

# INTERLOCKING SYSTEM OF SKYLOCK YARDERS

The purpose of this diagram is to explain the arrangement of the three drum interlocking system of the Skylock yarders, and the function of each.

The enclosed sketch shows the general arrangement of a three drum interlocking yarder. The drums are namely; running skyline, main, and slack pulling. The running skyline drum shaft assembly is equipped with the infinite ratio interlocking system. The main drum and slack pulling drum are identical in dimensions and are interlocked with each other. The main drum has the maximum line pull of the three drums and is used for the in-haul. The slack pulling drum has approximately one-half the line pull of the main. The main and slack pulling drums are interlocked with gears and chain drives. By shifting clutches, the relative rotation can be changed so the two lines can in-haul or out-haul simultaneously, or move in opposite directions. The two drums being identical in dimensions, the cables the same diameter and the same length, causes the lines to move at the same speed regardless of the relative motion.

The function of each line is as follows: The **running skyline** is powered by the drum with the infinite ratio drive and this line can be tensioned or slackened at any time without interfering with the movement of the other two cables. The maximum tension of the line is predetermined and cannot be exceeded. This minimizes rigging and tailhold damage and waste of power. The control of the tension does not in any way decrease the speed of the two front drums. This line leaves the machine and is passed through a tailhold system comprised of a single or multiple set of blocks. The tailhold system depends on the type of tailhold employed, such as a mechanical mobile unit or a set of blocks rigged in a standing tree. From the tailhold blocks the line is connected to the carriage which rides on the skyline as shown in figure No. 1.

The main line is the line with the maximum pull. It leaves the machine and extends out to the carriage where it is connected to the slack pulling line. The slack pulling line rides over a sheave and returns to the machine. This makes the main and slack pulling line a single length. Since both the main and the slack pulling line are the same diameter and length, and are wrapped on identical drum sizes the result is that the line speed will be identical.

If grapples are used, the grapple line, which is approximately 8 feet long, is attached to the connector of the main and slack pulling line with the other end attached to the grapple leg. Pulling of the grapple line closes the grapple; slacking off allows the grapple to open by gravity, or by the weight of the log in the grapple.

In figure No. 2 the tong line is attached to the connector in a similar manner to the grapple line. This line is used to attach rigging to which the choker lines are connected.

The two carriages appear to be the same, but further description will show that there is a difference. The carriage for the tong line has a differential sheave to minimize any "belly" in the tong line and the sheaves in the grapple carriage are identical but without the differential. Both carriages are attached to the same rider-block, which is a light weight block equipped with Timken bearings.

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The line sequence of grapple yarding is as follows:

**Step No. 1** Arrows marked No. 1 (blue, green and red)  
a. Running skyline coming in, as indicated by arrows, pulls the carriage out away from the machine.  
b. Carriage going out pulls main and slackline cable away from drums.

**Step No. 2** All cables are stopped and tension is maintained.

**Step No. 3** Arrows marked No. 2 (green and red) move in direction as indicated by arrows. This closes the grapple onto the log as shown in figure No. 1.

**Step No. 4** All arrows marked No. 3 (blue, green and red) move in the direction indicated. The green and red pull the carriage toward the machine at the same time pulling the running skyline off the drum at a rate controlled by the operator. The infinite ratio interlock produces the deflection in the running skyline necessary to clear the logs of hang-ups.

**Step No. 5** The carriage and log reach the machine and all cables are stopped.

**Step No. 6** The arrows marked No. 4 (red and green) move in the directions indicated. This releases the grip of the grapples and allows it to open dropping the log in place. This completes the cycle of grapple yarding.

The line sequence for choker logging is as follows:

**Step No. 1** The arrows marked No. 1 (blue, green and red).  
a. Running skyline coming in as indicated pulls carriage out away from machine.  
b. Carriage going out pulls main and slack pulling line away from the drums.

**Step No. 2** All cables stop.

**Step No. 3** Arrows marked No. 2 (green and red) move as indicated. This pulls the tong line out of the carriage for the choker setters.

**Step No. 4** Arrows marked No. 3 (red and green) move in directions indicated and pull the tongline into the carriage and the logs up to the carriage.

