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Introduction

GKN is a global industrial company, headquartered in Great Britain and with production facilities in more than 40 countries.

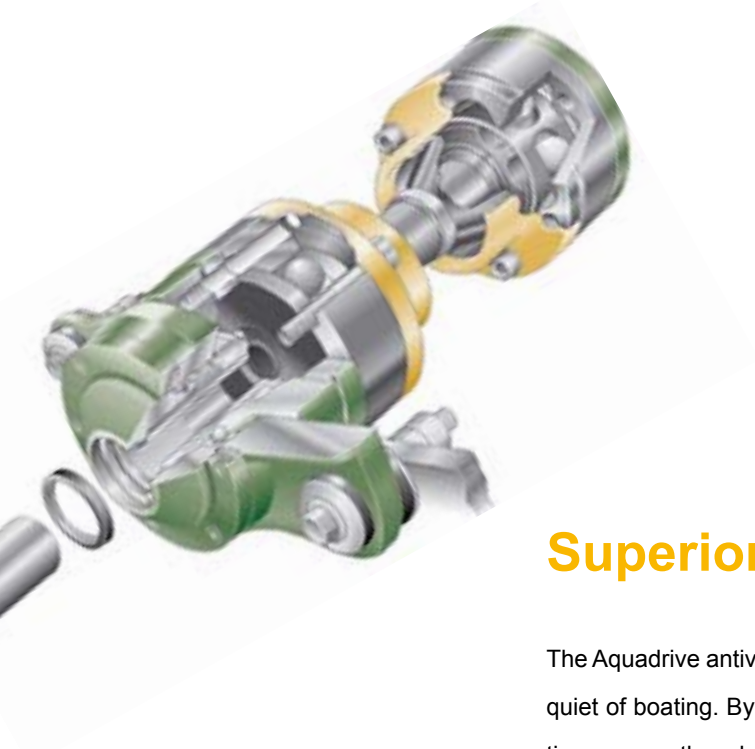
Founded in 1759 in the middle of the industrial revolution, it was originally named Dowlais Iron Company and was one of the largest steel producers in the world. The current name, GKN (Guest, Keen and Nettlefold) was taken in 1902 with the fusion of Dowlais I.C. (Guest family), Keen Nuts and Nettlefold Limited.

After a variety of transformations, the business focused on the Automotive and Aerospace industry and today GKN holds a leadership position in most of its products:

- N°.1 in transmission systems for the Automotive Industry
- N°.1 in Powder Metal parts production
- N°.1 in the production of systems and components for special vehicles
- Global supplier of aerospace industry systems and components; GKN holds a leadership position in composite materials and propulsion systems.

In 2005, group sales exceeded 5,25 billion Euro, with more than 110 million in pre-tax profits. The Company employs more than 36.500 people in GKN and in the joint-ventures that GKN has with other large international groups.

EXPECT > MORE



Superior engineering

The Aquadrive antivibration system will help you, and your crew, enjoy the peace and quiet of boating. By isolating the engine from the rest of your boat, noise and vibration are greatly reduced. Most installations result in a 50% or more reduction in cabin or cockpit noise and vibration. Aquadrive will also help to keep your driveline in good condition by minimising wear and tear on the transmission and cutlass bearings.

The propeller shaft is aligned to an Aquadrive thrust bearing, which absorbs the propeller thrust. A Constant Velocity (CV) shaft transmits engine power to the thrust bearing and propeller shaft. The CV shaft automatically adjusts to changes in the alignment between engine and thrust bearing and allows engine movements in every direction. Unlike standard installations, periodic realignment will not be required. The use of soft-engine mounts, which isolate engine vibration from the hull, completes the system. Aquadrive antivibration system creates the necessary conditions for a smooth running, quiet boat.



The Aquadrive system



CV shaft

The drive shaft of variable length includes two true plunging Constant Velocity joints that work independently at any angle, this eliminates the need for accurate engine alignment, either during initial installation or subsequent use. The rolling action of the balls within the CV-joints absorb all axial and radial loads, permitting the use of very soft engine mounts as well as reducing wear in connected bearings. A range of pre-machined gearbox coupling kits allows problem free coupling to almost every marine gearbox transmission. All exposed fasteners are made of high-grade stainless steel.



Thrust bearing

Aquadrive thrust bearing assemblies with rubber mounts attached to a cross brace in the hull. Massive bearings transfer the thrust directly to the hull and not the engine. In addition, the propeller shaft is much better supported, leading to smoother running and less wear on the stern seal.

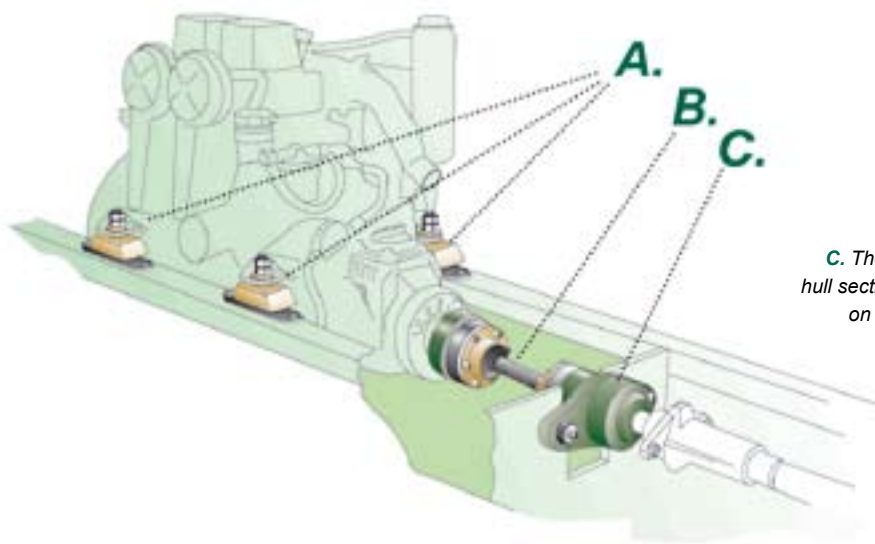


Engine mounts

Aquadrive's proven engine mounts are softer than almost any other and should be used 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.

Outstanding technology to improve boats worldwide

Aquadrive offers fourteen different models designed to match boats powered from 5 hp to 2000 hp, we have a system that's right for nearly any boat. Whether you are a professional marine engine installer or an enlightened boat owner, we can help you find the system that's right for your boat.



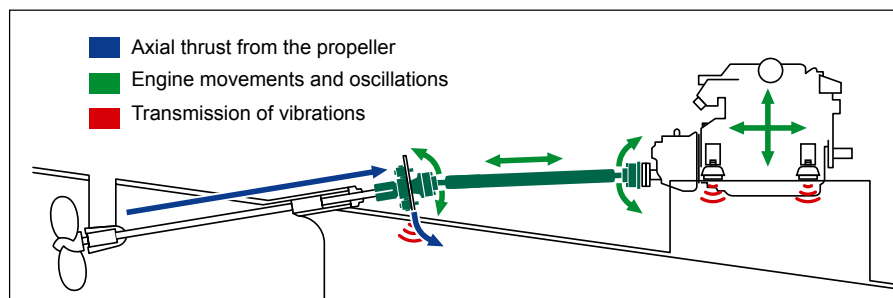
A. The soft engine mounts isolate the engine from the hull.

