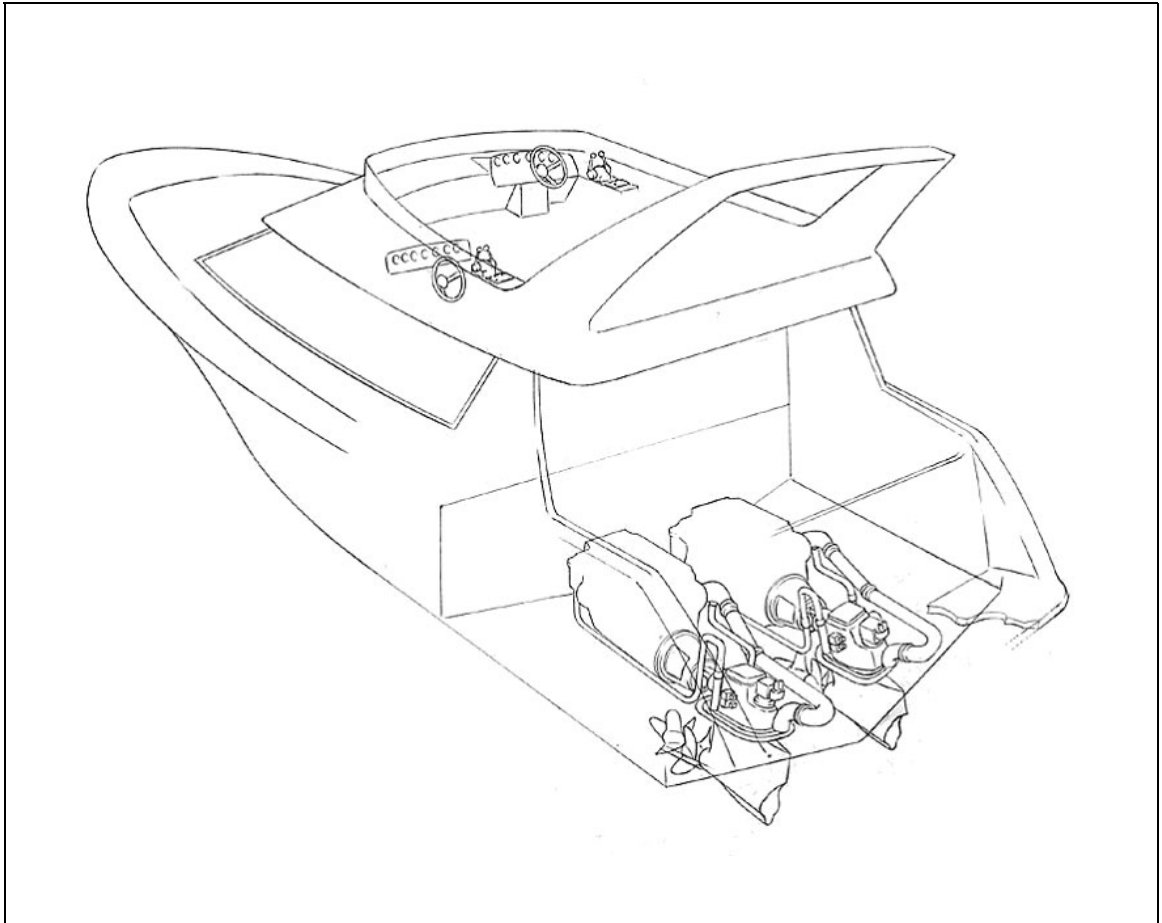


Volvo Penta Installation Check List

D4/D6 with IPS Twin Installation (Version 2.4)



Boat/Vessel Manufacturer:

Boat/Vessel Model/Type:

Engine Installation/Type:

Hull Identification Number:

1 Check List Information

1.1 Issuer

<i>Inspector</i>	<i>Date</i>
<i>Company</i>	<i>Phone</i>
<i>Address</i>	<i>City</i>
<i>Country</i>	<i>Email/Fax</i>

1.2 Installation Approval

Volvo Penta does not make physical engine installations. This document shall be regarded as a tool to systematically check and assess the installation. That does not mean that the check and signature on this form that the responsibility is either shared or overtaken by the person doing the check. The responsibility for the installation remains with installing company or party.

<i>Inspection subject to Volvo Penta Certified Installation:</i> Yes: <input type="checkbox"/> No: <input type="checkbox"/> , if Yes, see procedure for Certified Installation.	
<i>Certificate number</i>	
<i>Approval signature</i>	<i>Date</i>

2 General Description

2.1 Contact and boat information

<i>Contact person</i>	<i>Title</i>	<i>Phone</i>
<i>Address</i>	<i>City</i>	<i>Country</i>
<i>Contact person signature</i>	<i>Date</i>	
<i>Hull material</i>		
Fiber reinforced plastic <input type="checkbox"/>	Steel <input type="checkbox"/>	
Aluminum <input type="checkbox"/>	Other <input type="checkbox"/>	
<i>Geometry</i>		
LOA [m/ft] _____	Lwl [m/ft] _____	
BOA [m/ft] _____	Bwl [m/ft] _____	
Draft [m/ft] _____	Displacement [kg/lb.] _____	

