Stellar Oilfield Solutions Inc.

Drill Line Tension Guide

User Procedure Manual

Special Instructions / Conditions of Use

Reading this user procedure manual prior to use is essential.

Slip & Cut, Drill Line Tension Guide

This device is used to aid in keeping drill line under tension when spooling new line onto the Draw works drum while performing routine slip & cut procedures on drilling rigs.

During this "Critical Task" there are many potential hazards that can be prevented with the use of this tool. Hazards include,

- Pinch & crush points
- Wickers from crew members handling wire rope to create tension using man power
- Workers near the Drawworks with safety guards removed while equipment is in motion
- Workers using hammer to seat Drill line into grooves on drum
- Workers using nylon sling as a make shift tension guide to hoist the drill line into the air with a winch line "tugger". This technique is not safe or practical as the sling can only provide limited tension and is not being used for its designed purpose, it will break after becoming frayed from the friction of the drill line passing through it, there is no structure supporting the drill line other than the nylon sling itself therefore the drill line will fall to the floor once it gives way and the winch line "tugger" will be freely hanging or swinging unsupported.

The use of Stellar J's Patented Drill Line Tension Guide will provide Safety and efficiency to the critical task removing these hazards in the following ways.

- Greatly reduces the amount of workers needed to handle the drill line lessening the exposure to wickers and pinch & crush points, while allowing workers to be repurposed to other tasks.
- No need to hammer line to seat into grooves on drum as desired tension can be reached with the use of the Drill line tension guide allowing for efficient re-spooling and keeping workers away from rotating equipment.
- Provides rated tools designed for the purpose of the task and takes away the use of questionable techniques used in the past.
- Inspect all equipment prior to use
- Read all relevant Safe Operating Procedure documents prior to performing task.
- Refer to Stellar J's user procedure manual for proper set up, installation, use, removal & storage of the tool.

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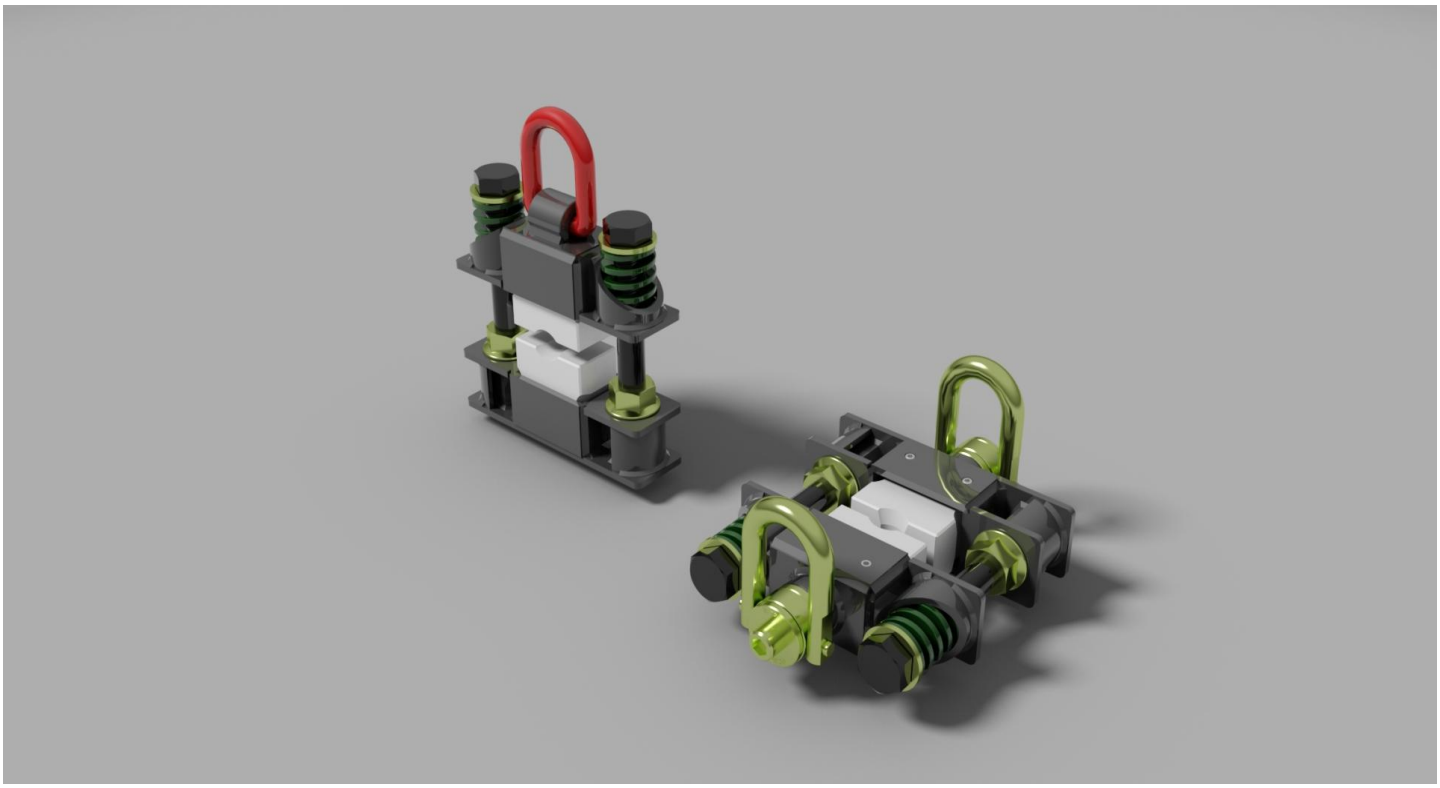
Figure #1



It is important to identify which style of Tension Guide you require for your rig. Typically the Vertical Style (red D-ring top) is used on Triple Drilling Rigs or rigs where the line is spooled from the reserve reel to the front of the Drawworks. The Horizontal Style (Gold swivel each end) is typically used on Double and Single drilling rigs and even Service rigs where the line is spooled from the reserve reel over the back of the Drawworks.

For the Horizontal style a 2-leg lifting sling is required (sold separately) to attach the tool to the "tugger" winch line.

If you have any questions as to which style you require please contact Stellar J Oilfield Solutions Inc. or Shaw's Enterprises Ltd. for clarification.

