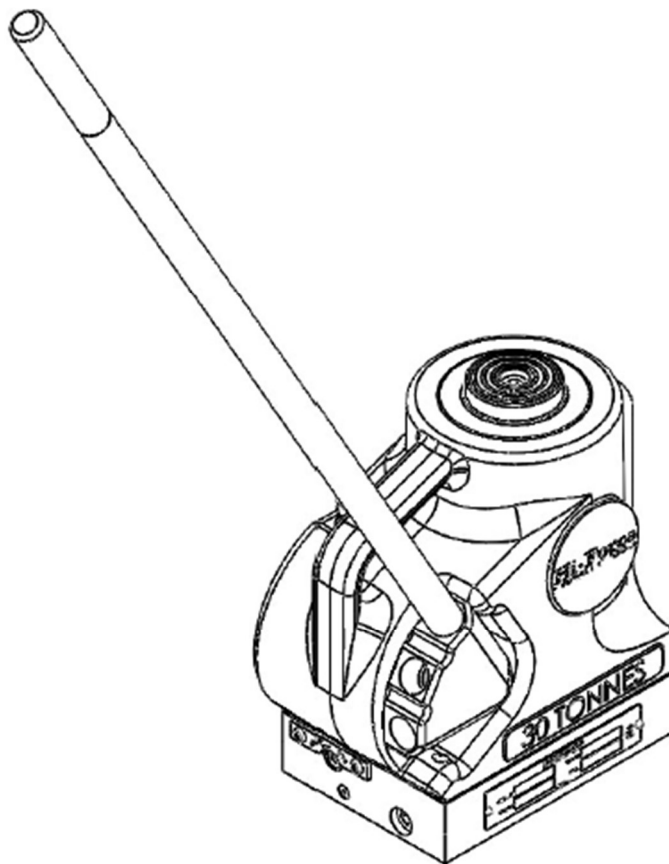


This 'original instructions' document assumes that the operator carrying out any operation with this product is trained and competent to do so. This manual does not attempt to cover all details or variations in the equipment. Nor does this manual claim to provide for every possible contingency met in connection with the installation, operation, or maintenance thereof. Should further information be desired, or should a particular problem arise which is not covered in sufficient detail, the matter should be referred to Hi-Force.

OPERATING INSTRUCTION MANUAL

JAH RANGE | LIGHTWEIGHT ALUMINIUM JACKS



To Include JAH620, JAH1220, JAH630, JAH1230, JAH660 and JAH1260 (including type C and SR derivatives)

This manual applies to the Hi-Force JAH range of Lightweight Aluminium Jacks. The JAH range of lightweight aluminium jacks offers a wide variety of capacities and lift height options. Available as either plain ram lifting jacks, with or without "failsafe" mechanical lock ring, or optional low height claw lifting design, all models are constructed predominantly of lightweight aluminium alloy with all critical functioning parts manufactured from high quality steel. Used extensively in maintenance, construction, heavy plant and machinery applications, these high quality jacks are the proven industry standard. It contains the latest product information available at the time of publication and approval. Hi-Force reserves the right to make changes to this document at any time without notice.

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NOTE: Images contained within this document are for illustrative purposes **ONLY**.

1.0 Inspection upon Receipt

Upon receipt of the product, visually inspect the item for any evidence of shipping damage. Please note: the warranty does not cover shipping damage. Notify the courier immediately if shipping damage is found and refrain from putting the product into service. The carrier is responsible for repair and replacement costs resulting from damage that occurred in transit.

2.0 Safety Precautions

2.1 Introduction



Read and follow all the instructions and safety warnings carefully before handling, installation or use of any hydraulic equipment. Failure to do so could lead to equipment damage, equipment failure, personal injury or even death. Hi-Force will not be held responsible for any damage to the equipment, injury or death resulting from the unsafe use of, lack of maintenance to, or incorrect operation of the product. If in doubt on the correct use of any Hi-Force equipment, contact your nearest Hi-Force office or distributor. Please be advised that; **“THESE HYDRAULIC JACKS ARE NOT SUITABLE FOR USE WITH ROAD VEHICLES”**. Only qualified personnel should be allowed to operate hydraulic equipment. If an operator has not been trained on high-pressure hydraulic equipment and its safe usage, consult your local Hi-Force sales office or distributor who can offer training courses for operators.

