NOTICE TO TECHNICIAN

NOTE:
This hose and pressure switch kit will allow the compressor clutch to operate in the same manner as the later 55 Series tractors and provide equal protection should high system pressure or loss of refrigerant occur.

The 30 and 40 Series tractors with SOUND-GARD Body (S.N. — 167110) have a sheet metal evaporator-blower motor housing. The pressure hose at inlet of the expansion valve has a short elbow. The wider construction foam evaporator-blower housing was a running change on 40 Series tractors at SGB (S.N. 167111 —). The pressure hose at inlet of the expansion valve required a longer tube at the elbow to make the expansion valve connection.

When the timer-relay on the 50 Series tractors was discontinued a pressure hose (RE55554) with two adapter ports for high and low pressure switches was installed at inlet of the expansion valve. This same hose and switch combination will be used for all 30 and 40 Series tractors. The thermal fuse and holder is to be discarded and the super heat shut-off switch will not be used. The 30 and 40 Series tractors that have the thermostat attached to the condenser line in front of the radiator were not equipped with refrigerant loss protection. This hose and switch kit can also be installed on those tractors.

NOTE: **Additional Information:**

When replacing a receiver-drier always use a John Deere receiver-drier (RE214439) that has a refrigerant pickup tube of the correct angle (60 degree) and has "TOP" stamped at the outlet end. The pickup tube inside some after-market receiver-driers has a flatter angle (13 degree) than the John Deere receiver-drier. The straighter pickup tube will be exposed to refrigerant gas, during hot ambient operating temperatures. If liquid refrigerant is not flowing to the expansion valve, reduced cooling capacity occurs. Some after-market receiver-driers are also equipped with a small sticker to identify the installation position. Some stickers have been found at the wrong position and bubbles were visible in the sight glass during operation at any ambient temperature. Using a John Deere receiver-drier with these features will assure liquid refrigerant is flowing to the expansion valve when the receiver-drier is installed with "TOP" located at the 12 o'clock position.

Parts List

Part Number	Quantity	Description
AR203726	1	Installation Instructions
Upper Roof Parts:		
RE55554	1	Hose, Pressure
R10093	2	O-Ring
R203463	1	Support, Hose
RE203464	1	Harness, Wiring
RE24308	1	Switch, Low Pressure
RE24307	1	Switch, High Pressure
RE23766	1	Diode
R44302	11	Band, Tie 7.5 in.
M73027	1	Band, Tie 11.5 in.
T28585	1	Body, Packard (F) Connector
R206840	1	Label, English
R206841	1	Label, Spanish
R206843	1	Label, French
Required To Remove Thermal Fuse Holder:		
T34067	1	Terminal, Packard Blade
T28585	1	Body, Packard (F) Connector
T28583	1	Body, Packard (M) Connector

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Inspect Pressure Hose at Inlet to Expansion Valve

IMPORTANT: Read this instruction thoroughly before performing procedure.

1. Turn key switch to **OFF** position.

2. Raise SGB roof.

3. Check air conditioning pressure hose elbow at inlet of the expansion valve on left side of the evaporator-blower motor housing.

   - If hose is **not** equipped with pressure adapters at the elbow, Go to Step 1, **Install Pressure Hose.**
   - If hose **is** equipped with two flared adapter ports at the elbow, do not remove refrigerant from the system. Go to Step 11, **Install Switches & Diode.**
   - If hose is already equipped with RE24307 & RE24308 switches, verify they are connected into the compressor clutch coil circuit (yellow wire) at the front-right corner of the SGB. Also verify the thermal fuse at the compressor has been removed. If there is a thermal fuse, Go to Step 18, **Removal of Thermal Fuse and Holder.**

