TROUBLE SHOOTING GUIDE

STATIONARY & SELF-CONTAINED COMPACTOR

Version 1.00
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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 stationary compactor or self-contained.

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

So with the flashing code and the system behaviour analysis, this guide guides the research to find the exact cause of the problem and how to solve it.

2 DESCRIPTION

2.1 COMPACTION CYCLE

Step #1: Moving forward of the ram to compact the loading area.
Step #2: Moving forward of the ram to compact the material in the compaction zone.
Step #3: Moving back of the ram to come back to the starting position at the beginning of the loading are.

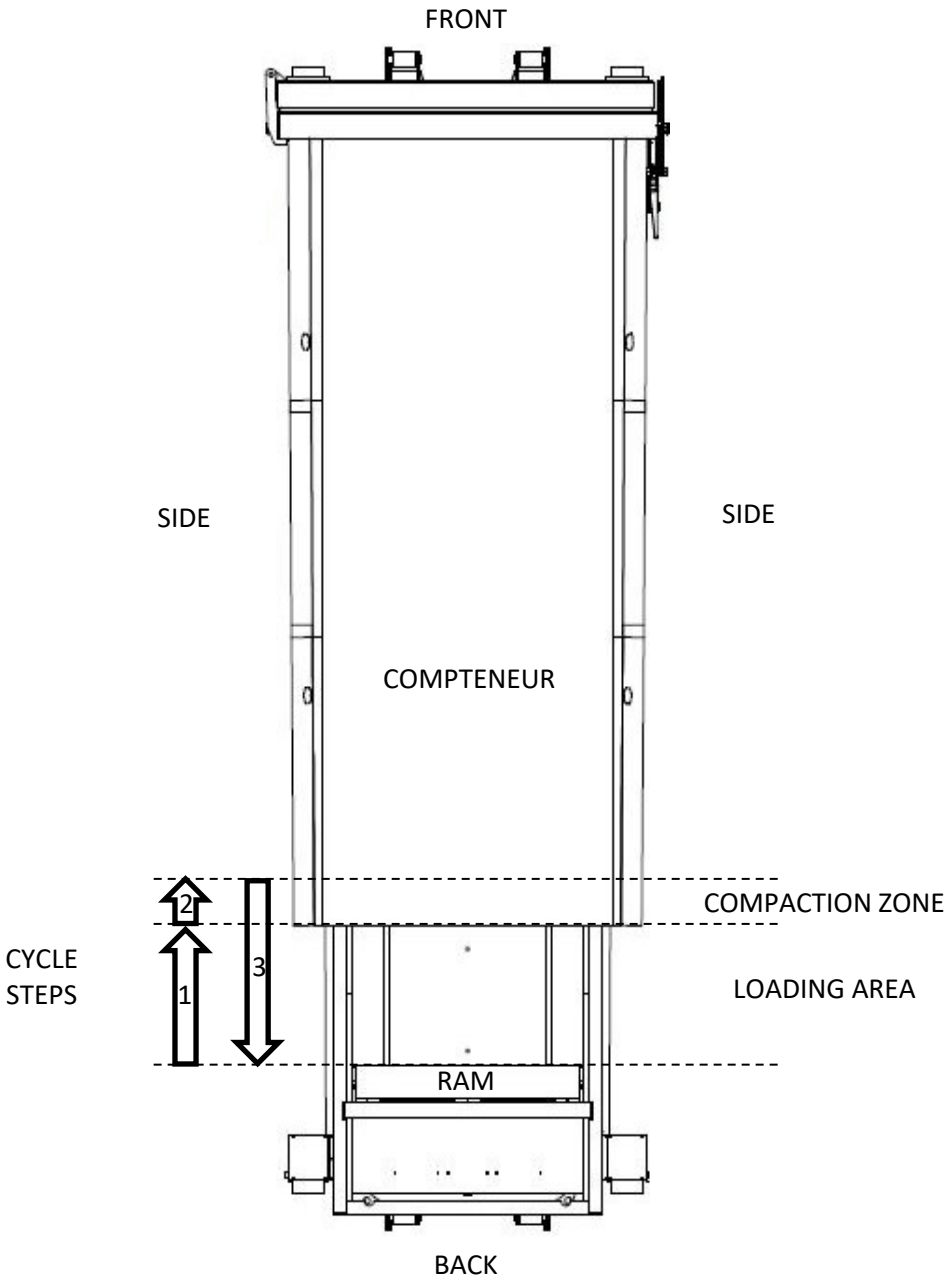
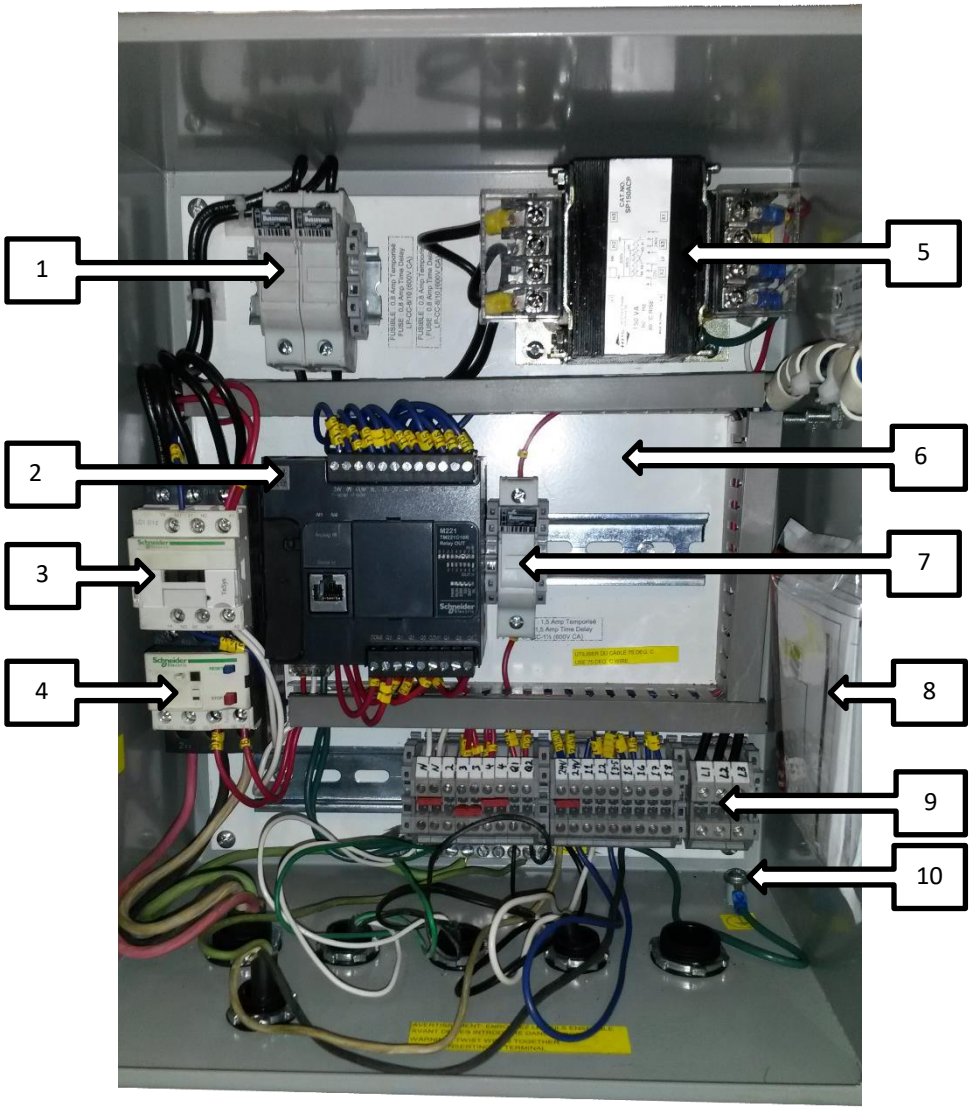


