



STANDARD MODELS

- 550
(955.xxxx.xxx)
- 1400
(914.xxxx.xxx)

Procedures

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3 Phase Motor Startup	15

*Note: Instructions relating to Standard 1400 models also apply to Standard 1200 and 2800 models.



BULLDOG MODELS

- 550
(855.xxxx.xxx)
- QT
(809.xxxx.xxx)
- QT E
(809E.xxxx.xxx)

Procedures

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BISON MODELS

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

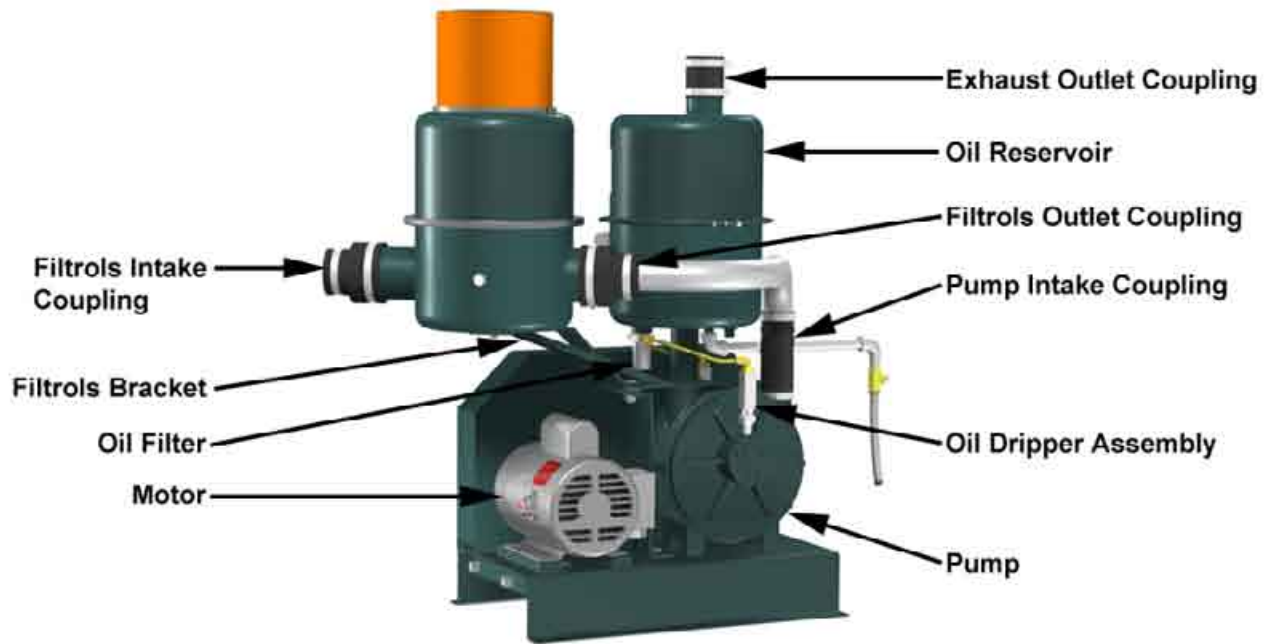
Procedures

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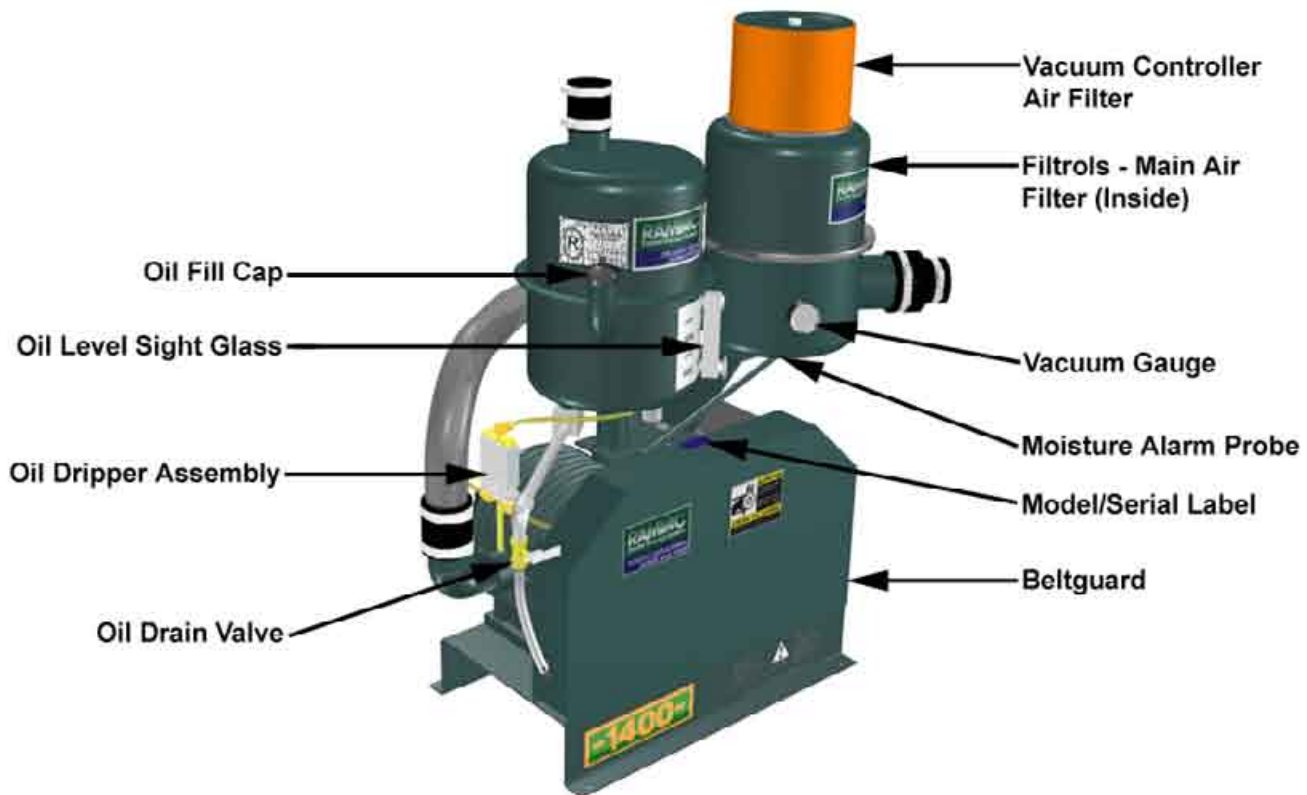
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STANDARD

Standard Models Important Features



Standard 550



Standard 1400

STANDARD

1 Phase Gray Box Electrols Upgrade

How to upgrade gray box Electrols to S1 Electrols on all 1 phase Standard models.

