

FOREWORD

It is the express intention of Moonraker Marine Limited that every Owner of a Moonraker Motor Yacht shall be as satisfied with his purchase as is humanly possible.

In pursuit of that intention the following pages are provided as an owner's manual including text and diagrams and drawings where applicable, to help you to have firstly, an understanding of the craft in general, and secondly, and perhaps more important, the Factory recommendations on how it should be best operated to give you, the owner, the greatest amount of satisfaction and trouble free service that can be obtained.

Your Moonraker 36 has been delivered to you after several years of design and development on the boat itself, and the requisite pre-delivery attention to your particular craft. It cannot be too strongly stressed however, that the well being of the Craft is now largely dependent upon how you look after it, bearing in mind that any boat is put into the most alienable of all elements by its very nature. The content of this manual has been kept as simple as possible in terms of technical data and does contain a number of vital actions, which must be taken on the part of the owner if the full performance is to be attained of which this craft is capable.

In conclusion, the Factory Service Department is always available both with advice and practical help for the purpose of ensuring an owner's maximum pleasure and enjoyment from the ownership of a Moonraker Class Motor Yacht.

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SECTION 2.

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Item 1.

Filtration in a marine engine is divided into two groups, that which serves the lubrication systems of the engines, and that which serves the air intake. The turbocharger air screen and filter are most important in keeping even small particles, which are suspended in the air out of the engine. These must be cleaned in accordance to the maintenance schedule to assure no particles enter the engine. However, minute particles of sometimes, less than one thousandth of an inch, do by-pass the filters and find their way ultimately into the lubrications systems. Were this allowed to circulate it would embed itself in the soft bearing surfaces that are employed throughout the engines. Thus the importance of the lubrications filter system can be seen. Modern lubricating oils were designed to suspend and isolate such particles and the lubricating filter is capable of retaining these particles. However, as time goes on, the efficiency of the lubricating filter is impaired due to saturation. Therefore, filter-changing recommendations should be strictly observed.

With regard to the above recommendations, the oil filters are changed in the following way.

Unscrew the bolt at the bottom of the filter bowl and lower the filter bowl clear, keeping it vertical to ensure as little oil as possible is spilled. Hold the complete assembly above an oil catch tray invert and remove the element. Thoroughly clean the filter bowl ensuring no particles remain there before proceeding further, ensure that the rubber sealing ring is in very good condition and still very flexible. If not, replace with a new joint supplied with the new filter. Having done this, place the new element into the filter bowl and re-fit complete assembly to the filter bowl head. Care should be taken not to rupture the rubber-sealing ring. Once this has been carried out the very next thing that must be done, and this is most important, that the; engine oil level should be checked. It is suggested that after the first 50 hours, the securing bolt is checked for tightness.

When it becomes necessary to renew the oil it should be done in the following way. Drain the used oil from the engine by means of either the drain plugs or suction pump provided. This operation should be carried out twice, with an interval of at least 10 minutes, to ensure complete drainage of old oil. Replace the drain plugs securely and refill with the recommended lubricant. The engine should then be run for a few minutes to ensure the complete circulation and then the level re-checked. It should be noted that over filling is almost as serious as under filling the engine sump.

Item 2.

The importance of maintaining a lubricating film to all bearing surfaces.

Lubricating oil performs four vital functions in an engine.

- 1 . It reduces friction by providing a film between bearing surfaces.

2. It is valuable for picking up small particles and carrying them to the oil filter where they are taken out of the circulation.

3. It is most important as the general engine coolant.

4. It acts as a complete sealant of rings to pistons, and cylinder walls.

If the lubricating oil performance is impaired on any of these counts the engine will suffer inevitably. Regular and thorough changing of oil will eliminate any such possibilities (Refer to maintenance schedules).

Item 3.Regulating the engines' fuel.

For the maximum efficiency of the engine, the fuel oil must be delivered to the combustion chambers at exactly the right time and in precisely the right quantities. The result of deviating for the manufacturer's recommended settings throughout the fuel system is poor performance and increased long term maintenance expense.

Efficient combustion will only be achieved if the precisely calculated air fuel ratios are maintained. Departures from the Manufacturer's recommendations will have serious effects ultimately.

Maintenance procedure as regards Item 3.

There are three accessible fuel filters in the fuel system. Fuel filtration is very important since the fuel system components are manufactured to incredibly fine tolerances. An illustration of this is the fact that certain fuel components cannot be assembled if they are at differing temperatures. The need for absolute cleanliness of fuel is therefore obvious.

Access to the primary filter is gained by removing the lower thumb screw and releasing the filter bowl, this reveals a rubber sealing ring which when removed, releases the brass gauze filter which can be cleaned by compressed air or rinsing in some cleansing fluid. When the bowl is replaced, it is suggested that it be topped up with clean fuel to assist fuel system priming. Access to the secondary filter in the cam shaft driven fuel lift pump is through the top cover of the fuel lift pump which is removed by removing a single bolt, taking out a rubber sealing ring and thence removing the brass gauze filter.

