

# RC265

## Pneumatic Actuators

### TYPE AND DESIGN

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

### OPERATING MEDIUM

The compressed air to be used must be free of dust and oil. Accepted operating medium: Non-dangerous fluids (group 2 according to directive 97/23/EC). The maximum particle size must not exceed 40 µm. The air dew point must be equal to -20 °C or at least 10 °C below the ambient temperature. The exhaust air must pass through a filter silencer before it is let out into the workshop.

### THE APPLICATION OF THE SCOTCH YOKE CONSTRUCTION

The Scotch Yoke of the RC 265 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 actuators are mounted as shown on figure 1, page 2. This design allows for highest torque at "closed" valve position.

The SR actuators have the pistons turned (rotated) 180° in relation to the DA actuators according to figure 3 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 pistons in an SR actuator are mounted according to figure 1 on page 2, the function is changed from "spring closes" to "spring opens".

The possibility to turn the pistons can be used in several ways in order to adapt the actuators to the customer's requirements. For further information on this, please consult factory.

### INSTALLATION AND ADJUSTMENT

All types of actuators can be mounted in various positions, i.e. vertical or horizontal. Unless otherwise agreed, the valve stem shall comply to ISO5211. When mounting on a valve, ensure that the actuator shaft and the valve stem are centered, and that an axial play of 0,5–1 mm exists between shaft and driving bush depending on actuator size. Ensure especially that actuator and driving bush are mounted correctly in relation to each other, considering that the actuator shaft has an octagonal hole and that a faulty mounting of 45° is possible. This naturally also applies to direct mounting on a valve. After mounting, it may be necessary to adjust the turning angle of the actuator, see limit adjustment on the right.

### MANUAL 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 supplied with a handwheel for manual operation, RC-M1.  
Other solutions can be supplied on request.

#### WARNING!

All manual operations must be carried out with a vented actuator.

### LIMIT ADJUSTMENT

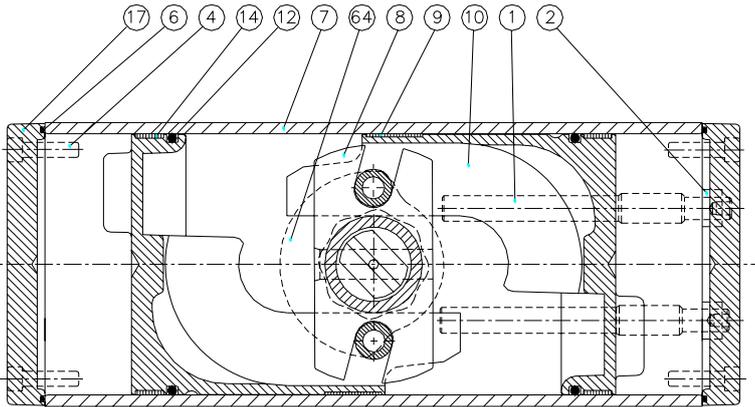
RC265-DA and -SR can be adjusted in "closed" and "open" valve position in the standard design. Adjustment can be carried out by removing the pressed protective cover (66) on the right side of the actuator seen from the air connection side and loosen the lock nut (2). The adjustment screws can be screwed inwards or outwards in order to adjust "closed" and "open" position. The actuator can be pressurized during adjustment, but the adjustment screw must be unaffected from the stop ring (64). Tighten the lock nuts after the adjustment, see the torque table on page 4, and fit the protective cover.

The actuator is supplied with an indicator on the drive shaft. The indicator can be mounted in two optional positions for different valve functions, mounting directions etc.

*Tightening torques for lock nuts on page 4.*

#### WARNING!

RC actuators must only be used as actuators on valves. Levers, racks and similar cannot be used to transmit movement without protective equipment. Pinch risk in the valve opening when test trimming non-installed valves.

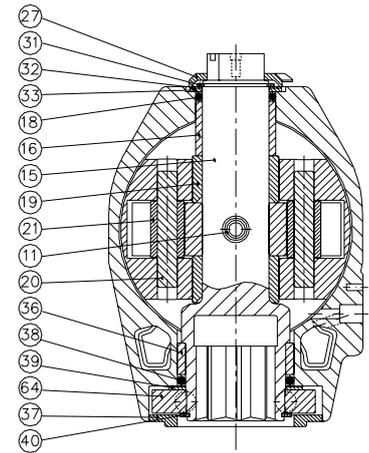


**Fig. 1** RC 265-DA from above

## 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 according to DIN 51524HLP. 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.