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Figure #2

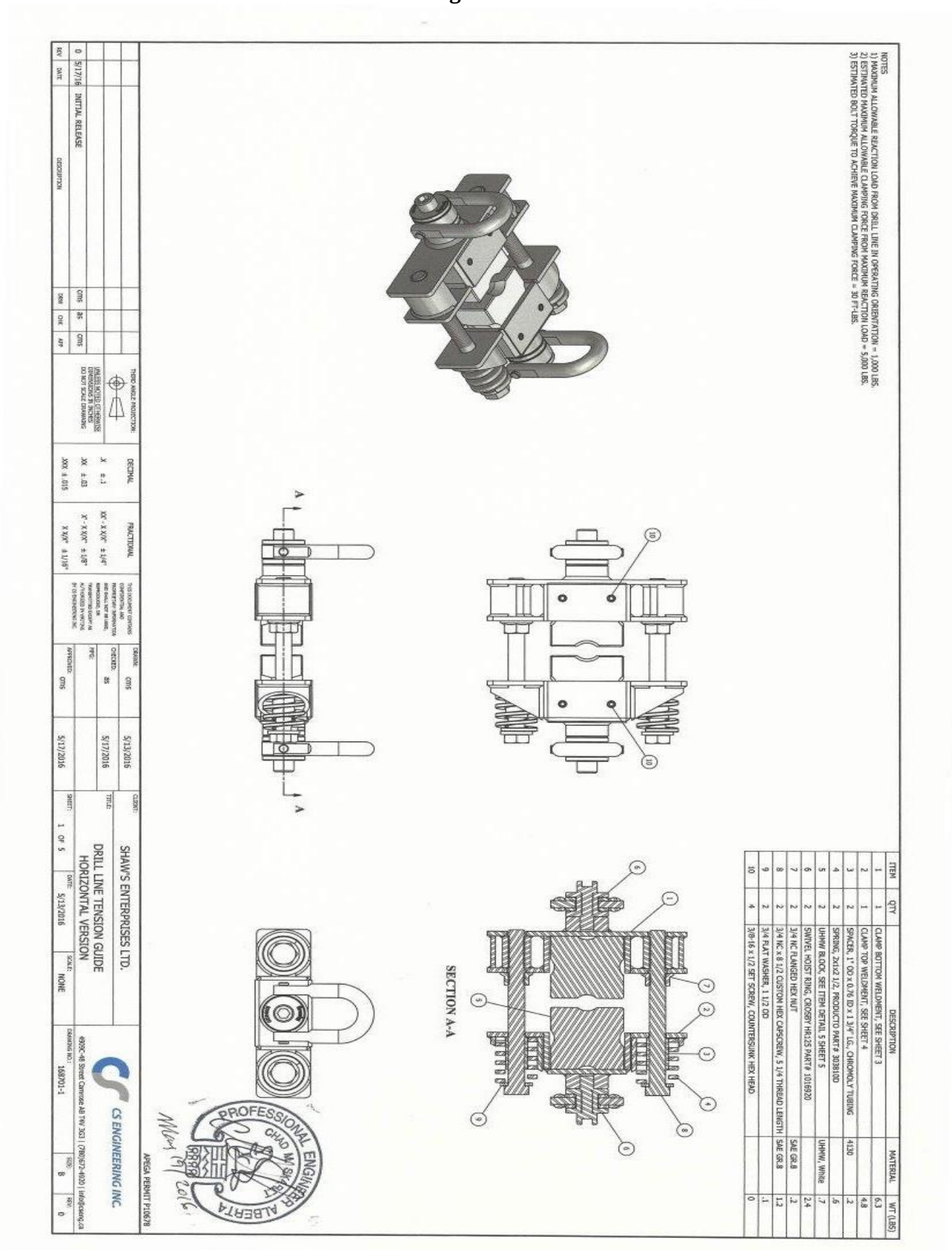

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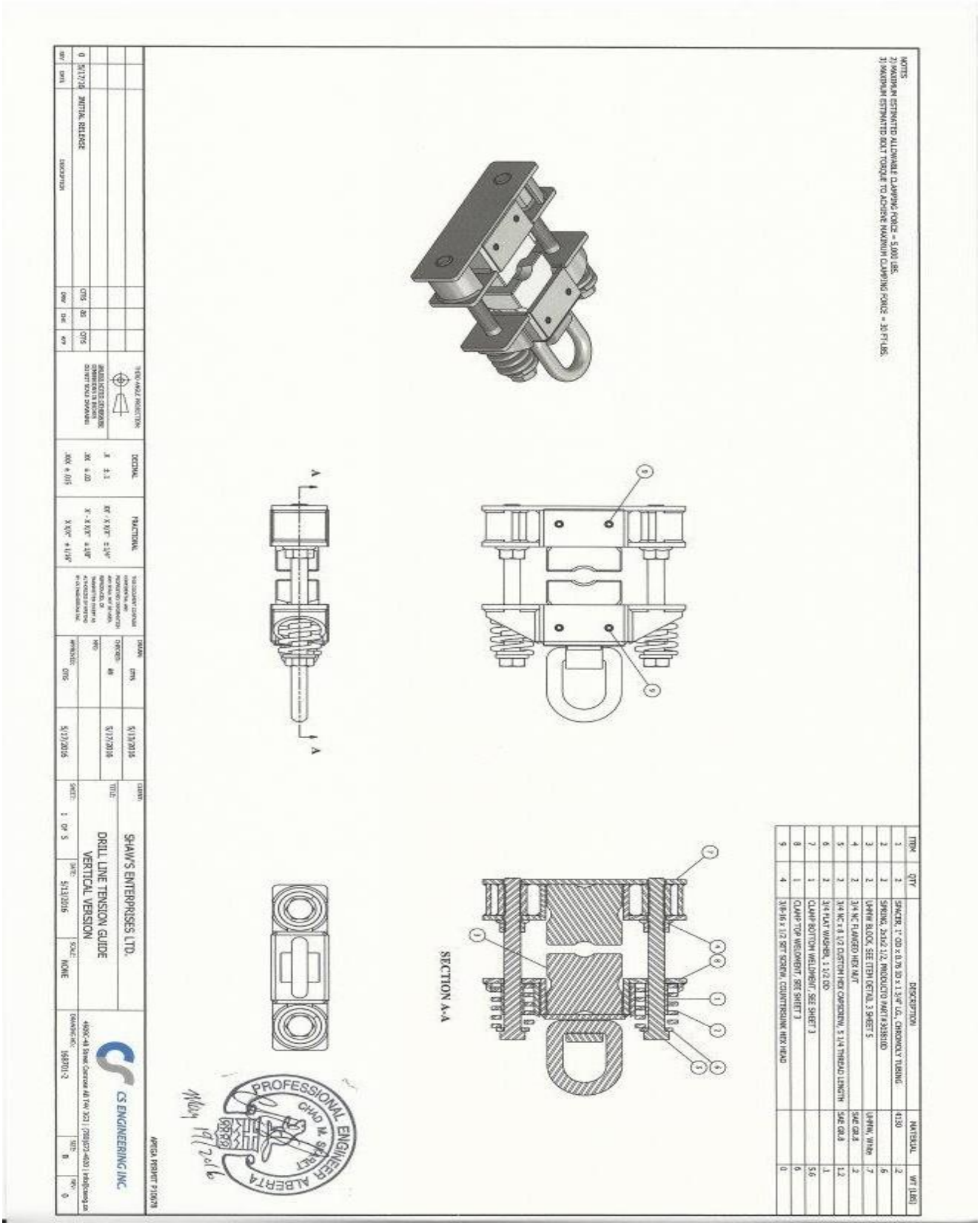
Figure #3



