



## 9 - Chip Conveyor - Lathe

# Chip Removal and Coolant - Service Manual

---

1 - Chip and  
Coolant -  
Introduction

---

2 - Auxiliary  
Coolant Filter

---

3 - Standard  
Flood Coolant

---

4 - Oil Skimmer

---

5 - Programmable  
Coolant

---

6 - Chip Auger

---

7 - Coolant Chiller

---

8 - Chip Conveyor  
- UMC

---

**9 - Chip Conveyor  
- Lathe**

---

10 - Coolant Refill

---

11 - High  
Pressure Flood  
Coolant

---

12 - Through-  
Spindle Coolant

---

13 - Through-Tool  
Air Blast

---

14 - Haas Chip Lift

---

15 - Mist  
Condenser

---

16 - Coolant Level  
Float Sensor

---

9.1 CHIP CONVEYOR - OVERVIEW

9.2 ST SERIES - CHIP CONVEYOR - INSTALLATION

9.3 TL-1/2 CHIP CONVEYOR - INSTALLATION

9.4 CHIP CONVEYOR - MOTOR REPLACEMENT

**9.5 CHIP CONVEYOR SYSTEM - TROUBLESHOOTING**

---

17 - Mini  
Conveyor

---

18 - Coolant VFD

---

19 - Coolant  
Sanitizer

---

20 - Chip  
Separator

---

21 - Chip Tray  
Strainer

---

## 9.1 CHIP CONVEYOR - OVERVIEW

### Chip Conveyor - Overview

---

[Service Minute - Chip Conveyor Tension](#)

[Chip Conveyor Troubleshooting - Haas Service Tip](#)

[Toolroom Lathe Conveyor Installation](#)

## 9.2 ST SERIES - CHIP CONVEYOR - INSTALLATION

### Chip Conveyor - Field Installation - ST Series - NGC

---

**AD0435**

### Chip Conveyor - Introduction

---

To identify a Non-Reboot vs. Reboot machine, follow the link below.

[LATHE VERSION IDENTIFICATION](#)

### Non-Reboot Machine - Chip Conveyor Part Numbers

---

MACHINE	CHIP CONVEYOR KIT
ST-10/10V/10Y/10YV/15/15Y - Built before <b>12/2019</b>	93-1000266
ST-20/20V/20Y/20YV/25/25Y	93-1000160
ST-30/30Y/30YEU/35/35Y	93-1000264
ST-40/45	93-1000262
ST-40L/45L/50/55	93-1000261

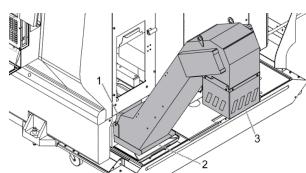
### Reboot Machine - Chip Conveyor Part Numbers

---

MACHINE	CHIP CONVEYOR KIT
ST-10/10Y/15/15Y - Built <b>12/2019</b> and later	93-1000326
ST-20/20Y/25/25Y	93-1000265
ST-30/30Y/35/35Y	93-1000263
ST-40L/45L	93-1001088

### Chip Conveyor - Field Installation - Introduction

---



- 1. Conveyor Trough Cover
- 2. Drip Tray
- 3. Safety Skirt

## Chip Conveyor - Field Installation

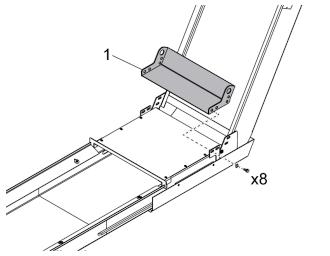
---

1

Download the Conveyor patch file from the Haas Service Portal and install it on the machine.  
Refer to: [PATCH FILE LOAD UNINSTALL - NGC](#).

2

If the machine has a chip tray (ST-10/15) remove it.

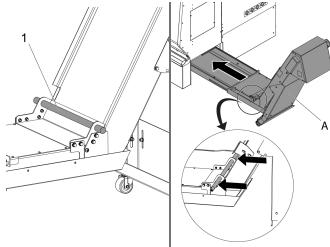


3

Attach the trough cover [1] to the CHIP CONVEYOR.

For a Jorgensen conveyor, install the (8) hex head screws and washers to attach the trough cover and lock the conveyor in the operating position as shown.

For a Hennig conveyor, install the (4) hex head screws and washers to attach the trough cover and lock the conveyor in the operating position.



