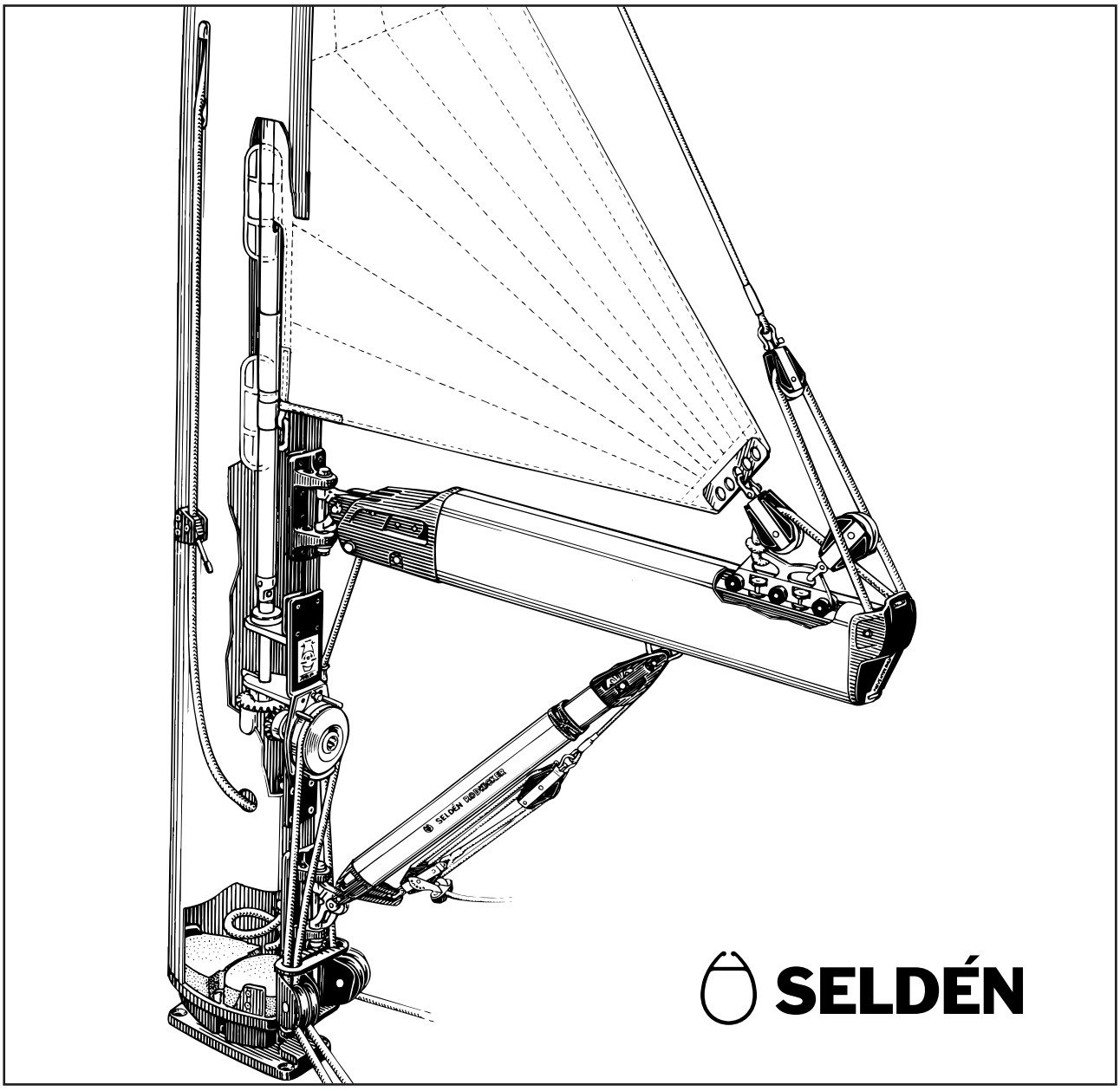
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2004-12-08

Manual for Furling mast
TYPE RB Mk II/RC Mk II



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PRODUCT DESCRIPTION.

- ☐ *Seldén Mast in-mast furling mast is a mainsail reefing and furling system.*
- ☐ *The furling geer been developed from experience gained from FURLEX foresail roller-reefing, and is dimensioned for the toughest conditions.*
- ☐ *The unique design of the halyard swivel bearing distributes the load over the whole ballrace to give smoother furling and the lowest possible friction, even under high loads.*
- ☐ *The entire reefing mechanism can be easily removed from the mast for service. Stainless steel thread inserts are used for all screws, so that dismantling is easy even after many years usage in a corrosive environment.*
- ☐ *The mast extrusion has an additional luff groove for a storm trysail or spare main. In an emergency even a foresail with rope luff could be hoisted.*
- ☐ *This Instruction Manual has been compiled to give you information on the in-mast reefing system. Study it and follow the instructions carefully, and we guarantee you many years of pleasurable use from your Seldén Mast in-mast furling mast.*

Follow the relevant rigging instructions in our booklet "HINTS AND ADVICE" for tuning the rig,