2.2 Work Area Safety

- Keep work areas clean and well lit. Cluttered spaces and inadequate lighting can result in unnecessary accidents.
- Keep unauthorised persons at a safe distance from the task site.
- **NEVER** use the tools in the presence of inflammable liquids, gases or material.
- **DO NOT** use the tools in potentially explosive atmospheres (ATEX) this tool is **NOT** ATEX approved.

2.3 General Hydraulic System Safety Precautions



WARNING! Failure to observe and obey the following safety precautions could result in property damage, significant personal injury or death;



- When operating any hydraulic equipment, all operators should ensure that all necessary personal protective equipment (PPE) is worn, as specified by their employer. Steel toe-cap safety shoes, safety glasses/visor, and protective gloves should be worn at all times. All relevant risk assessments should be completed before the use of the equipment.
- Keep hydraulic equipment away from open flames and direct heat.
- **NEVER** handle a pressurised hydraulic hose. Hydraulic oil escaping under pressure from a ruptured hose can penetrate the skin and lead to a significant medical emergency, and in some cases, death. Should this incident occur, seek out medical attention immediately.

- The system operating pressure **MUST NOT** exceed the pressure rating of the lowest-rated component in the system. It is good practice to use a pressure gauge to monitor the entire system.
- Only use hydraulic cylinders in a complete and tested, coupled system. **NEVER** attempt to use a cylinder that is not correctly coupled to its operational pump. **NEVER** pressurise an uncoupled coupler/s.
- **NEVER** attempt to disconnect a hose from a hydraulic system until the systems pressure has been completely released. Doing so can result in that pressure becoming trapped within the system and relieving trapped pressure can be dangerous.
- **NEVER** try to relieve trapped hydraulic pressure in the system by loosening or attempting to remove the coupler. Trapped hydraulic pressure can cause a loosened coupler to dislodge unexpectedly with great force. This action could result in serious personal injury or death, as the coupler could become a projectile and hit operatives in the working area.
- Loosening a coupler under pressure can result in the escape of hydraulic oil at high pressure, which can penetrate the skin and cause significant injury or death.
- **NEVER** use a hammer and punch to unseat a coupler check valve that is under pressure. Doing so could result in the sudden, uncontrolled release of hydraulic oil at high pressure, which could cause significant injury or death.
- Immediately replace any worn or damaged parts using genuine Hi-Force parts only.
- **DO NOT** remove any labels from the product. Replace any damaged or unreadable label immediately.



CAUTION!

Failure to observe and obey the following safety precautions could result in property damage, equipment damage or minor/moderate personal injury;

- **NEVER** lift or carry any hydraulic components by the hose or hoses connected to them.
- Avoid damaging hydraulic hose. **ALWAYS** route hoses to ensure that they are free from sharp bends and kinks. Using a bent or kinked hose will result in severe back-pressure, which can lead to hose failure.
- **ALWAYS** operate the system under no-load conditions before the actual operation, to ensure there is no air trapped in the hydraulic circuit.
- Servicing of hydraulic equipment must only be undertaken by a qualified technician.



- **DO NOT** drop or place heavy objects on a hydraulic hose, as this may cause internal damage, which could result in rupture of the pressurised hose. A ruptured hose could cause significant damage to components and possible severe injury to personal operating nearby.

2.4 Hydraulic Jack Specific Safety Precautions

! WARNING! Failure to observe and obey the following safety precautions could result in property damage, serious personal injury or death;

- **DO NOT** work under or near a load supported only by hydraulic means. A hydraulic jack, when used as a lifting device, should **not** be used as a load-holding device. Once lifted, all loads should be supported using rigid mechanical structures unless using a JAH jack of the SR type with mechanical locking collar.



- **ALWAYS** raise the ram cap or claw toe to the load. **DO NOT** drop loads onto the jack.
- **NEVER** exceed the maximum rated capacity of any hydraulic jack and **DO NOT** attempt to lift a load greater than the jack's stated maximum capacity on the ram cap or the toe of the jack.
- Overloading hydraulic jacks can result in component failure and possible serious personal injury.
- **ALWAYS** place hydraulic jacks on a flat, even surface that supports the entire base (6) and can support the load to be applied.
- Where applicable, use an additional support base to assist in supporting the load to be lifted.
- Avoid lifting loads that are not central to the ram cap or full width of the claw toe. Avoid offset loading as this can damage the liner bore, ram and can also lead to unstable load lifting.
- **DO NOT** weld any items to the jack or claw, or modify it in any way from its delivered condition. Your warranty may be invalidated, and it could lead to serious personal injury.
- **DO NOT** use if there is evidence of oil leakage.
- Never extend the ram by any means other than pumping the jack.
- Inspect and clean the jack after every use, but if subjected to abnormal or shock loading inspect for damage immediately.

