

STANDARD OPERATING PROCEDURE

Hydraulic Hose Manufacturing - Cutting

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HYDRAULIC HOSE MANUFACTURING – CUTTING

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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 the cutting process for hydraulic hose manufacturing.

2.0 SCOPE AND APPLICATION

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

3.0 HAZARDS AND CONTROLS

- Risk of injury from flying or exploding debris, smoke inhalation, and contact with moving parts.
 - Use machine guards and wear appropriate personal protective equipment (PPE), including safety glasses, gloves, and coveralls.
 - Keep hands and body parts clear of moving components.
 - Ensure the exhaust fan is turned on to prevent smoke buildup.
 - Properly bend the hose before cutting, and operate at a cutting speed lower than the saw blade's rated cutting rate.
- Risk of strain or musculoskeletal injury to the upper limbs, shoulders, or back from handling heavy hoses.
 - Use proper body positioning and lifting techniques to support and move heavy hoses safely. Avoid twisting or overreaching, and engage core muscles when lifting or repositioning.
 - Use the overhead crane or other lifting devices to maneuver heavy hoses into position safely.

4.0 CHECKLIST

- ☐ Attend all preparatory meetings (i.e.: daily PSI; job scope; review of JSA's and SOP's 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) Complete a hazard assessment (i.e. FLRA) for the task. Notify supervision if unsure of task or if hazards are outside of the worker's control.
- 2) Inspect tooling and work area prior to task. Remove from service and notify supervision of any damaged or defective tooling. Do not use unsafe tooling.
- 3) Before cutting, visually inspect the end of the hose to ensure it has been cut squarely, the wires are not corroded, and the rubber has not deteriorated. Inspect the hose cover for damage and the hose for kinks before manufacturing the assemblies. If a portion of the hose coil fails the visual inspection, cut the damaged piece from the coil, follow the remainder of this procedure, discard the piece, and start over at step one.
- 4) Adjust the set stop to the desired cutting length and lock it in place.
- 5) Place a coil of hose on the dispensing turntable or pull the hose from the reel rack.
- 6) Pull the hose to the set stop and clamp the hose.
- 7) Pull the hose so that there is no slack in the hose between the set stop and the saw blade. Visually inspect that the hose is flat and centered in the channel.
- 8) Adjust bending pins to properly allow for the hose to bend away from the cutting blade during cutting.
 - a. **Note:** If the hose is not properly bent, it will bind against the saw blade during cutting, causing massive heat due to friction. This can damage both the machine and the hose being cut, potentially leading to the blade overheating and fracturing.
- 9) Adjust air pressure for the size of the hose being cut.
- 10) Make sure the safety cover is fully down.
- 11) Turn the exhaust fan on.
- 12) Start the saw by pushing the start button.
 - a. **Note:** The Main power switch on the machine needs to be turned to the on position in order for the start push button to work.

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- 13) Keep hands outside of the safety cover area, step on the air foot pedal to activate the air pull lever to pull the hose squarely into the saw blade.
 - a. **Note:** Do not attempt to cut the hose faster than the blade can cut, by pulling the hose too fast into the blade. Excessive speed will cause damage to the blade and hose. Make sure the hose is square to the blade during cutting. Adjust air speed as necessary.
- 14) After the hose has been cut, turn the saw off by pushing the stop button. Turn the exhaust fan off and remove the hose from the cutting bench.
- 15) Inspect the hose to make sure the hose is cut squarely.
 - a. **Note:** An Uneven hose end can cause uneven compression of the ferrule, resulting in a "CRACKED FERRULE".
 - b. **Note:** An Uneven hose end can result in the hose tube not fully engaging with all the micro grooves on the hose assembly, which can cause shortened service life.

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

- Refer to the Manufacturer's Operation Manual or OEM Parts Manual for operation and setup details.
- Alberta Occupational Health and Safety Act, Regulation and Code
- 950C-C-025 Hand Tools Code
- 950C-C-050 PPE General Code
- 960C-SOP-504 Hand Tools; Use of
- 960C-SOP-505 Hand Tools Powered Use
- 960C-SOP-112 Air Line Control and Dangers
- 962C-SOP-009 Manual Lifting, Positioning and Carrying Heavy Objects

9.0 APPENDICES

- No appendices.