

# OPERATION MANUAL

## OSX-2

### Oil System Cleaner

#### WARNING

**DO NOT** pour oil into the fill port. Serious damage will result.

The OSX-2 must be connected to a **FULLY CHARGED 12 volt battery**. This will normally be the battery in the vehicle being serviced.

Do not use a battery charger to power the OSX-2.

Use of undercharged batteries and battery chargers will damage the OSX-2 and void the warranty.



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Manual P/N 035-80910-00

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## **WARNING**

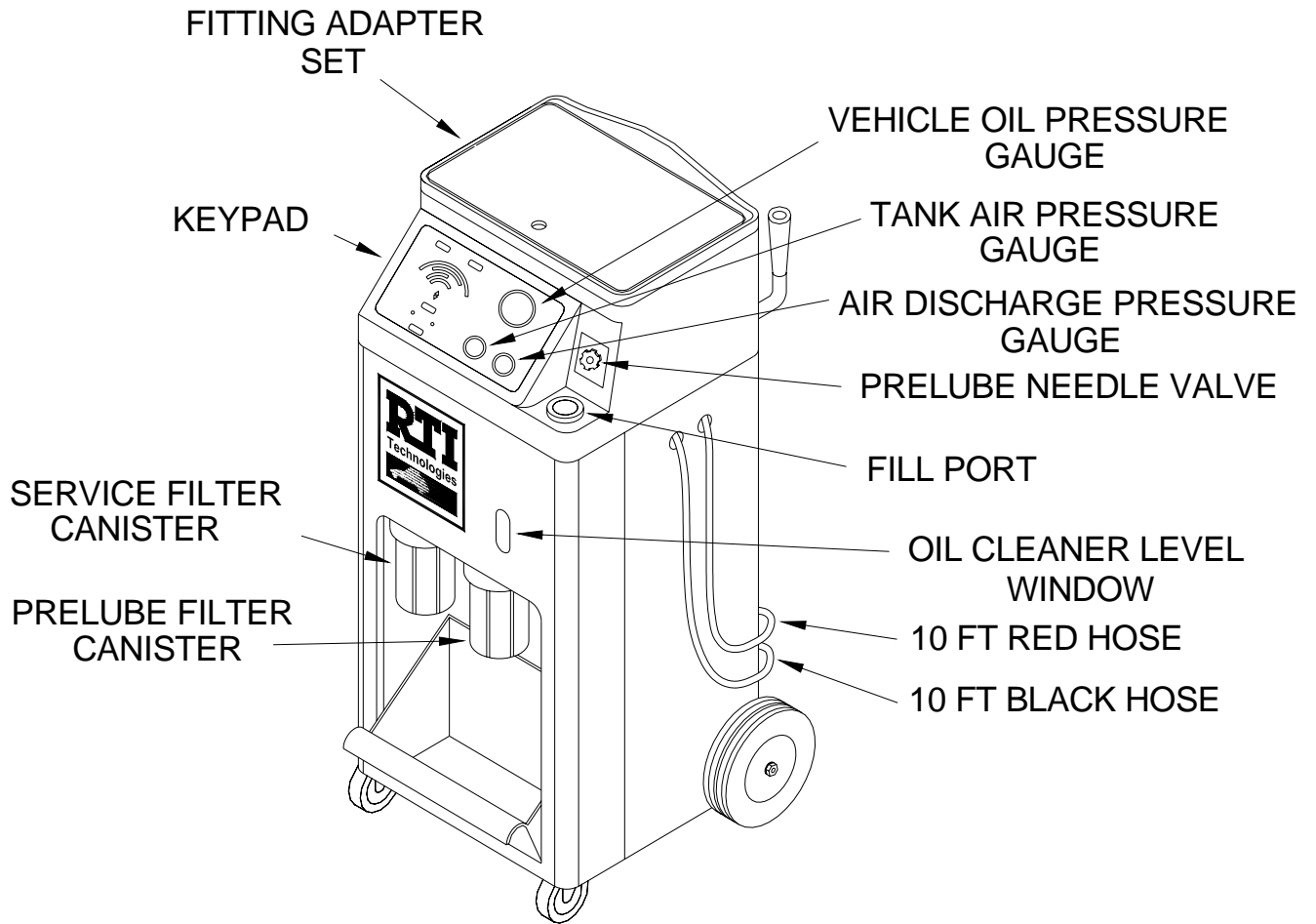
**The use of any non-battery powered packs, such as standard automotive battery chargers, is strongly discouraged.**

**Any resultant damage that the OSX-2 machine incurs while using such battery charging equipment will void the OSX-2 warranty.**

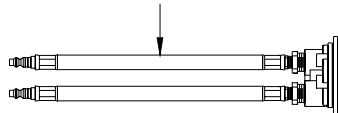
# COMPONENT DESCRIPTIONS

Unpack all components. Use drawing below to verify fitting adapter quantities. Items not shown are six RTI service filters and six 16 oz. bottles of RTI PREMIERCARE MOTOR FLUSH.

