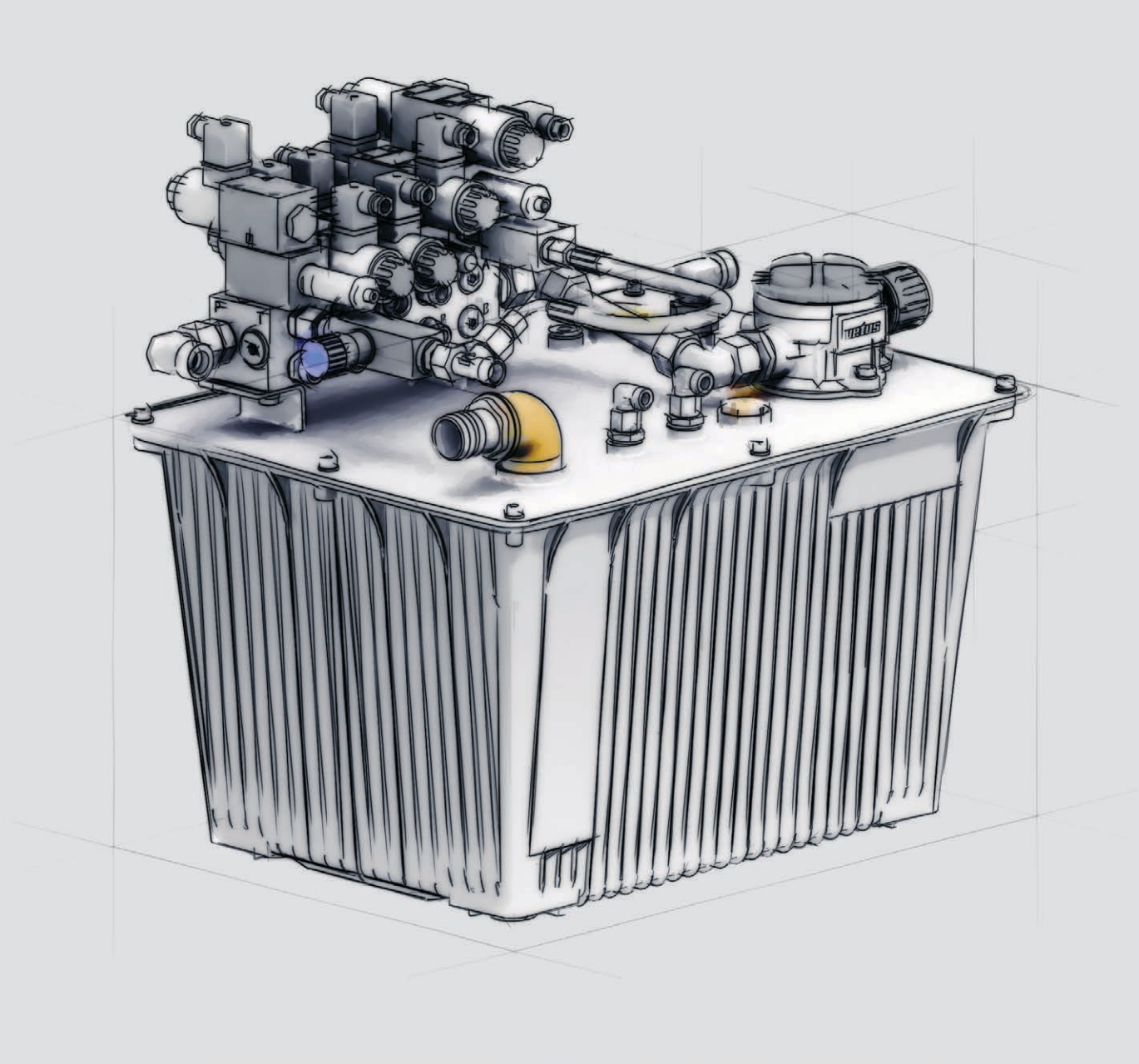
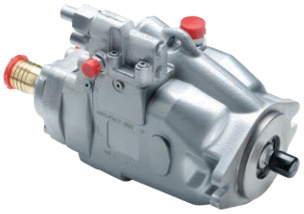
Power hydraulics

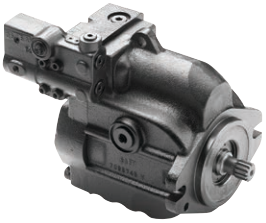


Overview

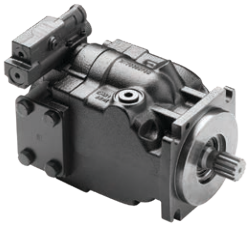
Hydraulic pumps see page 251



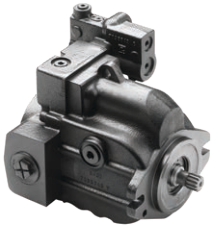
HT1015E62



HT1015SD2



HT1022SD



HT1017SD

HT1016SD

Hydraulic tanks see page 252

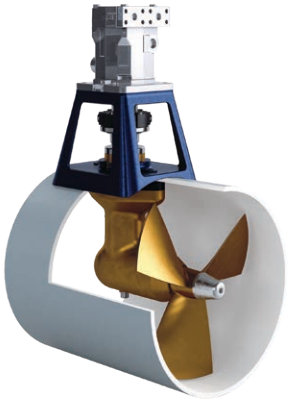
HT1028B

HPTANK

HT1010BS

Hydraulic bow and stern thrusters see page 257 - 258

BOW..HMD



BOWH

Stabilizers see page 258

STAFIN..B

Hydraulic power steering see page 260

HT1038

Hydraulic propulsion see page 262

Hydraulic windlasses see page 265

VWC SERIES

VWCLP SERIES

VC SERIES

Power hydraulics in general

Power where you need it, for as long as you need it

VETUS Hydraulic Systems are an excellent way to move the power of a "Prime Mover" engine to user devices around the boat, by means of the controlled flow of high pressure fluid moving through flexible hoses or rigid tubes. The prime mover may be a main propulsion engine, the engine of a diesel generator, or a "powerpack" engine dedicated to powering the hydraulic system. A user device is any item or system of mechanical equipment, including bow and stern thrusters, windlasses, capstans, winches, cranes, hatch lifters, roll stabilizers and power steering.

Hydraulic systems are complex and require a lot of expertise but the results are well worth the effort. A VETUS customer support team member is available by email, to discuss your boat configuration and usage and to recommend hydraulic user devices and central system equipment.

You will receive our recommendations for your Power Hydraulic system within 48 hours of all information being received and finalized. Remember that in some cases it is difficult or impossible to retrofit a power take-off and it is therefore recommended to order a power take-off when purchasing an engine or gearbox.

Hydraulic Pumps

VETUS hydraulic pumps are variable volume, load sensing, piston pumps and are able to provide full hydraulic flow and pressure at all PTO/ prime-mover engine speeds, providing the engine is producing enough power at those speeds. These pumps adjust themselves to meet the requirement of the activated user devices, and when no hydraulic flow is required, stop pumping and freewheel, so no clutch is required at the Power Take Off (PTO) on which the pump is mounted.

Standard hydraulic pumps stocked by VETUS

Non-standard pumps are made to order.

