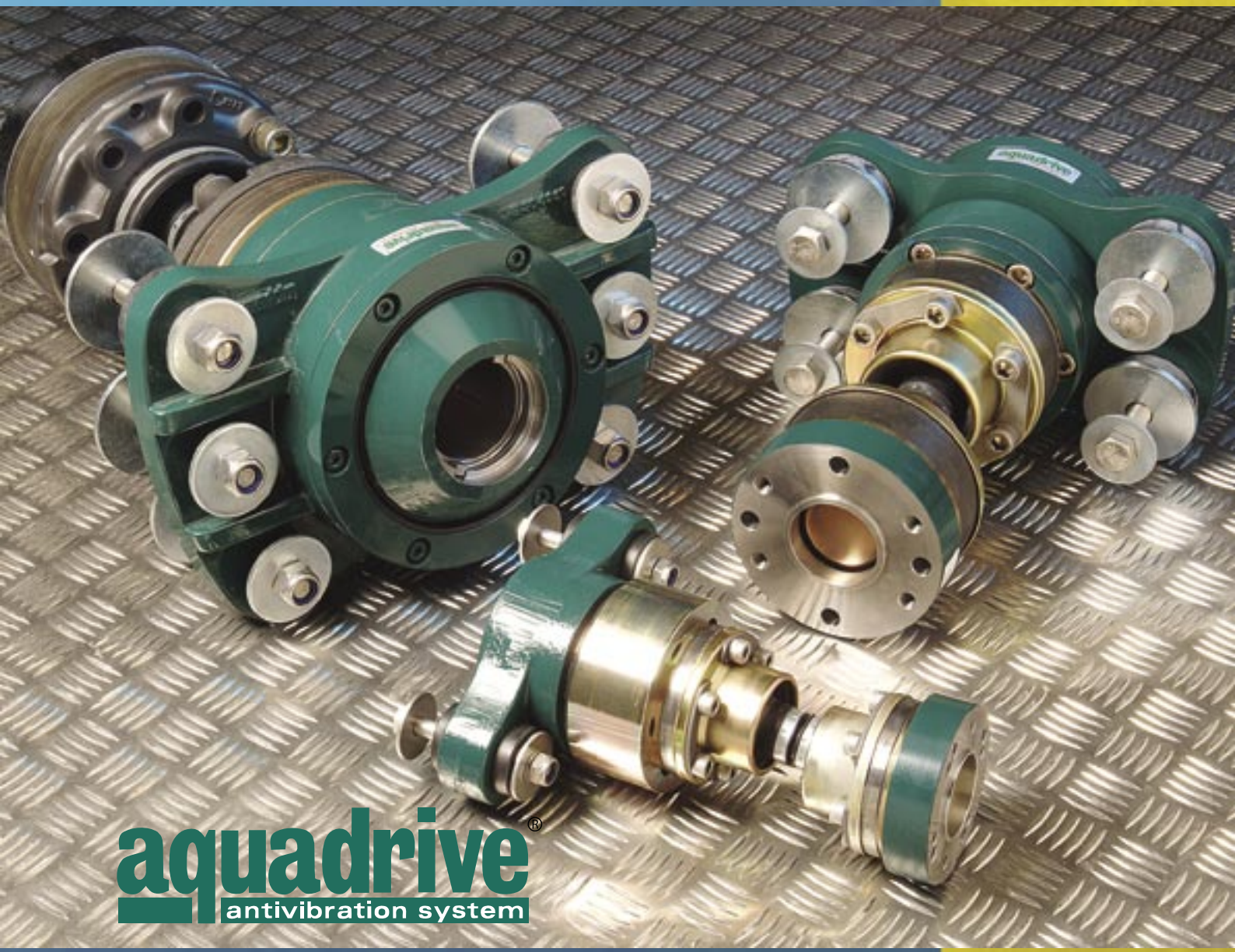
Halyard

Quiet vibration-free performance from today's high-revving diesels

AQUADRIVE VIBRATION CONTROL COUPLINGS

The ultimate contribution to peace and quiet on board



aquadrive® antivibration system

One of a series of brochures on products from Halyard 2

ISSUE 2

WHY FIT AN **AQUADRIVE?**

An Aquadrive system will reduce structure borne noise and vibration by up to 90%. It will reduce overall noise levels by up to 75%. It will end shaft alignment problems on installation, and for ever more!

