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Castel has always been aware of environmental sustainability issues and gives its contribution to a cleaner environment, supplying the refrigeration and air conditioning industry with state-of-the-art and environment-friendly technology. With its commitment and steady research in its laboratories, Castel has developed a whole range of products using natural refrigerants, which reduce emissions to the minimum.



ISO 14001

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Electronic oil level regulators



Application

The products, shown in this leaflet, are designed for installation on commercial refrigerating systems and on civil and industrial conditioning plants using traditional fluids: R134a, R22, R404A, R407C, R410A, R507. For specific applications with other fluids, please contact Castel Technical Department.

The electronic regulators series 5650 ensure the monitoring and checking the oil level in the crankcase either of reciprocating compressors or of scroll compressors. In particular, these regulators are employed for the solution of the problem of incorrect oil distribution in multi-compressor systems.

Construction

The body of the 5650 regulator is made of anodized aluminum, within which are housed the conduits and the seat of the oil injection valve. The oil supply port so as the armature of the solenoid valve is made of stainless steel.

In the same body it is also housed the electronic board, protected by a steel cover which guarantees a degree of protection IP65 outwards. This board is connected to the outside of the body via two micro connectors, industrial standard EN 175301-803 Form C.

There are two symmetrical versions of the electronic regulator: the 5650 / R version with oil supply on the left side and sight glass on the right side, the 5650 / L version with oil supply on the right side and sight glass on the left side. The connection to the compressor crankcase, either equipped with flange connection or equipped with a threaded connection, is ensured by four specific stainless steel adapters' series 5690.

On both sides of the regulator are positioned two transparent membranes that allow the display of 4 LEDs which indicate the conditions in which the regulator is operating.

The particular construction of the controller allows minimizing the phenomenon of the emulsion, oil and refrigerant foam, during the phase of oil injection and always ensures a correct reading of the level.

The electrical connections are made by two co-molded cables with DIN connectors in order to ensure a degree of protection IP67 towards the outside; a cable serves for the power supply while the other serves for the management of the level alarms, and is provided with a length of 3 meters.

Operation

The electronic regulators series 5650 operate by monitoring the oil level through a combination of optoelectronic sensors, the principle of optical detection of the level is based on the fact that a ray of light, directed on a glass prism, returns a different refractive index depending on whether the glass is immersed in a gas rather than a liquid.

The check of the oil level and the corresponding alarms are managed by a logical controller that, by running the number of "refill" and "wait" cycles and the relative openings of the adduction solenoid valve, is able to maintain the level at the desired height, and also to send any alarm signals to the arranged contact.

The four LEDs positioned on both sides of the regulator indicate the following status information:

- Led "POWER" - GREEN,
ON fixed : means that the regulator is powered.
- Led "OIL GOOD" - GREEN,
ON fixed : means that the oil level is correct
ON flashing : means that the oil level is low, but the filling cycle is not active



- Led "OIL FILLING" - YELLOW
ON fixed: means that the filling cycle is active and the solenoid valve is open
ON flashing: means that the filling cycle is active but the solenoid valve is closed

- Led "ALARM" - RED,
ON fixed: means there is an alarm condition but with the filling cycle active.

Electronic oil level regulators

Part number	Connections		Version	Voltage [V]	Frequency [Hz]	Degree of protection	Cables kit (1)	PS [bar]	TS [°C]	
	Adapters (1)	Oil inlet SAE FLARE							Min	Max
5650/RA2	5690/X11 5690/X12 5690/X13 5690/X14	3/8"	Right	24VAC	50/60	IP 65	9901/X26	45	-30	+130
5650/RA6				220VAC	50/60					
5650/LA2			Left	24VAC	50/60					
5650/LA6				220VAC	50/60					

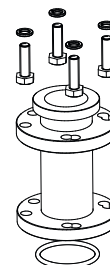
Note:
(1) To be ordered separately

Cables kit

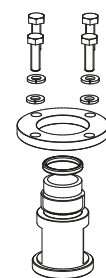
Part number	Use	Degree of protection	Cable length [m]
9901/X26	Power supply cable	IP 67	3
	Alarms cable	IP 67	3

Oil level regulators adapters

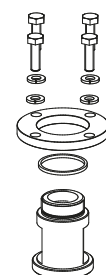
Part number	Compressor crankcase connections
5690/X11	Flanged with 3 holes on dia 1.7/8" and 4 holes on dia 50 mm
5690/X12	1.1/8" - 12 UNF thread
5690/X13	1.1/8" - 18 UNEF thread
5690/X14	3/4" NPT thread



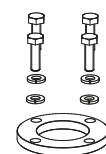
5690/X11



5690/X12



5690/X13



5690/X14

