



INSTALLATION INSTRUCTIONS

25 AMP Switch Kit

514-0101

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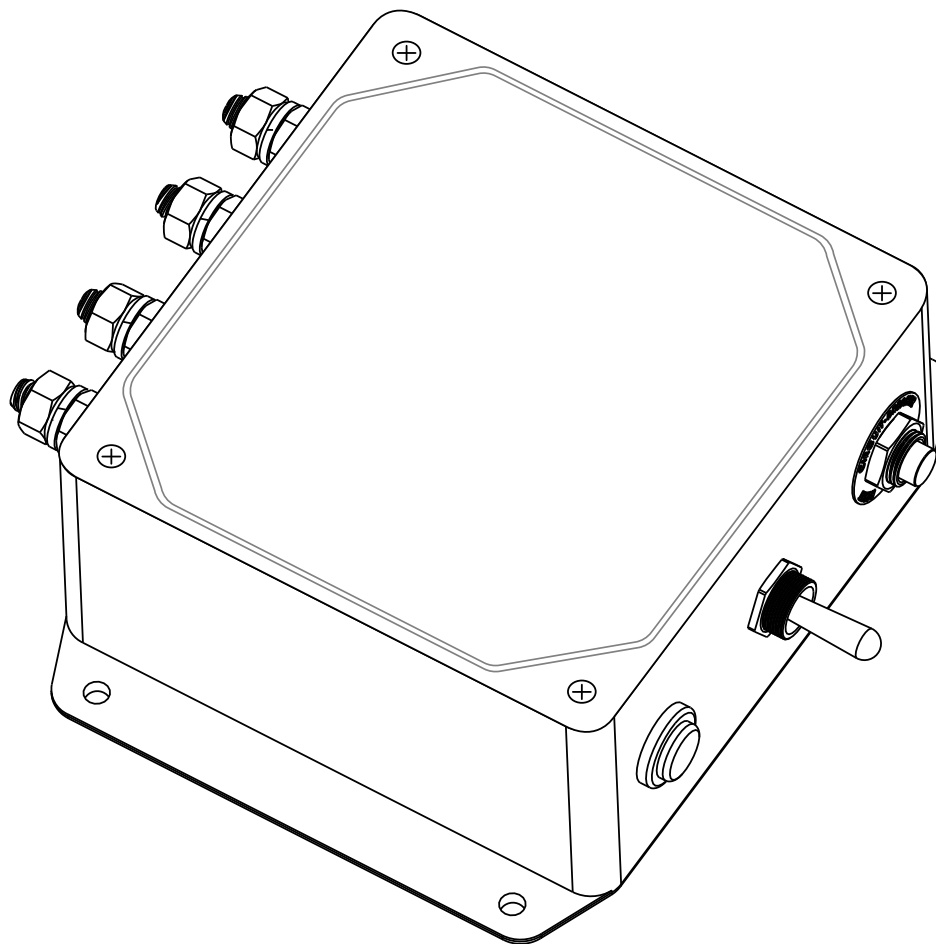
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DURING INSTALLATION, SOME FABRICATION MAY BE REQUIRED.



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A large, light gray equilateral triangle with a white exclamation mark in the center, serving as a background for the section header.

SAFETY & SYSTEM REQUIREMENTS



Safety Requirements



Failure to comply with requirements outlined in this document may result in serious injury or property damage.

The following requirements shall be met when installing or servicing electrical components in Pulltarps Automated Tarp Systems:

- All connections to vehicle battery systems, vehicle battery chargers, and external power supplies shall be disconnected during all installation procedures.
- Prior to installing wiring on positive terminals, check voltage on all wires and connection points using a voltmeter.
- The following personal protective equipment shall be worn at all times while installing components:
 - » Safety Glasses or Prescription Glasses with Side Shields.
 - » Steel or Composite Toe Protective Shoes.

Tools and Equipment Required for Installation

The following tools are required for installation of electrical components

- Torque Wrench with range between 50 to 150 in.lb.
- Nut Driver Set.
- Wire Cutters up to 2AWG size wire.
- Wire Insulation Stripping Tool for wire size range from 2 to 8 AWG.
- Wire Insulation Stripping Tool for wire size range from 16 to 18 AWG.
- Wire Terminal Crimping Tool for wire size range from 2 to 8 AWG.
- Wire Terminal Crimping Tool for wire size range from 16 to 18 AWG.
- Heat Gun for application of heat shrink insulation.
- Multi-meter with DC voltage measurement capability.
- Zip Ties.
- Vehicle Chassis Wiring insulated c-clamps capable of carrying 2 to 8 AWG wiring.