This is cleaned in the same way as the primary gauze filter. The final micro filter element, it should be noted, is capable of removing particles of dirt from the fuel system, which are in fact, invisible to the naked eye. This should be changed as scheduled in the following way.

The central retaining bolt is removed and the base plate and canister filter element are removed. The filter head and bottom plates should then be cleaned before the new canister filter is fitted. After this operation the fuel systems priming will become necessary and should be carried out as recommended. No maintenance further to this should be necessary in the fuel system, however should the owner have the facilities for further maintenance of the fuel system he should refer to the maintenance manual and observe all its recommendations strictly. As previously stated, the fuel pump is a very accurate piece of equipment and although robust, if interfered with, will seriously effect engine performance.

IMPORTANT.

PARTICULARLY WITH THE FUEL SYSTEM, BUT ALSO APPLYING GENERALLY TO THE REST OF THE ENGINE, OVER TIGHTENING CAN CAUSE SERIOUS DAMAGE TO THE RELEVANT COMPONENTS.

Item 4.

Guarding against corrosion.

It is quite obvious that a marine engine comes into closer contact with raw elements than almost any other engine installation in the world. It is therefore, far more susceptible to salt water and aerial corrosions. The most effective form of prevention of this problem is absolute cleanliness both inside and outside the engines. As regards the outside of the engine all that needs to be done is first, that the engine should be made clean and lightly oiled. From the inside of the fresh water system the most effective form of prevention is some recommended coolant inhibitors. This treatment will reduce maintenance expenditure and also has the following advantages. Experience has shown us that no matter who gets on your boat, they will express an interest in the engine bay, the condition of the engine bay attributes significantly to a general opinion of the boat.

Item 6. Allowing the engine to breathe.

A marine engine spends its working life in a confined area. Therefore, every effort must be made to assist it's breathing. This includes not only the turbocharger intakes screen and filter but also the complete exhaust run and also the fans, which supply and exhaust the engine bays. Inadequate engine breathing unfortunately, does not only impair engine efficiency but has the very serious side effect of incomplete combustion. This has the local but serious effect of reducing the effective lubricating capacity of the oil, and consequently piston life will suffer.

Since procedure has already been laid out for cleaning air screens of the turbocharger the only other form of maintenance is confined to, if fitted, the oil filter element. If this be the case, it must be remembered that the turbocharger filter does not incorporate a by-pass valve and therefore, must be kept absolutely clean. otherwise the turbocharger will be starved of lubricating oil. The filter can be changed as the engine oil filter but further to this, it must be bled. This is done by slackening the lubricating oil feed pipe union at the centre casing of the turbocharger, or the plug in the filter head casting if fitted. The engine should then be turned over on the battery, with the fuel control off.

I.E. Stop controls, until oil leaks from the unions, re-tighten the union and then start the engines.

Any maintenance further to this should only be carried out by the Owner if he is suitably equipped.

Further details of maintenance can be obtained from the Manufacturer's Manual.

Item 7.The importance of governing.

The engine of your boat has been designed to operate between precisely controlled limits. It is necessary that the manufacturer's recommendations; as regards these limits is maintained. Increasing revolutions per minute of an engine by changing the governor or changing, or alternating the governing settings, to allow the engine to exceed its rated r.p.m. leads to damage. It must also be remembered that diesel engines are made to very fine tolerances, and in particular, valve to piston clearances. The over-revving of an engine has often been known to cause the piston to strike the valve, causing serious damage to each.

Item 8.The importance of correcting troubles at an early stage.

An engine is made of many parts, each closely related to many other parts, each of which has its own function, and failure to perform that function places an additional strain on the other parts. As overloaded parts fail, they add to the overload on still others until the progressive failures put the engine out of commission.

Preventative maintenance is a series of simple checking, service and repair operations, intended to fore-stall progressive damage. Delaying a maintenance job that needs to be done is a reckless gamble. Very few engine failures occur which are not preceded by warning signs, that can be easily detected. If the maintenance schedule is strictly observed, all maintenance, even for a period of years, will remain within the scope of the average owner.

Item 9.

How to prepare a maintenance log.

It is necessary that a small amount of paper work be carried out to keep an accurate check on the maintenance as scheduled. It is valuable to have a written record of the maintenance you have carried out to assist you in retrospect when checking your maintenance schedules. This is also useful in the event of it ever becoming necessary to an Engineer who may be working on your boat.

We suggest that as certain parts of the maintenance schedules are carried out that these be entered in the Engineer's Log.

SECTION 3.

GEARBOX

The type of gearbox fitted to your Moonraker 36 is dependent upon the engine installation. They are hydraulic and transmit their power to the shaft through a heavy duty flexible coupling. All types of gearboxes are water cooled through the engine intake, and gearbox coolings should not be forgotten in the cooling system maintenance schedules.

Even though gearboxes differ in actual layout, the maintenance for each is more or less the same. Maintenance is confined to checking transmission fluid level and greasing the gearbox forward and reverse controls. The combined dipstick and plug for the first check is screwed into the gearbox casting, and can be identified by the fact that it has a square head. To check the transmission fluid level, the screw must be turned into the casting hand tight to ensure a true reading. The forward and reverse linkage on the gearbox should be smeared with grease to protect against atmospheric corrosion, which will make the controls stiff. Further to this, a visual check should be made of the control cables, and their terminals in accordance with the maintenance schedules.

