

T-5800 Pneumatic Receiver-Controller

Features

- High Volume Output
- Field Programmable Action and Readjustment
- Field Selectable Set Point Adjustment - Local or Remote
- Adjustable Gain and Ratio Values
- Automatic/Manual Integral Control Cutout and Adjustable Integral Time (T-5800-2 & T-5800-4 Only)
- Replaceable External Oil Indicating Supply Filter
- Built-in Output Pressure Gage
- Hypodermic Needle Test Points
- See-Through Plastic Protective Cover
- Snap-On Air Connections
- Corrosion Resistant Noryl Body

The T-5800 Series Receiver-Controllers are designed for use with remote temperature, humidity, or pressure transmitters (connected to the controlled variable "CV" input) to provide precise control of pneumatic devices. These receiver-controllers are capable of providing restricted supply air to low volume remote transmitters, thus requiring only one air line connection between the two instruments. In addition, the "CV" input can accept the transmitted output of any pneumatic device which has a calibrated output of 3 to 15 psig (21 to 105 kPa), such as a process transmitter.

The T-5800 is available in single or dual input models with proportional or proportional plus

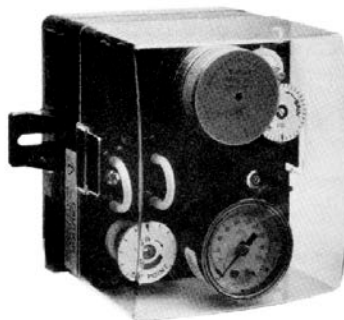


Fig. 1: T-5800-1 Single Input Proportional Receiver-Controller

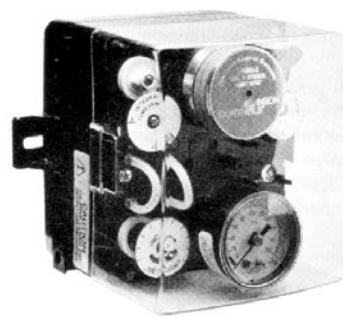


Fig. 2: T-5800-2 Single Input PI Receiver-Controller

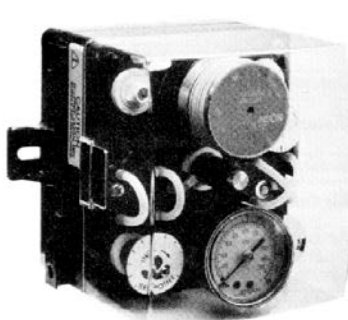


Fig. 3: T-5800-3 Dual Input Proportional Receiver-Controller

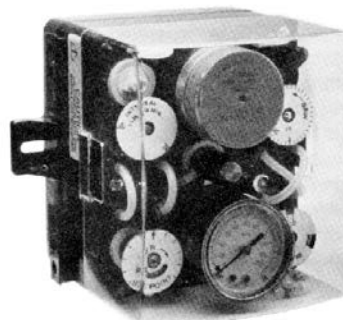


Fig. 4: T-5800-4 Dual Input PI Receiver-Controller

integral (PI) control. In addition to the above mentioned features, all adjustments are made on the face of the unit. These adjustments include the gain, local set point (when selected), ratio (dual input models only), master input balance (dual input models only), and integral time (PI models only). The action and readjustment are field selected by interchanging the placement of the tube ends from one lower spigot to the other lower spigot (see Fig. 5). The hypodermic needle test points provide

convenient test pressure checks for the set point pressure "SP", controlled variable pressure "CV", and master input pressure "M" (dual input models only).

Proportional-Only Control: T-5800-1 & T-5800-3

Over the years, proportional-only control has been an acceptable means of controlling variables such as discharge air temperature, humidity, water temperature, and pressure. A change in the controlled variable as measured by a transmitter,

provides a change in the input "CV" pressure. The controlled variable is compared, by the internal circuitry, to the set point pressure. Based on the gain setting, the unit produces an output pressure signal change which is proportional to the difference between the set point pressure and the controlled variable pressure.

In addition, the T-5800-3 has a master input "M" connection which serves to readjust the set point value of the receiver-controller in accordance with a predetermined schedule.

