



### IMPORTANT! READ THIS FIRST!

Installation of shock absorbers or other suspension components requires special tools and expert knowledge. Accordingly, installation of all BILSTEIN products must be performed by a professional automotive suspension technician.

When replacing other brands, BILSTEIN shock absorbers or other suspension components should always be installed as a set. All BILSTEIN products must only be used for the specific, intended application as indicated in the application guide. **Any use of any BILSTEIN product other than for its intended use may result in serious bodily injury or death.**

Always use a chassis hoist for the installation of BILSTEIN products and make certain that the raised vehicle is securely attached to the hoist and/or supported to prevent the vehicle from slipping, falling, or moving during the installation process.

**If you install any BILSTEIN product without the necessary special tools, expertise, and chassis hoist, you may subject yourself to the risk of serious bodily injury or death.**

BILSTEIN shock absorbers are gas-filled and are highly pressurized.

- Never place any BILSTEIN shock absorbers in a vise or use a clamp on any BILSTEIN shock absorber.
- Never apply heat near any BILSTEIN shock absorber.
- Never attempt to open or repair any BILSTEIN product, in order to prevent **serious bodily injury or death.**

Any attempt to misuse, misapply, modify, or tamper with any BILSTEIN suspension product voids any warranty and **may result in serious bodily injury or death.**

While installing any BILSTEIN product:

- Do not use impact tools for loosening or tightening fasteners, because this may destroy the screw threads.
- Self-locking fasteners must only be used **once!**
- Reuse original equipment components only if they are in good condition, otherwise replace them with new components.
- Never remove the slight film of oil on the shock absorber piston rod and seal.
- All mounting fasteners for shock absorbers and other suspension components must be securely tightened before tension is placed on the suspension system, unless otherwise specified in the manufacturer's service manual or in this instruction.

After installing any BILSTEIN product:

- The suspension caster and camber must be checked and/or adjusted to comply with the vehicle manufacturer's specifications.
- The (load dependent) brake compensator and the anti-lock brake system must be checked and/or reset to comply with the vehicle manufacturer's specifications.
- The headlight aim must be checked and adjusted. Or, if applicable, adaptive headlights must be checked and recalibrated to comply with the vehicle manufacturer's specifications.
- If applicable, any/all Advanced Driver Assistance Systems (ADAS) must be checked and recalibrated to comply with the vehicle manufacturer's specifications.

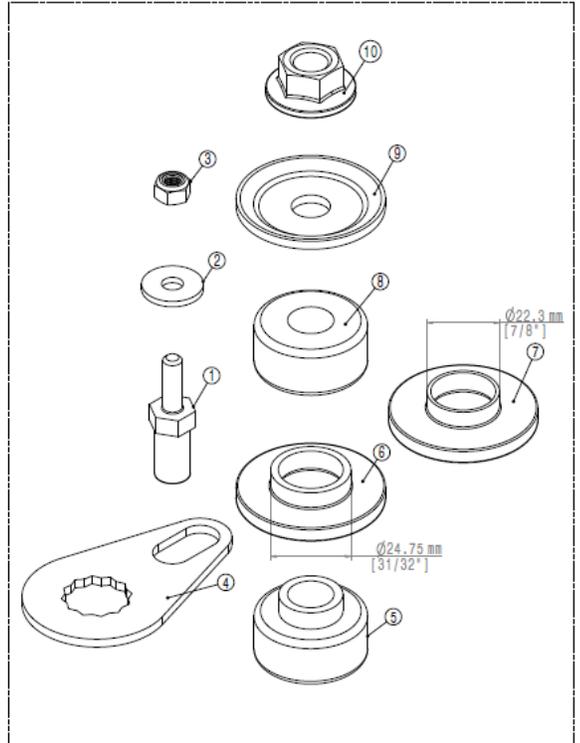
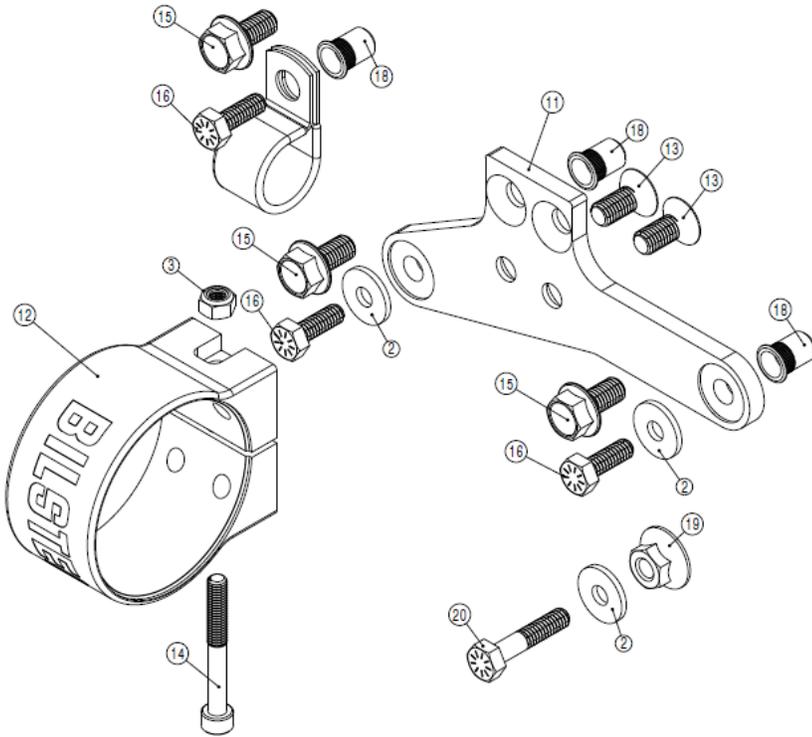
### **CAUTION for COILOVER TYPE SUSPENSIONS!!!**

