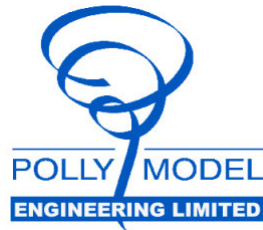


Tel: +44 115 9736700
Fax: +44 115 9727251



Polly Model Engineering Limited
Atlas Mills, Birchwood Avenue
Long Eaton
NOTTINGHAM
ENGLAND
NG10 3ND

Incorporating BRUCE ENGINEERING

POLLY MODEL ENGINEERING

Combined Catalogue

Incorporating

Bruce Engineering Model Engineers Supplies

Practical Scale Fine Scale Locomotives

October 2013



Tel: +44 (0)115 9736700

Fax: +44 (0)115 9727251

Introduction:

Building on the strong foundations of Bruce Engineering and Polly Locos, Polly Model Engineering Limited is one of the leading suppliers to the model engineering hobby. Unique amongst suppliers with its in house manufacturing capabilities, Polly is able to address all your model engineering requirements. Combining over forty years experience in supplying model engineers and a comparable time in the manufacture of renowned Polly kit build locomotives, we can justifiably claim to understand the needs of the model engineer. Furthermore we pride ourselves on the stock held, such that most items are available for immediate despatch.

Separate catalogues are available detailing: Polly Locomotive kits, Polly Spares and Stuart Models. This catalogue combines the model engineers supplies and the Practical Scale elements of our business. Frequently in the recent past we have found customers not realising that the items required were available from Polly, but in the other catalogue. We hope you find this catalogue interesting and useful.

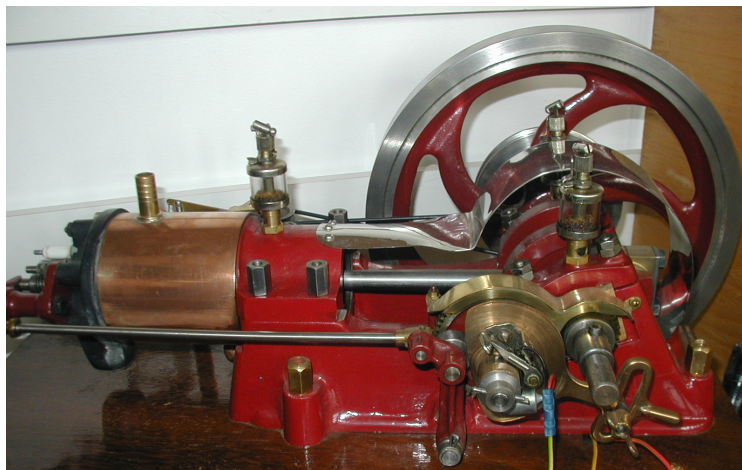
The range of products listed is vast and whilst we are proud to be appointed agents by suppliers such as Loctite and Johnson Matthey, we are also pleased to be associated with specialist model engineering suppliers including, Dave Noble (3 cock water gauges, etc), Rob Barker (traction engine fittings), Gordon Chiverton (injectors) and others too numerous to mention. As we constantly strive to extend and update our range of fittings and supplies, please contact us whatever your requirements.

All prices listed include UK VAT (sales tax). Customers for export outside the EU, may deduct the tax from the listed prices. VAT on most items is 20%, although books are not taxed. Prices are current at the time of publication of the catalogue, but are subject to revision in the event of supplier price increases. Postage is additional on all orders, based upon the costs incurred with the Post Office.

This is a metric catalogue, and products are sold by weight in kilogrammes and length in metres. However, for the convenience of our customers generally working to imperial standards, certain dimensions (e.g. thread sizes) are quoted in inches or feet. Note: 1 foot is 304.8 mm and 1 inch is 25.4 mm.

Details of how to order, together with an order form are provided in this catalogue. We have NO MINIMUM ORDER CHARGE and international postage is no problem.

Photo: R&B Gas Engine



Contents:

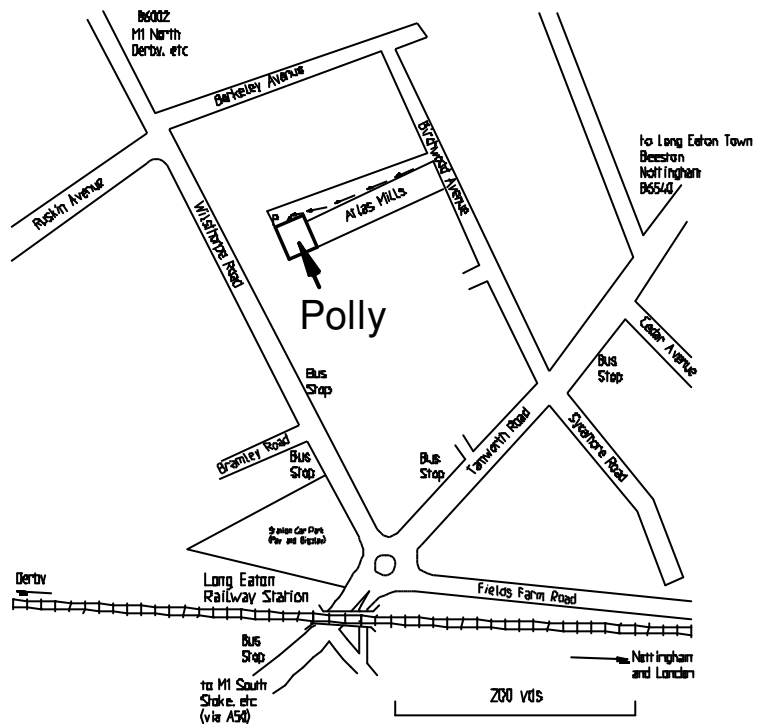
	Page	
Introduction	2	
Contents	3	
2. Polly Loco Kits, summary with prices	5	
3. Historic Engines Southwest	6	
Stationary Engine Kits designed by Anthony Mount		
Engines price list	6	
4. Stuart Models kits	22	
Price list for popular Stuart Models	23	
5. Our own stationary engine models	24	
6. Ready to Run Stationary Engines	26	
7. Steam engine & loco accessories	27	
8. Transfers	29	
9. Lost Wax Castings from Doug Hewson	33	
10. Fittings, including Injectors, Valves, etc	34	
11. Materials and Consumables	45	
metals, fasteners, O rings, etc		
12. Books	59	
13. Tools, taps and dies, drills, BA spanners	61	
15. Engines and Transmissions	65	
16. Practical Scale		
16.1 Standard GWR Parts for 5" and 7 1/4" gauge		
16.1.1 GWR Buffers		
16.1.2 Parallel Buffers		
16.1.3 GWR Taper Buffers (Collett)		
16.1.4 GWR Taper Buffers (Dean)		
16.2 GWR Handrail stanchions		
16.3 GWR Injector Steam Valves		
16.4 GWR Cylinder Relief Valve		
16.5 GWR Plunger type Cylinder Drain Cocks		
16.6 GWR Loco Wheels		
16.7 GWR Brake Valves		
16.8 GWR Cab Front Windows		
16.9 GWR Standard Cab Side Windows		
16.10 GWR Cab Seats		
16.11 GWR Firehole doors and flap plates		
18. GWR Penrhos Grange 4-6-0	5"	
gauge		
19. Other 5" gauge 2 Cylinder GWR 4-6-0 designs by N.Evans		
3.1 Hatherton Hall		
3.2 Modified Hall		
20. GWR 'Fair Rosamund'	5"	
gauge		
21. Midland Compound by Mike Smart		
22. GWR Loco Designs by Pete Rich		
6.1 GWR Saint		
6.2 GWR Castle/Star		
6.3 GWR Dean Single/Armstrong 4-4-0		
23. GWR Tenders		
23.1 3500 & 4000 gal Tender (Collett)		
5" gauge		
23.2 3500 gal Tender (Churchward)	5"	
gauge		
23.3 3500 gal Tender (Churchward)	7 1/4"	
gauge		
23.4 Dean Tender	5"	
gauge		
23.5 4000 gal Tender (Collett)		
7 1/4" gauge		
24. GWR Collett Goods 0-6-0		
7 1/4" gauge		
25. GWR 1400		
7 1/4" gauge		
26. Highland Railway Locos		
26.1 Highland Railway Loch 4-4-0		
5" gauge		
26.2 Highland Railway Jones Goods 4-6-0		
5" gauge		
27. Highland Railway Jones Tender	5" gauge	
28. Southern Railway Schools 4-4-0	5" gauge	
29. Southern Railway Bulleid Q1 0-6-0	3 1/2" gauge	
30. Engineering Services		98
31. Non-Catalogue requirements		
32. How to Order		
33. Order Form		

Where to find us!

With increasing demand, investment in additional machinery and stock, we outgrew our premises and from 1st November 2010 have been in a new place. With larger workshops and more room to organise stock, you can expect even more from POLLY!

**Atlas Mills,
Birchwood Avenue,
Long Eaton,
Nottingham,
NG10 3ND**

Only a short distance from our previous premises, with the same telephone, fax and email contact details, mail order service continues as usual. Callers are welcome at the new premises, but it can be helpful to telephone beforehand and we can have things ready for you. Please be aware that parking in the yard is limited.



Polly at a recent exhibition

In addition to our range of kit-build locos and general model engineers' supplies, you will find:

- Our own manufactured fittings, safety valves, lubricators, special GWR loco parts, etc
- Wide range of stationary engine kits including Stuart Models and designs by Anthony Mount
- Loco drawings, castings and parts from 3 1/2" to 7 1/4" gauge including exclusive designs serialised in the magazines – S.R. Q1 by Nick Feast, Fair Rosamund by Neville Evans, Collett Goods by Dave Aitken

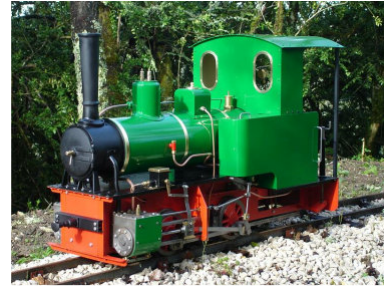
Shop hours: Mon – Fri 9:00 to 16:45, closed for lunch 12:45 to 14:00
Sat mornings by appointment

Address: Atlas Mills, Birchwood Avenue, Long Eaton, Nottingham, NG10 3ND

Section 2. Polly Locomotive Kits



Polly V £6656.00



Orenstein and Koppel 0-4-0T £6035.00
0-6-0T £6478.00

Polly IV £6360.00

Polly I £5276.00



- **Since 1987 the famous 5" gauge live steam POLLY Loco kits.**
- **Complete fully machined kit of parts**
- **Can be assembled with hand tools**
- **6 different locos to choose from**
- **Driving/Passenger truck and accessories available**



Polly III £5670.00

Polly II £5898.00



Driving/passenger
Truck from £835.00



Polly VI £7652.00

See separate Polly Locomotive Kit catalogue for full details of these exciting models. Polly Loco owners should contact us with any requirement for spares or accessories. Enquiries welcome regarding Polly Owners Group.

Section 3. Historic Engines Southwest

Polly Model Engineering Limited is pleased to be appointed exclusive distributor of this lovely range of scale model stationary engines, designed by Anthony Mount. The majority of the designs and their construction have been described in Model Engineer Magazine or Engineering in Miniature and the range is still growing. Visitors to model engineering exhibitions can expect frequently to see Anthony's work on display (often winning high awards). The models are not generally aimed at the beginner, although models such as Crosskill's engine are well suited to the less experienced and a determined beginner might well take on Murray's Hypercycloidal. Kits generally include all drawings, which are conveniently printed on a number of A4 sized sheets, together with all the main castings required. Many of the castings are produced using the lost wax process, in order to reproduce the intricate detail characteristic of the models. Some kits include laser cut parts. The builder normally provides stock materials and fasteners, although these can generally be supplied from our materials stock if required. Drawings for the engines are available separately and if the castings are ordered within 6 weeks from delivery of the drawings, the cost of the drawings is allowable against the kit price.

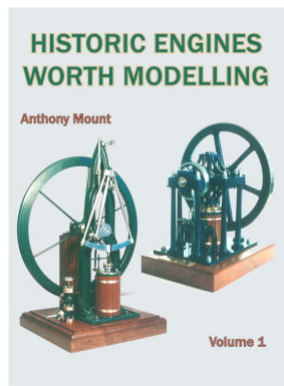
The table below gives prices for drawing and casting kits. Prices are in £ (GBP) and include VAT, but postage is extra.

Bailey's Vertical Hot Air Engine		£238.70
Bailey's Vertical Hot Air Engine The Bee		£251.90
Benjamin Goodfellow Overcrank Engine 1851		£251.90
Benson's Vertical Engine		£174.90
Bodmer's Sliding Cylinder Engine		£258.50
Boulton & Watt Bellcrank Engine 1802		£245.30
Cross Engine		£180.40
Crosskill's Oscillating Engine		£74.80
Denny Improved Ericsson Hot Air Engine		£221.10
Easton and Anderson Grasshopper Beam Engine 1892		£217.80
Farcot Engine (drawings only)		£37.00
Galloway's Non-Dead Centre Engine		£350.00
Jame's Booth's Rectilinear Engine 1843		£232.10
Kientzy Oscillating Engine		£324.50
Maudslay Sons & Field	Drgs only	£37.00
Maudslay Columnar Engine 1862		460.00
Murray's Hypocycloidal Engine		£217.80
Polignac Engine, drawings only at present		£26.00
Scotchcrank Engine 1846		£97.20
Savage Organ Engine (drawings only)		£26.00
Simpson and Shipton's Short Stroke Engine 1851		£258.50
Steeple Engine	(RTR £enquire	£129.80
Stockport		£192.00
Trapezium Connecting Rod Engine		£143.00
Tuxford's Double Sided Rod Engine		£129.80
VERTO A Steam Power Plant		£122.10
Waller's Table Engine	Part set	£97.20
Whitmore and Binyon		£221.10
Fenby		£247.50

Drawings only for any of the above £26.00 per set
 Except those priced as drawings only

Books by Anthony Mount

The majority of models by Anthony Mount have been published in either Model Engineer magazine or Engineering in Miniature magazine and where available the publication dates are given in the summaries on the following pages. Design and construction details of some of the more popular established models have recently been published in book form, in 2 volumes - Historical Engines Worth Modelling. Volume 1 describes the Rectilinear Engine, the Steeple Engine, Crosskill's engine, Boulton & Watt engine and the Hypocycloidal engine. Volume 2 describes Benson's engine, Grasshopper engine, Bodmer's engine and Simpson & Shipton's engine. Price for these volumes is £12.95 each.



Bailey's Vertical Hot Air Engine

Bailey's vertical hot air engine runs on the Stirling engine principles. Heated air expands inside the hot cap and moves to the power cylinder exerting pressure on the power piston causing the power stroke. At the same time displacer moves the now cold air back to the hot cap for reheating.

The engine full size was rated at a 1/4hp, and was mainly used for pumping water. A pump was fixed to the side of the engine and was driven by a crank on the flywheel.

They were built at the Albion Works Salford Manchester.

The model is attractive to watch in motion and is fairly simple to build. An extensive range of castings is supplied with the kit. The firebox, displacer cylinder, water jacket, power cylinder, bearing brackets, displacer cover and cylinder cover are gunmetal castings and the flywheel which is 6" (150mm) diameter is cast iron. The displacer is made from a brass tube. The hot cap is a stainless steel spinning. The other parts (not supplied) are made from bar stock.

A set of 29 A4 drawings are supplied with the kit plus a parts list. The drawings have dimensions in both imperial and metric.

The heat source can be a ceramic burner gas fired with Butane. A suitable burner is available from Bruce Engineering who can also supply the gas valve.

The engine can be machined on a 3 1/2" lathe, nearly all the work is turning with just a little milling. A large fixed steady is needed for some of the turning.

It is good introduction to the world of hot air engines, and being a reasonable size the parts are not too fiddly to make. Though the prototype was painted, the castings are so arranged that they can be machined all over. The polished gunmetal and steel making an attractive combination.

The engine was serialised in Engineering In Miniature from March 1999 to December 1999.



Bailey's Vertical Hot Air Engine (The Bee)

Founded by John Bailey in 1838 at the "Albion Works" Salford, Manchester, the company was taken over by John's son, Sir William Henry Bailey in 1866.

Bailey's hot air engine (concentric version) was patented in 1881. In advertisements it was called the "Bee". It came in two sizes.

No 1, approximate power 1000 foot pounds, price £10, bright parts nickel plated £11 10s. Total height 2'-9". Suitable for driving shop window advertisements, model coffee mills, roasting jacks, dental lathes etc.

No 2, approximate power 2000 foot pounds, price £15, bright parts nickel plated, £16 10s. Total height 3'-6". Suitable for driving large sewing machines, amateur lathes, band sawing machines etc.

The model is 17" (430mm) high. There are 28 drawings, A4 size. Both metric and imperial



dimensions are shown on the drawings. The firebox, legs, air cooler, water jacket, cover and pulley are gunmetal castings. The flywheel which is 6" (150mm) diameter is cast iron. The whole was built on a Myford ML7R lathe, VMC milling machine and the usual hand tools.

The model can be gas fired (Butane) using a ceramic burner. A suitable type being available from Bruce Engineering as is a gas valve.

An engraving from a contemporary advertisement was used for the external details. The patent drawings (though they varied considerably from the advertisement sketch) were used for the internals.

The model was described in Model Engineer from 21st September 2001 to 5th April 2002 alternate issues.

Benjamin Goodfellow Overcrank Engine 1851

I first came across this engine in the then Brighton and Hove Engineerium, which at the time of writing is closed for refurbishment but hopefully it will soon be open.

It is not a huge engine the flywheel being about 1500mm (5ft) diameter, it is a delightful engine being from about the mid nineteenth century and was used to drive a workshop. The Goodfellow Company went on to build many large mill engines for the textile industry. George Watkins who photographed the engine in the 1950s quotes the engine as being 10hp with a pressure of 130psi and running at 90rpm. The engine was installed in the cotton mill fitting shop of E. & G. Hindle Ltd, Bastfield Mill, Blackburn. It was built in 1851 and was still in use in the 1950s driving the fitting shed shop when the main weaving shed engine was stopped. For interest the main engine was probably built as single expansion twin cylinder slide valve horizontal by W. & J. Yates 1870s, a new high pressure cylinder by Clayton and Goodfellow was fitted in the 1880s making it a cross compound

Our little engine is in classical architectural style, lightly built and quite tall for its size. Being a small engine I decided to make the model a reasonable size so that the individual parts were not too small, opting for a 200mm (8") diameter flywheel, so it is still within the capacity of most model engineers lathes, for example the Myford Series 7 lathes will take just under 250mm (10") in the gap.

The flywheel and cylinder are supplied as iron castings, the base, entablature, governor bracket and some other parts are laser cut in mild steel. The ordinary bar material is not supplied.

There are 34 drawings of A4 size dimensioned in both metric and imperial. The engine was serialised in Engineering in Miniature



Benson's Vertical Engine



This type of engine was called by the Victorians a vertical engine. An engine with the cylinder above the crankshaft was called an inverted vertical. This engine was built in the middle of the nineteenth century and is typical of the type. Incorporating a forked connecting rod. Long piston rod which avoided a crosshead and slide bars. It was simple in design and would have been built in small powers. Benson's design is unique as far as I know in using a single column to support the mechanism.

The design is attractive to the modeller in that the single column is easy to turn and the entablature makes lining up the crankshaft simple. The governor is also large in relation to the engine, which gives us a chance to make it operable in this small size. A governor is also interesting to make and looks good in operation. The forked connecting rod is shown with proper straps and wedges. But this could be simplified to plain round ends with bushes if desired.

There was no scale given with my source material, but using my usual scale of 1/12 the full size flywheel would have been about 6'-0" diameter which gives a 6" (150mm) diameter flywheel for the model. This makes up into quite a small engine.

October 2013

For All your Model Engineering Requirements:

Email: sales@pollymodelengineering.co.uk Polly Model Engineering Ltd (inc Bruce Eng) Fax +44 (0)115 9727251

Web: www.pollymodelengineering.co.uk

Page 8

Telephone: +44 (0)115 9736700

The base, entablature and cylinder are gunmetal castings. The flywheel is cast-iron. The bracket, pump body and eccentric straps are brass lost wax castings. Also supplied are the skew gears for the governor. The rest being made from bar material.

A set of drawings are available all A4 in size and numbering 21. A parts list is also included. The drawings are dimensioned in both imperial and metric. The imperial size being given first with the metric dimension below.

The engine was serialised in Model Engineer from 5th July 1996, Vol. 177 No 4020 to 31st December 1996, Vol. 178 No 4032, alternate issues.

Bodmer's Sliding Cylinder Engine 1841

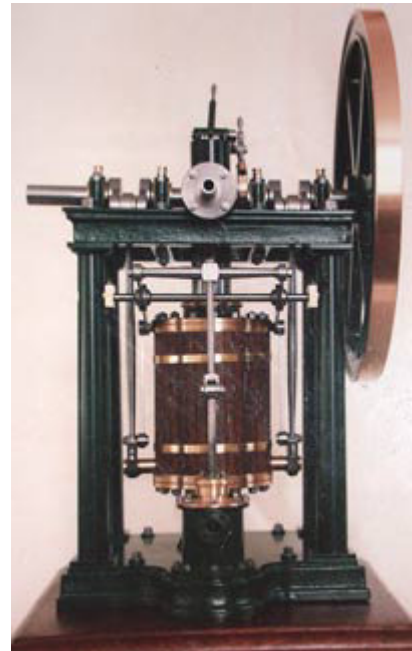
Bodmer's sliding cylinder engine is rather unusual in that the piston is held in a fixed position and the cylinder reciprocates. It was patented by Johann Georg Bodmer in 1841. Bodmer was a Swiss of German descent, born in Zurich in 1786. He first came to England in 1816. He spent many years in this country before returning to Zurich in 1860, he died in 1864.

He was a brilliant engineer and patented many designs, not only for engines but locomotives, cotton machinery, marine work and much else. Amongst his patents were Breech loading guns, the bayonet and its fixing to rifles, textile machinery, the chain grate stoker, variable expansion valve gear with left and right hand threads, commonly attributed to Meyer. Multi-syphonic locomotive firebox, the slotting machine, the radial drilling machine, the rocking grate for furnaces. The vertical lathe or boring machine, the idea of corridor trains. As you can see he had a very fertile mind. He had his own engineering works first in Bolton and later in Manchester and introduced the metric system there. A bit of a workaholic, he often worked a 16 hour day.

The sliding cylinder engine appears amongst a number of inventions all under one patent. Whether it was ever built I do not know, but some of his designs were built at his own factory. His drawing shows it arranged for use in a paddle ship but he does note that it is also suitable for land use. I have arranged it as a stationary land engine. The columns and frames following along the lines of other engines by Bodmer.

The model has a 9" (228mm) diameter flywheel, and the castings for base, entablature and cylinder, covers are in gunmetal and the fly wheel is cast iron. Drawings and parts list are available and there are 30 in the set, all of A4 size, and the dimensions are in both imperial and metric.

The model can be built on a 3½" gap bed lathe, though a milling machine does make things easier. The model was serialised in Model Engineer from 11th August 2000 to 23rd March 2001, alternate issues.

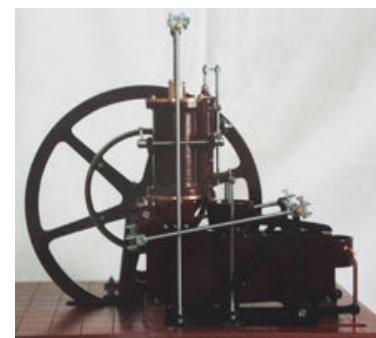


Boulton and Watt Bellcrank Engine 1802

The Bellcrank engine was introduced by Boulton & Watt in 1802. The design was formulated by William Murdock and the Soho foundry manager a Mr Southern. The aim was to supply a small self contained engine, to the smaller manufacturer who could not afford a house built beam engine. The design was called a Bellcrank on account of the shape of the rocking leavers. These resembled the leavers that transferred the pull of the ropes in a bell tower to the bells.

The design was in production from 1797 until 1806, when Boulton & Watt introduced their small self contained beam engine mounted on a cast iron cistern. From my research all the engines seemed to vary slightly one from another. The earliest engines were filled with a form of drop valve. Then came the long D valve, followed by the slide valve. The model is based on one from 1802 with a long D valve.

The drive to the valve is interesting. Bolted to the flywheel is an eccentric ring. A



October 2013

For All your Model Engineering Requirements:

Email: sales@pollymodelengineering.co.uk Polly Model Engineering Ltd (inc Bruce Eng) Fax +44 (0)115 9727251

Web: www.pollymodelengineering.co.uk

Page 9

Telephone: +44 (0)115 9736700

forked end of a lever pivoted on the cylinder, fits into the ring. As the flywheel revolves the lever is raised and lowered. On the other end of the pivot shaft is another lever. This lever fits into a slot in a shaft that slides up and down while attached to the steam chest. The sliding shaft has a link at the top which attaches to the valve rod.

The base of the engine is a cistern, inside there is a condensing tank. The cylinder is also mounted on the cistern as are the crankshaft bearings. The flywheel is carried on a separate shaft mounted in its own bearings.

The model is to a scale of 1 3/16" to 1ft, which gives a fly wheel of 9" (225mm) diameter. Castings are for flywheel, cam ring, cistern, condenser, cylinder, covers and steamchest. There are 26 drawings and a parts list in the set, all are of A4 size. The drawings have both metric and imperial dimensions.

Construction is quite straight forward, and can be carried out on a 3 1/2" lathe. A drill and mill will make things a bit easier of course. One variation from the norm is the long D valve, which is not self sealing like a traditional slide valve. It can be viewed like an inside admission piston valve. Except that the heads are not circular but D shaped. The valve is hollow and exhaust from the top of the cylinder passes down through the valve to reach the condenser. Serialisation of the model began in Engineering In Miniature July 1993 and ended in June 1994

Cross Engine

The Cross engine uses an unusual arrangement to convert reciprocating to rotary motion, called a rectilinear motion. An engine using this motion was patented by James Booth in 1843 and a model of his engine is available from our collection.

This model uses the same motion but with a much simpler detail design. It is based on another model in the collection of a friend of mine, though unfortunately there is no indication of the period it was built and who made it.

It is difficult in words to describe the motion, but in essence the cross acts a guide frame for two crossheads (sliders), one moves vertically and the other horizontally. The end of the piston rod is connected to the vertical slider, joining the two sliders together is a link which has three equally spaced holes in it, same pitch as the crank throw. The crankpin is connected to the centre hole, as the sliders move up and down and across; the centre hole of the link drags the crank around.



I followed the original concept of the model but drastically altered the details. Following as much as possible the full size engine details of the 1840s period I think it looks a good representation of how such an engine would have looked like for that period. Castings are provided for the flywheel in cast iron and in gunmetal for the cylinder. Laser cut mild steel laminations are provided for the base, entablature and guide cross. Also supplied is a full set of 23 drawings all of A4 size and both metric and imperial dimensions are shown on the drawings.

The model's flywheel is only 138mm (5 7/16") diameter so well within the usual model engineers lathe capacity. The model stands about 300mm (12") high on its wooden base.

The engine was serialized in Engineering in Miniature from March 2009 to October 2009

Crosskill's Oscillating Engine

The design for this engine was taken from a book published in the 1870s. One page contained a number of small thumbnail sketches of engines including Crosskill's oscillating engine. Though no scale or size was given, it was presumed that it would have been a small engine of about six horse power. This type of engine would have been used to power a small workshop or individual machine. The model though based on Crosskill's design is not an exact copy in miniature. It has been modified to make it easier to build in this small size. The prototype had both a slide valve and governor, these have been omitted. The governor would have required a microscope to build it. The idea for this engine is one that while looking attractive, has only a small number of parts, and will not take long to build. It is



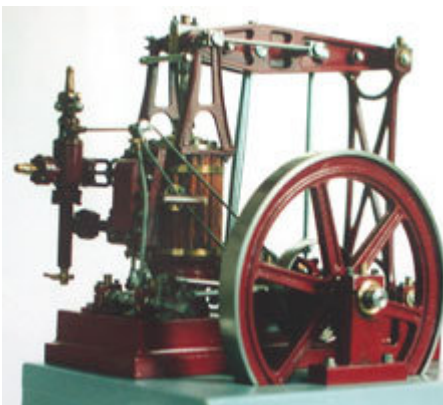
aimed at newcomers to the hobby and those wanting a change from a more demanding project.

Four castings are required, flywheel, 3" (75mm) diameter, base, table and cylinder. The other parts are machined from rod and bar material. The castings are made using the lost wax process, which should give well detailed castings. The design requires quite a number of interesting machining operations, covering most of the standard machining methods met with in model engineering. As such, it is a good introduction to the hobby. Being small, it is within the range of many of the small lathes available today. A drilling machine and mill will of course make life easier, but they are not essential. All the machining could be performed on a lathe equipped with a vertical slide.

There are 9 drawings in the set plus a parts list, and all are A4 size. They are dimensioned in both imperial and metric. The imperial dimension appears first with the metric below. Drill sizes are given only in metric as these are now preferred. You will notice that the dimension conversions are not exact, the desire being to use standard material sections from both systems. There are twenty main parts to the design.

The engine can be run on both compressed air and steam. A small compressor of the air brush type will be adequate, only about 10 psi is required. Included in the package, with the castings and drawings, is a descriptive booklet giving details on model construction.

Easton and Anderson Grasshopper Beam Engine



The grasshopper beam engine is so named because it is supposed to resemble a grasshopper when in motion. The Grasshopper engine was introduced in the 1820s and was built by many companies, but Easton and Anderson specialised in the genera. This model is based on an example supplied to Winchester gasworks in 1892. It was used to drive the gas exhausters that pulled the gas from the retorts and pumped it into the gas holders. The prototype was photographed in 1936 by George Watkins and was published in his book, "Stationary Steam Engines In Industry Vol 1, Fig 89". 1892 is quite late in the thy for a grasshopper engine, but it does contain some "modern" features, such as double beam, single marine type big ends, disk crank, Meyer valves and Tangye governor. As a hole it has quite clean lines.

The model follows the prototype quite closely, but though it has an air pump, no condenser is fitted. The governor though it revolves is non operational.

There are two eccentrics operating a concentric rocking shaft. But there is only one slide valve fitted, the other valve rod is a dummy. The two eccentrics are fitted as the concentric shaft is such an interesting feature.

The engine is quite small with a flywheel of 5" (125mm) diameter. Construction is quite straight forward, but some parts are quite small. Castings are available for the flywheel, base, cylinder, covers, rackets, rocking frame, and beams. There are 34 drawings and a parts list, all of A4 size. The dimensions are in both imperial and metric, you will find that some of the conversions are not exact as standard material sections are used where possible. The imperial dimension appears first with the metric dimension below. Drill sizes are given only in metric as these are now the preferred size.

The model can be built on a 3½" lathe, being quite small it might be possible to build it on some of the smaller lathes now available. All the work could be done on the lathe especially if a vertical slide is used. However a drill and mill will make things a bit easier.

The engine does look very attractive in motion. The spinning governor is an added attraction. This was supplied by Tangye, a Birmingham company, and it is not known if this arrived with the engine or was added later. It was Tangye who supplied the Hydraulic rams that were used to assist the launch of Brunel's Great Eastern steam ship. Grasshopper engines have also been used in marine work, some were installed in tugs.

The model was serialised in Engineering In Miniature from June 1992 to May 1993.

Farcot's Table Engine

For details of this engine I am grateful to a friend in France who kindly sent over some drawings of French stationary steam engines taken from a book published in the 1860s. It was in two volumes, text and plates, but only the plates had survived. So I am unable to give any background information on the engine to be described. Except that Farcot was a major manufacturer of engines and machinery in France and his name crops up quite often in French steam engine books.

The moment I saw the engine I thought it looked very elegant and would make a very attractive model. The more I looked at the design the less I felt that castings would be needed. The only way to get the detail required would be with lost wax castings, and this would be prohibitively expensive with the quantity and sizes required. Therefore I opted for a fabricated design.

All the parts can be machined on a Myford S7 lathe, except for the flywheel. This is 400mm diameter and only 8mm thick. The bosses are bolted on as in the prototype, so I had the flywheel profile milled from plate including the + section spokes. If there is sufficient demand these can be supplied ready milled.

An alternative will be a laser cut mild steel blank and you can mill the webs of the spokes yourself. The cylinder was double steam jacketed, so while the cylinder looks very big and powerful the working cylinder was in fact quite small. I have used only one jacket in the model and the design lent itself to be made from continuously cast phosphor bronze tube (easy machining type). The cylinder was a most enjoyable exercise to build, as it was machined on all surfaces. No castings to clean up.

As you can see from the photograph the entablature, connecting rod guides and governor bracket are very ornate. As for the governor this is in a class of its own. At first glance a standard Watt type. Its operation gets more and more involved the further you look into it.

As the governor operates it engages with three bevel gears in a sort of differential gear. As it rises it drives one way, as it falls it drives the other. This motion is transferred via another set of bevels to a vertical drive shaft. The other end of the shaft ends in a worm and wheel, pivoted in the centre of the steam-chest, which is itself circular.

In the prototype the valve consisted of two slide valves one on top of the other, along the lines of Meyer valves. As the centre pivot moved by the action of the governor it opened and closed the top valve altering the cut off.

To the left there was another lever that through a shaft terminated with a spur gear in a pocket behind the slide valve. The lever could be pulled forward engaging the gear with a rack along the side of the valve. Thus the slide valve could be moved independently for starting purposes.

