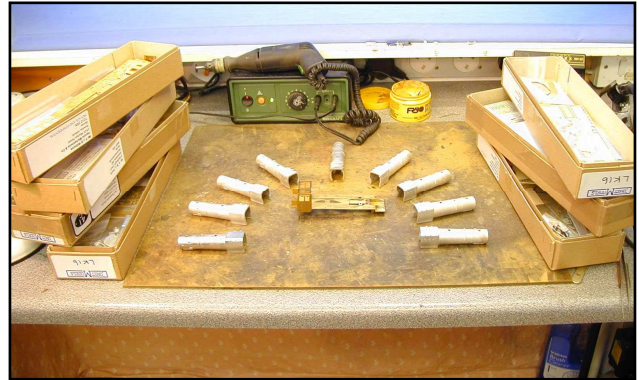


Comet Ivatt Class 2 2-6-0

The introduction of the Comet Models Ivatt Class 2 2-6-0 filled an important gap in the Motive Power Department and the prospect of building this modern kit was quite exciting. As it turned out far more exciting than I could have imagined! When I first started kit building on a full time basis I built a batch of BR Standard Class 2 78xxx 2-6-0's which went like hot cakes, were a joy to build and looked the part. The 78xxx's ran on my own layout EM gauge of Millhouses in 1960 and worked turn and turn about with their predecessor the Ivatt Class 2 but a model of one had long been on my personal wish list.

As it turned out I ended up with nine of these new kits to build, three in 00, three in EM and three in P4 and so as part of the building exercise, the research into the class began with casual browsing through railway books. This proved very confusing indeed; a lot of variations were noted in the photographs so a more thorough investigation was obviously going to be needed. This trail started in the Library in the National Railway Museum at York, went on to a photographic expedition to the Severn Valley Railway and then trawling through authoritative books on the subject and dozens of picture books looking for evidence.



The result of this investigation and the subsequent kit building is this article, about how I went from Prototype to Model which, I hope, you, the reader, will find interesting,



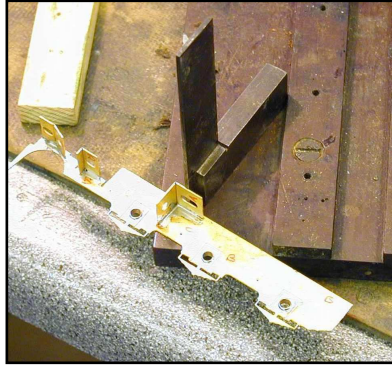
informative and stimulating. I have interjected various data tables throughout the building sequence rather than give a couple of pages of seemingly dull data but they are important and woe betides those who do not consider such information important or relevant.

Building Dates & Lot Numbers

Year	Lot	Crewe	Darlington	Swindon
1946	182	6400 – 6409	-	-
1947	189	46410 – 46419	-	-
1948	194	46420 – 46434	-	-
1949	-	-	-	-
1950	201	46435 – 46464	-	-
1951	207	-	46465 – 4 6494	-
1952	207/8 -	-	46495 – 46502	46503 – 46514

The Chassis 00 & EM

Comet supplies their standard Ivatt Class 2 2-6-2T chassis with this kit and so the first thing that has to be done is to cut them at the indicated point prior to assembly. For those unfamiliar with Comet's

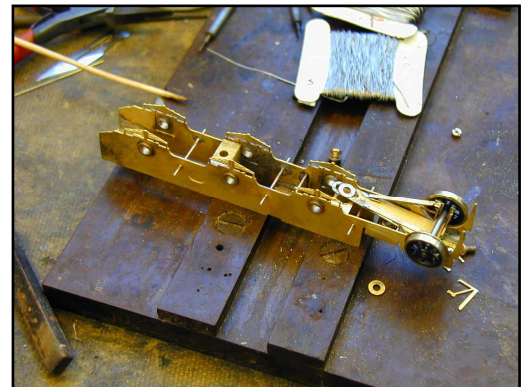


standard chassis packs I would recommend the purchase of their chassis alignment jigs that are available in both 00 & EM versions. This seriously



simplifies the positioning of spacers and ensures you build a square chassis which, if not done, can be the cause of so many running problems

later. For me it was before I knew the jigs were available so I did it the hard way. Firstly sorting out just where the spacers were going to be, then soldering them all in along one side ensuring they are all square then assembling the two sides together with the aid of extended axle jigs and a small engineers square. Once you have the two sides soldered