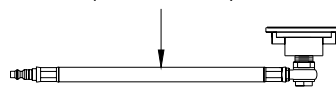
Contact RTI if any items are missing or damaged.



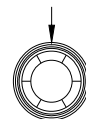
SPIN-ON FILTER ADAPTER HOUSING (STRAIGHT)



SPIN-ON FILTER ADAPTER HOUSING (90 DEGREE)



SPIN-ON ADAPTER COLLAR



THREAD GAUGES W/ ADAPTER INSERTS

ADAPTER HOSE



RED [diagram] SILVER

BLUE [diagram] YELLOW

# SAFETY PRECAUTIONS

**WARNING:** Failure to follow these precautions can result in serious injury or even death.

- Read and understand the Operation Manual completely before operating this unit.
- Always wear proper eye and skin protection when operating and maintaining this equipment.
- Take precautions to keep clothing, hair, hands, hoses, etc. away from all moving parts of the vehicle.
- Oil and engine parts can be extremely hot, even after the engine is turned off. **Always use extreme caution when connecting and disconnecting hoses and adapters.**
- Always keep a fire extinguishing device that is suitable for gasoline, chemical, and electrical fires nearby when working with flammable liquids.
- **NOTE: Vehicle exhaust gases contain Carbon Monoxide, which is lethal and odorless.** Choose a well ventilated work area and avoid inhaling any fumes when operating the equipment.
- Flush solutions are harmful if swallowed. If swallowed, call a doctor immediately and do not induce vomiting. If Flush Solution gets in the eyes flush with water immediately. For contact with skin wash with soap and water. Apply skin lotion if necessary to sooth irritation.
- Immediately clean up any oil or other chemical spills and use a proper container for disposal.
- Comply with local, state, and federal regulations for fluid disposal.

# PRIMING THE HOSES

**Upon unpacking the OSX-2, the following steps must be performed initially before it is used for service.**

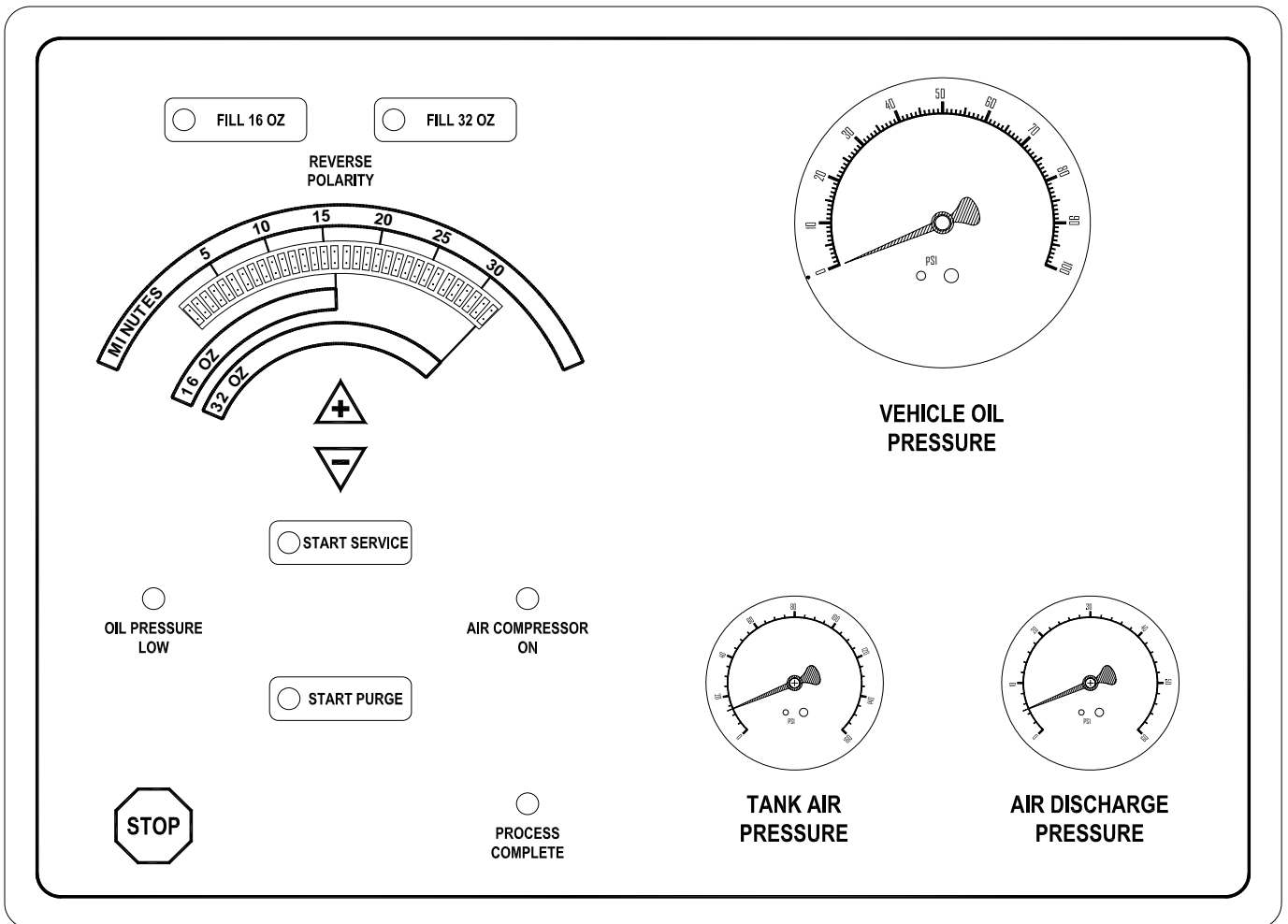
**Also, the below procedure may be required if the OSX-2 Fluid Tank ever runs empty or if the Inline Filter is ever replaced.**