Vehicle Battery Connection Requirements

Main Power to Pulltarps System

- Source Voltage Line to Motor Reversing Relay shall be connected directly to the vehicle battery system.
- The Source Voltage Line shall include an in-line Pulltarps supplied circuit breaker. The circuit breaker shall be no greater than 12 inches from the positive terminal of the vehicle battery system.
- Main Power and Ground Connection through a power distribution box are forbidden.

Main Ground to the Pulltarps System

- Ground line to the Motor Reversing Relay shall be connected directly to the negative terminal of the vehicle battery system.
- Battery terminals shall be coated with dielectric grease to prevent corrosion.
- Appropriate ring terminal or battery terminal at the vehicle battery connection are required.

System Circuit Breaker Requirements

- The breaker shall be installed on the main positive wire within 12 inches of the positive terminal of the vehicle battery system.
- Circuit Breaker shall be mounted on a vertical surface with the input and output wires entering and exiting from the sides. This is the only approved installation orientation for the circuit breaker.
- Terminals of the circuit breaker shall be no less than 2 inches from any surface on the vehicle in all directions.

Motor Reversing Relay Requirements



Failure to properly follow all requirements may result in present or future property damage. Pulltarps Motor Reversing Relays contain a hot at all times connection to the vehicle battery system. Care must be taken to prevent contact between battery supply terminals and conductive surfaces of the chassis

**Motor Reversing Relay Requirements (Continued)**

The positive terminal of Pulltarps Motor Reversing Relay is hot at all times, breaker connected to the positive terminal of the vehicle battery energy system. Care must be taken to ensure the positive terminals meet the following:

- 1. Connected only with the supplied fasteners to the correct torque (8-11 ft.lb) to prevent a loose, high resistance connection, and...*
- 2. Strain relieved to prevent wire torque and vibration from loosening connection.*
- 3. Completely covered with the proper Red terminal boot.*

Failure to comply may result in excessive heat in the connection due to high resistance.

Mechanical Reversing Relay Requirements (Part Number 514-9978)

- The Motor Reversing Relay shall be installed on a vertical plane with the wires from terminals (B+, B-, M2, M1) facing down. This is the only approved orientation of the motor reversing relay.
- Mount the relay in a location that it is protected from road debris, ice, snow, and road spray or bombardment.
- Use the terminal boots supplied with the motor reversing relay, according to the following color codes:
 - » B+ is RED indicating the terminal is un-switched, fused, and hot at all times (POSITIVE).
 - » B- is Black (NEGATIVE).
 - » M2 is Black (BLUE - COVER).
 - » M1 is Red (YELLOW - UNCOVER).
- All terminals shall be coated with dielectric grease to prevent corrosion and long term connection from debris between electrical terminals.
- Install the motor reversing relay such that the terminals are facing the vertical mounting surface on the vehicle body
- The motor reversing relay shall be attached to the surface using only threaded fasteners with torque specification consistent with the fastener size and type.
- All terminal wires shall be strain relieved using insulated C-clamps attached to vehicle body to prevent wire vibration and torque loading from loosening electrical connections.
- Route all electrical wires from the Motor Reversing Relay in a manner that will avoid wire insulation chafing, pinching, and wear from other items on the truck chassis or wear from the environment.
- Torque all electrical connection fasteners to minimum 8-11 ft.lb.



