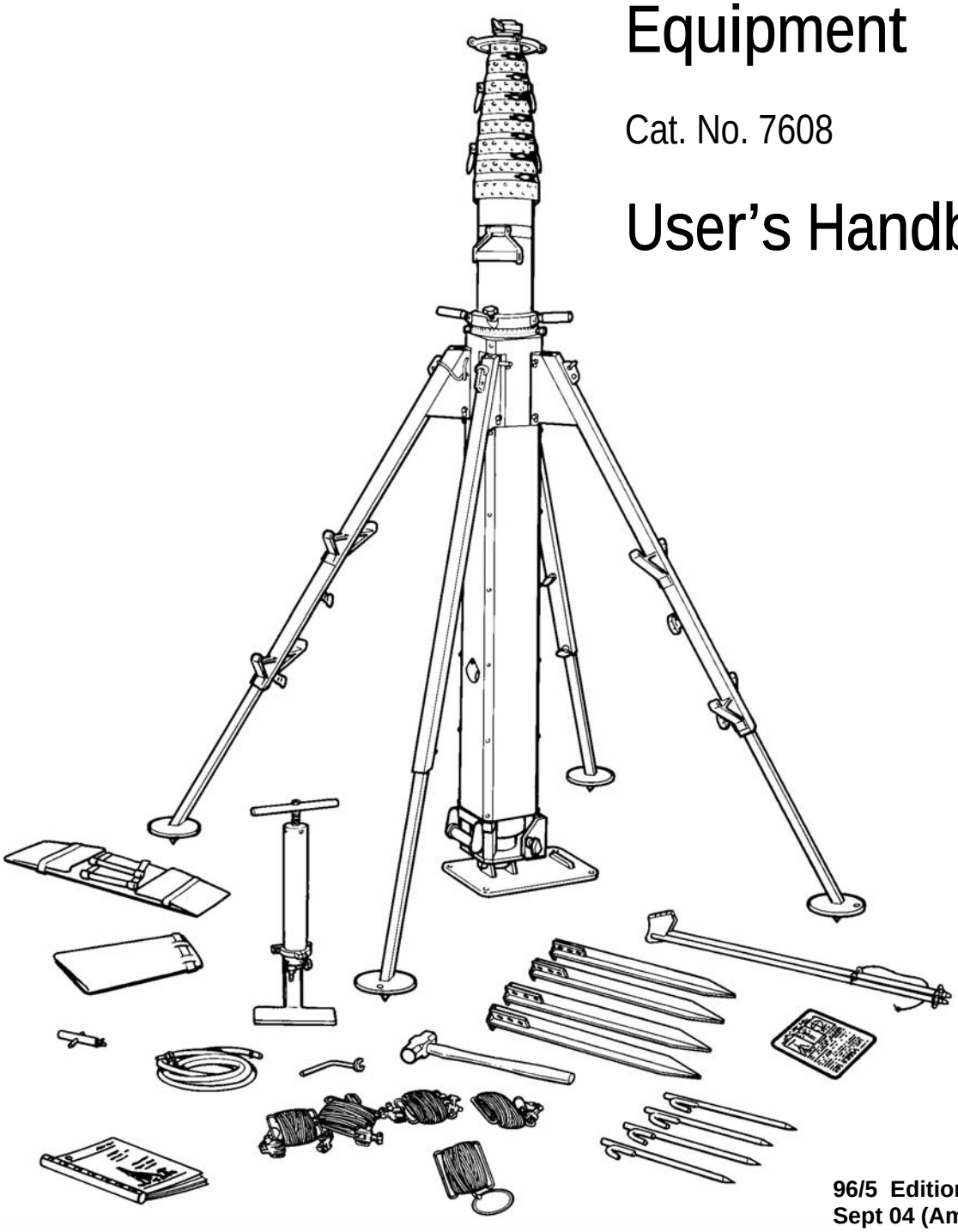
CLARK MASTS™

SCAM 12
Field Mast Kit
and Ancillary Equipment

Cat. No. 7608

User's Handbook



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Guarantee

All of our equipment is unquestionably guaranteed by us to be free from defects in materials, workmanship and function as defined by us when supplied.

We therefore undertake to replace or repair as necessary any equipment which proves faulty in any of these respects provided that no modifications have been carried out without our knowledge and consent. The period of this guarantee is one year from supply. However, as it is the policy of this Company to maintain a sincere interest in all our equipment for an indefinite period after purchase, our customers may rest assured of sympathetic attention to all complaints no matter when they occur.

In the event of a claim under guarantee being made we will carry out the work at our works and will re-despatch at our expense, by our choice of means, to any part of the world. We shall not be responsible however, for any labour expended or consequential loss incurred by the customer due to the alleged defect.

In brief it is our desire to be of assistance and provide a prompt and cheerful service at all times so that our relationship with our customers shall be happy and mutually advantageous.

Inspection of Equipment Ordered

In all cases where a customer wishes to personally inspect equipment before acceptance, inspection must be carried out at our works of manufacture by the customer or his representative. Packing standards may also be inspected at the same time.

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SCAM 12 FIELD MAST KIT
AND ANCILLARY EQUIPMENT

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CHAPTER 1
INTRODUCTION

101. General Description

The Scam 12 mast comprises eight tubular sections constructed of light aluminium alloy. The sections telescope inside one another and are erected pneumatically using a handpump (or compressor - as listed in the associated publications list).

As the mast is raised each section is clamped by means of a clamp collar. The lower section is encased in a cage, a square, steel housing to which the four adjustable field legs may be attached. Two of the four field legs have steps to assist the user in attaching the guys, operating the clamp collar screws and viewing the bubble level. The built-in bubble level enables the user to plumb the mast vertical prior to extending the mast sections.

The mast can be rotated by the two side handles, positioned with a floating azimuth ring and locked by a locking screw. These are all located at the top of the mast cage. The handles can be folded for stowage.

The kit includes a mast swivel nest for supporting the base of the mast, four spikes for holding down the mast swivel nest and a prop stand. The prop stand is used for supporting the mast so that the antenna can be fitted easily prior to raising the mast to the vertical.

101.1. Repair Philosophy

If the Scam 12 mast unit is damaged beyond unit repair the mast must be returned for base/contract repair. (Refer to Chapters 4 and 5, Repair Charts.)

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102. Technical Specifications and Dimensions

102.1. Principal Dimensions and other Details of the Scam 12 Mast and Ancillaries

Extended height of mast: 12 m (39.37 ft).

Retracted height of mast: 2.36 m (7 ft 9 ins).

Maximum recommended headload: 35 kg (77 lbs).

Maximum working air pressure: 1.41 kg/cm^2 (20 lbs/in^{2}g).

Total time to extend mast with a 31.7 kg headload: 15 minutes.

Time to retract mast: 7 minutes.

Antenna socket size: 40 mm (1.575 ins).

Maximum cross section of mast cage: 18 x 18 cm (7 x 7 ins).

Bottom section diameter: 15.24 cm (6 ins).

Top section diameter: 6.35 cm (2.5 ins).

Number of sections: 8.

Mast swivel nest base plate size: 40 $\times$ 28 cm (16 $\times$ 11 ins).

Prop stand - closed length: 82 cm (32.25 ins).

Prop stand - angle between legs when open: 42°.

Total weight of mast kit (approx.): 152.16 kg (336.69 lbs).

102.2. Materials of Construction and Finishes

Mast sections: Aluminium alloy to BS 1471 grade 6082 temper T6. Anodised to MoD DEF STAN 03-25 and dyed green.

Steel components: Where surface hardness is required medium carbon steel to EN 8DM (BS 970: 212A42) induction hardened, elsewhere EN1A (BS 970: 230M07) or equivalent. Zinc plated and passivated MoD to DEF STAN 03-20.

Paint: NATO green IRR to MoD DEF STAN 80-41.

Canvas cover and bag: Cloth-coated polyurethane, olive drab to MoD Spec. UK/SC/3501A.

Guys: 5 mm terylene green. Breaking strength 600 kg.

Mast section bearing surfaces: Nylon.

102.3. Erection Site Requirements

Area required: The mast, fully extended and guyed, will need an area large enough to accommodate the outer picket radius of 7 metres (23 ft).

Maximum slope of ground for field mounted mast: 24°.

Picket Radius: 7 metres (23 ft).

Operating temperature range: -30°C to +55°C dry.

Minimum number of personnel required for field erection: 3.

Maximum recommended wind speed guyed: 144 km/hr (90 mph).

Maximum recommended wind speed during erection of the mast: 32 km/hr (20 mph).

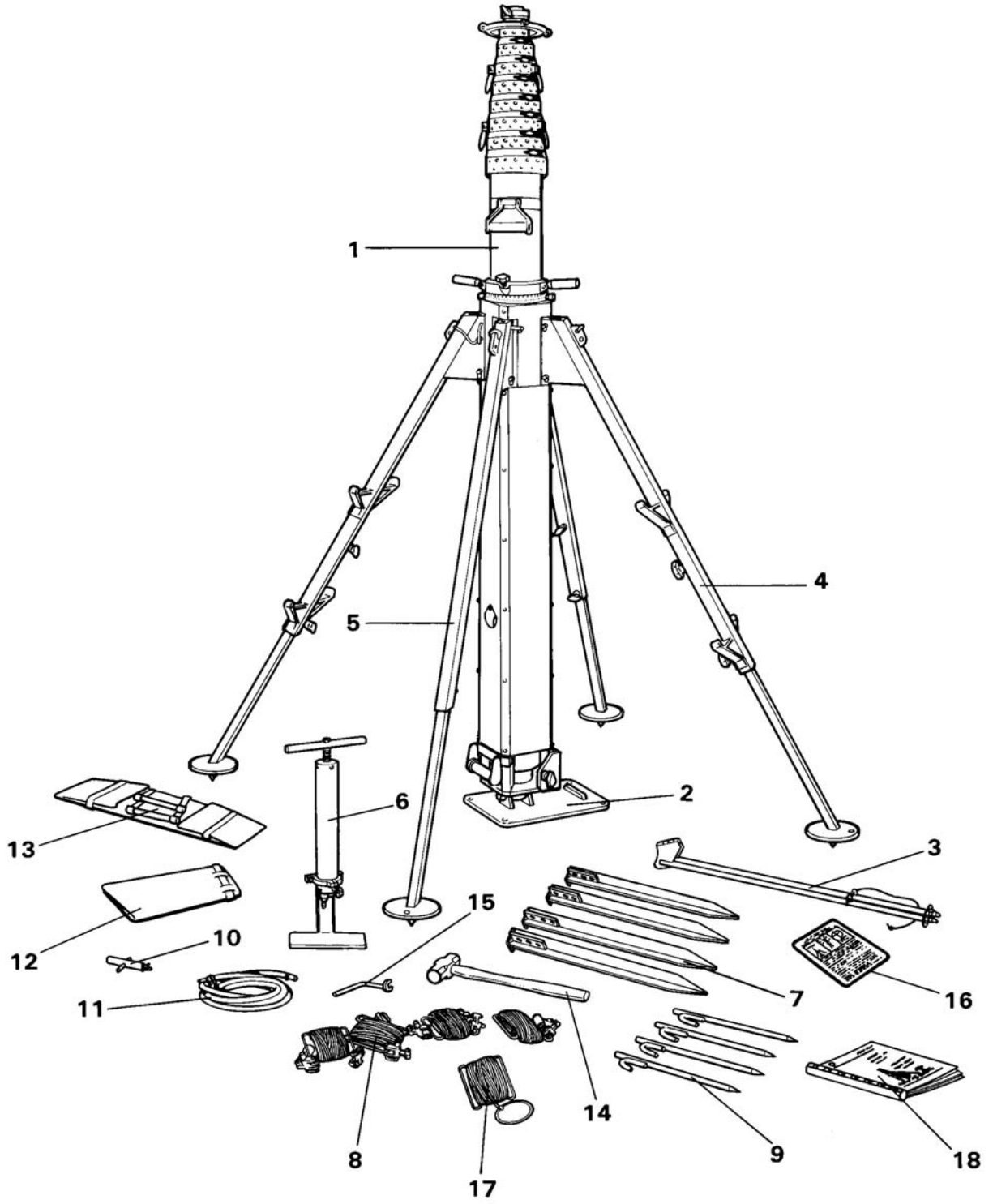


Fig. 1
SCAM 12 MAST UNIT AND ANCILLARY EQUIPMENT Cat. No. 7608 NSN 5985-99-620-8829

103. Kit Components

Item	Clark Masts Ref.	Description	Unit Weight (approx.)	Qty. per Kit	NSN
1	7609	Scam 12 Mast Unit	82.00 kg	1	5985-99-620-8832
2	7710	Mast Swivel Nest	9.83 kg	1	5985-99-620-8833
3	7029	Prop Stand	1.21 kg	1	5985-99-620-8834
4	3574	Stepped Field Leg	9.00 kg	2	5985-99-222-3834
5	2336	Plain Field Leg	9.00 kg	2	5985-99-104-4148
6	3508	Scam Handpump	3.03 kg	1	4320-99-220-7006
7	2484	24″ Picket	2.27 kg	4	4030-99-117-3766
8	6110	60 ft Guy Assembly	0.80 kg	4	5985-99-117-3744
9	6409	14″ Spike	0.44 kg	4	5985-99-620-2944
10	2384	Exhaust Key	0.16 kg	1	5985-99-104-4236
11	2470	Hose Assembly	0.53 kg	1	5985-99-104-4272
12	2434	Canvas Cover	0.21 kg	1	5985-99-104-4237
13	2932	Accessory Bag	2.50 kg	1	8105-99-106-0904
14	B2621	4 lb Hammer	2.16 kg	1	5120-99-949-4253
15	7715	Spanner	0.10 kg	1	5120-99-620-9643
16	7269	Instruction Plate (Issue 2)	0.09 kg	1	9905-99-620-8861
17	6108	Picket Location Line	0.30 kg	1	5985-99-117-3742
18	N/A	User’s Handbook	N/A	1	N/A

Total weight of mast kit (approx.): 152.16 kg

104. Physical Description

104.1. Mast Unit

The mast comprises eight tubular sections; a bottom section, six intermediate sections and a top section. At the upper end of each of the lower seven sections is a clamp collar (Fig. 2). These enable the mast to be locked at any height. Within each collar is a spring-loaded key which engages into an axial keyway on each of the intermediate sections and the top section. These prevent relative rotation of the mast sections. Each collar also contains a number of screw-adjusted nylon pads to provide a bearing surface between sections. At the lower end of each section is a piston which incorporates a sealing ring to minimise air leakage. On the collars of the third and sixth sections cable guides are provided to ensure that the antenna feeder cables rotate with the mast. On the top section is a roller guy collar which has four lugs for attachment of the terylene guys. The roller guy collar is mounted on roller bearings to facilitate smooth rotation of the mast through 360°.

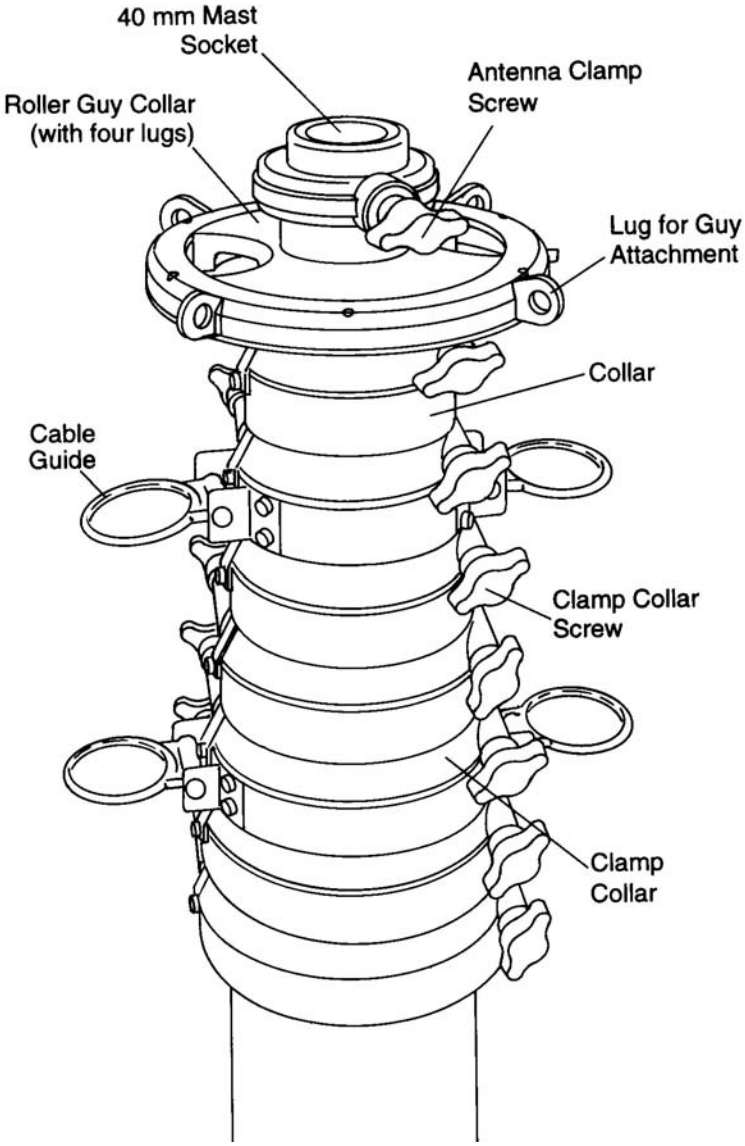


Fig. 2
VIEW OF MAST HEAD AND ROLLER GUY COLLAR

The snap hooks of the terylene guys are attached to the four equi-spaced lugs on the roller guy collar as shown in Fig. 3.

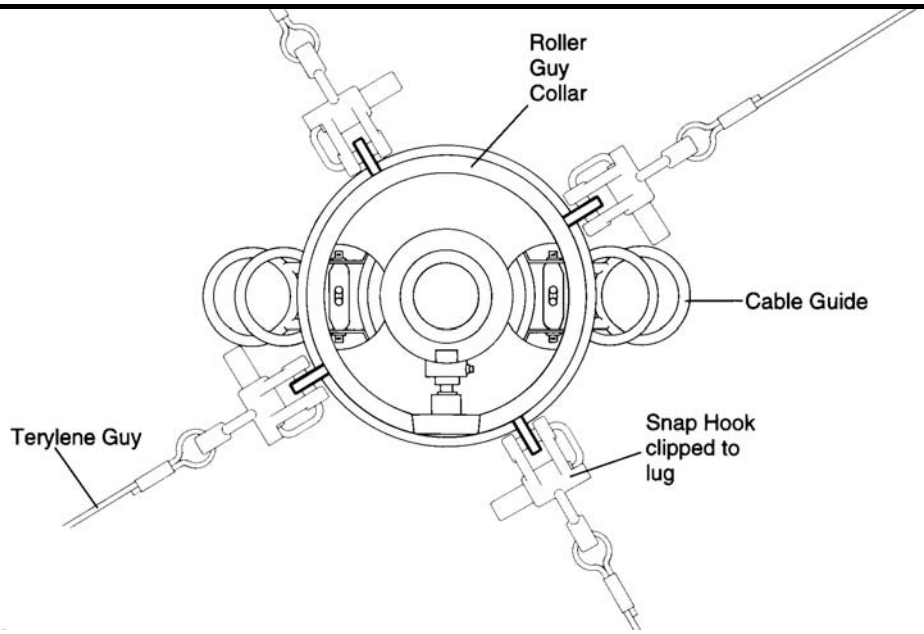


Fig. 3
VIEW FROM DIRECTLY ABOVE MAST
SHOWING THE FOUR TERYLENE GUYS CLIPPED TO
THE FOUR LUGS ON THE ROLLER GUY COLLAR

Carrying handles are fitted to the mast, as shown in Fig. 4, for ease of transportation. The handles can be folded flat if required.

