

Customer Informational Packet

+0.400 Raised Cam BBC, 9.8-10.6 Deck
Serial No.'s: 000134-Present

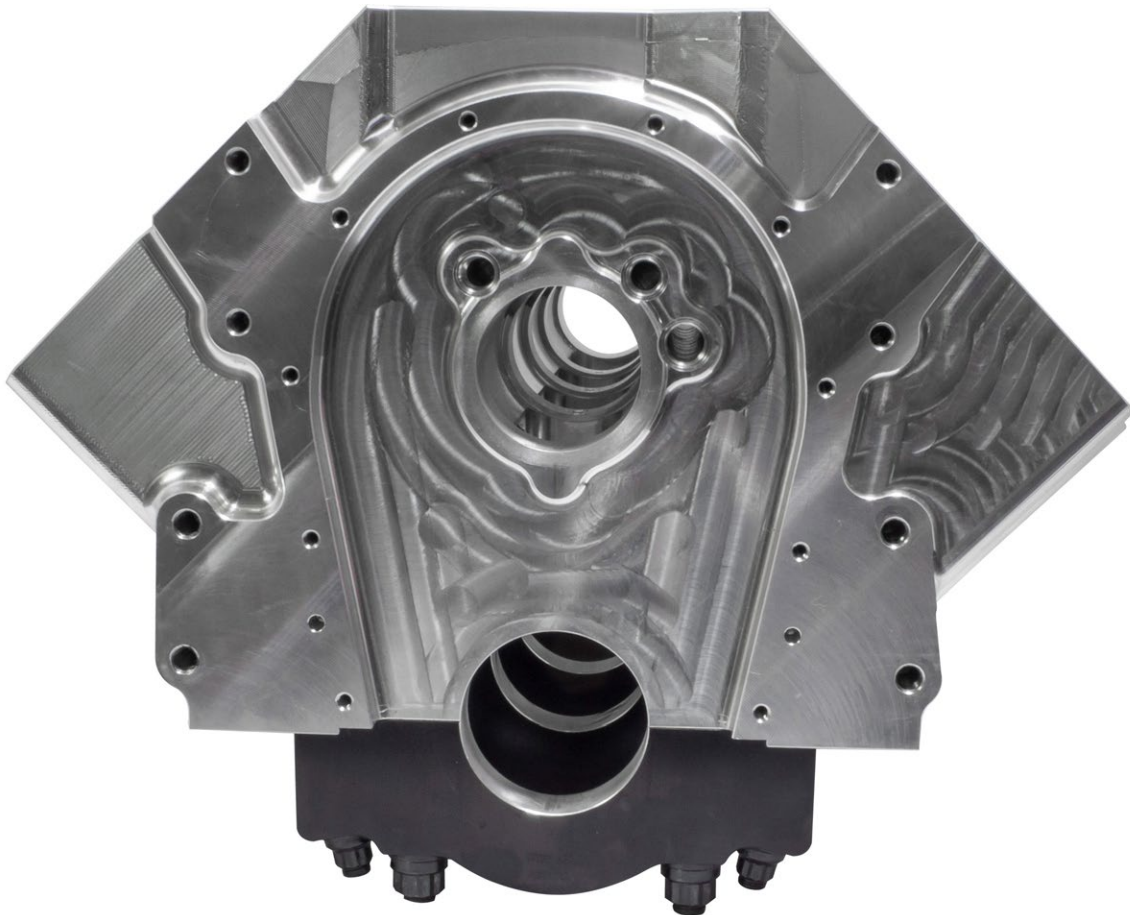


Table of Contents

Rotational Assembly Clearance.....	1
China Wall	1
Block Oiling.....	1
Oil Pan.....	1
Cylinder Head Studs.....	1
Timing Drive Options	2
Main Caps	2
Miscellaneous Information.....	2
Appendix A: Oil Pan Pattern Print.....	4
Appendix B: Cylinder Head Bolt Pattern Print-Standard 7/16”	5
Appendix C: Cylinder Head Bolt Pattern Print-1/2” Upgrade.....	6
Appendix D: Cylinder Head Stud Order Form Print.....	7
Appendix E: Block Mounting Print	8
Appendix F: Block Oiling Print.....	9
Appendix G: China Wall Modification Print.....	10
Appendix H: Jesel Double Torrington Print.....	11

Rotational Assembly Clearance

Max Stroke Clearance: 4.750"

This stroke clearance only includes the aluminum engine block for 90% of rotating assemblies. The sleeves are left unnotched to accommodate the wide range of rotating assemblies used in our billet aluminum block. This allows for the maximum amount of cylinder sleeve support in each customer's build. The end user will need to notch the cylinder sleeves, the aluminum block should remain untouched or at most require only a minimum amount of material be removed.

China Wall

The china wall on this block is cut to the height that accommodates Energy Manufacturing's 14.5° spread port cylinder heads. Should you not be putting a set of Energy cylinder heads on your block please view 'China Wall Modification Print' in Appendix F on page 9. The equation on this print will aid you in determining the height you will need to machine the china walls down to. One equation is the long hand version and the other is the input required if calculating with Microsoft Office Excel. In the table on page 9 we have included the proper china wall height for a 9.8" deck block with Energy & OEM cylinder heads for you to verify that your calculation is being completed properly.

