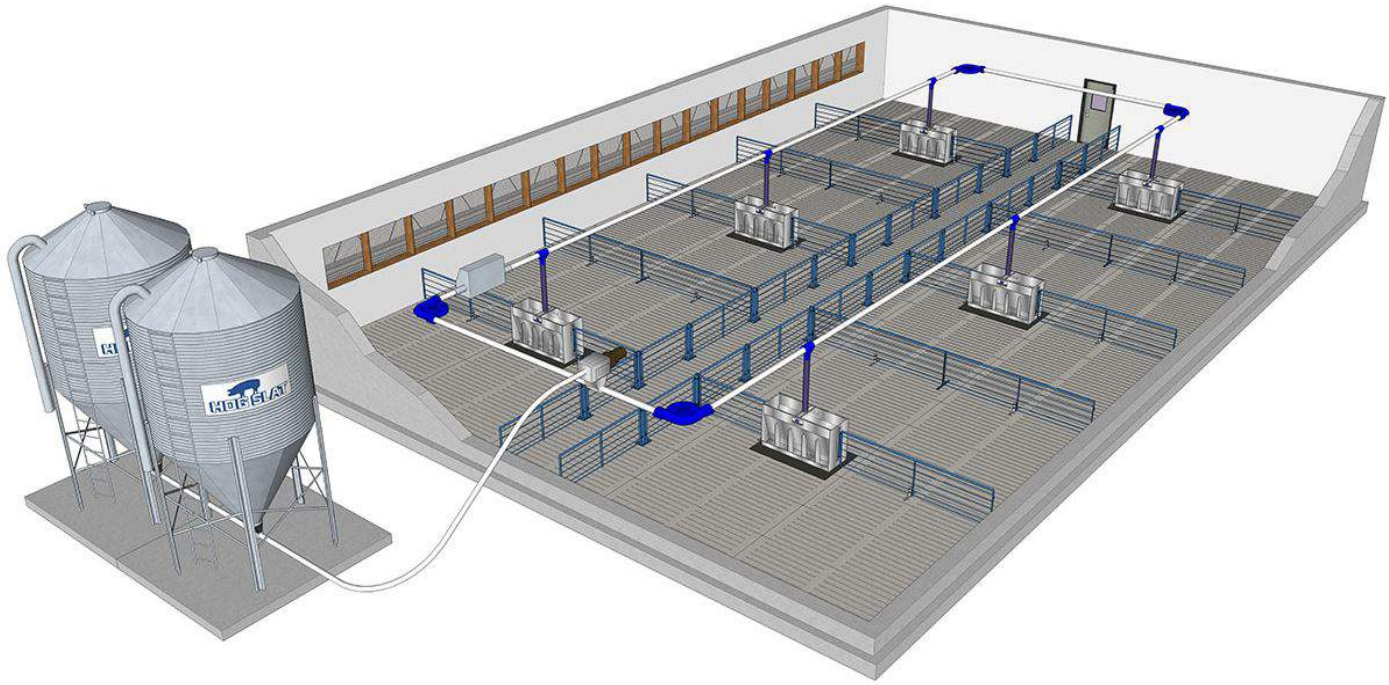
GrowerSELECT®

GROW-DISK™

FEED SYSTEM
OPERATING INSTRUCTIONS

THIS SHOULD NOT BE REFERENCED FOR INSTALLATION OR MAINTENANCE



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Safety Information

Caution, **Warning**, and **Danger** decals have been placed on the equipment to warn of potential dangerous situations. Care should be taken to keep this information intact and easy to read at all times. Replace missing or damaged safety signs.

Safety – Alert Symbol

This is a safety-alert symbol. When you see this symbol on your equipment, be alert to the potential or personal injury. GrowerSelect equipment is designed to be installed and operated as safely as possible, however, hazards do exist.

Signal Words

Signal words are used in conjunction with the safety-alert symbol to identify the severity of the warning.

DANGER - identifies immediate hazards which WILL result in severe personal injury or death.

WARNING - identifies hazards or unsafe practices which COULD result in severe personal injury and death.

CAUTION – identifies hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

Warning – Moving Parts

Keep hands and clothing clear of moving parts. Chain Disk can cut and crush.

Severe personal injury will result if the electrical power is not disconnected prior to servicing the unit.

DANGER – ELECTROCUTION HAZARD

Disconnect electrical power before inspecting or servicing equipment unless maintenance instructions specifically states otherwise.

Ground all electrical equipment for safety.

All electrical wiring must be done by a qualified electrician in accordance with local and national electrical codes.

Ground all non-current carrying metal parts to guard against electrical shock. With the exception of motor overload protection, electrical disconnects and over current protection are not supplied with the equipment.

General Safety Notes

The assembly, installation, and maintenance must be performed by qualified personnel.

- Safety notes and warnings in these instructions and on the system equipment must be followed. Failure to follow specified instructions may cause damage to equipment and/or personal injury or death.
- All components in the GROW-DISK™ chain system must be transported and assembled properly.
- System may only be operated if all the necessary emergency and alarm systems are connected and operational.
- System must be maintained at regular intervals.
- Only manufacturer-approved components and accessories may be operated in conjunction with the system.
- A lockable main switch must be installed between the controls and the main power capable of shutting the system down. It must be ensured that the system cannot be turned on by a third party.
- Before components in the feed system are opened, the chain must have come to a complete stop.
- Work on the feed system may only be carried out with the corresponding safety equipment (work gloves, safety glasses etc.).
- All system parts must be properly grounded to guard against electrical shock.
- The system may only be operated if all components are closed (driving unit, deflector corner pieces, and feed receiving station).
- The system must be switched off immediately if the conveyor chain is blocked.
- In systems with two or more feed bins in a row, only one bin may dispense feed into the feed system.
- The system can be started automatically using the controls. It must be ensured that no persons can reach into dangerous places with their hands.
- The safety equipment may not be switched to inactive.
- The feed system may only be repaired by persons who are authorized by the manufacturer.
- These instructions are to be submitted to the system operator following successful assembly.
- Always wear protective clothing and any applicable Personal Protective Equipment (Safety Glasses and/or Ear Plugs) when working with the equipment.
- Discarded materials, equipment, and boxes should be recycled in accordance with local and national codes.

