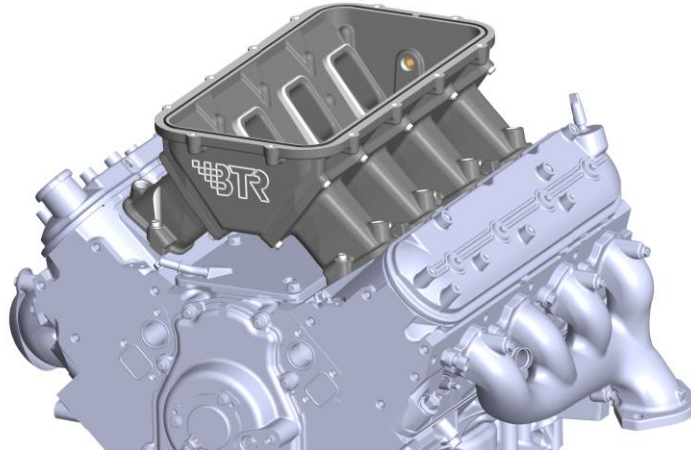




BTR TUNNEL RAM LOWER INSTALLATION INSTRUCTIONS



Congratulations! You're part of a select few of max-effort racers looking for the peak of the mountain. The BTR TNL Lower is designed to be paired with a Hi-Ram style 23 -bolt perimeter lid and/or intercooler/nitrous plate to complete.

IMPORTANT NOTE: Proper installation is the responsibility of the installer. This is a MAXIMUM EFFORT Intake manifold lower plenum that should be matched to an appropriate combination. Improper installation will void your warranty and may result in poor performance and engine or vehicle damage. PLEASE study these instructions carefully before beginning this installation. Most installations can be accomplished with common tools and procedures. However, you should be familiar with and comfortable working on our vehicle. If you do not feel comfortable performing this installation, it is recommended to have the installation completed by a qualified mechanic.

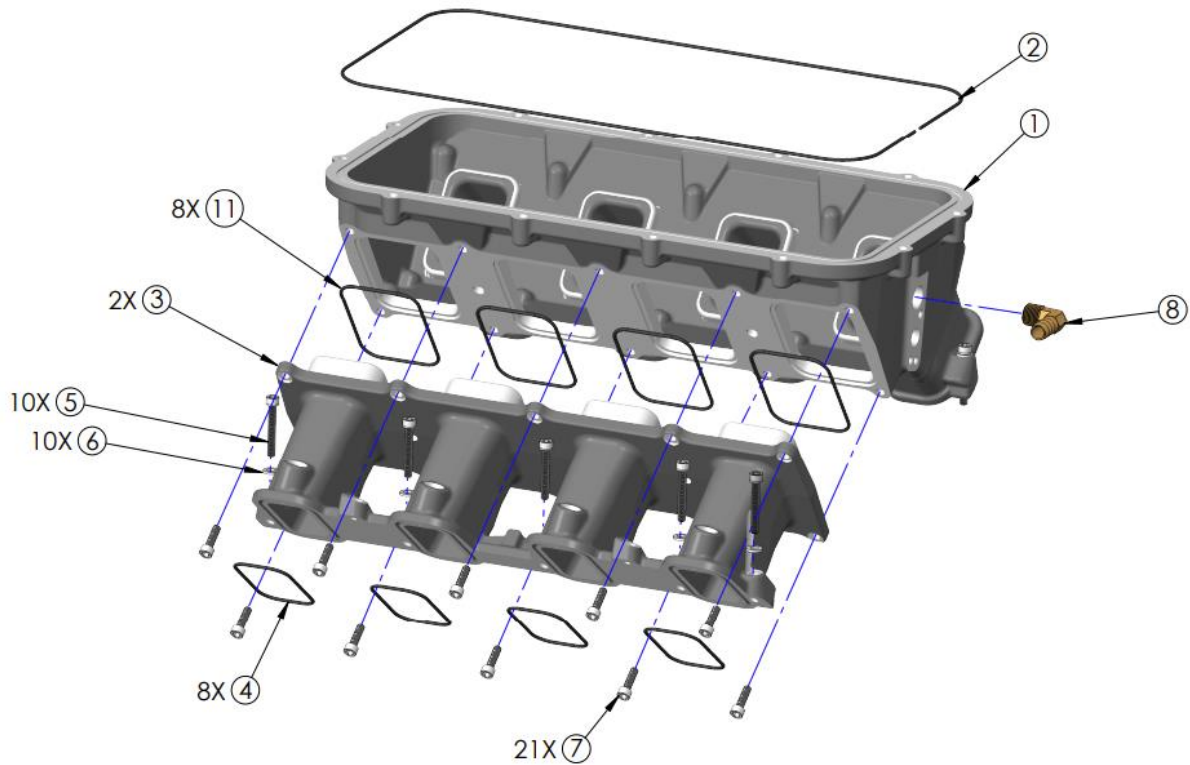
QUESTIONS & TECHNICAL ASSISTANCE:

