



William Hackett

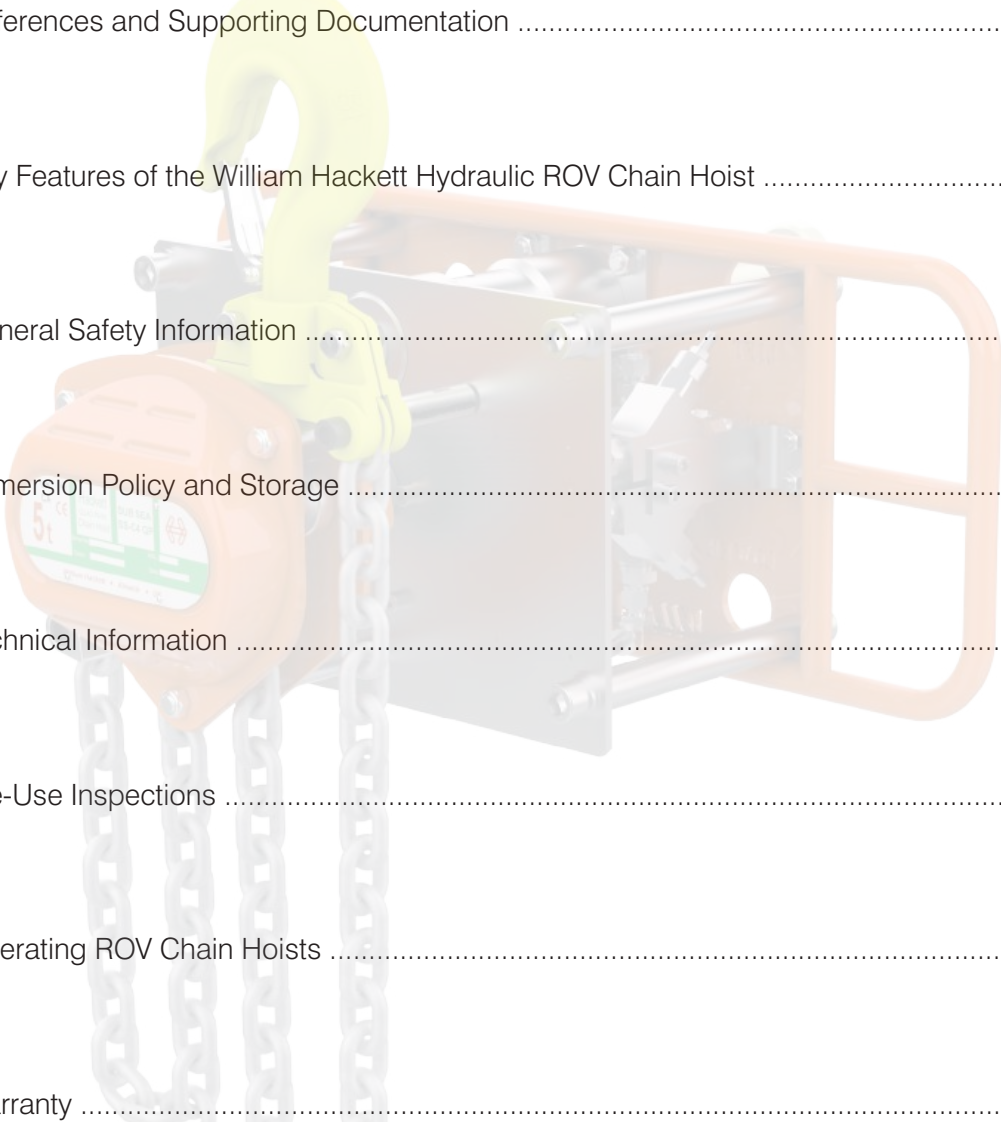
*SS-C4 QP
Hydraulic
ROV Operable
Chain Hoist
User Guide*





NOTE: ROV Hooks optional

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1. References and Supporting Documentation

Ref. 1.

Manual - WH SS-C4 QP Chain Hoist.

Ref. 2.

DNV Salt Water Immersion Test Report No. A0359376.02, Rev. 1.

Ref. 3.

IMCA LR 005, D 028 - Rev. 3.

Ref. 4.

WHRD-0125 (Fleeting).

Duty holders and actual users of lifting equipment, including chain hoists and associated components can obtain more detailed information and guidance on safe use and compliance with statutory requirements from the following publications:

Ref. 5.

HSE Publication L113 (2014) Safe Use of Lifting Equipment.

Ref. 6.

HSE Publication INDG422 (2008) Thorough Examination of Lifting Equipment.

2. Key Features of the William Hackett Hydraulic ROV Chain Hoist

William Hackett SS-C4 QP ROV Chain Hoists are intended to be operated by Remotely Operated Vehicles (ROVs) in underwater and offshore environments, specifically designed for deep-sea operations and subsea lifting applications. A range of ROV interfaces are available to meet specific project requirements.

The patented William Hackett quad-pawl brake system is incorporated into the ROV Chain Hoist design, making the fail-safe braking mechanism available even in ROV or power failure situations. ROV Chain Hoists units are built with high-quality materials and specialised coatings for enhanced corrosion resistance in marine environments. Ease of maintenance with accessible parts and serviceability is a critical design feature to prolong the service life of each unit and to ensure ROV Chain Hoists are safe and fit for use in sub-sea lifting environments.

