



SAFE USE OF HYDRAULIC CYLINDERS

Applies to: Hi-Force, Enerpac, Tangye and similar hydraulic cylinders, jacks, and pumps

✓ Purpose

Hydraulic cylinders provide controlled lifting, pushing, pulling, or pressing force for heavy machinery, structures, and engineering tasks.

They deliver high force output from a compact unit when used with manual, electric, air, or petrol-driven pumps.

This leaflet provides guidance for safe setup, operation, and maintenance to prevent overloading, hose failure, hydraulic leaks, or unstable lifts.

⚙ Before Use

- Inspect cylinder – Check body, piston, saddle, threads, and return mechanism for damage, scoring, or leaks.
- Verify tonnage rating – Ensure the cylinder's capacity (tonnes) exceeds the load being lifted or pushed.
- Check stroke length – Confirm the required lift does not exceed the cylinder's maximum stroke.
- Check hydraulic pump – Inspect pump body, handle, motor, reservoir level, and pressure gauge.
- Inspect hoses & couplers – Look for cracks, abrasion, blistering, cuts, corrosion, or leaking fittings.
- Confirm compatibility – Ensure all components (pump, cylinder, hose, coupler) share the same **pressure rating**, typically 700 bar / 10,000 psi.
- Check base stability – Cylinder must sit on a solid, level surface using a steel plate or jacking block if required.
- Inspect saddle – Ensure correct saddle is fitted and contact surfaces are clean and centred.
- Confirm load path – The load must be vertical and directly aligned with the cylinder; no side-loading.
- Do a function test – Pressurise lightly with no load to check movement and valve operation.
- Ensure operator competence – Only trained persons should assemble and operate hydraulic equipment.

🚧 During Operation

- Position cylinder centrally under the load with full base contact.
- Use suitable jacking blocks, cribbing, or steel plates to ensure stability.
- Pump slowly and evenly — avoid shock loading.
- Keep hands and body clear of the load path and pinch points.
- Monitor pressure gauge regularly to avoid overload.
- Use tilt saddles or specialist cylinders if misalignment cannot be avoided.
- If using multiple cylinders:
 - Use a manifold for equalised flow
 - Maintain synchronised lifting at all points
- Check hoses remain straight, supported, and protected from crushing or sharp edges.
- Never work under a load supported only by a hydraulic cylinder — always use mechanical supports.
- Stop immediately if you see leaks, hear hissing, or notice jerky piston movement.

Do Not

- Exceed the rated pressure or tonnage capacity.
- Use damaged hoses, couplers, or cylinders.
- Side-load or force the cylinder at an angle.
- Use cylinders as structural supports — they are not designed to hold static loads.
- Weld, heat, or modify the cylinder or ram.
- Use PTFE tape on hydraulic fittings — use proper sealing surfaces only.
- Unscrew couplers under pressure.
- Allow hoses to become kinked, crushed, or tensioned.
- Lift people or allow personnel beneath unsupported loads.

After Use

- Lower the load fully using the release valve or pump return.
- Depressurise the system before disconnecting hoses.
- Clean cylinder and hose threads using a lint-free cloth.
- Inspect for leaks, damaged seals, and worn saddles.
- Replace dust caps on all couplers to prevent contamination.
- Store vertically with ram fully retracted.
- Maintain accurate inspection and pressure test records.

Safety Reminders

- Always follow manufacturer instructions (Hi-Force, Enerpac, etc.).
- Maintain good housekeeping around hydraulic equipment.
- Ensure cylinders are fully supported with stable cribbing before going under loads.
- Never exceed 700 bar/10,000 psi systems unless designed for it.
- Perform pre-use checks before each shift.
- Wear correct PPE: gloves, helmet, safety boots, and eye protection.
- Have hydraulic equipment periodically inspected by a competent person.

Support and Maintenance

For service, inspection, and spare parts, contact your local Lifting Gear and Safety Depot

Depot List

Bristol: 0117 9714883

Avonmouth: 0117 9550456

Newport: 01633 334450

Port Talbot: 01639 540007

Pembroke: 01646 574000

Plymouth: 01752 474488

Fareham: 01329 550988

Redruth: 01209 703990