RT Models

4mm scale 009, 3.5mm scale H0e, 7mm scale 0-9

Narrow gauge steam locomotive valve gear instructions

Whilst these instructions relate to the N gauge outside framed/cranked Graham Farish class 08 diesel shunter, (As pictured below) Most of the valve gear parts can be used on other makes to adapt or improve your model.

Test the chassis as bought to make sure it works well before modifying it

Resin Keeper plate

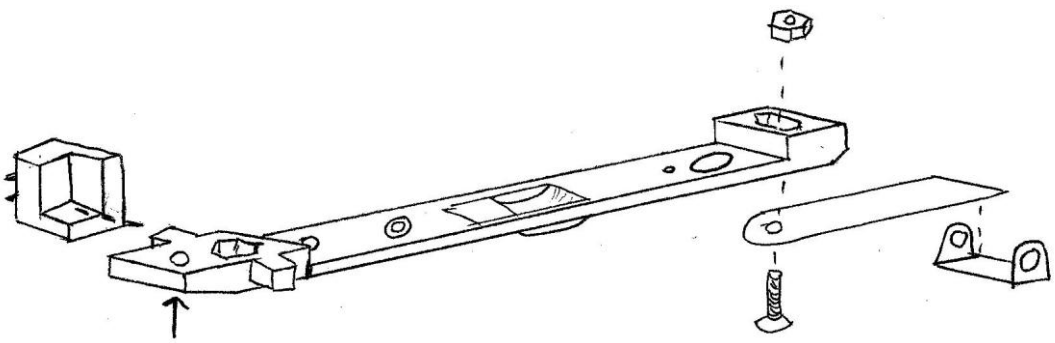
The replacement resin keeper plate is designed only for the outside framed class 08 diesel shunter chassis as pictured above.

The advantages of it is the increased width limits the side play in the wheels which is not needed and stops the pickups getting squashed and stop working.

The replacement keeper plate allows the cylinders to be attached on steam locomotives which aids in dismantling the chassis if needed later on for maintenance, a new easy fixing point at the front to allow the chassis to be screwed to the new body (shown by the arrow on the diagram) and the ends now contain 10BA sized captive nut areas so the pony trucks or bogies can be attached to the ends of the chassis.

The keeper plate will require the flash to be filed off and the keeper plate washed in warm soapy water and an old toothbrush due to the release agents used in resin castings. The replacement keeper plate is a direct replacement, carefully unscrew the old one off and screw the new one in its place.

The pony trucks can be made to any length required.



Coupling Rods

Before removing the coupling rods from the fret, drill out the holes with a 1.4mm drill or a tapered broach which is better for this sort of job..

Remove the coupling rods from the fret with a Stanley knife on a hard surface or with a pair of Xuron etch snips.

Carefully file the coupling rods where the tabs were present and also where you drilled the holes to de-burr them, when done re-drill again to make sure the holes are clear.

Now carefully pull the crankpins off the cranks on the chassis, it is recommended doing this inside a box to avoid losing them. Put these carefully aside for later use.

Now fix the coupling rods to the cranks, once you are satisfied that these fit well push the crankpins back on the front and rear cranks only.

Check the chassis how it runs by pushing the chassis along by hand by un-screwing the gearbox tower and unclipping the motor so the worm gear clears to allow the chassis to be pushed along.
You can test the chassis under power to check that it runs freely with the rods on.

If it does bind then the rods may need to be removed and drilled out with a slightly larger drill
0.1 mm bigger.

Crossheads, Slide Bars and Connecting Rods

Two versions of crossheads are offered in the range, one single slide bar and one double slide bar, you will need to select which one you need.

Different lengths of connecting rods are offered, 13mm and 15mm are meant to be driven off the centre axle as per the left hand diagram, 25mm is meant to be driven off the rear axle as per the right hand diagram.

You will need to carefully remove the parts from the fret with a Stanley knife on a hard surface.
File the remains of the tabs off the parts.

Fold up the slide bar units with the half etch line on the inside of the fold and solder the inside of the folds to strengthen them.

Now take one of the crossheads (if the single slide bar version, fold up the tops) and push a pin through with the head on the pin on the outside, next place one washer/spacer on the back of the cross head pushing it over the pin.

Next push a piece of paper like cigarette roll up paper preferably as it's very thin or 80gsm printer paper although this isn't as thin.

Now push the connecting rod over the pin as tightly as possible onto the paper. A drop of oil on the paper should minimise the risk of solder clogging the parts.

