Abacus®

Leaders in Lighting

Part No: TEL/FLAG/A3700

Telescopic Flagpole Mast
11.8m-36m

Product Manual

November 2022

WE STRONGLY RECOMMEND THAT THESE INSTRUCTIONS ARE READ CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE AND MAINTAIN THIS EQUIPMENT

Product Manual

November 2022

1. Safety

WE STRONGLY RECOMMEND THAT THESE REQUIREMENTS ARE READ CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE AND MAINTAIN THIS EQUIPMENT.

i) It is essential that all operators are trained and authorised in the safe use of the equipment.

ii) It is recommended that certified operator training be carried out by Abacus personnel.

iii) The hydraulic unit must only be used for the purpose intended, as described in these operating instructions. Abacus Lighting Limited will not be held responsible for any misuse or abuse of the unit. Similarly no repair, modification or maintenance work, other than that specified in these instructions, must be carried out unless authorised by Abacus.

iv) During the extending and retracting operation the operator must ensure that all non essential personnel and members of the public are kept clear from the areas surrounding the mast. These areas should be clearly defined and cordoned off to prevent access.

v) Head protection must be worn at all times when operating the mast.

vi) The head-load (weight or wind area) must not be increased without authorisation from Abacus.

vii) When using hydraulic units it is essential that the operator is aware of the COSHH regulations relating to the safe handling of hydraulic oil. Reference should be made to the COSHH data sheet supplied in these instructions.

2. Installation

2.1.General

This mast is used for the mounting of a flag to be raised out of a concrete pit. The telescopic elements of the mast are supplied fully assembled ready for the connection of the flag attachment pole, as well as wiring and connection to the hydraulic powerpack.

The foundation bolts should be cast in concrete 3 to 4 weeks prior to erection of the mast to allow time to cure.

Masts are constructed from steel to EN10025 grade S275 and S355, pressed to form octagonal shafts. The mast and foundation bolts are finished galvanised with a painted finish, with fasteners being from stainless and galvanised steel.

THIS MAST IS NOT TO BE MODIFIED BY ANY MEANS UNLESS ADVISED BY THE ABACUS TECHNICAL DEPARTMENT.

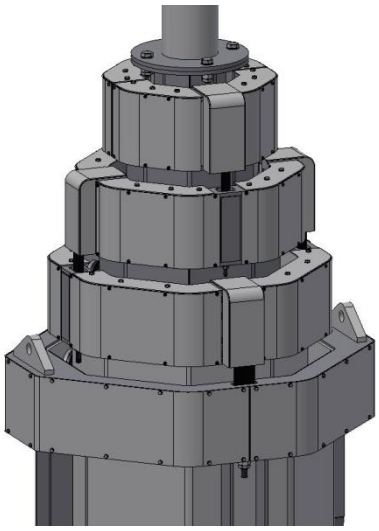
2.2.Mast Assembly

1. Before commencement of assembly examine the items and ensure that there are no missing or damaged parts. The following items of equipment will be required (not Abacus supply);

- Mobile crane with 2 No. 5-tonne lifting shackles
- Torque multiplier and wrench

2. Fix the flag-mounting pole to the top flange of the mast using the bolts provided, ensuring all flag mounting rings have been fitted.

3. The holding down bolts are each fitted with two nuts and washers. The upper nuts and washers and template should be removed. The threads should be examined for any damage and rectified using a die nut if necessary. The nuts should be set in a level plane using a steel bar and spirit level across each opposing pair of nuts. Using a crane, lift the mast using both lifting shackle lugs and place over the foundation bolts. Lower onto the bottom set of nuts, ensuring the direction of the hydraulic hose glands are as required and that the mast will clear any obstructions.



4. Check the mast for vertical alignment. Use the levelling nuts to accurately ‘plumb up’ the mast. Once satisfactory, all bolts should be tightened to a torque setting of 850Nm. If the gap below the flange is to be grouted it is essential that adequate provision is made for ventilation and drainage of any water collecting inside the base.

