
MOTORVAC TECHNOLOGIES INC.

COOLANTCLEAN-1000



MODEL#MCF-5150

**Engine Cooling System Service
MANUAL #100-5150**

Operator's Manual

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Introduction

Congratulations on your selection of the COOLANTCLEAN 1000 Cooling System Service Unit. By choosing this product, you are acquiring the most technologically advanced method available for performing cooling system services and coolant exchanges.

The COOLANTCLEAN 1000 System is designed to service most automotive applications by exchanging most of the coolant in the vehicle's cooling system. Connections to the vehicle are achieved with the supplied adaptors. Partial service can be completed by using the cone adapter in the radiator fill neck. Complete service can be completed by using the adapters that install in-line between the vehicle's radiator & upper radiator hose.

Once connected, the unit can be safely used to:

- Relieve system pressure to provide safe, worry-free access to the vehicle's system.
- Pull down or evacuate the coolant levels in the radiator and overflow tanks, providing a safe connection of the unit without hot coolant worries.
- Service the cooling systems by exchanging the coolant in the vehicle's system.
- Completely or partially empty a vehicles coolant system for repair procedures.
- Evacuate air from empty coolant system in order to eliminate air pockets.
- Refill coolant system with clean or used fluid saved from prior evacuation.

With the vehicle's engine off, the COOLANTCLEAN 1000 unit can be used to vacuum off the pressure from a hot system prior to removal of the radiator cap. Partial evacuation of the coolant can be accomplished using the cone adapter in the radiator neck. Complete evacuation of the coolant can be accomplished by loosening the upper radiator hose connection to allow air into engine.

It is recommended that vehicles (with conventional type coolant) have their cooling systems serviced every 15,000 to 30,000 miles, or according to the manufacturer's recommendations. Periodic service intervals are recommended to provide proper protection against overheating and breakdown of the coolant's protective properties. Old coolant can no longer protect against rust or acids that can break down metal & aluminum parts in the system.

Have all associated personnel study this Operators Manual completely to become thoroughly familiar with the COOLANTCLEAN 1000 Cooling System Service Unit & it's proper operation.

IMPORTANT

**The COOLANTCLEAN 1000 Cooling System Service is designed to work
EXCLUSIVELY
With standard automotive coolant formulations.**

**Use of additives or chemicals during services may cause operational failure of
the COOLANTCLEAN 1000 Service System and will void the manufacturer's
warranty.**

See the warranty card for specific details.

Overview

This manual contains all the information you need to use the COOLANTCLEAN 1000 Service Equipment. Please make sure all technicians using the unit & performing services read this manual and have it within easy reach whenever the unit is being used.

The following is a quick reference to the information in this manual.

System Features and Functions

This chapter describes the COOLANTCLEAN 1000 Service System's Controls, Connections and their proper usage.

Safety Information

Read & adhere to the safety guidelines in this chapter at all times!

Before You Begin

Follow the instructions in this chapter to prime the unit & check operation before using the COOLANTCLEAN 1000 unit for the first time.

Service Procedure

This chapter contains a step-by-step setup and service procedures for:

- Relieving system pressure
- Evacuating coolant in the radiator or overflow tank
- Performing a cooling system service.

Troubleshooting and Additional Help

Turn to this chapter in the unlikely event you have problems with your COOLANTCLEAN 1000 service equipment or need additional help.

