

Rochester Wire & Cable, LLC

FIELD CARE AND USE DOWNHOLE WIRELINE CABLES

Proper care of any downhole wireline cable should start with the arrival of the cable at its destination and continue throughout the cable's lifetime. This document offers Rochester's recommendations.

UNLOADING

- Do not let chain or wire rope slings come in contact with the cable if handling with overhead crane
- Do not let fork lift come in contact with cable
- Do not drop the reel

MOVING

- Pry against flange of the reel
- Never pry against the cable

STORAGE

- Store in a clean, dry space, preferably indoors
- If cable must be stored outdoors, all precautions must be taken to protect it from rain and condensation - store above runoff or splash level and cover the cable

INSTALLATION

- Cable must be installed under predetermined tension based on various critical factors
 1. Cable diameter
 2. Cable weight
 3. Anticipated operating depth
 4. Anticipated services to be performed
- It is extremely important that an experienced "spooling operator" be used
- The winch drum must be in good condition – true, free of cracks, dents, excessive corrosion, and have properly drilled cable core entrance hole
- For Wireline Service Center locations , see our website

BREAK-IN PERIOD

- Operate at reduced speeds for first 20-25 runs (this allows initial stretch to be removed and wires to properly seat in position - a cable that is properly broken in usually gives trouble free service.)
- During break-in period always maintain 50 percent of your weight while deploying the cable.
- During break-in period it is recommended to use similar line speeds for deployment and retrieval.
- Rochester recommends speeds of 250 – 300 feet per minute during break-in
- Operate with tools that allow normal cable rotation to occur

- Use extra care when operating in deviated or “cork screw” holes – maintain proper weight and allow normal cable rotation

SHEAVES

- Use proper sheave size
 1. 3/16” – 12 inch diameter sheave
 2. 7/32” – 12 inch diameter sheave
 3. 9/32” – 16 inch diameter sheave
 4. 5/16” – 17 inch diameter sheave
 5. 3/8” – 20 inch sheave
 6. 7/16” – 23 inch diameter sheave
 7. 15/32” – 20 inch diameter sheave
 8. Slammer – 26 inch diameter sheave
 9. .484” – 27 inch diameter sheave
 10. 17/32” – 26 inch diameter sheave
 11. .490” – 27 inch diameter sheave
- Incorrect sheave size can cause premature wear and can contribute to loose and “ropy” armor conditions
- Use proper sheave grooves – the groove should support 120 degrees of the cable diameter
- Routinely grease sheave
- Keep sheaves in general good working order

OPERATION

- Spot truck or skid where cable will spool properly - be sure the cable is not rubbing on any part of the derrick or other structure
- Be sure all trucks and skids are tied down and secured properly before starting downhole
- Be sure the correct cable has been selected for the intended operation
- Deploy the cable at proper speeds as dictated by individual well conditions and company policies
- Maintain proper tension on cable at all times – never “float” the cable into the hole - failure to do so can result in serious cable damage such as electrical failure due to “drum crushing”.
- Do not “overrun” the cable - any sudden release of tension may result in “bird caging” of the armor and/or “z” kinked conductors
- Constantly monitor the weight indicator – stay within limits
- Do not spud with cable - the electrical conductors inside the armor might become damaged
- When using hydraulic pack off or grease seal lubricants:
 1. Do not use for “line wiper”
 2. Do not have too tight when there is movement in cable
 3. Be careful of excessive amount of fluid or pressure against cable unless there is movement in cable
 4. Do not close any valve until tools are clear and up in the lubricator
- Lubrication is a most important key to longer cable life. The cable must be lubricated
 1. At least every 5 runs
 2. If it is not used for one or more weeks
 3. If it looks dry

ROUTINE MAINTENANCE

- Watch for abnormalities such as loose armor or unusual damage during each deployment and retrieval
- Establish routine maintenance visits to a cable service center
 1. Inspect cable to deepest point run for abnormal armor conditions (loose armor, kinks, crushed spots – note: high wires are indicative of loose armor) – recondition by tightening if required
 2. Special alloy H₂S resistant cable should be inspected a minimum of every 10-20 runs, or more frequently depending on operational conditions
 3. Inspect for proper lubrication – clean and oil the cable if necessary
- Routinely check for brittle, excessively corroded armor wire

CORROSIVE AND WEAR DETECTION METHODS

- Abrasive wear - cable replacement is indicated by:
 1. A 5% reduction in cable diameter over and above normal “pull down”
 2. A 20% loss in wire diameter of any single wire (measured across the worn section)
- Corrosive degradation - cable replacement is indicated when:
 1. Visual examination of individual wires indicates surface pitting (depth defects [pits] greater than 6% of the wire diameter
 2. An “e” kink test performed on the wires comprising each individual layer exhibits a failure rate of 30% or greater
 3. The protective layer of zinc is absent from the wire (generally indicates contact with a corrosive environment)
- Miscellaneous wear - cable replacement is indicated when visual inspection reveals:
 1. Gouged and/or nicked wires
 2. Cable kinking (a severe bend that is permanently placed in the cable)
 3. Deformation of layer elements (cable crushing, pulled, bent and misshaped wires)