

Vol. 1

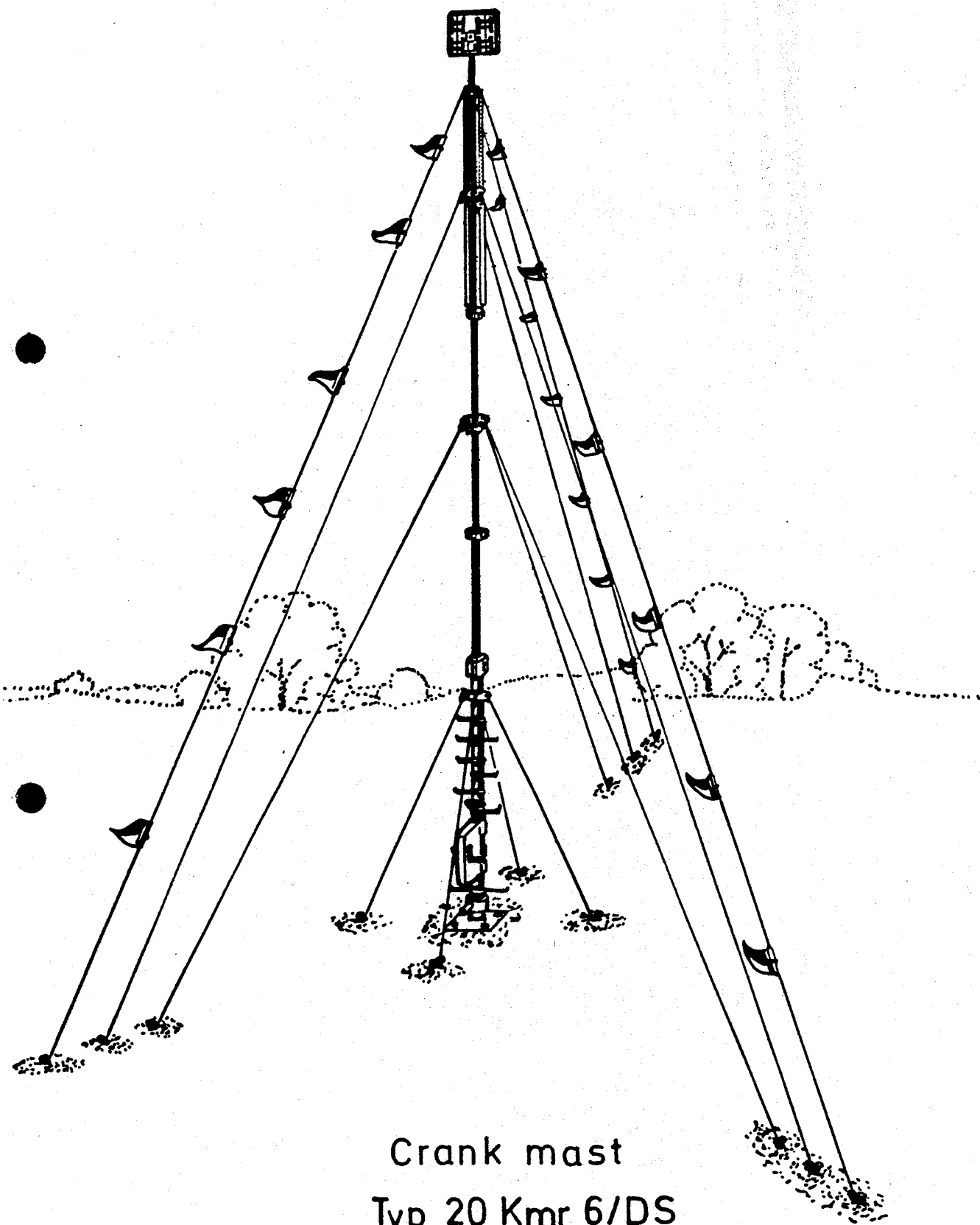
List of Instructions

The documentation of "Telescoping Manually-Cranked Mast 20 Kmr 6/DS" consists of the following parts:

"Telescoping Manually-Cranked Mast Type 20 Kmr 6/DS" Vol. 1	Description, Operating Instructions
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"Telescoping Manually-Cranked Mast Type 20 Kmr 6/DS" Vol. 2	Maintenance Instructions, Repair
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"Telescoping Manually-Cranked Mast Type 20 Kmr 6/DS" Vol. 3	Illustrated Spare Parts' List
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Crank mast
Typ 20 Kmr 6/DS

Safety Specifications for Erecting and Dismantling the Mast

1. The mast must be erected and dismantled only by personnel trained or instructed at the equipment (at least 3 persons).
2. During the mast's erection and dismantling as well as during any kind of work done at the erected mast, safety/steel helmets have to be used.
3. Before erecting the mast, the guy anchors' tractive power has to be checked in accordance with chapter 2.1.
4. The mast must not be erected or dismantled at wind speeds exceeding 18 m/s.
5. During or before a thunderstorm, erecting or dismantling masts has to be avoided as well as staying near erected masts. During that time, the service personnel has to stay in cabins or in driver's cabs.
6. The lightning protection must be mounted correctly at strictly every erection.
7. At extension heights exceeding 20 m (measured at the antenna top), the flight obstruction marking must be set.
8. Before every extension and retraction, the guying systems have to be slackened. This applies to even the smallest corrections of height.
9. Ascending the mast's base is allowed only if the base guying is properly set. At every ascent a safety belt must be worn.
10. Non-observance of the erecting specifications or incorrect handling can lead to personal and/or material damage. Therefore these specifications have to be respected scrupulously.

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1. Technical Description

1.1 Mast: Type 20 Kmr 6/DS

1.1.1 Description

The antenna mast 20 Kmr 6/DS is a telescoping tubular mast, extendible mechanically by means of ropes and a hand crank.

Extension and retraction are done by necessity, thus guaranteeing insured operatability also under aggravated conditions like angular position or icing.

The extended mast can be locked at any height by means of a built-in friction disk brake acting automatically.

Erection and dismantling of the mast is possible at a ground slope up to 10° in any direction. Thanks to the installation aid integrated in the mast, wind speed during that time can be up to 18 m/s if an FM 200 Band II antenna is used.

Torsion of the mast around the vertical line when guyed is possible only within the guying segments (120°).

For the installation of the mast three persons are needed.

1.1.2 Technical Data

Measurements:

Height of mast, extended (up to middle of antenna) 21 m

Length of mast, retracted 4100 mm

Main tubular member ϕ .. 140 mm

Antenna connection peg .. 40 mm

Height of crank 810 mm

Height of crank including mast base..... 1000 mm

Weight:

Mast + crank ... about 138.5 kg

Spare parts 20 S about 193.5 kg

Cranking Power During Extension

F_{\max} (l=250 mm) 100 N

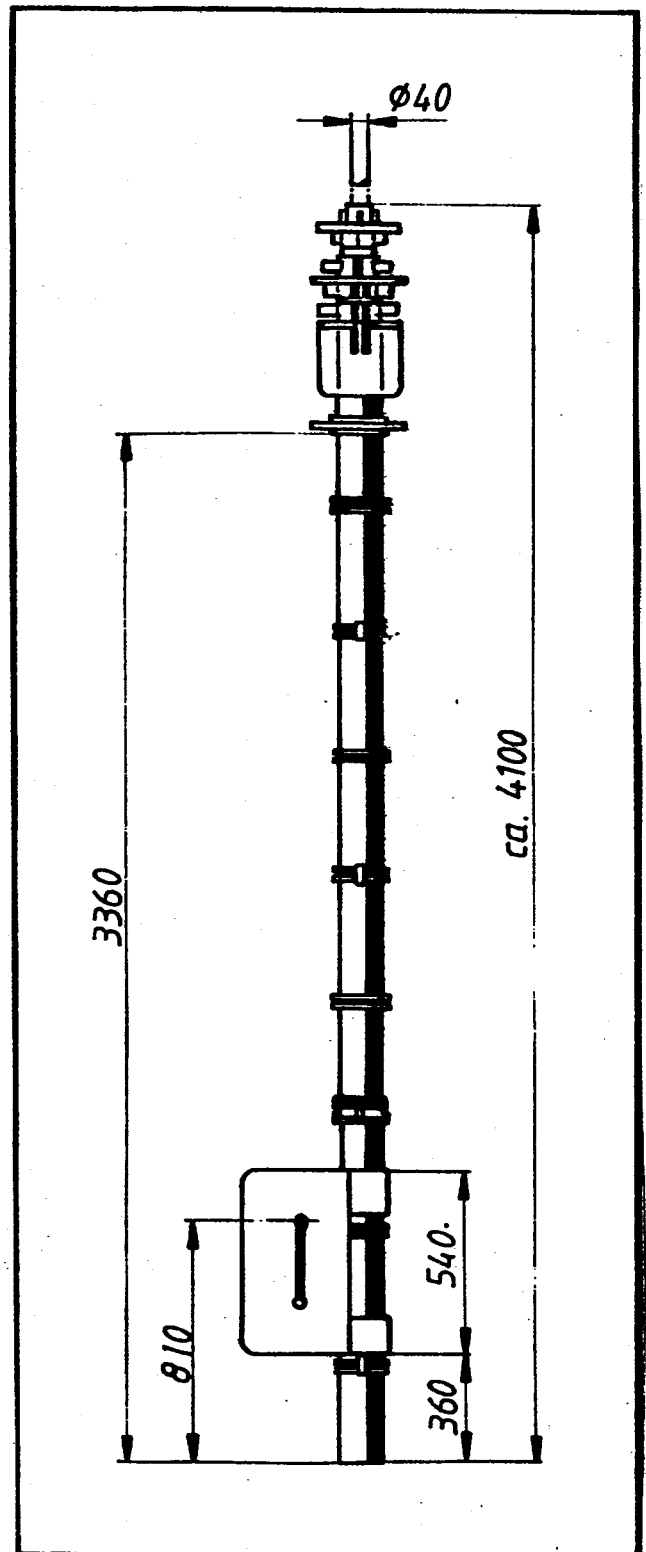


FIGURE 1

1.1.3 Admissible Wind Load Stressing or Wind Speed

(calculated for head load/1 antenna FM 200 Band II):

