



INSTALLATION MANUAL

# WHISPER 3,5

- 3000 RPM -

Marine diesel generating set 230V / 50Hz  
Digital Diesel Control



Art.nr. 50200311

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This manual applies to the Mastervolt Whisper 3,5 Marine Diesel Generating set controlled by Digital Diesel Control first launched in April 2004. For earlier models refer to other manuals available on our website: [www.mastervolt.com](http://www.mastervolt.com)

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## 1 INSTALLATION

To ensure reliability and durability of the equipment, it is very important that the installation is carried out with the utmost care and attention. To avoid problems, such as temperature problems, noise levels, vibration, etc. the instructions set out in this manual must be followed and all installation work must be carried out professionally.

### 1.1 LOCATION

Since Whisper generating sets have extremely compact dimensions, they can be installed in tight locations. Please consider that even almost maintenance-free machinery must still remain accessible.

When selecting the location area in which to mount the generating set, make sure there is sufficient room to carry out any maintenance work. The unit must be easily accessible on the service side and on the distribution side to have access to the raw water pump and oil strainer.

Please also note that in spite of the automatic oil pressure sensor it is still essential that the oil level is checked regularly.

### 1.2 INSTRUCTIONS FOR OPTIMAL SOUND AND VIBRATION INSULATION

Position the generating set as low as possible in the vessel. As the generating set is already secured to the base frame by means of flexible engine mountings, the frame can be mounted directly to the vessel's main structure.

#### 1.2.1 Steel base plate

However to keep resonant vibrations at a minimum, it is recommended to mount the generating set on a solid steel base plate, approx. 30 mm weighing approx. 44 kg or 50% of the weight of the generating set. The engine draws its inlet combustion air through several holes in the capsule base. Therefore the capsule must be fitted with sufficient clearance between the capsule underside and the base plate. A steel base plate is available from Mastervolt as an optional accessory (ref. fig. 12, page 15).

#### Further recommendations

Whisper generating sets are standard equipped with a "GRP" (Glass Reinforced Plastic) sound cover. The canopy has been designed to give effective sound insulation. For optimum sound and vibration dampening, the following factors should be considered.

- 1 Avoid mounting the generating set in close proximity to thin walls or floors that may cause resonance.
- 2 Sound dampening is extremely poor if the generating set is mounted on a light weight flimsy surface such as plywood which will only amplify vibrations. If mounting on a thinner surface cannot be avoided, this should at least be reinforced with stiffening struts or ribbing. If possible, holes should be bored or cut through the surface to help reduce the resonance. Covering the surrounding walls and floors with a heavy coating plus foam will certainly improve the situation.
- 3 Never connect the base of the generating set directly to bulkheads or tanks.

### 1.3 VENTILATION

The generating set normally draws air from the engine room. Engine rooms with natural ventilation must have vent openings of adequate size and location to enable the generating set to operate without overheating. To allow an ample supply of air within the temperature limits of the generating set an opening of at least 100 cm<sup>2</sup> is required.

A "sealed" engine compartment must have a good extraction ventilator to maintain reasonable engine room temperatures. High temperature of intake air reduces engine performance and increases engine coolant temperatures. Air temperatures above 40°C reduce the engine power by 2% for each 5°C of rise. To minimise these effects the engine room temperature must not be more than 15°C above the outside ambient air temperature.

Apply a combination of ventilators, blowers and air intake ducting to meet the temperature limit. The air inlet ducts should run to the bottom of the engine room to clear fumes from the bilge and to circulate fresh air. Air outlets should be at the top of the engine room to remove the hottest air. An engine room blower should be used as an extraction ventilator to remove air from the engine room.

In cases where it is impossible to meet the above mentioned temperature limit by using machine room ventilation, connections are to be made for an air inlet directly to the enclosure. With these connections the generating set can be directly connected to an air duct.

Air inlets should be louvered, where appropriate, to protect the engine room and to protect the generating set from water spray. As an extra precaution, the fitting of a cowl ventilator with a cover box located as high as possible, is recommended.

## 1.4 CONNECTIONS

The generating set comes supplied with all supply lines and output cable (i.e. electric cables, cooling water connections, exhaust, fuel lines etc.) already connected to the engine and generator. The supply lines are fed through the capsule's front base. The connections are marked as shown in fig. 1.

All electrical connections, cable types and sizes must comply with the appropriate national regulations. Supplied cables are rated for ambient temperatures up to 70°C. If the cables are required to meet higher temperature requirements, they must be run through conduits.



### ATTENTION!

Before working (installation) on the system read the section safety instructions

## 1.4.1 Fuel supply

### 1 FUEL TANK

Fuel tanks should be made of appropriate material such as (stainless) steel or plastic. Steel tanks should not be galvanised or painted inside. Condensation can occur in metal tanks when temperature changes. Therefore, water accumulates at the bottom of the tank and provisions should be made for the drainage of this water.

The tank will need a filling connection, a return connection and an air ventilation connection which will require protection against water entry.

Some official regulations do not allow connection points at the base of the fuel tank; in this instance connections are to be made at the top of the tank with internal tubing down to a few cm above the bottom of the tank.

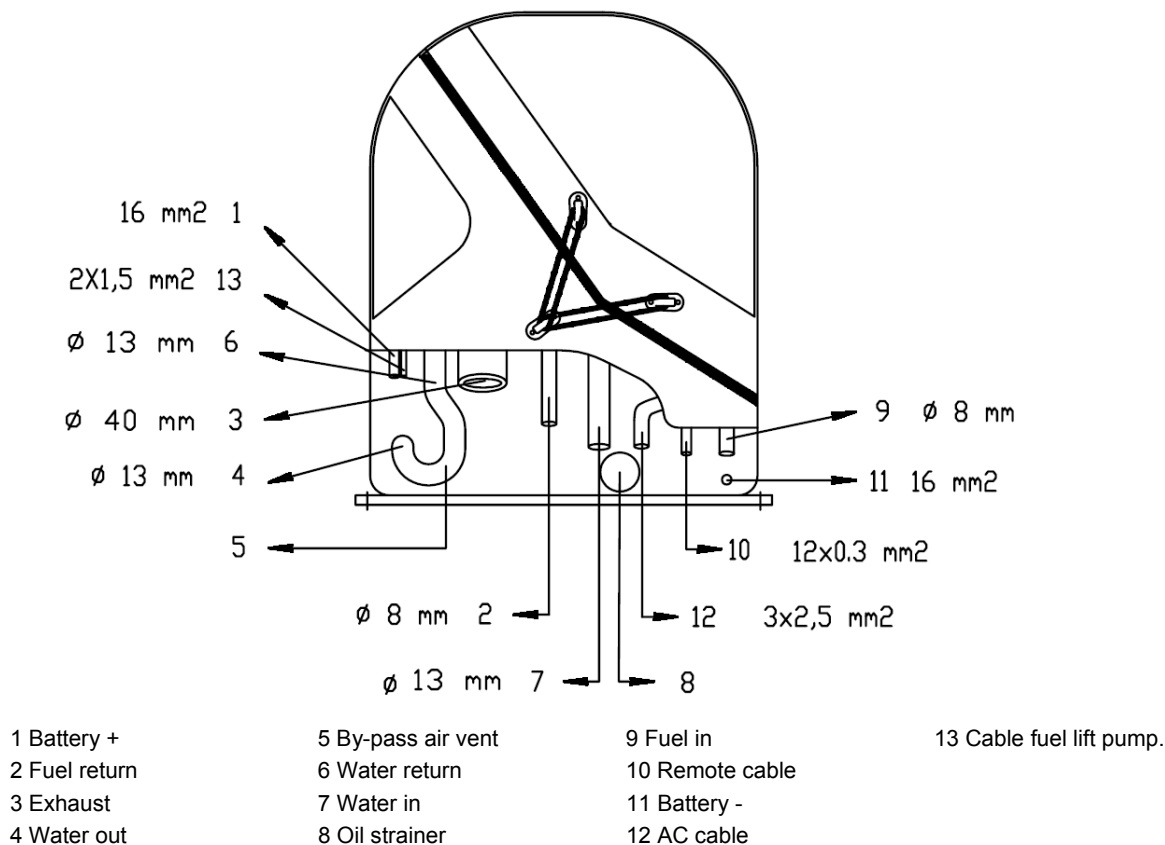


Fig. 1

## 2 FUEL LIFT PUMP

The generating set itself is equipped with a fuel lift pump; therefore the tank can be installed at a lower level than the generating set. The maximum suction height is 1 m.

If the pump has to lift the fuel higher than one meter an external fuel lift pump must be installed. The control board is already prepared to connect an extra fuel pump.

## 3 FUEL PIPES

When the tank is above the generating set we recommend ending the return line on the top of the tank (A).

When the return is on the top - in case of a leakage the return line cannot overflow because of siphoning. One will only need a fuel cock in the fuel supply line.

