



380J-3

MARINE DIESEL ENGINE SET OPERATION MANUAL

EAST CHINA SHIPBUILDING INSTITUTE FACTORY
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1.GENERAL PRECAUTIONS

- (1). Ensure that the engine is securely mounted.
- (2).Ensure that the ventilation and combustion air ducts are not obstructed.
- (3).Keep the engine and surrounding areas clean.
- (4).Never allow any part of the body to come into contact with high pressure fuel oil when testing injection equipment.
- (5).Avoid contact with exhaust pipe when the engine is, or has recently been running . These parts can be very hot and can cause severe burns.
- (6).Rectify all fuel water and oil leaks as soon as possible.
- (7).Isolate the battery when working on the engine.
- (8).All drive belts must receive regular attention.
- (9).Keep electrical contacts free from corrosion etc by smearing them with petroleum jelly.
- (10).Batteries under charge release explosive gases, therefore the battery compartment must be well ventilated at all times. Never allow any smoking, sparks or flames near the batteries.
- (11). Wear protective goggles when handling liquids which is harmful to eyes, for example, battery acid. If any of these substances are splashed in the eyes, wash out thoroughly with clean water.
- (12)Many liquids used in engines are harmful if taken internally .In the event of accidentally swallowing oil, fuel, antifreeze or battery acid obtain medical assistance immediately.

2.INTRODUCTION

The SIYANG make marine diesel engine set, type 380J-3 is based on 380C diesel engine and adapted for lifeboat Propulsion conforming to the latest requirements include SOLAS 1974,1996 Amendments.

It is essential that the operators read carefully the main points in this manual before the engine is put into service.

Reference is made to:

“CHECKS BEFORE STARTING” “STARTING” “OPERATION” and “STOP”.

The engine must be able to start and operate under the most severe conditions. Therefore the engine set must be carefully maintained in accordance with this manual.

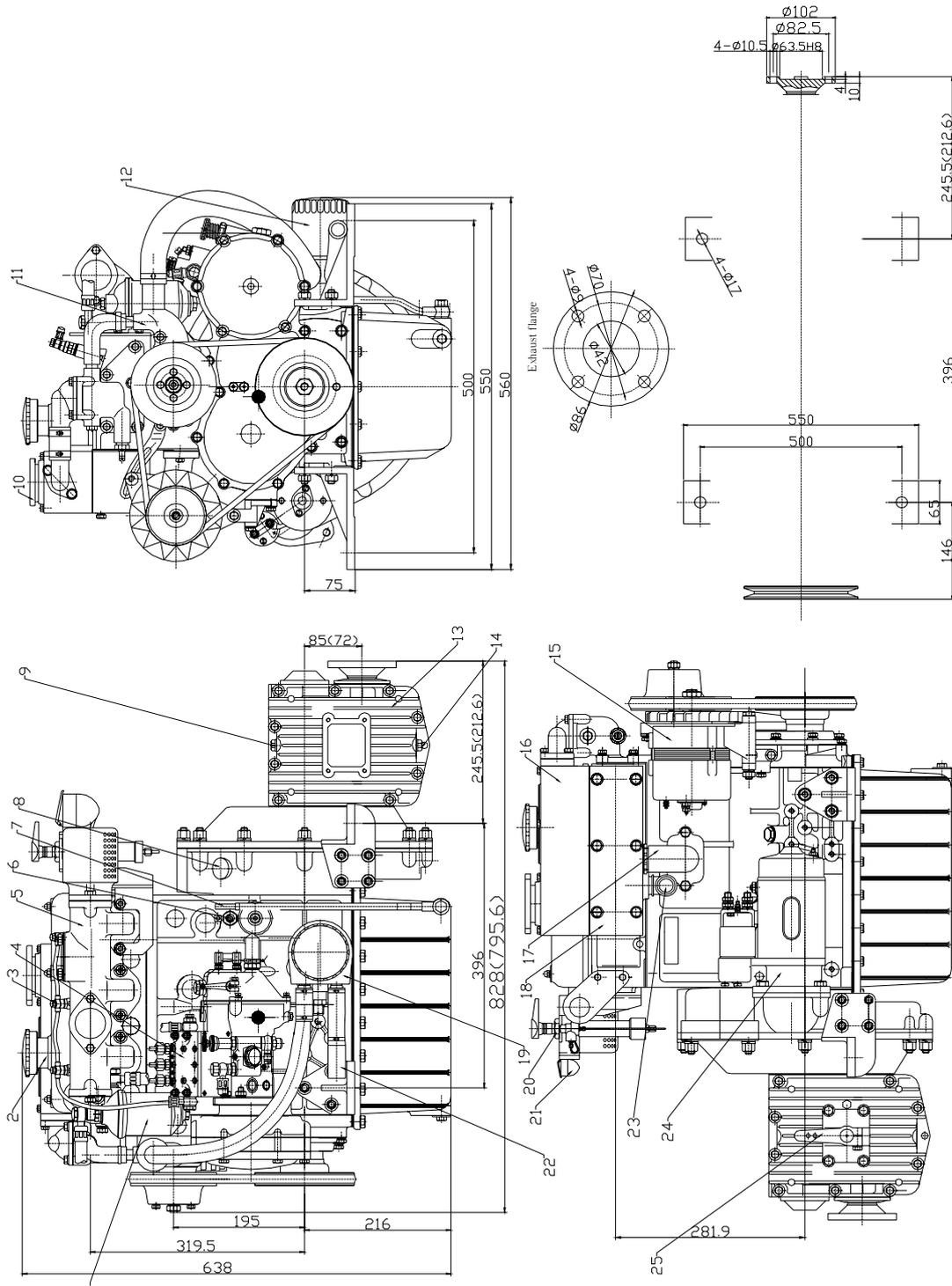
The information , specification, illustrations, instructions and statements contained within this publication are given with our best intentions and are believed to be correct at the time going to press. As our continued technical development, We reserve the right to amend any technical information with or without prior notice.

