

TAPERED POLES

JOB NUMBER: _____ DATE: _____

CUSTOMER: _____

PROJECT: _____

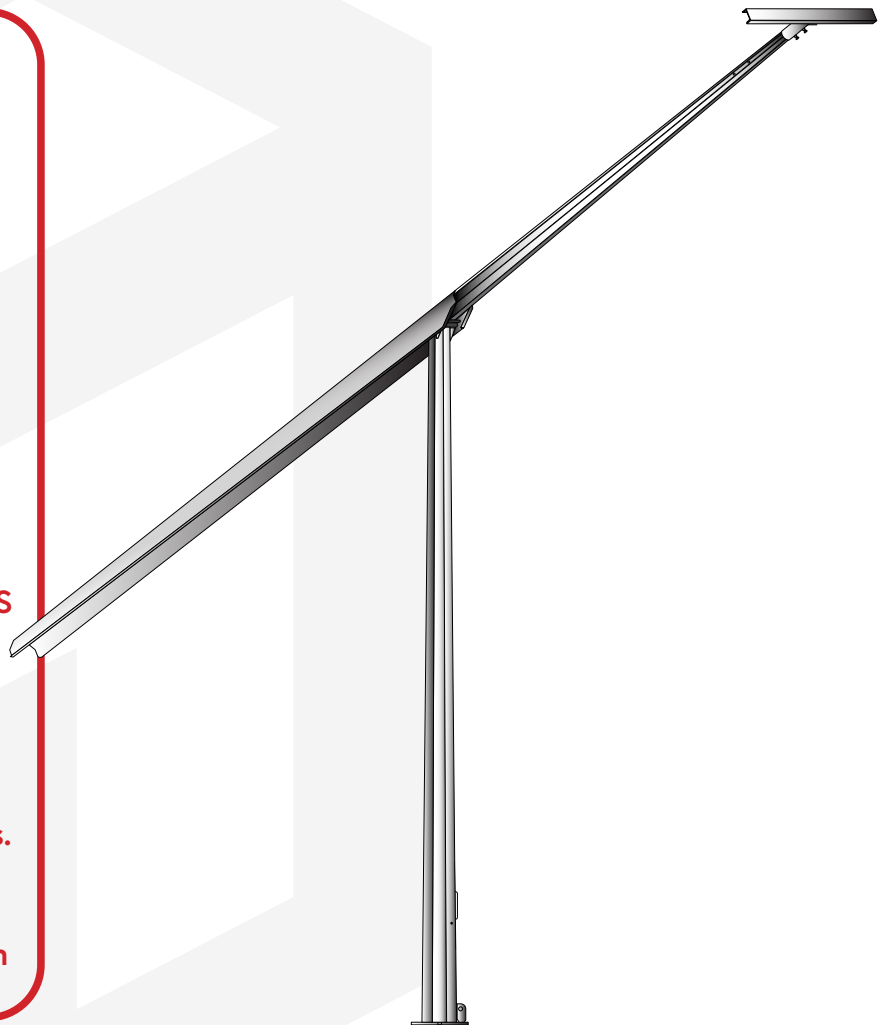
Contact GM Poles to arrange technicians to perform a general overhaul and inspection:



WARNING



- This pole is to be operated in **CALM WEATHER** only – up to 10 knots. Refer to windsock at pole top if your pole has been fitted with one.
- This pole is a **COUNTER-BALANCED** device.
- **DO NOT ALTER POLE MASSES** either by removing, adding or changing luminaire and/or masses without the prior written consent of GM Poles. Unauthorised changes in pole masses could render the pole **UNSAFE** to operate, resulting in possible **SERIOUS INJURY OR DEATH**.
- It is mandatory for anyone who uses these mid-hinged poles to have been trained using competency-based training techniques and listed in the end users register of trained operators.
- Inspections and maintenance are to be carried out as per the guidelines within this document and recorded in a service register before use.



GMP PART NO.			
CLIENT POLE NO.			
LUMINAIRE (TYPE & PART NO.)			
LUMINAIRES QTY PER POLE			

CONTENTS

SECTION A – OPERATION AND GENERAL INFORMATION 3

Product Details	3
Foundation Bolts	3
Baseplate Mounted Pole	3
Pole Top Accessory	4
Wiring	4
Isolation Procedure	4
Lowering and Raising Procedure	5

SECTION B – CHECKING AND MAINTENANCE 11

Initial Operation	11
Annual Inspection	11
Every 8 Years	11
Removal of Pole Mounted Assets	11

SECTION C – ASSOCIATED AND REFERENCED DOCUMENTS 12

Pole Footing Installation	12
Pole Erection	12
Pole Baseplate Grouting	12
Pole Maintenance	12
Pole Coating Touch Up Procedures	12
GM Poles Warranty	12
Contact GM Poles	12

SECTION A – OPERATION AND GENERAL INFORMATION

PRODUCT DETAILS

GM Poles tapered mid-hinged poles enable maintenance of pole top mounted assets from ground, thus eliminating the need for an elevated work platforms and eliminating risks associated with working at heights.

