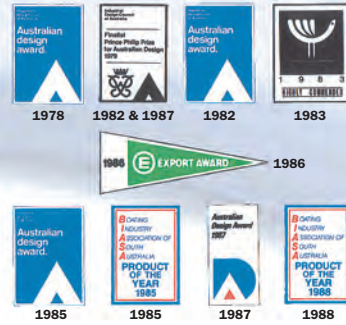




HyDrive

**HYDRAULIC STEERING
FOR INBOARDS
&
POWER & SAIL**



HyDrive Engineering Pty Ltd began manufacturing hydraulic boat steering equipment in South Australia in 1966 and since that time, has been one of the world leaders in boat steering technology. The largest manufacturer in the Southern Hemisphere, HyDrive boasts sales of more than 600,000 units around the world.

HyDrive's huge market in small boat steering systems has led to increased production facilities, extensive quality control and testing procedures, and considerable investment in product design and development.

The range of steering has increased dramatically over the past 20 years with considerable emphasis being placed on the growing need for more efficient and powerful steering equipment to handle larger vessels, and larger horsepower on smaller vessels. Now, HyDrive has a product range which caters to all types of vessels from 5 metres to over 100 metres.

The pedigree of HyDrive steering systems includes a host of accolades and awards for design excellence over the years, including 4 Australian Design Awards, 2 Prince Phillip Prize Finalists, Premier's Award for design excellence, 2 Boating Industry Association awards for innovation, and several other commendations. Whilst this may mean little to a customer, it actually reflects the constant striving for performance and excellence that has made HyDrive a leader in the field of boat steering equipment.

What you expect from a HyDrive product.

You can expect that HyDrive manufacture their products using only optimum materials for exposure to the harsh marine environment.

You can expect that safety margins on our equipment exceed the requirements of Marine Survey Societies.

You can expect that each product you purchase has been fully tested - we do not batch test.

You can expect that HyDrive will constantly strive to provide cutting-edge technology and offer you the most reliable equipment available on the market.

You can expect to be fully supported quickly and efficiently by our worldwide warranty network.

You can expect the steering unit to exceed your expectations.

For further information and the name of your nearest distributor, contact:-

HyDrive Engineering Pty Ltd

59 Wingfield Road, Wingfield
South Australia 5013

Int Tel +61 8 82431633

Int Fax +61 8 84457938

Email: sales@hydrive.com.au

Website: www.hydrive.com.au



Admiral Helms

Tired of fighting with the steering on your boat? Then let an Admiral put you in command.

HyDrive, Australia's largest selling hydraulic steering for small boats, offers the finest in smooth, powerful steering, with quality and materials that are built to last. Large horsepower outboards are handled with comfort and without feedback from engine torque.

It doesn't matter whether you have a small boat with a small outboard, or a larger craft with multiple V-8's, there is a HyDrive Admiral to suit. Everything you need to handle virtually any boat using outboards, inboards, sterndrives or jet units from 4-15 Metres - delivered in a single carton!

The heart of the new Admiral Series is the HyDrive Model 101(28cc/rev) and 102 (35cc/rev) helm unit. These 7-piston pumps are precision manufactured to standards and tolerances that are second to none. In-built lock valves, which eliminate torque feedback are standard. The light, smooth steering must be experienced to be appreciated.

But why HyDrive?

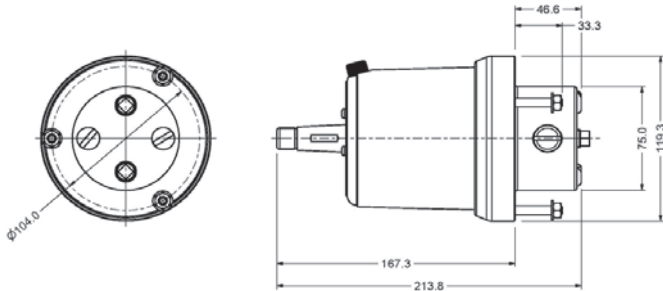
While it's true that there are other hydraulic steering systems on the market, none of them have been built using the same salt-water resistant design criteria or give you the same value as HyDrive.

Designed as a complete Do It Yourself installation, everything you need is supplied including detailed instructions. You don't even have to know anything about hydraulics!

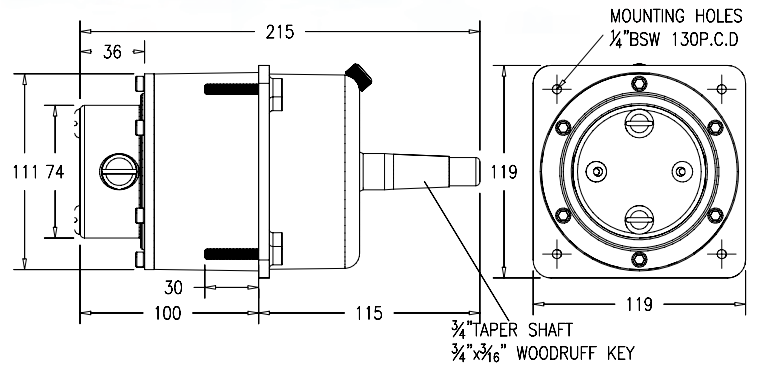
Just compare the list of features and then consider carefully which system you really want to fit on your boat.

NEW

Model 401 & 402 front-mount helm



ADMIRAL HELMS

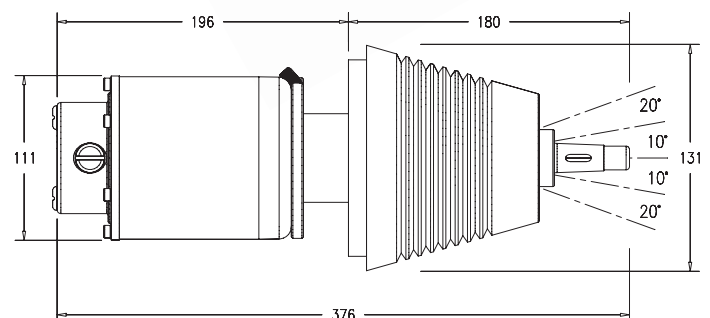


The Admiral Helm unit

- Compact, low-profile standard helm with minimal protrusion from the console
 - Optional front mount or tilting helm style
 - In-built lock-valve eliminates torque feedback. The wheel stays where you put it!
 - Field replaceable shaft seal
 - Solid stainless steel helm shaft for optimum strength and durability. Do not settle for "hardened alloy" (anodised aluminium)
 - Superior material choice - even the wheel nut and washer are brass
 - 4 precision bearings for smoothest performance
 - All helms are built to High Performance standards
- you don't pay more for HyDrive Power!-**



Fully tilting helm design
Model 101 - Tilt or 102 - Tilt



INBOARD CYLINDERS

Inboard



Model 212 Sport

212 Sport Cylinder

HyDrive has a wide range of hydraulic steering for in-board rudders and jet units. The Admiral series provides a powerful and economical alternative to traditional cable and mechanical steering systems. Various cylinder sizes can be used with the Admiral model 101 and 102 helm units to provide the best combinations of torque for your boat. Single or multiple steering stations are simple.