While every effort is made to ensure the accuracy of the particulars contained within this publication neither the manufacturer or dealer shall in any circumstances be held liable for any inaccuracy or the consequences thereof.

User of this manual are advised that the specification details apply to 380J-3 engine set and not to any one particular engine. In case of difficulty, consult East China Shipbuilding Institute Factory, China or a local distributor for further advice and technical assistance.

The information given is subject to the company’s current condition and is for the assistance of users and is based upon results obtained from tests carried out at the place of manufacture. Our company doesn’t guarantee that the same results will be obtained elsewhere under different conditions.

When purchasing parts, or giving instruction for the clients repairs, please refer to engine part catalogue and specify ESCI Factory. Our company **can not** be responsible for any damage arising from the parts that have not been supplied by our company.



Note: The dimension in bracket is only for matching ZF12M gearbox.

Fig.380J-3 marine diesel engine set overall dimension

2.1 DESCRIPTION OF THE ENGINE SET

- 1. Fuel filter**
- 2. Breather**
- 3. Fuel injector**
- 4. Injection pump**
- 5. Inlet manifold**
- 6. Outlet cock**
- 7. Lube oil dipstick**
- 8. Tachometer sensor**
- 9. Gearbox dipstick**
- 10. Expansion tanker cap**
- 11. Fresh water pump**
- 12. Lube oil filter**
- 13. Gearbox**
- 14. Gearbox oil screw**
- 15. Alternator**
- 16. Expansion tanker**
- 17. Lube filling cap**
- 18. Exhaust body**
- 19. Lube cooler**
- 20. Either pump**
- 21. Starting liquid reservoir**
- 22. Water inlet pipe**
- 23. Water outlet pipe**
- 24. Starting motor**
- 25. Gearbox handle**

3. GENERAL ENGINE DATA

Type	380J-3
Model	In line, vertical, water cooled four stroke
Combustion chamber	Direct injection
Number of cylinders	3
Bore×stroke (mm)	80×90
Total displacement (liters)	1.357
Firing order	1→3→2
Compression ratio	18:1
Rated output (kw/rpm)	20.6/2800
Fuel oil consumption at rated output (g/kw·h)	≤255
Lube oil consumption at rated output (g/kw·h)	≤2.72
Air consumption in 10 minutes (m ³)	16.148
Lubrication method	Splashed and forced
Method of cooling	Water coolant
Direction of rotation	Counter clockwise (Looking on flywheel end)
Method of starting	Electric option spring starter
Method of operation	Mechanical direct translating or flexible shaft remote operation
Exhaust temperature at rated output (°C)	≤550
Overall dimension (L×W×H) (mm)	828 (796)×560×638
Weight (kg)	200

Note: the dimension in bracket is only for matching ZF12M gearbox

4.MAIN STRUCTURE OF ENGINE

4.1 FUEL SYSTEM

The fuel system are important controlling components of the diesel engine. They are composed of injectors, fuel filter, injection pump and high and low pressure pipes and various connections. The feed pump draws fuel from the fuel tanker and deliveries it to the filter. The fuel, after passing through the filter, passes into the injection pump. The fuel passes into the high pressure pipe then to the injector which atomizes the fuel to fine droplets for combustion. Small amount of fuel passes through the oil return pipe into the fuel tanker

Fuel pump timing 24~27 °TDC

Injection pressure New: 20.5Mpa/used: 20Mpa

Diesel oil conforming GB252-87 light diesel fuel grades No.0 or No.-35 or to USA specification ASTM D-975-77 Grades NO.1-D and 2-D.If the engine has to work in areas with extremely low ambient temperatures, use fuel with good clog characteristic. Clog point(CFPP) -25°C.

4.2 LUBRICATION SYSTEM

The lubrication system is made up of an oil sump, an suction strainer, an oil pump, lube cooler ,filter and various pipes. The oil pump draws the lube oil contained in the oil sump through oil suction strainer then the lube oil flow into lube cooler and lube filter. The lube oil in main oil passage is separated into three flows. One passes through main bearing and flow into connecting rod bearing; The second passes through the camshaft bearing and flow the sloping oil passage to lubricate the valve rocker arm shaft liner; the third one flow into timing idle gear bearing. Cylinder liner, piston, piston pin, connecting rod l shells etc are splash or atomized lubricated.

The lubrication oil should be added properly. If it is added to much, it would be burning; if added to less, the bearing shells would be burnt. It is ideal to add the oil until its level reaches between the upper and low marks on the dipstick. When the oil level goes down to the low mark, lube oil should be added. Before starting the diesel engine, the oil level should be checked.

Lube oil pressure	98kpa ~120kpa at idle. 250~390kpa at rated output.
Oil sump capacity.....	5.2liters.
SCG-025/ZF12M Gearbox sump capacity.....	0.75liters/0.56 liters.

4.3 COOLING SYSTEM

The cooling system of the engine set is of forced circulative water cooling close type, which consists of lube oil radiator, water tanker, water pump, rubber pipe etc.

The cooling system of the engine is closed water cooling system.

The cooling liquid comes from the keel cooler through the lube oil cooler and water pump to the engine block, cylinder head, water cooling exhaust pipe and outlet then feed back to keel cooler to make circulation cooling.

Too high cooling temperature will cause the lamp in the control panel to light up and acoustic alarm to function.

Water temperature75~95 °C.

Antifreeze concentration of 40% should be used as an all year round coolant. This concentration will give low temperature protection down to -25 °C.