Part Code	Pump capacity (cc) (fluid pumped in one revolution)	Direction of Rotation	Shaft	Weight kg approx	Torque in Newton Metres for each bar of operating pressure*	Suction and pressure port location	Available SAE flange	Max cont rpm
HT1015SD2	45	LH - anticlockwise	13 spline	27	0.72	rear	SAE B 2 bolt	2800
HT1015E62	62	LH - anticlockwise	13 spline	24	1	rear	SAE B 2 bolt	2600
HT1016SD1	30	LH - anticlockwise	13 spline	24	0.48	side	SAE B 2 bolt	3200
HT1016SD2	45	LH - anticlockwise	13 spline	27	0.72	side	SAE B 2 bolt	2800
HT1017E62	62	RH - clockwise	13 spline	24	1	rear	SAE B 2 bolt	2600
HT1017SD1	30	RH - clockwise	13 spline	24	0.48	side	SAE B 2 bolt	3200
HT1017SD2	45	RH - clockwise	13 spline	27	0.72	side	SAE B 2 bolt	2650
HT1022SD	75	LH - anticlockwise	14 spline	27	1.2	side	SAE C 4 bolt	2400
HT1023SD	75	RH - clockwise	14 spline	27	1.2	side	SAE C 4 bolt	2400
HT1016SD3	100	LH - anticlockwise	17 spline	56	1.6	side	SAE C 4 bolt	2450
HT1016SD4	130	LH - anticlockwise	17 spline	56	2.1	side	SAE C 4 bolt	2200
HT1027**	45	RH - clockwise	13 spline	27	0.72	side	SAE B 2 bolt	2800

* It may be necessary to reduce pump pressure to avoid exceeding the maximum allowed torque for the PTO, even if that means reduced power for the user device.

** This pump is configured to mount on the PTO of a John Deere diesel engine.

All pumps come standard with a connection kit.

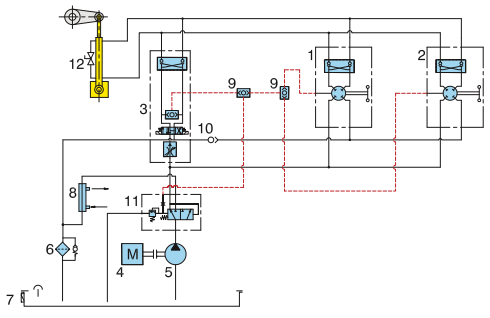


Diagram of a single hydraulic drive

It is possible to connect various equipment devices to one hydraulic pump.

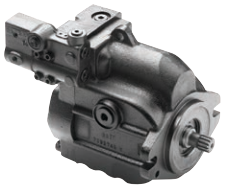
1. Steering pump
2. Second steering position
3. Autopilot
4. Engine
5. Hydraulic pump
6. Return filter
7. Hydraulic fluid tank
8. Oil cooler
9. Shuttle valve
10. Non-return valve
11. Priority valve
12. Steering cylinder with bypass

Hydraulic pumps (Load-sensing)

Specifications
- Capacity: 62 cc
- Rotation: Counterclockwise viewed from end of shaft
- Connection: SAE-B flange, 13 spline shaft
  Rear connection for suction and pressure
  Fits VETUS DEUTZ engines and PRM gearboxes
- Maximum r.p.m.: 2.880

HT1015E62

Specifications
- Capacity: 45 cc
- Rotation: Counterclockwise viewed from end of shaft
- Connection: SAE-B flange, 13 spline shaft
  Rear connection for suction and pressure
- Fits VETUS DEUTZ engines and PRM gearboxes
- Maximum r.p.m.: 2.800
- Displacement limiter



HT1015SD2

Specifications
- Capacity: 62 cc
- Rotation: Clockwise viewed from end of shaft
- Connection: SAE-B flange, 13 spline shaft
  Rear connection for suction and pressure
- Maximum r.p.m.: 2.880

HT1017E62

Specifications
- Capacity: 30 cc (SD1) or 45 cc (SD2)
- Rotation: Counterclockwise viewed from end of shaft
- Connection: SAE-B flange, 13 spline shaft
  Side connection for suction and pressure
- Maximum r.p.m.: 3.600 SD1. / 2.800 SD2
- Displacement limiter

HT1016SD1

HT1016SD2

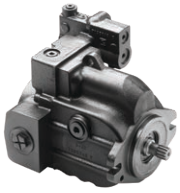
Specifications
- Capacity: 75 cc
- Rotation: Counterclockwise (HT1022SD), clockwise (HT1023SD) viewed from end of shaft
- Connection: SAE-C flange, 14 spline shaft
  Side connection for suction and pressure
- Maximum r.p.m.: 2.880

HT1022SD

HT1023SD

Specifications
- Capacity: 30 cc (SD1) or 45 cc (SD2)
- Rotation: Clockwise viewed from end of shaft
- Connection: SAE-B flange, 13 spline shaft
  Side connection for suction and pressure
- Maximum r.p.m.: 3.600 SD1. / 2.800 SD2
- Displacement limiter

  For John Deere engines, pump type HT 1027 has an extension shaft, for connection to the water pump.



HT1017SD1

HT1017SD2

Specifications
- Capacity: 100 cc (SD3) or 130 cc (SD4)
- Rotation: Counterclockwise viewed from end of shaft
- Connection: SAE-C flange, 17 spline shaft
  Side connection for suction and pressure
- Maximum r.p.m.: 2.800 SD3
  2.600 SD4

HT1016SD3

HT1016SD4

Hydraulic tanks

Hydraulic systems require the installation of a hydraulic tank, as a collection point for hot hydraulic fluid returning from all of the user devices in the system, and as a reservoir from which the pump or pumps can draw the hydraulic fluid and re-pressurize it for re-use. The returning hydraulic fluid foams when it reaches the tank and returns to atmospheric pressure. So the tank must be sized so that the fluid is in the tank long enough for the foam to "boil out", returning the fluid to a completely liquid state, able to maintain its volume as it is re-pressurized by the pump(s).

The table shown on the next page provides guidance for tank selection for systems driving thrusters. All other device will be covered if the system is adequately sized for the thrusters.

Hydraulic reservoir tanks

Examples of hydraulic reservoir tanks.

HT1010 comes with a NG6 (D03) 5 fold manifold and one HT1013 on/off directional valve as standard. A HT1011 single step or HT1012 dual step load sensing device should be ordered separately.

HT1028B

HPTANK

HT1010

HT1010BS

Tank type	HT1028B	HPTANK	HT1010	HT1010BS
Tank capacity (L)	20	38	70	130
Weight (kg)	24	29	34	68
Total height (mm)	415	565	490	580
Wide (mm)	470 x 310	530 x 210	620 x 480	730 x 600
Voltage (DC)	24 (12 on request)	24 (12 on request)	24 (12 on request)	24 (12 on request)
Vibration dampers (ordered separately) **Height (mm)**	HT3020 (set of 4) 15	HT3010 (set of 4) 30	HT3010 (set of 4) 30	HT3010 (set of 4) 30
Material body	aluminium alloy	stainless steel (AISI 316)	aluminium alloy	stainless steel (AISI 316)

Hydraulic tanks

The chart below provides a guideline for tank types for systems including thrusters, although this will be reviewed by your VETUS Power Hydraulics support engineer in developing the equipment list for your system. In most circumstances, all other devices will be covered if the tank is big enough for the thrusters.

