PLM-13.5-4S-2XCAT6-4X18AWG-NAC

4 Stage Pneumatic Light Mast
Extends to 13.5 Feet
2x CAT6 4x18AWG Internal Cable

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Safety Information

***Always** follow the Operating Instructions*

***PLM Telescopic Masts** are considered to be temporary structures and should not be expected to withstand all weather conditions indefinitely. For wind speeds in excess of those stated it is essential for the life of the mast and the safety of the operating personnel, to retract the mast. In all cases refer to label supplied with mast to find actual design parameters.*

*Do **NOT** operate the mast in weather conditions that may cause danger to the operators, any personnel or equipment. Do **NOT** exceed the **MAXIMUM** weather conditions stated.*

*Installation **MUST be** carried out by authorized personnel*

***Larson Electronics Pneumatic Masts** can be heavy and care should be taken when lifting and transporting them*

Ensure the area in which the mast raised is free of any overhead obstructions and power lines.

DO NOT operate the mast Outside of the operating temperature range -30ºC to +70ºC and at wind speeds or head loads in excess of those recommended

Ensure that the head load is securely mounted to the mast

*If **Guy Wires** are used, once in position they can become a potential trip hazard. Ensure they are either clearly marked with a visual indicator or an exclusion zone around the mast is setup.*

***ALWAYS** Consult the supplier/manufacturer prior to the use of standard commercially available compressors.*

DO NOT *operate at pressures above those recommended. Over pressurization severely strains the collar and base section screws and can, in extreme circumstances, force a collar off and allow the tube to blow out.*

DO NOT *attempt to rotate the mast unless fitted with a rotating system.*

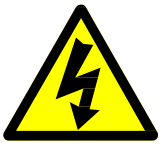
Since telescopic masts are essentially composed of sliding sections, care should be taken to keep them clean and lubricated. ***Please see Maintenance section***

If a tube section sticks during the extension of a mast severely enough to cause it to crash into its relevant collar, the cause must be investigated ***immediately****. Failure to do so will result in progressive mechanical damage. The most common causes are as follows:*

Lack of lubrication

Bent or damaged section *(Usually caused by overloading mast and/or operating at too high a wind speed)*

If there is no obvious reason for a section to stick, that section must be removed for inspection and possibly also the next largest section into which it slides. Please see Maintenance section



Precautions should be taken to prevent lightning strikes to the light mast and equipment installed on it

The warranty will be invalidated in the event that:

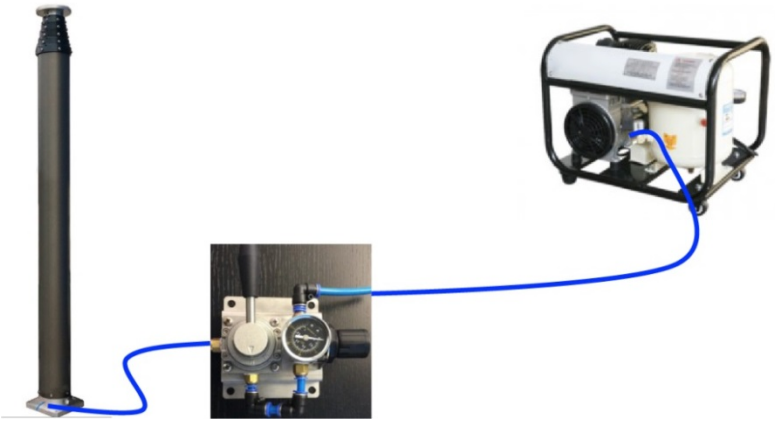
- ☐ Specified oils and lubricants are not used
- ☐ Recommended service intervals are not maintained
- ☐ The mast is operated only partially pressured or extended
- ☐ The mast is operated within a moving vehicle or moving trailer
- ☐ Maximum working pressures, loading or wind loading are exceeded
- ☐ The mast is operated at temperatures outside the recommended range
- ☐ Non-accredited installation, or service work is undertaken
- ☐ The installation and operating instructions are not adhered to

Failure to observe any of the warnings in this manual may result in personal injury, death, or equipment damage. Larson Electronics, LLC accepts no responsibility or liability for unauthorized use or actions outside of those recommended.

The PLM Pneumatic Light Mast provides a safe and effective way for operators to quickly deploy lights, security cameras and other equipment to elevations up to eighteen feet. The pneumatic telescoping mast is extended when the compressed air is put into the mast; when the compressed air exits, it will retract.