Proportional Plus Integral (PI) Control: T-5800-2 & T-5800-4

A proportional plus integral (PI) receiver-controller is basically a proportional receiver-controller with a mechanism incorporated to automatically increase the gain setting as a function of time. This integral time is field adjustable and factory set at approximately 3 minutes (per repeat). As the gain increases, less offset results between the set point and the controlled variable. As the gain approaches its maximum setting, this offset is virtually undetectable.

The T-5800-2 and T-5800-4 PI Receiver-Controllers have an automatic/manual integral control cutout feature which allows the system to start up using proportional-only control. This feature keeps the system from going out of control on startup, as is inherent to PI (automatic reset) controllers, when the system has been off for some time.

PI control is specifically designed for closed loop arrangements utilizing modulating controlled devices, where the control point offset associated with proportional-only control is undesirable. Static pressure of supply fans, return fan volume control, and chilled water temperature

Specifications

Product		T-5800 Pneumatic Receiver-Controller
Models	T-5800-1	Single Input, Proportional
	T-5800-2	Single Input, Proportional Plus Integral
	T-5800-3	Dual Input, Proportional
	T-5800-4	Dual Input, Proportional Plus Integral
Action	T-5800-1 & T-5800-2	Direct or Reverse Acting; Field Selectable
	T-5800-3 & T-5800-4	Direct or Reverse Acting with Direct or Reverse Readjustment; Field Selectable
Set Point Adjustment		Factory Set Local at Approximately 9 PSIG (63 kPa); Field Selectable Local or Remote
Gain	T-5800-1 & T-5800-3	Adjustable from 0.5:1 to 15:1, Factory Set at Approximately 10:1
	T-5800-2 & T-5800-4	Adjustable from 0.5:1 to 15:1, Factory Set at Approximately 5:1
Ratio (T-5800-3 & T-5800-4 Only)	Jumper 1:1	Variable from 0.1:1 to 2:1, Factory Set at Approximately 1:1
	Jumper 3:1	Variable from 0.1:1 to 6:1, Factory Set at Approximately 3:1
Integral Time (T-5800-2 & T-5800-4 Only)		Adjustable from .01 to a Minimum of 30 Minutes (Per Repeat), Factory Set at Approximately 3 Minutes
Supply Pressure		18 to 22 PSIG (126 to 154 kPa), Nominal 20 PSIG (140 kPa) Air Supply Must Be Clean, Dry, and Oil Free
Air Consumption	T-5800-1	45 SCIM (12 mL/s)
	T-5800-2	60 SCIM (16 mL/s)
	T-5800-3	60 SCIM (16 mL/s)
	T-5800-4	75 SCIM (20 mL/s)
Output Capacity		1000 SCIM (273 mL/s)
Materials	Body	Black Noryl Thermoplastic
	Cover	Clear Acrylic Thermoplastic
Mounting		Surface
Air Connections		Two Detachable Connectors with Barbed Fittings for 1/4 in. O.D. Poly tubing
Ambient Operating Limits	Temperature	50 to 120°F (10 to 49°C)
	Humidity	10 to 90% RH at Max Dew Point of 85°F (29°C)
Ambient Storage Temperature Limits		-20 to 150°F (-29 to 66°C)
Accessories (Order Separately)	T-5800-100 Time Delay	
	X-200-140 Hypodermic Needle Test Probe	
	X-200-173 Calibration Kit (Optional)	
Shipping Weight		3.8 lb (1.7 kg)

