

# The Generator

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**Palmerston Model Engineering Club**  
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Managers of the Marriner Reserve Railway - Marriner Street - Palmerston North  
PO Box 4132 - Manawatu Mail Centre - Palmerston North 4442

## The Palmerston North Model Engineering Club

### Upcoming Club Nights

25 June 2020

AGM 2020  
7.30pm Hearing Association Hall  
435 Church Street, Palmerston North

23 July 2020

Richard's Tour Aotearoa  
Cape Reinga to Stirling Point Bluff.

27 August 2020

Bring along your current project

### Marriner Reserve Railway

5 July

Recommencement of railway operations at the Mariner Reserve  
Trains in operation from 1 pm to 3pm Weather permitting.

19 July

Trains in operation from 1pm to 3pm  
Weather permitting

## Notice of AGM

The Annual General Meeting of the Palmerston North Model Engineering Club will be held on the 25th June at 7.30pm at the Hearing Association Hall 435 Church Street, Palmerston North.

Members who do not wish to attend are able to cast a proxy vote with another club member of their choosing or in writing and lodged with the Secretary .

Meeting to be followed by a presentation of some of the workshop projects you will have undertaken during the level 4 lockdown when you were able to work with minimal disruption.

## Marriner Reserve Railway

With the relaxation of the Covid 19 restrictions Thursday gathering have recommenced with the first priority to catch up on all the grounds maintenance stuff and Structures and Vehicle inspections which haven't been done over the last couple of months to get the reserve and our facilities back to how we like it looking. With railway operations to recommence in July the focus shifts to ensuring that the railway infrastructure is all still operational after being idle for a couple of months and getting back onto some planned projects we have in mind, re decking the Levin bridge to name one.



Ian McLellan and Doug Chambers servicing one of the railways holder style turn-outs, cleaning, lubricating and adjusting the blade alignment if necessary paying particular attention to the blade alignment. I suspect with Doug's new southern railway "Schools Class " soon to try out a full lap of the Marriner Reserve railway they were paying particular attention to the 3.5 inch gauge.

## Presidents Report

In keeping with the lead set by other clubs, it has been agreed that the PNMEC President will publish a regular article in The Generator, providing a commentary on the club's activities.

**AGM:** With the move to Level-1 now upon us, it has been agreed that the Annual General Meeting will be held at 7:30pm on Thursday 25 June 2020. This will be at our usual meeting place, the Hearing Association Hall, Palmerston North.

Two long standing committee members have decided not to stand for re-election.

As published previously, Robert Edwards has decided to retire as President. I wish to extend a vote of thanks to Robert for the effort and guidance he has provided. Robert's input has been significant and must not be underestimated. He has been a very steadying influence at all club activities, and this guidance will be missed.

In addition, Murray Bold has decided not to seek re-election. Murray has been a prominent member of the committee for a long time. In his capacity as Vice-President, Magazine Publisher and Web Master he has made a significant contribution to the running of the club. I can assure you his smiling face and jovial personality will be missed at the committee meetings.

Both of these departing members are senior and experienced club officials. Their departure will create a significant vacuum in the club administration that will have to be filled. We desperately need replacement committee members. It is time to get your nominations in.

With the AGM upon us it is also time to think about your nomination for the Compton Shield. Time to think back over the year and nominate the person you think should be "Member of the Year".

**Marriner Reserve Railway:** With the arrival of Covid-19, Level-1, the committee has decided to commence routine operations at the Marriner Reserve Railway. The first run day will be 5 July. Once again, we ask members to assist with the operation of these public running days. This operation has fallen onto the shoulders of only a few members and ongoing assistance is required. More on this topic to come.

**Thursday Club:** The "Thursday Club" as it is affectionately known, for members only running, and also track maintenance at Marriner Reserve, is already back in operation. If members want a place to go to escape the winter blues, or just a place to come for a good chat, the Thursday Club is a good sanctuary. 9.30am, Thursday Mornings, Marriner Reserve.

**Special Thanks:** I would like to extend a hand of thanks to Doug Chambers who has put in considerable effort keeping the lawns mowed and the general facilities at Marriner Reserve clean, tidy, and presentable during the Covid Crisis. Doug, on behalf of the club thank you. Your efforts are appreciated.

**The Generator:** The committee has decided to make a change to the way articles are acquired for the club newsletter. Traditionally, the magazine has been filled by members volunteering articles and photos about their projects and activities. Some members have been good contributors and their articles have been well read. But there is also a lot happening around the club that is not reported and some of these projects are worthy of a magazine article. Consequently, a small team of reporters has been put together to go out to club members that we know are active. Through an interview and photographs they will compile articles for the club magazine telling the story of your project. So, if you get a phone call from the club reporters, don't panic this is what it is about. Remember, you can run but you can't hide **"WE KNOW WHERE YOU LIVE"**.

