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# General Information

## Engine code letters and engine number

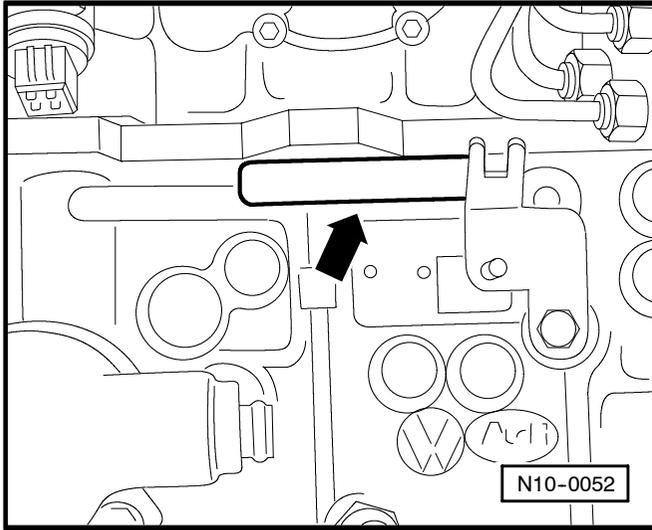
### Engine number



The engine number ("engine code" and "serial number") is located on the left-hand side next to the injection pump on the cylinder block.

The engine number consists of up to nine characters (alphanumeric). The first part (maximum of 3 code characters) represents the "engine code", the second part (six places) the "serial number". If more than 999,999 engines with the same code have been produced, the first of the six places is renewed with a letter.

In addition, an information plate with "engine code letters" and "serial number" is located on the upper section of the toothed belt guard.



## Engine characteristics

<b>Code letters</b>	<b>BCT</b>	<b>ANF</b>
Manufactured	06.01 ►	06.01 ►
Displacement l	2,5	2,5
Output kW at rpm	40/2500	55/3600
Torque Nm at rpm	155/2250	155/2250
Bore Ø mm	81	81
Stroke mm	95,5	95,5
Compression ratio	19,0	19,0
CZ at least	49	49
Firing order	1-2-4-5-3	1-2-4-5-3
Turbocharging	-	-
Charge air cooling	-	-
Self-Diagnosis	x	x
Weight kg (dry, with sub-assemblies, cooling system and coupling flange)	260	260
Certificate No. as per BSO 2	M 103 300 05	M 103 300 05

<b>Code letters</b>	<b>BCU</b>	<b>ANG</b>	<b>BCV</b>	<b>ANH</b>
Manufactured	06.01 ►	06.01 ►	06.01 ►	06.01 ►
Displacement l	2,5	2,5	2,5	2,5
Output kW at rpm	74/2600	88/3250	108/4000	111/4000
Torque Nm at rpm	270/2500	275/2500	310/1900	310/1900
Bore Ø mm	81	81	81	81
Stroke mm	95,5	95,5	95,5	95,5
Compression ratio	19,0	19,0	19,0	19,0
CZ at least	49	49	49	49
Firing order	1-2-4-5-3	1-2-4-5-3	1-2-4-5-3	1-2-4-5-3
Turbocharging	x	x	x	x
Intercooler	-	-	x	x
Self-Diagnosis	x	x	x	x
Weight kg (dry, with sub-assemblies, cooling system and coupling flange)	275	275	280	280
Certificate No. as per BSO 2	M 103 300 06	M 103 300 06	M 103 300 07	M 103 300 07

# Inspection Service

The intervals for the inspection service work to be carried out are as follows:

- ◆ Work for daily inspection work before going out, ⇒ page 5.
- ◆ Inspection work at the beginning of the season, ⇒ page 5.
- ◆ Inspection work at the end of the season, ⇒ page 6.
- ◆ Inspection service once a year or every 200 operating hours, ⇒ page 7.
- ◆ Additional work every 5 years or every 1,000 operating hours, ⇒ page 8.

## ***Instructions for conducting the service work***

- ◆ The order of the individual service items has been tested and optimised. Therefore, it must be complied with to prevent unnecessary interruptions in work.
- ◆ The order of the work descriptions corresponds to the working sequence of the inspection service of type of service most frequently carried out.
- ◆ If defects are discovered during the inspection service that require repair measures, then please inform the customer.

## Work required for daily inspection work before going out

<b>Work required</b>	<b>page</b>
- Conducting visual inspection for leaks and damage from above and below	9
- Checking engine oil level	11
- Checking power-steering hydraulic oil level in Z-drive	18
- Checking hydraulic oil for reversing gear	19
- Checking and cleaning seawater filter	36
- Draining circulation prefilter with water separator (bowl)	15

## Work required for inspection work at beginning of season

<b>Work required</b>	<b>page</b>
- Checking ribbed V-belt for seawater pump	28
- Checking ribbed V-belt for alternator, power-steering pump etc.	29
- Checking toothed belt for camshaft drive	30
- Checking toothed belt for injection pump	34

## Work required for inspection work at end of season

<b>Work required</b>	<b>page</b>
- Conducting visual inspection for leaks and damage from above and below	9
- Changing engine oil	10
- Replace cup oil filter	12
- Renewing fuel supply filter	17
- Washing out and oiling air filter	27
- Checking and cleaning seawater filter	36
- Checking seawater pump impeller and renewing if necessary	37
- Check reactive anode and renew if necessary.	41
- Interrogate fault memory	43
- Seawater circuit: Draining seawater and flushing	40

## Work required for inspection service once a year or every 200 operating hours

<b>Work required</b>	<b>page</b>
- Conducting visual inspection for leaks and damage from above and below	9
- Changing engine oil	10
- Replace cup oil filter	12
- Changing circulation prefilter with water separator	13
- Renewing fuel supply filter	17
- Checking power-steering hydraulic oil level in Z-drive	18
- Checking hydraulic oil for reversing gear	19
- Checking coolant level and antifreeze	22
- Washing out and oiling air filter	27
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- Checking toothed belt for injection pump	34
- Checking and cleaning seawater filter	36
- Checking seawater pump impeller and renewing if necessary	37
- Check reactive anode and renew if necessary.	41
- Interrogate fault memory	43

## Work required for additional work every 5 years or every 1,000 operating hours

<b>Work required</b>	<b>page</b>
- Washing out and reoiling air filter	27
- Renewing toothed belt for camshaft drive	30
- Renewing toothed belt for injection pump	34
- Checking pipe bundles of heat exchangers, removing and cleaning if necessary	21

# Description of Service Work

## Conducting visual inspection for leaks and damage from above and below

Please carry out the visual inspection as follows:

- Check engine and engine compartment for leaks and damage.
- Check lines, hoses and connections of
  - ◆ fuel system
  - ◆ cooling system
  - ◆ power-steering hydraulic system

for leaks, rub spots, porosity and brittleness.

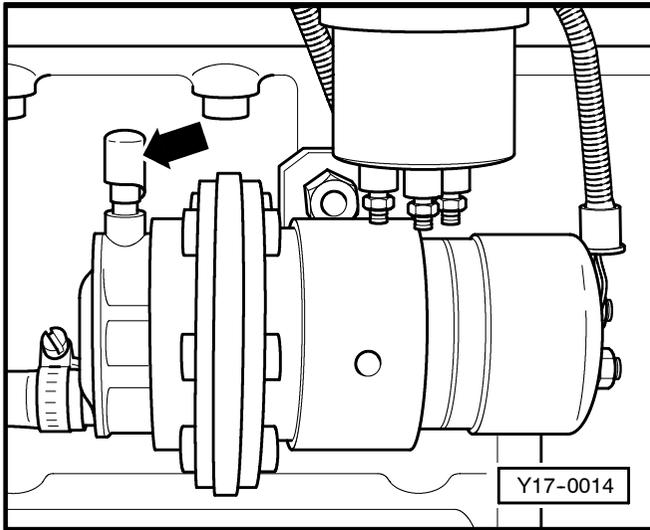
### **Note:**

*Please have any defects determined eliminated as part of repair measures.*

## Changing engine oil

### **Note:**

The motor oil must be changed together with the filter once a year or every 200 operating hours. The annual oil change must be carried out at the end of the season.