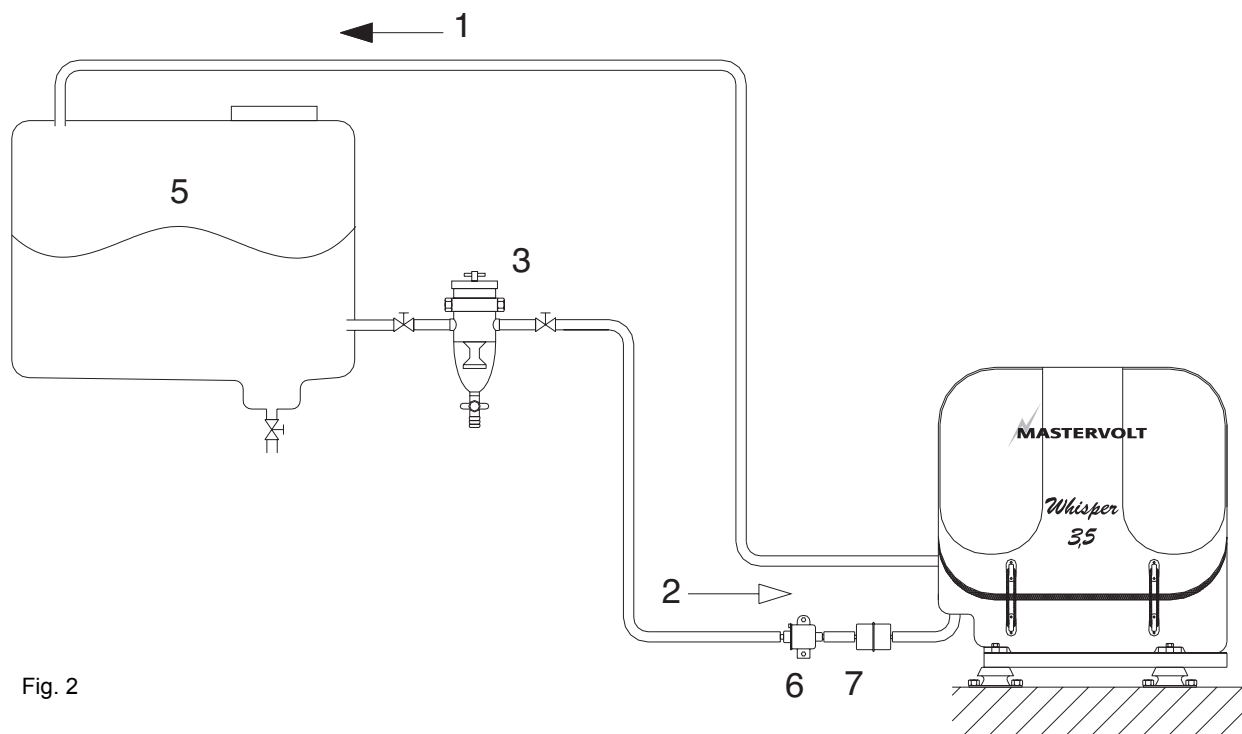
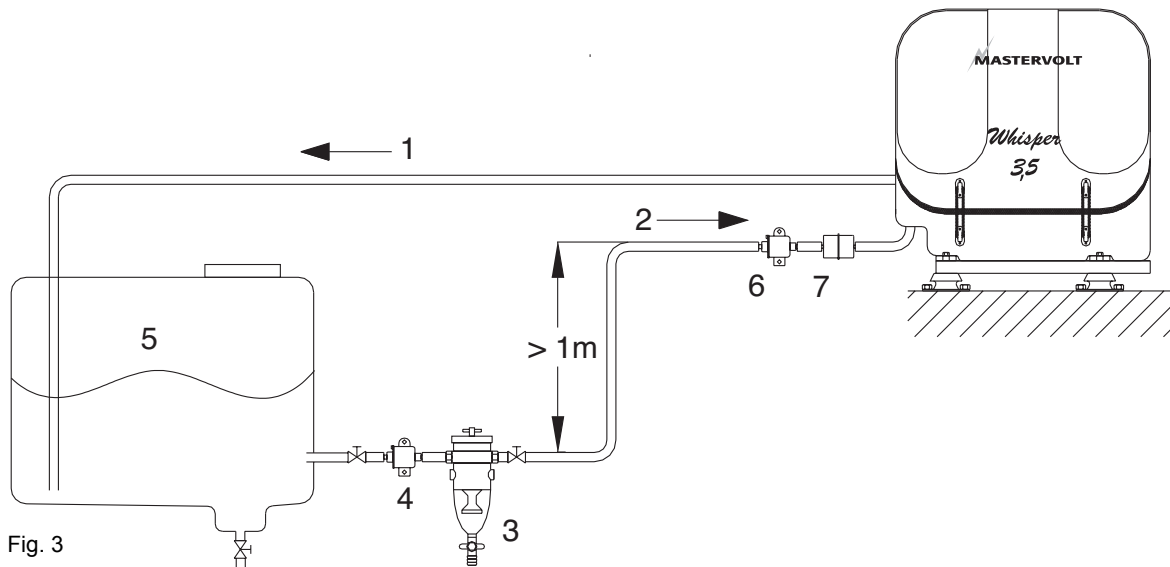


Fig. 2

- 1 Fuel return;
- 2 Fuel supply;
- 3 Prefilter / water separator (optional);
- 5 Fuel tank;
- 6 Standard fuel lift pump;
- 7 Standard fuel filter.

When the tank is below the generating set we recommend ending the return line on the bottom of the tank (A) below the inlet of the supply line to discharge under the lowest fuel level. This prevents air getting into the fuel line. Here also one needs a fuel cock only in the supply line.



Both supply and return fuel pipe lines should be appropriate material and 8 mm outer diameter tubing. The quality of the tubing of fuel pipes could be submitted to local regulations depending on the application of the vessel.

The fuel pipes can be plumbed to the flexible hoses which are on the generating set and have a connection to fit to 8 mm pipe. This fuel lines fulfils CE standards and are according to ISO 7840 A2. It is important to avoid bends in the pipes, as they could trap air bubbles. The return pipe should never be connected to the suction pipe. Other consumers of diesel fuel, such as the propulsion engine and heaters, have to be connected to separate suction and return pipes

- 1 Fuel return;
- 2 Fuel supply;
- 3 Prefilter / water separator (optional);
- 4 Extra fuel lift pump (optional);
- 5 Fuel tank;
- 6 Standard fuel lift pump;
- 7 Standard fuel filter.

#### 4 FUEL FILTERS

A fine fuel filter is installed which requires maintenance. Mastervolt advises to install an extra fuel filter/ water fuel separator near the fuel tank.

Before starting your generating set for the first time follow the fuel system bleeding procedure in the users manual.

### 1.4.2 Cooling

Intercooling is based on a raw water pump, heat exchanger and water-injected exhaust.

The generating set should have its own sea water (coolant water) inlet and should not be connected to any other engine systems. A properly installed cooling system is critical to keep engine temperatures within an acceptable range. Ensure that the installation complies with the following installation instructions.

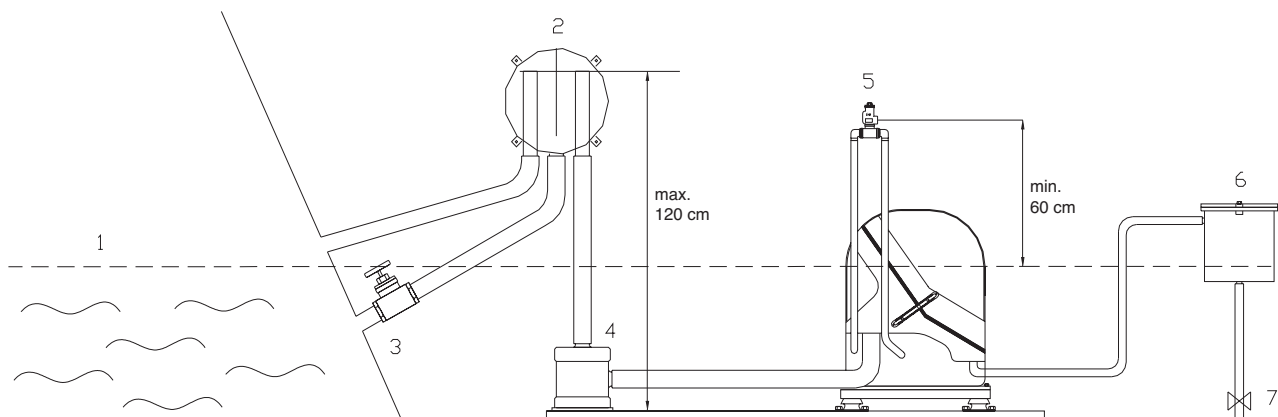


Fig. 4.

1 Water level  
 2 Water/exhaust separator  
 3 Seacock  
 4 Waterlock

5 Air vent;  
 6 Water strainer;  
 7 Seacock.

## 1 RAW WATER SUPPLY

For raw water supply the following installation materials are required: -a skin fitting - a sea cock - a water strainer - hoses and clamps. In order to keep the suction resistance in the line at a minimum, the sea water intake system (i.e. sea cock, tru-hull fitting, inlet filter, etc.) must have an inner diameter of at least 12.5 mm diameter ( 1/2"). The suction hose should be kept as short as possible. Raw water plumbing should avoid bends as much as possible.

Restriction of raw water flow, caused by kinked hoses, undersized pipes or connections, will reduce the engine cooling capability. This is the main cause for overheating of an engine.

After running the generating set for the first time, check the coolant flow rate using a stopwatch and by holding a pail of a known volume under the wet-exhaust outlet. The flow rate should be 8 to 12 litres /min.

## 2 INSTALLATION OF THROUGH HULL FITTING

It is good practice for yachts to use a hull inlet fitting with an integrated strainer (water scoop). For propulsion engines in motorboats the water scoop is often mounted against the sailing direction to induce more water intake for cooling.



This should not be done in the case of a generating set! When sailing at higher speeds, water will be forced into the inlet and your generating set will overflow!

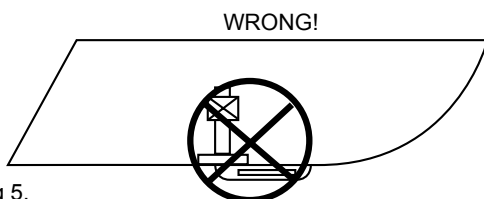
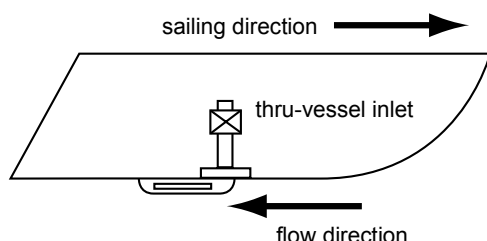


Fig 5.

On motorboats and on sailing boats the water scoop for a generating set should be fitted with the opening faced backwards to prevent water being forced in during sailing. Use a sealant when mounting the skin fitting.

