P29 Series Low Pressure Cutout Control
With Time Delay Relay

Application
The P29 combines a pressure sensing mechanism with a time delay. A drop in pressure energizes the time delay relay which opens a contact after a predetermined time period.

There are two principal applications for this control:

1. **Chiller Low Temperature Cutout**: Pressure element is connected to the suction side of a chiller refrigeration system and the time delay relay is wired to the compressor control circuit. Prolonged low suction pressure, such as pressure caused by a low temperature condition, will cause the control to shut down the refrigeration compressor.

2. **Industrial Equipment, Oil Pressure Lubrication Cutout**: On any electrically driven machine with a forced oil system, the pressure element is connected to the lube oil system and the time delay relay is wired in the control circuit. The control time delay allows oil pressure to build up to normal on start-up or recover from temporary fluctuations. A sustained loss of oil pressure will cause the control to shut down the machine.

⚠️ **CAUTION**: Use P29 pressure controls only in normal indoor environments or outdoors where it is protected from direct exposure to weather.

Specifications

<table>
<thead>
<tr>
<th>Product</th>
<th>P29AC</th>
<th>Auto Recycle, 120/240 VAC</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>P29NB</td>
<td>Manual Reset, 120 VAC</td>
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<td>P29NC</td>
<td>Manual Reset, 120/240 VAC</td>
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<td>P29NF</td>
<td>Manual Reset, 120/240 VAC, Alarm Terminal</td>
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- **Time Delay Shutoff Range**, "Heater On": 20° Hg Vacuum to 100 PSIG (~70 to 700 kPa)
- **Additional Pressure to Avoid Shutoff**, "Heater Off": 2.2 ± 1.5 PSI (15.2 ± 10.3 kPa)
- **Maximum Allowable Test Overpressure**: 325 PSI (2241 kPa)
- **Ambient Temperature**, Minimum: 32°F (0°C)
- **Material**, Case: .062" (1.6 mm) Cold Rolled Steel
- **Shipping Weight**, Complete Control: 3.0 lb (1.36 kg)
- **Mounting**, Mounts to Flat Surface or With a 271-51 Universal Mounting Bracket

All series P29 controls are designed for use only as operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add devices (safety, limit controls) or systems (alarm, supervisory systems) that protect against, or warn of, control failure.
Features

- Heavy duty low profile pressure elements withstand excessively high overrun pressure that may be encountered in system testing.
- Time delay relay incorporates trip-free manual reset.
- The timing mechanism (time delay relay and terminal board) may be easily removed and replaced in the field.
- Ambient compensation minimizes the effect of temperature variations at the control location.
- Simple, single pointer scale indicates cutout pressure.
- Enclosed pressure actuated contacts.
- Single unit mounting and wiring saves installation time and material.

Operation

When the equipment is started, the time delay heater is energized. If the gage pressure does not build up to the "heater-off" value within the required time limit, the time delay relay trips to stop the equipment.

If the gage pressure rises to the "heater-off" value within the required time limit, the time delay relay will not trip and the equipment will continue to run. The equipment will be shut down on subnormal pressures longer than the time setting of the time delay relay.

Time Delay Relay

The time delay relay is a thermal expansion device. "Trip-free" manual reset models are available with factory set and sealed 60 second time delay.

The time delay relay is compensated to minimize the effect of ambient temperature variations. Timing is affected by voltage variations.

For applications using a 208 volt control circuit, it is suggested that one leg of the 208 volt control circuit and a neutral or ground wire be used to power the 120 volt circuit of the time delay heater.

When a P29 control is installed on a 440 or 550 VAC system, use an external step-down transformer to provide either 120 or 240 volts to the pilot and time delay relay circuits. The transformer must be of sufficient volt-ampere capacity to operate the motor starter and P29 time delay relay.

Time Delay Relay Selection

The time delay relay assembly (timer and terminal board) may be removed and replaced in the field. The complete replacement time delay relay may be ordered by Part Number only from the Selection chart.

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Fig. 3 — Internal wiring for 120/240 VAC models.

Fig. 4 — Typical wiring diagram for P29 when used on 240 volt system with 240 volt magnetic starter coil.

Electrical Power Required for Time Delay Relay

<table>
<thead>
<tr>
<th>Timing in Seconds</th>
<th>Voltage 12, 24 or 120 V</th>
<th>240 V</th>
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</thead>
<tbody>
<tr>
<td>10</td>
<td>30 VA</td>
<td>60 VA</td>
</tr>
<tr>
<td>30, 45, 60, 90 or 120</td>
<td>15 VA</td>
<td>30 VA</td>
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*Includes dropping resistor wattage.
Optional Constructions

Pressure Connectors

Standard controls are supplied with 36 in. capillary with 1/4 in. sweat section (Style 34), or 1/4 in. FNPT connector (Style 15) may be supplied on quantity orders, when specified. (See Power Element Style, Fig. 7.) Standard pressure controls are regularly supplied for non-corrosive refrigerants (fluorinated hydrocarbons). Available for ammonia service and industrial equipment oil service with 1/4 in. - 18 FNPT connector. (See Style 15, Fig. 7.)

Automatic Recycling

Available with automatic recycle for electric interlock circuits, specify P29 with automatic recycle when ordering.

Shutdown Alarm Circuit

When specified, Shutdown Alarm Circuit is supplied at extra cost.

Time Delay Heater Circuit

Standard controls are supplied with 120/240 volt time delay heater circuit. Time delay heater circuits for operation on 12 volts AC/DC, 24 volts AC/DC are available at extra cost.
c. Type of time delay.
1) Manual reset
2) Automatic recycle
d. Timing in seconds (10, 30, 45, 60, 90 or 120). 
**Note:** 10 second timing for automatic recycle only.
e. Time delay heater circuit voltage.
1) 120/240 VAC
2) 12 VAC or DC
3) 24 VAC or DC
f. Special features.
1) Alarm circuit
2) Part Number 271-51 mounting bracket, if required.
Performance specifications appearing herein are nominal and are subject to accepted manufacturing tolerances and application variables.

UL Guide No. SDFY
File SA516

CSA Class No. 1222 01
File LR948
Notes