

**BILSTEIN**  
FUEL SYSTEM SERVICE CENTER



# D-1000 (12v)

## INSTRUCTION MANUAL



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# SAFETY INFORMATION

***THIS EQUIPMENT IS DESIGNED TO BE OPERATED BY QUALIFIED PERSONNEL. IT SHOULD ONLY BE OPERATED AFTER READING THE INSTRUCTION MANUAL AND UNDERSTANDING THE SAFETY RULES.***

- DO NOT SMOKE NEAR THIS MACHINE.
- DO NOT INHALE OR BREATHE THE FUMES FROM THE MACHINE OR THE EXHAUST FUMES FROM THE ENGINE.
- USE IN A WELL VENTILATED AREA.
- READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET.
- IMMEDIATELY REPAIR ANY LEAKS IN THE MACHINE OR CONNECTORS.
- IMMEDIATELY CLEAN UP ANY SPILLS.
- KEEP A FIRE EXTINGUISHER HANDY.
- KEEP THE LINES AWAY FROM MOVING PARTS AND HOT OBJECTS.
- DO NOT EXCEED THE PRESSURE FOR WHICH THE MACHINE IS SET. TO DO SO WILL CAUSE MACHINE DAMAGE, POSSIBLE PERSONAL INJURY AND VOID THE WARRANTY.
- DO NOT USE ANY CLEANING SOLUTION IN THIS MACHINE UNLESS IT IS APPROVED BY THE MANUFACTURER.
- DO NOT PUT GASOLINE (PETROL) IN THIS MACHINE.
- MIX THE BILSTEIN **D-501** FUEL SYSTEM CLEANING SOLUTION WITH DIESEL FUEL ONLY.

## **THEORY OF OPERATION**

Simple and easy to operate the BILSTEIN FUEL SYSTEM SERVICE CENTER MODEL D-1000 (12v) when used with the authorized cleaning solutions will remove carbon, gum, varnish and other contaminants from the engine's fuel system and combustion surfaces. Think of it as a kidney dialysis machine for diesel engines, requiring only a hook-up to the engine's fuel system inlet and return lines. Used as directed, a service (cleaning) will reduce emissions, restore horsepower, reduce smoke, restore driveability and increase fuel mileage.

The BILSTEIN MODEL D-1000 (12v) connects to the engine being cleaned by connecting it with the adapters provided to the fuel system inlet and return lines. Thereby replacing the engine's fuel tank with the fuel/solution tank located inside the machine.

While the engine is run at about 1200 RPM a mixture of Bilstein D-501 cleaning solution and diesel fuel is circulated through the engine's fuel system. The carbon and other contaminants are removed from the engine by the exhaust system and by the filter that is part of the system.

Your BILSTEIN FUEL SYSTEM SERVICE CENTER MODEL D-1000 (12v) machine can also be used to clean the intake manifold, after/inter-cooler and turbocharger.

## **USE ONLY:**

BILSTEIN **D-501** FUEL SYSTEM CLEANING SOLUTION for diesel engines.

USE OF OTHER CLEANING SOLUTIONS MAY CAUSE ENGINE DAMAGE AND **MAY VOID** THE MANUFACTURER'S WARRANTY

# FIRST TIME OPERATION

**REFER TO FIGURE A**

1. READ THE SAFETY INSTRUCTIONS AND THIS ENTIRE MANUAL.
2. INSTALL THE **RED** FUEL LINE TO THE PORT MARKED **PRESSURE** USING THREAD SEALANT ON THE THREADS.
3. INSTALL THE **BLACK** FUEL LINE TO THE PORT MARKED **RETURN** USING THREAD SEALANT ON THE THREADS.
4. INSTALL THE HOSE BRACKETS USING THE SCREWS PROVIDED. MAKE SURE THE GROUND IS RE-FASTENED TO SCREW IN WHICH IT IS LOCATED.
5. INSTALL THE AXLE AND WHEELS USING THE PARTS PROVIDED. THE AXLE GOES THRU THE 1/2" HOLE AT THE REAR OF CABINET. THE ASSEMBLY SEQUENCE IS (FROM MACHINE OUTWARD) WASHER>SPACER>WASHER>WHEEL>WASHER>COTTER PIN.
6. INSTALL THE FRONT FEET USING THE PARTS PROVIDED.
7. INSTALL THE HANDLE USING THE PARTS PROVIDED.
8. CHECK TO MAKE CERTAIN THE FILTER IS SECURE.
9. FILL THE RESERVOIR WITH A MIXTURE OF BILSTEIN D-501 FUEL SYSTEM CLEANING SOLUTION AND CLEAN DIESEL FUEL.  
THE CORRECT RATIO IS:

---

<b>1 PART</b>	<b>.....</b>	<b>BILSTEIN D-501 FUEL SYSTEM CLEANING SOLUTION</b>
<b>2 PARTS</b>	<b>.....</b>	<b>CLEAN DIESEL FUEL</b>

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10. CONNECT THE RED BATTERY CLIP TO A 12-VOLT SOURCE, AND THE BLACK CLIP TO GROUND.
12. CONNECT THE PRESSURE AND RETURN LINE TOGETHER WITH GA-032 ADAPTER.
13. TURN ON THE TOGGLE SWITCH MARKED "PRIME/PUMP". THE PUMP WILL NOW START TO PUMP. CHECK FOR LEAKS. LET THE PUMP RUN FOR ABOUT 5 MINUTES. STOP THE PUMP AND DISCONNECT THE GA-032 ADAPTER.
14. YOUR D-1000 MACHINE HAS NOW BEEN PRIMED AND IS READY FOR YOUR FIRST ENGINE CLEANING.

# SYSTEM FEATURES & FUNCTIONS

## CONTROLS & GAUGES

**FIGURE A**

**1 QUICK DISCONNECTS** Connects the adapters to the fuel pressure and return lines.

**2 FUEL FILTER/WATER SEPERATOR** Filters return fuel from the engine's fuel system.

**3 MIXTURE TANK** Holds a total of 5 gallons (20 liters) of diesel fuel and Bilstein D-501 fuel system cleaning solution. Tank is opaque for viewing of liquid level

**4 TIMER** Sounds alarm when TIMER returns to zero. To shut off alarm turn off TOGGLE SWITCH marked "ALARM".

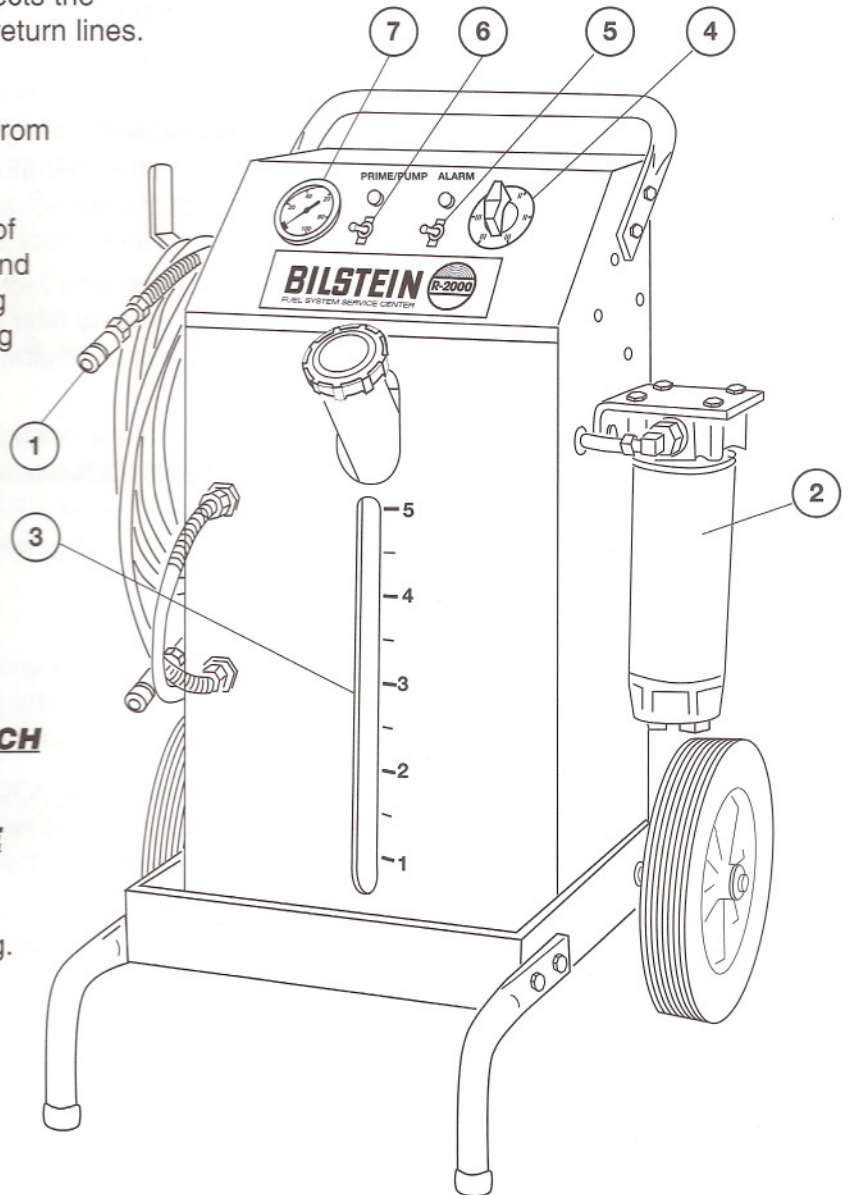
**5 ALARM TOGGLE SWITCH** Activates TIMER.