SECTION 4.

SHIPS ELECTRICS.

The electrical system of your Moonraker 36 is of an advanced design, is ruggedly constructed, and is engineered to ensure maximum flexibility of performance.

The electrical systems diagrams and the master wiring diagram are enclosed with this manual.

A fundamental electrical system is devised with separate batteries for engine start facility and domestic supply. The system is so arranged with regard to its flexibility that should the domestic system run lower than is tolerable, a certain amount of the capacity available from the engine start system is available by turning the master control switch on the left hand side of the instrument console to its Number 2 position. This provides a stand-by domestic system whilst still providing the essential capability of starting the engine. All models are fitted with high rate alternator charging which, given the effect of running both engines, will ensure fast battery re-charge rate. State of battery indicators are provided to give indication at all times as to the amount of storage capacity in any of the particular systems.

In addition to the internal of the ships electrics, a shore support system is also standard equipment. This is provided with a suitable length of cable which, when plugged into any main shore supply point will charge the batteries at a high, or low rate, and which also has a by-pass feed providing full mains voltage on board for the application of domestic appliances, where necessary, . The shore support system is located in the engine bay and has three main controls listed.

- 1 The on/off switch.
2. The high or low charge rate switch, up for high, down for low.
3. The master fuse of the circuit breaker.

Assuming that the electrical capacity is in a reasonable state before mooring, on subsequent connection of the shore support system, the system will sustain the entire operation of ships electrics whilst she is moored and recharge the batteries at the same time. Whilst it is not possible to damage the shore support system or any of the electrics by starting or running the engines with the shore support system connected, it is not recommended.

All systems on the craft are individually coded, harnessed and fused. The master electrical distribution board is situated in the bottom of the main control console and is easily accessible through the hatch provided therein. All 12 volt models naturally run on a 12 volt system throughout but the 24 volt models (i.e. Perkins and Cummins) have a split system which is clearly marked as to its 12 and 24 volt systems. Visible failure fuses are clearly marked in individual banks and the failure of one circuit or item of the equipment will not interfere or de-rate the general electrical performance of the ships supply as a whole. From the foregoing and the accompanying systems and wiring diagrams, the fundamental layout of the ships wiring and its principal of operation are self explanatory. The following however, is meant to be a list of vital do's and dont's if the maximum performance is to be obtained from the ships electrical system.

1. At all times, make sure that the batteries are topped up with distilled water. For purposes of battery specific gravity values checks the following figures apply.

Full charge 1.280.

Half charge 1.250.

Low charge 1.200.

2. That the interconnections between them are tight and good and that the interconnection terminals are lightly greased. Make sure that after replenishment with distilled water the battery's tops are firmly replaced and the battery box cover as a whole is in position. The batteries are ventilated in the general from the ventilation system of the engine compartment.

3. Observe that whenever the craft is left at its moorings, the master switches are turned to the off position, thus completely disconnecting the batteries from the ship's supply.

4. On starting the engines, ensure that the red alternator warning light beside the relevant starter switch comes on when the ignition switch is first turned on but extinguishes itself at or about 7-800. r.p.m. once the engine has fired up, at the same time observe the relevant ammeter and ensure that no discharge is occurring on that particular engine. Because of the system employed it may be that the ammeters will not at any time show any substantial rate of charge but the important thing to note is that there is no discharge showing but a positive indication of some capacity. It may be in certain circumstances that the charging capacity may be high for short periods but unless this reaches its maximum charge rate, or is held at high rates for long periods of time then this should cause no concern.

5. In the event of power being available to start one engine only in a normal manner, the other engine being either sluggish in starting cycle or failing to turn it over altogether, hold down the "Solenoid" switch on the switch panel whilst engaging the starter of the inoperative engine. With the other engine running the second engine will immediately have 100% current for the operation of the starter motor and will therefore, fire up in the normal way and the starter solenoid switch must be released immediately this engine fires. The alternator warning light should be noted to extinguish itself at the same r.p.m. and a note taken of the ammeter reading at the same time.

6. The charging system between engines and ships domestic supply will from that time be completely automatic and no further attention need be paid to it, save in the event of any particular circuit, refer to the circuits diagrams enclosed and visually inspect the master distribution board having removed the access hatch in the control console. If it is found that a fuse has blown then this must be replaced. If the same failure occurs immediately or shortly after a fault in that particular circuit will obviously be suspect, and should be searched for in the usual manner, looking for the usual causes. I.E. Bad connections, moved and/or short of wires etc. If on a third attempt the same fuse blows again, the particular system should be left isolated until such time as it can receive special attention.

DO NOT ATTEMPT TO SUSTAIN ANY SYSTEM BY FITTING A HIGHER CAPACITY FUSE THAN IS FITTED AT THE FACTORY.

