

TABLE OF CONTENTS

1. GENERAL DESCRIPTION	1-1
1-1. PRINCIPAL DIMENSIONS AND FIGURES	1-1
1-2. SAIL PLAN	1-2
1-3. RIGGING LIST	1-4
1-4. DECK PLAN	1-6
1-5. ACCOMMODATIONS	1-7
1-6. THROUGH-HULL FITTINGS	1-8
1-7. MAST FITTINGS	1-9
1-8. BOOM FITTINGS	1-9
2. SPARS AND RIGGING	2-1
2-1. STEPPING MAST	2-1
2-2. STANDING RIGGING ADJUSTMENT	2-3
2-3. HALYARD LEAD	2-7
2-4. BOOM SETTING	2-8
2-5. MAIN SHEET LEAD	2-9
2-6. BENDING ON THE MAIN SAIL	2-10
2-7. BENDING ON THE JIB	2-12
2-8. REEFING	2-13
3. ELECTRIC SYSTEM	3-1
3-1. BATTERY	3-1
3-2. BATTERY SWITCH	3-1
3-3. ELECTRICAL SWITCH PANEL	3-3
3-4. BILGE BLOWER	3-3
4. ENGINE	4-1
4-1. BEFORE STARTING ENGINE	4-1
4-2. STARTING ENGINE	4-5
4-3. WARM UP	4-7
4-4. POINTS TO CHECK DURING OPERATION	4-7
4-5. SECURING ENGINE	4-8
PRACTICAL NOTE	4-9

5. PLUMBING SYSTEM	5-1
5-1. PLUMBING SYSTEM DIAGRAM	5-1
5-2. FRESH WATER TANK	5-2
5-3. GALLEY	5-2
5-4. HEAD	5-3
5-5. BLIGE PUMP	5-3
5-6. COCKPIT LOCKER	5-4
5-7. ANCHOR WELL	5-4
6. MAINTENANCE TIPS	6-1
6-1. FIBERGLASS SURFACES	6-1
6-2. STANDING RIGGING AND HALYARDS	6-2
6-3. SPARS	6-2
6-4. SAILS	6-3
6-5. TEAK	6-3
6-6. HARDWARE	6-3
6-7. BATTERY	6-3
6-8. ZINC-RING	6-4
6-9. CRADLE	6-5
7. OPTIONAL ITEMS	7-1
7-1. BACKSTAY TENSIONER	7-1
7-2. FOLDING PROPELLER	7-1
7-3. INSTRUMENT CONSOLE	7-1
7-4. WINCHES AND CLEATS FOR SPINNAKER SHEET	7-2
7-5. SAILS	7-2
7-6. TABLE-TOP AND CABIN SOLE MATTRESS	7-2
7-7. BOTTOM PAINT	7-2

1. GENERAL DESCRIPTION:

1-1. PRINCIPAL DIMENSIONS AND FIGURES:

DESIGNER	:	YAMAHA DESIGN TEAM	
BUILDER	:	YAMAHA MOTOR CO., LTD.	
RIG	:	MAST HEAD SLOOP	
L.O.A.	:	7.55 m	24 ft 9 in
L.W.L.	:	5.87 m	19 ft 3 in
BEAM	:	2.73 m	8 ft 11-1/2 in
DRAFT	:	1.65 m	5 ft 5 in
TOTAL HEIGHT (Above the water line)	:	10.70 m	35 ft 3 in
MAST LENGTH	:	9.325 m	30 ft 7 in
HEAD ROOM	:	1.70 m	5 ft 7 in
DISPLACEMENT	:	1,700 kg	3,748 lbs
BALLAST	:	650 kg	1,433 lbs
TOTAL SAIL AREA (100% fore Δ + main sail)	:	26.29 sq m	283 sq ft
	:	MAIN CABIN	1*
	:	FO'CSLE	2
	:	QUARTER BERTH	2
WATER CAPACITY	:	36 liter	9.5 US gals
ENGINE	:	YANMAR YSM8 4 CYCLE 1 CYLINDER DIESEL	
1-HR, RATING OUTPUT	:	8 HP/3,200 rpm	
CONTINUOUS RATING OUTPUT	:	7 HP/3,200 rpm	
REDUCTION RATIO	:	2 : 1	
PROPELLER ROTATION	:	COUNTER-CLOCKWISE (viewed from astern)	
CRANKSHAFT ROTATION	:	COUNTER-CLOCKWISE (viewed from astern)	
FUEL CAPACITY	:	25 liter	6.6 US gals
SPEED, MAX.	:	abt. 6 kts	
SPEED, CRUISING	:	abt. 5 kts	
FUEL CONSUMPTION	:	abt. 0.8 liter/0.2 US gals/HR	
CRUISING RANGE	:	abt. 130 nautical miles	

* EXTRA MATTRESSES (OPTION) ARE NECESSARY

* SPECIFICATION SUBJECT TO CHANGE WITHOUT PRIOR NOTICE

1-2. SAIL PLAN:**1-2-1. Sails:**

	AREA sq m (sq ft)	LUFF m (ft)	FOOT m (ft)	LEECH m (ft)	LPG m (ft)	WEIGHT oz	NOTE	%J
MAIN	11.69 (125.83)	8.50 (27.9)	2.75 (9.0)	8.85 (29.0)		6		
1Pt. REEFED MAIN	9.89 (106.46)	7.70 (25.3)	2.57 (8.4)	8.00 (26.2)				
2Pt. REEFED MAIN	8.02 (86.33)	6.80 (22.3)	2.36 (7.7)	7.05 (23.1)				
3Pt. REEFED MAIN	6.09 (65.55)	5.80 (19.0)	2.10 (6.9)	6.00 (19.7)				
No. 1 GENOA	21.80 (234.66)	9.75 (32.0)	4.80 (15.7)	9.25 (30.3)	4.47 (14.7)	5	OP.	150%J
No. 2 GENOA	18.70 (201.29)	9.35 (30.7)	4.40 (14.4)	8.50 (27.9)	4.40 (14.4)	6	OP.	135%J
REGULAR JIB	15.00 (161.46)	8.85 (29.0)	3.90 (12.8)	7.70 (25.3)	3.40 (11.2)	6		115%
No. 2 REGULAR JIB	11.0 (118.40)	7.35 (24.1)	3.60 (11.8)	6.15 (20.2)	3.00 (9.8)	7	OP.	
STORM JIB	6.80 (73.20)	5.70 (18.7)	3.15 (10.3)	4.35 (14.3)	2.40 (7.9)	8	OP.	80%
100% Fore Δ	14.60 (157.15)							
SPINNAKER		9.60 (31.5)	5.36 (17.6)	9.60 (31.5)			OP.	

NOTE: Material: DACRON EXCEPT NYLON SPINNAKER

Spinnaker Foot: SMW (I.O.R. Measurement)

Op.: Option

Weight of Canvas: Ounces per square yard

Figures in meter shall be referred to for sailmaking purpose.

1-2-2. BATTENS

TOP	0.500 m	19 in 11/16
MIDDLE (2)	0.600 m	23 in 5/8
BOTTOM	0.550 m	21 in 5/8

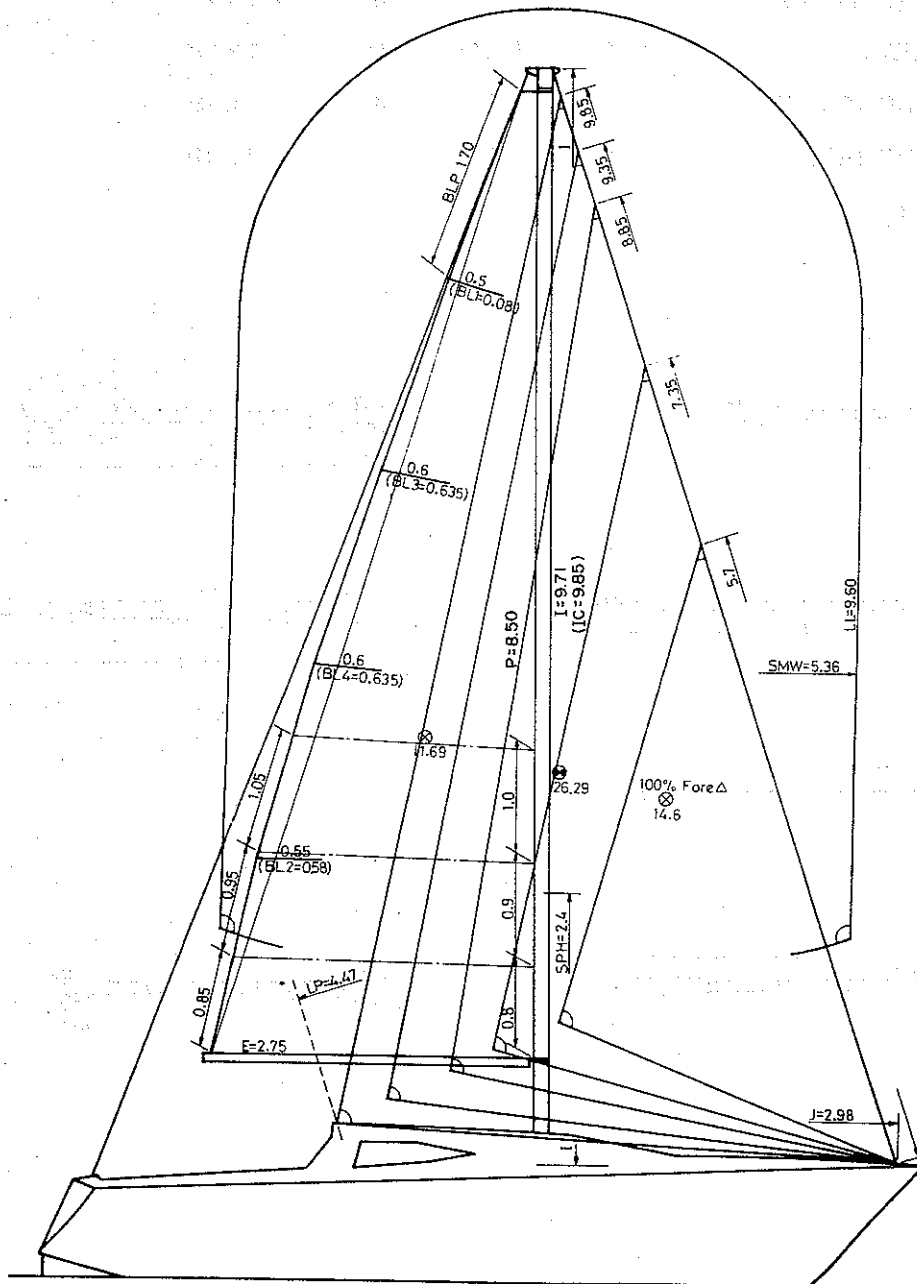
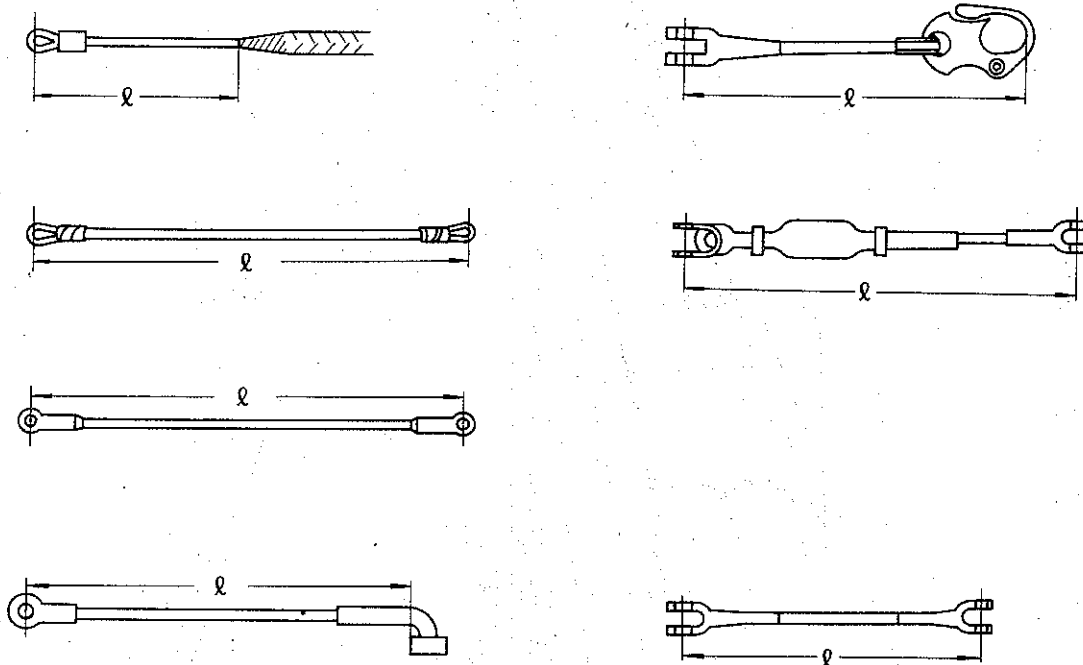


