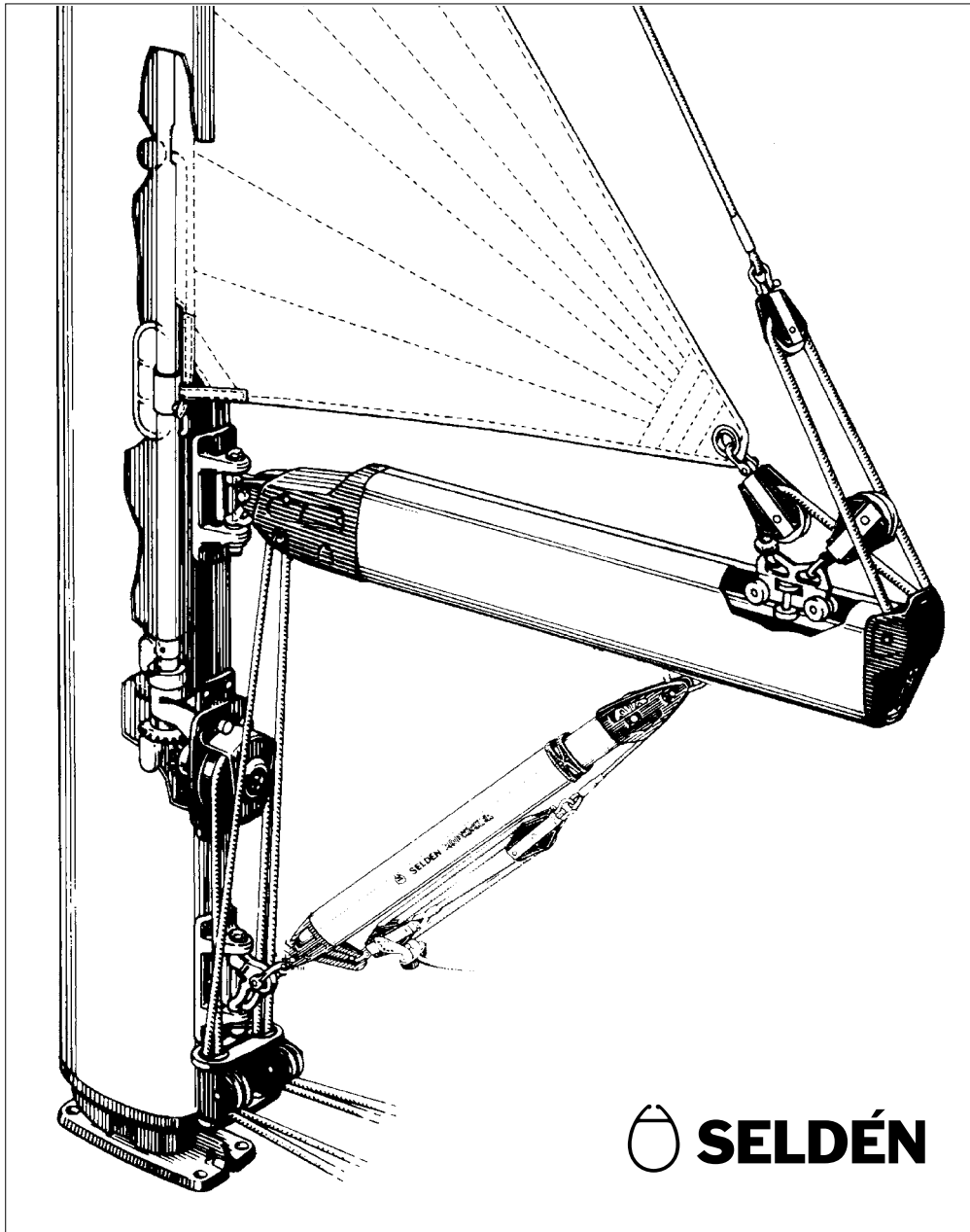


Manual for Furling mast Type RA



Contents:	Page:	Contents:	Page:
<i>Product description</i>	2	<i>Spare mainsail</i>	9
<i>Luff extrusion</i>	4-5	<i>Anti-vibration strip</i>	10
<i>Operation & Operational hints</i>	6	<i>Running cables</i>	10
<i>Fitting & Hoisting the sail</i>	8	<i>Maintenance</i>	10
<i>Before sailing</i>	8	<i>Dismantling</i>	12-13
<i>The sail</i>	9	<i>Notes</i>	14-15
<i>Sail dimension</i>	9	<i>Important points</i>	16

Product description

- Seldén furling mast is a mainsail reefing and furling system. The Seldén furling mast roller mechanism design is based on 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 ball-race to give smoother furling and the lowest possible friction.
- The entire reefing mechanism can be easily removed from the mast for service. Stainless steel 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. A foresail with a rope luff could also be hoisted.
- This instruction manual has been compiled to give you information on the Seldén mast in-mast reefing system. Study it, and follow the instructions carefully, and we guarantee you many years of pleasurable use from your Seldén furling mast.
- Follow the relevant rigging instructions in our booklet "Hints and Advice" for tuning the rig.

