

# HAINES 29 ELECTRIC

*All quiet on the Norfolk Broads? The latest version of this popular river cruiser comes with electric propulsion.*



We first tested the Haines 29 two years ago, when it made its debut at the Nottingham Boat Show (see MBM Aug 96 p60). Since then more than 20 have been built by Haines Marine, for private owners and hirefleets in the UK and in Ireland.

To date, all of these have been powered by a single inboard diesel engine. But, in a remarkable new development, the builders' Norfolk neighbours Brimbelow Engineering have fitted a 29 with twin 2kW electric motor drives, for the



**Above:** the first Brimbelow electric-powered craft at home on the Norfolk Broads. **Left:** alongside the steering wheel is a single short joystick, which is used to control the boat's thrust, forward or astern, and to vary the speeds of the two motors.

ultimate in peaceful river cruising.

At the same time the interior layout of the boat has been updated and revised, so we took the opportunity to test the whole package on a bright but chilly winter's day on the Broads.

## Design

The Haines is based on the Aquafibre 29 hull, with a modified deck moulding.

Designed by Andrew Wolstenholme, its hull is of round-bilge displacement form, giving the lowest resistance at river speeds, and minimum wash. A deep keel offers some protection to the sterngear, particularly in the single-screw version, but it also helps the twin-screw electric arrangement.

In fact, the electric boat is soon to be offered in single-motor form as well.

## Exterior

The 29's small cockpit incorporates a deep seat/locker on each side. One of these takes a pair of 13kg gas bottles, which is a useful feature on a

boat designed for serious cruising.

The helm controls are neatly mounted in an attractive walnut-veneered panel, and come complete with key-switches for the two motors and a short single 3in (75mm) joystick. A matching panel on the console has gauges that show current drawn, voltage, and battery capacity remaining.

A door in the centre of the transom leads out to a small, full-width bathing platform.

Deck layout has been well thought out, as you would expect for a boat which is sold to many hirefleet operators. The side decks are a good width, with a moulded non-slip finish and a raised lip. Substantial guardrails run from amidships to the bow, with well-sited handrails inboard on the cabin top.

Solid stainless steel bollards located forward, amidships and aft take care of mooring. The anchor stows on the foredeck, with its chain



**Above:** the saloon's curved settee will seat five people or sleep two. **Left:** a basin and a shower tray are neatly moulded into the toilet compartment. **Below:** the forward dinette features a circular table, which is complemented by the curved worktop of the adjacent galley.



leading down into a locker beneath.

Topsides are protected from damage by rubber D-fendering all round the gunwale, with a lower strike aft.

## Interior

Two hinged glass-and-aluminium doors lead from the cockpit into the saloon, where a new feature is the curved settee to starboard, giving the interior a more welcoming, open feel. It will seat five people, and can be converted into a double berth.

Opposite is the helm position, and aft of this a sideboard. Large windows all round, with sliding sections on each side, and a large opening overhead hatch give plenty of light and air.

Three steps lead down to the forward accommodation. This is laid out in open-plan fashion, with a spacious galley to starboard and a dining/sleeping area in the bow.

The galley makes clever use of curves in the worktop, which lead the eye forward to the dinette, yet underneath this surface the lockers are made up of flat panels. Under a twin-burner gas hob is a combined oven and grill, and alongside a small Electrolux fridge. Two lockers, plus shelves above, give a reasonable amount of storage space. Hot







**Left: battery status indicators assume extra prominence alongside other domestic services.**

water is provided by a Paloma gas heater mounted out of sight on the forward bulkhead.

The dinette has a semi-circular settee, and a round table which drops to form the infill for a large double bed. Lockers are found under the seats.

The WC to port is a good size, with a neat moulded sink unit, a moulded shower tray, and a manual PAR toilet, discharging into a holding tank.

## Propulsion

Twin separate 2kW electric motors were fitted to our test boat, using separate shafts, although a purpose-built system under development by Brimbelow will link two motors through a common gearbox to one shaft.

Traction batteries are used to provide power, with each motor served by a bank of 36 cells, giving 250Ah at 72V.

The batteries are located under the saloon floor, where the engine would have been, in two substantial boxes. Each bank has its own charger, which connects to a mains supply via a shore line. The boxes are vented by fans to remove the hydrogen gas given off during charging, which should take 12-15 hours from 'empty' to 'full'.

## Underway

There are two modes of operating the joy-stick, which can be moved in any direction.

