

How to properly convert the power unit input voltage for the Bulldog QT E and Bison E units.



BULLDOG MODELS

- QT E
(809E.xxxx.xxx)

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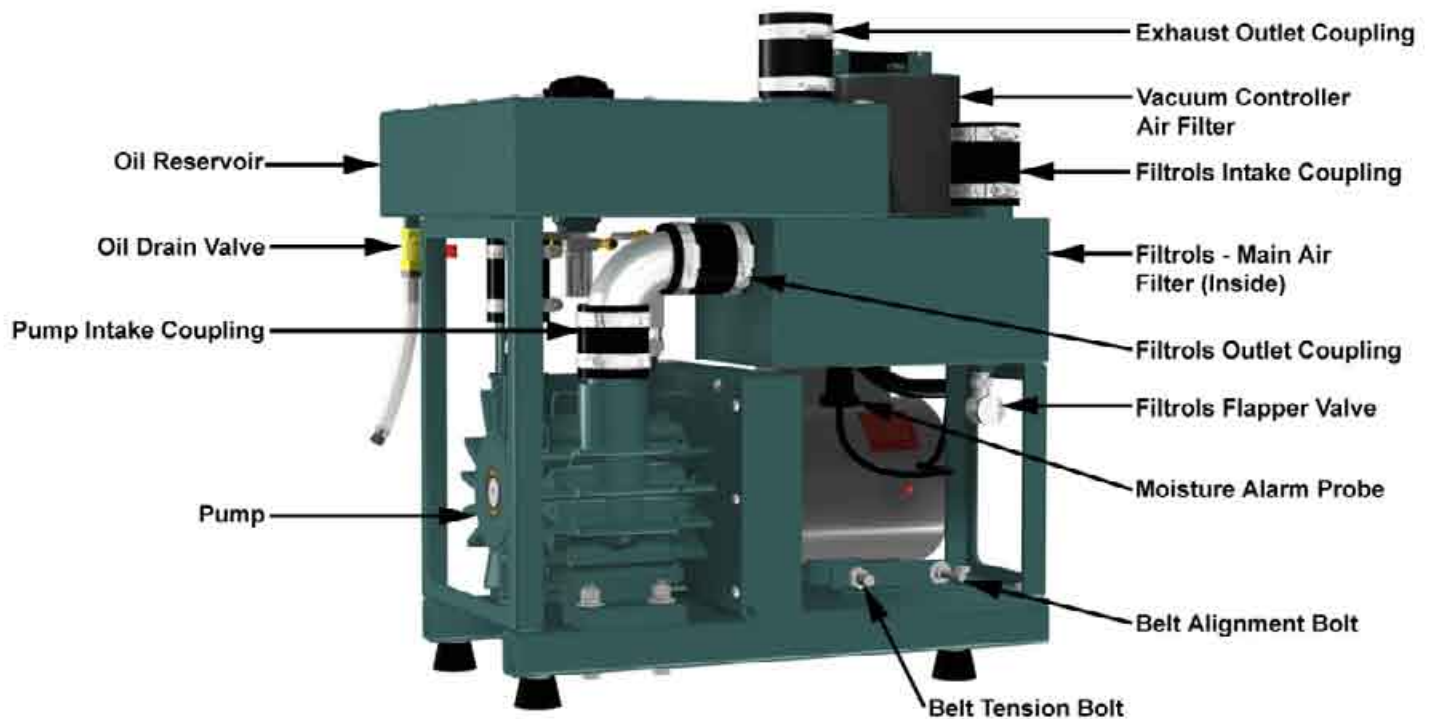
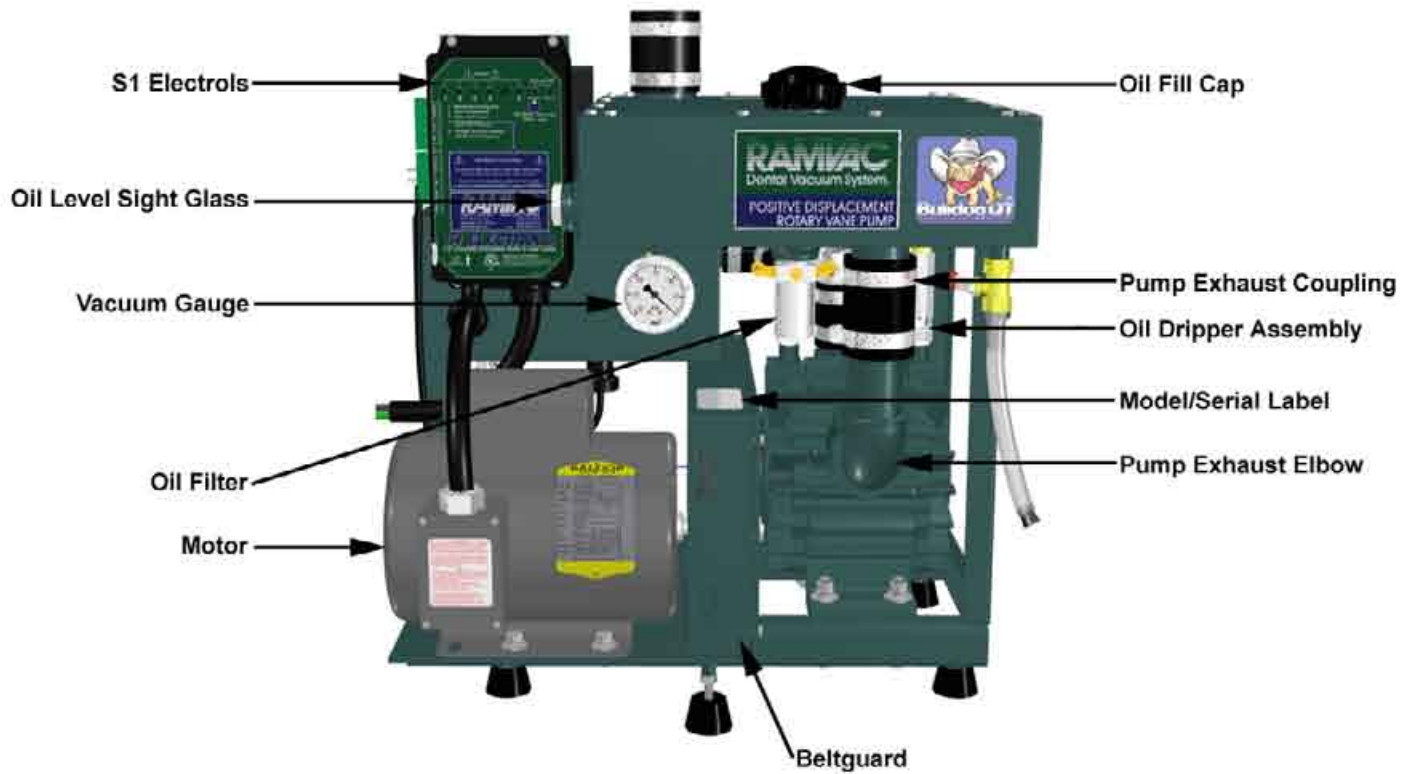
BISON MODELS