For small inboard vessels, the 212 Sport is the ideal choice, giving very light, direct control for most boats up to approx 8 metres. The cylinder is made from the finest anodised aluminium and stainless steel.

This unit is available in a complete kit using the 101 Helm unit - Part Number SPORTKIT-2



Model 212 Jet

212 JET Cylinder

Most jet units use only a small tiller arm and require little movement to control the full swing of the nozzle. The 100mm (4") stroke of the 212-JET cylinder makes a very compact, yet powerful alternative to cable steering, and provides instant and accurate control of the jet at a very low turns ratio.

This unit is available in a complete kit using the 102 Helm unit for lowest turns - Part Number JETKIT-1



Model 210 & 216 Cylinder

Model 213 Cylinder

210, 213 & 216 Cylinders

For larger vessels, and those demanding increased protection from exposure to heavy conditions, the Model 210, 213 and 216 cylinders offer the ultimate choice in marine steering. Using chrome-plated brass, bronze and stainless steel, these powerful cylinders are ideally suited to both pleasure and light commercial vessels. Fully insulated to help prevent electrolysis and designed for in-field service, these larger systems are available in either kit form or individual components as required.

IBKIT1 - Model 210 balanced cylinder (85KgM)

IBKIT2 - Model 210 un-balanced cylinder (85KgM)

IBKIT3 - Model 216 balanced cylinder

(80KgM - ideal for small yachts with heavier piston rod and reduced turns)

IBKIT4 - Model 213 balanced cylinder (110KgM)

Note: For larger vessels see HyDrive Commercial and Sailing systems.



POWER STEERING *Power*

12VDC Power steering to suit any brand or horsepower outboard

INBOARDS • OUTBOARDS

The HyDrive POWERKIT-12 is a 12volt DC system designed to provide Electronic-hydraulic power steering to handle large horsepower or multiple outboard engines. Tried and proven for over 3 years in our USA and UK markets on extreme performance boats, we now offer it to outboard dealers and boat builders world-wide to maintain their ability to compete with the very latest in outboard steering technology.

The system can be used to upgrade existing manual hydraulic steering or can be installed as a complete steering unit.

The heart of the package is the microprocessor controlled pump unit which senses loads and delivers pressures up to 1000psi to handle the most powerful applications with finger-tip control on the wheel. This "smart" pump cycles into neutral with minimum current draw when no load is sensed and instantly delivers flow and pressure when loads are applied.

The pump unit comes as a package with a single station steering helm unit which delivers 50cc per rev offering very direct steering with a turns ratio on a 210BH outboard steering cylinder of only 3 turns lock to lock.

This is the basic start-up kit:-

POWERKIT-12

1 x HD12VDC PUMP UNIT

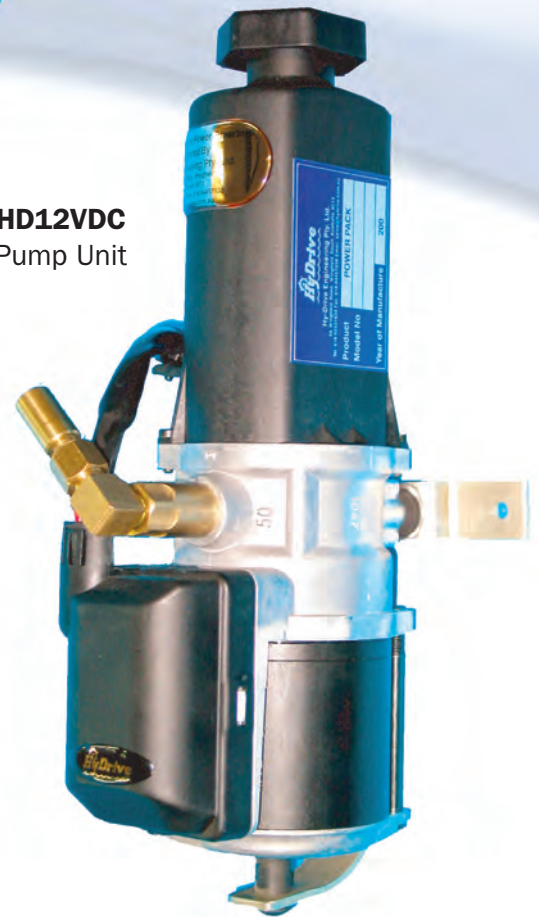
1 X PS50 HELM UNIT

This kit must be added to steering cylinders, which are available to suit all types of outboards and engine wells.

MODELS TO SUIT INBOARDS AND JETS

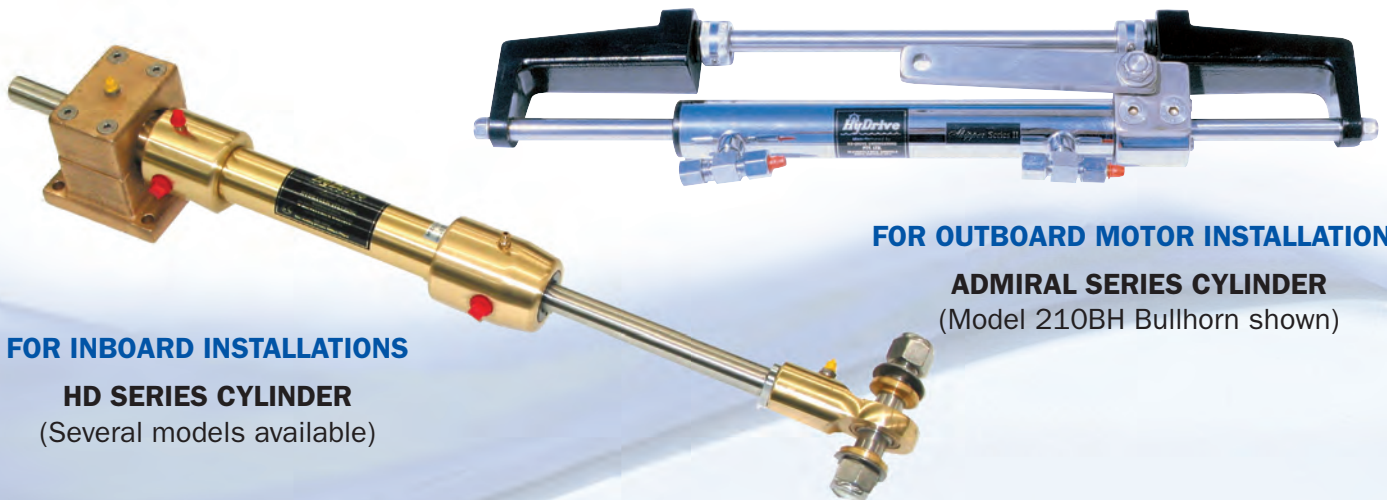
The same kit can be used for steering inboard rudders and jets using any cylinder up to around 300cc capacity, and will deliver finger-tip control.

