

Hydraulic jacks - technical information

New policy number: **149**
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 Owner: **Assistant Director, Property and TSS**
 Responsible work team: **Fleet Liaison Engineering and Equipment Team**

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1 Introduction

- 1.1 This policy describes the hydraulic jacks carried on FRUs and explains their operation, maintenance and testing.

2 Description

- 2.1 There are three different types of hydraulic jack in use in the London Fire Brigade:



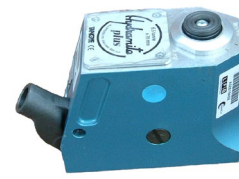
LFB image id 213409

Tangye Hydralite PS1230



LFB image id 214757

Tangye Hydralite PS630



LFB image id 213410

Tangye Hydramite

- 2.2 Two PS630 and Hydramite jacks are carried on each FRU. The PS1230 is only carried on the Skills FRU which carries two.

- 2.3 Each jack is designed with an in-built hydraulic pump, which is worked by an operating handle.

- 2.4 An internal safety relief valve is fitted in each jack, which limits the load that may be lifted to the equipment rated load + 10% maximum.

2.5 Tangye Hydralite PS1230 and PS630:

- (a) The Tangye PS Hydralite series are enclosed hydraulic jacks constructed mainly of aluminium alloy.
- (b) The operating quadrant has three positions for the operating handle, which allows the handle to be positioned to suit the operator.
- (c) **Model PS1230** has a 305mm stroke and 30 tonne capacity.
- (d) A toe lift attachment is provided with the PS1230 jack to provide a low height lifting point.
Note: This reduces the lifting capacity of the jack to 12 tonnes.
- (e) When the toe lift is fitted, lifting must always and only be carried out on the toe. If lifting using the ram only, the toe lift must be removed.
- (f) **Model PS630** has a 152mm stroke and 30 tonne capacity.
- (g) Each jack is supplied with its own individual jacking handle (length 771mm, weight 2.2kg).

2.6 Tangye Hydramite 8104H

- (a) The Hydramite jack is a compact multi use jack constructed mainly from aluminium alloy.
- (b) The hydraulic system is sealed allowing for the jack to be used in any orientation.

(c) It has a 75mm stroke and a 6.5 tonne capacity.

(d) Each jack is supplied with its own individual jacking handle (length 626mm, weight 1.3kg).

2.1 Technical details:

Type	Capacity	Stroke	Height closed	Weight
PS1230	30 tonne	305 mm	470 mm	23.4 kg
Toe lift	12 tonne	n/a	n/a	7.6 kg
PS630	30 tonne	152 mm	263 mm	14.4 kg
Hydramite	6.5 tonne	75 mm	140 mm	3.6 kg

3 Safety precautions

- 3.1 Full structural firefighter PPE to be worn at all times with helmet visor down when operating this equipment.
- 3.2 These hydraulic jacks should only be operated by suitably qualified operational personnel who have received specific training in their use.
- 3.3 The toe lift should be removed from the PS1230 to reduce the weight before moving or carrying the jack. Each item should be carried by a separate crew member.
- 3.4 Manually handling the jacks should be kept to a minimum, with consideration given to the distance that the jack needs to be carried.
- 3.5 Ensure that the chosen jack has the capacity to lift the weight of the load prior to commencement of the operation, do not overload the jack.
- 3.6 Ensure that the load being lifted is secure and stable (chocked and blocked) before placing the jack in place.
- 3.7 Ensure adequate blocks and wedges are available to support the weight and to allow additional packing to be added as the load is lifted (pack as you jack). Only the specific operating handle for jack type should be used.
- 3.8 Do not position the jack by using the operating handle in the release valve. If the jack is to be placed some distance under the load, use the operating handle in the operating quadrant.
- 3.9 Block the load during the lift and descent (jack and pack).
- 3.10 Do not leave the jack under load or unattended. Monitor the stability of the jack and the load at all times.
- 3.11 Whenever lowering a jack under load, ensure that the pressure is released very slowly to prevent the load being lowered from descending too rapidly. If the jack is inadvertently subjected to a shock load, remove from service.

