



SERVICE MANUAL BULLETIN

This Service Manual Bulletin is prepared by the Publications Department of New Flyer Industries Canada ULC. Refer to details below.

SMB-159

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| APPLICABILITY | | | | | |
|----------------|---|---|---|---|---|
| VEHICLE LENGTH | <input type="checkbox"/> 30ft. | <input type="checkbox"/> 35ft. | <input type="checkbox"/> 40ft. | <input type="checkbox"/> 60ft. | <input checked="" type="checkbox"/> ALL |
| VEHICLE TYPE | <input checked="" type="checkbox"/> Xcelsior® | <input type="checkbox"/> MiDi® | <input type="checkbox"/> Invero® | | <input type="checkbox"/> ALL |
| | <input type="checkbox"/> Low Floor | <input type="checkbox"/> High Floor | | | |
| FUEL TYPE | <input checked="" type="checkbox"/> Diesel | <input checked="" type="checkbox"/> Diesel/Electric | <input checked="" type="checkbox"/> CNG | <input checked="" type="checkbox"/> LNG | <input type="checkbox"/> ALL |
| | <input checked="" type="checkbox"/> Fuel Cell | <input type="checkbox"/> Trolley/Electric | <input type="checkbox"/> Battery/Electric | | |
| SUBJECT | Cooling System Pressure & Leak Test | | | | |
| SECTION TITLE | 6 - COOLING SYSTEM | | | | |
| DETAILS | <p>This bulletin provides a procedure for testing the cooling system for leaks on your New Flyer vehicle.</p> <p>This information supersedes any prior information on this subject already provided in your New Flyer Service Manuals. Make this Service Bulletin available to service personnel to inform them of changed information.</p> | | | | |

1. Cooling System Pressure & Leak Test

1.1. Pressure Test Specifications

| PRESSURE TEST SPECIFICATIONS | | | |
|-------------------------------------|---|----------------------|----------------------|
| Item | Specification | 16 psi System | 18 psi System |
| 1 | Minimum stabilized pressure | 14 psi | 15 psi |
| 2 | Stabilized pressure range after vehicle operation | 12 to 14 psi | 15 to 20 psi |

1.2. Description

NOTE:

This test is applicable to cooling systems using a 16 or 18 psig pressure cap.

Pressure testing the engine cooling and HVAC Systems ensures that the vehicle is free of leaks and is holding pressure for optimal performance. A pressure test tool is required with a pressure regulator of a 0

to 50 psi rating. See “Fig. 1: Pressure Test Tool” on page 2. The pressure/leak test procedures are described as follows:

- Pressure Test Tool Setup
- Leak Test Cooling System: Before Filling
- Leak Test Cooling System: After Filling
- Leak Test Cooling System: After Road Test