It will allow the engine to be installed flat, because the Aquadrive allows angles between the engine and the shaft. It will ease problems when re-engining. And it's a gift when re-engining an older boat.

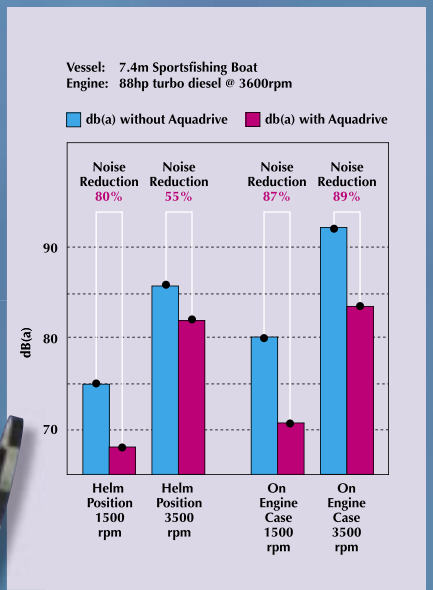
How does it remove so much noise?

Marine engines traditionally have been coupled directly to the propeller drive shaft, perhaps with a stiff flexible coupling between the two. Most of the vibration is sent straight down the shaft, and the engine mounts can't do their job properly because they are strained forwards by propeller thrust. So vibration gets into the hull, and vibration equals noise.

The Aquadrive puts free movement between engine and shaft. It takes the propeller thrust straight onto the hull, and allows free movement of up to 25mm between engine and shaft – up and down, sideways, or fore and aft. No vibration goes down the shaft, The mounts are no longer strained forwards by the propeller's thrust. The Aquadrive allows so much movement that you can even fit special softer mounts on engines of four cylinders or more.

What's the result?

Modern hulls are made from GRP or steel. Both materials carry noise badly, so structure borne noise is a particular problem. The chart shows just how much noise can be cancelled by fitting Aquadrive.



