



## INSTRUCTIONS

### **RHS® 23° Small Block Chevy Single Plane Intake Manifold 12902, 12902P, 12903, 12903-KIT, 12903P, 12903P-KIT**

Thank you for choosing RHS® products; we are proud to be your manufacturer of choice. Please read this instruction sheet carefully before beginning installation, and also take a moment to review the included limited warranty information. Contact us toll free at 1.877.776.4323 or at [www.racingheadservice.com](http://www.racingheadservice.com) under Tech Help with any questions.

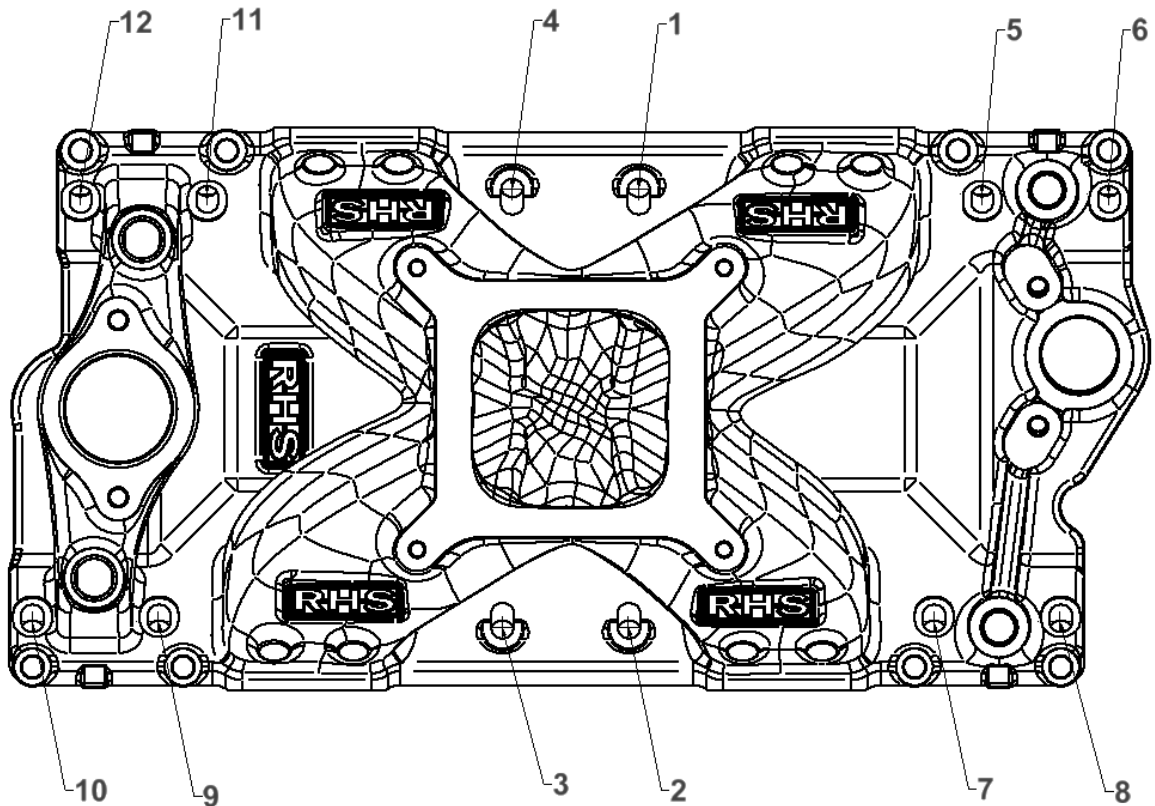


**NOTE: Installation instructions vary between standard Small Block Chevy (SBC) heads and 1996+ GM (Vortec) heads. Please refer to Section A for use with standard SBC heads and Section B for use with Vortec heads. Please also refer to Section C for installing fuel injected manifolds (Part #12903-KIT and #12903P-KIT).**

#### **Section A: Installing with Standard SBC Heads**

1. Before starting, mock-up the manifold and confirm alignment of bolt holes, gaskets, ports, etc.
2. Begin by ensuring that both heads and the end seal surfaces at either end of the valley area of your block are clean and free of oil.
3. With new intake manifold gaskets (not included) in place, begin by applying a 3/16"-1/4" bead of automotive grade RTV silicone sealant to the valley end seal surfaces of the block. This bead should also travel 1/2" up onto the intake gasket on either side.
4. Confirm RTV silicone beads will center up and properly seal the manifold before proceeding. Set the manifold on the heads and loosely thread the bolts in place. You may choose to apply light thread-lock to the bolts before installation.

