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Fax : 33 (0) 559 56 95 71

http://www.ls-france.com
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INTRODUCTION

LS Hydraulic Steering Systems

Our hydraulic steering systems for outboard motors are perfectly adapted to the requirements of different applications, i.e. pleasure boating, workboats, professional or amateur fishing, competition and its accompaniment.

They are easy to install, state of the art machine finished and made to resist a marine environment.

You can easily select the best suited system for your boat within the most comprehensive range available on the market with a guarantee of efficiency, reliability and smoothness.

Our systems carry a 2 year warranty and are CE approved.

DESCRIPTION OF LS HYDRAULIC STEERING SYSTEMS

As a general rule, the basic set up of a steering system includes:

- 1 Cylinder,
- 1 Manual pump,
- Fittings and tubing to connect the cylinder to the manual pump.

Other elements will be added to this basic set up in function of the number of steering stations, the number of outboard motors to be operated and the addition of a power pack for the automatic pilot.

**Cylinder**

The cylinder is the dictating element towards the selection of a system as it gives the power to the steering system. To select a cylinder, follow the method described on page 3.

**Manual pump**

The manual pump is an axial piston pump which sucks and forces back the oil contained in the circuit when the wheel is operated. Its cubic capacity determines the number of turns required for a lock to lock manoeuvre of the motor(s). The pump is fitted with lock valves to prevent inopportune motor movement when the helm is not operated. The pump is also fitted with pressure relief valves to protect the circuit against abnormal pressure increase.

**Tubing**

Tubing is designed for hydraulic transfer under pressure and is easily integrated in the installation as a result of its flexibility and small bending radius. Tubing diameter is selected in function of the manual helm pump flow rate.
HYDRAULIC STEERING SYSTEMS FOR OUTBOARD MOTORS

INTRODUCTION
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WORKING PRINCIPLE

DIRECTION OF ROTATION TO STARBOARD

Manual pump
Flexible tube
Cylinder

THE OIL PUSHES THE CYLINDER AS SHOWN BY THE BLACK ARROWS. THE BACK OF THE MOTOR SWINGS OUT, MAKING THE BOAT TURN TO STARBOARD.

SELECTION OF THE STEERING SYSTEM
To select a steering system in our range, first determine the maximum horse power developed by the outboard motor(s) and the rotational direction of the propellers on installations with several motors.
Indeed:
• For twin motor installations working in the same rotational direction, add the power of both motors (see example below).
Whereas:
• For twin motor installations working in counter-rotation, take into account the power of one motor only + 20% (see example below).

Maximum Power
For the installation of one single motor 1 x 115 H.P. .............................................. = 115 H.P.
For twin motor installation 2 x 115 H.P. (same rotational direction) ....................... = 230 H.P.
For twin motor installation 2 x 115 H.P. (in counter rotation) : 115 + 20% ............. = 138 H.P.

Now select in our range the hydraulic steering which complies with the maximum power of the motor(s) (see examples below):
Maximum power 115 H.P. .................. LS 125 PRO or LS 226
Maximum power 230 H.P. .................. LS 3500 PRO or LS 232 C
Maximum power 138 H.P. .................. LS 175 PRO

For twin motor installations when the calculated maximum power exceeds the maximum power the steering system is given for (ex.: 2 x 200 H.P. in same rotational direction = 400 H.P.), it will be necessary to install a cylinder on each motor with a parallel hydraulic circuit (see “Different types of assemblies” on page 4).

Note: For 4-blade propellers or more and for motors equipped with twin propellers or with long or extra-long shafts, please contact us.
DIFFERENTS TYPES OF ASSEMBLIES

Single-motor installations

- 1 motor
- 1 pump
- 1 front mount cylinder

- 1 motor
- 1 pump
- 1 side mount cylinder

- 1 motor
- 1 pump
- 1 side mount cylinder on panel

Twin-motor installations

- 2 motors
- 1 pump
- 1 front mount cylinder
- 1 tie rod

- 2 motors
- 1 pump
- 2 front mount cylinders
- 1 tie rod

- 2 motors
- 1 pump
- 2 side mount cylinders
- 1 tie rod

Installation for double steering station

Non vented plug compulsory
HYDRAULIC STEERING SYSTEMS 
FOR OUTBOARD MOTORS 

### SIDE MOUNTED STEERING

Maxi motor power **175 H.P.**  
(Pump 26 HB with lock valve + fitt. + VHM 28 ST HB + fitt + 8m of flex tube)  

Maxi motor power **175 H.P.**  
(Pump 26 HB with lock valve + fitt. + VHM 28 ST HBR + fitt + 8m of flex tube)  

Maxi motor power **300 H.P.**  
(Pump 30 HB with lock valve + fitt. + VHM 32 ST HB + fitt + 8m of flex tube)

