



Technical Instructions

Leeson/Baldor Motor Start Switch/Capacitor Replacement Instructions

HySecurity supplies two different 60hz, single phase motors for their gate operators: Leeson® and Baldor®. These instructions explain how to replace the start switch and start capacitors for each of these motors.

If you are working on a StrongArm unit, you will need to remove the motor and pump pack from the chassis to access the start switch. For instructions, refer to the StrongArm M30 (MX3577-01) or M50 (MX3578-01) installation manual.

DANGER!

To avoid risk of injury or death, turn off the gate operator and disconnect it from the main power source prior to performing any of the following procedures!

Tools Needed:

- Nut drivers (¼ inch and 5/16 inch) or Phillips-head screwdriver
- Needle-nose pliers.

Start Switch Replacement

Leeson Motor: Start Switch Replacement

1. Confirm Part Number on motor tag (MX001901, MX001902, MX001903) and confirm motor has start switch installed (**FIG-1**).
2. Remove (and retain) the four screws and cover from junction box.
3. Use needle-nose pliers to remove the four spade lugs from old start switch (**FIG-2**).
4. Remove (and retain) the two screws securing start switch to motor.
5. Pull old start switch and gasket from motor and discard.
6. Retrieve rubber gasket from kit and place between start switch and motor.
7. Attach motor's four spade lugs to the new start switch per the following and **FIG-2**. **Tip:** Connect inside spades first.

- Pin 1 = T9
- Pin 2 = T5
- Pin 3 = T11
- Pin 4 = T7

NOTICE

See page 4 for a full Leeson motor external wiring diagram.

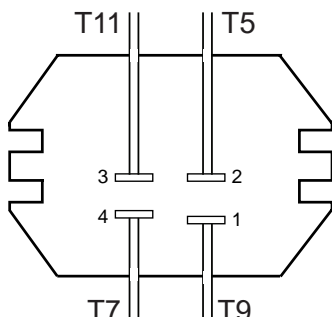


FIG-2: Leeson Start Switch Wiring

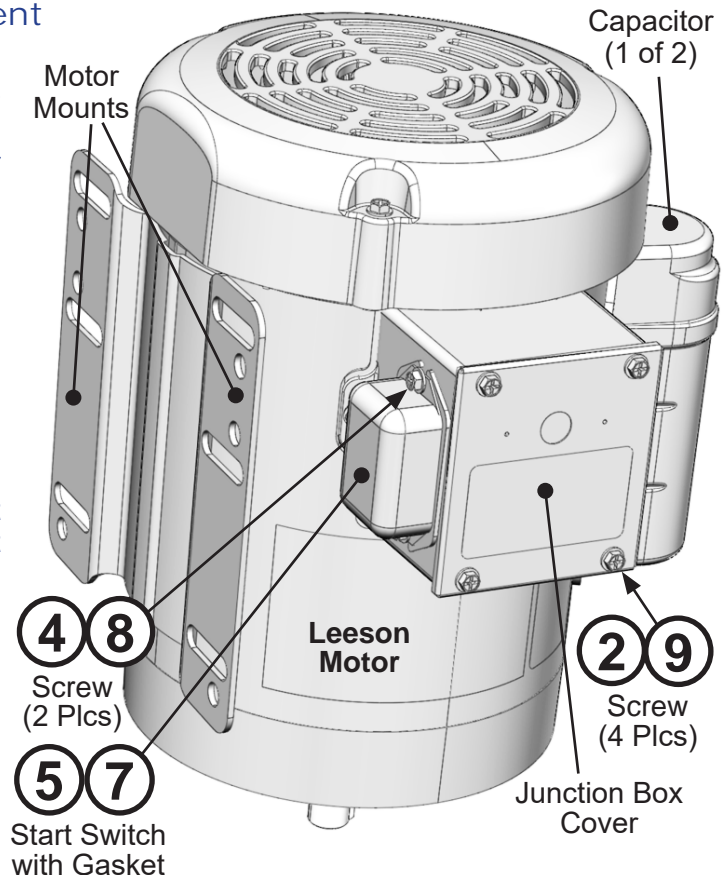


FIG-1: Leeson Start Switch Location

8. Install two screws removed in Step 4 to secure start switch to motor.
9. Replace junction box cover and secure with the four screws removed in Step 2.