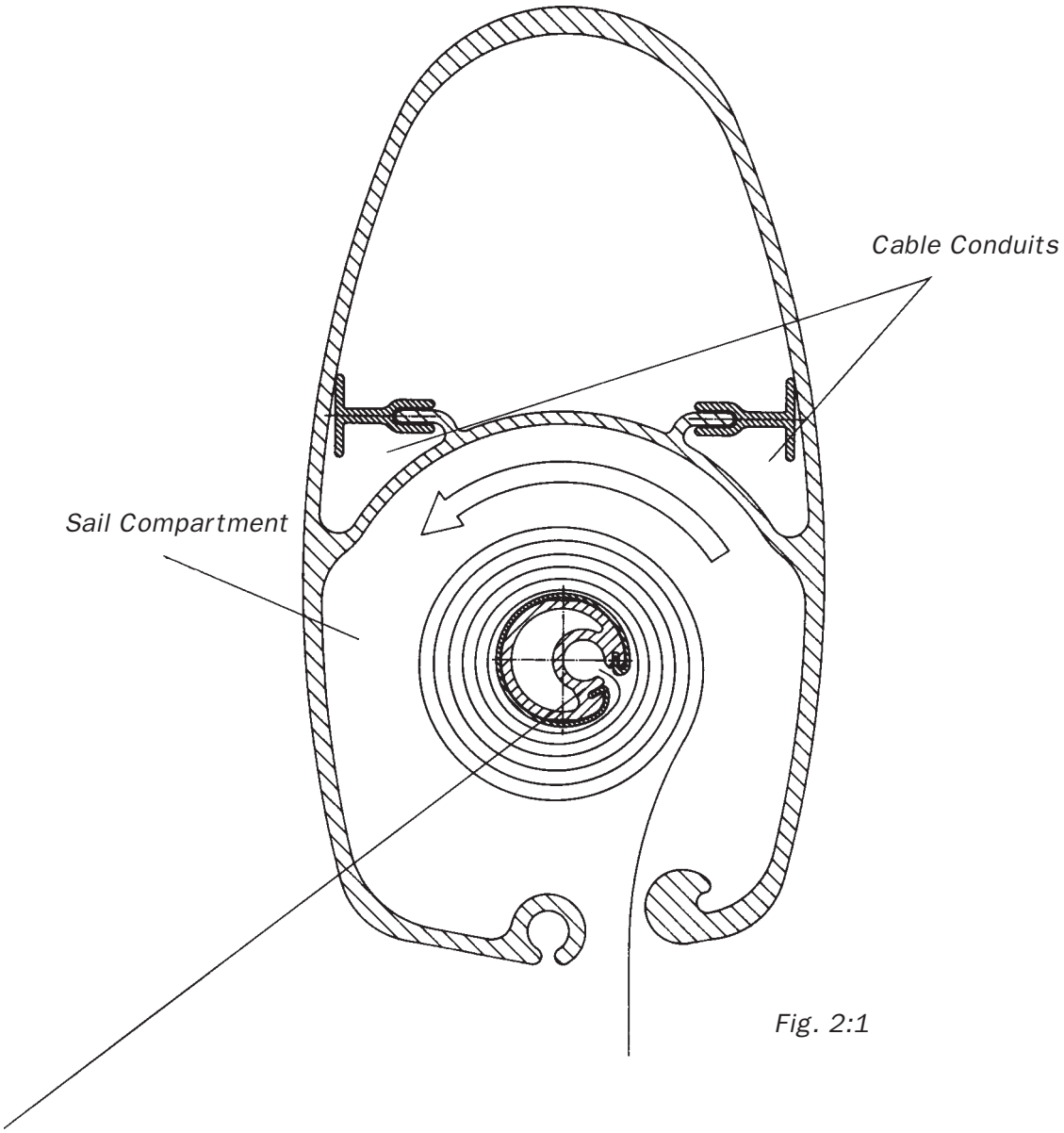


Fig. 2:1

Asymmetric luff extrusion giving reduced initial resistance to reefing due to easier bending of the luff.

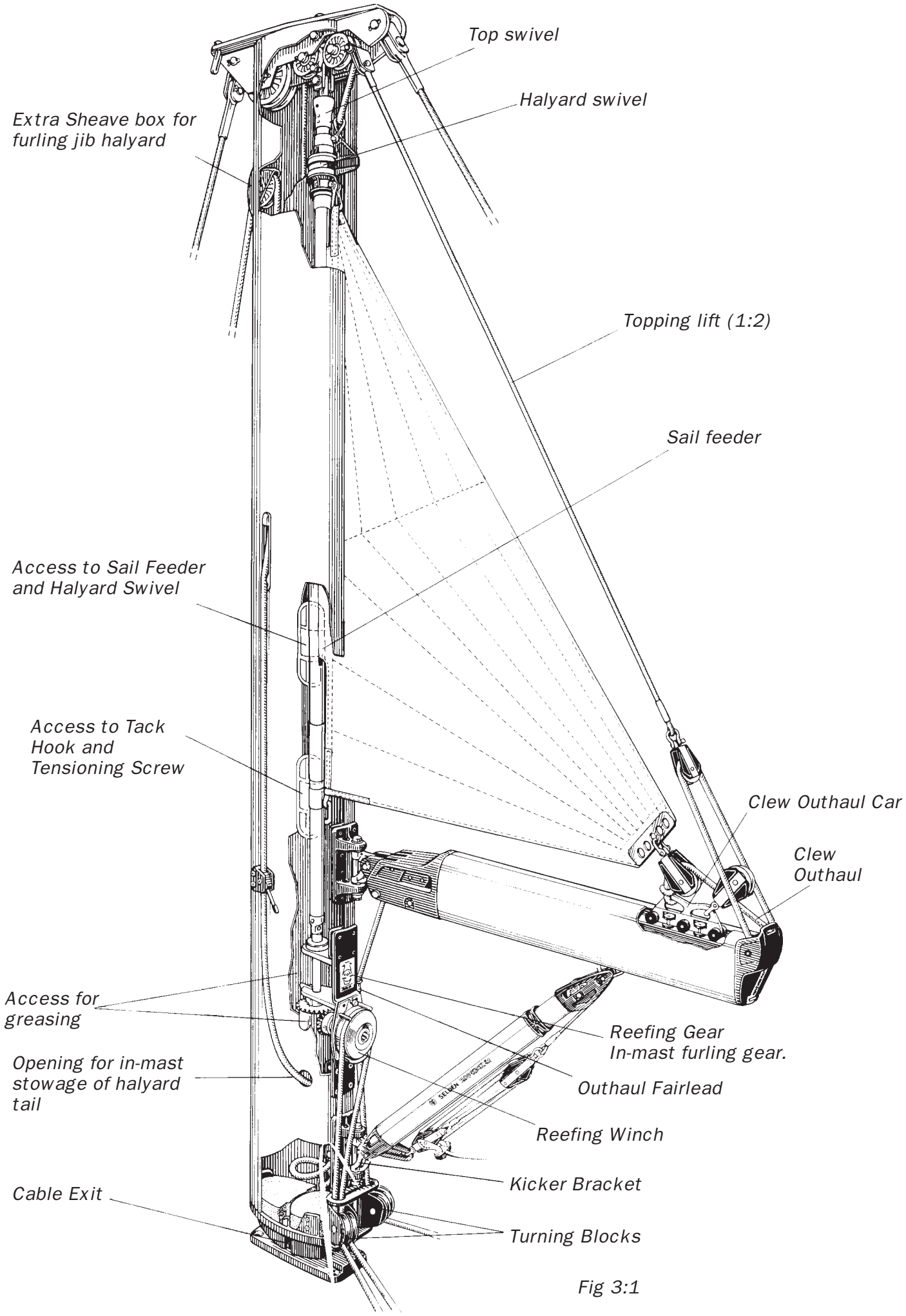

Top swivel
Halyard swivel
Extra Sheave box for furling jib halyard
Topping lift (1:2)
Sail feeder
Access to Sail Feeder and Halyard Swivel
Access to Tack Hook and Tensioning Screw
Clew Outhaul Car
Clew Outhaul
Access for greasing
Reefing Gear In-mast furling gear.
Opening for in-mast stowage of halyard tail
Outhaul Fairlead
Reefing Winch
Kicker Bracket
Cable Exit
Turning Blocks

Fig 3:1

CHECKING LUFF EXTRUSION TENSION PRIOR TO STEPPING THE MAST.

The luff extrusion is correctly tensioned before leaving the factory, but tension can be re-checked before stepping the mast in the following manner.

Lay the mast horizontally, and check that the extrusion is just clear of the mast wall at its mid point. If adjustment is neccesary see points 1-5 below.

