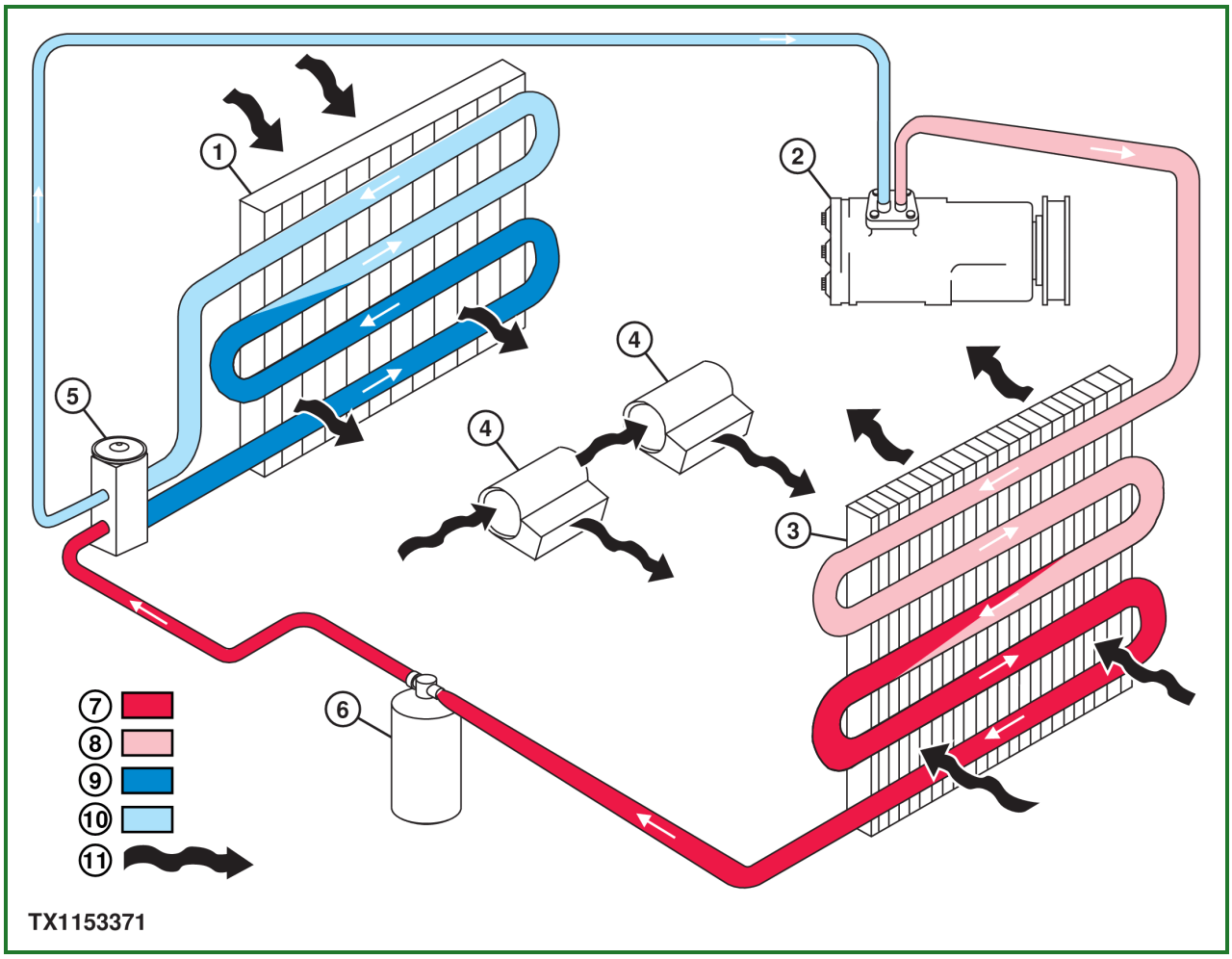
Air Conditioning System Cycle of Operation



TX1153371-UN: Refrigerant System Cycle of Operation

LEGEND:

1 - Evaporator

2 - Compressor

3 - Condenser

4 - Circulation Blower Motor

5 - Expansion Valve

6 - Receiver-Dryer

7 - High-Pressure Liquid

8 - High-Pressure Gas

9 - Low-Pressure Liquid

10 - Low-Pressure Gas

11 - Air Flow

The compressor (2) is belt driven and engaged by an electromagnetic clutch. The air conditioner circuit automatically controls compressor engagement or disengagement when system is in operation. See System Functional Schematic . (Group 9015-10.)

The compressor draws low-pressure gas (10) from evaporator (1) and compresses it into high-pressure gas (8). High-pressure gas causes temperature of refrigerant to rise higher than outside air temperature.

High-pressure gas leaves compressor and flows through condenser (3). Inside condenser, heat is removed and transferred to outside air that is drawn through condenser core by the fan. Cooling refrigerant causes it to condense, and refrigerant leaves condenser as high-pressure liquid (7).

High-pressure liquid flows into receiver-dryer (6), where moisture and contaminants (acid, solids, etc.) are removed. The receiver-dryer contains a color moisture indicator. If the indicator is blue, moisture is not present. If the indicator is pink, moisture is present. When moisture is present and combined with refrigerant, hydrofluoric and hydrochloric acids are formed. These acids are corrosive to metal surfaces, and leakage will eventually develop. The receiver-dryer also stores refrigerant, allowing a longer period of time before additional refrigerant is needed. Refrigerant hoses allow a small amount of refrigerant to migrate through their walls.

Refrigerant flows from receiver-dryer through expansion valve (5) to the evaporator. The expansion valve senses refrigerant temperature and pressure to modulate refrigerant flow, which then changes refrigerant to low-pressure liquid (9) entering evaporator. Actual cooling and drying of cab air takes place at evaporator. Heat absorbed by evaporator and transferred to refrigerant causes refrigerant to vaporize into low-pressure gas. Low-pressure gas is drawn from evaporator by compressor and cycle is repeated.

A freeze control switch senses temperature of evaporator coil through a capillary tube. This prevents the evaporator from becoming cold enough to freeze moisture that condenses on the evaporator coil. Condensed moisture is drained away through drain tubes connected to a drain pan under evaporator.

System pressure is monitored by a high/low-pressure switch, located on high-pressure side of expansion valve. If pressure becomes too high or too low, the switch opens and stops the compressor, interrupting the cycle.

Accumulator is located between evaporator and compressor in low-pressure gas hose to retain a quantity of oil to protect compressor from a dry start after long periods of not being used.

For location of heating and air conditioning system components, see Cab Roof Harness (W18) Component Location . (Group 9015-10.)

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