

Abacus[®]

Leaders in Lighting

Product

Part No:

YH/CAST/ASSY/N/A

YH/HYDTOOL/76

(York Hinge columns)



Operation & Maintenance Manual

November 2022

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

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Where this symbol appears there remains a residual risk. Please pay particular attention to the instructions.

1. Scope

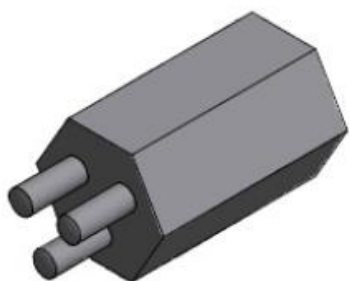
This product manual covers only the operation and maintenance of the **hinge** unit itself.

Please refer to the 'fixed tubular column' manual (ref. INS-FXT) for guidance on the installation and maintenance of the main column structure.

2. Hinge Operation

While the device can be safely operated by a single individual, it is recommended that two operatives are present for ease of use.

2.1 Required tools:



3-pin tool



8mm Allen key with security pin recess



Triangular headed door key



24mm spanner / socket

Hydraulic Counterbalance Assembly (see below)

Mobile Pump Unit (see below)

2.2 Lowering Technique

Prior to performing any lowering operation, please refer to the maintenance section as detailed in 3.1

- Check the area is clear in the direction of fall. Be aware of overhead cables. In public areas it may be necessary to demark an exclusion zone
- Rigidly affix both upper and lower clamps to the recesses on the hinge casting.



Figure 1 Lower clamp affixed to column. Please note that clamps are keyed to ensure correct orientation

- Connect the pump and actuate the ram until it engages with the upper surface of the casting recess.



Figure 2 Connecting quick detach hose from pump unit to ram.



Figure 3 Lower and upper clamps situated on hinge body. Please note that the retaining pins on clamps may vary.

- Using the 8mm security Allen key, completely remove the security screw.



Figure 4 Removing the safety screw

- Using the 3-pin tool and a socket or spanner, remove the lower locking bolt. This is the lower of the two transverse pins.



Figure 5 User removable 3-pin bolt



Figure 6 Non-user serviceable 4-pin bolt



Figure 7 Lower locking bolt removed

- With the lower locking bolt removed, the column can be lowered.
- **PRIOR TO COMMENCING ANY LOWERING OPERATIONS ENSURE THERE ARE NO INDIVIDUALS OR OBJECTS IN THE DIRECTION OF FALL.**
- It may be necessary to push the column slightly in the direction of fall to begin the lowering operation.





Figure 8 Pushing column in direction of fall

- The valve on the pump unit must be opened in order to allow the column to fall. It is possible to close the valve at a given point in the lowering of the column to stop or slow the fall of the column if necessary.



Figure 9 Adjusting pump unit pressure

- Should the pump lose pressure or the hose be severed, the column will lower at a controlled rate.
- Once the top section of the column is perpendicular to the base, re-insert the locking bolt into the mechanism using the 3-pin tool. (See Figure 5)



Figure 10 Column fully lowered (NB locking bolt not inserted)

It is now safe to work on the column luminaire etc without adjusting the counterbalance.

- **UNDER NO CIRCUMSTANCES SHOULD THE COUNTERBALANCE BE REMOVED WITH THE COLUMN IN THE LOWERED POSITION WITHOUT THE LOCKING PIN PRESENT.**

2.3 Raising Technique

- Ensure the pressure relief valve on the counterbalance pump unit is fully closed by turning the valve clockwise. (see Figure 9)
- Remove the lower locking bolt using the 3-pin tool. (see Figure 7)



Figure 11 Operating pump

- Operate the pump in long, smooth movements, excessively short or sharp movement of the pump unit may result in oscillation in the unsupported length of the column which could cause damage or loosening of bolts over time.
- When the column is fully raised, it may be necessary to push the top of the column over slightly to encourage the hinge to close fully.
- Re-insert the locking bolt using the 3-pin tool.
- Re-insert the security screw using the security Allen key. (see Figure 4)
- Remove the counterbalance assembly starting with the upper locking section.



Figure 12 Removing counterbalance

- Remove the lower locking section, taking care to ensure the counterbalance does not fall abruptly.
- Relieve pressure on the counterbalance pump assembly and retract the ram fully so that no visible rod protrudes from the body of the ram. (see Figure 9)
- **IT IS ESSENTIAL THAT THE RAM MUST BE RETRACTED PRIOR TO STORING THE COUNTERBALANCE AS CORROSION ON THE ROD CAN DAMAGE THE SEALS AND RENDER THE COUNTERBALANCE UNSAFE OR UNSERVICEABLE.**
- Remove the hose from the ram body



Figure 13 Removing of hose from ram body

- Store counterbalance and pump unit securely and in an upright position.