Tank specifier for thruster systems

		One thruster				Two thrusters			
Tank type		**HT1028B**	**HPTANK**	**HT1010**	**HT1010BS**	**HT1028B**	**HPTANK**	**HT1010**	**HT1010BS**
	Tank capacity litre	20	38	70	130	20	38	70	130
	Maximum oil contents litre	18	35	63	117	18	35	63	117
	Approx. weight of oil in kg	17	32	58	107	17	32	58	107
	Dry (empty) weight of tank in kg	24	29*	34	68**	24	29*	34	68**
	Approx weight of full tank in kg	41	61	92	175	41	61	92	175
	Approx height overall including valves and dampers (mm)	430	565*	680	610**	430	565*	680	610**
	Approx length (mm)	470	530	620	730**	470	530	620	730**
	Approx depth overall including valves (mm)	310	430***	480	600**	310	430***	480	600**
	Additional minimum clearance required at top for filling and filter maintenance	250	300	250	350	250	300	250	350
Thruster type	Single thruster flow rate litre per minute								
BOW55HMD	13	✓	✓	✓	✓	x	✓	✓	✓
BOW95HMD	18	✓	✓	✓	✓	x	✓	✓	✓
BOW160HMD	28	x	✓	✓	✓	x	x	✓	✓
BOW230HMD	40	x	✓	✓	✓	x	x	✓	✓
BOW310HMD	70	x	x	✓	✓	x	x	x	✓
BOWH410	92	x	x	x	✓	x	x	x	✓
BOWH550	92	x	x	x	✓	x	x	x	✓

* No manifold/valve block or valves can be mounted on the top of the HP tank
** This weight or dimension does not include valves, blocks or manifolds, as these are assembled to each customer's order
*** It is possible, with a mounting plate, to install a manifold and valves on the front of the HP tank, but those dimensions are not included here

The weights and dimensions provided in this chart are approximate and will vary with each tank, manifold and valve assembly, but for a successful installation, it is essential that adequate space and support is planned and designed into the engine room for the tank assembly and hydraulic pumps.

Manifold for additional control units

An extension of the basic manifold block. Required if more than five solenoid control devices are installed. Includes additional electrical connection box.

HT1026

Hydraulic oil

We recommend the use of the following hydraulic fluids: VETUS Hydraulic oil HT (HLP ISO-VG46).

Type	Specification	
VHT1	1 L	ISO VG 46
VHT4	4 L	ISO VG 46
VHT20	20 L	ISO VG 46

VHT

Hydraulic load sensing and control devices

In order to direct the oil flow from the hydraulic pump to the equipment to be driven, load sensing and control devices, which are built up in modular construction segments, are used. These ensure the correct speed and sense of rotation of the equipment to be driven. Supplied as standard for 24 VDC electric installations, 12 VDC on request.

HT1011

Single step load sensing device (24 VDC). Gives zero or full flow rate, depending on whether a load is sensed or not. Used for e.g. bow and stern thrusters. Includes electrical connection box.

HT1011

HT1012

Dual step load sensing device (24 VDC). Gives zero, partial or full flow rate, dependent on load sensed. Used for e.g. bow and stern thrusters. Includes electrical connection box.

Not compatible for systems with a fixed displacement pump.

HT1012

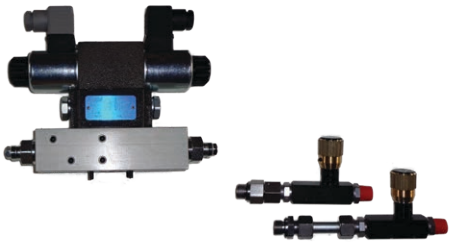
HT1013

Solenoid control unit (24 VDC) for bow and stern thrusters.

HT1013

HT1014

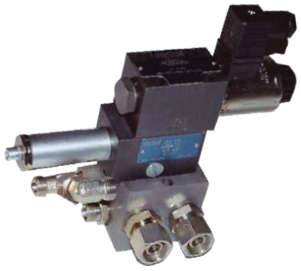
Solenoid control unit (24 VDC) with counterbalance, for e.g. mast lowering, hinged radar support (or any other hydraulic cylinder for numerous applications).



HT1014

HT1024

Solenoid control unit (24 VDC) for use with a set of stabilisers.



HT1024

HT102311

Control unit for anchor winches, capstans and other applications which are driven by a hydromotor with a flow rate of up to 60 L/minute. Pressure and oil flow separately adjustable.

HT102312

Control unit for anchor winches, capstans and other applications which are driven by a hydromotor with a flow rate of up to 60 L/minute. Only the oil flow is adjustable.

HT102311

HT102312

Hydraulic thruster control joysticks

BPJSTA

Joystick (3-positions) for operation, with full thrust only, of a hydraulic bow- or stern thruster. Only suitable for a single step load-sensing device (HT1011). Intended for dashboard mounting, without panel, without on/off switch.

Watertight to IP 65.

BPJSTA

BPJ5B

Joystick (5-positions) for operation, with full or half thrust, of a hydraulic bow- or stern thruster in combination with a dual step load-sensing device (HT1012).

Watertight to IP 65.

BPJ5B

DBPJ5B

Dual joystick (5-positions) for operation, with full or half thrust, of a hydraulic bow- or stern thruster in combination with a dual step load-sensing device (HT1012).

Watertight to IP 65.

DBPJ5B

BPJE2

Control panel with built in time delay when reversing the direction of rotation. For operation of a bow thruster at full thrust, in combination with a single step load sensing device (HT1011). Panel suitable for 12 or 24 VDC.

Watertight to IP 65.

BPJE2

BPJDE2

Control panel with two joysticks and built in time delay when reversing the direction of rotation. For operation of bow and stern thrusters at full thrust, in combination with two single step load sensing devices (HT1011). Panel suitable for 12 or 24 VDC.

Watertight to IP 65.

BPJDE2

HT5034

This electrical connection box is supplied with type HT1011, HT1012 and HT1026.

HT5034

Type	Specification
HT1011	Single step load sensing device, incl. electrical connection box
HT1012	Dual step load sensing device, incl. electrical connection box
HT1013	Solenoid control unit 24 VDC, for bow and stern thrusters, (12 VDC available to special order)
HT102311	Control unit 24 VDC, for anchor windlass, (12 VDC available to special order)
HT102312	Control unit 24 VDC, for anchor windlass, (12 VDC available to special order)
BPJSTA	Joystick switch only for dashboard mounting
BPJ5B	Hydraulic thruster control panel with a joystick (5 positions)
DBPJ5B	Hydraulic thruster control panel with dual joystick (5 positions)
BPJE2	Control panel with built in time delay and single joystick
BPJDE2	Control panel with built in time delay and two joysticks
HT5034	Electrical connection box

Proportional valves

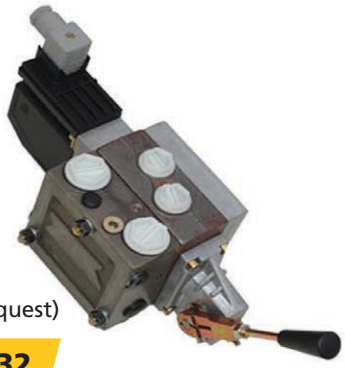
HT1032/35

Proportional valve assemblies. HT1032 for one thruster or windlass HT1035 for two thrusters or a thruster and a windlass. These valves can be mounted on a HT1010 tank.

