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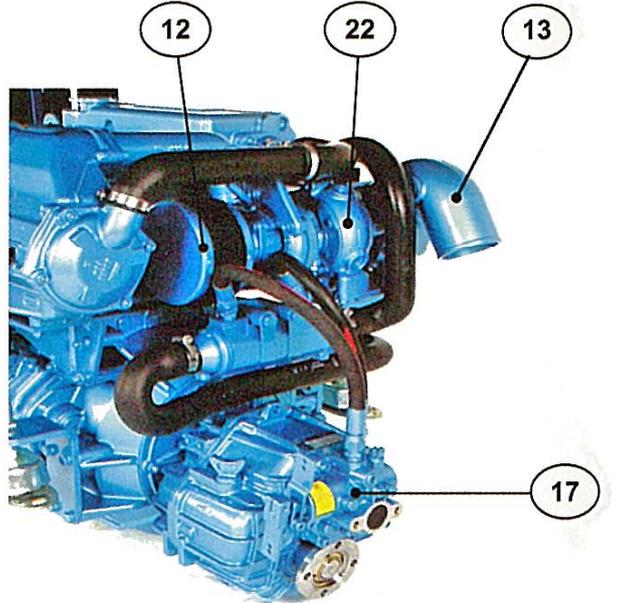
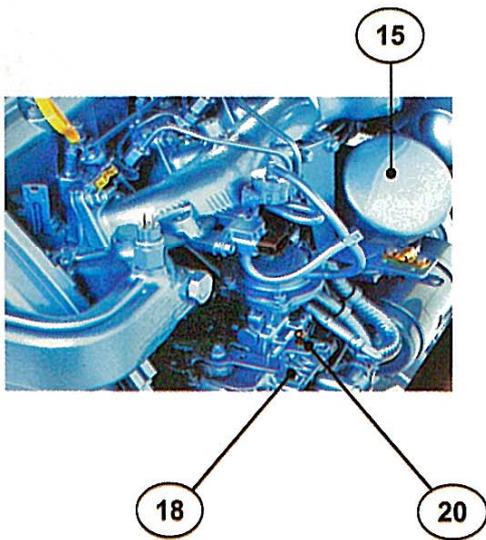
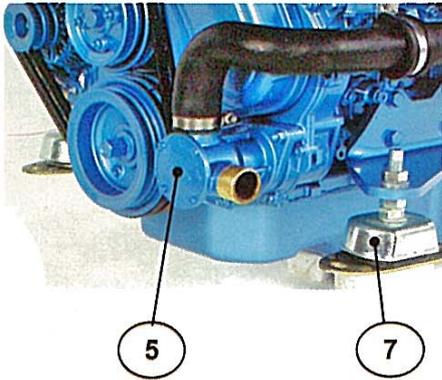
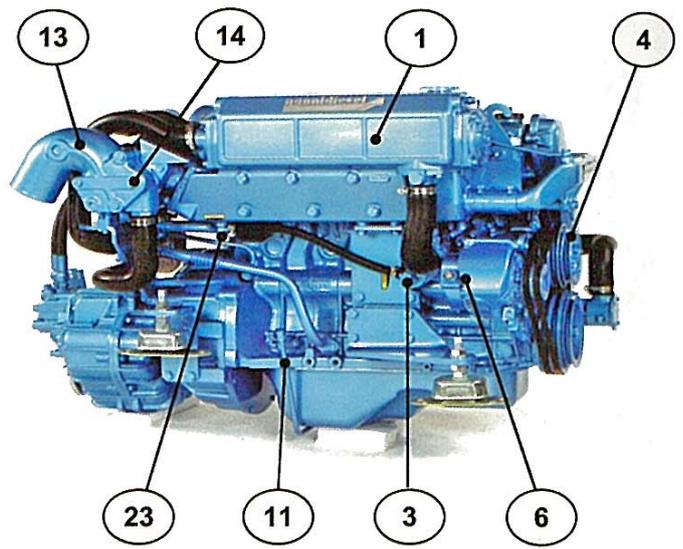
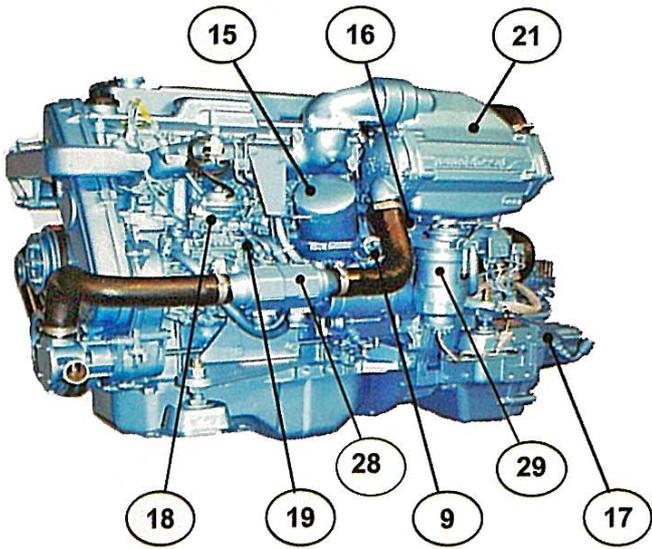
4.380 TDI