INSTALLATION INSTRUCTIONS

25 AMP Switch Kit

Switch Requirements

Momentary Rocker Switch and Rotary Switch

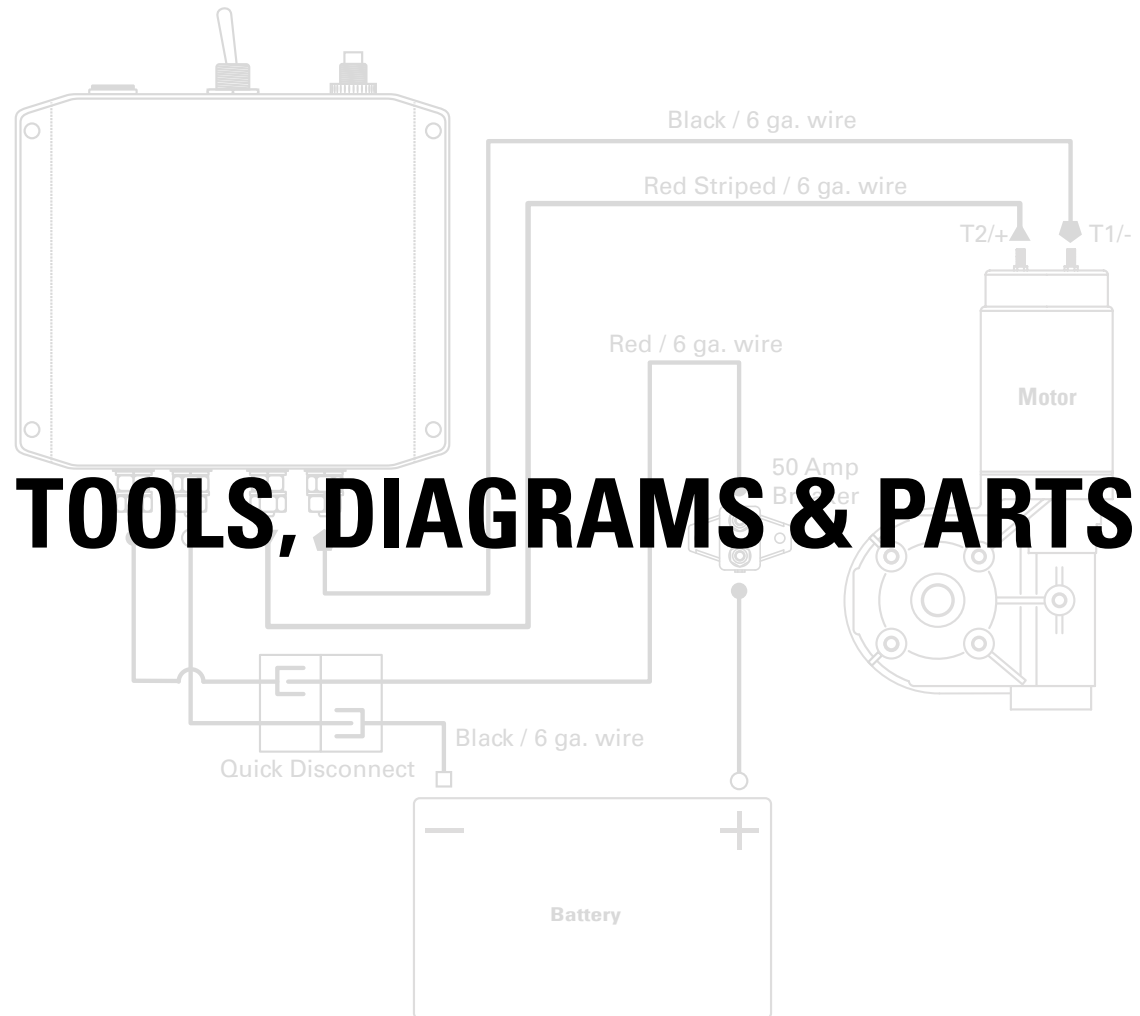


Pulltarps Rocker and Rotary switches contain hot-at-all-times connection at the center terminal of the switch. No exterior installation of the rocker or rotary switch is permitted. Contamination from an outside environment may connect the switch center input to the command line, resulting in unexpected movement of the tarp system.

- Use only a Pulltarps supplied Rocker Switch or Rotary Switch with the motor reversing relay.
- Switch terminals shall be protected from contact with conductive materials.
- Switch harness shall be fully insulated.
- Switch spade terminal connections shall be fully seated, preventing exposed conductive surfaces.
- Rocker switch shall be installed such that the switch labels read from left to right.

Gear Motor Installation Requirements

- Gear Motor shall be mounted using all mounting locations provided.
- Electric Motor connections shall be fully coated in dielectric grease.
- Electric motor connection torque requirement: 15 to 22 in.lb.
- To prevent terminal damage - **Do not exceed 25.5 in.lb.**