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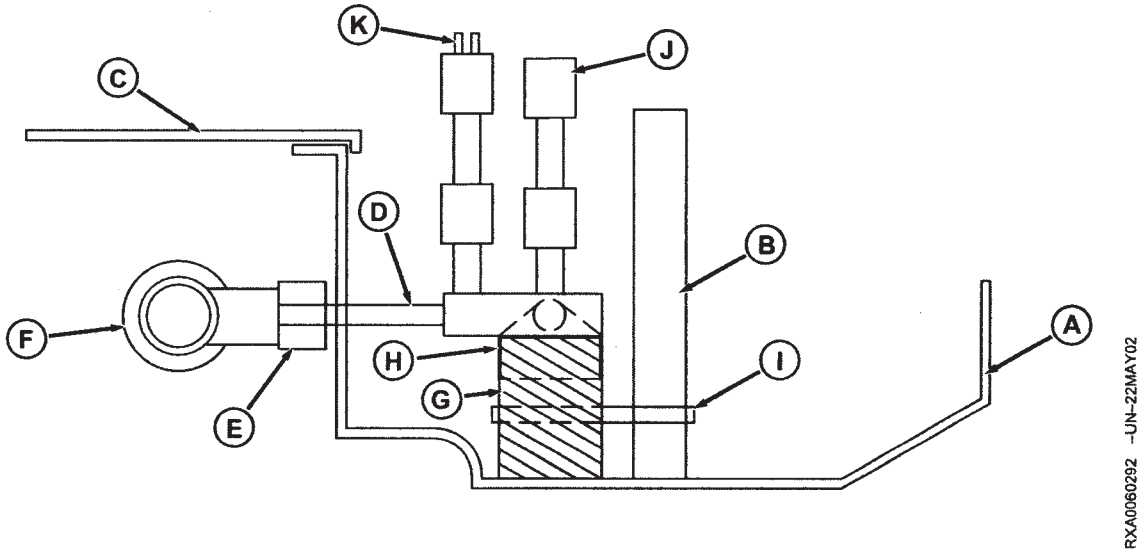
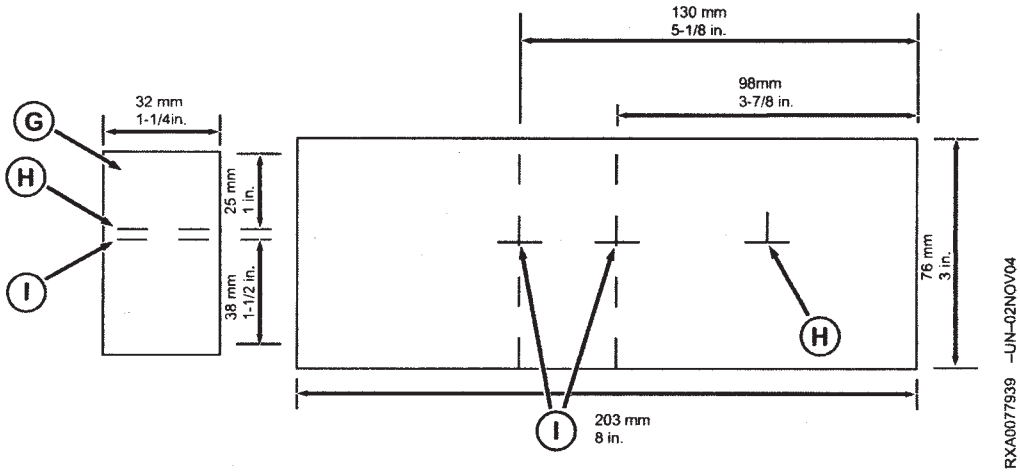
Install Pressure Hose



Hose Support (Front View)



Hose Support

A—Tractor Roof—Left Side
B—SGB Lifting Post—Left Side
C—Evaporator—Blower Motor Cover
D—RE55554, Hose to TEV
E—Hose Tube Nut to TEV
F—Expansion Valve
G—R203463 Hose Support (1-1/4 x 3 x 8 in.)
H—R44302 Short Tie Band
I—M73027 Long Tie Band
J—RE24307 High Pressure Switch
K—RE24308 Refrigerant Loss Switch

1. Identify whether system has R-12 or R134a refrigerant.

NOTE: If system has R-12, consider converting the system to R134a. See TM-1719, "Air Conditioning Retrofit" for performing the conversion by flushing the compressor and system.

2. Recover refrigerant from the system with appropriate recovery equipment.

Continued on next page

3. Remove cover above evaporator and blower motors to access expansion valve tube nut.

4. After recovering refrigerant, remove pressure hose between inlet of the expansion valve and left rear corner of SGB. Wipe the new R10093, o-rings with refrigerant oil and install on RE55554, hose ends. Clean the openings of expansion valve and tube at rear corner. Install the new hose with tube nuts finger tight.

NOTE: The hose support is not required if SGB roof is made of construction foam design (not steel). If SGB roof is made of construction foam material, tension tube nuts at both ends of the hose at this time. Then go to step 8.

NOTE: **Steps 5, 6, & 7 apply to tractors with a sheet metal evaporator-blower motor housing.** *See drawing on page 4.*

5. Prepare the R203463 foam hose support for installation at in-board side of the SGB lifting post. Mark the support on post side 3 7/8" and 5 1/8" from the rear. Then measure half way up from bottom at these two locations and make a cross mark (I).

6. Use a No. 1 cross point screw driver and push the point through the support from the outside at the two cross marks (I). Remove the M73027, long tie band from wrapper. Push the pointed end through the support from outside with flat side vertical at the 3-7/8" mark. Then push pointed end back through the support from inside at the 5-1/8" mark. Position the support under the hose. Secure the support to the lifting post with only enough tension to prevent movement on the post.

NOTE: See Hose Support drawings, Page 4.

7. Mark the support 1" below the tube part of the hose (H), near the elbow. Use the No. 1 cross point screwdriver and push the pointed end through the support. Insert pointed end of R44302 short tie band through this hole and secure hose with light tension only. Hold the support and hose firmly downward and tension the hose tube nut on the expansion valve. Position the hose to clear the hinge and tension the rear tube nut.

NOTE: If the receiver-drier has been in service for more than two years, it should be replaced.