Load case 1: Operation Without Formation of Ice

Max. dynamic pressure q_0 max 900 N/m²

Max. wind speed v 38 m/s
or 137 km/h

Antenna's inclination max. $\pm 2^\circ$

Load case 2: Operation With 2 cm of Ice All Around

Max. dynamic pressure q_0 max 670 N/m²

Max. wind speed v 33 m/s
or 120 km/h



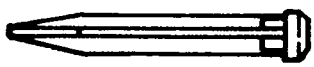


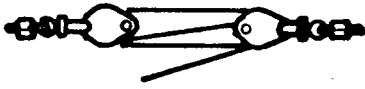
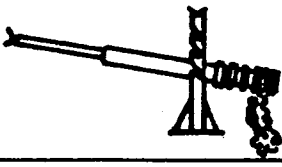


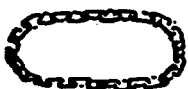
Antenna's inclination max. $\pm 2^\circ$

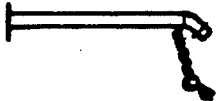
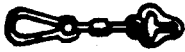
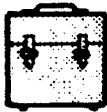

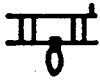
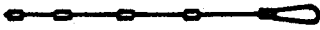
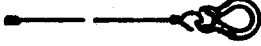
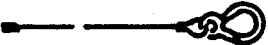


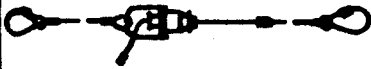
Load case 3: Installation



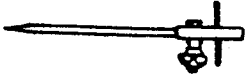
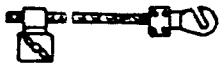

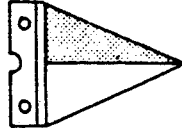





Max. dynamic pressure q_0 max 200 N/m²




Max. wind speed v 18 m/s
or 65 km/h

1.2 Accessories

Pieces	Designation	
1	Mast base	
4	Stake, long 400	
13	Guy anchor, long 800	
1	Sledgehammer, 5 kg	
1	Guy anchor tester max. testing power about 5 kN	
1	Pulley train	
	Guy anchor puller, consisting of - trestle - lever tube - chain	
1	Trestle	
1	Lever tube (auxiliary mast)	
1	Chain min. breaking load 1400 kg	

2	Auxiliary prop	
4	Guy wire grip	
2	Bag for accessories, big	
3	Guy wire, 16.5 m long. Rope Φ 5; 6x19 DIN 3060-SE marked YELLOW	
11	Winch for the guy wires	
1	Measuring tape PVC round rope Φ 2.8	
3	Guy wire, 22.5 m long. Rope Φ 5; 6x19 DIN 3060-SE marked BLUE	
3	Guy wire, 24.5 m long. Rope Φ 5, 6x19 DIN 3060-SE marked RED	
9	Guying unit	
9	Double guy wire grip	
3	Auxiliary rope round strand rope 2 DIN 3055	

4	Guy wire, 6.2 m long. Rope Φ 5; 6x7 DIN 3055-SE marked GREEN	
1	Lightning protection cable, 22 m long	
4	Stake	
3	Lightning protection cable, short	
1	Bag for accessories, small	
18	Flight warning pennon	
18	Rubber ring	
3	Flight warning ribbon, red	
3	Flight warning ribbon, white	
1	Safety belt	
12	Locking hook 60	

1	Mast top	
1	Wire tension measuring device	
1	Anemometer	

1.3 Transport, Loading

For transportation the mast has to be retracted completely. If it is transported on a special vehicle designed for this purpose, all the transport fixing devices have to be closed, and the appropriate protections have to be mounted.

2. Operating Instructions

2.1 Site Selection and Earth Anchorage Check

Before every new erection, the suitability of the site chosen, particularly the local ground conditions, have to be checked according to the safety specifications. The guy anchors' tractive power have to be determined according to the individual ground conditions. One guy anchor is staked provisionally. Then the crew leader takes out the following test:

- (1)- Position anchor pulling trestle (2/1) with lever tube (2/2), auxiliary props (2/3) and testing device (2/4) according to figure 2.
Pulling angle: $\alpha \approx 45^\circ$

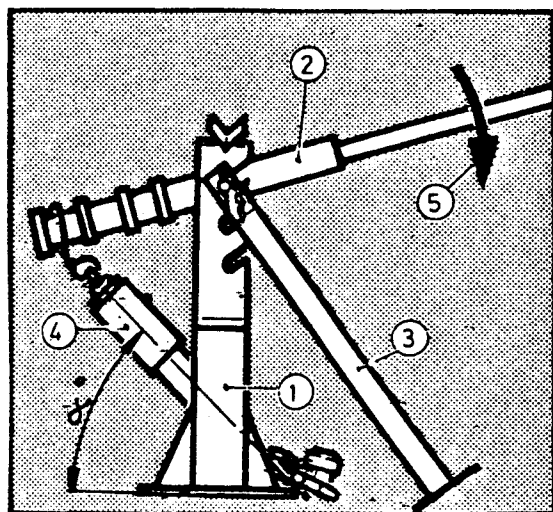


FIGURE 2

- (2)- Put the guy anchor under strain by applying slowly but constantly increasing pressure to the lever tube in the direction of the arrow (2/5), until first motions of the guy anchor in the pulling direction can be noticed (3/1).

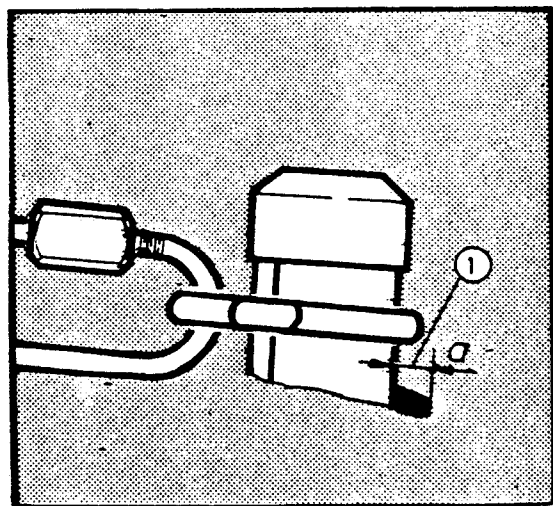


FIGURE 3

(3)- Read on the guy anchor tester the value thus reached and compare it to the values in table 1. (Table can be found in the guy anchor box's lid, too.)

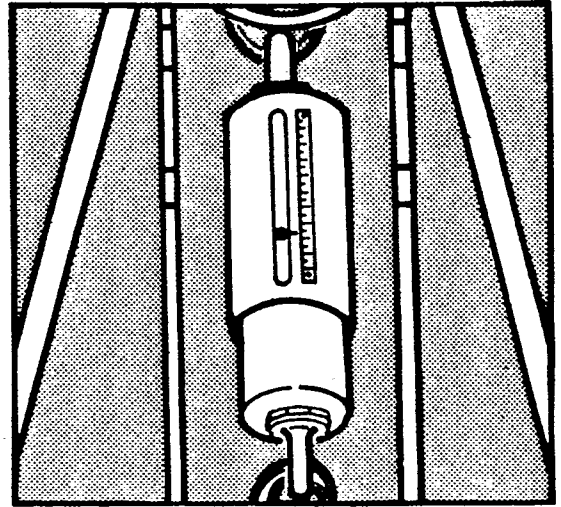


FIGURE 4

If the desired values indicated in table 1 (80 or 57, respectively) are not reached, a decision about the erection has to be made on the ground of the measured values (wind speed and tractive power of the guy anchors) which have to be compared with the indications in table 1.

Remark: The evaluation shall be based also on weather reports and wind warnings.

Stress On Guy Anchors Depending Upon Wind Speed

Wind Force	Wind Speed up to		Scale Divisions of Guy Anchor Tester Without Ice
	m/s	kn	
0	0.2	0.4	18
1	1.5	3	18
2	3.3	6	18
3	5.4	10	18
4	7.9	16	19
5	10.7	21	22
6	13.8	27	25
7	17.1	33	30
8	20.7	40	38
9	24.4	47	48
10	28.4	55	59
11	32.6	63	80
12	36.9	71	--
13	41.4	80	--

At every mast erection, values 80 or 57, respectively, are to be aimed at. In case of values being lower than that, see Operating Instructions, 2.1.

TABLE 1

2.2 Erection of the Telescoping Manually-Cranked Mast

2.2.1 Determination of Points of Anchorage

REMARK: The four base guying points, placed offset from each other at 90° angles and at a distance of 4.25 m from the mast base's center, form the inner guying circle (5/1). The other three guying circles have radiuses of 10.5 m for the first guying level (5/2), 11.25 m for the second (5/3) and 12 m for the third (5/4), respectively. Here, the guying points are placed offset from each other at 120° angles. Each guying circle's radius is measured by means of a measuring tape.

