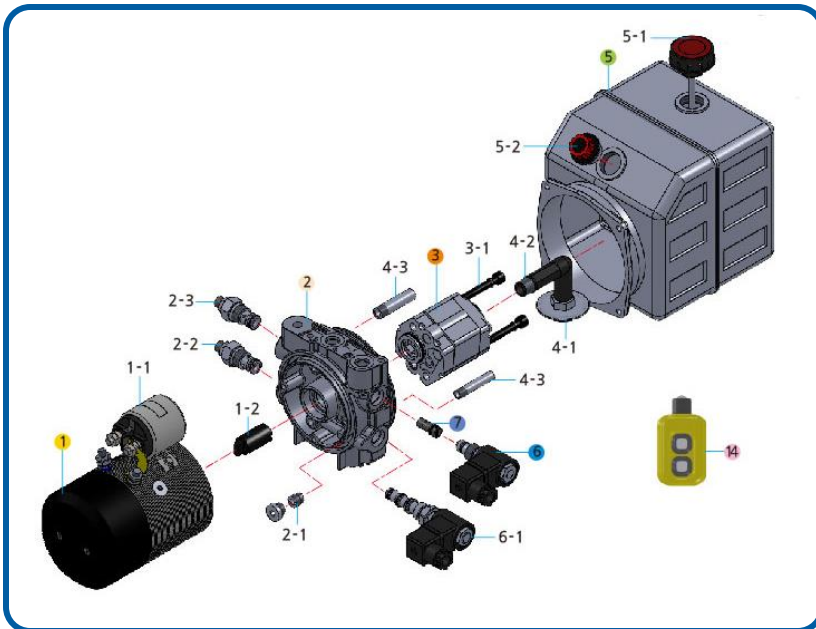
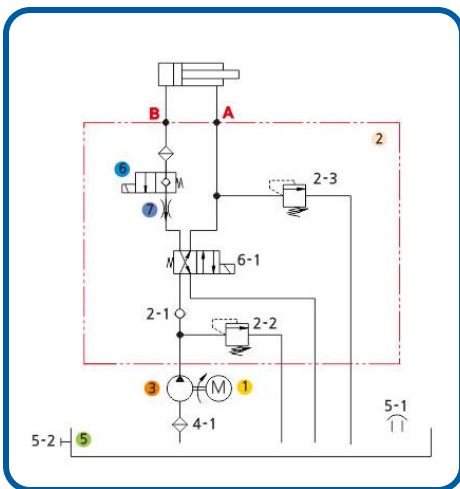




HYDRAULIC MINI POWER PACKS

START-UP / INSTALLATION REFERENCE



- **Installation, Operation & Maintenance** **3**

Pre-Built Units:

- **PO Power Unit Only** **4**
- **SA Manual – 2W/2P Lever** **5**
- **SA Solenoid – 2W/2P** **6**
- **DA Solenoid – 4W/2P Dual PO Check** **7**
- **DA Solenoid – 4W/2P, B-Hold/FC, A-Relief** **8**
- **DA Solenoid – DO3 4W/3P A-PO Check** **9**
- **DA Solenoid – 2-DO3 4W/3P A-PO Check** **10**
- **DA Solenoid – 4W/3P Dual PO Check** **11**
- **DA Solenoid – 4W/2P Dual PO Check, A-Relief** **12**
- **APU Auxiliary Power** **13**

Thank You for your selection of the **Hydro-Tek DC Mini Power Pack**. Please take a moment to review the following important application information.

MOUNTING

- Make sure the Power Pack is assembled for the required mounting orientation. They can be assembled and modified to mount horizontally or vertically. It is important that if you need to change the mounting orientation, the suction and return tubes inside the tank are correct (Contact FORCE America for assistance).
- Mount the power pack on a solid and level surface free of debris, collision, vibration and weather conditions to ensure proper functionality of the power pack. Optional mounting bracket is available (**Part #: BRACKET-B**).
- The unit contains two **M10 x 1.50** threaded holes located on the bottom and side of the manifold to provide flexibility in mounting the unit horizontally or vertically (**Mounting bolts not included**).

FLUID RECOMMENDATIONS

- Use quality hydraulic oil with additives for inhibiting rust, oxidation, anti-wear, anti-foam and to be compatible with BUNA-N seals.
- Ensure the fluid is clean (and filtered) before installing in the tank. The pump suction includes a strainer that should be checked and cleaned if needed. Clean the strainer if replacing the fluid.
- Make sure the fluid volume and level is correct for the cylinder size and type.
- Oil viscosity is important for proper operation. The viscosity must be based on the coldest temperature in which the unit will be operating.
- 10° to 100° F = (ISO 22, 5W or 5W-20 Fluid Rating). 30° to 160° F = (ISO 32, 10W or 10W-30 Fluid Rating). Do not exceed 160° oil temperature.
- ATF (Automatic Transmission Fluid) contains the basic fluid requirements and is acceptable for most applications and climates.
- Water in the oil can cause damage. Inspect the fluid for water regularly, if present, it normally adds a milky color.

START UP PROCEDURES

- Make sure the reservoir has been properly filled.
- Jog the electric motor to prime the pump.
- Initial startup should be done under a **"NO LOAD CONDITION"** until all lines are properly filled.
- Pressure line(s) may need to be purged to remove trapped air (**Observe All Safety Procedures!**)
- Purge the system until a clear stream of oil is seen. (Use care when doing this to avoid contact with oil spray).
- Jog the electric motor during this process and continually check the oil level in the reservoir, refilling as needed.

PRESSURE RELIEF VALVE

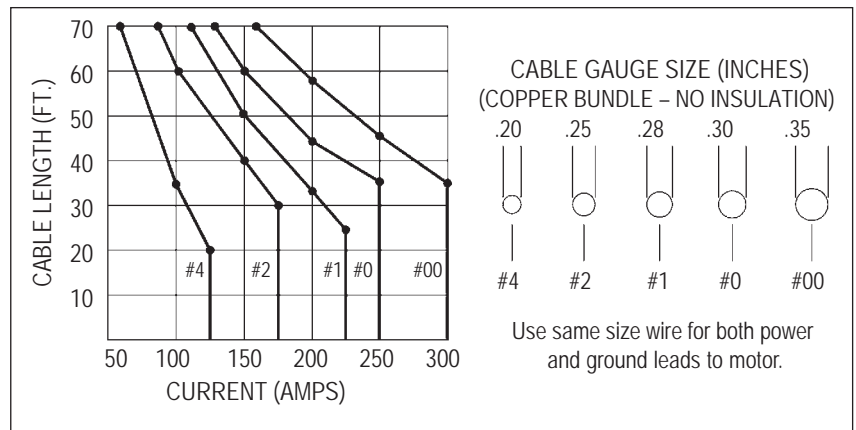
- The relief valve is preset to 2500 PSI at the factory. The proper relief setting is critical for operational and safety reasons.
- To set the relief you must use a pressure gauge connected to the pressure line. Pressure adjustable from 1400 to 3500 PSI.

ELECTRICAL

- Make sure the power pack has been properly connected with the appropriate size wiring.
- Chart shows recommend wire size. Never use smaller than 4 gauge power and ground cable.
- Most chassis manufacturers recommend a dedicated circuit for the DC power pack.
- A high amperage fuse or circuit breaker is typically required for proper protection (**Not included**)

MAINTENANCE

- Keep the unit clean and dry, look for any leaks and repair.
- Do not pressure wash.
- Check all wiring for corrosion and for proper connections. Clean and tighten as necessary.
- Check oil level and top off as needed. Change annually or as needed.

