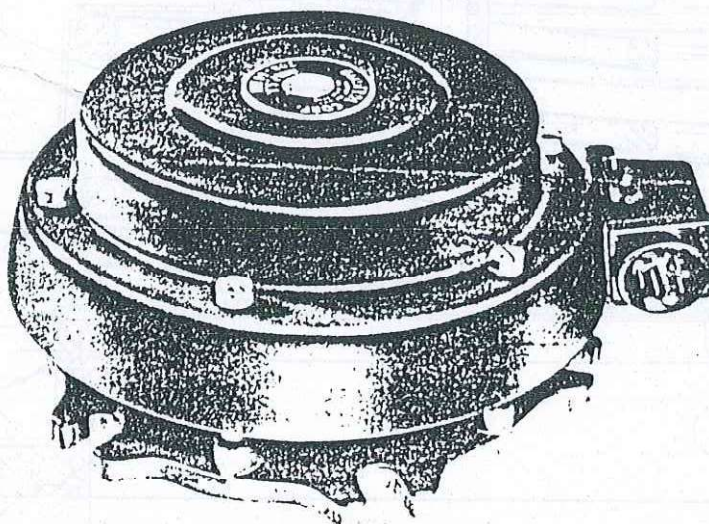




Series 208-60 Pressure Relief Device



APPLICATION

QualiTROL pressure relief devices play a vital role in the protection of power transformer systems. Power transformers are filled with an insulating and cooling liquid. Should a fault or short circuit occur, the arc instantaneously vaporizes the liquid causing extremely rapid buildup of gaseous pressure. If this pressure is not relieved adequately within several thousandths of a second, the transformer tank will rupture spraying flaming oil over a wide area. The damage and fire hazard possibilities of this consequence are obvious, and it is imperative that measures be taken to prevent them.

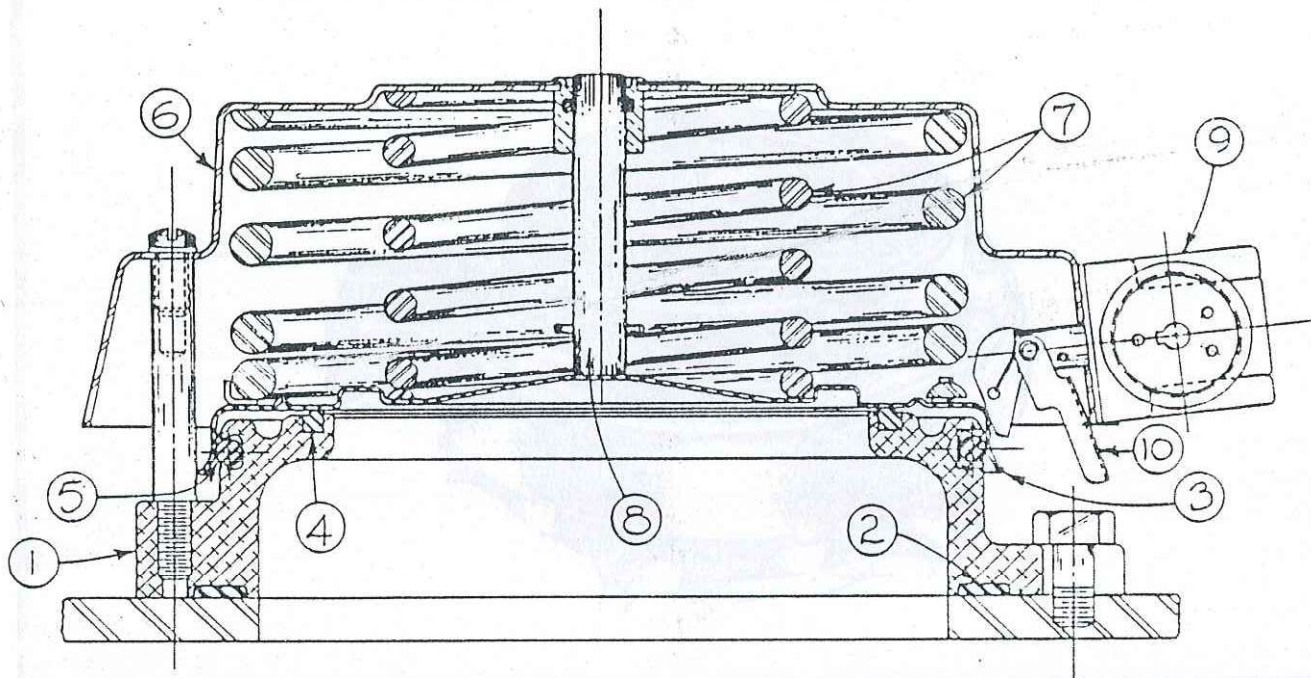
Some installations employ conventional slow-acting pressure relief devices as the means to prevent the disastrous effects of a fault or short circuit; but it is most important to note that these conventional devices do not respond quickly enough to relieve an instantaneous pressure buildup.