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PLENUM BASE			
ID #	NAME	DESCRIPTION	QTY
1	MANIFOLD PLENUM BASE	MACHINED INTAKE MANIFOLD	1
2	O-RING CORD	LID GASKET 70A DUROMETER	1

RUNNERS (Application specific)			
ID #	NAME	DESCRIPTION	QTY
3	MANIFOLD RUNNER	MACHINED INTAKE RUNNERS	2

O-RING KIT (Application specific)			
ID #	NAME	DESCRIPTION	QTY
4	MANIFOLD TO ENGINE SEAL	O-RING TO SEAL INDIVIDUAL PORTS TO HEADS	8

HARDWARE KIT (TRHK)			
ID #	NAME	DESCRIPTION	QTY
5	MANIFOLD MOUNTING BOLT	M6 X 1.0 X 40mm 12.9 SHCS	10
6	MANIFOLD MOUNTING BOLT WASHER	M6 STAINLESS DIN125A F/W Z	10
7	MANIFOLD RUNNER MOUNTING BOLT	M6 X 1.0 X 20MM STAINLESS SHCS	20
8	REAR VACUUM PORT BARB	1/2" HOSE X 3/8" NPT BRASS 90 DEGREE ELBOW BARB	1
9	FRONT VACUUM PORT BARB	3/8" HOSE X 1/4" NPT BRASS HOSE BARB	1
10	FRONT VACUUM PORT PLUG	1/4" NPT STEEL SOCKET HEAD PIPE PLUG	1
11	RUNNER TO PLENUM SEAL	O-RING TO SEAL INDIVIDUAL PORTS TO PLENUM	8
12	THROTTLE BODY GASKET	102MM THROTTLE BODY GASKET	1
13	MAP SENSOR BOLT	M6 X 1.0 X 20MM STAINLESS SHCS	1

Installation:

- 1) Use only the recommended manifold to engine seal when installing this intake manifold.
- 2) Attach runners to plenum using supplied O-rings and bolts as shown in image 1.

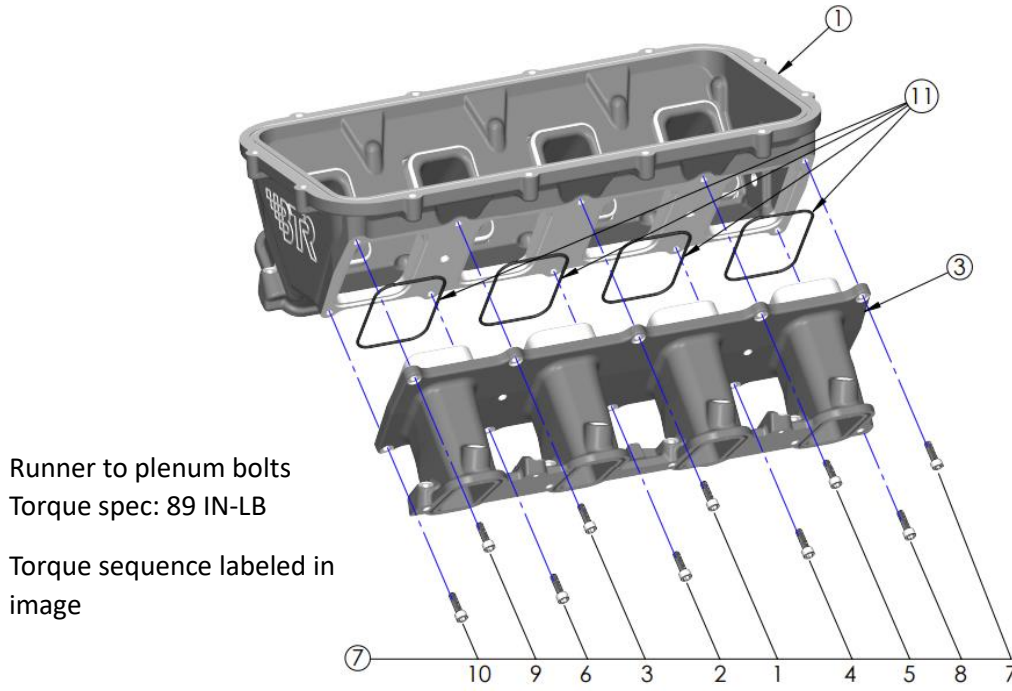


Image 1

- 3) Repeat for opposite side.
- 4) Install the intake manifold port seal O-rings to runners as shown in image 2.