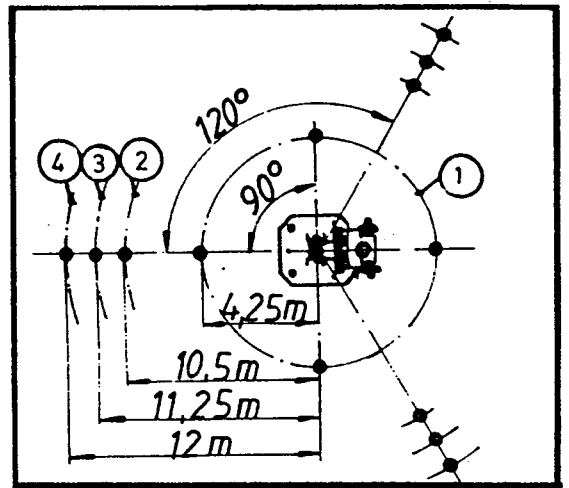


FIGURE 5

2.2.1.1 Mast Base's Anchorage

(1) Lay down the turnable mast base at the chosen site in such a way that the auxiliary marking (grooved drive stud 6/1) points to the lift-up direction. Peg (6/2) points up vertically. Mast base is anchored to the ground by means of 4 stakes (long 400 mm, 6/3).

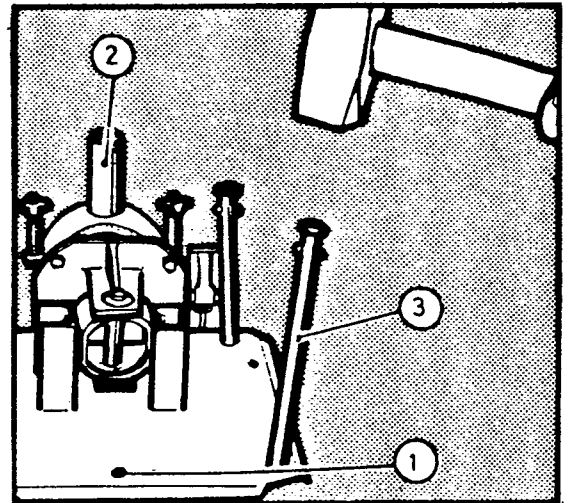


FIGURE 6

- (2) Open attachment screw (7/1) completely.
- (3) Lock turning head (7/2) by means of locking lever (7/3).

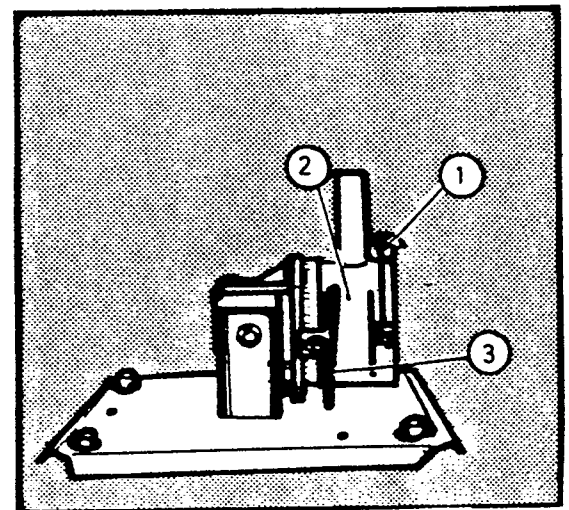


FIGURE 7

2.2.1.2 Determinaion of Points of Anchorage for the Base Guying

- (1)- Hold loop of measuring tape (8/1) over hinge bolt (8/2).
- (2)- Tauten measuring tape and run it over the auxiliary marking (8/3) in lift-up direction.
- (3)- Push guy wire grip with safety hook (9/1) over guy anchor (9/2) and stick it into the ground immediately beside the first marking on the measuring tape (9/3) in such a way that the safety hook (9/1) points toward the mast base.
- (4)- Determine the other three earth anchorages by running the measuring tape over the base plate's edges in such a way that the resulting angles are 90° each (5/1). Insert guy anchor as under point(3.)

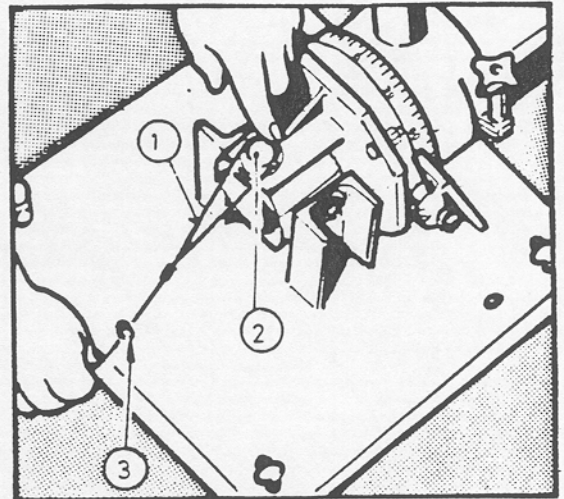


FIGURE 8

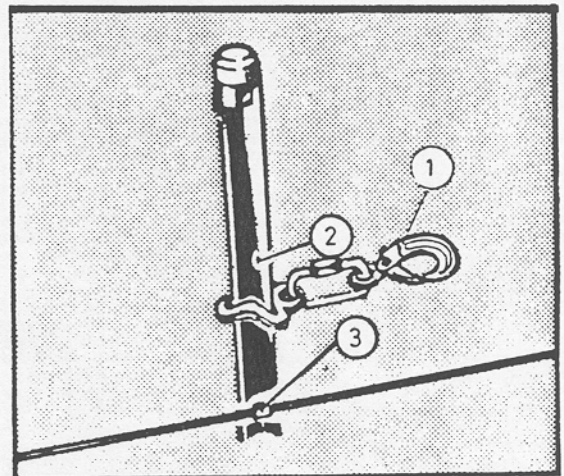


FIGURE 9

2.2.1.3 Determination of Anchorage Points for Guying Levels 1, 2 and 3

- (1)- Determine direction of guying points by means of the auxiliary marking (10/1). Lay measuring tape out taut in each of these directions.

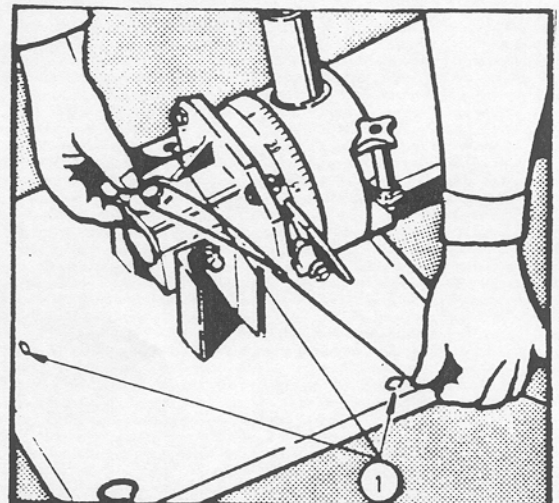


FIGURE 10

- (2)- Push double guy wire grips (11/1) each on one guy anchor.
- (3)- Stick the three guy anchors located on a line into the ground immediately beside the markings (11/2) in such a way that the double guy wire grips point toward the mast base.

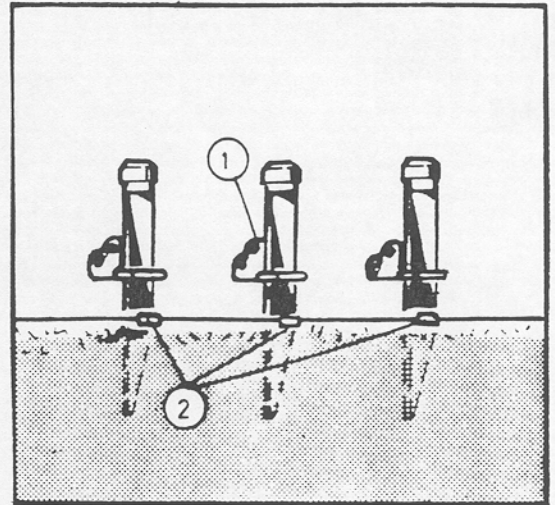


FIGURE 11

2.2.1.4 Staking the Guy Anchors

REMARK: Take care that by means of the sledgehammer (12/1) the guy anchors always are staked into the ground vertically.

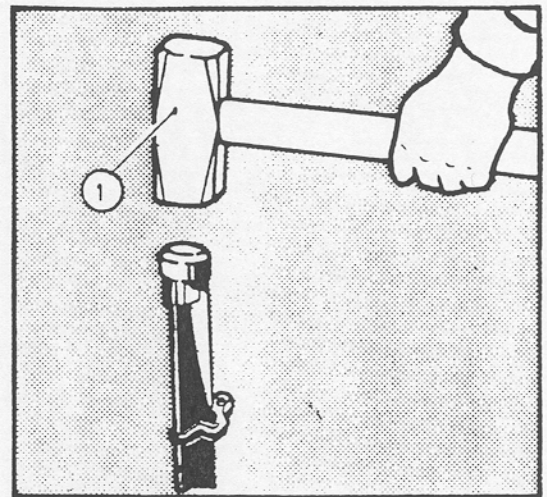


FIGURE 12

2.2.2 Installation of the Mast

The mast is lifted from the vehicle and carried to the installation site:

- (1)- Insert mast into turning head of the mast base (13/1) and lay it on the ground. The crank box (13/2) points up vertically.
- (2)- Lock mast by means of star grip screw (13/3).

