MAST RAISING AND LOWERING

If you are the owner of a sailing boat, there will come a time when the mast has to be lowered and raised whether for maintenance or to adhere to hard standing rules.

There is usually a professional service in the vicinity who will do this, however, if the mast is reasonably small and light, the job can be done if you recruit some help - probably from neighbouring owners. (that way you create a self-help group).

The basic method is to moor the object yacht between two similar boats with the masts all in line, and use their halyards to lower or raise the mast. Details of the sequence follow, but first the various rigs and their implications should be understood.

THE OWNER OF THE OBJECT BOAT SHOULD KNOW WHICH TYPE OF RIG HE HAS AND ANY EXTRA REQUIREMENTS NEEDED, as he has to guide the team through a safe and successful process.

RIG Differences

Type 1. Standard single fixed spreader rig with three or four lower, deck stepped
1A. As above, but keel stepped. (mast will be bottom heavy)
1B. Spreaders not fixed (able to articulate upwards)

Type 2. Double spreader, or other "top heavy" rig

Variation 3. Any of the above with a radome, inboom reefing track or other attachment requiring laying "face down"

PREPARING TO DROP THE MAST

It's obvious that everything will need to be removed from the mast - sails, boom, fragile instruments if you have any.
All electrical cables should be unplugged and bagged for their own protection.
Be sure to free any halyards, reefing lines etc. from blocks at the foot of the mast.

Loosen the bottle screws and remove the pins from the lower shrouds. The mast will stand safely supported by the capshrouds, forestay and backstay if there is one.
Bring the lower shrouds to the foot of the mast and put a loose tie round them.
Free up the adjusters and pins on the remaining rigging so it can be easily removed.

Now is the time to gather your team and position the boats.

Make up a strop from about 2 metres of stout rope formed into a loop.

The strop is passed round the mast then the lifting halyards and a pull-down line attached with bowlines all interlinked. (see drawing) at the front of the mast.
HOWEVER, this is where the first variant comes in...
**Type 1 Rig** - Strop is **outside** the lowers and will load on the underside of the spreaders.

**Type 1B Rig** - Strop is **inside** the lowers, and will load on their fixings. In a mast raising situation, the downhaul is VERY IMPORTANT as the strop will usually jam and need to be "jiggled" free to retrieve the hoist halyards. Otherwise someone will need to climb once the rigging is secure...
**Type 1A Rig** - A stout line is required instead of the downhaul to keep the strop from going all the way up to the spreaders (or lowers attachment). This should be attached to the foot of the mast (a cleat or winch) so as to keep the strop about a metre* below the spreaders.

* 1/2 the height of the 'extra' mast coming up through the coachroof.

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![Type 1A Rig Diagram](image)

**Type 2 Rig** - In the previous situations, the mast is able to balance around the strop attachment point. However, in a multi-spreader or other 'top-heavy' case, an extra line is needed at the foot of the mast, led away from the unstepped destination of the foot (see later) and put under control of a person whose job it is to ease the line (mast coming down) or pull (winch) the line (mast going up) in order to assist the people guiding the foot of the mast.

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![Type 2 Rig Diagram](image)
How it works - mast coming down:

Strop in position and knots checked. Wincher and tailer (if needed) on each 'crane' boat. The strain is taken on the halyards until the mast is just supported. The remaining shrouds and stays are disconnected and brought to the foot of the mast. If there is a headsail foil, a person is detailed to stay with the drum and control it's journey. Once all is free, and any bolts/pins etc. at the mast heel are removed, two people will be required to manhandle the foot of the mast in a manner similar to someone tossing a caber at a highland games. 

ALL OTHERS SHOULD BE CLEAR OF THE AREA UNDER THE MAST

Lifting halyards are now wound until the heel of the mast comes clear of the deck, at which time it can be walked to the bow (usually!) of the boat while the halyards are slowly and smoothly eased on each of the 'crane' boats keeping the mast central. Some form of support for the mast is usual - planks across pushpit and pulpit and a fender on the coachroof are the most common. The headsail foil will naturally find itself lying along the mast and may need extra support at the drum to prevent the foil bending during storage.

Mast going up:

All ties securing shrouds and halyards to be removed, bottlescrews oiled and in place, correct size clevis pins and split pins available, instruments lights and aerials at the masthead installed. It is good practice to "bag" the clutter of ropes, stays and cables clear of the mast foot. Moor the boat between the 'crane' boats with the mast fitting/tabernacle in line with the other masts. Attach the strop, halyards and downhaul at the balancing point of the mast (already described above) making sure the headsail foil (and halyard if attached to the bearing or drum) is LYING IN THE "V" OF THE HALYARDS - ie , will not end up trapped against the mast by the strop or behind the halyards as it is raised. (Except variant 3) If the mast is top heavy, a line* needs to run from the foot of the mast along the length of the boat to a winch. The mast is winched up by the 'crane' boats, while the foot is guided towards its destination by two of the team assisted by the line* hauler as required. The capshrouds, foil/forestay and backstay can now be connected to the boat and snugged up. It is common for rigging to have "shrunk" and coachroofs to have "grown" during storage, so it can be difficult to get pins etc. to line up. A heavy person (or two) moving about the deck to the opposite side of the boat from the stay being worked on, can tip the hull up to meet the rigging being held in place by the 'crane'boats. Once the four principal wires are attached, the mast is stable and the strop can be hauled down to clear the way for the lowers to be rigged. This can be done after the boat has returned to it's own berth, freeing the crane boats to enjoy the rest of their day.

Rig Variation no 3 requires a "face - down" attitude for mast storage. This is adopted if there is a radome which interferes with the strop (even if a strop spreader is used) or there is a vulnerable attachment to the rear of the mast - external main reefing foil, inboom reefed luff alignment addition etc.
The difference is that the strop, halyards and downhaul are attached from BEHIND the mast, which is then supported as above. Once the foil is loosened, the mast must be tilted back a little to get the drum up over the pulpit and outside the guardwires. The drum guiding person is going to take the drum all the way aft as the mast is lowered.

Once the drum is outboard, the capshrouds and backstay can be loosened off and the mast lowered - this time the "cabers tossers" and drum guider have to walk AFT and the mast will lie face down.

NOTE. When the mast is being raised, the foil will NOT be laid in the "V" of the halyards, It must be free to be walked all the way forward.

Finally, as in everything, preparation is important so as not to take up too much of your friends time. They will not appreciate hanging round tied on to your boat while you fiddle with stuff that should have been done before you interrupted their boat time.

**On The Assisting Boats**

The winch operators on the crane boats have to be aware of everything going on as they work. The mast should remain above the centre line of the object boat as much as possible and it is important to avoid jerky motion when lowering. This is best done by easing the tail smoothly hand over hand with just two turns on the winch rather than stopping and starting with too many turns snatching and possibly riding.

Mast winches are sometimes a bit neglected so make sure they are up to the job before starting. A better solution may be halyards led back to a reduction geared self tailer in the cockpit or an electric anchor windlass.

A good way of creating a stress-free lead on the lifting halyard is to hoist a strong block almost to the masthead with the lifting halyard through it. This allows the block to articulate under load rather than subjecting the fixed sheaves to an angular force.

As already mentioned, at all times there should not be anyone below the mast when it is being moved. The crane crews are in a good position to monitor this and "advise" as necessary.

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