

Module	Error	Place (subgroup)	Cause	Solution
1 Hopper	1.1 Does not supply parts	-	1.1.1 The maximum number of attempts to submit parts was exceeded, thus suspending the dropping of parts and activating the request to replenish the parts.	Refill parts or reset the request for parts refill. If the problem recurs, check the parts sensor in hopper 1BGR1R / 1BG2 / 1BG3
			1.1.2 The hopper has not been instructed by the feeder.	Check the minimum level sensor in the 2BG1 / 2BG2 feeder.
	1.2 Submits an insufficient number of parts	Rattle hopper	1.2.1 Incorrectly set throttle valves on 1P1.	Adjust the feed rate - slow forward, fast backward.
2 Feeder	2.1 Part jamming	Anywhere	2.1.1 Mismatched parts.	Check the correctness of the parts used (type, dimensions, tolerances).
		Linear feeder, entrance to separator	2.1.2 Dirt, foreign objects.	Check, clean.
		Entry under the guide	2.1.3 The parts are jumping on each other.	Slow down and calm down the movement of the parts in the feeder/rail by adjusting the Amplitude/Frequency parameters. See more. User manual
			2.1.4 Parts pressing on each other before the extension, too long stock.	Shorten the stock so that it does not extend in front of the guide. Check the function of the 3BG1 stock sensor, reduce the full stock detection time parameter of the feeder. For the step feeder, increase the waiting time before the next stroke 2P1.
			2.1.5 The guide has too much clearance (the bolts under the guide jump on each other) / too little clearance (they don't fit).	Adjust the height of the guide according to the height of the screw heads.
		Input to the separator	2.1.6 Misalignment of the feeder/separator.	Adjust the position of the separator so that the gap between the feeder and the separator is approx. 2mm, the track in the axis, in the plane. A stock of several parts should push the first part into the separator.
	2.2 No vibration	-	2.2.1 Controller off.	Check the 230V input voltage and the position of the switch. The green "ON" LED on the controller is lit. If a hand controller is connected, its display must be lit.
			2.2.2 Incorrect setting of the motor start on the controller.	The display must read "NO". Save with the "SET" button. Vibration functionality can be verified by switching to continuous running "RUN". When the PLC is requested to start the vibration, the orange LED I1 / I2 must be lit, the output voltage to the motor is indicated by the green LED M1 / M2. User manual
			2.2.3 There is no requirement to run from the queue sensor / separator.	Check the function of the queue sensor 3BG1 and the separator input sensor 3BG2. The run request is indicated by the yellow I1/I2 light directly on the controller. User manual
	2.3 Insufficient supply of parts	Bowl feeder	2.3.1 Low level in feeder / overfilled feeder, insufficient or excessive vibration	Set the minimum level sensor in the bowl feeder 2BG2. Adjust the frequency/amplitude of the vibrating feeder. Check that the bowl/linear is not resting on the machine structure. Tighten the bolts holding the magnet to the linear.
		Step feeder	2.3.2 Large delay in movement of step 2P1.	Reduce the feed delay time (waiting time before the next 2P1 stroke).
Input to the separator		2.3.3 Gap in the parts queue before the separator - the 3BG1 queue sensor switches off immediately when a part arrives.	Increase the full stock detection time parameter on the 3BG1 sensor.	

3 Separator	3.1 The pneumatic roller of slider 3P1 does not reach the end position.	Stuck / pinched part inside the separator.	3.1.1 The part detection sensor in the 3BG2 separator switches incorrectly (early/still switched on).	Check the function of sensor 3BG2 and the delay before separation (the time between the detection of the part by sensor 3BG2 and the displacement of cylinder 3P1).
			3.1.2 Incorrect input path adjustment.	see 2.1.6
	3.2 Pneumatic cylinder of slider 3P1 does not reach the starting position.	Stuck / pinched part inside the separator.	3.2.1 Output track misalignment.	Ensure a smooth feeding of parts into the outlet hose. Adjust the stoppers of the 3P1 slide (and possibly the stoppers of the 3P2 output cylinder). Check that the output hose is not broken at the flange.
