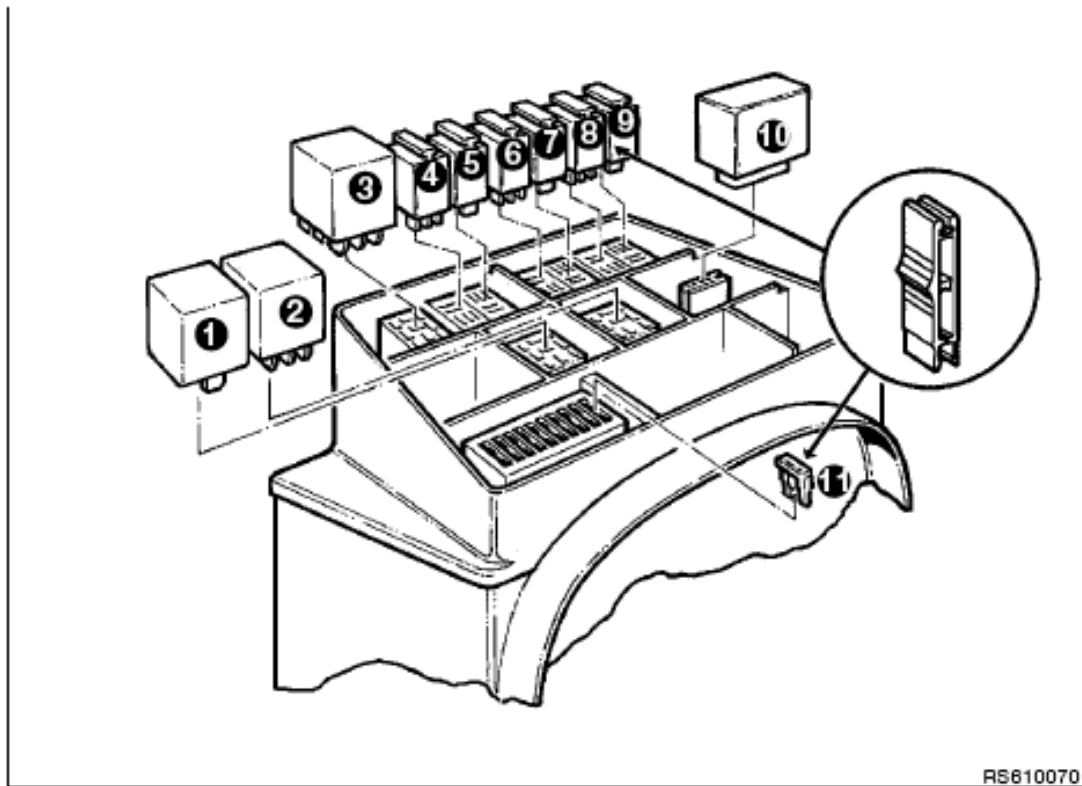


Electrical Data for the R1100RT



Relay positions (central electrical equipment box)

1. Encoding plug for Motronic and catalytic converter
2. Fuel gauge/display damping
3. Starter motor relay
4. Load-relief relay
5. Horn relay
6. Fuel pump relay
7. Motronic relay
8. ABS warning relay
9. Not in use
10. Flasher unit
11. Fuse

Connections to fuses: [RS/GS/R]
(No. 1 on left, looking forwards)

- | | |
|---|--------|
| 1. Instrument cluster,
brake and rear lights | 15 Amp |
| 2. Parking light | 15 Amp |
| 3. Flashing turn indicators, clock..... | 15 Amp |
| 4. Power socket | 15 Amp |
| 5. Motronic..... | 15 Amp |
| 6. Fuel pump | 15 Amp |
| 7. Heated handlebar grips | 4 Amp |
| 8. Spare fuse..... | 4 Amp |
| 9. Spare fuse..... | 15 Amp |
| 10. Spare fuse..... | 15 Amp |

Connections to fuses: [RT]
(No. 1 on left, looking forwards)

- | | |
|---|--------|
| 1. Instrument cluster,
brake and rear lights | 15 Amp |
| 2. Parking light | 15 Amp |
| 3. Flashing turn indicators, clock..... | 15 Amp |
| 4. Power socket | 15 Amp |
| 5. Motronic..... | 15 Amp |
| 6. Fuel pump | 15 Amp |
| 7. Heated handlebar grips..... | 4 Amp |
| 8. Radio | 15 Amp |
| 9. Spare fuse..... | 15 Amp |
| 10. Spare fuse..... | 4 Amp |

R1100RT

Relay #6 is the fuel pump relay. For safety reasons it is tied into the engine kill switch which makes it a good place to pick up +12VDc. Lifting the fuse allows you access to to the Green/Yellow stripe wire. This is where we pick up +12VDc for the following parts of the RB Racing Turbo System:

1. RSR 400i Injector Controller: Red wire.
2. Oil scavenge pump: Red wire.
3. On/Off RSR Water Injection Arm/Disarm Switch: Red wire
4. To Inverter 30A relay to turn on Inverter. Red wire.