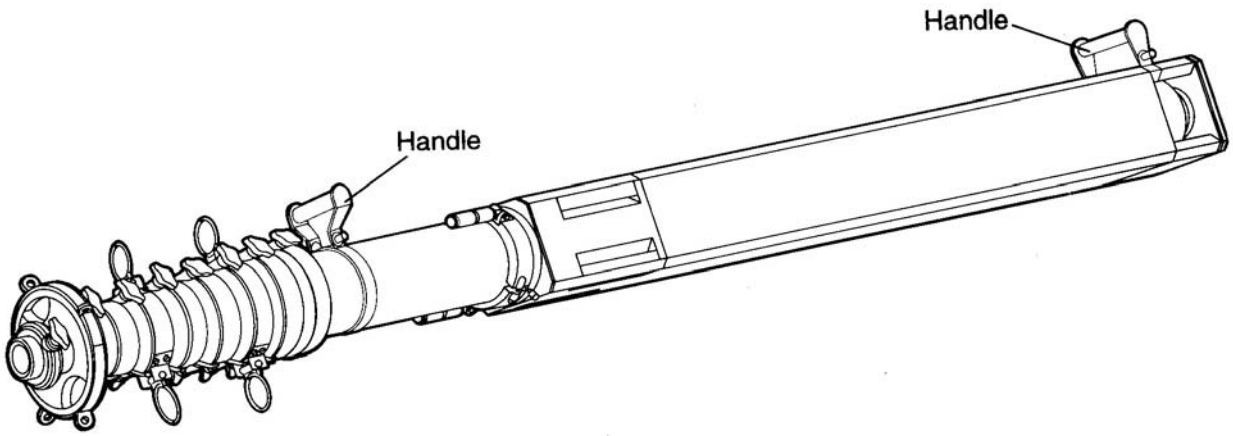
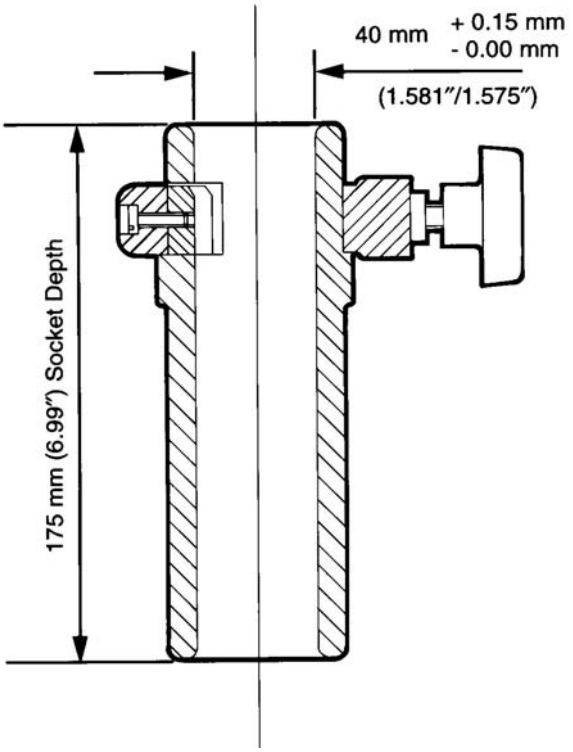


Fig. 4
MAST CARRYING HANDLES

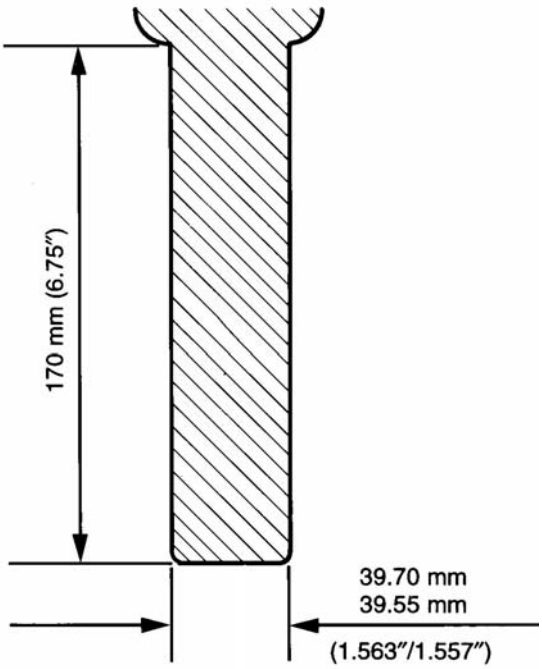
The upper end of the top section has a 40 mm mast socket to accept an antenna mounting spigot. Actual dimensions of the mast socket and antenna spigot are shown in Fig. 5 below.

The clamp has been designed to hold the antenna securely when clamped yet instantly released when unclamped. It holds without any shake. When using directional antennas the mast may be rotated therefore an antenna rotator is not necessary.

Mast Socket



Antenna Spigot



The antenna should be fitted with a spigot of the above dimensions.

Fig. 5
MAST SOCKET AND ANTENNA SPIGOT

104.2. Mast Cage

A large part of the bottom (first) mast section is housed within the mast cage (Fig. 6). The protective steel cage comprises four detachable panels. The four adjustable field legs attach to the upper part of the cage. The upper bearing ring has a graduated azimuth ring and two folding handles for rotating the mast (Fig. 7). The mast can be locked by means of the bearing ring locking screw on the upper bearing ring. On top of the cage is a bubble level, with a protective cover, for checking the verticality of the mast.

The base of the mast is situated within the cage (Fig. 8). Access is available to the bayonet socket for connecting air supply or releasing air pressure. A drain valve is provided allowing water which has collected in the mast to be drained out. The safety valve stops the mast being over-pressurised and releases at 1.8kg/cm^2 (25 lbs/in^{2}g).

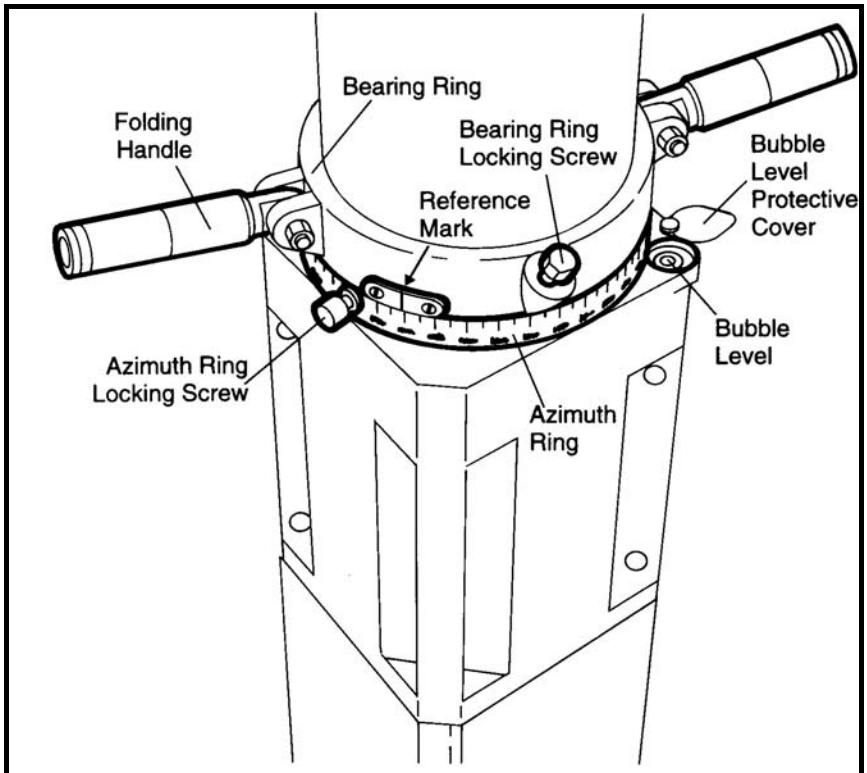


Fig. 7
TOP OF MAST CAGE

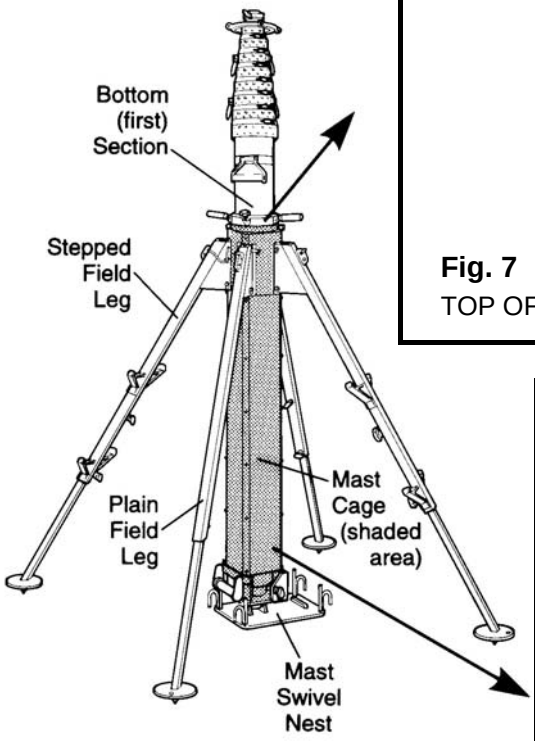


Fig. 6
MAST AND CAGE

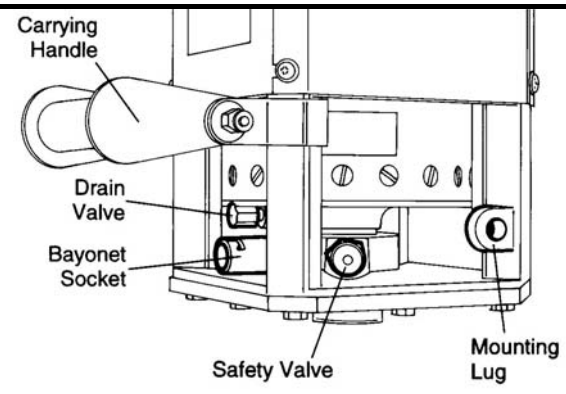


Fig. 8
BOTTOM OF MAST CAGE

104.3. Mast Swivel Nest

The base of the mast cage sits in the mast swivel nest (Fig. 9). The universal joint and top plate will cater for slopes of up to 24°. The four holes in the bottom plate accept the four 14″ steel spikes. Each spike has a hook at the end to aid removal from the ground.

The pair of locating screws on the hinged nest accommodate and retain the width of the mast cage. In use the lower part of the cage, with cage lugs downwards, is placed between the locating screws of the hinged nest and secured into position by tightening the knobs on the locating screws.

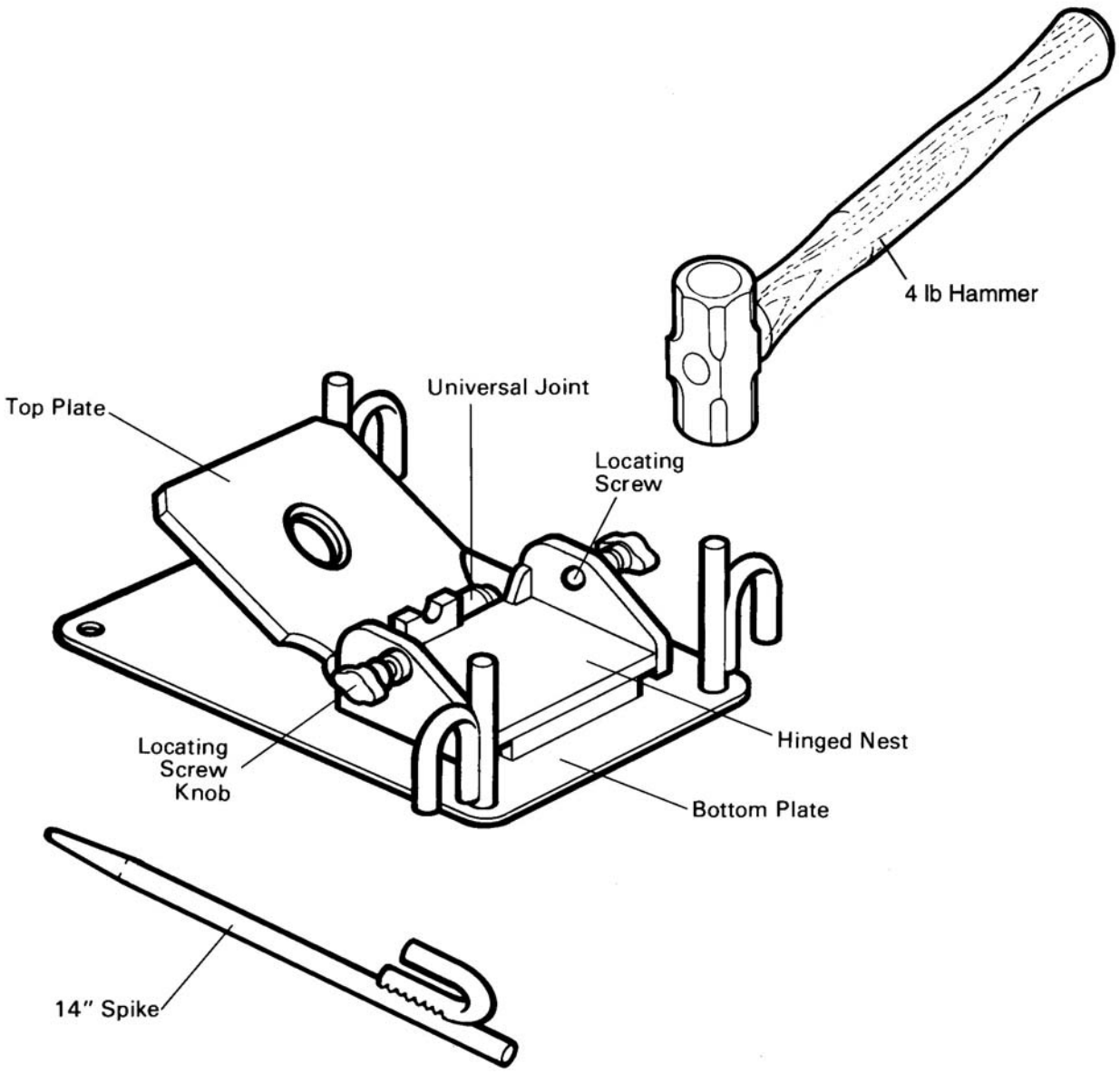


Fig. 9
MAST SWIVEL NEST AND SPIKES

104.4. Prop Stand

The prop stand aids the operator when assembling and mounting unwieldy antenna arrays. After fitting on to the hinged plate of the mast swivel nest the mast is lifted and lowered on to the prop stand which should be positioned below the largest clamp collar (Fig. 10). Bottom locating studs prevent the prop stand slipping. The prop stand can be folded for stowage.

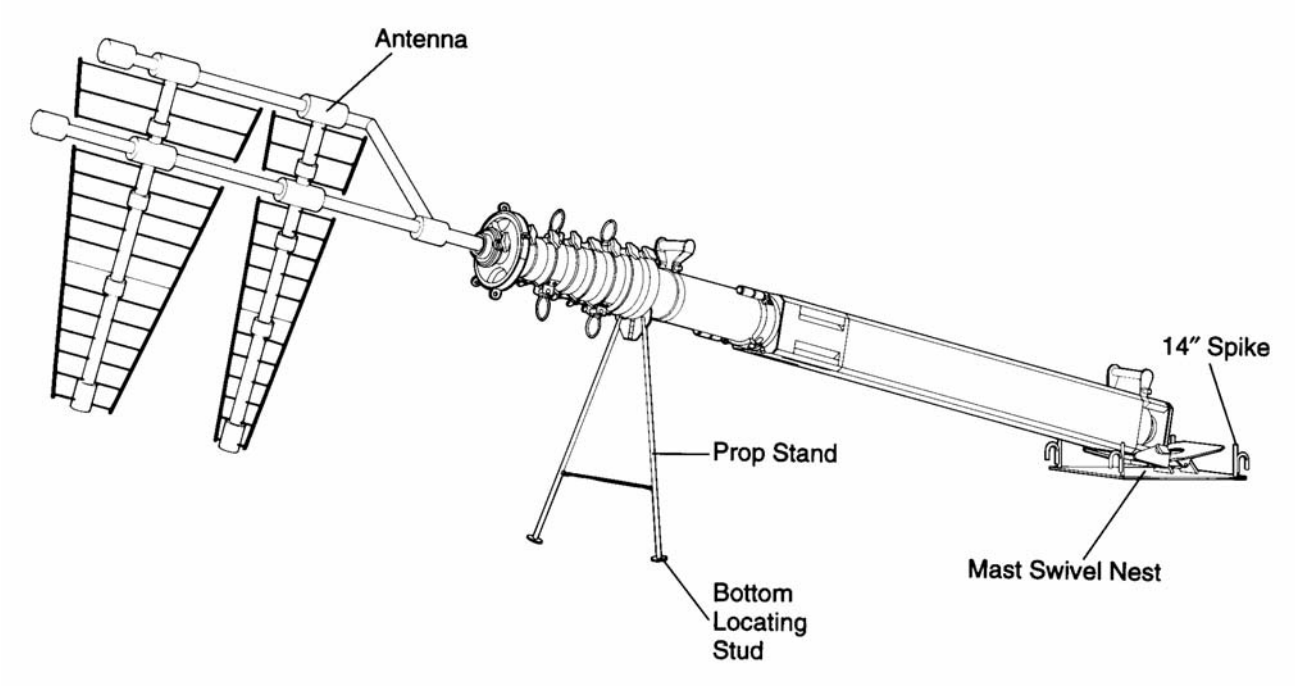


Fig. 10
PROP STAND

104.5. Field Legs

Four telescopic field legs are provided (Fig. 11). The legs are of steel construction to provide weight and rigidity. They attach to the cage with a drop head pin arrangement (Fig. 12).

The legs can be adjusted by loosening the clamp screw to deal with slopes up to 24°. To prevent slippage the underside of each foot has a blunt spike.

Two of the field legs have welded steps. The steps enable the operator to reach the mast head for clamping operations, antenna cable attachment, the fitting of guys and checking the bubble level.

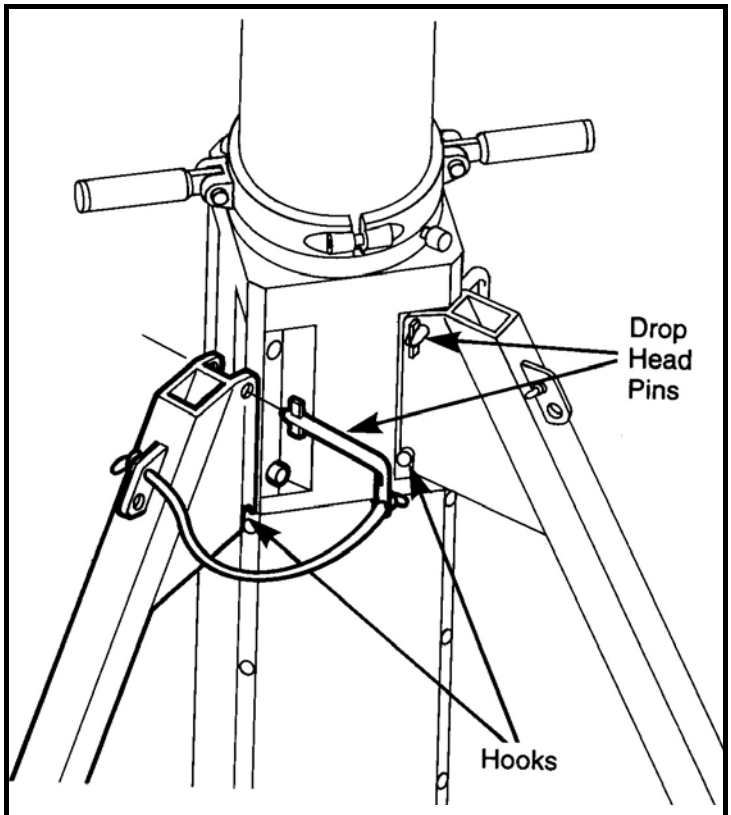


Fig. 12
ATTACHING FIELD LEGS TO MAST CAGE

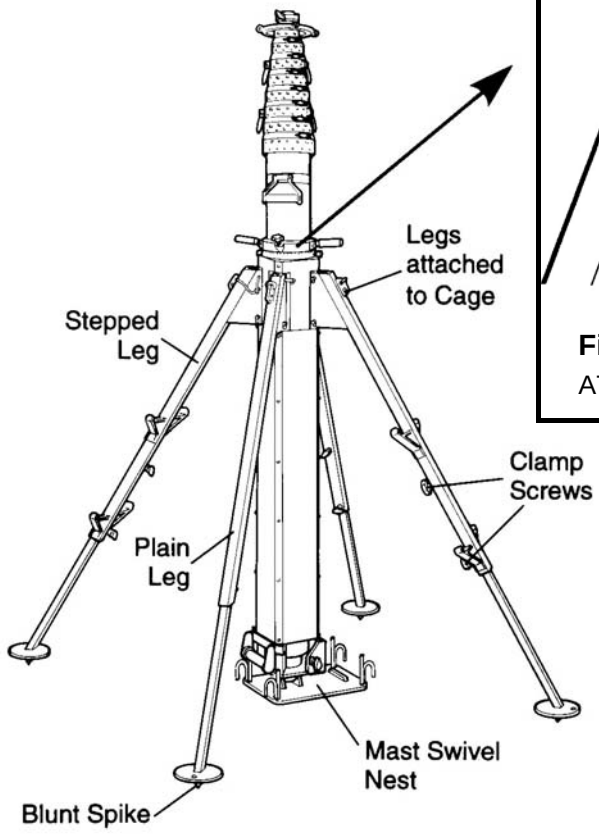


Fig. 11
MAST WITH FIELD LEGS FITTED

104.6. Handpump and Hose

The handpump is a single-action design of light alloy construction mounted on a steel foot support (Fig. 13).