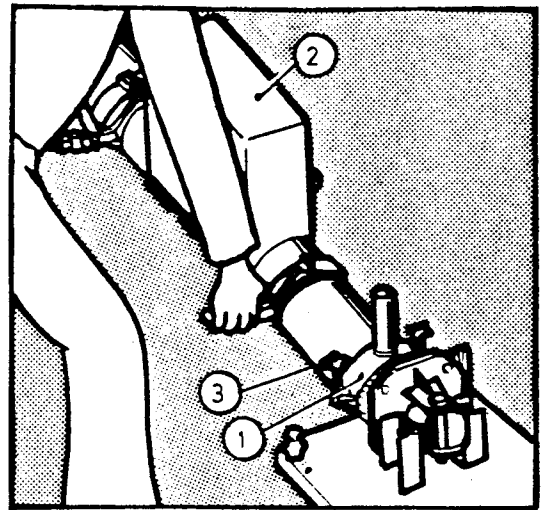


FIGURE 13

- (3)- Insert mast top (14/6) in such a way that the position of the openings (14/1 and 14/2) and that of the slits (14/3) in the mast top's insert end (14/4) corresponds to the disposition of rollers (14/5) in the mast top clamp (14/6). Insert tommy screw (14/7) from below and pull tight.

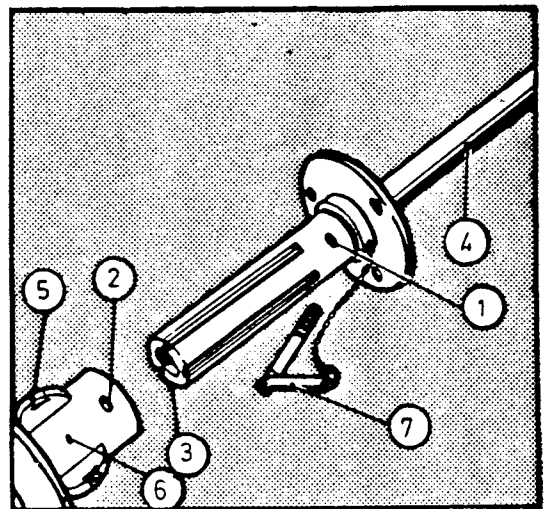


FIGURE 14

- (4)- Lay mast upon trestle (15/1) placed ready for this purpose.

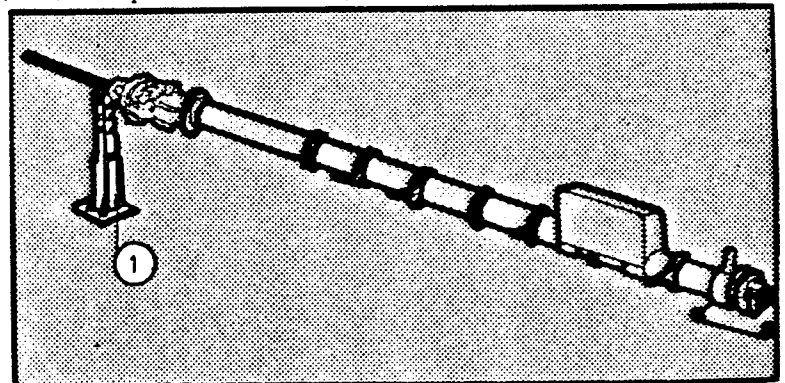


FIGURE 15

2.2.3 Attachment of the Guy Wires to the Mast

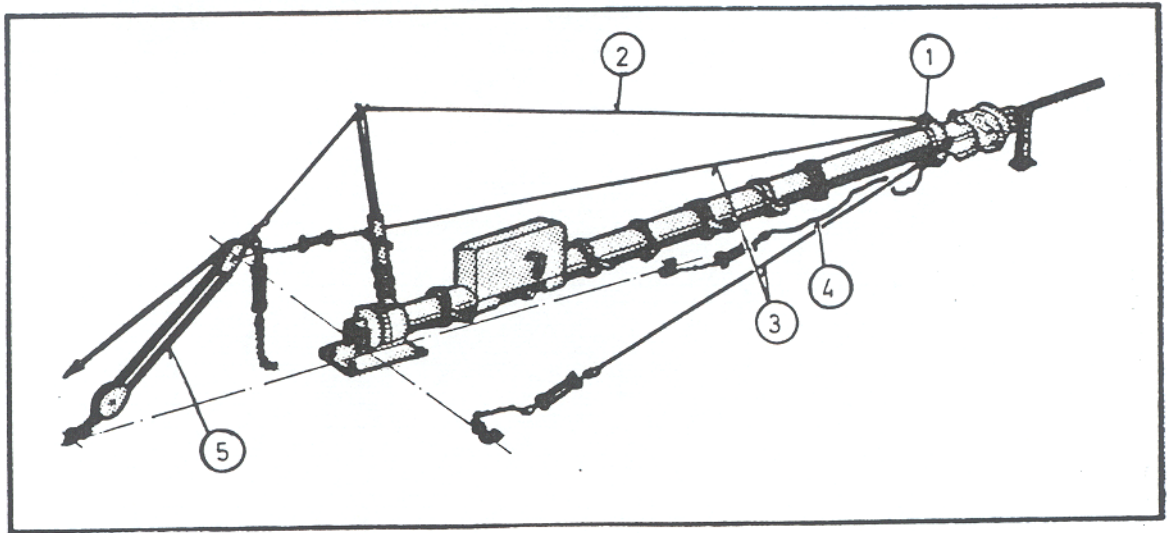


FIGURE 16

2.2.3.1 Base Guying

The base guying is to be attached in accordance with figure 16. The guy wire round plate and the hooks belonging to it (16/1) are marked green.

- (1)- Hang safety hook (17/1) into the guy wire round plate's (17/2) opening and lay guy wires in the direction toward the anchorage.

REMARK: The safety hook can be opened by pushing up the locking bar (17/3). By pulling the guy wire the safety hook closes automatically.

- (2)- Slip lever tube (18/1) on peg (18/2).
- (3)- Put guy wire (16/2) over lever tube's fork.

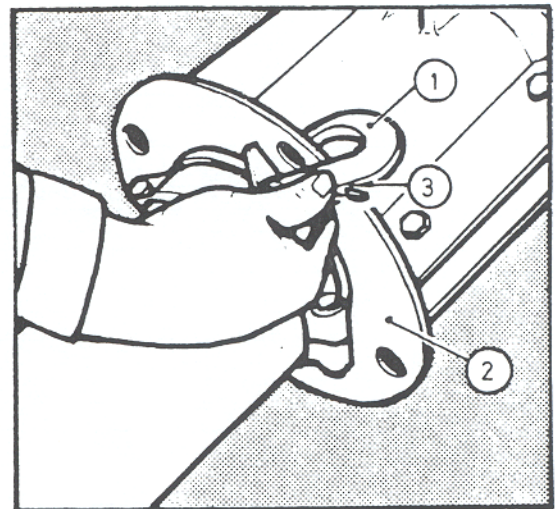


FIGURE 17

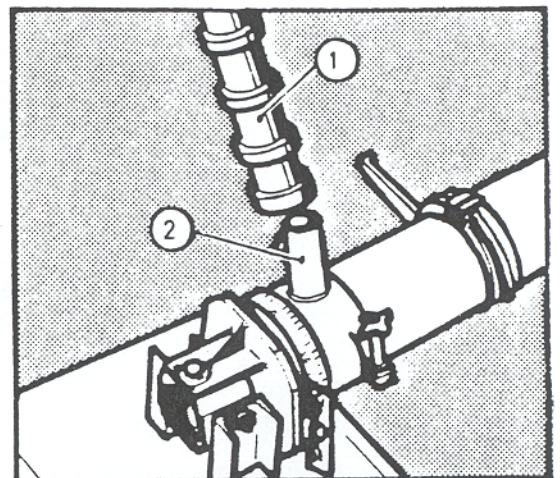


FIGURE 18

(4)- Hang roller bracket (19/1) of the pulley train (16/5) by the extra link into the ring (19/3) of the guy wire (16/2). Close sleeve nut of the extra link.

REMARK: The pulley train's (16/5) pulling rope must go over the roller bracket (19/1).

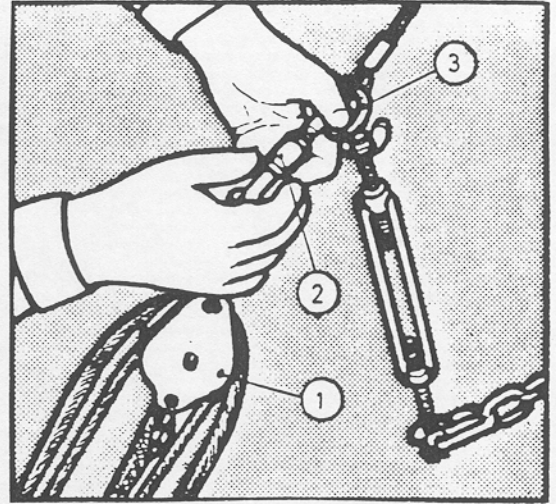


FIGURE 19

(5)- Hang the pulley train's roller holder (20/1) by the extra link (20/2) into the guy wire grip's extra link (20/3).

REMARK: Guy wire grip's hook (20/4) must remain free.

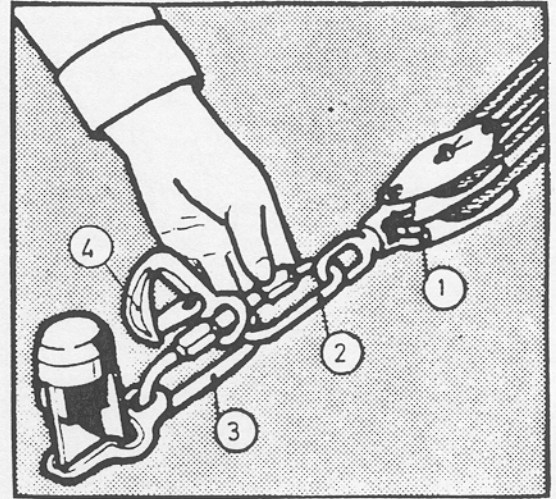


FIGURE 20

(6)- Hang guyings (16/3 and 16/4) by chains into safety hooks of the guy wire grips (figure 21).

