X012 v062026

Ford E-series

Chevy C4500

Leveling System Installation Manual

For welding, bolt-on and drilling applications

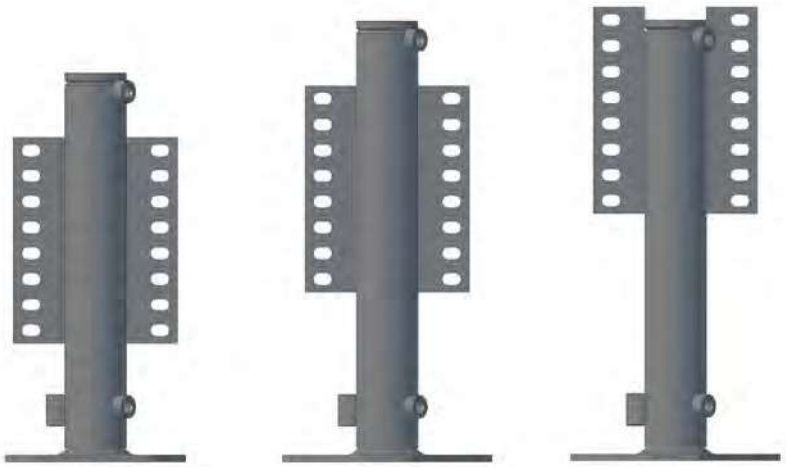
bigfootleveler.com

This manual provides general instructions. Many variables can change the circumstances of the instructions, i.e., the degree of difficulty, operation and ability of the individual performing the instructions. This manual cannot begin to plot out instructions for every possibility, but provides the general instructions, as necessary, for effectively interfacing with the device, product or system. Failure to correctly follow the provided instructions may result in death, serious personal injury, severe product and/or property damage, including voiding of the Quadra warranty.

- Failure to follow instructions provided in this manual may result in death, serious personal injury and/or severe product and property damage, including voiding of the component warranty.
- During operation of our systems, the vehicle or trailer tires should maintain contact with the ground - moving to a more level area may be required.
- During servicing make sure that the coach is supported according to the manufacturer's recommendation and not our systems, as it is not intended to be used for any work or persons under the vehicle. Lift the coach by the frame and never the axle or suspension. Do not go under the coach unless it is properly supported. Unsupported coaches can fall causing death or personal injury or product or property damage. Use proper personal protective equipment.

- Always wear eye protection when performing service, maintenance or installation procedures. Other safety equipment to consider would be hearing protection, gloves and possibly a full face shield, depending on the nature of the task.
- Moving parts can pinch, crush, or cut. Keep clear and use caution.

Cylinder Identification



8k-11
E-350 Front
C4500 Front

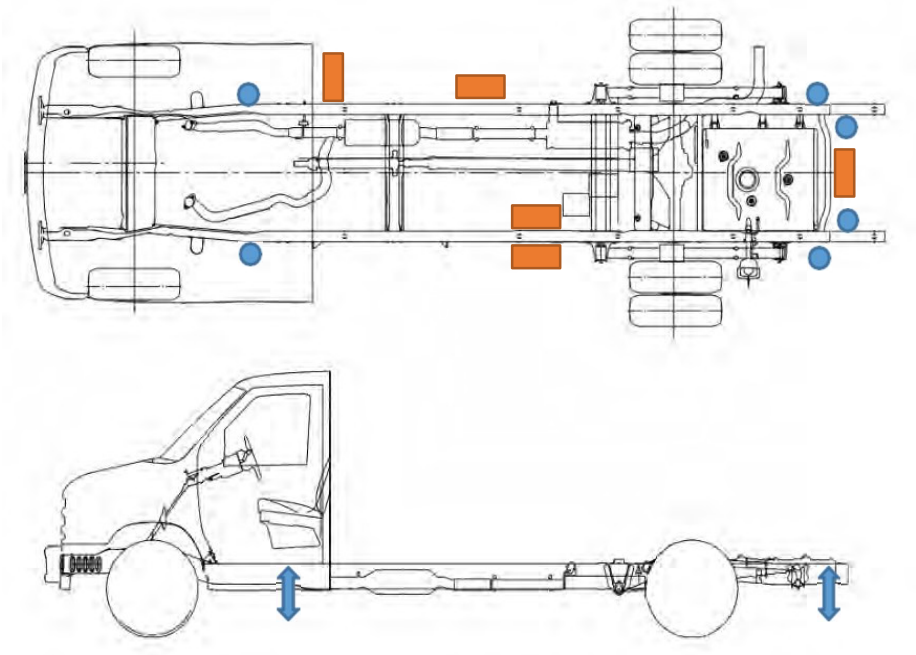
8k-13F
E-450 Front

8k-13R
E-350/450 Rear
C4500 Rear

Cylinder & Pump Locations – Chevy 4500 shown below

Possible Cylinder Locations (Blue)

Possible Pump Locations (Orange)

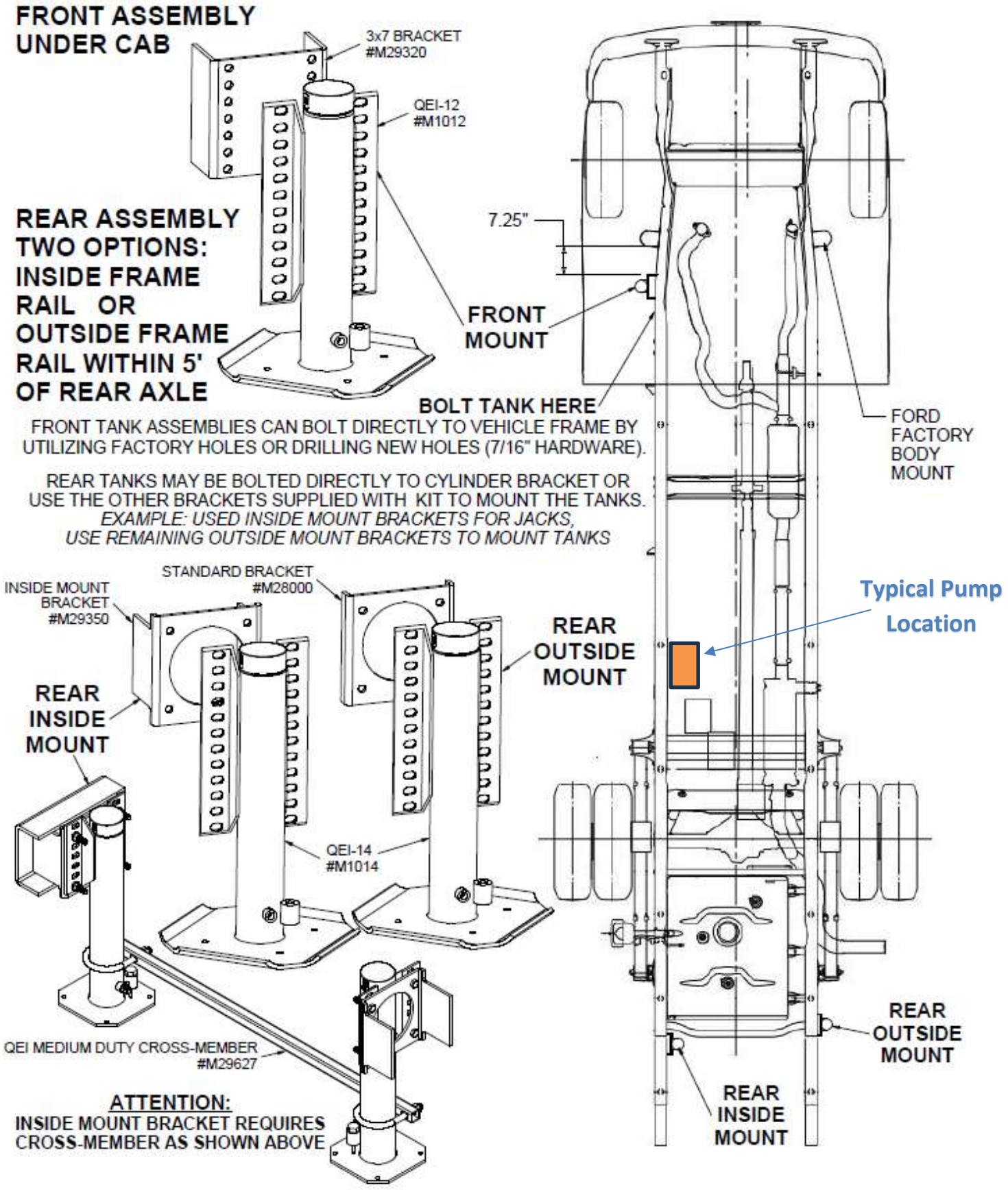


Chevy 4500 typical brackets used, reference the following page as well:

- Front cylinder weld bracket use M28000, under cab, outside of frame. Mount cylinder prior to welding to set ground clearance and placement for best position.
- Rear cylinder weld bracket use M28000 or M29320 (use deep bracket if need to clear or straddle vertical tubing welded to the vehicle frame). Again mount cylinder to bracket prior to welding for best position, outside mount is best. Jacks can be staggered further forward or backward up to 18″

Mount the jacks up as high as possible, typical ground clearance from bottom of footpad to ground is 6-7″ in the front and 7-8″ in the rear.

