

# **Installation Instructions for 513020 & 513006**

## **Small Block Ford Intake Manifold**

Available for: 289, 302 V8 (exc. BOSS)

### **INTAKE MANIFOLD INSTALLATION INSTRUCTIONS**

**This instruction sheet is designed to cover a wide variety of vehicle applications. If your vehicle is not equipped with the items referred to in these instructions (EGR, transmission kick-down linkage, air conditioning, and power brakes), proceed to the next step.**

Thank you for choosing JEGS for your manifold needs. It is our concern that you follow these instructions carefully, so that you can achieve the desired results. Slight errors in installation can make a big difference in performance, mileage, and emissions. PLEASE READ THESE INSTRUCTIONS COMPLETELY BEFORE INSTALLATION.

**IMPORTANT:** Although all JEGS parts pass several inspections, it is imperative that the installer personally inspects the part before installation. Run a stiff wire through passages while shining a bright light into it. Also, wash the part using a mild soap and water solution. Check the fit on all bolt holes for proper alignment and thread any fittings in first by hand. Failure to perform these simple checks could result in engine damage.

### **APPLICATION:**

JEGS advanced high-rise "CS-331" manifolds. These are the most advanced dual plane. Intakes on the market, combining excellent bottom-end performance with an exceptionally broad power curve that extends to 6000 RPM. They are ideally suited to a number of applications, including high performance street and marine use, E.T. Bracket racing, and even RVs, tow vehicles, etc. "CS-331" manifolds are to be used in conjunction with more aggressive camshaft profiles, high performance ignition, and exhaust systems, etc. They have a square bore carburetor pad to accommodate 600-850 cfm aftermarket carburetors. The "Assault" manifolds have been designed to accept most stock hardware, such as coolant and vacuum lines, coils, and brackets. Little alterations, if any, will be required.

**NOTE:** It may be necessary to purchase some of the parts listed below (or their equivalents) in order to properly complete the manifold installation. Determination of equivalency is the responsibility of the consumer. JEGS does not assume that responsibility.

### **PARTS REQUIRED:**

- A. Intake manifold gasket set (555-210200)
- B. Thermostat housing gasket
- C. Oil-resistant, silicone based sealant (555-28030)
- D. Carburetor base gasket (555-16100) or (555-16105)
- E. Teflon tape

**NOTE:** Never install tapered (pipe) fittings in an aluminum manifold without Teflon tape or thread damage will likely occur.

### **TOOLS REQUIRED:**

- |  |   |
|--|---|
| A. Socket wrench set – 3/8" drive ratchet and extensions | H. Needle nose pliers                         |
| B. Open end wrenches – 3/8" to 1"                        | I. Drain bucket                               |
| C. Box end/flare wrenches (optional)                     | J. Timing light                               |
| D. 10" adjustable wrench (crescent)                      | K. Torque wrench                              |
| E. Ignition wrench set                                   | L. File                                       |
| F. Screwdrivers – standard and Phillips, various lengths | M. 5/16" x 18NC tap (for cleaning bolt holes) |
| G. Gasket scraper  |   |



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## MANIFOLD REMOVAL PROCEDURE:

1. Disconnect the ground cable from the battery.
2. Identify the vacuum and crankcase ventilation hoses (if any) leading to the air cleaner and note the routing and connection points. Remove the air cleaner.
3. Prior to removing any other vacuum lines, identify the routing of the lines. Mark and remove the vacuum lines from the carburetor and/or intake manifold.
4. Drain the radiator. (It may be necessary to remove the bottom radiator hose if there is no drain plug in the radiator).

**WARNING:** Hot water and steam may be present if the engine is still warm.

5. Disconnect the throttle linkage, transmission kick-down linkage (auto trans. only), and choke rod from the carburetor, (if applicable).
6. Loosen the gas cap to relieve pressure from the fuel system. Disconnect the fuel line at the carburetor using flare wrenches. Plug the end of the fuel line to prevent fuel leakage. Remove the carburetor.
7. Tag and disconnect the ignition coil and sensor wires. Remove the ignition coil bracket and the coil.
8. Remove the radiator hose, thermostat housing, and the thermostat.
9. Remove all water and vacuum fittings from the manifold.
10. Remove all remaining brackets (if any) from the manifold.
11. Loosen and remove valve covers to assist in the manifold removal and the new manifold instructions.

## IGNITION REMOVAL PROCEDURES:

**NOTE:** In some applications, removal of your distributor is not necessary. If so, move on to step 6 below.

**CAUTION: FOLLOW THESE INSTRUCTIONS CAREFULLY, AS SERIOUS DAMAGE CAN OCCUR WHEN THE IGNITION IS NOT RE-INSTALLED CORRECTLY.**

1. Remove the distributor cap.
2. Note the position of the rotor and make a mark on the distributor case in line with the rotor tip.
3. Note the position of the distributor vacuum canister and place some type of reference mark on a convenient surface.
4. Note the position of the points, if open, how much; if closed, note the distance from the point block to the cam lobe.
5. Remove the distributor. **DO NOT** rotate the engine after removing the distributor.
6. Remove the 16 or 12 (depending on vehicle's year) intake manifold-to-cylinder head bolts. **You will only be reinstalling 12 bolts.**
7. Remove the intake manifold.