			3.3 Slow feeding	-
	3.3 Slow feeding	-	3.3.1 Long stabilisation time.	Reduce the delay before separation (the time between the detection of the part by the sensor 3BG2 and the movement of the cylinder 3P1).
			3.3.2 Large number of automatic repairs 1.	see 2.1.6 or 3.1.1.
			3.3.3 Large number of automatic repairs 2.	The part is stuck in the separator - see 3.2.1. False switching of the sensor on input 3BG2 - see 3.1.1. Sensor on output 3BG3 is not switching. Check the sensor.
			3.3.4 Long transport time of the screw to the next station.	Increase the flow of transport air 3P3.
			3.3.5 Slow next station.	Speed up the next station.
	4 Cleaning station	4.1 Slider cylinder 4P10 does not reach the end position.	Stuck / pinched part inside the cleaning station.	4.1.1 Two screws or one stuck screw at the input.
4.1.2 Incorrect input path adjustment.				Check slide end stop 4P10 and hose kink at input flange.
4.2 The pneumatic cylinder of the 4P10 slider does not reach the starting position		Stuck / pinched part inside the cleaning station.	4.2.1 Incorrect input path adjustment.	Ensure a smooth flow of parts into the outlet hose. Adjust the end stop on the 4P10 slide roller. Check that the outlet hose is not kinked at the flange.
			4.3 Slow feeding	-
4.3 Slow feeding		-	4.3.1 Long cleaning time 4P12.	Reduce cleaning time.
			4.3.2 Large number of automatic repairs 1.	see 3.3.2
			4.3.3 Large number of automatic repairs 2.	see 3.3.3
			4.3.4 Long transport time of the screw to the next station.	Increase the flow of transport air 4P11.
			4.3.5 Slow next station.	Speed up the next station.
4.4 Insufficiently cleaned parts		-	4.4.1 Filter clogged with dirt.	Change the filter
			4.4.2 Too short cleaning time.	Extend the cleaning time.
			4.4.3 Slow speed of the part on entry, the part does not "shake it off".	Increase the transport air flow of the previous station to slightly impact the part on impact.

5 Measuring and cleaning station	5.1 Slider cylinder 4P2 does not reach the measuring position	Stuck / pinched part inside the static for measuring and cleaning	5.1.1 Two screws or one stuck screw at the input.	Perform initialization to remove excess parts from the hoses. Alternatively, two parts on the inlet must be removed manually. Increase the cleaning time/delay between detection of the part by the sensor on the inlet hose and moving the slide.
			5.1.2 Incorrect input path adjustment.	Check slide end stop 4P2 and end stop 4P3. Check hose kink at input flange.
	5.2 Slider cylinder 4P2 does not reach the centre position.	Stuck / pinched part inside the static for measuring and cleaning	5.2.1 Incorrect input path adjustment.	Ensure a smooth flow of parts into the output hose. Adjust the 4P2 slide cylinder end stops and the OK/NOK 4P5 hose transfer end stops. Check that the output hose is not kinked at the flange.
	5.3 Slow feeding	-	5.3.1 Long cleaning time 4P1.	Reduce cleaning time.
			5.3.2 Large number of automatic repairs 1.	see 3.3.2
			5.3.3 Large number of automatic repairs 2.	see 3.3.3
			5.3.4 Long transport time of the screw to the next station.	Increase the flow of transport air 4P6.
			5.3.5 Slow next station.	Speed up the next station.
			5.3.6 Long measurement time.	Reduce the measurement stabilization time.
	5.4 Insufficiently cleaned parts	-	5.4.1 Filter clogged with dirt.	Change the filter
			5.4.2 Too short cleaning time.	Extend the cleaning time.
			5.4.3 Slow speed of the part on entry, the part does not "shake it off".	Increase the transport air flow of the previous station to slightly impact the part on impact.
	5.5 Unstable parts measurement	-	5.5.1 Loose measuring station lid or other loose part.	Check the correct tightening of the measuring station lid, the mounting of the measuring cylinder, the mounting of the sensor on the 4P4 pneumatic cylinder.
