9 - Autodoor - Troubleshooting

CAN DC Autodoor - Troubleshooting Guide - NGC

Introduction

This troubleshooting guide will show you how to troubleshoot a CAN Autodoor. For troubleshooting other CAN systems refer to the CAN LUBE PANEL AND SPINDLE HEAD - TROUBLESHOOTING GUIDE

Download and fillout the CAN Autodoor Inspection Report Checklist below before replacing any parts.

CAN AUTODOOR INSPECTION REPORT CHECKLIST

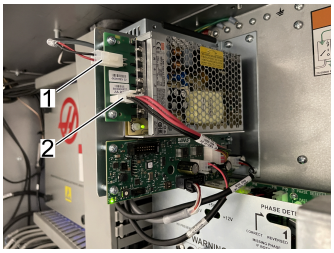
Symptom Table

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Alarm 548 DOOR M CODES NOT ALLOWED	The machine does not have a cell safe signal or the light curtain is not enabled.	The **Mill M80/M81** and **Lathe M85/M86** M-codes work only while the machine receives a cell-safe signal from a robot or if it has a light curtain installed. For more information refer to Robot Integration Aid - NGC reference document.
ALARM / CAN CODE **BEFORE SOFTWARE 100.21.000.1100:** **Alarm 9898.001:** CAN NODE WARNING **CAN code [0x43]:** CAN NODE WARNING **SOFTWARE 100.21.000.1100 and Later:** **Alarm 9706 or (100.001):** CAN NODE COMMANDED CURRENT OUT OF RANGE **CAN code [0x43]**	Outdated Firmware & Parameters	Upgrade to the latest **Software**, **Configuration files**, and **I/O / CAN AD Firmware**.
Alarm 9701: Node ID: XX Node reported it lost communication from I/O board CAN code [0x01]	Old IO firmware.	Load I/O firmware 4.09 or greater.
	Poor connection	Verify CAN Bus Connectors are fully seated and termination resistor set correctly.

The door does not fully open.	Chip build up in the door rollers or coolant contamination on the auto door wheel.	Clean the chips away from the door rollers. Clean the coolant from the auto door wheel.
	The door open time factory setting values are not set correctly.	Refer to Smart CAN Autodoor Upgrade procedure.
	The motor is not aligned to door track.	Check the door alignment. See **Auto Door - Door Alignment** section below.
	The motor pulley may have come unattached.	Remove the motor cover to see if the pulley is securely attached, if not inspect pulley and motor shaft and apply red Loctite to motor shaft and threads.
	DM/DT/UMC-350 Machines built before 7/15/2023: The auto door is skipping gears.	Replace the auto door adapter bracket with new, stiffened adapter bracket **25-14189B.**
There is a delay at the end of the door open sequence.	The autodoor CAN board firmware may be outdated.	Go to **Diagnostic>System Tab** and verify the **Auto Door Version** is upgraded to firmware **aV142** or higher.
The door opens all the way but does not hold and retract causing the motor to pop off the door track when disengaging.	Defective Motor.	If a single door machine, install a new motor and check if the door holds and retracts. If it holds and retracts, replace the defective motor. If a dual door machine, swap the motors and check if motor holds and retracts. If it holds and retracts, replace the defective motor.
The door tracks are coming undone.	The track clip is not engaging properly onto the tooth profile.	The track clip size has been increased, check the **Autodoor Track Clip** section below to determine if the machine has the updated track clips. If the new clips are needed, order the track clip replacement kit and follow the Autodoor Track Replacement procedure.
When Opening or closing the doors, the doors will stop and retract and a message **"Auto Door Collision Detected"** is generated.	Chip build up in the door rollers or doors are not aligned correctly.	Clean the chips away from the door rollers. Make sure the doors are aligned and can open and close smoothly.
	The machine has outdated configuration files.	Download and update the machine with the latest configuration files from the Haas Portal.
	(2-Door Autodoor only) The motor power cables are plugged into the incorrect outputs.	Check that the motor cables are plugged into the correct outputs on the Smart CAN PCB. Motor 1 should be connected to J6. Motor 2 cable should be connected to J9. Use the electrical diagram shown below.
	(2-Door Autodoor only) The left and right door open switches are connected backwards on the I/O PCB.	Make sure that when you open the left door the left door input on the I/O PCB diagnostic screen change states. If it does not check the door inputs on the I/O PCB (P41 Right Door Open and P42 Left Door Open).
	Machines with dual doors only: The motor current when opening or closing is over the current limit.	**Machines with dual doors only:** Upgrade to the 350W Power Supply and install the parameter patch and IO patch.