Ford E-350 & E-450 Chassis - Weld-on Application



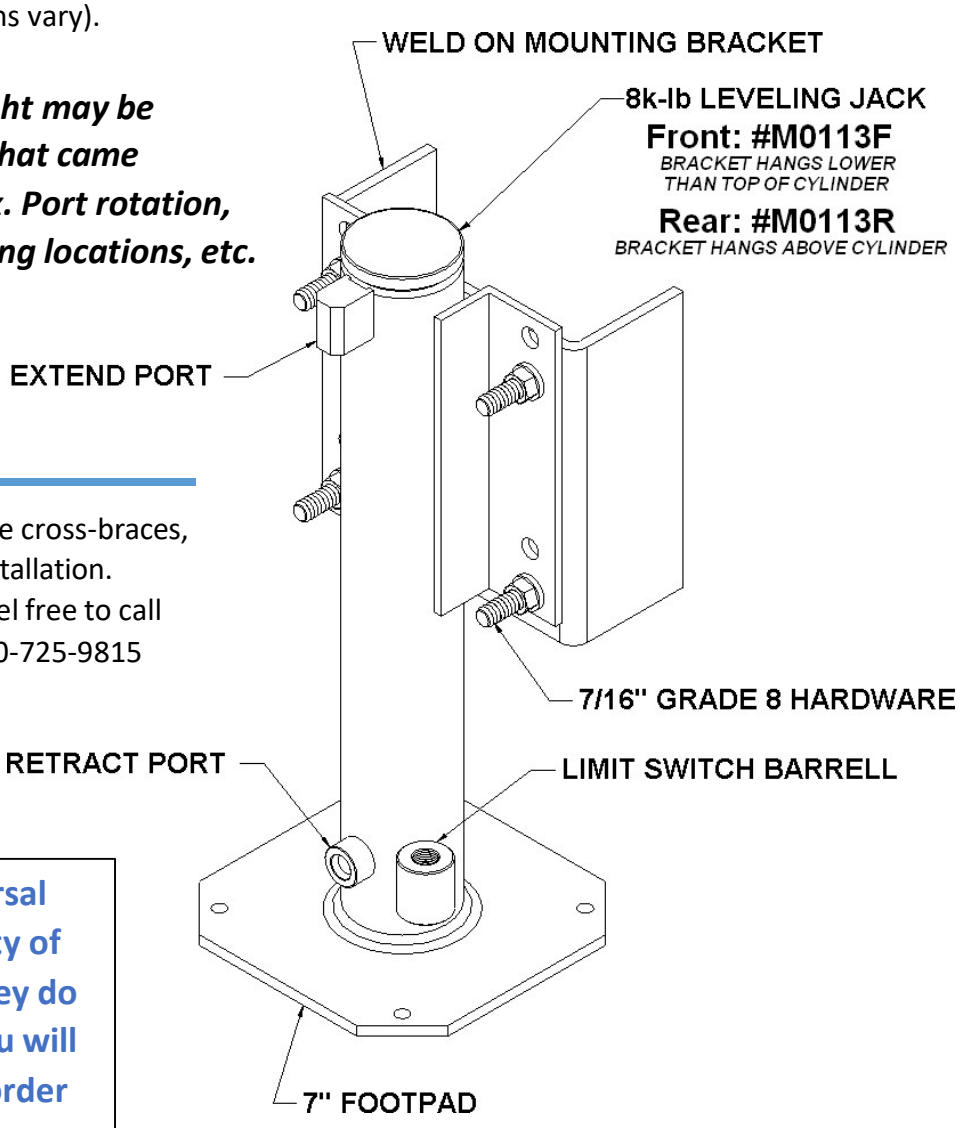
General Cylinder Installation & Assembly

Mounting the Cylinders

Pre-assemble jack prior to hanging on vehicle in specified location.

- Attach foot pad with ½" flat head bolt or ¾" thin jam nut with an impact. **Clockwise ONLY, do not reverse.**
- Remove port plugs with 3/16" allen wrench.
- Install supplied JIC elbow fittings to the bottom & top ports with 9/16" wrench.
- **DO NOT** install the extend hose to the top port on central pump systems yet, this will be done later on in installation (due to the length of hose they must go through a bleeding process), unless noted otherwise.
- Place ¼" clevis pin in limit switch barrel then insert threaded limit switch with 7/8" wrench (see wiring section later on in booklet).
- For jack locations see diagrams on the following pages, but typically the front jacks should be under the cab and the rear jacks should be within 60" behind the rear axle.
- Hang jack using at minimum of four 7/16" or two to four 1/2" Grade-8 bolts, hex nuts & lock washers.
- Typical cylinder ground clearance (ground to bottom of footpad) should be between 6" and 9" for optimum lift and road clearance (applications vary).

The cylinder shown to the right may be different from the cylinders that came in your vehicle specific kit, Ex. Port rotation, length, bracket style, mounting locations, etc.



If your kit came with ¾" square cross-braces, they are required for installation.
If you have any questions feel free to call Quadra Manufacturing 800-725-9815

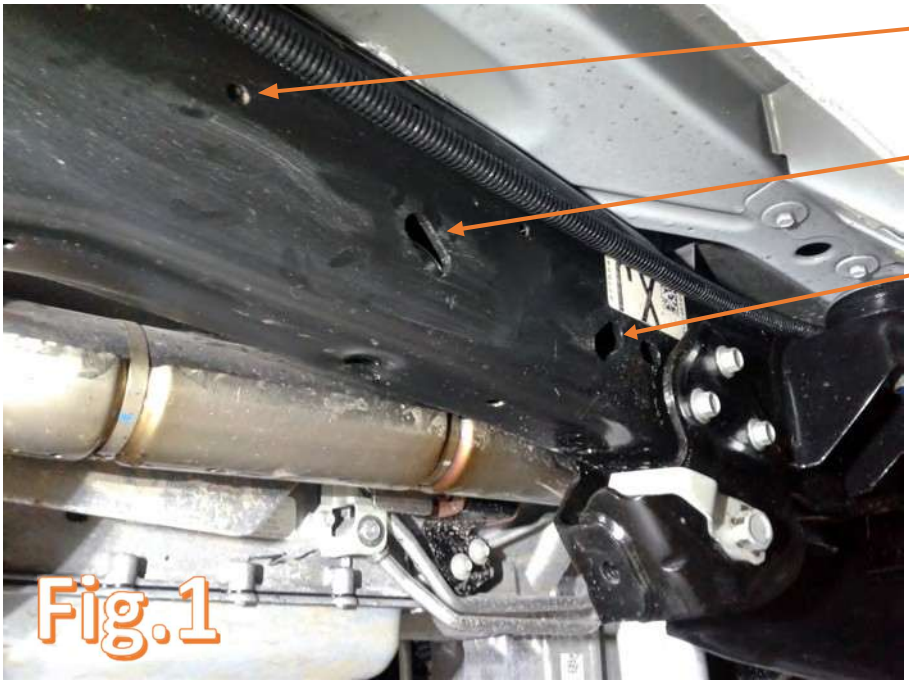
Hydraulic lines are universal lengths and fit the majority of applications, however if they do not fit your exact model you will need to call and place an order for longer lines.

Bolt-On Application

FRONT CYLINDER MOUNTING

Additional drilling to frame may be required on pre-2008 Ford frames, or to increase attachment strength to vehicle.

Shown in **Fig.1,** underneath the cab is the passenger side front jack location, just behind front axle…



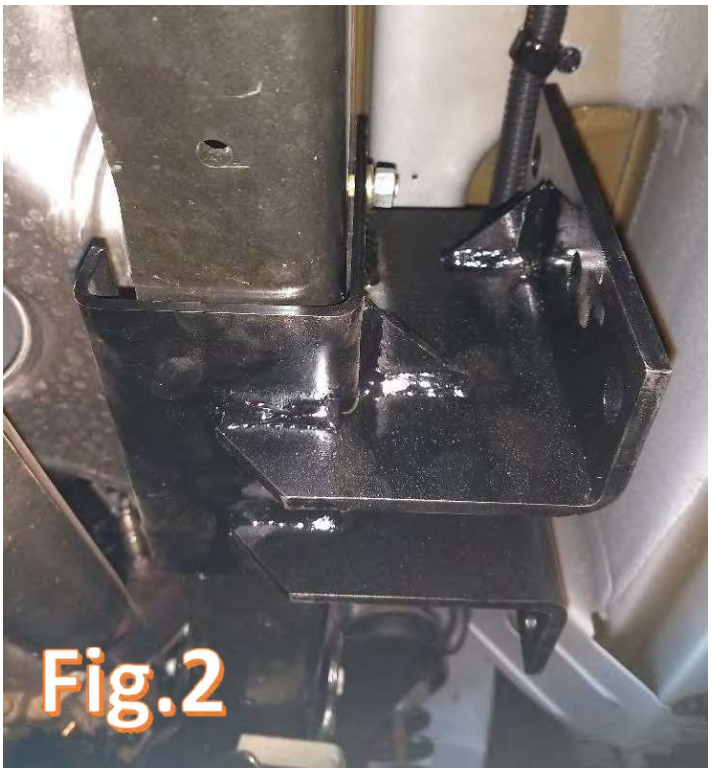
Locate 3/8” hole towards rear of 2nd slot. (Use this hole for the front bracket)

Locate 2nd slot after 1st slot towards rear. (Use this slot for the front bracket)

Locate 1st slot after suspension bracket. (For reference, Not using this slot)

Fig.2 Passenger front mounting bracket shown fastened with 3/8” hardware (perspective facing front of vehicle). NOTE: Bracket surface is tight to bottom of Ford frame for proper lifting surface, and straight before tightening to 50 ft/lbs.

