How it Works

The hydraulic tailstock uses a hydraulic cylinder to engage or disengage the tailstock from the part.

The tailstock can be activated by the operator from a foot switch or by M-codes in a program. When activated the control sends 120 VAC to the appropriate solenoid to move the tailstock in or out. A pressure adjusting valve on the hydraulic power unit (HPU) lets the operator set the amount of force applied by the tailstock.

As the tailstock moves, its position is reported by an encoder. SL lathes use an optical encoder to read its position on a comb strip. ST lathes use a string encoder in which the string is mounted to the tailstock body. As the string pulls or retracts it rotates the encoder spool which is mounted to the base casting.

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Section 1

Symptom: Part chatter.

Probable Cause: Tailstock Advance button or handle jog, used to put pressure on the part.

Corrective Action:

Do not use the TS hand jog keys to engage the tailstock when you cut the part. Pressure applied by the TS hand jog keys is not always consistent, and can result in chatter marks on the part.

Always use M21 or the foot pedal to maintain pressure on the part.

Section 2

Symptom: Part chatter.

Probable Cause: Spindle Speed Variation not in use

Corrective Action:

Spindle Speed Variation (SSV) allows you to specify a range within which the spindle speed will continuously change.

This changes the frequency of the machining process, which helps to suppress chatter.

M38 turns SSV mode ON and M39 turns it OFF.

Setting 165 specifies the amount that the spindle speed changes above and below the programmed speed.

Setting 166 specifies the SSV duty cycle in 0.1-second increments. The duty cycle affects the rate of spindle speed change.

Refer to the operator's manual for more information on Spindle Speed Variation.
Section 3


Probable Cause: Tailstock is out of alignment.

Unwanted taper in a cylindrical part may indicate that the tailstock is not correctly aligned. A dimensional difference in axes between the spindle and the tailstock results in a poor cut.

Corrective Action:

Make sure the tailstock is correctly aligned to the center bore of the spindle.

Section 4

Symptom: Taper on the part.

Probable Cause: Tailstock pressure is incorrect.

Unwanted taper in a cylindrical part may indicate that the pressure applied to the part by the tailstock is not correct.

Corrective Action:

If the taper is consistent across the part, you may need to increase the tailstock pressure to hold the part more firmly.

If the taper is not consistent, the tailstock pressure may be too high. Reduce the pressure to make sure the stock does not deform.

Note: Verify that the tool Taper offset is zero.
Section 5

Symptom: The tailstock does not move, or moves slowly.

Probable Cause: The HPU solenoid or rapid valve has no voltage, or is contaminated.

It is normal for the hydraulic pressure unit (HPU) solenoids to be hot to the touch.

Corrective Action:

Use a voltmeter to check for 120 VAC at the solenoid on the hydraulic power unit (HPU):

- Pull the solenoid connectors partially apart so you can access the leads with your needle-tip probes while the solenoid is connected.

  With the tailstock in operation, measure the voltage to the solenoid.

If there is no voltage, go to I/O PCB - How it Works and Troubleshooting Guide (Classic Haas Control) to troubleshoot the I/O PCB.

If the HPU solenoid receives voltage, but does not operate correctly, clean the solenoid or rapid valve:

- Turn off the power to the machine.
- Remove the solenoid or valve.
- Use compressed air to clean the solenoid or valve.
- Reinstall the solenoid or valve.

⚠️ Caution: Do not lose the o-ring when you reinstall the solenoid or valve.

Section 6

Symptom: Tailstock does not Home in the correct position (SL).

Probable Cause: The encoder comb strip is faulty.

Corrective Action:

Inspect the encoder comb strip for damage or contamination.

Clean the encoder comb strip.

Make sure the encoder read head is not contaminated or damaged.

Make sure that the way covers and way cover rails are not contaminated or damaged.
Section 7

Symptom: Tailstock does not Home in the correct position (SL).

Probable Cause: The string encoder is faulty.

Corrective Action:
Inspect the encoder string for contamination or damage.
Make sure the string [1] can move freely in and out of the encoder housing.
Inspect the encoder housing for signs of damage or contamination.

Section 8

Symptom: The tailstock stops before it gets to the part (SL).

Probable Cause: The way covers are binding.

Corrective Action:
Clean the lower way cover rails.
Make sure the way covers move smoothly on the rails, and do not bind on each other.