



TROUBLESHOOTING GUIDE

BULLPAK

Version 2

September 2026

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1 GENERAL INFORMATION

This document has for objective to help guide the operator or technician into solving the different electrical and mechanical problems that might occur on a Bullpak.

Usually, when an abnormal situation occurs, an alarm is generated through the system and the status light "PRÊT / READY" flashes to report the situation. The flashing code indicates the current alarm.

Therefore with the flashing code and analysis of the performance of the system, this guide enables the orientation of the research to find the exact cause of the problem and how to solve it.

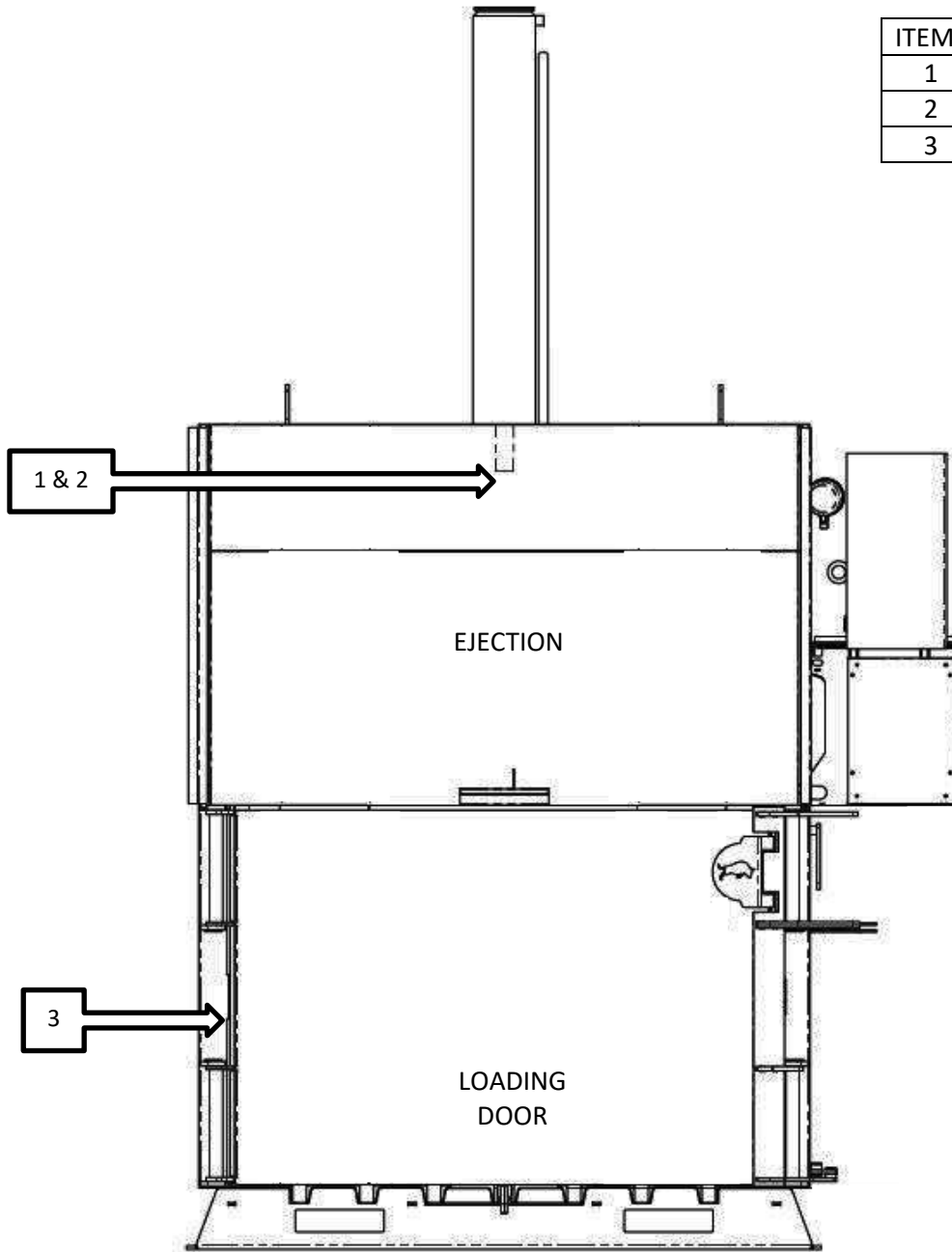
2 DESCRIPTION

2.1 Compaction cycle

Step #1: Descend the ram to clean the loading area.

Step #2: Descend the ram to compact the material in the compaction zone.

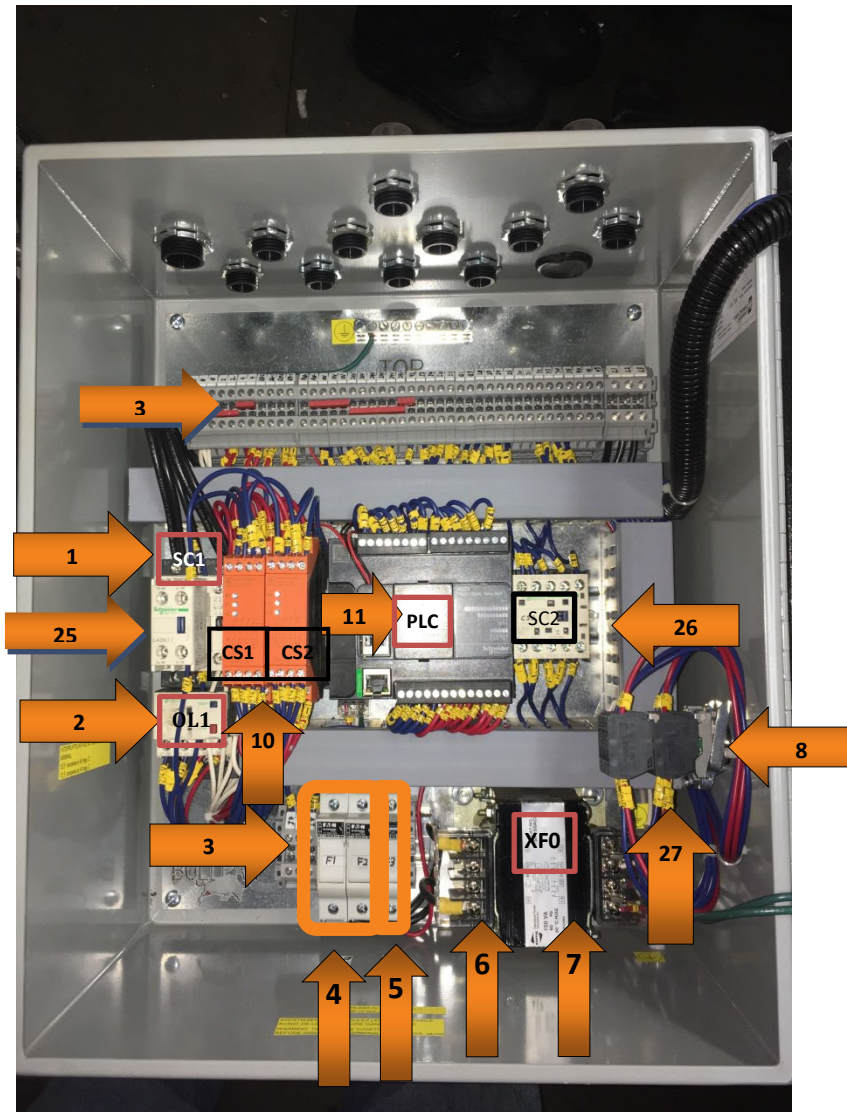
Step #3: Ascend the ram to return to the original position at the beginning of the loading area.