CONNECTION

1. Use air pipe to connect air compressor with control panel and mast.
2. Connect power to air compressor.
3. Use pressure gage to indicate pressure of air storage tank, use pressure gage to indicate the output of air pressure.
4. Adjust output air pressure, keep output pressure between 1.5~3 BAR(25-40Psi)



INDICATION

Before extending the mast, please confirm:

1. Select an area free of power lines or other overhead obstructions. Mast location should be no closer than a horizontal distance equal to the extended height of the mast away from any overhead power lines.
2. The mast should be located on level terrain.
3. Secure the payload and any required cables to the mast.
4. Attach the pneumatic system to the mast. Using the control valve, pressurize the mast to extend it. Do not exceed the maximum recommended operating pressure of the mast at any time.
5. The center of gravity should be in the range of top plate (flange). Or the mast will undertake radial force. It will deform the mast.
6. Please retract the mast when it is not in use. Open the exhaust valve until each section has lowered completely.
7. The mast cannot be moved while extending.

MAINTENANCE

1. Keep the mast surface clean.
2. Keep off the smash or scratch on the mast.
3. Pour 10~20 gram of lubrication oil per 6 month to the drain hole (breath hole). The oil is suggested ISO VG32. Or you can choose the oil according to your local temperature.
4. Please pour lubrication oil if the mast doesn't retract or extend smoothly.
5. Please check the pressure of compressed air before you extend the mast. It must be in the permission range (0.15-0.3Mpa).
6. Only professional person can repair the mast.
7. Please use the kits from original factory for repairing or replacing.
8. If you have any problem, please contact the manufacturer.

Mast Installation and Mounting

Mast Mounting

There are several mounting arrangements available for the installation of masts. They can be mounted either internally or externally to a vehicle or building. Various mounting solutions are available from LarsonElectronics.com

MAST INSTALLATION-INTERNAL MOUNTING

WARNING: Mounting Structure Hazard!
Mounting mast into a structure unable to resist the forces generated from customer specific loading scenario could result in death or serious injury and could damage the mast. Before operation, be certain mounting structure is capable of resisting forces generated from all loading and environmental conditions, including, but not limited to, mast size and weight, payload size and weight, sail size, wind speed, guy line arrangement, support bracket or roof line location and base plate assembly.
CAUTION: Safety Instruction – Roof Access! If mast will be mounted to a vehicle, user must provide safe means to access the roof of the vehicle during installation and maintenance.