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Technical Instructions

Baldor Motor: Start Switch Replacement (Stearns Sinpac)

1. Confirm Part Number on motor tag (MX000784 or MX000785) and confirm motor has start switch installed (**FIG-3**). If motor is P/N MX5546, proceed to Samusco switch instructions on page 3.
2. Remove (and retain) four screws and front cover from the junction box.
3. Use needle-nose pliers to remove four spade lugs from the old start switch terminals (**FIG-7**).
4. Remove the two screws that secure the start switch to top of motor junction box and retain screws for later reassembly.
5. Remove old start switch and discard.
6. Place rubber gasket between start switch and motor, then replace two screws that secure it to top of junction box.
7. Attach motor's four (4) spade lugs to new start switch per below and **FIG-4**:
 - Pin-1 = White w/ Black stripe
 - Pin-2 = Purple
 - Pin-3 = White w/ Blue Stripe
 - Pin-4 = White w/ Red stripe
8. Install cover to junction box and secure with four screws removed in step 2.

----END----

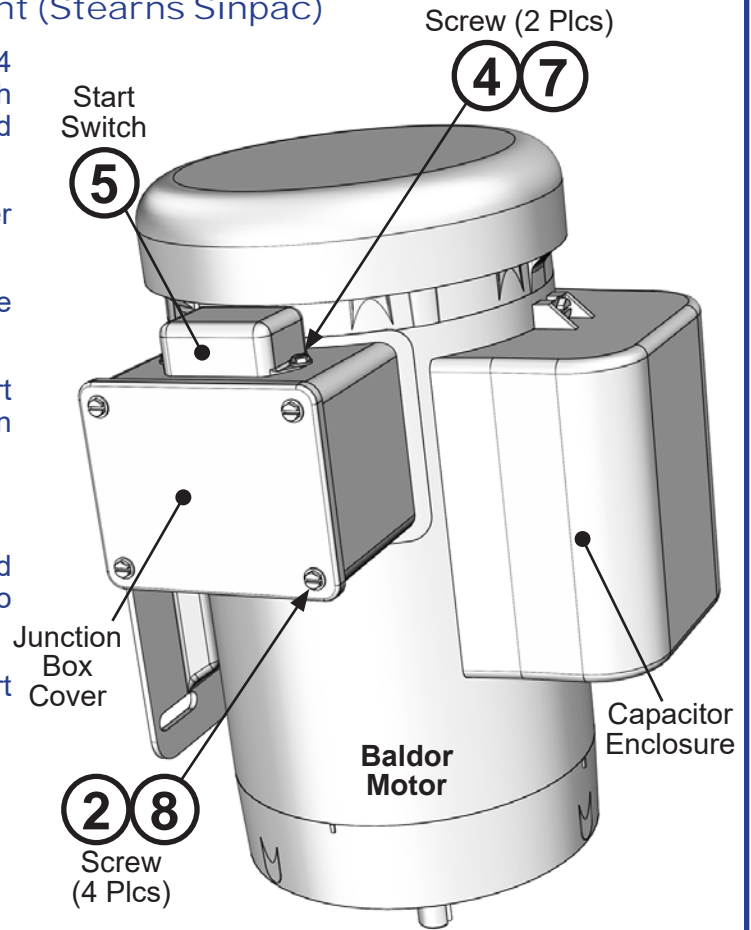


FIG-3: Baldor Motor - Stearns Sinpac Start Switch Location

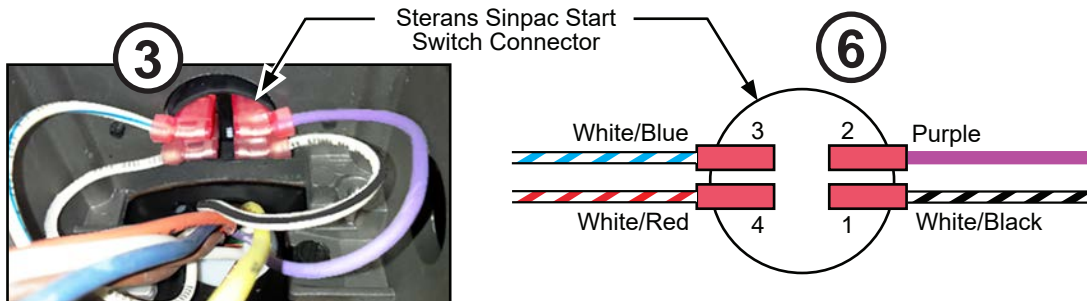


FIG-4: Stearns Sinpac Start Switch Wiring



Technical Instructions

Baldor Motor: Start Switch Replacement (Samusco)

