

# STANDARD OPERATING PROCEDURE

## TRACK REMOVAL & INSTALLATION

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## TRACK REMOVAL & INSTALLATION

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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 removing and installing tracks on dozers.

## 2.0 SCOPE AND APPLICATION

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

## 3.0 HAZARDS AND CONTROLS

- Pinching or crushing fingers/hands or other body parts.
  - Never position yourself between the front idler and the blade, or between the track frame and push arm when removing or installing tracks.
  - Keep fingers away from pinch points when tensioning slings, using come-along, pressing pins, or prying master links apart.
  - Do not get under the machine until it's properly raised, blocked, or supported on stands.
- Bogie assembly separating from the track frame.
  - Use a professional engineer-approved or manufacturer-approved bogie strap (suspension strap) to secure the suspension to the track frame. Never substitute with unapproved or makeshift equipment.
- Falling or swinging suspended loads striking someone or property.
  - Confirm the weight of equipment or components before lifting.
  - Only use jacks and stands that are rated and certified for the specific load.
  - Use the correct lifting tools for the job and inspect all lifting equipment to ensure its appropriately sized, in good condition, and can support the weight.
  - Never stand directly in the line of fire or beneath a suspended load.

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- Uncontrolled movement of equipment.
  - Complete a live work checklist hazard assessment prior to the task.
  - The machine will be shut down and locked out whenever the technician does not need the machine running to turn the tracks.
- Personal injury from manual lifting of the tracks and master link.
  - Stretch before the task. Do not lift greater than 50 lbs. without assistance.
  - Use equipment to move and transport tracks. i.e., forklift or front-end loader.
  - Use two people to manually lift and place the track pads for replacement.
- Miscommunication between spotter and operator causing injury or equipment damage.
  - The spotter and operator must agree on standard hand signals or radio terms before beginning the task.
  - Only approved, clear hand signals will be used. Both the spotter and the operator must be trained and aligned on these signals.
  - Use radios when visual contact is limited. Ensure radios are fully charged and functioning before use.
  - The spotter must stay in the operator's line of sight at all times. If visual contact is lost, the operator must immediately stop the equipment.
  - Only one designated spotter is allowed to communicate with the operator to avoid conflicting signals. The only exception is the emergency stop signal, which anyone on site may give if an immediate hazard is observed.

## 4.0 CHECKLIST

- ☐ Attend all preparatory meetings (IE: 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.**

## 5.0 DEFINITIONS

### 5.1 Company

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

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## 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

### 6.1 General Safety

- 1) Complete hazard assessment (i.e., FLRA) for task. Notify your supervisor if you are unsure of the task and if there are any hazards outside of your control.
- 2) Review OEM procedure for the task. Procedures may vary depending on the machine size, model, and manufacturer.
- 3) Inspect all rigging components prior to lifting, including but not limited to lifting lugs located on the track frames, shackles, rigging, and the equipment used to hoist track frames (see Appendix C for an example of lifting lugs).
- 4) Complete a live work checklist hazard assessment.

### 6.2 Track Removal

- 1) Install bogie strap/suspension strap to secure suspension to track frame.
- 2) Raise the machine using hydraulic jacks until the bogies are clear of the track.
- 3) Place the stands and lower the machine onto the stands. Alternatively, use the machine's implements (review 960C-SOP-401 Raising, Blocking, and Lowering Dozers using Hydraulic Attachments).
- 4) Lower the blade and ripper.
- 5) Spray paint or otherwise mark the master pads.
- 6) Have a competent operator rotate the track to bring the master link over the idler.
- 7) Install a two-legged cable sling on the crane and hook them on the pad below the master link.
- 8) Raise the crane to support the lower section of the track.
- 9) Bind a wood block under the grouser of the pad on the floor or ground to safeguard against a sudden drop of the track.
- 10) Relieve tension on the track adjuster before removing the master link.
- 11) Ensure the park brake is engaged before removing the master link, as the weight of the track will cause it to move forward slightly.
- 12) Note: If removing tracks from the front idler, the dozer blade will need to be raised and placed on stand(s).
- 13) Remove the bolts holding the master link together and pull the pad out (refer to the manufacturer's specifications to verify the weight of the track pads and follow OEM procedures for removal).