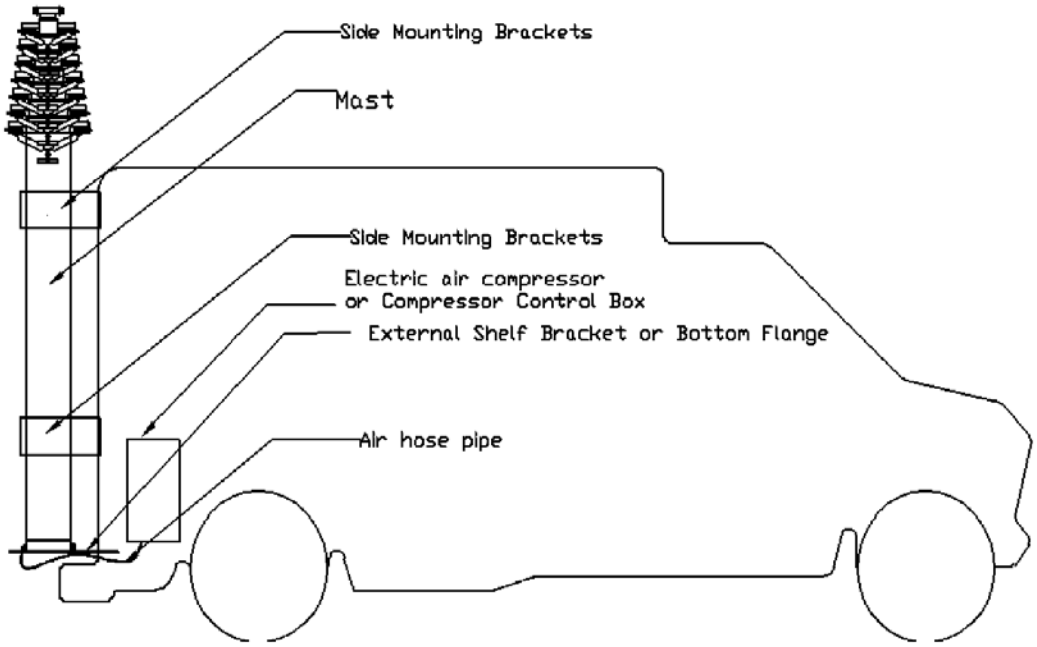
1. To select a suitable location for the mast in a vehicle consider the following:
    - **A.** Roof must be as flat as possible at the location of the mast. The roofline must lie in between the weep hole and base tube collar.
    - **B.** The floor must be level and solid. If not, it must be reinforced.
    - **C.** The area underneath the floor must be free of obstructions to allow for accessibility to base plate fasteners and the bottom air inlet port, if used.
    - **D.** For manually rotating models only, the location of the mast must allow enough clearance from the wall to accommodate the turning handles and the air hose if the air is routed to the side port
2. Remove any roofline or ceiling panels. Cut a round hole in the roof larger than the diameter of the mast base section. Cut the same size hole in the roof liner or ceiling panel. Center the ceiling plate over the hole. Use it as a template to drill bolt holes for attachment.
3. If irregularities exist in the roof, washers or short spacers can be used.
4. To assemble the roof mounting hardware, apply a bead of silicone sealant to both sides of one rubber gasket. Line up all holes and fit the gasket between the roof flange and the roof. For super heavy duty masts, the gasket fits between the roof ring and the roof. The other gasket needs no sealant and fits against the inside of the roof. It is held in place by the ceiling plate. Line up all holes and fasten this assembly together using the appropriately sized fasteners. Securely tighten all nuts. Clean off any silicone sealant that may have squeezed out into the hole cut for the mast. Replace the roof liner or ceiling panel before installing the mast.
5. To locate the base plate for the mast, first make sure the floor of the vehicle is level. Find the base plate location by using a plumb bob supported from the center of the roof hardware or by using a carpenters level held against the base tube of the mast. In the latter case, slide the weather bonnet, or retaining ring and o-ring for super heavy duty masts, over the bottom of the mast base section and up the mast past the weep hole towards the collar. If the weather bonnet is difficult to maneuver, put soapy water or oil on the mast to allow it to slide more freely. Lower the mast partially through the roof and attach the base plate before lowering the mast to the floor. It is necessary to check the mast in two places 90 degrees apart when using a level. Be certain to orient the mast so the operator has a clear view of the mast hazard labels. Additional labels are provided with the operator's manual that can be applied where the operator deems appropriate. Once located, the base plate may be used as a template to drill holes through the floor. Secure the base plate to the floor.
6. After the mast is secured to the base plate and the base plate is fastened to the vehicle, slide the weather bonnet down the mast and over the roof flange. For super heavy duty masts, remove any fasteners from the mounting hardware, slide the o-ring and retaining ring down the mast and tight against the roof ring and reattach all fasteners. If the weather bonnet or roof ring is difficult to maneuver, put soapy water or oil on the mast to allow it to slide more freely.
7. Air to operate the mast may be provided by an air compressor or other source of clean dry air. The air system should be regulated to not exceed the maximum operating pressure of the mast being used.
8. Install the weep hole drain kit provided with the mast.
9. For rotating masts, locate the turning handles at the desired height. Tighten the turning handle bolts just enough to allow the turning handles to rotate the mast without slipping. Tightening the turning bolts too much can deform the base tube and impede the movement of the next internal mast section. Lock the mast in place by tightening the locking screws located on the base plate assembly at all times unless the mast is to be rotated

MAST INSTALLATION-EXTERNAL MOUNTING

Mounting Structure Hazard! Mounting mast into a structure unable to resist the forces generated from customer specific loading scenario could result in death or serious injury and could damage the mast. Before operation, be certain mounting structure is capable of resisting forces generated from all loading and environmental conditions, including, but not limited to, mast size and weight, payload size and weight, sail size, wind speed, guy line arrangement, support bracket or roof line location and base plate assembly.

Safety Instruction – Roof Access! If mast will be mounted to a vehicle, user must provide safe means to access the roof of the vehicle during installation and maintenance.

