



Part Update: FEEDSTOCK FLEX SWITCH UPGRADE AND INSTALLATION INSTRUCTIONS

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SUBJECT: New Feedstock Flex Switch installation and recalibration procedure

Models: PP20, PC20

Symptoms: Failure of Feedstock Flex Switch: Feedstock Auger does not stop, over-filling reactor. Auger does not turn on when reactor level is low, but can be turned on manually through the PCU.

Causes:

1. Improper installation or service resulting in failure of the internal reed switch and/or shorting of the wires.
2. Improper calibration.
3. Defective switch.

Important notice: Upgraded Feedstock Flex Switches are now available (APL part # 820-00199 revB). *Always disconnect the connector between the switch's wires and the wiring harness before removal from or installation of the switch onto the reactor.*

Installation: Apply thread sealant such as pipe dope or teflon pipe tape to the threaded portion of the switch and thread the switch into the top of the reactor until hand tight.

NOTE: *Make sure that the wire and connector rotate with the switch while it is screwed into or out of the reactor to prevent failure of the Reed Switch within the Brass Stud due to twisted wires.*

Use a pipe wrench to tighten the switch at least one more full turn, continuing to tighten until the alignment notch on the flange is directly opposite the Drying Bucket. This ensures the switch's paddle makes full contact with the feedstock flowing from the drying bucket. Before reconnecting the wiring connector, make sure the wires form a loose loop between the Strain Relief and the Brass Stud and make sure there is no strain on the wires.

Re-calibration: Switches are calibrated at the factory so that the magnet in the tip of the Switch Rod will open the Magnetic Reed Switch glued inside the Brass Stud when the paddle is pushed by the feedstock entering the reactor. Field calibration should only be done if testing has shown that the auger's failure to start or stop is being caused by poor calibration.

Testing:

1. Unplug the wire connector and attach a multimeter to the wire terminals within the switch's wiring connector to test for continuity.
2. Check to make sure the switch works by pushing gently on the paddle while holding the switch in its normal upright position. The circuit should open by the time the paddle is pushed to about 3/4 of its total range of motion in the direction of fuel flow - directly toward the face of the paddle. If the circuit opens (i.e. loses continuity) with this test, the switch is working correctly and no further action is needed.

The latest *Operation Manual* and *Technician's Handbook* for your model are available online at www.allpowerlabs.com/support

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Adjusting: If switch does not open:

1. Loosen the lock nut.
2. Gently turn the Brass Stud clockwise with your fingers until you feel resistance as it just touches the top of Switch Rod. Turn the stud back counterclockwise $\frac{1}{2}$ a turn, re-tighten the lock nut to no more than 7 Nm (~5 ft. lbs.) and retest.
3. If switch doesn't open before the paddle stops, loosen the locknut and back off the stud counterclockwise another $\frac{1}{8}$ turn, retighten and retest. Repeat the test until the switch passes.

Adjusting: If switch is open at rest:

1. Check to make sure the corrugated section allows the rod to center. If the switch can be closed by pushing the paddle, the rod needs to be recentered.
2. If Switch Rod and magnet are not in the center of the Switch Body, turn the switch over to drop out the Limiter Tube and bend the corrugations by hand until Switch Rod rests at center.
3. After the Switch Rod is centered, drop the Limiter Tube back over the Switch Rod into Switch Body so that it sits inside the corrugations. It should easily slide in and out. Retest.



FEEDSTOCK FLEX SWITCH

NOTE: Some feedstocks may need a bigger paddle to switch reliably. If switch is properly calibrated and working when tested but not working when installed in the Pyroreactor, i.e. isn't able to trigger the auger shut off, it may need a larger paddle. A Paddle Adaptor (APL part # 430-00334 revA) is available which snaps onto the existing paddle to help the Flex Switch work better with a greater variety of feedstocks.

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