OIL MANAGEMENT



Oil Switches, Sensors and Oil Control Systems









HB Products

Products for Oil Management

Oil control is important on most cooling and heat pump systems for lubricating the compressor. Oil from the compressor in the high-pressure gas circulates in the system. On the high-pressure side the oil is separated and drained in the oil separator and liquid receiver. On the low-pressure side the oil is separated and drained from the evaporator and separator. This brochure shows some of the applications where the switches and sensors can be used.

Oil Switches

Oil switches are used for detection of oil in gas or oil in liquid ammonia. Several versions exist optimized for different applications. The switches are typically used in compressors and separators. Special switches can control a solenoid valve and maintain a level in compressor or vessel.

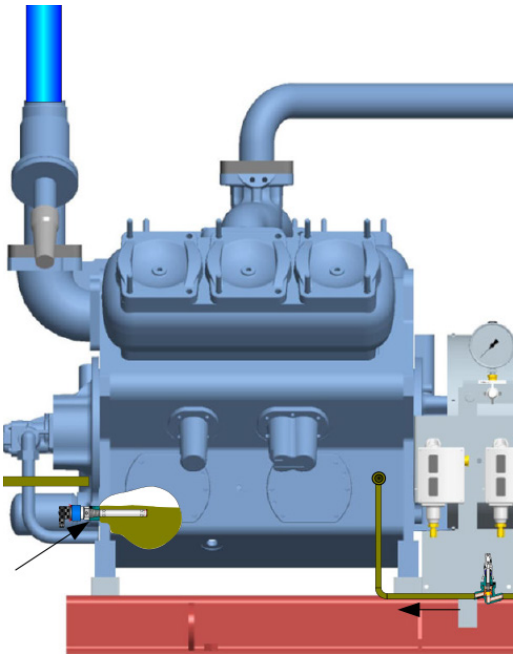


Two HBSOR for oil level measurement in compressors - Typical oil level control in reciprocating compressors is made with two switches. One at minimum and one at maximum level.

HBSO is a series of oil switches for different applications, oil types and temperatures.

The switches are available in different versions

Supply:	24V AC/DC or 90-240V AC
Temperatures:	Low, normal and high temperatures
Thread:	½" of ¾" in different thread types
Output:	NPN, PNP or solid-state relay
Switching:	NO, NC or programmable
IP class:	IP54 or IP65

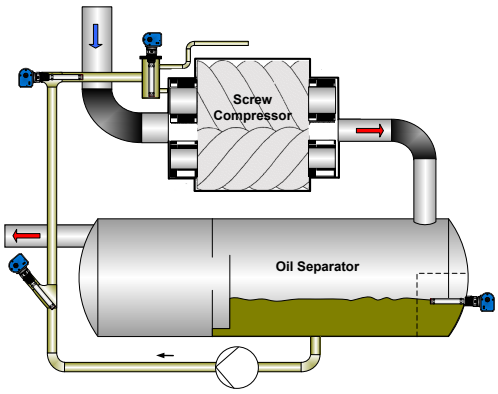


HBSO installed in the oilsump in reciprocating compressor



Oil Detection and control in screw compressors

In large screw compressors with oil separators oil switches are typically used for both controlling the level and securing oil supply to the compressor.

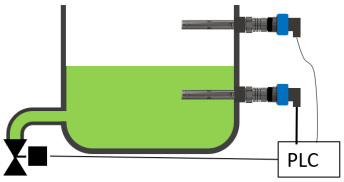


Dual Or Single Switch Level Control

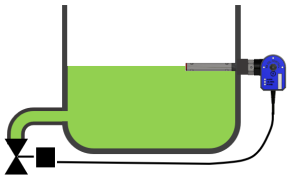
It is common to use two level switches. But for most systems, the control can also be made with a single switch. If the switch has the right control algorithm it can make sure that the compressor always have sufficient oil in the sump.
The control can be made in a PLC or a HBOC/C can be used – this switch can control a solenoid valve directly and make sure the level I kept. If this can't be achieved the systems will be alarmed.



Dual switch application
High and low level



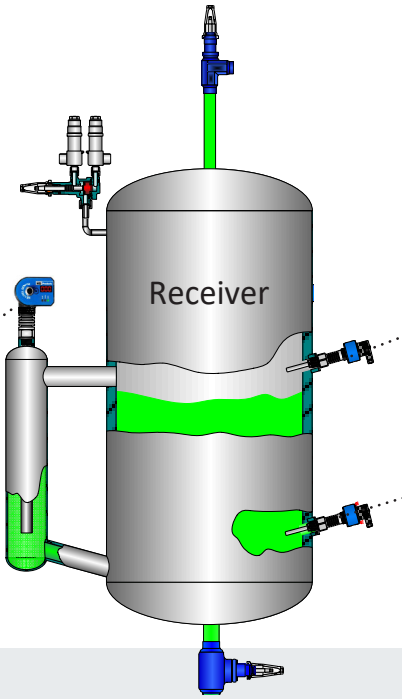
Single switch application
One smart sensor





Fail safe installation

Fail-safe installations means when the level is in between the two switches, both a broken wire and a high or low level will provide an alarm. If both switches provide alarm simultaneusly, then the switches has most likely lost the power supply.



