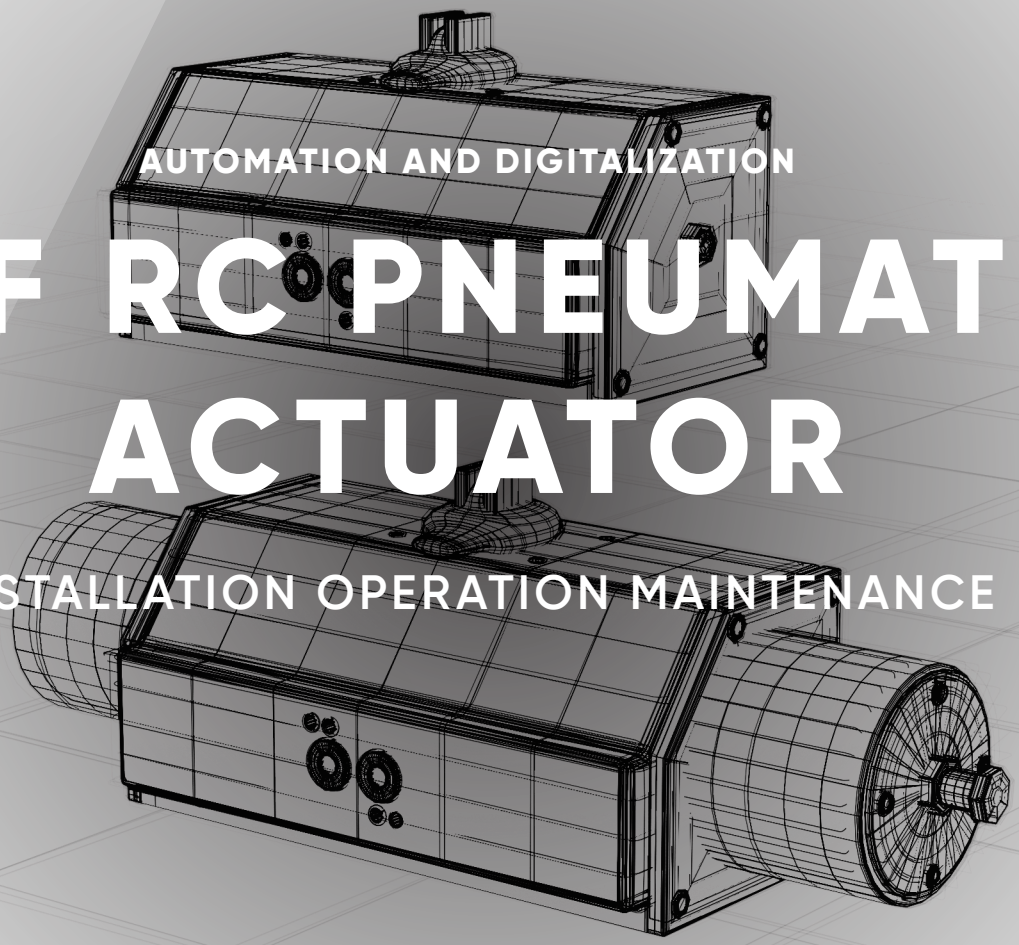
AUTOMATION AND DIGITALIZATION

NAF RC PNEUMATIC ACTUATOR

INSTALLATION OPERATION MAINTENANCE



ANDRITZ

ENGINEERED SUCCESS

TYPE AND DESIGN

791270 = Double Acting. Actuator with pneumatic operation in both directions.
791272/791274 = Spring Return. Actuator with spring return. 791272 for spring closing, and 791274 for spring opening.
Size -210, 230, 250 and 270 have 1 piston.
Size -220, 240, 260 and 280 have 2 pistons.

OPERATING MEDIUM

The air or inert gas to be used must be fi ltered to 30 mm 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 fi lter silencer before it is let out into a workshop.

