# Oil Level Regulator TK3<sup>+</sup>@46bar (26 bar M.O.P.D.)– 24Vac Connectors Version



KI AB

#### **Main Features**

- **High reliability**ensured by absence of mechanical moving parts.
- Sight glass and electronic LEDs can be checked on the same side where is more comfortable to do inspections.
- Well consolidated steel with fused glass technology and the absence of seals ensures no leakage and good chemical compatibility.
- Direct mounting onto 3/4/6 bolts compressors
- Left/Right mounting possibilities with the same TK3<sup>+</sup>.
- Easy maintenanceof the coil of the valve and of the Electro-Opticsensorthat can be easily replaced without emptying or depressurizing the plant.
- No need to use external pressure reduction devices
- Maximumcompatibility with particular mediadue to the possibility of mounting of different/custom valves
- 230 VAC /2A alarm relay output suitable for **direct connection in the security chain** of the system
- Adapters suitable for various types of compressors
- Unit conform to directives: \*2004-108-CE
- \*CEI EN 60204-1:2006

## **Application Description**

The TK3<sup>+</sup> is designed to control the oil level in the compressor crankcase in order to avoid the compressor to run without oil and so improve its lifetime.TK3<sup>+</sup> monitors the oil level with the embedded electro-optic sensor and comprises a solenoid value for oil filling and a relay output contact to give an alarm or directly stop the compressor (through a separate power relay).

The output contact (normally open) is closed when the oil level is enough and open if after a determined number of filling cycles the oil level is not restored. Alarm state is represented by the red LED.

The LEDs on the Electronic box give immediately info on the status of the system and act as follows: Power Light (green colour): always on when power is applied.

Oil Good (green colour): steady on while oil level is good, blinking for a first period of oil missing (even due to turbulence, undulations, etc.) before start filling and is off when filling.

Oil Filling (yellow colour): Off while oil level is good, steady on while injecting oil, blinking while (after filling)  $TK3^+$  check if the oil level is restored.

Alarm (red colour): Off while oil level is enough, steady on if after a determined number of filling cycles the oil level is not restored.

Filling cycles continue also in alarm condition and in each phase if the correct oil level is restored the oil feeding is stopped and the alarm is deactivated (auto restore from alarm).

In standard model the functioning sequence is the following:

- 10 sec of continuative absence of oil before starting the filling phase
- 6 sec of oil injection for the first cycle up to a maximum of 32 sec
- Variable timing from 25 sec to 50 sec of oil monitoring after each injection, before filling again or returning to normal condition
- 7,5 minutes before giving alarm in case of oil lack.

Functioning and alarm delay times can be customized in order tofollow customer needing.

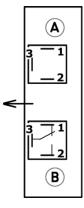




## **Technical Data**

Supply voltage	24Vac ± 10% @50 Hz
Supply Current	Each TK3 <sup>+</sup> require 20VA.
Electrical connection	9.4mm Industry Standard Connectors / EN175301-803 – B Ind. connector
Output signal	Contact free relay output NO and NC
	Up to 230VAC @2A
Relay output	The Normally Open (NO) alarm contact (blue wire) is closed when power
	is applied to the TK3 $^{+}$
Housing material	Nickel plated steel
Enclosure protection class	IP 65
Media Temperature	-40°C ÷+85°C
Ambient temperature	-40°C ÷+60°C
Max working pressure	46bar (higher values upon request)
MOPD	26 bar (higher values upon request)
Oil Return Line	7/16 – 20 UNEF male
CableType	PVC cable CEI 20-22. Working temp.: -20 ÷ +70 °C (fixed laying)

## **Electrical Connections**



Electronic Sensor Connections (Industry Std. 9.4mm). Top View. The arrow indicates the glass side Connector A – Power Supply (cable with 3 wires and valve derivation) 2. Brown (BN): 24VAC / LINE 3. Blue (BU): 24VAC / NEUTRAL Connector B – Relay (cable with 3 wires)

Valve Connection EN 175301-803 size BIND.



The coil is connected between pins 1 and 2 and it is directly driven by the electronics of the  $TK3^{+}$ .