**6 PRIME/PUMP TOGGLE SWITCH** Activates the PUMP.

**7 PRESSURE/VACUUM GAUGE** Reads pressure when pump is on and reads vacuum when pump is off and the diesel engine is running.

**8 BATTERY CLIPS** (not shown) Connects to a 12-Volt source such as the vehicle battery.

**9 FUEL STRAINER** (not shown) Located inside the cabinet. The STRAINER protects the PUMP and BY-PASS VALVE.



# CLEANING DIESEL ENGINES

## REFER TO FIGURE A

1. Pour at least 2 gallons (8 liters) of **CLEAN DIESEL FUEL** into the reservoir.  
Add 1 gallon (4 liters) of **BILSTEIN D-501 FUEL SYSTEM CLEANING SOLUTION** to the reservoir.
  2. Connect the pressure and return lines together using adapter GA-032.  
Connect the battery connections. Turn on the PRIME/PUMP TOGGLE SWITCH and let the mixture circulate for 2 or 3 minutes.
  3. Disconnect the engine's fuel system suction side fuel supply line. Preferably disconnect after the primary filter. If you connect prior to the primary filter install a clean filter before cleaning the fuel system. Attach the appropriate adapter to engine side of the disconnected fuel line.
  4. Disconnect the return fuel line at a convenient location. Make sure you have disconnected down stream of any return lines. Fit the appropriate adapter to the return side of the hose just disconnected.
  5. Using the QUICK DISCONNECTS attach the adapters to their respective hoses on the MODEL D-1000 (12v).
  6. Turn on the PRIME/PUMP SWITCH and start the engine. Let the engine idle until the air has been worked out of the fuel system. Turn off the PRIME/PUMP SWITCH.  
The engine should now run smoothly. If it does not, check for loose connections.
- NOTE:** Once the engine is running smoothly the MODEL D-1000 (12v) PUMP does not need to be on: the RELAY VALVE, located inside the machine, will automatically re-route the mixture around the pump. Run the engine at about 1200 rpm.
7. Turn on the timer toggle switch and set the timer for 45 minutes. The alarm will sound when the 45 minute cycle is complete.
  8. When the alarm sounds shut off the engine, then shut off the MODEL D-1000 (12v) machine.
- NOTE:** Do not shut the MODEL D-1000 (12v) machine off prior to shutting off the engine. If you shut off the machine first the engine may be difficult to re-start due to air entering into the fuel system.

CONTINUED

**REFER TO FIGURE A**

9. Re-connect the fuel lines. Start the engine and check for leaks.

**NOTE:** Do not allow the mixture tank to run out of mixture during the cleaning operation. If the tank becomes empty the engine will "suck" air into the fuel system and become difficult to start. Always maintain at least **2 GALLONS** of mixture in the tank at all times.

**NOTE:** Most diesel engines clean-up better if they are run at about **1200 rpm's** (high idle). Do not run the engine under load while connected to the MODEL D-1000 (12v).

**NOTE:** If during the cleaning operation the vacuum gauge reads in excess of **10 inches** of vacuum turn on the PRIME PUMP.