1. Secure disconnect.
2. Disconnect gray box Electrols.
 - a. Disconnect power source wires from L1, L2, and GND. Remove cord grip and power source wires from gray box Electrols.
 - b. Disconnect motor wires from 2T1, 4T2, and motor ground. Remove cord grip and motor wires from gray box Electrols.
 - c. Disconnect moisture alarm probe wires from P1 and P2. Remove wires from cord grip.
 - d. Disconnect remote switch wires from R1, R2, and RL. Remove wires from cord grip.
3. Discard gray box Electrols.
4. Install S1 Electrols using the 4 mounting holes.
5. Remove the cover screws and cover.

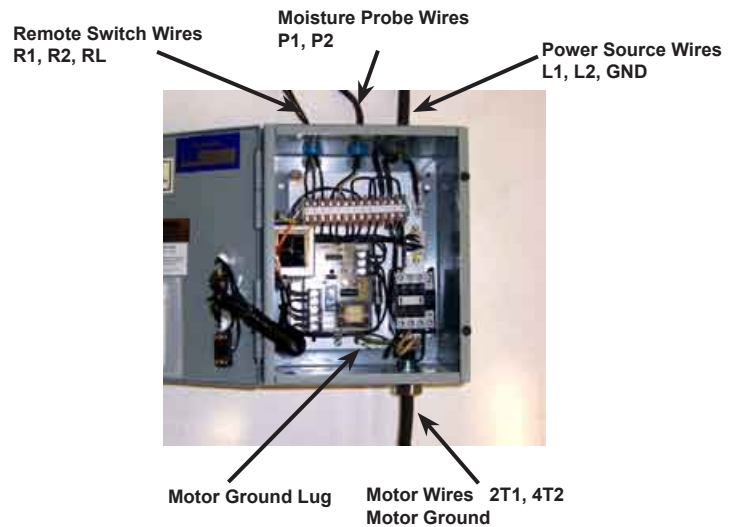
Note: There will be 2 wires under L1 screw and 2 wires under GND screw.

6. Install cord grip and power source wires in side knockout on S1 Electrols.
 - a. Connect power source wires to L1, L2, and GND.
7. Install cord grip and motor wires to bottom knockout on S1 Electrols.
 - a. Connect motor wires to L1, M1 and GND.
8. Install cover using the screws previously removed.
9. If present, disconnect oil switch (spade terminals) from moisture alarm cord.
 - a. Connect supplied extensions to wires coming from oil switch and connect to terminals 1 and 2 on terminal plug "12DE34".
10. Connect moisture alarm probe wires to terminals J and K on terminal plug "56JK78".

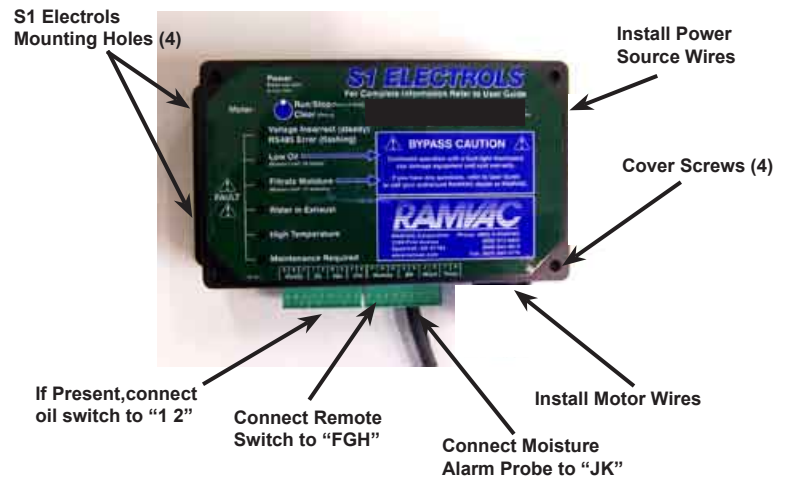
Note: If Electrols is part of a VSC or MPC, refer to "VSC or MPC User Guide" for further installation instructions.

11. Connect low voltage remote switch wires to terminal plug FGH.
 - a. Connect switch wire to F.
 - b. Connect light wire to G.
 - c. Connect common wire to H.

1 Phase Gray Box Electrols
Note: Gray Box Electrols have several variations



S1 Electrols

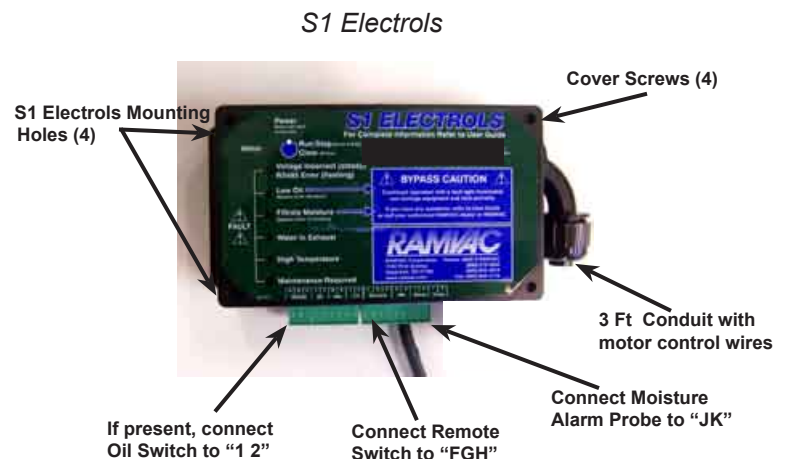
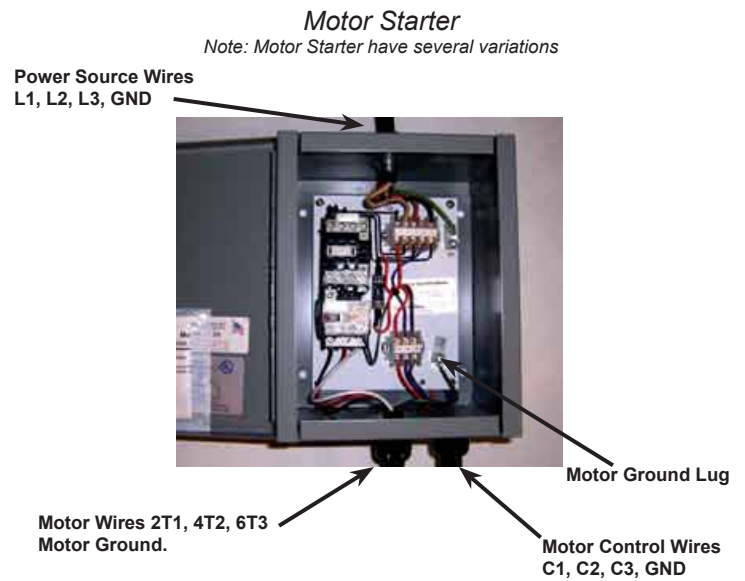
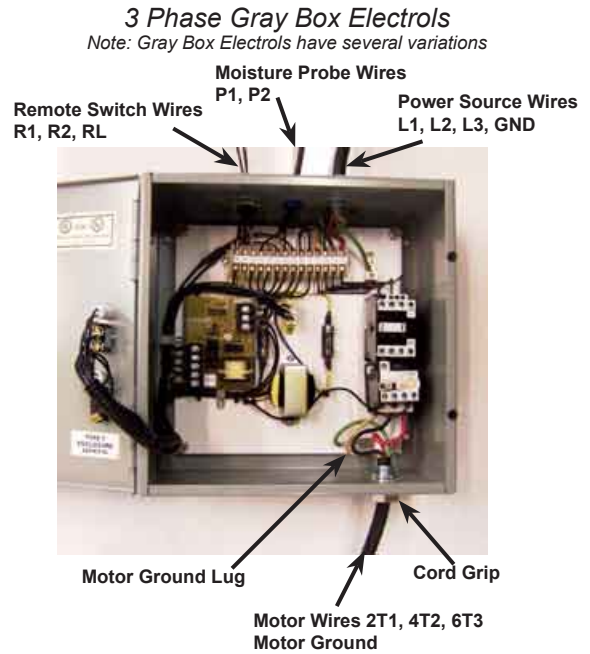