The design of the QualiTROL pressure relief device, however, is such that the sensing and relief of dangerous pressure increases are accomplished immediately. Full valve opening occurs within 2 milli-seconds.



Qual-TROL

C O R P O R A T I O N



DESIGN AND OPERATION:

The pressure relief device is essentially a spring-loaded valve having a unique means of providing instantaneous amplification of actuation force. In the above cutaway drawing, the unit is shown mounted on the transformer by lugs on flange (1) and sealed by mounting gasket (2). Valve disk (3) is spring-loaded and sealed against gasket rings (4) and (5) by springs (7). Valve operation is effected when the pressure acting against the area defined by gasket ring (4) exceeds the opening pressure established by springs (7). As disk (3) moves upwards slightly from gasket ring (4), the transformer pressure then quickly becomes exposed to the disk area of the diameter of gasket ring (5), resulting in a greatly increased force, and causing immediate full opening of the valve corresponding to the closed height of the springs (7). The transformer pressure is rapidly reduced to normal values and springs (7) return valve disk (3) to the closed position. A minute bleed port to outside from the volume entrapped between gasket ring (4) and gasket

ring (5) prevents inadvertent valve operation in the event that foreign particles on gasket ring (4) present an imperfect ring-to-disk seal.

A bright color-coded mechanical indicator pin (8) in cover (6), although not fastened to valve disk (3) moves with it during operation and is held in the valve-open position by an O-ring in the pin bushing. This pin is clearly visible from a great distance, indicating that the unit has functioned. Pin (8) may be reset by manually pushing it downward until it rests on valve disk (3). A long-armed semaphore, not shown on the cutaway drawing, can also be supplied for visual indication from even greater distances that the unit has functioned.

The relief device can be provided with a sealed, weather-proof alarm switch assembly (9) mounted on the cover. The switch assembly includes a single-pole, double-throw switch having a 3 conductor cable for connection to a remote alarm or signal device. Actuated by movement of valve disk (3), the switch is manually reset by arm (10).

INSTALLATION ADVICE:

Typical Installations: QualiROL pressure relief devices are used in a wide variety of transformer systems, including:

1. Network (up to 500KVA and higher in certain application)
2. Large distribution and small power (up to 2500KVA)
3. Medium power (2500KVA to 10,000KVA)
4. Large power (10,000KVA and above)
5. LTC (load tap changer)
6. Mobile systems
7. Electric railway locomotives

NUMBER PER INSTALLATION: While no precise formula applies in the determination of the number of pressure relief devices that should be used per installation, it is usual to apply the following general rule: Use one (1) pressure relief device for each 10,000 gallons of cooling liquid capacity or fraction thereof. Some regulations specify the use of pressure relief devices on transformers rated at 5000KVA or higher, but QualiROL pressure relief devices are in use on transformers rated as low as 300KVA. In the higher ratings, multiple devices are used.

MOUNTING: QualiROL pressure relief devices are usually mounted in the horizontal position, top side up. Although the horizontal position is recommended, the device may be mounted on its side (vertical plane), or with top side down. Care should be taken that the device is not exposed to an excessive head of oil. In addition, provision should be made for proper clearance of the operation indicator.

RELIEF PRESSURE SETTINGS: The normal operating pressure for most installation is 10 ± 1 psi. QualiROL pressure relief devices are also supplied with nominal pressure settings of 4, 5, 8, 10 and 12 psi. Any other practical setting may be supplied.

TRANSFORMER LIQUID COMPATABILITY: Two types of gasket rings are available: Nitrile gaskets for use with standard "transformer oil", and Silicone gaskets for use with "Askarel", "Pyranol", "Inerteen" and "Chlorextol". Mounting flange gaskets are supplied by the transformer manufacturer.