Block Oiling

Please see illustration of the blocks oiling system and location of plugs included with block in Appendix E on page 8 labeled 'Block Oiling Print'. Energy Manufacturing suggests plugging the crank to cam oil passageways with a 1/4-20 set screw in position #2, 3, & 4 if utilizing roller cam bearings. The #1 and #5 cam bearing are oiled directly off of the main oil gallery and do not require plugs.

Oil Pan

The oil pan on your block is a 10.375" rail width block with no oil filter provision. Please see details of the fastener holes & locations named 'Oil Pan Pattern' in Appendix A. All main caps are splayed, verify that your front cover & the rear of your oil pan will have clearance.

Cylinder Head Studs

Please see print with details of the cylinder head stud holes named 'Cylinder Head Bolt Pattern' in Appendix B on page 5. Use the 'Cylinder Head Stud Order Form', located in Appendix C on page 6, to simplify ordering head studs from your chosen provider. Your cylinder head stud provider should be able to provide you with torque specifications and install instruction. We at Energy Manufacturing suggest completely coating the end of the stud going into the block with Marine Grade Anti-Seize to prevent dissimilar metal corrosion. To avoid damage to the threads, thread the fastener into the block hand tight without the use of power tools.

Timing Drive Options

Jesol Belt Drive: KBD-35500

- Front/rear needle bearing (TORRINGTON DOUBLE CAM THRUST) Option: OPT-KCA39290

NOTE: If using double Torrington thrust option reference, 'Jesol Double Torrington Print', in Appendix G for additional information required.

RCD Gear Drive: 251500-0008

- Contact RCD for additional accessories specific to your setup to accompany your gear drive.

Innovators West Belt Drive: 5101

- This belt drive comes with a front/rear needle bearing that works with the front of the #1 cam bearing in the OEM location.

Main Caps

We at Energy Manufacturing suggest completely coating the end of the stud going into the block with Marine Grade Anti-Seize to prevent dissimilar metal corrosion. To avoid damage to the threads, thread the fastener into the block hand tight without the use of power tools. The ½" splayed studs are designed to have the threads bottom out in the bottom of the threads, the 9/16" studs are designed to have the bullet nose bottom in the bottom of the tap drill hole. After installing main caps, and before torquing the main studs, verify that the caps are seated on the split line with a .001" shim. The main stud nuts should be hand tight before checking the caps. The torque specifications are 170 ft-lbs. for the vertical doweled 9/16" studs and 120 ft-lbs. for the splayed ½" studs. Energy Manufacturing suggests ARP Ultra Torque for the nut end of the studs. The slide hammer bolt hole for cap removal is 5/16-18.

Miscellaneous Information

This block does not have a distributor hole and will require an alternate method to fire the ignition.

Max Cylinder Bore Size: 4.600"

Max Suggested Cam Tunnel Size: 60mm Roller Bearing

- When proceeding with a cam tunnel larger than a 60mm Roller Bearing housing size please contact Energy Manufacturing to review all of the required modifications and review the associated risks.

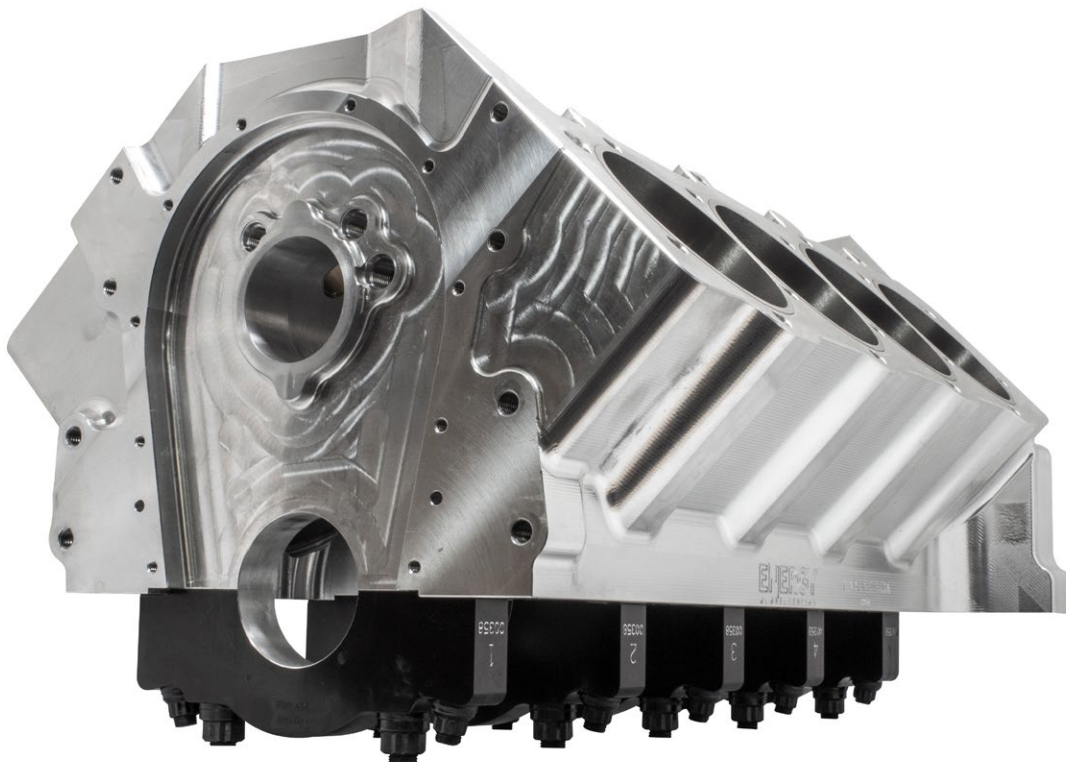
Suggested Cam Bearing Width: 20mm

Miscellaneous Information (Continued)