## 3 WATER STRAINER

Use an appropriate water strainer with connections of 12.5 mm (1/2"). Install the water strainer in a well accessible position, (refer to fig. 4-6) 5 cm above the waterline.

## 4 SIPHON BREAKER (AIR VENT)

When the point of water injection is below the waterline, then -when the engine is stopped -there is a risk that the cooling water may enter the engine as a result of siphoning. To avoid this happening, the generating set is designed to accommodate a siphon breaker (air vent). In the standard delivery the connections are bypassed. Hose of 12.5 mm (1/2") inner diameter should be used.

If the generating set cannot be mounted such that the bottom of the generating set is placed above the

waterline, an air vent must be installed. Extend the water hose of the by-pass 600 mm above waterline and install an air vent. Ideally, the air vent should be mounted above the yacht keel center line (i.e. to minimize the influence of swaying on the water intake). The hose of the drain should go downwards. Water must flow out freely and air has to flow in freely as well. (refer to fig. 15).

Fast motorboats will lay deeper when sailing at large speed and can cause pressure on the waterinlet. This should be avoided to prevent flooding the engine.



If the air vent is clogged the water hoses will not be vented when the generating set has stopped and water can be forced into the engine. This leads to immediate engine problems and eventually severe damage!

### DAMAGE CAUSED BY THE INGRESS OF WATER IN THE ENGINE IS NOT COVERED BY WARRANTY

Check the air vent at regular intervals. Open, clean and lubricate the valve as required (fig. 6).

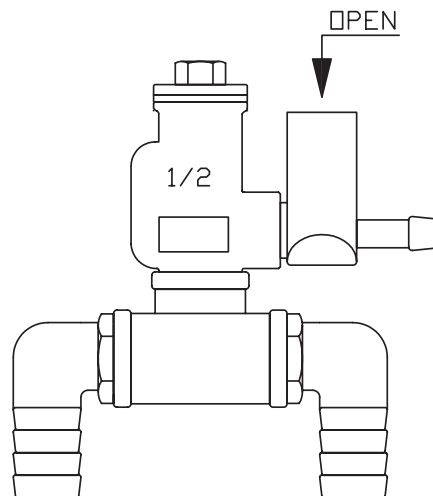


Fig 6.

### 1.4.3 Exhaust system

Water is injected in the exhaust system of the generating set. In this way the cooling water that has passed the heat exchanger is mixed with the exhaust gases. Temperature and volume of the gases are thereby reduced considerably, so that a rubber exhaust hose can be used and the level of noise is reduced as well.



## 1 STANDARD EXHAUST SYSTEM INSTALLATION

The generating set exhaust system must remain completely independent and separate from the exhaust system of any other engine on board. A water lock prevents the generating set from being flooded by cooling water and should be installed as close to the generating set as possible. The lock must be large enough to hold the entire water volume held in the hose from the top of the goose neck to the water lock. The water lock must be installed at the lowest point of the exhaust system (ref. to fig. 7-1). The exhaust hose must have an inner diameter of 40 mm no less, no more-. The exhaust system must be installed so that the back pressure inside the exhaust does not exceed 0,8 psi 60 cm. waterpressure (refer to paragraph 5.4.3 of the users manual) and total length up to the outlet or water separator does not exceed 2,5 m. The exhaust hose descends from the capsule to the water lock. Then the hose rises maximum lift 120 cm via the "goose neck" to the through-hull exhaust outlet, situated minimum 50 mm above the water line (refer to fig. 7-5. The "goose neck" must be vertical and situated preferable along the ship's keel center line. It

is recommended to install an extra muffler fig.7 (2) close to the through-hull fitting.



Because of the small gas flow of the small engine it is very important to keep strictly to the instructions above. Some mufflers and water locks cause too high back pressure. You are advised to use a Mastervolt installation kit or check the back pressure (refer to paragraph 5.4.3 of the users manual). Too high back pressure causes the system to fill up with water that affects the outlet valve and valve seat.

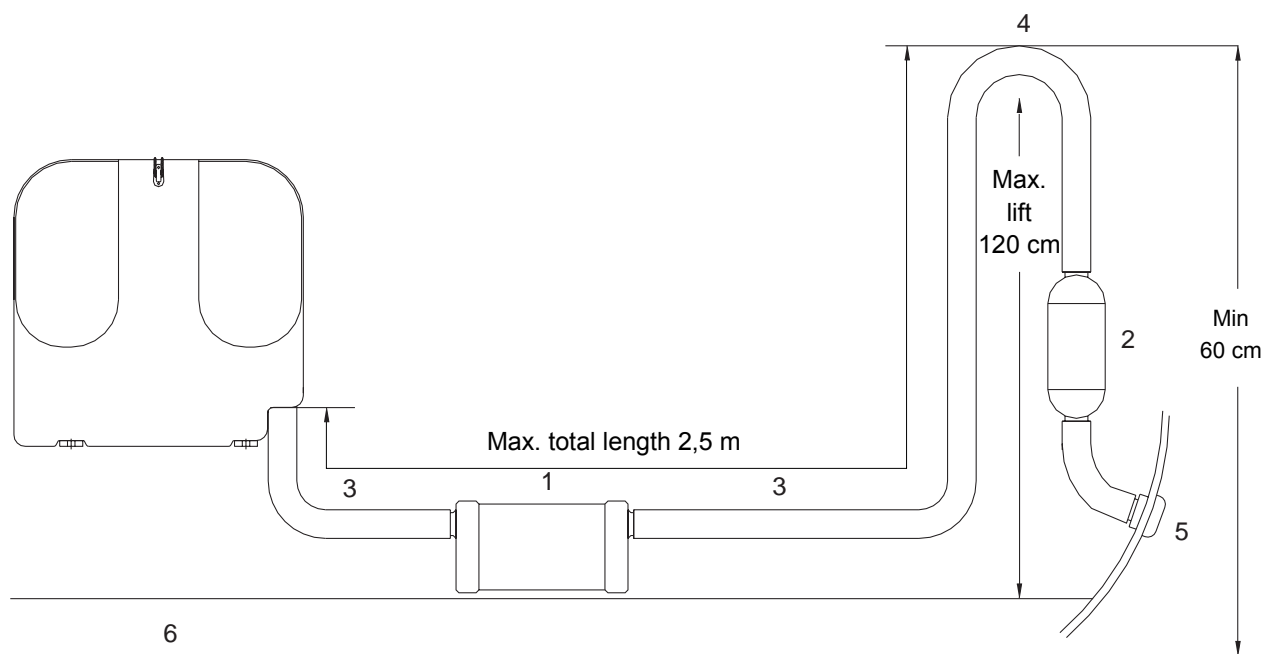


Fig 7

- 1 Exhaust water lock;
- 2 Exhaust outlet muffler;
- 3 Exhaust line Ø 40 mm;
- 4 Goose neck;
- 5 Through-hull exhaust outlet Ø 40 mm;
- 6 Water level.

## 2 "SUPER SILENT" EXHAUST SYSTEM

In order to reduce the noise level of the generating set to a minimum, an option to reduce the exhaust noise further (especially exhaust water splashing) is an exhaust/water separator. The exhaust/water separator allows the cooling water to be ejected through a line separate from the exhaust fumes and also functions as a goose neck to prevent water from flooding the engine. The exhaust/water separator is mounted more than 60 cm above the water level.

shortest possible path to the through-hull outlet.

Only when using an exhaust /water separator the exhaust may have a length up to 7,5m after the water/gas-separator. However water traps should be avoided as the fumes still contain water and this should not accumulate in bents. Under no circumstances the hose may go up again. (Refer to fig. 8a) An additional outlet exhaust muffler close to the hull outlet will help further to reduce noise emission. (Refer to fig. 9)

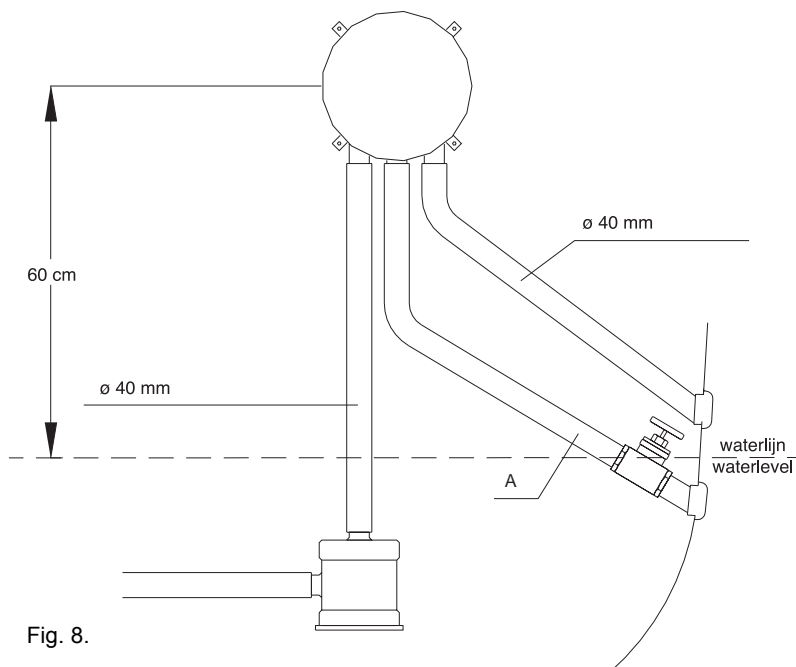


Fig. 8.

