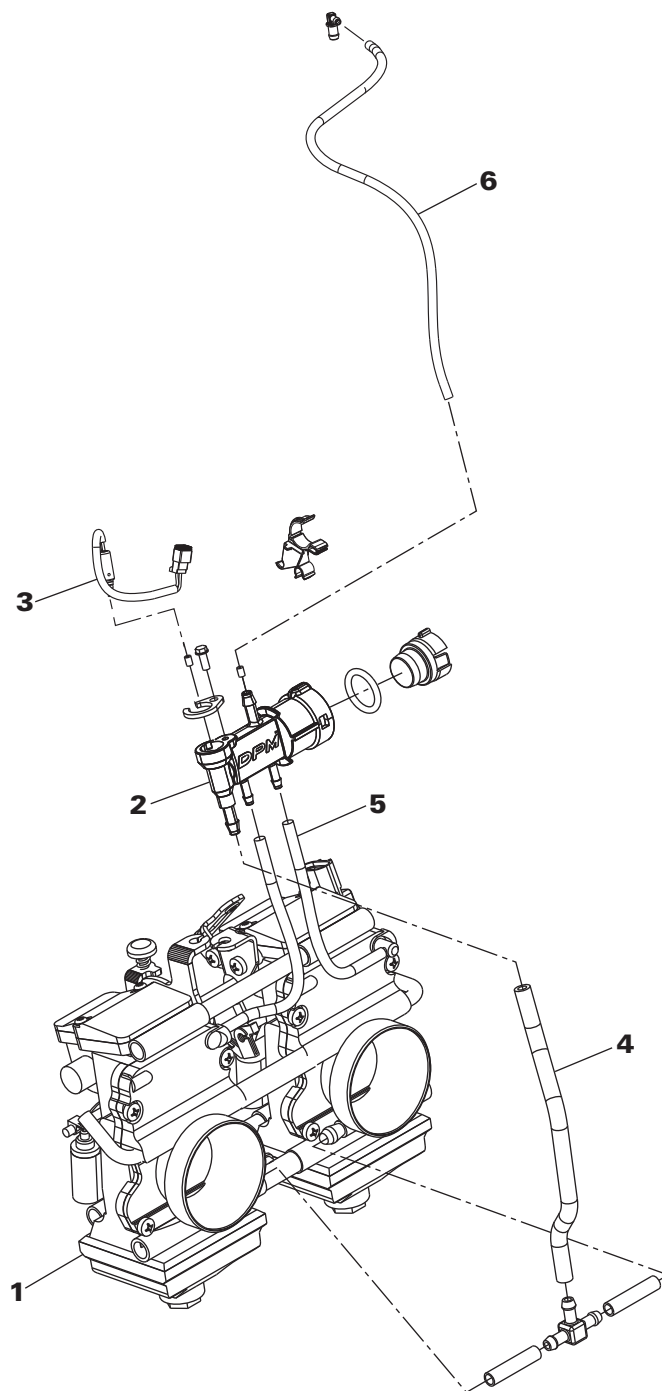


# DPM SYSTEM (800R POWER TEK)

## SERVICE TOOLS

Description	Part Number	Page
FLUKE 115 MULTIMETER .....	529 035 868 .....	4
VACUUM/PRESSURE PUMP .....	529 021 800 .....	7

## Subsection XX (DPM SYSTEM (800R POWER TEK))



mmr2008-032-001\_a

1. TM carburetor
2. DPM manifold
3. DPM solenoid
4. Negative pressure tubes connected to venturi
5. Float bowl tubes
6. Vent tube connected to air intake silencer

## GENERAL

### SYSTEM DESCRIPTION

The DPM receives negative pressure created in the carburetor venturi. A solenoid (controlled by ECM) opens the passage, when activated, to decrease the pressure in the carburetor bowls which in turn, leans the fuel mixture.

**NOTE:** For engine starting and warm-up, the required richer mixture is supplied by a conventional choke (enricher type).

The carburetors are calibrated with the richest jetting required to fulfill the worse operating conditions.