Figure 1

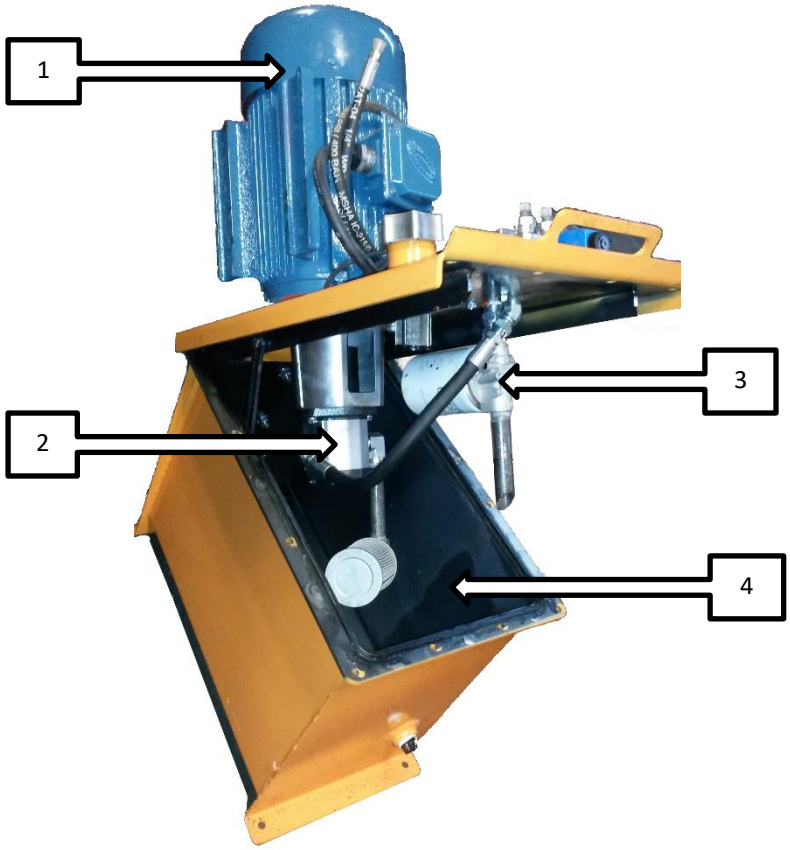
2.2 COMPONENT

2.2.1 ELECTRIC PANEL

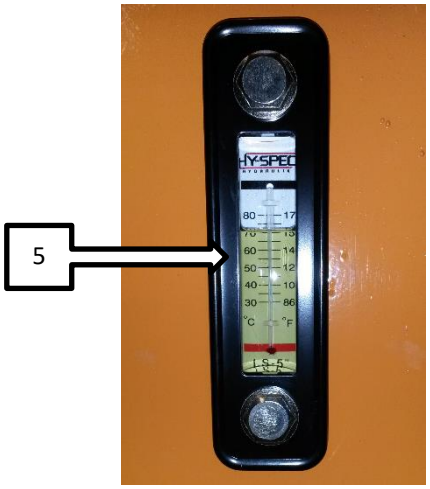


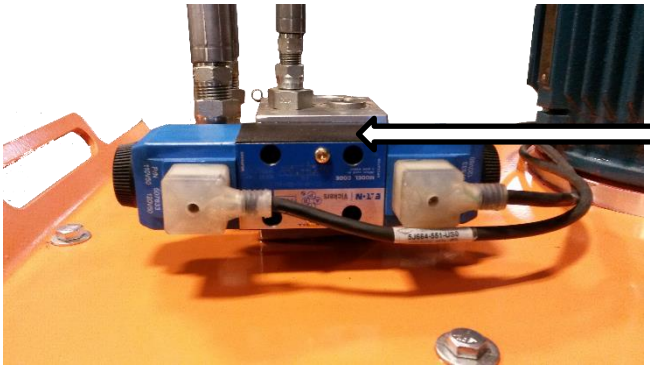
ITEM	DESCRIPTION
1	Main fuse
2	PLC
3	Pump motor contactor
4	Overload relay
5	Transformer
6	Safety relays
7	Control fuse
8	Electrical diagram pocket
9	Terminal block
10	Grounding

2.2.2 HYDRAULIC UNIT



ITEMS	DESCRIPTION
1	ELECTRIC MOTOR
2	HYDRAULIC PUMP
3	OIL FILTRE
4	OIL RESERVOIR
5	THERMOMETER AND OIL LEVEL
6	VALVE BLOC





3 LIST OF ALARMS