If the through-hull exhaust outlet has to be mounted far from the generating set, an exhaust/water separator must definitely be installed. (Total length of the exhaust piping from generator to top of goose neck (water separator) is more than 2,50 m.) The sea water from the separator must run down along the

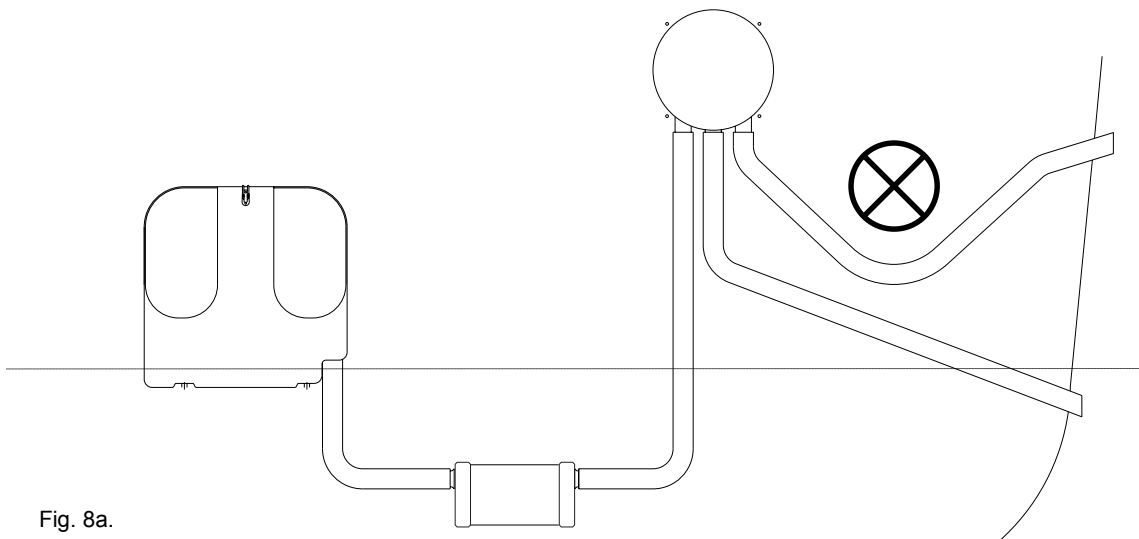


Fig. 8a.

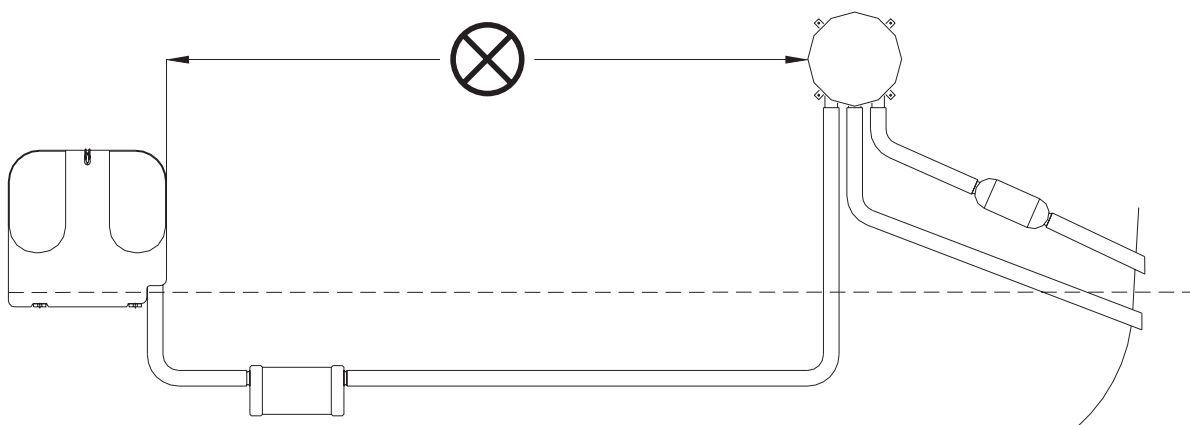
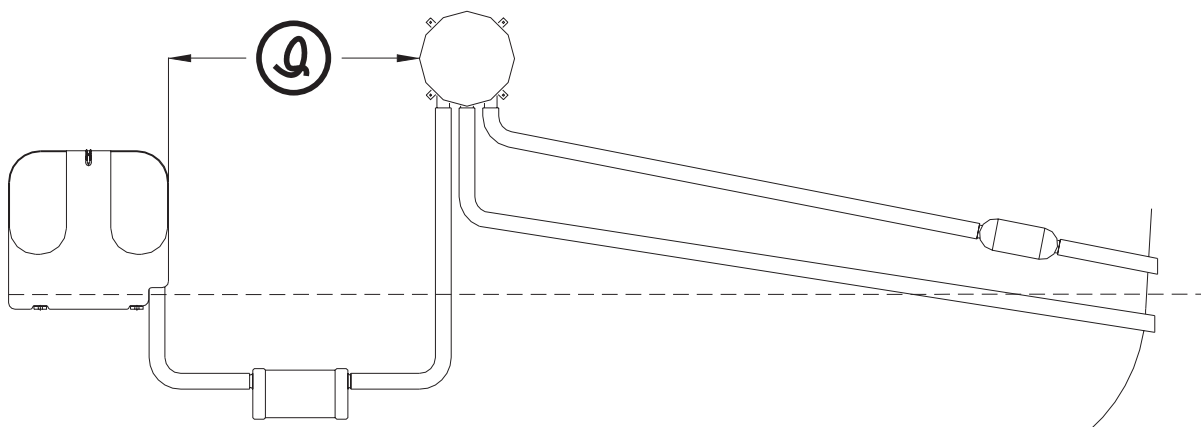


Fig. 9.



If the generating set and the exhaust system have been installed correctly, neighbouring boats will not be disturbed by generating set noise. With the "super silent" exhaust system, generating set noises are almost inaudible. For optimal noise reduction, the sea water outlet from the exhaust/water separator (centre outlet on the unit) should run to the through-hull outlet along the shortest possible path. The sea water outlet should be installed below the water level to eliminate noisy splashing of the effluent sea water.

The through-hull outlet for the exhaust fumes should not direct the fumes directly toward the water surface as this will cause excessive noise (ref. to fig. 10).



Do not direct the outlet directly toward the water surface.

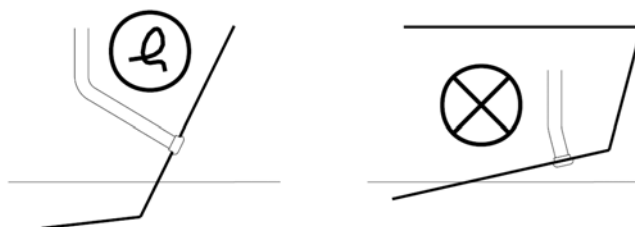


Fig 10

#### 1.4.4 Digital Diesel Control system (12 Volt)

##### 1 DIGITAL DIESEL CONTROL SYSTEM

The electrical control system is standard in 12 Volt with negative earth. Non- earth return is available as an option for aluminium vessels to prevent corrosion. All electrical wiring has been prepared on the generating set to the control panel prior to despatch from the factory. The engine is controlled by a very advanced microprocessor based system: Digital Diesel Control.

The "black box" containing the microprocessor is located on top of the alternator.

A local control panel is on the generating set.

##### Remote control

A remote control panel also containing a microprocessor is in the delivery. A 15 m intermediate 8-pole communication cable is in the standard supply too. If necessary an optional longer (max 30 m) intermediate cable can be connected if the standard length does not suit the required distance. When a longer distance than 30 m is required, consult the Mastervolt service department for advice. Refer to fig. 11.

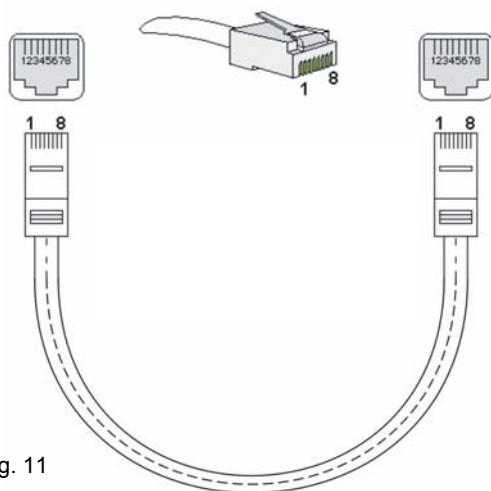


Fig. 11

One can mount the control panel after drilling a hole in the dashboard using the plastic cover. Refer to the dimensional drawing in paragraph 3.5. The panel without the plastic cover fits the Mastervision modular panel system.

More remote control panels (slave panels) can be put in parallel by using the modular connectors on the back of the units. As a slave one can use the same panel offering all functions again. It is also possible to use an old or new type slave panel only to start and stop the generator.

Old type remote panels and system panels can be connected by means of the green connector.

Pay attention to the colour codes as indicated in fig. 12 when fitting cable to the green connector. Some software versions in old system panels (supplied before may 2004) could conflict with the software in the DDC and an up-date of the software of the system panel could be necessary. When this is the case consult to the Mastervolt service department for advice.

When using the factory settings, installation is very simple: just plug the remote cable into the remote and the generator is ready to use. Refer to fig. 12.

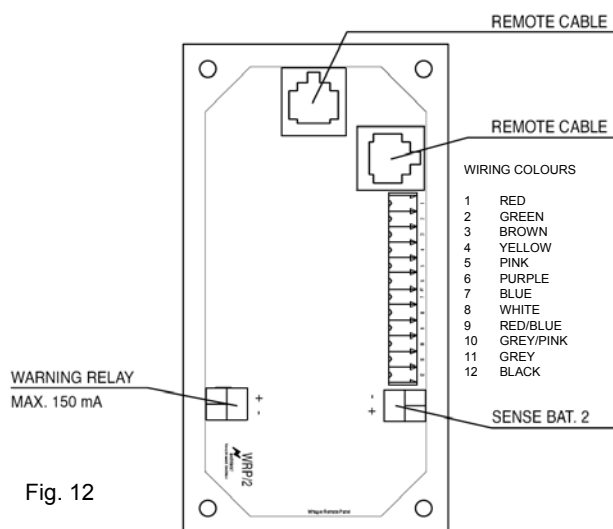


Fig. 12

##### Acoustic alarm or warning lamp

One can connect an external max.150 mA relay to generate an acoustic warning or applying a warning lamp etc. Be aware of polarity as some relays has a diode inside and should be connected plus to plus en minus to minus as indicated. Refer to fig. 12.