Example applications of the William Hackett ROV Chain Hoist include:

- **Offshore Oil and Gas Platforms:**

Used for lifting and positioning heavy equipment, components, and tools on offshore oil rigs or during underwater installations.

- **Subsea Construction:**

Assists in underwater construction projects, including the installation of pipelines, cables, and other subsea infrastructure.

- **Marine Salvage Operations:**

Employed in the recovery and salvage of submerged vessels, machinery, or other heavy objects from the ocean floor.

- **Underwater Maintenance and Repairs:**

Facilitates maintenance tasks such as removing, replacing, or repairing subsea equipment and components, including anchor chains and mooring systems.

- **Renewable Energy Projects:**

Supports underwater tasks during the installation and maintenance of tidal turbines and offshore wind farms.

- **Research and Exploration:**

Used by scientific and research institutions for deep-sea exploration projects and the deployment of subsea equipment.

- **Civil Engineering and Bridge Construction:**

Aids in the construction and maintenance of submerged structures, including underwater parts of bridges, docks, and piers.

3. General Safety Information

All ROV chain hoists come with an EC Declaration of Conformity stating compliance with the relevant health and safety regulations.

Disassembly, inspection, maintenance, assembly and testing should only be performed by a competent person. It is the responsibility of the owner/user to install, operate, inspect and maintain the product in accordance with all applicable standards and regulations.

Do:

- use the William Hackett hoist within 2% of its rated load capacity (WLL) and its maximum rated load capacity (WLL)
- only allow a competent and trained person to operate the hoist
- make sure that the hoist suspension hook is securely attached to a suitable support
- make sure hook attachment points are the right size and seated in the hook saddle
- make sure that the hook latch is closed and does not interfere with any part of the load attachment
- make sure the load is free of all obstructions during the lifting operation
- inspect the chain block regularly, replace damaged or worn parts and keep maintenance records
- only use William Hackett parts when replacing components
- keep specific components well lubricated (refer to Ref. 1)
- ensure the load chain is not twisted
- lifting is done in a straight line and the load chain is always in-line with 2 attachment points
- ensure the top and bottom hooks are free to rotate under no load conditions
- ensure chain bags are fit for use and load chain feeds into the chain bag in a uniform manner

Do Not:

- lift more than the rated load capacity (WLL) of the hoist
- lift below 2% of the rated capacity (WLL) of the hoist
- use a hoist if all marking are not legible
- use in an acidic environment
- use in excessively hot or cold environments (refer to section 5)
- use the hoist if an abnormal operating noise is heard
- wrap the load chain around the load and back-hook into a choker or basket hitch
- run the load chain over sharp edges
- allow the load to swing
- lift over people
- use a damaged hoist
- support a load on the tip of a hook
- attempt to repair a hoist unless you are competently trained
- shock load the hoist
- allow the load to swing
- use to lift people

3. General Safety Information

- use modified hoists with components which are not manufactured by William Hackett
- use a hoist with excess corrosion/rusting
- submerge a hoist subsea for longer than the recommended timeframe (refer to section 4)
- use chain end stops or anchorage as an operational limiting device
- use a hoist if load chain is not running smoothly through the hoist pocket wheel i.e. if load chain is jumping or jamming in the hoist
- drive the hoist hydraulically if the hand chain is fitted to the hoist
- attempt to alter hydraulic circuit fittings when pressurised

The maximum settings listed in section 5 shall not be exceeded - doing so invalidates all warranty and liability policies previously stated by William Hackett Lifting Products Limited.

Speed and load calibration of the ROV hoist assembly requires the hydraulic system to be pressurised and test loads to be applied to the hoist simultaneously therefore extreme caution must be taken.

4. Immersion Policy, Procedures and Storage

4.1. Immersion Policy

The William Hackett Subsea Chain Hoist is designed for single or multi-immersion operations lasting up to 31 consecutive days.

It is recommended that each William Hackett subsea chain hoist has a service and inspection log detailing the number of immersions and total duration of use. The hoist can be used as many times as required within a 31-day multi-immersion period; however, between immersions or when not in use, the hoist must be cleaned and stored in accordance with William Hackett's procedures (refer to section 4.1).

After each 31-day immersion period, the hoist should be sent to an authorized William Hackett agent for a thorough inspection and maintenance. This service must include a complete disassembly and visual inspection of all internal components, followed by a series of supplementary load tests after reassembly to ensure a safe and reliable performance.

Any use of a subsea chain hoist outside the parameters of the William Hackett Immersion Policy should be based on a thorough risk assessment. It is recommended to consult William Hackett's technical team for guidance in such cases.

4.2. Cleaning and Storage of Subsea Chain Hoists

After each period of subsea use, the hoist should be flushed with unpressurized fresh water, functionally checked, and stored in a dry, sheltered area. Avoid using solvents or lubricants during cleaning, as they may damage the equipment.

Report any defects immediately to the responsible person and quarantine any damaged hoists. Ensure the load chain is thoroughly dried and wrapped securely around the hoist rather than left on the floor.

During storage, including transporting the hoist to the offshore worksite, protect the hoist from exposure to conditions that could impair its safe operation, including:

- Water or seawater
- Temperatures outside the hoist's operating range
- Solvents
- Corrosive chemicals or fumes
- Grit, sand, and wind-blown dust

Store the hoist on suitable racks within a container to prevent accidental mechanical damage, ensuring the load chain remains off the ground.

