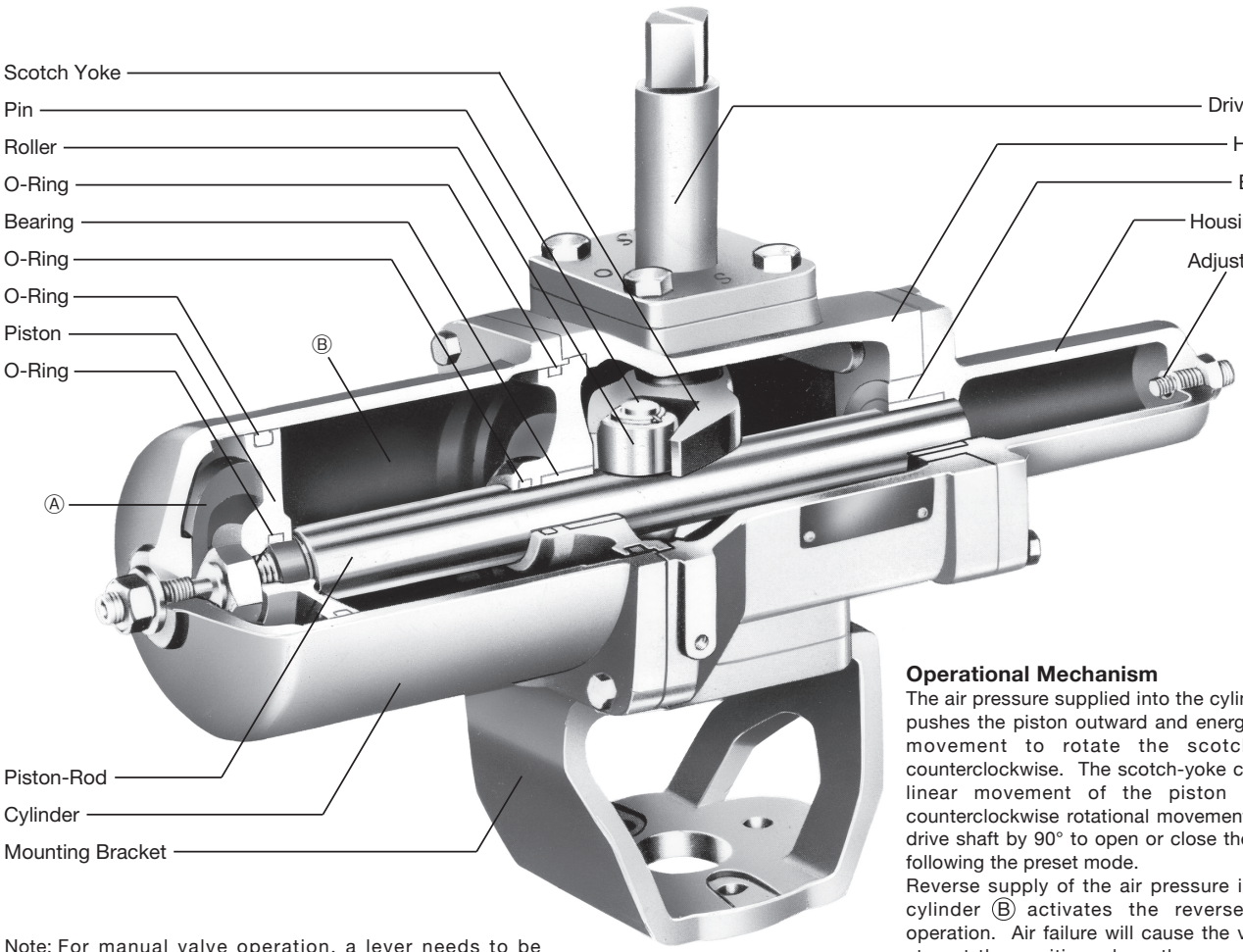
Features of KITZ B Series Pneumatic Actuators

Internationally patented

Type B (Double-Action)



Note: For manual valve operation, a lever needs to be mounted on the top end of the drive shaft of Type B-1 through B-4 actuators. Separate manual operators are available for Type B-5 and B-6 actuators.

Operational Mechanism
The air pressure supplied into the cylinder Ⓐ pushes the piston outward and energizes its movement to rotate the scotch-yoke counterclockwise. The scotch-yoke converts linear movement of the piston rod to counterclockwise rotational movement of the drive shaft by 90° to open or close the valve, following the preset mode.
Reverse supply of the air pressure into the cylinder Ⓑ activates the reverse valve operation. Air failure will cause the valve to stay at the position where the operation is disturbed, unlike the valve driven by Type BS or BWS actuator.