The product generally consists of:

- **Foundation bolts for setting into reinforced concrete footing (refer to GM Poles Footing Installation Instructions document);**
- **a baseplate mounted pole to be erected on the foundation bolts (refer GM Poles Pole Erection Procedure document);**
- **and there is often an additional pole top accessory such as outreach(es) or crossarm to suit pole top mounted assets such as luminaires, cctv cameras, etc.**

FOUNDATION BOLTS

GM Poles pole products mount on proprietary foundation bolts fabricated from Class N, deformed bar with minimum yield strength of 500MPa to AS/NZS 4671. Foundation bolts are supplied complete with two nuts and washers each. One nut and washer per bolt is used underneath the baseplate for levelling the pole, the other nut and washer is the hold-down set to be tightened after levelling to snug tight.

Refer to GM Poles Foundation Bolt brochures for further specific product information.

BASEPLATE MOUNTED POLE

The pole is hot dip galvanised with a tapered octagonal cross-sectional area. The pole features a fixed base section with a hinge at its top. Connected to this base section is a pole top section with a counterbalanced apron below the hinge. All components except the hinge pin are hot dip galvanised steel, the hinge pin is Grade 316 Stainless Steel.

The pole has been designed and balanced by GM Poles to suit the pole top arrangement per details supplied by the customer. **Any change in the arrangement may result in UNSAFE operation which may cause INJURY OR DEATH thus, any alterations must be approved by GM Poles.**



POLE TOP ACCESSORY

The pole top accessories are fabricated, and hot dip galvanised and are to be securely attached to the pole top. This connection needs to be performed carefully to ensure that there is no release of the accessory when the pole is in the lowered position. Only GM Poles mounting accessories are to be mounted to the pole top such as outreach(es) or crossarm. The accessory may be used to mount luminaires, cameras or other device per project requirements. The details of the GM Poles accessory has been included in our assessments for pole balancing, along with the assets per details supplied to us by the customer. **Any change in the arrangement may result in UNSAFE operation which may cause SERIOUS INJURY OR DEATH thus, any alterations must be approved by GM Poles.**

WIRING

Wiring of the poles is to be performed by a suitably qualified and licensed electrician. The cables used inside the pole must be flexible enough to bend through 180 degrees about a small radius at the location of the pole hinge. They must also be wear-resistant to prevent damage caused by the regular (approximately once a year) operation of these poles. It is strongly recommended that the cables within the pole be run in a flexible conduit to provide further protection at the hinge location.

ISOLATION PROCEDURE

ELECTRICAL:

Open the pole access door and switch off the circuit breaker powering the pole top electrical assets before operating the pole.

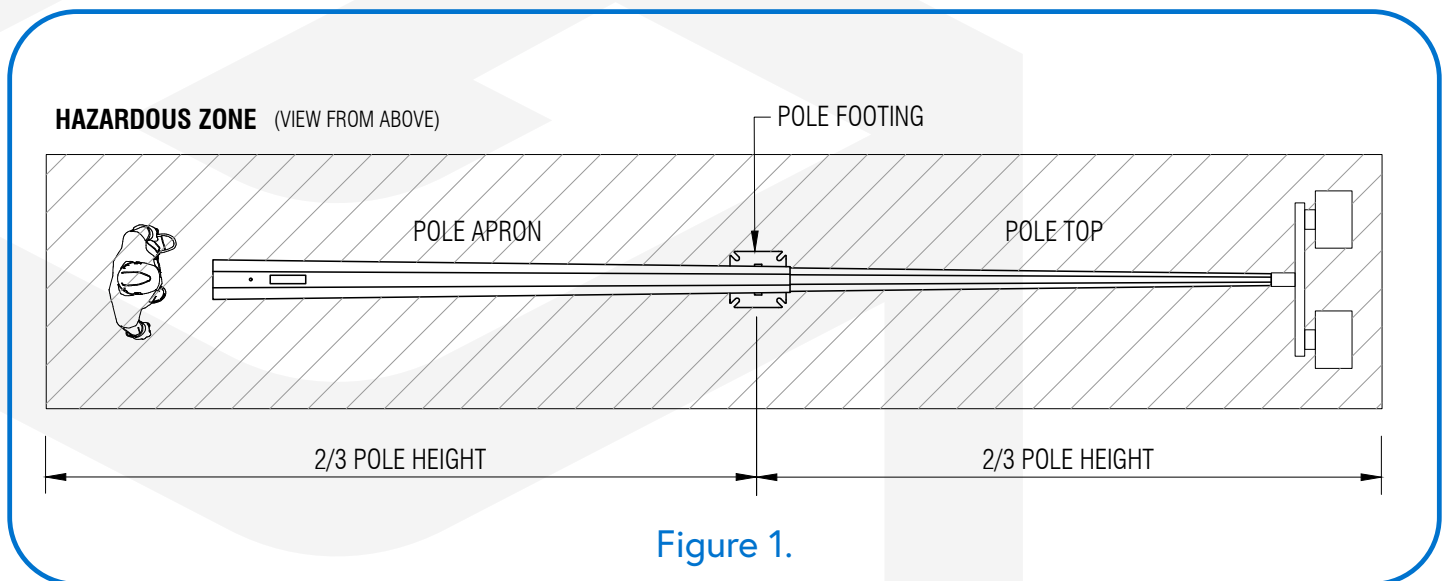
MECHANICAL:

The pole is secured in the raised position by locking screws located near the base of the apron. The pole is only secure when in the raised position with the locking bolt fitted and tightened. These screws are to be removed to lower the pole top. Procedure defined in the next section.

LOWERING AND RAISING PROCEDURE

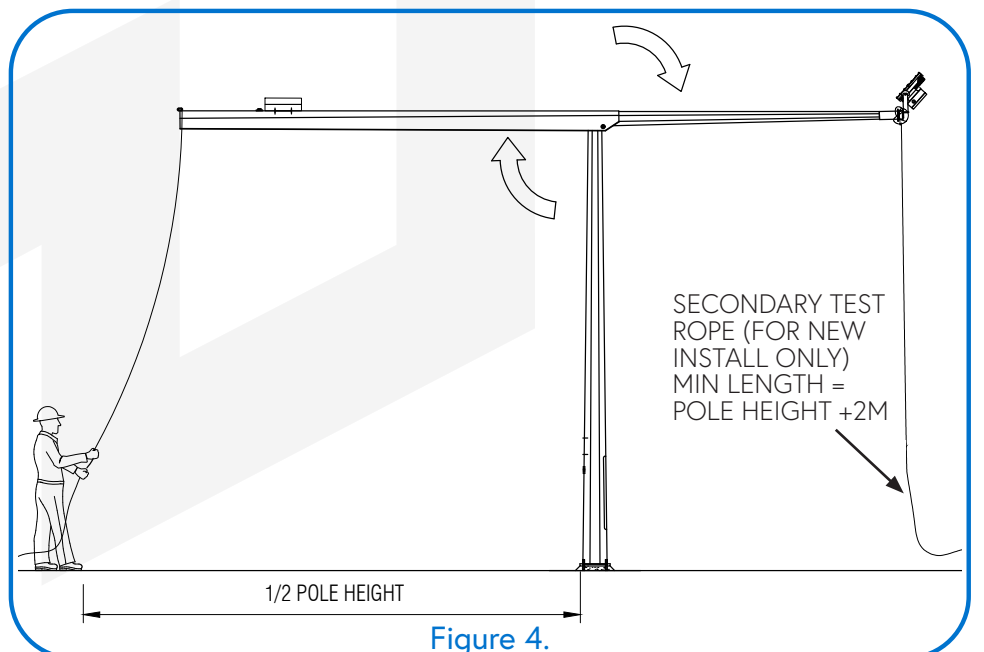
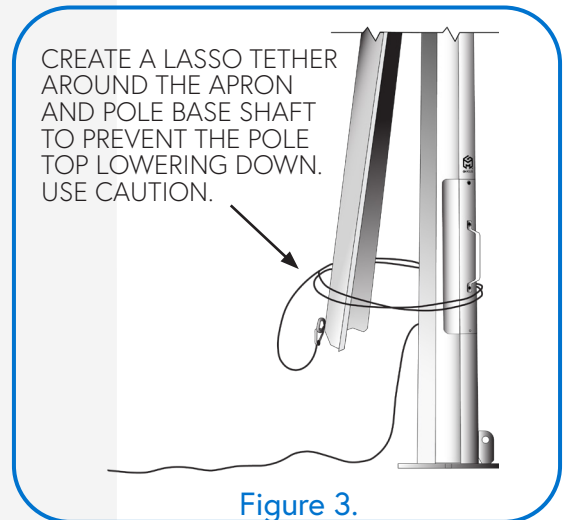
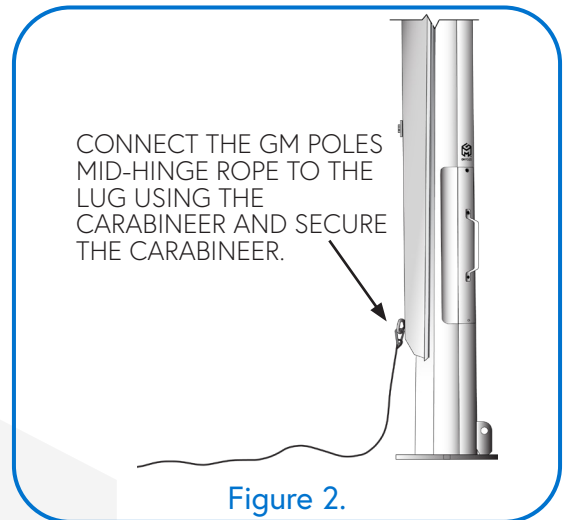


- All manoeuvres are to be performed in calm weather (less than 10 Knots).
- If pole is fitted with windsock, check that windsock is not horizontal.
- Personal Protective Equipment (PPE) is required and as a minimum to include: Safety Glasses, Hard Hat and Riggers Gloves.
- 'Hazardous Zone' should envelope the pole for operational area.