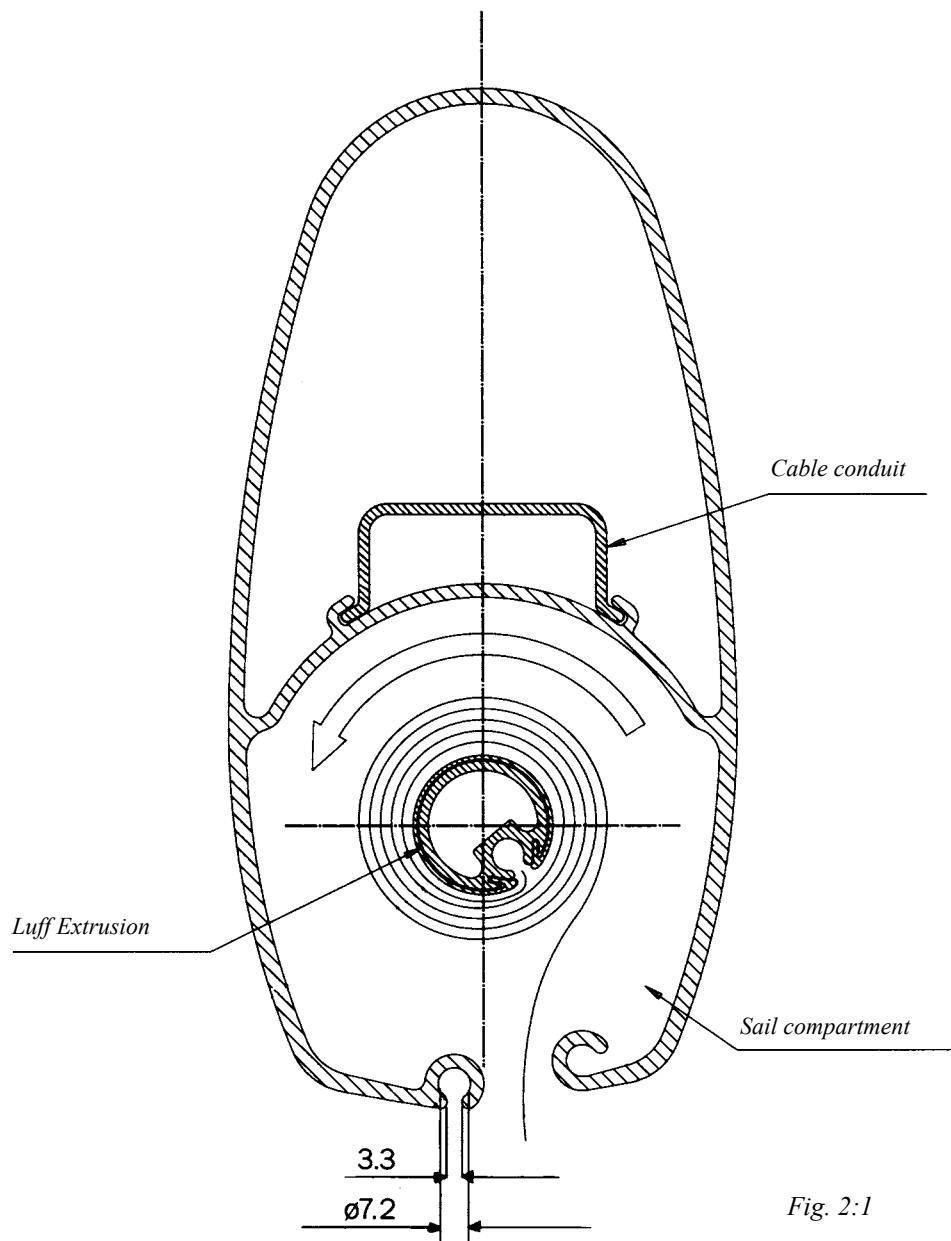


Fig. 2:1

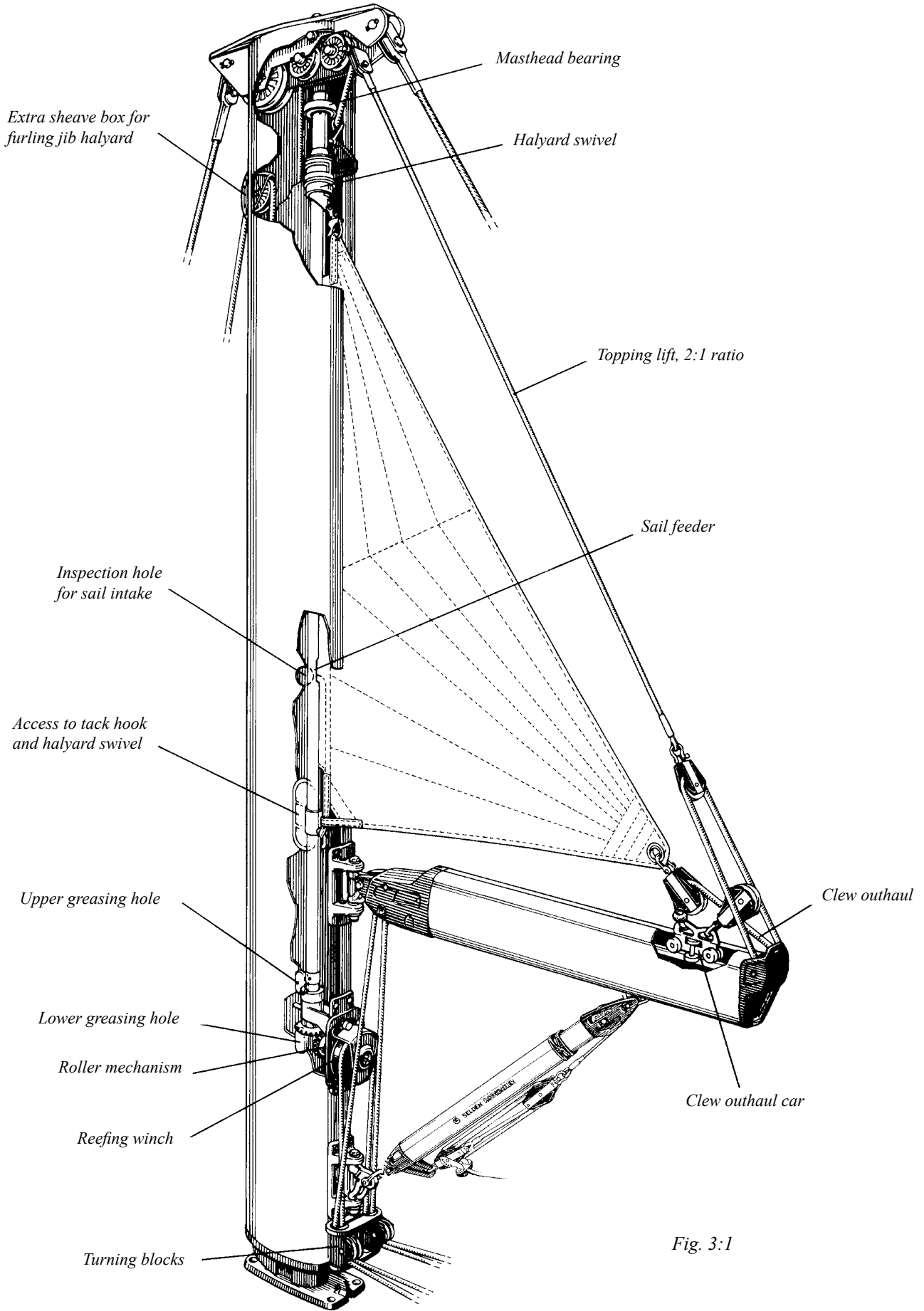


Fig. 3:1

Luff extrusion

- The luff extrusion is always correctly tensioned during manufacture.
- A correctly tensioned extrusion facilitates reefing and setting the sail.
- The extrusion will be pulled aft when sailing. A correctly tensioned extrusion will therefore be largely supported by the after face of the sail chamber.
- It is not normally necessary to readjust the tension. However, if tension seems too slack it should be adjusted as follows.

