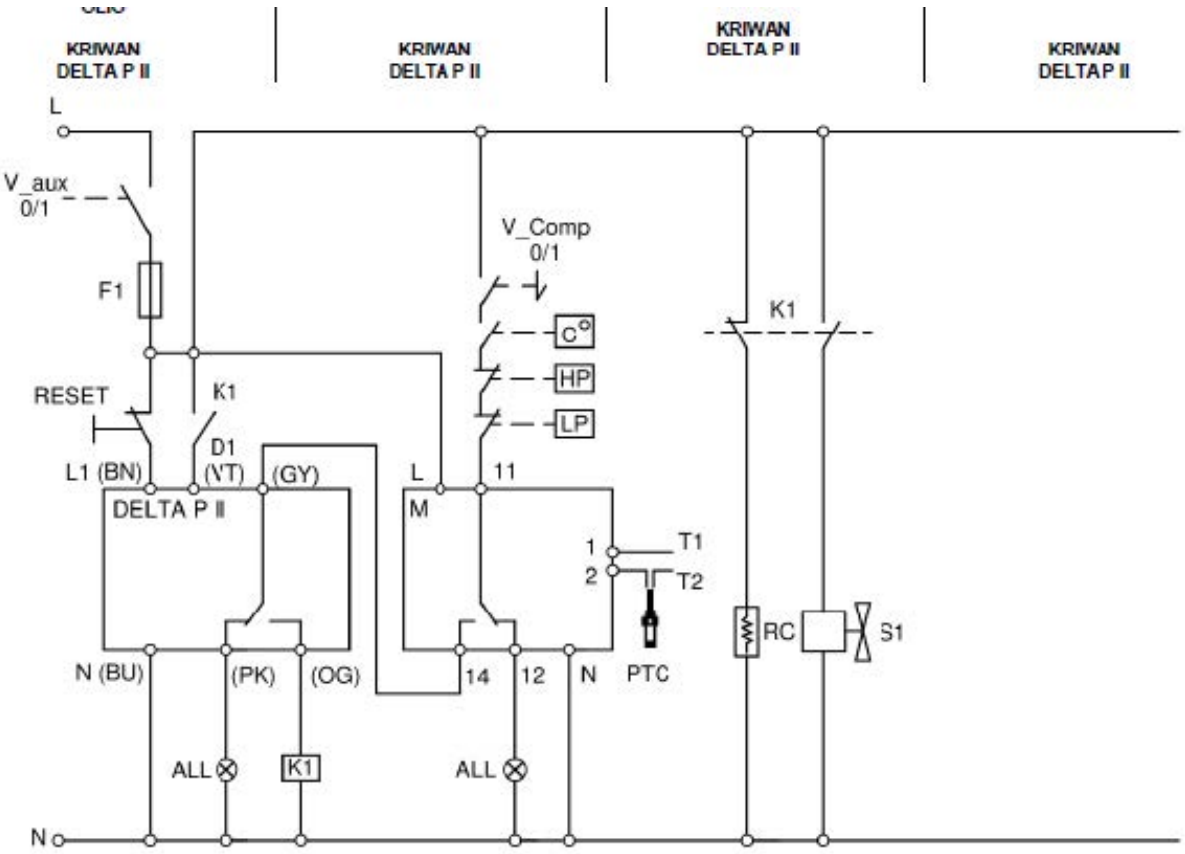
Series H5, H6, H7 with Oil Pressure Sensor and PTC130 Discharge Temp. Sensor

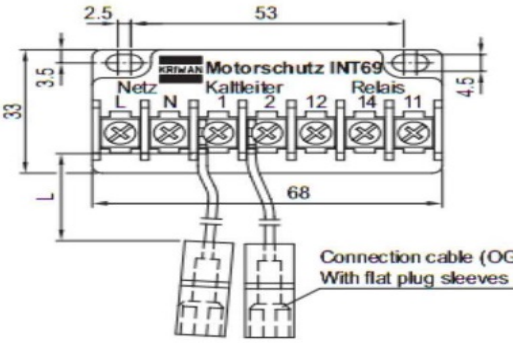


- Connect the PTC130 degree C Discharge Temperature Sensor in Series with INT69
- Connect the OPS (Delta P 2) should be connected in series with INT69 on the chain alarm of system