Fig. 1 SAIL PLAN

1-3. RIGGING LIST:**1-3-1. Standing Rigging:**

DESCRIPTION	Q'ty	LENGTH	DIA.	TYPE
		m	mm	
HEADSTAY	1	10.030	5	1 x 19
BACKSTAY (1)	1	8.200	5	1 x 19
BACKSTAY (2) (SPLIT PART)	2	1.975	4	1 x 19
UPPER SHROUD	2	9.245	5	1 x 19
LOWER SHROUD (FORE)	2	4.615	4	1 x 19
LOWER SHROUD (AFT)	2	4.630	4	1 x 19

NOTE: LENGTH

1-3-2. Running Rigging:

DESCRIPTION	Q'TY	LENGTH m	DIA. mm	COLOR	TYPE
MAIN SHEET	1	15.00	10	RED 1/4	Braided Polypropylene <i>yellow</i>
JIB SHEET	1	19.00	13	YELLOW 1/4	"
SPIN. SHEET	2	15.00	10	GREEN 1/8	"
MAIN HALYARD (TAIL)	1	12.00	10	RED 1/4	"
JIB HALYARD (TAIL)	1	13.00	10	YELLOW 1/4	"
SPIN. HALYARD	1	24.00	10	GREEN 1/4	"
SPIN. POLE LIFT	1	15.00	8	GREEN 1/8	"
MAIN TACK DOWNHAUL	1	1.50	8	RED 1/8	"
MAIN CLEW OUTHAUL	1	4.00	6	RED 1/8	"
CUNNINGHAM	1	5.00	8	RED 1/8	"
MAIN SHEET TRAVELLER	1	4.50	8	RED 1/8	"
REEF LINE (1)	1	5.50	8	WHITE	"
REEF LINE (2)	1	7.50	8	WHITE	"
REEF LINE (3)	1	9.50	8	WHITE	"
REEF POINTS	1	4.00	6	WHITE	"
SPIN. FORE GUY	1	6.50	8	GREEN 1/2	"
BOOM VANG LINE	1	6.00	8	RED 1/2	"
MAIN HALYARD	1	9.60	3		7 x 7
JIB HALYARD	1	10.30	3		7 x 7

NOTE: "RED 1/4" rope has 1/4 of strands colored red.

1-4. DECK PLAN:

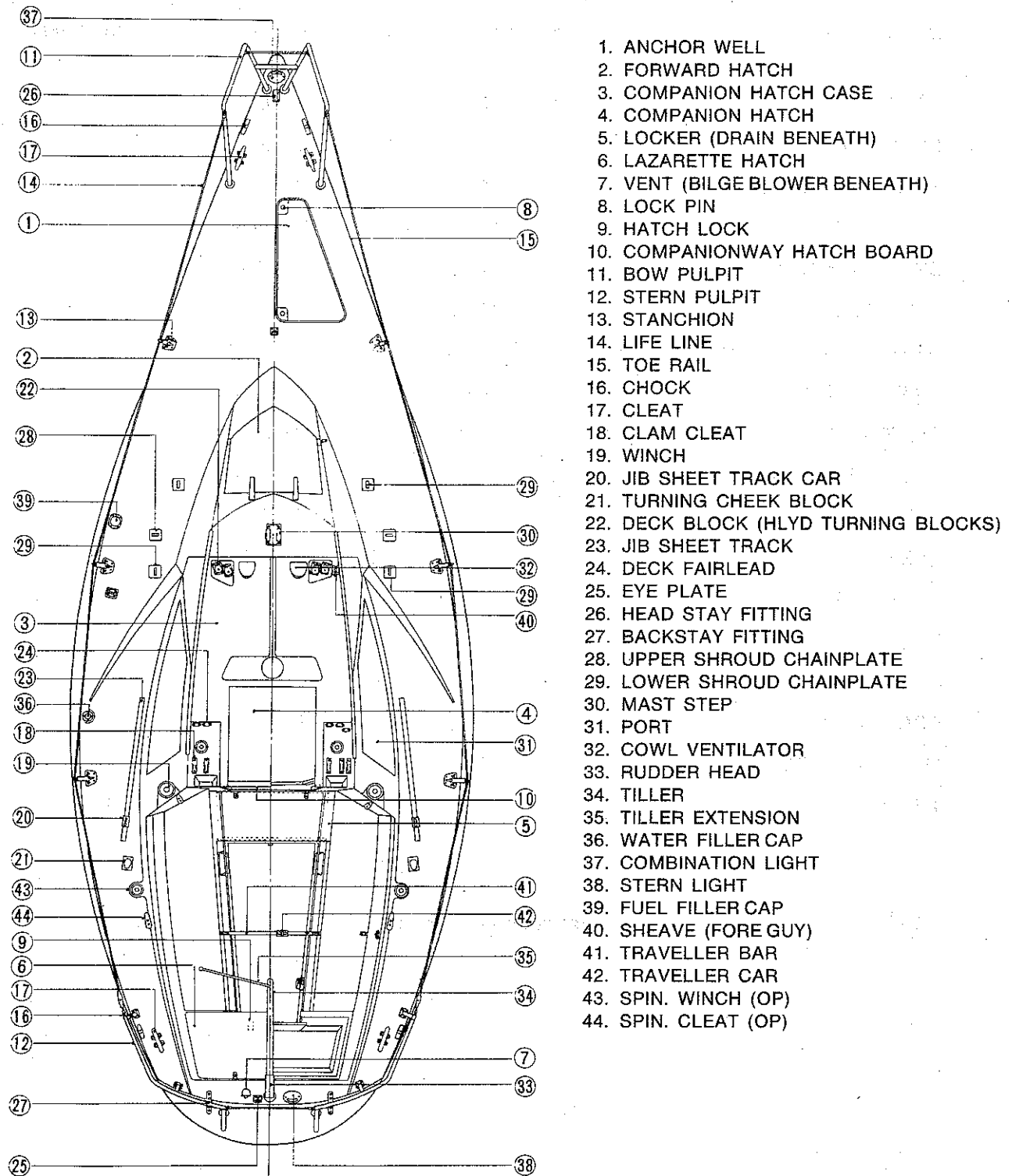


Fig. 2 DECK PLAN

* SPECIFICATION MAY VARY IN DIFFERENT COUNTRIES.

1-5. ACCOMMODATIONS:

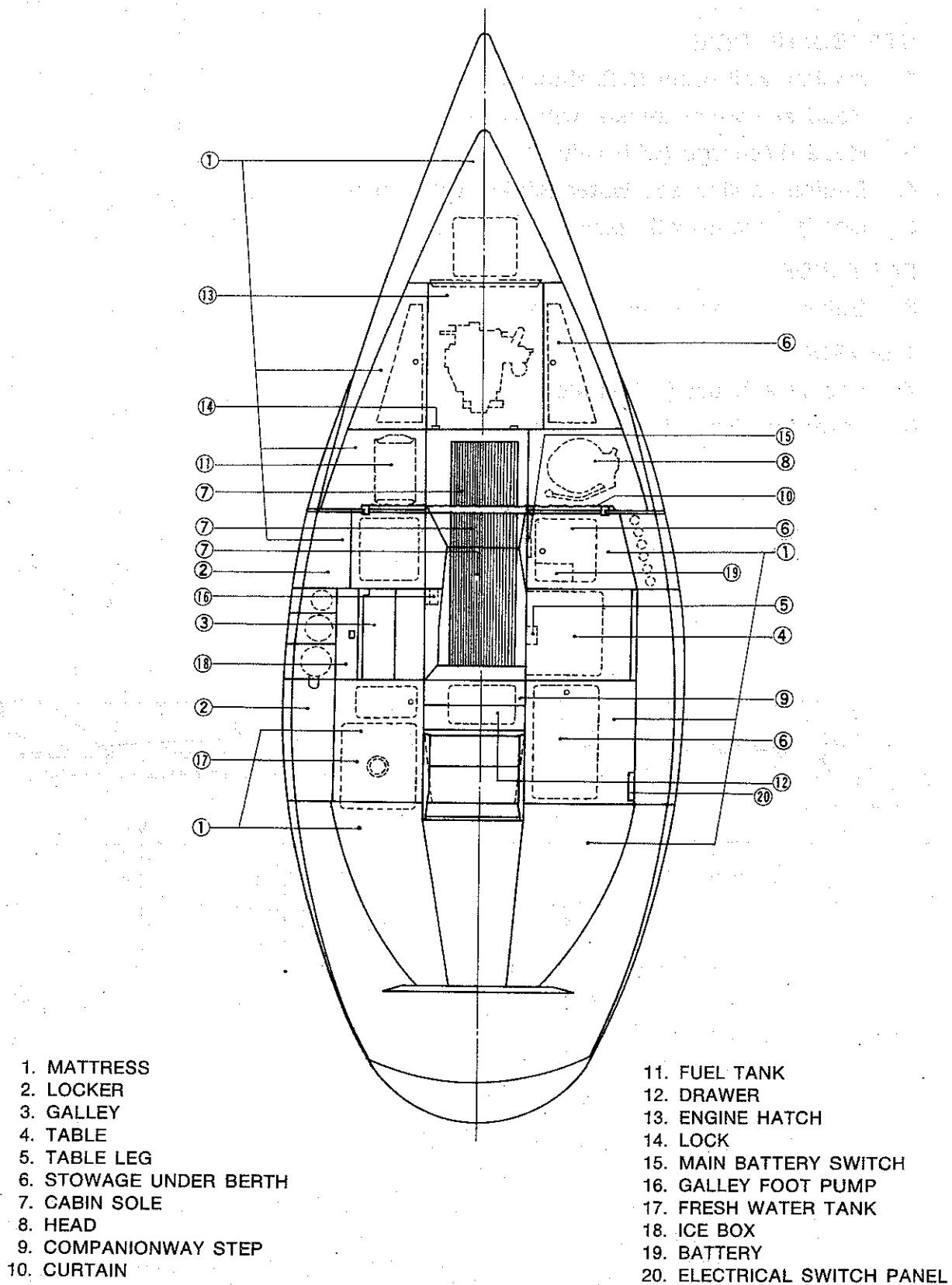


Fig. 3 ACCOMMODATIONS

1-6. THROUGH HULL FITTINGS:

STARBOARD SIDE:

1. Anchor well drain (NO shutoff)
2. Head sea water intake (with valve)
3. Head discharge (with valve)*
4. Engine cooling sea water intake (with valve)
5. Cockpit drain (with valve)

PORT SIDE:

6. Galley sink drain (with valve)

TRANSOM:

7. Engine exhaust (NO shutoff)
8. Lazarette drain (NO shutoff)

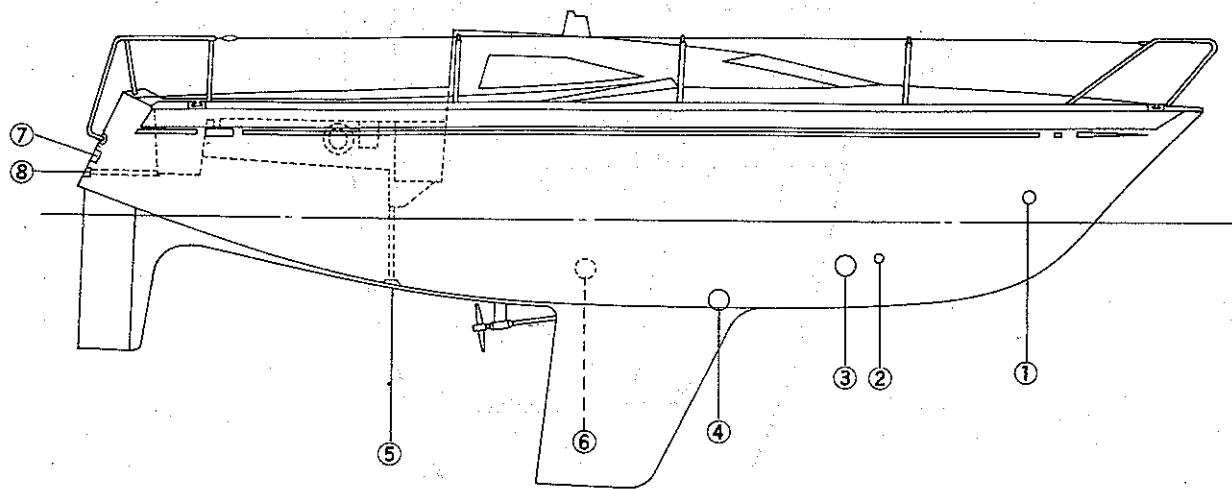
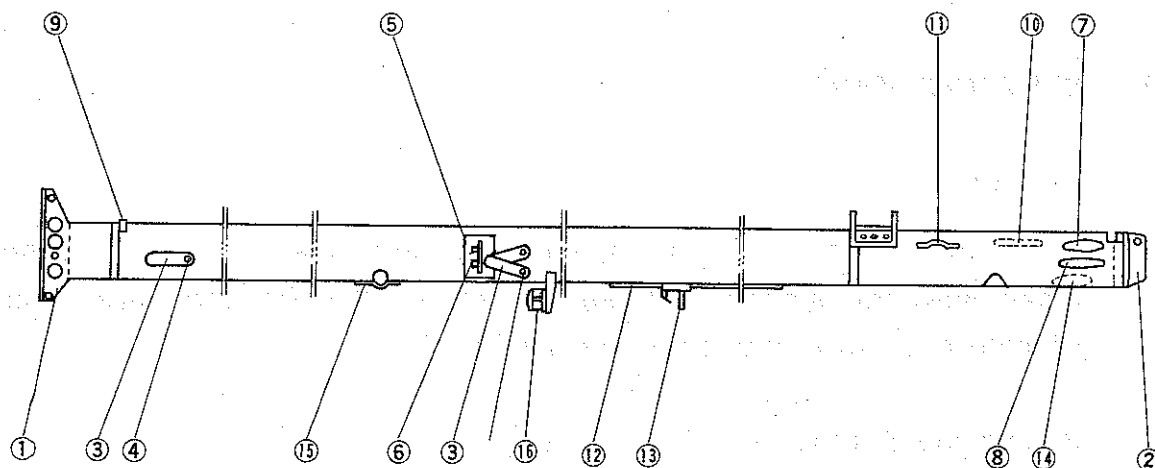