HD12VDC
Pump Unit



PS50 HELM UNIT

Automatically reverts to a manual pump in the event of power failure.



FOR INBOARD INSTALLATIONS

HD SERIES CYLINDER

(Several models available)

FOR OUTBOARD MOTOR INSTALLATIONS

ADMIRAL SERIES CYLINDER

(Model 210BH Bullhorn shown)

POWER STEERING

Power

Consider power steering instead of manual hydraulic

HyDrive's impressive range of manual hydraulic outboard steering is ideal for most applications, however, power steering may be suitable for large horsepower boats that require small turn ratios for little effort or for people who require power assistance in turning the wheel. The system can be installed as a complete unit, or used to upgrade an existing HyDrive manual hydraulic unit that is in good condition. Before upgrading to a power steering unit which outputs 1000psi, the cylinder must be inspected for suitability. Power steering systems are available for dual stations, single or dual cylinders, catamaran steering without mechanical tie-bars and can include provision for an autopilot.

TILT-HELM

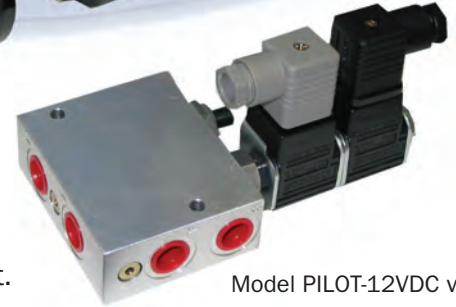
HyDrive's tilting helm unit offers versatility and simple installation for angled flybridges and consoles where the tilting feature is an advantage. Adjusts to +/- 20degrees.



Model PS50-TILT helm

AUTOPILOT VALVE

Autopilot solenoid valves with pressure compensated flow controls are available to ensure accurate handling when used with an autopilot such as the COURSEMASTER CM80i intelligent pilot which is designed for outboards and does not require a rudder transducer. It can be used with any brand of autopilot.



Model PILOT-12VDC valve

You may not have to handle this amount of Horsepower, but isn't it nice to know that HyDrive can !



60ft RIB built by Crompton UK

2000HP of thrust - handled by the power of just two HyDrive 210BH Bullhorn cylinders and the Powerkit-12



**HyDrive**

HYDRIVE ADMIRAL HD SERIES HELM UNITS

Helm Units

Intelligent and efficient internal design ensures optimum performance and maximum durability under the most extreme conditions.



INBOARDS • COMMERCIAL

HyDrive has released a new range of manual helm units with increased capacity, incorporating some of the unique design features that made the “2000 Series” helm units the most awarded steering design in marine history.

The 2000 Series helms have proven their performance over the last 37 years and have received 5 awards for design excellence. The unique anti-wear porting design has been retained in the new HD series, making them arguably the most durable and efficient pump in their class.

The HD Series helms with an increased efficiency rating of around 30%, are also available in a wider range of displacements to meet the increasing demand for larger manual hydraulic steering systems.

The new models are fully interchangeable with the older HyDrive models, and due to new technology used, the helm units are more compact in size than their predecessors.

Designed for use with the HyDrive HD Series cylinders, multiple steering stations are simple to install, and offer a range of torques from 100KgM to over 2600KgM making them suitable for most vessels up to 50 Metres.

- **Stainless steel shafts**
- **Fully chromate-converted aluminium housing, coated in polyurethane for maximum corrosion resistance**
- **Fully pressure-compensated for wear resistance**
- **High pressure rating**
- **High safety factors**
- **Designed for use with HyDrive ULTRA-15 hydraulic fluid**

Model 103 - 105

These helms are supplied with fittings to suit 1/2” copper tubing only.

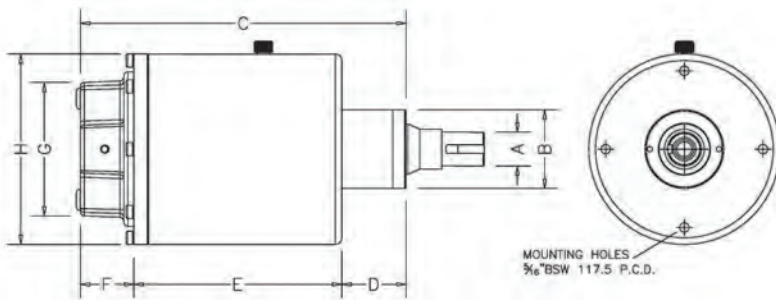
Model 103 Helm units are supplied with 3/4” taper shafts as standard. Parallel shafts are available as an option.

Model 104 and **105** units are supplied with 1” Parallel shafts as standard. 3/4” taper shafts are available as an option on model 104 only.

Model 106 - 107

These helms are supplied with 1” parallel shafts and fittings to suit 5/8” diameter copper tubing only.