Note: System is to be wired in accordance with all applicable local and national electrical wiring codes. All wiring sizes and fuse capacities are to be sized according to applicable electrical code specifications or other regulations.

General Operation Notes

Prior to Operating the Grow-Disk Feed System, read this entire manual. This operating instructions manual is intended to provide guidelines for the operating of the system. Instructions should be considered as recommendations only. Actual operation may vary depending on specific conditions.

The system is only suitable for operation in dry areas. System parts that are assembled outside the house must be adequately protected against moisture.

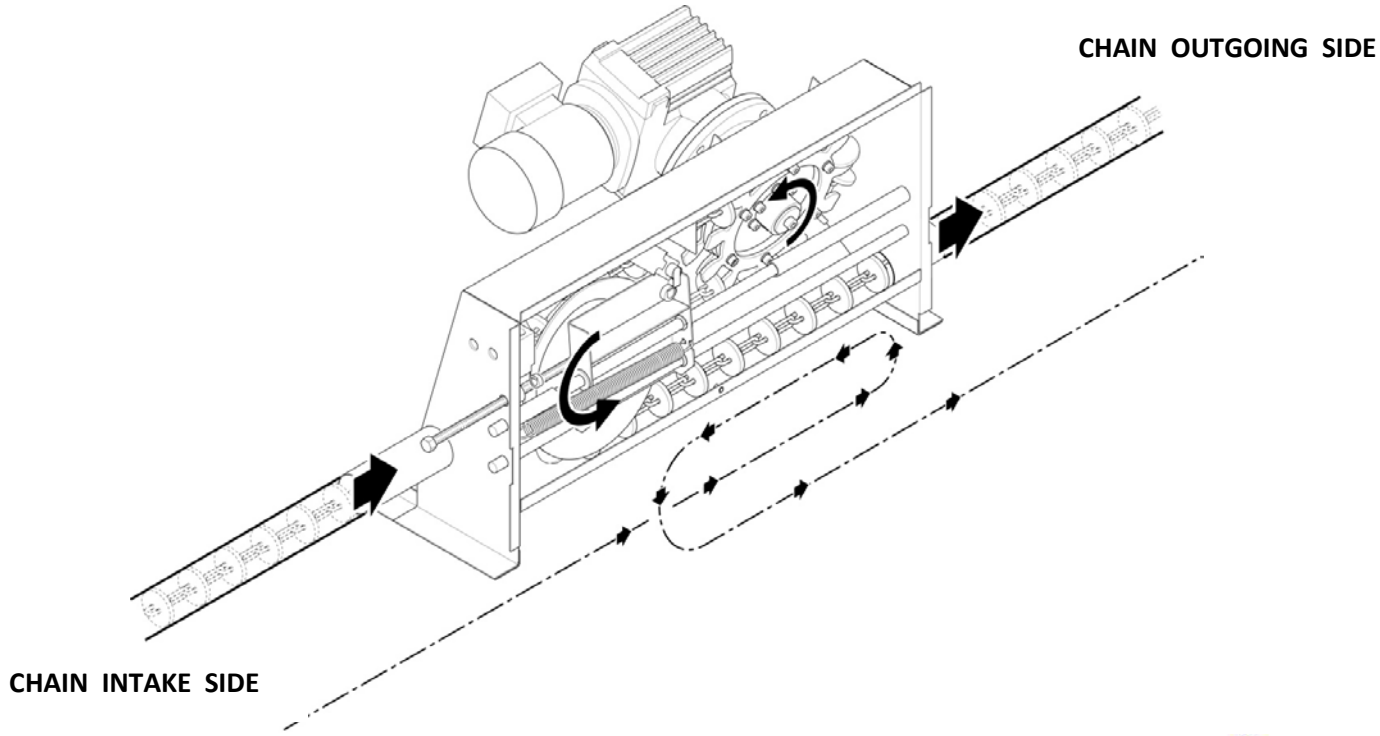
Do not pressure wash the drive unit, chain disk fill hopper, unsealed corners, proximity switch, controller or any other electronic components.

The feed system is intended for the transportation of feed. Maximum running time of the system may not exceed 4 hours per day.

Only dry feed may be transported in the feed conveyor system (maximum residual moisture = 14%, maximum filling level = 50%). The feed can be floury, crumbly, or in pellets.

Principle of Operation for the GROW-DISK™ Drive Unit (WL10022012)

The Drive Unit is an enclosed stainless steel housing with a spring loaded idler tensioning wheel, a drive sprocket wheel, and a safety switch to shut down the system if it becomes obstructed by a foreign object or has incorrect conveyer chain tension. The drive sprocket wheel pulls the conveyer chain out of the conveyer tube system. The guide wheel takes the chain back into the conveyer tube system on the other side of drive unit. Correct chain tension is automatically adjusted by a spring loaded tensioning wheel.
The Drive Unit is designed so that if feed enters the unit, it is able to carry it back out again.