Fig.3 Passenger front mounting bracket Shown fastened with 5/8” hardware (perspective facing rear of vehicle). NOTE: Bracket surface is tight to bottom of Ford frame for proper lifting surface, and straight before tightening to 80 ft/lbs.



Bolt-On Application – page 2

FRONT CYLINDER MOUNTING CONTINUED…

Passenger front shown with 8k13 #M0213F cylinder (perspective facing rear of vehicle). Note how cylinder is mounted above the frame in a “pocket” of the Ford body for higher ground clearance. Fasten cylinder to front mounting bracket with a minimum of four supplied 7/16” Grade-8 bolts 1.75” long with nuts and lockwashers. Make sure cylinder is straight and level, proceed to tighten bolts to 70 ft/lbs.

Front cylinder on Ford chassis: Angle bracket is 2.5” below to top of the cylinder.

Rear cylinder on Ford chassis: Angle bracket is ½” above the top of the cylinder.

Drilling Application Rear Cylinders (Bolt-on kit)

MOUNTING REAR CYLINDERS

Drilling to the Ford frame (not on the frame extension)

Fig.1. Locate the first Ford cross-member (between the frame rails) after the rear axle's rear leaf spring perch bracket. Hold the rear inside mount bracket (#M29352) up to the frame as shown. Ensure the bracket is tight to the flanges of the Ford frame for structural support. Rear cylinders should always be within 60" from the rear axle. Care to not interrupt departure angles when placing rear cylinders. Departure angle, imagine placing string from center of rear tire making contact with the ground and the furthest and lowest point of the vehicle (typically hitch receiver or bottom of rear bumper). Always position as close to rear axle as possible and up high enough to not interfere with departure angle.

Fig.2. Mark the holes as shown on the frame rail. Four holes are required per bracket. Do this for both sides.

Fig.3. After all eight holes (four on each side) are marked, set brackets aside. Using a center punch and smaller drill bits to start, proceed to drill all holes through the Ford frame up to a minimum diameter of 7/16" (.44") or maximum diameter of 31/64" (.48") for the supplied 7/16" Grade-8 hardware.

Attach the rear cylinder to the inside mount bracket using the supplied 7/16 x 1.5" bolts, lockwashers and nuts (two per leg) use the bottom holes of the bracket and whichever cylinder holes near the bottom you believe will work for your vehicle height (you can hold both up to check ground clearance and departure angles). Tighten the 7/16" x 1.75" bolts down to 70 ft/lbs. Now place the assembly up to the frame and insert the four supplied 7/16" x 5" bolts through the frame holes and into the bracket and cylinder assembly. When cylinder is straight and level and ground clearance is checked, tighten to 70 ft/lbs. Do the same to both sides.

If mounting the rear cylinders directly to the outside of the frame, follow same basic procedure and mark holes in the frame though the cylinder's holes at correct height and position, drill holes and utilize at minimum four 7/16" Grade-8 bolts per cylinder and tighten to 70 ft/lbs. Make sure the supplied cross-brace is used when mounting the cylinders between the frame rails.

Welding to the Ford frame (not on the frame extension)

Locate the proper bracket location on the frame for test fit. Bolt the cylinder to the weld-on bracket (70 ft/lbs.) and test fit again, verify proper ground clearance, take care not to interfere with departure angle and place cylinder as high as possible for best ground clearance. Recommended to mount the cylinder to the bracket prior to welding the bracket to the frame. When it is time to weld, use floor jack or a partner to hold the jack in place, at the proper height, and straight and level before welding. Put as much vertical surface weld on as possible (Ford recommends not to weld to horizontal flanges to avoid any new model frame warranty issues). Make sure cross-brace is installed when mounting between the frame rails.

Cross-brace Installation

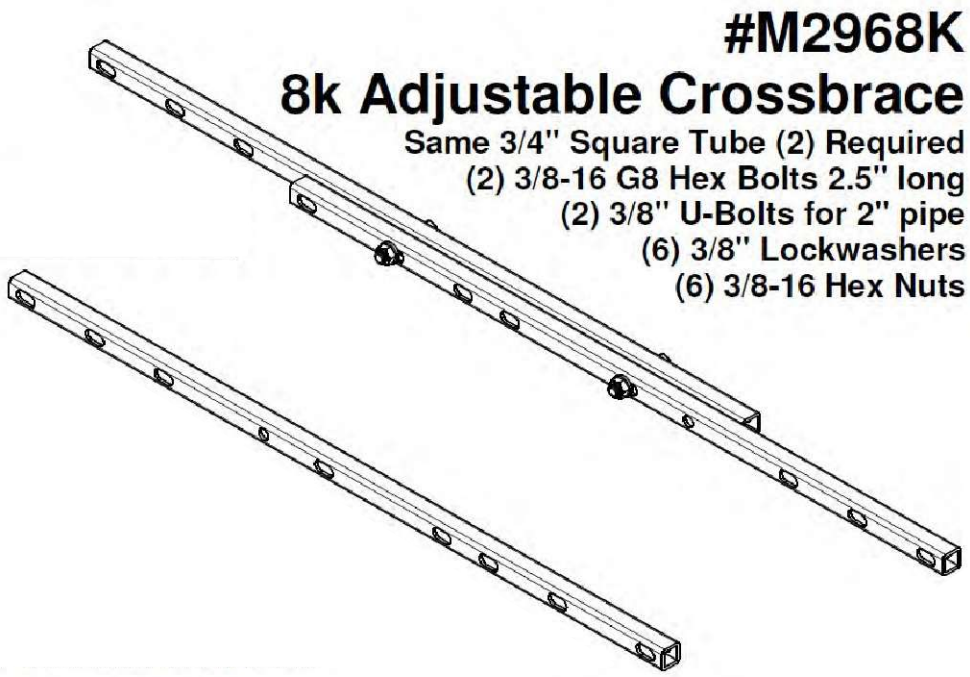
Used to tie left and right cylinders together in front or rear.

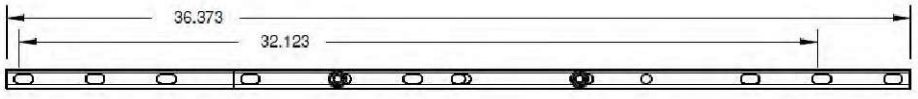
Inside mount E-series only require one tube and pair of U-bolts.

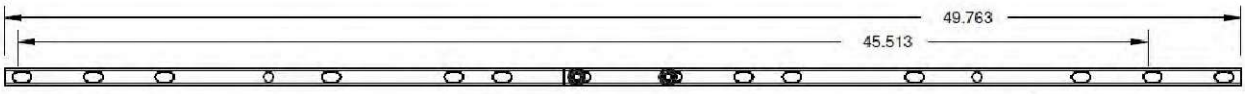
NO cross-brace required in front or rear outside mounts for C4500 or E-series.

Most Bolt-on applications (Sprinter and Transit chassis) require front cross-braces.

Installs with U-bolts around each cylinder, and two 3/8” bolts through aligned overlapping sections, drilling may be required.





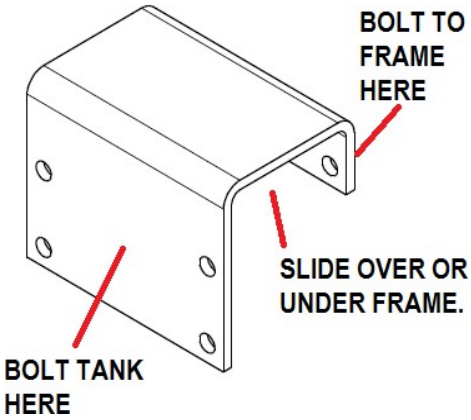


Applications:
Ford E-450 Inside Mount Rear, Chevy 4500 Inside Mount Rear,
Sprinter Channel Front, Sprinter Channel Staggered/Inside Mount Rear
Sprinter Universal 4pt 8k15 Rear (replaces crossplate)

-BOLTS PASSENGER & DRIVER CYLINDERS TOGETHER...
-ADDS STABILITY AND ADDITIONAL SIDE LOAD STRENGTH...
-DRILLING MODIFICATION OR DIFFERENT HARDWARE MAY BE REQUIRED BASED ON CERTAIN APPLICATIONS...

Hydraulic Pump Mounting Bracket

This #M29311 tank mount bracket (to the right) enables the tank assembly (quad pump or central pump assemblies) to mount in-between the frame rails on the Ford's channel frame. Typical open location is on the inside driver's side frame rail in front of the rear axle. For quad pump systems, maybe install both rear tanks or both front tanks. This brackets slides over the top or underneath the channel, allowing a vertical surface over the "open" area of the channel style frame where the cables and wiring are attached. Take care not to drill into the wiring when mounting this to the frame. Simply bolt the tank to the other side using a minimum of two bolts. You can mount the tank using just one side of the bracket to the tank (Ex. To left holes on bracket and tank), the tank body is strong enough to support the weight of the assembly, using 7/16" hardware with lockwasher required, torque to 70 ft/lbs.).