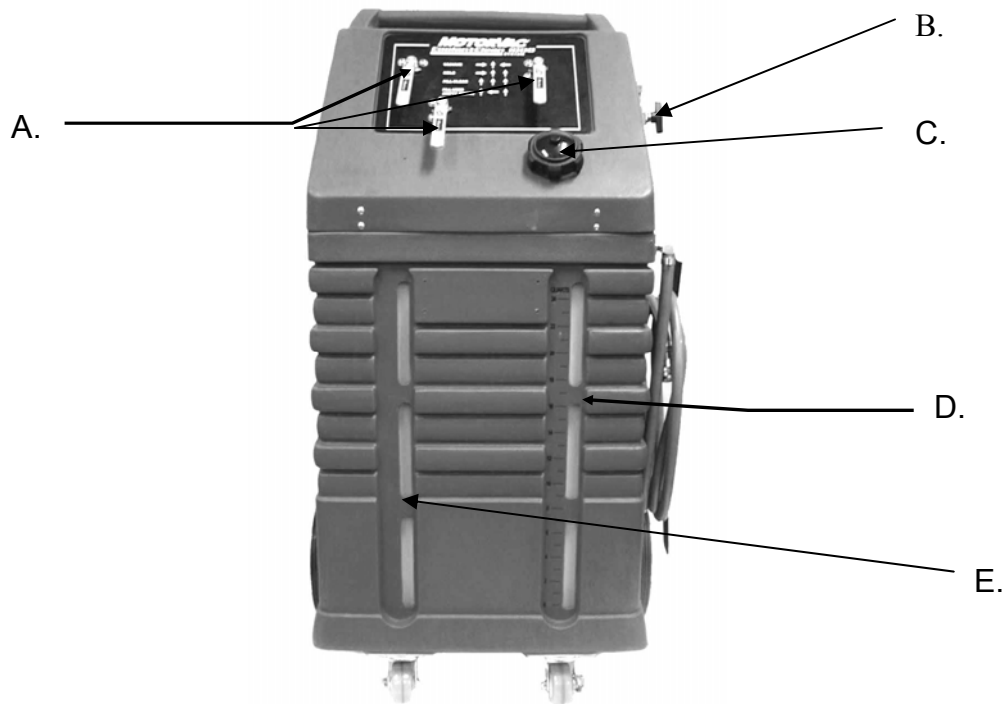
Appendices - Maintenance, Accessories, and Parts

The appendices contain routine maintenance procedures for the COOLANTCLEAN 1000 such as cleaning the filter, lists of any available accessories & replacement parts.

System Features and Functions

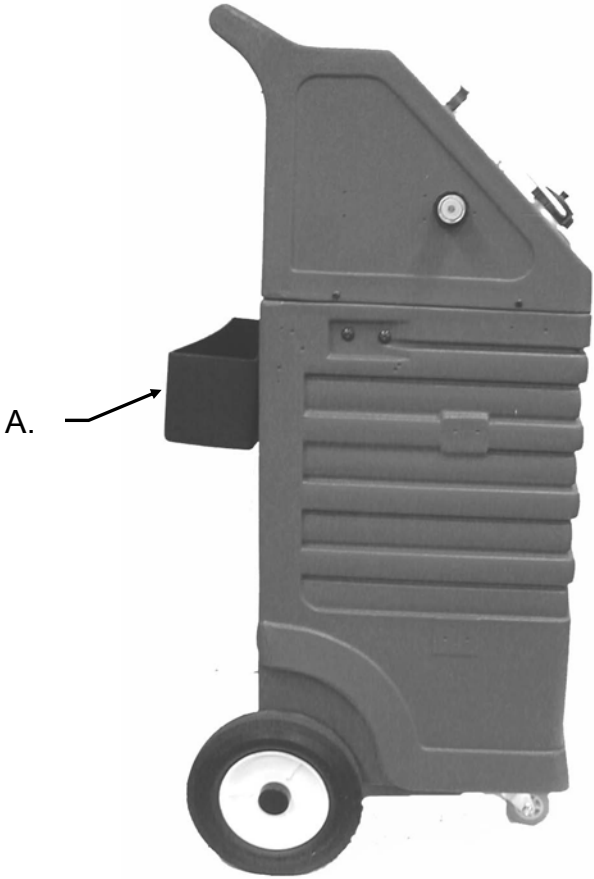
The front of the COOLANTCLEAN 1000 Cooling System Service unit contains the Control Panel, Fluid Filler Neck for adding coolant to the unit's Reservoir Tank & Tank Level Indicator. System overview and descriptions follow.

