



Installation Instructions

Victor CNC™ LS3 Rectangle Port Cylinder Head

Edelbrock Part Number: 77670

Description Victor CNC Cylinder Head for Chevrolet LS3, Bare

1. Overview

These installation instructions apply to the Edelbrock Victor CNC™ LS3 Rectangle Port Cylinder Head. This document is intended for experienced engine builders and professional installers. Proper verification and measurements are required at all stages of installation. Failure to follow these instructions or to verify clearances may result in component damage or engine failure.

2. Pre-Installation Requirements

Required tools include a calibrated torque wrench, angle gauge (if required), pushrod length checker (COMP Cams® #7705CPG or equivalent), dial indicator, feeler gauges, valve spring height micrometer, engine assembly lubricant, clean compressed air, and thread chasers or taps.

Before installation, verify minimum bore size of 4.000 in, cylinder head fastener compatibility, intake manifold compatibility, header and spark plug wire clearance.

3. Critical Measurements & Verification

Valve guide clearance must be verified prior to final assembly. Recommended clearance is 0.0015–0.0016 in intake and 0.0020–0.0025 in exhaust. Pushrod length must be measured to ensure proper rocker geometry.

Piston-to-valve clearance must be verified with a minimum of 0.080 in intake and 0.100 in exhaust.

Retainer-to-guide and chamber-to-dome clearances must always be checked.

4. Installation Notes

Use appropriate head gaskets and ensure proper orientation. Follow fastener manufacturer torque specifications, sequence, and lubricant requirements. Verify rocker arm sweep pattern during mock-up and rotate engine by hand to check for interference prior to startup.

5. Milling Guidelines

Flat milling removes approximately 0.0055" per cc. Angle milling removes approximately 0.0075 in per cc. Excessive angle milling may result in intake manifold misalignment.



Specifications

Item	Intake	Exhaust
Port Volume	263 cc	103 cc (all)
Port Location	OEM	OEM
Material	Cast Aluminum 356-T6	—
Chamber Volume	68 cc	—
Spark Plug Type	14mm, 5/8 hex, .750" reach, flat gasket or tapered seat	—
Spark Plug Location	Stock Location	—
Valve Angle	11°	11°
Valve Specifications	See notes Suggested Component section	See notes Suggested Component section
Valve Seat Angles	45°	45°
Valve Seat Dimensions	2.220" x 1.350" x 0.375"	1.680" x 1.350" x 0.375"
Valve Guide I.D.	8 mm	8 mm
Valve Guide Specifications	0.502" O.D. x 2.500" L x 0.500" boss dia.	0.502" O.D. x 2.500" L x 0.500" boss dia.
Valve Guide Material	manganese bronze	manganese bronze
Valve Seats	Iron-Copper Matrix	Iron-Copper Matrix
Spring Pocket Diameter	1.650"	1.650"
Pushrod Diameter	3/8" (larger dia. will require clearance)	3/8" (larger dia. will require clearance)
Weight	31 lbs.	—
Flow at 0.100" Valve Lift:	74 CFM	55 CFM
Flow at 0.200" Valve Lift:	152 CFM	107 CFM
Flow at 0.300" Valve Lift:	222 CFM	144 CFM
Flow at 0.400" Valve Lift:	270 CFM	172 CFM
Flow at 0.450" Valve Lift:	289 CFM	183 CFM
Flow at 0.500" Valve Lift:	305 CFM	194 CFM
Flow at 0.550" Valve Lift:	320 CFM	201 CFM
Flow at 0.600" Valve Lift:	331 CFM	207 CFM
Flow at 0.650" Valve Lift:	339 CFM	212 CFM
Flow at 0.700" Valve Lift:	341 CFM	216 CFM

Features

- Optimum port design for greater flow, better atomization & enhanced dynamics.
- Fully CNC machined ports and chamber
- Efficient water jacket design for greater thermal conductivity & reduced risk of detonation.
- Thick deck faces and added material for angle milling.
- CNC chamber design for excellent combustion thermodynamics
- All accessory bolt holes drilled and tapped for exact tolerance.
- LS 6-bolt design Compatible with GM LSX Blocks

Tech Notes

- Minimum Bore Size: 4.000"
- Flat Mill: 0.0055" per cc
- Angle Mill: 0.0075" per cc (excessive milling can cause intake manifold misalignment)
- Head Bolt Torque: Refer to manufacturer of head bolt fastener
- Pushrod length should always be measured with an adjustable pushrod (COMP 7705)
- Recommended valve guide clearance: Intake 0.0015"–0.0016"/Exhaust 0.002"–0.0025"
- Recommended minimum piston-to-valve clearance: 0.080" intake/0.100" exhaust



Tech Notes (continued)

- Retainer-to-guide clearance must be checked with high-lift cams
- Chamber-to-Piston clearance must be checked when using domed pistons
- Additional valve spring pocket machining is not recommended
- Chamber volume may vary due to valve margins and dishes — always verify before installation
- Valve guide clearance must be checked (stem diameter variance)
- Water jackets should be flushed before assembly

Suggested Components

Item	Part Number / Recommendation	Notes
Spark Plug	Champion RC4-YC	14mm, 5/8 hex, .750" reach, flat gasket style
Rocker Arms	COMP Cams 1478-16	COMP Cams® GM LS Upgraded OEM Rocker Arms
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Rocker Studs	COMP Cams® #4582-KIT	COMP Cams® Rocker Arm Stud Kit
Shaft Rocker System	COMP Cams 1980-16	Max-Lift BSR Shaft Rocker System
Head Bolts	OEM	—
Head Studs	ARP 234-4317	—
Manifold	FAST 146106, 146104B Edelbrock 7141, 71413, 2821, 28215	—
Intake Valves	COMP Cams 6081-8	2.165" x 5.450" x 8mm Valve Stem, Stainless Steel
Intake Valves	COMP Cams 6083CPG	2.165" x 5.540" x 8mm Valve Stem, Titanium
Exhaust Valves	COMP Cams 6082-8	1.600" x 5.450" x 8mm Valve Stem, Stainless Steel
Exhaust Valves	COMP Cams 6084CPG	1.600" x 5.450" x 8mm Valve Stem, Inconel
Valve Springs	COMP Cams 26925-16	1.320" O.D. Dual Spring 0.660" Max Lift
Valve Springs	COMP Cams 26943-16	1.550" O.D. Dual Spring 0.740" Max Lift
Valve Locks	COMP Cams 632-16	
Valve Stem Seals	COMP Cams 511-16	0.500" Steel Jacketed Viton
Valve Spring Locators	COMP Cams 4642-16	Steel Spring Seat Cup

Note: suggested components must be verified for compatibility between components, not all are cross compatible and must be selected accordingly.