



**RC 88**  
**Pneumatic Actuator**  
**Single**  
**&**  
**Double Acting**





# Pneumatic actuators

## TYPE AND DESIGN

DA = Double Acting. Actuator with pneumatic operation in both directions.  
SR = Spring Return. Actuator with spring return.

## LUBRICATION

RC actuators are permanently lubricated and additional lubrication is normally not required. However, for actuators performing 100,000 operation cycles or more under very heavy load, an oil mist lubrication is recommended.

Oil mist lubrication requires a mineral oil type ISO VG32 class 1 for usage in temperature range -10 to +70°C. Oil mist lubricator must be set at lowest possible value. Commenced oil mist lubrication must continue. If the actuator is equipped with pneumatic or electro-pneumatic positioner, oil mist must not be used.

## OPERATING MEDIUM

The air or inert gas to be used must be filtered to 50µm particle size or less. If the operating temperature is below +5°C, the air dew point must be below the application temperature. The exhaust air must pass through a filter silencer before it is let out into a workshop.

The spring houses on SR actuators which normally "breathe" through the right port, must not be in connection with corrosive atmosphere. Our technicians will show a suitable method to avoid this.

## HAND OPERATION

### WARNING!

*It is very risky to try to operate the actuator manually by using the key grip on the driving shaft. The accumulated energy inside the actuator may instantaneously be set free.*

The actuator can be equipped with disengagable gearbox on the top of the actuator for manual operation.

### WARNING!

*All manual operation must be carried out using a vented actuator.*

## THE POSSIBILITIES OF THE SCOTCH YOKE CONSTRUCTION

The Scotch Yoke of the RC actuators has angled slots. Thus the output torque can be given different values depending on how the pistons are mounted in the actuator. As standard the DA actuator is

mounted as shown in Figure 1 on page 2. This design allows for the highest torque at "closed" valve position. The pistons are then in their outermost position and can be fine adjusted  $\pm 3^\circ$ .

The SR actuator has the pistons turned 180° in relation to the DA actuator according to Figure 4 on page 3. This gives an increase of the torque towards the end of the rotary motion, although the spring force is diminished.

When the positions in an SR actuator are mounted according to Figure 1, the function is changed from "spring closes" to "spring opens". The adjustment of the end position will then take place in "closed position".

If the pistons in a DA actuator are mounted according to Figure 4, the fine adjustment will take place in "open" valve position. The actuators can be supplied with adjustment in both end positions on request. The possibility to turn the pistons can be used in several ways in order to suit the actuators to the customer's requirements. For further information on this, please consult factory.

## INSTALLATION AND ADJUSTMENT

### WARNING!

*RC actuators must only be used as actuators on valves. Levers, racks and similar cannot be used to transmit movement without protective equipment.*

All types of actuators can be mounted in various positions, e.y. vertical or horizontal. When mounting on a valve, ensure that the actuator shaft and the valve stem are centered, and that a play of ca. 1-2 mm exists between shaft and driving bush. After mounting, it may be necessary to adjust the turning angle of the actuator.

**Tightening torques for screws and lock nuts on page 4.**

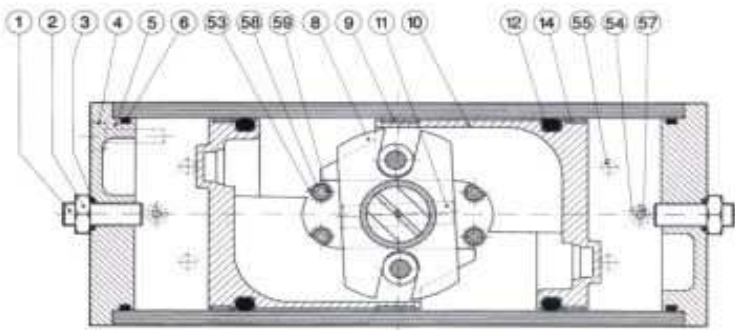
As mentioned previously, the DA actuators can, as standard, be adjusted in "closed" valve position and the SR actuators in "open" position. The adjustment occurs by loosening the lock nut on the end plate and turning the set screw clockwise for reduced and anti-clockwise for increased rotary motion. The adjustment degree is  $\pm 3^\circ$ .

RC88 has 4 adjustment screws. It is important that all screws are in contact with the piston in question.