			5.5.2 Short measurement stabilization time or part variability.	Extend the measurement stabilization time. Check the input material.
	6 Screwdriver	6.1 Part jamming	-	6.1.1 The screw does not reach the collets / bushing in time.
6.1.2 Two parts stuck together at the input.				Initialize to remove any excess parts from the hoses. It may be necessary to disconnect the hose bushing and remove the parts by manual removal.
6.1.3 Screw stuck on input edge due to disconnected hose.				Check that the hose is correctly attached.
6.2 The part is shot through the collets out		Screwdriver with collets	6.2.1 The screw speed is too fast.	Reduce the transport air flow of the previous station. Check the condition of the springs on the collets.
6.3 Loss of screw during vacuum tube ejection from collets.		Screwdriver with collets and vacuum tube	6.3.1 Small pressure in the bit ejection cylinder, when the bit passes through the collets, the bit is ejected.	Increase the pressure in the bit ejector cylinder. Check that the vacuum tube can pass freely through the collets. Slow down the vacuum tube extension cylinder.
6.4 Vacuum nose can't hold the part		Screwdriver with vacuum nose	6.4.1 While the screw is being picked up by the vacuum tube, the bit is ejected and the part falls off.	Reduce air flow to the ejector
			6.4.2 Insufficiently deep vacuum	Replace the filter, check for leaks in the vacuum system, check the vacuum nose for deterioration.
6.5 Screwdriving will not start.		-	6.5.1 Controller off.	Switch on the screwdriver controller.
			6.5.2 Without communication with PLC.	Check the input and output signals with the PLC. Check mapping in PLC.
			6.5.3 Premature termination - interruption of the signal from the PLC.	Too short instruction from the PLC - must be set for the whole screwdriving time.
			6.5.4 Premature termination - moment overrun.	Mechanical blockage of the bit or a low maximum torque setting may cause the screwdriver not to turn.
			6.5.5 A screwing programme has not been selected.	Use the signals from the PLC to select the correct screwdriving program.
6.6 Unsatisfactory result of screwing		-	6.6.1 Wrong setting of the screwdriving program.	Select the correct program, check its parameters.
			6.6.2 Material defect.	Check that the screw component or the product into which the component is screwed has not changed.
			6.6.3 The screwdriver bit loses contact with the part during the screwdriving process.	Make sure that the cushioned bit exerts a slight pressure on the part throughout the screwdriving process.

6 Screwdriver	6.7 The screw has not been removed from the side feeder bushing.	Screwdriver with side feeding	6.7.1 Wrong position of the vacuum tube relative to the bushing.	Check the X-Y position of the vacuum tube. Verify that it slides down to the screw in the bushing.
			6.7.2 Error with screws where the bit is supposed to fit into the screw already when picking up - it does not fit.	Check the operation of the screwdriver during pick-up - starting a program with permanent rotation or corrective bit rotation.
			6.5.3 Vacuum path error.	Check vacuum sensor settings, vacuum system tightness, filter cleanliness.
7 Others	7.1 Screw stuck in the hose.	-	7.1.1 Too small hose bend radius.	Straighten the hose, increase the bend radius.
			7.1.2 Hose breaks at the hose input/outlet at the flange.	Straighten/cut off the damaged piece of hose.
			7.1.3 Damaged hose.	Check that the hose is not damaged along its entire length due to pinching or breakage.
	7.2 Part does not reach the end of the hose	-	7.2.1 Short blowing time of transport air.	Ensure sufficient transport air flow for a sufficient period of time.
			7.2.2 False switching of the sensor at the end of the hose.	Make sure that there is only one screw in the hose during transport. Check the sensor at the end of the hose to see if it is tripping due to metal parts near it.
	7.3 Machine won't start	-	7.3.1 Power/connectivity with PLC/air	Check 230V power supply to the controller, screwdriver controller running, pressurized air at the valve terminal inlet, 24VDC power supply and communication with the terminal and remote IOs.
7.3.2 Permission to run / blocking from PLC			Check that all conditions for running are fulfilled (e.g. E-stop, door locks, parts in hopper, possibility of cleaning during initialization, (non)presence of product).	