◆ Please observe disposal regulations!

- ▶ - Remove the sealing plug and fit the hose on the connection on the oil extraction pump -arrow-.
- Guide the hose into the container provided for the oil change.
- Press and hold the yellow button on the central electrics with the engine stopped and the ignition switched on until all motor oil has been extracted.
- After draining is completed, remove the hose again and close the connection on the oil extraction pump with the sealing plug.
- After oil has been poured in, wait at least 3 minutes and then check the oil level.
- Checking engine oil level ⇒ page 11.

## Checking engine oil level

- Pull out the dipstick, wipe off with a clean cloth and push the dipstick back in as far as possible.

### **Note:**

*Please observe disposal regulations!*

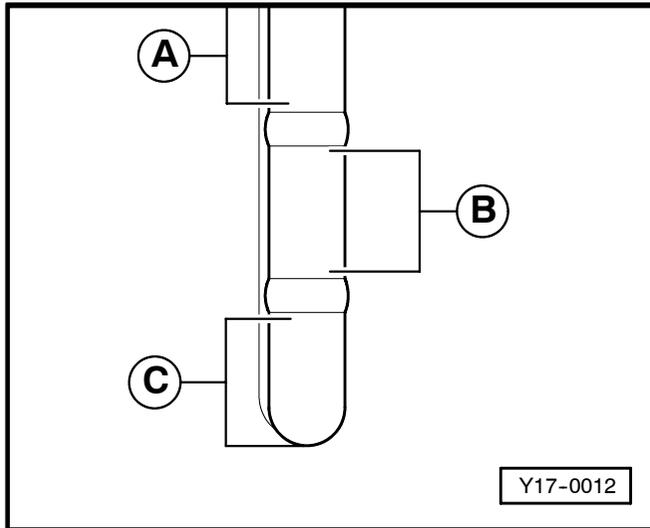


- Pull out dipstick and read off oil level:

Area a - Oil **must not** be added.

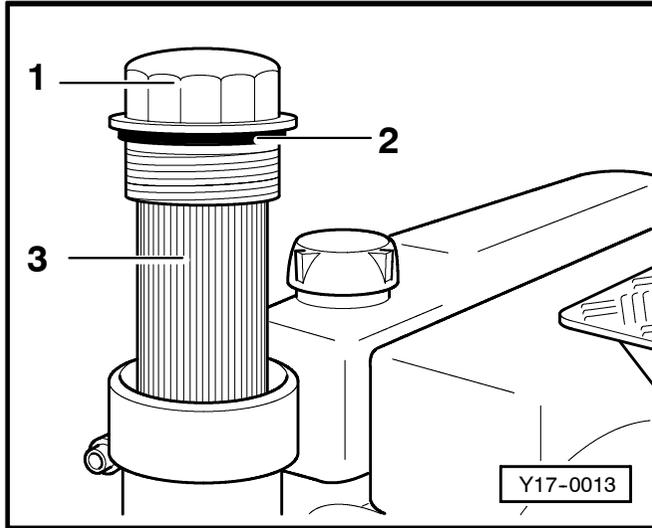
Area b - Oil **need not** be added.

Area c - Oil **must** be added. It is sufficient when the oil level is then somewhere within the range -b-.



## Replace cup oil filter

◆ *Please observe disposal regulations!*



- ▲ - Unscrew the cap -1-.
- Separate the filter insert -3- from the cap.
- Clean the cap.
- Renew the sealing ring -2-.
- Wet the new sealing ring with oil.
- Fit the new filter insert in the cap.
- Tighten the cap with 25 Nm.

After the motor oil and the cup oil filter have been changed, watch the following after the first engine start:

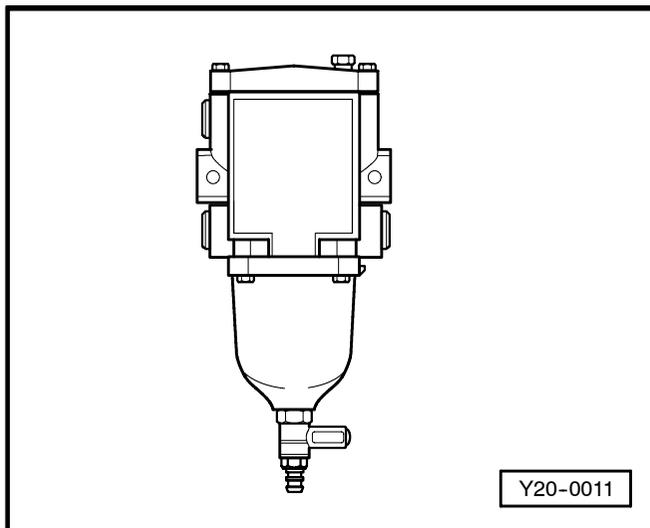
- As long as the oil-pressure warning lamp in the instrument panel lights up, the engine may only run at idle. Do not actuate the throttle! Bursts of throttle can damage the turbocharger or cause it to fail completely.
- The full oil pressure is not reached until the warning lamp has gone out, and the throttle may be applied.

- After oil has been poured in, wait at least 3 minutes and then check the oil level.
- Checking engine oil level ⇒ page 11.

## Changing circulation prefilter with water separator

### **Notes:**

- ◆ *Please make sure that no diesel fuel gets onto the coolant hoses. Clean hoses immediately if necessary!*
- ◆ *Please observe disposal regulations!*



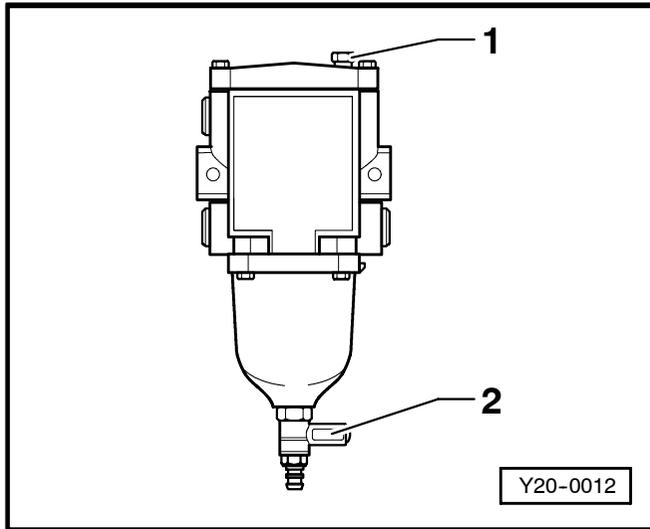
- ◀ - Switch off the engine (single filter) or switch over to the second filter (double filter).
- Screw out the four lid screws and remove the lid.
- Remove the filter cassette.
- Take out the filter insert by the hoop.
- Lay in the new filter element.
- Lay the filter cassette on the filter element.

- Check the lid seal for damage and correct seating in the lid.
- Fit the lid with the seal.
- Tighten the screws diagonally.
- Unscrew the bleeder screw.
- Pour clean diesel fuel into the filter via the bleeding hole.
- Screw in the bleeder screw.
- Please start the engine and conduct a visual inspection of the fuel system for leaks.