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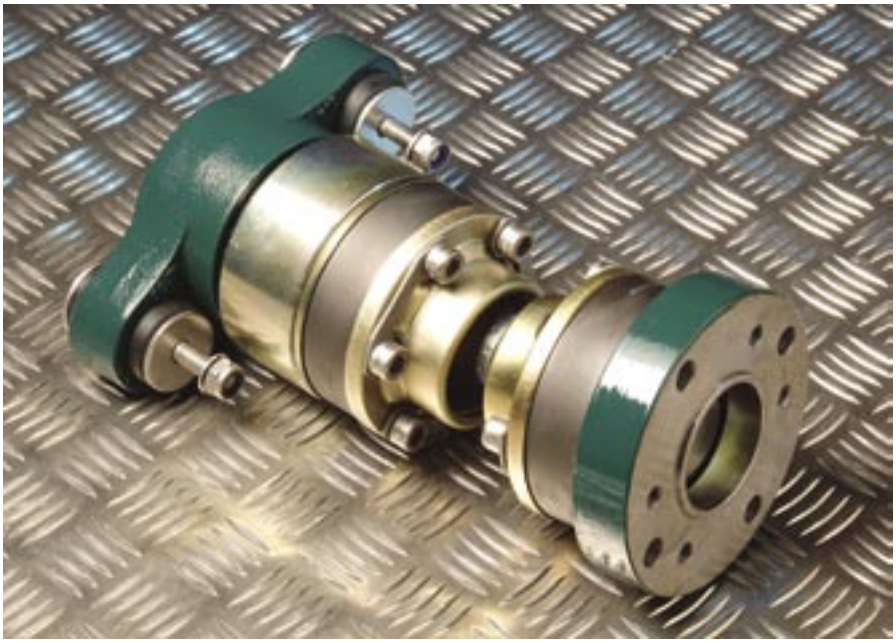
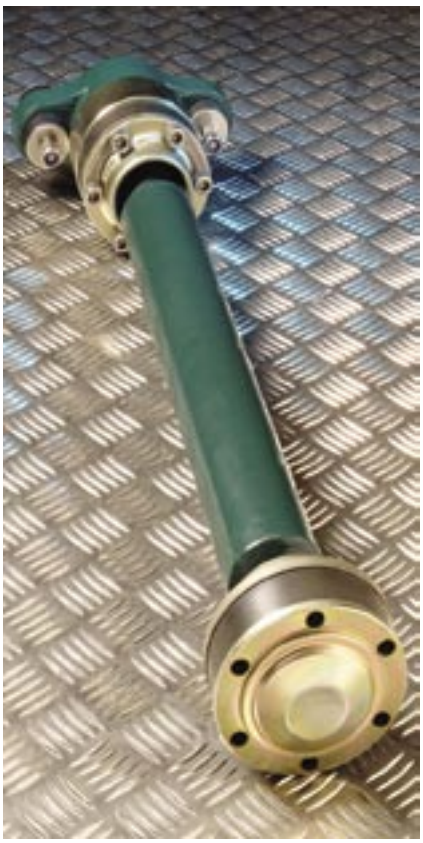
AQUADRIVE TO SUIT ALL ENGINES

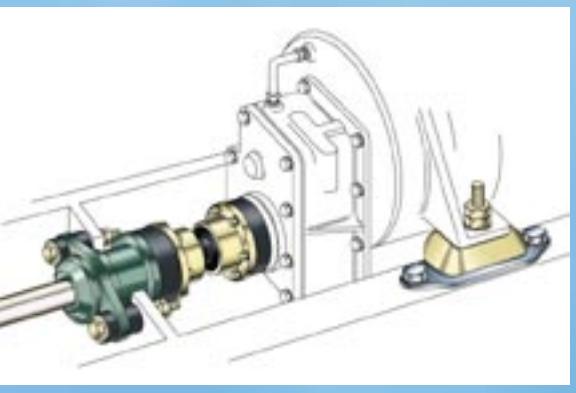




Moduline Aquadrive
The new Moduline range. Twenty years of development has produced a completely new range with less weight, less length, more power capacity, and all the advantages of the original concept. The Aquadrive special drive shaft has been up-rated to take more power. The thrust bearing assembly is now cast from specially treated alloys to reduce weight. The shaft coupling is hidden away inside the thrust bearing to reduce length and weight dramatically.

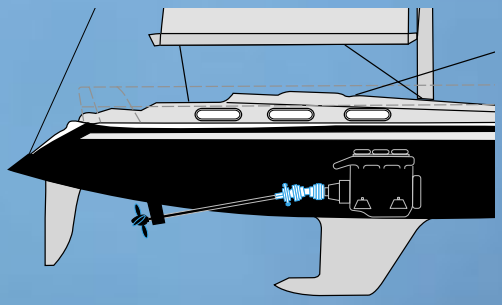
Long shaft Aquadrives
Systems with longer Aquadrive special drive shafts allow the engine position to be varied enormously. Shafts up to 4 metres long allow engines to be raised or lowered relative to the propeller shaft, or even moved over to one side.

AQUADRIVE



How does it solve shaft alignment problems?

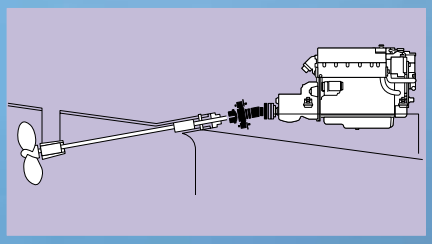
Marine engines are supported on timber or steel bearers fixed into the hull. These bearers are positioned to allow the engine to line up roughly with the shaft. The engine is then adjusted on its mounts so that it lines up with the propeller shaft coupling within a few thousands of an inch. All this takes hours of painstaking work. And then when you launch the boat, or tighten the backstay on a yacht, it all moves slightly and needs to be done again!



