

LIGHTING MAST

Erection, Installation, Maintenance, Operation Manual

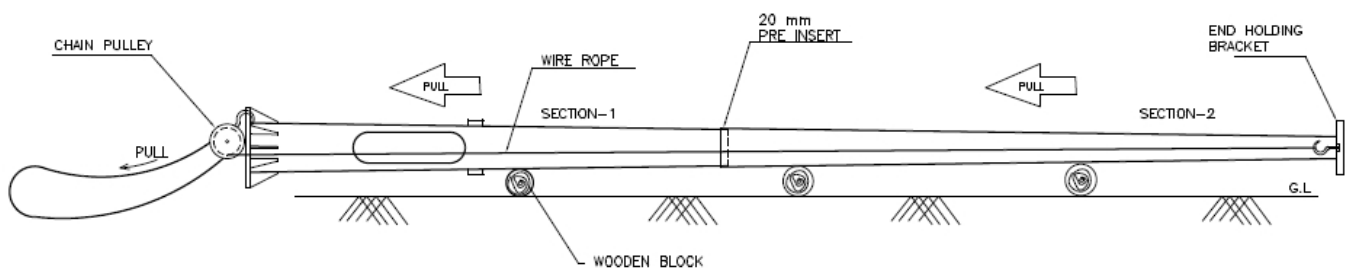
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1. ERECTION AND INSTALLATION PROCEDURE

- 1.1 Collect all the accessories (e.g., head frame, lantern ring, etc) of high mast at erection site.
- 1.2 Check PCD and diameter of foundation bolts on the foundation. Then check PCD and hole diameter of base plate in bottom section.

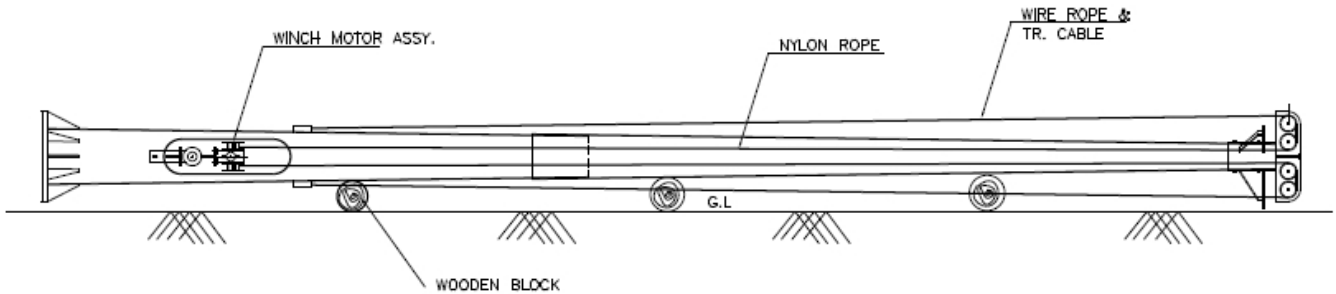
1.3 SECTION ASSEMBLY:-



Pic.-1

- 1.3.1 Bottom section and middle section are placed horizontally on round wooden block and insert the middle section approx. 20mm into the bottom section.
- 1.3.2 A chain pulley block approx **5 M/T** is placed behind the base plate of the mast. The end of the chain pulley is fixed with the flange of the mast and the chain hook is fixed to the top end of the inserted section.
- 1.3.3 Then the sections are pulled by the chain block.
- 1.3.4 Care is to be taken to align the section properly to achieve correct insertion. Welding joint of each section to be aligned with each other.
- 1.3.5 After proper sleeve joint assembly of bottom and middle section, the same procedure is continued to join the top section.

