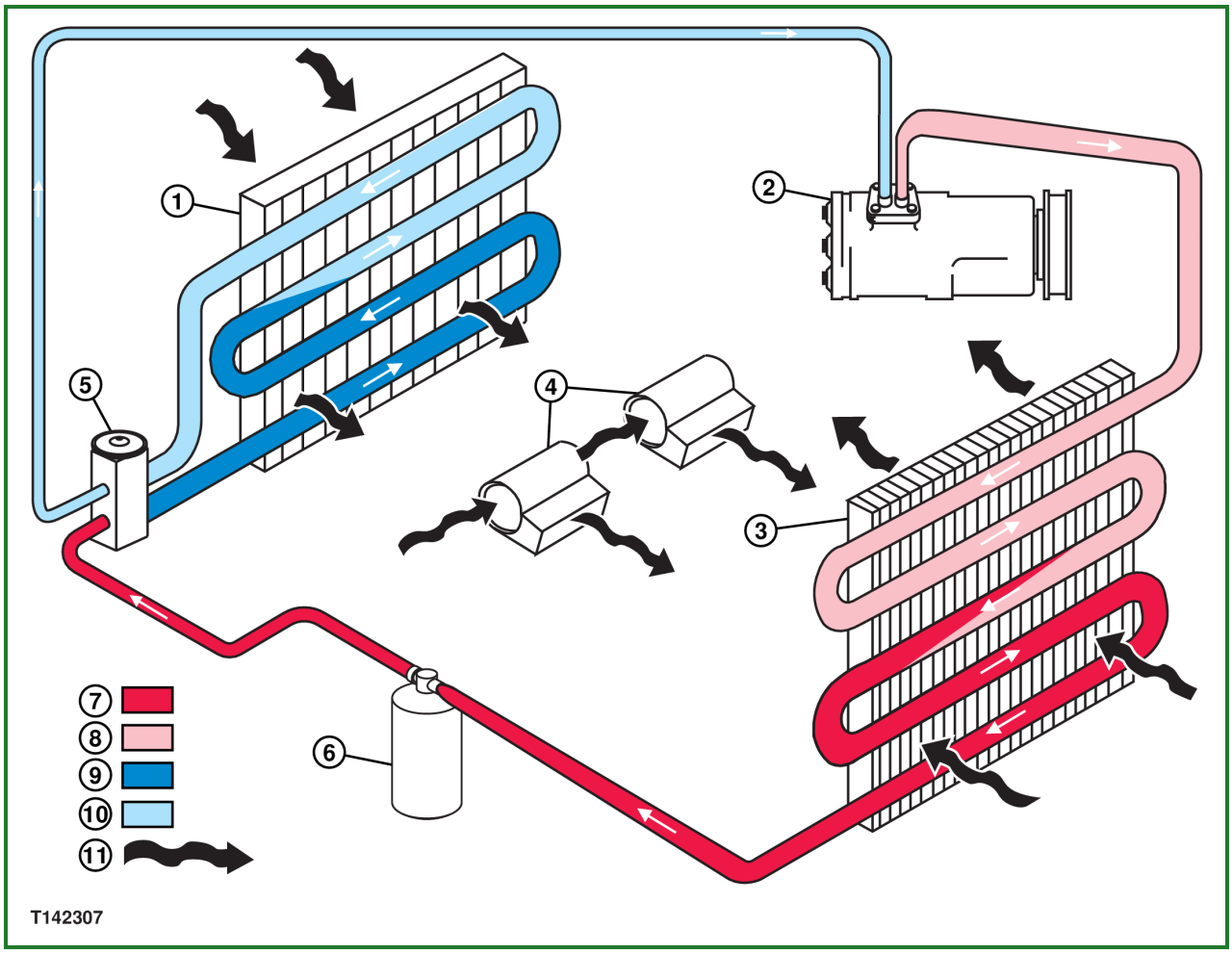
Air Conditioning System Cycle of Operation



T142307-UN: Air Conditioner System Cycle Of Operation

LEGEND:

1 - Evaporator

2 - Compressor

3 - Condenser

4 - Circulation Fan 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

Compressor (2) is belt-driven and engaged by an electro-magnetic clutch. Air conditioner circuit automatically controls compressor engagement or disengagement when system is in operation.

