PULLTARPS®

INSTALLATION INSTRUCTIONS

Smart Switch w/ External Switch - 24 Volt

501-9949

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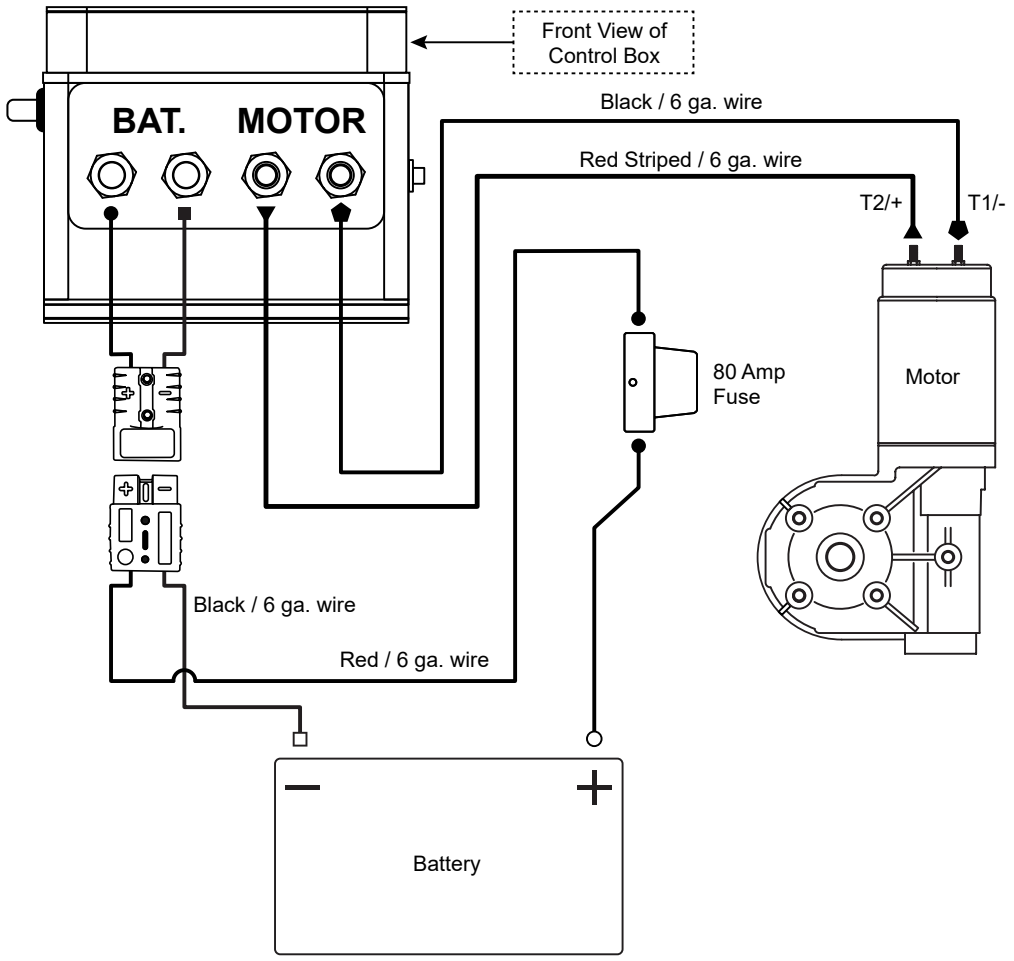
PDF: Smart Switch Basic Kit - 12 Volt

PDF: Smart Switch w/ Ext. Switch - 24Volt

PDF: Cab External Switch - 12 Volt

Video: Electric Drive Unit Operation



Document #: 607-0091
Revised: 04/10/25 WLH

DURING INSTALLATION, SOME FABRICATION MAY BE REQUIRED.

Table of Contents

SAFETY & SYSTEM REQUIREMENTS

Safety Requirements

⚠ WARNING

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.

Switch Requirements

Momentary Rocker Switch and Rotary Switch

⚠ DANGER

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.**

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.