1.4 HEAD FRAME ASSEMBLY:-

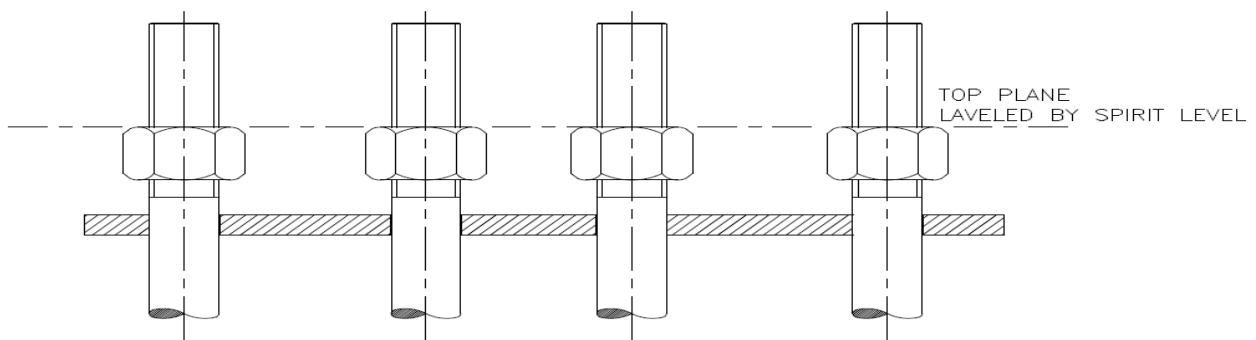


Pic.-2

- 1.4.1. The head frame of the mast is fitted on the top section.
- 1.4.2. The wire ropes and cables are inserted inside the mast with the help of a nylon rope which was initially inserted during assembly of sections.
- 1.4.3. The compensating disc, power tools and winch assembly are fixed inside the mast.
- 1.4.4. The wire rope and the cables are passed on the pulleys of the head frame and attached to the stopper clamp welded on the mast's base section.
- 1.4.5. In case of three point suspension, the part of cable pulley arrangement of Head Frame to be kept behind the door side and in case of two point suspension, the both pulley arrangement of head frame to be kept along the sides of the door.

1.5. FOUNDATION BOLT ARRANGEMENTS:-

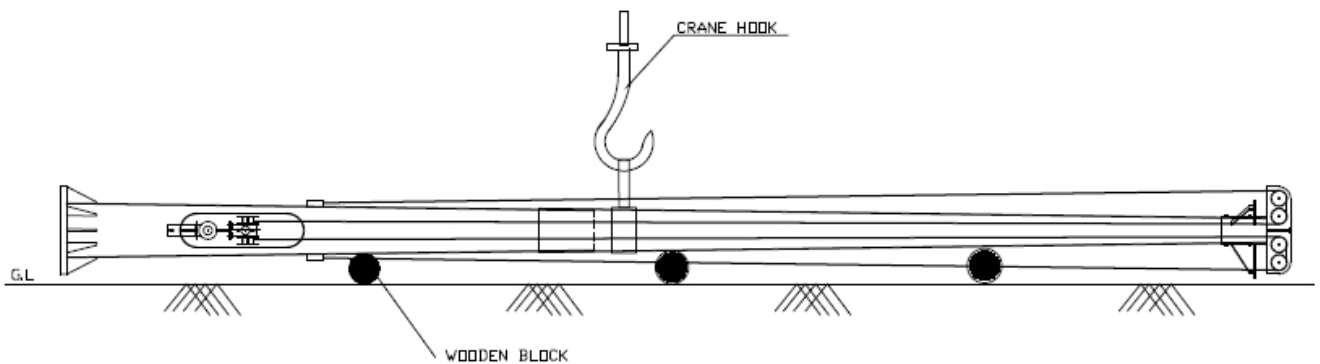
Ensure the bolts threads are cleaned and greased and have one nut on each bolt within 15mm bottom clearance is from base. Using a spirit level ensure that all the nuts are in one plane.