**Lifeguards**

Crewe engines were built with lifeguards on the frames
Drawing N° D6/014/139
 Darlington & Swindon were built with lifeguards on the bogies
Drawing N° SL.DE.21938
On repairs and renewals some frame lifeguards were changed to bogie ones

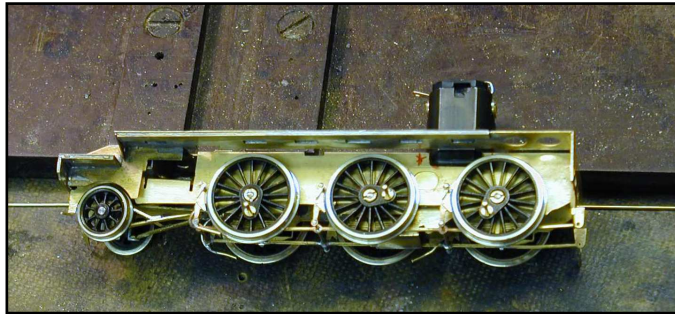
together you can strengthen it all up by soldering in the 0.7mm brake hanger rods and then the spacer that will carry the retaining nut for the set screw that forms the pivot point for the front pony truck. Note particularly, at this stage whether or not your chosen prototype should have the Lifeguards left on the

mainframes or cut off and included on the pony truck; remember that when the frame version engines went into the works for renewals and repairs they may have had this position changed to the pony, so check with photographs just in case.

I use Powerflow lead free flux with an Antex 690SD temperature controlled soldering iron for all my work, as I found, very early on in my building life, that the tips stay cleaner longer, there is adequate heat to do the work you are demanding and excessive overheating is avoided; the 25 watt versions so often favoured by so many kit builders are not, in my opinion, suitable for our kind of work. If you do end up with a blackened soldering tip then the use of Antex Tip Cleaner should restore it without recourse to some of the more aggressive actions I have witnessed over the years. As with all fluxes care should be taken to remove all traces during and after

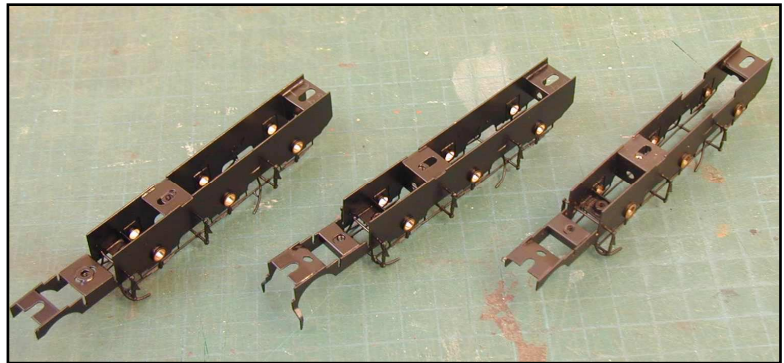


each stage of construction and in particular prior to painting, I use a 50:50 mix of Meths and Water plus a stiff bristle brush as I go and a thorough washing at the end of each session. Miss any residue of Powerflow and it turns bright green overnight just to remind you it is still there!



Once all cleaned up a trial fit of the Markits wheels can be undertaken plus the fitting of the coupling rods on the crank-pins (open out the crankpin hole just over the crankpin diameter for now); such is the design of the kit you should be assured of a perfect fit first time. Attention can then be turned to the motor and gearbox choice and position.

I decided on the Comet 50:1/Ultrascaple geared box coupled to a Mashima 1620 flat can motor, which I have found robust, powerful and not too fast running, but deviated from the instructions and sat the motor in a cut-out in the frames and up into the firebox. This also retains the gap under the boiler which would

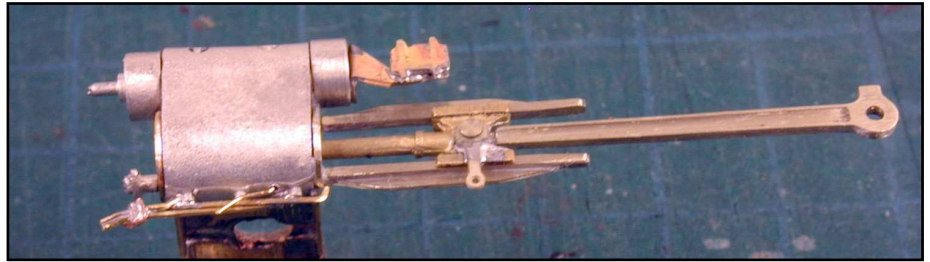


otherwise be filled with motor. If you follow my way then observe the motor is offset on the gearbox so slightly differing amounts need to be cut from either side of the frames. Once the motor sits flat and at right angles to the frames and is hidden away in the superstructure you will not notice the cut-away in the frames from normal viewing positions.

