

Honeywell

L91 PROPORTIONING PRESSURE CONTROL CONTROLLERS

L91 PROPORTIONING PRESSURE CONTROL CONTROLLERS ARE SERIES 90 MODULATING PRESSURE CONTROLLERS THAT PROVIDE DIRECT CONTROL OF MODULATING MOTORS OR VALVES USED ON AUTOMATIC BURNERS OR STEAM HEATING SYSTEMS.

L91A L91B L91D L91F

• Models available for pressure systems up to 300 psi [2068 kPa].

• These controllers may be used with steam, air, noncombustible gases, or other fluids noncorrosive to the brass or phosphor-bronze (300 psi models) bellows.

- Wiper on the controller potentiometer moves in response to pressure changes.
- L91D has 2 potentiometers for unison control of 2 motors.
- L91F has a fixed resistor and a manually-adjusted trim potentiometer in series with the controller potentiometer; for special applications in electronic bridge circuits.
- L91B, D, and F models have an adjustable proportioning (throttling) range to allow selection of desired pressure control range.
- Adjustments are made by screws on top of case.
- Large, easily-read scaleplates are marked in both customary (or/in.², psi, or in. Hg) and metric (kPa, MPa, or mm Hg) units.
- Steel case has clear plastic cover so that pressure settings and potentiometer action can be observed.
- Fitting with 1/4-18 NPT threads provides rapid installation.
- Controller can also be surface mounted by screws through holes (knockouts) in back of case.

SPECIFICATIONS

TABLE I-MODELS AVAILABLE

MODEL	OPERATING RANGES ^a		POTENTIOMETER PART NO. ^f	PROPORTIONING (Throttling) RANGE AT MIDSCALE			MAXIMUM SURGE PRESSURE	
				ADJUSTABLE	CUSTOMARY UNITS	METRIC UNITS	psi	kPa
	CUSTOMARY UNITS	METRIC UNITS						
L91A	0 to 16 oz/in. ²	0 to 7 kPa	23176CB	No	1 oz/in. ² _o	0.4 kPa	6	41
	0 to 15 psi	0 to 103 kPa	23176CB	No	0.5 psi	3.4 kPa	25	172
	2 to 50 psi	14 to 345 kPa	23176CB	No	2 psi	13.8 kPa	85	586
	5 to 150 psi	0.03 to 1.03 MPa	23176CB	No	5 psi	0.03 MPa	225	1551
	10 to 300 psi ^b	0.07 to 2.07 MPa	23176CB	No	12 psi	0.08 MPa	350	2413
L91B	0 to 16 oz/in. ²	0 to 7 kPa	23176CF	Yes	2 to 38 oz/in. ²	0.9 to 16.4 kPa	6	41
	0 to 4 psi	0 to 28 kPa	23176CF	Yes	5 to 38 oz/in. ²	2.2 to 16.4 kPa	6	41
	0 to 15 psi	0 to 103 kPa	23176CF	Yes	1.5 to 12 psi	10 to 83 kPa	25	172
	2 to 50 psi	14 to 345 kPa	23176CF	Yes	5 to 32 psi	34 to 221 kPa	85	586
	5 to 150 psi ^d	0.03 to 1.03 MPa	23176CB	Yes	5 to 23 psi	35 to 160 kPa	225	1551
	10 to 300 psi ^{c,d}	0.07 to 2.07 MPa	23176CB	Yes	12 to 48 psi	85 to 330 kPa	350	2413
	10 to 300 psi ^c	0.07 to 2.07 MPa	23176CF	Yes	30 to 110 psi	0.21 to 0.76 MPa	350	2413
L91D	0 to 15 psi	0 to 103 kPa	23176CF	Yes	1.5 to 12 psi	10 to 83 kPa	25	172
	5 to 150 psi ^d	0.03 to 1.03 MPa	23176CF	Yes	13 to 52 psi	0.09 to 0.36 MPa	225	1551
	10 to 300 psi ^{c,d}	0.07 to 2.07 MPa	23176CF	Yes	30 to 110 psi	0.21 to 0.76 MPa	350	2413
L91F ^e	0 to 15 psi	0 to 103 kPa	9	Yes	1.5 to 12 psi	10 to 63 kPa	25	172
	5 to 150 psi	0.03 to 1.03 MPa	9	Yes	13 to 52 psi	0.09 to 0.36 MPa	225	1551

