

SAFETY PRECAUTIONS

All safety precautions should be read and followed. Serious personal injury or vehicle damage can occur if these precautions are not followed. Take special care working around the instrument panel area if your vehicle is equipped with an air bag.

- Always make certain the transmission is in park, wheels are blocked and parking brake is ON.
- Always wear eye protection.
- Always keep a dry chemical (Class B) fire extinguisher handy.
- Take great care around HOT or MOVING components.
- Never smoke around fuel components or the battery.
- Always operate the vehicle in a well-ventilated area. Exhaust gases are poisonous.
- Never disconnect any electrical connection with the ignition switch ON unless instructed to do so.
- Avoid touching electrical connector pins.
- Do not allow extension cords for power tools or drop lights to lie on, near or across any vehicle electrical wiring.

The Vacuum Pump/Brake Bleeder is a multi-unctional vacuum pump that is used to test a variety of essential vehicle settings and operations. By using some of the included accessory caps and rings it can also be used as a brake bleeder.

The Vacuum pump/Brake Bleeder's gauge is factory calibrated and measures in both inches and millimeters of mercury. This model works on both foreign and domestic vehicles.

Virtually all Internal combustion engines, whether gasoline or diesel, utilize vacuum to operate a myriad number of controls and applications. A tool such as this is indispensable in keeping any engine operating at its peak efficiency.

**DO NOT USE THE VACUUM PUMP TO SIPHON LIQUIDS.
DAMAGE TO THE INTERNAL CHAMBER AND SEALS WILL RESULT.**

Every vehicle has specific measurement values for vacuum related readings. It is beyond the scope of this instruction sheet to properly describe the correct procedure and test data for each vehicle. This technical information can be found by looking in your vehicle service manual. Accessing specifications released by the original manufacturer can be done by contacting them or finding material at your public library, the internet or local auto parts supplier.

partial list of tests performed with the aid of the Vacuum Pump/Brake Bleeder

COMPUTERIZED ENGINE CONTROL DEVICES

- Barometric pressure (BARO) Sensor
- Positive Crankcase Ventilation (PCV) System
- Exhaust Gas Recirculation (EGR) System
- Manifold Air Pressure (MAP) Sensor

IGNITION CONTROL DEVICES

- Vacuum Advance Distributor
- Retard Control Valve (RCV)
- Spark Delay Valve (SDV)

SYSTEMS TESTING

- Air Condition & heating Controls
- Cruise Control Systems
- Headlight Cover Door
- Fuel Tank & Line Testing
- Vacuum Door Lock Systems