7. On boats where a Webasto oil fired central heating system is installed, it is desirable, owing to the high demand made during the start cycle of this particular equipment to have both engines running whilst the Webasto system is running through its start cycle. Starting instructions for the Webasto oil fired system are contained with this brochure, which are self explanatory. In brief however, once the starting cycle has been completed and the normal heating mode is in operation, together with a positive indication of the green light on the indicatory board, the engines may then be stopped.

8. When the shore support system is connected and selected to either high or low rated charge, it is desirable that the engines are not run.

9. Should for any reason (i.e. running in an exceptionally heavy sea way) the bilges become filled with water to an extent which is thought to have exceeded that of the battery box level, a full inspection should be carried out on the batteries immediately draining them if necessary. Partial immersion with the engines running and all systems functioning would result in the creation of chlorine gas, which is injurious to health, and for that reason alone, the electric bilge pump should be left running in the manual position at all times, if it is thought that water is being shipped due to heavy sea conditions. The boat is quite capable of dealing with heavy sea conditions, but it is particularly important that this section of ships management should not be neglected.

10. It should be borne in mind that if for any reason the ships electrical system is allowed to reach a low stage of charge it will take a correspondingly much greater time to bring it back up to its full capacity. For this purpose, the engines must be run or the shore support system connected for the maximum possible time, without any draw being placed on the ships electrical system, until such time as all systems are functioning absolutely normally. Any attempt to operate the craft with an abnormally low state of supply will result in voltage drop throughout the craft which will have injurious effect to most of the equipment fitted therein.

11. IMPORTANT.

REMEMBER THAT NO MATTER HOW GOOD AN ELECTRICAL DESIGN MAY BE ON A CRAFT OR HOW LARGE OR HOW SOPHISTICATED THE STORAGE SYSTEM MAY BE, THAT THE ULTIMATE DECIDING FACTORS IS THE OUTPUT OF THE ALTERNATORS. IT MUST ALSO BE REMEMBERED THAT EVEN THOUGH THE MOONRAKER'S STORAGE AND ELECTRICAL SYSTEM IS LARGE AND COMPREHENSIVE BY ANY STANDARDS IT CANNOT HOPE TO COMPETE WITH A NORMAL DOMESTIC SYSTEM UNLESS A DIESEL GENERATOR IS FITTED.

For this reason the sensible management of ships electrics must always be maintained using the very minimum compatible with requirement at that time. By all means use the lights when they have to be used, but turn them off when they are no longer needed. On boats equipped with Automatic pilot, radar, webasto central heating etc, which will require an exceptionally heavy draw then it may be necessary to ensure that whilst these items of equipment are in operation, to minimise the number of other systems which are in operation at that time. Sparing use of the electrical current available will make sure that the ships system is given the maximum opportunity to function efficiently.

12. Should any problems be encountered which are not included in the above section the factory service department should be referred to on all occasions, or a specialised electrician who should be able to troubleshoot any particular problems by reference to the wiring diagrams as a whole.

13. Under no circumstances where heavy draw equipment is fitted, i.e. radar, etc, should this equipment be operated when the engine's are not running. The Godwin automatic water pressure system is fitted with a master cut off switch, which will prevent any current waste in the event of any small leaks in the system. It is recommended that the master switch be left on for periods when the shower, toilet suite is being used, or when the galley is being used, but while the craft is in a cruising configuration then this switch is left in the "off " position. Never leave the craft after a voyage without first checking that every single item of equipment has definitely been turned off, and furthermore, turn the battery and master switches to the 'off' position as an added precaution.

SECTION 5.**FUEL SYSTEMS.**

Fuel is supplied to the engines from a fibreglass tank, which is moulded in glass-reinforced plastic, integrally with the hull. The fuel tanks breathe through a large diameter pipe, which draws air from the fibreglass side cowls to port and starboard of the cockpit. The tank is fitted with twin fuel supply neoprene diaphragm valves and a similar valve serving the fuel return facility. The fuel runs then as a group past through the forward engine main bulkhead to the primary filters mounted to port and starboard of the systems bay. These primary filters consist of a glass bowl type dirt trap and a gauze filter and rubber sea is situated in the mounting bracket castings. Any foreign bodies having entered the fuel tank will be filtered out of the fuel systems at this stage. Any such material can be easily identified in the glass bowl and should be cleaned out in accordance with the maintenance schedule from here the fuel passes through the gauze filter in the cam shaft driven fuel lift pump. This dual course filter arrangement ensures that no large particles even reach the micro filter element. This fuel lift pump has a manual pumping facility, to assist fuel system priming. Just before the fuel passes into the injection pump itself, it is filtered through the microelement filter. This final filter also has an air trap on the fuel return side to remove any bubbles of air, which may have entered the system. A diesel engine is supplied with fuel at a much greater rate than it can possibly use, this ensures that air does not enter the system. This over supply of fuel necessitates a fuel return system; this is fitted to each injector in series and is also joined by the fuel return pipe on top of the micro filter. Fuel returns from each engine come together at a "T" junction, and return to the fuel tank. The fuel then continues to the injector pump which will be either of the in line or distributor type, depending upon the engine installation.

IMPORTANT.