Alarm **9899 IOPCB CAN FAULT** and/ or **9105 IO BOARD COMMAND EXECUTION FAILURE**	The CAN node I/O Configuration is incorrect.	Update the I/O configuration via the I/O Config tab.
	The incorrect CAN node is enabled.	Verify that Factory Settings 9000.001 -> 9031.001 are set correctly. Only active nodes should be enabled.
	The Autodoor CAN PCB does not have power.	Verify that the Low Volt Power supply is supplying power to the CAN Autodoor PCB.
	The CAN node Communication cable is disconnected.	Power down machine for at least a minute. Verify all CAN communication cables are connected correctly.
	The CAN Module ID Selector is incorrect.	Power down machine for at least a minute. Set ID selector correctly. Power up machine.
	The CAN Modules have incorrect termination.	Power down machine for at least a minute. Verify that only last node in the chain is terminated. Power up machine.
	The CAN Node needs to be reset.	Disable CAN Node via 9000.001 -> 9031.001. If the machine recovers (I/O page isn't "X") after disabling a particular node, try to enable the node again.
Alarm 9172 AUTO DOOR COLLISION	Auto Door detected a collision while closing.	Check for objects blocking the door from closing.
		Check for chip build up on the door roller rails.
		Check that the door drive wheels are not stuck or are losing contact with the top of the door.
		Check the wiring for short circuits.
	Outdated Firmware & Parameters	Upgrade to the latest **Software**, **Configuration files**, and **I/O / CAN AD Firmware**.
Alarm 9118 AUTO DOOR DID NOT OPEN or **Alarm 9983** AUTO DOOR DID NOT CLOSE	DC Autodoor did not open or close within the allowed time.	Check for any obstructions in the path of the door.
		Check for chip build up on the door roller rails.
		Check that the door drive wheels are not slipping or are losing contact with the top of the door.
	Detents are installed.	Remove the door detents. Refer to the **Detent Removal** section below.
	Outdated Firmware & Parameters	Upgrade to the latest **Software**, **Configuration files**, and **I/O / CAN AD Firmware**.
Alarm 9829 CAN ANALOG OVER LIMIT	Outdated Firmware and Parameters.	Upgrade to the latest **Configuration files**, and **I/O / CAN AD Firmware**.
(Only Lathes) Door seems to be dragging.	The push nuts on the pivot pin in the motor assembly have come off.	Order (2x) o-rings **PN# 57-0551** and install them as shown below in the **Push Nut Re-Attachment** section below.
(Only Lathes) Rattling/grinding noise coming from the motor area.		
Autodoor continues to run after being fully open.	Machine was built with autodoor between February 2023 to June 2023 or if a belt was changed between these dates, the belt may be defective.	Inspect the Autodoor system thoroughly. If it all checks good, the belt will need to be replaced. Refer to DC Autodoor Track Replacement - AD0465.

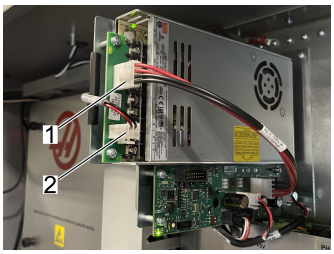
Power Supply Identification



150W CAN Auto Door Power Supply

The power input on the power supply is on the top**[1]**.

The power output on the power supply is on the bottom**[2]**.

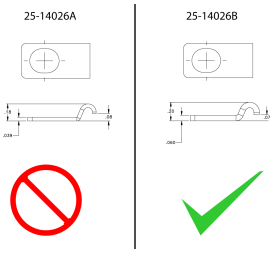


350W CAN Auto Door Power Supply

The power output on the power supply is on the top**[1]**.

The power input on the power supply is on the bottom**[2]**.

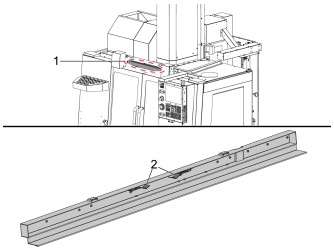
Door Track Clip



The track clip size has been increased, make sure that the machine has the updated clips.

