

# FluidXchange Operating Instructions

## Key Features and Benefits:

- No moving parts. Uses Shop Air to extract or inject coolant from the vehicle.
- Easy to operate Control Manifold to create vacuum or pressure to the Tank.
- Automatic Shut-Off Valve to prevent injecting air into the cooling system.

## Photo Legend:

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>➤ A – In-Hose Shut-Off Valve</li> <li>➤ B – Control Manifold (Vacuum or Pressure)</li> <li>➤ C – Gauge (Vacuum or Pressure)</li> </ul> | <ul style="list-style-type: none"> <li>➤ D – Pressure By-Pass Shut-Off Valve</li> <li>➤ E – End-of-Hose Q/D Coupling</li> <li>➤ F – Retro-Fit Kit Stopper Handle</li> <li>➤ G – End-of-Hose Hand Valve Assembly</li> </ul> |
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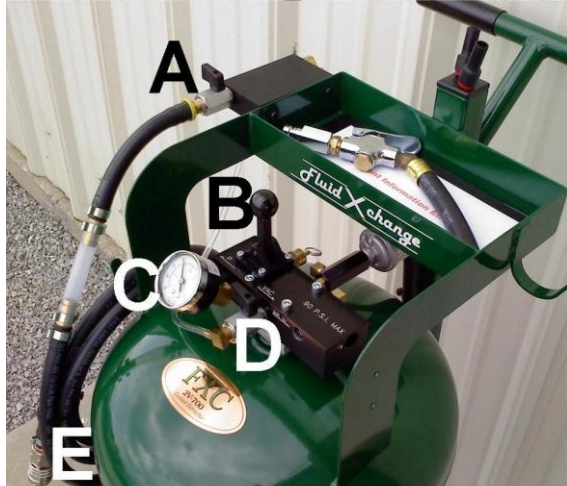
### Extract Coolant

- 1) Remove Vehicle Surge-Tank Cap
- 2) Connect shop air (regulated to 90 psi max) to manifold
- 3) Close in-hose ball-valve (A)
- 4) Place control manifold in vacuum mode (B)
- 5) Connect hose to cooling system Q/D Fitting (E)
- 6) Open in-hose ball-valve (A) to extract coolant
- 7) Amt of vacuum can be seen on gauge (C)
- 8) Close in-hose ball-valve (A) when extraction is complete
- 9) Disconnect hose from cooling system Q/D Fitting (E)

### Inject Coolant

- 1) Remove Vehicle Surge-Tank Cap
- 2) Connect shop air (regulated to 90 psi max) to manifold
- 3) Close in-hose ball-valve (A)
- 4) Place control manifold in pressure mode (C) up to 25 psi
- 5) Connect hose to cooling system Q/D Fitting (E)
- 6) Open in-hose ball-valve (A) to inject coolant
- 7) Add pressure to tank as needed to continue to inject coolant
- 8) Tank will shut-off when completely empty to avoid injecting air into the cooling system
- 9) Do not over-flow cooling system surge-tank
- 10) Close in-hose ball-valve (A) when injection is complete
- 11) Disconnect hose from cooling system Q/D Fitting (E)

### FluidXchange Controls



F - Retro-Fit Stopper Handle



G - Hand Valve

### Eliminate Trapped Air

- 1) As part of the Injection step, take these additional steps
- 2) Stop injecting coolant when a few inches of coolant reaches the Surge Tank. Close in-hose ball-valve (A)
- 3) Disconnect hose from cooling system Q/D Fitting (E)
- 4) Attach Retro-Fit Stopper Handle to hose (F to E)
- 5) Clamp off any vent hoses/connections to the Vehicle Cooling System
- 6) Place control manifold in vacuum mode (C)
- 7) Seal Retro-Fit Stopper over Vehicle Surge-Tank opening
- 8) Open in-hose ball-valve (A) to apply vacuum
- 9) Amt of vacuum can be seen on gauge (C)
- 10) Watch air bubble in the Surge Tank as trapped air is removed from the cooling system
- 11) When air bubbles stop, close in-hose ball-valve (A)
- 12) Relieve vacuum on surge-tank and remove retro-fit stopper
- 13) Replace Retro-Fit Stopper Handle with Hand Valve (G to E)
- 14) Place control manifold in pressure mode (B) up to 25 psi
- 15) Open in-hose ball-valve (A)
- 16) Complete filling the Surge Tank using Hand Valve