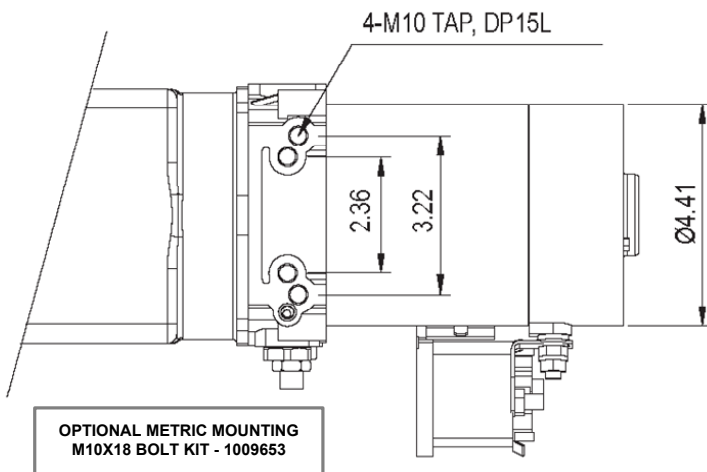
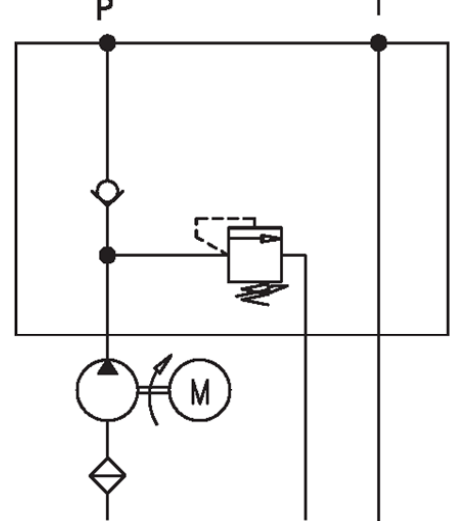


Retain this guide for future reference

STOCK UNITS INCLUDE:

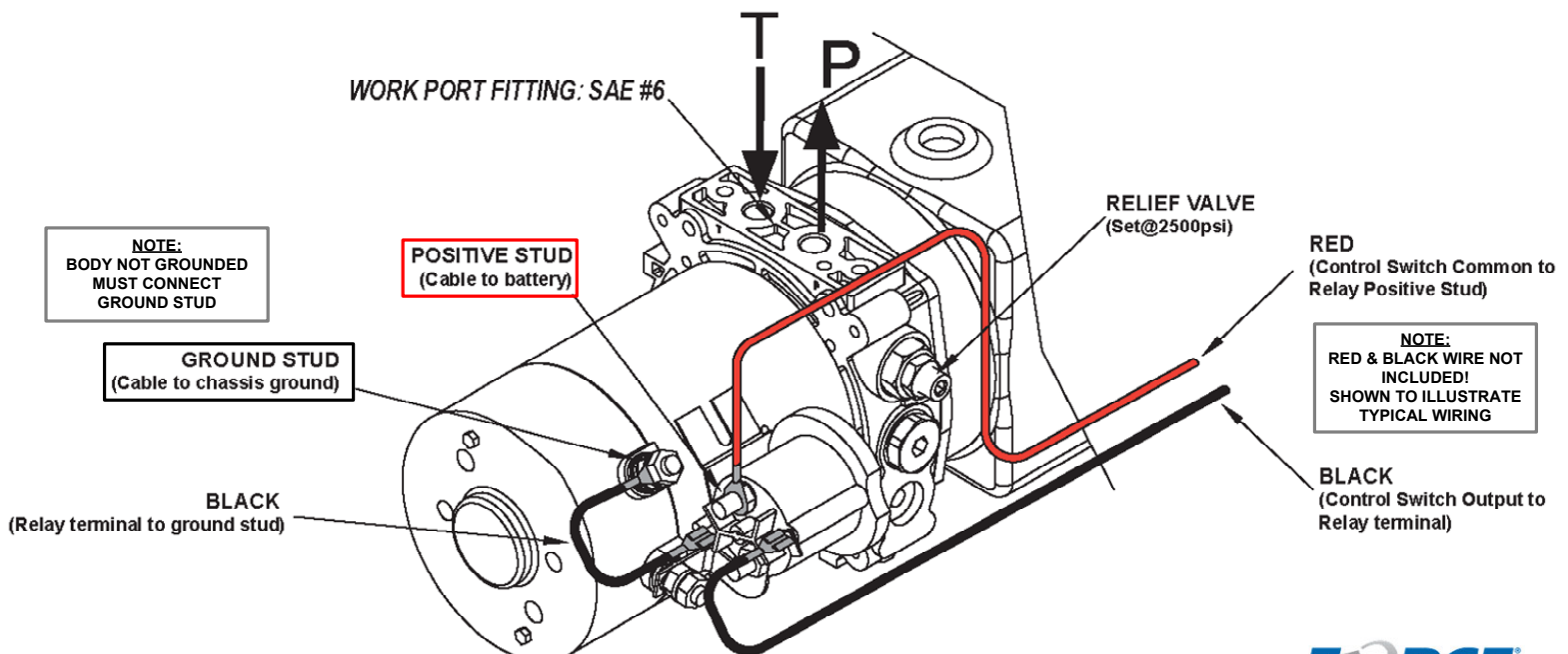
- STD 12 VDC MOTOR
- .128 CI / 2.1 CC PUMP
- ADJUSTABLE MAIN RELIEF SET @ 2500 PSI
- ISOLATION CHECK VALVE
- NO DIRECTIONAL CONTROL VALVES
- SAE #6 PORTS
- MANIFOLD MOUNTING OPTION (STACK ON VALVE)

MOUNTING SPECIFICATION

HYDRAULIC CIRCUIT
SCHEMATIC**FUNCTION LOGIC:**

- START SOLENOID ENERGIZES ELECTRIC MOTOR TO PUMP FLOW OUT "P" PORT
- RETURN OIL AT "T" PORT
- MUST CONNECT TO EXTERNAL VALVES TO OPERATE ACTUATORS

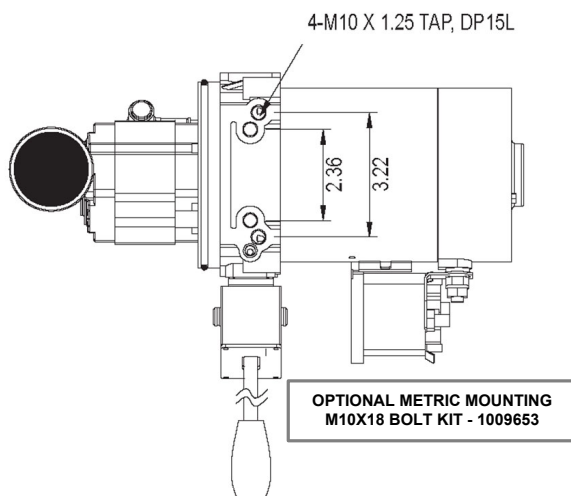
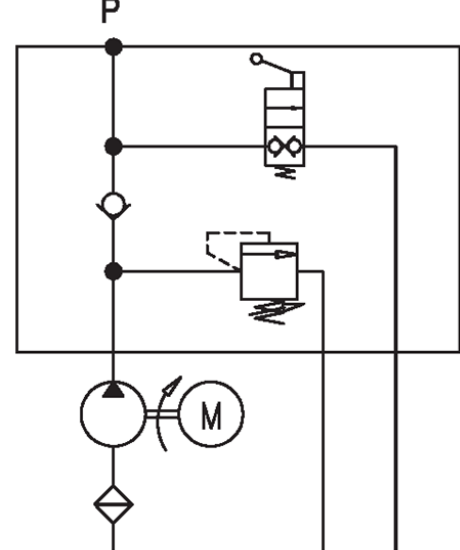
WIRING DIAGRAM



STOCK UNITS INCLUDE:

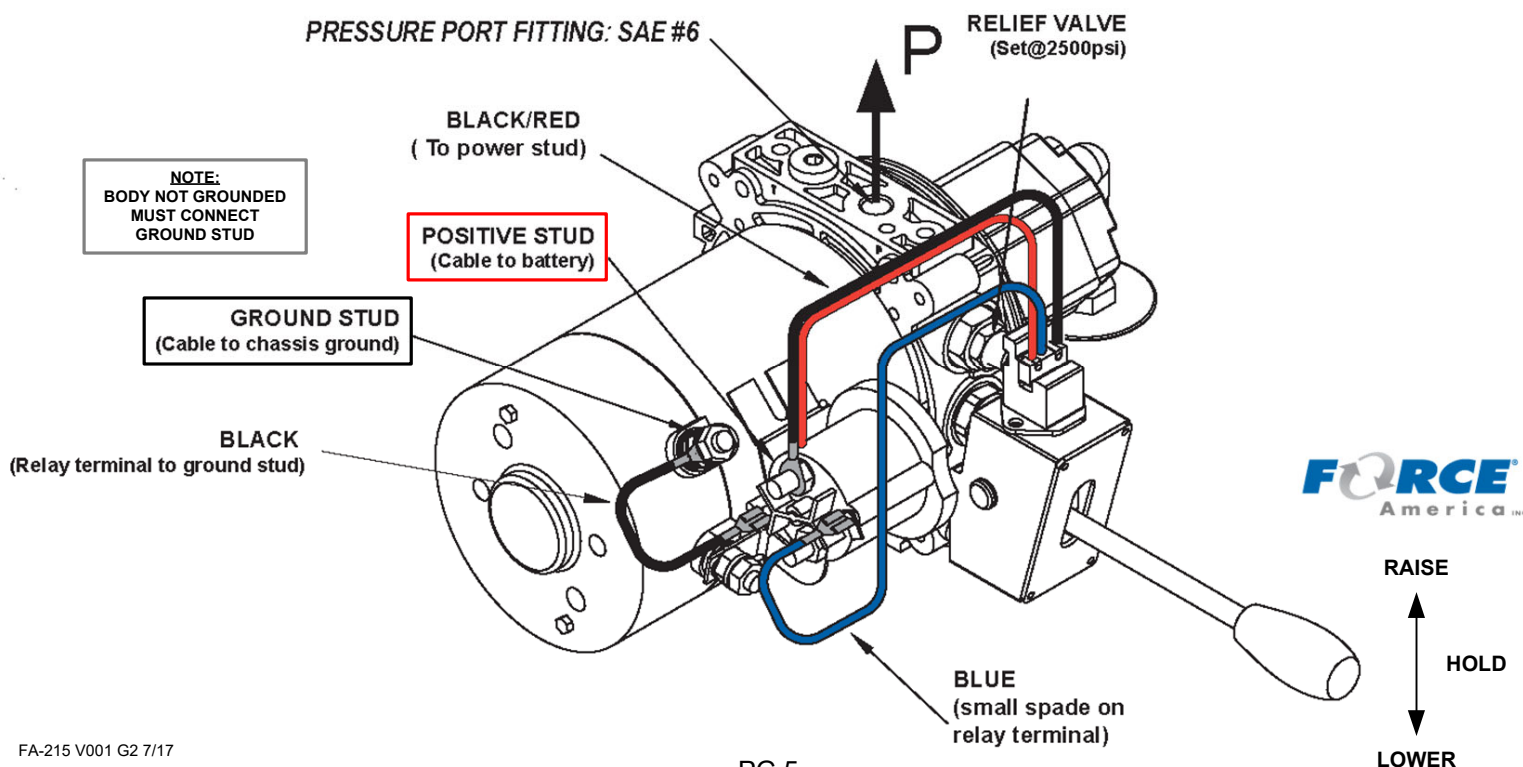
- STD DUTY 12 VDC MOTOR
- .128 CI / 2.1 CC PUMP
- ADJUSTABLE MAIN RELIEF SET @ 2500 PSI
- ISOLATION CHECK VALVE
- LEVER OPERATED VALVE
- SAE #6 PORT

MOUNTING SPECIFICATION

HYDRAULIC CIRCUIT
SCHEMATIC**FUNCTION LOGIC:**

- LEVER UP MOTOR RUNS TO PUMP FLOW OUT "P" PORT
- LEVER CENTER HOLDS LOAD
- LEVER DOWN OPENS VALVE TO RETURN OIL BACK THROUGH "P" PORT

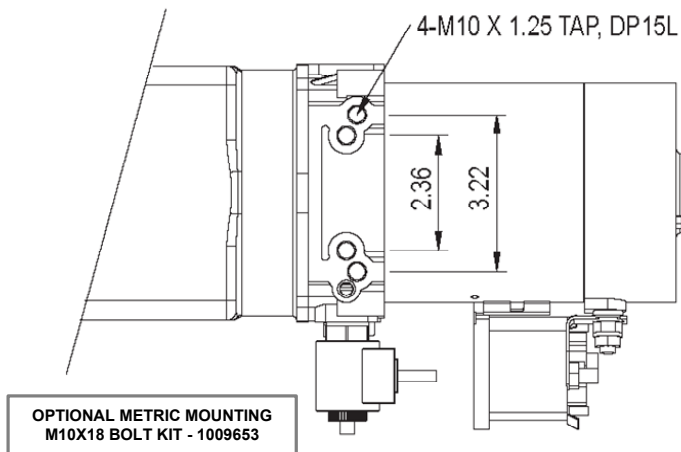
WIRING DIAGRAM



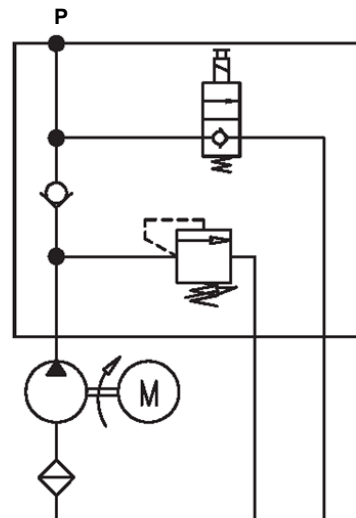
STOCK UNITS INCLUDE:

- STD DUTY 12 VDC MOTOR
- .128 CI / 2.1 CC PUMP
- ADJUSTABLE MAIN RELIEF SET @ 2500 PSI
- ISOLATION CHECK VALVE
- SOLENOID OPERATED VALVE
- SAE #6 PORTS
- OPTIONAL 2-BUTTON 10' PENDANT