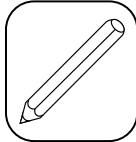
TOOLS, DIAGRAMS & PARTS



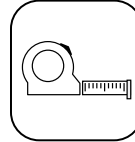
Recommended Tools



Safety Glasses and Gloves



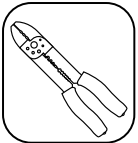
Pencil or Marker



Tape Measure



Adjustable Wrench



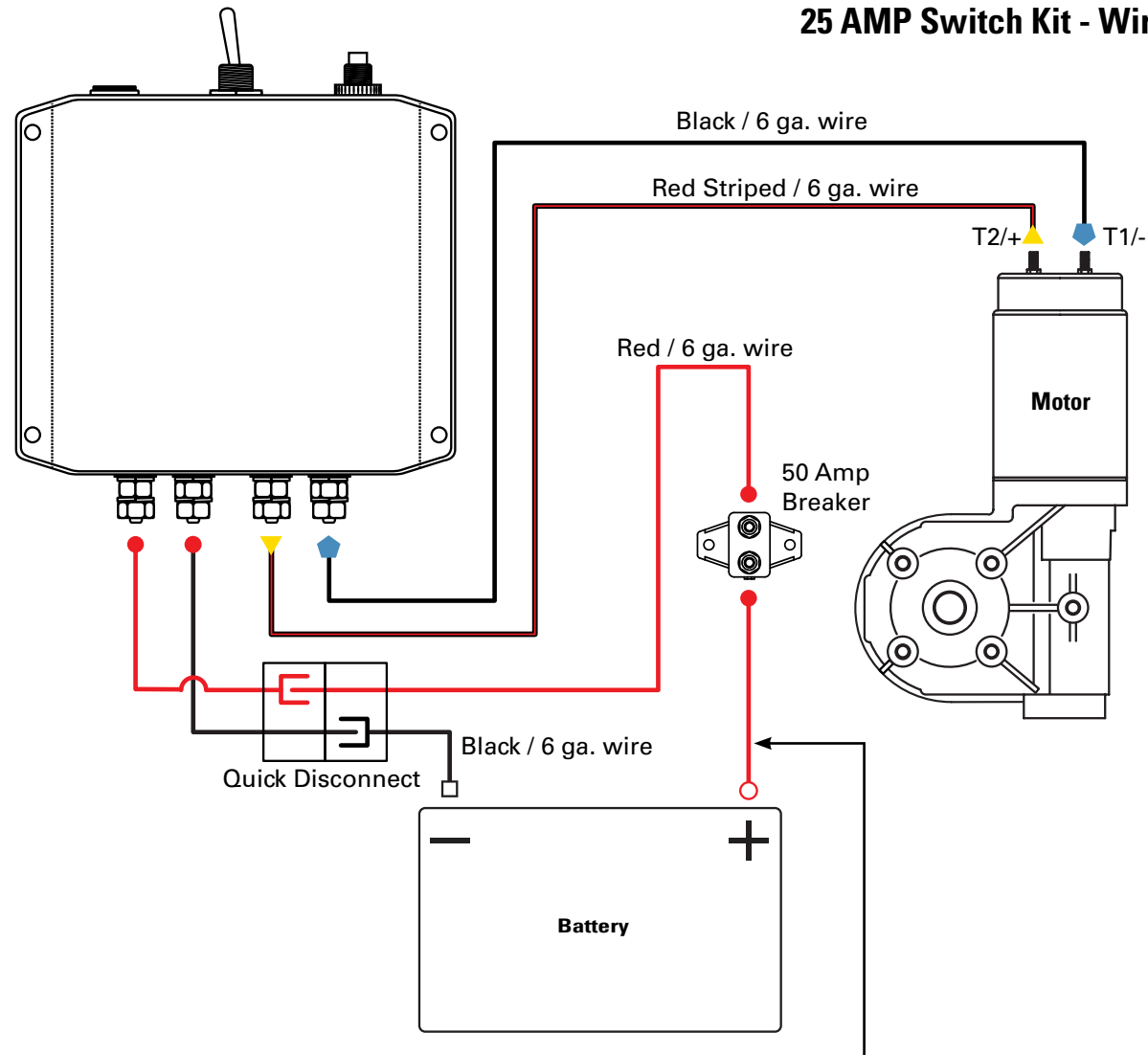
Wire Cutters



Soldering Iron



25 AMP Switch Kit - Wiring Diagram #514-0101



Note: 12" Max distance between Battery and Breaker.

