



Installation Instructions

Victor CNC™ LS7 Rectangle Port Cylinder Head

Edelbrock Part Number: 77666, 77668, 77678, 77689, 77679, 77698, 77699,

Description Victor CNC Cylinder Head for Chevrolet LS7, Bare

1. Overview

These installation instructions apply to the Edelbrock Victor CNC™ LS7 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 4.065 in, cylinder head fastener compatibility, intake manifold compatibility with raised port location (+0.220 in), and 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 LS7 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	291 cc (77678, 77679, 77689), 307 cc (77666, 77668, 77698, 77699)	98 cc (all)
Port Location	0.220 raised (OE manifolds will fit)	0.100 raised (OE manifold will fit)
Material	Cast Aluminum 356-T6	—
Chamber Volume	69 cc (all)	—
Spark Plug Type	14mm, 5/8 hex, .750" reach, flat gasket	—
Spark Plug Location	Stock Location	—
Valve Angle	12°	12°
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" (77678, 77679, 77689, 77699), 2.290" x 1.350" x 0.375" (77666, 77668)	1.680" x 1.350" x 0.375" (all)
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	77679, 77699, 77668-Copper Infiltrated Powdered Metal (CI-PM), 77678 & 77689, 77698, 77666-Copper alloy	77679, 77699, 77668-Copper Infiltrated Powdered Metal (CI-PM), 77678 & 77689, 77698, 77666-Copper alloy
Spring Pocket Diameter	1.625"	1.625"
Pushrod Diameter	3/8" (larger dia. will require clearancing)	3/8" (larger dia. will require clearancing)
Weight	31 lbs	—

Features

- Optimum port design for greater flow, better atomization & enhanced dynamics.
- Copper Infiltrated-Powdered Metal (CI-PM), or Beryllium Copper valve seats
- 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
- 77689 features machined provisions for mechanical fuel injection down nozzles

Tech Notes

- Minimum Bore Size: 4.065"
- 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
- Retainer-to-guide clearance must be checked with high-lift cams
- Chamber-to-Piston clearance must be checked when using domed pistons
- Spring pockets can be machined to a larger diameter, but cannot be machined deeper
- Chamber volume may vary due to valve margins and dishes — always verify before installation



Tech Notes (Continued)

- 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 1525CPG	Raised Port Shaft Mount Rocker System 1.8/1.8 Ratio
Head Bolts	OEM	—
Head Studs	ARP 234-4339	—
Manifold	FAST 146202B, 146204, Edelbrock 28875, 2887, 28905, 2890,	—
Intake Valves	COMP Cams 6062-8	2.200" x 8mm Valve Stem, Stainless Steel
Intake Valves	COMP Cams 6064-8	2.200" x 8mm Valve Stem, Titanium
Intake Valves	COMP Cams 6068-8	2.250" x 8mm Valve Stem, Titanium
Exhaust Valves	COMP Cams 6063-8	1.615" x 8mm Valve Stem, Stainless Steel
Exhaust Valves	COMP Cams 6066-8	1.615" x 8mm Valve Stem, Titanium
Exhaust Valves	COMP Cams 6067-8	1.615" x 8mm Valve Stem, Inconel
Valve Springs	COMP Cams 26925-16 (-05)	1.320" O.D. Dual Spring 0.660" Max Lift
Valve Springs	COMP Cams 26926-16 (-06)	1.320" O.D. Dual Spring 0.675" Max Lift
Valve Spring Kit	COMP Cams 7230TS-KIT	
Valve Locks	COMP Cams 623-16	8 mm 7° Machined Steel
Valve Stem Seals	COMP Cams 511-16	0.500" Steel Jacketed Viton
Valve Spring Locators	COMP Cams 4709-16	Steel Spring Seat Cup