B. The Constant Velocity drive shaft absorbs engine vibrations and eliminates the need for accurate alignment.

C. The thrust unit, fastened on a load bearing hull section, reduces stress on the transmission, on the engine mounts and, in particular, on the engine bearings.

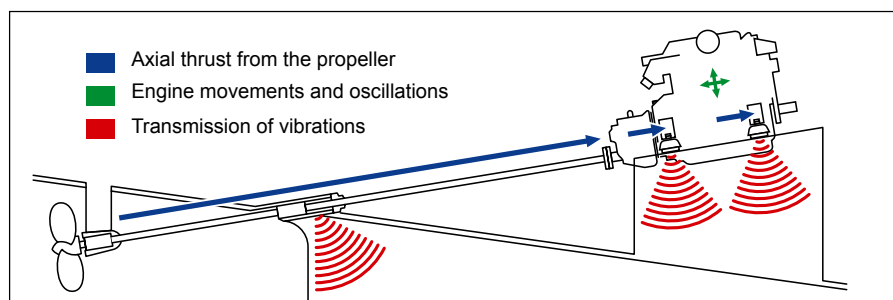


With Aquadrive



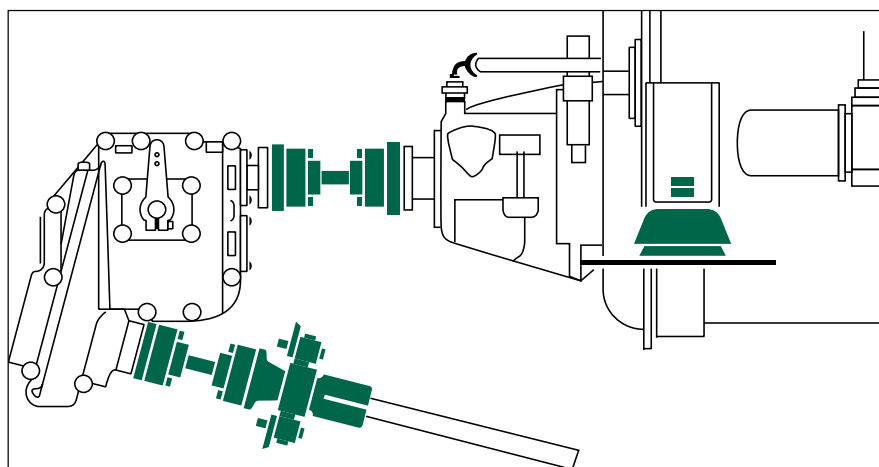
With Aquadrive the engine can be installed in a horizontal position using soft and efficient mounts. Apart from easy installation and permanent alignment, this also leads to better space utilisation while dramatically reducing vibration and noise.

Without Aquadrive



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

Aquadrive for V-drives



Aquadrive for installations with V-drive.

No noise

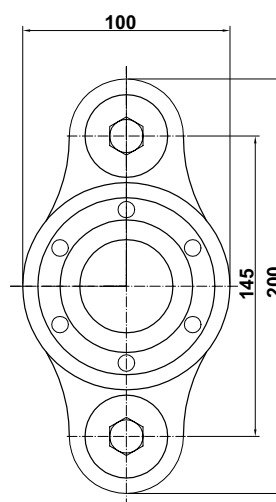
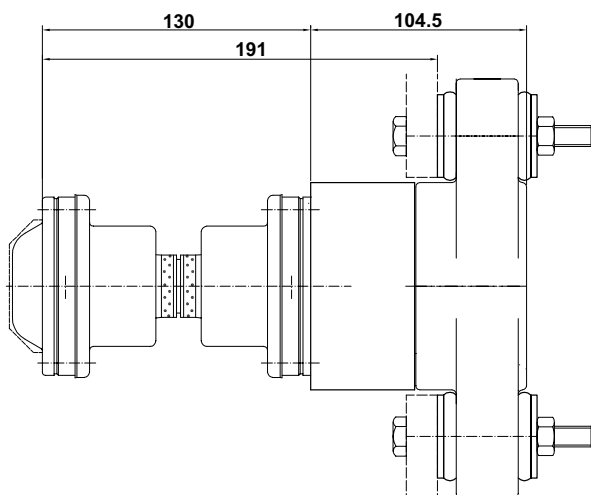


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antivibration system

Moduline B10



CVB 05.10



Max static torque ($\varnothing A=20$ mm):	1034 Nm / 763 lbft
Max propeller shaft revolutions:	4000 rpm
Max continuous propeller thrust:	11 kN / 2475 lbf

Rating guidelines

CVB 05.10	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Sailing boat	33 (45)	3800	2.6:1
Displacement motorboat	26 (35)	2600	3.0:1

Please note

CV05 is not available in custom length. Alternatively, see CVB 10.10 instead

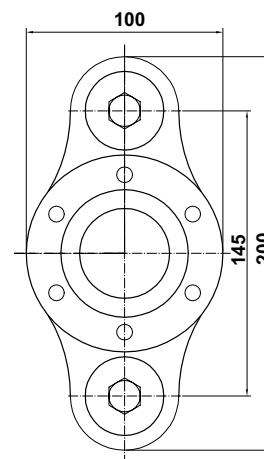
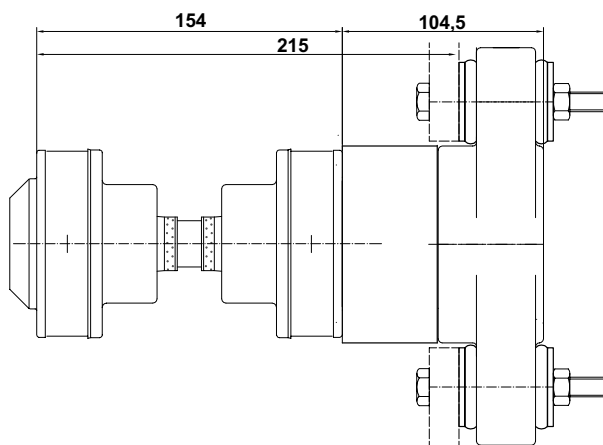
Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.





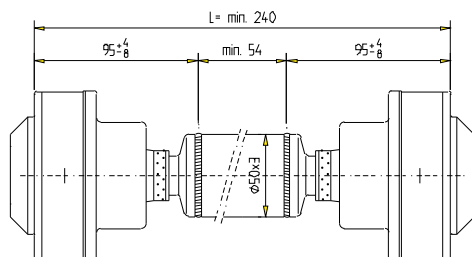
CVB 10.10

Max static torque ($\varnothing A=1\text{ mm}$):	1300 Nm / 969 lbft
Max propeller shaft revolutions:	4000 rpm
Max continuous propeller thrust:	11 kN / 2475 lbf



CV10

Custom-length CV10 driveshaft is available in lengths from 240 mm. Maximum length depends on shaft rpm.



Rating guidelines

CVB 10.10	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Planing boat	62 (85)	3800	2.0:1
Sailing boat	55 (75)	3800	2.6:1
Displacement motorboat	40 (55)	2600	3.0:1

Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.