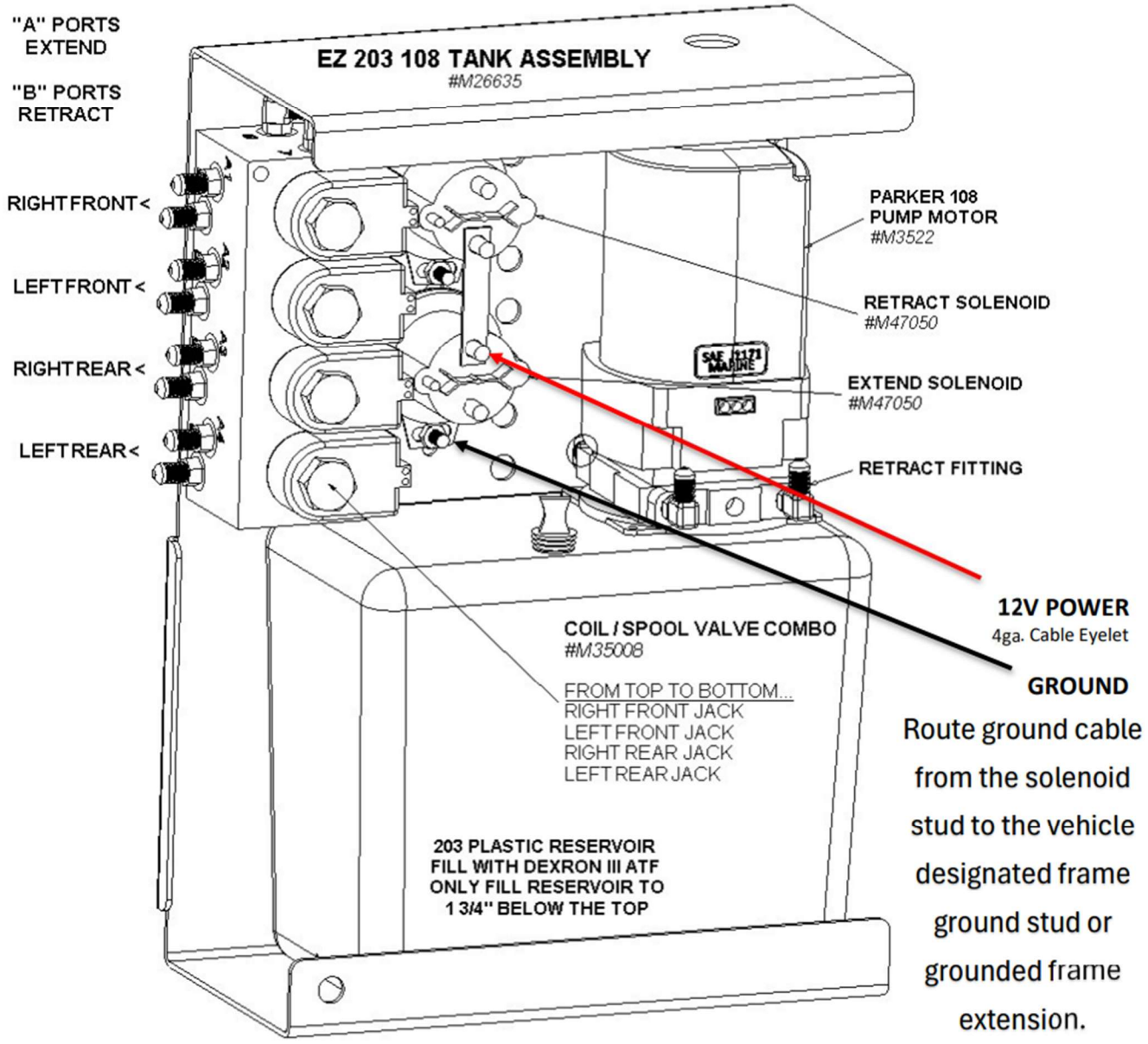


Vertical Pump Mounting – page 1 of 1

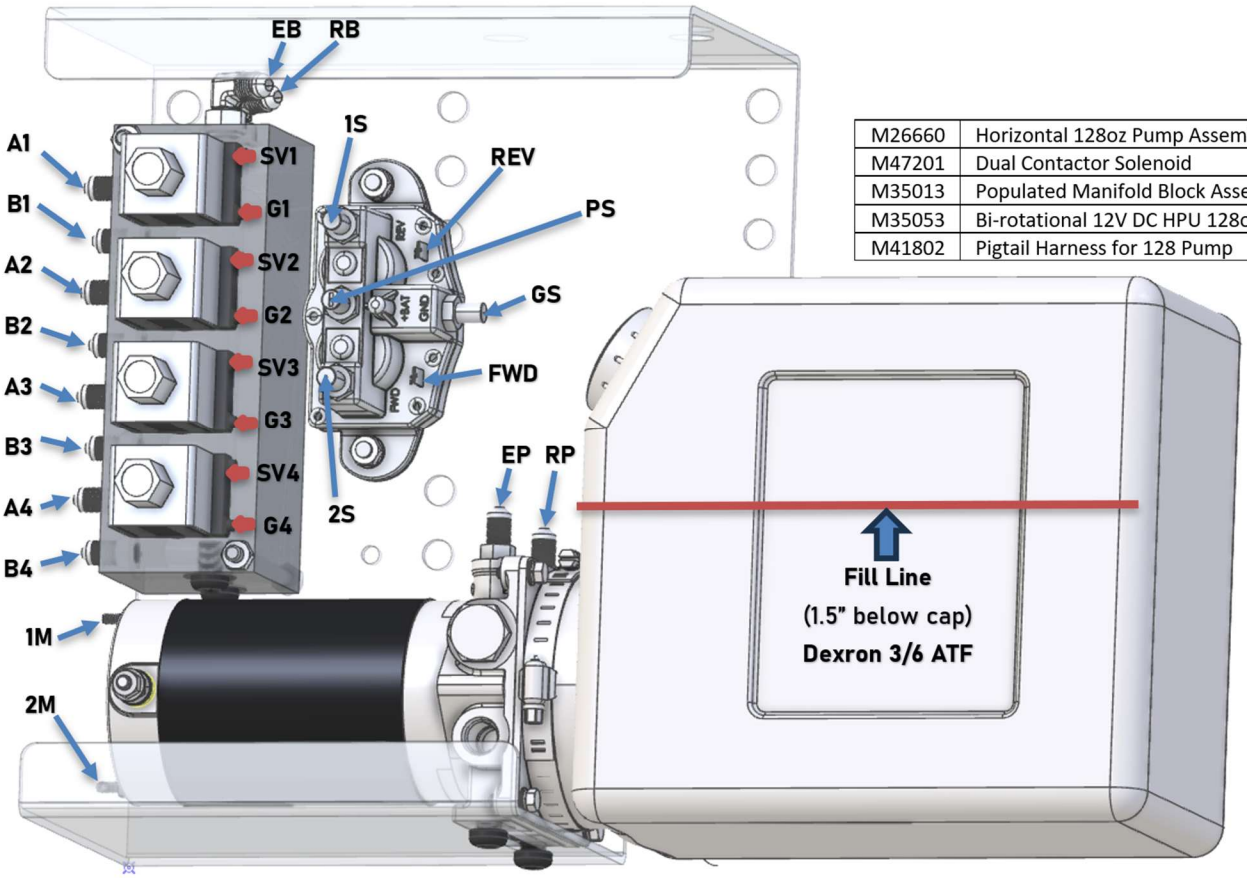
Tank Assembly will be pre-assembled & pre-wired direct from factory.

- Mount the pump using a minimum of two 7/16” bolts, nuts & lock washers.
- Plumbing is shown in Fig. 2 below, use 9/16” wrench and be careful not to under or over-tighten the hydraulic fittings. Sometimes marking the hydraulic lines with tape may make it easier.
- **DO NOT** install the top extend lines to the jacks themselves yet, this will be done later in installation.
- The main wire harness will plug directly into the 14-pin connecter that is pre-wired to the assembly.
- Route the ***ground cable*** (attached to ground shown below) to a grounded surface on the vehicle frame.
- Finally installing the plastic three sided tank cover, this should be done later on in the assembly.
- The tank cover will need to be trimmed to your liking around the hydraulic lines. Fasten the tank cover with at least two self-threading screws, be careful not to puncture the plastic reservoir.