Compressor draws low pressure gas from evaporator (1) and compresses it into high pressure gas. This causes temperature of refrigerant to rise higher than that of outside air.

High pressure gas leaves compressor and flows through condenser (3), where heat is removed and transferred to outside air being drawn through condenser by engine fan. Cooling of refrigerant causes it to condense and leave condenser as high pressure liquid.

High pressure liquid flows into receiver-dryer (6) where moisture and contaminants (acid, solids, etc.) are

removed. If moisture is combined with refrigerant, hydrofluoric and hydrochloric acids are formed. These acids are very corrosive to metal surfaces and leakage will eventually develop. 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 evaporator. Expansion valve senses refrigerant temperature and pressure to modulate refrigerant flow. Expansion valve changes refrigerant to a low pressure liquid 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.

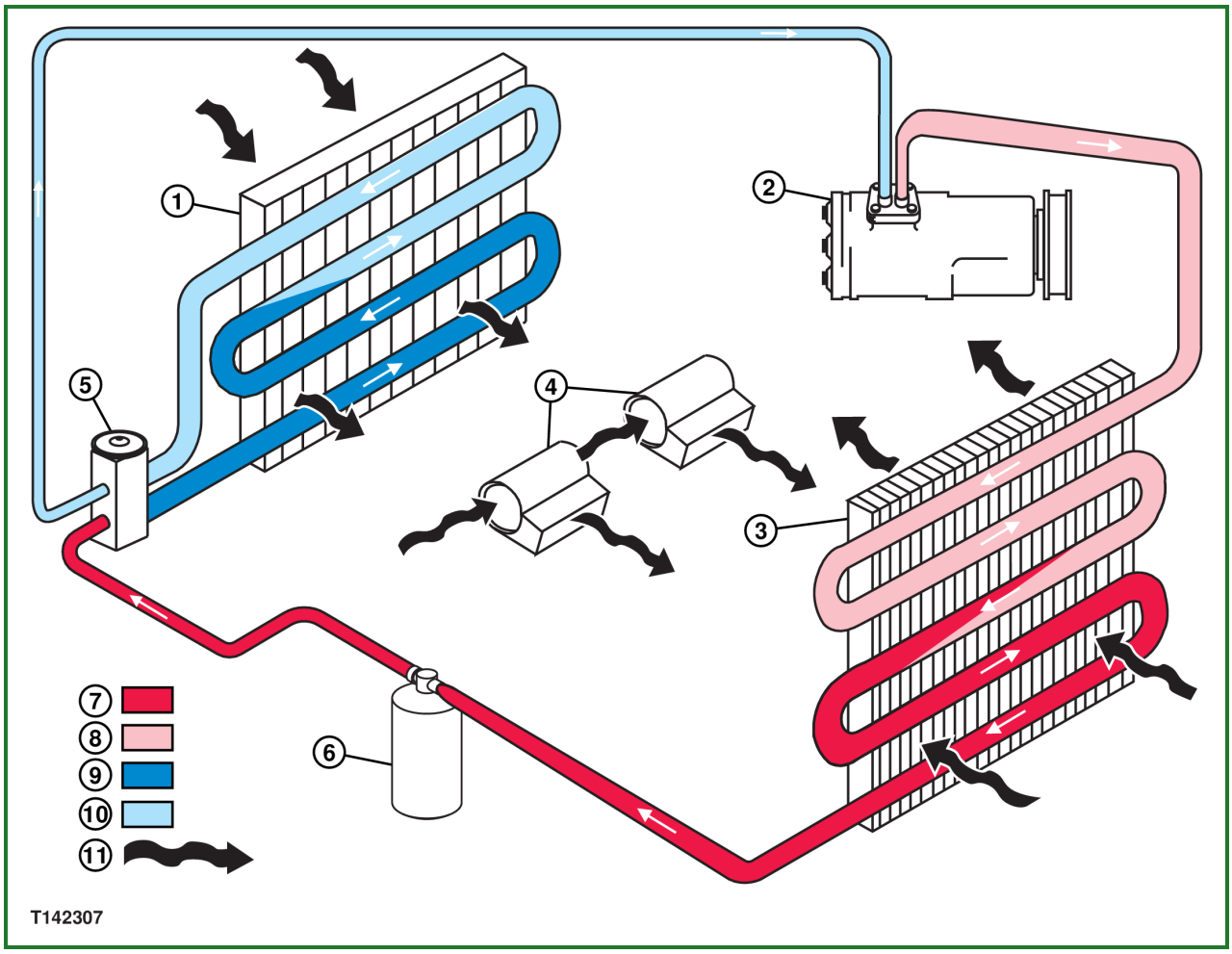
A freeze control switch senses temperature of evaporator coil through a sensing probe and electronic switch. This prevents evaporator from becoming cold enough to freeze moisture that condenses on evaporator coil. Condensed moisture is drained away through drain tubes in drain pan under evaporator.