If the machine needs the updated clips, go to the AUTODOOR TRACK REPLACEMENT procedure and order the replacement kit.

Detent Removal



If the machine is outputting **Alarms 9118** or **9983** and there are no obstructions in the path of the door, the detents may need to be removed if they are installed.

The detents are attached to the sheet metal above the door(s) [1].

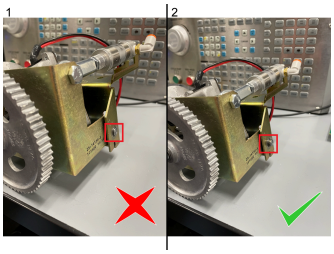
Remove the hardware and detents [2] from the machine.

Push Nut Re-Attachment

If the push nuts (PN# 46-0043) come off the pivot pin, order (2x) o-rings **PN# 57-0551.**

Take one push nut [1] and put the o-rings [2] inside the push nut as shown in the right picture.

Attach the push nut with the o-rings on to the pivot pin.



If the push nut is attached without the o-rings it will look like the image on the left.

When the push nut with the o-rings is attached, the pivot pin will stick out like the image on the right.

Make sure the pivot pin sticks out like the image on the right and re-attach the other push nut.

Dual Door - 350W Power Supply Upgrade

Machines with dual doors only:

If a Vertical Mill or Longbed Lathe with Dual doors fails to open or close the doors, perform all the troubleshooting steps.

If the machines continues to alarm out, install the new power supply released for Smart CAN Auto Doors.

93-3354 CAN AUTODOOR POWER SUPPLY KIT 2021

Note: This applies to machines with dual doors only.

Note: Patches required to upgrade current limits.

Parameter Patch: **AD 350W PS CV**

IO Patch: **AD 350W PS IO**

Auto Door - Data Collection

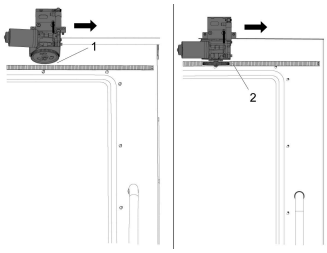
Use the Data Collection tool to collect the motor current data when the doors are opening.

The Data Collection Tool file and How-To procedure is found on the HBC SITE.

Files are found: **Service Tab** > **Documents and Software** > **Control Software** > **Next Generation Control** > **CAN Auto Door & E-Vise**

Note: The machine must have the latest Software, and I/O & AD Firmware. The correct CAN node must be enabled and all troubleshooting done before using the Data Collection tool. Include this data with the Service Notification.

Auto Door - Door Alignment



To align the track to the motor, it is important for the wheel to have full engagement on the track. DO NOT sacrifice door alignment for track alignment. If you are having issues aligning the track, adjust the track itself with the slots in the track clips.

Verify that the gap between the gear and track [1] is equal through the whole travel of the door when the motor is raised.

Verify that the gear is centered to the track [2] when the motor engages the track through the whole travel of the door.

Verify that the gear is perpendicular to the track [2] when the motor engages the track through the whole travel of the door.

NOTE: The illustration shown is from a UMC Auto Door installation.

Autodoor Settings

SETTING	DESCRIPTION	USAGE

131	Auto Door	When this setting is set to **ON** the door closes when **[CYCLE START]** is pressed and opens when the program reaches an **M00, M01 (with Optional Stop turned ON), M02, or M30** and the spindle has stopped turning. **Note:** The Autodoor button Open/Closes the door regardless if setting 131 is set to On/OFF, except if the machine has the HE patch. **Mill:** To use **M80/ M81** Auto Door Open / Close M-codes. Refer to M80 / M81 (Auto Door Open / close M-codes). **Lathe:** To use M85/ M86 Auto Door Open / Close M-codes. Refer to M85 / M86 (Auto Door Open / close M-codes) . **Note:** The M-codes work only while the machine receives a cell-safe signal from a robot or if it has a light curtain installed. For more information refer to Robot Integration Aid - NGC reference document.

NOTE: The following factory settings are listed for reference and they can only be changed by a HFO technician.