## INSTALLING YOUR NEW JEGS MANIFOLD:

1. To prevent gasket pieces from falling into ports and valleys when cleaning old gaskets from head surfaces, lay rags into all ports and valleys. When clean, remove the stuffing carefully. Make sure that all particles that fell on the rags are completely removed. Wipe surfaces with rags soaked in lacquer thinner or alcohol to remove any oils or grease. This is must for proper manifold/gasket sealing.
2. Lay the manifold gaskets in place.
3. Ford changed the design of the water outlets in the heads throughout the years. JEGS manifolds will work on any year heads, provided that the correct gasket is used. Due to their superior sealing qualities, JEGS recommends using a high performance style intake manifold gasket set, such as JEGS P/N 555-210200.
4. Apply a 1/4" wide bead of oil-resistant RTV-silicone sealant to the front and rear block-sealing surfaces, making sure to overlap manifold gaskets at all four corners. Do not use cork or rubber seals.

**NOTE:** Thread sealant should be used on all bolt threads.

5. Carefully, lay your JEGS intake manifold in place. If the manifold must be moved, re-check the gaskets. Install the intake bolts initially torqueing to 10 ft./lbs., then 15 ft./lbs., following the factory Ford sequence, and finally torque **ONLY THE INSIDE 8 BOLTS** to 25 ft./lbs. There is no cylinder head surface to support the four outer bolt bosses, and they may crack if torqued beyond 15 ft./lbs.
6. Install the thermostat, gasket, and housing (using silicone sealant on both sides of the gasket). Be sure that the thermostat housing has been cleaned of any old gasket material.
7. Install the heater and radiator hoses.
8. If you had to remove your distributor, install it at this time. Make sure that your distributor engages the oil pump drive shaft.
9. Check the location of the rotor and distributor body, making sure your reference marks line up. Refer to ignition removal section (steps 2, 3, & 4). Tighten the distributor body just enough that it can still be rotated by hand.
10. Install all water sensors and vacuum fittings into the manifold.



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**NOTE:** Use Teflon tape or pipe dope on all pipe threads.

11. Plug all unused water and vacuum ports in the manifold.
12. Install your four carburetor studs in the manifold. Place the carburetor gasket on the clean carburetor pad. Do not use any type of sealant on the carburetor gasket.
13. Install the carburetor. Connect all linkage and throttle springs.
14. Connect all vacuum and fuel lines. Refer to your tags or drawings for correct placement.
15. Automatic transmissions only: Adjust kick-down or throttle pressure linkage for proper shift points. Check all linkages, making sure that there are no obstructions in function.
16. If required, reinstall valve covers and new gaskets.
17. Install the A/C and coil brackets, coil, wires, and all brackets that were removed from the manifold.
18. Close the drain and fill the radiator to the proper level with coolant.
19. Retighten the gas cap and connect the battery cable.
20. Hook up the timing light and start the engine. Set the timing to factory specs. Tighten the distributor.
21. Check for possible fuel, oil, or coolant leaks and for proper choke operation.
22. Install the air cleaner.

**CAUTION:** Check to be sure that there is adequate clearance for the throttle and choke linkages through their range of travel.

**IMPORTANT:** Check for adequate hood clearance before closing the hood.

23. Operate the engine for 30 minutes. Allow the engine to cool and retorque the manifold bolts following step 4 above.

**YOUR MANIFOLD INSTALLATION IS COMPLETED! NOW IS A GOOD TIME TO CHANGE YOUR OIL AND FILTER.**



## GENERAL INFORMATION

1. It is advisable to periodically (every six months or 6000 miles) recheck the torque on the manifold bolts to minimize the possibility of a vacuum leak.
2. If the cylinder heads have been milled or the cylinder block "decked", the cylinder head faces and the end surfaces of the manifold must be milled to compensate. This is necessary to maintain correct port alignment, minimize the possibility of manifold vacuum leaks, and assure proper engine performance.
3. Ignition timing should be set to factory specifications. Any attempt to further advance the initial setting will result in (1) an adverse effect on exhaust emission levels and (2) improper engine operation. Since idle speed increases as the ignition is advanced, the only way to bring the idle speed down to an acceptable level is to close the throttle plates with the idle speed adjustment screw. Closing the throttle plates in this manner will change the geometry between the throttle plates and the idle fuel ports. This can cause idle quality deterioration and make it difficult to get the idle mixture rich enough. If more advance is desired, it should be done in the distributor advance curve.
4. When changing from a 2BBL intake manifold (NOTE: Check legality in your state), it is sometimes necessary to adjust the transmission kick-down linkage to the carburetor in order to obtain WOT. This adjustment is made by loosening the locking grommet to achieve full throttle. Lock the grommet against the kick-down cable and connect the kick-down linkage to the carburetor. Consult the appropriate chassis service manual for more detailed adjustment instructions.



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