Fuse #1 is the Instrument Cluster Fuse. This is where we pick up +12VDc for the following parts of your RB Racing Turbo System:

1. RSR Air Fuel Ratio Gauge: Red Wire and Orange Wire joined here.
2. RSR Orca Turbo Dash: Red Wire.

Water Injection Power Supply (Inverter): Battery + to 20A fuse to relay. OEM Relay #6 triggers direct 12V to Inverter.

R1100S (See diagram on page 3)

Relay #4 is the fuel pump relay. For safety reasons it is tied into the engine kill switch which makes it a good place to pick up +12VDc. Lifting the fuse allows you access to to the Green/Yellow stripe wire. This is where we pick up +12VDc for the following parts of the RB Racing Turbo System:

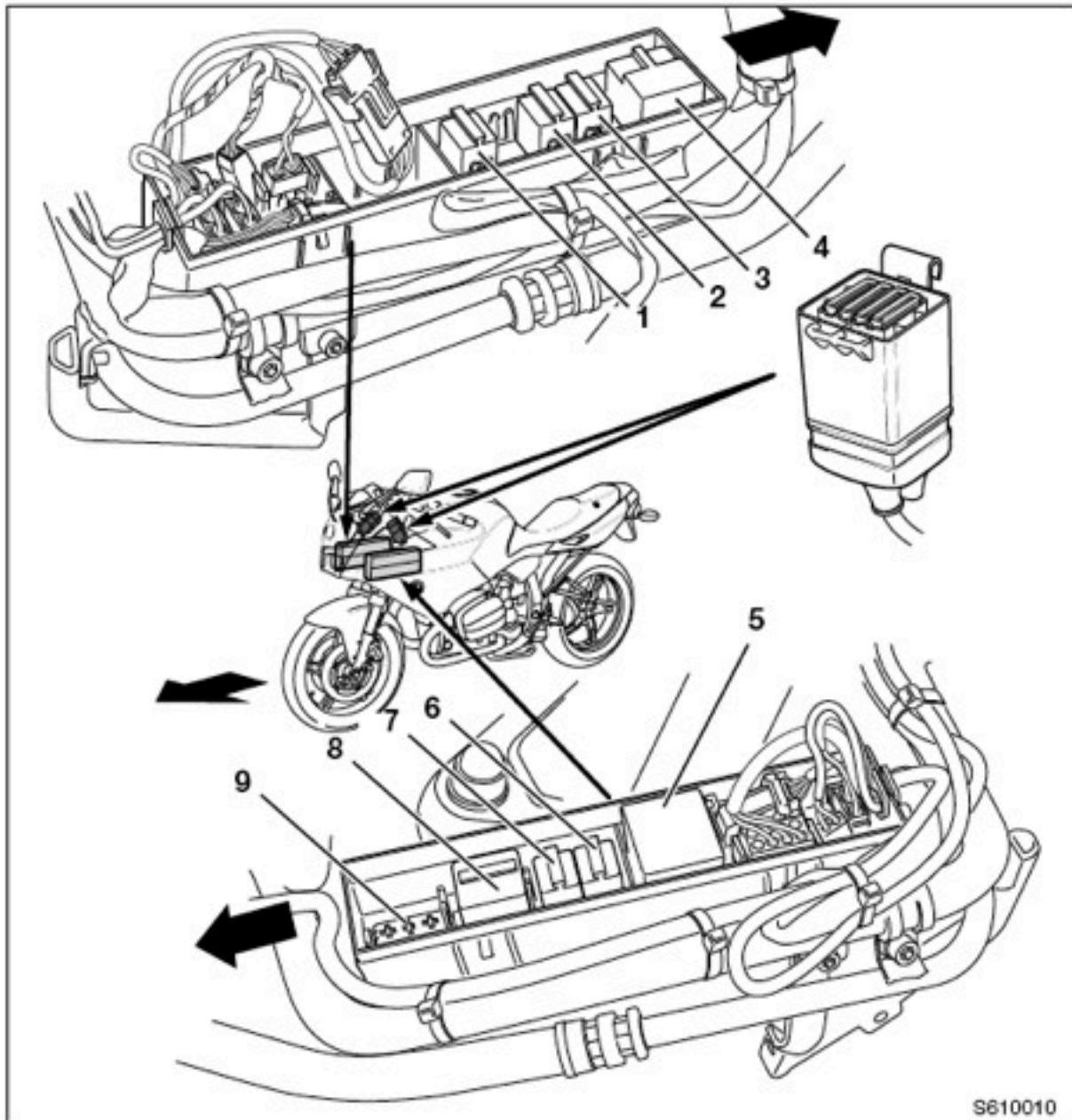
1. RSR 400i Injector Controller: Red wire.
2. Oil scavenge pump: Red wire.
3. On/Off RSR Water Injection Arm/Disarm Switch: Red wire
4. To Inverter 30A relay to turn on Inverter. Red wire.