3. Maintenance and Calibration

3.1 Whenever Column is Lowered

Prior to operating counterbalance/lowering.

- Check status of counterbalance, including:
 - Ensuring ram moves freely and is devoid of surface corrosion and pitting.
 - Examine the ram, in particular the area around the seals for signs of damage and leakage of oil.
 - Check that the flow restrictor assembly at the base of the ram is present, undamaged and not leaking oil.
 - Check that the flow control valve assembly on the pump unit is present, undamaged and not leaking oil.
 - Fixtures and fittings on the assembly are devoid of corrosion and located correctly.
 - All fixtures and fittings are tight and do not exhibit signs of excess movement.
- Check the internal hinge components, including:
 - Cable / conduit (splits, traps)

3.2 Every 12 months

Check the hinge operation as per part 3.1 above.

We recommend the following simple checks be carried out at 12 monthly intervals and any defective items replaced. Please refer to Appendix 1: Counterbalance Maintenance) for a complete maintenance schedule based upon frequency of use.

- The pivot should be re-greased. Use a general purpose grease and grease gun to apply via the grease nipple located on the front of the hinge. This is easiest carried out with the hinge in the raised position. Wipe away any excess grease.
- Check the oil level in the pump unit tank with the pump as near horizontal as possible and the ram fully retracted and detached. Remove the breather valve assembly from the centre of the top plate. The oil level should be approximately 30mm from the top of the tank. Tank capacity is 1.0 litres and should be topped up with Renolin Hydraulic oil CL Range Ref CL46 (or equivalent). **Note that if the oil level is exceeded with the rams extended, oil may be expelled from the filler cap during lowering of the column.**

3.2.1 Hydraulic Hoses

Hydraulic hoses have a finite life and must be inspected, tested and replaced in accordance with the table below;

Age	Recommendation
Up to 3 years	Use without further testing
3 to 5 years	Use after representative samples subjected to a proof pressure test.
5 to 8 years	Use after representative samples subjected to proof, impulse and burst pressure tests and cold bend and electrical tests.
Over 8 years	Scrap

3.3 Every 24 months

The counterbalance assembly should be returned to Abacus (complete with pump unit) for assessment, any required remedial works and re-certification.

4. Hinge Installation (In-situ retrofit)

A York Hinge unit can be retrofitted to an existing static column to enable future maintenance to be carried out from ground level.

Only undertake this work if the following conditions are met:

- The column uses a 76mm diameter shaft at the location where the hinge is to be fitted.
- The column is in sound structural condition. Hinging a column imposes stresses in the steelwork which may not be routinely experienced due to wind loading alone. It is imperative that the steelwork is inspected, particularly around the taper joint and the foundation, for signs of corrosion or fatigue cracking.
- There is adequate space for the hinged column to fall into, in a way that will be safe and un-obstructive for any 3rd parties.
- The maximum headload for the column does not exceed 22kg.
- Adequate consideration should be made regarding the wall thickness of the 76 CHS section utilised, this device is designed for use for 3.0-3.2mm wall thicknesses. Thicker section may be used, but this increased dead load will accordingly decrease the usable headload on the column. If you have concerns regarding capacity or the wall thickness of the section exceeds 3.2mm, **contact Abacus prior to proceeding.**
- The overall height of the column including base section does not exceed 6m.

Step	Operation
1	Open the column door and remove the cut-out fuse to isolate the column.
2	Disconnect the lantern feed cable from the isolator.
3	Measure 460mm and 750mm up from the top of the opening and mark the two locations on the column shaft.
4	Retract the jack clamp as far as possible. Assemble the clamp and position it on the column ensuring that the bottom edge of the upper shaft clamp aligns with the 750mm mark.
5	Close the shaft clamp and tighten it to the shaft.
6	Secure the bottom half of the fixture to the column.
7	Mount the saw to the shaft with the cutting clamp, ensuring that the blade aligns with the 460mm mark.
8	If there is more than 180mm of spare cable length then the existing cable may be reused. Feed the cable into the protector tube and slide the tube up into the column so that its top end is above the cut line. If preferred, it may be easier to simply cut through the existing cable and replace it once the column is hinged.
9	Start the saw and proceed to cut part way through the shaft until the protector tube is contacted. If the cable is to be replaced then the shaft can be cut fully and step 10 omitted.
10	Re-mount the saw to cut in from the opposite side and finish the cut.