- BISON E
(818E.xxxx.xxx)
(826E.xxxx.xxx)

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BULLDOG

Bulldog Models Important Features



BULLDOG

115 Volt to 230 Volt Conversion

How to convert a Bulldog QT E 115 volt unit to a Bulldog QT E 230 volt unit.

1. Secure disconnect.
2. If Handy Box is present, remove according to "Handy Box Removal" procedure.
3. Remove cover from motor junction box.
Note: Wire nut and tape all connections.
4. Rewire motor.
 - a. Connect one power wire to motor lead #4.
 - b. Connect one power wire to motor leads #1 and #8.
 - c. Connect motor leads #2, #3, and #5 together.
 - d. Connect ground wire to motor ground screw.
 - e. Wire nut and isolate lead "J".
5. Reconfigure S1 Electrols:
 - a. Remove four cover screws.
 - b. Remove cover and place it on top of the S1 Electrols. Leave ribbon cable attached.
 - c. Using needle-nose pliers, carefully move power jumper to "230V" position.
 - d. Re-install cover.

Warning: If labels are not available, use a permanent marker to record the change in voltage.

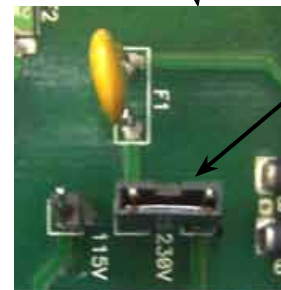
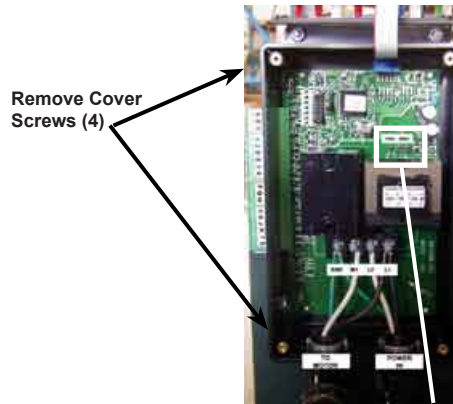
6. Apply labels:
 - a. Place new "VOID" sticker over broken "VOID" Sticker on Electrols cover.
 - b. Motor junction box: Remove 115 volt label and place 230 volt label on junction box.
 - c. Motor body: Remove 115 volt label and place 230 volt label.
 - d. S1 Electrols: Remove 115 volt label and place 230 volt label.

Bulldog Motor



Motor junction Box

S1 Electrols Internal Components



BULLDOG

230 Volt to 115 Volt Conversion

How to convert a Bulldog QT E 230 volt unit to a Bulldog QT E 115 volt unit.

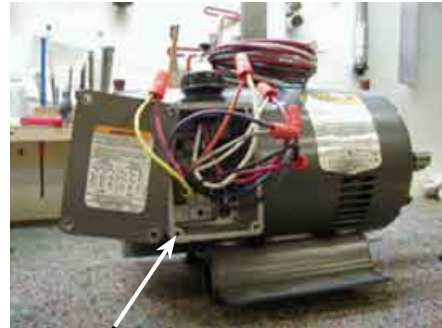
1. Secure Disconnect.
2. Remove cover from motor junction box.
Note: Wire nut and tape all connections.
3. Rewire Motor:
 - a. Connect one power wire to motor lead #4.
 - b. Connect one power wire to motor leads #1, #3, and #8.
 - c. Connect motor leads #2, #5, and #J together.
 - d. Connect ground wire to motor ground screw.
4. Reconfigure S1 Electrols:
 - a. Remove four cover screws.
 - b. Remove cover and place it on top of the S1 Electrols. Leave ribbon cable attached.
 - c. Using needle-nose pliers, carefully move power jumper to "115V" position.
 - d. Re-install cover.

Warning: If labels are not available, use a permanent marker to record the change in voltage.

5. Apply labels:
 - a. Place new "VOID" sticker over broken "VOID" Sticker on Electrols cover.
 - b. Motor junction box: Remove 230 volt label and place 115 volt label.
 - c. Motor body: Remove 230 volt label and place 115 volt label.
 - d. S1 Electrol: Remove 230 volt label and place 115 volt label.

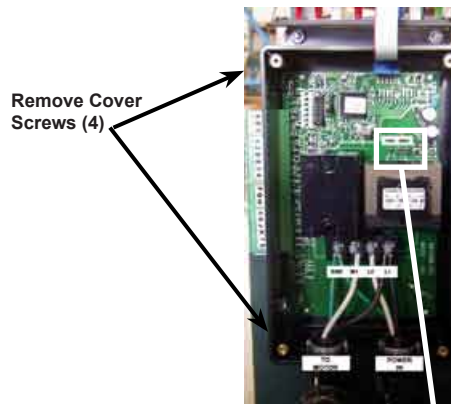
Note: If making a display unit see "Handy Box Installation" procedure.