Pic.-3

1.6. ELEVATION OF ASSEMBLED HIGH MAST:-

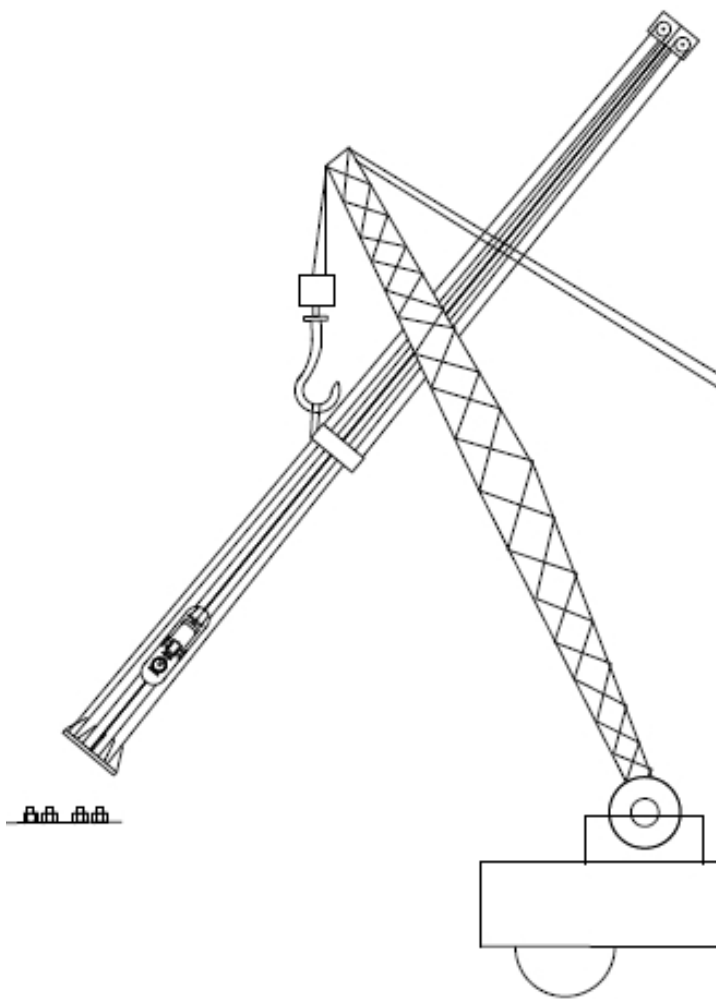
The center of gravity of the mast should be determined and the sling placed in position just above the point. A straining wire rope with shackles is secured to the sling and the fixed hole provided in the gussets (stiffners). One further rope should be attached to the sling for assisting the removal of sling, when the mast is firmly secured to the foundation bolt.



Pic.-4

1.7. ERECTION OF MAST:-

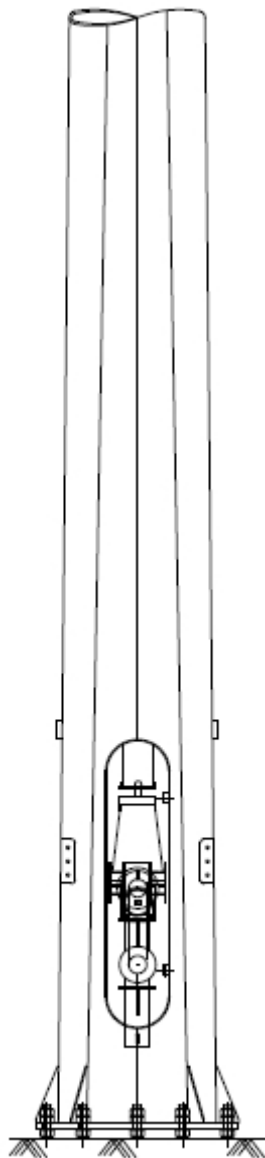
The crane lift the mast assembly on the foundation keeping the door in required side and the supply cable is to be kept inside the mast.



