

DART



Iron Small Block Chevy – Technical Notes:

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|---|---|
| Deck Height ----- | 9.025" |
| Bore ----- | 4.000" or 4.125" |
| Main Bearing Size ----- | 2.450" (350) & 2.650" (400) |
| Weight ----- | 175 lbs |
| Largest recommended bore ----- | 4.165" |
| Camshaft Bearing Bore ----- | 2.000" (SBC) |
| Camshaft Position ----- | Standard SBC |
| Cylinder Wall Thickness, Min. ----- | .230" @ 4.165" dia. |
| Deck Thickness ----- | Thick decks for optimal head gasket sealing |
| Torque Specs – Main Caps ----- 1 – 5 7/16" bolts 65 ft lbs w/ CMD high pressure lube. | |
| ----- 2, 3, 4 3/8" bolts 35 ft lbs w/ CMD high pressure lube. | |

Early stock SBC 2 hole oil filter adaptor is required.

Standard SBC timing chain, timing cover, gear or belt drive can be used.

Actual deck height will be .005"-.010" taller for additional machining requirements.

Standard 1980-1985 SBC oil pan can be used, 1986 and up can be used for 1 pc rear seal.

Cam bearing OD should be de-burred before installation.

When initially removing main caps, the caps & block should be de-burred before reinstalling; this will insure that correct main size is maintained.

Standard SBC head studs or bolts may be used.

Head stud holes are blind. They do not go into the water jacket.

Blue Locktite is recommended when installing the head and main studs into the block.

Studs should **NEVER** be torqued into block. They should only be lightly snugged.

Note: The tapered portion of the stud body should never contact the deck or bolt hole counter bore. If the stud body does thread to deep and makes contact with the deck surface then you should use a small ball bearing in the bottom of the bolt hole to space up the stud accordingly.

Press-in freeze plugs are available. Part's not included with block. Dart offers a block parts kit that includes all necessary hardware for assembly PN# 32000013.

Press-in cam plug dia = 2.106"

Timing cover and Oil pump dowel pins are .246" O.D. in dart blocks

DIPSTICK: Chevy 1980-1985 is required, you will have to cut off the area about 1" below the shoulder.

Dipstick tube installation: If an oil dipstick tube is used, after installation fill, the engine with the correct oil amount for the pan and filter, remark the dipstick indicator full mark if necessary. In certain applications you may need to modify or bend the tube to properly install it.

OIL PUMP DRIVESHAFT

STD SBC 350 main oil pump drive shaft 5.750 OAL.

Note: Be sure to check distributor to oil pump shaft clearance with distributor, intake manifold and oil pump installed on the block.

PRIORITY MAIN OIL SYSTEM

Oil is directed to the main bearings first, then to the cam bearings.

There are NO provisions for oil restrictors machined into the SHP block. Special oil restrictors are available online at www.allstarperformance.com PN# 90072.

OIL PUMP

STD SBC oil pumps are recommended, high volume high pressure oil pumps are NOT recommended due to the efficiency of our priority main oiling system.

NOTE: If cast iron solid flat tappet lifters are used in the SHP Chevy block, the block must be fitted with steel lifter bushings or a tool steel lifter should be used. The SHP blocks are cast from grey iron and cast iron lifters can cause galling or seizure in the lifter bores resulting in engine damage.

NOTE: Due to variations in lifter sizes and clearance preferences, most of our engine builder customers prefer the lifter bores sized on the small end of the specification. Sometimes these bores will need to be lightly honed.

OIL PANS:

1980-1985 Chevy pans are recommended for 2 piece rear seals and 1986 and up required for 1 piece seal cranks. Please inquire with pan manufacture for fitment for your application. Due to the larger wider main caps it is best to test fit oil pan first to verify clearance on the main caps.

NOTE: The fuel pump pushrod bore is machined for a .500" rod. Be sure to check the clearance because of the inconsistencies in the diameters of push rods.

WARNING: with a multitude of different crank, rod and piston combinations available it is important to check clearance of all moving parts (especially crankshaft counterweight to block) before attempting any type of assembly.

It is good engine building procedure to ALWAYS check the fit of the distributor before any machining or cleaning is done.

L IFTERS

SHP blocks are designed to work with 1987-1995 Factory Hydraulic roller setups. If you choose to run a link bar lifter it will require the .300 taller lifters. This is due to the taller lifter boss used for the factory hydraulic roller setup. If .300" tall lifters are used then you must install them prior to installing the cylinder heads, due to the distance between the lifter boss and head being closer together. **They will not fit after the head is installed.**

NOTE: If you are using aftermarket cam profiles you must use the correct components for the application.

