5.5 Discharge temperature protection

5.5.1 ASTP Advanced Scroll Temperature Protection

Scroll compressor models ZB50KCE to ZB114KCE have the addition of the Advanced Scroll Temperature Protection (ASTP). The Advanced Scroll Temperature Protection is also a temperature sensitive thermo-disc that acts to protect the compressor from discharge gas overheating. Once the discharge gas reaches a critical temperature, the ASTP feature will cause the scrolls to separate and stop pumping although the motor continues to run. After running for some time without pumping gas, the motor protector will open.

Figure 13: Advanced Scroll Temperature Protection (ASTP)

ASTP was developed to protect the compressor, not for envelope control. Applications where compressors are used in the upper left corner of the operation envelope may lead to undesired downtime and cut-offs for safety. Therefore the envelope needs to be controlled properly. For such applications, it is strongly advised to install an additional external discharge thermostat.

To identify compressors with Advanced Scroll Temperature Protection, a label has been added above the terminal box.

NOTE: **Depending upon the heat build-up in the compressor, it may take up to two hours for the ASTP and motor protector to reset!**

5.5.2 Discharge line thermostat

The use of an external discharge thermostat is required for all ZF*K5E and ZB*K5E compressors and a discharge thermostat is included in the standard delivery of all these models.

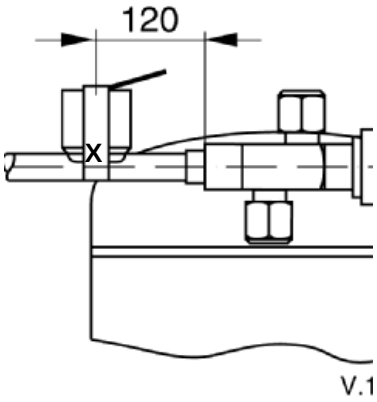

Figure 14: Discharge temperature protection: recommended position

Internal discharge temperatures can reach unacceptable values under some extreme operating conditions (such as loss of refrigerant injection charge or extremely high compression ratio). This could cause compressor damage.

The ZF*K5E and ZB*K5E dedicated discharge thermostat has a cut-out setting of 130°C ± 4K with closing at 101°C ± 8K and should be installed approximately 120 mm from the discharge valve outlet (see **Figure 14**). In order to avoid improper functioning due to false readings this thermostat needs to be insulated (see "X" in **Figure 14**).