

# Making petrol tanks

**Metalworker Pete Kyte works fast but it still takes two days to build a motorcycle tank. Bill Westwood tells us how it's done. Pictures: Doug Millhouse**



1: Working like a dressmaker...

**C**USTOM Tanks and Designs of Pershore specialise in hand built motorcycle parts and custom paintwork. Sole proprietor is the creative Peter Kyte who doubles as the skilled and energetic workforce of his successful one-man business.

Peter makes fuel and oil tanks for all types of bikes, including Choppers and Lowriders; seat pans for road racers, dragsters, trials and moto cross machinery; vintage silencer boxes and battery compartments and Cafe Racer fairings. He will even make a frame.

And his services are much in demand. He is a welder and a metalworker who has applied his trade to something he enjoys and elevated his craftsmanship to an art form.

"Bikes became a way of life," he says. "I enjoy a challenge every day and I like to make 'one-offs' but the upsurge in the vintage/classic scene has changed the market drastically." He has customers in Germany, the Isle of Man, Sweden, Australia, New Zealand, Italy, Japan, America and Lichtenstein. "People ask me if I'll make Gold Star petrol tanks for them in steel! That would take two weeks and cost £1,000 and I don't have time for that."

Pete and his companion, a 17-year-old mongrel bitch which he lovingly calls 'Fatso' (he buys her ice cream every afternoon) occupy a thousand square foot workshop. The traditional machinery – a 'wheel' for forming double curvatures, a swager, and a 'spinning jenny' – and the handtools of the panel beater's trade are everywhere. "The sort of things that tanks were made with in the vintage and the classic era and which were thrown out some twenty years ago."

The walls are lined with benches, one supporting a huge guillotine. Racks of metal and tanks await his attention and when we were there a 'Team Obsolete' racing G50 tank stood on the floor for the capacity to be increased.

Bikes and bits are everywhere. "A lot of stuff gets left behind," Pete says, "and litters up the place. When I moved in here I wondered what I'd do with all the space but now I know." One end of the works is taken up with a spacious paint spraying booth for his custom painting trade.

Here Pete makes a Thruxton tank for a Velocette which took two days. He works hard and fast, full of confidence.



2: Even the large guillotine will cut around the outside curves.



3: Inside curves are cut out with a smaller guillotine.



4: Pete shapes the tank top with the 'wheel'...



5: ... and checks the profile with a gauge against a Thruxton tank.



6: 'Dollies', a planishing hammer, and a 'spoon'.

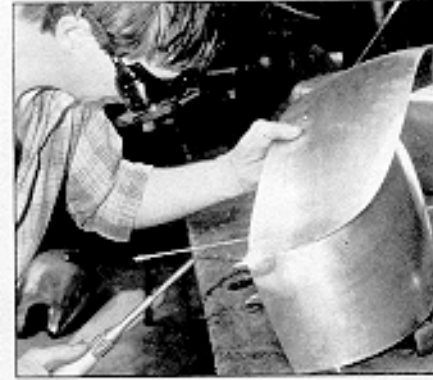


7: A double curvature is formed along the edges of the tank top.

**W**ORKING like a dressmaker with a sheet of 16 gauge NS3 H4 aluminium Pete marks out the pieces that go to make a Thruxton tank. He uses cardboard templates and a pen or scriber. Where he means to fold the metal he will use the pen as it would crack along a scribed line. He marks out very carefully to minimise the waste as aluminium is expensive. "It goes up and down," he says. "Three years ago it was 98p per kilo but now it's £2.48 plus VAT and carriage. It comes in sheets 4ft x 2, 6ft x 3, 8ft x 4 and bigger. I use the 6 x 3 as I can get my arm across them."

- The 'patterns' must be cut out with a guillotine which won't deform the metal in the way that tinsnips would. Even the large guillotine will cut around the outside curves, while the inside curves are cut out on a smaller guillotine mounted in a vice.

- He shapes the tank top with a 'wheel'. The wheels themselves can be adjusted to vary pressure on the metal that is passed between them. The more pressure he applies the thinner it becomes. He works the tank to and fro between the wheels to stretch it to a double curvature. Using an old Thruxton tank from which he made



8: You really need three hands for this!



9: The tank must then be washed.



15: Throwing up a ridge on the bottom of the tank.

the templates, he checks the profile with a gauge. This is made of short stiff wires sliding through a wooden clamp.

- With a mallet, and a 'dolly' in a vice, he also puts a double curvature along the edges of the tank top. "Two flat pieces welded edge to edge get locked into a shape which it is difficult to alter." A 'dolly' by the way, is a piece of high quality wrought steel with a flat surface or a single or double curvature.

- Pete then puts a curve into the tank sides with the wheel and welds the sides and top together. "You really need three hands for this," he says, "so I hold the top and one side in one hand and with the welding torch I fuse the two together at the bottom nearside corner. I then 'tack' weld with a welding rod and flux. Tacking needs a higher temperature as the metal warms up when you're welding it." Having tacked the sides in place he welds them on. The degree of heat is critical, and if the phone rings while he's welding Pete just curses quietly and ignores it.



10: The tank is cut away where it will fit around the steering head.



16: Starting with the fusing method.

- The tank must then be washed as the salts contained in flux are exceedingly corrosive. "They even eat away the nozzle of the welding torch and would certainly burn through the tank in time. Once the metal has been washed you have to dry it off, especially if the tank is to be polished, as water will stain aluminium."

- Pete now cuts away the cut-out where the tank will fit around the steering head. He doesn't do this when the top is cut out as the heat would melt the corners when the sides are welded on. "You cannot weld small bits of aluminium to large bits as the small bits tend to melt. You weld a large bit to a large bit and then cut off the excess." The rear end of the tank is also cut away to clear the top tube of the frame.

