This procedure tells you how to install the I/O PCB revision-AC. Revision-AC started in June, 2010. Revision AC is compatible with these lower versions: S thru AB.

The machine has “Smart” alarm functions if you have these software versions or higher: mill 17.04 or lathe 10.04.
Caution: When you do maintenance or repair on CNC machines and their components, you must always follow basic safety precautions. This decreases the risk of injury and mechanical damage.

Do these steps before you do work in the machine or in the control cabinet:

- Set the main circuit breaker to the [OFF] position.
- Use an approved lock with an approved safety tag. Always follow lock-out procedures in accordance to local government rules.
- After turning off the machine, wait at least 5 minutes before working in the control cabinet, to allow power to dissipate. Wait for the voltage indicator LED on the vector drive to go off completely.
- Always turn off the main air supply when you work on any part of the pneumatic system.
- Make sure to rest the spindle head on a block of wood when work is done on a vertical axis. This will prevent any unintended movement that could result in the axis falling.
- Never alter any safety circuits on the machine.
- Never change any parameter while in DEBUG mode (Classic Haas Control) and the servos ON. Put the machine in Emergency Stop mode to change any parameters.
- Never operate the machine in DEBUG mode (Classic Haas Control).

You should not do machine repair or service procedures unless you are qualified and knowledgeable about the processes. Serious damage to the machine components can result in costly repairs. The service technicians at your Haas Factory Outlet (HFO) have the training and experience, and are certified to do these tasks safely and correctly. The repair and service work performed by your HFO is protected with a limited warranty.

Danger: Some service procedures can be dangerous or life-threatening. DO NOT attempt a procedure that you do not fully understand. If you have any doubts about doing a procedure contact your Haas Factory Outlet (HFO) and schedule a service visit.
Parts Included

KIT PN: 93-0619F, I/O PCB AC CCA. QTY: 1

[A] 34-3283C QTY: 1
I/O PCB, REV AC

[B] 33-0807 QTY: 1
CABLE, JUMPER WORKLIGHT I/O PCB

[C] 33-0819A QTY: 1
CABLE, JUMPER BRUSHLESS ROTARY POWER CONTROL

[D] 33-8668A QTY: 1
CABLE, JUMPER 890 HD STATUS I/O PCB

[E] 75-15602 QTY: 8
JUMPER, SHORTING BLOCK - 2 POLE

[F] 33-8626A QTY: 1
CABLE, JUMPER BRUSHLESS ROTARY POWER CONTROL

[G] 33-0815B QTY: 1
CABLE, SMTC BRAKE RESISTOR

[H] 33-0607A QTY: 1
CABLE, PROBE I/F VQCPS ADAPTER

[I] 33-0613A QTY: 1
CABLE, PROBE I/F WIPS ADAPTER

[J] 33-0318 QTY: 1
CABLE, SMTC REGEN RESISTOR

[K] 83-3036 QTY: 1
REGEN, RESISTOR 100 OHM TOLERANCE 10% 50 WATT

Tools Required

ESD Strap

Digital Multimeter
STEP 1

Push [POWER OFF]. Set the main circuit breaker to the OFF position. Lock the main circuit breaker. Use an approved lock with an approved safety tag.

**Danger:** When the machine is off, wait at least 5 minutes before you work in the electrical cabinet. This lets power dissipate from the machine. When the voltage indicator LED on the vector drive goes off completely, it is safe to work in the electrical cabinet.

**Caution:** When you touch a PCB that is not grounded, you must put on an Electrostatic Discharge (ESD) strap.

Remove or open the I/O PCB cover.

Record the I/O PCB version letter from the board.

Make sure all cable connections have the correct labels. Record the position of the push-on jumpers on the I/O PCB. Disconnect all cables.

Remove the I/O PCB. Put the removed I/O PCB in the bag from the replacement I/O PCB.
Do each set of instructions that is applicable to your machine:

**All machines:**
Install the new I/O PCB [A]. Connect the cables and jumpers that you disconnected from the original I/O PCB.