Bulldog Motor

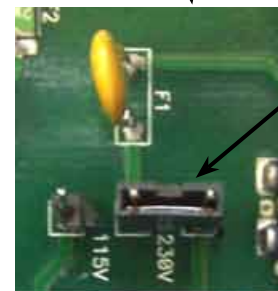


Motor Junction Box

S1 Electrols Internal Components



Remove Cover Screws (4)

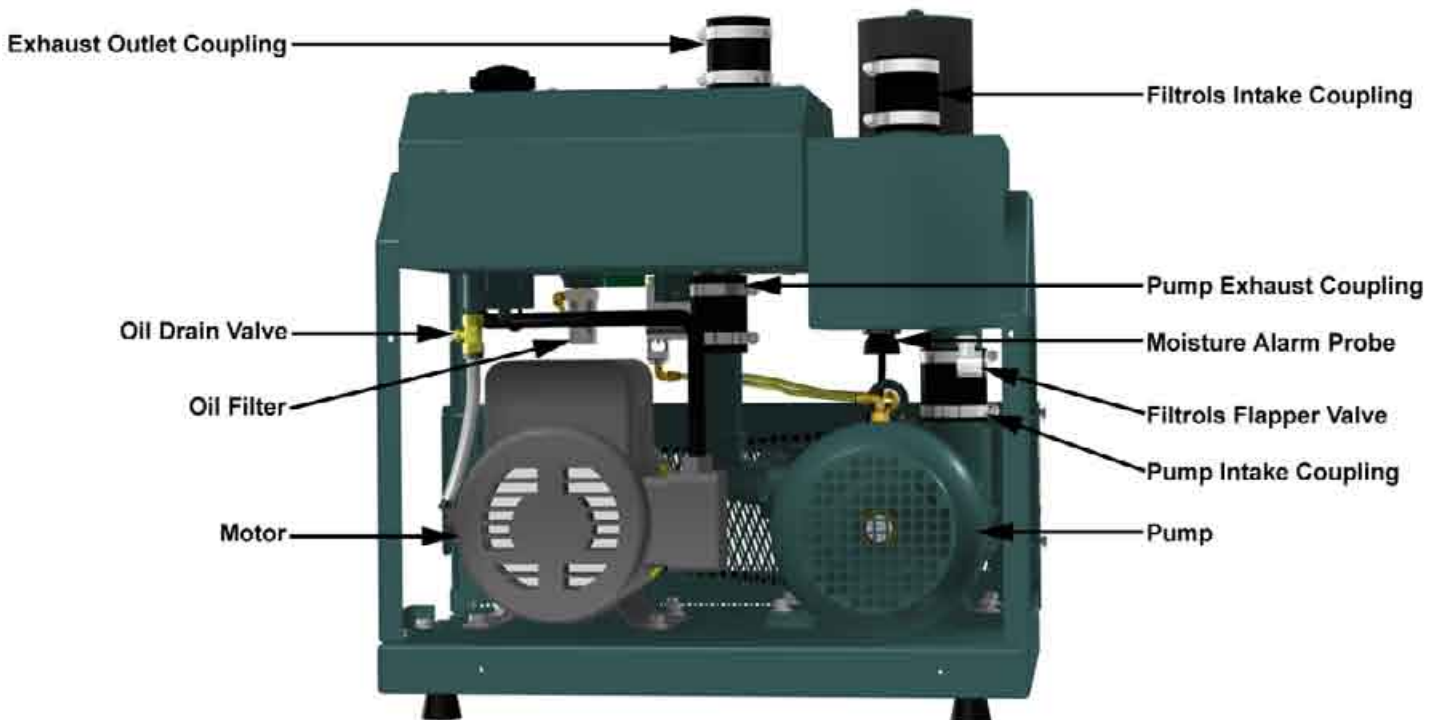


Power Jumper

NOTES

BISON

Bison Models Important Features



3 Phase, 230 Volt to 460 Volt Conversion

How to convert a Bison E, 3 phase 230 volt unit to a Bison E, 3 phase 460 volt unit.

