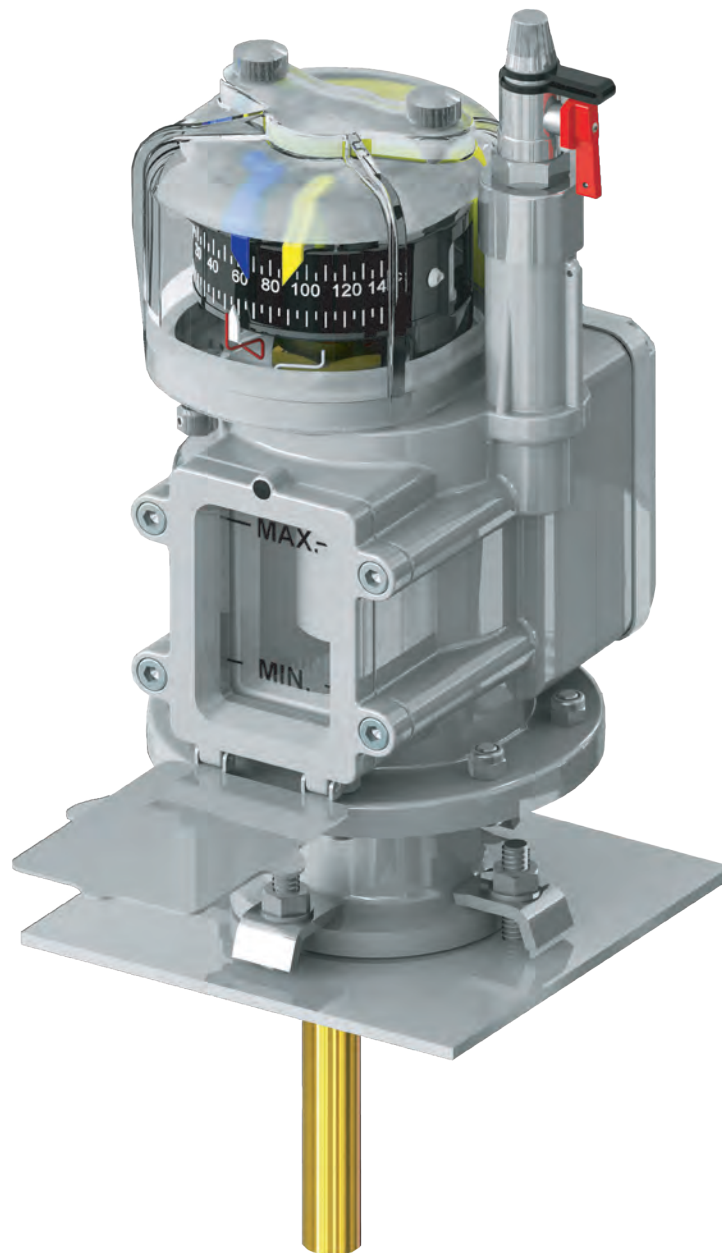


The H-J Family of Companies

Transformer Protection Relay HJTPR-500

Protects Hermetically Sealed, Oil Filled Distribution Transformers and Reactors in Accordance with EN 50216-3



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Transformer Protection Relay HJTPR-500

Introduction

In hermetically sealed oil filled distribution transformers and reactors the oil does not come in contact with the air, therefore, its properties are less compromised, which guarantees a longer service life. During service, the most critical variables to monitor a transformer/reactor type are oil temperature, oil level, gas accumulation and internal pressure.

Our Transformer Protection Relay offers 4 functions in 1 compact and reliable device that becomes an excellent cost/benefit solution for hermetically sealed oil filled distribution transformers and reactors.

The Transformer Protection Relay is capable of measuring oil temperature, indicating oil level and gas accumulation, and detecting the internal pressure when exceeding a set limit.

The Transformer Protection Relay includes:

- Thermometer with contacts for temperature monitoring.
- A sight glass for oil level and gas accumulation indication with a rohacell float that operates an alarm for minimum oil level and/or a maximum gas collection.
- A pressure switch that can be adjustable from 10 - 50 kPa.
- A 1/8" ball valve for oil/gas sampling or air venting.

The Transformer Protection Relay is installed in the cover of the transformer/reactor.