4.390 TDI

Notice de conduite
Instruction manual
Manuale d'istruzione
Betriebsanleitung
Instructieboek
Manuale de instrucciones
Instruksjonbok
Käyttöohje

MAN Diesel

energy in blue



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*All informations and specifications contained in this manual are based on the latest product information available at time of publication.

1 – SAFETY INFORMATION

These directions for use are provided to help you to use your engine and its fittings. They include important instructions, which should be observed while operating the engine.

The operator must read these instructions.

They should be permanently kept in the place where the engine is used.

SAFETY SYMBOLS

These symbols are used to indicate danger. They are intended to attract your attention to those elements or operations, which can endanger you or other users of this engine. Read the instructions preceded by the safety symbols attentively. It is essential for you to read the instructions and safety regulations before starting the engine.

⚠ DANGER Signifies that a very serious danger exists which may result in the strong possibility of death or serious injury if the specific suitable safety measures are not observed.

⚠ WARNING Signifies that a danger exists which may cause injuries or death if specific suitable safety measures are not observed.

⚠ CAUTION Reminds you of safety measures or directs your attention to dangerous practices, which may cause injuries to persons or damage the boat or its components.

The user should take all necessary precautions regarding operations and protection and should seek the advice of a professional.

Disregarding these safety instructions may lead to:

Bodily harm, environmental pollution (leaks of dangerous substances), dangers to property with risks of failure of the essential functions of the engine.

OBSERVING THE SAFETY RECOMMENDATIONS

Follow the warning and caution labels affixed to the engine

Disengage the ignition key and turn off the battery main switch before performing any work on the engine or its fittings.

Close the engine cover and replace the protection devices before starting the engine

Always keep the area surrounding the engine clean and free of any debris

Place any flammable liquids outside and away from the engine compartment

Never use the engine when under the influence of alcohol or medication

WEAR PROTECTIVE CLOTHING

To avoid bodily injury, remain clear of rotating parts and do not wear oversize garments close to a running engine

Use safety equipment such as glasses, gloves, etc. according to circumstances and needs

FUELS AND LUBRICANTS

Stop the engine before adding fuel or lubricant. Do not smoke and do not approach with an open flame whilst adding fuel. Wear gloves when checking for any possible leaks. Hot lubricating oil can burn you - let the engine cool before checking the motor oil level, changing the motor oil, or the oil filter cartridge. Always use the fuels and lubricants recommended by NANNI DIESEL.

ENGINE EXHAUST WARNING

Run the engine in a well-ventilated place, away from persons and animals -the accumulation of engine exhaust gas can be toxic.

PRESSURE

Do not open the engine coolant and motor oil caps when the engine is warm. Release all pressure in the line before loosening the caps.

Do not check for possible pressure leaks with bare hands - wear gloves - liquids ejected under pressure may cause serious injuries - in case of contact with a spurt of fluid, immediately consult a physician.

BATTERY

A mixture of highly explosive, inflammable and volatile gases forms when recharging the battery.

Never smoke near the battery or approach it with an open flame or spark

Never short circuit the battery terminals

The battery electrolyte is highly corrosive – Wear protective gloves and glasses.

ELECTRICAL WIRING

Turn off engine electrical switches and battery main switch before any repair to the electrical equipment.

Check the state of the cables and the electrical wiring - a short circuit may cause fire.

DISPOSAL OF FLUIDS

The different fluids used for the operation of the engine may be toxic and hazardous to your health. Carefully read the instructions appearing on the labels of these products.

Observe the environmental protection regulations relative to the disposal of motor oil, fuel, engine coolant fluid, filters and batteries.