## Draining circulation prefilter with water separator

### Notes:

- ◆ Please make sure that no diesel fuel gets onto the coolant hoses. Clean hoses immediately if necessary!
- ◆ Please observe disposal regulations!



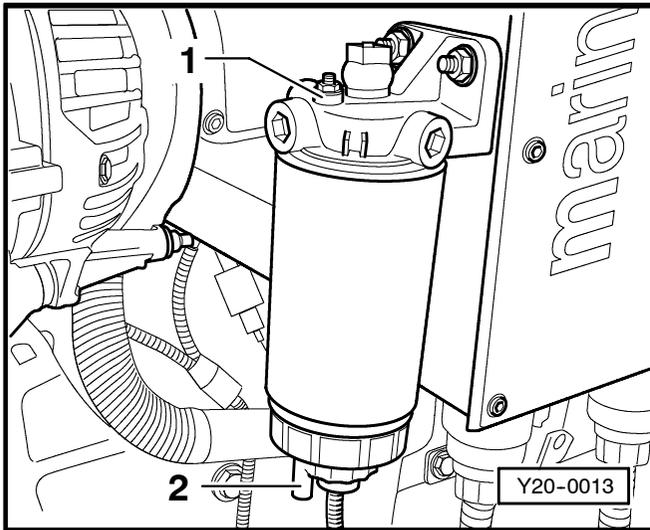
- ◀ - Switch off the engine (single filter) or switch over to the second filter (double filter).
- Unscrew the bleeder screw -1-.
- Open the drain valve -2- below the bowl and catch fuel in a suitable container until the entire dirt is rinsed out of the bowl.
- Close the drain valve.

- Pour clean fuel into the filter via the bleeding hole.
- Screw in the bleeder screw -1- again.
- Start the engine and check the fuel system for leaks.

## Draining water from fuel supply filter

### Notes:

- ◆ Please make sure that no diesel fuel gets onto the coolant hoses. Clean hoses immediately if necessary!
- ◆ Please observe disposal regulations!
- Unscrew the bleeder screw -1-.
- Separate the electrical connector for the water warning device and unscrew the water drain screw -2- (approx. 1 turn) and catch approx. 100 cm<sup>3</sup> of fuel with a suitable container.
- Screw in the bleeder screw -1- again.
- Start the engine and check the fuel system for leaks.



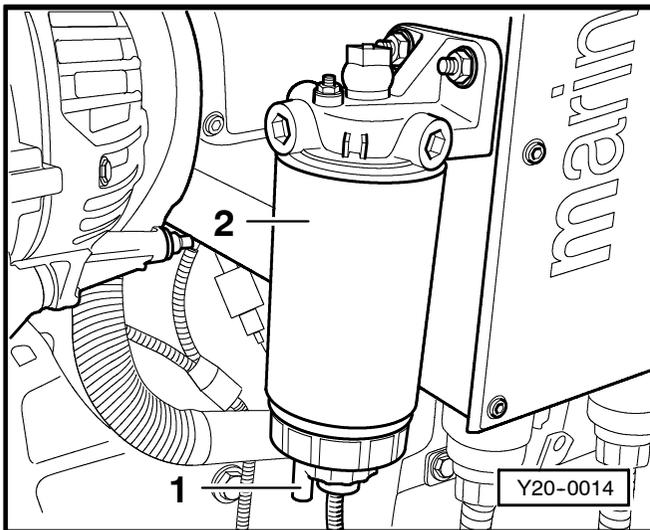
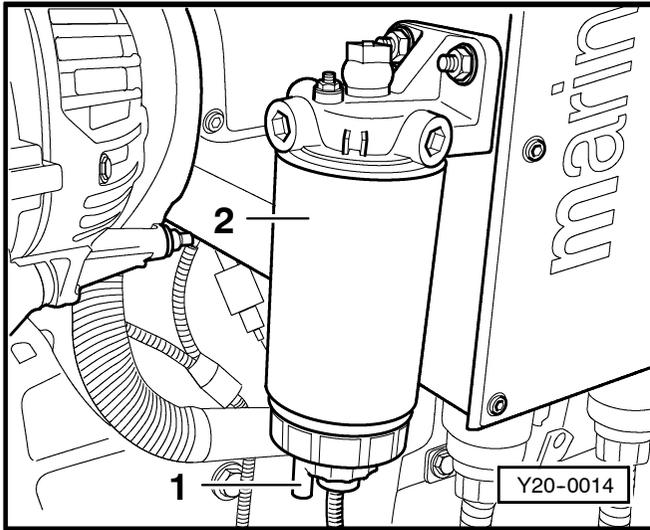
## Renewing fuel supply filter

### Notes:

- ◆ Please make sure that no diesel fuel gets onto the coolant hoses. Clean hoses immediately if necessary!
- ◆ Please observe disposal regulations!

Please carry out the following work:

- ▲ - Separate the connector for the water warning device and screw out the water drain screw -1- of the fuel supply filter -2-.
- ▲ - Unscrew the old fuel filter -2- and clean the sealing surface of the bracket.
- Wet the rubber ring of the new filter with diesel fuel.
- Fill the new filter with clean diesel fuel. This enables the engine to be started more quickly.



- Screw in the filter and tighten it hand-tight.
- Reconnect the connector for the water warning device.
- Please start the engine and conduct a visual inspection of the fuel system for leaks.

### **Checking level of power-steering hydraulic oil**

- Check the oil level with the engine running and the rudder in the straight-ahead position.
- Unscrew the cap from the reservoir of the power-steering hydraulic system and remove it with the dipstick.

The oil level display must lie between the "MIN" and "MAX" marking.

- Add the following oil if necessary: G 002 000 or G 002 000 A8

**Note:**

*If the oil level has dropped to the MIN marking, the power steering system must be checked (repair measure). Simply continuing to top up the system will not solve the underlying problem.*

## Checking hydraulic oil level for the reversing gear

### **Note:**

*The boat must be lying calmly to measure the oil level. After switching off the engine, wait a few minutes to permit the oil to run back.*

- Pull out the dipstick, wipe it off with a clean cloth and push the dipstick back in as far as possible.

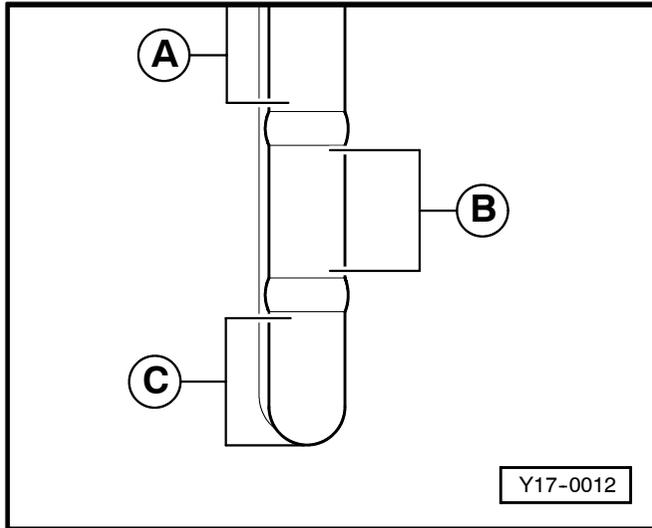


- Pull out dipstick and read off oil level:

Area a - Oil **must not** be added.

Area b - Oil can be added.

Area c - Oil **must** be added. It is sufficient when the oil level is then somewhere within the range -b-.