The Aquadrive changes all the rules. The propeller shaft fits into the Aquadrive's thrust bearing, which is fixed firmly into the hull. The engine is connected using the Aquadrive's special drive shaft. This allows misalignment of 12.5mm (1/2") – or more on larger Aquadrives. Engine alignment can even vary while running, so the movement on an older or timber hull is not a problem.

Can the engine be installed flat?

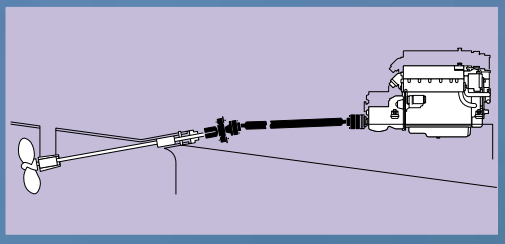
Marine engines are normally lined up with the propeller shaft, which has to angle down through the bottom of the boat. The engine therefore ends up with its front higher than its back, wasting precious headroom.



Fit an Aquadrive between the engine and the shaft and suddenly you have an angle of ten degrees or more, allowing the engine to be fitted horizontally. The Aquadrive thrust bearing takes the propeller shaft (and the thrust!), and the special drive shaft is simply installed with the desired angle at each end. The maximum angle depends on the shaft speed.

Will Aquadrive help me re-engine?

The biggest problem in choosing a new engine is fitting it in the existing space, with the fewest possible changes to the craft. Just imagine the flexibility if you could put an angle between the new engine and the existing shaft. Or use a longer Aquadrive to lower the whole engine. Or fit the Aquadrive to take out movement between a new engine with flexible mounts and traditional solid sterngear.



Aquadrives installed with 400hp engines on a 15m motor yacht.

Aquadrive with a Yanmar 2GM engine in a Contessa 32.

How does the Aquadrive help with older boats?

Older boats have two particular problems, both of which make life a misery when re-engining. The stern tube and shaft are rigidly mounted in the hull, so the extra vibration of a new and flexibly mounted engine will simply destroy the sterngear. And older hulls, particularly timber ones, flex a great deal in the water causing the engine alignment to change. Aquadrive solves both problems by allowing free movement between the engine and the shaft. The movement of the new soft mounts, and alignment changes due to hull flexing, can be ignored.

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WHAT'S **INSIDE** AN AQUADRIVE?

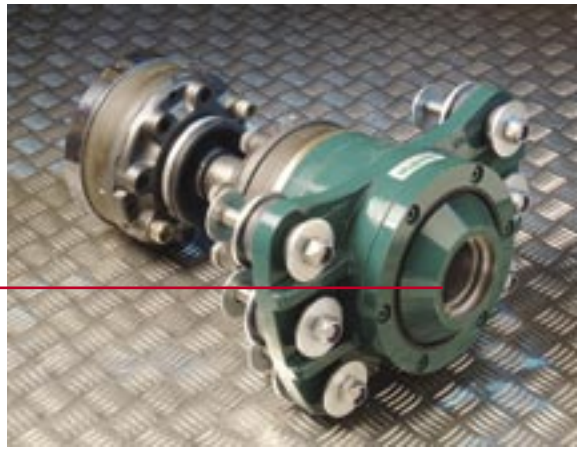
The Aquadrive has four main components. The gearbox adaptor is ready made to couple our drive to your gearbox. Behind this comes the Aquadrive special drive shaft, with a tough constant velocity joint at each end. Then the thrust bearing, engineered to take forward and reverse thrust, and rubber mounted to reduce noise. Finally the shaft coupling, produced for a wide variety of shaft diameters.