2 - GENERAL INFORMATION

Your NANNI DIESEL engine is a product of the research and quality manufacturing of NANNI INDUSTRIES. It is constructed from the finest materials available, according to finite specifications, and in accordance with very strict production methods.

Your NANNI DIESEL engine is a dependable and long-lasting power source for your boat.

Proper installation of the engine on board of your boat is of the greatest importance for safe navigation and also for respect of the environment. The NANNI INDUSTRIES engineers are among the worlds most highly skilled. Their experience, their knowledge of the seas, their mastering of techniques in association with the skills of the engineers of KUBOTA, MAN and TOYOTA guarantee you the best available combination of performance/reliability/economy.

⚠ WARNING: a boat builder or an authorized workshop, in conformity with the NANNI INDUSTRIES installation instructions, must perform the installation of your engine.

These operating instructions contain information, which are necessary for the proper operation of the engine.

Present in over 50 countries through its network

of agents and authorised dealers, NANNI INDUSTRIES guarantees your safety worldwide.

Concerning parts, labour, or simply advice, everything has been considered to properly serve your needs. Do not hesitate to contact your authorised NANNI DIESEL dealer.

We wish you pleasant navigation.

Read this manual carefully before proceeding with the use of the engine. Follow the safety measures.

⚠ WARNING: *The proper operation of a marine engine is linked to use suitable for the engine and its gearbox's specifications (type of boat, hours and RPM of use).*

3 - ENGINE IDENTIFICATION

On all correspondence, requests for information and orders for parts, it is essential to indicate the references appearing on the engine and reversing gearbox identification plates.

IMPORTANT: Note the serial number and the engine and transmission model designations. Keep a copy of this information in a safe place.

IDENTIFICATION OF MAIN PARTS

1. Heat exchanger
2. Cooling liquid filler hole
3. Block drain plug
4. Fresh water pump
5. Sea water pump
6. Alternator
7. Flexible mount
8. Electrical connector
9. Starter
10. Engine oil filler hole
11. Engine oil extraction tube
12. Air filter
13. Exhaust elbow
14. Anode
15. Oil filter
16. Oil pressure sender
17. Reverse gear box
18. Injection pump
19. Fuel solenoid control
20. Throttle lever
21. Air cooler
22. Turbo
23. Heat exchanger drain plug
24. Turbo vent valve
25. Turbo drain valve
26. Air cooler condensation exit hole
27. Minus terminal attaching nut
28. Fuel oil cooler (4.390 only)
29. Engine fuel filter

4 - PRE DELIVERY SERVICE

Once the engine has been installed on board, and before removing the protective covers from the various filler holes, clean the external surfaces of the engine. These operations have to be done by the boat builder representative or an authorized workshop.

GENERAL VERIFICATION

See SILVERWAKE® warranty conditions

- Fill with motor oil and transmission fluid
- Fill with heat exchanger coolant fluid; bleed at the high point of the turbo volute
- Check tension of belts
- Check that the different connectors, as well as, the oil and water drain plugs are properly tightened
- Check that the electrical cable terminal, battery terminals, battery switch and extension wiring connectors are properly tightened
- Check the remote control levers (by moving them several times)
- Check for proper synchronisation of the shift throttle lever (essential in the case of a single Lever control). **Shift must be fully engaged before throttle cable start to move.**
- Perform a final check of the clamps as well as a visual check of the complete marine engine assembly. If necessary, retouch the paint on the assembly and accessories.

⚠ DANGER: *Do not approach the battery with an open flame or spark. A mixture of extremely explosive gases forms when the battery is being recharged - Do not short circuit*

• *The battery electrolyte is highly corrosive: if the battery acid comes in contact with the skin, immediately wash with soapy water - in case of contact with the eyes, rinse abundantly with water and consult a physician immediately*

- *Start with the positive terminal when connecting cables to the battery*

- *Start with the negative terminal when disconnecting cables from the battery*

⚠ WARNING: *Do not allow fuel or lubricant to spill on the engine.*

• *The fluids used for the operation of the engine may be dangerous to your health.*

• *The engine oil may damage your skin – wear gloves.*

NOTE: Modern diesel engines are precision machines which require the use of high quality fuel and lubricant.

Engine and reversing gear box lubrication

Engine

- Oil pump driven lubrication system, pressure regulated by a discharge valve.
- Disposable cartridge oil filter

Transmission

Refer to separate specifications

Adding motor oil

Through the filler hole located on the cylinder head cover, unscrew the cap. Check the level with the oil dipstick. Do not exceed the maximum level.