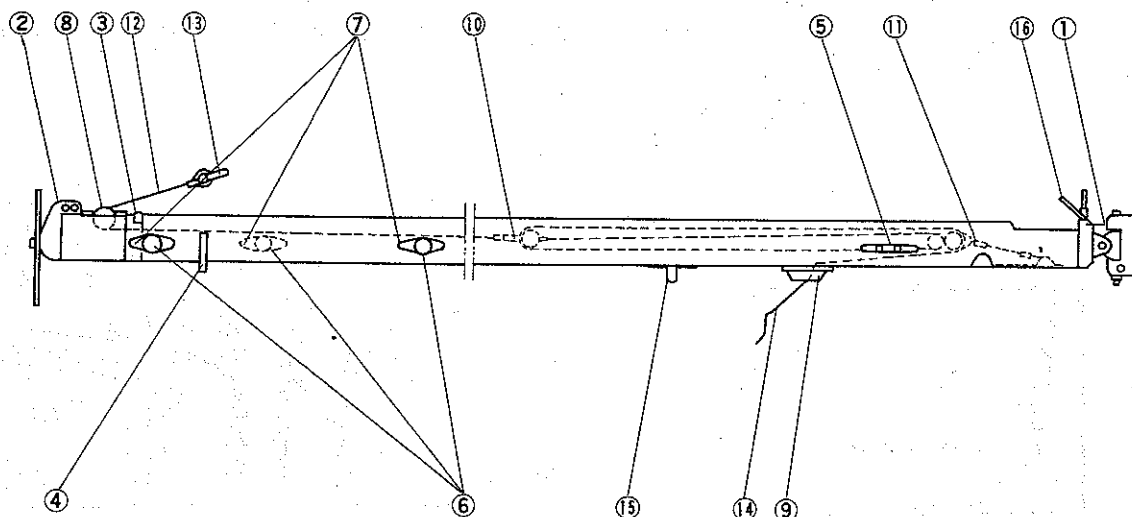
Fig. 4 THROUGH HULL FITTINGS

* EXCLUDE U.S.A. MODEL.

1-7. MAST FITTINGS:

- | | |
|--------------------------|---|
| 1. HEAD | 9. STOPPER |
| 2. HEEL | 10. CLEAT (TACK DOWNHAUL) |
| 3. TANG | 11. EYE STRAP & CLAM CLEAT (CUNNINGHAM) |
| 4. PIN | 12. SPIN. POLE TRACK |
| 5. SPREADER BRACKET | 13. SPIN. POLE TRACK CAR |
| 6. PIN | 14. BLOCK (SPIN. HALYARD) |
| 7. SHEAVE (JIB HALYARD) | 15. SHEAVE (SPIN. POLE TOPPING LIFT) |
| 8. SHEAVE (MAIN HALYARD) | 16. MAST (ENGINE) LIGHT |

Fig. 5 MAST FITTINGS

1-8. BOOM FITTINGS:

- | | |
|----------------------------|---------------------------|
| 1. GOOSENECK | 9. CLAM CLEAT |
| 2. BOOM END | 10. SINGLE BLOCK W/BECKET |
| 3. CLEW STOPPER | 11. FIDDLE BLOCK |
| 4. BAIL | 12. CLEW OUTHAUL |
| 5. CLEAT | 13. SHACKLE |
| 6. CHEEK BLOCK (SLAB REEF) | 14. CLEW OUTHAUL TAIL |
| 7. EYE STRAP (SLAB REEF) | 15. EYE STRAP |
| 8. SHEAVE (OUTHAUL) | 16. REEFING HOOK |

Fig. 6 BOOM FITTINGS

2. SPARS AND RIGGING:

2-1. STEPPING MAST:

(1) Preparation:

Keep unnecessary staff out of your way and check all parts carefully. Make sure the standing rigging is not tangled, halyards are properly running and all turnbuckles are slacked.

(2) Setting the Spreaders:

Secure the spreaders to the spreader brackets.

Attach the stoppers to the upper shrouds temporarily. Pull the upper shrouds along the mast and set the stoppers so as their top come to the same level of the top side of the spreaders at the mast (see Fig. 8).

- NOTE:** 1) A SPREADER SHOULD BE ADJUSTED SO THAT THE ANGLES BETWEEN THE SHROUD AND SPREADER ABOVE AND BELOW ARE EXACTLY EQUAL (see Fig. 9). FAILURE TO DO THIS CAN CAUSE THE SPREADER TO SLIP WHICH SHOULD RESULT IN THE LOSS OF THE MAST.
- 2) BIND UP THE SPREADER TIPS AND BRACKETS WITH INSULATING TAPE FOR SECURITY.

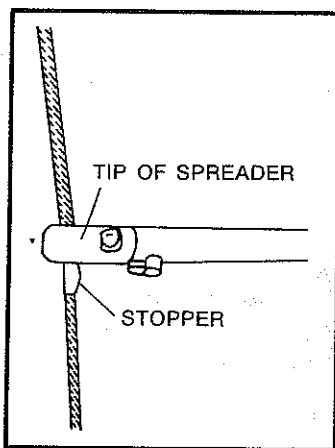


Fig. 7

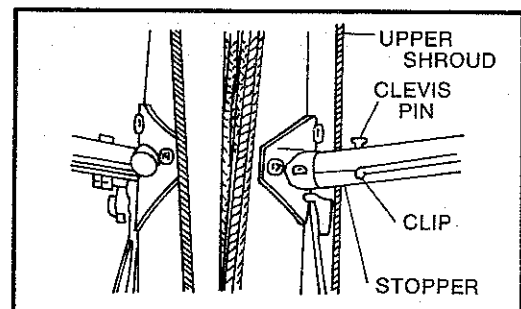


Fig. 8

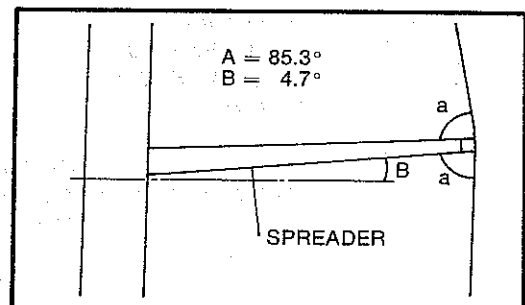


Fig. 9

(3) Setting the Heel of the Mast:

- a. Set the heel of the mast to the mast-step by putting the bolt through the hole on the heel and secure the nut and cotter pin (see Fig. 10).
- b. Connect the electric wires and push the surplus wire into the mast.

(4) Setting the Appropriate Standing Rigging:

Attach the upper shrouds, the aft lower shrouds and the backstay to each chainplate and fitting. Set the clevis pins so that the cotter pins/clips come inboard.

(5) Stepping the Mast:

One person will push the mast up and another will help him by pulling the head stay.

NOTE: WATCH THE ACTION OF THE TOGGLES SO THAT THEY DON'T BEND THE TURNBUCKLES.

(6) Setting the Head Stay:

Set the head stay to the forwardmost pin of the head stay fitting.

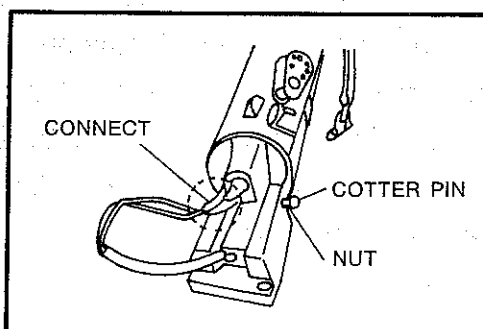


Fig. 10

2-2. STANDING RIGGING ADJUSTMENT:

Our masts are built to withstand any normal usage, but improper tuning or handling can cause problems. Rigging, as well as tuning, becomes all important when setting up the mast because of the light weight section we use. A knowledgeable person should oversee the rigging and tuning so as to eliminate the possibility of an eccentric load which might occur with an improperly loaded shroud.

The following article, therefore, is to give you a hint on how to proceed on the adjustment of the standing rigging.

NOTE: SPECIAL ATTENTION SHOULD BE GIVEN TO THE INITIAL STRETCH OF THE UPPER SHROUDS AND A FURTHER GRADUAL STRETCH OF THE WIRE OVER THE FIRST FEW HARD RACES OR HARD WEATHER SAILS.

2-2-1. The Rake of the Mast:

The rake of the mast should be determined according to the helm of the boat under sail. But you may start with our recommended rake — 1.25 degrees.

Attach the end of a steel measure to the eye of the main halyard and hoist it to the top of the mast. And adjust the head stay and backstay to bring the mast in the position so as the distance between the masthead and the aftermost end of the deck reaches 33'10" 3/4 in (see Fig. 11).

This is temporary setting. Do not set up the stays too tight, rather start with slack stays. You will have to check the rake after you have adjusted the tension on the head stay and backstay.

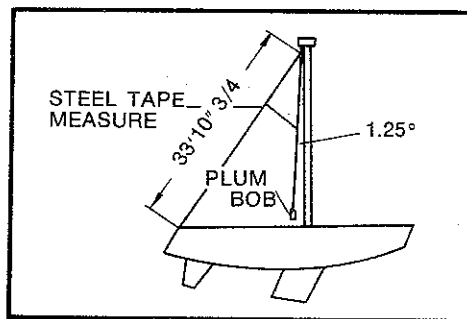


Fig. 11

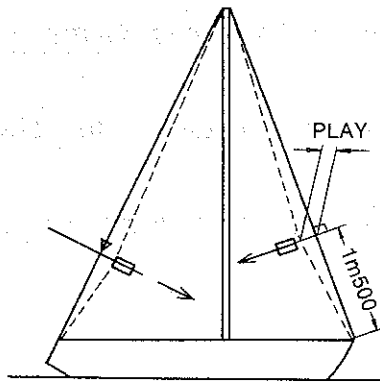


Fig. 12

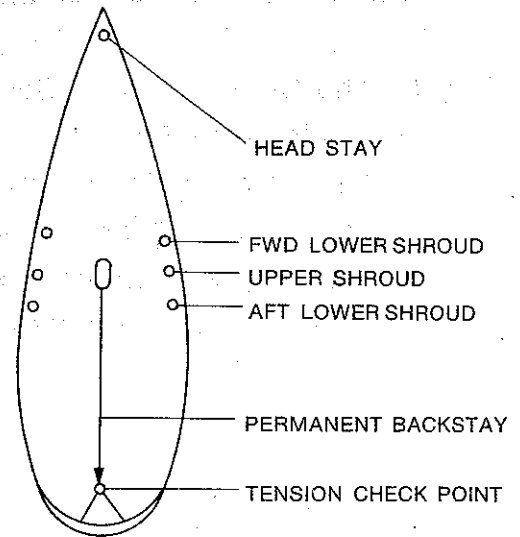


Fig. 13

2-2-2. The Adjustment of the Stays:

- (1) **Head Stay:** Set up the head stay taut. And pull the stay by means of a spring balance at right angles to it at the point of the heights of 1m500 / 4 ft 11 in from the pin of the head stay fitting. Adjust the turnbuckle so the stay has: 55mm / 2-3/16 in of play at 10 kg / 22 lbs load (see Fig. 12).
- (2) **Permanent Backstay:** Set up the permanent backstay so the stay has 50 mm / 2 in of play at 10 kg / 22 lbs of load at the toggle (see Fig. 12 and 13).
- (3) **Recheck the Head Stay:** By the above in (2), the head stay has got some additional tension. The play will reduce to 45 mm / 1-3/4 in.
- (4) **Secure the turnbuckle locknuts of the head stay and backstay.**

2-2-3. The Adjustment of the Shrouds:

- (1) The Upper Shroud: Set up the upper shroud to have 45 mm / 1-3/4 in of play (see Fig. 14).

