

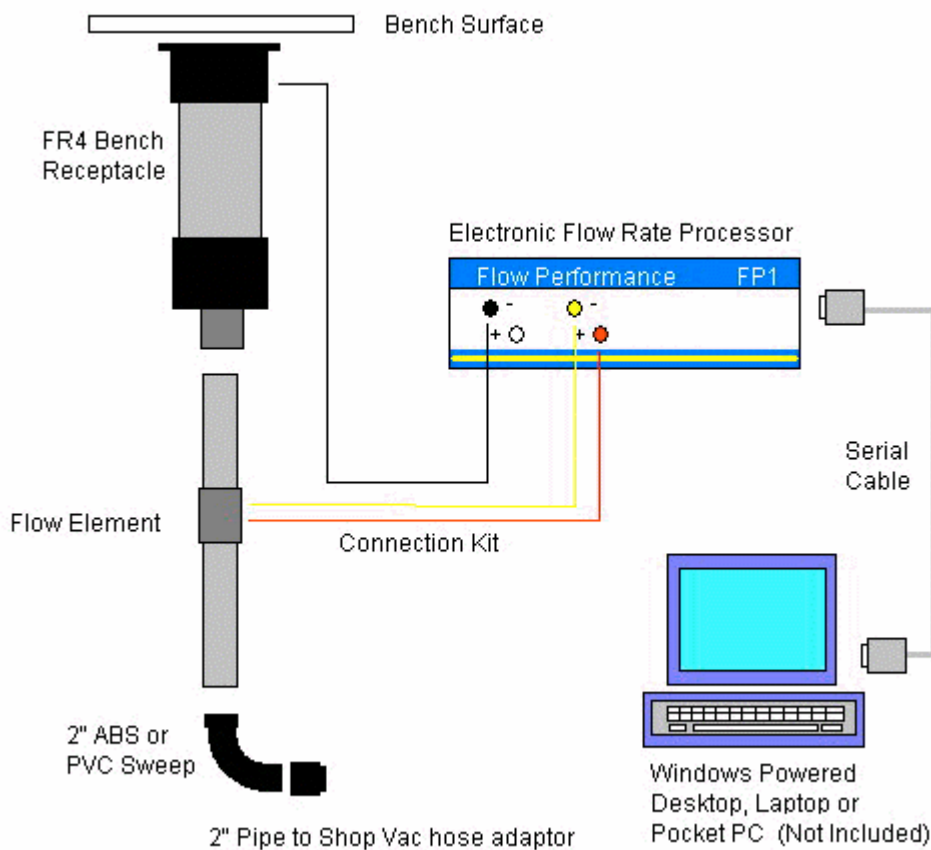
Flow Performance LLC

Bench Construction

The Flow Performance Basic System flow bench kit can be assembled on a wall or freestanding shelf system for the ultimate in small size, flexibility and ease of assembly. Shelf systems that employ the doublewide brackets and standards are highly recommended, since the less expensive single wide hardware does not offer the stability and will not safely hold the weight of most automotive cylinder heads.

Melamine is a very good choice for an inexpensive and easy to work with material for your bench surface. You can buy melamine shelving from most any hardware or home center. **Be sure to use only the 3/4" thick melamine**, since many shelves are made of a slightly thinner melamine.

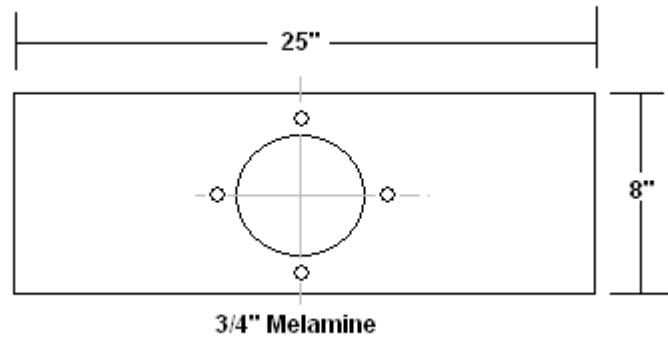
Plywood or low-density particleboard is not recommended for use as a bench surface because they can leak air, especially plywood.



