Charging

Superheat and Subcooling

Charging Methods
Cylinders

• Most R-410A cylinders have an internal dip tube which allows the feeding of liquid when the cylinder is in an upright position. They must be inverted for vapor flow.

• Color is rose (pink).

• The cylinder has to have minimum cylinder pressure requirement of 400 psig rating (DOT 4B400 or DOT 4BW400)

NOTE: Avoid storing R-410A where temperatures will exceed 120° F.
Charging

- Charge through the suction side of the system.

- Use a commercial-type metering device in manifold hose to allow liquid to vaporize.

- Follow your typical sub-cooling or superheat procedures to arrive at the correct charge.
Insta Charge
R-410A Gauges With Sight Glass

- Dedicated charge hoses
- Dedicated manifold
- R-410A hoses rated up to 550 to 800 PSIG
Manifold Gauge Set
Methods Of Charging Systems

- WEIGHING METHOD
- SUPERHEAT METHOD
- SUBCOOLING METHOD
The proper method of charging a heat pump in the heat mode is by weight with the additional charge adjustments for line size, line length, and other system components.
Weighing In Method

THIS METHOD CAN BE USED ON ALL TYPES OF REFRIGERATION SYSTEMS

1. DETERMINE THE PROPER WEIGHT OF THE CHARGE FROM THE DATA PLATE ON THE CONDENSING UNIT. THIS WILL USUALLY INCLUDE ENOUGH REFRIGERANT FOR THE STANDARD EVAPORATOR AND 15 FEET OF LINE SET.

2. MEASURE THE AMOUNT OF LINE SET INCLUDED IN THE SYSTEM. USING THE CHARTS IN THE INSTALLATION INSTRUCTIONS, ADD OR SUBTRACT THE PROPER AMOUNT OF REFRIGERANT TO DETERMINE THE FINAL CHARGE.

3. USING A CALIBRATED SCALE, ADD OR REMOVE REFRIGERANT BASED ON YOUR CALCULATIONS
Fishing Scale

[Image of a person holding a fishing scale with a gas cylinder superimposed over it with a no symbol]
Electronic Scale
Recovery Cylinder
R-410A condensers are factory charged for 15 feet of line set. To calculate the amount of extra refrigerant (in ounces) needed for a line set over 15 feet, multiply the additional length of line set by 0.6 ounces. Note for the formula below, the linear feet of line set is the actual length of liquid line (or suction line, since both should be equal) used, not the equivalent length calculated for the suction line.

Use subcooling as the primary method for final system charging of long line set system application.

Extra refrigerant needed =

(Linear feet of line set – 15 ft) x X oz/ft.

Where X = 0.67

for 3/8” liquid line and 3/4 suction line.
<table>
<thead>
<tr>
<th>Line set sizes</th>
<th>Additional Refrigerant (oz. per lineal foot)</th>
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</thead>
<tbody>
<tr>
<td>3/8” liquid only</td>
<td>0.60</td>
</tr>
<tr>
<td>3/8” liquid and 5/8” suction</td>
<td>0.63</td>
</tr>
<tr>
<td>3/8” liquid and 3/4” suction</td>
<td>0.67</td>
</tr>
<tr>
<td>3/8” liquid and 7/8” suction</td>
<td>0.74</td>
</tr>
<tr>
<td>3/8” liquid and 1 1/8” suction</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Extra refrigerant needed per lineal foot = .
Where \( X = 0.67 \) for 3/8” liquid tubing and 3/4”.

**EXAMPLE:** Measured Line Set 25 feet
25 feet Line Set – 15 feet =
10 feet x 0.67 = 6.7 oz.
Understanding Superheat