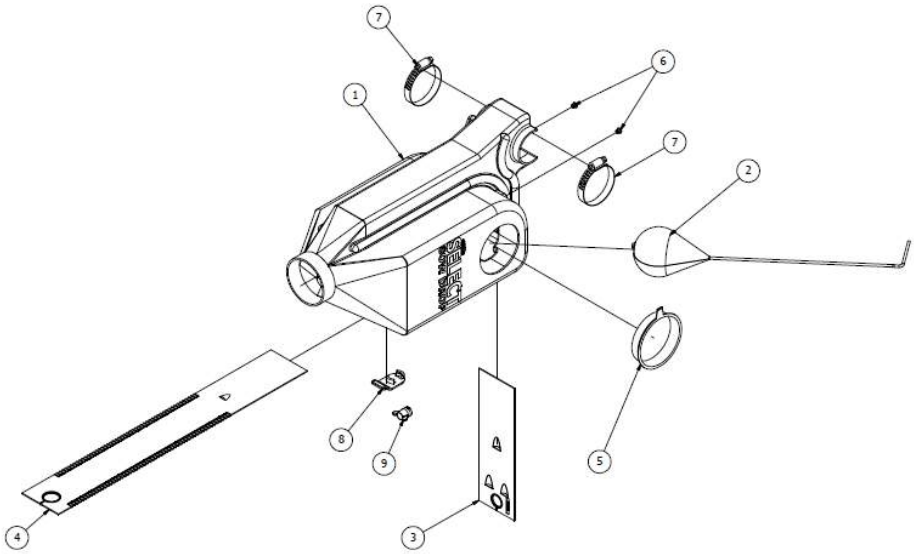


GROW-DISK™ Conveyer Tubes Operating Requirements

- Conveyer tubes must be hung every 5 feet on wall brackets or chain supports.
- Chains supports should be tight to the conveyer tubes

GrowerSELECT HSSD55 12 Pound Sow Drop Feeder

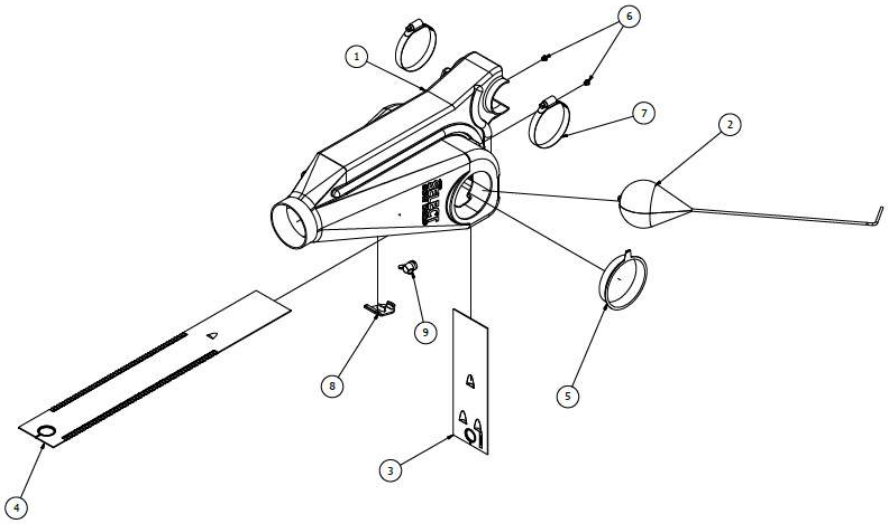
The GrowerSelect HSSD Feeder Sow Drop Dispenser is specifically designed to hold and deliver feed to gestating sows within a swine facility. The capacity of each feed dispenser is 1-1/2 to 12 pounds. The delivery of feed can be controlled manually or automatically with the use of winches, trip levers, actuators, control units, timers, and sensors.



Item	Description	Part Number
1	Tank	HSSD55-1
2	Ball Drop with String	HSSD01
3	Shut-off Gate	HSSD02
4	Feed Measure Gate	HSSD03
5	Cap	HSSD04
6	Grommet	HSSD06
7	Hose Clamp	HSHC-36
8	Clip	HSSD05
9	Thumb Nut 1/8”	HSH032

HSSD558 8 Pound Sow Drop Feeder

The GrowerSelect HSSD558 Feeder Sow Drop Dispenser is specifically designed to hold and deliver feed to gestating sows within a swine facility. The capacity of each feed dispenser is 1-1/2 to 8 pounds. The delivery of feed can be controlled manually or automatically with the use of winches, trip levers, actuators, control units, timers, and sensors.



Item	Description	Part Number
1	Tank	HSSD558-1
2	Ball Drop with String	HSSD01
3	Shut-off Gate	HSSD02
4	Feed Measure Gate	HSSD03
5	Cap	HSSD04
6	Grommet	HSSD06
7	Hose Clamp	HSHC-36
8	Clip	HSSD05
9	Thumb Nut 1/8”	HSH032

HSSD60C 8 Pound Sow Drop Center Drop Feeder 60mm with Guard

The GrowerSelect HSSD60C Feeder Sow Drop Dispenser is specifically designed to hold and deliver feed to gestating sows within a swine facility. The capacity of each feed dispenser is 1-1/2 to 8 pounds. The delivery of feed can be controlled manually or automatically with the use of winches, trip levers, actuators, control units, timers, and sensors.

GrowerSELECT Feed Line Sow Drop Operation

Adjustment Method – To change the capacity of the Sow Drop dispenser, a retractable wall is adjusted up and down by sliding the blue capacity indicator tab to meet the specified amount.

Shut Off Operation – dispenser is equipped with a top slide which covers the top inlet hole preventing flow of feed. Pull the slide out will allow feed to flow.

