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How do I fit a round tube into a square hole?

To form the tube to fit in the flange, we lay the end of the pipe on a vise, hammer and rotate in 90° increments until it fits into the flange. We then tack weld the pipe to the flange. After all 4 pipes are tack welded to the flange, we put the header in a vise on #1 pipe with the gasket site of the flanges facing up.

We use a large rosebud tip to heat the part of the tubing that is sticking through the flange, or any other part of the tubing we want to form, to a dull red color. We then use a long punch, about 10" long, and lightly hammer on the side of the punch to form the tube. Great care must be taken to not overheat the tubing. It may takes as many as 15 or 20 cycles of heating and forming to finish one cylinder.

When the pipe is formed on one side of the flange, we tack weld the pipe to the flange to hold it in place with either MIG or TIG. Then reposition the header to hold it by another cylinder pipe, for example #3 cylinder. When finished forming all the pipes, we braze the pipe to the flange on the outside.

Notes: *On all production headers built in house, all tube to tube joints are gas acetylene welded. The advantage is the annealing process that gas acetylene produces as opposed to TIG welding which causes very high stresses and results in premature tubing failure unless properly annealed.*

We gas acetylene braze the tubes to the flange on the outside, and some headers such as road race or oval track are MIG welded on the inside. Again the gas acetylene has an annealing quality and the brazed area produces a large fillet, which really spreads out the loads involved. We have seen oval track headers last for 10 years and drag race headers last for 25 years using these procedures.

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