Using predefined maps, the ECM is constantly activating (duty cycle) the DPM solenoid to optimize the air/fuel mixture.

The ECM receives the signals from different sensors which indicate engine operating conditions at millisecond intervals.

The engine RPM (through the trigger coils) and TPS are the primary sensors used to control the DPM. Other sensors (air pressure, air and coolant temperature) are used as secondary inputs.

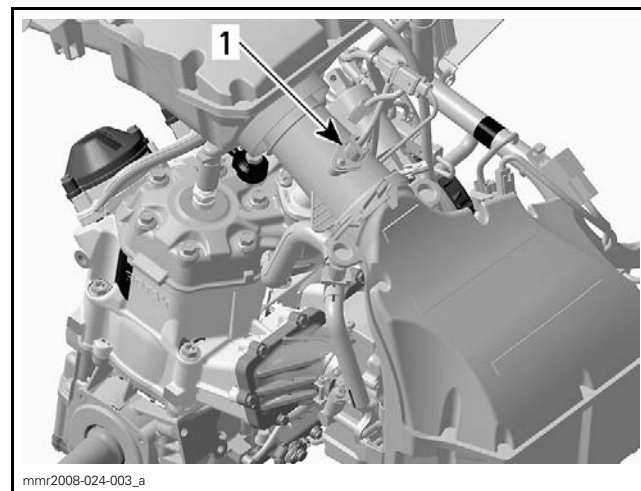
As air temperature and altitude change, the ECM uses its 3D mapping to maintain an optimum air/fuel mixture.

The ECM begins to lean fuel mixture when engine RPM is above approximately 3500 RPM.

## PROCEDURES

**NOTE:** It is a good practice to check for fault codes using B.U.D.S. software as a first troubleshooting step. Refer to *MONITORING SYSTEM AND FAULT CODES* section.

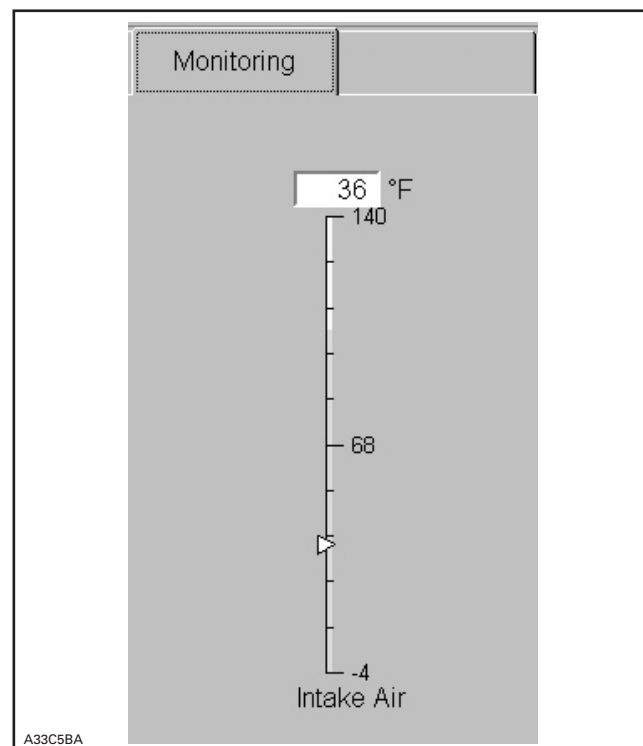
## AIR TEMPERATURE SENSOR (ATS)