Pick-ups are always a contentious issue and wherever possible I use the American system of current collection; all the RHS wheels of the loco live to the chassis, including the pony wheels, and the LHS wheels of the tender live to that chassis. A current carrying wire, with plug and socket carries the current between the two. (Markits supply all their bogie, pony and tender wheels live one side if requested.) The draw bar is supplied in two halves for the builder to assemble at whatever distance the tender needs to be behind the loco to negotiate the tightest curves it is likely to encounter. There is also a difference in height between the loco and tender drawbar holes so I kill two birds with one stone and join the two halves with a small strip of double sided copper sleeper strip. This insulates the loco and tender and equalizes the drawbar heights at the same time, the joint is under the fall plate which, if loose, has very thin black plasticard, fixed to the underside, or is substituted for very thin copper clad fibre board, to ensure electrical insulation. In practice it is worth the extra effort as the lack of pick-up wires, that lose contact, just gather dirt or burn the wheels and rail with sparking will bring long term improved, maintenance free, running.



Outside valve gear can be a worry to many potential kit builders but, on this occasion, Comets designers have ensured everything goes together as



intended and fits. The double thickness connecting and coupling rods solder up in the usual way, flooding the joints with solder then cleaning them up again with a medium file until the tops, bosses and undersides all look like a solid piece of metal. Finish off with a polish of wet and dry paper. The front layer leading etched boss on the coupling rods needs to be filed away



so that the retaining nut is effectively recessed and does not foul the movement of the coupling rod. This dodge is also helpful when applied to the piston end of the coupling rods thus moving those outwards by one etched thickness and allowing just a tad more clearance. This is particularly important where clearances are limited in the wider gauges. The cylinders can be considerably improved by the addition of operating rods and cylinder drains.

Superstructure

Moving on to the Superstructure you will find the fit of the parts very good indeed but, again, care must be taken on the selection of chimney's, top feeds and AWS equipment if you are to have an accurate model. Like the Ivatt class 2 tank engines three types of

Chimneys (as built)		
Short wide	6400 – 6465	Not included in kit
Tall thin	6465 – 6494	Early variation
Tall wide	6495 – 6527	Later Standard Chimney

chimney were used on these engines and it is important to check both dates and photographs of your chosen prototype as by the 1960's many, if not most, had the Tall Wide type as fitted to the later batches. A similar story applies to the Top Feeds and the little cover plate extensions that were fitted. The later fitting of AWS equipment, associated pipe work and front bang plates is only evidenced by photographs but at least it is fairly obvious to see when they are so fitted. One of my pet hates is the cut-outs in boilers to accommodate motors and the Ivatt's boiler is a classic example of just that ... it just has to be filled in. I use car body filler, a piece of thin, flexible plastic card, a length of tape and a mixing tool. By wrapping the card round the boiler and over the hole, securing it in place with the tape you can spoon in the body filler until the hole is filled; about 3mm thick should do it. Once everything has set the

Top Feeds	
Pre 6420	Plain top
6420 onwards	Cover Plate extension
<i>Important ... check dated photographs as they did change with time</i>	