Fig. 2



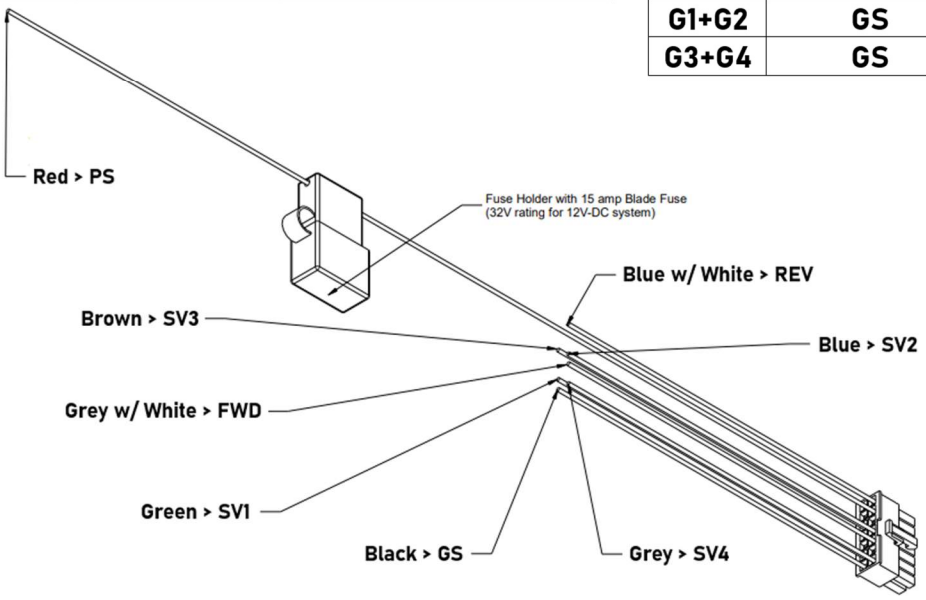
Horizontal Pump Mounting – page 1 of 2



M26660	Horizontal 128oz Pump Assembly
M47201	Dual Contactor Solenoid
M35013	Populated Manifold Block Assembly
M35053	Bi-rotational 12V DC HPU 128oz
M41802	Pigtail Harness for 128 Pump

Factory Pre-wired Connections		
1M	**1S**	M48311 6-AWG Red Cable
2M	**2S**	M48311 6-AWG Red Cable
REV	Female Spade	Blue w/ White wire -M41802
FWD	Female Spade	Grey w/ White wire -M41802
PS	Butt Connector	Red wire -M41802 (+12V)
GS	Butt Connector	Black wire -M41802

Factory Pre-wired & Plumbing Connections		
EB	**EP**	M52353T Green Hose 10.8" OAL
RB	**RP**	M52352T Black Hose 11.5" OAL
SV1	Butt Connector	Green wire -M41802
SV2	Butt Connector	Blue wire -M41802
SV3	Butt Connector	Brown wire -M41802
SV4	Butt Connector	Grey wire -M41802
G1+G2	**GS**	5/16" Ring Terminal (both wires)
G3+G4	**GS**	5/16" Ring Terminal (both wires)

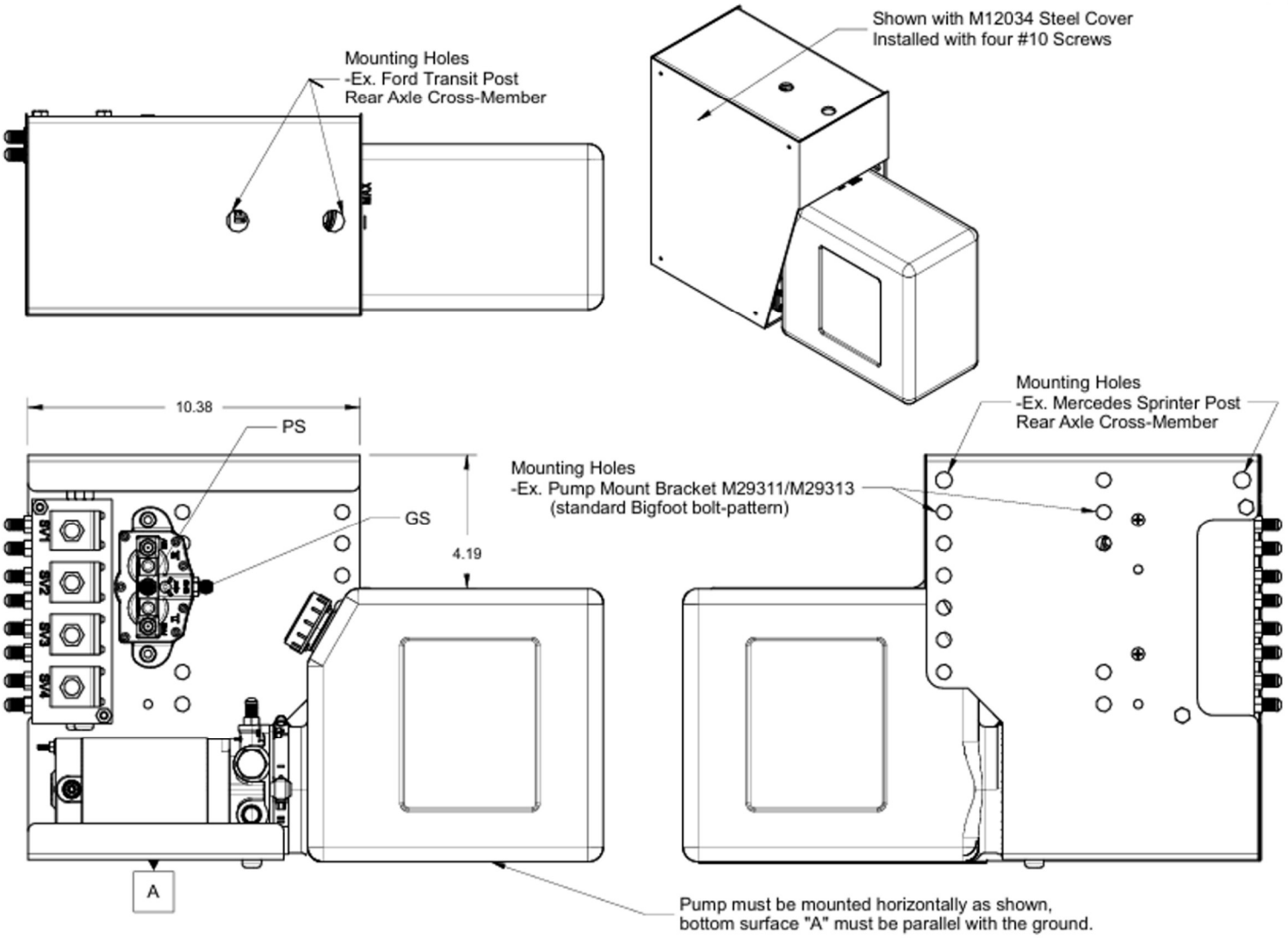


Installation Hydraulic Plumbing	
A1	Pass Front Extend -Green Hose
B1	Pass Front Retract -Black Hose
A2	Driv Front Extend -Green Hose
B2	Driv Front Retract -Black Hose
A3	Pass Rear Extend -Green Hose
B3	Pass Rear Retract -Black Hose
A4	Driv Rear Extend -Green Hose
B4	Driv Rear Retract -Black Hose

Installation Power Connections	
PS	4ga Red Battery Cable AUX stud Breaker
GS	6ga Black Ground Cable Neg. Terminal

Horizontal Pump Mounting – page 2 of 2

Utilize pump mounting holes mentioned below for specific vehicles mounting directly to the vehicle chassis. On the Ford Transit use blind bolts (top surface mount) to underside of the factory rear cross-member just behind the rear axle, utilizing existing holes. On the Mercedes Sprinter, use 1/2” or 7/16” routed through the factory cross-member behind the rear axle similar to the vertical pump mounting, but with two bolts. Or utilize the standard Bigfoot bolt-pattern using 7/16” hardware and any standard Bigfoot bracket, or mount directly to vehicle sub-frame, etc. oriented as shown below regarding surface “A”.



Hydraulic Plumbing

Typical hose plumbing for this chassis, lengths required may vary based on application, pump location and hose routing. Some models may require longer hoses due to their floor plans, required hose routing, etc. Recommend purchasing any longer hoses from Bigfoot systems to ensure hoses and fittings are to the specifications of our system. JIC fittings require hand tight + ¼ turn. Do not overtighten as the fittings may break, however check all fittings and ensure they are nice and snug before and after running the hydraulic system. You will need a 7/16" wrench for the fittings, 3/16" allen for the port fittings and 15mm wrench for the hose fittings.