Do not use glue or sealant on any of the joints or connections except where the FR4 receptacle meets the bottom of the bench surface. You want to use a silicon adhesive at that joint (do not use a gasket between FR4 receptacle and bottom of bench surface).

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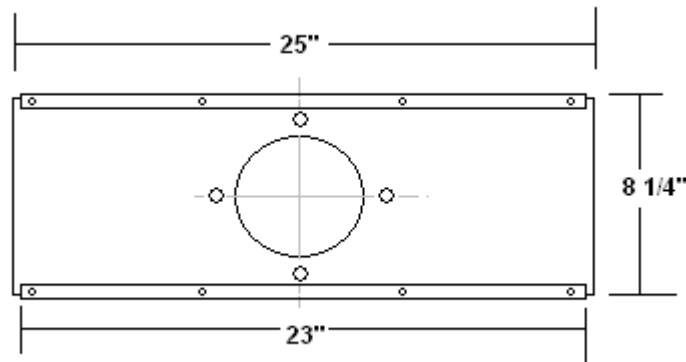


Bench Surface

3/4" melamine is an ideal material for a bench surface. You can buy 3/4" melamine shelves from most any hardware or home center (**Be sure the melamine is a full 3/4" thick.** Thinner shelving is quite common and will not work with Flow Performance cylinder bore adapters).

If you plan to use Elfa freestanding shelf system for your flow bench, your bench surface will need to be at least 25" wide.

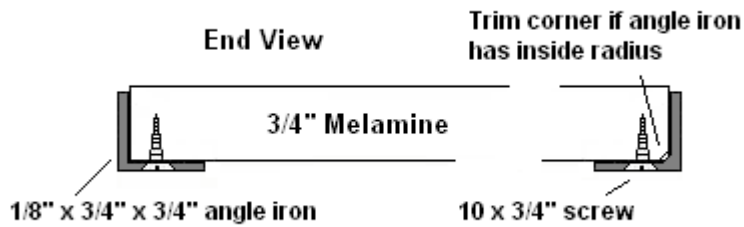
You will need to cut a 4.5" round hole in the center of your bench surface and drill 4 holes to mount your FR4 receptacle to the bottom of your bench surface.



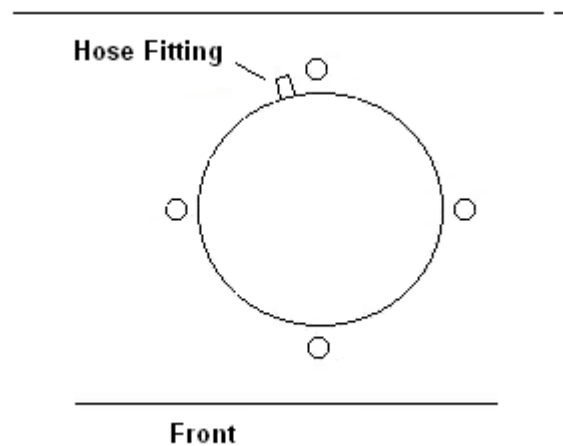
A safer bench surface, especially if you plan to flow test big block heads, incorporate angle iron braces along the sides and bottom of the bench surface as shown above. The angle iron should be cut to 23" if Elfa freestanding shelf system is to be used. The bench surface melamine should be 8.25" wide if using angle iron support to provide clearance for the FR4 mounting flange, or you will have to notch the angle iron to clear the mounting flanges of the FR4.

Flow Performance offers a prefabricated iron reinforced bench surface complete with gasket and double wall shelf brackets. Ask for FBS4.

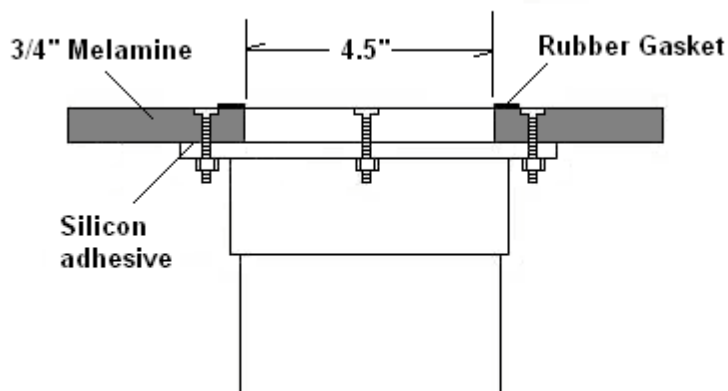
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Make sure to check your angle iron that it is straight before purchasing or installing.