! CAUTION! Failure to observe and obey the following safety precautions could result in property damage, equipment damage or minor/moderate personal injury;

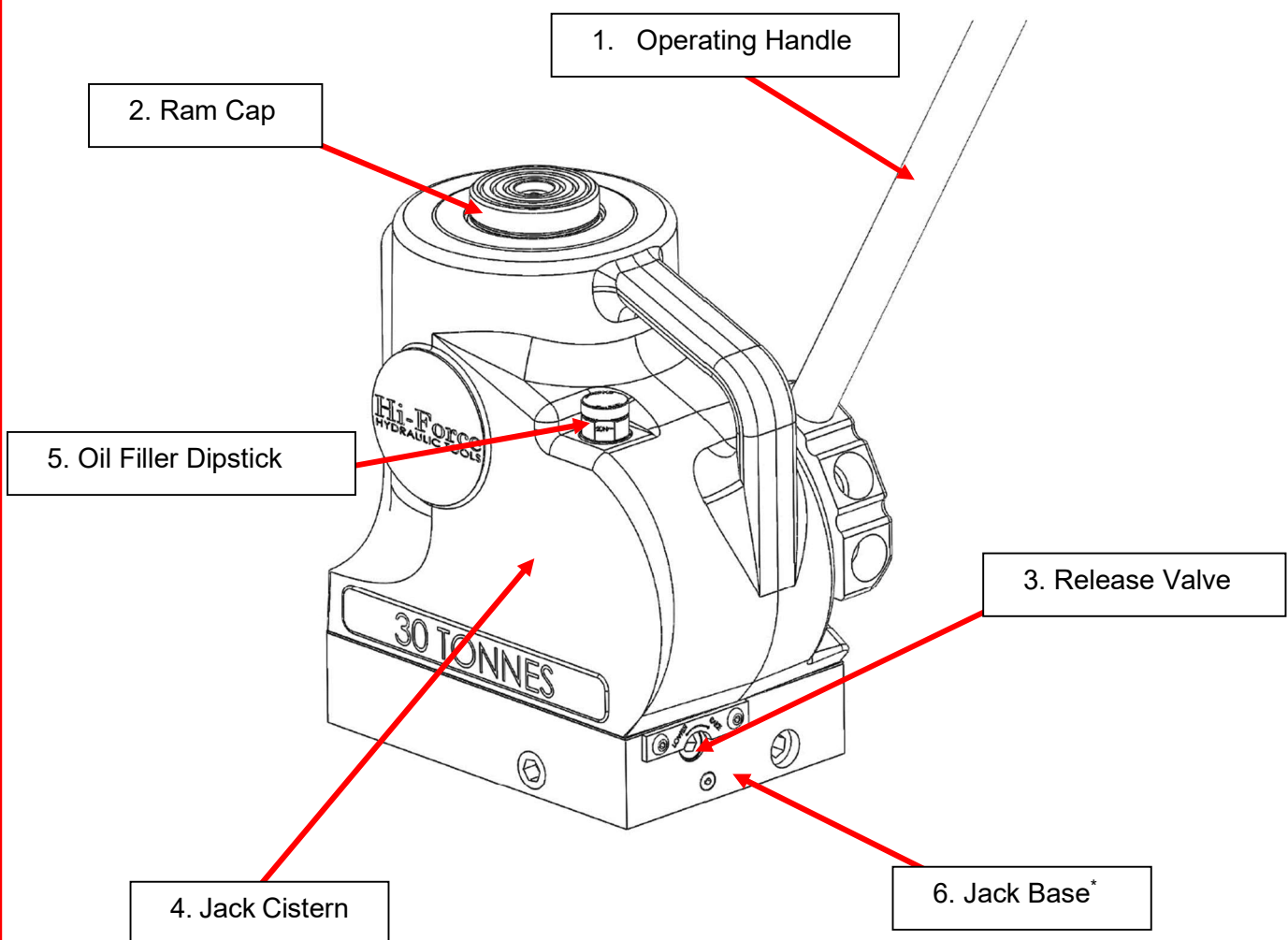
- To protect your warranty, only use Hi-Force HFO15 hydraulic oil or a suitable ISO 15 grade.
- Make sure there is sufficient spare lifting capacity and stroke when selecting Jack/s for any application.
- Ensure hydraulic jacks are used only under environmental conditions that are suitable for their use. The jacks proper functioning cannot be guaranteed under adverse conditions, and a shortened product lifespan can result.