Fuse #3 is the Instrument Cluster Fuse. This is where we pick up +12VDc for the following parts of your RB Racing Turbo System:

1. RSR Air Fuel Ratio Gauge: Red Wire and Orange Wire joined here.
2. RSR Orca Turbo Dash: Red Wire.

Water Injection Power Supply (Inverter): Battery + to 20A fuse to relay. OEM Relay #4 triggers direct 12V to Inverter.

Electrical data for R1100S



S610010

Relay positions (central electrical equipment box)

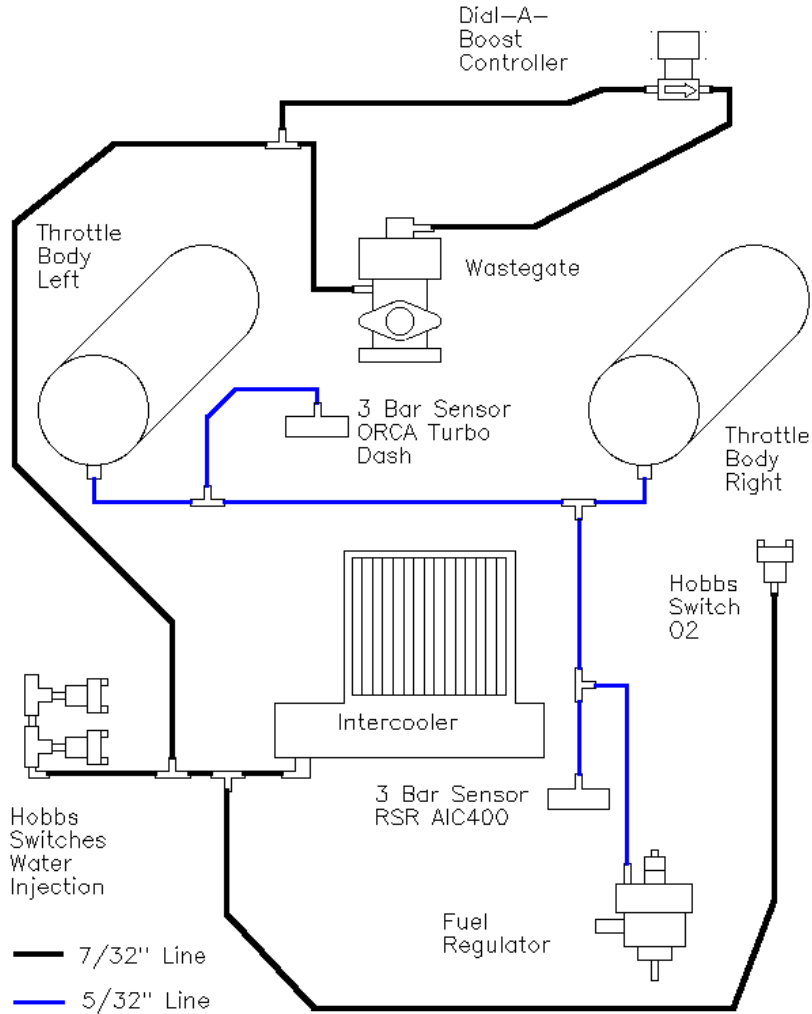
1. ABS warning relay
2. Relief relay
3. Horn relay
4. Indicator damping
5. Flasher unit
6. Fuel pump relay
7. Motronic relay
8. Starter motor relay
9. Coded plug for Motronic

Fuse assignments

Left fuse box
(No. 1 on left, looking forwards)