Pic.-5

1.8. TIGHTENING OF FOUNDATION BOLT:-

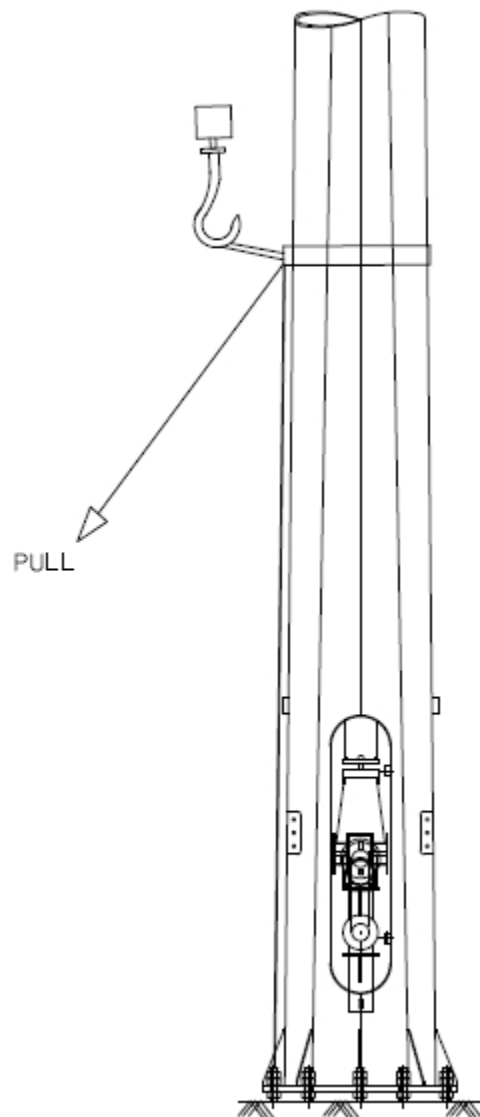
Nut should be tightened properly. Ensure that two nuts in each foundation bolt to be placed on the base plate (LOCK NUT).



Pic.-6

1.9. SLING PULLING:-

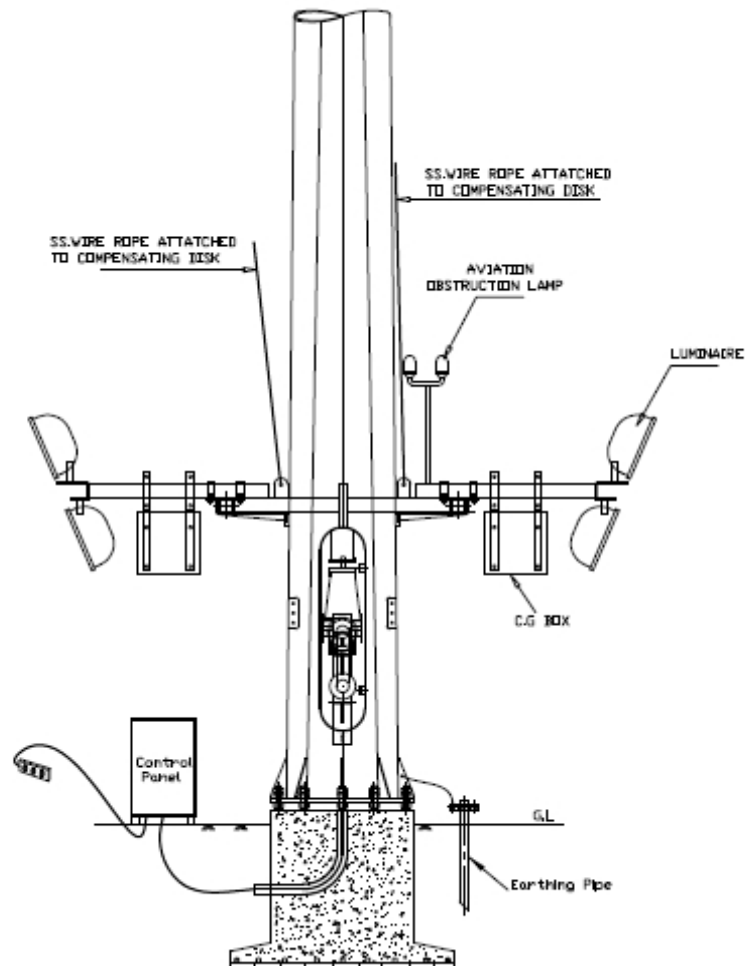
The straining wire can be removed from the gusset/stiffner. Then the sling is to be removed by pulling down the rope attached and straining wire.