FACTORY SETTING	DESCRIPTION	USAGE
2194	Enable Front Door Fully Open Switch	(Single Door) Enables checking of front door fully open switch at end of door sequence, behavior is unaffected otherwise
2195	Enable Right Door Fully Open Switch	(Double Door) Enables checking of right door fully open switch at end of door sequence, behavior is unaffected otherwise
2196	Enable Left Door Fully Open Switch	(Double Door) Enables checking of left door fully open switch at end of door sequence, behavior is unaffected otherwise
9009.001	CAN NODE 9 (LEGACY AUTODOOR)	Enabled when the Legacy CAN Autodoor power supply is installed.
9013.001	CAN NODE 13 (AUTODOOR) ENABLE	Enabled when the Smart CAN Autodoor power supply is installed.

Smart CAN Autodoor Sequences

Note: The following sequence scenarios only apply to the Smart CAN Autodoor.

Open Sequence with Door Fully Open Switch:

1. Engage motors and wait for timeout.
2. Unlock the door wait for timeout.
3. Until Door opening time expires
    - Drive Door at open voltage
    - Drive Door at open current,
        - If CAN node enters protection state due to current of motors exceeding commanded, door sequence will stop
            1. If run via M-Code/Robot/APL there is an alarm
            2. If run via autodoor button there is a message
4. Until settle time expires
    - Drive Door at slow open voltage
    - Drive Door at slow open current
        - When the door hits the endstop the current will rise and CAN Node will enter a protected state
            1. CAN Node will signal main process is done and won't wait until time expires.
5. Wait for timeout.

6. Reverse motors for time.
7. Disengage motors and wait for timeout.
8. If Fully open switches are enabled
    - Check switches
        - If not fully opened
            1. If run via M-Code/Robot/APL there is an alarm
            2. If run via autodoor button there is a message

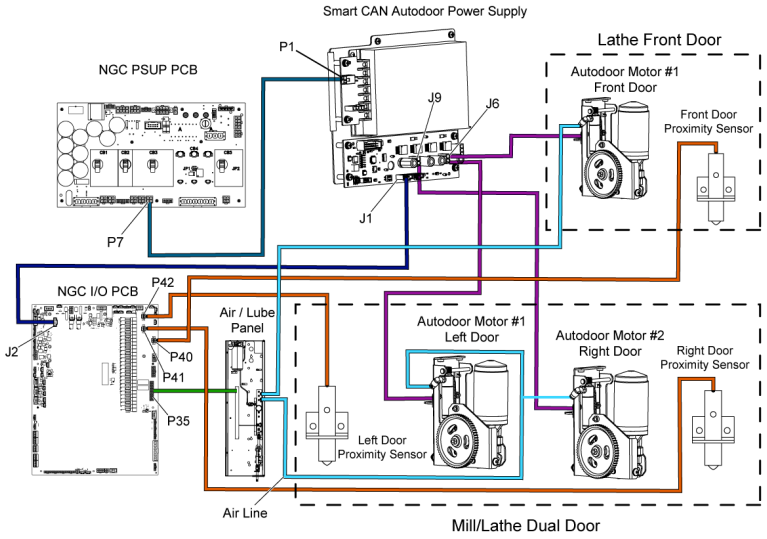
Open Sequence without Door Fully Open Switch:

1. Engage motors and wait for timeout.
2. Unlock the door wait for timeout.
3. Until Door opening time expires
    - Drive Door at open voltage.
    - Drive Door at open current.
        - If CAN node enters protection state due to current of motors exceeding commanded, door sequence will stop
            1. If run via M-Code/Robot/APL there is an alarm
            2. If run via autodoor button there is a message
4. Until settle time expires.
    - Drive Door at slow open voltage.
    - Drive Door at slow open current.
        - When the door hits the endstop the current will rise and CAN Node will enter a protected state
            1. CAN Node will signal main process is done and won't wait until time expires.
5. Wait for timeout.
6. Reverse motors for time.
7. Disengage motors and wait for timeout.

Close Sequence:

1. Engage motors and wait for timeout.
2. Unlock the door wait for timeout.
3. Until Door Close Time expires.
    - Drive door at close speed.
    - Drive door at close current.
        - Software will monitor reported current and if it exceeds limit for longer than max time assume collision and reverse motors.
            1. If run via M-Code/Robot/APL there is an alarm
            2. If run via autodoor button there is a message
        - If firmware detects current over commanded for longer than 250 ms enter safe state and signal Software. Software will assume collision and reverse motors.
            1. If run via M-Code/Robot/APL there is an alarm
            2. If run via autodoor button there is a message
4. If close switch not found
    - If run via M-Code/Robot/APL there is an alarm
    - If run via autodoor button there is a message