Front View - Control Panel Features and Functions



- | | |
|--|---|
| A. Flow Control Valves | Controls flow directions for vacuum, hold vacuum, and fill functions |
| B. Air input control valve. | Turns on and off the 'shop' air flow to the pump. |
| C. Clean fluid tank fill neck | Access to clean fluid tank. (26 quarts maximum capacity) |
| D. Clean fluid tank level window | Visual access to monitor fluid level in clean fluid tank. |
| E. Used/waste fluid tank level window | Visual access to monitor fluid level in used fluid tank. |

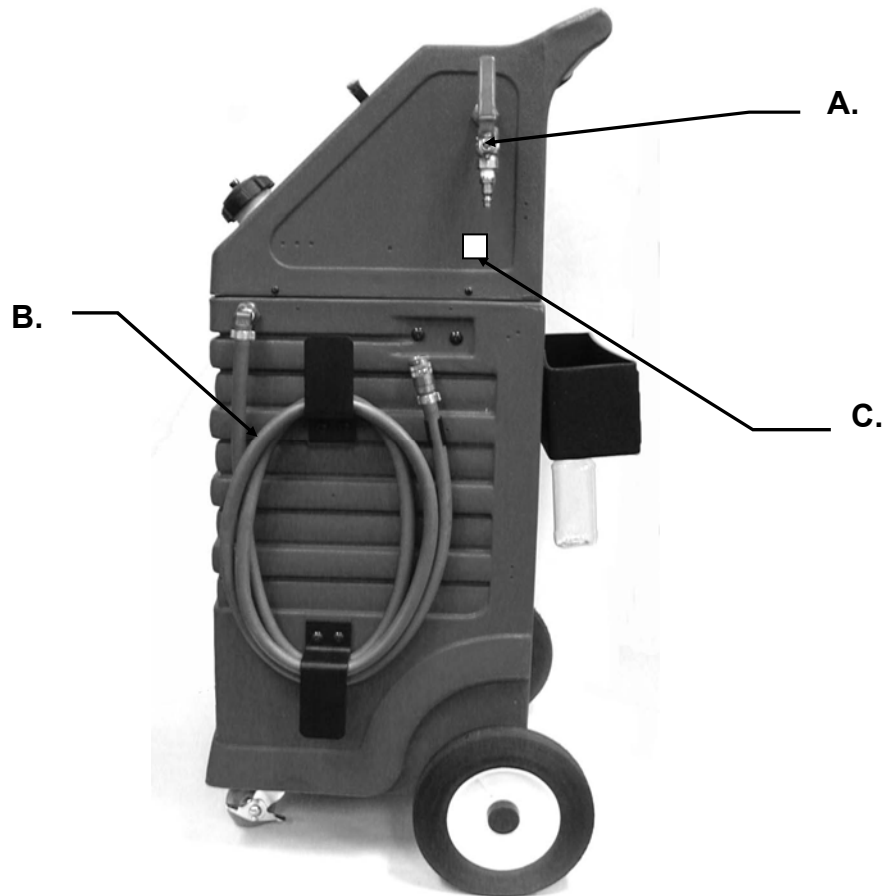
Left View



A. Adapter Tray

Used to store adapters used in vehicle hookups.

Right View



A. Air control valve

Turns the air pressure to the unit on or off.

B. Service Hose

- **Used to vacuum out used coolant.**
- **Used to vacuum out air from empty system.**
- **Used to refill system with clean or used coolant.**

C. Model/Serial number label

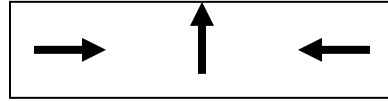
- **Identifies unit model and serial number.**

Theory of Operation

Detailed descriptions of the various operations, valves and indicators that make up the COOLANTCLEAN 1000's control panel are listed below.

3- Control valves:

◆ **When the valves are in the VACUUM position .**



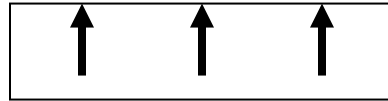
(And unit connected to a vehicle) The unit will apply vacuum thru the "Green" hose when the air control valve is turned on and the regulator is adjusted to adequate pressure.

◆ **When the valves are in the HOLD position:**



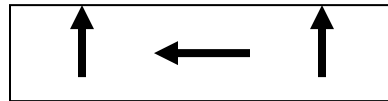
After maximum vacuum has been achieved (24 inch's of vacuum/ top hose collapsed) you can turn the #3 valve to the 'HOLD" position. This allows for system leak tests after repairs have been completed on a vehicle.