ITEMS	DESCRIPTION
1	Loading door sensor
2	Loading door lock
3	Ejection door sensor

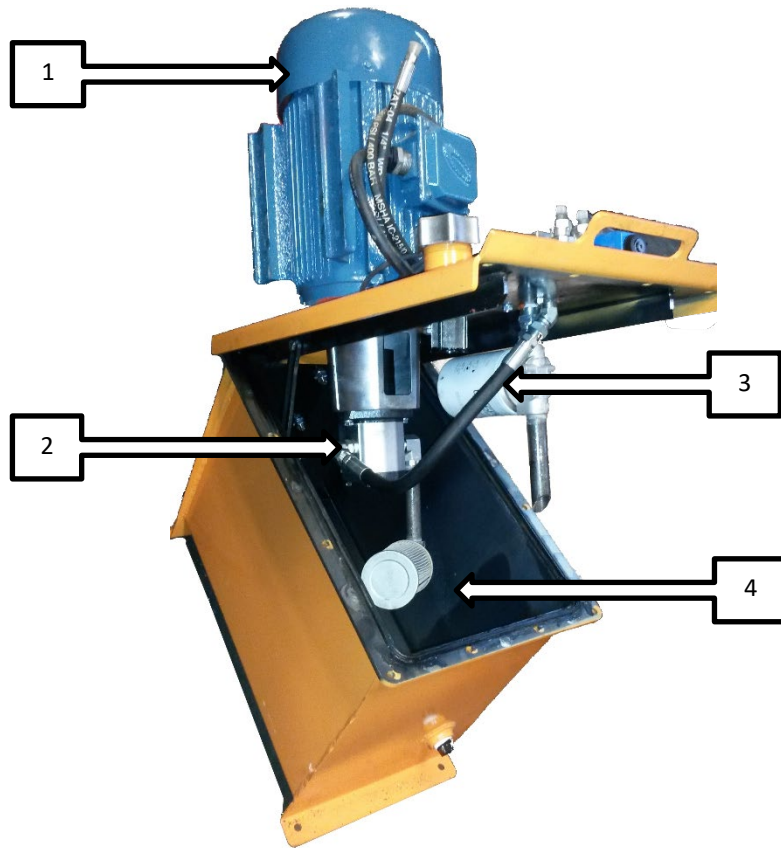
2.2 COMPONENT

2.3 ELECTRICAL PANEL

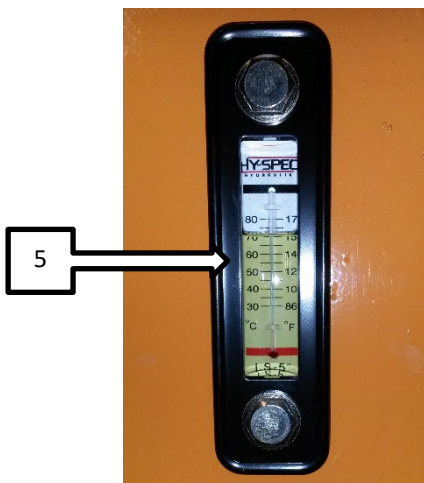
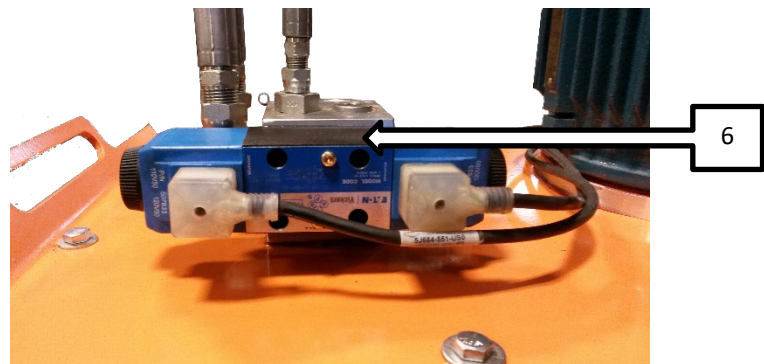


ITEMS	DESCRIPTION
1	Contactor motor
2	Overload
3	DIN rail mount terminal block
4	Double fuse holder
5	Simple fuse holder
6	Finger Guard
7	Control Transformer
8	Contact Block
10	Safety relay
11	PLC
25	Safety auxiliary contactor
26	Safety contactor
27	Auxiliary contact N.C

2.3.1 HYDRAULIC UNIT



ITEMS	DESCRIPTION
1	Electric motor
2	Hydraulic pump
3	Oil filter
4	Oil tank
5	Thermometer and oil level indicator
6	Valve block



3 LIST OF ALARMS

3.1 WITNESS LIGHTS DEACTIVATED

If an abnormal situation is detected, the system falls into alarm and all actions are stopped immediately. To reset an alarm, you must enable and disable the emergency stop button. If the alarm is still present, the lights "PRÊT / READY" will flash according to a flash code. A 3 second pause indicates the end of the flash code. It is very important to start counting pulses at the end of the pause to make sure you have the right end count.

Code	message	description
Always on	System secured	Indicates that the security relay is fixed.
Always off	Safety violation	Indicates that the security of the system has been violated.
1	Emergency stop	The emergency stop button is pressed.
2	Loading door opened	The loading door opened during a compaction cycle.
3	Ejection door opened	The ejection door is opened: - Before the bail is completed. - After the ejection of the bale.
4	Lengthy Compaction/Return cycle	The compaction OR return cycle is 3 seconds over the normal time.
5		
6	Weak PLC Battery (Does not shut down the system)	The PLC battery must be quickly replaced. (model BR2032 3Volt)
7	Loading door blocked	The loading door refuses to open OR it is not well closed during the start of the cycle.
8	Overload	The overload relay of the hydraulic pump motor is at fault.

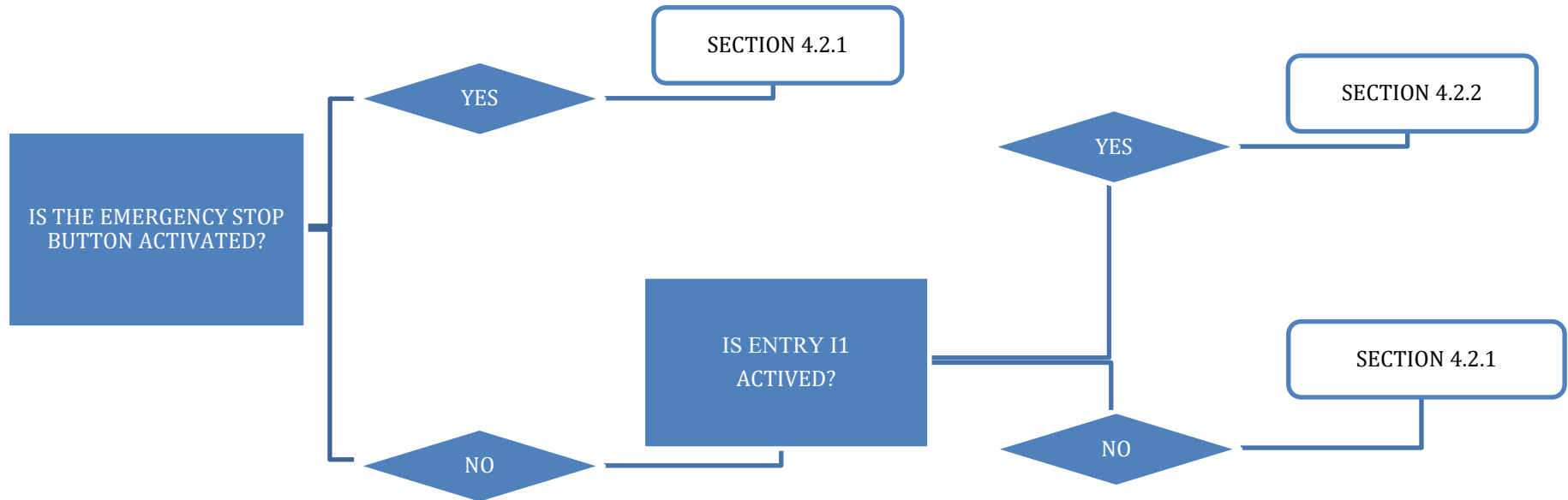
3.2 Status/Diag LED

Unit Indicators (per IEC 60073)

