

Congratulations on the purchase of your RB30 Platinum Racing Engine Cradle (PREC)! This PREC will assist in preventing block twist, block cracking as well as prolong engine bearing life and allow 4WD Sump compatibility.

A large, custom-machined aluminum plate with a complex, multi-hole design, surrounded by various hardware components including bolts, nuts, washers, and a PRP logo.

Although not a requirement for a PREC installation, if your engine block is to be tunnel bored, or mains closed and honed etc. Please arrange that your machine shop does this prior to commencing the below steps.

Step 1:

Bolt down main cradle without crankshaft and tension main bolts to specification.

Important Notes:

You should use the actual bolts that will be used in your build. They must be torqued to their correct specifications.

Please ensure your OEM Main cap girdle is centered, this is usually done with a rubber mallet on the 4 pointy corners of the girdles reinforcement.

If installing aftermarket main studs, there may be 3 studs that require shortening as they will protrude into the machined surface. We recommend machine down the seats of these nut seats to ensure all the studs are equal 4.4 inch lengths.

Step 2:

Prepare RB/RD engine block on mill and set level along sump pan reference to ensure main bearing cradle is machined parallel to sump mounting surface.

Mill material off the installed cradle to precisely 23mm above block deck height (i.e. sump pan face)(Please measure this with your own equipment to ensure uniformed result) allow 1 thou clearance on block pan surface to allow for sealant if possible. This will provide a machined face on each of the seven main bearing caps.

Important Note:

Please ensure you check your installation height and zero your own measuring equipment before machining.

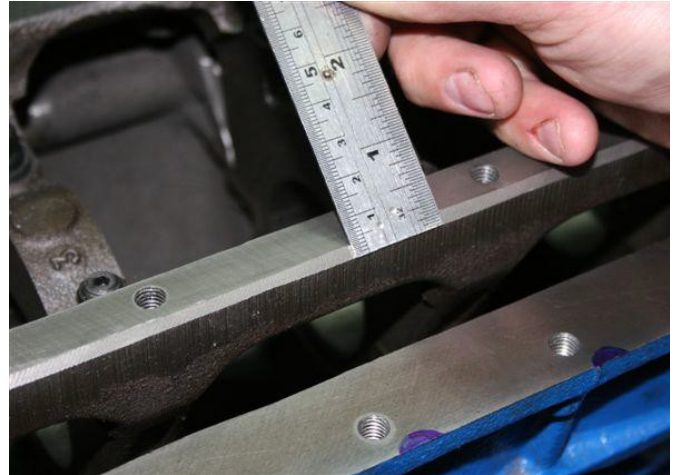


Step 3:

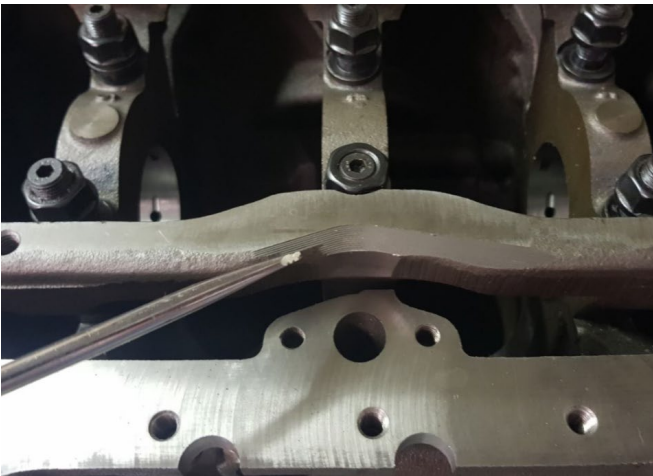
Clearance of OEM cradle for Platinum brace integration:



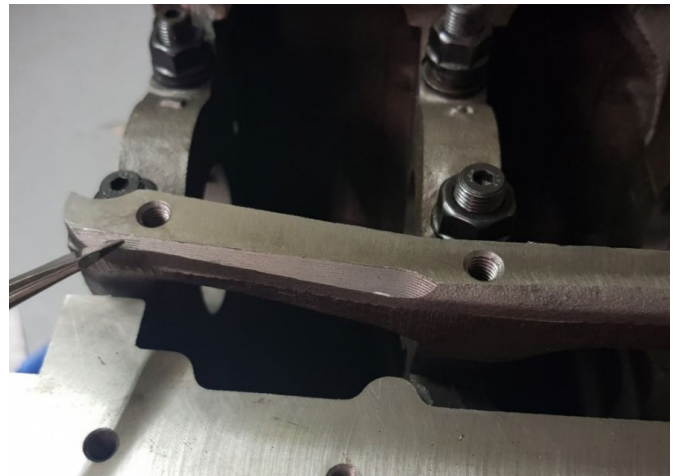
Remove sharp edge of cradle at a 45° angle with a grinder. This will ensure the edge does not come in contact with the inner radius of your PREC.



Grind edge until bevel is approximately 3-4mm wide.



Relieve the OEM cradle near the OEM oil pick up oil gallery to ensure your new wet sump a nice oring seat to seal.



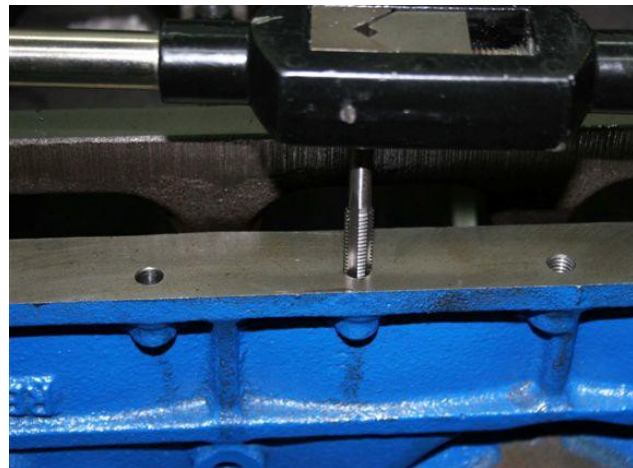
Relief clearance towards the back of the OEM cradle near the 7th main cap is also required as shown.

Step 4:

Thread enlarging and tapping:



Drill out all original M6 sump bolts with a 6.85mm (17/64) drill or 7.0 mm as shown.



Using an M8 x 1.25 intermediate tap, create new threads as shown.



Use at least 4- 6 evenly spaced bolts around the perimeter of the pan rail as shown above to trial fit your brace. Ensure there is no more than 2 thou gap between the PREC and the OEM main cap girdle.



Mark the additional 13 bolt holes through the brace onto the cradle with a centre punch as shown.

Step 5:

Drilling and tapping into marked cradle:

Remove alloy cradle and drill 6.85 mm (7mm) holes through center punch markings with a drill press. Holes to be drilled approximately 10mm deep.



Alternative to the use of a drill press, image above demonstrates the use a drilling guide to assist.



Using an M8 x 1.25 intermediate tap, create new threads into main cap cradle.

Important Note:

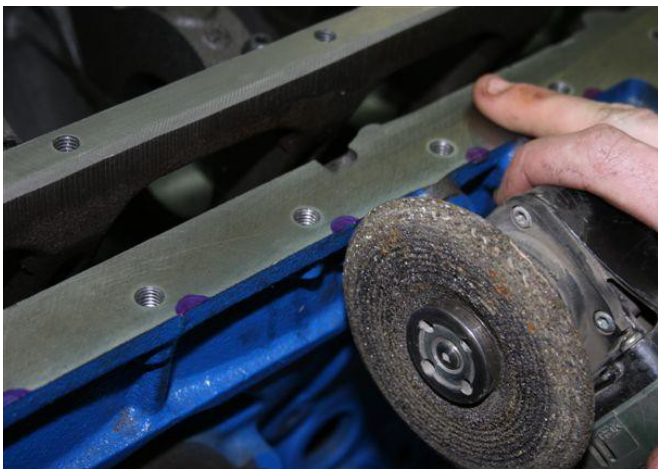
If you are retaining 2WD and not converting the block to 4WD, the following steps are not necessary, please skip to **Step 10 - Assembly**.

