Gripper Mechanical Setup - Flowline Mk3 Toothed Gripper

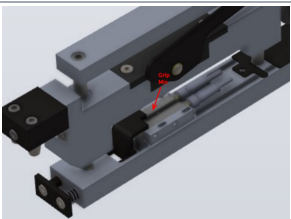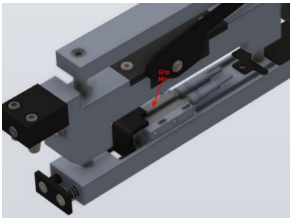How to set up a gripper on a Flowline Mk3 with a Toothed Gripper

Contents

General Setting Procedure with Gripper Jig D0015453

1. Ensure Outputs work correctly for both gripper lift and lock - grippers should lock when the output is ON
2. Ensure Gripper sensors are set correctly and min / max are correct way round
3. Adjust MH side GY position to match gripper jig
4. Adjust and align saw side backfences
5. Adjust Saw side GY position to match jig (check along entire length and into saw)
6. Pin Saw side Gripper in position

Gripper Min / Max Setup

This gripper design has two gripper switch inputs. This design was implemented to ensure the system can load a bar with an uneven or angled cut on the end. The sensors are activated by a long stroke on a spring, which has at least 10mm range of movement.

Gripper sensors

Sensor	Pic	Function
Grip Min		Senses that a profile is gripped in the jaws. **It should be active1-2mm after the spring is depressed**
Grip Max		Activates when profile hits "end stop" of gripper mechanism whn loading. This ensures a reliable datum point. **It should be active when the spring is fully depressed**

Software Sequence / Process

Machining Centre Side

Step	Action	Notes
1	Move to loadingpos plus 5mm	
2	Wait for gripper max input	(completely bottom out gripper)
3	Wait for gripper to be within 0.25mm of expected position and 100ms to pass (to allow system to settle)	
4	Clutch and material load motor off	
5	Move to loadingpos	Pushes profile back to
6	Clutch on	holds profile steady
7	Wait for trim Pause	
8	Move x axis to loadingpos+200mm	Clear of tooling head
9	Run datum hole routine	
10	Move to loadingpos	
11	Grip	
12	Wait for grip on time	
13	Check that grip min switch is active	Ensure the bar is gripped
14	Grip lock on	Locks the gripper in its current position so it does not force the profile to "wheelie"

Saw Side

Step	Action	Notes
1	Move to just before start of bar defined by sloadpos file and sawLoadDiff parameter +50mm	
2	If gripper activated, the end of the bar is not where it should be	- wrong place in the bar queue - wrong bar loaded
3	channel on, lock off to ensure profile is held when gripper nose spring approaches	
4	Move slowly to a position beyond bar end, waiting for grip min to be active	If grip min not active, restart the sequence but add 100mm to grip positions
5	When grip min is active, halt the SX axis	
6	Move additonal 25mm to overshoot holes	
7	Gripper on, wait grip on time	ps_gripOnE
8	Channel off then lock on momentarily later to leave a gap between channel and profile	ps_chanLockOffOnE
9	Pull gripper back to locate into holes	Pull back away from saw blade 30mm
10	Test grip min switch still active	If grip switch not active, confirm with operator, else regrip again

Gripper Lock

> ⚠ ...The cylinder locking devices on these cylinders are sprung loaded and locked on by default. They need to be piped to the opposite port of the valve so that the cylinder locks when the output is on

Troubleshooting - Common problems

- Griplock round the wrong way - see above
- Gripmin / Gripmax inputs wrong way round or not set correctly
- Gripper holes not set the same as hole setup jig (make sure it is used the correct hand for your machine
- Measure / Laser motion parameters not set correctly (measurespeed=200, measureAcc=2000, laserDecel=2000)
- Latest software version installed 6.6020 or later
- Pause for gripper on is not long enough