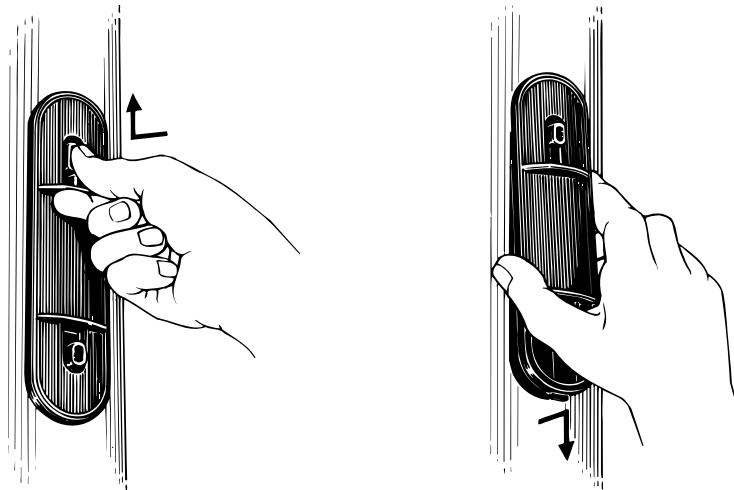


WARNING!
Do not over-tension the extrusion.
You may overload the system.

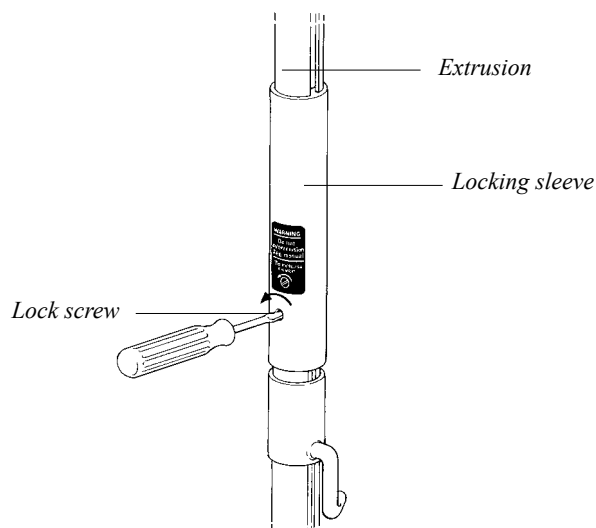
Tension the Extrusion

Adjustment is undertaken as follows: (the mainsail is removed).

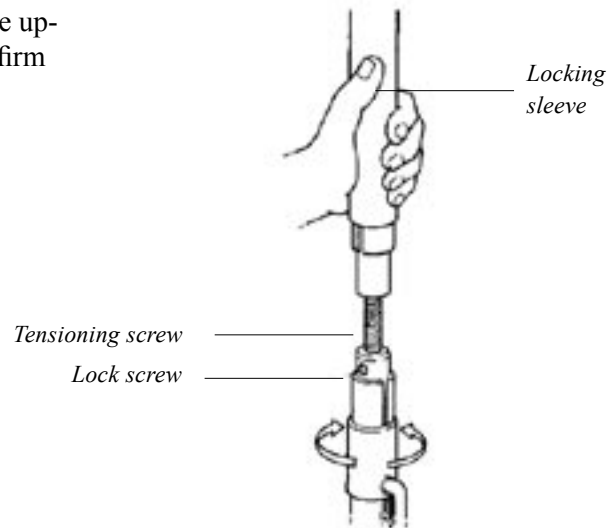
1. Lift off the covers. Press in one of the buttons and push. Lift the opposite end and pull.



2. Loosen the lock screw sufficiently to free the locking sleeve.



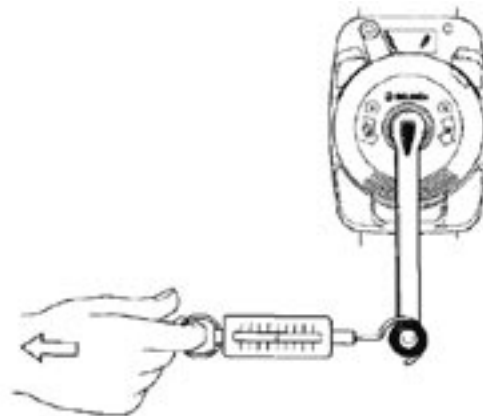
3. Push the locking sleeve up to a level with the upper opening. Put in your left hand and get a firm grip on the locking sleeve.



4. Turn the tensioning screw with a winch handle in the drive unit. When the locking sleeve slips in your hand the luff extrusion is acceptably tensioned in an easy manner. If you wish to make a more exact adjustment, the following values can be used.

System	Extrusion	Measured force p with 10" winch handle
Type RA	190/94 213/104 235/116	16 N

The force in the winch handle can easily be measured with a spring balance.



Reefing winch with handle and spring balance.

5. Adjust the turn so that the locking sleeve can be drawn over the bottom of the luff extrusion.
6. Pull the locking sleeve down to the locking position.
7. Tighten the lock screw to hold the locking sleeve in place.

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. 5:1).

Endless line

If Seldén 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 prespliced loop can be fed into it. Other wise the line will have to be first 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. 4:1 and 4:2 show two suggested arrangements.