V aux – Auxiliaries energy supply
V Comp - Compressor energy supply
F1 – Fusible
K1 – Contactor
RC – Crankcase heater
S1 – Solenoid
M – Protection module
Delta P II (KRIWAN) – Differential Oil Pressure
RESET – DP II sensor manual reset
HP – High Pressure Switch
LP – Low Pressure Switch
PTC – Discharge temperature probe

1-2 /T1 – T2 – Thermistors (Compressor terminal plate)
BN: Brown
GY: Grey
VT: Violet
OR: Orange
PK: Pink
BU: Blue

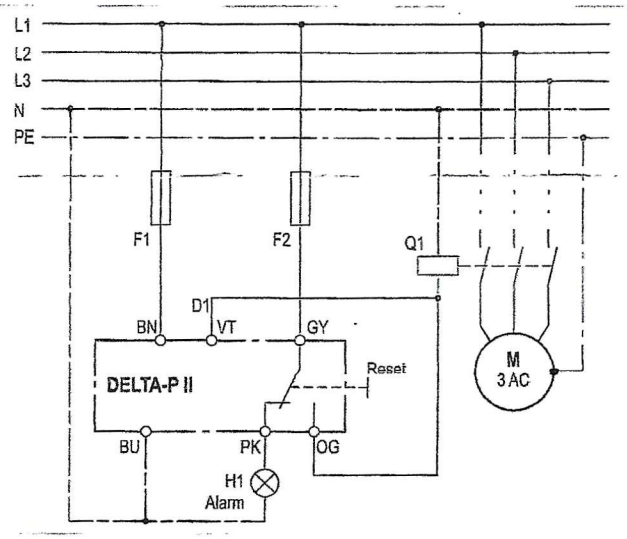
Topside Int69

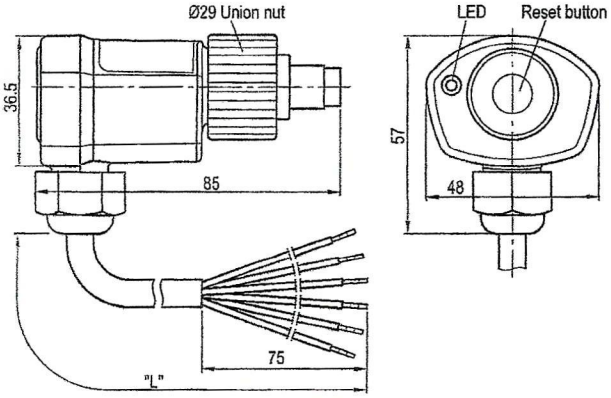


DELTA-P II® Electrical part

KRIWAN

DELTA-P II®





Application

Monitoring the lubrication system is especially important in refrigerant compressors.

KRIWAN's differential pressure monitoring is a very reliable method for piston compressors.

It consists of two parts; the DELTA-P II electrical part and a separately available screw-in part.

The electronic electrical part can be mounted or replaced without opening the refrigeration circuit.

Functional description

The difference between high pressure and suction pressure in the screw-in part influences a movable piston. Its position is registered without contact by the mounted DELTA-P II electrical part and evaluated.

After the compressor starts up and the starting transition time has elapsed, the differential pressure monitoring is active.

Fluctuations in the differential pressure are taken into account by an extension of the switch-off times (time integration). A missing differential pressure leads to a locked switch-off.

Restarting is only possible after a reset.

The potential-free contact can be looped into a safety circuit without a supplementary auxiliary relay.

The integrated installation check monitors the proper assembly.

A built-in LED signals the current status (see flash code).

●	Differential pressure good
●‿●	Differential pressure too low
● ● ● ● ● ●	Internal error, voltage supply too low or faulty assembly
	Operating recognition on but relay off

Installation instructions

1. Ensure cleanliness of the screw-in part.
2. Mount electrical part into the screw-in part. The cable outlet has to point downwards here.
3. Tighten the coupling ring hand tight.

⚠ The mounting, maintenance and operation are to be carried out by an electrician. The valid European and national standards for connecting electrical equipment have to be observed.