3.1 STATUS LIGHT OFF

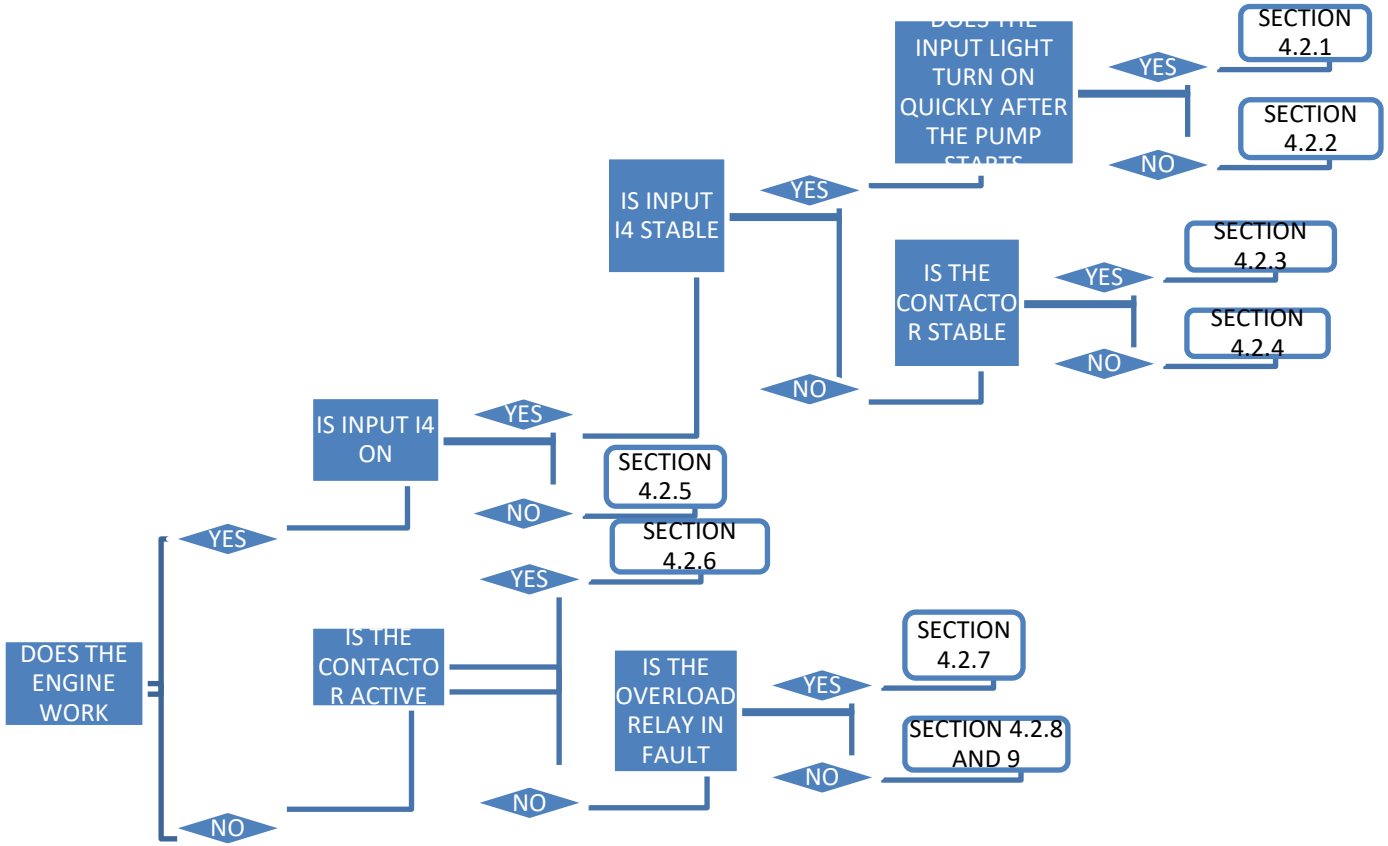
If an unusual situation is detected, the system falls into alarm and all actions are cancelled immediately. To reset an alarm, it is necessary to activate and deactivate the emergency stop button. If the alarm is still present, the status light "off" will flash according to a flashing code. A 3 second pause indicates the end of the flashing code. It is very important to start counting the pulses at the end of the break period to make sure you have the right final count.