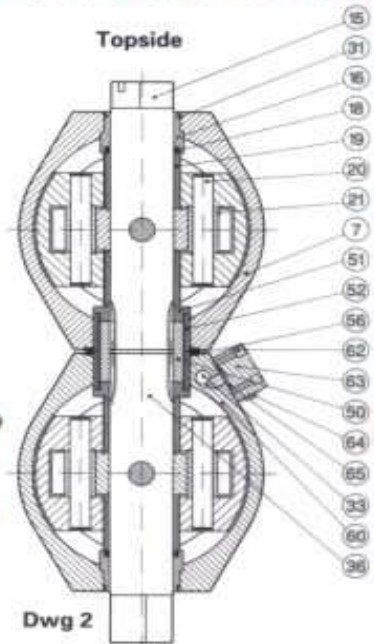
### WARNING!

*Pinch risk in the valve opening when test running non-installed valves.*





Dwg 1 RC88-DA-actuator. Upper cylinder from above.



Dwg 2

## SERVICE OF RC88

### WARNING!

*Before dismantling, check that the compressed air and possible power supply are disconnected. Dismantling of SR unit: See instruction on page 4.*

### Exchange of piston sealings and support element

1. Please read the warning above!
2. Dismantle the actuator from the console.
3. Dismantle the end plates (5) or the spring houses (26).
4. Fasten the actuator shaft between soft jaws in a vice and turn the actuator until the pistons reach the cylinder end. Then place a few rods in the holes on the outside of one piston. By pressing together and pulling these rods simultaneously, the piston is dismantled from the cylinder.
5. If the O-rings (12) are worn, they must be replaced.
6. Replace the support ring (14) if it is worn.
7. Replace the support segment (9) if it is worn. If it has been glued, the whole piston is replaced.
8. Grease the cylinder surfaces with a high quality grease, for instance a ball bearing grease.
9. Mount the pistons.
10. Mount the end plates and adjust the turning angle.

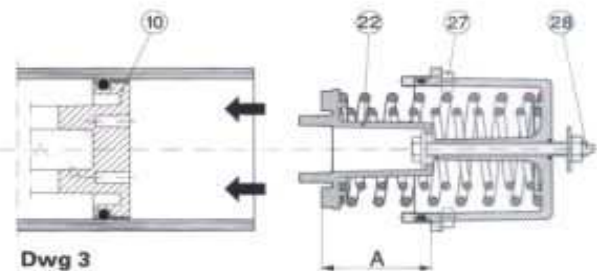
### Exchange of shaft seals and shaft bearings

This work is best carried out by the actuator supplier.

### Converting to SR actuators

All DA-actuators can be changed into SR actuators by adding spring conversion kits according to the following:

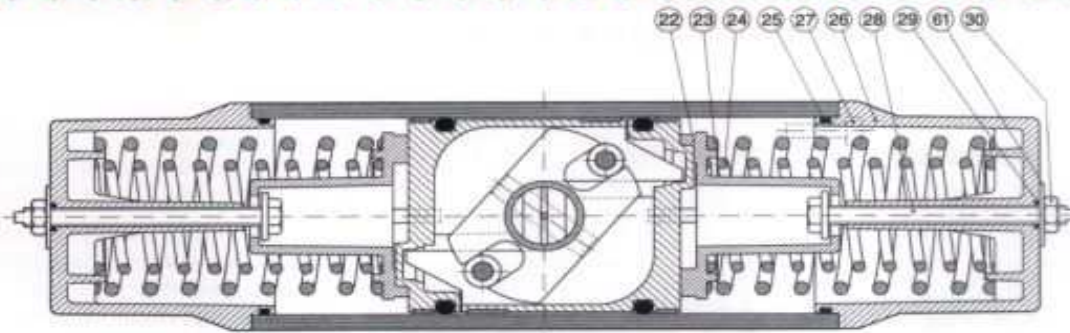
1. Please read the warning above!
2. Dismantle the end plates.
3. Dismantle the pistons. See the text under "Exchange of piston seals and support elements".
4. Mount the pistons according to Dwg 4 on page 3.
5. Check that the spring is correctly pre-tensioned. The "A" measure in Dwg 3 should be 137 mm.



Dwg 3

Adjustment is made with the screw (28).

6. The spring guide (22) is centered towards the piston with the aid of 2 pins.
7. The SR units must be turned so that one of the three support points lies between the bosses on the piston (10).
8. Mount the SR unit when the pistons are in their innermost positions.
9. Put the screws (27) in place. When tightening the screws, the spring force is transmitted from the tensioning screw (28) to these screws. **Tightening torques according to page 4.**
10. The turning angle of the actuator is adjusted with the tensioning screws (28). **It is important that all screws are in contact with the piston in question.**



Dwg 4 RC88-SR actuator. Upper cylinder from above.