5. Connect the hydraulic hoses and sensor cables to the hydraulic power pack and control panel. The mast can then be commissioned.

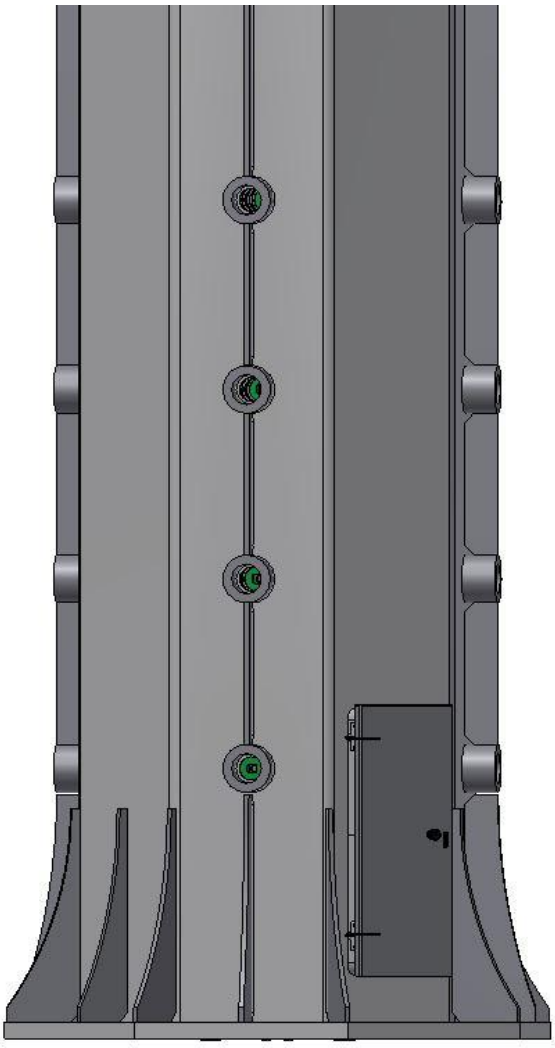


Image showing the lower spacer pad access ports (pads shown in green).

2.3.Mast Commissioning

Commissioning of the mast should only take place once the mast is fully installed.

1. Connect hydraulic hoses to the ram and the power pack, leaving one hose top connection loose to allow hose to fill with oil.

2. Fill one hose with oil by energising the powerpack.

3. Repeat steps 1 & 2 for the second hose.

4. De-energise the powerpack.

5. Open the ram isolation valves.

6. Check for oil leaks at all connections, rectify as required.

7. Energise the powerpack and extend the mast for approximately 1m. Set the main pressure relief valve at 105 bar.

8. Check again for oil leaks at all connections and rectify if required.

9. Fully retract the mast, set annulus pressure relief valve to 105 bar.

10. Check again for oil leaks at all connections and rectify if required.

11. Fully extend the mast monitoring the pressure. Check lift chains are equally tensioned, and grease mast/chains as required.

12. Inspect all the collar areas, noting the spacer pad clearances and adjusting as required.

13. Leave the mast in the finished extended position for a period of 10 minutes.

14. Check the hydraulic system has locked by checking the mast has not crept down.

15. Fully retract the mast, setting the annulus pressure relief value to maintain a constant acceptable lowering rate which maintains a smooth descent, free from vibrations, excessive noise, etc.

16. Extend and retract mast fully, until no intervention/alterations are required.

3. Operation

3.1. General

The hydraulic operation of the mast is carried out by remote control, which consists of two buttons, marked 1 and 2.

1: Mast Extend

2: Mast Retract

The extending and retracting limits are set by the available travel within the ram, and the travel of the mast is monitored by two proximity sensors in the side of the base. In both extending and retracting modes, these sensors - once activated, will shut off the hydraulics.