Model 103 to 107 do not have in-built lock valves. When used in dual stations they require the use of lock valves to prevent counter-rotation. Should feed-back be required on one or both stations, one of the manual or electric locking options should be used. (See section on feedback options)



Model 103,104,105,106 &107 HELM PUMP DIMENSIONS

| MODEL | A | B | C | D | E | F | G | H |
|-------|---|----|-----|----|-----|----|-----|-----|
| 103 | T | 59 | 303 | 48 | 156 | 40 | 102 | 143 |
| 104 | P | 59 | 303 | 48 | 156 | 40 | 102 | 143 |
| 105 | P | 59 | 303 | 48 | 156 | 40 | 102 | 143 |
| 106 | P | 59 | 334 | 48 | 182 | 46 | 112 | 170 |
| 107 | P | 59 | 334 | 48 | 182 | 46 | 112 | 170 |

T = 3/4" dia TAPER(1" per ft) SHAFT - 3/4"x3/16" WOODRUFF KEY
 P = 1" dia PARALLEL SHAFT - 1/4"x1" SQUARE KEY

DISPLACEMENTS

Model 103 - 2.00cu ins (35cc) per rev
 Model 104 - 2.6 cu ins (43cc) per rev
 Model 105 - 5.2 cu ins (86cc) per rev
 Model 106 - 7.5 cu ins (125cc) per rev
 Model 107 - 10 cu ins (165cc) per rev

Manual Emergency Steering for Power Assisted Systems.

The HyDrive HD Series helm units are ideally suited for use with large power steering systems and can provide emergency manual backup steering at working pressures up to 1000psi. These helms install into the power steering circuit and are isolated by means of 3-way ball valves until required in order to maintain total system integrity. For emergency use, they are fully compatible with most hydraulic fluids used in power-assisted systems.

HD SERIES CYLINDERS

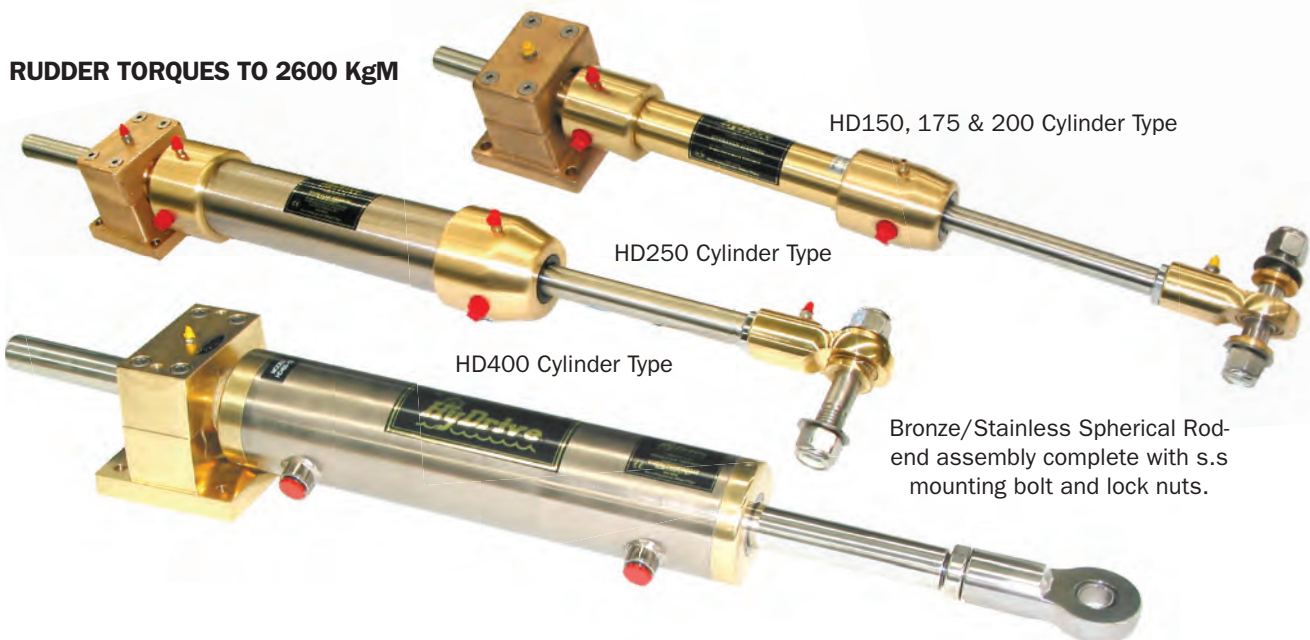
HD Series

HD Series Cylinders - The Pride of the Fleet

This superb range of cylinders are designed and constructed exclusively for use on boat steering equipment, and are made from the finest marine-grade materials available. They feature 316 stainless steel piston rods (not hard-chromed), high tensile bronze and brass end-caps and mounting brackets, and fully articulated attachments for the most durable performance.

The HD150, 175, 200 and 250 model cylinders are supplied with a spherical rod-end for attachment to the tiller arm and include a heavy duty stainless steel pin and nut set. The unique rod-end is made entirely from bronze and stainless steel, greased through the centre for maximum wear protection, and is fully wear adjustable. The huge HD400 cylinders are supplied with an all-stainless steel spherical rod end with in-built lubrication.

The perfect match for the HD Series helm units, HyDrive cylinders are available in a range of sizes and strokes to cater to a wide range of rudder torque capacities for all types of vessels, power or sail, leisure or commercial.



RUDDER TORQUES TO 2600 KgM

CYLINDER CAPACITY, TILLER LENGTH and TORQUES

HELM TURNS HO/HO FOR VARIOUS CYLINDERS

| Cylinder Model | Stroke inches | Tiller inches | Torque KgM | Volume cc's | Helm 103 | Helm 104 | Helm 105 | Helm 106 | Helm 107 |
|----------------|---------------|---------------|------------|-------------|----------|----------|----------|----------|----------|
| 150-9 | 9 | 8.0 | 107 | 172 | 4.9 | 4.0 | 2.0 | 1.4 | 1.0 |
| 150-9 x 2 | 9 | 8.0 | 215 | 344 | 10 | 8 | 4 | 3 | 2 |
| 150-12 | 12 | 10.7 | 143 | 229 | 6.5 | 5.3 | 2.7 | 1.8 | 1.4 |
| 150-12 x 2 | 12 | 10.7 | 286 | 458 | 13 | 11 | 5 | 4 | 3 |
| 175-10 | 10 | 8.9 | 185 | 296 | 8.4 | 6.9 | 3.4 | 2.4 | 1.8 |
| 175-10 x 2 | 10 | 8.9 | 369 | 591 | 17 | 14 | 7 | 5 | 4 |
| 175-12 | 12 | 10.7 | 221 | 355 | 10.1 | 8.2 | 4.1 | 2.8 | 2.1 |
| 175-12 x 2 | 12 | 10.7 | 443 | 709 | 20 | 16 | 8 | 6 | 4 |
| 200-12 | 12 | 10.7 | 289 | 463 | 13.2 | 10.8 | 5.4 | 3.7 | 2.8 |
| 200-12 x 2 | 12 | 10.7 | 578 | 927 | 26 | 22 | 11 | 7 | 6 |
| 200-15 | 15 | 13.4 | 362 | 579 | 16.5 | 13.5 | 6.7 | 4.6 | 3.5 |
| 200-15 x 2 | 15 | 13.4 | 723 | 1158 | 33 | 27 | 13 | 9 | 7 |
| 250-12 | 12 | 10.7 | 506 | 811 | 23.2 | 18.9 | 9.4 | 6.5 | 4.9 |
| 250-12 x 2 | 12 | 10.7 | 1012 | 1622 | 46 | 38 | 19 | 13 | 10 |
| 250-15 | 15 | 13.4 | 633 | 1014 | 29.0 | 23.6 | 11.8 | 8.1 | 6.1 |
| 250-15 x 2 | 15 | 13.4 | 1265 | 2027 | 58 | 47 | 24 | 16 | 12 |
| 400-12 | 12 | 10.7 | 1326 | 2124 | 60.7 | 49.4 | 24.7 | 17.0 | 12.9 |
| 400-12 x 2 | 12 | 10.7 | 2651 | 4247 | 121 | 99 | 49 | 34 | 26 |