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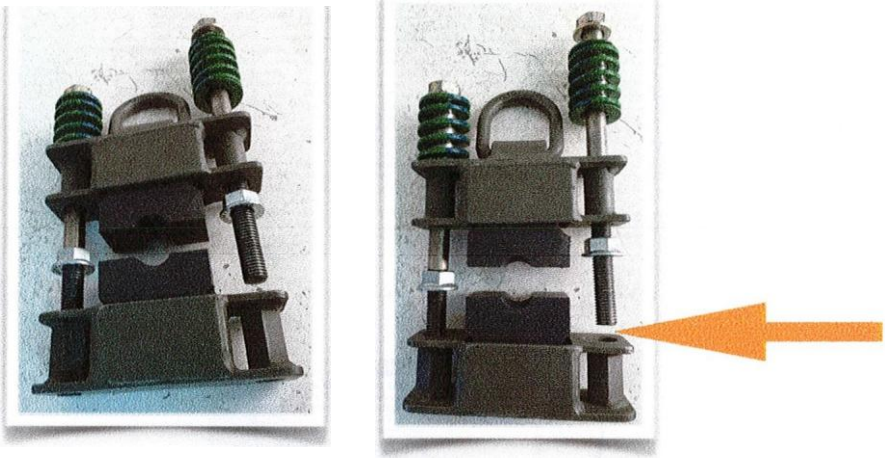
Slip & Cut, Drill Line Tension Guide, User Procedure Manual

This manual will highlight identification of parts, Inspection, Installation, Use, and Removal & Storage of the tool.

Step 1. Thoroughly inspect equipment prior to each use. Please refer to Figure 2 & 3 to identify all parts and components of the tool and to ensure they are all in working order and that nothing is damaged or missing. For the purpose of these instructions we will refer to the Vertical style from Figure 3.

Step 2. Ensure that the friction wear blocks (item 3) are fully seated into their pockets and snug the hex cap screws (item 5) gently by hand with a wrench to hold wear blocks into place. Have the tool ready in advance so that the flange nuts (item 4) are both raised to the upper portion of threads on the long bolts (Item 5). One of the long bolts is to be partially threaded into the lower coupling nut and on the opposite side of the tool have the long bolt completely removed "unthreaded" from the lower coupling nut.



Step 3. Once the dog nut has been tightened and the free end of the drill line has been secured onto the drawworks drum the Drill Line Tension Guide is ready to be installed.

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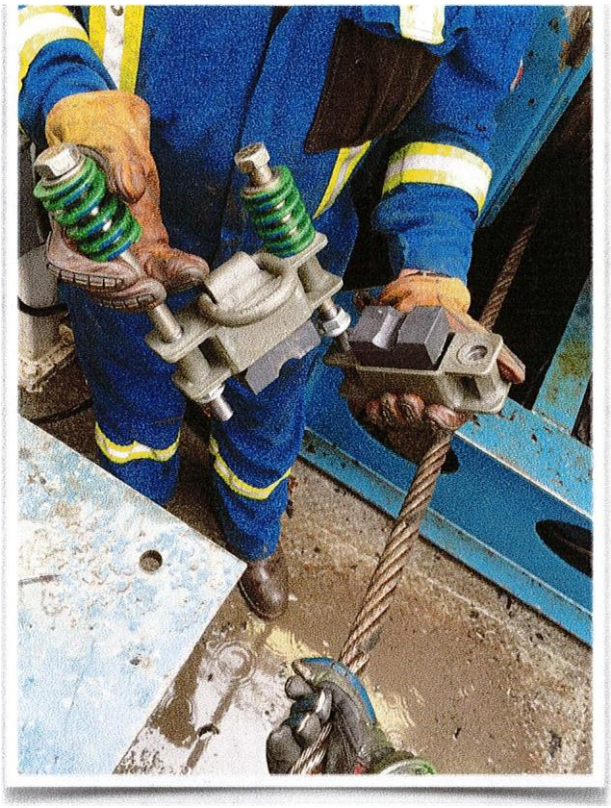
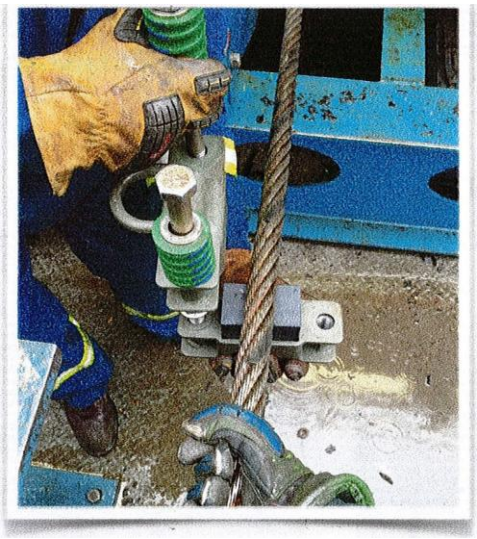
Step 4. Use the connected side of the tool as a "Hinge Point" separate the 2 clamp halves and swing the tool open.



Step 5. Lay the drill line onto the centre groove of the lower friction wear block