STANDARD

3 Phase Gray Box Electrols Upgrade

How to upgrade gray box Electrols to S1 Electrols on all 3 phase Standard models.

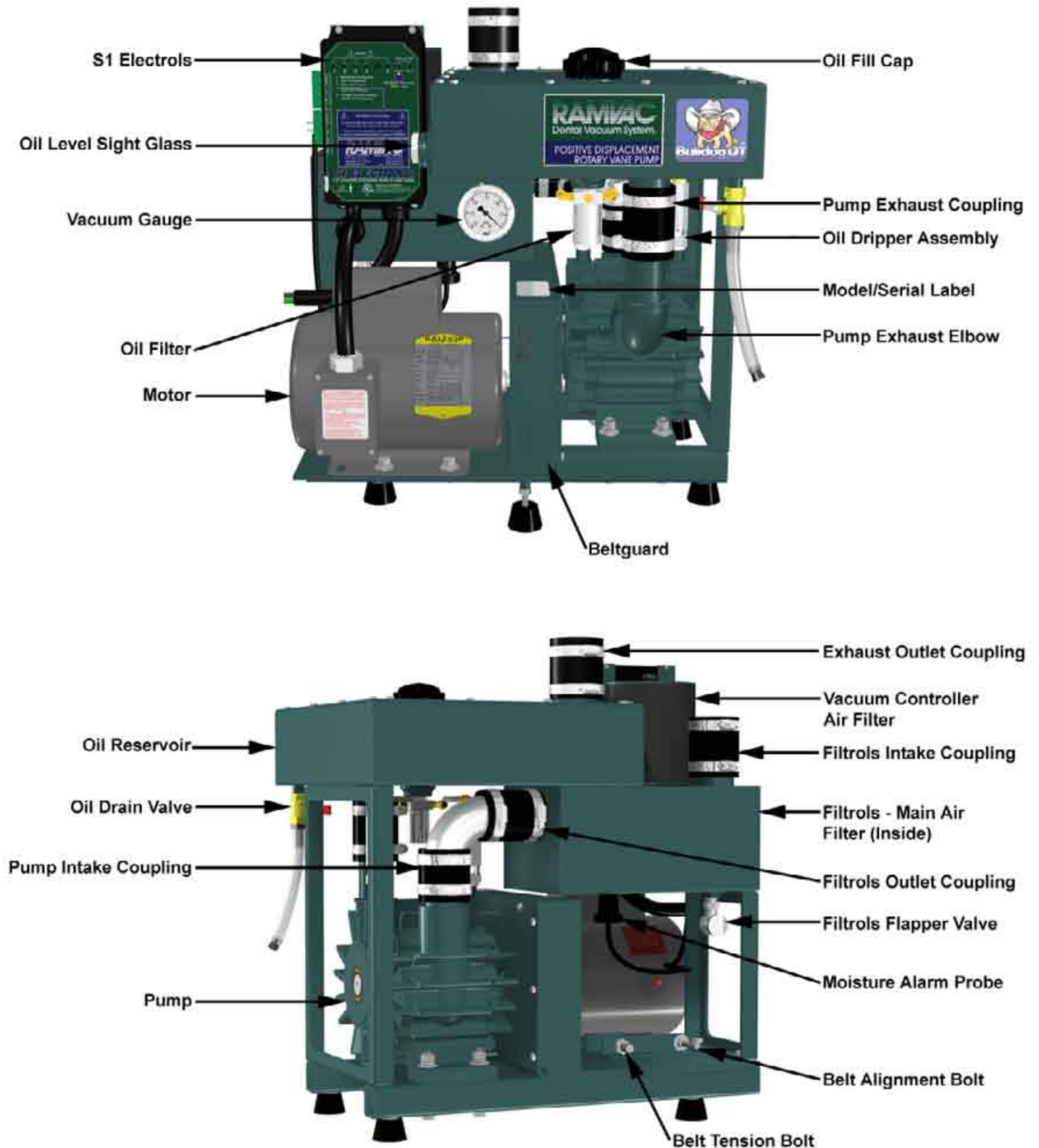
1. Secure Disconnect.
 2. Remove items from gray box Electrols.
 - a. Disconnect power source wires from L1, L2, L3 and GND.
Remove cord grip and power source wires from gray box Electrols.
 - b. Disconnect motor wires from 2T1, 4T2, 6T3 and motor ground.
Remove cord grip and motor wires from gray box Electrols.
 - c. Disconnect moisture alarm probe wires from P1 and P2. Remove wires from cord grip.
 - d. Disconnect remote switch wires from R1, R2, and RL. Remove wires from cord grip.
 3. Discard gray box Electrols.
 4. Install motor starter.
 5. Install S1 Electrols using the 4 mounting holes.
 6. Install cord grip and power source wires into top knockout on motor starter.
 - a. Connect power source wires to L1, L2, L3 and GND.
 7. Install cord grip and motor wires into bottom knockout on motor starter.
 - a. Connect motor wires to 2T1, 4T2, 6T3 and motor ground.
 8. Install motor control wires marked C1, C2, C3, and GND from S1 Electrols into bottom knockout on motor starter.
 - a. Connect wires C1, C2, C3, and GND to appropriate terminals.
 9. If present, disconnect oil switch (spade terminals) from moisture alarm cord.
 - a. Connect supplied extensions to wires coming from oil switch and connect to terminals 1 and 2 on terminal plug "12DE34".
 10. Connect moisture alarm probe wires to terminals J and K on terminal plug "56JK78".
- Note: If Electrols is part of a VSC or MPC, refer to "VSC or MPC Manual" for further installation instructions.*
11. Connect low voltage remote switch wires to terminal plug "FGH".
 - a. Connect switch wire to F.
 - b. Connect light wire to G.
 - c. Connect common wire to H.
 12. Perform "3 Phase Motor Startup" procedure.



NOTES

BULLDOG

Bulldog Models Important Features



BULLDOG

1 Phase Gray Box Electrols Upgrade

How to upgrade gray box Electrols to S1 Electrols on all 1 phase Bulldog models.