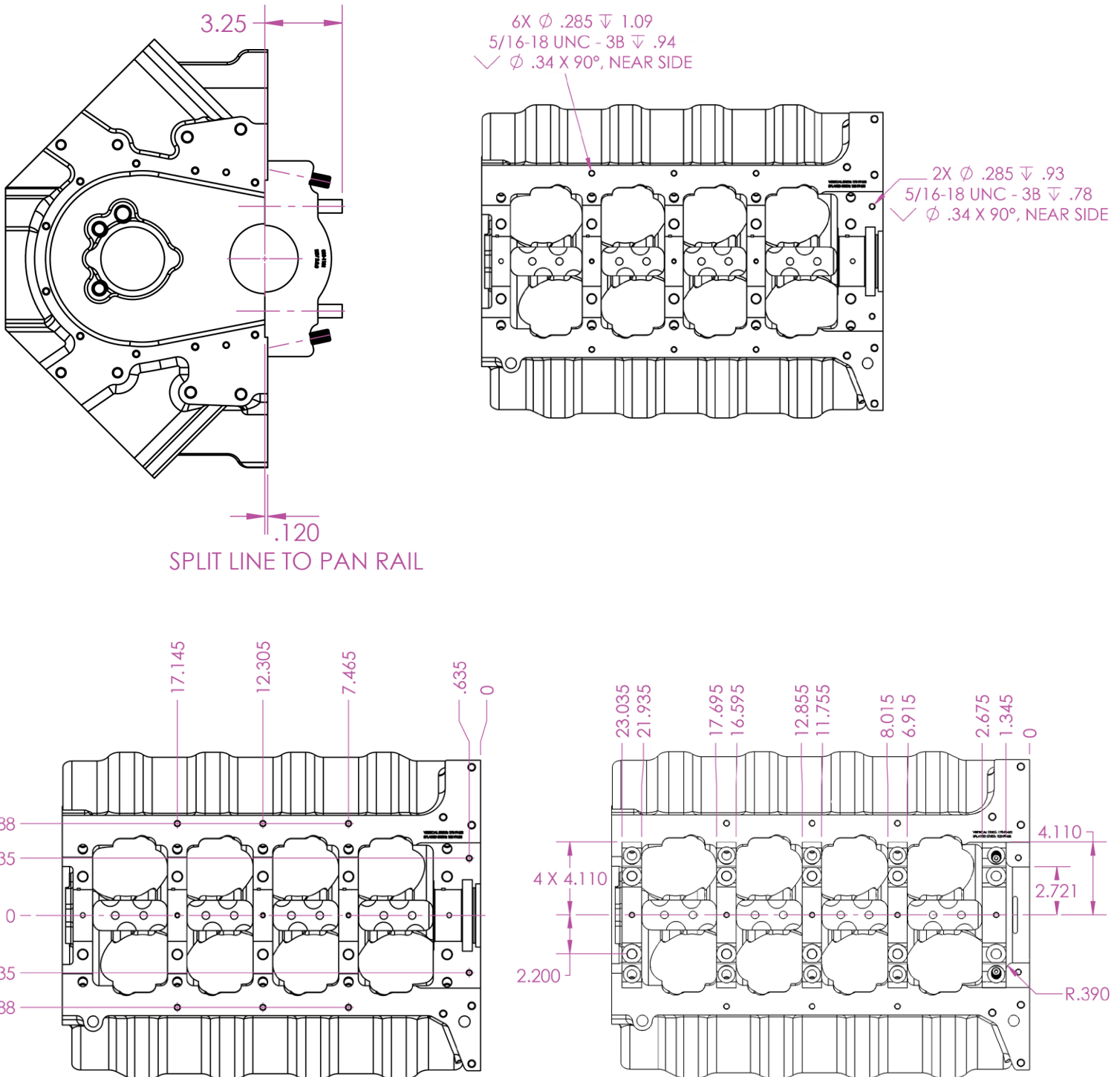
Lifter Position: Standard, 45° Intake/39° Exhaust

Rear Cam Plug: This block comes with a rear cam plug included in the packaging. It seals with an O-ring included, pilots into the rear of the block and is fastened with (3) #8-32 countersunk head screws.