Propeller shaft options

B10 standard version accepts following propeller shaft sizes:

3/4"	20 mm	22 mm	7/8"	25 mm	1"	1 1/8"	30 mm	1 1/4"	32 mm	35 mm	1 1/2"	40 mm
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Oversize version with external clamp mechanism suits shaft diameters:

1 3/4"	45 mm	50 mm	2"
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All B10 systems are also available with flange coupling to suit standard BW 5" propeller flange. Please contact our technical department to assist you in selecting a suitable Aquadrive system for your application.

No noise

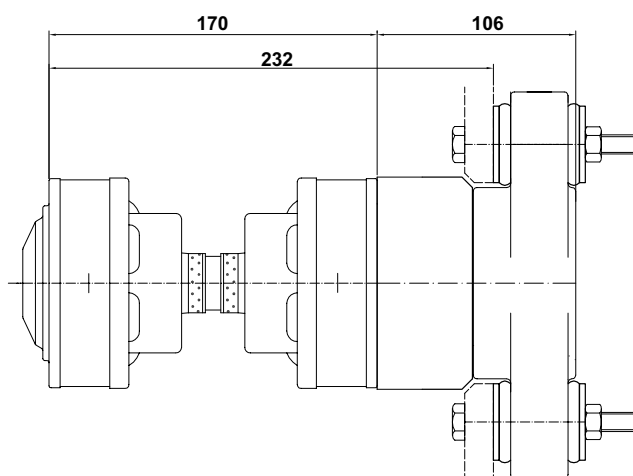
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antivibration system

Moduline B10



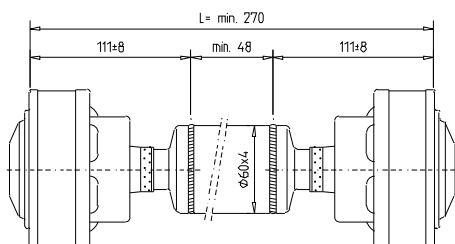
CVB 15.10

Max static torque ($\varnothing A = 1\frac{1}{4}"$):	1625 Nm / 1200 lbft
Max propeller shaft revolutions:	4000 rpm
Max continuous propeller thrust:	11 kN / 2475 lbf



CV15

Custom-length CV15 driveshaft is available in lengths from 270 mm. Maximum length depends on shaft rpm.



Rating guidelines

CVB 15.10	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Planing boat	114 (155)	3800	2.0:1
Semi-displacement motorboat	96 (130)	3300	2.2:1
Sailing boat	85 (115)	3300	2.6:1
Displacement motorboat	66 (90)	2600	3.0:1

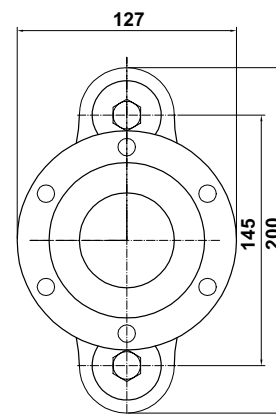
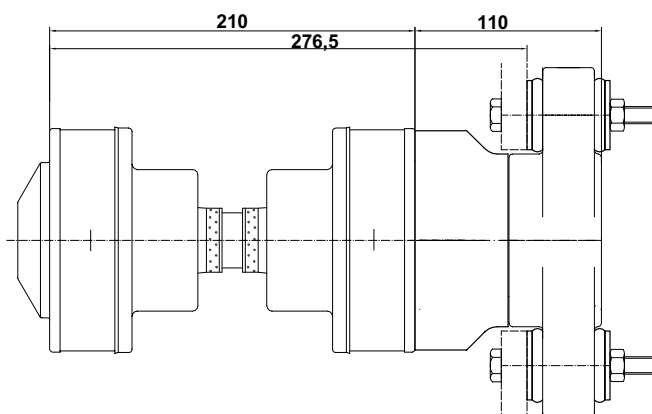
Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.





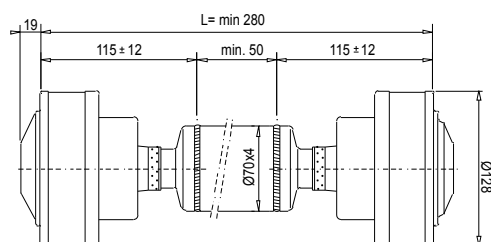
CVB 21.10

Max static torque ($\varnothing A=40$ mm):	2068 Nm / 1526 lbf
Max propeller shaft revolutions:	4000 rpm
Max continuous propeller thrust:	11 kN / 2475 lbf



CV21

Custom-length CV21 driveshaft is available in lengths from 280 mm. Maximum length depends on shaft rpm.



Rating guidelines

CVB 21.10	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Planing boat	173 (235)	3800	2.0:1
Semi-displacement motorboat	147 (200)	3300	2.2:1
Displacement motorboat	96 (130)	2500	3.1:1

Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.

Propeller shaft options

B10 standard version accepts following propeller shaft sizes:

3/4"	20 mm	22 mm	7/8"	25 mm	1"	1 1/8"	30 mm	1 1/4"	32 mm	35 mm	1 1/2"	40 mm
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Oversize version with external clamp mechanism suits shaft diameters:

1 3/4"	45 mm	50 mm	2"
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All B10 systems are also available with flange coupling to suit standard BW 5" propeller flange. Please contact our technical department to assist you in selecting a suitable Aquadrive system for your application.

No Vibration

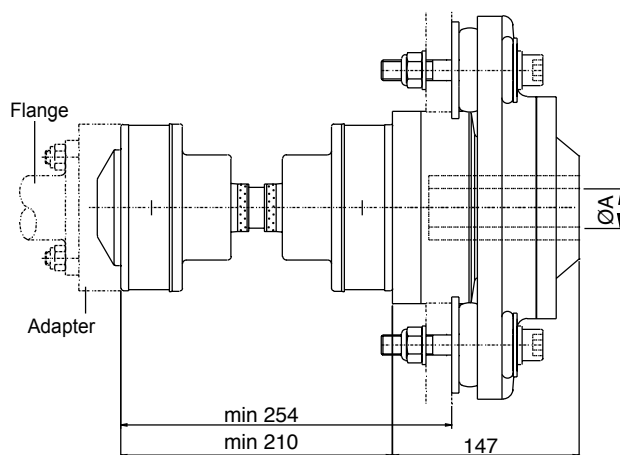
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Moduline B20



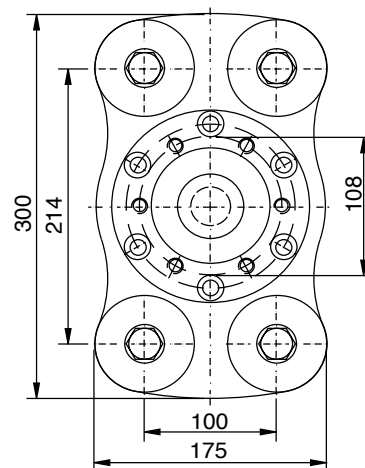
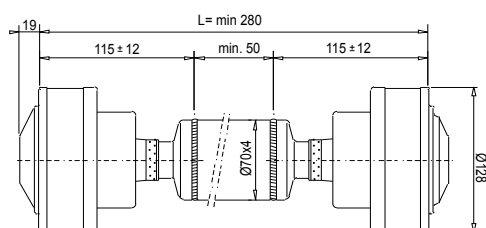
CVB 21.20

Max static torque ($\varnothing A=2''$):	1400 Nm / 1034 lbft
Max propeller shaft revolutions:	2000 rpm
Max continuous propeller thrust:	14 kN / 3150 lbf



CV21

Custom-length CV21 driveshaft is available in lengths from 280 mm. Maximum length depends on shaft rpm.



