Aluminum Big Block - *Technical Notes*

Deck Height 9.800 10.000 10.200 10.400
Bore 4.250 4.500 4.600
Main Bearing Size ..... BBC
Weight ..... 130-170 lbs
Largest Recommended Bore ..... 4.625 (some are ordered with special smaller o.d. sleeves)
Camshaft Bearing OD (BBC journal) 2.120
Camshaft Position Raised ..... Std and +.400 raised
Deck Thickness ..... .625+
Sleeve O.D. ..... 4.740 standard 4.660 special
Oversize O.D. available ..... +.010 & +.020
Sleeve Length 9.80 (6.370) 10.00 (6.570) 10.20 (6.770) 10.40 (6.970)
Sleeve Press ..... .0005 / .001
Torque Specs - Main Caps **All main 100 ft. lbs. with high pressure lube**
Stud Length in block - Head & Main **1.770"** **(1.550 thread + .270 bottom bullet)**
1-5 Inner Studs ½ x 4.850 oal
2-4 splayed outers ½ x 3.800 oal
1+5 outer ½ x 4.325 oal

It is mandatory to use our Stud Kits as they have the correct thread, bottom length & bullet.
Using incorrect studs can cause serious leaks & damage.
Head stud holes are blind. They do not go into the water jacket.
A sealant/antisieze must be used on the head studs. Loctite # 620 is recommended.
Studs should never be torqued into block. They should only be lightly snugged.
Actual deck height will be .005" - .010" taller for additional machining requirements.
Cam bearing OD should be deburred before installation.
Special Timing gear is required for raised camshaft.
When initially removing main caps, the caps & block should be deburred before reinstalling. This will insure that correct main size is maintained.
Additional rod clearance may be necessary at bottom of cylinders.
Stock engine mount holes, front & side.
Screw in freeze plugs are provided (1 5/16" threads)
Cam plug dia = 2 3/8". The plug is installed backwards. A snap ring is recommended for retention.
Mechanical fuel pump uses stock fuel pump pushrod, with +.400 raised cam use +.200 longer pushrod available from Moroso
Note: Be sure to check distributor to oil pump shaft clearance with distributor, intake manifold and oil pump installed on block.
Before honing sleeves or decking block you MUST install a torque plate using a head gasket with a steel wire. This will seat the sleeves in the block. Some engine builders heat the block to about 200 deg before installing the torque plate, then leave it at 200 deg for 30-45 minutes for extra assurance that the sleeves are seated properly. The sleeves should be above the deck .002" when new and .000" - .002" when used.

Head Gasket & Cylinder Head Installation: You must use sealer on the head stud threads. Use silicone around all coolant holes and head studs on both sides of gasket. Pack the counterbore around the head stud with silicone leaving a small amount sticking up around the stud. This exact procedure should seal all coolant leaks.

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.

If a dry sump oiling system is used you must plug the oil inlet hole in the rear main cap or in the block, underneath the rear main cap. (1/4" NPT)

PRIORITY MAIN OIL SYSTEM
Oil feed can be directed through the front or the rear oil inlet.
Oil is directed to the main bearings first, then to the cam bearings.
If lifter oiling is restricted, restrictors must be installed in the front lifter galleys .

FOR ADDITIONAL INFORMATION SEE DIAGRAM ON BACK

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.

SPECIAL NOTE: With a multitude of different crank, rod and piston combinations available it is important to check clearance of all moving parts, especially crankshaft counterweight and connecting rod to block. All parts must be checked before any type of machining or assembly is attempted.
It is good engine building procedure to ALWAYS check the fit of the distributor before any machining or cleaning is done.

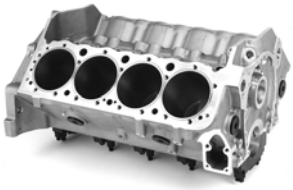
We Also Stock Parts that are Unique to this Block.