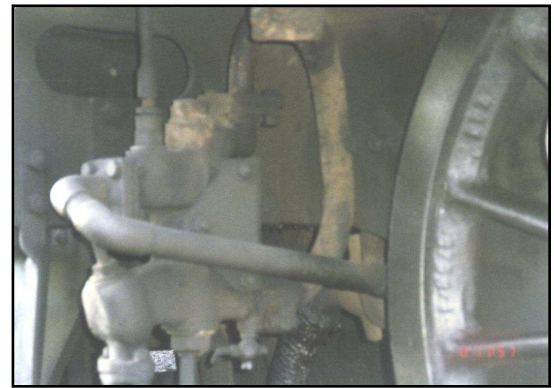
is set the



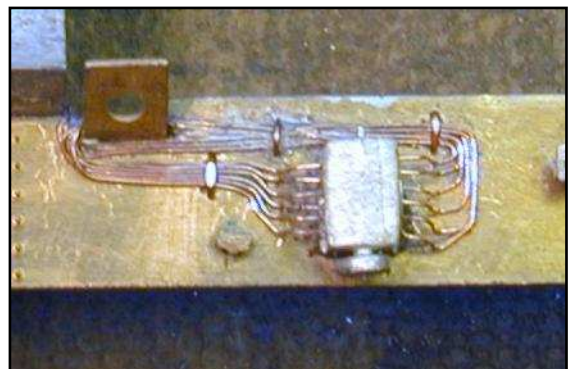
tape can be removed, the card removed and it leaves a smooth surfaced patch of the correct diameter and cone shape ready for fitting to the firebox. The rest of the superstructure goes together as per the instructions, I experienced few further problems, and the design of the cab construction is very clever indeed.



The injectors were next, made up from castings supplied; just where all the cast pipes went is always difficult to see from pictures so I photographed the details of the real, preserved, engine. The pipe runs are different to that which are shown and produced by Comet

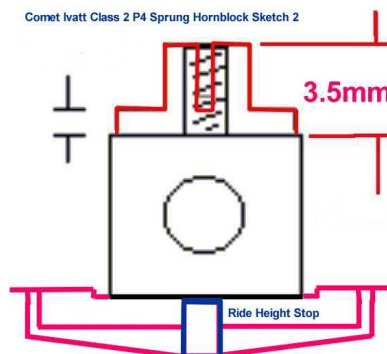
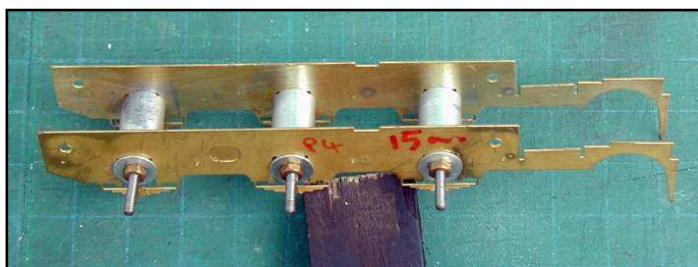


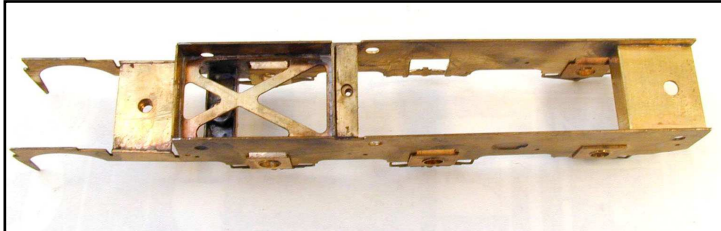
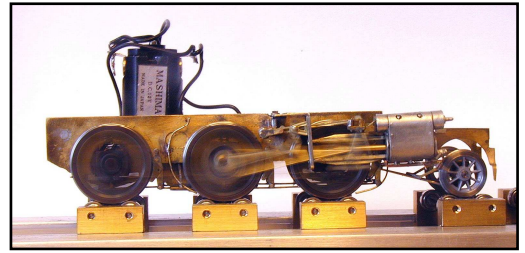
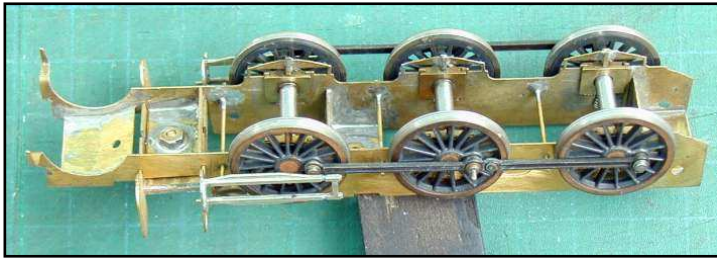
practice) so, in the absence of any other evidence, I changed my piping to look like those in my picture. The thing to remember with injectors is that, in their simplest form, they need water and steam input pipes plus an outlet pipe to the boiler. Add to those an operating rods from the cab and you end up with a nice representation of these mysterious but essential pieces of equipment that lurk away in the dark away from camera lenses. Lubricators were next and I wanted to include pipe runs along the footplate as per prototype. Requirements ... a large number of 0.45 drills, a reinforced pad on the