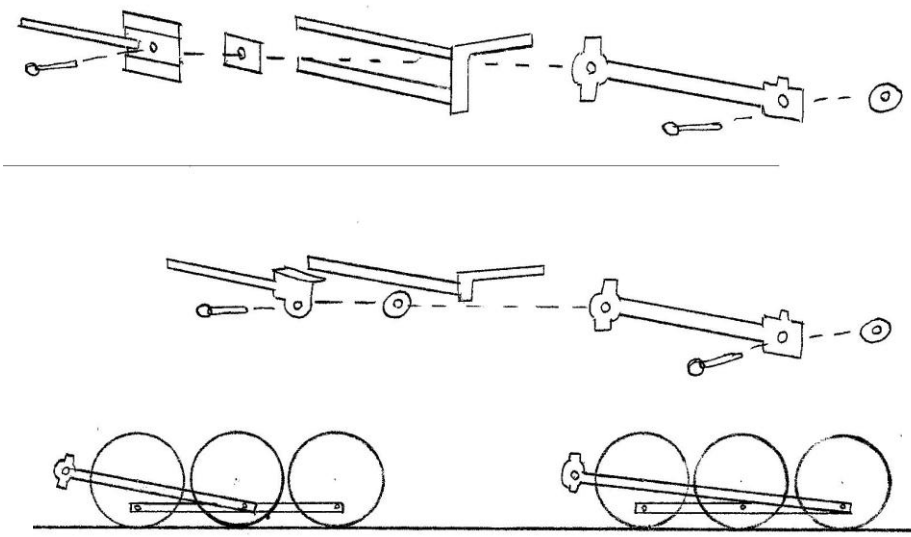
Place a small amount of flux onto the back of the connecting rod and pin, then very quickly place the soldering iron onto them to solder the pin in place, don't leave the iron on for too long as it risks the solder flowing where you do not want it.
Don't worry about how tidy it is as once you are satisfied the joint is strong enough, cut the remains of the pin and file the rear till you are nearly flush with the connecting, not file flush with the rod as you need some solder to remain.

Check that the rod moves freely, if so pull the paper out of the crosshead and repeat for the other side.

If not, sometimes just forcing it slightly may be enough but not so to bend the parts.

If this doesn't work then you will need to unsolder the parts, clean them up and start again I'm afraid, I have done this myself with kits I've built over the years.

Now push the crossheads onto the slide bars, if they don't move freely or don't go on at all then the slide bars may need a bit of filing on the tops.



Cylinders

Now we can turn to the Cylinders, clean all traces of flash and mould feeds with needle files.

Now take one of the Cylinder blocks making sure it is the correct one for your chosen side, the small bars sticking out of the ends of the cylinder blocks should face towards the wheels.

Now check that the Cylinder covers fit onto the Cylinder blocks, once they do put these aside for the next stage.

Test the cross head and slide bars onto the cylinder blocks to make sure they work freely, if not then the top and/or bottom bar on the Cylinder block/s may need thinning down with a needle file.

When you are satisfied put the crossheads and slide bars, check the throw of the cross heads with the cranks on the wheels and the slidebar.
Check where you will want the slide bar to be positioned so as to allow the crosshead to have full travel as well. If needed trim some of the end of the slidebars so they fit within the cylinder block.

When you are satisfied with everything you can sandwich the slide bars with the Cylinder cover to check it works freely. If it does so, glue the Cylinder cover on preferably from the outside so the glue doesn't end up oozing onto the working parts if you was to push the cylinder cover on.

Repeat for the other side.

Now determine for your needs and how you feel about it, how many washers you need off the connecting rod fret between the coupling rods and the connecting rods, try to keep the connecting rods as parallel to the coupling rods if possible.

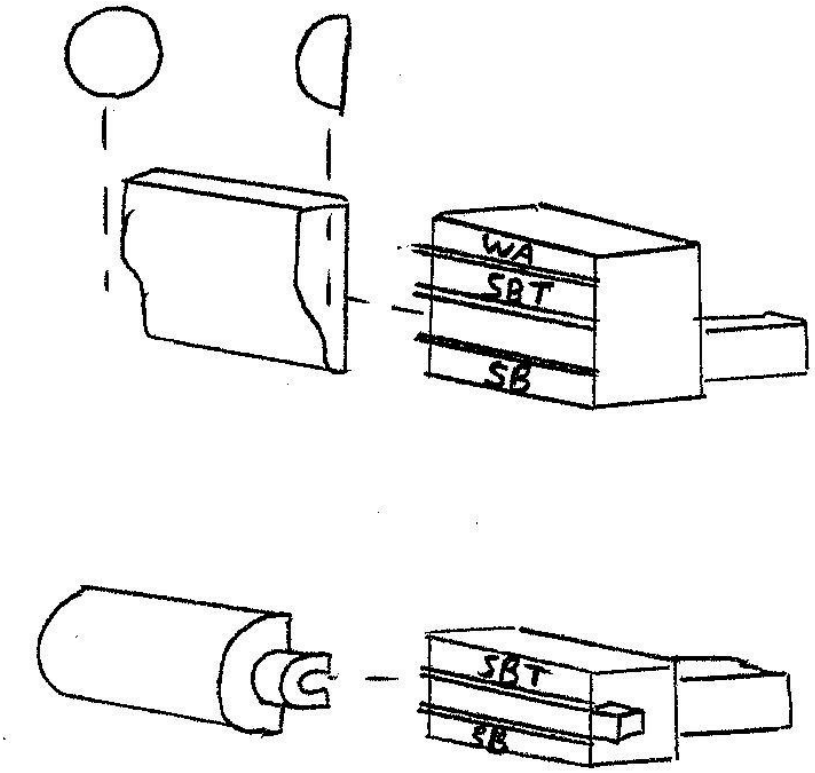
Now trim the remaining pins to a suitable length and push through the connecting rod and any washers you may wish to use into the crank which the pin should be a push fit.