NOTE: Qualities and quantities of oil to be used are described in the technical characteristics

FUEL SYSTEM

Composition

Main disposable cartridge filter

Seawater fuel cooler (4.390 TDI)

Injection pump

High-pressure injector line

Injectors

Fuel system bleeding

- Check the fuel level in the fuel tank.
- Open the fuel tank delivery valve. Open the air vent screw on the top of the filter carrier; use the included lift pump.
- Close the screw when air bubbles have disappeared. Start the engine. In the case of complete lack of fuel:
- Unscrew the pressure line union nut of injector n° 1. Turn the engine with starter till fuel appears. Tighten the union nut and do the same operation for the other injectors.
- Start the engine and check the leakage lack.

⚠ DANGER: - *Do not smoke, or draw near with an open flame or spark.*

- *Always dry off any spilled fuel.*

COOLING SYSTEM

It consists of two different systems: the closed cooling system and the external sea water system (raw water.)

Closed cooling system

It consists of a engine water circulating pump driving from the crankshaft, by two V-belts, a water heat exchanger including exhaust manifold, oil cooler integrated in the block and a thermostat.

Sea water system

It consists of a pump, a heat exchanger for the fresh and seawater, an air cooler, fuel oil cooler (4.390), gearbox oil cooler and a mixer exhaust elbow.

Coolant fluid

Recommendations for the first use

- Check the tightness of the drain valve located under the turbo, open the air vent valve on the top of the turbo volute.

- Prepare a permanent antifreeze mixture with 50% antifreeze and 50% fresh water. The required quantity is indicated in the technical specifications.

- Fill the mixture into the tiller hole, close the valve on the top of the turbo when the mixture appears, and continue to fill until the maximum filling level. (Subsequent checks are to be made only with fresh water; in cold engine situation). Start the engine check the level, close the pressure cap. Verify the leakage lack.

Every two years, at the beginning of the boating season, completely drain the cooling system, clean it with fresh water; and refill according to above instructions (see SILVERWAKE warranty conditions).

⚠ DANGER: - Fill the engine with coolant liquid only when the engine is turned off and cold

- Do not smoke or draw near with a flame.

- Stay clear of rotating parts while the engine is operating.

⚠ CAUTION:

NEVER ADD UNDILUTED ANTIFREEZE.

Use of other type of coolant or other additives may cause fouling on the exchangers and overheating of the engine.

AUXILIARY HOT WATER HEATER CONNECTIONS

An installation for on board hot water may be connected to the engine circuit. Consult our network for further information.

Sea water filter

It is recommended that a water filter between the pump and seawater pickup be fitted. Check and clean the filter regularly.

⚠ CAUTION: *Before starting the engine, check to see that the seacock is open since even a few seconds' dry operation will damage the water pump impel/en*

After cleaning the seawater filter; carefully close the cover in order to avoid that air enters into the water pump.

ELECTRICAL EQUIPMENT

Engine - Battery

- A. Alternator
- B. Starter
- C. Glow plugs
- D. Fuel solenoid control

E. Oil pressure switch

E Water temperature switch

G. Water temperature sender

H. Connector

I. Oil pressure sender

J. Preheating relay

K. Starting relay

L. Pre/post heating unit temperature sender

M. Water in fuel filter sensor

Instrument panel

a. Engine water temperature & water in fuel filter light switch. (If equipped).

b. Oil pressure light switch

c. Preheating light

d. Battery charge light

e. Audio warning buzzer

f. Ignition start stop key.

g. Instruments lighting

h. Connector

i. Tachometer with integrated hour meter

j. Pre heating control unit

k. Voltmeter gauge

l. Oil pressure gauge

m. Coolant temperature gauge

Wire position / Color / Function

1	Red	Positive
2	Black	Negative
3	Brown	Starter
4	Brown 1 .	Pre heating
5	White	Stop
6	Grey	Oil pressure sender
7	Purple	D + alternator
8	Grey-1	Oil alarm
9	Yellow green	Water switch
10	Yellow green 1	Water temp sender
11	Orange	Pre heat. Unit temperature sender
12	Blue-1	Tachometer
13	Blue	Tachometer

5 - ENGINE OPERATION

STARTING THE ENGINE

⚠ DANGER: - **Firmly close the hatch and replace the protective elements before starting the engine.**

- Check the fuel tank level.

- Open the fuel delivery valve.