NOTE: If cast iron solid flat tappet lifters are used in the SHP Chevy block, the block must be fitted with bronze lifter bushings or a tool steel lifter should be used. The SHP blocks are cast from grey iron and any iron lifters can cause galling and then seizure in the lifter bores resulting in engine damage.

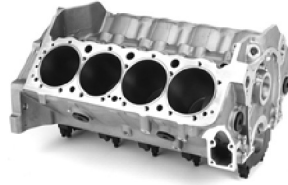
NOTE: Due to variations in lifter sizes and clearance preferences, most of our engine builder customers prefer the lifter bores sized on the small end of the specification. Sometimes these bores will need to be lightly honed.



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SBC Iron Block

| | |
|---------------------------------|--|
| Part# | 31161111-31161211 (350 main) 31162111 – 31162211 (400 main) |
| Material: | Superior iron alloy |
| Bore: | 4.00" or 4.125" unfinished |
| Bore & stroke: | 4.165" x 4.000" max with clearance machining & small base cam. |
| Cam bearing bore ID: | SBC - 2.00" |
| Cam bearings: | Special coated, grooved, w/3 oil holes |
| Cam Bearing O.S. | + .010", +.020", +.030" |
| Cam bearing press: | .002" |
| Cam journal OD: | Standard SBC - 1.869" |
| Cam Plug: | 2.106" dia. Cup plug |
| Cylinder Wall Thickness: | .230" min @ 4.165" bore |
| Deck Height: | 9.025" +.005" to .008" / – 0.00" |
| Deck Thickness: | Thick decks for optimal head gasket sealing |
| Fuel Pump: | Mechanical pump provision |
| Fuel Pump Pushrod: | Standard Length |
| Freeze Plugs: | Press in cup plugs |
| Lifter Bores: | SBC .8427" - .8437" (Required .300" taller lifters) |
| Lifters: | Designed for factory 87-95 Hyd rollers, Must use +.300" taller lifters if using link bar lifters |
| Main bearing size: | 2.450" (350) 2.650" (400) |
| Main bearing bore: | 2.6405" – 2.6415" (350) & 2.8405" – 2.8415" (400) |
| Main Cap bolts: | #1 - #5 7/16" & #2, #3, #4 3/8" Splayed |
| Main Stud Kit: | Dart PN# 66311110 |
| Main cap press: | .005" |
| Main caps: | Ductile Iron |
| Main cap register: | Deep stepped register on each side (no need for dowels) |
| Oil system: | Wet Sump - Priority main oiling |
| Oil Pump shaft: | 350 main = Stock shaft (.481"OD) 400 main = Stock shaft (.425"OD) MUST machine |
| aftermarket shaft | |
| Oil Filter: | Standard SBC filter and uses 2 bolt filter adapter. |
| Oil Pan: | Standard 1980-1985 SBC oil pan. 1986 and up for 1pc. seal |
| Rear Main Seal | 350 main - STD seal / 1986 and up for 1pc. seal 400 main - Felpro# 2909 |
| Serial No. | Left front & main caps |
| Starter: | Standard SBC |
| Stud holes, Head: | Blind holes |
| Timing chain/gears | Standard SBC components, with 91-02 vortec thrust plate |
| Timing Cover: | Can use stock cover or late model vortec cover will work. |
| Torque Specs: | #1-#5 7/16" bolts – 65 ft lbs w/CMD #3 #2, #3, #4 3/8" bolts – 35 ft lbs w/CMD #3 |
| Weight: | 175 lbs @ 4.000" bore |



This Block should be assembled only by experienced, professional engine builders.

INSPECTION

Upon receiving this block it should be thoroughly inspected for shipping damage.

Prior to machining and assembly please inspect the following items: Cylinder bores - Oil passages - Deck surfaces - All threads

MEASURING & MACHINING

- ❑ All initial measuring should be done before any machining has begun.
- ❑ Decks are CNC machined to standard deck heights. If you need a particular deck height always measure before machining.
- ❑ Main journals are finish line honed to the low to middle of the specification. They should be measured for your preference. If you have need for a different diameter you must realign hone this yourself.
- ❑ Crankshaft & rod clearance should always be checked before any machining is started. You need .060" clearance for rotating counterweights and rods.
- ❑ Due to variations in OD dimensions of the numerous lifter manufacturers, lifter bores are finish honed on the tight side of the tolerance to leave room for lifters that are larger than the standard.

WASHING

- ❑ Final washing should be very thorough, paying particular attention to all oil galleys. Use hot soapy water and rinse with hot water first, followed by cold water which helps reduce rust.

Dart Small Block Chevy SHP Engine Block

