Perkins Prima Engine Mounts

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Abstract

A set of custom engine mounts is required to bolt the engine into the land Rover chassis. The engine mounts are quite simple flat steel fabrications and there is no need to alter or reposition the stock chassis mounts. The engine mounts fit to the Prima block on the threaded pads designed for engine mounts. The alternator has to be relocated and one of the engine mounts will incorporate part of the alternator mount, the other mount is a seperate fabrication which bolt's to the block. The engine mounts are fabricated from 5mm, or thicker, bright mild steel.

1 Introduction.

The engine mounts need to be fairly stiff, the rubber isolastic mounts are there to absorb vibrations. The diesel and petrol rubber mounts are different, different stiffnesses and different shapes, the petrol ones are about 60mm diameter[bit of guesswork here] and the diesel ones are square approx 60mm square.

The left hand mount is clear of any obstruction, but the right hand one has to clear the relief valve in the oil pump and the turbo oil feed. the relief valve plug could be ground so it would clear the mount and then a grove ground into the mounts to clear the oil feed pipe. Or space the mount away from the block by 5mm. you will still need to check the feed pipe clears and possible grind some relief for it.

There is no need for a jig, these pieces can be tacked together and welded quite easily, though i do tend to clamp stuff to be welded even if it's only roughly as you can move it around and make sure it's all inthe right place, rather than hold and tack and then have to do it again becuase you didn't get it quite right.

You should be able to weld this all quite well with a 150 A mig or a similar stick welder, I use about 120A with my tig on this stuff.

I take it you can weld..

2 The Right Hand Mount.

The right hand mounting rubber sits on the fabricated wedge that the sat under the original mount.

The mount needs to clear the block by approxamately 5mm, this is to clear the oil pressure relief valve and the turbo oil feed fitting; it might be necessary to grind a V out of the top edge to clear the union on the feed pipe. Clearing the relief valve can be accomplished either by spacing the mount away from the block by 5mm or by fabricating the mount with an angle[when viewed from above see pictures of my mounts on my website]. The spacers I use are two 80 mm lengths of 5mm x 25 mm steel, drilled to fit the mounting holes and tacked on to the mount. I forgot to include them in the drawings.

The alternator lower mount is on the front face of the mount, I use a short length[~18mm] of 1" inch dimeter steel threaded 10mm and welder to the front brace on the mount see Figure1. If you can't weld a bit of bar on weld a strip with a hole for the bolt to go through, it would be a good idea to incorporate some sort of captivating arrangement as it not the easiest place to get a nut.

The top plate doesn't have to have a bend in it, fabricate it from two pieces of 5mm plate and weld them together. You need the bend, if the top piece was straight it would intersect the block plate at the level of the mounting bolts.

3 Left hand mount.

The left hand mount doesn't have anything in the way and can be made pretty much as you like. I just try and keep it looking pretty similar to the right hand mount.

default

4 Alternator Mount.

The alternator mount needs to be made roughly as in the drawing. The belt cover has to be cleared by the piece of flatstock that joins the tube to the plate. The alternator needs to clear the engine mount, this is close and depending how high you place the 'tube' you will have to bevel the top edge of the engine mount; you might have to take a bit of the rib off the underneath edge of alternator and trim the outer side of the alternator lower mounting boss. The higher the alternator top bolt the better. I placed it about 10 mm higher and was told it was to difficult to get the top right bolt in, this is easy to solve use a snap-on flexocet socket to do it up;-) There are other ways around access, make the mount with access to the top rh bolt, make the mount so the alternator is even higher, don't include the 'wedge' under the rh engine mount or rotate one half of the alternator case and put the long bolt mount on the engine mount.

I haven't shown the triangle welded between the two flat pieces, after cutting the bits out you will probably find a nice triangular piece of 5mm that fit's perfectly, amongst the scrap on the floor.

