

DIRECTIONS FOR ACTUATOR INSTALLATION

Duration and safety use of actuators and plants, for all operators within their range of action, also depends on the attention paid to the following directions.

- Move carefully, without crashes.
- Keep actuators in their original packaging, with the relevant contents slips.
- Stock in warehouse between 0° C and + 40° C., even for long periods.
- Construction materials, surface treatments and paintings are physically steady and chemically inactive only under the conditions which are indicated on the identification nameplate.
- Possible arising of oily fogs inside the device: filtrate exhaust feeding air or recycle through specific solenoid-valves.
- Actuator's lubrication is made by the manufacturer. Its operation warranty, identified as number of movements before main metallic part substitution, is 1.000.000 manoeuvres (opening and closing). It is referred to standard models only.
- Springs operation, is guaranteed for 100.000 manoeuvres (opening and closing) before it has to be tested: they must be substituted in case of corrosion marks, wear or side yield.
- Antifriction plastic parts and rubber seals identified as "spare parts set" operation, is guaranteed for 300.000 manoeuvres (opening and closing) before it has to be tested: they must be substituted in case of corrosion marks or pressure losses.
- Installation of the actuator is forbidden before the plant is declared in accordance to CE norms or to eventual technical norms that must regulate the plant's working.

In case of need, about correct operation, call please our Technical Office.

ALUMINIUM "RE" SERIES ACTUATORS NOTICE AND NOTES FOR ACTUATORS USE IN EXPLOSIVE ENVIRONMENTS "ATEX" 94\9\CEE DIRECTIVE

"RE" Series Rack & Pinion Actuators in aluminium alloy are carefully engineered and manufactured according to the relevant technical norms and safety european directives.

They can be used in "ATEX" 94\9\CEE Directive dangerous zones, according to the following manufacturer classification.

Device Group II (surface) - Category 2 - G (gas) and D (dust) use

- Low Temperature -40 +80°C (-40 +176°F)  II 2GD c Tmax = 95°C (203°F)
- Standard -20 +80°C (-4 +176°F)  II 2GD c Tmax = 95°C (203°F)
- High Temperature -20 +150°C (-4 +302°F)  II 2GD c Tmax = 165°C (203°F)

Due to the relevant safe condition needs, for applications in that particular environment, carefully read please the above notices.

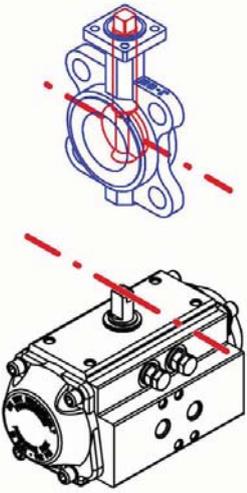
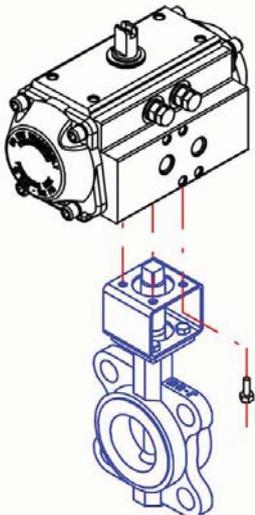
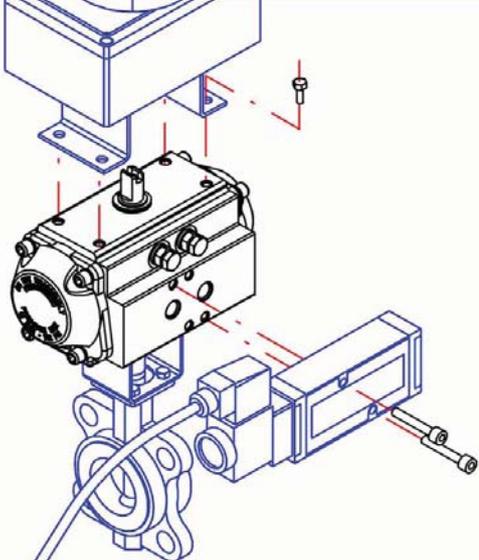
- Before installation, please read our "Instruction manual for use and maintenance" carefully.
- Follow the use expected for actuators.
- Follow the indications of maximum temperature-environment of use, punched on identification nameplate.
- Don't let the actuator be fed by flammable, explosive or burning fluids (oxygen, acetylene etc...).
- Avoid the penetration of explosive atmospheres inside actuators.
- Do not hit the external parts of actuators (both aluminium and steel parts) through metallic objects (it may cause sparkles).
- Do not manually force actuators over the maximum output torque.
- Avoid accumulation of combustible dusts on actuator surfaces.
- Avoid accumulation of electrostatic charges on insulating surfaces of APR, by providing suitable "grounding", using for example the valve fixing screws.
- All components and accessories installed on APR for drive and control purposes, must be suitable for those uses in accordance to the danger classification of the area.
- Maintenance operations on actuators must be made according to the norms in force, (for example EN 50281, EN 60079 etc...) and to the danger classification of the area.
- Do not make maintenance operations in places with explosive atmosphere.
- Verify springs functioning every 100.000 (one hundred thousand) cycles: substitute complete spring cartridges when necessary, but do not try to disassembly them.
- Verify all rubber sealing elements (o-ring s and plane gaskets) and all plastic anti-friction pads every 300.000 (three hundred thousand) cycles: substitute the complete spare-parts set when necessary.
- Use and operation not in accordance to a.m. notes, may cause danger or damage to people and things, and let every legal responsibility lose from Manufacturer side.