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

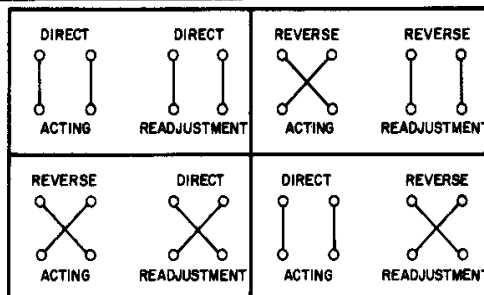


Fig. 5: T-5800 Receiver-Controller Modes

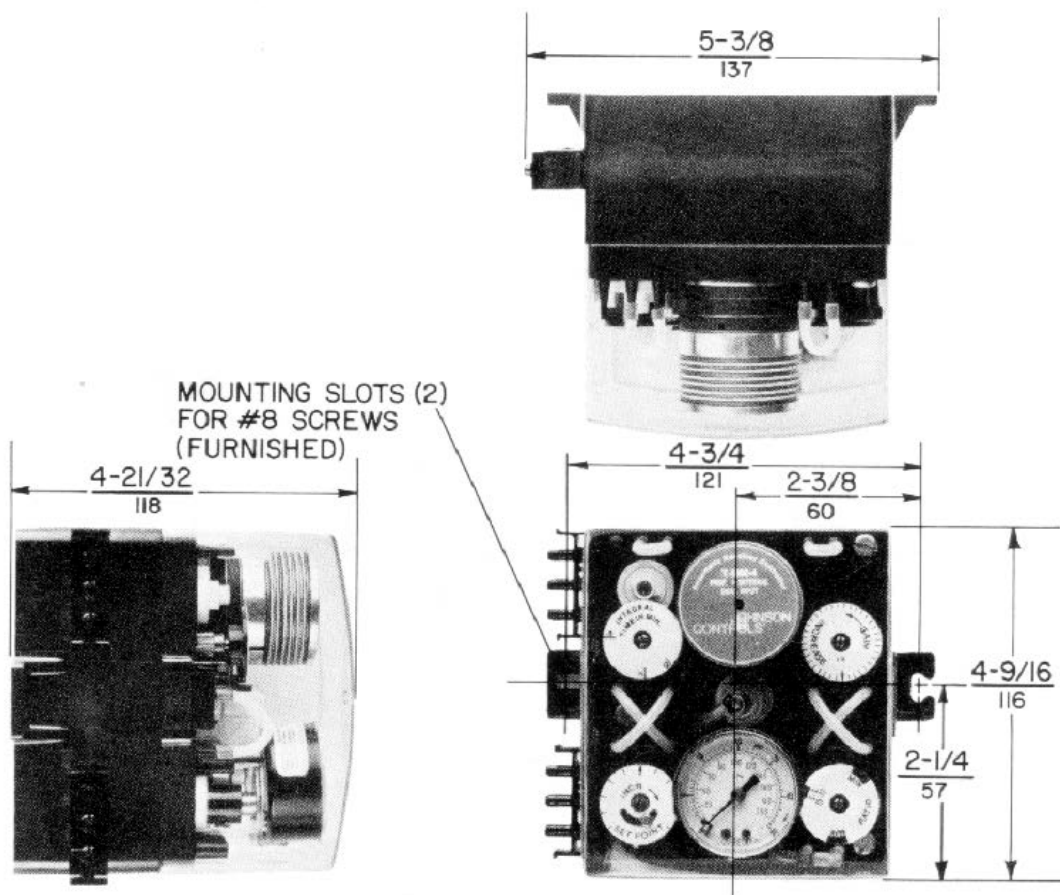
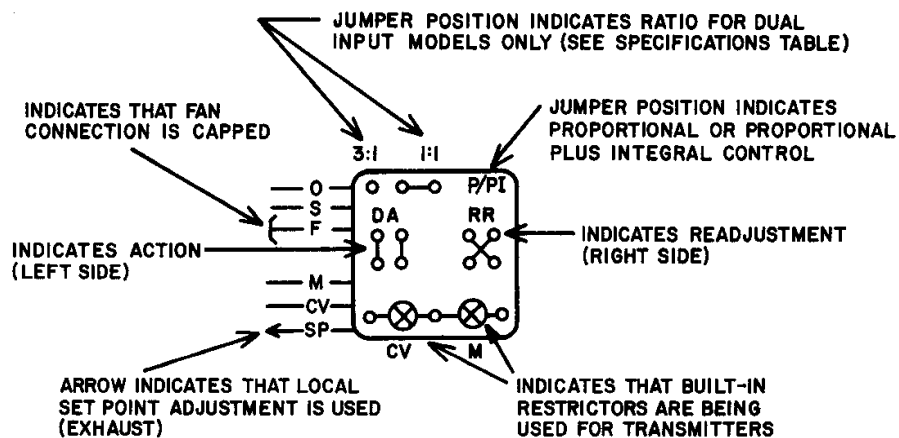