See back side for further specifications

DELTA-P II® Electrical part

KRIWAN

DELTA-P II®

Technical specifications

Supply voltage	AC 50/60Hz 115-230V -15...+10% 3VA
Permissible ambient temperature T_A	-30...+70°C (UL: +65°C)
Permitted rel. humidity	10-95% RH, without condensation
Input, operating recognition motor	L-potential at the D1 connection (see wiring diagram)
Starting transition	90s ±5s
Switch delay	
- After applying the supply voltage	3s ±1s
- Operating recognition active after	5s ±2s
- Error	5s ±2s
Resetting the lock	Power reset >5s or reset by button
Relay	
- Contact	AC 240V 2.5A C300 Min. AC/DC 24V 20mA
- Mechanical service life	Approx. 1 million switching cycles
Protection class acc. to EN 60529	IP54 in mounted condition
Connection type	Cable 6xAWG-18 L=1m
Housing material	PA glass-fibre-reinforced
Mounting	Union nut (torque max. 10Nm)
Dimensions	Refer to dimensions in mm
Weight	Approx. 200g
Check base	EN 61000-6-2, EN 61000-6-3 EN 61010-1 Overvoltage category II Pollution level 2
Approval	UL File No. E222056 $_{c}$UR$_{us}$

Order data

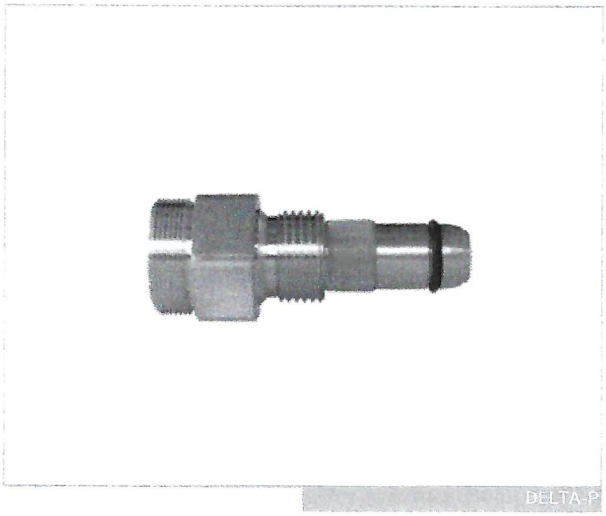
DELTA-P II Electrical part	**22 S 635**
Accessories and application information	see www.kriwan.com

Product group S

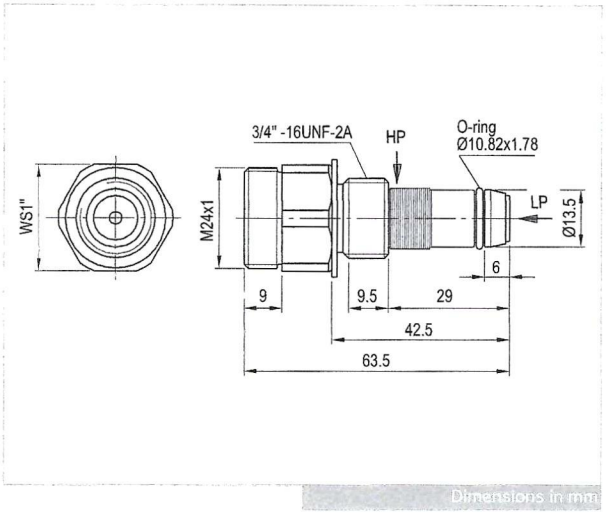
DELTA-P® Screw-in part

KRIWAN

DELTA-P®



DELTA-P



Dimensions in mm

Application

Monitoring the lubrication system is especially important in refrigerant compressors.

KRIWAN's differential pressure monitoring is a very reliable method for piston compressors.

It consists of two parts: the screw-in part and a separately available evaluation circuitry.

The DELTA-P screw-in part is screwed directly into the pump housing, and is connected via internal channels to the suction and high pressure of the oil pump. This eliminates external pipe lines and flare connections.

The screw-in part does not need to be disassembled when mounting or exchanging the evaluation circuitry. The refrigeration circuit remains closed.

Functional description

The difference between high pressure and suction pressure influences the position of a movable piston. This is registered by the mounted evaluation circuitry.

Installation instructions

Installation: The maximum torque of the screw-in part is 75Nm and needs to be ensured by a ring spanner or a socket key. After installation, check for leaks.

⚠ Installation, maintenance and operation must be carried out by a specialist. The valid European and national standards for connecting refrigeration plants must be observed.