THE APPLICATION OF THE SCOTCH YOKE CONSTRUCTION

The Scotch Yoke of the 791270, -72/-74 -series actuators has angled slots. Thus the output torque canbe given different values depending on how the pistons are mounted in the actuator. As standard, the 791270 actuators are mounted as shown on picture 1, page 2. This design allows for highest torque at "closed" valve position.
The pistons are then in their outermost position and can be fi ne adjusted ±3°. The 791272, -74 actuators have the pistons turned (rotated) 180° in relation to the 791270 actuators according to picture 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 791272, -74 actuator are mounted according to picture 1 on page 2, 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 791270 actuator are mounted according to picture 3, on page 3 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 customers requirements. For further information on this, please consult factory.

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 handwheel for manual operation, RC-M1. Other methods are available on request.

WARNING!

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

INSTALLATION AND ADJUSTMENT

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 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 eachother, considering that the actuator shaft has an octagonal hole and that a faulty mounting of 45° degrees 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.

TIGHTENING TORQUES FOR LOCK NUTS ON PAGE 6.

As mentioned previously, the 791270 actuators can, as standard, be adjusted in "closed" valve position and the 791272, -74 actuators in "open" position.
The adjustment occurs by loosening the lock nut on the end plate, after which the set screw is turned clockwise for reduced and anti-clockwise for increased rotary motion.
The adjustment degree is ±3 °C. Size -220, 240, 260 and 280 have two adjustment screws.

IT IS IMPORTANT THAT BOTH SCREWS ARE IN CONTACT WITH THE PISTON IN QUESTION.

The actuator is supplied with an indicator on the driving shaft. The indicator can be mounted in 2 optional positions for different valve functions, mounting directions, etc.

WARNING!

NAF Pneumatic 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.

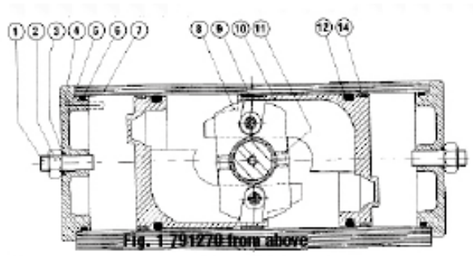
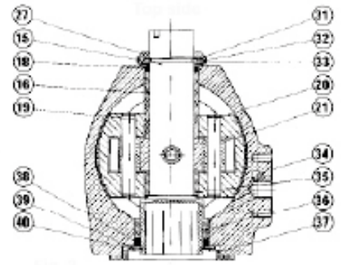


Fig. 1 791270 from above



Cylinder bore and drive shaft with Grease shaft sealings and bearings		Grease	
Piston roller (21)	791270 standard and high temp.	Cargo White Grease, Klüber Isofl ex Topas NCA 52.	Grease
All 791270, -72/-74	791270 low temp.	Klüber Isofl ex Topas NCA 52	Cargo Red Grease, Klüber Unimoly GL 82.

LUBRICATION

NAF 791270, -72/-74 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 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.

SERVICE OF 210–280

WARNING!

Before dismantling, check that the compressed air and possible power supply are disconnected.
Dismantling of 791272, -74 unit, see instruction on page 5. Dismantling of 791272, -74 unit with manual operation unit type M1, see instr. on page 4.

EXCHANGE OF SHAFT SEALINGS AND SUPPORT WASHERS

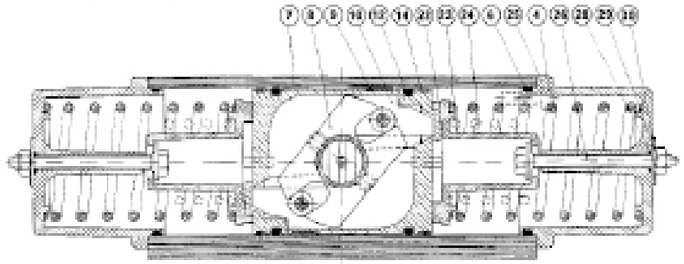
The shaft bearings (18) and (38) and the support washers
(33) and (39) can easily be replaced as below.
1. Please read the warning on the left!
2. Dismantle the actuator from the console.
3. Dismantle the circlips (31) and (49) around the shaft.
4. Dismantle the worn details.
5. Fit the new O-rings (18) and (38).
6. Fit new washers under the circlips.
7. Use a grease according to the lubrication list when mounting.
8. Fit the new circlips with the rounded inner edge towards the centre of the actuator. Do not stretch them more than necessary.
9. Check that the circlips are tightly fi tted without play in their grooves.