1. When selecting the location for the mast on the vehicle, check the strength and rigidity of the body where the mast is to be externally attached.
2. Make sure the vehicle is on a flat level area.
3. If using the external shelf bracket, securely attach it to the vehicle. Be certain the shelf bracket is level.
4. Attach the base plate to the external shelf bracket or other mounting structure.
5. Attach the external support bracket around the mast base section.
6. Secure the support bracket to the wall structure. Spacers may be added between the support bracket and the wall as needed to keep the correct alignment between the support bracket and the shelf bracket.
7. Periodically inspect all fasteners and welds to make sure the mast is securely attached.
8. A bottom air inlet is available on all standard model masts. The base plates and external shelf brackets are machined to allow access to the bottom air inlet.
9. Air to operate the mast may be provided by an air compressor or other source of clean dry air. The air system should be regulated to not exceed the maximum operating pressure of the mast being used.
10. For rotating masts, locate the turning handles at a desired height (preferably above the weep hole if feasible). Tighten the turning handle bolts just enough to allow the turning handles to rotate the mast without slipping. Tightening the turning handles too much can deform the base tube and impede the movement of the next internal mast section. Lock the mast in place by tightening the locking screws located on the base plate. The locking screws should be tightened in against the mast at all times unless the mast is to be rotated. See Chapter 3 for instructions on rotating the mast.
11. The weep hole drain kit, intended to protect the interior of a vehicle from damage due to water drainage, is not required for externally mounted masts. However, the elbow from the kit may be used to shield the weep hole from blow sand, dust and other debris.



Mounting Plates

Use 1/2-13 Grade 8 Bolts. It is important that the correct size bolts are used. It is important also when bolting to a vertical surface to ensure that the structure is strong enough or suitably reinforced to take the loads. If any doubt, please contact Larson Electronics, LLC for specific loadings for the mast.

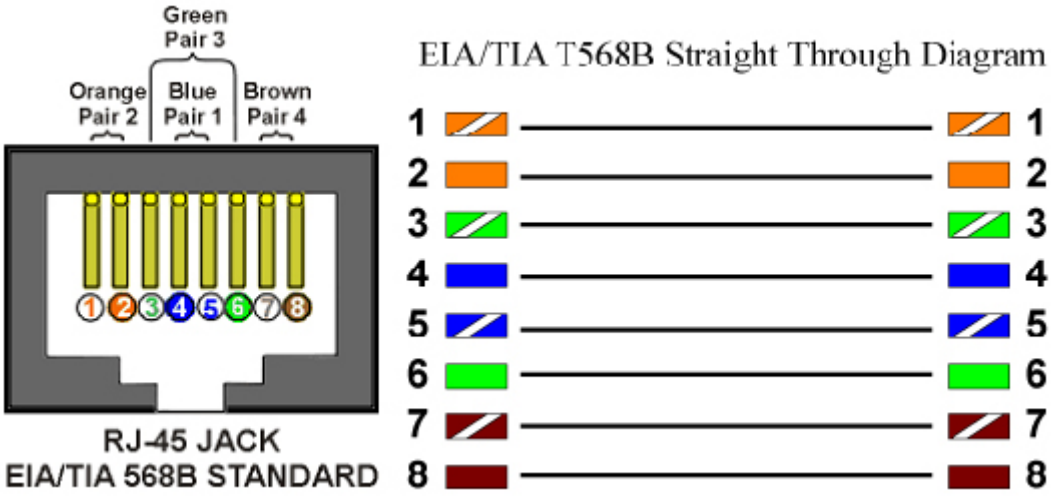
Install the mounting plate through the predrilled mounting holes. Once the mounting plate has been installed, slide the mast in the plate while ensuring the cord/tube will fit through the hole on the base.

Once in place, tighten the hand screws for a firm grip. Continue the installation once the mast is securely mounted.

Mounting Head

Identify mounting plate on top of mast. Configure load to match plate and mount to mast. Do not exceed 154lbs capacity!

Connect cable as required.



Compressor

If the mast is supplied with a compressor, please refer to the compressor manual for installation and operation. Air line simply pushes into the blue Mast Inlet Valve. Press the blue ring inwards while pulling air line to remove.