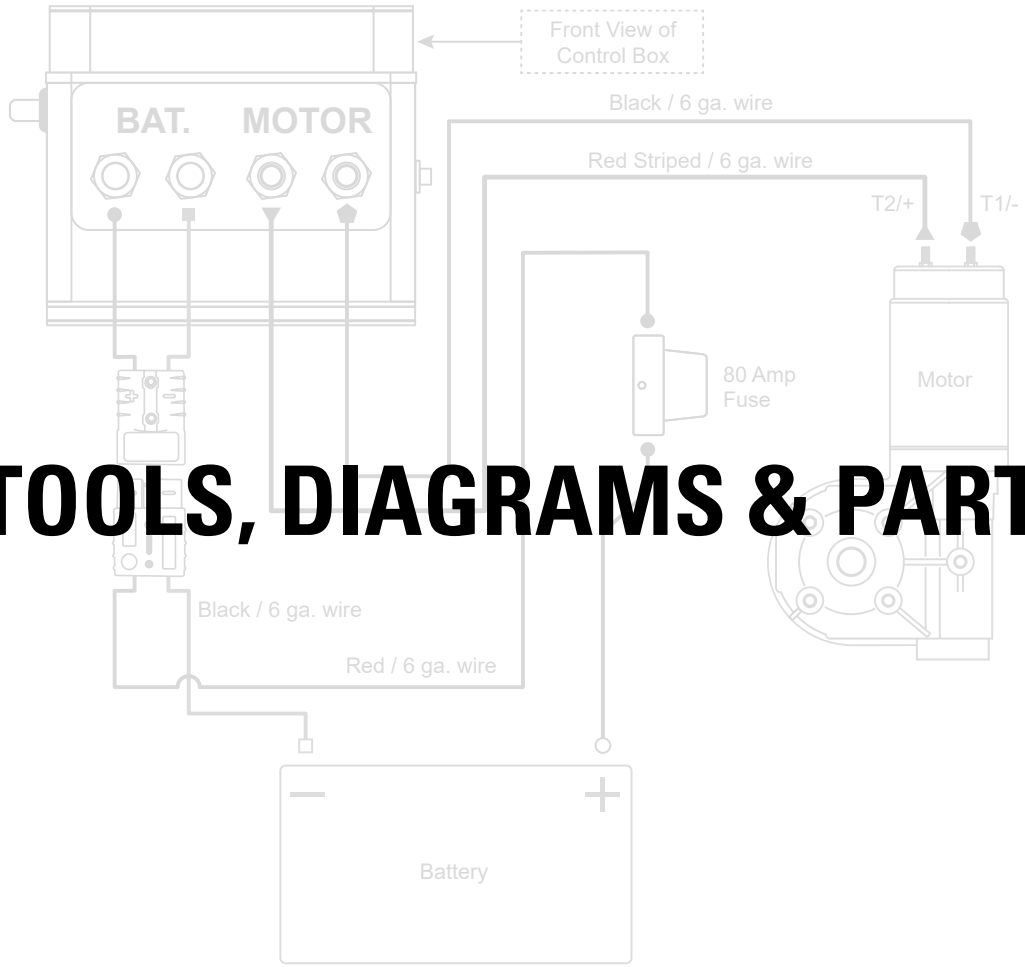
System Circuit Breaker Requirements

- 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.

Control Box

⚠ CAUTION

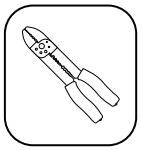
Failure to properly follow all requirements may result in present or future property damage. Pulltarps Motor Reversing Relays contain a hot at all times connection to the vehicle battery system. Care must be taken to prevent contact between battery supply terminals and conductive surfaces of the chassis