**Fig. 2**

## RECOMMENDED LUBRICATION GREASE

Cylinder bore and drive shaft with shaft sealings	Grease
RC265 standard	Cargo White Grease
RC265 high temp	Cargo Flour
RC265 low temp	Klüber Isoflex Topas NCA 52
Piston roller (21) + bearing	Grease
RC265	Cargo Red Grease

## SERVICE OF RC265

### WARNING!

Before dismantling, check that the compressed air and possible power supply are disconnected. Dismantling of SR unit with manual operation unit type M1, see instruction on page 4.

### Exchange of piston sealings and support elements

1. Please read the warning above!
2. Dismantle the actuator from the console / valve.
3. Dismantle the end plates (17) or the spring houses (25).
4. Fasten the actuator shaft between soft jaws in a vice. Screw out the limit adjustment screws to obtain sufficient rotation. Turn the actuator until the pistons reach the cylinder end. Check how the pistons are mounted. Then place two rods in the holes on the top of the piston. Press together and pull these rods simultaneously to dismantle the piston from the cylinder.
5. Replace the piston O-ring (12) if it is worn.
6. Replace the support ring (14) if it is worn.
7. Replace the support element (9) if it is worn.
8. Grease the cylinder surfaces with a grease according to the lubrication list above.
9. Mount the pistons in the same position as originally.
10. Fit the limit adjustment screws (1).
11. Mount the end plates and adjust the limit positions.

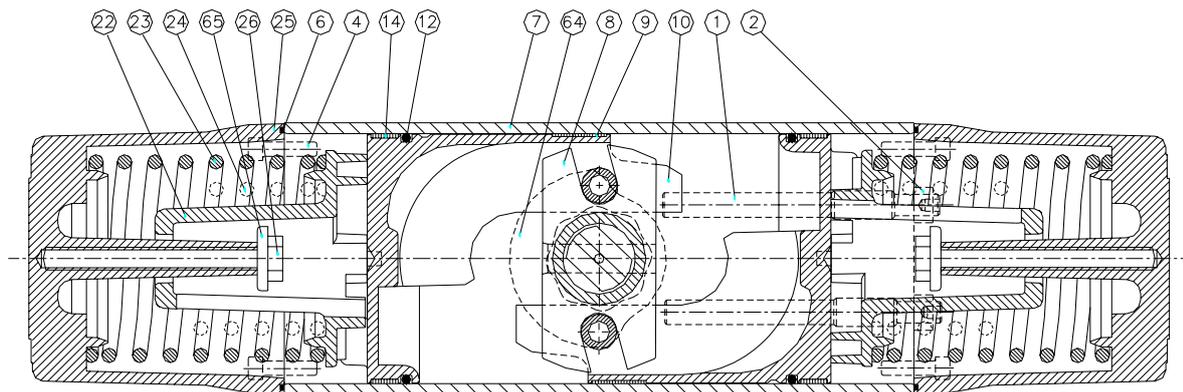
### Exchange of shaft sealings and support washers

The shaft bearings (18) and (38) and the support washers (33) and (39) can easily be replaced as below.

1. Please read the warning to the left!
2. Dismantle the actuator from the console.
3. Dismantle the circlips (31) and (40) around the shaft.
4. Dismantle the stop ring from the shaft - note the ring position against the shaft.
5. Dismantle the worn details
6. Fit the new O-rings (18) and (38).
7. Fit new washers under the circlips.
8. Use a grease according to the lubrication list above when mounting.
9. Fit the new circlips with the rounded inner edge towards the centre of the actuator. Do not stretch them more than necessary.
10. Check that the circlips are tightly fitted without play in their grooves.

### Exchange of shaft bearing

The bearings (16) and (36) can easily be replaced when the pistons and shaft sealings are dismantled as above.



