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SSS Salsco Safety Shield Operator's Manual



11-11-2020

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What is the Salsco Safety Shield?

The Salsco Safety Shield (SSS) is a safety system used to help protect an operator from bodily harm when operating handfed wood/brush chippers that are equipped with hydraulic infeed rollers. This safety system is used to augment existing safety systems already in place on these types of handfed chippers. These wood/brush chippers are extremely dangerous to operate. A momentary lapse in judgment, a simple distraction, an improper feed or simply a wrong move can almost instantly result in a horrible injury or worse, death. The Salsco Safety Shield, when properly installed and operated, detects when an operator's Safety Accessory enters a defined hazard area and then shuts down the infeed rollers helping to protect the operator from harm. The operator can then restart the infeed rollers if it is safe to do so.

How does the SSS work?

The operator wears Safety Accessories (magnetic wrist and ankle bands) that can be detected by the safety system. These devices are much like hardhats, safety glasses, ear plugs and gloves, in that no benefit of additional safety occurs unless these devices are worn by the operator. The Safety Accessories contain magnets which are detected by the antennas (metal plates) that are mounted directly to the left and right inside walls of the infeed hopper. When a Safety Accessory moves into the area bound by the left and right antennas (the hazard zone), the antenna will signal the electronics associated with this safety system to interrupt power to the solenoids controlling the hydraulic flow to the infeed rollers. When power is removed from the solenoids, the hydraulic flow is stopped causing the rollers to stop immediately. Note that the safety system does not change the mode or direction of the infeed rollers at any time, it only serves to stop the flow of hydraulic fluid to the infeed rollers, thus causing the rolls to stop.

A special medical alert: Due to the strong magnets used in the Safety Accessories, those operators with **heart conditions, who have some form of heart control device, such as a pace maker**, should consult their doctor before using the Safety Accessories. We do not recommend using this system without first consulting with your doctor and getting their approval after they have been informed about the Safety Accessories used in this system.

What components make up the Salsco Safety Shield?

The SSS is composed of 6 types of components, a SSS Controller, Safety Accessories, two Restart Boxes, two Antennas, two Wiring Harnesses and two Rear Green LED indicators.

Salsco Safety Shield

The SSS Controller: This is the brain (electronics) of the safety shield system. It is the device that responds to a triggered event caused by an accessory moving into the hazard zone, which causes a chain of events to shut down the infeed rollers. It is also this device which responds to the Restart Boxes to allow the infeed rollers to function.

The Safety Accessories: These are the wearable devices that are detected by the antennas when these devices move into the hazard zone or when hovering next to a Restart Box. For more information see the Safety Accessories section below.

The Restart Boxes: Also called reset boxes, these are the devices which signal the SSS Controller to re-enable the infeed roller when a Safety Accessory is hovered next to the box. There are typically two of these boxes located near the outside end of the infeed hopper. They are typically wired in parallel making it so a single operator from either side of the infeed hopper may restart the system. An optional wiring can be done (series wiring) so that it requires two operators, one on each side of the infeed hopper to restart the system.

The Antennas: The Antennas or metal plates are located on the inside left and right walls of the infeed hopper. These metal plates detect the Safety Accessories within a certain range and working together create an area called the hazard zone. When a Safety Accessory moves into this hazard zone the antenna signals the SSS Controller creating a triggered stop event which leads to the shutdown of the infeed rollers.

The Wiring Harnesses: The two wire harnesses electrically connect all the necessary devices to allow for proper signaling and powering of the SSS. One wire harness signals detection of the Safety Accessories either from the Restart Boxes or the Antennas. The other wire harness provides power to the SSS Controller and wiring to allow the interruption of power to the solenoids controlling hydraulic flow to the infeed rollers.

Rear Green LED Indicators: Two Green LEDs are installed on the top rear of the infeed hopper. These LEDs serve to let the operator know the machine is running and the Safety Shield is enabled.



Reset Box - One on either side of the infeed.



Antenna - One on either side of the infeed.



SSS Controller

What steps are Required to Use the Salsco Safety Shield?

“Chip” says “Remember to always perform the following steps to verify the proper function of the SSS Salsco Safety Shield. These steps must be performed resolving any operational problems prior to any use of the wood/brush chipper.”



“Safety is no Accident!”

- 1) Put on all manufacturer recommended safety gear including the recommended Safety Accessories associated with the safety shield. At a minimum two Wrist Safety Accessories and two Boot Lace Accessories must be worn. **Wrist and Ankle bracelets should be worn with the arrow pointing to the ground when standing with your hands at your sides. Boot Lace Safety Accessories should be worn as pictured on the accessory.**
- 2) Start up the wood/brush chipper in the manner as directed by the wood chipper’s manufacturer manual.
- 3) Walk to the rear side of the infeed hopper. On system initial startup the infeed rollers should be stopped. If not already positioned, move the infeed roller control bar to the position that places the rollers into the material reversing direction. Ensure that the infeed rollers are stopped. If rollers are not stopped refer to the trouble shooting section of this document.
- 4) Now hover one of the Wrist Accessories next to the Restart Box located just outside the hopper or if you have a two operator enabled system, a second operator must also hover at the same time a Wrist Accessory next to the Restart Box located on the opposite side of the infeed hopper. The infeed roller should now start rolling in a reverse direction. If not, refer to the trouble shooting section of this document.