##### Automatic start/stop

**Mastervolt cannot be held responsible for damage caused by the unattended running generator using the auto-start/stop mode or interval mode.**

**Using the auto-start/stop (interval) mode the generator can start unexpectedly. When working on the electrical system, the 3 Amp fuse must be removed from the control panel and the battery plus cable must be removed from the battery.**

The Mastervolt Digital Diesel Control system offers several options for automatic starting and stopping.

Access to this menu and other menus could be blocked. For blocking and setting up this options refer to the APPENDIX of the DDC users manual.

One of these options is to monitor a second battery (Not being the starter battery) to start the generator automatically when the voltage of this battery drops below a certain setting.

Other names for this second battery are "auxiliary battery", "service battery", "users battery" or "consumers battery". We will refer to this battery as "the second battery"(BAT2). In some menus the starter battery could be indicated as "the first battery" (BAT1).

A sense wire to monitor the second battery should be connected (Attention polarity!) to the connector on the back of the remote panel. Refer to fig. 12. The sense wires must be connected directly on the second battery before a main switch and be protected by a 3 Amps fuse.

(Monitoring the generator starter battery does not require an extra sense connection)

#### Settings

When one want to apply other settings than the factory settings refer to the DDC users manual, especially to the APPENDIX.

## 2 STARTER BATTERY

For starting, the Whisper 3,5 requires a battery with a capacity of at least 55 Ah. The generating set can be connected with the main engine battery or have its own battery.

We strongly recommend the use of a separate battery for the generating set and to keep the wiring system for the propulsion engine and the domestic DC supply system completely separate and individually connected to separate batteries.

However, the negative of all the batteries on the vessel should be interconnected (when on earth) to avoid difference in the voltage level of the earth on different places causing trouble to electronic devices which might be in the system.

The above recommendation is not valid for ships having the starter battery of the propulsion engine or other auxiliary equipment positive grounded. When this is the case an expert should be consulted.

A battery switch may be used.

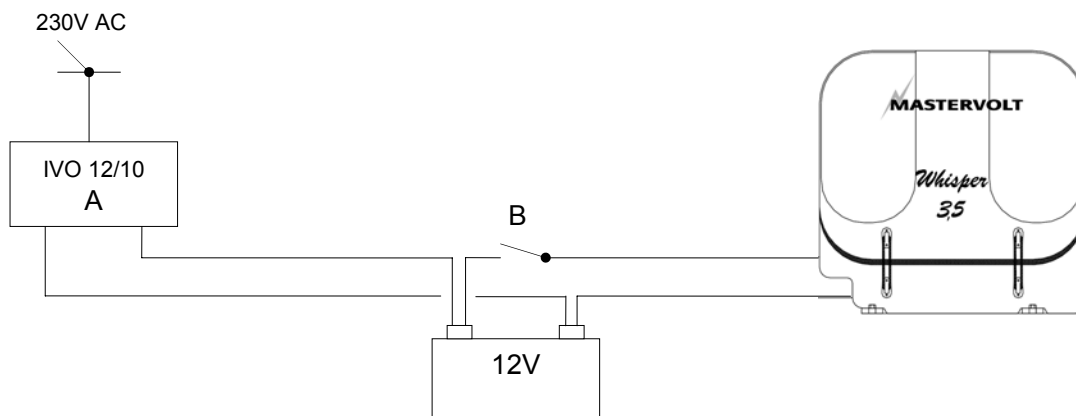
The starter battery is charged by the standard internal charger in the alternator. An additional battery charger will help to keep the battery in good condition when the generating set is not used. A battery charger is not included in the standard supply. A high efficiency battery charging unit can be ordered from Mastervolt which is able to charge both the ship's main battery and the starter battery. Also a small charger can be used to charge the starter battery only, such as the IVO SMART 12/10.

## 3 OTHER RECOMMENDATIONS AND WARNINGS

The battery should be secured for seagoing conditions and the terminals should be insulated. For extra safety the battery can be enclosed in a wooden, plastic, Fiberglass etc. (non metal) box. Even when the earth return system is applied a negative battery cable should be used and the vessel should not to be used as a conductor.

In the negative battery cable a 250 Amp starter battery switch could be applied to switch off the battery. The battery cables are supplied in a standard length of 1.5 m, if longer cables are required a larger cross sectional area should be considered to compensate for voltage reduction.

When two batteries are used in series to provide a 24 Volt supply system, never take off 12 Volt (starting) power from one of these batteries. This will result in



severe damage to the batteries within a short time.  
Disconnect the battery leads if electrical welding is to be carried out, otherwise damage will be caused to the diodes of the alternator.



As explosive hydrogen gases are discharged during charging, the battery should be located in a well ventilated room. Ensure that the supplied battery cable connectors are properly fitted and never remove during or shortly after charging as sparking can occur, which may ignite the hydrogen gasses.

#### 1.4.5 AC power system (230 Volt)



Before working (installation) on the system read the sections on safety in the users manual.

Be sure that all electrical installations (including all safety systems) comply with all required regulations of the local authorities. All electrical safety/shutdown and circuit breaking systems have to be installed onboard as the generating set itself cannot be equipped with such equipment for every possible variation.

The vessel's power supply system should be suitable and safe for the AC voltage which is applied and the power that will be generated. Special attention has to be paid on dividing the system in branches which are fused individually.

It is absolutely essential that each and every circuit in the on-board electrical system is properly installed by a qualified electrician.

#### 1 FUSE

An input fuse (from the generating set to the system) should be installed to protect the installed electrical system. The fuse should be sized such that the rated generating set current is not exceeded by more than 15%.

For the Whisper 3,5 the maximum single phase current is 13A for 230V or 25A for 120V. The fuses must be of the slow reacting type. For electrical motors connected to the system, a motor protection switch must be installed.

#### 2 GROUNDING

The AC alternator windings are not grounded. Measures against earth insulation failures are often subject to local regulations. The housing of the alternator and all other metal parts are grounded. For safety reasons connect the main ships ground to

negative point of the generating set start battery. When an ungrounded return DC system or positive grounded DC system is applied the battery negative should not be connected to the main ships ground.

To make a connection between "neutral" and "ground" could be necessary as part of a specific insulation failure protection system.

Small pleasure craft in Europe is submitted to The Recreational Craft Directive 94/25/EC. The guidelines of this directive refer to (ISO 13297).

When the installation comply to this standard the "neutral" and "ground" should be connected on the generating set by connecting the blue (neutral) wire with the terminal on which the yellow/green wire is connected. (Refer to page 53)

#### Warnings:



In all situations the transfer switches between shore, inverter and generator should switch both neutral and L1. Of course this is the case when using a Mastervolt Masterswitch.

Be aware that insulation protection systems can be different for different applications and even within the ship there could be different standards for different spaces. We did refer to the Recreational Craft Directive that applies to pleasure craft up to 24 m of length. Sometimes one has to comply with other standards such as the rules of certification societies like Lloyds Register of Shipping or Veritas, regulations for the protection of personal, building legislation, etc. It is of the greatest importance to have expert advice on this issue.

#### 3 CABLE

For the power cable we recommend the use of 3 wire oil resistant cable with a cross sectional area of 2.5 mm<sup>2</sup> for 230V. One wire for earth is included. For very long cables it is recommended to apply cables with a larger cross section than the mentioned above.

#### 4 TRANSFER SWITCH

A power source selector switch must be installed between the generating set and the ship's electrical supply system. This switch must ensure that all AC consumers can be switched off at once. This switch should also be installed to keep the generating set and shore (grid) power systems separate.

Transfer switches - to switch over from shore to ship or from generating set to inverter - should be well designed to switch over all wires including neutral (and not only phases or line) and there should be provisions with the aid of timers to prevent relays from chattering.

Mastervolt advises the installation of a MASTERSWITCH as the power source selector. This works automatically when the generating set is not running the input remains in the shore position and as soon as the generating set is running the

MASTERSWITCH switches automatically after 10 seconds delay time over to the generating set position.

## 2 INSTALLATION SPECIFICATIONS

### 2.1 WHISPER 3,5 INSTALLATION TABLE

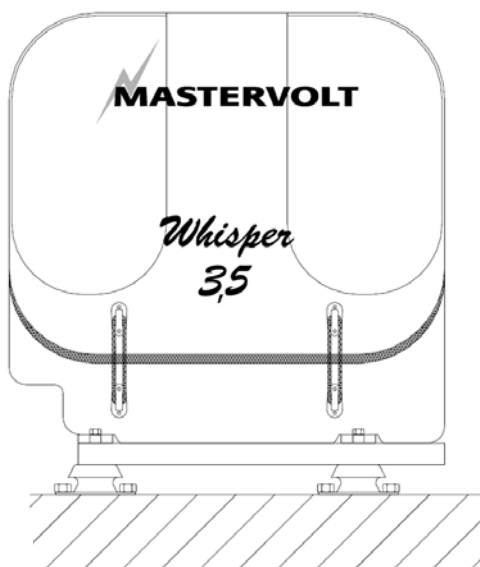


Fig. 12

- 1 install a steel foundation plate between ship's hull and generating set, with 4 shock mounts (ref. to fig. 12) 'foundation plate'.
- 2 Mount the generating set directly to the foundation plate.
- 3 Connect the (sea) water inlet to the strainer.
- 4 Connect exhaust system.
- 5 Connect a siphon breaker or 'air vent' into the cooling circuit, if necessary.
- 6 Connect 'fuel supply line' to the water separator/ fuel filter.
- 7 Connect 'fuel return line' to the fuel tank.
- 8 Connect remote panel (just plug in).