5. Torque the intake mounting bolts to 25-30 ft.-lbs. in the sequence shown below.



6. Install carburetor/throttle body, distributor and appropriate coolant lines and sensors. Properly plug any unused ports.

## **Section B: Installing with GM Vortec Heads**

1. Before starting, mock-up the manifold and confirm alignment of bolt holes, gaskets, ports, etc.
2. Begin by ensuring that both heads and the end seal surfaces at either end of the valley area of your block are clean and free of oil.
3. With new intake manifold gaskets (not included) in place, begin by applying a 3/16"-1/4" bead of automotive grade RTV silicone sealant to the valley end seal surfaces of the block. This bead should also travel 1/2" up onto the intake gasket on either side.
4. Confirm RTV silicone beads will center up and properly seal the manifold before proceeding. Set the manifold on the heads and loosely thread the bolts in place. You may choose to apply light thread-lock to the bolts before installation. **NOTE: GM Vortec heads use different bolt holes than standard SBC heads – these holes are numbered in the following diagram.**

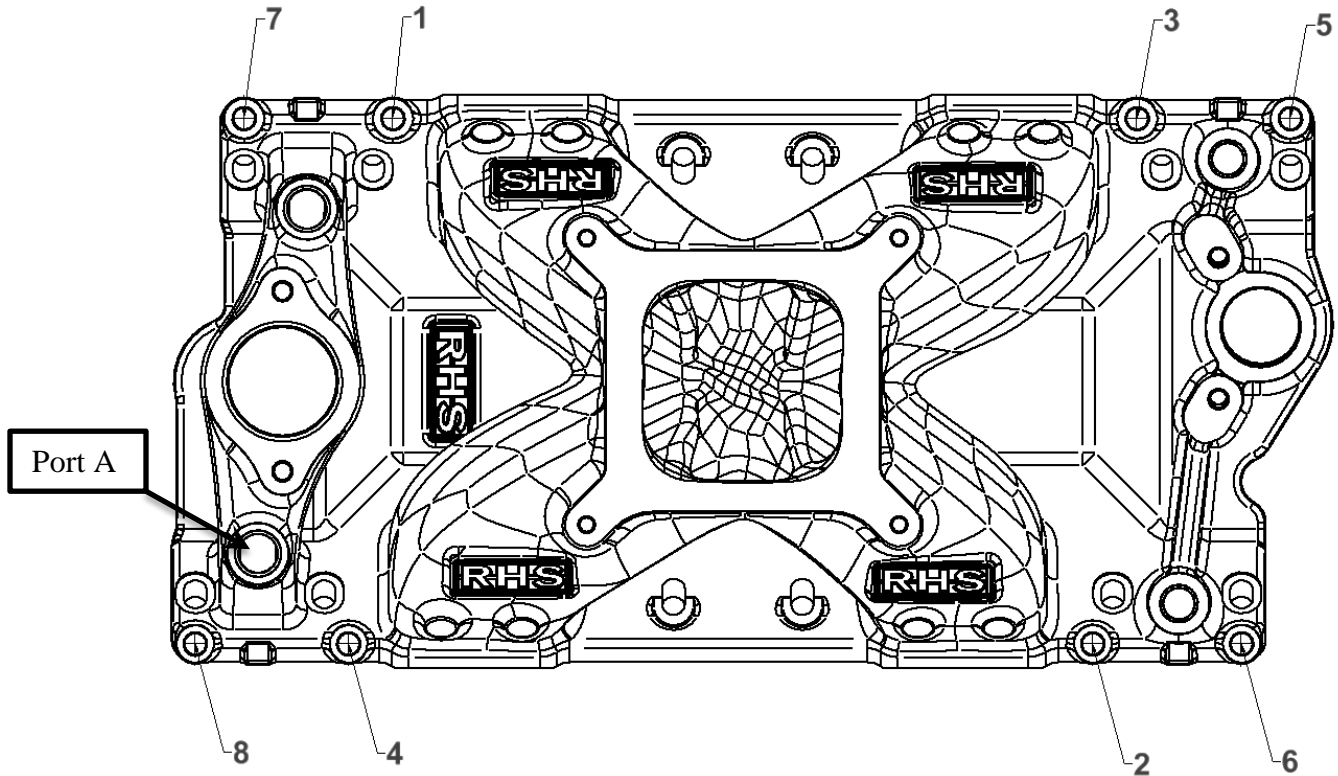
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Part #549121IS  
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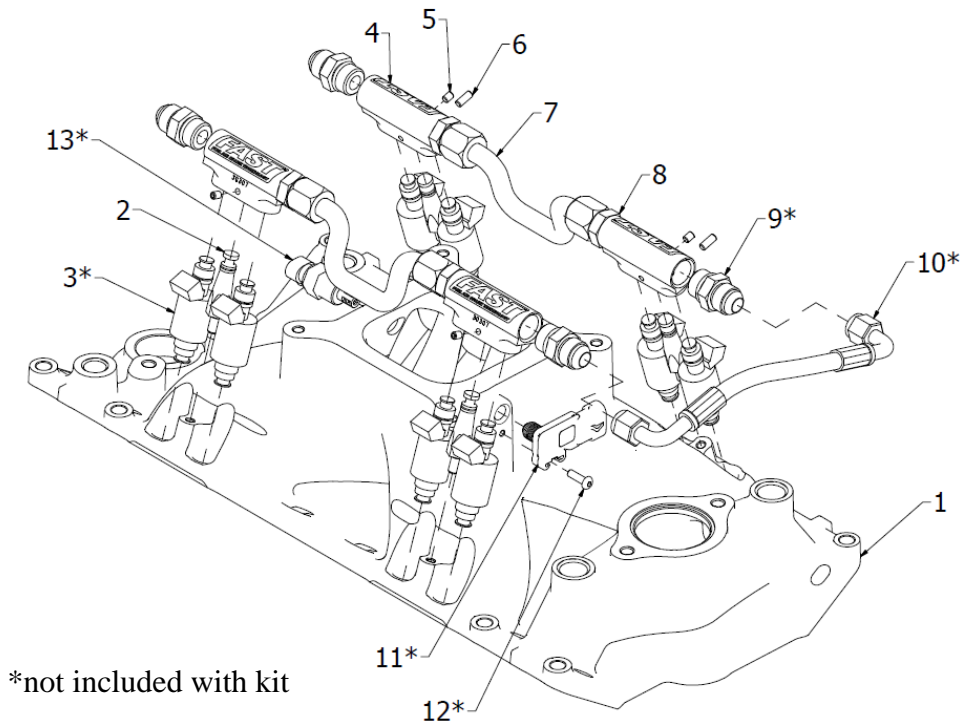
5. Torque the intake mounting bolts to 18-20 ft.-lbs. in the sequence shown below.