IT MUST BE NOTED THAT THIS PUMP HAS BEEN SET UP WITH THE USE OF VERY SPECIALISED EQUIPMENT TO ENSURE ITS GOOD AND CONTINUED FUNCTIONS. IT MUST NOT BE INTERFERED WITH, OTHER THAN FOR OPERATING THE PRIMING VALVES IN THE EVENT OF FUEL SYSTEM PRIMING BECOMING NECESSARY. THE MANUFACTURER'S RECOMMENDATION MUST BE ADHERED TO STRICTLY.

Detailed instructions on fuel systems priming will be found in the engine manufacturer's manual.

When refuelling it is always wise to check that the dipstick plug, which has been moulded into the top of the fuel tank, is securely tightened. Access to this plug is at a point between the first two saloon bulkheads. Once the carpet has been rolled back, the plug can be opened with the same key as serves the fuel filler to the starboard of the cockpit.

SECTION 6.STERN GEAR AND ASSOCIATED CONTROLS.

The Moonraker 36 is fitted with manganese bronze shaft logs and shaft supports. (A or P as applicable to engine installation) with removable cutlass bearings. Stainless steel propeller shafts and bronze three bladed propellers are provided in sizes to suit the optional engine installations. Twin rudders in bronze rudder bearing posts are fitted with bronze or stainless steel shafts, the rudders being of bronze alloy, stainless steel or glass reinforced plastic as applicable.

Maintenance to the above, with the exception of the stem glands, is confined to observations. A weekly check of the rudder posts, steering controls and shafts will be adequate to ensure their good condition, the stem glands, however, require daily maintenance in the following way. They must be greased every day the boat has been operated; this is done by rotating the grease cup mounted above the gland itself. Between half and one complete turn will guarantee adequate greasing of the stern glands. A supply of the recommended grease should always be readily available. (Refer to recommended lubricants table). Access to the stem glands is through the aft bunk panels, or cockpit well panels, depending upon the model. References to the diagrammatical layout of the boat will give immediate recognition for access to all these components.

It may be found that after a certain period of usage, small water leaks may develop at the stem glands, this is due to wear on the stern gland packing. It may therefore, become necessary after two seasons or so depending upon the usage of the boat to replace the stern gland packing. This is of the usual graphite impregnated type and once the boat is out of the water, can be replaced in the following way. The large locking nut is unscrewed with the use of a correctly sized spanner, since the use of a wrench could possibly damage this nut, the gland packing retaining sleeve is then screwed away from the gland itself, and the old packing removed. The new quarter inch square graphite impregnated packing should then be cut to rings, which are just over size for the diameter of the shaft. This should then be pushed firmly but carefully into the stern gland one at a time, until the packing comes within one inch of the outer edge of the stem gland. **IT SHOULD BE NOTED THAT STERN GLAND PACKING SHOULD NEVER BE WOUND INTO THE STERN GLAND.** The retaining sleeve should then be screwed up to the packing hand tight, and then turned once further with a spanner and then the lock nut retightened firmly but not over tight.

SECTION 7.

DOMESTIC SYSTEMS.

GAS.

Gas is employed for cooking, refrigeration and water heating. Although your boat has been provided with a gas leak-sensing device, it is necessary that weekly visual checks are made to assess the condition of all the pipe runs and the security of the unions. This is easily done using the relevant systems diagram enclosed.

Instructions for the operation of the cooker, refrigerator and water heater are enclosed and their maintenance recommendations should be closely observed.

Further to this, it must be said that though as a percentage, very few accidents happen on boats due to gas leakages, the most serious accidents are associated with this.

WATER SYSTEMS.

Constant domestic water pressure is maintained by a high capacity marine pump, which is situated in the systems bay in the cockpit. It is controlled by a switch marked "Godwin" which when on, acts automatically. It is suggested that this be switched off every night to eliminate any possibility of battery usage or potential short circuits. Pipe runs can be examined again weekly is advisable, for cleanliness and security with reference to the relevant systems diagrams. For hot water systems maintenance, the routine is the same but should also encompass the gas systems inspection. For skin fittings, refer to relevant paragraph. The shower units are provided with a drain pump situated in the systems bay, operated by a push/pull switch in the shower unit. Again, maintenance is restricted to visual check of general condition of pipe runs, pump unit and associated wiring. **THIS PUMP MUST NEVER BE ALLOWED TO RUN WHEN DRY AS SERIOUS DAMAGE TO THE MOTOR WILL OCCUR.**

SEA TOILETS.

Sea toilets are perhaps the most sensitive part of any boat. Its facility for disposal should never be utilised other than for that purpose for which it is intended. Maintenance is basically a matter of keeping it clean, but it is provided with sea cocks and these should be shut off if any prolonged period without utilisation is envisaged.

SECTION 8.HANDLING.

The hull form of your Moonraker 36 has captured the advantages of both the planing and displacement principles. As a consequence of this both its slow and fast sea keeping performances are of an extremely high standard.

Unfortunately we cannot tell you how to handle your boat since only experience will give you the feel of it. We can however, tell you of our experience in handling the boat, and also the effects we have noticed of certain seas on the Moonraker 36. We will deal with the subject under the following headings.