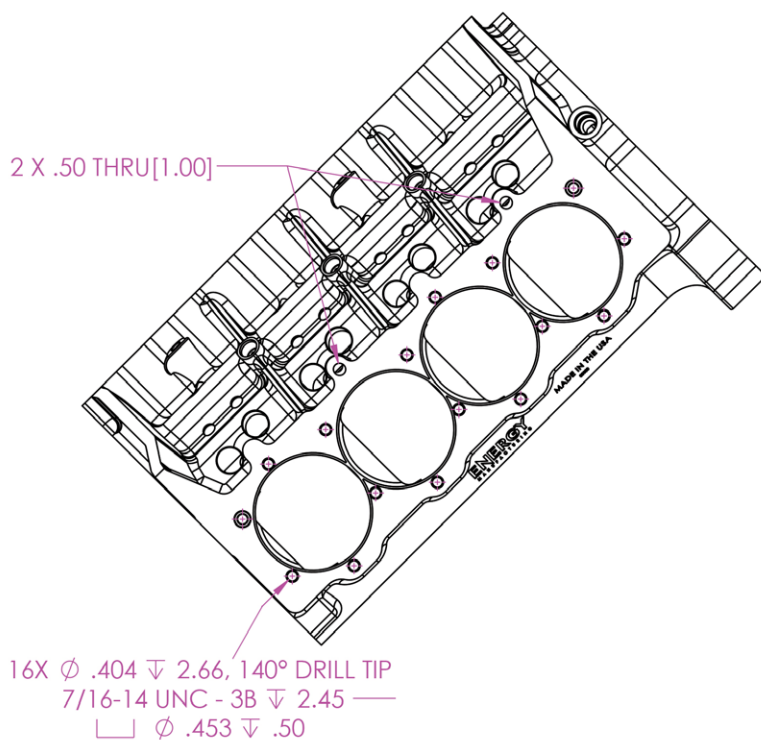
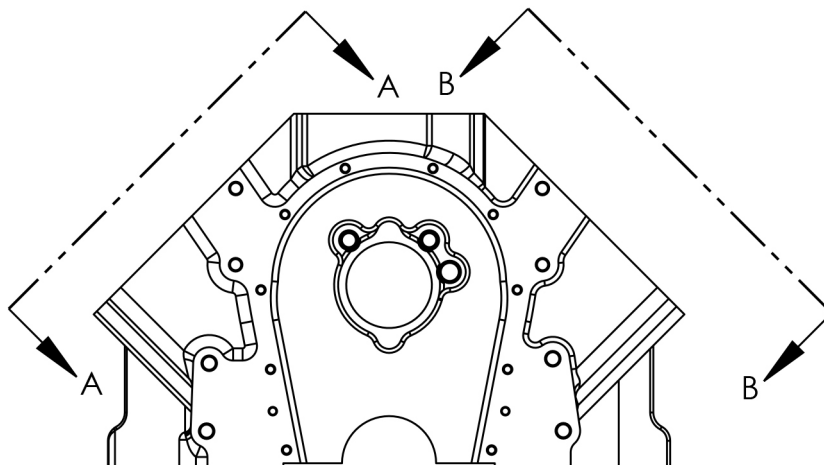
For details relevant to manufacturing an engine plate and mid plate please view 'Block Mounting Print' in Appendix D. This print also includes the details of features which need clearance verified for on the back of the block.



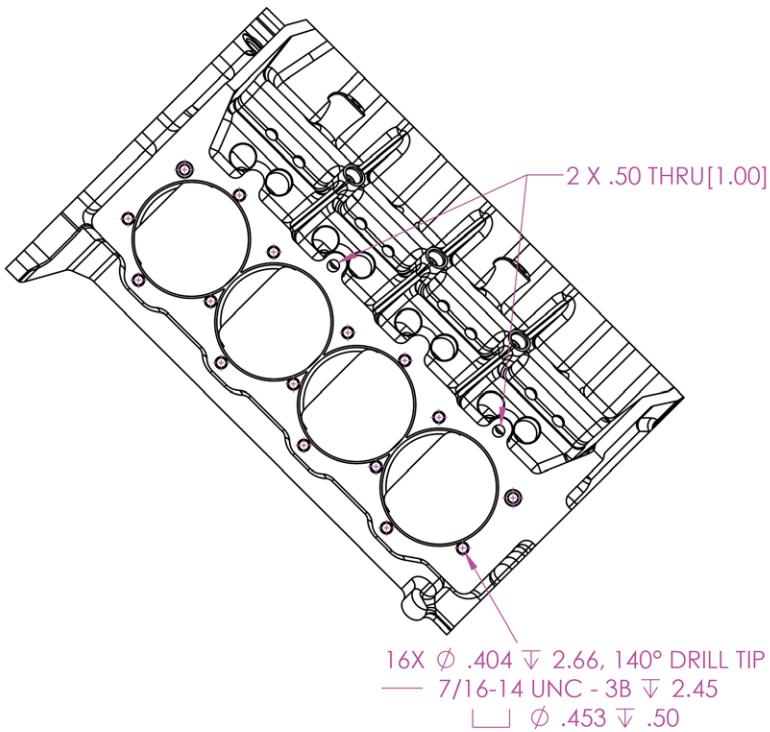
Appendix A: Oil Pan Pattern Print



Appendix B: Cylinder Head Bolt Pattern Print - Standard 7/16"