The base of the pump incorporates a screw-operated air valve for controlling the retraction of the mast from the pump operator's position. A fabric reinforced rubber hose assembly is supplied for use with the pump. In use the plug end of the hose is inserted into the bayonet socket at the base of the mast.

The hose is 3 metres long with an outside diameter of 17.4 mm.

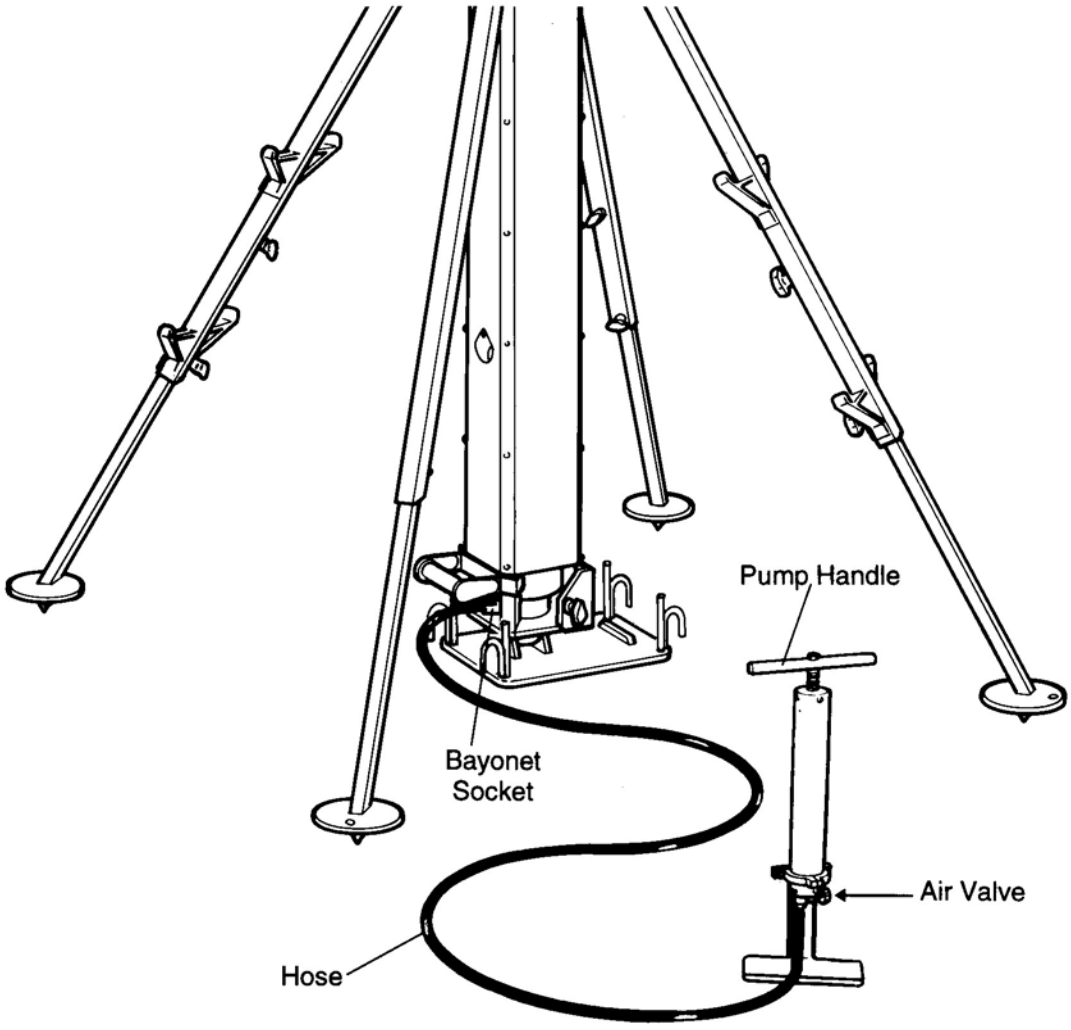


Fig. 13
HANDPUMP AND HOSE

104.7. 24″ Pickets

Four 24″ pickets are provided. The snap hooks of the terylene guys clip to the lower hole in the steel plate of the pickets (Fig. 14).

In use the pickets should be hammered into the ground at least three-quarters of their length, leaning away from the mast at an angle of approximately 70°.

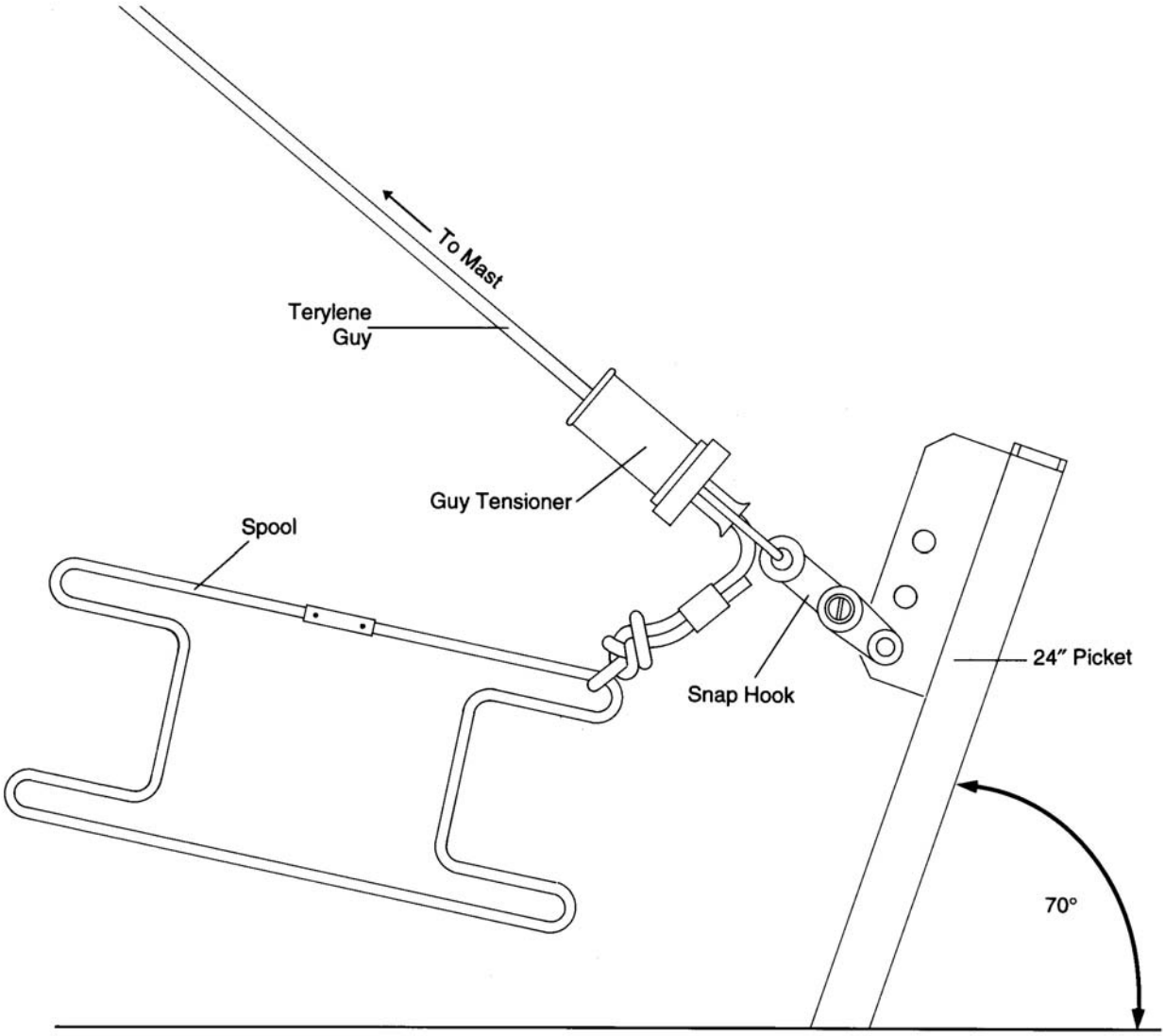


Fig. 14

TERYLENE GUY ATTACHED TO A 24″ PICKET AT THE 7 METRE RADIUS

104.8. Guy Assemblies

A set of four 60 ft (18.3 m) terylene guys is provided (Fig. 15). One end is fitted with a snap hook for attachment to a lug on the roller guy collar at the mast head and the other passes through a tensioner and terminates at a wire spool. Attached to the body of the tensioner is another snap hook for connecting the guy to the picket. The breaking strength of the 5 mm terylene is 600 kg. After use the guys should be wound neatly on to the wire spools.

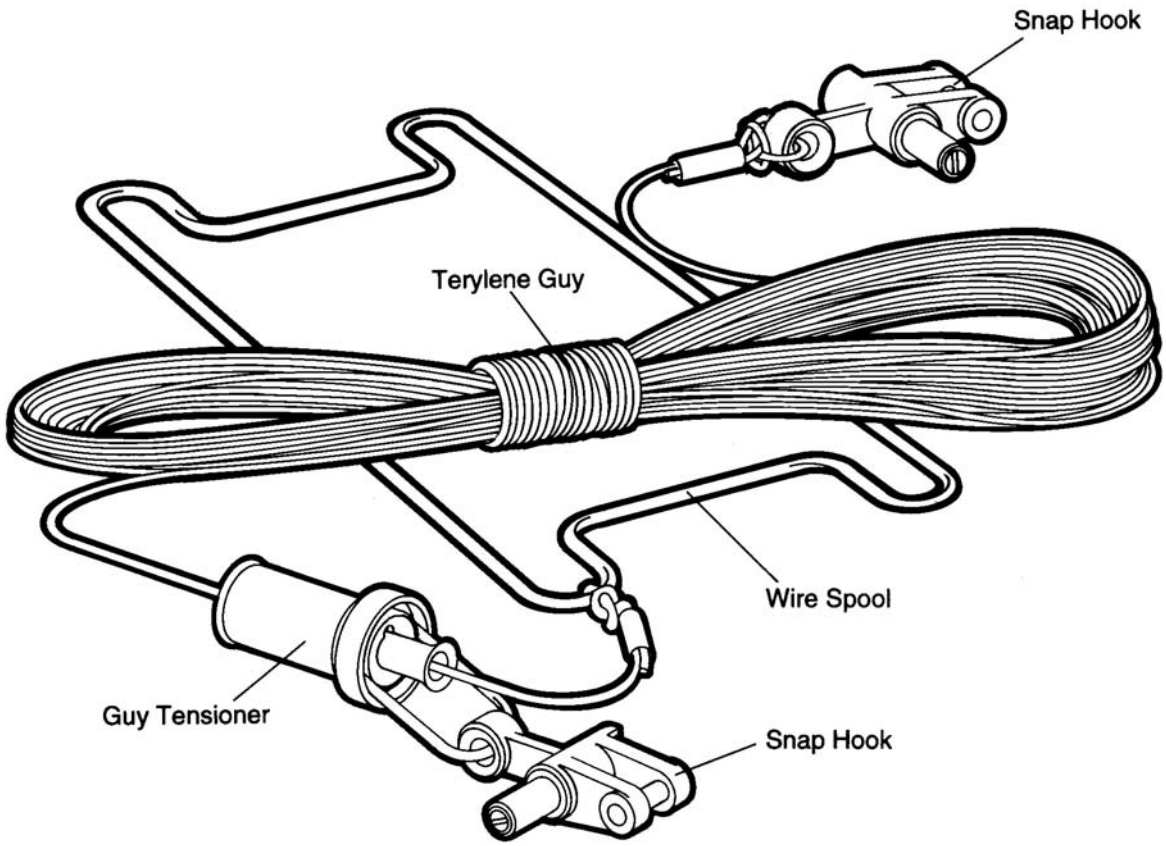


Fig. 15
60 FT TERYLENE GUY ASSEMBLY

104.9. Exhaust Key

An exhaust key is supplied with the kit (Fig. 16). If required the mast can be retracted by inserting the exhaust key into the bayonet socket at the base of the mast, this opens a non-return valve within the socket to allow air to escape and the mast to retract.

The other end of the key forms a box spanner which is used for operating the drain valve and releasing or tightening the bearing ring locking screw. The steel exhaust key is fitted with a tommy bar to provide the leverage required.

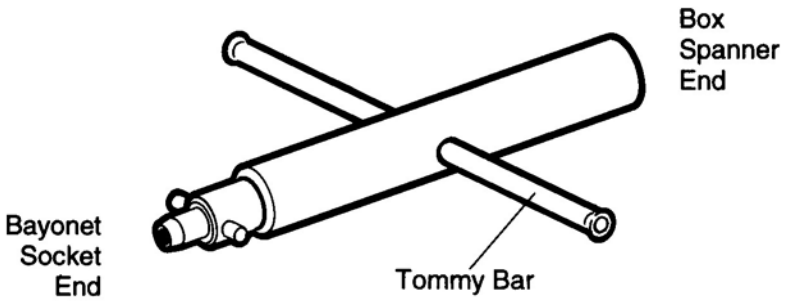


Fig. 16
EXHAUST KEY

104.10. Canvas Cover

The kit includes a canvas cover (Fig. 17) which, when placed over the retracted mast head, will prevent rain entering the open antenna socket of the mast when an antenna is not attached. The cover must be fitted whenever the mast is retracted to prevent rain from entering the mast joints.

Fig. 17
CANVAS COVER

104.11. Accessory Bag

The accessory bag carries all the mast accessories and equipment with the exception of the field legs and prop stand.

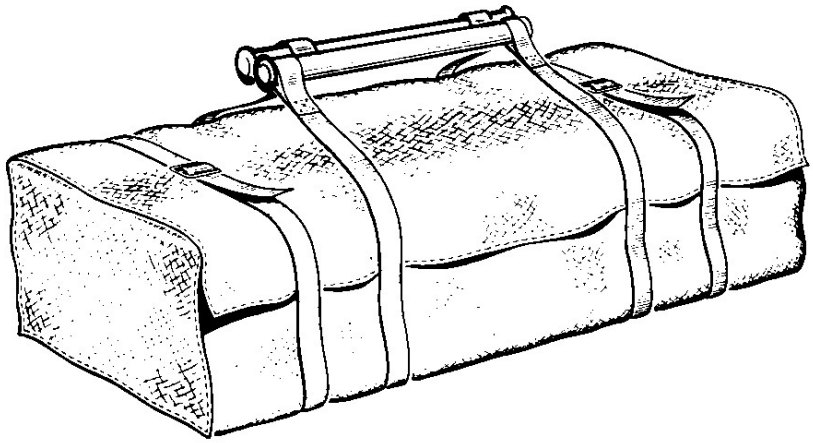


Fig. 18
ACCESSORY BAG

104.12. 4 lb Hammer

The double-faced hammer is supplied for driving in the pickets and spikes.

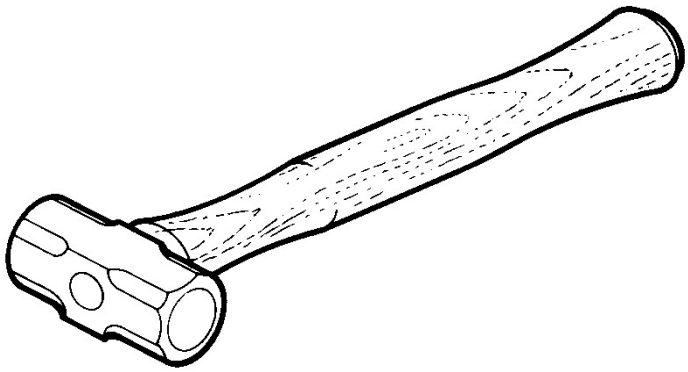


Fig. 19
4 LB HAMMER

104.13. Spanner

The spanner (Fig. 20) is used for removing and replacing the safety valve and the bayonet socket from the base of the mast.

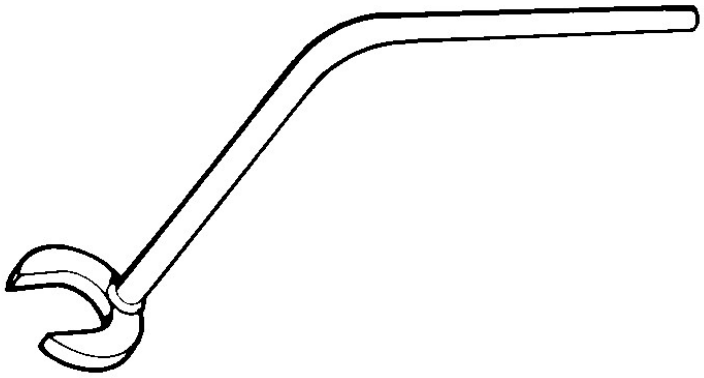


Fig. 20
SPANNER

104.14. Instruction Plate

An instruction plate is provided (Fig. 21) outlining the basic operating instructions for the mast. The plate also features an equipment check list and diagram. The plate is made from steel with a protective plastic coating.

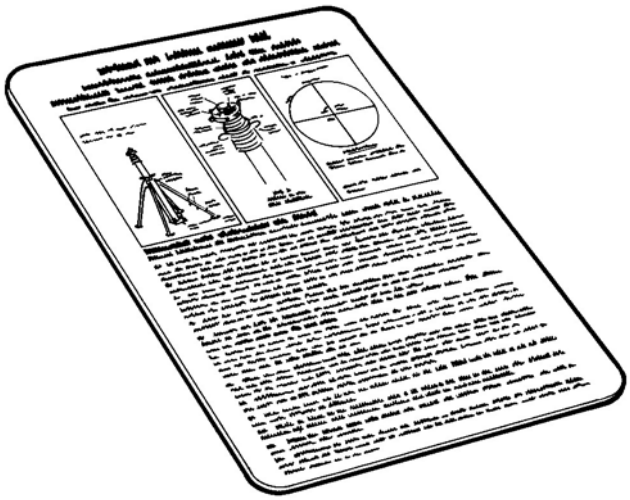


Fig. 21
INSTRUCTION PLATE

104.15. Picket Location Line

The picket location line (Fig. 22) is used to position the pickets at the correct distance away from the mast base as illustrated in the mast layout on page 22. The picket location line consists of a ring at one end and approximately 7.3 metres of cord and a wire spool at the other end. The pickets should be hammered in at the spool. After use the cord should be stored neatly on the wire spool.

