



# HP Series Pneumatic Electric Actuator

Installation, Maintenance and Operational Manual



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# Pneumatic Actuator Engineering Manual

The actuator is designed for pneumatic operation with maximum air pressure of 110 PSIG and a temperature range of -10° to +195° F. The use of filtered and lubricated air is recommended.

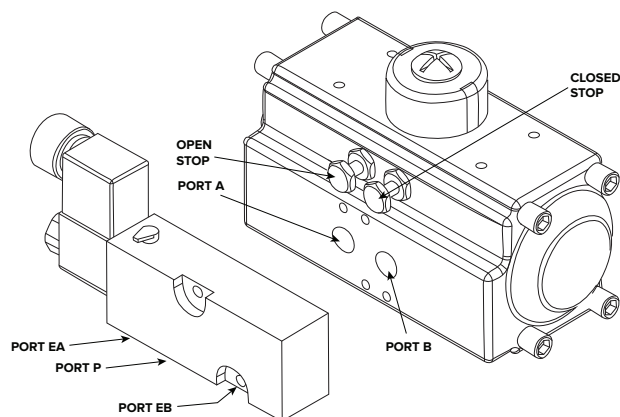
## WARNING

**DO NOT APPLY ELECTRIC OR PNEUMATIC POWER UNLESS UNIT IS FULLY ASSEMBLED AND MOUNTED.**

**ALWAYS DISCONNECT ELECTRICAL AND PNEUMATIC POWER SOURCES AND RELIEVE PRESSURE IN THE SYSTEM BEFORE WORKING ON THIS UNIT.**

**IT IS RECOMMENDED THAT EYE PROTECTION BE WORN WHILE SERVICING THE SYSTEM.**

**FAILURE TO COMPLY WITH ABOVE WARNINGS COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE UNIT.**



**MOUNT SOLENOID IN POSITION SHOWN. USE THE TWO MOUNTING HOLES NOTED TO ALIGN O-RINGS AND SOLENOID TO THE ACTUATOR**

## Adjusting Stops

Adjust Open Position:

- Turn stop bolt CW to shorten stroke.
- Turn stop bolt CCW to lengthen stroke.

Adjust Closed Position:

- Turn stop bolt CW to shorten stroke.
- Turn stop bolt CCW to lengthen stroke.

## Operation

Pressurizing port "A" will cause a counter-clockwise rotation of the shaft and position indicator. For double acting models, a clockwise rotation is obtained by pressurizing port "B" and venting port "A". For spring return models, a clockwise rotation is obtained by removing supply air and venting port "A" only.

## Actuators Equipped With Solenoid Valves

### Double Acting (Normally Closed Mounting)

Air is supplied to the 1/4" NPT port on the solenoid. When electric power is applied to the solenoid, air is allowed to enter the center chamber of the actuator, driving the pistons outward, causing a counter-clockwise rotation of the shaft. Air in the end chambers is vented to atmosphere. The actuator is in the open position.

When electric power is removed from the solenoid, supply air is shifted to the end chambers, driving the pistons inward, causing a clockwise rotation of the shaft. Air in the center chamber is vented to atmosphere. The actuator is in the closed position.

### Spring Return (Fail-Safe Closed Mounting)

Air is supplied to the 1/4" NPT port on the solenoid. When electric power is applied to the solenoid, air is allowed to enter the center chamber of the actuator, driving the pistons outward, compressing the springs in the end chambers and causing a counter-clockwise rotation of the shaft. Air in the end chambers is vented to atmosphere. The actuator is in the open position.

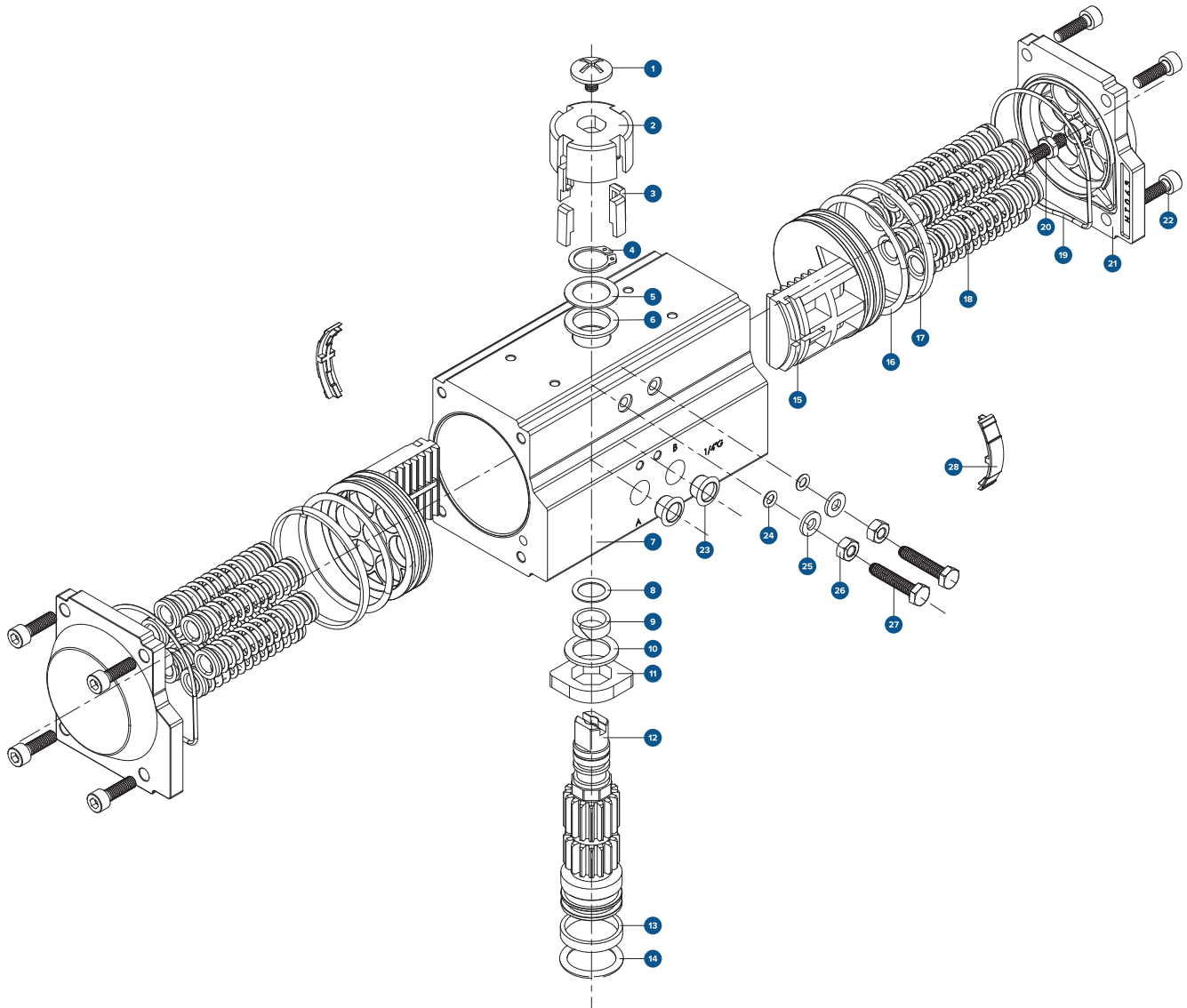
When electric power is removed from the solenoid, supply air is blocked and air in the center chamber is vented to atmosphere. The compressed springs in the end chambers extend, driving the pistons inward, causing a clockwise rotation of the shaft. The valve is in the closed position.