**If disassembling a coilover type suspension, refer to the vehicle manufacturer's service manual for proper procedures. The coil spring is preloaded and must be compressed with a spring compressor to release load before the upper mount is disassembled. Failure to follow the vehicle manufacturer's procedures may cause serious injury or death, and may damage the vehicle.**

### **IMPORTANT!!!**

**This BILSTEIN product may or may not be compatible with non-BILSTEIN aftermarket products and/or vehicle modifications. It is the responsibility of the professional automotive suspension technician performing the installation to identify any non-OEM components and/or modifications on the vehicle that may interact with the suspension system. These must be evaluated for any potential physical static or dynamic interference with and/or effect on the function of this BILSTEIN product.**

# E-WM05-0000169 MOUNTING INSTRUCTION



Items in the dotted line are bagged separately.

<b>Bill of Materials</b>		
<b>Item #</b>	<b>Description</b>	<b>Qty</b>
1	Anti Rotation Pin	1
2	Washer; 1/4" ID x 3/4" OD	4
3	Nylock; M6x1	2
4	Anti Rotation Plate	1
5	Bushing; Lower	1
6	Alignment Washer; '10-	1
7	Alignment Washer; '03-'09	1
8	Bushing; Upper	1
9	Concave Washer	1
10	Flange Locknut; M12X1.25	1
11	Reservoir Mount Plate; Rear	1
12	Reservoir Clamp	1
13	Flat Head Screw; M8x1.25; L=18	2
14	Socket Head Cap Screw; M6x1; L=50mm	1
15	Flange Head Cap Screw; M8x1.25; L=16mm	3
16	Hex Head Cap Screw; 1/4"-20; L=3/4"	3
17	Loop Clamp; Hose; 7/8" Dia.	1
18	Threaded Insert; 1/4"-20 Internal Thread	3
19	Serrated Flange Nut; 5/16"-18	1
20	Hex Head Cap Screw; 1/4"-20; L=1 1/4"	1



### **B8 8100 shock installation procedure:**

The step by step procedure is shown with pictures. See pages 21 and 22 for the end result.

- A. Remove the existing shock from the vehicle following all procedures in the vehicle manufacturer's service manual. Inspect the OE lower shock bolt/washer for any damage or excessive wear. If these components are in good condition, save them for reuse later. If damage or excessive wear is present on any of these components, purchase the required replacement OE components.
- B. Place the Anti Rotation Pin (BOM item #1) into the frame hole circled in red below. This hole is towards the front of the shock mount hole.



Right side depicted. Left side is a mirror image.