Use the main halyard or a steel tape measure to check the athwartship alignment (see Fig. 15).

Adjust the shrouds so the masthead is equidistant from each chainplate (see Fig. 15).

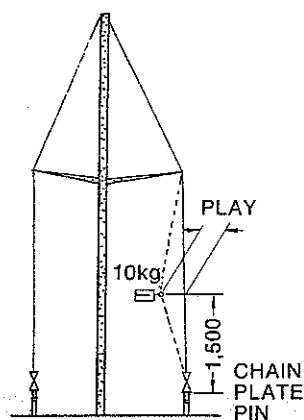


Fig. 14

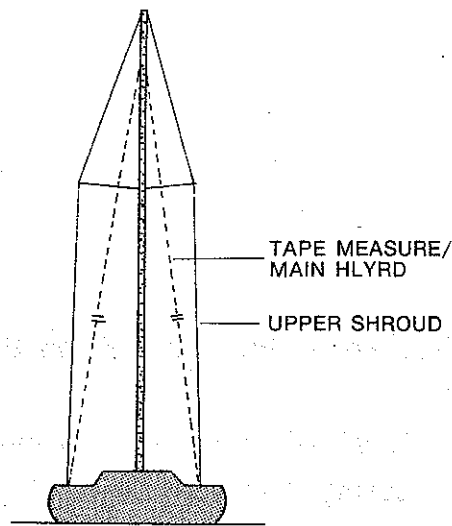


Fig. 15

- (2) The Forward Lower Shrouds: Adjust the forward lower shrouds so that they start pulling the mast forward at the spreader brackets. Note that both shrouds have the same play and the mast is straight.
- (3) The Aft Lower Shrouds: Just take the slack off by turning the turnbuckles by hand.
- (4) Secure all turnbuckle locknuts.

NOTE: 1) THE UPPER SHROUDS ARE GENERALLY SET TIGHTER THAN THE LOWERS, BUT NOT AS TIGHT AS THE STAYS.

2) SIGHT UP THE MAST WHILE THE BOAT IS UNDER WAY. IT SHOULD BE STRAIGHT IN ITS GROOVE AND LEEWARD SHROUDS SLACK WHEN ON THE WIND.

3) REMEMBER, DO NOT TIGHTEN THE STANDING RIGGING MORE THAN NECESSARY. OTHERWISE, HULL DAMAGE MAY RESULT.

4) DO NOT ATTEMPT, OR AT LEAST BE VERY CAUTIOUS TO CORRECT MAST CURVATURE UNDER WAY. RIGGING ON THE LEEWARD SIDE IS NORMALLY QUITE SLACK WHEN A BOAT IS HEELED, AND IT IS EASY TO ADJUST IT TOO TIGHT WHICH CAN DESTROY THE PROPER TUNE AND GREAT STRAIN ON THE BOAT.

ADDITIONAL NOTE ON MAST TUNE:

The mast should be set straight athwart-ship in the boat and have a slight rake of about 1.25 degrees aft. A straight mast can best be obtained by turnbuckle adjustment, starting with the LOWERS and then the UPPERS, while sailing to windward in a 5 to 10 mph breeze. The head of the mast should NOT "hook" to windward. If not straight, it would be more desirable to have the head "fall-off" slightly to leeward. This should give the mast a smooth, even curve from head to deck. Sighting along the back of the mast on each tack, from deck level, will give a comparison and indicate the necessary adjustment.

REMEMBER THAT THE MAST OF YOUR Y-25II IS STEPPED ON DECK. THEREFORE, THE SHROUDS MUST BE TIGHTER THAN ON A MAST PASSING THRU THE CABIN TOP AND RESTING ON THE KEELSON.

For normal cruising and racing conditions, we recommend a "firm" rig. Thus a dock side starting point would have the headstay, backstay and uppers tight, with the lowers just firm. Now the backstay may be made slightly tighter to "hook" the top of the mast aft. One should be able to stand facing the mast, reach out and pull on any shroud and see the mast slightly move in that direction. Try to get tension on both shrouds equal with about 1-1/2" to 2" of play on the uppers and 2-1/2" to 3" on the lowers.

THIS TENSION ON A SHROUD OR STAY SHOULD NOT EXCEED 25% TO 30% OF THE CABLE'S BREAKING STRENGTH. THE HEADSTAY, BACKSTAY AND LOWER SHROUDS ON YOUR Y-25II ARE 7/32" 1 x 19 WITH A BREAKING STRENGTH OF 4,450 POUNDS (2,020 KGS). THUS THE MAXIMUM TENSION ON THESE CABLES SHOULD NOT EXCEED 1,323 POUNDS (600 KGS). THE UPPERS ARE 3/16" 1 x 19 WITH A BREAKING STRENGTH OF 2,865 POUNDS (1,300 KGS) THUS THE TENSION ON THESE SHROUDS SHOULD NOT EXCEED 860 POUNDS (390 KGS).

When racing, the backstay may be tightened up to compensate for the additional forward loading applied by the genoa. At the conclusion of the race it is best to "slack-off" the amount you "took-up" on the backstay turnbuckle. This avoids setting up unnecessary strains on the hull and rig. Under NO circumstances should any of the rigging be set up "bar-tight".

TOO MUCH TENSION ON THE BACKSTAY IS PROBABLY THE PRIME REASON FOR MAST AND RIGGING FAILURE. BE EXTREMELY CAREFUL WITH HYDRAULIC TYPE ADJUSTERS. EXPERIENCE HAS SHOWN THAT ABT. 573 POUNDS (260 KGS) TENSION ON THE BACKSTAY WILL PRODUCE AS STRAIGHT A JIBSTAY AS IS NECESSARY OR POSSIBLE.

2-3. HALYARD LEAD:

Main halyard, jib halyard and spinnaker pole topping lift are led over the sheaves at the masthead, led through inside of the mast and come out through the sheaves around the foot of it. The main halyard comes out through the port forward sheave, the jib halyard from the port aft sheave and spinnaker pole topping lift from the starboard side. Lead them as shown in Fig. 15. To lead them through under the companion hatch case, small staffs are attached. Tie a figure 8 knot on the bitter end of each tail.

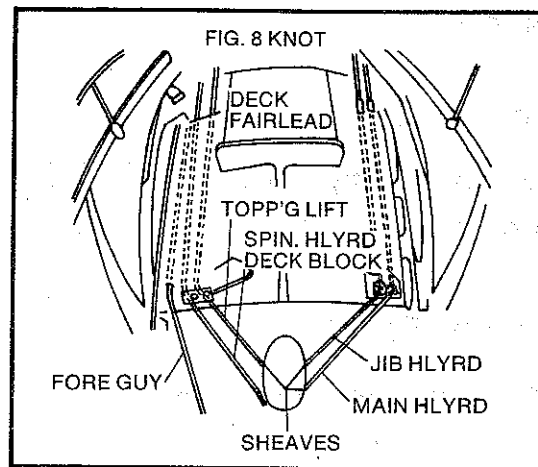


Fig. 16 HALYARD LEAD

2-4. BOOM SETTING:

Insert the gooseneck fitting into the groove through the wider section of it. Put the S-hook of the boom lift pendant to the boom end plate to support the boom.

Secure the tack downhaul to the gooseneck by a bowline.

Downhaul: 1.5m 8mm ϕ Red 1/2

5 ft 5/16" dia.

NOTE: Starting Hull No. 0100424, the gooseneck specification is changed and the downhaul is eliminated.

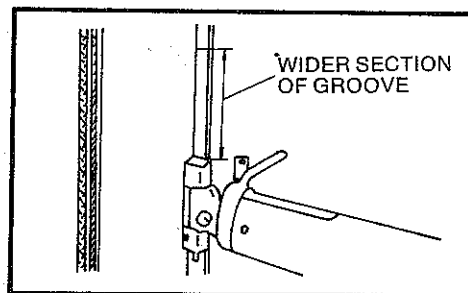


Fig. 17

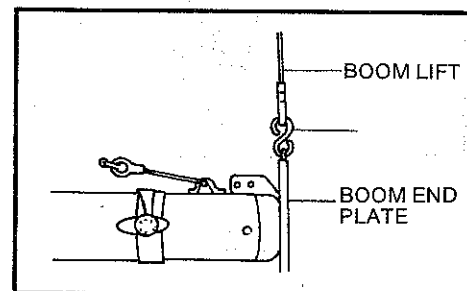


Fig. 18

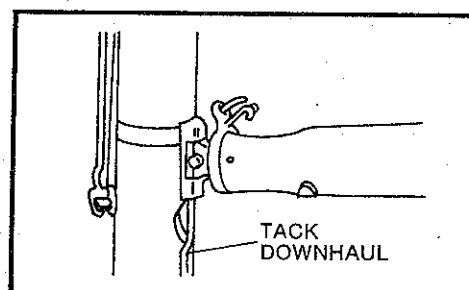


Fig. 19

2-5. MAIN SHEET LEAD:

- (1) Main Sheet: See Fig. 20.

Main Sheet: 15m 10mm ϕ Red: 1/4
50 ft 13/32" dia.

- (2) Traveller Adjust: See Fig. 21.

Traveller Adjust: 4.5m 8mm ϕ Red: 1/8
15ft 5/16" dia.

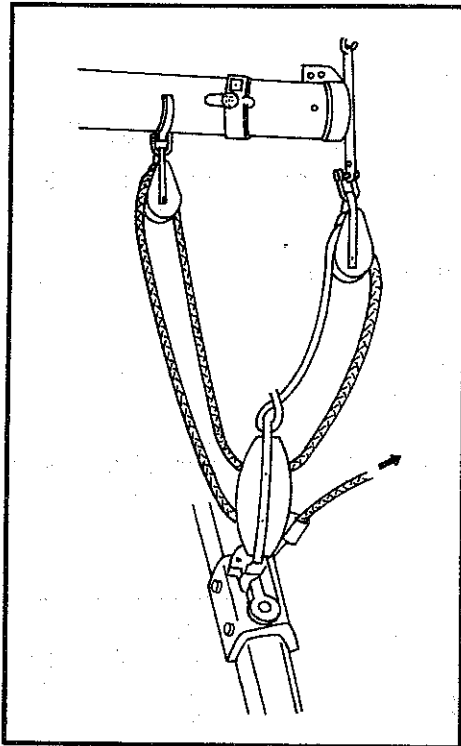


Fig. 20

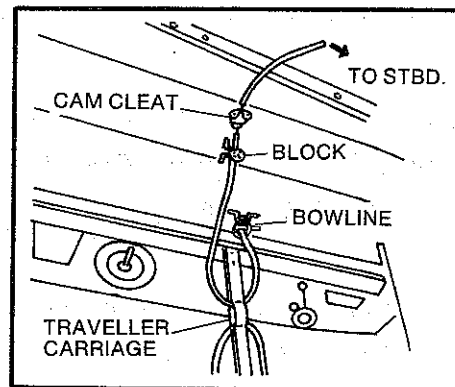


Fig. 21

2-6. BENDING ON THE MAIN SAIL:

- (1) Start with the clew, pull the clew cringle to the end of the boom as a crew member "feeds" the bolt rope into the groove from the gooseneck (see Fig. 22).
 - (2) Shackle the clew outhaul to the clew cringle (see Fig. 23).
 - (3) Shackle the tack to the gooseneck fitting (see Fig. 24).
 - (4) Rigging the Reef Line:
 - 1) Secure the 1st reef line (5.5m 8mm ϕ White / 18ft 5/16"dia.) to the eye strap at the end of the boom by a bowline (see Fig. 6).
 - 2) Reeve it through the 1st (the lowest) reef cringle on the leech and through the 1st (aftermost) cheek block on the port side of the boom and the eye of the jam cleat.
 - 3) At the bitter end make a figure 8 stopping knot. The 2nd and the 3rd reef lines will be arranged similarly.
- 2nd Reef Line:
7.5m 8mm ϕ White / 25ft 5/16"dia.
- 3rd Reef Line:
9.5m 8mm ϕ White / 31ft 5/16"dia.