Code	message	description
Remains on	System off	Indicates that the system is not operational
Remains off	Ready-to-use system	Indicates that the system is in working order
3	Confirmation of operation of the pump contactor.	The contactor that activates the hydraulic pump does not return the working confirmation signal. (*see section* ***Erreur ! Source du renvoi ntrouvable.***)
4	High pressure start of cycle	The pressure is too high* is present during the first step of the cycle. (*see section* ***Erreur ! ource du renvoi introuvable.***)
5	Time of front compaction cycle unusual	The execution of step # 1 and # 2 of the cycle is too long. (*see section* ***Erreur ! Source du renvoi ntrouvable.***)
6	Time of back compaction cycle unusual	The execution of step # 3 of the cycle is too long.(*see section* ***Erreur ! Source du renvoi introuvable.***)

*generally adjusted at 1800psi

4 CODE 3: WORKING CONFIRMATION

4.1 TARGETTING THE CAUSE



Organizational Chart 1

4.2 TEST PROCEDURES

4.2.1 INPUT I4 QUICKLY TURNS ON

A working confirmation alarm occurs if the system detects a security violation during an automatic cycle. Although, if it is not the case and that all the pieces react normal call your representative for technical assistance.

4.2.2 INPUT I4 DOES NOT QUICKLY TURN ON

The activation of the contactor is too long. Normally, the contactor and the pump should activate immediately after the activation of output Q0.

Disable the main supply power of the panel and check for the presence of debris in the contactors' holes.

4.2.3 INPUT I4 UNSTABLE

If the light of input I4 is not stable, it is possible that a screw is probably loosely tightened and the wire it holds is loose, causing random signal cuts.

Disable the main power supply of the panel and check the tightening of the following wires:

Wire I4 on input I4 of the PLC

Wire 24V and I4 on screw 13 and 14 of the contactor

4.2.4 CONTACTOR UNSTABLE

Check is the signal of output Q0 is stable.

A screw is probably loosely tightened and the wire it holds is loose, causing the contactor to be deactivated randomly.

Disable the main power supply of the panel and check the tightening of the following wires:

fils Q0 sur la sortie Q0 de l'automate

fils Q0 et 6 sur les vis 95 et 96 du relais de surcharge

fils 6 et N sur les vis A1 et A2 du contacteur

4.2.5 INPUT I4 DOES NOT TURN ON

Make sure the I4 wire is properly connected to the I4 input

Activate the contactor and check is the 24Vdc goes to input I4. With a voltmeter on DC mode, connect the black sonde on screw 0V DC OUT at the top of the PLC.

Connect the red sonde to the following screws:

screw 24V DC OUT of the PLC

screw 13 and 14 of the contactor

screw I4 of the PLC

4.2.6 PUMP OFF – CONTACTOR ACTIVE

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

Connect the red sonde on 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 in 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

4.2.7 OVERLOAD RELAY AT FAULT

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

If the problem quickly reoccurs, perform verification 4.2.6.

4.2.8 CONTACTOR INACTIVE – 120v TEST

Make sure that wire Q0 is connect to output Q0.

Activate the sequence and while output Q0 activates, check that the 120Vac goes to the contactor coil A1. With a voltmeter on AC mode, connect the black sonde on screw X2 (white wire) on the transformer.

Connect the red sonde on the following screws and check that the voltmeter indicates 120Vac.

X1 (red wire) of the transformer

1 and 2 Of emergency stop button contact

13 and 14 of the safety relay (optional)

23 and 24 Of the safety relay (optional)

COM0 of the PLC

95 and 96 of the overload relay

A1 of the contactor

4.2.9 CONTACTOR INACTIVE – NEUTRAL TEST

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

Connecter la sonde noire sur les différentes vis suivant : le voltmètre doit indiquer 120Vac à chacune des vis.

X2 (white wire) of the transformer

A2 of the safety relay (optional)