## **Changing hydraulic oil for reversing gear**

For this purpose please proceed according to the specifications of the gear manufacturer.

⇒ Technical literature of gear manufacturer

## Checking pipe bundles of heat exchangers

### **Note:**

- ◆ *The pipe bundles of the heat exchangers must be checked every 5 years or every 1,000 operating hours, whichever is reached first.*
- ◆ *On engines with an intercooler, the cooling pipe bundle for the intercooler must also be removed and cleaned in addition to the pipe bundle for the main heat exchanger.*

- Remove pipe bundles

⇒ Workshop Manual; page 19-1; Cooling; Removing and installing parts of cooling system

On removed pipe bundle:

- Hold a clean cloth in front of the outlet of the pipe bundle.

- Blow through the individual water channels of the pipe bundle with compressed air so that any particles are caught by the cloth.

If individual pipes are clogged due to deposits, then it may be possible to clean them with mechanical aids (spiral pipe cleaner) or special treatment methods (e.g. acid bath) at specialized radiator workshops.

## Checking coolant level and antifreeze

The engines are filled with the coolant additive -G 12 A8D-. When adding coolant, please also add only coolant additive -G 12 A8D-, specification TL-VW774D. Please observe the label on the container.

### **Note:**

*-G 12 A8D- can be recognised in the expansion tank from its red colour.*

### **Important!**

- ◆ ***The coolant additive -G 12- may never be mixed with other coolant additives.***
- ◆ ***If the liquid in the expansion tank is brown, -G 12- has been mixed with another coolant.  
In this case, the entire coolant must be changed immediately (repair measure)!***  
***If the coolant is not changed, serious malfunctions or engine damage may occur!***

## Checking coolant level and adding coolant if necessary

- Please check the coolant level at the expansion tank with the engine cold.
  - ◆ Handover inspection: Coolant level at Max marking.
  - ◆ Inspection service: Coolant between the Min and Max marking.
- If the coolant level is too low, add the missing quantity in accordance with the mixing ratio.

**Note:**

*In case of a non-consumption-related liquid loss, determine and eliminate the cause (repair measure)*

**Mixing ratio:**

Frost protection down to	Coolant additive	Water
-25 °C	approx. 33 % (equivalent to approx. 4 ltr. -G12-)	approx. 67 %

**Notes:**

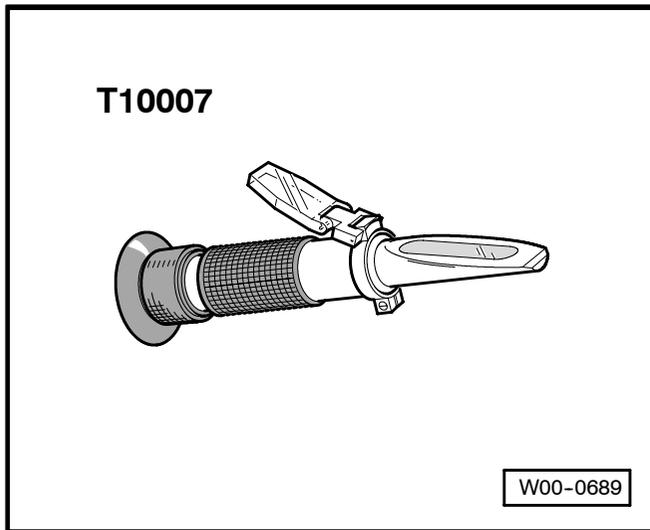
- ◆ *Coolant additives prevent frost and corrosion damage, lime deposits and also raise the boiling temperature. For these reasons the cooling system must always be filled with radiator antifreeze and anti-corrosion agent throughout the year.*

- ◆ *The coolant concentration may not be reduced during the warmer season or in warmer countries by adding water. The coolant additive share must be at least 33 %.*
- ◆ *Especially in countries with a tropical climate, the coolant contributes to the operating safety due to the higher boiling point when the engine is subjected to heavy loads.*

### **Checking frost protection and adding coolant additive if necessary**

### **Special tools, workshop equipment, test and measuring equipment and accessories required**

- ◆ T10007 Refractometer



### **Note:**

*Please read the exact value for the following tests at the light-dark border. To improve visibility of the light-dark border, please apply a drop of water to the glass with a pipette. The light-dark border can now be clearly recognised at the "WATERLINE".*

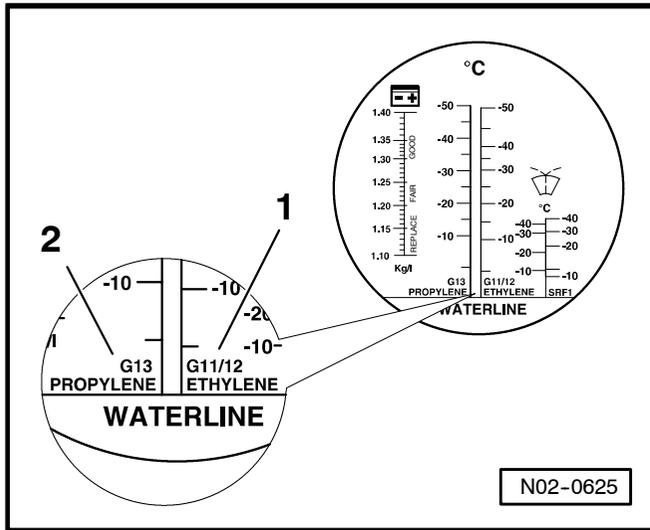
- Please check the concentration of the coolant additive with the refractometer T10007 (follow operating instructions) or with a commercially available antifreeze tester.



Scale -1- of the refractometer refers to the coolant additives -G 12- as per TL VW 774 D and -G 11- as per TL VW 774 C.

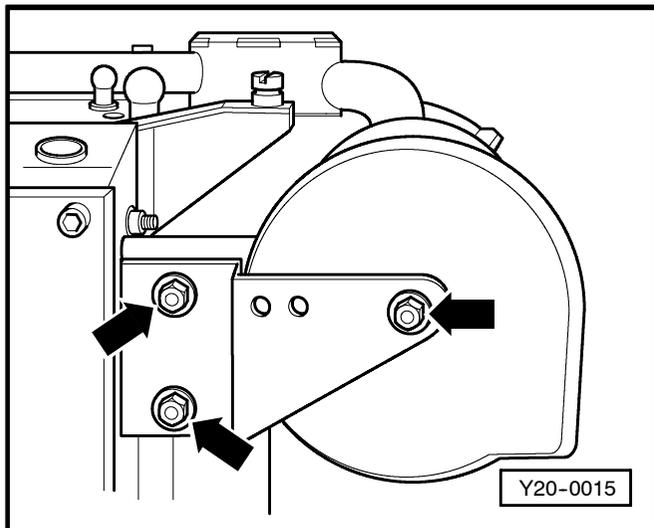
**Notes:**

- ◆ *The frost protection must be ensured down to approximately -25 °C (in countries with an arctic climate down to approximately -35 °C).*
- ◆ *If stronger frost protection is required for climatic reasons, the percentage of -G 12 A8D- can be increased, however only up to 60 % (frost protection down to approximately -40 °C), as otherwise the frost protection will be reduced again and the cooling efficiency worsened.*