Rating guidelines

CVB 21.20	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Displacement boat	100 (135)	2600	3:1
Planing boat	165 (225)	3900	2:1

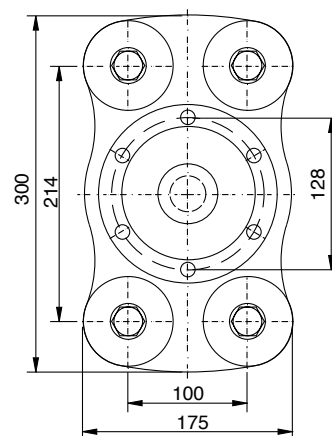
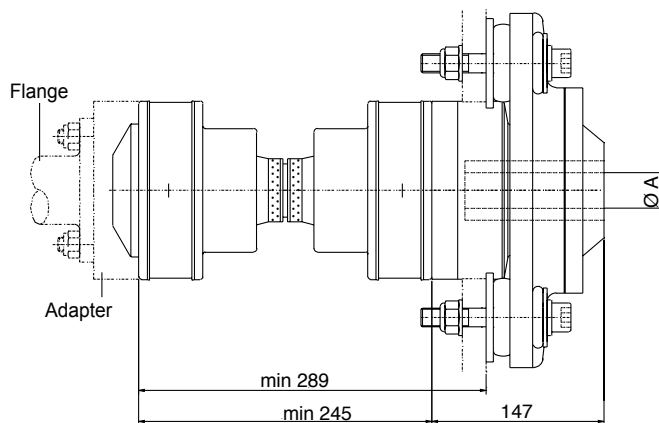
Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.





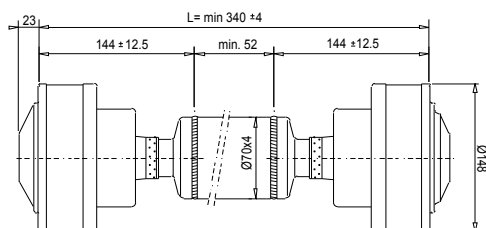
CVB 30.20

Max static torque (ØA=2"):	1400 Nm / 1034 lbft
Max propeller shaft revolutions:	2000 rpm
Max continuous propeller thrust:	14 kN / 3150 lbf



CV30

Custom-length CV30 driveshaft is available in lengths from 340 mm. Maximum length depends on shaft rpm.



Rating guidelines

CVB 30.20	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Displacement boat	130 (175)	2600	3:1
Planing boat	200 (270)	3300	2:1

Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.

Propeller shaft options

B20 standard version accepts following propeller shaft sizes:

ØA	35 mm	1 1/2"	40 mm	1 3/4"	45 mm	50 mm	2"
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All B20 systems are also available with flange coupling. Please contact our technical department to assist you in selecting a suitable Aquadrive system for your application.

No Maintenance

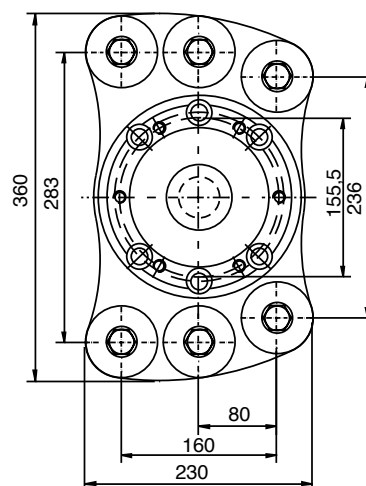
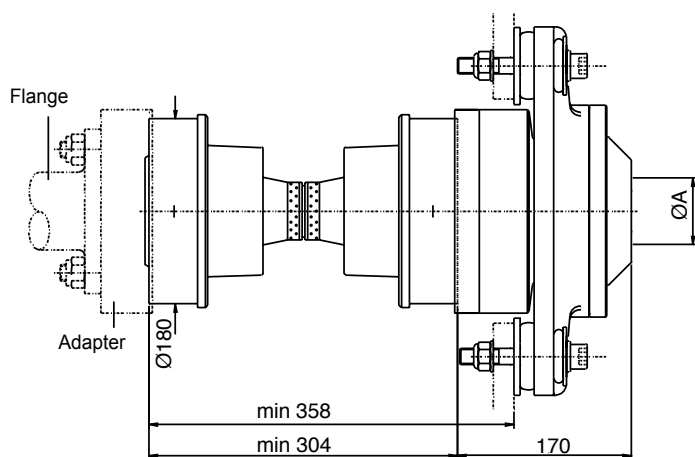
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Moduline B30



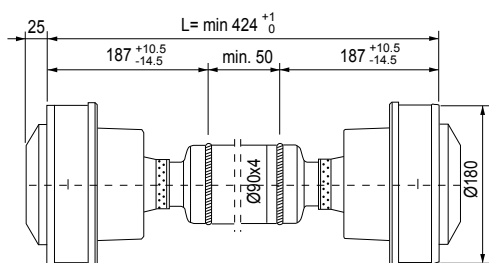
CVB 32.30

Max static torque ($\varnothing A=65$ mm):	3000 Nm / 2215 lbft
Max propeller shaft revolutions:	1700 rpm
Max continuous propeller thrust:	21 kN / 4725 lbf



CV32

Custom-length CV32 driveshaft is available in lengths from 420 mm. Maximum length depends on shaft rpm.



Rating guidelines

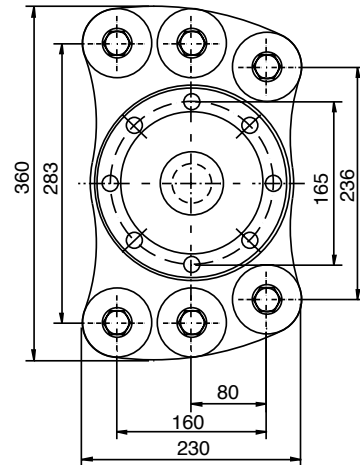
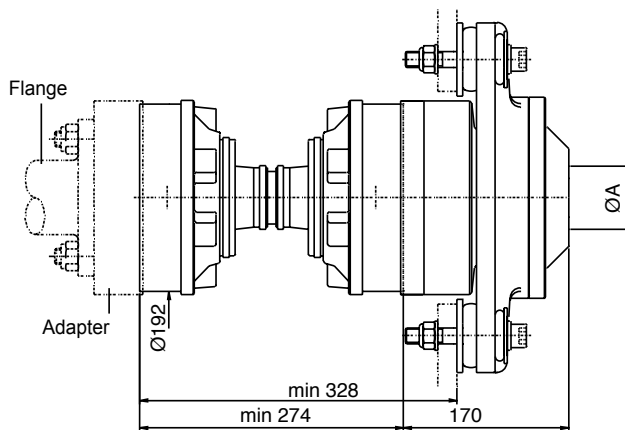
CVB 32.30	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Displacement boat	195 (265)	2600	3:1
Planing boat	270 (365)	3000	2:1

Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.