3.0 Declaration of Incorporation / Conformity

Hi-Force declares that this product has been tested and complies with the standards set out in the relevant EU directives. The EU Declaration of Incorporation / Conformity is included as Annex A to this instruction document and is supplied with all shipments of this product.

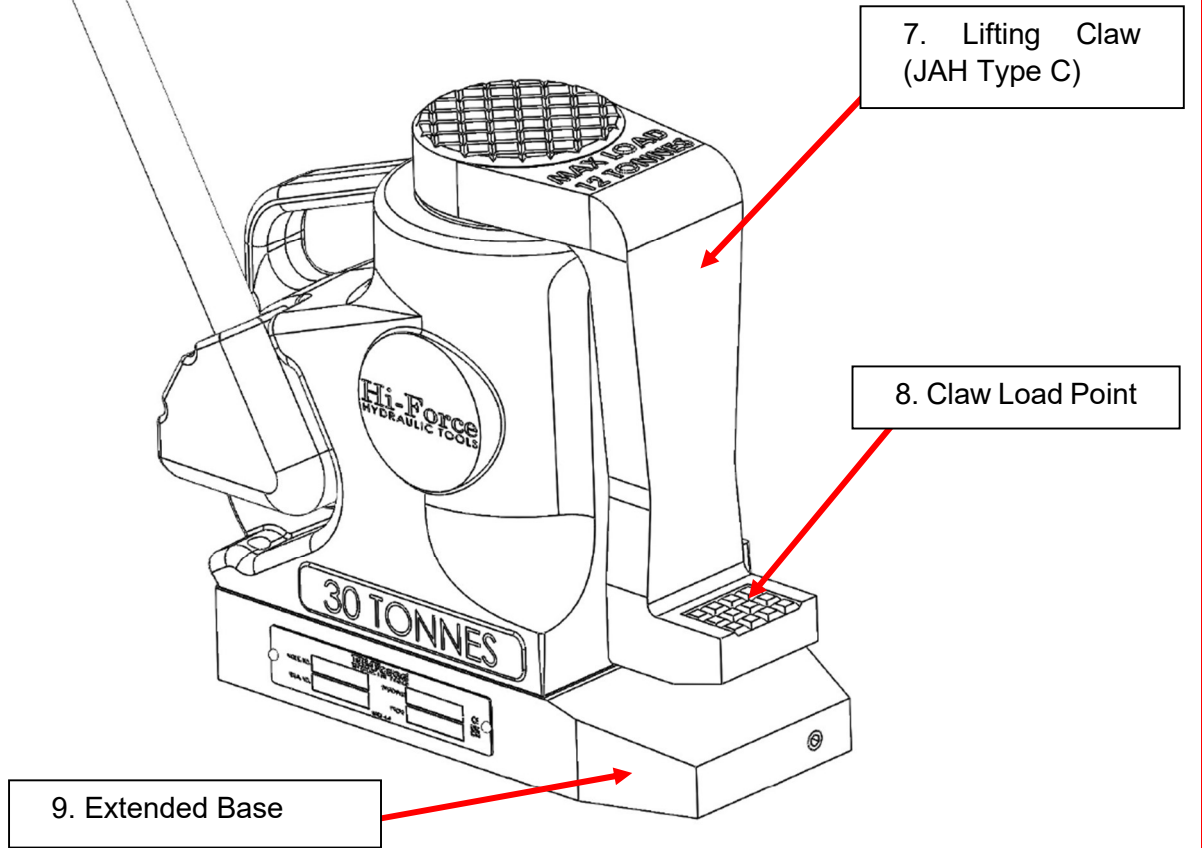
4.0 Component Identification

Plain Ram JAH Type

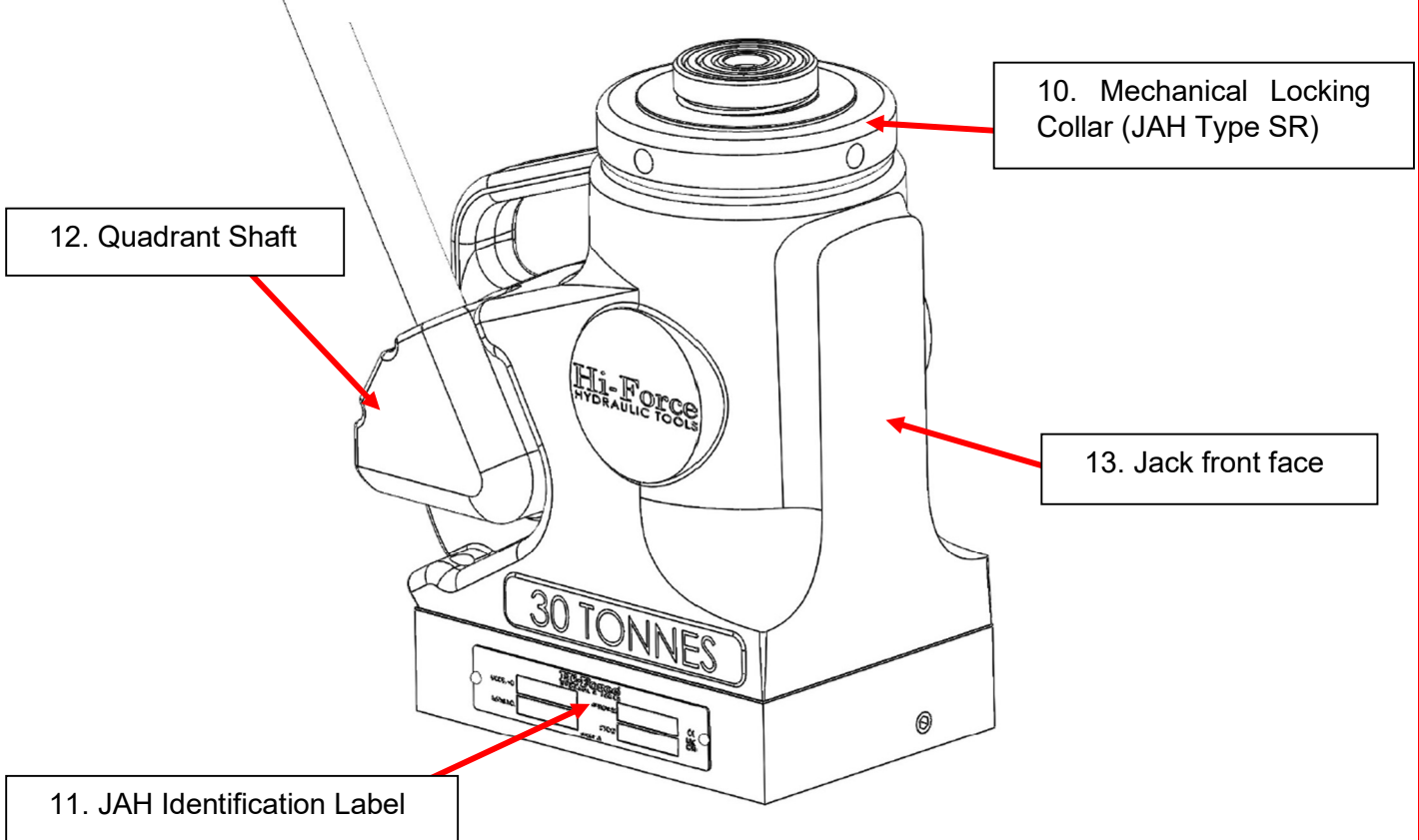


* Jack bases vary dependant on the model so refer to catalogue data tables for details of individual models.

Plain Ram JAH with Claw (JAH Type C)



Screwed Ram JAH with Locking Collar (JAH Type SR)



5.0 Installation/Setup

5.1 Before Each Use

- Check the selected jacks load rating before use. See JAH identification label (11).
- Ensure the jack is in good condition and check the oil level (see section 5.2).
- Check the external surfaces for signs of mechanical damage and/or oil leaks. If either is present, **DO NOT** use the equipment until it has been serviced and returned to its proper operating condition.
- Ensure the external surfaces are dirt free.

5.2 Filling with Oil

Hi-Force JAH Jacks are despatched from the factory pre-filled with oil, and ready for use. If at some stage the jack requires to be topped up with oil, or it needs replacing, follow the procedure below;

- Firstly, ensure that the Ram is **FULLY** retracted, place the jack on its base with the oil filler port facing upwards.
- Remove the oil filler dipstick assembly (5) with a 20mm spanner.
- The level of oil should be within 5mm of the top of the dipstick. The dipstick should be screwed fully into position by hand to determine this level.
- Top up or replace oil as required with high grade HFO15 or suitable ISO15 hydraulic oil.
- Replace the oil filler dipstick assembly (5) with a 20mm spanner to a torque of 20Nm.
- Wipe away any excess oil that may have spilt on the jack exterior.
- See table 8.2 for full JAH jack range minimum oil volume requirement.



