

## HOLLEY HIGH PERFORMANCE INTAKE SYSTEM 1979-1985 RX-7 - Non-Ported

1976-85 -12A Street Port, Manual/ with Headers

### Installation Instructions

**Note: These instructions assume:**

- The original intake and emission controls have been or will be removed from the engine.
- The intake gasket surface has been thoroughly cleaned.
- Header has been or will be installed.
- A 6 PSI fuel pump with a minimum flow rate of 20 GPH has been installed.
- This is a manual transmission equipped vehicle.
- The Mazda-installed cruise controlled unit will not be used.

1. Using (2) of the bolts supplied, attach the large throttle cable housing bracket to the intake manifold from the underside of the portion of the carburetor mounting flange which extends toward the engine. Do not use washers. Install the other (2) bolts along with (2) flat washers in the remaining (2) holes in the carburetor mounting flange. See Photo 1.



Photo 1

2. Install the carburetor on the manifold, using flat washers, lock washers, and nuts supplied. Torque nuts to 11 ft. lbs. (Caution: Do not over torque nuts.) Before proceeding, check primary and secondary throttle shafts for freedom of operation and full throttle. Also install the air cleaner stud and air cleaner.

3. Drain water from the engine; remove the air pump, intake manifold with carburetor, metering oil pump rod, and emission control valves. If installing a header, remove the thermal reactor or exhaust manifold, the section of exhaust pipe between the reactor and the heat exchanger, and the smaller tube from the intake manifold to the heat exchanger. Then locate the "Header Installation" instructions and complete them before proceeding.

4. Remove both plastic metering oil pump tubes and the rubber connecting hoses from the metering oil pump as complete assemblies. Remove both rubber connecting hoses from the longer plastic tube. Using the hoses removed from the longer plastic tube, all of the short tube assembly, and the plastic "T" supplied, reconnect the metering oil tubes as shown in Photo 2 to form a single line to the Holley carburetor. Trim hoses as necessary.



Photo 2

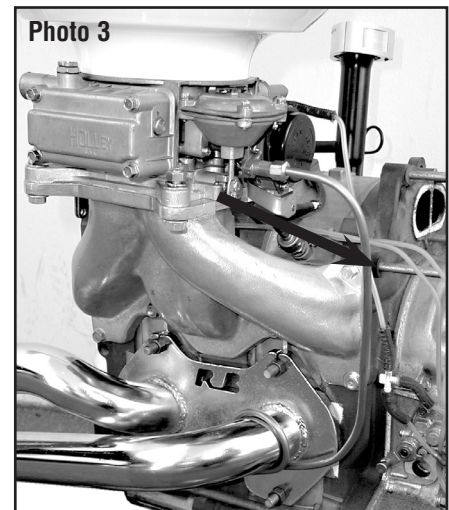
5. Remove all traces of the original intake gasket from the engine. Put a small amount of gasket sealer (preferably non-hardening Permatex) around the water ports in the new intake gasket. Install the water passage "O" rings supplied in the rotor housing recess. Install the intake manifold/carburetor assembly.

Note: The intake gasket does not match the center ports in the intake manifold. THIS IS INTENTIONAL! Do not grind the intake manifold to match the engine if stock porting is used, or you will not get the best results.

6. Insert the metering oil pump rod into the pump arm, then attach it to the carburetor arm just below the choke housing using the black linkage clip supplied. Slip (1) small flat washer onto the rod from the lower end, and hold it in position with the cotter pin. Do not spread the cotter pin yet. Check the distance from the top of the washer to the underside of the round portion of the pump arm. The initial setting distance should be, 1/4-inch  $\pm$  1/32-inch. Add or remove washers as necessary to obtain this clearance, then spread the cotter pin. This setting is approximate, so it is desirable to set the flow to the recommended rate as soon as possible (see specifications on back page).

7. Connect the metering oil pump tube to the flange fitting on the carburetor primary float bowl.
8. Insert the throttle cable housing into its bracket. Then insert the round portion of the cable end into the holes in the links attached to the carburetor throttle arm, so that the cable wire is situated between the links. Tighten the bolt that holds the links to the throttle lever so that the links are just able to rotate on the lever. Hook the end of the throttle return spring with the longer straight section between the two nuts on the upper portion of the primary throttle lever. Hook the other end in the small hole on the throttle cable housing bracket. Adjust the linkage so that full throttle occurs when throttle pedal touches the floor.
9. Remove the fuel high-temp bypass hose from the tube leading back to the tank. (The carburetor end of this hose was connected to the top of the fuel inlet fitting, and it is the middle of the (3) tubes on the firewall, that come from the rear of the car). Install a cap on this tube.
10. Connect the fuel pressure hose to the carburetor using the hose clamp (cut hose as necessary).
11. Form the long copper tube to fit neatly from the choke heat inlet (near the black housing on the carburetor) and lead the opposite end down to the area of the exhaust header. Wrap the tube around the #1 header pipe approximately 1.25 times. See Photo 3. (This procedure will allow the choke to function correctly.)
12. RX-7 1979-1980: Connect the short hose provided from the fuel tank evaporation control tube (the lowest of the 3 lines on the firewall) to the short tube on the intermediate housing just below the oil filler tube. (1981-1982 RX-7s require no change from stock.)
13. Use the rubber hose provided to connect the tube on the oil filler neck to the carburetor air cleaner. Slip the hose end into the grommet in the lower portion of the air cleaner through it about 1", then push the short copper tube provided into the end of the hose to retain it and pull it down lightly to seal it firmly.
14. Connect the power brake hose to the intake manifold fitting.
15. Connect the trailing vacuum advance diaphragm (marked "T") to the fitting on the primary metering body of the carburetor with the hose provided. Leading vacuum advance is not used.
16. 1980 RX-7 - Disconnect the 2-wire quick disconnect (green with orange stripe, and black with red stripe) coming from the ignition "ignitor" box (near coils). This will keep the trailing ignition "on" all the time and prevent the leading ignition from retarding.
17. Refill the cooling system with 1 gallon of anti-freeze and water.
18. Before starting the engine, check the float level. Be sure the car is on level ground. When fuel level is correct, fuel will just begin to drip from the inspection port. Also recheck throttle for smooth operation and full opening, and for fuel leaks.
19. After cold starting, idle should be approximately 1000 RPM. When warm, idle should be 800 RPM. The cold idle speed can be adjusted with the fast idle screw, accessible behind the choke housing. In addition, the black choke housing can be rotated to tailor the choke operation to local weather conditions.