4

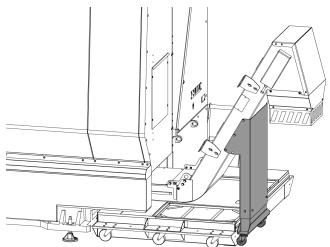
**A Caution:** The conveyor is heavy.

Put a piece of "1" bar stock [1] into the holes in the lifting tabs. Lift the CHIP CONVEYOR [A] with a lift strap on the bar stock and a forklift (not shown).

Raise the conveyor until it is level with lathe chip conveyor pocket.

**Note:** For ST-40/45/40L/45L/50/55 machines with a 95 Gallon Coolant Tank proceed to the next step.

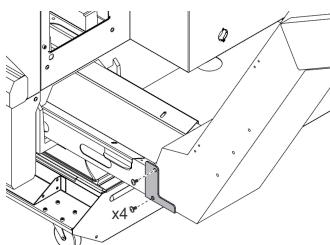
Push on the bar stock to move the conveyor into the machine. This may take (2) or more people.



5

**Note:** This step applies to ST-40/45/40L/45L/50/55 machines with a 95 Gallon Coolant Tank.

- Lower the conveyor legs.
- Push the conveyor in until the conveyor legs almost touches the coolant tank.
- Remove the legs from the conveyor.
- Push the conveyor the rest of the way in.
- To prevent a coolant leak install the bolts back into the tapped holes.

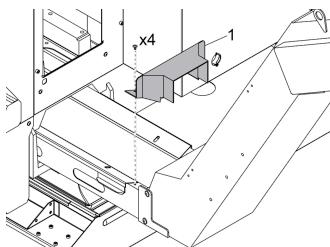


6

**Note:** This step applies to ST-10, ST-20, and ST-30 lathes only.

For a Hennig conveyor, install the (4) 1/4-20 X 1/2" button head cap screws (BHCS) to lock the conveyor in the operating position as shown.

For a Jorgensen conveyor, install the (2) 1/4-20 X 1/2" BHCS to lock the conveyor in the operating position.



7

**Note:** This step applies to ST-10, ST-20, and ST-30 lathes only.

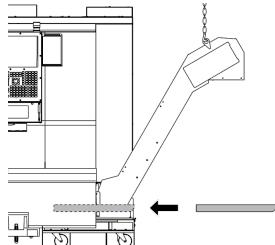
Install the trough cover [1] to the chip conveyor.

**Note:** This step applies to both Hennig and Jorgensen conveyors.

Push the chip conveyor into the lathe.

## Chip Conveyor - Drip Tray - Field Installation

This procedure tells you how to install the chip conveyor drip tray. The chip conveyor drip tray for ST-10, ST-20, and ST-30 is packaged inside the lathe. The ST-40 Non-Reboot and ST-40/45/S/L/Y/SY Reboot drip tray is already installed.



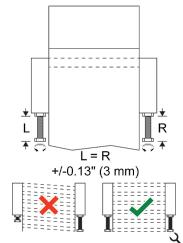
- 1 Lift the chip conveyor.

Slide the drip tray under the chip conveyor to the approximate position shown in the figure.

**Note:** No fasteners are needed to keep the tray in place.

For ST-40/40L models, unfold and lock the leg before operation. The leg height needs to be adjusted so that the casters touch the floor after the machine is leveled.

## Chip Conveyor - Belt Tension



- 1 Open the cover at the head of the conveyor. Look at the belt tension as the belt goes around the sprocket.

Tighten the belt tensioning screws at either side of the conveyor head to adjust the belt drive shaft and remove slack from the belt.

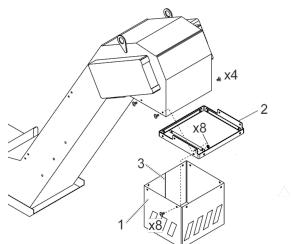
**Note:** Adjust the screws equally to keep the drive shaft perpendicular to belt travel.

While you adjust the belt tensioning screws, push up on the belt with a wrench at the head of the conveyor. Measure the belt slack [1] at the center of the belt in the lift section of the conveyor. The correct belt slack for Jorgensen conveyors is 0.25" - 0.38" (6 - 10 mm). The correct belt slack for Hennig conveyors is 0.12" - 0.25" (3 - 6 mm). Repeat step 2 as needed.

Apply the jam nut on each tensioning screw to lock it in place.