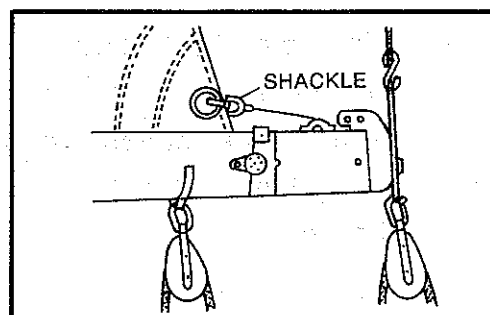
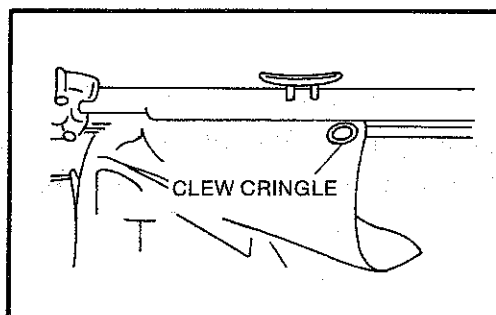


Fig. 22

Fig. 23

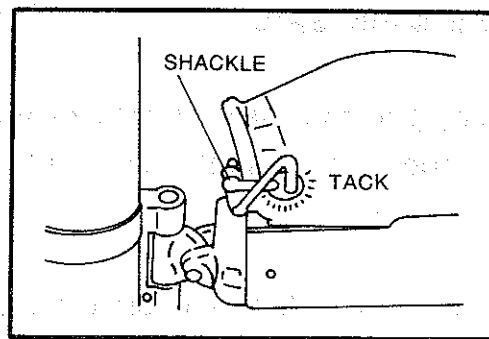


Fig. 24

(5) Insert the Battens:

The top batten is the shortest.

The 2nd and the 3rd battens have the same length and the lowest batten is medium in length.

(6) Attach the Halyard to the Head Board:

1) Before attaching the sail to the mast, start at the tack and check the length of the luff to be sure it is not twisted.

2) Insert the luff bolt-rope into the groove of the mast from the wider section of it.

3) Shackle the halyard to the head board. Be sure the halyard is clear of stays or spreaders.

4) Clear the Mainsheet:

The sheet must be free to run through the blocks as the sail is raised. The coiled sheet is usually laid flat on the floor of the cockpit with the part leading to the boom coming from the top of the coil.

(7) Hoist the Mainsail:

Before you attempt to hoist the sail, check the wind direction. The boat should be headed into the wind.

1) Release the boom lift and have the boom held by a crew member while the sail is being raised.

- 2) Pull the halyard from the cockpit as a crew member feeds the bolt rope into the groove.
 - 3) When the head board reached the mast top stopper, belay the halyard to the cleat.
 - 4) Push down the gooseneck so as it touches to the lower stopper and belay the tack downhaul to its cleat.
- (8) Cunningham: (5m 8mm ϕ Red: 1/8 / 17ft 5/16"dia.)
 The usage of the cunningham is to adjust the tension on the luff according to wind conditions.
 The end is belayed to the eye strap on the port side of the mast and the line is rove through the cunningham hole on the luff and secured to the clam cleat on the starboard side of the mast.
- (9) Adjust and set the clew outhaul.
- (10) Take the slack off from the reef line.

2-7. BENDING ON THE JIB:

- (1) Secure the tack to the second pin on the stem head fitting. Turn the pin 180 degrees to set. Check the position of the stopper of the pin. Secure the jib hanks or snaps, starting from the bottom to the head stay. Check each snap carefully as it is slipped onto the stay to see it is not twisted. Check aloft to be sure the halyard is not wrapped around the stay and then secure it to the head of the jib.
- (2) Jib Sheet Lead:
 The forward ends of the jib sheets will be secured to the clew of the jib by bowline, or by making "Toggle and becket" — "Tabarly knot". Then the bitter end will be led outside of the shrouds and rove through the sliding block on the track and turning block and led to the winch.

2-8. REEFING:

Most of the sailboats in beating will loose speed and beatig angles relatively if the boat heels more than 30 degrees. This is the time to shorten sails by changing the jib to a smaller one and or by reefing the main accordingly.

The following method of reefing is called "Jiffy Reef" by Peter M. Shutter in his excellent "SAIL" article Sept. '71 and also named "Slab Reef" derived from the slab line which was used to haul up the foot of square sails. It is really a jiffy and quick reef permitting the main to be reefed underway without dropping or using roller reef.

(1) Stand-by:

Helmsman: to slack the main

No. 1 Crew: to slack the boom vang and main halyard

No. 2 Crew: to haul in the reef line.

(2) Go: (Reef)

1) Slack boom vang.

2) Slack main sheet.

3) Pull reef line tight and cleat, raising boom end.

4) Drop halyard to the mark predetermined and hook the tack reef cringle to the hook on the gooseneck.

5) Pull main halyard and belay.

6) Harden downhaul, sheet in main.

7) Carefully tie reef points or lash down the bunt by a small line.

3. ELECTRIC SYSTEM:

3-1. BATTERY:

The power for the lights aboard and engine starting is supplied by the 12-Volt storage battery (optional). Because the engine installed, YANMAR's single cylinder diesel engine, can be started by hand-cranking very easily, one regular 12V-70AH battery is good enough generally. The engine is equipped with a 12V-35A alternator with IC regulator made by HITACHI. This system rapidly charges the battery until it reaches capacity and then shuts itself down and provides only a trickle charge to keep the battery fully charged.

The battery stowage is located under the starboard forward settee and just behind the main battery switch. Lash down the battery to the hull. Two eye straps are fitted there and one lashing strap is enclosed for lashing purpose.

3-2. BATTERY SWITCH:

The battery switch is under the starboard settee. By switching this switch from "OFF" to position "BOTH" you can energize the all electric system, e.i. the engine and the switches on the distribution switch panel.

By switching this switch to "1", you energize the switches for all lighting system and by "2" the engine respectively.

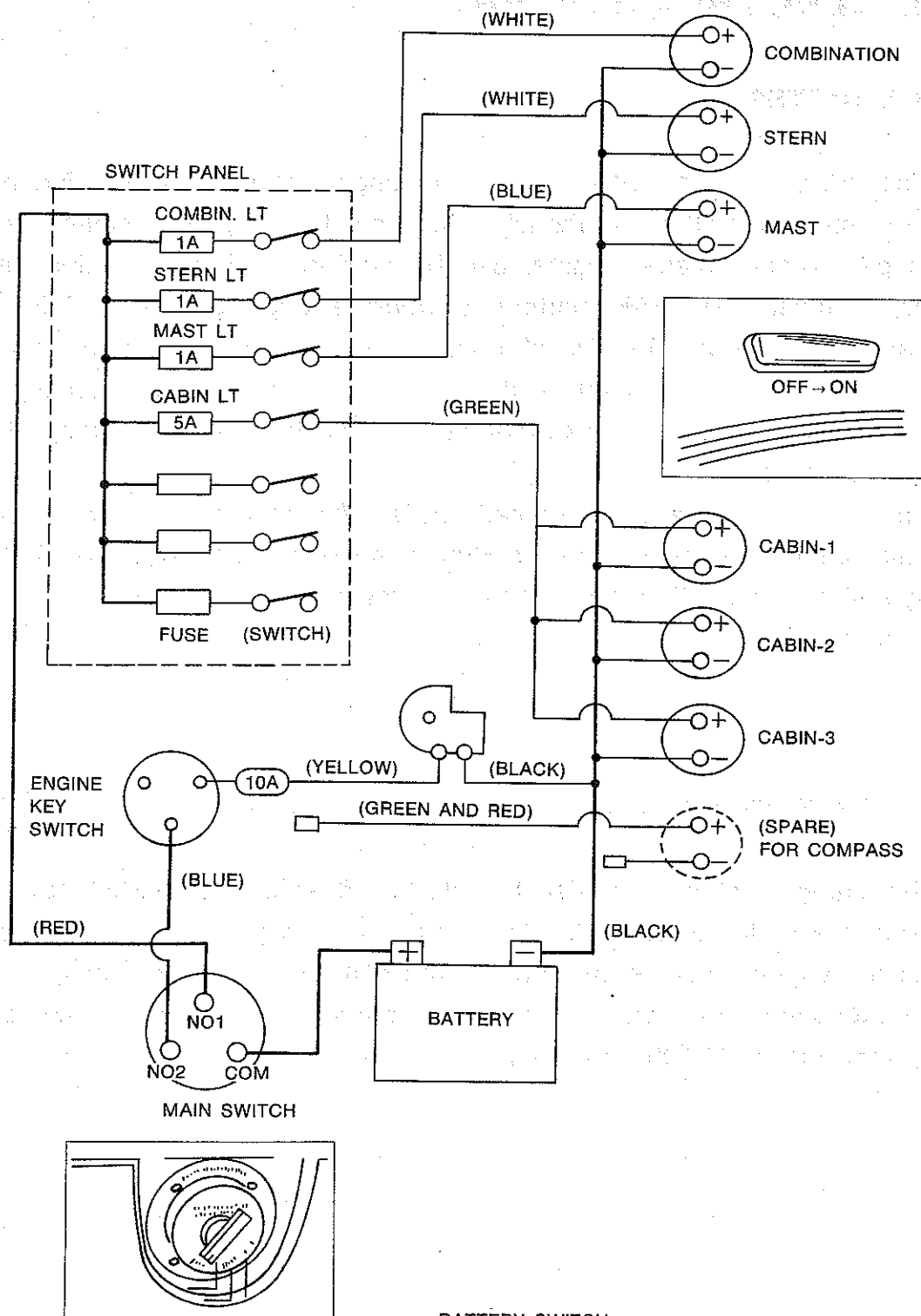


Fig. 25 ELECTRIC SYSTEM

* SPECIFICATION SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

3-3. ELECTRICAL SWITCH PANEL:

All control switches and fuses are installed in the electrical switch panel on the front board of the stowage bin above the starboard quarter berth, with the exception of the engine and blower switch which is starboard side of the cockpit well. The engine key switch works as the blower switch also. Each cabin light has its own switching system. The entire system is diagrammed in detail in Fig. 25.

NOTE: WHEN YOU START THE ENGINE, TURN THE MAIN BATTERY SWITCH TO "2" OR "BOTH" AND ALSO THE ENGINE KEY SWITCH "ON" NO MATTER HOW YOU START IT BY HAND OR NOT, EXCEPT WHEN YOU DISENGAGED THE ALTERNATOR FROM THE ENGINE.

FAILURE TO DO THIS WILL RESULT THE DAMAGE OF THE DIODES OF THE RECTIFIER OF THE ALTERNATOR.

3-4. BILGE BLOWER:

The bilge blower is located under the port aft cowl vent. By turning the engine key switch to "ON" position, you can turn the bilge blower. The fuse is behind the engine instrument panel and accessible from the starboard quarter berth.

NOTE: DURING THE ENGINE OPERATION, PERIODICALLY CHECK THAT THE BILGE BLOWER IS OPERATING.

4. ENGINE

The YAMAHA-25II is equipped with a 4-cycle, single cylinder YANMAR Model YSM8 diesel engine. These engines are direct drive and have a single disk clutch (wet type) and 2 : 1 reduction gear in the transmission gear box. The engines are controlled from the cockpit by Morse single-lever controls, Model "MV" Control head with 33-C Red Jacket Cables.

NOTE: MORSE CONTROLS DIVISION
NORTH AMERICAN ROCKWELL
Hudson, Ohio 44236

These engines are reliable and easy to operate, as are the controls, but there are a number of essential checks that must be made prior to operation in order to ensure continued reliability. Remember, the more you know about the operation of the auxiliary, the less likely it is to give you trouble. THIS SECTION IS SUPPLEMENTARY. THEREFORE, READ "YANMAR OPERATION MANUAL - YSM" CAREFULLY.

In every case, the fuel supply, cooling system, oil level in engine and oil level in transmission should be checked.

4-1. BEFORE STARTING ENGINE:

4-1-1. Fuel Supply:

- (1) Fuel is supplied by one 25 liter (6.6 US gals) tank which is located under the port forward berth.
- (2) The fuel filler cap is located on the port side deck (see Fig. 2). The air vent runs up into the stanchion just abaft the filler cap.
- (3) Open the fuel supply valve under the fuel tank. (On U.S. Model the fuel supply valve is located on the top of the tank).
- (4) Turn on the valve of the fuel filter (see fig. 26, 27).