Electrical Diagrams

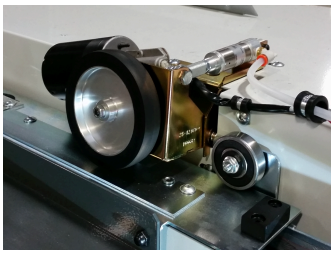


Related Content

- CAN BUS SYSTEMS TSG
- DIAGNOSTIC DATA
- I/O TROUBLESHOOTING
- FIRMWARE UPDATE
- CAN SPINDLE HEAD AND LUBE PANEL TSG
- ROBOT INTEGRATION

8M DC Autodoor - Troubleshooting Guide - NGC

Introduction



The DC Auto Door uses a pneumatic cylinder to push the drive wheel onto the door.

A 12 volt motor drives the wheel CW and CCW to open or close the door.

The machine uses a timer to open the door(s) (**P1404/ P2229,P2230**) and the door closed sensor to stop the motor when closing the door(s).

An internal spring in the cylinder raises the assembly up when the solenoid shuts off.

Symptom Table

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Alarm 548 DOOR M CODES NOT ALLOWED	The machine does not have a cell safe signal or the light curtain is not enabled.	The **Mill M80/M81** and **Lathe M85/M86** M-codes work only while the machine receives a cell-safe signal from a robot or if it has a light curtain installed. For more information refer to Robot Integration Aid - NGC reference document.

Auto Door not engaging, wheel is turning.	There is a problem with the solenoid or contamination in the cylinder.	Troubleshoot the solenoid, inspect the air hose and cylinder.
Auto Door engages but wheels do not turn.	The Door or the DC motors are jammed.	If the DC motors are jammed it will cause the 12VDC power supply to shut down. Verify that the Door or DC motors are not jammed.
	There is a problem with the auto door 12VDC power supply.	Check the AD power supply, 120 VAC input, 12 VDC output. The power output can drop if the power supply senses a large load, this is normal. Check for door jams or binding in the motors.
	There is a problem with the 8M PCB.	Inspect the relays and connections.
	The IO.xml configuration file is not mapped correctly.	This can happen if the auto door was field installed, or after a software update. The IO.xml file may not have the output mapped correctly, call Haas Service.
The door does not fully open.	Chip build up in the door rollers or coolant contamination on the auto door wheel.	Clean the chips away from the door rollers. Clean the coolant from the auto door wheel.
Setting **131 Auto Door** is **On**. When pressing the Auto Door button on the side of the pendant, or when commanding a M80 on MDI. A message **"Feature Disabled"** appears on the screen or alarm **548 DOOR M CODES NOT ALLOWED**.	The parameter **823 [823:] Auto Door Type is set to 0**.	Make sure parameter 823 [823:] Auto Door Type is set correctly: **5 = Single DC Motor Auto Door** **6= Dual DC Motor Auto Door**

Input Voltage Inspection

Corrective Action:

Measure the voltage on the AD power supply [1]. Verify the 120 VAC input and 12 VDC output.

Measure the voltage at P2 on the 8M PCB [2]. Use a multimeter with needle-tip probes. The voltage must be 12 VDC.

Note: Do not measure the voltage with the cable disconnected.

If the voltage is not correct, measure the voltage at P35 for CHC or P18 for NGC on the PDIST PCB. The voltage must be 12 VDC. If the voltage is correct, cable 860 is at fault. If the voltage is not correct, troubleshoot the PDIST PCB.

If the voltages are correct and 12 VDC is going to the motor but it does not rotate, the motor may have failed. The motor should read 6-12 Ohms of resistance.

Relay Inspection

Corrective Action:

Refer to 8M PCB - TROUBLESHOOTING GUIDE

Solenoid

After an auto door is field installed, or after a software update. The IO.xml file may not have the output mapped correctly, call Haas Service.