Install the access cover.

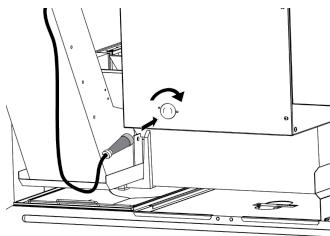
## Chip Conveyor - Safety Skirt - Installation



- 1 Attach the skirt [1] to the bracket [2].

Note: The seam [3] in the skirt faces the conveyor as shown.

Mount the bracket to the conveyor.

**2**

Connect the chip conveyor to power.

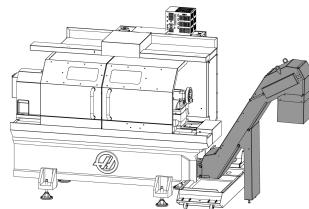
## 9.3 TL-1/2 CHIP CONVEYOR - INSTALLATION

### **TL-1/2 Chip Conveyor - Installation**

**AD0491***Applies to NGC machines built from: January, 2017*

#### **TL-1/2 Chip Conveyor Installation Video**

#### **Introduction**

**1**

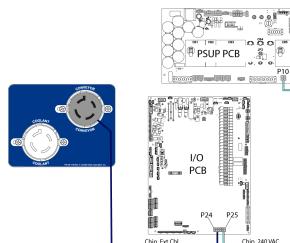
#### **Field Install Kits**

- TL-1 93-1000484
- TL-2 93-1000483

If the chip conveyor is a field install follow the Field Install section below.

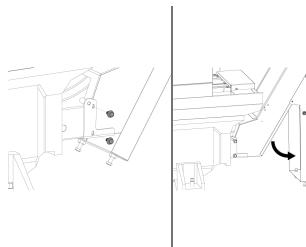
If the machine is a new install with a chip conveyor follow the Machine Install section below.

#### **Field Install**

**1**

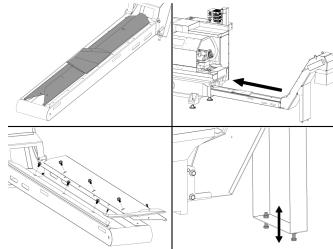
Route the chip conveyor cable from I/O P24, out the bottom of the controller and along the coolant pump cable.

Route the chip conveyor power cable from P10 on the PSUP PCB to P25 on the I/O board.

**2**

Install the lower bracket hardware.

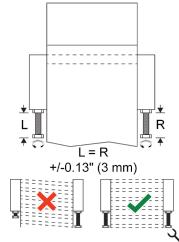
Lower the chip conveyor legs and reinstall the hardware.

**3**

Place the chip conveyor wings on the chip conveyor belt and install the chip conveyor into the base.

Reinstall the chip conveyor wings to the chip conveyor and adjust until there is no gap between the casting and wings.

Adjust the chip conveyor legs until the chip conveyor sits flat in the base casting.

**4**

Open the cover at the head of the conveyor. Look at the belt tension as the belt goes around the sprocket.

Loosen the motor mount hardware and tighten the belt tensioning screws at either side of the conveyor head to adjust the belt drive shaft and remove slack from the belt.

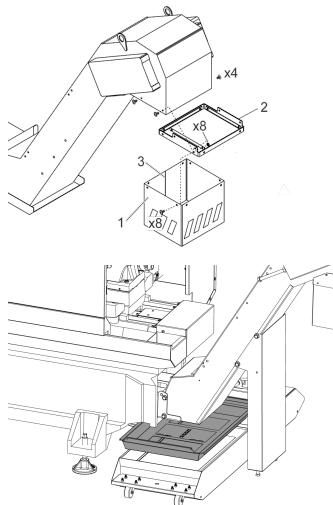
**Note:** Adjust the screws equally to keep the drive shaft perpendicular to belt travel.

While you adjust the belt tensioning screws, push up on the belt with a wrench at the head of the conveyor. Measure the belt slack [1] at the center of the belt in the lift section of the conveyor. The correct belt slack for Jorgensen conveyors is 0.25" - 0.38" (6 - 10 mm). The correct belt slack for Hennig conveyors is 0.12" - 0.25" (3 - 6 mm). Repeat step 2 as needed.

Apply the jam nut on each tensioning screw to lock it in place.

Tighten the motor mount hardware.

Install the access cover.