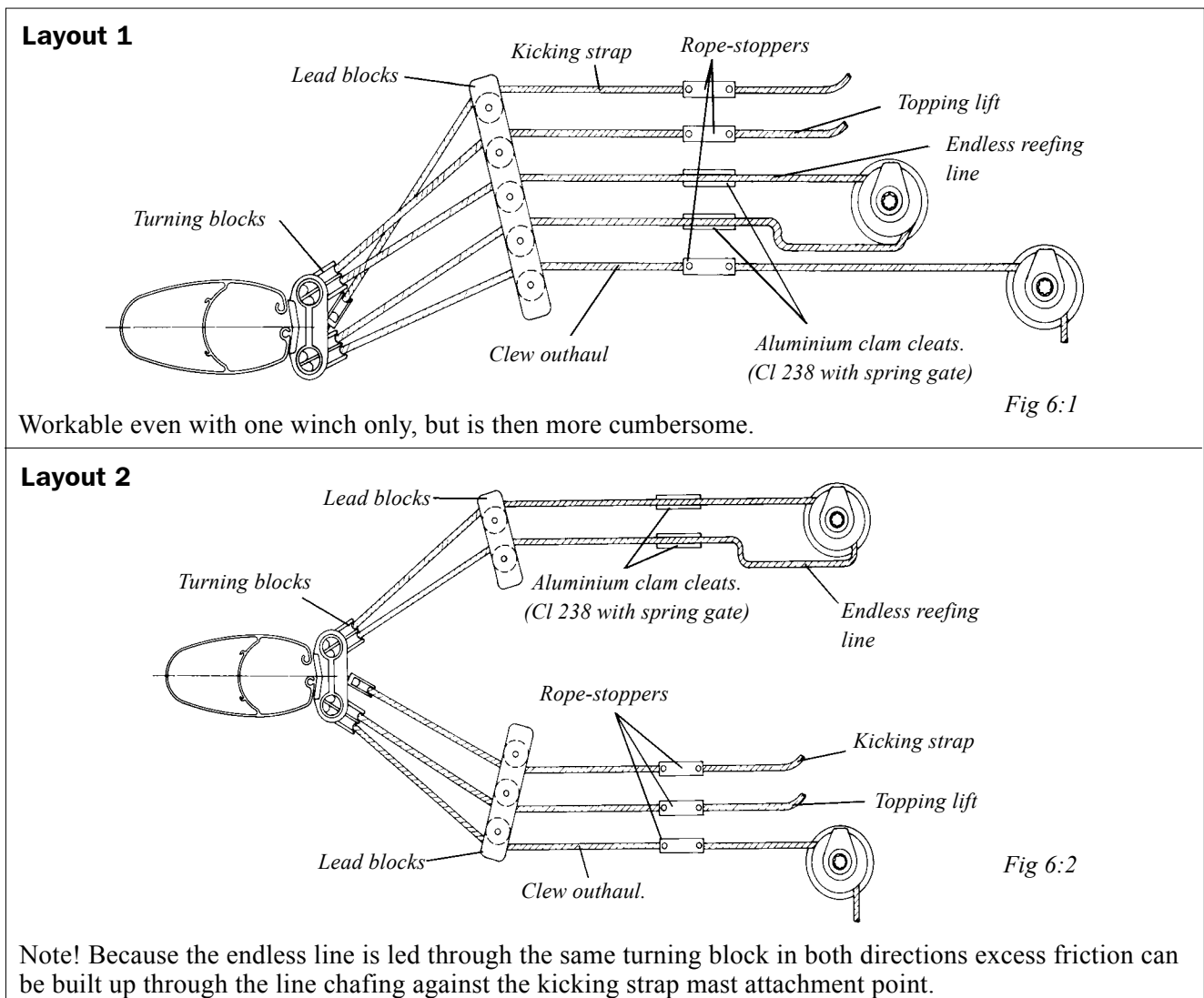
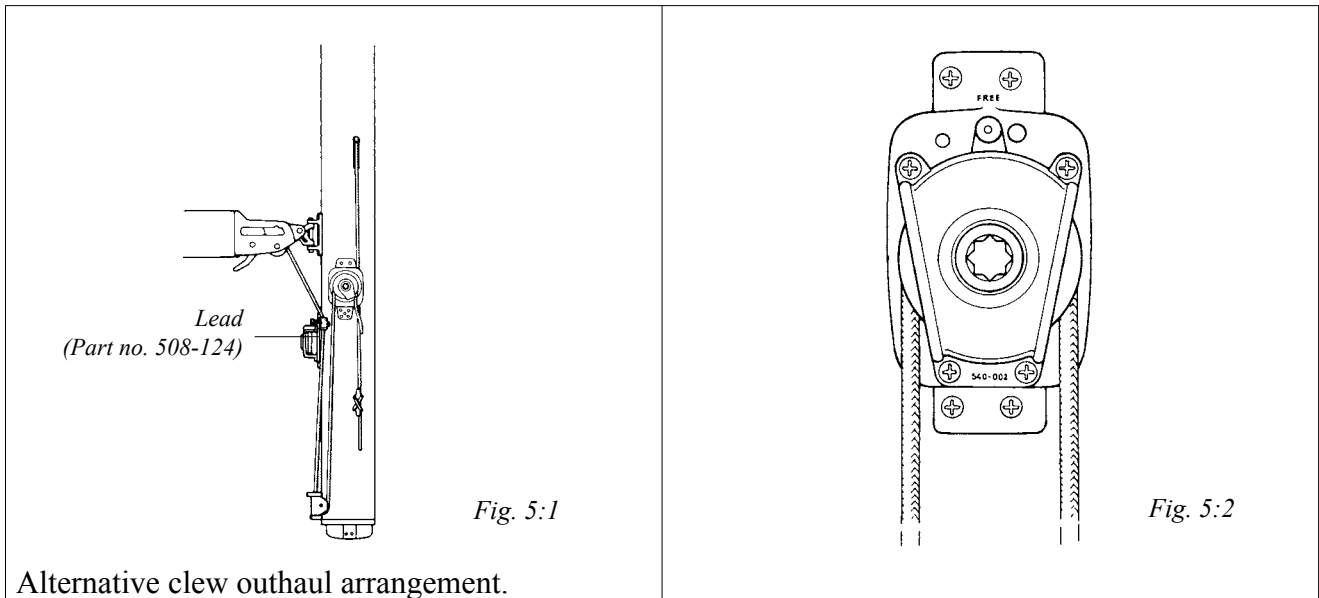


Fig 6:1

Fig 6:2



- When reefing from the cockpit the reefing winch must be set to "free". (See fig. 5:2).
- Use 10 mm diameter double plaited line for the endless loop.
- The mast turning block has removable sheaves and a slit to allow the endless loop to be fitted even when pre-spliced.
N.B. These turning blocks must be used for reefing system control lines only!
- 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, with the awkwardness that entails.

Operation hints

Unfurling

- Free both sides of the endless loop from the winch and clam -cleat. It will then slide on the reefing winch.
- Pull out the sail with the outhaul line.

Furling

- The leech should be kept fairly taut when reefing or furling. Adjust the topping lift to achieve this, and the sail will form a good tight roll around the luff extrusion.
- Use the winch to take up on the endless loop.
- Keep slight tension on the outhaul while doing this. This applies especially when the wind is abaft the beam or in light air.
- Always lock the reefing winch when leaving the boat.

Reefing

- Carefully slacken off the outhaul line.
- Whilst continuing to ease off the outhaul, roll in the desired amount of sail. The leech should be kept fairly taut. Keep slight tension on the outhaul while doing this.
- 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.

When working at the mast: activate the lock on the reefing winch ("in") before reefing the sail.



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 7. An incorrectly made tack can cause wrinkles in the sail and make smooth furling difficult.