1. Secure Disconnect.
2. Remove items from gray box Electrols.
 - a. Disconnect power source wires from L1, L2, and GND. Remove cord grip and power source wires from gray box Electrols.
 - b. Disconnect motor wires from 2T1, 4T2, and motor ground. Remove cord grip and motor wires from gray box Electrols.
 - c. Disconnect moisture alarm probe wires from P1 and P2. Remove wires from cord grip.
 - d. Disconnect remote switch wires from R1, R2, and RL. Remove wires from cord grip.

3. Discard gray box Electrols.
4. Install S1 Electrols using the 4 mounting holes.
5. Remove the cover screws and cover.

Note: There will be 2 wires under L1 screw and 2 wires under GND screw.

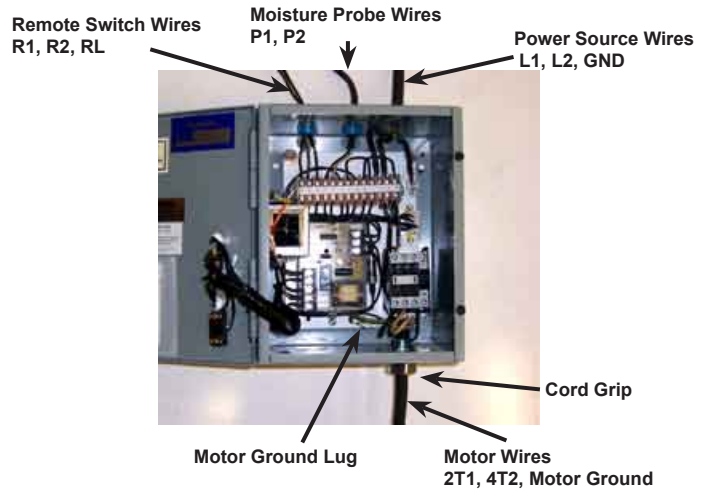
6. Install cord grip and power source wires in side knockout on S1 Electrols.
 - a. Connect power source wires to L1, L2, and GND.
7. Install cord grip and motor wires to bottom knockout on S1 Electrols.
 - a. Connect motor wires to L1, M1 and GND.
8. Install cover using the screws previously removed.
9. Connect moisture alarm probe wires to terminals J and K on terminal plug "56JK78"

Note: If Electrols is part of a VSC or MPC, refer to "VSC or MPC Manual" for further installation instructions.

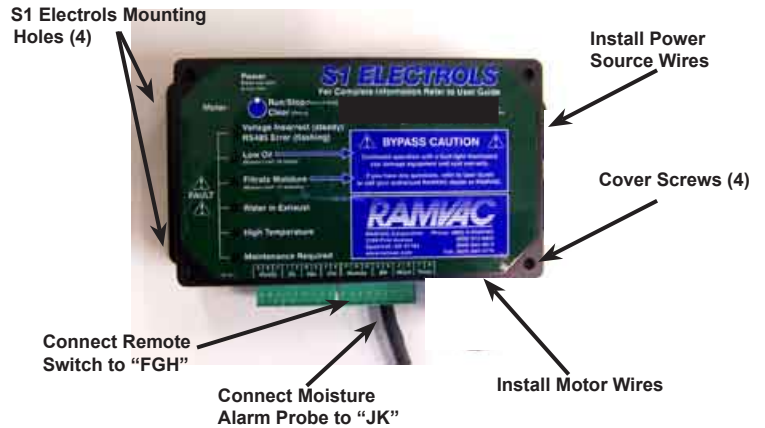
10. Connect low voltage remote switch:
 - a. Connect switch wire to F.
 - b. Connect light wire to G.
 - c. Connect common wire to H.

1 Phase Gray Box Electrols

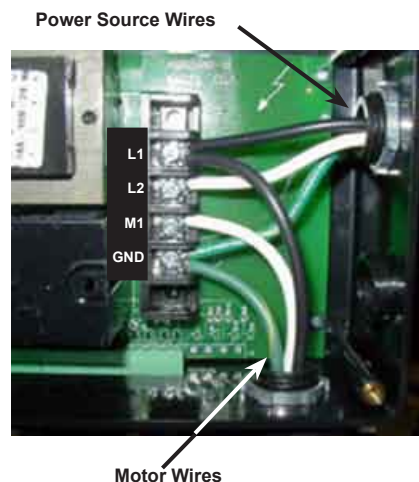
Note: Gray Box Electrols have several variations



S1 Electrols



S1 Electrols



BULLDOG

3 Phase Gray Box Electrols Upgrade

How to upgrade gray box Electrols to S1 Electrols on 3 phase Bulldog models.

1. Secure Disconnect.
2. Remove items from gray box electrols.
 - a. Disconnect power source wires from L1, L2, L3 and GND.
Remove cord grip and power source wires from gray box Electrols.
 - b. Disconnect motor wires from 2T1, 4T2, 6T3 and motor ground.
Remove cord grip and motor wires from gray box Electrols.
 - c. Disconnect moisture alarm Probe wires from P1 and P2.
Remove wires from cord grip.
 - d. Disconnect remote switch wires from R1, R2, and RL.
Remove wires from cord grip.
3. Discard gray box Electrols.
4. Install motor starter.
5. Install S1 Electrols using the 4 mounting holes.
6. Install cord grip and power source wires into top knockout on motor starter.
 - a. Connect power wires to L1, L2, L3 and GND.

Note: There will be 2 wires in the motor ground lug.

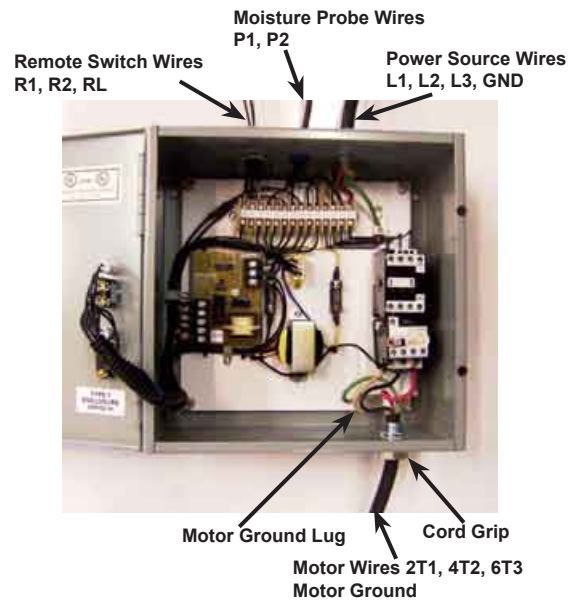
7. Install cord grip and motor wires into bottom knockout on motor starter.
 - a. Connect motor wires to 2T1, 4T2, 6T3 and motor ground.
8. Install cord grip and control wires marked C1, C2, C3, and GND from S1 Electrols into bottom knockout on motor starter.
 - a. Connect wires C1, C2, C3, and GND to appropriate terminals.
9. Connect moisture alarm probe wires to terminals J and K on terminal plug "56JK78".

Note: If Electrols is part of a VSC or MPC, refer to "VSC or MPC Manual" for further installation instructions.