**5**

Install the chip conveyor skirt[1] to the bracket[2] and install to the chip conveyor.

**Note:** The seam [3] in the skirt faces the conveyor as shown.

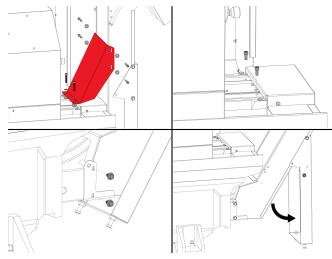
**6**

Install the new coolant tank chip tray.

Plug in the chip conveyor to the plug on the controller support.

## Machine Install

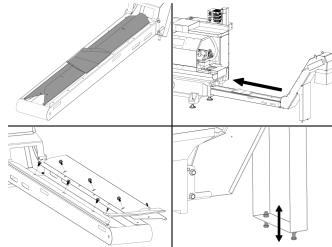
---

**1**

Remove the chip conveyor shipping bracket and install the tailstock stop hardware that is found inside the machine.

Install the lower bracket hardware.

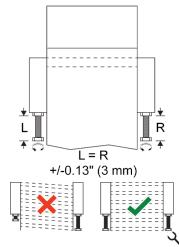
Lower the chip conveyor leg to the extended position.

**2**

Pull the chip conveyor out of the base and place the chip conveyor wings on the chip conveyor belt.

Install the chip conveyor all the way into the base casting and reinstall the chip conveyor wings to the chip conveyor and adjust until there is no gap between the casting and wings.

Adjust the chip conveyor legs until the chip conveyor sits flat in the base casting.

**3**

Open the cover at the head of the conveyor. Look at the belt tension as the belt goes around the sprocket.

Loosen the motor mount hardware and tighten the belt tensioning screws at either side of the conveyor head to adjust the belt drive shaft and remove slack from the belt.

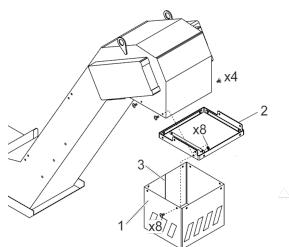
**Note:** Adjust the screws equally to keep the drive shaft perpendicular to belt travel.

While you adjust the belt tensioning screws, push up on the belt with a wrench at the head of the conveyor. Measure the belt slack [1] at the center of the belt in the lift section of the conveyor. The correct belt slack for Jorgensen conveyors is 0.25" - 0.38" (6 - 10 mm). The correct belt slack for Hennig conveyors is 0.12" - 0.25" (3 - 6 mm). Repeat step 2 as needed.

Apply the jam nut on each tensioning screw to lock it in place.

Tighten the motor mount hardware.

Install the access cover.

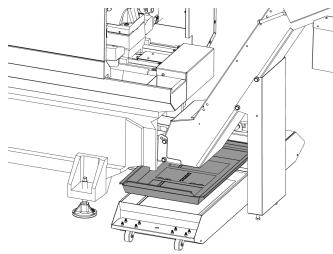
**4**

Install the chip conveyor skirt[1] to the bracket[2] and install to the chip conveyor.

**Note:** The seam [3] in the skirt faces the conveyor as shown.

Install the new coolant tank chip tray.

Plug in the chip conveyor to the plug on the controller support.

**5**

Install the new coolant tank chip tray.

Plug in the chip conveyor to the plug on the controller support.

## Chip Conveyor Activation

---

Turn on the machine.

Login to the [HAAS SERVICE PORTAL](#).

Download the Chip Conveyor option configuration patch files.

**Note:** The option files will appear on the configuration download page after the Chip Conveyor Kit has been ordered. If the option does not appear contact the service department.

Load the option configuration patch file to the control. Refer to the [NEXT GENERATION CONTROL - CONFIGURATION FILE - DOWNLOAD/LOAD](#) procedure.

## Test the Chip Conveyor

---

**1**

Test the chip conveyor by pressing the **[CHIP FWD]**, **[CHIP STOP]**, and **[CHIP REV]** buttons on the control pendant.