HD Series Cylinders are manufactured to the highest standards and safety margins. They meet all requirements of International Survey Societies, CE, ABYC & NMMA



YACHT AND CATAMARAN STEERING

Steering

Yacht steering WITH feedback

CATAMARANS • SAILBOATS

Many traditional sailors have resisted changing to hydraulic steering due to a loss of feel or feedback common with many of the hydraulic systems on the market.

With the introduction of the new Admiral HD Series helm units, HyDrive introduce an Evolution in Yacht Steering.

As a result of years of intense research and development, HyDrive Hydraulic steering offers huge advantages for sailing boats :-

Simple installation with hydraulic tubing that can be run literally anywhere on the boat - no more straight line cables, pulleys, or sheaves!

- Instant movement - No slack!
- Fully compatible with hydraulic autopilots
- Totally Manual - no power required
- Ease of fitting to wind-vanes
- Safety and reliability that only hydraulics can offer.
(You trust hydraulics to stop you safely in your car)
- Cost savings on expensive quadrants (Overall costs on a complete hydraulic system will most likely work out considerably less than that of an equivalent cable system of equal quality and power)



HD Series
Model 106 - 107



HD Series
Model 103 - 105

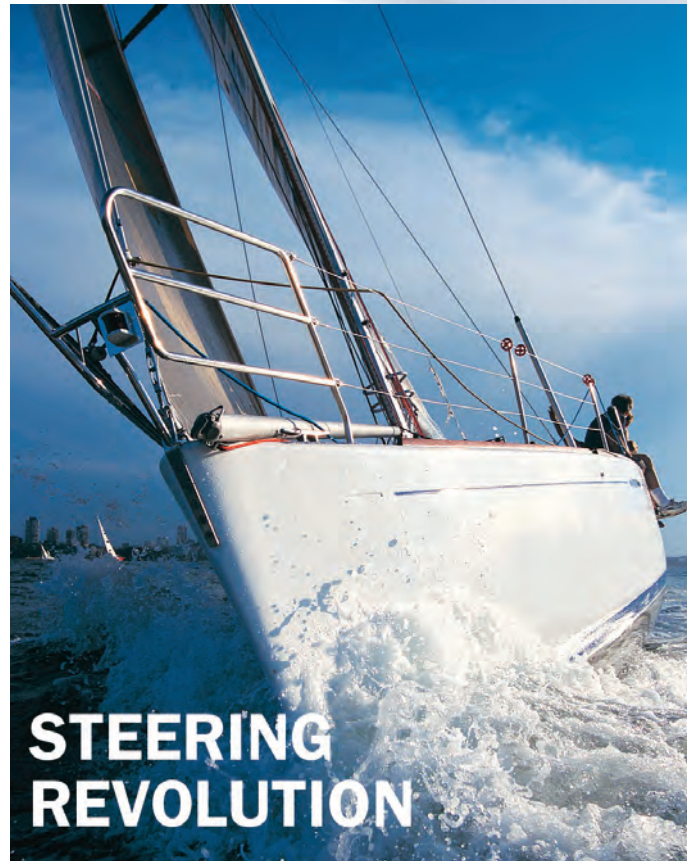
The ULTIMATE for Yacht feedback

The new improved performance and unique oil balanced design make these helm units the ultimate for yacht steering where feed-back to the wheel is required. The efficiency of the design means that even small loads can be sensed at the wheel, giving the "feel" of mechanical steering with all the safety and advantages of hydraulics. (See previous page for torque specifications & turns ratios)

Precision, quality and intelligent design are the keys to this revolution in steering.



Fluid - Link systems can be handled by any of our HD or Admiral Series systems.



Catamaran steering WITHOUT a Tie - Rod

HyDrive is now recognised as the market leader in hydraulic steering for catamarans, both power and sail, inboard or outboard, and is the specialist in fluid-link steering systems.

Fluid-Link is the term for two independent cylinders connected via a simple valve and controlled by the helm unit like any standard steering. The valve allows the cylinders to be aligned to each other, and synchronisation is maintained by the quality of the cylinders and seals themselves.

While a mechanical tie-rod is the most reliable system, on most cats this is impossible to achieve. A Fluid-Link therefore offers the perfect solution to a major problem, and gives fast, responsive, and reliable steering.

All hydraulic circuits of this type will eventually get out of synchronisation, however the high quality bore finish and seal design of a HyDrive unit will offer maximum performance before realignment is necessary.

FEED BACK OPTIONS FOR SAILBOATS

Feedback

Many yacht sailors prefer to maintain a high degree of feed-back, or feel, from their steering systems and traditionally this has been limited to cable steering. Now, with the new Admiral range of HD Steering units, this is fully achievable with hydraulics. In some instances however, feedback can be a disadvantage for either an autopilot, or for pure comfort in heavy conditions. The following accessories are available.

ELECTRIC BY-PASS

With Dual Stations or Single Stations fitted with HYDRAULIC autopilots, the helms (pumps) require isolation from each other to prevent motoring each other under pressure and failing to steer the boat accurately. The **FEEDBACK-DS12V** (for 12vDC or **FEEDBACK-DS24V** for 24Vdc) unit incorporates a dual lock valve for isolation of the two stations. This lock valve is automatic and does not prevent normal operation of the steering. Simply turning the wheel operates the valve and the steering functions normally. When you stop rotating the wheel the valve self-locks and prevents the helm from being motored under pressure. In effect this then removes ALL feedback.