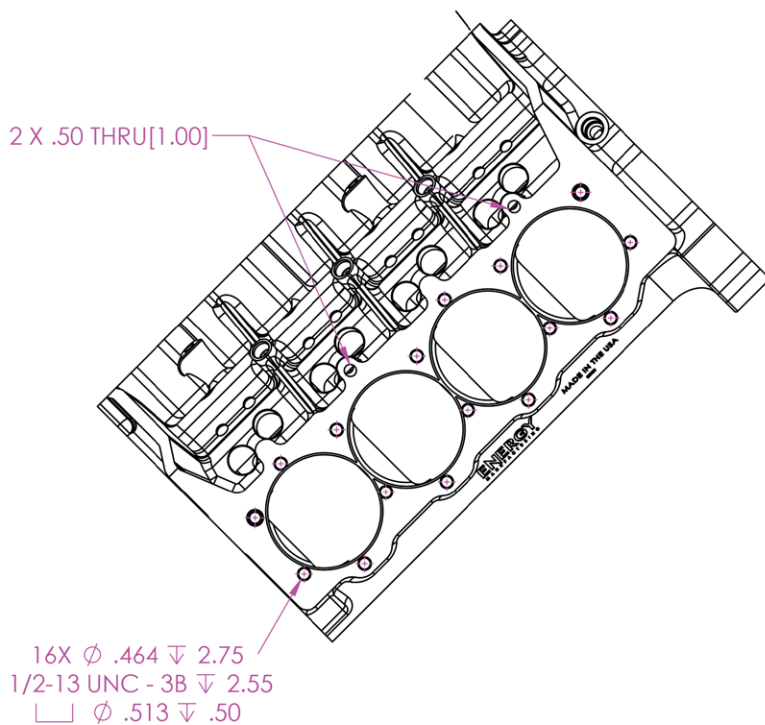
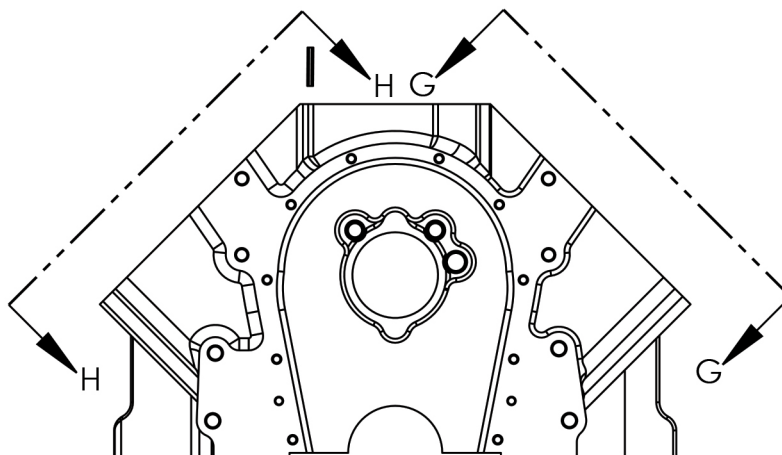
VIEW B-B



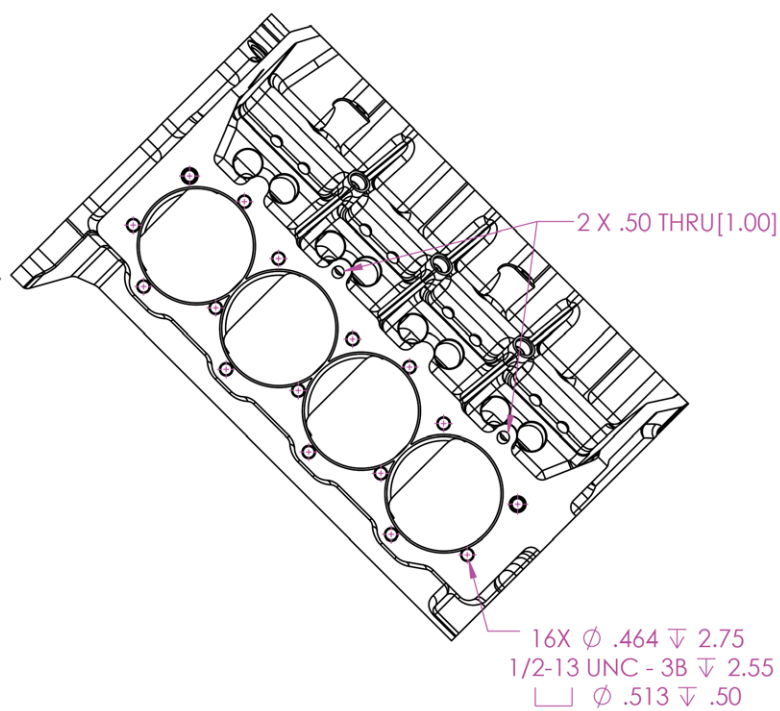
VIEW A-A

* Verify the head bolt hole size ordered before using this information for ordering cylinder head studs.