- 9 Connect the AC cable from the AC box to the power source selector or MASTERSWITCH.
- 10 Connect plus and minus from the 12V starter battery to the battery cables.
- 11 Install a Mastervolt battery charger. (optional)

### 2.2 COMMISSION TABLE

- 1 Check if a siphon breaker (air vent) is necessary and has been installed and that the drain is without bents and air can flow in freely.
- 2 Open the seawater inlet valve and check all water connections. Check if the strainer is installed above the seawater level.
- 3 Check if the exhaust system is properly installed. Also check the minimum required height of 600 mm above sea level of the exhaust loop (goose neck). Check length of exhaust hose, diameter of exhaust hose, position of the waterlock, maximum lift.
- 4 Open the seawater outlet valve and check all water connections.
- 5 Check the AC cables and the grounding.
- 6 Check if an AC breaker is installed before or after the power source selector. When there is only a circuit breaker, use it to disconnect the generating set from the grid.
- 7 Check all DC connections, check if the battery switch/ circuit breaker is closed.
- 8 Open the fuel valve and bleed the fuel system. Ensure there is sufficient fuel. The Whispers are self bleeding. To check the well functioning release the bleed screw on the high pressure fuel pump. Push the start button activating the electric system and activating the fuel pump. When more time is needed

- to bleed, push "start" and hold on the local control panel (so not on the remote panel). Hold as long as necessary to bleed the system. Retighten the bleed screw when no further air bubbles are expelled. Check if there are no air leaks in the fuel supply line and check if the lift of the fuel is less than 1 meter. Check if there is no air in the water fuel separator.
- 9 Check if the air intake in the canopy is not blocked.
  - 10 Check the oil level and color of the oil.
  - 11 Start the engine by pushing the start button.
  - 12 Check when the generating set is running, the delay of 3 seconds in the power source selector transfer.
  - 13 Check voltage and frequency under 'no load' conditions.
  - 14 Check voltage and frequency under 'full load' conditions.
  - 15 Check if the battery charger of the generating set is working (max. 14.2 Volt).
  - 16 Close the sound shield and check the noise level.
  - 17 Stop the generating set and check the engine again for leakages of oil, fuel or water.
- Installation checklist available on our website: [www.mastervolt.com](http://www.mastervolt.com).  
 Commissioning form available on our website: [www.mastervolt.com](http://www.mastervolt.com).

## 2.3 INSTALLATION SPECIFICATIONS WHISPER 3,5

### TECHNICAL DATA

Article no	50900500
Dimensions wxdxh.	505x400x500 mm
Weight	97 kg including sound shield
Max. operation angle	25°
Remote panel 15 m cable	Digital Diesel Control System
Battery capacity min.	12V, 55 Ah
Fuel consumption	0,7-1,5 l/hr, load dependent
Lift fuel pump	electric driven 12 V DC, max. lift 1 m
Cooling	indirect cooling
Cooling pump	raw water Mastervolt self priming impeller pump, PTO driven, type K
Minimum water supply	8-10 l/min
Crank case lube oil capacity	1.3 litre + 0.2 oil cooler, total 1.5 litre
Alternator	synchronous brushless, maintenance free water cooled
Voltage regulation	capacitor
Output power	230V 50 Hz 3,6 KVA cos phi = 0,8; 3 KVA = 3 kWatt cos phi = 1
Battery charger	additional 12V winding including regulator (6 Amps)



## 2.4 SPECIFICATION OF THE ACCESSORIES

Water scoop	min. 1/2" (recommended 3/4")
Inlet valve	min. 1/2" in 12.5 mm out (recommended 3/4" in 12.5 mm out)
Water strainer	12.5 mm in, 12.5 mm out
Air vent	12.5 mm
Inlet suction hose	12.5 mm
Fuel filter/water separator	30 micron
Fuel inlet and return	8 mm
Exhaust hose in/out	Ø 40 mm
Water lock	Ø 40 mm
Water/gas separator	Ø 40 mm
Anti shock mounts	art. nr. 50230552
Foundation plate	min. 44 kg
Battery charger (optional)	IVO SMART 12/10; 12V / 10 Amps

## 2.5 INSTALLATION MATERIALS WHISPER 3,5

### WATER INLET KIT 13 mm

no	qty	article no	description	dimensions
1	1	50230052	intake strainer	3/4
2	1	50230042	lever operated ball valve FF	3/4
3	1	50221016	male hose connection	3/4x13
4	3	50221521	hose clamps	12-20 mm
5	3	50220055	outboard cooling water hose	12x18,2 mm
6	2	50221003	male hose connection	1/2x13
7	1	50230060	nickel plated brass intake strainer	1/2
8	1	50230067	mounting bracket waters trainer	
<b>TOTAL</b>		<b>50230201</b>	<b>WATER INLET KIT 13 mm</b>	

### AIR VENT KIT 13 mm

no	qty	article no	description	dimensions
11	2	50221260	hose connector	13 mm
4	7	50221521	hose clamps	12-20 mm
12	3	50220057	warm cooling water hose	13x20 mm
13	2	50221082	elbow 90 ° m/f	1/2
6	2	50221003	male hose connection	1/2x13
14	1	50221042	TEE fittings	1/2
15	1	50230001	siphon breaker valve	1/2
16	1	50221001	male hose connection	3/8x13
<b>TOTAL</b>		<b>50230202</b>	<b>AIR VENT KIT 13 mm</b>	

### EXHAUST KIT 40 mm

no	qty	article no	description	dimensions
21	1	50221481	hose connector	40 mm
22	5	50221506	hose clamps	44-56 mm
23	3	50220033	marine exhaust hose	40 mm
24	1	50230071	waterlock	40 mm
25	1	50230038	brass through hull fitting hose connection	1 1/4x40
<b>TOTAL</b>		<b>50230203</b>	<b>EXHAUST KIT 40 mm</b>	

**OPTIONAL INSTALLATION MATERIALS**

no	qty	article no	description	dimensions
21A		50201830	elbow 90° adapter exhaust hose	40 mm

**WATER SEPERATOR KIT 40 mm**

no	qty	article no	description	dimensions
22	4	50221506	hose clamps	44-56 mm
23	2.5	50220033	marine exhaust hose	40 mm
31	1	50221015	male hose connection	1 1/4 x 40
32	1	50230044	lever operated ball valve FF	1 1/4
33	1	50230033	brass through hull fitting	1/1/4x70
34	1	50230080	water exhaust fumes separator	40-40-40
<b>TOTAL</b>		<b>50230204</b>	<b>WATER SEPERATOR KIT 40 mm</b>	

**FUEL KIT**

no	qty	article no	description	dimensions
41	2	50221203	straight coupling	8 mm
42	1	50230090	fuel strainer/water separator	M14x1,5 mm
43	2	50221618	parallel male stud coupling	M14 - 8 mm
44	2	50221644	reducing male nipple	M14-M16 60 gr.
45	2	50221615	hose connection	8 mm
46	2	50221616	nut coupling	M16x1,5 mm
47	1	50221352	nipple hose pipe	8 mm
<b>TOTAL</b>		<b>50230205</b>	<b>FUEL KIT</b>	

**OPTIONAL INSTALLATION MATERIALS**

no	qty	article no	description	dimensions
48	1	50222020	copper fuel pipe	6x8 mm
49	1	50220063	fuel hose	8x16 mm

**BATTERY INSTALLATION KIT 55 Ah**

no	qty	article no	description	dimensions
51	1	64000550	battery 55Ah	
52	1	43011030	battery charger IVO SMART 12/10	
53	1	68060100	battery terminal +	M8
54	1	68060200	battery terminal –	M8
55	1	68456902	isolation cap	
56	1	68456914	isolation cap	
57	1	79009005	battery switch	250 Amp
58	4	6503001608	cable connectors	M8x16
<b>TOTAL</b>		<b>50230206</b>	<b>BATTERY INSTALLATION KIT 55 Ah</b>	

**BASE PLATE KIT**

no	qty	article no	description	dimensions
61	4	50230052	rubber mountings	M12
62	1	50230012	base plate Whisper 3,5	
63	1	50230011	fastener kit base plate	
<b>TOTAL</b>		<b>50230207</b>	<b>BASE PLATE KIT</b>	

