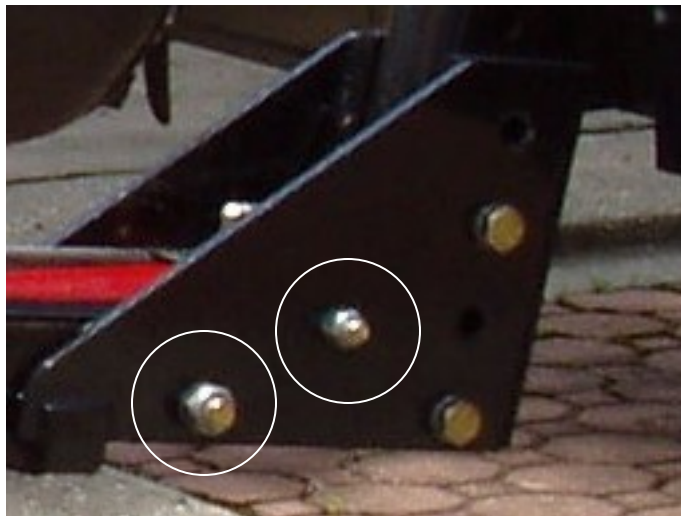


INSTALLATION GUIDE FOR MINUTE MAN HDH

Important: Read this page before attempting installation. Failure to do so could result in damage to the wheel lift and/or truck. An improperly installed wheel lift can also result in bodily injury or death.

To avoid damage to the Minute Man HDH boot, do not over tighten the in/out cylinder bolt or the extension tube bolt shown below. These bolts are furnished with nylon insert lock nuts. They are designed to keep the fasteners in a “free spinning” state. If these bolts are too tight, the unit will not unfold properly. When installed the ram extension should be able to freely slide in the boot.



General Safety Rules

1. Always wear eye protection while working with any tools.
2. Always wear hearing protection while running power tools and striking tools.
3. Wiring and electrical work should be performed by an experienced individual using tools that are insulated from electrical shock.
4. Never run cable or wiring that has one end connected to a battery. Run cable and prepare ends for termination before making any connections to either the vehicle or auxiliary batteries.
5. Always check for wiring, brake, and fuel lines before drilling holes through truck frame and bed.
6. All fasteners used to secure mounting brackets, the Minute Man frame, and counterweight should be Grade 8 or higher quality material.