^aScaleplates are marked in both customary (oz/in.², psi, or in. Hg) and Metric (kPa, MPa, or mm Hg) units.

^bModels available with or without steam trap (siphon loop).

^cIncludes steam trap (siphon loop).

^dModel available with 1/4 in. BSP-TR internal threads (British Standard Pipe Threads) for mounting.

^eL91F models have one fixed resistor and one manually-adjustable trim potentiometer in series with the controller potentiometer. Various combinations of resistance values and locations of the fixed resistor and trim potentiometer are available. See Table II.

^fLength of active winding is 7/64 in. [2.8 mm] for Part No. 23176CB, and 1/4 in. [6.4 mm] for Part No. 23176CF.

^gSee Table II for potentiometer part number.

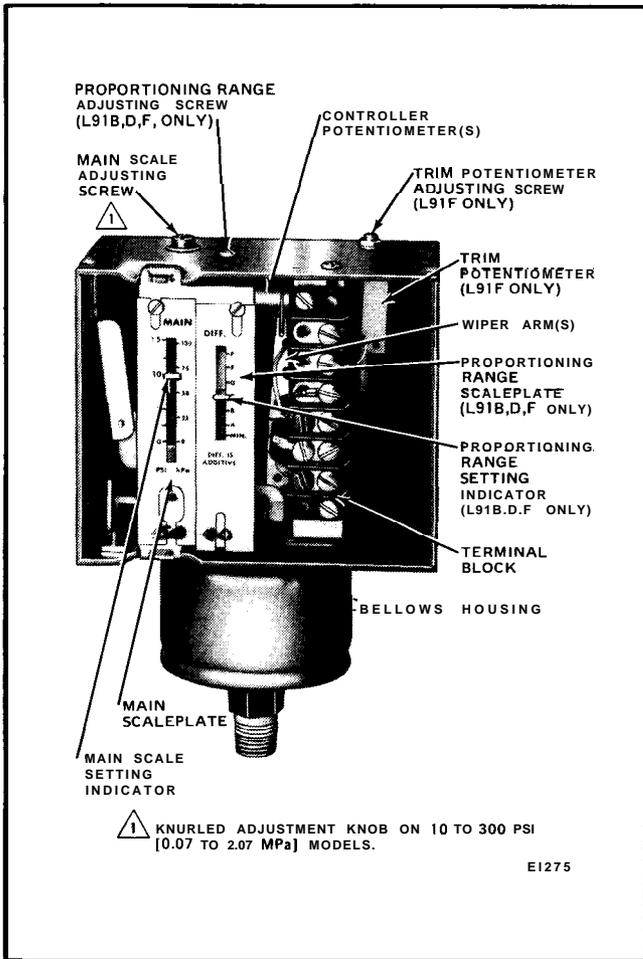


FIG. 1— SETTING AN L91 PROPORTIONING PRESSURE CONTROL CONTROLLER.

MODELS:

- L91A**—single potentiometer; nonadjustable proportioning range.
- L91 B**—single potentiometer; adjustable proportioning range.
- L91D**—2 potentiometers allow unison control of 2 motors; adjustable proportioning range.
- L91 F**—single potentiometer; adjustable proportioning range; fixed resistor and manually-adjustable trim potentiometer in series with controller potentiometer.

ELECTRICAL RATING: 24 Vac.

POTENTIOMETER ACTION: Wiper moves toward "W" on pressure rise; toward "B" on pressure fall. Potentiometer is field replaceable.