REMARK: Hang in the chain for the two lateral guyings (16/3) at such a length that the wires are slightly tensioned. The tensioning turnbuckles of the base guyings must be adjusted to half the span (about 500 mm) (figure 22).

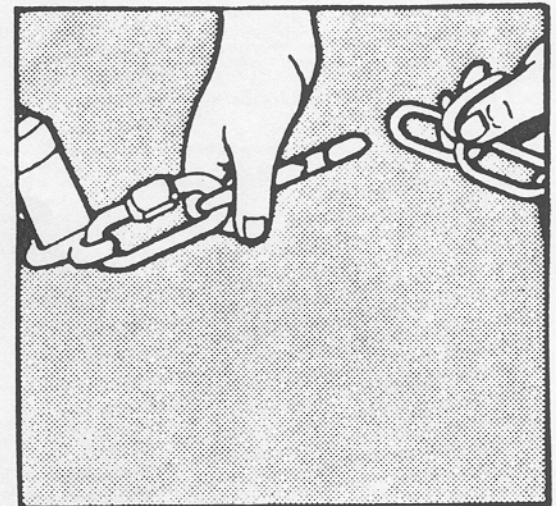


FIGURE 21

2.2.3.2 Guying Levels 1, 2 and 3

The ropes of guying levels 1, 2 and 3 are hung into the colour marked guy wire round plates by means of the safety hooks, and loosely laid in the direction toward the corresponding guy anchorage.

REMARK: The colours of the safety hooks must correspond to the colour marking of the guy wire round plates:

- Guying 1: YELLOW
- Guying 2: BLUE
- Guying 3: RED

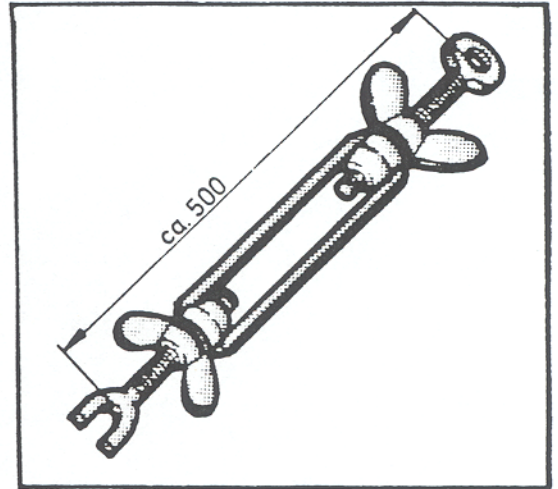


FIGURE 22

2.2.3.3 Installation Aid Guying

Hang the ropes of the installation aid guying by the locking hooks (23/1) into the thimbles (23/2) of the ropes which can be pulled out of the mast top clamp. In doing so, lay ropes loosely to the ground.

REMARK: Application of the installation aid guying is dispensable only if an erection height of 12 m is guaranteed not to be exceeded.

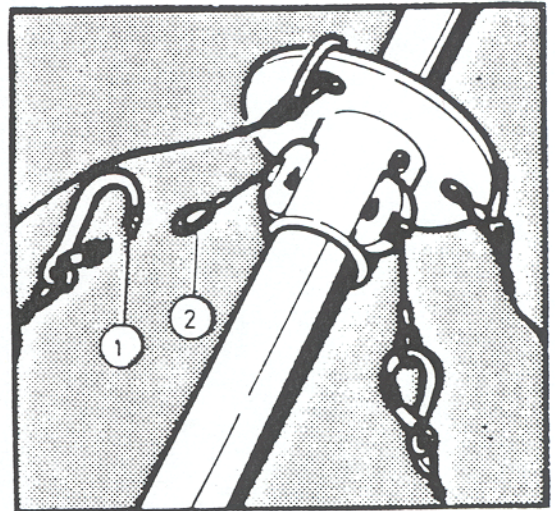


FIGURE 23

2.2.4 Antenna Installation

(1)- Push antenna (24/1) in a downward hanging position onto the mast top (24/2) until it comes to the stop in such a way that the peg (24/3) is placed within the guide slit (24/4) of the antenna support. Lock the antenna by means of star handle (24/5).

(2)- Connect antenna cable. Hang locking hook of the antenna cable's pull relief into grip (24/6).

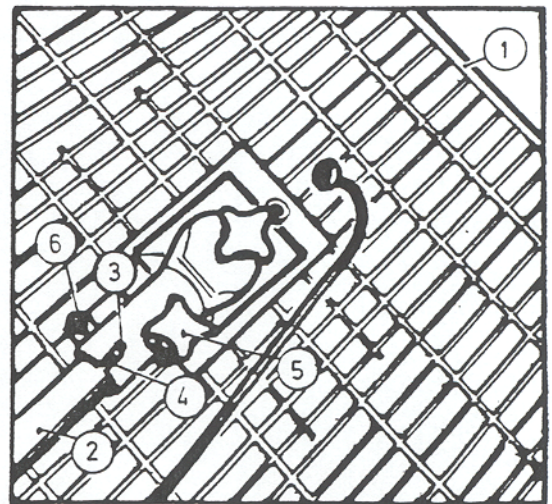


FIGURE 24

- (3)- Fasten lightning protection cable (25/1.) to mast top (25/3) by means of butterfly nut (25/2).

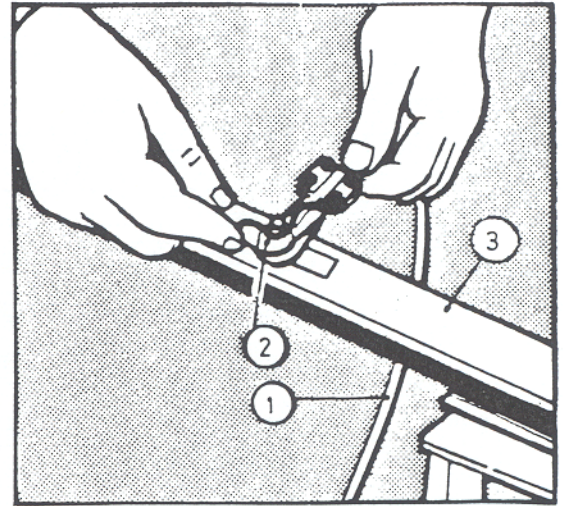


FIGURE 25

- (4)- Insert antenna cable and lightning protection cable into guide grips (26/1).

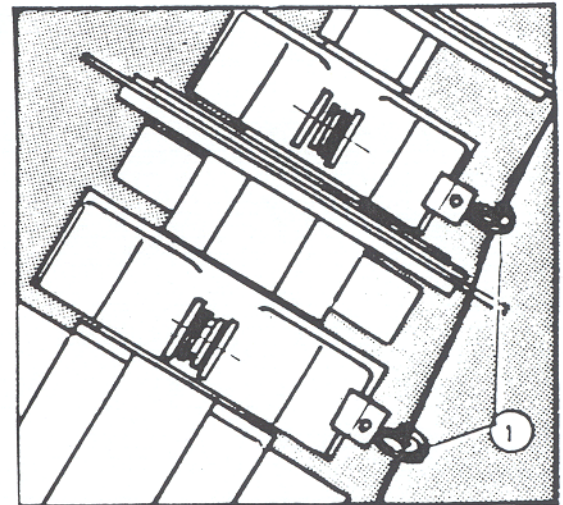


FIGURE 26

2.2.5 Setting of Flight Obstruction Marking

At extension heights exceeding 20 m, the flight obstruction marking must be set. The flight warning ribbons marked red and white are designed to make visible the top of the mast; the red and white pennons (6 per guy wire) represent the obstruction marking for the 3 guy wires most distant from the center of the mast.

- (1)- Hang red flight warning ribbons into eyelet screws (27/1) by means of locking hooks.
- (2)- Hang white ribbons into eyelet screws (27/2).

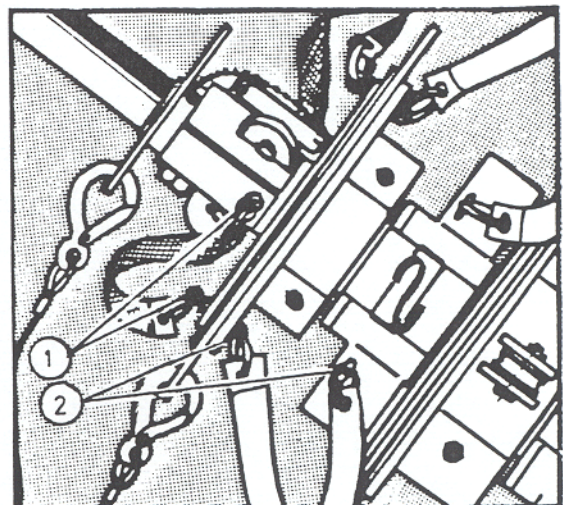


FIGURE 27

- (3)- Slip rubber ring (28/1) on black marking (28/2). Lay flight warning pennon over the rope in such a way that the rubber ring is placed within the slot.

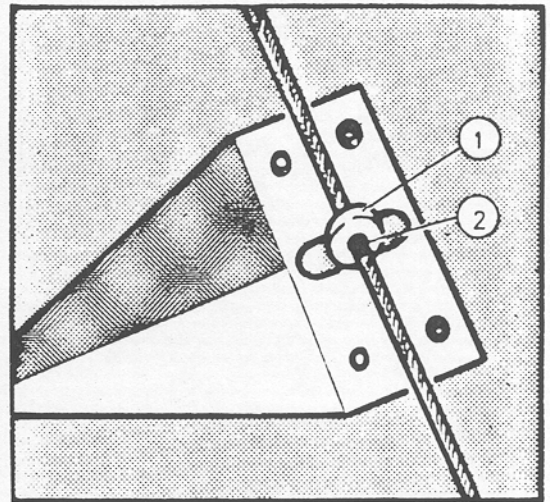


FIGURE 28

2.2.6 Erection of the Mast

REMARK: At wind speeds exceeding 18 m per second, the mast must not be erected or dismantled.