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INSTALL OPERATION

For a safe install operation, follow please the above procedure.

 <p>1</p>	 <p>2</p>
<p>Make sure that both valve and actuator are closed.</p> <ul style="list-style-type: none"> • Standard SR models normally closed. • Standard DA models, feed by port "2" in order to reach the correct positioning. 	<p>Assembly through screws, bracket and adapter.</p> <p>N.B. Not for valve\actuator direct assembly.</p>
 <p>3</p>	 <p>4</p>
<p>Insert actuator on top of adapter and assembly it through screws.</p>	<p>Connect accessories, making sure of the real position of the valve.</p> <p>Connect pneumatic/electrical feeding and verify correct operation.</p>

Disassembly is made following all described operations, backwards.

Pay attention to safety rules.

In case of difficulty, do not force the elements, but verify clearances, axis position, supplied feeding and correct torque dimensioning of valve and actuator.

In case of need, about correct operation, call please our Technical Office.

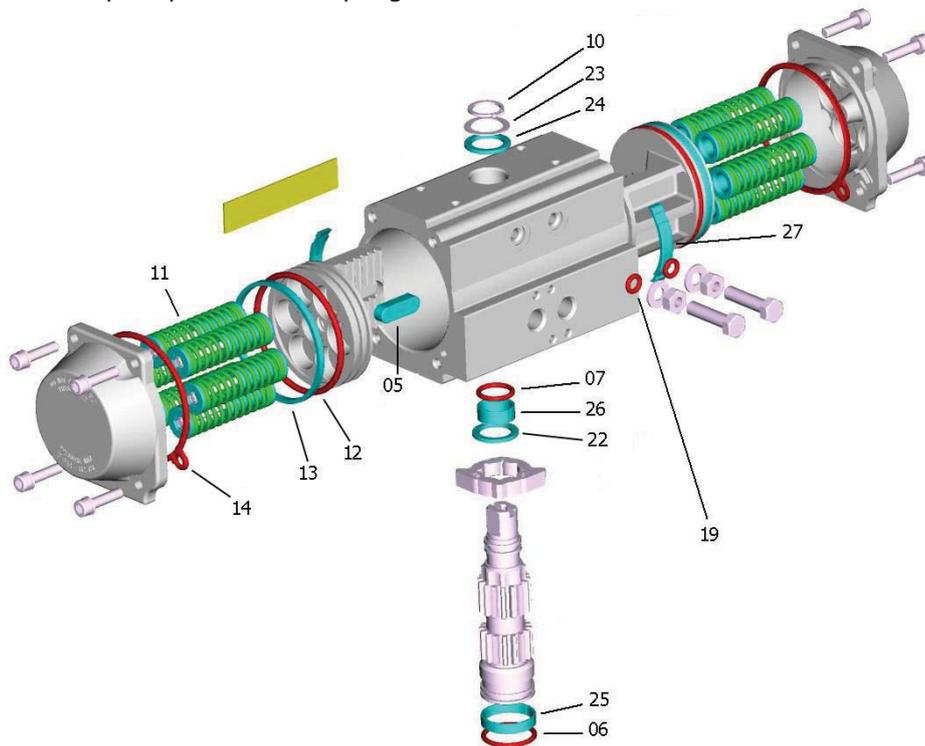
SPARE-PART SET AND SPRINGS

Please note that, depending on working conditions of the actuator, it may be necessary to make a "spare-part set" periodic substitution, this means a change of all antifriction plastic parts and of all rubber seals. Their lifetime duration is guaranteed only for 300.000 manoeuvres (opening and closing), before a new inspection comes to be necessary: in case of corrosion marks or pressure losses, these parts must be substituted.

It may be also necessary to substitute a "spare-part set" for use at a different working temperature. In this case, please verify that both "spare-part set" and lubricant are suitable for the new environmental conditions (see "Actuator working temperatures" datasheet).

Please remember that springs lifetime duration is guaranteed only for 100.000 manoeuvres (opening and closing), before a new inspection comes to be necessary: they must be substituted in case of corrosion marks, wear or side yield.

This is a list of "spare-part set" and springs.