I expect all the parts could be made for the model, but there would not be the power from the governor to drive the bevel gears let alone the slide valve. So I built the governor as a decorative but non operational mechanism. The wheels go round but nothing happens.

The large size of the fly wheel requires the whole engine to be raised up to clear. Either by putting the engine on a stone or brick pedestal or building a deep wooden base to house the lower half of the flywheel.

I have shown the air pump as it is quite distinctive and indicates that the engine was of the condensing type. But like the governor in does not need to work, as I suspect nobody will ever run the engine as a condensing engine.

No materials are being supplied for this engine only a set of drawings, which consists of 41 all of A4 size, plus a parts list. The dimensions are shown in metric only. The model has been serialized in Engineering In Miniature from November 2003 to August 2004.

Galloway's Non Dead Centre Engine

Galloway's non dead centre engine was patented in 1838 by Elijah Galloway and was an attempt to build an engine with the advantages of self starting in any position with the simplicity of a single crank.

As can be seen there are two vertical cylinders connected by a connecting rod of triangular configuration to a single crank placed between the cylinders. As the pistons are 90 degrees out of phase to each other there is never a position where the piston of at least one cylinder cannot bear upon the crank. During each revolution the top beam of the connecting rod goes from horizontal to an angle as the piston rods are in a fixed plane some means of extending the beam is required. This is accomplished by having sliding bearings in the crossheads.



To keep the centre of the connecting rod beam in a straight vertical line, a motion beam is connected to the centre of the connecting rod beam and goes via mother sliding bearing housed in brackets to the side of one cylinder to another tie rod which goes back to the brackets. This sort of "parallel motion" constrains the connecting rod into a straight vertical line.

Having a lever going up and down to the side of the engine it was a convenient place to put an air pump driven by said beam.

The engine was designed for marine use driving paddles and for land use as a stationary engine. It was built but was not used a great deal at the time. It was reinvented by Bernay's in 1874 and again in 1887 by Fleming and Ferguson, who used it as a marine engine driving screws. In this instance the cylinders were inverted. It was licensed by Fleming and Ferguson to Musgrave's who built as a compound, triple and quadruple expansion mill engine. A small compound has survived and is in the care of The Northern Mill Engine Society at Bolton.

The model was built using a Myford ML7R lathe and VMC milling machine. There are 40 drawings all to A4 size, dimensions are in metric only. The fly wheel is 228mm (9") diameter. Castings for the cylinders, covers, pistons, air pump, bearing beams, bearing frames, covers and steam chests are in gunmetal. The fly wheel is cast iron.

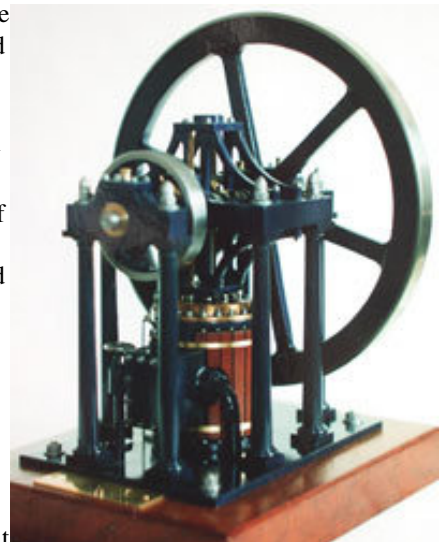
The engine is fascinating to watch in motion, it has to be seen to be believed.

The engine was serialised in Engineering In Miniature from August 2001 to June 2002.

James Booth's Rectilinear Engine 1843

This unusual engine was patented by James Booth in 1843. His hopes for the design were that it would give a compact layout for use in paddle ships, and for driving machinery on land.

The term rectilinear derives from the action of converting reciprocating motion to rotary. As you can see from the picture, this was accomplished by a set of links, connected to the crossheads. The crossheads run in guides in the form of a cross. The reciprocating motion of the piston drives one end of the link, connected to the vertical crosshead. The other end of the link is connected to the horizontal crosshead, which is pulled across. The combined motion pulls the centre of the link around in a circular path. Attached to the centre of the link is the crank from which is derived the rotary motion. This arrangement removes the need for a connecting rod, which greatly reduces the height of the engine. However it does increase the number of rubbing surfaces. I have been unable so far to determine if the engine was ever built full size.



The design of the model was developed from the patent drawings. It follows fairly closely the spirit of the prototype but some details had to be guessed at as their arrangement was not shown. A standard slide valve is used for steam distribution. A main stop valve is also incorporated into the design, and sits adjacent to the valve chest.

Construction is straight forward, but care is required to ensure that the guide frames line up on the centre line of the crankshaft. The fly wheel is 9" (225mm) diameter which allows for machining on a Myford series 7 lathe. Machining follows the usual model engineering processes and most can be done on the lathe. It is of course easier if a drill and milling machine can be used as well.

Castings are required for Flywheel, and pulley which are in cast iron, cylinder, covers, piston, steam chest, eccentric strap and guide frames are in gunmetal. The bearing frames being in aluminium. The base is a 3/16" (5mm) thick mild steel plate. Other parts are machined from rod and bar material. There are 20 drawings in the set, plus a parts list. They are dimensioned in imperial and metric. Some of the conversions are not exact, as standard material sections have been used where possible.

The model was serialised in Engineering In Miniature, from December 1989 to October 1990. The engine when built is fascinating to watch, the motion is really unusual. It appears as if the fly wheel is revolving one way and the links are revolving in the opposite direction.

Kientzy Oscillating Engine

The source for this model design was an engraving from a French book on steam engines published in the 1860s. Though I would imagine the design to be from the 1850s. But with a name like Kientzy I do wonder if it was indeed French. There was no text with the engraving by way of explanation.

Oscillating engines are about the simplest steam engine you can get. They were built from tiny little workshop engines, up to pairs of 100" giants for use in paddle ships. All the larger engines including our prototype had a slide valve to distribute the steam. But the valve gear if you can call it that consists of a quadrant and valve rod. The movement of the cylinder giving motion to the valve. Most steam engine types are associated with their original designers, for example, beam engines with Newcomen, Steeples with Napier, Bellcranks with Boulton and Watt, Siamese with Maudslay, but who originated the oscillating engine? I seem to remember a small double oscillator in the Science Museum by Maudslay from 1815.

Our prototype is a great looking engine and runs quite smoothly considering the amount of movement from the cylinder. I have modified the design slightly from that drawn, as the outer end of the crankshaft was carried in a wall box. A wall box was a cast iron structure built into the engine house wall to take a bearing pedestal.

The fly wheel is 225mm (9") diameter and is an iron casting. The frames, governor brackets, eccentric strap and slide valve are brass lost wax castings. The cylinder is also of the lost wax type but in bronze. The foundation is an aluminium casting in heat treated LM25 which machines very nicely. The engine can be machined on a lathe of the Myford series 7 size.

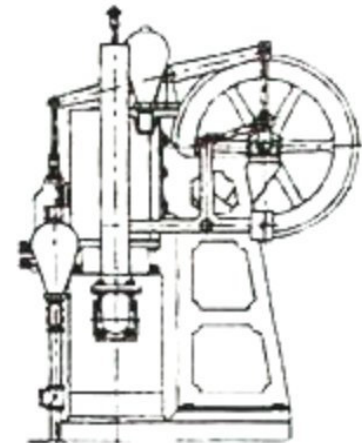
There are 30 drawings of A4 size and the engine was serialised in Engineering In Miniature from May 2005 to February 2006.



Denny Improved Ericsson Engine

The Denny Improved Ericsson Hot Air Engine was introduced at the beginning of the 20th Century by the American Machine Company of Newark Delaware. I was told that Denny was the chief designer for the American Machine Company. The original engine was designed by the famous Swedish engineer Ericsson.

The engine runs on the principles invented by Robert Stirling in 1816. It is a Stirling hot air engine. It has the piston and displacer concentric to each other in the same cylinder. The full size engine was intended primarily as a pumping engine. Such duties as pumping water from a well to the cistern of a large house or factory. In the countryside it would have pumped water from artesian wells to water cattle or for irrigation. A pump is integral with the design and is detailed on the model. It was built in a range of sizes and was popular in the USA as it could be run by anybody whereas a qualified engineer was required to attend a steam engine. The model engine is based on a drawing in the original catalogue and from photographs of a preserved engine. If the photographs can be believed it was painted an orange/red colour.



The model is about 250mm (10") high and has a 100mm (4") diameter flywheel, as such it can be built on most model engineers lathes. It is supplied as an Iron casting for the flywheel, Gun metal castings for the base, firebox, water jacket and beam pivot bracket. Laser cut mild steel parts are supplied for the main frame, bell cranks and beam. Also supplied are stainless steel tubes for the cylinder and displacer. The other small parts are fabricated.

A set of 30 A4 drawings are supplied and the dimensions are shown in both metric and imperial. The model is easy to build and with a 30mm (1 3/16") diameter piston has enough power to be easy to run. Tiny hot air engines can be a problem at times to overcome their own inertia. It is designed for a ceramic gas burner but other sorts of burner could be used instead. This engine was serialised in Engineering in Miniature from June 2006 to March 2007.



October 2013

For All your Model Engineering Requirements:

Email: sales@pollymodelengineering.co.uk Polly Model Engineering Ltd (inc Bruce Eng) Fax +44 (0)115 9727251

Web: www.pollymodelengineering.co.uk

Page 14

Telephone: +44 (0)115 9736700

M' A de Polignac's Curved Cylinder Engine

This engine was designed by M' A de Polignac in France in the 1870s. The engine is unusual in that the cylinder is curved along its length. The piston is also suspended in a frame and swings like a pendulum. It was claimed that this form of construction relieved the cylinder of wear, and allowed for a fast running engine.

The engine was available from the catalogue of a M' Oppennan. The design was published in a book of 1875, which had been edited in 1873. The illustration on which I based the model was for an engine of 6hp. As you can see from the illustration the engine is of light construction. A speed of 500 rpm was claimed, and that the engine had been tested to 750 rpm. It was a small engine with fly wheels 500mm diameter. I chose a scale of 1/5 which gave a fly wheel diameter of 100mm. The cylinder bore is 19mm diameter. The engine was used to drive woodworking machinery where the high speed was put to good use. Though it was originally a metric design I have used dual measurements on the drawings. Showing imperial first with the metric dimension below. You will notice that they are not exact conversions. Standard material sections have been used where possible.

The set of drawings comprise 20 in number plus a parts list, all to A4 size. Both metric and imperial dimensions are given on the drawings. There are five castings, an aluminium base, gunmetal for the cylinder, covers and eccentric strap. The rocking frame is a laser cut mild steel plate, as are the side frames, the webs being soldered on to represent castings. The flywheels and pulley wheel are machined from free cutting mild steel blanks. All other parts are made from bar and rod material.

The curved cylinder was machined full size using a horizontal boring machine and a large rotary table. In the model the curved bore was machined using a metal jig that was pivoted on the back of the cross slide. An extension being bolted to the back of the cross slide to get the pivot point far enough back. The other end was forked around the toolpost on the top slide. The top slide being used to apply the feed to a boring tool held in the chuck. The cylinder casting was clamped to the jig.

The engine runs very smoothly and is fascinating to watch in motion. It is quite a simple engine and can be machined on a 3 1/2" lathe. The laser cut frames save a lot of work. The connecting rod is an interesting piece of machining being fish bellied.

The engine was serialised in Engineering In Miniature from June 1995 to December 1995.

Maudslay Columnar Engine 1862

I first saw the prototype of this engine as a child when taken to the Science Museum South Kensington by my parents during the school holidays. It was a wonderful exciting place full of models that you could set in motion by turning a handle or pressing a button, plus full size exhibits that towered over the small visitor.

The prototype was built by Maudslay Sons and Field to power their exhibits at the 1862 International exhibition which was held at South Kensington, not to be confused with the Great Exhibition of 1851 held at Hyde Park and later transferred to Crystal Palace, so the engine has not stayed far in its existence. By the time of the International Exhibition Henry Maudslay had died and the company was being run by his sons, so I do not know who designed the exhibition engine but it does have wonderful lines. As is often done for exhibitions the engine was given a special finish, in this case the whole of the engine apart from the flywheel is in polished gunmetal and looks absolutely super.



I made the flywheel 178mm (7") diameter which is roughly half size and well within the capacity of the usual model engineers lathe such as the Myford Series 7 lathes. The main column is a big casting and I did mine on a Warco BH600 lathe rather bigger than the Myford as it has a large fixed steady necessary to support the column. A vertical milling machine is essential for some of the machining.

Castings are available for the column, inner and outer cylinder, top and bottom cylinder covers, base ring and flywheel. Apart from the cast iron flywheel and laser cut mild steel base, all the other parts are in gunmetal, so the castings for this engine are more expensive than usual, to counter this there is very little that needs painting.

There are 27 drawings of A4 size in the set and as is my usual practice they are dimensioned in both metric and imperial. The castings and drawings are available from Polly Model Engineering but as they are quite big and weigh a

lot they are to individual order. There are plenty of parts to make while waiting for the castings. The engine was serialised in Model Engineer (16th July 2010 for 2 consecutive issues, then alternate issues to 3rd December, final page on 17th December)

Murray's Hypocycloidal Engine

This engine has an interesting pedigree. Originally introduced by Matthew Murray in 1802. It was one of a number of engine designs produced after the Boulton and Watt patents expired. It could be classified as a portable engine, in that it was not house built, being self contained it could be erected anywhere. It was of about 5hp and was condensing, working at a low pressure.

A unique feature of the engine was the hypocycloidal motion, whereby reciprocating motion was transformed into rotary motion. The geometric principle is that a point on a circle rolled around the inside of another circle of twice the diameter will scribe a straight line. In practice the small circle is a spur gear which rolls around inside a ring gear with internal teeth. As the piston rod rises and falls, the end is pivoted on a pin fixed on the periphery of the small gear. The small gear rolls around and through a crank drags the crankshaft round.



The model is based on a later engine than Murray's original. It was built by John Bradley and Co (Stourbridge) Ltd and is in the Henry Ford Museum at Dearborn, Michigan. It was used for pumping water. In the model the pump is not included, the desire being to show only the hypocycloidal mechanism. Another engine from the same company but possibly of earlier design is in the Birmingham Museum of Science and Industry.

One reason for choosing the prototype was that it had cast plate frames and base. This has lent itself to reproduction by laser cutting, the same method being used to provide the gears and flywheel. The flywheel has only four spokes and these are quite thin, which made the possibility of having them cast doubtful.

The cylinder, covers and steamchest are gunmetal castings. There are 19 A4 drawings in the set plus a parts list. All dimensions are in both metric and imperial. The engine can be built on a 3½" lathe, though not essential, a milling machine will make things easier. The engine was serialised in Engineering in Miniature from October 1996 to June 1997. It is a most fascinating engine to watch in motion.

Savage Organ Engine

These little engines were used to drive fairground organs. They were sometimes mounted at the back of the organ, at the front of a traction engine, or on the centre engine of a carousel.

Savage's were of course a famous engineering company producing agricultural and fairground steam machinery in both the 19th and 20th centuries. They were based at Kings Lynn in Norfolk and the town museum contains much appertaining to the company as well as storing a large number of the companies wooden patterns.

The company was founded in 1850 by Frederick Savage, who had been born on 3rd March 1828 in the village of Hevingham in Norfolk. At the age of sixteen he started work with Thomas Cooper "Whitesmith and Machine Maker," who had a small foundry in East Dereham Norfolk. It was taken over by John and James Gill, "Millwrights and Machine Makers." In 1848 Savage moved to Lynn and gained employment as a wheelwright and blacksmith with Charles Willett. who styled himself as "Brazier, Tinplate worker, Ironmonger, Wholesale and Retail Dealer, Whitesmith and Belihanger".

In 1850 Willett retired and Savage set up on his own account with a small smithy and foundry. Business expanded and he moved in the next few years to ever larger premises. In 1872 came his last move to the north end of town to new premises he called The St Nicholas' Ironworks. He was now known as "Engineer and Agricultural Machinists". He also became a J.P. and in 1889-90 the mayor, and he had a statue erected as a monument to him. He died on 27th April, 1897, aged sixty-nine.

A good write up of the company is given in the book "The Engine Builders of Norfolk" by Ronald H Clark, who also did a separate booklet on the 114th anniversary of the company.



The model has a cast iron flywheel of 150mm (6") diameter. The frame, pedestal bearings, governor bracket and governor slider are brass lost wax castings. The cylinder is a gunmetal lost wax casting.

The base is made from 7 laminations of laser cut steel, also laser cut are the governor arms and links, and the throttle lever.

With quite a small flywheel it should be possible to build the engine on some of the smaller lathes available as well as the usual 3 1/2" machine.

The engine was written up in *Engineering In Miniature* from October 2004 to April 2005.

Scotchcrank Engine 1846

The Scotchcrank engine is unusual in that no connecting rod is required. The reciprocating motion is converted to rotary motion by the piston rod having a horizontal slot in which fits the crankpin. As the piston rod rises and falls the crankpin moves along the slot giving rotary motion to the crankshaft.

I have never seen an explanation as to why the motion is called "Scotchcrank".

The design is attractive not only for the unusual motion but for the delightful architectural features of the period in which it was built.

Due to the form of construction most of the parts are fabricated. Gunmetal castings are used for the cylinder. The slide valve is of conventional form but is housed in a steamchest as used for long D valves. Also of interest is that the steam in let and exhaust come up through the columns and enter and leave the cylinder along the same centreline.

The entablature core and beading are fabricated. The base is a 5mm thick mild steel plate.

The cast iron flywheel is 9" (228mm) diameter and has eight spokes. The cylinder is 3 1/8" (80mm) long and F" (25mm) bore. A Watt type governor is fitted.

The model can be built on a 3 1/2" (89mm) lathe, a milling machine is a help but a vertical slide should cope with most of the milling operations. A full set of 26 drawings of A4 size are available, and have imperial and metric dimensions.

The model was described in *Model Engineer* from 20th November 1998 to 4th June 1999, alternate issues.

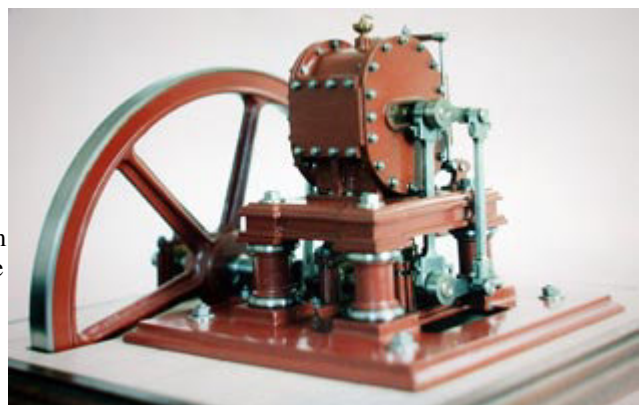


Simpson and Shipton's Short Stroke Engine 1851

This engine was patented by two Manchester engineers, Joseph Simpson and James Alfred Shipton in 1848. It is a rotary steam engine, but it still uses connecting rods to drive the crankshaft. The "cylinder" or perhaps better described as a chamber, sits on a table carried on four short columns. Inside the chamber is a "piston" lying on its side. Passing through the piston is an eccentric shaft, connected to the outer ends of the shaft are cranks. Connecting rods drop from these cranks to the crankshaft carried on bearings fixed to the base. Steam enters the chamber through a balanced slide valve and impinges on the side of the piston rolling it around inside the chamber.

The claim for this arrangement was a compact smooth running engine. Against the design are the problems of sealing the length and ends of the piston. Full size this was achieved by having a flat spring loaded plate bearing against the side of the piston. The ends were sealed by split coned rings seated in coned recesses in the ends of the piston. By expanding the ring with a wedge the ring rode up the coned recess and increased the length of the piston sealing the ends. In the model the length wise sealing is achieved by using a very slight interference fit. The ends are sealed with rings of graphited yarn dropped into grooves machined in the piston ends.

Construction of the model is quite conventional without any odd machining practices. It can be machined on a 3 1/2" lathe, the flywheel being 9" (225mm) diameter. There is quite a lot of milling involved, and while this could be done



October 2013

For All your Model Engineering Requirements:

Email: sales@pollymodelengineering.co.uk **Polly Model Engineering Ltd (inc Bruce Eng)** Fax +44 (0)115 9727251

Web: www.pollymodelengineering.co.uk

Page 17

Telephone: +44 (0)115 9736700

using a vertical slide. A vertical milling machine does make things a lot easier. The big ends are of the strap and coffer type. Castings are available for the base, table, cylinder, piston, covers, steamchest, steamchest cover, eccentric strap and flywheel. There are 23 drawings plus a parts list and all are of A4 size. The drawings have both metric and imperial dimensions. Except that all drill sizes are given in metric as these are now the preferred size.

The engine does look very interesting when in motion, there are levers gyrating all over the place. It is also very free running and only requires a wisp of air to get it running. How many of these engines were built full size is unknown, but an engine was exhibited at the great exhibition in 1851 where it drove textile machinery. There is also a reference to the engine in the "Engineer" in 1862. Still with the same cylinder arrangement, but with a different drive mechanism. The model was serialised in Engineering In Miniature in August 1994 to May 1995.

Steeple Engine

A Steeple engine (illustrated right) is so called because of the resemblance of the piston rod extension to a church steeple. It is sometimes confused in model engineering circles to a table engine, but the difference is quite easy to see. The cylinder in a table engine literally sits on a table. With the crankshaft below the table. With a steeple engine the cylinder sits at floor level and the crankshaft passes over the cylinder. This is apart from marked differences between the piston and connecting rod arrangements.

Steeple engines were an early attempt to get away from the beam engine arrangement. The first steeple engines were designed by Napier in the 1830s for use in paddle boats. The cylinder went in the bottom of the boat, the crankshaft was at deck level, and the upper section was housed in a deck house.

The model is based on a land engine of the 1860s. The flywheel construction is quite interesting. Full size the boss and rim were cast around wrought iron spokes laid in the foundry mould. This is not possible in a model, so the boss is built up and the rim is a gunmetal casting that can be machined all round. The spokes are rods Loctited in position. The lathe is used as a jig to hold them in position while the Loctite cures.

The model has a 9" (229mm) diameter flywheel. The base, flywheel rim, main frame, cylinder, steamchest and eccentric strap are gunmetal castings. The other parts are machined from mild and stainless steel bar stock.

A full set of 22 A4 drawings are available plus a parts list. The drawings have both imperial and metric dimensions.

The engine is a delight to watch in motion and an interesting project to build. Construction is possible on a 3 1/2" (90mm) gap bed lathe. The gap being needed for the flywheel. This engine is also available as a ready to run model or fully machined kit. This engine was serialised in Engineering in Miniature from January 2000 to August 2000.



Stockport Engine

I first came across the inspiration for this engine some years ago in a book published in the 1890s on gas engines. An illustration in the book showed a small 3/4hp gas engine made by J.E.H. Andrew & Co in their Stockport works. They also produced very large horizontal gas engines. The engine was unusual in that it had a steeped piston the larger upper portion compressed the mixture and the lower smaller diameter part of the piston was where the charge was ignited by hot tube ignition.

As I only had an external elevation and was unable to find out anything more about the engine I put it to one side, but I liked the appearance of the engine so decided to modify the engine to work as a vacuum engine. These engines are also called atmospheric hot air engines, flame gulpers and flame lickers. The engine works with an external flame which is sucked into the engine when a slide valve opens, the cylinder fills with hot air, the valve shuts then the hot air is condensed and atmospheric pressure drives the piston down and the process is then repeated. They produce little power but make a good noise and run well and are easy to make. It is designed to run on Butane gas and details of the burner arrangements are given in the drawings.



The fly wheel and base are supplied as iron castings, the cylinder and piston are continuous cast iron bar. The column is a piece of steel tube and the top of the column is machined from a block of steel. Also supplied is material for the carbon/graphite valve and the springs and a laser cut blank for the crankshaft. The ordinary bar material is not supplied. There are 22 drawings of A4 size dimensioned in both metric and imperial and the castings and all materials including the springs are supplied in the kit. The engine can be machined on a lathe of the Myford series 7 size or even smaller as the fly wheel is only 150mm (6") diameter and the engine was serialised in Model Engineer from 5th June 2009 for three consecutive issues then alternate issues.

Trapezium Connecting Rod Engine

This example of a trapezium connecting rod engine is attributed to Professor Realeaux, who was professor of Kinematics at Charlottenburg University Berlin and was taken from a Dutch textbook published in the 1890s. As can be seen the connecting rod is in the form of a trapezium and completely encompasses the cylinder. The motion is most interesting and makes for an attractive model. It would probably have been in the range of 5 to 25 NHP range. Alas few details are given in the text. I have presumed a 9ft (2.7metre) flywheel, which conveniently at 1/12 scale gives a 9" (228mm) flywheel.

The base and brackets are aluminium castings. Gunmetal castings are used for the cylinder, covers, steam-chest and eccentric strap. The flywheel is cast iron. The connecting rod yokes are mild steel fabrications. The valve is of the slide valve type. To support the crankshaft there is an outrigger bearing.



There are 20 A4 drawings which have both imperial and metric dimensions, also included is a parts list.

Construction is quite straightforward and can be performed on a 3 7/2" (90mm) lathe such as the Myford series 7, with a gap bed. Though not essential a milling machine does make some operations easier.

The model was serialised in Engineering In Miniature from July 1997 to February 1998.

Tuxford's Double Side Rod Engine

This model of Tuxford's Double Side Rod Engine was developed from a small engraving in a book published in the 1880s. The engine can be viewed as midway between a Table engine and an Oscillating engine. As with the table engine there is a table, but the cylinder is placed under the table. The piston rod drives upwards to a cross beam. From the crossbeam rods drop down to crossheads sliding on guides attached to the side of the cylinder. Pivoted from the crossheads are connecting rods which rise upwards to the crankshaft. Because of this arrangement the crankshaft has to have a very long crankpin the full width of the cylinder. The reason for this arrangement was to obtain a compact engine but with the long connecting rods of the true table engine. Though more compact than the Table engine it was not as simple as the Oscillating engine.



There was no size or scale given but if we assume a 9ft (2.7metre) flywheel this would give us a 1/12 scale and a 9" (228mm) flywheel for the model. There are 26 drawings in the set all A4 size, and are dimensioned in both imperial and metric.

The imperial dimension appears first with the metric dimension underneath. You will notice that the metric dimensions are not exact conversions from the imperial, I have tried to use standard metric stock sizes where possible.

The construction of the engine has some interesting operations, and the whole builds up into an attractive engine of quite small size, but without any tiny parts. The number of castings have been kept to the minimum and consist of just, flywheel pulley wheel, base and cylinder.

When built up the engine runs quite smoothly with a majestic motion, the movement of the engine is most attractive to watch. I hope you enjoy building and running the engine.

The engine was serialised in Engineering In Miniature from January 1995 to September 1995.

Waller's Table Engine

The first table engine is credited to Henry Maudslay in 1805, and the type was built by many manufacturers during the nineteenth century. This example is a later one from the 1880s. Details came from a book published in the 1880s and the author was a director of George Waller and Co. There was a short note on the engine in the text and the wording was such that it indicated that the engine was still available at that date. It was also stated that while horizontal engines were cheaper in first cost, the table engine took up a small amount of floor space and did not often get out of order.

The design follows the classical architectural style, though slightly less ornate than some earlier examples. As with all table engines it has a majestic stately motion, a pleasure to watch. It is quite easy to build the majority of nuts being of 8BA (M2.2) size.

There was no indication of size on the engraving but if we take the fly wheel as 9ft (2.743M) and a scale of 1/12 we arrive at the convenient size of 9" (228mm). The design is such that the base and table can easily be machined from mild steel blanks. As can the columns, and an interesting feature being that two of the columns form the steam and exhaust pipes. A is used for the flywheel.

The cylinder is described in the article as a fabricated design, however a gunmetal casting is now available and a cast eccentric strap.

Drawings are available as a set of 27 of A4 size. They have dimensions in both imperial and metric.

The engine can be built on a 3 1/12" lathe and though not essential a milling machine is also useful. The engine was serialised in "Engineering In Miniature" from March 1998 to February 1999.

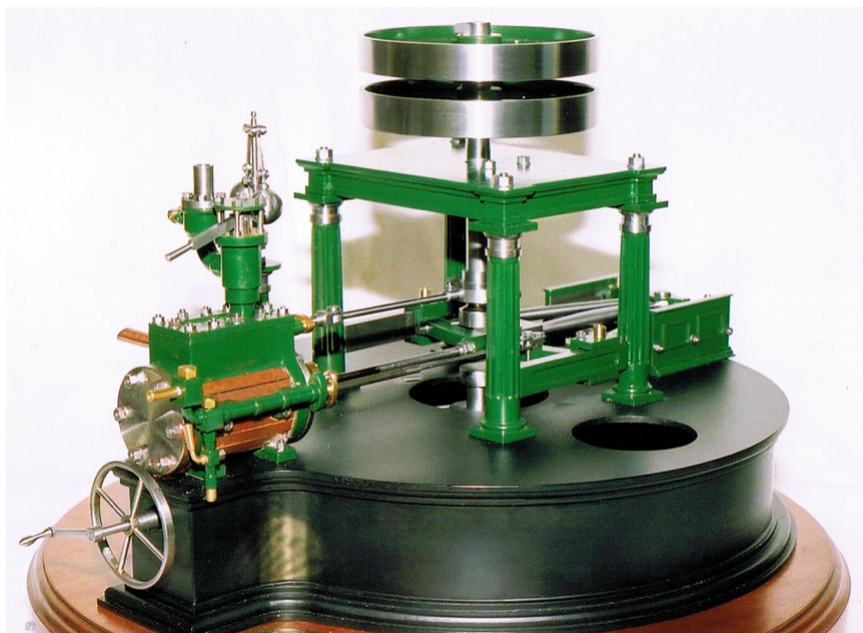


Whitmore and Binyon Fixed Engine

I came across this engine through the good offices of a friend who knowing my interest in unusual engines let me have a copy of an engraving he had.

The engine was designed by Whitmore and Sons of Wickham Market, Suffolk, and was exhibited at the International Exhibition at South Kensington in 1862, (not to be confused with the Great Exhibition of 1851), where it gained an exhibition prize medal. The company in 1868 changed its name to Whitmore and Binyon. The company was founded by Nathaniel Whitmore in 1780 as a smithy for hand tools and agricultural machinery.

The main purpose of the unusual design was to drive direct by belt the vertical spindles of the old style flour mills. The engine engraving shows two pulley wheels but an engraving of the mill shows the engine driving three stones.



The base of the engine is a great cast iron drum within which is the flywheel, four Corinthian columns support an entablature which carries the upper bearing. An additional bearing above the pulley wheels was bolted to the mill framework. This is not shown on the model. The flywheel is 215mm (8 1/2") diameter and machinable on most model

engineers lathes such as the Myford ML7 series. The flywheel is supplied as an iron casting and the cylinder is a gunmetal casting. Due to the shape of the base it has not been possible to produce it as a casting so it is made up from a series of laser cut laminations. These have most of the holes already formed so it is quite simple to bolt it together with a few spacers to form a rigid construction. The pulleys due to their slim design are also laser cut fabrications. The drive to the crankshaft is by horizontal steeple motion which makes for a fascinating engine to watch when in motion.

The design was serialised in *Engineering in Miniature* in late 2007 to early 2008.

35 A4 drawings are supplied with the castings and all are available from Polly Model Engineering.

Woodroffe's "Verto" Engine 1880

Woodroffe and Co's "Verto" engine was built at the Albion works, Rugeley, Staffordshire in the 1880s and 90s. It was available in a range of sizes from 1 to 5 horse power. It was a general purpose engine used as a power source in many industries. It came in three forms, as an engine on its own (below), as engine and boiler mounted on a fixed base, which also doubled as a water tank, and as an engine and boiler mounted on a travelling base (right).

The model is also available in the same three forms. The model is quite small, the boiler being 9" (127mm) high, the flywheel is 4" (102mm) diameter.



The engine is shown with a boiler feed pump (above). But due to the smallness of the set up. If continuous running on steam was desired it would be better to disconnect the pump and feed the boiler from a separate water supply.

The wheels are interesting, full size the spokes were built up from strip material. A similar method is used for the model.

Gunmetal castings are available for the base, engine column, engine base and cylinder. The fly wheel is cast iron. The rest of the engine is made from bar material. There are 46 A4 drawings in the set giving details of all three forms of the engine. Both metric and imperial dimensions are shown on the drawings.

The model was built on a Myford ML7R lathe. A milling machine will also be found very useful in building this engine. The model was serialised in *EIM* from September 2000 to July 2001.

4. Stuart Models

**Polly Model Engineering Limited is a
major distributor of:
STUART MODELS**

Steam Engines - Established 1898



**Stationary steam engines and
workshop machinery, available as
unmachined casting sets (fully
machined castings and ready to
run models available to order).**



**These famous models capture the character of early
industrial steam plant. Larger models
may power small boats.**



**Stuart Models catalogue available
price £6.00, with details of the full
range, see next page for summary
price list of popular casting
kits normally available from
stock.**



Stuart Models Casting Kit Prices

Note All Prices include VAT

Polly Model Engineering Limited is a major distributor of Stuart Models with a wide range of castings held in stock. Any available items within the Stuart range can be supplied, including machined kits and workshop models. Models can be supplied mail order worldwide or may be collected from any of the major model engineering exhibitions or rallies.