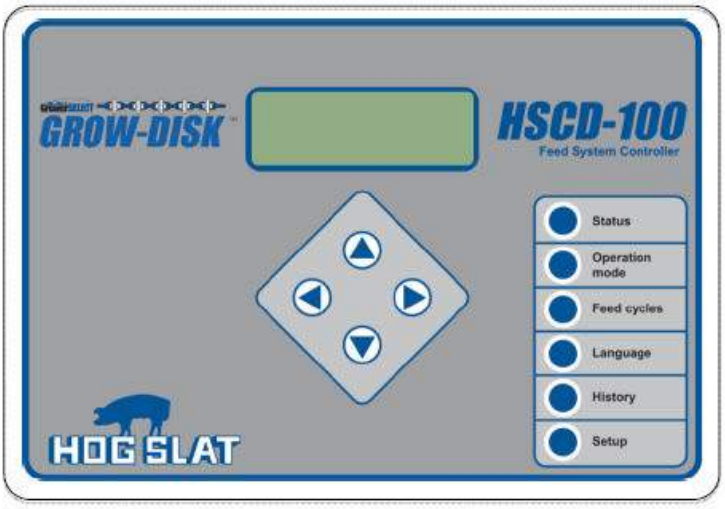
Feed Drop Method – In order to release the feed from the Sow Drop dispenser, a ball is pulled vertically by a cable which uncovers the hole in the bottom of the feeder.

HS693 Feed Line Control Unit – 230V Single Phase

A red indicator light on the side of the switch housing will illuminate when the diaphragm has been pressed (MOTOR OFF) and the switch has been activated.
The ON/OFF switch is used to enable or disable the Control Unit. **DO NOT USE THIS SWITCH AS DISCONNECTING MEANS FOR SERVICING.**

GROW-DISK™ HSCD-100 System Controller

The HSCD-100 is a livestock feed system controller used to control a chain disk and auger motor with feed drop tubes. The user can define up to 12 feed cycle start and dump times over the course of a normal day. A proxy switch is used to detect feed in the last drop tube or at the end of the feed line. A toggle switch can be connected to manually stop the system without generating an alarm. The system features a current sensor input used for overload protection on the feeding system. (Refer to manual HSMANUAL-048 HSCD-100 User Manual)

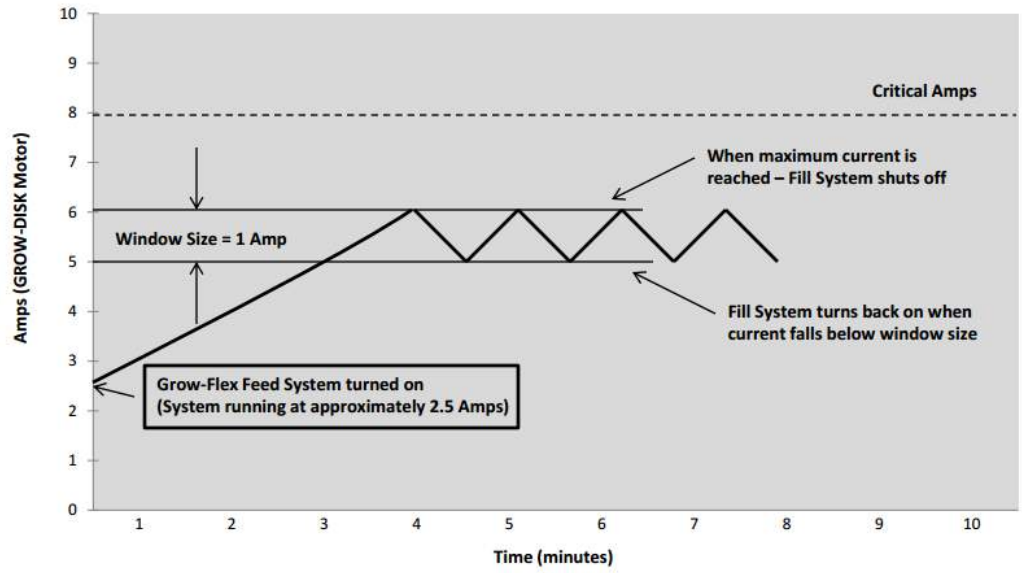


Recommended HSCD-100 System Controller Settings (amps, delay times, etc.)

a. Recommendation for Amps (Motor 1.1kW 60Hz Single Phase, item# BM966)
   i. Max Current 7.5 Amps
   ii. Window Size 1.0 Amps
   iii. Critical Amp Draw 8.5 Amps
b. Recommendation for Auger Delay for 900 feet system (speed of chain 115 feet/min)
   i. 8 minutes
c. Recommendation for Feed Sensor Bypass (minimum 30 seconds less than auger delay)
   i. 7 minutes
d. Recommendation for Shutdown Delay
   i. 30 seconds
e. Recommendation for Maximum Runtime
   i. Average feeding time plus 10 minutes

HSCD-100 Current Sensor

The Grow-Disk chain disk system can over fill if the Grow-Flex feed system's capacity is greater than the capacity of the Grow-Disk system. Overfilling will overload the Grow-Disk motor causing the thermal overload switch to kick out and/or premature motor failure. To prevent this from occurring, a current sensor has been installed on the Grow-Disk HSCD-100 Controller circuit board. This current sensor monitors the amp draw of the Chain Disk motor and controls a relay which is wired to the fill system. If the amperage exceeds the value defined by Max Current, it will temporarily turn off the GROW-FLEX™ AUGER System. As the Chain Disk system continues to empty itself the amp draw will decrease steadily. If the amperage drops below the defined Window values then the GROW-FLEX™ AUGER System will turn on. This ON/OFF cycling of the GROW-FLEX™ AUGER System will occur every few minutes until the Grow-Disk system is full. At this time, both the chain disk system and the fill system will shut off. When the amperage exceeds the value defined by critical amps on the Chain Disk motor load, the complete system is shut down and the controller goes into alarm mode.