- (1)- Pull the pulling rope (29/1) until the mast stands vertically. During erection, guide auxiliary mast manually.

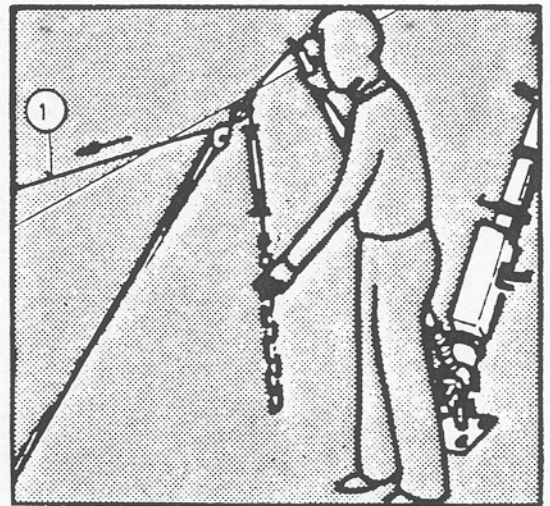


FIGURE 29

- (2)- As soon as the telescoping manually-cranked mast stands approximately upright, hang the chain of the base guying wire (30/1) into the safety hook (30/2) of the guy wire grip.

ATTENTION: The mast must be held by means of the pulley train until the last base guying wire is fastened. Only then the pulley train may be taken off.

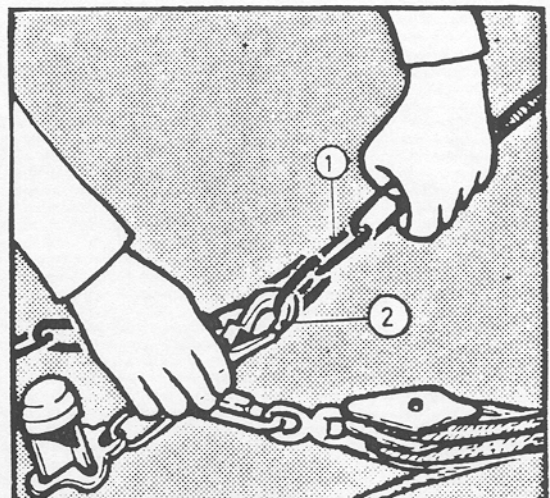


FIGURE 30

2.2.7 Alignment of the Mast

- (1)- Set up the mast vertically by adjusting the tensioning turnbuckles fitted into the guy wires. The mast is aligned as soon as the air bubble of the level (31/1) stands within the adjusting circle.

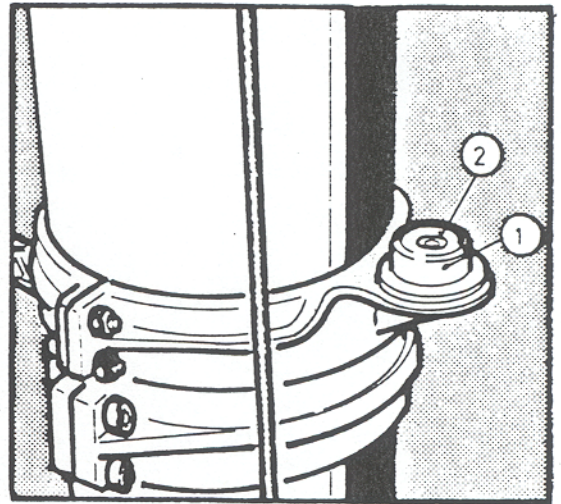


FIGURE 31

- (2)- Regulate the necessary initial tension of 1500 N by uniformly re-tensioning the tensioning turnbuckles.

REMARK: Should the tensioning width of the tensioning turnbuckles not be sufficient, the chain would have to be re-set. In doing so, the tensioning turnbuckle has to be adjusted to the maximum length again (see figure 32).

While the chain is re-set, the mast always has to be sustained by at least one person in order to avoid its overturning.

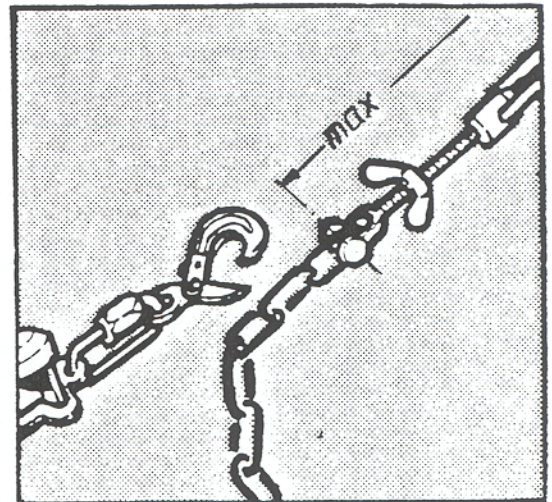


FIGURE 32

2.2.8 Control of Wires' Tension

- (1)- Turn back the adjusting knob (33/1) until it comes to the stop.
- (2)- Hold the wire tension measuring device to the guy wire in such a way that the latter passes by the rollers (33/2) at the side of the measuring cylinder and finds its place between the lever (33/3) and the cam of the measuring cylinder (33/4).
- (3)- Turn the adjusting knob clockwise until the lever's tip (33/3) reaches the red marking.

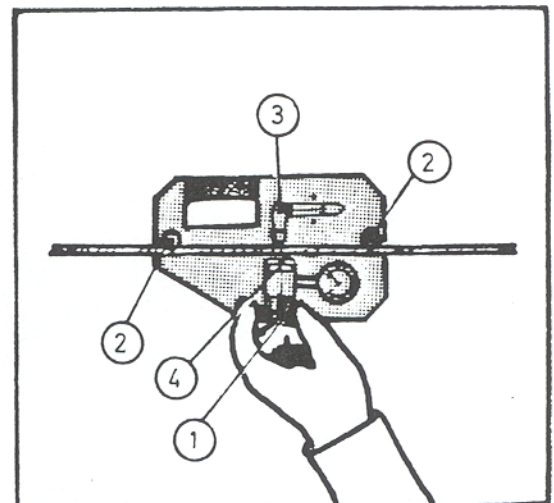


FIGURE 33

(4)- Read scale value and compare it to the values required for the initial tension (see chapter 2.2.7 no. (2) and chapter 2.2.11).

2.2.9 Extension of the Mast

REMARK: During the erection of the mast to any height exceeding 20 m make sure that the flight warning ribbons are sagging freely during the entire act of extension.

(1)- Extend the mast to a height of 12 m by means of the winch crank (34/1).

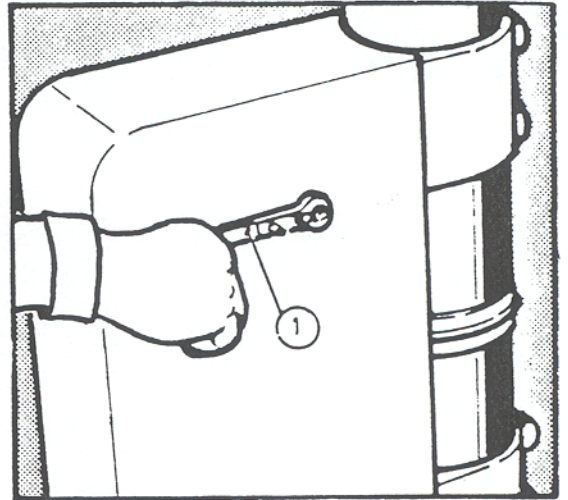


FIGURE 34

REMARK: The extension height of 12 m is reached when the red markings (35/1) on the auxiliary ropes have arrived at the level of the crank box's upper edge.

(2)- Hang the locking hooks of the installation aid wires into the guy wire grips of the guy anchorages most distant from the center of the mast.

REMARK: Take care that the installation aid wires are fastened only to the corresponding guy anchorages.

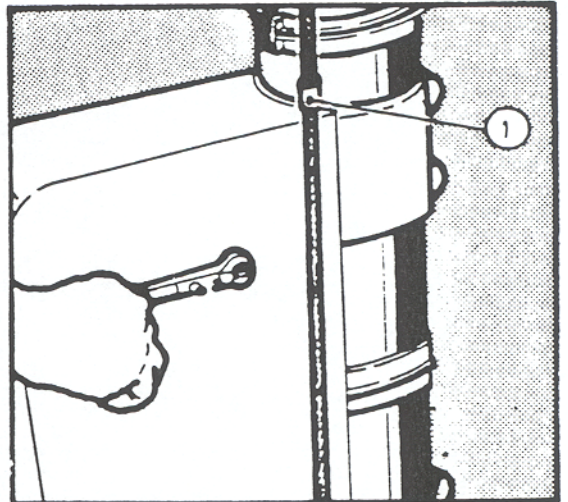


FIGURE 35

(3)- Draw the loose end of the rope (36/1) through the tensioning ball (36/2).

