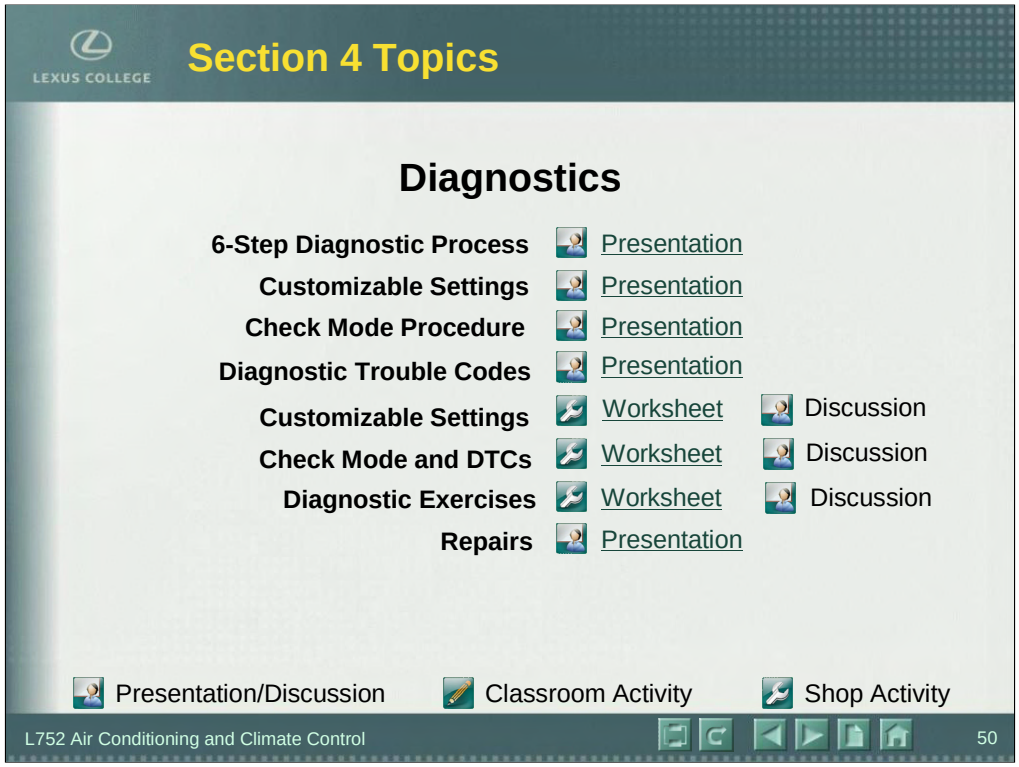


Section Overview

- 6-Step Diagnostic Process
- Customizable Settings
- Check Mode Procedure
- Actuator Check (Step Test)
- Diagnostic Trouble Codes
- Repairs

Systematic Diagnosis

To repair a malfunctioning A/C system, you should conduct a systematic diagnosis of the complaint. Systematic diagnosis is:

- A logical, systematic approach to the process of finding the trouble.
- Based on a clear understanding of how the system works or should work.

6-Step Diagnostic Process

The 6-step diagnostic process gives you a logical plan for correcting an
A/C problem.