- C. Hold the Anti Rotation Pin with a 1/2" or 13mm deep socket. Place a Washer (BOM item #2) over the threaded stem from the top side of the frame. Thread the Nylock (BOM item #3) onto the stem. Then, hold the Anti Rotation Pin assembly towards the rear of the vehicle and tighten the Nylock with a 10mm ratcheting wrench.  
**Torque the Nylock to 7 ft-lb (10 Nm).**

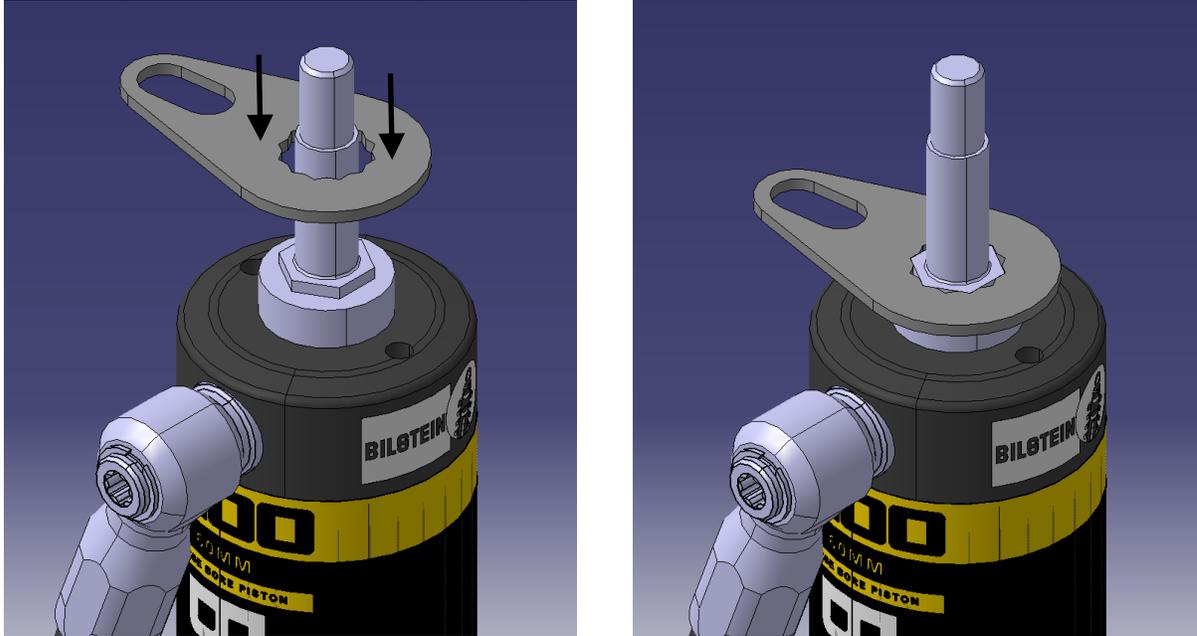


Right side depicted. Left side is a mirror image.

# E-WM05-0000169 MOUNTING INSTRUCTION



- D. Slide the Anti Rotation Plate (BOM item #4) over the threaded pin and onto the shock body as shown below. The Anti Rotation Plate should be clocked about 90 degrees clockwise from the hose port for the left side shock and 90 degrees counterclockwise for the right side. Verify the double hex/twelve-point hole in the plate seats over the hexagonal boss at the base of the pin. Failure to lock this double hex/twelve-point into place as shown below may cause your shock to rotate and contact components on the vehicle.



Left side depicted. Right side is a mirror image.

- E. To ensure the hose spigot/shock body does not contact the chassis, it is essential to have proper clocking of the Anti Rotation Plate in relation to the hexagonal boss at the base of the mount pin. Shown below are three examples of an optimal, minimum and maximum hose spigot placement on the vehicle. An adjustment of the Anti Rotation Plate on the mount pin will be necessary if the Anti Rotation Plate is clocked too close to the chassis with a gap smaller than 6mm or too far away which could lead to tire rubbing issues. Each notch on the double hex/twelve-point hole will give a resultant angle of 30 degrees to assist with proper alignment of the shock body. If necessary, the plate can be flipped to achieve a finer, 15-degree adjustment.