If adjustment has to be made after the mast has been stepped, then the luff extrusion should be so tensioned that it does not beat against the mast wall when you grasp it through the upper access hole and shake it.

Most of the extrusion will be resting on the aft face of the sail compartment when sailing.

DO NOT OVER-TENSION! A luff extrusion that is over-tensioned will require increased furling effort.

LUFF EXTRUSION ADJUSTMENT.

1 *Remove the Access covers.*

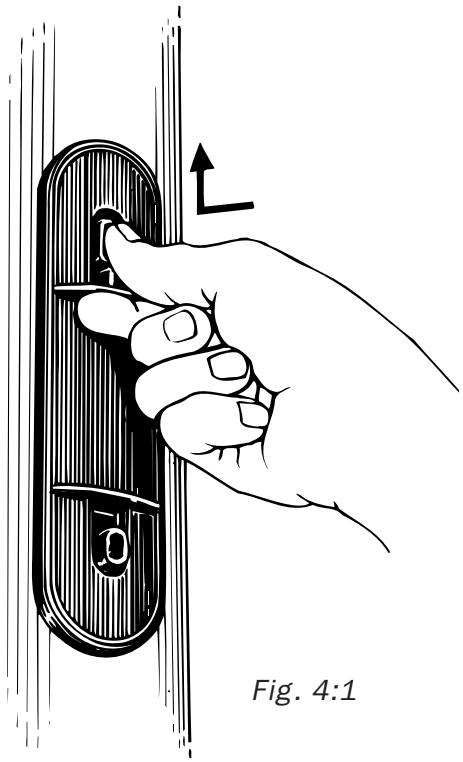


Fig. 4:1

Depress one button and push.

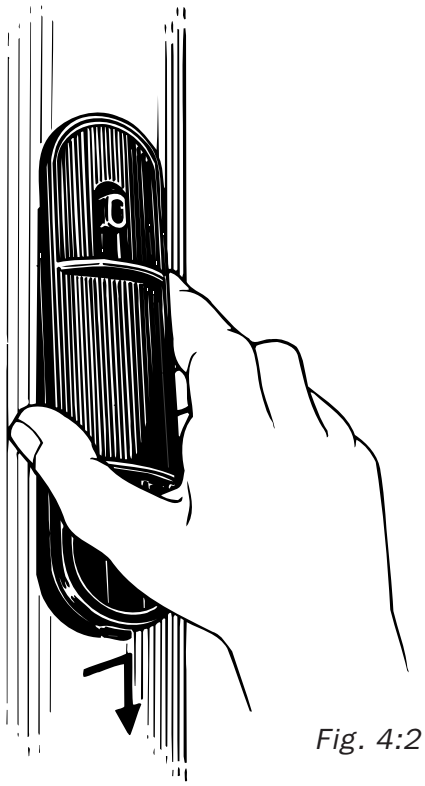
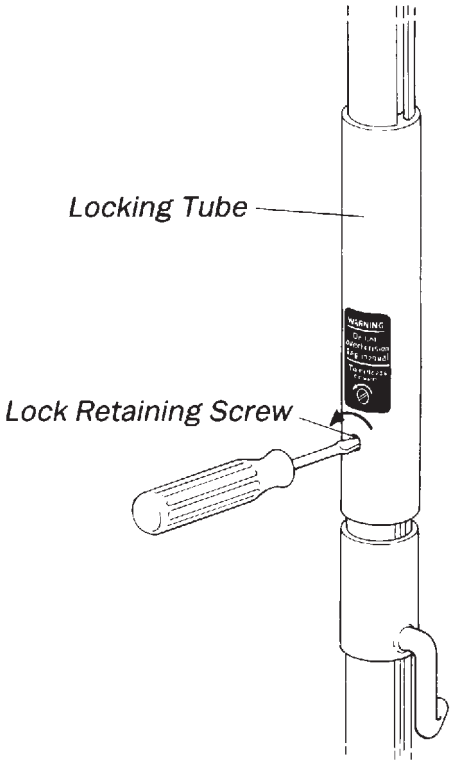


Fig. 4:2

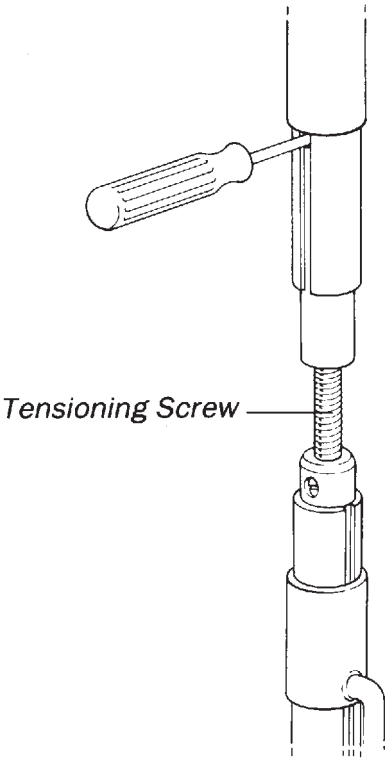
Lift the opposite end and remove.

2



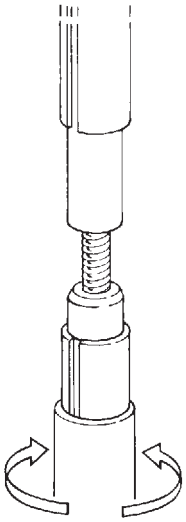
Undo the Lock Retaining Screw and free the Locking Tube.

3



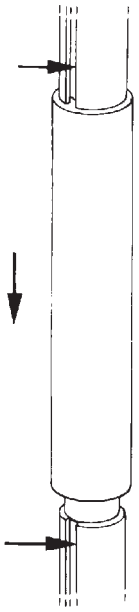
Push the Locking Tube upwards above the Sail Feeder. Lock the Tube in this position by putting a screwdriver through the hole at the lower end of the Sail Feeder.
The screwdriver will also stop the luff Section from turning while tensioning (step 4).

4



Turn the Reefing winch using the winch handle until the luff is correctly tensioned.

5



Adjust so that the Locking Tube fits over the lower part of the Luff Section. Lower the Locking Tube to locking position. Replace the Lock Retaining Screw.

OPERATION.

Reefing and unreefing is accomplished with a reefing line and an outhaul operated either from the cockpit or by working at the mast. In the latter case the outhaul is also taken to the boom or mast near the gooseneck. (See Fig. 7.1).
Operating at the mast is recommended with type RC. This is due to the friction in the control lines system from mast to cockpit on a large yacht.

Endless line.
If in-mast furling mast is to be operated from the cockpit then a reefing line in the form of an endless loop in combination with a self-tailing winch is recommended. The endless loop must have surplus length to allow it to be easily removed from the winch. The tail-end of the loop must also be belayed on a cleat or Clam-cleat.