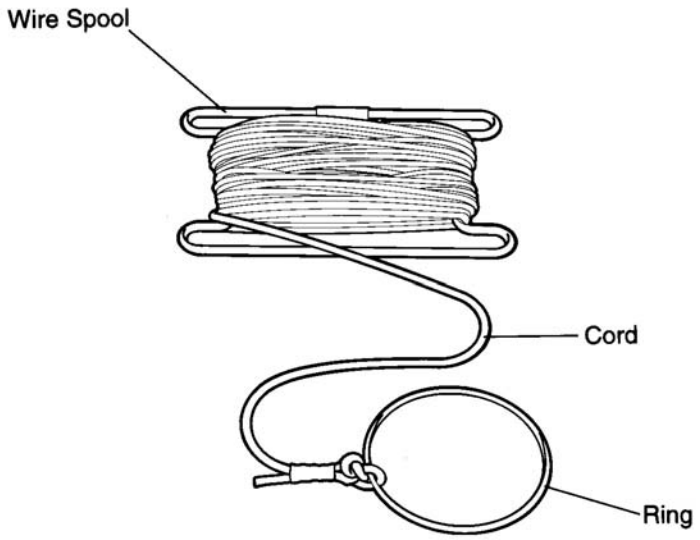


Fig. 22
PICKET LOCATION LINE

CHAPTER 2
OPERATING INSTRUCTIONS

IMPORTANT SAFETY PRECAUTIONS

WARNING

FAILURE TO COMPLY WITH THESE PRECAUTIONS COULD PRESENT PHYSICAL DANGER TO PERSONNEL AND/OR CAUSE DAMAGE TO EQUIPMENT.

BEFORE USING THE SCAM 12 FIELD MAST KIT AND ANCILLARY EQUIPMENT

1. Before attempting to use the mast and/or ancillary equipment the operator must ensure that he/she is familiar with the equipment and with all of the correct operating procedures and safety checks. The operator should also be satisfied that all the equipment is in a SAFE OPERATING CONDITION.
2. The mast MUST NOT BE OPERATED by an unauthorised person.
3. The mast and its ancillary equipment MUST NOT BE USED FOR ANY OTHER PURPOSE OTHER THAN THAT FOR WHICH IT WAS DESIGNED as published in the manufacturer's literature.
4. Hard hats must be worn at all times by all operators on site and gloves must be worn to protect hands.

SITE SELECTION

5. It is important to check that there is clear space above the mast wherever the mast is to be extended. NEVER ATTEMPT TO ERECT A MAST WHERE THERE ARE OVERHEAD OBSTRUCTIONS SUCH AS OVERHEAD POWER CABLES, TREES, BUILDINGS, BRIDGES ETC. **ALWAYS CHECK** FOR ANY OVERHEAD OBSTRUCTIONS.
6. When selecting a site for extending the SCAM 12 mast the operator must ensure that the guy pickets when driven into the ground will not interfere with water or gas pipes or electricity cables.

OPERATION - GENERAL

7. Before extending or retracting the mast check the weather conditions. IT IS DANGEROUS TO ATTEMPT TO ERECT OR RETRACT A MAST WHEN IT IS TOO WINDY. If in any doubt DO NOT extend or retract the mast (refer to Weather Conditions on page 23). For reference the Beaufort Scale is printed on the inside back cover of this handbook.
8. DO NOT EXCEED THE RECOMMENDED MAXIMUM HEADLOAD. The recommended maximum headload for the SCAM 12 mast is 35 kg (77 lbs). The maximum recommended surface area for the headload is 1,000mm^2.
9. Before transportation of the mast all clamp screws on the mast clamp collars must be tightened to prevent the mast sections from slipping out.

OPERATION - GUYING

10. THE MAST MUST BE GUYED PROPERLY AT THE CORRECT PICKET RADIUS. DO NOT reduce the radius or angle of the pickets. The pickets MUST be set out at as shown in Fig. 24 Layout of Erected Mast on page 22.
11. As the mast extends ensure that the guys do not snag on other equipment or natural features eg rocks, trees.
12. In windy conditions it is important to man the guys at the picket radius as the mast extends, tensioning where necessary in order to keep an even tension at the top of the mast.
13. In severe weather conditions, and when carrying large frontal area antennas, the top two sections of the mast can be left retracted.

14. When clipping the guys to the guy collars and to the pickets ensure that the snap hooks are FULLY CLOSED AND SECURE.

15. Do not over-tension the guys as this may lead to mast buckling should strong winds occur.

16. Extreme caution must be taken when adjusting the pickets if the ground has softened due to heavy or prolonged rain. This exercise MUST NOT be carried out in wind speeds higher than 32 km/hr (20 mph).

OPERATION – EXTENDED MASTS

17. If snow and ice has become excessive on an erected mast making the mast unstable the mast must be lowered safely.

18. Daily checks must be made on the condition of the guys, snaphooks and pickets. If the condition of the guys have deteriorated in any way the mast must be lowered and the guys replaced. The pickets must be driven deeper into the ground if the ground has been softened with rain.

19. The mast must be lowered, or the height reduced if the windspeed exceeds the design parameters.

MAINTENANCE

20. When carrying out maintenance or servicing DO NOT RETURN TO SERVICE any parts which are damaged, faulty or worn. Discard damaged items and replace with new parts. All available spare parts are listed in Chapter 5, Repair Charts 501 to 504.

21. Where silicone grease is recommended use silicone grease Clark Masts Part No. B3905. According to EEC criteria this product is not classified as a hazardous preparation.

22. When any equipment is to be decommissioned it must be disposed of in accordance with current environmental regulations.

201. Site Selection

The field mounted Scam 12 mast needs an area large enough to accommodate the picket radius of 7 metres. A team of three operators is necessary to carry the kit to the site and to erect and extend the mast. The mast swivel nest, legs and guys can be easily adjusted to deal with slopes of up to 24°.

WARNING

The 90° spacing between the pickets is important for safety. If there are any obstructions on the site change the radius of the picket from the mast NOT the angle between the pickets.

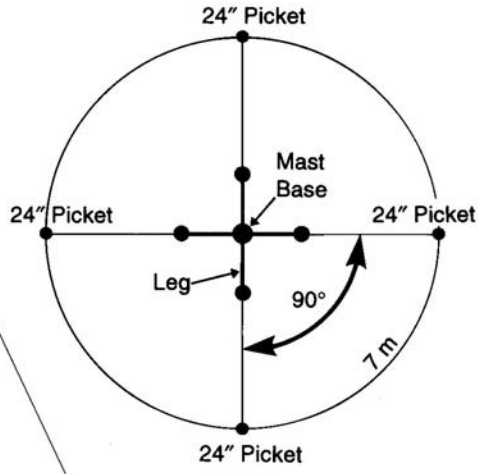


Fig. 23
SITE PLAN

Fig. 24
LAYOUT OF ERECTED MAST

202. WARNING - Weather Conditions

The following recommendations should be adhered to when erecting or retracting the Scam 12 mast:

a) When erecting or retracting the mast the maximum wind speed the mast can withstand is 20 mph (32 km/hr).

b) When retracting a mast in winds of up to 20 mph (32 km/hr), it is important to man the guys. This will keep the top of the mast evenly tensioned.

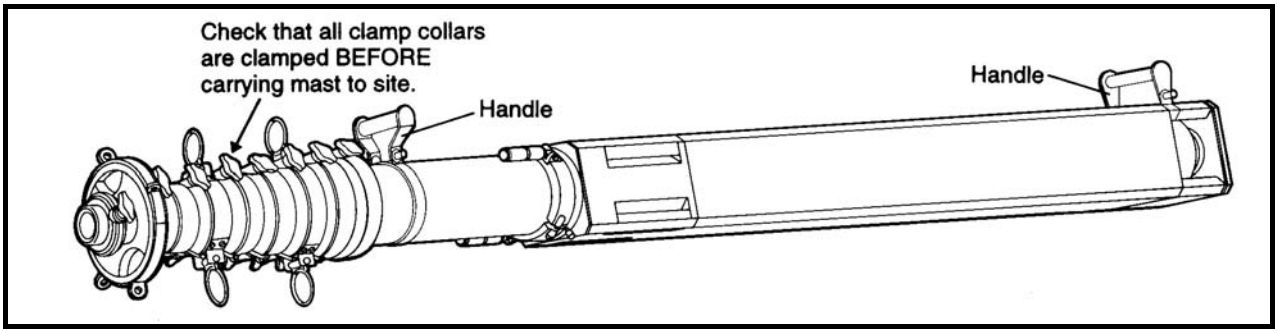
c) Once extended and fully guyed the mast is capable of withstanding a maximum wind speed of 90 mph (144 km/hr). A copy of the Beaufort Wind Scale is printed on the inside back cover of this handbook for reference.

d) The mast can be maintained erect in temperatures ranging from -30°C to +55°C dry. (For low temperature operation see paragraph 207, Low Temperature Operation, on page 35).

WARNING

DO NOT ATTEMPT TO ERECT THE MAST IN HIGHER WIND SPEEDS THAN THOSE RECOMMENDED OTHERWISE INJURY TO PERSONNEL AND DAMAGE TO MAST MAY RESULT

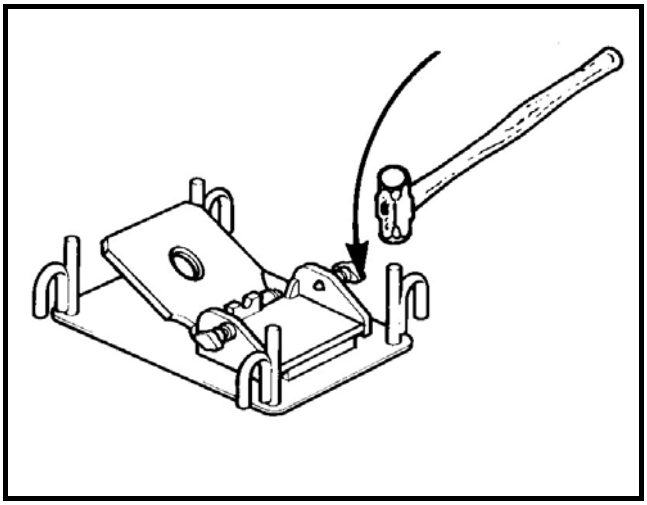
203. Erecting and Extending the Mast



1. Lay kit out adjacent to site. **WARNING** before carrying mast, check that the clamp collars of each mast section are fully clamped. Carry the mast by the carrying handles fitted. **WARNING** This is a 3 person lift.

Remove the instruction plate from the accessory bag and check each item against the kit list on this plate to make sure all equipment is present.

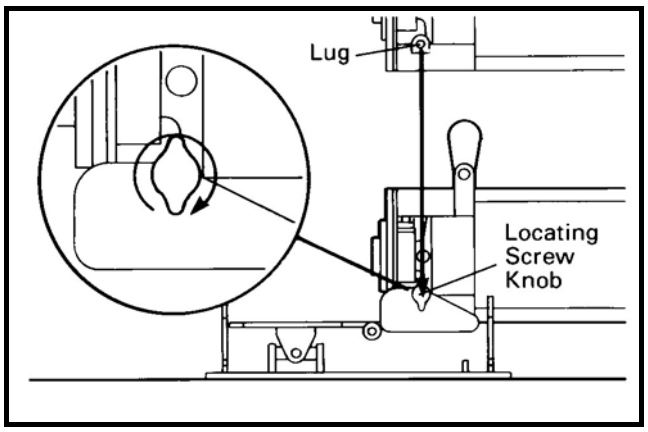
2. Remember, the mast will need an area large enough to accommodate the picket radius of 7 metres. The slope of the ground should be no more than 24



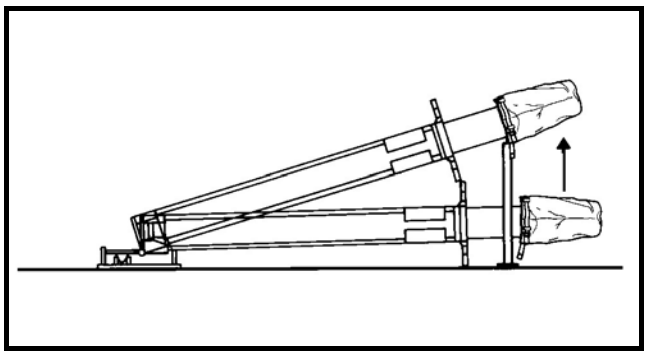
WARNING

NEVER ATTEMPT TO ERECT THE MAST WHERE THERE ARE OVERHEAD OBSTRUCTIONS SUCH AS TREES, POWER CABLES, BUILDINGS OR BRIDGES. ALWAYS CHECK FOR OVERHEAD OBSTRUCTIONS.

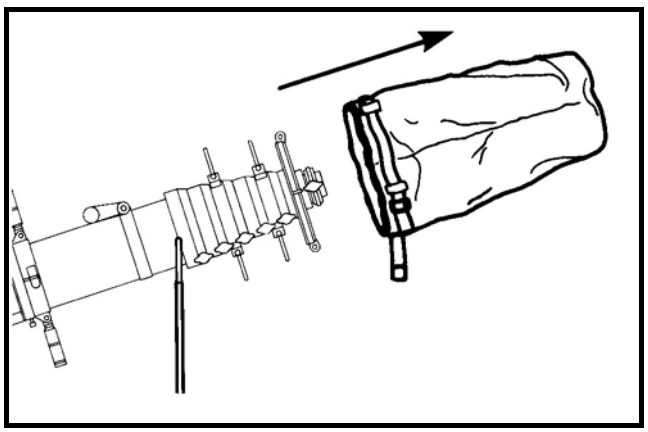
3. Lay the mast swivel nest in the centre of the site in a position which will allow the pickets to be placed at the correct radius of 7 metres from the base of the mast. Secure the mast swivel nest to the ground by driving in the four corner spikes.



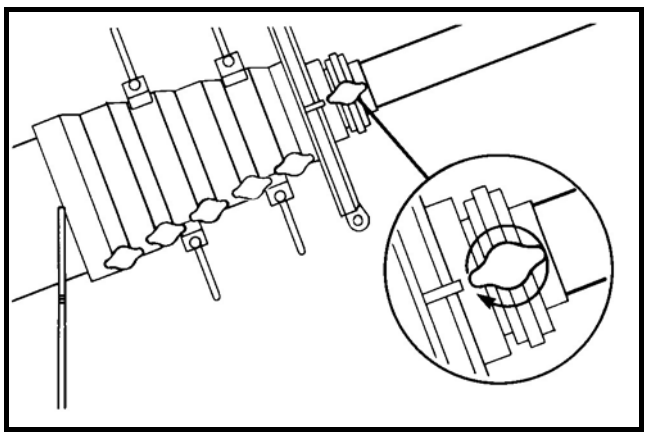
4. Ensure that the locating screws on the swivel nest are backed off. Lower the bottom end of the mast on to the hinged nest of the swivel nest making sure that the lugs on the mast cage correspond with these locating screws. Secure in position by tightening the knob on the locating screws (see inset).



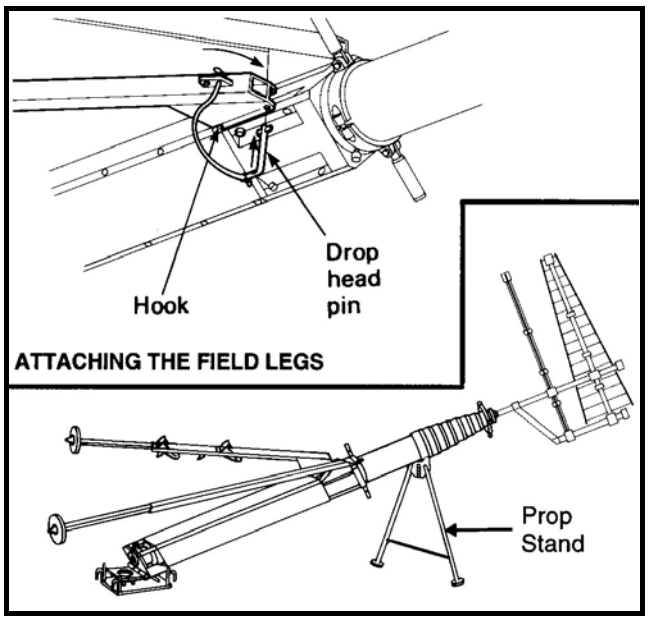
5. While two people lift the top of the mast up the third operator can position the prop stand under the largest collar for support.



6. At this stage the mast cover can be removed and stowed in the accessory bag.

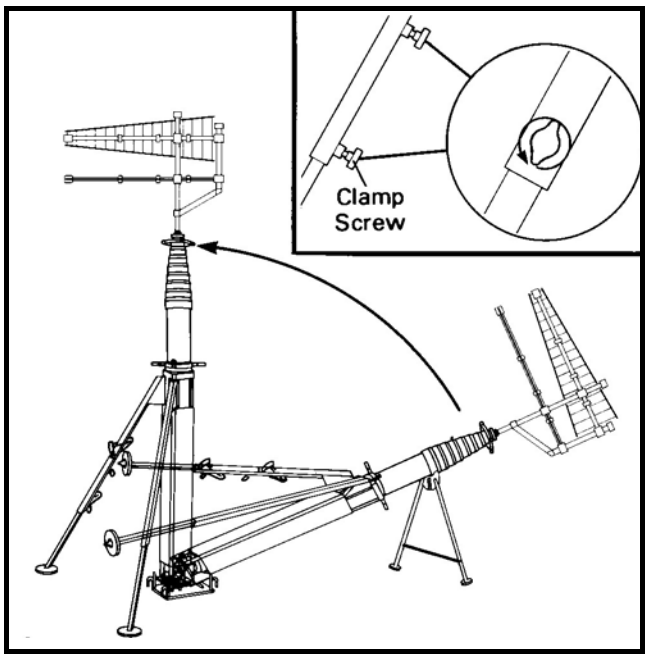


7. The antenna can now be attached to the 40 mm diameter attachment socket at the top of the mast. This must be done in such a way that the antenna feeder cable outlet is in line with the cable guides on the mast sections below. Secure the antenna spigot by tightening the antenna clamp screw (see inset).



8. Now that the mast is supported on the prop stand, fit two field legs, one stepped and one plain, on the upper facing side of the mast cage. This is done by hooking the slot in the top of the leg over the stud on the top of the mast cage. Push the leg up so that the hole in the leg plate lines up with the hole in mast cage. Secure by inserting the drop head pin through the hole (refer to inset).

Adding the two field legs will form a tripod when the mast is pushed upright.

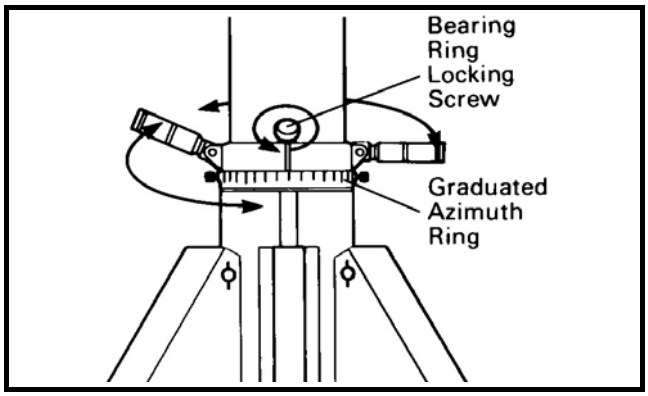


9. After these two field legs have been fitted all three operators can push the mast to the vertical. When the mast reaches the vertical one person can swing round to the opposite side and adjust and clamp the two field legs.

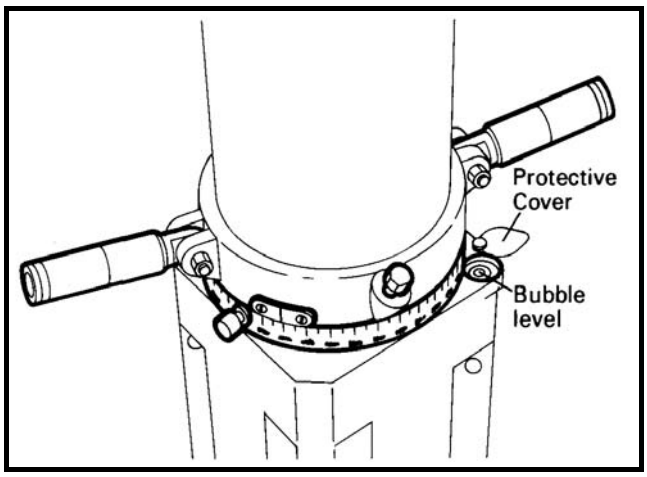
The legs can be adjusted by releasing the two clamp screws (see inset) and pulling out the inner leg until the mast is approximately vertical.

