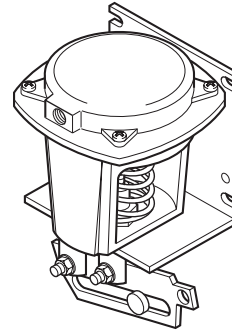


Damper Actuators, Proportional

For proportional pneumatic actuator with 11 sq. in. (71 cm²) effective area used to control damper and air valves in heating, ventilating, and air conditioning systems.

Features:

- Rugged cast aluminum body.
- Special linkage permits easy adjustment of stroke to suit various applications.
- Hesitation and non-hesitation models available.



Model Chart

Model No.	Nominal Operating Range	Starting Pressure Adjustable	Maximum Force ^a				Nominal Torque ^b Proportional Control ^a		
			Return Stroke	Power Stroke			15 psi Supply Dual Press. System	15 psi Supply Single Press. System ^c	20 psi Supply Single or Dual Press. System ^c
			Based on 1.5 psi Pressure to Actuator	15 psi Supply Dual Press. System	15 psi Supply Single Press. System ^c	20 psi Supply Single or Dual Press. System ^c			
psig	psig	lb	lb	lb	lb	lb-in.	lb-in.	lb-in.	
MK-4401 MK4-4401 ^d	3 to 8	3 ±1	8.25	30.25	38.5	66	7.9	7.9	7.9
MK-4411 MK4-4411 ^d	5 to 10	5 ±1	19.25	19.25	27.5	55	7.9	7.9	7.9
MK-4421 MK4-4421 ^d	8 to 13	8 ±1	35.75	2.75	11	38.5	2.6	7.9	7.9
MK-4451 MK4-4451 ^d	3 to 6, 9 to 12	3 to 6	8.25	8.25	16.5	44	7.9	7.9	7.9
MK-4461 MK4-4461 ^d	3 to 6, 11 to 17			0	0	16.5	0	0	

^a Force and torques on based on factory set stroke and starting pressure.

^b Nominal torque for actuators is based on 1.5 psi (10 kPa) pressure change at the actuator.

^c Adjust pressure reducing valve so that listed pressures are available at the actuator. MK-4421 requires that 15 psi (103 kPa) be available to actuator. MK-4461 requires that 20 psi (138 kPa) be available to actuator.

^d Factory installed positive positioner (AK-42309-500) start point adjustable 2 to 10 psi with span adjustable 2 to 10 psi.

MK-44xx Series, MK4-44xx Series

Specifications

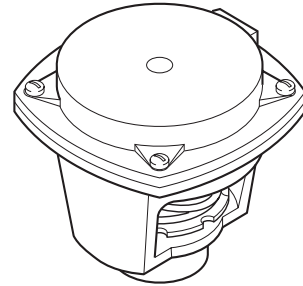
Construction	
Housing	Die cast aluminum.
Diaphragm	Replaceable beaded molded neoprene (Part number PNV-2).
Stroke	
Linkage	Adjustable 1/2 to 3 in. (13 to 76 mm); factory set for 2 in. (51 mm).
Diaphragm	Factory set for 1 in. (25 mm).
Nominal Damper Area	Actuator sizing should be done in accordance with damper manufacturer's specifications.
Start point	Adjustable. Refer to Description Model Chart.
Spring	Retracts actuator crank arm on loss of air pressure.
Maximum air pressure	30 psig (207 kPa).
Ambient temperature limits	
Shipping	-40 to 160°F (-40 to 71°C).
Operating	-20 to 160°F (-29 to 71°C).
Air connections	1/8 in. FNPT.
Mounting	In any position. Mounting bracket, linkage, and connector for 5/16 in. (8 mm) diameter push rod assembled to actuator.
Dimensions	7-7/16 H x 5-3/4 W x 4-7/8 D in. (189 x 146 x 124 mm).

Accessories

Model No.	Description
AK-42309-500	Positive positioning relay.
AM-111	Crank arm for 5/16 in. diameter damper shaft.
AM-112	Crank arm for 3/8 in. diameter damper shaft.
AM-113	Crank arm for 1/2 in. diameter damper shaft.
AM-115	Crank arm for 7/16 in. diameter damper shaft.
AM-122	Linkage connector straight type.
AM-123	Damper clip.
AM-125	5/16 x 20 in. damper rod.
AM-125-048	5/16 x 48 in. damper rod.
AM-132	Ball joint connector.
AM-161-3	Damper linkage kit (AM-173 crank arm and AM-132 connector).
AM-743	Linkage kit for M-693 Series replacement.
TOOL-095-1	Pneumatic calibration tool kit.
Maintenance Parts	
PND-145-104	3 to 8 psig spring.
PND-145-104	5 to 10 psig spring.
PND-145-107	8 to 12 psig spring.
PNV-002	Diaphragm.

Valve Actuators, Proportional

For proportional pneumatic actuator with 11 sq. in. (71 cm²) effective diaphragm area used to control 1/2 in. to 2 in. VB-7xxx series valves and SP-3xx00 step controllers.



Features:

- Rugged die cast aluminum construction.
- Rolling diaphragm.
- Multiple spring ranges for various applications.
- Adjustable start point (refer to Specifications).
- 1/2 in. nominal stroke.
- Can also be used on 1/2" stroke discontinued VB-9xxx series valves (1/2" to 1-1/4").