1. If poles is fitted with a windsock at pole top, observe its activity to ensure wind is less than 10 knots. A wind speed of 10 knots is indicated by the windsock in the horizontal position with no creases.
2. Conduct a 100% visual check to ensure the pole foundation bolts are tight, the hinge is in place, the pole top accessory (if any) and pole mounted assets look secure.
3. For poles with multi-piece top shafts, ensure that the overlap retaining safety threaded rod in place. **Note that the lugs for this safety device are NOT to be used for pole assembly.**
4. Check maintenance log to ensure annual checks have been completed.
5. Ensure site is clear of personnel or objects in the defined 'hazardous area'. *Refer Figure 1.* Ensure the lowering rope and carabineer are in good order. Check that the rope length is at least 1.5x pole height. E.g. 1.5x pole height = 9m for a 6m pole.
6. Isolate the pole electrically – refer above '*Isolation Procedure*' to ensure the pole is not 'live'.

7. Connect the GM Poles mid-hinge rope supplied to the rope lug using the carabineer provided and secure the carabineer. *Refer Figure 2.* For Large mid-hinged poles ONLY the following apply:
 - a. Mid-hinge Rope kit supplied has a rope that will have either one or two tails. If with two tails, the lowering operation is to be performed by two person operation. The length of each tail is to be 1.5x pole height. The rope is to be secured to the pole with a shackle of 2t minimum capacity.
 - b. Mid-hinge Rope kit supplied contains a 'pole top securing rope' that is 3m in length with a eye at each end and a 1t shackle. It is used to secure the pole top to the base after the pole top has been lowered.
8. Use the GM Poles rope to create a lasso tether around the apron and pole base shaft. This is to allow 'testing' of the counterweighting effort before properly lowering the pole top. *Refer Figure 3.*
9. Unwrap rope and layout in the direction of the initial apron movement to prevent tangling with the rope during the lowering procedure. Firmly hold the rope taut. **NEVER let go of this rope** until pole is fully lowered and secured. Be mindful of the rope as a potential trip hazard.
10. If this is a new pole that has not been swung before, a secondary rope needs to be attached to the top of the pole – secondary rope is by others. *Refer Figure 4.* Minimum length of the secondary rope is length of pole height plus 2m. This is in case the pole is not balanced correctly. If the apron is too heavy & the pole top does not want to swing over, then contact GM Poles for advice before proceeding further. It is important to leave the secondary rope connected to the pole top otherwise an elevated work platform may be required to change the top headframe mass. After the new mid-hinge pole has been test swung and the balancing is easy to operate, then the secondary test rope connected to pole top can be removed.



11. Undo the apron retaining bolt(s) **as detailed below**. Note that the bolt(s) have allowance for a padlock (by others) which may have been fitted. Access to the padlock is by removing the access door opposite the hinge. GM Poles do not provide the padlock and do not have access to any associated keys.

Location and operation to remove apron retaining bolt(s):

- a. Apron retaining bolt(s) will be removed by accessing the nuts from within the pole for poles that have **retained locking bolt(s)** *Refer Figure 5*. Note that a loose washer plate may be associated with the retaining nuts, or
- b. Apron retaining bolt(s) will be removed by removal of bolt(s) from outside on the apron side for poles that have retained locking nuts within the pole. *Refer Figure 6*.

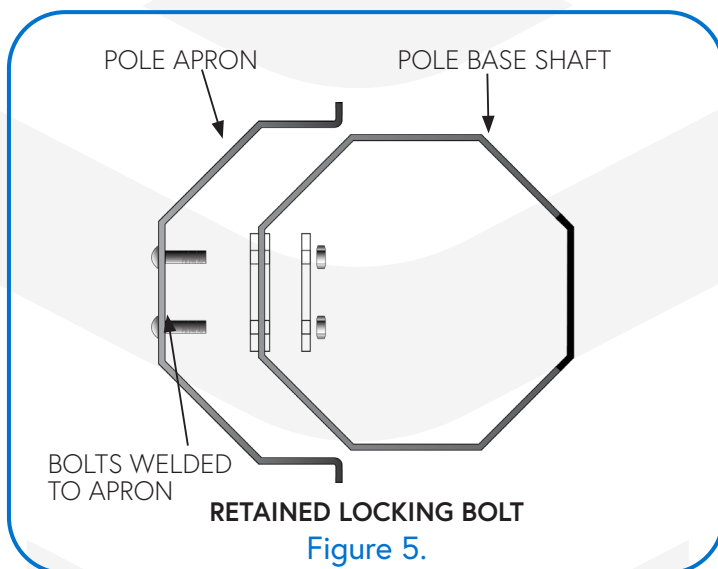


Figure 5.