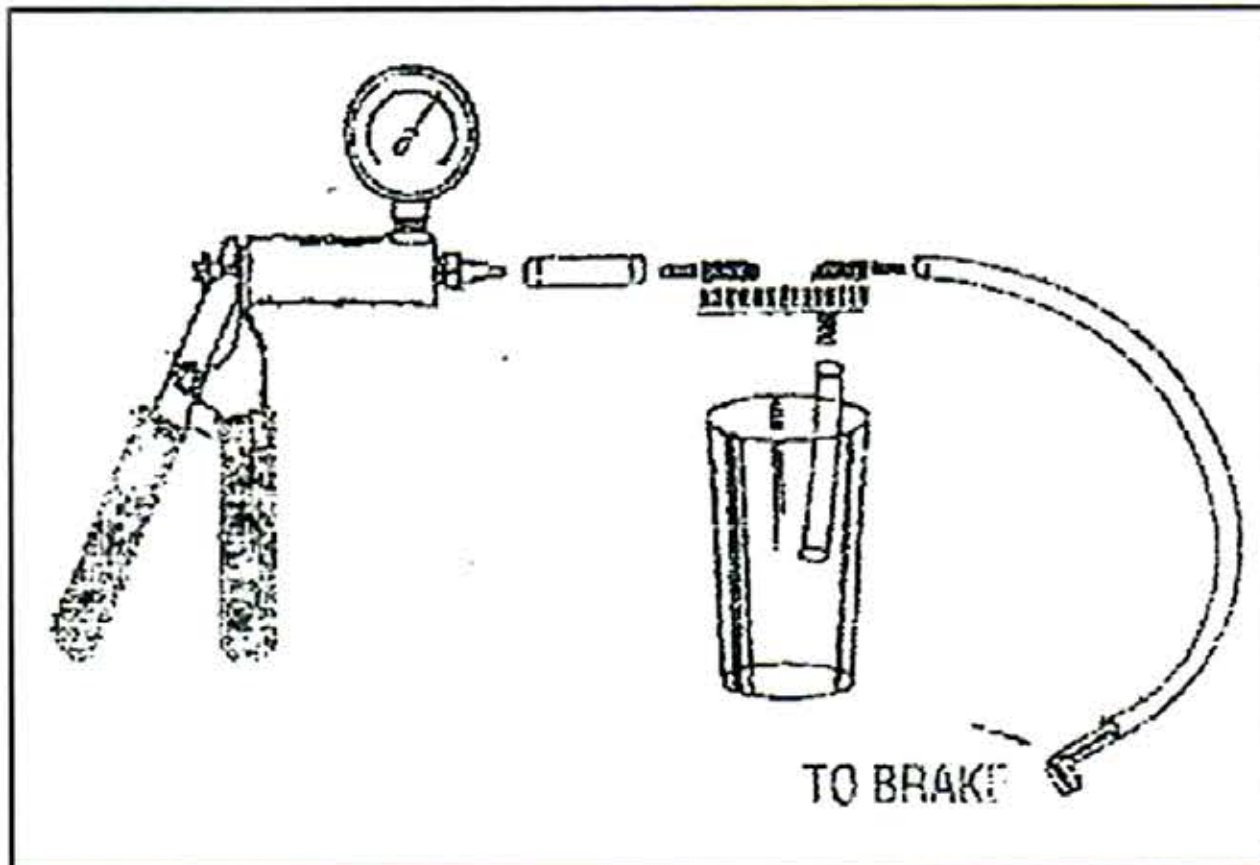
BRAKE SYSTEMS

- Bleeding Antilock Brake Systems
- Bleeding Conventional Systems
- Brake Line Bleeding
- Vacuum Power Brake Systems
- Dual-Bleeder Systems



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BRAKE BLEEDING GENERAL INSTRUCTIONS



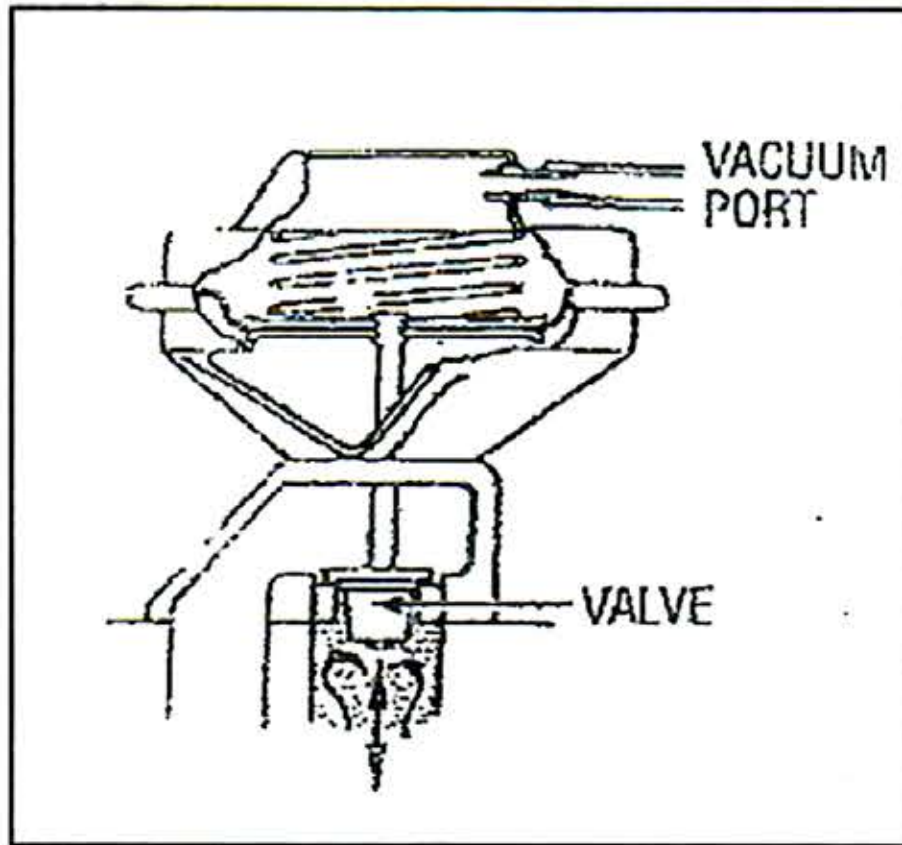
NOTE: EACH MANUFACTURER HAS SPECIFIC GUIDELINES. OBTAIN THEM AT ONE OF THE SOURCES LISTED ABOVE AND FOLLOW THE FOR YOUR PARTICULAR VEHICLE.