Fig. 6: T-5800 Series Dimensions in./mm and Mounting Details

Application and Drawing Identification

TC-	TRC-
HC-	HRC-
PC-	PRC-



Accessories (Order Separately)

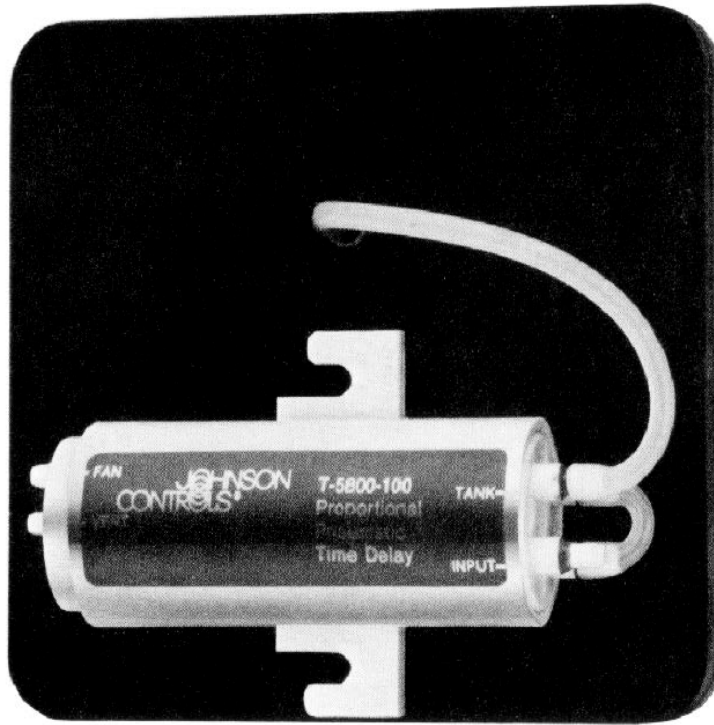


Fig. 7: T-5800-100 Time Delay
Dimensions: 4-1/4 in. W x 3-3/4 in. H x 1-1/2 in. D
(108 mm W x 95 mm H x 38 mm D)

Application and Drawing Identification

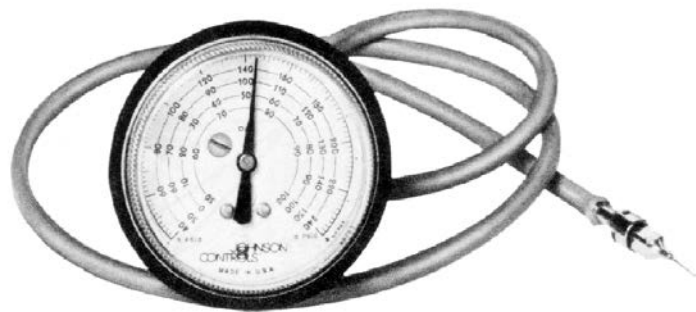
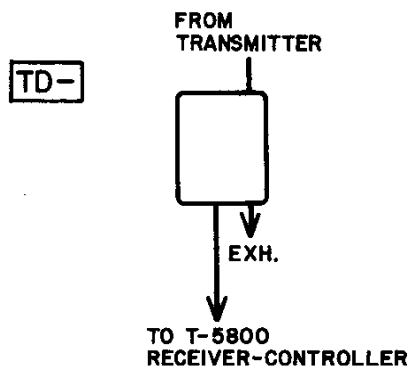


Fig. 8: X-200-140 Hypodermic
Needle Test Probe
(Order Test Probe and Gage Separately)