EXCHANGE OF SHAFT BEARINGS

The bearings (16) and (36) and also the support ring (19) on size 210-240 can easily be replaced when the pistons and shaft sealings are dismantled as above.

EXCHANGE OF PISTON SEALINGS AND SUPPORT ELEMENTS

1. Please read the warning above!
2. Dismantle the actuator from the console.
3. Dismantle the end plates (5) or the spring houses (25).
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 sealing ring (13) and the piston O-ring (12) are worn, they must be replaced. (Size 270 and 280 have no sealing rings).
6. Replace the support ring (14) if it is worn.
7. Replace the support element (9) if it is worn.
8. Grease the cylinder surface with a grease according to the lubrication list above.
9. When mounting the pistons, we recommend the use of some kind of piston ring compressor. Size 270 and 280 which do not have sealing rings, can be mounted without appliances.
10. Mount the end plates and adjust the shaft turning angle.



Part	Description	Number	Number	Material	Surface treatment
1	Adjusting screw	1	–	Size 210-260: Stainless steel Others: steel	Zinc plated
2	Locknut1)	1	–	Size 210-260: Stainless steel Others: steel	Zinc plated
3	O-ring1)	1	–	Nitrile	
4	Screw	8-16	8-16	Size 210-260: Stainless steel Others: steel	Zinc plated
5	End plate with centre hole1)	1	–	Aluminium	Anodized
6	O-ring	2	2	Nitrile	
7	Cylinder	1	1	Aluminium	Anodized
8	ScotchYoke	1	1	Steel	
9	Support element1)	1	1	POM/PTFE	
10	Piston1)	1	1	Aluminium	
11	Role pin, double2,3)	1	1	Spring steel	
12	O-ring1)	1	1	Nitrile	
13	Sealing ring,4)	1	1	PTFE, filled	
14	Support band1)	1	1	PTFE, filled	
15	Driving shaft	1	1	Size 210-260: Stainless steel Others: steel	Zinc plated, yellow
16	Bearing, upper	1	1	Polymer material	
17	End plate without centre hole5)	1	1	Aluminium	Anodized
18	O-ring, upper	1	1	Nitrile	
19	Support ring, upper	1	1	Polymer material	
20	Piston pin1)	1	1	Steel	
21	Piston roller1)	1	1	Steel	
22	Spring guide1)	–	1	Aluminium	
23	Spring external1)	–	1	Size 210-260: Alloyed spring steel Others: Spring steel	Corrosion protected
24	Spring, inner1,6)	–	1	Alloyed spring steel, corrosion protected	
25	Spring housing1)	–	1	Aluminium	Anodized
26	Pre-tensioning screw1)	–	1	Size 210-260: Stainless steel Others: steel	Zinc plated
27	Indicator	1	1	Polymer material	
28	O-ring1)	–	1	Nitrile	
29	Lock nut1)	–	1	Size 210-260: Stainless steel Others: steel	Zinc plated
30	Marking washer1)	–	1	Aluminium	Anodized
31	Circlip, upper	1	1	Size 210-260: Stainless spring steel Others: Spring steel	Corrosion protected
32	Middle washer	1	1	Size 210-260: Stainless steel Others: steel	Corrosion protected
33	Support washer, upper	1	1	Polymer material, chemically resistant	
34	Sealing1)	1	1	Size 210-260: Stainless steel Others: nitrile	
35	Support ring, lower	1	1	Polymer material	
36	Bearing, lower	1	1	Polymer material	
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	Size 210-260: Stainless steel Others: Spring steel corrosion protected	