6. Install carburetor/throttle body, distributor and appropriate coolant lines and sensors. Properly plug any unused ports.

**IMPORTANT:** This manifold was primarily designed for use with Vortec heads on pre-Vortec blocks (1995 and earlier). If you are running a 1996+ block, you must run a coolant bypass line from the manifold to the 5/8" hose nipple on the passenger side of the water pump. It is suggested that you use the 1/2" NPT port labeled "Port A" in the figure above.

## Section C: Installing Fuel Injected Manifolds (12903-KIT and 12903P-KIT)



ITEM	PART NUMBER	DESCRIPTION	QUANTITY INCLUDED IN "-KIT"
1	12903	SBC Intake Manifold	1
2A	30305	Short Fuel Rail Mount	4
2B	30306	Tall Fuel Rail Mount	4
3	VARIES	Fuel Injector	Not Included
4	30307	Fuel Rail	4
5	30248SS	Fuel Rail Mount Set Screw	4
6	30307SS	Long Fuel Rail Set Screw	4
7	30304	Center Link Fuel Line	2
8	54023A	Center Link To Fuel Rail Fitting	4
9	VARIES	AN Fitting	Not Included
10	----	Fuel Rail Crossover (Optional)	Not Included
11	307029	Manifold Absolute Pressure Sensor	Not Included
12	304150MMS	10-24 MAP Mounting Screw	Not Included
13	307004	Idle Air Temp Sensor	Not Included