Appendix C: Cylinder Head Bolt Pattern Print - 1/2" Upgrade



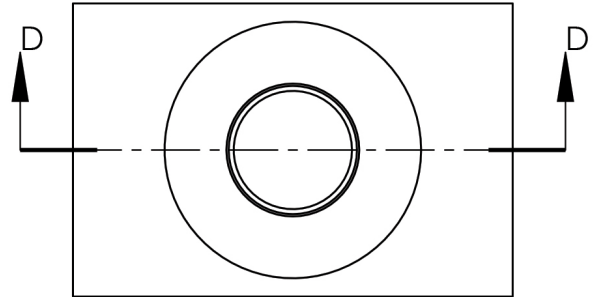
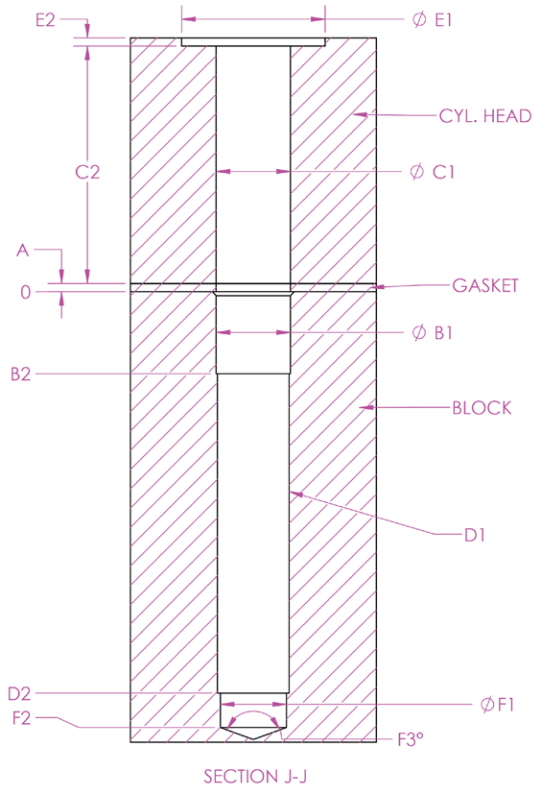
VIEW G-G



VIEW H-H

* Verify the head bolt hole size ordered before using this information for ordering cylinder head studs.

Appendix D: Cylinder Head Stud Order Form Print



Each stud should have part number associated.
Format of part number is as follows:

“#” Stud
Designation_Energy
Customer #_UTS of
Material _ Date of
RFQ (MM_DD_YY)

Ex: #1_103_180_07_23_20

STUD DES.	QTY.	A (GASKET THK)	ØB1 (BLOCK CB Ø)	B2 (BLOCK CB ↓)	ØC1 (HEAD THRU Ø)	C2 (HEAD THRU ↓)	D1 (THD SIZE, PITCH & CLASS)	D2 (THD ↓)	ØE1 (CBØ)	E2 (CLEAR ABOVE CB ↓)	ØF1 (DRILL Ø)	F2 (DRILL ↓)	F3° (DRILL ANGLE)