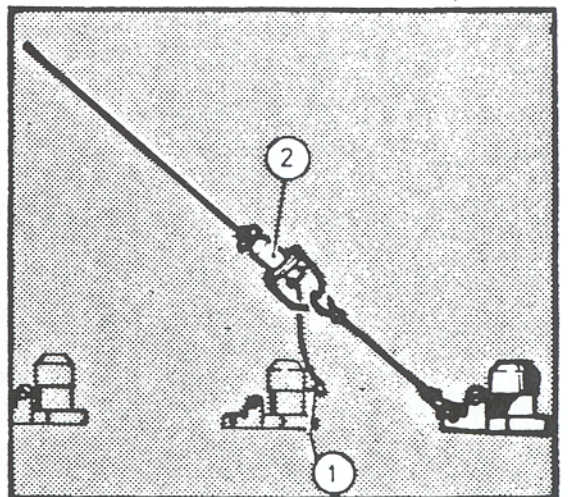


FIGURE 36

REMARK: Pre-tension the installation ropes only until the installation aid integrated in the mast begins to become effective. This can be seen by the thimbled (37/2) rope's (37/1) starting to be pulled out of the mast top clamp (37/3). Take care that all of the three ropes are pre-tensioned uniformly. However, the installation aid ropes must not be pulled out of the mast top more than about 10 cm.

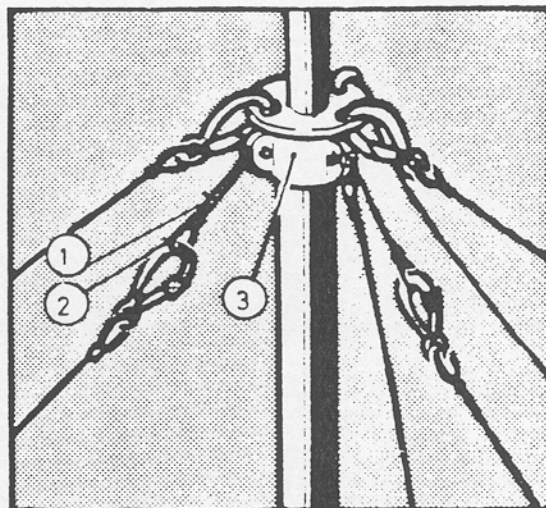


FIGURE 37

(4)- Extend the mast to the required height by means of the winch crank.

2.2.10 Fastening the Ropes of Guying Levels 1, 2 and 3

2.2.10.1 Attachment of the Guying Unit

(1)- Fasten the fork of the guying unit's (38/2) tensioning turnbuckle (38/1) to the guy wire grip (38/4) by means of the bolt (38/3).

REMARK: The guying units of the three exterior guy wires must be fastened in the openings (38/5).

(2)- Adjust the tensioning turnbuckles (38/1) to maximum length.

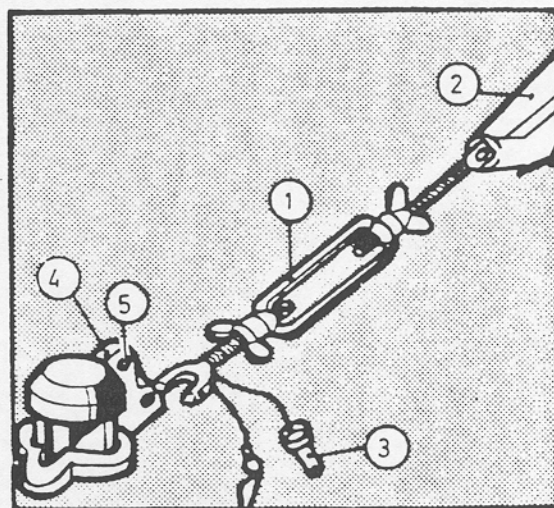


FIGURE 38

2.2.10.2. Insertion of the Guy Wires into the Rope Tensioner

(1)- Unscrew the knurled nut (39/1) from the countersinking (39/2) and open the lever (39/3) until it comes to the stop.

(2)- Insert the rope into the opened rope tensioner in the direction of the arrow.

REMARK: The rope ends always must be inserted on the side of the straight leg (39/4).

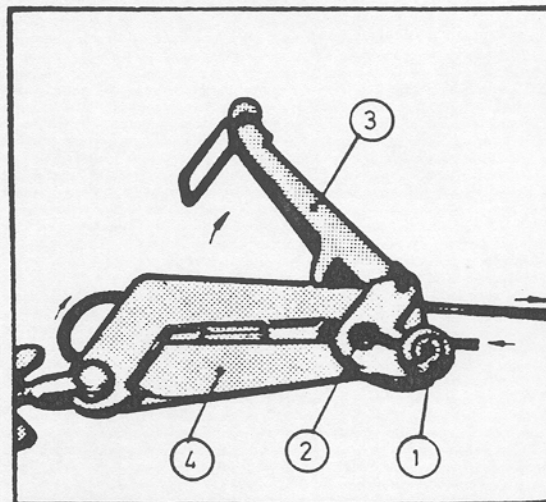


FIGURE 39

2.2.10.3 Pre-tensioning of the Guy Wires

(1)- Pull through with one hand the off-running rope end (40/1) to the desired length.

ATTENTION: While smoothly pre-tensioning the ropes by hand, take care that the mast is not pulled out of its vertical position.

(2)- With your other hand, loosen the knurled nut (40/2) from the locking. Push the lever (40/3) in the direction of the arrow until it comes to the stop.

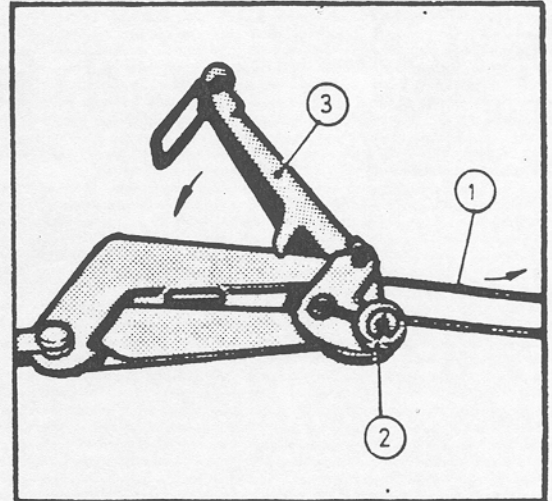


FIGURE 40

REMARK: While closing the rope tensioner, make sure that the bolt (41/1) is placed below the closing lever's tappet (41/2).

(3)- By means of the knurled nut (41/3), secure the tensioner in its closed position against unintentional opening.

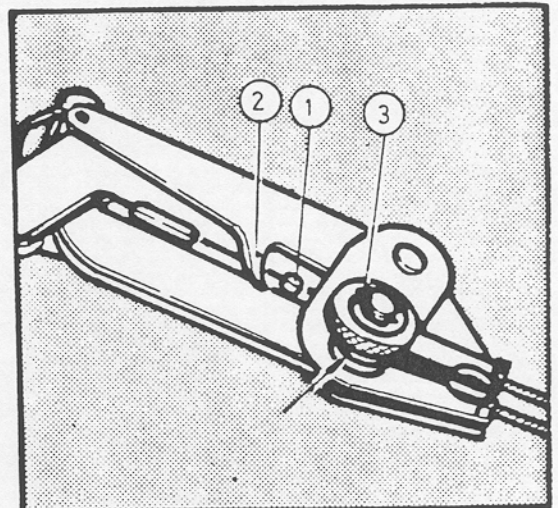


FIGURE 41

2.2.10.4. Dismantling of the Installation Aid Guying

(1)- Open the locking hook (42/1) and take it off the double guy wire grip (42/2).

(2)- Slowly release the auxiliary ropes until complete slackening.

REMARK: The three installation aid ropes are under spring tension. Their sudden release might lead to injuries with the service personnel and to mechanical damage with the installation aid.

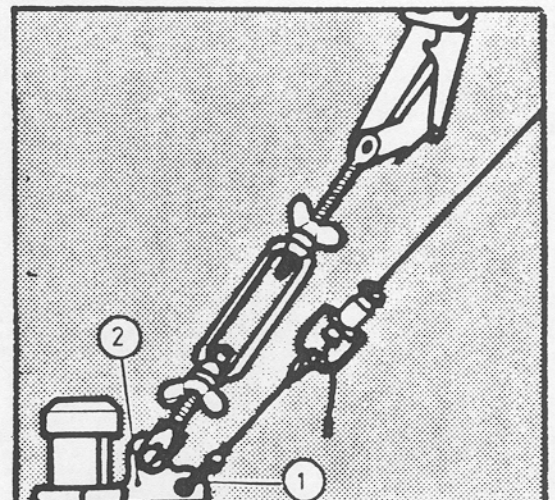


FIGURE 42

2.2.11 Guying of the Mast

- (1)- Pre-tension to 1200 N the ropes of guying 1 (YELLOW) by means of the tensioning turnbuckles.
- (2)- Control the tension in accordance with point 2.2.8.
- (3)- Pre-tension to 1100 N the ropes of guying 2 (BLUE).
- (4)- Pre-tension to 1000 N the ropes of guying 3 (RED).
- (5)- Lock the tensioning turnbuckles with butterfly nuts (43/1).

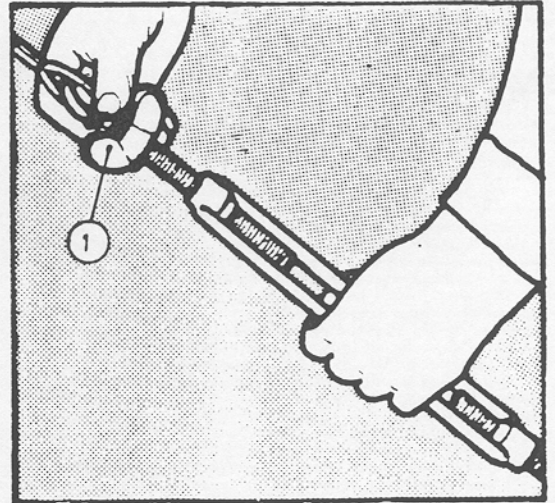


FIGURE 43

REMARK: After the guying is done, the initial tension of the individual ropes must have reached the following values:

Guying 1 (YELLOW):	800 N
Guying 2 (BLUE):	800 N
Guying 3 (RED):	1000 N

If the required values are not reached, the tension of each guy wire must be corrected correspondingly, parting from guying 1. In doing so, keep in mind that the initial tension of a guying level can be reduced by re-tensioning the guying level next in number.