MINUTE MAN HDH INSTALLATION GUIDE



WWW.MINUTEMAN1.COM 877-593-6959

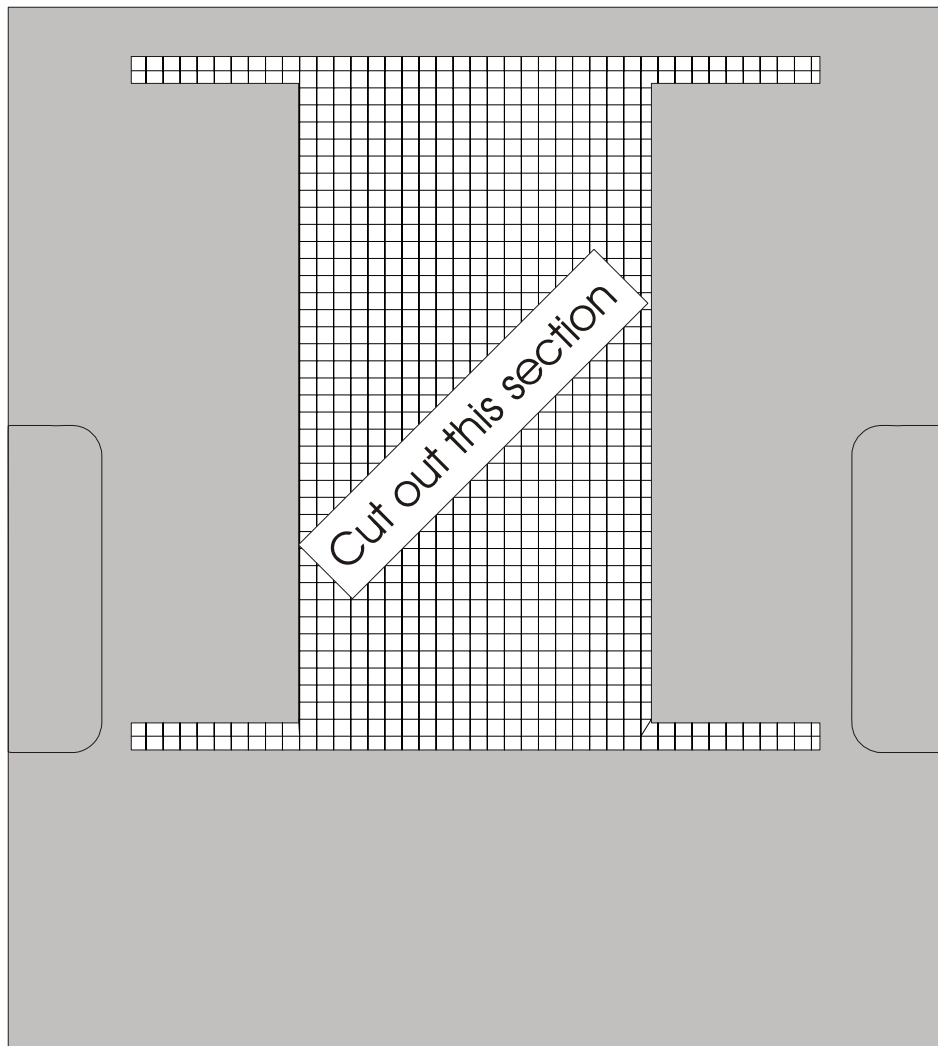
Required Supplies for Installation

1. Drill motor with ½" capacity chuck
2. Drill bits: ¼" and ½" sizes
3. C-clamp with a minimum of 6" capacity
4. Impact wrench, ½" drive or larger, with a minimum of 600 ft/lbs of output torque, or ½" drive or larger breaker bar. Sockets and wrenches: ¾", 1 1/8", 1 5/16", and 1 ½".
5. Fastener retaining compound (Thread Locker, Loctite 242 blue, or equivalent)
6. Tape measure
7. ½" transfer punch
8. Paint or china marker
9. Mounting bracket kit supplied by factory or angle iron for fabrication by the installer.
10. ½" x 2" and ½" x 2 ½" bolts, eight each for mounting brackets. Must be Grade 8 or higher quality. These are included with the factory mounting bracket kit.
11. Locking nuts, i.e. stover lock nuts, L9 lock nuts, deformed thread nuts that are the same thread pitch as Grade 8 unit mounting bolts. These are included with the factory mounting kit
12. Automatic Transmission Fluid, Dexron III, 9 quarts.
13. 12 volt deep cycle marine battery
14. 2 gauge welding wire (approx 12-16 feet) with 3/8" copper lugs (six) for terminating ends.
15. Crimping tool for attaching lugs to cable ends.
16. Combination wrenches: 7/16", ½", 9/16", and 11/16".
17. #2 phillips and small flat blade screwdrivers.
18. Basic wiring tools, i.e. wire stripper, crimpers, utility knife, and electrical tape.
19. Several scrap pieces of 2" x 4" lumber.

Before beginning installation the following must be performed on the truck:

1. Remove rear factory bumper.
2. Remove any hitch receivers i.e. Reese Hitch™
3. Remove spare tire.
4. Disconnect the battery.
5. It is recommended that the fuel tank be near empty, some trucks will require the fuel tank to be dropped or moved over to allow access to fasteners and mounting brackets.
6. The rear suspension should be modified with three additional leaf springs, a super spring add on kit (call for details), or an air bladder system

7. If the truck has a slide in bed liner, it will need to be removed or modified. If it is left in, the Minute Man frame must be placed in the bed, centered in the box, and slid in the correct distance (see detailed instructions following). The frame must be traced and the bed liner cut so that the minute man frame sits directly on the box bed. Examine the diagram below. The area to be removed is shown. **Do not bolt the frame of the Minute Man over a slide in bed liner!** The unit may not stay securely fastened and will result in improper load balancing and damage to property.



1. Mark the center of the bed from left to right. Then mark the bed from the back as follows:

Short box: 24 ¼”

Long box: 29 ¼”

These are guide lines, step 4 will confirm if the placement is correct.



2. Mark the center of the rear frame cross member (approx. 23 ½”).



3. Place the frame inside the pick up box. It is recommended that this be done with at least three people, a lift truck, or a hoist. The unit should be slid into the box so that it is centered in the box and the rear frame cross member of the Minute Man unit be aligned with the measurement marks that were drawn in step one.



