

## A Year of Two Halves.

Engine/Travel power

After an extended maintenance period TQ finally had the repair to the engine completed, with a new crankshaft, a modification to the pulley and addition of the spline lock it has proven so far to be a solid repair. Armed with the knowledge gained by previous experience and provided we all adhere to the advice laid down with regard to use of the Travel Power generator, I think we can now put this behind us and look forward to trouble free running for the foreseeable future.

The repair wasn't without complications, the engine couldn't be removed from TQ until late January, and there were various hold-ups after that.

On 22nd January I hired a trailer and transported the engine over to Boating Leisure Services in Nether Heyford for repair.

Beta Marine sent a crankshaft to Boating Leisure Services that was slightly "marked" in the important places which meant a replacement had to be sent. This time they sent the wrong crankshaft! Finally the right crankshaft was sent which was in the same condition as the first, but Gary Manning (BLS) agreed with Beta that it be sent away for polishing prior to fitting and Beta would pick up the tab.

By 10th March, the engine was fully assembled and tested and on 11th March I hired the trailer again to bring the engine back to Driotwich. It was soon fitted back in TQ and normal service was resumed.

The Summer has by enlarge been relatively fault free, although there was a scary moment when it was thought the gearbox was playing up, but it turned out to be normal wear and tear and isn't posing a problem at present.

More recently a member reported there was no mains electricity on board, the inverter made arcing noises before it failed completely and the Travel Power generator also failed. Even the shore line kept tripping at the bollard, so I phoned Jeremy the Boatman and asked if he could take a look. It wasn't good news... the inverter has a short across the live, neutral and earth effectively frying the electronics and is rendered uneconomical to repair. The TP generator has mashed up the comm ring and brush set, it would have to be packed up and sent to Cox's for another repair. We don't know why the shore line was playing up, but suspect it must be due to the fault in one or both of the other two sources.

As a new inverter was required it was recommended we go for a high capacity inverter and finally do away with the Travel Power generator. A Victron 3000 has been ordered and is being fitted as you are reading this. It will run the washer/drier and all the other electrics on board although not at the same time. It can even be used when cruising. I will issue a second edition presentation "Using Electricity aboard Narrowboat Tranquility" soon due to the major changes that have been made.

The engine starting fault has reared its ugly head from time to time throughout the year and I've had many experts look at it in the past and no one has yet come up with a solution. I've replaced the ignition switch and starter motor, added an extra earth cable from the engine direct to the -ve battery terminal, the 40 amp fuse has been checked for corrosion time and time again, as have the terminal blocks on the engine mounting rails, the 11 way plug/socket has been checked and cleaned both ends, and recently more cabling has been replaced.

I have written to Tony Brooks of TB Training for some help and he said I've covered all angles but I have a couple of suggestions which I will try out soon and I'll let you know the results at the AGM.

## Re: Narrow boat Tranquility - Engine starting problem.

TB

Tony Brooks

### Reply

Fri 02/09, 17:11

Kevin T (kdtseven@hotmail.co.uk)

Dear Kevin

I am afraid that I can not be much help with such an intermittent fault that has been looked at by so many people. It seems that you have done all the right things though.

This sounds lie a poor connection but where is anybody's guess.

Have the starter battery terminals and posts had their mating surfaces scraped to bright metal and dressed with Vaseline before refitting and tightening. Black corrosion on the negative terminal post can give this sort of symptom.

As you give no indication that the warning lamps go out and the instruments all drop when this happens I must assume they do not so that suggests you still have a decent supply to the ignition switch so the fault must be else where.

If this were my boat I would start by running a new cable of 44 x 0.30mm between the ignition switch start terminal and the starter energise terminal bypassing the multiway plug. Are you aware that sometimes boats have two such plugs?

I would then start looking very intently at all the terminal crimps on all the heavy starting cables in case one was lose. I might even take each lead off in turn and try to run some solder in the crimp but it would need a very large hot iron (2 or 3 lbs) or a small blow torch. I think Beta have a positive junction stud on the engine "foot" that all engine positives are connected to. Make sure this is clean and tight.

There must also be a question over the engine battery master switch, especially if it uses a plastic key. These are known to fail and give intermittent faults. You can do a crude test by disconnecting one lead and putting both leads on one terminal but remember the switch will then be out of circuit. As an alternative screw some paper up into a little ball and pop id down the hold with the key on top, If the fault clears it is the switch that's faulty.

I am sure that if you tested for voltdrop on the starter circuit when the fault was present you would find the fault but possibly less likely when it is not apparent. Still worth doing though. see <http://www.tb-training.co.uk/MarineE06.html#PRE-ENGAGE%20STARTERS>

It is possible that the starter may have worn or sticky brushes but its been overhauled so we can rule that out.

Just once I had similar symptoms and it turned out to be a fault with the cell interlink lead burning inside the battery if it was that the lights and instruments would turn off when you try to start.

Not a lot of use I am afraid

----- Original Message -----

**From:** Kevin T

**To:** Tony@TB-Training.co.uk

**Sent:** Friday, September 02, 2016 5:39 PM

**Subject:** Narrow boat Tranquility - Engine starting problem.

Hi Tony,

My name is Kevin Trott, I'm the engineering manager for our self managed syndicate boat Tranquility currently based at Droitwich Spa Marina. I have a 44 year background in production and maintenance engineering in factories and some of my professional experience relates to large diesel engines, ie factory generators.

Our syndicate has had an on-going problem with starting our Beta Marine 43 engine for the past four years and no one can pin down the fault. We've had RCR look at it on many occasions and various other reputable engineers from around the system have attempted the challenge but we've yet to resolve it. Usually when RCR arrive their engineer turns the key and it starts straight away.

Most of the time the engine starts straight away, but occasionally the symptoms are that when the ignition key is turned to the start position there is usually just a click from the starter motor, or sometimes nothing at all. Go and make a cup of tea, and come back later and it starts with no problem.

We know the starter battery is good, it's been tested on many occasions using drop test equipment and passes with flying colours. The next thing we check is the 40 Amp inline fuse for corrosion, all is good there, and the 11 way harness has been checked with particular attention paid to pin 2, the connection from the ignition switch.

In desperation I changed the ignition switch, and then I had the starter motor re-manufactured at Cox's Automotive, and a fine job they did too, but to no avail.

One day we called in to Star Line in Nuneaton to have the domestic batteries changed and when they tried to start the engine to test the charging circuit it failed - right in front of the professionals' eyes, "get these guys on the case", and to be fair they did an admirable job and at first it seemed they had found a fault. They connected a heavy duty jump lead to the lifting eye on the engine and the other end to the negative on the battery. Turned the key and the engine started straight away. Removed the jump lead and we're back to the same fault. So a large 40mm<sup>2</sup> cable was purchased and fitted directly between the engine casing and the -ve on the battery.

This worked for a while, but a syndicate member called me to say the engine failed to start and called RCR. Of course when they arrived it started and no fault was found. So the fault still exists.

Recently the engine was removed from Tranquility and a new crankshaft was fitted. This was due to another problem relating to the Travel Power generator we have on board, but now we have a modified crankshaft pulley and a spline lock fitted and everyone in the syndicate now knows not to use the Travel Power generator with engine revs below 1200 rpm or while cruising.

In May I changed the starter motor for a brand new one and this still hasn't resolved it. Since then all the cabling relating to the starting circuit has been replaced and a syndicate member has called me today to say he couldn't start the engine and had called RCR. I've not heard back, but i'm guessing the usual happened and he's on his way.

I don't know where to turn next with this, hoping you can throw a glimmer of light on it for us.

Best regards,  
Kevin

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