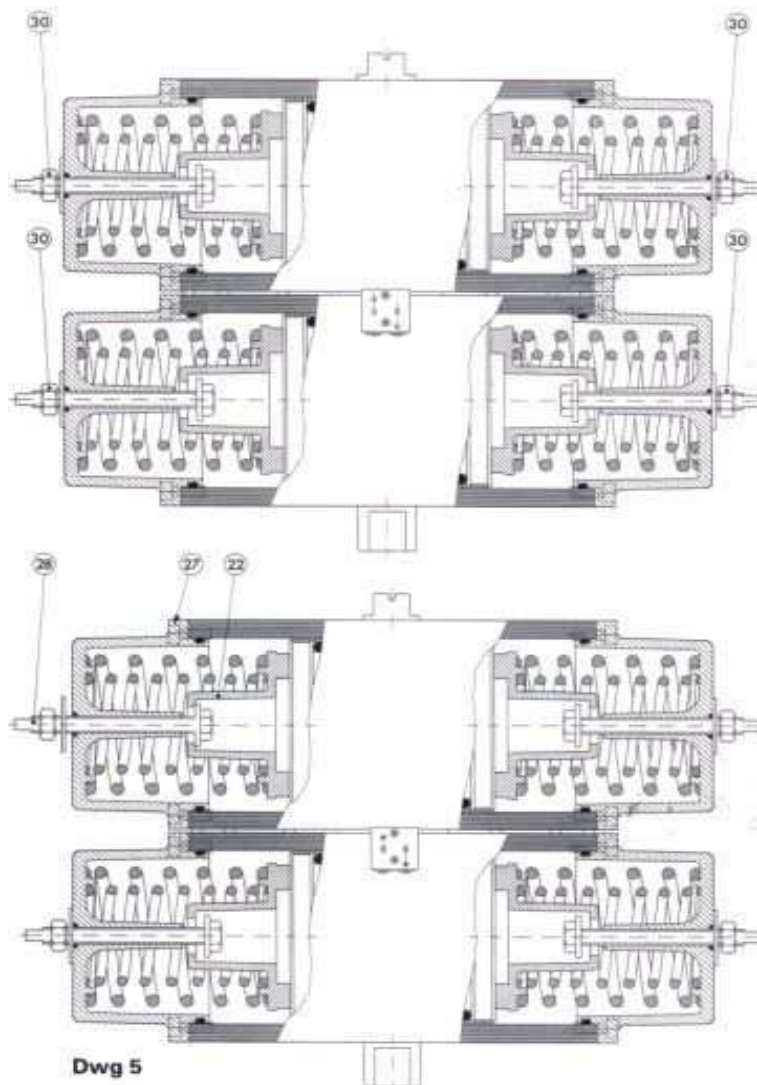
### Material table for RC88

Part No	Description	Number 88-DA	Number 88-SR	Material	Surface treatment
1	Adjusting screw	4	—	Steel	Zinc plated
2	Lock nut	4	—	Steel	Zinc plated
3	O-ring	4	—	Nitrile	—
4	Screw	32	—	Steel	Zinc plated
5	End plate	4	—	Aluminium	Anodized
6	O-ring	4	—	Nitrile	—
7	Cylinder, upper	1	1	Aluminium	Anodized
8	Scotch Yoke	2	2	Steel	Hardened, corrosion protected
9	Support element	4	4	POM/PTFE	—
10	Piston	4	4	Aluminium	—
11	Roll pin	2	2	Steel	Tempered
12	O-ring	4	4	Nitrile	—
14	Support ring	4	4	PTFE, carbon filled	—
15	Driving shaft, upper	1	1	Steel	Chemically zinc plated
16	Bearing, outer	2	2	POM	—
18	O-ring	2	2	Nitrile	—
19	Support ring	4	4	POM	—
20	Piston shaft	4	4	Steel	Hardened
21	Bearing roller	4	4	Steel	Hardened
22	Spring steering	—	4	Aluminium	—
23	Spring external	—	4	Spring steel	Corrosion protected
24	Spring internal	—	4	Spring steel	Corrosion protected
25	O-ring	—	4	Nitrile	—
26	Spring housing	—	4	Aluminium	Anodized
27	Screw	—	32	Steel	Zinc plated
28	Pre-tensioning screw	—	4	Steel	Zinc plated
29	O-ring	—	4	Nitrile	—
30	Lock nut	—	4	Steel	Zinc plated
31	O-ring	2	2	Nitrile	—
33	Sealing plug	4	4	Nitrile	—
36	Drive shaft, lower	1	1	Steel	Chemically zinc plated
50	Splines sleeve	1	1	Steel	—
51	Guide ring	2	2	POM	—
52	Bearing inner	2	2	Oil bronze	—
53	Spacer	4	4	Stainless steel	—
54	Sleeve	4	4	Stainless steel	—
55	Guide pin	8	8	Stainless steel	—
56	O-ring	1	1	Nitrile	—
57	O-ring	8	8	Nitrile	—
58	Plane sealing	4	4	Steel/Nitrile	Corrosion protected
59	Screw	4	4	Steel	Zinc plated
60	Cylinder lower	1	1	Aluminium	Anodized
61	Marking washer	—	4	Aluminium	Anodized
62	Screw	2	2	Steel	Zinc plated
63	Namur adapter	1	1	Aluminium	Anodized
64	Banjo hole screw	2	2	Brass	Nickel plated
65	O-ring	2	2	Nitrile	—





