



MOTOWN LS ENGINE BLOCKS

Iron SBC Specifications and Instructions

Technical data and specifications for IRON MOTOWN II block part numbers:

Part #	Series	Type	Deck	Bore	Mains	Lifters	Main Caps	Max Stroke
084080	Sportsman	Bare	9.240"	4.115"	400	.8437"	Nodular splayed 4-bolt	4.000"
084180	Race	Bare	9.240"	4.115"	400	.8437"	1045 billet splayed 4-bolt	4.000"

IMPORTANT: Part #832880 installation kit required

Consists of:	Part #	Description	Quantity
	061077	Valley adapter	1
	061078	Valley cover plate	1
	061079L	Cylinder head end plate adapter (left)	1
	061079R	Cylinder head end plate adapter (right)	1
	C91294A332	10mm flat head screws	9
	C9464K91	O-rings	2

Block Applications: The MOTOWN LS blocks are designed to be a replacement for the small block Chevy two piece seal, driver side dipstick applications. In applications where the cylinder bore is 4.200, the combination is making 700+ HP normally aspirated, or the block is being used in a nitrous or blower application, it is **HIGHLY RECOMMENDED** to use the MOTOWN LS block with the billet, splayed main caps. This block has an LS water jacket and thus utilizes LS cylinder heads.

Block Material: High density cast iron.

Deck Height: 9.240 (Standard LS Chevrolet)

Cam Bearings: Standard SBC. NOTE: When installing, BE SURE the oil hole in the bearings aligns with the oil feed hole to the main bearings. This block has the oil hole at the 5 o'clock position to prevent bearing hole closure at high spring pressures.

Main Bearings: MOTOWN LS blocks are available with 400 main journals only which utilize the oversized Fel-Pro #2909 or equivalent (line bore/line hone applications) rear main seal.

Main Caps: All five main caps are four bolt nodular iron or 1045 billet steel caps with the center three being of the splayed design. The inner row of bolts are 1/2 inch thread. The outer row of bolts are 7/16 thread. Torque specs with on main bolts are: 100 ft. lbs. inner & 70 ft. lbs. outer with oil. All MOTOWN LS blocks will have the bolt pattern spread of a 400 block. Most windage trays fit the 350 bolt pattern. Custom fitting of the windage tray may be required.

Lifter Bores: Indexed. Lifter bore size is .8437" (standard Chevy diameter) with spacing at 1.830" (standard LS). Lifters are at the standard 41° bank angle. NOTE: A standard LS lifter will work, however, if using a solid roller lifter, then a notch in the side must be machined due to a larger cam core which raised the lifter in the block (see illustration the right). Check with World for any future lifter changes. **DO NOT USE LIFTERS AS IS.**

Maximum Bore: All IRON blocks can be bored safely to a maximum of 4.200.

Cylinder Bores: IRON block cylinder bores are of a Siamese design. Because of increased cylinder wall thickness, it is not necessary to incorporate steam holes for street use.

Cylinder Wall Thickness: IRON block @ 4.125 bore: approximately .200.

Water Jackets: Expanded for better cooling. Capacity is 152 fl.oz. per bank.

Gear Drives & Belt Drives: The face of the block has more clearance built in to accommodate all aftermarket belt and gear drives.

Lubrication: Priority main oiling system. Another benefit is that the distributor is now at the end of the oiling cycle, preventing leaks that were a common occurrence when the distributor was improperly fitted or the O-rings were damaged. We recommend oils designated SM/SL/SJ, 15W-40 or 20W-50.

Oil System Features: As is, block is set up for OE style internal oil pump. Integral bosse front and rear for dry sump applications. Oil pressure can be drawn from rear of block, at the top of the bellhousing.

Oil Restrictors: Relocated to the lifter valley for easier access. 1/8" pipe plugs are used with a hole drilled through the center (not provided). Contact your engine builder for hole diameter as it will vary by application and components employed.

Filtration: Integral mount for spin on filter.

