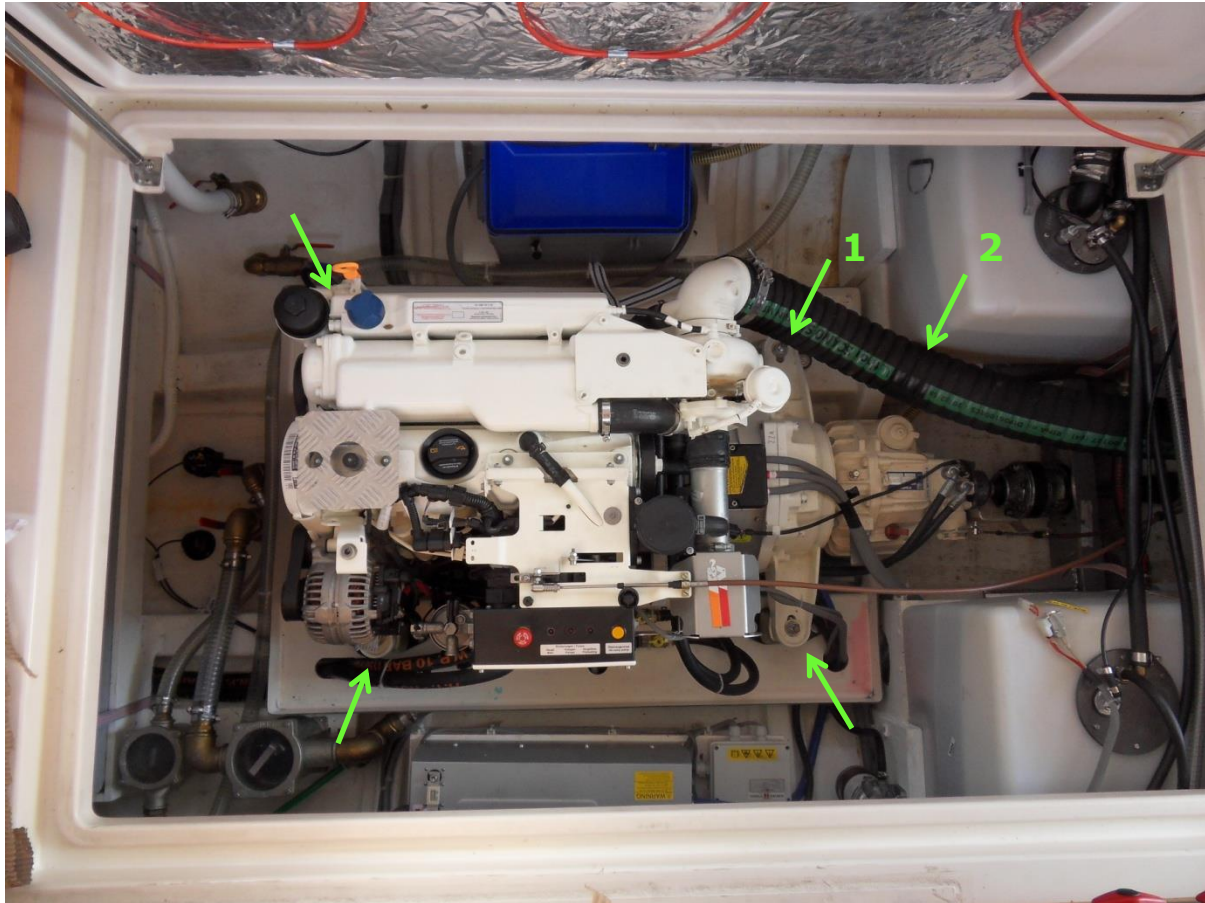
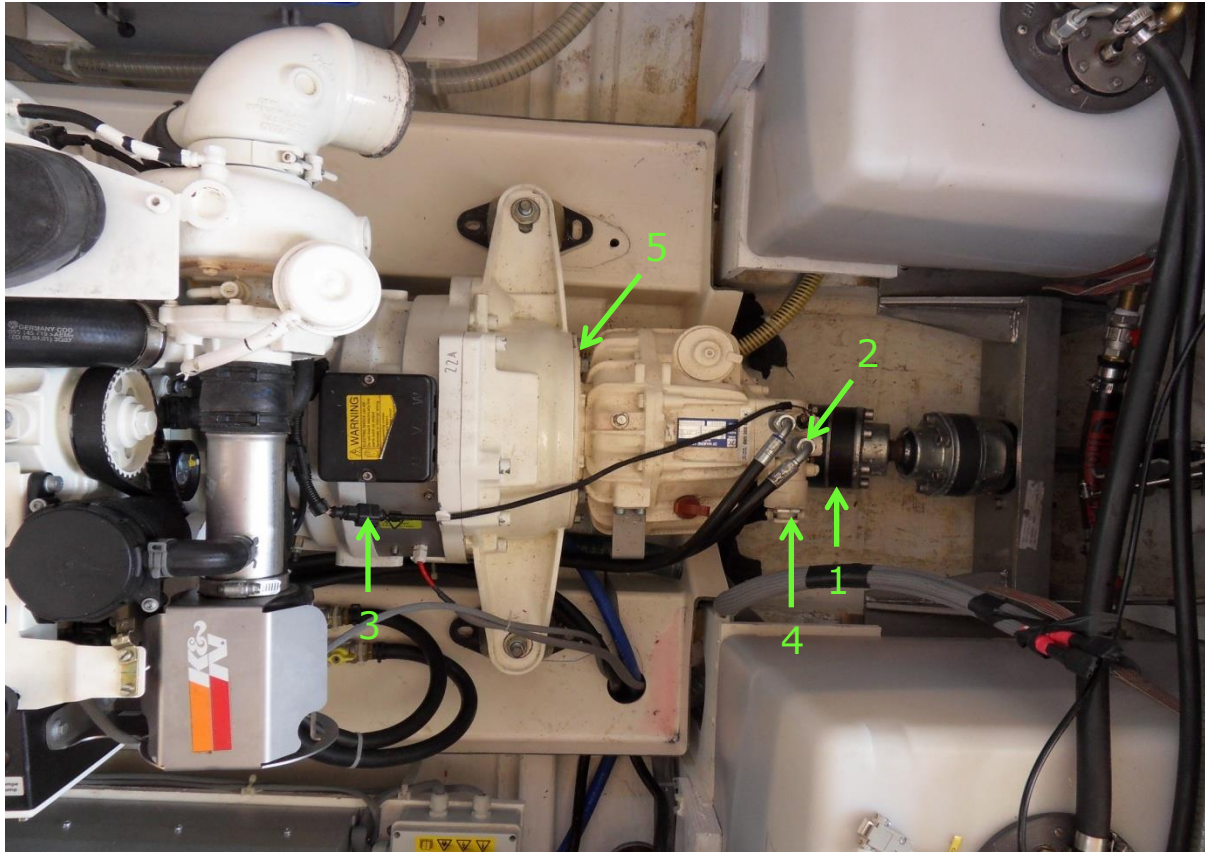


Service manual
AIZ replacement - greenline



Remove the sound protection / cocoon located around the engine..
Mark position of the leg brackets.