MOUNTING SPECIFICATION

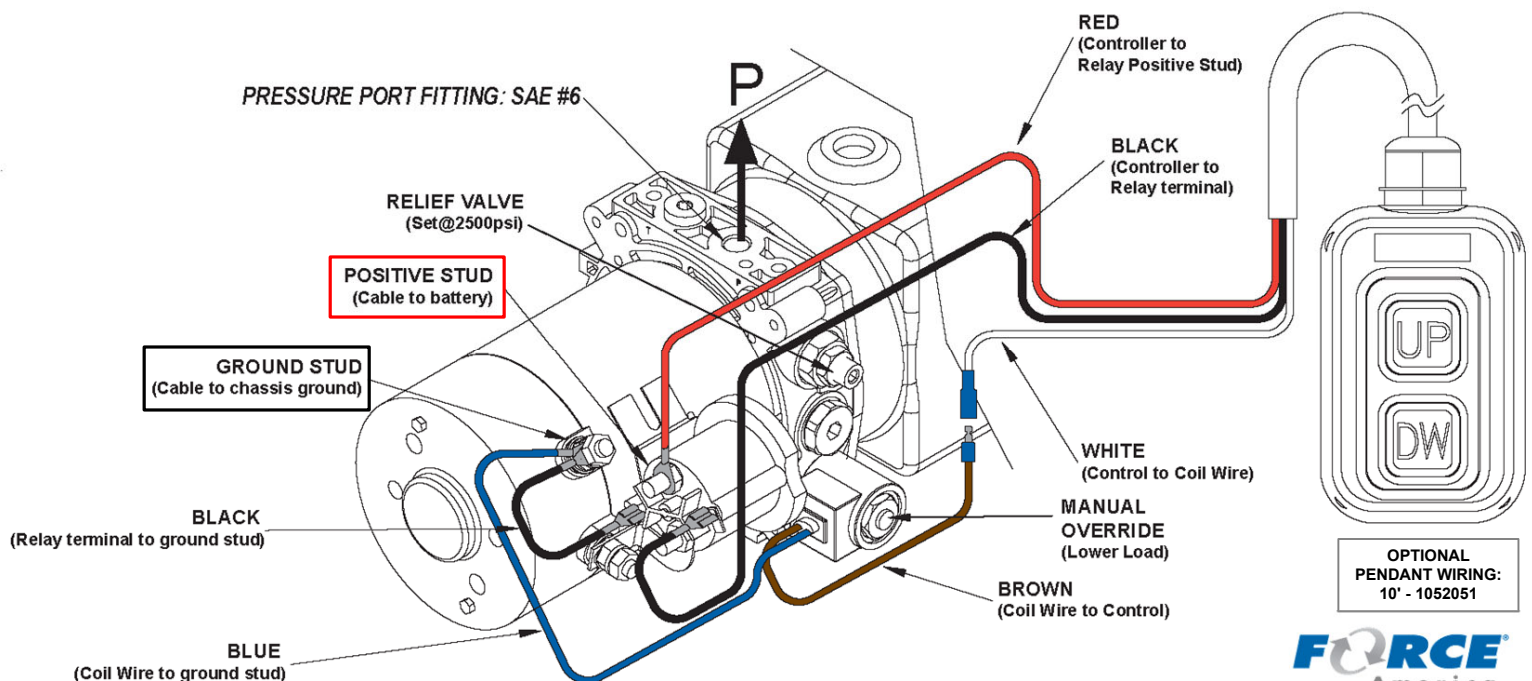


HYDRAULIC CIRCUIT SCHEMATIC

**FUNCTION LOGIC:**

- START SOLENOID ENERGIZES ELECTRIC MOTOR TO PUMP FLOW OUT "P" PORT
- ALL OFF – HOLD LOAD
- ENERGIZE SOLENOID VALVE ONLY TO RETURN OIL TO TANK BACK THROUGH "P" PORT

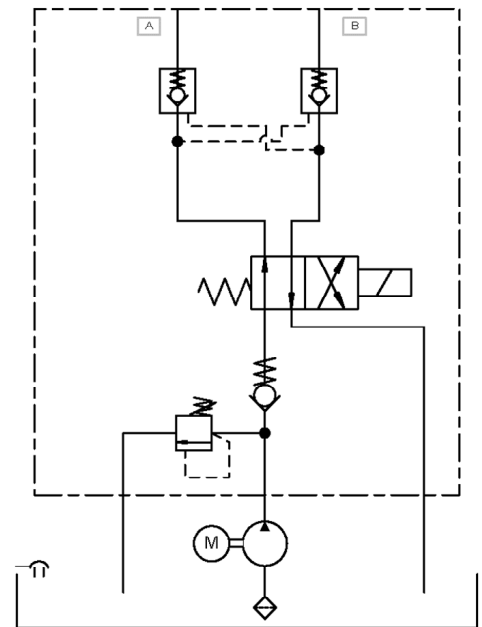
WIRING DIAGRAM



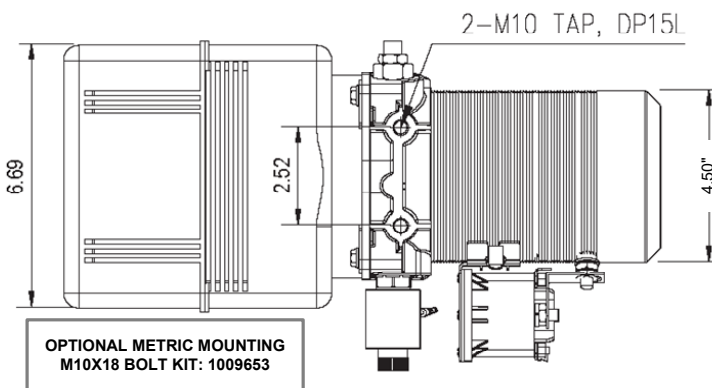
STOCK UNITS INCLUDE:

- INT OR STD DUTY 12 VDC MOTOR
- .097 CI / 1.6 CC OR .128 CI / 2.1 CC PUMP
- ADJUSTABLE MAIN RELIEF SET @ 2500 PSI
- ISOLATION CHECK VALVE
- 4 WAY / 2 POSITION SOLENOID VALVE
- DUAL P. O. CHECK VALVE (3:1 RATIO)
- SAE #6 PORTS
- OPTIONAL 2-BUTTON 10' OR 20' PENDANTS

HYDRAULIC CIRCUIT SCHEMATIC



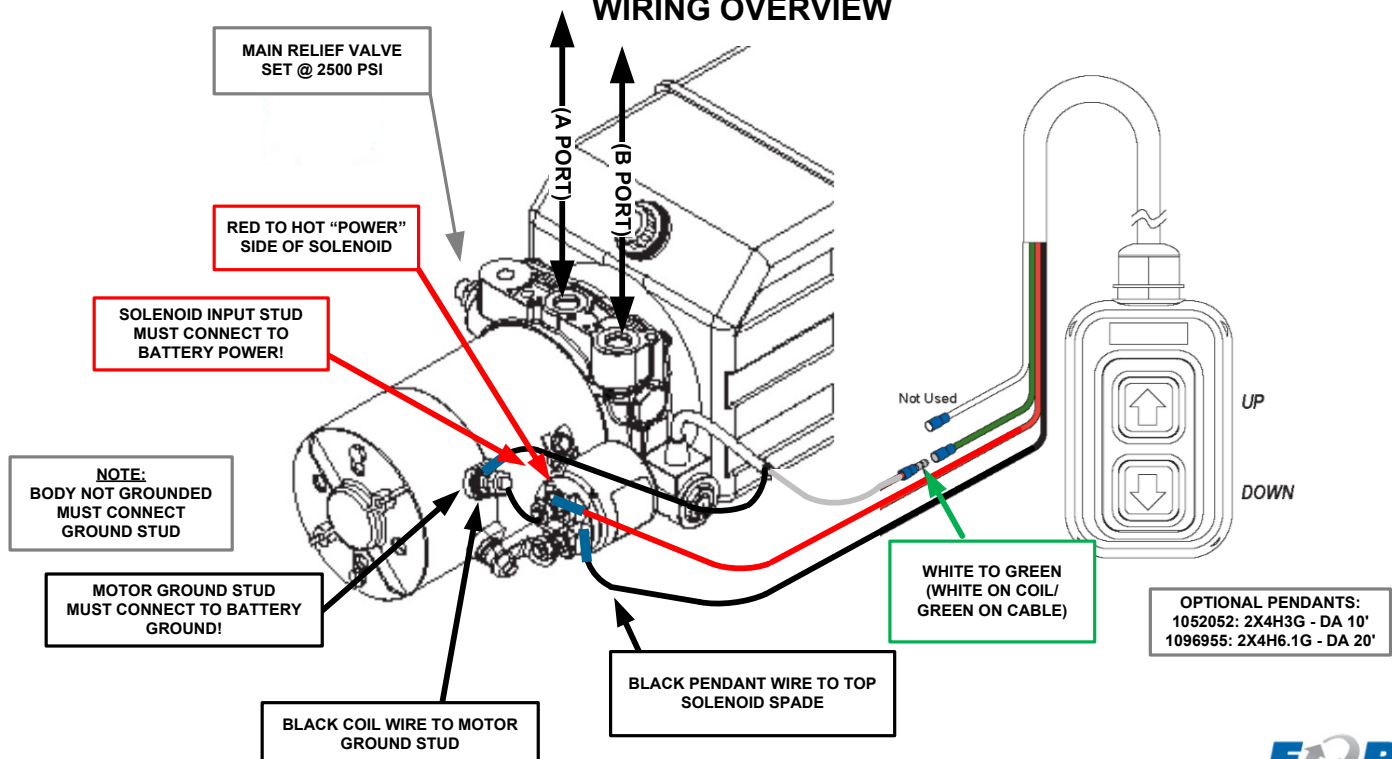
MOUNTING SPECIFICATION



FUNCTION LOGIC:

- MOTOR RUNS PUMP FLOW OUT "A" PORT – OIL RETURNS "B" PORT
- ALL OFF - HOLDS LOAD WITH P.O. CHECK
- MOTOR RUNS/SOLENOID VALVE SHIFTS TO PUMP FLOW OUT "B" PORT – OIL RETURNS "A" PORT

WIRING OVERVIEW



- INT & STD DUTY 12 VDC MOTOR
- .097 CI / 1.6 CC & .128 CI / 2.1 CC PUMP
- RELIEF SETTING: 2500 PSI INT / 3000 PSI STD DUTY
- ISOLATION CHECK VALVE
- 4 WAY / 2 POSITION SOLENOID VALVE
- SOLENOID POPPET HOLDING VALVE “B” PORT
- “A” PORT RELIEF SET @ 500 PSI
- 2 GPM PSI COMP FLOW CONTROL “B” PORT
- SAE #6 PORTS
- OPTIONAL 2-BUTTON 10' OR 20' PENDANTS