4. Check the measurement from the back of the Minute Man frame to the back of the truck bed. As measured and marked on the bed in step one, the back of the Minute Man frame should be (to the end of truck bed):

Short Box: 24 ¼"

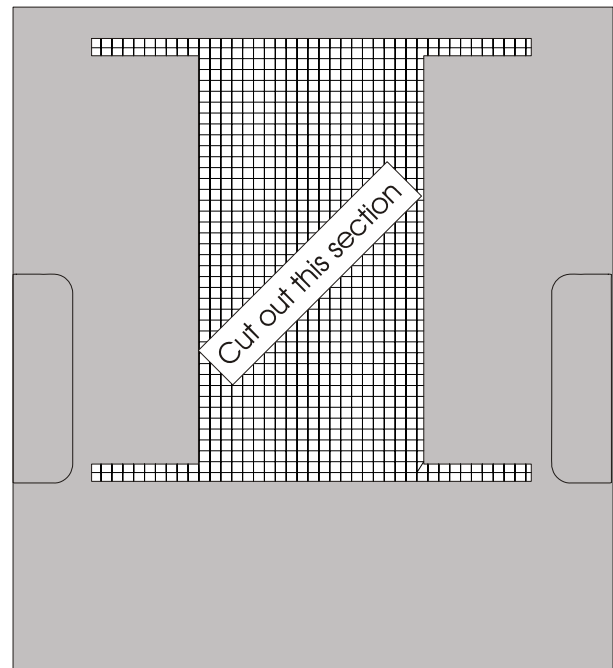
Long Box: 29 ¼"

If the measurements are any less than shown above, the elbow once installed will hit the back of the truck box when the boom is in the down position.

Note: some Dodge short box trucks may require a custom "short" boom.



5. If the truck has a slide in bed liner the Minute Man frame needs to be traced onto the liner. Slide both the Minute Man frame and the liner out of the box. Cut the traced pattern out of the liner and place it back in the truck box. Place the Minute Man frame back into the box and check its fit in the liner. Double check that the unit is still centered and properly placed front to back in the box.



6. Drill holes through bed. Drill a ¼" pilot hole through the mounting holes already in the Minute Man cross frame tubes.

Before drilling, check area below the bed for any fuel or brake lines, and wire cables etc. Once the holes are drilled, check under the bed for any immediate obstructions that will not allow for mounting bolts and brackets to securely fasten the wheel lift frame to the truck frame, i.e. bed cross supports or fuel tank fill tubes. If it appears that there will be a problem the Minute Man may need to be moved further in or out of the bed. Remember, moving the wheel lift further back moves the center of gravity of the vehicle as well. Call 1-877-593-6959 for assistance or any questions you may have about positioning the lift in your truck.



7. Place the rear mounting bracket under the holes drilled through the bed. The upper leg of the bracket must be flush with the truck bed and the lower leg must be flat against the truck frame (shown in the illustration top, right on the following page). For Ford trucks, remove the rear overload spring stop from the truck frame and follow the next three steps.



7.1 (Ford trucks) Drill out the holes in the spring stop and the truck frame to ½" diameter. Check the fit of the ½" mounting bolts included with the factory mounting brackets.

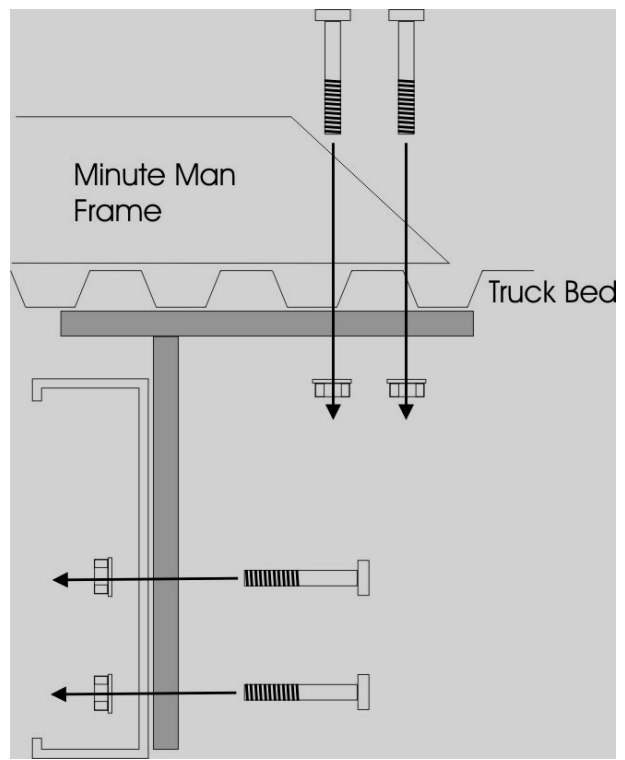
7.2 (Ford trucks) Line up the spring stop holes with those on the unit mounting bracket and bolt both pieces to the truck frame using the existing holes for the spring stop. Examine the picture at the right, note that the spring stop is placed on the wrong side of the bracket. It should be placed on “under” the upper leg of the mounting bracket. The picture (below, right) is mounted correctly.