We are pleased to advise that the Stuart No 4 and No 8 engine kits, which have been unavailable for some years, are now available from stock. The following are some of the more popular models in stock at time of preparation of this catalogue.

Spares and replacement drawings for Stuart kits are available with a selection being held in stock. Please telephone us with your requirements.

Enquire for prices of casting kits not listed and also fully machined kits which are available for some models, though not normally kept in stock.

Stuart prices are subject to change by the manufacturer and their current list prices will apply.



Steam Pump	72475	£90.00
S50 Engine	71315	£90.00
Victoria Engine	71419	£262.80
Twin Victoria	71425	£488.40
James Coombes	71407	£286.80
Twin Launch	71382	£286.80
Sirius	71220	£286.80
Stuart Beam	71390	£286.80
10V	71183	£90.00
D10	71204	£179.40
Steam Hammer	71387	£286.80
Stuart No 1	71151	£488.40
Compound Engine	71385	£286.80
7A	71170	£243.60
Half Beam	71456	£286.80
10H	71195	£90.00
Stuart Score	71216	£179.40
Oil Field Pump	71199	£286.80
No 8	71175	£243.60
No 9	71178	£369.60
Stuart Triple	71225	£714.00
Stuart Oscillator	71303	£46.50
Stuart Lathe	74010	£179.40
Stuart No 4	71156	£369.60

5. Our Own Stationary Engine Kits

5.1 R&B Gas Engine

This is the biggest engine which we do, available with 12" flywheel as standard and optional second flywheel or can be fitted with smaller 9" flywheels.

Size and Weight: 2 ¼" bore x 2 ¾" stroke, finished weight 60 lbs.

This is an open crank internal combustion engine of robust proportions and is conservatively stressed with large bearing areas. It is capable of hard work and is suitable for driving workshop machinery, dynamos, water pumps, etc. The governor if fitted can hold speed within 5%.

The engine is based on typical designs of circa 1900-1930 and may be run on natural gas, butane or propane. If fitted with a carburettor the engine will run equally well on petrol (gasoline). Ignition is by coil and battery but a magneto can be fitted if so desired.



Schedule:-	Drawings and parts list	
	Cast iron –	cylinder, cylinder head, flywheel
	Aluminium –	base, piston, main bearing caps
	Gunmetal –	big end bearings, main bearings, cam follower, timing bracket
	Aluminium bronze –	rocker arm
	Steel –	balance weight and flame cut crankshaft & con rod.
	Optional extras:-	timing gears (Myford change wheels 60T & 30T)
		Contacts, condenser, glass bowl drip feed lubricators, spark plug.

Castings and Drawings	£404.80
Drawings only	£28.00
Extra flywheels 9"	£68.20
12"	£73.70

5.2 Atmospheric Gas Engine (AGE)

The atmospheric gas engine is a copy of a model engine circa 1885 when it was designed and run off coal gas with open flame ignition.



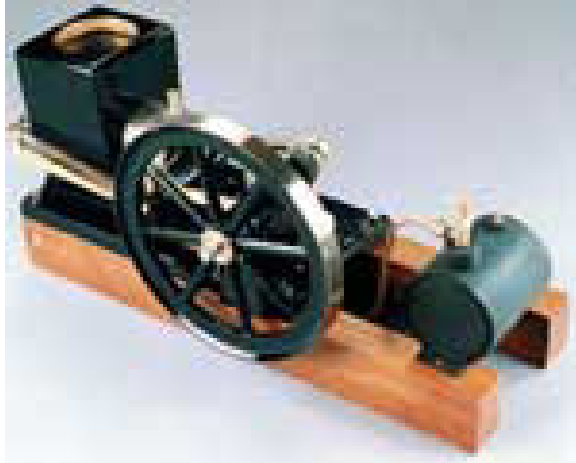
Engine size: Bore 1" Stroke 1" : Twin 5" diameter flywheels
It has a fascinating operating cycle. Briefly, as the piston progresses down the bore a mixture of gas and air is drawn in; ignition is provided by an external flame sucked through a port halfway down the side of the cylinder. Then follows a half stroke of power and exhausting.

Thus, as there is no compression, this is a true "atmospheric" engine.

These days it is no longer possible to obtain coal gas for which the engine was designed, however acetylene (welding gas) has a similar wide ignition range and this engine runs well on it. Butane and propane are also suitable, but as they have only a relatively narrow ignition range, they are not so easy to use.

Set of castings, materials, fixings and drawings		129.80
Pair of bevel gears		£18.00
Gas tap (2 required)	each	£17.00
Set of 3 Oil cups	each	£5.20

5.3 Scott Vacuum Engine (Flame Gulper)



A really practical kit with a comprehensive list of parts and materials designed for ease of making, ideal for beginners or as a quickie in the middle of longer term projects.

This type of (hot air) engine, sometimes known as a flame gulper or licker were produced in the latter part of the 19th century with ratings from 1/20 th to 1/2HP. One such engine is listed in the 1904/5 Bassett-Lowke catalogue as the "Lowne" patent atmospheric engine. The engine works by drawing hot gases from a flame via a valve into the cylinder as the piston descends. Near the bottom of the stroke the valve shuts, the hot gases condense and produce a vacuum. Atmospheric pressure on the underside of the piston pushes it up causing the power stroke.

The engine is hopper water cooled and has a 1 5/16" bore with a stroke of 2". Construction is relatively simple and fairly quick to build. It can be made on a lathe with a centre height of 2 5/8" (65mm) or over. Castings are all gunmetal and ball bearings are used in the big end, cam followers and main bearings. It runs well from cold but it is quicker if warm water is used in the jacket. The power output is quite high for an engine of this type and it may be used to drive pumps, dynamos or Meccano models. Speed can effectively be governed by the strength of the cam follower spring as the follower tends to lift off the cam in a similar way to a hit and miss governor as used on gas engines. Speed is also variable depending on flame setting and the cam timing. The valve is made from carbon impregnated with graphite to withstand the flame temperature without distortion. As the valve slowly wears, graphite is liberated in fine powder form which is sucked into the cylinder subsequently lubricating the piston and bore. Firing is usually by alcohol, but a gas burner can be fabricated and a rechargeable gas tank is available. The kit includes castings, drawings, materials, ball races, special carbon/graphite valve material, springs and screws. Drawings for the alcohol and gas burners are provided but no burner materials.

Castings, Drawings, Materials, Screws	£129.80
drawings only	£28.00
RC gas tank std	£52.00
Filler Nozzle	£12.90

5.4 Robinson's Hot Air Engine B4



The Robinson engine although not the most efficient of it's type was undoubtedly one of the most frequently used for pumping water in country houses and driving small machinery. Usually coal fired, they could be left unattended for several hours. The model is 1/3rd full size and is supplied with drawings, materials and iron castings. Brass spinings are provided for the hot cap and displacer. The power cylinder is 1 3/8" bore x 1" stroke and the displacer 2 1/4" bore by 7/8" stroke.

Drawings and castings kit	£135.30
Ready to run engine as available see "ready to run engines"	N/A

6. Ready to Run Stationary Engines

6.1 'STEEPLE' Stationary Engine

The 'Steeple' engine from the Historic Engines South West range is one of our most popular models. In response to popular demand, for those lacking the time or skill to complete such a model, we have in the past commission built 'Ready to Run' models.

Whilst we have no immediate plans to produce further models, should there be sufficient demand we may be able to produce a further batch. Please enquire.



6.2 HOG Microstirling Engine



This delightful miniature hot air engine operates from a small spirit burner about the size of a Tee light. It will provide hours of fascination as it buzzes away effortlessly demonstrating the operation of a simple Stirling Engine.

Available in Gold or Antique Silver finish.

Price £145.00 inc VAT

6.3 Robinson Hot Air Engine

These craftsman built models really capture the character of the prototype on which they are based. Craftsman built models such as this are necessarily subject to availability.

Currently unavailable ready to run

Kit available £135.30 inc. vat plus post



7. Accessories

Steam Raising Blowers

Available to suit a wide range of models. Fitted with a tapered chimney spigot and suited to a wide range of locomotive applications. To suit 3/4 - 1 3/4 dia chimney

12/24v dc blower	£28.50
------------------	--------



Dynamos:

Ideal for use with miniature traction engines or stationary steam engines.

major 18watt	£56.50
minor 6watt (illustrated)	£25.00



Minor dynamo:- 6 watt output (max), 1-12volts, speed range 1000 to 12000 rpm; suitable for use with many small steam engines, gives a good output at relatively low rpm.

Major Dynamo:- 18 watt output (max) 1-12 volts, speed range 1000 to 12000 rpm; suitable for use with medium sized stationary engines, e.g. Stuart 10V & S50. Also suitable for 1" scale Showman's traction engines. Gives good output at reasonable speeds.

Firing Shovel & Poker Sets

Firing irons for 3 1/2" gauge, 5" gauge and 7 1/4" gauge locos, plus the 5" gauge Polly shovel/poker sets. We also stock the miniature 5" gauge shovels from Doug Hewson (illustrated left).

3 1/2" g 7/8" wide x 10" Brass	£24.00
5" g 1 3/16" wide x 10 3/4" Brass	£26.00
7 1/4" g 1 5/8" wide x 15" Brass	£27.50
5" g Doug Hewson (left)	£26.00
5" g Polly shovel and poker set (far right)	£16.50
Polly type extra long	£18.50



Flu brushes

Bristle		Bronze	
1/4"	£3.10	1/4"	£4.10
5/16"	£3.10	5/16"	£4.10
3/8"	£3.40	3/8"	£4.40
7/16"	£3.60	7/16"	£4.60
1/2"	£3.60	1/2"	£4.60
5/8"	£3.90	5/8"	£4.90
3/4"	£3.90	3/4"	£4.90
1"	£4.10	1"	£5.10

We stock a wide range of brushes for cleaning tubes in your boiler, available in both bristle and bronze.



Loco Lamps

Fine scale miniature loco lamps to suit LMS, GWR (illustrated) or BR styles
5" gauge £16.50 each, 7 1/4 gauge £30.50 each.



Miniature Cast Signs

Cast aluminium signs of our own manufacture, supplied unpainted. Three designs currently available with further designs in preparation.

Crossing no gates 4-6-0	£12.50
Crossing no gates 0-6-0	£12.50
Beware of trains	£10.50
Level Crossing (gated)	In prep



Reilang Oilers

Reilang oilers with their unique double pump action are ideal for oiling up your loco or for general workshop use. General purpose pump action oilers available in various sizes, pressure oilers to fit machinery oil nipples and pocket oilers.

Reilang flexible spout oiler 200ml	£28.40
Reilang pocket oiler 75ml	£5.55
Reilang precision oiler 200ml	£29.30
Reilang precision oiler 300ml	£33.10
Reilang precision oiler 500ml	£38.45



Weir Pumps (Steam Operated Feed Pump)

These ready to run Weir pumps are a useful alternative to axle pumps and injectors for boiler feed. Easily mounted on the footplate of your loco, they add operational interest to the model. Simply controlled by throttling the water output.

A suitable displacement lubricator is also available. Not currently available.

Weir pump rtr	
Displacement lubricator	
Complete	

Locomotive and Traction Engine Nameplates and Numberplates

We regularly produce machined nameplates for our Polly locomotive customers and these nameplates can be made in sizes to suit other narrow gauge models in 5" and 7 1/4" gauge or to suit traction engines. The thickness of the brass plate used, gives the impression of a substantial cast plate, something which cannot be achieved with an etched plate. We are also able to supply some cast numberplates for GWR locomotives and some other plates. Please enquire with your requirements. Since plates are made to order, there may be a significant lead time.

8. Transfers

These are high quality waterslide transfers for railway and road steam models in all popular model engineers' gauges. They are faithful reproductions of prototype livery elements with accurate colour reproduction. Application is very straightforward and full instructions are supplied with each item. When correctly applied, they should enhance your model for many years. Due to the wide variety of formulations available, the combination of underlying paint finish, transfer and varnish should be tested before being applied to your model.

Unless otherwise specified, all numerals are supplied in pairs of 0–9 and company lettering and crests are supplied in pairs. Lining is usually supplied in sheets approximately A4 sized for 5" gauge, A5 for 3½" gauge and A6 for 2½" gauge.

Pre grouping railway companies

CatRef	OldRef	Gauge	Description	Size	Price
HRY01/1		1	Highland Railway locomotive sheet1 selection for Castles & Bens	Contains all Loch names &	£24.
HRY01/3		3	Highland Railway locomotive sheet		£17.
HRY01/5		5	Highland Railway locomotive sheet numbers for Jones Goods	Contains all Loch names &	£75.
MRY01/3		3	Midland Railway 'M R' for bufferbeams		£4.6

Lining

CatRef	OldRef	Gauge	Description	Size	Price
BlankA4	BlankA	99	Blank transfer sheet (163 x 280mm)		£3.5
BlankA5	BlankA	99	Blank transfer sheet (160 x 140mm)		£2.4
LIN-Black corners		99	1/32" wide black lining	21ft lining, 42 circles & 104	£4.6
LIN-Gold corners	LM2C	99	1/32" wide gold lining & corners	21ft lining, 42 circles & 104	£4.6
LIN-Red corners	LM2A	99	1/16" wide red lining & corners	21ft lining, 42 circles & 104	£4.6
LIN-White corners	LM2D	99	1/32" wide white lining & corners	21ft lining, 42 circles & 104	£4.6
LIN-Yellow	LM2B	99	1/32" wide yellow lining & corners (2 sheets)	21ft lining & approx 80 corners.	£4.6
LINBRX/1		1	BR Experimental Blue lining & corners		£4.6
LINBRX/3		3	BR Experimental Blue lining & corners		£6.5
LINBRX/5		5	BR Experimental Blue lining & corners		£7.7
LINBRX/7		7	BR Experimental Blue lining & corners		£7.7
LINGWR/1		1	GWR/BR lining & corners		£4.6
LINGWR/2	WS19B	2	GWR/BR lining & corners	6.0ft lining & 48 corners.	£4.6
LINGWR/3	WS19A	3	GWR/BR lining & corners	8 3/4ft lining & 48 corners.	£6.5
LINGWR/5	WS19	5	GWR/BR lining & corners	12ft lining & 48 corners.	£7.7
LINGWR/7		7	GWR/BR lining & corners		£7.7
LINLNE/1		1	LNER/BR Lining & corners		£4.6
LINLNE/2		2	LNER/BR Lining & corners		£4.6
LINLNE/3	WS20A	3	LNER/BR Lining & corners	7 1/2ft lining & approx 40 corners.	£6.5
LINLNE/5	WS20	5	LNER/BR Lining & corners	12ft lining & 15 circles	£7.7
LINLNE/7		7	LNER/BR Lining & corners		£7.7
LINLNW/1		1	LNWR/BR Lining & corners	limited availability	£4.6
LINLNW/2	WS22B	2	LNWR/BR Lining & corners	4. 1/4ft lining & approx 60 corners.	£4.6
LINLNW/3	WS22	3	LNWR/BR Lining & corners	limited availability	£6.5
LINLNW/5	WS22A	5	LNWR/BR Lining & corners	8 1/2ft lining & Approx 60 corners.	£7.7
LINMET/1		1	Yellow/black/yellow lining for Metropolitan, Barry etc.		£4.6
LINMET/3		3	Yellow/black/yellow lining for Metropolitan, Barry etc.		£6.5
LINMET/5		5	Yellow/black/yellow lining for Metropolitan, Barry etc.		£7.7
LINMET/7		7	Yellow/black/yellow lining for Metropolitan, Barry etc.		£7.7
LINMXD/1		1	Boiler bands for LNW & BR mixed traffic livery		£4.6
LINMXD/3		3	Boiler bands for LNW & BR mixed traffic livery		£6.5
LINMXD/5		5	Boiler bands for LNW & BR mixed traffic livery		£7.7
LINMXD/7		7	Boiler bands for LNW & BR mixed traffic livery		£7.7

British Railways

There are two liveries for British Railways locomotives, the 1948 livery using a yellow lion over a wheel, and the 1957 livery using a red lion holding the wheel. Both use the same cabside numerals.

Lion over wheel were applied to full-size locomotives in one of three sizes. The following table offers guidance on which transfers are most likely to be suitable for your locomotive. These transfers are supplied in pairs (left and right facing).

	2½"	3½"	5"	7¼"
Small	48Lion/10	48Lion/15	48Lion/21	48Lion/44
Medium	48Lion/21	48Lion/44	48Lion/51	48Lion/72
Large	48Lion/35	48Lion/52	48Lion/72	48Lion/91

The lion holding wheel design (below) was applied to locomotives in one of two sizes. The table below gives guidance on which transfers are most likely to suit your locomotive. These transfers are supplied in sets of three (except 57Lion68), to enable the modeller to have either forward facing or left facing lions on each side.

2½" 3½" 5" 7¼"

Small 57Lion/15 57Lion/23 57Lion/32 57Lion/47

Large 57Lion/23 57Lion/32 57Lion/47 57Lion/68



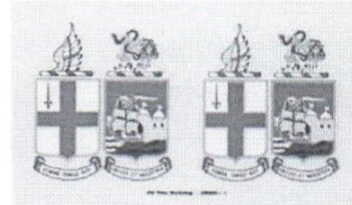
<i>CatRef</i>	<i>OldRef</i>	<i>Gauge</i>	<i>Description</i>	<i>Size</i>	<i>Price</i>
48Lion/10			BR Lion over wheel (LH & RH)		£2.4
48Lion/101		10	BR Lion over wheel (LH & RH)		£6.5
48Lion/15		99	BR Lion over wheel (LH & RH)		£2.4
48Lion/21		2	BR Lion over wheel (LH & RH)	11/16" (21mm) high	£3.5
48Lion/25		99	BR Lion over wheel (LH & RH)		£3.5
48Lion/35		3	BR Lion over wheel (LH & RH)		£3.5
48Lion/51		5	BR Lion over wheel (LH & RH)	2 1/8" high	£4.6
48Lion/72		7	BR Lion over wheel (LH & RH)		£5.7
48Lion/91	WS34	7	BR Lion over wheel (LH & RH)	3 1/2" (91mm) high	£5.7
BRY01/01		1	BR Cabside numbers 0-9		£2.4
BRY01/02		2	BR Cabside numbers 0-9		£3.5
BRY01/03	WS27	3	BR Cabside numbers 0-9	1/2" high.	£4.6
BRY01/05	WS28	5	BR Cabside numbers 0-9	11/16" high.	£5.7
BRY01/07	WS29	7	BR Cabside numbers 0-9	1 1/16" high.	£6.5
BRY01/10		10	BR Cabside numbers 0-9		£12.
BRY01a/1		1	BR Cabside numbers 0-9 (White, Scottish Region)		£2.4
BRY01a/2		2	BR Cabside numbers 0-9 (White, Scottish Region)		£3.5
BRY01a/3		3	BR Cabside numbers 0-9 (White, Scottish Region)		£4.6
BRY01a/5		5	BR Cabside numbers 0-9 (White, Scottish Region)		£5.7
BRY01a/7		7	BR Cabside numbers 0-9 (White, Scottish Region)		£6.5
BRY04/3		3	Additional cabside '0' digits, for BR Stds etc.	As BRY01/3	£2.4
BRY04/5		5	Additional cabside '0' digits, for BR Stds etc.	As BRY01/5	£2.4
BRY04/7		7	Additional cabside '0' digits, for BR Stds etc.	As BRY01/7	£2.4
BRY05/3		3	BR Powercodes		£2.4
BRY05/5		5	BR Powercodes		£2.4
BRY05/7		7	BR Powercodes		£2.4
57Lion/15 either forward facing pair or both left facing.		2	BR Lion Holding Wheel	15mm high. Set of 3, to make	£3.5
57Lion/23 either forward facing pair or both left facing.		2	BR Lion Holding Wheel	23mm high. Set of 3, to make	£4.6
57Lion/32 either forward facing pair or both left facing.	WS33	3	BR Lion Holding Wheel	32mm high. Set of 3, to make	£4.6
57Lion/47 either forward facing pair or both left facing.		5	BR Lion Holding Wheel	47mm high. Set of 3, to make	£5.7
57Lion/68		7	BR Lion Holding Wheel (LH & RH)	68mm high. Pair, facing left & right.	£6.5
BRY02/3	WS39A	3	BR Overhead warning	9/16" high	£2.4
BRY02/5	WS39B	5	BR Overhead warning	3/4" high	£2.4
BRY02/7	WS39C	7	BR Overhead warning	1 1/8" high	£2.4
BRY15/01 0-9 & 'D's		1	BR diesel numbers (1957-65) (square serif)	8 sets	£3.5
BRY15/02		2	BR diesel numbers (1957-65) (square serif)		£4.6
BRY15/03		3	BR diesel numbers (1957-65) (square serif)		£4.6
BRY15/05		5	BR diesel numbers (1957-65) (square serif)		£5.7
BRY15/07		7	BR diesel numbers (1957-65) (square serif)		£6.5

British Railways (Diesel Models)

<i>CatRef</i>	<i>OldRef</i>	<i>Gauge</i>	<i>Description</i>	<i>Size</i>	<i>Price</i>
BRY03/1		1	BR Arrows		
BRY03/2		2	BR Arrows		
BRY03/3	WS40A	3	BR Arrows	1.0" high	£2.4
BRY03/5	WS40B	5	BR Arrows	1.3/8" high	£3.5
BRY03/7		7	BR Arrows		

Great Western Railway (GWR)

Lettering and crests supplied in pairs, except crests in gauge 0. For passenger locomotives, the GWR lettering (GWR03) can be combined with the crest (GWR04) to produce G (Crest) W.



<i>CatRef</i>	<i>OldRef</i>	<i>Gauge</i>	<i>Description</i>	<i>Size</i>	<i>Price</i>
GWR03/2		2	'GWR' lettering		£4.6
GWR03/3		3	'GWR' lettering		£4.6
GWR03/5		5	'GWR' lettering		£4.6
GWR03/7		7	'GWR' lettering		£6.5
GWR04/1		1	Great Western 'Twin city' crest		£4.6
GWR04/2		2	Great Western 'Twin city' crest		£6.5
GWR04/3		3	Great Western 'Twin city' crest		£6.5
GWR04/5		5	Great Western 'Twin city' crest		£6.5
GWR04/7		7	Great Western 'Twin city' crest		£7.7
GWR05/3		3	GWR monogram	1 1/16" (27mm) dia	£4.6
GWR05/5	WS38	5	GWR monogram	1.3/8" dia.	£4.6
GWR06/1		1	GWR buffer numbers		£3.5
GWR06/10		10	GWR buffer numbers		£12.
GWR06/2	WS30A	2	GWR buffer numbers	1/4" high.	£3.5
GWR06/3	WS30B	3	GWR buffer numbers	3/8" high.	£3.5
GWR06/5	WS30C	5	GWR buffer numbers	1/2" high.	£4.6
GWR06/7		7	GWR buffer numbers		£4.6
GWR07/1		1	'Great Western' lettering.		£3.5
GWR07/3		3	'Great Western' lettering.		£4.6
GWR07/5	WS16	5	'Great Western' lettering.	1/2" high.	£6.5
GWR07/7		7	'Great Western' lettering.		£7.7
GWR09/1		1	GWR cabside route restriction discs & power codes		£2.4
GWR09/2		2	GWR cabside route restriction discs & power codes		£2.4
GWR09/3		3	GWR cabside route restriction discs & power codes		£3.5
GWR09/5		5	GWR cabside route restriction discs & power codes		£3.5
GWR09/7		7	GWR cabside route restriction discs & power codes		£4.6

London & North Eastern Railway (LNER)

Lettering supplied in pairs of G LNER, allowing the builder to make up either GNR or LNER as required. All except LNER04/0 are in gold, shaded red, white and black.



<i>CatRef</i>	<i>OldRef</i>	<i>Gauge</i>	<i>Description</i>	<i>Size</i>	<i>Price</i>
LNE02/1		1	LNER lettering		£4.6
LNE02/2	WS6A	2	LNER & GNR lettering	1/2" high.	£4.6
LNE02/3	WS6	3	LNER & GNR lettering	3/4" high.	£4.6
LNE02/5	WS7	5	LNER & GNR lettering	1.0" high.	£5.7
LNE02/7		7	LNER & GNR lettering		£6.5
LNE03/1	WS3	1	LNER Cabside numbers	7/16" high.	£4.6
LNE03/2	WS3A	2	LNER & GNR numbers	1/2" high.	£4.6
LNE03/3	WS4	3	LNER & GNR numbers	3/4" high.	£4.6
LNE03/5	WS5	5	LNER & GNR numbers	1 1/8" high.	£5.7
LNE03/7		7	LNER & GNR numbers		£6.5

London, Midland & Scottish Railway (LMS)

<i>CatRef</i>	<i>OldRef</i>	<i>Gauge</i>	<i>Description</i>	<i>Size</i>	<i>Price</i>
LMS03/2		2	LMS serif 14" letters		£4.6
LMS03/3	WS8A	3	LMS serif 14" letters	3/4" high.	£4.6
LMS03/5	WS9A	5	LMS serif 14" letters	1.3/16" high.	£5.7
LMS03/7		7	LMS serif 14" letters		£6.5
LMS04/1		1	LMS serif 14" letters	9.5mm High	£3.5
LMS04/2		2	LMS serif 14" letters		£4.6
LMS04/3	WS8	3	LMS serif 14" letters	3/4" high.	£4.6
LMS04/5	WS9	5	LMS serif 14" letters	1 3/16" high.	£5.7
LMS04/7		7	LMS serif 14" letters		£6.5
LMS05/3 5" gauge.	WS11A	3	LMS serif 12" numbers	3/4" high. Formerly described as	£4.6
LMS05/3a	WS10A	3	LMS serif 10" numbers	5/8" high.	£4.6
LMS05/5		5	LMS serif 12" numbers	1 1/16" High	£6.5
LMS05/7		7	LMS serif 12" numbers	limited availability	£7.7
LMS06/1		1	LMS serif 12" numbers	9.5mm High	£3.5
LMS06/2		2	LMS serif 12" numbers		£4.6
LMS06/3 5" gauge.	WS11	3	LMS serif 12" numbers	3/4" high. Formerly described as	£4.6
LMS06/3a	WS10	3	LMS serif 10" numbers	5/8" high.	£4.6
LMS06/5		5	LMS serif 12" numbers	1 1/16" High	£6.5
LMS06/7 1923-27 livery.	WS12	7	LMS serif 12" numbers	1 1/2" high. Also suitable for 5"G	£4.6
LMS07/2		2	LMS 1936 style sans-serif letters		£4.6
LMS07/3		3	LMS 1936 style sans-serif letters		£4.6
LMS07/5	WS49	5	LMS 1936 style sans-serif letters		£5.7
LMS07/7		7	LMS 1936 style sans-serif letters		£7.7
LMS08/2		2	LMS 1936 style sans-serif letters		£4.6
LMS08/3		3	LMS 1936 style sans-serif letters		£4.6
LMS08/5		5	LMS 1936 style sans-serif letters		£5.7
LMS08/7		7	LMS 1936 style sans-serif letters		£7.7
LMS09/2		2	LMS 1936 style sans-serif numbers		£4.6
LMS09/3		3	LMS 1936 style sans-serif numbers		£4.6
LMS09/5	WS50	5	LMS 1936 style sans-serif numbers		£6.5
LMS09/7		7	LMS 1936 style sans-serif numbers		£7.7
LMS10/2		2	LMS 1936 style sans-serif numbers		£4.6
LMS10/3		3	LMS 1936 style sans-serif numbers		£4.6
LMS10/5		5	LMS 1936 style sans-serif numbers		£6.5
LMS10/7		7	LMS 1936 style sans-serif numbers		£7.7

Southern Railway (SR)

<i>CatRef</i>	<i>OldRef</i>	<i>Gauge</i>	<i>Description</i>	<i>Size</i>	<i>Price</i>
SRY01/1	WS1/1	1	Southern Maunsell lettering (Old Stock)	Letters 3/16", numbers 9/16"	£3.5
SRY01/2	WS2/1	2	Southern Maunsell lettering	Letter 1/4", numbers 3/4"	£4.6
SRY01/3	WS13	3	Southern Maunsell lettering	Letters 7/16", numbers 1 1/8"	£5.7
SRY01/5	WS14	5	Southern Maunsell lettering	Letters 1/2", numbers 1 1/2"	£7.7
SRY04/3	WS41A	3	Southern "Sunshine" lettering	5/8" high.	£7.7
SRY04/5	WS41B	5	Southern "Sunshine" lettering	7/8" high.	£7.7
SRY04/7	WS41C	7	Southern "Sunshine" lettering	1 1/4" high.	£7.7

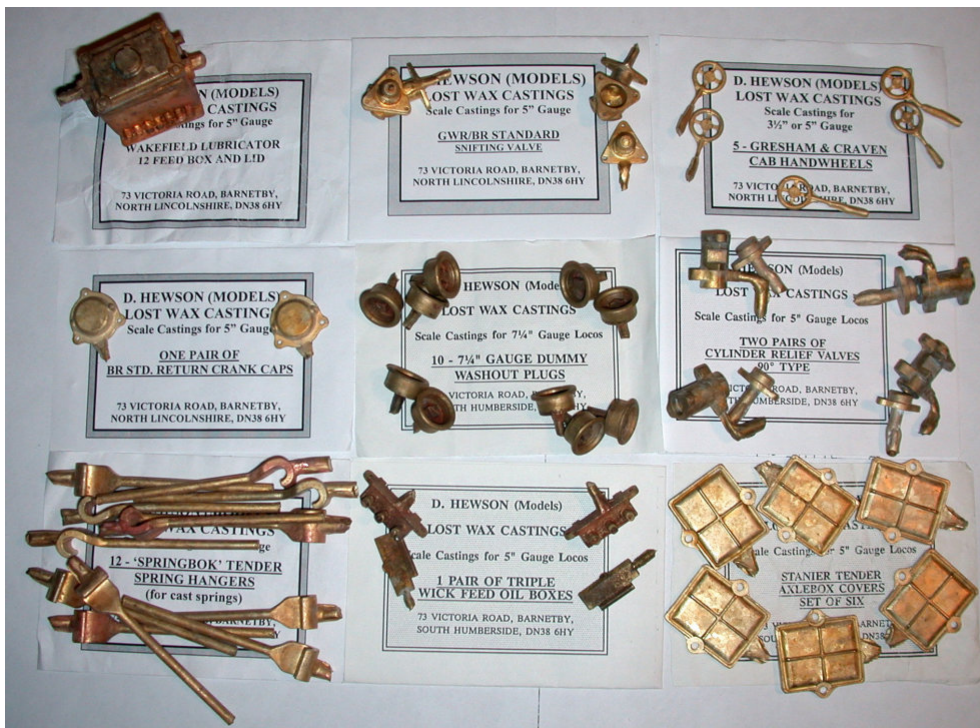
Traction engines & road vehicles

<i>CatRef</i>	<i>OldRef</i>	<i>Gauge</i>	<i>Description</i>	<i>Size</i>	<i>Price</i>
TEW01	TEW01	99	Wheel spoke 1	1/2" wide, 9" long	£6.5
TEW02	TEW02	99	Wheel spoke 2	3/8" wide, 7" long	£5.7
TEW03	TEW03	99	Wheel spoke 3	5/16" wide, 5" long	£4.6
TEW04	TEW04	99	Wheel spoke 4	1/4" wide, 4" long	£3.5
TEW05	TEW05	99	Wheel spoke 5	3/16" wide, 3 1/2" long	£3.5
TEW06	TEW06	99	Wheel spoke 6	1/8" wide, 2" long	£2.4
TEW07	TEW07	99	Signwriter Sheet 1a (A-Z)	3/4" high	£7.7
TEW07A	TEW07	99	Signwriter Sheet 1 (A-Z)	1/2" high	£7.7
TEW08 (captions)	TEW08	99	Signwriter Sheet 2 (A-Z & captions)	5/16" (Main letters) & 1/2" high	£10.
TEW09	TEW09	99	Burrell 3" scale transfer set		£29.
TEW10	TEW10	99	Allchin 1 1/2" scale. Transfer set	limited availability (less tender rear & spud pan)	£24.

9. Lost Wax Castings and Accessories from Doug Hewson



Examples of the popular accessories and lost wax castings by Doug Hewson which are normally available from Polly. Firing shovels, vacuum brake hoses and steam pipes are particularly popular. Enquire for availability of further items.



10. Fittings

Polly Model Engineering and Bruce Engineering are famous throughout the world for supply of high quality injectors and other steam fittings. Many of these items are craftsman made to the highest standards achievable. Indeed many customers request products from particular craftsmen. Whilst we attempt to maintain stocks of such items and are always developing new products and seeking new suppliers, delays in shipment are sometimes inevitable if customers have very specific requirements. Due to the different sources of supply fittings may vary in appearance and differ from those illustrated. If customers require matching fittings, it is advisable to order them as a set. In some cases, we may be able to supply matching handles for different styles of valve. Some specialist fittings are available for models in the Practical Scale range. In particular a wide range of GWR fittings, as diverse as fine scale handrail stanchions and driver's seat castings are available.

Axle pumps

Conventional pumps suitable to be driven by eccentrics on locomotives, etc.