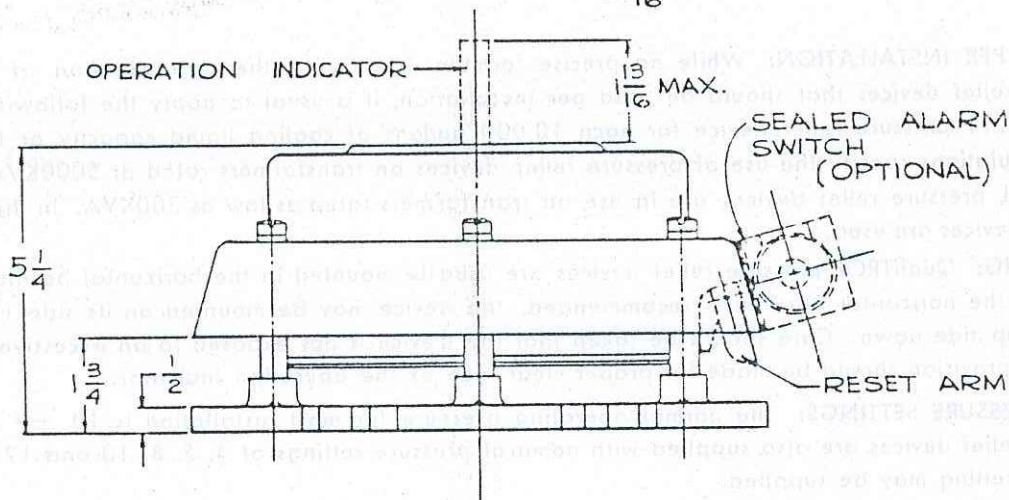
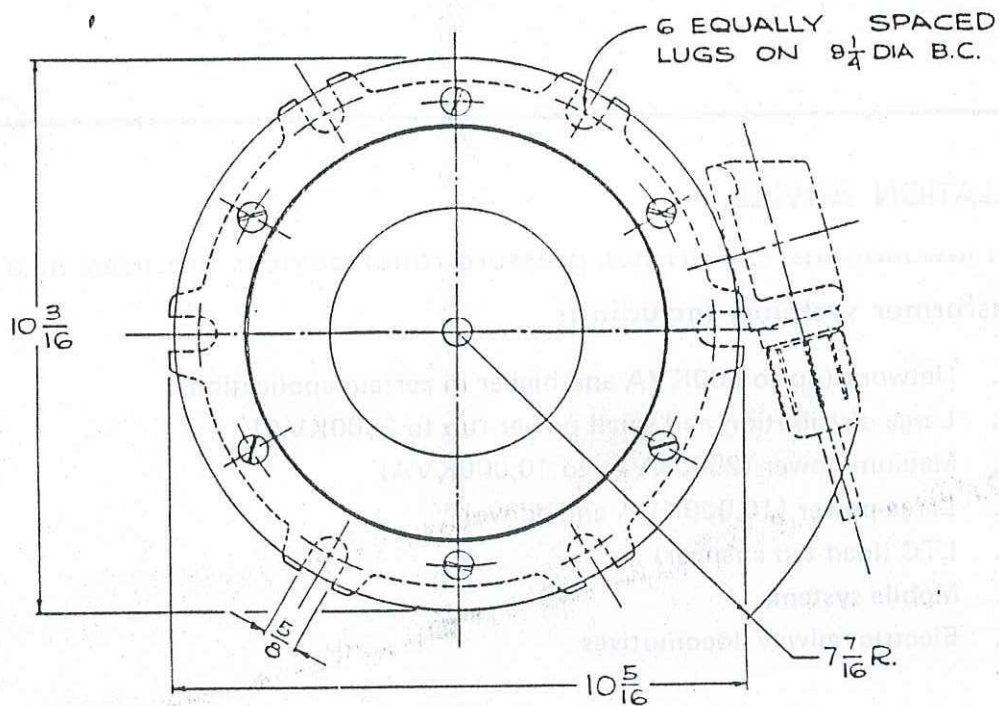
OPERATION INDICATORS: As previously described, three types of operation indicators can be supplied:

1. As a standard, a color coded plastic pin located in the center of the cover
2. As an option, a manually resettable switch for remote alarm or indication
3. As an additional option, a long-armed manually resettable semaphore

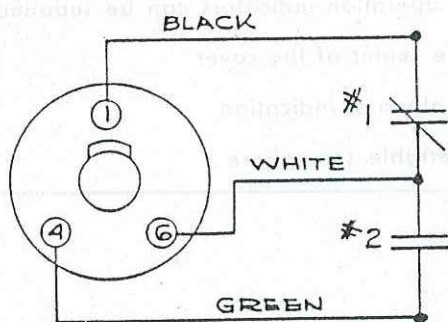
Ordering Information:

When ordering please specify:

1. Type of service (transformer oil or non-flammable liquid).
2. Pressure relief setting (4, 5, 8, 10, or 12 psi standard).
3. Alarm switch required?
4. Alarm switch cable length (4 feet standard).
5. Semaphore required?



ALARM OR SIGNAL SWITCH (OPTIONAL)



WIRING DIAGRAM

Type: Single-pole double-throw

- Operation:
- Contact #1 normally closed, #2 normally open
 - Contact #2 closes and #1 opens when valve operates
 - Manual reset from b to a

Rating:

- 15 amps @ 125, 250 and 480V AC
- $\frac{1}{2}$ amp. @ 125V DC, non-inductive
- $\frac{1}{4}$ amp. @ 250V DC, non-inductive

Sucesión Carlos Kaufmann

Antonio Miro Quesada 113

Ofic. 204

Teléfono 289271

Lima - Perú - Casilla 71



C O R P O R A T I O N

1385 FAIRPORT ROAD • FAIRPORT, NEW YORK 14450 • Telephone (716) 586-1515