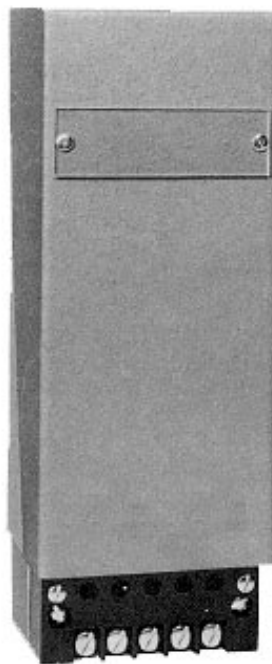


Single I/P Converter
Model : KUX112
User's Manual



Azbil Corporation

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1. GENERAL

1.1 Description

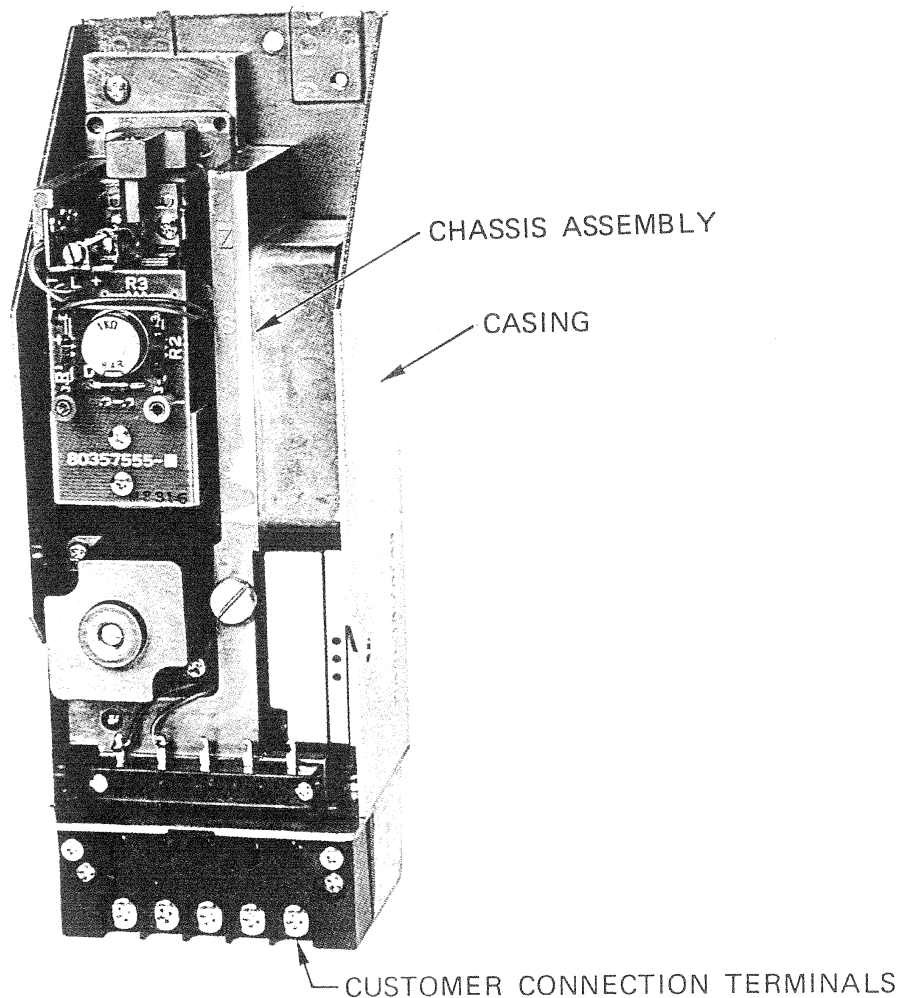
The SystempaK I/P Converter, KUX112, converts an electrical input signal of 4 - 20mA DC into a pneumatic output signal of 0.2 - 1.0kgf/cm² or other unit. It is an indoor installation type of instrument and can be directly installed on a panel.