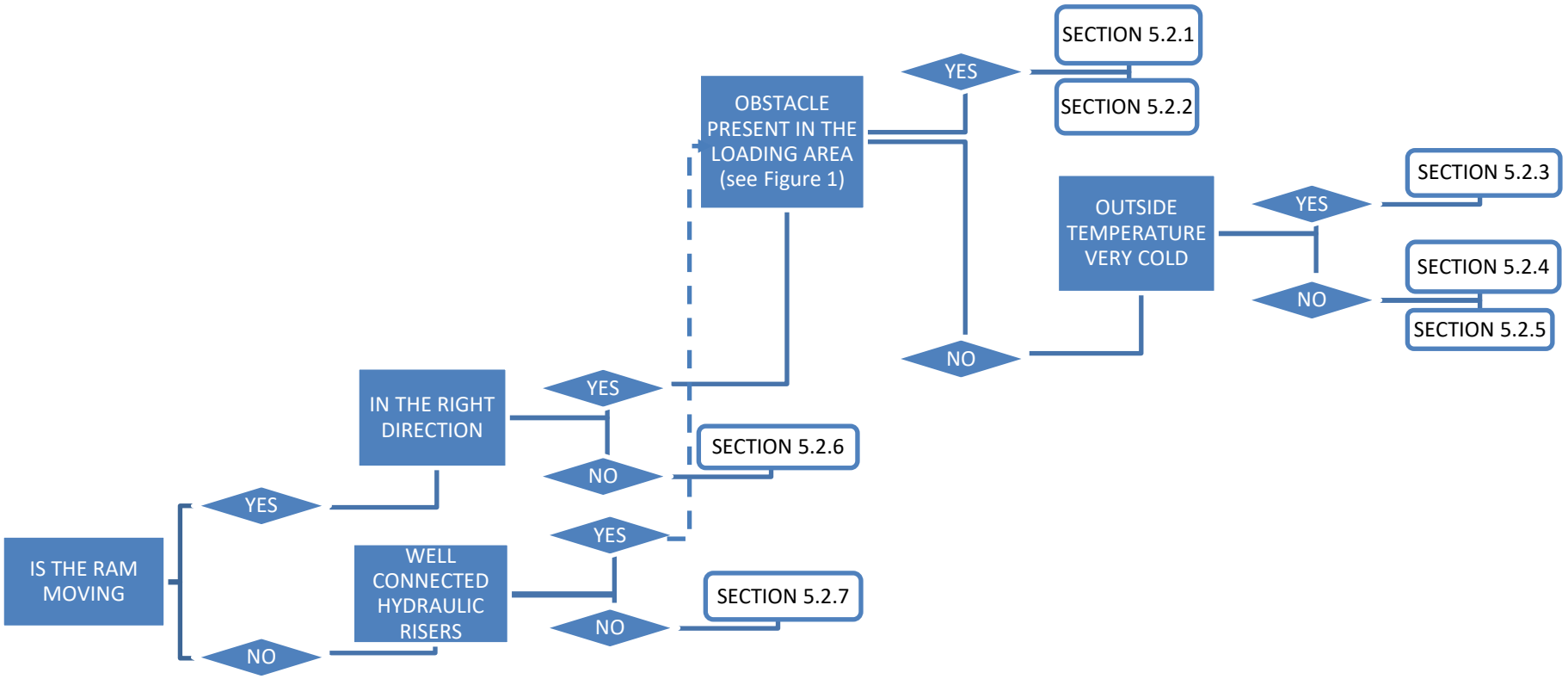
The two terminals N (grey)

N of the PLC

A2 of the contactor

5 CODE 4: HIGH PRESSURE CYCLE DEPARTURE

5.1 TARGETTING THE CAUSE



Organizational Chart 2

5.2 TEST PROCEDURE

5.2.1 PRESENCE OF OBSTACLES

Remove all objects that could block the movement of the ram. Exemple: wooden pallet, medal bar..

5.2.2 CONTAINER TOO FULL

Check if the container is full and if it is overfollowing in the loading area.

Depending on the model, this may occur if the operator has ignored the almost full warnings (light or pressure dial) OR has cleared the full memory with the hauler station OR by pressing the emergency stop button.

5.2.3 TEMPERATURE VERY COLD

When the temperature outside is very cold (inferior to -40°C) and that the ompactor has not operated for a long time, it is possible that the oil thickens and there be frost inside the hydraulic hose.

Check if the heating element of the oil reservoir is operating (optional).

Force the oil to circulate in the hydraulic circuit to warm it up. To do this, press the "Action" button during the automatic cycle.

5.2.4 DEFECTIVE PRESSURE SENSOR

If the pressure sensor is defective, it is possible that it is sending a permanent signal OR too quickly.

It is therefore necessary to check the operation of the pressure sensor.

When the pump is stopped, check that input I5 is still on

When the pump is running, look at input I5. When it comes on, check the current pressure on the dial.

5.2.5 PRESSURE ADJUSTMENT

If detector and input I5 are working, the adjustment of the pressure sensor must be checked.

Check that the detector adjustment is at 1800psi

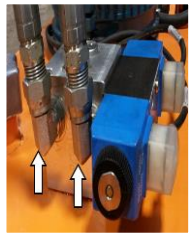
When input I5 lights up, confirm on the dial that the pressure corresponds to the adjustment of the sensor.

5.2.6 MAINTENANCE ERROR

Following maintenance, the holes may not be connected to the correct port.

Check the quick connectors.

Check the holes on the cylinders.