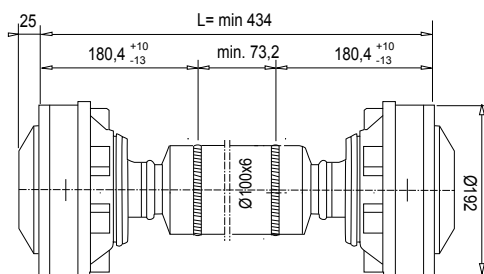
CVB 42.30

Max static torque ($\text{ØA}=65 \text{ mm}$):	3000 Nm / 2215 lbf
Max propeller shaft revolutions:	1700 rpm
Max continuous propeller thrust:	21 kN / 4725 lbf



CV42

Custom-length CV42 driveshaft is available in lengths from 430 mm. Maximum length depends on shaft rpm.



Rating guidelines

CVB 42.30	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Displacement boat	240 (325)	2800	3:1
Planing boat	310 (420)	2600	2.5:1

Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.

Propeller shaft options

B30 standard version accepts following propeller shaft sizes:

ØA	40 mm	1 3/4"	45 mm	50 mm	2"
	2 1/4"	60 mm	2 1/2"	65 mm	70 mm

All B30 systems are also available with flange coupling.

Please contact our technical department to assist you in selecting a suitable Aquadrive system for your application.

No noise

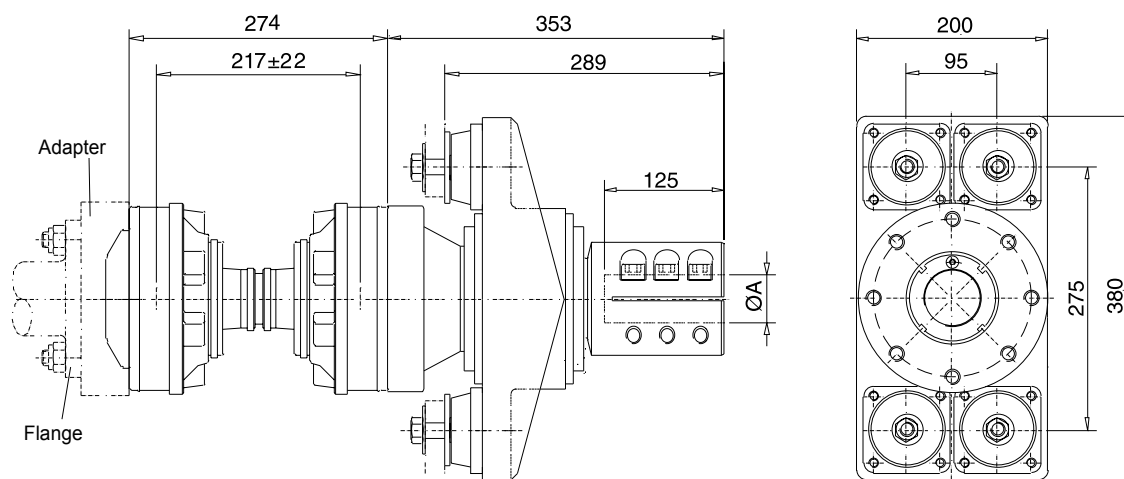
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Heavy Duty Line HDL



HDL 42.680

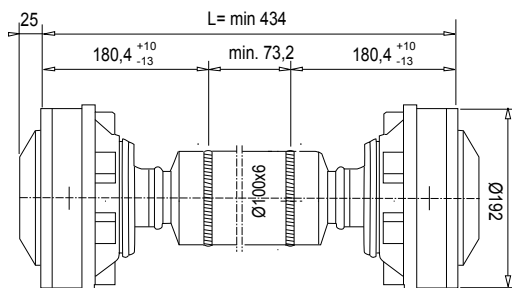
Max static torque:	10500 Nm / 7750 lbft
Max propeller shaft revolutions:	1700 rpm
Max propeller thrust:	40 kN / 9000 lbf



CV42

Rating guidelines

Custom-length CV42 driveshaft is available in lengths from 420 mm. Maximum length depends on shaft rpm.



HDL 42.680	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Displacement boat	220 (300)	2100	3:1
Planing boat	420 (570)	2600	2:1

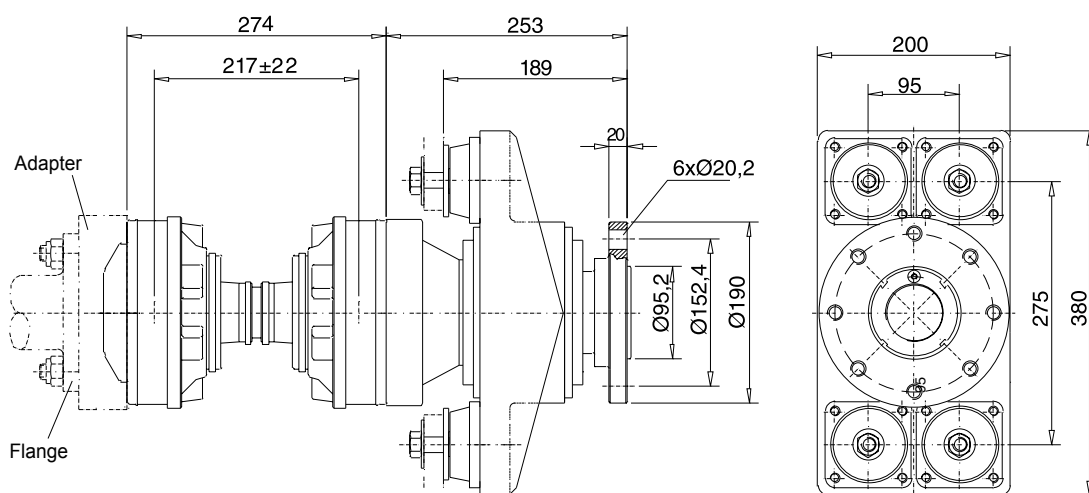
Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.





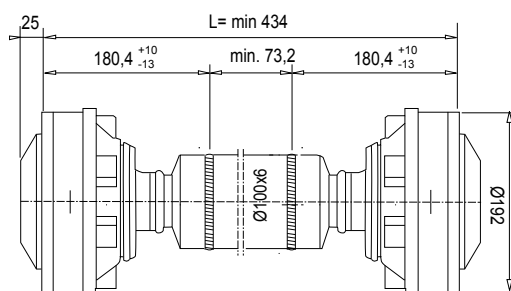
HDL 42.680 Flanged

Max static torque:	10500 Nm / 7750 lbft
Max propeller shaft revolutions:	1700 rpm
Max propeller thrust:	40 kN / 9000 lbf



CV42

Custom-length CV42 driveshaft is available in lengths from 430 mm. Maximum length depends on shaft rpm.



Rating guidelines

HDL 42.680	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Displacement boat	220 (300)	2100	3:1
Planing boat	420 (570)	2600	2:1

Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.

Propeller shaft options

HDL 680 standard version accepts following propeller shaft sizes:

50 mm	2"	2 1/4"	60 mm	2 1/2"	65 mm	70 mm
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Please contact our technical department to assist you in selecting a suitable Aquadrive system for your application.