5.3 Operating Orientation

! CAUTION! JAH jacks are designed only to be operated in two orientations. These are either upright on the base (6&9) or horizontally on the front face of the jack cistern (13). The two orientations are pictured in **Figure 1**, at the top of page 8. Ensure that any load is supported by the jack base (6&9) and **not** the aluminium jack cistern. If full support of the base can be achieved, the JAH jack can be used in the two orientations on page 8. The jack must not be used with the base partially supported to prevent damage and/or injury. Jacks with an **EXTENDED BASE (9)** **CANNOT** be used in the Horizontal orientation and can **ONLY** be used in the upright orientation.

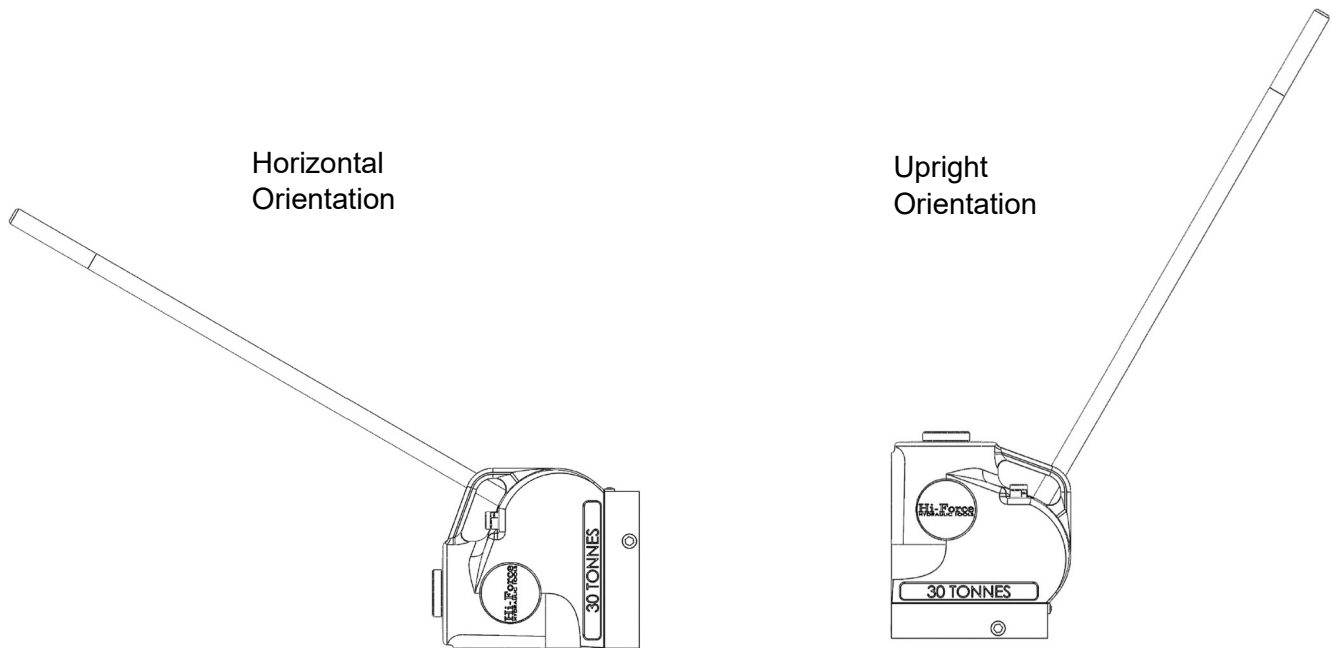


Figure 1.