0 - 10 VDC

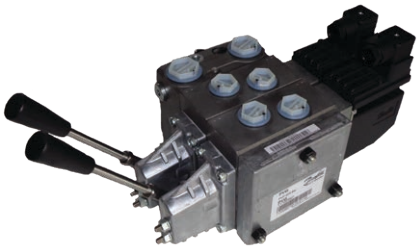
HT1032EU

HT1035EU



24 VDC (12 VDC on request)

HT1032



24 VDC (12 VDC on request)

HT1035

If the system incorporates two thrusters with proportional control, then a HT1035 dual valve assembly will be supplied, rather than two HT1032s.

Model HT1034 Proportional control joystick

Single joystick control.
A LED lights up when the joystick opens the proportional valve. The LED will go out when the joystick is in neutral.

The LED can be installed in one of the mounting holes of the joystick.

If more than 1 steering position is required, a MSCOBOX must be ordered for every extra steering position to let the joysticks communicate.

HT1034

Thruster type	Valve type	Valve Assembly or Part Number	
		on/off-directional	Two stage, Load sensing
BOW55HMD	Direct operating	HT1013	HT1012
	Proportional	HT1032	Not applicable
BOW95HMD	Direct operating	HT1013	HT1012
	Proportional	HT1032	Not applicable
BOW160HMD	Direct operating	HT1013	HT1012
	Proportional	HT1032	Not applicable
BOW230HMD	Direct operating	HT1013	HT1012
	Proportional	HT1032	Not applicable
BOW310HMD	Direct operating	HT1013	HT1012
	Proportional	HT1032	Not applicable
BOWH410	Direct operating	Not applicable	Not applicable
	Proportional	HT1032	Not applicable
BOWH550	Direct operating	Not applicable	Not applicable
	Proportional	HT1032	Not applicable

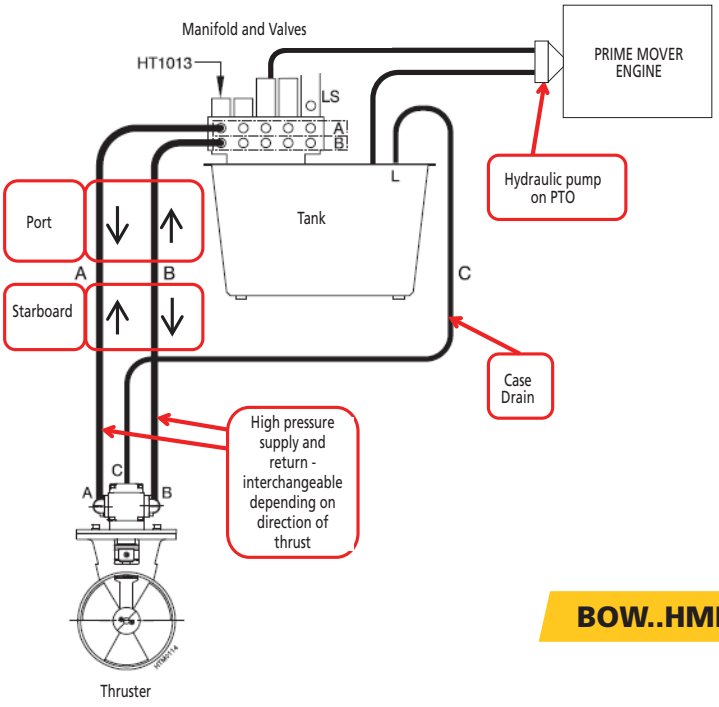
Note: HT1011 single stage and HT1012 two stage, load-sensing valve set is supplied standard with an HT5034 electrical junction box.

Hydraulic bow and stern thrusters

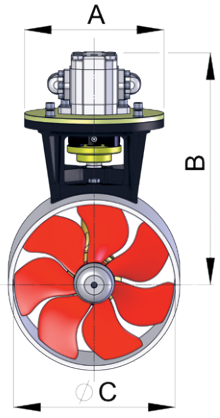
Type BOW..HMD

VETUS hydraulic thrusters are able to run continuously, although not as primary propulsion units. They deliver high power and great reliability, with no electrical connections at the thruster or pump(s) and they need little routine maintenance. These thrusters are available with several control heads, in three control regimes, including proportional control.

The connections and flow of oil for a thruster



Type	Specifications	Connection kit
BOW55HMD	Hydraulic bow thruster 55 kgf incl. hydro motor 3,5 kW, for tunnel diam. 150 mm	HT3057
BOW95HMD	Hydraulic bow thruster 95 kgf incl. hydro motor 6,0 kW, for tunnel diam. 185 mm	HT3057
BOW160HMD	Hydraulic bow thruster 160 kgf incl. hydro motor 12,3 kW, for tunnel diam. 250 mm	HT3056
BOW230HMD	Hydraulic bow thruster 230 kgf incl. hydro motor 16,4 kW, for tunnel diam. 300 mm	HT3061
BOW310HMD	Hydraulic bow thruster 310 kgf incl. hydro motor 26,8 kW, for tunnel diam. 300 mm	HT3058
BP1053	Bronze propeller for BOW22024/BOW230HM	
BP1182	Bronze propeller for BOW300HM/310HM	



Note: The connection kit consists of couplings specially selected for the desired hydraulic hoses.

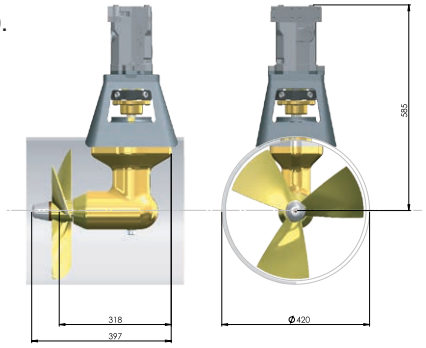
Specifications	BOW55HMD	BOW95HMD	BOW160HMD	BOW230HMD	BOW310HMD
Thrust N (kgf)	**550 (55)**	**950 (95)**	**1600 (160)**	**2300 (230)**	**3100 (310)**
Hydraulic motor power kW	3,5	6,0	12,3	16,4	26,8
Hydraulic motor speed rpm	3000	4100	3730	2540	2760
Hydraulic motor capacity cm³/rev	4,2	4,2	8,4	16,8	27
Flow rate l/min	13	18	28	40	70
Operating pressure bar	165	230	260	245	230
Internal tunnel diameter mm	150	185	250	300	300
A mm	160 Ø	200 Ø	240 Ø	258 Ø	258 Ø
B mm	258	276	345	431	455
C mm	150 Ø	185 Ø	250 Ø	300 Ø	300 Ø

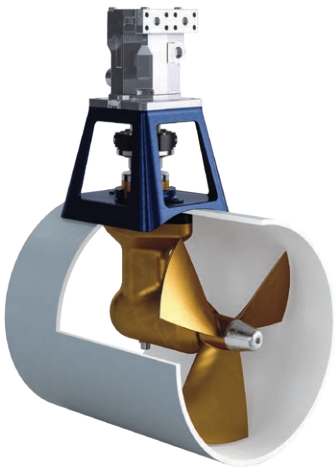
Hydraulic bow and stern thrusters

Type BOWH410 - BOWH550

Newly designed tailpiece for types BOWH410 and BOWH550.