5 Cutting

If you cut the block plates and bolt them to the fitted engine,

I would cut the block plate and the two top plates, do both mounts. Fit the engine and set it at the right height. Before you take the original engine out check the postion of the crankshaft, look through the front crossmember and measure the height of the crankshaft and the distance from the NS chassis rail. Bolt the rubber mounts to the chassis. Bolt the block plates top the block. Then see how the top plates for the mounts fit. you can lift or lower the engine slightly if you want. I would raise it slightly if anything. Trim the length of the and bevel the edges as necessary, so you can fit the plates against each other.

When your happy you need to tack weld the plates. I fitted them then managed to clamp them squarely at approx the right angle, when tacked I set the angle slightly greater than the angle needed to allow for contraction. You can hold the plate firmly against the block and see how it fits against the rubber mount. I set the angle greater and welder the inside and it pulled it shut I then welder the outside and if you guessed the angle right it will be right, if not stick it in a vice when it's welded and bend it to fit. do the same for the left hand side.

when you hav ethe two plates welded at teh right angle it's just a matter of bracing them. You need to be able to get at the bolts holding the mounts to the block. so make the front brace qas deep as you want and make the rear brace a narrow triangle, leaving access to swing a ratchet.

Appendix

Drawings

1. See file mount_part1.pdf
   This is the piece of the engine mount that bolts to the block.
2. See file rhmount_part2.pdf
   The top part of the right hand mount.
3. See file lhmount_part2.pdf
   Top of the left hand mount
4. See file rhmount02.pdf
   This is the assembled right hand mount.
5. See file lhmount02.pdf
   Assembled left hand mount.
6. See file sides02.pdf
   These are the three side braces, for the engine mount.
7. See file alternator_detail.pdf
   Where the mounts for the alternator are in relation to the block holes. When viewed from the rh side.
8. See file alternator_parts.pdf
   The gusset between the two plates isn't shown.

this shows the front 'brace' onthe rh mount and the 'spacers' needed behind the mount onthe rh side of the engine to clear the oil pump relief valve.

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Figure 1: Right hand engine mount.

See rhmount_ass.pdf and lhmount_ass.pdf for how they should look when assembled.

I sketched allthese sizes when i made the first set of mounts, the pieces might well need triming to fit, i cut all the pieces with simple straight lines and trimmed them to suit..

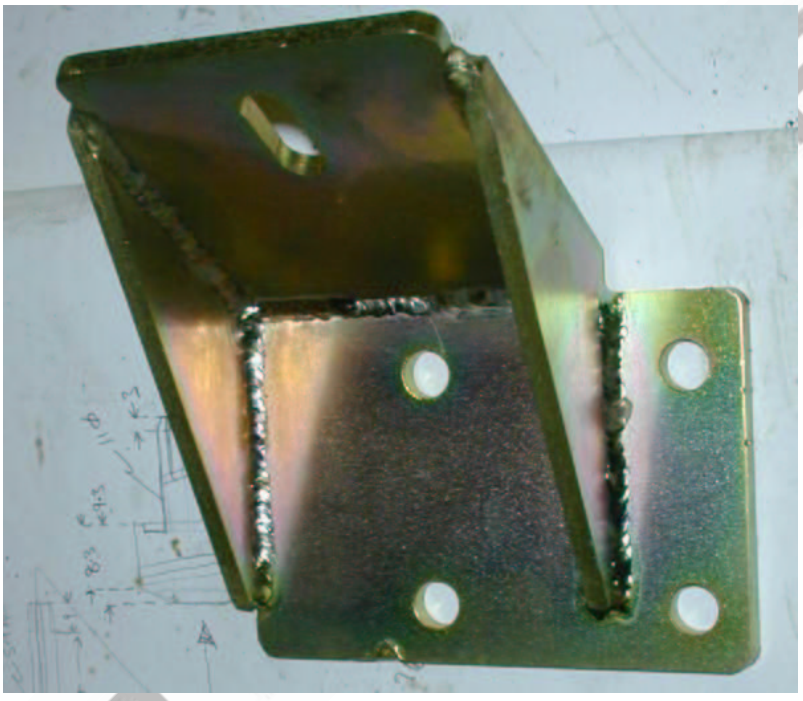

Figure 2: Left hand engine mount, included angle between mount and block 122 degrees.

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