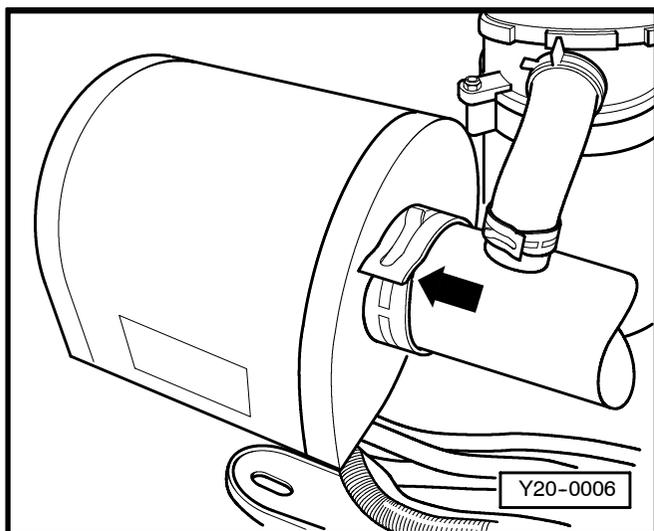


## Removing and installing air filter

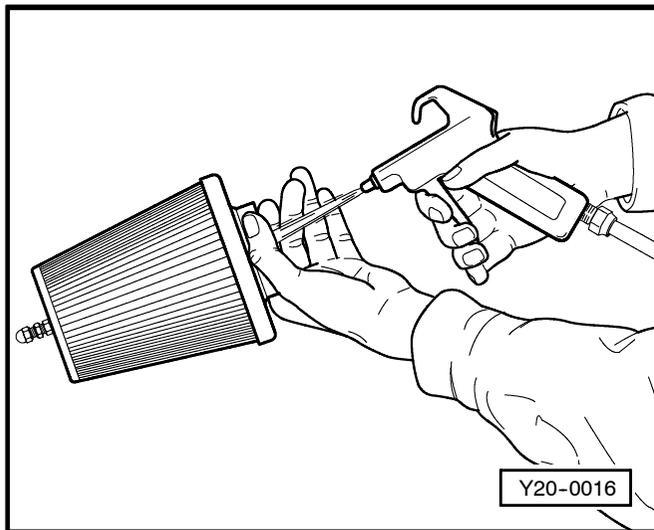
- ▲ - Unscrew the three screws -arrows- and remove the bracket.



- ▲ - Loosen the clip -arrow- and pull the filter insert off the intake pipe.
- Unscrew the nut on the air filter housing and take out the filter insert.
- Wash out and oil the air filter, ⇒ page 27.



Installation is carried out in reverse sequence.



## Washing out and oiling air filter

### Special tools, workshop equipment, test and measuring equipment and accessories required

◆ VW marine cleaning kit

- Remove air filter, ⇒ page 26.

◀ - Blow out the filter insert with a maximum of 2.0 bar compressed air from the inside outward.

#### **Note:**

*Also follow the instructions of the cleaning kit.*

- Spray the air filter with the air filter cleaner and allow the liquid to soak for approx. 10 min.

#### **Note:**

*The filter insert may not be cleaned with petrol.*

- Then thoroughly wash out the filter in a dish with cleaning solution.

- Rinse out the filter with water from the clean side to the dirty side.

- Allow the filter to dry.

**Note:**

*Do not use compressed air or a heat dryer to dry.*

- Wet the air filter with filter oil on the outside.

**Note:**

*After approx. 10 min. any grey areas still present on the air filter must be reoiled.*

Installation is carried out in reverse sequence.

## **Checking ribbed V-belt for seawater pump**

- Check condition of ribbed V-belt for:
  - ◆ Base cracks (minor cracks, core breaks, cross-sectional breaks)
  - ◆ Layer separation (top layer, tensile strands)
  - ◆ Break-outs on base
  - ◆ Fraying of tensile strands
  - ◆ Side wear (material removal, frayed sides, side hardening -glassy sides-, surface cracks)
  - ◆ Traces of oil and grease

**Note:**

*If defects are determined, the ribbed V-belt must always be renewed. This can prevent failures or malfunctions. The renewal of the ribbed V-belt is a repair measure.*

⇒ Workshop Manual; page 27-17; Removing and installing ribbed V-belt

Tension ribbed V-belt

On engines with a tensioner, the ribbed V-belt need not be tensioned.

**Checking ribbed V-belt for alternator, power-steering pump etc.**

- Check condition of ribbed V-belt for:
  - ◆ Base cracks (minor cracks, core breaks, cross-sectional breaks)
  - ◆ Layer separation (top layer, tensile strands)
  - ◆ Break-outs on base
  - ◆ Fraying of tensile strands

- ◆ Side wear (material removal, frayed sides, side hardening -glassy sides-, surface cracks)
- ◆ Traces of oil and grease

**Note:**

*If defects are determined, the ribbed V-belt must always be renewed. This can prevent failures or malfunctions. The renewal of the ribbed V-belt is a repair measure.*

⇒ Workshop Manual; page 27-17; Removing and installing ribbed V-belt

Tension ribbed V-belt

On engines with a tensioner, the ribbed V-belt need not be tensioned.

## Checking toothed belt for camshaft drive

**Note:**

*The toothed belt must be renewed every 5 years or every 1,000 operating hours, whichever comes first.*

## Checking toothed belt condition (all engines)

- Check for:
  - ◆ Minor cracks, cross-sectional breaks
  - ◆ Layer separation (toothed belt body, tensile strands)
  - ◆ Break-outs on toothed belt body
  - ◆ Fraying of tensile strands
  - ◆ Surface cracks (plastic jacket)
  - ◆ Traces of oil and grease

### Notes:

- ◆ *If defects are determined, the toothed belt must always be renewed. This can prevent failures or malfunctions. The renewal of the toothed belt is a repair measure.*
- ◆ *During all checking and adjustment work, the engine may never be turned by the camshaft under any circumstances. Failure to observe this could result in serious engine damage.*

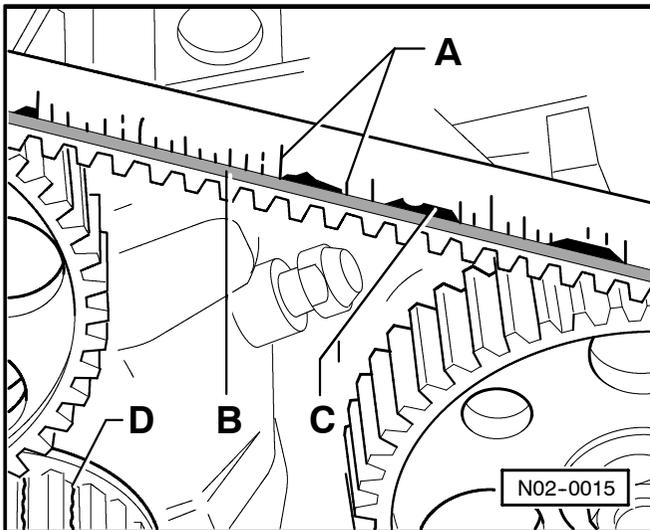
◀ When checking the condition, pay particular attention to the following damage:

A - cracks (cover side)

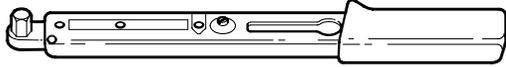
B - Side rubbing

C - Frayed areas

D - Cracks (at base of teeth)



**V.A.G 1331**

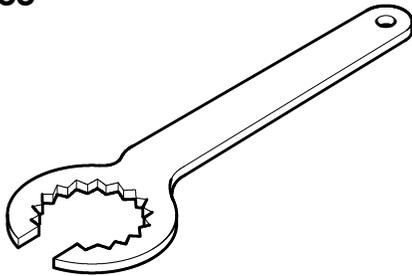


W00-0427

**Special tools, workshop equipment, test and measuring equipment and accessories required**

- ◆ Torque wrench (5 - 50 Nm) V.A.G 1331

**3355**



W00-0720

- ◆ Ring spanner 3355

- Remove toothed belt cover.
- Please conduct a visual inspection on the toothed belt tensioner.