No noise

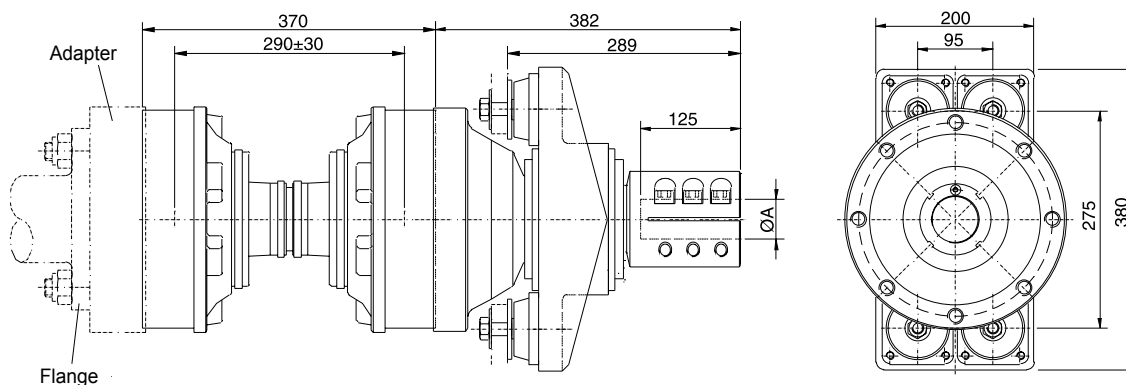
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antivibration system

Heavy Duty Line HDL



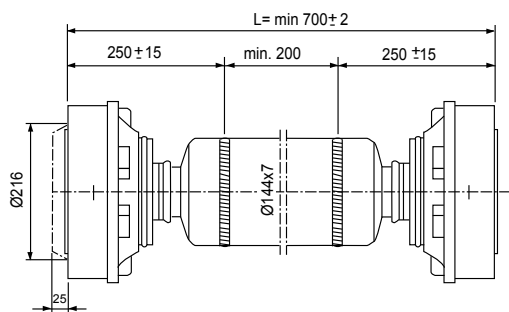
HDL 60.700

Max static torque:	12240 Nm / 9060 lbft
Max propeller shaft revolutions:	1700 rpm
Max propeller thrust:	40 kN / 9000 lbf



CV60

Custom-length CV60 driveshaft is available in lengths from 700 mm. Maximum length depends on shaft rpm.



Rating guidelines

HDL 60.700	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Displacement boat	370 (500)	1900	2.7:1
Planing boat	660 (900)	2300	1.75:1

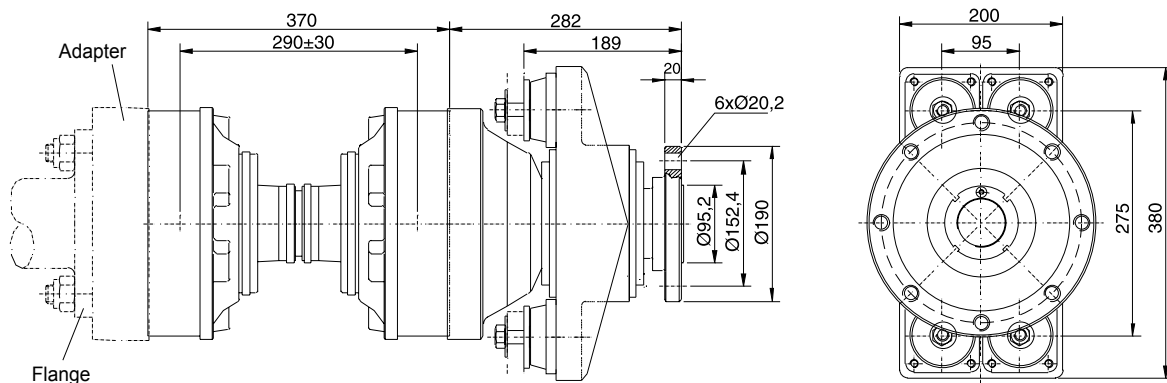
Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.





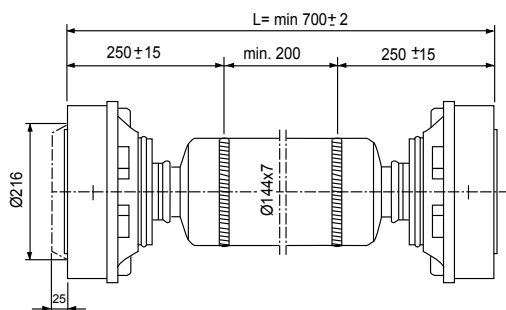
HDL 60.700 Flanged

Max static torque:	12240 Nm / 9060 lbft
Max propeller shaft revolutions:	1700 rpm
Max propeller thrust:	40 kN / 9000 lbf



CV60

Custom-length CV60 driveshaft is available in lengths from 700 mm. Maximum length depends on shaft rpm.



Rating guidelines

HDL 60.700	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Displacement boat	370 (500)	1900	2.7:1
Planing boat	660 (900)	2300	1.75:1

Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.

Propeller shaft options

HDL 700 standard version accepts following propeller shaft sizes:

50 mm	2"	2 1/4"	60 mm	2 1/2"	65 mm	70 mm
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Please contact our technical department to assist you in selecting a suitable Aquadrive system for your application.

No noise

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antivibration system

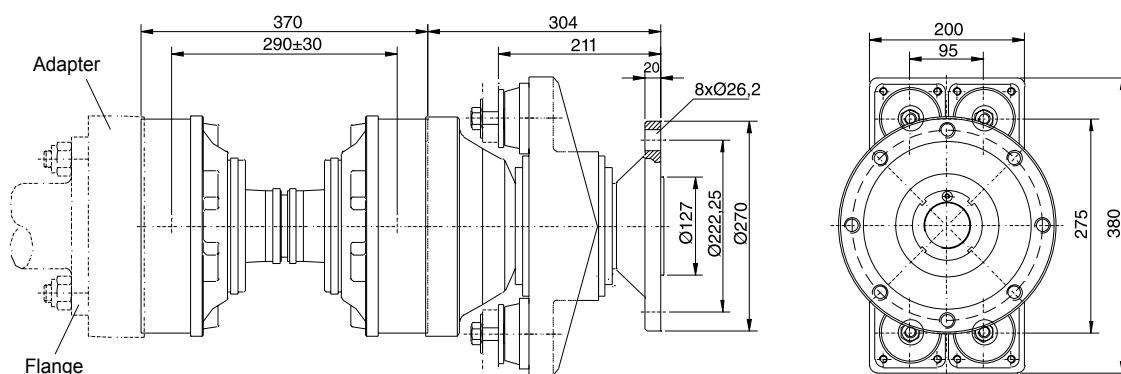
Heavy Duty Line HDL



HDL 60.700 HT*

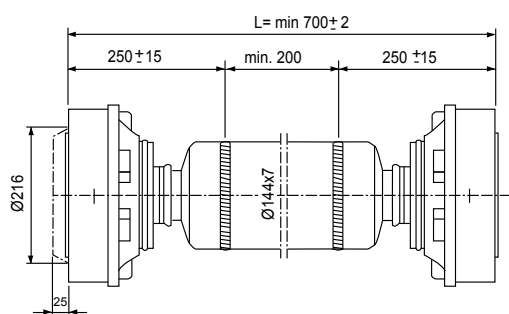
* HT - High tensile steel version

Max static torque:	22000 Nm / 16280 lbf
Max propeller shaft revolutions:	1700 rpm
Max propeller thrust:	40 kN / 9000 lbf



CV60

Custom-length CV60 driveshaft is available in lengths from 700 mm. Maximum length depends on shaft rpm.