palm of your hand, very flexible fingers and time! I used thin copper wire for the pipes running through 0.45 mm holes drilled through each lubricator (note the different number on either side) and held in place on the footplate with loops of the same wire but slightly flattened out to represent the flat clips actually used. I think the effort involved on the nine locos defiantly worth it as the resulting effect helps turn a model into a representation of the real thing.

P4 Chassis





Tender Details

Tender Allocation

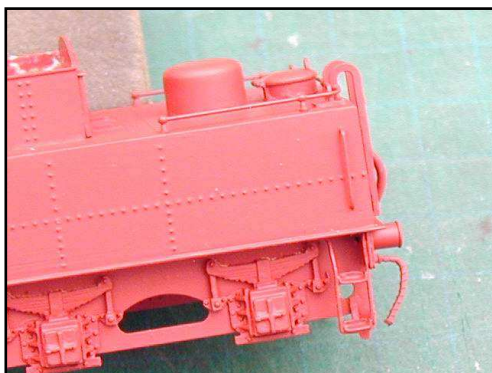
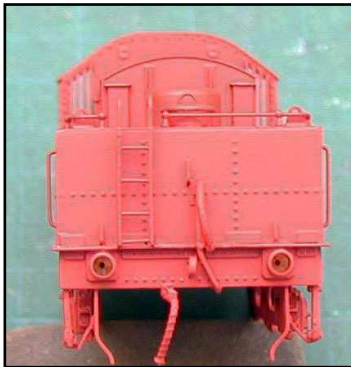
Paired No's 46400 – 7000
 sequentially to 6527 – 7127
Later in their lives some tenders were swapped around

Tender Lots & Numbers

Lot	182	7000-7009	Crewe	Lot	207	7065-7102	Darlington
	189	7010-7014	Crewe		208	7103-7127	Swindon
	194	7020-7034	Crewe				
	201	7035-7049	Crewe				

Tender Steps, Ladders and Handrails

First 18 Darlington Tenders had no water scoops fitted
 Crewe Engines were built with a long ladder on tender rear
Ladder drawing N° D4/04/66
 Crewe tenders had no steps on the rear side
 Darlington & Swindon were built with a short ladder on tender rear
Ladder drawing N° SLDE20291
 Darlington & Swindon tenders had steps on the rear side
 Tenders built with strap steps but some changed to plate
Close observation of photographs is advised
Drawing N° D5/U2/38 & D5/U2/41 original steps type
Drawing No D-21495 for plate type installed on renewals
 Tenders built with short ladders also had a rear side handrail



Makers Plates Details

Loco builder's oval plate "BUILT – 1950 - CREWE"
 Tender rectangular plate "M - N° 7121 - 1953"
 Tender oval plate "WATER CAPACITY - 3000 - GALLONS"
 (Available from Bill Bedford Models by special order e-mail billb@mouse.demon.co.uk)

Preserved Examples

46428 East Lancashire Railway Bury
46441 Steamtown Carnforth
46443 Severn Valley Railway
46447 Buckinghamshire Railway Centre
46464 Caledonian Railway Brechin
46512 Strathspey Railway Aviemore
46521 Severn Valley Railway

Check before visiting as engines can get moved around

Withdrawal

The first engine withdrawn was 46407 in December 1961

The last 39 engines to be withdrawn, en block, were in May 1967

Painting

LMS engines late plain black livery
BR Lined Black with a few early exceptions
BR (WR) some lined Green from late 1950's
Early & late small emblems, some large late emblem.

Acknowledgements

An Illustrated History of LMS Locomotives Volume 5 Bob Essery & David Jenkinson Silver Link Publishing ISBN 0 947941 39 4

National Railway Museum York Library

Geoff Sullivan photographs of 46443 & 46464

Caledonian Railway at Bridge of Duns 46464

Severn Valley Railway 46521

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Steam Classic 1995

Back Track The Ivatt Class 2 2-6-0's

Locomotives Illustrated No 22 The LMS Moguls Ian Allan ISSN 0307-1804

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