PART	QUANTITY	DESCRIPTION	MATERIAL	SPECIFICATION	PROTECTION
5 *	2	Antiejection key	Acetalic Resin – PA66 – PA66		
6 *	1	Lower shaft O-Ring	NBR - FPM\FKM - Silicone		
7 *	1	Upper shaft O-Ring	NBR - FPM\FKM - Silicone		
10 *	1	Seeger ring	Carbon steel		Nichel plating
11	0 ... 12	Spring cartridge	Carbon+Stainless Steel, PA 66	AISI 304 (A2)	Painting
12 *	2	Piston O-Ring	NBR - FPM\FKM - Silicone		
13 *	2	Piston head bearing	Acetalic Resin – PA66 – PA66		
14 *	2	Cover gasket	NBR - FPM\FKM - Silicone		
19 *	2	O-Ring	NBR - FPM\FKM - Silicone		
22 *	1	Gear antifriction washer	Acetalic Resin – PA66 – PA66		
23 *	1	Shaft thrust washer	Stainless Steel	AISI 304 (A2)	
24 *	1	Shaft antifriction washer	Acetalic Resin – PA66 – PA66		
25 *	1	Lower shaft pilot ring	Acetalic Resin – PA66 – PA66		
26 *	1	Upper shaft pilot ring	Acetalic Resin – PA66 – PA66		
27 *	2	Piston bearing	Acetalic Resin – PA66 – PA66		

* Standard SPARE-PARTS SET in NBR - Special HIGH Temperature in FPM\FKM - Special LOW Temperature in Silicone

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MAINTENANCE, SPARE-PART SET AND SPRINGS SUBSTITUTION

In event of "spare-part set" and/or spring substitution, follow please the above procedure also listed on actuator handbook (held inside every actuator box).

MAINTENANCE, SPARE PARTS SET AND SPRING SUBSTITUTION

Actuator must be absolutely taken off from the plant where it is installed, disconnected from pneumatic and electrical feeding, and from possible accessories, see Fig. 14.

Warning!

Installation, adjustment and maintenance must be effected under safety conditions. Do not connect pneumatic/electrical feeding until all operations are terminated. For all numbered parts, only complete spare-part sets are available.

TAKE OFF!
ZERLEGEN!
DEMONTIER!
DESMONTAR!
DISINSTALLARE!