◆ **When the valves are in the FILL-CLEAN position:**



The unit will pump New coolant from the clean fluid tank out of the "Green" hose.

◆ **When the valves are in the FILL-USED position:**



The unit will pump used fluid from the used/waste fluid tank out of the "Green" hose. Used to refill an engine with used fluid after an engine repair has been completed or to empty the waste fluid into a recycle tank.

Safety Information and Precautions

/!\ DANGER

Vehicle exhaust gases contain Carbon Monoxide, which is a colorless and odorless lethal gas.

Only run engines in well-ventilated areas and avoid breathing exhaust gases.

Extended breathing of exhaust gases will cause serious injury or death.

/!\ WARNING

Exhaust gases, moving parts & hot surfaces are present during and after the vehicle's engine is running. Hot coolant is present during the connection of the service equipment.

Read and understand the operator's manual before using the COOLANTCLEAN 1000 Service System.

When using petroleum products or chemicals always refer to the MSDS sheets and manufacturer's instructions for the proper procedure to handle emergency medical treatment, cleanup, handling and storage requirements.

Improper use of the COOLANTCLEAN 1000 Cooling System Service equipment or exposure to exhaust gases and hot coolant can cause injury.

Spilled coolant on an engine can ignite.

Avoid exposure to flames, sparks, hot engine parts, and other ignition sources.

Always keep a fully charged fire extinguisher nearby. All extinguisher should have a class "B" rating suitable for gasoline, chemical and electrical fires.

Cleanup any oil or coolant spills immediately.

Dispose of contaminated cleanup material according to governing environmental laws.

Never look directly into the air plenum or carburetor throat when the engine is operating.

Always verify hose connections are secure to the radiator, upper hose & other connection points before starting the vehicle's engine. Pressure test if necessary.

Explosion or flame or exposure to flammable liquid and vapors can cause injury.

Flammable coolant can splash out of the unit's tank when filling or when unit is being moved.

Always keep unit's coolant tank cap secure except when filling with coolant.

Explosion or flame can cause injury.

Engine cooling systems may maintain residual pressure in connection lines to and from the radiator even after the engine has been turned off.

Wear safety goggles.

Wear chemical resistant gloves when connecting or disconnecting hoses and adapters.

Chemicals can cause harmful byproducts and undesirable effects on the unit,

Do not add any chemicals to COOLANTCLEAN 1000's reservoir tank.

Use only approved coolants.

Do not swallow or ingest any chemicals.

Use with adequate ventilation. Avoid breathing vapors.

Do not store or use chemicals in or on the machine (other than coolant).

Improper use of coolant can cause injury.

Over exposure can have harmful effect on eyes, skin, respiratory systems & possible unconsciousness or asphyxiation.

Improperly blocked vehicles can move.

Set the parking brake and chock the wheels.

Moving engine parts:

The engine cooling fan may cycle on and off depending on the coolant temperature and could operate without the engine running.

Wear safety goggles.

Always keep objects, clothing, and hands away from the cooling fans and engine parts.

Moving engine parts can cause injury.

Hot surfaces are present during and after running the engine.

Do not contact hot surfaces such as manifolds, pipes, mufflers, catalytic converters, Radiators, hoses, adapters or other hot parts of the cooling system.

Hot surfaces can cause injury.

Catalytic converters become extremely hot.

Do not park converter-equipped vehicle's over dry grass, leaves, paper or other flammable material.

Do not touch a catalytic converter until the engine has been off for at least 45 minutes.

Catalytic converters can cause burns.

Cracked fan blade can become airborne.

Examine fan blades for cracks. If found, do not service the vehicle.

Flying objects can cause injury.

Batteries produce explosive gases and can explode.

Wear safety goggles when working on or near batteries.

Use in a well-ventilated area.

Keep sparks and flames away from the battery and never lay tools, equipment or other conductive objects on the battery. When connecting tools or equipment to a power source battery, assure the equipment's power switch is OFF. Keep battery acid away from skin or eyes. In case of eye contact, flush with clean water for 15 minutes and get medical attention.