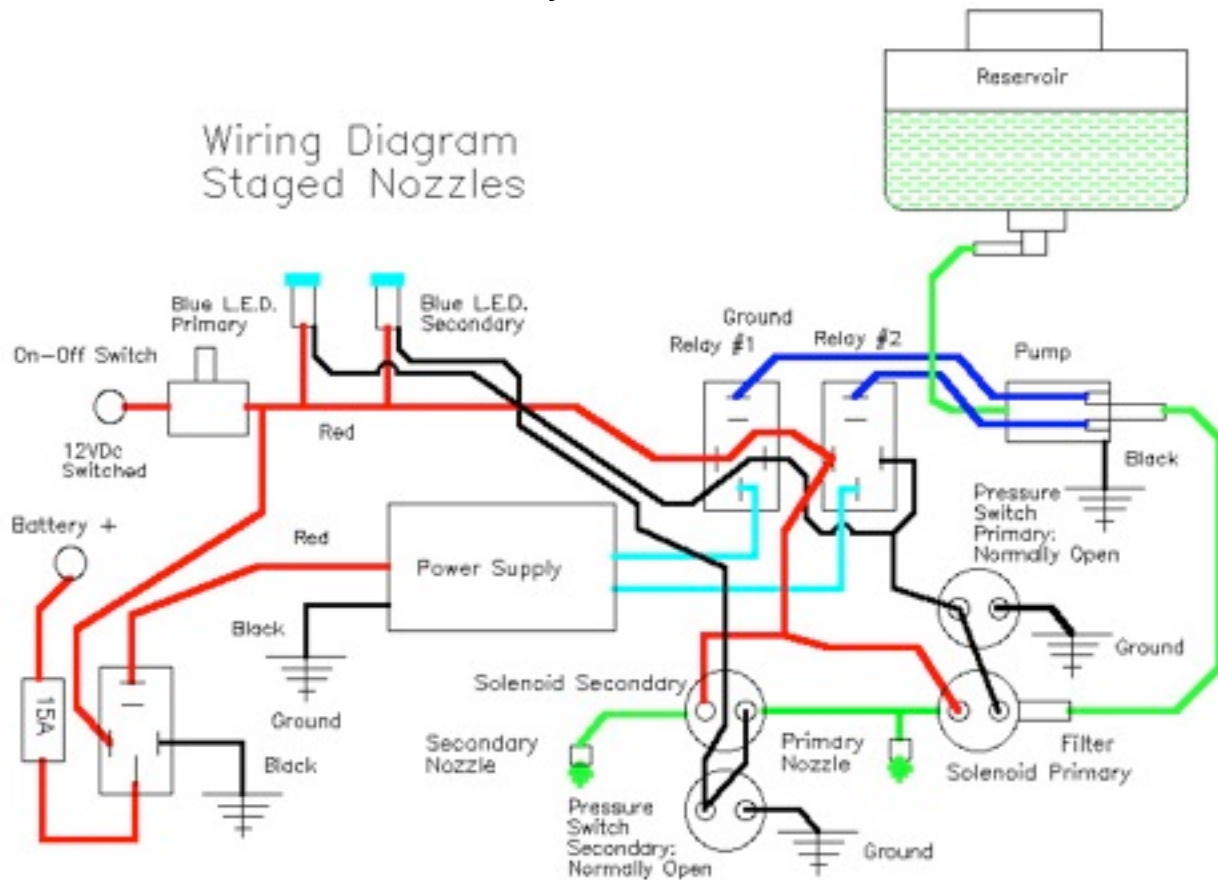
1. instrument panel, controller for fuel warning lamp or indicator damping, brake light 4 amps
2. Rear light, parking light, number-plate light 4 amps
3. Instrument panel, horn, power socket .. 15 amps
4. Fuel pump, Motronic 15 amps

Pneumatic Diagram All R1100/1150 Models



Note: No clamps are used on the pneumatic lines save to the two used on the right and left throttle body vacuum ports located on the bottom of each throttle body.

Water Injection Schematic



Assembly Sequence and Photos



Stripped down and ready to install. The air box air temperature sensor will just be tied off to sense ambient temperatures.

We provide a 3/8" hose that sockets into the original air box breather aluminum fitting. Run this hose to the rear of the bike by the license plate and water injection reservoir. Use plastic tie wraps to secure the hose to the frame.

The aluminum bracket that is bolted to the top center of the frame will have to have the vertical tabs cut off (See pages 18 and 19). The connector tube from the turbo to the intercooler will pass this area.

The Bosch Billet Fuel Regulator mounts as shown with a supplied stainless steel bracket.



The turbo exhaust header is a four piece design with three slip joints. Two exhaust port bends, one Y pipe / collector and a slip connector to the turbo. You may coat the inside of each slip joint with Permatex 598B (Black) non-hardening gasket compound.

Use the stock oem stainless metal gaskets.

Two Bolt Exhaust: Use the four stock oem 8mm x 1.25 hex nuts

Three Bolt Exhaust (Early R1100): Use the six 8mm x 1.25 nuts provided.