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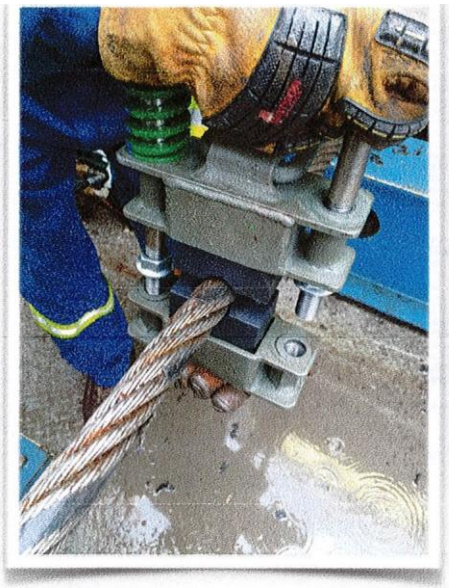
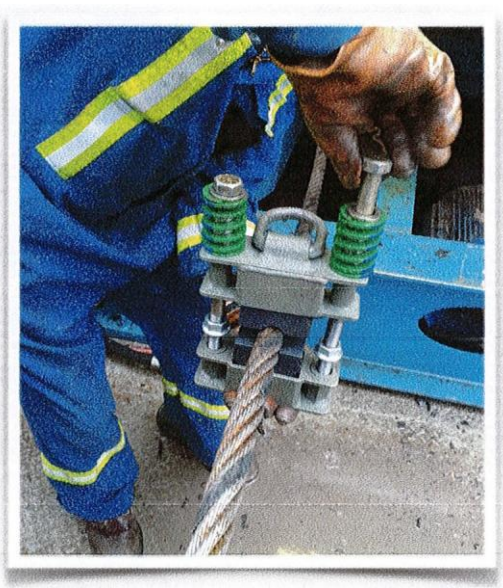
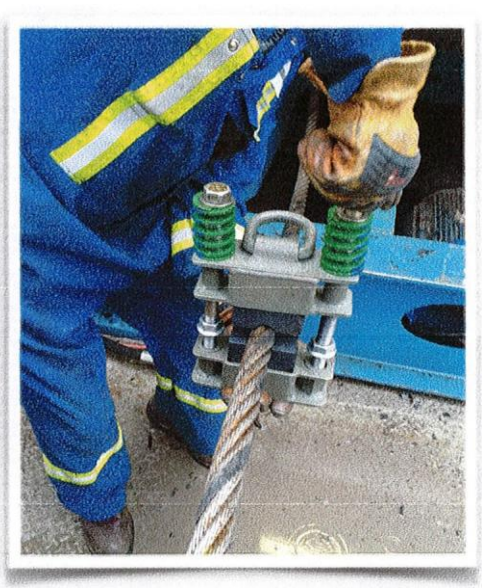
Now swing the upper clamp half into position and begin threading the Bolts into the lower coupling nuts alternating sides to ensure the clamp is tightened evenly.

(Do not over tighten)







Position the winch line "Tugger" and attach to the lifting point D-Ring

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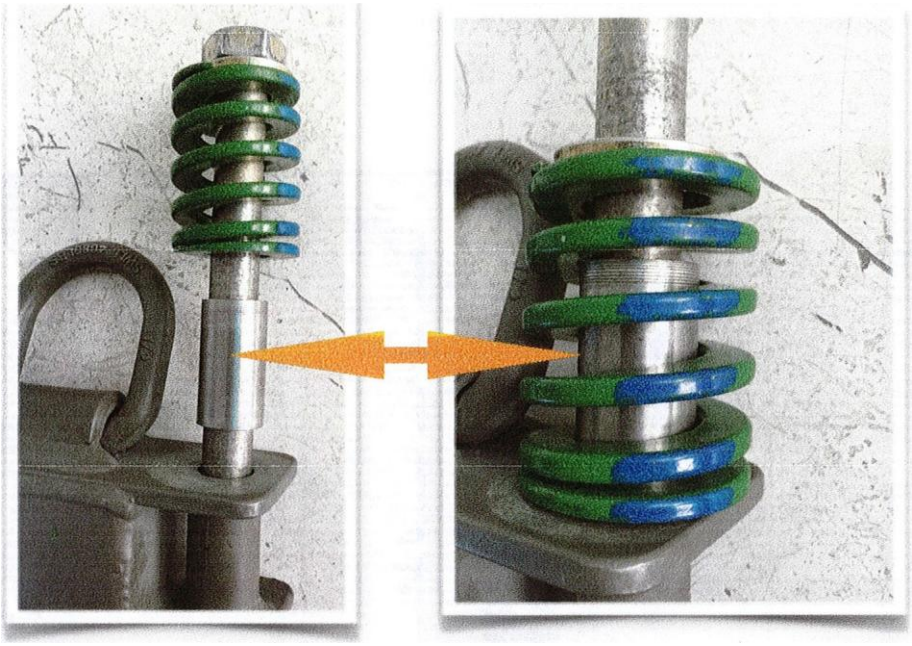
Step 6. Inside the centre of the 2-1/2" springs (item 2) is a 2" steel compression sleeve (item 1)



Tighten the bolts with an impact tool or ratchet until the springs have compressed 1/2" and the washer (Item 6) under the bolt head begins to press against the top of the steel compression sleeve.

It is at this moment that clamping pressure will begin and will not need to go much further.

(Do not over tighten)