Verify the Complaint

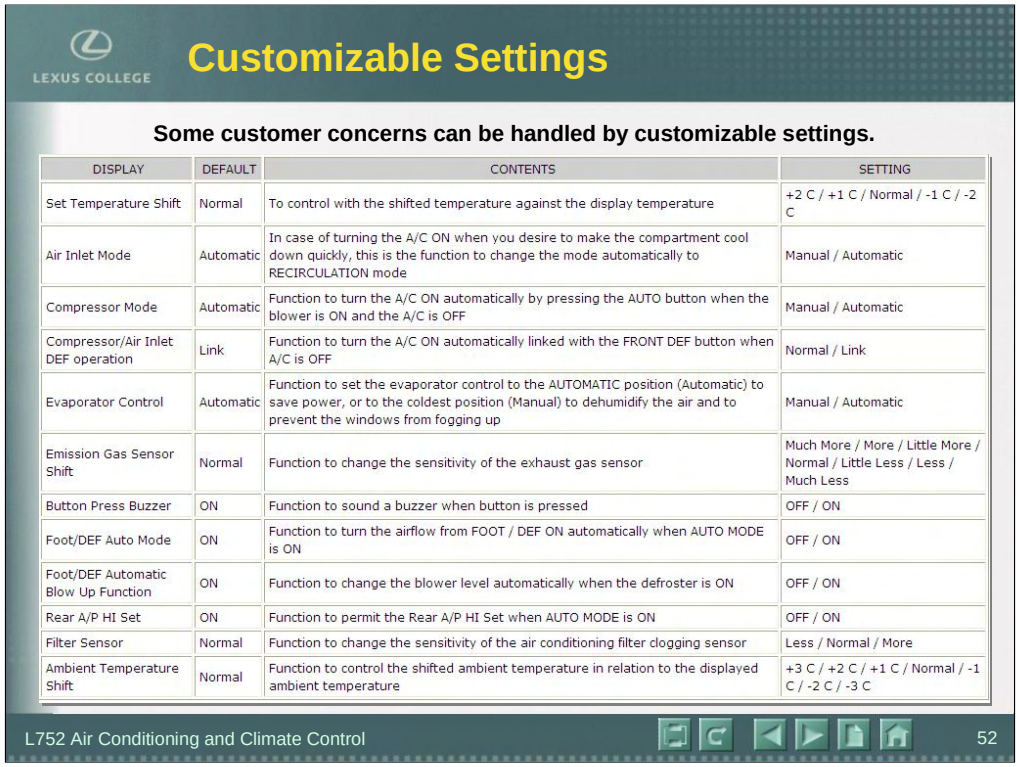
- Don't start testing until you can reproduce the problem noted on the repair order.
- Determine if it is a problem or a normal system function.

Determine Related Symptoms

- Perform system checks to determine what is and is not working normally.

Analyze the Symptoms

- Consider the customer's complaint and any related symptoms that you have found.
- Determine when the problem occurs (operating conditions).
- Determine what kind of problem you need to look for.



DISPLAY	DEFAULT	CONTENTS	SETTING
Set Temperature Shift	Normal	To control with the shifted temperature against the display temperature	+2 C / +1 C / Normal / -1 C / -2 C
Air Inlet Mode	Automatic	In case of turning the A/C ON when you desire to make the compartment cool down quickly, this is the function to change the mode automatically to RECIRCULATION mode	Manual / Automatic
Compressor Mode	Automatic	Function to turn the A/C ON automatically by pressing the AUTO button when the blower is ON and the A/C is OFF	Manual / Automatic
Compressor/Air Inlet DEF operation	Link	Function to turn the A/C ON automatically linked with the FRONT DEF button when A/C is OFF	Normal / Link
Evaporator Control	Automatic	Function to set the evaporator control to the AUTOMATIC position (Automatic) to save power, or to the coldest position (Manual) to dehumidify the air and to prevent the windows from fogging up	Manual / Automatic
Emission Gas Sensor Shift	Normal	Function to change the sensitivity of the exhaust gas sensor	Much More / More / Little More / Normal / Little Less / Less / Much Less
Button Press Buzzer	ON	Function to sound a buzzer when button is pressed	OFF / ON
Foot/DEF Auto Mode	ON	Function to turn the airflow from FOOT / DEF ON automatically when AUTO MODE is ON	OFF / ON
Foot/DEF Automatic Blow Up Function	ON	Function to change the blower level automatically when the defroster is ON	OFF / ON
Rear A/P HI Set	ON	Function to permit the Rear A/P HI Set when AUTO MODE is ON	OFF / ON
Filter Sensor	Normal	Function to change the sensitivity of the air conditioning filter clogging sensor	Less / Normal / More
Ambient Temperature Shift	Normal	Function to control the shifted ambient temperature in relation to the displayed ambient temperature	+3 C / +2 C / +1 C / Normal / -1 C / -2 C / -3 C

Isolate the Trouble

- Determine where to begin testing and narrow the problem down.
- Consider possible related problems. (A stuck expansion valve could indicate inadequate lubricating oil.)