Note: In that the front header is a "Y" shape with two slip joints and since the two bolt flanges do not rotate, once on the studs, the whole assembly has to go on in one shot.

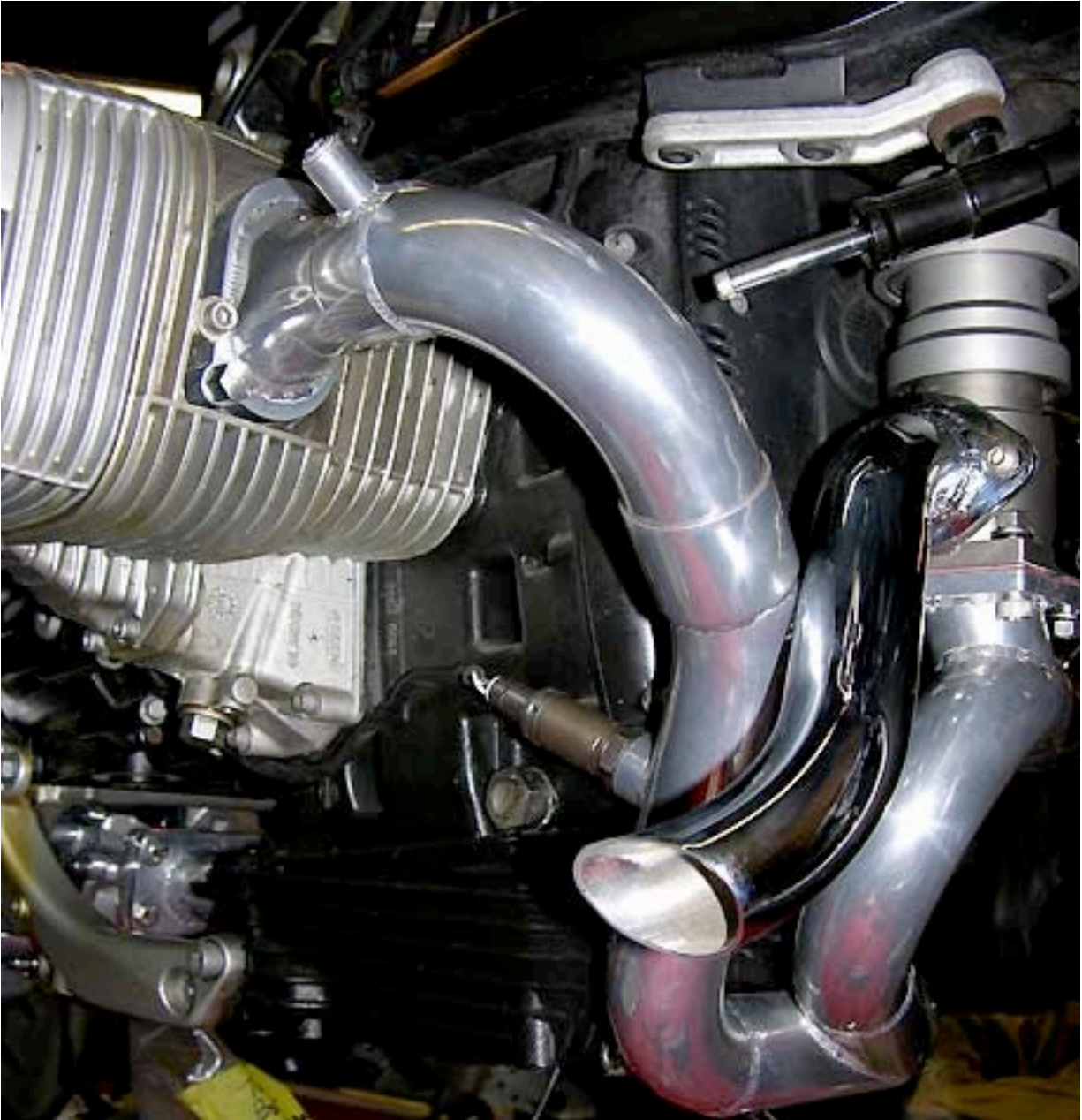
The slip joints must be fully seated. Using Permatex 598B will allow the joints to be rotated a bit during the assembly and not bind. Use a rubber hammer and gently tap things together. The merge collector, in its final position, should be less than 1/16" away from the lower engine casting.



Billet RB Racing BoostMaster Wastegate. Note that the top and side fitting point to the left side of the bike (as you sit on it).

An annealed copper gasket is provided. You may place a light coating of Permatex 598B on the gasket faces.