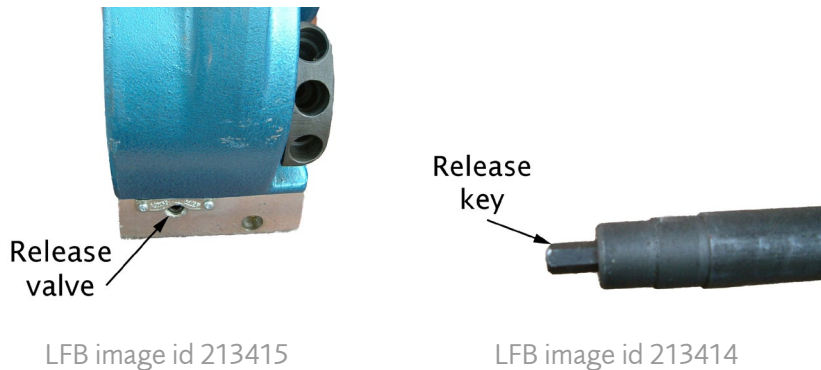
4 Operating instructions

- 4.1 Before using, ensure the jack is in good order, checking for any damage or oil leaks. If either is obvious do not use.
- 4.2 Place jack on firm ground, with the jack base fully supported. Use packing if necessary. A flat block should be used to spread the weight where possible.

4.3 Tangye Hydralite jacks

(a) To raise:

- Ensure that the release valve is closed, this is done by using the hexagonal key at the end of the operating handle, i.e., rotate as far as it will turn clockwise.



- Insert handle into the preferred operating quadrant (three positions are available for the operator to choose) and operate in a controlled steady manner.
- The jack ram is raised on each downward stroke.
- If using the toe lift, ensure that the head of the toe lift is fitted correctly around the ram top and the heel rests against the front face of the jack.

Both of these types of jack are fitted with a positive stroke limitation device which prevent the ram being raised beyond its maximum lift. Continuing to operate the lever at the end of the ram stroke may cause some oil to appear at the top of the liner. Continued pumping will only circulate the oil back to the reservoir.

(b) To lower:

- Using the hexagonal key at the end of the operating handle, open the release valve by rotating anti-clockwise, When the jack is under load the valve should be "cracked" open very gently to prevent the rapid descent of the load. (The amount the valve is opened governs the speed of descent.)

4.4 Tangye Hydramite 6.5T

(a) To raise:

- Ensure that the release valve is closed. This is done by using the hexagon key at the end of the operating handle, i.e., rotate as far as it will turn clockwise.
- When closing the release valve, excessive tightening is unnecessary, and will accelerate the wear of the valve.



- Insert the handle into the operating socket and operate in a steady controlled manner.
- The jack ram is raised on each downward stroke.
- The Hydramite is designed to provide a stroke of 76mm. At the full extent of its travel, a hydraulic stroke limiting device operates. Continued pumping will not extend the ram further, since at this point the oil is passed back into the jack's reservoir.

(b) To lower:

- Using the hexagonal key at the end of the operating handle, open the release valve by rotating anti-clockwise. When the jack is under load the valve should be "cracked" open very gently to prevent the rapid descent of the load (the amount the valve is opened governs the speed of descent).

(c) After use (all types):

- Ensure the ram is fully retracted.
- Close the release valve.
- Store in an upright position

5 Maintenance and testing

- On acceptance.
- After use.
- Quarterly.
- 6 monthly (by the vehicle and equipment (V&E) contractor).