Close manoeuvring.

Slow running.

Fast running.

Following seas.

Head seas.

Beam seas.

Quartering seas.

Item 1.

Close manoeuvring.

Perhaps the most harassing manoeuvre that one has to make in a boat is coming alongside or stern to in a crowded port, and for this the following information should be utilised. It must be remembered; due to the light weight of this vessel that only slight throttle movement is required to have a tangible effect on the way of the boat. It is also useful to note that again due to the weight of the boat the way can be taken off almost instantaneously with a burst of reverse power. As you become used to manoeuvring this boat in confined spaces, you may learn with the use of alternating differential throttle, the boats ability to move sideways with very little fore and aft movement.

Added to the very good manoeuvrability of the boat, there is also the complete all round vision, which the layout of the boat facilitates.

Thus the suspense that normally accompanies harbour manoeuvring has, on the Moonraker 36, been eliminated.

Item 2.

Slow running.

Because of the manoeuvrability of the Moonraker 36, the same applies to slow running as for close manoeuvring. In the event of the boat being in a large sea which requires a reduction in speed, the problem is not so much a handling problem as a navigational one, whilst the boat is relatively easy to steer and course maintenance un-dramatic, the accuracy over large sea distances can only be dependent upon your navigational experience. As a point of general handling, it must be said that in our experience people tend always, to over-correct the Moonraker 36. This you will find in time is never necessary, because of its sensitivity.

Item 3.

Fast running.

We have not only spent a great amount of time experimenting with the production of the Moonraker 36 but also a great amount of time also in the handling department. We have used a great number of propeller / rudder variations to discover the optimum performance of these components. As you will probably know, we have made boats capable of up to 33 knots our experience with these boats has enabled the correct configuration of propeller and rudder to be reached. We now find that we have a boat, which at high speed can be steered quite comfortably with one hand, with no concessions to sensitivity due to rudder areas etc. You will find that with your Moonraker 36 in certain seas conditions will tend the boat another 5 knots, sometimes even more, thus the drama that would normally accompany steering a boat at 25 or 30 knots has been completely removed. Such sea running is amongst the most enjoyable experiences you will have with this boat.

Item 4.

Following seas

The behaviour of boats in following seas is subject to the greatest exaggeration. The only dangerous condition that can arise due to a following sea is the boat broaching. Broaching is a condition where, in a following sea, the boat is allowed to run to the quarter and the bow swings round and becomes beam on to the crest of a wave. These conditions in extremes will result in the boat-rolling beam wise down the wave.

In our direct experience with this condition in the Mediterranean during a severe Mistral we found that controlling the boat, whilst needing a large amount of concentration was not impossible. The technique in riding such seas is to reduce throttle as the crest of the wave comes under the boat and allow the wave to pass under the boat. Once the wave has passed under the boat the throttles may again be opened up and taken up to full cruising speed. The reason for helmsmen allowing the boat to be put in the position of potential broach is due to the lack of attention to speed of wave. At no time must the boat be allowed to go faster than the wave is coming up to the boat.

Item 5.

Head seas.

Handling in the above conditions presents no real problem in reasonable seas. However, it should be noted that in any boat, speed must be adjusted to suit conditions. The only condition that may cause any apprehension in such a sea is where green water is taken over the bow. This will very rarely happen in English waters, or offshore Continental waters, due to the length of the seas, however, in the Mediterranean very short steep seas are experienced and at high seas, green water over the bow is not unheard of. Under such conditions only your personal experience will allow you to adjust speed accordingly'.

Item 6.

Beam seas.

The two principle effects of a beam sea on any boat are

1. Loss of directional stability and
2. Rolling.

In the Moonraker 36 hull rolling has been reduced to a minimum, it also settles from any such roll very quickly. The boats inbuilt fore and aft stability is not affected by a beam sea. You will, no doubt, come to notice how in a beam sea, very high average speeds can be maintained.

Item 7.

Quartering seas.

Quartering seas, from a point of view of comfort are perhaps the worst thing a sea traveller can come across, due to the corkscrewing action on the boat. One suffers from the combined stern or head effect and also the beam effect of the sea. The Moonraker 36 will naturally, be affected by these conditions, but to a much lesser extent than a traditionally designed boat.

Only your personal experience will verify these statements, but our own experiences and the experiences of professional Skippers who have delivered our boats, allow us to give this guide with complete confidence in our product.

SECTION 9

Hull and Superstructure, Windows and fittings.

On the "B" Type Moonraker 36 Hull which is optionally available for all models which is used as standard on the Police Patrol Boat variant and other similar applications, the forward spray rail and aft ski rail are in moulded fibreglass from the special mould from which this type of hull is made, but if one or the other is fitted to the normal "A" type hull then these would be of a wooden fabrication which is bolted or attached to the hull after the hull has been manufactured and is therefore, not integral with the moulding.

The wheelhouse roof on all the models or a flying bridge where applicable is constructed in an identical manner to the foregoing, both being in their particular parts, have a fibre glass and balsa wood core laminated construction.