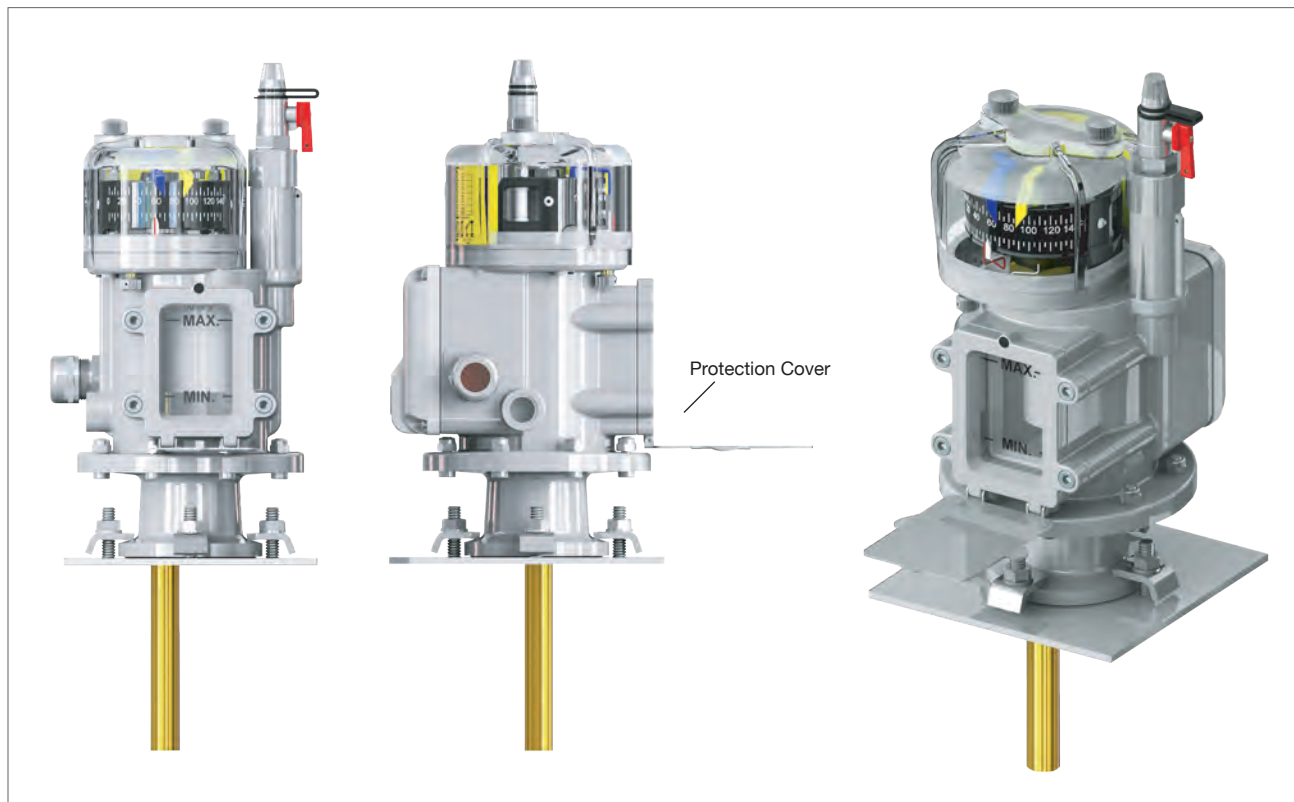
Benefits at a glance

- » 4 functions in 1 compact and reliable device
- » Reed switch for gas formation and oil level detection
- » Adjustable pressure switch
- » Bimetal thermometer for temperature measurement
- » Two adjustable temperature limit switches for temperature alarm and tripping
- » UV-resistant C4 powder-coating (C5-Marine available upon request)
- » Independant compartments for oil/gas operation and alarm and triggering contacts.

