

## Forged 2.2 build to begin soon.

Posted by Marty J - 2009/08/25 01:33

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I have been planning an engine/car rebuild/upgrade for quite some time now and thought I would let you know just what will be going into my MR2. It is a revision 2 1993 JDM MR2 Turbo which has the 3SGTE engine and E153 gearbox. Below is a list of parts that are either already installed or waiting to be installed.

The head has already been rebuilt to my specification which was done by a company called QEP in the UK.

- Ferrea 1mm oversized intake/exhaust valves
- Ferrea dual valve springs
- Ferrea seats and retainers
- JUN bronze valve guides
- Piper 264\* intake/exhaust cams with modification to allow for clearance
- HKS vernier pulley wheels
- Shimless bucket conversion
- HKS timing belt
- JUN 2.2 stroker kit
- Pauter connecting rods
- ACL race bearings for main, connecting rods and thrust.
- ARP studs and bolts for everything that needs them.
- Engine girdle
- Moroso upgraded sump
- Crank scraper
- KORacing 3082r turbo kit
- RMR intake manifold
- Q45 throttle body
- Samco silicon hoses
- 2 x Walbro fuel pumps
- 2 x Bosch 044 fuel pumps
- 4 x Delphi 1000cc fuel injectors
- Fuel swirl pot
- Upgraded intercooler
- Upgraded intercooler fan
- Sard S.C.S. intercooler water spray
- AEM water injection kit
- Full Toyota gasket set
- Hydra Nemesis EMS
- Tein type Flex with EDFC
- TRD front and rear antiroll bars
- Polyurethane bushings on just about everything
- Tanabe under brace
- Tein pillowball tension rods
- KSport adjustable endlinks front and rear
- Braided clutch hose
- Rebuilt gearbox by Rogue with Quaife LSD
- Carbonetic twin plate carbon clutch
- Cusco brake master cylinder stopper brace
- Wilwood rear brake kit
- KSport 330mm 8pot front brake kit

17" wheels (I can't remember the brand)  
 215x40x17 Goodyear front  
 235x35x17 Goodyear rear  
 ATS upgraded upgraded cv cages  
 Revision 6 front lights  
 HID front steerable fog lights  
 Rev 3 rear lights  
 Carbon front light lids  
 Carbon engine lid  
 Carbon boot lid  
 Carbon engine service panel  
 Carbon copy Tom's air scoop  
 Carbon revision 5 spoiler  
 Short shift gear stick with unknown brand carbon knob :laugh:  
 Momo Jet steering wheel with quick release  
 HKS EVC V  
 Dash pod for 3 gauges  
 Zeitronix wideband kit  
 EMS Powered racing harness bar  
 HKS dump valve

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**Re:Forged 2.2 build to begin soon.**

Posted by Spidey - 2009/08/25 08:25

Impressive spec/parts list :woohoo:

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**Re:Forged 2.2 build to begin soon.**

Posted by dan - 2009/08/25 08:41

Can't wait to see this in the flesh! Are you going to be doing the work yourself or are you leaving it in with someone to carry out for you? Should be pushing mega power when you have everything up and running! You planning on doing any drag runs? Be nice to see an MR2 show up a few of the Evos and Skylines!

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**Re:Forged 2.2 build to begin soon.**

Posted by mnixon - 2009/08/25 09:22

that's quite a list! What power are you expecting out of it?

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2009/08/25 09:53

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That's a smoking hot build right there. Does that 3082 have an anti-surge housing? if so it's going to sound something like this: <http://www.youtube.com/watch?v=2BeeFJ4nsvc>

Looking forward to seeing how this build comes along. Hope you've got some good motorways up there :lol:

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**Re:Forged 2.2 build to begin soon.**

Posted by MOG - 2009/08/25 09:56

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Very nice, gonna keep an eye on this :)

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**Re:Forged 2.2 build to begin soon.**

Posted by dan - 2009/08/25 10:00

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Motorways? Donegal? You havin a laugh!

:laugh: :P

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2009/08/25 11:43

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Thanks Spidey.

Dan I will be doing most of the work myself. The block will most likely be sent to Tim of TBDevelopments. Tim uses a torque plate when he sends the blocks to be bored for the JUN stroker uses 87mm Cosworth pistons.I have no plans on doing any drag runs . . . but you never know ;) .

mnixon I hope to get 400whp on pump fuel. It will have two maps. One for the NCT guys which should keep them happy and the other map for performance.

Quandry I don't think the 3082r has an anti surge housing. I would need to ask KORacing that question . :unsure:

MOG this wont be finished any time soon. It takes a lot of effort for me to just get out of my cosy bed :lol: .

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2009/08/25 16:19

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Marty J wrote:

It will have two maps. One for the NCT guys which should keep them happy and the other map for performance.

I was thinking about this myself, but actually as they only rev them up to 2,500rpm and then idle, you only need to optimise for lambda in those areas and then the rest should be free for max power.  
:woohoo:

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2009/08/25 21:04

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Here are some photos I took today.

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT2153.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT2151.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT2152.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT2154.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT2155.jpg>

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**Re:Forged 2.2 build to begin soon.**

Posted by Harper - 2009/08/25 21:11

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when this is finished will it be the quickest mr2 on the island?

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2009/08/25 21:14

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ho ho ho, nothing like a bit of competitive talk eh? :D I think Stephen up at Momentum has 600hp or something?

On that note, is there a drag strip anywhere in Ireland? north or south?

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2009/08/25 22:45

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I don't think my engine build would suit drag racing. I chose it more for fast road use, but I wouldn't mind trying something like a time trial.

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**Re:Forged 2.2 build to begin soon.**

Posted by Spidey - 2009/08/26 09:51

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I think a 2.2 stroker with a 3071 or 3082 will suit anything - there is a 3071 in the 10s on mr2oc.com !

You and Quandry have to get your cars on the drag strip at some stage :)

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2009/08/26 11:07

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Sorry Marty we went off topic a bit there. The drag racing discussion is now continued here.

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2009/08/29 11:57

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Hey Marty, how's the build coming along?

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2009/08/29 15:33

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Would you believe it if I told you that I hurt my back when I was doing some soldering on Monday :huh: . I have been taking Difen anti-inflammatory capsules and my wife has been rubbing in Deep Heat ;) . It's still not right but slowly recovering.

The first thing to do is cleaning the engine thoroughly. I plan on painting it when it's back together. I have plenty of small sealable plastic bags to help label all the nuts and bolts that are removed. I will try to remember to take photos as the engine work progresses.

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**Re:Forged 2.2 build to begin soon.**

Posted by MOG - 2009/08/29 17:02

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haha love the pics mate, reminds me of having my old mr2 up on blocks, had it like that for a couple months without going near it :silly:

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2009/08/29 18:07

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Wow sorry to hear you hurt your back. :(

Hope you have a speedy recovery and looking forward to hearing about how you're getting on.

Q

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**Re:Forged 2.2 build to begin soon.**

Posted by dan - 2009/08/29 20:34

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Yea mate sorry to hear about your back. Hope you recover quickly but if you have your wife to tend to your every need then it cant be all bad!

Keep us updated with the progress as the build goes on. If you're ever stuck or in need of a hand feel free to give me a shout. I'll do my best to get up to you.

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**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2009/09/02 22:57

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thanks for the vote of convidence martyj i'll do my best on your build if your send it to me :)

also anyone wants to know abotu turbo specs just ask. i can do a gt3082r with anti-surge if needed

Tim  
TB Developments

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2009/09/04 00:21

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Well I thought that I would do something with the MR2 today even with a dodgy back and installed LEDs in where the maps lights are. There are 20 LEDs per side which should release another 0.0000001 whp :lol: They are very bright B) and use less power as a bonus.

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2009/09/04 08:25

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Any pics of what they look like? I put led's in my dash behind the guages and so far have been amazingly un-impressed :dry:

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2009/09/11 22:40

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I am glad to say that my back is better and today I have been removing more bits and pieces from the engine.

Regarding the LEDs below are some photos of the mod, but they don't do it justice. They look a lot better in person.

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT2253.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT2247.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT2245.jpg>

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2009/09/12 11:48

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Nice, nice, nice.... where did you get to now on the engine?

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2009/09/12 12:59

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The next thing to do is remove the gearbox so that I can attach the engine to a stand. I already have a rebuilt gearbox with a Quaife differential installed, so this one will be a spare.

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2009/11/02 16:30

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Hey Marty, how's that build coming along? :)

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**Re:Forged 2.2 build to begin soon.**

Posted by Clearsky - 2009/11/02 18:59

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Marty J wrote:

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Regarding the LEDs below are some photos of the mod, but they don't do it justice. They look a lot better in person.

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<http://i67.photobucket.com/albums/h295/MartyJ1/PICT2247.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT2245.jpg>

They look great where did you get them??

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2009/11/02 20:28

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I bought them from a ebay member based in Hong Kong.

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**Re:Forged 2.2 build to begin soon.**

Posted by Clearsky - 2009/11/02 20:44

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Marty J wrote:

I bought them from a ebay member based in Hong Kong.

Do you have a name or a link??

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2009/12/07 16:04

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Alright Marty how's it going?

If you need any help with DIY tuning let me know I'm just itching to see that 2 of yours in action :)

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2009/12/07 21:14

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For the momment the MR2 won't be done before Christmas. My wife's Ford Ka broke down and I am in the middle of stripping the engine down. As if things could not get any worse, I have been in bed with the flu since Saturday :(

I did order a new style of front bumper, hopefully it will arrive this week.

<http://i67.photobucket.com/albums/h295/MartyJ1/BW9GwB2kKGrHgoOKiUEjLmV5LBKb4RRcfO.jpg>

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2009/12/07 21:29

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Sorry to hear you're feeling crook and have another engine build to do. Don't get mixed up and put the 3081 in the Ka now :lol2:

That bumper looks pretty awesome!! :yes:

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2009/12/07 22:28

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Oops I just noticed that I didn't reply to clearsky, sorry :blush: . I can't remember who sold me the leds, on ebay just type in '12v leds' and browse. That's what I did ;) .