1. Open two 16 oz. bottles of RTI PremierCare Motor Flush and pour contents into Fill Port. Make sure that fluid level is above the "0" Mark on Oil Cleaner Level Window.
2. Connect red (positive) clamp on power cable to red (positive) terminal on vehicle battery. Connect the black (negative) clamp to a ground on vehicle frame as far from the battery as possible. All LED's on keypad should illuminate for one second and buzzer should pulse. If not, check connections and verify that **REVERSE POLARITY** LED is not illuminated. If **REVERSE POLARITY** LED is illuminated, reverse the battery connections.
3. Attach Adapter Hose to 10 Ft Red Hose on the OSX-2 and insert into Fill Port.
4. Continually press the **FILL 16 OZ** button on the Keypad until the LED array no longer flashes and the amount of cleaner dispensed reaches 16 oz. on the LED array.
5. Remove Adapter Hose from the Fill Port and replace Fill Port cap.
6. Remove Adapter Hose from 10 Ft Red Hose on the OSX-2.

The OSX-2 is now ready for service. See Operating Procedure on Page 8 for detailed information on how to perform the OSX-2 cleaning procedure.

# CONTROL PANEL FUNCTIONS

The OSX-2 is an automatic oil system cleaning machine that has state-of-the-art controls. Operation of this machine is intuitive and easy to master. Below is a list of the keypad functions.



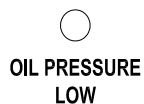
Stops any procedure the moment it is pressed. Also acknowledges the completion of a process and is used to stop the buzzer from sounding.



Illuminates when the selected process is complete. The buzzer will sound continuously when this is illuminated.

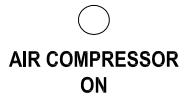


Purges any excess cleaner and contaminants in the engine oil pan when pressed. LED illuminates during the purge process.



Illuminates when engine oil pressure is low or when vehicle engine is not running.

# CONTROL PANEL FUNCTIONS (Continued)



Illuminates when the air compressor is building up air pressure within the air tank.



Begins the OSX-2 cleaning procedure when pressed and LED remains illuminated throughout the cleaning process.



Sets the number of minutes for the OSX-2 cleaning procedure. When the + arrow is pressed, the OSX-2 service time is increased in increments of 5 minutes. When the - arrow is pressed, the OSX-2 service time is decreased in increments of 5 minutes.

**REVERSE  
POLARITY**

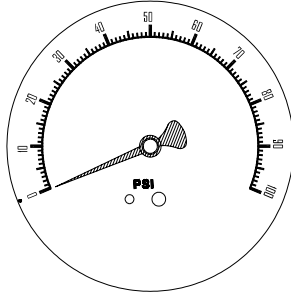
Illuminates when the battery clamps are reversed.



Injects 16 oz. of cleaner into engine when pressed.

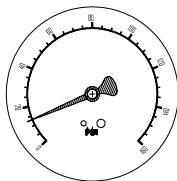


Injects 32 oz. of cleaner into engine when pressed.



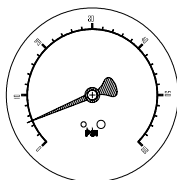
**VEHICLE OIL  
PRESSURE**

Indicates the amount of engine oil pressure when engine is running.



**TANK AIR  
PRESSURE**

Indicates the amount of air pressure within the onboard Air Tank.