Specifications	BOWH410	BOWH550
Thrust N (kgf) (power output)	**4100 (410)**	**5500 (550)**
Hydraulic motor power kW	29,5	39
Hydraulic motor speed rpm	2650	2900
Hydraulic motor capacity cm³/rev	24	35,6
Flow rate l/min	63,6	103
Operating pressure (bar)	250	250
Internal tunnel diameter mm	400	400





Type	Specifications
BOWH410	Hydraulic bow thruster 410 kgf, incl. hydro motor 29,5 kW, for tunnel diam. 400 mm
BOWH550	Hydraulic bow thruster 550 kgf, incl. hydro motor 39 kW, for tunnel diam. 400 mm
BP1259	Bronze propeller for BOWH410
BP1260	Bronze propeller for BOWH550

BOWH410 **BOWH550**

Stabilizers (hydraulic) 10 - 24 m

What are fin stabilizers?

Fin stabilizers are fins mounted beneath the waterline of a yacht which are installed on both sides of the vessel at a downward angle.

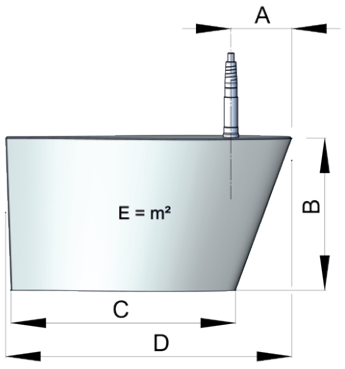
The VETUS stabilizer fins are computer controlled and have the ability to change their angle via a hydraulic system to counteract roll caused by waves or wind.

- "Plug and Play" installation for steel, GPR and aluminum vessels
- Greatly reduces pitch and roll
- Available as a stand alone system
- Easy to install in an existing hydraulic system
- Automatic centering
- Fully automatic operation
- The fin movement is automatically adjusted according to the degree of damping selected, the speed of the vessel and the sea state
- All electronic components are solid state
- Also suitable for refit projects

STAFIN..B

Technical specifications
Standard fin sizes : 0.3 m² - 0.4 m² - 0.5 m² - 0.6 m² - 0.7 m²
Fin material : AISI 316 Stainless steel
System voltage : 24 VDC

NB: a converter (12 VDC to 24 VDC) is required when the boat has a 12 VDC power supply (code: STA12/24)



	03	04	05	06	07
A	142 mm	176 mm	215 mm	250 mm	291 mm
B	431 mm	497 mm	554 mm	600 mm	605 mm
C	620 mm	716 mm	801 mm	873 mm	1021 mm
D	798 mm	921 mm	1024 mm	1125 mm	1318 mm
E	0.3 m²	0.4 m²	0.5 m²	0.6 m²	0.7 m²

Stabilizers (hydraulic)

Installation options

Available as a stand alone system

- Connected to a belt driven hydraulic pump with bearing support and pulley
  or
- Connected to a hydraulic pump fitted to a SAE-A PTO on the engine or gearbox

Our stabilizers are also easy to integrate into existing systems
- By adding a VETUS hydraulic control unit (HT1024) between the current hydraulic system and the VETUS stabilizers

Scope of supply

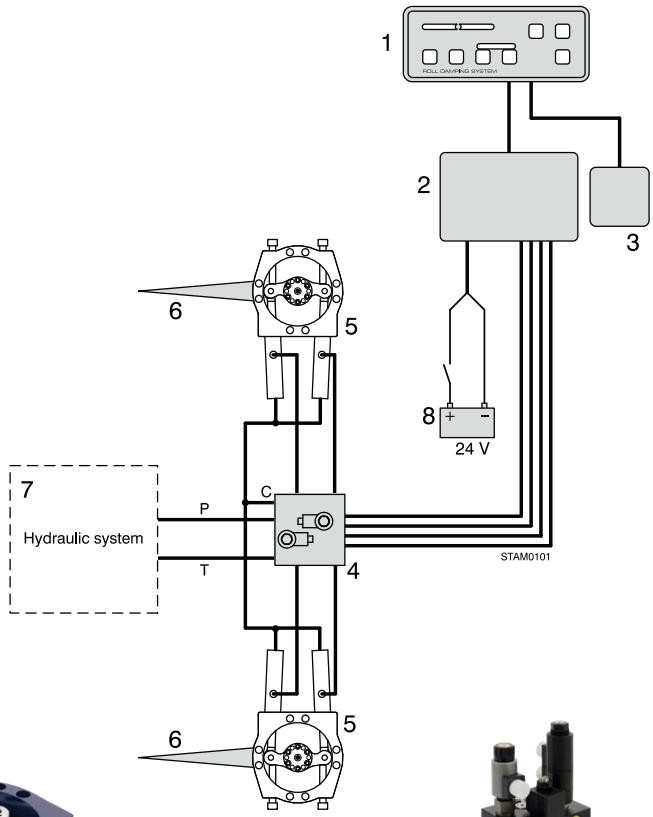
The following parts are included:

A Basic set (code: STA24VA), consisting of:
- Control panel (1)
- Junction box (2)
- Roll sensor ('solid state' gyroscope) (3)
- Hydraulic valve block (4)
- Two actuator units with hydraulic cylinders (5)

B Set of two AISI 316 stainless steel fins:
- Set of fins with surface area of 0,3 m² - 0.7 m² (6)

C Two bushes (to install fins through hull):
- Welding bushes, steel (code: STATHS)
- Welding bushes, aluminium (code: STATHA)
- Laminated bushes (code: STATHG)

Also required:
- Hydraulic pump(s) (7)
- Hydraulic tank (7)
- Hydraulic control unit (code: HT1024) (7)



(1)

(5)

(4)

(C)

Automatic centreing

Putting the gearbox in neutral or astern, the fins will centre automatically. This reduces drag and makes manoeuvring in the marina a lot easier.

VETUS CAN DESIGN AND SUPPLY THE COMPLETE HYDRAULIC SYSTEM IF REQUIRED

Hydraulic power steering

For larger boats, VETUS hydraulic power steering is a most comfortable and extremely safe steering system. The effort required at the helm is only about 10% of a non-powered steering system. In other words: the boat can be steered literally with one finger. Because of this, the steering wheel diameter can be considerably smaller than normal; a wheel diameter of just Ø 360 mm will usually suffice.

Steering pumps

The VETUS steering pump has a closed mid position, ensuring that there will be no oil flow as long as the wheel remains untouched.

To connect one or more VETUS steering pumps and/or an automatic pilot to a VETUS hydraulic system, a control unit model HT1019 must be used.

The external flange of the steering pump is made of seawater resistant aluminium, hand polished and anodised. The steering wheel shaft is made of stainless steel, type I-4462, Ø 19 mm, taper 1:12.