<table>
<thead>
<tr>
<th>Code of elements that can make up a complete kit</th>
<th>Type of pump</th>
</tr>
</thead>
<tbody>
<tr>
<td>2200048 Pump 26 HB with lock valve</td>
<td>2200948 26 HB with lock valve</td>
</tr>
<tr>
<td>2200050 Pump 30 HB with lock valve</td>
<td>2200950 30 HB with lock valve</td>
</tr>
<tr>
<td>2200033 Cylinder VHM 28 ST HB</td>
<td>2200033 VHM 28 ST HB</td>
</tr>
<tr>
<td>2200196 Cylinder VHM 28 ST HBR</td>
<td>2200196 VHM 28 ST HBR</td>
</tr>
<tr>
<td>2200608 Cylinder VHM 32 ST HB</td>
<td>2200608 VHM 32 ST HB</td>
</tr>
<tr>
<td>2200021 Set of pump fittings</td>
<td>Weight: 1.5 kg</td>
</tr>
<tr>
<td>2200022 Set of cylinder fittings</td>
<td>Weight: 1.5 kg</td>
</tr>
<tr>
<td>2200038 Set of pump s/steel fittings</td>
<td></td>
</tr>
<tr>
<td>2200023 Set of cylinder s/steel fittings</td>
<td></td>
</tr>
<tr>
<td>2200047 Set of tees for Ø8 mm flex. tube</td>
<td></td>
</tr>
<tr>
<td>2200024 Ø8 flexible tube (per metre)</td>
<td></td>
</tr>
<tr>
<td>2202041 Tie rod 470 – 710 mm</td>
<td></td>
</tr>
<tr>
<td>2200017 Oil (2 litre can)</td>
<td></td>
</tr>
</tbody>
</table>

**2200017**  
2 litre oil can for LS hydraulic steering  

1 motor  
1 cylinder  
1 pump
HYDRAULIC STEERING SYSTEM LS 80 PRO – 2203348

FOR OUTBOARD MOTORS UP TO 80 HP / PORT TO STARBOARD: 3.5 turns
contact us for boat speed exceeding 40 knots

Composition of standard kit 2203348

- 2200804 Pump 20 HB with lock valve
  Weight: 2.8 kg

- 2203315 Cylinder VHM EX 80 HP + fittings
  Weight: 2.2 kg  Volume: 70 cc  Stroke: 206 mm

- 2203853 OB filling kit

- 2201989 Set of elbow pump fittings Ø 6

- 1204268 10 metres of flexible tube Ø 6

ACCESSORIES

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- PUMP BEZEL – page 20
- OIL CAN – page 20
- BULKHEAD STRAIN RELIEF – page 20
- TIE RODS – page 21
HYDRAULIC STEERING SYSTEM LS 125 PRO – 2203349

FOR OUTBOARD MOTORS UP TO 125 HP / PORT TO STARBOARD: 5.4 turns
(200 H.P. for two motors working in counter-rotation)
contact us for boat speed exceeding 40 knots

Composition of standard kit 2203349

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2200804</td>
<td>Pump 20 HB with lock valve</td>
<td>1</td>
</tr>
<tr>
<td>2203333</td>
<td>Cylinder VHM EX 125 HP + fittings</td>
<td>1</td>
</tr>
<tr>
<td>2201989</td>
<td>Set of elbow pump fittings Ø 6</td>
<td>1</td>
</tr>
<tr>
<td>1204268</td>
<td>10 metres of flexible tube Ø 6</td>
<td>1</td>
</tr>
<tr>
<td>2203853</td>
<td>OB filling kit</td>
<td>1</td>
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ACCESSORIES

<table>
<thead>
<tr>
<th>Category</th>
<th>Page</th>
</tr>
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<tbody>
<tr>
<td>STEERING WHEELS</td>
<td>22</td>
</tr>
<tr>
<td>PUMP BEZEL</td>
<td>20</td>
</tr>
<tr>
<td>ADAPTATION KIT FOR HONDA MOTORS 115, 135, 150 HP</td>
<td>20</td>
</tr>
<tr>
<td>OIL CAN</td>
<td>20</td>
</tr>
<tr>
<td>BULKHEAD STRAIN RELIEF</td>
<td>20</td>
</tr>
<tr>
<td>TIE RODS</td>
<td>21</td>
</tr>
</tbody>
</table>
HYDRAULIC STEERING SYSTEM LS 175 PRO – 2203350

FOR OUTBOARD MOTORS UP TO 175 HP / PORT TO STARBOARD: 5.3 turns
(300 H.P. for two motors working in counter-rotation)
contact us for boat speed exceeding 40 knots

<table>
<thead>
<tr>
<th>2203334</th>
<th>VHM EX 175 HP + fittings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight: 3 kg</td>
<td>Volume: 137 cc</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>220948</th>
<th>26 HB with lock valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight: 2.8 kg</td>
<td></td>
</tr>
</tbody>
</table>

