

STANDARD OPERATING PROCEDURE

Hytorc Torque Wrench Operation

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HYTORC TORQUE WRENCH OPERATION

Tammy Siver

4	APP	APR 10, 2024	Approved	Andre Brule	Lisa Norris	Tammy Siver
3	APP	JUN 28, 2021	Approved	Tammy Siver	Gilbert Schreyer	Gilbert Schreyer
2	APP	JUL 12, 2019	Approved	Allen Negard	Tammy Siver	Gilbert Schreyer
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The following is a step-by-step procedure on how to complete a specific task or meet a facility specific requirement. Standard Operating Procedures (SOPs) are written for all identified critical tasks. By virtue of the hazard or complexity associated with critical tasks it is paramount that the SOP be followed as written. SOPs contain a listing of high-level hazards associated with the task, for detailed hazard analysis reference the applicable Task Hazard Assessments. SOPs do not replace the requirements contained in the company Standards, Codes, and Processes nor does it replace the need to comply with required legislation. Section 8.0 references documentation that the worker shall understand before work commences.

1.0 PURPOSE

- To establish a company standard to safely and effectively carry out work as it applies to using a Hytorc Torque Wrench.

2.0 SCOPE AND APPLICATION

- This document applies to all company Heavy Construction Mining operations. Ensure all site-specific requirements are being met or exceeded before performing the task.

3.0 HAZARDS AND CONTROLS

- Pinching, crushing and line of fire injuries.
 - When applying power, ensure that fingers and hands are kept away from the edges of the wrench or reaction arm.
 - Ensure the reaction arm has a good surface to set against, a minimum of 10mm of contact must be made.
- Injecting hydraulic oil through the skin.
 - Do not hold the hydraulic hoses when the unit is running unless there is a shield layer over the hoses.
- Equipment breaking, reaction arm failing.
 - Inspect the tool before use for cracks, flaws, or deformation.
 - Reaction arms are not to be modified or repaired. Ensure the reaction arm is secured, in place, and the lock ring is securely seated.
- Tool shifting when taking up load.
 - While in use, the tool must always be supported to prevent unexpected release in the event of a fastener or component failure.
- Tool failure and / or improper torquing.

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- Perform a thorough inspection of all Hytorc torque wrenches both before and after usage. If any defects or damages are found during the inspection, tag it out and ensure that they are not used until they are properly repaired or replaced.
- Make sure to keep the reaction arm and tool free from any oil, grease, mud, or dirt to avoid any damage or malfunction.
- Hytorc torque wrench must be serviced and calibrated as per manufactures specifications. At a minimum servicing and calibration shall be conducted annually.
- Do not modify tool or substitute/exchange parts.
- Always follow calibration and/or torque chart for the specific tool being used to ensure pressures and torque values are accurate for the tool used.
- Do not exceed maximum hydraulic pressure setting on the torque chart. If the maximum pressure setting does not loosen the fastener use the next size larger Hytorc wrench.
- Tool must operate at a 90-degree angle to the work surface.
- Hytorc wrench must be sent for service if torque head, fittings and swivel joint leak, pressure gauge does not read 0 (zero) when system pressure is removed, pump or motor make noise.
- Do not operate Hytorc wrench unless trained in its use.
- Only use Hytorc or good quality impact sockets. Inspect sockets before use. Do not use sockets that appear more oval than square and have excessive play or sloppiness between the square drive of the machine and socket. Never use chrome sockets.

Examples of sockets that are **clearly unsafe** for use.



4.0 CHECKLIST

- Attend all preparatory meetings (IE: daily PSI; job scope; review of JSA's and SOPs for the job).
- Complete FLRA cards before starting the work.
- Ensure all personnel involved in the task are aware of the hazards and the controls to be used, as identified in the SOP's; JSA's; and FLRA's.
- Conduct a pre-job inspection of all equipment to be worked on and tools to be used.
- Standard of Training required for working on this job: On-the-job training.**

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5.0 DEFINITIONS

5.1 Company

Means North American Construction Group Ltd. (NACG) and all directly or indirectly owned subsidiary companies, including joint ventures.

5.2 Company Personnel

Includes the Company's employees, officers, directors, agents, associates, consultants/contractors, temporary employees and third party processors.

5.3 HSE

Refers to the Health, Safety & Environment department.

6.0 PROCEDURE

- 1) Inspect the wrench, electrical wiring, hydraulic hoses, pump, pressure valve, pressure gauge for leaks or damage before assembling the unit, check hydraulic tank oil level.
- 2) Always use Hytroc or high-quality impact sockets. Before use, inspect the socket and install the safety pin through the socket and square drive. Secure the pin with an "O" ring or a tie wrap.
- 3) Install the proper reactionary arm for the task and ensure the lock ring is securely seated.
- 4) The reaction arm must make at least 10mm of contact with the anchor point.
- 5) Ensure the hose fittings are screwed on tight.
- 6) Testing for leaks:
 - Run the wrench through 2 full cycles (tighten and retract) at low hydraulic pressure, if the tool does not rotate increase the pressure setting 1 full turn.
 - At the completion of the second full cycle keep the tool operating under pressure for a few seconds, test at each of the specified test pressures noted in the operations manual, release pressure and check for leaks.
- 7) Setting the torque:
 - Refer to the chart that is with the unit to determine the hydraulic pressure for the desired torque.
 - Press and hold the start button on the remote control until the square drive no longer turns.
 - When the square drive stops adjust the pressure control valve to achieve the required setting.
 - Release the start button and the tool moves to the retracted position.
 - Press and hold the start button again and verify the pressure setting is correct.

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- 8) Place the socket on the nut/bolt and adjust the reactionary arm to the proper position. Place the sole of the reactionary arm against the surface. Avoid using the side of the arm. Ensure it is positioned so that it cannot slip off, Hytorc should be 90⁰ (degrees) to the fastener.
- 9) Make sure your hand and fingers are clear of the pinch points, and then activate the Hytorc.
- 10) Activate the tool, when you hear a “click” sound or the socket stops turning, release the button or switch. Activate the button or switch again until the click sound stops, or the socket stops turning. This process may have to be repeated several times.
- 11) Move on to the next bolt and repeat steps 8 through 10. Always remember to have your fingers and hand clear of the pinch points and the reactionary arm is set so that it will not slip.
- 12) To reverse the Hytorc:
 - Push the square drive release button and remove the square drive retainer plate on the back side from the square drive.
 - Remove the square drive and re-install on the opposite side of the wrench, ensure the parts are clean.
 - Install the square drive retainer on the other side. Do not operate the tool without the square drive retainer secured correctly.
 - Operate the tool to the end of stroke and increase the pressure setting to maximum. Never exceed maximum system pressure.
 - If the fastener fails to loosen, use a larger tool.
- 13) When the task is finished, clean all the parts of the system, and store the unit in its trunk, ready to go for the next use.

7.0 NOTES

If this task is to be done by a method different than described in this SOP, the work must **STOP**, and the alternate method must be **DOCUMENTED** with an adequate hazard assessment tool such as a JSA. The document must be **APPROVED** by a supervisor before such procedures are implemented.

8.0 REFERENCES

- Manufacturers Specifications: Operation Manual
- Alberta Occupational Health and Safety Act, Regulation and Code – {Part 25, Tools Equipment and Machinery}
- 950C-C-022 - General Housekeeping Code
- 950C-C-049 - PPE - General Code
- 960C-SOP-004 - Flagging Tagging and Barricading Hazardous Areas

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- 962C-SOP-009 - Manual Lifting and Carrying Heavy Object

9.0 APPENDICES

No appendices.