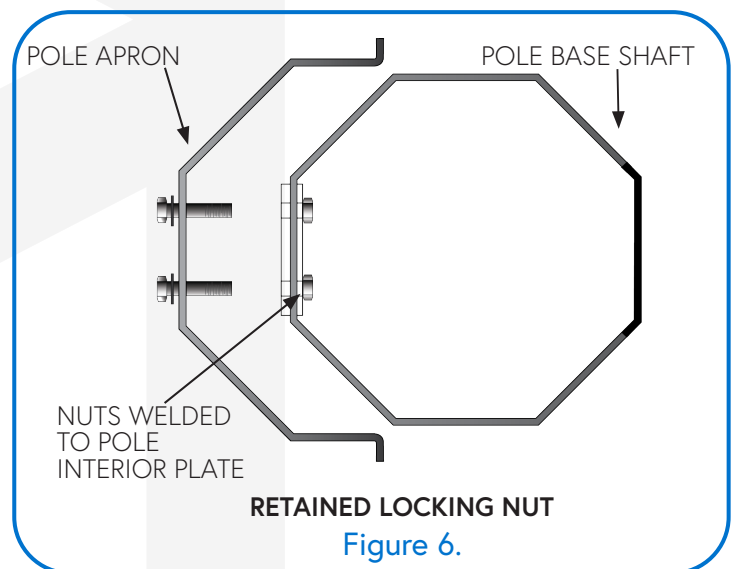
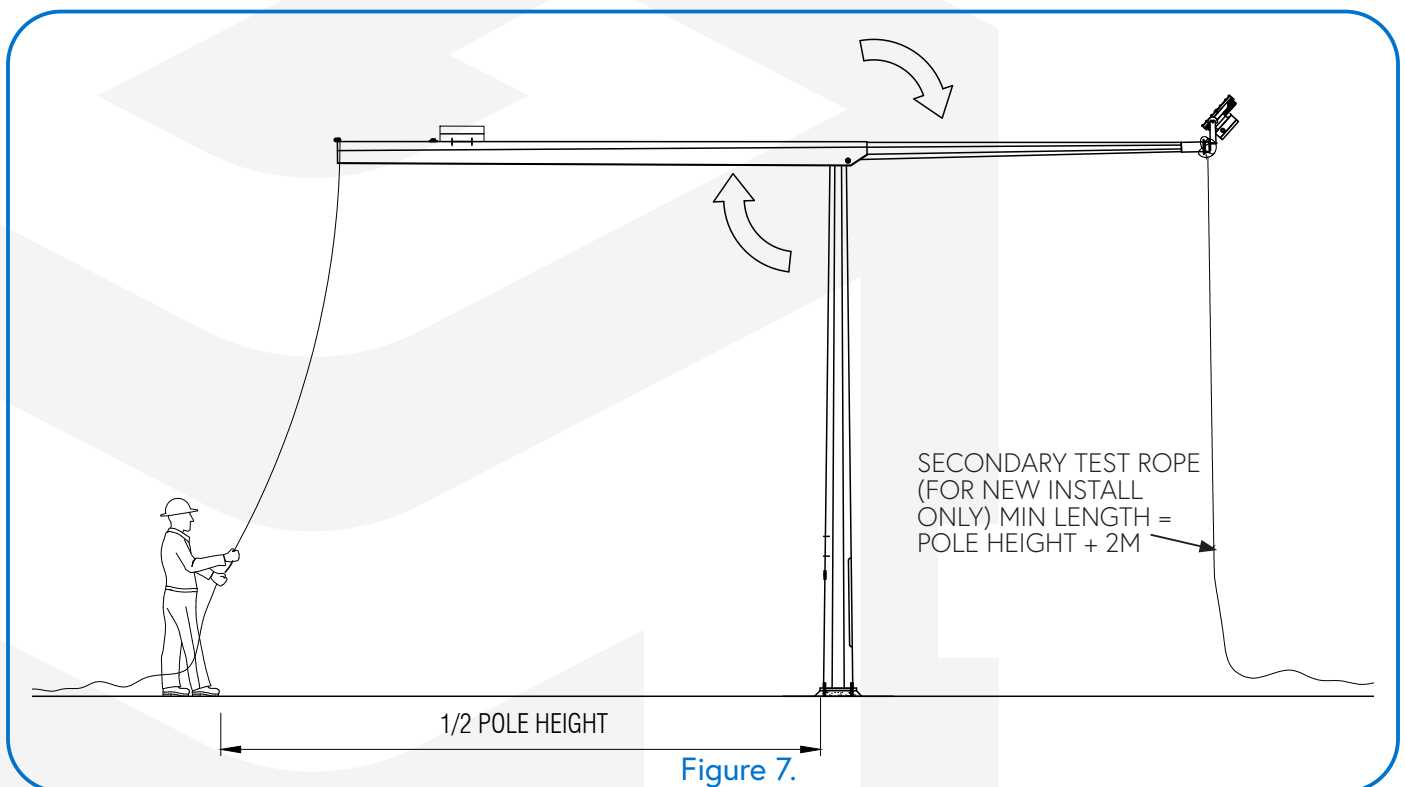


Figure 6.