Place the FR4 so that the hose fitting is to the rear and will not get in the way of clamps that will be used to mount your test pieces. Use the FR4 flange as a drilling guide for the flange bolt holes. Counter sink bolt holes on the bench top so that mounting screw heads are below surface!



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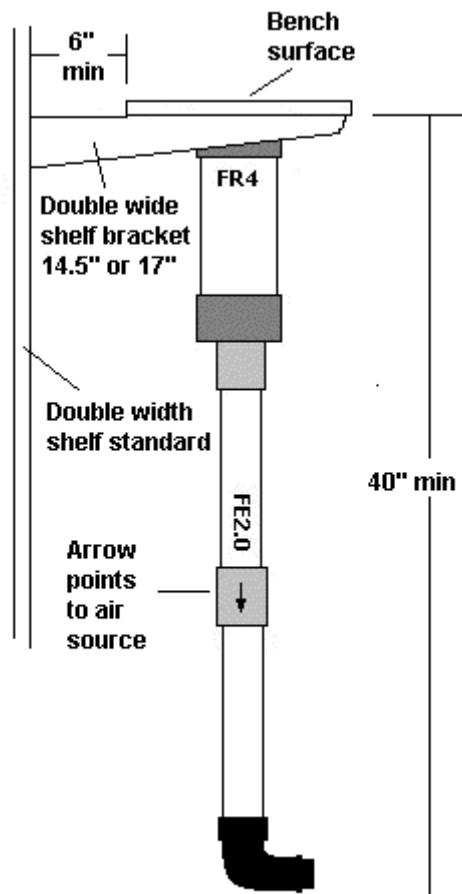
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Be sure to use silicon adhesive caulk between FR4 receptacle and bottom of bench surface when mounting the FR4. Use a FP cylinder bore adapter or a piece of 4" plastic pipe to line up the FR4 with the bench opening when installing screws. **Do not over-tighten the screws, just snug!**

Installing Gasket Material

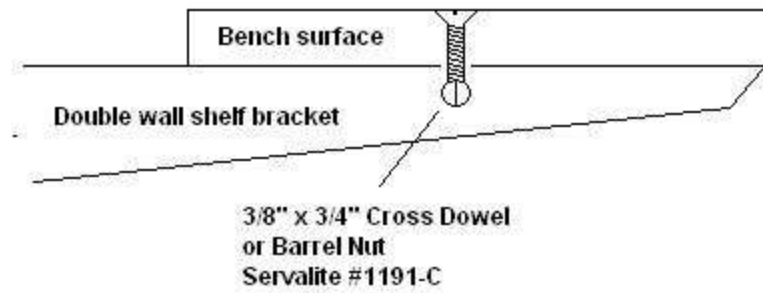
Use contact cement to glue your bench top gasket to the bench top surface. Rough up the bottom side of the rubber gasket material with a coarse grit sandpaper and apply an even coat of contact cement to both surfaces. Then let dry for at least 30 minutes before applying gasket to bench surface. Be careful, once the gasket material touches the bench surface, it is stuck, you will not be able to reposition it.

Clamp a flat board against the gasket material for about 30 minutes for a nice smooth lump free gasket. Now trim out the inside portion of the gasket using a very sharp carpet knife or hobby knife.

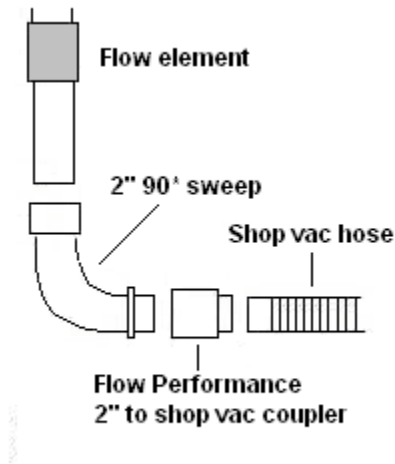


You will need at least 40" of vertical space for the Basic System, and at least 6" clearance between the back side of the bench surface and the nearest wall or shelf standard for applying clamps to locate your test piece. Do not glue or use sealer on any of the pipe joints.