Composition of standard kit 2203350

- 1 motor
- 1 cylinder
- 1 pump

<table>
<thead>
<tr>
<th>220948</th>
<th>Pump 26 HB with lock valve</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weight: 2.8 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2203334</th>
<th>Cylinder VHM EX 175 HP + fittings</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>2202723</th>
<th>Set of straight pump fit. 1/4 BSPP TS8</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>1204825</th>
<th>10 metres of flexible tube Ø 8</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>2203853</th>
<th>OB filling kit</th>
</tr>
</thead>
</table>

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- ADAPTATION KIT FOR HONDA MOTORS 115, 135, 150 HP – page 20
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- TIE RODS – page 21
HYDRAULIC STEERING SYSTEM LS 225 PRO – 2203351

FOR OUTBOARD MOTORS UP TO 225 HP / PORT TO STARBOARD: 4.9 turns
(400 H.P. for two motors working in counter-rotation)

2203355  VHM EX 225 HP + fittings
Weight: 3.9 kg  Volume: 127 cc  Stroke: 210 mm

2200948  26 HB with lock valve
Weight: 2.8 kg

Composition of standard kit 2203351

- 1 motor
- 1 cylinder
- 1 pump

2200948  Pump 26 HB with lock valve
2203355  Cylinder VHM EX 225 HP + fittings
2202723  Set of straight pump fit. 1/4 BSPP TS8
1204825  10 metres of flexible tube Ø 8
2203853  OB filling kit

ACCESSORIES

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- TIE RODS – page 21
HYDRAULIC STEERING SYSTEM LS 3500 PRO – 2203576

FOR OUTBOARD MOTORS UP TO 350 HP
PORT TO STARBOARD: 6.5 turns

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Weight</th>
<th>Volume</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>2203572</td>
<td>VHM EX 3500 HP + fittings</td>
<td>4.6 kg</td>
<td>198 cc</td>
<td>210 mm</td>
</tr>
<tr>
<td>2200950</td>
<td>30 HB with lock valve</td>
<td>3.4 kg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Composition of standard kit 2203576

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Type of pump</th>
</tr>
</thead>
<tbody>
<tr>
<td>2200950</td>
<td>Pump 30 HB with lock valve</td>
<td>2200948</td>
</tr>
<tr>
<td>2203572</td>
<td>Cylinder VHM EX 3500 HP + fittings</td>
<td></td>
</tr>
<tr>
<td>2200021</td>
<td>Set of elbow pump fittings</td>
<td></td>
</tr>
<tr>
<td>1204825</td>
<td>10 metres of flexible tube Ø 8</td>
<td></td>
</tr>
<tr>
<td>2203853</td>
<td>OB filling kit</td>
<td></td>
</tr>
<tr>
<td>2203573</td>
<td>Cylinder VHM EX 3500 HPI + fittings</td>
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</tbody>
</table>

Nb of turns lock to lock

<table>
<thead>
<tr>
<th>Type of Pump</th>
<th>2200950</th>
<th>2200948</th>
<th>2201105</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5</td>
<td>6.5</td>
<td>5.6</td>
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HYDRAULIC STEERING SYSTEM LS 7000 PRO – 2203577

FOR TWIN OUTBOARD MOTORIZATION IN COUNTER-ROTATION
UP TO 2 x 350 H.P. / PORT TO STARBOARD: 7.5 TURNS

Composition of standard kit 2203577

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Weight</th>
<th>Volume</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>2203572</td>
<td>VHM EX 3500 HP + fittings</td>
<td>4.6 kg</td>
<td>195 cc</td>
<td>210 mm</td>
</tr>
<tr>
<td>2200948</td>
<td>26 HB with lock valve</td>
<td>2.8 kg</td>
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</table>

Type of pump

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Size</th>
<th>Lock Valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>2202644</td>
<td>20 HB with lock valve 1/4 BSPP</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>2200948</td>
<td>26 HB with lock valve</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>2200950</td>
<td>30 HB with lock valve</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Nb of turns lock to lock

<table>
<thead>
<tr>
<th>Option</th>
<th>10</th>
<th>7.5</th>
<th>6.5</th>
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ACCESSORIES

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<th>Component</th>
<th>Page</th>
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<td>20</td>
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</tr>
<tr>
<td>BULKHEAD STRAIN RELIEF</td>
<td>20</td>
</tr>
<tr>
<td>TIE RODS</td>
<td>21</td>
</tr>
</tbody>
</table>
HYDRAULIC STEERING SYSTEM LS 226 – 2201757

FOR OUTBOARD MOTORS UP TO 115 HP / PORT TO STARBOARD: 4.8 turns
(180 H.P. for two motors working in counter-rotation)

- **2200830** VHM 226 + fittings
  - Weight: 2 kg
  - Volume: 96 cc
  - Stroke: 230 mm

- **2200804** 20 HB with lock valve
  - Weight: 2.8 kg

**Composition of standard kit 2201757**

- **2200804** Pump 20 HB with lock valve
- **2200830** Cylinder VHM 226 + fittings
- **2200807** Set of straight pump fittings
- **1204268** 10 metres of flexible tube Ø 6
- **2203853** OB filling kit