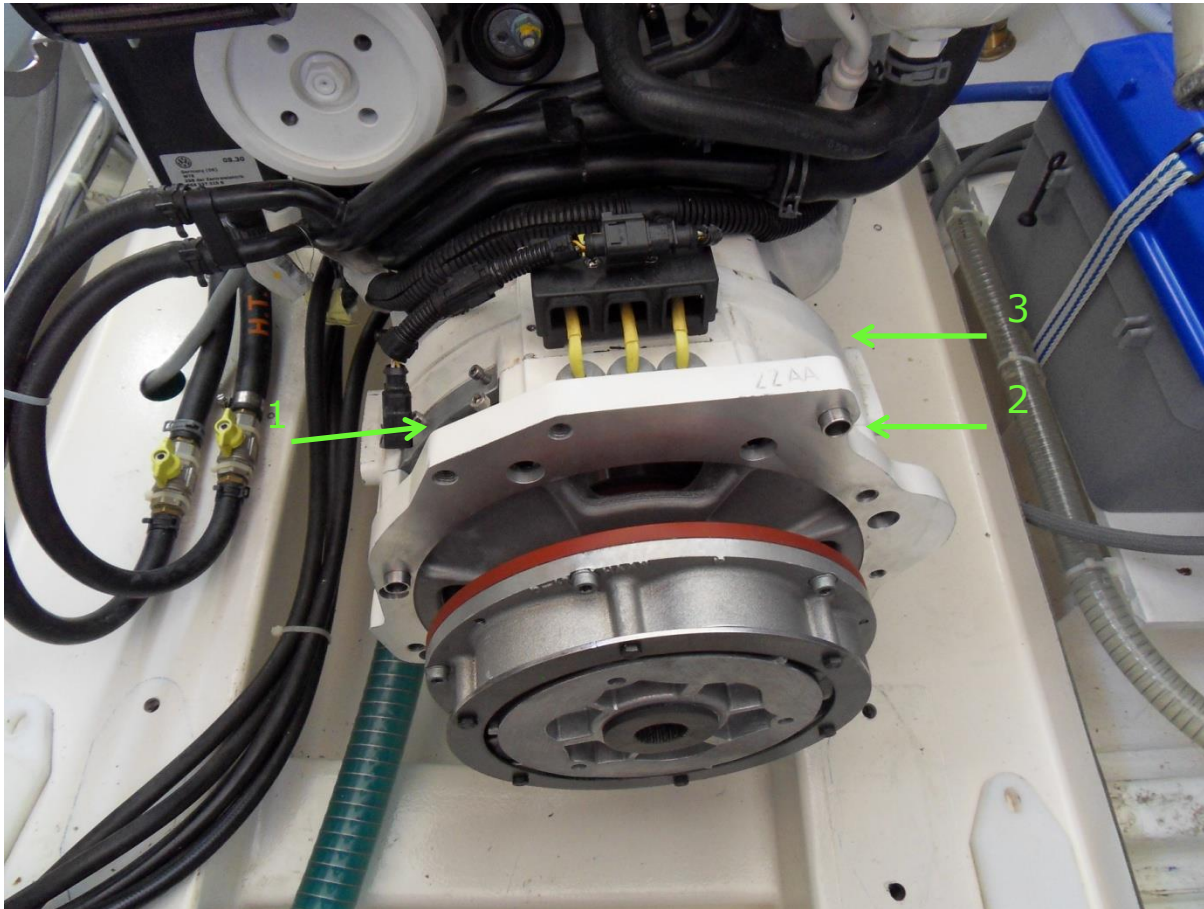
- 1 - Unscrew bolts from engine leg brackets (8 pieces).
- 2- Remove exhaust pipe, drain the water to the back of the exhaust.



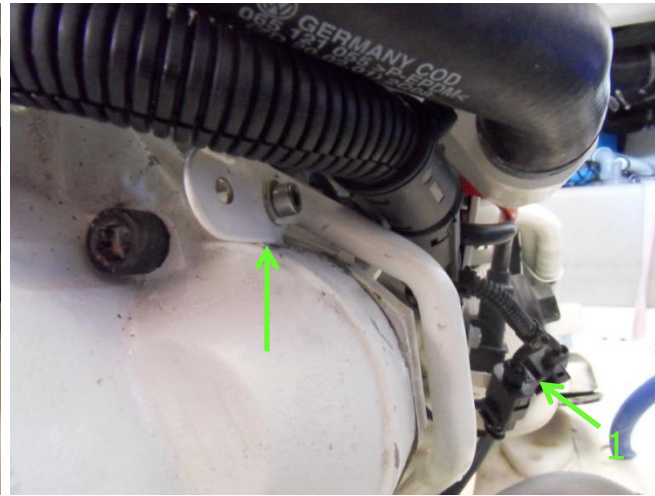
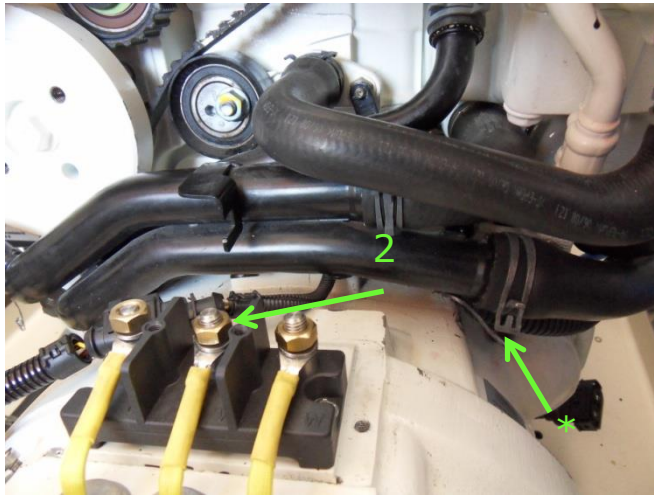
- 1 - Disconnect aquadrive from gearbox ZF 25.
Push engine forward, with caution (lines, cables).
- 2 - Disconnect hydraulic pipes.
- 3 - Disconnect el. cable for temperature sensor.
- 4 - Disconnect throttle lever wire command.
- 5 - Unscrew ZF 25 from bell housing (6 nuts), remove gearbox.



Lift engine, secure with wooden wedges..
Disassemble bell housing from AIZ (mark the bolts).



- 1 - Remove hall sensor from housing.
- 2 - Disconnect cooling pipes (2 pieces).
- 3 - Disconnect clutch actuator line.

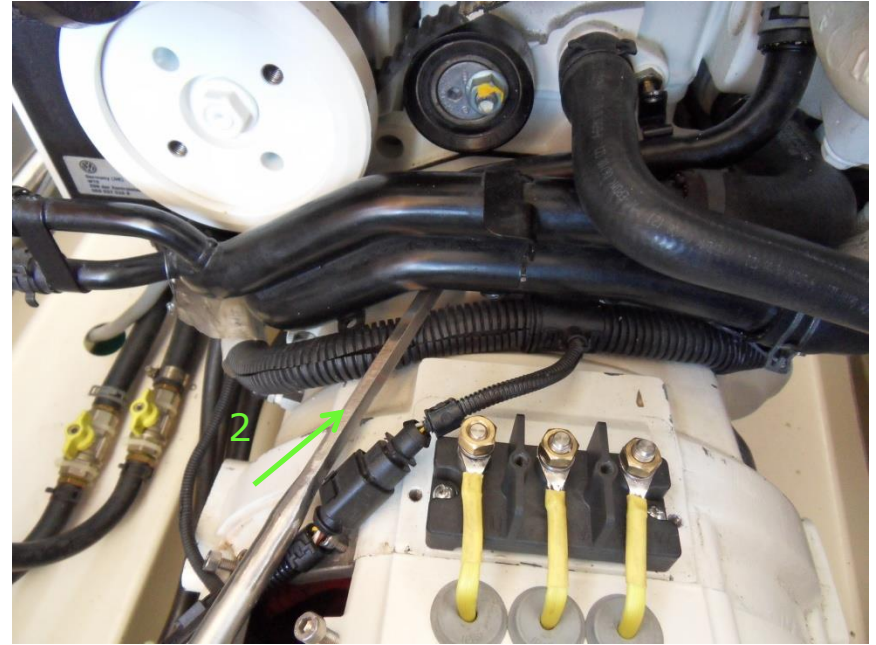
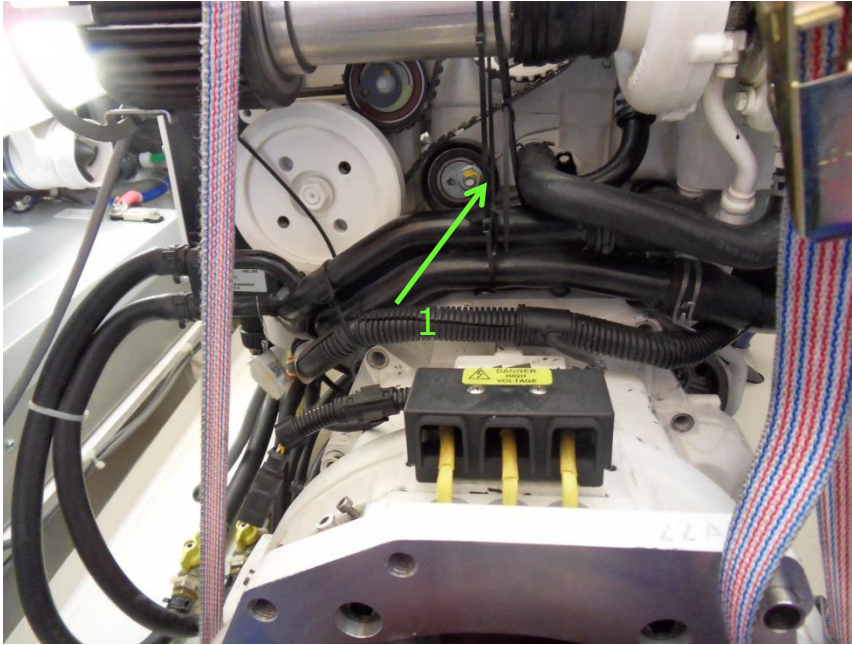


Unscrew the 3 bolts and 1 nut fixing the cooling pipes,
bend the metal feathers * up.