7.3 (Ford Trucks) Position the bracket assembly as shown at the right. Note upper leg of the bracket extends to the outside of the truck frame. Go on to step nine.



8. If the brackets are being fabricated by the installer they should be constructed of ½” thick steel and welded by an experienced individual using a MIG welder with capacity for ½” thick steel. The brackets must be mounted as closely as possible to the holes drilled in the bed.



9. Drill through the mounting bracket holes and through the truck frame with a ½” drill. Sometimes it may be easier to place the bracket in place and spray paint through the holes in the bracket to mark where to drill in the frame (2008 era Ford extended cab short box front mounting bracket location shown at right).



9.1 Minute Man Mfg. has attempted to instruct in this manual a basic mounting configuration. Due to the numerous variations and changes in truck model years, it may be necessary to modify the mounting brackets shipped from the factory. Please call 1-877-593-6959 with any questions.

10. Bolt all the brackets to the frame using ½” Grade 8 bolts and lock nuts. The bolts should be long enough so the nuts fully engage with the thread on the bolt. It is always a good idea to use washers where space permits. This will help distribute the load away from the fasteners. Mounting hardware is included with factory mounting kits. Tighten all ½” fasteners with 119 ft/lbs or torque.

Ford front bracket (standard cab long box shown at right).



11. Drill down through the holes in the Minute Man frame and bed into the mounting brackets using a ½” drill.



12. Pull the hydraulic lines out of the boom. Position hoses inside the boom so they all lay flat, have no tangles, and do not cross over each other.



13. Lay the hoses in the following order:

Black: Driver's side
Red: Passenger's side
White: middle
Spring: middle



14. Stand the elbow up and run the lines completely through the tube down into the end of the lower elbow.



15. Place the elbow fully into the boom. Make certain the lines do not cross or pinch when the elbow is inserted in the boom.

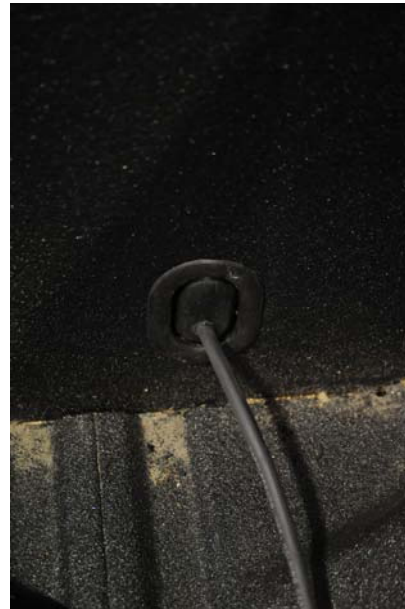


16. Bolt the elbow in place using a 3/4" x 6" Grade 8 bolt (included). Tighten the bolt with 380 ft/lbs of torque.



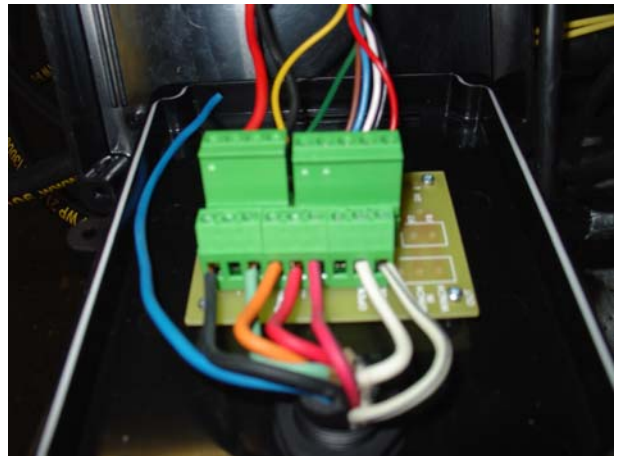
17. From the inside of the truck cab, route the controller cable to the truck box. Find a route that will not pinch or pull on the cable. Leave enough length on the cable to be able to operate the controller freely in the cab.