- The next job is to merge the welds into the metal, a process known as planishing, or 'cleaning off the lumps'. Using a planishing hammer Pete beats the weld against a dolly held inside the tank by hand. This is very clever stuff and more beating with a spoon shaped hammer spreads the double curvature. "You can't teach anybody how to do this. It comes to you eventually after years of practice. You have to hit the metal hard enough to stretch it to the shape you want but not too hard to stretch it too much. You can hear it going into shape by the sound the hammer makes as the double curvature begins to fit the dolly. This is hard and noisy work and I turn up the radio to drown the row I'm making. I lightly file the weld to find the high and low spots but you must never clean a weld right off as you are weakening the joint. I keep checking on the profile but I'm not too particular at this stage."



11: The rear end of the tank is also cut away to clear the frame.



17: The heat distorts the side. Pete corrects it with a hammer.

- The bottom of the tank is a complicated shape constructed from five pieces. It has to clear the top tube of the frame



20: Folding up the 'tunnel'.



12: Planishing the weld.



13: The 'spoon' that spreads the double curvature.



14: "Cleaning off the lumps".



18: Sanding off irregularities. "I used to do it all by hand."

and the rocker box. Pete takes the near-side bottom of the tank, and with the swager he throws up a one inch ridge along the curving outside edge so that it keeps the shape when he welds it to the tank side, starting with the fusing method, then holding it with tacks an inch apart. This is a gradual process as heat relieves the stress and the side keeps changing shape. He corrects it with a hammer and while he taps it back to line up with the bottom the welding torch is held between



21: The 'tunnel' is left long so that it can be cut to fit exactly.



19: Checking on the profile.

two nails knocked into the bench. When the bottom is held on he welds it into place then washes off the flux and dries the metal.

• He now goes back to planishing the tank top welds, holding the hammer at the far end of the shaft and checking on the profile as he works. He also uses an electric sander to clean off irregularities and gets through two of them each year as dust gets in the bearings. "If the tank is to be painted then the small irregularities don't matter but if it's going to be polished it's another three or four hours' work. I used to do it all by hand!"



22: Note the space to take the cut-out for the rocker box.

• When the joints between the top and sides are virtually invisible he folds up the 'tunnel' that allows the tank to clear the frame. "The smaller folder isn't very accurate. The temperature affects the sort of bend you get and its shape is also influenced by the speed at which you fold the metal." He checks the fit inside the tank. The tunnel is left long so that it can be scribed and cut to fit exactly.

• With the tunnel offered up there is still a gap between the outside of it and the bottom of the tank that is already welded into place. This space is to be filled by a piece of aluminium shaped to clear the nearside of the rocker box. There will also be a slightly different 'cut-out' on the other side.

• Pete now welds the tunnel into place on the nearside of the tank. "You have to leave a gap between the pieces you are welding. The longer the weld, the larger the gap that must be left at the far end. If you put the pieces edge to edge they would pucker at the weld. When welding aluminium the degree of heat is critical to within 50°. I judge it by the noise the nozzle of the torch is making."

• He then bends up the cut-out for the rocker box, offers it up to check the fit, then snips off the spare metal. All the templates for the tank are slightly over-



23: Pete welds the tunnel into place.



Bending a cut-out ...



Marking the position of the filler



He cuts the hole with tinsnips and the job's finished apart from the petrol tap and front mounting lugs. Tomorrow's job!



25: ... and snipping off spare metal.



27: The area that must be cut away to clear the GP carburettor.

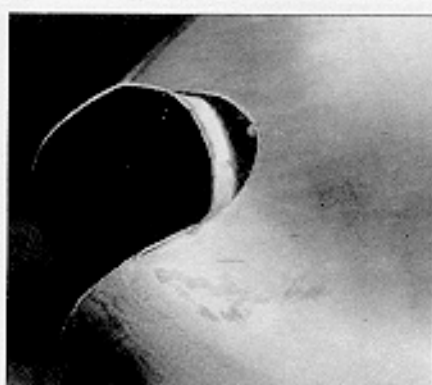
size. In a batch of half a dozen each tank will be different as everything is done by hand. Pete treats each tank as a one-off.

- He puts a rib into the cut-out for cosmetic reasons, welds it up, and tacks it into place. He then welds it to the tunnel and the nearside bottom half. He has to use a screwdriver to pull the tunnel into place as the heat distorts the bottom edge.

- The offside bottom of the tank is tacked then welded in; the tunnel tacked and welded to it, and the tank side, back and front. The cut-out for the offside of the rocker box is fabricated and tacked and welded into place.



26: He has to use a screwdriver to pull the 'tunnel' into place.



28: There is still a gap between the 'tunnel' and the tank top.

- With the bottom of the tank complete, other than the hole to take the petrol tap, Pete now marks the area that must be cut away from the offside back end bottom of the tank where it has to clear the Thruxton's Amal Grand Prix carburettor.

- There is still a gap between the tunnel and the tank top at the cut-out for the steering head. Pete heats the tunnel with the torch, taps the metal inwards to fit around the cut-out, and welds it into place.

- Very carefully he then marks out the centre of the offset filler cap and with a half inch metal cutter, not a drill, he makes an accurate round hole. A drill would tear the metal. Using the inside of the filler cap he marks the full size of the filler hold, cuts inside the line with tinsnips, then raises the remaining metal to a lip. Incredibly, the filler cap just snaps on to the lip. It will be brazed onto the tank as welding it would melt the lugs that hold the springs.

All the tank needs now are its front mounting lugs and a hole cut for the petrol tap.

● Pete Kyte can be contacted at Custom Tank & Design, Unit 23, Pershore Trading Estate, Pershore, Worcestershire, WR10 1DD. Telephone: 0386 554136.