12. Pull on the rope and test the behaviour of the pole by opening it to the limit of the lasso tether.
- a. If the apron of the pole wants to rush back towards the pole base to its closed position and you need to exert a reasonable effort to slow it down, it is likely that the pole is "bottom heavy" and will be very difficult to get the pole top to come down.
 - b. If the pole top is rotating quickly down and the apron is pulling hard on the lasso tether, then it is likely that the pole is "top heavy" and may be very difficult to control.
 - c. A well-balanced pole should be easy to move back and forwards through the limited arc. If in your opinion the pole is either "top heavy" or "bottom heavy", **do not continue**.
 - i. Refit the apron locking screws
 - ii. Tag the pole "Out of service"
 - iii. Call GM Poles asking for Technical Support. The pole may have been tampered with.
13. If you are satisfied with the balance of the pole, untie the lasso tether and proceed.

14. Step away from the pole in the direction of the initial apron movement to 1/2 the pole height whilst holding the rope but do not pull on it at this stage. For larger poles that have rope with two tails, co-ordinate with a team member to use both tails to control the pole lowering.
15. When in position, tug on the rope to initiate movement. While holding the rope, swing the apron up to begin the lowering process. The force used to swing the apron should be just enough to rotate the apron toward and just past the horizontal position. *Refer Figure 7.* The mechanical effort on the rope to retain the pole in a horizontal position will vary depending on pole height. A short pole may have a rope load as much as 16kg whereas a tall pole may be no more than 4kg. **If the control load seems excessive or unsafe, contact GM Poles as the pole balance may have been tampered with.**



16. Once the apron has passed the horizontal position it will continue lowering under its own momentum. Begin to step back to a distance of 1x pole height to control the lowering. Do this well before the pole top reaches the bottom to provide for maximum control. Slowly feed the rope out to enable the pole to complete the lowering process. **NEVER let the pole gain too much momentum.**
17. Pay particular care as the top of the pole nears the ground to prevent the lights or headframe colliding with personnel, the pole base, or other infrastructure.



- **NEVER let the pole gain too much momentum.**
- **If the control load seems excessive or unsafe, contact GM Poles as the pole balance may have been tampered with.**

18. Secure the top of the pole to the pole base *Refer figure 8* by either:
- Using the 3m Pole Top Securing Rope, if supplied; or by
 - Wrapping the GM Poles lowering rope loose end a number of times around both the pole base and now adjacent, pole top.

USING THE 3M POLE TOP
SECURING ROPE, IF SUPPLIED;
OR BY WRAPPING THE GM POLES
LOWERING ROPE LOOSE END
A NUMBER OF TIMES AROUND
BOTH THE POLE BASE AND NOW
ADJACENT POLE TOP.