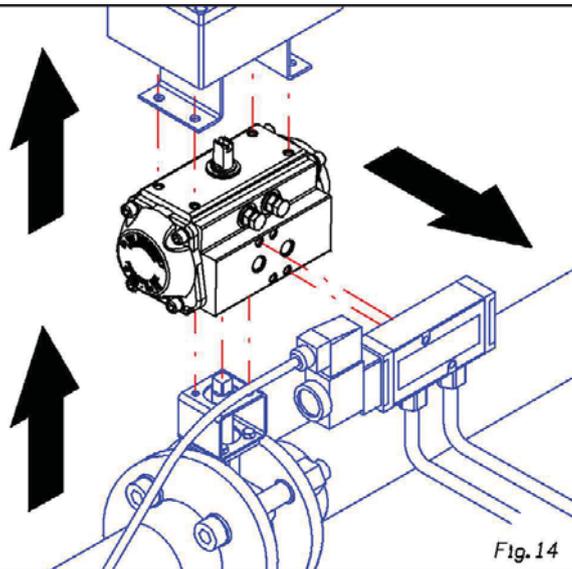


Fig. 14

DISASSEMBLY
ENTFERNEN
DEMONTIER
DESMONTAR
SMONTARE

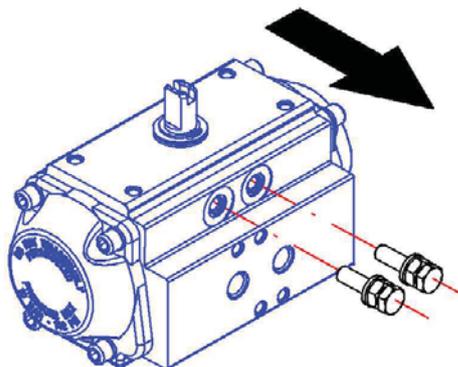


Fig. 15

1 Take off external adjustig screws, see Fig. 15

DISASSEMBLY
ENTFERNEN
DEMONTIER
DESMONTAR
SMONTARE

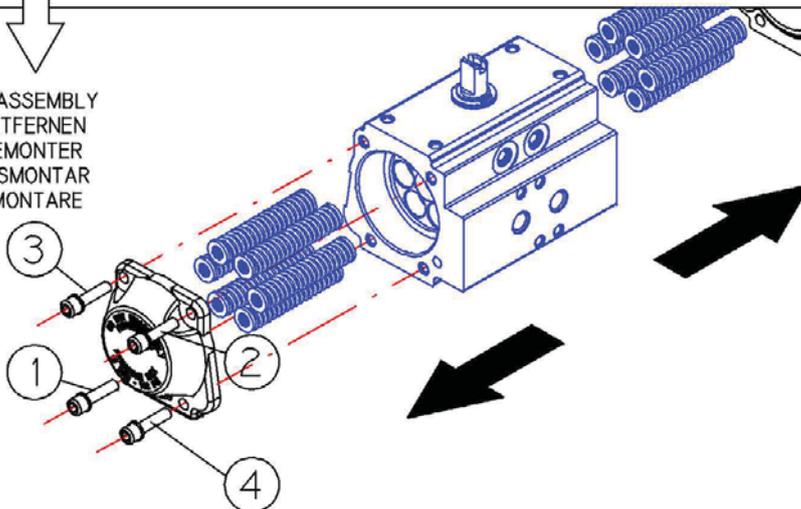


Fig. 16

2 Take off covers loosening screws as per indicated numeration; pull out springs, if any, from pistons seats, see Fig. 16.

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3 Rotate top stem in order to release pistons from shaft's rack. Take off pistons through a pair of pincers, see Fig. 17.

TAKE OUT
AUSZIEHEN
EXTRAIRE
EXTRAER
ESTRARRE

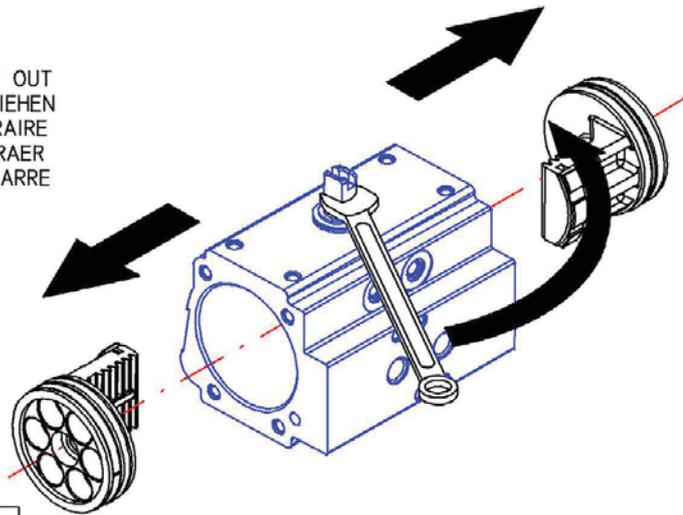
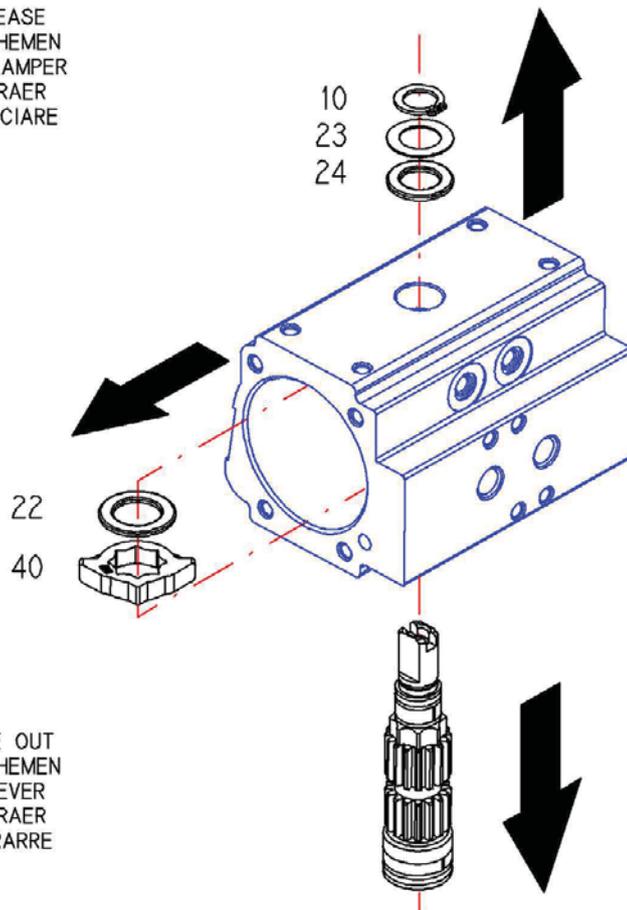


Fig. 17

4 Release seeger ring (Part 10) from the shaft top and take away:
 • Shaft thrust washer (Part 23),
 • Anti-friction washer (Part 24),
 • Gear antifriction washer (Part 22),
 • External adjusting gear (Part 40) and the shaft too, see Fig. 18.