5. Technical Information

The harsh conditions experienced at subsea worksites undoubtedly will have an adverse effect on any hoist that has not been specifically designed for use in that environment. The saltwater conditions may accelerate the corrosion within the unit, the water immersion may wash grease from internal parts and particles suspended in the water can affect the ability of the brake to hold the load.

William Hackett ROV Chain Hoists have specifically been designed to combat these issues through innovative design functionality, material selection and specialist material coatings to ensure safety when operating ROV hoists subsea.

5.1. Hydraulic ROV interfaces

The William Hackett hydraulic drive options provide a flexible range of operator-friendly interfaces for ROV pilots to engage with.

Hydraulic interface options:

Fast, compact and efficient hydraulic connection options available for control via an ROV, deck HPU or subsea manifold.



- Quick Disconnect (QD) options:
 - 3/4" ISO 16028 non-spill, Flat-Face, Quick-Coupling system
 - 3/4" Wet-Line, Wing Nut, Quick-Coupling system.



5. Technical Information

Key features:

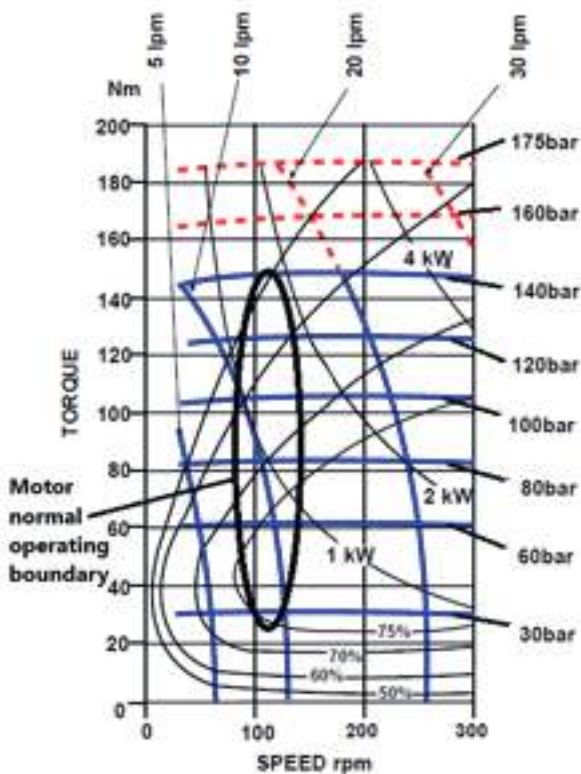
- Robust and naturally balanced 316L stainless steel framework with multiple ROV grasping handle positions to ISO 13628-8 and high visibility, powder coated paint to ISO 13628-1
- Laser cut 316L stainless steel interface plate provides clear valve identification and direction control labelling
- Fully compatible with industry standard hydraulic oil and biodegradable oil (ISO 32), and water-based hydraulic fluids*
- Cathodic protection for sustained subsea use to DNV-RP-B401
- Fully controlled flow provided by high quality, compact, dual Bypass valves, and Flow Control valves
- When the Hot Stab or QD couplings are disconnected, seawater ingress and hydraulic fluid spillage is prevented by the high quality, dual flow check valves
- High quality, subsea hydraulic motor with corrosion protected chrome-plated shaft to prevent seal degradation and improve long term internal and external pressure tightness
- Motor specification provides optimised efficiency for torque load ratings of hoist
- Manufactured in the UK.

5. Technical Information

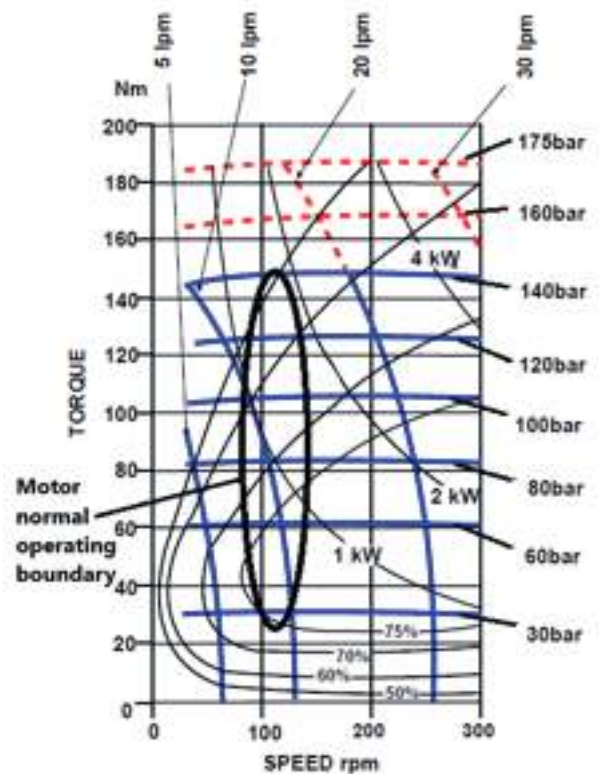
Specifications:

- 210 bar (3000psi) maximum system pressure
 - Relief valves settings: Raise 120 bar / Lower 120 bar (+30/-0 bar)*
 - 110rpm motor performance (does not account for other system pressure losses)
- Nominal raise torque:
 - 120Nm at 110 RPM has 115 bar pressure drop at flowrate 13 l/min*
- Nominal lower torque:
 - Breakout: 120Nm at 110 RPM has 115 bar pressure drop at flowrate 13 l/min*
 - Continuous: 30Nm at 110 RPM has 30 bar pressure drop at flowrate 8 l/min*
 - 140rpm motor performance (does not account for other system pressure losses)
- Nominal raise torque:
 - 120Nm at 140 RPM has 115bar pressure drop at flowrate 15 l/min*
- Nominal lower torque:
 - Breakout: 120Nm at 140 RPM has 115 bar pressure drop at flowrate 15 l/min*
 - Continuous: 30Nm at 140 RPM has 30 bar pressure drop at flowrate 11 l/min*
- Normal operating range/boundary of motor in this application is presented in the motor performance diagrams below.