8. Add 2.0 oz. of oil (TY22100, PAG for R134a) (TY6384, Mineral oil for R-12) to the drier before installation.

9. Connect a vacuum pump and evacuate the system. Do a vacuum leak check before charging the system.

10. Recharge the system with the proper refrigerant specified in the retrofit or tractor technical manual.

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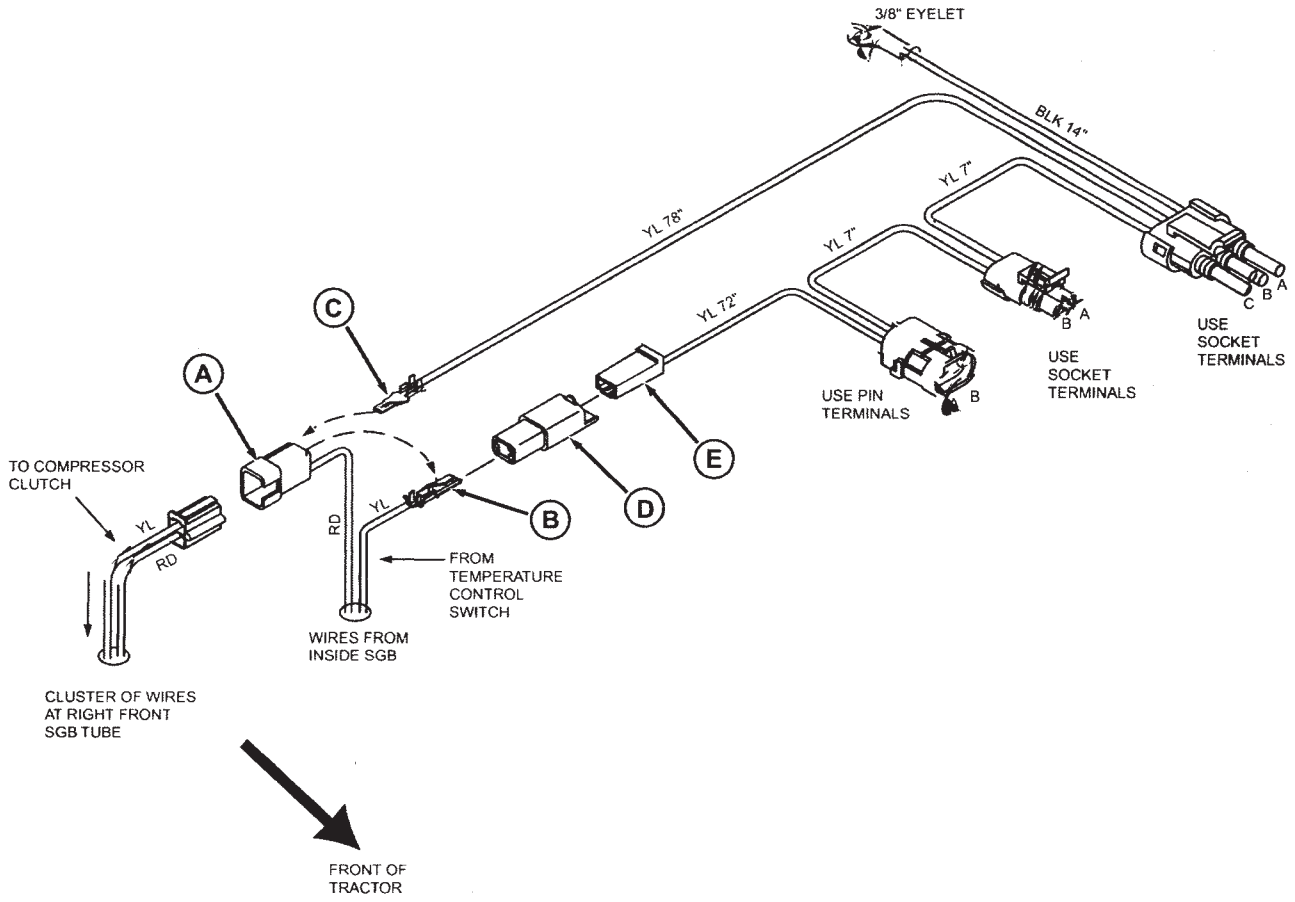
Install Pressure Switches & Diode



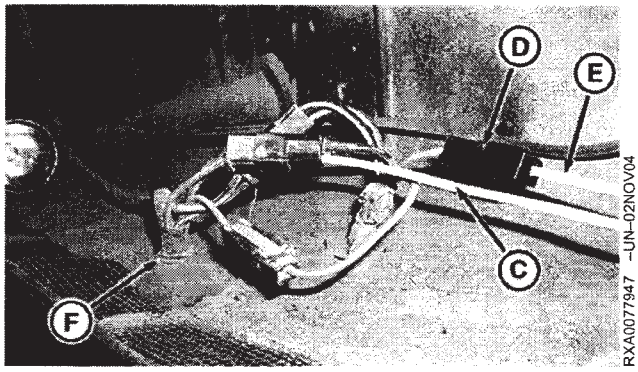
RE203464 Switch Harness Diagram

NOTE: See Hose Support Diagram and Switch Diagram.

1. Remove protective caps from adapter ports on RE55554, hose and inspect adapters for damage and debris. Install RE24307 & RE24308 switches on hose adapters with firm tension.

2. Connect new RE203464 wire harness to both pressure switches and install RE23766, diode.

3. Locate 2-way connector (A) (yellow and red wires) at right front SGB post. Disconnect and remove the blade terminal from the connector (B) (yellow wire from temperature control switch).



