

INTAKE MANIFOLD CONSIDERATIONS

One of the beauties of a port fuel injected engine is that the intake manifold can be optimized for acoustic tuning without the problems of wet flow. Acoustic tuning will enhance the airflow into the engine at certain RPM's. The actual calculations required for manifold design are beyond the scope of this appendix, but the following are some examples of what can be done with intake manifold design.

Acoustically tuned intake pipes are nested inside a plenum box. The pipe length is based on the RPM the engine will run and the pipe diameter is typically based upon an air velocity number. It takes a lot of dyno time to effectively develop a tuned intake manifold system. Obviously this type of intake manifold design will not work with a carburetor.



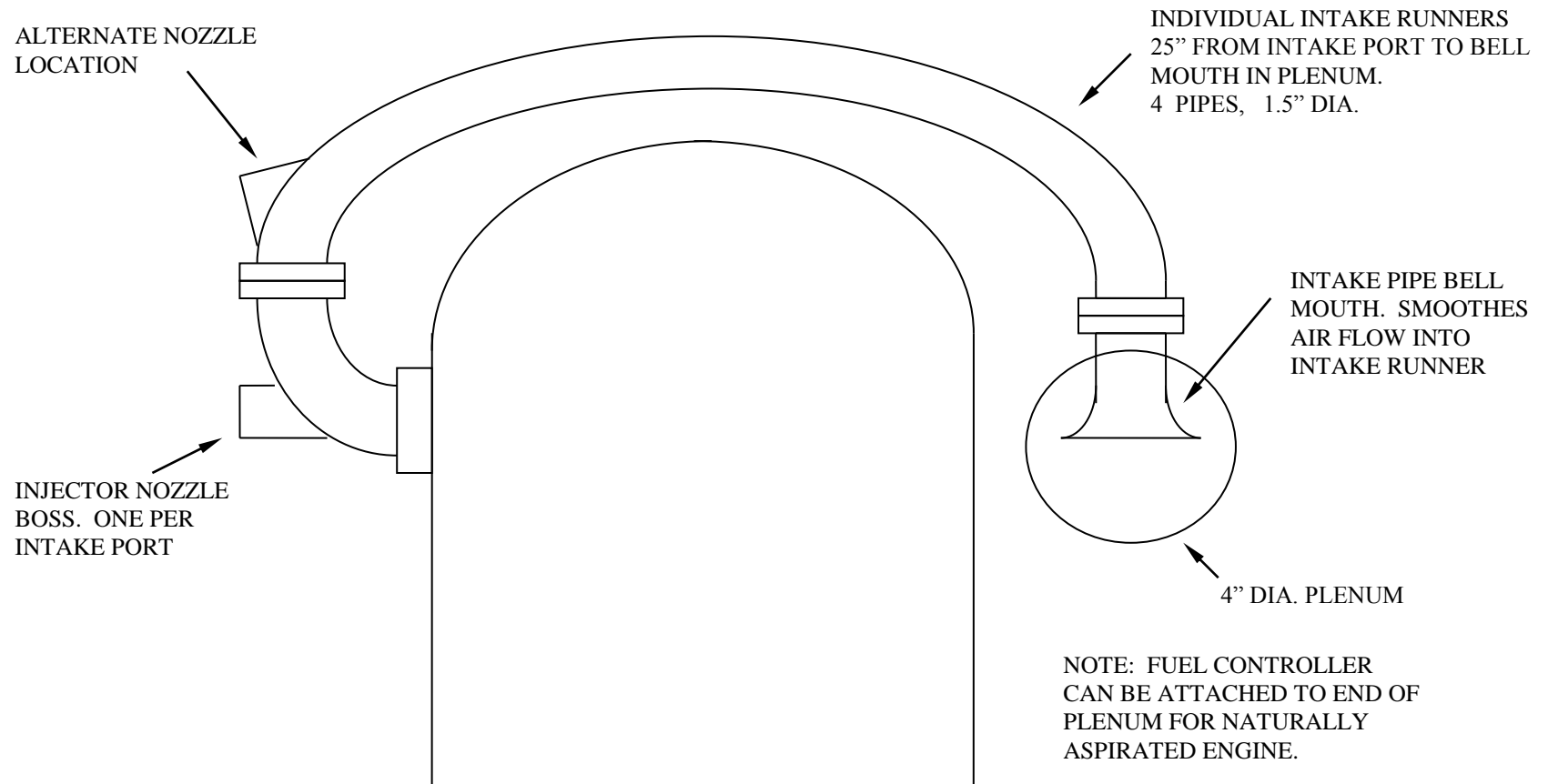
Injector nozzle ports.