*System factory set for ISO32 hydraulic fluid at 15°C with valve setting adjustment necessary for alternative temperatures and viscosities.



Speed/torque/pressure performance curves
at 110rpm



Speed/torque/pressure performance curves
at 140rpm

5. Technical Information

5.2. Chain Block Technical Specification

Standards:

The WH ROV SS-C4 QP chain hoist is verified by DNV as compliant with the requirements of the relevant international standards. (Verification No. N141UH09).

- British Standard BS EN13157: 2004 + A1:2009
- American Standard ASME B30.16-2014
- Australian Standard AS1418.2-1997
- South African Standard SANS 1594: 2007
- NORSOK R-002: 2017

Optional ROV interfaces:

- Hot Stab
- Quick Disconnect (QD) Coupling

Light load capability: tested and certified at 2% of the chain hoist rated capacity.

Quad pawl (QP):

- Fitted as standard on all ROV chain hoists
- Enhanced resilience to failure
- Finer tolerance adjustment
- Endurance tested to twice the industry norm

Safety factor: 4 : 1

Safety latches: hooks are fitted with heavy duty steel latches. The latch and hook tips are integrated creating a strong and robust hook closure.

Hook overload and traceability marks: hooks have overload indicator marks either side of the hook throat (3.2t to 10t). Both top and bottom hooks are embossed with a batch code, manufacturer's mark and the working load limit.

Fleeting/cross hauling: independently tested and verified (Test Report 2550-7615) for fleeting or cross hauling applications. Certified to angles up to 60° from the vertical without deration of the WLL.

Load Chain: fitted with Grade T (8) load chain, fully compliant with BS EN 818-7 and other international standards

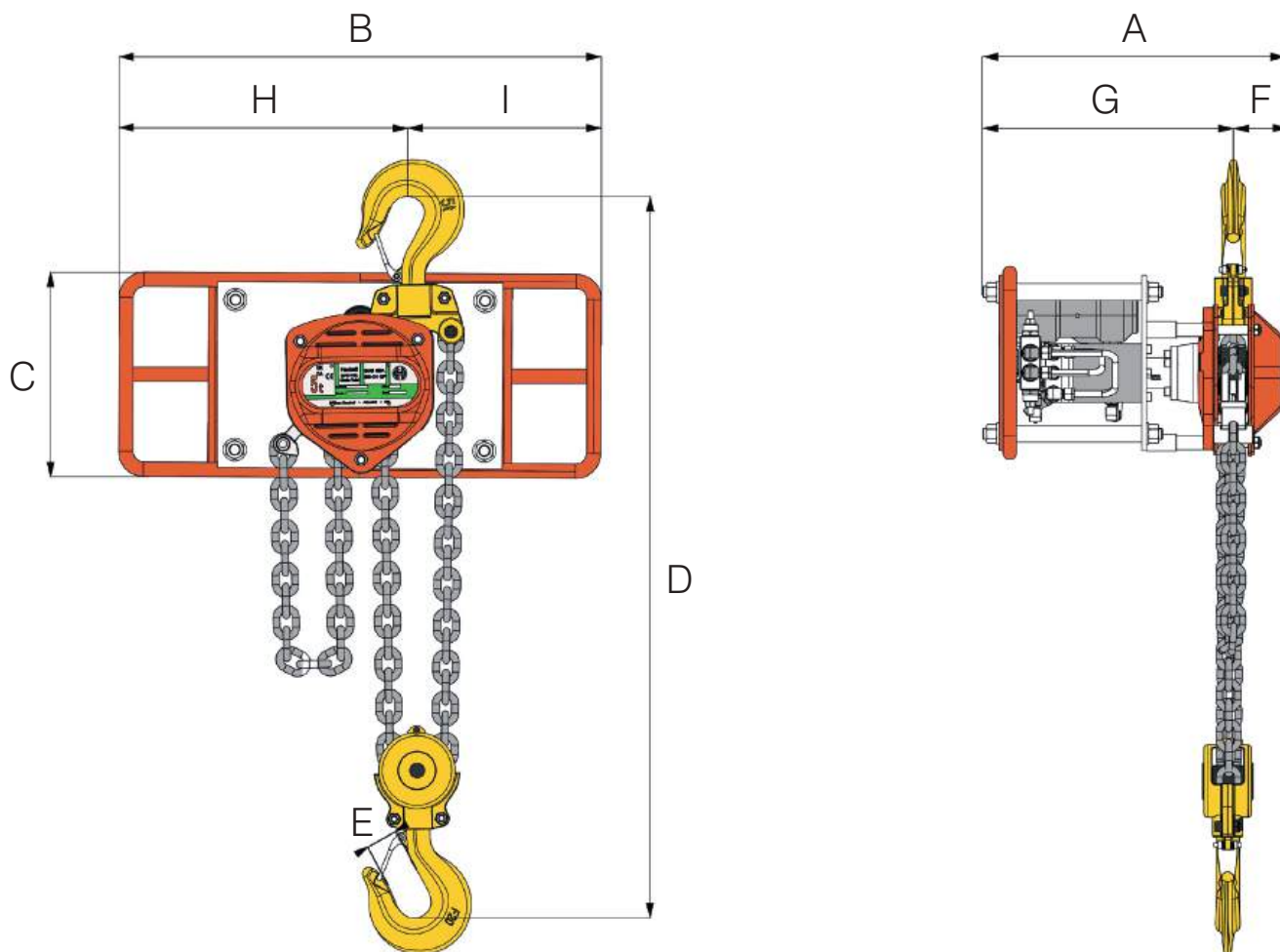
Temperature range: -40°C to +60°C.