1. Air temperature sensor (ATS)

### ATS Sensor Dynamic Test

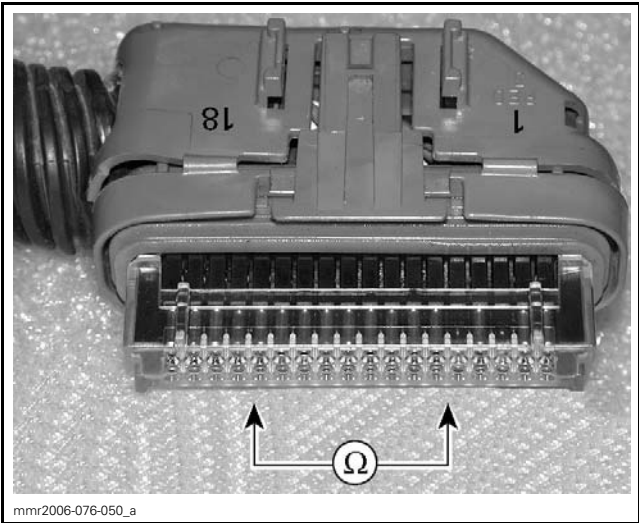
1. Connect vehicle to the applicable B.U.D.S. version.
2. Select the **Monitoring** and **ECM** tabs.
3. Monitor the **Intake Air** indicator. It should show the ambient temperature. Otherwise, perform the ATS sensor resistance test.



ATS Sensor Resistance Test  
(at ECM Connector)

Disconnect the ECM connector.  
Measure resistance at ECM connector as follows.

ECM CONNECTOR		MEASUREMENT
DA-1	DA-19	Refer to <i>TEMPERATURE SENSOR TABLE</i> in <i>ATS SENSOR RESISTANCE TEST (AT SENSOR)</i>

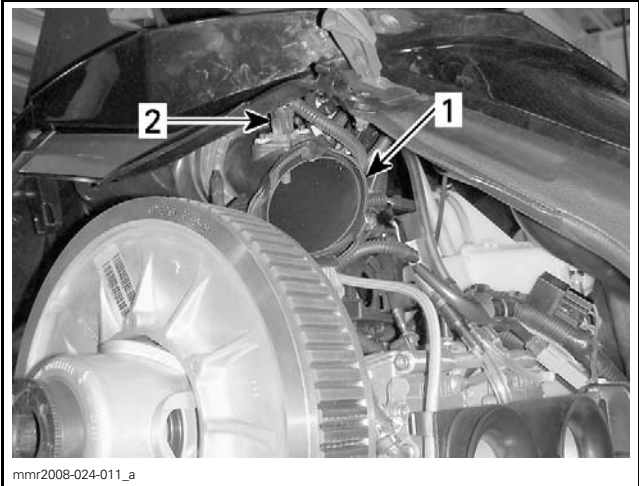


ECM CONNECTOR

If resistance is out of specification, carry out *ATS SENSOR RESISTANCE TEST (AT SENSOR)*.

ATS Sensor Resistance Test  
(at Sensor)

1. Remove pulley guard. Refer to *DRIVE SYSTEM AND BRAKE* subsection.
2. Remove primary air intake silencer. Refer to *AIR INTAKE SYSTEM* subsection.
3. Rotate intake adapter to disconnect ATS sensor connector.

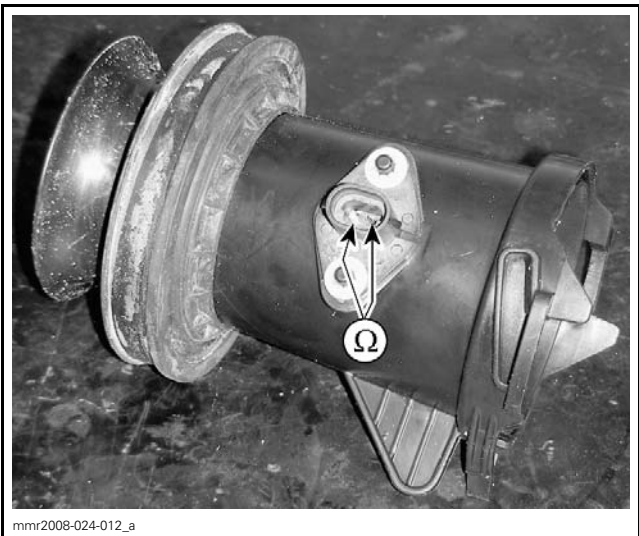


1. Rotate intake adapter
2. Disconnect ATS sensor connector

4. Using the FLUKE 115 MULTIMETER (P/N 529 035 868), measure ATS sensor resistance.



ATS SENSOR		MEASUREMENT
Pin A	Pin B	Refer to <i>TEMPERATURE SENSOR TABLE</i> below