Pic.-7

1.10. LANTERN RING ARRANGEMENT AND WIRING:-

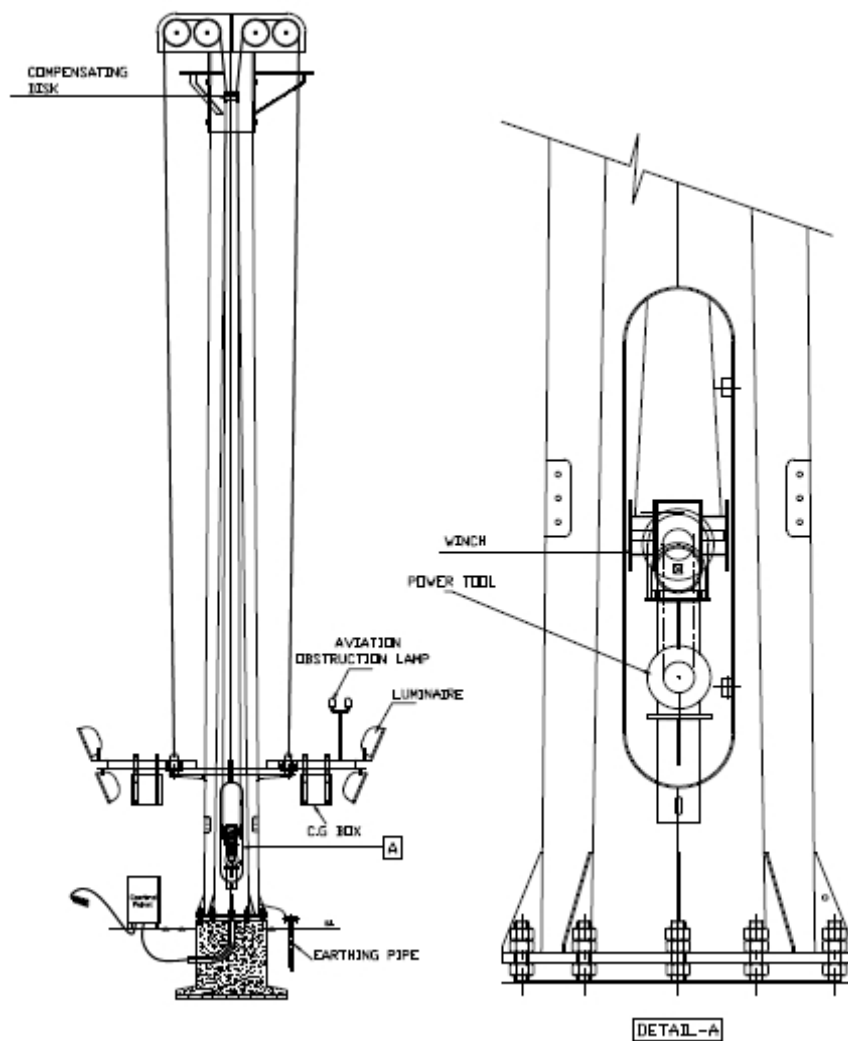
The two halves of the lantern carriage are fitted with luminaires, CG box and Junction box and wiring is completed.