Correct the Trouble

- Don't replace a major component until all other possible problems have been checked, and corrected if necessary.

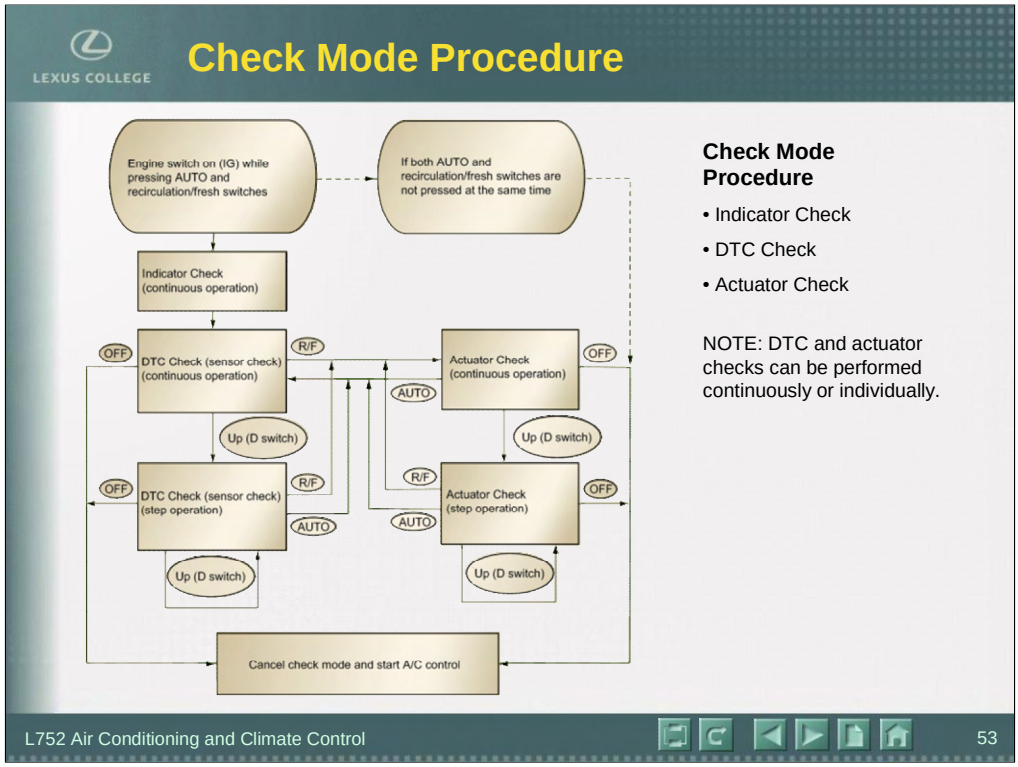
Check for Proper Operation

- Don't assume everything is working properly after making a repair.
- Verify the specific complaint is corrected.
- Determine what might cause the problem to happen again.
- Be sure no new problems have been introduced.

Customizable Settings

Sometimes what may seem like a problem to the customer is actually a normal system function. A variety of system functions can be customized using Techstream. (Refer to the sample Repair Manual chart above.)

- Be sure to make a note of the current settings before customizing.
- When troubleshooting a function, first make sure that the function is set to the default setting.



Check Mode Procedure

Lexus automatic A/C systems include a self diagnosis feature for testing indicators, displaying DTCs, and testing the compressor, blower and dampers. This Check Mode Procedure may operate differently from vehicle to vehicle, so refer to the Repair Manual for the vehicle you are servicing.