INTAKE ADAPTER REMOVED FOR CLARITY PURPOSE ONLY

ATS SENSOR TEMPERATURE TABLE		MEASUREMENT
°C	°F	RESISTANCE ( $\Omega$ )
- 30	- 22	28000
- 20	- 4	14500
0	32	5500
20	68	2500
40	104	1200
60	140	600
80	176	320
100	212	180
130	266	90

If out of specification, replace sensor.

If resistance tests good, and *ATS SENSOR RESISTANCE TEST (AT ECM CONNECTOR)* failed, re-pair wiring/connector.

### ATS Sensor Replacement

1. See procedures above to reach sensor.
2. Loosen boot clamp.



1. Boot clamp

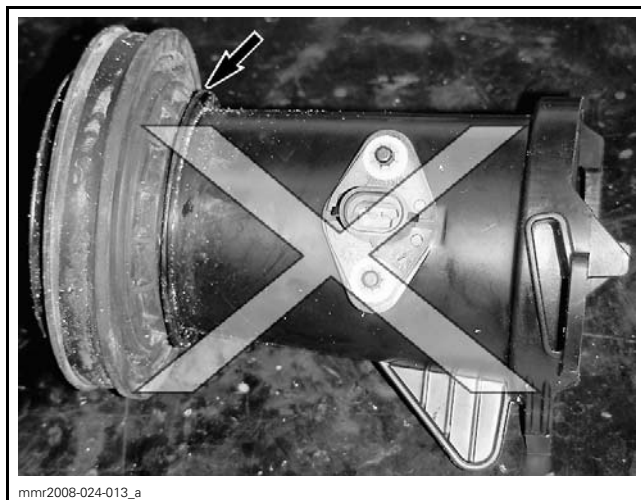
3. Unplug ATS sensor connector.
4. Pull out intake adapter.
5. Remove and discard sensor push nuts.



6. Pull sensor out.
7. Use **NEW** push nuts and secure the new sensor to adapter.
8. Ensure adapter boot is properly installed as shown.



CORRECT BOOT INSTALLATION

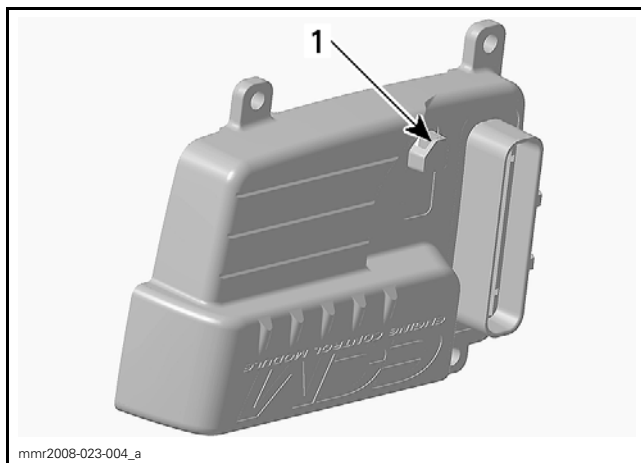


**WRONG BOOT INSTALLATION**

9. Install intake adapter on secondary air intake silencer.
10. Reconnect ATS sensor.
11. Reinstall all other removed parts.

### AIR PRESSURE SENSOR (APS)

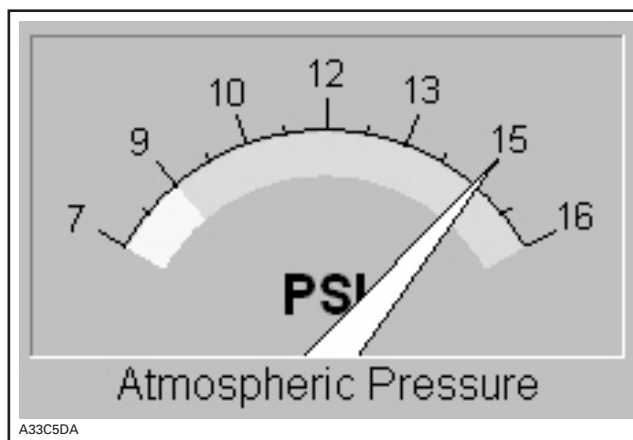
APS sensor is integrated in ECM.