1. Confirm Part Number on motor tag (MX5546) and confirm motor has start switch installed (**FIG-5**). If motor is MX000784 or MX000785, proceed to Stearns Sinpac start switch instructions on page 2.
2. Remove (and retain) four screws and front cover from the junction box.
3. Use needle-nose pliers to remove the three spade lugs from the old start switch terminals (**FIG-6**).
4. Remove bolt securing old start switch to top of junction box and retain bolt.
5. Remove old start switch and discard.
6. Retrieve new start switch and install to interior top of junction box with bolt removed in Step 4.
7. Attach motor's three (3) spade lugs/wires to new start switch per below and **FIG-6**:
 - Pin-1 = White w/ Black stripe
 - Pin-2 = Purple and White w/ Black Stripe
 - Pin-5 = White w/ Blue Stripe
8. Install cover to junction box and secure with four screws removed in step 2.

----END----

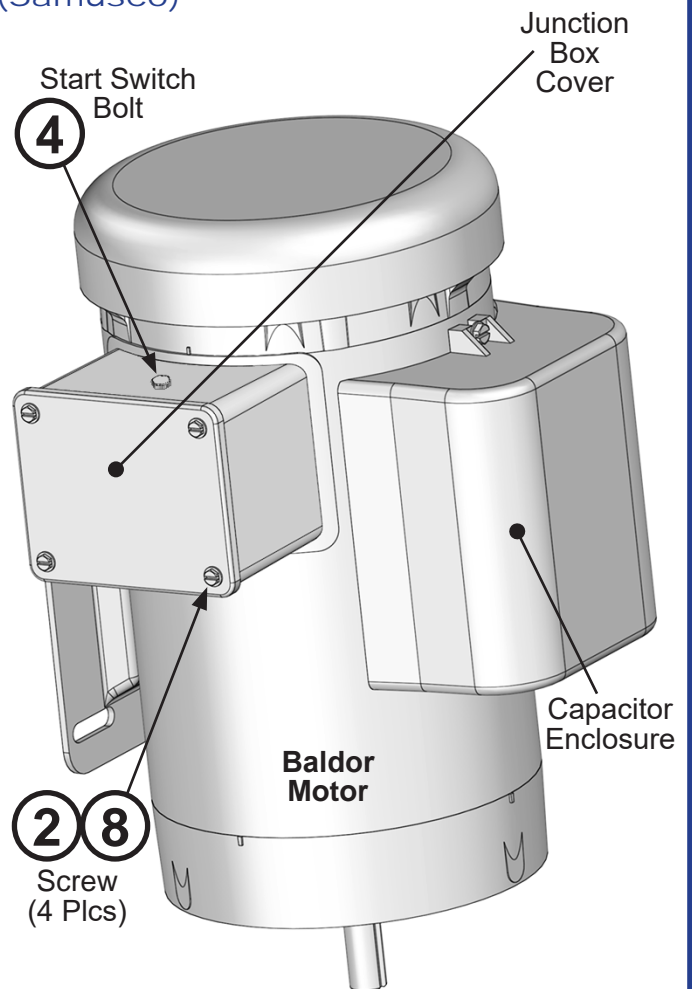


FIG-5: Baldor Motor - Samusco Start Switch Location

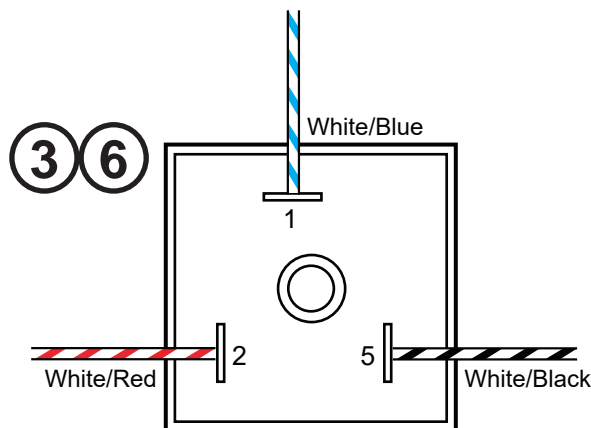
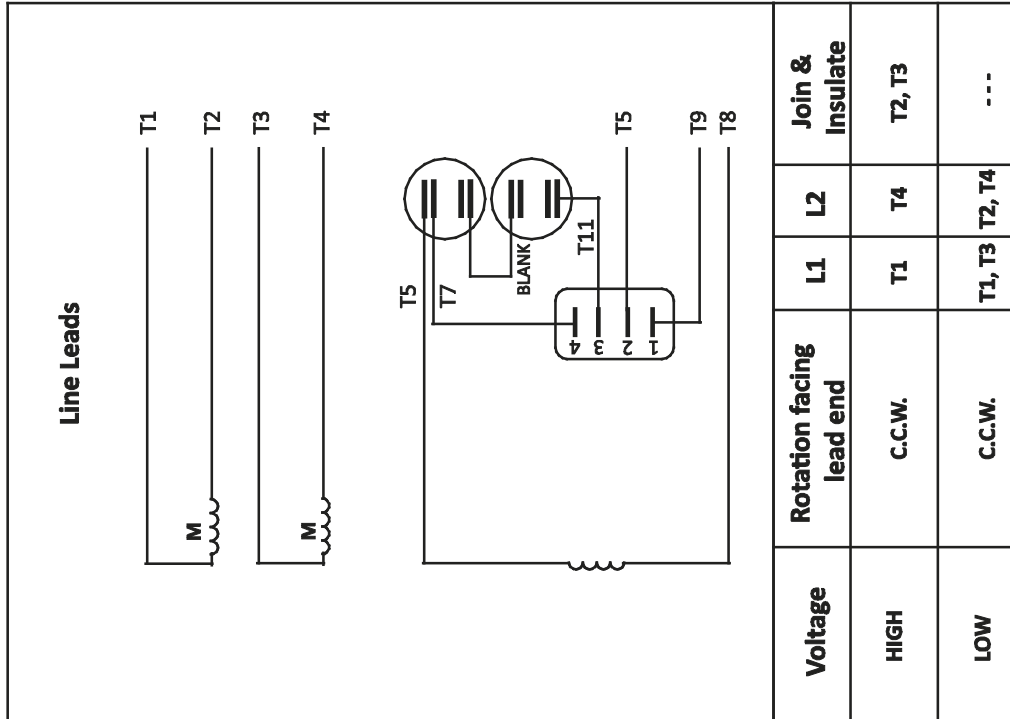


FIG-6: Samusco Start Switch Wiring



Technical Instructions



View from outside of the motor at the switch end.