2. Remove the covers.

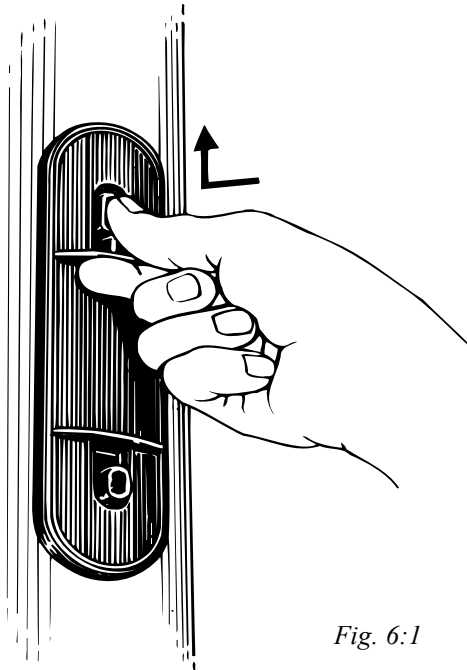


Fig. 6:1

Depress one button and push.



Fig. 6:2

Lift the opposite end and remove.

3. Join the head to the halyard swivel.
4. Join the outhaul block to the clew of the sail.
5. Hoist the sail until there is about 700 mm (2'3") between the sail foot and the upper edge of the sail feed. Keep a check at the sail feed that the luff is being correctly fed into the luff extrusion.
6. Feed the bottom part of the luff into the extrusion below the sail feed. Connect the tack to its hook.
7. Stretch the halyard until horizontal folds disappear and lock it in its halyard stopper. Halyard tension is subsequently adjusted when sailing to get correct draft.
8. Roll the sail into the mast until only the slew is exposed. The mast extrusion is asymmetric, which facilitates rolling in the sail in one direction. The sail should therefore always be rolled on to the starboard side of the luff extrusion. (See fig. 6:3). This is done by turning the reefing winch clockwise.

Note. Turn the reefing winch clockwise.
The sail will then be reefed correctly.

Before sailing

- Check that the sail is correctly furled on the luff extrusion: i.e. to its starboard side. (see Fig. 6:3.)
- Whilst still on the mooring furl and unfurl the sail a couple of times to ensure that the system is working as it should, and also to ensure that the sail is to correct size.

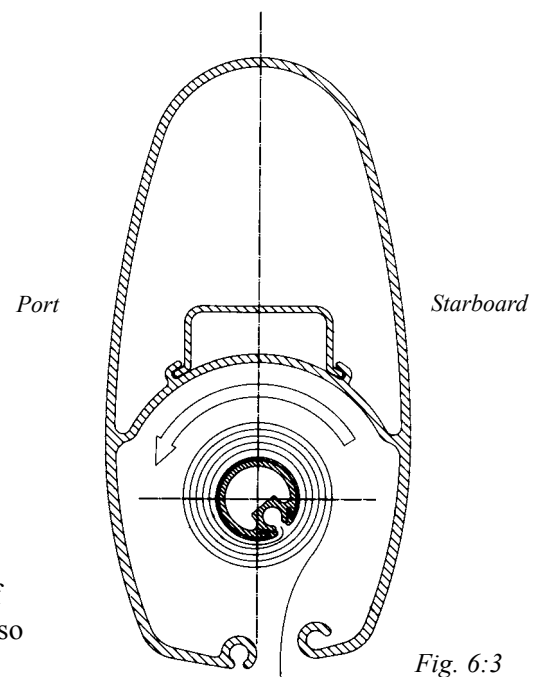


Fig. 6:3

The sail

The luff should be easy to fold around the luff extrusion for reduced rolling resistance when starting to roll in the sail. Do not use too heavy a cloth in the luff area.

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 would then increase initial reefing resistance.

Sail dimensions

- We recommend maximum 5 mm (13/64") luff tape. (Maximum 4 mm hard line). Dimensions for the luff groove are shown in fig. 7.1.
- 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 (3516419 in order to fit the outhaul block).

Fig. 7:2

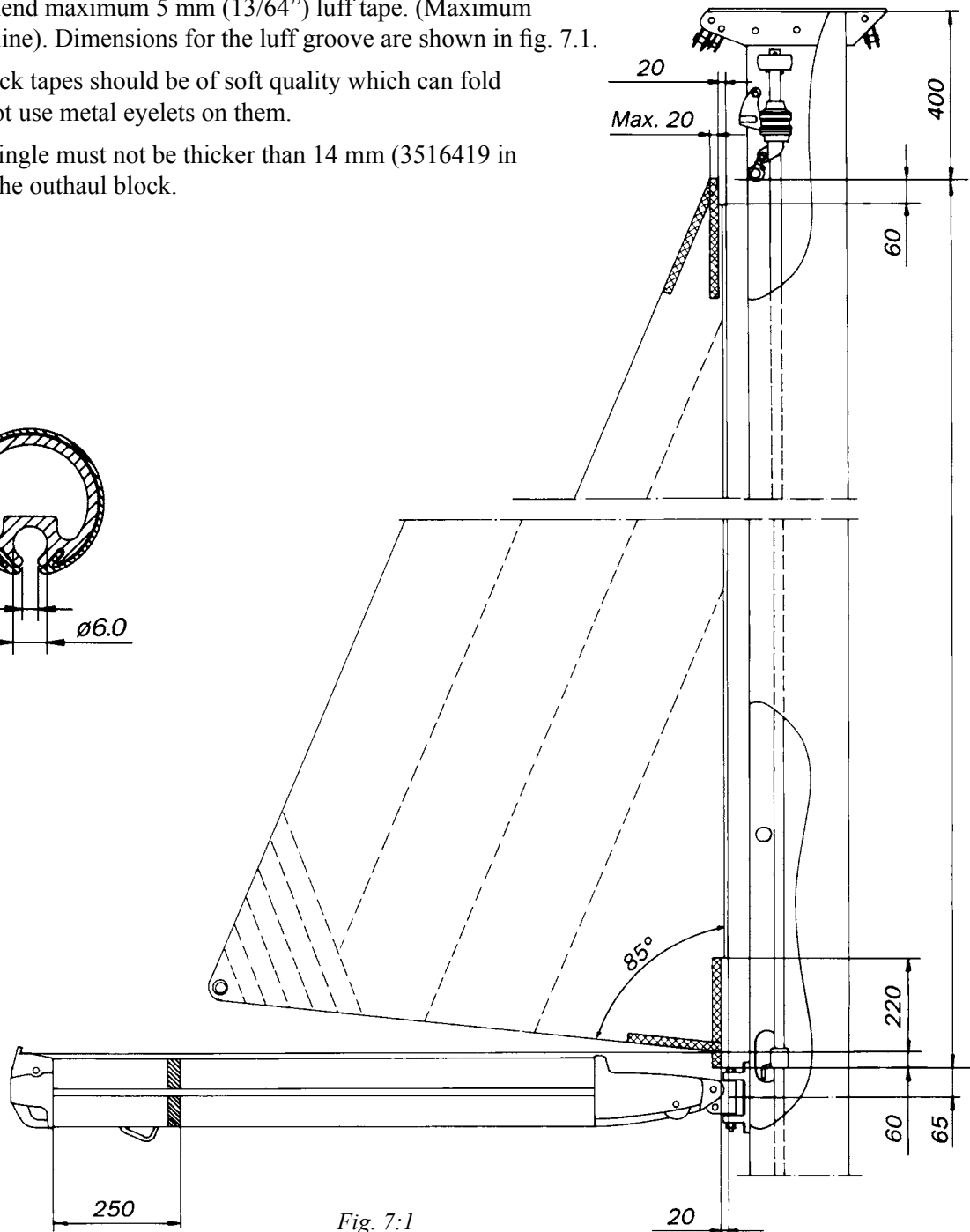
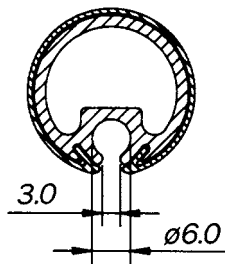