Make sure a JUMPER [E] is connected to these locations: P6, P7, P72, P81 [2], P20 [13], P9, P89 [11], P48 and P50 [12].

The new I/O PCB comes with a jumper installed at P57. If you have a cable that connects to P57 [6], move the jumper [6] to P87 [7]. If the original cable that connects to P57 [6] is too short, use the longer CABLE [G] that came with the new I/O PCB.

**EC series machines:**
Make sure that the CABLE [J] connects an isolated regen resistor to R310 [1]. Polarity is not effected. Connect the RESISTOR [K] to the left of the vector drive or on the I/O PCB cover.

**Chip augers and conveyors:**
Set your meter to Ohm. Measure test points between TP6 and TP7 at position R122 [4]. Turn the small screw on the potentiometer to adjust the current for the auger or conveyor:
- Adjust the overcurrent to 3 kOhm +/-100 Ohm for augers and conveyors.
- Adjust the overcurrent to 4.5 kOhm +/-100 Ohm for lathe chip conveyors.

**Probes:**
If a cable was connected to P77 [8] on the removed I/O PCB, use the part number of the cable to find the replacement:
- 33-0615; use ADAPTER [I] for probe system WIPS
- 33-0617; use ADAPTER [H] for probe system VQCPS / MIPS
- 33-0618; use ADAPTER [H or I] for probe system PROMAC

**For LPRO-R:** Connect cable 33-0619 to P77. If you replaced an I/O PCB that is version AB or lower, remove cable 33-0333 and install cable 33-0619. Each cable is included in the LPRO-R kit.

**Lathes:**
Connect the JUMPER [C] to P15 [9].

**HS-1/2 RP:**
Remove cable 810B and install CABLE [F]. This cable connects from P57 [6] on the I/O PCB to the HOPT PCB.
## STEP 3

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the removed I/O PCB was Revision S or T:</td>
<td>Set the JUMPERS [E] at J1 [3] to MILL position (for all models).</td>
</tr>
<tr>
<td></td>
<td>Make sure a jumper is connected at J2 [5].</td>
</tr>
<tr>
<td>If the removed I/O PCB was Revision U through AC:</td>
<td>Set the JUMPERS [C] at J1 [3] and J2 [5] to the same position as on the removed board.</td>
</tr>
<tr>
<td>If the removed I/O PCB was Revision S through Y:</td>
<td>Install JUMPER [B] at P83 [10].</td>
</tr>
<tr>
<td>If the removed I/O PCB was Revision W through AC:</td>
<td>Install JUMPER [B] at P83 [10], unless a cable is connected in that position.</td>
</tr>
</tbody>
</table>

## STEP 4

**Do this step to make sure the I/O-PCB operates correctly.**

- **Set the main circuit breaker to the ON position. Push [POWER ON].**
- Push [POWER UP/RESTART].

**Note:** If the beacon light, worklight, or high-intensity light do not operate, make sure that a jumper or cable is installed at P83 [10].

- Make sure that Parameter 209:23 MCD RLY BRD is set to 1. If the parameter shows “RESERVED” or “UNUSED”, do not adjust this parameter.
- Make sure that Parameter 57:10 PH LOSS DET is set to 0. If the parameter shows “RESERVED” or “UNUSED”, do not adjust this parameter.

## STEP 5

**Do this step if you have an auger or chip conveyor.**

Operate the auger or chip conveyor.

1. If the motor will not turn forward continuously, measure the test points between TP6 and TP7 at position R122 [4] on the I/O PCB. Turn the small screw on the potentiometer to adjust the resistance a maximum of 1 kOhm.
2. Block the auger or belt with a piece of wood. Make sure that the motor pauses before it changes direction.

**Note:** The belt-style conveyor possibly will not change direction, but it will pause. This is normal operation.

3. If the auger or belt will not pause, adjust the resistance at R122 [4] a maximum of 1 kOhm.

## Conclusion

Operate the spindle, tool changer, coolant, TSC, P-cool spigot, Emergency Stop, beacon, operator door, and all optional systems. Make sure that all machine parts and systems operate correctly. If the Side-Mount Tool Changer operates slowly, cycle the power.