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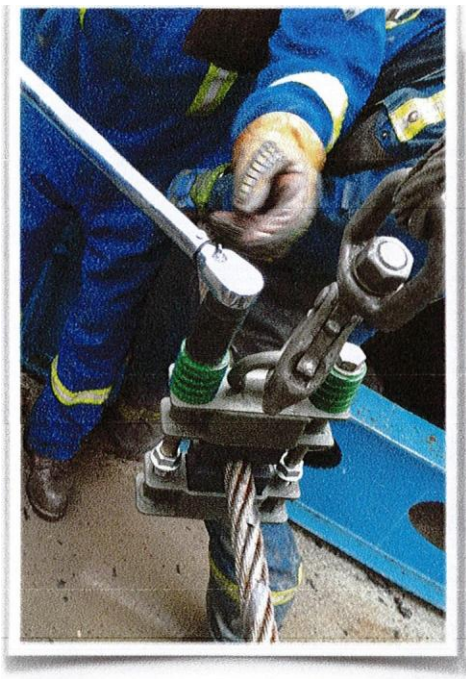
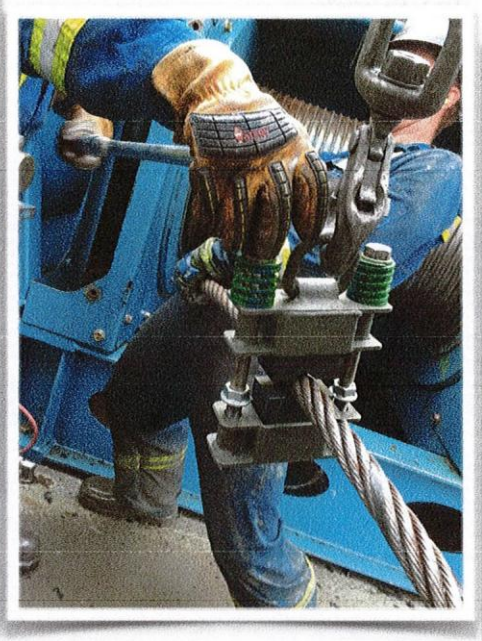
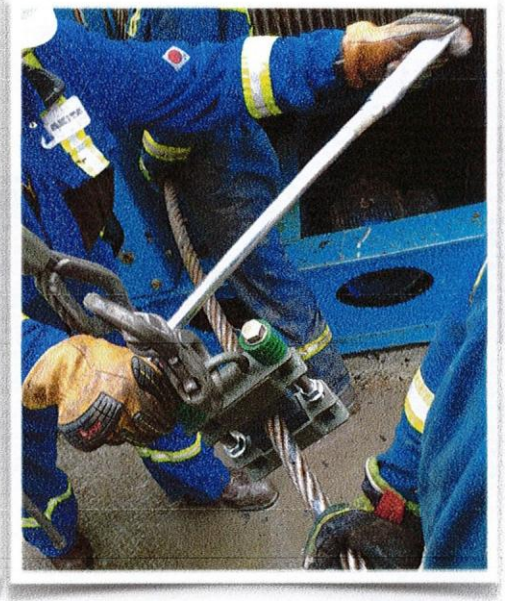
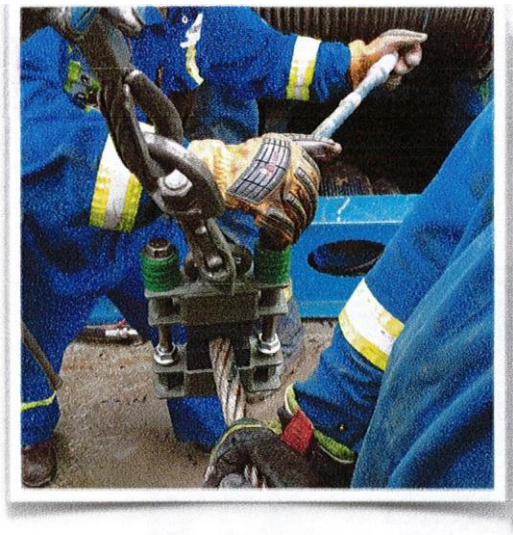
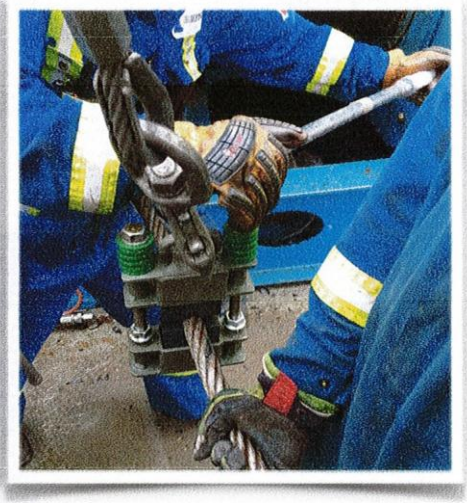
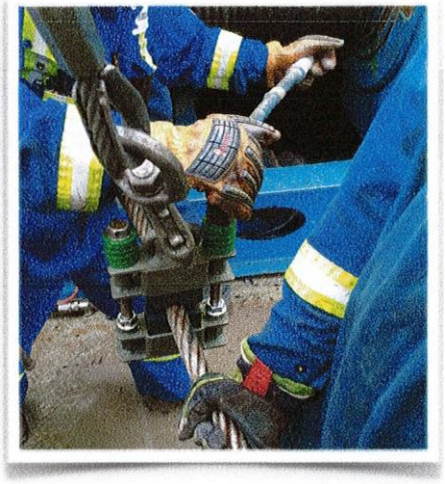
Step 7. Remove the impact tool or ratchet and finish tightening with a torque wrench in the **range of 20-30 ft lbs** (it is very important to maintain the proper torque) this will provide even clamping pressure and enable the user to find a torque setting within the range that is optimal for the specific Rig it is being used on, once the optimal torque value has been established the same value can be used each time the procedure is repeated. Note: Torque may need to be set higher or lower depending on drill line diameter and the use of PVC coated line.

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Be aware of the "SWLL" (Safe Working Load Limits) of the winch line being used and the "SWLL" stamped on the lifting point D-Ring or Swivel Hoist Rings (DO NOT ECXEED SWLL)

Spin the Flange nut down the threads of each bolt and snug them with a wrench hand tight against the top plate face of the lower clamp half on each side.

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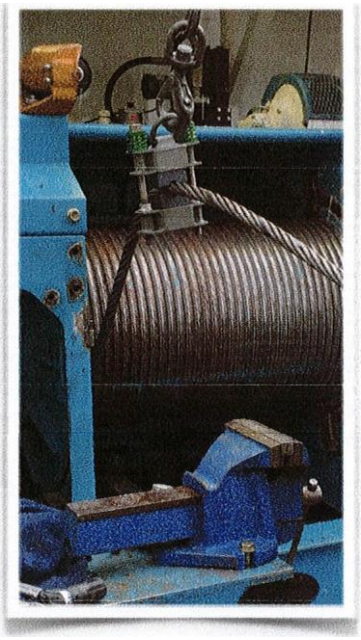
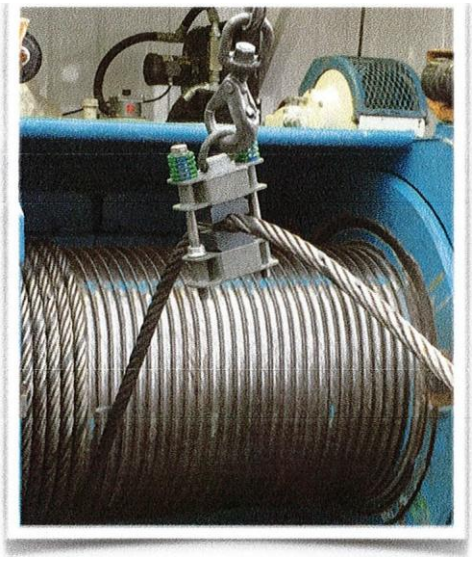
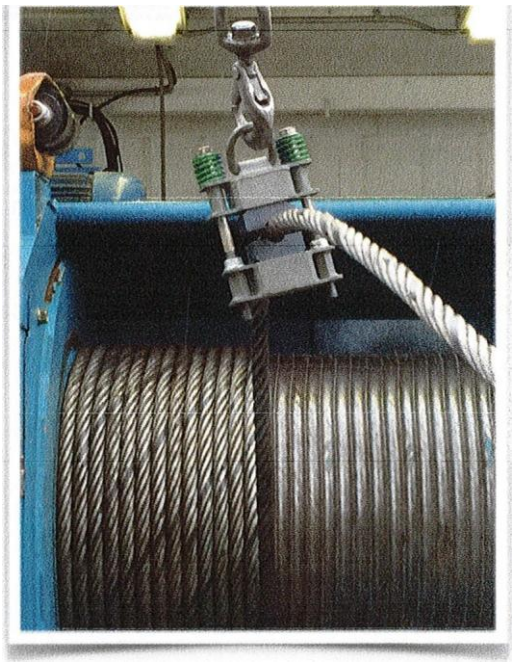
Step 8. Hoist the tool up off of the floor suspending it with the winch line "Tugger" so that the bottom of the tool is no higher than the Top of the Drawworks Drum.