- Open the seacock valve.

- Check the engine and gearbox motor oil levels.

- Check the level of coolant fluid.

- Switch On, the battery main switch

- **Check that the remote control lever is in the neutral position.**

- Disengage the throttle lever from the shift engagement.

- Turn the start key clockwise Stop to Switch On position, the oil alarm indicator, the battery and preheating lights will illuminate and the buzzer will sound; the preheating is activated. Wait until the extinction of the green lamp and then engine starts. Release it immediately after the engine has started.

- Check the indicator lights and other functions once the engine is running.

- Immediately stop the engine if the buzzer sounds, if the temperature rises abnormally or if one or several indicator lights remain illuminated.

⚠ CAUTION: Search for the cause and eliminate it before re starting the engine

- Allow the engine to run at idle rpm, during 2 at 3 minutes

- Check that the seawater comes out freely from the transom exhaust pipe.

- If the engine doesn't start at the first trial, repeat the steps waiting 5 to 15 seconds between each trial, switch key switching off.

IMPORTANT:

In case of several unsuccessful engine starter attempts, search the cause. Never insist because it may cause water return into the engine from the exhaust system!

⚠ WARNING: *Never cut the electrical circuit by using the battery main switch while the engine is running. This may cause damage to the alternator:*

STOPPING THE ENGINE

- Return the control lever to the idle/neutral position

- Allow the engine to idle for several minutes in order to stabilise temperatures and turbo speed

- Never increase the engine rev. Before switching off the key!

- Turn the key till the "O" position (vertical)

- Switch off the battery main switch; close the seacock and the fuel-tank delivery valve.

⚠ CAUTION: *in case of boat trailer stop the engine and imperatively close the seacock in order to avoid accidental engine filling by seawater.*

Twin installation: *In case of using only one engine, close the seacock of the not running engine.*

Never forget to open the seacock before restarting the engine.

ENGINE RUN IN - GUARANTEE VISITS

Running in

During the first 20 hours of operation, it is recommended to take precautions to properly run in your engine and not push to the maximum engine performance except during short periods. Never race your engine immediately after starting, without having allowed it to warm up.

Guarantee visits

All preventive maintenance operations and their periodicities are described on the warranty book: SILVERWAKE®

These compulsory visits condition the warranty validity. They have to be carried out by an authorised NANNI DIESEL representative. Every new engine is guaranteed against all parts defects according to the modalities specified on the SILVERWAKE (r) warranty book furnished to the buyer upon engine delivery.

6 - MAINTENANCE

⚠ DANGER: *To avoid bodily injury, stop the engine and allow it to cool, turn off the battery main switch before any repair Follow instructions for safety and environmental protection*

IMPORTANT - These recommendations are essential. The observation of these recommendations will prolong the life of your engine and will affect the applicability of the guarantee, which is provided.

- Do not make any unauthorised modifications to the engine.

- Damage caused by the use of parts not bearing a manufacturer's reference number are not covered by the warranty

- The repairs and maintenance must be carried out by an authorized NANNI DIESEL workshop.

If the engine is used for a number of hours less than the number specified for maintenance intervals, then maintenance must be performed at least once a year.

In this case, it is recommended that maintenance be performed before winter storage. New, clean lubricants will thus protect the engine.

Valves adjustments

These operations have to be done by a specialized workshop (calibrated shims)

Periodicity: following maintenance table.
(See values on board of technical characteristics)

Replacement of the seawater pump impeller

- Close the seacock valve.
- Take out the water pump cover.
- Extract the worn impeller with the help of a crocodile clips.
- Clean the kept parts.
- Place the new impeller
- Refit the water pump cover using a new gasket.
- Open the seacock valve.
- Start the engine and check the circuit waterproofness

Electrical equipment

Regularly check the tension of the alternator belt. Tighten the belt between the pulleys. (190 Nm using a Denso SST).

⚠ DANGER: - *Stop the engine and switch off the main battery switch, before making any repairs to the electrical system.*

Battery

- Check the battery elements condition once per season.
- The density of the electrolyte should be between 1.270 and 1.285
- The electrolyte should be checked periodically. The level should be maintained at 1 cm above the accumulator plates. Add distilled water, if necessary.

⚠ DANGER: *Never approach with a flame, and never check the battery with "a spark", because the gases, which may be released, are inflammable and explosive - The battery electrolyte is highly corrosive. If battery acid comes in contact with your skin, immediately wash with soapy water:*

Rinse eyes abundantly with water and consult a physician immediately.