To allow feedback, the unit has twin by-pass solenoids which divert the oil flow around the valve to the main steering helm unit and gives that station full feel. The valve can be activated by either a separate switch, or, if fitted to an autopilot, will turn off the feedback every time the pilot is turned ON. Switching the pilot OFF returns feed-back to the steering wheel.

MODELS AVAILABLE FOR SINGLE STATIONS

Where someone wants the option of turning feel ON or OFF on the system, there is a similar model available for single stations. The Part Number **FEEDBACK-SS12V** or **FEEDBACK-SS24V** is smaller and more compact than the dual unit.

MANUAL CONTROL OF FEEDBACK

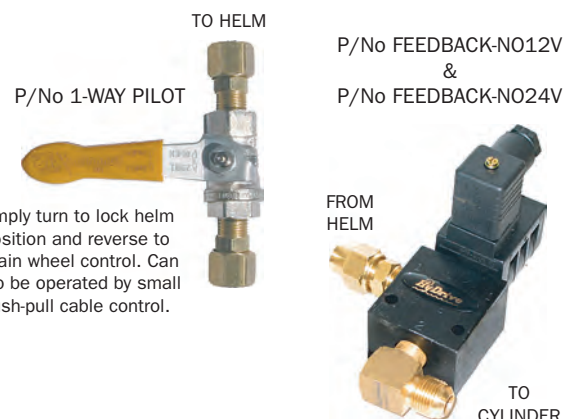
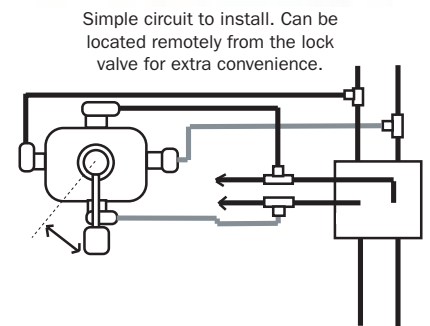
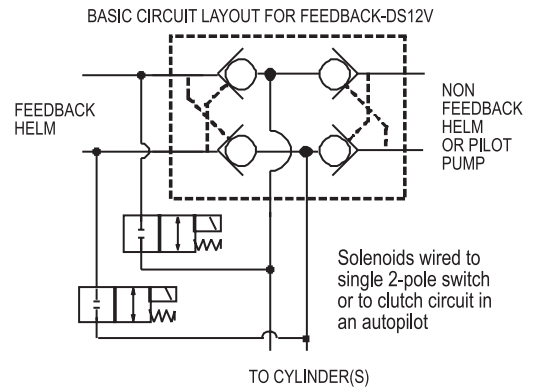
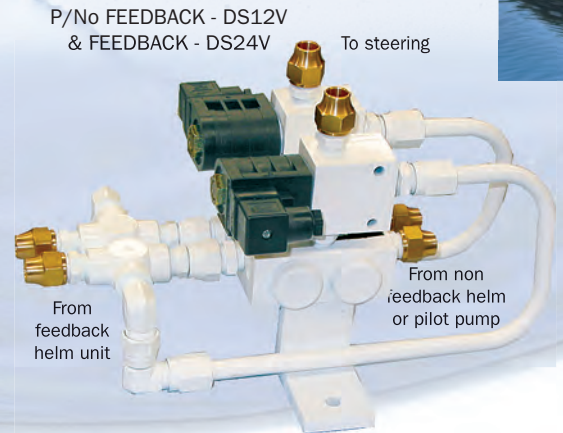
Where optional feedback is required, there is a manually operated alternative to the electric powered solenoid. This valve by-passes the Dual Station lock valve or Single Station lock valve in the same way as the electric version above. Part Number "**FEEDBACK**" can be mounted remotely from the lock valve, making it easier to operate from the helm position.

MANUAL LOCKING OF HELM

If an autopilot is fitted, and where feel is required ALL the time, by installing a single manual valve in ONE of the cylinder lines, you can lock the helm unit and prevent it from being turned. This not only prevents the autopilot from moving the helm, but also the steering wheel - just like a brake. This is quite popular where feel is to be retained at all times, but the ability to lock the wheel for a spell is essential. Simple to fit, it needs to be placed where it can be easily operated. Alternatively, it can be activated by a push-pull cable unit.

ELECTRIC LOCKING OF HELM

An electric version of the same principle is available. P/No **FEEDBACK-NO12V** (12Volt DC) and **FEEDBACK-NO24V** (24Volt DC) valves can lock one single line to the helm with the flick of a switch and is very simple to install.



WHICH UNIT WILL FIT MY BOAT?

Which one?

For Outboards or Sterndrives

GENERAL INFORMATION

For outboard steering selection, the most important requirement is the amount of room available either side of the outboard motor. Unless you have a pair of very large horsepower motors, any of the kits, from the Sportkit to the powerful OBKIT1 using the 210BH cylinder, can steer your boat. The ultimate decision comes down to a combination of personal preference, your budget, and the amount of engine-well space available. The drawings on the rear page provide you with the minimum space required for each type of cylinder. Please ensure that the measurement is taken at the narrowest section of your engine well - particularly with tapered wells, as the cylinder tilts down with the motor. Keep in mind however, that for some boats which have plenty of available space, or have the motors mounted on pods, the OBKIT1 using the 210BH cylinder may be the most practical for installation to allow for boarding ladders, ski-ropes, or other obstacles.

For Outboards or Sterndrives

Selection of steering for inboard rudders is not as simple as for outboard or sterndrive powered vessels. Each rudder design has its own characteristics which are affected by vessel speed, propeller diameter/pitch, horsepower, tunnels, nozzles etc and this makes selection a matter of calculation, rather than selecting one model to suit all. There is a questionnaire available from our website (or your dealer) which, when completed and forwarded to us, or your HyDrive supplier, gives all information required to calculate the rudder torques on your vessel. Keep in mind that there is no single formula which can take all types of vessel into account.. We need more information than simply the rudder dimensions, to give you peace of mind that the unit recommended will perform safely and correctly.

Contents of a KIT

Each standard Admiral Kit comes in a single carton with the following items:-

- Admiral Series Model 401 Helm
- 2 litres HyDrive ULTRA-15 fluid
- 15 metres (50ft) high pressure 3/4" od hydraulic tubing*
- Installation Instructions
- All fittings to suit
- Bleeder Kit
- The Cylinder type of your choice

In short - you get everything except a steering wheel. What could be simpler. No complicated part numbers - just a simple KIT number.