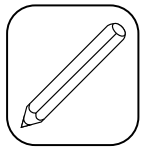


TOOLS, DIAGRAMS & PARTS

Recommended Tools


Safety Glasses and Gloves

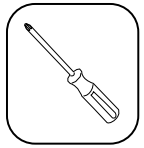

Wire Crimping & Cutter Tool

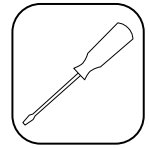

Pencil or Marker


Adjustable Wrench


Tape Measure

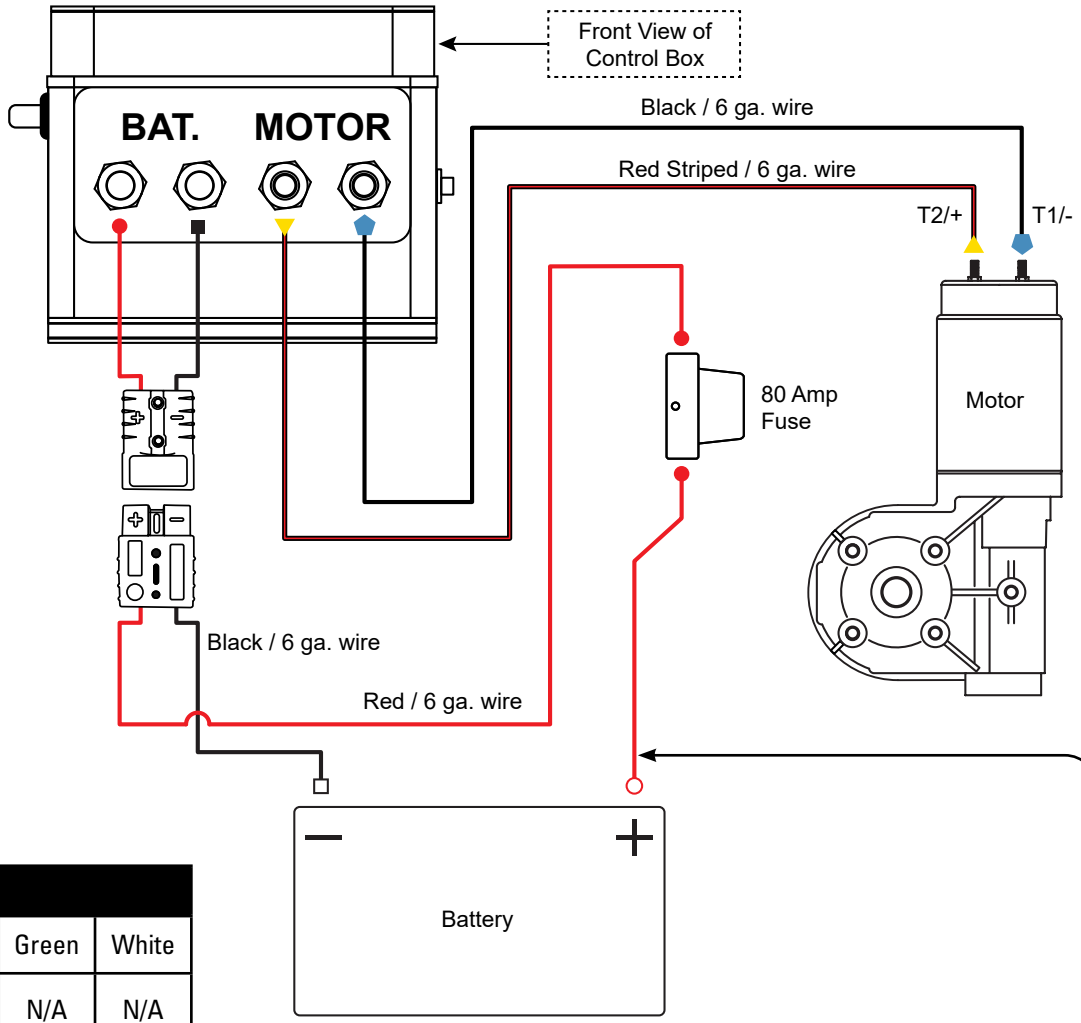

Power Drill


Philips Screwdriver


Flathead Screwdriver


Soldering Iron

Wiring Diagram #501-9949



BOOT COLORS						
	Red	Black	Yellow	Blue	Green	White
With Boot	●	■	▲	⬟	N/A	N/A
No Boot	○	□	N/A	N/A	◇	◉

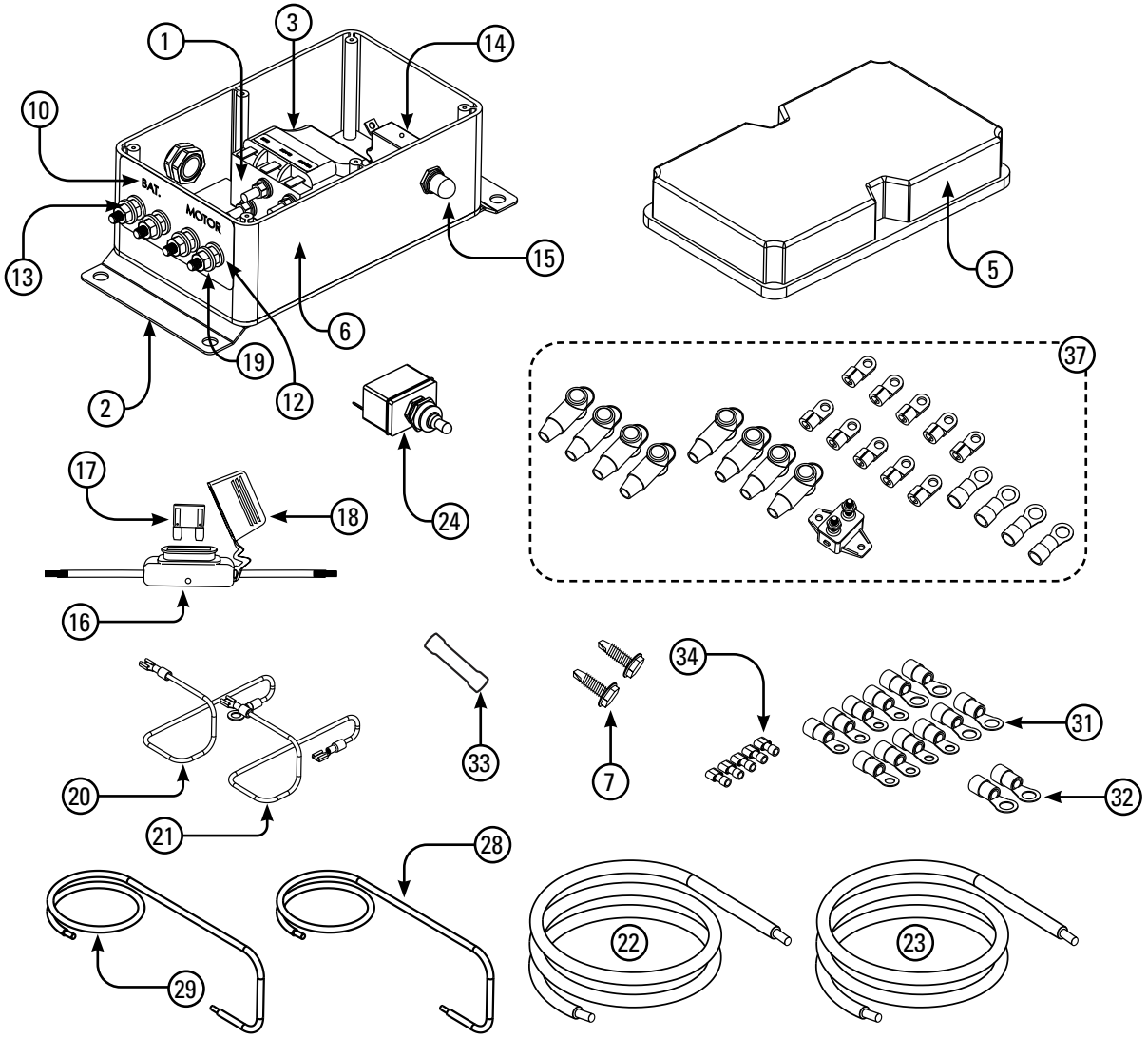
Note: 12" Max distance between Battery and Breaker.