Proof tested: 100% of hoists are proof tested to 1.5 times the WLL.

Optional equipment: ROV chain hoists can be fitted with specialist lifting components such as ROV Shank Hooks, Shackles, Sling Hooks and Overload Limiters.

Manufactured and proof tested in the UK.

5. Technical Information



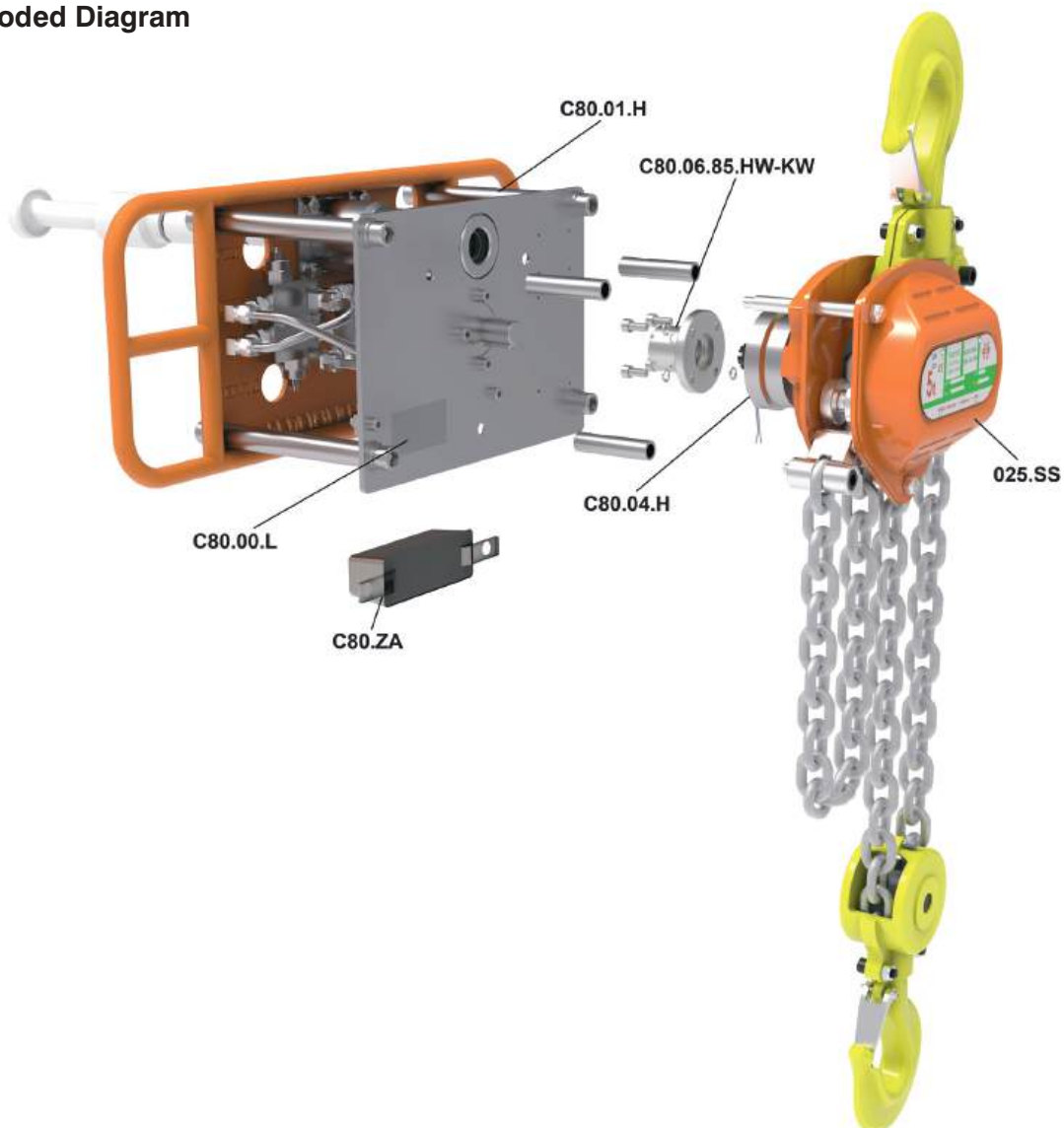
Specifications

Part Code	WLL t	No. of Falls	Load Chain mm	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	3m HOL weight out of water kg	Extra Weight per m kg
022.R.300.H1.P	3.2	1	10.0	460	676	286	520	43	80	380	387	309	65.0	2.24
022.R.500.H1.P	5.0	2	10.0	460	676	286	600	51	80	380	419	257	76.4	4.48
022.R.1000.H1.P	10.0	4	10.0	460	676	286	760	64	80	380	471	199	106.9	8.96
022.R.1500.H1.P	15.0	6	10.0	515	676	286	1000	86	75	440	517	159	154.7	13.44
022.R.2000.H1.P	20.0	8	10.0	490	900	286	1150	80	102	388	544	352	187.5	17.92

Larger capacities up to 50t available on request.