1. Secure Disconnect.

Note location and orientation of power source motor wires for proper installation.

2. Remove 230 volt motor starter box.
 - a. Disconnect power wires L1, L2, L3, and GND. Remove cord grip and wires from motor starter box.
 - b. Disconnect control wires C1, C2, C3 and motor wires 2T1, 4T2, 6T3 and motor ground. Remove cord grip(s) and wires from motor starter box.
3. Remove 230 volt motor starter box.
4. Install 460 volt motor starter box.
 - a. Install cord grip and power source wires into top knockout on motor starter box.
 - b. Connect power wires to L1, L2, L3 and GND
5. Install cord grip(s), motor wires and motor control wires into bottom knockout(s) on motor starter box.
6. Connect motor wires to 2T1, 4T2, 6T3 and motor ground.
7. Connect wires C1, C2, C3, and GND to appropriate terminals.

Note: Wire nut and tape all connections.

8. Rewire motor:
 - a. Remove cover from motor junction box.
 - b. Wire motor for 460 volts according to the wiring label on the motor junction box.

Warning: If labels are not available, use a permanent marker to record the change in voltage.

9. Apply labels:
 - a. Motor junction box: Remove 230 volt label and place 460 volt label on junction box.
 - b. Motor Body: Remove 230 volt label and place 460 volt label on top of motor.

10. Perform "3 Phase Motor Start-up" procedure.

3 Phase Motor Starter

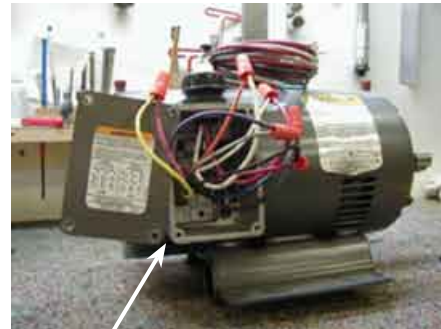
Note: Motor Starters have several variations

Power Source Wires L1, L2, L3, GND



Motor Control Wires C1, C2, C3, GND and Motor Wires 2T1, 4T2, 6T3, Motor Ground

Motor



Motor Junction Box

BISON

3 Phase, 460 Volt to 230 Volt Conversion

How to convert a Bison E, 3 phase 460 volt unit to a Bison E, 3 phase 230 volt unit.

1. Secure Disconnect.

Note location and orientation of power source wires and motor wires for proper installation.

2. Remove 460 volt starter box.
 - a. Disconnect power wires L1, L2, L3, and GND. Remove cord grip and wires from motor starter box.
 - b. Disconnect control wires C1, C2, C3 and motor wires 2T1, 4T2, 6T3 and motor ground. Remove cord grip(s) and wires from motor starter box.
3. Remove 460 volt motor starter box.
4. Install 230 volt motor starter box.
 - a. Install cord grip and power source wires into top knockout on motor starter box.
 - b. Connect power wires to L1, L2, L3 and GND
5. Install cord grip(s), motor wires, and motor control wires into bottom knockout(s) on motor starter box.
6. Connect motor wires to 2T1, 4T2, 6T3 and motor ground.
7. Connect motor control wires C1, C2, C3, and GND to appropriate terminals.

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3 Phase Motor Starter

Note: Motor Starters have several variations

**Power Source Wires L1, L2,
L3, GND**



**Motor Control Wires C1, C2, C3, GND
and Motor Wires 2T1, 4T2, 6T3, Motor
Ground**

3 Phase, 460V to 230V Conversion

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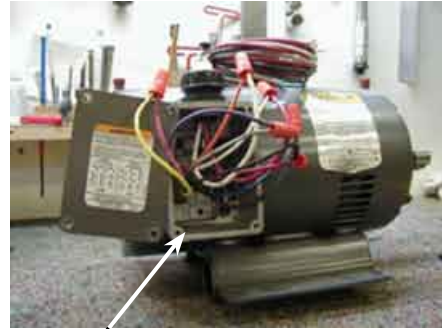
Note: Wire nut and tape all connections.