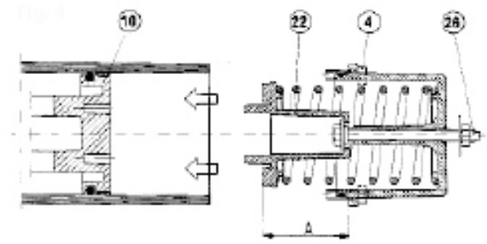
CONVERTING TO 791272, -74 ACTUATORS

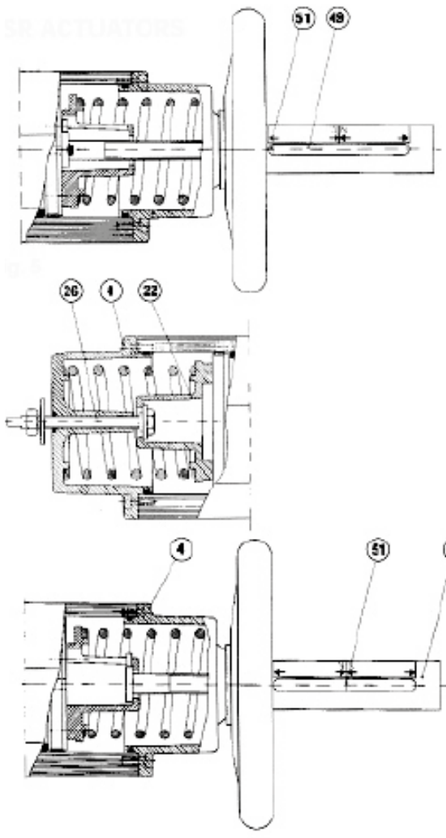
All 791270 actuators can be changed into 791272, -74actuators by adding spring conversion kits according to the following instructions:

1. Please read the warning on page 2!
2. Dismantle the end plates. (The description is for Size 220, 240, 260 and 280 which have two pistons).
3. Dismantle the pistons. See the text under "Exchange of piston sealings and supportelements".
4. Mount the pistons according to picture 3 on page 3.
5. Check that the spring is correctly pretensioned according to table 1 and picture 4.
6. The spring guide (22) is centered towards the piston with the aid of 2 pins.
7. The 791272, -74 units on sizes 230–280 must be turned so that one of the three support points lies between the bosses on the piston.
8. Mount the 791272, -74 unit when the pistons are in their innermost position.
9. Put the screws (4) in place. When tightening the screws, the spring force is transmitted from the tensioning screw (26) to these screws.
Tightening torques according to table on page 6.
10. The turning angle of the actuator is adjusted with the tensioning screw (26).

Instructions for dismantling of 791272, -74 actuators with manual operation unit type m1.

791272, -74 actuator	Dimension A (mm)
210-220	41
230-240	62
250-260	87
270-280	137

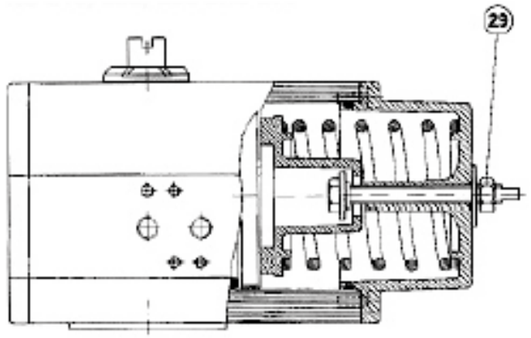


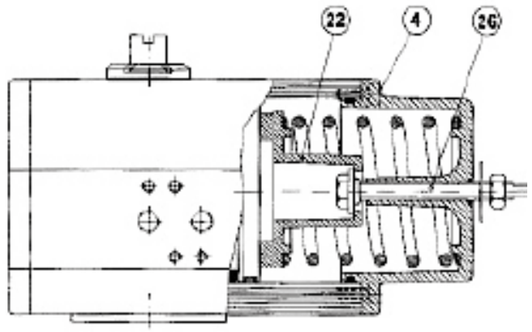


WARNING!

Do not remove the protective tube (50) and handwheel from the spring housing as long as the springs are tensioned. This procedure must be followed for safe dismantling of pretensioned spring housings.

1. The actuator must be pressureless.
2. Check that the springs can press the piston back into its starting position according to picture 5.
The upper shaft journal must not be oblique.
3. Disconnect possible power supply.
4. Turn the handwheel so that the threaded stem (51) moves toward the actuator until it stops and the stem can just barely be seen in the plastic tube (49).
5. For sizes 220, 240, 260 and 280 (i.e. actuators with two pistons): adjust the tensioning screw (26) in the opposite spring housing anti-clockwise until it lies against the spring guide (22). Dismantle the spring housing by loosening the screws (4).
6. For all sizes: then turn the handwheel until there is resistance and the threaded stem (51) can be seen somewhat to the right of neutral position "N".
7. Dismantle the spring housing of the manual override by loosening the retaining screws.