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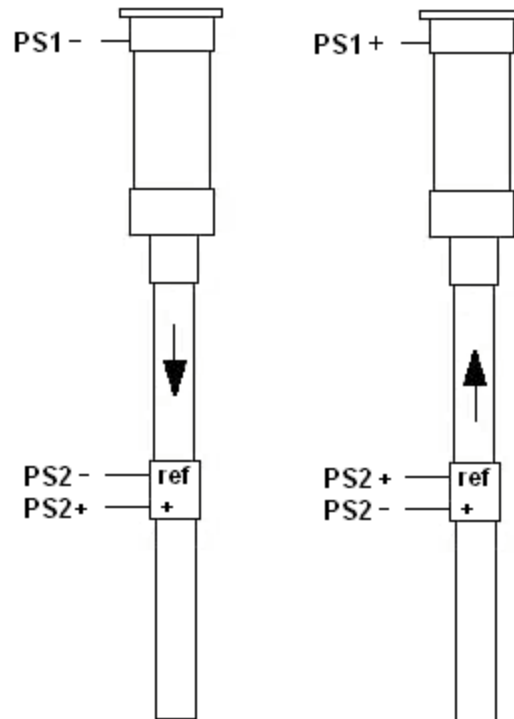


Your bench surface can be securely attached to your double wall shelf brackets using a barrel nut and a machine screw. A 3/8" diameter by 3/4" long barrel nut or cross dowel can be inserted into a 3/8" diameter hole that you can drill through your double wall shelf bracket. Then a machine screw can be dropped between the double walls of the bracket and threaded into the barrel nut.

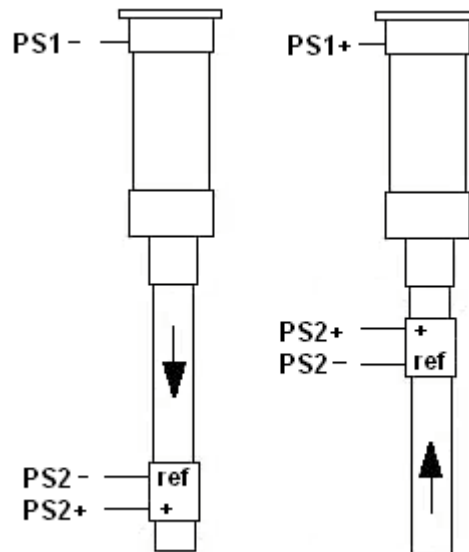


Do not use any glue or sealant in you pipe joints.

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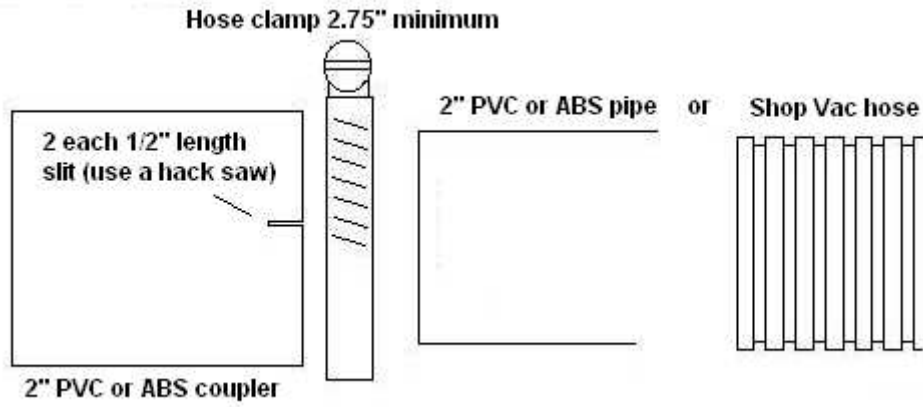
Forward flow (vacuum, intakes) Reverse flow (positive pressure, exhaust)
Connections to FP1 processor



Some older FE2.0 flow elements cannot flow in reverse and need to be flipped for reverse flow (these elements have 6 Pitots that are equal length).

FE2.5 flow elements can be located under the FR4 in this way too.

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Plastic pipe and shop vac hose can be securely attached to plastic 2" couplings by cutting some slits into the coupling and securing with a hose clamp.