



SMC

WTM

Winch Operated Telescopic Hilomast

Operators Manual

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Preface

SMC - **South Midlands Communications Ltd** was established in 1958 and initially specialized in antenna support masts, towers and HF antennas. SMC is now recognized globally as a specialist communications company.

Over the last 50 years the SMC product range has grown to include pneumatic telescopic masts, aluminium lattice masts, high-level photography solutions, Mil' specification antenna positioner's and two way radio products including GPS, AVLS and data transfer.

SMC are able to advise, design, supply and install mobile communications systems, from the simple to more complex and integrated networks.

Although every care is taken in the production of this publication it may contain technical inaccuracies or typographical errors. SMC may make improvements and or changes in the product detailed in this manual at any time without notice.

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Safety Information

Recommended protective clothing & Equipment



Eye protection must be worn



Safety gloves must be worn



Protective footwear must be worn



Hard hats must be worn



WARNING: Risk of personal injury, death or equipment damage **ALWAYS** follow the operating instructions



WARNING: Moving parts and cables. Care should be taken when operating the mast. Fingers, hands and clothing **MUST ALWAYS** be kept clear of any moving parts and cables.



WARNING: The cables may have sharp edges or burrs. Hands could also become trapped between the cables and equipment. Protective gloves **MUST** be worn.



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



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



WARNING: Ensure that the head load is securely mounted to the Mast.

FAILURE TO OBSERVE ANY OF THE WARNINGS IN THIS MANUAL MAY RESULT IN PERSONAL INJURY, DEATH, OR EQUIPMENT DAMAGE. SOUTH MIDLANDS COMMUNICATIONS LTD (SMC) ACCEPTS NO RESPONSIBILITY FOR IMPROPER USE OR USE NOT COVERED IN THIS MANUAL.

WTM Series

Features

- * Robust construction - mast sections constructed from heat treated aluminium alloy, unless otherwise specified.
- * Full length splines prevent relative rotation.
- * Sections extended simultaneously by a stainless steel rope system.



Mast	Height Extended		Height Retracted		No. of Sections	Dia of Top Section	Vertical Head Load	Horizontal Head Load	Max. Wind Speed Unguyed	Basic Weight of Mast
	M	ft	M	ft						
WTM/1	13	43	5.37	17.62	3	102	50	23	130	80
WTM/2	17	57	5.48	18.00	4	76	45	16	96	92
WTM/3	21	70	5.63	18.46	5	50	20	10	80	102
WTM/4	9	29	2.98	9.78	4	76	55	38	160	62
WTM/4-S	6.6	21.7	2.5	8.2	4	76	55	38	160	37

Table 1: Mast Features

Specification

WTM1 and WTM2

These masts will support large 3 element antennas, providing that the maximum operating heights specified in **Table 2** are not exceeded. The figures are for a typical antenna with a boom length of 4.3 metres (14 ft) and element length of 8.2 metres (27 ft) giving wind loads of 45kgs (100 lbs) at 36m/sec (80mph).

Wind Speed (Unguyed)	25m/sec. 55mph	31.5m/sec. 70mph	36m/sec. 80mph	45m/sec. 100mph
WTM1	Fully Extended 13m (43ft)	Fully Extended 13m (43ft)	Retracted to 11m (36ft)	Retracted to 9m (29ft)
WTM2	Fully Extended 17m (56ft)	Retracted to 13m (43ft)	Retracted to 11m (36ft)	Retracted to 9m (29ft)

Table 2: Operating Heights

WTM3

This mast is intended for smaller antennas, where maximum height is of prime importance. It is particularly useful for experimental work and field strength measurement. However, if under extremely windy conditions, the operating heights are reduced to those shown in **Table 2** as it will withstand the same wind loading as the WTM2 mast.

WTM4

This mast has been developed to withstand high head loads at heights of up to 9 metres. It will safely support a 0.6m (2ft) diameter dish at a wind speed of 160kph or a 1.0m (3ft) diameter dish at a wind speed of 100kph. It has a retracted length of only 2.98m (9.78 ft), making it ideally suitable for fitting to the rear of telecommunications vehicles. A 2.0 metre extension is available if required.

WTM/4-S

This mast is a shorter version of the WTM/4 and has an isolated/insulated top section.

Installation Instructions

Hand Winch

- 1) Remove the nuts and screws from the winch mounting plate
- 2) Attach the winch to the mounting plate on the mast, ensuring that all holes are lined up and that the handle is on the right of the mast as you face it i.e. as in the image below.