1/4" ram axle pump 3/4 stroke	£40.00
3/8" ram axle pump 1" stroke	£45.00
1/2" ram axle pump 1 1/8" stroke	£50.00



Blanking Plugs

3/16 x 40	£1.90	3/8 x 32	£1.85
1/4 x 40	£2.40	1/2 x 26	£2.30
5/16 x 32	£3.30	5/8 x 26	£3.25

Blow Down valves

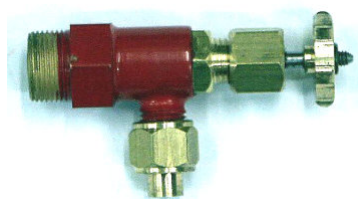
Available with a wide range of standard threads, enquire for special thread requirements.

1/4 x 40	£10.00	3/8 x 32	£10.70
5/16 x 26	£10.70	3/8 x 40	£10.70
5/16 x 32	£10.70	1/2 x 26	£12.90
5/16 x 40	£10.70	1/4 BSP	£34.00
3/8" x 26	£10.70	1/4 BSP (P.B. special)	Enquire for price



Blower valves

1/4" x 40	5/32 x 40 int	£12.90
5/16" x 40	3/16 x 40 int	£13.00
3/8" x 40	1/4 x 40 int	£13.20



Brake Cylinders (Vacuum)

As described in EIM, vacuum brake cylinders have been developed for the 7 1/4" gauge tender of the Collett Goods. See Practical Scale section of catalogue for availability of parts etc.



Brake Valves

Precision made vacuum brake control valves are supplied from craftsman manufacturers. The illustration shows our standard 3 position vacuum brake control valve – price £55. Fine scale GWR pattern combined vacuum and steam brake valves are available see our Practical Scale catalogue.



Brake Vacuum Ejectors

Vacuum ejectors are suitable for continuously braked trains using the vacuum system.

Small ejector 1/8 x 5/32 x 5/32 pipe	£30.40
Medium ejector 5/32 x 3/16 x 3/16 pipe	£35.50
Large ejector 3/16 x 1/4 x 1/4	£36.00

Brake Vacuum Limiters

Vacuum limiting valve used at the rear end of the train to limit vacuum. Adjustable 10-22" Hg. £20.00



Buffers – GWR Style

Within the 'Practical Scale' range a large number of loco specific components are available. These include:
GWR Collett parallel buffers fully finished for 5" gauge at £49.50 per pair
GWR Collett parallel buffers fully finished for 7 1/4" gauge at £59.70 per pair
GWR Collett taper body buffers, lost wax body casting incorporating step plate, backplate casting, CNC machined head and stem, plus spring, set of parts for 5" gauge £65.90 per pair
See our Practical Scale Catalogue for further details.

Bypass water valves

for floor or tank fitting, with stud for mounting.

5/32" floor bypass	£12.70
3/16" floor bypass	£14.20
1/4" floor bypass	£14.20



Ceramic Burners

Models are available to suit a variety of small models, plus standard rectangular and circular types. Ceramic burner material, jets, etc are also available for DIY construction. Please note that in general these small burners are well suited to miniature locos (e.g. G0 and G1) and small stationary engine boilers, but they are unlikely to generate sufficient heat for passenger hauling locos. Supplied without pipework /jet* unless stated.

2" round	X	£40.00
2.75" round	X	£44.00
Minnie		
2.75" x 1"	X	£32.00
2.75" x 2"	X	£41.00
5 5/8" x 1"	X	£41.00
5 5/8" x 2"	X	£46.00
Ceramic firetube burner for 28 & 35mm tubes	X	£32.50
Mamod tractor, inc pipework + tank+ valve		£61.00
Mamod loco, inc pipework		£61.00
Wilescot tractor, inc pipework		£61.00
50 x 16mm Wilescot D18, etc	X	£27.00
120 x 18 Wilescot D20, D21, D22, D24, etc	X	£31.50
Gas tank to burner pipe 135 mm		£8.50
Gas tank to burner pipe 275 mm		£9.00
Gas tank to burner pipe 450 mm		£9.50



x – Burner only * - Jets to suit available separately

Check valves (non-return valves or clacks) for oil, water or steam

In line pipe fitting and threaded body boiler fittings (90 degree). Oil check valves are fitted with springs to ensure the seating of the valves with the higher viscosity of the oil. Backhead fitting 'clacks' are 90 degree type.

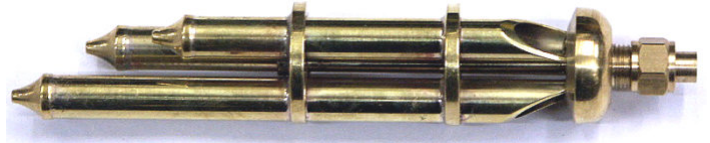
Oil pump 1/8" pipe	
In line type	£9.50
Oil 90deg for steam pipe 1/8" pipe	
1/8" pipe to 1/4" x 40 thread	£9.50
1/8" pipe to 3/16" x 40 thread	£9.50
water feed 90deg clacks	
3/32" pipe 3/16 x 40	£9.90
1/8" pipe 1/4 x 40	£9.90
5/32" pipe 1/4 x 40	£9.90
5/32" pipe 1/4 x 32 (Stuart)	£18.60
3/16 pipe 5/16x32	£11.30
1/4 pipe 3/8 x 32	£14.20
1/4 pipe 7/16x26	£14.20
5/16 pipe 1/2 x 26	£20.00
3/8 pipe 1/4 BSP	£22.10
in line check valves	
1/8" pipe	£9.50
5/32" pipe	£9.80
3/16" pipe	£11.10
1/4 pipe	£11.80
5/16" pipe	£13.90



Chime Whistles

3 & 4 note chime whistles in polished brass, 2 sizes available. In polished brass, these chime whistles both look and sound very effective. Suitable for narrow gauge locomotives or steam road vehicles.

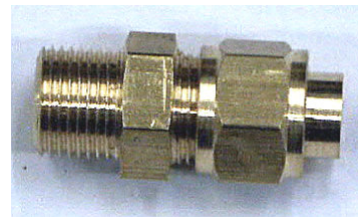
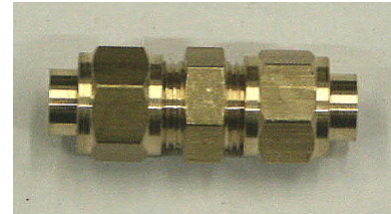
Small Chime Whistle	£52.50
Large Chime Whistle	£77.30
Whistle valve (large) 3/8"x32	£26.80
Whistle valve small 5/16 x 32	£22.40



Connectors (Pipe)

pipe to pipe, bulkhead and pipe to thread (stud) connectors.

3/32" pipe to pipe	£2.90
1/8" pipe to pipe	£3.60
5/32" pipe to pipe	£3.60
3/16" pipe to pipe	£3.90
1/4" pipe to pipe	£4.60
3/32" pipe x 3/16" 40 pipe to thread	£2.70
1/8" pipe x 1/4" 40 pipe to thread	£2.90
5/32" pipe x 1/4" 40 pipe to thread	£2.90
5/32" pipe x 1/4" 32 pipe to thread (Stuart)	£8.40
3/16" pipe x 5/16" 32 pipe to thread	£3.20
1/4" pipe x 3/8" 32 pipe to thread	£3.60



Connectors Bulkhead

Supplied with additional nut to clamp body to bulkhead.

1/8" pipe	£3.10
5/32" pipe	£3.70
3/16" pipe	£3.70
1/4" pipe	£4.60



Connectors – loco to tender

Quick release pressure connectors for the hand pump and silicone rubber tubes for injector feed, etc. In sizes to suit 3 1/2" / 5" gauge and 7 1/4" gauge locos.

3.5/5" gauge	£20.00
7.25" gauge	£23.00



Couplings

Scale forged couplings

Four designs to suit the main railway companies, GWR, LMS & LNER/BR plus hook and chain coupling for freelance and industrial locos. All available in 3 1/2", 5" and 7 1/4" gauge versions.



BR&LNER coupling and hook

3.5" gauge	£39.00
5" gauge	£48.00
7 1/4" gauge	£55.00

GWR Coupling and hook

3.5" gauge	£39.00
5" gauge	£48.00
7 1/4" gauge	£55.00

LMS coupling and hook

3.5" gauge	£39.00
5" gauge	£48.00
7 1/4" gauge	£55.00

Hooks and chains

3.5" gauge	£27.50
5" gauge	£30.00
7 1/4" gauge	£36.00

Cylinder Drain Cocks

Locomotive type drain cocks in sets of 4 (2 left hand 2 right hand) in various sizes and threads, Stuart models types also available. See Practical Scale catalogue for fine scale GWR types, 5" & 7 1/4" gauge.

Loco type	Set 4	Stuart Models type	Each
5/32" x 40	£26.00	5/32" x 40	£11.70
3/16" x 40	£26.00	3/16" x 40	£13.20
1/4" x 40	£26.00	1/4" x 32	£13.20
5/16" x 32	£27.00		
5/16" x 40	£27.00		



Elbows

Pipe elbows in sizes from 3/32" to 1/4" pipe.

3/32"	£7.20		5/16"	£10.00
1/8"	£7.10		3/8"	£12.70
5/32"	£7.10			
3/16"	£7.50			
1/4"	£7.70			

Filler nozzles, valves, jets, etc

Nozzles for refillable gas container (fits screw top canisters); gas canister valve, gas filler valves (Ronson type), gas jets,

Filler Nozzle for refillable gas container	fits screw top canisters	£12.90
Gas Canister Valve		£19.60
Gas filler valves, Ronson type		£5.10
Gas jets	Sizes 5, 10, 15	£3.60

Gas tanks (refillable) in three sizes.

These tanks are primarily intended for use with small marine, rail or stationary applications such as steam cranes where a large gas tank or piping would be out of place. Made of non-sparking brass and copper construction and silver soldered, the tanks are available in 4 sizes.

Mini	As per Mamod, etc	1.75" high	£35.00
Small	2" diameter	1.75" high	£51.50
Standard	2" diameter	3.5" long	£52.00
Large	2" diameter	5" long	£64.90

For use with up to 60/40 Butane/Propane mix. Test pressure 360psi. Supplied with test certificate.



Gas refill adapter also available, used to fill the above tanks from self sealing disposable gas cartridges, see above.

Globe Valves – see also Steam Stop Valves

3/32"	£13.75	1/4"	£19.00
1/8"	£16.50	Stuart type	£20.00
5/32"	£16.50	5/16"	£25.70
3/16"	£17.00	3/8"	£25.70

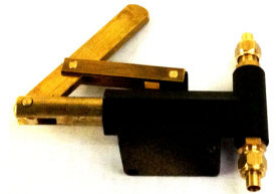
Suitable for steam or water, available in straight (180 degree) or right angle (90 degree), please specify which.



Hand pumps

Pipe to pipe versions for footplate use (illustrated) or tank (tender) versions for submerged use.

Ram size	Pipe size	Tank type	Pipe-Pipe type
5/16"	1/8	£29.90	£34.50
3/8"	5/32	£35.00	£42.20
1/2	3/16	£38.00	£47.40
5/8"	1/4	£41.00	£49.50
3/4	3/8	£67.90	£72.50



Hand feed pump castings for 1", inc ram material, O rings and SS balls, enquire for price

Handrail Stanchions

for locomotives to suit 3 1/2" 5" and 7 1/4" models. Manufactured with threaded shank which

Gauge	Rod Size	Thread size	Price per 10
2 1/2" gauge	1/16	M2	£4.30
3 1/2" gauge	3/32	8BA	£3.80
5" gauge	1/8	6BA	£4.20
7 1/4" gauge	5/32	4BA	£7.70

may be screwed into smokebox or nutted to tank panels, etc. Prices per pack of 10



Fine scale GWR handrail stanchions, based on official works drawings. The short blind type (type 1) are suitable for tender and footplate handrails where model engineers have always had to compromise and round off the end of the handrail. Type 3 are the special length stanchions used on the front of smokeboxes and are supplied individually as only one per loco is usually required.

Fine scale GWR handrail stanchions, based on official works drawings. The short blind

GWR 5" (6BA) per 10	1/8" bore	GWR 7 1/4" (4BA) per 10	3/16" bore
Type 1 Short Blind	£6.95	Type 1 Short Blind	£7.90
Type 2 Short Thru	£6.95	Type 2 Short Thru	£7.90
Type 3 Smoke box	£1.00 each	Type 3 Smoke box	£1.00 each
Type 4 Standard Thru	£6.95	Type 4 Standard Thru	£8.00

Handwheel castings, in brass.

Available in 'standard' or locomotive style to suit models of various sizes. Our range includes some from Doug Hewson and larger wheels as used for hand brake on the Highland Railway tender.

<i>solid boss suitable for drill/tap</i>	
standard (scale fluted)	
7/16" dia	£1.50
1/2" dia	£1.80
5/8" dia	£2.10
3/4" dia	£2.30
3 spoke type (not illustrated)	
3/8" dia	£2.50
1/2" dia	£2.60
9/16" dia	£2.70
5/8" dia	£3.00
11/16" dia	£3.25
3/4" dia	£3.25
1" dia	£4.10
1 3/16" dia	£4.70
loco type (4 spoke with side handle)	
1/2" dia	£2.60
3/4" dia	£3.35



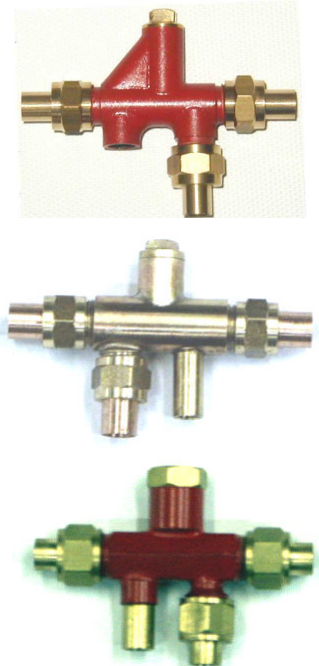
Highland railway hand brake wheel, 1.08" diameter 5 spoke £4.25 each, also available.

Injectors

Our wide range of injectors includes horizontal and vertical types ranging from 11 oz per minute to 60 Oz per minute. Specialist injectors from Chiverton and Jubilee all in stock. Unfortunately John Cashmore injectors are no longer available.

injector special for Allchin	n/a		
injectors horizontal (JC)		Inj. Horiz. (GC)	
11oz 5/32" pipe	n/a	12 oz	£49.00
22oz 3/16" pipe	n/a	16 oz	£49.00
40oz 1/4" pipe	n/a	24 oz	£49.00
60oz 1/4" pipe	n/a	30 oz	£49.50
100oz 5/16" pipe	n/a	40 oz	£49.50
injectors vertical (JC)		60 oz	£54.00
11oz 5/32" pipe	n/a	Inj. Vertical (GC)	
22oz 3/16" pipe	n/a	12 oz	£51.00
40oz 1/4" pipe	n/a	16 oz	£51.00
60oz 1/4" pipe	n/a	24 oz	£51.00
100oz	n/a	40 oz	£54.00
Injectors horiz.		60 oz	£58.00
No 2 (11 oz)	£47.00		
No.3 (16 oz)	£47.00	Availability of	
No.4 (22 oz)	£47.00	Some sizes	
No.5 (2 2/3 pt)	£50.00	And types	
No.6 (4 pt)	£50.00		
No.8 one gallon 3/8" pipe	£72.00	Limited	
No 8 vertical	n/a		

Enquire for availability of high pressure injectors.



Lubricators

standard ratchet type lubricators with various tank sizes, including double pump type. Lubricator mechanisms and roller clutches or ratchet components for use in your own tank.

Lubricator ratchet type	
lubricator 1"x1"	£40.00
lubricator 1.25"x1.25"	£44.80
lubricator 1.25" x 2"	£44.30
lubricator 2x2 twin	£75.20
Lubricator mechanism only single	£25.60
Lubricator mechanism only double	£51.00
Lubricator Clutchless 1.25" Sq.	
	44.80
lubricator roller clutches	
3mm ID x 6mm OD per pair	£13.90
Ratchets/Pawls	£6.50
lubricator displacement type	
Stuart type 1/4 x 32tpi thread	£43.00
Hydrostatic lubricators	
Single glass sight feed	£74.00
Double glass sight feed	£99.00
Triple glass sight feed	£133.00
Spare glass	£5.00



Nipples (see also Union Nuts)

to suit all ME pipe sizes, including flat ended nipples for injectors. For pressure gauge specials see below.

Standard	Type		Injector	Type
Pipe size	Price per 10		Pipe Size	Price each
3/32	£3.00			
1/8	£3.10		1/8	35p
5/32	£3.10		5/32	35p
3/16	£3.10		3/16	35p
1/4	£3.30		1/4	39p
5/16	£5.10			
3/8	£6.00			



Oil Cups and Oilers

A range of adjustable precision oil cups and drip feed oilers with clear glass reservoir. Standard types available in variety of sizes with imperial threads, other threads to order.

Oil Cups	
small 8BA oil cups	£2.60
6BA oil cups	£2.80
4BA oil cups	£3.40
2BA oil cups	£3.90

Glass oilers	
7mm glass 1/8x40	£13.90
10mm glass 5/32x40	£15.00
12mm glass 3/16x40	£16.20
16mm glass 3/16x40	£19.00

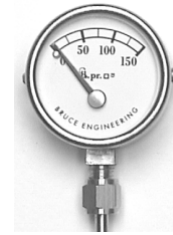


Enquire for availability and price of drip feed oilers. Large drip feed oilers as used on R&B engine, available price £12.90 threaded 1/8" BSP.

Pressure Gauges

Probably the widest range of gauges available from any supplier. Sizes ranging from 1/2" dia to 4", plain or flange mount graduated in metric (bar) or imperial (psi). Calibrated test gauges available for inspection/certification. Pressure gauge siphons also available.

Standard type	Pressure range	Price
1/2"	0-80, 0-100, 0-120 psig	£35.00
3/4"	0-30, 0-60, 0-80, 0-100, 0-120, 0-150 psig 0-6, 0-10bar	£26.00
1"	0-30, 0-60, 0-80, 0-100, 0-120, 0-150, 0-200psig 0-6, 0-10 bar	£26.15
1 5/8" centre mvmnt	0-100, 0-160, 0-300psig	£29.65
2" centre mvmnt	0-160, 0-300 psig	£30.40
Flanged type		
3/4"	0-80, 0-150 psig	£28.20
1"	0-80, 0-150 pig	£36.15
1 5/8" centre mvmnt	0-160, 0-300 psig	£34.00
2" centre mvmnt	0-160, 0-300 psig	£36.00
4" standard test gauge	0-400 psig	£67.00



Nut + Olive to suit gauge	Price
1/2"	£2.00
3/4" & 1"	£1.80
1 5/8" & 2"	£1.80

Standard gauge supplied calibrated with certificate, recalibration can be arranged.

Pressure Gauge Siphons

Syphon standard for 3/4" and 1" gauges, thread size 3/16" x 40	£8.70
Syphon standard for 3/4" and 1" gauges, thread size 1/4" x 40	£8.70

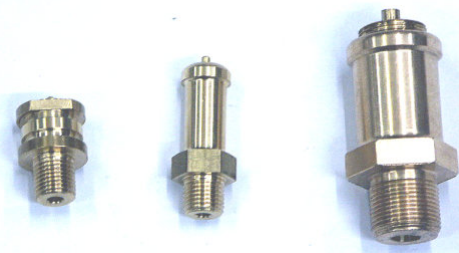


Safety Valves

Short Express and Tall styles available.

A wide and developing range of precision safety valves to suit the needs of most model engineers. New types being introduced exhibit minimal pressure rise with maximum flow under steam test conditions, in line with latest boiler test recommendations. Note safety valves are not calibrated and should be adjusted and tested to suit the boiler and conform with boiler testing requirements.

1/4" x 40 for G1 Tall or Express style	£19.00
5/16" x 26 Tall or Express style	£17.50
5/16" x 32 Tall or Express	£17.50
3/8" x 26 Tall or Express	£20.00
3/8" x 32 Tall or Express	£20.00
1/2" x 26 short	£25.20
1/2" x 26 tall	£26.30
5/8" x 26 short use as spec. by boiler designer	£29.30
5/8" x 26 tall use as spec. by boiler designer	£30.40

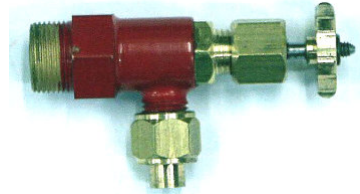


Sight Feed Lubricators – see Lubricators

Steam Stop Valves – see also Globe Valves

Flanged backhead fitting steam stop valves with pipe sizes from 3/32" to 1/4". See also Globe Valves (180 degree) for pipe sizes up to 3/8". Radio control servo valves are also available. Steam stop valves can also be used for water. Scale GWR injector steam valves for 5" and 7 1/4" gauge are also available.

90 deg pipe to thread	
3/16" x 40tpi 3/32" pipe	£14.20
1/4" x 40tpi 1/8" pipe	£12.90
1/4" x 40tpi 5/32" pipe	£12.90
5/16" x 32tpi 1/8" pipe	£13.00
5/16" x 32tpi 3/16" pipe	£14.20
5/16" x 32tpi 1/4" pipe	£14.20
3/8" x 32tpi 1/4" pipe	£14.20
7/16" x 26tpi 1/4" pipe	£14.20



Steam Valves for Radio Control

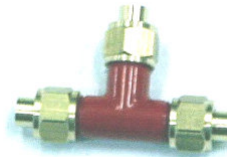
90 degree lever movement steam valves for servo operation (radio control) £20.00 each.



Steam Tees

in various sizes supplied with nuts and nipples.

3/32" pipe	£7.30	5/16"	£11.00
1/8" pipe	£7.10	3/8"	£13.50
5/32" pipe	£7.10		
3/16" pipe	£7.50		
1/4" pipe	£7.80		



Union cocks from Stuart Models

Also suitable for use as draincocks on stationary and marine engines.

1/8" pipe	3/16 x 40 tpi	£17.10
5/32" pipe	1/4 x 32 tpi	£18.96
3/16" pipe	5/16 x 26 tpi	£18.96

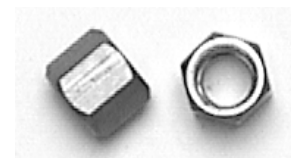


Union nuts

to suit various ME pipe sizes in packs of 10

3/16 x 40	£3.60		3/8 x 26	£4.60
7/32 x 40	£3.50		3/8 x 32	£4.60
1/4 x 32	£3.50		3/8 x 40	£4.60
1/4 x 40	£3.50		7/16 x 26	£9.00
5/16 x 26	£3.80		7/16 x 32	£9.00
5/16 x 32	£3.80		1/2 x 26	£9.00
5/16 x 40	£3.80		9/16 x 26	£25.20

9/16 x 26 available individually £2.75 each



Vacuum Ejectors – see Brake Vacuum Ejectors

Vacuum gauges

In various sizes, plain or flanged, style can be matched to pressure gauge. Gauges are calibrated 0-30" Hg = 14.7 psig.

Standard type	Range	Price
3/4" dia	0-30" Hg	£28.30
1" dia	0-30" Hg	£36.00
1 5/8" dia	0-30" Hg	£30.00
2" dia	0-30" Hg	£39.65
Flanged type		
3/4" dia	0-30" Hg	£30.40
1" dia	0-30" Hg	£30.40
1 5/8" dia	0-30" Hg	£39.65
2" dia	0-30" Hg	£36.00

Vacuum Limiting valves – see Brake Vacuum Limiters

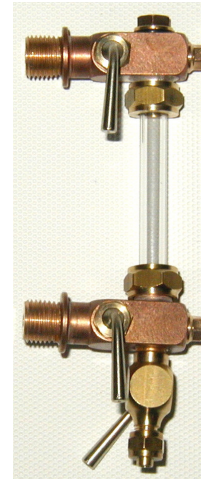
Water Gauges

A wide range of gauges ranging from the simple plain type to the precision three cock bronze and gunmetal types by specialist suppliers such as Rob Barker and Dave Noble. Left and right handed available. Linked cocks available in smaller sizes.

Plain with blowdown valve	Price
3/16 x 40 4mm glass	£23.90
1/4 x 32 5mm glass	£23.90
1/4 x 40 5mm glass	£23.90
5/16 x 32 6mm glass	£27.40
3/8 x 32 7mm glass	£29.40

1/4 x 32 also available without blowdown £22.70

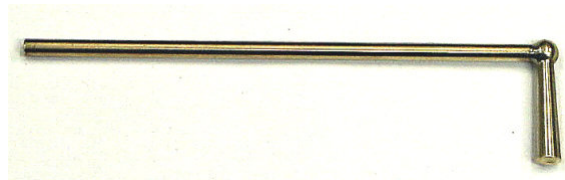
3 cock type	Price
1/4 x 40	£71.00
5/16 x 32	£95.00
3/8 x 32, 5mm glass (for Winson)	£95.00
3/8 x 32 7 mm glass	£141.60
1/8 BSP 8mm glass	£141.60
1/4 BSP 10 mm glass	£156.00
3/8 BSP	£254.40
1/2 x 26 10mm glass	£156.00



Water valves for tender or tank fitting

90 degree on-off valves in a variety of sizes with extended operating arms available separately. Used for water supply to injectors, etc where they provide good flow and handle indicates the position of the valve.

5/32 pipe	£15.00
3/16 pipe	£16.50
1/4 pipe	£18.50
5/16 pipe	£16.50
3/16 pipe	£21.50
3way	
Handle	£4.60



Whistles – see also Chime Whistles

in various sizes of plain type and recently introduced chime whistles. Illustration shows 3 and 4" scale combined whistle & valves for traction engines, etc.

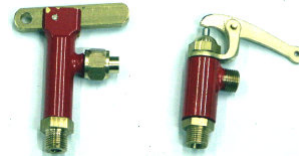


Traction engine type	With lever valve
3" scale 5/16 x 32	£67.50
4" scale 1/8 BSP	£88.00

Loco type	Length	Use separate valve
3/8" dia	2 3/4"	£11.00
1/2" dia	3 1/2"	£12.90
5/8" dia	4 3/8"	£13.50

Whistle valves

Lever type reversible handle 1/4" x 40 pictured right	£19.00
Lever type 1/4" x 40	£17.00



Standard backhead fittings available. Large valve to suit chime whistle – see chime whistles.

11. Materials & Consumables

Axle Bearings – Double Sealed Needle Roller Bearings

1/2" ID (shaft size)	£4.50 each
3/4" ID (shaft size)	£8.30 each

As used in Neville Evans designs, for tender and locomotive axle bearings.

Bakers Fluid flux

For soft soldering, supplied in 125cc bottle price £3.50, N.B. Not available by post.

Boiler Lagging

Boiler lagging 2mm (0.08") thick	£2.30 per ft
Boiler lagging 3mm (0.12") thick	£3.30 per ft

High temperature (1200 deg C) ceramic matting in 2mm or 3mm thickness 20" wide, cut length to your requirement.

Boilers, Boiler kits and Flanged Plates

We are currently unable to directly supply boilers or boiler kits. However, for our own designs of locomotive we can normally make recommendations of suitable professional boiler makers.

Please bear in mind that demand for boiler making is high and lead times are correspondingly long. Place your order sufficiently early to ensure your boiler is ready when you need it.

Brass bar

In round, square, rectangular and hexagon sections in a wide variety of sizes. Longer lengths on request for collection from workshop or exhibitions. Max length for postage two feet.

1ft lengths							
Round		Square		Rectangular		Hexagon	
1/16"	£0.90	1/8"	n/a	1/16 x 1/4"	£0.70	3mm	£1.75
3/32"	£0.80	5/32"	n/a	1/8 x 1/4"	£1.34	5/32"	£1.75
1/8"	£0.90	3/16"	£1.85	1/8 x 3/8"	£1.80	3/16"	£1.75
5/32"	£1.05	1/4"	£2.06	1/8 x 1/2"	£2.50	7/32"	£2.10
3/16"	£1.15	5/16"	£2.30	1/8 x 3/4"	£3.70	1/4"	£2.10
7/32"	£1.30	3/8"	£3.10	1/8 x 1"	£4.50	5/16"	£2.20
1/4"	£1.45	1/2"	£5.35	3/16 x 1/2"	£4.60	3/8"	£3.10
9/32"	£2.10	5/8"	£8.34	1/4 x 1/2"	£4.12	7/16"	£3.90
5/16"	£1.85	3/4"	£12.30	1/4 x 3/4"	£5.15	1/2"	£4.95
3/8"	£2.50	1"	£20.80	1/4" x 1"	£6.70	9/16"	£5.95
7/16"	£3.70			3/8 x 5/8"	£6.18	5/8"	£7.50
1/2"	£4.30			1/2 x 3/4"	£7.42	3/4"	£10.80
9/16"	£6.00			1/2 x 1"	£12.36	1"	£18.70
5/8"	£7.50						
3/4"	£10.10						
1"	£15.50						

Brass angle

From 1/4" to 1", standard length 2' **Metric Small Sizes (thin section)**

2ft lengths	Price	1metre lengths	Price
1/16 x 1/4"	£4.40	2mm x 2mm x 0.4mm	£6.15
1/16 x 5/16"	£5.45	3mm x 3mm x 0.45mm	£6.80
1/16 x 3/8"	£5.80	4mm x 4mm x 0.5mm	£9.50
1/16 x 1/2"	£6.00	5mm x 5mm x 0.6mm	£11.90
1/16 x 3/4"	£8.80	6mm x 6mm x 1mm	£13.65
1/16 x 1	£11.90		

Brass 'half-round' Beading

Nominal Width	Price per ft
1/16"	£0.55
3/32"	£0.60
1/8"	£0.70
5/32"	£1.00
3/16"	£1.45

Brass sheet

Off-cuts normally available - standard thicknesses held in stock 0.5mm, 1.0mm, 1.2mm, 1.5mm, 2.5mm, 3mm. Sizes 1.2mm and below are CZ108 half hard bendable and 1.5mm and above are CZ120. Enquire for availability.

Bronze Balls For non-return valves, etc.

pkts of ten	1/16"	£2.50		Pkts of 10		
	3/32"	£2.20			9/32"	£6.50
	1/8"	£1.90			5/16"	£7.00
	5/32"	£2.00		Price per ball	3/8"	£3.10
	3/16"	£2.90			1/2"	£3.70
	7/32"	£3.20			5/8"	£5.20
	1/4"	£3.70				

Bronze Bar PB102 or Colphos

Round hard drawn 12" length		Hexagon 12" length	
1/8"	£1.60	5/32" colphos	£2.10
5/32"	£1.80	1/4" colphos	£3.60
3/16"	£2.70	.324" 2BA colphos	£5.70
1/4"	£3.50	10mm colphos	£9.30
5/16"	£4.20	7/16" colphos	£9.70
3/8"	£6.00	1/2" pb102	£15.50
1/2"	£7.40	5/8" pb102	£22.70
		3/4" pb102	£25.80

Bronze Bar PB660

Leaded, round various sizes, 12" length

Round 12" length				
1/2"	£7.00		3/4"	£16.00
5/8"	£9.80		1"	£24.00

Cast Iron

Round to 60mm diameter, minimum length 3" cut to length.

per foot min order 3"				
25mm	£10.80		40mm	£15.50
30mm	£12.30		50mm	£21.00
			60mm	£25.00

Ceramic Plaque for Burners

Ceramic material easily cut to shape as used in our burners.

5" x 7" x 7/16"	£19.50
-----------------	--------

Chequer Plate

1:16 and 1:10 (approx suitable for 3 1/2" and 5" g resp.), aluminium sheets approx 10" x 2 1/2" £6.00 each
 suitable for 7 1/4" gauge, aluminium sheet approx 8" x 16" £15.00 each

Comsol high temperature soft solder

1.5mm wire, melts at significantly higher temperature (295 deg C) compared to normal soft solder, facilitating more complex assemblies.

over 3m less 10%	per metre	0.5kg reel complete
3mm dia wire	£6.50	£56.50

Copper tubing bending

Grade 1/16" to 3/8" diameter (plus some metric sizes)

<i>bending grade per foot</i>			
1/16"	n/a	3/16"	£1.10
3/32"	£0.80	1/4"	£1.30
1/8"	£0.90	5/16"	£2.30
5/32"	£1.00	3/8"	£2.60

Copper tubing Thin wall 1/16" to 1/4"

<i>Thin Wall per foot</i>			
1/16"	£0.55	5/32"	£1.00
3/32"	£0.80	3/16"	£1.10
1/8"	£0.90	7/32"	£1.20
		1/4"	£1.30

Copper washers

In assorted thickness packs (for steam fittings, etc) 20 in pack – 5 of each

4 thicknesses in each packet			
1/8"	£2.60	5/16"	£3.10
5/32"	£2.70	3/8"	£3.35
3/16"	£2.90	7/16"	£3.60
7/32"	£2.90	1/2"	£3.75
1/4"	£3.00	Assorted sizes 3/16 – 1/2"	£10.30

Fibre washers

M2.5	7/64	£0.35	M6	1/4	£0.60
M3	1/8	£0.50	M8	5/16	£0.60
M4	5/32	£0.40	M10	3/8	£0.70
M5	3/16	£0.45	M12	1/2	£0.80

Fluxes

<i>per 250 grammes</i>	
Easyflow	£12.00
Tenacity no.5	£12.00
Stainless steel flux	£14.00

For silver soldering, Easyflo, Tenacity 4a, Stainless Steel etc.