System pressure is monitored by high and low pressure switch, located near receiver-dryer. If pressure becomes too high or too low, switch opens and stops compressor, interrupting the cycle. For location of system components, see Air Conditioning and Heater System Component Location . (Group 9031-15.)

Go to Section_9031:Group_05

AB06447,0000A57-19-20130409

Air Conditioning System Cycle of Operation



T142307-UN: Air Conditioner System Cycle Of Operation

LEGEND:

1 - Evaporator

2 - Compressor

3 - Condenser

4 - Circulation Fan 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

Compressor (2) is belt-driven and engaged by an electro-magnetic clutch. Air conditioner circuit automatically controls compressor engagement or disengagement when system is in operation.

Compressor draws low pressure gas from evaporator (1) and compresses it into high pressure gas. This causes temperature of refrigerant to rise higher than that of outside air.

High pressure gas leaves compressor and flows through condenser (3), where heat is removed and transferred to outside air being drawn through condenser by engine fan. Cooling of refrigerant causes it to condense and leave condenser as high pressure liquid.

High pressure liquid flows into receiver-dryer (6) where moisture and contaminants (acid, solids, etc.) are

removed. If moisture is combined with refrigerant, hydrofluoric and hydrochloric acids are formed. These acids are very corrosive to metal surfaces and leakage will eventually develop. 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 evaporator. Expansion valve senses refrigerant temperature and pressure to modulate refrigerant flow. Expansion valve changes refrigerant to a low pressure liquid 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.