Four stainless steel 5/16" x 18 x 1 1/4" socket heat stainless cap screws, lock washers and nuts are provided. On the left side the bolts install from the top and on the right side they install from the bottom.



Chrome wastegate exhaust exits to the left. Two 5/16 x 18 x 3/4" Stainless Button Head Cap screws hold the tube to the wastegate. Tighten with 3/16" Allen and 1/2" wrench.

The chrome tube vents the exhaust gases when the wastegate opens.

The wastegate is shipped with a basic spring pressure of around 8-9 psi. The pneumatic boost controller allows you to turn up the boost to 25 psi. The two stage water injection is set to activate at 4 and 8 psi. On pump gas and without lower compression forged pistons we recommend the boost be held to 9 psi.

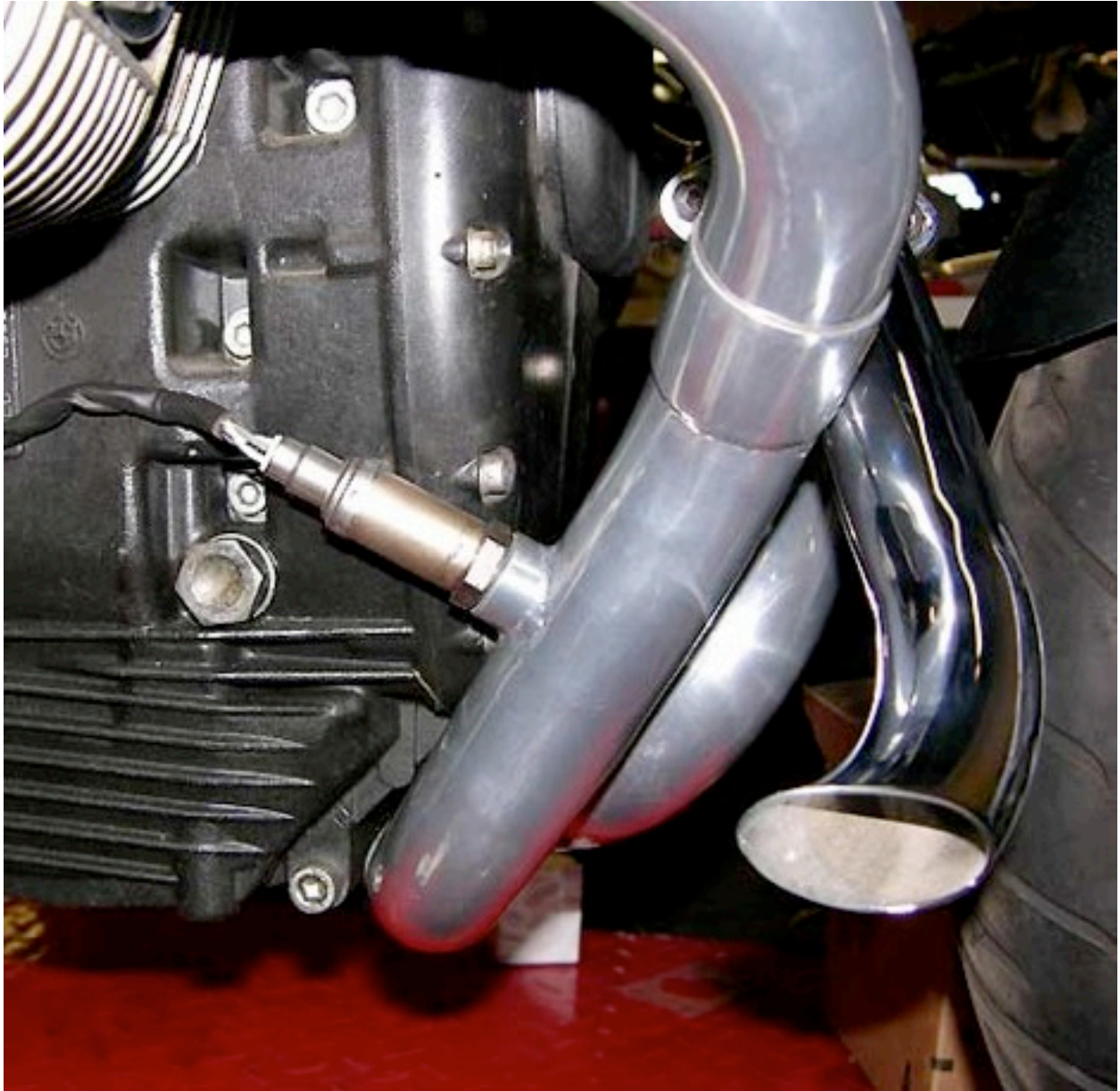
12-15 psi more than doubles the horsepower. Higher octane or heavy doses of Toluene.