1. MAKE SURE VEHICLE'S MASTER CYLINDER RESERVOIR IS FULL.
2. BLEED THE SYSTEM IN THE FOLLOWING ORDER:
 - a. MASTER CYLINDER (IF BLEEDER EQUIPPED)
 - b. WHEEL CYLINDERS AND CALIPERS IN SUCCESSION, BEGINNING WITH THE WHEEL CLOSEST TO THE MASTER CYLINDER AND PROGRESSING TO THE ONE FARTHEST FROM IT.
3. ATTACH A 2" PIECE OF PLASTIC TUBING TO THE BOTTOM OF THE BRAKE BLEEDER JAR LID AND ATTACH THE LID ONTO THE JAR.
4. ATTACH THE 12" PLASTIC TUBE TO THE TOP OF THE JAR LID MARKED "TO PUMP" AND ATTACH THE OTHER END TO THE BRAKE BLEEDER PUMP'S BARRED FITTING.
5. ATTACH THE 24" LENGTH OF PLASTIC TUBING TO THE OTHER PORT OF THE JAR LID.
6. BLEED VEHICLE MASTER CYLINDER IF IT IS EQUIPPED WITH A BLEEDER VALVE. IF YOU ARE INSTALLING A NEW MASTER CYLINDER THEN "BENCH" BLEEDING IS NECESSARY.
7. SELECT THE PROPER SIZED ADAPTER TO FIT SNUGLY OVER THE BRAKE BLEEDING FITTING AND ATTACH IT TO THE END OF THE 24" LENGTH OF TUBING.
8. ATTACH THE BRAKE BLEEDING FITTING TO THE BLEED SCREW AND PUMP THE BRAKE BLEEDER PUMP 10-15 TIMES TO CREATE A VACUUM IN ITS RESERVOIR JAR.
9. OPEN THE VEHICLE'S BRAKE BLEEDING FITTING 1/4-1/2 TURN AND ALLOW ABOUT 2" OF FLUID TO FLOW INTO THE RESERVOIR JAR. RE-TIGHTEN THE FITTING AFTER BLEEDING.
10. BEFORE MOVING ON TO THE NEXT BRAKE TO BLEED, FILL THE MASTER CYLINDER RESERVOIR BACK TO NORMAL WITH FRESH FLUID.
11. PROCEED TO THE VEHICLE'S NEXT BRAKE AND PERFORM THE SAME STEPS AS ABOVE.