While two people hold the mast stable the third operator can attach and adjust the two remaining field legs. The legs should be attached so that the two stepped legs are on diagonally opposite sides of the mast cage.

Remove the prop stand and stow in the accessory bag.



10. Unscrew the bearing ring locking screw at the top of the mast cage using the exhaust key and rotate the mast and antenna to approximately the desired direction. This will mean little or no adjustment will be necessary when the mast is fully extended. Tighten the bearing ring locking screw.

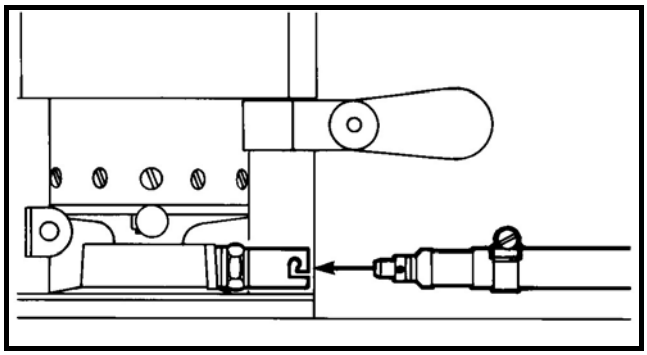


11. Check that the mast is vertical by climbing the steps on the leg and, after sliding off the protective cover, observing the bubble level situated at the top of the mast cage. Each leg can be adjusted until the bubble level is centred.

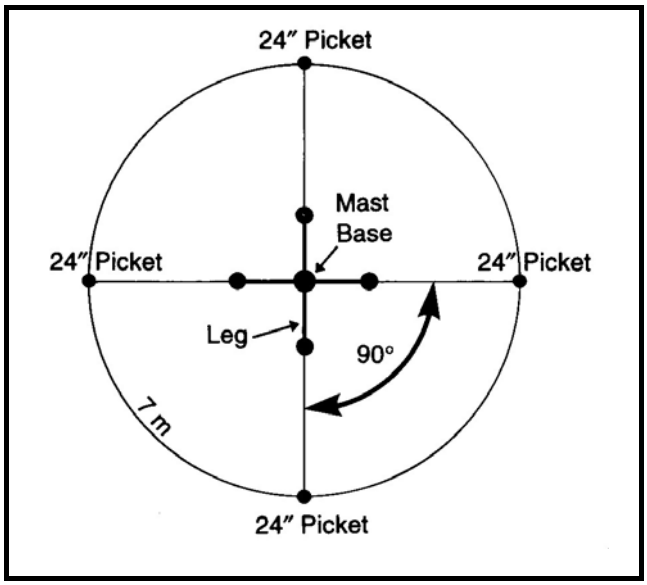
WARNING

DO NOT LOOSEN THE CLAMP SCREWS ON THE LEGS IF AN OPERATOR IS UP ON THE STEPS OF A LEG.

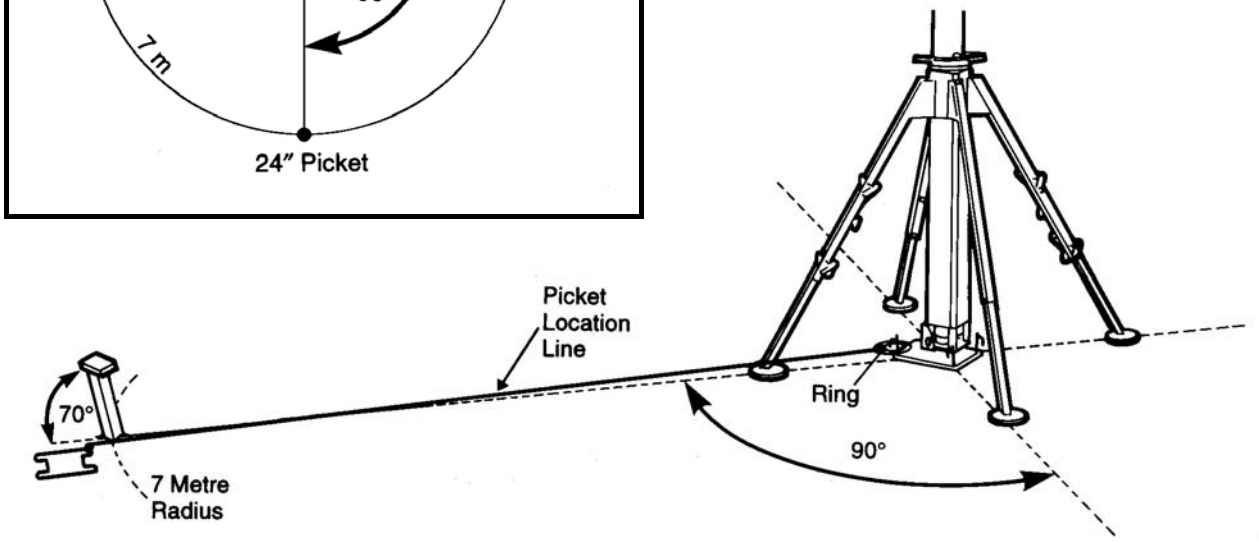
ADJUST AND CLAMP LEGS ONE AT A TIME.

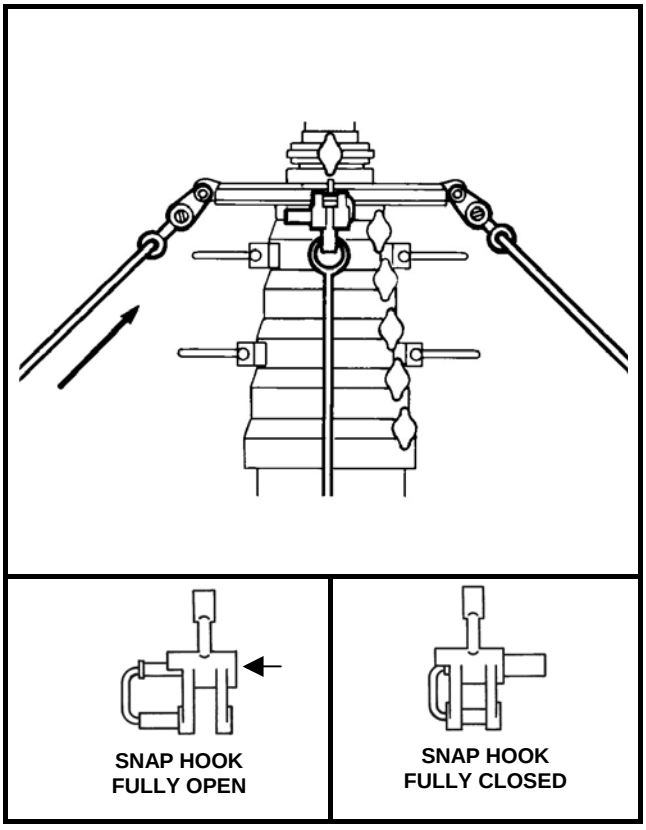


12. Connect the air hose on the handpump to the bayonet socket at the base of the mast.



13. Place ring of picket location line over a spike on the mast swivel nest. Carry spool away from mast keeping in line with leg. Refer to site plan (left) and illustration below. Pull location line taut and hammer in a 24″ picket at the end of the location line which is the 7 metre radius point. Repeat this operation until all four pickets are set out. Pickets must be hammered in, ideally, three-quarters of their length into the ground at an inclined angle of approximately 70° leaning away from the mast.





SNAP HOOK
FULLY OPEN

SNAP HOOK
FULLY CLOSED

14. Partly unreel the terylene guys. The snap hooks which are to be clipped to the lugs on the guy collar are the ones attached with a Bowline to the terylene guy itself NOT the ones attached to the tensioners.

WARNING

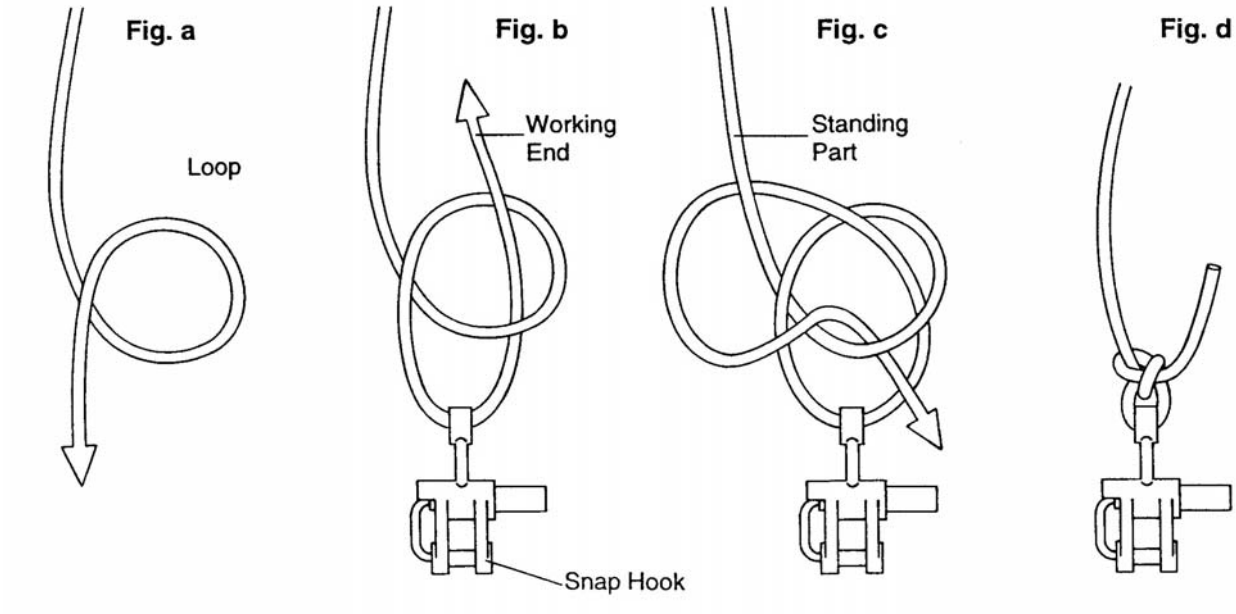
Check that these snap hooks are tied FIRMLY to the guys with a BOWLINE knot (see below) and secured with an identification sleeve.

Attach the snap hooks of the guys to the four lugs on the top roller guy collar.

WARNING

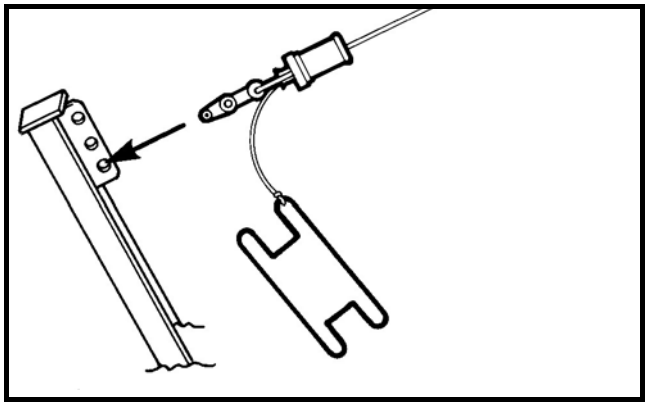
Ensure that all snaphooks are FULLY CLOSED and SECURE (see inset left).

TYING A BOWLINE KNOT

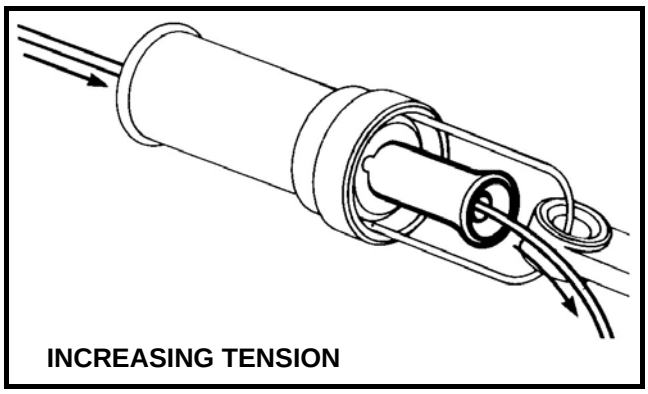


To tie the common Bowline knot first form a loop in the terylene guy as shown in Fig. a. Next, pass the working end of the guy through the snap hook and up through the eye of the loop (Fig. b). Now pass the working end of the guy around the back of the standing part, and then back down through the eye of the loop (Fig. c). Finally, pull the knot taut as shown in Fig. d.

For extra safety the end of the guy should be secured with a rubber sleeve or ferrule. This can be done when the equipment is serviced.



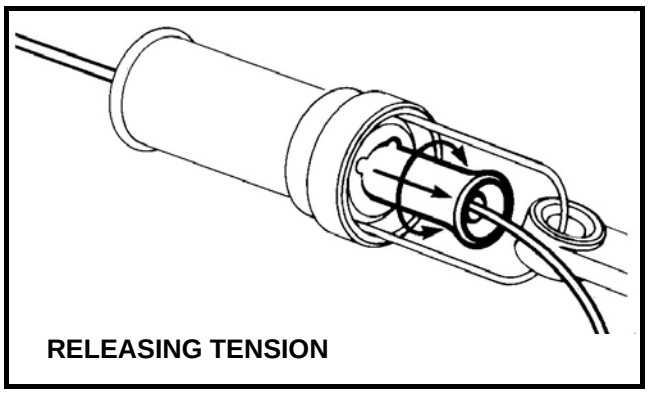
15. Completely unwind the guys and attach the snap hooks, complete with tensioners, to the lower holes on the pickets.



INCREASING TENSION

16. **TENSIONER OPERATION**

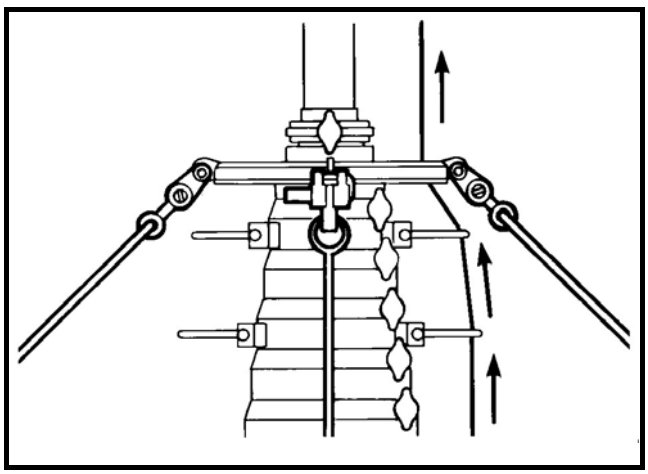
To increase tension - hold the body of the tensioner on one hand whilst pulling the free end of the guy through the tensioner with the other hand.



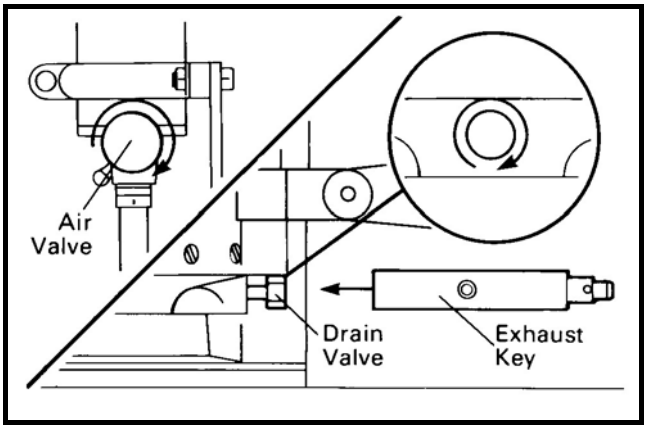
RELEASING TENSION

To release tension - The tensioner is held as above whilst pulling the belled tube with the other hand. The tensioner can be locked in the free position by pulling out the belled tube and at the same time rotating the tube in either direction as shown.

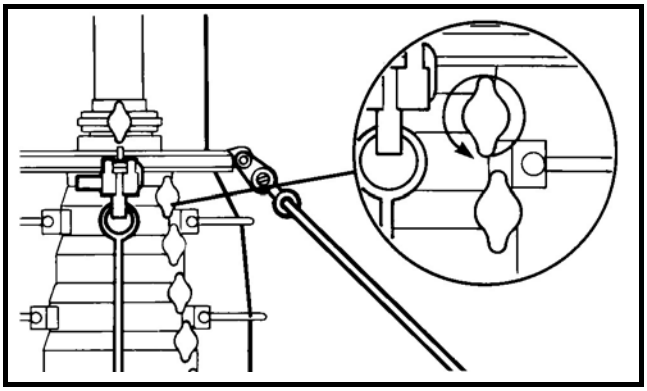
17. Pull out the centre tubes of the tensioners and turn to lock in the free running position.



18. Now pass the feeder cable up through the cable guides on the mast collars and the hole in the roller guy collar and connect to the antenna.



19. Close the air valve on the handpump. Close the drain valve at the base of the mast with the exhaust key.

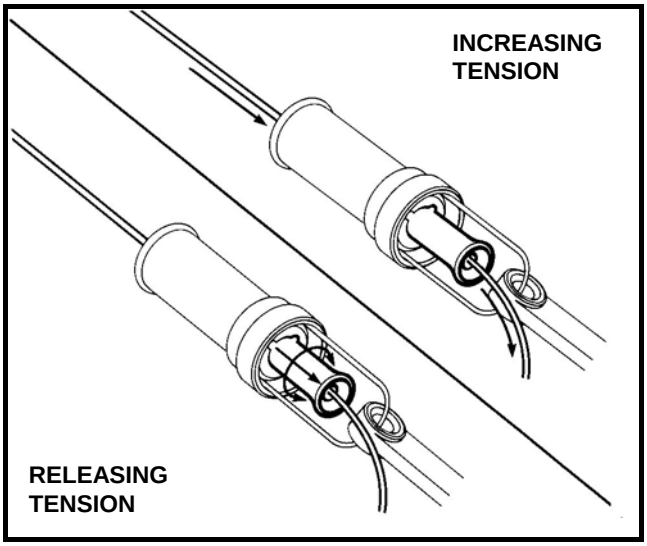


20. Unclamp the top mast section and commence pumping the mast up with the handpump.

WARNING

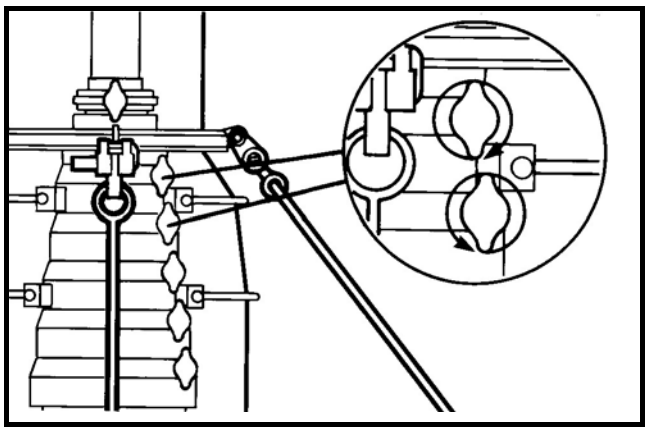
IN WINDY CONDITIONS IT IS IMPORTANT TO MAN THE GUYS AT THE OUTER PICKET RADIUS, TENSIONING WHERE NECESSARY IN ORDER TO KEEP AN EVEN TENSION AT THE TOP OF THE MAST.

(REFER TO PARAGRAPH 202, WEATHER CONDITIONS, ON PAGE 23).