The picture at the right shows the cable coming through the front of the box with a factory installed access port (2008 Ford).



18. Wire the control cable to the control box on Minute Man lift. Connect the wires as follows:

- Green: Up
- Orange: Down
- Red: In
- Red w/ black stripe: Out
- White: Open
- White w/ black stripe: Close
- Black: Hot or positive common
- Blue: not used, spare



19. Run a battery cable from the truck's battery into the truck box. The cable should be a minimum of 2/0 gauge. Always insure the cable is secured to the truck; away from moving parts, hot exhaust or other engine components, and not pinched in doors, windows, or trim. Some trucks will have plugs in the back wall of the box to facilitate running cables into the bed.



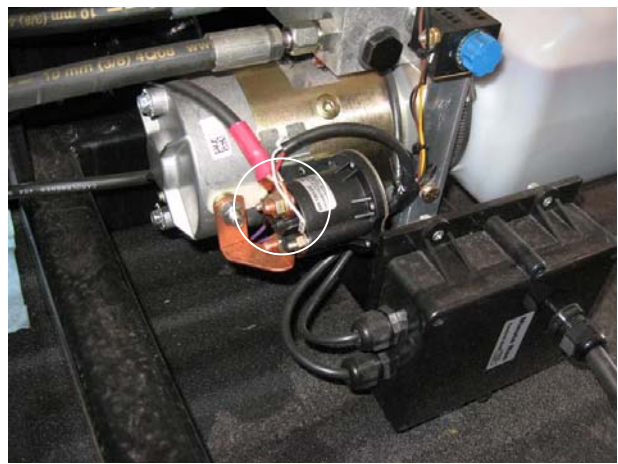
19.1 Install a 12 Volt deep cycle marine battery into the battery box on the Minute Man frame. It is recommended to have a battery that has a minimum of 500 Cold Cranking amps (CCA rating).



19.2 Connect the 2/0 cable from the grounding screw on the pump manifold to the negative terminal on the auxiliary battery.



19.3 Connect the 2/0 cable from the positive stud of the pump motor solenoid (top stud), to the positive terminal of the auxiliary battery.



19.4 Connect both ends of the cable from the vehicle's battery to the Minute Man's auxiliary battery.



20. Fill the hydraulic reservoir on the pump to nearly full. Using the controller, raise the boom up ("UP" button on controller). Install the elbow hose pulleys in the holes at the lower elbow tube. The two larger diameter pulleys should "sandwich" the smaller pulley.



21. Tap the shaft all the way through the elbow so that both ends are flush with the outside of the tube. Position the hoses as follows:

Black: driver's side
White: middle pulley
Red: passenger side
Spring cover: bypass over pulleys



22. Place the boot on several short 2" x 4" lumber pieces. Use the controller to lower the elbow into the boot ("DOWN" button). Bolt the boot onto the elbow using hole locations that will allow the boot to touch the ground without bottoming out the boom in the frame cradle. It may be necessary to use the hydraulic system to "force" the elbow down into the boot; it has a very tight tolerance.

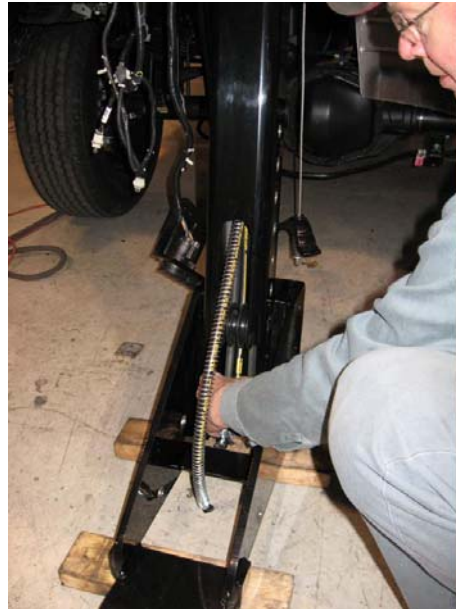


23. The boom should be able to rest in the cradle as the boot touches the ground. The elbow has multiple mounting holes for the boot. Find the combination that works best for the truck.