## 9.4 CHIP CONVEYOR - MOTOR REPLACEMENT

### Chip Conveyor - Motor - Replacement

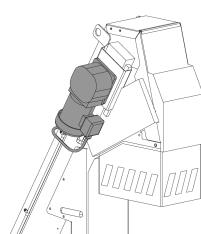
---

**AD0345**

*Applies to machines built from: July, 1998*

## Introduction

---



This procedure tells you how to install and wire a replacement motor for a conveyor. When you receive the replacement motor, the cable for the motor will have one of these circumstances:

- The cable may match your existing electrical cable. In this circumstance, no modification is necessary.
- The cable may not match your existing electrical cable. In this circumstance, you have (2) options:
  - You can bypass the extension cable on the machine and connect the

new motor cable directly to the I/O PCB.

- You can take the cable off of the old motor and install it onto the new one. This procedure shows you how to make that modification.

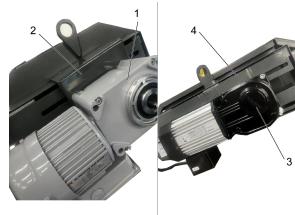
Use P/N **93-1224B** for vertical mills and lathes with 200:1 and above gear ratios.

Use P/N **93-1224C** for vertical mills and lathes with Hennig or Keyarrow Chip Conveyors.

Use P/N **93-2381** for horizontal mills.

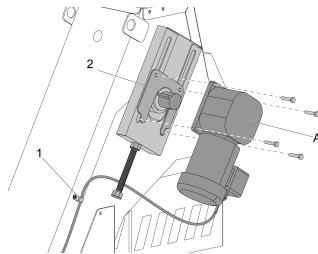
For CDF conveyor motor replacements refer to [AD0642 - CDF CHIP CONVEYOR - MOTOR REPLACEMENT](#).

## Conveyor Motor Brand Differences



**Note:** Keyarrow Conveyors come with Michuen Motors [1] where the mount plate [2] is needed. If the motor being replaced is a Bison Motor [3] on a Keyarrow Conveyor, the mount plate is **NOT** needed [4]. Do not dispose mount plate.

## Motor Replacement



- 1 Remove the cable clamps [1].

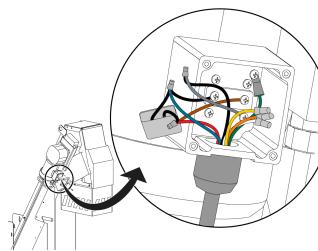
Remove the used motor.

Press the CHIPC MOTOR 1/8HP 235V 50/60HZ [A] onto the conveyor shaft. Align the slot in the motor shaft with the key [2] on the conveyor shaft.

Attach the motor to the conveyor head.

Install the cable clamps [1].

Connect the electrical cable.



- 2

Do this step if you must modify the cable that came with the motor.

Cable Wire	Connect to:
Blue	Capacitor/motor black
Red	Capacitor/motor brown
Black	Motor gray
Green	Ground
Yellow	Cap off - no connection
Orange	Cap off - no connection
White	Cap off - no connection

Power on the machine.

Push **[CHIP FWD]**.

If the motor is wired correctly, the chip conveyor moves forward.

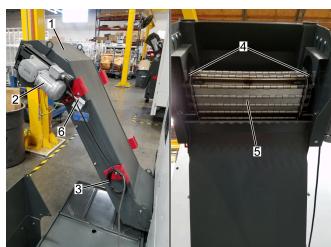
Push **[CHIP REV]**.

If the motor is wired correctly, the chip conveyor moves backward.

## 9.5 CHIP CONVEYOR SYSTEM - TROUBLESHOOTING

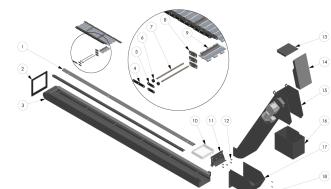
### Conveyor System - Troubleshooting Guide

#### Introduction



1. Conveyor
2. Drive Motor
3. Power Cord
4. Conveyor Drive Shaft /Sprockets
5. Belt
6. Belt Tensioning Screws

#### Exploded View



1. CONVEYOR TROUGH COVER
2. GASKET
3. CONVEYOR TROUGH
4. DOUBLE CHAIN LINK OUTER
5. SINGLE CHAIN LINK OUTER
6. CHAIN SPACER
7. BELT PIN
8. CHAIN LINK INNER
9. BELT PLATE
10. CONVEYOR TUNNEL INSERT
11. CONVEYOR BRACKET
12. HHB 5/16-18 X 1
13. CONVEYOR RAMP COVER TOP

- 14. CONVEYOR RAMP COVER SIDE
- 15. CONVEYOR RAMP
- 16. CONVEYOR CHUTE
- 17. CONVEYOR TROUGH EXTENSION
- 18. BHCS 5/16-18 X 1 SS