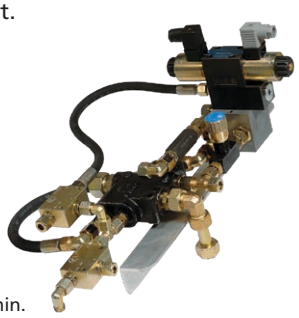
HT1018
HT1020
HT1025
HT1038

Type	Specifications
HT1020	Hydraulic power steering 75 cm³/rev for cylinders up to MTC17510
HT1018	Hydraulic power steering 95 cm³/rev for cylinders up to MT0230B
HT1025	Hydraulic power steering 145 cm³/rev for cylinders up to MT0345B
HT1038	Hydraulic power steering 185 cm³/rev for cylinders up to MT0455B
HT1019	Steering and control unit for hydraulic power steering and autopilot
HT1021	Dual non-return valve for hydraulic power steering

HT1019

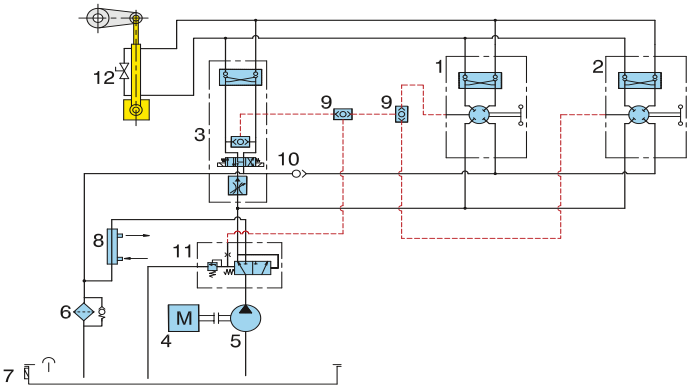
Solenoid control unit (24 VDC) for use with a hydraulically powered steering system or an automatic pilot.

HT1019



* Standard: Max. 75 l/min.

Schematic based on Fixed Pump



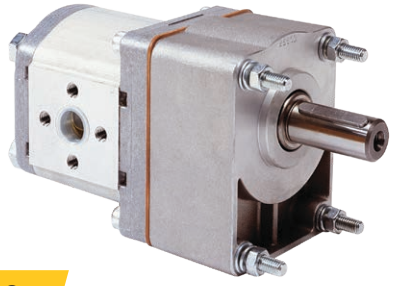
1. Steering pump with non-return valve
2. Steering pump with non-return valve (second steering position)
3. Control unit
4. Propulsion engine
5. Hydraulic pump
6. Filter
7. Hydraulic tank
8. Oil cooler
9. Shuttle valve
10. Non-return valve
11. Priority valve
12. Cylinder with by-pass

Pump type Assuming 4 - 6 steering wheel revolutions from port to starboard	Cylinder volume (in cm³)	VETUS cylinder model	Oil flow to steering pump (L/min.)	Pipe diameter (mm)	Bypass kit
HT1020 (75 cm³/rev.)	300 to 450 cm³	up to MTC17510	30	Ø 10 mm	HT3013
HT1018 (95 cm3/rev.)	380 to 570 cm³	up to MT0230B	30	Ø 18 mm	HT5598
HT1025 (145 cm3/rev.)	580 to 870 cm³	up to MT0345B	30	Ø 18 mm	HT5599
HT1038 (185 cm3/rev.)	740 to 1110 cm³	up to MT0455B	30	Ø 18 mm	HT5611

Hydraulic power steering

Hydraulic pump type HT1029

VETUS offers a fixed volume hydraulic pump, which is belt driven off the main engine. This pump can be used in conjunction with our hydraulic power steering. This pump has a built in bearing block. Its dimensions are small and are comparable with those of the alternator. The pump has a power take-off of approximately 1 kW (1.5 hp).



- Dimensions (l x w x h): 220 x 90 x 112 mm
- Weight: 5 kg
- Shaft diameter: 22 mm
- Maximum shaft speed: 3,500 rpm
- Suction and pressure connections are included
- Direction: HT1029 Clockwise
  HT1029CCW Counter clockwise

HT1029

HT1029CCW

If an existing engine driven pump is to be used, the hydraulic flow rate must be minimum 7 l/min and maximum 40 l/min, with a maximum working pressure of 70 bar.

Oil cooler type HT3011MP - 2 KW

If a pump with a fixed swept volume, or a high capacity is installed, or if the am-bient temperature is high, a lot of heat can be generated. In these cases, the installation of an oil cooler in the return line will be required. Cooling water hose diameter Ø 2" thread.

Specifications
- Max oil flow: 40 L/min.
- Working pressure: 25 bar
- Connections for the hydraulic side ¾" BSP, two straight screw-in fittings included
- Connections for the cooling water side 2" BSP
- Length: 338 mm

HT3011MP

Oil cooler type HPCOOLER 10 - KW

Large capacity oil cooler. Couplings for the oil connections are supplied.

Specifications
- Max oil flow: 90 L/min.
- Working pressure: 20 bar
- Connections for the hydraulic side ¾" BSP, two straight screw-in fittings included
- Connections for the cooling water side 1 ½" BSP
- Length: 442 mm

HPCOOLER

Small hydraulic tank type HT1028

VETUS power steering can be connected to an existing on board hydraulic system. However, if one is not fitted and only power steering is required, this small hydraulic tank (contents about 18 L) will be sufficient. The tank comes complete with all the necessary control components mounted on the top.

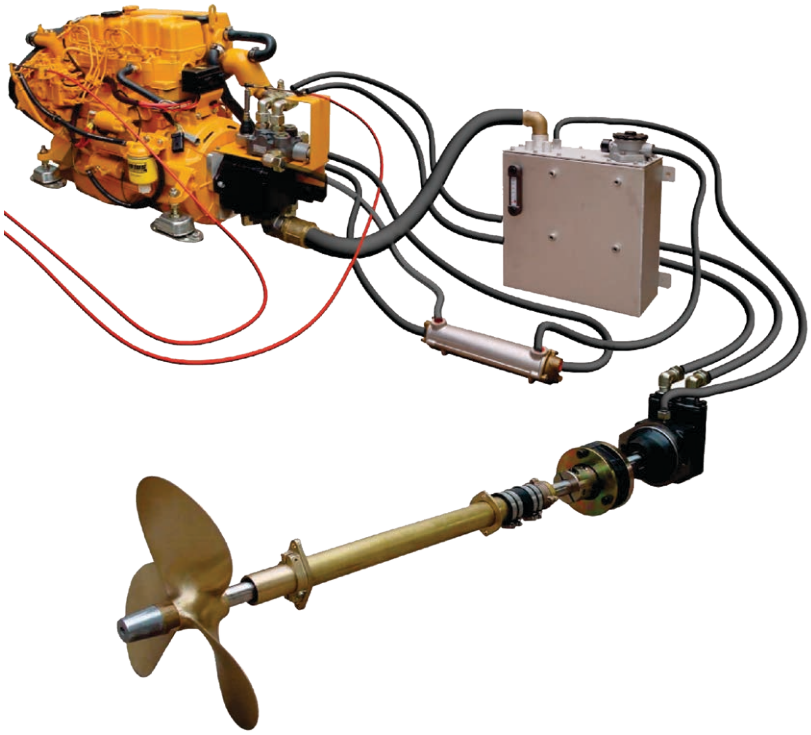
Dimensions of the tank
- Length 460 mm
- Width 300 mm
- Height 470 mm

Type	Specifications
HT1028	Hydraulic tank for power steering (complete)
HT1029	Hydraulic pump with bearing block, 11.3 cm³/rev
HT301132	Hydraulic oil cooler for hose ID Ø 32 mm
HT3011MP	Oil cooler, 2" BSP

HT1028

Hydraulic propulsion

In many cases it may be preferable to drive the propeller shaft by means of a hydraulic motor, instead of using the conventional set up of engine and gearbox.