**ACCESSORIES**

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- **OIL CAN – page 20**
- **BULKHEAD STRAIN RELIEF – page 20**
- **TIE RODS – page 21**
HYDRAULIC STEERING SYSTEM LS 232 C – 2202224

FOR OUTBOARD MOTORS UP TO 300 HP / PORT TO STARBOARD: 4.7 turns
(500 H.P. for two motors working in counter-rotation)

2200696 VHM 232 H + fittings
Weight: 4.1 kg  Volume: 140 cc  Stroke: 230 mm

2200870 30 HB with lock valve
Weight: 3.4 kg

Composition of standard kit 2202224

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Weight</th>
<th>Volume</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>2200950</td>
<td>Pump 30 HB with lock valve</td>
<td>3.4 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2200948</td>
<td>26 HB with lock valve</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2200950</td>
<td>30 HB with lock valve</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2200696</td>
<td>Cylinder VHM 232 H + fittings</td>
<td>4.1 kg</td>
<td>140 cc</td>
<td>230 mm</td>
</tr>
<tr>
<td>2200021</td>
<td>Set of elbow pump fittings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1204825</td>
<td>10 metres of flexible tube Ø 8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2203853</td>
<td>OB filling kit</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Type of pump

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Weight</th>
<th>Volume</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>2202644</td>
<td>20 HB with lock valve 1/4 BSPP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2200948</td>
<td>26 HB with lock valve</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2200950</td>
<td>30 HB with lock valve</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Nb of turns lock to lock

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 HB</td>
<td>7</td>
</tr>
<tr>
<td>26 HB</td>
<td>5.5</td>
</tr>
<tr>
<td>20 HB</td>
<td>4.7</td>
</tr>
</tbody>
</table>

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POWER ASSIST STEERING FOR OUTBOARDS

**2203854 LS 3500 ASS/30 CC - 3 l/mn - POWER ASSISTED 12 V** composed of:
- 1 pump 30 HB with lock valve 2200950
- 1 power pack unit 3 l/mn12 V(*) 2203800
- 1 cylinder VHM 3500 HP + s/steel fittings 2203574
- 1 connection kit 2203856
- High pressure tubes (lengths to be confirmed)

**2203855 LS 3500 ASS/30 CC – 4.5 l/mn - POWER ASSISTED 12 V** composed of:
- 1 pompe 30 HB with lock valve 2200950
- 1 power pack unit 4.5 l/mn12 V(*) 2203841
- 1 cylinder VHM 3500 HP + s/steel fittings 2203574
- 1 connection kit 2203856
- High pressure tubes (lengths to be confirmed)

(*) Available in 24 Volt upon request.

**2203800 POWER PACK UNIT IN 12 V(*)**

**2200950 PUMP 30 HB WITH LOCK VALVE**

**2203574 CYLINDER VHM EX 3500 HP + S/STEEL FITTINGS**

**ACCESSORIES**

- LS oil, 2 litre can 2200017
- Tie rod (for twin motorization) 2202103
- Tilt HB 5 – Pump 30 CT 2203659
- S/steel motor connection plate for VHM EX 350 HPI 1206001
- Autopilot connection cable (10 m) 1206880
POWER ASSIST STEERING FOR OUTBOARDS

**2203829 LS 232 C/40 CC** POWER ASSISTED 12 V
composed of :
- 1 servo assistance LS 40 - SC 2203820
- 1 power pack unit 12 V(*) 2202762
- 1 connection kit 2203831
- 1 cylinder VHM 232 H + s/steel fittings 2200696
PORT TO STARBOARD 3.5 turns

**2203830 LS 3500 PRO/40 CC** POWER ASSISTED 12 V
composed of :
- 1 servo assistance LS 40 - SC 2203820
- 1 power pack unit 12 V(*) 2202762
- 1 connection kit 2203831
- 1 cylinder VHM EX 3500 HP + s/steel fittings 2203572
PORT TO STARBOARD 4.9 turns

(*) Available in 24 Volt upon request

**ACCESSORIES**

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS oil, 2 litre can</td>
<td>2200017</td>
</tr>
<tr>
<td>Ø8 mm flexible tube (per metre)</td>
<td>2200024</td>
</tr>
<tr>
<td>Tie rod 470 – 710 mm (232)</td>
<td>2202041</td>
</tr>
<tr>
<td>Bulkhead strain relief</td>
<td>2201753</td>
</tr>
<tr>
<td>Tie rod 580 – 810 mm (3500 PRO)</td>
<td>2202103</td>
</tr>
<tr>
<td>S/steel motor connection plate for VHM EX 350 HPI</td>
<td>1206001</td>
</tr>
</tbody>
</table>
HYDRAULIC STEERING SYSTEMS FOR RACE BOATS