5. Technical Information

5.3. Exploded Diagram



Parts List

Part Code	Quantity	Description
022.SS	1	Hackett Subsea Chain Block Carcass C4
C80.01.H	1	HS Hydraulic Ass Inc.
	1	Grab Handle and Backplate
	1	Motor Drive Adaptor/Keyway
	4	Drive Adaptor Shes A4 M8 x 20
C80.85.HW-KW	1	HS Hand Wheel Extension Bar Inc.
	3	Brake Cover Spacer
	3	M10 A4 CSK Backplate Bolts
C80.04.H	1	Hot Stab Brake Adaptor
C80.ZA	2	Zinc Anode
C80.00.L	1	ROV Hot Stab Label

6. Pre-Use Inspections

6.1. Manufacturer Testing and Verification

Systematic and logical checks are critical for identifying issues related to accidental damage, internal corrosion, brake contamination, or improper storage. Use the following checklist to ensure safe operation:

1. Preparation

Prior to issuing the SS-C4 QP ROV chain hoist from storage, confirm the certification is within date, and matches the identification on the label.

Clean the hoist if necessary, before inspection.

2. Label and Certification

Confirm the nameplate details are clear and visible.

3. Hooks and Latches

Ensure hook latches function correctly.

Verify hooks are free to rotate without load and show no signs of wear or distortion, such as an increased throat opening.

4. Load Chain

Check for wear or damage, especially on bearing surfaces inside the links. Look for bent, notched, stretched, or corroded links, and ensure the chain moves freely.

5. Brake and Ratchet

Without a load on the hoist, turn the ROV interface (e.g. D-Handle) clockwise to ensure a clear, positive clicking sound as the brake ratchet engages with the pawl system.

6. Chain Sheaves

On multiple-fall hoists, verify that all chain sheaves rotate freely without load.

7. Fixings and Anchors

Check that all fixings (e.g., split pins, nyloc nuts) are present and in good condition.

Inspect the hoist slack end chain anchor for damage.

8. Hoist Body

Inspect for general damage that could indicate neglect, damage, or misuse.

9. Load Chain Wheel, Guides, and Strippers

Ensure the load chain wheel is free from damage or debris.

Confirm guides and strippers are functional and in good condition.

10. Operating Instructions are available.

11. Manual Drive and ROV Interface

Inspect flexible rubber joints for secure attachment and damage.

Confirm the manual drive handle is secure and free from distortion.

For hand-chain operable ROV hoists, ensure connecting links are secure and free from cuts, nicks, cracks, corrosion, and acid damage.

13. Functional Test

Perform multiple lift and lower cycles to confirm the chain hoist operates as expected, with no unusual sounds or resistance.

14. Light Load Test

Lift a test load of 2% of the hoist's WLL through a distance of 300mm.

To check the brake's functionality; begin to lower the test load (opening the hoist's brake mechanism).

Stop driving the hoist and check the load instantly stops moving, checking for any indication of 'slippage'

WARNING: Remove hand chains prior to submersion and/or ROV-controlled operation of the hoist.

IMPORTANT: If any of the above criteria are not met, do not use the hoist.

6. Pre-Use Inspections

6.2. Manufacturer Testing and Verification

William Hackett ROV Hoists are proof load tested by the manufacturer to 1.5 x WLL. Light load testing at 2% of the hoist's WLL should be performed as part of a pre-use, interim or periodic inspection. A table of 2% light loads are detailed below.

Hoist WLL t	2% Light Load (0.02 x WLL) kg
3.2	64
5.0	100
7.5	150
10.0	200
15.0	300
20.0	400

Note:

Proof load tests should only be performed by the manufacturer. Never exceed the hoist's Working Load Limit.

7. Operating ROV Chain Hoists

7.1. General Operation

William Hackett ROV Chain Hoists are actuated by an ROV receptacle which interfaces with the hoist's drive component; either a D-Handle, T-Handle, Fishtail or Torque Bucket interface. General principles for operating hoisting equipment are applied to subsea ROV hoists. The William Hackett ROV Hoist is made up of an ROV interface, attached to a WH SS-C4 QP Chain Hoist. For more information on the WH SS-C4 QP Chain Hoist, refer to the manual (Ref. 1).

The following steps detail the operation of the William Hackett ROV Chain Hoist for effective and safe lifting in underwater environments. Ensure that the ROV operator is well-versed in these instructions and the specific environmental considerations of the subsea lifting operation.

1. **Attach to Load:** Position the ROV to align the hoist with the load attachment point. Secure the hook around the load's attachment point and ensure the latch is fully closed.
2. **Engage Hoist with ROV:**
 - Use the ROV's manipulator to grip the hoist's operating handle/interface.
 - Apply the necessary drive parameters outlined to initiate the hoisting process.
3. **Lifting the Load:**
 - Carefully lift the load in a controlled, steady motion.
 - Avoid sudden jerking or rapid acceleration, which may place undue stress on the hoist and chain.
 - Continuously monitor the load during the lift, adjusting the ROV position as needed to maintain a safe orientation.
4. **Lowering the Load:**
 - Reverse the process to lower the load in a controlled manner.
 - Keep the load path clear, and ensure the descent is smooth and gradual.
5. **Disconnecting the Hoist:**
 - Once the load is lowered and secured, carefully release the hoist from the load attachment point using the ROV's manipulator.