Technical specifications

Media temperature	-30...+90°C
Permissible relative humidity	10-95% RH without condensation
Operating pressure	Max. 60bar
Test pressure	90bar
Burst pressure	Min. 300bar
Permissible media	Non-corrosive media which does not attack the material. A test is recommended for individual cases.
Housing material	Brass
Differential pressure	0.95bar
Washer	20x26mm Cu
Weight	Approx. 100g

Order data

DELTA-P Screw-in part	**02 D 444**
Accessories and application information	see www.kriwan.com

Product group D

Edition: 710.00471.1

Technical changes reserved

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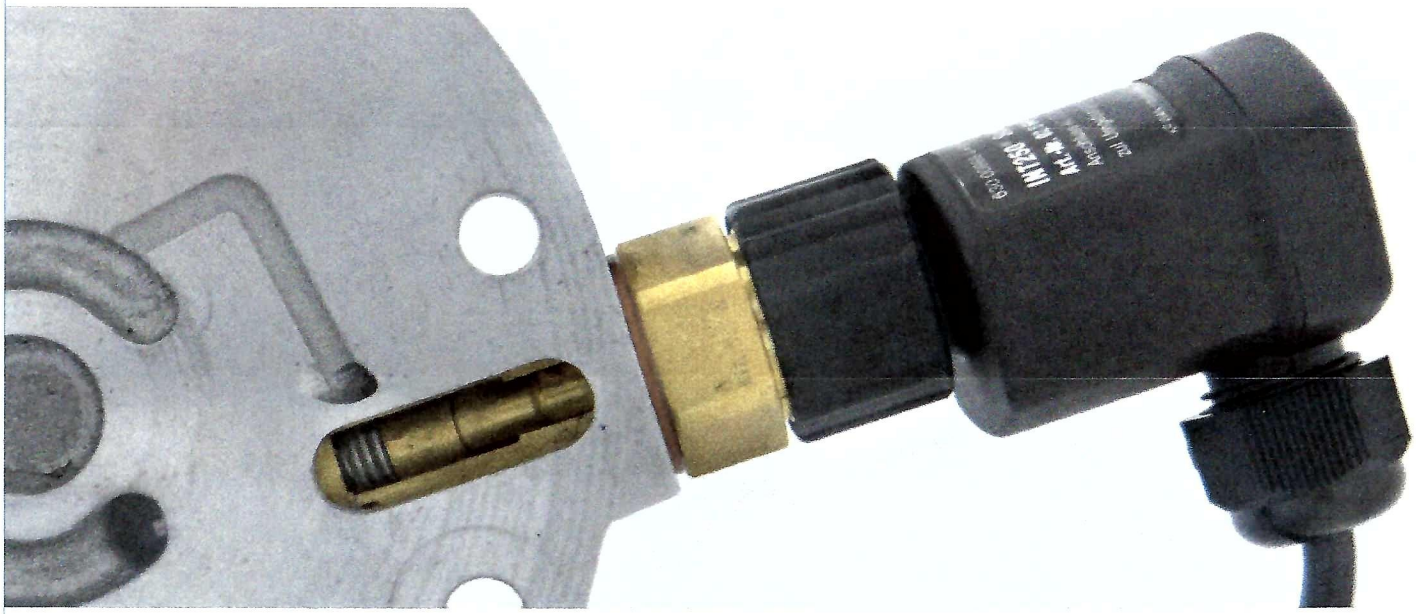
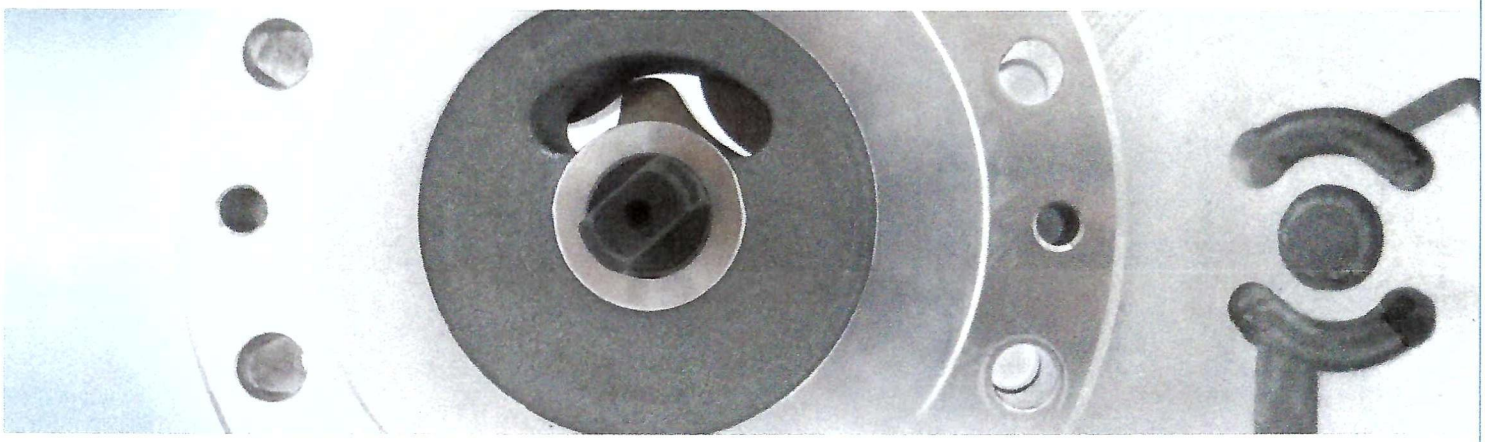
KRIWAN
Oil Differential Pressure Measurement