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Transformer Protection Relay HJTPR-500

Overview



Features

Oil Temperature

- Measures the internal transformer oil temperature
- Bimetal thermometer for temperature measurement
- Oil temperature scale 0°C - 140°C
- Two adjustable changeover contacts from 20°C (min.) to 120°C (max.) \pm 2°C for temperature alarm and tripping
- Resettable max. temperature indicator

Gas Formation

- Visually indicates gas accumulation
- Gas activated reed switch that triggers at a volume of 170cm³

Oil Level

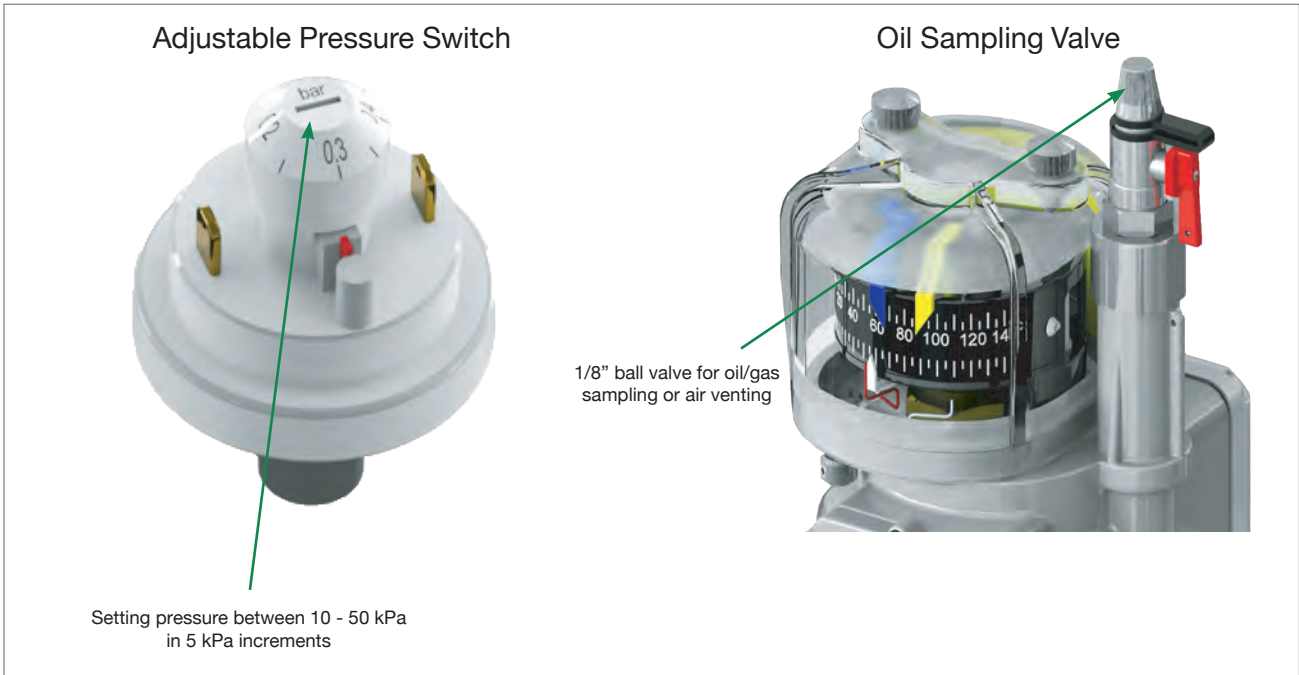
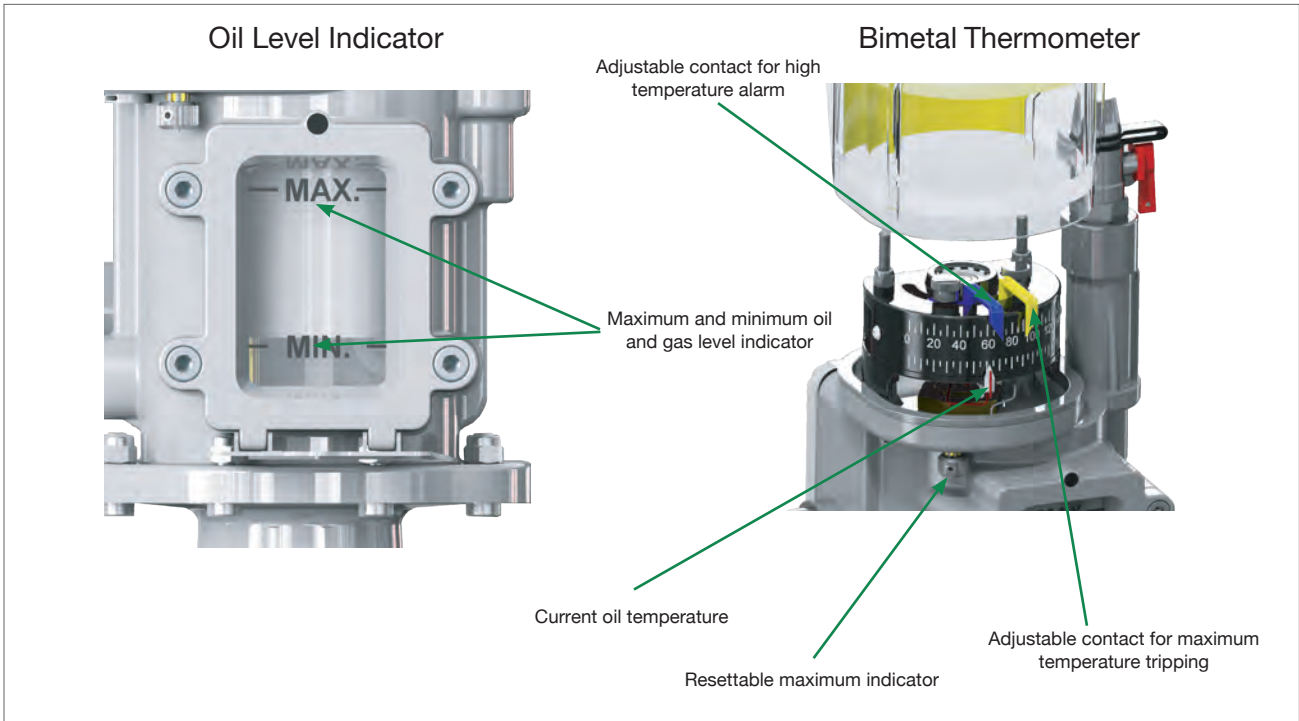
- Visually indicates oil level variation
- Reed switch for minimum oil level detection