**NOTE:** A typical diesel engine will consume .1 to .2 liters of Bilstein D-501 fuel system cleaning solution per liter of engine displacement per 45 minute cleaning cycle.  
Example: A diesel engine of 10 liters of displacement will use 1.0 to 2.0 liters of Bilstein D-501 fuel system cleaning solution per 45 minute cleaning cycle.



• **SYSTEM MAINTENANCE**  
 • **ADAPTER KIT LIST**

*The MODEL D-1000 (12v) machine requires very little maintenance in order to insure proper and safe operation.*

**THE FOLLOWING POINTS MUST BE OBSERVED:**

1. Drain the filter bowl after each cleaning
2. Change the filter after a maximum of every 50 cleanings
3. Clean the suction line strainer, located inside the machine, after every 100 cleanings
4. Remove and clean the mixture tank after every 100 cleanings
5. Periodically check fittings for tightness
6. Periodically check electrical connections

**MODEL D-1000 (12v) ADAPTER KIT LIST**

Part No.	Description	Qty
D-001	#10 FEMALE SWIVEL	1
D-002	#8 FEMALE SWIVEL	1
D-003	#6 FEMALE SWIVEL	2
D-004-A	1/2" OD SAE MALE	1
D-004-B	1/2" OD SAE MALE	1
D-005-A	1/2" OD SAE FEMALE X FEMALE CONNECTOR	1
D-005-B	1/2" OD SAE FEMALE X FEMALE CONNECTOR	1
D-008	#6 X #6 UNION	2
D-009	#6 X 1/4" MPT CONNECTOR	2
D-010	1/4" X 1/4" MPT UNION	2
D-011	#10 X #8 UNION	2

Part No.	Description	Qty
GA-001	1/4" (6MM) MALE BARB	2
GA-002	5/16" (8MM) MALE BARB	2
GA-003	3/8" (10MM) MALE BARB	2
GA-004	1/4" (6MM) OPEN END HOSE	2
GA-005	5/16" (8MM) OPEN END HOSE	2
GA-006	3/8" (10MM) OPEN END HOSE	2
GA-025	3/8" (10MM) BANJO FITTING	2
GA-010	1/2" (12MM) BANJO FITTING	2
GA-019	5/8" (14MM) BANJO FITTING	2
GA-046	3/4" (16MM) BANJO FITTING	2
GA-017-A	3/8" (10MM) WASHER	4
GA-011	1/2" (12MM) WASHER	4
GA-031	5/8" (14MM) WASHER	4
GA-046-A	3/4" (16MM) WASHER	4

**BILSTEIN**

FUEL SYSTEM SERVICE CENTER

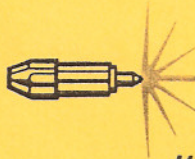


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# ENGINE CLEAN TECHNOLOGY, INC.

Manufacturers of the "INJECTOR CLEAN SYSTEM" Machine

## PACKING LIST FOR B I L S T E I N MACHINE

### EFI-800 & 888

- HOSE BRACKETT SET
- FEET SET (4) W/HARDWARE
- HANDLE W/HARDWARE
- 1 FUEL FILTER
- INSTRUCTION MANUAL
- WARRANTY CARD
- 1 GA-032 ADAPTER
- 1 GA-026-A ADAPTER
- PRESSURE RETURN HOSES

### EFI-1000

- HOSE BRACKETT SET
- FEET SET (2) W/HARDWARE
- 3 FUEL FILTER
- INSTRUCTION MANUAL
- WARRANTY CARD
- 2 WASHERS & 2 COTTER PINS
- 1 GA-032 ADAPTER
- 1 GA-026-A ADAPTER
- 1 AXLE
- 2 WHEELS
- PRESSURE/RETURN HOSES

### D-800

- HOSE BRACKETT SET
- FEET SET (4) W/HARDWARE
- HANDLE W/HARDWARE
- 1 FUEL FILTER
- 1 INSTRUCTION MANUAL
- 1 WARRANTY CARD
- PRESSURE/RETURN HOSES
- SMALL DIESEL ADAPTER KIT

### D-1000

- HOSE BRACKETT SET
- FEET SET W/HARDWARE
- 6 WASHERS, 2 SPACERS &  
2 COTTER PINS
- INSTRUCTION MANUAL
- WARRANTY CARD
- 1 HANDLE
- DIESEL ADAPTER KIT
- 2 WHEELS
- PRESSURE/RETURN HOSES

MODEL NO D-1000

SERIAL NO B-2345

DATE PACKED 10/15/98

PACKED BY PETER

ALL CLAIMS FOR SHORTAGES MUST BE MADE WITHIN 24 HOURS OF RECEIPT OF GOODS. THIS PACKING SLIP MUST ACCOMPANY ANY SHORTAGE CLAIMS.