5.4 Placing the Jack

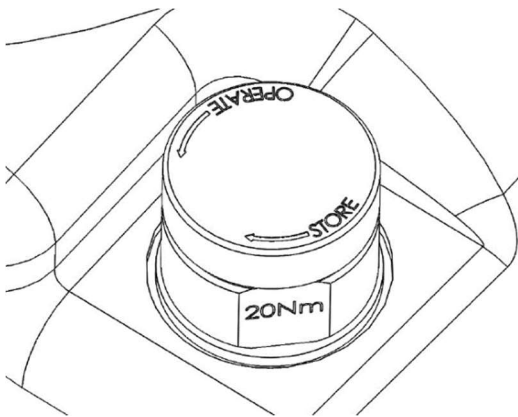
- Carefully determine the jacking/loading point of the item to be lifted/moved, taking the following into consideration:
 1. Make sure the jacking/loading point is strong enough to withstand the load that will be applied to it, without damaging the object being lifted/moved. If necessary, place suitable material between the load point and the jack ram to avoid damaging the structure to be lifted/moved.
 2. Ensure the chosen loading point will not cause the structure to topple or shift unexpectedly when the piston is extended. If necessary, put additional safety measures in place (eg. Rigging, blocking) to limit any unexpected movement of the load.
- Place the jack on a firm, level foundation capable of supporting the load to be lifted/moved, whilst fully supporting the jack base (6&9). Where necessary, use an additional support base of suitable material to support the jack and distribute the load evenly across its base.
- **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 handle/quadrant shaft socket (12) to position the jack.
- **ALWAYS** ensure the jack's ram contacts the load to be lifted as squarely as possible to stop possible side-loading of the ram in the liner.

6.0 Operation

Prior to operation it is the responsibility of the owner and all operators to read, understand and comply with all appropriate safety warnings and operating instructions relating to the equipment being used.

Hi-Force JAH Jacks feature 2 built in safety devices to ensure safe operation and to protect the jack from damage. They are as follows:

- An internal (factory set) pressure relief valve to prevent over-loading. This limits the load that may be lifted to a maximum equal to the equipment rated load + 10%.
- An integral stop ring to limit maximum stroke and prevent over-stroking of the piston. **Note:** Never operate the jack against the stop ring without an external load present, to prevent damage/injury.



Prior to operation of the jack, the dipstick cap must be turned anti-clockwise towards the 'Operate' position (see **Figure 2.**) to ensure sufficient air is allowed to enter and escape the jack cistern during the lifting and lowering of a load. Turn the cap until it stops to ensure it is fully open. Operating the jack whilst the dipstick cap is in the 'Store' position will result in jack not being able to operate efficiently and will limit the stroke and lifting capacity of the jack.

Figure 2.

6.1 To Lift or Push a Load

- Using the key on the end of the operating handle (1), turn the release valve screw (3) clockwise to close it. **NOTE:** Excessive tightening is not necessary and will lead to component wear.
- Put the operating handle into the quadrant shaft mechanism (12) and operate the jack. The ram will rise and lift/push the load. When the ram reaches full stroke the integrated stop ring prevents the piston from rising further and you should stop operating the jack immediately.

If you need to raise the load further than the rated stroke of the jack. Mechanically support the load in its raised position, then retract and remove the jack. Using a suitable support material (eg steel plate) raise the level of the jack and continue with the lift.

- **ALWAYS** remove the operating handle from the jack when not in use.

6.2 To Lower the Load

- Whenever possible, wipe the ram clean before lowering.
- Use the key on the end of the operating handle (1) to turn the release valve screw (3) anti-clockwise and open it. Opening the release valve **SLOWLY** will control the rate of lowering.

WARNING: NEVER turn the release valve quickly when there is a load on the jack. The load will fall uncontrolled and may lead to personal injury or property damage.

- **DO NOT** overload the jack during lowering.

- JAH jacks do require a load to return the ram back into the liner.

6.3 Jacks with Locking Collars (Type SR)

- All models can be supplied with threaded rams and locking collars (10) to mechanically support the load without relying on the hydraulic circuit or mechanical supports.
- When the load is at the required position, rotate the locking collar (10) clockwise until it rests hand-tight on the top of the liner/cistern (4). **NEVER** lock the ram in the fully extended position at the jacks maximum stroke, as this will not enable you to take the load off the locking collar when you want to lower the load.
- To undo – operate the jack so that it takes the load off the locking collar (10). Rotate the collar anticlockwise until it reaches the top of the ram, just under the ram cap (2).