Front Passenger Cylinder Extend Port to Manifold A1 = Green

Front Passenger Cylinder Retract Port to Manifold B1 = Black

Front Driver Cylinder Extend Port to Manifold A2 = Green

Front Driver Cylinder Retract Port to Manifold B2 = Black

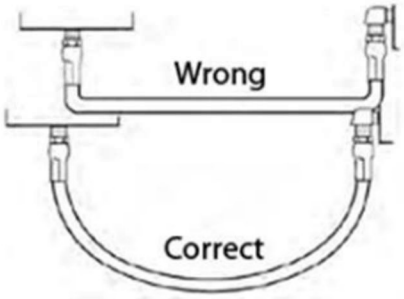
Rear Passenger Cylinder Extend Port to Manifold A3 = Green

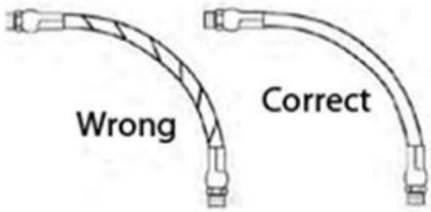
Rear Passenger Cylinder Retract Port to Manifold B3 = Black

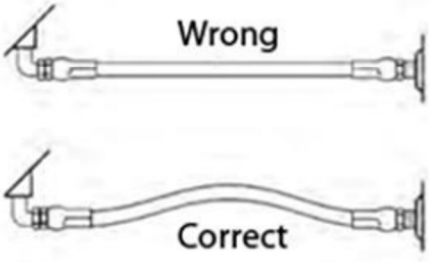
Rear Driver Cylinder Extend Port to Manifold A4 = Green

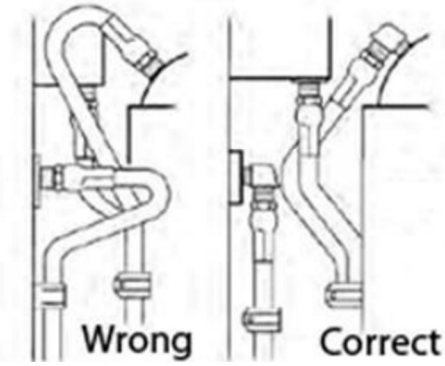
Rear Driver Cylinder Retract Port to Manifold B4 = Black

When routing the hose, avoid twisting the hose, keep bends long and sweeping, with slack. Avoid any areas where the bends could kink with tight turns or rub against moving, sharp or hot objects.



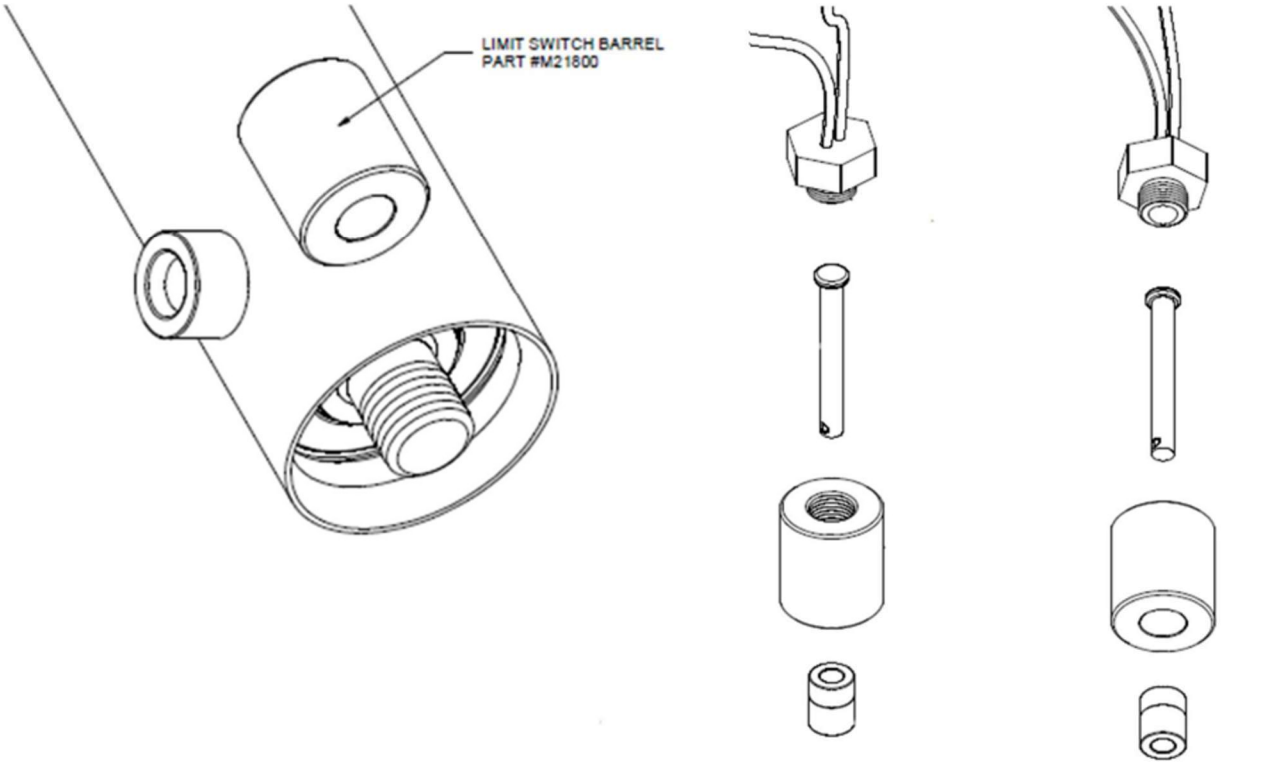






Limit Switches

Each cylinder has a mechanical switch that provides a signal to the controls when the cylinder is not fully stowed or retracted. Locate the limit barrel welded to each cylinder near the footpad as shown below. The barrel already has the white bushing installed from the bottom, need to install pin from the top and thread in the limit switch itself with 7/8” wrench, do not overtighten.

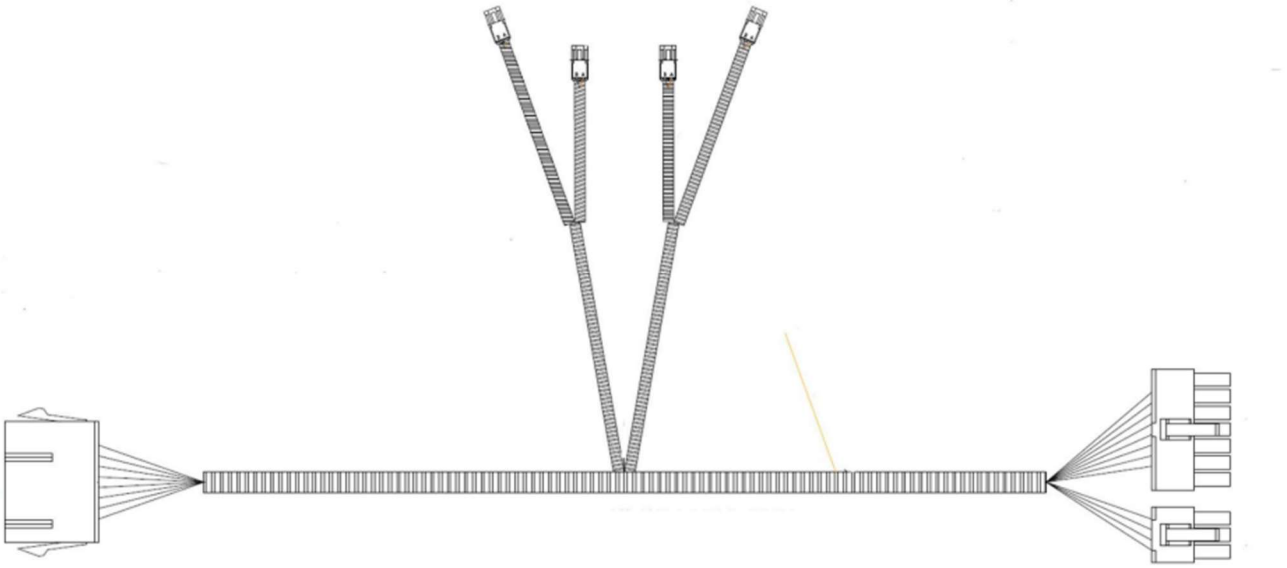


Electronics

Install the controller to a vertical surface, must be directly facing the front, rear, passenger or driver side of the vehicle. Controls cannot be mounted at angles or laying flat. Typical installation is near on or near the cabinetry or dinette near the RV side entry door. Controls may vary, but typically mounted as shown.

Electronics cont'd...

The harness shown below, each black Deutsch connector is routed to a cylinder limit switch, doesn't matter which one. The end with one 14-pin connector is routed and plugged into the pump harness. The end with one 14-pin connector and one 6-pin connector is routed inside the vehicle to the backside of the controller. The yellow wire needs to tie into an ignition or accessory hot wire from the vehicle, see next pages for details.