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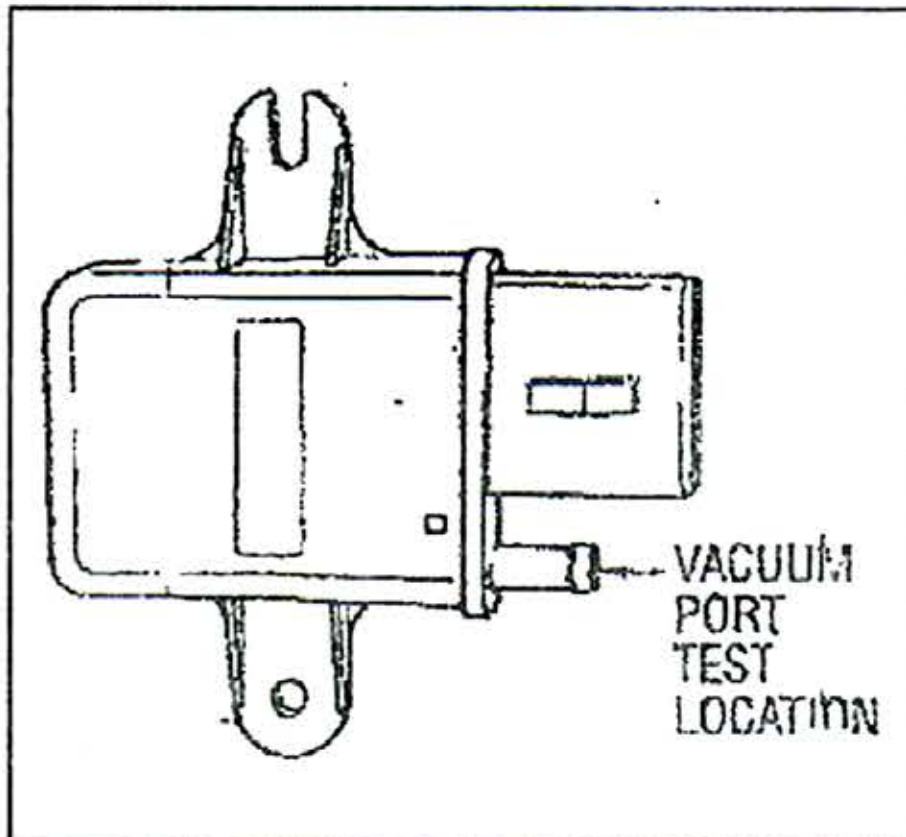
GR(Exhaust Gas Recirculation)VALVE GENERAL GUIDELINES



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THE EGR VALVE IS AN EXAMPLE OF A VALVE THAT IS ACTUATED BY VACUUM. WITH NO VACUUM APPLIED THE EGR VALVE IS CLOSED AND NO EXHAUST GAS IS RECIRCULATED. AS VACUUM IS APPLIED THE EGR VALVE OPENS AND EXHAUST GAS IS ALLOWED TO RECIRCULATE.

MAP (MANIFOLD ABSOLUTE PRESSURE) SENSOR GENERAL INSTRUCTIONS



NOTE: EACH MANUFACTURER HAS SPECIFIC GUIDELINES. OBTAIN THEM AT ONE OF THE SOURCES LISTED ABOVE AND FOLLOW THEM FOR YOUR PARTICULAR VEHICLE.

ATTACH THE 12" LENGTH OF PLASTIC TUBING ONTO THE VACUUM PUMP'S BARBED FITTING. ATTACH THE OTHER END TO THE VACUUM PORT ON THE MAP SENSOR. PUMP THE VACUUM PUMP UNTIL THE GAUGE NEEDLE REGISTERS APPROXIMATELY 15" HG OF VACUUM. THE GAUGE NEEDLE SHOULD STAY AT THAT PRESSURE AND NOT DROP. IF IT DOES NOT HOLD ITS VACUUM, REPLACE THE MAP SENSOR.

IN OPERATION THE MAP SENSOR SENDS A RETURN SIGNAL TO THE VEHICLE'S ELECTRONIC CONTROL MODULE. ON SOME CARS THIS SIGNAL VARIES IN FREQUENCY BETWEEN 160 AND 85 HZ, DEPENDING ON VACUUM LEVEL. TO CHECK THE ELECTRICAL CHARACTERISTICS, A FREQUENCY METER IS NECESSARY IN ADDITION TO THE VACUUM PUMP. MANUFACTURER'S SPECIFIC DATA SHOULD BE REVIEWED PRIOR TO TESTING.



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congratulations, you've just purchased a high quality Vacuum Pump and Brake Bleeder Kit. Illustrated below are the different parts of this valuable tool. All are designed and manufactured to help you perform a large number of tests and procedures. You will also find some typical test sites and instructions with this. Your best source for various connections and tests for your particular vehicle are found in its service manual.

VACUUM PUMP/BRAKE BLEEDER PARTS