RELEASE
ABNEHEMEN
DE CLAMPER
EXTRAER
SGANCIARE

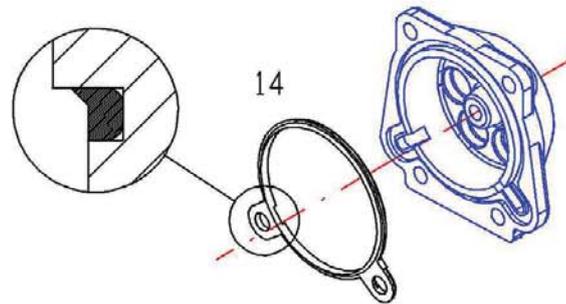


TAKE OUT
ABNEHEMEN
ENLEVER
EXTRAER
ESTRARRE

Fig. 18

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SPARE PARTS SET
ERSATZTEILKITT
KIT DE RECHANGE
JUEGO DE RECAMBIO
SET-RICAMBI



5a From both covers take off:

- Cover gasket (Part 14).

5b From both pistons take off:

- Piston bearing (part 27),
- Anti-ejection key (Part 05),
- O-rings (Part 12),
- Piston head bearing (Part 13).

5c From the shaft take off:

- Upper pilot ring for shaft (Part 26),
- O-rings (Part 06-07),
- Lower pilot ring for shaft (Part 25).

See Fig. 19.

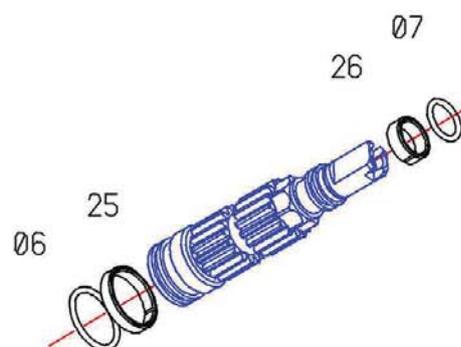
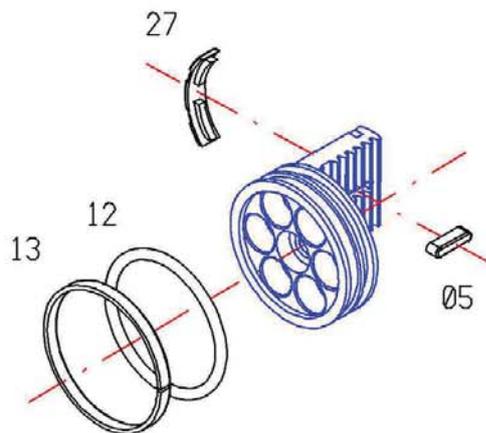


Fig. 19

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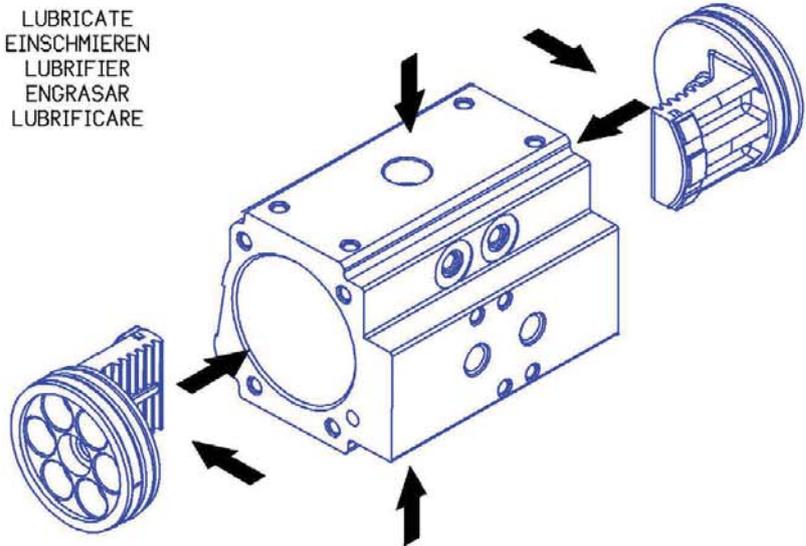
WARNING!

After disassembly all particulars to be substituted, and before proceeding with their replacement, carefully clean all components: body, pistons, covers and shaft.

Replace now the old particulars with the new ones.

Before assembly, lubricate please where indicated with molybdenum bisulphide grease type: ESSO MOLY EP-2, AGIP SM2 SE or similar, see Fig. 20.