Battery Cable Installation

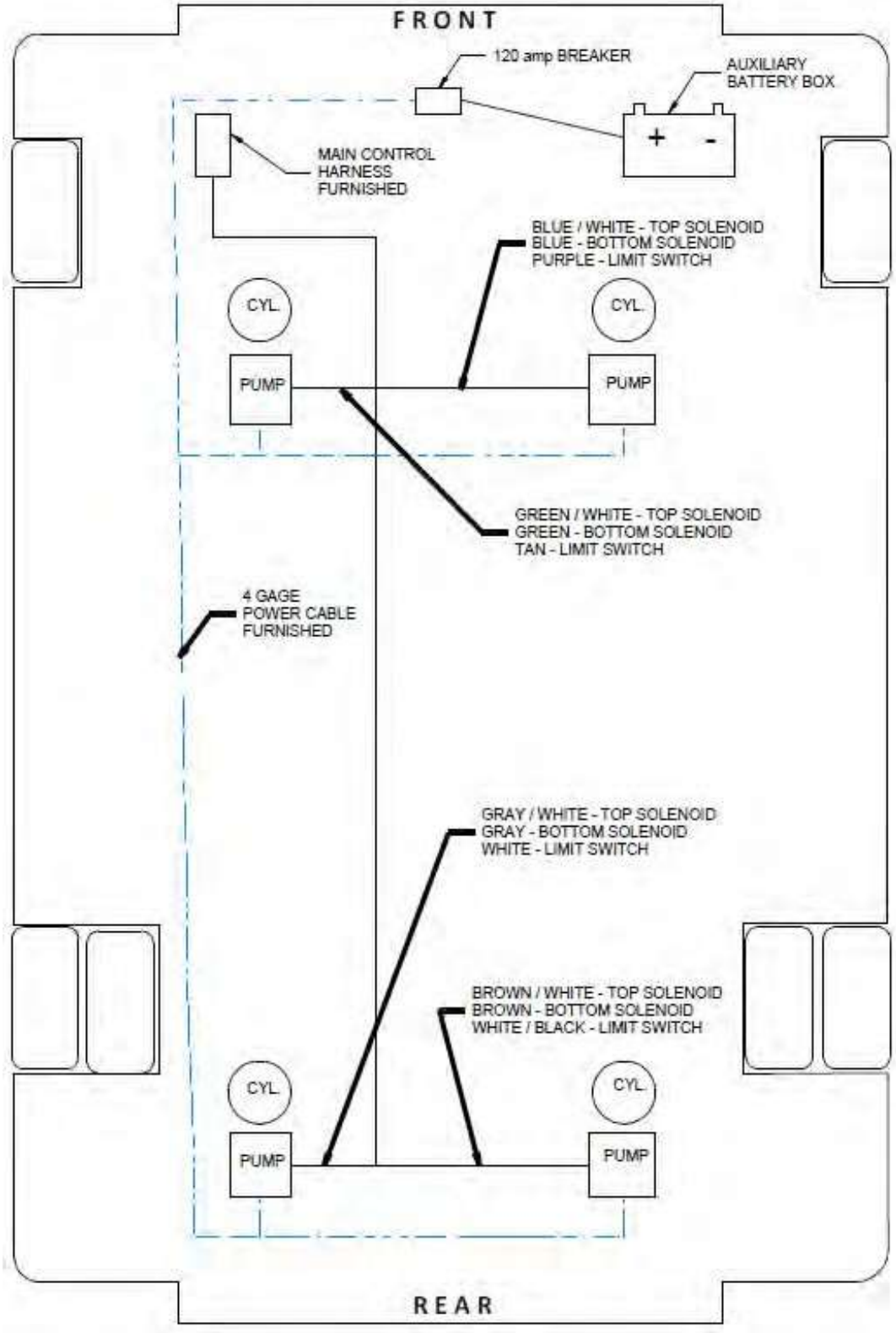
Supplied will be a 4 gauge battery cable that needs to be cut into two pieces.

- The 1st to run from the Solenoid power stud from the pump with copper strip to the 80 amp breaker AUX stud.
- The 2nd to run from the BAT stud on the breaker to the Positive Terminal on the RV house battery (not Ford battery). Hooking up the power should be the final wiring step so make sure this is done after all the other electrical work is done for safety. The supplied 80 amp breaker should be securely fastened in the battery box. Ground cable (attached to central pump assembly, typically white 10ga. wire should be fastened to vehicle frame or extended to negative terminal on battery.

Ground cable for horizontal pump assembly is a designated ground cable that is routed directly to the negative terminal of the house battery. Alternative if it will not reach the battery, the ground cable can be fastened to a vehicle frame stud just like the vertical pump ground cable.

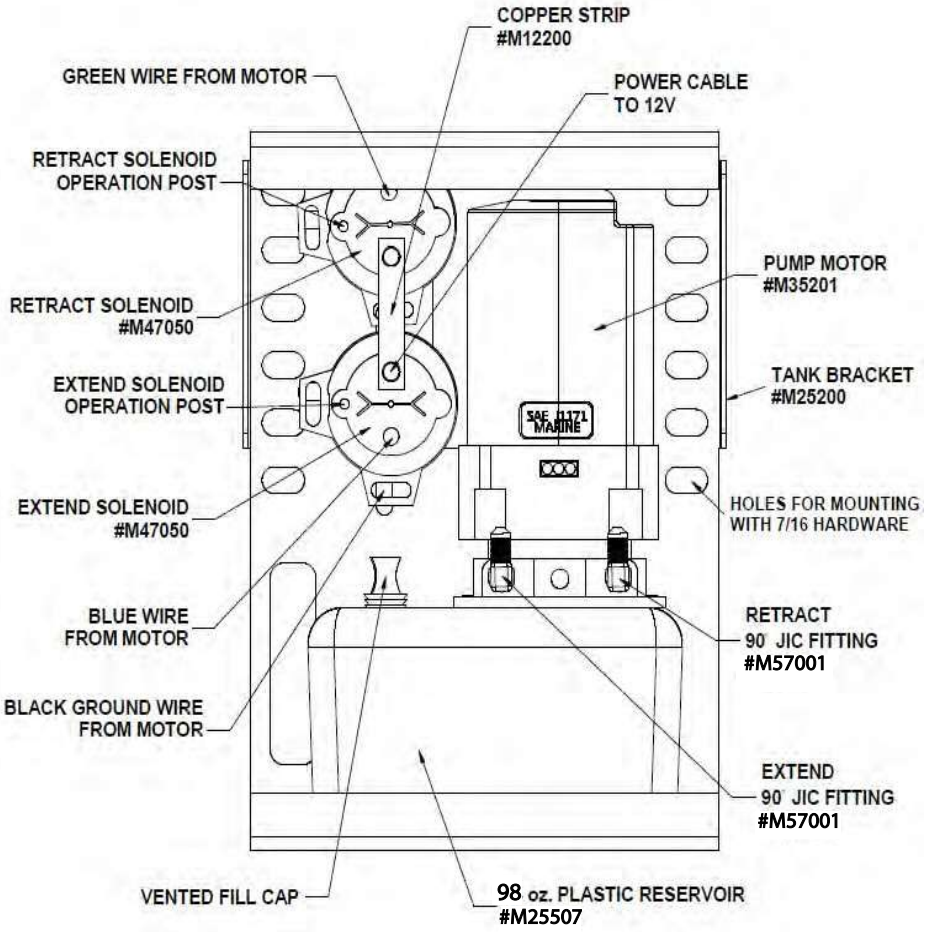
Example below of routing the AKQ or Manual “Quad pump” systems 14-pin wire harness. The “Central pump” systems harness is similar except that the leads to each corner or jack have only a tan & black wire that plugs into the limit switch and the end of the harness with the 14-pin connector plugs into the pump while the end with the 14-pin & 6-pin connectors plug into the Automatic panel. Take care to avoid high heat areas and moving parts.

MAIN WIRE HARNESS DIAGRAM



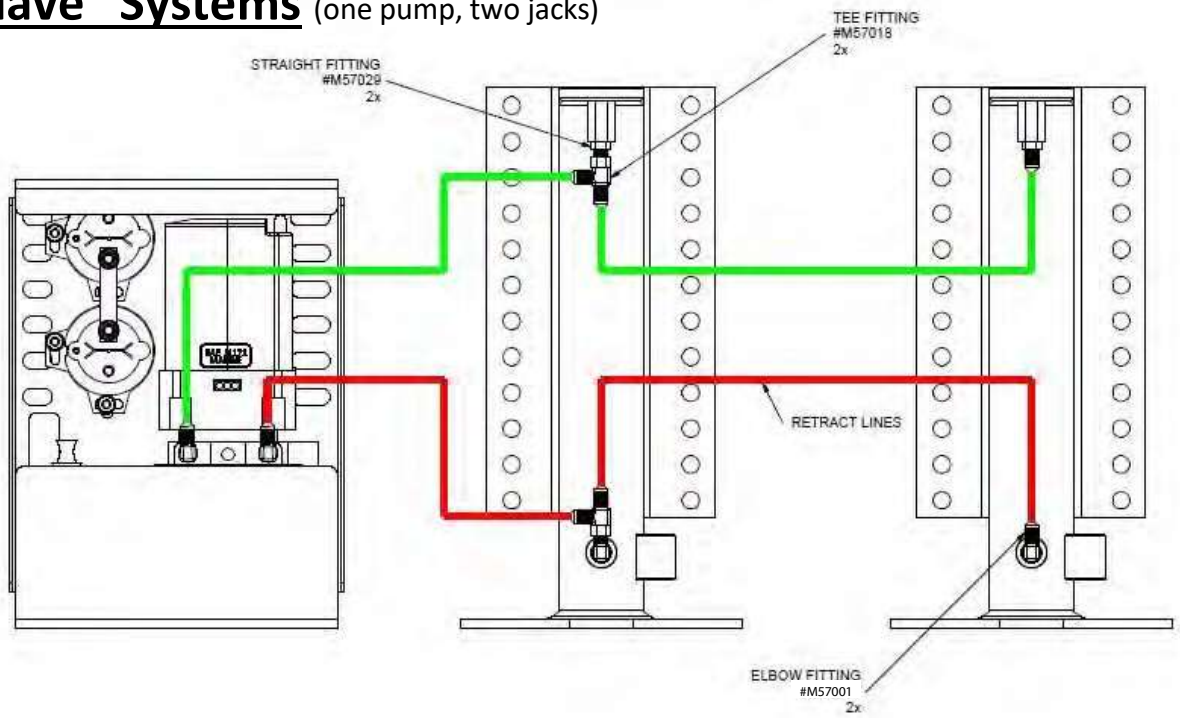
Rocker Switch Controls

Included is a harness *(#M43800)* that routes from the tank assembly to the rocker control switch. The red wire is the 12V power, this goes from the power stud on the tank assembly (on copper strip with 5/16” studs from solenoids) to the center post on the switch. The black wire is ground & is not needed for this switch. The grey wire goes from the retract operation post on the retract solenoid to the post labeled “1” on the switch. The blue wire goes from the extend post on the extend solenoid to the post labeled “3” on the switch. The switch is not waterproof & must be installed inside the coach.