24. Route the hoses as shown at the right. Bolt the boot to the elbow using 7/8" x 2 1/2" Grade 8 bolts (included). **Make sure the bolts do not cross thread during installation!** Tighten the 7/8" bolts with 600 ft/lbs of torque.

Check the fit by lifting the head/extension assembly by hand (team lift only). It should move up and down in the boot without scraping or pinching.



25. Remove the in/out cylinder from the ram and extension by first removing access plug. Then pull out the cylinder pin and remove the cylinder body from the extension. There is a 1/2" punch access hole opposite the threaded plug hole.



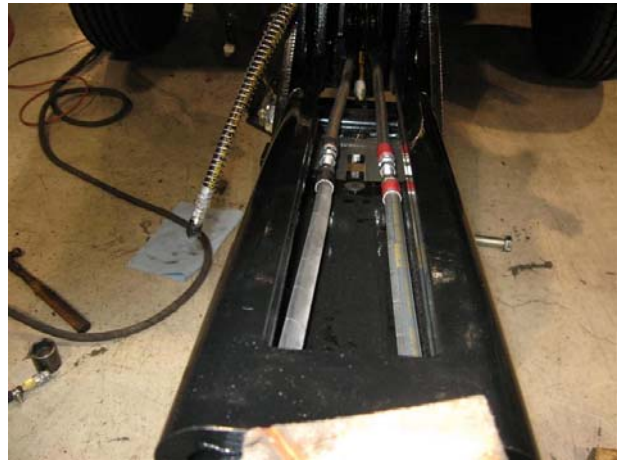
26. Drive the pin out in the direction shown in the picture at right.



27. Place the extension and head assembly into the boot. Insert the custom 1" x 8" Grade 8 Hex Head bolt through the boot and extension. Secure with a 1" lock nut. **DO NOT OVER TIGHTEN. THE BOLT SHOULD REMAIN LOOSE FITTING; THE NUT HAS A NYLON INSERT TO KEEP IT FROM BACKING OUT.**



27.1 Connect short hoses (25" long) to the corresponding color hoses from the elbow. Route the hoses through the ram so the exit out the end, one on each side of the cylinder pin mounting tube on the ram.



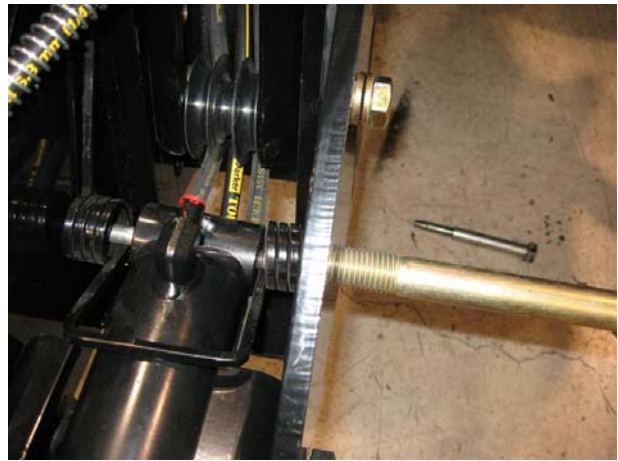
28. Connect the hoses to the fittings on the head assembly as follows:

Red: Passenger side head fitting
Black: Driver's side head fitting

The hoses are spring tensioned inside the boom. They will need to be pulled to reach the fittings.



29. Replace the in/out cylinder into the extension. Bolt in place in the same manner as the extension bolt using a 1" x 8" Grade 8 Hex Head bolt and lock nut. **DO NOT OVER TIGHTEN!** Insert the bolt through the holes in the included boot spring. The closed end of the spring should lie on the body of the in/out cylinder. The open end of the spring (the legs) will be on the walls of the elbow.