4-1-2. Fuel System Diagram of Standard Model:

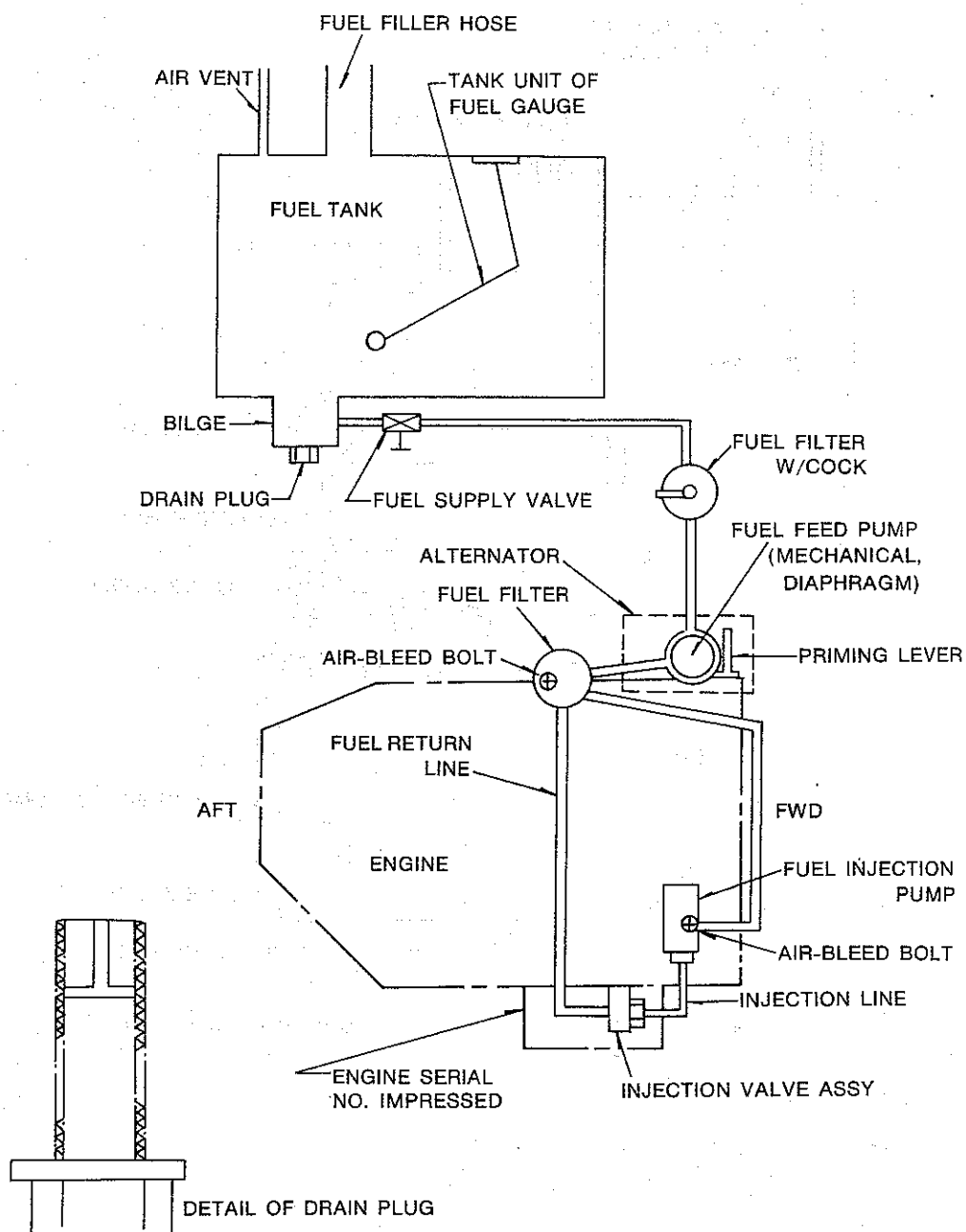


Fig. 26

4-1-3. Fuel System Diagram of U.S.A. Model:

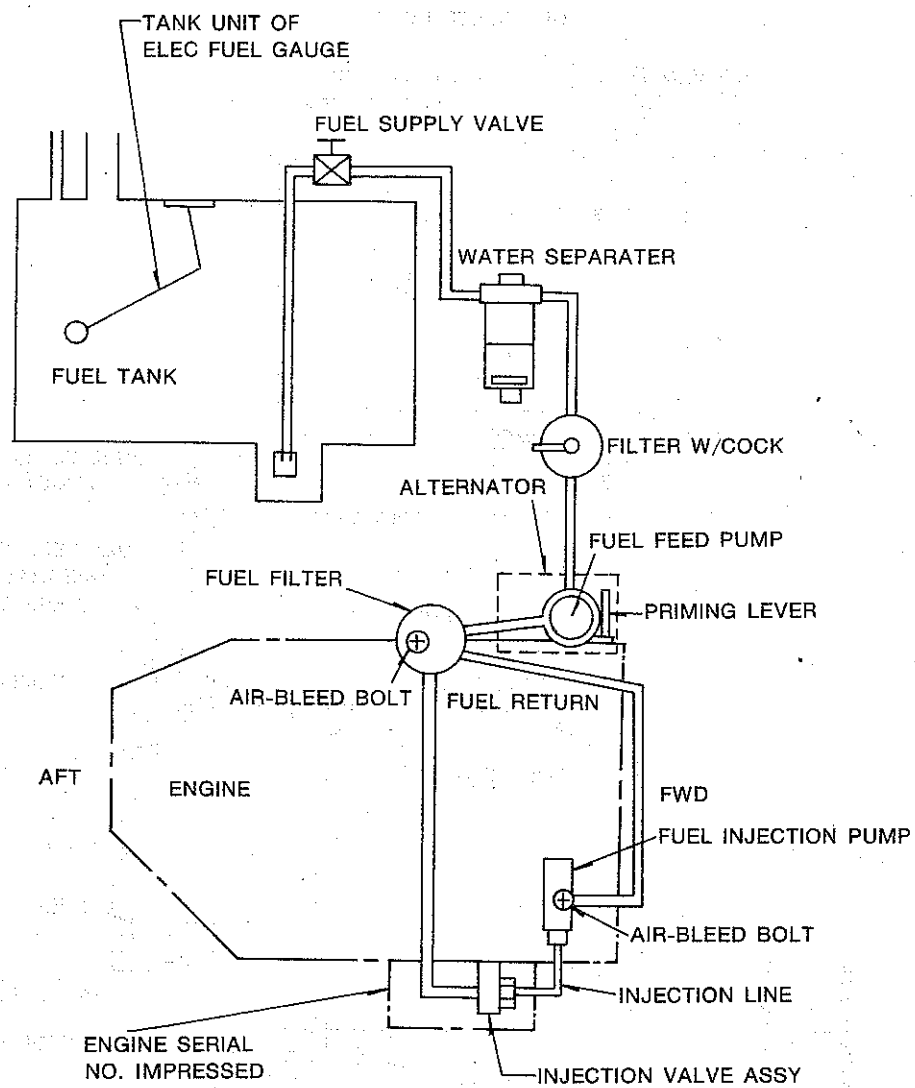
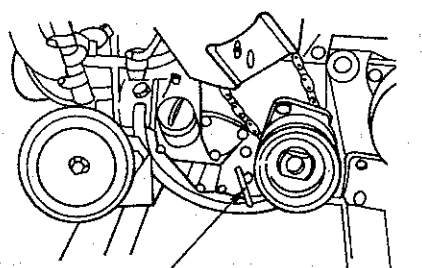


Fig. 27

4-1-4. Other Check Points:

- (1) Turn the handle which is on the forward lower end of the engine to both left and right several times to remove dirt from the lubricating oil strainer element (see Fig. 28).
- (2) Lubricate:
 - 1) Starter chain.
 - 2) Starter chain free gear metal (see Fig. 29).
 - 3) Starter shaft bearing (see Fig. 30).



HANDLE OF LUB. OIL STRAINER

Fig. 28

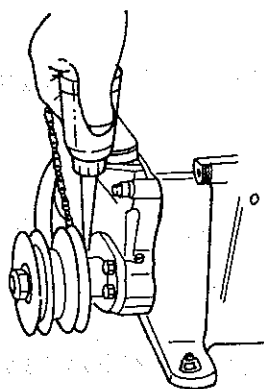


Fig. 29

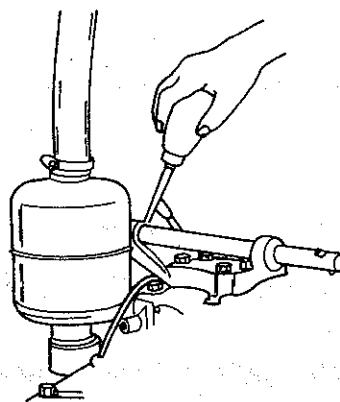


Fig. 30

- (3) Check the oil level in engine, oil level in transmission, the tension on V-belt, each terminal and that the clutch lever is in NEUTRAL.
- (4) Turn the battery switch from "OFF" to position "2" or "BOTH".
- (5) Open the sea water cooling sea valve which is under the removable part of the forward most cabin sole.

These can be done from below. The rest of the starting operation is conducted from the cockpit.

4-2. STARTING ENGINE:

4-2-1. Electrical Starting:

- (1) Pull out the engine warm-up knob under the control lever and put the control lever in the "half speed" position.

NOTE: BEFORE STARTING MOTOR, MAKE SURE THIS CONTROL IS IN NEUTRAL POSITION

With Control in Neutral Position, knob can be pulled out — this will allow clutch to remain in neutral while control lever can be moved to obtain desired starting throttle.

- (2) Turn the switch key to "ON" position. (The warning buzzer will sound.)
- (3) Press the starter button to start the engine. As soon as the engine starts, remove your finger from the button.
- (4) Move the control lever back to the Idle position and let the engine warm up for at least five minutes.

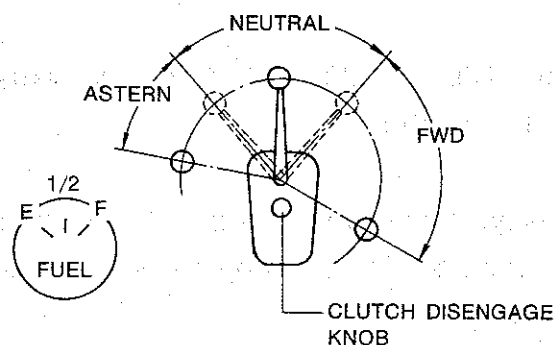


Fig. 31

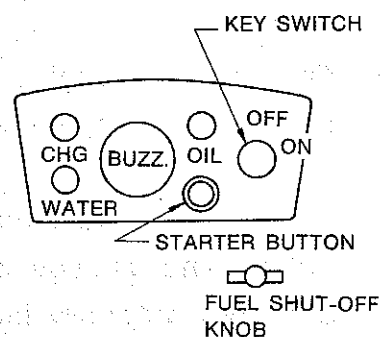


Fig. 32

- NOTE:**
- 1) DO NOT RUN THE STARTER MOTOR FOR MORE THAN 10 SECONDS AT A TIME.
SHOULD THE ENGINE FAIL TO START, WAIT FOR ABOUT 30 SECONDS BEFORE OPERATING THE STARTING MOTOR AGAIN.
 - 2) DO NOT TURN THE BATTERY SWITCH OR KEY SWITCH OFF WHILE THE ENGINE IS RUNNING.
 - 3) BE SURE TO CHECK THAT THE CHARGING LIGHT AND THE OIL PRESSURE AND COOLING WATER WARNING LIGHTS GO OFF.
 - 4) CHECK THAT THE COOLING WATER IS COMING OUT OF THE EXHAUST ON THE TRANSOM.

4-2-2. Hand Starting:

- (1) Turn the battery switch to "2" or "BOTH" position.
- (2) Pull out the engine warm up knob and place the control lever in the "HALF" position.
- (3) Turn the switch key to "ON" position.
- (4) Disengage the decompression lever and turn the starting handle vigorously 5 ~ 6 times.
- (5) When sufficient momentum has been obtained, release the decompression lever and turn the starting handle firmly.

4-3. WARMING UP:

- (1) Operate the engine at around 700 ~ 800 RPM for at least five minutes to completely warm up the engine.
- (2) If the engine is running normally, place the control lever at neutral detent and engage clutch by pushing in the engine warm up knob and then gradually increase speed.

NOTE: WHEN RUNNING THE ENGINE FOR THE FIRST TIME AFTER LAUNCHING, RUN IT FOR 15 ~ 20 MINUTES AT ABOUT 700 ~ 800 RPMs.