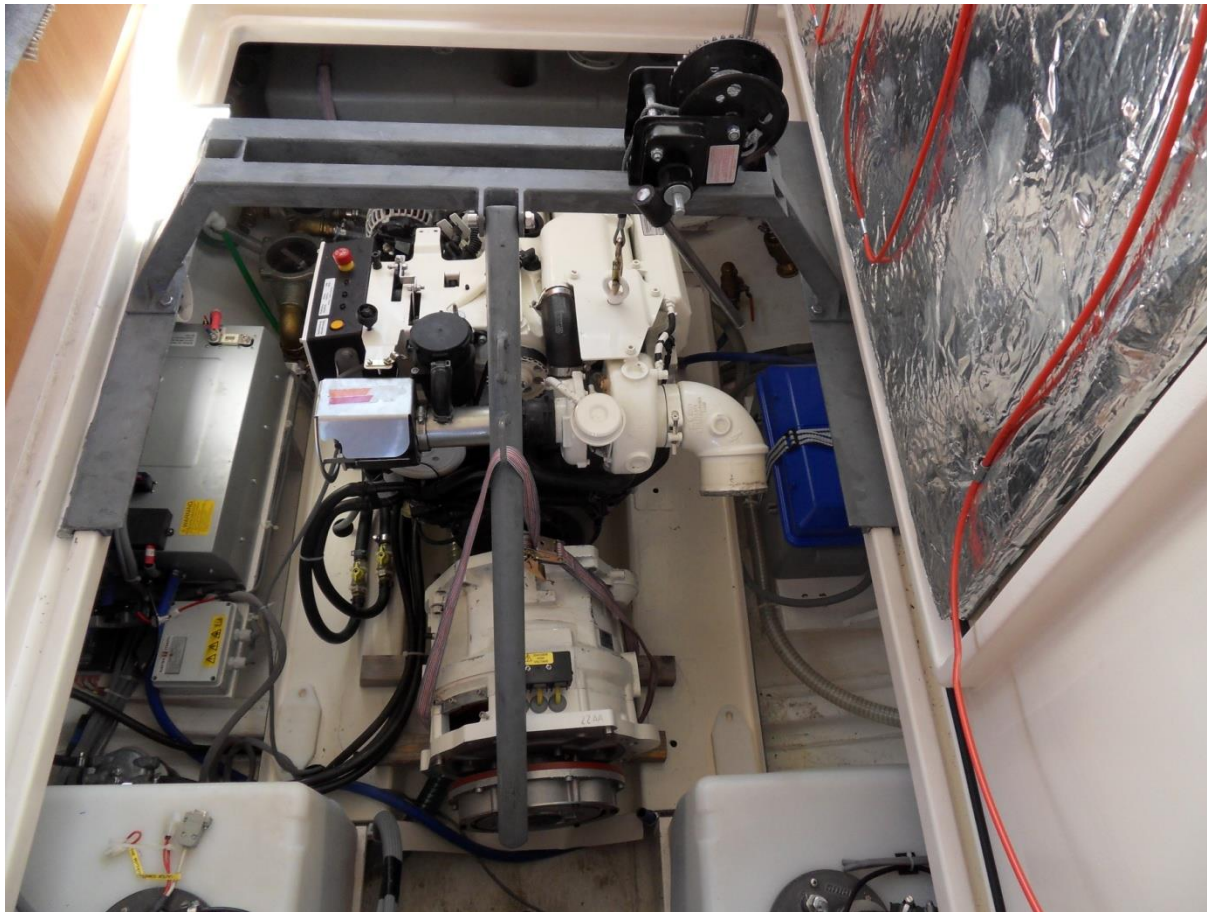
1 - Loose the electrical conectors from the brackets

