



# VICTOR JR. ALUMINUM CYLINDER HEADS

For Small-block Ford V8s

Part #77169, #77179, #77189, #77199, #77389 & #77399

## INSTALLATION INSTRUCTIONS

Not Legal for sale or use on pollution-controlled vehicles

Please study these instructions carefully before installing your new cylinder heads. If you have any questions, do not hesitate to contact our **Technical Hotline at: (800) 416-8628** from 7:00 am to 5:00 pm, Monday through Friday, Pacific Standard Time.

### DESCRIPTION

Edelbrock Victor Jr. Ford heads have a 500+ horsepower potential, out-of-the-box, for an affordable, race-winning set-up. They feature large volume, high-flowing 210cc intake ports and .130" raised 75cc exhaust ports. Designed to work with standard port location intake manifolds, these heads have CNC gasket-matched port entries and exits with blended valve bowls. The spark plug holes and valves are in the stock location with a valve cover rail that's raised .150". Complete heads come with stainless steel, 1-piece, swirl-polished, under-cut stem valve (2.05" intake/1.60" exhaust) as well as phosphor bronze valve guides.

The intake and exhaust ports are CNC machine "matched" and have been designed for maximum flow velocity when matched with the Victor Jr. intake manifold #2921 (for 302-based small-block Fords) or #2981 (for 351-W based engines). **NOTE:** These heads are drilled for 1/2" diameter head bolts as used on 351-W engines. Use Edelbrock Head Bolt Kit #8553 or stock Ford 1/2" head bolts with hardened washers (ARP #200-8533) to mount these heads on 351-W engines. To mount these heads on 289-302 engines, you must use Edelbrock head bolt bushings with integral washers #9680 with either Edelbrock head bolt kit #8552 or stock 7/16" head bolts.

### IDENTIFICATION

These heads are sold in pairs, either bare or assembled, in the following configurations:

|   | Chamber Size | Part No.       |
|---|--------------|----------------|
| <b>Victor Jr. (bare)</b> .....  | <b>60cc</b>  | <b>#77169*</b> |
| <b>Victor Jr. (with valves only)</b> .....  | <b>60cc</b>  | <b>#77179*</b> |
| <b>Victor Jr. (with valves, springs, retainers and keepers for flat tappet cams)</b> .....  | <b>60cc</b>  | <b>#77189*</b> |
| <b>Victor Jr. (with valves, springs, retainers and keepers for solid roller cams)</b> ..... | <b>60cc</b>  | <b>#77199*</b> |
| <b>Victor Jr. (bare)</b> .....  | <b>70cc</b>  | <b>#77389*</b> |
| <b>Victor Jr. (bare)</b> .....  | <b>70cc</b>  | <b>#77399*</b> |

Complete cylinder heads are assembled with the following components: Stainless steel, one-piece, swirl-polished intake and exhaust valves with under-cut stems for increased flow; 2-ring positive oil control seals; 7/16" rocker studs and 5/16" guideplates; Edelbrock Sure-Seat Valve Springs for either flat-tappet cams (#77189) or solid roller cams (#77199), retainers, and valve keepers. Complete cylinder heads are assembled and prepared for installation right out of the box. **Bare cylinder heads will have valve guides and seats installed, but will require final sizing and a valve job to match the valves you will be using.**

### ACCESSORIES

Although Edelbrock Victor Jr. Cylinder Heads will accept some OEM components (rocker arms, valve covers, intake manifold, head bolts [351-W only], etc., we highly recommend that premium quality hardware be used with your new heads.

**HEAD BOLTS or STUDS:** High quality head studs or head bolts with hardened washers must be used to prevent galling of the aluminum bolt bosses. Recommended head bolts are ARP #254-3708 for engines with 7/16" head bolt holes (289 and 302). You may use Edelbrock Head Bolt Kit #8552 or stock 7/16" bolts on 289-302 engines only if you purchase Edelbrock head bolt bushings with integral washers #9680. Engines with 1/2" diameter head bolts (351-W and 302 SVO) use Edelbrock Head Bolt Kit #8553 or stock 351-W bolts with high quality head bolt washers such as ARP #200-8533.