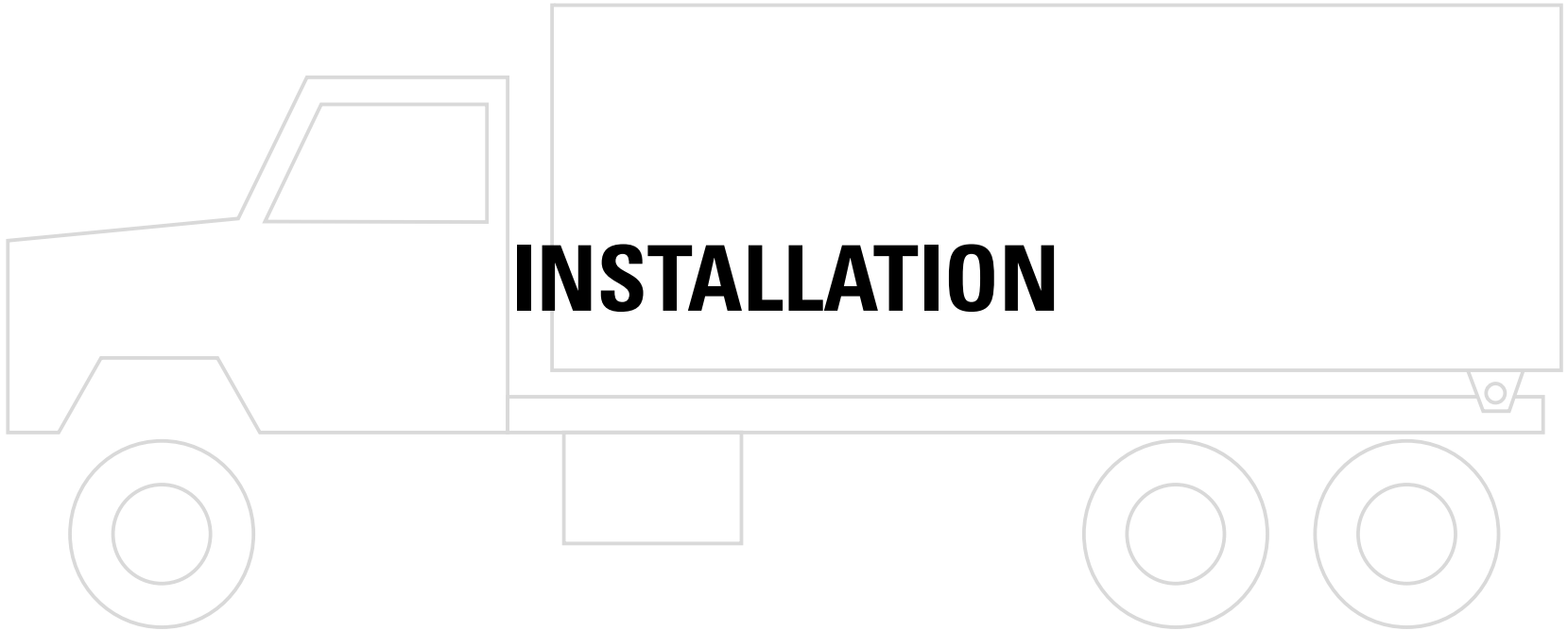
1404 N. Marshall Ave. El Cajon CA. 92020 • For technical support call us at (877) 861-6265 or visit at Pulltarps.com.

ITEM	PART #	DESCRIPTION	QTY
1	501-9947	Solenoid Inside Mounting Plate	1
2	501-9948	Solenoid Inside Mounting Plate	1
3	514-9958	Reversing 100 AMP Contactor - 24V	1
4	503-2501	1/4-20 X 1/2" USS Carriage Bolt (Not Shown)	4
5	517-9923	Plastic Flanged Solenoid Box Cover	1
6	517-9934	Plastic Flanged Solenoid Box	1
7	506-9904	#10-16 X 1/2"Phillips Pan Head Screw	2
8	504-9903	10-32 Nylock Nut (Not Shown)	2
9	504-2506	1/4-20 Hex Lock Nut "Thin" (Not Shown)	4
10	517-0214	Elect. Switch Label (Back)	1
11	503-2508	1/4-20 X 1" Brass Hex Head Bolt (Not Shown)	4
12	505-2501	1/4" SAE Thin Zinc Washer	8
13	504-2502	1/4-20 Brass Nut	8
14	514-0407	50 AMP "Push to Reset" Breaker	1
15	514-0420	Boot for 40 AMP Breaker	1
16	514-0418	Line Fuse Holder 80 AMP	1
17	514-0417	80 AMP Blade Fuse	1
18	514-0431	Line Fuse Holder 80 AMP Cover	1
19	505-2503	1/4" Lock Washer - Plated	8
20	514-9964	12" Red 14GA Jumper w/ Spade/Ring	1
21	514-9921	4" Black 10 GA Jumper with 1/4" Eyelets	1
22	514-9968	6 GA Electrical Wire - Red	1
23	514-9969	6 GA Single Strand Wire - Black	1
24	514-0130	Sealed Toggle Switch	1
25	514-0129	Toggle Switch Boot (Not Shown)	1
26	602-0038	PT Decal for Solenoid Boxes (Not Shown)	1
27	602-0039	In / Out Label for Sol. Box (Not Shown)	1
28	514-0208	14 GA Electrical Wire - Orange	1
29	514-0210	14 GA Electrical Wire - Blue	1
30	514-0307	Connector 6 GA #10 Stud Vinyl Insulated (Not Shown)	2
31	514-0308	Connector 6 GA w/ 1/4" Hole	12
32	514-0309	Connector 6 GA w/ 3/8" Hole	2
33	514-0318	Butt Connector for 6 GA Wire	2
34	514-0321	Push-On Female Terminal 16 GA .25 Wide	5
35	517-0234	Motor Label (Not Shown)	1
36	517-0235	Power Label (Not shown)	1
37	106870	Electrical Terminal Kit	1