## Instructions for dismantling of RC88-SR actuators



Dwg 5

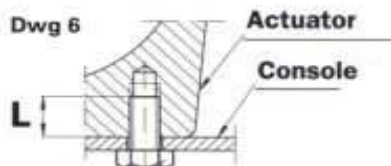
### WARNING!

*This procedure must be followed for safe dismantling of pretensioned spring housings.*

1. Check that the springs can press the piston into starting position according to picture on the left.
2. The actuator must be pressureless.
3. Disconnect all possible power supply.
4. Loosen the lock nuts (30).
5. Turn both tensioning bolts (28) clockwise until they can be turned with the minimum force.
6. Turn the upper left tensioning bolt (28) anti-clockwise until it lies against the spring steering (22) according to the lower dwg and dismantle the left spring housing by loosening the screws (27).
7. Dismantle the upper right spring housing by using the same method as with the left one.
8. Dismantle the lower spring housings in the same manner as the upper ones.
9. Dismantling must be carried out with the utmost care. In the case of the slightest uncertainty – contact the supplier!

### TIGHTENING TORQUES FOR SCREWS AND LOCK NUTS:

The actuators must be screwed onto the console with the correct torque in order to remain stable during operation. Please use as long screws as possible without the threads grounding. "L" is the screw length according to Dwg 6.



### Tightening torques in Nm:

Fixing screw against console:

L = 16, Mv 125 Nm

L = 18, Mv 140 Nm

L = 20, Mv 155 Nm

L = 22 (max), Mv 170 Nm

(the information also applies for screws when mounting a console on the upper side of the actuator)