A—Two-Way Connector
B—Blade Terminal
C—Harness Blade Terminal
D—T28585 Connector Body
E—Connector
F—Wires at Right Front SGB Tube

Continued on next page

NOTE: Tractors having a sheet metal evaporator-blower housing, route the wire harness on the front side. Tractors having the construction foam style housing, route wire harness on rear side.

4. Insert blade terminal (C) of RE203464 wire harness, in original 2-way connector body and reconnect the two connectors.

5. Re-shape the original blade terminal (B) so the locking tab will latch in the T28585 connector body (D). Install connector body on the blade terminal from the 2-way connector and connect to other wire (E) of new harness.

NOTE: Wire harness will be slightly long for tractors having a sheet metal blower housing. Loop wire if necessary and install R44302 tie band to take up excess slack.

6. Remove the front cap screw at left roof hinge and scrape the metal around the hole to obtain good electrical continuity. Secure the black wire with eyelet at this location.

7. Band the switch and diode leads to the pressure hose to prevent contact with the SGB roof when it is in the closed position. Band the two wires of the wire harness at 12—16" intervals toward right corner of SGB roof.

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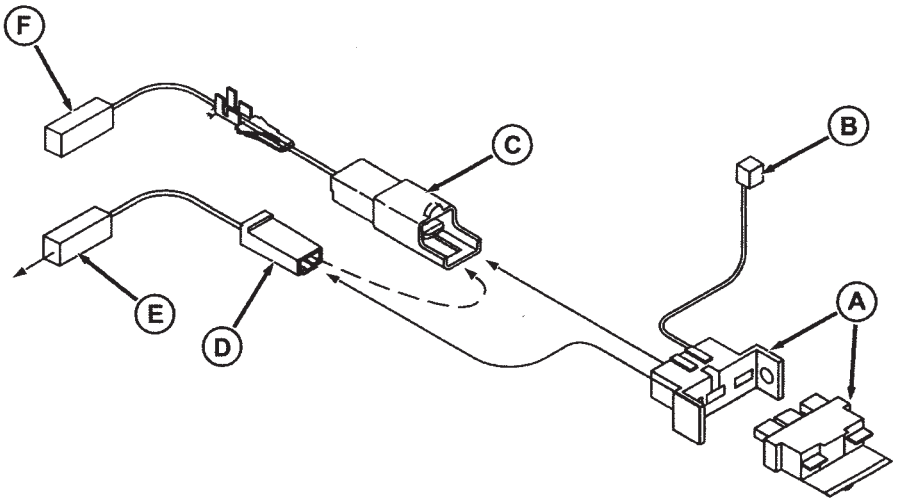
Removal of Thermal Fuse and Holder (Delco Compressor)



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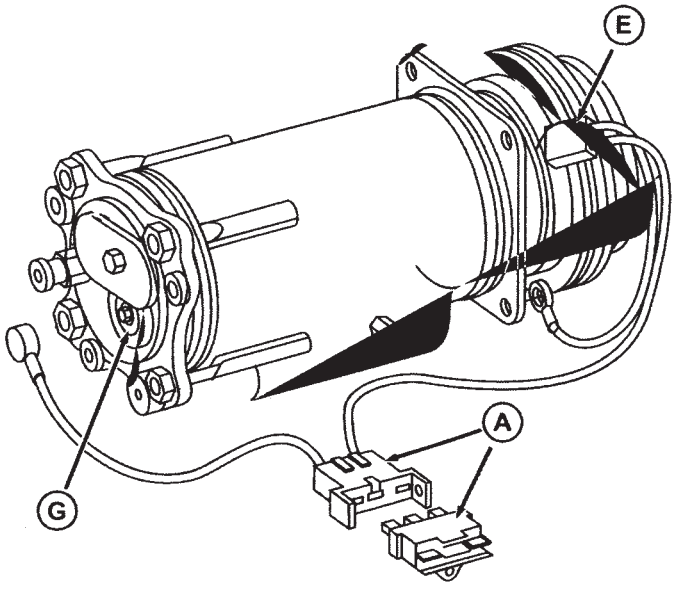
Temperature Control Wiring Diagram



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Compressor

A—Thermal Fuse and Holder
B—To Super-Heat Switch
C—T34067 Terminal & T28585 Connector
D—T28583 Connector Body
E—To Clutch Coil
F—From Temperature Control Switch
G—Super-Heat Switch

Continued on next page

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NOTE: See Temperature Control Wiring and Compressor Diagrams.

1. Remove power supply wire from center socket at compressor thermal fuse holder (A). Cut off the female terminal and install T34067, blade terminal and T28585, connector body (C) to this wire.
2. Remove clutch coil wire (E) from socket in thermal fuse holder (A). Install T28583 connector body (D) on female terminal. Plug the two connector bodies (C and D) together.
3. Disconnect the third wire from the Super Heat Shut-off Switch (G) at rear of the compressor and discard the thermal fuse and holder (A).