NC versions are normally chosen for top position to get a fail-safe installation

NO versions are normally chosen for bottom position to get a fail-safe installation



Oil Level Sensor

In oil reservoirs the level can be measured by a HBLC-OIL sensor. This is a sensor which can be installed in a standpipe or directly in the vessel. The sensor measures the level inside a pipe and is relatively stabile even in a vessel where the oil is rippling. The sensor can measure the oil level in any gas.



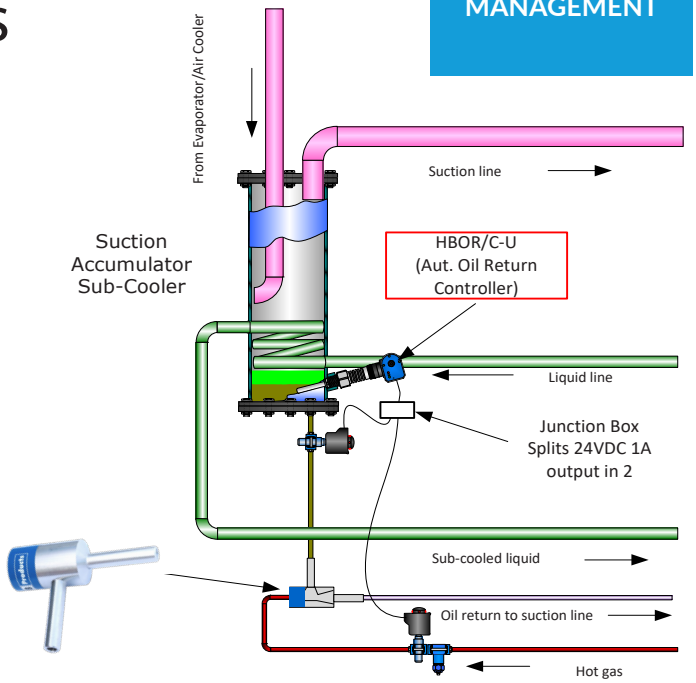
OIL MANAGEMENT

Automatic Oil Systems

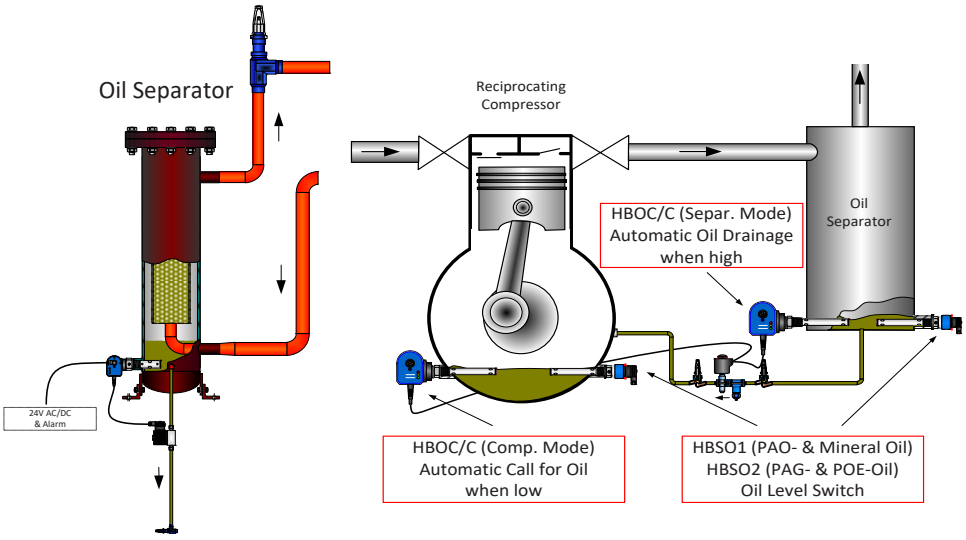
Oil return from liquid separator in ammonia systems

In a liquid separator you typically have gas, liquid ammonia and oil and you like to return the oil with-out returning ammonia and gas. For this application we have the HBOR/C. This switch triggers only when oil is present and not when ammonia and gas is present. The switch has a solid-state relay output which can be used for activation of solenoid valve.

The oil return can be made with an ejector **HBEJ** or similar powered by hot gas.



Automatic return from oil separators and reservoirs to compressors



In oil separators without liquid refrigerant the HBOC/C is used. The switch has a solid-state relay output which can be used for activation of solenoid valve.

With two HBOC/C switches, one in the compressor and one in the oil reservoir/separator, the system can be made automatic. Standard oil switches HBSO can be used as well but requires a PLC for control.

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We are dedicated to supplying switches and sensors for industrial applications. We focus on refrigeration, but our sensors can also be used in other industrial applications where robust and reliable sensors are called for. Our sensors are developed and manufactured in Denmark. We mainly use local sourced parts to increase flexibility and reduce lead times. All sensors and switches comply with EU directives and have earned the CE marking.