Optimal Hose Spigot Angle

# E-WM05-0000169 MOUNTING INSTRUCTION

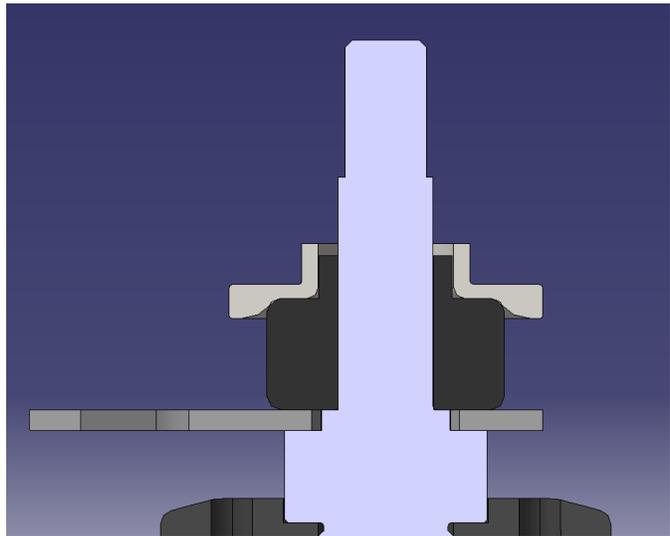


Minimum Hose Spigot Angle



Maximum Hose Spigot Angle

- F. Slide the Lower Bushing (BOM item #5) and the appropriate Alignment Washer for your vehicle (BOM item #6 or #7 depending on year; see BOM on page 2) over the threaded pin on the shock body as shown below.



Left side depicted. Right side is a mirror image.

- G. Install the lower shock mount and thread in the OE lower shock bolt/washer that was removed in step A. Thread in until the lower shock mount is almost snug, but don't tighten yet.

# E-WM05-0000169 MOUNTING INSTRUCTION



- H. Then, using some force, compress the shock and place the threaded pin on the shock body through the chassis mount. Guide the Anti Rotation Plate (BOM item #4) so it captures the Anti Rotation Pin (BOM item #1) and carefully center the Alignment Washer (BOM item #6 or #7) in the chassis mount hole as shown below.



Left side depicted. Right side is a mirror image.

- I. Slide the Upper Bushing (BOM item #8) over the threaded pin, followed by the Concave Washer (BOM item #9). Verify the Concave Washer is installed concave side up as shown below. Then thread the Flange Locknut (BOM item #10) onto the threaded pin on the shock body. Tighten the Flange Locknut using an 18mm ratcheting wrench.  
**Torque the Flange Locknut to 20 ft-lb (27 Nm).**

You should now have the following:



Left side

# E-WM05-0000169 MOUNTING INSTRUCTION



Right side

- J. With both upper and lower shock mounts secured, and with the rear suspension drooped out, make sure the Anti Rotation Pin is not contacting the Anti Rotation Plate or shock body. If it is contacting, loosen the Nylock (BOM item #3) and slide the Anti Rotation Pin forward slightly until there is a small gap (~1/16"). Re-torque Nylock according to step C.

# E-WM05-0000169 MOUNTING INSTRUCTION



K. You should now have both shocks installed as shown below.



Left Rear



Right Rear



# E-WM05-0000169 MOUNTING INSTRUCTION



**For 4Runner** [Steps L-M can be skipped for GX460. Steps L-O can be skipped for '03-'09 4Runner and GX470]

- L. In order to install the reservoirs, the following plastic pieces need to be removed to gain access to 2 frame holes that will be used for the reservoir mounting.



Left side



Right side

- M. Remove the 5 screws holding the black plastic piece under the rear quarter panel. They are circled in red in the pictures below. The clip in the red square can be removed to further ease installation, but its removal is not required. The plastic piece can be rotated out of the way with it still fastened.



Right side depicted. Left side is a mirror image.





Right side depicted. Left side is a mirror image.

**For Lexus GX460** [Steps N-O can be skipped for 4Runner and GX470]

- N. In order to install the reservoirs, the following plastic pieces need to be removed to gain access to 2 frame holes that will be used for the reservoir mounting.



Left side



Right side

# E-WM05-0000169 MOUNTING INSTRUCTION



- O. Remove the 5 screws holding the mud flaps and black plastic piece under the rear quarter panel. They are circled in red in the pictures below.