Once the engine is warm, adjust the idle mixture by turning each screw until the engine just peaks in RPM, then backing off the screw about 3/8 turn. Reset the idle RPM and repeat this procedure if necessary.



**Note:**

Installation of this kit requires the use of a high performance pump delivering 4 - 6 PSI.

**RECOMMENDATIONS****Ignition Advance: 1977-83 Non-Ported**

(Check at idle)	Leading Dist.	Set 2° advanced from stock (2° BTC)
	Trailing Dist	Set 1° advanced from stock (19° ATC)
1976 12A	Leading Dist	2° BTC
	Trailing Dist	15° ATC

**1977-83 Street Ported:**

Leading Dist. 8° BTC  
Trailing Dist 12° ATC

**1984-85 12A Non-Ported**

Leading: Stock  
Trailing: Stock

**1984-85 12A Street Ported**

Leading: 3° BTC  
Trailing: 17 ATC

**Fuel Filter:** Fram G-12

**Spark Plugs:** NGK BR9EIX (or equivalent) @ .020" gap (racing)  
NGK BR8EIX (or equivalent) @ .020" gap (highway)  
NGK BR7EIX (or equivalent) @ .020" gap (city)

NOTE: In 1981-82 engines a special Racing Beat spark plug socket is necessary to install and remove these spark plugs.

**Metering Oil Pump Flow:** Idle position - stock  
Full throttle position\* 5cc/5 min. @ 2000 RPM

\*Hold Metering Oil Pump arm in the full throttle position with a piece of string or light wire while testing.

## Float Level Adjustment

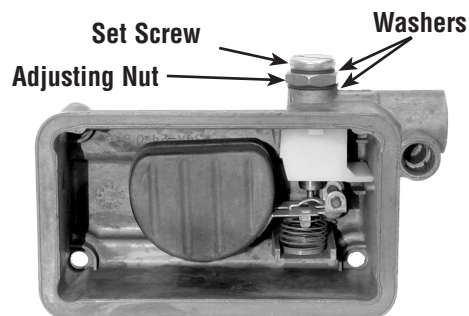
With the car on a level surface, use the following process to adjust the primary and secondary float bowl levels.

**Method 1 - Engine not running**

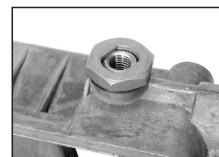
Turn the ignition key to the "on" position and allow the fuel pump to fill the float bowls. Turn "off" the ignition and check the float level. The correct level is achieved when fuel seeps from the sight plug (or MOP oil line fitting) on the bowl. Remove the oil line, or sight plug fitting to monitor the fuel seeping from these openings. If required, make adjustments to the needle valve, then repeat the above process. To raise the float level, turn the adjusting nut counter clockwise. To lower the float level, turn the adjusting nut clockwise.

**Method 2 - Engine running**

With the engine running, slightly loosen the set screw on top of the adjustment needle (The object is to keep just enough pressure on the washers to prevent fuel from flowing out the top of the needle assembly, but loose enough for the adjusting nut to be turned.) After turning the adjusting nut, tighten (or loosen) the set screw to keep pressure on the washers. The correct level is achieved when fuel seeps from the sight plug (or MOP oil line fitting) on the bowl. Remove the oil line, or sight plug fitting to monitor the fuel seeping from these openings. (Take necessary precautions to collect any fuel that may seep from the carburetor during this adjustment process.)



Rotating the collared adjusting nut raises, or lowers the needle assembly. When performing the "engine running" adjustment method, care must be taken to keep pressure on the washers to prevent fuel from leaking from the valve. (Adjusting nut shown without set screw for illustration purposes only.)



## Trouble Shooting

If you encounter a problem with the engine performance, your first step should be to review the instructions and verify that all procedures have been correctly completed. Should your problem persist, the following list may assist you in determining the source of the trouble.

**Problem****Possible Cause****Rough Idle**

- Incorrectly adjusted idle mixture
- Fuel pressure too high
- Fuel inlet needle valve held open by foreign material
- Idle fuel jets clogged
- Incorrect float level

**High Idle**

- Incorrectly adjusted idle speed
- Air leak through manifold gasket

**Hesitation or Stumble  
on Acceleration**

- Accelerator pump linkage incorrectly adjusted
- Accelerator pump passages clogged by foreign material
- Idle mixture too lean
- Low float level

**Poor High RPM Power**

- Low fuel pressure
  - A. Inadequate fuel pump
  - B. Dirty fuel filter
  - C. Fuel line damaged or crimped
  - D. Faulty wiring
- Incorrect float level