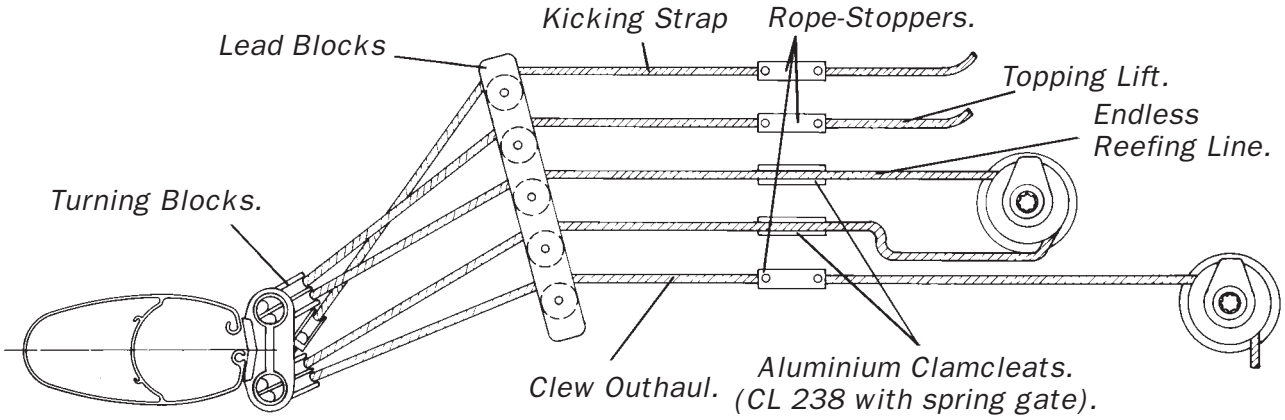
A rope-stopper can also be used, but it should be of a type that can be dismantled so that a pre-spliced loop can be fed into it. The line would otherwise first have to be passed through the stopper before splicing.

Clew Outhaul line.
A self-tailing winch is also recommended for the clew outhaul line. A rope-stopper that permits controlled paying out, such as a Rutgerson RAM-JAM, is recommended for this purpose.

Topping lift & kicking strap.
We recommend that the topping lift and kicking strap also be handled from the cockpit. These lines are best belayed with rope-stoppers. The topping lift should be ended with a figure-of-eight stopper knot to prevent it inadvertently running out. This stopper-knot should be placed where the rope exits from the boom, and in such a position that it will prevent the boom from dropping below its lowest necessary level. (NOTE. This is not necessary if a rod type kicking strap is used).

Figs. 6:1 and 6:2 show two suggested arrangements.

Layout 1



One winch only is possible, but is then more cumbersome to operate. *Fig 6:1*

Layout 2.

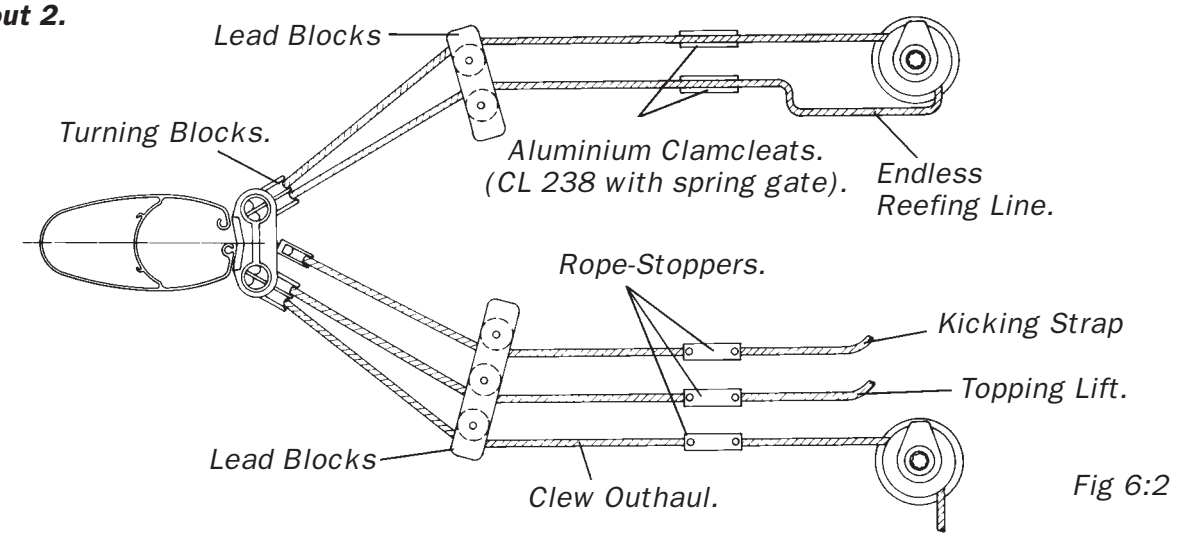


Fig 6:2

NOTE! Because the endless line is led through the same turning block in both directions excess friction can be built up through the line chafing against the kicking strap mast attachment point.

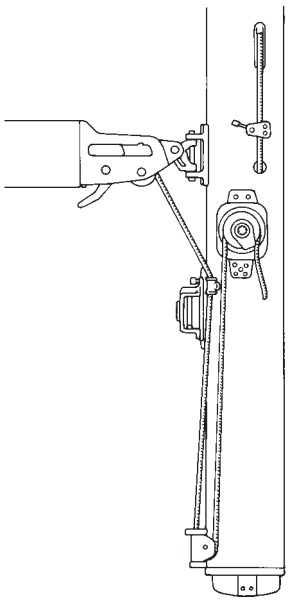


Fig. 7:1

Alternative Clew Outhaul Arrangement.

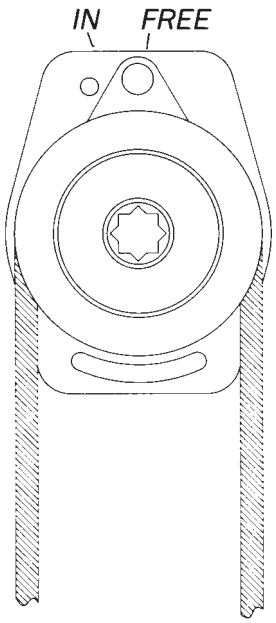


Fig. 7:2

☐ *When reefing from the cockpit the Reefing Winch must be set to "free". (See Fig. 7:2).*

☐ *Use 10 mm diameter double plaited line for the endless loop.*

☐ *The mast Turning Block has removable sheaves and a slot to allow the endless loop to be fitted even when pre-spliced.*

NOTE. THIS TYPE OF TURNING BLOCK IS DESIGNED FOR REEFING SYSTEM CONTROL LINES EXCLUSIVELY!