LUBRICATE
EINSCHMIEREN
LUBRIFIER
ENGRASAR
LUBRIFICARE



ESSO MOLY EP2
AGIP SM2 SE

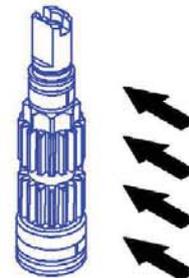


Fig. 20

RE-INSERT
EINFUEGEN
REINSERER
ALOJAR
REINSERIRE

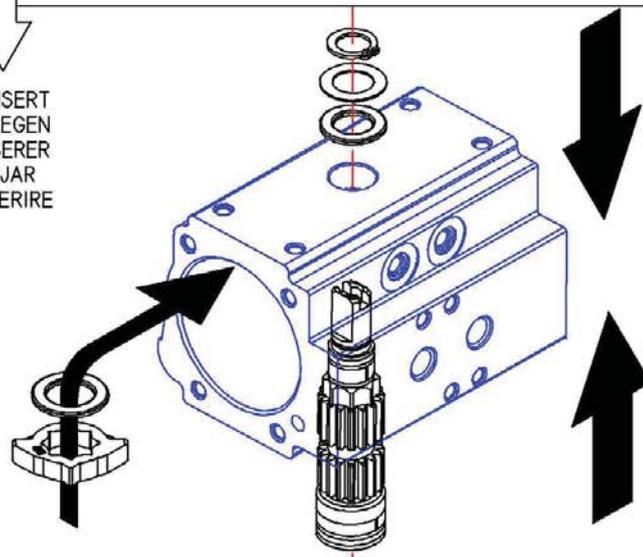


Fig. 21

6 Re-insert the shaft in the body, with external adjusting gear and gear antifriction washer on its inside. Slip the external washers and clip the seeger ring: be shure please that they are well engaged, see Fig. 21.

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7 Fig. 22 shows the correct gearing by gear and shaft, and the direction of the gear's arrow respect to the body (actuator top vision).

In order to easy subsequent operation (inserting pistons in the body), it is suggested to respect this schema.

BE SURE | ACHTUNG | S'ASSURER | ASEGURARSE | ASSICURARSI |

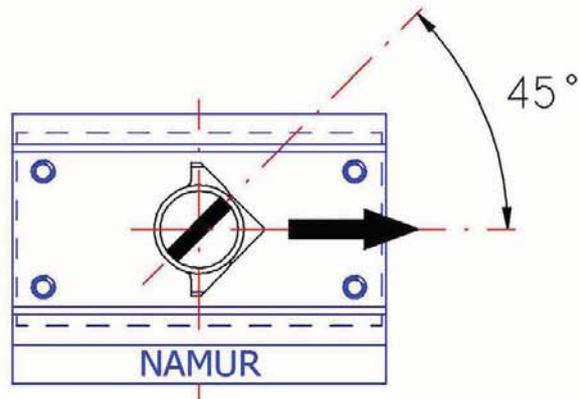


Fig.22

8 Insert the pistons in the body, see Fig. 23.

WARNING!

If the assembly variation is not STANDARD = A (see "ASSEMBLY VARIATION" data sheet or the handbook's TAB A-B-C-D), it need reverse the gearing angle by gear and shaft (Fig. 22), or the rotation of the pistons respect to the body (Fig. 23), or both.

RE-INSERT
EINFUEGEN
REINSERER
ALOJAR
REINSERIRE
(TAB A-B-C-D)

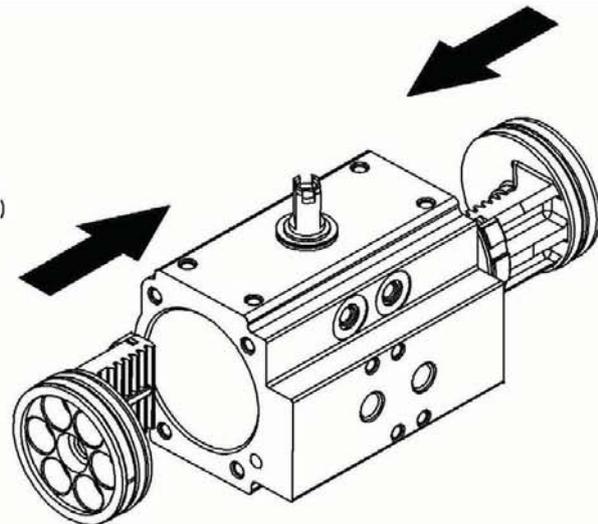


Fig.23

BE SURE | ACHTUNG | S'ASSURER | ASEGURARSE | ASSICURARSI |

9 Verify the piston's "right phase": this means they are engaged with the same tooth on shaft, and verify that shaft rotation induces a piston's symmetrical opening, see Fig. 23-A.

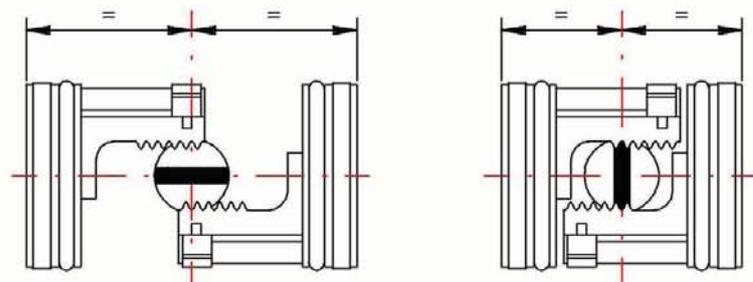


Fig.23-A

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10 Verify that after a 90+5° shaft rotation the pistons rest inside to the body, see Fig. 23- B.