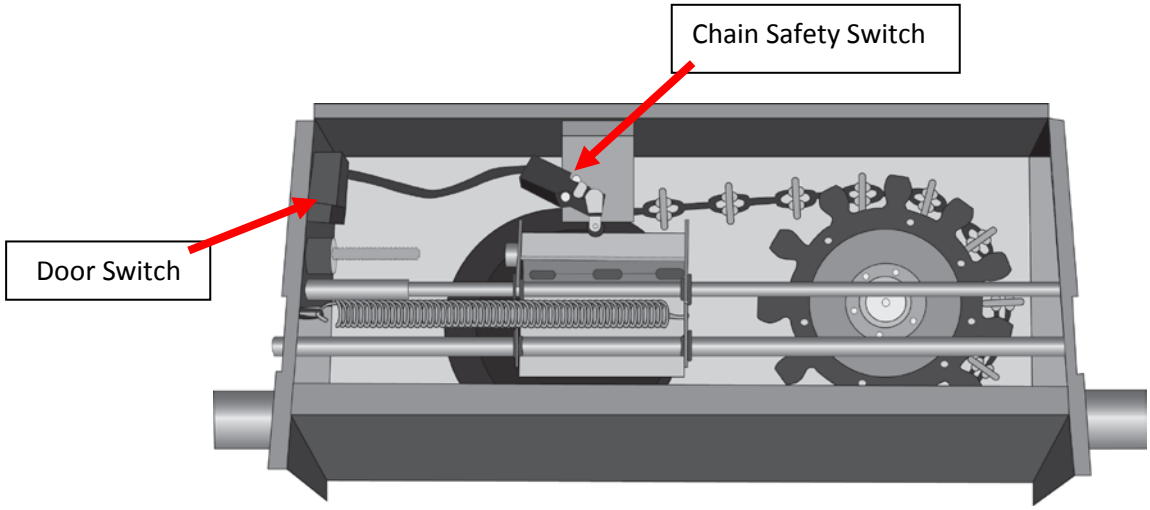
Graphical Illustration of Current Sensor Operation for Typical Feed System

GROW-DISK™ HSCD-100-SS -Soft Start for Chain Disk System

The HSCD-100-SS soft starter is designed to start the chain disk drive motor at a slower rate in order to reduce the mechanical impact on the system upon start-up. With longer systems, the impact of starting the system almost instantaneously results in severe force placed on the chain, corners and drive system until the system is up to speed. The HSCD-100-SS reduces the start-up current of the drive motor and ramps the motor up to full speed over a period of 3 seconds reducing the sudden impact on the system. Once the system has been started for 5 seconds, the soft start circuit is bypassed allowing the motor to run at normal full speed. Any time the chain disk drive motor is started, the soft start circuitry will be active.

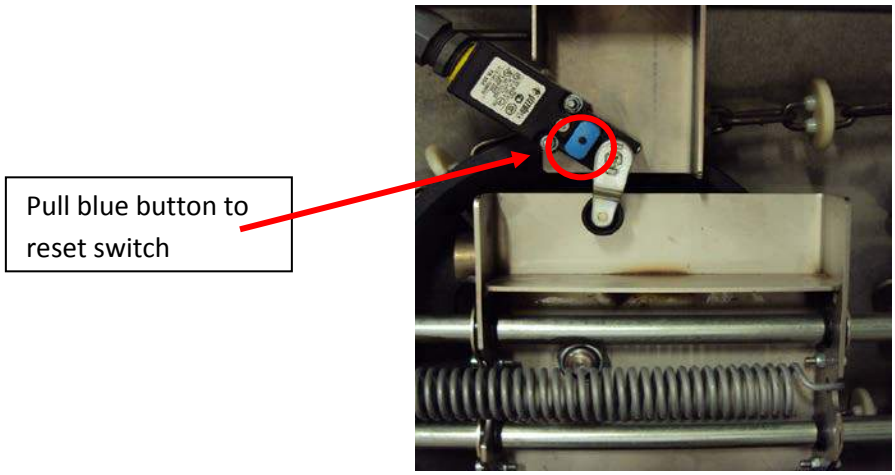
Drive Unit Chain Safety Switch and Door Switch

Each Drive unit is equipped with 2 safety switches. The door switch prevents the system from starting with cover off or shuts it down if the cover would be removed during operation. The chain safety switch will shut off the system if the conveyer chain tension is too loose or conveyer chain is blocked.



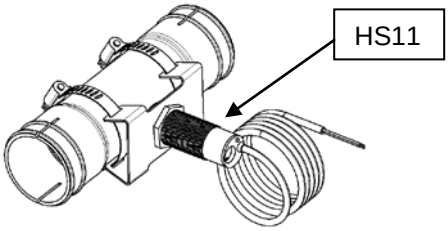
Drive Unit Chain Safety Switch

The safety switch is located inside the Drive Unit as shown below. The switch can be activated in either direction by a bracket which is attached to the idler wheel. If either side of the bracket (caused by chain being too long or too short) comes in contact with the limit switch, it will shut the system down. It will also shut down if the chain or spring breaks or if a foreign object gets hung in system. Disconnect power and locate problem before attempting to reactivate the system. Once the problem has been corrected, pull the blue reset button on the safety switch and reset the HSCD-100 Controller.



Position of Safety Switch should be installed approximately 2" from left side of bracket as shown above.