3.2. Checks Before Use

1. Examine the hydraulic hoses for signs of damage or loose connections.

2. Opening the inspection hatches in the base, examine the ram seals for signs of damage and leakage of oil.

3. Check the oil level is to the centre of the level gauge.

4. Check the electrical connections on the powerpack for damage or loose connections.

5. Check the function of the pump and control valve by extending the ram for a short distance i.e. 100mm. Retract the ram at the same time observe the pressure gauge. During extension it should be 0-80 bar and 50 bar minimum during retraction. As the ram reaches fully closed the reading should build up to the relief valve pressure of 105 bar.

IF ANY OF THESE CHECKS ARE FAILED THE MAST MUST NOT BE USED.

4. Maintenance

4.1.General

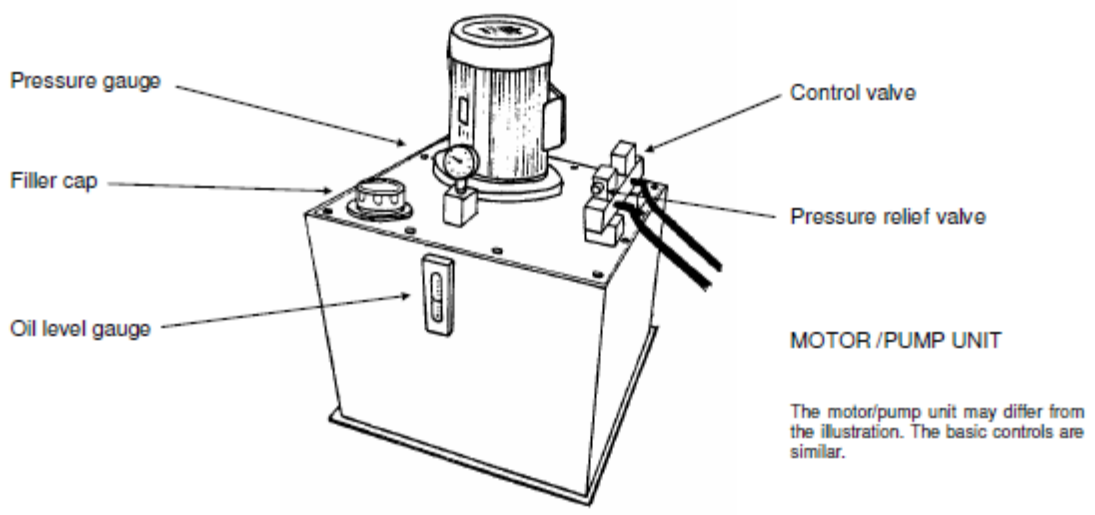
The equipment consists of a ø140mm bore, ø125mm rod double-acting hydraulic ram mounted inside the mast which is connected to the electric motor pump unit. The electric motor rated at 7.5kW from a 400v supply.

The pressure relief valve on the hydraulic power pack is set at 105 bar (1523 psi). In the event of a hose failure, the hydraulic ram has an integral flow control valve, which will ensure the mast descends at a controlled rate.

The ram clevis is fitted with a counterbalance control valve which will only allow the ram to operate if there is positive pressure on both the annulus and core sides of the hydraulic system. This stops the ram in the event of a major hydraulic failure, such as a severed hose.

The hydraulic circuit is fitted with two filters. A suction strainer is fitted inside the reservoir and a return line filter is located below the tank. All filters are adequate for the life of this unit and will only need replacing if contaminated oil has been used to refill the tank.

All maintenance works must be fully documented and copied to Abacus Lighting Ltd. so a full service history can be maintained.



4.2.Mast

To ensure the mast remains operational, it is recommended to be extended and retracted at least once every 3 months.