Typical Applications

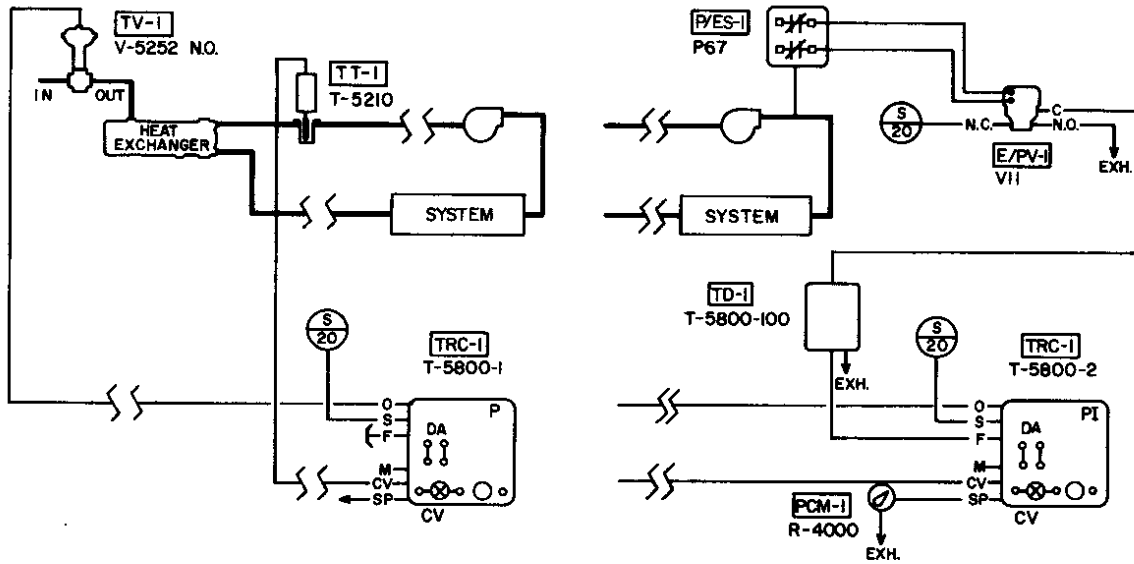


Fig. 9: Typical T-5800-1 & T-5800-2 Application with Local or Remote Set Point Adjustment

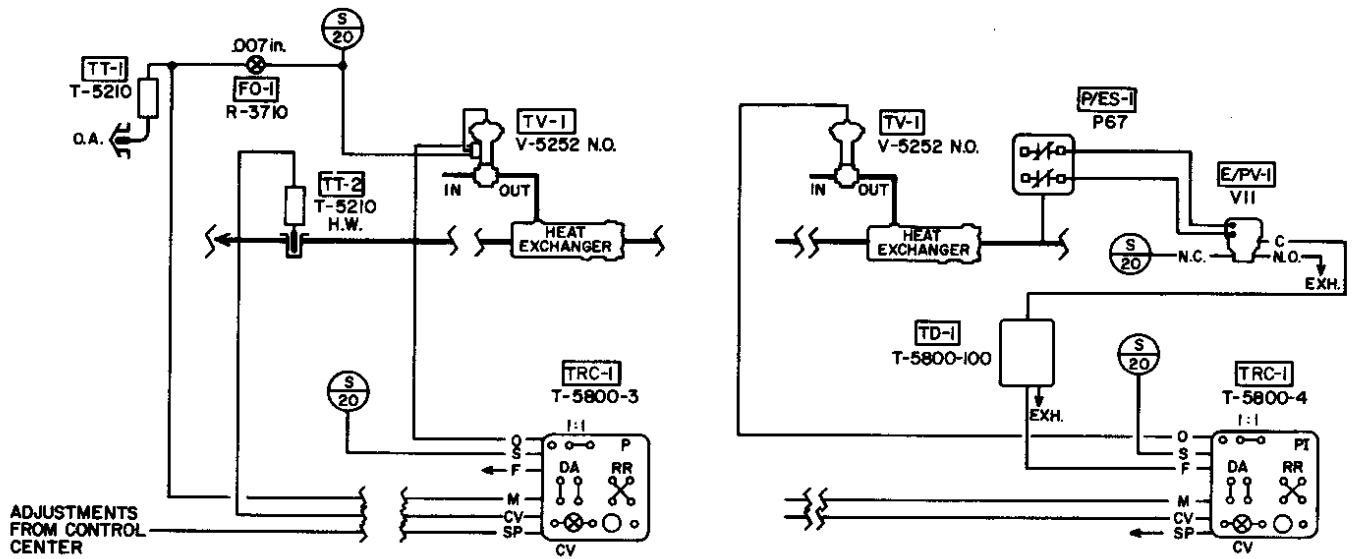


Fig. 10: Typical T-5800-3 & T-5800-4 Application with Local or Remote Set Point Adjustment