6.69

2.52

Ø4.41

M10 TAP, DP15L

**OPTIONAL METRIC MOUNTING
M10X18 BOLT KIT - 1009653**

- MOTOR PUMPS FLOW OUT "A" PORT – OIL RETURNS W/ "B" PORT VALVE ENERGIZED
- ALL OFF - HOLDS LOAD WITH "B" BLOCKING VALVE CLOSED (DE-ENERGIZED)
- MOTOR RUNS/SOLENOID VALVE SHIFTS TO PUMP FLOW OUT "B" PORT – OIL RETURNS "A" PORT
- "B" PORT TANK RETURN FLOW METERS OIL TO TANK
- "A" PORT RELIEF LIMITS MAX PSI ON "A" ONLY

WIRING DIAGRAM

TOP VALVE "A" PORT
RELIEF @ 500 PSI
BOTTOM VALVE
MAIN RELIEF @ 2500 OR
3000 PSI

WORK PORT FITTING:
SAE #6

POSITIVE STUD
(Cable to battery)

RED
(Raise Coil Wire
to ground stud)

GROUND STUD
(Cable to
Chassis Ground)

NOTE:
BODY NOT GROUNDED
MUST CONNECT
GROUND STUD

BLACK
(Relay terminal
to ground stud)

BLACK
(Coil wire to Motor ground
stud)

2 GPM Flow
Control Under Valve
(Lowers Load)

(WHITE)/WHITE
(Lower Control to
Coil Wire)

(RED)/GREEN
(Raise Coil Wire
to Control)

RED
(Controller to
Relay Positive Stud)

BLACK
(Controller to
Relay terminal)

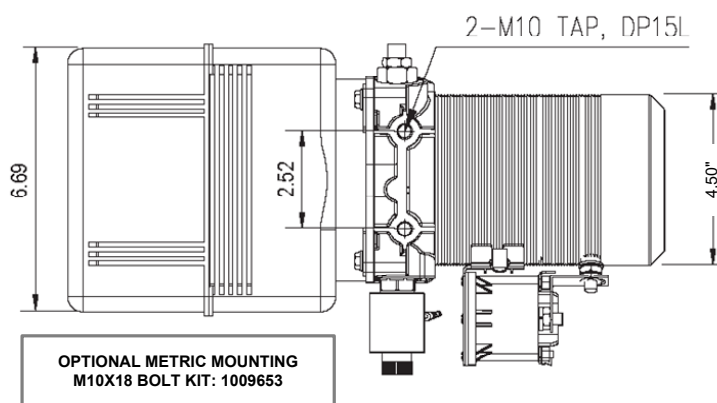
OPTIONAL PENDANTS:
1052052: 2X4H3G - DA 10'
1096955: 2X4H6.1G - DA 20'

UP
DOWN

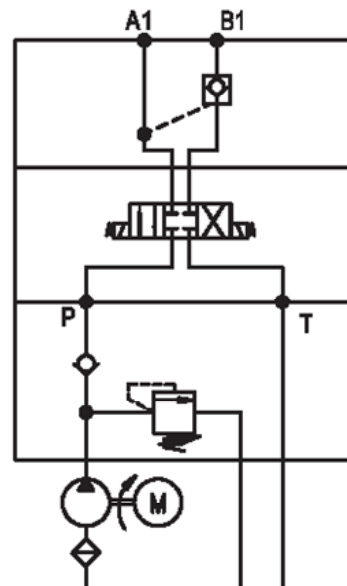
STOCK UNITS INCLUDE:

- STD DUTY 12 VDC MOTOR
- .128 CI / 2.1 CC PUMP
- ADJUSTABLE MAIN RELIEF SET @ 2500 PSI
- ISOLATION CHECK VALVE
- 4 WAY / 3 POSITION SOLENOID VALVE
- "B" PORT P. O. CHECK VALVE (3:1 RATIO)
- SAE #6 PORTS
- OPTIONAL 2-BUTTON 10' OR 20' PENDANTS

MOUNTING SPECIFICATION

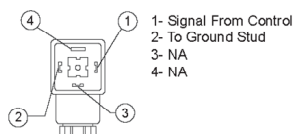


HYDRAULIC SCHEMATIC

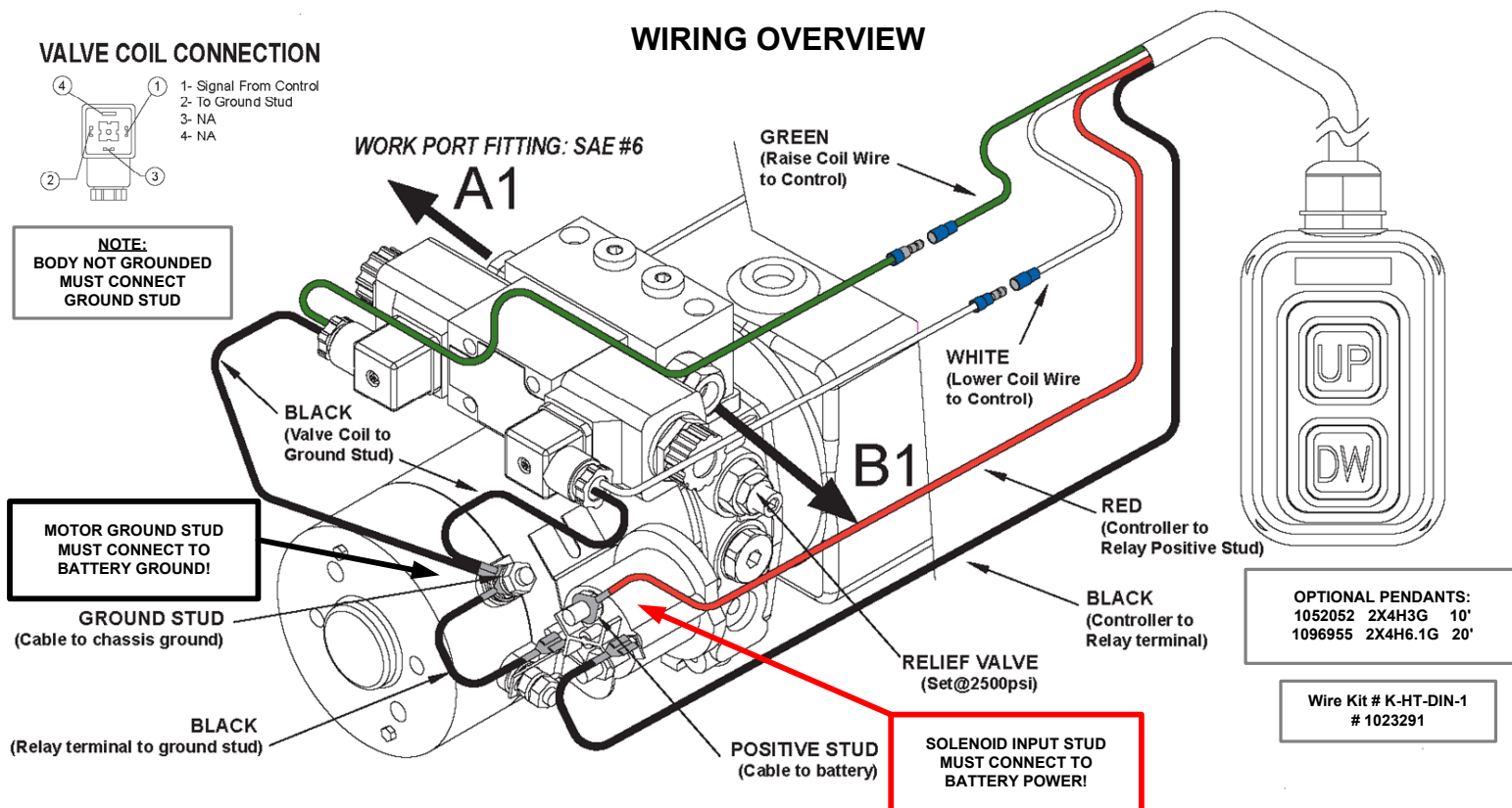
**FUNCTION LOGIC:**

- MOTOR RUNS/SOLENOID VALVE SHIFTS PUMP FLOW OUT "A" PORT – OIL RETURNS "B" PORT
- ALL OFF - HOLDS LOAD WITH P.O. CHECK ON "B" PORT
- MOTOR RUNS/SOLENOID VALVE SHIFTS TO PUMP FLOW OUT "B" PORT – OIL RETURNS "A" PORT