Geoff it's 3082r to be precise :silly:

I almost forgot to tell you that I received my refund from Baktasht a few days ago :woohoo:

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2009/12/08 08:58

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wow good news!

I wish I could have been more instrumental in helping you on that but I'm glad it worked out in the end.

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**Re:Forged 2.2 build to begin soon.**

Posted by Spidey - 2009/12/08 09:14

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Marty J wrote:

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<http://i67.photobucket.com/albums/h295/MartyJ1/BW9GwB2kKGrHgoOKiUEjlLmV5LBKb4RRcfO.jpg>

Love those rims :love:

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2009/12/08 13:51

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What size would you say those rims are, 18" ?

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2009/12/08 14:16

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possibly, these are 18"s and the top of the rims seem to be at similar body points.

<http://img9.imageshack.us/img9/8496/img0028gjl.jpg>

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**Re:Forged 2.2 build to begin soon.**

Posted by Spidey - 2009/12/08 14:17

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I'd guess at 18s as well - looks great but ride might be harsh on those rubber bands !!

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/01/05 11:57

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Alright Marty, how are you doing up there? We've a good bit of snow on the east so I'm guessing your 2 is pretty much like a big snow man at this stage :(

Any progress on your engine build?

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/01/05 15:19

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Well the at the moment the MR2 is freezing its nuts off :laugh: The engine is cosy in the garage. I rebuilt the wifes Ford Ka engine,it ran like new for ten minutes then went back to it's rough idle, it's most likely a temperature sensor.

It's a bit tight in the garage at the moment with the Ka so I'm sorry to report that the 3SGTE hasn't been touched. It wouldn't take long stripping it down but I don't want stuff laid about untill I finsh the Ford. After that the 3SGTE block will be sent away to be bored and honed for the stroker kit. The front bumper arrived before Christmas and is in storage.

How's your motor, not the best weather for the MR2 ?

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/01/05 15:23

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Wow awesome, can't wait to see that bumper in action - it's pretty serious!

We're all iced in down here so I've resigned myself to not driving the 2 and that I will have to buy a battery charger at Halfords... :(

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/01/05 15:39

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If the battery is 5 years or older the cold can kill them. Have it tested first. If it is ok and your alarm is running it down, you might be better off removing the battery if the MR2 is not going to be used for a while.

Also a tip for anybody needing a jump start. After connecting the jump-leads allow the good car to run for a few minutes to put some charge into the drained battery. Switch off the running car and ONLY then try to start the car with the drained battery with the jump leads still connected. Trying to start a car from one that is already running can damage your alternator or other delicate electronics like the ecu. This is because the alternator on the running car can get overloaded and send electric spikes to the other car.

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**Re:Forged 2.2 build to begin soon.**

Posted by mark239 - 2010/01/13 19:53

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Are you using a rev 1 gearbox? As I notice you're using a Quaife ATB.

Lot of trouble tbh - could just have used a good plate type! Bit draggy though.

I'd be terrified of 87mm bores on these engines. My block cracked before at 86.5. I have sleeved 86mm now.

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/01/13 20:03

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Rev2 gearbox. I purchased a gearbox from Rogue Motorsport in the UK. They stripped it and made sure everything in the gearbox was within Toyota spec. I got them to install the Quaife LSD because it has a lifetime guarantee and I read plenty of good reports about the quality of their products.

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/01/13 20:08

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Rogue did have to bolt on a rev 1 speedo gear 33481-17010 and use 16 rev 1 bolts 90105-12154 to attach the ring gear.

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/01/13 20:15

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Who did your original bore. Did you have your car tuned, if so who by. Who installed the sleeves. How much was the cost of the labour and sleeves ? Thought I would ask the most obvious questions.

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## Re:Forged 2.2 build to begin soon.

Posted by mark239 - 2010/01/13 20:28

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I installed the sleeves, with a little assistance from a friend who has a machine shop. (A lot of assistance!) I used darton sleeves if I remember correctly, bought from enginelogics.

Took about 4 days in total, was a nightmare! Took me even longer than when I cut the valve seats out for the bigger valves and widened the ports out.

If he had been installing them, it would probably have been about £300? I think some of the english tuners do a package deal on them though.

I also made a set of custom shims from hardened tool steel while we were at it.

The block cracked on the dyno the last time (And was getting to almost 400hp - even with a cracked block!) - while it was being tuned - I do the mapping myself now though. The person operating the dyno continued to rev it like mad when it was overheating. The previous block must just have been weak - but they are pretty crap in general tbh. If this one goes I will substitute it with a 5S block.

=====

## Re:Forged 2.2 build to begin soon.

Posted by mark239 - 2010/01/13 20:36

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I've a GT3582 on at the minute - but I'm thinking of swapping it for a Holset or Borg Warner at some point.

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## Re:Forged 2.2 build to begin soon.

Posted by Quandry - 2010/01/13 21:00

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mark239 wrote:

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they are pretty crap in general tbh. If this one goes I will substitute it with a 5S block.

Sorry to threadjack but...

300 is cheap if it took 4 days! :cheer:

What Gen block are you on Mark? GenII or GenIII?

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## Re:Forged 2.2 build to begin soon.

Posted by Quandry - 2010/01/13 21:05

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Marty J wrote:

Rogue did have to bolt on a rev 1 speedo gear 33481-17010 and use 16 rev 1 bolts 90105-12154 to attach the ring gear.

Hey Marty if you're on Mechanical speedo drive, you can use an Australian MR2 speedo. They were all mechanical (right up to 99 apparently!) and they all read out to 260kph. I think with your spec no one would dispute you needing it :doc:

If you're interested, you can find them on ebay.com.au or I have some contacts over there I can put you in touch with.

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## Re:Forged 2.2 build to begin soon.

Posted by mark239 - 2010/01/13 21:23

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Quandry wrote:

mark239 wrote:

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Sorry to threadjack but...

300 is cheap if it took 4 days! :cheer:

What Gen block are you on Mark? GenII or GenIII?

It would have taken a single day if I hadn't been there :)

It's a 3rd gen that I have - but people still crack the others - quite a common cracker that block - apart from the real late ones, and the 5S ones.

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/01/13 21:59

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Hmm yeah I heard that the GenIII block is like custard over 400hp. Supposedly a good hybrid is the GenII block and GenIII head. ATS have made 700hp with that recipe. Late 5S seems to be the latest (worthwhile) trend though as you say.

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**Re:Forged 2.2 build to begin soon.**

Posted by mark239 - 2010/01/13 22:28

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I think there is an element of luck involved! When you bore them out for sleeves you can see how thin the cylinder walls really are. Then once you're over that hurdle, they crack at the corner where the water pump is.

I know of a few rev 2's that cracked at 1.4 bar, and also mine cracked at around that previously. I have mine at 2 bar so far and really don't want to go above that. So I'm now considering a change of turbo to something more efficient.

Marty - sorry for hijacking your thread. Mods please feel free to clean up!

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/01/13 22:58

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I have a engine girdle that I bought a couple of years ago (MR2 parts hauler :P) . Its is supposed to help stop the block flexing.

No problem Mark. Did you have to cut a ring in the top of the block for the sleeves so they don't slide down ?

Geoff thanks for the info on the dials but I already have some fancy dials that go up to 180mph.

=====

## Re:Forged 2.2 build to begin soon.

Posted by mark239 - 2010/01/13 23:06

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Marty J wrote:

I have a engine girdle that I bought a couple of years ago (MR2 parts hauler :P ) . Its is supposed to help stop the block flexing.

No problem Mark. Did you have to cut a ring in the top of the block for the sleeves so they don't slide down ?

Geoff thanks for the info on the dials but I already have some fancy dials that go up to 180mph.

The girdle is good for the middle of the cylinders weakness, but not the water pump edge weakness. That's what I'm worried about now.

The sleeves had a thicker top than the rest (As most of them do) And you do just simply machine the top of the bore out further for them than the rest of the bore. Only sleeves designed for the likes of aluminium engines that have full length sleeves dont have the top section on them. On my Lotus excel, theyre in 2 parts. And impossible to find in good shape!

here is a pic where you can see the sides of them had to be slightly shaped also in order to make them fit side by side!

<http://www.mark-chapman.com/uploads/mr2/asblock1.JPG>

<http://www.mark-chapman.com/uploads/mr2/honing.JPG>

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## Re:Forged 2.2 build to begin soon.

Posted by Quandry - 2010/02/25 12:14

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Alright Marty!

Don't know if you saw this drag MR2 that has the JUN 2.2 stroker kit...

<http://www.mr2.ie/index.php/mr2-forum/6-buy-swap-and-sell/6103-drag-2-on-ebay-826bhp>

Looks like you're in good company :)

Any updates on your build?

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## Re:Forged 2.2 build to begin soon.

Posted by Marty J - 2010/02/25 17:31

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He has certainly spent a lot of cash on the MR2. He's +1 on me with the custom parts, though it is a HKS stroker kit he has which was customised with the drag pistons to make it a 2.1 and not a JUN kit ;) . I am not sure about using it as a daily driver :unsure:

Regarding my car :( I'm still staring at all the nice shiny parts. The Ford Ka is back in the garage which means the MR2 has to wait. I ordered a ELM 5 scanner for the Ka. I'm hoping that it will point me in the right direction to find the fault.

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## Re:Forged 2.2 build to begin soon.

Posted by Quandry - 2010/02/25 18:58

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ah no :( sorry to hear mate... I hope you get your 2 pumping by summer time!

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## Re:Forged 2.2 build to begin soon.

Posted by Marty J - 2010/03/06 18:34

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Well I can say that I will be back working on the MR2 in a couple of days :cheer: .

Now I know this has nothing to do with the MR2, but for those people that have a second car that is playing up and has a OBD II port I would like to recommend the Elm 5 OBD II scanner. My wifes' Ford Ka was spluttering and stalling all the time. So I decided to strip down and rebuild to see if there was anything mechanically wrong with the Endura engine. The car still splutterd and stalled after replacing all the gaskets. I didn't like doing it but we decided to take it to Desmonds Ford dealer in Derry. They came back with a report saying that it was either wiring or a faulty throttle sensor and a bill for £70. I wasn't convinced, so after I did some research I purchased the ELM 5 scanner for €92.00 on Ebay. This scanner plugs into the usb port on the laptop and the other end goes to the OBD II socket in the car. I obtained some good software to work with the scanner and within seconds of using it, it found a faulty TMAP sensor (the throttle sensor IS working). I replaced the sensor last night and the car is back on the road :).