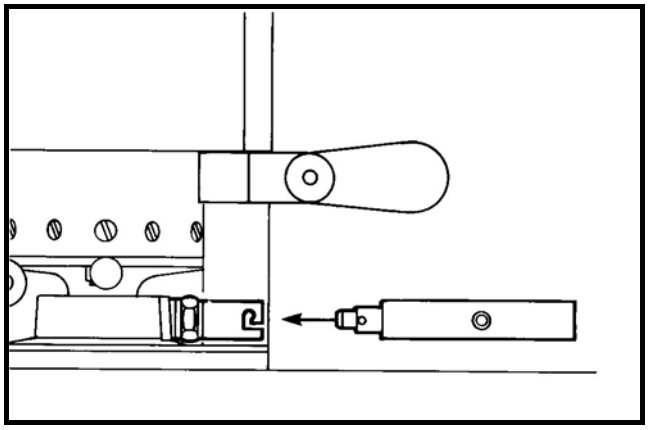
21. As the mast extends adjust all guys at the pickets taking up slack by pulling the guys through the tensioners keeping the mast evenly tensioned.

In windy conditions it is important to man the guys to keep an even tension at the top of the mast.



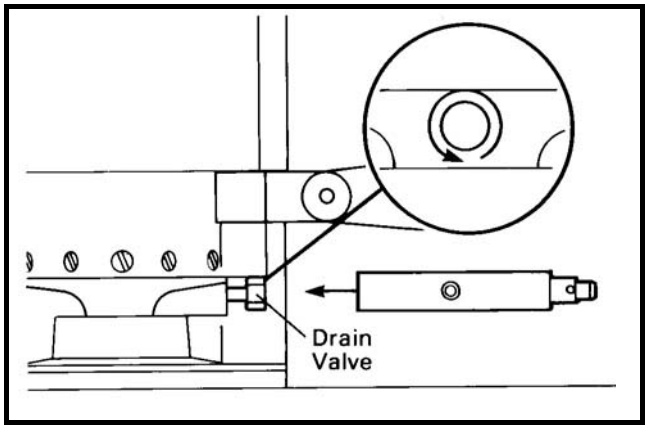
22. Clamp the top section when fully raised and release the next section. Repeat this procedure until the mast is fully extended and clamped.

Check the verticality of the mast from a position directly below the mast and from all angles around the picket radius. Ensure the mast is evenly tensioned and that all the guy tensioners are in the 'increasing tension' position holding the guys firmly.

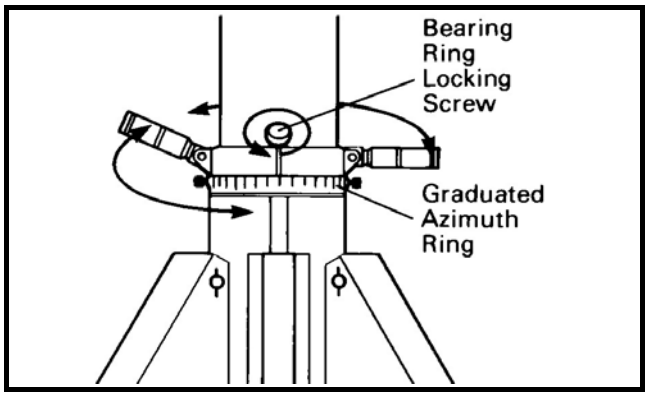


23. Disconnect the air hose from the bayonet socket at the mast base. Insert the exhaust key into the bayonet socket and release the air pressure from the bottom mast section.

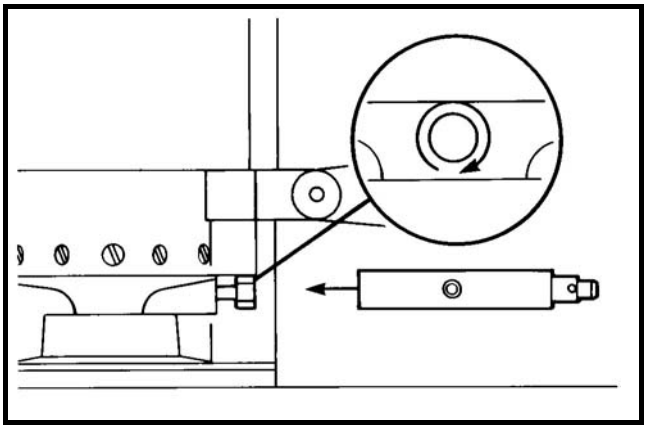
In wet, low temperature conditions it is recommended that the mast be maintained under pressure. Refer to Section 207, Low Temperature Operation, on page 35.



24. Using the other end of the exhaust key, fit over the head of the drain valve at the base of the mast, turn and leave drain valve open. This will allow any water which collects in the mast to drain away.



25. To rotate mast and position antenna, unscrew the locking screw on the bearing ring using the exhaust key and rotate the mast and antenna to the final desired position by means of the two side handles. Readings can be taken from the floating graduated azimuth ring. Tighten the locking screw with the exhaust key when the mast is in the desired position.

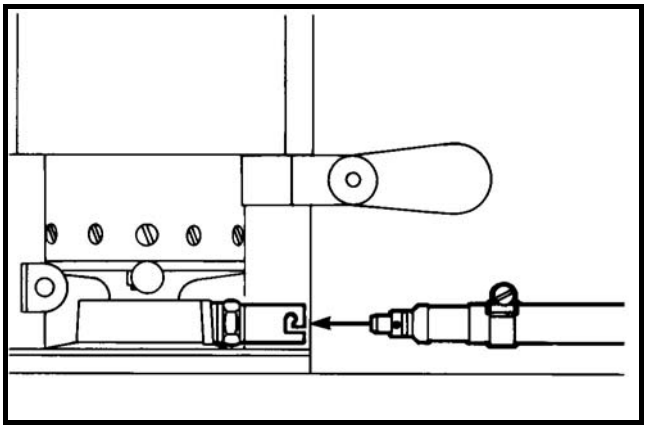


204. Retracting the Mast

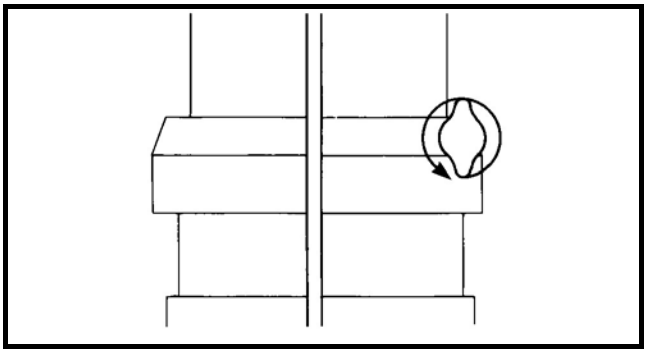
WARNING

Before attempting to retract the mast assess the wind conditions. The mast MUST NOT be retracted in wind speeds of 20 mph (32 km/hr) or over.

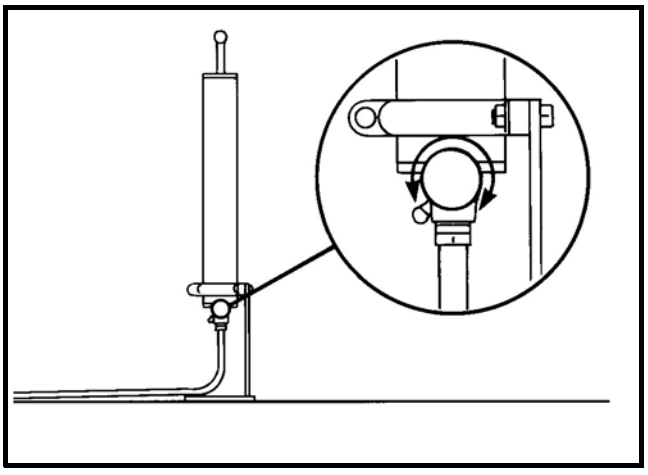
1. Close the drain valve on the mast using the exhaust key.



2. Re-connect the air hose from the handpump to the bayonet connector on the mast base. Now re-pressurise the mast using the handpump. To determine if the air pressure is sufficient, plug the exhaust key into the bayonet socket for ONLY A FEW SECONDS and check for the presence of a strong jet of air from the bayonet socket. Replace the hose into the bayonet socket.

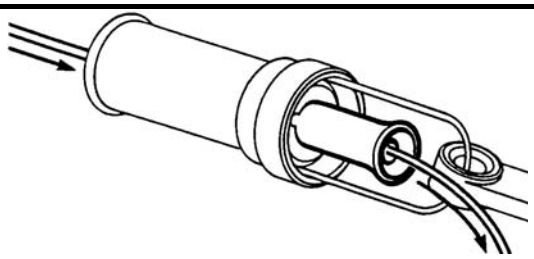


3. Release the lowest clamp collar.



4. Retract the mast by opening and closing the air valve on the handpump, as shown, to control the retraction. At the latter stage of descent the valve may be closed off and the drain valve opened, this will expel any water inside the mast.

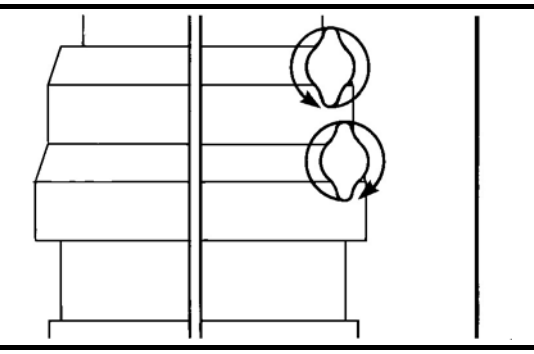
For the more experienced operator the exhaust key may be substituted for the handpump control valve in retracting the mast. The mast is retracted by plugging the exhaust key into the bayonet socket and allowing the air to drain out.



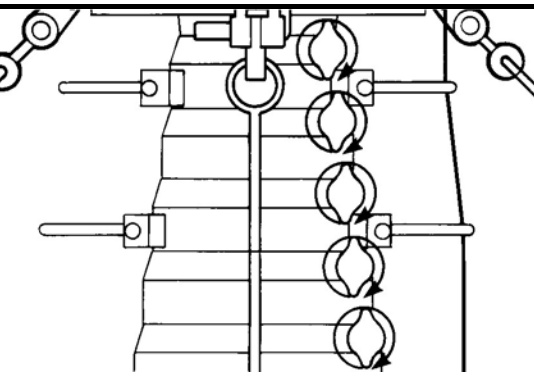
INCREASING TENSION

5. As the mast descends go to each picket in turn and pull the guys through the tensioners so that the slack is taken up. Keep a light tension on the guys as mast and headload are lowering.

If wind-blown sand or dust has adhered to the mast sections wipe them clean as they retract.

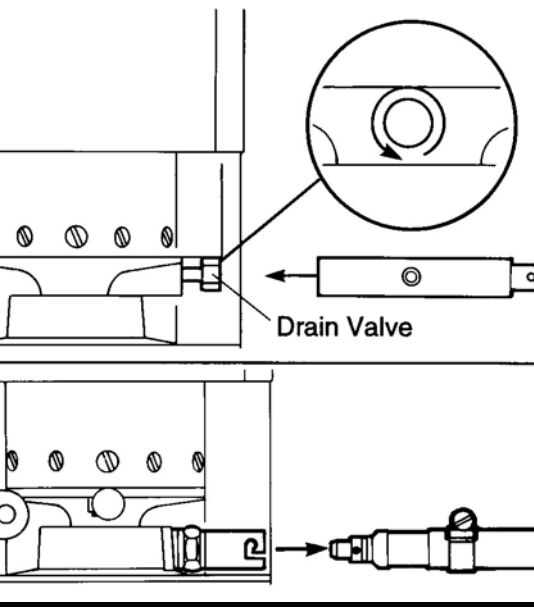


6. When the first mast section has fully retracted clamp the first clamp collar and release the second clamp collar. Repeat this procedure section by section until the mast is fully retracted.



7. **WARNING**

When the mast is fully retracted tighten all clamp screws on all clamp collars.

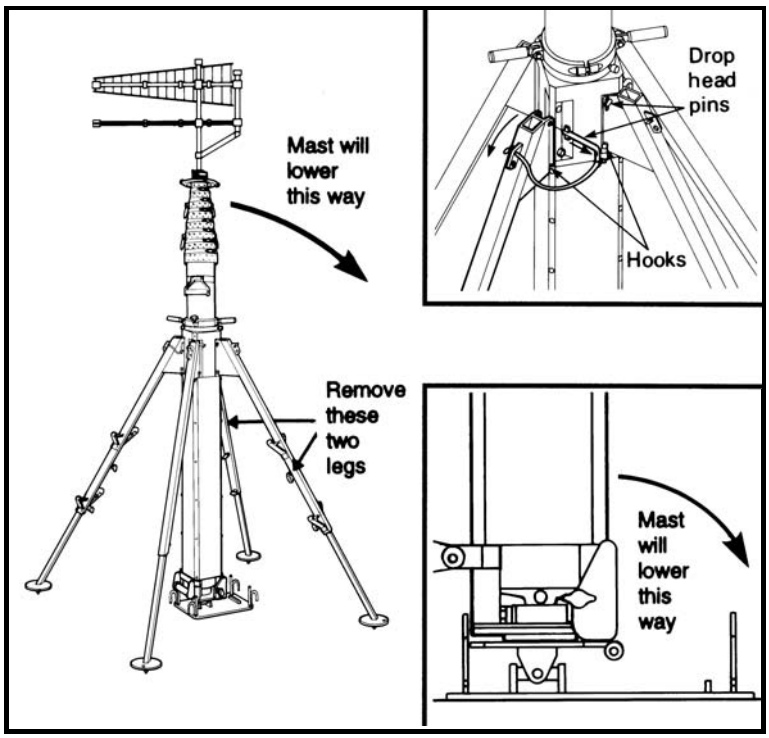


8. Open the mast drain valve with the exhaust key and leave open (left). Disconnect the handpump air hose from the bayonet socket at the base of the mast (below left).

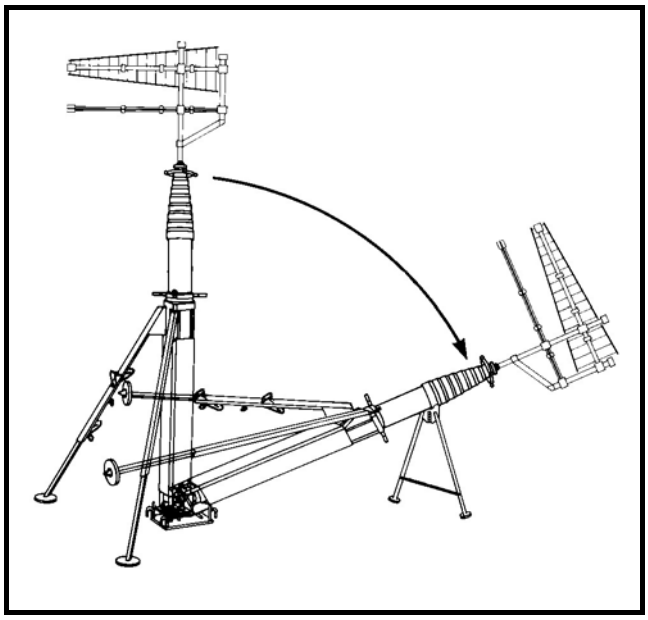
205. Dismantling the Mast

1. Disconnect the feeder antenna cable from the antenna and pass back through the hole in the roller guy collar and cable guides. Wind the cable up for storage.

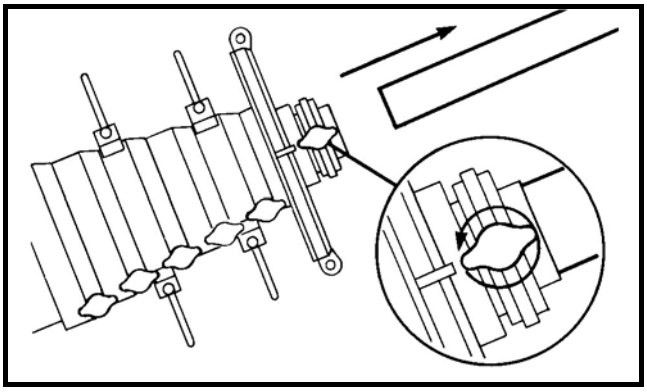
2. Unclip the guys, using the snap hooks, from the pickets and from the guy collar at the mast head. Wind all guys neatly on to their spools.



3. Look at the mast swivel nest to determine which way the mast will lower down. While two people hold the mast steady the third person can remove the two field legs on the side of the mast cage which is to be lowered to the ground (refer to the illustrations, left). The third operator brings the prop stand ready to put it in position as the mast is lowered.

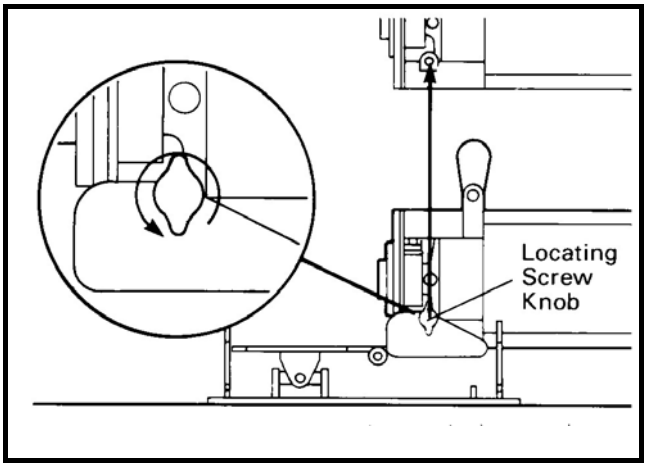


4. All three personnel can now lower the mast carefully with one person positioning the prop stand under the bottom collar. Remove the remaining two field legs.



5. Loosen the antenna socket clamp screw (see inset) and withdraw the antenna.

6. Check that all the clamp collars are locked, replace and secure canvas cover. Remove prop stand and lower mast on to the ground.



7. Unscrew the two locating screw knobs on the mast swivel nest and lift mast out using the handles.

8. Pull out the four corner spikes from the mast swivel nest.

9. Finally, remove all four pickets from the ground and stow all items, checking with the kit components list on the Instruction Plate.

206. Stowage

After dismantling the mast and before leaving the site check that:

a) Drain valve at the base of the mast is left open.
b) Air valve on body of handpump is open.
c) Check for signs of fraying when rewinding guys on to spools
d) All clamp screws on the mast clamp collars are tightened.
e) Kit is complete against the Kit Components List on the Instruction Plate (or on page 5 of this handbook). All loose items should be stowed in the accessory bag.
f) All defects have been reported.

207. CAUTION - Low Temperature Operation

In sub-zero temperatures the erection or retraction of the mast may become impossible due to the formation of ice. The ice may form internally due to rain entering a mast joint and freezing at that point or draining into the mast base and freezing there rendering the mast inoperative. In addition, ice may form on the outside of the mast sections.

The following features have been incorporated in the design of the mast to minimise the formation of ice:

a) An angled drain hole above each piston seal allows the escape of any water that has entered the joint.

b) Low temperature pneumatic seals and lubricant tested to -20°C.

c) A drain valve to drain any water that has collected in the base of the bottom mast section.

d) As a result of each telescoping action, the exterior of each section acquires a thin film of grease which helps to prevent ice forming.

e) The mast cover is for use at all times when the mast is retracted to prevent rain entering the joints.

For mast operation in sub-zero temperatures the following procedure is suggested:

Since the design of the seals is such that they have maximum effect (and so prevent the entry of water) when under pressure, then it is recommended that in wet, low temperature conditions the mast is maintained under pressure, preferably a few pounds above normal so that periodically, every two hours or so, the exhaust key can be inserted to check the correct operation of the exhaust valve. Any water which has collected can be removed by operating the drain valve with the other end of the exhaust key.

If, despite these precautions, the mast still ices up, then all the usual de-icing methods should be tried, including wrapping the joints or the exhaust valve with cloth soaked in hot water containing anti-freeze. A de-icing fluid can be squirted into the joints, via the drain holes, and into the exhaust valve.