During the course of manufacture, the superstructure moulding is firmly bonded and bolted where applicable to the hull and is designed to be stressed in such a way as to impart tremendous rigidity and consequential safety through its structural integrity. Appropriate sealants are used in the jointing of the hull to the superstructure during the bolting and bonding process, after which, the rubber de-fendering is applied to ensure a greater number of bolts for greater strength, after which, the hull to deck gap is firmly caught and sealed with a compound especially made for that purpose.

The fitting of the windows, deck gear and other fittings effects the well being of the fibreglass content of the craft quite directly, and it is for this reason therefore, that these sections are now included.

WINDOWS.

High grade aluminium anodised frames are used in closely fitting apertures which are cut into the superstructure, after the superstructure has been moulded. The windows are flanged both on the outside of the hull and on the inside where they effectively trap the soft lining installation, and are sealed on the outside by a rubber tape material and a soft bedding compound. The windows are retained between their double flanges by numerous screws fixed and drilled through the flanges, which effectively trap the window frame in position in the superstructure. It is to be particularly noted however, where a new craft is concerned, that some settlement and movement will take place during the first 2-6 months of the craft's life in order for the sealants and bedding compounds to have their maximum effect.

This obviously presents a situation which will allow the ingress of a slight amount of water and it is recommended that a small screwdriver be used whether the windows have appeared to have a slight leak or not, at varying periods during the first six months of the craft's life, to tighten up the window mounting bolts from the outside, taking care always, to ensure that no over tightening takes place, which would lead to the shearing off of the bolt in question. In the event of this settlement being rather more unusual, the sealing of the troublesome spot can easily be affected by undoing the screws in the relevant area, applying an appropriate sealing compound, and retightening.

DECK FITTINGS.

Wherever a deck fitting is fixed to the superstructure, it requires a hole to be drilled, and various methods of attachment used. and this in itself will always present a potential source of minor leaks. The utmost care in design and manufacture is taken to ensure that the techniques employed and the technical processes involved are such as to minimise such a danger and examination of the craft will show where the pulpit, stanchions, grab rails, stern rails, winch, anchor chocks, and oil other items of deck gear are concerned, that the appropriate sealant method for that particular application has been used.

It is most important to remember however, that unusual leverage on the stanchions, or pulpit etc, may cause the mounting bolts to stretch, which would have the effect of breaking the relevant seal. The craft is constructed from this point of view in such a way, as the retightening of any such stretched bolt or broken seal is a relatively easy matter with adequate access and it is recommended that at all times whether the leaks are suspected or not, that a reasonably frequent check is made with a screwdriver or the appropriate tool for the fitting concerned, to ensure that all fixings are fast and firm.

Fundamental facts and vital points in the maintenance of the above with regard to your Moonraker 36 Motor Yacht are therefore listed as follows: -

1. Hull and superstructure cleaning

A mild soap powder together with the applied rag or very soft brush should at all times clear any tarnish from the deck or the superstructure which should then be immediately washed with fresh clear water if available. Leather cloth patterns may on occasion be subject to ingrained dirt through boarding from river banks and/or sand quays etc, and when this is the case, an attempt should be made to soak out the stain before taking any further action, as scrubbing the non slip surface may have the effect of ingraining the dirt into it rather than taking it out.

2. In order to preserve the smart and glossy appearance to the hull, it is highly recommended that during the first few months of the craft's life the hull itself is polished with a silicone polish as is frequently used on cars, and for this purpose Auto Brite is highly recommended. This will form a firm base upon which it will be difficult for discolouration associated with fouled waters to attach itself permanently to the hull, making the subsequent removal a matter of comparative ease. To save one's energy it is quite feasible to do half one side of the boat one week and the other half of the boat the next week, but it should be stressed that once the hull becomes thoroughly ingrained with an oil bases sediment it will be very difficult to restore the gloss.

3. Particularly obstinate marks can be removed by a gentle application of cutting down compound, which should then be polished after its application.

4. Never attempt any rectifications other than are generally pointed out in the above numbered paragraphs without consulting the Factory's service department, and never be tempted to dislodge persistent dirt by the energetic use of a scrubbing brush or something similar with harsh abrasive actions, as this could also cause an area of local discolouration which would be difficult, if ever, to remove.

5. The hull bottom when properly antifouled should be capable of staying in the water all the year round, depending always upon the situation of its mooring, and should be removed or slipped from the water perhaps once a year for examination purposes. If your Moonraker 36 is delivered to you without the Factory approved antifouling having been applied, the factory service department should always be consulted as to which grade and method of application has proved to be the best for this particular craft.

If time and circumstances do not allow for this however, never under any circumstances apply an antifoul to your boat without first applying the appropriate etching primer without which the antifoul will not adhere to the hull bottom.

6. Stainless deck gear.

This is manufactured from a high-grade stainless steel and the best method of cleaning is with washing up liquid and fresh water. When the craft is new, a certain amount of mil-scale on the steel itself may lead to spotting, but this can easily be removed with a very mildly abrasive polish, and if subsequently treated with a silicone or wax polish should never give rise to the same problem again. Depending upon the age of steel in question, this particular problem may never occur but it must be remembered that it is good practice and sensible to always hose a boat down when returning from a sea trip in fresh water areas, and whenever possible, to wash down the superstructure and deck gear of a boat with fresh water even when at a sea mooring.