Do not short circuit.

RECOMMENDATIONS: In order to ensure proper operation of the alternator and integrated regulator:

Never:

- Turn off the battery main switch whilst the engine is running (risk of damage to the regulator)
- Reverse the battery terminals. The terminals are respectively marked + (positive) and - (negative); the negative is the ground terminal; (the cable terminations and the cables must be correctly attached).
- Change the circuit charger while the engine is running.

For the use of several batteries, install a battery isolator (consult our network).'

In case of starting the engine with a spare battery and jumper cables, proceed in the following manner:

- Disengage the main battery circuit, connect the spare battery to the main battery by connecting the + to the + and the - to the -. Once the engine starts, disconnect the jumper cables and never cut the main battery circuit.

You must disconnect the 2 battery cables when:

- You use a battery charger
- Before any repair to the electrical system.
- Before doing any soldering work on a metal hull.

Rinsing the cooling system

Fresh water system

- Remove the Heat Exchanger pressure cap.
- Open the drain valve under the turbo volute
- Release the bolt banjo located under the exhaust manifold.
- Remove the block drain plug situated on the thermostat cover
- Drain the water from the heat exchanger and from the engine block
- Refill the system with fresh water and let the engine run for several minutes at low rpm..
- Apply the procedure of filling/priming described on the paragraph: Closed cooling circuit
- Drain the water and again replace it with a mixture of antifreeze/fresh water.
- Fill the cooling system according to instructions.

NOTE: *In the case where a boiler system is connected to the engine, also completely drain this one, and to refill it, note the quantity of the coolant mixture being added. Check to see that all air is purged from the system during the refilling.*

⚠ WARNING: *Liquid under pressure. Do not open the pressure cap when the engine is warm.*

Allow the engine to cool/ and open the cap with caution (two steps turning).

Draining the Sea water system.

- Close the seacock
- Drain all of the seawater intake pipes, the filter, the seawater pump, the heat exchanger pipe, by unscrewing the assembly collars.
- Drain the exhaust system, since a certain quantity of water remains at the bottom of the water lock.

Cleaning the heat exchanger; air cooler, fuel oil cooler (if fitted), and gearbox oil cooler.

In order to Check the exchanger tube stack.

- Remove the covers.
- Remove the tube stack (except on fuel cooler) and clean it with water and no corrosive acid (local market).
- Rinse out with fresh water.
- Replace the O-rings and remount the tube stack and the covers.

⚠ WARNING: *Corrosive products may hazardous to your health. Read the instructions on the product label carefully*

Fuel filter cartridge replacement.

The engine fuel filter is a disposable-type filter.

- Close the fuel valve
- Unscrew the cartridge from the head of the fuel filter assembly.
- Coat the gasket of the new cartridge with engine lubricant.
- Screw the new cartridge onto the filter head, and then tighten it by hand 3/4 of a turn (do not use tools).
- Open the fuel valve.
- Energizing the system.
- Start the engine and check waterproof ness.

⚠ CAUTION: *- Always dry off any spilled fuel
- Follow the environmental protection instructions*

Fuel injectors replacement

Remove:

- The High-pressure fuel delivery pipes.
- The fuel return piping
- The complete injector
- Dismantle the injector
- Replace the injector gasket and nozzle
- Test the injector opening pressure and spray pattern.
- Re fit all the removed parts.

⚠ WARNING: *Do not allow diesel fuel to spray onto your skin - wear gloves*

IMPORTANT: This work must be performed by an authorised NANNI DIESEL engine repair facility. The injectors should be checked every 400 hours or every 2 years, according to maintenance board and SILVERWAKE® booklet.

Engine oil change

The oil change accessory pump removes the engine oil, preferably when the engine is slightly warm.

- Pump until the engine is completely drained.
- Refill to full level with new motor oil
- Check the level with the use of the dipstick
- Do not exceed the maximum level.

⚠ WARNING: *Hot oil can burn you - Avoid all contact with your skin
Respect the environmental protection regulations*

Replacement of the oil filter

The cartridge is of the disposable type

- Join a pipe on the filter head pan and connect it to a container
- Unscrew the cartridge from the head of the filter.
- Coat the gasket of the new cartridge with engine lubricant.
- Screw the new cartridge onto the filter head, then tighten it by hand 3/4 of a turn (do not use tools)
- Check that the filter does not leak when the engine is running
- Stop the engine and add motor oil between the low and full marks.