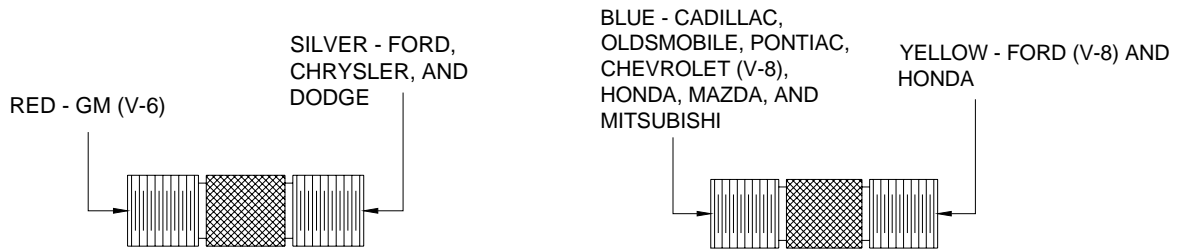


**AIR DISCHARGE  
PRESSURE**

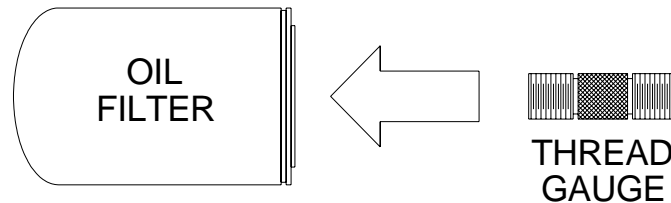
Indicates the amount of discharged air pressure when performing the air purge procedure.

# DETERMINING VEHICLE OIL FILTER TYPE

Before starting the OSX-2 oil cleaning procedure, the oil filter type of the vehicle being serviced must be determined. To do this, use the Thread Gauge. The following illustrations list the two Thread Gauges and their compatibility.



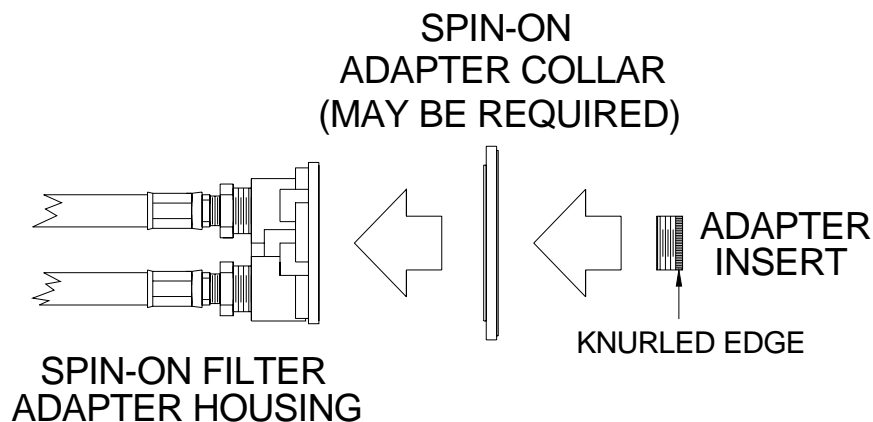
Select a Thread Gauge and screw it into the new engine oil filter as shown:



**NOTE: Select the appropriate Thread Gauge which easily screws into the engine oil filter. The Thread Gauge should completely screw into oil filter housing without exerting excessive force.**

Once the correct thread and pitch have been determined, screw the corresponding colored Adapter Insert into Spin-on Filter Adapter Housing as shown:

**NOTE: The straight Spin-On Filter Adapter Housing is illustrated below. Depending on the physical location of the engine oil filter, the 90 degree Spin-On Filter Adapter Housing may be more appropriate. Also, the Spin-On Adapter Collar may be required depending on the diameter of the engine oil filter mount.**



**NOTE: ENSURE THAT KNURLED EDGE OF ADAPTER INSERT IS FACING OUTWARD WHEN SCREWING IT INTO SPIN-ON FILTER ADAPTER HOUSING.**

# OPERATING PROCEDURE

The following steps will circulate the oil cleaning mixture through the engine oil system, removing the sludge and other contaminants.

1. Start the vehicle and allow engine to reach normal operating temperature. Turn vehicle engine **OFF** when the proper temperature is reached.
2. Verify that Prelube Needle Valve is completely closed. To do this, turn handle completely in the clockwise direction.
3. Unscrew Prelube Filter Canister from the filter mount and pour 16 oz. of new vehicle manufacturer recommended engine oil into canister. Once Prelube Filter Canister is full, replace canister onto filter mount. **NOTE: Verify that O-ring on Prelube Filter Canister is firmly seated before screwing it back onto the filter mount and that the 1/4" diameter dip tube is placed inside canister housing.**
4. Verify that there is at least 32 oz. of oil cleaner visible in the Oil Cleaner Level Window. If not, add the proper amount of oil cleaner to Fluid Tank through Fill Port.
5. Unscrew the Service Filter Canister and install a new 5-micron filter into the canister. Verify that canister O-ring is installed and secured in place. **NOTE: Filter must be changed after each oil cleaning service.**