BOOT COLORS

	Red	Yellow	Blue
With Boot			
No Boot		N/A	N/A

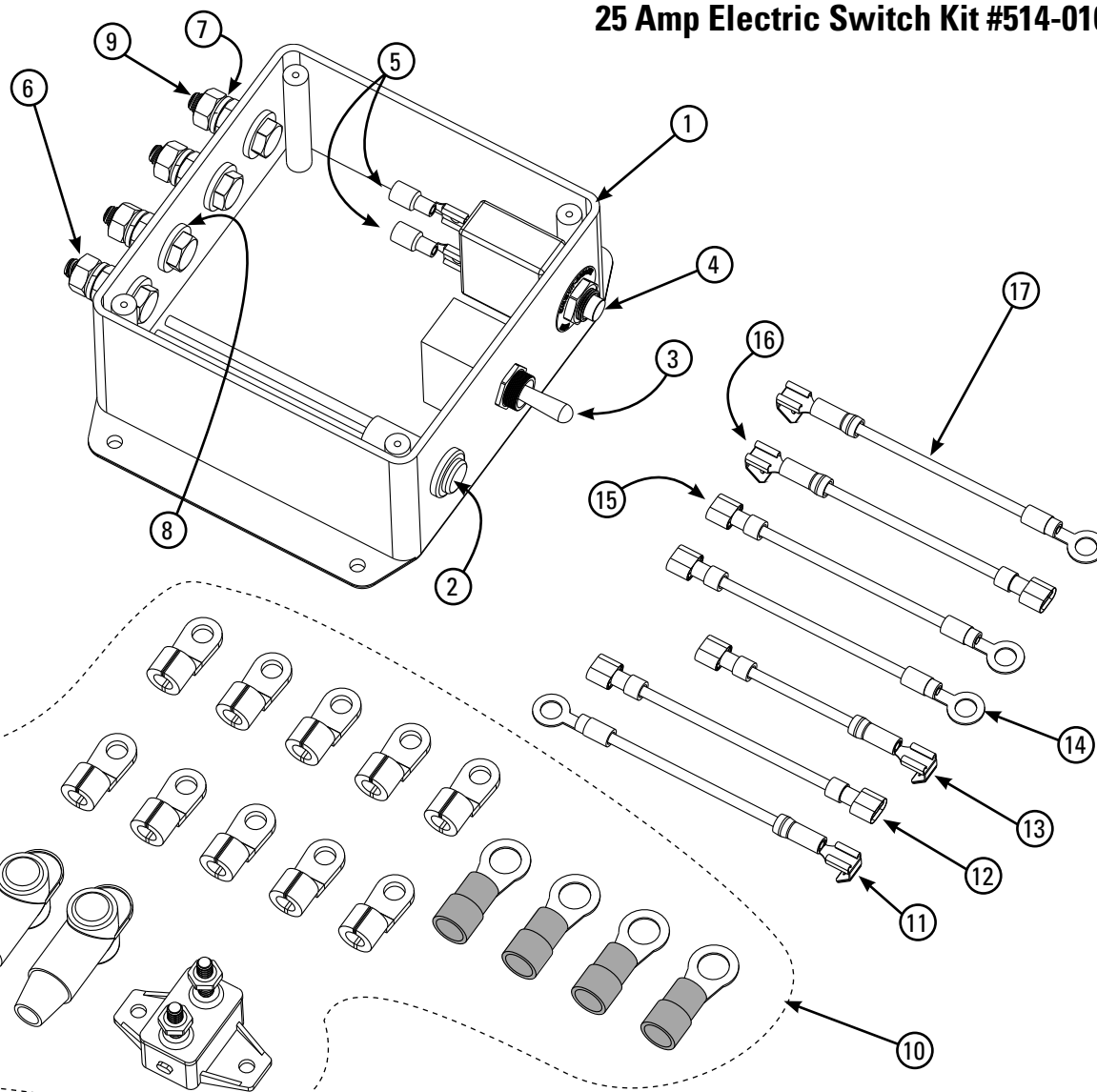


INSTALLATION INSTRUCTIONS

25 AMP Switch Kit

25 Amp Electric Switch Kit #514-0101

ITEM	PART #	DESCRIPTION	QTY
1	514-9991	Enclosure for Electric Pulltarp	1
2	514-9904	Red Lamp - 12V	1
3	514-0102	15A Switch for Electric Pulltarp	1
4	514-0402	25 AMP "Push to Reset" Breaker	1
5	514-0332	Push-OnspadeTerm. 22-18 1/4"	2
6	504-2502	1/4" - 20 Brass Nut	8
7	505-2503	1/4" Lockwasher (Shown in Flattened State)	8
8	505-2501	1/4" Washer	8
9	503-2508	1/4 - 20 x 1 HHCS GR5	4
10	106870	Breaker and Connector Kit	1
11	514-9923	10GA Black Wire Assy., 3" Long Stacked .25" Male Spade, .25 Ring Term	1
12	514-9924	10GA Black Wire Assy., 3" Long .25" Female Spade, Insulated both ends	1
13	514-9928	10GA Black Wire Assy., 2" Long Stacked .25" Male Spade .25" Female Spade, Insulated	1
14	514-9929	10GA Orange Wire Assy., 3" Long .25" Ring Terminal .25" Female Spade, Insulated	1
15	514-9959	10GA Red Wire Assy., 3" Long .25" Female Spade, Insulated .25" Ring Term	1
16	514-9960	10GA Blue Wire Assy., 3" Long Stacked .25" Male Spade .25" Female Spade, Insulated	1
17	514-9961	10GA Blue Wire Assy., 3" Long Stacked .25" Male Spade .25" Ring Terminal	1



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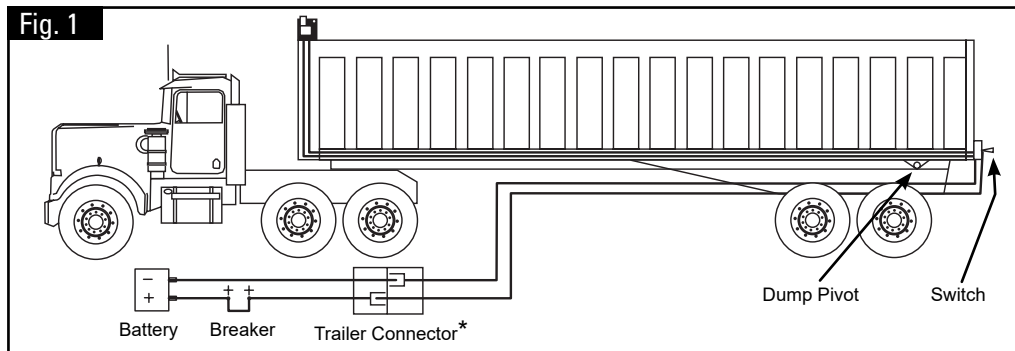