**NOTE:** It is recommended that 289-302 engines producing 380 or more horsepower (or with nitrous oxide) be converted to accept 1/2" diameter head bolts by a qualified machine shop to ensure maximum head gasket durability.

**ROCKER ARMS:** The valve springs supplied will accommodate valve lifts up to .625"-.650", which is much higher than stock rocker arms will allow. Roller rocker arms designed for use with 7/16" studs are required.

**VALVE COVERS:** Because most roller rockers are physically larger than stock rockers, taller valve covers are usually required to clear them. Use Edelbrock Signature Series chrome valve covers #4460, or Elite Series polished aluminum valve covers #4260.

**INTAKE MANIFOLD:** Edelbrock Victor Jr. Cylinder Heads are matched in size and operating range with Edelbrock Victor Jr. intake manifold #2921 (for 302) or #2981 (for 351-W). Additionally, any manifold that matches Fel-Pro gasket #1262 may be used.

**EXHAUST HEADERS:** Edelbrock Victor Jr. Cylinder Heads use the stock 2" wide exhaust bolt pattern. Headers with flange openings matching a Fel-Pro #1487 gasket will fit. Exhaust ports are CNC profiled to match Fel-Pro #1487 exhaust gaskets which are recommended for this application.

**SPARK PLUGS:** Use 14mm x 3/4" reach gasketed spark plugs. Heat range will vary by application and may range from Champion RC-9Y to RC-12Y (or equivalent) for street performance use. Racing applications will generally require colder spark plugs; consult Champion or Edelbrock technical departments for recommendations. Use anti-seize compound on the plug threads to prevent galling in the cylinder head, and torque to manufacturer's specification for aluminum heads.

## INSTALLATION

Before final installation of the cylinder heads several things need to be checked to ensure proper engine operation:

1. **Piston to valve clearance** - Minimum intake valve clearance should be .080". Minimum exhaust valve clearance should be .110". The point of minimum intake valve to piston clearance will usually occur somewhere between 5° and 20° After Top Dead Center during valve overlap. The point of minimum exhaust valve to piston clearance will usually occur 20° to 5° Before Top Dead Center during valve overlap. **Re-machining of the piston top eyebrows may be required with some pistons.**
2. **Proper lifter adjustment and rocker geometry** - Lifter pre-load or clearance is easily adjustable due to the stud/guideplate design. Rocker geometry should be checked making sure that the contact point of the roller remains properly on the valve tip and does not roll off the edge. Visual inspection of the rockers, valve springs, retainers, and pushrods should be made to ensure that none of these components come into improper contact with each other. If problems with valve train geometry occur, simple changes such as pushrod length may have to be made.

### Other Assembly Tips

- When installing the spark plugs and exhaust headers, be sure to use a high temperature anti-seize compound on the threads to reduce the possibility of thread damage in the future.
- **Do not exceed a torque of 16-18 ft./lbs. on the intake manifold bolts and lubricate the bolt threads prior to assembly.**
- If pushrod to cylinder head contact is a problem, loosen rocker studs and re-position guideplate as needed for clearance.