It just goes to show that the main dealers aren't always the best places to go to. I really think that this tool could save people a lot of money, I wish I had bought it before I stripped down the engine. It's just a pitty that the MR2 doesn't have a OBD II port :(

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## Re:Forged 2.2 build to begin soon.

Posted by tbdevelopments - 2010/03/06 19:28

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well that alpha car actually had a St185 TTE Celica block in it. Thats why it has the HKS custom drag pistons. The TTE block goes for £5000 for the bare casing but is alot stronger, The pistons have to be custom because the deck hight on the tte engine is 3mm lower than the normal 3sgte so off the shief 3sgte pistons won't fit.

also be very careful with sleeves, yes they are much stronger but when you start running higher bhp levels we've found the block actually falls apart around the sleeves because of the torsional stress placed on the block from launching the car and the weakness of the casing because of the amount of material removed to fit the sleeve to start with. On the drag research car the sleeved blocks have always failed before a normal run of the mill gen 3 3sgte. Also with dalton sleeves the expansion rate on the top lip is a little funny, another thing we've found is that at high bhp levels on the dyno so minimizing torsional stress the topring expands faster than anything else causing it to expand pushing the head and gasket upwards, If it didn't lift the head it causes a weakness in the headgasket that lead to eventual failure. This is why i now stay away from sleeves from the results of our extensive testing.

don't count out gen 3 engines because of all the bullshit rumours. I've ultrasonically scanned hundreds of 3sgtes from rev 1 to 5 and there all similar, just normal casting variations nothing that i would say sets a trend to one being stronger than another, and the later thickwalled blocks are also again rubbish.

The later model caldina blocks are a good contender as there basically the same as the mr2 3sgte but the waterpump head stud is a solid chunk of cast over being a small protrusion which helps to the cracking issue in that area which is where all the ones i've seen have failed. Head lifts in that area putting stress on the block casting around the stud threads.

Hope that helps

Tim  
TB Developments

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/03/25 00:02

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Well I finally got stuck in and stripped down the engine today. I have it on an engine stand and it was straight forward. I would recommend an engine stand for this type of work, as I was able to get to every nut and bolt easily without having to be a contortionist.

The block, JUN stroker kit and a few other items will soon be on the way to TBDevelopments. The reason I want Tim to work on the block is because he uses a torque plate when the block is being bored & honed.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/03/25 00:03

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no worries mate anything i can do to help :)

Tim  
TB Developments

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/03/25 08:23

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Cool, good to know there will soon be another wicked 2 tearing up the roads :cheer:

=====

**Re:Forged 2.2 build to begin soon.**

Posted by slipslidery - 2010/03/25 08:42

---

Oh sweet, job luck with the build you lot. B)

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/03/25 16:54

---

I just weighed the stripped block at 37.4 kg. :ohmy:

=====

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/03/25 22:05

---

oh yeah its a heavy un lol

Tim  
TB Developments

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/03/26 08:52

---

Marty J wrote:

I just weighed the stripped block at 37.4 kg. :ohmy:

SHIPLY is your friend... [www.shiply.com](http://www.shiply.com)

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/03/26 12:40

---

I had a good discussion with Tim from TBDevelopments into the wee small hours last night. I don't know how he does it and then gets up to work. Tim made some helpful suggestions and is going to install the full rotating assembly. I have not met Tim yet but he seems like he wants to do the best he can with what ever the customer has got. That's why I am sending him my engine. There are a couple of parts going on that are not common (to my knowledge) on a 3SGTE rebuild/upgrade. A girdle to strengthen the bottom end. This is basically attached to the main caps using ARP studs with spacers. The other part is a crank scraper with a Teflon blade which will help keep oil off the crank and in the sump. Here is a link that can better explain what it does : <http://www.crank-scrapers.com/What%20is%20a%20crank-scraper.html>

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**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/03/26 13:29

---

just got back for lunch, lets say i was a little late thismorning lol

Its ok i didn't have much to do, i'm waiting on this water hose for a 500bhp build thats stopping me going any futher with it at the moment, and that hasn't arrived yet :(

Tim  
TB Developments

---

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/07 16:32

---

A quick update. Tim has received the engine block and necessary parts. So now I will wait for Tim to work his magic and transform Toyota's 2.0 to a 2.2 JUN forged bottom end B)

Tim if it's not too inconvenient, maybe you could take some photos as you progress ;)

---

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/04/07 16:44

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Cool! :cheer:

Karma click for both for good luck :)

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/04/08 09:52

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Hi Marty, I saw your post on MR2oc.com about machining sizes. If you send a polite PM to Ishii on that board, he could get you the details. He is in Yokohama and is an MR2 guru.

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/08 10:41

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OK thanks Geoff :)

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/08 11:34

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I was on the phone talking to a guy at Cosworth UK. He said that the 87mm refers to the bore and not the piston size. So for the 3SGTE JUN stroker kit the the bore should be 87mm - 87.02mm.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/04/08 11:47

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I've just spent 30 mins hunting around the JUN website... damn they've got some awesome looking stuff!

=====

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/04/08 11:54

---

hey buddy.

i really need a proper number. I've measured the pistons this morning and there all very slightly different sizes, this is normal in forged pistons. This is why you measure, add clearance then bore each cylinder to each piston.

So #1 piston will go into and only #1 bore.

There some are under 87mm, and a couple of over.

Now if you take his word that the pistons are under size of 87mm (there not) and just bore to 0.02mm clearance thats a clearance of 0.0007". CP pistons which are made of the same material and similar

design are 0.0035" so the JUN ones are 5 time smaller than CP (this isn't correct) and still 2 times smaller than standard toyota.

this will seeze up the first time it comes onto load.

The other thing he said in the email was the rings are perfect gap and won't need filing yet you look at the japanese paperwork and right in the middle is a spec sheet for piston ring gaps and what they should be machined to.

:S

Tim  
TB Developments

---

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/04/08 11:59

---

right spoke to cosworth, the first guy didn't have a clue what i was talking about, he was just saying

"oh we don't even measure the actual piston we just bore what it says on the side of the box" thats really amature i'm afraid and he'd even even heard of a torque block for the head.

So got transfered to some guy from product development who as soon as i said he said on bare with me i've got another call, then never came back.

I'll try again tonight after i've done a little job and run upto toyota.

Tim  
TB Developments

---

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/08 12:08

---

Ok thanks Tim. I am very suprired at the way Cosworth are dealing with this. How did they ever get into F1 if this is the way they run things ?

---

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/04/08 12:14

---

well i spoke to the guy first who didn't understand what i was on about, and i said there was a slight difference in the pistons, how do you account for the difference in clearance if the bore size is fixed. He

just said well thats within our tollerances.

PMSL the difference i was talking about is 4 time larger than the torque block distorts the block.

maybe it me being to anal over things :S

Tim  
TB Developments

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/08 12:19

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Anal is good :kiss: LOL if you are going to build the engine this carefully then this will show others how well you do it :)

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/04/08 12:44

---

Marty I will PM you Ishii's email address, from what Tim says maybe the best answer will come from JUN themselves. Might take a while to get it but worth doing right once..

=====

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/04/08 14:09

---

ok well let me know asap. i've only for under 4 weeks to build this thing before the deadline on collection and the machinist is going to have it for about 3 weeks :(

Tim  
TB Developments

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/11 03:39

---

I finally received a reply from a JUN mechanic :cheer: .

From: Junichi Tanaka  
Sent: 11 April 2010 02:19

To: Martin O'Donnell  
Subject: Re: Piston and piston ring clearance

JUN Auto Mechanic  
3-1-7 Sekimachikita Nerimaku Tokyo  
Tel 81-3-3920-4165 Fax 81-3-3594-2689  
April 11

Dear Mr. Martin  
Thank you for your mail. I was out of office for a while.

- 1. Piston clearance 0.05mm-0.07mm
- 2. Ring gap
  - 1st 0.20mm-0.50mm
  - 2nd 0.25mm-0.50mm
  - Oil 0.20mm-0.60mm

Thank you,

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/04/11 09:24

wow cool! :)

=====

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/04/11 17:07

that is tight on the clearances, i'll put them at 0.06mm which is 0.023". still tight compared to the 0.0035" of CP and the like but if you say thats good i'll go with that :)

Tim  
TB Developments

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/11 17:40

Tim I would have gone with your spec if I had not received the info from JUN. But now I have it I would like to go with what they recommend and what you said in your last post. I am glad that you are not a mechanic that just wants to rush the job :)

Geoff thanks for the pm, unfortunately Ishii didn't get back to me :(

=====



**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/04/11 17:42

---

no worries mate of course i'll go with there sizes, i only said about the CP ones because they use similar material spec and using one similar would have been better than just picking a number out the air :)

I'll drop the bits down to the machine shop tomorrow

Tim  
TB Developments

=====  
**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/11 17:54

---

Tim I meant to ask you what is the black 'paint' on the JUN crank ?

=====  
**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/04/11 18:00

---

its just an anti corrosion coating to stop it rusting nothing special

Actually the crank isn't anything special either its a \$80.00 5efe standard toyota crank thats offset ground. The normal 5sfe crank the conrod journal diameter is larger than the 3s so you machine them down to fit the 3s conrods. But because its a few mm smaller you can offset grind it.

Standard there 91mm stroke, they've offset ground this to 92mm, very similar to the kits i sell which are 93mm offset ground.

Then you can use stock or uprated 3sgte conrods to work with that crank.

difference between this kit and my own is that the stroker is 1mm shorter but you use 87mm pistons where i use 86.5mm to obtain around 2.2ltr with both kits.

hope that helps with explaining some of the details of the kit as well.