**NOTE: When replacing the filter, hand tighten the Service Filter Canister only.**

6. Remove oil filter on engine and dispose of in compliance with local, state and federal regulations. Install Spin-On Filter Adapter Housing with Adapter Insert onto oil filter housing.
7. Connect the 10 Ft Red Hose and the 10 Ft Black Hose on the OSX-2 to the respective hoses on the filter adapter. Verify that the hoses are properly coupled.
8. Connect red (positive) clamp on power cable to red (positive) terminal on vehicle battery. Connect the black (negative) clamp to a ground on vehicle frame as far from the battery as possible. All LED's on keypad should illuminate for one second and buzzer should pulse. If not, check connections and verify that **REVERSE POLARITY LED** is not illuminated. If **REVERSE POLARITY LED** is illuminated, reverse the battery connections.
9. Press either the **FILL 16 OZ** or **FILL 32 OZ** button, depending on the engine oil capacity of the vehicle being serviced. Refer to the capacity table below for specific information. When fill process is complete, the **PROCESS COMPLETE** indicator will light and buzzer will sound. Press the **STOP** button.

ENGINE CRANKCASE CAPACITY	OIL CLEANER CAPACITY	RECOMMENDED SERVICE TIME
0 - 5 Quart (0 - 4.7 Liter)	16 oz. (.47 Liters)	15 minutes
6 - 10 Quart (5.7 - 9.5 Liter)	32 oz. (.95 Liters)	30 minutes

# OPERATING PROCEDURE (Continued)

10. Start vehicle. The service time can be adjusted by pressing either the + arrow to increase the time by five minutes, or the - arrow to decrease the time by five minutes. See the recommended service times in the table on the previous page. Once desired service time has been set, press the **START SERVICE** button to begin service procedure.
11. Once the service is complete, the buzzer will sound continuously, and **PROCESS COMPLETE** indicator will light. Press the **STOP** button. Turn the vehicle engine **OFF**.
12. Remove the engine oil fill cap on engine.
13. Remove the engine oil drain plug and allow oil to drain into a suitable drain pan.  
**NOTE: Engine oil will be extremely hot. Take the necessary precautions to prevent any serious personal injury.**
14. Press the **START PURGE** button to remove any excess cleaner and contaminants within engine oil system. When the purge process is complete after 30 seconds, the **PROCESS COMPLETE** indicator will light, and the buzzer will sound. Press the **STOP** button.
15. Replace drain pan plug on engine.
16. Turn OSX-2 Prelube Needle Valve counterclockwise to distribute oil in Prelube canister throughout engine oil system. **NOTE: The tank air pressure must be at least 30 psi in order to distribute the full amount of oil in Prelube canister.** Once Prelube canister is empty, turn Prelube Needle Valve completely clockwise to fully close needle valve.
17. Disconnect the battery leads, hoses, and Spin-On Filter Adapter Housing from the vehicle.
18. Install new oil filter on engine. Pour in the correct amount of new oil into the oil fill spout on engine. Replace the engine oil fill cap.
19. Start the vehicle and verify that there are no oil leaks present.
20. Allow engine to run for two to three minutes to properly circulate new oil throughout engine. Turn vehicle engine **OFF** and perform engine oil level check on a level surface. Add oil to engine if necessary.
21. Test drive vehicle for approximately two to three miles. After test drive is complete, turn vehicle engine **OFF** and verify that there are no oil leaks.

# MAINTENANCE

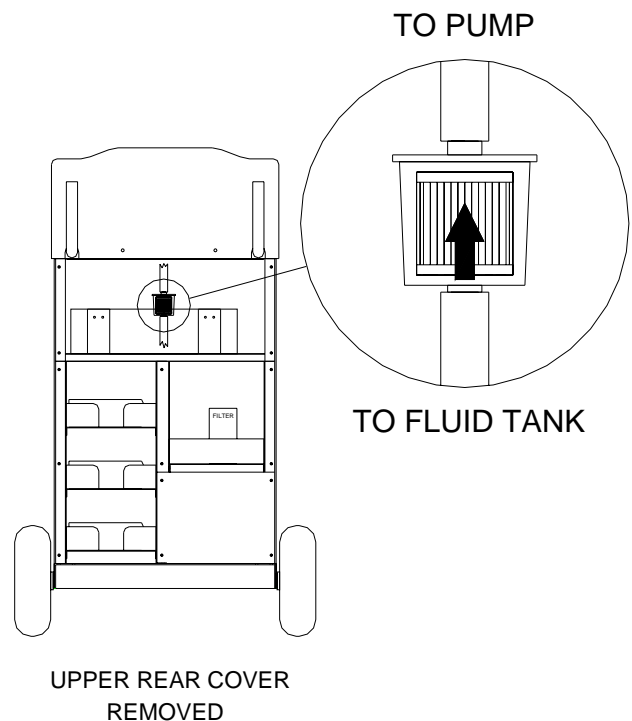
The OSX-2 will provide many years of reliable service if properly maintained. The following checklist will ensure that the OSX-2 will run at peak efficiency and present an image to your customers that your shop performs high tech oil system cleaning services.