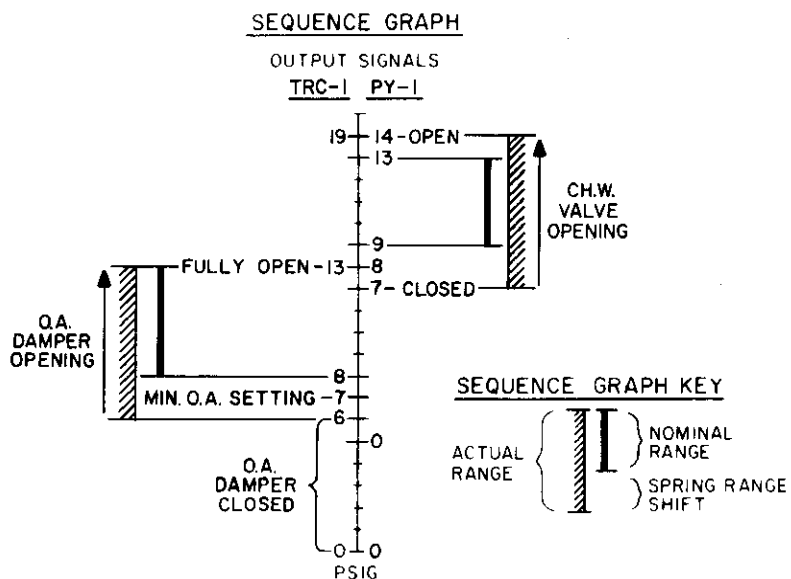
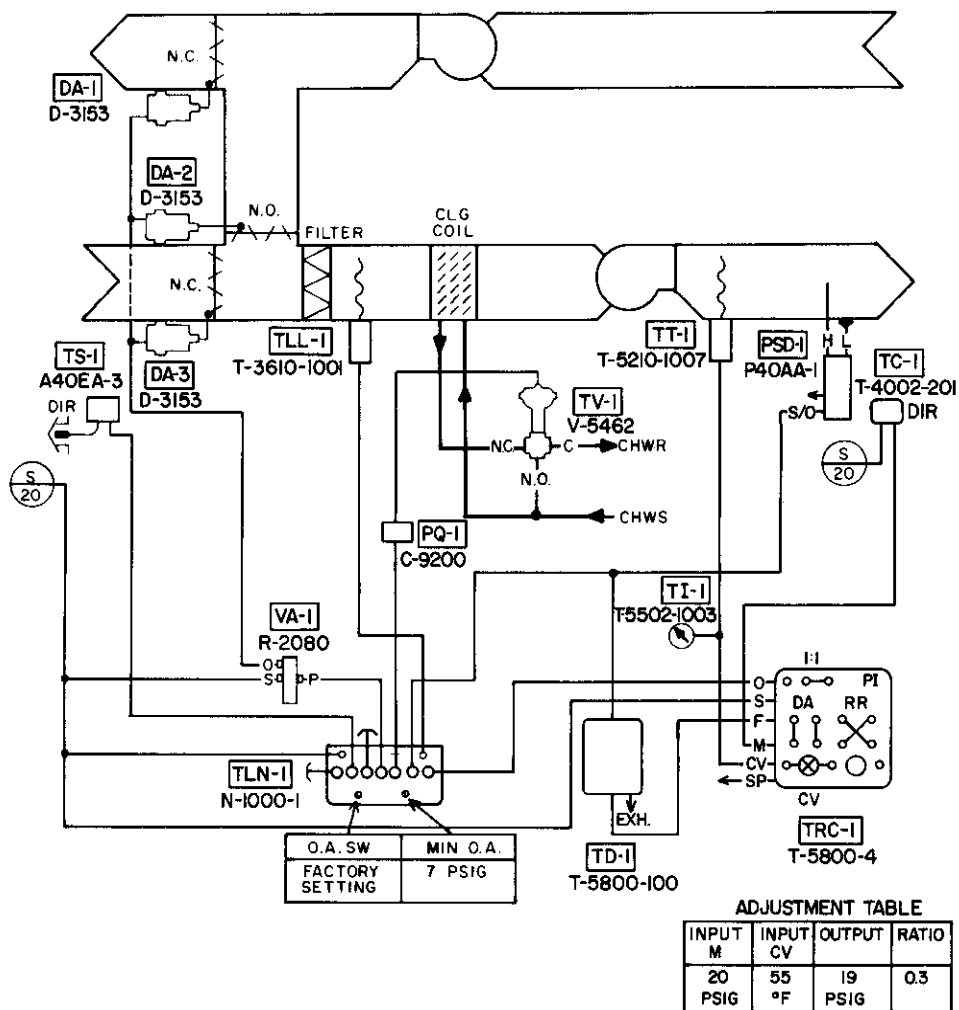