2 - Disconnect power cables from AIZ

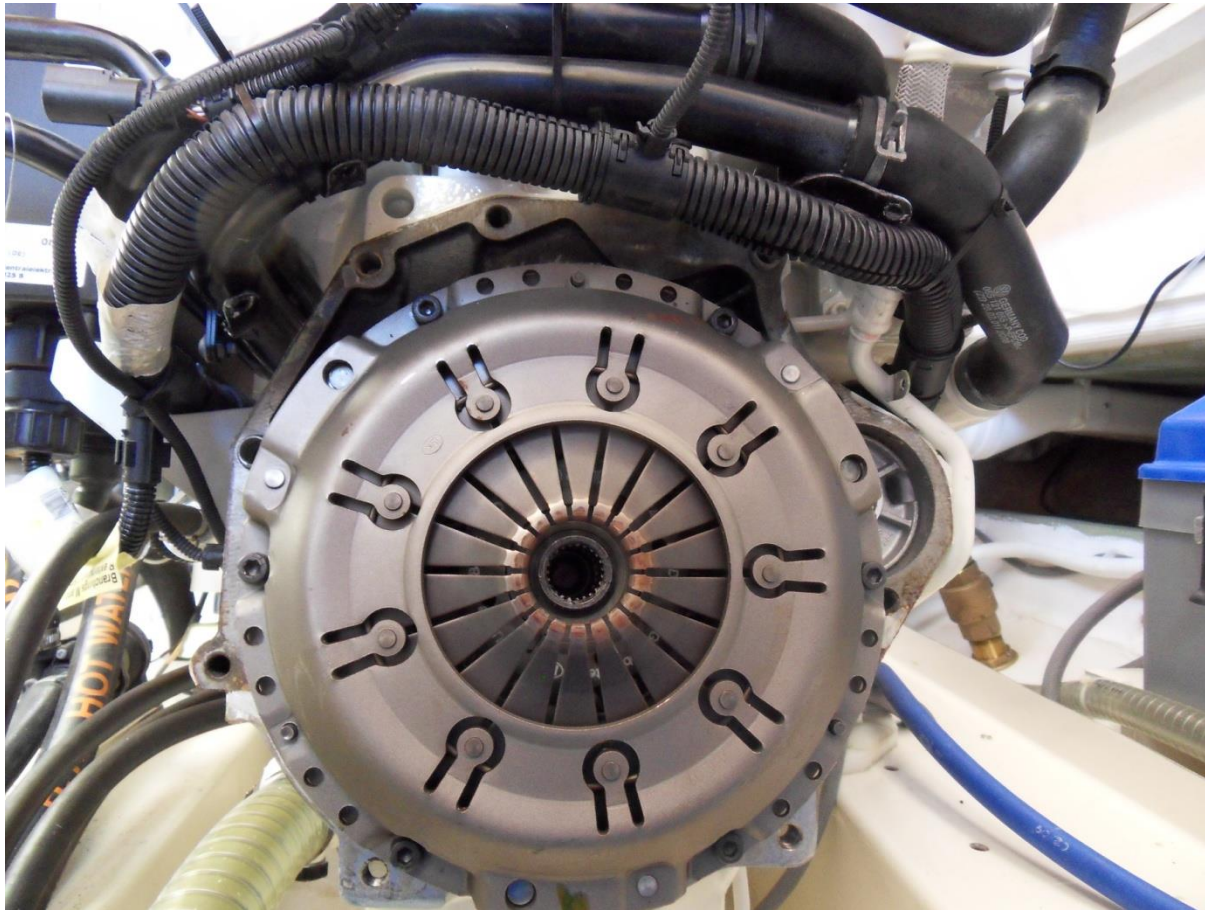
Caution: mark and isolate the cables



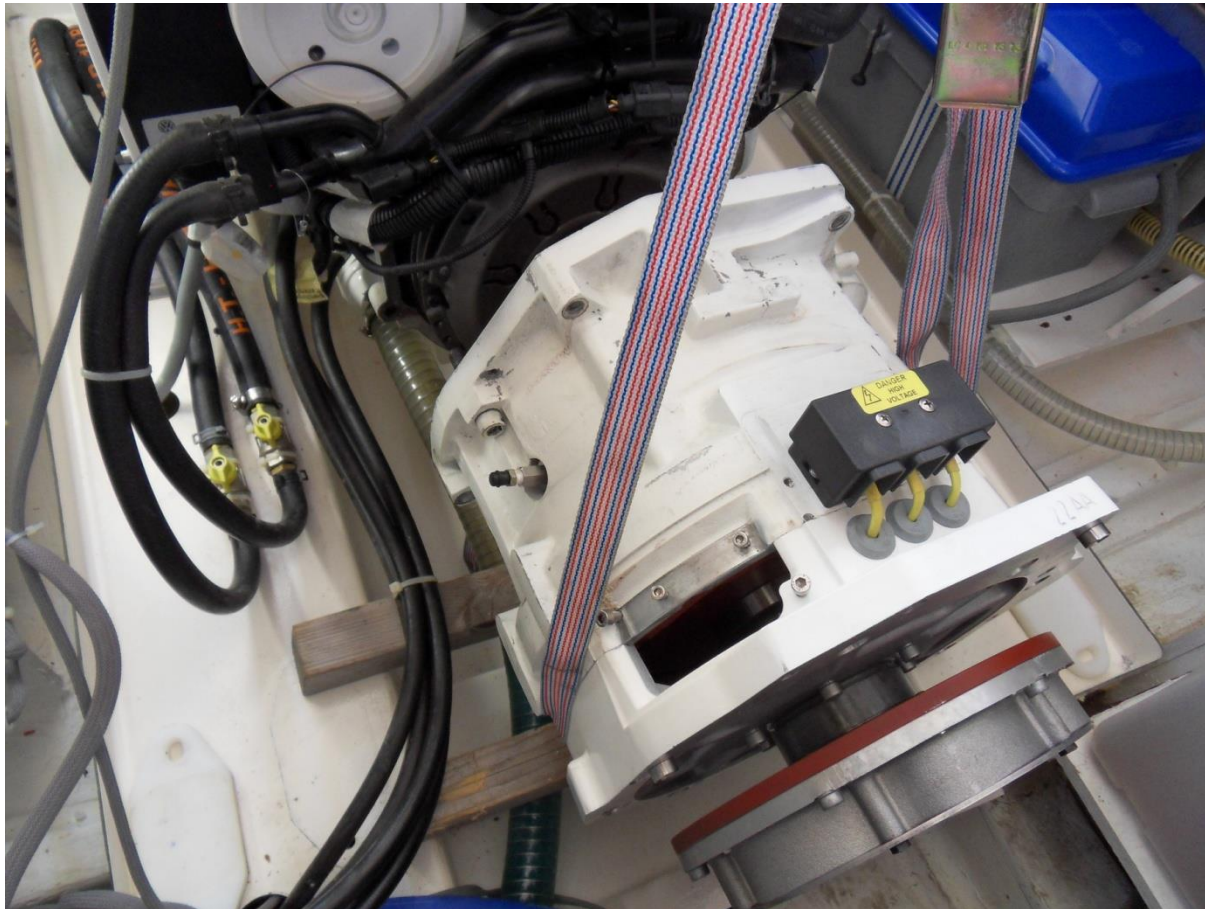
- 1 - Lift cooling pipes with pvc ties
 - 2 - Unscrew bolts of AIZ with special tool,
(hexagonal key with spherical head from 300 - 400 mm long).
- Caution: mark the position of the bolts



Remove the AIZ unit from the diesel engine with the help of special tool wich is also carrying the engine.

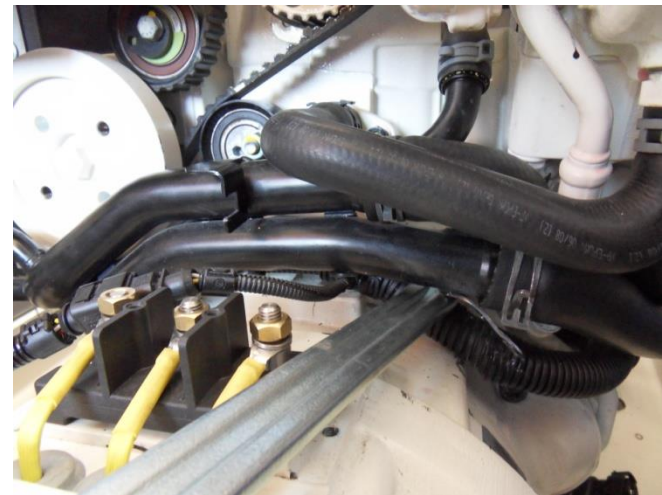
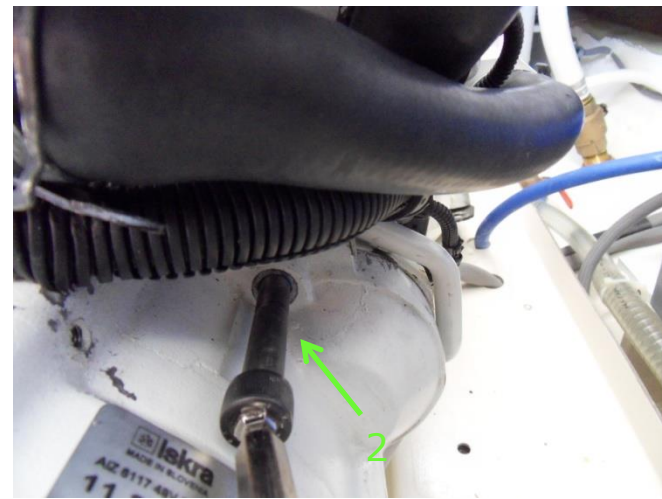
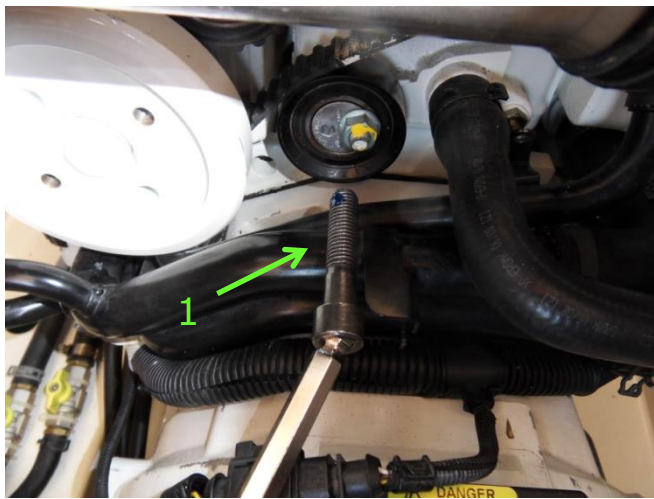


Adjust the clutch to the position on the picture
(the thinner part of the clutch plate should be on the 12 o'clock position).

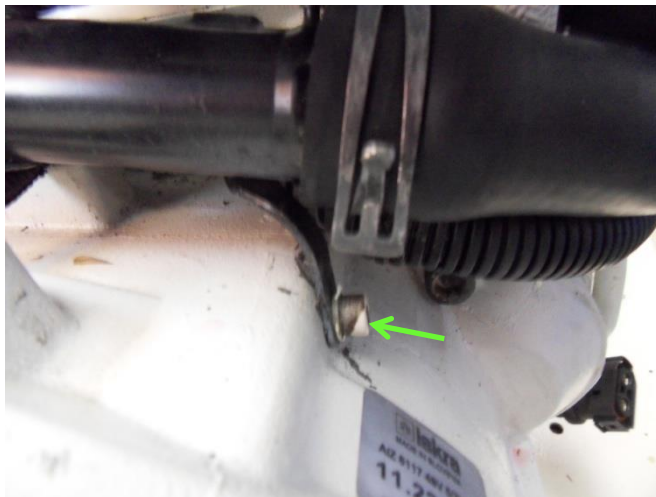
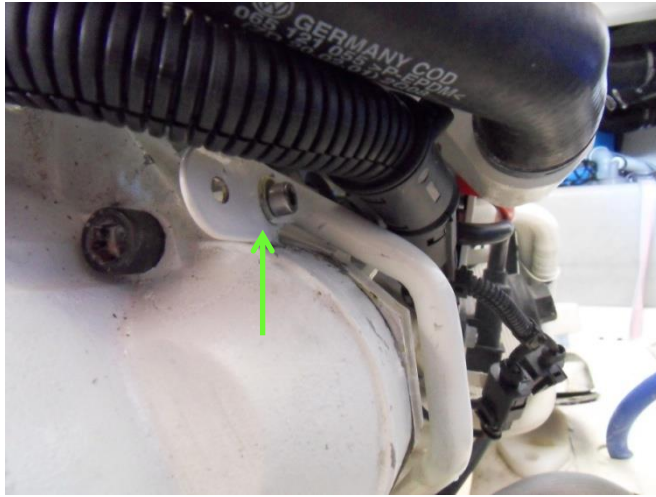


With the help of lifting rod attach AIZ unit to the diesel engine.