8. Rewire motor:
 - a. Remove cover from motor junction box.
 - b. Wire motor for 230 volts according to wiring label on motor junction box.
9. Verify configuration of S1 Electrols:
 - a. Remove four cover screws.
 - b. Remove cover and place it on top of the S1 Electrols. Leave ribbon cable attached.
 - c. Verify the power jumper is in "230V" position. If necessary, using needle-nose pliers, carefully, move power jumper from "115V" to "230V" position.
 - d. Re-install cover.

Warning: If labels are not available, use a permanent marker to record the change in voltage.

10. Apply labels:
 - a. Place new "VOID" sticker over broken "VOID" Sticker on S1 Electrols cover.
 - b. Motor junction box: Remove 460 volt label and place 230 volt label on junction box.
 - c. Motor Body: Remove 460 volt label and place 230 volt label on top of motor.
11. Perform "3 Phase Motor Start-up" procedure.

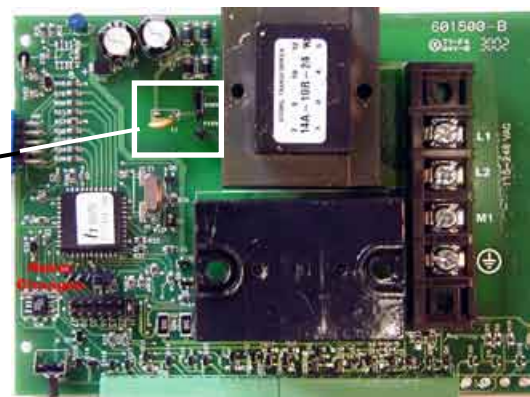
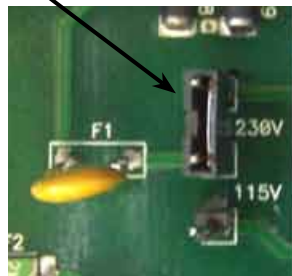
Motor



Motor Junction Box

Bison S-1 Electrols

Power Jumper



HANDY BOX

Handy Box Removal

How to remove and return a handy box from display unit.

1. Unplug power cord from electrical outlet.
2. Remove cover of handy box attached to power cord.
3. Remove tape and wire nuts and disconnect wires.
4. Loosen vacuum unit end conduit fitting nut (not the cord grip) from handy box.
5. Remove power wires and conduit fitting. Place nut back onto conduit fitting.
6. Replace handy box cover and return handy box and cord with plug to RAMVAC.

Handy Box



Remove screws and front cover.

To Outlet. Do NOT remove this fitting.



Use conduit fitting nut to install or remove power wires and conduit.

To Vacuum Unit.

Handy Box Installation

How to install a handy box to use on a unit for display.

1. Order handy box and cord from RAMVAC.
2. Remove cover of handy box.
3. Insert power wires and conduit fitting into handy box. Install conduit fitting nut and tighten.
4. Connect ground wire (green w/ yellow stripe) to ground screw and tighten.
5. Connect power wires to power unit wires. Wire nut and tape.
6. Replace handy box cover.
7. Wire tie handy box to back left leg of vacuum unit.

THREE PHASE MOTOR START-UP

3 Phase Motor Start-up

How to properly start a 3 phase unit the first time or after changes to motor, motor starter or Electrols.

1. Turn power on at disconnect.

Caution: Pump has 50% chance of rotating backwards.

DO NOT ALLOW debris to enter pump.

2. Check for correct pump rotation:

a. **Standard Models:**

- i. Loosen Filtrals intake coupling and remove line.
- ii. Place hand by Filtrals intake to determine airflow.

b. **Bulldog and Bison Models:**

- i. Remove vacuum controller and main air filter from power unit.
- ii. Place hand in Filtrals close to pump inlet to determine airflow.