11	Remove the saw and tube clamp from the column. Jack up the shaft clear of the base and swing to one side. Withdraw the cable from the base section.
12	De-burr cut edges on both halves.
13	Using a grinder and flap disc remove any excess paint from the shaft for 75mm from the cut ends to ensure the shaft will slide freely into the hinge sockets.
14	Apply zinc rich primer to the cut edges and ground faces to protect against corrosion.
15	Insert the York Hinge (ensuring the text on the casting is facing upwards), into the lower part of the column. Do not tighten the grub screws yet. Check the hinging direction is roughly correct and rotate the hinge unit as necessary.
16	Swing the upper column back in-line, above the hinge.
17	If the cable is being reused then thread the end of this down through the hinge.
18	Slowly lower the jack, guiding the upper shaft into the hinge, until the upper shaft is fully seated. Ensure the cable (if present) does not become trapped.
19	Tighten the grub screws in the top half of the hinge only. These need not be fully torqued at this point as they will need to be removed for injecting the resin. Release the shaft clamps and remove the jack.
20	Remove the security screw and pivot lock bolt and hinge the column down to the horizontal position. See section 2.2.
21	Using the leverage of the upper shaft, rotate the lowered upper section so that the column falls in the correct direction.
22	Raise the column back to the vertical position and replace the pivot lock bolt and security screw. See section 2.3.
23	Remove grub screws from upper hinge. On both the upper and lower parts of the hinge, inject resin through the grub screw holes. Only three full movements of the lever are required, or stop if resin becomes visible at the end of the hinge.
24	Insert grub screws and adjust so that the column is vertical. Fully tighten all grub screws. Note the resin takes around 10 minutes to begin curing so any adjustment must be completed within this time.
25	Apply resin around the annulus. Wipe away any excess. Allow 30 minutes to cure.
26	Lower the column as per section 2.2.
27	Column can now be operated per the manual.

5. Colour Code Identification

All Abacus hydraulic counterbalances have colour coded ram tops in order to quickly identify them at a glance, these are as follows:

Counterbalance	Colour Code	Max Headload
YH/HYDTOOL/76	PINK	22kg
RLH168	BLACK	90kg
RLH1M	GREEN	120kg
RLH2M	GREY	185kg
RLH5	BROWN	175kg
RLH7	WHITE	175kg
RLH11	YELLOW	350kg
RLH12	BLACK	550kg
RLH13	BLACK	715kg
RLH14/RLT	BLUE	1640kg
RLH15	GREEN	1450kg
RLH16	SILVER	1550kg

For detailed information on the operation and capacities of each counterbalance, refer to their individual O&M manuals.

6. EN40 Certificate of Constancy of Performance

Certificate of Constancy of Performance GB13/89393.00

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)

Fixed, Based Hinged & Tapered Steel & Aluminium Lighting Columns.

Note: All products must have a valid ITT report placed on the market under the name or trademark

Abacus Lighting Ltd

Oddicroft Lane Sutton in Ashfield Nottinghamshire NG17 5FT United Kingdom

and produced in the manufacturing plant

Abacus Lighting Ltd

Oddicroft Lane Sutton in Ashfield Nottinghamshire NG17 5FT United Kingdom

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)

EN 40-5:2002, EN 40-6:2002

under system 1 for the performances set out in this certificate are applied and that the construction product(s) 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 9. Certified since 01 August 2013.

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



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7. Environmental Requirements

HYDRAULIC COUNTERBALANCE UNITS ONLY

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

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

The counterbalance for use with a York hinged column should be considered as an integral part of the column which may sometimes be partly or wholly situated on a removable unit. The primary function of the product, including sub-components, is as a column for lighting purposes or otherwise. The raising component of the column cannot be readily altered. It should not therefore be considered as 'lifting equipment' in the normal sense of the term (such as a crane, fork lift truck or accessories such as chains, slings or eye bolts) and as such does not fall under the Lifting Operations and Lifting Equipment Regulations (LOLER) 1998.

Abacus appreciates however that some customers may make an internal decision to classify the equipment, either partly or wholly, under LOLER 1998 in order to maintain continuity with existing asset management protocols. If this is the case then Abacus can supply the necessary Safe Working Load signage and advise on the requisite maintenance.

Appendix 1: Counterbalance Maintenance Schedule

Abacus

Counterbalance Maintenance

Counterbalance On Site Maintenance Inspection						
Typical Counterbalance Usage						
Storage	Usage: Minimal Used twice a year or less		Usage: Average Used every 3 months		Usage: High Used several times per month	
	Counterbalance Type		Counterbalance Type		Counterbalance Type	
	Spring	Hydraulic	Spring	Hydraulic	Spring	Hydraulic
Stored inside a building in dry environment	10 years		3 years	5 years	2 years	3 years
Stored outside under cover, or stored in a vehicle	2 years		2 years		1 year	
Stored outside exposed to the elements	1 year					

All counterbalance operatives must be trained and accredited to Raise and Lower the column