4.2.1. Every Time the Mast is Lowered

1. Check that all electrical and hydraulic connections are not damaged or disconnected.

2. Check that the hydraulic hoses and flexible conduits are not damaged.

3. Check the hydraulic hoses and connections do not leak under pressure. **DO NOT PULL THE COUPLINGS OR DISCONNECT ANY HOSES.**

4. Check the oil level in the tank when the mast is fully retracted. The oil level should be to the centre of the clear indicator panel on the side of the tank. If required, top up the oil with **Fuchs Agrifarm universal mineral oil** (or equivalent). Note that if the oil level is exceeded with the mast extended, excess oil may spill from the filler cap during retraction.

4.2.2. Every 12 Months

Equipment required: mobile platform up to 35m, various spanners, torque wrench. Remove the cover plates at the top of each section to expose the adjustable spacer pad assemblies and chain sprockets.

1. Check the foundation bolts to ensure none have worked loose. The torque settings are as follows:

Foundation Bolts: 16 No. M30x1220 grade 8.8 - Torque setting = 850Nm

2. Check the general condition of the external chains (when mast is extended) and chain anchors.

3. Thoroughly check the hydraulic system including all connections, pipes, valves, etc. for leaks.

4. Lubricate the external pad faces with a thin layer of lithium grease to assist smooth operation.

5. The bearing pads are designed for the life of the structure but should be inspected for any signs of excessive wear and adjusted accordingly by Abacus trained/approved personnel.

6. Carry out a visual inspection and report the general condition of the structure.

7. Check that the relief valve pressure is correctly set up to 105 bar on the extension of the mast. The pressure should rise quickly and stabilise at the correct value which should be 80-105 bar. If the reading is incorrect adjust the pressure relief valve setting as follows, the relief valve is located below or adjacent to the control valve. Hold the centre adjusting screw with an Allen key and slacken the locknut. With the ram fully closed, operate the control panel such that the relief valve pressure can be read on the pressure gauge. Turn the Allen key clockwise to increase the relief valve pressure and anticlockwise to decrease it. When the correct reading has been obtained, tighten the locknut and recheck the pressure setting. Refit the screwed cap if provided. Please note the ram must be fully extended to achieve the relief valve pressure. When mast is retracting the relief pressure must be set by Abacus trained/approved personnel.

8. The ram must NOT be left extended for long periods as the piston rod may corrode.

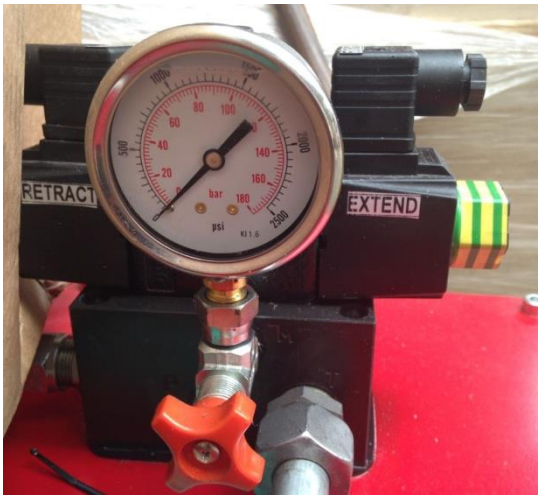
9. The power pack will not require maintenance other than noted previously. Consult the manufacturer in the event of any faults.

4.2.3. As Required

Touch-up the paint work as required. Ensure sprockets chains are not painted.

DO NOT USE THE UNIT UNLESS ALL THESE CHECKS ARE SATISFACTORY.

IN THE EVENT OF DAMAGE TO COMPONENTS OR FOR FURTHER ADVICE CONTACT THE ABACUS TECHNICAL DEPARTMENT AT THE ADDRESS BELOW.