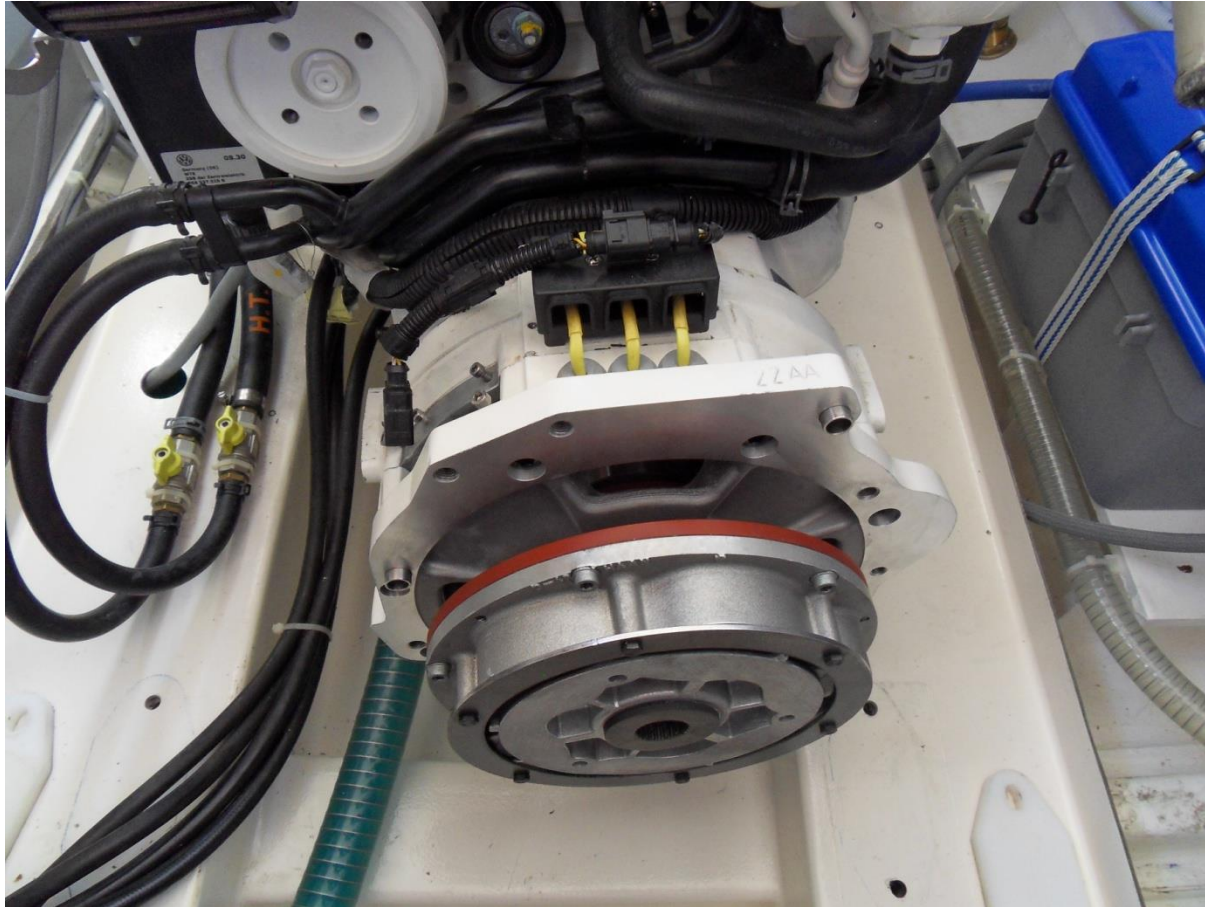
Caution : make room for the edge of AIZ by lifting cooling pipes with pvc ties, be sure you also bend the metal feathers and lift the diesel engine sufficiently for manipulation of the AIZ.



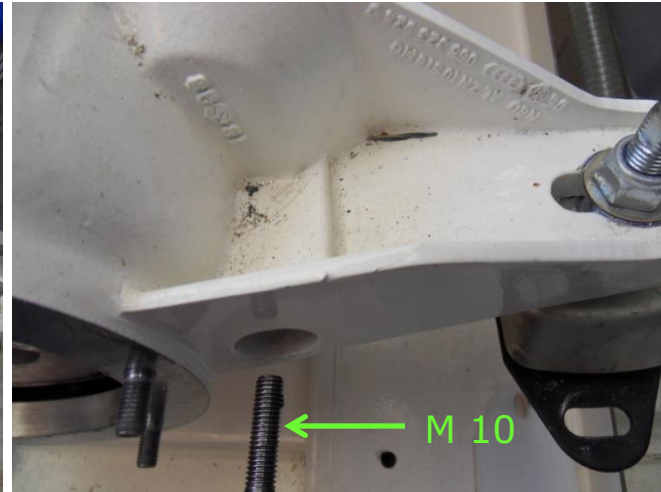
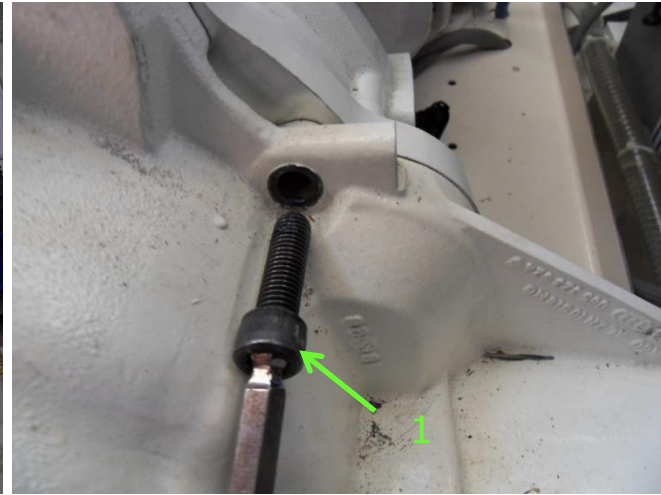
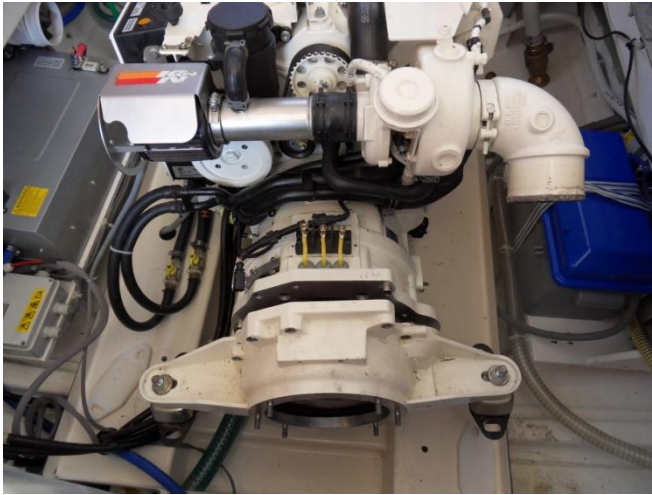
Install the bolts in the reverse order you removed them,
 Use glue for instalation, clean bolts If you are using used bolts.
 1 - The shortest bolt is under the roller.
 2 - The longest bolt is attached to the starter.
 3 - The bolt behind the bleeder is always previously installed.
 Help yourself with tire lever to put back electrical cables under the pipes
 Tightening torque is 80 +/- 4 Nm



Bend back the iron feathers, be careful not to damage them



If you are using the old CENTA flexible clutch,
mark the places of the bolts and be careful about the pins.
Use the right holes for pins and bolts.
Tightening torque is 23 +/- 2 Nm



Use reverse assembly to put together the transmission bell housing and the AIZ, watch the pins.

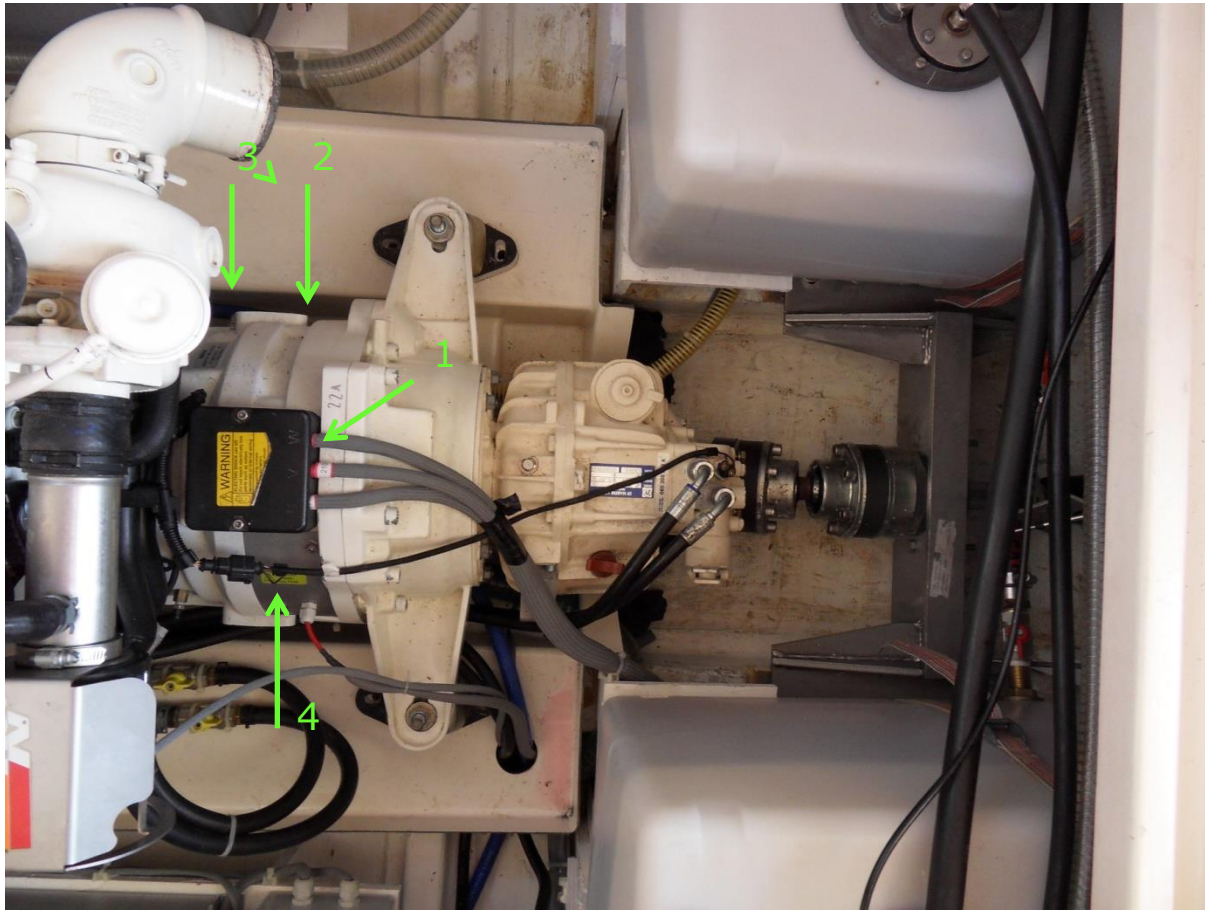
Tightening torque for M12 is 80 Nm.