Gasket paper In various thicknesses for steam, oil and water. Per piece approx 12" square

Asbestos free, 0.5mm (0.020")	£1.80	oil and water type paper	£1.00
-------------------------------	-------	--------------------------	-------

Gauge Glass Plain and Red Line

<i>plain metric per foot</i>			<i>Red Line per 6"</i>	
clear 4mm	£1.90		5mm	£3.50
clear 5mm	£1.90		6mm	£3.50
clear 6mm	£1.90		7mm	£3.50
clear 7mm	£2.20		8mm	£3.50
clear 8mm	£2.20		9mm	£3.50
clear 10mm	£2.70		10mm	£3.50

October 2013

For All your Model Engineering Requirements:

Email: sales@pollymodelengineering.co.uk Polly Model Engineering Ltd (inc Bruce Eng) Fax +44 (0)115 9727251

Web: www.pollymodelengineering.co.uk

Page 48

Telephone: +44 (0)115 9736700

Gauge Glass Blue Line (Shelbach)

We are pleased to advise that following a period of extreme short supply, we have now managed to find a new source of this popular gauge glass. Stocks are limited, but some 6.5mm available is available at £4.10 per 6" length.

Graphited Packing

In small quantities in various thicknesses.

Approx. 600mm per pack	
square 3mm	£3.10
5mm	£3.75
1/4"	£3.75

Also available PTFE square packing suitable for loco pistons, 5mm square section 75p per inch.

Graphited String

per hank (approx 2') 1/16" dia	£1.00
--------------------------------	-------

Loctite Products

As official Loctite distributors, we stock a range of popular Henkel-Loctite products, for thread sealing, bearing retaining, wheel fixing, etc. see Technical Note on our website and Henkel-Loctite website for detailed application notes. Trade enquiries welcome for these and other Loctite products.



Loc 'n Seal 3mm tube	Sealing and aligning boiler fittings	N/A
Loctite 2400 5ml bottle	Sealing and aligning boiler fittings Replaces Loc'n'Seal	£4.00
Multi-gasket 574	For most steam and i/c engine joints	£19.00
Superclean 7061	For preparation of surface prior to assembly	£11.75
Loctite 641 10 ml bottle	Retaining compound, fixing of studs and bearings in housings	£7.75
Loctite 542 10 ml bottle	Thread sealant for piping systems oil/water/air.	£7.75
Loctite 603 10 ml bottle	Retaining compound for high strength assembly, wheels, etc., replaces 601 and is more oil tolerant with higher strength	£7.75
Loctite 290 10 ml bottle	Penetrating thread sealant for fixing after assembly.	£7.75
Loctite 243 10 ml bottle	Medium strength for thread locking of nuts	£7.75

Lubricants, Steam Oil and cutting Oils

steam oil (1000sae and 460sae), slideway lubricant, cutting and tapping fluid, soluble oil and honing oil. The thinner grade steam oil (460) is suitable for smaller (e.g. gauge 1) locos.

Steam Oil 1000 grade ½ litre	£3.70
Steam Oil 1000 grade 1 litre	£4.90
Steam Oil 460 grade 1/2 litre	£4.00
Hone Oil 1/2 litre	£4.90
Soluble Oil 1 litre	£4.40
Cutting & tapping fluid 1 litre	£4.40
Slideway oil 1/2litre	£3.50
WD40 Aerosol Can	£2.50

Nitrile Rubber balls – see also Viton Balls

For check valves, axle and hand water pumps, etc., which are sometimes difficult to get a satisfactory seal on. Under water pumping conditions with the correct lift and seat the balls have a life of several hundred hours. Nitrile balls are sold individually.

1/8"	£1.10	7/16"	£1.65
5/32"	£1.20	1/2"	£2.00
3/16"	£1.20	9/16"	£1.95
7/32"	£1.25	5/8"	£2.05
1/4"	£1.35	3/4"	£3.85
5/16"	£1.55		
3/8"	£1.55		

Nuts, Bolts, Caphead Bolts, Grubscrews

We stock a wide range of BA fastenings in popular sizes with hexagon (inc. small head), roundhead and countersunk heads. A limited range of cap head (socket head or allen screws) bolts, BA and metric studding is stocked in brass, steel and stainless steel studding. With the general adoption of metric fasteners for industrial application, it is becoming increasingly difficult and expensive to obtain BA fasteners.

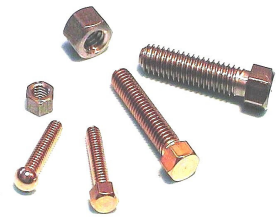
Although it is our intention to stock BA fasteners for as long as they are obtainable and there is customer demand, we have for some time stocked a range of metric fasteners. The drawback of metric fasteners in the small sizes has historically been the large size of the hexagon heads which made them generally unsuitable for model use. We are pleased now to be able to offer a range of metric fasteners, specially manufactured for model engineers. The small size hexagons are most appropriate for our models and a wide range of special screws, including slotless 'rivet head' screws, dome nuts, etc., are available.

See tables on following pages for available sizes.

Screws per 25			BA Brass or Steel Nuts -per 25 Specify brass or steel required	
steel hex head			2BA brass	£1.50
12BA x 3/8"	£3.60		3BA brass	£1.30
12BA x 1/2"	£3.60		4BA brass	£1.40
10BA x 1/2"	£3.50		5BA brass	£1.30
9BA x 1/2"	£3.60		6BA brass	£1.30
8BA x 1"	£3.60		7BA brass	n/a
8BA x 1/2"	£3.50		8BA brass	£1.60
7BA x 1/2"	£3.30		9BA brass	n/a
6BA x 1"	£3.85		10BA brass	£2.40
6BA x 1/2"	£3.65		12BA brass	£2.70
5BA x 1/2"	£3.20		2BA steel	£1.45
4BA x 1"	£3.60		3BA steel	£2.80
4BA x 1/2"	£3.35		4BA steel	£1.30
3BA x 1"	£3.85		5BA steel	£1.30
2BA x 1"	£3.85		6BA steel	£1.30
2BA x 1/2"	£3.35		7BA steel	£2.90
Steel countersunk			8BA steel	£1.90
10BA x 1/2"	£3.10		9BA steel	n/a
8BA x 1/2"	£2.85		10BA steel	£2.60
7BA x 1/2"	£2.80		12BA steel	£2.70
6BA x 1/2"	£2.80			
4BA x 1/2"	£2.80		BA Washers in Brass or Steel	
Brass Countersunk			Most sizes available	
12BA x 1/2"	£3.10		Pkts of 25	£0.70
12BA x 3/8"	£3.75			
10BA x 1/2"	£3.10		Rivet Head/Slotless Screws -Metric	
8BA x 1/2"	£3.10		M1.2	£3.80
6BA x 1/2"	£2.70		M1.6	£3.90
5BA x 1/2"	£3.10		M2	£3.60
4BA x 1/2"	£2.90		M3	£3.90
Hexagon Brass				
12BA x 1/2"	£5.70			
10BA x 1/2"	£5.40		Cap Head 4BA Bolts	
8BA x 1/2"	£5.15		4BA x 3/8"	£2.60
6BA x 1/2"	£5.25		4BA x 1/2"	£2.60
5BA x 1.2"	£5.25		4BA x 3/4"	£2.60
4BA x 1"	£5.40			
2BA x 1"	£5.90		Grub Screws pkt 10	
Round Head Brass			6BA	BA sizes not
10BA x 1/2"	£3.15		4BA	generally
8BA x 1/2"	£2.90		2BA	available
6BA x 1/2"	£2.90		M3 pkt 10	£1.50
			M4 pkt 10	£1.50
			M5 pkt 10	£1.50

N.B. All our stock 'bolts' are technically screws, as they are threaded right up to the head. Generally small BA and metric bolts are very difficult to source and many model engineers wrongly assume that hexagon headed screws are in fact bolts, expecting screws to have slotted heads!

Metric Screws and nuts, specially produced for model engineers. High quality rolled threads, with small size hexagon (choice of standard or high head bolts). These nuts and bolts are precision made fasteners specially made in Germany for model engineers. They should not be confused with lower cost industrial fasteners which do not offer such clean hexagons or inferior machined thread screws of doubtful strength.



Packs are marked with size of the bolts – e.g. M3 x 15, indicating the thread size and the length in mm.

Description [packs of 25]	M1.2	M1.4	M1.6	M2.0	M2.5	M3.0	M4.0
Steel low head hex bolts	8mm £3.85		12mm £3.85	15mm £3.90	15mm £3.90	15mm £3.90	10mm 12mm 15mm 20mm £3.10
Steel std/high hd hex bolts	12mm £3.90	12mm £3.85	8mm £3.30 12mm £3.85	15mm £3.90	15mm £3.85	10mm £3.35 15mm £3.85	
Brass hex bolts	8mm £3.90	12mm £3.90	10mm £3.85	10mm £3.90 15mm £3.90	10mm £3.85	15mm £3.85	
Brass rivet head bolts	12mm £3.85		12mm £3.90	10mm £3.60		10mm £3.90	
Stainless hex bolts				8mm £7.40 10mm £7.70	10mm £7.45	10mm £7.45 15mm £7.70	
Steel hex nuts	£4.00	£3.85	£3.20	£3.20	£3.85	£3.60	£3.60
Brass hex nuts	£4.05	£4.00	£3.85	£3.20	£3.30	£3.85	
Brass lock nuts	£3.85		£3.85	£3.85		£3.85	
stainless hex nuts				£5.90	£5.90	£5.90	
Dome nuts				£6.50			

Specialist fasteners available, including other sizes of dome nuts, please enquire.

'O' Rings

A wide range of sizes, available in Nitrile rubber, Silicon or Viton. For use as piston rings, joint seals, gauge glass seals, etc. Sizes from 1/8" to 1 1/2" in stock.

Nitrile – 0-100°C (saturated steam), Viton 15-200°C (superheated steam), Silicone 60-200°C

Pkts of 6 (not larger sizes)	BS No.	Nitrile	Viton	Silicon	Pkts qty as listed		BS No.	Nitrile	Viton	
					ID x OD	c/s				
1/8" x 1/4"	1/16	006	£0.65	£1.00	£1.00	1" x 1 1/4" pkt of 4	1/8	214	£1.40	£4.40
5/32" x 9/32"	1/16	007	£0.65	£1.00	£1.00	1 1/8" x 1 3/8" pkt of 4	1/8	216	£1.70	£4.10
3/16" x 5/16"	1/16	008	£0.65	£1.00	£1.00	1 1/4" x 1 1/2" pkt of 2	1/8	218	£1.90	£4.10
7/32" x 11/32"	1/16	009	£0.65	£1.15	£1.30	1 3/8" x 1 5/8" pkt of 2	1/8	220	£1.90	£4.10
1/4" x 3/8"	1/16	010	£0.65	£1.15	£1.15	1 1/2" x 1 3/4" pkt of 2	1/8	222	£1.90	£4.30
5/16" x 7/16"	1/16	011	£0.65	£1.35	£1.35	1 3/4" x 2" pkt of 2	1/8	224	£1.90	£4.30
3/8" x 1/2"	1/16	012	£0.65	£1.45	£1.45					
3/8" x 9/16"	3/32	110	£0.75	£2.00	£2.00	Silicon Gauge Glass O Rings				
7/16" x 5/8"	3/32	111	£0.75	£2.25	£2.25	4mm – 10mm glass size (specify)			65p pkt 4	
1/2" x 11/16"	3/32	112	£0.75	£2.35	£2.35					
9/16" x 3/4"	3/32	113	£0.95	£3.00	£3.00	Small Section O Rings			Nitrile	
5/8" x 13/16"	3/32	114	£0.95	£3.65	£3.65	3/32" x 7/32"			15p ea	
11/16" x 7/8"	3/32	115	£1.00	£3.65	£3.65	1/16" x 3/16"			15p ea	
3/4x15/16pkt of 4	3/32	116	£0.85	£3.70	£3.75	3/32" x 5/32"			n/a	
3/4" x 1" pkt of 4	1/8	210	£1.15	£3.80	£3.65	4mm x 6mm			15p ea	

Phosphor Bronze- see Bronze bar

Rivets

Brass snap head rivets from 1/32" to 1/16" diameter, in packs of 50 with larger quantities on request

Copper snap head from 1/16" diameter to 3/16" for boiler making and general use. Standard packs of 50, 3/16" in packs of 25.

Steel general purpose snap head rivets.

Rivet Head Screws (Slotless screws) to match rivets, see nuts and bolts above.

rivets brass snap head		rivets steel snap head	
Per pkt 50			Per pkt 50
1/32" x 1/4" long	£1.40	1/16" x 1/4" long	£1.10
3/64" x 1/4" long	£1.15	1/16" x 1/2" long	£1.10
1/16" x 1/4" long	£1.40	5/64" x 1/2" long	n/a
rivets copper snap head		3/32" x 1/2" long	£1.20
Per pkt 50		1/8" x 1/2" long	£1.20
1/32" x 1/4" long	£1.40	1/8" x 1" long	£1.40
3/64" x 1/4" long	£1.15	5/32" x 3/4" long	£2.10
1/16" x 1/4" long	£1.20	5/32" x 1" long	£2.50
1/16" x 1/2" long	£1.50	3/16" x 1" per 25	£1.80
3/32" x 1/2" long	£1.40		
1/8" x 1/2" long	£2.10		
1/8" x 1" long	£3.75		
5/32" x 1" long	£5.60		
3/16" x 3/4" long per pack 25	£4.00		
3/16" x 1" long per pack 25	£5.00		

Enquire for quantity prices of rivets.

Roll Pins

Pkt of 10	Price
1/16"	£1.00
3/32"	£1.30

Silicon Rubber Tubing

Per 5ft	Price
1/8"	£3.50
5/32"	£3.50
1/4"	£4.10
3/8"	£5.70

Ideal for tender to loco water connections, brake pipes, etc.
Available in 5' lengths from 1/8" to 3/8" int. dia.

SAFETY VALVE SPRING and BALL DETAILS for Gordon Smith designs

Valve Seat Dia	Drawing number	Ball size	Valve Style (short/tall)	Suitable for Loco Type	Manufacturer Part No.	Price per spring	Price per ball
1/8"	SV#1	5/32"	23/32" tall 90 psi	MOLLY - etc	LC-016A-03-SS	£2.10	20p
1/8"	SV#1B	5/32"	3/8" tall (4 per loco)	3 1/2" g LMS Princess	LC-014A-01-SS	£2.10	20p
5/32"	SV#2	3/16"	13/16" tall 100 psi	Large 3 1/2" g, Small 5" g	LCM-055B-04-SS	£2.10	25p
5/32"	SV#2 A	3/16"	Short (1/2" tall) 100 psi	ditto	LC-021AB-04-SS	£2.10	25p
5/32"	SV#2B	3/16"	Short (7/16" tall) 90 psi	HIELAN LASSIE	LC-018AB-02-SS	£2.00	25p
5/32"	SV#2C	3/16"	Twin GWR style 80psi	DIDCOT & PANSY	LC-026B-11-SS	£2.60	25p
5/32"	SV#2D	3/16"	Tall 80 psi	3 1/2" g DERBY 4F	LCM-055B-04-SS	£2.10	25p
5/32"	SV#2-3F	3/16"	Tall 90 psi	5" g JINTY	LC-018AB-02-SS	£2.00	25p
5/32"	SV#2 E	3/16"	Sunken Style, 1/4" tall	Dummy Salter Large 3 1/2" g Small 5"	LCM-055B-04-SS	£2.10	25p
5/32"	SV#2 BR Style	3/16"	3/8" tall with adjuster protruding x 1/16"	3 1/2" g BRITANNIA or similar BR Loco	LC-018AB-02-SS	£2.00	25p
3/16"	SV#3 A# 2	7/32"	Tall Special design	3 1/2" g MOUNTAINEER	LCM-060B-06-SS	£2.20	25p
3/16"	SV#3	7/32"	29/32" Tall	Maid of Kent etc	LC-026C-03-SS	£2.20	25p
3/16"	SV#3 A	7/32"	Short (1/2" tall)	Other 5" g Loco's	LCM-060B-06-SS	£2.20	25p
3/16"	SV#3B	7/32"	Sunken Style 5/16" Tall	Dummy Salter 5" g Talyllyn etc	LC-026C-03-SS	£2.20	25p
3/16"	SV#3C	7/32"	Twin GWR Style 90 psi	Cookham MANOR or similar	LCM-060B-06-SS	£2.20	20p
3/16"	SV#3 E#2	7/32"	Twin GWR Style 90 psi	5" g Firefly or similar	LCM-060B-06-SS	£2.20	25p
3/16"	SV#3 L	7/32"	Sunken Style 7/16" Tall	7 1/4" g LION	LCM-060B-06-SS	£2.20	25p
3/16"	SV#3-Simplex	7/32"	1-1/2" tall	Simplex	LCM-060B-06-SS	£2.20	25p
3/16"	SV#3-SP	7/32"	Medium Height Special	5" g SWEET PEA	LC-026C-03-SS	£2.20	25p
7/32"	SV#4	1/4"	Tall	Large 5" g & Very Small 7 1/4" g Loco's	LC-029C-03-SS	£2.20	25p
7/32"	SV#4 A	1/4"	Short (5/8" tall)	5" g MAINLINE BR Style	LC-029C-03-SS	£2.20	25p
7/32"	SV#4B	1/4"	Very Short (7/16" Tall)	5" g BRITANNIA	LC-029C-03-SS	£2.20	25p
1/4"	SV#5	5/16"	Tall (1-1/16" tall)	Large 5" g	LCM-080D-05-SS	£2.20	35p
1/4"	SV#5 A	5/16"	Short (13/16" Tall)	Large 5" g	LCM-080D-05-SS	£2.20	35p
5/16"	SV#6	3/8"	Tall (1-7/16")	7 1/4" g Standard Gauge	LC-042E-08-SS	£2.40	55p
5/16"	SV#6 A	3/8"	American Style	7 1/4" g Standard Gauge	LC-042E-08-SS	£2.40	55p
5/16"	SV#6C2	3/8"	Medium Height Special	5" g SPEEDY (Single Valve)	LC-042E-08-SS	£2.40	55p
5/16"	SV#6C6	3/8"	Medium Height Special	5" g MINX (Single Valve)	LC-042E-08-SS	£2.40	55p
5/16"	SV#6C5	3/8"	BR/Stanier Style	7 1/4" g BR Class 4MT	LC-042E-08-SS	£2.40	55p
3/8"	SV#7	7/16"	Tall (1-13/16")	7 1/4" g Narrow Gauge 100psi	LC-055G-05-SS	£2.65	90p
1/2"	SV#8	5/8"	Tall (2-9/16")	10 1/4" g Standard Gauge	LC-072G-08-SS	£4.20	£2-50p

Safety Valve Drawings for all designs of these mild pop safety valves are 50p each.

Silver Solder

We have always sought to supply the highest quality silver solders available, including the most popular Easyflo 2 from Johnson Matthey. During 2010, EF2 was discontinued. AG303 also a cadmium bearing alloy having a similar temperature range to EF2 is also discontinued. Silverflo 24, Silverflo 40 and Silverflo 55 rods are stocked, with SF55 being the closest substitute for EF2. Fluxes stocked, Easyflo, Tenacity 4A and Stainless flux. Argobraz e 56 is a special silver solder particularly suited for stainless steel in arduous environments such as superheater headers, where EF2 or similar may fail after a time.



AG303 contains Cadmium	610-620 C	1.5mm x 500mm stick for general purpose lowest temperature, highly fluid for fine work. Also available in 2.0mm sticks. NO LONGER AVAILABLE – USE CADMIUM FREE ALTERNATIVES
Silver Flo 55 Cadmium free	630-660 C	1.5mm x 500mm stick for Cad.free low temp. larger fillets for fabricated work, step brazing of brass.
Silver Flo 24	740-800 C	1.5mm x 500mm srick for Cad free high temp. Replaces C4, ideal for fireboxes and start of step brazing.
Silver Flo 67E		Hallmark quality for jewellery
Silver Flo 40	650-710 C	For firebox tubeplates, step brazing. Useful working range.
Argobraz e 56	600-711 C	Specialist silver solder for stainless steel.

Prices	1 stick	5 sticks	10 sticks
AG303	N/A	N/A	N/A
SF55 1.5mm dia	£7.25	£35.00	£67.50
SF55 2.5mm dia	£19.80		
SF24	£4.00	£19.20	£38.00
SF40	£5.60	£27.50	£54.00
Argobraz e 56	£9.00		
SF55 0.5mm wire 10feet	£5 pkt		
AG303 Foil 0.003" x 1/2" x 5feet	N/A		

£N/A per Kg (approx 120 sticks)

£ per Kg (approx 65 sticks)

See also 'Fluxes'. Enquire for larger quantity discounts for professional boiler makers, etc.

Silver Steel

We stock genuine Stubbs silver steel in a wide range of imperial and metric sizes. This high carbon steel is ideal for making 'D' bits and other tooling and is readily hardened and tempered.

	Metric					Imperial			
						1/16"	0.65	9/32	3.60
2 mm	1.00		8 mm	3.20		3/32"	0.70	5/16"	3.40
3 mm	1.00					1/8"	1.00	11/32"	4.00
4 mm	1.30		10 mm	5.00		5/32"	1.35	3/8"	4.50
5 mm	1.70					3/16"	1.40	7/16"	6.00
6 mm	2.40		12 mm	7.15		7/32"	2.60	1/2"	7.10
7 mm	2.90					1/4"	2.30	3/4"	14.50

Soft Solder paste

'Nealtin', a convenient ready to use, low temperature flux solder mix. Ideal for soldering small parts where it is necessary to avoid excessive amounts of solder. Flux residues wash off easily with water.

250 gramme tins	£11.90
-----------------	--------

Split pins (cotter pins)

from 1/32" to 5/32" diameter in various lengths.

<i>steel zinc plated per pkt 10</i>	
1/32" x 1/2"	£0.90
3/64" x 1"	£0.60
1/16" x 1"	£0.60
5/64" x 1.252"	£0.80
3/32" x 1.5"	£0.90
1/8" x 1.75"	£1.00
5/32" x 2"	£1.55

Stainless steel balls

for safety valves, clacks, pumps, etc.

Packs of 10			
		1/4"	£2.30
1/16"	£1.30	9/32"	£3.60
3/32"	£1.30	5/16"	£2.60
1/8"	£1.30	11/32"	£3.20
5/32"	£1.30	3/8"	£3.50
3/16"	£1.55	7/16" per 5	£3.70
7/32"	£2.40	1/2" per 5	£5.30

Stainless steel rod

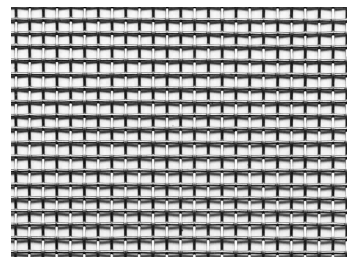
Free cutting stainless rod, supplied in 1 foot lengths.

round		hexagon	
1/16"	£0.60	3/32"	-
3/32"	£0.90	5/32"	£1.90
1/8"	£1.00	3/16"	£2.10
4mm	£1.10	1/4"	£3.10
3/16"	£1.20	5/16"	£4.10
7/32"	£1.60	3/8"	£4.60
1/4"	£1.40	7/16"	£5.20
5/16"	£2.30	1/2"	£7.60
3/8"	£4.30	9/16"	£9.40
7/16"	£6.00	5/8"	£10.30
1/2"	£6.40	3/4"	£16.50
9/16"	£9.40		
3/4"	£12.10		
1"	£15.60		

Stainless mesh

nominal 12" square sheets for making spark arrestors.

nominal 12" square	£12.40
--------------------	--------



Stainless steel springs

in a variety of diameters and wire gauges, to give spring rates suitable for safety valves, axlebox springs etc. Table below gives sizes and spring rate (lbs per inch of deflection). Use the table overleaf to determine the spring required. The first four columns give the physical size of the spring and enable you to determine whether the spring will fit in its intended place. The fifth column gives the force in pounds per inch deflection. It is thus easy to assess what the force exerted by the spring will be and what the effect of further deflections will be. Clearly when considering compressed springs care has to be taken that the spring does not become 'coil bound'. Available in 1 ft lengths (305mm).



12" lengths	Wire Dia	I/D	Coils per inch	lbs per inch	
1/8" x 30swg	.012	.101	28	.64	£1.70
1/8" x 27 swg	.016				£1.80
1/8" x 25swg	.020				£1.80
5/32" x 23 swg	.024	.106	20		£1.70
3/16" x 26swg	.018	.150	20	1.34	£1.70
3/16" x 23swg	.024	.139	16	5.88	£1.80
1/4" x 23swg	.024	.202	12	2.99	£1.80
1/4" x 21swg	.032	.186	14	9.04	£2.30
1/4" x 19swg	.040	.170	16	21.6	£2.30
5/16" x 21swg	.032	.248	11	5.37	£2.30
5/16" x 19swg	.040	.232	12	13.11	£2.50
5/16" x 18swg	.048	.216	13	27.43	£2.50
3/8" x 18swg	.048	.279	10	18.98	£2.90
3/8" x 17swg	.056	.263	10	37.87	£2.90
7/16" x 16swg	.064	.310	9	44.54	£2.90
7/16" x 15swg	.072	.294	9	76.33	£2.90
1/2" x 16swg	.064	.372	8	31.63	£3.10
1/2" x 14swg	.080	.340	7	98.7	£3.10

Steel Stock in round, hexagon and square

We stock a range of common sections. As manufacturers, we have a wider range of steel available than is practical to list. Please contact us if you have any specific requirements.

Mild Steel generally EN1A in 2ft lengths

Sections Bright Mild Steel:

Size (dia or a/f)	Round	Square	Hexagon
1/8"	£0.90		
5/32"	£0.80		
3/16"	£0.80		
7/32"			
1/4"	£1.20	£3.80	£3.80
5/16"	£1.30	£3.80	£4.80
3/8"	£1.70	£4.10	£5.50
7/16"	£2.70	n/a	
1/2"	£2.70	£4.30	
9/16"	£2.70		
5/8"	£3.70	£9.10	
3/4"	£6.25	£10.66	£9.20
7/8"	£6.70	£12.00	
1"	£7.95	£15.30	£10.60

1/16" x 1/2"	£2.60		3/16" x 3/4"	
3/32" x 1/2"	n/a		1/4" x 1/2"	£4.80
1/8" x 1/4"	£1.50		1/4" x 3/4"	£5.30
1/8" x 3/8"	£2.40		1/4" x 1"	£6.30
1/8" x 1/2"	£1.70		1/4" x 1 1/2"	£7.20
1/8" x 3/4"	£3.20		1/4" x 2"	
1/8" x 1"	£5.50		3/8" x 5/8"	
1/8" x 1 1/2"	£5.80		3/8" x 1 1/4"	£6.40
1/8" x 2"			3/8" x 1 1/2"	£7.70
1/8" x 3"	£5.80		1/2" x 1"	£7.70
1/8" x 4"	£6.70		1/2" x 1 1/2"	£9.60
3/16" x 3/8"	£2.40		1/2" x 2"	£12.50
3/16" x 1/2"	£2.60			
Angle metric				
16 x 16 x 3	10.30			

N.B. Some small steel sizes are becoming increasingly difficult to obtain, enquire for availability.

Spring steel

Sold in 1ft lengths. Suitable for leaf springs. Supplied in normalised (soft) state, heat treatment information available on request.

3/8 x .040	£0.65
7/16 x .032	£0.70
7/16 x .040	£0.70
1/2 x .040	£0.75

Studding brass

2BA	£2.80	6BA	4BA	£4.80	£4.80	8BA	£6.40
-----	-------	-----	-----	-------	-------	-----	-------

1 ft (305mm) lengths

Studding metric stainless

M2 stainless	£2.80
M3 stainless	£2.80
M4 stainless	£2.80

1 ft (305mm) lengths

Steel Studding

2BA steel	£4.10
4BA steel	£3.85
6BA steel	£3.60
8BA steel	£7.80

1 ft (305mm) lengths

Superheater Elements Stainless Steel

We supply welded superheater elements in a range of standard sizes. Please enquire for prices and availability.

Simplex	£70.70
1/4 x 24	£37.10
5/16 x 27	£45.80
3/8 x 30	£56.20
Grange	£149.50

Taper pins

packs of 10 from 5/64" to 1/8" nominal diameter – temporarily unavailable.

per pkt 10	
5/64 / 1/2"	n/a
5/64 x 3/4"	n/a
3/32 x 5/8"	n/a
3/32 x 1"	n/a
1/8 x 1"	n/a

Viton Balls – see also Nitrile Balls

	Per ball
1/8"	£1.85
5/32"	£1.90
3/16"	£1.95
1/4"	£2.40

12. Books

We stock a wide range of model engineering related books, including many classics. 'The Model Engineer's Reference Book' is a must for every model engineer. Martin Evan's Treatise on Miniature Locomotive Construction is a valuable reference book for loco builders and the various books on building Stuart stationary engines are essential to novice builders of those models. George Thomas' work on toolmaking is legendary and even for those who 'want to get on with the job' the books are worth reading. Take time to peruse our collection of books at the major exhibitions where space allows us to display them.

STUART ENGINE CONSTRUCTION BOOKS

The Stuart Beam Engine	£9.25
The No. 9 Engine	£9.25
Building the Vertical Engine [No.10]	£9.25
The Victoria	£9.25
The Williamson	£9.25

CONSTRUCTION BOOKS

Building the Beam Engine 'Mary'	£6.95
Miniature Car Construction	£5.95
Building the Overcrank 'Georgina'	£6.95
Model Boiler Making [Pearce]	£5.95
Model Boilers and Boiler Making [Harris]	£14.95
The Quorn Tool and Cutter Grinder	£12.95
Rob Roy and William	£14.95

I.C.ENGINES,HOT AIR ENGINES,&OTHER PRIME MOVERS

The Stirling Engine Manual	£27.95
The Atom Minor Mk 111	£5.95
Gas and Oil Engines Simply Explained	£5.95
Model Petrol Engines [Westbury]	£11.95
Small Internal Combustion Engines [Westbury]	£9.50
Magnetos Simply Explained	£4.95
Model Steam Turbines	£5.95
Diesel Model Engines	£11.95
Ignition Equipment	£12.50
Model Petrol Engines	£11.95
Model Jet Reaction Engines	£5.95
Windmills and Wind Motors	£5.95

LATHE & WORKSHOP PRACTICE

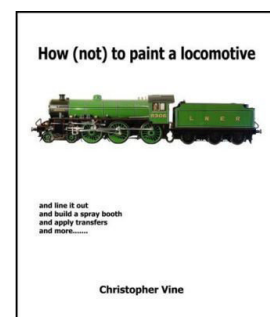
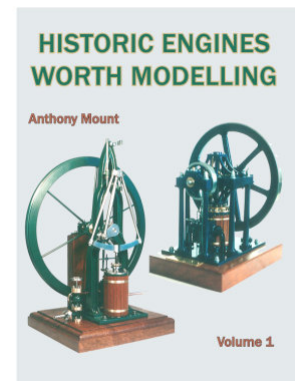
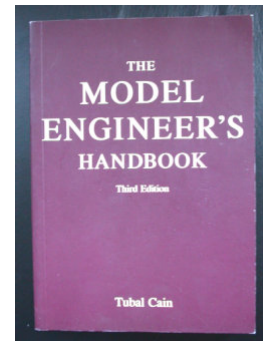
Beginners Guide to the Lathe	£5.95
Know Your Lathe	£6.95
Pattern Making [Camm]	£3.95
Grinding, Lapping and Honing	£5.95
Know Your Materials – Metals	£5.50
Gear Wheels and Gear Cutting	£5.95
Bent Iron Work	£5.95
Painting and Lining Models	£5.95
How to Paint a Locomotive [C.Vine]	£19.95
Gear Wheels Simply Explained	£5.95
Screw Cutting for Engineers	£5.95
The Model Engineers Handbook	£9.95
Model Engineers Workshop Manual [Thomas]	£23.95
Workshop Techniques [Thomas]	£26.95
The Art of Wood turning	£9.95

LOCOMOTIVE & STEAM RELATED

Baker Valve Gear	£5.50
The Live Steam Book LBSC	£15.95
The Locomotive Simply Explained	£5.95
The Model Steam Locomotive [Martin Evans]	currently out of print
Locomotive Valves and Valve Gears	£13.95
Locomotives Valves Setting	£6.95
Locomotive Handbook	£5.95
Locomotive Injectors	£8.95
Beginners Guide to Model Steam Locomotives	£15.95
Slide Valve Simply Explained	£4.95

STATIONARY ENGINES

Historic Engines Worth Modelling Vol.1 [A.Mount]	£12.95
Historic Engines Worth Modelling Vol.2 [A.Mount]	£12.95
Care & Management of Stationary Steam Engines	£5.95



MISCELANEOUS

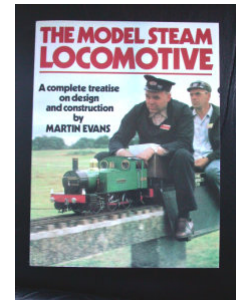
Flash Steam [Westbury]	£6.95
BOOKS CONTD:	
Steam Wagon Manual	£7.95
Model Stationary Engine Design & Construction	£5.95
Garden Railways	£6.95
Meccano No.10 Manual	£11.95
The Portable Steam Engine	£14.95

CATALOGUES

Polly Range of Locomotive Kits	£2.00 [£3.00 by post]
Bruce Engineering Model Engineers Supplies	£1.50 [£1.75 by post]
Stuart Models	£6.00

Recent ADDITIONS TO THE CATALOGUE

Drills, Taps and Dies [Tubul Cain]	£6.95
Myford Series 7 Manual	£7.95
Milling – A Complete Course	£6.95
Vertical Milling in the Home Workshop	£6.95
The Motorcyclist's Workshop	£10.50
Workshop Drawing [Tubul Cain]	£6.95
How to Read Workshop Drawings	£5.95
Simple Workshop Devices	£6.95
Workshop Wrinkles and Recipes	£6.95
Building 5"Gauge Wagons [BR steel 16 ton mineral [D.Hewson]	£2.95
Building 5"Gauge Wagons [LMS 20 ton goods brake van]	£2.95
Making Clocks	£6.95
Evolution of the Steam Engine	£5.95
Meccano and Hombly Trains Catalogue [1933/34 reprod]	£2.95
Peter's Railway Vol 1	£11.95
Peter's Railway Vol 2 Moonlight Express	£11.95
Peter's Railway Vol 3 Forgotten Engine	£11.95



13. Tools

Open-ended and BA box spanners

Box spanners from 0BA to 12BA available individually

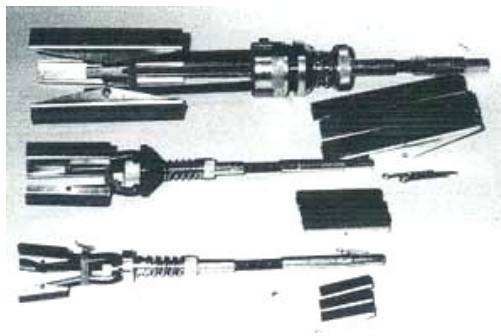
Open ended 0-11BA set	£16.50
Open ended Metric set	£16.50
2BA Box Spanner	£2.80
3BA Box Spanner	£2.80
4BA Box Spanner	£2.80
5BA Box Spanner	£2.80
6BA Box Spanner	£2.80
7BA Box Spanner	£2.80
8BA Box Spanner	£2.80
9BA Box Spanner	£2.80
10BA Box Spanner	£2.80
12BA Box Spanner	£2.80
11BA special Box Spanner	£2.80



Cylinder Honers and spare stones for finishing bores

4 sizes to suit a range of bores from 1/2" to 7" diameter. 3 in 1 set also available. See also honing oil.