6.4 Jacks with Lifting Claws (Type C)

- Claws (7) are supplied as an accessory to provide a low height lifting point. When fitted, lifting must always and only be carried out on the load point or toe of the claw(8).
- The capacity of the claw (7) is only rated at **40%** of the capacity of the jack to which it is fitted. Lifting claws must **NOT** be fitted to screwed ram jacks with locking collars (Type SR). Lifting claws must **ONLY** be used with jacks having extended bases (9), that extend under the toe of the claw. They must **ONLY** be used for vertical movements of loads in the upright orientation.
- The recess on the underside of the top of the claw fits around the top of the ram cap (2). The claw pad of the claw assembly rests against the front face of the jack (13). Ensure that the claw assembly is seated on the ram cap (2) properly before use and that the claw load point (8) is completely under the load.

7.0 Maintenance and Storage

ALWAYS check the oil level prior to use (refer to 5.2) and use Hi-Force the specified hydraulic oil grade only with all jacks. The use of other fluids may invalidate your warranty.

After use, always wipe the ram clean and retract it fully. The dipstick vent must be turned clockwise to the 'Store' position (see **Figure 2.**) to ensure that oil is **Not** allowed to escape from the jack cistern during storage. Storing the jack whilst the dipstick is in the 'Operate' position could result in oil draining from the jack.

Keep the jack exterior clean in order to prolong the products lifespan.

Routinely perform a visual inspection of the jack for signs of general damage and have serviced on a regular basis.

When not in use, store the hydraulic jack upright in clean and dry conditions. If storage is to be for a prolonged period, it is advisable to apply grease to exposed metal surfaces.

NEVER store, transport or lift a jack with its ram in the extended position.

Have the Jack serviced regularly by a Hi-Force authorised repair centre.

8.0 Specifications

8.1 JAH Specifications

Refer to the identification label for model number information. Operating conditions for jacks are -20° C to 40° C. Operating outside of this temperature range may influence component reliability.

Model Number	Jack Capacity (tonnes)	Stroke (mm)	Weight (kg)	Maximum Working Pressure (Bar)
JAH620	20	152	13	694
JAH1220	20	305	18	694
JAH620SR	20	152	13	694
JAH1220SR	20	305	19	694
JAH620C	20	152	20	694
JAH1220C	20	305	23	694
JAH630	30	152	16	645
JAH1230	30	305	24	645
JAH630SR	30	152	17	645
JAH1230SR	30	305	24	645
JAH630C	30	152	23	645
JAH1230C	30	305	32	645
JAH660	60	152	30	642
JAH1260	60	305	46	642
JAH660SR	60	152	30	642
JAH1260SR	60	305	46	642
JAH660C	60	152	49	642
JAH1260C	60	305	67	642

8.2 JAH Minimum Oil Volume Requirement

MODEL NUMBER	OIL VOLUME (ml)
620	600
1220	1100
630	850
1230	1550
660	1550
1260	2950

9.0 Trouble Shooting

Hi-Force JAH Jack's should be serviced and repaired only by authorised Hi-Force repair centres. The following table gives possible causes and solutions for common problems.

TROUBLESHOOTING GUIDE		
Problem	Possible Cause	Solution
1. Ram will not advance, advances part way or erratically.	a. Release valve open.	Close release valve. (See section 6.1)
	b. Load is too heavy for jack.	Use suitably rated jack. (See Section 5.1)
	c. Oil level is low.	Add oil to the reservoir. (See Section 5.2)
	d. Ram binding in liner.	Repair or replace jack.
	e. Jack seals leaking.	Repair or replace jack.
	f. Pressure relief valve leaking	Repair or replace jack
	g. Delivery valve leaking	Repair or replace jack
	h. Airlock within jack	Repair or replace jack
	i. Dipstick in 'Store' position	Turn to 'Operate' position. (See section 6)
2. Ram advances but will not hold.	a. Load is too heavy for jack.	Use suitably rated jack. (See Section 5.1)
	b. Ram seal leaking.	Repair or replace jack.
	c. Release valve open.	Close release valve. (See section 6.1)
	d. Delivery valve leaking	Repair or replace jack.
3. Jack leaks oil.	a. Worn or damaged seals.	Repair or replace cylinder.
	b. Jack damaged internally.	Repair or replace cylinder.
	c. Jack over-filled with oil	Drain excess oil from cistern.
4. Ram will not retract or retracts slower than normal.	a. Release valve is closed.	Open release valve. (See section 6.2)
	b. Oil reservoir over-filled.	Drain excess oil from cistern.
	c. Damaged or worn seals.	Repair or replace jack.
	d. Jack damaged internally.	Repair or replace jack.
	e. Ram binding in liner.	Repair or replace jack.
	f. Dipstick in 'Store' position	Turn to 'Operate' position. (See section 6)

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