VALVE COIL CONNECTION



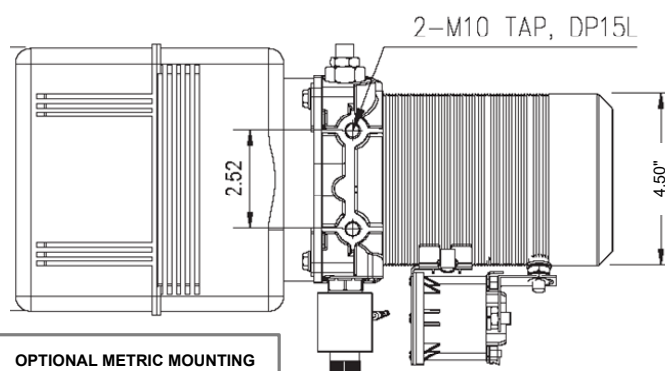
WIRING OVERVIEW



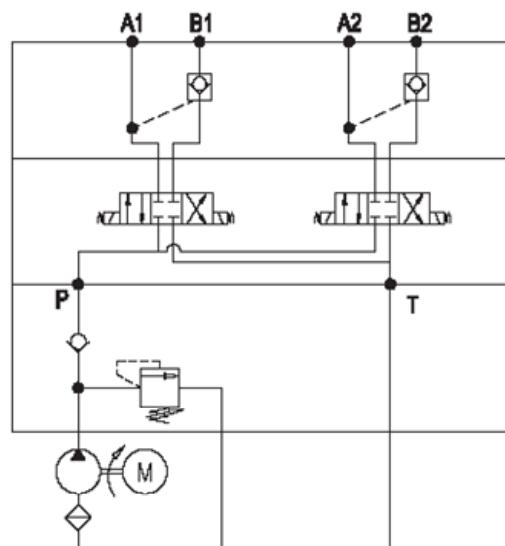
STOCK UNITS INCLUDE:

- STD DUTY 12 VDC MOTOR
- .128 CI / 2.1 CC PUMP
- ADJUSTABLE MAIN RELIEF SET @ 2500 PSI
- ISOLATION CHECK VALVE
- 2 - 4 WAY / 3 POSITION SOLENOID VALVES
- "B" PORT P. O. CHECK VALVES (3:1 RATIO)
- SAE #6 PORTS
- OPTIONAL 4 - BUTTON 10' OR 20' PENDANTS

MOUNTING SPECIFICATION



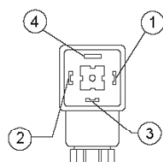
HYDRAULIC SCHEMATIC

**FUNCTION LOGIC:****NOTE: LOGIC THE SAME FOR BOTH VALVES**

- MOTOR RUNS/SOLENOID VALVE SHIFTS PUMP FLOW OUT "A" PORT – OIL RETURNS "B" PORT
- ALL OFF - HOLDS LOAD WITH P.O. CHECK ON "B" PORT
- MOTOR RUNS/SOLENOID VALVE SHIFTS TO PUMP FLOW OUT "B" PORT – OIL RETURNS "A" PORT

WIRING OVERVIEW

VALVE COIL CONNECTION



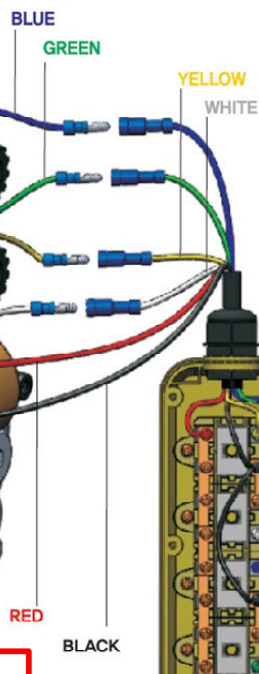
WIRE KIT # K-HT-DIN-2
1023462

NOTE:
BODY NOT GROUNDED
MUST CONNECT
GROUND STUD

MOTOR GROUND STUD
MUST CONNECT TO
BATTERY GROUND!

SOLENOID INPUT STUD
MUST CONNECT TO
BATTERY POWER!

12V DC Battery



PENDANT NUMBERS:
1052104 4X5H3G 10'
1073286 4X5H6.1G 20'

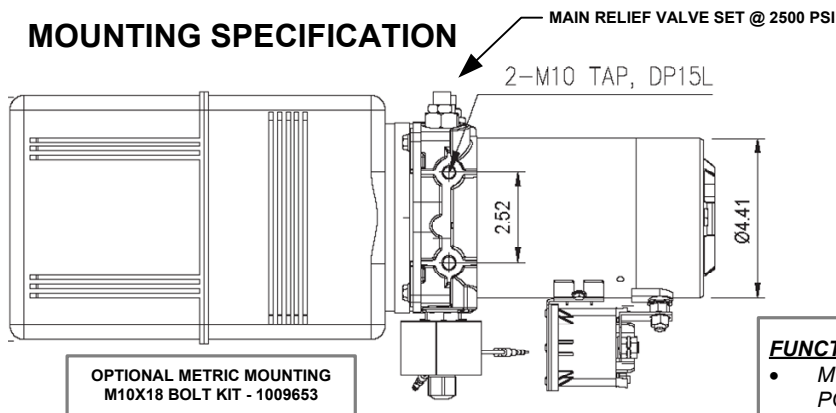
YELLOW
-
BOTTOM
VALVE
-
WHITE

BLUE
-
TOP
VALVE
-
GREEN

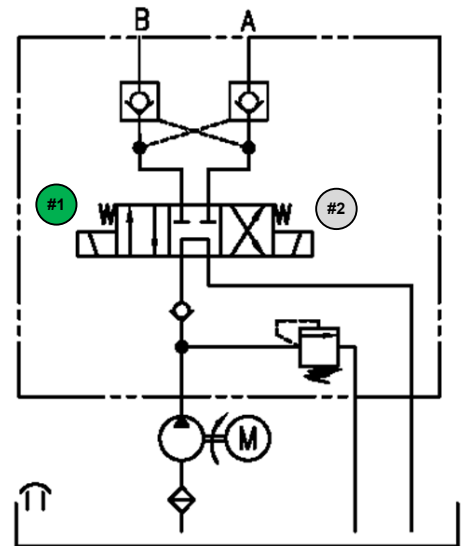
STOCK UNITS INCLUDE:

- INT & STD DUTY 12 VDC MOTOR
- .097 CI / 1.6 CC & .128 CI / 2.1 CC PUMPS
- ADJUSTABLE MAIN RELIEF SET @ 2500 PSI
- ISOLATION CHECK VALVE
- 4 WAY / 3 POSITION SOLENOID VALVE
- DUAL P.O. CHECK VALVE (3:1 RATIO)
- SAE #6 PORTS
- OPTIONAL 2-BUTTON 10' OR 20' PENDANTS