Smooth operation with minimum friction
Extensive use of fluorocarbon resin to coat inside parts of the actuator reduces friction to a minimum for smooth operation. This includes the inside of the cylinder, resulting in smooth sliding of the piston and O-rings, as well as the surfaces of driving shaft, piston rod, and all bearings. As a result, the actuator features long-term stable operation.

Simple, trouble-free construction
The number of parts has been minimized to reduce mechanical problems and simplify periodical check, maintenance, disassembly, or reassembly.

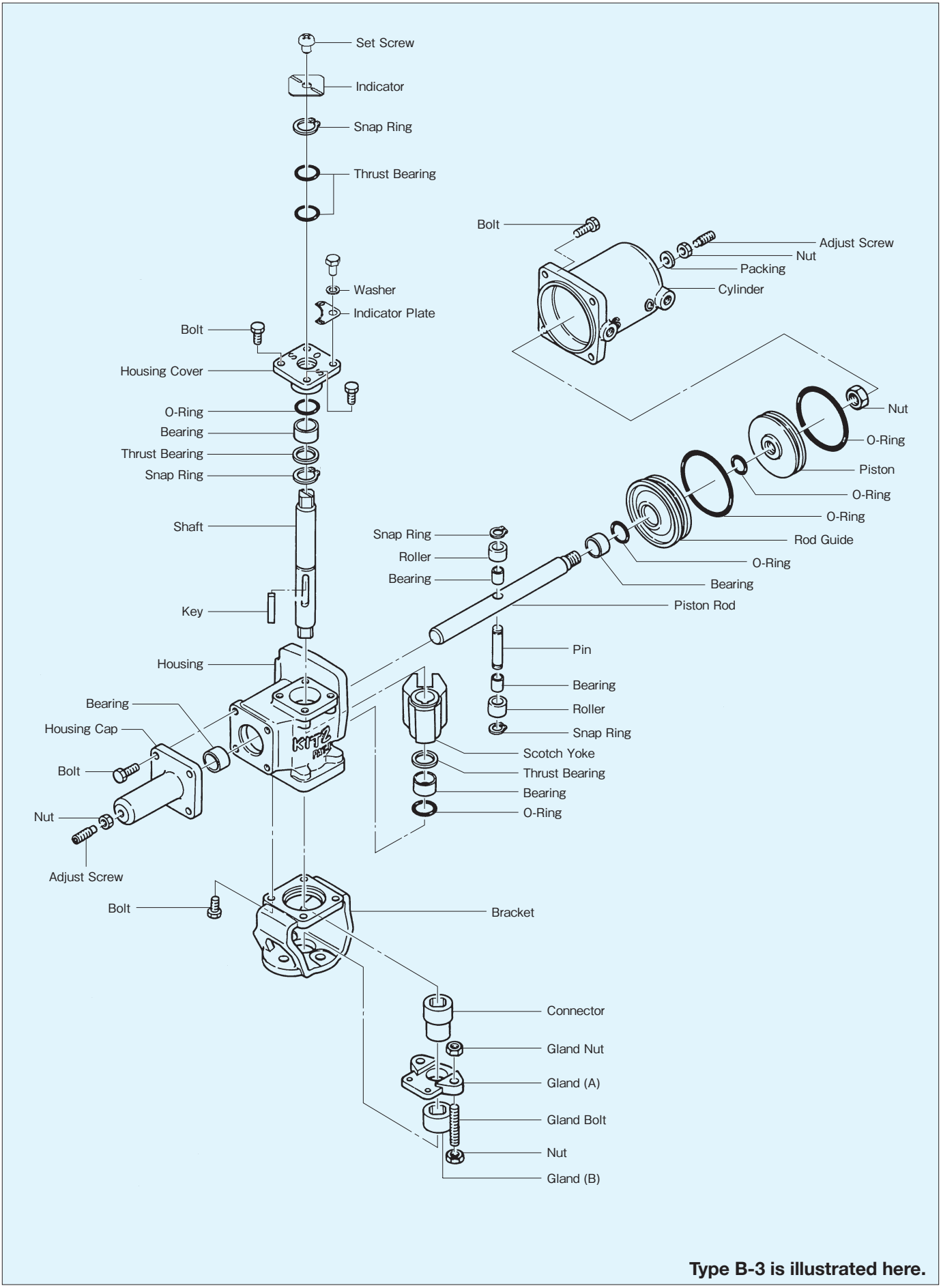
Separated turning mechanism and cylinder
Unlike conventional designs, in which the cylinder drive transmission mechanism is incorporated in the cylinder itself, the transmission mechanism of KITZ B Series actuators is designed with a scotch yoke installed separately from the cylinder.