**Fig. 3** RC265-SR from above

Part No.	Description	Number DA	Number SR	Material	Surface treatment
1	Adjusting screw	2	2	Stainless steel	
2	Lock nut	2	2	Stainless steel	
4	Screw	8	8	Stainless steel	
6	End plate sealing	2	2	Nitrile, HNBR	
7	Cylinder	1	1	Aluminium	Anodized
8	Scotch Yoke	1	1	Steel	
9	Support element	2	2	Polysulphone	
10	Piston	2	2	Aluminium	
11	Roll pin, double	2	2	Spring steel	
12	O-ring	2	2	Nitrile	Low friction treated
14	Support band	2	2	PTFE, filled	
15	Driving shaft	1	1	Steel	Yellow chromated
16	Bearing, upper	1	1	Polymer material	
17	End plate	2	-	Aluminium	Chromated + epoxy coated
18	O-ring, upper	1	1	Nitrile	
19	Support ring	2	2	Polymer material	
20	Piston pin	2	2	Steel	
21	Piston roller	2	2	Steel	
22	Spring guide	-	2	Aluminium	
23	Spring external	-	2	Alloyed spring steel	Epoxy coated
24	Spring internal (1)	-	2	Alloyed spring steel	Epoxy coated
25	Spring housing	-	2	Aluminium	Chromated + epoxy coated
26	Pre-tensioning screw	-	2	Steel	Anodized
27	Indicator	1	1	Polymer material	
31	Circlip, upper	1	1	Spring steel	Dacrolite treated
32	Middle washer	1	1	Steel	Zinc plated
33	Support washer, upper	1	1	Polymer material, chemically resistant	
36	Bearing, lower	1	1	Bearing bronze	
37	Guide ring	1	1	Polymer material	
38	O-ring, lower	1	1	Nitrile	
39	Support washer, lower	1	1	Polymer material, chemically resistant	
40	Circlip, lower	1	1	Spring steel	Dacrolite treated
64	Stop ring	1	1	Steel	Nitro carburized
65	Washer	2	2	Steel	Zinc plated
66	Protective cover	2	2	Polymer material	

1) Only for certain spring configurations.

### 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 on page 2!
2. Dismantle the end plates.
3. Dismantle the pistons. See the text under "Exchange of piston sealings and support elements".
4. Mount the pistons according to Fig 3 above.
5. The SR units must be turned so that one of the three support points locates between the bosses on the piston (10).
6. Mount the SR unit when the pistons are in their innermost position.
7. The spring guide (22) is centered towards the piston with the aid of 2 pins.
8. Fit the screws (4). When tightening the screws, the spring force is transmitted from the tensioning screw (26) to these screws. **Tightening torques according to table on page 4.**
9. Adjust the turning angle of the actuators, see the limit adjustment on page 1.

## INSTRUCTIONS FOR DISMANTLING OF RC265 ACTUATORS WITH MANUAL OPERATION UNIT TYPE M1

### WARNING!

Do not remove the protective tube from the spring housing as long as the springs are tensioned. This procedure must be followed for safe dismantling of pre-tensioned spring housings.

1. The actuator must be pressureless.
2. Disconnect possible power supply.
3. Unscrew the adjustment screws (1, figure 3) so that they don't obstruct the shaft (15) movement.
4. Check that the shaft is in closed (fail close) or open (fail open) position, i.e. the springs have pressed the pistons (10) into their inner position.
5. Turn the handwheel so that the yellow indication ring (67) moves towards the actuator. Turn until it stops. The indication ring can now be seen through the plastic tube (49) through the inner part of the window.
6. Check under the actuator that the cam does not lie against the adjustment screws.
7. Turn back the handwheel until the indication ring has passed "AUTO"-position and there is resistance. This unloads the retaining screws (4, figure 3) in the spring housing from the spring force.
8. Dismantle the manual override by loosening the retaining screws of the spring housing and turning the handwheel several turns in the direction which gives the least resistance.

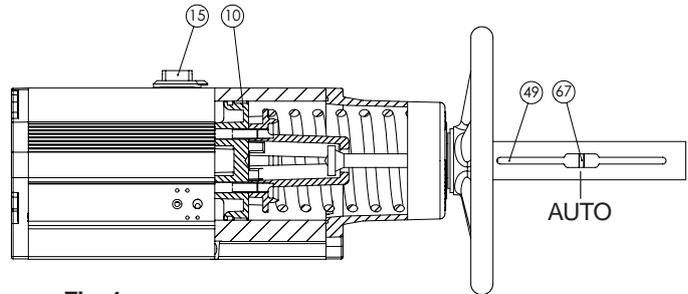
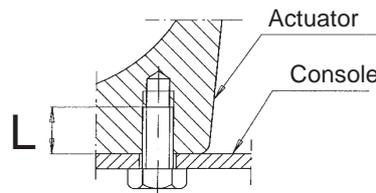


Fig. 4

Dismantling must be carried out in the above order with the utmost care. In the case of the slightest uncertainty - contact the supplier!

### TIGHTENING TORQUES FOR SCREWS AND LOCK NUTS IN Nm

The actuators must be screwed onto the console with the correct tightening 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 drawing.



Actuator	End plate screw (4)	Lock nut (2)
RC265	23	90

### Tightening torques in Nm

Resistance class min 8.8. Lightly oiled screws.

Actuator	DIN flange	Thread	L max (mm)	Screw length (mm)										
				8	10	12	14	16	18	20	24	28	32	
RC265	F12	M12	25				60	70	75	75				

We reserve the right to alterations without previous notice.



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