State	Status	Troubleshooting
Off	Not powered	NA
Red	Not safe, OSSD not active	NA
Green	Safe, OSSD active	NA
Green Flash	Power up test or OSSD inputs not valid	Check 24V DC or OSSD inputs (yellow and red wire)
Red Flash	1Hz Flash Recoverable Fault 4 Hz Flash Non-recoverable Fault	Recoverable fault– check OSSD outputs are not shorted to GND, 24V DC or each other. Cycle Power If fault is recoverable, replace.
Amber Flash	1 Hz Flash margin indicator safe, OSSD active	Sensor is reaching max. Sensing distance; re-align sensor with actuator

4 CODE 1: EMERGENCY STOP

4.1 TARGETING THE CAUSE



Organization Chart1

4.2 TEST PROCEDURES

4.2.1 EMERGENCY STOP BUTTON: ACTIVATED



Check status of the emergency stop button:

- 1) Press the button to force it to stop.
- 2) Pull the button to feel the movement of the button deactivating itself.
- 3) If the alarm is still present, call your representative for technical assistance.

4.2.2 EMERGENCY STOP SIGNAL: ENTRY I1 STILL ON



Perform the various following manipulations and verify the state of entry I1.



Activate and deactivate the emergency stop button consecutive times.



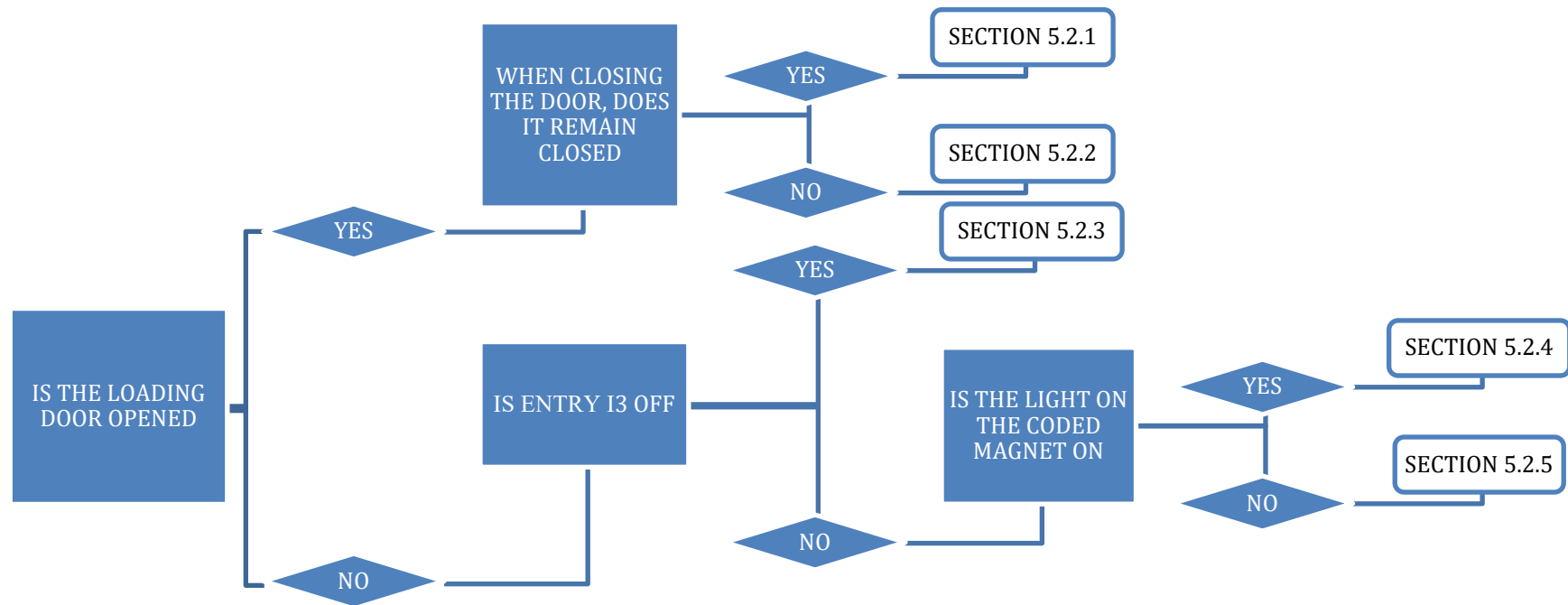
Unplug wire I1 at the back of the emergency stop button.



Unplug wire I1 on output I1 of the automaton.

5 CODE 2: LOADING DOOR OPENED

5.1 TARGETING THE CAUSE



Organization Chart 2

5.2 TEST PROCEDURES

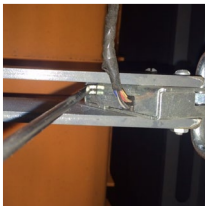
5.2.1 OPENING OF THE LOADING DOOR



Activate a compaction cycle and verify that the door does not open on its own during the operation cycle.

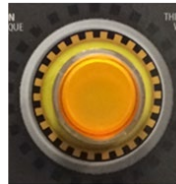
If the door opens at the wrong time, verify the installation and the functioning of the mechanical lock.

5.2.2 LOCKING LOADING DOOR



Verify the mechanical installation of the locking system of the loading door.

5.2.3 FALSE SIGNAL FROM THE LOADING DOOR



Activate the compaction cycle.



During the cycle, verify the state of entry I3. It should light up only at the end of the cycle when the ram has returned to its original position and when the loading door opens.

5.2.4 FUNCTION OF THE LOADING DOOR'S SENSOR

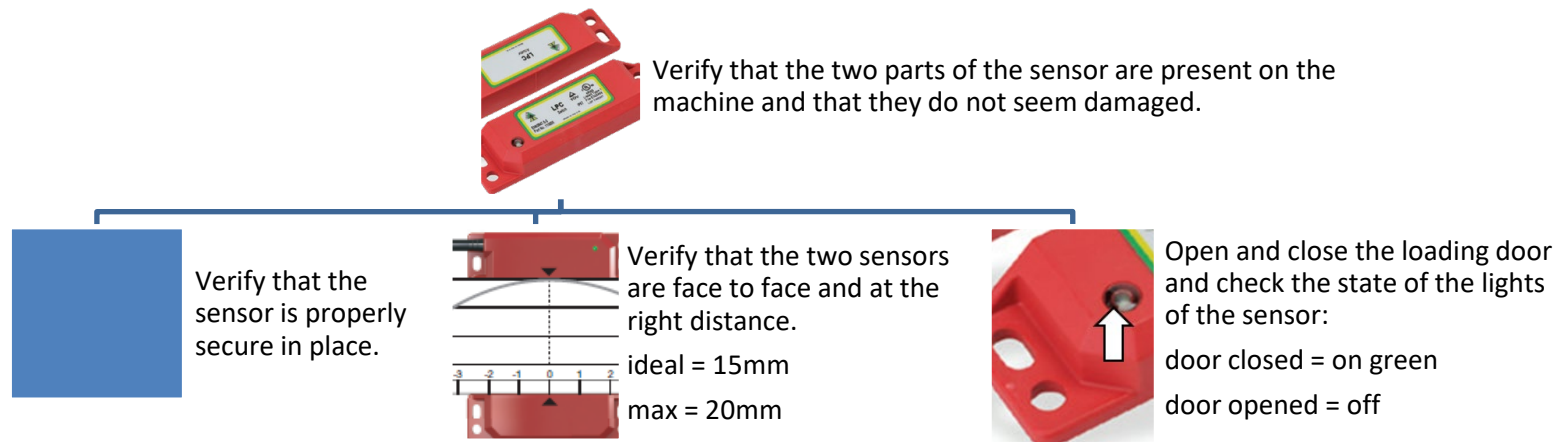


Follow the wire of the loading door's sensor and check the white wire of terminal I3. You must have 24Vdc between this wire and the 0Vdc terminal.