**Note:**

*If defects are determined, the toothed belt tensioner must always be renewed. This can prevent failures or malfunctions. The renewal of the toothed belt tensioner is a repair measure.*

⇒ Workshop Manual, Repair Group 13; Crankshaft Group; Dismantling and assembling engine; Removing and installing toothed belt for camshaft

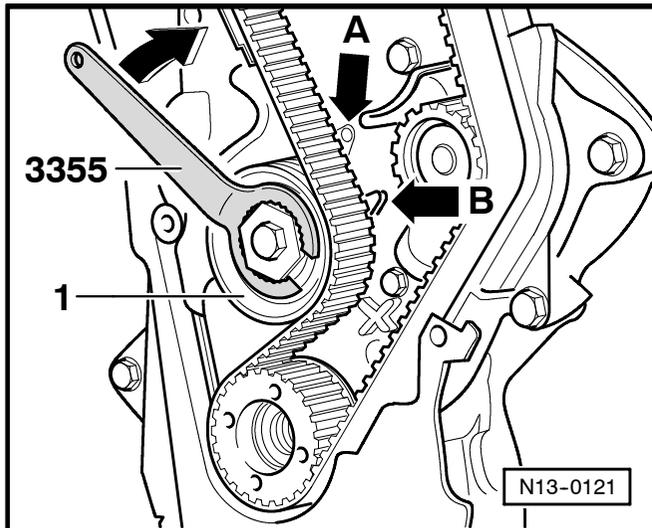


- Check whether both pointers -arrow B- are opposite each other.

If this is the case: toothed belt tension is OK!

If this is not the case:

- Loosen mounting bolt of tensioner.
- Turn the tensioner clockwise with ring spanner 3355 up to the inner tensioner stop. Then turn back the tensioner until both pointers -arrow B- are opposite each other.



- Tighten mounting bolt of tensioner with 20 Nm
- Install toothed belt cover.

## **Checking toothed belt for injection pump**

### ***Note:***

*The toothed belt must be renewed every 5 years or every 1,000 operating hours, whichever comes first.*

### **Checking toothed belt condition (all engines)**

- Check for:
  - ◆ Minor cracks, cross-sectional breaks
  - ◆ Layer separation (toothed belt body, tensile strands)
  - ◆ Break-outs on toothed belt body

- ◆ Fraying of tensile strands
- ◆ Surface cracks (plastic jacket)
- ◆ Traces of oil and grease

**Notes:**

◆ *If defects are determined, the toothed belt must always be renewed. This can prevent failures or malfunctions. The renewal of the toothed belt is a repair measure.*

⇒ Workshop Manual; Repair Group 23; Servicing diesel direct injection system; Removing and installing toothed belt for injection pump

◆ *During all checking and adjustment work, the engine may never be turned by the camshaft under any circumstances. Failure to observe this could result in serious engine damage.*

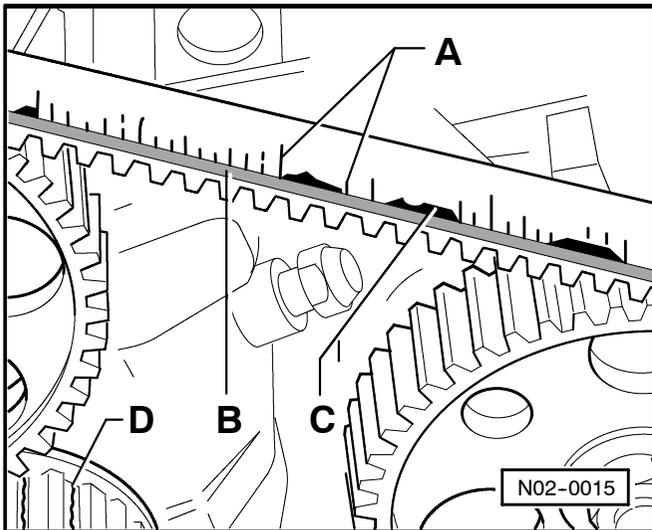
◀ When checking the condition, pay particular attention to the following damage:

A - cracks (cover side)

B - Side rubbing

C - Frayed areas

D - Cracks (at base of teeth)



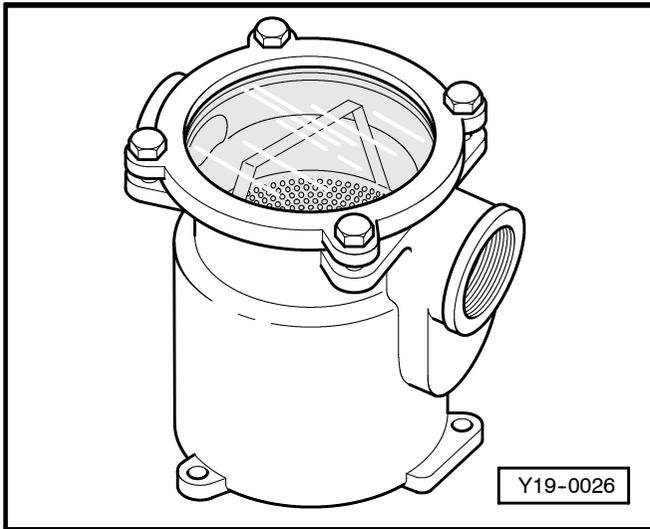
## Checking and cleaning seawater filter

***To prevent water from entering, never open the filter housing with the seawater cut-off valve open!***

A visual inspection is sufficient for conducting a simple check of the seawater filter for soiling. No assembly work is required for this, as the filter housing is transparent.

If dirt is present, proceed as follows:

- Close the seawater cut-off valve.
- Unscrew the screws of the seawater filter housing and remove the cover.
- After the filter elements has been removed, rinse it thoroughly with clean water.
- Refit the filter and treat the filter cover seal with silicone oil or Teflon spray before installing.
- Check the cover and the seal for proper seating.



**Note:**

*Air can be sucked in due to an improperly seated cover. This could lead to the engine overheating!*

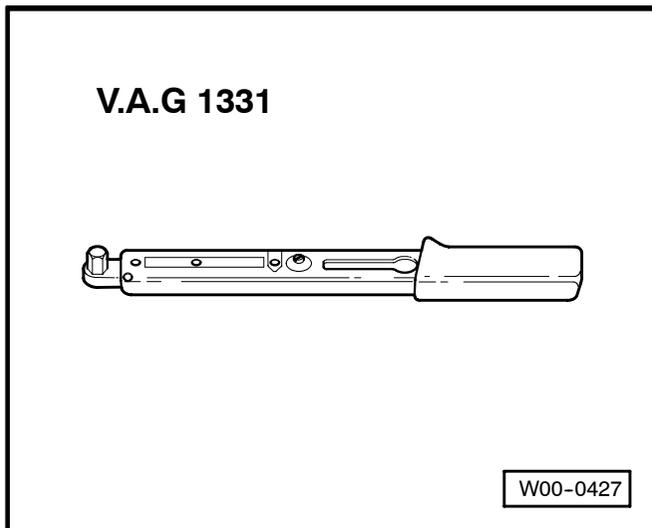
- Open the seawater cut-off valve again.