Typical Plumbing

For 2pt “Slave” Systems (one pump, two jacks)



VERSION #1: (SHOWN) THE "TEE" FITTINGS MOUNTED TO THE DRIVE JACK.

VERSION #2: INCLUDES MOUNTING THE "TEE" FITTINGS TO THE PUMP FITTINGS.

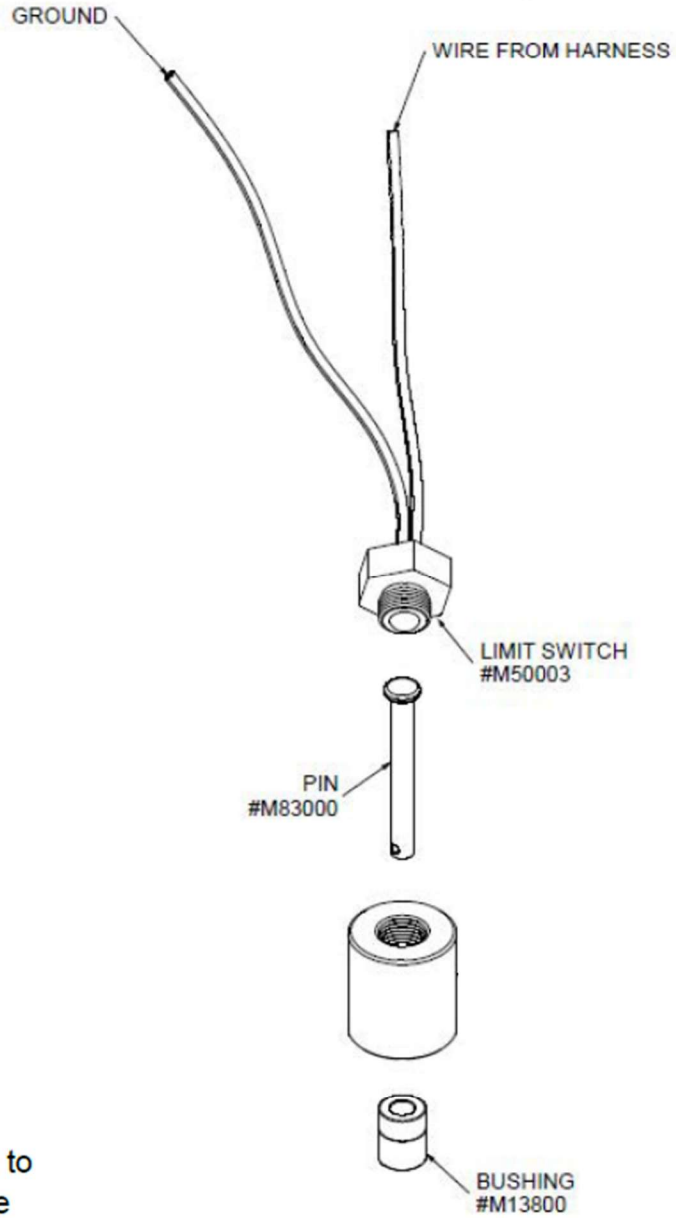
VERSION #3: RUNNING TWO LINES FROM THE PUMP AND PLACING THE "TEE" FITTINGS IN-LINE, THEN RUNNING INDIVIDUAL LINES TO EACH JACK FROM THE "TEE" FITTINGS.

SYSTEM MAINTENANCE

For most Bigfoot landing gear and leveling systems…

#1. Check the power supply to the Bigfoot system, RV house batteries, diesel chassis battery, trailer battery, etc. Test the voltage under load by using a volt meter and test your voltage with the system pump operating, if this drops below 10-11 volts, you may need to look into replacing the battery or batteries. If voltage is good under load, you may need to replace or check other connections on the pump assembly, including the power wire (connected to copper strip) and the ground from the pump to the frame. Our pumps ground at the solenoid mounting flange and contact between the pump steel housing and the frame it is bolted to, and has a 10 ga. cable that connects the tank body to the frame, typically only 3-6 ft long.

#2. Inspect and maintain the limit switches (if equipped) for each cylinder. See diagram on the right to identify the limit switch. These can be removed with a 7/8" wrench. To prolong the life of the switch, remove and apply di-electric grease on the ball itself and the limit pin. These are normally closed switches and are tied to your "Jacks Up" indication, Retract function, and ignition safety alarm on your panel (if equipped).



#3. Check for fluid leaks on the ground, footpad, hose, fittings, etc. Our systems use ATF so the fluid should be red in color. If leak is found, locate the origin and check fluid level inside the pump assembly, fluid level should be between 1-1.5" below the top of the reservoir.

#4. If your cylinder chrome shaft/rod is exposed (not a square jack), spray dry teflon spray on the shaft when leaving for long period of time, more frequently if by the ocean or salty environment.

#5. After a few uses, check all the hardware for cylinder mounting and pump mounting, re-torque to proper specs to make sure the bolts did not come loose. 3/8" & 7/16" hardware to 70 ft/lbs., 1/2" hardware to 100 ft/lbs., if bolt-on system, note any frame or bracket deformation prior to reaching full torque spec. (some deformation is OK, as long as the structure & function of component is still intact).

TROUBLESHOOTING

Most issues are power related. Always check power and ground wire connections first. Check power level of battery under load (place volt meter on battery then press and hold EXTEND ALL on control to see if voltage drops).

Control Panel shuts off during operation

This means the control is receiving less than 9.5v from your house batteries, please check and charge your batteries, then try again.

Cylinders not lifting or holding pressure

This means there is more than likely air in the system (not bleed during installation). Two methods, easy method is to enter manual mode and completely extend all four cylinders to full extension and leave for an hour, then retract, wait another 30 minutes before operating again. If this does not fix the issue then the secondary bleeding procedure must be done, see below for instruction.

Secondary air bleeding process

If there is still air in the system, a more strategic method may be required. Loosen all four extend hose fittings (15mm wrench) on the jacks (located near the top of each cylinder), enough that fluid and air can escape. Enter manual mode on panel Press and hold each cylinder until solid fluid comes out of each fitting. Tighten fittings and repeat for retract hose fittings to ensure all air is out, to retract cylinders in manual mode, press each cylinder and the RETRACT button simultaneously. Re-tighten all fittings and clean up mess. This method can also be done by placing each line in a bucket to minimize mess afterwards. *In some instances, the front jacks may need to be dis-mounted from underneath the cab to access the top extend ports during the bleeding procedure.*

Cylinder will not operate, extend or retract

Attempt to bleed system first, verify that it will not operate in either direction. Then check all wires at the control panel to make sure they are inserted properly and plugged in(wires may be loose in connector). If this is all good, then check wiring at pump(s).

Warranty Guideline

Owner must activate warranty! Via Phone or Website

OEM Installed Quad/Central Pump Systems: 1 year parts and labor

Automatic Leveling Systems: Lifetime Cylinders, 1 year parts and labor

Should the product be defective due to workmanship and/or material flaws, we will repair/replace the defective material.

Core charges may be applied and refunded on certain components.

Bigfoot is NOT responsible for:

- Freight on warranty parts.
- Replacing footpads, bolts, loose or bent brackets or fluids lost as a result of failure to maintain the system, Ex. loose/missing footpads, loose mounting brackets/hardware from not re-torquing after initial use, etc.
- Damages caused by abuse, misuse, negligence, misapplication, error of operation, accidental or purposeful damage or faulty installation, including but not limited to hoses, fittings & wiring components. Example, bent limit switch pins from hitting ground while driving, missing SnapPads, operating system with rear tires off the ground, modification to system, etc.
- Liability for loss to the vehicle, or apparatus or property, loss of time, manufacturing costs, labor, material, loss of profits, consequential damages (direct or indirect).
- For transportation to and from a service center, onsite service calls to or from the customer, damage from road hazard, loss of salaries, commissions, lodging, towing charges, bus fares, car rentals, fuel expense, telephone charges, inconvenience compensation while repairing or replacing a defective part or material.

This warranty voids all previous issues, regardless of provided manual version. Effective date: **7/1/2025**

Owner must register within 30 days from the date of purchase to activate warranty. Call or online at bigfootleveler.com

Prior to any work being done an **authorization number must be obtained** by calling

269-483-9633 for Warranty Parts or Service Labor. For full warranty transcript just contact us!

Service labor based on a flat rate schedule determined by Bigfoot for authorized work performed will be reimbursed. This will eliminate much diagnostic time and avoid refusal of unauthorized claims. Many problems may be resolved by contacting a Bigfoot service representative or visiting our support docs on our website.

Write down your system serial number here_____

Serial # located on the sticker on the system controller or call us, starts with # 8……