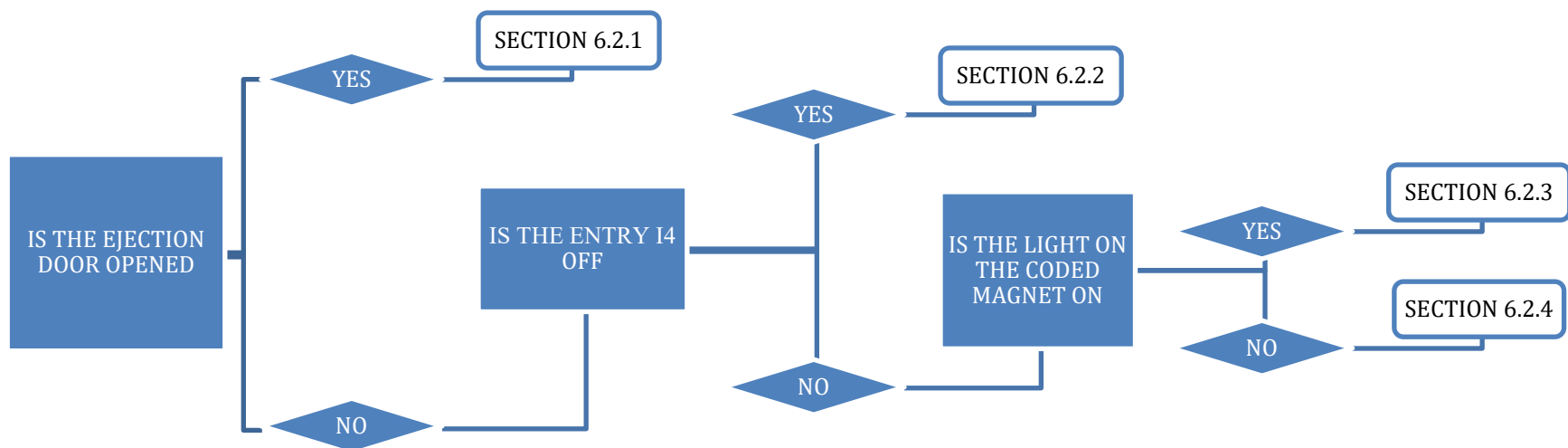
Refer to page 11.

5.2.5 ADJUSTMENT OF THE LOADING DOOR'S SENSOR



6 CODE 3: EJECTION DOOR OPENED

6.1 TARGETING THE CAUSE



Organization Chart 3

6.2 TEST PROCEDURES

6.2.1 OPENING OF THE EJECTION DOOR



Close the ejection door and use the steering wheel to lock the opening.

6.2.2 FALSE EJECTION DOOR SIGNAL



Activate a compaction cycle.

During the entire cycle, check the state of entry I4. It should not turn on.



Open and close the door to be sure that entry I4 reacts correctly depending on the position of the door and that the signal remains stable.

closed = on

opened = off

6.2.3 FUNCTIONNING OF THE LOADING DOOR'S SENSOR



Follow the wire of the loading door's sensor and check the white wire of terminal I3. You must have 24Vdc between this wire and the 0Vdc terminal.



Refer to page 11.

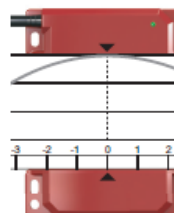
6.2.4 ADJUSTMENT OF THE EJECTION DOOR'S SENSOR



Verify that the two parts of the sensor are present on the machine and that they do not seem damaged.



Verify that the sensor is properly secure in place.



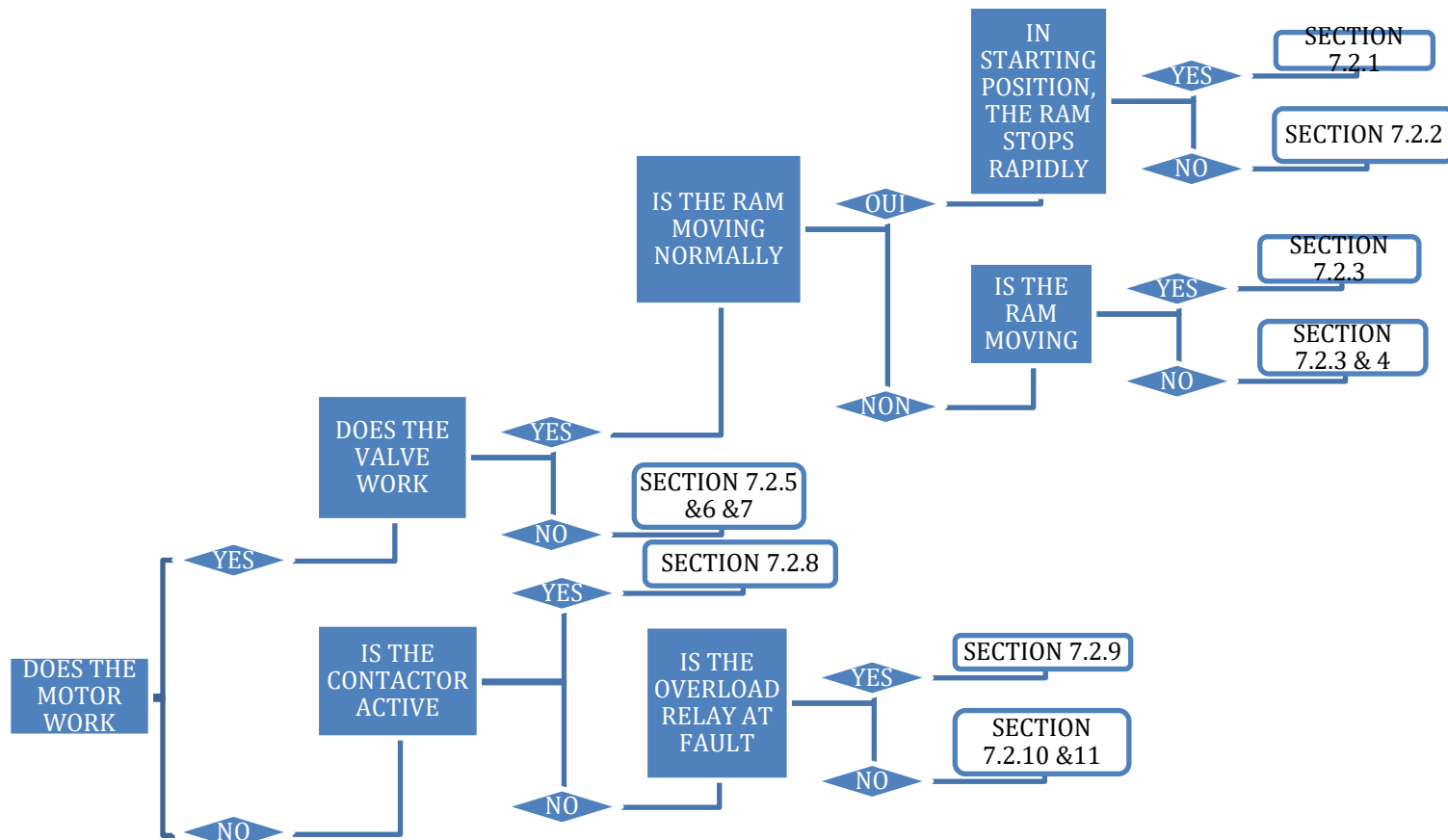
Verify that the two sensors are face to face and at the right distance.
ideal = 15mm
max = 20mm



Open and close the ejection door and check the state of the lights of the sensor:
door closed = on
door opened = off