1.2 Structure and Features

The KUX112 is comprised of a converter main unit (chassis assembly), a casing and a cover. The main unit is readily detachable from the casing by loosening the clamping-screws. As you detach the main unit from the casing, the air connectors are automatically sealed, thereby affecting neither the pneumatic signal channel nor the air supply channel.

Input check terminals are provided on the front panel, allowing you to check readily the input current signal.

Precaution: Hands off the mechanism at upper left of the main unit, except the adjustment parts.



Model KUX112 I/P Converter
(with cover removed)

2. SPECIFICATIONS

2.1 Performance Specifications

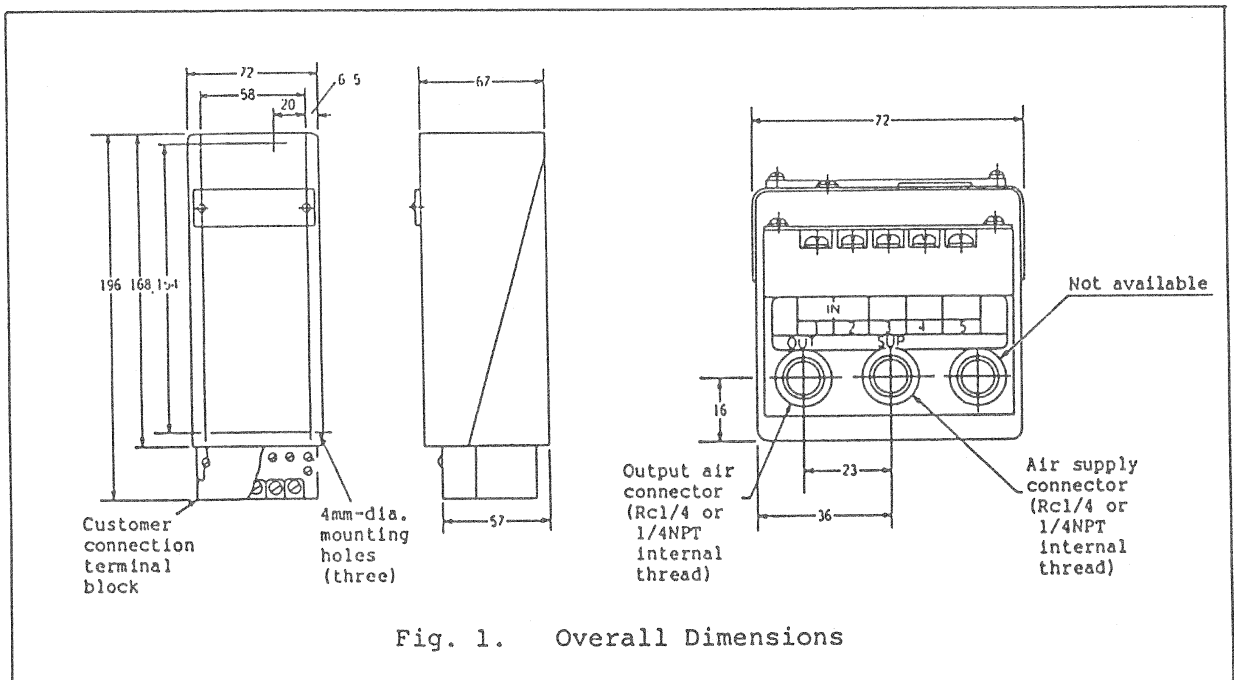
Item	Specification
Input signal	4 - 20mA DC (limit current approx. 30mA)
Input resistance	300Ω max.
Output signal	0.2 - 1.0kgf/cm ² , 3 - 15psi, 0.2 - 1.0bar, 20 - 100kpa (rated pressure 2kgf/cm ²)
Air supply	1.4kgf/cm ² , +30%, -10%
Air consumption	< 4Nℓ/min.
Maximum air supply capacity	< 20Nℓ/min.
Maximum air exhaust capacity	< 20Nℓ/min.
Minimum load capacity	4mm-inner-diameter copper pipe x 3m + 20cc
Electrical connections	M3 x 6mm binding screws
Air connections	Rc1/4, 1/4NPT internal thread
Ambient temperature	0 to 50°C
Ambient humidity	10 to 90% RH
Accuracy	± 0.25% FS
Hysteresis	0.15% FS
Temperature characteristics	Zero shift: ± 1% FS/25°C (max.) Span shift: ± 1% FS/25°C (max.)
Type of housing	Indoor installation type
Type of installation	Wall mount type
Weight	Approx. 1.6kg