Tim  
TB Developments

=====  
**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/11 18:07

---

I read that the flywheel needs to be modified if you use the 5sfe crank.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/11 18:09

---

Tim I have just found out that you have returned to the MR2 Only magazine . :woohoo:

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/04/11 19:11

---

tbdevelopments wrote:

its just an anti corrosion coating to stop it rusting nothing special

Actually the crank isn't anything special either its a \$80.00 5efe standard toyota crank thats offset ground. The normal 5sfe crank the conrod journal diameter is larger than the 3s so you machine them down to fit the 3s conrods. But because its a few mm smaller you can offset grind it.

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difference between this kit and my own is that the stroker is 1mm shorter but you use 87mm pistons where i use 86.5mm to obtain around 2.2ltr with both kits.

hope that helps with explaining some of the details of the kit as well.

Tim  
TB Developments

Fascinating and nice info Tim - +1 KC for you..

Any chance of pics to show the difference? :hmm:

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/12 14:17

---

I think that is what you have in your engine Geoff isn't it ?

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/04/12 14:38

---

Yes it's a 5sfe crank. No idea if it's offset ground or whatnot though..

=====

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/04/12 14:47

---

i didn't realise i ever left mr2only magazine :unsure:

i'll do some piccys as it goes together mate, dropped it off at the machine shop today.

what flywheel you using on it buddy? if its a fidanza they use slightly enlongated holes already to suit 3s or 5s fittment

Tim  
TB Developments

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/12 14:57

---

I have the Carbonetic twin plate clutch which came with a flywheel.

Well that's good about the magazine because I do enjoy those technical articles, especially when it is to do with the MR2 . :)

=====

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/04/12 14:59

---

well doing a kind of tales from the workshop, just brief overviews of what i have to do the and projects that come through. No doubt your engine build will get a mention.

Not sure on that fittment it might need tweeking.

Tim  
TB Developments

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/12 15:32

---

After an engine build like this has been run in what's the recommended oil viscosity for the road ?

=====

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/04/12 16:58

---

i just use the silcoline pro s that oilman sells

Tim  
TB Developments

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/04/26 12:54

---

Tim has told me that he has almost finished the 2.2 bottom end. He is waiting for some bolts I sent to reinstall the crank seal end plate.

Anbody got any tips on holding that thing down while it is in the boot of my brother-inlaws Golf ? I wouldn't like to see what would happen if I had to brake hard :unsure:

=====

**Re:Forged 2.2 build to begin soon.**

Posted by slipsliderg - 2010/04/26 13:03

---

If it is ok to sit it horzonitally, I would suggest a heavy blanket and a couple of 20 kg bags of sand over the blanket.

Don't know how the golf would like that though.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/04/27 23:39

---

few pics for you mate

<http://i62.photobucket.com/albums/h115/Mr2turbored/DSCN3414.jpg>

<http://i62.photobucket.com/albums/h115/Mr2turbored/DSCN3415.jpg>  
<http://i62.photobucket.com/albums/h115/Mr2turbored/DSCN3416.jpg>  
<http://i62.photobucket.com/albums/h115/Mr2turbored/DSCN3418.jpg>  
<http://i62.photobucket.com/albums/h115/Mr2turbored/DSCN3419.jpg>  
<http://i62.photobucket.com/albums/h115/Mr2turbored/DSCN3420.jpg>  
<http://i62.photobucket.com/albums/h115/Mr2turbored/DSCN3421.jpg>  
<http://i62.photobucket.com/albums/h115/Mr2turbored/DSCN3423.jpg>

all finished :)

Tim  
TB Developments

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## Re:Forged 2.2 build to begin soon.

Posted by Marty J - 2010/04/28 00:40

---

Looking good Tim. Thanks :) It's taken me along time just to get to this stage.

For myself and others that may read this section, what advice would you give for running-in an engine that has been built like this ?

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## Re:Forged 2.2 build to begin soon.

Posted by Quandry - 2010/04/28 08:33

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Looks great Tim, super pics. KC+2 ;)

---

## Re:Forged 2.2 build to begin soon.

Posted by tbdevelopments - 2010/04/28 11:14

---

all i can do is suggest what i've done in the past.

follow the typical cam break in method on start up. fire it up and rev from 2-3k for 30mins then turn it off. Retorque the head studs. Run the car for 50miles to check for leaks etc, just normal driving 4k ish revs with no more than 0.4bar boost. drop the oil and filter.

Continue breaking it in, 4k and 0.5bar boost, lots of engine breaking to help seat the rings, back roads etc so keep the revs moving over just sitting on the motorway whihc will glanze the rings.

500miles drop the oil, continue doing this, until you get to 1000miles steadily increasing how you drive.

1000miles put some good oil in it and get it full power mapped.

been working for me. On some big builds i've had to get the car basemapped as soon as its build to be able to run it in properly, if its poor running get this done within the first few hundred miles to prevent it damaging anything during the 1000

Tim  
TB Developments

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/05/13 10:15

---

What's the latest on your engine Marty? did you figure out the Hydra Nemesis yet?

---

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/05/15 16:52

---

I was in England for just over a week and I arrived back this morning with the rebuilt block. There's not much point in taking more photos just yet as they would be similar to Tims photos. No updates on the Nemesis.

Tim is an great guy, younger than I had expected. Unfortunately we both had to be somewhere else and could not talk for long.

Anyway the good thing is that I can now resume my engine build.

---

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/05/15 18:28

---

good to meet you to mate.

no worries on the youth thing, haha i get that quite alot but seeing i started at 14 building engines it still gives me miles more experience than most. lol

Tim  
TB Developments

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/05/15 22:29

---

Cool! looking forward to seeing how this comes together :)

=====

**Re:Forged 2.2 build to begin soon.**

Posted by slipslidge - 2010/05/15 22:38

---

How long left to a start up Marty.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/05/16 02:14

---

slipslidge wrote:

How long left to a start up Marty.

:unsure: I would like to say a week or two but I have never done this before. I can't see it on the road for another couple of months. I have no reason to rush it. Maybe I should change the title to "2.2 build guess when it will be finished" :)

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/05/17 08:53

---

You probably just need a long weekend then :D

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/06/14 10:27

---

How are you coming along on this Marty? :)

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/06/14 10:43

---

I haven't done anything because my family are always finding other things for me to do. Oh and now there is the World Cup so that's another distraction :blush: . I am still waiting for the intercooler that I ordered last month :angry: .

Any upgrades/mods with your own car lately Geoff ?

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Spidey - 2010/06/14 10:46

---

We were just talking about your build the other evening when we had a mini-meet. I was saying you have some patience - but, as you said, its not so much patience but getting time to do it all.

Looking forward to seeing it in a meet in a few months :)

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/06/14 10:56

---

When I was in my early twenties I would have wanted everything done yesterday :laugh: . Now I am not as impatient, I don't worry about leaving it for a while. I can guarantee that I will be at future meetings when the MR2 is back on the road. The next upgrades after the engine will be the bodywork.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/06/14 11:26

---

Marty J wrote:

Any upgrades/mods with your own car lately Geoff ?

I changed my shifter bushings yesterday from the brass type to the bearing type.

From this

[http://twosrus.com/new/images/Purchased\\_Products/SpeedSource/bushing1.jpg](http://twosrus.com/new/images/Purchased_Products/SpeedSource/bushing1.jpg)

[http://twosrus.com/new/images/Purchased\\_Products/SpeedSource/bushings2.jpg](http://twosrus.com/new/images/Purchased_Products/SpeedSource/bushings2.jpg)

To this

[http://www.btowstore.com/WebRoot/BT3/Shops/BT2570/481A/246B/8E2B/2242/B6AA/0A0A/33E8/4BEF/KBRW001\\_m.jpg](http://www.btowstore.com/WebRoot/BT3/Shops/BT2570/481A/246B/8E2B/2242/B6AA/0A0A/33E8/4BEF/KBRW001_m.jpg)

I was installing them out in the rain yesterday so did not get to take photos for a 'How To' article, however I found that one was easiest to do from underneath the car and the other from the top. The bearings feel much smoother than the brass bushings, although I found that my brass ones had been installed without any grease! :blink:

One thing I found is that the split pin will fire off out of your greasy hands very easily and I lost mine for a few hours in the engine bay. Out of desperation I tried to make my own but after ten or twenty minutes I resorted to searching every nook/cranny and eventually I did find the pin (at the time I did not know it



was in there, I thought it had flown off on to the lawn or something...)

To add insult to injury, I was doing an oil change in the middle of all this and found that the oil tray had a crack in it - AFTER I had already started dropping the oil!!! yes - four litres out on the driveway. I got about 10 newspapers spread out to pickup the oil and then it started to rain again... so I was soaked, cold, sore back and pi55ed off - what a day! :side:

=====

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**Re:Forged 2.2 build to begin soon.**

Posted by slipsliderg - 2010/06/14 11:40

Marty J wrote:

I haven't done anything because my family are always finding other things for me to do.

Amen to that one brother, there are many of us in the same boat on this site I think.

Geoff KC for the efforts, I was stuck in the rain last week doing the front and rear brakes on the Previa, was in such a hurry to do them it took twice as long. :fail:

Keep up the good work Marty B)

=====

---

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/06/14 11:49

those brass shifter bushes are actually much better than the bearing buddy.

i used to sell the bearing type and i would find you'd get play after a few months then become very stiff and grinding after about a year, i swapped to selling the brass ones because never had a failure or problems.

Tim

TB Developments

=====

---

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/06/14 11:56

Thanks Tim,

Probably the brass ones would be fine if mine had been greased, I'll keep them aside for when the bearings pack it in then.

One other thing I noticed is that the shift linkage/rod/fork whatever that is attached to the gearbox had a

lot of play and squeeking. Out of interest, do you know if the E153 from Rev 3,4,5 is bolt in for the Rev2 (same axles etc)??

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/06/14 13:49

---

Geoff are your shifter bearings like this ?

<http://i67.photobucket.com/albums/h295/MartyJ1/bearingpart.jpg>

You can get these here. <http://www.mr2oc.com/showthread.php?t=387847&page=1&pp=30>

I have the brass shifter bushes installed for the past five years and was contemplating buying some of the above, but Tim has made me think twice now.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/06/14 13:57

---

On closer inspection on the Kelsport site, they are not the same. I don't think spherical bearing shifter bushes have been produced for the MR2 since Phoenix Power made them.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/06/14 14:05

---

Yes they look like a better fit. The Kelsport ones do take a few washers to get them to fit right.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/06/14 14:13

---

Like you said Geoff, you have the brass type to re-use if the new type play up.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by SWAGGER - 2010/06/14 14:16

---

Jesus Quandry, KC+1 for your pains! Dedication though! Good man. :yes:

EDIT: Best of luck getting the time you need to finish of the engine works Marty! Keep the faith! Im looking forward to seeing this, it will be the only other 2.2 Stroker I will have ever seen besides Quandry's.