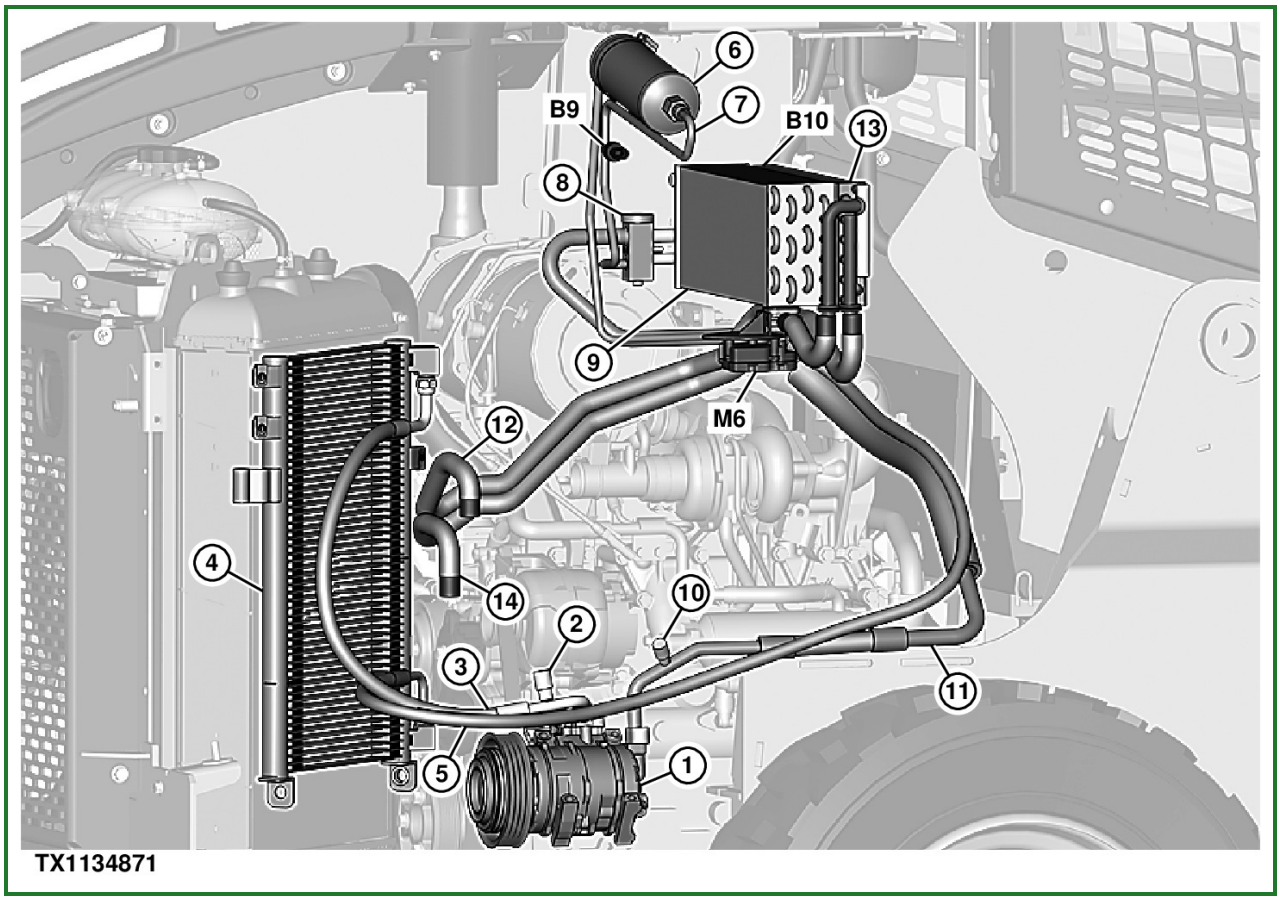
A freeze control switch senses temperature of evaporator coil through a sensing probe and electronic switch. This prevents evaporator from becoming cold enough to freeze moisture that condenses on evaporator coil. Condensed moisture is drained away through drain tubes in drain pan under evaporator.

System pressure is monitored by high and low pressure switch, located near receiver-dryer. If pressure becomes too high or too low, switch opens and stops compressor, interrupting the cycle. For location of system components, see Air Conditioning and Heater System Component Location . (Group 9031-15.)

Go to Section_9031:Group_05

AB06447,0000A57-19-20130409

Air Conditioning and Heater System Component Location



TX1134871-UN: Air Conditioning and Heater System Component Location (right side shown)

LEGEND:

1 - Compressor

2 - High-Pressure Diagnostic Port

3 - Compressor-to-Condenser High-Pressure Line

4 - Condenser

5 - Condenser-to-Receiver-Dryer High-Pressure Line

6 - Receiver-Dryer

7 - Receiver-Dryer-to-Expansion Valve High-Pressure Line

8 - Expansion Valve

9 - Evaporator

10 - Low-Pressure Diagnostic Port

11 - Expansion Valve-to-Compressor Low-Pressure Line

12 - Heater Hot Water Feed Line

13 - Heater Core

14 - Heater Hot Water Return Line

B9 - Air Conditioner High/Low-Pressure Switch

B10 - Air Conditioner Freeze Control Switch

M6 - Heater Valve Motor