When operating the mast in temperatures down to -20ºC the following instructions are to be observed:

a) If possible keep the mast under cover at all times when not in use.

b) If, after de-icing, the mast fails to erect correctly, due to partial seizure of its tubes, cease pumping until all tube sections have been freed otherwise is may erect without warning causing damage to the mast.

CHAPTER 3
INSPECTION STANDARDS

301. Responsibility for Inspection

This is the responsibility of the unit technician or workshop personnel who are qualified to inspect masts.

302. Periodicity and Recording of Inspections

Inspections of the Scam 12 mast unit and all ancillary items should be carried out every three months. A safety valve test and a pressure test on the mast should be performed every twelve months. On completion of each inspection task a record must be held using a Unit Servicing log. Additionally all minor repairs and replacements should be recorded.

303. Tools for Inspection

The following tools will be necessary in order to inspect the mast and its ancillaries:

Bayonet pressure gauge
Engineer's hammer
Hide or similar soft-faced hammer
Large and small screwdrivers
Crosspoint screwdriver
Set of AF Allen keys
Centre punch
Pliers
Adjustable spanners
Measuring tape

The following materials will be required:

Silicone grease, Clark Masts Part No. B3905
Bearing Grease
Oil can
P.T.F.E. tape
Jointing compound

304. Inspection Standards

304.1. Checking the Mast and Kit

Lay out the kit and, checking with the Kit Components List on page 5 of this handbook, make a visual examination to see that all equipment is present.

Following the sections 304.2 to 304.20 on the following pages, each part of the kit must now be scrutinised for mud, dirt, rust, condensation, paint condition, lack of lubricant and damage. Clean off any mud as inspection of each item takes place and lubricate screw threads. Lay aside any pieces of equipment which will need further attention. It is important to make a note of these items so that they can be returned to the kit when they have been repaired.

Cross reference to Section 104, Physical Description, on page 6 onwards will prove beneficial in identifying individual parts.

304.2. Mast Unit

At the mast head check that the mast socket is clean and clear and that the antenna clamp screw is lubricated and not damaged. All cable guides should be present and undamaged. All clamp screws should be oiled. Check for free rotation of the roller guy collar. The four lugs on the roller guy collar should be checked for damage.

At the top of the cage ensure that the folding handles fold and unfold freely and that the screws, nuts and washers securing the handles to the bearing ring are present, oiled and undamaged. Check for damage to the bubble level and its cover. The azimuth ring and bearing ring should rotate freely when unlocked. Check for any damage to the azimuth ring and the bearing ring locking screw.

Check that the two carrying handles are not damaged. They should be oiled and fold freely.

At the base of the mast check that the bayonet socket, drain valve and safety valve are clean and free from any mud and obstructions. The mounting lugs on either side of the cage should be undamaged.

The mast sections should be checked to ensure that they are clean and free from any wind-blown sand or dust. Check for the presence of a thin film of silicone grease on the mast sections. If the surfaces are dry or patchy arrange for the mast to be serviced. **CAUTION**: USE ONLY SILICONE GREASE ON THE MAST SECTIONS. (Refer to the Lubrication Diagram, on page 44).

304.3. Mast Swivel Nest

Check that the two locating screws and knobs are oiled and not damaged in any way and that the four corner holes on the bottom plate are free from dirt. Check the free movement of the universal joint and oil if dry.

304.4. Prop Stand

Look to see that the terylene rope is attached and firmly knotted to both legs of the prop stand assembly. The length of cord should be approximately 0.7 metres.

304.5. Field Legs

Ensure that the drop head pins at the top of each leg are present and are securely attached by means of their cord to the top of each leg. The two clamp screws on each leg should be present, operational and lubricated. Loosen these clamp screws and confirm that the legs are straight by checking the telescoping action of each leg. Briefly fit each leg to the mast cage to verify a secure fit. The steps on the stepped legs should be free from mud.

304.6. Scam Handpump

Check that the air valve and the hose connector are present and undamaged. Tighten the air valve and pump the handle a few times to confirm that the air is being pushed through the hose connector and that the pump is operating smoothly. Loosen the air valve again.

304.7. 24″ Picket

Check that the three holes in the steel plate of each of the 24″ pickets are clear of dirt and mud.

304.8. 60 ft Guy Assembly

Check the operation of each of the guy tensioners by pulling out, turning and releasing the centre tube. Ensure that the snap hook is securely attached to the tensioner. Check the function of this snap hook to make sure it fully opens and closes. Unwind the terylene guy completely and check the snap hook at the other end of the guy. This snap hook should be firmly attached to the guy by a bowline knot and identification sleeve. All snap hooks should be lightly lubricated. Examine all of the guys and make an inspection to see if they are frayed. Check that the wire spool on each guy is secure. Measure each of the terylene guys and if they have been cut and repaired in the field, reducing their overall length, it is important that they are laid aside to be replaced. Wind undamaged guys back on to their spools.

304.9. 14″ Spike

Make sure that the four spikes are not bent and are free from mud.

304.10. Exhaust Key

Ensure that the exhaust key is present and that it is clean and not blocked with mud. The tommy bar should be straight. Fit the exhaust key into the bayonet socket and over the drain valve to check if it fits and operates correctly.

304.11. Hose Assembly

Look for any splits in the air hose. Check that the hose clips at either end of the hose are intact. Fit the hose connector into the bayonet socket at the base of the mast to confirm a good fit and that it is not damaged.

304.12. Accessory Bag and Canvas Cover

Examine the accessory bag and canvas cover carefully for signs of fraying or tears. Check the buckles and stitching. Wipe the covers clean of any dirt or mud.

304.13. 4 lb Hammer

Check the condition of the hammer. The head should be secure on the shaft.

304.14. Spanner

Check that the spanner is present and clean.

304.15. Instruction Plate

Check that the instruction plate is present, clean and legible.

304.16. Picket Location Line

Unreel the location line completely. The ring should be securely knotted with a bowline knot to the cord at one end and the wire spool at the other. Check that the length of the cord from spool to ring is no less than 7 metres. If the cord has been cut and repaired in the field, reducing its overall length of 7 metres, it will need to be laid aside to be replaced.

304.17. User's Handbook

Check that the handbook is clean, legible and intact. There should be a front and back cover (page 55), introduction pages (i) to (iv) and internal pages numbered 1 to 54.

304.18. Stowage of the Kit

Pack the kit away. The damaged items which will need to be repaired or repainted should be taken to the appropriate workshops.

304.19. Stowage of the Mast

Before stowing the mast drain out all condensation by inserting the exhaust key into the drain valve and allowing any water to escape. Ideally the mast should be stored vertically. If this is not possible the mast must be rotated 90 degrees every three months. This prevents flattening of the seals.

304.20. Pressure Test

The following pressure test should be carried out every twelve months. Erect the mast in the field with a 31.7 kg (70 lbs) test head load. Follow the Operating Instructions in Chapter 2, (Section 203, 1 - 22), but DO NOT lock the clamp collars. Connect the pressure gauge and air hose from the handpump. Check that the mast is pressurised to 1.41 kg/cm^2 (20 lbs/in^{2}g) and leave mast extended, at this pressure, for 60 minutes.

After this time check the pressure gauge. Pressure should not have dropped at a rate of more than 0.42 kg/cm^2 (6 lb/in^{2}g). If pressure is between 0.94 kg/cm^2 and 1.41 kg/cm^2 (14 lbs/in^{2}g and 20 lbs/in^{2}g) this is within the manufacturer's limits.

If the pressure has dropped below 0.94 kg/cm^2 (14 lbs/in^{2}g) the seals and 'O' rings will need to be checked and/or replaced by the manufacturer or workshop technician qualified to inspect masts.

Retract the mast following the Operating Instructions in Chapter 2 (Section 204, Retracting the Mast). As the mast retracts check for the presence of a thin film of silicone grease on the mast sections. If surfaces are dry or patchy report the matter and arrange for the mast to be serviced. **CAUTION:** USE ONLY SILICONE GREASE ON THE MAST SECTIONS. (Refer to the Lubrication Diagram, on page 44).

CHAPTER 4
MAINTENANCE AND SERVICING

401. Responsibility for Inspection

This is the responsibility of the unit technician or workshop personnel who are qualified to inspect masts.

402. Preventative Maintenance

The best form of preventative maintenance is to thoroughly check the mast and ancillaries BEFORE they are put away for storage. This will ensure the kit, when retrieved for use will be clean, dry, oiled and functional.

403. Periodicity of Maintenance Checks on the Mast Unit

(Refer to Section 501, Repair Chart 101 - Scam 12 Mast Unit, on page 47.)

403.1. Daily Tasks on an Erected Mast:

Inspect guys for signs of fraying and check that they are without slack. Adjust as necessary, with the aid of the bubble level, to maintain vertical alignment of the mast.

Check that the pickets are firmly in the ground. During high winds and rain carry out frequent inspections to ensure that pickets are holding firm.

Check that the drain valve at the base of the mast is open. If it is closed use the box spanner end of the exhaust key, and allow any water which has collected to drain out.

WARNING

The terylene guys WILL NOT SHRINK when wet and DO NOT need to be slackened in wet weather.

403.2. Weekly Tasks:

Mast cleaning and lubrication. The mast sections are self-lubricating. Internally the mast has a thin film of silicone grease on each section as a result of each telescoping action. Additional grease applied externally will only serve to attract quantities of wind-blown sand and dirt which will cause damage to the seals when the mast is retracted.

Inspect each section as it is extended and check that a thin, unbroken film of silicone grease is present. Ensure that the keyways are thoroughly cleaned using a soft cloth to remove any dirt. Remove all loose dirt with a soft cloth.

Lower and raise each mast section in turn and re-inspect the surfaces for the presence of lubricant. If surfaces are dry or patchy report the matter and arrange for the mast to be serviced and lubricated with the approved grease.

Open the drain valve, using the box spanner end of the exhaust key, and allow any water which has collected to drain out.

This periodic check is essential for efficient operation of the mast especially when it is in use in sub-zero temperatures.

403.3. Monthly Tasks:

Carry out the tasks detailed in the previous paragraph ‘Weekly Tasks’. Inspect all guys, hose and clips, clamp bolts, field legs and handpump. Check that:

a) All terylene guys are sound with no fraying and that all snap hooks have adequate lubrication.

b) All hoses and clips are serviceable.

c) All bolts are free from rust. Where necessary grease the threads wiping off the excess.

d) Field legs and handpump are serviceable.

Examine all mast fitments for corrosion, damage and rust; where necessary arrange for cleaning and painting by the supporting workshops.

403.4. Periodicity of Servicing Mast

Every one to three years remove the mast sections, thoroughly clean inside and out, then re-grease with silicone grease. Rebuild mast with new piston seals and new keys.

Every five to ten years the mast will need to be completely stripped down, as all the perishable components such as seals, 'O' rings and keys will need to be replaced.

404. Periodicity of Maintenance Checks on Ancillary Items

(Refer to Section 504, Repair Chart 104 - Scam 12 Mast Ancillary Items, on page 53.)

Carry out the monthly tasks detailed in paragraph 403.3. Inspect all guys, hose and clips, clamp bolts, field legs and handpump.

The ancillary items detailed on the following pages must be checked six monthly and serviced every one to three years referring to the appropriate procedures below.

CAUTION: Where silicone grease is recommended use silicone grease Clark Masts Part No. B3905. Where oil is recommended use any clean machine oil. Where grease is recommended use any good quality bearing grease.

404.1. Mast Swivel Nest

Dismantling the Mast Swivel Nest: To separate the hinged nest from the top plate remove the split pins from the hinge rod and withdraw the hinge rod. If necessary the retaining knobs may be removed from their locating screws by unscrewing the grubscrew.

To separate the top plate from the base plate remove the two opposite pivot screws using an Allen key and lift off the top plate. This will allow the swivel block to be removed.

Thoroughly clean and examine all parts. In particular the locating screws, the hinge rod and the swivel block with pivot screws. Any part which appears damaged should be replaced.

For reassembly of the mast nest the above procedure should be reversed. Oil all screws and pivots.

404.2. Prop Stand

The bottom locating stud should be replaced if necessary. If the prop stand assembly is damaged it should be replaced. The terylene rope should be examined and replaced if frayed.

404.3. Field Legs

The inner leg may be completely removed from the outer leg by slackening the clamp screws then pushing the inner leg in until it protrudes above the top of the outer leg. The two screws may then be removed and the inner leg can be withdrawn from the outer leg. Examine both inner and outer legs and remove any burrs with a smooth file. If either leg is badly distorted, preventing free movement, a replacement part should be fitted. If either the clamps screw or the stud are damaged they should be replaced. Oil the clamp screws.

The drop head pin should be free from burrs and the latch should swivel freely. If the pin is badly worn or the latch mis-shapen the complete drop head pin should be replaced. Oil the latch.

404.4. Handpump

The handpump may be removed from its stand by removing the two screws from the wall bracket.

Pull out the pump handle to its fullest extent and remove the handle by gripping the piston rod in a vice using soft jaws. Remove nut and unscrew handle from the piston rod.

Remove the screws and pull the piston rod out of the pump barrel. The piston, seal and diaphragm should now be inspected and if they are showing any signs of wear they must be replaced.

After removing the screws at the lower end of the pump, the valve end cap assembly can be pulled from the pump barrel. In order to examine the sealing disc the valve end cap assembly will have to be dismantled. To dismantle the valve end cap assembly first remove the four screws and lift out the valve plate. Unscrew the shouldered screw to expose the sealing disc. The valve screw may be removed by slackening the grub screw and completely unscrewing the valve screw. Hose connectors can be removed by using a spanner.

Re-assembly of the handpump: Assemble valve end cap and replace in pump barrel, securing with the four screws.

After replacing the piston, seal and diaphragm these items must be greased. **CAUTION:** Use only a silicone grease as any other type of grease will be harmful to the seal. The pump barrel must be lightly greased.

Carefully replace the piston rod into the pump barrel and secure the bearing end cap on to the pump barrel using the four remaining screws. Lightly grease the piston rod.

Screw the pump handle on to the piston rod, ensuring that the threaded insert is correctly positioned. Secure with the washer and nut.

Bolt the assembled handpump back on to its stand.

404.5. 24″ Picket

Should the holes for guy attachment on the 24″ pickets have become oval, they should be drilled or filed round. Any burrs on the picket heads should be removed with a file. Re-paint where necessary.

404.6. 60 ft Guy Assembly

(Refer to Section 502, Repair Chart 102 - 60 ft Guy Assembly, on page 49.)

Replace any guy, guy tensioner, snap hook or spool which appears worn. Snap hooks must be tied to the guys with a bowline knot. The ends of the guys should be sealed by a flame and the loose ends of the knot secured with plastic sleeving.

404.7. 14″ Spike

File the top of the spike to remove any burrs which have resulted from hammering. File point of spike and straighten the shaft if the spike has become distorted or damaged.

404.8. Exhaust Key

The bayonet fitting of the exhaust key should be clean and free from burrs. The air passage of the key should be clear to allow air to freely pass when the mast is being lowered. If the key is badly damaged it should be replaced.

404.9. Hose Assembly

If the hose or the plug should become damaged the relevant part should be replaced. If the hose is leaking a replacement hose must be fitted.

404.10. Accessory Bag and Canvas Cover

Replace the complete bag or cover if the cloth-coated polyurethane becomes frayed or torn. Check the carrying straps on the accessory bag particularly where they are attached to the bag itself. Examine the stiffening in the bottom of the bag and if it is split or damaged it should be replaced.

404.11. 4 lb Hammer

The hammer head should be checked to see that it is secure on the shaft. The shaft itself should be free from damage and if it is badly damaged it should be replaced.

404.12. Spanner

Check the spanner for burrs and jaw distortion. Replace if damaged.

404.13. Instruction Plate

Replace the metal instruction plate if it has become illegible.

404.14. Picket Location Line

(Refer to Section 503, Repair Chart 103 - Picket Location Line, on page 51.)

Check the ulstron cord especially at the ends where it is attached to the ring and the spool. If it has become detached it must be secured with a bowline knot and black sleeving. If the cord is badly damaged, enough to reduce its overall length, it must be replaced. Any reduction in cord length will affect the picket radius. The total length of the cord from spool to ring should be no less than 7 metres.

404.15. Paint

After overhaul check the paint condition on all items and repaint where necessary with the correct paint (NATO Green IRR BS 381C 285).

404.16. Lubrication

Where silicone grease is recommended use silicone grease Clark Masts Part No. B3905, NSN 9150-99-710-9909. Where oil is recommended use any clean machine oil. Where grease is recommended use any good quality bearing grease.

The Lubrication Diagram on page 44 shows important oiling and greasing points on an assembled mast.

CAUTION: DO NOT allow mineral oil or grease to come into contact with the mast sections, seals or pistons. **CAUTION:** Use ONLY silicone grease on the MAST SECTIONS.

CAUTION

DO NOT ALLOW MINERAL OIL OR GREASE TO COME INTO CONTACT WITH THE MAST SECTIONS, MAST SECTION RUBBER SEALS OR PISTONS, AS THEY WILL BE IMMEDIATELY DAMAGED.

DO NOT USE GREASE CONTAINING MOLYDISULPHIDE.

SUCH ACTION RENDERS VOID ALL CONSEQUENTIAL GUARANTEE CLAIMS.