Battery explosion and ignited gases can cause injury.

Before You Begin

First Time Operation

NOTE:

This unit has been tested with water and is ready for use after receiving the unit & performing the following priming procedure.

Remember to send in your warranty card to properly register your machine.

1. Check the unit's service hoses, and all external components for damage.
2. Attach an adapter to the coupler of the service hose.
3. Fill the unit's reservoir with 12 quarts (11 liters) of **new coolant mixture.** **CAUTION, DO NOT MIX DEXCOOL WITH ETHYLENE GLYCOL TYPE COOLANT. RESULTS WILL "JELL".**
4. Insert the hose adapter into the fluid tank fill neck.
5. Adjust control valves to the "Fill-Clean" position.
6. Attach air supply line to air input valve.
7. Hold hose wand **securely** and turn on air valve. ***Pump and wand will "pulse".***
8. Once the pump has been internally lubricated you can set the valves to vacuum and test the vacuum function.
9. Insert the wand into a bucket of fluid, turn the control valves to vacuum and turn on the air valve. Unit should draw fluid out of the bucket and pump it into the Used/Waste fluid tank. Turn air off.
10. Turn the control valves to FILL-USED, insert the wand into a fluid capture container and turn the air valve on. Unit should pump fluid for used fluid tank out of the service hose. Unit is now "tested".
11. The unit is now ready to perform a service. See service instructions for procedure.

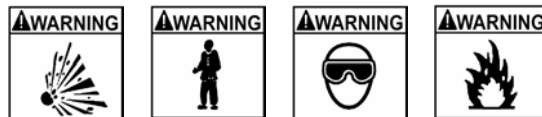
NOTE:

This procedure should be performed BEFORE operating the unit for the first time *or any time the unit's reservoir tank is completely emptied.*

Engine Cooling System Service Procedure

Follow this section to connect the COOLANTCLEAN 1000 unit to the vehicle's radiator and or the upper radiator hose.

!! WARNING



Verify that engine and machine are both off before connecting or disconnecting radiator hoses, lines or adapters.

Hot Coolant can spray out of pressurized lines when connecting or disconnecting.

Always wear safety goggles.

Wear chemical resistant gloves when connecting or disconnecting hot fittings and adapters.

Wrap a shop towel around pressurized fittings and adapters when disconnecting.

Avoid exposure to flames, sparks, hot engine parts, and other ignition sources.

Explosion or flame or exposure to flammable liquid and vapors can cause injury.

Service Procedure

1. Check engine & coolant temperatures before removing any cooling system components or repairing any associated items, let vehicle cool off if necessary.
CAUTION: Cooling systems may retain residual pressure after the vacuum procedures are performed. Extreme care should be taken and proper protection worn when releasing the radiator and overflow tank caps. **Verify all pressure has been alleviated before opening hot cooling systems; hot coolant under pressure can cause severe burns.**
2. Use the small hose adapter (p.n.060-1400) to connect to radiator overflow tube if residual pressure needs to be removed from engine prior to removal of radiator cap. Attach the small hose adapter to the overflow tube and briefly activate the vacuum procedure.
3. For a "PARTIAL" service attach service hose to cone adapter, after removal of the radiator cap, insert the cone adapter into the radiator fill neck. Set valves into vacuum position and turn on the air control valve. Watch the upper radiator hose for maximum vacuum. Upper radiator hose will be collapsed completely at this time. Repeat process on the overflow tank if necessary.
4. When you are ready to refill the vehicle the cone adapter should be in the radiator neck and full vacuum should be applied to the system. (Hold position of valves) **move the valve to the fill-clean position and the vacuum in the system will draw fluid back into the engine from the clean fluid tank.** When the flow stops the cone adapter can be removed from the radiator. To 'top-off' hold the wand securely at the radiator cap opening (allowing trapped air to escape) and turn on the air pressure to the pump. Turn off air valve when full. Replace the radiator cap. Refill overflow tank if required. "Partial" service is now complete.