⚠ WARNING: *Hot oil can burn your - Avoid all contact with your skin
Respect the environmental protection regulations*

Reversing gearbox

Refer to detailed instructions in the reversing gearbox manual attached to the Owner 's manual

Reversing gear box control system

Verify the remote controls regularly. The cable stroke should be 35 mm on both sides of dead centre

(O - A = O - B). The lever must be able to move freely to its stroke limits.

Mind the levers position!

⚠ DANGER: To avoid bodily injury do not start the motor without the air Filter

IMPORTANT: Allow the engine to idle before stopping the engine

MAINTENANCE

Periodical Maintenance Table

TYPE OF OPERATION	C/R/A Check Replace Adjust	Every day	At 20h	Every 100 h	Every 200h or every year	Every 400 h or every 2 years
Cooling liquid level	C/A	X	X		X	
Oil level : gear box	C	X	X		X	
Oil level : engine	C	X	X		X	
Instrument panel : indications and alarms	C	X	X		X	
Belts tension	C/A/R	X	X		X	
Battery electrolyte level	C/A	EVERY 15 DAYS				
Remote control: cables inspection, throttle shift and trolling : general greasing	C/A		X		X	
Bolts and rings tightness	C/A		X		X	
General waterproof ness	C/A		X		X	
Engine mountings and alignment	C/A		X		X	
Heat exchanger pressure cap	R					X
Coolant	R					X
Thermostat	R					X
Exchanger tube bundle: cleaning	C					X
Air cooling tube bundle: cleaning	C					X
Fuel oil cooler (4.390 TDI)	C					X
Sea water filter: cleaning	C	According clean state				
Fuel pre-filter: water draining	C/A	X	X	X	X	X
Fuel filter	R		X		X	X
Engine oil filter	R		X		X	X
Fuel pre-filter (cartridge)	R		X		X	X
Engine oil	R		X		X	
Gearbox oil	R		X			X
Seawater impeller	R				X	
Injector opening pressure	C/A/R					X
Valves clearance	A					500 H→
Stuffing box	C	X	X		X	
Air filter, cleaning	C			X		
Turbocharger: Inspection/cleaning	C					X
Waste gate lever : free displacement, greasing	C		X		X	
Sacrificial anode (on exhaust elbow)	C/R			X	X	X
Air coolant: condensation exit hole : Cleaning	C			X		
Timing belt	R					X

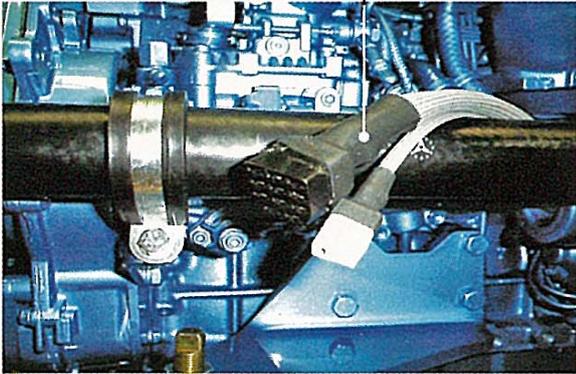
Technical specifications

NANNI DIESEL ENGINE	T4.155	4.380TDI	4.390TDI
Number of cylinders	4 in line		
Max. power*	114.1 kW (155 hp)	128.8 kW (175 hp)	147.2 kW (200 hp)
Maximum rated load*	3600 rpm		
Idle speed	800/850 rpm		
Max no load speed	4100 / 4300 rpm		
Cycle	4 strokes		
Bore & stroke	96 x 103		
Cylinder size	2982 cm3		
Compression ratio	19,7		
Rotation direction	Counter clockwise		
Injection order	1-3-4-2		
Injection pump	DENSO VE 22100-67080		
Injection pressure	15.2 MPa		
Fuel consumption	280 g/kWh @ 3600 rpm		
Timing point before TDC	0.42 +- 0.02 (Plunger stroke)		
Dry weight	346 kg	346 kg (ZF45A)	355 kg (ZF45A)
Alternator	12 V - 80A		
Battery capacity (min.)	100/110 A/h		
Cooling circuit	By heat exchanger / Closed cooling system		
Sea water pump	Neoprene type rotor		
Coolant: 50% water + 50 % anti-freeze	15.5 Litres		
Valve clearance (cold)	Intake 0.25 - Exhaust 0.30		
Engine oil recommended	API mini CD - SAE 15 W 40		
Engine oil capacity, following installation angle	6.4 to 7.7 l		
ZF Marine gearbox	ZF25A	ZF25A 26 / ZF45A	ZF45A
ZF lubricant capacity	1.5 l	1.5-2 l / 2.5 l	2.5 l
Oil specification	Automatic transmission fluid, Type A		
Technodrive gearbox	TM545A		TM545A
Oil capacity Technodrive gearbox	2.6 l		2.6 l
Oil specification	API mini CD - SAE 15 W 40		