7. Care of cockpit interior.

This is largely finished in fibreglass with the obvious insertion of vinyl tread lined engine box covers and woodwork where appropriate. As this area of the craft inevitably has a high degree of traffic, it is strongly recommended that rubber mats or something similar be placed in appropriate positions, which saves not only a large amount of wear and tear, but a large amount of physical cleaning also. Any marks occurring in the cockpit interior can always be removed by polishing with a very fine compound and a finishing polish or silicone wax. Never allow any waxes or compounds to come into any contact with any fibreglass, which is coloured black, (I.E. Instrument panel) as it is very difficult to remove. The best method of preserving this smart appearance to the panel and the fuse panel on the control console is the application of a small amount of ordinary black shoe polish with a soft cloth.

8. Woodwork on superstructure.

These items mainly refer to the aft timber rail, sundeck rail, leeboards, boat's name board, masts, winch blocks where fitted and the upper screens surrounds. It can be expected during a season's usage that the finish on these will deteriorate through exposure to the elements, especially where a boat is kept in a humid atmosphere and/or at a sea mooring constantly.

It cannot be emphasised too strongly that once the opportunity for the varnish to wear and flake off has occurred, and following that, the bare timber itself has been exposed to the weather, a discolouration of the timber will occur which will never be recoverable, and one should at all times keep a watchful eye for the start of any normal deterioration in the varnish work on the timber on their craft, and to take immediate action once it is noticed. The Factory Service Department will be pleased to advise on what type of varnish should be used, and its method of application.

VITAL DO'S AND DONT'S.

1. If structural damage through impact or accident is experienced or suspected inform the Factory Service Department immediately.

 2. Remember that the fore cabin floor and the saloon floor are the top of the main fuel tank where long-range fuel tanks are fitted. The floor immediately underneath the galley and washroom also constitutes the fresh water tank top. Never under any circumstances attempt to drill any holes or make any fixings in this area, without direct reference to the Factory.

 3. If structural damage through accident is incurred, the Factory Service Department should be notified immediately, as it is fully equipped to deal with any matter arising from such damage, and any attempt to repair the boat by a different means from which it was originally constructed will almost inevitably prove to be that of an inferior nature. If any structural mal-function minor leaks, slight deteriorations, or any other matters pertaining to the hull and superstructure constructure are suspected, the Factory service department must be informed immediately.

 4. The Moonraker 36 is an immensely strong craft and will take very heavy seas without giving any cause for the concern on the part of the owner, provided always that the craft is properly handled. However, from a structural point of view Moonraker Marine Limited respectfully point out to owners that the sea is a very mighty element and should for that reason alone demand respect. In inclement weather the owner may lose his ability to handle the craft, which would render it liable for any structural damage. It is a matter of fact that in our experience on all boats of any type that damage at sea usually occurs when the Captain's ability to deal with the elements falls short of the craft itself. This is by no means a singular or special failing, but care must be taken at all times. The operation of your Moonraker 36 is planned to give you the best enjoyment and safety, apart from the engineering section itself, and the integrity of the fibre glass hull and superstructure are by far the most important aspects concerning the well being of the occupants on the boat as a whole.
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SECTION 10.

SERVICE, MAINTENANCE, SCHEDULES

MOONRAKER 36.

1. DAILY

- Check engine oil levels.
- Check gearbox oil levels.
- Record oil pressure.
- Check fuel level.
- Check cooling system level.
- Check turbocharger oil pressure.
- Grease stern glands.
- Check for water in Bilge.
- Fill in Engineers and Ships log.

2. WEEKLY.

- Inspect fuel system for leaks and rectify
- Clean fuel system primary filter bowls.
- Check cooling system for leaks.
- Check specific gravity of batteries.
- Check all hoses and clips.
- Check all skin fitting terminals.
- Clear and secure all wiring terminals.
- Clean and secure gas connections and piping.

3. EVERY 100 HOURS.

- Inspect engine for oil leaks and rectify.
- Grease Tachometer drive.
- Check hot and cold water systems.

4. EVERY 200 HOURS.

- Change engine oil.
- Change oil filter.
- Change turbocharger filter.
- Check and adjust drive belt tension.

5. EVERY 400 HOURS.

Change transmission fluid.
Clean fuel lift pump gauze.
Clean air filter gauze.
Tighten manifold nuts.
Check turbocharger-mounting nuts.

6. EVERY 800 HOURS.

Change fuel filters.
Clean injectors.
Clean turbocharger Impellor and Diffuser.

BI-SEASONAL.

Check raw water pump impellor.
Clean heat exchanger and cooling system.

NOTE.

Reference should be made to the appropriate engine Manufacturers Manual when required.

IMPORTANT.

We must strongly emphasise the importance of carrying out the foregoing maintenance schedules at the correct intervals, as failure to do so will render the Manufacturers Warranty null and void.