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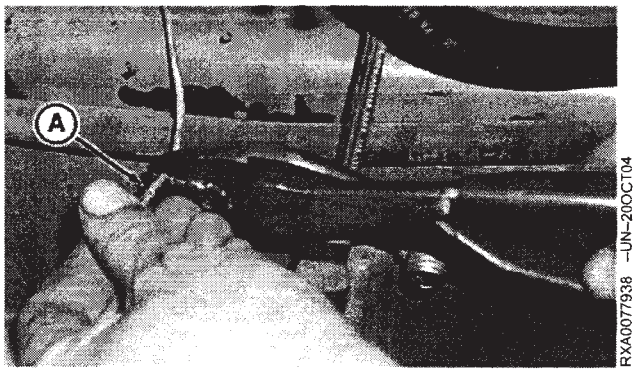
Removal of Thermal Fuse and Holder (Denso Compressor)

NOTE: R78061 blade terminal, R78059 seal and R78052 one way connector are not part of this kit and will need to be ordered through normal parts ordering system.

1. Remove power supply wire from center socket at compressor thermal fuse holder. Cut off female terminal (A) and install R78061 pin terminal (B), R78059 seal (C) and R78052 one way connector (D) to this wire.
2. Connect one way connector to compressor wiring connector (E).

A—Terminal
B—Blade Terminal
C—Seal
D—One Way Connector
E—Compressor Wiring Connector



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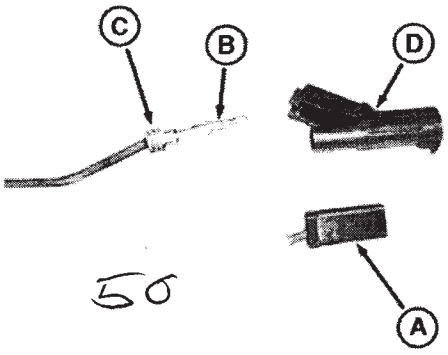
Thermal Fuse Removal



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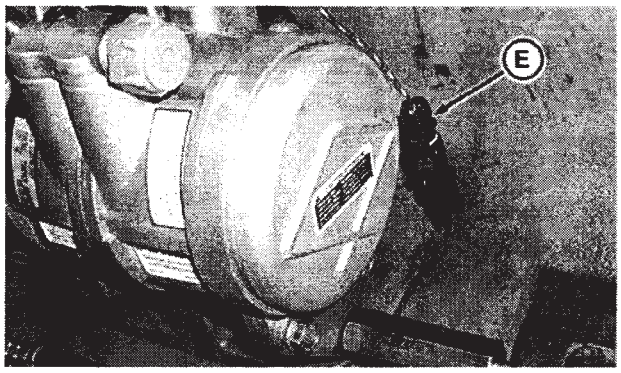
Weather Pack Connector



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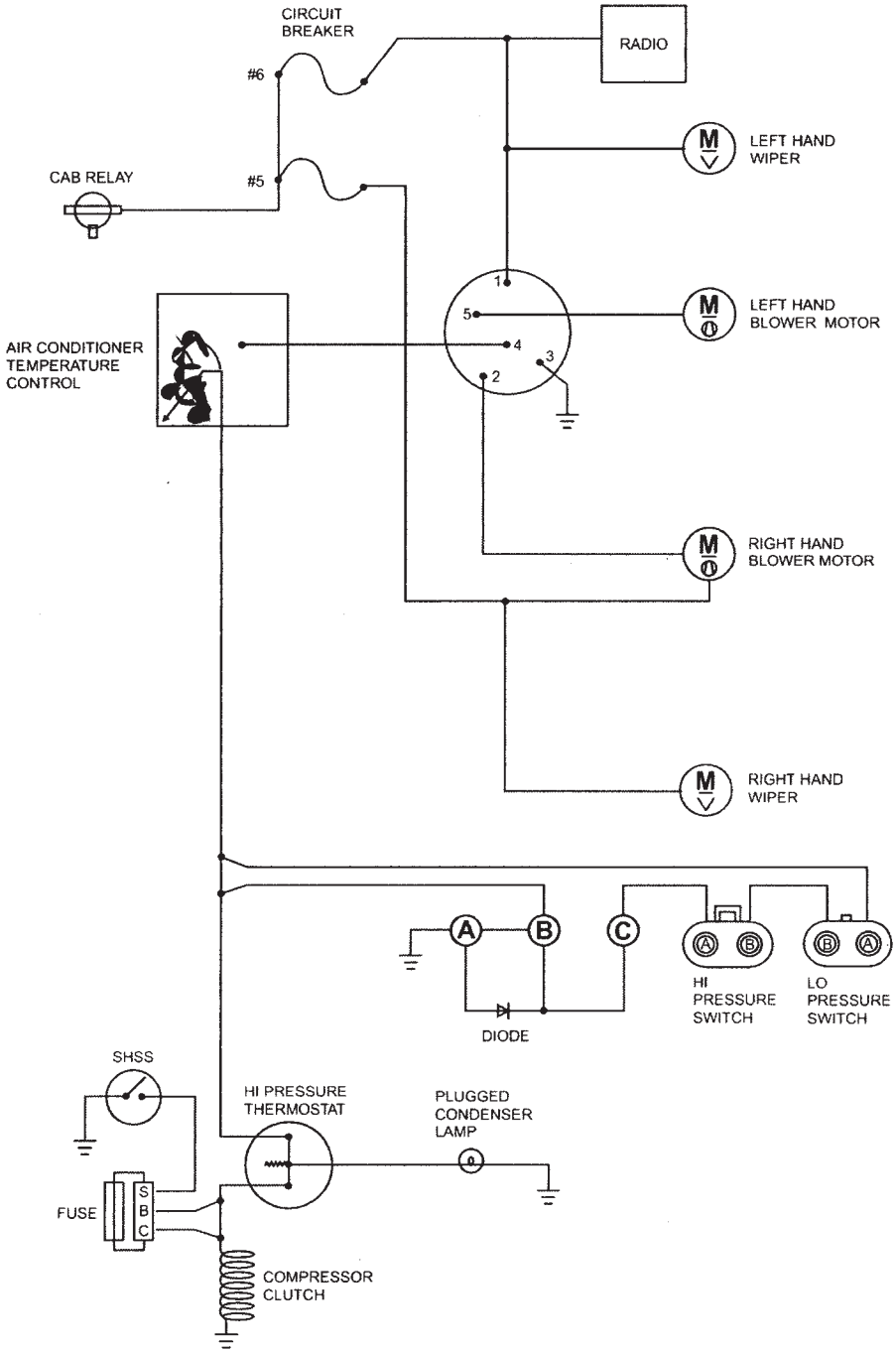
Removal of Thermal Fuse and Holder (Delco and Denso Compressor)