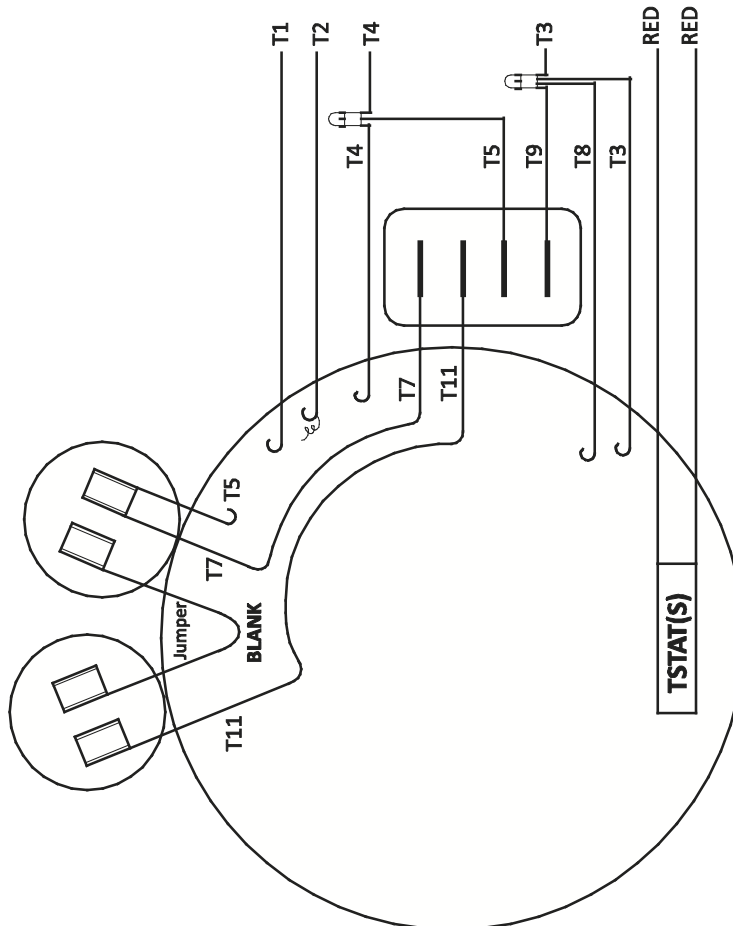


FIG-7: Leeson Motor External Wiring




Technical Instructions

Discharging Capacitors

Safety Information

This document includes instructions for replacing the motor start capacitors, which requires special safety precautions. Read all cautions and instructions below before replacing the motor start capacitors:

 **CAUTION**

Capacitors maintain an electrical charge even after the gate operator is turned off and disconnected from its main power source. The motor start capacitors must be discharged before attempting to unwire and remove them. **Read the following instructions before attempting to discharge the capacitors!**

NOTE: It is NOT recommended to use a metal screwdriver, or other electrically conductive object, to short the leads on large capacitors.

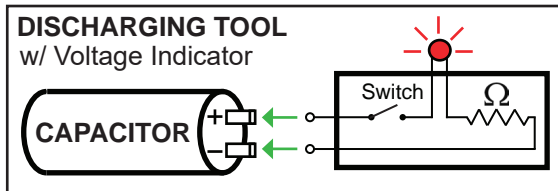
Equipment Needed:

- Electrically insulated gloves.
- Protective eyewear
- Work area free of conductive materials.
- Discharging tool (approximately \$20) or a socketed light bulb (not connected to power) with a switch and wired to have two free leads. Either of these provide a resistive load that will safely drain a capacitor. See the diagrams in the instruction below for how these are configured.

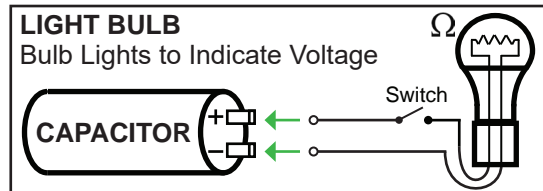
Discharging Capacitors with a Discharge Tool or Light Bulb

Put on electrically insulated gloves and protective eyewear. Ensure a work area where no conductive materials may come into contact with the capacitor leads.

1. Perform the capacitor enclosure disassembly up to the point that the capacitor leads and wiring are accessible. Do not touch or disconnect the wires yet!
2. Ensure the switch for discharging tool (or light bulb) circuit is turned OFF.
3. Touch the two prongs of discharging tool (or wires from light bulb) to the positive (+) and negative (-) terminals of capacitor and maintain contact. There is no polarity in this connection.
4. While maintaining contact, turn on the switch of tool or light bulb. If voltages are present, the discharging tool indicator light (or light bulb) will light up and then fade as the voltage is drained.




Method A: Discharge Tool



Method B: Light Bulb

5. When the tool indicator light (or light bulb) goes out, then discharging has finished and the capacitor is safe to handle.
6. Repeat steps 1-5 to discharge the next capacitor.

 **CAUTION**

Discharge BOTH capacitors from the same motor first before attempting to unwire either of them!



Technical Instructions

Capacitor Replacement

Leeson Motor: Capacitor Replacement



CAUTION

3

Safely discharge BOTH capacitors prior to touching or removing wires! Read ALL safety information and instructions found on page 5 before performing any of the instructions below!

NOTE: Remove and replace one capacitor at a time.

1. Use ¼ inch nut driver to remove two screws that secure capacitor enclosure to motor. Retain enclosure and screws for later reassembly.
2. Remove gasket between enclosure and motor and retain for later reassembly.
3. Read **CAUTION!** above and safety information and instructions on page 5.
4. Use needle-nose pliers to remove wires from capacitor terminals.
5. Remove and discard old capacitor.
6. Retrieve gasket removed in Step 2 and place it between enclosure and motor.