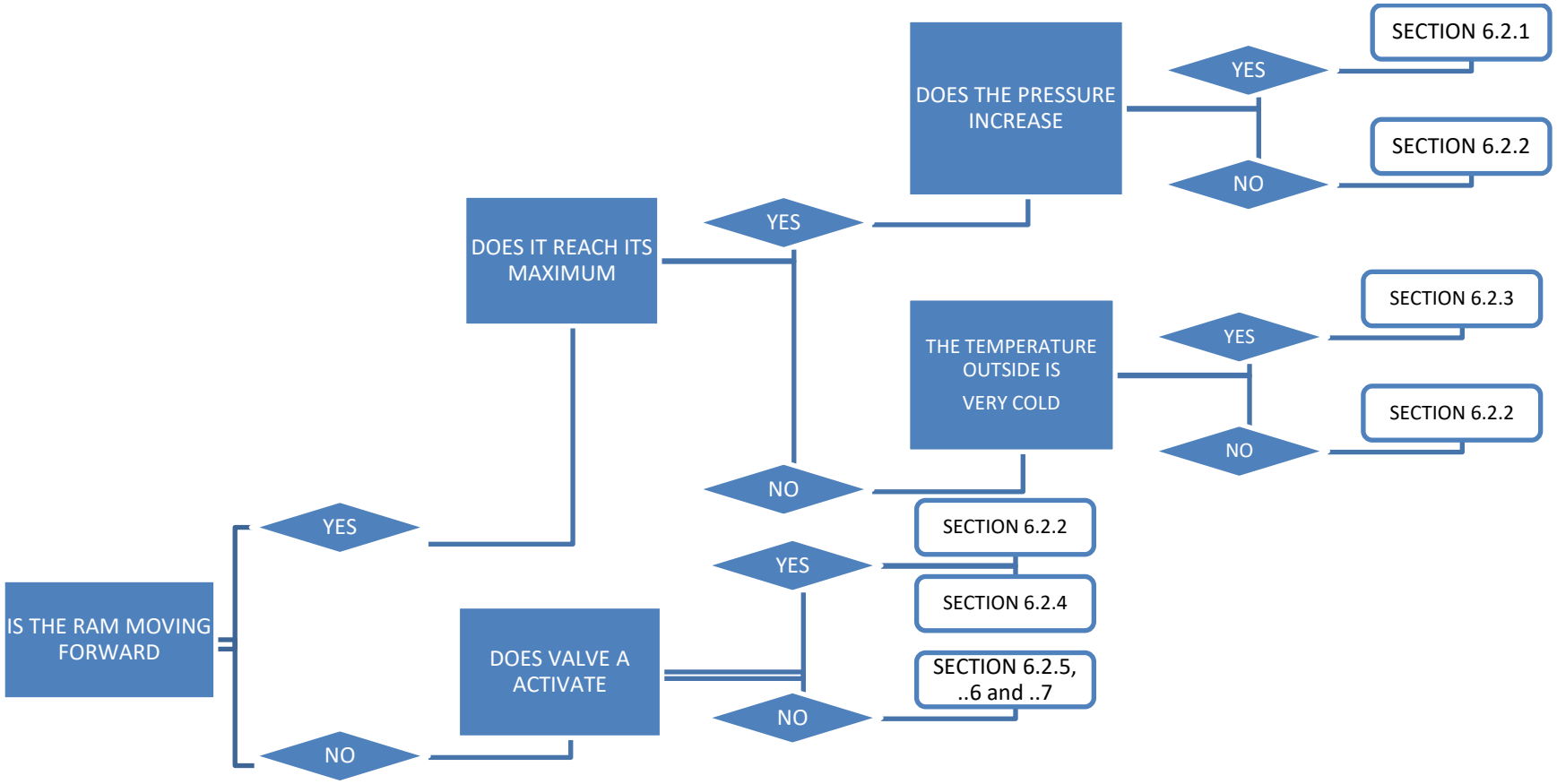
Check the holes on the valve block.

5.2.7 HAULER ERROR

When changing containers, the hauler may have not reconnected the hydraulic hoses.

6 CODE 5: ABNORMAL FRONT CYCLE TIME

6.1 TARGETTING THE CAUSE



Organizational Chart 3

6.2 TEST PROCEDURE

6.2.1 REACHED ITS END OF STROKE

When the ram reaches the end of its stroke, check if the pressure of the dial reaches 1800 psi.

Check if the adjustment of the sensor is at 1800psi.

Check if input I5 is on.

6.2.2 LOSS OF PRESSURE

If the pressure does not increase, the piece of equipment that restricts the oil pressure must be found.

Check the oil level.

Check hydraulic leaks.

Check that the pressure generated by the pump is stable and that it does not decrease.

Check that the pressure relief valve is properly adjusted to 2100 psi.

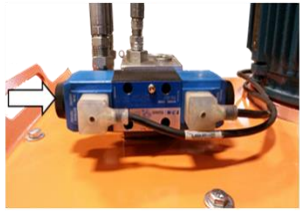
6.2.3 COLD TEMPERATURE

When the outside temperature is cold, it is possible that the oil thickens and slows down the speed of the hydraulic cylinders.

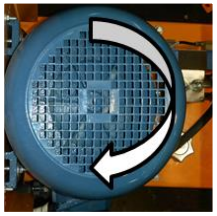
Check that the heating element of the oil tank is in operation. (optional)

Activate several cycles to circulate the oil in the hydraulic circuit. This movement allows the oil to warm up.

6.2.4 ACTIVE VALVE – NO MOVEMENT



Activate the hydraulic pump and using the tip of a screwdriver, press the manual valve activation button to check if the valve mechanics is working properly.

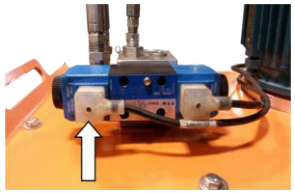


Check the direction of rotation of the electric motor.

6.2.5 INACTIVE VALVE - VISUAL TEST

If the valve does not activate, an electrical problem may be present.

Check if the light of output Q1 light activates.



When output Q1 is activated, check that the warning light lights up inside the electrical connector of valve A.

Check that the correct wire is used to activate the valve.

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120VAC/DC

6.2.6 INACTIVE VALVE- TEST 120V

Make sure that wire Q1 is connect to output Q1.

Activate the sequence and while output Q1 activates, check that the 120Vac goes to the coil of valve A. With a voltmeter in AC mode, connect the black sonde to screw X2 (white wire) on the transformer.

