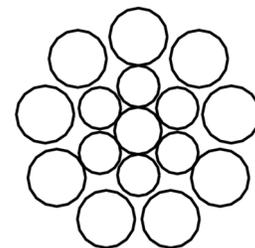


Camesa Swabs and Dycams

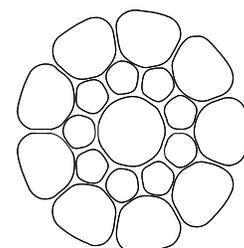
Although we refer to Swab and Dycam oilfield lines as ropes or cables, they are strands. A strand is a number of wires helically wrapped around a central wire. Several strands are then helically wrapped around a center strand or core to make a cable or wire rope. If the resulting line is 3/8 inch or less in diameter it is called a cable; if it is over 3/8 inch diameter it is called a wire rope. True cables or wire ropes can be made fairly stable and torque resistant by varying the construction and lay directions of the various strands used in construction of the rope.

Swabs and Dycams consist of 2 layers of wire wrapped around a core wire. These limitations of design also limit construction possibilities. In a Swab line the wire layers are wrapped in opposing directions, a right over left or left over right lay. Dycam wire lay is wrapped in the same direction; right over right or left over left lay. This fundamental difference in the lay of the wire results in a Swab line having a higher resistance to loosening and developing excess torque than a Dycam.



Swabline

Dycam lines are strands that are either pulled through a forming die or compacting head, the end result of either method is a strand that has flattened outer layer wires. During manufacture of Dycams, a large amount of pressure is applied over the inner layer of wires by the various manufacturing processes. In order to avoid damage to the inner wires they must be wrapped in the same direction as the outer wires. While this makes for a strong strand, the strand is not very stable and has a tendency to loosen and unwind as torque is applied to the cable while pulling out of the well and is released on subsequent trips into the well.



Dycam

The following is taken in part from a Camesa Technical Bulletin entitled [Wireline Torque](#), and the bulletin is available on the Camesa Website, www.camesaemc.com. The information is for EM Cables but holds true for Swabs and Dycams.

All cables inherently have some torque and will develop a need to rotate relative to the tension applied during operations. This is generally not a problem as long as the cable is allowed to rotate freely. In today's complex oilfield there are a lot of variables that affect and restrict cable rotation. If the cable is not allowed to rotate in proportion to tension, torque build up will begin to occur in certain areas of the cable depending on what is restricting it from rotating properly. For example, the pack-off will restrict the cable from rotating and the cable will accumulate torque as the cable passes through pack-off. This will result in torque build up and loose outer armor.

Cable rotation can be restricted resulting in torque imbalance from the following operations:

- Deviated or crooked well bores.
- Going in and out too fast and not observing the 80/120 tension rule. (The tension going into a well should not be less than 80% of line weight plus tool weight; the tension coming out of a well should not exceed 120% of line weight plus tool weight including friction and drag.)
- Pulling out of a well at high speeds that result in excessive tension.
- Centralized and decentralizing tools.
- Heavy and viscous drilling mud and completion fluids affect the tension of the cable.
- Grease heads or pack-offs used to wipe or control pressure.
- Pulling out of a rope socket under high load conditions.
- Low fluid bypasses conditions.

If a cable has been run into a well bore with any condition that may prevent free rotation or cause torque imbalance, the cable will need attention to keep it from failing. The standard approach is to normalize the cable to be sure the outer armor is tight. If you feel or see your cable trying to curl up while lying on the ground during rig ups it has excessive torque. Running the cable in this condition will risk breaking, or getting a strand cross-over which can cause the cable to strand at deeper depths. Remember every bird cage you see is caused by getting too much slack in one location of the cable.

Lack of tension means low rotation is required and high tensions means a lot of rotations required to prevent torque build up. If you come out of a well with very high tension and torque in the cable, the next time you go into a well with very little tension, there will be a lot of torque in the cable wanting to be released. Armor separation, high strands, or bird caging are not the only issues to worry about with torque build up, you may also experience early pullouts, cable breaks, and excessive compression on the conductor which can short out the cable. The more you understand the effects of torque the better off you are in preventing cable failures and or well site disasters.

Both EM Cables and Swab lines are designed to counteract the effects of torque to some extent. When run properly and serviced on a regular basis both of these cable types will hold up well. Due to the manufacturing processes used with Dycams, the inner and outer wire layers being wrapped in the same direction, the wire layers are not able to rotate in opposite directions balancing the cable rotation, thus Dycams loosen very easily. Combined with the operation methods used on Dycam type jobs (very high tensions coming out of the well, very low tensions going in the well, very high rates of line speed, use of pack offs on moving cable) and the lack of opposing wire layers, Dycams loosen very quickly. The use of a packoff on moving line can be especially destructive, the accumulation of loose wire below the packoff can create bird caging, broken wires, and change the lay length and preform of the individual wires leading to ropey line. While it is sometimes possible to recondition loose cable through a process called “tightening” at qualified cable service centers, Dycams are difficult to tighten properly as the flattened wires will not always line up in the same position as when the cable was manufactured.

We recommend using proper cable running procedures with all types of cables, however, no matter how well we run Dycams they will always have a tendency to loosen and become damaged more easily than either Swabs or EM Cables.

If you have any questions about the proper use of any Camesa Swab, Dycam, or EM Cables please contact your local Camesa Sales Representative. Contact info can be found on the Camesa website or the Camesa App.