CAUTION

WHERE SILICONE GREASE IS RECOMMENDED USE ONLY SILICONE GREASE CLARK MASTS PART NO. B3905.
NSN 9150-99-710-9909

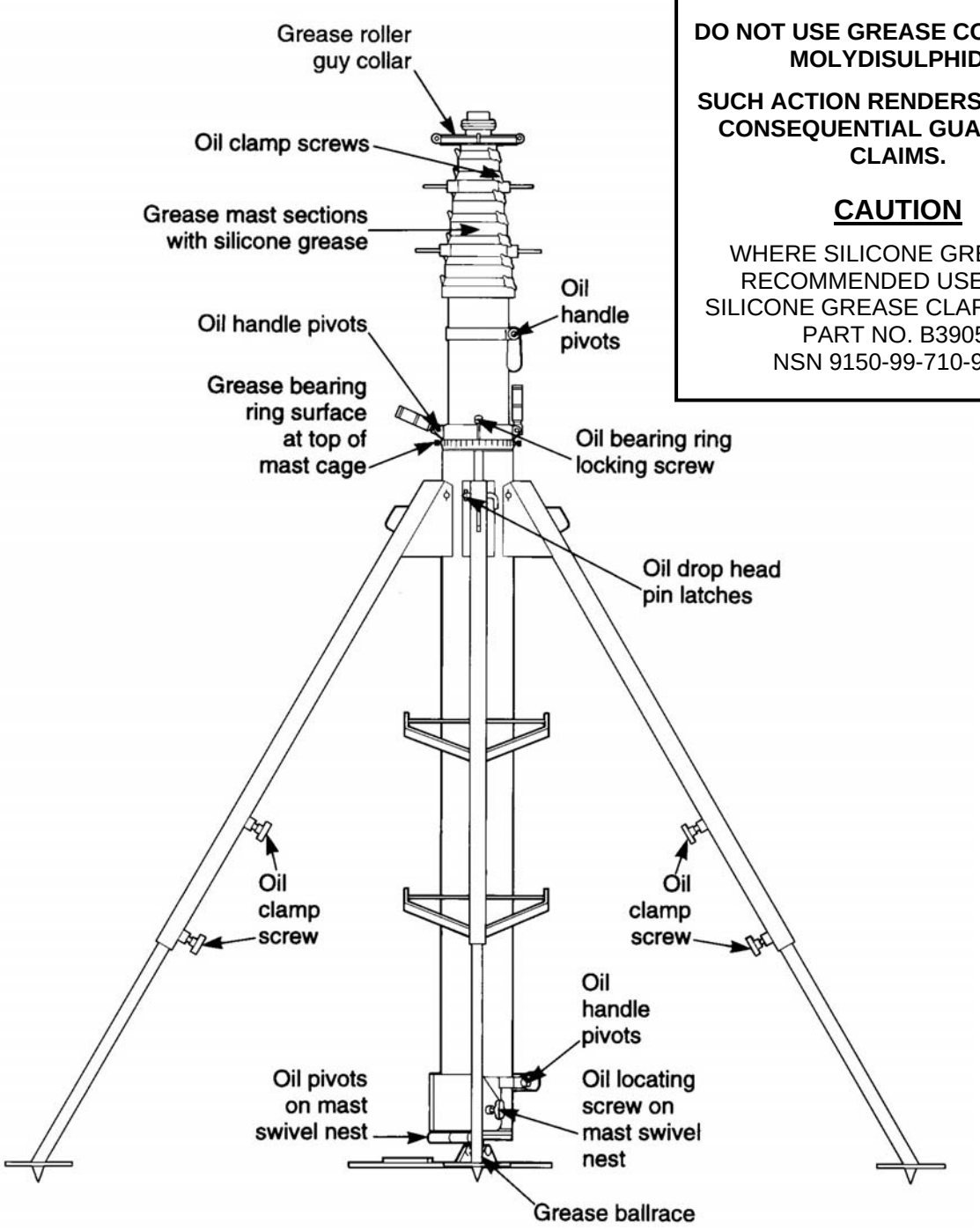


Fig. 25
LUBRICATION DIAGRAM

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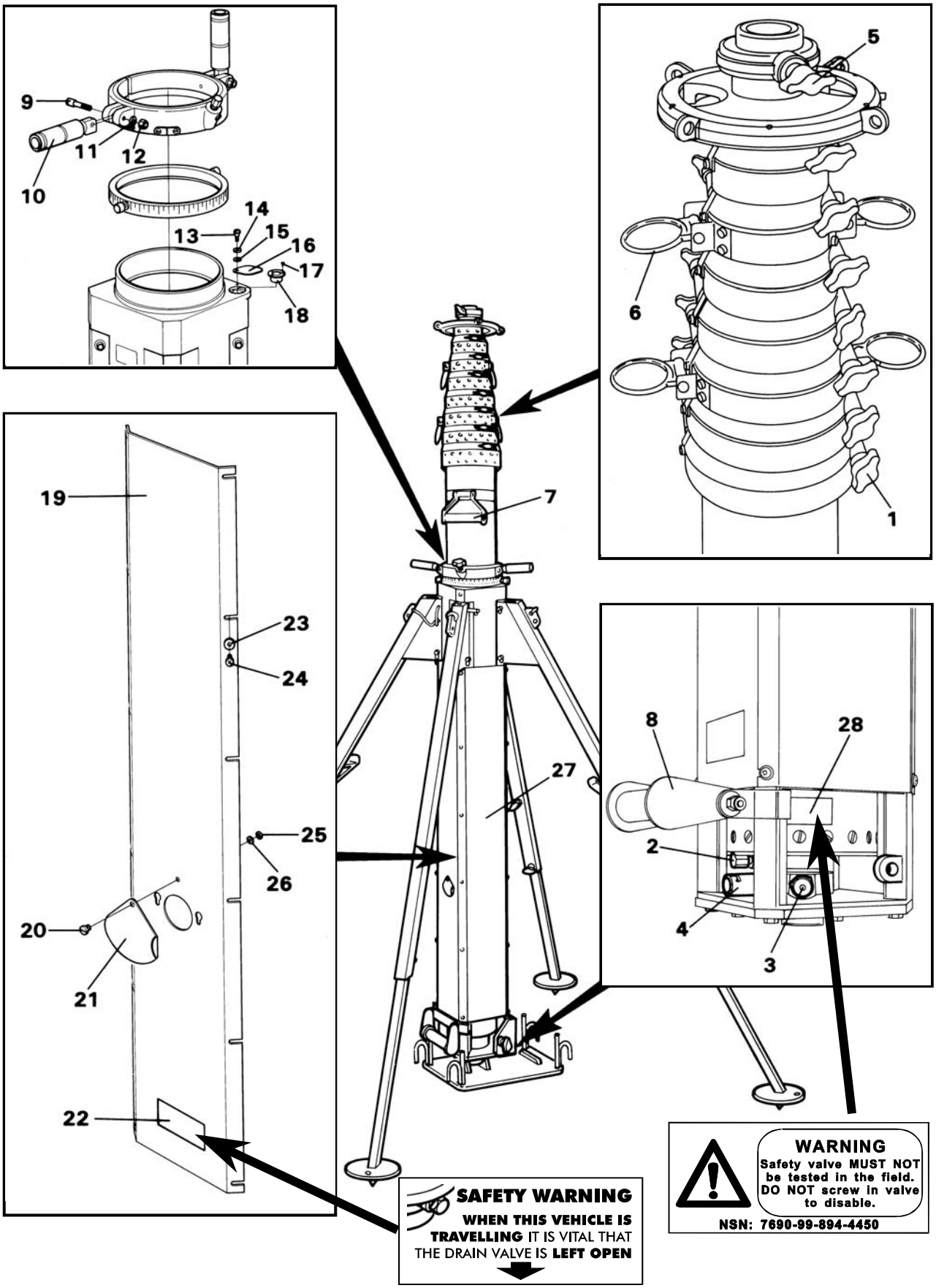
CHAPTER 5
REPAIR CHARTS



501. Repair Chart 101 - Scam 12 Mast Unit

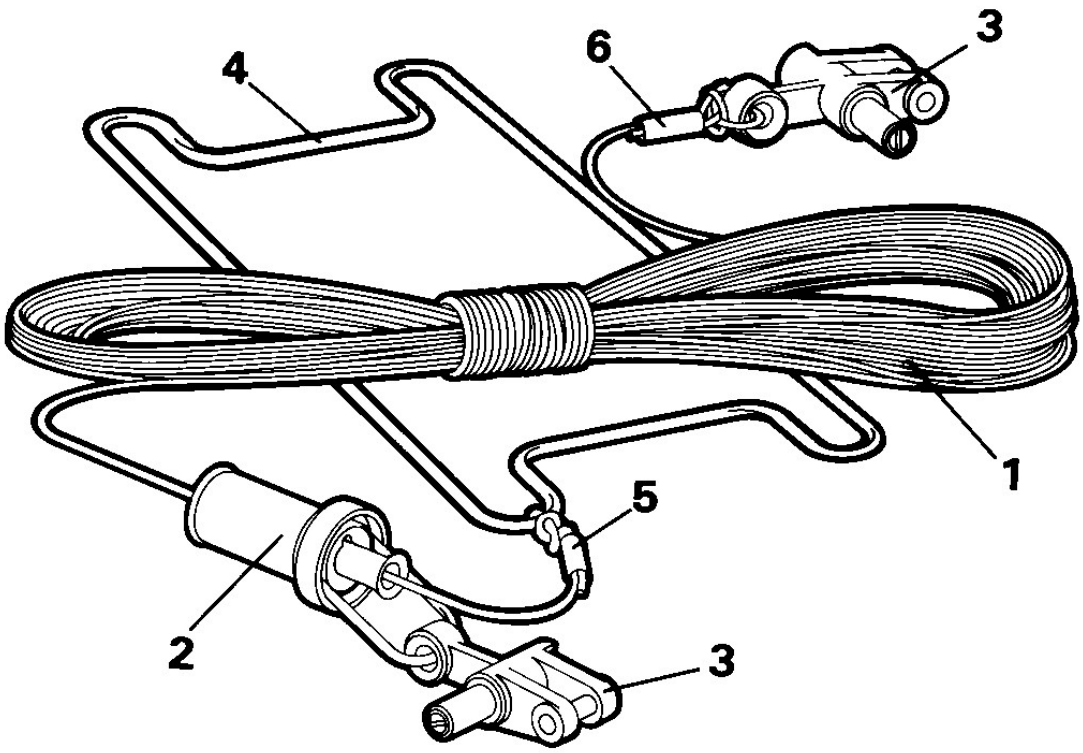
Item	Clark Masts Ref.	Description	Qty. per Kit	NSN
1	7677	Knob	14	5355-99-640-0700
2	6841	Drain Valve Screw	1	5985-99-636-8650
3	1852	Safety Valve	1	4820-99-114-3873
4	B3563	Bayonet Socket	1	4730-99-923-9039
5	8814	Clamp Screw	1	5985-99-756-2556
6	7630	Feeder Cable Guide Assembly	4	5820-99-639-3059
7	7703	Upper Lifting Handle Assembly	1	5985-99-636-8674
8	7696	Lower Lifting Handle Assembly	1	5985-99-636-8673
9	7078	Hinge Screw	2	5305-99-635-5245
10	7676	Handle	2	5985-99-636-8675
11	B1418	¼″ Spring Washer	2	5310-99-101-7284
12	B1136	¼″ BSF ‘Nyloc’ Nut	2	5310-99-120-1610
13	5357	Pivot Screw	1	5305-99-638-1602
14	B635	2BA Spring Washer	1	5310-99-771-6691
15	B43	2BA Plain Washer	1	5310-99-941-6867
16	5356	Cover	1	5999-99-787-0211
17	B1440	8BA × ¼″ Brass Ch Hd Screw	3	5305-99-120-1590
18	B5314	Circular Bubble Level	1	5210-99-628-7177
19	13372	Side Panel (for hot air access)	1	5340-99-535-8236
20	13371	Shouldered Screw	1	5305-99-037-0785
21	13370	Access Cover	1	5340-99-702-5474
22	13222	Safety Label	1	9905-99-768-3853
23	B2264	2BA Large Washer	24	5310-99-948-4940
24	B1972	2BA × ½″ Phillips Pan Hd Screw	24	5305-99-983-9854
25	B12074	M5 Hex Lock Nut	1	5310-99-122-5494
26	B5782	M5 Plain Washer	1	5310-99-122-3409
27	7056	Side Panel	3	5985-99-225-0744
28	19845	Safety Valve Warning Label	1	7690-99-894-4450

Note:- Items 19, 20, 21, 25 and 26 can be ordered separately or as an assembly - Side Panel Assembly part number 13369, NSN 5985-99-420-9358.

WARNING

Item 3, Safety Valve, should be checked every twelve months. A check should also be carried out after every service or if the Safety Valve has been replaced.

Note:- Detailed parts are listed in the Base Repair Information Folder.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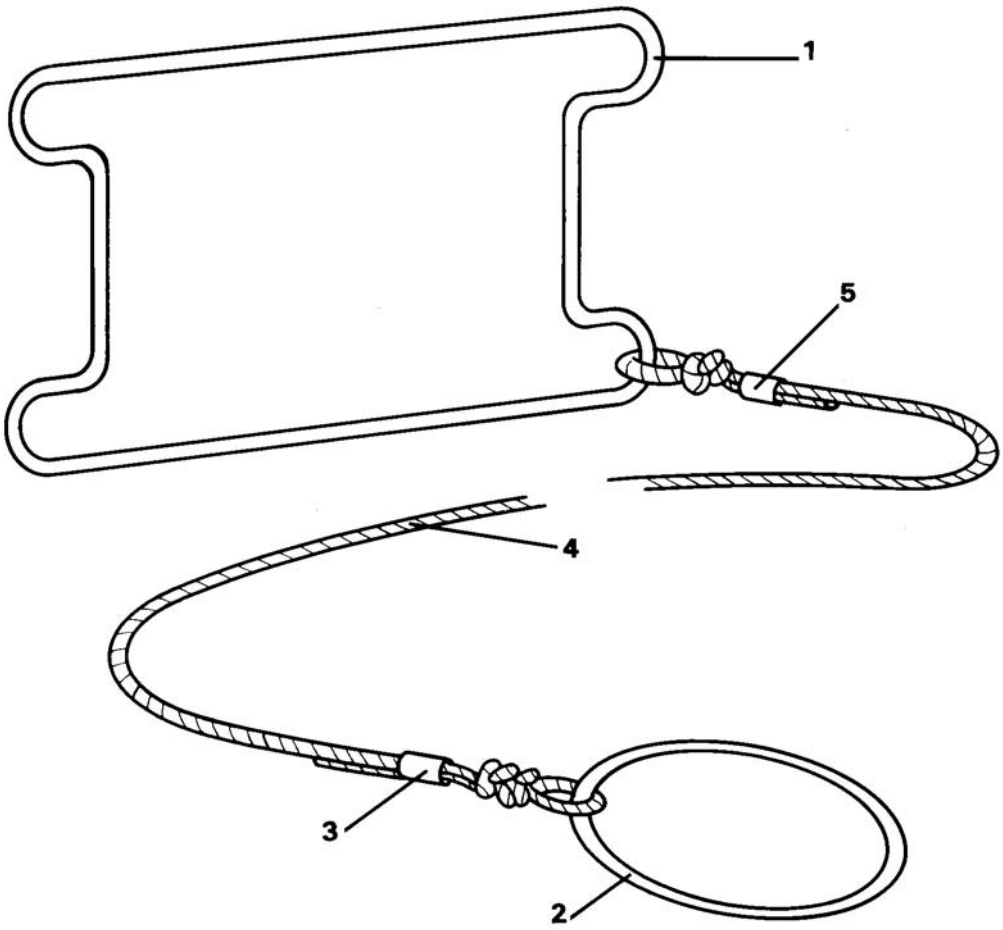
502. Repair Chart 102 - 60 ft Guy Assembly

Item	Clark Masts Ref.	Description	Qty. per Kit	NSN
1	B4325	Guy Rope 60 ft (19 m)	1 length	4020-99-638-1600
2	3870	Guy Tensioner	1	5985-99-624-7667
3	7547	'Genk' Snap Hook	2	5820-99-636-9251
4	6354	Spool	1	5985-99-620-4871
5	B4327	Black Sleeve	1	5975-99-753-6594
6	8115/2	Identification Sleeve	1	N/A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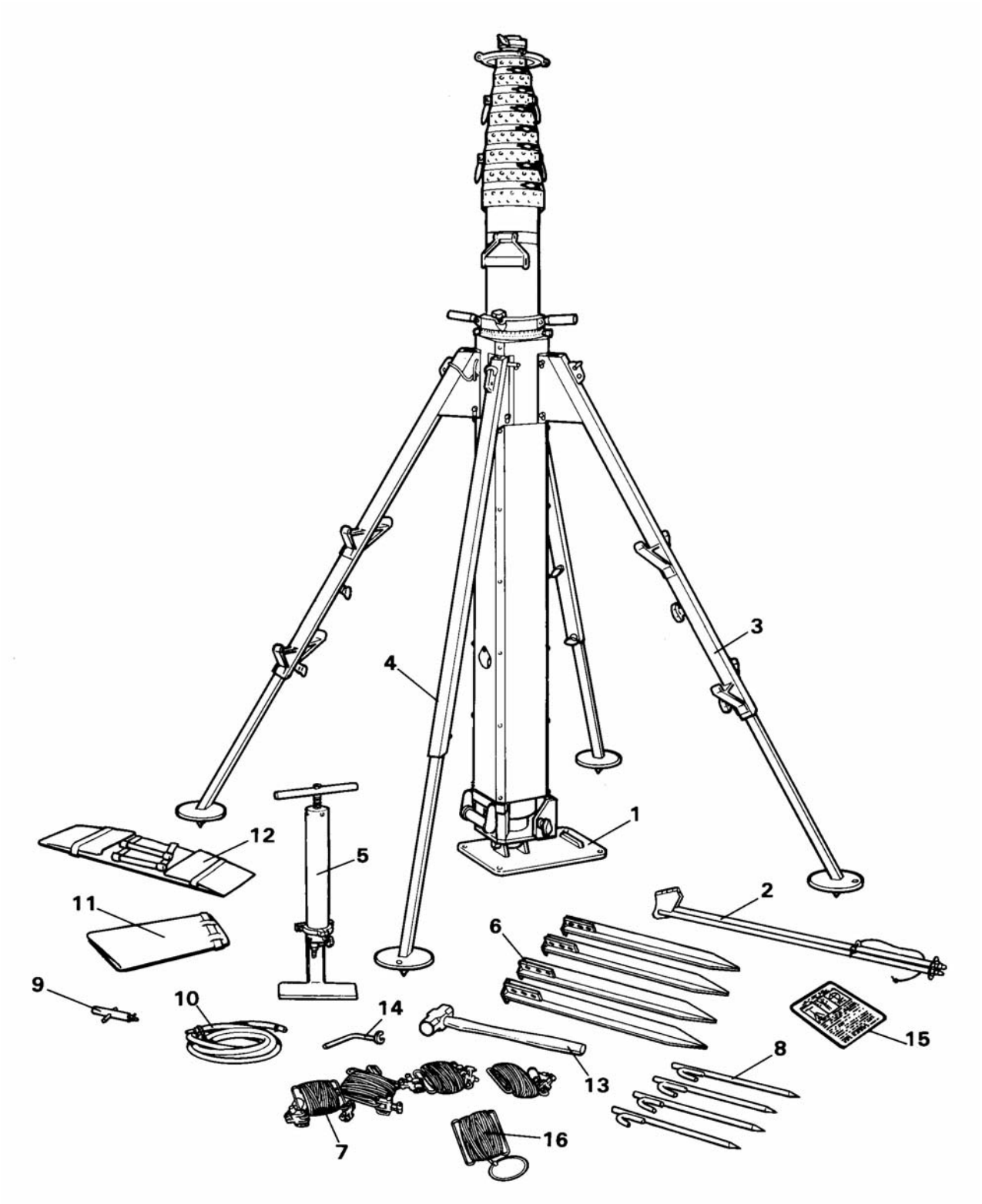
503. Repair Chart 103 - Picket Location Line

Item	Clark Masts Ref.	Description	Qty. per Kit	NSN
1	6354	Spool	1	5985-99-620-4871
2	6410	Picket Location Line Ring	1	5365-99-624-8125
3	8115/1	Identification Sleeve	1	N/A
4	B3860	ø4 mm Cord (White)	1 length	4020-99-638-1601
5	B4327	Black Marker	1	5975-99-753-6594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504. Repair Chart 104 - Scam 12 Mast Ancillary Items

Item	Clark Masts Ref.	Description	Qty. per Kit	NSN
1	7710	Mast Swivel Nest	1	5985-99-620-8833
2	7029	Prop Stand	1	5985-99-620-8834
3	3574	Stepped Field Leg	2	5985-99-222-3834
4	2336	Plain Field Leg	2	5985-99-104-4148
5	3508	Scam Handpump	1	4320-99-220-7006
6	2484	24″ Picket	4	4030-99-117-3766
7	6110	60 ft Guy Assembly	4	5985-99-117-3744
8	6409	14″ Spike	4	5985-99-620-2944
9	2384	Exhaust Key	1	5985-99-104-4236
10	2470	Hose Assembly	1	5985-99-104-4272
11	2434	Mast Cover	1	5985-99-104-4237
12	2932	Accessory Bag	1	8105-99-106-0904
13	B2621	4 lb Hammer	1	5120-99-949-4253
14	7715	Spanner	1	5120-99-620-9643
15	7269	Instruction Plate (Issue 2)	1	9905-99-620-8861
16	6108	Picket Location Line	1	5985-99-117-3742

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The Beaufort Wind Scale

Beaufort Number	Average Speed			Descriptive Title	Observations
	m.p.h.	kt.	km/hr		
0	0	0	0	Calm	Smoke rises vertically.
1	2	2	3	Light air	Direction shown by smoke but not wind sock.
2	5	5	8	Light breeze	Wind felt on face, weather vanes revolve.
3	10	9	16	Gentle Breeze	Leaves and twigs in motion; wind sock is filled but limp; wind extends light flag.
4	15	14	24	Moderate breeze	Small branches are disturbed; dust and loose papers raised.
5	21	19	33	Fresh breeze	Small trees in leaf begin to sway.
6	28	24	45	Strong breeze	Large branches in motion; telegraph wires whistle.
7	35	30	56	Moderate gale	Trees in motion; inconvenience felt when walking against the wind.
8	42	37	67	Fresh gale	Breaks twigs off trees; walking made difficult.
9	50	44	80	Strong gale	Slight structural damage occurs; chimney pots and slates are removed.
10	59	52	94	Whole gale	Trees uprooted; considerable damage occurs.
11	69	60	110	Storm	Rarely experienced; very widespread damage.
12	above			Hurricane	
	75	65	120		