



as much torque and have a maximum rpm of 5,000 or more. The power of a DM2 comes from its capacity, 2,628 cc for the two cylinders and the ingenious cylinder head design. Fuel consumption is around 2 to 3 hours of normal canal cruising from a gallon of fuel, or in metric terms 1 litre per hour. With only minor modifications to the fuel filter systems, it is possible to run the DM2 on low grade fuel, such as reclaimed lubricating oil or vegetable oils.

The visual appearance and slow running capabilities make the DM2 an ideal choice for traditional styled canal boats, and for restorations of historic boats. The size and weight (13 cwt or 730 kg) demand a separate engine room of at least 6 feet or 2 metres length.

#### Are you interested in a new DM2?

If you are, or if you have an old D or DM series or National 2DM engine you wish to have rebuilt, then contact the RN Diesel Engine Company, Royal Oak Works, 4 Oak House, Royal Oak Way North, Royal Oak Industrial Estate, DAVENTRY, Northamptonshire, NN11 8PQ. Phone/Fax 01327 700023, e-mail [info@russellnewbery.co.uk](mailto:info@russellnewbery.co.uk), web [www.russellnewbery.co.uk](http://www.russellnewbery.co.uk)

#### Interested in joining the RN Register?

You do not need to own an RN or National engine! You just have to be interested in RN engines in particular or vintage diesel engines in general. Membership is only £12 per year. The Register publishes a Newsletter four times a year which covers all aspects of RN engines, ancient and modern, and related boating items. The other major activity of the Register is running an annual gathering of RN and National powered boats. This takes place each summer at different locations on the canals and waterways of England. (It might one year grace Wales!) To join contact Rob Davies, 55 Noddington Lane, Whittington, LICHFIELD, Staffordshire, WS14 9PA. Phone 01543 432079, e-mail [robbed2@ntlworld.com](mailto:robbed2@ntlworld.com), web [www.russellnewbery.co.uk/Register](http://www.russellnewbery.co.uk/Register)



Shackerstone 2009



Ellesmere Port 2010

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Compiled by Andrew Laycock



## A brief history of Russell Newbery Diesel Engines



#### What is a Russell Newbery?

Russell Newbery is a brand of engine, nowadays seen mainly in canal narrowboats. The name is from the surnames of the two founders of the original company, Fedrick Russell and William Newbery. Both of these gentlemen were apprentices to Henry Royce at his Trafford Park works in Manchester. On completion of their apprenticeship in 1909 they setup their own company. The initial base was at Altrincham, then in Cheshire. William Newbery left the company before 1920, which by then was a busy concern producing generating sets and petrol and paraffin engines. The main market for these was to country houses, before the advent of the national grid, this was the only way for rural houses to use electricity.

By the outbreak of the first world war several other manufacturers, including Bolinder, Kromhout, Petter and Gardner, were producing two-stroke or semi-diesel engines. These were powerful and reliable and saw applications in industrial, transport and marine environments. Russell Newbery never manufactured their own semi diesel, but by the late 1920s they were experimenting and developing a high speed (for the time) single cylinder engine to power the smaller generators then in production. This new diesel engine was code named "D1" - probably for "Diesel One". It was the very first diesel engine produced by the Altrincham Works. It was a heavily constructed single cylinder totally enclosed vertical four-stroke power unit built to meet the Lloyds specification. It delivered 9 BHP when running at its designed maximum of 1,000 rpm. Compare this to the Bolinder semi-diesel that revved at 450 rpm. From its introduction in 1929, the D1 was an immediate success. It was easily incorporated into a power pack with generator, radiator and heavy duty steel frame. It soon became a popular seller.

Probably most of the later stages of the development of the D1 were in the hands of Jack Bradbury, who was then the company chief engineer and designer. Jack was a capable engineer and by 1930 had produced multi-cylinder developments of the original single-cylinder unit. Two, three and four cylinder models known respectively as "D2", "D3" and "D4" were manufactured.

#### When did the canal boat connection start?

During the early 1930s, the Grand Union Canal Company formulated an ambitious canal improvement scheme. This included an expansion of their carrying subsidiary, the Grand Union Canal Carrying Company Limited (GUCCCL). In 1934 GUCCCL ordered six pairs of narrowboats (7 foot beam), split between three builders, Harland and Wolff Ltd. of Woolwich, Edward G. Woods of Brentford and Walkers of Rickmansworth. A pair is one motor boat equipped with an engine and an unpowered "butty" boat towed by the motor boat. All six of the motor boats were fitted with a marine version of the Russell Newbery D2 engine, the DM2, at a cost of £216 per unit. A pair of boats were able to load around 55 tons of cargo, 25 in the motor and 30 in the butty. The DM2 engine producing 18 BHP was able to propel

the loaded pair at a top speed of six knots, a total combined weight of around 85 tons. These twelve boats were the first of what became known as the Star class. They were 71 feet 6 inches in length, drew 3 foot 9 inches when loaded and the holds were 4 feet 2 inches deep.