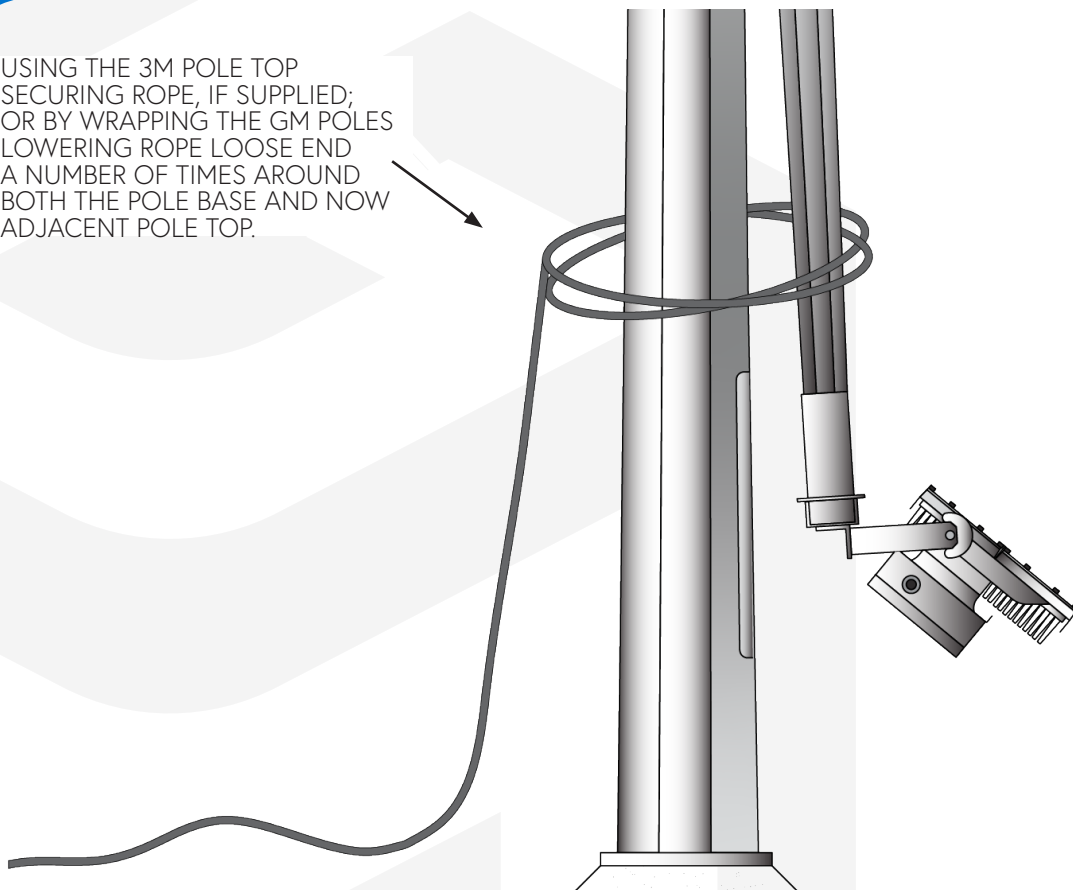


Figure 8.

19. Service the pole mounted assets/fittings.

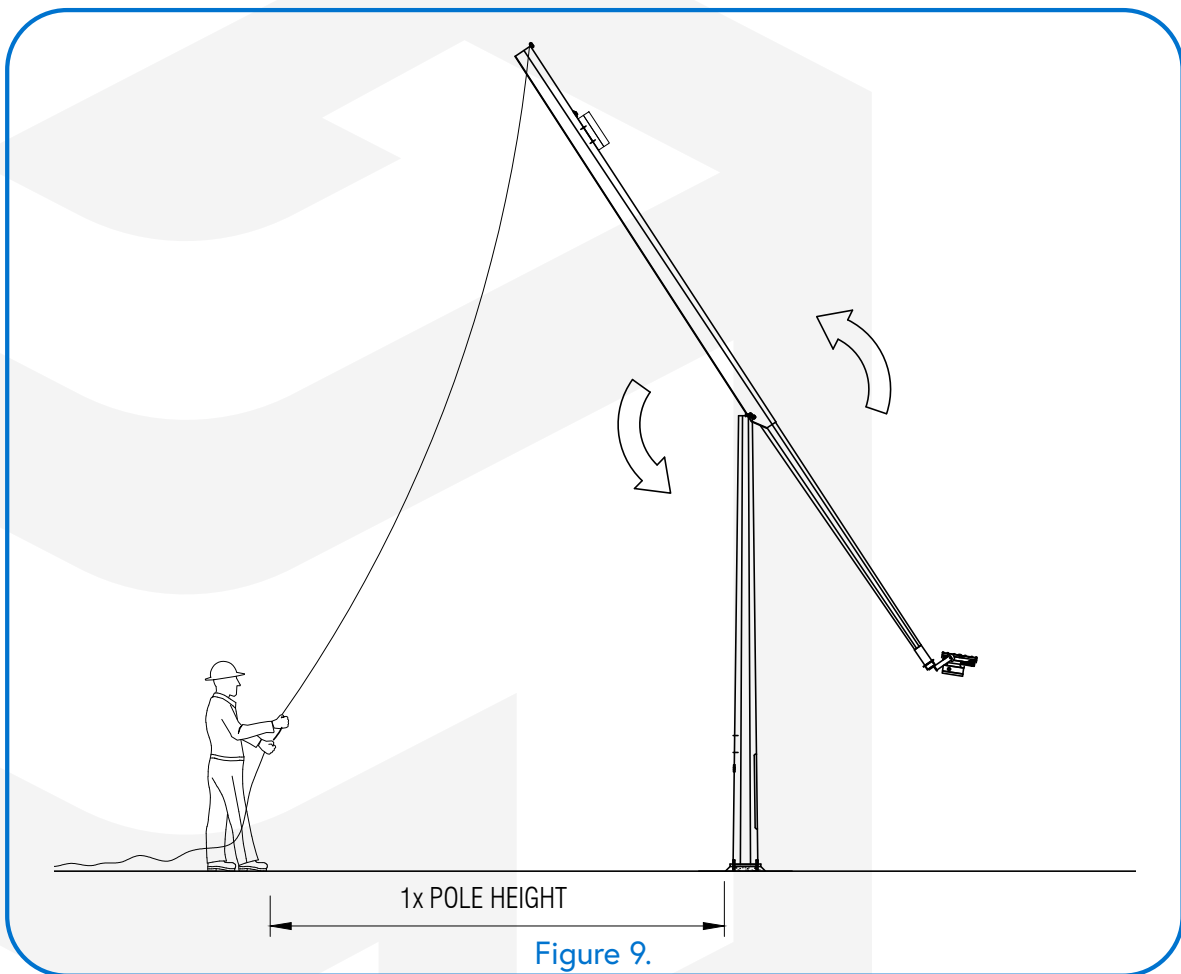
NOTE: do not alter pole masses either by removing, adding or changing luminaires and/or masses without the prior written consent of GM Poles. **Unauthorised changes in pole masses could render the pole UNSAFE to operate, resulting in possible SERIOUS INJURY OR DEATH. Any alteration may also exceed structural capacity of the pole during design wind events. DO NOT LEAVE THE POLE INVERTED (TOP DOWN) FOR EXTENDED PERIODS (I.E. OVERNIGHT)**