2.2 Model No. Table

Model Number Structure of Multiple I/P Converters

Basic model No.	Selections						Options	Description
	Power supply	Input	Output	Connections	Installation	Environments		
KUX112								Single I/P Converter
	-X							None
		1						4 - 20mA DC
			1					0.2 to 1.0kgf/cm ²
			2					3 to 15psi
			3					0.2 to 1.0bar
			4					20 to 100kpa
				A				Rc1/4
				B				1/4NPT internal thread
					S			Wall mount, indoor installation
						X		Standard
						A		Tropicalization (special spec.)
						B		Corrosive atmosphere (special spec.)
							-X	No options

2.3 Overall Dimensions



3. OPERATING PRINCIPLE

The electrical input signal (current signal) is converted by the magnet unit into a mechanical force which causes the beam position to change. The change in beam position is converted by the nozzle/flapper mechanism into a pneumatic signal, which is boosted by the pilot relay into the pneumatic output signal. The pneumatic output signal is fed back via the feedback bellows to the beam, thereby attaining an equilibrium state. Thus, the electrical input signal is converted into a pneumatic output signal which is directly proportional to the input signal.

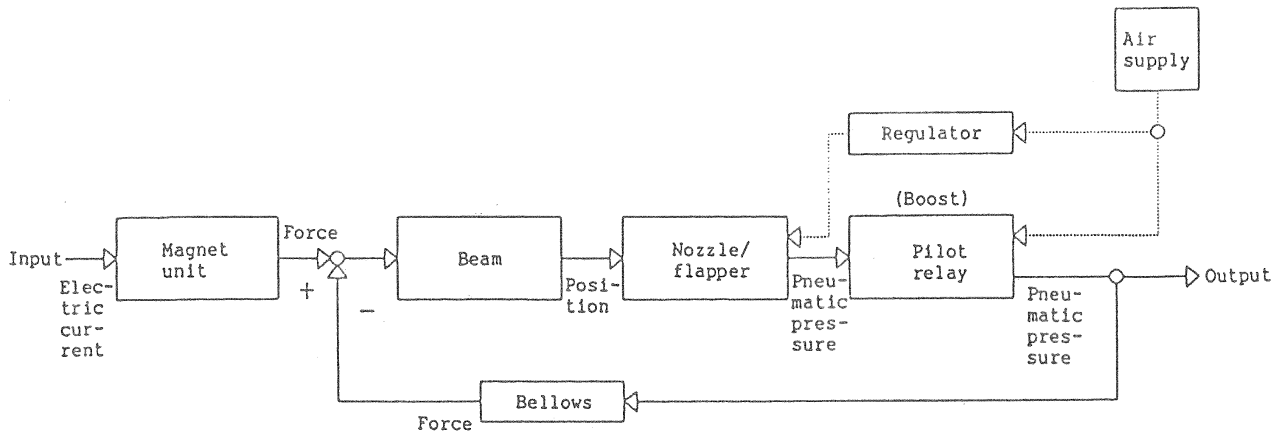


Fig. 2. Block Diagram of I/P Converter

4. INSTALLATION

4.1 Installation Dimensions and Method

For the installation dimensions, see Fig. 1. The casing can be fixed directly to a panel with three #6 screws (supplied) at the locations indicated with the asterisks in Fig. 3.