E1 hone 1/2 - 1 1/4	£14.95
E1 spare stones	£3.60
E2 hone 1 3/16 - 1 3/4	£15.95
E2 spare stones	£4.70
E3 hone 1 9/16 - 3"	£20.50
E3 spare stones	£7.20
E4 hone 2" - 7"	£30.40
E4 spare stones	£10.25
4 in 1 hone set	£33.50



Die stocks

to suit 13/16" and 1" diameter dies.

to suit 13/16" dies	£4.65
to suit 1" dies	£5.90

Dies for thread cutting – see Taps and Dies

Drills

full range of quality high speed steel twist drills in metric sizes plus centre drills (Slocum drills).

centre drills (slocum)			
No.1 1/8"	£1.85	No.4 5/16"	£3.35
No.2 3/16"	£2.15	No.5 7/16"	£5.60
No.3 1/4"	£2.65		

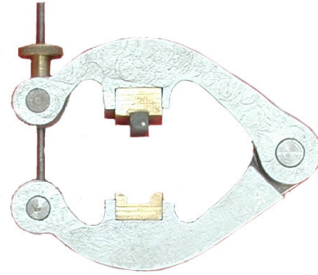
imperial fractions	1/32"	£1.00			
3/64"		£1.00		9/32"	£1.80
1/16"		£1.00		19/64"	£2.60
5/64"		£1.05		5/16"	£2.30
3/32"		£0.95		21/64"	£3.20
7/64"		£1.00		11/32"	£2.75
1/8"		£0.95		23/64"	£3.85
9/64"		£1.20		3/8"	£3.30
5/32"		£1.20		25/64"	£4.60
11/64"		£1.00		13/32"	£4.00
3/16"		£0.95		27/64"	£5.40
13/64"		£1.25		7/16"	£5.40
7/32"		£1.15		29/64"	£6.50
15/64"		£1.65		15/32"	£5.80
1/4"		£1.45		31/64"	£7.60
17/64"		£2.00		1/2"	£6.60

Metric Series					
1	£0.85	4.3	£1.25	7.6	£2.10
1.1	£1.10	4.4	£1.45	7.7	£2.80
1.2	£1.00	4.5	£1.05	7.8	£2.90
1.3	£1.15	4.6	£1.25	7.9	£3.00
1.4	£1.10	4.7	£1.35	8	£2.50
1.5	£0.95	4.8	£1.40	8.1	£3.10
1.6	£0.95	4.9	£1.40	8.2	£3.10
1.7	£1.00	5	£1.20	8.3	£3.25
1.8	£1.00	5.1	£1.45	8.4	£3.10
1.9	£1.00	5.2	£1.50	8.5	£2.85
2	£0.85	5.3	£1.55	8.6	£3.50
2.1	£1.00	5.4	£1.60	8.7	£3.55
2.2	£1.00	5.5	£1.60	8.8	£3.60
2.3	£1.00	5.6	£1.65	8.9	£3.70
2.4	£1.00	5.7	£1.70	9	£3.15
2.5	£0.85	5.8	£1.75	9.1	£3.90
2.6	£1.00	5.9	£1.80	9.2	£3.95
2.7	£1.00	6	£1.50	9.3	£4.05
2.8	£1.00	6.1	£1.90	9.4	£4.10
2.9	£0.85	6.2	£1.90	9.5	£4.30
3	£1.00	6.3	£1.95	9.6	£4.30
3.1	£1.00	6.4	£2.00	9.7	£4.50
3.2	£1.00	6.5	£1.70	9.8	£4.50
3.3	£0.85	6.6	£2.10	9.9	£4.60
3.4	£1.10	6.7	£2.20	10	£3.90
3.5	£1.15	6.8	£1.85	10.5	£4.30
3.6	£1.00	6.9	£2.25	11	£4.80
3.7	£1.00	7	£1.90	11.5	£5.25
3.8	£1.15	7.1	£2.20	12	£5.90
3.9	£1.15	7.2	£2.95	12.5	£6.50
4	£1.20	7.3	£2.30	13	£7.10
4.1	£1.00	7.4	£2.35		
4.2	£1.00	7.5	£2.00		

External Hones

2 sizes of kit available, for up to 1" diameter or up to 2" diameter. Spare stones also available. These kits contain castings and materials, including stones.

No.1	£19.40
extra stone & carrier	£4.65
No.2	£28.75
extra stone & carrier	£4.65



Lining pens

No longer available

Milling cutters

from 1/8" dia to 1/2" diameter, see also slot drills.

1/8"	£6.00
5/32"	£6.30
3/16"	£6.00
7/32"	£6.30
1/4"	£6.00
5/16"	£6.95
3/8"	£6.95
1/2"	£8.65

Rivet snaps

Available individually, sizes 1/32" to 3/16" diameter.

1/32"	£6.60
3/64"	£6.60
1/16"	£7.10
5/64"	£7.60
3/32"	£7.60
1/8"	£7.80
5/32"	£7.80
3/16"	£7.90
1/4"	£7.90



Rivet Tools

Lever action rivet crimping tools, ready to use with one set of snaps, additional snaps available

Tool	Price	Additional snaps £17.00 per set, shank sizes:
12mm reach	£98.50	0.8mm (1/32"), 1.2mm (3/64"), 1.6mm(1/16")
45mm reach	£102.00	2.0mm (5/64"), 2.4mm
75mm reach	£104.00	

DIY casting for 75mm tool with drg £19.50

Set 3 tools £270.00

Slot drills

from 1/16" to 1/2" diameter.

1/16"	£7.60
3/32"	£7.60
1/8"	£6.90
5/32"	£6.20
3/16"	£6.20
1/4"	£6.60
5/16"	£7.80
3/8"	£7.80
1/2"	£8.30

Tap wrench

Straight type 1/16 to 1/4"	£5.70
----------------------------	-------

Pipe benders

Set of pipe benders (1/8" to 1/4")	£13.50
Set of mini pipe-bending springs	£3.70

Taps

Taper, second & plug taps or sets of all three, wide range of BA, ME, BSB, etc and some metric sizes. Sets of small size taps and dies in metric sizes also available.

British made BA, ME, BSP, BSB, BSW Quality carbon steel Taps and Dies

BA (taper, second or bottom taps)

	Tap	Die
0BA	£3.00	£5.90
1BA	£3.00	£5.90
2BA	£1.75	£3.00
3BA	£3.00	£5.90
4BA	£1.70	£4.00
5BA	£1.75	£5.90
6BA	£1.75	£4.00
7BA	£2.30	£7.10
8BA	£2.30	£5.90
9BA	£3.00	£9.10
10BA	£3.00	£9.10
12BA	£8.00	£11.30

British Standard Brass 26tpi

	Tap	Die
1/4x26	£2.60	£6.20
5/16x26	£2.90	£6.20
3/8x26	£3.20	£6.20
7/16x26	£4.10	£7.30
1/2x26	£4.50	£7.30
9/16x26	£5.60	£10.30
5/8x26	£6.50	£14.40

British Standard Pipe BSP

	Tap	Die
1/8BSP	£4.10	£7.50
1/4BSP	£4.40	£7.90
3/8BSP	£5.05	£11.30

Metric

	Tap	Die
M2	£2.95	£5.90
M2.5	£2.95	£5.90
M3	£2.40	£5.90
M4	£2.40	£4.10
M5	£2.60	£4.10
M6	£2.60	£4.10
M7	£3.25	£5.50
M8	£3.25	£5.50
M10	£3.55	£6.20
M12	£4.10	£8.75

Model Engineer 'ME' 40tpi

	Tap	Die
1/8x40	£1.75	£4.00
5/32X40	£2.20	£4.40
3/16X40	£2.20	£4.40
7/32X40	£2.20	£4.40
1/4X40	£2.20	£4.40
9/32X40	£4.00	£7.70
5/16X40	£3.30	£7.70
3/8X40	£4.00	£7.70
1/2X40	£5.20	£9.10
7/16 x40	£5.20	£9.10

Model Engineer 'ME' 32tpi

	Tap	Die
5/32X32	£2.20	£4.60
3/16X32	£2.20	£4.70
1/4X32	£3.10	£6.60
5/16x32	£3.10	£6.30
3/8x32	£3.10	£6.20
7/16x32	£4.40	£9.00
1/2x32	£5.20	£9.00
9/32x32	£3.20	£6.70

Whitworth BSW

	Tap	Die
1/16x60	£3.20	£6.20
3/32x48	£3.00	£6.20
1/4x20	£2.30	£4.70

Metric Special

	Tap	Die
M4.5 x 0.5 sec	£5.20	£8.30

Metric 'mini tap and die' sets £25.75

M1 – M2.5 taper + plug

Tap + die holder

15. Engines and Transmissions

Note: at time of printing these products are not available as the supplier is no longer trading.

16. Practical Scale

The fine scale range of locomotive designs offered by Polly Model Engineering. These designs should not be confused with the well known locomotive kits. Designs are exclusive to Polly and include models in the popular scales of 3 ½", 5" and 7 ¼" gauge.

The general aim of Practical Scale has been to provide designs suitable for the 21st Century where aspirations for fine scale models are very high, but experience, skill and facilities are not always available. Designs are produced by reputable designers with the majority being published in the model engineering press. We specialise in GWR designs, but the range includes locos from other railways, including SR, HR and MR. We offer a number of GWR standard parts also suitable for designs other than those listed. Wheel castings etc for other designs are also available, please enquire.

The most well known of our designs is Penrhos Grange in 5" gauge, designed by Neville Evans and although an impressive GWR 4-6-0, this loco is relatively simple to build. In addition to the drawings and castings which might normally be supplied, there are a wide range of lost wax castings, laser cut parts and some machined parts available. The aim has been to produce a model of fine scale appearance with practical simplifications in those less visible areas. Subject to availability, machined cylinders and other parts may be available for builders lacking facility, time or skill. The tender designed for the Grange is applicable to many other GWR locos and building is greatly facilitated by the availability of CNC profiled, drilled and formed platework. This combined with the high quality castings, laser cut frames etc considerably reduces the work involved in building a high quality model. In addition to the Collett tenders in 3500 and 4000 gallon form, we have the 3500 gallon Churchward model designed by Ian Roberts, again with the CNC cut platework. The 7 ¼" Churchward tender designed in collaboration with David Aitken takes modelling to new standards

The Highland locos again by Neville Evans are proven designs with several models having been displayed in national exhibitions in recent years. These models are slightly more conventional in the expectations of skill from the builder, but nonetheless a range of lost wax castings, laser cut parts etc is available. Several examples of the Schools loco in 5" gauge have been completed and this powerful 4-4-0 is ideal for those SR enthusiasts wanting to build a genuine 3 cylinder version. The latest of Neville's designs the Fair Rosamund GWR 0-4-2T in 5" gauge is an attractive reasonably easy to build small tank engine. As at the time of writing (Jan 2011) the first model was nearing completion.

The 3 ½" gauge SR Q1 is a simple model for those wanting to build a scale model without the need for a large number of expensive castings. Although much simplified the model captures the character of the prototype and laser cut profiles are available to realise the shape of the boiler and firebox cladding.

Pete Rich's fine scale drawings include a wealth of detail enabling the more discriminating modeller to faithfully replicate in miniature a number of GWR designs. The principal designs are the Castle/Star, the Saint and the Dean Single/Armstrong 4-4-0. The standardisation of GWR designs is such that a number of other designs can be built and some additional drawings are available. Most of Pete's drawings are for 5" gauge.

For 7 ¼" gauge we offer the Collett Goods 0-6-0 tender loco, which is a very finely scaled model serialised in EIM. A vast range of parts is available, including a number of machined and part machined parts. Also in 7 ¼" we have drawings and parts for the production of a fine scale GWR 1400 class loco designed to similar standards.

16.1 Enquiries and Orders:

This catalogue replaces individual lists previously provided for each locomotive design. Enquiries regarding scale models are most effectively handled by email scale@pollymodelengineering.co.uk, in writing or perhaps speaking to us at exhibitions. We will attempt to answer telephone enquiries, expert assistance may not always be available when you phone.

Orders may be placed as convenient, by phone or fax, in writing or email as above. Whilst large stocks are held, not all items will be available from stock. Normal payment methods include cash, cheque, P.O. or any popular credit card. All prices include VAT at the standard rate of 20% and overseas customers should note that this tax element can be deducted from the price payable (divide prices by 1.2).

Prices are subject to revision in the light of increased costs from suppliers. In particular non-ferrous castings have increased significantly of late and we have to avoid excessive price increases.

17. Standard GWR Parts for 5" and 7 1/4" gauge

Polly Model Engineering has long been involved in the design and development of finescale GWR locomotives and many of the 'standard' GWR parts are applicable to other models. Illustrated in this section you will find some of these items.

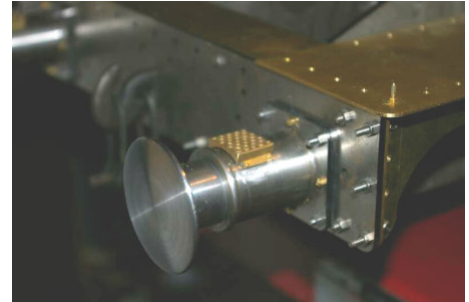
17, 1 GWR Buffers

17.1.1 Parallel Buffers 5" & 7 1/4" gauge

Applicable to later GWR and BR era locomotives, these buffers are supplied as assembled, working spring buffers. The heads are CNC profiled to the correct shape and the



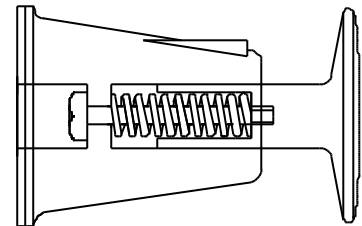
design is such that there is no projection of the buffer shank through the buffer beam when compressed. A large spigot on the backplate engages in the buffer plate to provide positive location.
5" buffers £49.50 pr, 7 1/4" gauge £59.50 pr



Lost wax cast step plates are available to complete (£9.95 pr 5" & £12.40 pr 7 1/4" gauge).

17.1.2 Taper Buffers (Collett) 5 " gauge

These buffers shown on many Collett works drawings are available as a set of lost wax castings and CNC turned parts. The step plate is cast into the stock. As with the parallel buffers there is no projection of the buffer shank through the buffer plate. Complete set of parts £65.90 per pair.



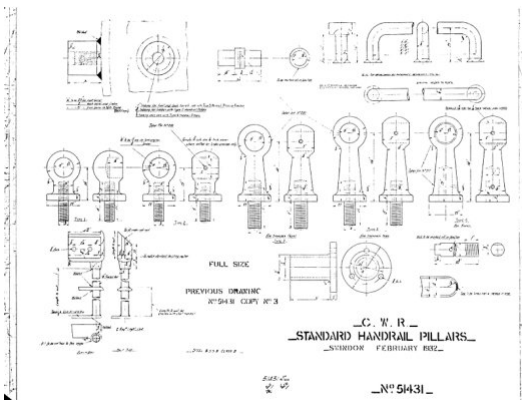
Collett Taper Buffer

17.1.3 Taper Buffers (Dean) 5" gauge

These more slender type buffers are fitted to earlier locos. Lost wax castings for buffer stocks to suit Pete Rich designs such as the Dean Single are available - £9.25 each.

17.2. GWR Handrail Stanchions 5" and 7 1/4" gauge

We produce a comprehensive range of handrail stanchions based upon the profiles shown on the Swindon drawing. In addition to the standard pillars, the special front smokebox door type is produced and available singly. The short type as used on tenders and pannier tanks, etc are available blind as well as through type.



17.3. GWR Injector Steam Valves

A pair of these distinctive valves on the turret of any GWR engine sets it apart from the model with standard proprietary valves. Valves for both gauges are fitted with Tufnol handles



5" gauge (1/4" x 40 tpi) £28.50 each
7 1/4" gauge (9/32"x 40 or 5/16" x 32 tpi) £43 each



17.4. GWR Cylinder Relief Valve

A prominent feature of outside cylinder GWR locos, these working valves are scaled from the full size.

5" gauge threaded 1/4 x 40 tpi £15.50 each
7 1/4" £22.00 each



17.5 GWR Plunger type Cylinder Draincocks

Available for 5" and 7 1/4" gauge
5" gauge set of 3 £40 (illustrated) 3/16 x 40
7 1/4" gauge set of 3 £60 threaded 3/16 x 40
7 1/4" gauge available right angled or 30 degree type.



17.6 GWR Loco Wheels

Standardisation on the GWR meant that wheels for a wide variety of classes of locomotive could be interchanged. For example, the 5' 8" wheel used on the Grange, was in fact the wheel previously used on the Moguls and similar wheels were used on the large prairie locos, Manors and on 47xx class. Thus the wheel we produce for Penrhos Grange has potential for many other models. The Fair Rosamund (late version) trailing wheel casting is in fact the same as the trailing wheel on the large prairie and with the leading wheel being similar to a bogie wheel a full set of wheels for a 41/51/61 prairie is available. The early Castle wheel is again the same as the early 4-4-0 County wheel and so it goes on. In many cases wheel designs changed over the years, particularly in respect of strengthened wheels with crankpins on a web between the spokes. For Hall and Modified Hall we can provide both styles.

We have a wide range of patterns available for many standard GWR wheels in both 5" gauge and 7 1/4" gauge and further wheels are added as the months go by. So even if we do not list the model you are considering, enquire as to how we can help.

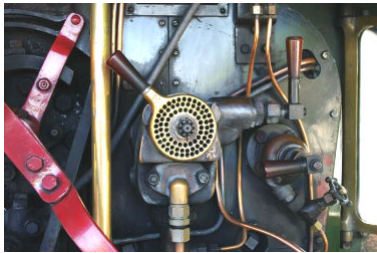


Occasionally we may not have the exact wheel you require, please contact us for our Model Engineering Requirements:

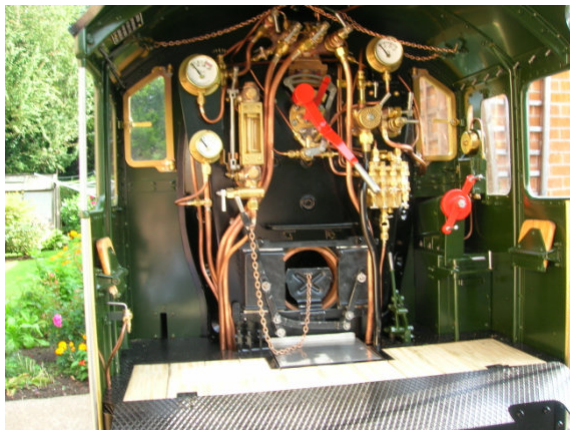
Email: sales@pollymodelengineering.co.uk Polly Model Engineering Ltd (inc Bruce Eng) Fax +44 (0)115 9727251
Web: www.pollymodelengineering.co.uk Page 69 Telephone: +44 (0)115 9736700

17.7 GWR Brake Valves

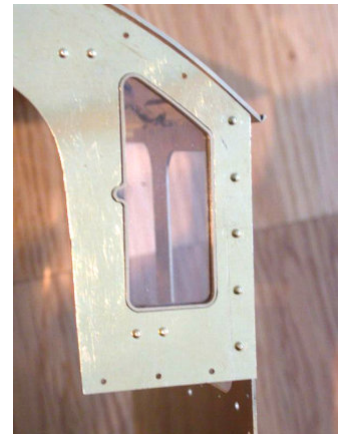
Brake valves are a distinctive feature of any loco backhead and the GWR had a few standard styles. For some time, we have supplied a 5" gauge valve with large ejector control suitable for Penrhos Grange etc. Currently we have valves for 7 1/4" gauge under development. Whilst the development of these valves has been triggered by the need for the Collett Goods, the valve will also be appropriate for other locos fitted with loco steam brakes and vacuum train brakes. We also intend to produce a GWR straight vacuum brake valve in 7 1/4" gauge.



17.8 Cab Front Windows



GWR Cab front windows evolved quickly and even though designs varied over the years from the early 1900's, all are recognisable as GWR style. Very early windows (such as can be seen on Lode Star in the NRM) are fitted with conventional door type hinges, whereas some are fitted with top and bottom pivots. However the most elaborate are fitted with fixed frame cast windows with opening cast frames and hinges built into the frame. We produce windows to suit a variety of



classes of loco in all these styles for both 5" and 7 1/4" gauge locos. There are some standard sizes which were fitted to a number of classes, but it should be remembered that in building model cabs we invariably use thicker than scale plate and this restricts the space available for window frames. So although we can produce windows to the works drawings, it may not be feasible to fit them to a particular model and some compromise is necessary. Windows are normally supplied glazed with acrylic material and operating hinges and handles.

17.9 GWR Standard Cab Side Windows

GWR cab side windows are fitted with blind bolts through the cabside sandwiching the glazing between the frame and the cabside. Our windows in 5" and 7 1/4" gauge replicate this construction with the 7 1/4 gauge windows closely corresponding to their full size counterparts. To avoid the risk of the glazing 'popping' out, the design for the 5" gauge windows is modified such that it is not visible on the assembled window, yet the glazing is more positively retained.



17.10 Cab Seats

Cab seats as illustrated in the Grange cab above, provided little comfort in full size for the driver/fireman but they do add to the appearance of a cab. Sets of lost wax castings available: 7 1/4 gauge - £32 and 5" gauge - £22 per seat including brackets.

17.11 Firehole Doors and Flap Plates

Fire hole door castings in steel or brass for 5" gauge £18 per pair

Fire hole door flap plate kit 5" gauge in stainless steel with hinge and chain parts £21

Enquire for other parts such as steam heat valves, lamp irons, etc,

17.10 CNC cut plate work for other models

As you will see throughout this catalogue, we produce a range of CNC cut and drilled brass platework to suit the range of models which we supply. In addition we have developed platework for a number of popular models not in our range. For example we can supply an extensive range of platework to suit Martin Evans Torquay Manor, although we do not supply drawings and castings for that model. Similarly, we are able to supply platework to suit GWR King in 5" and 7 1/4" gauge together with tender tank parts for a comprehensive range of GWR tender types.

1400 in 5" gauge (Winson)

Replacement Front and Rear spectacle plate £38

Opening glazed cab windows set of 4 £108

Toolbox kit with hinge parts £34 pair.

1400 in 5" gauge (Didcot)

Cab and bunker parts, scaled from our fine scale 7 1/4 design to dimensions from Neville Evans 5" gauge design. Includes removable roof section, bunker stiffener parts, front and rear spectacle plates, cab inner rear, etc. Enquire for details.

Opening glazed cab windows set of 4 £108

Toolbox kit with hinge parts £34 pair.

Sandboxes front and rear. Enquire for details

King in 5" gauge (Perrier)

Cab platework, fire iron tunnel, running plates and valances available to order

King in 5" gauge (Wilson)

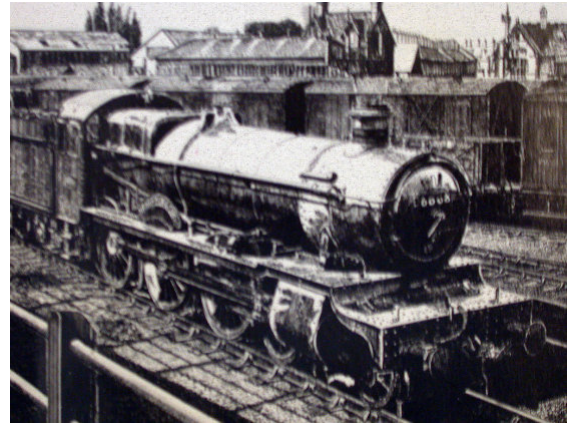
Cab platework etc enquire for details.

King in 7 1/4" gauge (Shortland)

Cab platework etc

18. GWR "Penrhos Grange" for 5" gauge

Designed by Neville Evans



Penrhos Grange is recognised as the model which significantly changed the perception of model engineering in the 21st Century.. In the past committed craftsmen have built some wonderful models but such models have been beyond the skill of an average model engineer. Present day aspirations are higher than ever, but skill levels may be more limited and this is reflected in the popularity of kit-built locos. Penrhos Grange is not a kit loco, and may be built in a conventional manner with drawings and castings available. However, if required much more can be available, as shown in the list below. Drill marked laser cut frames and other parts help to quickly establish a square foundation for the loco. The option of machined cylinders and wheels often appeals to builders with limited facilities, skills or time. The wide range of lost wax castings further reduce skill and machining effort required to realise a fine scale model. The simplifications of such things as drag beam construction are hard to discern from the finished model which bears a close resemblance to the prototype. The availability of CNC cut, drilled and formed platework appeals not just to Grange customers but to many other builders of GWR locomotives who realise how long it takes to get all the rivet holes in the right place and ensure the many parts of a tender or cab fit together correctly.

The model has been described in Model Engineer, but care must be taken as the designer's first intent was to develop a Grange using available parts. The present design evolved during publication of the series. For tender details see section 6.1 or 6.2.

All drawings are full size for 1 1/16" to one foot., Full set of loco drawings £80 inc vat.

GR1 Penrhos Grange General Arrangement	£14.50
GR2 Penrhos Grange, stretchers and spashers	£14.50
GR3 Frames, doublers, buffer beams and hornblocks – 'New' Cylinders, leaf springs and scale bogie	£14.50
Frame drawings showing alternative coil spring arrangements in place of the leaf springs or the use of Torquay Manor cylinders are available, please enquire for details.	
GR4 2 Cylinder bogie	£11.00
GR5 Wheels and outside motion	£7.50
GR6 GWR No 1 Boiler GA	£11.00
GR7 GWR No 1 Boiler Firebox	£11.00
GR8 GWR No 1 Boiler Plates and Bushes	£11.00
GR9 Cylinders, crossheads, etc	£11.00
GR10 Grange Smokebox and Chimney	£14.50
GR11 Vgear eccentrics, etc	£7.50
GR12 Cab and Rev stand	£11.00
GR13 Valve Gear Penrhos Grange	£7.50
GR14 Superheater and Saddle	£14.50
GR15 GWR Backhead Fittings	£7.50
GR16 Grange Valances Stays and Cab Steps	£14.50
GR17 Brake Gear	£11.00
GR18 Draincocks and operating mechanism	£7.50
GR19 No 1 Boiler Cleading	£7.50
GR20 Backhead layout with sight feed lubricator	£7.50
GR21 Ashpan	£7.50



Loco Parts:

Cross-heads, lost wax castings in stainless steel, per pair	£32.00
Laser cut frames and doublers (New cylinders)	£54.00
Laser cut frames as above with all holes CNC centre drilled	£89.00
Laser cut frames and doublers (Torquay Manor Cyls)	POA
Bogie stay TM cylinders laser cut	£3.10
Cut blank for Bogie Stay PG cylinders	£3.10
GWR Standard parallel loco buffers fully working	£49.50 pr
GWR style screw link coupling set	£48.00ea
Front and Rear loco Buffer plates laser cut with all holes	£24.00 pr
Reinforcing plates laser cut and drilled	£7.50 pr
Drag box stay H, steel block	£12.00
Front buffer beam stretcher block A	£6.50
Frame stay E, laser cut blank	£3.10

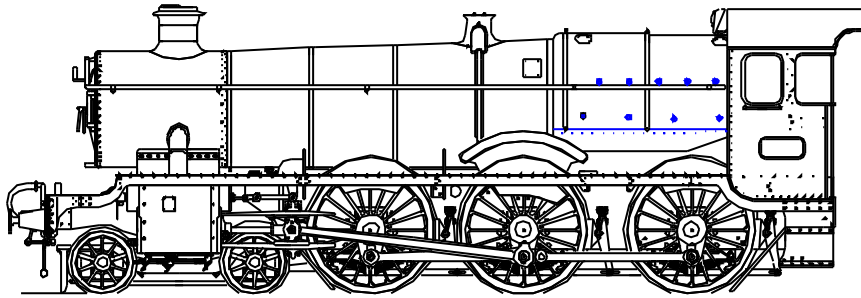


Rear main stay F, laser cut blank		£2.60
Rear lower stay G, laser cut blank		£2.30
PSG1(GM) Cylinder casting set GM, including front and rear caps		£195.00
PSG1(Iron) Cylinder casting set Iron, including front and rear caps		£145.00
Cylinder drain cocks (GW pattern plunger type) set of 3	limited availability	£46.00
PSG7 Exhaust manifold		£9.95 ea
Smokebox saddle		£19.75
PSG6 Boiler support stay		£19.00
PSGW12 Motion brackets, lost wax castings		£29.95 pr
Reverser stand, lost wax casting		in prep
PSG10 Main driving wheels		£32.00 ea
Main Axle blanks silver steel (3 required)		£9.95 ea
PSG5 Eccentric casting (GM)		£24.00 set
Main Axle double sealed needle roller bearings		£8.00 ea
Driving wheel horns, lost wax casting		£7.50 ea
Spring hanger bracket, lost wax casting		£7.10 ea
Brake hanger bracket		£8.10 ea
Brake hanger, std GWR pattern		£6.00 ea
Snifting Valve Lost wax castings		£25.52
Driver's Brake Valve – finished functional lost wax cast valve, ejector steam & vac operation		£90.00
Safety valve springs stainless steel		£2.00 each
Safety valve bonnet lost wax casting		£46.00
CNC machined con rods, per pair		enq
CNC machined coupling rods, per set		enq
Boiler flanged plates, per set		enq*
Boiler complete, copper fully silver soldered, tested with certificate		enq*
Stainless steel welded superheater elements		£122.00 pr
CNC cut/drilled cab platework set, includes glazed opening front windows, side windows, rear aperture strip,		all roof
Braces, cab side braces and basic angles, fully drilled		£305.00
CNC cut/drilled cab steps and step plates, brass		£22.00
PSG9 Bogie Wheels		£16.00 ea
Bogie Axle steel (silver steel 1/2" dia)		£5.60
Bogie top frame, laser cut with all holes		£12.95
Bogie equaliser bars, laser cut, set of 4		£25.00 set
Bogie Braces, set of laser cut parts		£8.75
Bogie guard irons, laser cut		£6.75 pr
PSG8 Bogie centre casting		£20.00
Bogie double sealed needle roller bearings		£4.60
Spring steel for loco main springs @ 68p per foot	7/16" x 23 ft	£16.00
Spring steel for bogie springs @ 62p per foot	3/8 x 13'	£8.30
Brake actuation levers laser cut		£2.30
Brake equaliser beams laser cut		£8.50
Reach rod laser cut		£3.30
Firebars laser cut stainless steel		£2.95 ea
Grate support laser cut		£7.20 pr
Handrail Stanchions, long, short and short blind type		£6.95 per
10		
Cab side windows, glazed – fix as prototype with 12 BA blind bolts from inside cab		£36 pair
Cab front Windows early type one piece frame with separate hinges		£48 pair
Cab front windows later type, two piece frame with bolt holes around aperture		£54 pair
Expansion link and die block set, wire eroded		£155 set
Smokebox Door, CNC turned		£30.50
Smokebox door ring blank front		£12.50
Smokebox door ring blank rear		£10.50
Smokebox tube rolled brass, drill marked for rivet holes and chimney		£44.00
PSGW9 Chimney Casting gunmetal		£25.00
PSGW22 Loco brake block lost wax cast steel		£6.75 ea
PSGW23 Steam heat valve (2 lost wax castings)		£25.00
Running plates CNC cut brass		£65.00
Running plate brackets CNC cut brass		£60.00
Valances, CNC cut brass		£80.00
Splashes CNC cut brass		£58.00
Fire Iron Tunnel		£18.00
Front sandboxes per pair, cnc cut, scored brass		£28.00pair
Rear sandboxes per pair cnc cut, scored brass		£28.00pair
PSGW24 Spring buckles lost wax castings		£8.00 each
PSGW25 Spring link lost wax castings		£5.50 each



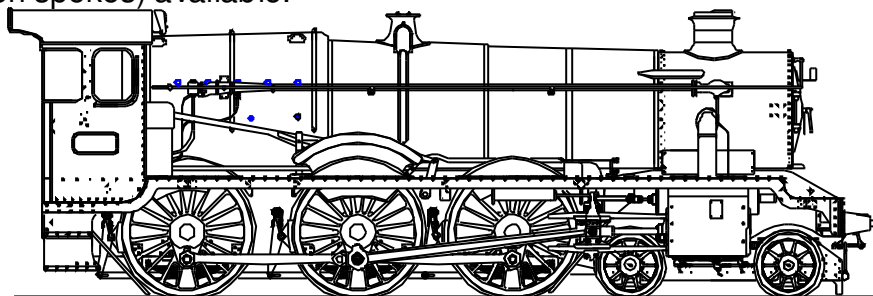
19. Other GWR 2 cylinder 4-6-0 Designs by Neville Evans

19.1 Hatherton Hall Many drawings for this model are available – request details. With many parts in common with Penrhos Grange (including the GWR No. 1 boiler), specific wheel castings (early pattern crankpin on spoke) are available. Enquire for availability of cylinders. Churchward of Collett tenders are appropriate – see separate section.