INSTALLATION INSTRUCTIONS

25 AMP Switch Kit

Electric Motor Wiring & Plug Assembly

Fig. 1



Step 1 - Wiring the Motor: First, remove motor housing, then run the 6 ga. wire to both locations (motor & battery box) and attach to truck body (Fig. 1).

Note: The wire must go beyond the pivot point.

Caution: Make sure wire does not get pinched at the pivot.

* Trailer Connector Detail

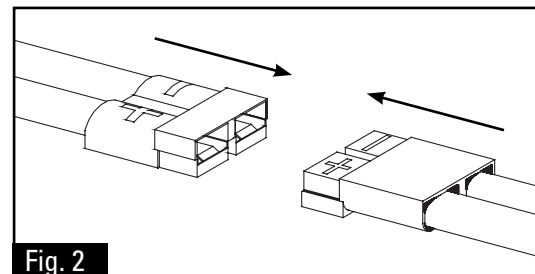


Fig. 2

Step 2 - Wiring:

Assemble the Quick Disconnect as shown (Fig. 2).

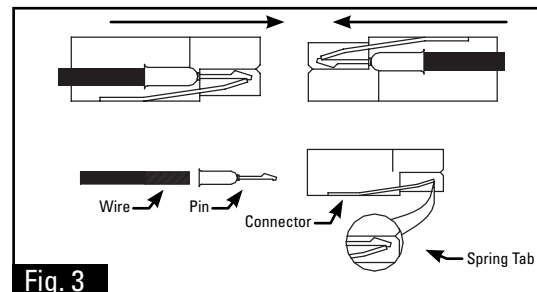


Fig. 3

Step 3: Crimp or solder pin to wire (Fig. 3).

Note: Make sure the pin snaps over the end of the spring tab.

Fig. 4

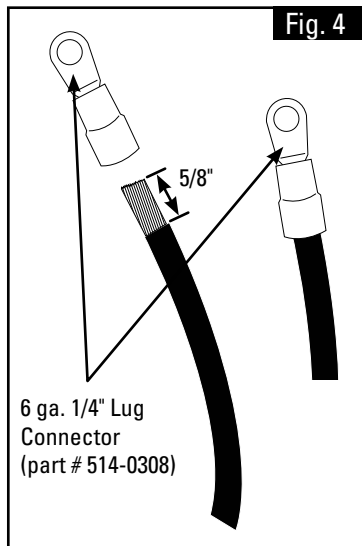
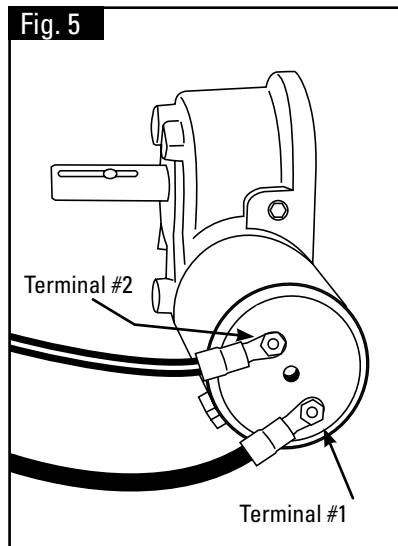


Fig. 5



Step 4 - Attaching The Connectors (Motor):

Split the molded 6 ga. wire approximately 4" and strip the ends about 5/8" down (Fig. 4). Attach connectors (part # 514-0308) and crimp (Fig. 4). Attach black wire to Terminal #1 on motor (Fig. 5). Attach red striped wire to Terminal #2 on motor (Fig. 5).

Note: Wire Cutters required.