In 1935 the GUCCL placed more orders for a total of 82 pairs of boats. They were obviously enamoured with the water-cooled powerful and reliable DM2 engines. However, RN were unable to meet this demand, either because of orders for their own stock electrical equipment and industrial demands, or the fact that the Altrincham Works were inadequate to meet the order. The National Gas Engine Company at Ashton under Lyme, just a few miles from Altrincham, had considerable capacity. After negotiations to circumvent the problem, RN licensed National to build their own two-cylinder D series under license, this became known as the National 2DM. As this was the first oil engine National had built, the company was renamed the National Gas and Oil Engine Company. Eventually the GUCCL owned 141 motor boats powered by National 2DMs and 38 with Russell Newbery DM2s.

#### **What else did the RN company build?**

Prior to the second world war, RN produced electricity generating sets and air compressors for many customers, often to match the individual customer's requirements. Many of these were powered by D series engines. Two, three and four cylinder marine versions, (DM2, DM3 and DM4 respectively) were sold as auxiliary and propulsion units for use on river and sea going boats both in the UK and overseas. In the late 1930s, RN licensed the patented cylinder head design to other engine manufactures including Gleniffers of Glasgow and Bamfords of Uttoxeter (who are now JCB). In 1938 Palmer Brothers of Connecticut purchased the American manufacturing rights. The E series engine was first produced in 1942. There are drawings of this engine modified to fit war time landing craft. These engines were intended to be produced by Francis Shaw of Manchester, however it is not clear if any were actually produced.

#### **What happened to the RN company?**

After the second world war the company sought investment to develop new ranges of engines. This led to the sale of RN to the Sterling Group, famous for the machine gun of that name. Production moved to Dagenham in Essex, the Altrincham works closed in 1949. The following decade was hectic, with many orders for marine units to replace those lost during the war. As part of the Stirling Group, RN also obtained many Government contracts. These included providing generating units for secret nuclear bunkers. An updated version of the E series was produced, predictably called the F series. Also in 1945 saw the appearance of an experimental engine with a fabricated crankcase and cylinder. This was the H4, but it was not a commercial success.

In 1969 Clive Raffel bought the Sterling Group, but a year later he died in an air accident. An amusing aside is that in his will Mr. Raffel left his estranged wife, Penny Brahms - a gorgeous model, four nude photographs of herself and one shilling. She disputed this, but lost. A Mr. Narracott bought RN from the remains of the Sterling Group. Ten years later, following his death, his son in law, Keith Roberts took over the company. Mr Roberts attracted some finance from investment and pension funds and was able to move production to a new works at Upminster. Under his leadership, the company spotted the growth market for traditional but



*Bill Lambert (far left) and the Upminster team with a completed single cylinder D1.*

new engines in modern canal leisure boats. Many RN powered boats you see today have Upminster built engines. A good part of this success was that the long serving chief engineer, Bill Lambert, took charge of every engine assembly.

However despite this modest success, the company required more investment. This was primarily to replace the by then aging machinery on which the engines were made. Unfortunately none was forthcoming, so in 1989 the company went into administration. The remaining assets, mainly spare parts, were purchased by Vero of Southampton. They resumed production of the DM series engines on modern

computerised machine tools. However, they followed the drawings exactly, and with out the knowledge of Bill Lambert, the build quality deteriorated.

In 1994 two engine enthusiasts, Allister Denyer and Graham Pearson, formed the Russell Newbery Register (RNR). The initial aim was to help owners of RN engines with practical advice on maintenance and to assist dealings with Vero to obtain correct spare parts. Altrincham, Dagenham and Upminster built engines have small, but significant, differences. By 1998, cooperation between the Register and Vero was strained, so a group of Register members formed the RN Diesel Engine Company Ltd to provide a repair and rebuilding service and to manufacture spare parts. Strictly this was a purchase of part of the old company from Coopers and Lybrand, the administrators of 1989. This was possible because of a complex legal situation resulting from the sale to Vero. In 1999 Vero sold all their remaining RN parts to boat builder R W Davis at Saul in Gloucestershire. They in turn sold these on to the "new" RN company the following year. In addition the new company was able to purchase the pattern for the D series piston, a vital component for production of new units.

In 2004 a group of RNR members financed the purchase of a modern industrial unit in Daventry, Northamptonshire, where the RN company has been able to establish a modern manufacturing facility. With the sourcing of new castings for some of the major components, production of entirely new DM2 engines recommenced. During 2009 a special engine painted in Manchester Red was completed to commemorate the centenary of the company.

#### **What are the features of a DM2?**

Ever since the first Grand Union RN powered boat, Walker built *Arcturus* delivered in October 1934, the two cylinder DM2 has been the most popular RN engine for canal boats.

A DM2 is a large, slow-running, robust and reliable engine. Although only delivering 18HP at 1,000rpm it produces a lot of "grunt" or torque - 95ft/lb to be precise. A similar sized modern diesel would be rated at around 100HP but produce only half