How it works

A hydraulic vane pump is fitted to the engine in place of the gearbox. This pump draws hydraulic fluid from a storage tank and delivers it under pressure to the speed and direction control valve. The control valve determines the direction and volume of hydraulic flow to the hydraulic vane motor, which can then rotate clockwise or counter clockwise as selected. This hydraulic motor drives the propeller shaft via a flexible coupling.

The VETUS system uses a hydraulic pump and motor with fixed swept volumes.
The transmission ratios (reduction) in the propulsion system are achieved by the difference in volume between the vane pump and the hydraulic motor.

The ratio between the engine RPM and the shaft RPM is 2:1 for models HPM4.35, HPM4.45 and HPM4.56 and 1.9:1 for model HPH4.65. The maximum permissible engine power is 50 kW (67 HP), with a maximum engine speed of 3,000 RPM. In most cases a shaft diameter Ø 25 mm will suffice. The output flange of the VETUS hydraulic motor fits all VETUS flexible couplings.

Scope of supply

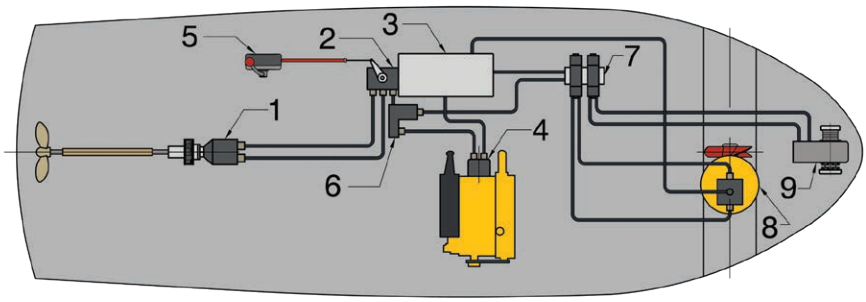
VETUS hydraulic propulsion is available in four versions:
Model HPM4.35 has a VETUS M4.35 marine diesel engine of 24.3 kW (33 hp).
Model HPM4.45 has a VETUS M4.45 marine diesel engine of 30.9 kW (42 hp).
Model HPM4.56 has a VETUS M4.56 marine diesel engine of 38 kW (52 hp).
Model HPH4.65 has a VETUS VH4.65 marine diesel engine of 48 kW (65 hp).

VETUS hydraulic vane motor

Stainless steel storage tank

VETUS hydraulic vane pump

All versions include
- VETUS marine diesel engine as selected
- Hydraulic vane pump
- Adapter flange and coupling to fit the pump to the relevant engine
- Hydraulic vane motor
- 35 L hydraulic oil tank
- Oil cooler
- Control valve
- Flexible engine mounts
- Engine instrument panel and loom

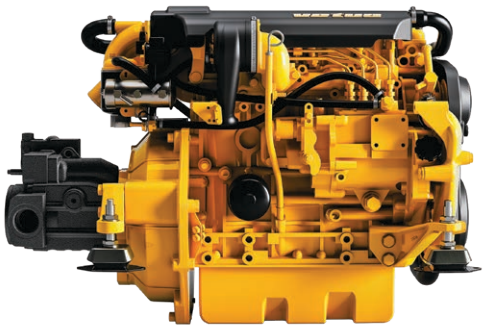


Example System
1. Hydraulic vane motor
2. Mechanically operated control valve
3. Stainless steel storage tank
4. Hydraulic vane pump
5. Remote control handle with cable
6. Connection for ancillary devices
7. Control unit for ancillary devices
8. Bow thruster
9. Anchor windlass

Powerpack

Hydraulic powerpack

A stand-alone diesel engine with a hydraulic pump, dedicated to driving a hydraulic system



A VETUS powerpack will consist of an M or VH series diesel engine with an appropriately sized hydraulic pump (variable volume, load-sensing or vane type depending upon the application) mounted on an adapter plate in place of a gearbox.

VETUS diesel engines meet all European emission requirements. If the powerpack is entirely devoted to propulsion, then its diesel engine will be controlled by a throttle lever, but in a multiple user-device system with a load sensing pump an electronic control will be fitted to the powerpack engine.

As with all VETUS hydraulic systems, a customer support engineer will work with you to configure the powerpack and related systems to suit your vessel and its needs. There are three VETUS powerpack models available.

Model	Power engine	Max rpm	Hydr. pump
PPM435	24,3 kW / 33 HP	3000	30 cm³ / rpm
PPM445	30,9 kW / 42 HP	3000	30 cm³ / rpm
PPH465	48 kW / 65 HP	3000	30 cm³ / rpm

Accessories included as standard with a VETUS Powerpack

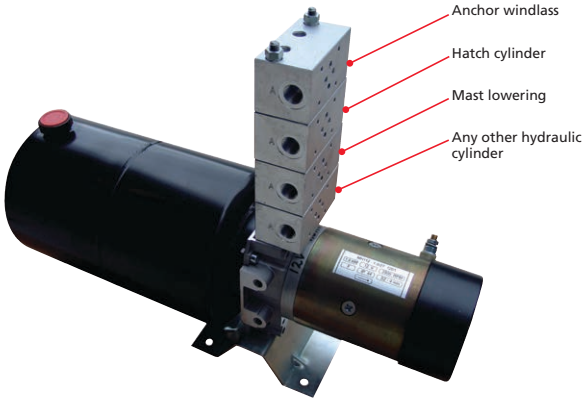
Four flexible engine mounts.

Engine instrument panel type MPA22KBS2.
Including 4 m cable.
A flybridge panel is available as an option.

Electric powerpacks, 12 and 24 VDC

For multiple applications

Most VETUS power hydraulic systems are designed to run from an engine driven hydraulic pump. With such a system on board, there will be enough power to operate various pieces of hydraulic equipment such as anchor windlasses, capstans, gangways etc. However, these devices can only operate when the main engine or generator is running, depending on where the pump is powered from. In certain circumstances though, it may be desirable to operate the hydraulic systems without a running engine or generator. In these cases, a VETUS electric powerpack will provide the answer: either as a stand alone system or as an additional power source in the main power hydraulics system.



These powerpacks can be supplied in various configurations: 12 or 24 VDC and with power capacities from 800 watt up to 3 kW, pump outputs, tank capacities, etc. The powerpack can be used to operate a maximum of four functions. In the example shown here, the powerpack is equipped with four NG6 base plates, to which standard VETUS solenoid control units may be connected (HT1014, HT102311, HT102312).

For the electrical operation of the powerpack and the control units, the VETUS junction box HT5034 is required together with one or more switches.