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Air Conditioner Wiring Diagram

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RW29387,000008E –19–02NOV04–1/4

NOTE: The system must be charged with refrigerant to 40—50 psi before the low pressure switch will close. a. If the clutch does not click On & Off, check new wire harness RE203464 and switches added at inlet of the expansion valve for less than 1.0 ohm resistance. See Air Conditioner Wiring Diagram, Page 10.

1. With key switch in **Run** position and the temperature control knob full CW, turn the blower switch between **Off and Low** several times. The clutch should click **On and Off.**

IMPORTANT: Typical suction pressure at 70 degree F. ambient temperature is 2—4 psi with a relative humidity at 10—70 percent. Do not change the factory setting of the expansion valve. Changing this setting usually results in a higher air duct temperature. See information for testing expansion valve below.

2. Operate system for 15—20 minutes to verify pressure and air duct temperature is within ranges specified in following charts.

Continued on next page

Use Chart No. 4 for all 30, 40, 50, 55, & 60 Series Row Crop & 30, 40, & 50 Series 4WD tractors. The pressures are very close to charts in the technical manuals and either can be use. The pressures at right side is a conversion for an R134a system on the same group of tractors. (Note-Chart No. 5 is a metric conversion of Chart No. 4)

Chart No. 4

Temperature Degree F.	R-12 Suction Pressure	R-12 Discharge Pressure	R134a Suction Pressure	R134a Discharge Pressure
51--60	1--5 Psi	100-150 Psi	1.0--6.0 Psi	105--165 Psi
61--70	2--10	120--170	2.0--11	125--190
71--80	3--15	130--195	3.0--16	135--215
81--90	4--20	145--225	4.0--21	150--250
91--100	5--25	160--260	5.0--26	165--285
101--110	10--30	175--300	10--32	180--330

Chart No. 5 (Metric conversion of Chart No. 4)

Temperature Degree F.	R-12 Suction Pressure	R-12 Discharge Pressure	R134a Suction Pressure	R134a Discharge Pressure
10.6--15.7	7--35 kPa	700--1050 kPa	7--42 kPa	735--1155 kPa
16.2--21.3	14--70	840--1190	14--77	875--1330
21.8--26.9	21--105	910--1365	21--112	945--1505
27.4--32.5	28--140	1015--1575	28--147	1050--1750
33.0--38.1	35--175	1120--1820	35--182	1155--1995
38.6--43.7	70--210	1225--2100	70--224	1260--2310

The R-12 chart in TM1434 must be used for the 60 Series 4WD.

When a 60 Series tractor is converted to R134a, use the following chart in TM1550 for 70 Series.

Chart No. 6 (60 & 70 Series 4WD Tractors with R134a)

Ambient Temperature Degree F.	Degree C.	R134a Suction Pressure Psi	R134a Suction Pressure kPA	R134a Discharge Pressure Psi	R134a Discharge Pressure kPA
50--60	10--16	5--16	30--110	115--155	790--1070
60--70	16--21	8--19	50--130	125--175	860--1210
70--80	21--27	11--22	80--150	140--205	970--1410
80--90	27--32	14--25	100--170	160--240	1100--1660
90--100	32--38	17--28	120--190	185--280	1280--1930
100--110	38--44	20--32	140--210	215--325	1480--2240
110--120	44--49	23--36	180--250	250--375	1730--2590

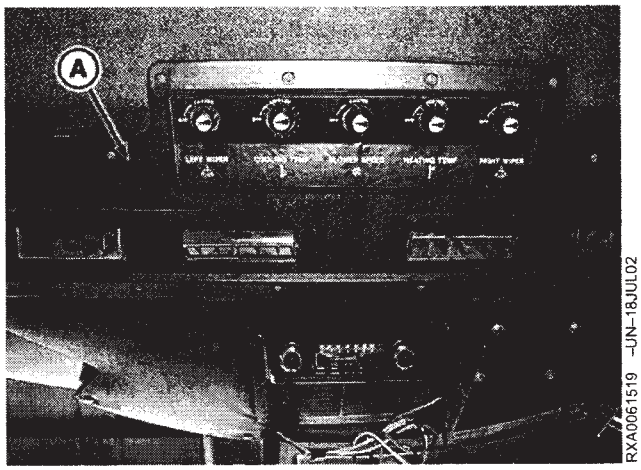
3. After verifying pressures are normal, close upper roof and secure.