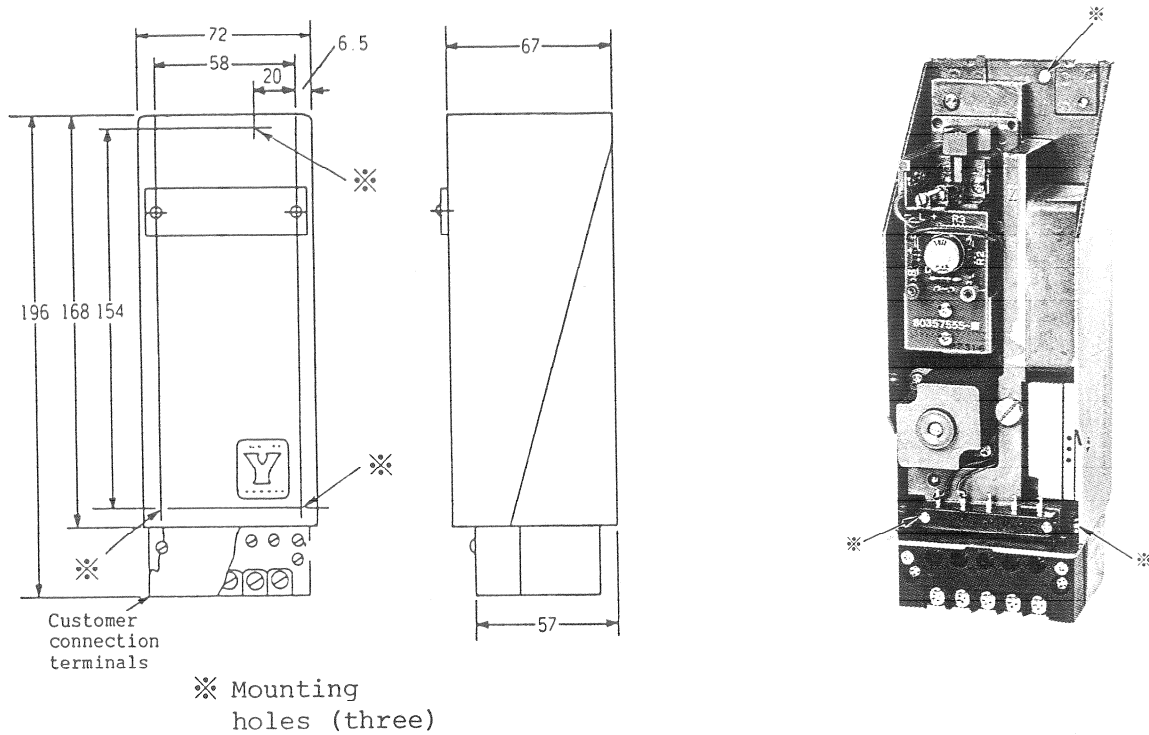


Fig. 3. Locations of Mounting Holes

4.2 Ambient Conditions

The place of installation should be of the specification temperature and humidity ranges and should be reasonably free from mechanical vibration.

4.3 Customer Connections

(1) Electrical Input Signal Connections

Connect the electrical input signal in the correct polarity. The terminal screws are of M3 x 6mm.

The instrument has no internal fuse or switch. Provide them externally (employing a wiring block, recommendably).

(2) Air Connections

The air connectors [Rc1/4 (or 1/4NPT internal thread)] are located at the bottom of the casing. Remove the cap and connect an air supply to the SUP connector and an output piping to the OUT connector.

For the air supply, provide a clean air via an Airstet (a regulator and a filter) at a pressure of $1.4 \pm 0.1 \text{ kgf/cm}^2$.

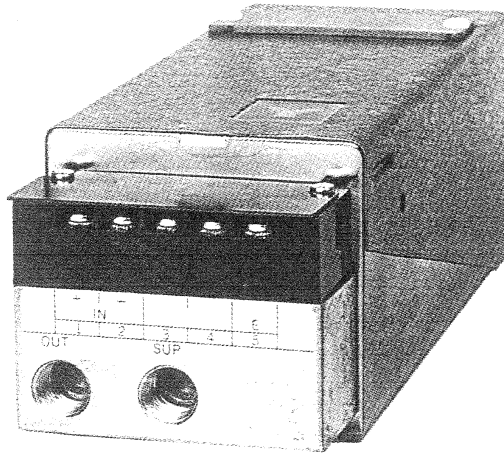


Fig. 4. Air Connectors

5. OPERATION PROCEDURE

When the I/P Converters are installed and electrical wiring and air piping are done, they are ready to operate. Provide the air supply.