=====

---

**Re:Forged 2.2 build to begin soon.**

Posted by slipsliderg - 2010/06/14 14:16

---

I have the Kelsport one fitted on mine, but when I seen Geoff pictures I thought that it was a much tidier looking setup altogether.

The Kelsport ones are fine, nice gear change feel. Don't like the multiple washers, would prefer a single spacer rather than a heap of washers. After what Tim said I shall be keeping a watch on these and think I would go with the brass next time.

=====

---

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/06/14 20:03

---

the kelsport ones are mainly a skateboard bearing, the other ones are full spherical beaings being produced by Chico Race Works, because i'm his sole european agent i'll be stocking these also and will be much stronger than the skateboard bearing type.

So i'll offer both i think.

Tim  
TB Developments

=====

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**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/06/14 20:44

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Well let us know when you have a group buy :)

sorry for the thread jack Marty

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**Re:Forged 2.2 build to begin soon.**

Posted by mark239 - 2010/06/14 21:04

If anyone has the dimensions of the brass ones, I could knock them out - as i have a CNC and a lathe.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/06/14 21:06

i do buts :silence:

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Spidey - 2010/06/15 08:54

mark239 wrote:

If anyone has the dimensions of the brass ones, I could knock them out - as i have a CNC and a lathe.

Hey Mark

If I gave you the dimensions of the Power FC, could you make up a simple bracket for it. At the mo, mine is held on with strong velcro.

If it would be expensive, not to worry. Its just that this is something that would prob sell and not just a one off.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by SWAGGER - 2010/06/15 12:31

I need a bracket for my PFC too. Would be great if it not just fit around the PFC but also bolted to original fix points from stock ECU.

Thats two already....(need a price first though)

=====

**Re:Forged 2.2 build to begin soon.**

Posted by mark239 - 2010/06/15 13:29

give us an idea of the dimensions, and where the hole centres need to be, and diameter of the holes and I'll see how handy they would be to knock up.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by SWAGGER - 2010/06/16 00:11

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Marty, im really sorry, we have gone totally off your topic. :blush:

End of this discussion here.... :smash:

Mark, ill measure up and PM you, cheers. :yes:

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/06/16 04:00

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No problem. I'm as guilty of doing the same thing.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/07/03 18:26

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I have the engine block back on the stand and have been examining it. I notice that it is now positive deck height ie. the pistons are above the deck by about 0.14mm. I am hoping that this should not be a problem when I install my HKS 1mm head gasket. I have installed the oil pump pulley and will soon have the water pump and Morroso sump on.

<http://i67.photobucket.com/albums/h295/MartyJ1/Morrososump.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/Morrosoinside.jpg>

=====

**Re:Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2010/07/03 19:50

---

don't worry i checked this against a stock 1.2mm metal gen 3 head gasket and it was perfectly fine :)

way ahead of you mate ;)

Tim

TB Developments

=====

**Re:Forged 2.2 build to begin soon.**

Posted by slipsliderg - 2010/07/03 21:34

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Hmmm tasty sump, are you going to be track daying this beasty Marty. Looks like plenty of baffling in all directions.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/07/04 00:06

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I wouldn't mind trying a track day, but I wouldn't like to see the MR2 get beat up. Time trials would be better.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/07/05 08:50

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Sounds promising Marty!! keep us posted on this beast of a build.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/07/09 15:08

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I have received my second intercooler which will go on the other air intake duct. I will have to move the fuel fill pipe as it is in the way, I'm hoping that I can still use the original fuel cap position. I have also been testing the Sard intercooler water spray that will be cooling both intercoolers. I am impressed with the fine mist that it sprays which should help to keep temperatures down. It can be triggered by a number of things, for instance the throttle position sensor. I am thinking about installing a iat sensor just after both the intercoolers output. When it reaches a certain temperature it triggers the Sard water sprayer. There will also be a Spal puller fan on each intercooler.

I was also at Maplins to get some wire and relays to upgrade the wiring to the fuel pumps (two Walbros intank) and also upgrade the wiring for the headlights. The wiring to the fuel pumps has been known to drop voltage (not to get confused; this has nothing to do with the variable speed of the pump. That is something else which Toyota designed) because it is on the thin side. The same could be said for the head and fog lights.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2010/07/09 15:35

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Sounds interesting Marty. Twin intercoolers is not something you see very often. Will be good to see

how this turns out.

=====

## Re:Forged 2.2 build to begin soon.

Posted by tbdevelopments - 2010/07/09 19:23

---

this twin intercooler thing has been done before buddy, but it doesn't work well unfortunately :( it causes alot of flow reversal issues and turbulances.

will also depend on what ic's your using as i estimate a genuine greddy will work better than 2 of the ebay type ones going from a back to back comparison i did last year. very poor results from the ebay ones i have to say :(

Hope this helps before you waste to much money on it

Tim  
TB Developments

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=====

## Re:Forged 2.2 build to begin soon.

Posted by Marty J - 2010/07/22 22:24

---

A quick update; the Moroso sump needs to be modified :angry: , the ARP main studs for the engine girdle are in the way. Nothing that a bit of welding won't sort out ;) . The fuel tank has just been removed and tommorrow I should be installing the 2nd Walbro fuel pump with fittings and uprated wiring :cheer: .

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=====

## Re:Forged 2.2 build to begin soon.

Posted by slipsliderg - 2010/07/22 22:31

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Marty J wrote:

I should be installing the 2nd Walbro fuel pump with fittings and uprated wiring :cheer: .

Oh, I love the sound of twin pumps in the morning, you know a cars good when the whine of the fuel pumps starts and build the excitement before you give the key the final twist.

Get the right fuel hose for going in the tank, seen some stuff melt when introduced to fuel, not what you want to see hapening on your build. I cna't remember what type it was or what type we replaced it with. I would get some of the hose and submerge it in some good go go juice for a day or two then check it for degradatation. Not meaning to scare you, just seen it before with "performance petrol hose".

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/07/22 22:41

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There is a "kit" that came with the fuel pump that contains some hose for in the tank. You are correct about using the right hose for in the fuel tank. I'm hoping that they don't make too much noise. I have a fuel pump insulator that goes around one of them, which should help reduce noise and vibrations.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/07/28 22:37

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OK, I need to buy a slightly longer fuel hose for in the tank. SAE 30R10 hose which means that it is suitable for being submerged in fuel. The hole where the pump goes in is ever so slightly too small to fit two Walbro pumps in. I will either hammer or cut the lip to make room. I was thinking about coating the tank in underseal to dampen the sound of the pumps. Does anybody have a better idea about soundproofing the pumps ?

=====

**Re:Forged 2.2 build to begin soon.**

Posted by slipslidery - 2010/07/28 22:45

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Get some dynamat perhaps that will help if you mount it above the fuel tank and over the hole if you cut around the pipe and wires. Also put it anywhere the tank may be rubbing off the tunnel.

Dynamat

Never used it myself, but worth looking into, only thing is you don't want it to thick as it will be harder to get the tanks to sit in properly. Hope it helps.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/07/28 23:05

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Good idea for above the tank. :) There are already oem pads on the tank to stop rubbing. I think I will do the Dynamat mod and use underseal, the paint on the tank is peeling and there is some surface rust. I used to think that the tanks were aluminium to keep the weight down, until I saw the rust. :(

=====

**Re:Forged 2.2 build to begin soon.**

Posted by SWAGGER - 2010/07/28 23:21

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Whoa, didn't know they were steel! That would be a great way to lose weight, if you could get an aluminium one made up.

How you getting on overall Marty?

When will you be firing it up for the first time?

=====

## Re:Forged 2.2 build to begin soon.

Posted by Marty J - 2010/07/29 03:22

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I want to buy a few other things for the MR2 before I install the engine. I am trying to make it as easy as possible on myself to do things while the engine is out of the car. I'm a bit tied up financially at the moment, so it's going slower than I had anticipated. It's better to wait and do it properly than rush in and half do the job. There are plenty of other jobs that I can still do on the car for now.

=====

## Re:Forged 2.2 build to begin soon.

Posted by SWAGGER - 2010/07/29 15:40

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Well fair to play to ya mate. I wish I had your patience. You are right anyway, if you rushed it, imagine the amount of things that would pop up afterwards that you forgot to do, that you would then have to go back and do. I'm thinking specifically of wiring and stuff, routed everywhere. Coming at it the way you are gives you time to think of every single thing you want to do and the time to do it right and NEATLY. Good on ya, hope it keeps ticking along anyway.

=====

## Re:Forged 2.2 build to begin soon.

Posted by Marty J - 2010/08/11 01:16

---

A slightly boring topic, but very important; In-tank fuel hose.

Now, untill recently I was none the wiser about in-tank fuel hoses. So I decided to read up about the subject on the web. It has come to my attention that there are probably a lot of modified cars running the wrong type of hose in their fuel tanks. Because the hose is in the fuel tank it should be designed to withstand being immersed in fuel. This means having a protective coating on the outside of the hose as well as on the inside. I have read that some suppliers of fuel pumps have included the wrong type of hose with the pumps. The wrong hose used is usually fuel injection hose that is designed to carry the fuel from the tank to injectors. When this hose is immersed in fuel, over a period of time the outside of the hose can start to swell or disintegrate which can cause all sorts of problems.

I was surprised that my local motor factor in Buncrana had never heard of this. The correct type of hose should have a SAE (Society of Automotive Engineers) 30R10 specification. I am not sure if this specification is used in Europe or that there is some other European equivalent. Which means that it is

suitable for use in fuel tanks. I have spent a few days looking for manufacturers of this type of hose and was amazed at the small amount of manufacturers that produce it. I was also shocked to find that it is quite expensive. The cheapest I could find it was €11.35 per foot for Gates 27093 not including shipping at Liquid Iron Industries in the USA.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by SWAGGER - 2010/08/11 12:07

---

Not boring at all Marty, quite the revelation in fact. Very interesting stuff. Hope that helps a few people before doing anything. For example, I have a new Walbro fuel pump to be fitted. Now I know to check the fuel hose first.