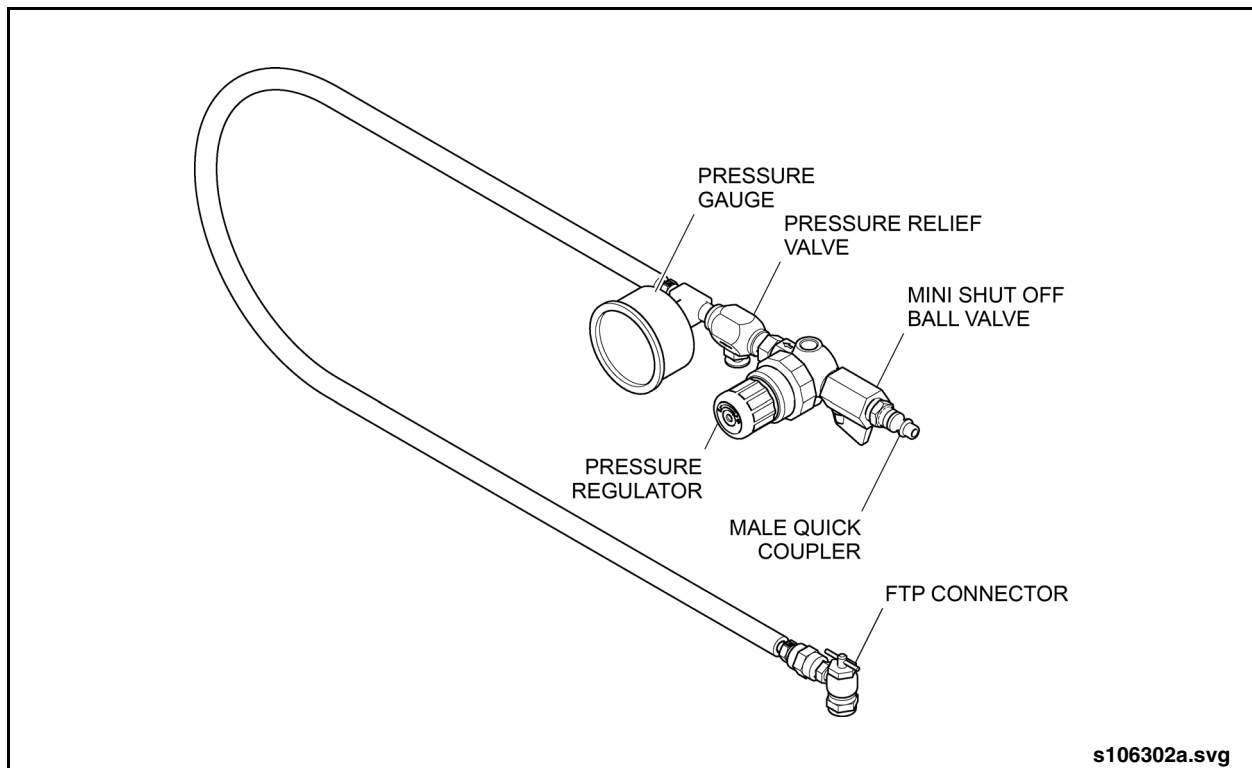


Fig. 1: Pressure Test Tool

1.2.1. Pressure Test Tool Setup



The cooling system is under pressure and contains hot fluids that can spill or spray and cause serious scalding injuries. Allow an appropriate amount of time for the cooling system to cool down below 120°F (49°C) before working on the cooling system unless otherwise noted.

1. Remove the cap on the Schrader valve.
2. Connect the charging chuck (FTP Connector) of the pressure test tool to the Schrader valve.
3. Close the mini shutoff valve of the pressure test tool.
4. Ensure that the pressure relief cap is installed, fully seated and that the relief valve is closed.
5. Remove the filler cap from the coolant recovery tank.
6. Ensure that all manual valves in the booster pump lines, coolant lines, and HVAC lines are set to the OPEN position.



Secure the pressure tester and air lines before making a connection to a pressurized air hose. Failure to properly secure the pressure tester and air lines can result in injury to personnel and damage to equipment.

7. Attach a shop air line to the quick coupler on the pressure tester

1.2.2. Leak Test Cooling System before Filling



DO NOT pressurize the cooling system above 25 psi otherwise cooling system

damage can occur. Adjust the pressure regulator accordingly before opening the pressure test tool shutoff valve.

1. Open the 1/4 turn valve, press and hold the button on the pressure test tool to pressurize the system.
2. Allow the pressure to build above the rating of the pressure control cap and then release the button.

NOTE:

The pressure relief cap relieves excess pressure and then the pressure holds.

3. Observe the pressure reading on the pressure test tool gauge. Allow the system to stabilize for 5 minutes. The system should stabilize at the minimum specified pressure. [Refer to Pressure Test Specifications, "Item 1" on page 2.](#)
4. Note the pressure regulator reading once stabilized.
5. Allow the vehicle to stand for an additional 10 minutes. If, after 10 minutes, the pressure reading drops by more than 0.5 psi from the noted stabilized pressure in the previous step, the leak test has failed.
6. If the pressure test failed in the previous step, maintain system pressure between 10 to 14 psi and troubleshoot the system by applying soapy water spray on all hoses, and hose connections. Repair/replace leaking hoses (indicated by bubbles forming in the applied soapy water) and retighten any loose hose connections. Refer your New Flyer Service Manual for torque values. Repeat this task until the test passes.
7. When the test has passed, close the shutoff valve and disconnect the pressure test tool from the vehicle.
8. Vent the pressure by using the pressure relief valve on the pressure relief cap.
9. Check the coolant level and fill cooling system as needed. Refer your New Flyer Service Manual for more information.