Additionally, 40% concentration will protect the cooling system from corrosion.

Warning: Antifreeze contains Glycol and other constituents which are toxic if taken internally, and can be absorbed in toxic amounts under prolonged skin contact.

If antifreeze is swallowed accidentally, medical advice should be sought immediately.

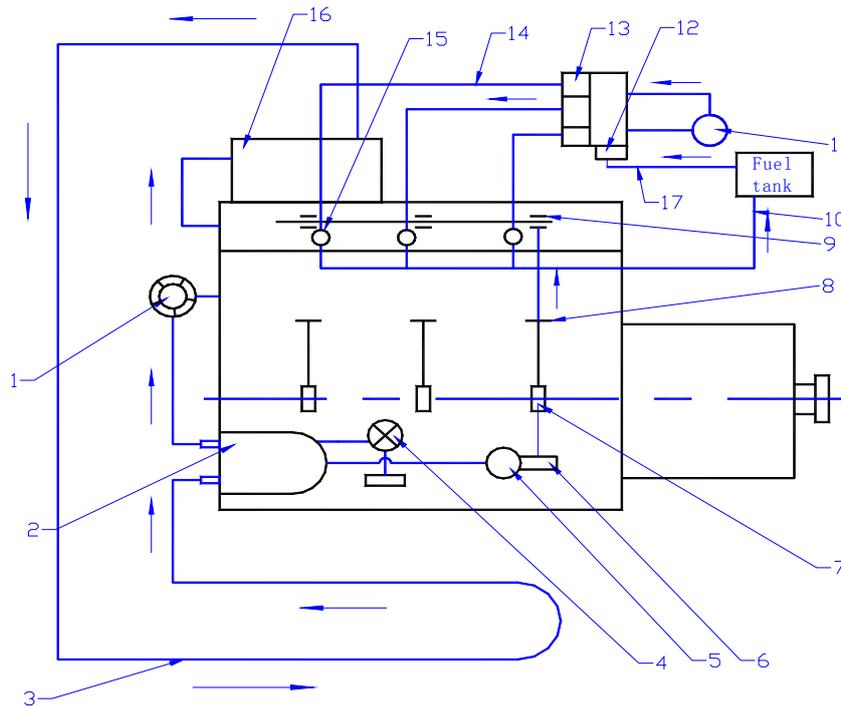


Fig Piping layout

- 1.Cooling water pump 2.Lube cooler 3. Keel cooler 4.Lube oil pump 5.Lube oil filter 6.Pressure control valve 7.Main bearing 8.Camshaft bearing 9.Rocker arm 10 Overflow pipe 11. Fuel oil filter 12.Fuel feed pump 13. Fuel injection pump 14. Fuel high pressure pipe 15. Fuel injection nozzle 16. Water exhaust pipe 17. Fuel oil inlet

4.4 ELECTRIC SYSTEM.

The electric system is composed of battery charging alternator, starting motor, relay regulator, switch, alarm buzzer, alarm lamps and instruments.

If without FQ spring starter, two separated charging battery should be need. The customers choose and use either one of two electric diagrams.

Voltage: 12V.
 Starter motor: 2.5kw
 Alternator: 750W

4.5 GEARBOX

Gearbox reduction ratio for SCG 025-3:2.74/2.67 (Forward/reverse)
 Gearbox reduction ratio for ZF12M:2.63/1.95 (Forward/reverse)
 Rotation direction of propeller Clockwise (forward)