BE SURE !
 ACHTUNG !
 S'ASSURER !
 ASEGURARSE !
 ASSICURARSI !

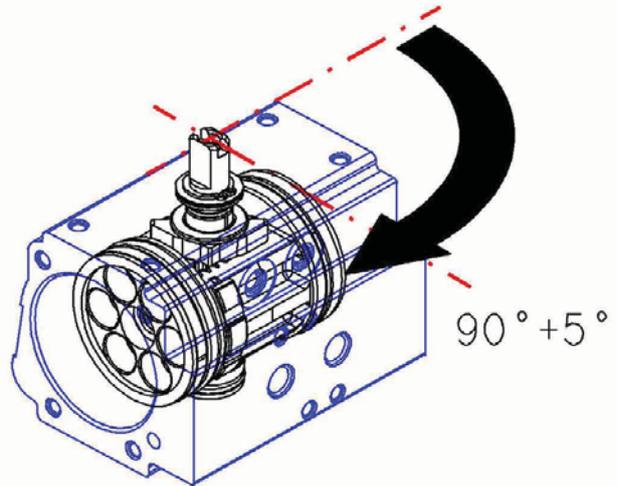


Fig.23-B

11 Adjust the 90° actuator rotation, re-inserting the appropriate external adjusting screws, see Fig. 24.

ADJUST
 VERSTELLEN
 REGLER
 AJUSTE
 REGOLARE

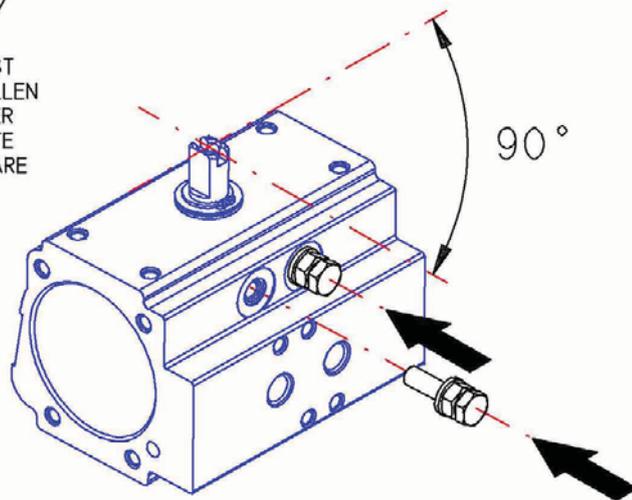


Fig.24

12 Fig. 25 shows, if presents, the optimal springs layout.

PAY ATTENTION
 ACHTUNG
 ATTENTION
 ATENCION
 ATTENZIONE

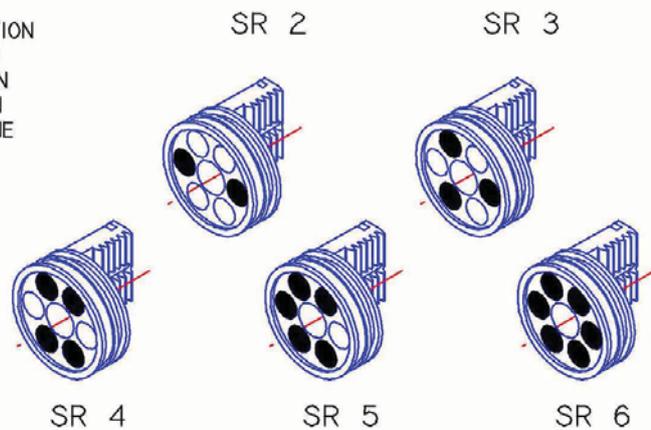


Fig.25

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13 Assembly covers tightening screws as per indicated numeration. Note please the screws tightening torque table, see Fig. 26.

In order to easy that operation, is better to dispose the actuator in vertical position.