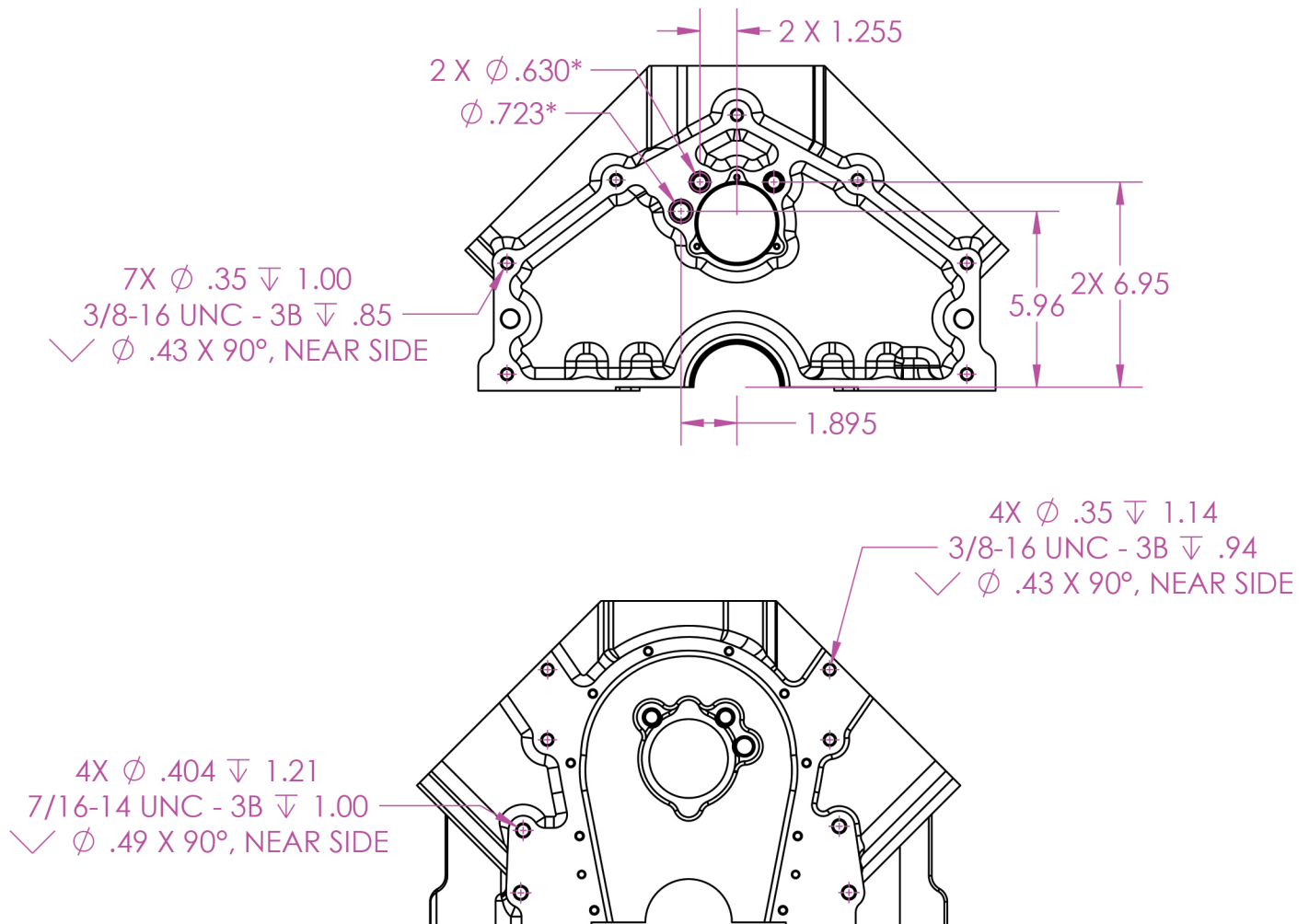
0 represents deck surface

BLOCK MFG.	BLOCK REV/SERIAL #	BLOCK PART #	HEAD MFG.	HEAD PART #	ENERGY CUSTOMER #	STUD MFG.	RFQ DATE	TORQUE RATING

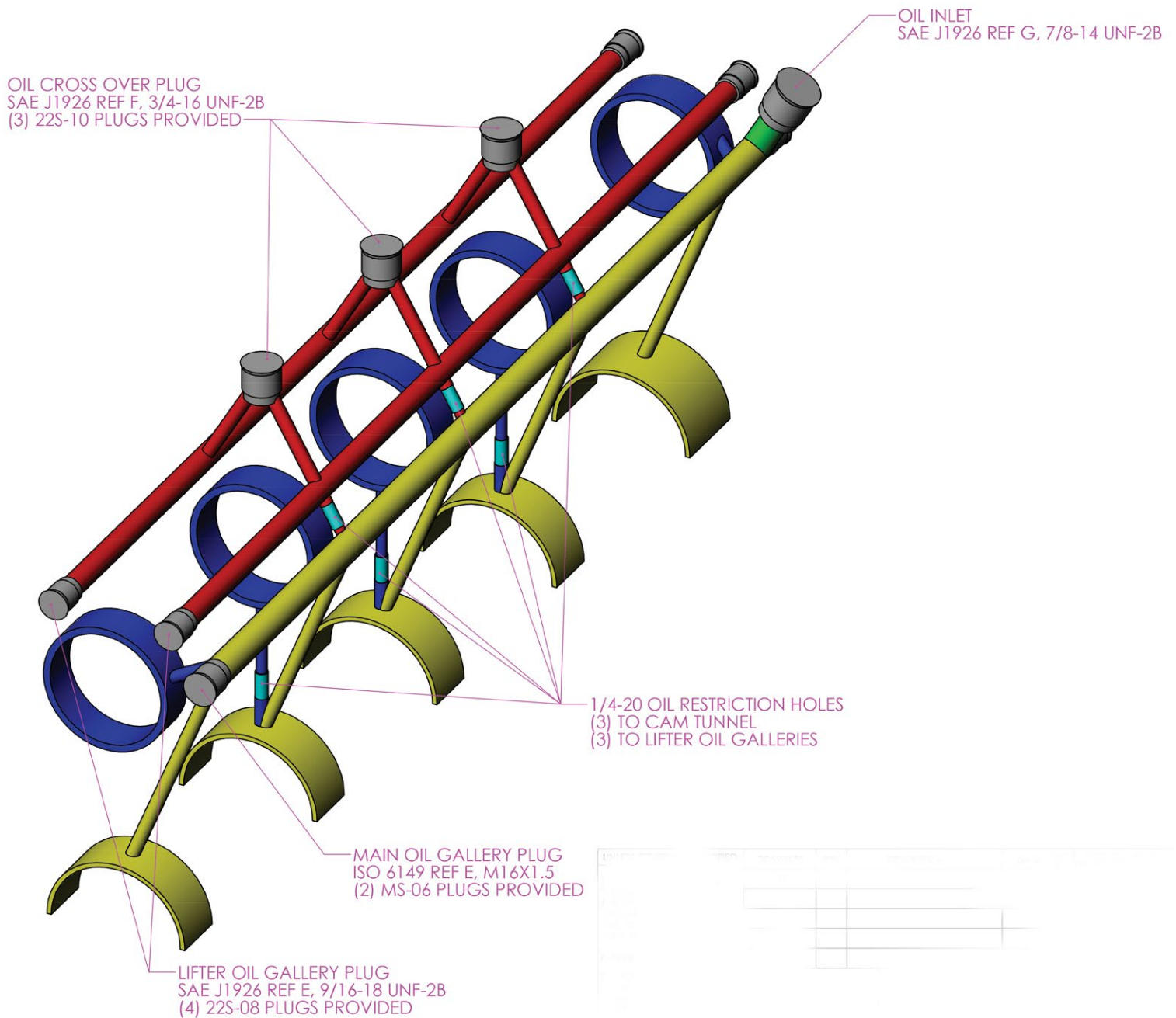
Appendix E: Block Mounting Print

Note:
Timing and Bell Housing Bolt Holes in OEM locations.