Fig. 7:1

Spare mainsail

The integrated sail groove on the after face of the mast can be used for hoisting a reserve sail. A foresail with luff tape and intended for use on an extrusion such as on FURLEX can be used with advantage. See Fig. 2:1 for dimensions.

Anti-vibration strip

Vibration can occur with any mast of normal design. With winds of 4–12 knots coming from abeam 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 to help prevent this oscillation from starting. It will also reduce wind noise.

For further information, contact Seldén Mast AB.

Running cables

All Seldén furling mast extrusions are fitted with a cable conduit. On keel-stepped masts this goes uninterrupted through to the foot.

The mast is provided with a messenger line from the factory.

Thread a new messenger line at the same time as you run through any new cables. This will ease any future, further, cable running.

If an existing cable should prevent a new cable being run it should be extracted, but attach a new messenger to the cable first, to take its place in the conduit. That messenger can then be used to draw two or more cables through the conduit – but do not forget to draw a replacement messenger through at the same time.

Cables are fed into the conduit through a hole in the mast wall by the head box. Cables should be over-length to allow subsequent removal of the head box without electrically disconnecting masthead installations.

Cable exits are located in the mast heel casting.

Maintenance of the Seldén 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. 9:1.

Halyard swivel

Grease the bearings by pressing grease directly into the recesses ① and ② by the rotating ring. This is Best done when the swivel is opposite the sail feed inspection hole ⑦.

Seldén furling mast gear.

Remove the upper oval plastic plug ④.

Lift the rubber boot, and grease the upper bearing ③ on the roller mechanism.

Remove the lower oval plastic plug level with the reefing winch and on the side of the mast. Grease the bevel gears ⑤, and the ball bearing ⑥.

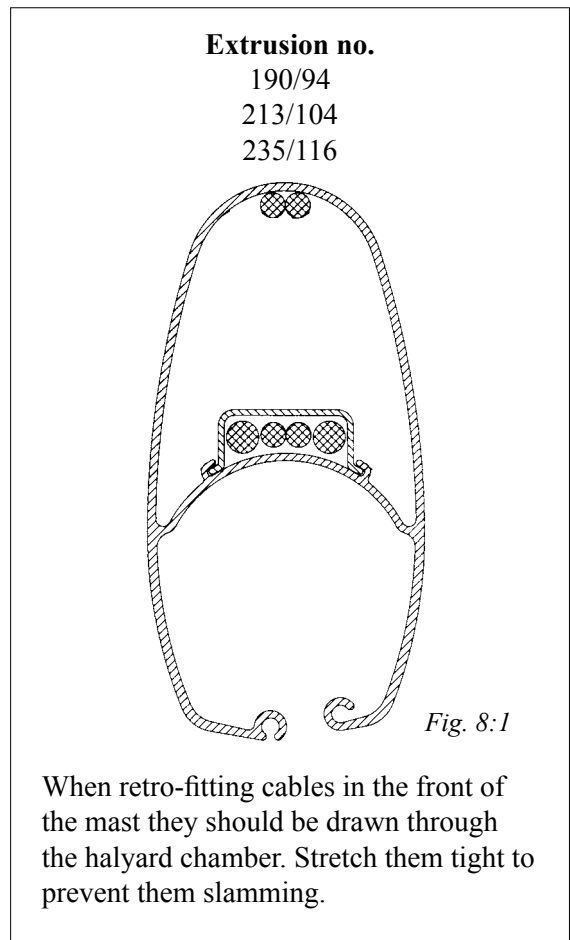
All grease points are shown in fig. 9:1.

Complete service

If the reefing system should begin to be stiff after several years usage it can be necessary to dismantle its components for servicing. Clean the gears and ball-bearings from old grease and relubricate.

The seldén furling mast is designed for easy servicing even after a long period of time. The holding Bolts for the reefing unit are screwed into stainless steel blind nuts and are not subject to corrosion.

Dismantling is described on page 12.