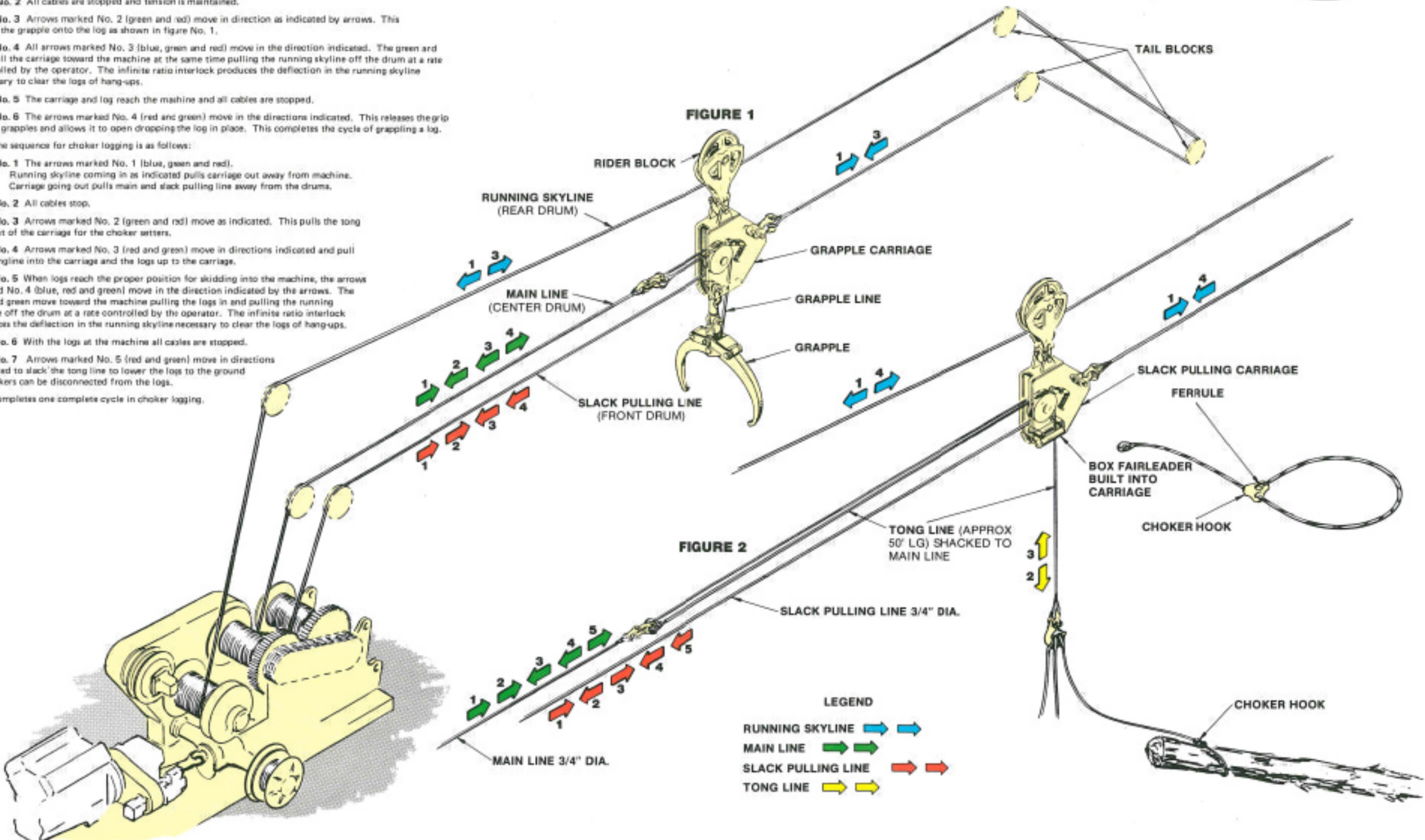
**Step No. 5** When logs reach the proper position for skidding into the machine, the arrows marked No. 4 (blue, red and green) move in the direction indicated by the arrows. The red and green move toward the machine pulling the logs in and pulling the running skyline off the drum at a rate controlled by the operator. The infinite ratio interlock produces the deflection in the running skyline necessary to clear the logs of hang-ups.

**Step No. 6** With the logs at the machine all cables are stopped.

**Step No. 7** Arrows marked No. 5 (red and green) move in directions indicated to slack the tong line to lower the logs to the ground so chokers can be disconnected from the logs.

This completes one complete cycle in choker logging.

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