Contact your VETUS representative to discuss the configuration options.

*The electric powerpacks meets the EMC requirements.

To prevent overheating, VETUS recommends the installation of a forced air cooler for DC Powerpacks. Available in 12V DC (VENT12PP) and 24V DC (VENT24PP).

Electric powerpacks, 12 and 24 VDC

Type EHP....R2

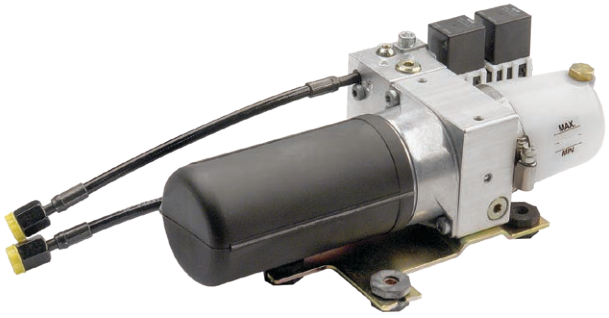
Opening a heavy hatch was never this easy

Due to the built-in check valve and short-circuit valve, the VETUS EHP's can be used for many purposes, such as: hatch lifters, gangways, mast lowering systems, swim platforms etc.

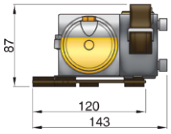
These powerpacks are available in various executions: 12 or 24 VDC and with different pump outputs. All variants are standard supplied with a relay and wiring for reversing the direction of rotation of the pump. A set of couplings for 8 and 10 mm pipes (EHPRSET..) must be ordered separately. Standard supplied with connections for 6 mm tubes.

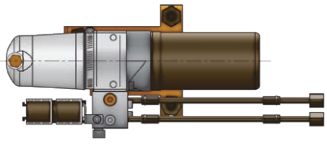
Type	Voltage (DC)	Volume (L/min.)	Power consumption	Max. working pressure
EHPA12R2	12	0,35	6,5 - 12 A	40 bar
EHPA24R2	24	0.35	5 - 6.5 A	40 bar
EHPB12R2	12	0,70	7,5 - 13,5 A	40 bar
EHPB24R2	24	0,70	5,5 - 7 A	40 bar
EHPC12R2	12	0,95	10 -15 A	40 bar
EHPC24R2	24	0,95	5,7 - 10 A	40 bar

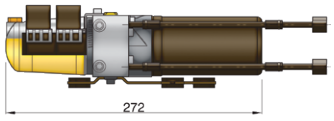
* Tank capacity 0,2 L



EHPA12R2 **EHPA24R2**
EHPB12R2 **EHPB242R2**
EHPC12R2 **EHPC24R2**







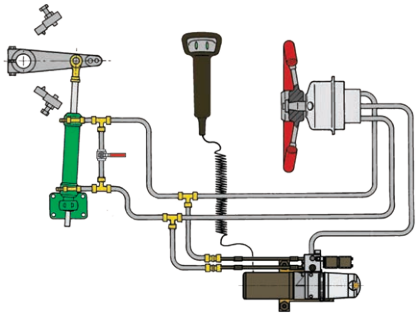
Electric remote control type RECON

Conventional wheel operated hydraulic systems equipped with a hydraulic powerpack (e.g. the VETUS EHP) can be easily equipped with this electrically operated remote control unit from virtually any point on board. Suitable for 12/24 VDC.

Also suitable for the operation of bow or stern thrusters, anchor windlasses, gangways, electric cranes, etc.

Type RECON consist of
- A rocker switch
- 3,5 m spiraled wire with a watertight plug
- Deck connector

Type	Description
RECON	Hand held remote control for operation of: bow and stern thrusters, windlasses, etc.



RECON

Set of limit switches

To avoid damage to the steering system components, the action of any electronic or electrical steering system should be tempered by limit switches located at the rudder stops.

Type	Description
EHPESSET	Set of limit switches (two pieces)

EHPESSET

Hydraulic windlasses

These hydraulic windlasses and capstans are powered by a Gerotor-type hydraulic motor with a two high pressure ports. No separate case drain is required. No electrical connections are required at the windlass or capstan. All electrical control connections are made at the control valves, most frequently located at the hydraulic reservoir tank, in or near the engine room.

Hydraulic port sizes and hydraulic hose type and diameters will be provided by your VETUS hydraulic support engineer. As with all Maxwell windlasses, the maximum pull should equal or exceed three times the total weight of the ground tackle (chain and anchor).

Please see the Maxwell windlass section of this catalogue for details of the chainwheel and warping drums, as these are common to both electric and hydraulic windlasses. In that catalogue section you will also find information about bow rollers, chain stoppers, anchors, chains, rodes and many other anchoring system components.

VWCLP

Maxwell hydraulic windlasses and capstans

Type Windlass	Maximum Pull		Chain size if applicable (inch - mm)	Rope size if applicable (inch - mm)	Hydraulic Flow		Hydraulic Pressure		Weight - topworks, gearbox, motor	
	Kg	Pounds			L/ minute	US. Gallons/ minute	bar	psi	Kg	Pounds
RC8-8	600	1320	5/16 - 8	5/8 - 16	20	5.3	138	2000	10.5	23
RC10-8	700	1540	5/16 - 8	5/8 - 16	20	5.3	138	2000	13.6	30
RC10-10	850	1870	3/8 - 10	5/8 - 16	20	5.3	138	2000	14	31
RC12-10	1134	2500	3/8 - 10/11	5/8- 3/4-16/20	42	11	138	2000	26	57
RC12-12	1590	3500	1/2 -12/13	3/4 - 20	42	11	138	2000	26	57
HRC10-8	700	1540	5/16 - 8	5/8 - 16	20	5.3	138	2000	13	28.5
HRC10-10	850	1870	3/8 - 10	5/8 - 16	20	5.3	138	2000	13	28.5
VC1000	700	1540	N/A		20	5.3	100	1450	11	24
VW1000	700	1540	1/4 to 3/8 - 6- 10		20	5.3	100	1450	15	33
VW1500	850	1870	1/4 to 3/8 - 6- 10		20	5.3	138	2000	15	33
VW2500	1135	2500	5/16 to 3/8 -9-11		36	9.5	138	2000	32	70.5
VW3500	1590	3500	3/8 to 1/2 -10-13		42	11	138	2000	40	88
VWC1000	700	1540	1/4 to 3/8 - 6- 10		20	5.3	100	1450	17	37
VWC1500	850	1870	1/4 to 3/8 - 6- 10		20	5.3	138	2000	17	37
VWC2500	1135	2500	5/16 to 3/8 -9-11		36	9.5	138	2000	32	70.5
VWC2500 Tall Drum	1135	2500	5/16 to 3/8 -9-11		36	9.5	138	2000	32	70.5
VWC3500	1590	3500	3/8 to 1/2 -10-13		42	11	138	2000	40	88
HWC2500	1135	2500	5/16 to 3/8 -9-11		36	9.5	138	2000	48.5	107
HWC3500	1590	3500	3/8 to 1/2 -10-13		40	10.6	138	2000	49	108

Check the Maxwell section page 345.

VWC

VWCLP

VC


THRUSTER
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