7 CODE 4: RETURNING CYCLE TOO LONG

7.1 TARGETING THE CAUSE



Organigramme4

7.2 TEST PROCEDURES

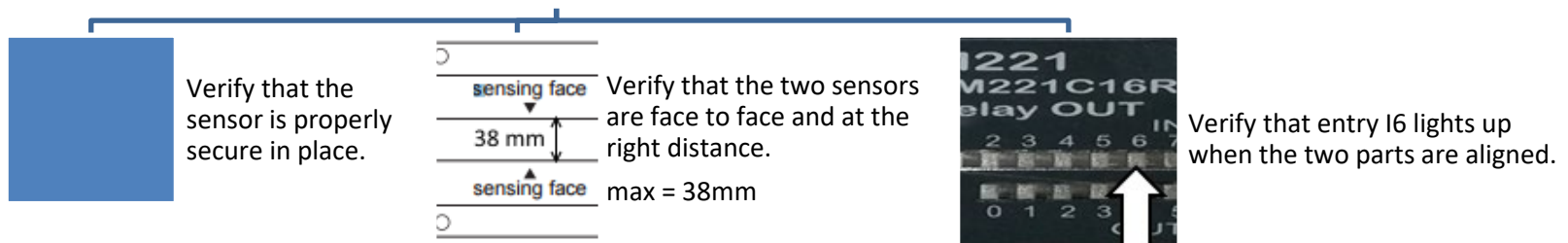
7.2.1 MODEL POORLY SETUP

Check the adjustment of the cycle times of parameters # 1-2-3. See (Technical Bullpak manual setion 4.2 of the parameters) for the procedures to follow.

7.2.2 ADJUSTMENT OF THE STARTING POSITION "TOP RAM" SENSOR

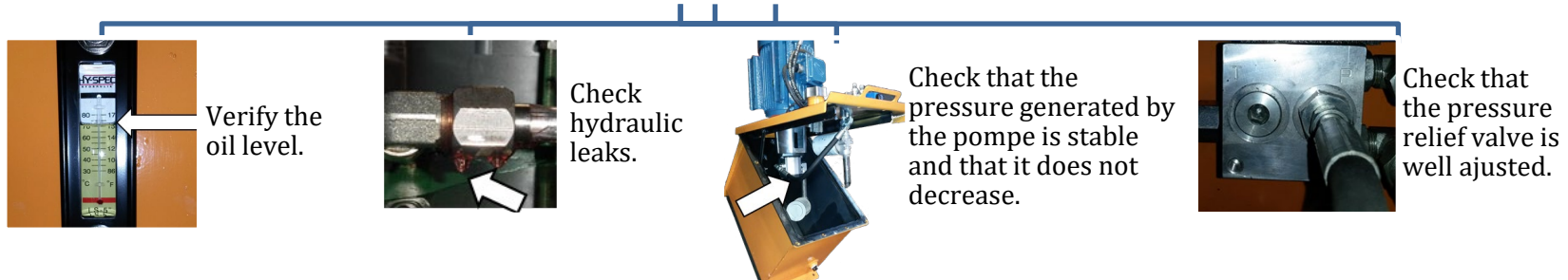


Make sure that the two parts of the sensor are present on the machine and that they do not appear damaged.

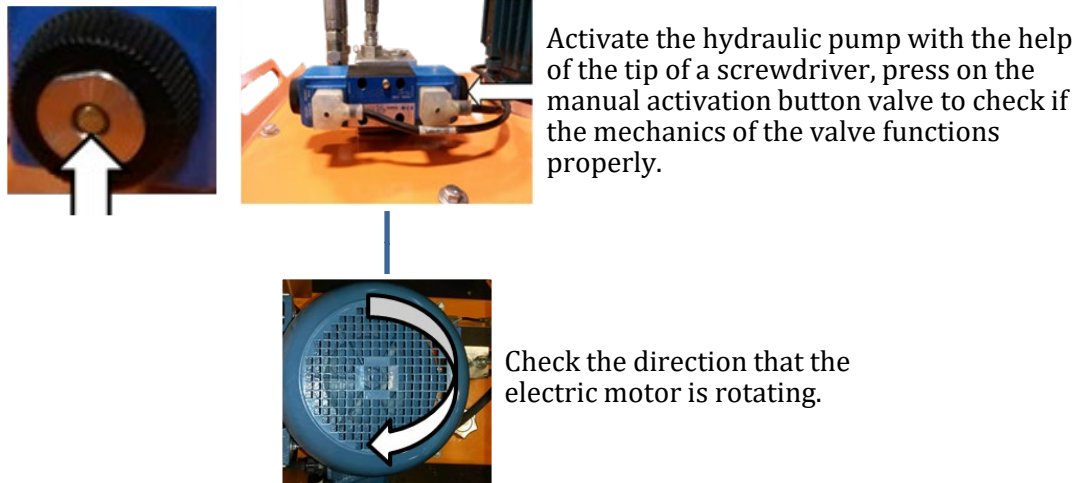


7.2.3 LOSS OF PRESSURE

The following points can cause a slowing of the ram and generate an alarm.



7.2.4 VALVE ACTIVE - NO MOVEMENT

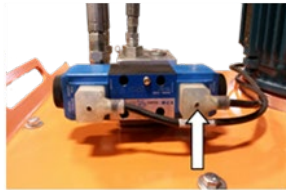


7.2.5 VALVE INACTIVE – VISUAL TEST



If the valve does not activate, it is possible that there is an electric problem.

Check if the light output Q6 is activated as the ram rises.



When output Q6 is active, check to see if the light turns on in the interior of the electric connector of valve B.

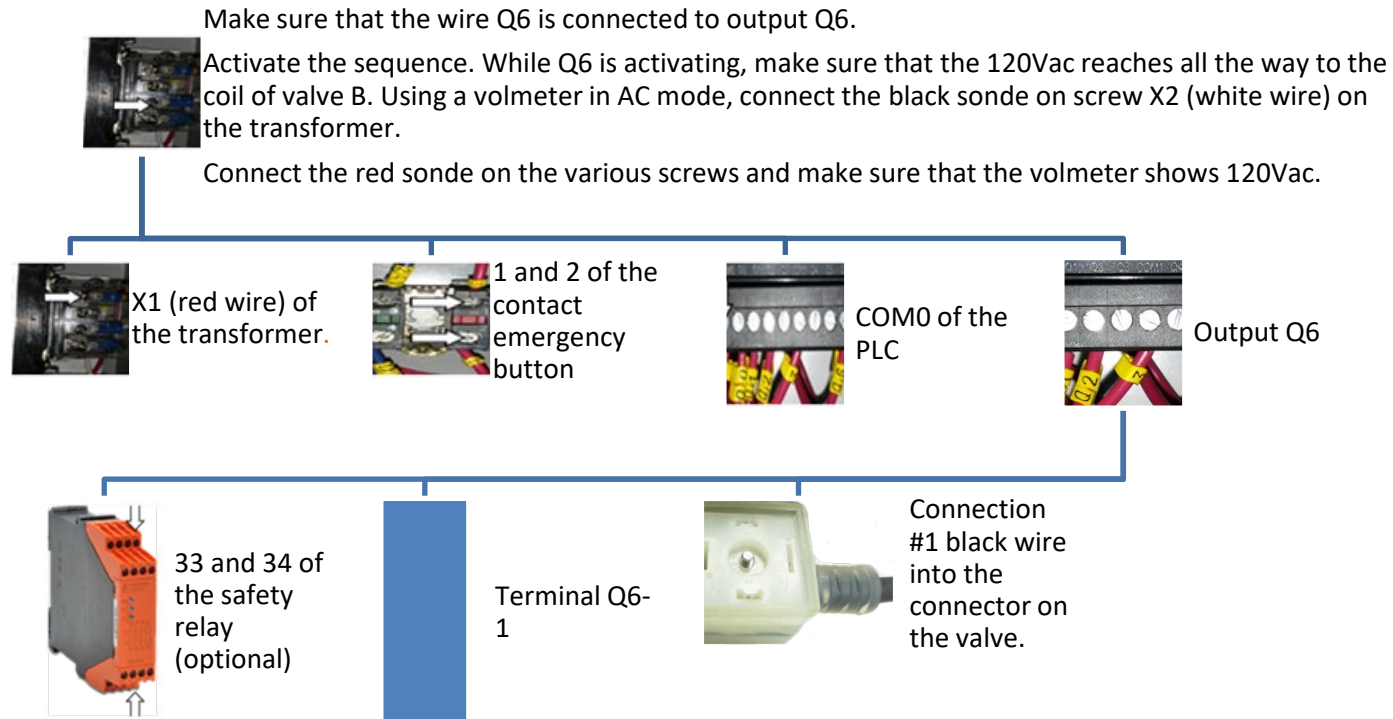


Check to make sure that the right wire is used for the activation of the valve.