## Fail-Safe Features

When electrical failure occurs and the air supply is not interrupted, the solenoid on the double acting model will cycle the actuator to the closed position.

Spring return model actuator will cycle to the closed position in the event of electrical and/or air supply failure.

Valve being actuated can be mounted to the actuator in such a way that the valve can either fail-safe open or fail-safe closed.



### Manual Override

In the event of air pressure failure, the actuator may be cycled manually. This is done by removing the position indicator and applying a wrench to the exposed end of the shaft and turning it in the desired direction.

For manual operation, the air must be allowed to escape from the actuator. This may require disconnecting air lines at the actuator or solenoid inlet port.

### Cycle Check

A routine cycle check can be performed on actuators equipped with supplied solenoids, by activating the override button on the solenoid body.

### Maintenance

Under normal operation, pneumatic actuators require no formal maintenance program. Regularly scheduled inspections should be performed to check:

- Actuator-to-valve alignment
- Damaged housing or mounting hardware
- Worn, loose or shifted parts due to shock, vibration etc.

See page 4 for Troubleshooting.

### Repair Kits

Repair kits include item numbers 6, 8, 9, 10, 13, 14, 16, 17, 19, 24 and 28. Use the actuator base model number followed by RK. e.g. HP052RK. To order replacement springs use the actuator base model number followed by SPRG. e.g. HP052SPRG. (sold individually)

ITEM	PARTS	MATERIAL	PROTECTION	QUANTITY
1	Screw	ABS + 304		1
2	Indicator	ABS		1
3	Indicator Pin	ABS		4
4	Spring Clip	Stainless Steel		1
5	Thrust Washer (Pinion)	Stainless Steel		1
6	Thrust Bearing (Pinion)	POM		1
7	Actuator Body	Extruded Aluminum Alloy	Hard Anodized (over 30µm)	1
8	O Ring (Top Pinion)	NBR		1
9	Bearing (Top Pinion)	POM		1
10	Thrust Bearing (Pinion)	POM		1
11	Stroke Cam	Stainless Steel		1
12	Pinion	Alloy Steel	Nickel Plated (over 25µm)	1
13	Bearing (Lower Pinion)	POM		1
14	O Ring (Lower Pinion)	NBR		1
15	Piston	Die Cast Aluminum Alloy	Hard Anodized (over 30µm)	2
16	Piston Seal	NBR		2
17	Piston Bearing	POM		2
18	Spring (Cartridge)	High Performance Spring Steel	Zinc Phosphate Coated	0-12
19	End Cap Seals	NBR		2
20	Stroke Bolt	Stainless Steel		1
21	End Cap	Die Cast Aluminum	Epoxy Coated (over 200µm)	2
22	End Cap Bolts	Stainless Steel		8
23	Plug	PE		2
24	Stroke Bolt O Ring	NBR		2
25	Stroke Bolt Washer	Stainless Steel		2
26	Stroke Bolt Retaining Nut	Stainless Steel		2
27	Stroke Bolt	Stainless Steel		2
28	Piston Guide	POM		2

## Troubleshooting

SYMPTOM	POSSIBLE PROBLEM	POSSIBLE SOLUTION
Actuator does not respond to control signal	Power interruption (electric)	Check supply power for proper voltage
	Power interruption (air)	Check air supply pressure
Actuator will not fully open and/or close the valve	Travel limit set improperly	Set internal and/or external stops
	Valve torque too high	Check valve for blockage or other malfunction Check to assure proper sizing of actuator to valve torque
Erratic operation	Over heating due to excessive cycle rate	Rapid and continuous cycling will cause heat build-up and seal failure. Reduce cycle rate
Actuator operates but valve does not turn	Broken linkage	Check linkage between actuator and valve
	Broken valve stem	Check valve stem



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