REV. 04/02/25 WLH

24 Volt Smart Switch w/ External Switch #501-9949





INSTALLATION

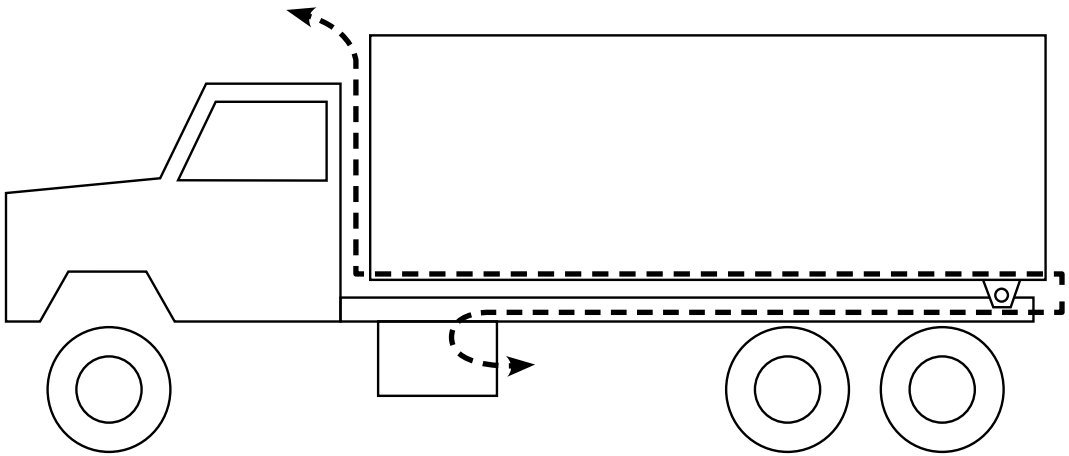
Wiring the Motor

Step 1: 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.

Fig. 1



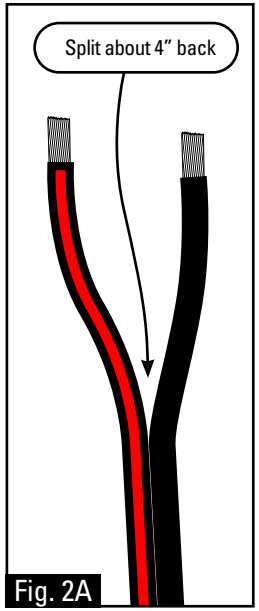


Fig. 2A

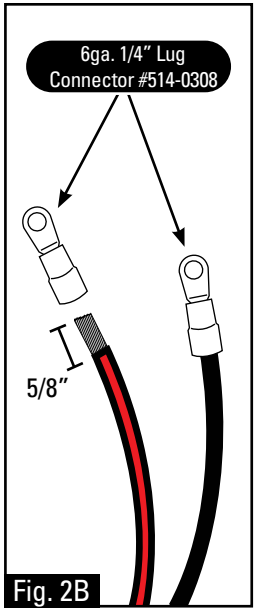
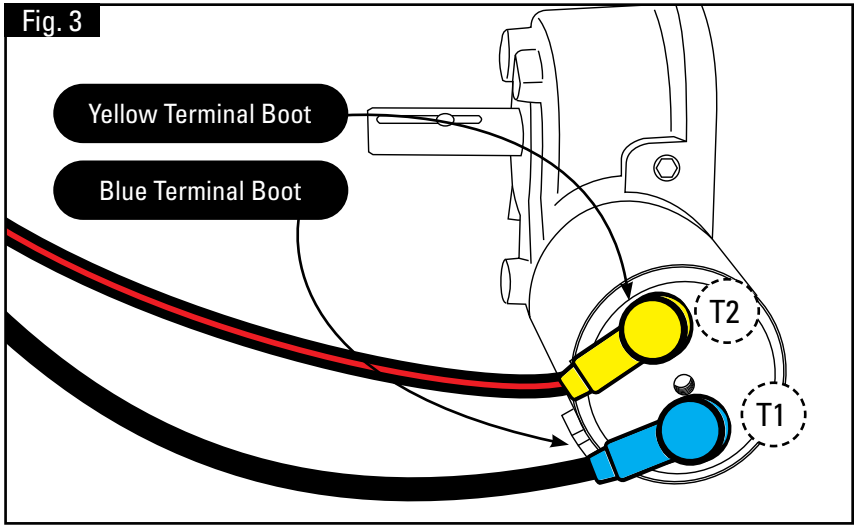


Fig. 2B

Step 2: Preparing the Connectors
On the motor side, split the molded 6 ga. wire approximately 4" (Fig 2A) and strip the ends about 5/8" down. Then attach connectors (part # 514-0308) and crimp (Fig. 2B).

Fig. 3



Step 3: Attaching Connectors to the motor
Attach Black wire to Terminal #1 (T1) on motor. Then attach the Red Striped wire to Terminal #2 (T2) on motor (Fig. 3).