Protect your oil pump in semi-hermetic piston refrigerant compressors

KRIWAN

Protection



Scope of application

Semi-hermetic piston compressors are usually equipped with oil pumps to ensure reliable oil lubrication. In order to transport sufficient quantities of oil and to avoid damage to the compressor, these compressor types are generally equipped with oil differential pressure switches. If the quantity of oil is too low, the compressor is shut down by the safety chain after a certain delay.

KRIWAN has developed a product family of evaluation units and screw-in parts that are outstanding due to their reliable oil differential pressure monitoring and easy handling. Thus, no additional capillary tubes are necessary.

Product family

Delta-P II
OPS 2

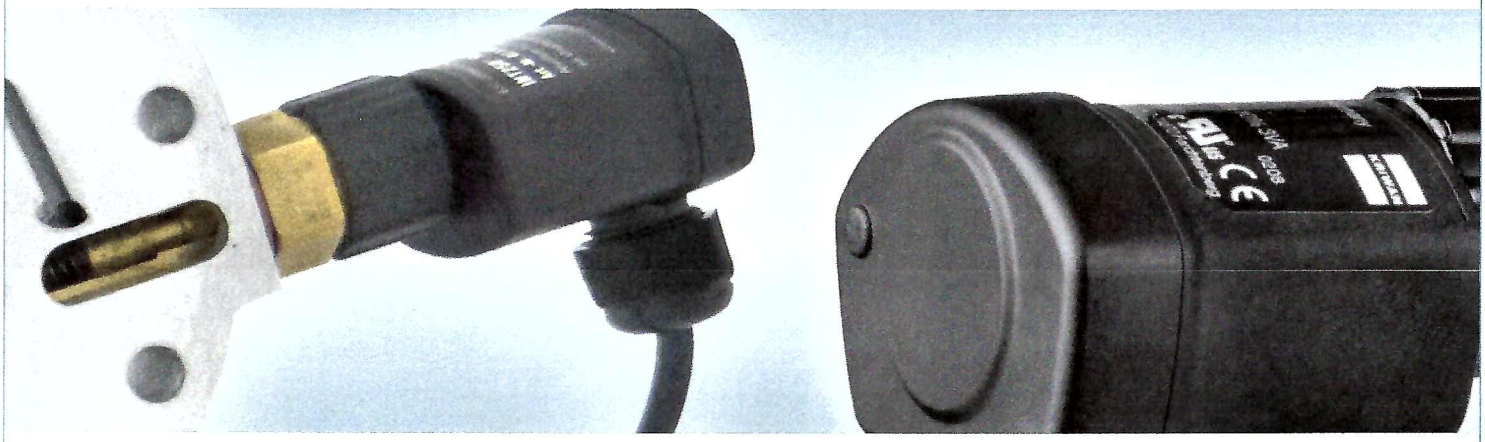
- Stand-alone solution
- Integrated intelligent electronics
- Time integration
- Hall sensor

INT250

- Solution for system integration
- Suitable for ATEX applications
- Reed contact

Screw-in parts

- Registering pump and suction pressure
- Installed directly in the pump
- Function with Delta-P II / OPS 2 and INT250
- Hermetically sealed – evaluation circuitry can be removed without evacuation
- One-time-only definition of the necessary oil differential pressure