Step 9. Begin spooling drill line onto the drum slowly, paying close attention that the line is sliding through the tension guide and not Exceeding the "SWLL" of the equipment, also monitoring the first few wraps as they can skip out of position. Once sufficient spooling has been established rotation speed is to be maintained as per operator's judgement.





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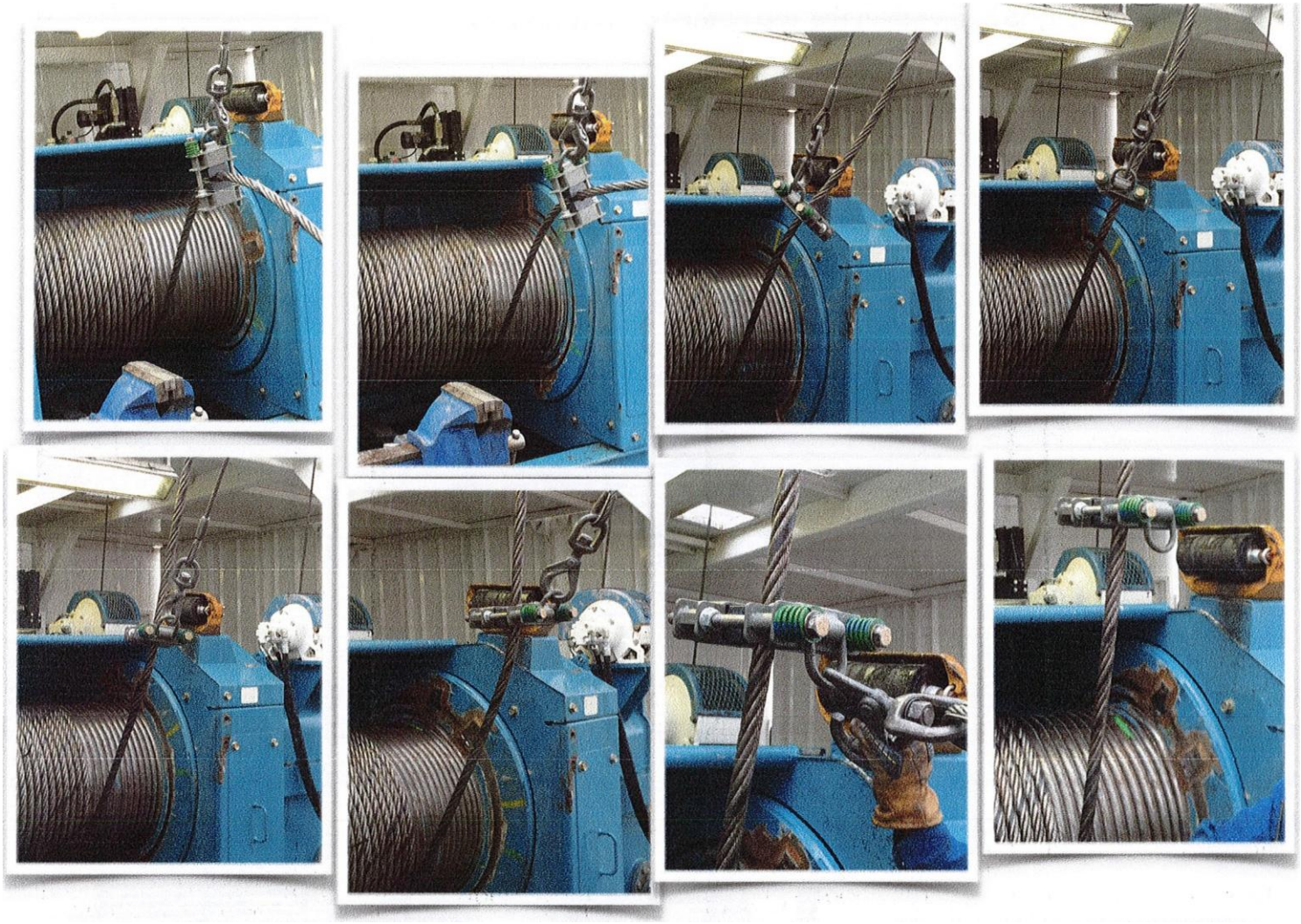
Step 10. Once slack of drill line is almost out slowly continue spooling, The "Tension Guide" will automatically rotate 180 degrees and walk the last section of line into place.



Step 11. Reverse installation steps to "Remove Tension Guide"

Remove winch line "Tugger" from lifting point D-Ring, loosen flange nuts and long bolts leave one of the bolts partially threaded into lower coupling nut and completely unthread the bolt on the opposite side spread the tool apart and swing open on hinge point remove tool from drill line and store the Drill line Tension Guide back into its storage case.

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Details on Friction Wear Blocks and preparing them for their next use

Each set of friction wear blocks have 4 chamfered sections on each block for the Drill line to sit in. The block can be rotated horizontally 90 degrees after each use and seated back into its holding pocket until those 4 sections have been used. Contact Stellar J Oilfield Solutions Inc. or Shaw's Enterprises Ltd. for replacement blocks.

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After using the "Tension Guide" you will notice the friction wear blocks will have a burr extending past the flat side of the block, this is due to the pressures put on the material and the drill line sliding past it. This is normal and will happen each time. You will need to remove it with a wire wheel or grinder or alternatively place the block into a vice and remove the burr with a course file in preparation for its next use so that the block can rotate 90 degrees and fit smoothly back down into the holding pocket to reveal a fresh new portion of wear material.

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How to identify and correct common rope problems in the field.

REDUCING CRUSHING AND SCRUBBING DAMAGE ON WIRE ROPE

CRUSHING When a wire rope crosses over the preceding layer on the drum, it is susceptible to crushing because there is only a single point of contact. This increases pressure and can result in damage by distorting the cross-section shape of the rope, its strands or core – or all three. Ropes that are new or not spooled onto the drum under tension are also more susceptible to crushing.

In addition, crushing may occur at the change-of-layer point where the rope is wedged against the flange of the drum.

SCRUBBING As the rope spools on the drum, it rubs against the preceding wrap at the kickover points, making the sides of the rope vulnerable to scrubbing damage. Scrubbing occurs most commonly when the rope runs into its preceding wrap in the same valley between two ropes on the lower layer. It can also occur as the adjacent rope comes into contact as a result of fleet angle.

FACTORS AFFECTING ROPE WEAR

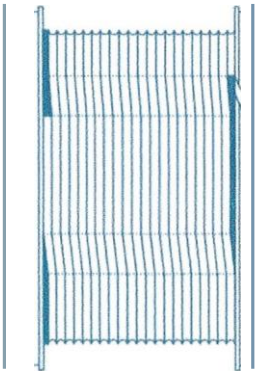
The degree of scrubbing and crushing damage depends on a variety of factors, such as rope construction, previous usage of the rope, the load on the rope, the drum diameter, the number of layers and the pitch of the grooving.