1. Air pressure sensor (APS)

### APS Sensor Dynamic Test

1. Connect vehicle to the applicable B.U.D.S. version.
2. Select the **Monitoring** and **ECM** tabs.
3. Monitor the **Atmospheric Pressure** indicator. It should show the actual atmospheric pressure. Otherwise, perform the following.



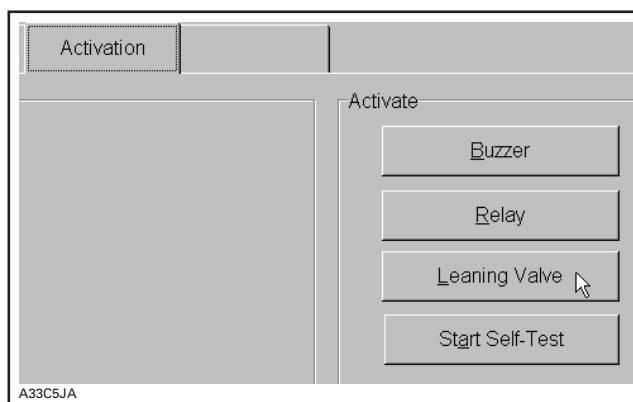
The average atmospheric pressure at sea level is 101.3 kPa (14.7 PSI).

4. Ensure pressure orifice is free of snow, ice and dirt. Temporarily remove the orifice filter and clean the area.
5. Check for fault codes in B.U.D.S.
6. If sensor does not work replace ECM.

### DPM SOLENOID

#### DPM Solenoid Test with B.U.D.S.

1. Connect vehicle to the applicable B.U.D.S. version.
2. Select the **Activation** and **ECM** tabs.
3. Click on the **Leaning valve** button to energize the DPM solenoid. This will validate the solenoid mechanical and electrical operation.



**ACTIVATION TAB**

4. Listen to or touch relay to feel it click.
5. If the solenoid does not work, check the input voltage at the solenoid connector.

### DPM Solenoid Input Voltage Test

1. Disconnect the connector from the solenoid.

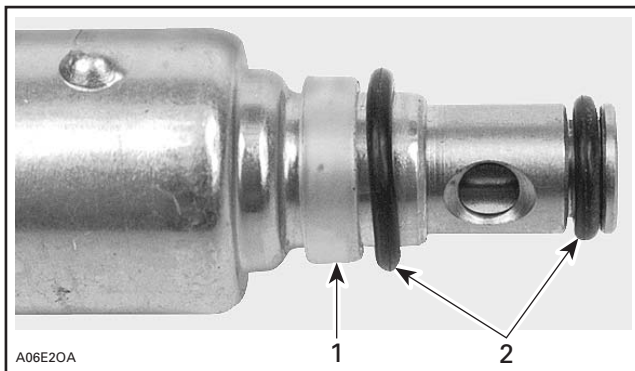
2. Measure voltage between pin 2 of DPM solenoid on harness side, and battery ground (engine ground on **manual start models**).

2.1 If 12 V is read, disconnect connector from the ECM and check continuity of circuit between pin DA-29 and pin 1. If wire/connector tests good, try a new ECM.

2.2 If it does not read 12 V, check the corresponding fuse(s), relay and continuity of circuit DP-2. If continuity is faulty, repair or replace wire and connector.

## DPM Solenoid Replacement

At reassembly, ensure that solenoid seals are in place.