Pressure

- An alarm/trip contact operates at a set limit of internal pressure.
- Adjustable setting from 10 - 50 kPa (5 kPa increments)

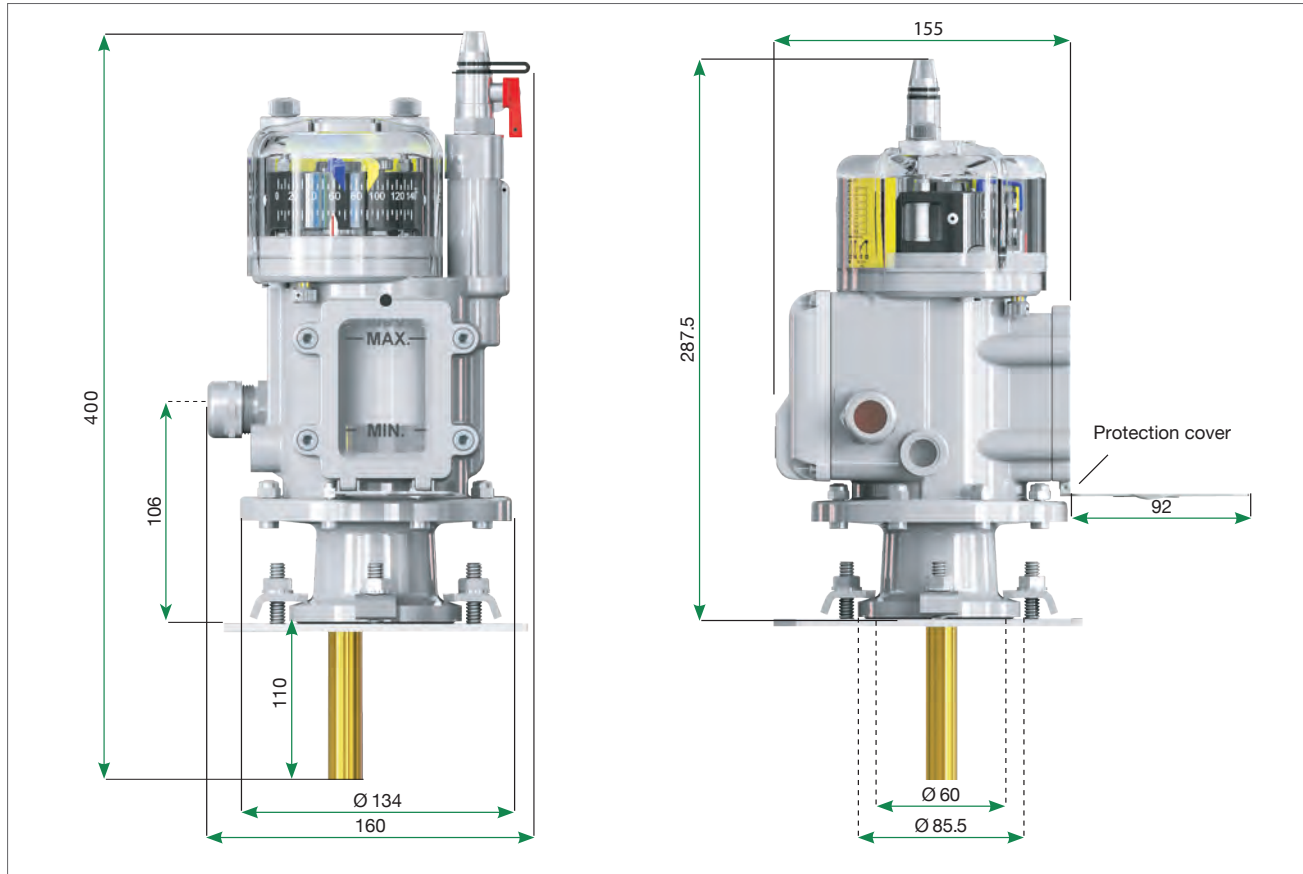
Transformer Protection Relay HJTPR-500

Functions in Detail



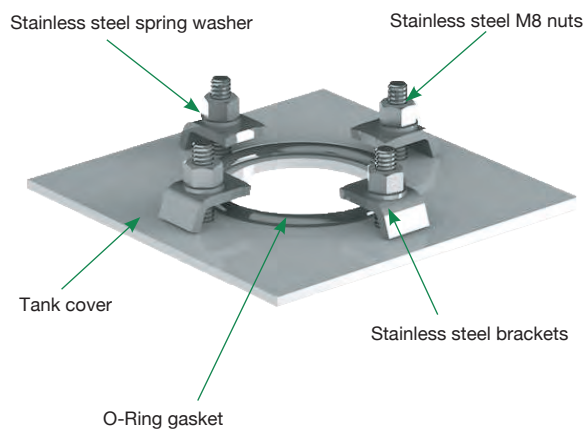
Transformer Protection Relay HJTPR-500

Dimensions



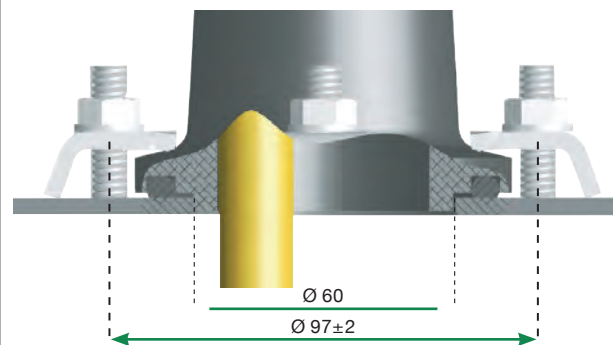
Dimensions in millimeters [mm]