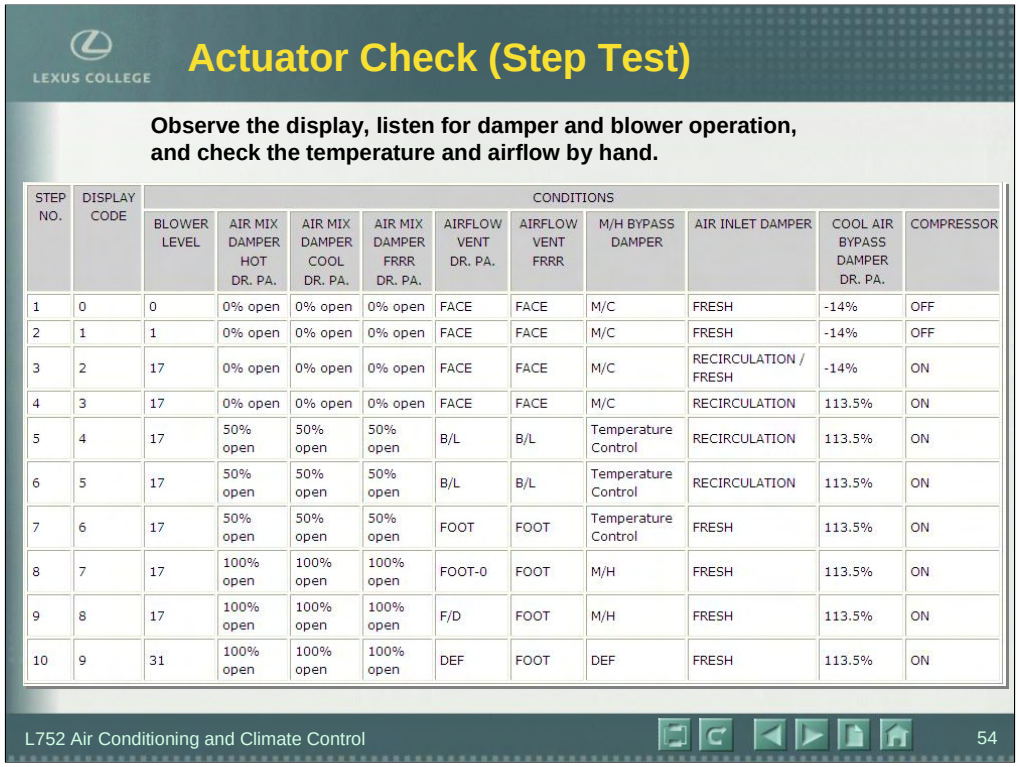
The typical procedure for entering the check mode is to hold the Auto and Fresh/Recirc switches while turning on the ignition. Self diagnostics include:

Indicator check – tests all indicator lights and buzzers.

Diagnostic code check – displays code numbers on the temperature display. A chart in the Repair Manual relates the code numbers to specific input (sensor) or output (actuator) circuits.

- For current faults, the buzzer sounds when the code is displayed.
- Past faults that have been stored in memory, but are not currently present, display the code number without the buzzer.
- Faults in the solar sensor or compressor lock sensor circuit are not kept in memory after the ignition is switched OFF.

Actuator check (step test) – automatically engages 8 to 10 different combinations of fan speed, air distribution modes, temperature settings and intake modes in a preset sequence. The Repair Manual includes a chart showing the intended combination of conditions for each of the steps.



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Actuator Check (Step Test)

Observe the display, listen for damper and blower operation, and check the temperature and airflow by hand.

STEP NO.	DISPLAY CODE	CONDITIONS									
		BLOWER LEVEL	AIR MIX DAMPER HOT DR. PA.	AIR MIX DAMPER COOL DR. PA.	AIR MIX DAMPER FRRR DR. PA.	AIRFLOW VENT DR. PA.	AIRFLOW VENT FRRR	M/H BYPASS DAMPER	AIR INLET DAMPER	COOL AIR BYPASS DAMPER DR. PA.	COMPRESSOR
1	0	0	0% open	0% open	0% open	FACE	FACE	M/C	FRESH	-14%	OFF
2	1	1	0% open	0% open	0% open	FACE	FACE	M/C	FRESH	-14%	OFF
3	2	17	0% open	0% open	0% open	FACE	FACE	M/C	RECIRCULATION / FRESH	-14%	ON
4	3	17	0% open	0% open	0% open	FACE	FACE	M/C	RECIRCULATION	113.5%	ON
5	4	17	50% open	50% open	50% open	B/L	B/L	Temperature Control	RECIRCULATION	113.5%	ON
6	5	17	50% open	50% open	50% open	B/L	B/L	Temperature Control	RECIRCULATION	113.5%	ON
7	6	17	50% open	50% open	50% open	FOOT	FOOT	Temperature Control	FRESH	113.5%	ON
8	7	17	100% open	100% open	100% open	FOOT-0	FOOT	M/H	FRESH	113.5%	ON
9	8	17	100% open	100% open	100% open	F/D	FOOT	M/H	FRESH	113.5%	ON
10	9	31	100% open	100% open	100% open	DEF	FOOT	DEF	FRESH	113.5%	ON