4.6 ELECTRICAL DIAGRAM

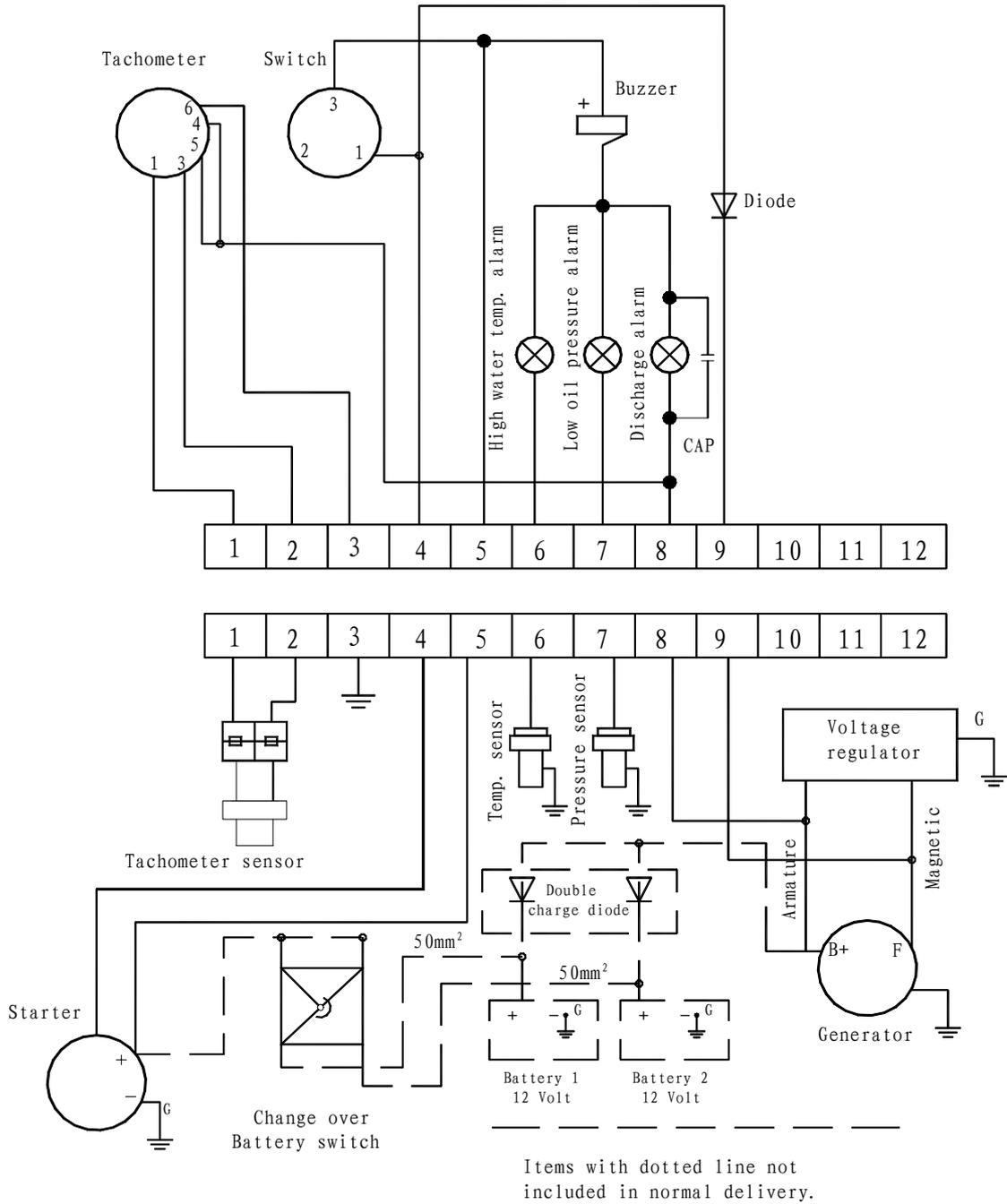
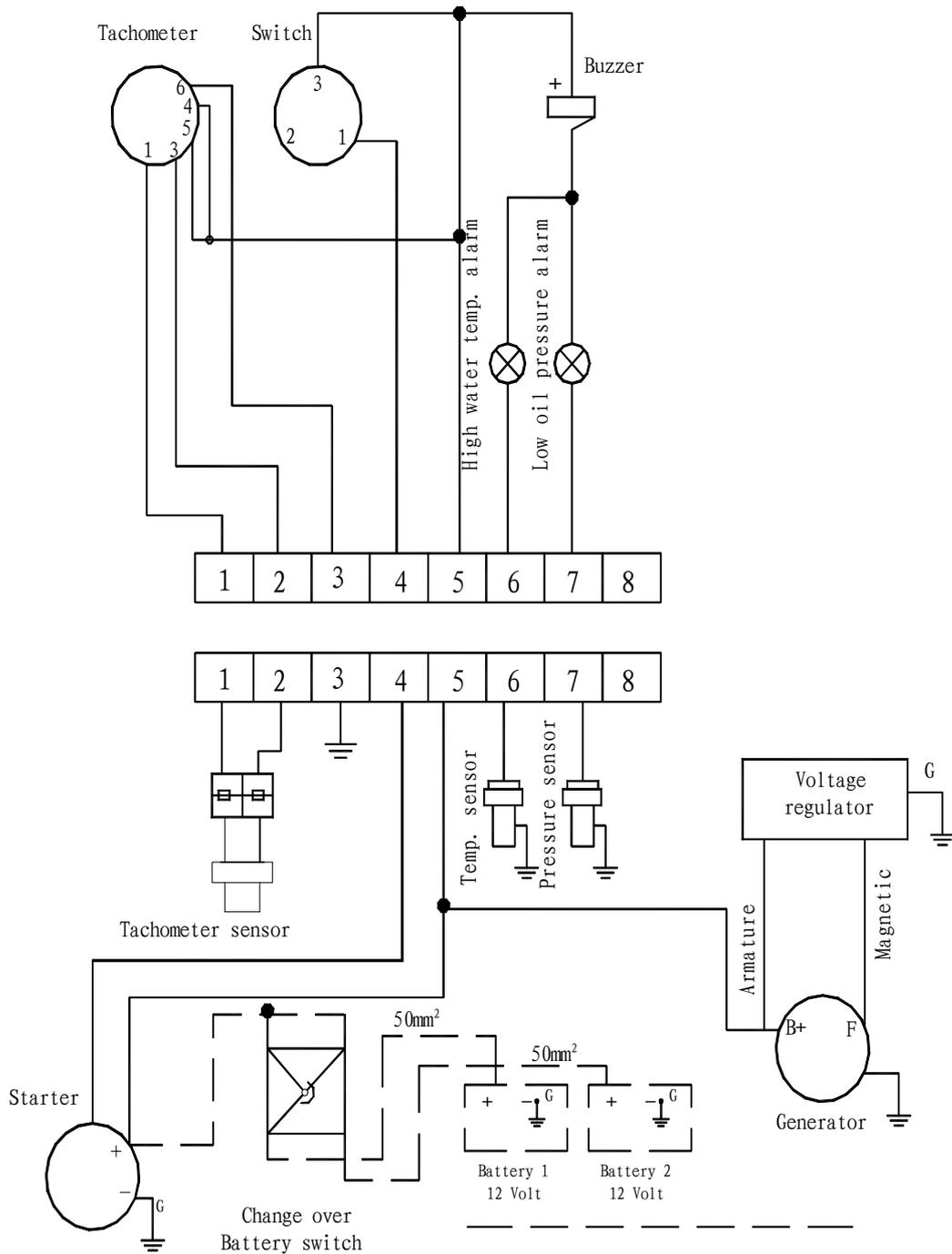


Fig Electric diagram 1



Items with dotted line not included in normal delivery.