Tightening torque for M10 is 50 Nm.

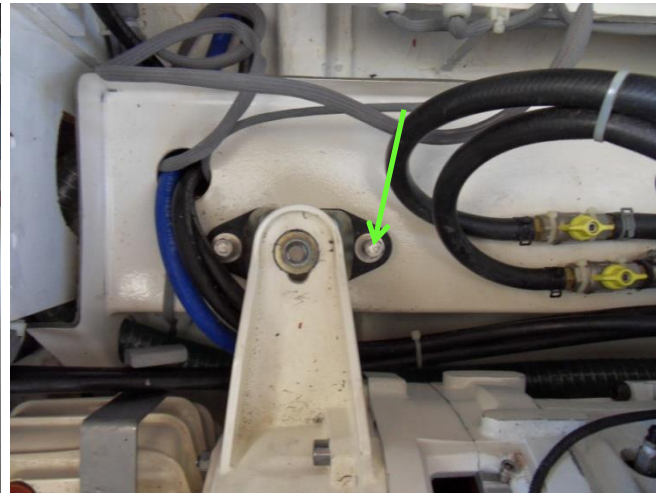
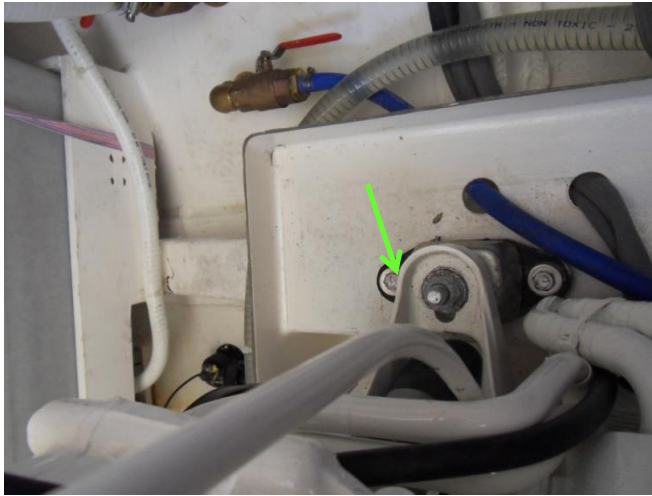
1 -Shortest bolt.



Mount back the gearbox, connect the hydraulic lines, the temperature sensor, throttle lever wire command.
Tightening torque for nuts of the gearbox is 50 Nm.



- 1 - Connect the HCU power supply
Caution : don't let the cables get in to contact
- 2- Connect the cooling lines.
- 3 - Connect the clutch actuator line.
- 4 - Install the Hall sensors.



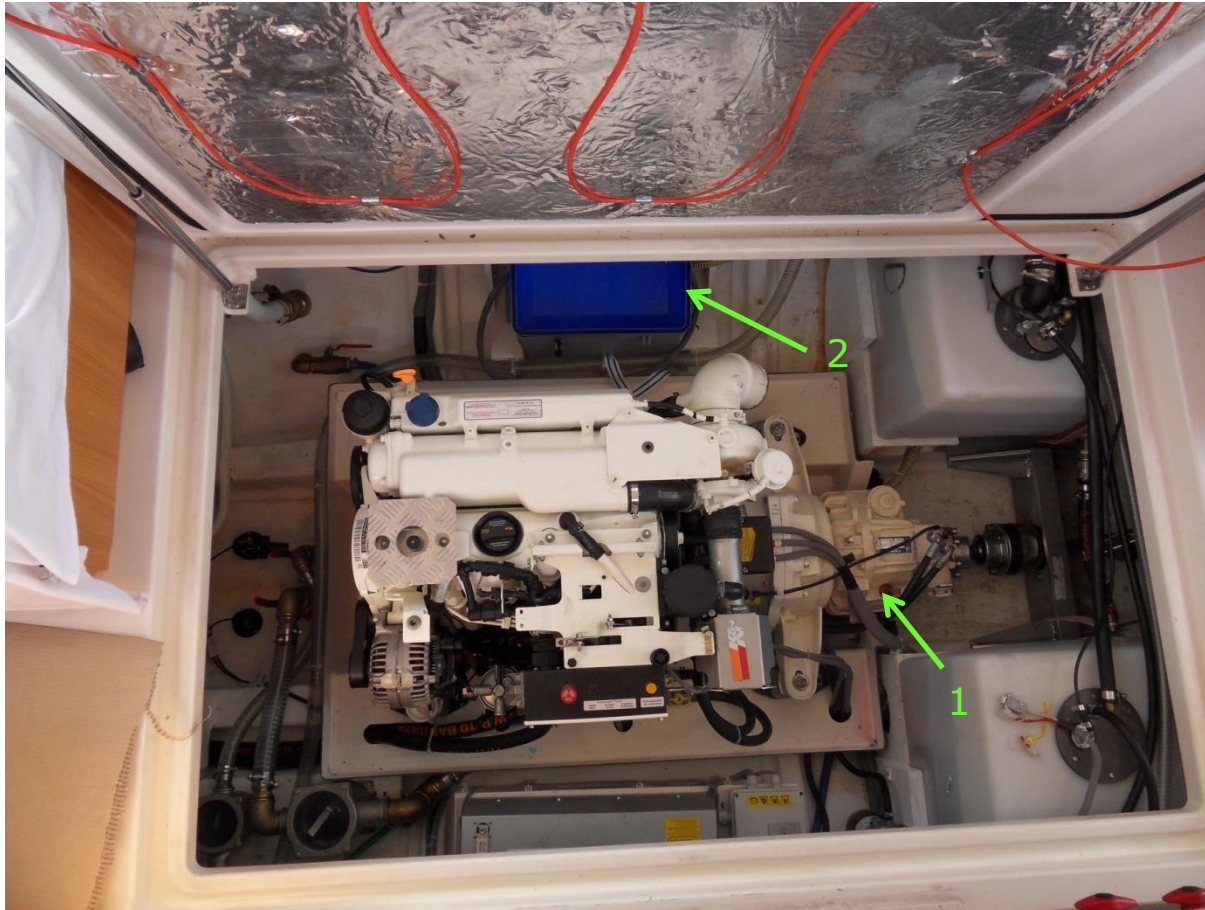
Put the engine back on it's place and tighten the leg brackets with the 8 bolts.

Caution : put it in the marks you made previously so it is alined with the shaft.



Assemble the acquadrive with the gearbox ZF 25.

Caution: use glue to attach the bolts and nuts or use self locking nuts.



- 1 - Check the level of the oil in the gearbox.
 - 2 - Disassemble the service battery housing , remove the battery and the housing so you can reach the clutch actuator.
- Also disassemble the metal housing from the clutch actuator.

1 - *Bleeding the clutch hydraulic system procedure.*

See above procedure in ISKRA manual or look specific instructions.

