



MOTOWN/MOTOWN LITE ENGINE BLOCKS

Iron & Aluminum SBC Specifications and Instructions

Technical data and specifications for IRON MOTOWN block part numbers:

Part #	Bore Size	Main Size /Type	Deck Height	Stage of Readiness
084010	3.990	350 Nodular Cap	9.025	Bare block
084020	4.115	350 Nodular Cap	9.025	Bare block
084030	4.115	400 Nodular Cap	9.025	Bare Block
084110	3.990	350 Billet Cap	9.025	Bare Block
084120	4.115	350 Billet Cap	9.025	Bare Block
084130	4.115	400 Billet Cap	9.025	Bare Block
084010-4000 to 4060	4.000	350 Nodular Cap	9.025	Prepped Block
084020-4125 to 4185	4.125	350 Nodular Cap	9.025	Prepped Block
084030-4125 to 4185	4.125	400 Nodular Cap	9.025	Prepped Block
084110-4000 to 4060	4.000	350 Billet Cap	9.025	Prepped Block
084120-4125 to 4185	4.125	350 Billet Cap	9.025	Prepped Block
084130-4125 to 4185	4.125	400 Billet Cap	9.025	Prepped Block

Technical data and specifications for ALUMINUM MOTOWN LITE block part numbers:

Part #	Bore Size	Main Size /Type	Deck Height	Stage of Readiness
084510	3.990	350 Billet Cap	9.025	Bare Block
084520	4.115	350 Billet Cap	9.025	Bare Block
084530	4.115	400 Billet Cap	9.025	Bare Block
084510-4000 to 4030	4.000	350 Billet Cap	9.025	Prepped Block
084520-4125 to 4155	4.125	350 Billet Cap	9.025	Prepped Block
084530-4125 to 4155	4.125	400 Billet Cap	9.025	Prepped Block

Block Applications: The Motown 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 or the combination is making 700 plus H.P normally aspirated or the block is being used in a nitrous or blower application, it is **HIGHLY RECOMMENDED** to use the Motown block with the billet, splayed main caps.

Block Material: High density cast iron or 357 T-6 aluminum.

Deck Height: 9.025 (Standard Chevrolet)

Deck Thickness: Approximately .600 minimum.

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.

Main Bearings: Utilizes 350 or 400 Chevrolet style main bearings. 350 main blocks use a standard SBC rear main seal Fel-Pro #2900 or equivalent. 400 main blocks use Fel-Pro #2909 or equivalent. This is the oversize seal for line bore/line hone applications.

Main Caps: Iron blocks come with nodular iron main caps with the three center caps being the standard four bolt style. All the main caps have 1/2 thread bolt. Torque specs on main bolts both inner and outer are 110 ft. lbs. with oil.

Billet main and aluminum blocks: All five main caps are four bolt billet 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 blocks (with either the 350 or 400 main size) 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 standard Chevy diameter .8437.

Maximum Bore: All IRON blocks can be bored safely to a maximum of 4.200, ALUMINUM blocks to a maximum of 4.155. **DO NOT EXCEED.**

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. ALUMINUM blocks have replaceable pressed-in liners. Sleeves are pressed-in with .00015 press fit and have a rubber O-ring near the bottom of the sleeve to prevent oil from entering between the sleeve and block.

Cylinder Wall Thickness: IRON block @ 4.125 bore: approximately .200. ALUMINUM block @ 4.125 bore: approximately .100.

Water Jackets: Expanded for better cooling. Aluminum blocks use two, screw-in, O-ringed freeze plugs per side, World part # 832521.

Gear Drives & Belt Drives: Due to the expanded water jackets, do run gear drives because of clearance issues with the backside of the idler gears and the cylinder block in the timing cover area. Jesel belt drives will work with minor grinding of the block and/ or belt drive cover.

Lubrication: Priority main oiling system. 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. Block has provisions to be converted to a dry sump oiling system. **SPECIAL NOTE:** ALUMINUM blocks: Due to the oil system improvements to the galleys and feeds in this block, it is not recommended to use a high volume pump. Oil pressure can be drawn from rear of block, at the top of the bellhousing.

Oil Restrictors: All Motown blocks use **SPECIAL** oil restrictors, World part # 832665-2. ALUMINUM blocks require two of these kits.

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. Billet 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 6.00 inch steel H-beam style connecting rod. ALUMINUM blocks sleeves may need to be clearanced for rod bolts on some big strokes, depending on rods used.

Camshaft: In long rod and stroker combinations it is recommended to use a camshaft base circle of 1.050 for flat tappet applications and a .875 base circle for roller camshaft applications.

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 OEM locations.

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 blocks are supplied with the following specs:

Block Weights: Motown Iron:190Lbs, Motown Aluminum: 100Lbs. (Caps and sleeves)

Deck Height: 9.030 +/- .005.

Cylinder Bore: 3.990 or 4.115 +/- .005.

Main Journals: SBC 350: 2.6411 ** SBC 400: 2.8411

Lifter Bores: .8437

Stroke Notch: 9.025 deck, 4.000.

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

Prepped Block

Motown blocks, when purchased prepped, will be sized to the above specs with the following exception: Cylinder Bores: 4.000 or 4.125. All prepped blocks will be painted (except aluminum blocks) 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. Aluminum block sleeves may need to be ground for rod bolt clearance on some big strokes, depending on rods used.

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. Due to the nature of aluminum blocks with ductile iron sleeves we highly recommend that the sleeves be pressed down to ensure that they are bottomed in the block prior to decking. You may find that after decking and cleaning the block that the sleeves may rise .001" to .002" above the deck. You can proceed with assembly as this will not affect the operation of the block. This condition will be corrected by the torquing of the cylinder heads.
3. Make sure block is free of debris. Clean block thoroughly.
4. 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.
5. 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.
6. Motown blocks come with a deck height of 9.025. 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:

Contact Customer Service to obtain a Return Material Authorization number directly from World Products for any warranty return. DO NOT CONTACT YOUR DEALER. DO NOT RETURN PARTS WITHOUT AUTHORIZATION. Returned product must be shipped prepaid. Collect shipments will be refused. Returned parts must have RMA number on the outside of the package, a copy of original bill of sale inside and a written explanation of the suspected defect. If the item is found defective, World Products will repair or replace it at its discretion and return it freight prepaid. No additional labor claims will be paid. There will be no exceptions to this rule.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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