David Bell  
Acting President

## Dave's Level 4 Lockdown Project

The level 4 Lock-down provided an interruption free period in the workshop. It was better than a holiday. The first item on the agenda was the completion of my metal cutting band-saw that had been sitting there for some time awaiting final assembly.

The donor saw was a surplus to requirements cast iron framed wood cutting band-saw. Most of the work was expended in the fabrication of a rigid base under the saw, and the construction of the speed reducing drive. The original wood cutting saw used a 1:1.5 ratio vee belt drive connecting the motor to the saw. The conversion to a metal cutting saw, required a significant speed reduction, achieved by the use of a vee belt speed reducing drive and a 30:1 worm drive gear box.

Conventional vee belts deform if they are left unused and under tension for extended periods. The belts get a set in them that produces a vibration as the tight diameter and loose diameter move over the pulleys. Band-saws are inherently unstable structures and amplify this vibration. Link Belts were selected for these drives as these are not prone to this problem. Well this theory might work well on commercial tool room band-saws but it didn't work here. The primary drive between the motor and gearbox worked perfectly, but the secondary drive between gearbox and the saw was a DEFINITE FAIL. Contrary to the manufacturers specifications, the higher torque in this drive caused the belt to stretch under load.

This loosened the tension on the drive and allowed the belt to slip. Replacing the pulleys with larger diameter items would have been the correct engineering solution, but as testing and trialling progressed, the substitution of a conventional vee belt resolved the problem.

The brand new, super cheap, gear box I purchased for this application was another issue. It didn't leak oil when stationary but leaked oil through both oil seals (in the form of a fine mist spray that went everywhere) the moment the motor was turned on. The breather in the gearbox was working correctly so the gearbox was not pressurising. These were just poor quality seals. They looked fine, they just didn't work. However this was my lucky day. Unbelievably I had new seals of the correct size in my "These might come in handy one day box". Fitted those, problem solved.

The photographs attached show the saw with its guards, chip trays, and covers removed prior to its first start. If you examine these photographs you will notice that all the electrics have been removed, and the motor is connected to an extension cord. Reason: On the first day of the level 4 lock-down the electrical contactor on my mill decided enough was enough and failed without warning. The only non essential electrical spares I had access to were in the band saw so they were robbed. I can assure you that reinstalling the replacement electricals in the saw with the drive mechanicals installed was a scream.



## Dave's Level 4 Lockdown Project



Variable Speed Drive: It was my intention to get the saw running and then arrange a variable speed capability once its performance was a known quantity. After trialling I decided to leave the saw with a single speed as 95% of its use will be on low to medium carbon steel and the current set up works well in that application. The saw goes through softer metals (aluminium and brass) with ease but the tooth pitch on the blade is too fine to excel in that application. A mechanical variable speed arrangement (stepped pulleys) is a future option. I cannot justify the cost of an electronic speed controller.

Cutting Performance: The saw blade I am using is a 10 mm deep “Die Master” produced by “Thode”. This has a staggered tooth form designed for tool makers profile cutting annealed tool steel. This blade works well on my set up and I can profile cut 10 mm carbon steel plate without difficulty, but as you have to feed the work through the saw manually, 6 mm steel plate is the practical limit for long cuts. The current set up can cut 30 mm bronze bar without effort.

Vibration: I have a dislike for machines that vibrate. After a fair bit of fine tuning I can now balance a coin on its edge on the table with the saw running. I will call that a success.

Comments: This saw lacks many of the features common to most tool room band-saws but it was built at a small fraction of their cost. Despite this, the saw has proved to be more than adequate for model engineering applications.

When reflecting on the material cost and the effort required, this project was worth it. However, if I had to purchase the donor saw, purchasing laser, water jet, or plasma cut components could be a more attractive option.

This saw should see me through to the rest home.

David Bell

## Kinner K5 part 3

With assembly of Cylinder Heads completed, temporary assembly of pistons (without rings) and cylinders to crankcase to check for free rotation and enable valve timing to be completed.

A timing disc with 5 lines 72° apart representing top dead centre of each cylinder was fitted to the front of the crankshaft with an indicator pointer mounted to the engine mounting base.

Then the difficult part starts!!

With 5 separate gear trains and camshafts, one for each cylinder and timed independently, the crankshaft was rotated to bring No.1 cylinder to top dead centre and No.1 camshaft in correct position, gears meshed and gear case refitted.

The crankshaft then rotated to next in firing order, No.3 cylinder, gear case carefully removed and No.3 camshaft adjusted to position.

This procedure was repeated until all valve timing was correct.

A small gear oil pump was built with ¼" diameter gears, driven from rear of crankshaft to supply oil through the shaft to the big-end bearings.

The piston rings were heat-treated and sized, fitted 3 per piston and only 2 broken when fitting!!



Pistons, cylinders and cylinder heads fitted permanently – perhaps!

All this prior to 'lockdown'.

(To be continued)

Graeme Hall

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