Following these steps will help ensure efficient and safe operation of the William Hackett ROV Chain Hoist. For any issues during use, refer to the step-by-step guide in section 7.2.3 and Ref. 1. The hydraulic system is simply an actuation mechanism for the hoist and does not hold the load placed on the hoist. If the hydraulic system was to fault, the screw brake mechanism within the chain block would hold the load.

7. Operating ROV Chain Hoists

All William Hackett ROV Chain Hoists are fitted with a visual indicator on the last 1m of load chain to help give ROV operators a warning/indication as to when there is no more slack chain available when lowering the hoist. This will help prevent overloading the end link of chain and it's anchorage. See image alongside for details.



7.2. Hydraulic Set-up

The hoist requires a hydraulic power supply, either through a hot-stab interface or a QD coupling interface. The hoist's hydraulic system is configured by the manufacturer to provide the required motor outputs for lifting and lowering a full capacity load. However, these settings can be adjusted to customer specific requirements or to realign the original valve settings if they have been tampered with. Hydraulic pressure must be measured at the hoist interface to mitigate any loss in pressure due to the length of hose being used.

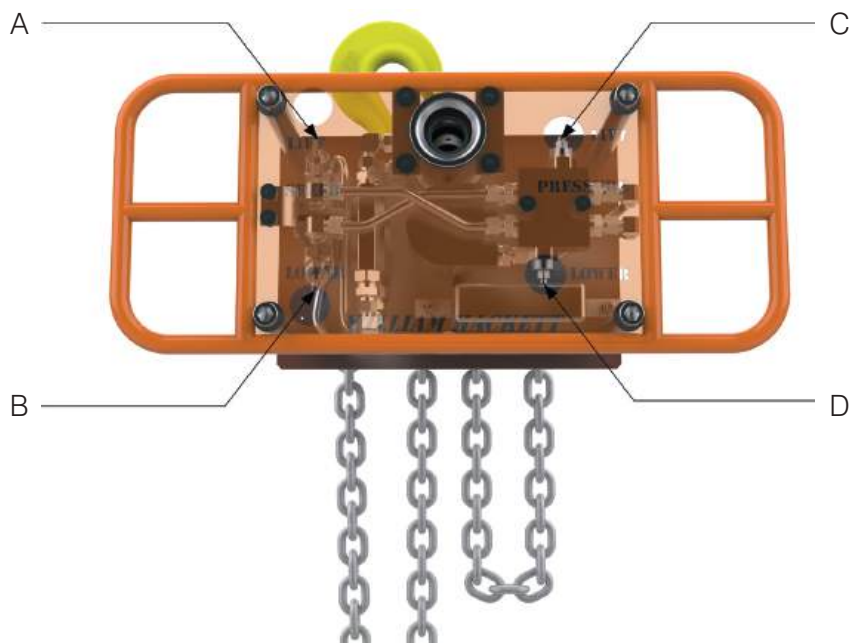
Valve Port Locations A-D:

A: Raise = Hoist Lifting Motion Speed Control

B: Lower = Hoist Lowering Motion Speed Control

C: Raise: = Hoist Lifting Motion System pressure relief and Load capacity control

D: Lower = Hoist Lowering Motion System pressure relief and Hoist Load capacity control



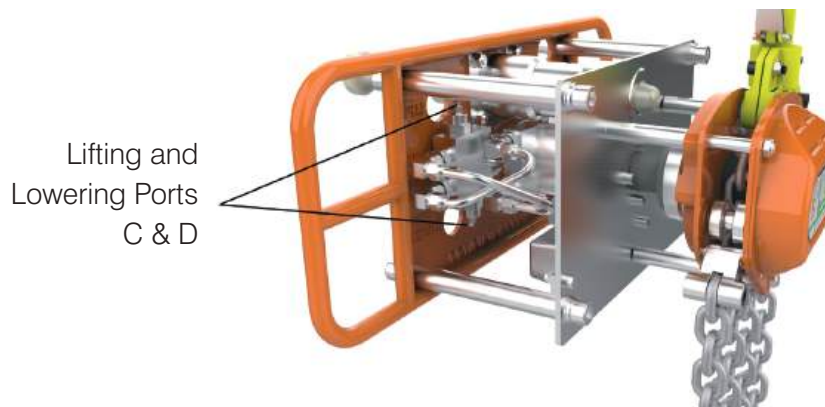
7. Operating ROV Chain Hoists

7.2.1. Pressure Relief Settings

The pressure relief valve is designed to create a bypass to the motor when the set pressure relief value has been reached, preventing over pressurising the hydraulic system. The lifting and lowering capacity of the hoist can be adjusted by adjusting the pressure relief valves. Note, the maximum supply pressure must not exceed 210bar. The recommended pressure settings for lifting and lowering can be found in section 5.1. The lifting and lowering adjustments can be made by tightening or loosening the valves pictured below.