## Symptom Table

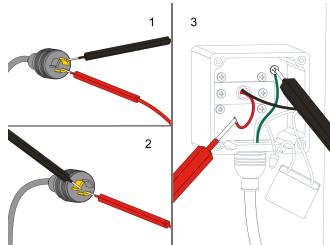
---

 **NOTE: TO RECEIVE THE CORRECT TECHNICAL SUPPORT ON YOUR CONVEYOR, IT IS REQUIRED TO TAKE A CLEARLY VISABLE PHOTO OF THE CONVEYOR NAME PLATE AND THE MOTOR SEPCIFICATION PLATE.**

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
The conveyor does not start.	The circuit breaker is tripped.	Check for a short circuit in the motor or the cable. Refer to the <b>Motor Cable Inspection</b> section.
	No power from I/O PCB to the motor.	Verify voltage at I/O PCB and the motor.
	Blown fuses (I/O-version R and earlier).	Check the fuses on the I/O PCB.
	The conveyor motor capacitor is defective.	Inspect motor capacitor for damage.
<b>For CDF Conveyor Only:</b> The 230V system does not turn ON and the red LED on the motor drive PCB is OFF.	The jumper on the motor drive PCB is incorrectly located or defective.	Make sure that the motor drive PCB has a jumper installed on P3 inbetween pin 1 and 2 (the bottom two pins).
	There is no 12V input power.	Make sure that the 12V input power is connected to P2 on the motor drive PCB.
Conveyor is noisy or oscillates between forward and reverse.	There is a build up of chips.	Clear excessive chips and any obstructions.
	The conveyor belt is damaged.	Inspect conveyor belt and repair or replace.
	The conveyor belt tension is incorrect.	Adjust the belt tension.
The auger is noisy or oscillates between forward and reverse. Then <b>Alarm 9906 CHIP CONVEYOR MALFUNCTION</b> is generated.	There is an excessive chip build-up or an obstruction.	Clear all chips and obstructions from the auger trough and chip chute.
<b>Alarm 9906 CHIP CONVEYOR MALFUNCTION</b>	The auger motor is bound up.	The machine is detecting an overcurrent condition. Check the discrete input CHIP_CONVEYOR_OVERCURRENT cycles from 0 - 1 or 1 - 0 (0 means overload condition). Check the motor for burnout or binding.
		Run the Chip Conveyor Overcurrent Data Collection, refer to the <a href="#">Diagnostic Data Collection</a> procedure for how to run the data collection.
Chip Auger, Conveyor, may start without operator action, even with doors open.	Machine has software 100.17.000.1016	Update software to 100.17.000.2030 or greater. This problem has been corrected such that the conveyor never restarts automatically. With a Classic Haas Control, the operator can restart the conveyor with the door open. NGC machines that have been updated after October 10th, 2018 will have strict door rules that makes this impossible.
M31 is restarting conveyor timers if the conveyor is already on.	Machine has software prior to 100.17.000.2030 and the conveyor cycle keeps restarting every time a M31 is encountered.	Update software to 100.17.000.2030 or greater. In the new software if a conveyor cycle is already running but in the off state, a M31 will NOT restart the conveyor. The conveyor will follow the cycle it is currently in.
<b>Alarm 9819 CHIP CONVEYOR SHORT CIRCUIT</b>	The auger motor start capacitor is at fault.	Inspect the auger motor start capacitor for damage.

<b>Alarm 9848 CHIP CONVEYOR MOTOR DISCONNECTED</b>	There is no power from the I/O PCB to the motor.	Verify the voltage at the I/O PCB and at the motor.
CDF Conveyor runs backwards when commanded to run forward	Motor wiring is incorrect.	Verify the motor wiring, use the wiring diagrams in the <b>CDF Motor Wiring</b> Section for reference.

## Motor Cable Inspection



### Corrective Action:

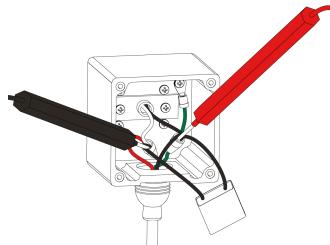
Inspect the motor cable for any sign of damage. Check for burn marks at the plug. This could be caused by coolant contamination.