Single-layer winding on a plain-faced drum is more likely to produce an increased rate of wear to both the rope and drum compared to a grooved drum. Grooved drums control the position of the base rope layer, thereby reducing some types of spooling problems.

FIELD SOLUTIONS

If crushing is a problem on drill lines, one solution is to go to more parts of line to reduce the load in the wire rope. This will result in longer string-up and may cause less service from your drill line. If crushing proves to be a continual problem, drum modifications may help.

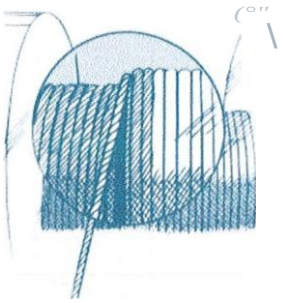
COUNTERBALANCE GROOVING



Has smaller displacement on the drum, which is less damaging at each crossover point compared to helical or parallel grooving. This reduces scrubbing problems at the kickover points as well as line "whipping." It also keeps the drum in balance by placing the kick-over points halfway around the drum from each other.

IMPROPER TENSIONING

Insufficient tensioning of the first two or three layers of rope can also cause rope wear by allowing "pulling in" by subsequent layers of rope. Without enough tension, these lower layers can be pushed apart by the upper layers. The upper layers then become wedged into the lower layers, which can distort the rope and/or individual wires.



WHIPPING

Rope whipping or vibration is another problem that may be encountered with high line speeds and multiple layer winding. Whipping is introduced by the lateral displacement or "throw" of the rope at the crossover points. When a wave is thrown into a rope by a crossover, this disturbance travels along the rope and is reflected back at the sheave at a speed relative to its weight and tension.

To reduce whipping problems, a line guide can be used between the drum and the crown sheaves.

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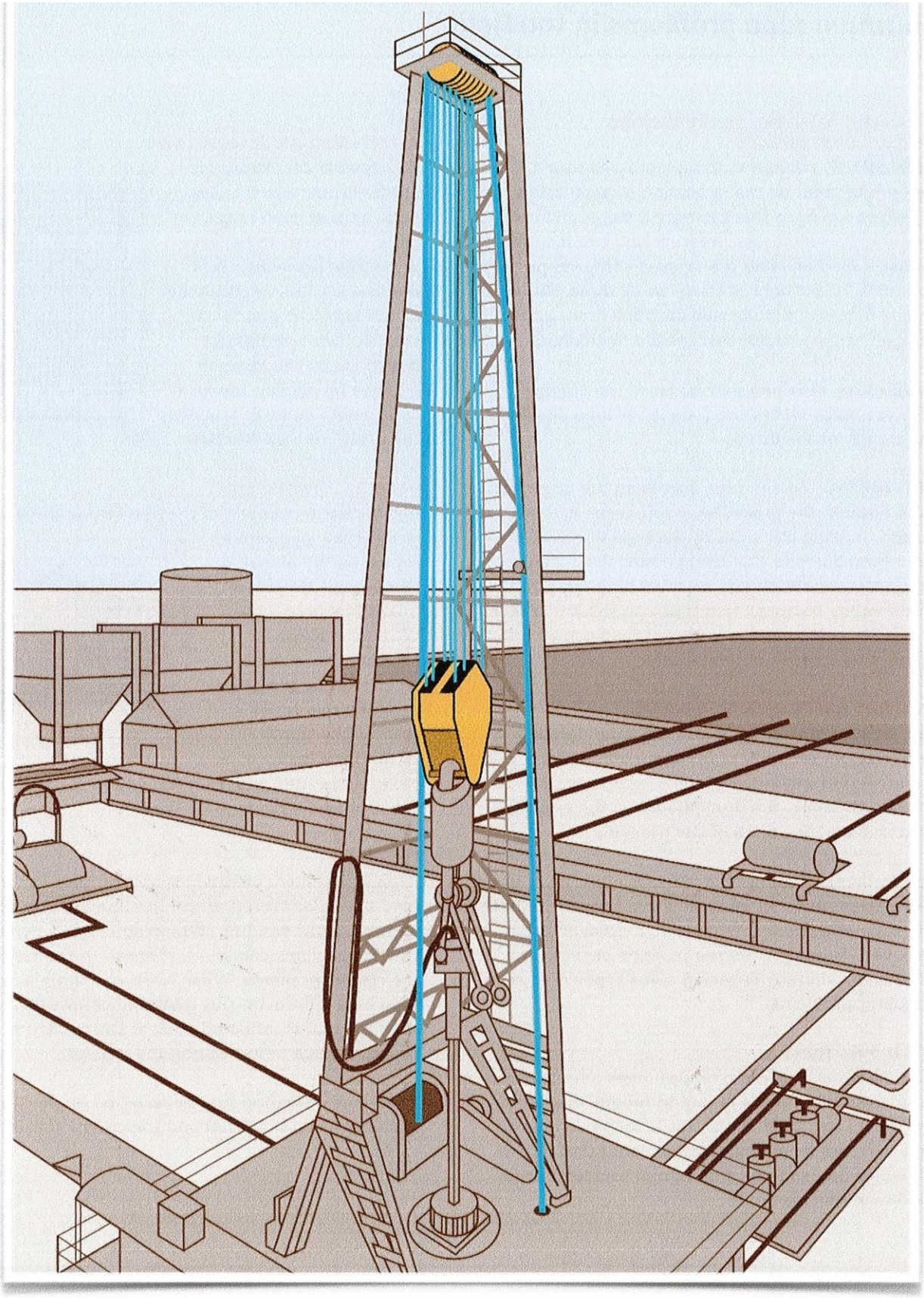