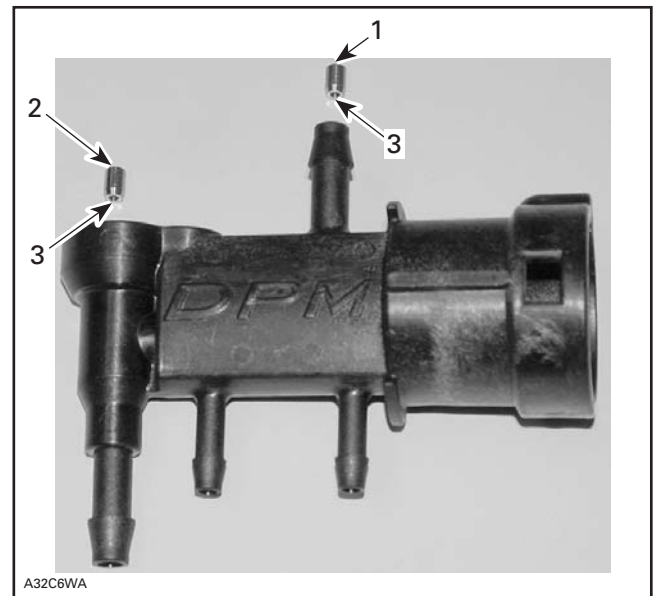
1. Plastic seal
2. O-rings

## DPM MANIFOLD

### DPM Manifold Visual Inspection

With DPM manifold removed from vehicle and all hoses disconnected from DPM manifold, inspect for any broken fittings or missing dust caps. If any part is broken, replace DPM manifold.

Ensure jets are positioned with the taper as shown.



1. Vent jet
2. Lean jet
3. Taper end here

Pay also attention not to mix jets. Refer to the following table for the proper inner diameter size. Refer to the illustration above for the jet location.

MODEL	INSIDE DIAMETER MM (IN)	
	VENT JET	LEAN JET
800R Power TEK	1.2 mm (.047 in)	2.0 mm (.079 in)

Ensure DPM cap O-ring is in good condition. To install cap, firmly push until tabs click and lock on both sides in DPM.

Leak test the DPM manifold.

### DPM Manifold Leak Test

#### Required Items

The following items will be required:

- Water column with at least 350 mm (13-3/4 in) in height
- 4.8 mm (3/16 in) T-fitting
- 6 mm (15/64 in) T-fitting
- 3.5 mm (9/64 in) ID x 100 mm (4 in) hose
- 6 mm (15/64 in) ID x 300 mm (12 in) hose
- VACUUM/PRESSURE PUMP (P/N 529 021 800).

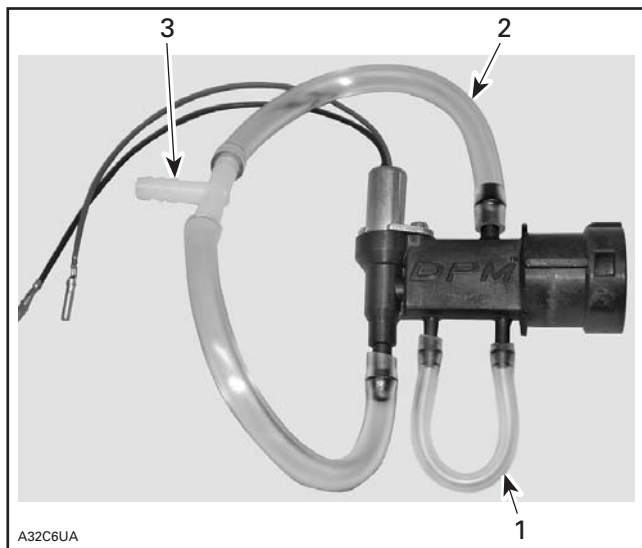


## Subsection XX (DPM SYSTEM (800R POWER TEK))



### DPM Manifold Preparation

Connect hoses as shown.