Note: An input check diode (equivalent impedance 300 ohms) is provided in the input circuit of I/P converter. When converter or receiving instruments are operated in parallel (in series for the DC current signal), it is possible that overloading is caused to the output circuit of the signal source instrument (such as a controller). To prevent overloading, short the diode by connecting the socket jumper to the two pins which is located between the CHECK terminals on the front panel of the converter. (See Fig. 5.)

6. ADJUSTMENT AND CALIBRATION

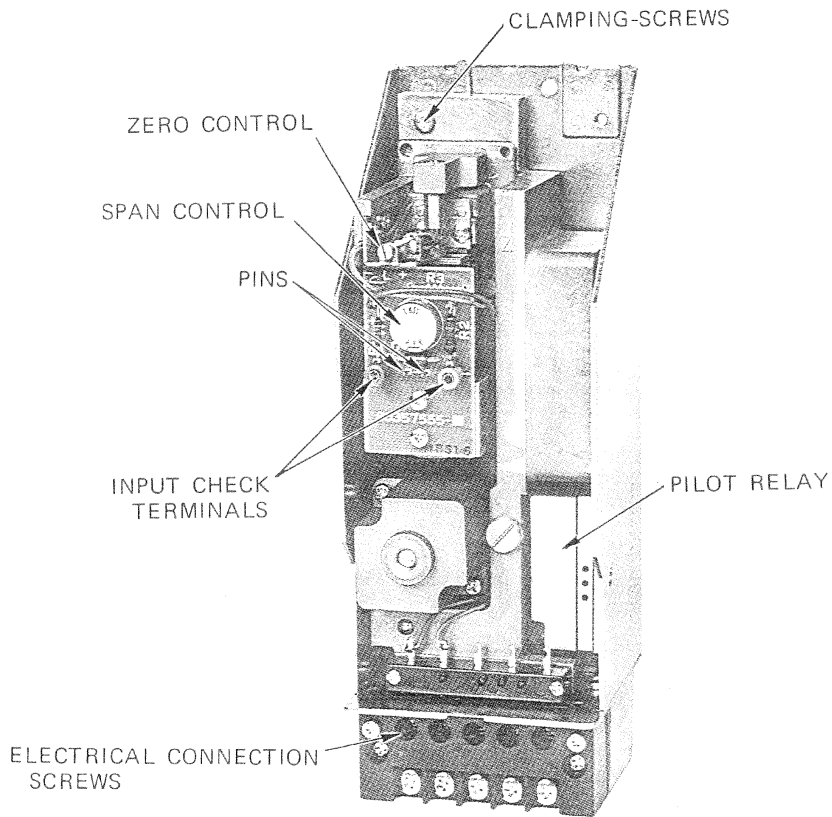


Fig. 5. Layout of Components

- (1) Connect an air supply and a precision pressure gauge to the SUP and OUT connectors, respectively, at the bottom of the I/P converter.