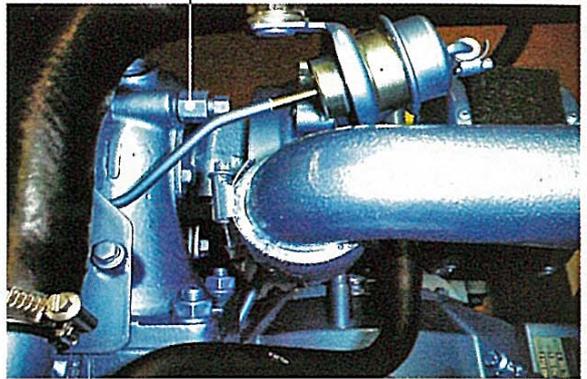
CAUTION: These specifications are designated for pleasure use only.
Recommended cruising speed: 200 rpm below maximum authorised speed.

Recommended on-board repair kit for motor type T4.155, 4.380TDI, 4.390TDI		
DESCRIPTION	Quantity	P/N
V-belt	Set of 2	970 312 335
Engine oil filter	1	970 312 207
Fuel filter	1	970 312 241
Seawater pump impeller kit	1	970 312 432
Preheating plug	1	970 312 323
Thermostat	1	970 312 274
Thermostat gasket	1	970 312 275
Air intake (O-rings)	2	48 418 164
Air exchanger gasket	4	48 418 168
Injector assembly	1	970 312 310
Injector gasket	1	970 312 309
Water / water exchanger gasket	4	48 418 167

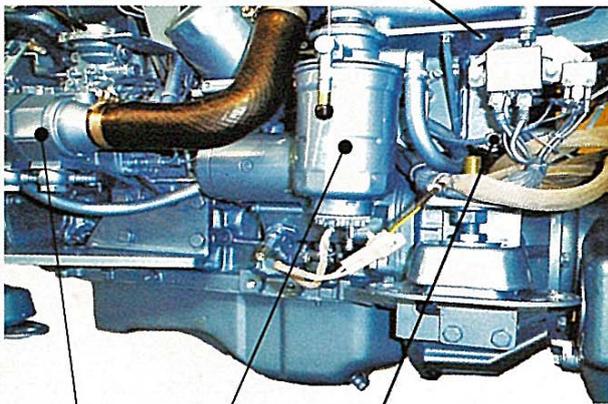
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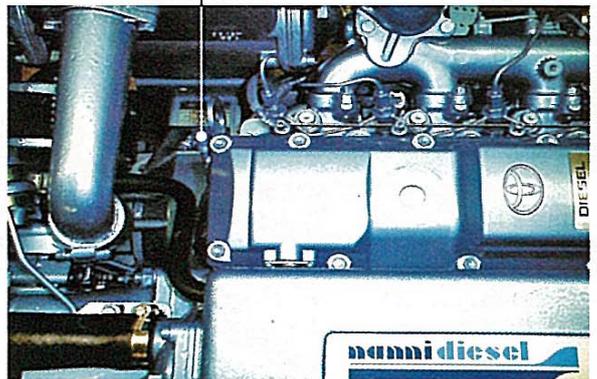
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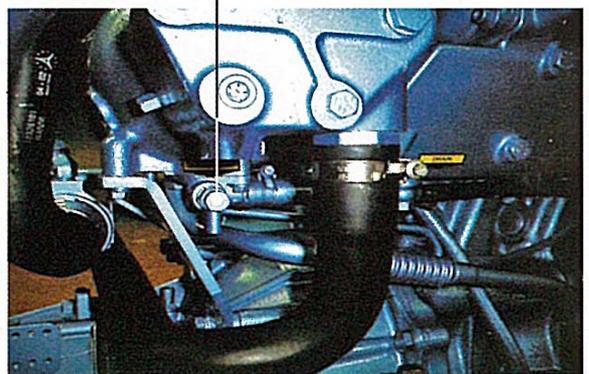
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