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# FluidXchange

# FluidXchange Testing Instructions

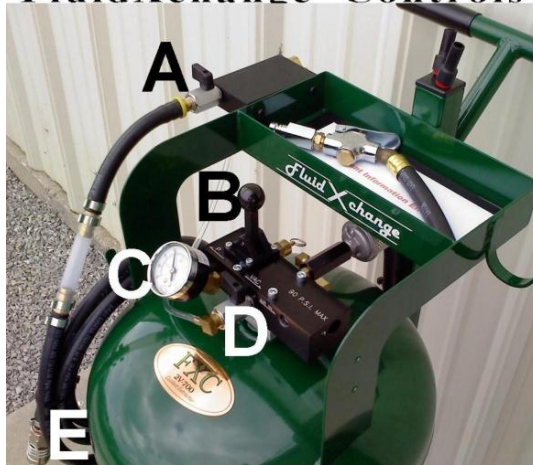
## Photo Legend:

- A – In-Hose Shut-Off Valve
- B – Control Manifold (Vacuum or Pressure)
- C – Gauge (Vacuum or Pressure)
- D – Pressure By-Pass Shut-Off Valve
- E – End-of-Hose Q/D Coupling
- F – Retro-Fit Kit Stopper Handle
- G – End-of-Hose Hand Valve Assembly

### Replace Quick-Disconnect Fitting (or other Cooling System Component)

- 1) Determine correct Q/D Fitting size for the application, wrap threads with sealant, and have ready to install on vehicle
- 2) Remove Vehicle Surge-Tank Cap
- 3) Close in-hose ball-valve (A)
- 4) Connect shop air (regulated to 90 psi max) to manifold
- 5) Attach Retro-Fit Stopper Handle to hose (F to E)
- 6) Clamp off any vent hoses/connections to the Vehicle Cooling System
- 7) Place control manifold in vacuum mode (B) to -20 Hg vacuum on gauge (C)
- 8) Seal Retro-Fit Stopper over Vehicle Surge-Tank opening
- 9) Open in-hose ball-valve (A) to apply vacuum
- 10) After vacuum on cooling system is established, loosen & remove drain plug and quickly replace with Q/D Fitting
- 11) Tighten Q/D Fitting for complete seal
- 12) Relieve vacuum on surge-tank by placing control manifold (B) in pressure mode until vacuum gauge (C) reads zero.
- 13) Remove Retro-Fit Stopper and if needed, complete system fill using hose (E) or hand valve (G).
- 14) Close in-hose ball-valve (A) when retro-fit is complete

### FluidXchange Controls



F - Retro-Fit Stopper Handle



G - Hand Valve

### Vacuum Test the Cooling System

- 1) Have the Vehicle Surge-Tank Cap in place
- 2) Connect shop air (regulated to 90 psi max) to manifold
- 3) Close in-hose ball-valve (A)
- 4) Connect hose to cooling system Q/D Fitting (E)
- 5) Place control manifold in vacuum mode (B) up to your system's specification
- 6) Open in-hose ball-valve (A) to start vacuum test
- 7) After tank & cooling system reach your desired vacuum, place control manifold in Off position and let sit
- 8) Listen for air leaks or loss of vacuum on gauge
- 9) When vacuum test is complete, relieve vacuum on the Cooling System by placing control manifold (B) in pressure mode until vacuum gauge (C) reads zero.
- 10) Remove Vehicle Surge-Tank Cap & complete system fill using hose (E) or hand valve (G).
- 11) Close in-hose ball-valve (A) & Pressure By-Pass Valve (D), and disconnect hose from cooling system Q/D Fitting (E).
- 12) Replace Vehicle Surge-Tank Cap.

### Pressure Test the Cooling System

- 1) Have the Vehicle Surge-Tank Cap in place
- 2) Connect shop air (regulated to 90 psi max) to manifold
- 3) Close in-hose ball-valve (A)
- 4) Connect hose to cooling system Q/D Fitting (E)
- 5) Place control manifold in pressure mode (B) up to your system's specification
- 6) Open in-hose ball-valve (A) to start pressure test
  - a. If a small qty of coolant is still in the bottom of Tank, pressure test can proceed (step 7).
  - b. If not, the shut-off valve in the tank will be engaged and block pressure to the Cooling system, so proceed with opening the Pressure By-Pass Valve (D).
- 7) After tank & cooling system reach your desired pressure, place control manifold in Off position and let sit.
- 8) Listen/look for air/fluid leaks or loss of pressure on gauge
- 9) When pressure test is complete, relieve pressure on the Cooling System by placing control manifold (B) in vacuum mode until pressure gauge (C) reads zero.
- 10) Remove Vehicle Surge-Tank Cap & complete system fill.
- 11) Close in-hose ball-valve (A) & Pressure By-Pass Valve (D), and disconnect hose from cooling system Q/D Fitting (E).
- 12) Replace Vehicle Surge-Tank Cap.

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