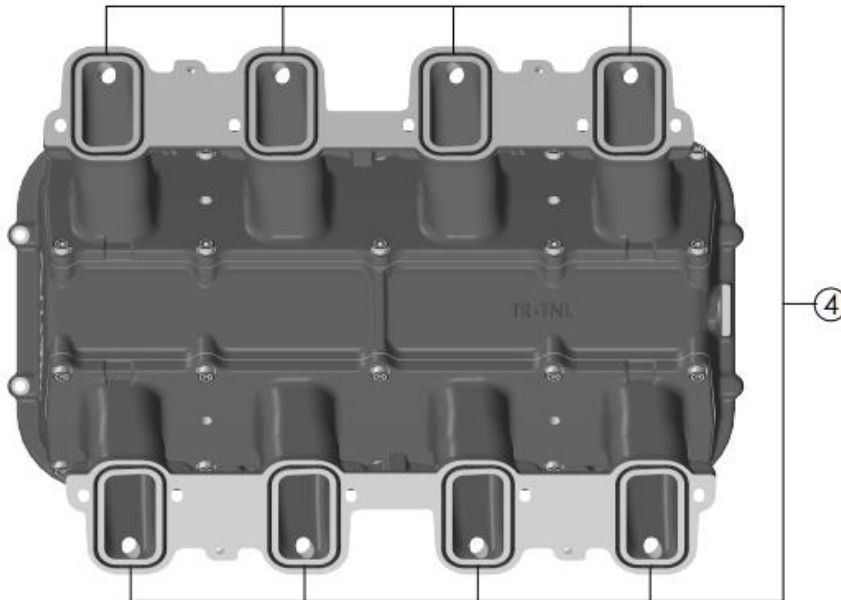


Image 2

- 5) Clean the cylinder head intake flanges,
- 6) Install the intake manifold lower plenum using ID #5 M6 X 1.0 X 40 hold-down bolts and ID #6 Washers. Snug all bolts first, then follow the torque sequence shown in image 3.