SINGLE-ENGINED INSTALLATION

The steering system will be composed of:
- 1 Pump 40 CT with lock valve 2200073
- 3 Sets of pump fittings 2200021
- 1 Distribution block 2210002
- 2 Sets of cylinder fittings 2200023
- 2 "Race" cylinders 28 C 158 2210000
  or 2 "Race" cylinders 32 ST 20 C 181 2210007
- x Metres of Ø8 flexible tube 2200024

- 2200073 Pump 40 CT with lock valve  Weight: 4.1 kg
- 2210000 Race cylinder 28 C 158  Weight: 1.1 kg
- 2210007 Race cylinder 32 ST 20 C 181  Weight: 2.2 kg

TWIN-ENGINED INSTALLATION

The steering system will be composed of:
- 1 Pump 30-90 CT with lock valve 2202068
- 1 Distribution block 2210002
- 2 Sets of cylinder fittings 2200023
- 2 S/steel cylinders 40 ST 28 C 220 2201976
- x Metres of Ø8 flexible tube 2200024
+ Various fittings

- 2202068 Pump 30-90 CT with lock valve  Weight: 7.5 kg
- 2201976 Race cylinder 40 ST 28 C 220  Weight: 6.4 kg
- 2200017 2 litre oil can for LS hydraulic steering

Photo: Laurent PLASSE / OFFSHORE PASSION
With this tiller for LS outboard cylinders, the boat can be steered from the motor. Thanks to this function, the motor can easily be operated without having to resort to the steering wheel (for various fishing actions, anchorage, watch and emergency tiller if need be).

Equipped with a quick coupling, the tiller can be fitted and removed easily and stored in a locker.

Manufactured in stainless steel tube, its weight does not exceed 0.8 kg.

⚠️ Do not use at a speed exceeding 6 knots.

---

### Recommended Pump Model in Function of the Cylinder

<table>
<thead>
<tr>
<th>Cylinder</th>
<th>Pump 2200804</th>
<th>Pump 2200950</th>
<th>Pump 221105</th>
</tr>
</thead>
<tbody>
<tr>
<td>VHM EX 80 BF</td>
<td>20 HB LV 20 cc/t</td>
<td>30 HB LV 29 cc/t</td>
<td>35 HB LV 35 cc/t</td>
</tr>
<tr>
<td>VHM EX 3500 BF</td>
<td>3.5 turns</td>
<td>7.5 turns</td>
<td>6.5 turns</td>
</tr>
</tbody>
</table>

### By-Pass Valves

- **2200803**: By-pass valve for flexible tube Ø 6 mm
- **2202496**: By-pass valve for flexible tube TS 8
- **2200027**: By-pass valve for flexible tube Ø 8 mm
HYDRAULIC STEERING SYSTEMS FOR STERN-DRIVES

HYDRAULIC STEERING SYSTEMS FOR POWER ASSISTED STERN-DRIVES

Cylinder type 28 ST HB AS is fitted directly on the power assisted steering system of the stern-drive motor. No additional mounting kit is required. It is suitable for Volvo, OMC, Mercruiser, Yamaha and others…

The kit for a single steering station consists of:
- 1 pump type 30 HB with lock valve 2200950
- 1 set of pump fittings 2200021
- 1 set of cylinder fittings 2200022
- 1 cylinder type VHM 28 ST HB AS 2200358
- x metres of Ø 8 mm flexible tube 2200224

For a double steering station, add the following to the above kit:
- 1 pump type 30 HB with lock valve 2200950
- 2 sets of pump fittings 2200021
- 1 set of tees 2200047
- x metres of Ø 8 mm flexible tube 2200224

CYLINDERS FOR STERN-DRIVES WITHOUT POWER ASSISTANCE

These cylinders are fitted on in the same way as a cable steering system. Fittings and tubes are the same as for cylinder VHM 28 ST HB AS above (2200358).

<table>
<thead>
<tr>
<th>Type of Motor</th>
<th>Type of Cylinder</th>
<th>Number of Turns Lock to Lock in Function of the Pump / Cylinder Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLVO</td>
<td>28 ST HB DT</td>
<td>Up to 175 H.P.</td>
</tr>
<tr>
<td></td>
<td>32 ST HBV DT</td>
<td>Up to 260 H.P.</td>
</tr>
<tr>
<td>MERCURY - OMC</td>
<td>32 ST HBM DT</td>
<td>Up to 175 H.P.</td>
</tr>
</tbody>
</table>

2200948 26 HB-L.V. with lock valve
2200950 30 HB-L.V. with lock valve
2201105 35 HB-L.V. with lock valve
2201107 40 HB-L.V. with lock valve
ACCESSORIES FOR OUTBOARD STEERING SYSTEMS

TILT HB 5

This product – the only one of its kind – is the most compact system on the market.

The hydraulic pump has been integrated directly into the tilt mechanism.

ORIENTATION CAPACITY
Possible orientation angle: -24° to +24° (5 positions).