Connect the red sonde to the following screws and check that the voltmeter reads 120Vac.

X1 (red wire) of the transformer

1 and 2 of emergency stop button contact

13 and 14 of the safety relay (optional)

23 and 24 of the safety relay (optional)

COM0 of PLC

terminal Q1

Connection #1 black wire in the connector of the valve.

6.2.7 INACTIVE VALVE- NEUTRAL TEST

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

Connect the black sonde to the following screws: the voltmeter must indicate 120Vac to each of the screws.

X2 (white wire) of the transformer

A2 of the safety relay (optional)

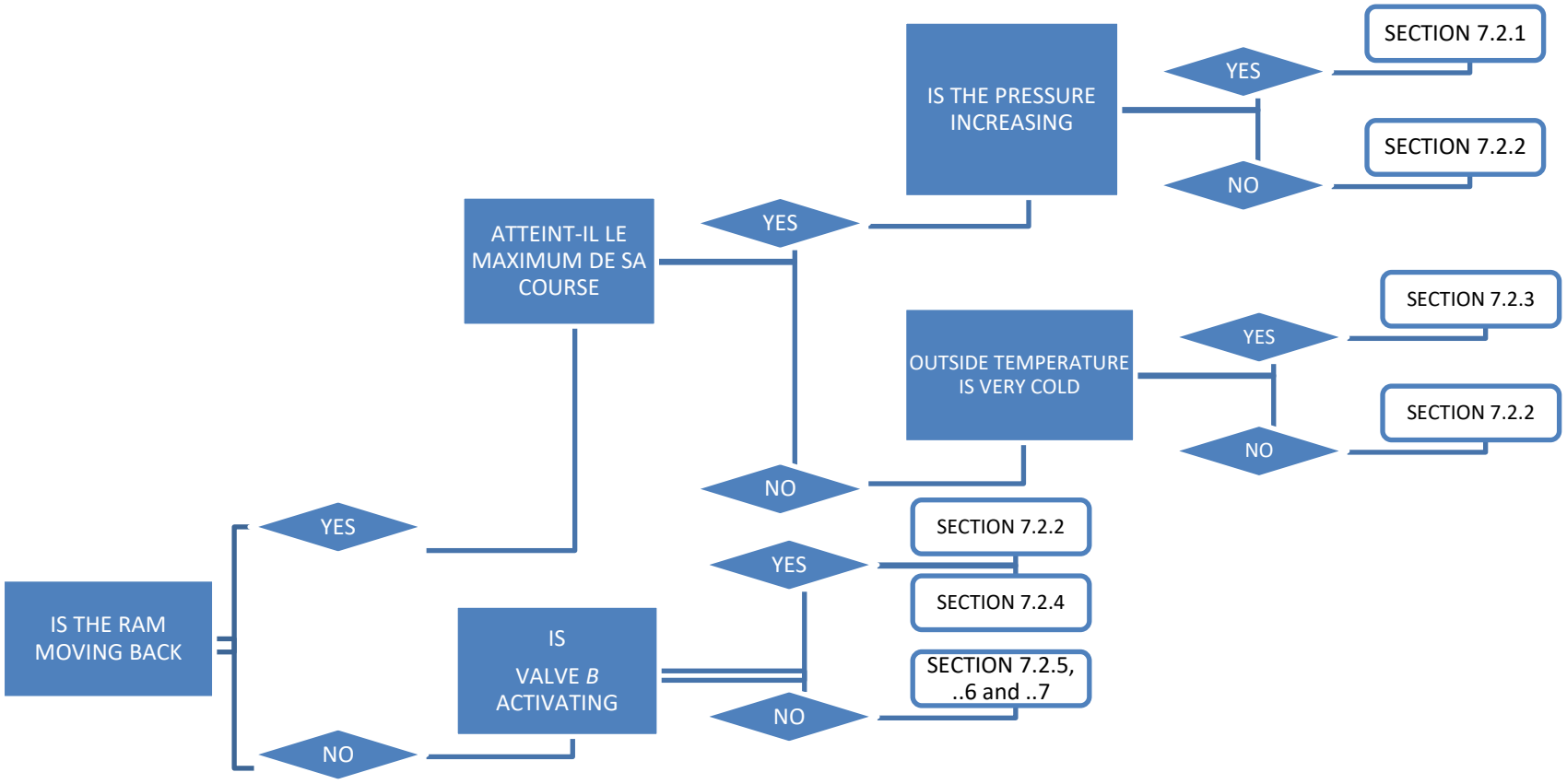
the two N terminals (grey)

N of the PLC

Connection #2 white wire in the connector of the valve.

7 CODE 6: BACK CYCLE TIME ABNORMAL

7.1 TARGETTING THE CAUSE



Organizational Chart 4

7.2 TEST PROCEDURE

7.2.1 REACHED ITS END OF STROKE

When the ram reaches the end of its stroke, check if the pressure of the dial reaches 1800 psi.

Check if the adjustment of the sensor is at 1800psi.

Check if input I5 is on.

7.2.2 LOSS OF PRESSURE

If the pressure does not increase, the piece of equipment that restricts the oil pressure must be found.

Check the oil level.

Check hydraulic leaks.

Check that the pressure generated by the pump is stable and that it does not decrease.

Check that the pressure relief valve is properly adjusted to 2100 psi.