Fig Electric diagram 2

4.6.1 ELECTRIC SYSTEM PARTS DESCRIPTION

Following parts is installed either engine side or panel side

Item	Electric diagram 1	Electric diagram 2
Tachometer	ZS12109.Y0	ZS12109.Y0
Starting switch	JK290	JK290
Buzzer	FMQ-2715	FMQ-2715
Alarm lamp (water temp.)	AD11-16	AD11-16
Alarm lamp (lube pressure)	AD11-16	AD11-16
Charge indicating lamp	AD11-16	AD11-16
Tachometer sensor	ZG912346	ZG912346
Temperature sensor	WB9311	WB9311
Lube pressure sensor	YB1011	YB1011
Starting motor	QD138C	QD138C
Battery voltage	12V	12V
Voltage regulator	FT111	FT111
Generator	JFW17H1	JFW17H1
Diode	IN5408	(No fitted)
Capacity	CB822 IUOJ400V	(No fitted)
Charging diode	702R	702R

4.6.2 INSTRUMENTS PANEL

According the choice of the buyer, the engine set is normally fitted one of the two instruments panel.

1. Tachometer 2. Alarm buzzer and lamp 3. Starting switch 4. Charging lamp (no fitted in Electric diagram 2.)

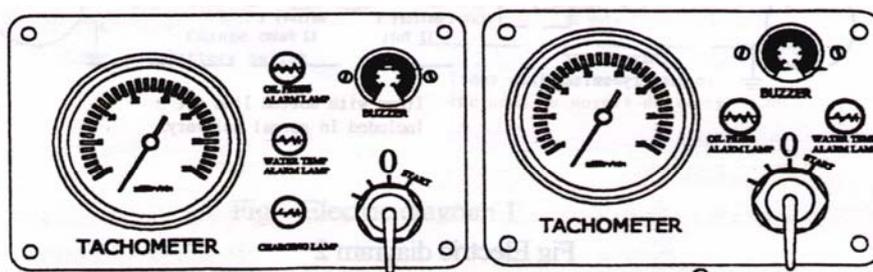


Fig. INSTRUMENT PANEL

4.7 STARTING PRECAUTIONS

Starting any engine can be dangerous in the hands of inexperienced people. Before attempting to start any engine, the operator should be fully conversant with starting procedure and controls.

- ①. Ensure that the batteries are in serviceable condition and correctly connected.
- ②. Check that the oil levels in the engine and the gearbox are correct.
- ③. Check that the fuel tank is full and that the system is primed.
- ④. Check that the all water drain plugs and cocks are closed. Check that water inlet valves, if fitted, are opened.
- ⑤. Check that water level in the expansion tank is filled up with mixture of water/antifreeze (40%).

4.8 CHECKS BEFORE STARTING

- ①. Oil level in oil sump and gearbox.
- ②. Coolant level in the expansion tank.
- ③. Battery main switch is on. Oil pressure light and changing light will now be on and the buzzer will sound.

5 OPERATION OF ENGINE

5.1 STARTING

- ① Before attempting to start the engine, the operator should be familiar with the safety precautions as described earlier.
- ② Move the speed/gearbox lever into the neutral position by means of the control lever.
- ③ Turn the switch to energize the starting motor.

Release immediately, if the engine starts, and it will return to position "0". The alarm light as well as the buzzer should now be off.

- ④ If the engine should fail to start, due to poor battery condition, turn the battery switch to the second start battery and repeat the starting procedure.
- ⑤ If the engine fails to start within 15 seconds, despite good battery condition, release the switch and investigate the cause. The starting motor should be allowed to cool for at least 15 seconds before attempting to

restart.

⑥ At low temperature it may be necessary to ease the starting by means of the start gas.

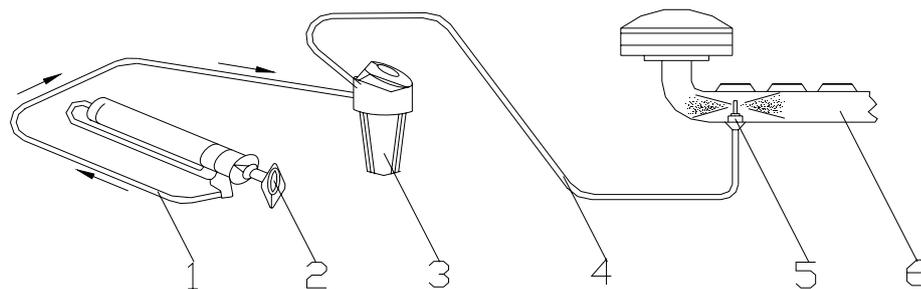
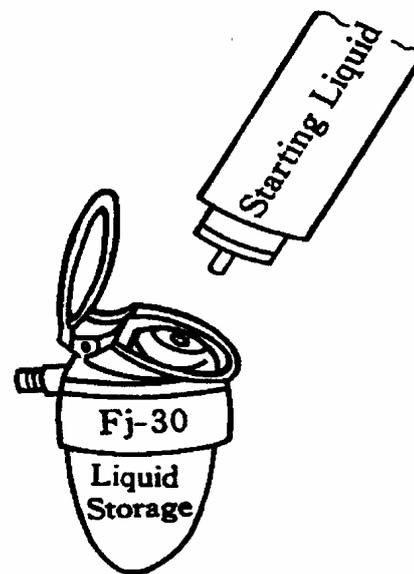
The operation method is shown as follows:

(1).Open the dust cover of the liquid storage. Insert the pouring liquid pressure can into the hole of the liquid storage. Squeeze the can to pour the liquid into liquid storage.

(2).Set the gearbox at idle position and put the handle of fuel rack at mid-position.

(3).Start the engine. At the same time, operate the hand-pump until the engine runs stably.