4-4. POINTS TO CHECK DURING OPERATION:

- (1) Fuel Oil: Check the fuel gauge.
Be sure to add fuel before the gauge shows empty.
- (2) Lubrication Oil: Check that the oil pressure warning light is OFF.
- (3) Check occasionally that the cooling water is coming out of the engine exhaust on the transom and that the cooling water temperature warning lamp is OFF.
- (4) Check the color of the exhaust. Excessively black exhaust fumes indicate that the load is too great and should be reduced.
- (5) Abnormal Sound: If the engine produces unusual noise during operation, stop the engine immediately and check it carefully.

NOTE: PLEASE READ "YANMAR OPERATION MANUAL" CAREFULLY.

4-5. SECURING ENGINE:

- (1) Gradually reduce the speed to LOW.
- (2) Place the control lever at the neutral detent and idle the engine for about 5 minutes.
- (3) Disengage the clutch and race the engine at 2500 rpm before stopping to expel any gas in the cylinder.
- (4) Set the engine to the lowest revolution speed (about 500 rpm), cut the fuel, and stop the engine.

NOTE: 1) NEVER USE THE DECOMPRESSION LEVER TO STOP THE ENGINE.

- 2) To cut the fuel pull the fuel shut-off knob LIGHTLY and hold it until the engine stops completely. It will take several seconds to stop because of its momentums. And also the sound of engine is very quiet there is a tendency to pull the fuel shutoff knob too strongly to break.

(5) Turn Off:

- 1) Key switch
 - 2) Battery switch
 - 3) Cooling water sea valve
 - 4) Fuel filter cock
- (6) While the engine is still warm wipe off any dirt and grime on the engine.

NOTE: When starting and stopping the engine with the key switch "ON", the warning buzzer will sound. This does not indicate engine trouble.

PRACTICAL NOTE:

READ "YANMAR OPERATION MANUAL" CAREFULLY.

(1) Breaking In:

The new engine must be carefully broken in during the first 50 hours. Operate below 2,500 rpms.

After the breaking-in period, retighten any important nuts and bolts that are loose.

Change the lubrication oil and the oil filter element or at least clean it.

(2) Heeling Angles Under Sail and Power:

KEEP THE HEELING ANGLE OF THE BOAT LESS THAN 20 DEGREES, OTHERWISE OVERHEATING OR SERIOUS DAMAGE OF THE ENGINE MAY RESULT.

(3) When the battery has not sufficient power by itself to start the engine, it may be started by using the decompression lever.

(4) Bleeding (Air Venting) the Fuel System:

In the event of air entering the fuel system, it will be necessary to bleed the whole fuel system before starting can be effected. Air in the fuel system can be either due to running out of fuel or leakage on the suction side of the fuel supply line.

1) Pull out the knob for engine warm-up and place the control lever in the "half speed" position.

2) Open the fuel supply valve.

3) Loosen the air bleed bolt on the top of the second fuel filter by one and a half turns.

4) Move the priming lever of the fuel feed pump up and down. The fuel feed pump is located under the alternator forward on the port side of the engine (see Fig. 23)

When bubbles stop coming out with the fuel, secure the bolt.

5) Loosen the air-bleed bolt on the fuel injection pump (see Fig. 23) by one and a half or two turns. Move the priming lever up and down until all the air bubbles out. Secure the bolt.

6) Put the control lever at FULL position.

Try to start the engine. In most cases the engine may start.

If not:

7) Loosen the high pressure pipe from the fuel injection pump.

Turn the engine with the starting motor, and at the same time tighten the cap nut of the high pressure pipe if fuel comes out.

- 8) Put the decompression lever in the "No Compression" position and turn the starting handle and make sure that the injection sound of the fuel is a strong high pitched "hiss".

Try to start the engine. As instructed in 4-2-2. Hand Starting.

(5) Cleaning the Fuel Filter:

Clean the fuel filter periodically. Replace the dirty element. Do not forget to bleed the filter after cleaning.

(6) Cleaning the Bilge of the Fuel Tank:

Clean the bilge of the fuel tank every three months by using the bilge drain plug.

(7) Water Trap: (U.S.A. Model)

Before the float reaches the red line drain out the water through the drain plug.

(8) Propeller Shaft Packing Gland:

When the engine is running and in gear, there should be a few drops of water coming out of the gland or else the packing locknuts are too tight and will burn up.

A drop of sea water every 10 ~ 20 seconds is standard, so adjust the locknuts.

At moorage, you may tighten the locknuts to stop the leakage BUT DO NOT FORGET TO ADJUST THE LOCKNUTS BEFORE YOU START THE ENGINE.

Replace the packing at least once a year.

Be sure you set SQUARE CUT WAX IMPREGNATED FLAX PACKING, of 4.8 mm / 3/16 inch and that it is NOT WOUND AROUND THE SHAFT but cut to form three single rings which are "stacked" on the shaft so that the cuts are staggered.

(9) Periodical Replacement:

Every 1 year	Gland packing
Every 2 years	Fuel filter hose
	Fuel supply line
	Fuel return line
	Exhaust rubber hose
	Stern tube rubber hose
Every 3 years	Fuel tank

(10) MORSE Single Lever Control, Adjustment of:

A tag is attached to the control lever and important instructions are printed on it. For your convenience we will repeat these instructions here:

FOR THE OWNER

IMPORTANT INSTRUCTIONS

This control system has been adjusted at the factory. However, due to changes in engine performance it may be necessary to re-adjust it after the break-in period, according to the instruction on the reverse side.

1. Disconnect both control cables at the engine and adjust engine for smooth idle. Set the idle stop for recommended idle speed.
2. Place control head hand lever in Forward Detent. Adjust the terminal on the throttle cable until it aligns with hole in carburetor throttle arm. replace terminal and lock with cotter pin.
3. Place control head hand lever at neutral detent. Place outdrive or transmission shift lever in neutral position. Adjust the terminal on the shift cable until it aligns exactly with the outdrive shift lever and re-connect the cable.
4. When control is properly adjusted, engine speed will remain at idle when control head hand is moved from Neutral to Forward or Reverse positions.

5. PLUMBING SYSTEM:

5-1. PLUMBING SYSTEM DIAGRAM: (Also see Fig. 4)

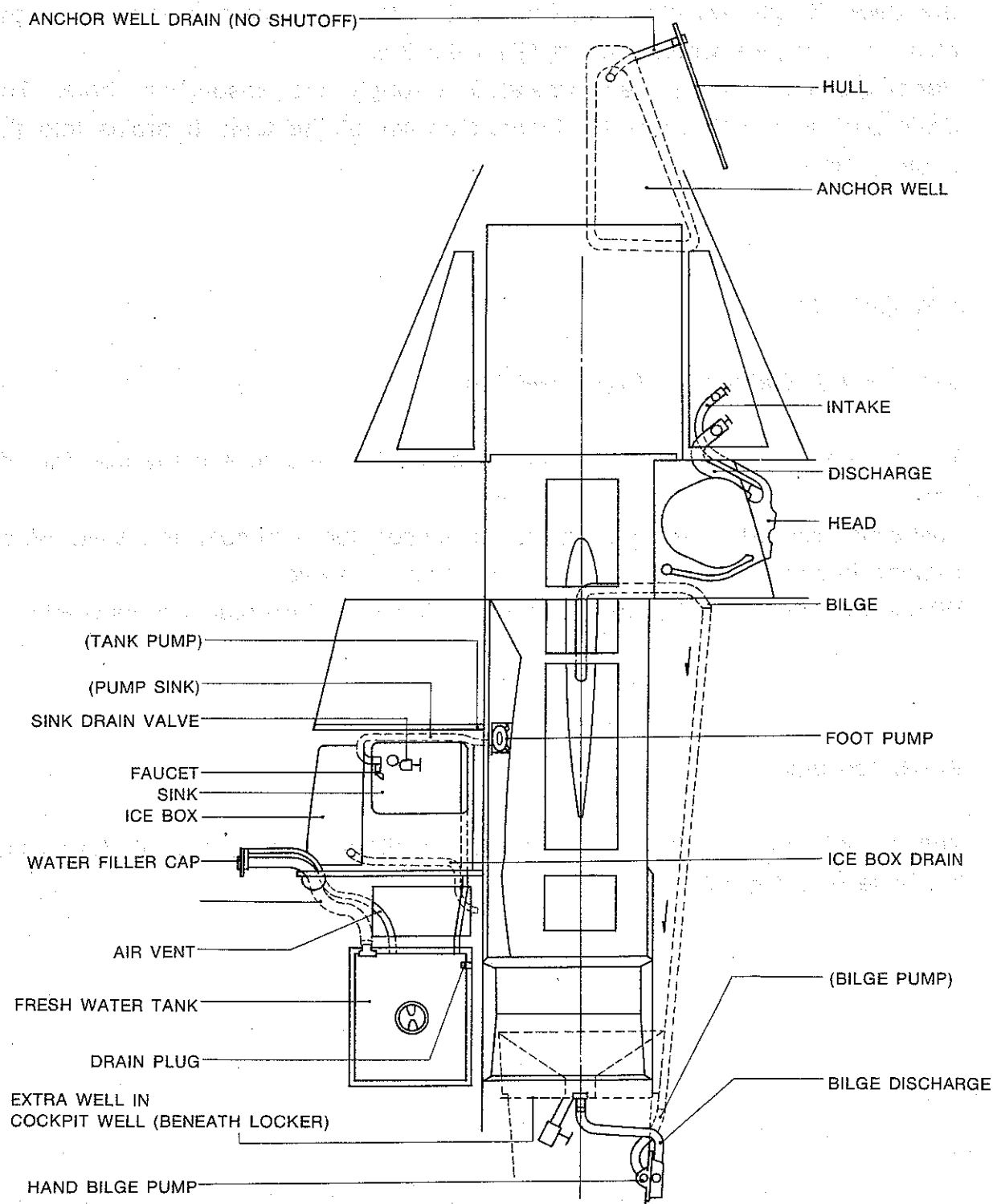


Fig. 33 DIAGRAM OF PLUMBING SYSTEM

5-2. FRESH WATER TANK:

A 9.5 gallon (36 litres) fresh water tank is under the port quarter berth. The air vent runs up along the hull through the shelves up to just under the deck. It will over-flow into the shelf. Please be careful and watch the clear air vent pipe when you are filling the tank. Periodical cleaning is recommended through the inspection hole. The drain plug is at lower forward inboard corner of the tank. It drains into the bilge directly.

5-3. GALLEY:

5-3-1. Fresh Water Foot Pump and Sink:

To use the galley stove or the sink, fold the top and turn it towards the ice box.

The sink drain shut-off valve is in the closed locker under the sink. When running in rough seas, it is prudent to close the valve.

When you use the foot pump, please use it gently. The faucet turns freely.

5-3-2. Ice Box:

The capacity of the ice box is 1 cu. ft (29 litres). Please note it drains into the bilge (see Fig. 33).

5-4. HEAD:

- (1) Open both intake and discharge valves under the forward starboard berth by turning the handles counterclockwise.
- (2) And read the "TOILET OPERATING INSTRUCTIONS" mounted on the bulkhead. For your convenience we will repeat these instructions here:

TOILET OPERATING INSTRUCTIONS

BEFORE USING: Raise lever and pump slowly to partly fill and wet inside of bowl.

AFTER USING:

- 1) Raise lever, pump until bowl is thoroughly cleaned and continue with several more full strokes to flush discharge lines.
- 2) Depress lever and pump slowly until bowl is empty.

IMPORTANT: When not in use, lever must be left in depressed position to prevent flooding.

DO NOT PUT PAPER TOWELS, MATCHES, RAGS, etc. INTO BOWL. THEY WILL PLUG THE VALVES.

5-5. BILGE PUMP:

To meet the current requirement of the North American Yacht Racing Union's standards for offshore racing events, one **MANUAL BILGE PUMP** is mounted on the starboard side of the cockpit well.

The pump discharges bilge through the drain hole in the extra well beneath the cockpit locker (see Fig. 33 and 4).

5-6. COCKPIT LOCKER:

With the same reasons as the above, the cockpit locker is designed to stow a life raft for offshore racing events, but also anything else may be stowed.

There are two bins on each side of the cockpit well for the winch handles, bilge pump handle, gear lever and speed control lever etc.

5-7. ANCHOR WELL:

On the fore deck the self-draining anchor well is located. A 10 kgs (22 pounds) YAMAHA ANCHOR (optional) can be stowed.

The YAMAHA anchors are developed by us, and a kin of a modified DANFORTH type anchor. (see Fig. 34).

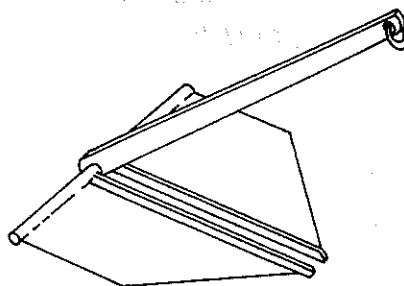


Fig. 34 YAMAHA ANCHOR
(OPTIONAL)

6. MAINTENANCE TIPS:

Get in the habit of checking fittings for cracks, wear or fatigue. Particularly, check locknuts which often seem to come loose.