On the open river you simply push it forward or backwards to drive the boat in a straight line, ahead or astern respectively, and it varies both motor speeds equally. You steer with the wheel, which is connected to twin rudders behind the props.

For close-quarters manoeuvring, you can move the joystick to the left or right, then forwards or backwards, to alter the speed of each motor proportionately, and cause the boat to turn. Moving it fully to one side will put one motor ahead and the other in reverse, allowing you to turn on the spot.

It sounds complicated, but in practice we quickly got the hang of it, and found ourselves turning the boat in its own length in narrow parts of the river and in the marina. But Brimbelow will supply you with separate joysticks for each motor if you feel more comfortable with this arrangement.

Fitted with 14in x 10in props, the motors give more than enough thrust for manoeuvring. When we put them to the test by trying emergency stops on the river, we stopped from 5mph in 1½ boat lengths, and from 4mph in less than one length, which is more than adequate for any situation.

In a straight line, we measured a maximum speed of 5.2mph, using our trailing log, on the shallow River Ant. Brimbelow say they have recorded 5.5mph on the open waters of Barton Broad.

At this higher speed the motors are drawing 28A each, which would fully drain the batteries in nine hours, and give you a maximum range of around 50 miles. In practice you would drop the throttle back considerably, which would still give a respectable speed but with much less current drain.

At 4.5mph the motors draw 20A, and at 4mph (the maximum speed on many sections of the Broads) only 15A. At these speeds you would get running times of 12 hours and 16 hours, and maximum theoretical ranges of 54 miles and 64 miles, respectively.

In practice, the batteries should not be drained regularly below the last 20% of charge, which would give ranges of about 45 and 55 miles, depending on speed.

If you want extra range, you can add extra batteries. It is feasible to increase capacity by 50% or 75%, with corresponding improvements in running time and range.

Noise levels are superbly low. You can hear the motors, but their slight whine is incidental compared with the rattle of a normal diesel. For the record, we measured a maximum of 58dB(A) in the wheelhouse at full speed. To put this in context, out in the cockpit we were getting 66dB(A), the difference being caused by our wake, passing ducks, and the wind in the reeds.

## Conclusions

The full electric package adds £6100 ex VAT to the price of a standard diesel-powered Haines 29. This will be offset by lower running costs, because after a day's cruising you will have to pay only around £3 to recharge the batteries, and annual servicing will be cheaper too.

But, for many, the main benefit of this form of propulsion is its near-silent running. □

## Haines 29 Electric

**Loa**  
29ft 0in (8.84m).  
**Beam**  
10ft 5in (3.18m).  
**Draught**  
2ft 6in (0.76m).  
**Air draught**  
8ft 3in (2.51m).  
**Displacement**  
3.75 tonnes.  
**Motors**  
twin 2kW electric motors.  
**Price**  
£59,000 ex VAT.  
**Builders**  
Haines Marine, The Old Mill,  
The Street, Catfield,  
Norfolk. NR29 5DH.  
Tel: 01692 582180.  
**Propulsion system**  
Brimbelow Engineering,  
The Old Mill, The Street,  
Catfield, Norfolk. NR29 5DH.  
Tel: 01692 582707.

## Brimbelow E-Drive system

**B**rimbelow Engineering are a well-established firm who already supply sterngear to many boatyards. They saw a need for ready-to-fit electric propulsion systems for the hundreds of small day-hire boats on the Broads, and eventually for the larger craft on weekly hire.

In conjunction with electric motor manufacturers Lawrence Scott, they have created a complete drivetrain, comprising the motor, reduction gearbox, stern tube, shaft and propeller, all bolted together ready to be dropped into a boat. Also included are the throttle lever and electronics necessary to control the speed and direction of the motor.

Brimbelow can also supply batteries, chargers and the switches and instrument panels required, all linked together with plug-in connection looms.

The basic motor is available in 1.6kW and 2kW form, at either 48V or 72V. The gearbox ratios and propeller can be altered to match the motor speed to the weight and speed of the boat, with propeller size ranging from 14in to 17in.

Both versions of the motor will power craft up to about 24ft, depending on shape and weight. For the Haines 29, 4kW is needed.

A purpose-built 4kW package is still under development, using two motors linked through a common gearbox to one shaft. However, to get the Haines 29 project underway, Brimbelow fitted twin 2kW systems for the first boat, which also allowed them to develop a control system with a single joystick controlling both motors.