(4).If knocking appears while the engine is starting; the operation of hand-pump must be slowed or stopped, so as to regulate the injecting liquid quantity for starting the engine stably.



low temp. starting liquid pouring system

1.Air pipe 2.Hand pump 3.Liquid 4.Liquid pipe 5.Injector 6.Air inlet pipe

CAUTION: Keep away from all heat sources (even sun light).The liquid is highly flammable.

5.2 STARTING BY SPRING STARTER (IF INSTALLED)

According to the buyer requests, we can install and supply the FQ engine starter (hand starting) for the engine starting.

This starter makes use of man-power to press its spring to store the energy. The engine is rotated, as the energy relives at a moments and causes the engine running over the speed of starting revolution of the engine quickly, and then the engine is starting.

Operation order and method:

1. Press the reset button.
2. Insert the handle, anticlockwise rotation, press the butterfly spring to fully pressing state.(The red mark is appearing).
3. The energy will relieve at a moment when the lever is pressed. At that time the engine speed rises over the starting revolution of the engine, then the engine is starting.

Note: The step-lever must be situated in unabated pressure state when the engine makes use of the FQ type starter .

4. If it is necessary to rotate the engine with the hands, press the reset button and draw-up the reliever lever and then the engine can be rotated with the handle.

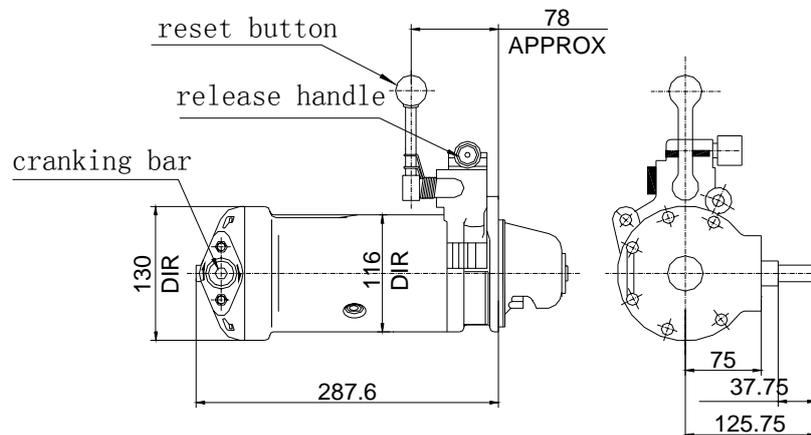


Fig. Spring starting motor

Note: 1. When use the FQ starter, never open the decompression.

5.3 OPERATION

If one or more alarm do not go out, or light up when the engine runs, the engine should be stopped at once to trace the reason.

When all function are normal, engage the gearbox by pushing the control lever forward or backward.

Increase the speed gradually if possible, allowing the engine to warm up, before going full speed.

In case of emergency, the lever can be moved into full speed position immediately.

5.4 STOPPING

Move control lever into neutral position.

Allow the engine to idle for appr.2 minutes to cool.

Stop the engine.

Switch off the battery main Switch.

If fresh water is only used, all of cooling water must be drained out from the cooling system when the ambient temperature is below 5°C(except anti-freeze coolant is used)

6 .ROUTINE MAINTENANCE

The engine has passed the lifeboat engine test programmer before delivery. Still however the engine is not completely run in.

It is recommended to operate the engine moderately during the first hours after it has been put into service. Full speed only for short periods during the first 15-20 hours.

6.1 INITIAL ATTENTION

1.Check and tighten all hose clamps and unions, paying particular attention to the fuel system.

2.Check and tighten all external nuts and bolts, particularly mounting bolts, shaft coupling bolts and exhaust manifold bolts and nuts.

3. Check belt tension, see ALTERNATOR BELT TENSION section.

4.Check lubrication oil and water coolant level .

6.2 ROUTINE MAINTENANCE PERIODES

Period	Attention
After the first 15 hours or after the first 3months	See INITIAL ATTENTION
Before start or weekly	Check engine oil level. Check coolant level. Check fuel level in tank. Grease stern gland
Every 3 months or 25 hours	Check gearbox oil level Check battery condition
Every year or 200hours	Change gearbox oil and lube oil Change lube oil filter Check alternator belt tension Check electric connect

6.3 LUBRICATION OIL SPECIFICATION

Temperature in starting	°C	Mono-grade	Multi-grade
Below	-15	5w	5w/30
Between and	-15 4	10w	10w/30
Between and	4 30	20/20 w	15w/30 10w/30
Above	30	30	15w/40 20w/40

The temperatures mentioned in the table are the ambient temperatures at the time when the engine is started.

However, if the running temperatures are much higher than the starting temperatures a compromise must be struck and a higher viscosity oil used , providing starting is satisfactory. Multi grade oils overcome the problem, provided they have a suitable specification .

The engines must be run on heavy duty lubricating oils, meeting the requirements of API CC.DEF2101D, MIL-L-2104B or MILL-L-46152A/B

Straight mineral oils are not suitable, neither are oils of less detergency than specified.

API CD, Series 3, or MIL-L-2104C/D oils can inhibit the running in process in new or reconditioned engine but can be recommended for engines running at high load factor, particularly in conjunction with high ambient temperatures.