5" gauge Hatherton Hall designed by Neville Evans

19.2 Modified Hall – Wyke Hall As above, frame drawings and GA are available. Also uses No. 1 boiler as Penrhos Grange. Specific wheels (later pattern with crankpin between spokes) available.



HAWKSWORTH MODIFIED HALL

The above locos can be paired with Collett tenders as described in section 5.1 and we may in future produce a design for a Hawksworth flush sided tender which would be an alternative for the modified hall.

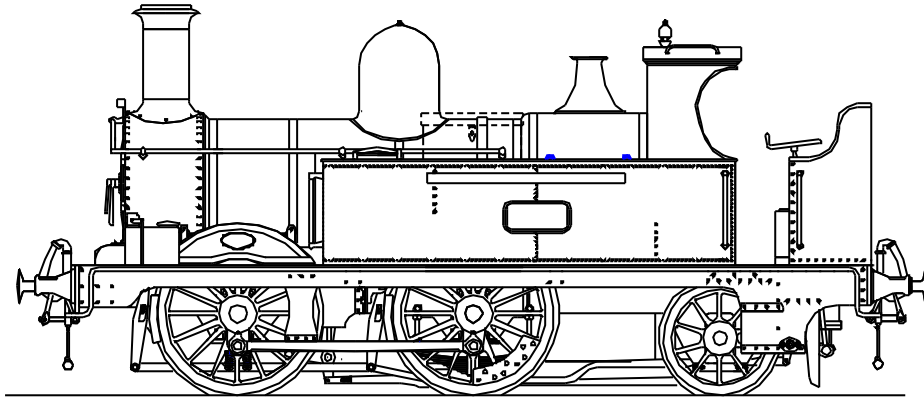


Some parts for Penrhos Grange

20. Fair Rosamund GWR 0-4-2 tank loco

A new design in 5" gauge by Neville Evans
Currently serialised in Model Engineer.

The first model of this attractive, early GWR 517 class tank loco has been built by Derek Tulley, who successfully completed Neville's School's class loco in 2009. Although Neville sadly died shortly before the model was completed, drawings for this design are now fully available, completed from the working drawings provided by Neville. All major castings are available, together with laser cut frames, buffer beams, motion plate, etc and many of our standard GWR parts are suitable to complete this model.



Prototype Model Built by Derek Tulley

Drawings:

Individual sheets available priced £12.00 each. Set 12 drawings £85 plus postage..

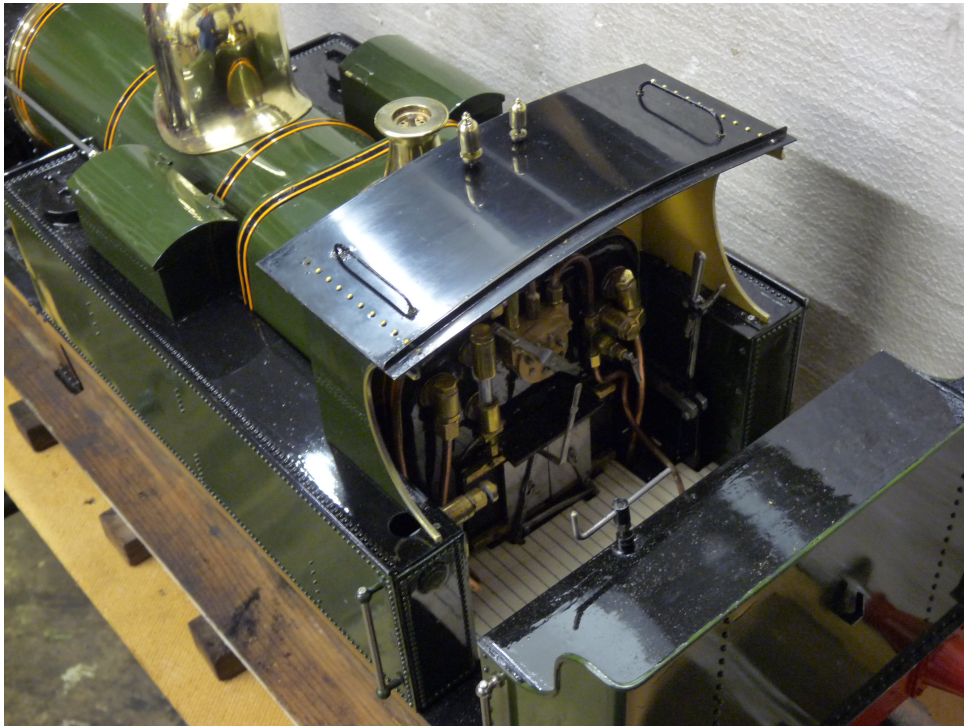
FR1	GA, horns, etc		FR7	Fair Rosamund boiler (belpaire)
FR2	Frames, stays and stretchers		FR8	517 Round topped boiler
FR3	Wheels and motion		FR9	517 simplified boiler
FR4	Valvegear		FR10	Tanks and splashers
FR5	Smokebox, dome and steam cct		FR11	Bunker and cab
FR6	Brake Gear		FR12	Superstructure

Parts Available:

Frame set consisting of laser cut frames, buffer plates front and rear, motion plate (drilled), stretchers	£94
PSFR1 Cylinders gunmetal casting	£84 pr
PSFR3 front cylinder end caps gunmetal casting	£9 pr
PSFR4 rear cylinder end caps gunmetal casting	£11.50 pr
PSFR3 Hornblocks Cast iron	£14 ea
PSFR5 Driving and coupled wheels	£32 ea
PSFR6 Trailing wheels	£21 ea
Chimney base in preparation	
Con rod blanks laser cut with straps	£26 pr
Coupling rods laser cut blanks	£24 pr
Eccentric rods and straps laser cut blanks	£38 set 4
Eccentrics laser cut blanks for ball races	£37 set 4
Eccentric strap bearings (sealed ball races)	£11.20 ea
CNC cut tank platework	Enq
CNC cut cab	
CNC cut bunker	

Further parts will be available and are being developed. Sadly Neville Evans designer of this model died with the model nearing completion. It has been agreed that the model will be completed and all drawings will be available. Articles detailing the completion will appear in Model Engineer.

Prices include VAT but not postage.



21. Midland Compound designed by Mike Smart

A full set of drawings for the loco and tender are available; these drawings by Mike Smart incorporate a wealth of design information. Mike has successfully built this model and ran it for a number of years. Although no specific castings are currently available, castings from other popular models can be adapted and appropriate guidance is given on the drawings.

Johnson Compound Express Loco (1902) No. 2631 GA

LMS Compound (1925) No. 1184 GA

Frame assembly 1184/E2

Cylinders and motion plus smokebox 1184/E3

Cylinders and bogie 1184/E4

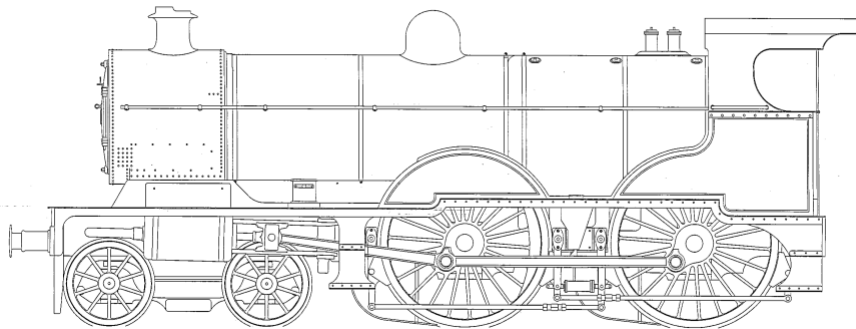
Miscellaneous details 1184/E5

Boiler LMS type G9AS+(G7S) B1184/1

Steam & Water Fitting G9 & G& Boilers B1184/2

LMS/MR Tender 3500 gal T3500M

Set of drawings £75



22. GWR Loco Designs by Pete Rich

Pete Rich is a respected loco designer, having designed and built a number of award winning locomotives. Numerous examples of his Castle and Star have been built. His Dean Single and Armstrong 4-4-0 design is currently being serialised in Model Engineer. Pete's drawings contain a wealth of historical information regarding the prototype locomotives, their liveries and modifications. These designs are not for beginners but the prototypical accuracy of the drawings should enable builders to achieve very high standards. The availability of castings is developing in collaboration with Pete.

22.1 Saint 4-6-0

This is the foundation 2 cylinder design and the set of available drawings cover most details of the locomotive. GA's and frame plans for other 2 cylinder locomotives having common parts with the Saint are available. A list is in preparation. Bogie wheel castings and driving wheel castings are available. Enquire for availability of lost wax cast cylinders.

Saint drawings available as follows:

- i) 29/2 Saint David GA
- ii) Chimneys and smokebox details for many classes
- iii) GWR No 1 boiler for Saint etc
- iv) Churchward bogie
- v) 29/5 Mainframes
- vi) 29/6 Axleboxes springs etc
- vii) 29/7 Driving wheels and rods
- viii) 29/8 Cylinders
- ix) 29/9 Churchward's launch link valve gear, motion plates, etc
- x) 29/17 Footplating, footplate support bkts and wheel splashes
- xi) 29/18 Cab sides, front, roofs and footplate floors

Price £14 per sheet or £120 per set including VAT.

22.2 Castle/Star 4-6-0



exhibition in 2009. The tender behind this model is the Churchward 3500 gallon tender by Ian Roberts described elsewhere in this catalogue.

Castle drawings see next page

Laser cut frames plain £47.00 pr

Laser cut frames centre drill marked £73.00 pr to order

PSCA4 Castle inside cylinders £230.00

PSCA6 cylinder front cover £4.30

PSCA7 Cylinder rear cover left £6.20

PSCA8 Cylinder rear cover right £6.20

PSCA2/3 Castle outside cylinders £268.00 per pair

PSCA1 Castle driving wheels £34 each

PR1 Bogie Wheels £18.50 each

PSCA5 Bogie Centre casting £39.50

PSCA9 Rear smokebox saddle/exhaust £28.00

PSCA11 Front sandbox CNC cut/scored brass pair £28.00

PSCA12 Rear sandbox as above early pattern pair £28.00

PSCA13 Rear sandbox as above later pattern pair £28.00



Arguably one of the most attractive GWR 4-6-0's the 4 cylinder castle is a very attractive model. A full set of drawings is available for this model together with major castings. Inside and outside cylinder castings (fully cored) and all wheels are currently available. The picture to the left shows a fine example of this model in action on the Nottingham SMEE track in 2009. The picture right shows a very attractive model of the earlier Star on display at the Bristol

PSCA10 smokebox door CNC turned steel £35.00
 Front & Rear Buffer plates plus reinforcing plates £26 set
 Main Horns (lost Wax) £8.75 each
 Trailing Horns (lost wax) .£8.75 each
 Cab platework set, CNC cut/drilled, inc. Opening glazed windows, side windows, etc £325
 Running plates, valences in preparation.
 For tender parts see section 7.1 (Collett 4000g)
 Castle Drawings:

Drawing no.	Description
1	Castle GA Cardiff Castle
2	Frames and buffer beams
3	Frame fixtures
4	Inside motion frame
5	wheels axles and axleboxes
6	connecting rods and guide bars
7	Guide bar frame and bogie centre pin
8	Valve Gear
9	Outside cylinders and rear smokebox saddle
10	inside cylinders and crossheads
11	outside cylinder cleading and castle type draincocks
12	inside cylinder cleading plates
13	GA brake system parts
14	Brakes the vacuum side
15	cylinder draincock mechanism and vacuum connection
16	Footplates
17	Nameplates, splashers and buffers
18	Reversing Gear etc
19	Sanding Gear
20	Hydrostatic lubricator and injector arrangement
21	Bogie GA and parts
22	Bogie centre parts, wheels, etc
23	Bogie brakes incomplete drawing
24	Castle class boiler
25	Castle former plates etc
26	Smokebox GA
27	Chimnies, blastpipe, smokebox fittings
28	Superheater, safety valve, regulator and firehole doors
29	Cabsides front and side windows
30	Boiler mountings
31	Lubricator valve, mason valve, etc incomplete drawing
32	Boiler cleading, ejector layout

Individual sheets £9.50 each, full set £130.00 inc Vat plus carriage

22.3 Dean Single and Armstrong 4-4-0 Tender Locos

These two loco designs are very closely related and Pete Rich has presented the designs together. The model is currently being serialised in Model Engineer. Most drawings are available and as at January 2011, patterns are being collated and refurbished such that castings can be available during 2011.

Drawings:

- i. 1. GWR "Dean Single" for 5" gauge, General Arrangement and Livery Guide
- ii. 1a. GWR Armstrong Class GA
- iii. 2. Dean Single inside main frame plates
- iv. 2a. Armstrong class inside frame plate
- v. 3. Designs for 5" gauge locomotive based on the GWR Dean Single and Armstrong classes – outside frame plates, front and rear buffer beams, frame stays, spacers, footsteps and motion plates
- vi. 3a. Designs for a 5" gauge locomotive based on the GWR Armstrong class, outside plate frames, buffer beams, frame stretchers/stays and motion plates.
- vii. 4. GWR "Dean Single and "Armstrong" classes – outside cranks, coupling rods, axleboxes, driving wheels, trailing wheels, crankshaft, eccentrics, leaf and coil springs, spring hangers, spring pads, horn blocks and horn keeps – REV 12/02/09
- viii. 5. GWR "Dean Single/Armstrong" classes for 5" gauge – GA of Valve Gear, Cylinders, Steam Chests, Cylinder Covers, Slide Valves, valve rod guides, valve rods, weighbar shaft, weighbar shaft bearings, connecting rods and bearings, eccentric sheaves and eccentric straps.
- ix. 8. GWR Dean Single and Armstrong classes – footplating and wheel splashes etc
- x. 9. GWR Dean Single and Armstrong classes Bogie
- xi. 10. Dean Single and Armstrong classes for 5" gauge – Smokebox etc
- xii. 11. Dean Single and Armstrong Classes – Boiler
- xiii. 12. Dean Single and Armstrong classes – boiler flanging plates
- xiv. xxx GWR "Dean Single and "Armstrong" classes for 5" gauge – Brake Cylinders, brake levers and pull rods and lower mudguards.
- xv. xxx Dean Single/Armstrong class brake gear – steam brake cylinders, brackets, brake levers, tie rods and lever pins, etc.
- xvi. xxx cab side plates, spectacle plate etc Armstrong Class
- xvii. xx bogie sideframes and springs, updated detail
- xviii. xx reach rod, indicator etc detail
- xix. xx rear footplate stay detail
- xx. xx screw reverser detail
- xxi. Cab Dean Single

Numbering of these drawings is not finalised (as at May 2011)

General Arrangement drawings £15 each, all other drawings iii – xvii, £12 each, detail drawings (unnumbered, marked xx above) £8 each. Drawings are of very large format, most being almost 5 feet long. Set of drawings £120

Castings:

Cylinder block (1 reqd) £31.00 each	Laser cut outer frames Armstrong	£28.00 pr
PRD7 Cylinder end cover rear	Laser cut inner frames Armstrong (joggled)	£32.00 pr
PRD8 Cylinder end cover front	Laser cut outer frames Dean	£28.00 pr
PRD9 Steam Chest	Laser cut inner frames Dean (joggled)	£32.00 pr
Steam chest cover		
Bogie wheels £17 each		
Trailing wheels £18.50 each		
Tender wheels £17.00 each		
Driving wheels Dean Single £34.00 each		
Driving wheels Armstrong £32.00 each		
Horns (lost wax) £8.75 each		
Buffer stocks (lost wax) £9.25 each		

It is anticipated that a large number of lost wax castings will be available using patterns provided by the designer.

22.4 Other Pete Rich Designs

Pete has produced many other drawings, including frame drawings, GA's etc for popular locomotives such as the GWR large prairie. Please enquire for availability of other drawings.

23. GWR Tenders

23.1 GWR Collet 3500 and 4000 gallon Tenders

For 5" gauge
See 7.5 for 7 ¼ version

Model designed by Neville
Evans for Penrhos Grange, but
also suited to many other GWR
designs.

Model illustrated 4000gal



Note: The primary difference between these two tenders is the height of the tank, the chassis is identical. Very few of the 3500 gal examples were built, but the 4000 gal type were widely used.

Tender drawings for Collet designed tenders, early and late frame styles included. Full set tender drawings £45.00 (please state which tender)

Individual sheets:

GRT-3500 3500 gallon tender GA and some details	£14.50
GRT-3500tank 3500 gallon tank platework, baffles, Etc	£14.50
GRT-4000 4000 gallon tender GA and some details	£14.50
GRT-4000tank 4000 gallon tank platework, baffles, etc	£14.50
GRT-U1 Common Collet underframe drawing sheet 1	£14.50
GRT-U2 Common Collet underframe drawing sheet 2	£14.50

Tender Parts

PSGW10 Tender Axlebox lost wax castings set of 6 (or pro rata)	£95.00
PSGW10a Tender Axlebox covers and oilbox lids set 6 of each	£15.00
Tender horns, lost wax steelcastings	£7.20 ea
GWR parallel body working sprung buffers complete	£49.50 pr
Tender brake hangers	£8.20 ea
Tender frames, laser cut inner outer and cross braces set, early style	£75.00
Tender frames, laser cut inner outer and cross braces set, later style	£75.00
Tender frames deluxe set inc buffer plates all holes cut, later style	£134.00
Tender buffer plates front and rear	£14.50 pr
Tender spring hanger brackets early style per set of 12	£43.50
Tender spring hanger brackets later style per set of 12	£43.50
Tender water gauge lost wax casting	£10.50
Tender vent (2 castings per vent, base/pillar and top)	£21.50
PSGT1 Tender Wheels	£18.95 ea
Tender axle material (Silver steel ½" dia, 3 lengths required)	£5.60 ea
Bogie/tender axlebox double sealed needle roller bearings	£4.60 ea
Water scoop dome, finish machined	£72.00
Spring steel 3/8" x 1mm for leaf springs (6metres required)	£3.00 per m
PSGT2 Brake block cast ring	£21.00

Platework for both versions of the tender is available to order (enquire for 3000 gal version). This includes, the soleplate, side sheets, top sheets, folded angles for joining, tender decking and coal space, tender front, various joint strips and angles, bulkheads, toolboxes, doors, brackets and platforms. Note rivets and screws for the tender assembly are now included in the price, together with the valance angle and steps.

October 2013

For All your Model Engineering Requirements:

Email: sales@pollymodelengineering.co.uk Polly Model Engineering Ltd (inc Bruce Eng) Fax +44 (0)115 9727251

Web: www.pollymodelengineering.co.uk

Page 81

Telephone: +44 (0)115 9736700

Complete set of platework fabrication parts including fasteners (no additional angle required) £530

23.2 Churchward 3500 Gallon 5" Gauge



A popular GWR tender, for most classes of loco from the early 1900's onwards. A number of these tenders have survived to preservation.

Drawings:

3 Sheets A0, covering GA and tank assembly and parts to make for chassis. Drawings assume profiled parts supplied by Polly.

£45

Churchward 3500 gallon tender also available, many chassis castings are common

Churchward tender tank brass parts incl rivets (additional angle required for this model)

£495

Churchward tender frames laser cut

£135

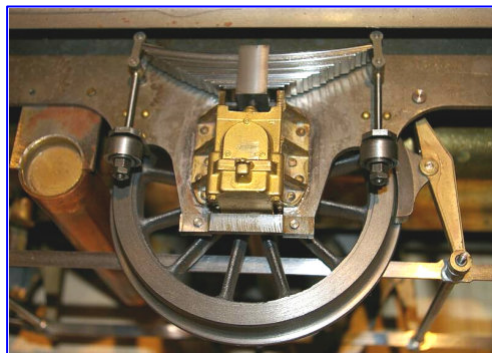
Churchward tender water gauge lost wax casting

£12.50

Churchward tender vent cap (lost wax)

£9.95

Many tender parts are common between Churchward and Collett tenders, e.g. Wheels, axleboxes, horns, etc See the Collett tender list for these parts. Many specialist parts, fittings and materials for completion of the model are available from stock.



23.3 7 ¼” Gauge Churchward 3500 gal Tender



Tender model designed for Collett Goods but suitable for many other GWR loco classes

Drg CH3500/1	Tender Chassis, drag beam and buffer beam	available
Drg CH3500/2	Wheels, axles, axleboxes	available
Drg CH3500/3	Steps, buffers, draglinks, lamp irons	available
Drg CH3500/4	Springs and drawgear, etc	available
Drg CH3500/5	Brake gear and Vac cylinder	available
Drg CH3500/6	Tender tank arrangement	available
Drg CH3500/7	Coalspace and partitions	available
Drg CH3500/8	Soleplate and sump	available
Drg CH3500/9	Toolboxes, sandboxes & water gauge	available
Drg CH3500/10	Dome, vents & shovelling plate	available
Drg CH3500/11	Brake and scoop columns	available
Drg CH3500/12	Water valves, fire iron rack, etc	available
Drg CH3500/13	Scoop mechanism and pipework	available
Drg CH3500/14	Footrests, seat and frame drilling	available
Drg CH3500/15	Laser cut chassis parts	available
Drg Ch3500/16	General Arrangement	in prep

Tender Parts:

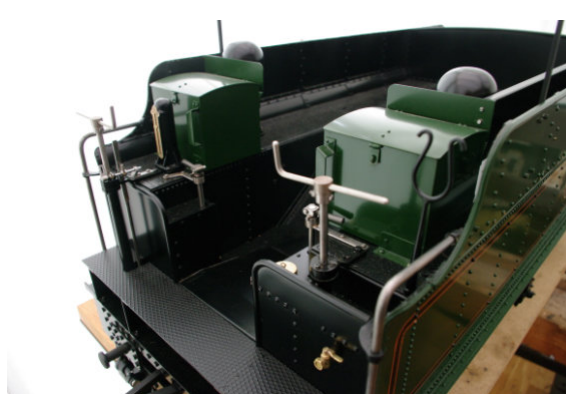
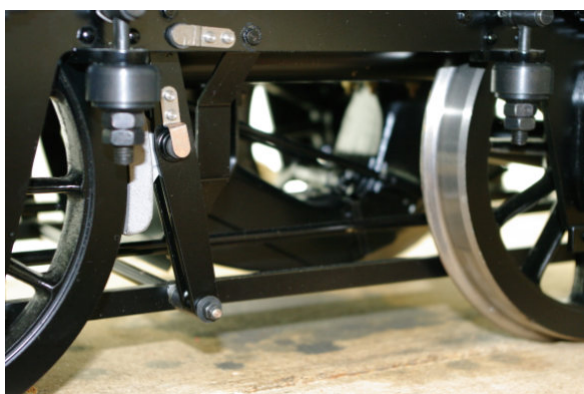
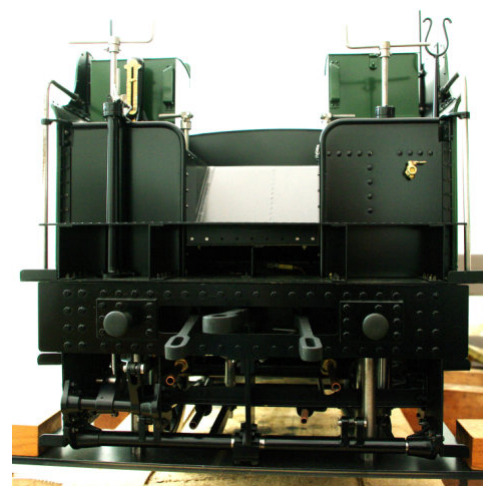
PST1	Centre brak shaft support gunmetal casting	£7.50 each
PST2	Brakeshaft end support gunmetal casting	£8.40 each
PST3	brake cyl end cover aluminium casting	£8.50 each
PSCT1	Tender wheel cast iron	£29.00 each
PSCT1a	Tender wheels CNC turned	£53.00 each
PSCT2	Tender axle CNC turned	£64.00 set 3
PSCW2	Axlebox front	£8.20 each
PSCW3	Axlebox bottom, ctr oilbox	£7.00 each
PSCW4	Axlebox bottom, side oilbox	£8.20 each
PSCW5	Axlebox top, oilpot type	£8.20 each
PSCW6	Axlebox top, oilbox type	£8.20 each
PSCT5	Fire iron support, lost wax casting	£9.80 each
PSCT6	Brake block lost wax casting	£6.75 each
PSCT7	Taper buffer step plate (lost wax brass)	£4.40 each
PSCT8	Brake cylinder support (stainless lost wax)	£7.40 each
PSCT9	Tender horn GM casting	£6.50 each
PSCT10	Tender frame plates laser cut	£42 pr
PSCT11	Drag beam, buffer beam & stretcher components laser cut	£180 set
PSCT12	Drag beam and buffer beam top & bottom plates CNC brass	£35 set
PSCT13	Tender brake hanger laser cut profiles	£32 set

PSCT14	Buttons for PSCT13 as available	£25 set
PSCW17	Water gauge lost wax casting	£19.50
PSCT4	Tender scoop bearing	£8.20 each
	Axlebox fronts	£9.50 set
	Axlebox oil pot lids, backplates and restraints	£10.50 set
	Water scoop dome, spun brass	£67.50
PSCT18	Scoop fixed part – alloy casting	£37.00
PSCT19	Scoop moving part - alloy casting	£34.00
	Vents, spun cap, cross, pillar and flange	£20 each.
	Footrest strip drilled	£12
PSCT20	Spring buckle steel casting	

Availability of machined parts is not guaranteed and there may be significant lead time on orders, please enquire. Parts marked 'enq' are batch manufactured and may not be available at a given time.

CNC cut drilled and formed platework

As described in Engineering in Miniature, designed in collaboration with David Aitken, this tender tank is no doubt the finest scale model yet specified. The model design derives from works drawings and careful study of surviving tenders, particularly those in the National Railway Museum. With our computer aided design systems and CNC machines, we have gone to great lengths to take much of the tedious work out of the project. All platework for the tank is CNC cut and precision drilled to ensure a good fit. Forming of the corners and top flare are among the most challenging operations for the model engineer and our pre-formed sides eliminate this problem. In total there are some 10 000 rivet holes pre-drilled in the platework and appropriate rivets can be supplied. A small amount of internal angle is required to complete the tank, but external angles are supplied as CNC cut and scored components which fold to the precise dimensions.



Illustrations on this page show the tender built to run behind our 2251 Class Collett Goods

Complete set of CNC cut and drilled brass plate work - £1350

This includes parts for tool boxes, sand boxes, filler, shovelling plate, sides and coal space CNC formed etc. Dome, vents, water gauge listed above can be used to complete the tank. Half round beading, rivets and other materials also available.

23.4 GWR Dean/Churchward Tenders

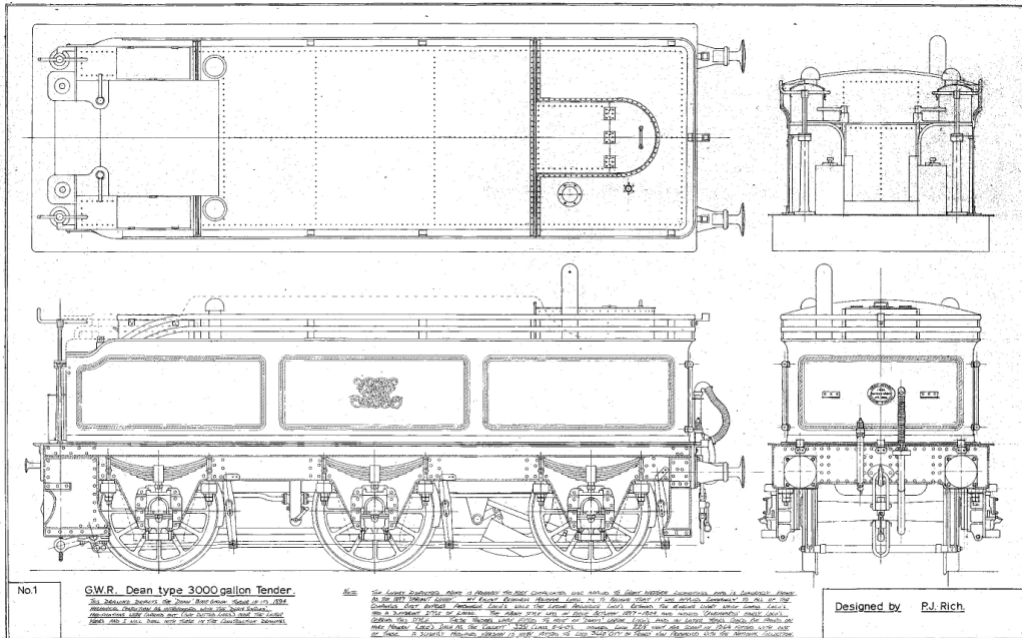
New for Autumn 2013:

2 versions of the Dean Tender

Early Type to suit Pete Rich's Dean Single or Armstrong 4-4-0

Later Type to suit City of Truro

These new 5" gauge tenders have been developed after extensive research, based on works drawings, photographic evidence and Pete Rich's drawings (which we are able to supply).



The following drawings by Pete Rich are available:

GWR Dean Type 3000 Gallon Tender GA

Dean/Churchward Tender Frames, etc

Dean/Churchward std parts, wheels, axleboxes, springs etc

Dean/Churchward Toolboxes, tool racks, air vents, scoop, water scoop dome

Dean Churchward Brake Gear, vac cylinder and reservoir, pipes and brackets

Tender tank for Dean/Churchward 3500 and 4000 gallon tenders

Drawing £15 each or £60 for the set.

Dean 3000 gal Tank platework (early version with coal bars) similar to drawing above £495

Dean Tender Tank platework (later version with flat coal rail panels, to be fitted with separate dome and filler) - as per City of Truro £495

Laser cut frames based on Pete Rich's drawings, set frames, stretchers, beams £127

Many castings from the Churchward/Collett tenders are appropriate for this tender too (including wheels, horns, axleboxes, etc) and additional castings will be introduced.

23.5 GWR Collett 4000 gal Tenders for 7 ¼ Gauge

A tender fit for a King!

Following on from the success of our other tenders and particularly the CNC cut/drilled/formed tender tanks, we have developed a tender tank to suit 7 ¼ gauge models.



Drilling of thousands of holes in neat rows, precisely cutting platework with fits and neatly forming flares and corners is one of the more tedious aspects of fine scale modelling. Our tender tanks do not take all of the skill out of making fine scale models, but they do take a lot of the drudgery out of the process. This enables skilled workers to more quickly produce high quality models and gives those with less experience a very good start. The 4000 gallon tank kit is developed from our experience of the 5" gauge version, but is more complete including parts for the shovelling plate, fire iron rack, etc. In total there are approaching 100 pieces of cut/drilled brass. The sides are cnc formed to ensure accuracy of the corner bends and flares. The other parts of the kit, including coal doors, toolboxes, etc are scored for simple bending without specialist equipment, but for those builders requiring it, we can form these parts for a small extra cost.

Price of tender tank brass parts including formed tender tank sides £1200 inc VAT.
Additional cost for bending other components £150
Other parts such as spun waterscoop dome available as per Churchward tender.

Tender chassis parts have a lot in common with the Churchward tenders, so wheels, horns, scoop castings, etc can be utilised. If there is demand, we will introduce laser cut tender frames etc to complete the range of parts required to build these tenders.

King builders in particular may note that although we do not supply drawings for a King, we are able undertake manufacture of platework parts to suit your requirements particularly for GWR models. A number cab platework sets have already been delivered to customers, including custom designed opening front windows, fire iron tunnel parts and glazed cab side windows.



23.6 GWR Collett 3000 gal Tenders

for 7 ¼ Gauge



A batch of flush bottomed 3000 gallon tenders were built to suit the 2251 Collett Goods locos although as there were about three times as many locos as new tenders, the locos frequently ran with older tenders (e.g. the 3500 Churchward design). Following on from our successful production of the 4000 gallon tank for the King, we now introduce this 3000 gallon version, based very much on works drawings and observations of surviving tenders. However, with these Collett tenders we have deliberately simplified the out of sight tank bottom such that the soleplate and tank bottom are flush. This is not visible from outside the tender and materially reduces the complexity of assembly for the model engineer.