Pic.-8

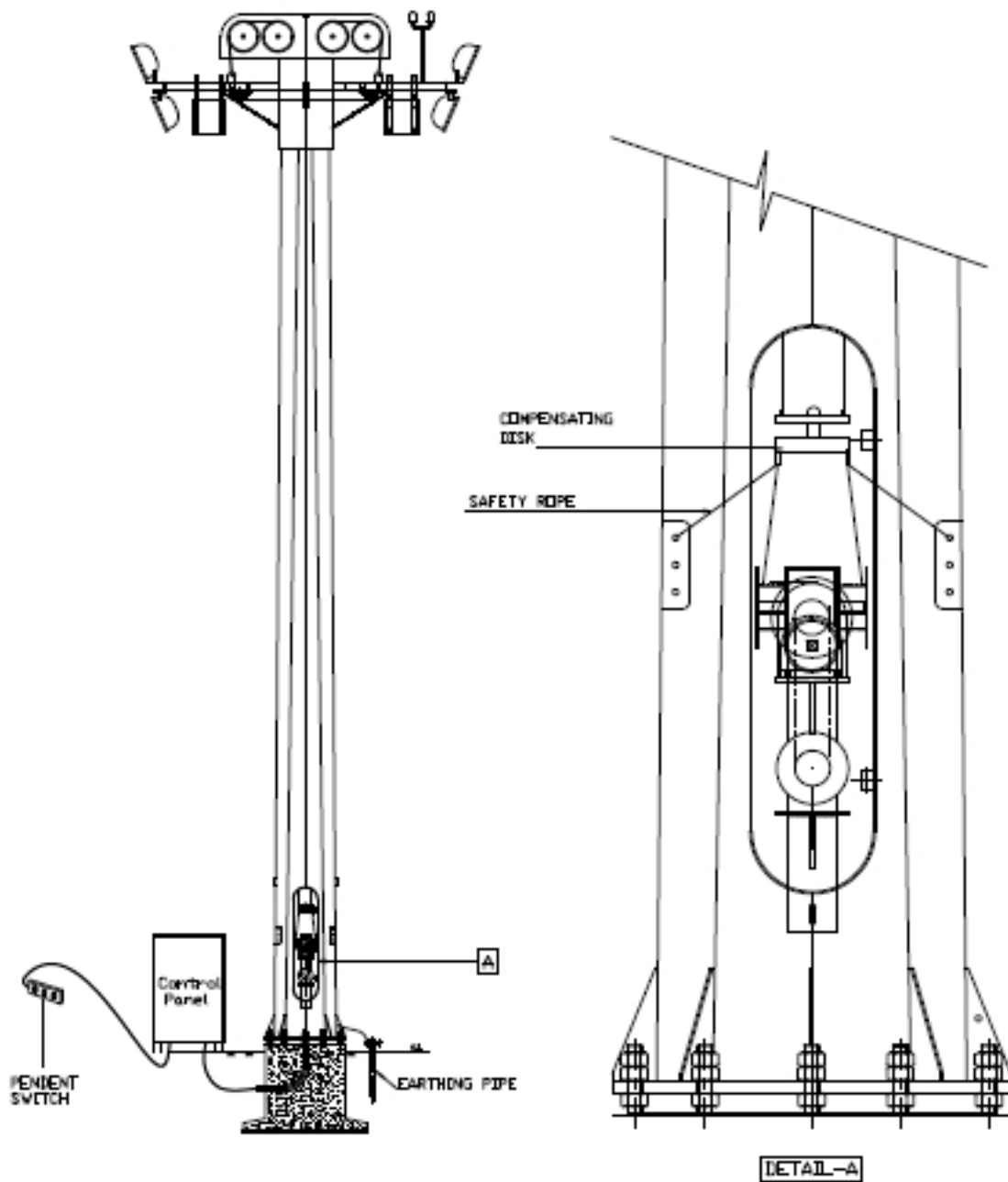
1.11. RISING OF LANTERN RING: -

Operate the pendant switch to lift the lantern carriage:



Pic.-9

1.12. FITTING THE SAFETY ROPE:



Pic.-10

2. GENERAL MAINTENANCE OF HIGH MAST

A periodic maintenance is very much required for Utkarsh make High Mast, as this System is erected to provide a vital utility item like light. Which is very important, this system is used for protection of the area, commodities life etc from the darkness of night from Vandalism.

To safe guard this system and its working, certain precautions are to be taken periodically.

Every 6 months or when ever the system require a light change

1. Feeder Pillar Box to be checked for any heated parts, loose connection flash mark.
2. High Mast door to be opened & cleaned, electrical connection checked for loose & heated (or Flash marks at plugs & sockets Contactors) parts, etc.
3. If Flash mark is found then Light load (Amp) and loose connection to be checked
4. Gear Box oil to be checked (Oil Capacity Max 200ml) To be replaced with fresh oil in every year.
5. Checking of Backlash. Gear Backlash is checked by gently rotating the input shaft in either direction to feel the looseness. The permissible limit is 0.4 to 0.7mm on the Input Shaft. Run the Gear System / Motor and confirm smooth operation
6. Motor Chain & Sprockets to be checked, it should be neither too loose nor or too tight.
7. All Screws, Nuts to be checked and tightened.
8. Cleaning of Lights to be carried out.
9. Check if water has entered the Luminaires / Ballasts / Junction Box. If so provide suitable & adequate protection (IP protection is needed).
10. Junction, Control Gear & Luminaires Box terminals to be tightened adequately.
11. General cleaning of the area around the Mast to be carried out regularly.
12. Precaution against (Rats, Reptiles even Ants & Termites etc) to be taken as they sometimes cause massive Short circuit resulting into loss of vital components.