Plenum box.

Incorporating port fuel injection to a carburetor manifold is a simple way to adapt this type of fuel metering to a number of engines. While this is not the optimum intake manifold design it does lend itself to installation versatility. A plenum box is used to collect the air after it passes through the fuel controller. This box slows the air down so that the pressure in the box is equal allowing the intake runners to pull equal air.

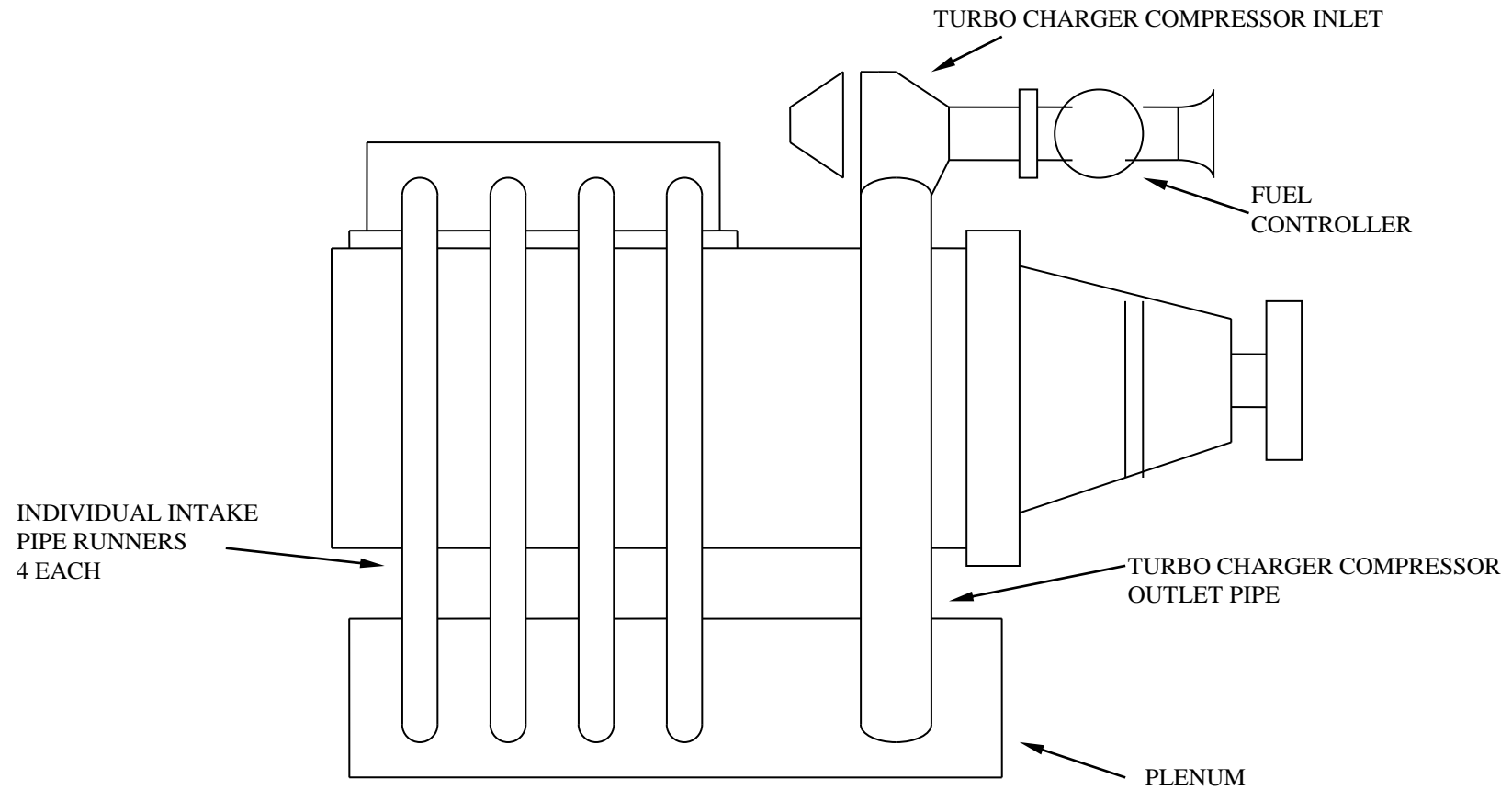


MAZDA INTAKE MANIFOLD DESIGN

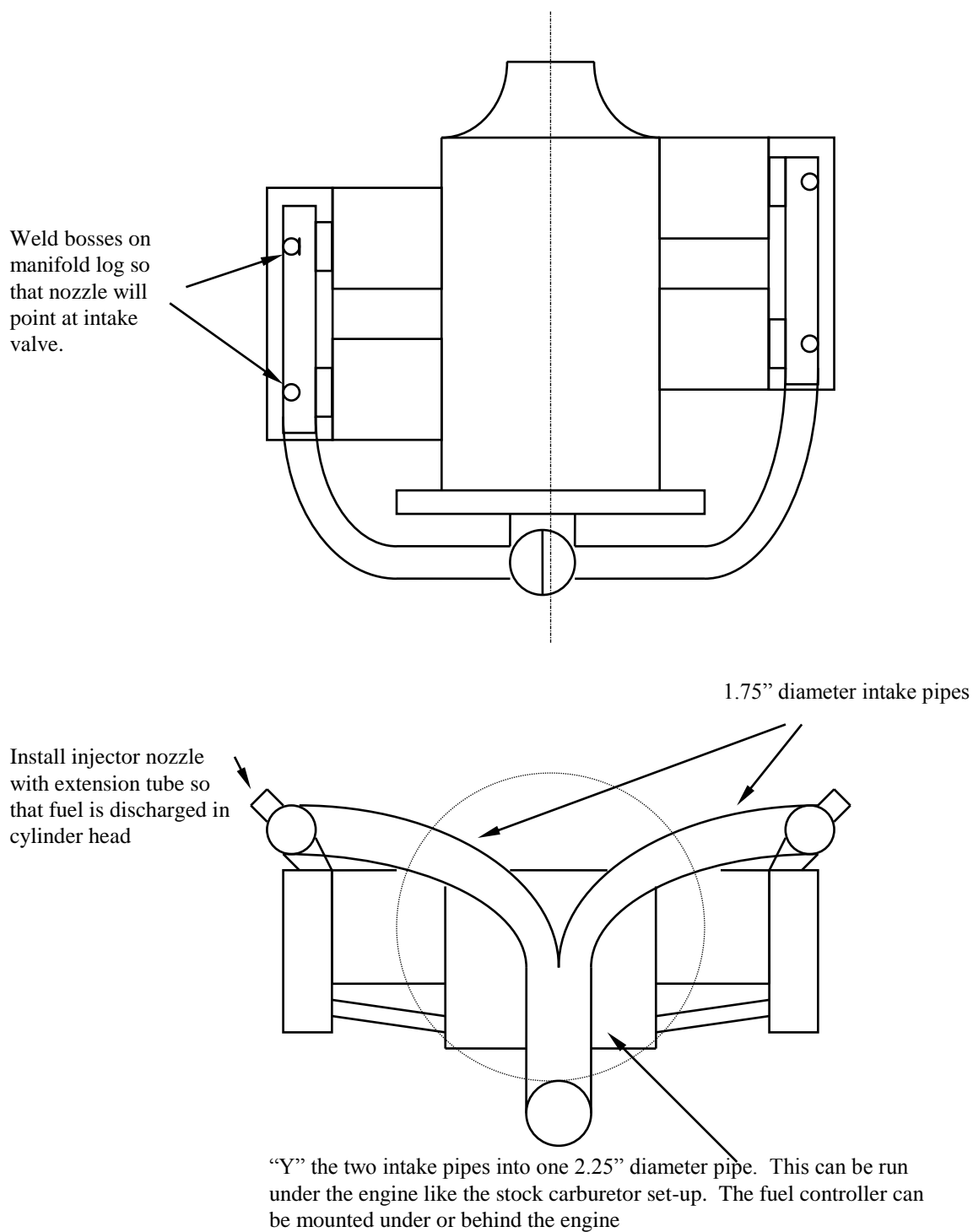


An alternative to fabricating an intake manifold is to use the Mazda intake manifold from a 1989-1991 Mazda RX-7. This will fit Mazda rotary engines from 1986 to 1991.

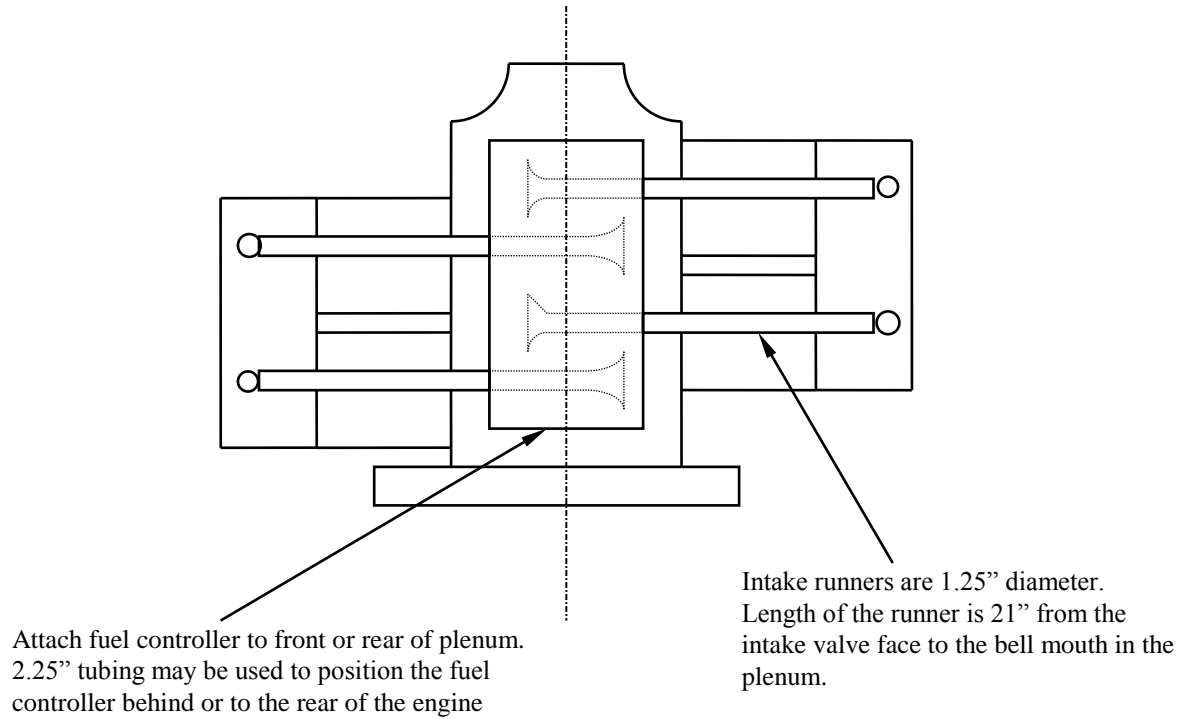
MAZDA INTAKE MANIFOLD DESIGN FOR TURBO CHARGED APPLICATION



MODIFIED STOCK VW INTAKE MANIFOLD



TUNED VW INTAKE MANIFOLD



Injector nozzle, 1 per cylinder.
Weld a box on the intake pipe so
that the nozzle will discharge fuel
at the back of the intake valve.

Plenum volume is 150 to 260 cubic
inches. Use rounded surfaces to keep the
plenum from flexing. 1/8" aluminum is
used to fabricate the box.