Left side turbo connector pipe with slip joint. Coat inside of slip with Permatex 598B. It is a slip joint and no form of clamp should be used.



Here the connector pipe snakes under the bike. Make sure the connector pipe does not touch or interfere with anything on the side of the bike as it goes along the side of the engine casting.



The O2 sensor sockets back into the new location on the left side. Twist the wires 3 turns CCW, then screw the sensor into the new location.



Double ceramic ball bearing turbocharger. The exhaust housing has been coated in silver ceramic. The AN4 oil feed line must be tightened down securely otherwise and CCW twisting motion on the stainless feed line will loosen the fitting. Use 9/16" wrench to tighten.

Four 5/16" x 18 x 1.5" Hex bolts with washers, lock washers and hex nuts hold turbo to connector tube. Sequence is bolt, washer and then lock washer and nut on reverse side. Bottom bolts inserted front to rear. Top left rear to front. Top right front to rear.

Five 8mm x 1.25 x 1 25mm stainless steel socket head cap screws and lock washers. You must install the turbo exit pipe (page 14) before you install the turbo.

Turbo Exit Pipe



The ceramic coated turbo exit pipe bolts to the inside of the rear pivot stay arm. Remove the 10mm x 1.5 nut on the inside of the stay arm and use a 10mm Allen wrench to tighten the bolt to the turbo exit tube.

The turbo end up being supported by this bolt, the connector tube and the tail section. It is a rock solid mount system.

Use the five 8mm x 1.25 x 25mm stainless socket head cap screws and lock washers on the exit flange. No gasket is used on the exit. Coat the exit turbo housing with 598B Permatex. The four 5/16" x 18 x 1.5" bolts are used for the turbo connector pipe. See page 13 for bolt insertion directions. 6mm Allen wrench and 1/2" wrenches.

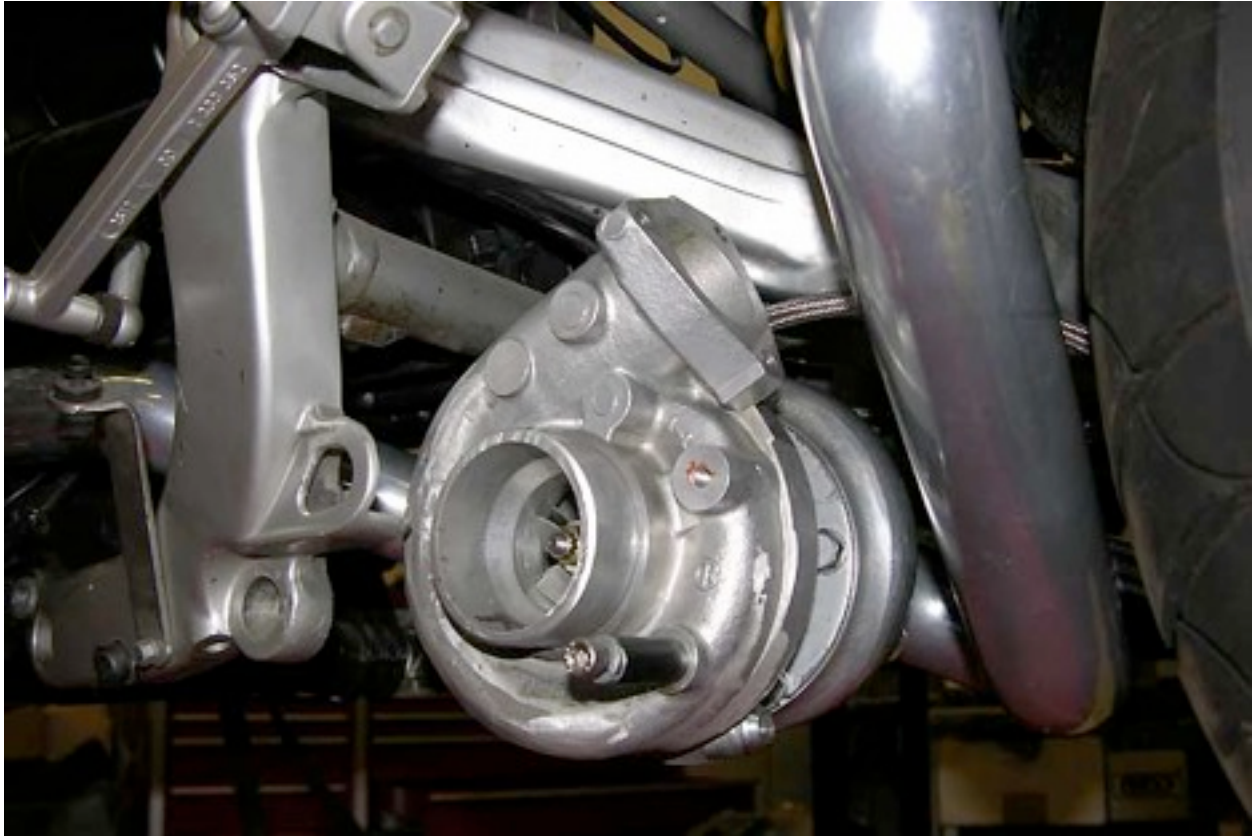
An annealed four bolt copper gasket provided is used between the turbo connector pipe and the turbo. You may place a light coating of 598B Permatex on the gasket faces.