1. Use tool tray for storage of tools and adapters only.
2. Keep the exterior surface clean. Use a mild all-purpose cleaner to wipe oil and dirt off of the cabinet.
3. Do not allow the unit to sit outside in direct sunlight or inclement weather. Excessive exposure to sunlight or moisture will cause serious damage and will void the warranty.
4. Periodically check all internal (by lifting out the tool tray) and external hoses for leaks or excessive wear. Any weak hoses should be replaced immediately to avoid possible injury.
5. Check air pressure in rear tires periodically (should be 30 psi) and add air if required.

## OSX-2 Inline Filter Removal and Replacement

If the OSX-2 begins to exhibit the symptom of a flashing LED Display while attempting to perform either the 16 or 32 oz. fill procedures and the oil cleaner level is above the "0" Mark on Oil Cleaner Level Window, then the OSX-2 Inline Filter (RTI Part # 026-80283-00) may need to be replaced. Follow the steps listed below for a safe and proper OSX-2 Inline Filter change.

1. Remove the upper rear cover on the OSX-2.
2. Unscrew Hose Clamps on both ends of Inline Filter. Carefully separate the hose between Fluid Tank and Inline Filter and drain excess oil cleaner from OSX-2 Fluid Tank into a suitable container that is in compliance with local, state and federal regulations.
3. Carefully disconnect the hose leading from the Inline Filter to the Pump and remove Inline Filter from OSX-2.
4. Install new Inline Filter on hoses and tighten Hose Clamps. **NOTE: VERIFY THAT ARROW ON NEW INLINE FILTER IS POINTING UPWARDS AND AWAY FROM FLUID TANK BEFORE REPLACING INLINE FILTER ON OSX-2.**
5. Replace the upper rear cover on the OSX-2.
6. Proceed to Priming the Hoses section of manual on Page 4 before performing any oil cleaning procedures.



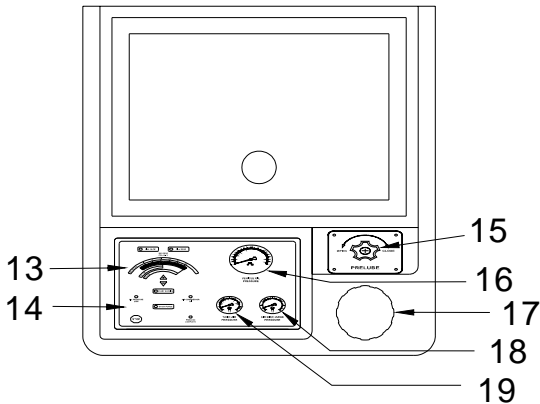
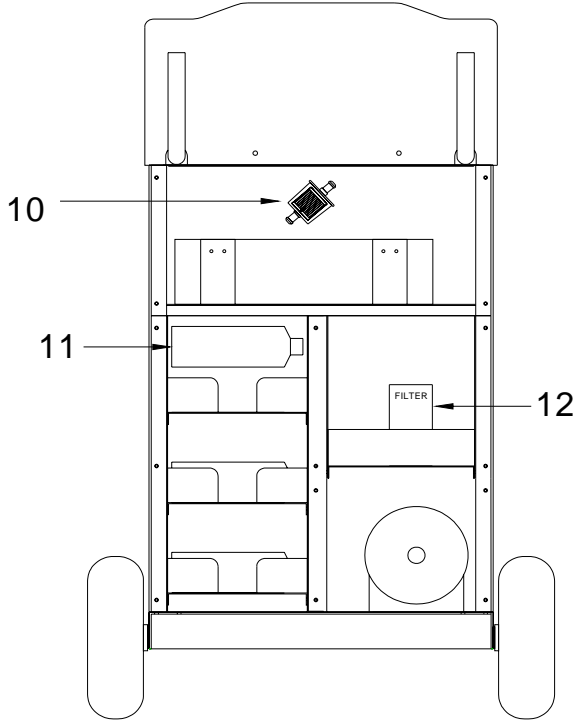
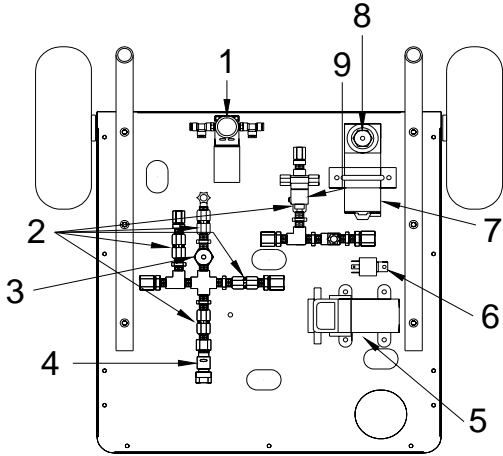
# MAINTENANCE (Continued)

