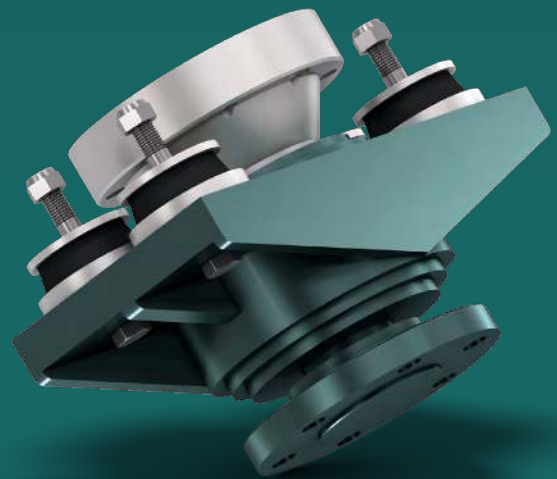




# FUNCTIONALITY AND QUALITY

from 5 to 2000 hp



# OUTSTANDING TECHNOLOGY TO IMPROVE BOATS WORLDWIDE.

For power rates up to 2000 HP.

## Traditional, rigid engine installation

In traditional installations, the engine must be very precisely aligned to the propeller shaft. The thrust of the propeller has to be absorbed by the engine and its mounts. These restrictions demand very stiff mounts which transmit high levels of vibration to the hull.

## ...or superior engineering through Aquadrive®

The Aquadrive® anti-vibration system eliminates the need for stiff, hard mounts and for careful engine alignment to the propeller shaft. Instead, the propeller shaft is aligned to an Aquadrive® thrust bearing which absorbs all the propeller thrust and stabilizes the alignment. CV-joint shafts transmit engine power to the thrustbearing and propeller shaft while allowing engine movements in every direction.

Soft Aquadrive® engine mounts isolate vibration from the hull and create the necessary conditions for a smooth and quiet boat.

## Easier engine installations and permanent alignment

Aquadrive® systems utilize CV-shafts to allow misalignment and engine movement. The system automatically adjusts to any changes in alignment between the engine and thrust bearing. Unlike standard marine engine installations, alignment is more easily accomplished and does not require periodic adjustments.

## Torsional damping and Aquadrive® systems

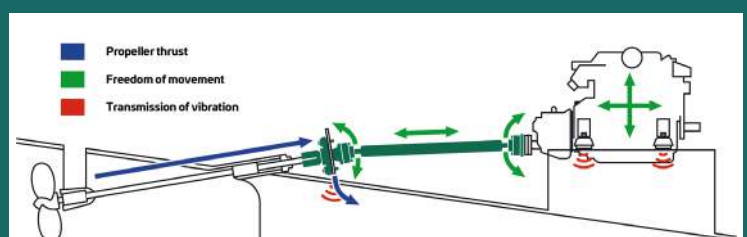
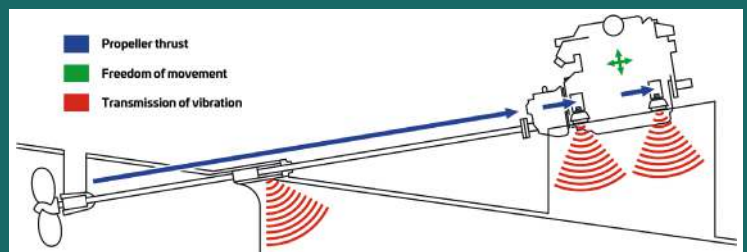
Soft, flexible rubber elements are normally installed between the engine flywheel and gearbox to avoid torsional vibration. Aquadrive® CV-shafts can surely be directly coupled to those gearboxes without additional rubber or flexible elements. For flywheelmounted installations, Aquadrive® torsional rubber dampers combined with CV-shafts (CVT-units) are available in a full range of power applications involving remote-mounted propulsion equipment, such as water-jets, stern drives and remote v-drives.

## Traditional, rigid engine installation

In traditional installations, the alignment of propeller shaft to the engine has to be very precise and subject to periodical maintenance. Relatively stiff mounts transmit high levels of vibration to the hull, even when perfectly aligned.

## Installation with Aquadrive®

The engine can be installed in a horizontal position using super soft and efficient mounts. Apart from easy installation and permanent alignment, this also leads to better space utilization while dramatically reducing vibration and noise.



# AQUADRIVE®

## – ANTI-VIBRATION SYSTEM

### Three different areas

Aquadrive® offers fourteen different models divided into two series:

- ▶ Moduline for midrange engines up to 100-310 kW (420 hp)
- ▶ HDL for heavy duty use up to 310-1200 kW (1 630 hp)

All three series follow the same concept, consisting of CV-shaft, thrustbearing and soft engine mounts.

### The CV-shaft

The drive shaft of variable length includes two true plunging Constant Velocity joints that work independently at any angle which eliminates the need for accurate engine alignment, either during initial installation or subsequent use. The rolling action of balls within the CV-joints absorb axial loads, permitting the use of soft engine mounts as well as reducing wear in connected bearings.