3. Run vacuum unit long enough to determine airflow direction, then turn pump off.

a. If air blows out of inlet pipe:

- i. Reverse any two motor wires on motor overload.
- ii. Repeat step 3.

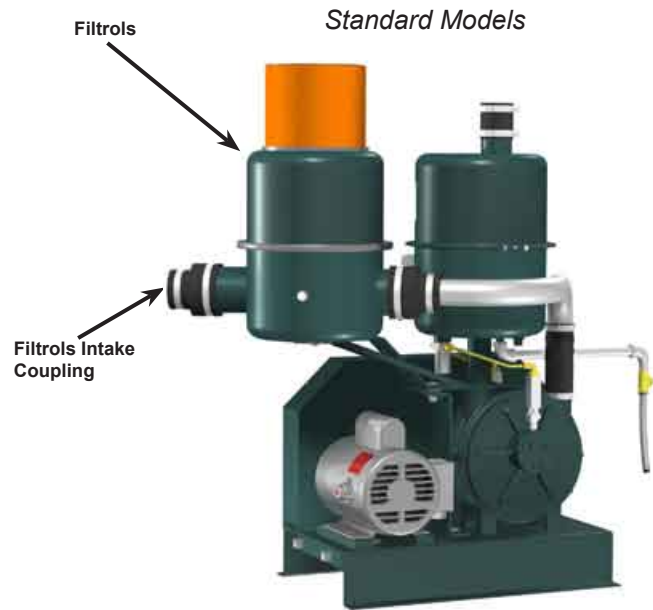
b. If air sucks into inlet pipe:

- i. Clean any oil or debris out of Filtrals.

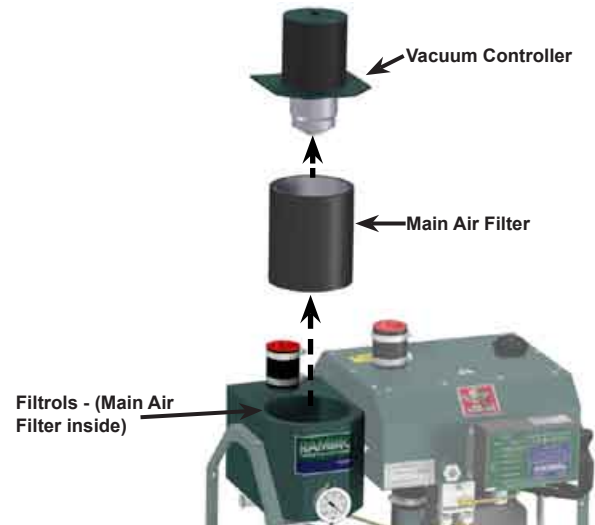
4. Complete 3 phase motor start-up

a. **Standard Models:** Re-install Filtrals inlet line

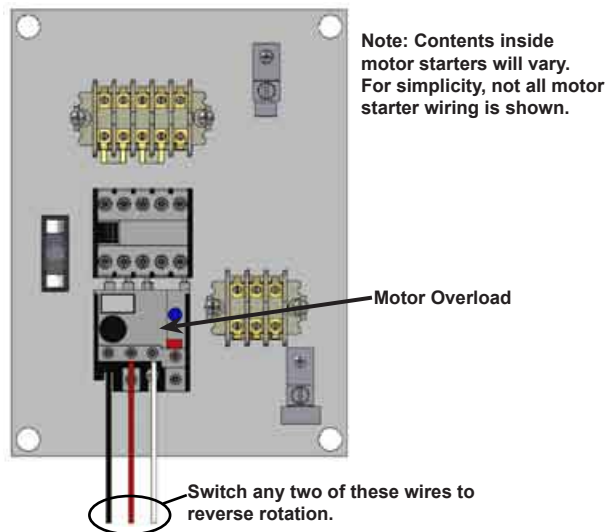
b. **Bulldog and Bison Models:** Re-install main air filter and vacuum controller.



Bison and Bulldog Models



Motor Starter



NOTES



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