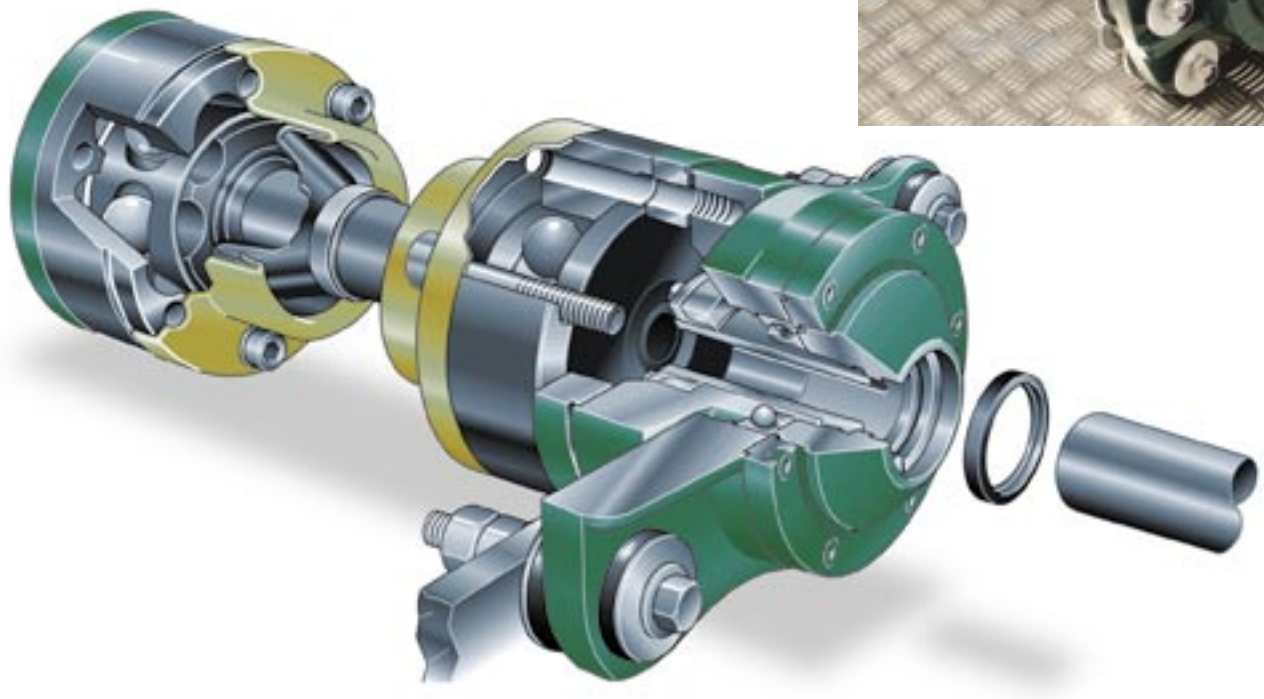
The **thrust bearing** is incredibly tough and built with races which can be replaced even after many years running. Sealed ball bearing races require zero maintenance on smaller Aquadrives. Taper roller units are built into the larger systems.

The **Aquadrive special drive shaft** will take an angle of up to 8 degrees at each end, and then take even more movement due to vibration. It will even take fore and aft movement – it is easy to forget that an engines vibrates fore and aft as much as it does up and down!

Gearbox adaptors are produced for almost every gearbox on the market today. They are supplied with all the correct nuts, bolts and washers.

Specially engineered shaft clamps, with bolts safely hidden inside the thrust bearing, are built into the new Moduline series of Aquadrives to reduce length and weight.





AQUADRIVE AS DRIVE SHAFTS
THE ONLY DRIVE SHAFT IN THE WORLD WITH **FREE END FLOAT**

Aquadrive special drive shafts can be used to connect Jet drives, V drives, thrusters and stern-drives. They remove vibration and take out misalignment in just the same way as the complete Aquadrive, but they have one huge advantage over rubber jointed drive shafts and older universally jointed units – they allow the engine to vibrate freely fore and aft.