Nice one! :yes:

=====

**Re:Forged 2.2 build to begin soon.**

Posted by SleepMethod - 2010/08/11 12:34

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Marty J wrote:

A slightly boring topic, but very important; In-tank fuel hose.

This is exactly the sort of thing for we need in this section +1KC!

=====

**Re:Forged 2.2 build to begin soon.**

Posted by slipsliderg - 2010/08/14 21:14

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Fair play to you Marty, nice one for posting up the details of the proper hose types, should save people considerable expense.

If the wrong hose was used it could have throw up al load of problems and many of them might not have been cheap.

KC for the research work :yes:

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/08/14 23:17

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No problem, this is exactly why we have an MR2 site to share information, swap ideas and make new

friends :)

=====

### Re:Forged 2.2 build to begin soon.

Posted by Marty J - 2010/08/23 12:45

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Today I received some hose from Liquid Iron Industries in the USA. Unfortunately it is not the Gates hose that I had ordered. :dry: I have emailed them to let them know about the situation and am waiting for a reply. If you are considering installing a Gates SAE 30r10 hose I would recommend that you order from somewhere else or wait for an update here.

=====

### Re:Forged 2.2 build to begin soon.

Posted by SWAGGER - 2010/08/23 15:02

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Bummer, hope they sort you out Marty!

=====

### Re:Forged 2.2 build to begin soon.

Posted by Marty J - 2010/08/23 15:16

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I must be jinxed when it comes to buying stuff from America :(

=====

### Re:Forged 2.2 build to begin soon.

Posted by Marty J - 2010/08/23 18:25

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I received a reply and a refund on excess postage charged. I will be using the Eaton hose.

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT2355.jpg>

Here's what Tim had to say.

Martin,

I no longer sell Gates hose as it is way too expensive for our application. The website is in the middle of being updated to reflect this change. In the meantime I had the pricing changed to reflect the Eaton hose. This Eaton hose conforms to the same specifications as the Gates hose but it is significantly cheaper. Eaton claims that it exceeds SAE 30R10 and it is safe for submersible applications. I have had no issues with it yet.

I was supposed to refund you the excess shipping cost and simply forgot. I shipped a similar package to Germany just before you contacted me and it was over \$30 so I assumed it would be similar. I issued you a refund for the \$16.55 just now.

Thank you,

--

Tim Diekmann  
President  
Liquid Iron Industries, Inc.

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**Re:Forged 2.2 build to begin soon.**

Posted by SWAGGER - 2010/08/23 21:08

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Seems fair enough, hope it does what it says on the tin!

Lovin the mini disco balls dude! :P You fitting those to the interior light dome? ;)

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/08/23 21:33

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OK so you like my balls dude :huh: So does my wife :laugh: I would have thought you would have gone for the MR2 mug.

<http://i67.photobucket.com/albums/h295/MartyJ1/mug.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT2356.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT2357.jpg>

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**Re:Forged 2.2 build to begin soon.**

Posted by SWAGGER - 2010/08/23 23:10

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:laugh: Brilliant man, I missed that! VG ;)

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**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/08/23 23:32

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I dropped the Moroso sump off at the local engineering firm to have a couple of aluminium extension plates to be tig welded on. This gives the two end girdle studs the room they need. I should have it back this Wednesday. I will install the two Walbro fuel pumps with the Eaton pick-up hose tomorrow.

=====  
**Re:Forged 2.2 build to begin soon.**

Posted by slipsliderg - 2010/08/23 23:39

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Good stuff Marty, is there much left on the list of things to do at this stage.

=====  
**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/08/23 23:44

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I will be doing a wire-tuck soon. I have already pulled the wires from the boot and engine back into the cabin, to be re-routed. I have a few other ideas as well ;)

=====  
**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/09/13 23:10

---

I finally got my crank scraper installed today. It certainly wasn't a straight forward drop in job like I had imagined when purchasing the thing. There was a lot of grinding and hacking to make it fit. To be fair on the maker I didn't specify that I was doing a stroker with a girdle. To allow the scraper to fit with the girdle I had to machine down the girdle spacers minus the thickness of the scraper because they would be sitting too high otherwise. Scraper and spacers both use the main bearing cap studs for attachment.

I am doing a wire tuck and got a bit carried away. I have almost finished upgrading one side of the wiring to the fog lights and revision 6 headlights. I don't know if it is completely necessary to do on the MR2 but I read on a few web sites that certain Toyota vehicles wiring was not as good as it could be for the lights. Toyota seemed to have used tonnes of insulating tape and tubing, it took me a while stripping down the wires. I am using relays wired directly to the battery and when I have finished the upgrade, the dipped beam will stay on even when I switch to high beam, which will improve the lighting which would have overloaded the original wires (that are now removed).

=====  
**Re:Forged 2.2 build to begin soon.**

Posted by SWAGGER - 2010/09/13 23:26

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Jesus, sounds like you are going to town on this project. Really thorough Marty, didn't realise that you were that good with the electronics too.

Any idea of time frame to first start? You must be close now. Dying to see this machine, I have a feeling it's going to be pretty epic going by the detail and time you are putting in, not to mentioned the endless list of fancy and custom after market goods. HUGE shame you can't come to Athlone in it.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2010/09/15 12:30

Lol I am just going with the flow so to speak. It will be be back on the road, I just don't know when. The only thing I am concerned about now is that it has been a bit "hyped up" on this forum, it would be embarrassing if something was to go wrong :blush: .

I have received a very late reply to an email that I sent to Gates UK. They have sent me the name of an Irish supplier and phone number. I have what I need, so have not been in contact with them to ask about the cost of a Gates submersible fuel hose. Gates is at the top when it comes to this particular product, so don't be put off by the high price. Strongline Autoparts in Dublin. (Tel No 01 462 4631)

=====

**Re:Forged 2.2 build to begin soon.**

Posted by slipsliderg - 2010/09/15 13:05

Strongline Website

=====

**Re:Forged 2.2 build to begin soon.**

Posted by SWAGGER - 2010/09/15 13:48

Don't worry about the hype Marty, it will just be nice to see all the work you have done! The effort is impressive, the result will be too.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Quandry - 2011/01/09 21:07

What's the latest on your car Marty? are you anyway closer to getting the engine back in?

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/01/10 15:29

---

What with the snow, Christmas and flu (in that order) I have not done anything with it. :(

But it is time to knuckle down and get it sorted. So I should be starting back on the whole car really soon.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/02/03 23:42

---

I ordered some more parts. A water pump with thermostat housing (I didn't like the look of mine, it was slightly pitted on the gasket mating surfaces). A timing belt tensioner bearing and a timing belt pulley.

=====

**Re:Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/02/08 16:15

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I received the parts today. The water pump is a Blue Print brand ADT39138. So back to the garage to continue the build.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/04/11 13:29

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So today I went searching for my Piper timing disc with no luck, but I did find this in the loft. I have posted it here incase somebody else needs to do their timing too, they can print it off. I should have most of the engine assembled by the end of this week. The dyno meeting in Armagh has spurred me on to get this project back on the road.

<http://i67.photobucket.com/albums/h295/MartyJ1/img126.jpg>

=====

**Re: Forged 2.2 build to begin soon.**

Posted by slipsliderg - 2011/04/11 13:41

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Good on you MartyJ, throw up some pictures of the progress, might spur me on a bit aswell.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Quandry - 2011/04/11 13:49

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cool! :cheer:

It did the same for me too :) I'm prepping now for doing my suspension bushes (with writeup ;)

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Harper - 2011/04/11 13:54

---

Will you have it running for the summer?

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/04/11 14:10

---

Lol I'll try and take a few photos for you. Really I should have Geoff looking over my shoulder and snapping them he's slightly keener than I am when it comes to photos and write ups :laugh:

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/04/11 14:13

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Fingers crossed, it will be on the road before the end of May.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/04/11 21:41

---

Is it just me or does this happen to everyone ? You tear the house apart looking for something, only not to find it. Then when you are doing something else it appears right under your nose :S

<http://i67.photobucket.com/albums/h295/MartyJ1/img127.jpg>

=====

**Re: Forged 2.2 build to begin soon.**

Posted by ricky2 - 2011/04/11 21:45

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Marty J wrote:

Is it just me or does this happen to everyone ? You tear the house apart looking for something, only not to find it. Then when you are doing something else it apears right under your nose :S

<http://i67.photobucket.com/albums/h295/MartyJ1/img127.jpg>

:laugh: Sounds about right :laugh:

=====

### Re: Forged 2.2 build to begin soon.

Posted by mark239 - 2011/04/11 22:29

---

Marty J wrote:

Is it just me or does this happen to everyone ? You tear the house apart looking for something, only not to find it. Then when you are doing something else it apears right under your nose :S

<http://i67.photobucket.com/albums/h295/MartyJ1/img127.jpg>

Had that degree wheel, you're better off with the full summit racing timing kit. Much easier to mount securely to the crank pulley.

=====

### Re: Forged 2.2 build to begin soon.

Posted by Marty J - 2011/04/12 00:20

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Do you mean this kit ? <http://www.summitracing.com/parts/SUM-G1056/?rtype=10>

I already have a dial indicator. In what way does the disc mount differently ?

=====

### Re: Forged 2.2 build to begin soon.

Posted by mark239 - 2011/04/12 00:35

---

Thats the one!

It's solid metal, so you can bolt it real firm - and the crank bolt fits through the middle.

I could lend you mine if you need it or were close by.

I would HIGHLY recommend that you convert to trigger wheel. The standard timing reference is BALLS.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/04/12 00:38

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I am in Buncrana, Co. Donegal, where are you ?