Head Stud Sets (specify cyl head type)

Ask about our special order machining options:
Special lifter bore sizes, bushings for link bars, and bushings for keyed style lifters
Special cam bore sizes
Special lifter bore placements
Optional head bolt patterns
Bore spacing

Call your Dart salesman today for details.
248-362-1188

IMPORTANT



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 reduces rust.

Honing Procedures for

- **HONING OIL** — **Sunnen** — **MAN 845-55**

- **SPEED & FEED** — **CK-10** — **(C&E) Pulleys**
  CV-616 — **185 rpm 50 strokes per minute**

- **HONING**

1) Rough	**.003" from size**	**Sunnen**	**C30A-25**
2) 220	**to size**	**Sunnen**	**C30A-55**
3) 280	**3 strokes**	**Sunnen**	**C30J-65**
4) 400	**3 strokes**	**Sunnen**	**C30J-85**

- **REHONE (deglaze)**

1) 220	**3 strokes**	**Sunnen**	**C30A-55**
2) 280	**3 strokes**	**Sunnen**	**C30J-65**
3) 400	**3 strokes**	**Sunnen**	**C30J-85**

- **RA should be 26 - 28**

- **SHOE ASSEMBLY TECHNIQUE**

  Titanium or hard shoe (part# CK-3570) from Sunnen on one side of honing head.

  Delrin (engineering plastic) attached to brass shoe holder & trimmed to size on other side. (Delrin bars can also be purchased from your local plastic supplier)

  ***** *DO NOT* use bronze shoe *****

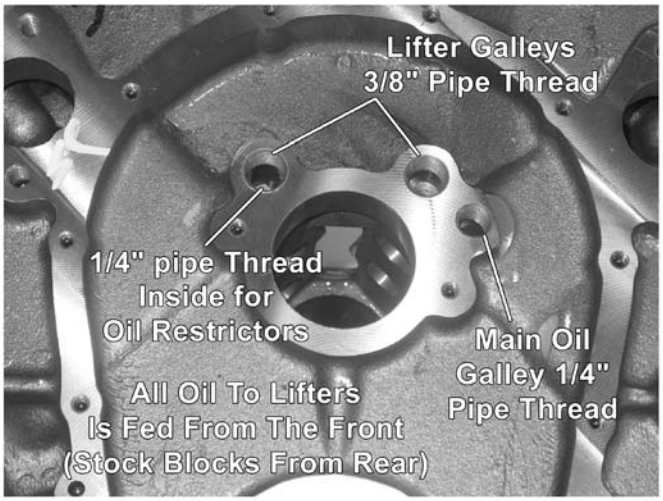
- **FRESH OIL IS CRITICAL**

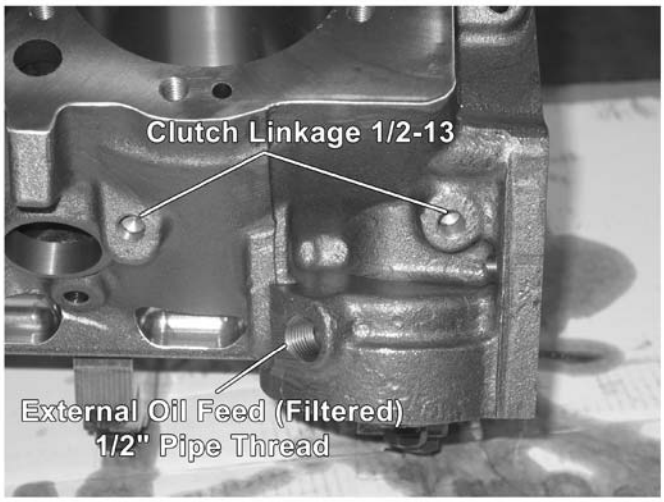
  These are only recommended procedures we have developed through our Pro Stock program. Some engine builders have their own procedures for honing our blocks.