No more vibration transmission through rubber joints. No more of the torsional lock-up to be found on shafts with sliding splines in the centre. Just give us details of the craft, power, and length and we'll do the rest.

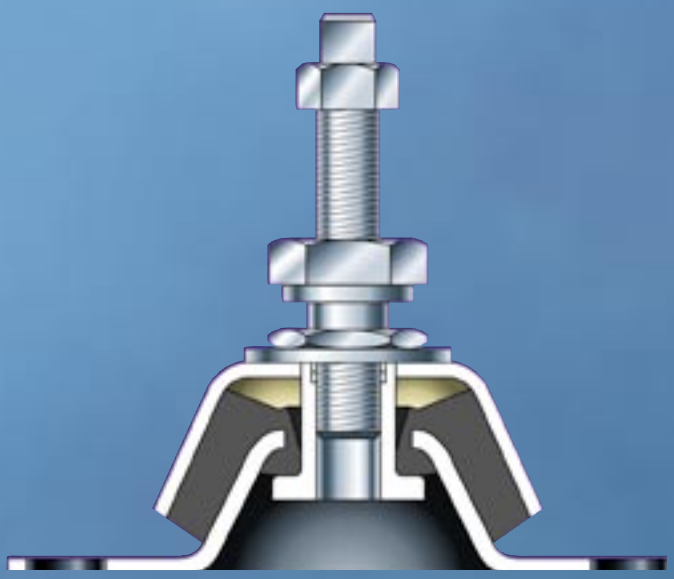
Aquadrive CVT systems
are designed for use where there is no gearbox, and no drive plate to absorb the engine's torsional vibration. All the same advantages as a complete Aquadrive, and the same unique free end float which no other drive shaft can offer.

Aquadrive triple
joint shafts have a third joint and a support bearing partway along their length. These specialised drive shafts allow total lengths of up to 9m for installations where flexibility of engine positioning is the key.

Aquadrive extended shafts
up to 2 metres long, allowing major engine position changes.

AQUADRIVE **ENGINE MOUNTS**
COMPLIMENTING THE AQUADRIVE'S FLEXIBILITY

The Aquadrive system creates free movement between the engine and the shaft. One result is that the engine's mountings can be much softer than normal, partly because the engine can vibrate freely relative to the shaft, and partly because no propeller thrust reaches the mounts and strains them forwards. Aquadrive engine mounts are used with engines of four cylinders or more, and our expert staff will rapidly select the correct rubber stiffness for the machinery involved.



What makes a mount good – and safe?

- Only natural rubber is used. Each size of mount is manufactured with up to four different rubber stiffness grades.
- The steel hood covers the whole top of the mount, reducing the risk of diesel attacking the natural rubber.
- The mount is "fully captive". Even if the engine turns over and the rubber elements rip, the engine is held tight.
- The bolt holes are slotted one way at each end so you can adjust their position.

50210 mounts
The baby of the range. 38mm high with a 12mm stud. Four rubber grades are available for weights up to 60kgs.

50220 mounts
The most versatile mount ever, taking weights up to 200kgs or more and available with five different rubber grades. The mount is 50mm high, with a 16mm stud.

50230 mounts
The big one. 68mm high with a 20mm stud, the 50230 comes in three rubber grades and will take weights up to 700kgs.

50240 mounts
The Giant. 110mm high and secured with four bolts, the 50240 has a 24mm stud and comes in four rubber grades taking up to almost 3000kgs.

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Phone and ask us if you'd like more help. We're happy to talk through the details of any installation.

TELEPHONE ADVICE

SYSTEM CERTIFICATION ISO 9001:2000 SGS

UKAS QUALITY MANAGEMENT 005

Halyard holds ISO900 Quality Assurance.

All products in this brochure meet the requirements of the Recreational Craft Directive at 1st September 2003.