SUTPHEN CORPORATION SALES TECHNICAL BULLETIN



AERIAL JOYSTICK/CONTROLS

OVERVIEW

This document presents the change for aerial models SP70, SP95, SP100, SP1110, and SPH100 that are currently using the Penny and Giles JC1500 center-lock joystick to the new Penny and Giles JC1500-034 with Operator Presence levers, that are not currently installed.

The purpose of the change is increased safety and reliability.

The joysticks at the Pedestal are wired to a Danfoss controller (module) known as the Base controller located in the Turntable electronics box. The base controller is also wired to the hydraulic control valves in the pedestal that control the hydraulic fluid to the raise cylinders, the extend cylinders and the hydraulic rotation motors known as the Fairfield drives.

The joysticks in the Platform are wired to a Danfoss controller (module) known as the Basket controller located in the Platform console. The basket controller communicates to the Base controller via a high-speed data network known as SAE J1939. The two controllers are programmed determining how the joysticks, valves and a few other related devices function.

COMPARISON

The current joysticks are the JC1500 made by Penny & Giles and purchased through Kraft Fluid Systems (KFS) (pictured below). This joystick has a center lock that the operator must pull up in order to move the joystick but that is the only safety feature. It does not employ an electronic safety check to verify intended handle movement. This joystick is used on all aerials with the Fairfield drives.



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COMPARISON CONTINUED

The joystick we are using as we move forward is the JC1500-034 with Operator Presence, also made by Penny & Giles and purchased through KFS. This joystick has no center lock but instead employs a lever on the front of the stick that is wired to the local Danfoss controller. This is known as the Operator Presence safety feature meaning that the joystick signal is valid only if the lever is pressed when the joystick is in the neutral position before using the joystick and remains pressed while using the joystick. If the operator releases the lever while the joystick is in use that joystick input will cease to be valid and the function (Raise/Lower, Extend/Retract, or Rotation) will ramp down to zero movement. The operator must return the joystick to neutral position and re-engage the Operator Presence lever to use the function again.



Using the JC1500-034 joystick (Operator Presence) also requires a different Base and Basket controller with more inputs as a result of the operator presence wires. The new Base and Basket controller are a little larger but we are able to mount them in the same locations without any issues.

The new joysticks are a little wider and taller than the existing joysticks we use now. As seen in the picture below the spacing between the new joysticks is less than the existing joysticks thus making it a little more difficult to wrap your hand around the joystick. However, it has been noted that most operators place their hand on top of the stick to operate which makes it easier to operate multiple or all three sticks at once.

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COMPARISON CONTINUED



We are working on redesigning the control panel so that it allows enough spacing for the new joysticks but in so doing the Pedestal and Platform control panel layouts change drastically. As can be seen in the previous pictures there is not much room to move things around. Of particular concern is the Class 1 SPS-4 switch (black, rubber-molded switch to the right of the joysticks). Making the spacing wider for the joysticks does not allow us to use the SPS4. Instead, we would have to use two SPS-2 switches and stack them (see below).

Rendering of Platform control panel using 2-SPS-2's. Note the greater spacing between the joysticks.



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