Note on the diagram below the different versions, both show the ends where the cross heads and slide bars will be attached.

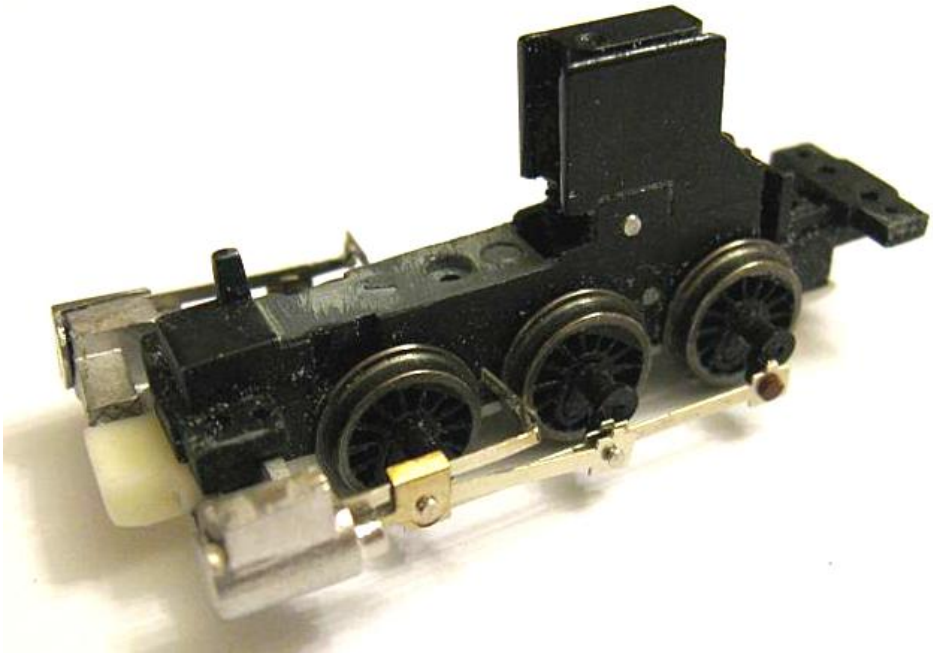
WA on the top diagram indicates where the top of the walchaerts valve gear is attached.

SBT slide bar top for both single and double slide bars

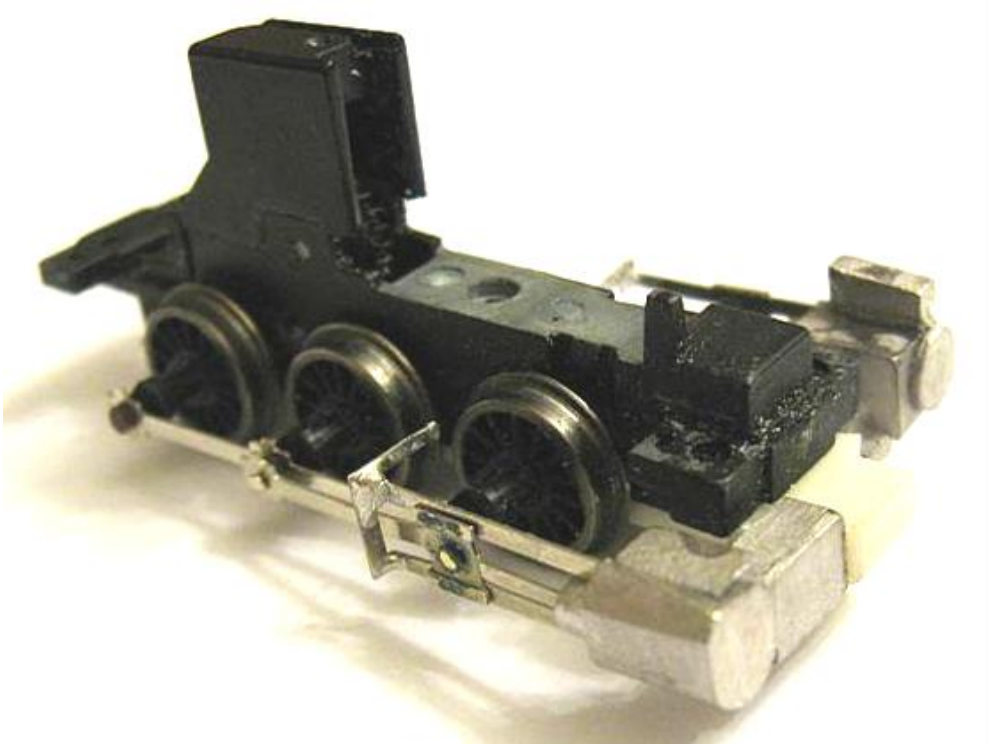
SB slide bar bottom for double slide bars only.



Chassis fitted with Type A cylinders, single slidebar, crossheads and 13mm connecting rods



Chassis fitted with Type B cylinders, Double slidebar, crossheads and 15mm connecting rods



Both photos shown without motor at the front of the chassis.