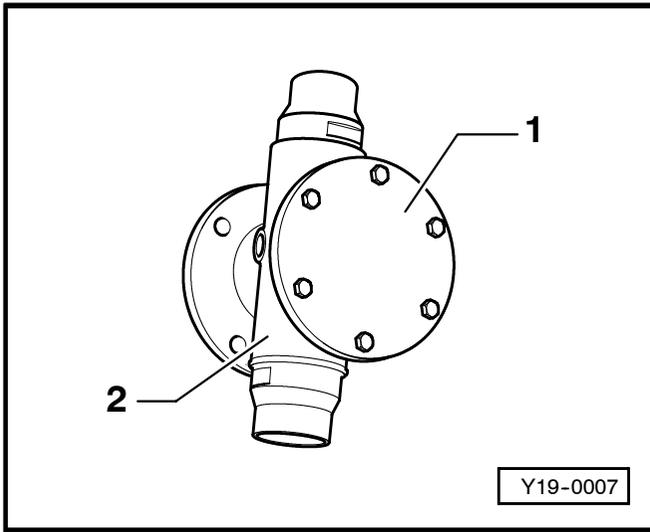
**Renewing seawater pump impeller****Special tools, workshop equipment, test and measuring equipment and accessories required**

- ◆ Torque wrench (5 - 50 Nm) V.A.G 1331
- ◆ T 01904 JABSCO puller

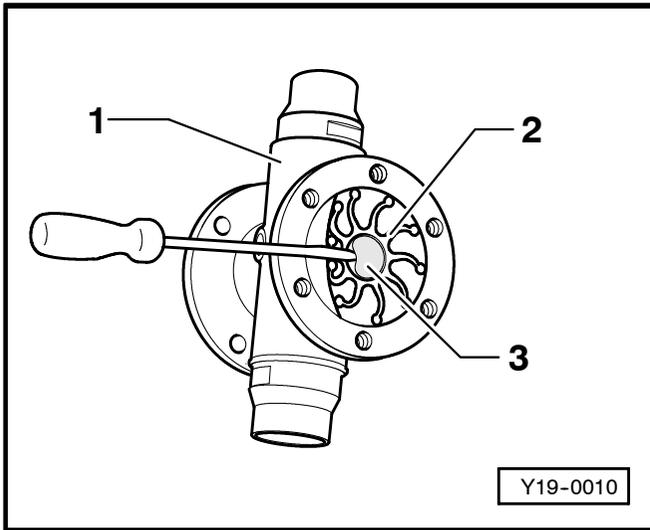
**Removing:**

- Close the seawater cut-off valve.
- Remove the seawater pump:  
⇒ Page 19-30; Removing and installing seawater pump

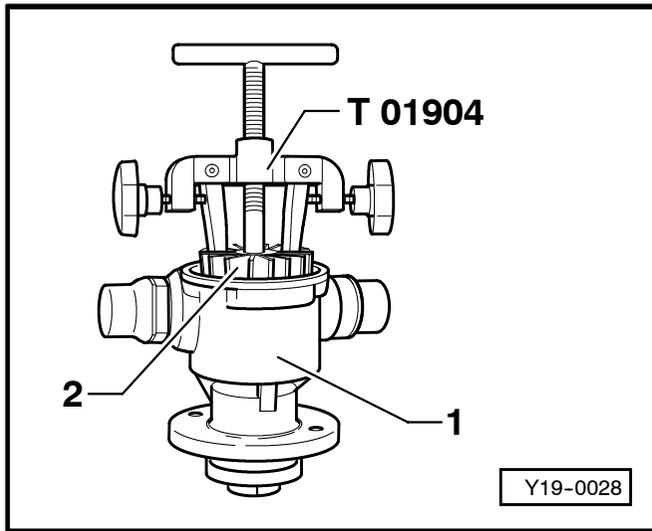




- ▶ - Unscrew the cover -1- of the seawater pump -2-.



- ▶ - Lever the rubber protection cap -3- off the impeller -2- of the seawater pump -1- with a suitable screwdriver



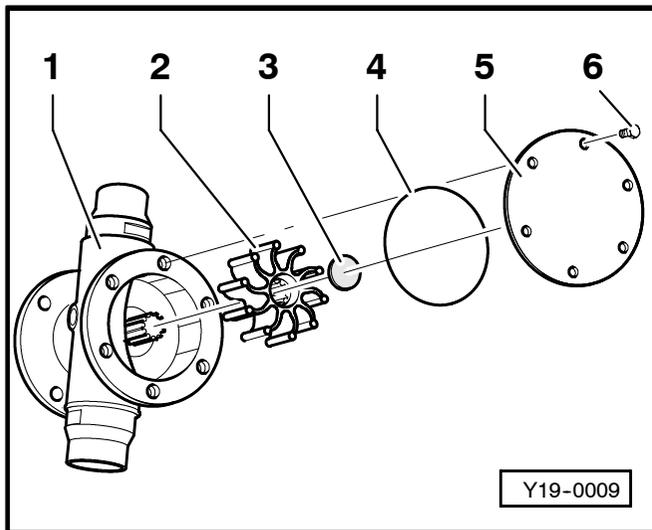
- ▶ - Carefully pull the impeller -2- out of the seawater-pump drive shaft -1- with the puller T 01904.

**Fitting**

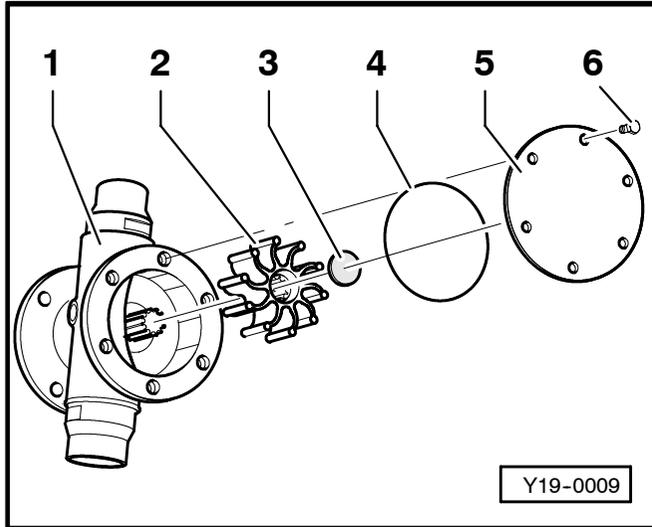
- Thoroughly clean the inside housing of the seawater pump of dirt and deposits.

**Notes:**

- ◆ *Lightly grease the drive shaft before fitting the impeller.*
- ◆ *Always renew seals after removal.*
- ◆ *If the impeller shows damage or traces of wear, it must always be renewed.*



- ▶ - Press the impeller -2- flush onto the drive shaft of the seawater pump -1- and seal off with the rubber protection cap -3-.



**Note:**

*Install new round sealing ring when assembling the seawater pump.*

- ◀ - Screw the cover -5- onto the seawater pump -1- with a new round sealing ring -4- diagonally.
- Now tighten the screws -6- with 3 Nm.
- Install the seawater pump:  
⇒ Page 19-30; Removing and installing seawater pump

**Seawater circuit: Draining seawater and flushing**

To prevent corrosion and frost damage, it is very important to flush the seawater cooling system with fresh water.

Conduct flushing in the specified order:

- Close the seawater valve.
- Open and clean the seawater filter, ⇒ page 36.
- Fill the seawater filter with fresh water and run the engine at idle.

