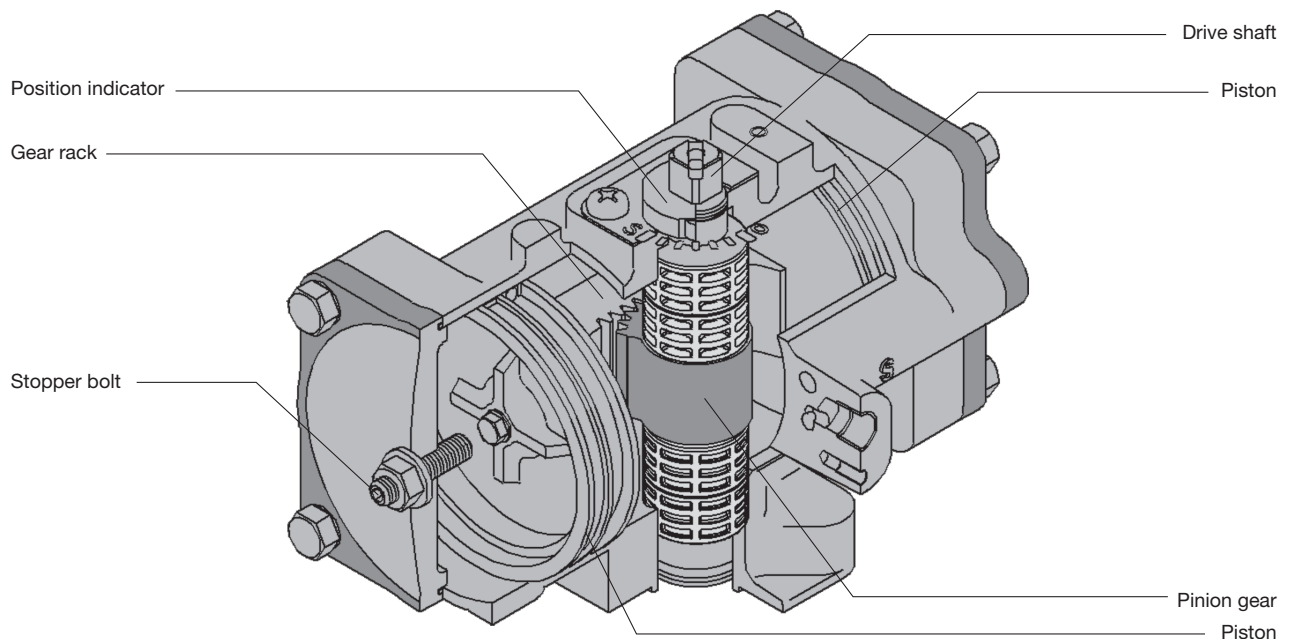


Features of KITZ F Series Pneumatic Actuators

Type FA (Double-Action)



Featured by the utmost handling ease and extended service life with high operational efficiency

Easy answers to engineering modification requirements

- Position indicator can be adjusted by 90°, when actuator mounting position is turned by 90°, for local piping or operating convenience.
- Actuator shaft rotating angle (valve opening/closing range) can be adjusted with optional longer stopper bolt to full 90° rotation for plus/minus 7°.
- Standard AIR-FAIL-CLOSE mode can be converted to AIR-FAIL-OPEN mode by means of mounting of spring cartridge on the actuator housing reverse end. (spring-return type only)
- Replacing modular units of blowoff-proof spring cartridge enables accommodation of higher output torque or lower operating pressure. (spring-return type only)
- Valve actuation mode is convertible between double-action and spring-return with addition or deletion of spring cartridge.

Economic advantage

Use of monobloc casting of piston-rack assembly results in reduced housing dimensions by 10% to 15% (compared with KITZ D Series actuators), and

saves air consumption for valve actuation.

Extended service life with monobloc casting of two pistons and a gear-rack

Pitch line of a gear-rack is positioned in the center of actuator housing, and two pistons are cast in integration with gear-rack as one-piece unit. This helps to keep piston position in parallel during actuator travel.

Light and compact housing

Employment of diecast aluminum for housings and piston-rack assemblies has reduced the actuator weight by 20% to 40% (compared with KITZ D Series actuators) for better torque-to-weight ratio.

Conformity to international standards

NAMUR VDI/VDE 3845 designs are used for tubeless mounting of solenoid valve and switchbox on actuator housing besides the conformity to ISO 5211 requirements for valve mounting flanges. The stem top design also conforms to NAMUR dimensions.