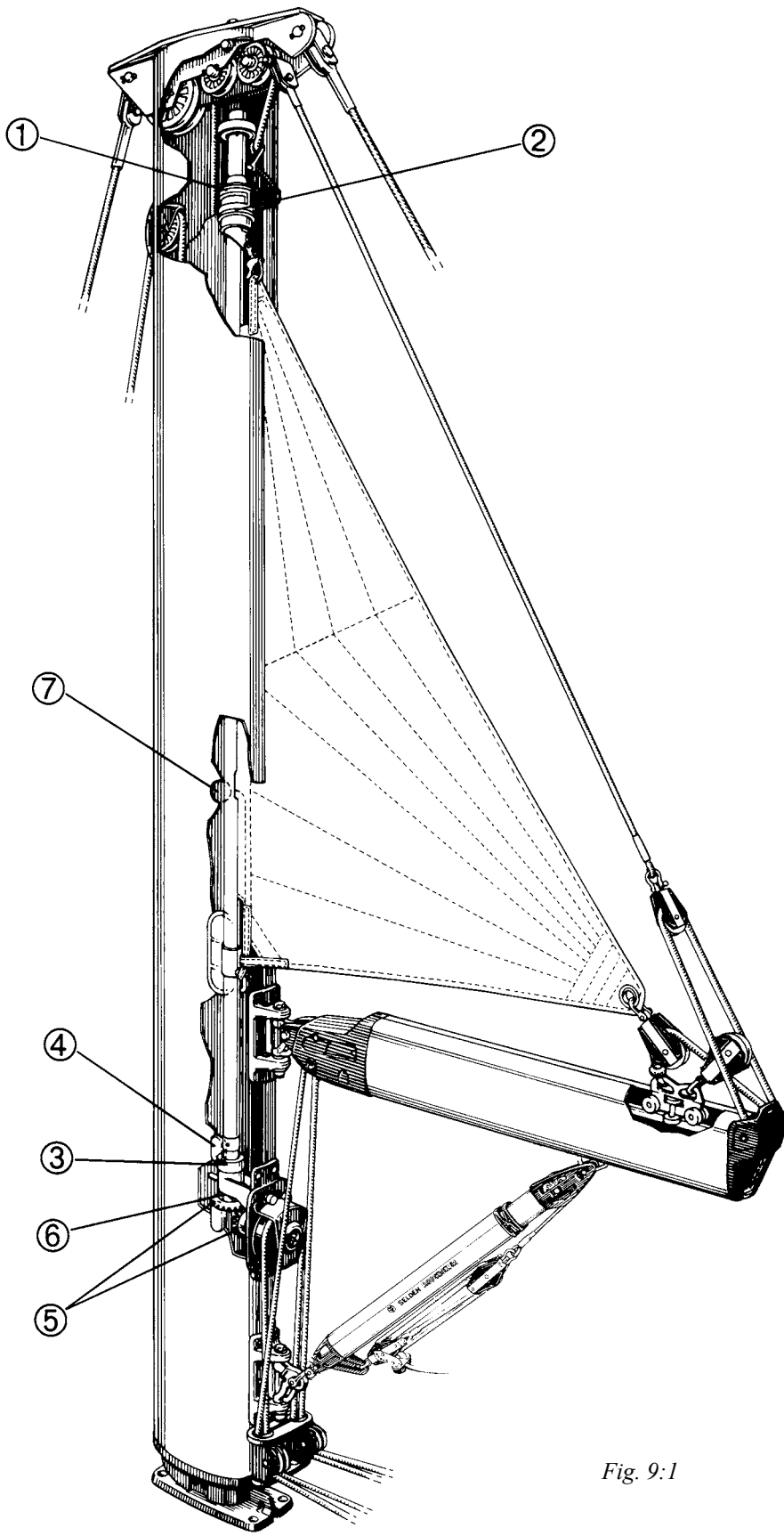


Fig. 9:1

Removal of the Seldén furling mast gear from the mast

1. Lay the mast horizontally.
2. Remove the upper plug ①. Free the extrusion from the reefing unit through the greasing aperture by removing the lower split-pin and clevis pin ②.
3. Unbolt the reefing unit (4 bolts), and remove it from the mast. (The reefing unit can be removed while the mast is rigged).
4. Remove the nuts ③ on the top of the head-box and lift off the head-box.
5. Pull the luff extrusion a short way out of the mast and remove the split-pins holding the plastic bushing in place.
6. The halyard swivel can then be removed from the extrusion.

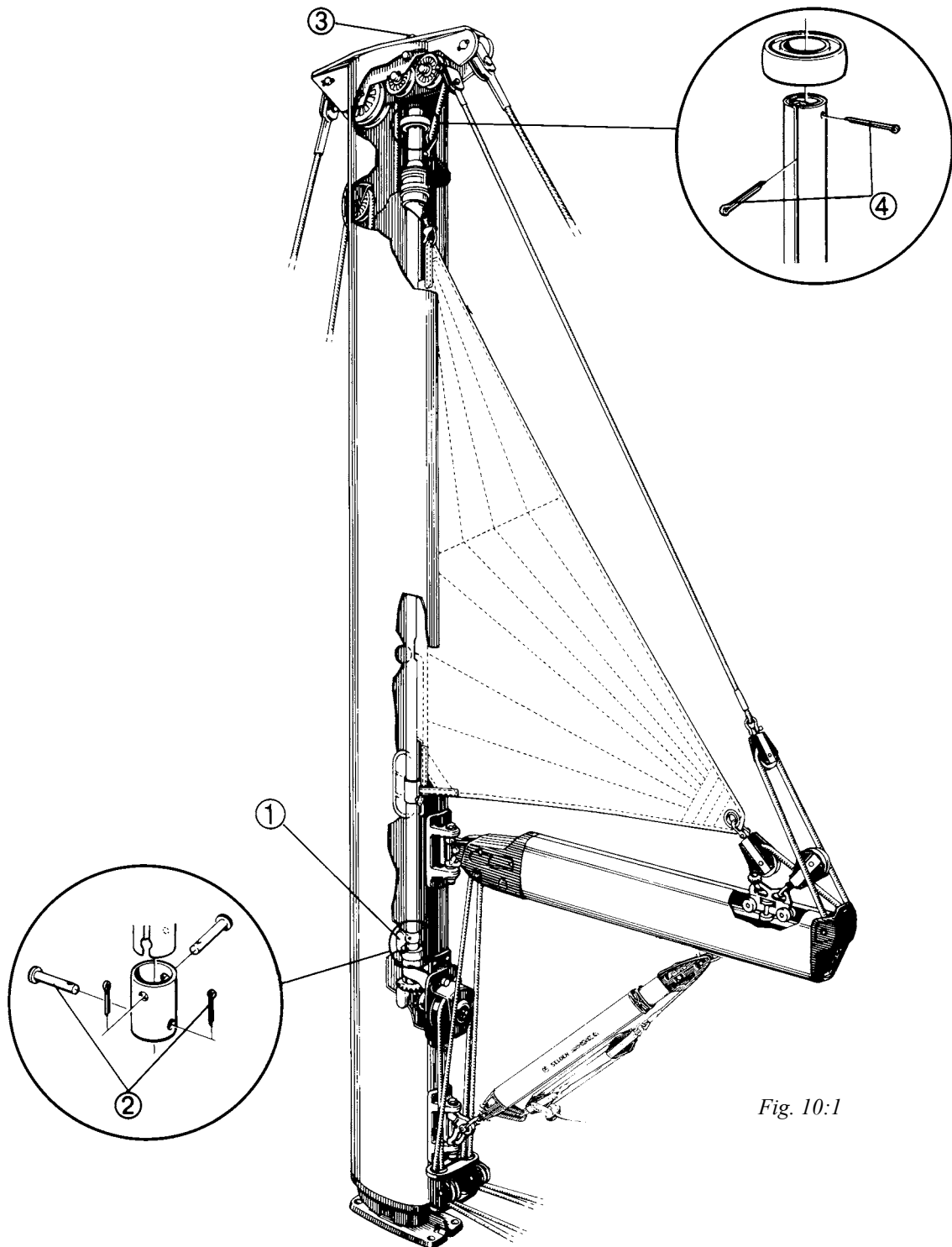


Fig. 10:1

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 Seldén furling mast gear

Tools required:

- Hammer punch, 5 mm. (3/16”).
- Phillips screwdriver.