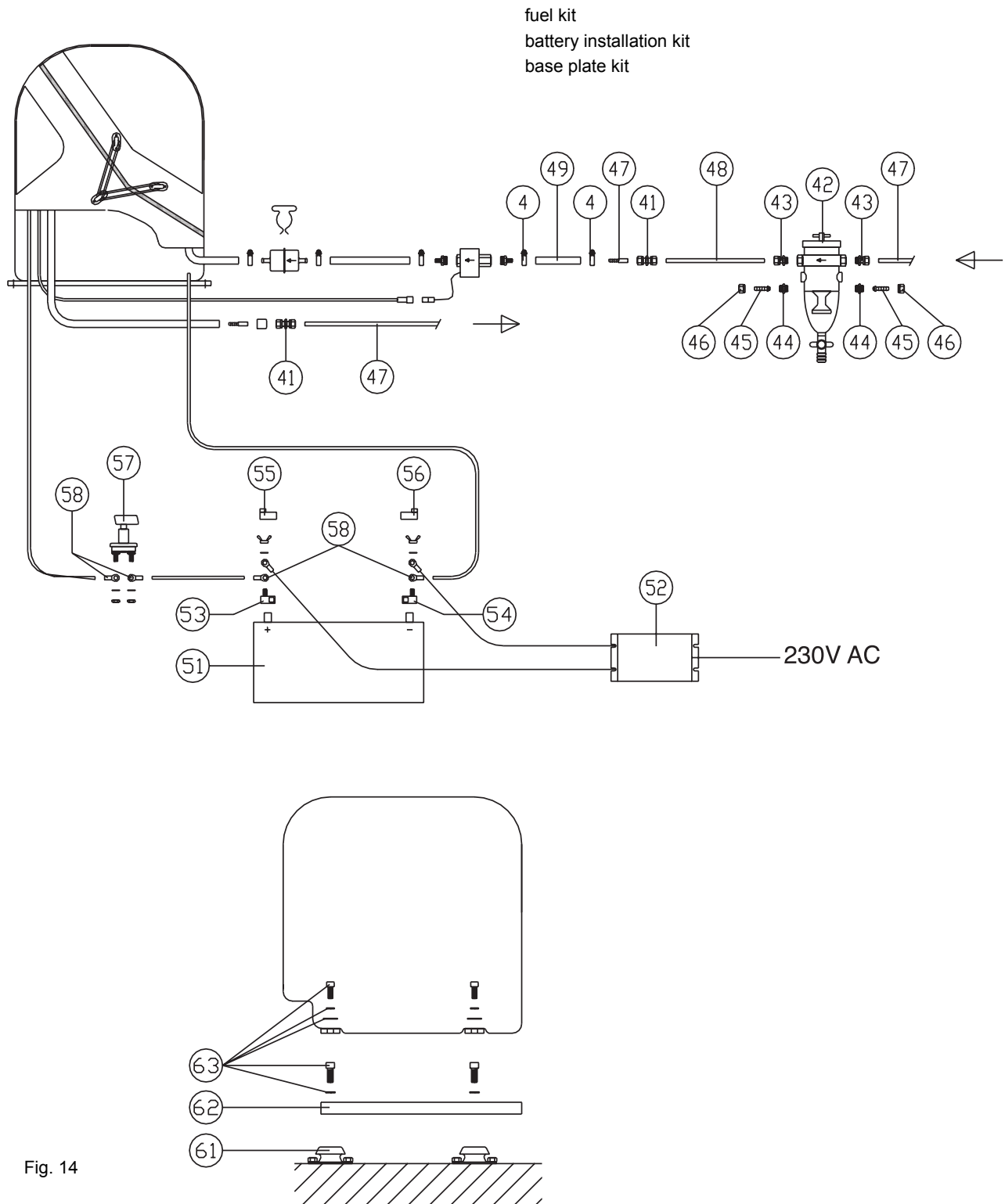
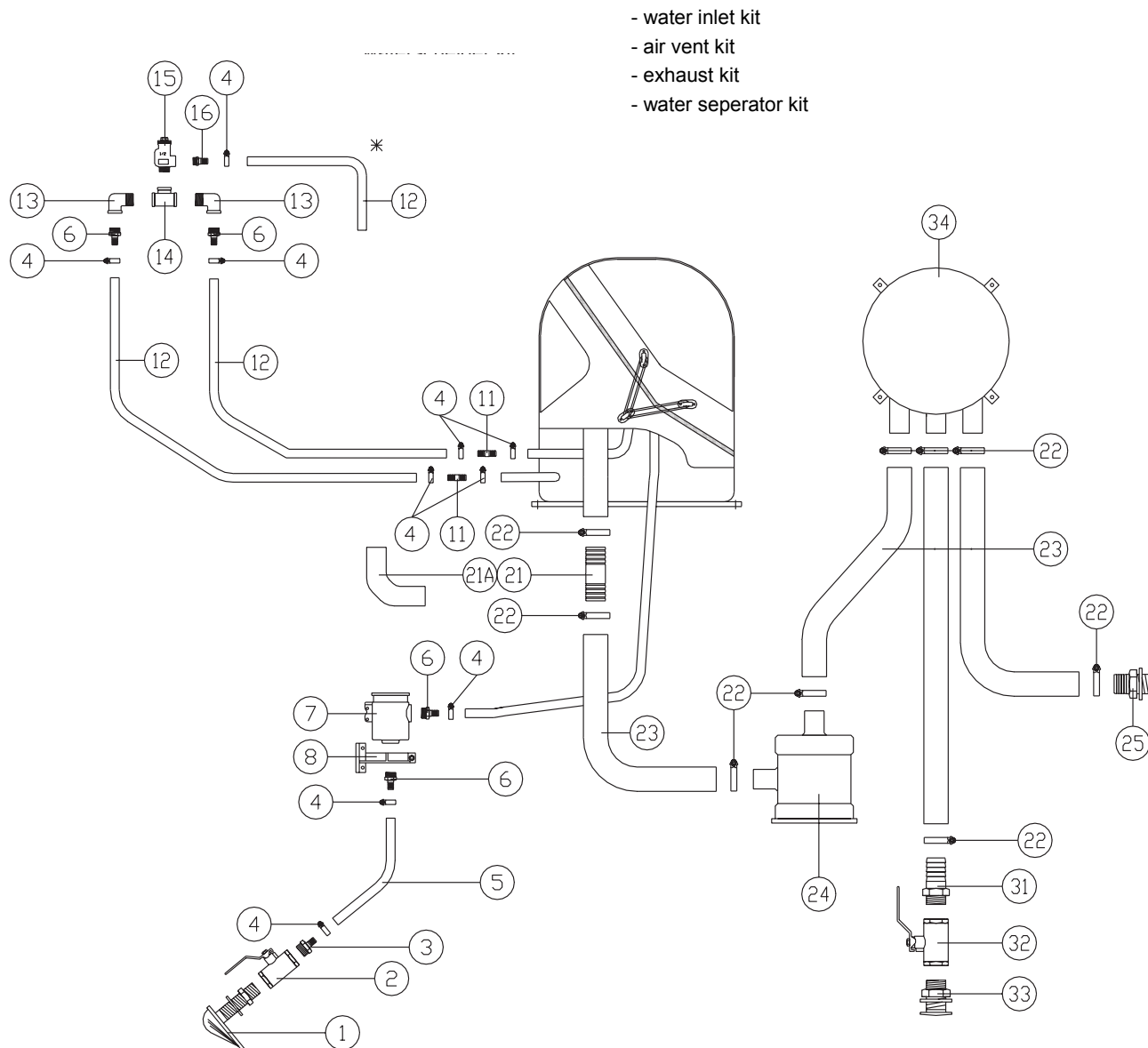


Fig. 14



\* Hose drain should go downwards. Water must flow out freely. Refer to installation manual for proper installation of the air vent kit.  
Faulty installation can cause serious damage.

Fig. 15



### 3.2 WIRING CODES AND COLOURS

	Cable code number	colour	cross section
battery > starter motor		red	16 mm <sup>2</sup>
starter motor > DCC	1	red	6 mm <sup>2</sup>
starter motor > LCP	13	red	2,5 mm <sup>2</sup>
battery > ground		black	16 mm <sup>2</sup>
ground > LCP ground (GND)	2	black	2,5 mm <sup>2</sup>
DDC > glow plug	3	brown	4 mm <sup>2</sup>
DDC > starter solenoid	4	yellow	2,5 mm <sup>2</sup>
LCP > fuel lift pump +	5	brown	1,5 mm <sup>2</sup>
LCP > fuel lift pump –	15	black	1,5 mm <sup>2</sup>
DDC > LCD	5	grey	1,5 mm <sup>2</sup>
DDC > oil pressure switch	6	purple	1 mm <sup>2</sup>
LCP > oil pressure switch	6	purple/black	1 mm <sup>2</sup>
DDC > oil temperature switch	7	blue	1 mm <sup>2</sup>
LCP > oil temperature switch	7	blue/black	1 mm <sup>2</sup>
DDC > exhaust temperature switch	8	blue/green	1 mm <sup>2</sup>
LCP > exhaust temperature switch	8	blue/rose	1 mm <sup>2</sup>
DDC > fuel valve solenoid	9	green	1,5 mm <sup>2</sup>
DDC > stop solenoid	20	pink	2,5 mm <sup>2</sup>
DDC > current measuring transformer	11	black	1 mm <sup>2</sup>
DDC > current measuring transformer	11	red	1 mm <sup>2</sup>
DDC > LCP	19	orange	1,5 mm <sup>2</sup>
DDC > LCP	12	black	1,5 mm <sup>2</sup>
DDC > LCP	14	red	1,5 mm <sup>2</sup>
DDC > LCP	16	red/green	1,5 mm <sup>2</sup>
DDC > generator AC output	33	brown	1 mm <sup>2</sup>
DDC > generator AC output	33	blue	1 mm <sup>2</sup>
LCP > battery charger winding generator	10	red	1 mm <sup>2</sup>
LCP > battery charger winding generator	10	red	1 mm <sup>2</sup>