6-1. FIBERGLASS SURFACES:

Maintenance of today's fiberglass sailboats is extremely simple when compared with the upkeep necessary to keep boats of other materials in "Shipshape and Bristol Fashion".

The glossy outer surface of your laminated fiberglass boat is known as "gelcoat", a polyester resin into which coloring pigments have been incorporated.

It should be hosed with fresh water after every outing. At least once a year the smooth gelcoat surface should be waxed and polished with a good automotive wax or a boat wax. A power buffer will make work on the large areas like the hull easier, but care must be taken not to cut through the gelcoat surface, particularly at corners and edges. For power cleaning use a LIGHT abrasive cleaner, while a heavier rubbing compound may be used when polishing by hand.

After buffing, wax and polish all surfaces except the-non-skid areas.

NOTE:

GELCOAT:

A can of gelcoat is enclosed with your boat for touch up. It is of ISO type and does not include catalyst, promoter or paraffin wax.

At 25 degrees Celsius temperature:

- 1) Add the promoter — 0.5% by weight and mix thoroughly,
- 2) Make a 2% paraffin wax solution in styrene and add this solution 4% by weight to the gelcoat and mix thoroughly and
- 3) Add the catalyst — 1% by weight and mix thoroughly.

YAMAHA uses:

Promoter: Cobalt naphthenate, 6% solution in toluen.

Catalyst: Methyl isobuthyl keton peroxide, 75% solution in
Di-methyl phthalate or
Methyl ethyl keton peroxide, 55% solution in
Di-methyl phthalate.

SAFETY PRECAUTIONS:

1. ALLOW AMPLE VENTILATION.
2. KEEP AWAY FROM OPEN FLAMES AND SPARKS.
3. NEVER MIX JUST PROMOTER AND CATALYST TOGETHER—
A VIOLENT EXPROSION WILL RESULT.

6-2. STANDING RIGGING AND HALYARDS:

Hose down with fresh water to remove salt and dirt. Periodically take a trip aloft to check the entire rig. Wire rigging must be examined carefully for broken strands and signs of frayed sections. If you find any, replace it. Especially check the places where you applied electric tape. Take the tape away, clean the wire, and then retape.

Particularly close scrutiny should be given to those sections which rest on sheaves.

When not under sail, KEEP THE HALYARDS TIED AWAY FROM THE MAST.

6-3. SPARS:

Take along a rag and a bucket of fresh water to clean the rigging and mast on your way up. After cleaning the mast and boom with fresh water, lubricate periodically with light grease or spray with a protective film such as WD-40. Secure the boom snugly when your boat is not in use.

6-4. SAILS:

Sails should be folded for storage whenever possible. Periodically hose down sails with fresh water to remove salt. Pay attention to your sails and if any tears, rips or worn spots appear on the corners, or headboard, or stitching begins to chafe, make a note of the damage and its location. And at your convenience, take the sail to a sailmaker for a professional repair job.

6-5. TEAK:

The teak is varnished with Urethane Clear varnish. If it loses its gloss, apply several coats of urethane varnish after sanding with #120 paper. A good rub with a chamois after hosing down will keep the gloss and also lengthen varnish life.

6-6. HARDWARE:

All blocks, sheaves, turnbuckles, and winches should be lubricated periodically with a light grease or sprayed with a protective film such as "WD-40".

6-7. BATTERY:

Regular care such as for your car battery should be taken. Lash it down to the hull with enclosed lashing strap. Periodically clean the terminals and apply anti-rust grease.

6-8. ZINC-RING:

To protect under-water metal from galvanic action, two zinc-rings are attached (see Fig. 35 SHAFTING).

Usually they last for 6 months, but periodically check them and if the volume reduce to a half of the original size, please replace it.

It is important to keep the surface of the zinc-rings clean. Periodically scrape the surface to remove marine growth.

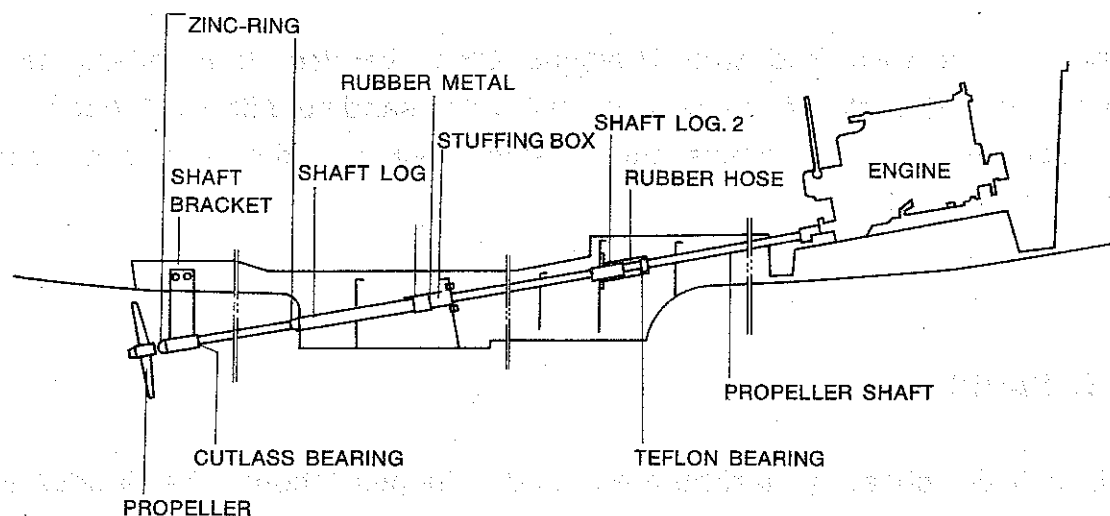


Fig. 35 SHAFTING

6-9. CRADLE:

The hull support of the cradle should have at least 150 mm / 6 in of width and apply felt or rubber sheet on its surface.

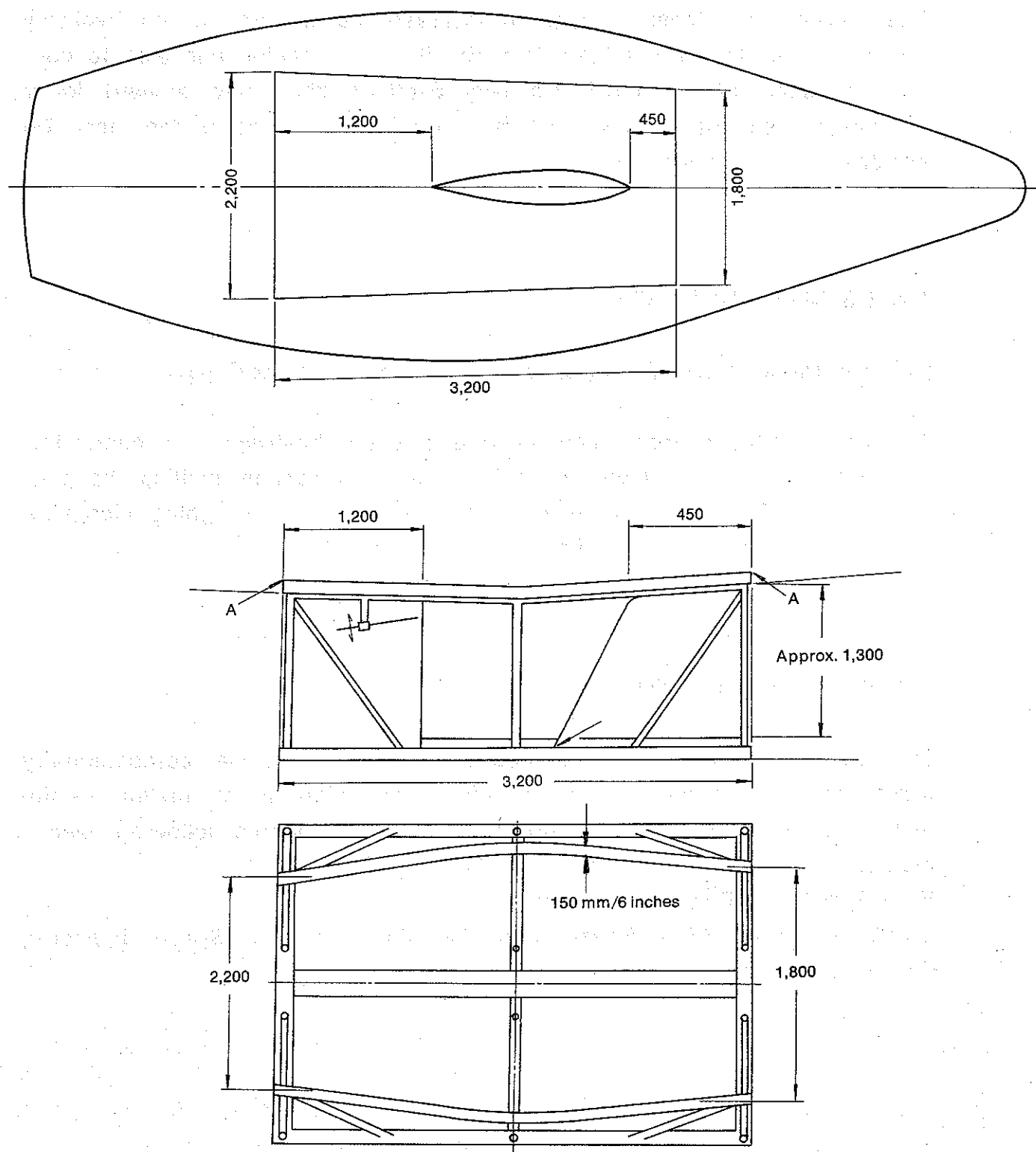


Fig. 36

7. OPTIONAL ITEMS:

7-1. BACKSTAY TENSIONER:

The backstay tensioner is used to increase the tension on the backstay and head stay to prevent the luff of the jib from sagging and also to control the bend of the mast. Be very cautious about the forward lower shrouds adjustment when you attempt to adjust the bend of the mast. Do not give them excessive slack.

7-2. FOLDING PROPELLER:

- (1) The merit of this type of propeller is its low drag under sail.
- (2) The demerit is: that, when the boat has any headway, it is nearly impossible or at least very difficult to stop the boat by shifting the gear reverse. Therefore you have to be very cautious in going alongside the wharf from certain angles.

7-3. INSTRUMENT CONSOLE:

The console is generally mounted just forward of the companionway hatch slide and provides a convenient presentation of information to the helmsman at all times. It is designed to accommodate following instruments:

VDO Speed and Distance Recorder

OMNI Apparent Wind Speed and Direction Indicator Speed Indicator,
Compass Indicator

7-4. WINCHES AND CLEATS FOR SPINNAKER SHEET:

Convenient for spinnaker handling in fresh breeze.

7-5. SAILS:

No. 1 Genoa (150%)

No. 2 Genoa (135%)

No. 2 Regular Jib

Storm Jib

Spinnaker

**7-6. TABLE-TOP MATTRESSES (2) AND
CABIN SOLE MATTRESS (1):**

The table can be used as an additional berth (see Fig. 37).

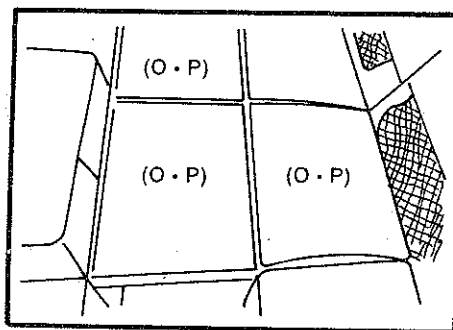


Fig. 37

7-7. BOTTOM PAINT:

Prevents the bottom from marine growth. Usually lasts for 6 months. the period will differ according to the condition of the water.

MEMORANDUM FOR THE RECORD

SUBJECT: [Illegible]

1. [Illegible]

2. [Illegible]

3. [Illegible]

4. [Illegible]

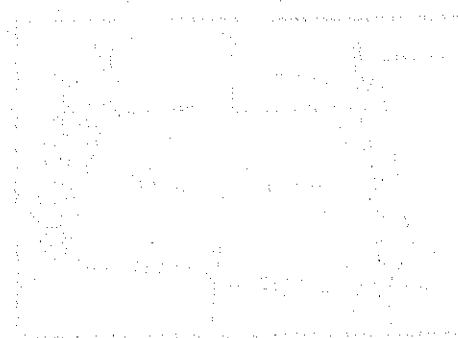
5. [Illegible]

6. [Illegible]

7. [Illegible]

8. [Illegible]

9. [Illegible]



10. [Illegible]

11. [Illegible]

12. [Illegible]