All supplies from Sunnen Products

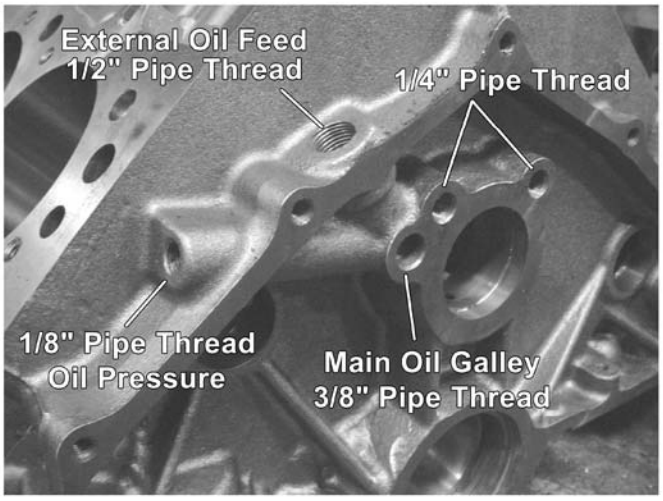
Dart BBC Aluminum Big "M" Block

Part#	31264344 - 31264695
Material:	355-T61 Aluminum Alloy
Bore:	4.250", 4.500" & 4.600"
Bore & stroke:	4.625" x 4.750" (max recommended)
Cam bearing bore ID:	BBC - 2.1195"- 2.1205"
Cam bearings:	Special coated, grooved, w/3 oil holes
Cam bearing O.S.	+.010", +.020", +.030"
Cam bearing press:	.002"
Camshaft position:	Std. Location or .400" raised available
Camshaft to Crank ∅	5.152" Std. / 5.552" +.400
Camshaft snout:	BBC
Cam Drive:	Timing chain, Gear drive & Belt drive
Cam Plug:	2.375" Dia. Cup Plug w/ Snap ring
Cam Plug snap ring:	.030" thick
Cubic inch:	638.4" (max recommended)
Cylinder Wall Thickness:	Min @ 4.770 (+.030) is .070 - .080 thick
Deck Height:	9.800" & 10.200" +/- .002
Deck Thickness:	.625" min.
Fuel Pump:	Mechanical pump provision
Fuel Pump Pushrod:	Std. BBC pushrod (+.200" pushrod for raised .400" cam)
Freeze Plugs:	Threaded 1 5/16" OD (1.312")
Lifter Bores:	SBC .8427" - .8437"
Main bearing size:	Std. BBC
Main bearing bore:	2.937" – 2.938"
Main caps:	Steel - 4 bolt splayed .005" press
Oil system:	Wet or Dry Sump - Main Priority Oiling
Oil Pump shaft:	BBC shaft (Moroso #22074 is a hex design for +.400"cam)
Oil Filter:	Std. BBC Location
Oil Pan:	Standard pan bolt pattern, extra bolt holes provided for stroker clearance
Rear Main Seal	STD 2 pc seal / Fel-Pro# 2918
Serial No.	Left front & main caps
Sleeve OD:	4.740"
Sleeve O.S.	+ .010", +.020" & +.030" available
Sleeve thickness:	4.250 Bore (.245) 4.500 Bore (.120) 4.600 Bore (.070)
Sleeve Length:	9.800 Deck (6.370) 10.200 Deck (6.770) 10.400 Deck (7.00)
Starter:	Mounts on either side
Studs, Mains:	1-5 Inner ½ x 4.850 2-4 Splayed ½ x 3.800 1 & 5 Outer ½ x 4.325
Studs, heads:	Must use our head studs
Studs holes, Head:	Blind holes
Stud length in block:	1.750"
Timing chain/gears	Std BBC or BBC +.400
Timing Cover:	Std BBC Timing Cover Dart 67240002 for +.400 cam
Torque Specs:	1-5 100 ft lbs with high pressure lube
Weight	9.800 x 4.250 bore (160lbs) - 9.800 x 4.500 bore (136lbs)
	10.200 x 4.250 bore (168lbs) - 10.200 x 4.500 bore (144lbs





DART Inside Head Stud Kit 64210240



DART Big M Chevy Block