Electric Motor & Breaker Wiring

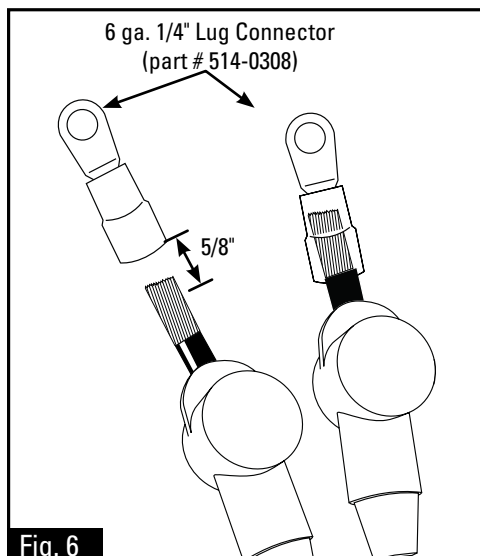


Fig. 6

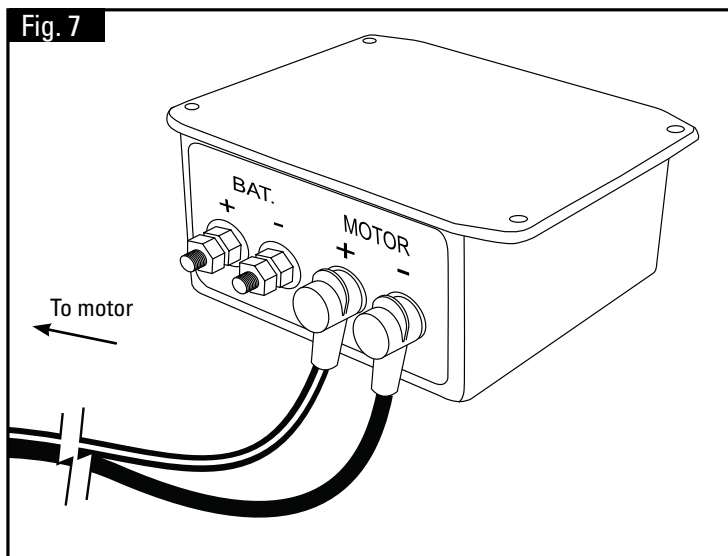


Fig. 7

Step 5:

Mount the Control Box at tailgate. Spilt the 6 ga. wire at the Control Box about 4" back and slip on rubber boots Red Boot (part # 514-0319) on red striped wire and Blue Boot (part # 514-0342) on black wire (Fig. 6 & 7). Strip wire about 5/8" and attach connectors (part # 514-0308) (Fig. 6). Attach Red Striped wire to Motor (+) and Black wire to Motor (-) on Control Box (Fig. 7).

Note: Do not over tighten nuts on connections!

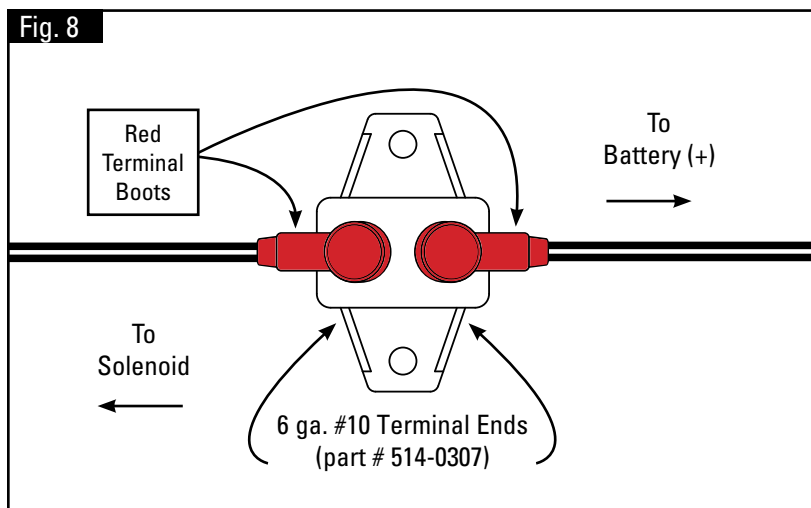


Fig. 8

Step 6:

Mount breaker in the battery box away from moisture. Cut a section in the red 6 ga. wire that will run to the positive terminal on the battery. Strip wire the ends about 5/8" and attach 6 ga. #10 terminal ends (part # 514-0307) (Fig. 6). Attach to breaker (Fig. 8)

Warning: Failure to install properly will void warranty on motor and other parts.