4.3.Counterbalances

Technical details are as follows;

Bore	**ø140mm**
Ram weight	800kg approx
Motor rating	7.5kW
Supply voltage	400V
Pressure relief setting	105 bar
Lifting capacity	16t
Tank capacity	180l
Hydraulic fluid (or equiv.)	Fuchs Agrifarm universal mineral oil

5. EN 1090 Certificate of Conformity

Certificate of Conformity of the Factory Production Control GB14/91485

In compliance with the Construction Products Regulation 2011 (retained EU law EUR 2011/305) as amended by the Construction Products (Amendment etc.) (EU Exit) Regulations 2019 and the Construction Products (Amendment etc.) (EU Exit) Regulations 2020, this certificate applies to the construction product(s)

Execution of steel structures and aluminium structures.

placed on the market under the name or trademark of

Abacus Lighting Ltd

Oddicroft Lane Sutton in Ashfield Nottinghamshire NG17 5FT United Kingdom

and produced in the manufacturing plant(s)

Abacus Lighting Ltd

Oddicroft Lane Sutton in Ashfield Nottinghamshire NG17 5FT United Kingdom

has been assessed and certified as meeting the requirements of

EN 1090-1:2009+A1:2011

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s) under system 2+ for the performances set out above are applied and that the factory production control fulfils all the prescribed requirements for these performances.

This certificate is valid from 01 August 2022 until 01 August 2025 and will remain valid as long as the test methods and/or factory production control requirements included in the designated standard, used to assess the performances of the declared essential characteristics, do not change, and the construction product and the manufacturing conditions in the plant are not modified significantly, unless suspended or withdrawn by the factory production control certification body.

Issue 6. Certified since 06 June 2014.

Authorised by

H. Crick – UK Business Manager

SGS United Kingdom Ltd Approved Body 0120
Rossmore Business Park, Ellesmere Port, Cheshire, CH65 3EN, UK
t +44 (0)151 350-6666 - www.sgs.com

UKAS PRODUCT CERTIFICATION
0005

6. CE Marking

CE

0120

Abacus Lighting, Oddicroft Lane, Sutton-in-Ashfield, Nottinghamshire, NG17 5FT, UK

14

GB14/91485

EN 1090-1:2009+A1:2011

TEL/FLAG/A3700

Tolerances:	EN1090-1
Weldability:	S275 & S355
Fracture toughness:	27J at 0°C
Reaction to fire:	Class A1
Release of cadmium:	NPD
Emission of radioactivity:	NPD
Durability:	Galvanised
<u>Structural characteristics:</u>	
Standards:	ILP PLG07
Load bearing capacity:	See calculations
Deformation at SLS:	See calculations
Fatigue strength:	NPD
Resistance to fire:	NPD
Calculation reference:	D3458c2
Manufacturing:	EN1090-2: EXC2

7. Environmental Advice

7.1. General

WE STRONGLY RECOMMEND THAT THIS ENVIRONMENTAL INFORMATION IS READ CAREFULLY BEFORE ATTEMPTING TO OPERATE AND STORE THIS EQUIPMENT.

Operatives should be familiar with the requirements of the following documentation-

i) Pollution Prevention and Control Regulations

ii) Control of Pollution (Oil Storage) Regulations

iii) Control of Substances Hazardous to Health Regulations

iv) Hazardous Waste Regulations

v) Environmental Protection Act

7.2. Information

Hydraulic counterbalances incorporate the use of hydraulic oil to successfully raise and lower a range of Abacus Lighting columns and masts.

Each counterbalance unit will have an oil reservoir, whether this will be separate on a trolley (usually for raising and lower bigger masts) or on the same assembly as the hydraulic ram. Each reservoir will have a 'breather cap' on top of the tank which is required for using a hydraulic system, the breather cap will leak out oil if the unit is tipped at any point therefore it must be kept upright to prevent this from happening.

Before use ensure that all the hydraulic hoses are connected properly to prevent any spillages when in use.

If you store or use oil you should be prepared for any spillages, keeping a stock of absorbent materials and ensuring the operatives are trained to deal with any spills that may occur. If there is a spill immediate action should be done to prevent the oil from entering any drains or water courses.

If absorbents are used to combat a spill, they may well be classified as hazardous waste and should be treated as such.

8. Equipment Classification

Should insert LOLER statement here