WARNING!

The procedure below must be followed for safe dismantling of pre-tensioned spring housings.

1. The actuator must be pressureless.

2. Check that the springs can press the piston into starting position according to picture on the left.

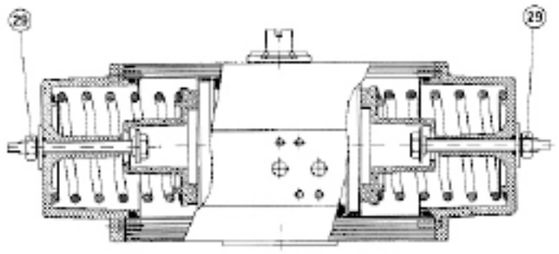
3. Disconnect all possible power supply.

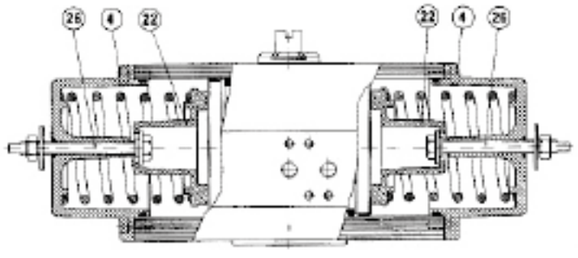
4. Loosen the lock nut (29).

5. Turn the tensioning screw (26) anti-clockwise until it lies lightly against the spring guide (22).

6. Dismantle the spring housing by loosening the screws (4).

7. Dismantling must be carried out with the utmost care. In the case of the slightest uncertainty – contact the supplier.





WARNING!

The procedure below must be followed for safe dismantling of pre-tensioned spring housings.

1. The actuator must be pressureless.

2. Check that the springs can press the piston into starting position according to picture on the left.

3. Disconnect all possible power supply.

4. Loosen the lock nuts (29).

5. Turn both spring tensioning screws (26) clockwise until they can be turned with minimum force.

6. Turn the left spring tensioning screw (26) anti-clockwise until it lies lightly against the spring guide (22) and dismantle the left spring housing by loosening the screws (4).

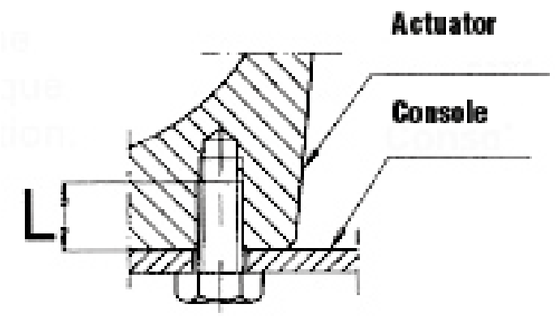
7. Dismantle the right spring housing in the same manner as the left one.

8. 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 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.



Tightening torques in Nm:
Resistance class min. 8.8. Lightly oiled screws.

Actuator	Endplate screw	Locknut	
		791270	791272, -74
	(4)	(2)	(29)
Size 210-220	5,5	20	9
Size 230-240	5,5	40	18
Size 250-260	23	90	35
Size 270-280	76	120	80

Actuator	DIN flange	Thread	L max (mm)	Screw length (mm)									
				8	10	12	14	16	18	20	24	28	32
Size 210	F05	M6	11	8,8	9,2								
Size 220	F05	M6	11	8,8	9,2								
Size 230-240	F07	M8	14		21	23	23						
	F10	M10	17			40	40	45					
Size 250-260	F10	M10	17			40	40	45					
	F12	M12	21				60	70	75	75			
Size 270	F14	M16	25					125	140	155	185		
	170 x 110	M16	25					125	140	155	185		
Size 280	F12	M12	25					70	75	75	75		
	F16	M20	32								280	330	360
	F25	M16	25					125	140	155	185		

CONTACT US!

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