2.2 Engines

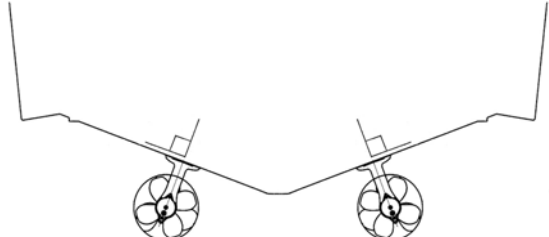
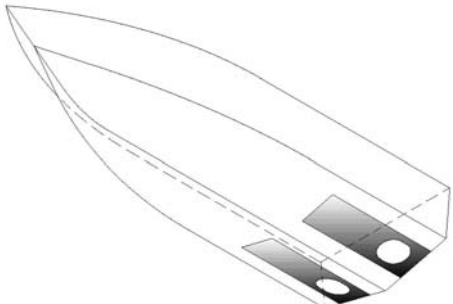
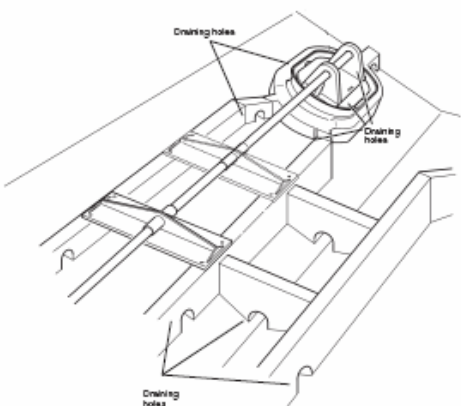
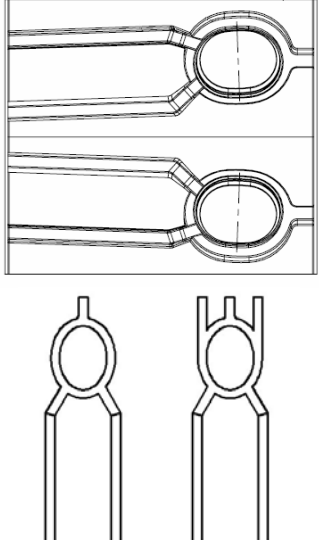
<i>Engine model (port)</i>	<i>Specification number</i>	<i>Serial number</i>
<i>Engine model (starboard)</i>	<i>Specification number</i>	<i>Serial number</i>
<i>Rating/hp</i>	<i>Rated RPM</i>	
<i>VP standard specification</i>		<i>Front end PTO</i>
Yes: <input type="checkbox"/>	No: <input type="checkbox"/>	Yes: <input type="checkbox"/> No: <input type="checkbox"/>

2.3 Transmission and propulsion

<i>Drive type and Model</i>	<i>Reduction ratio</i>	<i>PropellerType/Size</i>
IPS		
<i>Drive serial number (port)</i>	<i>Drive serial number (starboard)</i>	

3 Installation

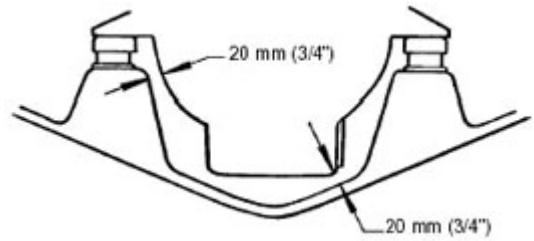
3.1 Hull shape and IPS placement and engine bed

<p>3.1.1 Flat hull and drive legs perpendicular to hull face</p> <p>Checked <input type="checkbox"/></p> <p>Remarks:</p>	
<p>3.1.2 Clearance around IPS installation, hull must be flat</p> <p>Checked <input type="checkbox"/></p> <p>Remarks:</p>	
<p>3.1.3 Engine bed design and structural strength, lamination, etc</p> <p>Checked: <input type="checkbox"/></p> <p>Remarks:</p>	
<p>3.1.4 Insert properly supported with front and rear stringers, engine bed attached</p> <p>Checked: <input type="checkbox"/></p> <p>Remarks:</p>	

3.1.5 Clearance to bottom and bed, sufficient

Checked:

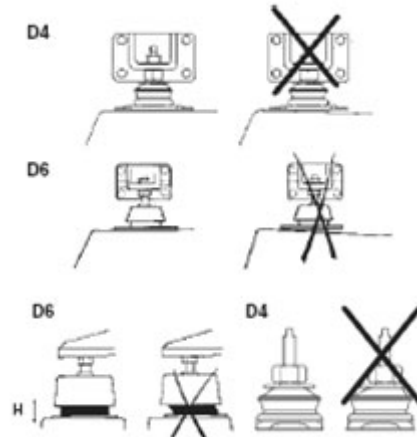
Remarks:



3.1.6 Fitting and alignment of flexible engine mounts, nominal height

Checked:

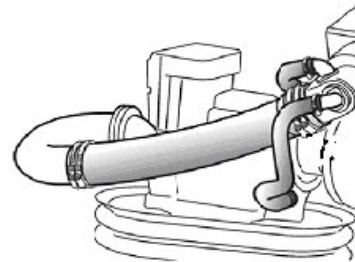
Remarks:



3.1.7 Exhaust hose clamps

Checked:

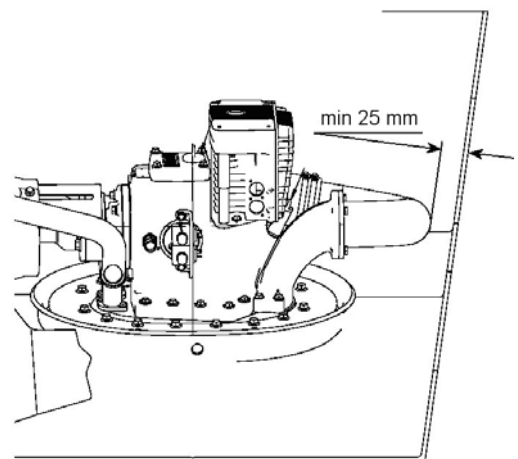
Remarks:



3.1.8 Distance to transom

Checked:

Remarks:

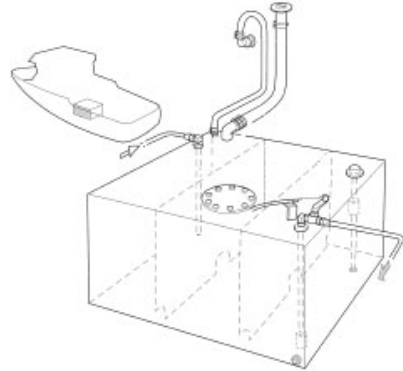


3.2 Fuel system

3.2.1 Fuel tank setup, tank location, clamping, connection locations, baffle plates

Checked:

Remarks:



3.2.2 Proper fuel lines (feed and return), size, fire resistance

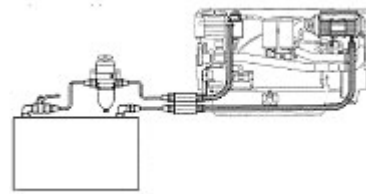
Checked:

Copper feed line pipe out dia [mm/in]:

Copper return line pipe out dia [mm/in]:

Hose inner dia [mm/in]:

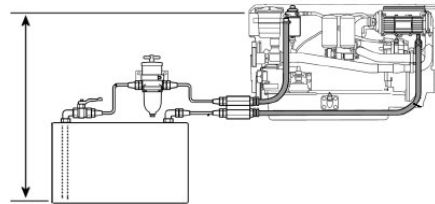
Remarks:



3.2.3 Fuel lines, installation, clamping, positioning, suction height

Checked:

Remarks:

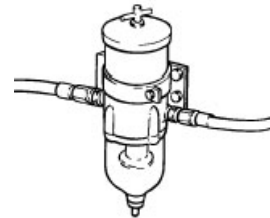


3.2.4 Extra water separator/fuel filters

Checked:

Type:

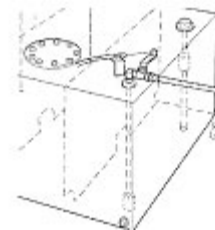
Remarks:



3.2.5 Required fuel shut off valve

Checked:

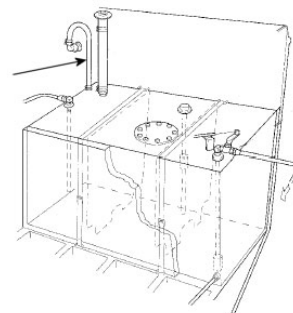
Remarks:



3.2.6 Tank ventilation, min 12 mm (0.5in) installed

Checked:

Remarks:



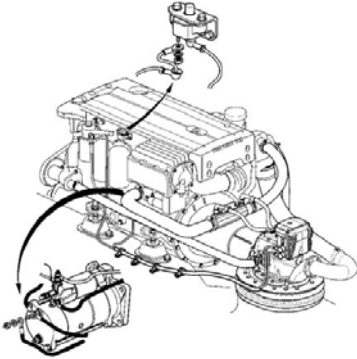
3.3 Electrical system

3.3.1 Electrical schematic diagram available (Required for Certified Installation)	Yes <input type="checkbox"/> No <input type="checkbox"/> Remarks:		
3.3.2 Voltage Checked: <input type="checkbox"/> 12V: <input type="checkbox"/> 24V: <input type="checkbox"/>	Remarks:		
3.3.3 Battery capacity starting groups, no common group allowed <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> Starboard Checked: <input type="checkbox"/> Ah: CCA/MCA: CCA – Cold Cranking Amperage MCA – Marine Cranking Amperage Starboard Cable length batt-engine [m/ft]: Cable area [mm²/AWG]: Port Cable length batt-engine [m/ft]: Cable area [mm²/AWG]: </td> <td style="width: 50%; vertical-align: top;"> Port Checked: <input type="checkbox"/> Ah: CCA/MCA: CCA – Cold Cranking Amperage MCA – Marine Cranking Amperage </td> </tr> </table>	Starboard Checked: <input type="checkbox"/> Ah: CCA/MCA: CCA – Cold Cranking Amperage MCA – Marine Cranking Amperage Starboard Cable length batt-engine [m/ft]: Cable area [mm ² /AWG]: Port Cable length batt-engine [m/ft]: Cable area [mm ² /AWG]:	Port Checked: <input type="checkbox"/> Ah: CCA/MCA: CCA – Cold Cranking Amperage MCA – Marine Cranking Amperage	Battery types: Lead Acid Battery <input type="checkbox"/> AGM <input type="checkbox"/> (AGM - Absorbed Glass Mat) Remarks:
Starboard Checked: <input type="checkbox"/> Ah: CCA/MCA: CCA – Cold Cranking Amperage MCA – Marine Cranking Amperage Starboard Cable length batt-engine [m/ft]: Cable area [mm ² /AWG]: Port Cable length batt-engine [m/ft]: Cable area [mm ² /AWG]:	Port Checked: <input type="checkbox"/> Ah: CCA/MCA: CCA – Cold Cranking Amperage MCA – Marine Cranking Amperage		
3.3.4 Battery capacity groups, AUX Number of groups: Batteries/group: Charge distributor: <input type="checkbox"/> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> Group 1 Checked: <input type="checkbox"/> Ah: </td> <td style="width: 50%; vertical-align: top;"> Group 2 Checked: <input type="checkbox"/> Ah: </td> </tr> </table>	Group 1 Checked: <input type="checkbox"/> Ah:	Group 2 Checked: <input type="checkbox"/> Ah:	Battery types: Lead Acid Battery <input type="checkbox"/> AGM <input type="checkbox"/> (AGM - Absorbed Glass Mat) Remarks:
Group 1 Checked: <input type="checkbox"/> Ah:	Group 2 Checked: <input type="checkbox"/> Ah:		
3.3.5 Charge distributor, separate accessory battery/batteries 16mm ² red power cable between alternator and the starter motor disconnected at both ends. 0.75mm ² yellow sensor cable between alternator and the starter motor disconnected at both ends. Checked: <input type="checkbox"/>	Remarks:		