Wiring the Solenoid

Fig. 4

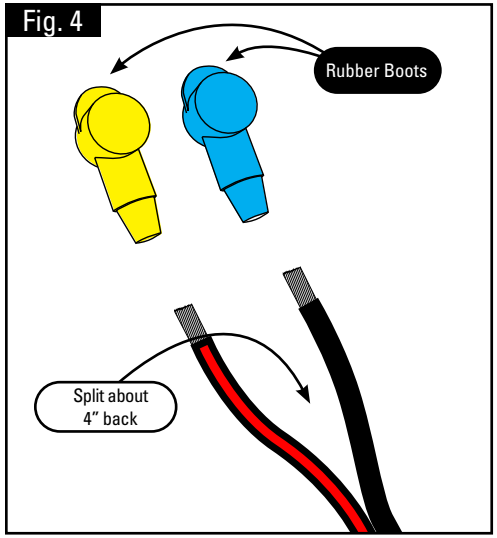
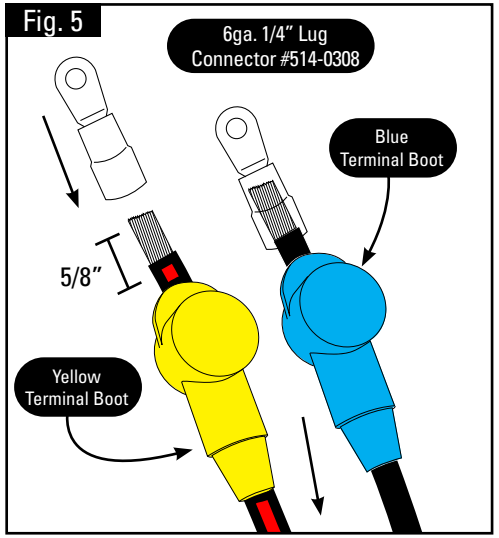


Fig. 5

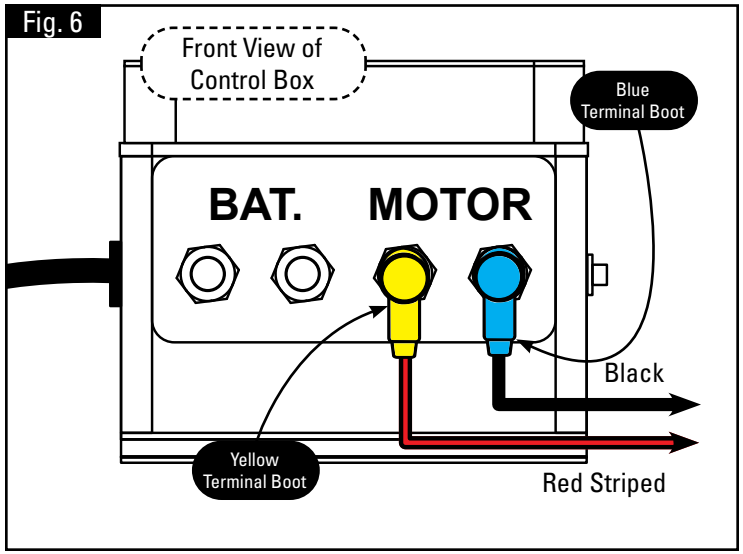


Step 4: Prepping the Wire
Take the other end of the wire and Split the 6 ga. wire at the control box about 4" back and slip on rubber boots - Yellow Boot (part # 514-0343) on Black wire and Blue Boot (part # 514-0342) on Red Striped wire (Fig. 4).

Strip wire about 5/8" and attach connectors (part # 514-0308) (Fig. 4). Crimp Connectors (Fig. 5).

Note: Do not over tighten nuts on connections!

Fig. 6

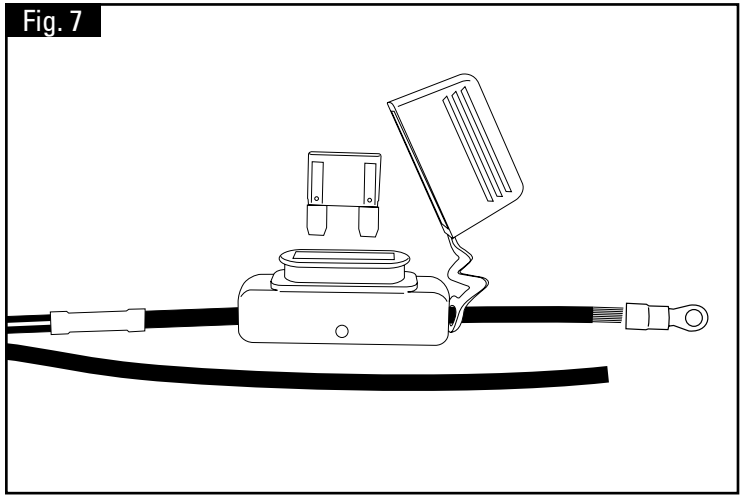


Step 5: Attaching the Connectors
Attach Red Striped Wire to the Motor (+) and connect the Black Wire to Motor (-) on the Control Box (Fig. 6).

Note: Both wires lead to the motor.

Wiring the Fuse

Fig. 7



Step 6: Cut a length of 6ga. duplex wire long enough to run from the battery to the Control Box. Then split the duplex wire at the battery (Fig 7).

Strip one end of the Red Striped wire about 5/8", and strip one end of the fuse holder wire about 5/8". Attach the 6 ga. Butt Connector (part # 514-0315) and crimp.

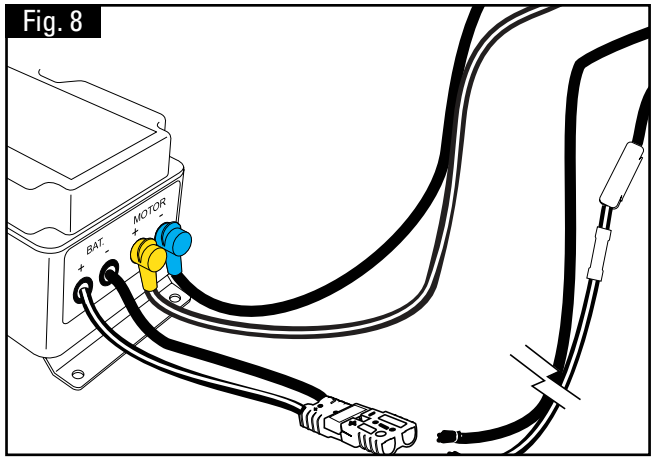
Strip the other end of the fuse holder wire about 5/8" and attach the 6 ga. 3/8" terminal end (part # 514-0309) or the 6 ga. 1/4" terminal end (part # 514-0308), depending on the size of the terminal at the battery.