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- 14) Separate the master link, remove the block, and lower the crane so the pad rests on a 2x4 to allow room to remove the slings.
- 15) Ensure all personnel are free and clear of the track frame and the path of travel for the track when it becomes free of the master link. Use the machine's drive to peel the track off the drive sprocket. The track will roll off the idler and pile up or roll out.
- 16) Attach a suitable cable to the end link and use a loader to pull the track clear of the machine.
- 17) Repeat steps 6 through 17 for the other track.

## 6.3 Track Installation

- 1) Install bogie strap/suspension strap to secure suspension to track frame.
- 2) Raise the machine and place it on suitable stands.
- 3) Raise the blade and place it on blocks or stands so that a cable can pass below.
- 4) Lay both tracks out behind the machine so they are aligned with the rollers and idlers.
- 5) Using a loader and sling, pull the tracks under the track frame until there is enough to come up over the front idler. Alternatively, a loader or forklift can be used to push the tracks under the track frame until the front link is past the idler with sufficient clearance to bring the end over the idler.
- 6) Install OEM tooling and a suitable lifting device onto the final drive and master link. In the absence of OEM tooling, the following methods may be used:
  - a. Attach a cable sling to one of the front track links and use a suitable lifting device (i.e., crane) to lift the track over the idler. Wrap the cable around the planetary drum with four wraps to use the drum as a winch. *Do not allow the wraps to overlap.* If overlapped, the cable will bind and tighten to the point where it cannot be easily undone. Alternatively, the cable may be pulled over the planetary drum using a loader or other suitable equipment.
  - b. Bolt a lifting eye to the planetary drum plate. Shackle the cable to the eye and place 2 to 3 wraps around the drum. Once complete, remove the lifting eye and replace the bolt.
- 7) Under the direction of a spotter, operate the machine slowly in reverse, allowing it to pull the track onto the sprocket. If required, the technician will pull the cable off the planetary drum to maintain tension and the wraps. When the track is over the sprocket and the cable has gone slack, stop the machine. Remove the OEM tool or the cable.
- 8) Slowly continue in reverse until the track is hanging over the back of the sprocket with enough length to drape it over the idler wheel. Reverse the track until the top master link is behind the idler. If the cable is being pulled by a machine, back up until the track end will sit against the idler.
- 9) Shut down the machine and isolate hazardous energy.
- 10) Place a block under the track at the front idler to prevent the track from folding off the front if the links should come loose from the drive sprocket.
- 11) Clean the mating surfaces of the master link and track shoe of any paint or dirt.

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- 12) With the crane and a two-legged cable sling with slip hooks, lift the back end of the track as much as possible and place blocking under it to hold it up. Use the crane and sling to pull the bottom end of the track to meet up with the upper end.
- 13) Alternatively, place a track pulling cable across pads at each end of the track with the hooks set behind the grouser. Use a come-along attached to the track to pull the wires together, allowing the master links to meet up.
- 14) Hold the joint with the crane or come-along and couple the jaw-type master links together.
- 15) There are some tracks without jaw-type master links, and there are multiple links, such as an LGP track. If press pins are used, use the pin press to install rather than a hammer.
- 16) Slide the final track pad into place and secure it with bolts. Apply anti-seize to the bolts. Torque the bolts to the manufacturer's specifications. Release the come-along.
- 17) Repeat steps for the second track.

## 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

- Alberta Occupational Health and Safety Act, Regulation and Code – {Part 2, Hazard Assessment, Elimination and Control}
- Alberta Occupational Health and Safety Act, Regulation and Code – {Part 15 Managing the Control of Hazardous Energy}
- Alberta Occupational Health and Safety Act, Regulation and Code – {Part 19 Powered Mobile Equipment}
- 950C-C-028 Hazardous Energy Isolation Code
- 960C-SOP-111 Live Work – Working on Equipment While Running
- 960C-SOP-400 Raising-Blocking Equipment in Shop with Crane
- 960C-SOP-401 Raising-Blocking and Lowering Dozers Using Hydraulic Attachments in a Shop or the Field.
- Manufacturer's (EG, CAT) Service and Procedure Manual

## 9.0 APPENDICES

- Appendix A – Track Components

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## Appendix A Track Components