3. OPERATION OF HIGH MAST

1. Be sure that the earthing is properly done and then disconnect the Power Supply from the Feeder Pillar Box.
2. Open the door cover and see that the Trailing cable is clamped properly with S.S wire rope.
3. Disconnect the plug of Trailing cable and also the safety rope.
4. Put the L-Stopper in stopper clamps.
5. Hold the pendant switch of power tool and keep yourself away at least 3mtr from the mast shaft.
6. Select the reverse mode of the pendant switch and start operation initially by inching and observe the Lantern ring comes down. Then start the operation and observe the continuous motion of Lantern ring. If some difficulty is found during the operation, slightly lift the Lantern ring in forward direction and continue the reverse operation.
7. When the Lantern ring comes down near the L-Stopper, start inching operation and stop it when it is properly docked.
8. Then the luminaires and other maintenance can be done safely.
9. Test the whole circuit by giving temporary supply to the Junction box.
10. Hold the pendant switch of the power tool and select the forward mode initially by inching and observe the Lantern ring goes up.
11. When the Lantern ring reaches near the L-Stopper, then start inching the operation and stop it when it is properly docking.

UNLOADING AND HANDLING INSTRUCTION

Material Handling (At the site)

1. Ensure that proper arrangement (Like wooden plank for stacking, Hydra/Mobile crane for unloading, PVC/Nylon Ceiling for lifting the segments & the components) have been made to keep the material on the site. Unload maximum 2 segments for HIGH MAST and maximum 10 for polygonal poles at a time
2. Unload the wooden box by the crane or Hydra and keep it in the safe custody to avoid any losses of the materials.
3. First Unload the Foundation bolts, Head frame and Lantern ring One by one and keep these separately, to avoid the damage of the components.
4. Unload the segments one by one and keep it on the wooden block, on the ground by the hydra/ Crane.
5. Keeps it away from dump or other metal to avoid WHITE RUST.
6. If in case no crane/ hydra available for unloading then use the wooden plank along with the tyres, to avoid any damage to the segments.

INSTRUCTION FOR INSTALLATION

1. Insert the segments up to the marking
2. Before placing on foundation bolts, please check the segments alignment.
3. Keep one nut in each foundation bolt for levelling of mast. Mast to be placed on levelling nuts. After installation ensures that there are 2 nuts in each foundation bolt over the base plate.
4. Tightened the bolts of head frame properly.
5. Trailling cable to be passed through the centre hole of compensating disc to avoid cable damage.
6. Aluminium cable clamp and cable and wire clamp to be tightened properly to avoid slippage of calbe.
7. Tightened the 4 nuts of each ss doc clamp of wire rope and use at least 2 doc clamp to each end of rope to avoid accident. Use alluminium ferrule to avoid unwinds of rope.
8. Before operation check the oil of winch and fill sae 90 grade oil into it to avoid winch failure.
9. Set overload relay of the motor in required posidion (approx 2.2a) to avoid motor burnt.
10. Before raising and lowering, check the buffer of l-ring to avoid scratching on mast surface during operation. Before operation check the balancing of lantern ring.

11. After installation use safety rope to release the load from winch. Winch to keep load free after installation to enhance the life of winch and to avoid accident.

DO and DON'T

DO :

1. Count the numbers of items as per the packing list.
2. Always use PVC ceiling to handle the segments by the crane.
3. If you are using fork lift, then always wrap the jute bags or thick paper on to the fork to avoid any metal contact-black & GI
4. The concerned person at the site at the time of unloading should ensure that the site has got the wooden logs & planks. Each layer of poles should be separated by wooden planks TO AVOID WHITE RUSTS.
5. If the site is remote –no crane /forklift/ other lifting device is not available- than for polygonal poles use manpower to unload and stack. Suppose there is no man power, than wooden planks can be placed at larger angle and drop one by one to hit a rubber tyre at the end of planks and stack properly. Always ensure that before unloading the next segment, previous one must be removed from that tyre.

Don't :

1. Never keep the segments on the ground directly.
2. Never Unload it by pulling directly from the truck.
3. Avoid the use of Wire ceiling to handle the segments.
4. Never keep the segments on the metallic sheet, sand, in and near to the wet area and water.
5. Never tilt the wooden box.
6. Never throw any items directly to the ground.