**Notes:**

- ◆ *Make sure that the seawater filter is always filled with fresh water to prevent the seawater pump from running dry. This would lead to a defect in the pump.*

◆ *Run the engine for a while so that all sludge and salt residues are rinsed away that could otherwise promote corrosion.*

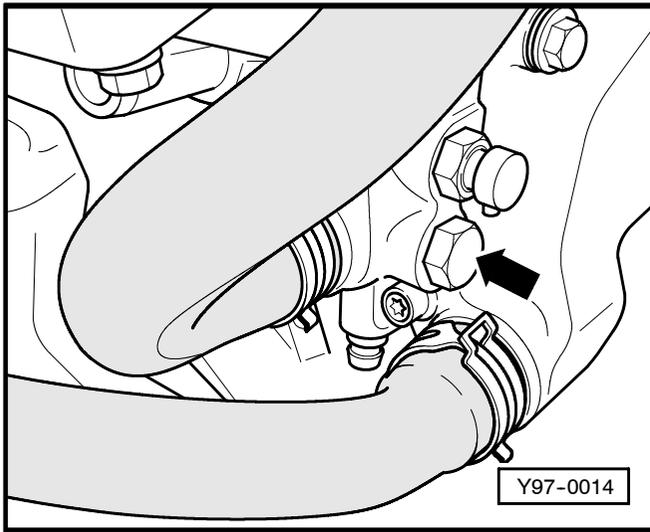
- Switch off the engine again.
- Screw on the cover of the seawater filter.
- Drain the fresh water.

### **Check reactive anode and renew if necessary.**

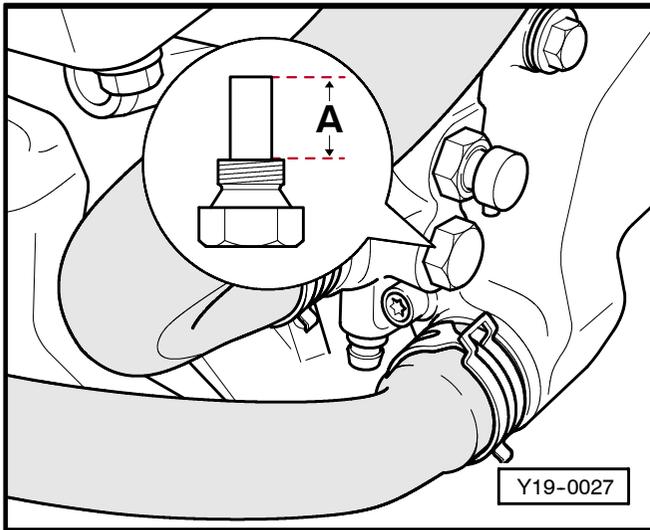
The reactive anode must be checked once a year.

Check the reactive anode, as it protects the engine from galvanic corrosion.

- Close the seawater cut-off valve.



- ▶ - Unscrew the reactive anode -arrow-.
- Please catch the escaping coolant with a suitable means.



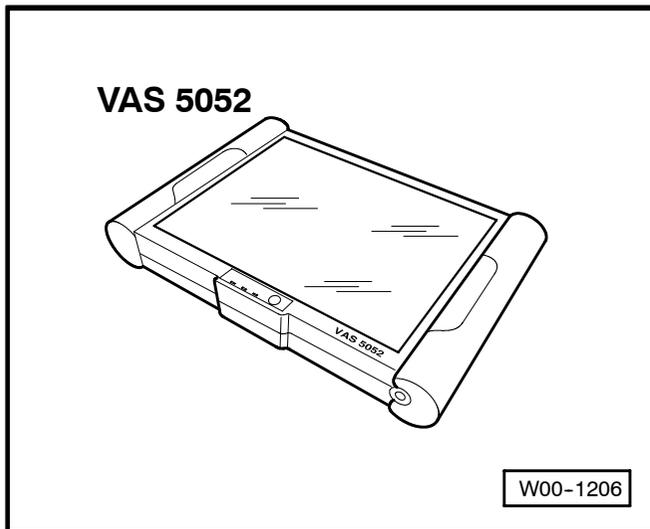
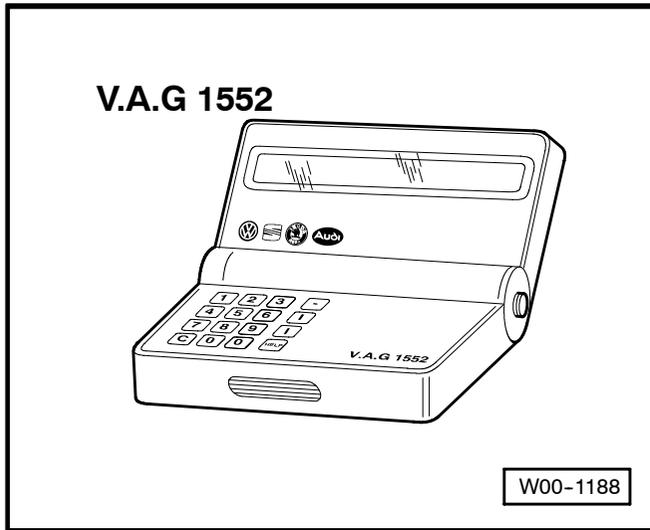
- The reactive anode must be renewed when it is more than 50 % consumed.
- ▶ A new reactive anode has a length of dimension  $A = 20$  mm.

## Interrogating and erasing the fault memory of the engine control unit

### Special tools, workshop equipment, test and measuring equipment and accessories required

When fault finding starts, self-diagnosis is to be initiated and the information stored is to be interrogated with the

- ◆ system tester V.A.G 1552 with cable V.A.G 1551/3



- ◆ VAS 5052 Diagnosis , measuring and information system

### Procedure

#### **Note:**

*All functions you have previously carried out with V.A.G 1552 can also be carried out with the new tester VAS 5052 .*

### Connect V.A.G 1552 or VAS 5052

- Remove the two screws from the oval cover marked "marine" in the instrument panel.

**Note:**

*Only with standard main instrumentation!*

The diagnostic connection is located under the cover.

- Connect the fault output device V.A.G 1552 or VAS 5052. Then run the engine and use the "Address word" 01 to select the control unit for engine electronics.

**Notes:**

- ◆ *If the display remains dark, check the power supply for the diagnosis plug:*  
⇒ Current Flow Diagrams
- ◆ *If the displays indicated in the work procedure are not achieved:*  
⇒ Operating instructions for the system tester
- ◆ *If input errors produce the message "Fault in the data interchange!", remove the cable from the system tester, reconnect it and repeat the work steps.*

*Only if the engine does not start:*

- Actuate the starter for at least 5 seconds. Do not switch off the ignition afterward.

Rapid data transfer	HELP
Select function XX	

◀ Display:

- Keep an eye on the information that appears on the display while operating the fault output device:
- Press the keys 0 and 2 for the function "Query fault memory" and confirm the input using the Q key.

X faults detected!
--------------------

◀ The display shows the number of faults stored or "No faults detected!".

*If the memory contains no faults:*

- Press the keys 0 and 6 for the function "Quit output" and confirm the input using the Q key.

If one or more faults are stored:

The saved faults are displayed consecutively.

Rapid data transfer	HELP
Select function XX	

◀ After the stored faults have been displayed, the display shows:

- Press the keys 0 and 5 for the function "Delete fault memory" and confirm the input using the Q key.

Rapid data transfer	→
Fault memory has been erased!	

◀ Display:

**Note:**

*If the ignition has been switched off between "Interrogate fault memory" and "Erase fault memory", the fault memory will not be erased.*

- Press the → -button.

◀ Display:

- Press the keys 0 and 6 for the function "Quit output" and confirm the input using the Q key.
- Switch off the ignition.
- Remedy the fault using the fault table:  
⇒ page 01-14.
- Then erase the fault memory ⇒ page 01-12.

Rapid data transfer  
Select function XX

HELP