3.3.6 Heavy loads, connections Remarks:

	Aux 1	Aux 2	Other:
Bow thruster	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stern thruster	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchor windlass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.3.7 IPS power connection
 Checked:
 Remarks:



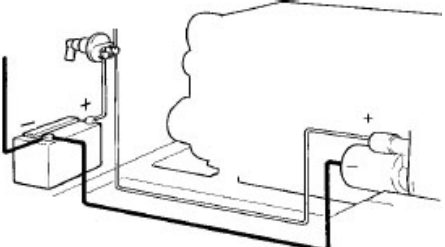
3.3.8 Joints readily accessible, harness routing, clamping, above estimated bilge water level and distance from hot areas Remarks:

Checked:

3.3.9 Engine main switch installed

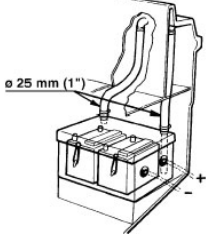
Checked:
 On positive (+): On negative (-):
 Rated Amp: Rated Amp:
 Peak Amp: Peak Amp:

Remarks:



3.3.10 Batteries properly secured and ventilated

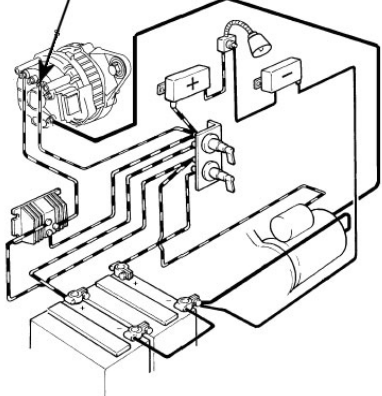
Checked:
 Remarks:



3.3.11 Alternator sensor cable (yellow), connection point

Starboard	Port
Checked: <input type="checkbox"/>	Checked: <input type="checkbox"/>
Main switch aux.: <input type="checkbox"/>	Main switch aux.: <input type="checkbox"/>
Main switch start: <input type="checkbox"/>	Main switch start: <input type="checkbox"/>
Alternator B+: <input type="checkbox"/>	Alternator B+: <input type="checkbox"/>
Charge distributor: <input type="checkbox"/>	Charge distributor: <input type="checkbox"/>

Remarks:



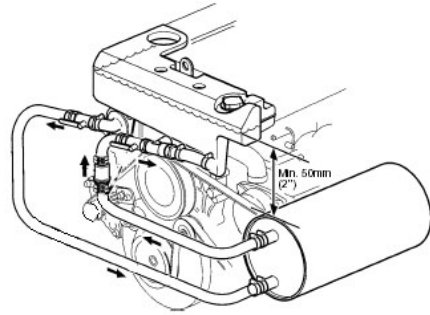
3.4 Cooling system

3.4.1 Hot water connections fitted

Checked:

Yes: No:

Remarks:

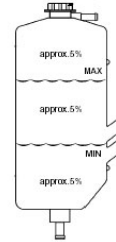


3.4.2 Extra expansion tank fitted, system volume, height

Checked:

Yes: No:

Remarks:



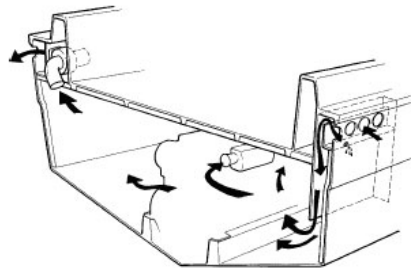
3.5 Ventilation and sound proofing

3.5.1 Total air intake and ventilation area

Checked:

Intake area [mm²/in²]:

Remarks:



3.5.2 Location of ventilators and air intakes, water ingress prevention

Remarks:

Checked:

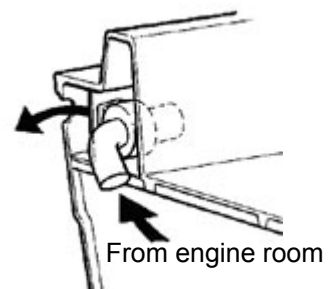
3.5.3 Electrical suction fan installed (not at air inlet)

Checked:

Yes: No:

Capacity [m³/min cf³/min]:

Remarks:

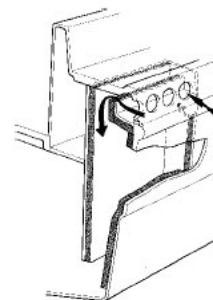


3.5.4 Sound proofing

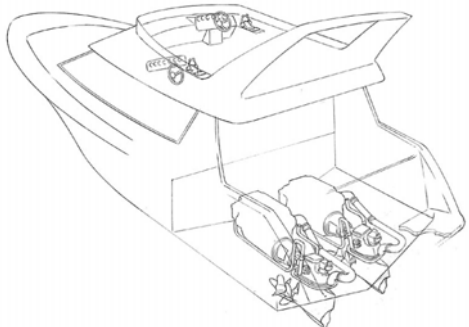
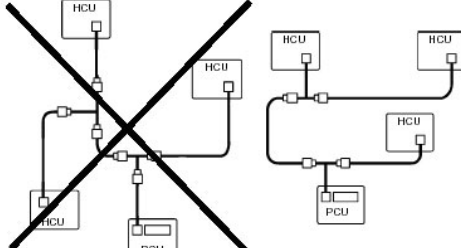
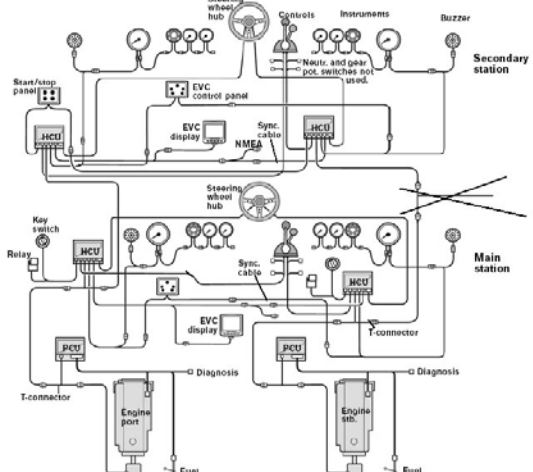
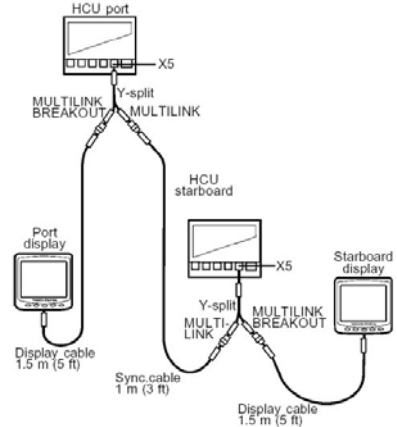
Checked:

Yes: No:

Remarks:



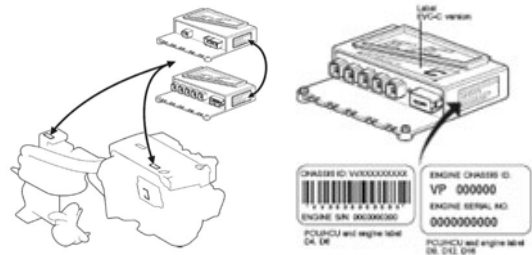
3.6 EVC, electronic vessel control system

<p>3.6.1 Helm/docking/engine station(s)</p> <p>Checked: <input type="checkbox"/></p> <p>Number of standard helms: Number of docking stations: Number of engine stations: Remarks:</p>	
<p>3.6.2 System network requirements</p> <p>Checked: <input type="checkbox"/></p> <p>Remarks:</p>	
<p>3.6.3 System configuration, cables, coding, clamping and routing</p> <p>Checked: <input type="checkbox"/></p> <p>Remarks:</p>	
<p>3.6.4 Twin engine installation -</p> <p>The display cable is connected to the Y-split marked MULTILINK BREAKOUT (yellow PVC-coating). The sync. cable is connected to the branch marked MULTILINK (yellow marking sleeve).</p> <p>Checked: <input type="checkbox"/></p> <p>Remarks:</p>	

3.6.5 PCU, HCU and SUS identity corresponds to engine identity (port and stb separate)

Checked:

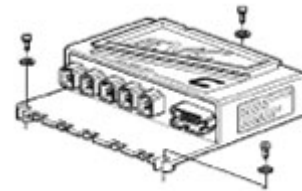
Remarks:



3.6.6 Location and mounting of PCU/HCU units, dry and accessible, not upside down

Checked:

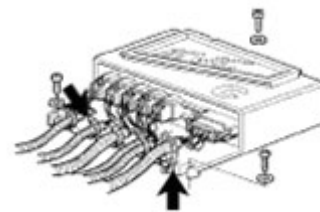
Remarks:



3.6.7 Strain relief on cables for all control units

Checked:

Remarks:



3.6.8 Control panel, correctly connected

Checked:

Remarks:

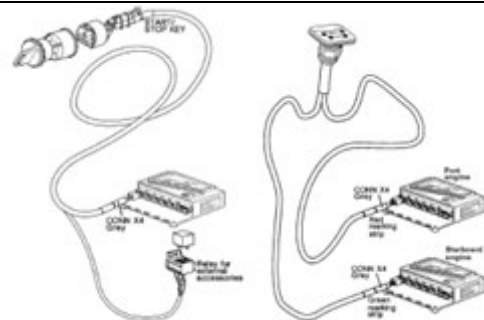


3.6.9 Key switch and start stop panel. Relay installed

Checked:

Number of relays installed:

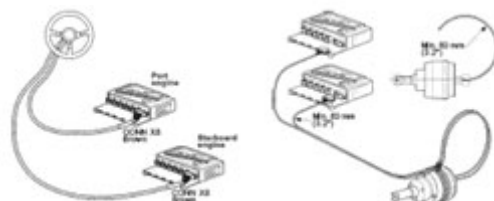
Remarks:



3.6.10 Steering control and connections

Checked:

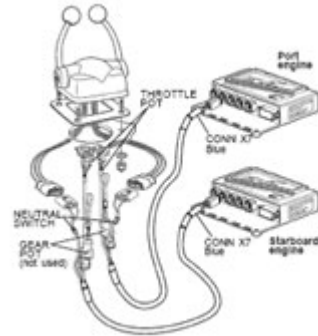
Remarks:



3.6.11 Electronic controls, no extensions allowed

Checked:

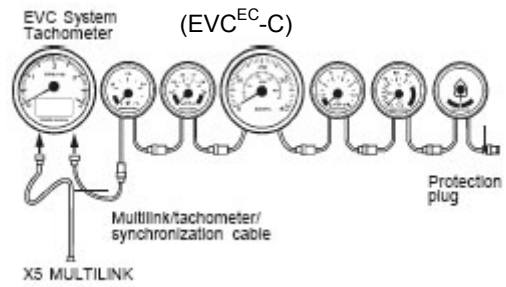
Remarks:



3.6.12 Instruments, cables, connections

Checked:

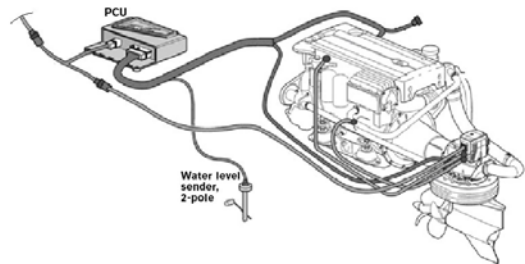
Remarks:



3.6.13 Connection SUS to PCU and fuel/water level sensor

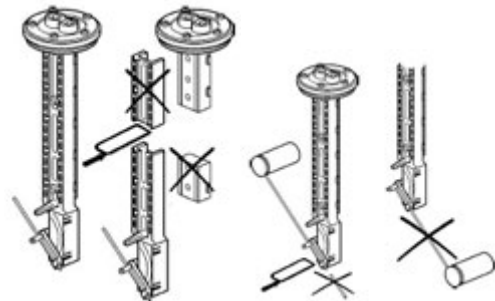
Checked:

Remarks:



3.6.14 Fuel level sender installed, calibration(s) done

- Empty tank calibration (mandatory)
 - Full tank calibration
 - Multi-point calibration
- Sender type: 3-180 ohm 230-30 ohm
-



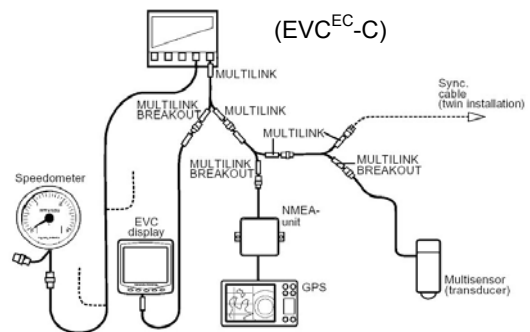
Checked:

Remarks:

3.6.15 GPS installed, NMEA 0183/2000 type signal, configuration

Checked:

Remarks:



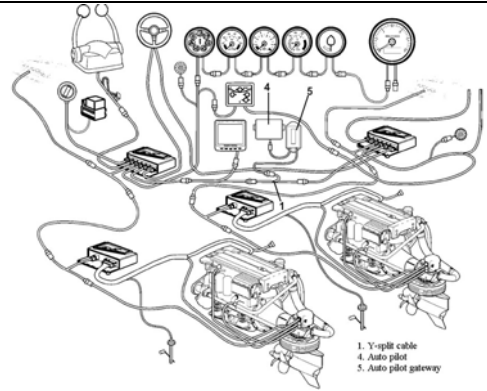
3.6.16 Autopilot installed

Autopilot brand:

IMPORTANT! Only the MULTILINK BREAKOUT part of the Y-split cable shall be connected to the EVC-display or the Autopilot-interface.