5J664-551-US0

120VAC/DC

7.2.6 VALVE INACTIVE – TEST 120V



7.2.7 VALVE INACTIVE – NEUTRAL TEST



Check continuity of neutrals to A2 contactor coil. Using a voltmeter on AC mode, connect the red sonde on screw X1 (red wire) of the transformer.

Connect the black sonde on the various screws below: the voltmeter must indicate 120Vac to each screw.



X2 (white wire) of the transformer.



A2 of the safety relay (optional).



The two N terminals (grey).



N of the PLC.



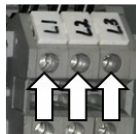
Connection #2 white wire into the connector on the valve.

7.2.8 PUMP OFF – ACTIVE CONTACTOR



Activate the contactor and check if the voltage is present on the three motor supply phases. Using a voltmeter on AC mode, connect the black sonde on the screw of the grounding panel.

Connect the red sonde on the various screws below: the voltage should be adequate depending on the panel power and identical on all three phases.



L1, L2 and L3
the main
power terminal
blocks



Screw T1, T2
and T3 at the
top of the
contactor.



Screw 2, 4 and
6 in the bottom
of the overload
relay



Connection T1,
T2 and T3 in
the junction
box on the
motor.

7.2.9 OVERLOAD RELAY AT FAULT



Let the motor cool down and press on the blue reset button on the right side of the overload relay.

If the problem quickly reoccurs, perform verification 7.2.10.

7.2.10 CONTACTOR INACTIVE – TEST 120v



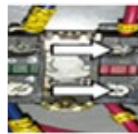
Make sure that wire Q4 is connected to output Q4.

Activate the sequence. While Q4 is activating, make sure that the 120Vac reaches all the way to the coil A1 of the contactor. using a volmeter in AC mode, connect the black sonde on screw X2 (white wire) on the transformer.

Connect the red sonde on the various screws below and make sure that the volmeter shows 120Vac.



X1 (red wire) of the transformer.



1 and 2 of the contact emergency button.



COM0 of the PLC.



Output Q4



13 and 14 of the safety relay (optional).



A1 of the contactor.

7.2.11 CONTACTOR INACTIVE – TEST NEUTRAL



Check continuity of neutrals to A2 contactor coil. Using a voltmeter on AC mode, connect the red sonde on screw X1 (red wire) of the transformer.

Connect the black sonde on the various screws below: the voltmeter must indicate 120Vac to each screw.



X2 (white wire) of the transformer.



A2 of the safety relay (optional).



The two N terminals (grey).



N of the PLC.



A2 of the contactor.

8 CODE 6 : REPLACING PLC BATTERY

8.1 REPLACEMENT PROCEDURES

8.1.1 REPLACING THE BATTERY



Check if the witness light "BAT" is on on the PLC.

IMPORTANT: Afterwards, cut off the main power source of the panel.



Identify the location of the battery in the upper right of the PLC.

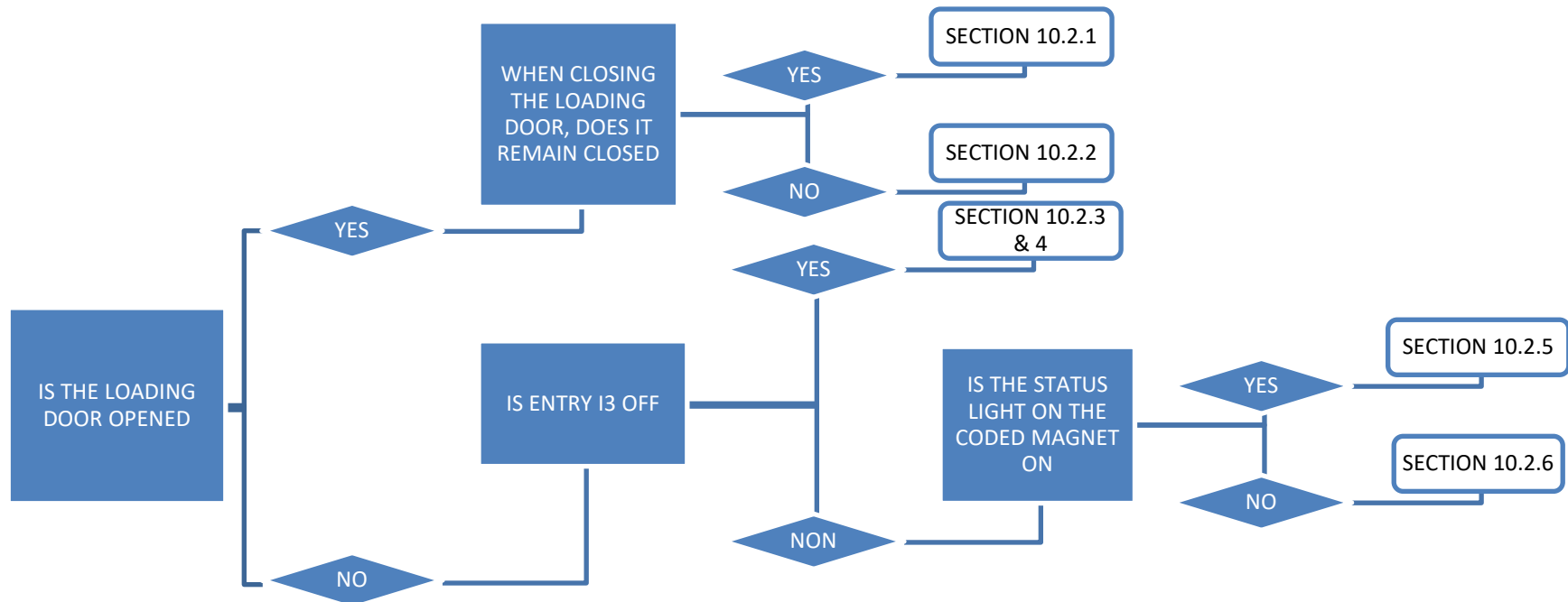


Remove the battery holder and replace the old battery with the new one.

Make sure to respect the polarity $\pm$ of the battery.

9 CODE 7: LOADING DOOR BLOCKED

9.1 TARGETING THE CAUSE



Organization Chart

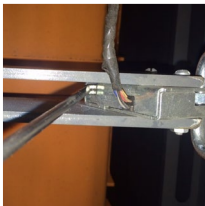
9.2 TEST PROCEDURES

9.2.1 OPENING OF THE LOADING DOOR



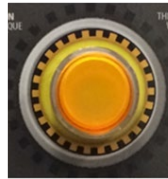
Press on the "action" button and check the door's behaviour. If the door opens immediately and code 7 activates = check if debris is stuck in the door's system and continue with procedures 10.2.4 and 10.2.5 if needed

9.2.2 LOCKING OF THE LOADING DOOR



Check the mechanical installation of the locking system of the loading door.