Step 6:

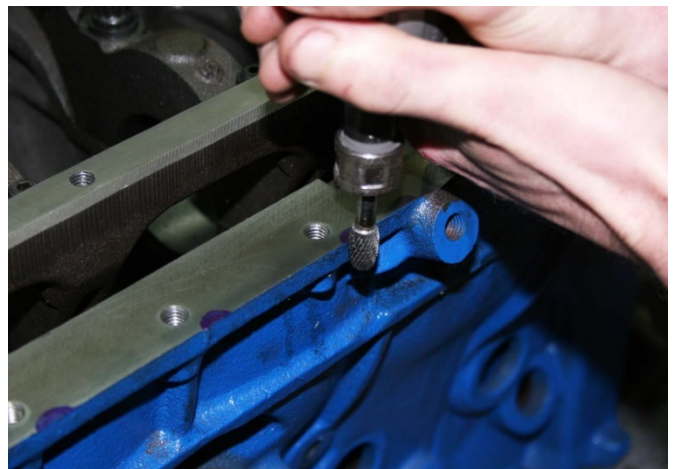
4WD Sump Preparation Part 1: Inlet Side

If your engine block is to be converted to 4WD, you will need to relieve the block to allow 5 Bolts to come through block into diff casing from the opposite direction, mark or scribe the path of bolts to come through block whilst cradle is still bolted to block as shown below.

Marker pen markings shown below to be removed should be approximately half the bolt hole each and total 5 bolts over differential housing side.



Using a grinder, remove sump skirt material to allow clearance for the new bolt path through block skirt.



Tidy up with a die grinder if required.

Step 7:

4WD Sump Preparation Part 2: Inlet Side

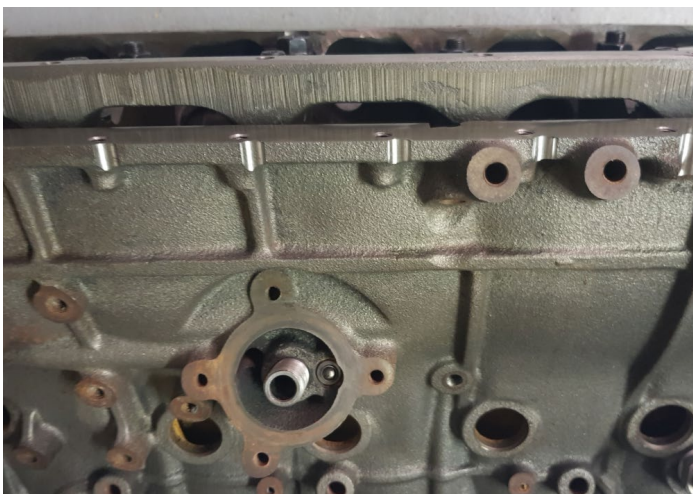
Webbing removal for tube mounting.



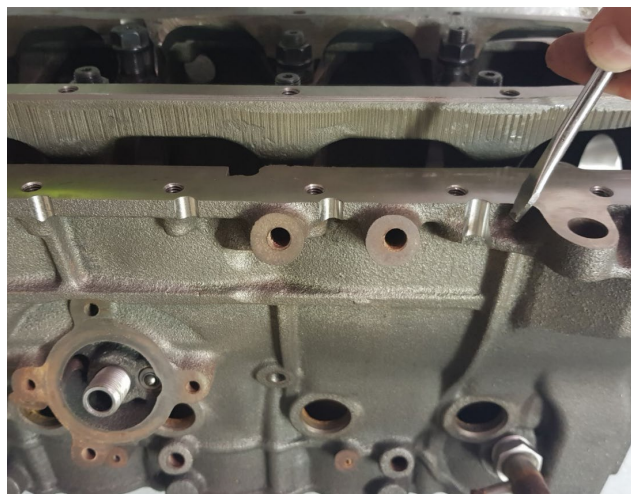
Remove material webbing directly below oil filter area.