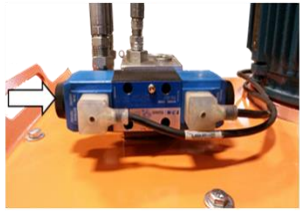
7.2.3 COLD TEMPERATURE

When the outside temperature is cold, it is possible that the oil thickens and slows down the speed of the hydraulic cylinders.

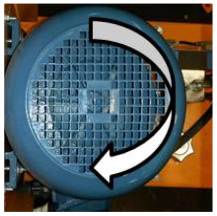
Check that the heating element of the oil tank is in operation. (optional)

Activate several cycles to circulate the oil in the hydraulic circuit. This movement allows the oil to warm up.

7.2.4 ACTIVE VALVE- NO MOVEMENT



Activate the hydraulic pump and using the tip of a screwdriver, press the manual valve activation button to check if the valve mechanics is working properly.

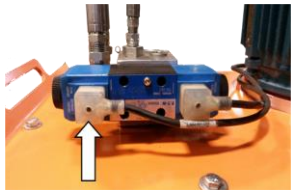


Check the direction of rotation of the electric motor.

7.2.5 INACTIVE VALVE- VISUAL TEST

If the valve does not activate, an electrical problem may be present.

Check if the light of output Q2 light activates.



When output Q2 is activated, check that the warning light lights up inside the electrical connector of valve B.

Check that the correct wire is used to activate the valve.

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120VAC/DC

7.2.6 INACTIVE VALVE- TEST 120V

Make sure that wire Q2 is connect to output Q2.

Activate the sequence and while output Q1 activates, check that the 120Vac goes to the coil of valve B. With a voltmeter in AC mode, connect the black sonde to screw X2 (white wire) on the transformer.

Connect the red sonde to the following screws and check that the voltmeter reads 120Vac.

X1 (red wire) of the transformer

1 and 2 of emergency stop button contact

13 and 14 of the safety relay (optional)

23 and 24 of the safety relay (optional)

COM0 of PLC

terminal Q2

Connection #1 black wire in the connector of the valve.

7.2.7 INACTIVE VAVLE- NEUTRAL TEST

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

Connect the black sonde to the following screws: the voltmeter must indicate 120Vac to each of the screws.

X2 (white wire) of the transformer

A2 of the safety relay (optional)

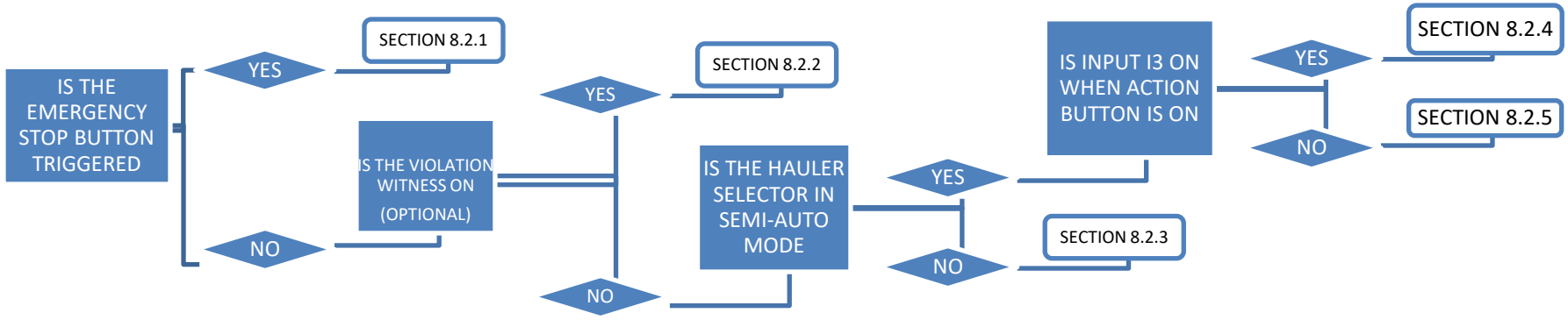
the two N terminals (grey)

N of the PLC

Connection #2 white wire in the connector of the valve.

8 PROBLEM WITH NO ALARM

8.1 SEQUENCE DOES NOT START



8.2 TES PROCEDURE

8.2.1 EMERGENCY STOP

Check the state of the emergency stop button

1) Press the button to force the stop.

2) Pull the button to feel the movement of the button turning off.

8.2.2 SAFETY VIOLATION

Make sure that all safety doors are closed and press the system start button to reset the safety relay. (optional)

8.2.3 HAULER MODE

The automatic operation sequence only works if the hauler mode is not in progress.

Check the key selector for the hauler mode. (optional)

Check that the container's presence signal is connected. (Optional)

8.2.4 ACTION BUTTON IS FONCTIONAL

Checks whether the RUN light on the PLC is on and does not blink AND that the ERR indicator is not lit.

Disable panel power for 30 seconds and then activate it.

8.2.5 INPUT I3 DOES NOT LIGHT UP

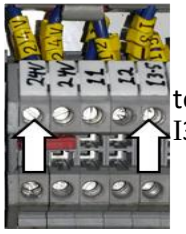
Make syre wire I3 is connected to input I3.

Activate the action button and check whether the 24Vdc goes to input I3. With a voltmeter in DC mode, connect the black sonde to the 0V DC OUT screw at the top of the PLC.

Connect the red sonde to the following screws:

screw 24V DC OUT of the PLC

screw 3(wire I3-5) and 4(wire I3) of the action button



terminal 24v and I3-5

screw I3 of the PLC