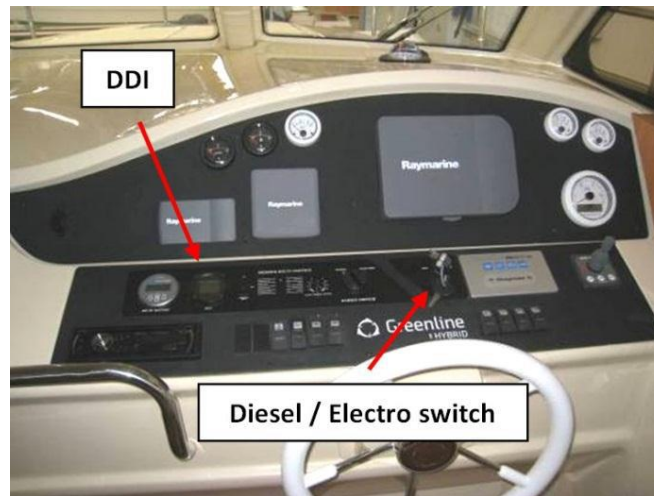
2 - *Setting the potentiometer for E-motor mode within the range of diesel motor throttle lever – greenline 33 – 40.*

See above procedure in ISKRA manual or look specific instructions.

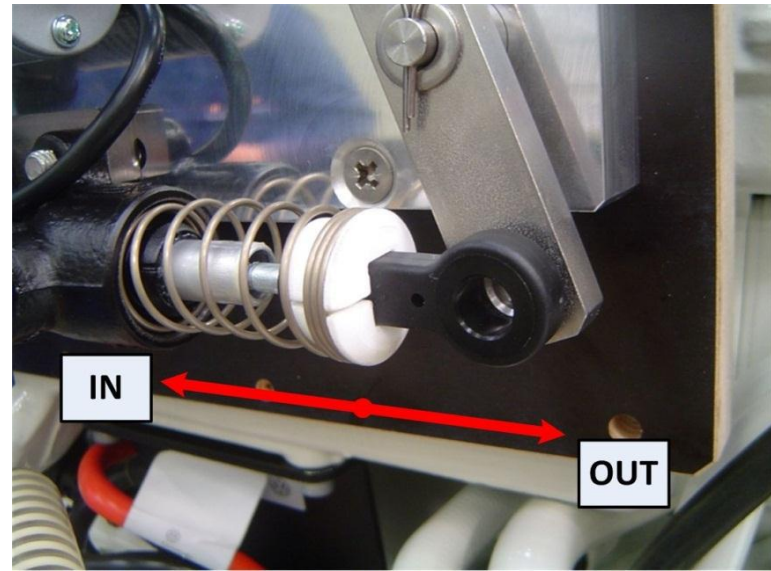
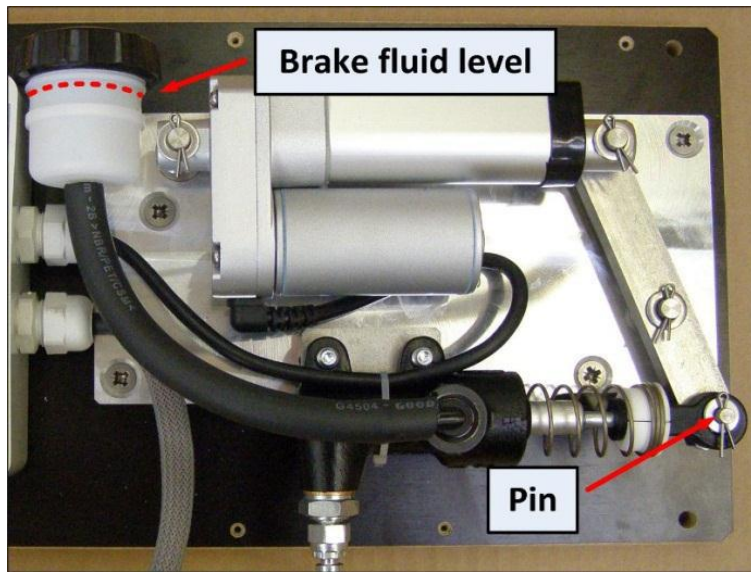
3 - Clutch function test.

See above procedure in ISKRA manual or look specific instructions.

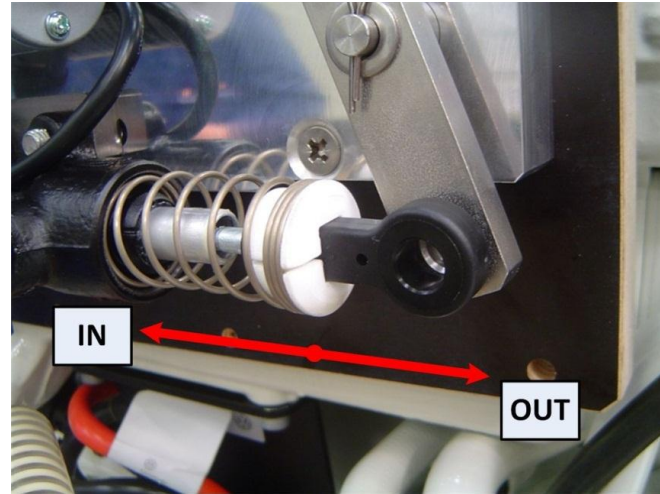
Bleeding the clutch hydraulic system procedure



The *48V HYBRID DRIVE SWITCH* must be set to OFF. Set the *DIESEL / ELECTRIC HYBRID SWITCH* to *DIESEL*. This assures that there is no pressure in the clutch hydraulic actuating system and the system is opened.



Check brake fluid level in the container – must be between min and max indicator.
On the actuator remove the pin connecting lever and the master cylinder piston rod.



Put transparent hose on bleed valve (see location on figure and insert the other end of the hose in an empty bottle). Protect housing with a piece of cloth.

Then do the following:

Loosen the bleed valve on the hydraulic connector with fork wrench 11mm and push the piston rod IN

Tighten the bleed valve and pull the piston rod OUT. Repeat this procedure as long as air bubbles appear in the transparent hose. While performing this operation connector must be secured with wrench 13mm against unscrewing and over tightening. Also constantly check brake fluid level which should never fall below 1/3 of the container. When the system is bled, master cylinder piston rod becomes very stiff to push IN by hand. Tighten the bleed valve with torque 13 ± 2 Nm while securing the connector with wrench 13mm against over tightening.

Remove the hose and put the pin, washer and split pin back to their place. If necessary, add brake fluid in the container.

Clutch function test

How to check if the clutch is disengaged.

Set the DIESEL / ELECTRIC HYBRID SWITCH to ELECTRIC.

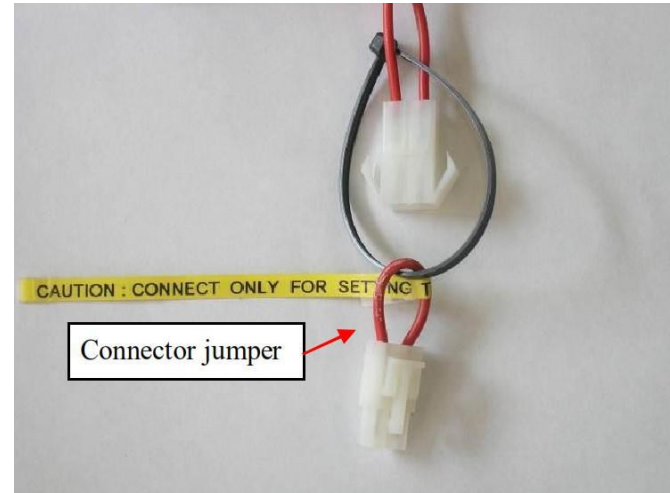
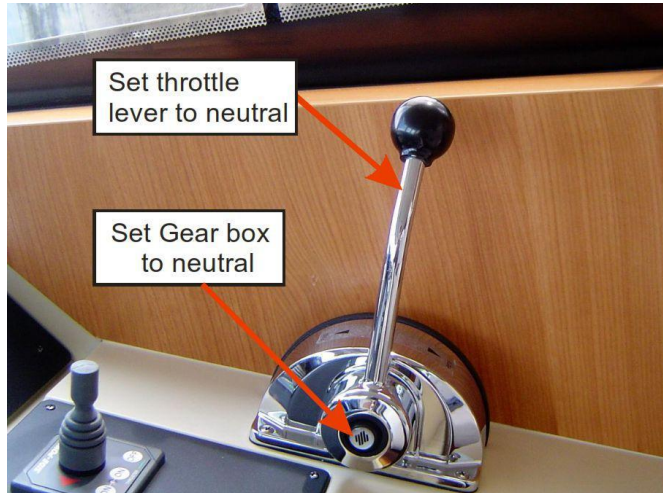
E-motor should be run at gearbox neutral position and full throttle –max. revolutions.