Rating guidelines

HDL 60.700HT	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Displacement boat	515 (700)	1900	3:1
Planing boat	735 (1000)	2300	2.5:1

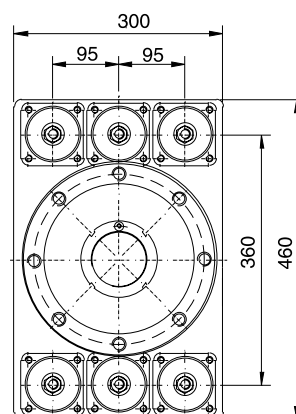
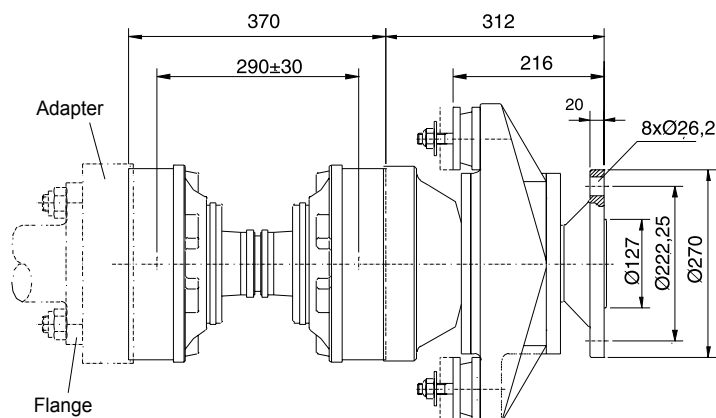
Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.





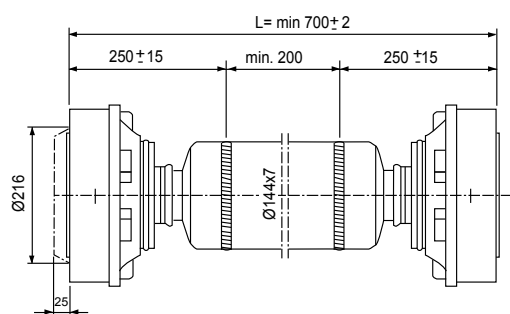
HDL 60.780 Flanged

Max static torque:	25000 Nm / 18500 lbft
Max propeller shaft revolutions:	1400 rpm
Max propeller thrust:	60 kN / 13500 lbf



CV60

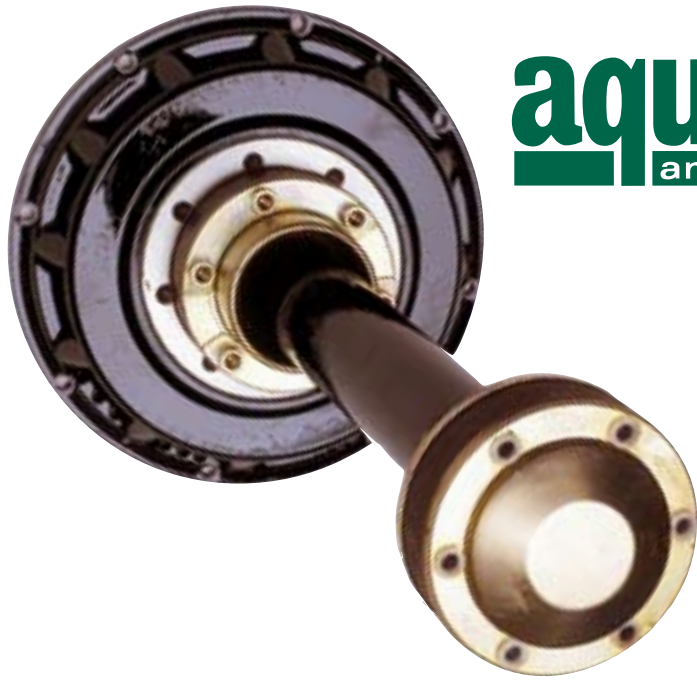
Custom-length CV60 driveshaft is available in lengths from 700 mm. Maximum length depends on shaft rpm.



Rating guidelines

HDL 60.780	Rated power kW / HP	Crankshaft rpm	Gearbox ratio
Displacement boat	590 (800)	2100	3:1
Planing boat	1100 (1500)	2300	1.75:1

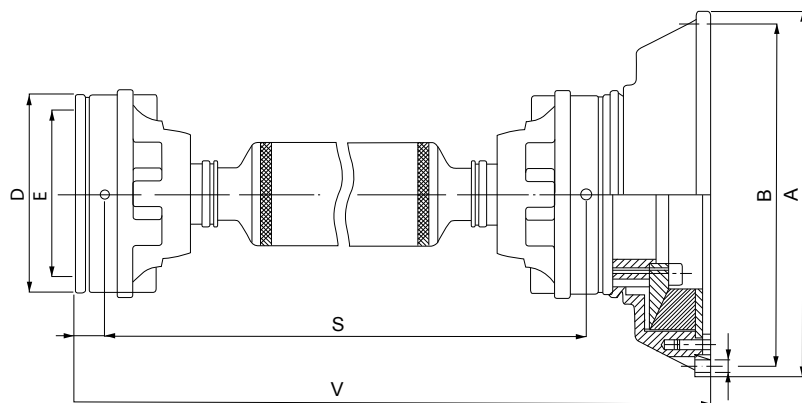
Note: Above rating examples are based on optimum conditions with 2° for each CV joints. In case a CV joint will run at an angle greater than 2°, the max permitted power must be reduced (normally by 8-9% for each degree over 2°). The maximum allowable joint angle is 5-8° depending on shaft rpm.



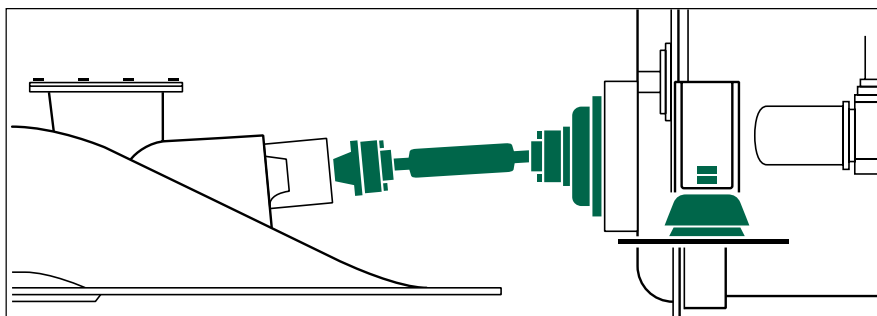
aquadrive[®]
antivibration system

Aquadrive and torsional damping

Soft, flexible rubber elements are normally installed between the engine flywheel and gearbox to avoid torsional vibration. Aquadrive CV shafts can be directly coupled to those gearboxes without additional rubber or flexible elements. For flywheel-mounted 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.