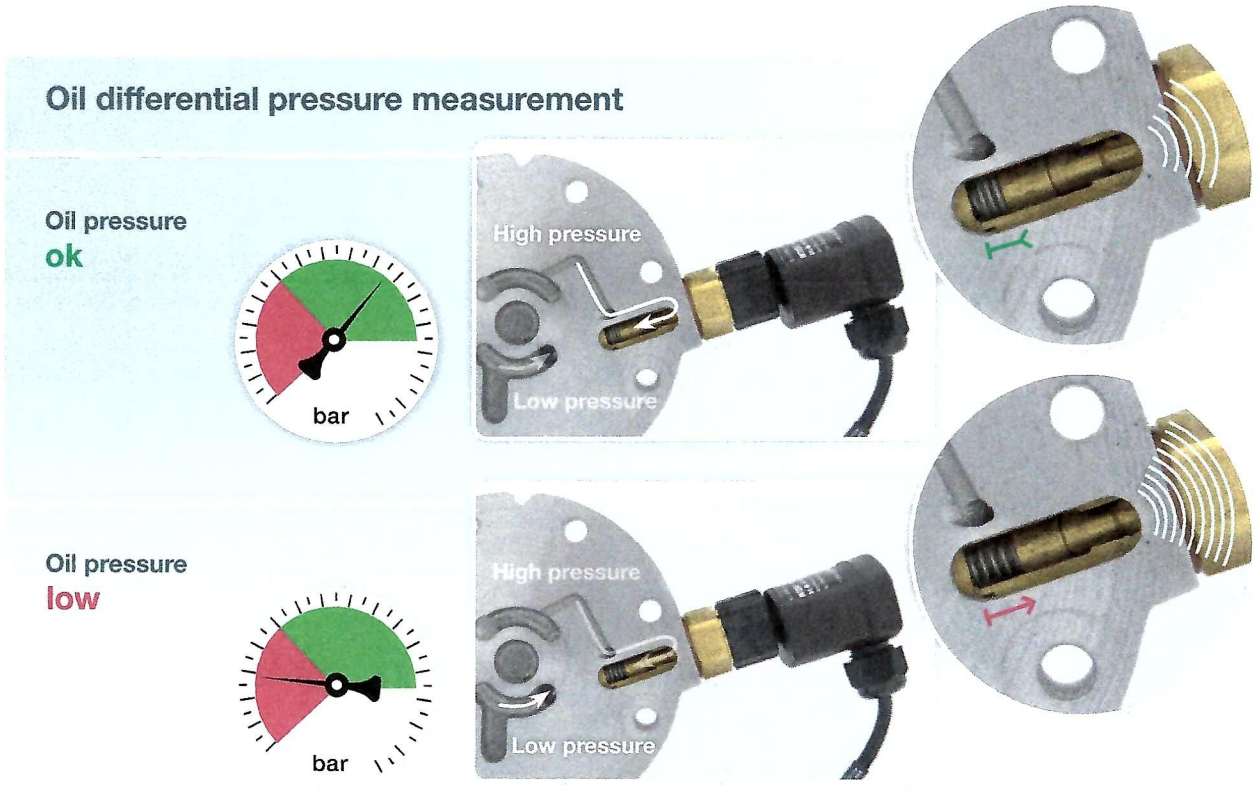


Functional principle

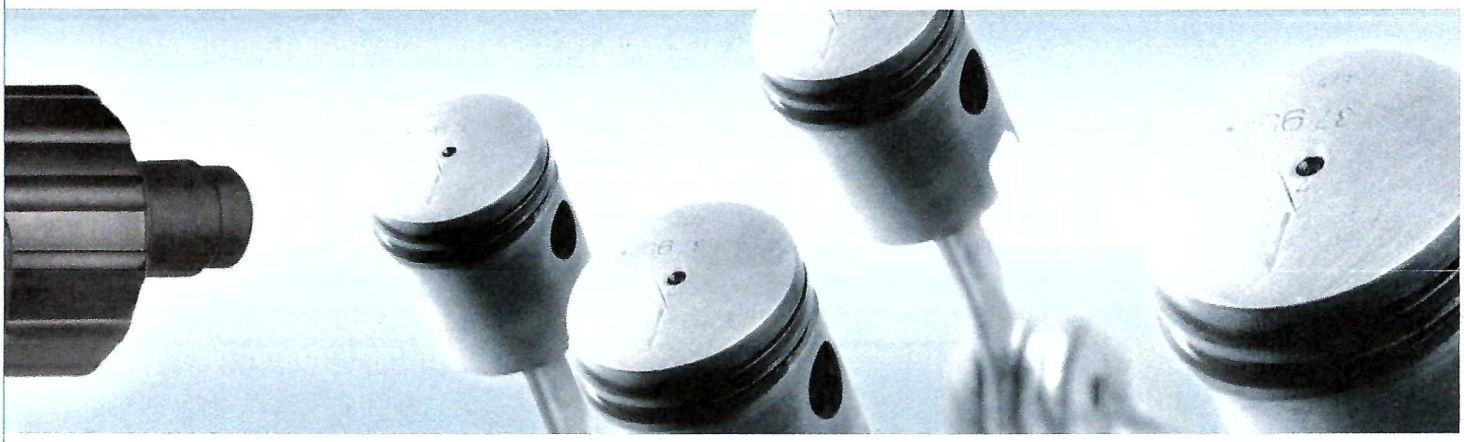
The KRIWAN solution for oil differential pressure monitoring consists of evaluation electronics as well as a screw-in part that are mounted separate from each other and that can be exchanged. The screw-in part is built directly into the pump and measures the pump and suction pressure through the internal channels and calculates the difference. If the pump pressure is great, the cylinder piston in the screw-in part is pressed forward and thereby distances itself from the evaluation unit. The electronics registers this distance and, in doing so, measures that sufficient oil differential pressure is available.

If the pump pressure is too low, the oil differential pressure is insufficient to move the cylinder. In this case, the sensor signals this promptly to the connected electrical device (on the INT250) or interprets the signal independently (on the Delta-P II and OPS 2) and switches off the compressor via the safety chain as a precaution after a defined delay time has elapsed.