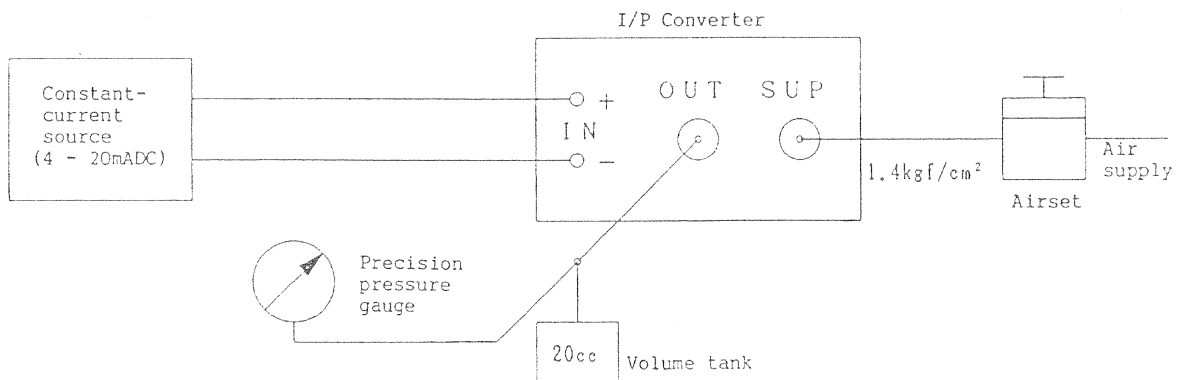


Fig. 6. Adjustment and Calibration Setup

- (2) Feed a current signal of 4mA from the constant-current source and read the output pressure.
- (3) Adjust the ZERO control with a screwdriver so that the output pressure becomes 0.2kgf/cm² [$\pm 0.25\%$]. The output pressure increases as you turn the ZERO control clockwise.
- (4) Feed a current signal of 20mA from the constant-current source and read the output pressure.
- (5) Adjust the SPAN control with a screwdriver so that the output pressure becomes 1.0kgf/cm² [$\pm 0.25\%$]. The output span becomes wider as you turn the SPAN control clockwise.
- (6) Repeat the procedures of steps (2) through (5) until the required ZERO and SPAN accuracies are attained concurrently.

7. MAINTENANCE

Normally, the I/P converter requires no maintenance service. When the I/P converter is operated in adverse conditions (such as with dusty air supply), disassemble the pilot relay and clean the restriction hole (employing a steel wire of 0.25mm dia.) and the port and seat (employing a soft cloth).

To disassemble the pilot relay, proceed as follows:

- (1) Remove the clamping-screws (see Fig. 5). Loosen the five electrical connection screws.
- (2) Exercising care not to touch the converting mechanism, detach the chassis assembly from the casing by pulling the chassis assembly upward.

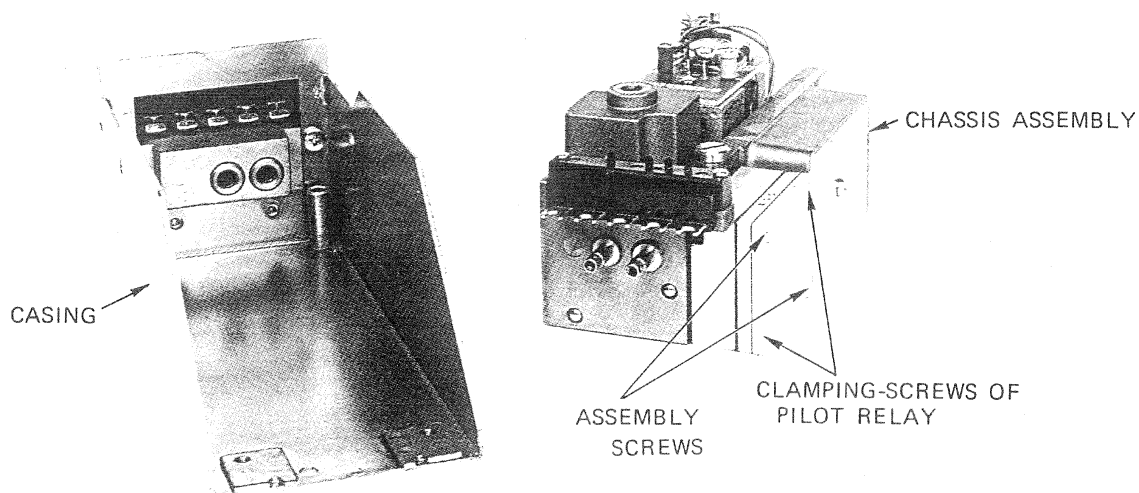


Fig. 7. Casing and Chassis Assembly

- (3) Remove the two mounting-screws of the pilot relay. Now the pilot relay can be disassembled by loosening its two assembly screws.
- (4) When the pilot relay is removed, a very fine hole (a hair sized hole) on the chassis assembly side becomes accessible. The hole acts as a restriction. Clean the hole employing a fine steel wire (0.27mm dia.).
- (5) To assemble the pilot relay, follow the above disassembly procedure in the reverse order.