Continued on next page

4. Install caution decal on control panel (A), left of wiper switch.

NOTE: Additional Information:
Inform operators to stop compressor operation, when air-conditioning system stops cooling.
If system does not start or later stops cooling, refrigerant and oil may not be circulating and compressor damage is possible. Check system operation: With engine at 1500 rpm set the blower and temperature control switches to engage the compressor clutch. These switches are located in the control panel above the operator's head. The air conditioning system should start cooling within three minutes. Inspect the larger suction line at rear of the compressor. It should be getting cool and typically will be covered with condensate or frost with continued operation. Cool air should also be coming from the blower air ducts. If refrigerant is not circulating, the compressor suction line and air from blower air ducts will be warm. Turn the temperature control switch OFF. Prolonged compressor operation without circulation of refrigerant and oil will cause compressor failure. Install test gauges and use test procedure in Section 290 of the technical manual for further system check out.

A—Control Panel



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Control Panel

IMPORTANT

Prevent Damage To Air Conditioning Compressor. If system is not cooling, turn temperature control switch OFF. Contact John Deere dealer

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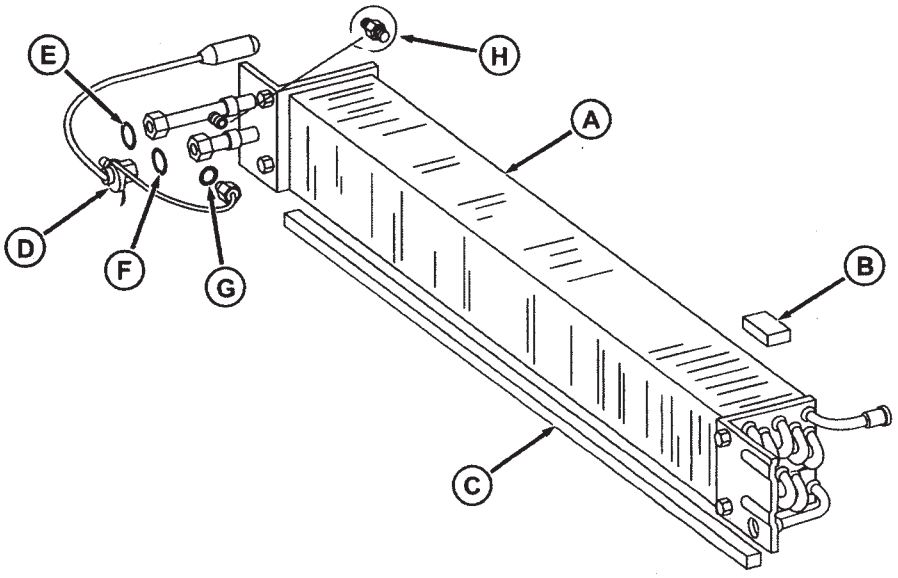
Label

RW29387,000008E –19–02NOV04–4/4

Check Of Thermal Expansion Valve (TEV) Operation On Tractor



RXA0061336 –UN–28JUN02

Evaporator

A—Evaporator
B—Foam Pad
C—Isolator
D—Expansion Valve
E—R33259 O-Ring
F—P51212 O-Ring
G—R34812 O-Ring
H—R130737 Fitting
I—Thermal Bulb

1. Connect air conditioning gauges to test ports and put the system into operation at 1500 rpm with the heater valve fully closed.

2. The following observations must be made before checking the TEV operation. Repair any condition that is not normal.

   A. Condenser and radiator must be clean to provide unrestricted air flow.

   B. If equipped with viscous fan drive the fan must turn up to correct speed with engine at wide open throttle.

   C. Fresh air and re-circulating filters must be clean.

   D. Seals for cab door, windows, control rods and wire harnesses must not leak air or allow entry of dirt.

   E. Blower motors must turn up to speed and provide a noticeable change of air flow from air ducts at each setting.

   F. Temperature control must be set for Max. cooling and heater control turned off at start of TEV testing.

   G. With engine off compressor clutch must click on and off when blower switch is turned from off to low speed and back to off. Repeat this check several times to be sure of correct operation.

Continued on next page

H. After 5 to 10 minutes of engine operation heater hoses at rear of cab or where ever possible to touch, must be only warm (not hot).

- If heater valve was open with engine coolant up to operating temperature, hoses and heater will be hot.
- Recheck temperature of hoses after 10 to 15 minutes of air conditioning operation to be sure engine coolant is not flowing through heater valve.
- If there is 0.5 gpm of coolant flow through heater valve, air conditioning capacity is severely deteriorated.

I. The compressor suction pressure must be above 5.0 psi, 10 psi is preferred, to perform TEV test. This pressure usually will be higher at slower engine speeds. Note: Low refrigerant charge will affect the results of this TEV test.