Actuators can be directly mounted to KITZ DJ, XJ Series Butterfly Valves

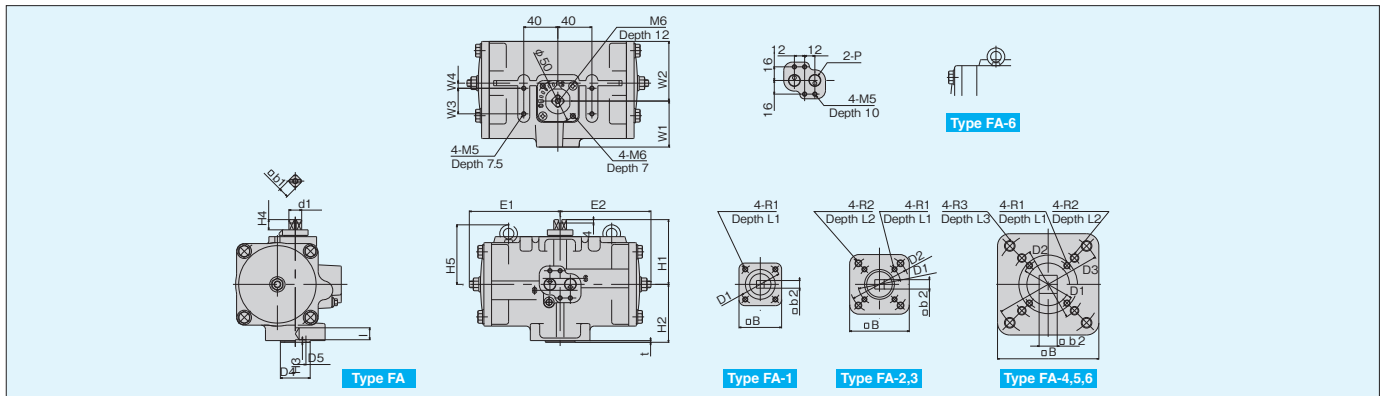
Optional adaptors (connectors) to the valves on the bottom of actuators can be provided for wide mounting variations

Specifications and Dimensions

Operating medium	: Compressed instrument air or nitrogen gas
Operating pressure	: Standard operating pressure 0.4 MPa
Operating pressure range	: 0.3 MPa to 0.7 MPa *
Cylinder test pressure	: 0.97 MPa
Shaft rotating angle	: $90^{\circ} \pm 7^{\circ}$
Service temperature	: -20°C to $+80^{\circ}\text{C}$ (Supplied air should not be frozen.)
Opening degree indication	: Indicator has 15 degree graduation (0 to 90°)
Valve mounting flange	: ISO 5211
Accessory mounting connection	: NAMUR VDI/VDE 3845
Coating	: Baked Polyester Resin Coating

* Be consulted by KITZ for non-standard operating pressure.

Type FA (Double-action)



Type FA Dimensions

unit : mm

Type	E ₁	E ₂	W ₁	W ₂	W ₃	W ₄	H ₁	H ₂	H ₃	H ₄	H ₅	D ₁	D ₂	D ₃	D ₄	D ₅	d ₁	b ₁	b ₂	B	ℓ	t	R ₁ ×L ₁	R ₂ ×L ₂	R ₃ ×L ₃	P
FA-1	87	87	50	54	30	0	70	55	3	12	—	50	—	—	35	25	15	12	9	50	16	2	M6×9	—	—	BSPT1/4
FA-2	107	107	54	70	30	6	80	68	3	12	—	50	70	—	35	30	15	12	11	70	16	2	M6×9	M8×12	—	BSPT1/4
FA-3	128	128	57	87	30	13	86	78	3	12	—	50	70	—	35	32	21	17	13	70	25	2	M6×9	M8×12	—	BSPT1/4
FA-4	160	160	68	111	30	21	108	96	4	12	—	50	70	102	55	40	21	17	17	95	27	3	M6×9	M8×12	M10×15	BSPT1/4
FA-5	208	208	78	135	30	30	132	116	5	20	—	70	102	125	55	50	29	23	27	113	34	3	M8×12	M10×15	M12×18	BSPT1/4
FA-6	268	268	101	178	30	45	152	125	5	20	157	70	102	125	70	60	41	32	27	134	34	3	M8×12	M10×15	M12×18	BSPT1/4