Data display interface (DDI) must display:

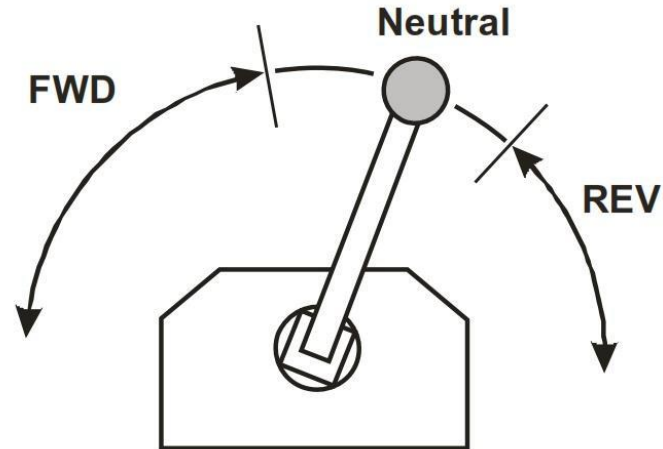
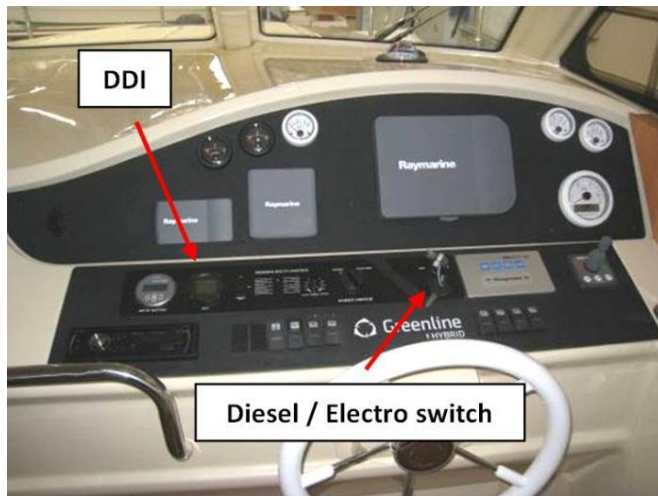
E-motor min. 1400 rpm

Battery current draw max. 40A

Setting the potentiometer for E-motor mode within the range of diesel motor throttle lever – greenline 33

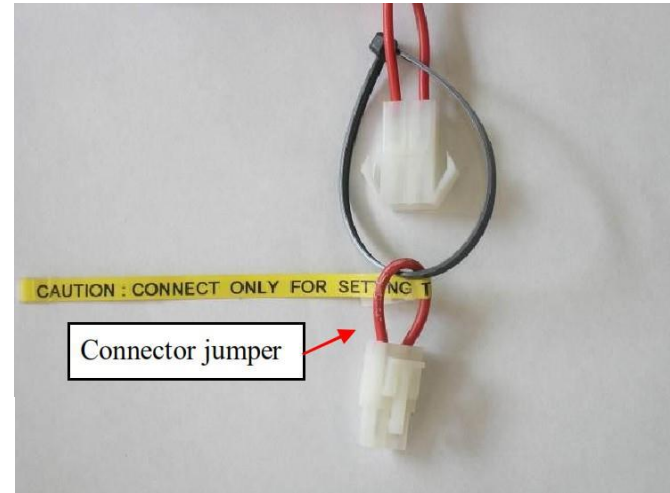
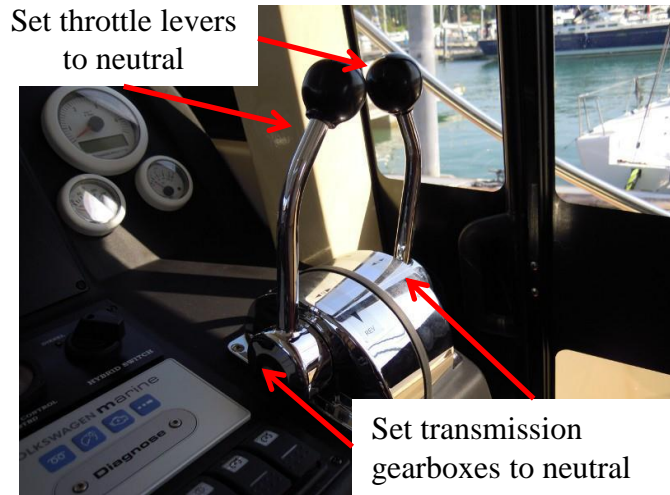


1. Set the *48V HYBRID DRIVE SWITCH* to OFF.
2. Warning: Set the transmission box to neutral.
3. Make a connection with the connector jumper on cable from connection box..

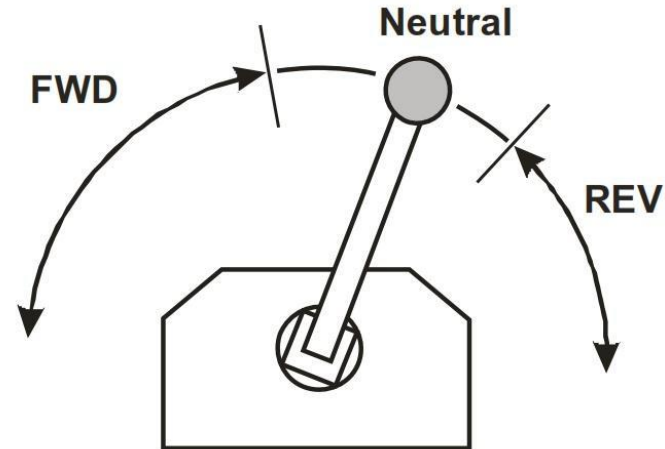
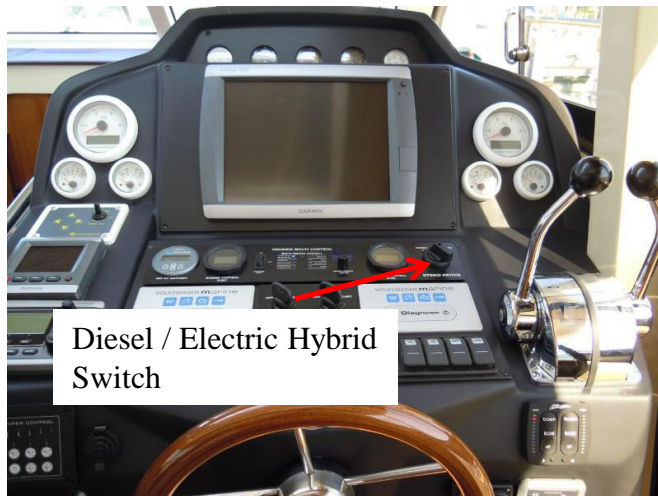


4. Set the *DIESEL / ELECTRIC HYBRID SWITCH* to *DIESEL* position.
5. Set the throttle lever to neutral.
Throttle lever has positions: Forward (FWD), Reverse (REV) and Neutral (N).
Throttle lever might have different angles at maximal shift from Neutral to maximal FWD and to maximal REV position.
6. Set the *48V HYBRID DRIVE SWITCH* to ON.
7. Then within 5 seconds put the throttle lever to its end position in the direction Forward or Reverse where the angle from the neutral position is smaller.
After that wait another 5 seconds.
8. Set the *48V HYBRID DRIVE SWITCH* to OFF.
9. Remove the connector jumper from the cable.
10. Test the speed of electric motor rotation in both end positions of throttle lever.
The test is done in neutral run of the gearbox. Repeat the procedure if maximal preset speed is not achieved.

Setting the potentiometers for E-motor mode within the range of diesel motor throttle levers – greenline 40



1. Set the *12V ENGINE PORT BATTERY SWITCH* and the *12V ENGINE STBD BATTERY SWITCH* to OFF.
2. Warning: Set the transmission gearboxes to neutral.
3. Make a connection with the connector jumpers on cables from both Connection boxes.



4. Set the *DIESEL / ELECTRIC HYBRID SWITCH* to *DIESEL* position.
5. Set the throttle levers to neutral.
Throttle levers has positions: Forward (FWD), Reverse (REV) and Neutral (N).
Levers might have different angles at maximal shift from Neutral to maximal FWD and to maximal REV position.
6. Set the *12V ENGINE PORT BATTERY SWITCH* and the *12V ENGINE STBD BATTERY SWITCH* to ON.
7. Then within 5 seconds put the throttle levers to their end position in the direction Forward or Reverse where the angle from the neutral position is smaller.
After that wait another 5 seconds.
8. Set the *12V ENGINE PORT BATTERY SWITCH* and the *12V ENGINE STBD BATTERY SWITCH* to OFF.
9. Remove the connector jumpers from the cables.
10. Test the speed of both E-motors rotation in end position of throttle levers.
The test is done in iddle run of reduction gears.
Repeat the procedure if maximal preset speed is not achived.