5. **TO DO A “COMPLETE” FLUID EVACUATION AND REFILL:**

use small hose to release pressure from cap if necessary, attach cone adapter to the service hose, remove the radiator cap, insert cone adapter into radiator fill neck, activate vacuum long enough to empty the upper radiator tank. Turn off the pump and release the vacuum in the radiator by moving the cone adapter. At this time disconnect the upper radiator hose from the engine (thermostat end). Install a hose “pinch” clamp on the upper radiator hose. (NOTE: the hose with clamp should still be clamped to the upper radiator fitting). Hold the cone snugly in radiator fill neck, turn on vacuum and pump until no more fluid is going into the waste tank. Vehicle coolant system is now empty and engine repairs can be done if needed.

Photo to be added later!

6. **TO REFILL AFTER A “COMPLETE” EVACUATION:** Reattach the vehicles upper radiator hose to the engine. (remove the hose “pinch” clamp) **HOLD THE CONE** adapter in place. Reapply vacuum to system. Adjust valves to “hold” after maximum vacuum is achieved. Reset the valves to “FILL-CLEAN” for new fluid or “FILL-USED” to replace used fluid. Vacuum in the system will pull the fluid from the selected tank. To ‘top-off’ loosen the cone adapter in the radiator neck and turn on the air valve to activate the pump. **BE PREPARED TO STOP THE PUMP WHEN THE RADIATOR IS FULL!** Note: When using the adapter with the shutoff valve, the pump in the CoolantClean 1000 will shut off if it’s pumping against pressure(valve closed) but will restart when pressure is released(valve opened). Be sure to turn off air valve **prior to** removal of cone adapter from radiator. **TIP:** Watch for when the upper radiator hose is no longer ‘collapsed’ and then top off with the cone adapter “loose” in the radiator neck.

WARNING:

**DO NOT MIX DEXCOOL & ETHYLENE GLYCOL BASED FLUIDS!!! Gelling will occur!!
Flush vehicle and or CoolantClean 1000 with water between usage of these fluids. If you are changing the Dexcool in a vehicle to ethylene glycol, flush the vehicle with water prior to introducing the ethylene glycol.**

Troubleshooting and Additional Help

Refer to the list below in the unlikely event that you have problems with your **CoolantClean 1000 Engine Cooling System Service Unit**.

Problem:

Solution:

ADDITIONAL HELP

Please verify that items 1-6 above have been reviewed before calling for additional assistance.

In the unlikely event that problems persist with the unit, call Technical Support. Have your model and serial numbers available before you call. Remember to send in your warranty card.

**In the U.S.
(714) 558-4822**

**International:
Call your local**

(800) 841-8810




distributor

Appendix B – System Accessories

Basic Adaptor

CoolantClean Engine Cooling System Service Unit

The following is a list of the adaptors included with your CoolantClean unit.

PART & NUMBER	QTY	DESCRIPTION
 060-1400	1	5/16" Open End Adaptor
 063-1035	1	"CONE" Adaptor
 063-1036	1	"Fill" adaptor (used for top off – precise fill control and for vacuum on side cap radiators)

Appendix C - Parts

Service Parts: CoolantClean Engine Cooling System

Please refer to the part numbers below when ordering parts for the unit.

<u>Part #</u>	<u>Description</u>
010-0027	Wheel
010-0026	Hub cap
010-6100	Swivel caster
010-6101	Swivel caster with break lock
010-5500	Axle, 1/2" Diameter, (Rear wheels)
040-0604	Cap Nut, 1/2" ID
040-0507	Axle bushing 1/2" ID. (Plastic)
010-5004	Hose bracket
010-6060	Reservoir cap
010-5602	Adapter box
010-1052	Bottle for adaptor box
040-1200	Screw, Phillips, 6-32 x 1/2" SS. (Adapter box)
040-2000	Threaded standoff, 6-32 x 3/8 Al. (Adapter box)
040-2200	Flat washer, #6 orifice, SS (Adapter box)
040-6023	Screw, Phillips head, #8 x 3/4" blk (Control & Rear panel)
080-0236	Female Quick Disconnect Couplers, 1/4", Brass
050-1935	Filter-Screen (external canister insert)
200-8701	Output hose assembly, (Green)
100-5150	Operators Manual
????	Adapter Kit, (Complete)
050-2411	Pump