☐ *If deck lead blocks are used we recommend those with removable sheaves from Seldén Mast. (Part No. 538-809-01, three sheaves; or 538-810-01, 4 sheaves). A pre-spliced endless loop can be threaded through them.*

☐ *If fittings from other suppliers are used they should have similar features to the foregoing. Fittings with permanent sheaves will entail splicing in situ.*

OPERATING HINTS.

Unfurling.

1 *Free both sides of the endless loop from the winch and Clam-Cleat. It will then slide on the Reefing Winch.*

2 *Pull out the sail with the outhaul line.*

Furling.

1 *The leech should be kept fairly tight when reefing or furling. Adjust the topping lift to achieve this, and the sail will form a good tight roll around the luff extrusion.*

2 *Use the winch to take up on the endless loop.*

3 *Keep slight tension on the outhaul while doing this. This applies especially when the wind is abaft the beam or in light air.*

4 *Always lock the Reefing Winch when leaving the boat.*

Reefing.

1 *Carefully slacken off the outhaul line.*

2 *Whilst continuing to ease off the outhaul, roll in the desired amount of sail. The leech should be kept fairly taught. Keep slight tension on the outhaul while doing this. When working at the mast: activate the lock on the Reefing Winch (-IN') before reefing the sail.*

3 *When the desired amount of sail is rolled in, use the outhaul to stretch the foot of the sail. When operating from the cockpit: make both "sides" of the reefing line fast to prevent slip on the Reefing Winch. Finally, tension the outhaul.*

WARNING! Never leave the handle in the Reefing Winch! It will rotate very rapidly when the sail is unfurled.

FITTING AND HOISTING SAIL.

1 *Check that the Tack and Head of the sail are made as illustrated on Page 10. An incorrectly made tack can cause wrinkles in the sail and make smooth furling difficult.*

2 *Remove the covers.*

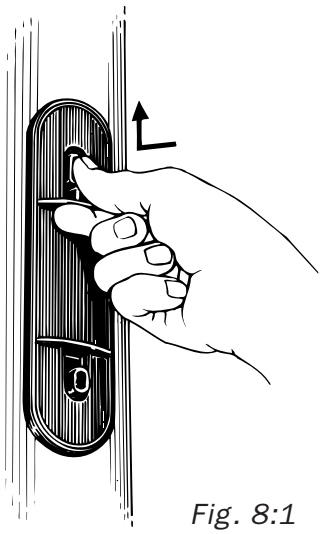


Fig. 8:1

Depress one button and push.

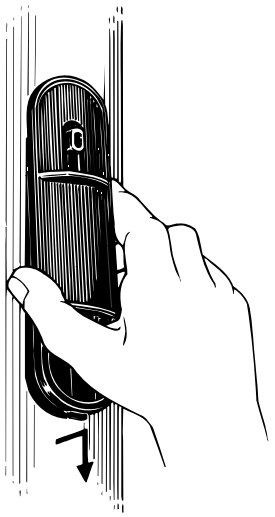


Fig. 8:2

Lift the opposite end and remove.

3 *Join the Head to the halyard swivel.*

4 *Join the Tack to the tack hook.*

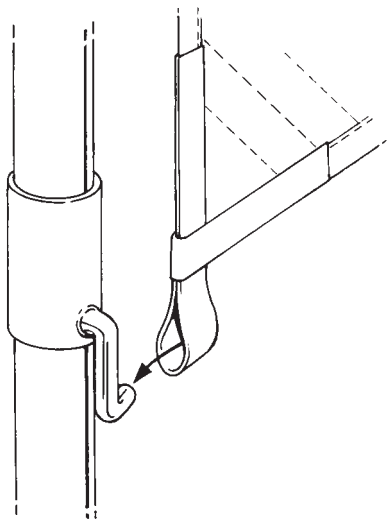


Fig. 8:3

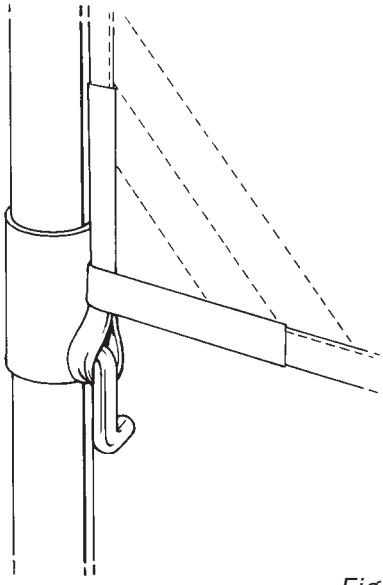


Fig. 8:4

5 *Attach the clew to the Outhaul Car.*

6 *Hoist the mainsail whilst simultaneously ensuring that it is feeding correctly into the luff extrusion.*

7 *Set the halyard and cleat it with the rope stopper. The halyard tail can be stowed in the mast by feeding it through the hole just below the halyard winch.*

8 *Furl the sail until only the clew is exposed. The luff extrusion is asymmetrical to facilitate rolling in one direction, and the sail should always be rolled onto the starboard side of the luff extrusion. The Reefing Winch should be turned clockwise. See Fig. 9:1.*

NOTE. TURN THE REEFING WINCH CLOCKWISE FOR CORRECT FURLING.

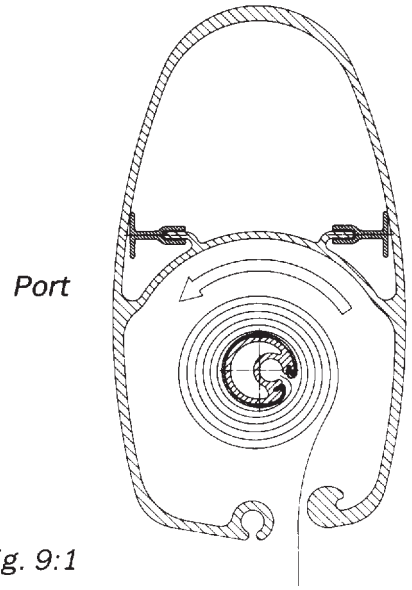


Fig. 9:1

BEFORE SAILING.

1 *Check that the sail is correctly furled on the STARBOARD SIDE of the luff extrusion. (See Fig. 9:1).*

2 *Furl and unfurl the sail a couple of times to ensure that the system works as it should, and to familiarise yourself with its operation, and also to check that the sail is to correct size.*

3 *The area aft of the mast must be free from halyards etc. or these can be caught by the sail during the furling procedure.*

ANTI-VIBRATION STRIP

Vibration can occur in any aluminium mast of normal design. With wind coming from approximately abeam at speeds of 4–12 knots the mast oscillates longitudinally at a rate of 3–6 cycles per second. As an optional item an "anti-vibration strip" is available for hoisting in the integral sail groove at the aft face of the mast to prevent vibration starting. It will also reduce wind noise.

For further information, contact Seldén Mast AB.

THE SAIL.