GrowerSELECT™ HS11 Feed Sensor

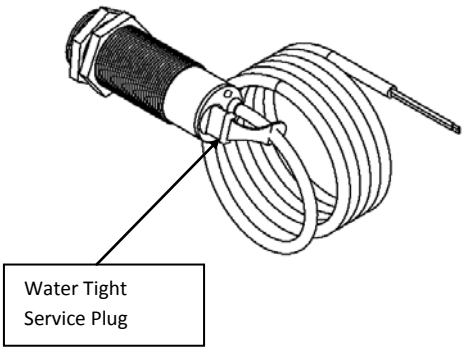


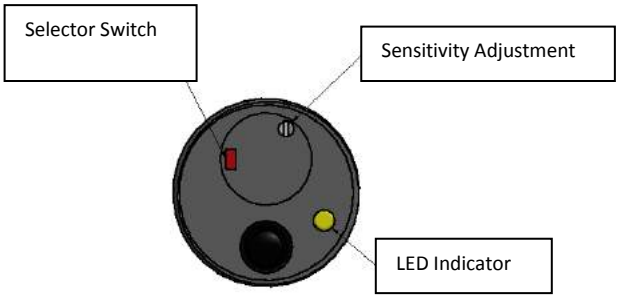
The HS11 Feed Sensor is used to signal the chain disk system controller when the feed system is full and to shut off the chain disk system drive unit. The HS11 is mounted in the chain disk feed tube after the last drop or mounted in the last drop tube depending upon application.

These instructions are a guideline for installation of the GrowerSelect Chain Disk System Feed Sensor (2) wire (Current Robbing) application for use with GrowerSelect Chain Disk Controllers and other Controllers utilizing (2) wire proximity switch inputs non-time delay. In all cases, the OEM (Original Equipment Manufacturer) wiring instructions should be followed if possible when connecting the HS11 to controller inputs.

It is in no way to be used to violate or supersede local, state and national wiring codes. All wiring sizes and fuse capacities are to be sized according to national electrical code specifications or other applicable regulations.

Feed sensor switch is switchable from Normally Open (NO) to Normally Closed (NC) depending upon application. Sensor is factory set to NO.





- **NO** (Normally Open) is defined as contacts open with power supply connected to Feed Sensor and no product in contact with sensor.
- **NC** (Normally Closed) defined as contacts closed with power supply connected to Feed Sensor and no product in contact with sensor.

Mounting:

Sensor should be installed consistent with existing sensor mounting if used as replacement or other suitable mount using the supplied locking nuts.

For installation in a chain disk feed tube, mount sensor to tube bracket as illustrated in ***Figure 1*** and ***Figure 2***. Sensor is supplied with (2) lock nuts. Thread one lock nut onto sensor about 1-2" from the end of the sensor. Place end of sensor through bracket and thread on second lock nut. Position sensor until end of sensors is touching the clear tube. Secure sensor by tightening the lock nuts on each side of the mounting bracket.

Position sensor bracket so that it is angled downward approximately 45 degrees to ensure feed detection.

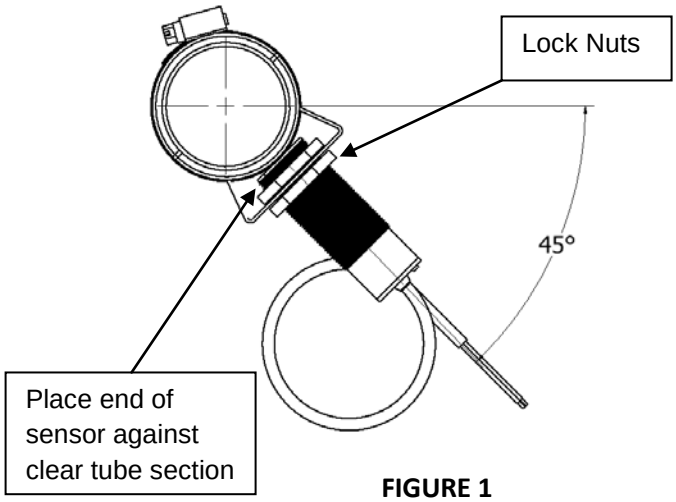


FIGURE 1

Sensor location should be over clear section of chain disk tube

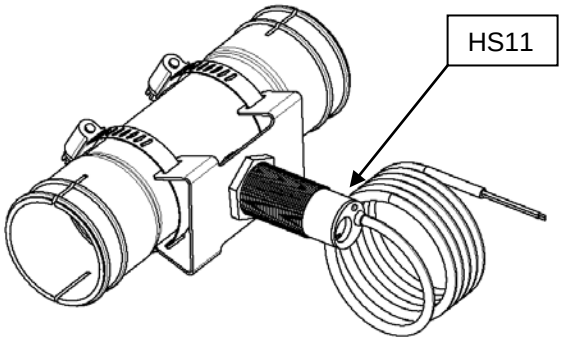


FIGURE 2

Adjustment:

Make sure there is no feed in the clear section of tube and there is not a disk section of the chain directly in front of the sensor.

For Normally Open (NO) Sensor Set-up:

1. Turn ON power to chain disk system controller so that Feed Sensor switch is powered.
2. Remove water tight service plug from back of sensor to reveal “sensitivity adjustment”.
3. If LED indicator is *not illuminated*, turn sensitivity adjustment CLOCKWISE until the LED indicator comes ON. Then turn sensitivity adjustment COUNTERCLOCKWISE until LED indicator is fully OFF (not blinking).
4. To set sensitivity, place index finger on tubing 1/4“away from edge of sensor. ***See Figure 3*** Adjust sensitivity until LED indicator is ON.
5. With the chain disk running past the Feed Sensor and no feed in the chain disk tube, the LED indicator may blink as the disks pass by which is acceptable but should not be ON solid as this would indicate the sensitivity is too high and would send false detection signal to the controller. Turn sensitivity adjustment slowly COUNTERCLOCKWISE until the LED indicator is not ON solid while the disks pass by.
6. Further adjustment of the sensitivity may be required once system contains feed. If further adjustment is required, simply turn sensitivity adjustment CLOCKWISE to detect objects farther away from the sensor (more sensitive) or COUNTERCLOCKWISE to detect objects closer to the sensor (less sensitive).