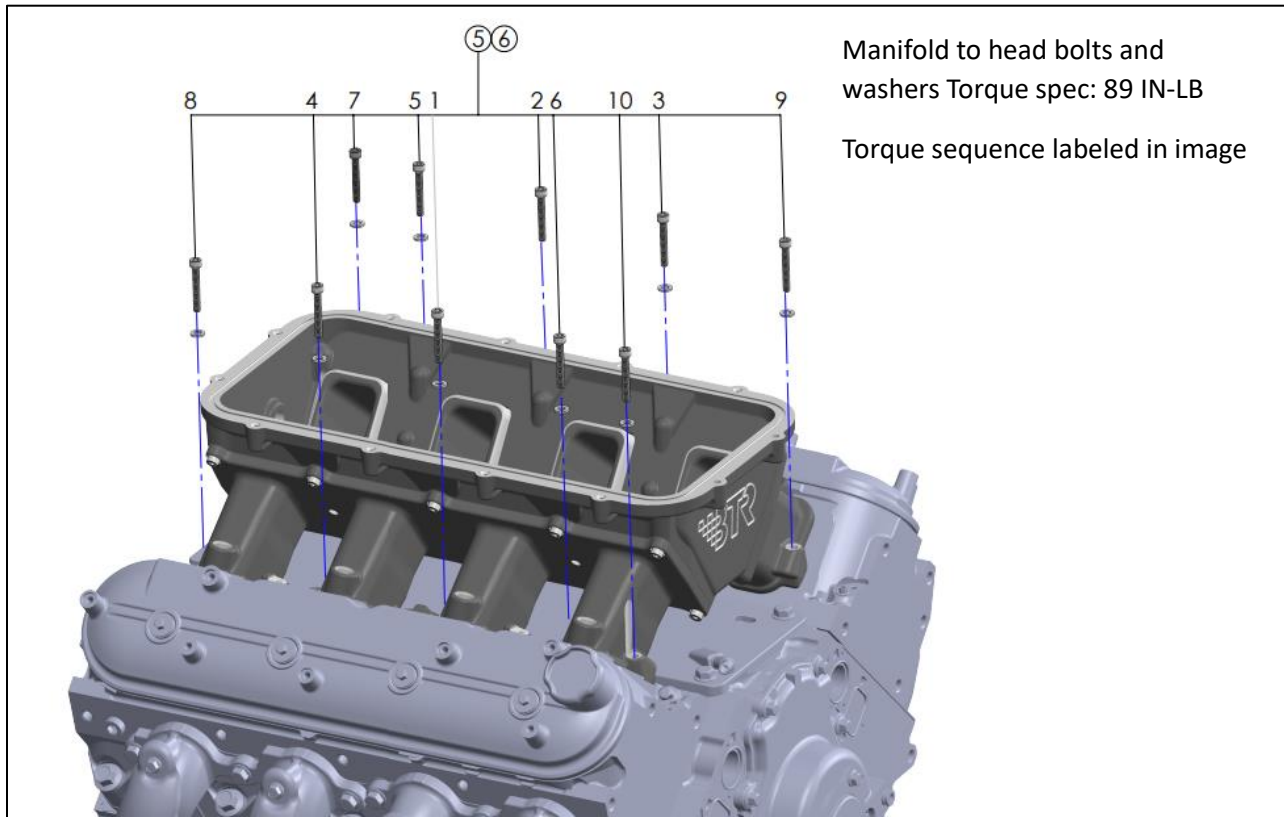


Image 3

- 7) OPTIONAL Install rear vacuum elbow as shown in image 4. Apply PTFE liquid sealant (Permatex 80631) or thread tape to threads. Finger-tight then 1 ½ to 2 turns.

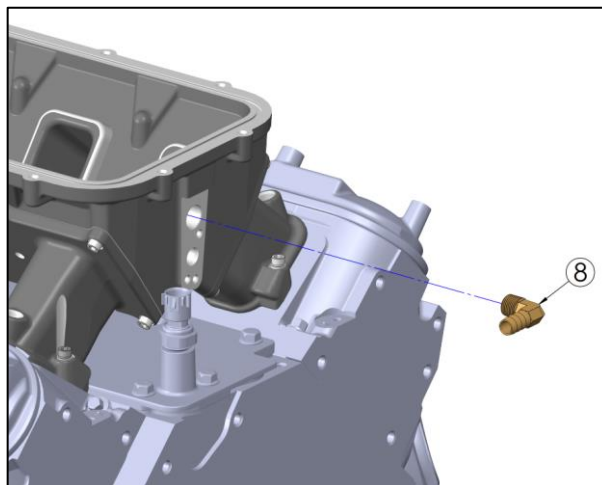


Image 4

- 8) Install MAP sensor using bolt ID# 13 in rear of plenum. See Image 5.
(Optional Map sensor port block off plate - ICT BILLET #551383)

LS/LT map sensor bolt hole
(Use either hole)

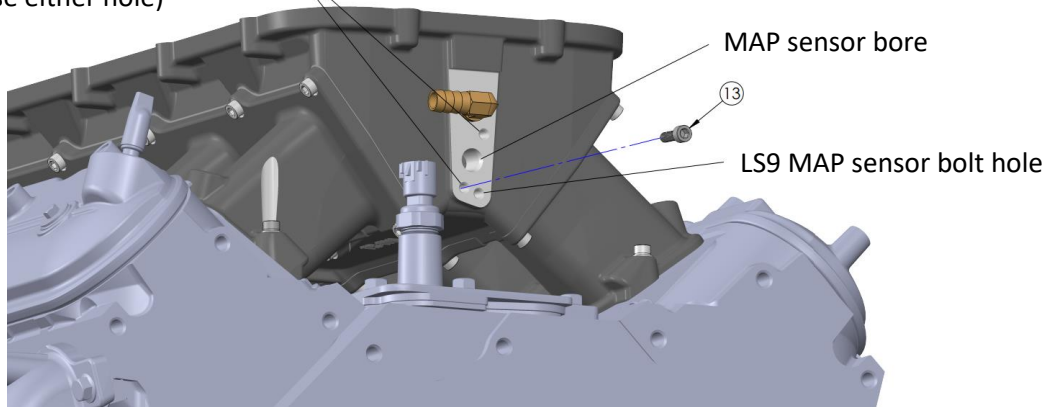


Image 5

- 9) Cut the supplied O-ring cord to the required length and prepare for bonding.
- 10) Place the O-ring cord into the groove on the plenum flange of the base manifold, allowing the ends to overlap slightly.
- 11) Mark both ends of the O-ring where they overlap to indicate the precise cut location.
- 12) Remove the O-ring cord and place it on a flat surface. Align the marked ends as they were when fitted in the groove.
- 13) Using a sharp razor blade, cut through both ends of the O-ring simultaneously at the marked point to ensure a clean, matching joint.
- 14) Apply a small amount of super glue (cyanoacrylate) to one of the cut ends and carefully bond the two ends together. Ensure the joint is smooth, properly aligned, and free from gaps or kinks.
- 15) To enhance the seal at the glued joint, apply a thin film of silicone sealer around the bonded area. Allow the silicone to partially cure before installing the O-Ring.
- 16) Reinstall the O-ring into the groove on the base manifold plenum flange, ensuring it is seated properly.
- 17) Install the intake manifold upper plenum or plate according to the manufacturer's instructions.
- 18) If equipped with port injection runners install fuel rails. (Fuel rail instruction and injector Guide - <https://qrco.de/bffz2Y>)

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