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Designation</th>
<th>Flow rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2203658</td>
<td>TILT HB 5 – 20 CT</td>
<td>20 cc/t</td>
</tr>
<tr>
<td>2203559</td>
<td>TILT HB 5 – 26 CT</td>
<td>26 cc/t</td>
</tr>
<tr>
<td>2203659</td>
<td>TILT HB 5 – 30 CT</td>
<td>30 cc/t</td>
</tr>
<tr>
<td>2203669</td>
<td>TILT HB 5 – 35 CT</td>
<td>35 cc/t</td>
</tr>
<tr>
<td>2203670</td>
<td>TILT HB 5 – 40 CT</td>
<td>40 cc/t</td>
</tr>
<tr>
<td>2203695</td>
<td>TILT HB 5 – 50 CT</td>
<td>50 cc/t</td>
</tr>
</tbody>
</table>

LS SPEEDY PURGE

Better, Faster and Neater Air Purge

LS SPEEDY PURGE is a tool designed to fill and purge air from LS hydraulic steering systems fitted on 5 to 15 metre boats.

LS SPEEDY PURGE connects directly to the 12 volt boat battery with crocodile clips and to the cylinder and pump with 2 x 4 metre clear spiral hoses.

Easily transportable, its 4 litre oil contents gives enough autonomy to fill and bleed 2 to 3 steering systems in a row without refilling.

Fill and purge is done neatly by a single operator in less than 10 mn, so that SPEEDY PURGE is paid off from the very first steering systems.
ACCESSORIES FOR OUTBOARD STEERING SYSTEMS

2203853 OB FILLING KIT

2203671 ADAPTATION KIT FOR HONDA MOTORS 115, 135, 150 CV

2203322 SEPARATOR DSC1.0

2203103 SEPARATOR DSC1

Fuel-water separators specifically designed for outboard motors, DSC1.0 and DSC1 come with two Ø8mm and two Ø10mm adjustable fittings, assembly screws and bolts and an instruction manual.

For outboard motors from 4 HP to 45 HP

For outboard motors from 45 HP to 300 HP

TOOLINGS FOR ASSEMBLY / DISASSEMBLY OF CYLINDERS

FOR CYLINDERS WITH CLIPS

<table>
<thead>
<tr>
<th>Reference 1</th>
<th>Cylinder Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>2201346</td>
<td>VHM 226</td>
</tr>
<tr>
<td>2201349</td>
<td>28 ST HB, 28 ST HBR, 28 ST HB AS, 28 ST HB DT</td>
</tr>
<tr>
<td>2200598</td>
<td>32 ST HB, 232H, 32 ST HBV, 32 ST HBM</td>
</tr>
</tbody>
</table>

FOR THE « EX » CYLINDER RANGE

<table>
<thead>
<tr>
<th>Reference 2</th>
<th>Reference 3</th>
<th>Cylinder Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>2202648</td>
<td></td>
<td>EX 75 HP, EX 80 HP</td>
</tr>
<tr>
<td>2203392</td>
<td></td>
<td>EX 150 HP, EX 281</td>
</tr>
<tr>
<td>2203392</td>
<td>2203797</td>
<td>EX 125 HP</td>
</tr>
<tr>
<td>2203193</td>
<td>2203798</td>
<td>EX 175 HP</td>
</tr>
<tr>
<td>2203193</td>
<td>2203799</td>
<td>EX 225 HP</td>
</tr>
<tr>
<td>2202863</td>
<td>2203793</td>
<td>EX 350 HP, EX 3500 HP</td>
</tr>
</tbody>
</table>

2201058 PUMP BEZEL

2200017 2 LITRE OIL CAN DEXRON II

For LS Steering Systems

2201753 BULKHEAD STRAIN RELIEF

(Suitable for all LS flexible tubes and all other flexible tubes with an outer diameter of 8 to 12 mm).
## ACCESSORIES FOR OUTBOARD STEERING SYSTEMS

### TIE RODS FOR OUTBOARD MOTORS

<table>
<thead>
<tr>
<th>Accessory Code</th>
<th>Center Distance</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2202911</td>
<td>450 – 650 mm</td>
<td></td>
</tr>
<tr>
<td>2202912</td>
<td>650 – 850 mm</td>
<td></td>
</tr>
<tr>
<td>2202041</td>
<td>470 – 710 mm</td>
<td></td>
</tr>
<tr>
<td>2202102</td>
<td>710 – 940 mm</td>
<td></td>
</tr>
<tr>
<td>2202103</td>
<td>580 – 810 mm</td>
<td>To be fitted with 1 VHM EX 350 HP or 1 VHM EX 3500 HP</td>
</tr>
<tr>
<td>2202123</td>
<td>650 – 880 mm</td>
<td>To be fitted with 2 VHM EX 350 HP or 2 VHM EX 3500 HP</td>
</tr>
<tr>
<td>2203756</td>
<td>600 – 820 mm</td>
<td>To be fitted with 1 VHM EX 125 / 175 / 225 HP</td>
</tr>
<tr>
<td>2203614</td>
<td>640 – 850 mm</td>
<td>To be fitted with 2 VHM EX 125 / 175 / 225 HP</td>
</tr>
</tbody>
</table>

