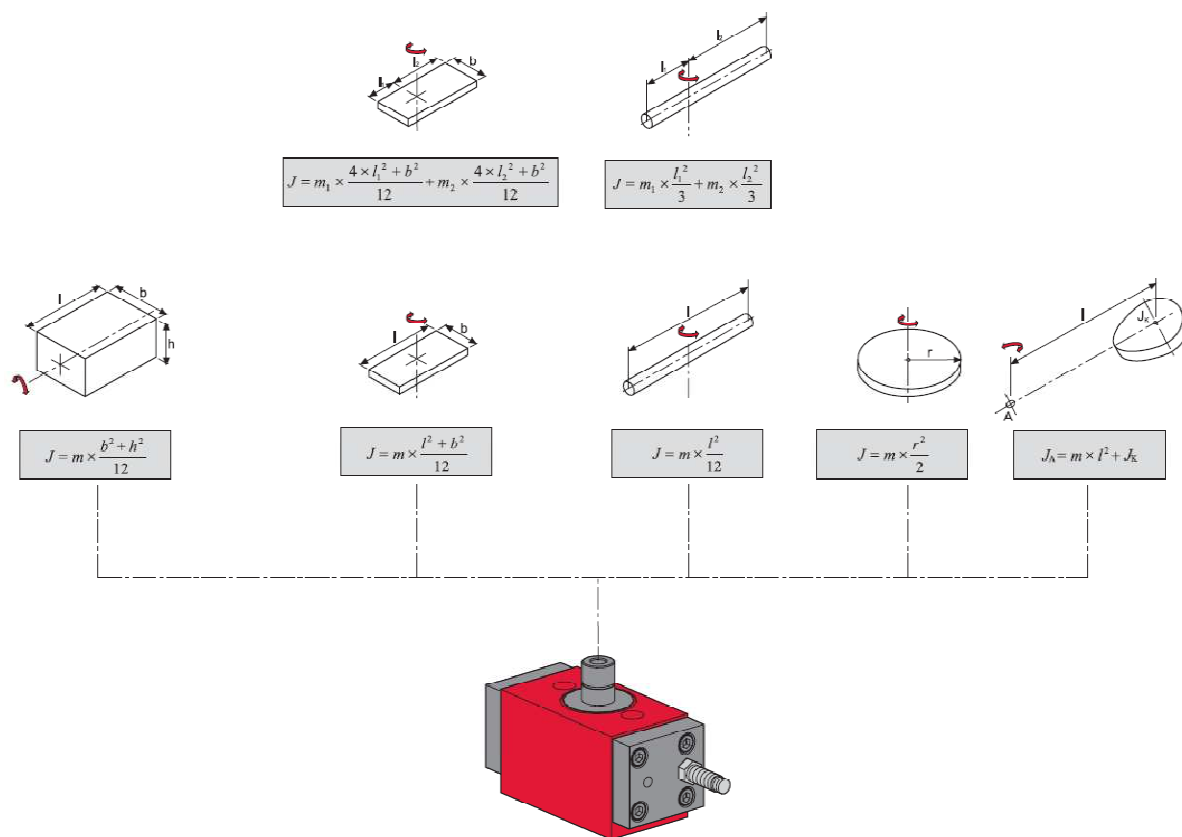
Encombrements avec des détecteurs coudés et droits (mm).

Dimensions when using angular and straight proxo switches (mm).



	A	B	C	D	E	F	G	H	I	K
RM 12				149.1	81.5	27.5			212.5	27.5
RM 12-SD	130.6	96	42				194	42		
RMZ 12	130.6	96	42				194	42		
RM 16				208.6	89	35			272	35
RM 16-SD	158.6	109	55				228	55		
RMZ 16	158.6	109	55				228	55		
RMZ 16/2				208.6	89/111.5	35/57.6			272	35/57.6
RM 16/360°SD	170.6	100	55				243	55		
RMZ 16/360°	179.6	109	55				243	55		
RM 25				238.6	113	59			302	59
RMZ 25/1				238.6	113/134	59/80			302	59/80
RMZ 25/2				238.6	113/134	59/80			302	59/80
RM 32				302.6	130	76			366	76
RMZ 32/1				302.6	130/157.5	76/103.5			366	76/103.5
RMZ 32/2				302.6	130/157.5	76/103.5			366	76/103.5
RM 32 m. FI.				302.6	130/157.5	76/103.5			366	76/103.5
RMZ 32/1 m. FI.				302.6	130/157.5	76/103.5			366	76/103.5
RMZ 32/2 m. FI.				302.6	130/157.5	76/103.5			366	76/103.5
RM 63				360.6	161	107			424	107
RMZ 63/2				360	161/192.5	107/138.5			424	107/138.5