Turbo Exit Pipe



The Black Hole muffler section will slip onto the turbo exit pipe. You may place a coating of Permatex 598B inside the slip joint of the muffler.

A spring is provided to pull the slip jointed section together.



With the turbo bolted in place the oil feed line will snake in a loop back to the right side of the bike and will pass over the 10mm mounting bolt location on the turbo exit flange.



Here the stainless steel AN4 oil feed line passes over the 10mm mounting bolt location



This is the turbo to intercooler ceramic coated connector pipe. Note the O-Ring in the three bolt mounting flange and the two rubber bumpers on the tube. The two rubber bumpers will press against the base of the intercooler.



The connector tube will snake down from the top, rotating into position where the three bolt flange will mate up with the turbo.

Before you insert the connector tube you must trim the two vertical tabs mentioned on page 3 of the instructions. A clear photo of the modified bracket can be seen on page 19.



Three 6mm x 1.0 x 25 mm stainless socket head cap screws with lock washers secures the three bolt flange to the turbo. Be sure the O-Ring is in place.

Twirl the three bolts in with your fingers and use a ball head 5mm Allen to tighten.



An silicone hose coupler attached the connector tube to the intercooler. Two #36 stainless hose clamps are provided. Do not install any intercooler hose clamps until all silicone connector hoses are in place and everything is properly aligned.

It is general, it is good practice to get everything into place and they slowing tighten up the entire system.



Slipping the Black Hole Muffler into place and installing the retention spring provided. The Muffler sockets into the left rear dowel under the tail section. An integral rubber sleeve is in the muffler bracket.



The license plate bracket sockets into the right underside dowel and rests on top of the ceramic coated Black Hole muffer bracket.

A 5/16" x 18 x 1" bolt, washer, lock washer and nut are provided. Tighten with 1/2" wrenches. Be sure the two parts i.e. the muffer and the license plate bracket are seated equally depth-wise on their respective dowels.

Note the breather tube hose to the right.

The Bracket incorporates a L.E.D. light.

The water injection reservoir will actually bolt to this bracket and the license plate will bolt to the face of the reservoir.



The intercooler is inserted from the top.



The air cleaner assembly sockets to the turbo compressor housing. Note that there is an internal O-Ring seal. We suggest you coat the inside of the slip area and the O-Ring with a light grease as it is a tight seal.

A 6mm stainless steel and lock washer secures the assembly to the turbo. Note the spacer which goes between the air cleaner and the turbo..



Here the K&N air cleaner assembly is mounted and secured with the 6mm mounting bolt and spacer.

You must push the air cleaner fully seated as show. The mount is designed to fully secure the air cleaner from falling off or becoming dislodged.

Note the air cleaner rubber mount is canted. Rotate the air clear so it cants inward and straight "back" but not so as to touch the tail pipe.



Three silicone hoses are provide with appropriate hose clamps, two hoses to the right side and one on the left side.



Right side silicone hose couplers.

Note the orange Adel clamp on the frame. This will be used to secure the 1/4" return line from the Bosch Billet fuel regulator



This is the vacuum line from the right to left throttle bodies and the tee that branches to the Bosch Billet fuel regulator.

In the pneumatic diagram on page 4 two additional tees will be placed within this system. No clamps are used on the brass tees but two clamps are used, one for each of the throttle bodies. Use 7mm nut driver to tighten the clamps.

Oil System

A separate PDF is provided with each RB Racing R series turbo kit.

Fuel Lines

A separate PDF is provided with each RB Racing R series turbo kit.

Orca Turbo Dash

A separate PDF is provided with each RB Racing R series turbo kit.

RB Racing Air Fuel Ratio Gauge and RSR AIC400

A separate PDF is provided with each RB Racing R series turbo kit.

Water Injection System

A separate PDF is provided with each RB Racing R series turbo kit.