30. Connect the hoses to the in/out cylinder as follows:

White: In/out cylinder base end
Spring covered: In/out cylinder, rod end



31. Operate the in/out buttons on the controller to align the in/out cylinder rod with the pin hole on the ram. Replace the cylinder pin and plug. **Make sure the pin is below the hydraulic hoses before installing the plug. Do not pinch the hoses. Do not over tighten the plug. It is recommended to use thread locker to secure the plug.**

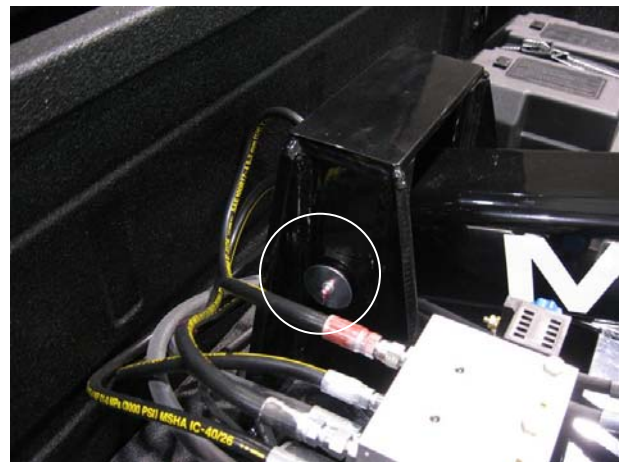


32. Check function and fluid levels. Test all functions on the controller. During testing it will be necessary to add more hydraulic fluid to the reservoir on the pump tank. The cylinders and lines hold more fluid than the tank has capacity for. Generally any air in the system will bleed out automatically.

33. Lubricate all the grease fittings as indicated in the pictures. Use high pressure grease (red grease) or high quality marine corrosion control grease. Pump grease until it is visible exiting ends of pins/bushings.

Boom pin (shown at right, two fittings)

Scissor pins: (four fittings, 2 each)



Extension bolt bushing:
Access in the folded position.



In/out cylinder bolt bushing:
Access in the unfolded position.



L-arm pin bushing (1 fitting each arm):
Access with arms open only.



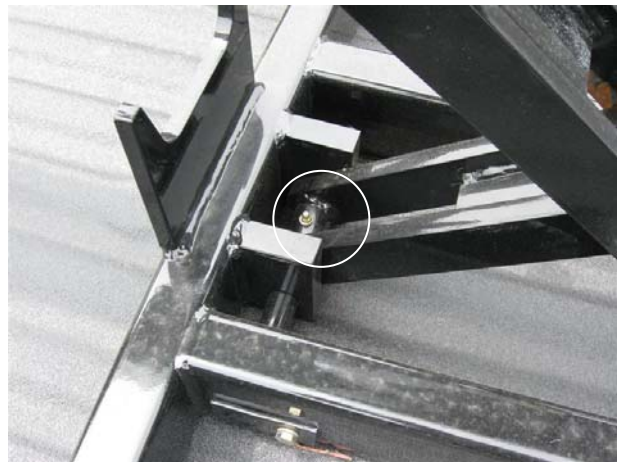
Head pivot bolt bushing (1 fitting):
Access with head rotated to side.



In/out cylinder pin (1 fitting):
Access with head "extended."



Scissor frame pin:
Access with boom "up."



Lift cylinder frame pin:
Access with boom "up."



L-arm cylinder pivot pin:
Remove shoe plates and "open" the L-arms.



Installing Optional Counter Weight

The following instructions are a general guideline for installing the Minute Man counter weight kit. It may be necessary to modify the mounting bracket or included fasteners to facilitate installation. Never cut the brackets in a manner that will weaken the structure of the counterweight mounts. It is not recommended that the vehicles frame be modified to install this kit.

1. place the counter weight assembly securely on a service jack. Slide the assembly under the front of the truck



2. Examine the truck frame and determine an area that will accommodate the counterweight. The weights should not pinch any hoses or wires; or hinder steering or suspension travel.

3. Remove the front bumper.



4. Using the floor jack, raise the weight up into position. Some 2008 and up Ford trucks will require the bracket to be positioned as shown at the right. The slot in the mounting bracket will accommodate the front portion of the body mount gusset.



5. If possible drill the holes in the frame with the counterweight in position. If this is not possible, mark the hole locations with spray paint or a transfer punch.



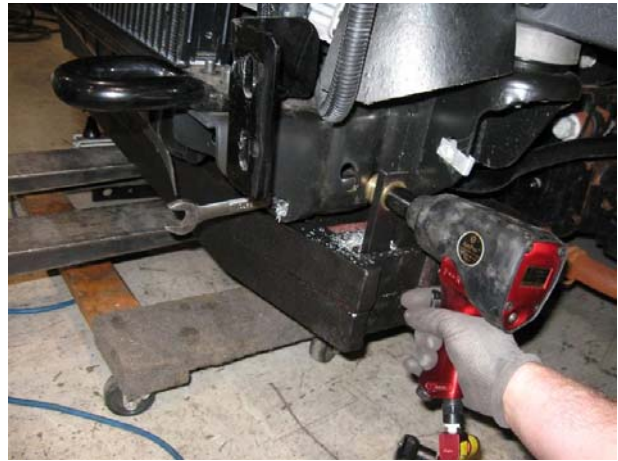
6. Place the counterweight back in position (if moved) and bolt in place using the included bolts and nuts. If the included hardware is not of sufficient, replace with Grade 8 or higher quality fasteners. Always install the rear most bolt first so that it is accessible inside the frame.