Model Chart

Model No.	Nominal Spring Range ^a	
	psig	kPa
MK-4601, MK4-4601	3 to 6	21 to 41
MK-4611, MK4-4611	5 to 10	34 to 69
MK-4621, MK4-4621	10 to 13	69 to 90
MK-4621-422	10 to 11.25	69 to 77
MK-4641	3 to 13	21 to 90

^a Nominal (no load) spring ranges based on 1/2 in. (13 mm) maximum stroke.

Specifications

Construction

Housing	Die cast aluminum.
Diaphragm	Replaceable beaded molded neoprene (Part number PNV-2).
Stroke	1/2 in. (25.4 mm) nominal.
Spring	Retracts actuator shaft and raises valve stem on loss of air pressure.
Nominal spring range	Refer to Model Chart.
Starting point	Field adjustable.
MK-4601, MK-4621 (-422)	+1/2 psig (7 to 14 kPa).
MK-4611, MK-4641	±2 psig (14 kPa).
Maximum air pressure	30 psig (207 kPa).
Ambient temperature limits	
Shipping	-40 to 220°F (-40 to 104°C).
Operating	-20 to 220°F (-29 to 104°C).
Air connections	1/8 in. FNPT.
Valve linkage	Order separately AV-401.
Mounting	In any upright position with actuator head above the center line of the valve body.
Dimensions	3-7/8 H x 4-3/4 W x 4-3/4 D in. (99 x 121 x 121 mm).

MK-46xx Series, MK4-46xx Series

Accessories

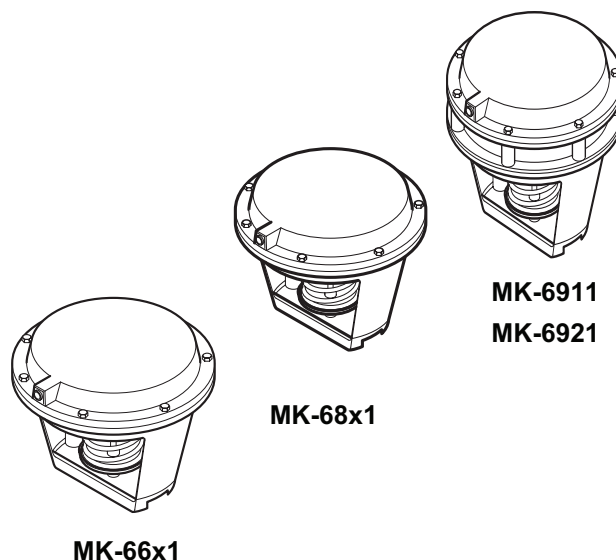
Model No.	Description
AK-42309-500 TOOL-095-1	Positive positioner and linkage; use with MK-46X1. Pneumatic calibration tool kit.
Maintenance Parts	
PNV-002	Diaphragm.
PNV-004-2	Piston.
PNV-232	10 to 11.25 psig spring for MK-4621-422.
PNV-238	3 to 6 psig spring for MK-4601.
PNV-239	10 to 13 psig spring for MK-4621.
PNV-251	High temperature diaphragm.

Valve Actuators, Proportional

Proportional pneumatic actuator with 50 sq. in. (323 cm²) effective diaphragm area used to control 1-1/2 in. to 2 in. VB-7xxx series, 2-1/2 in. to 5 in. VB-8xxx series, 2-1/2 in. to 4 in. discontinued VB-9xxx series and 4 in. to 6 in. discontinued VB-9323 series valves.

Features:

- Rugged die cast aluminum construction.
- Rolling diaphragm.
- Three spring ranges for various applications.
- Start point adjustable ± 2 psi.



Model Chart			
Model No.	Nominal Spring Range ^a		Nominal Stroke in. (mm)
	psig	kPa	
MK-6601	3 to 8	21 to 55	1/2 (13.7)
MK-6611	5 to 10	34 to 69	1/2 (13.7)
MK-6621	8 to 13	55 to 90	1/2 (13.7)
MK-6801	3 to 8	21 to 55	1 (25.4)
MK-6811	5 to 10	34 to 69	
MK-6821	8 to 13	55 to 90	
MK-6911 ^{bc}	5 to 10	34 to 69	1-1/2 (33.1)
MK-6921 ^b	8 to 13	55 to 90	1-1/2 (33.1)

^a Nominal (no load) spring ranges based on maximum 1/2 in. (13.7 mm), 1 in. (25.4 mm) or 1-1/2 in. (33.1 mm) stroke for MK-6911.

^b MK-6911 is only used on 6 in. VB-8xx3-0-5-16. MK-6911 and MK-6921 were used on discontinued 4 to 6 in. VB-9323-0-5-x.

^c Recommended for field replacements only where 20 psi air supply pressure is not available and/or required close-off pressure is less than 125 psi.

Specifications	
Construction	
Housing	Die cast aluminum.
Diaphragm	Replaceable beaded molded neoprene (Part number PNV-202).
Stroke	Refer to Model Chart.
Spring	Retracts actuator shaft and raises valve stem on loss of air pressure.
Nominal spring range	Refer to Model Chart.
Starting point	Adjustable ± 2 psig (14 kPa).
Maximum air pressure	30 psig (207 kPa).
Ambient temperature limits	
Shipping	-40 to 220°F (-40 to 104°C).
Operating	-20 to 220°F (-29 to 104°C).
Air connections	1/8 in. FNPT.
Valve linkage	Refer to Accessories (order separately).
Mounting	In any upright position with actuator head above the center line of the valve body.
Dimensions	7-3/4 H x 10-1/2 W x 10-1/2 D in. (199 x 267 x 267 mm).