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5) Now with the rollers in reverse motion, while standing at the hopper side, reach toward the nearest vertical edge of the closest antenna (metal plate). This should cause the infeed roller to stop. If not, refer to the trouble shooting section of this document.

6) With the rollers now stopped, walk to the other side of the hopper and hover one of the Wrist Accessories next to the Restart Box located just outside the hopper or if you have a two operator enabled system, a second operator must also hover at the same time a Wrist Accessory next to the Restart Box located on the opposite side of the infeed hopper. The infeed roller should now start rolling in a reverse direction. If not, refer to the trouble shooting section of this document.

7) Now again with the rollers in reverse motion, while standing at the hopper side, reach toward the nearest vertical edge of the closest antenna (metal plate). This should cause the infeed roller to stop. If not, refer to the trouble shooting section of this document.

While performing any of the required steps above, if a problem occurred, directing you to the trouble shooting section, **DO NOT USE** the machine until the problem has been properly resolved. Be sure to shut down the machine with the key in the off position prior to taking any other action.

How do I use the wood/brush chipper equipped with a Salsco Safety Shield?

After the operator puts on all the required personal safety equipment, including the minimum required Safety Accessories of at least 2 Wrist accessories and 2 Boot Lace accessories, and after following all of the startup/safety procedures for the manufacturer's wood/brush chipper, followed by the required 7 steps above which verifies the proper function of the Safety Shield, the wood/brush chipper is ready for use. The operator will then position the infeed control bar to the appropriate position, and when safe to do so, will hover a Safety Accessory next to a Restart Box enabling the infeed rollers to function. The operator will then use the chipper and any installed features as directed by the manufacturer. While using the chipper, if a Safety Accessory worn by the operator moves into the hazard zone unintentionally, the infeed rollers will stop. The operator can then – **if it is safe to do so** -- hover a Safety Accessory next to a Restart Box to re-enable the infeed rollers and continue with their work. If while working, there is a need to intentionally stop the infeed rollers, the operator can deliberately reach toward either antenna to stop the infeed rollers immediately or position the control bar appropriately.

A special medical alert: Due to the strong magnets used in the Safety Accessories, those operators with **heart conditions, who are using some form of heart control device, such as a pace maker**, should consult their doctor before using the Safety Accessories. We do not recommend using this system without first consulting with your doctor and getting their approval after they have been informed about the Safety Accessories used in this system.

What are the various types of Safety Accessories?

There are several Safety Accessories available at this time. The accessories in general are composed of a cloth type material that is rugged enough to withstand the environmental conditions in which chipping machines are used that enclose magnets of proper field strength with hook and loop fastener material for easy on and off. Listed below are those available at this time:

Ankle Accessory – should be worn with arrow pointing to the ground.

Boot Lace Accessory – should be worn as indicated on the accessory.

Wrist Accessory – should be worn with arrow pointing to the ground.

How do I start the infeed rollers from a Triggered Stop Event?

When the SSS system is initially powered up, the infeed rollers will not function regardless of the infeed control bar positioning. On startup the operator must perform the 7 verification steps described in the “Required to Use” section above, resolving any operational problems prior to use.

To restart the infeed rollers from a triggered stop event (the operator entered the hazard zone), the operator must first ensure that it is safe to allow the infeed rollers to function. If the operator has determined it is safe for the rollers to operate, the operator must hover their worn Safety Accessory next to one of the Restart Boxes associated with the safety system. This action will re-enable the infeed rollers to function in the mode and direction determined by the other controlling devices that are part of the wood chipper itself. Note, if your system uses the restart wiring option requiring two operators then both operators on opposite sides of the infeed hopper will need to hover their Safety Accessory next to the Restart Boxes at the same time to enable the infeed function.

Trouble Shooting Section

This section is intended to aid the operator in understanding the workings of the Salsco Safety Shield (SSS) to be able to better communicate a problem with a qualified safety shield service technician.

The SSS is composed of 6 types of components, a SSS Controller, Safety Accessories, two Restart Boxes, two Antennas, two Wiring Harnesses and two Green LED indicators. A failure of any one of these components can result in a malfunction of the SSS.

The SSS Controller: The table below shows normal operation of the LEDs on the SSS Controller. Note, **never are both the Blue and Red LEDs ON solid together**. Anytime the Blue LED illuminates the system will be disabled and is only re-enabled when there is a solid Red LED ON.