Oil differential pressure measurement



Communication

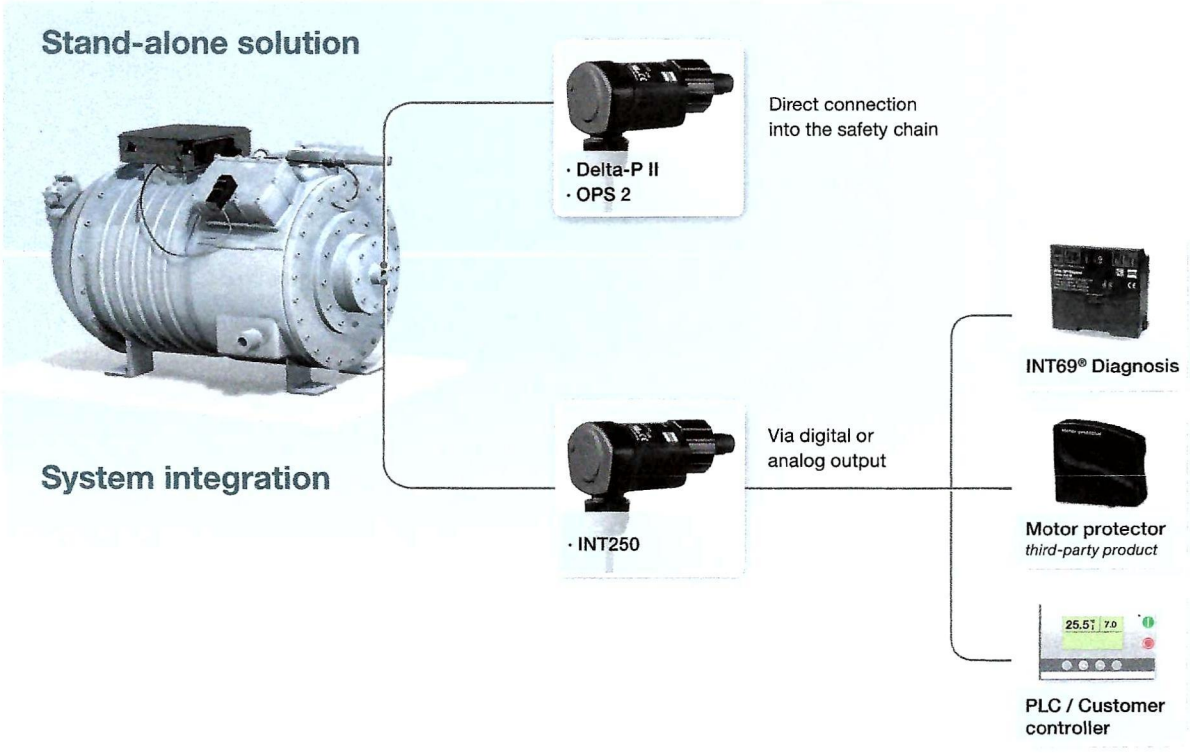


Easy integration with your systems

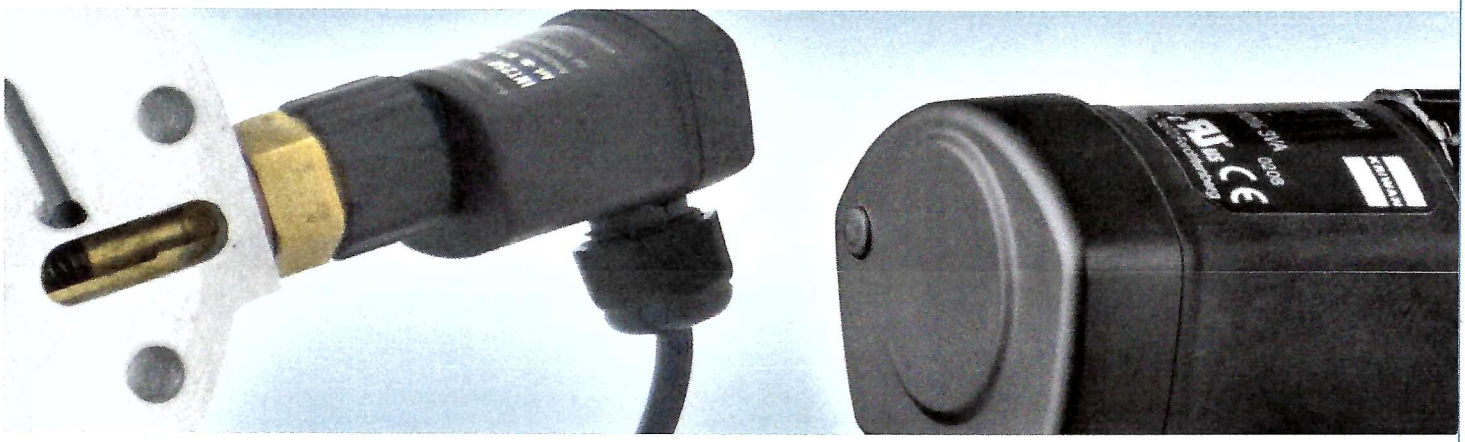
The oil differential pressure measuring can be integrated as an independent solution directly in the safety chain (Delta-P II and OPS 2) as well as in a comprehensive control system (INT250).

For the independent solution, the oil differential pressure is monitored reliably by the KRIWAN device by itself without an additional control or operating system being necessary.

Integration in control systems opens up further possibilities for diagnostics and control. In some systems, for example, a remote control is possible. Depending on the system, costs for the installation can be greatly reduced.



Benefits



Reliable protection for compressors

Technical expertise, experience and outstanding product quality have made KRIWAN a leading manufacturer in the refrigeration and AC market for almost 50 years.

All units are continuously monitored during production and subjected to extremely rigorous testing. This helps to prevent failures in the systems and makes sure that persons and machinery are always safe.

KRIWAN stands for outstanding product quality and reliability. Currently, more than 10,000,000 compressors around the world are equipped with the popular INT69® and more than 500,000 oil pumps are already monitored by KRIWAN differential pressure sensors.

Thanks to precise, reliable measurements, errors are avoided and the service life of the system is extended.

What make KRIWAN products for oil differential pressure measurement so special are the high flexibility as well as the compatibility for integration in existing systems.

Benefits at a glance

- Removal or replacement of the switch is possible with the refrigerant circuit closed
- Screwed directly in the pumping housing makes other additional, breakable pipe connections unnecessary
- Visual status information (optional)
- Installation control
- UL- and CE-conform
- Low leak rate
- Quick and easy assembly
- Function for self-monitoring of the device (optional)
- High flexibility with various screw-in parts