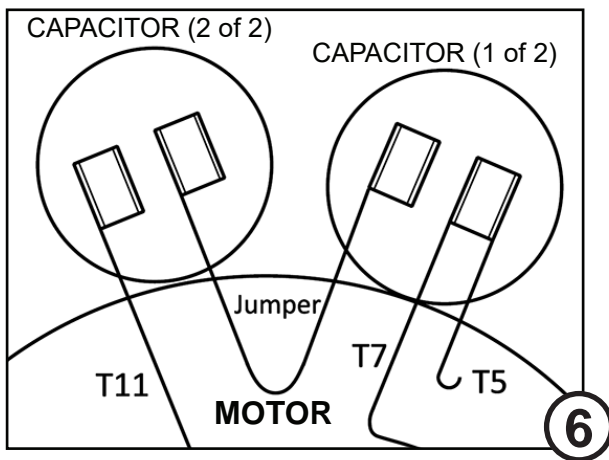


FIG-9: Leeson Motor Capacitor Wiring

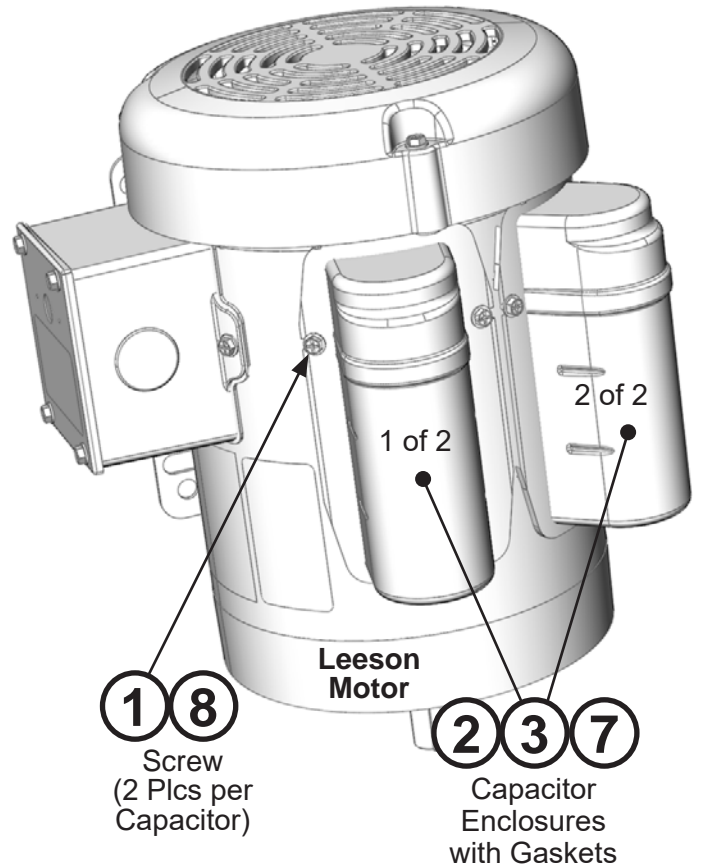


FIG-8: Leeson Motor Capacitor Location

7. Attach motor wires to new capacitor terminals per the wiring diagram below.
8. Secure Capacitor Enclosure to motor with two screws removed in Step 1.
9. Follow steps 1 through 8 to replace the other capacitor.

----END----

NOTE: If you are working on a StrongArm unit, remount the motor and pump pack assembly inside the unit and replace the cover.



Technical Instructions

Baldor Motor: Capacitor Replacement



CAUTION

2

Safely discharge BOTH capacitors prior to touching or removing wires! Read ALL safety information and instructions found on page 5 before performing any of the instructions below!

1. Use 5/16 inch nut driver to remove two screws securing capacitor enclosure. Remove enclosure and retain with screws for later reassembly.
2. Read **CAUTION!** above and safety information and instructions on page 5.
3. Remove spring retainer with a needle nose pliers (**FIG-11**).

NOTICE

A weather gasket is sandwiched between the capacitors and the motor. Leave the weather gasket in place and do not remove it.

4. Remove wires from the capacitor terminals.
5. Remove and retain the insulator sheet from enclosure and the foam pads from the capacitors.
6. Discard the used capacitors.
7. Wrap each new capacitor in a foam pad.
8. Attach motor wires to the new capacitor terminals per photo and wiring diagram (**FIG-12a/12b**).