Since wheels, axleboxes, horns etc are common with other tenders, it is easy for the model engineer to build a suitable chassis using our castings. We plan to produce specific laser cut frames in the near future such that everything for this tender will be available from Polly.

Tender tank parts, CNC brass with corners and flares formed - £1200 including VAT

24. GWR 2251 Class 0-6-0 Collett Goods 7 1/4" gauge

Designed by David Aitken

This fine scale 7 1/4" gauge loco has been designed with reference to the Swindon works drawings and close examination of the surviving prototype 3205 on the South Devon Railway.

Serialisation of the construction of the loco has commenced in Engineering in Miniature (September 2006) and work on the prototype loco and tender model is well advanced. In order to facilitate fast build of this loco, many laser cut, lost wax cast and



CNC machined parts are available. Whilst drawings, castings and most parts are normally available, availability of machined parts cannot be guaranteed.

Drawings:

Drg 2251/1	General Arrangement and Frames	Available
Drg 2251/2	Buffer beams, buffers and brackets	Available
Drg 2251/3	Cylinders	Available
Drg 2251/4	Running Plates	Available
Drg 2251/5	Drag Beam and Stretchers	Available
Drg 2251/6	Axles, rods, horns & axleboxes	Available
Drg 2251/7	Wheels and balance weights	Available
Drg 2251/8	Valvegear	Available
Drg 2251/9	Springs, hanger bkts, motion plate, crosshead	Available
Drg 2251/10	reverser and stand	Available
Drg 2251/11	Boiler	Available
Drg 2251/11 a	Boiler plates	Available
Drg 2251/12	Sandboxes front and rear	Available
Drg 2251/13	Brakes, blocks hangers and linkage	Available
Drg 2251/14	Steam Brake cylinder and mounting	Available
Drg 2251/15	Draincocks and linkage	Available
Drg 2251/16	Cab side sheets and spectacle plate	Available
Drg 2251/17	Smokebox, saddle and door	Available
Drg 2251/18	Smokebox fittings	Available
Drg 2251/19	Standard GWR Water Gauge	Available
Drg 2251/20	Firehole door, tray, handle	Available
Drg 2251/21	Pipework and associated brackets at rear of loco	Available
Drg 2251/22	Cab floor supports and misc holes in running plates	Available
Drg 2251/23	Oil Boxes and chassis details	Available
Drg 2251/24	Crosshead vac pump	Available
Drg 2251/25	Blower valve and regulator handle	Available
Drg 2251/26	Cab roof and roof fittings	Available
Drg 2251/27	Sandlevers and cab fittings	Available
Drg 2251/28	Cab windows and spec plate, etc	Available
Drg 2251/29	Splashers and Reach Rod	Available

October 2013

For All your Model Engineering Requirements:

Email: sales@pollymodelengineering.co.uk **Polly Model Engineering Ltd (inc Bruce Eng)** Fax +44 (0)115 9727251

Web: www.pollymodelengineering.co.uk

Page 88

Telephone: +44 (0)115 9736700

Drg 2251/30	Safety valve	Available
Drg 2251/31	Regulator and superheater	Available
Drg 2251/32	Chimney and petticoat	Available
Drg 2251/33	Backhead Cladding	
Drg 2251/34	Ashpan and Grate	
Drg 2251/35	Boiler Cladding	
Drg 2251/36	Vacuum and Steam Heat pipe connections	
Drg 2251/37	Blastpipe and steam pipe connections	

Further drawings are in preparation and will be available. The prototype loco is being built from the drawings in order to minimise errors in the published drawings. Parts will not generally be released until they have been proven on our prototype model. Drawing No.2251/1 is A0 sized and most other drawings to date are A1 sized. Drawings 19/20 are A2 size. Price of drawings is £9.50 per sheet including VAT, postage extra.

Loco Parts:

PSC01	Laser cut frames plain	£70 per pair
PSC01A	Laser cut frames CNC centre drilled	£95 per pair
PSC02	Front buffer plate with all fixing holes	£16.95 ea
PSC03	Rear drag plate with all fixing holes	£25.00 ea
PSC04	Laser cut front buffer beam bracket fabrication components	£7.95 pair
PSC05	Rear firebox stretcher with all holes cut	£14.50 ea
PSC06	Front upper firebox stretcher with all holes cut	£11.00 ea
PSC07	Front lower firebox stretcher with all holes cut	£7.00 ea
PSC08	Driving and coupled wheels set of 6	£330 per set
PSC08A	CNC turned driving wheels	£535 per set
PSC09	Rear axle seal CNC machined	£4.60 each
PSC10	Hornblock castings (2 hornblocks per casting)	£22.00 each
PSC10A	Hornblock castings part CNC machined	£185 per set
PSC11	CNC turned Horn fixing bolts	£30 per 100
PSC12	Finished sprung buffers	£59.50 per pair
PSC13/14 etc	Cab parts, sides, roof, spec plate etc	£295.00
PSC15	Cab front windows (glazed, opening two part frame)	£62.00 per pair
PSC16	Cab side windows (acrylic glazed)	£44.00 per pair
PSC17	Running Plates and support brackets	£86 set
PSC18	Spring hanger bracket left hand	£7.20 each
PSC19	Spring hanger bracket right hand	£7.20 each
PSC20	Smokebox saddle iron casting	£28.00
PSC21	Cylinder casting iron casting	£72 each
PSC21A	Cylinder casting machined	£385 pair
PSC22	Steam chest casting	£22 each
PSC22A	Steam chest machined	£98 each
PSC23	Cylinder end cap front	£11.25 each
PSC23A	Cylinder end cap front CNC machined	£15.50 each
PSC24	Cylinder end cap rear	£14.00 each
PSC24A	Cylinder end cap rear CNC machined	£27.00 each
PSC25	Guard Irons laser cut flat	£3.80 pair
PSC26	Drag Plate rubbing plates with all holes	£11.75 pair
PSC27	Motion Plate casting Gunmetal	£46.00
PSC27B	Motion Plate casting Iron alternative	£41.00
PSC28A/B	Crosshead casting, handed	£12.90 each
PSC29	Eccentric strap gunmetal casting (pair, 2 pair required)	£19.00 pair
PSC30	Valve buckle gunmetal casting	£11.30 each
PSC31	Slide Valve gunmetal casting	£9.95 each
PSC32	Valve guide two part (split) gunmetal casting	£16.50 each
PSCW1	Buffer step plate (lost wax casting)	£6.20 each
PSC33	CNC Machined Coupling Rods (set)	£470.00 set
PSC34	CNC Machined inside connecting rods and straps	£230.00 pr
PSC35	CNC Machined eccentric rods	£283.00 set
PSC36	Spring pressure pad lost wax casting	£4.50 each
PSC37	Spring bolts CNC turned	£18.50 per set

October 2013

For All your Model Engineering Requirements:

Email: sales@pollymodelengineering.co.uk **Polly Model Engineering Ltd (inc Bruce Eng)** Fax +44 (0)115 9727251

Web: www.pollymodelengineering.co.uk

Page 89

Telephone: +44 (0)115 9736700

PSC38	Dummy shock absorber	£9.90 per set
PSC39	Smokebox rear ring casting GM	£44.00 each
PSC40	Smokebox front ring casting GM	£55.00 each
PSC41	Crankpins CNC turned silver steel	£15.50 set
PSC42	Centre buffer beam supports, CNC cut brass	£14.50 pair
PSC43	Front steps and step plates, CNC cut brass	£15.50 set
PSC44	Rear steps and step plates	£23.00 set
PSC45	Front valance CNC machined brass	£11.20 pair
PSC46	Brake rigging pins, CNC turned (18 parts)	£33.00 set
PSCW8	Spring links, lost wax cast steel	£39.00 set
PSCW9	Spring buckles lost wax cast steel	£44.00 set
	Piston Rings 1.875" dia x 0.125"	£8.75 each
PSC47	CNC machined alloy steel crankshaft with eccentrics	£695.00
PSC69	Regulator casting and cover 2 gunmetal castings	£45.00
PSC50	Pump casting	£22.50 each
PSC50a	Fully machined finished vac pump	not currently available
PSCW10	Carriage warming valve, set of lost wax castings	£37.00 ea
PSC51	Safety valve bonnet	enq
PSC52	Valve rod cap front	£12.00 pr
PSC53	Valve rod gland (rear)	£12.00 pr
PSC54	Sand box front (pair)	£26.00
PSC55	Sand box rear (pair)	£26.00
PSC56	Smokebox Door CNC turned steel	£38.50
PSC57	Valve rods fully machined	£210.00 pr
PSC58	Lifting links, fully machined	£155.00 set 4
PSC59	Reverser stand lost wax casting	£28.00
PSCW11	Drivers seat base and handed brackets, lost wax castings	£26.00
PSC60	CNC machined brass splasher parts (set 6, 4 parts per splasher)	£74.00 set
PSC61	CNC machined PB (hard) spring leaves, set 12 x 10 leaves (relieved)	£105.00
PSC62	Valve guide oil box and lid, CNC machined	£25.00
PSC63	Smokebox Seal plate, CNC machined brass (2 pieces)	£24.00
PSC64	Brake shaft trunnion casting (2 required)	£8.00 ea
PSC65	Steam Brake cylinder and piston casting GM	£31.00
PSCW12	Brake hanger	£11.50 ea
PSCW13	brake block (loco)	£6.50 ea
PSCW14/16	sand crank & sand lever, lost wax castings	£6.50 pr
PSCW15	Brake hanger bracket	£9.75
	Anchor links (brake rigging)	£14.00 set
	Bell Cranks (brake rigging)	£20.00 set
	Brake beam laser cut blanks	£11.00 set
PSC66	Firebox cladding front (casting)	£75
PSC73	Brake hanger pin retaining clips	£6.00 per set
PSC72	Brake block pin retaining clips	£6.00 per set
PSC67	Steam manifold lost wax casting	£39.00 ea
PSC68	Firebox stay ends	£3.00 ea
	Petticoat pipe	£23 ea
PSC74	Chimney base casting	£24.00
	Wheel balance weights laser cut inner and outer	£32.50 set 12
	Chimney CNC turned	
PSC70	Safety Valve base	£25.00
PSC71	Clacks and elbows casting for set	£21.00
	Pistons and piston rods	£30.00
	Expansion links & die blocks (wire eroded set)	£195.00
PSCW17	Steam turret base casting bronze	
PSCW18r/l	Whistle Valve right and left	

Availability of machined parts is not guaranteed and there may be significant lead time on orders, please enquire. Parts marked 'enq' are batch manufactured and may not be available at a given time. Please see web page www.pollymodelengineering.co.uk for updates or telephone/write to Polly using the above contact details. N.B. Price of castings particularly gunmetal castings is subject to revision in the light of foundry prices.

25. GWR 1400 in 7 ¼ Gauge



The GWR Collett 1400 is one of the most popular prototype locomotives. The design information and parts available from Polly Model Engineering are intended to allow the more discerning builder to produce a closer to scale 7 ¼ gauge model. A three bar crosshead and correct pattern valveguide assembly are available together with wheels, cylinders, etc. Items such as the screw reverser stand are precision lost wax steel castings. In due course, it is intended to produce CNC machined platework to suit this model.

Drawings and parts for a fine scale model, building on Dart. In addition to the detail drawings offered, builders are recommended to purchase a set of Dart drawings by Martin Evans.

Set of detail drawings (Apr 2011 61 drawings) Including notes from the designer	£40.00 set
PSD2 Motion plate casting for 3 bar crosshead GM	£62.00 each
Correct pattern valve guide (lost wax) 1 reqd	£55.00 each
PSD1 3 bar crosshead casting reverser casting	£34.00 pair
Eccentric straps (lost wax casting) 4 reqd	£27.50 each
PSD3 Trailing wheels with correct spoke 2 reqd	£16.50 each
PSD4 Cylinder casting (iron) 2 reqd	£37.00 each
PSD5 Cylinder end cap front 2 reqd	£65.00 each
PSD6 Cylinder end cap rear 2 reqd	£8.20 each
PSD7 Smokebox ring front (GM)	£9.30 each
PSD8 Smokebox ring rear (GM)	£72.00 each
Brake hanger lost wax steel casting 4 reqd	£44.00 each
Boiler	£11.30 each
Tank platework, CNC cut and drilled brass	Enq
Front spectacle plate	£260.00
Rear spectacle plate with doors	£30
Front Sandboxes	£42
Rear Sandboxes	£26.00 pr
Tool boxes	£32.00 pr
Opening glazed Cab windows set of 4	£38.00 pr
Note: a number of parts designed for the Collett Goods are also suitable for this model.	£130.00

26. Highland Locos - Designed by Neville Evans Drawings, Castings and Parts for 5" gauge



Completed Loch model - bronze medal winner at MEX 2008

Highland Railway Loch Drawings

All drawings plotted full size, numbers in brackets indicate paper size
A0 size drawings £14.50 each, A1 size drawings £11.00, A2 size drawings £7.50 each
Set of loco drawings for Loch £75 Set of Loco Drawings for Jones Goods £75
Set of tender drawings (both locos) £50

Loch Sheet 1	Loch General Arrangement	(A0)
Loch Sheet 2	Loch frame, doublers and horn blocks	(A1)
Loch sheet 3	Loch buffer beams and stays	(A2)
Loch sheet 4	Loch axle boxes and suspension	(A2)
Loch sheet 5	Loch bogie (both locomotives)	(A2)
Loch sheet 6	Loch cylinders	(A2)
Loch sheet 7	Loch valve gear	(A2)
Loch sheet 8	Loch connecting rod, motion bracket and reverse stand	(A2)
Loch sheet 9	Loch driving and coupled wheels side rod and reach rod	(A2)
Loch sheet 10	Loch boiler	(A1)
Loch sheet 11	Loch dome and regulator	(A2)
Loch sheet 12	Loch steam circuit and super-heater	(A1)
Loch sheet 13	Loch smoke box	(A1)
Loch sheet 14	Loch smoke box doors and fittings	(A2)
Loch sheet 15	Loch brake components	(A2)
Loch sheet 16	Loch backhead and brake G.A.	(A2)
Loch sheet 17	Loch Cab	(A1)
Loch sheet 18	Loch Platforms and buffers	(A1)
Loch sheet 19	Loch Ash-pan and cleading, firehole door	(A2)
Loch sheet 20	Loch Draincock linkage	(A2)

Highland Railway Jones Big Goods Drawings

Goods Sheet 1	Big Goods General Arrangement/Frames/Hornblocks/Doublers	(A0)
Goods Sheet 2	Buffer beams and stays	(A2)
Goods Sheet 3	Axleboxes and suspension	(A2)
Goods Sheet 4	Cylinders	(A2)
Goods Sheet 5	Bogie	(A2)
Goods Sheet 6	Motion	(A2)
Goods Sheet 7	Connecting and side-rods	(A2)

October 2013

For All your Model Engineering Requirements:

Email: sales@pollymodelengineering.co.uk Polly Model Engineering Ltd (inc Bruce Eng) Fax +44 (0)115 9727251

Web: www.pollymodelengineering.co.uk

Page 92

Telephone: +44 (0)115 9736700

Goods Sheet 8	Driving and coupled wheels; Brake Gear G.A., motion brackets	(A2)
Goods Sheet 9	Brake Components	(A2)
Goods Sheet 10	Boiler	(A1)
Goods Sheet 11	Dome/Regulator	(A2)
Goods Sheet 12	Steam Circuit and Smokebox	(A0)
Goods Sheet 13	Grate and Ashpan	(A2)
Goods Sheet 14	Smokebox Doors and fittings	(A2)
Goods Sheet 15	Platforms and Buffers	(A0)
Goods Sheet 16	Big Goods Cab	(A1)
Goods Sheet 17	Ash-pan cleading	

Photographs:

4 x A3 sheets @ £4.00 per sheet – detail photographs of the Jones Goods taken in Glasgow Museum of Transport are available. These are very important to achieve authenticity in detail and colour. Many of these photos are also useful for Loch builders.

Highland Railway Loch Parts

PSHL01	Main Frame and doublers	1 pair per loco	£49.50 pr
PSHL01C	Ditto centre drilled	1 pair per loco	£84.00 pr
PSHL02	Front Buffer beam	1 per loco	£6.20 ea
PSHL03	Rear Buffer Beam	1 per loco	£6.20 ea
PSH01	Main driving wheels Loch	4 per loco	£134.00 set
PSH02	Main frame stay Loch	1 per loco	£15.50 ea
PSH04	Drag beam 2 parts Loch	2 per loco	£24.50 pr
PSH05	Horn block driving left hand Loch	1 per loco	£11.95 ea
PSH06	Horn block driving right hand Loch	1 per loco	£11.95 ea
PSH07	Horn blocks Loch	2 per loco	£19.00 pr
PSH08	Smokebox back Loch	1 per loco	£22.50 ea
PSH09	Smokebox front Loch	1 per loco	£22.50 ea
PSHM2	Valence ends brass	2 sets per loco	£4.10 set
PSHM3	Platform plates 1.2mm Brass Loch	1 pair per loco	£15.50 pr
PSHM4	Cab sheets 0.5mm brass, Loch	1 pair per loco	£6.20 pr
PSHM5	Wing Plate for smokebox front 1mm brass	1 per loco	£7.75 ea
PSHW1	Lost Wax Outside Motion Bracket LH	1 per loco	£16.50 ea
PSHW2	Lost Wax Outside Motion Bracket RH	1 per loco	£16.50 ea
	Loco brake blocks	2 pr per loco	£11.30 set

Highland Railway Jones Goods Parts

PSHL04	Main Frames and doublers	1 pair per loco	£54.00 pr
PSHL04C	Main Frames and doublers centre drilled	1 pair per loco	£89.00 pr
PSHL05	Front Buffer Beam	1 per loco	£6.20 ea
PSHL06	Rear Buffer Beam	1 per loco	£6.20 ea
PSH10	Main driving wheels Jones Goods	6 per loco	£149 set
PSH11	Front main stay Jones Goods	1 per loco	£15.50 ea
PSH12	Central main stay Jones Goods	1 per loco	£11.20 ea
PSH04	Drag beam 2 parts	2 per loco	£25.00 pr
PSH07	Horn blocks Jones Goods	6 per loco	£56.00 set
PSHW9	Lost Wax Outside Motion Bracket LH & RH	1 per loco	£21.00 ea

Highland Railway, parts for both Locos

PSH03	Rear Main Stay	1 per loco	£11.20 ea
PSH13	Cylinder main casting	2 per loco)per set
PSH14	Cylinder end cap front	2 per loco) GM £240
PSH15	Cylinder end cap rear	2 per loco)Iron £160
PSH16	Cylinder end cap rear boss	2 per loco)
PSH17	Bogie Wheels	4 per loco	£66.00 set
PSH18	Bogie Centre Stay	1 per loco	£19.75 ea
PSH19	Bogie Centre Stay brace	1 per loco	£14.50 ea
PSH20	Bogie Centre slider	1 per loco	£18.50 ea
PSH21	Bogie Dummy Springs set	4 per loco	£32.00 set
PSH22	Bogie spring mounts stick of 4	1 per loco	£8.20 stick
PSH23	Chimney	1 per loco	£29.00 ea
PSH24	Dome lost wax alternative now available	1 per loco	enquire
PSH25	Safety valve base	1 per loco	£9.95 ea
PSH26	Smokebox door	1 per loco	£11.95 ea
PSH29	Eccentric Straps	4 per loco	£31.00 set
PSHW3	Lost Wax crossheads in stainless steel	2 per loco	£41.00 pr
PSHW4	Combination clack and injector valve cstg	2 per loco	enquire
PSB1	Axlebox bearings (sealed needle roller)	4/6 per loco	£8.00 ea
PSA1	Main axle silver steel blanks	2/3 per loco	£10.80 ea

27. Highland Railway Tender Parts 5" gauge

Jones Tender Drawings

Tender Sheet 1	Jones Tender General Arrangement	(A1)
Tender Sheet 2	Jones Tender Frames	(A1)
Tender Sheet 3	Plan & Side View Tender Brake Gear	(A1)
Tender Sheet 4	Axle box, wheels and buffers	(A1)
Tender Sheet 5	Handpump and fittings	(A1)
Tender Sheet 6	Tender Tank	(A0)

Tender Parts

PSHL07	Tender frames laser cut	1 pr per tender	£26.00 pr
PSHL07C	ditto centre drilled	1 pr per tender	£38.50 pr
PSH27	Tender Wheels	6 per tender	£15.75 ea £93.00 set
PSH28	Horncheeks (now lost wax castings)	6 pair per tender	£4.60 ea £55.00 set
PSHW5	Axleboxes (lost wax castings)	6 per tender	£12.50 ea £75.00 set
PSHM1	Axlebox fronts (machined plates)	6 per tender	£1.30 ea £7.40 set
PSHW6	Axlebox oil boxes (lost wax castings 2pt)	6 per tender	£8.30 ea £49.95 set
PSHW7	Spring buckles (lost wax castings)	6 per tender	£4.80 ea £29.00 set
PSHW8	Spring hangers (lost wax castings)	12 per tender	£1.85 ea £21.50 set
PSHW9	Stirrups (lost wax castings)	12 per tender	£6.60 ea £77.00 set
PSHM6	Tender Platework cut but not drilled as supplied to Neville Evans		£95.00
PSHM7	Tender rear toolbox brass supplied flat		£25.70
PSHW10	Tender brake handwheel		£3.25 ea
	Brake blocks	6 per loco	£16.95 set
	Double sealed needle roller bearings for tender		£4.50 ea

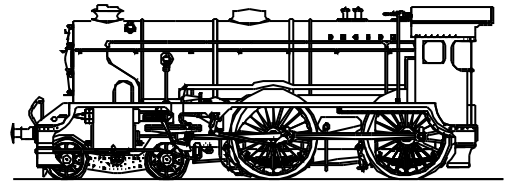
Casting prices are subject to revision on receipt of new stock.

We stock a wide range of fittings and materials which will be necessary in the completion of this model.

Enquire for boiler and flanged plate prices. All prices include VAT. Carriage extra.

28. 5" gauge "STOWE" SR Schools Class 4-4-0

Designed by Neville Evans



Derek's Schools loco
on display at Bristol
2009

This design by Neville Evans was recently serialised in Model Engineer. Several completed models are now running with a number of others being built.

All drawings are full size for 1 1/16" to one foot.
Full set of loco drawings available £75.

SCH01 General Arrangement	£14.50
SCH02 Frame drawing	£14.50
SCH03 Bogie and wheels	£14.50
SCH04 Inside and outside cylinders	£14.50
SCH05 Inside and outside valvegear	£14.50
SCH06 Platforms etc	£14.50
SCH07 Boiler	£14.50
SCH08 Smokebox, Regulator, etc	£14.50
SCH09 Cab	£14.50
SCH10 Misc parts	£14.50
SCH11 drawing number not used.	
SCH12 Tender	£14.50
Laser cut frames	£53.50
Laser cut frames as above with all holes CNC centre drilled	£89.00
Frame stiffeners pair	£18.00
Vertical main plate laser cut (plain)	£5.20
Horizontal main plate laser cut (plain)	£7.50
Lower stretchers (set 3)	£15.00
Buffer plates front and rear with holes cut	£25.00
Spring hangers lost wax castings set of 8	£78.00
Driving wheel horn cheeks set of 8	£60.40
Bogie frame laser cut (strengthened type)	£19.20
PSSCH01/02 Driving wheels set of 4	£148.00
PSSCH03 Bogie wheels set of 4	£75.00
Axle steel main axles (3/4" silver steel 13" length)	£9.95
Axle steel bogie wheels (1/2" silver steel 13" length)	£5.45
Main axle bearings (double sealed needle rollers)	£7.80 ea

October 2013

For All your Model Engineering Requirements:

Email: sales@pollymodelengineering.co.uk Polly Model Engineering Ltd (inc Bruce Eng) Fax +44 (0)115 9727251

Web: www.pollymodelengineering.co.uk

Page 95

Telephone: +44 (0)115 9736700

Bogie axle bearings (double sealed needle rollers)	£4.50 ea
PSSCH04 Outside main cylinders per pair	£148.00pr
PSSCH05 Cylinder end caps front	£6.20each
PSSCH06 Cylinder end caps rear	£6.95each
PSSCH08 Inside cylinder casting	£97.00 ea
Valveguide casting, lost wax steel	£16.50 ea
Bogie centre fabrication parts laser cut	£38.00
Bogie horncheeks lost wax castings set of 8	£60.00
Motion Stay fabrication parts	£38.00
Motion Brackets	£42.00
pair	
Expansion link stay	£23.00
Weighshaft trunnion and caps, 2 sets per loco at £16 each	£32.95
Lifting arm	£12.30 ea
Smokebox door 'dog'	£2.90 ea
Smokebox door, CNC turned steel	£35
Expansion links wire eroded inside and outside set of 3	enquire
PSSCH07 Front valve cover casting	£4.40 ea
Cylinder gland plate	£5.40 ea
Cylinder backplate laser cut steel	£12 pair
Tender frames pilot drilled	£37.00 pr
PSSW 10 Valve handle	£3.90 ea
PSSW 11 Tender horn cheek left hand, 6 per tdr, brass castings	£8.50
PSSW 12 Tender horn cheek right hand 6 per tdr, brass castings	£8.50
PSSW 13 Tender horn keep, brass casting, 6 per tdr	£8.50
PSSW 14 Tender spring hanger bracket, 12 per tender	£5.90
PSSW 15 Tender spring hanger bottom plate, 6 per tender	£5.90
PSSW 16 Tender axlebox front, 6 per tdr	£6.90
PSSW 17 Tender axlebox body, 6 per tender	£10.20
PSSW 18 Tender axlebox bottom plate, 6 per tender	£4.20
PSSW 19 Tender spring pressure plate, 12 per tender	£2.90
Tender wheels CNC turned profiled disc wheels	£18.50
each	

Note where appropriate, iron castings are annealed by a specialist heat treatment company before despatch.

Various parts and fittings from our general stock, including fasteners, steam fittings, etc, are also available.

All prices include VAT, but plus carriage. Further components under development as the design progresses. Pre-ordered parts can be collected from exhibitions. Enquire for availability of parts not listed.

29. Bulleid Q1 in 3 1/2" Gauge



Recently serialized in Model Engineer, this simplified design by Nick Feast, of the well-known S R loco has already proved itself over the last couple of years on the Bournemouth track. Castings and laser cut parts are available to start building this loco now. The characteristic Bulleid wheels and the shape of the boiler cladding are easily produced.

The model is easy to build with basic workshop facilities and due to its size is easily handled.

Publication of this model commenced in June 2009 in Model Engineer. A full set of drawings is available. The designer has completed one model and is building a second from his own plans. In due course, as the drawings are amended, revised sheets will be issued. The following basic parts are available and builders may well fabricate other parts themselves. Further parts are expected to be added to the list over coming months. Please enquire for boilers and boiler fittings and other stock components.



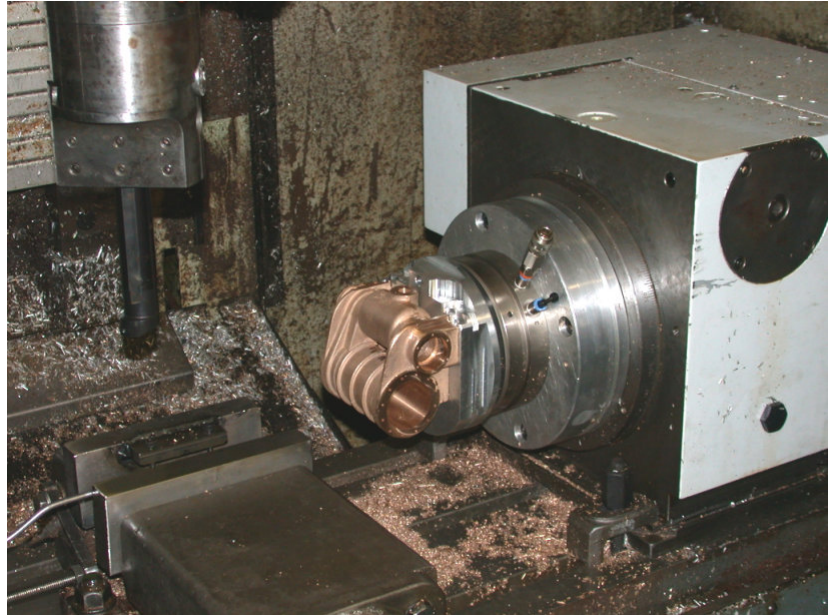
Set drawings	20 A3 sheets	£65 set
PSQ01	Bulleid Driving Wheel, iron casting	£22 ea
PSQ02	Cylinder, iron casting	£40 ea
PSQ03	Cylinder end cap rear, iron casting	£7 ea
PSQ04	Driving wheel hornblock, iron casting	£7 ea
PSQ05	Main Frames, laser cut mild steel	£42 pair
PSQ06	Tender Frames, laser cut mild steel	£24 pair
PSQ07	Smokebox profiles, 6mm mild steel	£21.50 pair
PSQ08	Cladding profiles, 6mm mild steel	£9.50 pair
PSQ09	Cab front, 3mm mild steel	£5.20 ea
PSQ10	Motion Plate 10mm laser cut steel	£7.20
PSQ11	Frame Stay 10mm laser cut steel	£5.00
PSQ12	Firebox cladding 4mm laser cut steel	£4.20
PSQ13/14	Con rods and straps, laser cut blanks	£24 pair
PSQ15/16	Coupling rod blanks laser cut set of 4	£30 set
PSQ17	Tender wheel iron casting	£15.00 ea
PSQ18	Tender axle box GM triple casting (2 required)	£19.00 ea
PSQ19	Tender horns cast iron	£6.50 ea
PSQ20	Tender dummy springs cast iron	£10.50 ea
PSQ21	Cab sides laser cut	£12 pair
PSQ22	Rear cab support frame laser cut	£7.50 ea

30. Engineering Services

Polly Model Engineering Limited has a comprehensively equipped manufacturing workshop, primarily engaged in the manufacture of the renowned Polly range of 5" gauge locomotive kits. We also manufacture a significant proportion of the items listed in this catalogue.

Equipment:

CNC Turning up to 10" diameter using Colchester Tornado Lathe
3 and 4 axis CNC Milling using Bridgeport Interact 412 Machining Centre
3 and 4 axis CNC Milling using Bridgeport Interact 720 Machining Centre
CNC Sliding Head turning up to 20mm using Star VNC-20, with live tooling and subspindle
Delapena Cylinder honing machine, J&S Surface grinder, vertical and horizontal milling, etc.
and other specialised machines.



Practical Scale:

For builders of our Practical Scale models, such as Penrhos Grange, we offer the facility to supply some major castings (e.g. wheels and cylinders) machined to drawing.

Trade Supplies:

We are also able to manufacture wheels, axles and other turned or milled components. We currently supply a number of specialist manufacturers in the hobby and have undertaken work for numerous clubs. So whether you are a supplier to the model engineering hobby or a club building a rake of riding cars, ask us to give you a quote for your machining requirements. With our understanding of the requirements of model engineers, you can be assured of a job well done at a fair price.

31. Non-Catalogue Requirements

In addition to the items listed in this catalogue, we may well be able to supply any of your other model engineering requirements. Whatever your requirement, give us a call and see how we can help.

32. How to Order

Orders may be placed in writing, by email, telephone or fax.

All UK orders are subject to VAT (included in prices of all VAT eligible goods) and overseas customers may deduct the UK VAT.

All orders are plus postage (also subject to VAT), please add sufficient, any overpayment will be credited. Heavy items such as casting sets and oil may be more conveniently collected from exhibitions.

There is no minimum order value and no surcharge for payment by credit card.



Order Form

You may find it helpful to use our order form. The form is also available for download from our website: www.pollymodelengineering.co.uk Completed forms may be posted, faxed, or emailed to us, telephone orders are also welcomed. Customers ordering for payment by credit/debit card should remember that in order to process your payment we need the 3 digit security code from the reverse of your card, in addition to the usual card information. In the interests of security, card details should not be sent by email.

Personal Callers

Personal callers are welcome at the workshop in Long Eaton (close to junction 25 on M1 motorway). Here you will have the opportunity to peruse our stock and see where the Polly locos are made. If possible please telephone before calling, to ensure that we are available (exhibition commitments, etc). Staff are normally available between 9:00 am and 4.45pm weekdays (lunch 12:45 till 2:00pm).

Contact Us:

Polly Model Engineering Limited

Atlas Mills, Birchwood Avenue

Long Eaton

Nottingham

NG10 3ND

Telephone: +44 (0)115 9736700 Fax: +44 (0)115 9727251

Email: sales@pollymodelengineering.co.uk

web: www.pollymodelengineering.co.uk

33. Order Form: Bruce Engineering Model Supplies



Polly Model Engineering Ltd

Incorporating Bruce Engineering
Established 1971

Model Engineering Supplies

Quantity Req'd	Description	List Price	Total
IMPORTANT	If paying by Credit/Debit card, we need your security code as well as other card details. This is 3 digit code on rear of card by signature strip.		

Note: All catalogue prices are inclusive of VAT

Goods Sub Total

Delivery Address:

Postage and Packing

Name:	
Address:	
Tel:	
Email:	

We accept payment by Mastercard, Visa, Switch, UK bank cheques and UK postal orders.

Note: Orders outside the EU do not pay VAT and postage will be as charged by the Post Office, see How to Order page of website.

Please post, fax or email this form to us. Orders by telephone also welcomed.