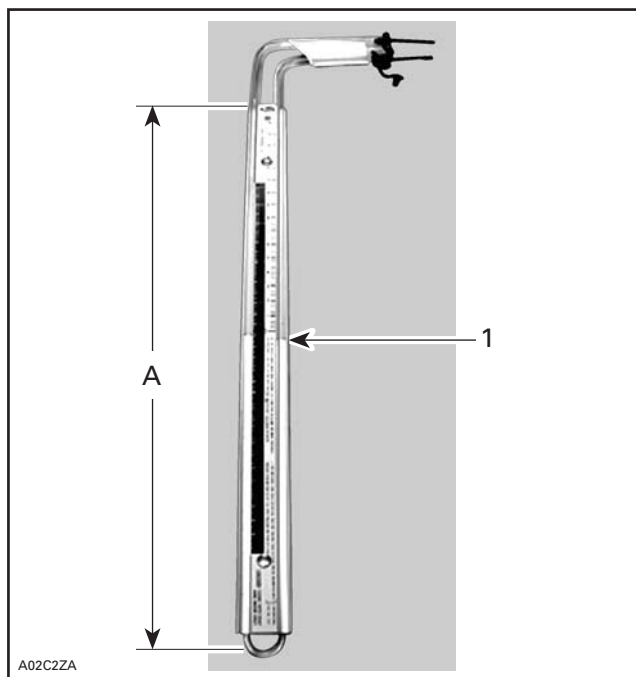


1. 3.5 mm (9/64 in) ID hose
2. 6 mm (15/64 in) ID hose
3. 6 mm (15/64 in) T-fitting

### Water Column Preparation

Mount water column vertically and secure it to a wall or workbench.

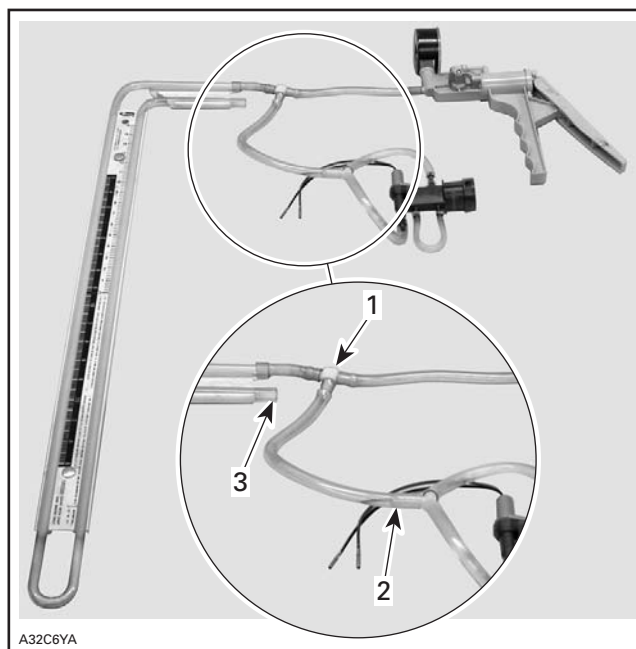
Fill water column to center line (at least 175 mm (6-7/8 in)) in height. Refer to following photo.



1. Center line at 175 mm (6-7/8 in)
- A. 350 mm (13-3/4 in)

### Connecting the Pump, DPM Manifold and Water Column

Connect hoses as shown.



1. 4.8 mm (3/16 in) T-fitting
2. T-fitting
3. Vented to atmosphere

Collect hose into one of the water column tubes, leave the other tube at atmospheric pressure.

### Testing

Set pump to "vacuum".



**NOTICE** Never use pump directly on DPM to make a pressure test. The vacuum produced by the pump is too high and would damage DPM components. Use the water column as explained above.

Apply negative pressure (vacuum) until the extremities of the water in the tube reaches a difference of 350 mm (13-3/4 in).

Stop pumping and allow water levels to stabilize in tube.

#### Analysis

RESULT	DPM MANIFOLD CONDITION
Water level remains unchanged	Good
Water level drops slowly to return to an even level in <b>more than 10</b> seconds	Defective
Unable to create any vacuum (water level increases and decreases immediately in tube)	Check your set-up and re-do the test. If still not able to create any vacuum, manifold is defective

If DPM manifold is defective, replace its parts (refer to *PARTS CATALOG*) and retest. If test fails again, replace DPM manifold.