* Allow the tilting of one motor independently of the other one
## RANGE OF STEERING WHEELS

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2200181</td>
<td>Plastic Wheel  Ø 320</td>
<td></td>
</tr>
<tr>
<td>2200182</td>
<td>Imitation Leather/Anodised Alu  Ø 320</td>
<td></td>
</tr>
<tr>
<td>2202462</td>
<td>S/Steel Wheel with knob  Ø 275</td>
<td></td>
</tr>
<tr>
<td>2203376</td>
<td>S/Steel Wheel  Ø 320</td>
<td></td>
</tr>
<tr>
<td>2202464</td>
<td>Covered S/Steel Wheel with knob  Ø 340</td>
<td></td>
</tr>
<tr>
<td>2200985</td>
<td>S/Steel Wheel  Ø 350</td>
<td></td>
</tr>
<tr>
<td>2203377</td>
<td>Covered S/Steel Wheel  Ø 360</td>
<td></td>
</tr>
<tr>
<td>2200986</td>
<td>S/Steel Wheel  Ø 400</td>
<td></td>
</tr>
</tbody>
</table>
### HYDRAULIC FLEXIBLE TUBES

#### FLEXIBLE TUBES FOR CRIMP CONNECTIONS

Only the sole use of LS flexible tubes in Ø6, Ø8 or Ø10 mm will **guarantee** the global performances and safe use of LS steering systems.

**A few references:**
- Ø6 Flexible tube - per metre 2200810
- Ø8 Flexible tube - per metre 2200024
- Ø10 Flexible tube - per metre 2200070
- Ø6 Flexible tube - length 8 m 1204267
- Ø6 Flexible tube - length 10 m 1204268
- Ø6 Flexible tube - length 12 m 1204740
- Ø6 Flexible tube - length 25 m 1204985
- Ø6 Flexible tube - length 35 m 1205301
- Ø6 Flexible tube - length 400 m 1205359
- Ø8 Flexible tube - length 10 m 1204825
- Ø8 Flexible tube - length 12 m 1204742
- Ø8 Flexible tube - length 20 m 1205245
- Ø8 Flexible tube - length 35 m 1205300
- Ø8 Flexible tube - length 400 m 1205360

#### Ø8 FLEXIBLE TUBES WITH PRE-CRIMPED CONNECTIONS

- Flexible tube - length 5 m 1290502
- Flexible tube - length 6 m 1290503
- Flexible tube - length 6.5 m 1290610
- Flexible tube - length 7.5 m 1290504

#### FITTINGS

<table>
<thead>
<tr>
<th>Type</th>
<th>Designation</th>
<th>Code for steel</th>
<th>Code for s/steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elbow fittings 90°</td>
<td>1/4 BSPT JIC M. 9/16</td>
<td>2200321</td>
<td>2200309</td>
</tr>
<tr>
<td></td>
<td>3/8 BSPT JIC M. 9/16</td>
<td>2200426</td>
<td></td>
</tr>
<tr>
<td>Swivel elbow fitt.</td>
<td>1/4 BSPP JIC M. 9/16</td>
<td>1205997</td>
<td>1206365</td>
</tr>
<tr>
<td>Swivel elbow fitt.</td>
<td>JIC M. 9/16 – JIC F 9/16</td>
<td>1205894</td>
<td>1205656</td>
</tr>
<tr>
<td>Straight fittings</td>
<td>1/4 BSPT JIC M. 9/16</td>
<td>2200427</td>
<td>2200447</td>
</tr>
<tr>
<td></td>
<td>1/4 BSPP JIC M. 9/16</td>
<td>2200199</td>
<td>2200448</td>
</tr>
<tr>
<td></td>
<td>3/8 BSPT JIC M. 9/16</td>
<td>2200428</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3/8 BSPP JIC M. 9/16</td>
<td>2200429</td>
<td>2202039</td>
</tr>
<tr>
<td>Adapters</td>
<td>1/4 BSPT JIC F.T. 9/16</td>
<td>2200430</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3/8 BSPT JIC F.T. 9/16</td>
<td>2200356</td>
<td></td>
</tr>
<tr>
<td>Connection fitt.</td>
<td>JIC M. 9/16</td>
<td>2200288</td>
<td></td>
</tr>
<tr>
<td>Tee fittings</td>
<td>1/4 BSPT 2 x JIC M. 9/16</td>
<td>2200431</td>
<td>1203946</td>
</tr>
<tr>
<td></td>
<td>3/8 BSPT 2 x JIC M. 9/16</td>
<td>2200432</td>
<td></td>
</tr>
<tr>
<td>Equal tee fittings</td>
<td>JIC M. 9/16</td>
<td>2200433</td>
<td>2202009</td>
</tr>
<tr>
<td>Swivel tee fittings</td>
<td>Rotatable JIC M. 9/16</td>
<td>2201566</td>
<td></td>
</tr>
<tr>
<td>Straight fittings</td>
<td>JIC M. 9/16 inner diam. 8</td>
<td>2200299</td>
<td>2200449</td>
</tr>
<tr>
<td></td>
<td>JIC M. 9/16 inner diam. 10</td>
<td>2200301</td>
<td></td>
</tr>
<tr>
<td>Elbow fittings</td>
<td>Inner diam. 8</td>
<td>2200302</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inner diam. 10</td>
<td>2200303</td>
<td></td>
</tr>
<tr>
<td>Connection fitt.</td>
<td>Inner diam. 8</td>
<td>2200373</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inner diam. 10</td>
<td>2200434</td>
<td></td>
</tr>
</tbody>
</table>
GUARANTEE