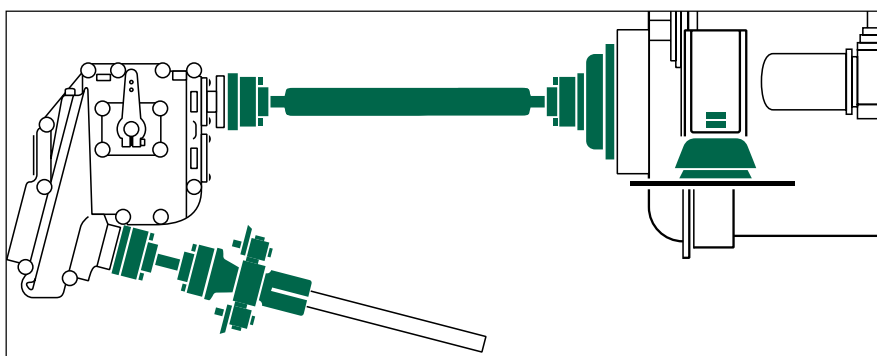


Aquadrive CVT for water-jet



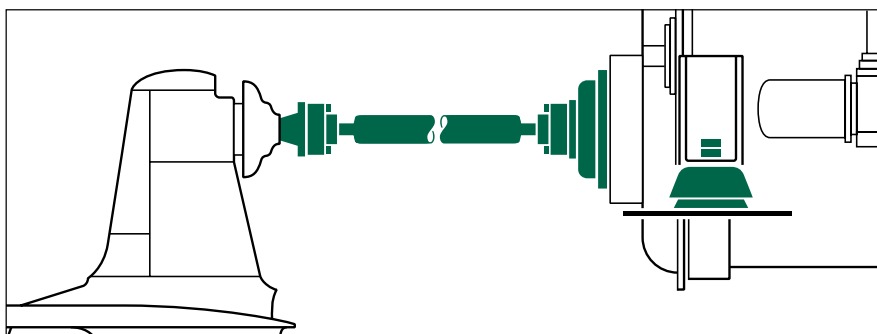
The CVT unit consists of a CV shaft of variable length and a rubber element torsional damper designed to bolt directly to the engine flywheel. This is the ultimate combination of excellent torsional damping and total absorption of misalignment and movement between water-jets and soft mounted engines.

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, then a CV shaft and thrust bearing that takes out the propeller thrust and allows soft mounted gearbox and free alignment. When required, "dual-rate couplings" are available to reduce "gear rattle"

Aquadrive CVT Jack-shaft



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

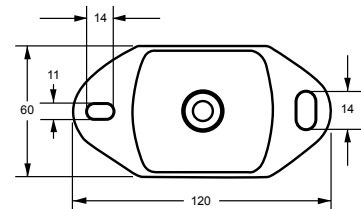
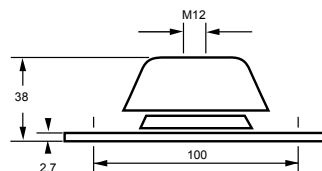
Engine mounts

The Aquadrive system creates free movement between the engine and the propeller shaft. One result is 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 can be used with almost any marine engine, and our expert staff will rapidly select the correct rubber stiffness for the machinery involved.



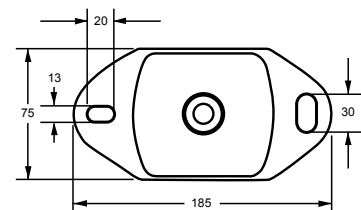
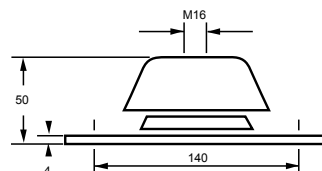
50210

The smallest engine mount of the range is available in four rubber grades for weights up to 60 kg per mount.



50220

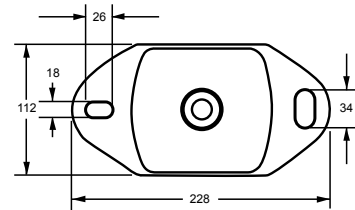
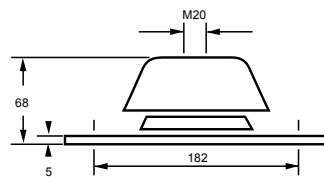
The most versatile mount is available with five different rubber grades and takes weights up to 200 kg per mount.





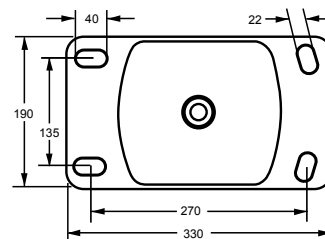
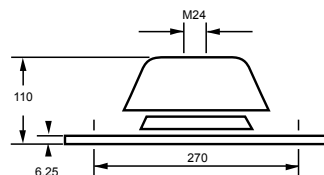
50230

This engine mount is available in four different rubber grades and will take weights up to 800 kg per mount.



50240

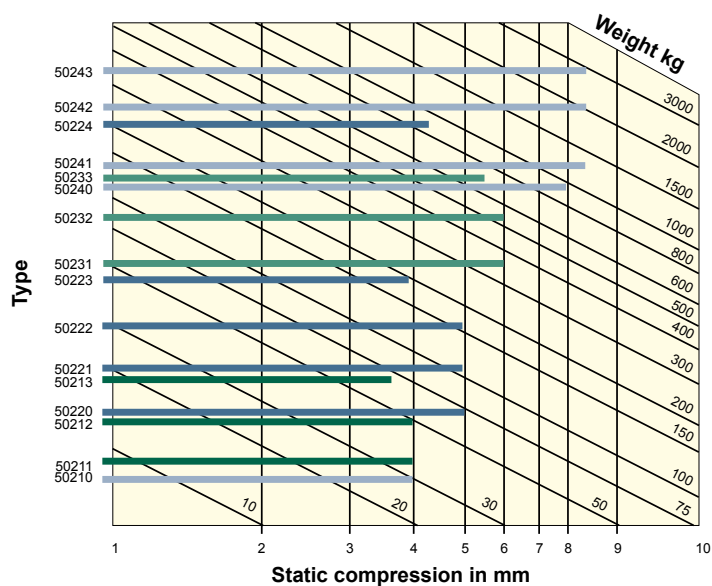
The largest of engine mount of the range is available in four rubber grades taking up to 3000 kg per mount.



Engine mount deflection chart

Selecting the correct rubber grade and mount for a particular engine or generator is a skilled task and our expert staff will advise. For those who wish to study the science, the chart above shows how much deflection will occur on each mount and rubber hardness given a particular weight on the mount. In general you should aim for 3 mm on the 50210, 4 mm on the 50220, 5 mm on the 50230 and 6 mm on the 50240.

■ 50210 ■ 50230
■ 50220 ■ 50240



Aquadrive References



Nimbus 42 Nova, Sweden
Aquadrive CVT



Gran Soleil 56, Italy
Aquadrive ModuLine



Hallberg Rassy 62, Sweden
Aquadrive ModuLine



Fleming 75, USA
Aquadrive HDL



*Discover the peace
and quiet of boating.*



Grand Banks 58 classic, USA
Aquadrive HDL



Norwegian Sea Rescue NSSR, Norway
Aquadrive CV shafts



Najad 511, Sweden
Aquadrive ModuLine



Grand Banks AC 64, USA
Aquadrive HDL



History

Back in 1977 an engineer and boat owner employed by Scatra AB in 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. Aquadrive has since then been developed to be the world leading anti-vibration system.

The company GKN Driveline reserves the right to change, modify or replace any specification or design features illustrated herein.



www.aquadrive.com

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