Note: Do not attach to positive (+) terminal on battery at this time.

Install 80 amp fuse in fuse holder.

Push the fuse holder cover over the fuse.

Fig. 8



Step 7: Strip the insulaton off the end of the red and black wires far enough to fit the contacts for the heavy duty plugs (Fig 8).

Fig. 9A

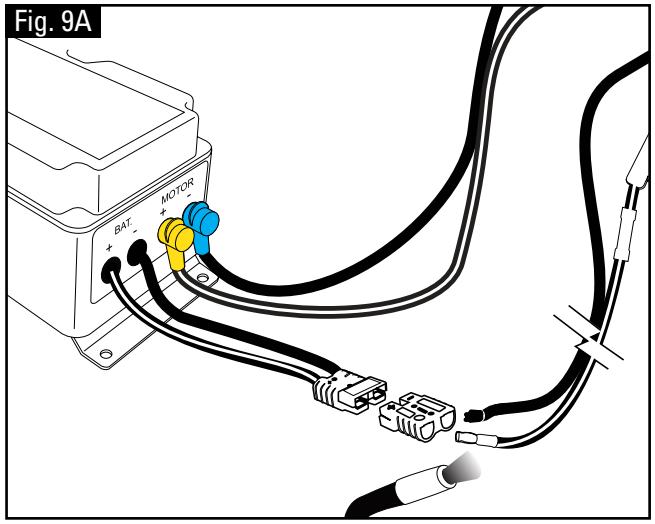
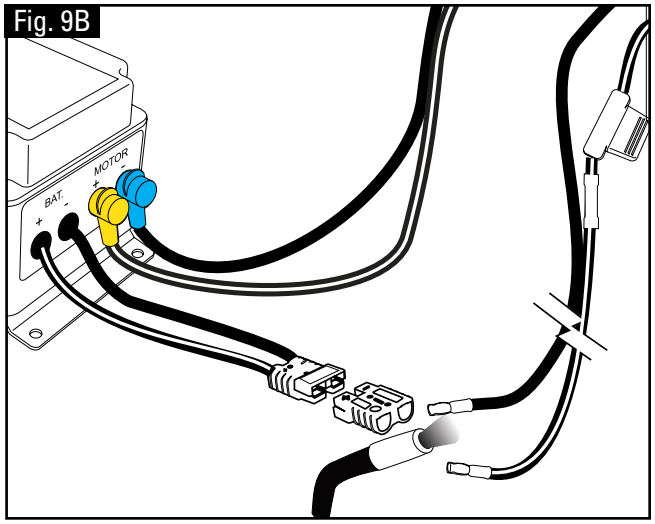


Fig. 9B



Step 8: Solder contacts to the ends of the wire (Fig 9A & B).

Wiring the Battery

* Trailer Connector Detail

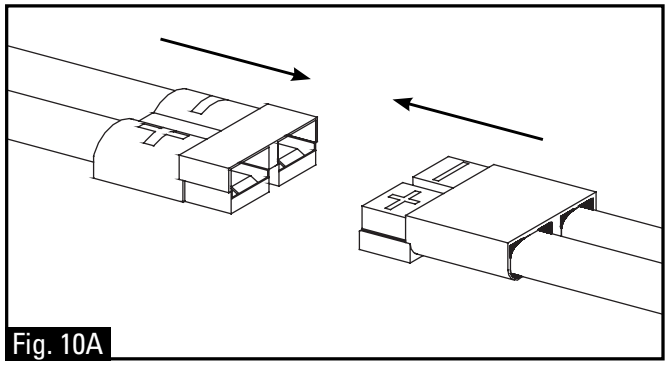


Fig. 10A

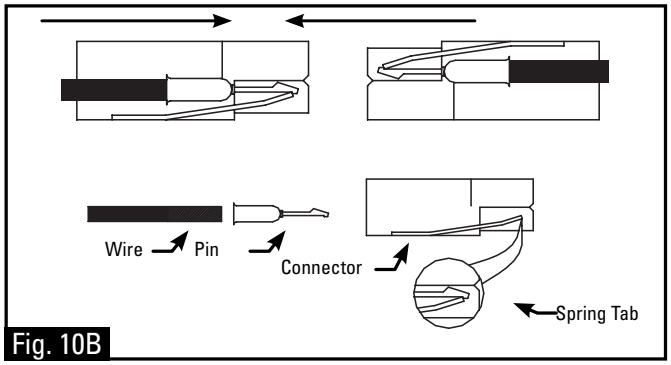


Fig. 10B

Step 9: Push contacts in the plugs from the back. Be sure that the contacts are inserted properly so that the spring tab in the plug locks the contact in place. (Fig. 10A & B).