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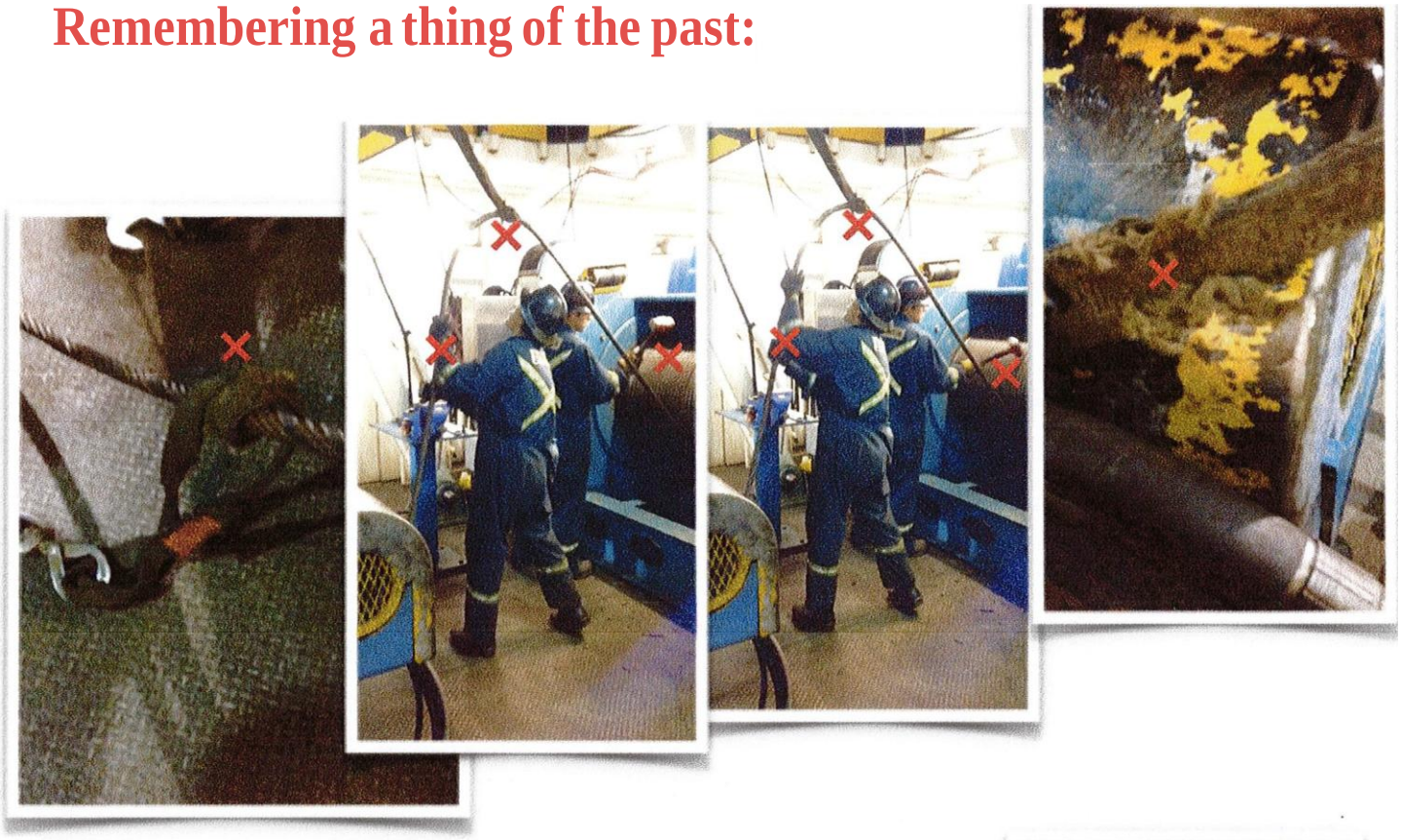
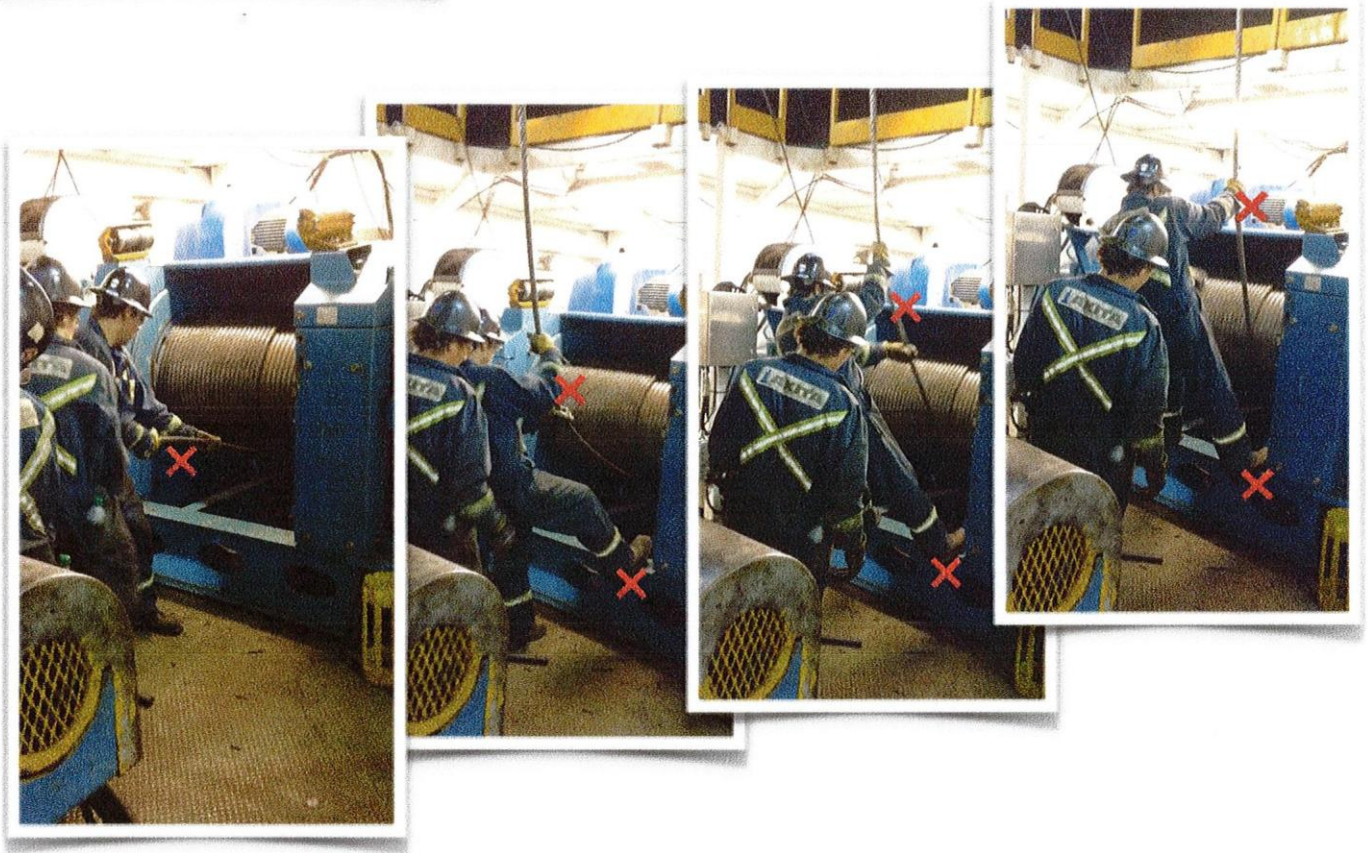
Remembering a thing of the past:





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HAVE A QUESTION OR PLACE AN ORDER?

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