The luff extrusion is asymmetrically shaped to help overcome initial resistance when starting to furl.
To improve sail shape when reefed and to reduce draft, "Luff Foam" may be used along the luff. The foam should not be placed closer than 50 mm (2") from the front edge of the luff as it will then increase initial reefing resistance. To further reduce resistance use as light cloth as possible in the luff tape.

SAIL DIMENSIONS.

- ☐ *We recommend maximum 8 mm (5/16") diameter luff-rope/luff-tape (maximum 7 mm (9/32") hard line). Luff groove dimensions are shown in fig. 10:2.*
- ☐ *Head and tack tapes should be of soft quality which can fold easily. Do not use metal eyelets on them.*
- ☐ *The clew cringle must not be thicker than 14 mm (35/64") in order to fit the outhaul block.*
  As an alternative a so called "clew board" can be fitted.
  This will considerably reduce the distance between the sail and the boom.

Extrusion	A	B	T Boom Toggle size* 80 mm	120 mm
R 232/126	600	400	80	125
R 260/136	600	400	80	125
R 290/150	700	500	90	135

*Boom Brackets No. 508-151 and 508-153

Boom Extrusion	OS
128/90	250
150/105	250
162/125	250
189/132	350
206/139	350
143/76	150
171/94	150
200/117	200
250/140	200

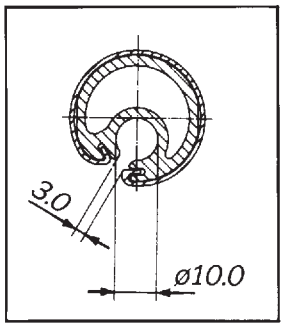


Fig. 10:2

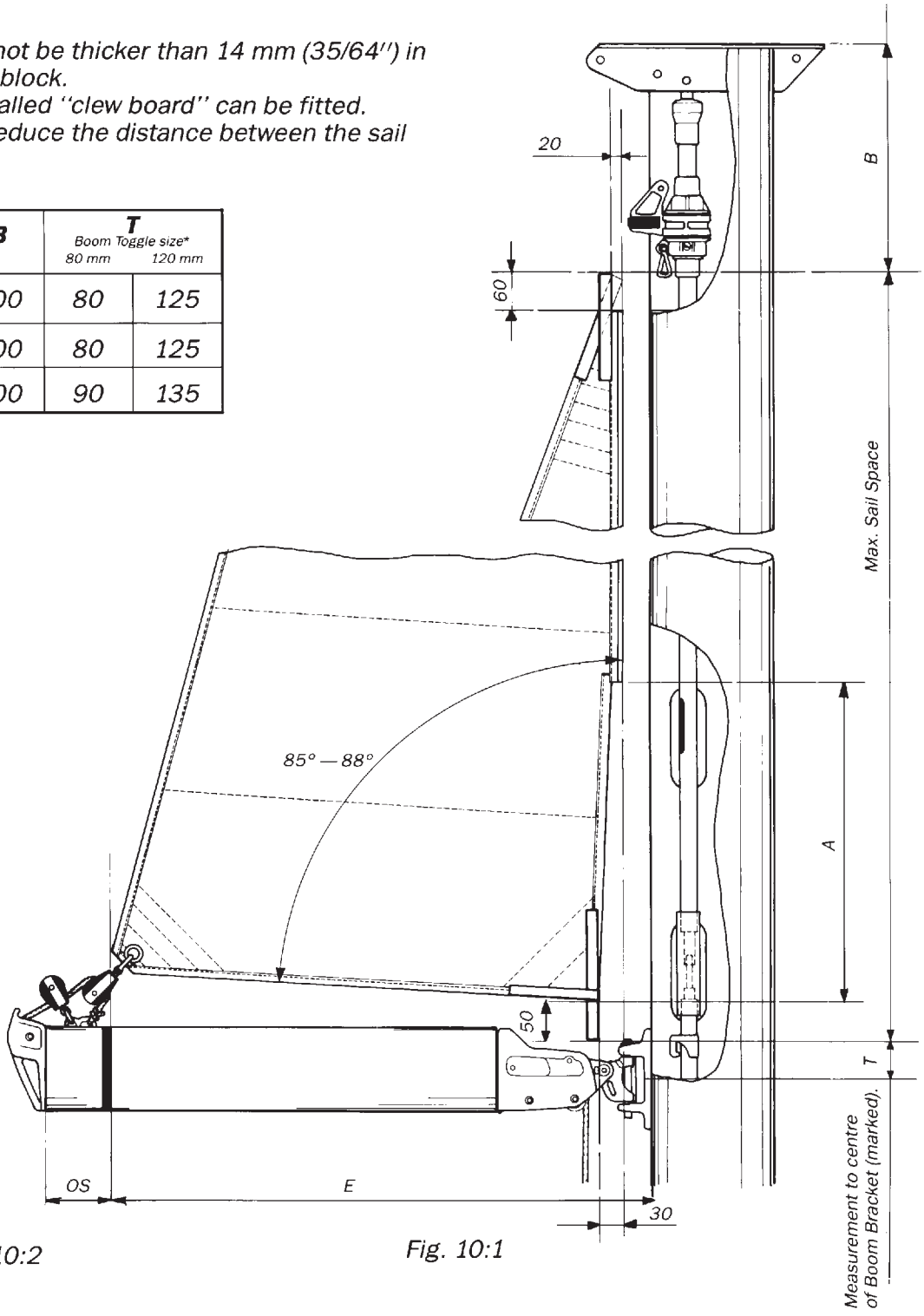


Fig. 10:1

SPARE MAINSAIL.

The spare Mainsail, which should be carried on board every yacht, can be hoisted in the intergrated sail groove at the aft face of the mast.
We recommend Aquabatten A032 or Rutgerson 101 sail-slides for this sail.
A foresail made for a luff extrusion, for a FURLEX for example, can be used in an emergency.

RUNNING CABLES.

All in-mast furling mast extrusions have one or more cable conduits. These run uninterrupted to the mast heel even on keel stepped masts.

A messenger is threaded through all empty conduits at the factory to facilitate cable drawing.

A new messenger should be drawn through a conduit at the same time as a cable is drawn through. This will facilitate the running of additional cables

If an existing cable should prevent a new one being run, it should be extracted after first having attached a new messenger to it to take its place in the conduit. That messenger can then be used to pull two or more cables through the conduit simultaneously.

Cables are led into a conduit at the masthead through a hole in the side of the mast extrusion. Cables should be over-length. The head box can then later be removed without the need to disconnect electric installations.

Cable exits are located in the mast heel casting.