MOUNTING SPECIFICATION

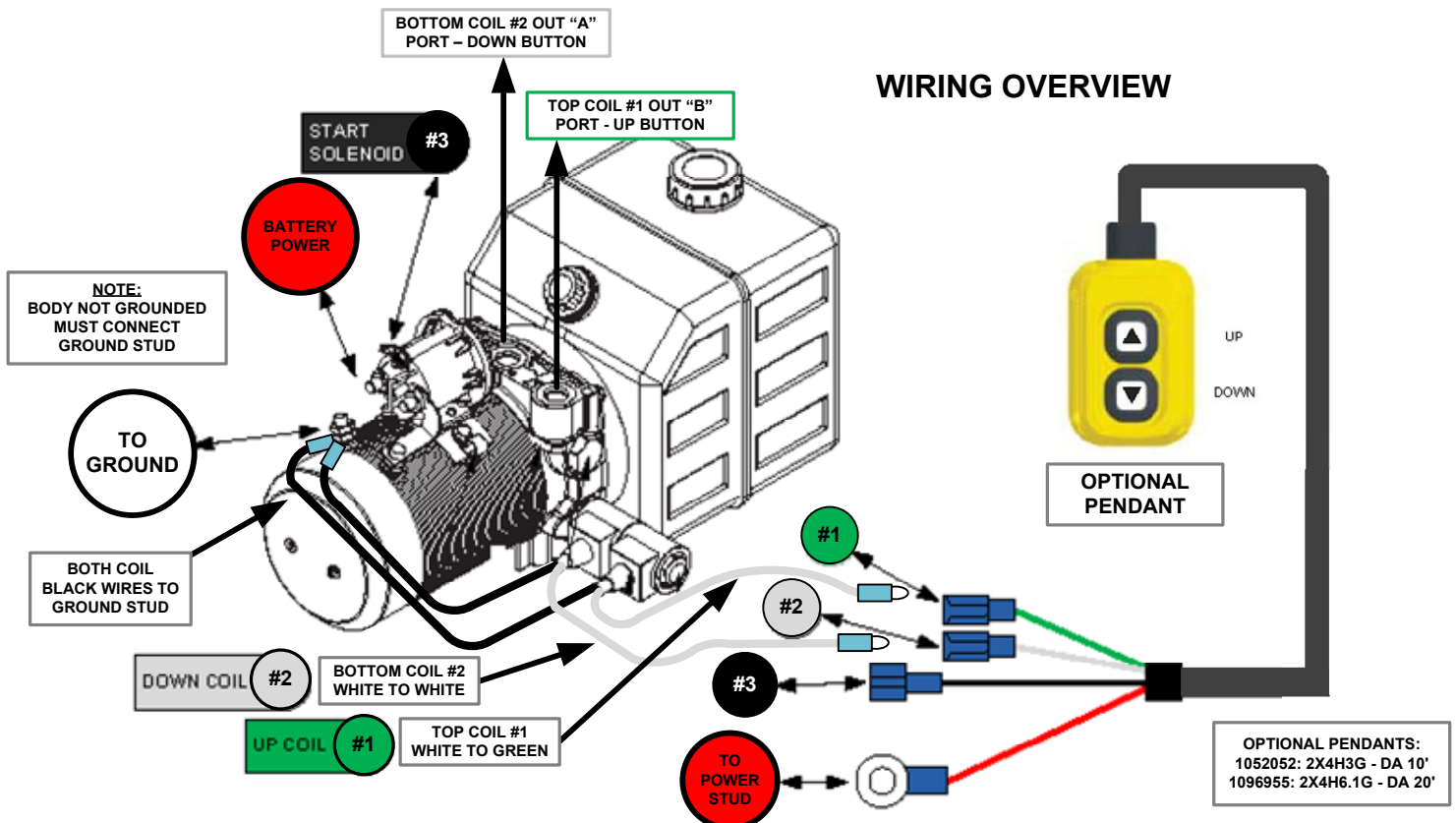


HYDRAULIC SCHEMATIC

**FUNCTION LOGIC:**

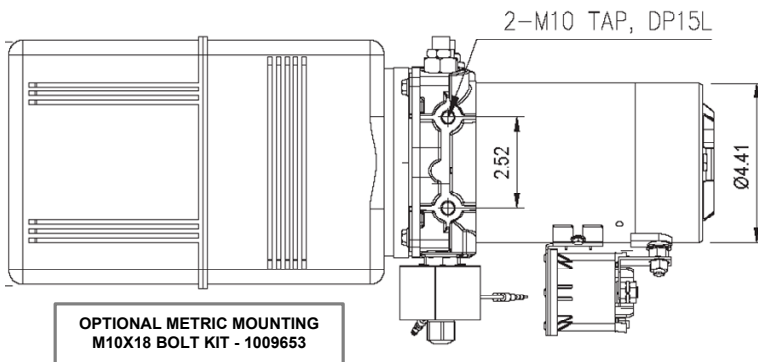
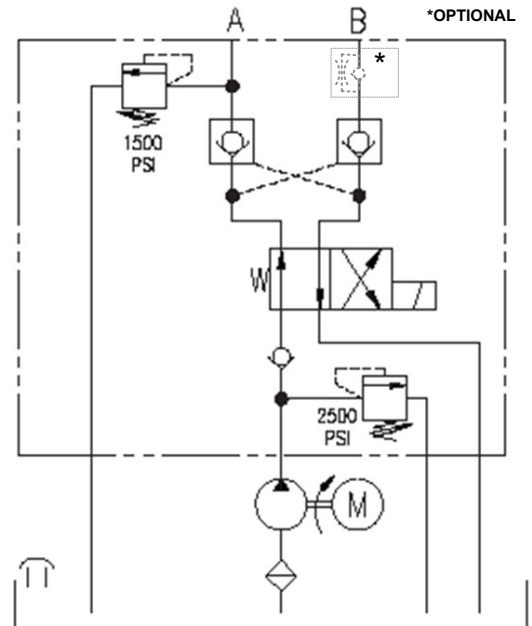
- MOTOR RUNS/SOLENOID SHIFTS TO PUMP FLOW OUT "A" PORT – OIL RETURNS "B" PORT
- ALL OFF - HOLDS LOAD WITH P.O. CHECKS
- MOTOR RUNS/SOLENOID VALVE SHIFTS TO PUMP FLOW OUT "B" PORT – OIL RETURNS "A" PORT

WIRING OVERVIEW

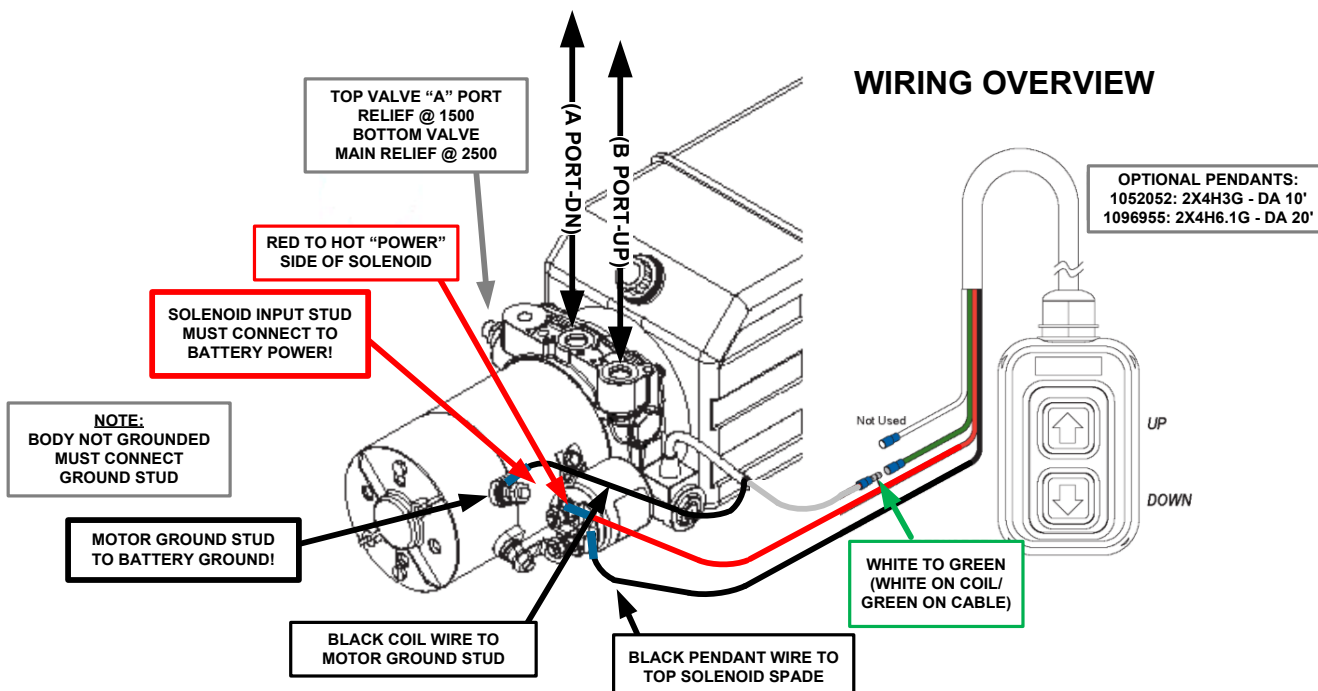


STOCK UNITS INCLUDE:

- INT & STD DUTY 12 VDC MOTOR
- .097 CI / 1.6 CC & .128 CI / 2.1 CC PUMP
- ADJUSTABLE MAIN RELIEF SET @ 2500 PSI
- ISOLATION CHECK VALVE
- 4 WAY / 2 POSITION SOLENOID VALVE
- DUAL P.O. CHECK VALVE (3:1 RATIO)
- "A" PORT RELIEF SET @ 1500 PSI
- SAE #6 PORTS
- OPTIONAL 2-BUTTON 10' OR 20' PENDANTS
("B" PORT FLOW CONTROL OPTION: #1068073)

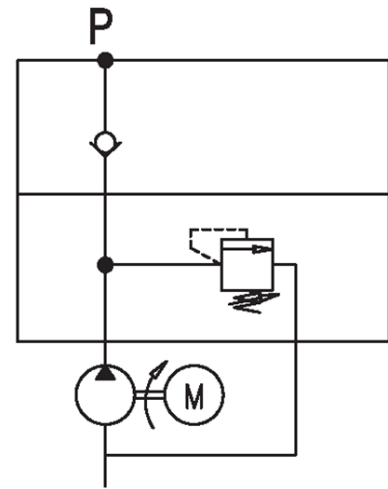
MOUNTING SPECIFICATION**HYDRAULIC SCHEMATIC****FUNCTION LOGIC:**

- MOTOR RUNS PUMP FLOW OUT "A" PORT – OIL RETURNS "B" PORT
- ALL OFF - HOLDS LOAD WITH P.O. CHECK
- MOTOR RUNS/SOLENOID VALVE SHIFTS TO PUMP FLOW OUT "B" PORT – OIL RETURNS "A" PORT
- "A" PORT PSI LIMITED TO 1500 BY PORT RELIEF

WIRING OVERVIEW

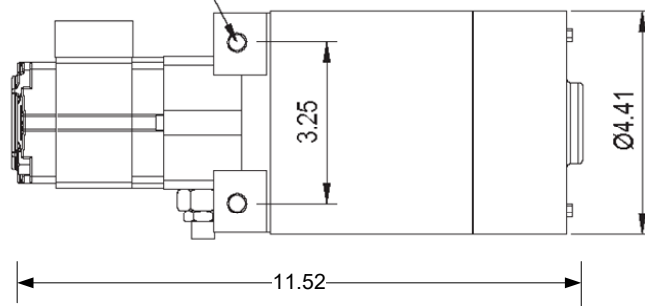
STOCK UNITS INCLUDE:

- STD & HD DUTY 12 VDC MOTOR
- .128 CI / 2.1 CC PUMP
- ADJUSTABLE MAIN RELIEF SET @ 2500 PSI
- ISOLATION CHECK VALVE
- SAE #6 PORTS

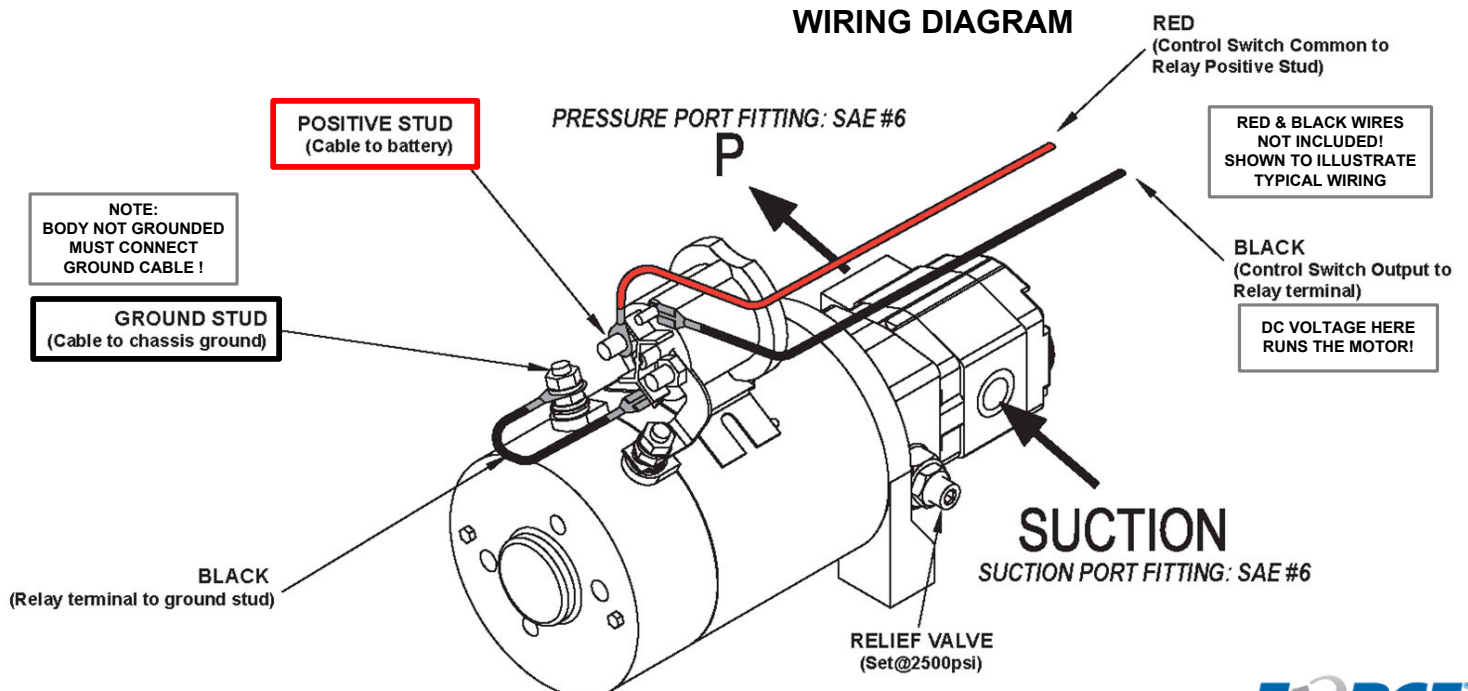
HYDRAULIC
SCHEMATIC

MOUNTING SPECIFICATION

2-M10 TAP, DP15L

OPTIONAL METRIC MOUNTING
M10X18 BOLT KIT - 1009653

WIRING DIAGRAM



Sales & Service Center Locations

Dedicated to customer service, FORCE America understands you have unique needs with tight timelines. We work hard to deliver what you need, when you need it. Our 15 sales and service centers across the US warehouse over 50,000 products in inventory allowing us to serve you in a timely manner. Best of all, with our manufacturing expertise and facilities we offer a number of customized systems and parts. From a simple hose fitting to the most sophisticated electronic controls, and GPS systems, we have it all.

FORCE America's experienced representatives can help guide you through application, installation or specification questions. For more complex issues, one of our specialized engineers can assist.



1-888-99-FORCE

Sales and Service Centers

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FA214-0120-03

501 East Cliff Road Burnsville, Minnesota 55337 www.forceamerica.com

Bismarck, ND	800-624-7568	Denver, CO	888-833-7711	Minneapolis, MN	800-328-2732
Charlotte, NC	800-788-8598	Fort Dodge, IA	800-362-2994	Philadelphia, PA	800-492-6621
Chicago, IL	800-433-5765	Kansas City, MO	800-383-4724	Salt Lake City, UT	877-230-0505
Columbus, OH	888-449-0356	Memphis, TN	888-845-5876		
Dallas, TX	800-893-7225	Milwaukee, WI	800-722-5844		

Atlanta, GA (Atlanta Powertrain™)	888-293-2325	atlantapowertrain.com
Seattle, WA (Mobile Equipment Systems™)	800-354-9028	mobileequip.com