This will allow clearance for your block mount tube supplied.



Prepared block should look similar to this on the inlet side of the engine.



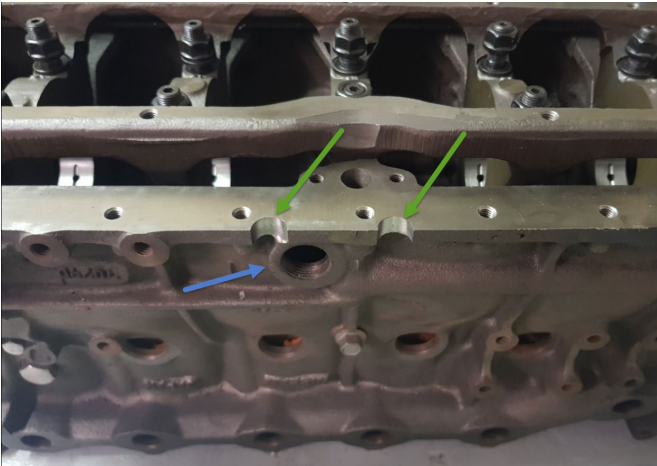
This picture demonstrates the cut out for the rear hole.

Step 8:

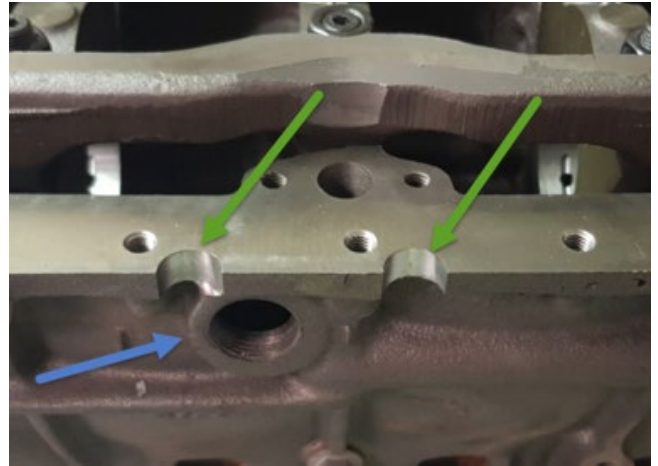
4WD Sump Preparation Part 3: Exhaust Side

Using the same technique for the intel side of the engine, there are 2 reliefs required for the exhaust side of the block as shown below.

Note: Before continuing, please ensure all studs are removed from the diff casing.



Remove the material on this part of the block as shown with the green arrows. (approx. diameter 16.5mm)



A small section of the turbo oil drain is also to be removed shown here with the blue arrow. This will allow the bolt head to drop through.



This view shows the bolt relief on the exhaust side of the block using M10 - 1.25x25 bolts.



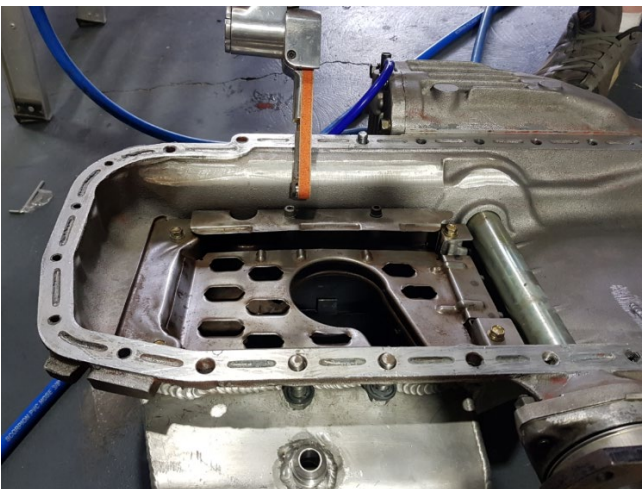
This is view shows the bolt relief on the inlet side of the block using M10 - 1.25x60 bolts fit through assembly with provided tube spacers.

