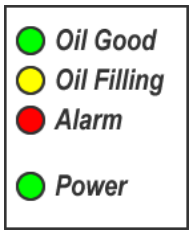
# Oil Level Regulator with increased oil mass flow TK3@100bar – 230Vac –Connectors Version


## 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+.**
- **Easy maintenanceof the coil** of the valve **and of the Electro-Opticsensor**that can be easily replaced **without emptying or depressurizing the plant.**
- **No need to use external pressure reduction devices**
- **Maximumcompatibility with particular media**due 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**:
  *2014/30/UE * 2014/35/UE

## Application Description

The TK3+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+ monitors the oil level with the embedded electro-optic sensor and comprises a solenoid valve 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).

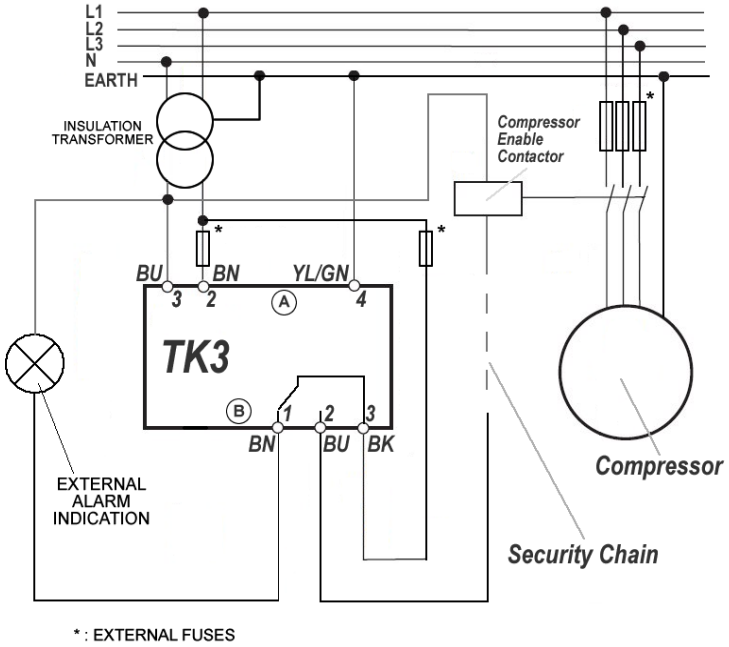
In this model (where the MOPD in std. working conditions is expected to be considerably less than the maximum specified), the functioning sequence is the following:
- 10 sec of continuative absence of oil before starting the filling phase
- 2 sec of oil injection for the first cycle up to a maximum of 18 sec
- Variable length of oil monitoring delay (after each oil injection) before filling again or returning to normal condition
- 7 minutes before giving alarm in case of oil lack.

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

## Technical Data

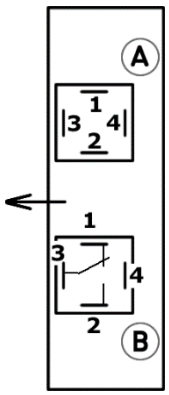
| | |
|---|---|
| **Supply voltage** | 230Vac ± 10% @50 Hz |
| **Supply Current** | Each TK3+ require 50VA. |
| **Electrical connection** | 9.4mm Industry Standard Connectors / EN175301-803A connector |
| **Output signal** | Contact free relay output NO and NC<br>Up to 230VAC @2A |
| **Relay output** | Minimum switching load: 500 mW (10V / 5mA)<br>The Normally Open (NO) alarm contact is closed when power is applied to the TK3+ |
| **Housing material** | Nickel plated steel for regulator body<br>PA glass fibre reinforced for electronics |
| **Enclosure protection class** | IP 65 |
| **Media Temperature** | -40°C ÷+85°C |
| **Ambient temperature** | -40°C ÷+60°C |
| **Max working pressure** | 100bar |
| **MOPD** | 25 bar |
| **Oil Return Line** | 7/16 – 20 UNEF male |
| **CableType** | PVC cable CEI 20-22. Working temp.: -20 ÷ +70 °C (fixed laying) |