Normal LED Reactions to Cause Actions				
Cause Actions		LED Reactions		System Response
		BLUE LED	RED LED	
1	Initial Power to Controller, Key ON	Blue Flash	Red OFF	In-feed will not function, Disabled.
2	Safety Accessory next to Restart Box	Blue OFF	Red ON	In-Feed ready to function, Enabled.
3	Safety Accessory moving near Antenna	Blue Flash	Red OFF	In-feed will not function, Disabled.
4	Not properly seated J1 Grey Connector	Blue ON	Red OFF	In-feed will not function, Disabled.
5	Open/Broken wire to either Antenna	Blue ON	Red OFF	In-feed will not function, Disabled.
6	Not properly seated J2 Black Connector	Blue OFF	Red OFF	No power control Disabled.
7	Idle state In-feed enabled to run	Blue OFF	Red ON	In-Feed ready to function, Enabled.
8	Idle state In-feed stopped due to trip	Blue OFF	Red OFF	In-feed will not function, Disabled.

In order to determine if SSS Controller is receiving proper power, turn key from Off position to On position without starting motor. You should see a Blue flash on controller top as noted in the **LED table, cause action #1**. This may require a second person as an observer. You may also at this point move your Safety Accessory near either Antenna and see a Blue flash on the controller top as noted in the **LED table, cause action #3**. With either of these actions, if a Blue flash is observed, the controller is getting proper power.

The Safety Accessories: These are the wearable devices that are detected by the antennas that have magnets within them. If the safety accessory is missing a magnet or magnets, **the system will not respond correctly to the accessory**. The accessory is no longer functional and needs to be discarded and replaced. The magnet has certain required specifications in direction and strength of its magnetic field for proper operation of the SSS. **Do Not try to use any other magnet type**. Contact your safety shield service technician for proper equipment pertaining to this SSS. **Wrist and Ankle bracelet Safety Accessories should be worn with the arrow pointing to the ground when standing with your hands at your sides. Boot Lace Safety Accessories should be worn as pictured on the accessory.**

The Restart Boxes: Also called reset boxes, these are the devices which signal the SSS Controller to re-enable the infeed roller when a Safety Accessory is hovered next to the box as noted in the **LED table, cause action #2**. A broken wire to the restart box or an incorrectly seated J1 connector at the controller could cause the restart action at the box to fail as noted in the **LED table, cause action #4 or #5**.

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The Antennas: The Antennas or metal plates are located on the inside left and right walls of the infeed hopper. These metal plates detect the Safety Accessories. A broken wire to the antenna or an incorrectly seated J1 connector at the controller will cause the antennas to malfunction as noted in the **LED table, cause action #4 or #5**. A shorted wire in the antenna circuit will have no Blue LED responses due to a Safety Accessory. Enabling the infeed may still be possible but **Do Not Use** the machine as the safety system is no longer 100% functional.

The Wiring Harnesses: The two wire harnesses electrically interconnect all the necessary devices to allow for proper signaling and powering of the SSS. One wire harness is for signaling detection of the Safety Accessories either from the Restart Boxes or the Antennas. A poorly seated J1 (grey) connector or broken wires in this harness will result in many possible problems but mostly **cause actions #4 or #5 above**.

The other wire harness is for power to the SSS Controller and wiring to allow the interruption of power to the solenoids controlling hydraulic flow to the infeed rollers. A poorly seated J2 (black) connector or broken wires in this harness will result in many possible problems but mostly **cause action #6 above**.

Rear Green LED Indicators: Two Green LEDs are installed on the top rear of the infeed hopper. These LEDs serve to let the operator know the machine is running and the Safety Shield is enabled. If there is a triggered stop event, the Green LED Indicators will turn off. Once the safety shield is reset, the green indicators will turn on again.

Decal Placement:

Place the Warning Decals shown below near the SSS Reset Stations, on both sides of the infeed hopper.



Salsco Safety Shield

Place the Warning and Danger Decals shown below near the Key Switch for machine start.



Contact us via our website at www.salsco.com or via phone (203)271-1682.

Salsco Safety Shield Orientation/Checkout

I have a good understanding of the "Salsco Safety Shield" and how it works to augment existing safety devices already on my machine.

I have been informed of the medical conflict concerning the strong magnets used in the Safety Accessories and operators with **heart conditions using some form of heart control device such as a pace maker**. I acknowledge that it is **not recommended** for these operators to use this system without first consulting with their heart doctor and getting their approval after they have been informed about the Safety Accessories used in this system.

I have been trained on the proper use of the "Salsco Safety Shield".

I understand that there are 7 steps that must be taken when using the "Salsco Safety Shield" and these have been explained in the "Salsco Safety Shield" handbook provided.

I understand **All Safety Features** must be checked and in working order. Failure to follow all safety instructions can result in serious injury or death.

☐

I have chosen to have the reset boxes wired such that it requires only one operator to enable the in-feed function from either side of the in-feed hopper.

☐

I have chosen to have the reset boxes wired requiring two operators, one on each side of the in-feed hopper to enable the in-feed function.

I have been trained to use the "Salsco Safety Shield" and will train others that will use the "Salsco Safety Shield".

I have received a copy of this orientation/checkout document and a copy of the "Salsco Safety Shield" handbook that was used during the orientation.

If you need any additional copies of the handbook and or this orientation/checkout document, feel free to contact us.

Customer/Operator Signature _____ Date _____

Print _____

Tech Performing Orientation _____ Date _____

Print _____

Controller Serial Number _____

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