This construction prevents air leakage even when the shaft clearance has increased during service.

Drive characteristics suited to quarter-turn valves
Unlike conventional cylinder actuators deploying linear drive characteristics, use of a scotch yoke mechanism provides a U-shape curve which maximizes the force obtained at the start and end areas of each stroke. This performance curve is similar to the torque characteristics of ball and butterfly valves in general, making KITZ B Series actuators suitable for such quarter-turn valves.

Installation of accessories
The actuator housing is provided with an arrangement for mounting limit switches and valve positioners, etc. on its top, and solenoid valves, air filters, and regulators, etc. on its side.

Construction Details of Type B Actuators



Type B-3 is illustrated here.

Optional Accessories

The following optional accessories are recommended for KITZ B Series actuators.
For supply of other accessories, contact your local KITZ distributors.

Product code	Purpose	Specifications
Limit Switch **LS** Weather-proof **LS-F** Explosion-proof	For initiating electric signals to check open or close position of the valve: A separate limit switch is recommended for each of open and close indications.	**LS** AC: 10 A/125 V 10 A/250 V 10 A/480 V DC: 0.8 A/115 V 0.4 A/230 V **LS-F** AC: 5 A/125 V 5 A/250 V DC: 0.8 A/125 V 0.4 A/250 V Contact circuit: 2-Circuit double break
Solenoid Valve **SOV** Weather-proof **SOV-F** Explosion-proof	Flow switching over air flow by electric signal; 4-way solenoid valves for double-action actuators, 4-way solenoid valves for spring-return actuators, with one OUT port plugged, or 3-way solenoid valves used.	Connected pipe: BSPT1/4 Working pressure: 0~0.97 MPa Orifice diam: 6 mm Electric current: 100 V/50 Hz 100 V/60 Hz 110 V/60 Hz 200 V/50 Hz 200 V/60 Hz 220 V/60 Hz Supply source connection Weather-proof: DIN terminals or terminal boxes Explosion-proof: Electric wire pipe threading
Air Filter-Regulator **F + R** (With pressure gauge)	For removing moisture, water and other foreign objects from operating air and for regulating air pressure at a desire level.	Connected pipe: BSPT1/4, BSPT1/2 Working pressure: Max. inlet pressure; 0.97 MPa Setting pressure range: Max. outlet pressure; 0.04~0.83 MPa
Speed Controller **SP**	For reducing actuator operating speeds.	Connected pipe: BSPT1/8, BSPT1/4, BSPT1/2 Operation pressure: 0.97 MPa max.
Quick Exhaust Valve **QE**	For increasing actuator operation speed. This device can increase operation speed only when the actuator is operated by the spring. Positioners cannot be used together with a quick exhaust valves.	Connected pipe: BSPT1/4, BSPT1/2 Working pressure: 0.97 MPa max.
Valve Positioner **P** (Complete with pressure gauge)	For controlling the flow rate. A positioner can be mounted on either double-action or spring-return actuators. Operation mode, air-to-open or air-to-close, can be changed simply by reversing cam direction.	Connected pipe: BSPT1/4 (pressure gauge: BSPT1/8) Supply pressure: 0.3~0.7 MPa Signal pressure: 0.02~0.1 MPa or specified Signal Current: E/P: (input signal) 4~20 mA Air consumption: 20 Nℓ/min. max. (at supply pressure 0.5 MPa)
Silencer **K**	For reducing the air exhaust noise of solenoid valves. The device is installed at the exhaust port of a solenoid valve.	Connected pipe: BSPT1/8, BSPT1/4, BSPT1/2 Working pressure: 0.9 MPa max.
Air Filter **F**	For removing moisture, water and other foreign objects from operating air.	Connected pipe: BSPT1/4, BSPT1/2 Working pressure: 0.97 MPa max.
Pressure Equalizing Valve **C**	For equalizing the internal air pressure to the atmospheric level for manual operation of actuators.	Connected pipe: BSPT1/4 Working pressure: 1.37 MPa max.

Above specifications are KITZ standards. Different specifications are optionally available.