# BILSTEIN

FUEL SYSTEM SERVICE CENTER



Nº 13094

## WARRANTY

Bilstein Corporation of America ("Bilstein") warrants, to the original end-user purchaser only ("Buyer"), all parts and materials ("Parts and Materials"), excluding normal use items (such as adapters, accessories, fuses, light bulbs, and external hoses) (Normal Use Items") to be free from defects in material and workmanship for a period of (SEE SCHEDULE) from the date of installation. Bilstein also warrants to the Buyer Normal Use Items to be free from defects in material and workmanship for a period of twelve (12) months from the date of installation. Filters are not covered by either warranty.

MODEL NAME	PERIOD
BILSTEIN MODEL EFI-1000 (12v)	5 Years
BILSTEIN MODEL D-1000 (12v)	5 Years
BILSTEIN MODEL EFI-888 (12v)	1 Year
BILSTEIN MODEL EFI-800 (12v)	2 Years
BILSTEIN MODEL D-800 (12v)	2 Years

Bilstein will repair or replace, at its option, for Buyer Parts and Materials or Normal Use Items that fail under normal use during the relevant time periods described above, provided that the R-2000 Fuel System Service Center is operated and maintained in accordance with the procedures set out in the instruction manual. On all repairs covered by this Warranty, Bilstein will pay for labor. Parts and Materials, and/or Normal Use Items used to effect the necessary repairs. Buyer is responsible for any and all shipping charges and duties (where applicable) to and from the authorized repair facility.

Contact an authorized Bilstein distributor or Bilstein for specific warranty repair procedures.

IN ORDER FOR THIS WARRANTY TO BE VALID, BUYER MUST SEND THE ATTACHED WARRANTY CARD TO BILSTEIN WITHIN 30 DAYS OF INSTALLATION OF THE R-2000 FUEL SYSTEM SERVICE CENTER. FAILURE TO RETURN THE WARRANTY CARD WITHIN THIS 30 DAY PERIOD WILL RENDER THE WARRANTY NULL AND VOID. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, WRITTEN OR ORAL, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. BILSTEIN'S LIABILITY (AND BUYER'S EXCLUSIVE REMEDY) IS LIMITED TO REPLACEMENT OR REPAIR, AT BILSTEIN'S OPTION, OF THE R-2000 FUEL SYSTEM SERVICE CENTER. IN NO EVENT SHALL BILSTEIN BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, LOSS OF DATA, OR LOSS OF USE DAMAGES) UNDER ANY CIRCUMSTANCES WHATSOEVER, EVEN IF BILSTEIN HAS BEEN ADVISED OF SUCH DAMAGE OR LOSSES.

This warranty is void if:

1. The R-2000 Fuel System Service Center is damaged due to mishandling, accident, negligence, alteration, abuse or misuse; or
2. Buyer fails to use parts, supplies, filters, and/or solutions supplied or approved by Bilstein; or
3. Repair has been made or attempted by personnel not approved by Bilstein; or
4. The R-2000 Fuel System Service Center is transferred from Buyer; or
5. Buyer has not returned the Warranty Card within 30 days from the date of installation.

**IMPORTANT: You must return this Warranty Registration Card within 30 days of installation in order to qualify for the Warranty outlined above.**

Nº 13094

Serial No.: \_\_\_\_\_ Model: \_\_\_\_\_

Owner (Buyer): \_\_\_\_\_

Business: \_\_\_\_\_

Address: \_\_\_\_\_

City: State: \_\_\_\_\_ Zip: \_\_\_\_\_

Business Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Purchased From: \_\_\_\_\_

Purchase Date: \_\_\_\_\_ Installation Date: \_\_\_\_\_

PN 40066

1. Pink copy: Distributor 2. Yellow copy: Dealer 3. Manila Card: Bilstein