Checked:

Remarks:



3.6.17 Auto configuration completed

Checked:

Remarks:

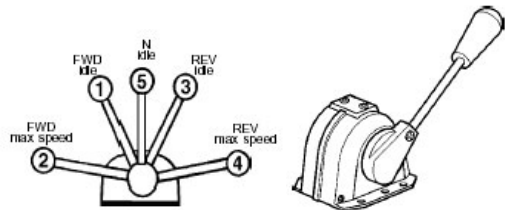


(EVC^{EC}-C)

3.6.18 Calibration of control

Checked:

Remarks:



3.6.19 IPS drive leg alignment calibration completed

Checked:

Remarks:

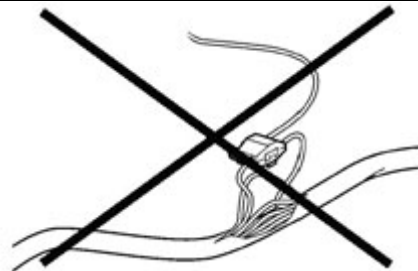


3.6.20 No external cables connected to the EVC system

IMPORTANT! Never cut or modify the Volvo Penta EVC cable harnesses. For extra power supply use the Volvo Penta relay for accessories.

Checked:

Remarks:



3.6.21 Available options (only EVC^{EC}-C)

Remarks:

Joystick (calibrated)

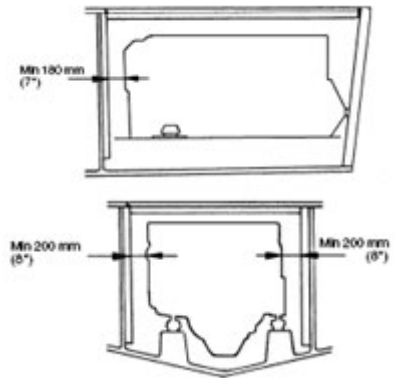
Trip computer

3.7 Accessibility for maintenance and repairs

3.7.1 Engine room accessibility

Checked:

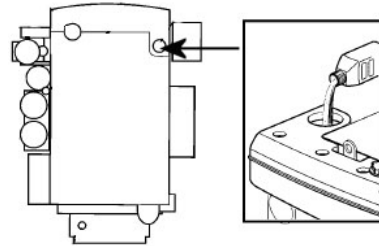
Remarks:



3.7.2 Oil change and refill

Checked:

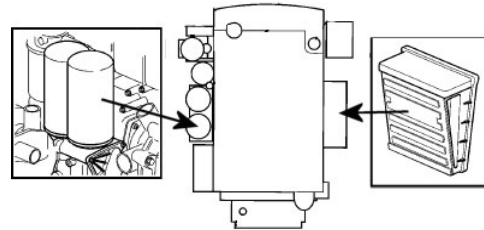
Remarks:



3.7.3 Change of oil, fuel, crankcase and air filters

Checked:

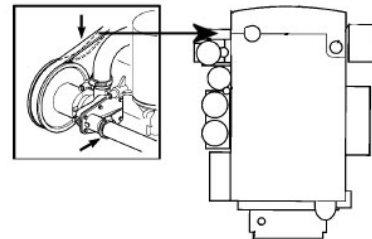
Remarks:



3.7.4 Check belt tensions and replacement

Checked:

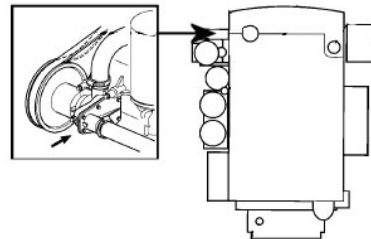
Remarks:



3.7.5 Replacement of impeller

Checked:

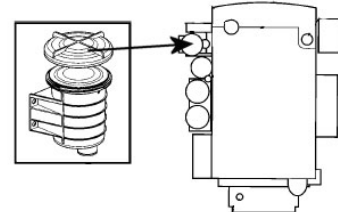
Remarks:



3.7.6 Cleaning of sea water filter

Checked:

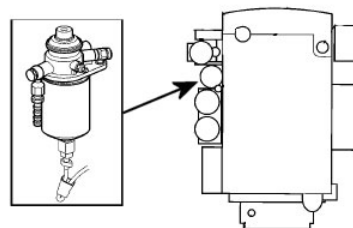
Remarks:



3.7.7 Fuel system water drainage

Checked:

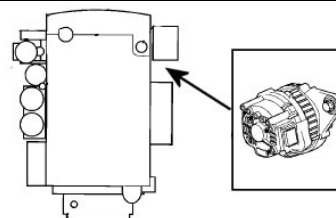
Remarks:



3.7.8 Electrical components

Checked:

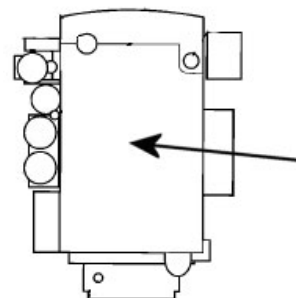
Remarks:



3.7.9 Removal of cylinder head

Checked:

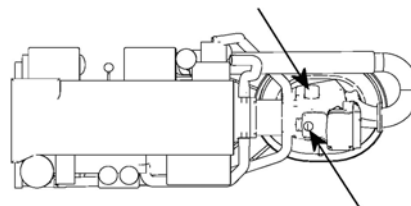
Remarks:



3.7.10 Access to IPS unit oil fill, change and filter

Checked:

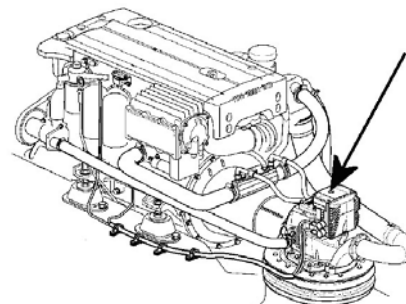
Remarks:



3.7.11 Access to IPS manual steering

Checked:

Remarks:



3.7.12 Engine package removal (boat builder must supply instruction if installation is to be certified)

Checked:

Instruction available: Yes: No:

Remarks:

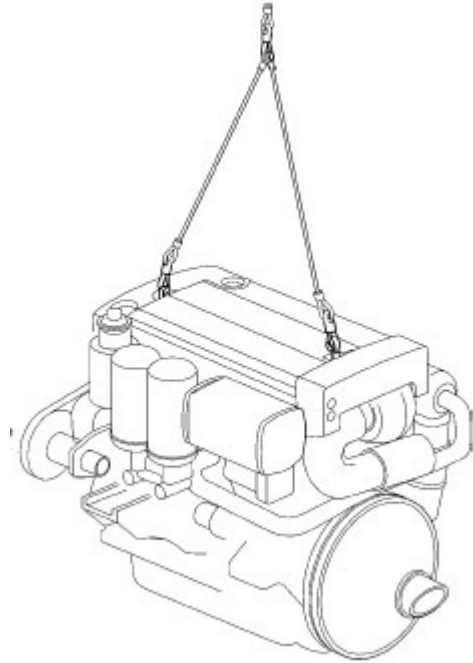
Time for removal/ refit of engine [h]:

Actual: Estimated: .

Flat rate for removal/ refit of engine:

D4/D6 IPS 350/400/450/500/600: 5,0 h

This is considered normal time.



3.8 Other accessories and options

3.8.1

Checked:

Remarks:

3.8.2

Checked:

Remarks:

3.8.3

Checked:

Remarks:

3.8.4

Checked:

Remarks:

3.9 Installation steps when boat is in water

3.9.1 Corrosion measurements

Read "Corrosion Measurement" available at Certified Installation Teamplace for instructions and actions. All measurements can be carried out with a multimeter and a calomel reference electrode (special tools).

A calibration of the reference electrode using a zinc anode is recommended before the measurements are carried out (see "Corrosion Measurements" for procedure information).

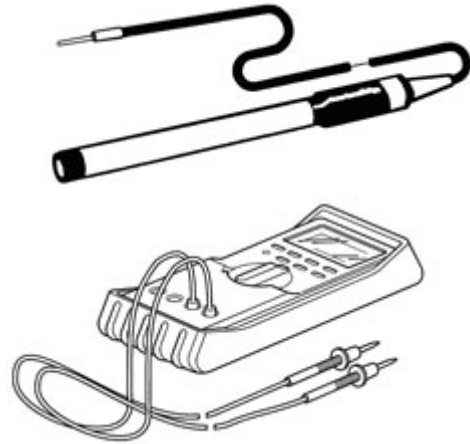
The corrosion measurements should be carried out in open water to achieve best results.

Checked:

Location for measurements:

Calibration done: Yes: No:

Remarks:



Measurement	Value	Criteria	Met	Action
Potential drive DC Starboard	mV	< -450 mV - seawater < -150 mV - fresh water	Yes <input type="checkbox"/> No <input type="checkbox"/>	3
Potential drive DC Port	mV	< -450 mV - seawater < -150 mV - fresh water	Yes <input type="checkbox"/> No <input type="checkbox"/>	3
Stray current DC (use multimeter / light bulb)	Ohm	> 5000 Ω	Yes <input type="checkbox"/> No <input type="checkbox"/>	5

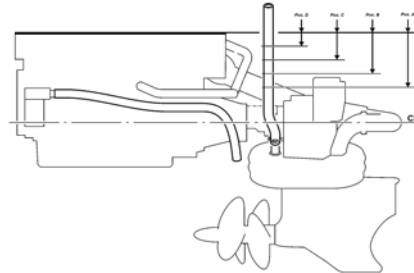
3.9.2 Water line level (laden)

Checked

Riser fitted Yes: No:

Brand:

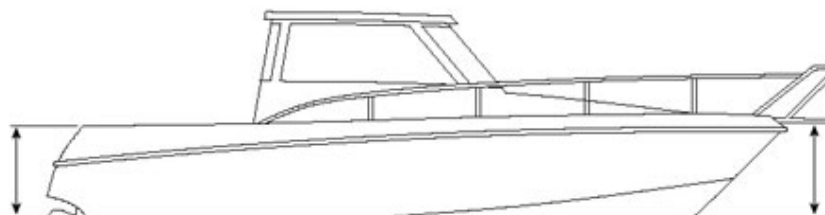
Remarks:



3.9.3 Measure true waterline as tested (laden), photograph and mark points of reference

Remarks:

Checked:



3.10 Sea trial (certified installation)

3.10.1 “VP performance report work sheet” must be completed if installation is to be certified.	Performance report number:
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3.11 Sea trial (Quick version, if 3.10.1 is not completed)

3.11.1 Max RPM, speed and displacement Checked: <input type="checkbox"/> Max RPM: Max speed [knots/mph]: Displacement [kg/lb.]:	Remarks:
3.11.2 Temperature at max RPM at air filter inlet Checked: <input type="checkbox"/> Temperature [°C/°F]: Ambient [°C/°F]:	Remarks:
3.11.3 Maximum inclination underway (hole speed range) Checked: <input type="checkbox"/>	Remarks:

3.12 Photos (add below)