1.2.3. Leak Testing Cooling System after Filling (NOT applicable to 16 psig system)

 **NOTE:**

This task requires a Stant (#12704) Engine Coolant System Pressure Tester Hose and Head Kit with the hose plugged or capped.

1. Vent the engine cooling system pressure at the pressure relief cap.
2. Install the pressure test tool.
3. Remove the pressure relief cap.
4. Install the Stant Engine Coolant System Pressure Tester Hose and Head Kit.
5. Rotate the pressure release bar on the Stant Pressure Tester Cap in the counter-clockwise direction to close the pressure relief valve.



DO NOT pressurize the cooling system above 25 psi otherwise cooling system damage can occur. Adjust the pressure regulator accordingly before opening the pressure test tool shutoff valve.

6. Open the shutoff valve of the pressure test tool.
7. Press and hold the button on the regulator to pressurize the cooling system to 25 psi.
8. Release the button and allow the system pressure to stabilize for 5 minutes. If, after

5 minutes, the pressure drops below 23 psi, press and hold the button on the pressure test tool regulator to re-pressurize the system to 25 psi and then release the button.

9. Note the pressure regulator reading once stabilized.
10. Allow the vehicle to stand for an additional 10 minutes. If, after 10 minutes, the pressure reading drops by more than 0.5 psi from the noted stabilized pressure in the previous step, the leak test has failed.
11. If the pressure test failed in the previous step, maintain system pressure between 10 and 14 psi and troubleshoot the system by applying soapy water spray onto all hoses, and hose connections. Repair/replace leaking hoses (indicated by bubbles forming in the applied soapy water) and retighten any loose hose connections. Refer your New Flyer Service Manual for torque values. Repeat this task until the test passes.
12. When the test passes, close the shutoff valve of the pressure test tool and vent the coolant system pressure by rotating the pressure release bar on the Stant Pressure Tester Cap in the clockwise direction.
13. Disconnect the pressure test tool from the vehicle and remove the Stant Pressure Tester Cap.
14. Install the original pressure relief cap to and fasten the cover back onto the Schrader valve.

1.2.4. Leak Testing Cooling System after Road Test



The cooling system is under pressure and contains hot fluids that can spill or spray and cause serious scalding injuries. This task may require close proximity to hot components. Ensure all safety precautions are taken before proceeding.



For this test, DO NOT attach the shop air line to the pressure test tool until specifically mentioned.

1. While the coolant is still hot (above 180°F (49°C)) and with the engine running, install the pressure test tool. Close the pressure test tool shutoff valve before installing.
2. Verify that the pressure reading is within the specified range and is stable. [Refer to Pressure Test Specifications, "Item 2" on page 2.](#)
3. If the pressure is within range and is stable, the leak test has passed - proceed to step

5 of this task. Otherwise, proceed to the next step.

4. If the pressure test failed in the previous step allow the coolant to cool to or below 120°F (49°C) Connect a shop air hose to the pressure test tool, open the pressure test tool shutoff valve and maintain system pressure between 10 and 14 psi.
5. Troubleshoot the system by applying soapy water spray onto all hoses, and hose connections. If a leak is detected (bubbles forming in the soapy water spray), Repair/replace leaking hoses and retighten any hose connections. Refer your New Flyer Service Manual for torque values.
6. When the leak test has passed, close the shutoff valve of the pressure test tool and vent the coolant system pressure.
7. Disconnect the pressure test tool from the vehicle.

1.3. Maintenance

 **NOTE:**

Refer to the Preventive Maintenance Section of your New Flyer Service Manual for scheduled maintenance procedures and intervals.