Measure the Ohms across the motor power cable leads [1] at the plug. There should be resistance leg to leg. An open reading suggests a bad motor or cable.

Measure the Ohms on the motor power cable from each power leg to the ground leg [2] of the plug. This reading should be open.

If cable shows a short leg to ground at the plug, disconnect the power cable at the motor and check each motor power lead to the motor chassis [3]. If reading is open, the cable is at fault. If any lead tests short, the motor is shorted.

## Voltage



### Corrective Action:

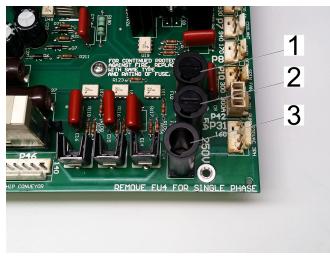
Find the chip conveyor motor cable 140 at the I/O PCB. Press **[CHIP FWD]**. Use a multimeter with needle tip probes to measure the voltage between the black and red wires on the cable.

Have someone press and hold **[CHIP REV]**. Measure the voltage between the black and white wires. When the I/O PCB operates correctly, each voltage reading is 240 VAC.

If the voltage at the I/O PCB is correct, open the conveyor motor junction box. Use a multimeter with needle tip probes to check for voltage on the power leads at the motor.

If there is no voltage, check the motor and the cable. If there is voltage, check the capacitor. If you verify the voltage and capacitor are correct, inspect the motor drive shaft and keyway.

## Fuses

**Corrective Action:**

Check these fuses at the bottom right corner of the I/O PCB (Fuse type: AGC 5 amp):

- Single phase motors: FU2 [1] /FU3 [2]. There should be no fuse in FU4 [3].
- 3 phase motors: FU2 [1] /FU3 [2] /FU4 [3]

A short in the motor or the cable could have blown the fuse

## Capacitor

**Corrective Action:**

Inspect the conveyor motor capacitor for damage. A damaged capacitor will usually have signs of deformation or bubbling on the capacitor casing. This could be caused by a short in the motor or in the cable.

Open the motor junction box. Check the capacitor. Look for burn marks on the case.

Measure the capacitor. Most multimeters can measure capacitance upon manual activation (turn to the correct units of measurement, and push the yellow button). It should be 6 or 9 microfarad as noted on the capacitor's case.

## Chips

**Corrective Action:**

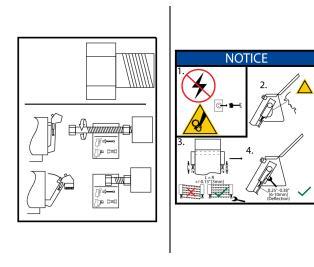
Clear chips and obstructions. Make sure the conveyor settings are optimized for the chips that are produced.

## Belt Inspection

**Corrective Action:**

Inspect the conveyor belt for damage.

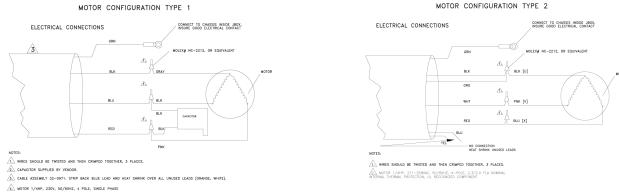
## Belt Tension

**Corrective Action:**

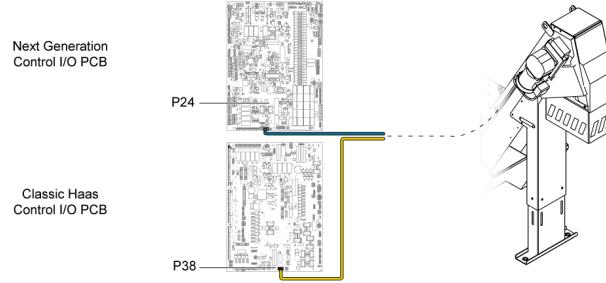
Make sure the belt tension is correct. Refer to the decals on the side of the machine. The correct belt slack for Jorgensen conveyors is 0.25" - 0.38" (6 - 10 mm). The correct belt slack for Hennig conveyors is 0.12" - 0.25" (3 - 6 mm).

## CDF Motor Wiring

Run the conveyor by pressing [**CHIP FWD**] if the conveyor runs backwards please check the motor wiring and verify it is wired correctly. Use the wiring diagrams below for reference.



## Electrical Diagram



**Hennig CDF Conveyor Diagram**