1) The manufacturer guarantees the equipment sold and supplied against any faulty manufacturing or defects whether they are the result of the design, the raw material, the manufacturing or construction under the terms and restrictions indicated below:

2) The guarantee is applicable only if the client has satisfied the general obligations of this contract, in particular, the terms of payment.

3) The guarantee only includes equipment sold by the manufacturer. It does not extend to equipment in which the manufacturers supply has been installed and, in particular, to the performances of this equipment.

4) When the manufacturers supplies are installed by the client or a third party into any other equipment, they remain solely responsible for this installation, the selection and suitability of the manufacturers supplies as the manufacturers diagrams, designs and proposals are given as an indication only, unless otherwise specified in the order. In particular, the manufacturer does not guarantee components or equipment not sold by him, nor the assembly, adaptation, design or operation of the assembly or parts of the assembly thus created. The manufacturers supply, as well as the assembly created by the client or a third party, are assumed to be operated under the exclusive control of the client or the third party.

5) The period of the guarantee is eighteen months starting from the date of first use by the original consumer or twenty four months from the date of delivery of the products to the transporter, distributor or wholesaler. The manufacturer has the right to require from the client proof of the commissioning date specified on the guarantee request. This period is neither extended nor interrupted through legal or amicable claims on the part of the client. At the end of this period, the guarantee is terminated without further consideration.

6) The obligation of the guarantee only applies if the client establishes that the defect appeared under normal operating conditions stipulated for this type of supply, or indicated by the manufacturer in writing and during normal operation. It does not apply in case of negligence, faulty maintenance or supervision, operators responsibility, imprudence, non observance of recommended or operating instructions, or the use of oil of insufficient quality for the equipment. The manufacturer is released from responsibility for any damage caused by loss of oil or leaks. The guarantee also does not apply for any incidents resulting from a case of force majeure or Acts of God, as well as any damage, replacement or repairs exceeding the normal material wear.

7) The guarantee is limited to the repair in the manufacturer's shop at his own cost within the shortest possible time, of the equipment and parts supplied by him, identified as defective by the technical department. These parts must be sent pre-paid. No claim may be made for compensation for any damage such as personal injury, damage to goods other than those concerned in this contract, privation of possession, operating losses, commercial damage or loss of earnings. During the guarantee period, the cost of labor, dismantling and reassembly of the equipment outside the manufacturer's plant, the shipping costs for repaired, replaced or faulty equipment, travelling and accommodation expenses for technicians are the responsibility of the client.

When the guarantees are given according to the industrial results for a given equipment, these results and the consequences of this undertaking will result in a special agreement between the parties.

8) In order to take advantage of this guarantee, the client must notify the manufacturer in writing as soon as possible of the defects attributed to the equipment and provide any proof concerning these defects. He must do his best for the manufacturer to be able to ascertain these defects and to perform corrective actions. The guarantee does not apply if the equipment is not returned to the manufacturer in the state in which it broke down or if it has previously been disassembled, repaired, modified either by a third party, the user or the client. After receiving proper notification of the equipment defect, the manufacturer shall correct this fault as soon as possible, reserving the right, if applicable, to modify all or part of equipment in order to fulfil the obligations.

9) The client agrees that the manufacturer will not be responsible for damage due to the fact that the client has not satisfied anyone of the obligations defined above.

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Non contractual document
Products and references may be modified without previous notice.
Lecomble & Schmitt Company

Brief history...

At the time of its setting up in the Paris region in 1965, Lecomble & Schmitt was designing and manufacturing columns, pumps, and associated equipment for the water industry. It was not until 1990 that the company began its focus on the heavy-duty market, including the manufacture of hydraulic and mechanical equipment for the construction industry. Since 1990, the company has been a subsidiary of the industrial group Appaloosa, which is also based in the Besançon area. The activities of the group centre around the manufacture of heavy-duty equipment, including pumps, valves, and associated systems.

Lecomble & Schmitt is a French company specialized in the design and manufacture of hydraulic equipment for the heavy-duty market.

Lecomble & Schmitt offers a comprehensive range of products and services to meet the needs of its customers.

Lecomble & Schmitt is a partner in various international projects, providing systems that are designed to meet the specific needs of each project.

Lecomble & Schmitt is committed to providing the highest level of customer service and support.

Lecomble & Schmitt

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