## Draining The OSX-2 Air Tank

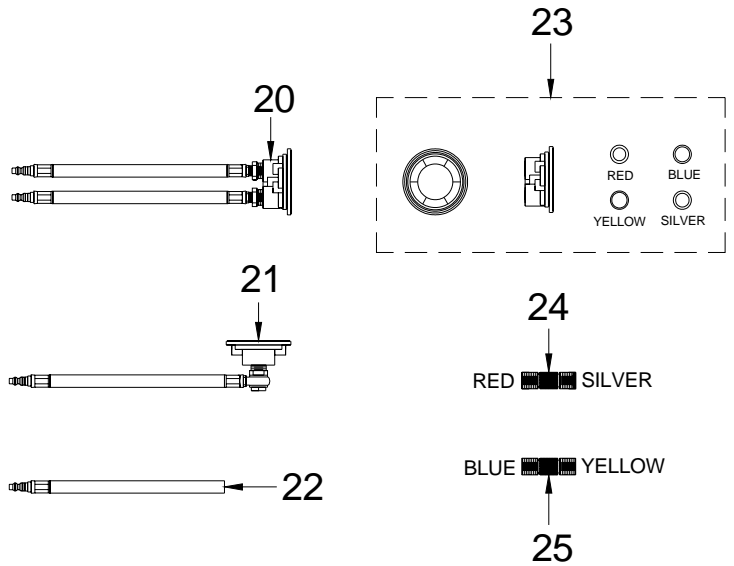
After a period of time, the OSX-2 may build up moisture within the Air Tank. Follow the steps listed below to properly purge any moisture from the OSX-2 Air Tank.

1. Attach Adapter Hose to the 10 Ft Red Hose on the OSX-2.
2. Verify that Prelube Needle Valve is completely closed and that Air Tank pressure is at least 70 psi. If Air Tank pressure is at least 70 psi, proceed to Step 3. Otherwise, place Adapter Hose into Fill Port. Connect red (positive) clamp on power cable to red (positive) terminal on vehicle battery. Connect the black (negative) clamp to a ground on vehicle frame as far from the battery as possible. All LED's on keypad should illuminate for one second and buzzer should pulse. If not, check connections and verify that **REVERSE POLARITY** LED is not illuminated. If **REVERSE POLARITY** LED is illuminated, reverse the battery connections. Press the **FILL 16 OZ** button to cycle the air compressor on. Allow air compressor to run until the air compressor on LED goes off. Disconnect the battery leads from vehicle and remove Adapter Hose from the Fill Port on the OSX-2.
3. Verify that there is no oil within the Prelube Filter Canister. If there is oil in the Prelube Filter Canister, empty oil into a suitable container.
4. Place the Adapter Hose into a suitable container that is in compliance with local, state and federal regulations.
5. Turn the Prelube Needle Valve counterclockwise and allow Air Tank to drain until it is empty.
6. Close the Prelube Needle Valve and disconnect Adapter Hose from the 10 Ft Red Hose on the OSX-2.
7. Drain any condensation which may have collected in the Prelube Filter Canister.