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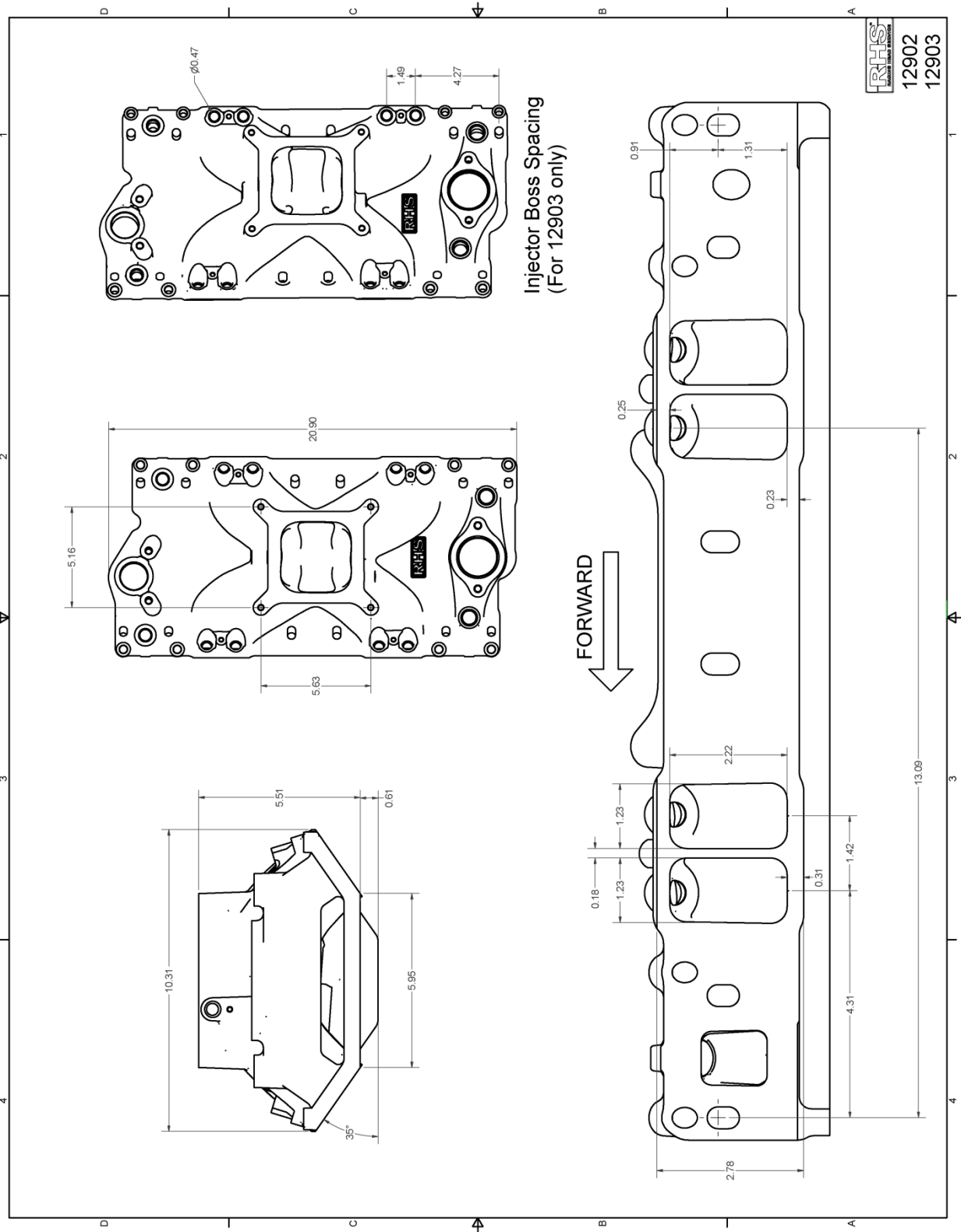
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1. Start the installation of your fuel injectors and fuel rails by installing your fuel rail mounting posts (Item 2). First select if you need to use the long or short mounting post. Use the tall mounting post for 2.550" o-ring center-to-center injectors (such as FAST™ Part #302400-1) and use the short mounting post for LS3/LS7-type injectors (such as FAST™ Part #30397-1). If you are not using one of these injectors or are not sure which type you have, mock-up one pair of injectors with a fuel rail and each mounting post, or see the injector height measurements listed on the next page. When used with the correct length mounting post the injector will be fully seated in both the fuel rail and the manifold and will have little movement up and down. The o-rings at the top and bottom of the injector will be covered. Once the proper mounting post is selected, screw four of them into the manifold (the other four posts will not be used). It is advisable to use some light thread-locking compound. Torque to 45 in.-lbs.
2. Seat your injectors (Item 3) into their ports on the manifold. It can be helpful to apply a very light amount of oil to the injector o-rings to help with this process.
3. Connect the fuel rails (Item 4) in pairs using the center link fuel line (Item 7) and provided AN fittings (Item 8). When installing the AN fittings, ensure that the o-ring properly seats in the fuel rail and is not damaged during installation.
4. Install the fuel rail pairs onto the injectors. Again, a small amount of oil on the injector o-rings can help this process. Check to make sure each injector o-ring fully seats.
5. With the fuel rails firmly seated, install two set screws (Items 5 and 6) into each fuel rail using light thread locking compound. The shorter set screw will be centered on the post and the longer set screw will be slightly offset. Tighten snugly.
6. After installing the rest of your fuel system, it is important to check for leaks before starting the engine. To do this, turn on your fuel pump and visually check over the entire system.




