

INVOTECH TECHNICAL INSTALING SCROLL COMPRESSOR

For the design of the receiver, we hope the receiver can contain most of the refrigerant inside the system (for the purpose of pump down system, etc) , so I list the suggestion of the receiver volume for your reference.

Compressor failure cause of the scroll compressors:

- (1) **Using the scroll compressor to do the vacuum pump for the system.** Because the scroll compressors can go to very deep vacuum (much deep than piston compressors), the motor, normally the fusite will be burnt. So the low pressure switch should be set right, and never short connected it.
- (2) **Working under low suction pressure** (outside of the envelope). The discharge temperature will be very high, the refrigerant oil will be carbonized and lost the lubrication action, so the parts inside the compressor will be wore and finally it will be failed. So the setting of the pressure switch is very important. This problems can be caused by **system leakage**, or **system is blocked** somewhere, or wrong use (for example, **use the middle temperature compressor for the low temperature application purpose**).
- (3) **Working under too high condensing pressure.** The discharge temperature will be very high, too. Cause by **dirty condenser**, or system is blocked somewhere, etc. So a high pressure switch and right setting is very important.
- (4) **Flood start.** The refrigerant is inclined to flow back to the compressor during the off time. If the off time of the compressor is quite long, many refrigerant will be back into the compressors. The refrigerant and oil will be dissolve in each other. Now if the compressor start up, the pressure of the low side of compressor will decrease very quickly, the liquid of oil and refrigerant will be boiling, oil and refrigerant will be pump out of compressor, the compressor will be damaged because of loss of oil. The crankcase heat can protect the compressor and prevent this problem happen.
- (5) Refrigerant is **flood back continuously.** Invotech Scroll has the dual compliant feature, they has very high capability to tolerant the flood back. But if the refrigerant is flooded back day and night all the way, the scroll sets will be wore because the oil is dilution by the liquid refrigerant.
- (6) The **refrigerant oil can't be back** by the **poor pipe/system design**, or caused by **frequently start/stop**.
- (7) The compressor **work in the wrong direction (three phase)**. The scroll compressor can only compress in one direction, some time (normally at the commissioning period), we can see the compressor is running, but without suction/discharge pressure, and the sound is abnormal, the running current is lower, that mean the compressor is running in the wrong direction. The only job need to do is to exchange two power lines.
- (8) The motor can be damaged by some **metal particles**. So it is very important to keep clean during unit assembly and field site installation periods. And the suction line filter can prevent this problem.
- (9) The motor can be damaged by **too high/low voltage**, or **unbalanced voltage**, or **missed phase**.
- (10) **Single phase compressor can't start**, because of **too low input power voltage**. Or **too short off duration** (we suggest the minimum off duration between the stop and start is 3 minutes)