

Three Truths of Pre-Charged Line Sets

Pre-charged line sets have a high first cost and result in higher operating costs through the life of the system. They waste energy and put unnecessary load on the refrigeration system. While pre-charged line sets are inexpensive to install, they result in higher costs. In fact, they shorten the system life and hasten replacements. This effect is a problem for coolers, but it is an even bigger problem in freezers. Here we reveal the dirty secrets about pre-charged line sets.

TRUTH 1

Pre-Charged Line Sets are Too Long

Pre-charged line sets come in standard lengths and that length is always too long for your intended use. You would never order a shorter length because you know that won't work. Likewise, pre-charged line sets cannot be bent at 90 degree angles which mean they will always require longer sloping turns.

But the longer length has hidden effects that waste money and energy: Refrigeration systems are like heat pumps – they move heat via liquid from one spot to another. The harder the system has to pump the more energy it uses. The longer the refrigeration line is and any unnecessary bends will both contribute to the refrigeration system consuming more energy.

Solution: Hard-piped refrigeration systems use the exact length of pipe and amount of 90 degree elbows that a given project requires.

TRUTH 2

Pre-Charged Line Sets are the Wrong Diameter

Pre-charged line sets come in limited sizes and they lose efficiency 100% of the time because of being the wrong diameter. In other words, not only are they always too long, but the diameter of the line set is usually wrong also.

A compressor pumps oil along with the refrigerant gas through the lines to the evaporator and returns back to the compressor on the suction side. When the line sets are too big, too long and coiled up it allows the oil to separate from the refrigerant inside of the lines. If a pre-charged line set is coiled up the oil can, and will, collect, or log, at the bottom of the coil loop as it separates from the refrigerant. This delivers several predictable side effects:

a) It starves the compressor of the oil that it needs in order to run *efficiently*.

- b) It reduces the effective capacity of the compressor so it needs longer run times.
- c) It results in higher energy costs
- d) It can result in premature compressor failures.

Solution: A good refrigeration contractor will use the correct size of copper piping to maximize the efficiency of the refrigeration system and to ensure good oil return.

TRUTH 3

Pre-Charged Line Sets are Improperly Charged

Pre-charged line sets are charged with refrigerant at the factory, as are the condensing units and evaporators. However, it's physically impossible for the line sets to not be over or under charged.

There is no scientific way for a factory to charge a line set exactly right for maximum efficiencies. A pre-charged line set will always be over or under-charged, in any case the result is inefficiencies, longer run times and higher energy consumption.

Solution: Properly charging the system after it is piped will result in the system lasting longer and operating more efficiently, with less product loss and lower operating costs for the customer.

THEORY versus REALITY

The theory behind pre-charged line sets is that they cost less because they are cheaper to install. The reality is that they are much more expensive systems to operate.

The Truths of Pre-Charged Line Sets

- They are always too long for the application.
- They are always improperly charged.
- They result in higher utility bills.
- They are expensive to purchase.
- The compressor life cycle is shortened due to improper refrigeration charge.
- A refrigeration company will eventually need to service the system and charge correctly.
- Added expense of a pre-charged line set plus the increased cost of operating and maintenance offset any savings on installation.