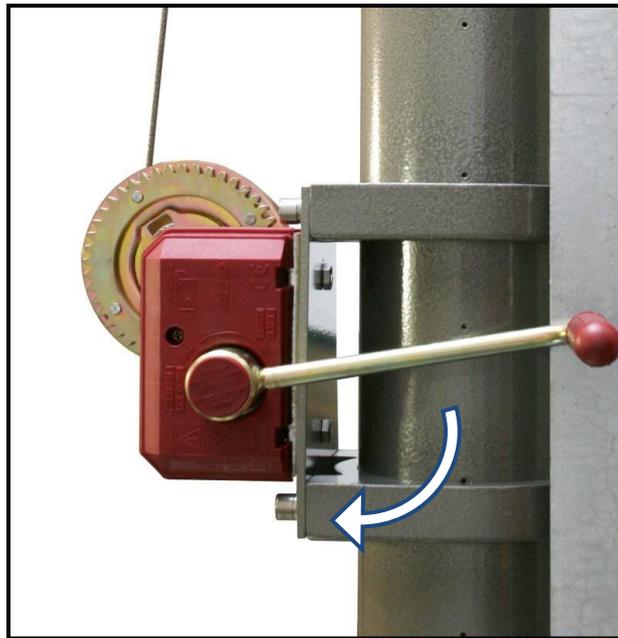


Diagram 1: Installation

Guy Radii

An upper guy assembly is optional for use in inclement weather conditions or to give directional stability to top of mast.

To calculate the distance of your upper guy radius use the information from the mast label to find the extended height of the mast and divide that figure by two (Radius = Extended Height/2)

The guy points should be 120° apart.

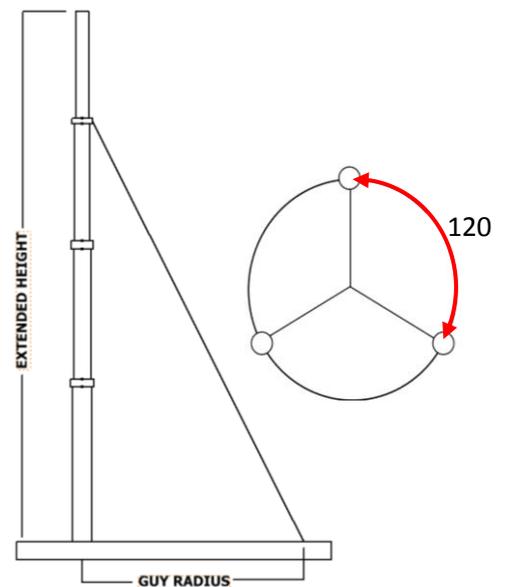


Diagram 2: Guy Radii

Operating Instructions

These are winch/wire operated masts of Aluminium with Stainless Steel fittings. Both manual and electronic winches are available, these instructions apply to both types and there are separate instructions for the winches.

Make absolutely sure that the mast is firmly and safety mounted as near to vertical as possible. Study the literature supplied to ensure that you know the maximum load it will carry and the maximum wind speed it can operate in.

Each section of the mast extends simultaneously by the stainless steel rope system. The tube sections are fitted with full-length keys to prevent rotation. The wire rope system has a normal safety factor of 8 to 1 and therefore, the sections do not require any form of locking.

The mast may be stopped at any point, it is only necessary to extend the mast to the height required, however when its maximum height is achieved a resistance will be felt on the handle of the manual hand winch, at this point back off the winch handle by half a turn. It is obvious that continued turning of the handle will introduce excessive load on the tube stops, which will result in damage to the mast.

The electric winches have a limit switches operating automatically.

For winch operation, see the Winch Operating Instructions supplied with the winch.

Maintenance

Very little maintenance is required with these masts; just a few drops of oil placed periodically at the top of each collar will ensure smooth operation but it is not essential. SMC recommend the use of Super Fluid which is available to purchase from your authorised distributor. The winch bearings are lubricated for life; however ensure that the mast and tubes sections are kept clear of any dust/debris to prevent build up of contaminants.

After some years the PTFE bearing material and Nylon keys may require replacement. The steel cables should be inspected regularly for wear and fraying. Replace any cable not in good condition immediately.

Like any mechanical device the mast should be used regularly to keep everything in good working order, long period of inactivity can have an adverse effect on the working parts. Rainwater can enter the mast by running down the sections but will not affect the mast in any way. Keep the drain hole at the bottom of the base tube clear.

Note: On no account should the mast be extended in the horizontal position without solid supports along its entire length, failure to do this will permanently bend the sections. When retracting the mast in this situation the sections must be pushed in from the top, keeping the wire rope tensioned at all times. Otherwise the wire rope will become snagged behind the key and jam. This usually means dismantling of the mast will be necessary to cure the problem.