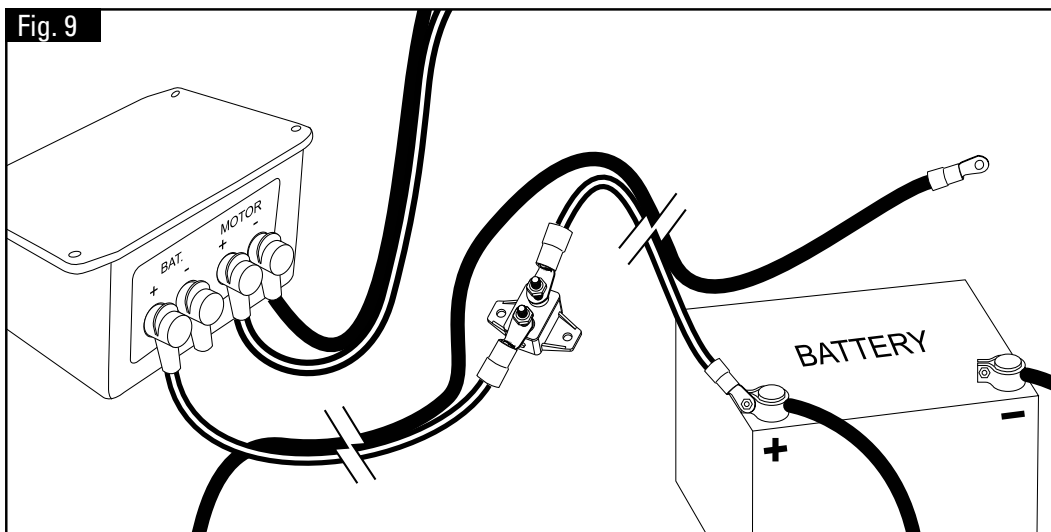


Wiring the Battery

Step 7:

Attach the red striped 6 ga. wire to BAT (+) at the control box. Slide Red Terminal Boot over the end and connect using the Lug Connector (part # 514-0308) as done in step 3.

Attach the other end of the red striped 6 ga. wire to the positive terminal on the battery using a 6 ga. 3/8" terminal end (part # 514-0309) or 1/4" terminal end (part # 514-0308) depending on the size of the terminal at the battery (Fig. 9).



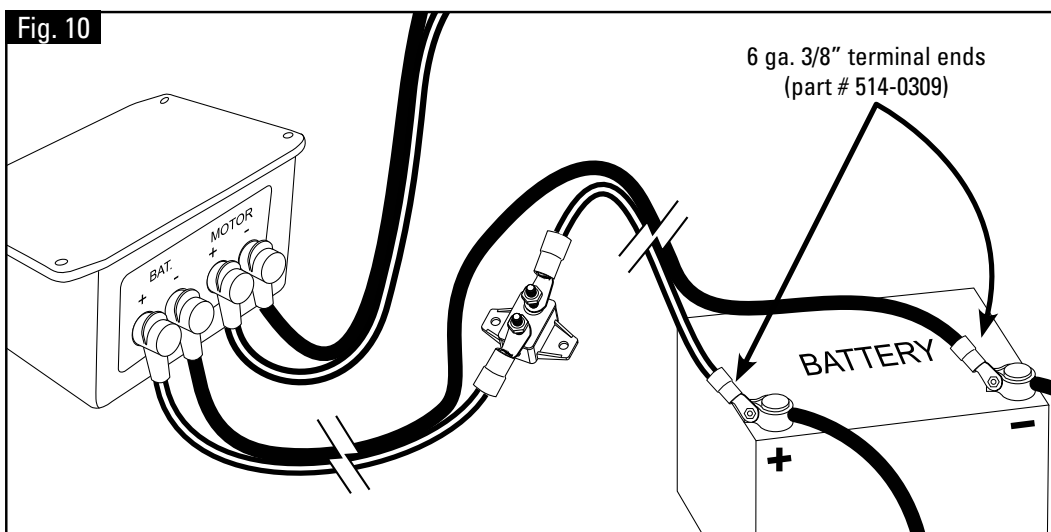
Step 8:

Connect the black 6 ga. wire to the negative terminal on the battery using a 6 ga. 3/8" terminal end (part # 514 0309) or 1/4" terminal end (part # 514-0308) depending on the size of the terminal at the battery (Fig.10).

Attach the other end of the black 6 ga. wire to BAT (-) at the control box as done in step 3. Slide Black Terminal Boot over the end and connect using the Lug Connector (part # 514-0308) as shown (Fig. 10).

Warning: You must attach the black 6 ga. wire to the battery first, before attaching it to the box.

Note: If the system operates backwards then reverse the 6 ga. wires on the motor.





INSTALLATION INSTRUCTIONS

25 AMP Switch Kit

Motor Check Out Procedure

1. Remove leads from motor & attach volt meter to the leads.
2. With the switch in the on position, the volt meter should read 12 volts minimum. If voltage is low recheck with engine running. Recheck wiring and connections (minimum 6 gauge wire must be used).
3. Return switch to the neutral position & reattach leads to motor.
4. Attach volt meter to leads at the motor.
5. With the switch in the on position and the leads attached, the volt meter should read 8.5 volts minimum. If voltage is low recheck with engine running. Recheck wiring and connections (minimum 6 gauge wire must be used).
6. Return switch to the neutral position and attach amp meter to leads at the motor.
7. With the switch in the on position, amp meter should read approximately 20 – 30 amps. Constant amperage reading of over 40 amps indicated binding in the system and/or low voltage.