Extrusion:
232/126
260/136
290/150

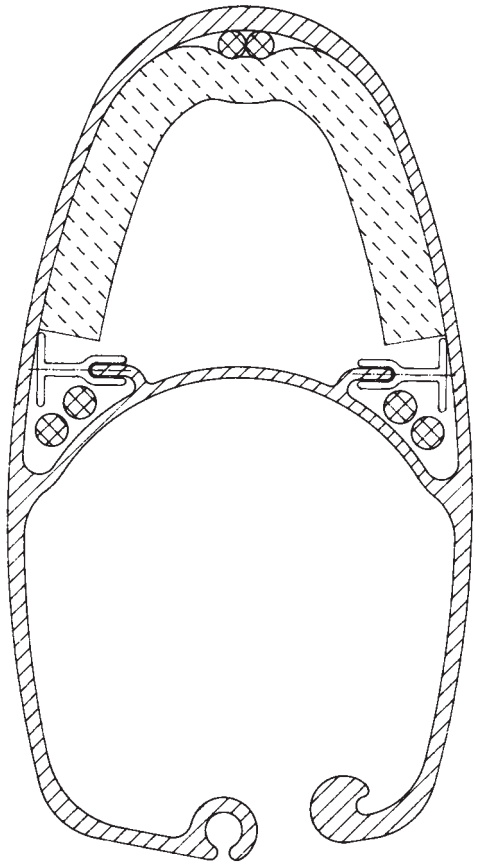


Fig. 11:1

Cables for forward- facing electrical installations are held in place with an "ETHAFOAM" pad to eliminate slapping.
If additional cables from mid- mast installations are required, proceed as follows.

1. *Lay the mast with forward face uppermost so that the cables will rest in one comer of the conduit.*
2. *Drill the exit hole for the cable through the other corner and forward of the cable. Use great caution when drilling so as not to damage the cable.*
3. *Carefully burr the hole to eliminate any sharp edges that could cause chafe. Some tape around the cable will give added protection.*

MAINTENANCE OF THE IN-MAST FURLING MAST.

Periodic Maintenance.

Maintenance should be undertaken at least once a year. All bearings should be greased with GREASE (Part No. 312-501), a tube of which is delivered with the mast. Read the following instructions and Fig. 13: I.
When greasing bearings and gears, do not over-grease. A thin coating of evenly applied grease is sufficient.

TOP SWIVEL:
The bearing has a lubrication hole ① marked "GREASE" where the grease should be injected. Access through the sail slot.

HALYARD SWIVEL:
Lubricate the swivel by injecting grease into the gaps ② & ③ in the ring. This is best done through the upper access hole.

IN-MAST FURLING MAST GEAR.
Remove the upper, oval plastic plug ④.
Lift the rubber boot and grease the upper shaft bearing ⑤.
Remove the lower oval plastic plug ⑪ on a level with the Reefing winch.
Grease the bevel gears ⑥ and ball-bearings ⑦ & ⑧.
All grease points are shown in Fig. 13:1

Complete Service.

It is a good idea after some years use to dismantle the gear for thorough cleaning and re-greasing. The in-mast furling mast is built so that servicing will be easy even after protracted use. Stainless steel thread inserts for all screw fastenings ensure that corrosion is eliminated.

REMOVAL OF THE IN-MAST FURLING MAST GEAR FROM THE MAST.

1. *Lay the mast horizontally on trestles.*
2. *Relieve tension on the Luff Extrusion by slackening the Tensioning Screw. (The Tensioning Screw is described on page 4).*
3. *Remove the upper plastic plug ④. Detach the Luff Extrusion from the furling Gear through the Grease Hole. The lower split pin and clevis pin ⑨ are removed.*
4. *Remove the furling Gear from the mast by undoing the eight holding screws and taking it away from the mast. (The furling Gear can be removed even when the mast is stepped).*
5. *Remove the headbox by undoing the nuts on top ⑩. The box can then be lifted off. Detach the Top Swivel from the head box.*
6. *The luff section and the Halyard Swivel can now be pulled out of the mast.*

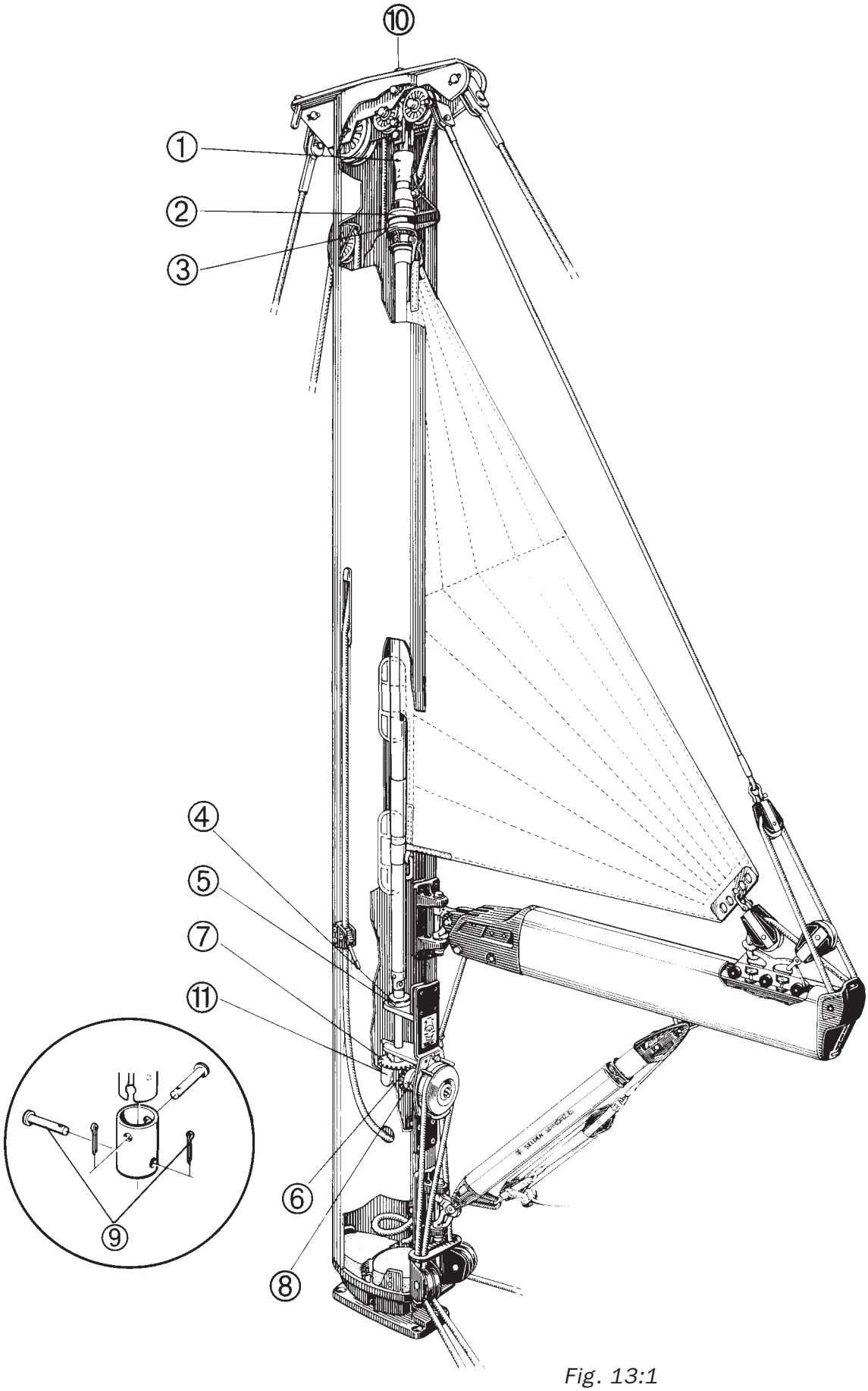


Fig. 13:1

DISMANTLING UNITS WITH BALL BEARINGS.