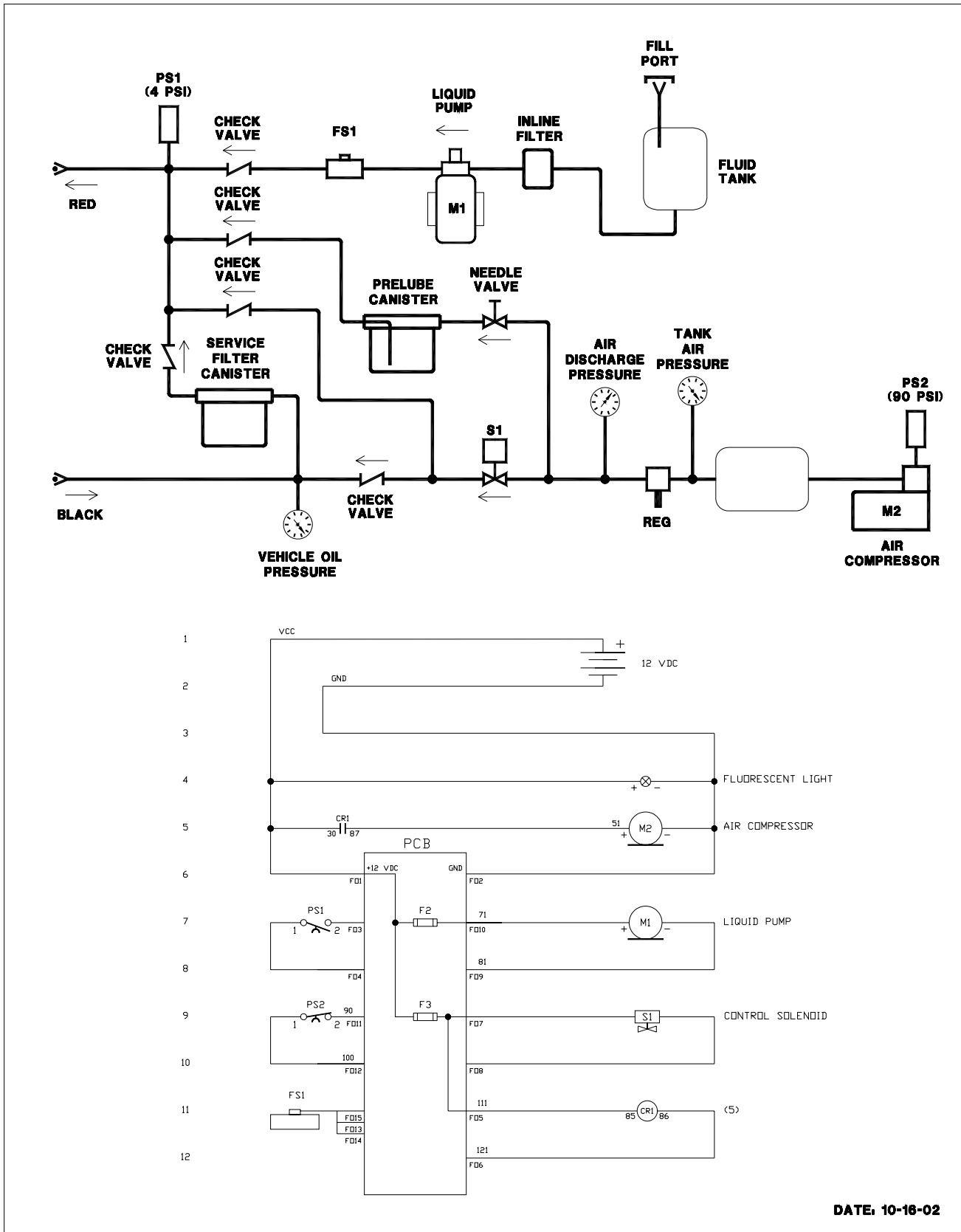
# PARTS IDENTIFICATION



	Part No.	Description
1	022-80116-00	Regulator 1/4 FPT X 1/4 FPT
2	022-80112-00	Check Valve 1/4 FPT X 1/4 FPT (Viton)
3	320-80025-00	Pressure Switch PS1 Assy
4	320-80024-00	Flow Sensor Assy
5	320-80016-00	Pump Assy
6	024-80086-00	Relay 40 Amp SPST 12 VDC coil
7	320-80021-00	Compressor Sub Assy
8	320-80022-00	Pressure Switch PS2 Assy
9	320-80018-00	Solenoid Sub Assy S1
10	026-80283-00	Inline Filter
11	011-80025-00	Oil Cleaner 16 oz. Bottle
12	026-80288-00	Poly Blown Filter
13	024-80083-00	Keypad Overlay OSX-2
14	024-80084-00	Circuit Board OSX-2 (12 VDC)
15	022-80113-00	Needle Valve 1/4 FPT X 1/4 FPT
16	026-80258-00	0-100 PSIG Pressure Gauge
17	021-80164-00	OSX-2 Spout Fill Assembly
18	026-80286-00	0-60 PSIG Pressure Gauge
19	026-80287-00	0-160 PSIG Pressure Gauge
20	320-80032-00	Str Filter Adapter 3/8"
21	320-80038-00	90 Degree Filter Adapter 3/8"
22	320-80037-00	Hose Assy Black 3/8"
23	026-80291-00	Filter Base Spin On Universal
24	060-81213-00	Thread Gauge 20 mm x 22 mm Universal
25	060-81212-00	Thread Gauge 18 mm x .75 in



# FLOW & WIRING DIAGRAM



DATE: 10-16-02

# EC Declaration of Conformity for Machinery

Directive 98/37/EC



**RTI Technologies, Inc.**  
4075 East Market Street  
York, Pennsylvania 17402 USA  
Phone: 717-840-0678

Herewith declares that:

- OSX-2 Engine Oil System Flusher
- is in conformity with the provisions of the Machinery Directive (directive 98/37/EC) and with the national implementing legislation
- is in conformity with the provisions of the following other EC directives:

Electromagnetic Compatibility (EMC) Directive 89/336/EEC

Electromagnetic Emissions EN 61000-6-4: 2001

Electromagnetic Immunity EN 61000-6-2: 1999

The OSX-2 is certified to the EMC Directive like the ATX-2 tested by:

TÜV America Inc.  
1775 Old Highway 8 NW Ste. #104  
New Brighton, MN 55112  
Phone: 651-638-0262

Thomas L. Crandall

A handwritten signature in black ink that reads 'Thomas L. Crandall'.

Vice President - Technology

Dated: January 10, 2005