Right side depicted. Left side is a mirror image.

- P. Once you've moved the panel out of the way, locate the holes on the vertical section of the frame rail. On the right side, they are either 10mm holes or threaded M8x1.25 holes depending on the year of your vehicle. On the left side, they are always threaded M8x1.25 holes.



Left side

Right side

Note: On GX470 models the air compressor assembly will need to be removed in order to install the reservoirs.



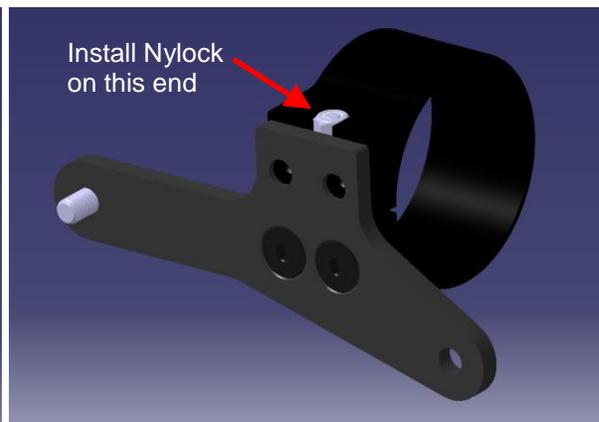
## 4Runner & GX460/470 Left Side Reservoir Installation

**Procedure** (Note, the reservoirs are not installed as a mirror image so step by step instructions with pictures of both sides are shown):

- Q. Prepare the assembly below by applying non-permanent thread locker to two Flat Head Screws (BOM item #13). Mount the Reservoir Clamp (BOM item #12) to the Reservoir Mount Plate (BOM item #11) as shown below using the two Flat Head Screws. Tighten using a 5mm hex.  
**Torque both Flat Head Screws to 16 ft-lb (22 Nm).**
- R. Place the Nylock (BOM item #3) in the upper slot of the Reservoir Clamp as shown below. Then place the Socket Head Cap Screw (BOM item #14) through the hole in the Reservoir Clamp, threading it into the Nylock. Thread in a few turns for now with a 5mm hex but leave loose enough so the reservoir can be installed in the next step. Apply non-permanent thread locker to one Flange Head Cap Screw (BOM item #15) and place it through the hole in the Reservoir Mount Plate as shown below. Note that the counterbores do not serve a purpose for the left side installation and are there for the right side if the Threaded Inserts are used.

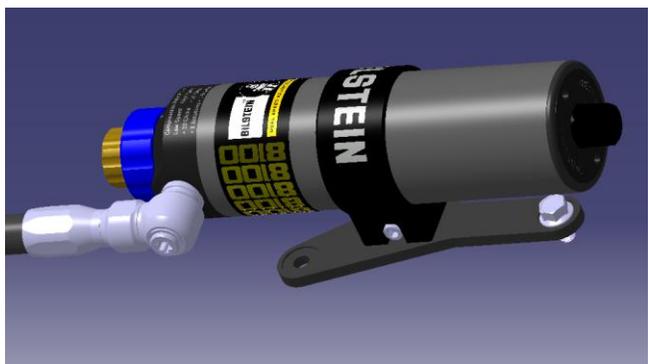


Front side

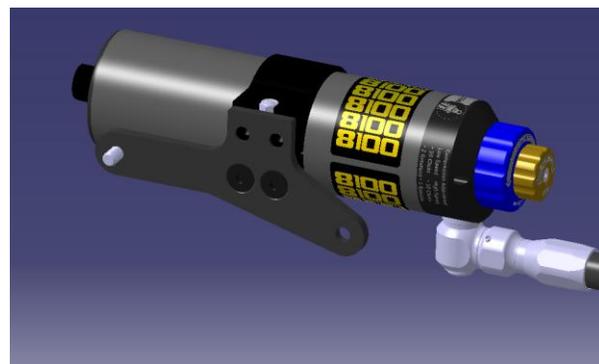


Back side

- S. Slide the reservoir through the Reservoir Clamp as shown below. Snug up the Socket Head Cap Screw (BOM item #14) so that the reservoir bracket assembly doesn't fall off the reservoir. But leave loose enough to be able to slide the reservoir back and forth in the Reservoir Clamp.