10. Connect remote switch wires to terminal plug "FGH".
 - a. Connect switch wire to F.
 - b. Connect light wire to G.
 - c. Connect common wire to H.
11. Perform "3 Phase Motor Startup" procedure.

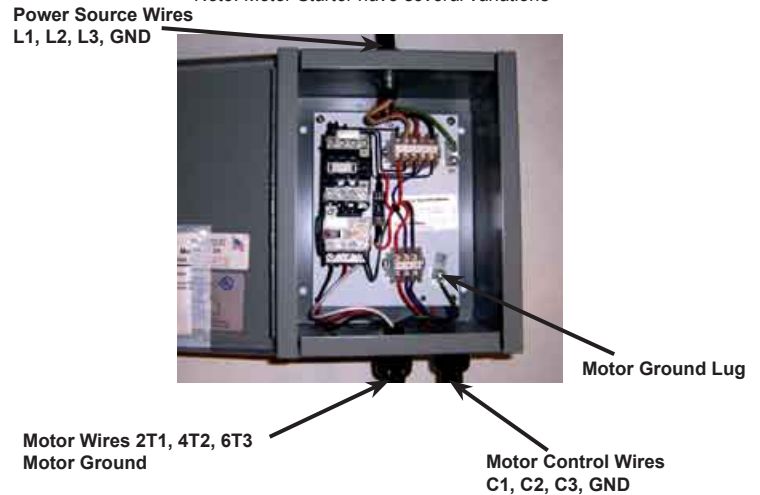
3 Phase Gray Box Electrols

Note: Gray Box Electrols have several variations

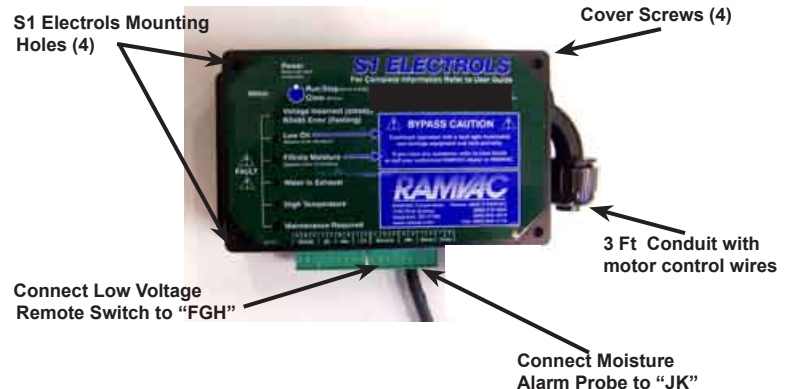


Motor Starter

Note: Motor Starter have several variations



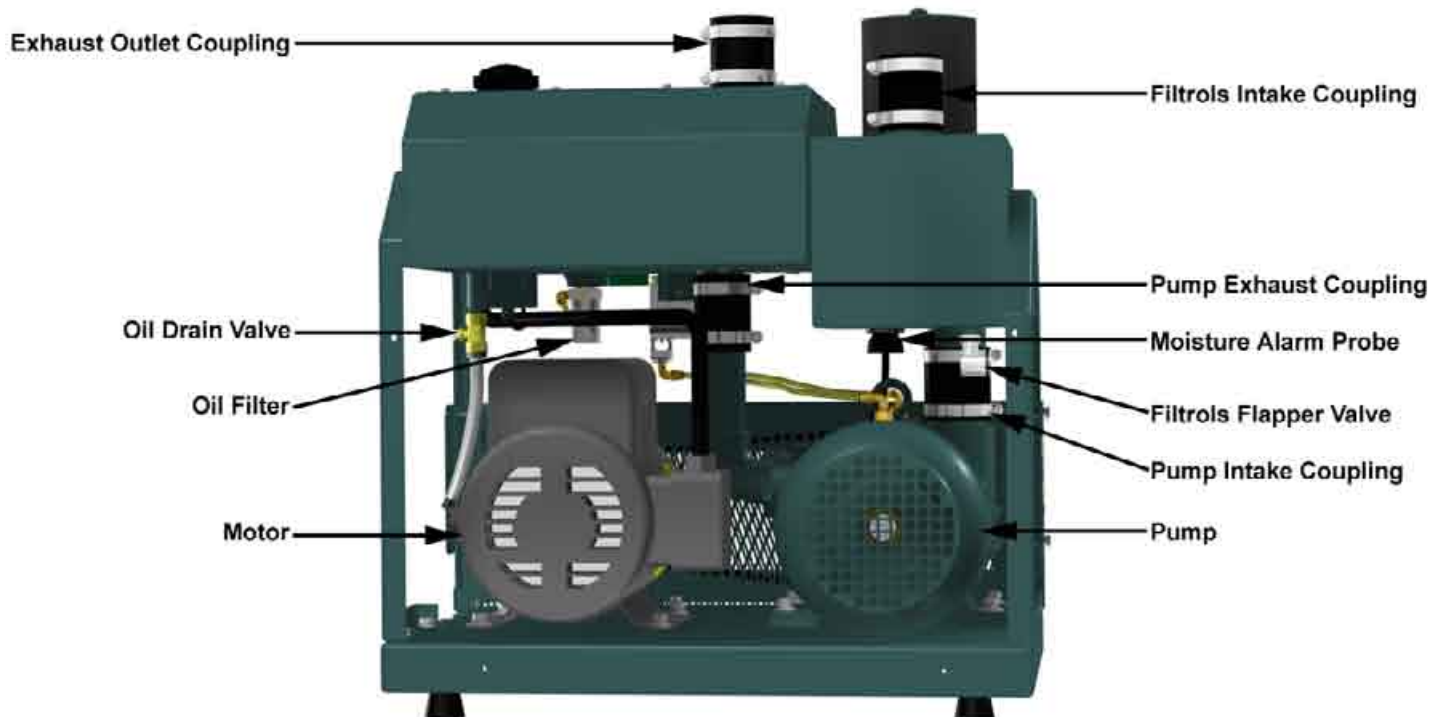
S1 Electrols



NOTES

BISON

Bison Models Important Features



BISON

1 Phase Gray Box Electrols Upgrade

How to upgrade gray box Electrols to S1 Electrols on 1 phase Bison models.

1. Secure Disconnect.
2. Remove items from gray box Electrols.
 - a. Disconnect power source wires from L1, L2, and GND. Remove cord grip and power source wires from gray box Electrols.
 - b. Disconnect motor wires from 2T1, 4T2, and motor ground. Remove cord grip and motor wires from gray box Electrols.
 - c. Disconnect moisture alarm probe wires from P1 and P2. Remove wires from cord grip.
 - d. Remove remote switch wires from R1, R2, and RL. Remove wires from cord grip.

3. Discard gray box Electrols.
4. Install S1 Electrols using the 4 mounting holes.
5. Remove the cover screws and cover.

Note: There will be 2 wires under L1 screw and 2 wires under GND screw.