Fig. 11: Typical Room Discharge Control Application using T-5800-4

three of the more widely used applications whose low gains and resulting offset dictate the use of PI control.

Installation

The T-5800 Series Receiver-Controllers are designed for surface mounting; refer to Fig. 6 for space requirements and mounting details. All air line connections are made to the units through two detachable connectors which have barbed fittings for 1/4 in. O.D. polytubing. All units are furnished with a clear cover to protect the components from

dust and dirt, to discourage unauthorized tampering, and to facilitate visual monitoring of the output pressure gage and dial settings.

Time Delay

A T-5800-100 Time Delay is available (ordered separately) for use in conjunction with the built-in automatic integral control cutout feature of the T-5800 Series PI Receiver-Controllers (see Fig. 7). This device provides adjustable times in order to allow the system to approach the proportional control point before the integral function of the T-5800 is initiated. The PI function takes over when the pressure of the

time delay signal is approximately 0.5 PSI (3.5 kPa) below the internal supply pressure (9 psig).

Calibration

The T-5800 Series Receiver-Controllers are factory calibrated to the values listed in the Specifications Table. Adjustments should only be performed by qualified personnel equipped with the proper knowledge and tools. Refer to Installation Data T-5800-A.1 for calibration instructions for the single input models and Installation Data T-5800-A.2 for calibration instructions for the dual input models.

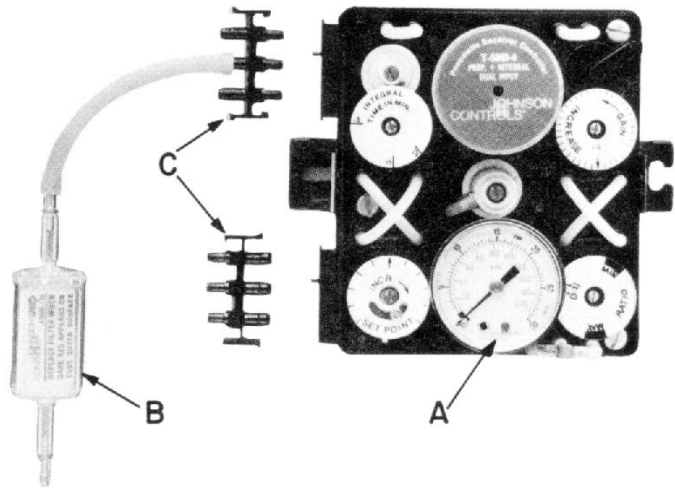


Fig. 12: T-5800 Series Receiver-Controller

Table 1: Repair Parts

Item	Description	Shipping Weight lb*	Code Number
A	Gage, 0 to 30 PSIG (0 to 210 kPa)	0.1	G-2010-5
B	Oil Indicating Filter Assembly	.05	A-4000-137
C	Connectors, Input and Output	.02	T-5800-600

*lb x 0.454 = kg

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