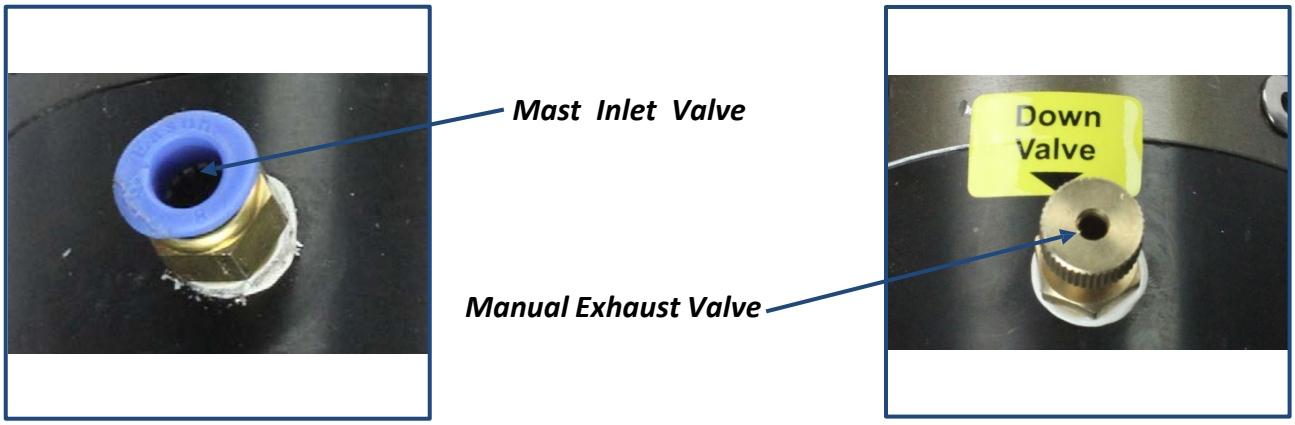


Fig 5: Valves

Mast Operating Instructions

Ensure the mast is mounted securely before deploying.

DO NOT remove the **Mast Exhaust Valve** in an attempt to retract a **Mast** more quickly, especially when the **Mast** is carrying a heavy head load, since this action removes control over the rate of descent. In extreme cases, the uncontrolled collapse of a **Mast** can lead to the head load being damaged, together with applying shock loads to the **Mast** fixings.

Raising the Mast

Raising the **PLM Mast** can be done manually or through the use of an Air Compressor.

Pneumatically

1. Close the mast exhaust valve by turning in a clockwise direction until finger tight.
2. Attach the compressor/foot pump to the mast via the inlet valve show in Fig.5
3. Activate the air supply.
4. When the top section is fully extended switch off the compressor. If equipped with a pressure switch, the air compressor will automatically shutoff once the appropriate air pressure is reached.

Lowering the Mast Sections

1. Ensure the air compressor is turned off.
2. Gently open the exhaust valve until each section has lowered completely.

Maintenance & Repair

Routine Maintenance

Only use oils/lubricants recommended by LARSON ELECTRONICS, LLC. Failure to do so may invalidate the warranty

Inspect and lubricate mast sections at four-week intervals or every 200 operations, whichever occurs first. If the mast has been used in a dusty environment, resulting in a buildup of contaminants and/or old lubricant on the surface of the tubes, remove by wiping each section with an oil soaked cloth.

To protect the seals oil should be injected into the Oil Holes located in the collar. Alternatively, proprietary oil misters may be incorporated within the air supply line. During periods of sustained cold and freezing conditions LARSON ELECTRONICS, LLC recommends the use of Kilfrost Lubricant.

To prevent the buildup of water inside the mast when not in use LARSON ELECTRONICS, LLC recommends the use of a mast cover, in addition the exhaust valve may be left open.

Long Duration Storage

If possible, store in an upright position to prevent seal distortion.

Fault Finding

Under no circumstances should the air pressure be increased above the levels stipulated on the mast label, in an attempt to force the mast. Over pressurization severely strains the collar and base section screws and can, in extreme circumstances, force a collar off and allow the tube to blow out.

If the mast will not extend please check the following:

1. Is the mast exhaust valve open or leaking?
   Action: Close or replace valve
2. Is the air inlet valve leaking?
   Action: Replace valve
3. Are any of the mast seals leaking?
   Action: see "Leaking Seal's"
4. Are any of the mast sections damaged?
   Action: Contact Larson Electronics, LLC for repair.

Replacement Parts

The PLM light mast is designed to provide years of reliable performance. Should the need for replacement parts arise, please contact Larson Electronics at the contact information below.

Should further information not covered by these instructions be required, please contact Larson Electronics at 1-800-369-6671 or sales@larsonelectronics.com for further assistance.

Please visit LarsonElectronics.com for Warranty and Return information.