=====

**Re: Forged 2.2 build to begin soon.**

Posted by dan - 2011/04/12 00:53

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Is there much involved in switching to trigger wheel setup Mark? If I'm starting from scratch I might as well go down the best route for futre proofing.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by mark239 - 2011/04/12 00:56

---

dan wrote:

Is there much involved in switching to trigger wheel setup Mark? If I'm starting from scratch I might as well go down the best route for futre proofing.

It's so easy it's almost hilarious.

You need a trigger wheel, and a sensor. Buy the trigger wheel from [www.trigger-wheels.com](http://www.trigger-wheels.com)

The sensor - a sensor from a ford transit will do, they also sell them at the above website.

You just then need to mount the sensor and the wheel.

Use SHIELDED cable.

I'd retain the distributor for the single tooth TDC sensor, or you could mount one on a cam pulley.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by mark239 - 2011/04/12 00:57

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Marty J wrote:

I am in Buncrana, Co. Donegal, where are you ?

Near Dungannon in Tyrone

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/04/12 01:04

Shame you weren't at the Armagh dyno meet. How soon could you post it, I would obviously refund you your costs ?

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/04/16 13:54

I was talking on the phone to Kris Osheim who runs KORacing in the US. Kris sold me the gt3082r turbo kit. He recommends that I install my old turbo for running in the engine because there is a slight risk of damage from bits of metal from the rebuild. So I am going to take his advice.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/04/16 17:17

Here's a couple of photos. The first is of the ARP studs and HKS head gasket installed. The second is of the head ready to be torqued. I should point out that there is an issue with installing the ARP nuts. Where the studs are situated there isn't quite enough room on the intake side to simply drop some the nut onto the stud. I coated the socket with some of the ARP lube and used a bit of force to get in there. Some people have used a grinder on their socket to make the wall a bit thinner.

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0202.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0204.jpg>

=====

**Re: Forged 2.2 build to begin soon.**

Posted by ricky2 - 2011/04/16 17:23

I need to stop reading this thread or I'll take a leap at it

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/04/16 18:20

Go on you know you want to :evil:

=====  
**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/04/22 21:51

---

This is where its at, at the moment.

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0218.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0225.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0228.jpg>

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**Re: Forged 2.2 build to begin soon.**

Posted by Harper - 2011/04/22 22:19

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I would love to have an engine to tinker about with. Where did you learn how to do this?

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=====  
**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/04/23 01:33

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Harper wrote:

I would love to have an engine to tinker about with. Where did you learn how to do this?

Lots & lots of reading; books, magazines and of coarse the internet :)

I just wish I could make some money from doing this kind of stuff :(

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=====  
**Re: Forged 2.2 build to begin soon.**

Posted by Quandry - 2011/04/23 08:06

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Looking good!!

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=====  
**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/05/03 15:38

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I cleaned out 18 years of grime from the engine bay yesterday. So these TRD engine mounts will be going going in soon.

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0262.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0263.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0264.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0265.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0266.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0267.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0268.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0269.jpg>

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Quandry - 2011/05/03 16:52

---

ok I'm jealous but I will give you a KC for doing it right! ;)

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/05/03 22:13

---

So I finally installed the Moroso sump. With that, the crank scraper and the engine girdle allowing extra oil capacity, this engine should be up for track use without too much worry of oil starvation.

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0271.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0272.jpg>

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**Re: Forged 2.2 build to begin soon.**

Posted by Quandry - 2011/05/09 11:36

---

Looking good Marty, that Alternator bracket looks the business!

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/05/09 13:01

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It is very light weight, you could lift it with your little finger, try doing that with the original alternator bracket :laugh:

Fingers crossed the engine will be back in the MR2 this week.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Harper - 2011/05/09 13:26

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When will it be running? we should organise a meet in celebration?

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/05/09 13:39

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I'm not sure if I will have it running this week. I still have a lot of wiring to sort out. I will also have to get it booked in for the NCT after it is run in.

Like I said in a earlier post, I am not going to risk the new turbo while I run in the engine, so the complete upgrade will be done in sections. At least I have the main part finished. So it will go something like:

1. Run in engine.
2. Install 3082r tubo kit, do some testing ;)
3. Install everything else
4. Get the Hydra Nemesis ems installed and tuned.

I have a nice crank trigger wheel and sensor installed for a future upgrade, when I can afford to go to coil on plugs.

I will take some photos later today.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/05/09 14:55

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So I'm going through some of my MR2 parts and I thought that I would post these photos of some of the parts that will have to wait to go on the engine.

1st photo has the Delphi 950cc fuel injectors next to the RMR.

2nd photo, Nissan Q45 throttle body. 3rd photo, RMR intake manifold for Q45.

3rd photo, RMR intake manifold.

4th photo, Garrett 3082r KORacing turbo with chromed compressor and heat coated turbine.

5th photo, KORacing down pipe that is also coated. This came with the turbo kit.

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0274.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0280.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0279.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0275.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0276.jpg>

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## Re: Forged 2.2 build to begin soon.

Posted by SWAGGER - 2011/05/09 22:05

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Jesus! That is some sweet kit Marty, whatever about performance, it will be something to behold! Even just looking at the engine will have some impact on people. Nice work, really. I can't believe the patience and meticulous levels of detail. Best of luck getting it running and run in. I am sure it will be some day for you, to hear it fire for the first time after all the thousands of hours of work. :)

=====

## Re: Forged 2.2 build to begin soon.

Posted by Marty J - 2011/05/09 23:43

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Thanks for the compliments Swagger.

Here's the photos of the crank trigger wheel and sensor.

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0283-1.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0282.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0286.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0281.jpg>

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## Re: Forged 2.2 build to begin soon.

Posted by Marty J - 2011/05/16 22:29

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So the standard intake manifold and throttlebody are back on. I went to install the exhaust manifold which already has the turbo and downpipe attached which has revealed a little problem. Because I have an engine girdle and a Moroso sump on, the down pipe is hitting the sump. So I will have to extend the down pipe about two centimeters. :(

After I have sorted that out, I will attach the ATS twin plate carbon clutch and the gearbox.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by AlersClarke - 2011/05/19 23:34

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Good man yourself.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by mark239 - 2011/05/21 22:01

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Did you get the cams degreed ok? Sorry I never replied about my kit, I blew my water pump and have had a few other bits and pieces going on!

I've went for a trigger wheel mounted on the crank - your's is a much neater install!

COP isn't expensive. You can get LS2 coils for sod all.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/05/22 03:32

---

Yes the cams have been set to Pipers spec.

I am juggling the cash at the moment, if I was still working this would have been finished a long time ago. So the cops will have to wait for now.

I thought that my local engineering firm could have supplied me with some piping to modify the down-pipe and mid-section. Unfortunately they don't have the correct size tubing in stock, I will have to look elsewhere.

And a kick in the nuts to myself, I need to repair the fuel tank. To cut a long story short, it needs to be brazed :groan:

=====

**Re: Forged 2.2 build to begin soon.**

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Posted by Quandry - 2011/06/09 10:08

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What's the latest? did you get your tank fixed?

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/06/09 10:54

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Not yet. I also need something cheap to replace the part that the + wires from the fuel pumps are connected to inside the tank. Any ideas as to what I could use ?

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Quandry - 2011/06/09 11:04

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Sorry Marty, my mechanic changed my fuel pump so I haven't seen it first hand. If it's possible to use genuine Toyota though it may be a good investment. Their parts seem to last the longest and is there a safety consideration also?

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/06/09 11:19

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I don't think this part is sold on its own. Basically it is carrying the + from the battery into the fuel tank so it is insulated so not to touch the tank which is negative.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Quandry - 2011/06/09 13:21

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Maybe you can get one from Joe?

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Quandry - 2011/06/09 22:54

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Actually thinking about it you might be able to get a whole tank from Joe in Tuam, then you don't need to

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braze your old tank??

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/06/10 11:31

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The reason I need to weld the tank is because I caused a split when I was removing a lip inside the flange. I needed to widen the lip to allow the two Walbro pumps to squeeze inside the tank. One of the pumps has insulation on it so they don't vibrate together and this made it even more difficult to fit them in.

So I would have to modify another tank which could go the same way. I will fix this tank myself to save some cash.

With a bit of ingenuity I think I could make something to safely carry the positive into the tank for the pumps. But if someone finds something that will do the job cheaply, please post it here.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/06/10 19:41

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The engine will be coming off the stand soon and this Carbonetic twin plate clutch will be the next part to be attached. :)

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0327-1.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/PICT0331.jpg>

=====

**Re: Forged 2.2 build to begin soon.**

Posted by dan - 2011/06/10 19:52

---

Making good progress Martin. Any idea when you'll be running it in? I've started tearing my car apart at last. Need to get a few more tools as the ones I have are breaking left and right! Buy cheap, buy twice!

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/06/10 20:05

---

I thought that I would have had it back together by now Dan, so I am going to refrain from answering when it will be ready.

I learned quick not to buy cheap tools. They nearly always let you down when you need them the most. Think of your MR2 like it is a sexy woman, she wants a good tool to keep her purring. ;)

=====

**Re: Forged 2.2 build to begin soon.**

Posted by dan - 2011/06/10 20:11

---

Haha, nice analogy. Yea I think I'll just get some of the Halfords Professional ones as there's a lifetime warranty on the mechanical parts. Can't see myself actually snapping any of them in two so it should be fine. Halfords is only down the road too so makes sense. Pity they're so expensive. Could do with a trade card!

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/06/10 20:23

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I bought some ratchet spanners from Halfords in Letterkenny a few years ago and they are great, but a bit pricey.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by slipsliderg - 2011/06/10 20:28

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Marty J wrote:

I bought some ratchet spanners from Halfords in Letterkenny a few years ago and they are great, but a bit pricey.

+1, but having them a few years proves there not that pricey :P

Build is coming on well there Marty, keep at it.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Quandry - 2011/06/10 20:49

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I'm buying a lot of tools at Halfords. I'd like to buy snap on but it's 7 times the price. I know they're bloody good, but the Halfords stuff is working just fine for me.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by dan - 2011/06/10 21:06

---

Yea, the bits I broke were from a mates toolbox he got in Halfords but they were those cheap ones in the €79 euro tool box. Overall though it's not a bad bit of kit. Just the socket wrench didn't last more than ten minutes! I'll get a good set of 1/2" sockets and a good wrench shortly though.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by mark239 - 2011/06/10 21:54

---

Marty J wrote:

Yes the cams have been set to Pipers spec.