DDC=Digital Diesel Control Unit

LCP=Local Control Panel

### 3.3 AC WIRING DIAGRAM 230V / 50HZ

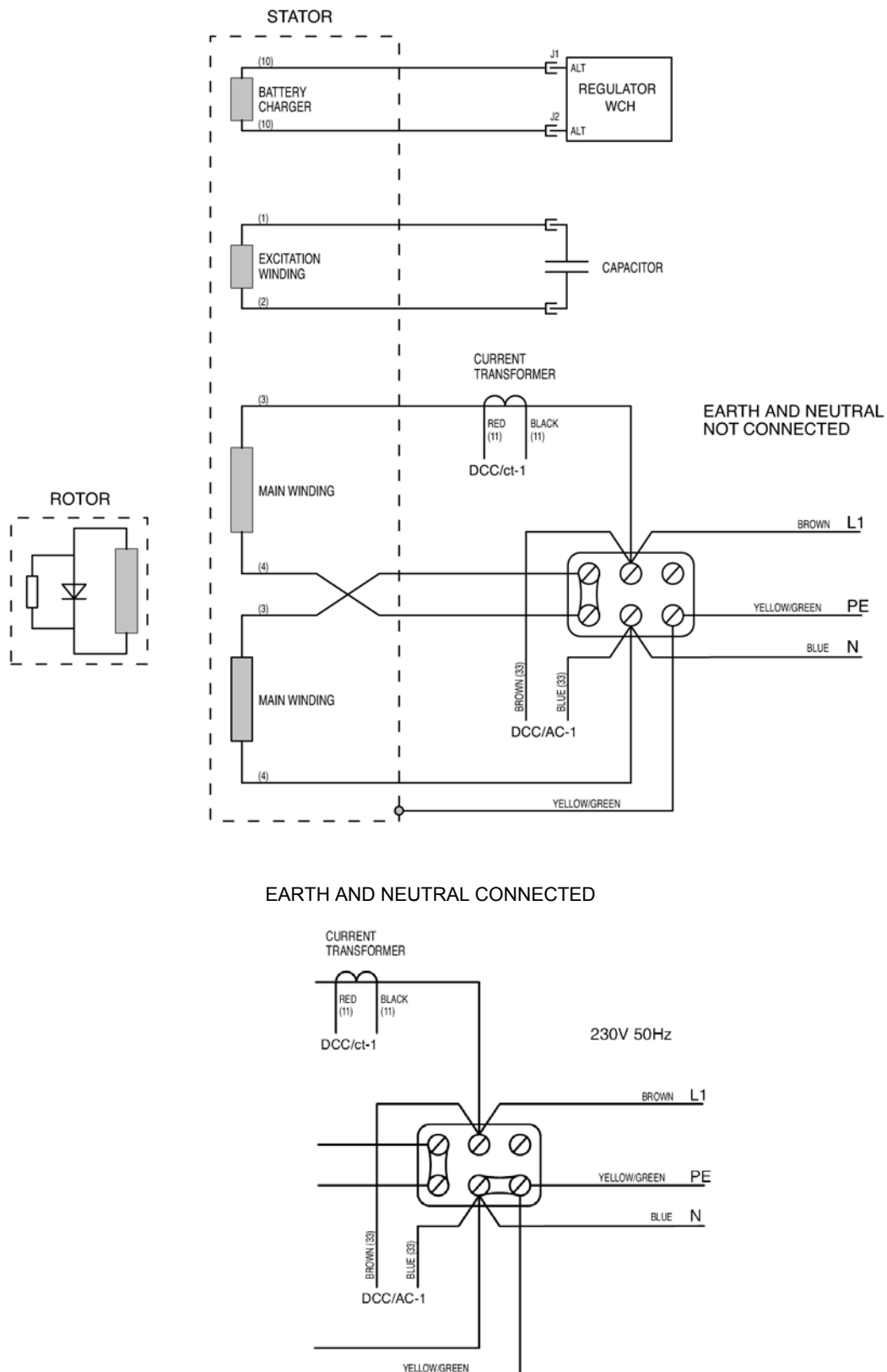
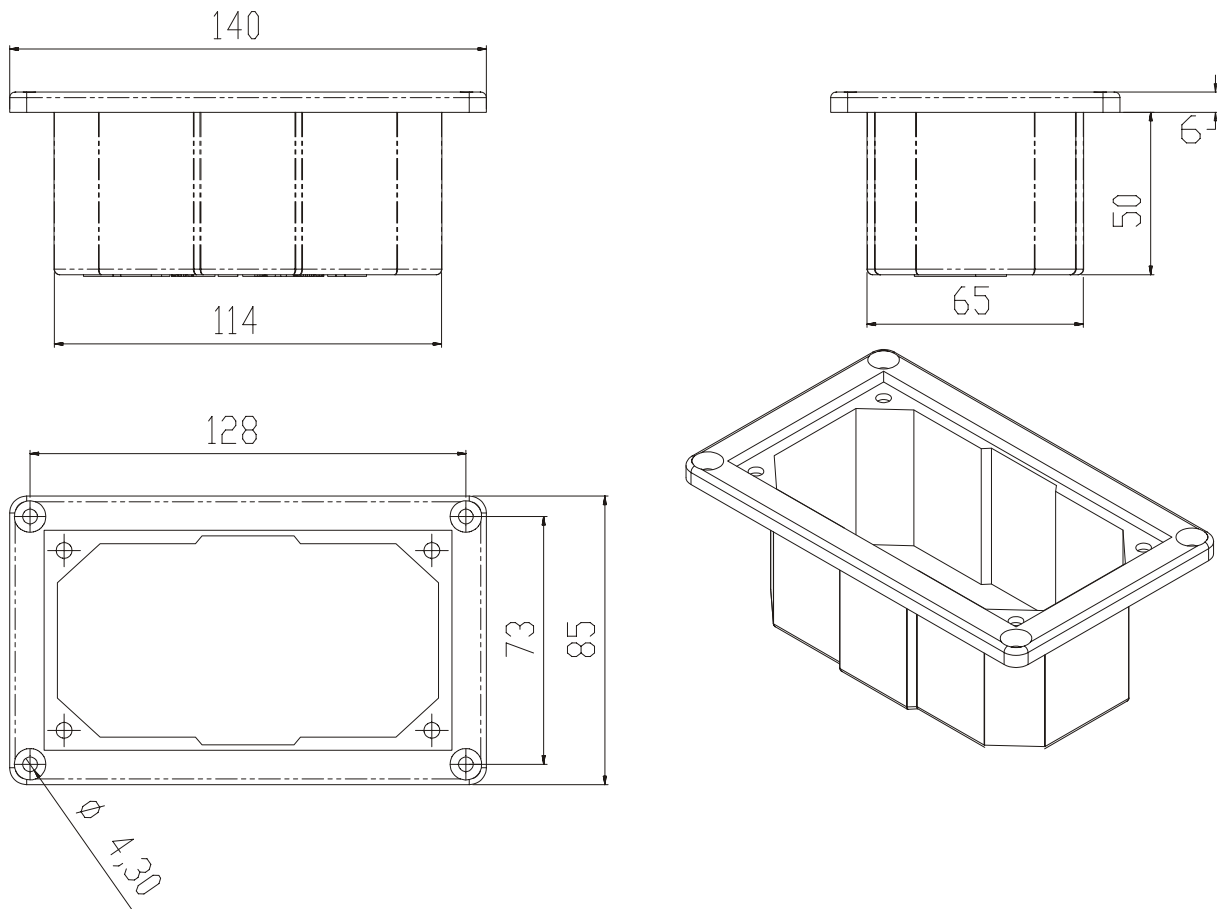


Fig. 17

### 3.4 REMOTE CONTROL PANEL DRAWINGS



The remote panel comes in a carton that can be used as a template to drill the mounting hole.

Fig. 18



### 3.5 WHISPER 3,5 DIMENSIONS

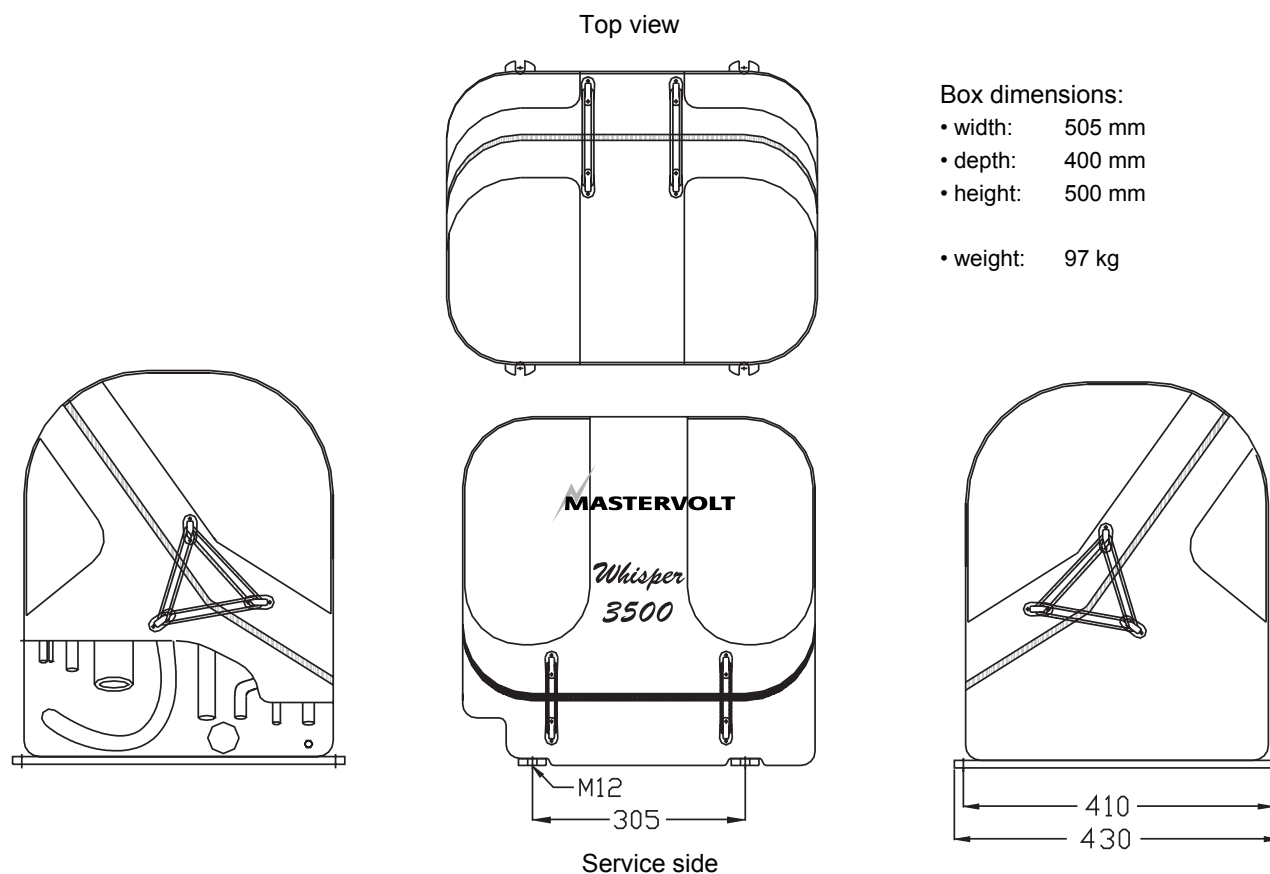


Fig. 19

#### CONNECTIONS

- exhaust: 40 mm
- fuel hose: 8 mm
- sea water in: 13 mm
- air vent connection: 13 mm
- battery +: 16 mm<sup>2</sup> red (included)
- battery -: 16 mm<sup>2</sup> red (included)
- cables: 50 Hz : 3x 2.5 mm<sup>2</sup> / 5 meter (included)
- remote control: 15 meter 8 wire twisted communication cable (included)







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