J. The compressor discharge pressure should be within 120 to 250 psi to perform the TEV test. The suction side is the critical pressure. Note: Discharge side is not critical, unless it is excessively high.

3. Check expansion valve operation as follows:

A. With compressor operating, set engine speed to get compressor at highest suction pressure. Note: Slower engine speed usually results in a higher pressure.

- If suction pressure is at least 5 psi, continue to "C".

B. If the suction side is zero or in a vacuum, check suction line from evaporator for a restriction (frost may accumulate at point of restriction). Frost will usually accumulate on entire suction line when ambient temperature is approximately 75 °F and below

- If there is no frost on suction line and low side gauge is in a vacuum, suction side quick disconnect coupler is not properly connected or expansion valve is closed. Repair is necessary at this time.

C. Compressor clutch must be hot wired to battery voltage to perform this TEV operational test. Install a jumper wire from starter battery terminal to the clutch coil. Note: Delco compressors will require a ground wire from clutch coil.

D. Turn blower switch off to stop air flow through evaporator. Note: This action causes evaporator to get very cold and TEV should close. Suction pressure should decrease.

E. Allow 60 to 90 seconds of operation with blower switch off for pressure to decrease.

- Record pressure at compressor suction side gauge.
- If suction side goes into a vacuum before specified time, go to next step immediately.
- 30, 40, 50, 55, 60 Series Row Crop and 30, 40 and 50 Series 4WD Tractors: Suction side will go into a 4—10" Hg. vacuum when the TEV closes.

F. Turn blower switch on and turn heater control knob to Max. heat. Note: This action causes evaporator to warm up and TEV should open. Suction pressure should increase to approximately same pressure at beginning of TEV test.

G. Allow 2 to 3 minutes of operation for peak rise of suction pressure. Note: Stop compressor operation if suction side does not return to a positive pressure within 60 seconds.

H. Repeat this TEV test two or three times to verify correct or incorrect valve operation before taking next step of action. Note: Depending upon level of refrigerant charge and ambient temperature, amount of pressure change varies. Therefore, you should not replace TEV when one tractor has a 5—6 psi pressure change and another tractor has a 10—15 psi change.

Continued on next page

I. Suction pressure typically changes 5 psi or more from TEV open to TEV closed.

- If TEV opens and closes, valve operation is normal. Continue with other testing.
- If suction pressure does not decrease with blower switch off, valve is stuck open. Replace valve.
- If suction pressure does not increase when blower switch is turned on and heater valve is opened, valve is stuck closed. Replace valve.

NOTE: If the expansion valve balance line connector threads, at outlet of evaporator, are damaged during valve removal, replace the connector with R130737 fitting (H), Page 14. Refrigerant leakage usually occurs at this point due to a damaged connector. The evaporator must be removed and repaired by a qualified welder.

OU1092A,0000212 –19–02NOV04–3/3

Expansion Valve (Quick) Bench Test

1. Remove expansion valve from shipping carton.
2. Inspect valve for any damage to threads, balancing tube, or thermal bulb.
3. Remove caps and clear any debris from valve inlet and outlet.
4. Attach flushing adapter JT03186 (A), (6887) from JT05419 or JT02098 fitting kit to inlet of valve (B).
5. Use a blowgun and 30" hose (C) from SERVICEGARD, Rubber Stopper Kit number D05361ST or comparable equipment. Connect the blowgun with hose to shop air supply of 70 to 120 psi.

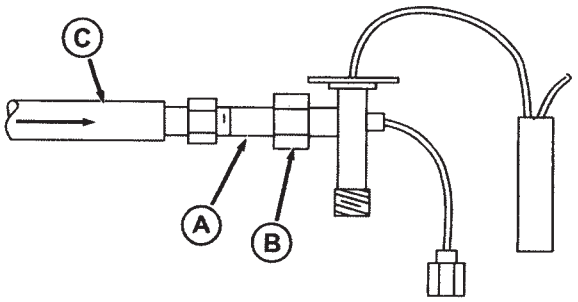
CAUTION: Direct air hose upward into a cleared atmosphere away from bystanders to check for adequate airflow.

6. Hold end of hose to prevent whipping and check amount of air (sound) that exits the hose before making the connection to the flushing adapter.

NOTE: The blowgun and hose must be clear of any obstructions to obtain an accurate check of the expansion valve.

7. Connect the hose having 7/16-20 threads to the flushing adapter.
8. Press the blowgun lever to apply air pressure at inlet of the expansion valve (B). There should be a good blast of air from outlet of the expansion valve. Eg: Compared to exhausting air directly into the atmosphere from the hose, the volume will be approximately one-half.

   - If there is good air flow from valve, the **valve is usable.**
   - If there is no airflow from valve, the thermal bulb has lost its gas charge. **Do not** use the valve



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Expansion Valve

A—JT03186 Adapter
B—Valve Inlet
C—Air Hose

Continued on next page

- If the airflow is poor or limited, the valve may not be properly adjusted or the thermal bulb is low on gas charge. Recheck for good airflow from blowgun hose to atmosphere. If that check is normal, **Do not** use the valve.

NOTE: It is recommended to perform this quick bench check on the expansion valve removed from system. believed to be faulty.

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