- 5.1 Examine jacks for oil or grit, clean if necessary, using a mild soapy solution and dry using a clean cloth.
- 5.2 Check condition of jack body, including security of the base and carrying handles where applicable.
- 5.3 Ensure operating handle is in good order and the release valve end is not damaged or deformed.
- 5.4 Extend ram (not under load) to full working height checking that its operation is smooth and that it is fully extended.
- 5.5 Check condition of ram for scoring or wear.
- 5.6 Check operation of release valve. Ensure the ram fully retracts.
- 5.7 Tests to be recorded on appropriate standard test card.

6 Defects

- 6.1 These items of equipment are CAT B items under the V&E contract.
- 6.2 Defects should be reported on POMS, id numbers as follows:

- | | |
|--------------------------------|-------|
| • Jack Hydralite 1230 | S9096 |
| • Jack Hydralite 1230 toe lift | S9097 |
| • Jack Hydralite 630 | S9098 |
| • Jack Hydralite handle | S9099 |
| • Jack Hydramite 6.5 tonne | S9100 |
| • Jack Hydramite handle | S9101 |

7 Associated material

7.1 This policy is to be read in conjunction with the following material where necessary:

- Policy number 174 – Control of substances hazardous to health regulations
- Policy number 206 – Environmental Protection
- Policy number 540 – Manual handling operations procedure
- Policy number 643 – Hazardous waste disposal procedure
- Policy number 707 – The control of infectious diseases policy
- Policy number 724 – Appliance inventories and operational readiness
- Policy number 747 – Polluting material storage and spillage procedure
- Policy number 846 – Blocks and wedges – wooden – technical information
- Policy number 985 - Operational safety management - knowledge skills and competence –
NOG

Document history

Assessments

An equality, sustainability or health, safety and welfare impact assessment and/or a risk assessment was last completed on:

EIA	07/09/2020	SDIA	H – 18/10/2023	HSWIA	18/09/2020	RA	n/a
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Audit trail

Listed below is a brief audit trail, detailing amendments made to this policy/procedure.

Page/para nos.	Brief description of change	Date
Page 1 para 2.3	Model PS 1220 updated to PS 1230 throughout policy deleted	03/03/2009
Page 3 para 2.4	Last line of table deleted	03/03/2009
Page 4 para 6.3 and Section 8	Deleted Allocation of equipment 'Fire Rescue Unit - last line deleted.	03/03/2009
Throughout	Policy reviewed as current. Major changes made throughout. Read through to familiarise yourself with the content.	07/02/2011
Page 2 para 2.2 Page 3 para 2.5	Policy reviewed as current. Toe lift capacity changed from 8 to 12 tonnes.	13/07/2011
Page 1	Responsible work team has changed from Engineering Fleet and Equipment Team to Fleet Liaison Engineering and Equipment Team. Also Asset Co has been changed to Premier FireServe.	29/10/2012
Throughout	Premier FireServe has been updated to 'the service provider'.	13/11/2012
Section 3 & 4	These sections have been swapped around so that Safety precautions is now before Operating instructions.	02/04/2014
Section 7	Added as a new section – Associated material.	02/04/2014
Page 6	SIA updated, full SDIA not required.	16/06/2014
Page 6-7	Subject list and FOIA exemptions tables.	28/10/2014
Throughout	This policy has had changes made throughout the document, please read fully to familiarise yourself with the amended note.	02/06/2017
Throughout	Policy 3 yearly reviewed, with no significant changes made.	22/09/2020
Throughout	Cross references updated.	28/06/2022
Section 2 Throughout	Information on the PS1230 updated. Minor changes made as part of the 3 yearly review.	20/10/2023

Subject list

You can find this policy under the following subjects.

Accidents – motor vehicles	Equipment – operational
Equipment – rescue	Fire rescue unit
Hydraulic platform	Road traffic accidents (RTAs)
Technical information	Road traffic collisions (RTCs)

Freedom of Information Act exemptions

This policy/procedure has been securely marked due to:

Considered by: (responsible work team)	FOIA exemption	Security marking classification