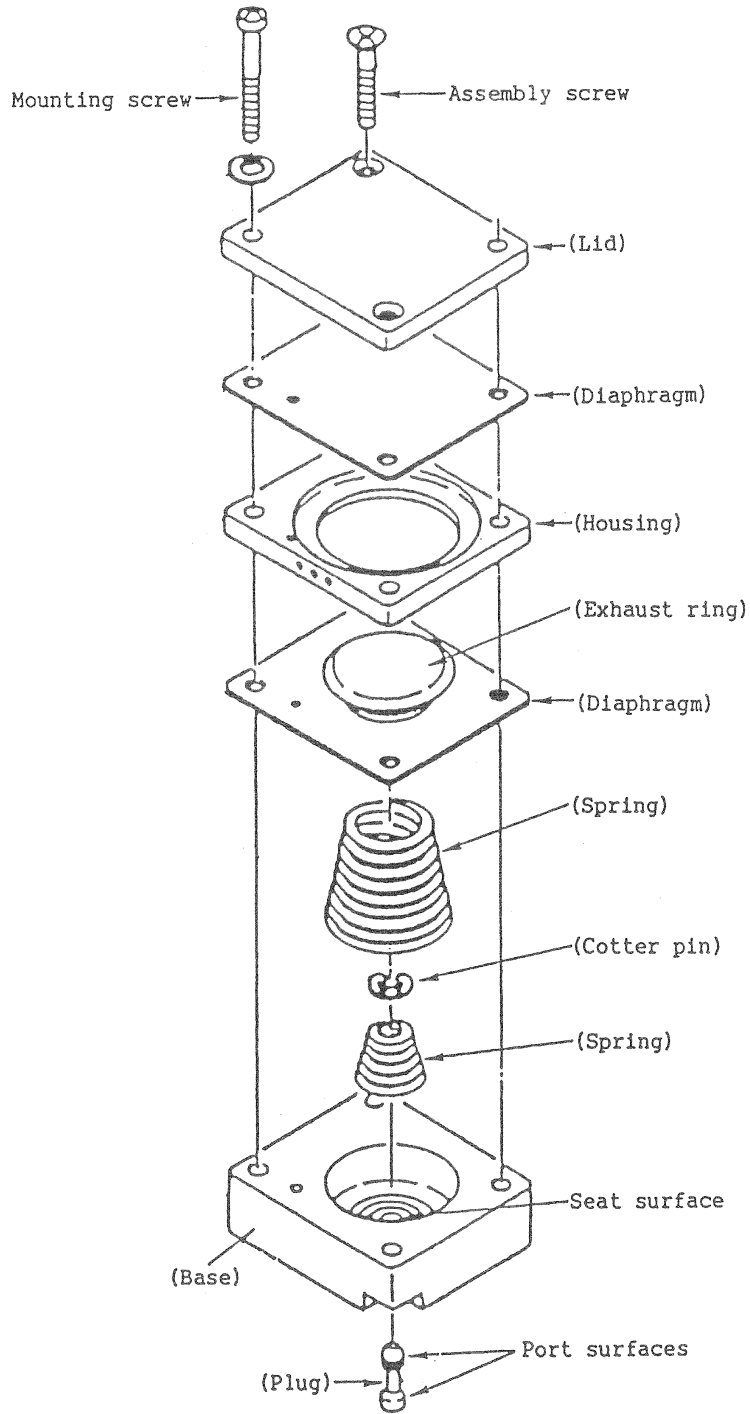


Fig. 8. Exploded View of Pilot Relay

Note: The plug spring and cotter pin remain in the assembled state. They are not required to be disassembled for cleaning. For cleaning, press the upper port surface downward.

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