Front side

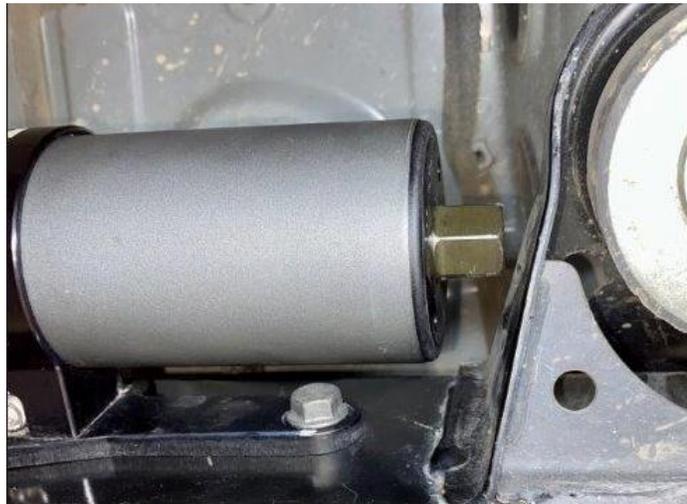


Back side

# E-WM05-0000169 MOUNTING INSTRUCTION



- T. Place the entire reservoir/bracket assembly under the rear quarter panel and mount to the two threaded holes in the frame. Use an open ended 13mm wrench to thread in the Flange Head Cap Screw. Apply non-permanent thread locker to the second Flange Head Cap Screw, then place it through the other hole in the Reservoir Mount Plate and into the threaded hole in the frame. Now, slide the reservoir so that it's almost touching the rear body mount bracket as shown below. This should yield approximately 1/4" clearance to the fender on the front side.  
**Torque both Flange Head Cap Screws to 18 ft-lb (25 Nm).**



- U. Once the reservoir has been positioned as shown and confirmed to not be contacting anything on the vehicle, tighten the Socket Head Cap Screw that was snugged down in step S.  
**Torque the Socket Head Cap Screw to 6 ft-lb (8 Nm).**



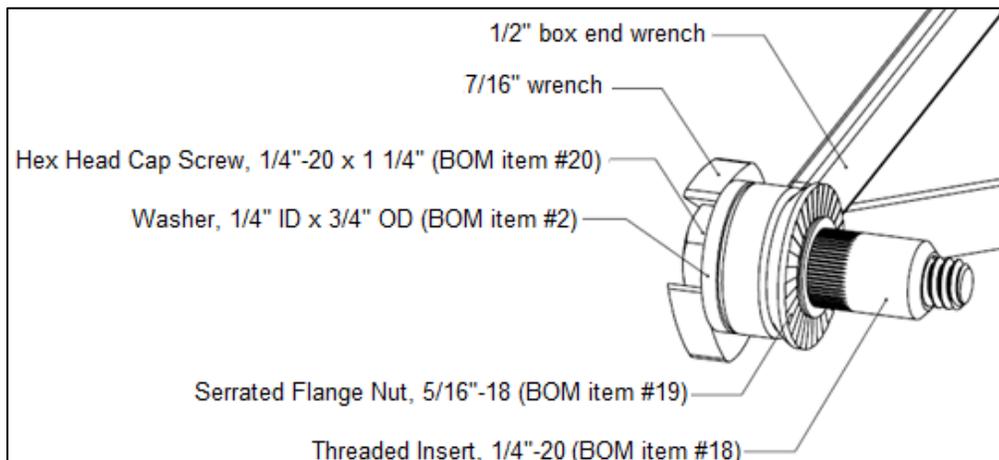
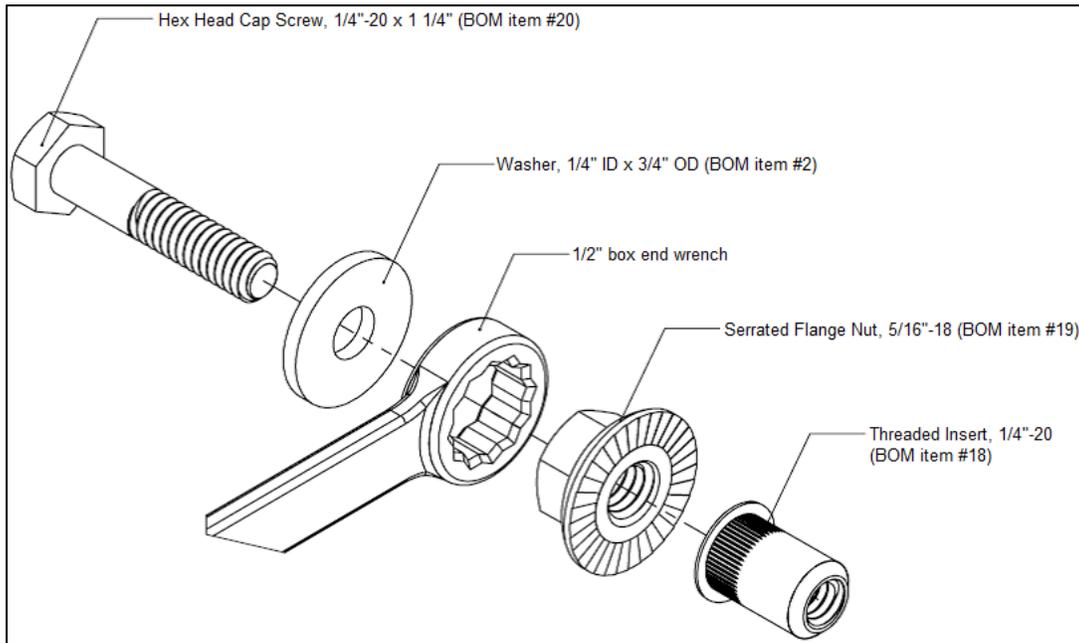
**4Runner & GX460/470 Right Side Reservoir Installation Preparation:**