### The Thrust bearing assembly

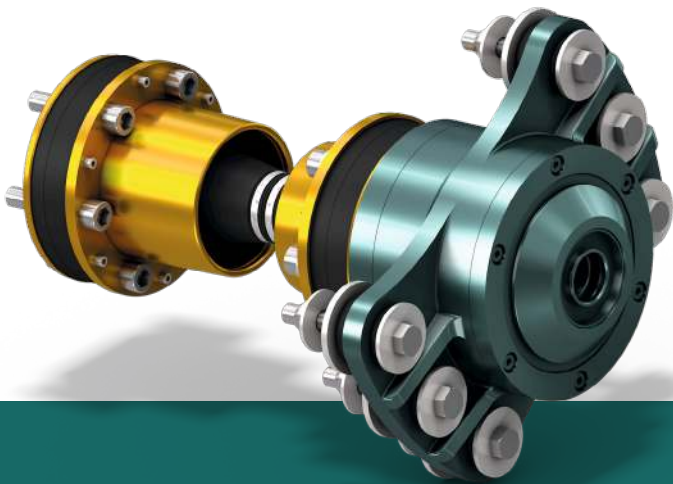
The thrustbearing assembly with rubber isolators is attached to a cross brace in the hull. It transfers the propeller thrust through robust roller bearings directly to the hull, not in the engine. The unit disconnects the gearbox from direct axial force impact and dynamic radial loads, minimizing wear and tear on transmission bearings and seals. The good support of the propeller shaft by the thrust unit also provides an improved durability to cutless bearings and stem seals.

### The Adapters

A neat range of pre-machined gearbox coupling kits allows problem-free coupling to almost every marine gearbox transmission.

### The Engine mounts

Aquadrive's proven engine mounts are softer than almost any other and indeed should be used with the Aquadrive® coupling to take full advantage of the system. These mounts are steel hooded to prevent diesel damage and fully captive so that the engine cannot leave its frame even if the vessel is turned over.

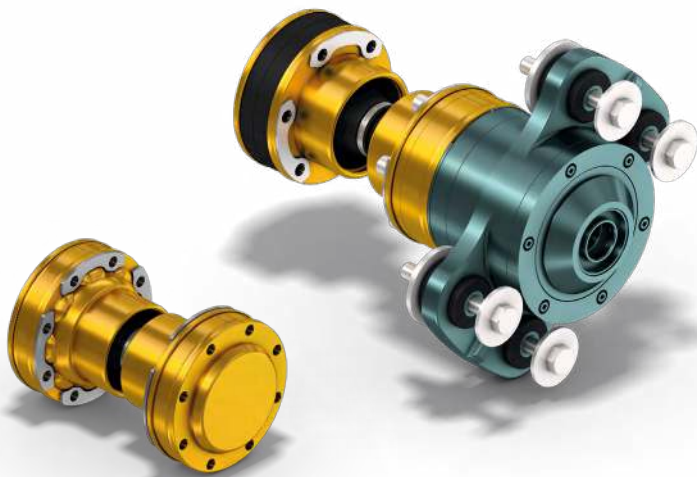


*Fleming 78  
CV60 HDL780HT*

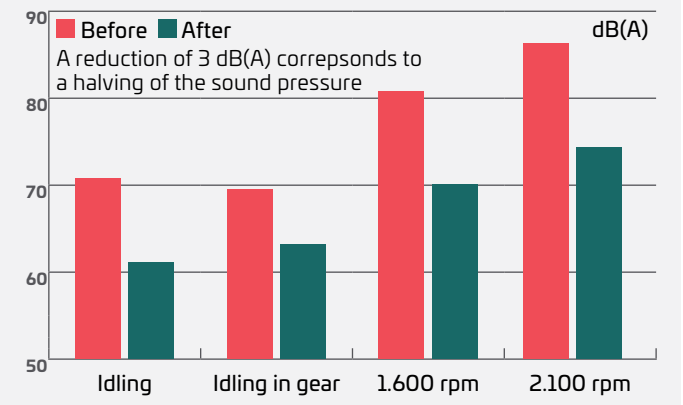
” *As shown in our test result, it’s obvious that the noise level on board became considerably lower after the Aquadrive® had been installed. Within the cabin, the noise level was in fact halved. It’s now even pleasant to stay inside the cabin while cruising and, regarding the level of vibration, it was even possible to put down a cup full of coffee without having it splashed to and from.* “

### How much noise reduction by Aquadrive®?

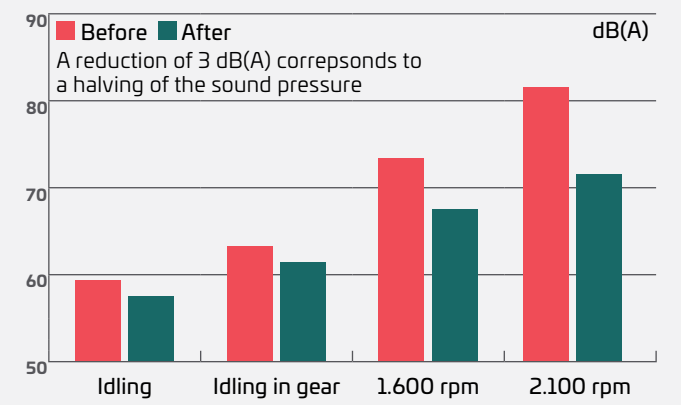
In a test carried out by the Scandinavian boat magazine “Båtnytt” (5/94) an Aquadrive® assembly was installed in a sailing yacht and the result was described as follows. The noise reduction is up to 75%.