POTENTIOMETER RESISTANCE: 140 ohms (nominal) for L91A,B, and D models; see Table II for L91F models.

PRESSURE SENSING ELEMENT: Phos-bronze bellows.

MAXIMUM AMBIENT TEMPERATURE: 150 F [66 C].

MINIMUM AMBIENT TEMPERATURE: 32 F [0 C].

ADJUSTMENT MEANS: Screws on top of controller case; knurled knob for main scale setting on 10 to 300 psi [0.07 to 2.07 MPa] models.

SET POINT: At low pressure end of proportioning (throttling) range.

WEIGHT: 116.15 oz. [0.88 kg].

FINISH: Gray.

MAIN SCALEPLATE: Marked in both customary (oz/in.², psi, or in. Hg) and Metric (kPa, MPa, or mm Hg) units.

PROPORTIONING RANGE SCALEPLATE (L91B,D, and F only): graduated from A to F with a MIN (minimum) value below A. (See Table III for the value of each division.)

MOUNTING MEANS: Fitting on bellows has 1/4-18 NPT threads (external on 0 to 16 oz/in.², 0 to 4 psi, and 0 to 15 psi models; internal on all other models) for mounting on a pipe or steam trap (siphon loop).

NOTE: Some models are available with 1/4-19 BSP-TR internal threads: see Table I.

Also can be surface mounted by screws through 2 holes (knockouts) in back of case.

TABLE II—L91 F RESISTANCE VALUES AVAILABLE

LOCATION OF FIXED RESISTOR AND TRIM POTENTIOMETER	CONTROLLER POTENTIOMETER			FIXED RESISTOR OHMS ^c	ADJUST TRIM POTENTIOMETER ^e FOR:
	OHMS ^c	PART NO.	SIZE ^d In. mm		
In Bl ega	11.2	23367F	3/16 4.8	470	518 ± 2 ohms, R-B
In B leg ^a	17.6	233676	3/16 4.8	870	942 ± 2 ohms, R-B
In w leg ^b	380.0	23176-CAK	1/4 6.4	2080	2515 ± 10 ohms, R-W

^aAvailable for 0 to 15 psi [0 to 103 kPa] models only.

^bAvailable for 0 to 15 psi [0 to 103 kPa] and 5 to 150 psi [0.03 to 1.03 MPa] models.

^cNominal resistance values.

^dLength of active windings.

^eManually adjustable trim potentiometer is 100 ohms (nominal) in all L91F models. With zero pressure on the bellows, adjust the trim potentiometer to obtain the resistance values listed between terminals R and B, or between terminals R and W, as indicated.

TABLE III—APPROXIMATE VALUE OF EACH DIVISION (A TO B, B TO C, etc.) ON PROPORTIONING (Throttling) RANGE SCALEPLATE (L91B,D,F only)

OPERATING RANGE		VALUE OF EACH DIVISION	
CUSTOMARY UNITS	METRIC UNITS	CUSTOMARY UNITS	METRIC UNITS
0 to 16 oz/in. ²	0 to 7 kPa	6.2 oz/in. ²	2.7 kPa
0 to 4 psi	0 to 28 kPa	5.7 oz/in. ²	2.5 kPa
0 to 15 psi	0 to 103 kPa	1.8 psi	12.4 kPa
2 to 50 psi	14 to 345 kPa	4.7 psi	32.4 kPa
5 to 150 psi (L91B)	0.03 to 1.03 MPa	7.8 psi	0.054 MPa
5 to 150 psi (L91D,F)	0.03 to 1.03 MPa	6.7 psi	0.046 MPa
10 to 300 psi (L91B with 7/64 in. pot.)	0.07 to 2.07 MPa	16.4 psi	0.113 MPa
10 to 300 psi (L91B,D with 1/4 in. pot.)	0.07 to 2.07 MPa	13.8 psi	0.095 MPa