9.2.3 OPENING OF THE BLOCKED DOOR



Press the "ACTION" button to allow the opening of the loading door despite the alarm.

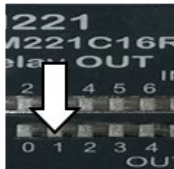


20 new attempts to unlock the door will activate in a period of 30 seconds. if the door does not open on its own, it is possible that debris is blocking the opening. In this case, the operator must apply a moderate force to help the opening of the door.

9.2.4 UNLOCKING OF THE LOADING DOOR



During the 20 unlocking attempts, check if the mechanical locking system functions correctly.



Verify if output Q0.1 activates at any second.



Place the **ear** near the mechanical lock and listen to see if you hear the locking system one (1) per second.



Check if signal 24Vdc reaches terminal block Q1.

10 CODE 8: OVERLOAD

10.1 TARGETING THE CAUSE

10.2 TEST PROCEDURES

10.2.1 OVERLOAD RELAY AT FAULT SEE 7.2.11 FROM THIS MANUAL



Give the motor time to cool down and press the bleu reset button on the right side of the overload relay.

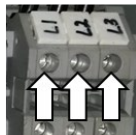
If the problem recurs quickly, perform the check 13.2.2.

10.2.2 PUMP OUT OF FUNCTION – CONTACTOR ACTIVE



Activate the contactor and check if the voltage is present on all three (3) phases of the motor supply. Using a voltmeter en AC mode, connect the black sonde to the panel ground screw.

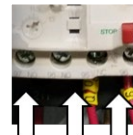
Connect the red sonde to the following screws: The voltage must be adequate according to the power supply of the panel and identical on the three phases.



L1, L2 and L3 of main power supply terminals



screw T1, T2 and T3 at the top of the contactor.



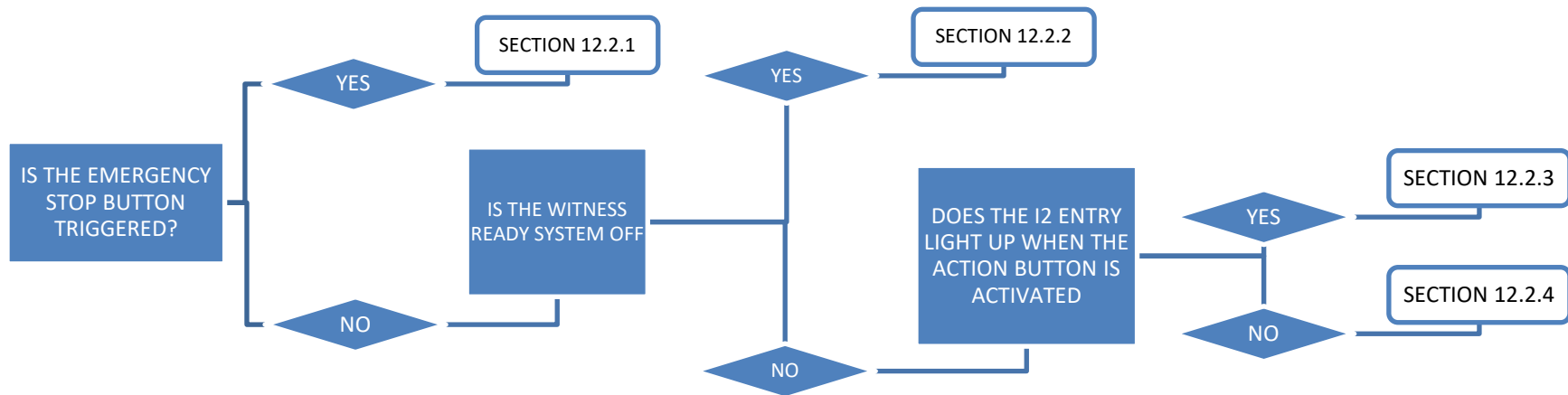
screw 2, 4 and 6 at the bottom of the overload relay



connection T1, T2 and T3 in the junction box on the motor.

11 PROBLEM WITHOUT AN ALARM

11.1 SEQUENCE WILL NOT START



Organization Chart 7

11.2 TESTING PROCEDURES

11.2.1 EMERGENCY STOP



Check the state of the emergency stop button.

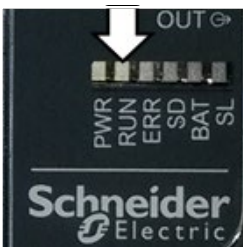
- 1) Press the button to force a shutdown
- 2) Pull the button to feel the movement of the button that switches off.

11.2.2 SAFETY VIOLATION



Make sure that all the security doors are well closed and press "ACTION" to reset the safety relay. (optional)

11.2.3 ACTION BUTTON FUNCTIONAL



Check if the witness RUN on the PLC is on but does not flash AND that the witness ERR is not on.

Disable the power of the panel for 30 seconds and reactivate it.

11.2.4 ACTION BUTTON: ENTRY I2 DOES NOT LIGHT UP



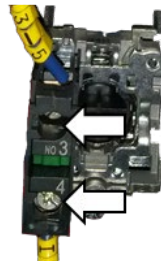
Make sure that wire I2 is connected to entry I2.

Activate the action button and check if the 24Vdc reaches entry I2. Using a voltmeter on DC mode, connect the black sonde on the 0V DC OUT screw at the top of the PLC.

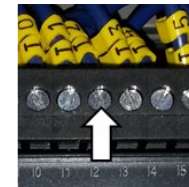
Connect the red sonde on the following various screws:



screw 24V DC OUT of
PLC



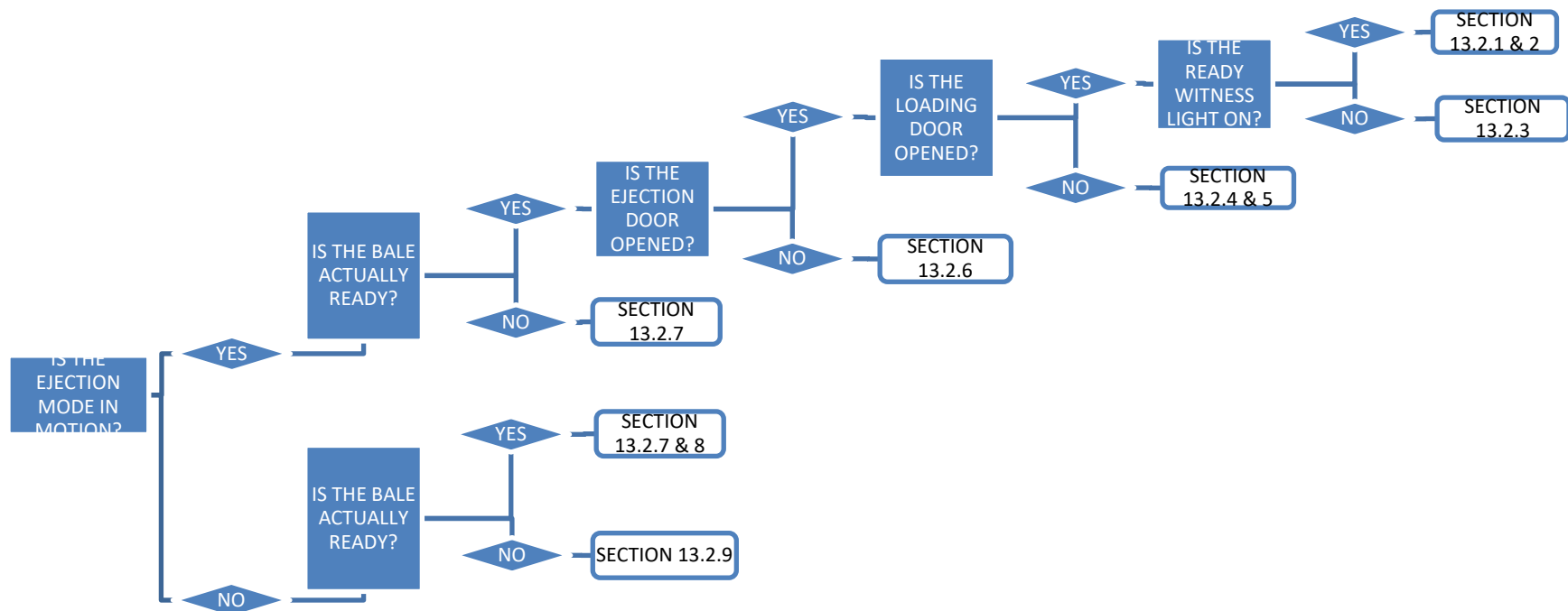
screw 3(wire 24v) and
4(wire I2) of the
action button