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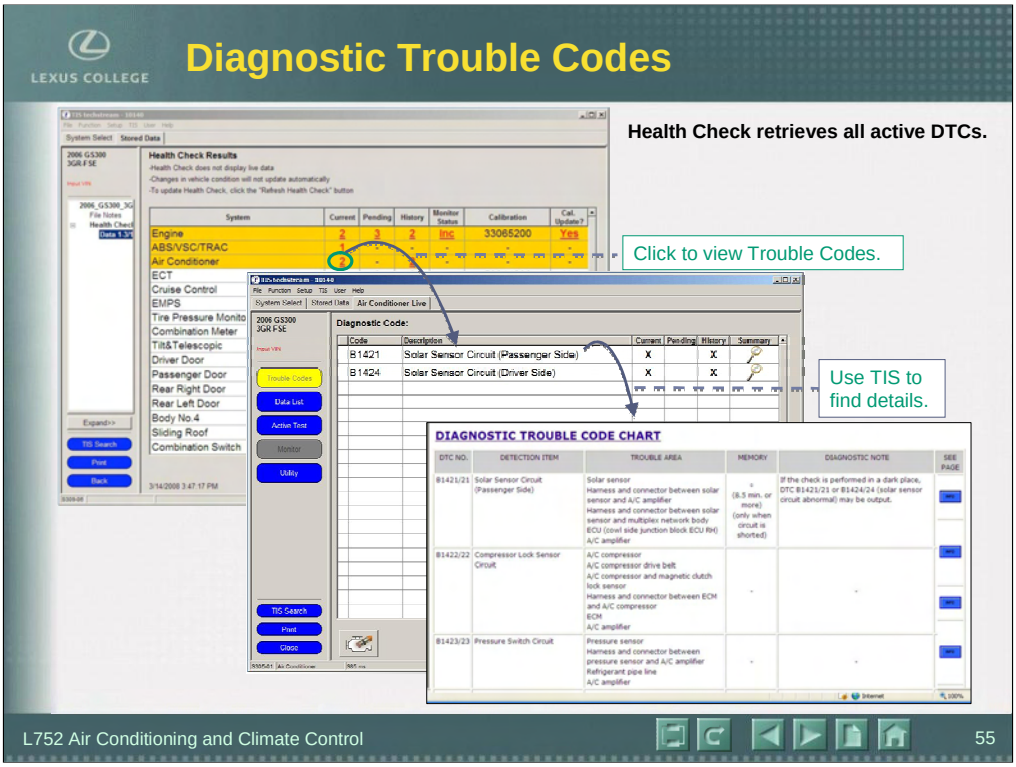
Depending on the self-diagnosis mode selected, the A/C ECU automatically steps through the tests in sequence, or the tests can be performed one-by-one by pressing designated switches on the control panel.

NOTES:



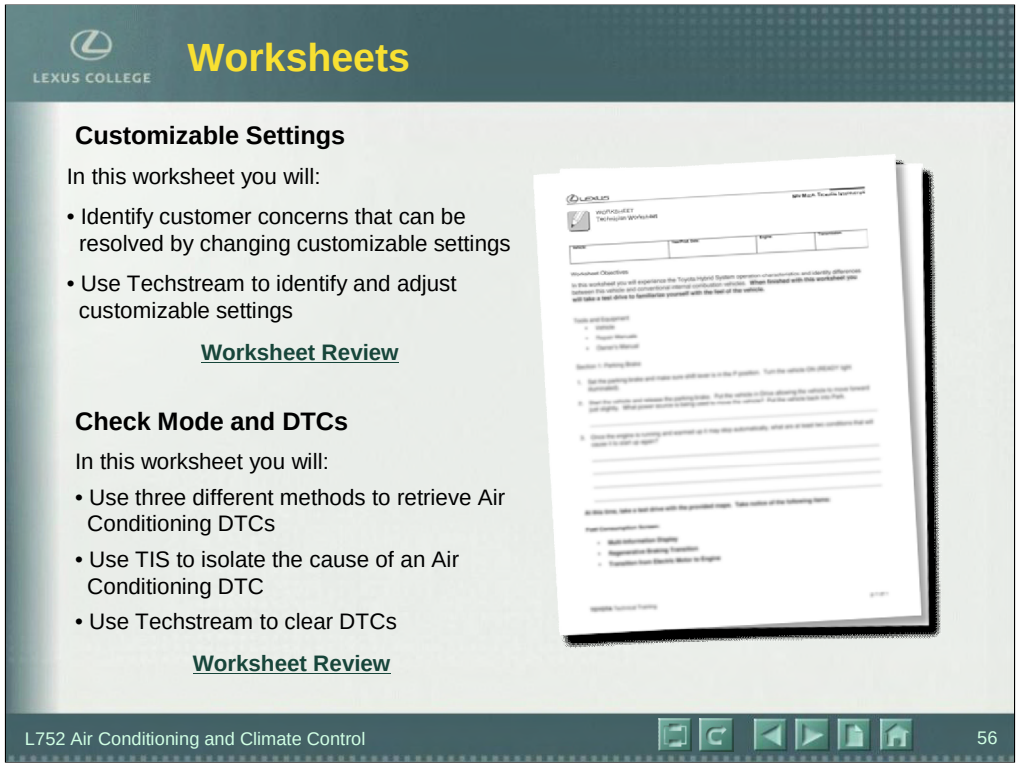
Diagnostic Trouble Codes

The A/C ECU stores Diagnostic Trouble Codes (DTCs) in response to most faults in its sensors, actuators and circuits. Performing a Health Check retrieves all active DTCs. An active code for the air conditioning system can lead you directly to a problem area.

The Repair Manual lists every DTC along with details that will help you isolate the cause.