## Electrical Connections




Wiring Example.
To obtain a better immunity against noise eventually present on power wires it is recommended to use an insulation transformer to power the TK3+

***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):LINE
3. Blue (BU): NEUTRAL
4. Yellow/Green (YL/GN): EARTH

**Connector B – Relay**
**(cable with 3 wires)**
1. Brown(BN): close in alarm
2. Blue (BU):open in alarm
3. Black (BK): common

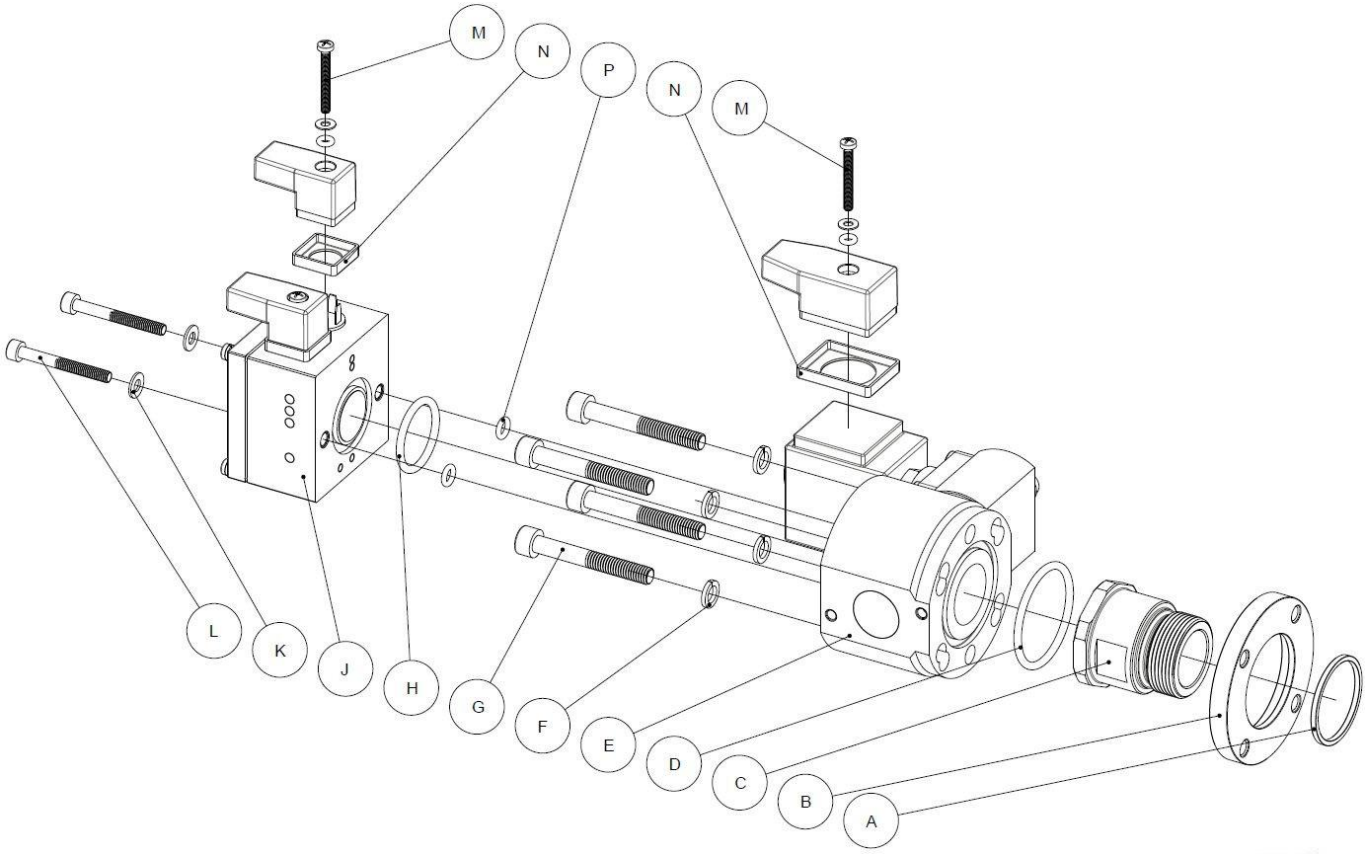
***Valve Connection EN 175301-803 (EX DIN 43650 size A)***


***The coil is connected between pins 1 and 2 and in the supplied harness is properly wired to the A connector of the Electronic Sensor.***

## 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
- 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+ body on the compressor (see below).
- The correct oil level in the compressor crankcase must be reached before restarting the system.