During the guying take care that the mast remains aligned vertically. The values of the initial tension must be controlled by means of the wire tension measuring device several times a day, i.e. at the time the changing of the guards and in case of extreme fluctuations of temperature or change of the weather.

2.2.12 Mounting of the Lightning Protection

- (1)- By means of the star handle nut (44/3), clamp the lightning protection cable, 22 m (44/1), to the earthing spike (44/2) staked beforehand.

REMARK: The lightning protection cable must be laid out to its complete length.

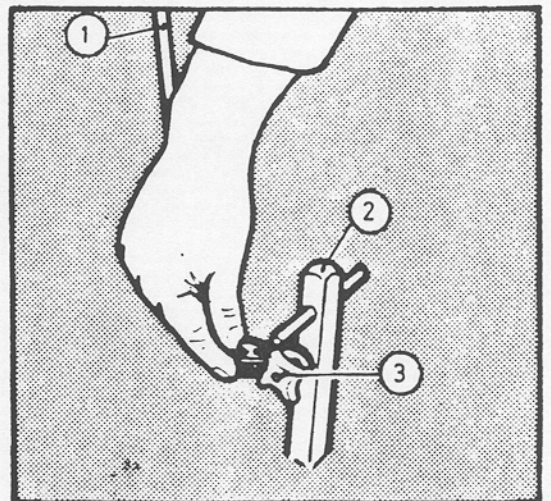


FIGURE 44

- (2)- Stake the earthing spikes (45/1) about .5 m from the guy anchors of the exterior guying. Fasten the short lightning protection cables to the guy wires using the wedge (45/2).

Clamp the cable lug of the lightning protection cable to the earthing spike (45/1).

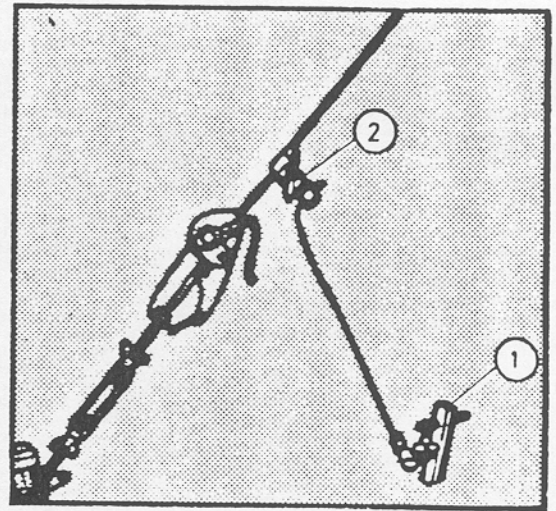


FIGURE 45

2.2.13 Twisting of the Guyed Mast

REMARK: The guyed mast can be twisted only within an angle of 120° (mind the position of the antenna and lightning protection cables!).

The three installation aid ropes hanging from the mast must not get hooked to the guy wires while the mast is twisted.

- (1)- Loosen the clamping lever (46/1).
- (2)- Turn the mast to the desired direction by means of the slipped-on lever tube (46/2).
- (3)- Lock the mast by means of the clamping lever (46/1).

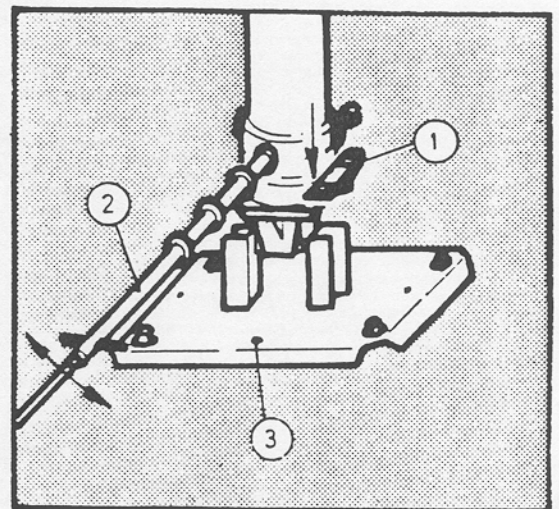


FIGURE 46

2.2.14 Dismantling of the Telescoping Manually Cranked Mast

The mast is dismantled and loaded in the opposite order of its erection.

REMARK: Before dismantling the mast, make sure that it stands in its original position, which means that the auxiliary mast (46/2) is located over the grooved drive stud (46/3).

The auxiliary ropes fastened to the guy wire grips of the anchorages must be pulled out of the mast top clamp uniformly until they come to the stop. The mast must not be dismantled at wind speeds exceeding 18 m per second or when a thunderstorm is coming up.

2.2.14.1 Pulling the Guy Anchors Out

- (1)- Form a loop with the chain (see figure 47) and put it over the guy anchor's ramming top (48/1).
- (2)- Lay the chain(48/2) over the lever tube (48/4) hung into the trestle (48/3).
- (3)- Pull out the guy anchor by stressing the lever tube's end.

REMARK: If the ground is firm or frozen, the guy anchors must be loosened by means of the sledgehammer before they can be pulled out.

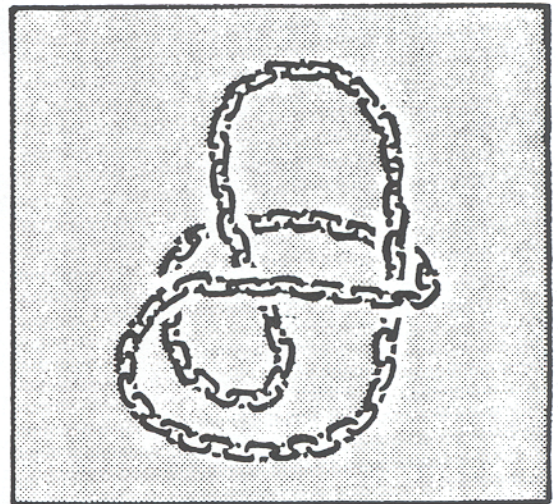


FIGURE 47

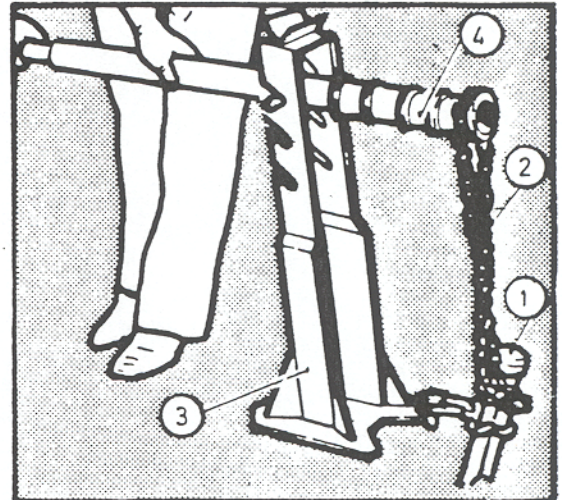


FIGURE 48

2.3 BEAUFORT WIND FORCE SCALE

Wind Force	Wind Speed m/sec.	Wind km/h	Scale		Wind's Effects
			With Ice	Without	
0	0,0 - 0,2	under 1	18	18	Smoke rising vertically.
			18	18	
1	0,3 - 1,5	1 - 6 1 - 3 kn	18	18	Wind's direction only visible from smoke.
			18	18	
2	1,6 - 3,3	6 - 11 4 - 6 kn	18	18	Wind can be felt on face. Leafs can be heard whispering.
			18	18	
3	3,4 - 5,4	12 - 19 7 - 10 kn	19	18	Leafs and thin twigs moving.
			19	18	
4	5,5 - 7,9	20 - 28 11 - 16 kn	19	19	Twigs and thin branches moving, dust rising.
			19	19	
5	8,0 - 10,7	29 - 38 17 - 21 kn	22	20	Small trees swaying.
			22	20	
6	10,8 - 13,8	39 - 49 22 - 27 kn	25	21	Wire cables can be heard whistling.
			25	21	
7	13,9 - 17,1	50 - 61 28 - 33 kn	30	23	Walking becomes difficult.
			30	23	
8	17,2 - 20,7	62 - 74 34 - 40 kn	38	26	Twigs breaking, walking almost impossible.
			38	26	
9	20,6 - 24,4	75 - 88 41 - 47 kn	48	30	Minor damage to houses and roofs.
			48	30	
10	24,5 - 28,4	89 - 102 48 - 55 kn	59	34	Trees are eradicated. Major damage.
			59	34	
11	28,6 - 32,6	103 - 117 56 - 63 kn	80	42	Storm damages all over.
			80	42	
12	32,7 - 36,9	118 - 133 64 - 71 kn		54	
				54	
13	37,0 - 41,4	134 - 149 72 - 80 kn		57	
				57	
14	41,5 - 46,1	150 - 166 81 - 89 kn			
15	46,2 - 50,9	167 - 183 90 - 99 kn			
16	51,0 - 65,0	184 - 201 100 - 108 kn			
17	over 56	over 201 109 kn			

Hurricane.
Common devastation.

M o d i f i c a t i o n s

Modification No.	Date	Authority responsible for the modification	Date	Signature
1	2	3	4	5