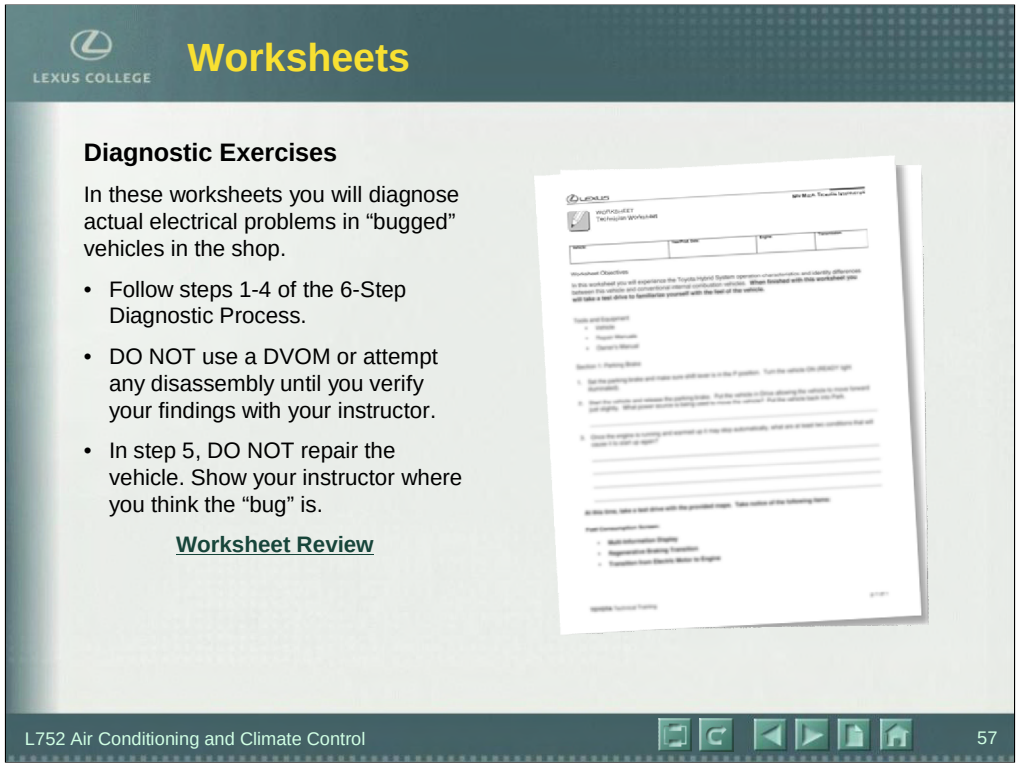
NOTE

On some vehicles, Techstream may not be able to retrieve DTCs from the A/C ECU. On these vehicles, DTCs must be retrieved using the Check Mode Procedure.



Use this space to write down any questions you may have for your instructor.

NOTES:



Use this space to write down any questions you may have for your instructor.

NOTES:

Answer the following questions:

1. What complaint were you diagnosing?

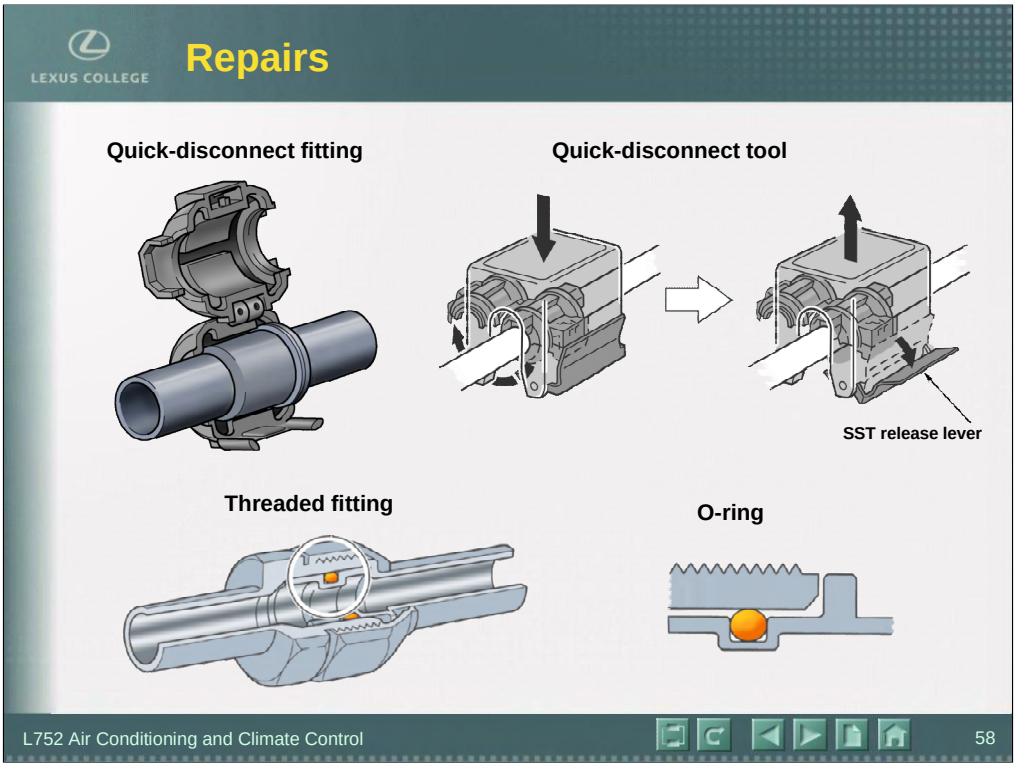
2. What related symptoms did you find?

3. What conclusion did you make?

4. How did you isolate trouble?

5. What was the root cause?

6. How would you fix the problem?



Component Replacement

Recover any refrigerant remaining in the system before disassembling refrigerant lines.

- On threaded fittings, observe torque specifications and use two wrenches. Hold the male fitting stationary with one wrench while rotating the female fitting (nut) with the other. Use a torque wrench for final tightening.
- Always handle O-rings carefully. Handle them with compressor oil-covered fingers or with a toothpick.
- Always install the receiver-drier last. Keep it sealed until the last moment to prevent the desiccant from absorbing moisture. It will become totally saturated within 10 minutes of exposure to humid air.