End plate screw: 76 Nm

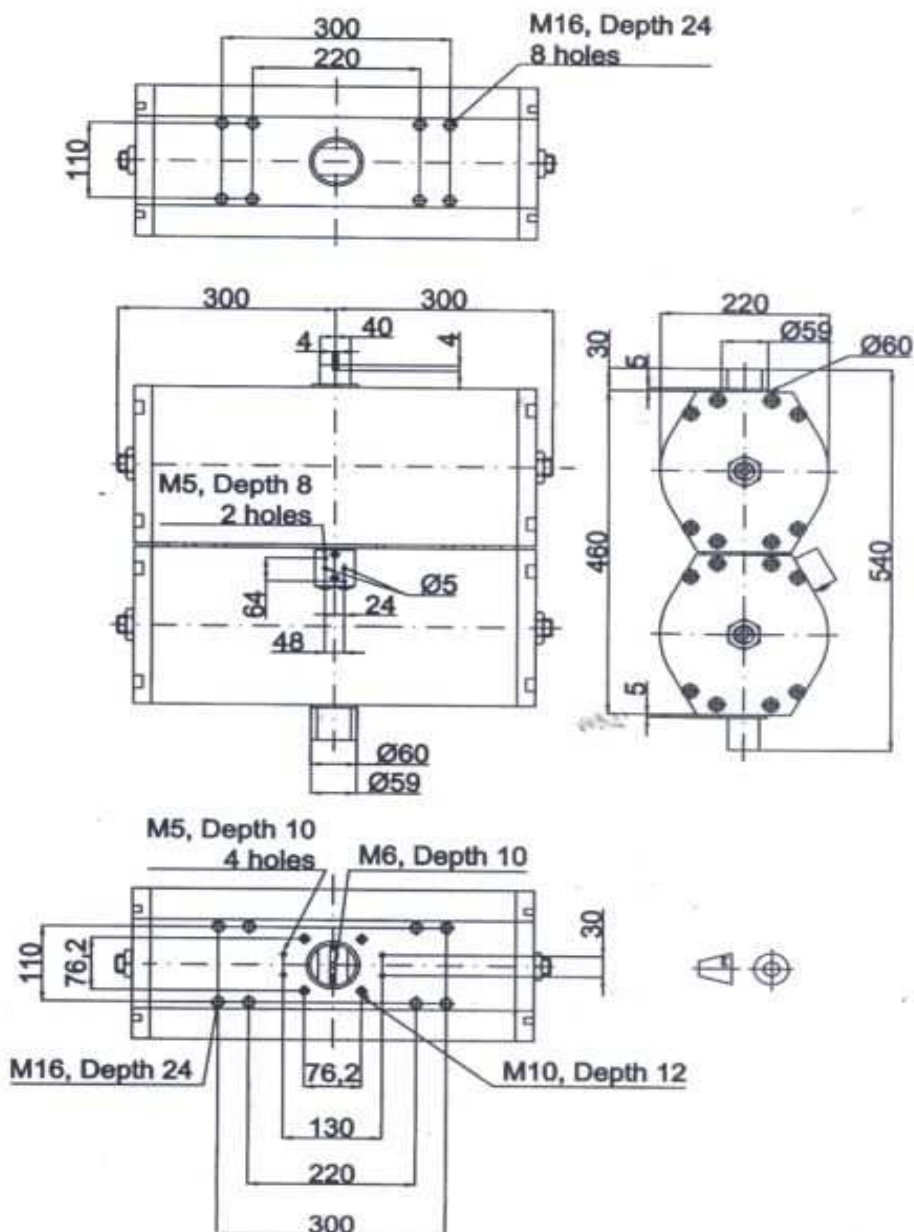
Lock nut for adjustment screw, DA and SR: 120 Nm.

**REMOTE CONTROL**



# Pneumatic Actuators DA - Double acting

## MEASUREMENTS

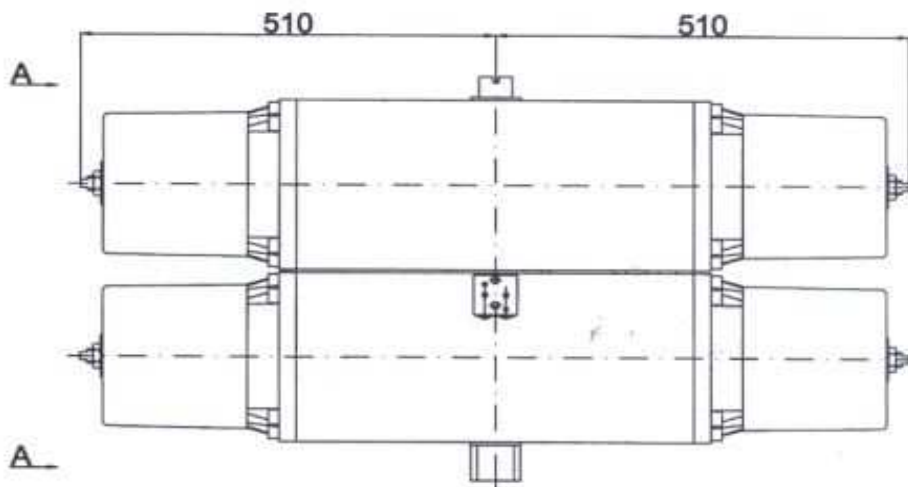


**TECHNICAL DATA**



# Pneumatic Actuators SR - spring return

## MEASUREMENTS



View: A-A



Type	Weight	Torque at 6 bar (Nm)		
		0°	50°	90°
RC88-DA	79 kg	7600	3800	5480

Type	Weight	Torque at 6 bar (Nm)					
		Air →			Spring →		
		0°	60°	90°	90°	30°	0°
RC88-SR	134 kg	4160	1800	2220	3680	1800	2520

Air consumption, free air at 6 bar, dm <sup>3</sup>	
RC88-DA	Anticlockwise rotation: 132. Clockwise rotation: 134
RC88-SR	132

Operation time at 6 bar, Sec.	
RC88-DA	RC88-SR
<10	<10

Max pressure: 7 bar. For further information, see instruction No. 706



We reserve our right for modifications caused by technical development.

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