3.3.0 Computation of moments of inertia



3.3.1 Adjusting the RM 63

Afag achieves the following delivery conditions for the RM:

RM 63 (Fig. 12)

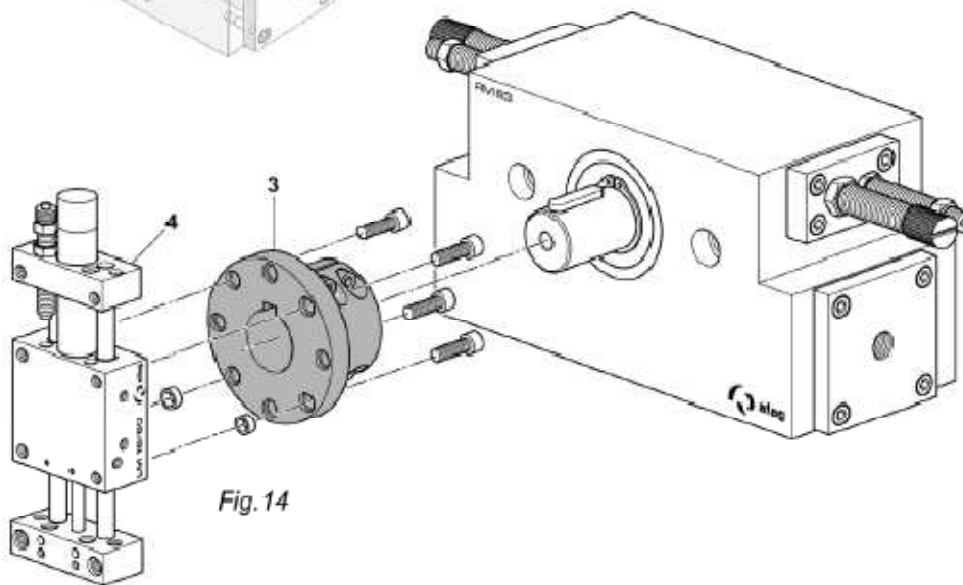
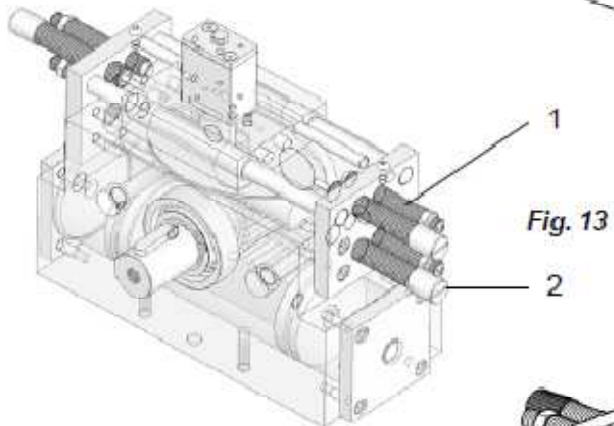
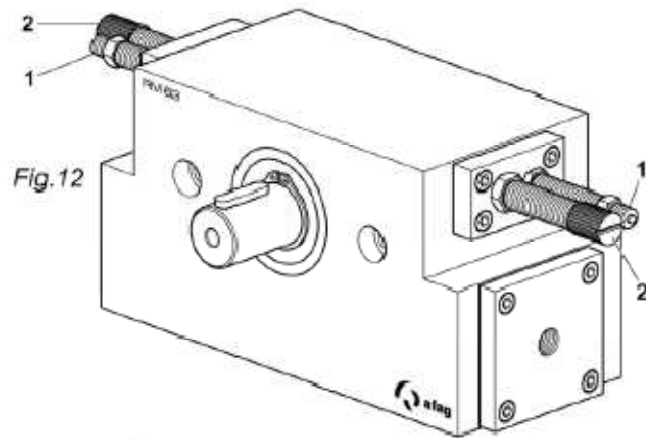
180° module with two limiter screws AS 12/60 (1) and two shock absorbers SDS 14/16 (2).