Following or equivalent types of oil can be used:

Mobile Delvac 1300 series	BP energol DS3
Shell Rimula ×oil	Gulfpride Seies 3
Esso lube XD3+	Elf Disal HD3
Chevon Delco Super 3	Texaco URSA S3
Fina Solna 3	Castrol Deusol RX super
Norol Marine TMA 300	Amocol New Supper ACE3

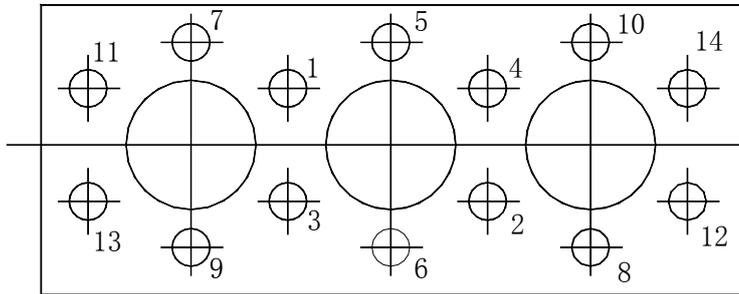
6.4 GEARBOX OIL SPECIFICATION

Automatic Transmission Fluid -ATF
 FORD Specification M 2 C-33 G
 GM Specification ATF DEXRON IID
 EXXON ATFD or ATF
 (or refer to gearbox manual)

6.5 MAIN SPANNER TORQUE SETTINGS

DESCRIPTION	N• M
Flywheel bolt	60
Cylinder head nut	140
Connecting rod bolts	70
Prop. shaft coupling bolts (acid proof)	70
Crankshaft main bearing	125

6.6 TIGHTENING SEQUENCES FOR CYLINDER HEAD BOLTS.



6.7 CHECK OF LUBRICATION OIL LEVEL

The lubrication oil level should always be checked before starting.

The level should never be allowed to fall below the lower mark.

6.8 LUBRICATION OIL CHANGE

The oil change should be done when the engine is warm.

Run the engine after oil change and check for any leaks.

Stop the engine, allow the oil to settle and top up if necessary.

6.9 ALTERNATOR BELT TENSION.

It is important that the belt tension is checked after an overhaul or when new belt is installed.

New belt tension:

A force of 3~3.5 kg to deflect belt 3.5 mm

Checking and adjustment at service intervals:

A force of 2~2.4 kg to deflect belt 3.5 mm

6.10 GEARBOX OIL CHECK

Check the oil level.

Fill up if the oil level is below the mark.

SCG-025/ZF12M Gearbox sump capacity : 0.75 liters/0.56 liters.

6.11 PRIMING THE FUEL SYSTEM

The fuel system has to be primed before initial starting, after fuel filter change, if the fuel system has been disconnected, or if the engine has run out of fuel and stops.

1. Loosen the vent plug on top of the fuel pump.
2. Turn on the handle of the fuel feed pump
3. Start the handle up-and-down movement.

4. When no air is left, retighten the vent plug and turn off the handle of the fuel feed pump.

6.12 DRAIN THE COOLANT

Remove the cap on the top of expansion tank. Drain the coolant through the cock in front of engine. Close the cap and cock after draining. Refill the cooling system with correct water anti-freezing mixture. Let the engine run idle for 20~30 minutes.

6.13 CHANGING FUEL FILTER ELEMENT

If the fuel oil tank is installed at a level above the engine, the cock must be closed before fuel filter change. Unscrew the filter container and discard the filter element. Ensure that the rubber gaskets and the spring are correctly fitted before the filter container is reinstalled after filter change.

Priming the fuel system after filter element change, see section 6.11.

6.14 IDLING SPEED ADJUSTMENT

Start the engine and run until normal operating temperature is reached .

Correct idling speed is less than 900 rpm and is factory set before dispatch.

Adjustment should only be carried out after consulting East China shipbuilding Institute Factory, CHINA.

6.15 VALVE CLEARANCE ADJUSTMENT

The valve clearance is :

Exhaust valve (cold) : 0.25~0.30 mm

Intake valve (cold) : 0.20~0.25 mm

6.16 STARTING AND RUNNING THE ENGINE WHILE THE LIFEBOAT IS HOOKED IN DAVITS OR IN FREE FALL RIG

The engine should be started and run once a week and after any kind of maintenance work.

The running should be limited to 5 minutes at idle speed .

The water temperature alarm should be watched .

6.17 GENERAL PRECAUTIONS ABOUT ELECTRIC SYSTEM

The following points must be strictly observed when working on the electric system, otherwise serious damage can occur.

1. Never remove any electrical cable without first disconnecting the

batteries.

2. Never disconnect the alternator cables while the engine is running.
3. Only disconnect the batteries with engine stopped and all switches in the OFF position.
4. Always check that cables are connected to their correct terminals before reconnecting the batteries. A reversal of polarity or short circuit will destroy diodes and transistors in the alternator and regulator.
5. Never flash any connections to check the current flow.
6. Always keep the electrical connections properly tightened.

6.18 STORAGE

1. If the engine is to be put out of service for a long period of time, It is necessary to drain out lubricating oil, cooling water and fuel when engine is still warm after stopping the engine.
2. Perform maintenances accordingly.
3. Dismantle both intake and exhaust manifolds and pour into the cylinder liners from the air passages about 0.2 kg of clean dehydrated oil (By heating the lubricating oil to 110~120°C, until all air bubble on surface of oil disappear). And rotate the crankshaft so that the valves, cylinder liners and pistons etc. are all covered with a layer of this oil.. Then install the intake manifold and exhaust body.
4. Remove sludge and dust from outer surface of the engine. Smear anti-rust oil on to exposed machined surfaces of parts of the engine. Rubber plastic components are prohibited to be smeared with oil.
5. Block the intake manifold and exhaust pipe flange with wooden plug, or wrap them up properly with plastic cloth in order to prevent any dust from getting in.
6. The engine so preserved should be stored in room of good ventilation and low humidity but without any dust. It is strictly forbidden to store the engine wherever there are chemical.

The preservation according to above procedure may be good for three months. Over this period, repeat this procedure.

7 TROUBLE SHOOTING

This section is intended as a guide only. If you are in difficulty, please consult East China Shipbuilding Institute Factory, CHINA or local our product distributor.