#### **Installation notes**

- Only qualified personnel should carry out installation/maintenance
- Protect hands and face from contacting the oil, which may contain harmful acid.
- Depressurize the system before attempting any work

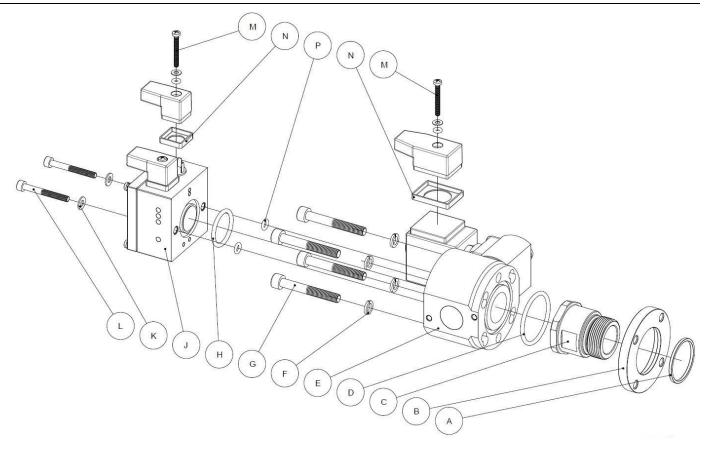
1. Brown(BN): close in alarm 2. Blue (BU): open in alarm

3. Black (BK): common

- Switch off power supply and isolate compressor
- If fitting to an existing installation, drain the compressor crankcase to just under the oil level sight glass.
- Mount the TK3<sup>+</sup> body on the compressor (see below).
- The correct oil level in the compressor crankcase must be reached before restarting the system.



## **Installation instructions**

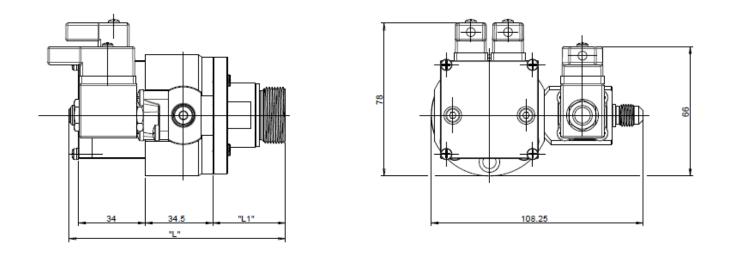


- Ensure that both the glass surfaces of the Electronic Module and of the TK3<sup>+</sup> for the electronicsare dry and clean.
- Mount the TK3<sup>+</sup> body on the compressor with supplied bolts and washers using propero-ring for the flange.
- Mount the electro-optic sensor on the TK3<sup>+</sup> body using the supplied bolts and plastic washers ando-ring for the electronics. NOTE. Do not apply too much strength during the screwing of the electronic module to avoid damages to the sealings of the electronic module and/or to the electrical module itself.
- Plug the Valve connector to the coil of the valve using supplied gasket and screw.
- Plug the Alarm and the Power connectors to the electro-optic sensor using supplied gaskets and screws.

NOTE. If the  $TK3^+$  need an adapter to be mounted onto the compressor, first mount the adapter onto the compressor then assemble the  $TK3^+$  with the adapter. In this case for the sealing between the regulator and the adapter, do not use the o-ring to be positioned on the flange's groove but only the o-ring intended for the adapter's groove.



## **Mechanical Dimensions**



Note. - Quotes in mm -. L and L1 can vary depending on the adapter (see TK3<sup>+</sup> Adapter Addendum)

## Ordering Code Examples with mentioned timings (Other possibilities and timings available on request)

	24Vac Connectors version + 3 m cables
TK3 <sup>+</sup> Oil Level regulator (no oil filter element included)	TK3P-A50AC13-01
TK3 <sup>+</sup> Oil Level regulator (oil filter element included)	TK3P-A20AC13-01
1" 1/8 – 18 UNEF Adapter	TKX-A001
¾" NPT Adapter	ТКХ-А002
3/4/6 bolts flange Adapter	ТКХ-А003

# Recommendations

Teklabrecommendsthe use of a10-micron filter in theoil linein order to protectthe sensorfrom contamination. It is recommended to check and keep cleansensitive surfacesduring major servicing. Teklab is not to beheld responsible or any erroronany information present in this document. The products, specifications and datareported herecan be changed without the need to give any notice. The information contained in this document are based on datacollected by Teklab that are considered valid and which are aligned with the technical knowledge of today. Use of this document and related products is intended only topersons having thenecessary skills and knowledge at their own risk and discretion. Since conditions of use areoutside the control of Teklab, we cannot any any liability for any damage caused by the use of our equipment. This document replaces all earlier versions.

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