Auto Door Settings / Parameters

Note: The following parameters ae not to be changed and should only be used as reference

SETTING	DESCRIPTION	USAGE
131	AUTODOOR	This setting enables/disables the auto door

Factory Setting Parameters

PARAMETER	DESCRIPTION	USAGE
1404	AUTO DOOR OPEN HOLD TIME (MS)	(Single Door) This specifies the time that the DC motor is on to open the door.
2229	DC MOTOR LEFT DOOR OPEN TIME	(Double Door) Specifies time for high speed motion of left door.
2230	DC MOTOR RIGHT DOOR OPEN TIME	(Double Door) Specifies time for high speed motion of right door.
2194	Enble Front Door Fully Open Switch	(Single Door) Enables checking of front door fully open switch at end of door sequence, behavior is unaffected otherwise
2195	Enable Right Door Fully Open Switch	(Double Door) Enables checking of right door fully open switch at end of door sequence, behavior is unaffected otherwise
2196	Enable Left Door Full Open Switch	(Double Door) Enables checking of left door fully open switch at end of door sequence, behavior is unaffected otherwise

Configuration Paramters

PARAMETER	DESCRIPTION	USAGE
251	AUTO DOOR OPEN ERROR TIME	This specifies the time allowed for the motor to run to open the door. After this an alarm is generated.
823	AUTO DOOR TYPE	The auto door type (type 5 = single DC motor autodoor, type 6 = dual DC motor auto door)
1405	AUTO DOOR CLOSE HOLD TIME (MS)	This specifies the time that the DC motor remains on after the door closed switch is sensed.
2091	WHEELS CONTACT DELAY	Used to ensure motors are fully engaged with the track before driving the motors.
2092	WHEELS RELEASE DELAY	Used to ensure motors have fully stopped before disengaging motors from track.

Classic Haas Control Parameters

Note: These parameters are only available on a Classic Haas Control with Lathe software version 11.26 or higher.

PARAMETER	DESCRIPTION	USAGE
1406	AUTO DOOR OPEN OUTPUT	The auto door open M-code relay output number.
1407	AUTO DOOR CLOSE OUTPUT	The auto door close M-code relay output number.
1408	AUTO DOOR ENABLE OUTPUT	The auto door engage solenoid output number.
1409	AUTO DOOR OPEN INPUT	This parameter is not used. There is no door open switch, the control looks at parameter 1404 time to open the door.

Autodoor Sequences

Open Sequence with Door Fully Open Switch

1. Turn on the relay to engage friction wheel.
2. Wait for timer P2091.
3. Turn off the door motor close relay; turn on door motor open relay.
4. Wait for door open, (P1404/ P2229, P2230).
5. Turn off door motor open relay.
6. Wait for timer P2092.
7. Turn off friction wheel engage relay.

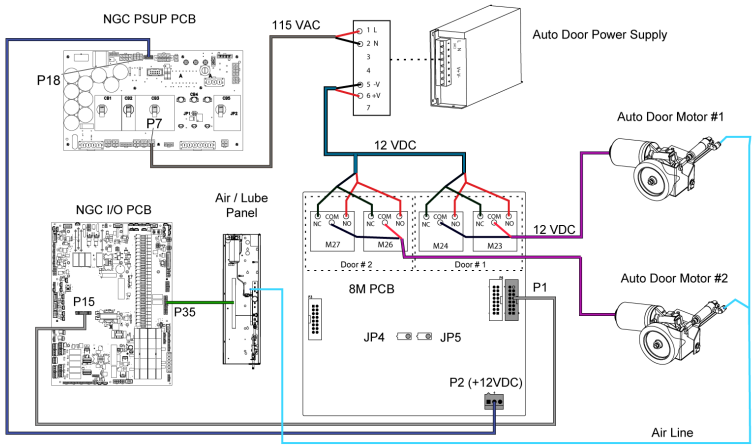
Open Sequence without Door Fully Open Switch

1. Turn on the relay to engage friction wheel.
2. Wait for timer P2091.
3. Turn off the door motor close relay; turn on door motor open relay.
4. Wait for Door Fully Opened switch signal (P2194/ P2195, P2196).
5. If Door Fully Opened switch is not detected before opening time expires (P1404 / P2229,2230), alarm (when open automatically)
6. Turn off door motor open relay.
7. Wait for timer P2092.
8. Turn off friction wheel engage relay.

Close Sequence

1. Turn on friction wheel engage relay.
2. Wait for timer P2091.
3. Turn off door motor open relay; turn on door motor close relay.
4. Wait for door closed switch signal.
5. If door switch is not detected before P251 expires, alarm (when closed automatically)
6. Wait for timer P1405.
7. Turn off door motor close relay.
8. Allow program execution to resume, if applicable.
9. Wait for timer P2092.
10. Turn off friction wheel engage relay.

Electrical Diagrams



Feedback