Mounting Hardware



Mounting hardware provided does not include bolts

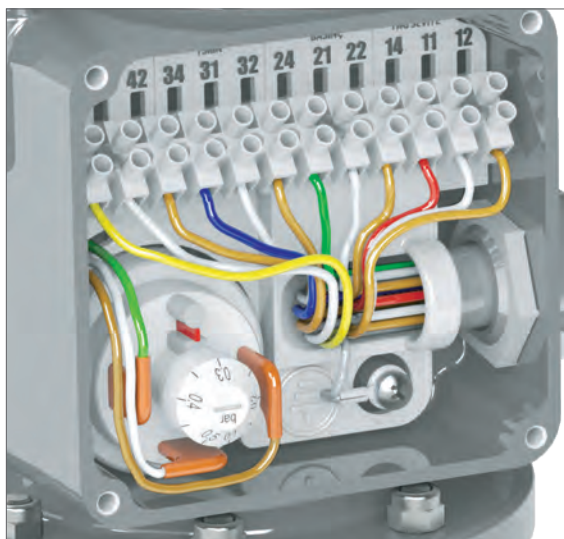
Flange Mounting Dimensions



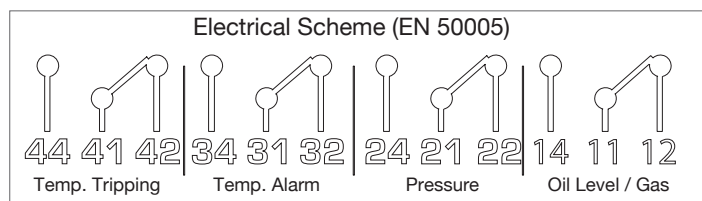
Transformer Protection Relay HJTPR-500

Technical Specifications

Functionality	Oil Temperature Indicator	Temperature scale range: 0°C - 140°C
		Adjustable changeover contacts: 20°C (min.) - 120°C (max.) ± 2°C
		Resettable max. temperature indicator
	Oil Level / Gas Accumulation Indicator	Rohacell float visual indication with minimum/maximum limits
		Reed switch operates at a minimum oil level and/or 170 cm ³ gas accumulation
Pressure Detection		Max. 50 kPa
		Adjustable 10 - 50 kPa (5 kPa increments)
		Viton membrane
General Features	Degree of Protection	IP65 (EN 60529)
	Shock Resistance	IK 07 (EN 50102)
	Cable Gland	M25 x 1.5
	Wire Section	1.5 - 2.5 mm ²
	Minimum Load	3 W; 125 mA / 24 V DC
	Contact Rating max.	100 W / VA
	Operation Time	< 0.5 s
	Sight Glass Dome	UV resistant Lexan
	Operating Temperature	-30°C - +120°C
	Corrosion Resistance	UV-resistant C4 powder-coating (C5-Marine available upon request)
	UV Resistance	DIN EN 75220, Z-Out / 25 days
	Fluid Resistance	Mineral Oil / synthetic and organic esters



Switching Capacity		
Temperature	Current max. 24 V DC	4 A
	Current max. 240 V AC	3 A
Pressure	Current max. 24 V DC	2 A
	Current max. 240 V AC	6 A
Oil Level / Gas Accumulation	Current max. 24 V DC	3 A
	Current max. 240 V AC	0.4 A



Transformer Protection Relay HJTPR-500

Routine Tests

Tests	Conditions
Oil Leakage Test	100 kPa pressure at 90°C oil temperature for 12 hours
Operation Test	All functions are checked in an operation simulation
Type Tests	Determination of the volume of gas or liquid sufficient to operate the contact at ambient temperature
	Operation of the relay installed 5° from the vertical axis
	Pressure test at 250 kPa for 2 min with oil temperature at 115°C
	Contacts' Magnetic Field rigidity test < 25 mT

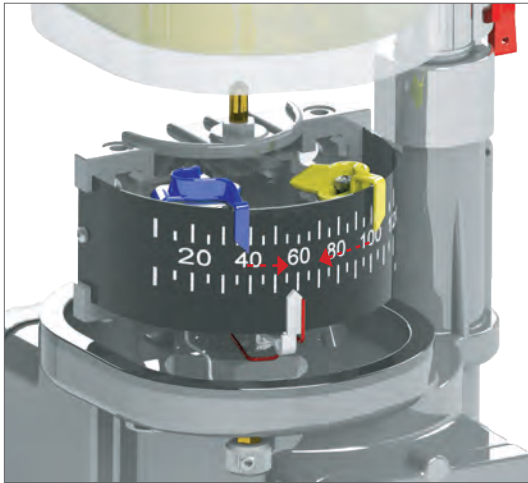
Routine testing is performed in accordance with EN 60076-1

In addition to tests specified in EN 502106-1, above mentioned type tests are performed before delivery

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Switches Operation Test

Note: Before the switches operation test, make sure the transformer is de-energized and the wiring is properly connected. Slightly loosen knurled nuts of the limit switches.