20. To raise the pole, first ensure all bolts securing pole mounted assets, balance weights and GM Poles accessory to pole connections are tight and free from corrosion or fatigue.



- Do not leave the pole inverted (top down) for extended periods (i.e. overnight)
- NEVER alter pole masses by removing, adding, or changing anything on the pole. This could cause the pole to become unbalanced and lead to SERIOUS INJURY OR DEATH.

21. After ensuring that there is no unauthorised persons or property in the 'hazardous area', undo the head securing rope then immediately step back 1x pole height away from the pole in the direction of the apron initial movement. *Refer Figure 9.*
22. Once at this position, slowly pull on the rope to begin the raising process. *Refer Figure 9.*
You may need to move toward the pole whilst pulling on the apron rope until the pole is in the horizontal position. Continue to pull the apron downwards keeping a safe distance from the apron. Once toward the base, the apron mass and small momentum should encourage the top shaft and apron to close against the pole base.



23. Slow down the rope feed to prevent the pole apron from colliding into the pole base and possibly damaging the product.
24. Walk directly to the pole base and fit securing screws into the apron and tighten.
25. Re-energise pole electrically and check that the pole is not live. Refit all pole access doors.

SECTION B – CHECKING AND MAINTENANCE

INITIAL OPERATION

The raise and lower operation of this pole has assessed and reviewed. The tuning of the pole is based on information provided to GM Poles by the customer. **Only the pole mounted assets specified shall be used and all assets combined with GM Poles accessory's must be attached before the pole is operated. Failure to comply with this requirement will result in UNSAFE use of this device and may cause SERIOUS INJURY OR DEATH and possibly damage to property.**

Care should be taken on the initial use of this pole product to ensure that the pole has been correctly balanced. It is strongly recommended that the GM Poles supplied rope and operator supplied PPE rigging gloves or similar are used each time the pole is operated.

ANNUAL INSPECTION

The mid-hinged pole should be operated a minimum of once every year with the following checks performed:

- Perform a visual inspection of pole and repair any corrosion. Refer to GM Poles Galvanising Touch Up Procedure, and Paint Touch Up Procedures if applicable.
- Inspect all hold down bolts for any signs of corrosion. All bolts are required to be snug tight and in place at all times.
- Inspect GM Poles pole top accessory (outreach, crossarm) mounting bolts for any signs of corrosion, wear or fatigue.
- Inspect apron locking screws for any signs of corrosion, wear or fatigue.
- Check that the hinge pin appears to be securely in place.
- Check that operating ropes and shackles are in good order.

IMPORTANT:

If a GM Poles component is considered defective, it must be replaced as soon as possible by a component supplied by GM Poles with the same characteristics. Contact GM Poles to discuss.

EVERY 8 YEARS

It is our advice that once every 8 years GM Poles technicians do a general overhaul and inspection.

REMOVAL OF POLE MOUNTED ASSETS

If a luminaire or cctv camera or other pole mounted asset or pole top GM Poles counterbalance weight must be removed for maintenance, then:

The pole top must be firmly secured against the pole base. Even a small amount of movement of a suddenly altered mass balance could result in injury.

- **For a short period of time (say <6hrs) during calm weather only:** ensure top of pole is positively secured to the pole base of the pole and a Danger Tag is installed in accordance with site specific "lock out" procedures.
- **For an extended period of time:** securely fit an equivalent weight to the exact same location as the asset that has been removed or counterbalance weight and raise the pole in accordance with this manual.

SECTION C – ASSOCIATED AND REFERENCED DOCUMENTS

Generally, associated and referenced documents are available via direct request to GM Poles or from the GM Poles website ([downloads page](#)).

POLE FOOTING INSTALLATION

Refer to GM Poles footing installation instructions.

POLE ERECTION

Refer to GM Poles pole erection procedure.

POLE BASEPLATE GROUTING

Refer to GM Poles grouting instructions.

POLE MAINTENANCE

Refer to GM Poles general maintenance instructions and if applicable, painted pole care instructions.

POLE COATING TOUCH UP PROCEDURES

Refer to GM Poles touch up procedures for galvanising, wet spray paint and powder coat.

GM POLES WARRANTY

Refer to GM Poles standard warranty document.

CONTACT GM POLES

Should you need advice, documents, or products, please contact GM Poles.