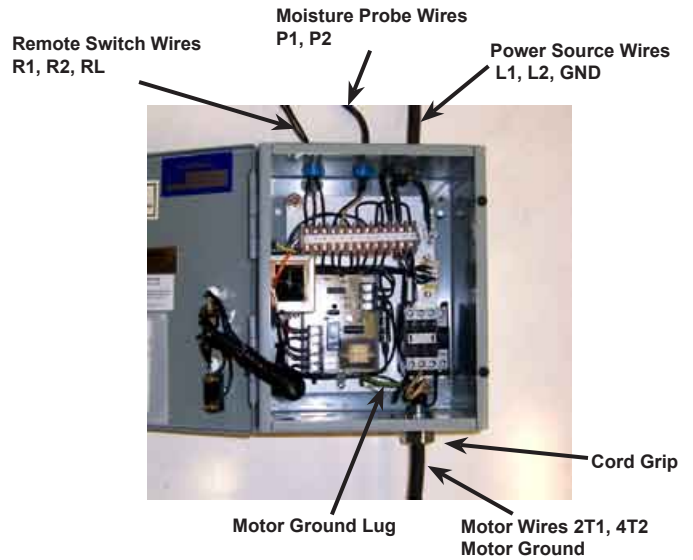
6. Install cord grip and power source wires in side knockout on S1 Electrols.
 - a. Connect power wires to L1, L2, and Gnd.
7. Install cord grip and motor wires to bottom knockout on S1 Electrols
 - a. Connect motor wires to L1, M1, and Gnd.
8. Install cover using the screws previously removed.
9. Disconnect oil switch and water switch (2 spade terminals) from moisture alarm cord.
 - a. Cut spade terminal ends from switch wires.
 - b. Install the supplied spade terminals on each of the 4 wire ends.
 - c. Connect supplied extensions to wires and connect to terminals.
 - i. Connect the oil switch wires to terminals 1 and 2 on terminal plug "12DE34".
 - ii. Connect the water in exhaust switch wires to terminals 3 and 4 on terminal plug "12DE34".

10. Connect moisture alarm probe wires to terminals J and K on terminal plug "56JK78".
11. Connect remote switch wires to terminal plug "FGH".
 - a. Connect switch wire to F.
 - b. Connect light wire to G.
 - c. Connect common wire to H.

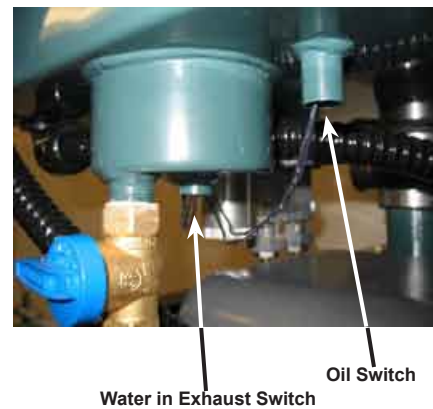
Note: If Electrols is part of a VSC or MPC, refer to "VSC or MPC Manual" for further installation instructions.

1 Phase Gray Box Electrols

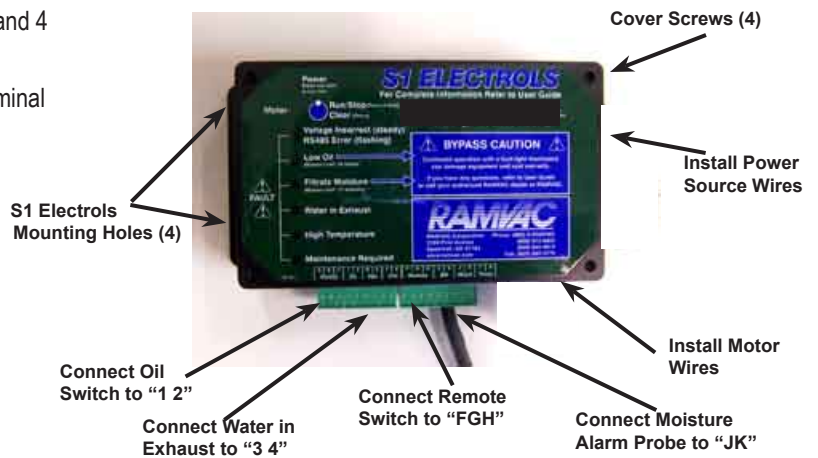
Note: Gray Box Electrols have several variations



Bison Reservoir Switches



S1 Electrols



3 Phase Gray Box Electrols Upgrade

How to upgrade gray box Electrols to S1 Electrols on 3 phase Bison models.

1. Secure Disconnect.
2. Remove items from gray box Electrols.
 - a. Disconnect power wires from L1, L2, L3 and GND. Remove cord grip and power source wires from gray box Electrols.
 - b. Disconnect motor wires from 2T1, 4T2, or 6T3 and motor ground. Remove cord grip and motor wires from gray box Electrols.
 - c. Disconnect moisture alarm probe wires from P1 and P2. Remove wires from cord grip.
 - d. Disconnect remote switch wires from R1, R2, and RL. Remove wires from cord grip.
3. Discard gray box Electrols.
4. Install motor starter.
5. Install S1 Electrols using the 4 mounting holes.
6. Install cord grip and power source wires into top knockout on motor starter.
 - a. Connect power wires to L1, L2, L3 and GND.

Note: There will be 2 wires in the motor ground lug.

7. Install cord grip and motor wires into bottom knockout on motor starter.
 - a. Connect motor wires to 2T1, 4T2, 6T3 and motor ground.
8. Install cord grip and control wires marked C1, C2, C3, and GND from S1 Electrols into bottom knockout on motor starter.
 - a. Connect wires C1, C2, C3, and GND to appropriate terminals.
9. Disconnect oil switch and water switch (spade terminals) from moisture alarm cord.
 - a. Cut spade terminal ends from switch wires.
 - b. Install the supplied spade terminals on each of the 4 wire ends.
 - c. Connect supplied extensions to wires and connect to terminals.

Note: See Bison Reservoir Switches illustration on previous page for specific locations.

- i. Connect the oil switch wires to terminals 1 and 2 on terminal plug "12DE34".
- ii. Connect the water in exhaust switch wires to terminals 3 and 4 on terminal plug "12DE34".

10. Connect moisture alarm probe wires to terminals J and K on terminal plug "56JK78".

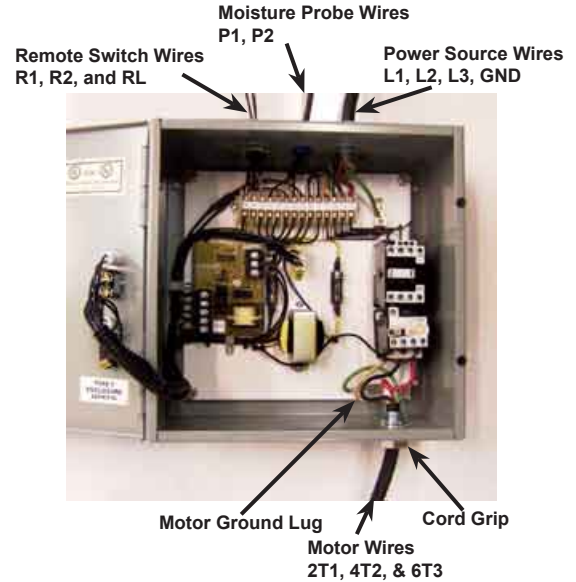
Note: If Electrols is part of a VSC or MPC, refer to "VSC or MPC Manual" for further installation instructions.