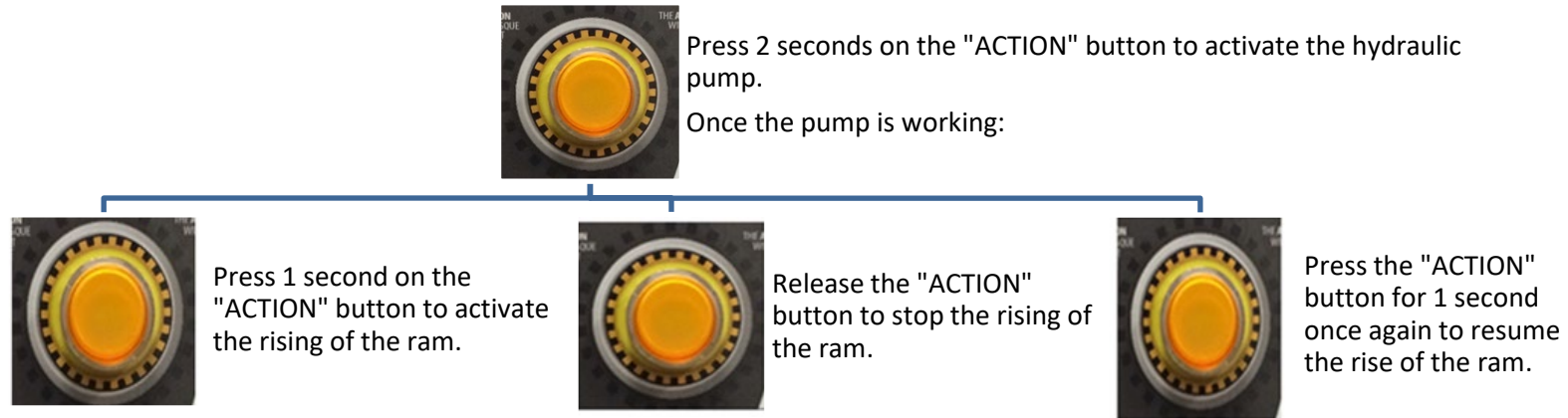
screw I2 of PLC

12 EJECTION MODE

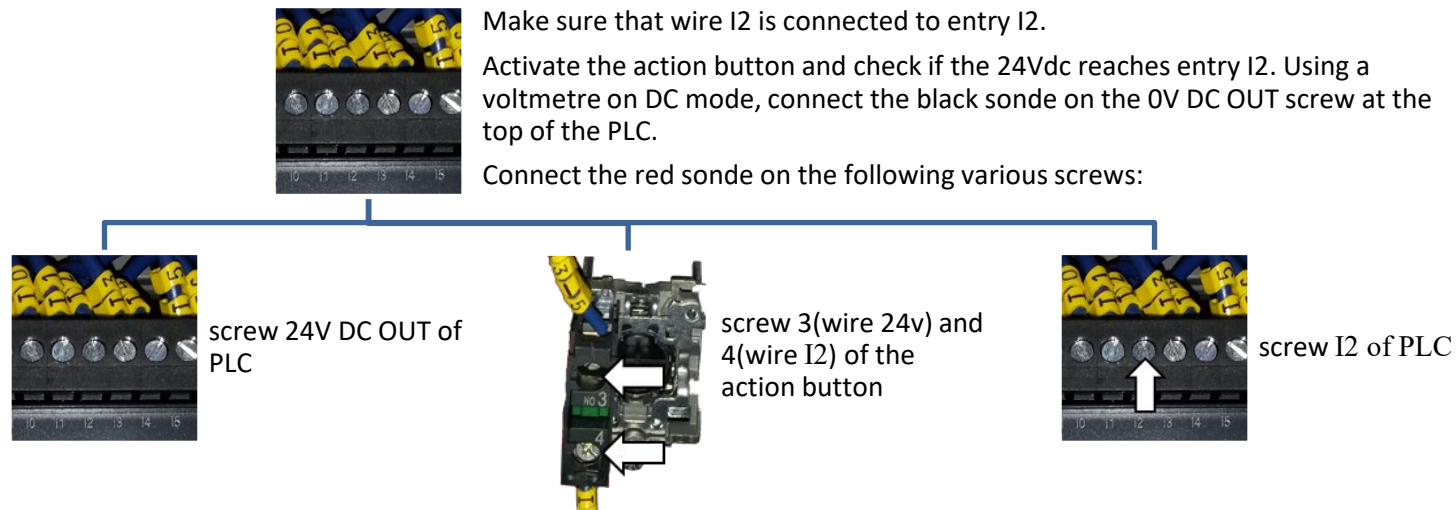
12.1 EJECTION PROBLEM



12.1.1 "ACTION" BUTTON



12.1.2 "ACTION" BUTTON: ENTRY I2 DOES NOT LIGHT UP



12.1.3 BUTTON "EJECTION"



Lower the "BULLPEN" guard. (optional)



On the side of the control pannel, press the "ejection" button and maintain pressure on it during the entire ejection cycle.

12.1.4 OPENING OF THE EJECTION DOOR



Before starting the ejection, the ejection door must be fully opened. Then, the loading door will open automatically to allow the ejection of the bale.



Make sure that the turn buckle is turned enough.



Make sure that the ejection hooks are well secured in the ram.

12.1.5 BAD MODEL CONFIGURATION SEE 7.2.1 OF THIS MANUAL

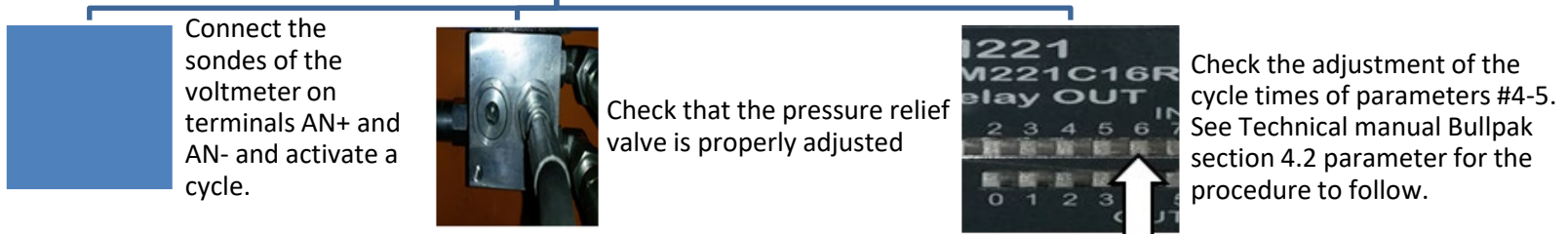
Check the adjustment of the cycle times of parameters # 1-2-3. See Technical manual Bullpak section 4.2 parameter for the procedure to follow.

12.1.6 FUNCTIONING OF THE PRESSURE SENSOR SEE 7.2.2 OF THIS MANUAL



Check if the pressure sensor functions correctly and that hits signal varies when the pressure increases.

Using the voltmeter on DC mode, measure the variation of the voltage (0-10Vdc)



12.1.7 FUNCTIONS NORMALLY



The machine is functioning normally.