Operating Mechanism

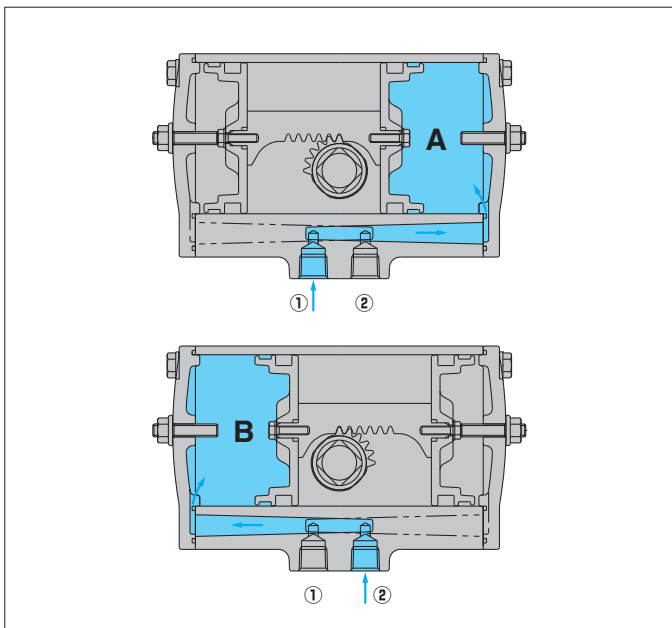
Type FA (Double-action)

- (1) Air pressure supplied into the chamber **A** through port ①, pushes gear rack with two pistons outward, and discharges the air residue (chamber **B**) through port ②.
- (2) The gear rack rotates the pinion gear and the shaft counter-clockwise, to drive the valve.
- (3) Reverse supply of the air pressure activates reverse valve operation.

Cylinder volume

unit : ℓ

Type	Chamber A	Chamber B
FA-1	0.15	0.15
FA-2	0.31	0.31
FA-3	0.61	0.61
FA-4	1.29	1.29
FA-5	2.29	2.29
FA-6	5.27	5.27



Actuator Sizing

The sizing shown below is based on the following conditions.

Ball valves

Operating pressure	0.4 MPa
Fluid type	· Fresh water or lubricant, Max. 1.0 MPa (* The figures shown in the table indicate service pressure limit. Unit MPa) · Air gas or steam, Max. 0.7 MPa
Fluid temperature	-20°C to +230°C (Limited within seat rating)

Be consulted by KITZ, if:

- ① Valves handle
 - a. Solvents, such as kerosene, naphtha or alcohol.
 - b. Powder, slurry or dehydrated cake.
 - c. Vacuum or any other service requiring oil free treatment.
- ② Valves are not operated for more than 3 months.
- ③ Valves are used as a control valve.

Butterfly valves

Operating pressure	0.4 MPa
Fluid type	Smooth fluid · Fresh water, lubricant (Max 1,000 cp)
Velocity	Up to 2 m/sec
Fluid temperature	0°C to Max. working temperature

Type, temperature and pressure of the fluid shall be determined by the rubber seat. Valve selection must properly be made based on these conditions.

Extra care shall be taken on velocity, if valves are used at the pump exit.

Type FA (Double-action)

Type	Bore	Shell Material	Class	Conection	Size Product coding	Size																			
						A	10	15	20	25	32	40	50	65	80	100	125	150	200	250	300				
						B	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12				
Ball Valve	Full Bore	Cast Iron	JIS 10K	Threaded	10FCT																				
				Flanged	10FCTB																				
			10STBF																						
			Stainless Steel	JIS 10K Class 150	Flanged	10/150UTB, 10/150UTDZ																			
		20/300UTB, 20/300UTDZ																							
			Carbon Steel	JIS 10K Class 150	Flanged	10/150SCTDZ																			
		20/300SCTDZ																							
			Reduced Bore	Stainless Steel	JIS 10K Class 150	Flanged	10UTR · 150UTR																		
		JIS 20K Class 300					20UTR · 300UTR																		
		Carbon Steel		Class 150	150SCTR																				
					Class 300		300SCTR																		
		Full Bore (3 way)	Stainless Steel	JIS 10K	Flanged	10UTB4T (L) A																			
		Full Bore (PFA Lining)				10UTBLN																			
	Butterfly Valve	Aluminum	JIS 10K		Wafer	10XJME																			
10XJSME																									
Ductile Iron		JIS 16K BS PN16	10DJ																						
			16DJ, PN16DJ																						

*FA-5 for TDZ.