* MERCKIT & VOLVOKIT do not include tubing

Dual Stations

Multiple stations are very simple to install and provide the helmsman with instant and light control from any number of steering positions. Ideal for fly bridge, rear deck, or tuna tower consoles, complete Dual Station Kits which include lock valves and all other fittings are available to make your installation very simple indeed.

Autopilots

Admiral Series helm units are designed for use with hydraulic autopilots, and have in-built lock valves and balance-line ports to ensure simple and economic installation. The HD Series helm units are also designed for use with hydraulic autopilots and require the fitting of external lock valves (Part No 331C or 318C) to isolate the helm from the pilot pump unit. (See also section on Feedback Options for Sailboats)

Catamarans

If you have inboards, outboards, sterndrives or jets, HyDrive has a fluid-link circuit design that will allow your steering to operate without mechanical tie-rods. (See previous page on Catamarans)

Installation

Installation of HyDrive steering equipment is very simple. From the minute you open the box and begin to read the comprehensive instructions, you will find the system has been designed to be installed by even the most inexperienced boating enthusiast without any hydraulic knowledge. Everything you need is included, right down to the nuts, bolts, and loctite.

Warranty

HyDrive Admiral series units are warranted for a period of 2 years from date of sale. (All Sportkit cylinders and complete steering systems on commercial vessels limited to 12 months)



OBKIT1 Complete kit featuring the **211 BH** cylinder



ACCESSORIES

Accessories

REMOTE BY-PASS VALVES FOR FLUID-LINK CATAMARANS

For larger vessels where manual activation of the manual by-pass valves (CatN8, 330C etc) are difficult, a remotely activated 12 or 24VDC bypass valve can be fitted. This allows alignment by the simple flick of a switch, and is adjusted by using the steering wheel and rudder angle indicators.

Valves come with blank female ports, and fittings are an additional cost. Valves need to be correctly selected to fit the tubing used in the installation.



BYPASS - NC12V
BYPASS - NC24V
For use with
Catamarans

BYPASS - NO12V
BYPASS - NO24V
For use with
Linear Drives

LINEAR DRIVE CYLINDERS

The same valve with a NORMALLY OPEN configuration can be used to allow hydraulic linear drive cylinders to float when not being used by an autopilot.



Part No - RAI

AUTOPILOT ISOLATION VALVES

The 2-WAY PILOT is used to isolate the pilot pump from the main steering lines, and the 1-WAY PILOT is used to isolate the balance line. These two valve types are essential to maintain manual steering in the event of pilot pump failure or service.



2 - WAY PILOT

330C BALL VALVE

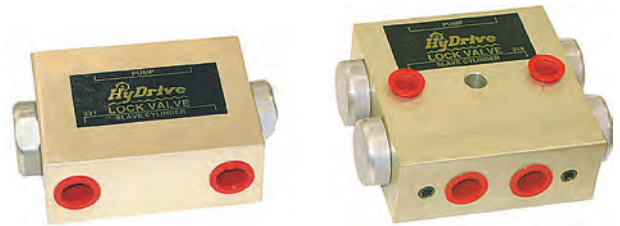
1 - WAY PILOT

LOCK VALVES

The 331C lock valve is a single double acting lock valve designed to prevent load motoring the helm unit. This should be used where the autopilot has a lock valve of it's own, or to eliminate feedback from a highly active rudder.

The 318C lock valve is a dual double acting lock valve and should be used on all dual station installations using 103-107 helm units, unless feedback is required (see feedback options).

These valves are available with various fittings and kits to make dual station installations very simple.



331 LOCK VALVE

318 LOCK VALVE

EXPANSION TANK KIT

Where the combination of helm size, tubing size, and run length result in a large oil volume in the system, it may be necessary to fit an expansion tank - particularly in areas where there is a large variation in temperature. This tank can be fitted to any of the model 103-107 helm units, and is usually located behind the console, out of sight - either higher or lower than the helm unit - eliminating any problems due to oil expansion.



BULKHEAD FITTINGS



EXPANSION KIT



OTHER FITTINGS

HyDrive provides a wide range of fittings to help make your installation complete. The chrome brass bulkhead fittings are a perfect solution to pass through fibre glass transoms and engine wells.

Copper, steel, and stainless steel tubing, and matching fittings - are also available.

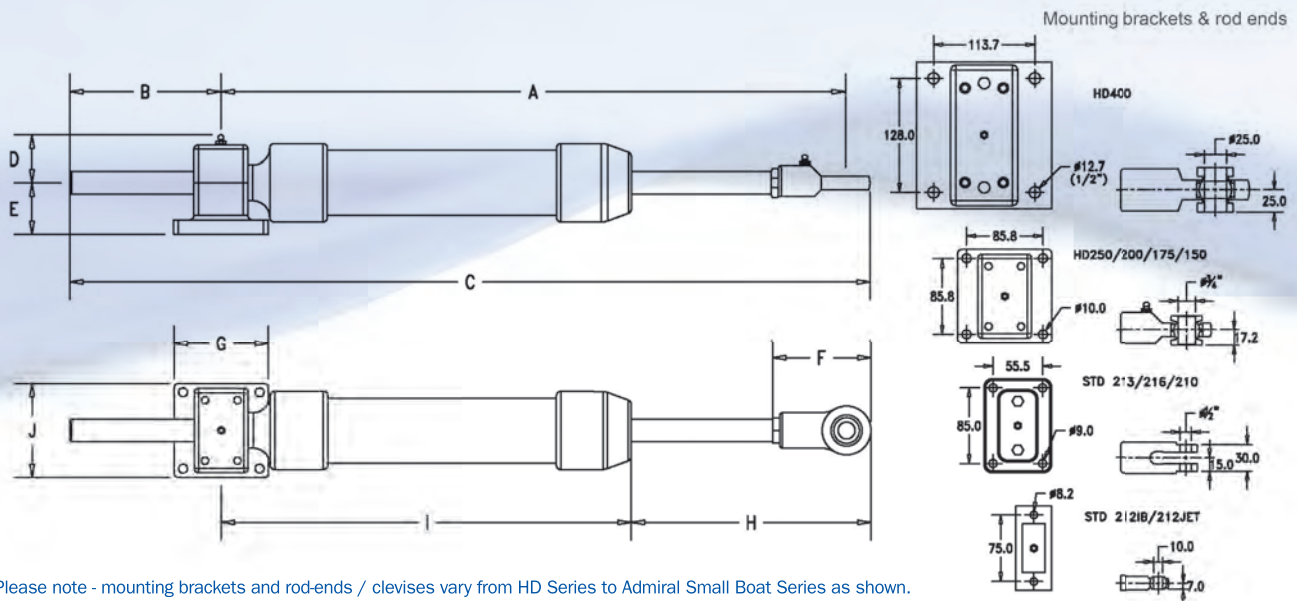


A range of fittings is available.