RMZ 63/2 (Fig. 13)

180° module with three limiter screws AS 12/60 (1) and Three shock absorbers SDS 14/16 (2).



Rotation Flange RM 63 (Fig. 14)

The rotation flange (3) is used to connect an RM 63 to another module (e.g. a linear module LM 16 (4)).



4.0.0 Maintenance instructions

4.1.0 Maintenance and servicing of the RM 63

 CAUTION	
	<p>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.</p>

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 cleunless.


Further maintenance

Under the following conditions is the RM rotatif 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 RM 63 rotary module is lubricated for-life and can be operated with oiled and unoiled air.

 CAUTION	
	Never operate the RM 63 rotary module 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 RM 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

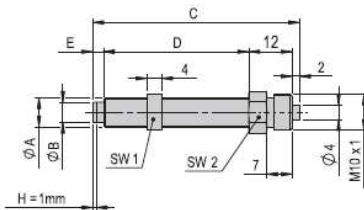
Viscosity range:

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>Recommendation: Clean and grease once a month!</p> <p>Afag standard: - Staburax NBU8EP (flat guides) - Blasolube 301 (piston rods)</p>

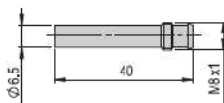
4.1.2 Accessories for RM 63

Anschlagschrauben AS	Vis d'arrêt AS	Adjusting stop screw AS	AS 08/15	AS 08/25	AS 08/40	AS 08/80	AS 12/60
Bestellnummer	Article No.	Order No.	11011202	11004991	11004992	11004993	11004994
A			M8x1	M8x1	M8x1	M8x1	M12x1
B			5.5 mm	5.5 mm	5.5 mm	5.5 mm	8 mm
C			32 mm	42 mm	57 mm	97 mm	78 mm
D			15 mm	25 mm	40 mm	80 mm	60 mm
E			3 mm	3 mm	3 mm	3 mm	4 mm
SW 1			10 mm	10 mm	10 mm	10 mm	12 mm
SW 2			10 mm	10 mm	10 mm	10 mm	14 mm
geeignet für:	destination avec:	pointed for:	GMQ 12 GMQ 20 GMQ 32	RM 12 LM 12 LM 16 LM 20	RM 16 RM 25 LM 12 LM 16 LM 20 LM 25 PMP-c PMP	LM 12 LM 16 LM 20	RM 32 RM 63 LM 32 LM 40
Wiederholgenauigkeit	Précision de répétition	Repeating precision	+/- 0.01 mm	+/- 0.01 mm	+/- 0.01 mm	+/- 0.01 mm	+/- 0.01 mm
Masse	Masse	Masse	0.013 kg	0.016 kg	0.021 kg	0.032 kg	0.058 kg



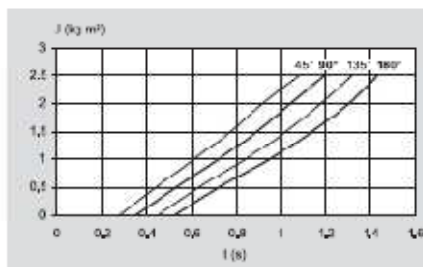
INI d6.5x44-Sn1.5-PNP-NO-M8x1

Initiator (SCHLIESSER)	Détecteur (FERMETURE)	Proximity switch (CLOSING)	
Bestellnummer	Article No.	Order No.	11005439
Betriebsspannung	Tension d'emploi	Normal voltage	10 - 30 VDC
Schaltabstand	Connecter distance	Distance to connect	1.5 mm



Einzelbar bei / Poser près / Insert prep:
 LM 12, LM 16, LM 20, LM 25, LM 32, LM 40
 (CSP 25-ZA), (LM 20/25), (LM 32-ZA)
 RM 12, RM 16, RM 25, RM 32, RM 63
 GMQ 12, GMQ 20, GMQ 32, PMP, PMP-c

INI 8x8x38.5-Sn2.0-PNP-NO-M8x1



Verfahrzeit
 Messung bei 6 bar

Durée du déplacement
 Précision mesurer près 6 bar



Traversing time
 Measurement by 6 bar

Legende/égende/legend:

mit SD
 avec SD
 with SD


4.1.3 Disassembly and repair

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

 CAUTION	
	<p>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.</p>


When can the modules be repaired by the customer?