### SPECIFICATIONS

|                                |   |
|--------------------------------|---|
| Head bolt torque:              | 7/16" bolts - 70/80 ft./lbs.<br>(short/long bolts)<br>1/2" bolts - 100/110 ft./lbs.<br>(short/long bolts) |
| Intake bolt torque:            | 16-18 ft./lbs.  |
| Rocker studs:                  | 7/16"   |
| Rocker stud torque:            | 45 ft./lbs. (7/16"-14)  |
| Combustion chamber volume:     | 60cc  |
| #77389 & #77399                | 70cc  |
| Intake port volume:            | 210cc   |
| Exhaust port volume:           | 75cc  |
| Deck thickness:                | 5/8"  |
| Valve Seats:                   | Hardened, interlocking ductile iron,<br>compatible with all fuels   |
| Valve Size:                    | Intake- 2.05", Exhaust- 1.60"   |
| Valve Locks                    | 11/32" x 7° (#9616)   |
| Valve Spring Retainers         | 7° 4140 steel (#9728)   |
| Valve Spring Diameter:         | 1.55"   |
| Valve Spring Installed Height: | 1.900"  |
| Valve Spring Seat Pressure:    | 210 lbs. (#77199); 130 lbs. (#77189)  |
| Max. Valve Lift:               | .650"-.670"   |
| Pushrod guideplates:           | 4140 hardened steel   |
| Rocker arms:                   | Aftermarket roller type required (7/16" stud)   |
| Pushrods:                      | 5/16" dia. hardened pushrods required for<br>use with guideplates   |
| Spark plugs:                   | 14mm x 3/4" reach gasketed seat   |
| Recommended intake gasket:     | Fel-Pro #1262   |
| Recommended exhaust gasket:    | Fel-Pro #1487   |

- Installation is the same as for original equipment cylinder heads. Consult service manual for specific procedures, if necessary. See separate section on head gasket selection. Be sure that the surface of the block and the surface of the head is thoroughly cleaned to remove any oily film before installation. Use alcohol or lacquer thinner on a lint-free rag to clean. Apply moly-oil mixture to head bolt threads, washer, and area under head bolt to prevent galling and improper torque readings. Torque to 70 ft./lbs. for 7/16" bolts (289/302) or 100 ft./lbs. for 1/2" bolts (351-W) in three or four steps following the factory tightening sequence (see Figure 1), then tighten the long (upper) head bolts to 80 ft./lbs. (7/16") or 110 ft./lbs. (1/2"). A re-torque is recommended after initial start-up and cool-down (allow 2-3 hours for adequate cooling).

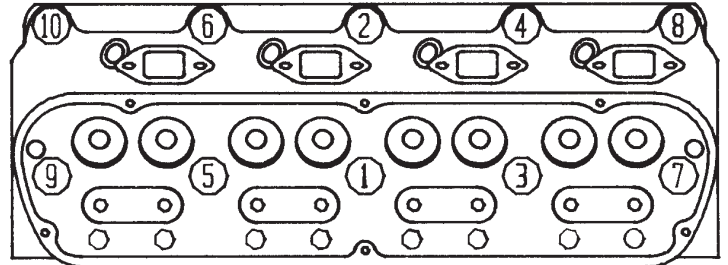


Figure 1— Tightening Sequence

### Head Gaskets

Head gasket requirements change according the application for which the cylinder heads are being used. Use the following as a guide for head gasket selection:

1. Engines with low or stock compression ratios (8-10:1), stock size head bolts (7/16"), and applications where the cylinder head is being used as a stock replacement or a performance upgrade with the stock piston volume, without nitrous or forced induction (blowers or turbos)- use Fel-Pro Head Gasket #9333-PT1. Victor Jr. heads are not recommended for these applications!
2. Medium performance engines, 10-12:1 compression ratio, increased preload cyl. head fasteners (7/16" stud or 1/2" head bolts or studs), not recommended with nitrous or forced induction- Fel-Pro Head Gasket #1011-2.
3. Highest performance racing engines. 12:1 and above compression ratio, 1/2" cyl. head fasteners designed for the highest preload, engines using nitrous or forced induction-Fel-Pro Head Gasket #1006 Locwire. **NOTE:** This gasket will require modification of the head deck surface by a competent machine shop to Fel-Pro specifications.

**NOTE:** When using Fel-Pro Print-O-Seal, or any silicone beaded gasket, you must apply a small strip of silicone to both the deck flange of the cylinder head, as shown below, and the same location on the surface of the block to prevent coolant from contaminating the engine oil.



Figure 2— Silicone Bead Location