Step 9: Sump Pan Modification

There is 1 x 6mm hole in the sump assembly outlined below will need over-sizing. Drill out existing 6mm Hole in Alloy Sump to 8mm to allow for new M8 bolt.



4WD Sump Integration



Trial fit your sump to ensure it fits, you may need to clearance a few areas, all sumps are slightly different being cast and we choose to keep as much material in the brace as possible, this area shown above may need a 45 degree finish



A couple of bolt reliefs in the back-left hand corner may need a tickle as well.

Step 10:

Assembly:

You are now ready for assembly,

Provided is all countersunk M8 x 1.25 bolts are supplied for both inner and perimeter of sump cradle to block. You will also find a complete bolt kit for assembly of your engine cradle, it is advised to trial-fit the PREC before engine assembly to ensure all bolts line up and all your threads are clean and don't bind. Running a tap or a drill through the PREC may be necessary as not all blocks are exactly the same and fractional clearance differences are to be expected.

If you are assembling a 2WD kit, you will notice some stainless cone shaped spacers, these spacers sit in the countersunk bolt holes allowing you to bolt your flat steel pan onto and through the brace without distortion.

There are 3 fitting kits available with the PREC:

RB26 and RB30 (2WD) REAR WHEEL DRIVE (KIT A)

RB30 (4WD) FOUR WHEEL DRIVE (WET AND DRY SUMP) (KIT B)

RB30 WET SUMP ADDITIONAL KIT (KIT C)

After assembly of engine, mount cradle to block using original Nissan gasket paste. Alternatively Ultra Grey works well, Thread lock, or Loctite is not necessary around perimeter, but is advised for all the center main cap supports. If you have a late revision brace you will see there is a O-ring groove, fill the o-ring channel in the brace with ultra grey, insert the o-ring (don't stretch it) then you may apply a bead of sealant over the o-ring and fit the brace. (no sealant required for the middle section of bolts.



All M8 countersunk bolts are to be torqued to 25 ft/lb. A non locking Loctite thread compound may be used but **NOT** recommended, they are hard enough to remove if required, a short tipped 1/4 drive snap on socket helps, a slow sharp 8.5mm drill bit will help if you burr the bolt.