All dismantling should be done on a clean unbroken surface. The various ball bearing units contain many small parts that fall apart when dismantling. Lay the dismantled parts out in an orderly manner.

Dismantling the In-mast furling mast gear.

Tools required:
– Hammer
– Punch, 6–8 mm (1/4–5/16").
– Allen key, 6 mm.
– Screwdriver, small

1 *Drive the spring-pin ① from the large bevel gear. Use hammer and punch.*

2 *Draw the shaft ② up and out from the furling gear.Take care of the balls and ballraces which will fall apart.*

3 *Drive the spring-pin ③ from the small bevel gear. Draw the gear and ball bearings off the shaft. Take care of ball bearings and races, which vill fall apart.*

> *Take care of ball bearings and races, which vill fall apart.*

4 *Undo the four screw holding the Reefing Winch, and remove the winch from the holding bracket.*
Remove loose components from the reverse side of the winch, and remove the locking ring from the shaft. The winch can then be dismantled.

5 *Clean the ball bearings, races, gears and winch components in a slovent bath.*

6 *Reassemble all components in the reverse order. The winch must be greased before reassembly. A layer of grease in the cupped half of a ballrace will hold the balls in place during assembly. Grease the bevel gear teeth.*

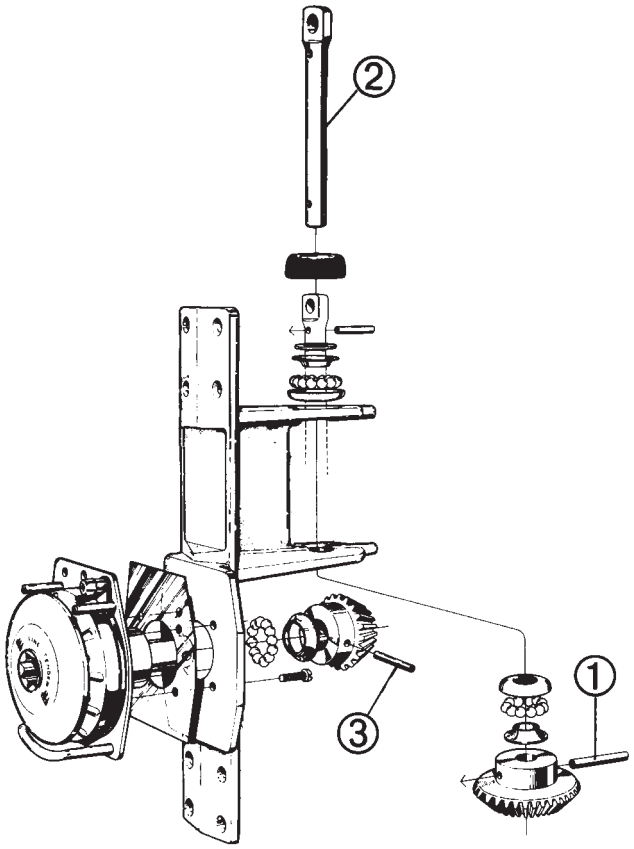


Fig 14.1

Dismantling the halyard Swivel:
Tools required:
– Phillips screw-driver

1 *RB/540-107 Remove both screws ①*

1 *RC/540-209 Remove both screws ① and the four screws in the stainless steel ring.*

2 *Turn item ② 90° to free the bayonet fitting, and remove it.*

3 *Lift item ③ off together with one ball bearing. Then lift off the second ball bearing.*

> *NOTE.*
> *Ball bearings may fall apart. Take care not to lose any parts.*

4 *Clean ball bearings and their races in a solvent bath.*

5 *Reassemble the components in the reverse order. A layer of grease in the cupped half of a ball-race will hold the balls in place during assembly.*

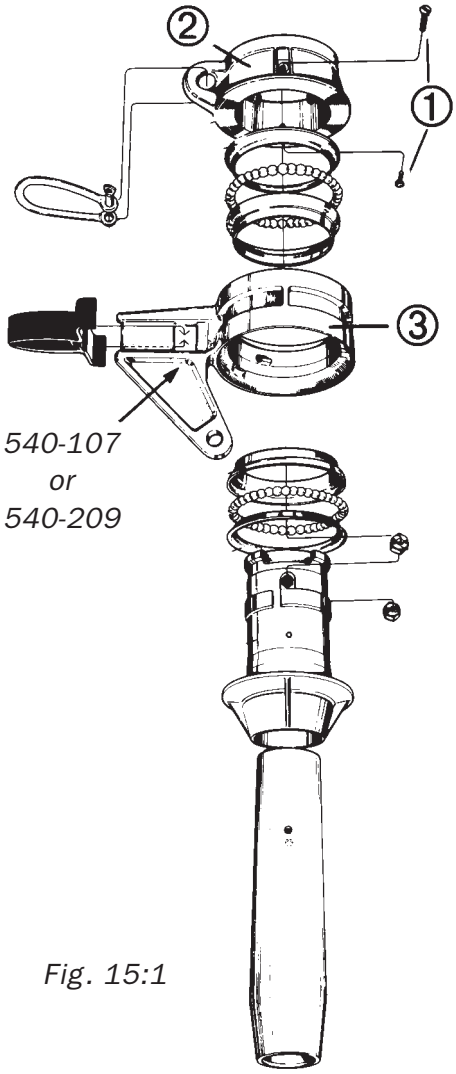


Fig. 15:1

IMPORTANT POINTS TO REMEMBER BEFORE SETTING SAIL.

- ☐ *The Sail must always be rolled to the starboard side of the luff extrusion. Turn the reefing winch clockwise!*
- ☐ *The leech should always be kept fairly tight when reefing or furling. Use the topping lift!*
- ☐ *Never leave the handle in the reefing winch – it will rotate very fast when unfurling the sail.*
- ☐ *Lock the reefing winch at the mast when reefing in heavy weather.*
- ☐ *Lock the Reefing winch when you leave the boat.*
- ☐ *The Topping lift should have a stopper-knot to prevent the boom from dropping into the cockpit.*

DINGHIESKEELBOATSYACHTS

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