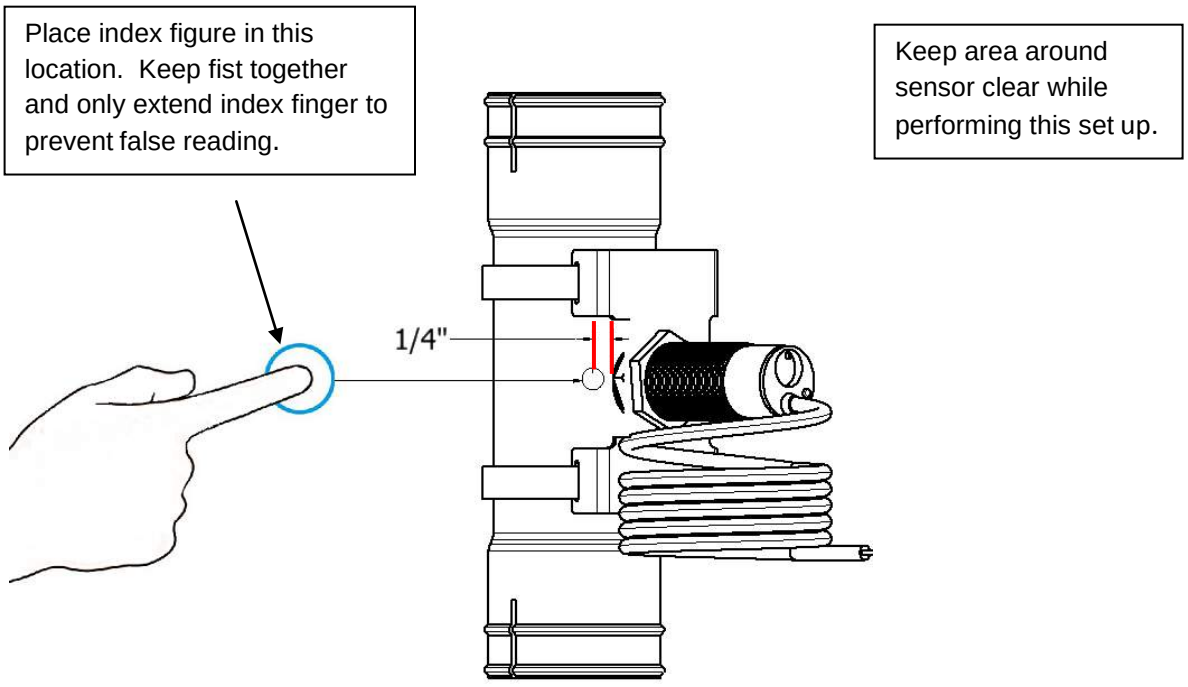


FIGURE 3

GROW-DISK™ Feed System Initial Operation/ Start Up

1. **Check the function of the Drive Unit Chain Safety Switch**
   - Disconnect power, following lockout tag out, and remove drive unit cover.
   - o Move safety switch roller in one direction so that safety switch is activated and blue reset button is tripped.
   - o Replace cover and turn power back on.
   - Put the HSCD-100 Controller into the manual start position. If alarm indication is displayed, then safety switch is working properly. If not, disconnect power, and notify maintenance personal.

2. **Check Chain Tension of the System**
   - o Check the position of the Chain Safety Switch during operation; it should be 2” from the left to the center of the safety bracket.
   - If not, turn off the drive unit and disconnect all electrical power and notify maintenance personal

GROW-DISK™ Feed System Maintenance

Caution: Always disconnect power before performing maintenance on system.

Only qualified and trained personnel are allowed to make the electrical connections. To prevent injuries, the feed transportation system must be isolated from the power system. The system must be safeguarded against accidental restart. Caution: Drive wheel must come to a complete stop, before opening any drive units.

Product	Maintenance description	Maintenance interval			
		1 month	3 months	6 months	12 months
Chain Disk Drive Unit					
	Remove dust from the drive unit motor fan		X		
	Remove feed residue from inside drive unit		X		
	Check wiring for damage				X
Gearhead	Check for oil leakage	X			
Switches	Check functioning of Chain Safety switch			X	
	Check functioning of Door Safety switch			X	
	Check wiring for damage				X
Wheels	Check Idler Tensioning Wheel for wear			X	
	Check Idler Tensioning Wheel is turning easily				X
	Check Drive Sprocket Wheel for wear				X
	Check Nylon Bushings on sliding rods for wear				X
Conveyer Chain					
	Check tension of conveyer chain	X			
	Check Chain Disk for wear or any damages			X	
Chain Disk Fill Hopper					
	Check Cover is in place and secured	X			
	Remove feed residue from inside Hopper		X		
	Verify that Chain Disk is not hitting the Hopper			X	

Product	Maintenance description	Maintenance interval			
		1 month	3 months	6 months	12 months
Corners					
	Check Corner for any leakage		X		
	Check functionality of Corner Wheels			X	
	Remove feed residue from inside corner				X
Conveyer Tubes					
	Check Conveyer Tubes for any leakage	X			
	Check to verify Supports for damage				X
Outlet / Sow Drops					
	Check Outlet / Sow Drops for any feed leakage	X			
	Check functionality of Slides			X	
	Check functionality of Sow Drop Feed Measure Slide				X
	Check Drop Tubes / Hoses for any damage				X
Proximity Switch					
	Check functionality of proximity switch		X		
	Check wiring for damage				X
	Check control tube for damage				X
Chain Disk Controller					
	Check functionality of Controller			X	
	Check wiring for damage				X
GROW-FLEX™ AUGER System					
Motor	Check Cover is in place and secured	X			
	Remove dust from the drive unit ventilator		X		
	Remove feed residue from inside drive unit		X		
	Check wiring for damage				X
Gearhead	Check for oil leakage	X			
Switches	Check functioning of Toggle switch			X	
	Check wiring for damage				X
Unloaders	Check Unloader for any leakage	X			
	Check Cover is in place and secured	X			
	Check to verify that no Flexible Auger is hitting the Unloader			X	
	Remove feed residue from inside Unloader			X	
Tubes / Elbows	Check PVC Tubes and Elbows for any leakage	X			
	Check to verify Supports for damage				X