11. Connect remote witch wires to terminal plug "FGH".
 - a. Connect switch wire to F.
 - b. Connect light wire to G.
 - c. Connect common wire to H.

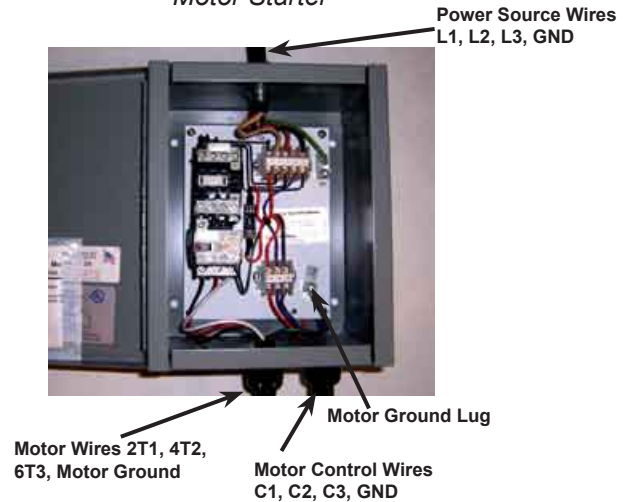
12. Perform "3 Phase Motor Startup" procedure.

3 Phase Gray Box Electrols

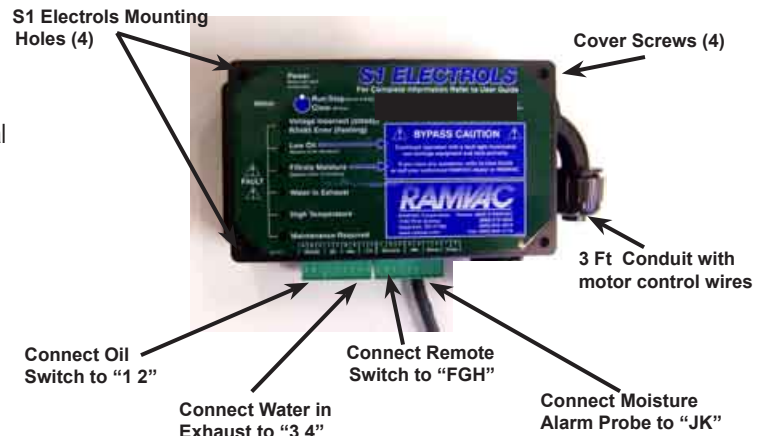
Note: Gray Box Electrols have several variations



Motor Starter



S1 Electrols



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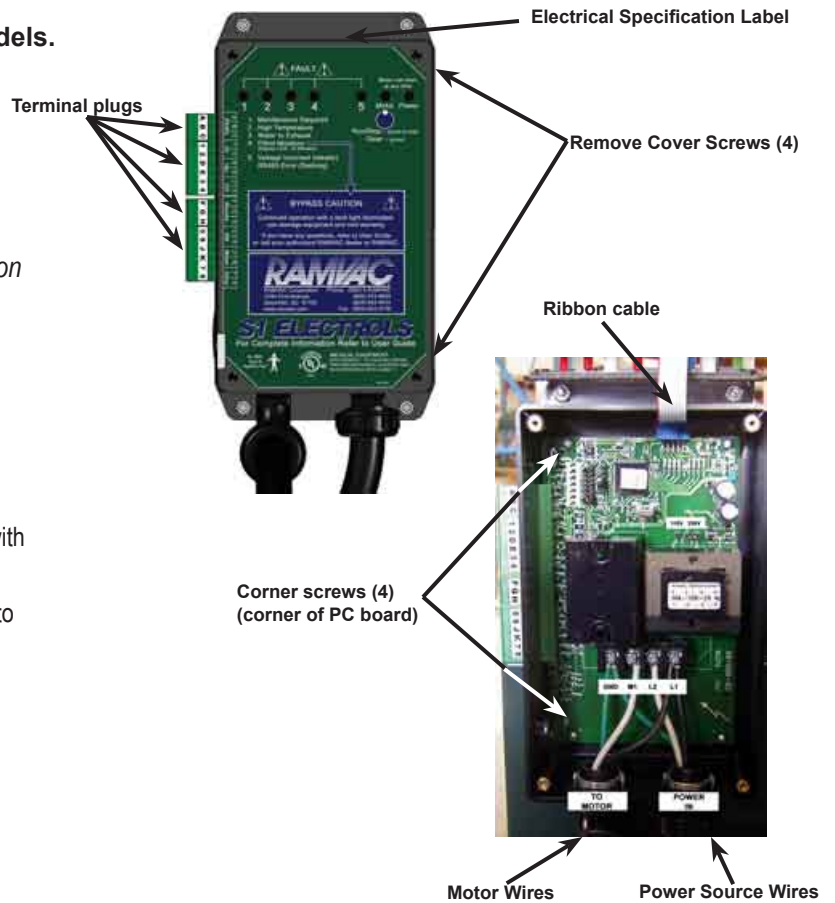
S1 ELECTROLS PC BOARD REPLACEMENT