1. Drive the spring cotter out from the upper bevel gear ①. Use hammer and punch.

At the same time take care of the balls and ballraces which will fall apart.

2. Draw the shaft ② up and out from the housing.
3. Drive the spring cotter ③ out of the lower bevel gear. Draw the gear off the shaft.
4. Undo the four holding bolts that hold the cover ④ over the reefing winch. Take off the cover. Remove loose components from the front of the winch.
5. Clean the ball bearings, races, gears and winch ratchets in a white-spirit bath.
6. Re-assemble all components in the reverse order. The winch ratchets must be greased before re-assembly. A layer of grease in the cupped half of a ballrace will hold the balls in place during re-assembly. Grease the bevel gear teeth.

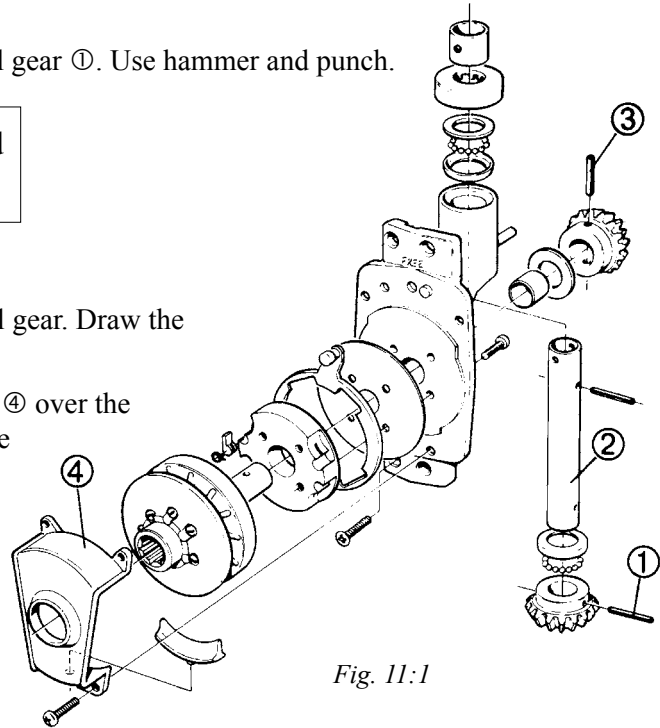


Fig. 11:1

Dismantling the halyard swivel.

Tools required:

- 2 small screwdrivers.

1. Component ① is secured by a bayonet fastening and two pairs of "snaps" ② that prevent it from turning. Two of these snap-locks (diagonally opposite each other) are pressed simultaneously outwards with the two small screwdrivers so that the component can be turned.
2. Turn component ① 90°. Draw it over the bayonet fastening until it stops (about 10 mm. (3/8)), and turn the component in the reverse direction 90°. Component ① can now be lifted off.
3. Lift off part ③ together with one ball race. Then lift away the other ball race.

NOTE. There is a risk that the ball bearings fall apart. Ball bearings lying in their races must be taken care of.

4. Clean the bearings and races in a bath of white spirit.
5. Re-assemble all components in the reverse order. A layer of grease in the cupped half of a ball-race will hold the balls in place during re-assembly.
6. Check that the snap-locks ② holding component ① in place have gone completely home.

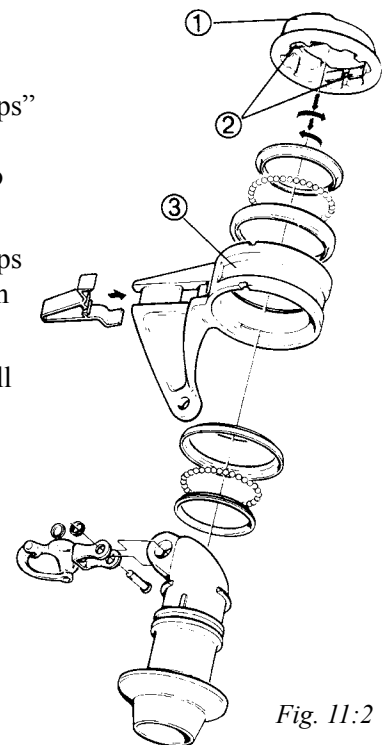


Fig. 11:2

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 and it will be correct.
- The leech should always be kept fairly tight when reefing or furling. Use the topping lift.
- Lock the reefing winch at the mast when reefing in heavy winds.
- 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.

DINGHIES KEELBOATS YACHTS

Seldén Mast AB, Sweden
Tel +46 (0)31 69 69 00
Fax +46 (0)31 29 71 37
e-mail info@seldenmast.com

Seldén Mast Limited, UK
Tel +44 (0) 1329 504000
Fax +44 (0) 1329 504049
e-mail info@seldenmast.co.uk

Seldén Mast Inc., USA
Tel +1 843-760-6278
Fax +1 843-760-1220
e-mail info@seldenus.com

Seldén Mast A/S, DK
Tel +45 39 18 44 00
Fax +45 39 27 17 00
e-mail info@seldenmast.dk

Seldén Mid Europe B.V., NL
Tel +31 (0) 111-698 120
Fax +31 (0) 111-698 130
e-mail info@seldenmast.nl

Seldén Mast SAS, FR
Tel +33 (0) 251 362 110
Fax +33 (0) 251 362 185
e-mail info@seldenmast.fr

www.seldenmast.com

Dealer:

The Seldén Group is the world's leading manufacturer of masts and rigging systems in carbon and aluminium for dinghies, keelboats and yachts.

The Group consists of Seldén Mast AB in Sweden, Seldén Mast A/S in Denmark, Seldén Mast Ltd in the UK, Seldén Mid Europe B.V. in the Netherlands, Seldén Mast SAS in France and Seldén Mast Inc in the USA. Our well known brands are Seldén and Furlex. The worldwide success of Furlex has enabled us to build a network of over 750 authorised dealers covering the world's marine markets. So wherever you sail, you can be sure of fast access to our service, spare parts and know-how.