## **Section D: Specifications**

<b>GENERAL SPECIFICATIONS</b>	
<b>Material:</b>	A356-T6 Heat Treated Aluminum
<b>Throttle Body/Carb Mount:</b>	4150 bolt pattern
<b>Head Style:</b>	Fits early and late model SBC heads as well as Vortec heads
<b>Coolant Ports:</b>	Front Outlets – 1/2" – 14 NPT Rear Outlets – 3/8" – 18 NPT
<b>Vacuum Port:</b>	3/8" – 18 NPT
<b>EFI SPECIFIC</b>	
<b>Manifold Injector Bung Diameter:</b>	15mm
<b>Fuel Rail Injector Bung Diameter:</b>	0.535"
<b>Injector Oring to Oring Height:</b>	Short Post: 1.48" Tall Post: 2.55"
<b>Fuel Rail Threads:</b>	AN -8 O-ring Straight Thread FAST™ Part #54023C – Fuel Rail to -6 AN FAST™ Part #54023A – Fuel Rail to -8 AN
<b>Suggested Fuel Crossover Length: (90° Fitting Center to Center)</b>	Short Post: 7.75" Tall Post: 9.00"
<b>Manifold Absolute Pressure Sensor:</b>	Use LS1-Style Sensor FAST™ Part #307029 10-24 UNC Mounting Screw
<b>Intake Air Temp Sensor:</b>	3/8" – 18 NPT Port for IAT Sensor FAST™ Part #307004
<b>CARBURETOR SPECIFIC</b>	
<b>Nitrous Oxide:</b>	Cast-in bosses ready to be drilled



### Social Media

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 twitter.com/RHSWins  
 cpgnation.com



### **Limited Warranty**

Racing Head Service® warrants that all of its products are free from defects in material and workmanship, and against excessive wear for a period of (1) one year from the date of purchase. This **limited warranty** shall cover the original purchaser.

**RHS® obligation under this warranty is limited to the repair or replacement of its product.** To make a warranty claim, the part must be returned within (1) one year of purchase to the address listed below, freight prepaid. Items covered under warranty will be returned to you freight collect.

**It is the responsibility of the installer to ensure that all of the components are correct before installation. We assume no liability for any errors made in tolerances, component selection or installation.**

**There is absolutely no warranty on the following:**

- A) Any parts used in racing applications;**
- B) Any product that has been physically altered, improperly installed or maintained;**
- C) Any product used in improper applications, abused or not used in conjunction with the proper parts.**

**There are no implied warranties of merchantability or fitness for a particular purpose.** There are no warranties, which extend beyond the description of the face hereof. RHS® will not be responsible for incidental and consequential damages, property damage or personal injury damages to the extent permitted by law. Where required by law, implied warranties or merchantability and fitness are limited for a term of (1) one year from the date of original purchase.

This warranty gives you specific legal rights and you may also have other legal rights, which vary from state to state.