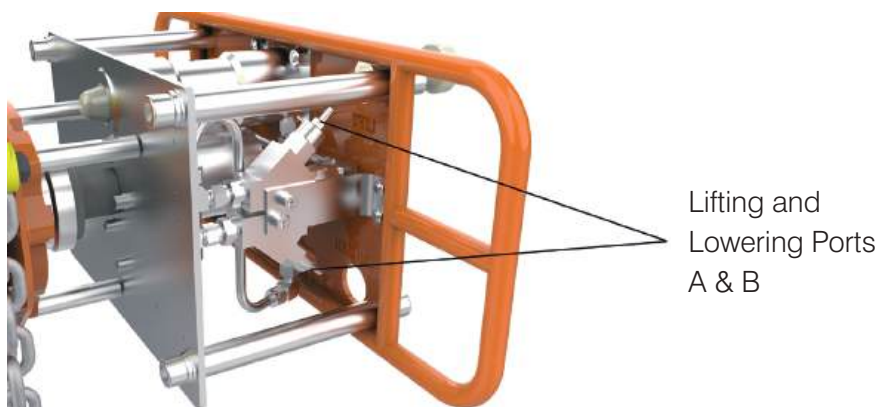
7.2.2. Pressure Relief Valve Settings

The flow control valve is designed to control the speed of the motor when operating the hoist. The lifting and lowering speed can be adjusted by adjusting the flow control valves. Note, the maximum motor output must not exceed 140 RMP. The recommended speed settings for lifting and lowering can be found in section 5.1. The lifting and lowering speed adjustments can be made by tightening or loosening the valves pictured below. Note, altering the flow control valves will alter the pressure relief settings described in section 7.2.1.



7.2.3. Flow Control Valve Settings

The flow control valve is designed to control the speed of the motor when operating the hoist. The lifting and lowering speed can be adjusted by adjusting the flow control valves. Note, the maximum motor output must not exceed 140 RMP. The recommended speed settings for lifting and lowering can be found in section 5.1. The lifting and lowering speed adjustments can be made by tightening or loosening the valves pictured below. Note, altering the flow control valves will alter the pressure relief settings described in section 7.2.1.

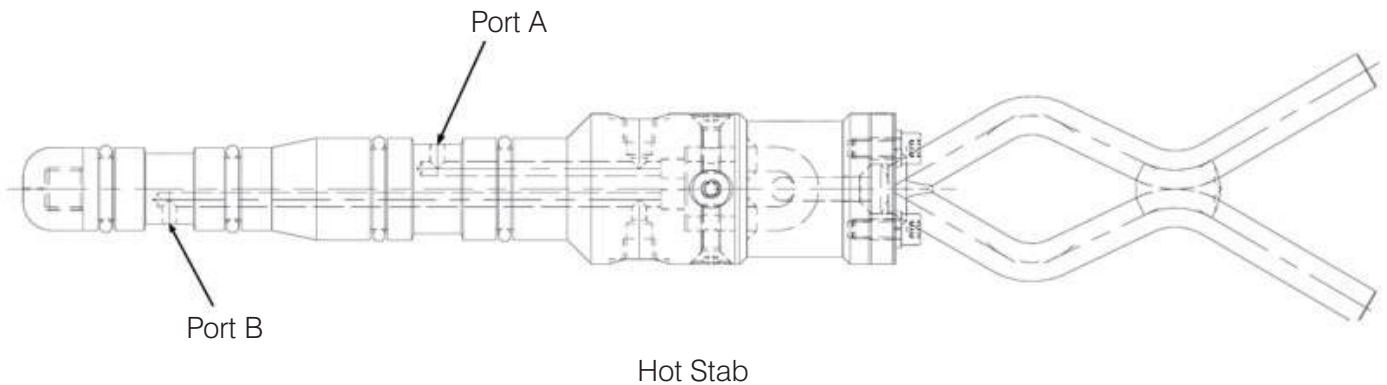


7. Operating ROV Chain Hoists

7.2.4. Hydraulic Setup: A step-by-step guide

Feed Port A to raise/lift the load.

Feed Port B to pay out or lower the load.



Use the following checklist to ensure the correct setup and safe operation. Note, it is not recommended to alter the manufacturer set valve settings unless completely necessary.

1. Connect the hoist to a hydraulic supply, either through the hot-stab or QD interface. Ensure flow and pressure gauges are available with the control system.
2. Begin the lifting or lowering function by allowing flow through the system.
3. Check the flow and pressure gauges match the values stated in section 5.1.
4. To alter the lifting and lowering speeds, tighten the flow control valves for slower speeds and loosen the flow control valves for faster speeds. Ensure the maximum recommended motor RPM output is not exceeded.
5. Alterations to the flow control valves will cause a change in pressure in the system. To ensure the hoist can lift and lower a full capacity load, alter the pressure relief valves to match the pressure values stated in section 5.1.
6. Lock all valves in place using the locking nuts when the correct flow and pressure values have been reached.
7. Ensure these steps are carried out for both the lifting and lowering flow directions.
8. Run the hoist in the lifting and lowering directions to ensure the hoist is running as intended and any air locks in the system have been removed.

8. Warranty

When supplied new the SS-C4 QP ROV chain hoist will be supplied with a Declaration of Conformity which sanctions the use of the product for a maximum period of 12 months before re-certification is required by a competent person.

Providing that the use, storage, routine maintenance and servicing instructions contained in this document are followed, the SS-C4 QP ROV can be used for multi immersions

The SS-C4 QP ROV is a lifting appliance and should be thoroughly examined by a competent person at least every 12 months, or following each period of deployment.

Only original William Hackett spare parts should be used.

William Hackett guarantee the performance of the SS-C4 QP ROV chain hoist for a period of 12 months from the date of sale subject to the purchaser and users complying with the safe use, storage, routine maintenance and servicing instructions, and there being no excessive wear and tear or misuse of the product.

These points do not affect the purchasers statutory rights.