ASSEMBLY
ZUSAMMENFUEGEN
ASSEMBLER
MONTAR
ASSEMBLARE

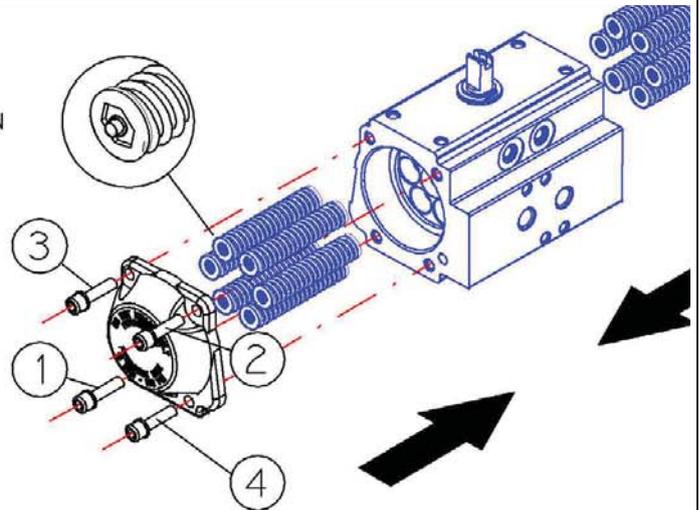


Fig.26

TIGHTENING TORQUE TABLE - TABELLE DER ANZUGS DREHMOMENTE |
TABLE DE COUPLE SERRAGE - TABLA DE PAR DE APRIETE
TABELLA COPPIE DI SERRAGGIO

M 5	M 6	M 8	M 10	M 12	M 14	M 16
4,5 Nm	8 Nm	19 Nm	38 Nm	65 Nm	115 Nm	160 Nm

RE-INSTALL AND CHECK
INSTALLIEREN UND UEBERPRUFEN
INSTALLER ET ESSAIER
REINSTALAR Y COMPROBAR
REINSTALLARE E PROVARE

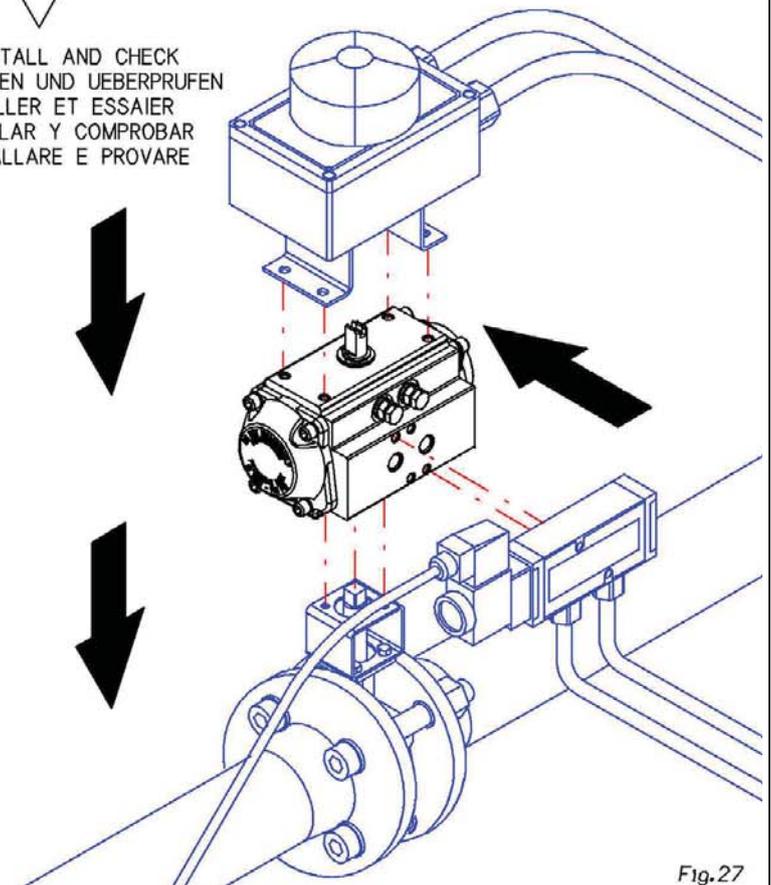


Fig.27

14 Re-assembly the actuator to the plant where it where installed, connect pneumatic and electrical feeding and verify correct operation, see Fig. 27.

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ASSEMBLY VARIATIONS

Valid for both aluminium "AP" and AISI 316 (A4) Stainless Steel "AP-A" actuators. There are four different assembly variations that are able to solve every need of valve/actuator placing combined with fail occurrence (fail-safe). They are mainly used for Spring Return "SR" operation.

The position of the upper part of actuator's shaft has to indicate the position of the valve. **ALPHAIR's standard assembly variation is: "A".**

P.N. According to ISO 5211 – DIN 3337, closing rotation of the valve has to be clockwise.

TYPE	ASSEMBLY SCHEME	TYPICAL APPLICATION	UTILITY
A			<p>SPRINGS CLOSE THE VALVE</p> <p>In event of fail, the valve is closed (fail-safe).</p>
B			<p>SPRINGS CLOSE THE VALVE</p> <p>In event of fail, the valve is closed (fail-safe).</p>
C			<p>SPRINGS OPEN THE VALVE</p> <p>In event of fail, the valve is opened.</p>
D			<p>SPRINGS OPEN THE VALVE</p> <p>In event of fail, the valve is opened.</p>

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