I am juggling the cash at the moment, if I was still working this would have been finished a long time ago. So the cops will have to wait for now.

I thought that my local engineering firm could have supplied me with some piping to modify the down-pipe and mid-section. Unfortunately they don't have the correct size tubing in stock, I will have to look elsewhere.

And a kick in the nuts to myself, I need to repair the fuel tank. To cut a long story short, it needs to be brazed :groan:

Do you see the down pipe - I believe the ONLY reason my manifold hasn't cracked is because my ENTIRE downpipe is flexi. I made it by cutting the downpipe up that I had, welding a v-band flange on to one end, and welding the other end to a length of flexi pipe.

The pipe costs £15 for 2 meters at your local motor factor.

Have a look here

<http://www.mark-chapman.com/uploads/mr2/pipe.JPG>

=====

**Re: Forged 2.2 build to begin soon.**

Posted by mark239 - 2011/06/10 21:56

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On the subject of ratchet spanners, only Brittool make decent ones.

All my other tools are Teng (But I use snap-on ratchets, as the teng ratchets are shite)

=====

**Re: Forged 2.2 build to begin soon.**

Posted by mark239 - 2011/06/10 21:58

---

what model is the crank trigger off ?

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**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/06/11 00:33

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I believe it's used on the Beams engine.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Peggyontherun - 2011/06/12 12:41

---

Cracking build fair play looking gud :)

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Quandry - 2011/08/24 09:18

---

What's the latest on your build then Marty?? :)

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/08/25 13:41

---

Sorry to say nothing has happened with the engine. I have a few things to be considered with other parts of the car before the engine goes in. :(

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Quandry - 2011/08/25 13:51

---

Just a question for you, I want to check my cam timing with a dial gauge indicator. Can these be bought online and do you know of any good writeups for the 3sgte?

=====  
**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/08/25 14:03

---

Borrowed from Piper cams:

**A Guide to Correct Timing**

To check your cam timing, you will need a 360 degree protractor and dial gauge. The engine must be set at TDC and the protractor bolted to the crank pulley. Attach the dial gauge so that the foot is resting on the valve spring cap (or follower on OHC engine). Attach a pointer to the engine and zero the protractor. The engine is now at TDC with the protractor reading zero.

Turn the engine until full lift is first shown on dial gauge. Note number of degrees (e.g. 106 degrees ATDC), continue to turn the engine and note when lift starts to reduce (e.g. 110 degrees ATDC). True full lift position will, in this case, be 108 degrees. Your figures will differ but true full lift is at midway point.

The correct full lift position for your cam is shown on attached information sheet.

I bought my dial gauge from an engineering firm a few years ago, but I cannot remember who they are. I will take a look later on to see what brand it is.

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=====  
**Re: Forged 2.2 build to begin soon.**

Posted by Quandry - 2011/08/25 14:27

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Thanks Marty, I might also check with Josh also, he's normally pretty good on tools online etc.

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=====  
**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/08/25 21:32

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I used a draper dial gauge and magnetic holder.

I used a couple of screw holes in the head and bolted a bracket to the head. This allowed the magnetic holder to grip to the head.

---

=====  
**Re: Forged 2.2 build to begin soon.**

Posted by Quandry - 2011/08/25 22:03

---

very cool, will have a look out for tools... oh dear having to buy more tools ;)

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2011/09/30 14:16

---

I received this product in the post today, it is made by a company called Liqui Moly in Germany. It is used on new turbos for when they are installed for the first time. There will be no oil circulation around the turbo for the first few seconds of starting the engine which creates wear and heat. This product protects and lubricates the turbos internal components until the oil reaches them.

I purchased it from AET Turbos in the UK for £13.19 delivered.

[http://i67.photobucket.com/albums/h295/MartyJ1/turbo\\_super\\_lube.jpg](http://i67.photobucket.com/albums/h295/MartyJ1/turbo_super_lube.jpg)

=====

**Re: Forged 2.2 build to begin soon.**

Posted by gof92tubby - 2013/08/01 22:28

---

Great read i love when you were chating with Tim from tb devlopment "anals good" :laugh: . Yea when you would be going this deep into your pockets you would like it to be pure perfection. :)

any updates

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Bommie - 2013/08/01 23:46

---

how have i not seen this thread before, epic work! KC'd! :woohoo:

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2013/08/02 00:23

---

I like to think that I have a good sense of humour. ;)

I have been doing a few things with the MR2 lately. I had a fuel rail produced to take some top feed Supra (7mgte) 440cc fuel injectors. The idea behind this is to run the engine in on the Toyota ems.

When run in,keep the Supra injectors in situ and add the other four 990cc injectors to the inlet manifold runners.

The Hydra Nemesis ems will activate the larger injectors when the extra power is needed.

This way should help get better fuel economy rather than just using four large injectors. :)

=====

**Re: Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2013/08/02 01:09

---

haven't you got this thing up and running yet. damn seems like a lifetime ago i built that bottom end.

Hope you've been keeping the bores nice and rust free :)

Tim  
TB Developments

=====

**Re: Forged 2.2 build to begin soon.**

Posted by gof92tubby - 2013/08/02 08:56

---

Wow that all sounds very complex to get working in harmony but f@#kin amazing at the same time have you any up to date pics even the car with that bumper you bought way back .this build must have cost you a fortune. It will defo be one of a kind. B)  
willing to trade kc's for pics :laugh:  
bommie dont be so trigger happy we wont get to see anything :laugh: :laugh:  
great read kcd

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Märty J - 2013/08/02 10:39

---

tbdevelopments wrote:  
haven't you got this thing up and running yet. damn seems like a lifetime ago i built that bottom end.

Hope you've been keeping the bores nice and rust free :)

Tim  
TB Developments

I kept them well lubed, they are as good as the day they were bored. :(

Nothing special to see that's why I didn't post any photos.



Having a baby and lack of cash slowed me down.

I bought most of the parts when I was working, so yes I did spend a lot on it.

=====  
**Re: Forged 2.2 build to begin soon.**

Posted by got92tubby - 2013/08/02 11:18

---

Only messing dude. If i had started a tread when i first got a mr2 there would have been pics of a parked car for three years then a lazy eye kit fitted and then car moved to a shed for another 2 and a half years before i finall got one on the road this year . A wedding two kids and the construction sector falling apart so i feel your pain. So compared to me you have made huge progress

Hope you get sorted soon very impressive build and we would all lovee to see it up and running. :)

=====  
**Re: Forged 2.2 build to begin soon.**

Posted by tbdevelopments - 2013/08/02 12:29

---

Marty J wrote:

tbdevelopments wrote:

haven't you got this thing up and running yet. damn seems like a lifetime ago i built that bottom end.

Hope you've been keeping the bores nice and rust free :)

Tim

TB Developments

I kept them well lubed, they are as good as the day they were bored. :(

Nothing special to see that's why I didn't post any photos.

Having a baby and lack of cash slowed me down.

I bought most of the parts when I was working, so yes I did spend a lot on it.

ah congratulations on the little one mate :)

Tim

TB Developments

=====  
**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2013/11/13 21:27

---

Just some cosmetics done recently.

<http://i67.photobucket.com/albums/h295/MartyJ1/DSC00814.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/DSC00818.jpg>

<http://i67.photobucket.com/albums/h295/MartyJ1/DSC00817.jpg>

=====  
**Re: Forged 2.2 build to begin soon.**

Posted by Infamous - 2013/11/13 22:01

---

Looking good good Marty! KC+1

=====

**Re: Forged 2.2 build to begin soon.**

Posted by got92tubby - 2013/11/13 22:05

---

Nice to see some updates .love the clear cam cover. The hks cam pulleys are sweet too. Serious detail going into this build kcd B)

Any pics of the body :pray:

=====

**Re: Forged 2.2 build to begin soon.**

Posted by spla300 - 2013/11/14 00:53

---

Very nice, i forgot all about this thread.  
Shame the way the engine is positioned in the mr2 you cant see them cams that well, ive a set of purple adjustable cams myself, nobody ever notices them :(

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2013/11/14 09:07

---

Thanks for compliments guys.

It's a bit difficult to see, but the metal plate was painted wrinkle red and is actually darker than what is seen in the photo.

The clear cover is held on with anodized gold titanium bolts, so no rusting there.

It is a tight fit in the engine bay, but at least some of you know about the pretty parts now. :blush:

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2013/11/14 09:10

---

I forgot to say that the body has not been touched since the MR2 was taken off the road. It needs T-cutting and a lot of tlc.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Quandry - 2013/11/14 09:50

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"anodized gold titanium bolts" - :O

Cool stuff Marty!!

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2016/05/10 09:02

---

So the expanding family slowly drains money, but the MR2 is gradually gaining more attention once again and I managed to buy replacement sills.

I'm dreading what else I might find once I start cutting the old rusty sills away.

Hopefully the old mig welder still works.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by ricky2 - 2016/05/10 09:32

---

Glad you're keeping the faith Marty had to do some sill work this year myself the first year I've needed anything for the mot the inside was ok but waxoiled it anyway.

=====

**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2016/05/10 19:03

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Going to do the same with the Waxoil.

=====  
**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2017/10/11 12:42

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I sent my Hydra Nemesis away today to get upgraded to 2.7 Epsilon. :)

=====  
**Re: Forged 2.2 build to begin soon.**

Posted by ricky2 - 2017/10/11 13:08

---

Its about time we seen this car on the road Marty any closer?

=====  
**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2017/10/11 13:33

---

No time soon. No Lotto wins yet.

I'm going the charge cooler route too. I bought a Pierburg CWA 100 electric coolant pump a while back. I want it to be reliable when I eventually do get it back on the road.

=====  
**Re: Forged 2.2 build to begin soon.**

Posted by Marty J - 2017/10/24 10:40

---

I got some stainless steel rear brace bars yesterday. They should last the life of the car.

[https://s26.postimg.org/qha1qgnpl/20171023\\_183344.jpg](https://s26.postimg.org/qha1qgnpl/20171023_183344.jpg)