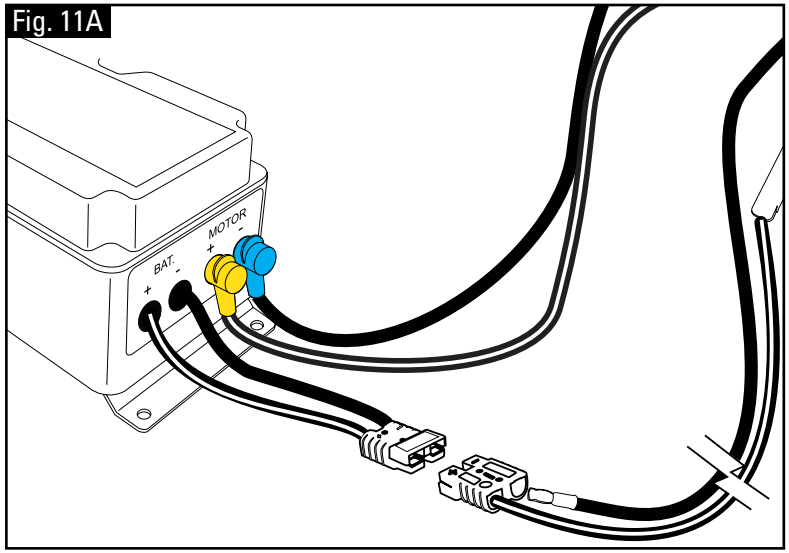


Fig. 11A

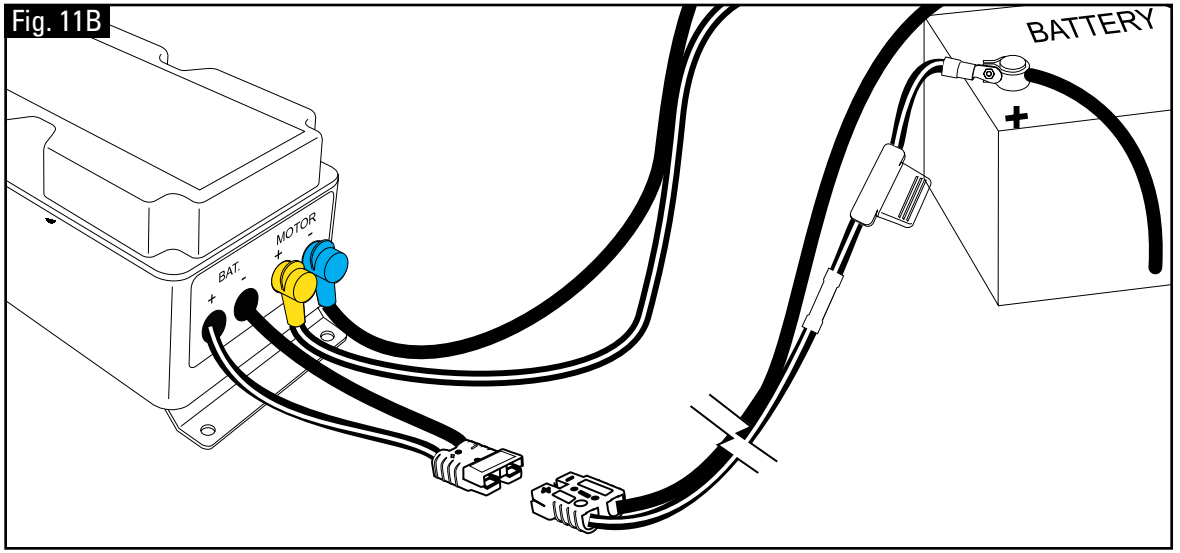
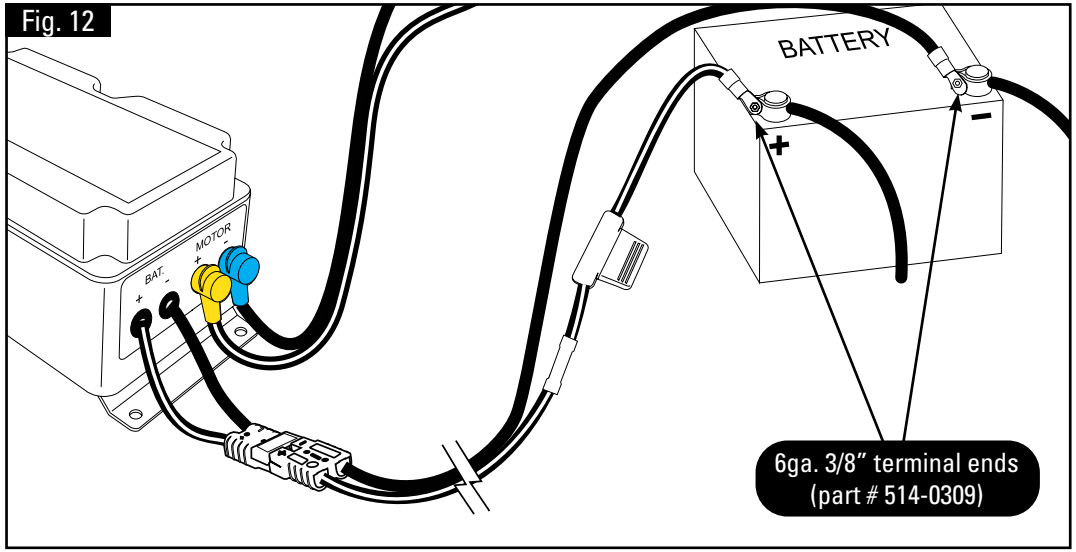


Fig. 11B

Step 10 - Wiring the Battery: Push contacts in the plugs from the back. Be sure that the contacts are inserted properly so that the spring tab in the plug locks the contact in place (Fig. 11A & B).

Wiring the Battery

Fig. 12



Step 11 - Wiring the Battery: Connect the red striped 6 ga. wire to BAT (+) at the battery. Connect the heavy duty plug at the Smart Switch Box (Fig. 12).

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

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.