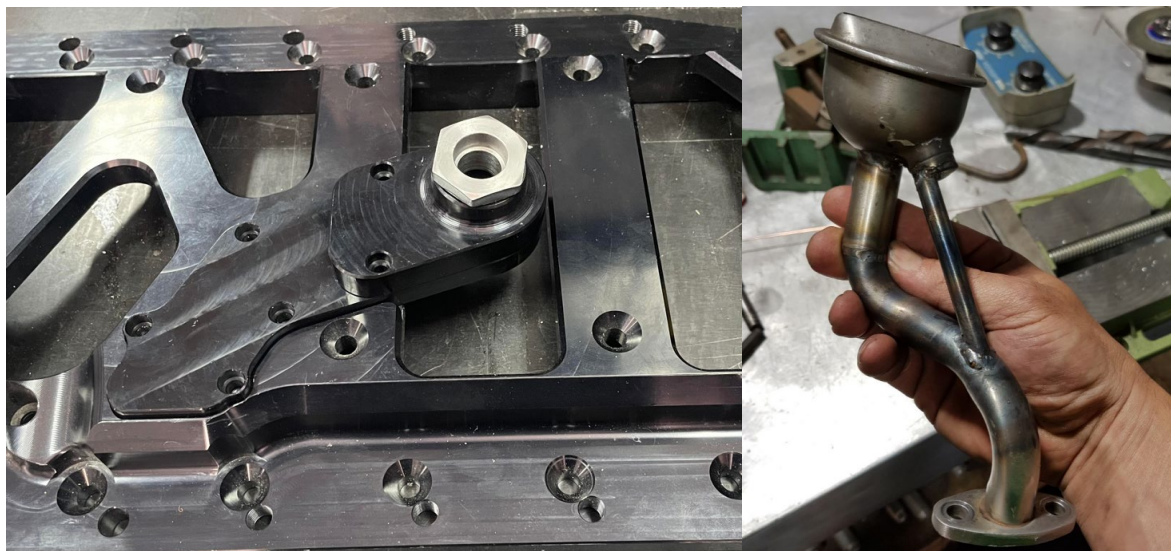


After fitting the oil pick-up you are now ready to bolt the sump on.

Seal your sump pan or diff sump assembly with Nissan glue or ultra grey and bolt up as per OEM specifications.

Step 11 Oil Pickup Modification:

Insert supplied plates in this order, be careful of the different length M5 bolts that hold it all together, use the o-rings provided, no need for sealant.



Use the OEM oil pick up or make up your own, cut the OEM oil pick up bowl off and weld it to the pipe provided.



The pipe supplied is made to follow the angle of the sump as it sits at 9 degrees, so it makes it easier to fab the pick up square on sump surface (5-8mm off the bottom of the sump is recommended)



Depending on the sump style / Brand being installed you may need to fit the sump from the bottom so that flaps do not get stuck under your oil pick up.

Step 10 Gearbox Integration

Once your engine assembly is complete, you will notice the sump sits 12 mm further away from the engine, although this is not a problem it is your choice to have the gearbox bottom bolts line up, please note that this is not a requirement and this platinum brace setup has been tested to over 2000 Flywheel horsepower without encountering a problem, this has been added for convenience only.



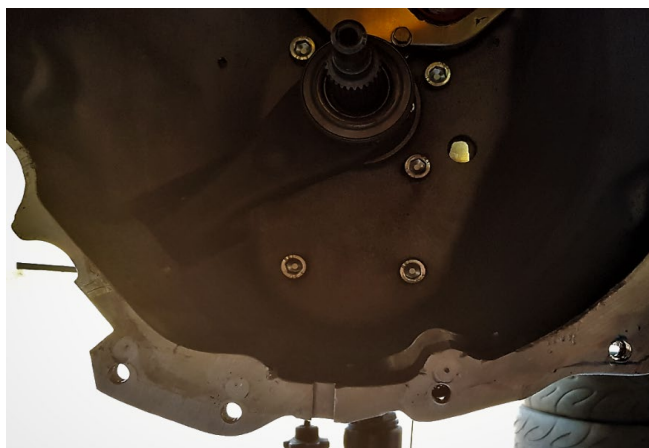
Stencil an addition out of 10mm (or thicker) alloy flat bar, use the gearbox bellhousing to scribe a cut line then cut your shape to match your gearbox, the outer shape can be stenciled against the sump to give a nice meeting surface.



The same can be done for the driver's side, you can choose to weld up the original threaded holes if you wish or leave them, it is inconsequential. Weld the plates on to the bellhousing on both sides, Remember to V out the meeting side for a stronger weld.



After grinding your welds back flat on the meeting side of the bellhousing, Line the gearbox onto the engine assembly and scribe or use a paint spray can to mark out new bolt hole placement



Part the assembly, drill and tap your holes (M10 x 1.5) if using original bolts, you are now ready for assembly.

Note 4WD Applications only: Once you fit your front propeller or transfer case shaft, you will notice that the clutch slave cylinder bleeder nipple comes close or hits the prop shaft, cut the tip of the nipple off to allow clearance.