S1 Electrols PC Board Replacement

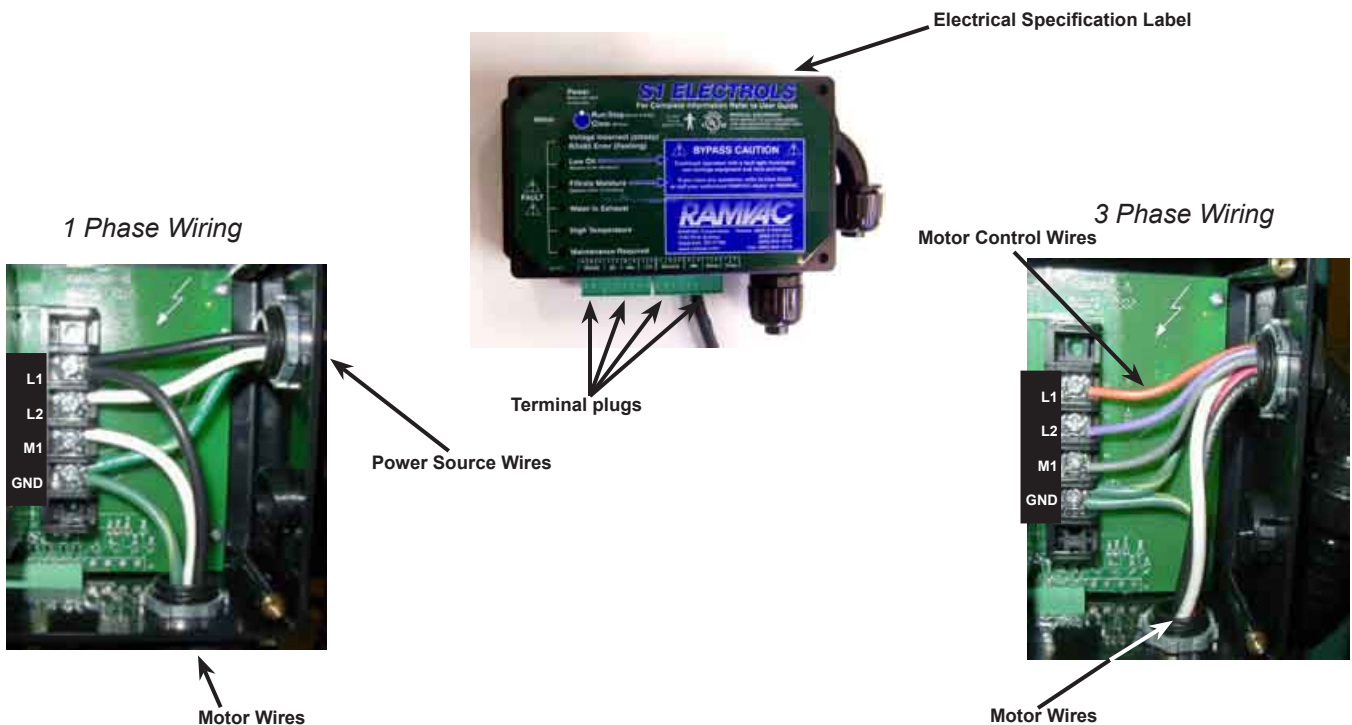
How to replace the S1 Electrols PC board on all models.

1. Secure Disconnect.
2. Remove original Electrical Specifications decal from top of S1 Electrols.
3. Apply new Electrical Specifications decal to top of S1 Electrols.
Note orientation and position of terminal plugs for re-installation
4. Remove terminal plugs attached to S1 Electrols.
5. Remove cover screws and open cover.
- Note orientation of power source and motor wires for proper connection.*
6. Disconnect power source and motor wires from terminal strip.
7. Remove corner screws on the pc board. Remove pc board.
8. Install replacement pc board in S1 Electrols box and secure it with corner screws.
9. With proper orientation connect power source and motor wires to terminal strip.
10. Install cover using screws previously removed.
11. With proper orientation, insert terminal plugs into S1 Electrols.

Bulldog Model S1 Electrols



Bison Model S1 Electrols



3 PHASE MOTOR START-UP

3 Phase Motor Start-up

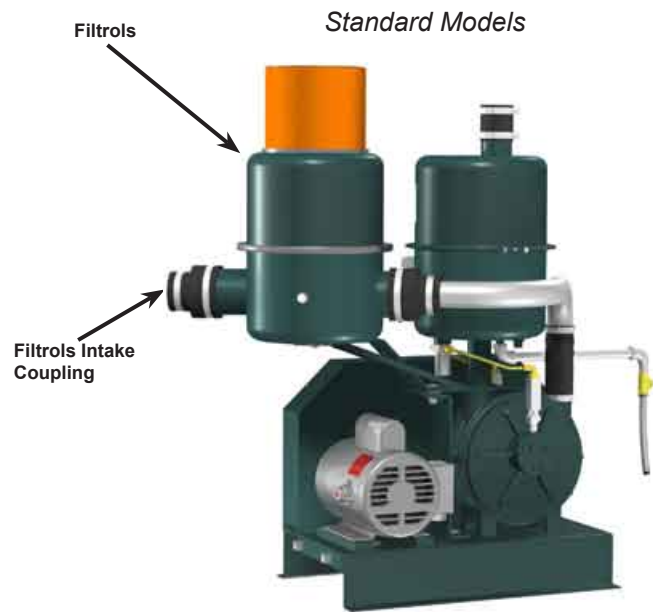
How to properly start a 3 phase unit the first time or after changes to motor, motor starter or Electrols.

1. Turn power on at disconnect.

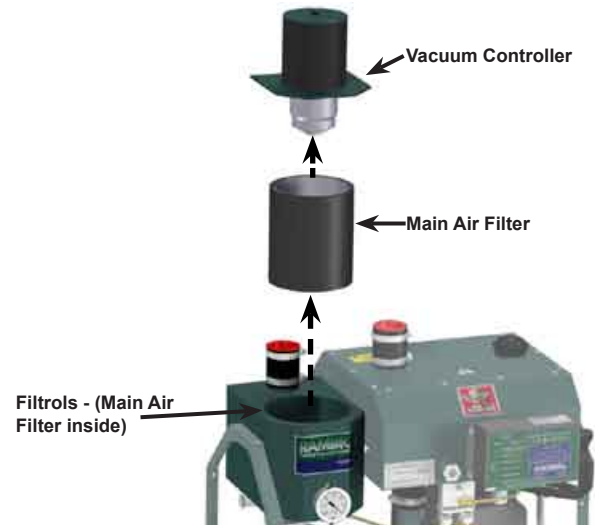
Caution: Pump has 50% chance of rotating backwards.

DO NOT ALLOW debris to enter pump.

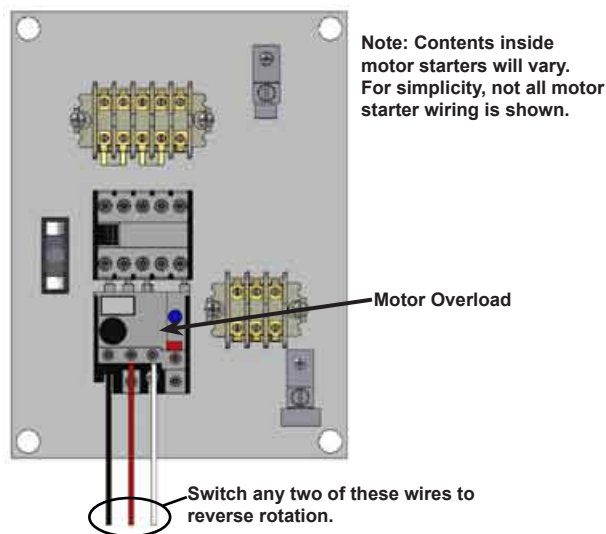
2. Check for correct pump rotation:
 - a. **Standard Models:**
 - i. Loosen Filtrols intake coupling and remove line.
 - ii. Place hand by Filtrols intake to determine airflow.
 - b. **Bulldog and Bison Models:**
 - i. Remove vacuum controller and main air filter from power unit.
 - ii. Place hand in Filtrols 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 Filtrols.
4. Complete 3 phase motor start-up
 - a. **Standard Models:** Reinstall Filtrols inlet line
 - b. **Bulldog and Bison Models:** Reinstall main air filter and vacuum controller.



Bison and Bulldog Models



Motor Starter



NOTES



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Spearfish SD 57783 USA
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Phone: 1-800-5-RAMVAC
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Fax: 1-605-642-3776

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Effective Date: 25-Oct-05
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