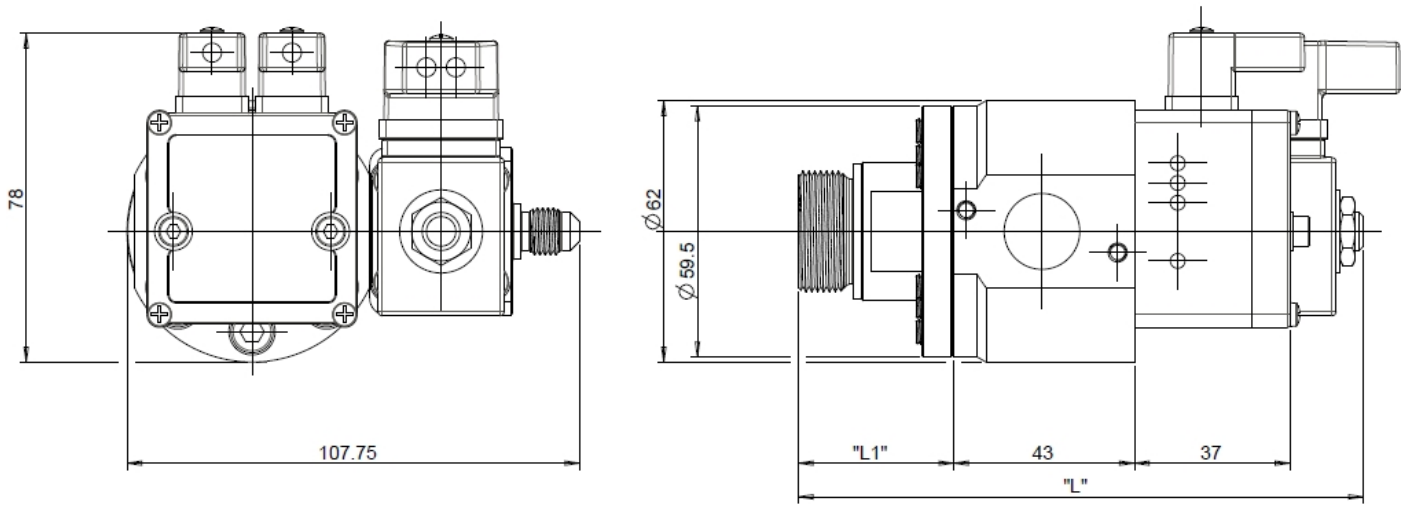
## Installation instructions




- Ensure that both the glass surfaces of the Electronic Module and of the TK3+ for the electronicsare dry and clean.
- Mount the TK3+ body on the compressor with supplied bolts and washers using propero-ring for the flange.
- Mount the electro-optic sensor on the TK3+ 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+ Adapter Addendum)

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

| | 230Vac Connectors version + 6 m cables |
|---|---|
| TK3+ Oil Level regulator | TK3P-E60BC16-05 |
| 1” 1/8 – 18 UNEF Adapter | TKX-A001 |
| ¾” NPT Adapter | TKX-A002 |
| 3/4/6 bolts flange Adapter | TKX-A003 |

## Recommendations

Teklabrecommendsthe use of a10-micron filter in theoil linein order to protectthe sensorfrom contamination.
It is recommendedto check and keep cleansensitive surfacesduring major servicing.
The selection of the orifice of the solenoid valve and of the functioning and alarm timingshas to be carried out considering all possible working conditions of the regulator in the system such as the type of compressor, the pressure differential across the valve (in the various application conditions), etc.
If the functional parameters are different from one installation to the other (also between compressors within the same compressor’s pack), make sure to use alwaysthe most appropriate product for the characteristics of the single installation. Please contact Teklab for more details about available products.
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This document replaces all earlier versions.

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