(Continued)

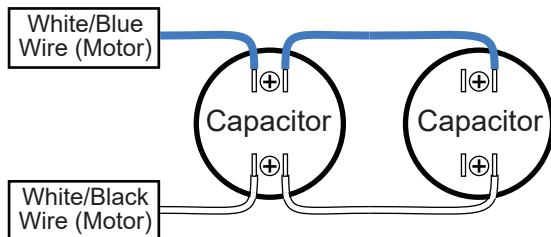


FIG-12a: Baldor Motor Capacitor Wiring Diagram

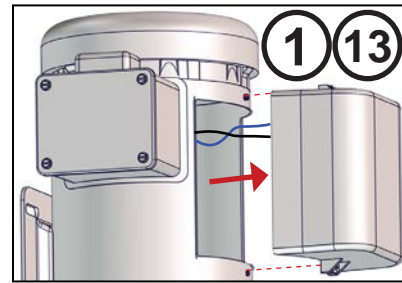


FIG-10: Remove Capacitor Enclosure

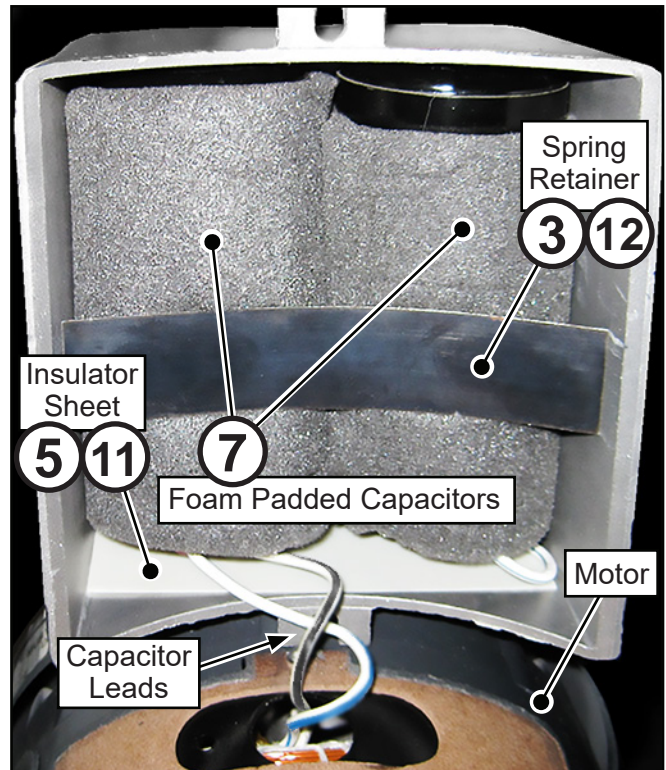


FIG-11: Baldor Motor Capacitors
(NOTE: Disassembly angle shows enclosure upside-down)

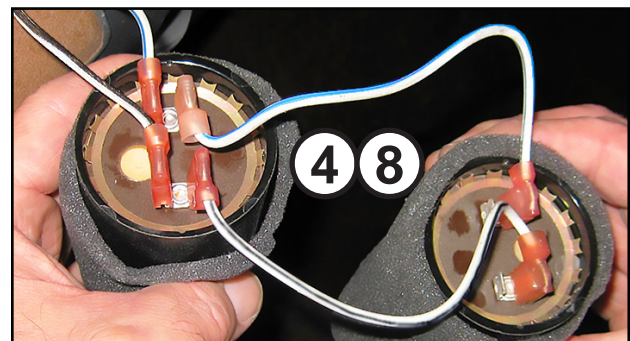


FIG-12b: Baldor Motor Capacitor Wiring



Technical Instructions

Baldor Motor: Capacitor Replacement (Cont.)

9. Orient enclosure so the interior standoff is at top of the enclosure when attached to the motor (**FIG-13**).



FIG-13: Capacitor Enclosure Interior

10. Place capacitors in enclosure, lead-end up, and stabilized against interior standoff.
11. Place insulator sheet between capacitor terminals and enclosure (**FIG-11**) and re-check wiring.
12. Replace the spring retainer to secure capacitors.
13. Ensure gasket is between enclosure and motor, then secure enclosure with screws removed in Step 1.

----END----

NOTE: If you are working on a StrongArm unit, remount the motor and pump pack assembly inside the unit and replace the cover.

Contact Information: Visit <https://support.hysecurity.com/hc/en-us> for installation manuals, replacement part instructions, part diagrams and more. Qualified HySecurity distributors are experienced and trained to assist in resolving installation problems. For the name of a qualified distributor near you, call HySecurity at 800-321-9947. *Before contacting your distributor or HySecurity Technical Support, obtain the serial number of your operator.