ACCESSORIES



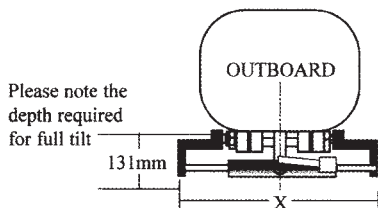
HD SERIES CYLINDER DIMENSIONS



Please note - mounting brackets and rod ends / clevises vary from HD Series to Admiral Small Boat Series as shown.

| MODEL | STROKE | A | B | C | D | E | F | G | H | I | J |
|----------|--------|-----|-----|------|------|----|-----|-----|-----|-----|-----|
| 212JET | 104 | 356 | 74 | 442 | 35.5 | 37 | 64 | 40 | 120 | 250 | 95 |
| 212STD | 182 | 469 | 111 | 594 | 35.5 | 37 | 64 | 40 | 157 | 326 | 95 |
| 210STD | 204 | 527 | 121 | 661 | 41 | 47 | 95 | 76 | 210 | 330 | 106 |
| 216STD | 204 | 527 | 121 | 661 | 41 | 47 | 95 | 76 | 210 | 330 | 106 |
| 213STD | 204 | 527 | 121 | 661 | 41 | 47 | 95 | 76 | 205 | 335 | 106 |
| HD150-9 | 229 | 547 | 149 | 750 | 57.5 | 58 | 111 | 106 | 231 | 370 | 106 |
| HD150-12 | 305 | 688 | 187 | 902 | 57.5 | 58 | 111 | 106 | 268 | 447 | 106 |
| HD175-10 | 254 | 611 | 161 | 799 | 57.5 | 58 | 111 | 106 | 242 | 396 | 106 |
| HD175-12 | 305 | 687 | 187 | 902 | 57.5 | 58 | 111 | 106 | 268 | 447 | 106 |
| HD200-12 | 305 | 687 | 187 | 902 | 57.5 | 58 | 111 | 106 | 268 | 447 | 106 |
| HD200-15 | 381 | 802 | 225 | 1054 | 57.5 | 58 | 111 | 106 | 306 | 523 | 106 |
| HD250-12 | 305 | 703 | 187 | 918 | 57.5 | 58 | 111 | 106 | 268 | 463 | 106 |
| HD250-15 | 381 | 818 | 225 | 1070 | 57.5 | 58 | 111 | 106 | 306 | 539 | 106 |
| HD400-12 | 305 | 864 | 205 | 1106 | 75 | 85 | 161 | 152 | 342 | 561 | 165 |

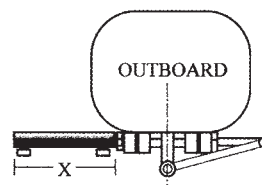
OUTBOARD AND STERNDRIVE CYLINDER DIMENSIONS



Please note the depth required for full tilt

Clearance requirements for the following cylinder types

- "X" =
- 210BH - 615mm (24")
 - 211BH - 540mm (21")
 - 212BH - 492mm (19.4")
 - 411BH - 540mm (21")



Clearance requirements for the following cylinder types

- "X" =
- 210T - 540mm (21.2")
 - 210TSE - 330mm (13")
 - 212T - 315mm (12.4")

| Model | A | B | C | D | E | F | G | H | I | J | K |
|------------------|-----------------|-----------------|-----------------|-------------|-----------------|-----------------|--------------|--------------|----------------|--------------|--------------|
| 212 | 15.25" (388) | 18.75" (476) | 22.25" (565) | 7" (178) | 7.625" (194) | 2.75" (70) | - | 3" (76) | 3.75" (95) | 1.5" (38) | 1.5" (38) |
| 210, 213,216, | 16.5" (419) | 20.75" (527) | 24.5" (622) | 8" (203) | 9.25" (235) | 3.25" (82.5) | 2.1" (55) | 3.3" (85) | 4.25" (108) | 3" (76) | 2" (50) |

TORQUE OUTPUT AND TURNS DETAILS

| KIT Number | Cylinder | Used for | Turns Ho/Ho | Torque | Cylinder Volume |
|------------|----------|-----------------|-------------|--------|-----------------|
| OBKIT1* | 211BH | Outboards | 5.4 | 85KgM | 154cc |
| OBKIT1-HP | 210BH | Outboards | 5.4 | 85KgM | 154cc |
| BOSUNKIT-1 | 411BH | Outboards | 5.4 | 85KgM | 154cc |
| OBKIT2 | 210T | O/B & S/Drive | 5.4 | 85KgM | 154cc |
| OBKIT3 | 210T | O/B & S/Drive | 5.4 | 85KgM | 154cc |
| PROKIT | 212BH | Outboards | 4.5 | 80KgM | 135cc |
| SPORTKIT | 212T | O/B & S/Drive | 3 | 40KgM | 78cc |
| SPORTKIT2 | 212 | Inboards & Jets | 3 | 40KgM | 68cc |
| IBKIT1 | 210 | Inboards & Jets | 5.4 | 85KgM | 154cc |
| IBKIT2 | 210SE | Inboards & Jets | 5.4 | 85KgM | 154cc |
| IBKIT3 | 216 | Inboards | 4.5 | 80KgM | 137cc |
| IBKIT4 | 213 | Inboards | 6 | 110KgM | 175cc |

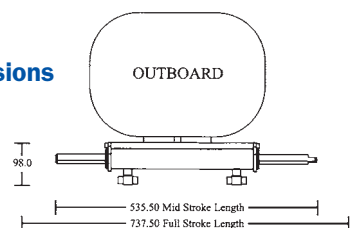
*Designate model OBKIT-H for HONDA outboards.

**Note: Some other kits are available for specialist installations.

All kits use Model 401 Helms as standard. Model 402 helms can be substituted if desired, reducing turns Ho/Ho by approx. 1 turn.

POWERKIT-12 Torque figures are the same as those of the manual systems shown.

216FM Dimensions



QUITE SIMPLY THE BEST