Freeze plugs: #EPC 41B-1 5/8"

Oil Pan Rails: Solid (stock width) can be clearanced for strokers. Splayed cap blocks may have oil pan interference with the front and rear main caps. It may be necessary to hand fit the oil pan.

Clearance: IRON blocks can handle up to a 4.00 inch stroke with a 6.125 inch steel H-beam style SBC connecting rod (DO NOT use LS rods).

Camshaft: At the time of this printing, COMP CAMS is manufacturing a core for the MOTOWN LS block, available for hydraulic roller and solid roller applications. At the current time you will have to use a round lobe billet core from an SB2 application. This cam will need to be ground as follows: LS lobe orientation, LS firing order, and a 41° lifter bank angle (NOT a 45° like a standard LS), standard small block cam journal size and locations, as is the distributor gear and fuel pump lobes. We highly recommend COMP CAMS, as they have prior experience producing these cams. However, we will be happy to provide information to the cam grinder of your choice. When you receive your cam you must check the alignment of the cam lobe and lifter roller. Due to manufacturing tolerances between different vendors, some minor modifications may be needed.

Fuel Pump: Uses stock style fuel pump and stock length fuel pump pushrod.



Starter: Starter mounting pad is drilled for both straight across and stagger bolt patterns.

Motor Mounts: Drilled and tapped for side and front mounts in both OEM and LS applications.

Cylinder Head Bolt Holes: Threads 7/16. Head bolt holes are blind tapped and do not extend into the water jackets. IT IS THE BUILDER'S RESPONSIBILITY TO DETERMINE THAT BOLTS OR STUDS USED HAVE THE PROPER ENGAGEMENT TO PREVENT STRIPPING THE THREADS.

DEFINITIONS AND DIMENSIONS:

Bare Block

Due to a vast difference of opinion among professional builders regarding specifications and procedures, all blocks when purchased bare, are finished within GM +/- tolerances. MOTOWN LS blocks are supplied with the following specs:

Block Weights: 190 lbs.

Deck Height: 9.240 +/- .005.

Cylinder Bore: 4.115 +/- .005.

Main Journals: SBC 400: 2.8412 +/- .0005

Lifter Bores: .8437 +/- .0005

Stroke Notch: 9.240 deck, 4.000.

It is the responsibility of the engine builder to finish the block to his or the end users preferences. Freeze plugs, oil galley plugs and cam bearings are not included or installed. However, stock Chevrolet hardware can be used.

Prepped Block

MOTOWN LS blocks, when purchased prepped, will be sized to the above specs with the following exception: Cylinder bores: 4.001 or 4.126 +/- .0005. All prepped blocks will be painted and have dowel pins, freeze plugs, cam bearings and oil galley plugs installed. The block will just need a final cleaning and be ready for assembly.

Before Final Assembly:

1. Before any assembly begins, thoroughly inspect the block for any defects. Remember you are the final inspector. Once machine work has begun, the block is NON-RETURNABLE.
2. Make sure block is free of debris. Clean block thoroughly.
3. Lifter bores are machined to the factory spec of .8437. Lifter diameters vary by manufacturer. Slight honing of the lifter bores may be needed for proper lifter to lifter bore clearance.
4. Long rod and stroker applications need to be dry assembled and checked for connecting rod to block interference. Grinding of the oil pan rail may be necessary. Clearance needs to be kept at a .050 minimum.
5. MOTOWN LS blocks come with a deck height of 9.240. If a lower deck height is desired, PLEASE measure the deck before any cutting is done. REMEMBER: MEASURE TWICE, CUT ONCE.

WARRANTY TERMS:

World Products Inc. (World) manufactures parts to meet QS 9000 specifications. In addition, all parts go through several inspection procedures before shipping. However, YOU ARE THE FINAL INSPECTOR. Please note: Inspect all parts before doing any machine work or assembly. Remember the saying "measure twice and cut once." If any defects are found or suspected, call World before proceeding. World will replace or repair at its option any defective part which has not been modified or misused within one year of INVOICE purchase date. Any modification or marine use of parts will void all warranties.

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WARRANTY CLAIMS:

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SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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