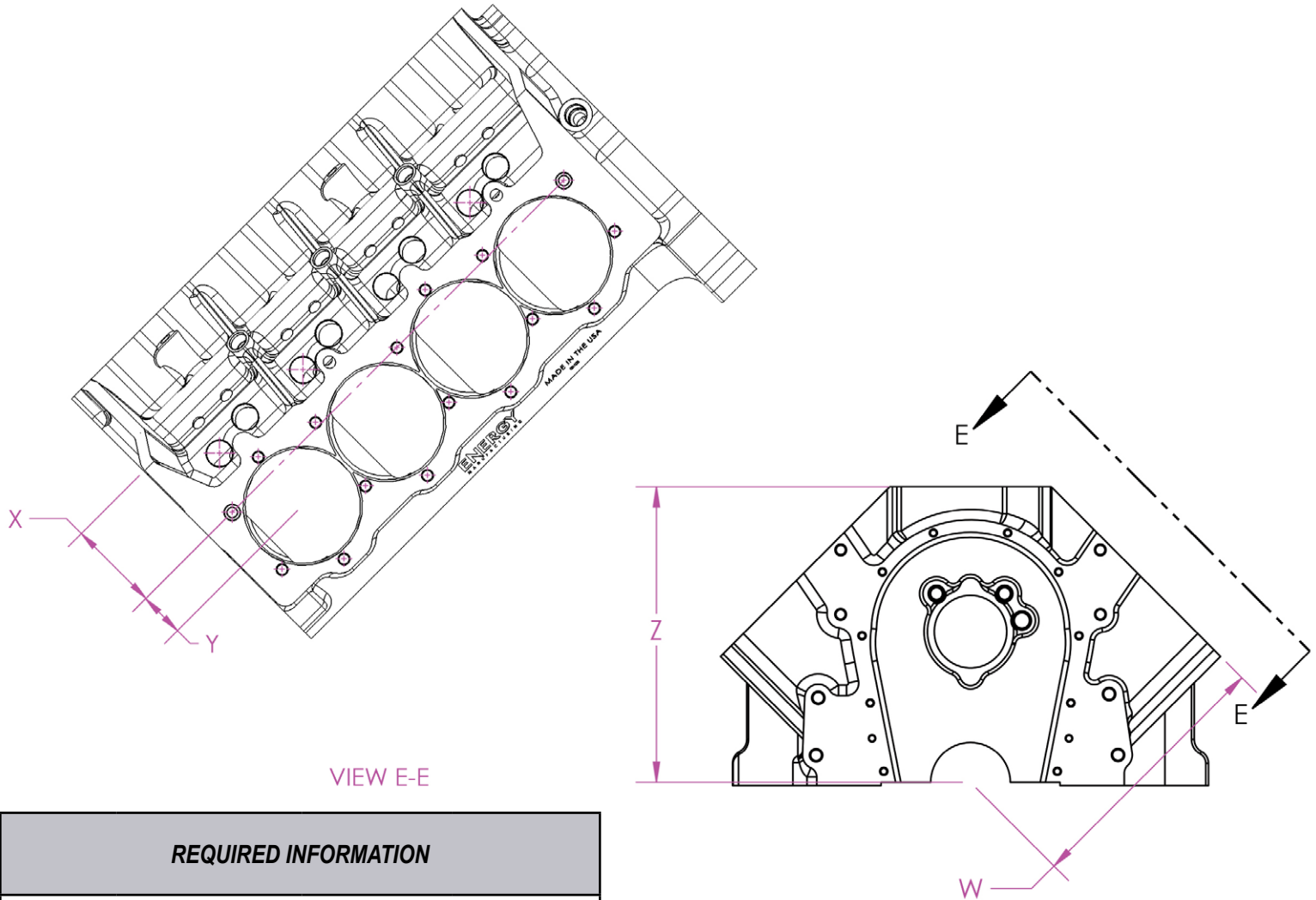
* Diameters protrude .100" above Bell Housing Surface



Appendix F: Block Oiling Print



Appendix G: China Wall Modification Print



REQUIRED INFORMATION

Variable	Description	Energy Mfg.	OEM
W	Deck Height	Ex: 9.800	Ex: 9.800
X	Dowel C/L to Intake Flange of Cylinder Head	3.750	3.550
Y	Bore C/L to Dowel C/L	1.850	1.850
Z	China Wall Height	Ex: 10.889	Ex: 10.748

Ex: Labeled values provided as an example for end users verification that they are utilizing equations properly.

FORMS OF EQUATION

Type	Written Form
Long Hand	$Z = (W * (2 \wedge 0.5)) - ((W - (X - Y)) / (2 \wedge 0.5))$
Excel	$= (W * (POWER(2, .5))) - ((W - (X + Y)) / (POWER(2, .5)))$

Appendix H: Jesel Double Torrington Print