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

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

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

- he returns the module to company Afag automation AG for repair.
- If the guarantee 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.

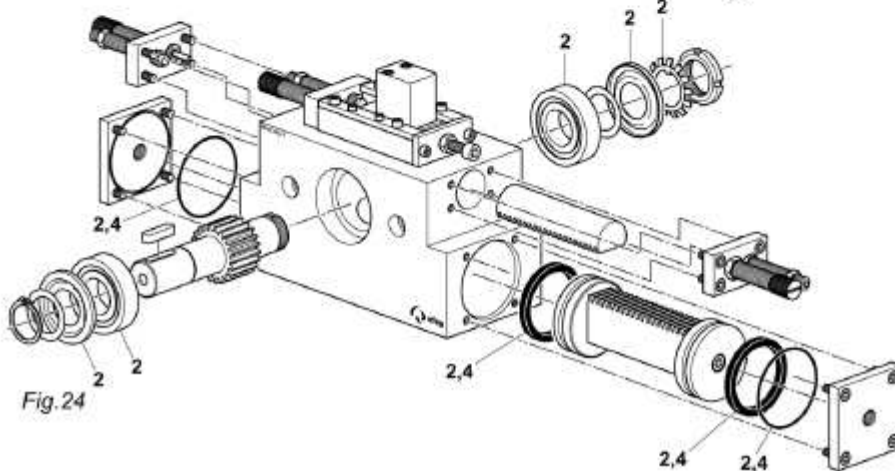
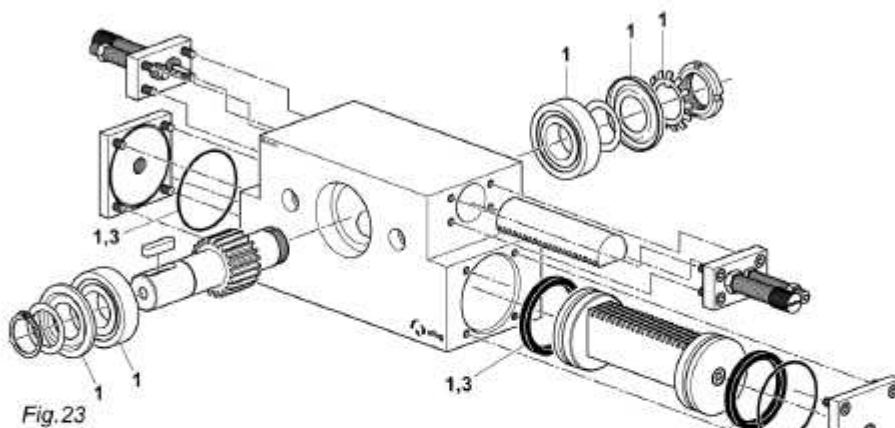
NOTE	
	<p>Afag offers a reliable repair service. Please note that Afag does not guarantee for parts which were not repaired by Afag Automation AG.</p>

4.1.4 Expendable parts to RM 63 - RMZ 63/1 – RMZ 63/2

Ersatzteile zu RM 63 -

RMZ 63/2


Pos	Bezeichnung	Abmessung	Lieferant	Anz.	Bestell Nr.
1	Verschleissteile		Afag	1	11007843
2	Verschleissteile		Afag	1	11007846



4.1.5 Faults during operation

Fault	Possible cause	Rectifying action
Module does not rotate	No compressed air	Check compressed air connections
	Module pneumatic connecting wrong	Check pneumatic links
End of travel signal not available	Anschlagschraube falsch justiert	Readjust stop screw
	Proximity switch faulty	Replace proximity switch
	Break in sensor cable	Replace proximity switch cable
The module impacts in stop positions	Shock absorber badly adjusted	Readjust the shock absorber to the stop screw
	Shock absorber faulty	Replaced exhaust air throttle
	no shock absorber installed	Installed shock absorber
	Exhaust air throttle faulty	Replaced exhaust air throttle
	Rotary speed too high	Adjust exhaust air throttle

5.0.0 Disposal

NOTE	
 A blue circular icon containing a white exclamation mark, used to denote a warning or important note.	RMs which are of no further use should not be disposed of as a complete unit but dismantled into individual parts according to the type of material and recycled should be correctly disposed of.



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