Maintenance Pressure Washing Procedure

1. Preparation

a. Close all Feed Bin Slides!

b. Empty the complete chain disk system (runtime minimum 2 complete chain cycles)

c. Turn off the **GROW-FLEX™ AUGER System** at toggle switch located on control unit**.**

d. Turn off the drive unit and disconnect all electircal power

e. Make sure all corners are sealed!

f. Clean out the remaining feed from the Chain Disk Fill Hopper and Drive Unit

g. Close the Drive Unit and Chain Disk Fill Hopper covers.

h. Close the slides on all outlet and sow drops.

2. Pressure Washing

- DO NOT pressure wash the **GROW-FLEX™ AUGER System**
- DO NOT pressure wash the **Chain Disk Drive Unit**
- DO NOT pressure wash the **Chain Disk Fill Hopper**
- DO NOT pressure wash the **Grower Select Proximity Switch**
- DO NOT pressure wash the **Outlet and Sow Drops** from inside

3. Post-Processing

- Make sure the **GROW-FLEX™ AUGER System stays turned off!** following lockout tag out

a. Connect the electrical power and start the chain system in **manual mode**

b. Run the Grow Disk System for 30 minutes.

c. During operation inspect all corners, chain disk fill hopper, outlet and sow drops for unusual vibration or sounds. If so, stop system immediately and investigate the source.

d. After successful checkup turn off the drive unit.

4. Reset Grow Disk System

a. Turn on the **GROW-FLEX™ AUGER System**

b. Change the Grow Disk Controller setting in **automatic mode.**

c. Reset the Grow Disk Controller if necessary.

d. Double check the slide positions of all outlet and sow drops and make adjustment if necessary.

e. Restart system in automatic mode

f. Check setup e.g. delay start of flexible auger, maximum runtime etc.

g. Check setup and function of proximity switch

h. Make setup adjustment if necessary

i. Open the slide on one feed bin.

Troubleshooting

Problem	Possible Cause	Corrective Action
Drive unit not operates	Motor will not run.	NO Power, Check wiring, fuses, and switches on equipment.
	Safety switches activated in drive unit.	Refer to Safety switch section.
	Motor thermal overload switch activated	Check motor overload reset and refer to Controller Manual
Motor overloads after running briefly	Low voltage (motor runs slow & overheats)	Check line voltage at motor; confirm appropriate wire size
	Foreign object stuck in chain	Remove foreign object
	System too full with feed	Check fill system rate, check proximity switch
	Wet feed being transported or allowed to stand in system	Check functions of all corners, Clean system from wet feed!
	Defective motor	Replace motor
Safety switch activated	Chain in system not tight enough	Remove sections of chain; reset limit switch
	Chain has broken in system	Repair broken section and reattach with chain coupler; reset Safety switch
	Foreign object in system	Remove foreign object; reset Safety switch
	System too full with feed	Check fill system rate; reset Safety switch
Drive unit motor does not shut off when full	Proximity switch sensitivity not adjusted properly (Not sensitive enough)	Adjust sensitivity
Drive unit motor always shuts off immediately after proximity by-pass time	Proximity switch sensitivity not adjusted properly (Too sensitive)	Adjust sensitivity

Grower Select Chain Feeding Components / Parts List

HSCD-01	**Cover Stainless Steel For Chain Drive Unit**	
HSFT2375	**Knob for Drive Unit Cover**	
HSSD60C	**1 amp fuse 5x20 mm**	

Notes

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Hog Slat Limited Warranty

Hog Slat warrants products to be free from defects in material or workmanship for a period of twenty-four (24) months from the date of **original purchase**. Hog Slat will credit, repair, or replace, at its option any product deemed defective within this time period. Labor costs associated with the replacement or repair of the product are not covered by the Seller/Manufacturer.

Conditions and Limitations

1. The product must be installed by and operated in accordance with the instructions published by the **Seller/Manufacturer or Warranty will be void**.
2. Warranty is void if **all components** are not original equipment supplied by the **Seller/Manufacturer**.
3. This product must be purchased from and installed by an authorized retailer/distributor or certified representative thereof or the Warranty will be void.
4. Malfunctions or failure resulting from misuse, abuse, negligence, alteration, accident, or lack of proper maintenance shall not be considered defects under the Warranty.
5. This Warranty applies only to components/systems for the care of poultry and livestock. Other applications in industry or commerce are not covered by this Warranty.
6. This Warranty applies only to the Original Purchaser of the product.

The **Seller/Manufacturer** shall not be liable for any **Consequential or Special Damage** which any purchaser may suffer or claim to suffer as a result of any defect in the product. **"Consequential"** or **"Special Damages"** *as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation, lost sales, lost orders, lost income, increased overhead, labor and incidental costs and operational inefficiencies.*

THIS WARRANTY CONSTITUTES THE SELLER/MANUFACTURER'S ENTIRE AND SOLE WARRANTY AND THIS MANUFACTURER EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, EXPRESS AND IMPLIED WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSES SOLD AND DESCRIPTION OR QUALITY OF THE PRODUCT FURNISHED HEREUNDER.

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Market - Hog