In the cockpit before and after installation of Aquadrive®



In the cabin before and after installation of Aquadrive®



Green Line 33  
(CVB32.20)



Tempus Fugit, Arkin Pruva  
(HDL 60.780)

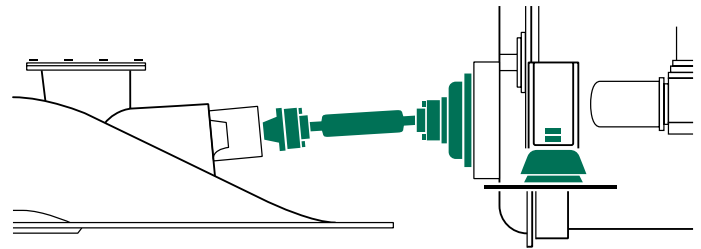


Violetta/Sunreef  
(CV48 COMPOSITE, VP IPS)

# MORE INSTALLATION EXAMPLES WITH AQUADRIVE®

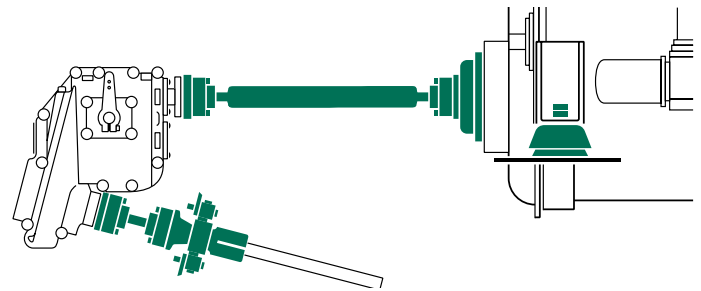
## **Aquadrive® CVT connecting flywheel to water-jet**

The CVT-unit consists of a CVjoint drive shaft of variable length and a rubber element torsional damper designed to bolt directly to the engine flywheel. This is the ultimate combination of excellent torsional damping and total absorption of misalignment and movement between waterjets and soft mounted engines.



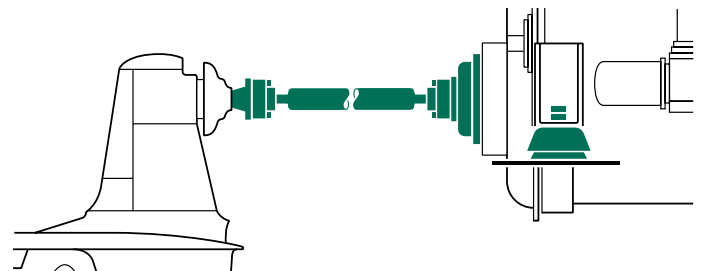
## **Aquadrive® for remote V-drives**

Demonstrably the best way to install a remote v-drive: The floating CVT-unit with torsional damping between soft-mounted engine and gearbox, and a complete assembly that takes out the propeller thrust and allows softmounted gearbox and free alignment to propeller shaft.



## **Aquadrive® CVT™ Jack-shaft**

When splitting the engine and outboard sterndrive, the best way to couple the flywheel to input stern drive flange is by means of a floating CVT-unit. This surely offers a smoother and quieter solution, with considerably less of wear in bearings, than any other drive shaft system available.



Swedish Coast Guard  
(CV48, VP IPS)

Pilot Boat Sweden  
(HDL 60.700)

Ocean Tug  
(HDL 60.780)

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**aquadrive**<sup>®</sup>  
antivibration system

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## Aquadrive<sup>®</sup> history

Back in 1977, the engineer and boat owner Anders Sandström – employed by Scatra AB, Nynäshamn, Sweden – had problems coupling the propeller shaft to his new engine and gearbox.

By using a CV-shaft and a home-made thrust bearing, he managed to overcome the problems of difficult alignment and an offset between the gearbox and propeller shaft. Not only did he solve these problems, but he also found that he had dramatically reduced

noise and vibration. He then placed the engine on much softer rubber mounts, improving even further on the results and convincing his company that they should launch the engine coupling system as a commercial product.

Initially the product line was named “Scatra CVA” but, as a consequence of increasing export sales, in 1982 the name was changed to the more marketable trade name; AQUADRIVE<sup>®</sup>.