7.1 DIFFICULT IN STARTING THE ENGINE

Causes	Remedial method
(1).The fuel filter or pipe are obstructed.	Clean the filter or pipes
(2).Air is locked in the fuel	Drain the air and tighten all fuel pipe connectors
(3).The fuel injection advance angle is incorrect.	Adjust the fuel injection advance angle as specification.
(4).The valve clearance is incorrect	Adjust the valve clearance as required.
(5).Battery not fully charged or poor wire connections	Charge the battery fully or tighten the connections.
(6). No fuel in tanker or poor spray from injector	Fill up the fuel or adjust the injecting pressure as required.
(7).Low cylinder compression pressure	Check and change the piston ring or cylinder liner. Change the cylinder head gasket if damaged.

7.2 INSUFFICIENT OUTPUT

Causes	Remedial method
(1) Low cylinder compression pressure	Refer to 7.1(7)
(2) The fuel injection advance angle is incorrect.	Refer to 7.1(3)
(3) The valve clearance is incorrect	Refer to 7.1(4)
(4) Fuel supply for each cylinder is unequal.	Adjust the fuel quantity of fuel injection pump.
(5) Low engine speed	Adjust the engine speed to specification.
(6) Excessive wear of plunger couple of Injection pump	Renew new plunger couple.
(7) The exhaust system clogged.	Clean.

7.3 BLACK SMOKING FROM EXHAUST

Causes	Remedial method
(1). The engine is overloaded (2). Fuel injector defeats (3). Poor fuel quality (4) The fuel injection advance angle is incorrect. (5) Combustion is incomplete	Reduce the load properly. Renew one. Change the fuel as specification Refer to 7.1(3) Check the injector, fuel injection advance angle, cylinder gasket and cylinder compression pressure etc.

7.4 LOW LUBE OIL PRESSURE

Causes	Remedial method
(1) Lube oil in oil sumps too low. (2) Lube oil pipe leaks (3) Lube filter obstructed. (4) The lube oil is too thickness (5) Pressure sensor or lamp defeats (6) Gear pump worn out and clearance is over	Fill up to the right mark. Tighten all connectors. Replace lube filter. Replace the lube oil as specification Replace a new one. Replace gears pump and adjust the clearances

7.5 ENGINE KNOCKING

Causes	Remedial method
(1). The fuel injection advance angle is incorrect. (2) Air or water is mixed in fuel system (3) Fuel supply for each cylinder is unequal. (4) Wear of the certain components exceeds specification limits	Refer to 7.1(3) Refer to 7.1(2) Refer to 7.2(4) Replace the worn parts.

7.6 ENGINE OVERHEATING

Causes	Remedial method
(1) Temperature of coolant water too high a. Insufficient coolant or vapor lock in cooling system b. Cooling water pump defeats c. Water pump belt is loose (2) Lube oil temperature is too high. a. Low lube oil level or high. b. Low lube oil pressure with insufficient flow. (3) The engine is overloaded.	Add water coolant Repair or replace water pump Refer to section 6.9 Fill or drain the lube oil Refer to 7.4 Refer to 7.3(1)

7.7 ENGINE OVER SPEED OR OVERRIDE

Causes	Remedial method
(1) Governor malfunction. (2) Control bar of fuel injection pump is stuck. (3) Fuel supplying of injection pump is too large. (4) Oil gets into cylinder too much	Stop engine and repair immediately. Ditto Stop the engine and readjust fuel pump delivery. Stop the engine and check and repair

Appendix 1: 380J-3 diesel engine set delivery list

This list is a standard delivery list.

No.	Description	Unit	Qty	Remarks
1	Marine diesel engine set	Set	1	
2	Tools & spare parts supplied with engine	Box	1	
3	380J-3 marine diesel engine set operation manual	Piece	1	
4	Gearbox operation manual	Piece	1	
5	380J-3 marine engine set parts catalogue	Piece	1	
6	Instruction for wheel house	Piece	1	
7	380J-3 Class inspecting certificate	Piece	1	
8	Product inspecting certificate	Piece	1	

Appendix 2: Tools supplied with 380J-3 marine diesel engine set

No.	Description	Unit	Qty
1	Valve tapping tools	1	
2	Tapping sand (140 [#])	1	
3	Feeler gauge	1	
4	8 [#] screw driver	1	
5	Spanner 8×10	1	
6	Spanne 13×16	1	
7	Spanne 18×21	1	
8	Spanne 17×19	1	

Appendix 3: Spare parts supplied with 380J-3 marine diesel engine set

No.	DWG no or Spec.	Description	Qty	Remarks
1	CZ380Q-030013	Cylinder head gasket	1	
2	CZ475Q-020003	Intake valve	1	
3	CZ475Q-020003	Exhaust valve	1	
4	N85-020003(1)	Outer valve spring	2	
5	N85-020003(2)	Inner valve spring	2	
6	N85-020002	Connecting rod bush	4	
7	CZ480Q-050006	Valve collets	2	
8	CZ475Q-030014	Upper bearing shell	2	
9	CZ475Q-030015	Lower bearing shell	2	
10	CZ480Q-050001	First piston ring	1	
11	CZ480Q-050002	Second piston	1	
12	CZ480Q-051000	Oil scraping ring	1	
13	ZCK154S423	Injector nozzle	2	
14	C0506-1000	Fuel filter element	1	
15	JX0706P1	Lube oil filter	1	
16	C0506-0003	Fuel filter sealing	1	
17		Oil sealing DL80×100×12	1	
18		Oil sealing DR55×75×12	1	
19	V13 ×1050	V-Belt	1	
20		Cold starting liquid	1	

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