7. Make sure there is enough thread on the back side of the bolt to engage the locking portion of the lock nut. If the bracket is wider than the frame, use shims or a stack of washers avoid bending the mounting bracket or frame when the bolts are tightened.



8. Tighten the ½” fasteners using 119 ft/lbs of torque (a impact wrench is preferred but not necessary).



9. Check that there are no pinched wires or hoses, etc. Replace the front bumper.



Installing the Optional Minute Man Rear Bumper

The following instructions are a general guideline for installing the Minute Man rear bumper. It may be necessary to modify the mounting brackets or included fasteners to facilitate installation. Never cut the brackets in a manner that will weaken the structure of the bumper or mounting brackets. It is not recommended that the vehicles frame be modified to install this kit.

1. Drop the spare tire if not done so at this time. Disconnect trailer wiring harness if it is mounted to the factory bumper.



2. Disconnect license plate lamp wiring from the factory bumper. This is usually connected via a harness clipped to the bumper itself.



3. Remove the factory rear bumper.



4. If there is a hitch receiver installed it must be removed.



5. Position the Minute Man bumper so it is at the proper height and centered to the truck box. If possible align the access holes for the spare tire removal crank. Check that the elbow is centered in the "pocket" of the bumper.



6. While the bumper is in place, hold the mounting brackets up to the frame and mounting plates on the bumper. Typically the factory bumper mounting holes in the frame can be used to mount the Minute Man bumper. It also may be required to shim the mounting bracket out from the frame or the bumper mounting plate. If there is a significant gap between the plate and frame one or the other will bend when the mounting bolts are tightened.



7. Once the bumper and brackets are aligned and spaced correctly, tighten the bolts. On vehicles with a tubular constructed frame (2009 and newer Dodge) caution must be used not to collapse the frame when tightening the bolts. The picture at the right is shown viewing straight up at the truck frame and the bumper mounting bracket.

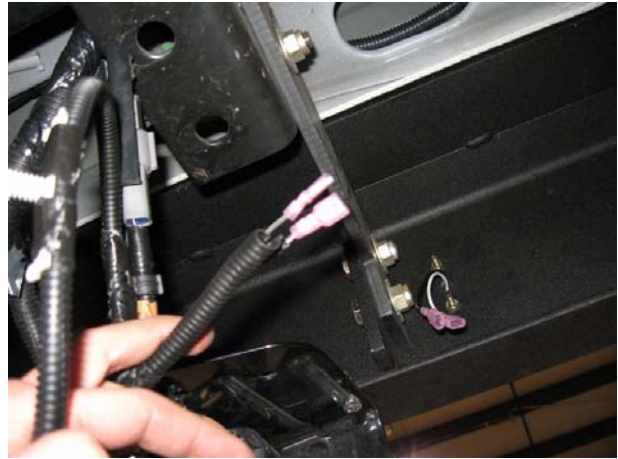


8. Check local laws concerning license plate mounting and lighting. It may be necessary to provide a plate lamp on the new bumper. Follow the steps below for connecting the plate lamp.

9. Place the lamp in the bumper as shown. Make sure the wiring is completely through the bumper and not pinched before tightening the bolts on the lamp.



10. Remove the factory plate lamp connector from the end of the wire harness. Connect the wire terminals to the end of the factory wire loom.



11. Connect the terminal ends loosely together. Check that the lamp functions with the vehicle parking lamps and head lights are turned on. If the lamp does not come on, switch the terminals around and re-test. When the lamp is functioning properly firmly connect the terminal ends.



12. Replace the wire loom back around the factory wiring and cover the loom and connectors with electrical tape.



13. Secure the wire harness to the frame in a manner that they will not hang down and snag on anything.



14. If desired replace the trailer wiring connector below the bumper.



15. Replace the vehicle spare tire and mount the license plate.