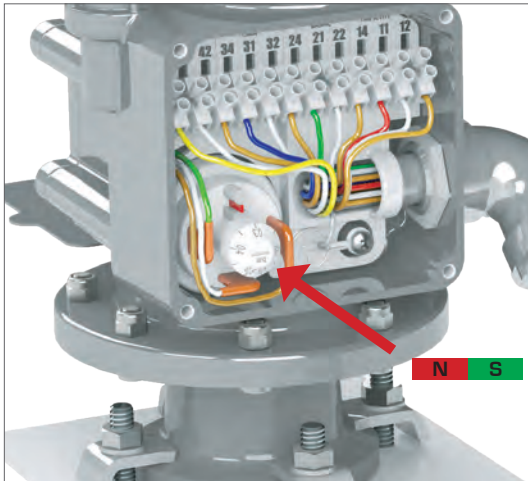


Temperature Switches Test

Procedure:

- Remove the thermometer's cover
- Slide the limit switches to the target alarm and trip high temperature settings.
- The respective changeover contact is mechanically audible when switched

Note: Do not move the oil temperature indicator (white needle) into the direction of the limit switches.



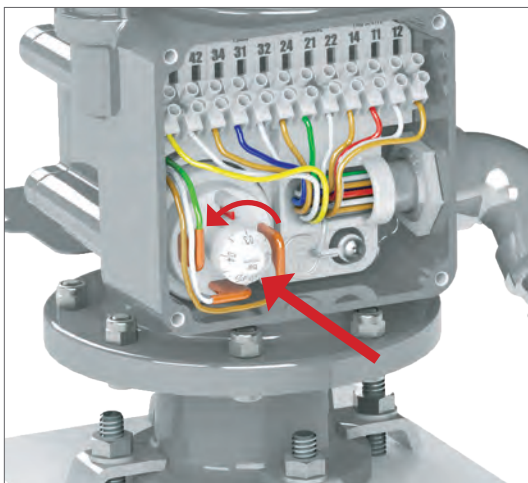
Oil Level/Gas Accumulation's Reed Switch Test

Procedure:

- Remove the terminal box's cover
- Move a rod magnet* towards the ground symbol
- The reed changeover contact magnetically switches
- When the rod magnet* is moved away from the device, the changeover contact switches back to its initial position
- Alternatively, apply pressure to the device through the opened 1/8" ball valve until the oil level drops

Note: Remove the ball valve's seal only after transformer's manufacturer approval.

**magnet not included*



Pressure Switch Test

Procedure:

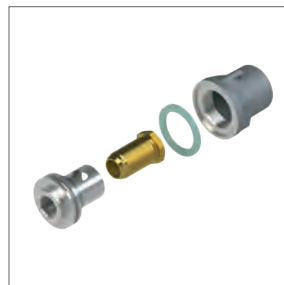
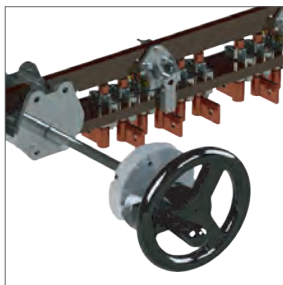
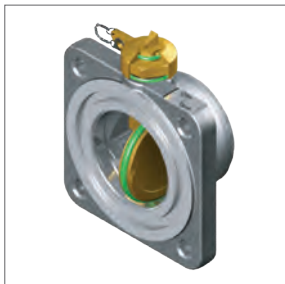
- Remove the terminal box's cover
- Set the value to 10 kPa (minimum pressure value)
- Connect an air pump to the opened 1/8" ball valve and apply pressure >10 kPa to the device until the contact switches

Note: Remove the ball valve's seal only after transformer's manufacturer approval.

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Transformer Components

- Buchholz Relay
- Pressure Relief Device
- Transformer Protection Relay
- Oil Level Indicator
- Bimetal Thermometer
- Dehydrating Breather
- Linear Tap Changer
- Radiator Valve
- Other Tank Components





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