- V. The fasteners to be used are different depending on if the holes in your frame are threaded or not. They are either 10mm through holes or M8x1.25 threaded holes depending on the year of your vehicle. If they are 10mm through holes, there are some steps that need to be done to install Threaded Inserts. If the holes in your frame are threaded, skip to step BB for 4Runner/GX470 or step GG for GX460.

Process for installing Threaded Inserts into frame (complete this procedure for all Threaded Inserts)

- W. If you have access to a Threaded Insert gun or pliers, that may be preferable to set the provided Threaded Inserts. Otherwise, using the BOM items shown below and a 1/2" box end wrench, arrange them as shown and turn the 1/4"-20 hex head cap screw by hand until it is snug.

Note that the screw will pass through the serrated flange nut without engaging the threads. The threads will instead engage the Threaded Insert. The serrations on the flange nut prevent the Threaded Insert from rotating while setting it.



# E-WM05-0000169 MOUNTING INSTRUCTION



- X. Place the Threaded Insert into the hole.



- Y. While keeping the Threaded Insert flange firm and parallel against the frame rail, tighten the screw using a 7/16" box end wrench or socket. Turn it 2.5 rotations to set the Threaded Insert. Tightening in 1/4 turn increments tends to work well.



- Z. Remove the screw, washer, and flange nut. The Threaded Insert should now be rigidly fixed in the hole as shown below.



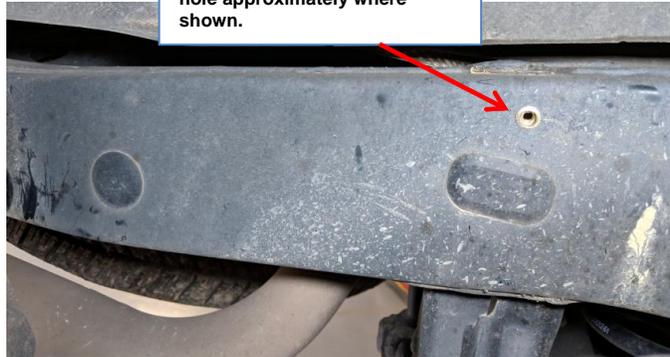


Note: This hole may not be present on some GX470 models. If it's not, it will need to be drilled out with a 25/64" or 10mm drill bit in order to install the threaded inserts. Drill the hole approximately where shown.

AA. Complete steps W-Z for the three places shown below:



Under rear quarter panel



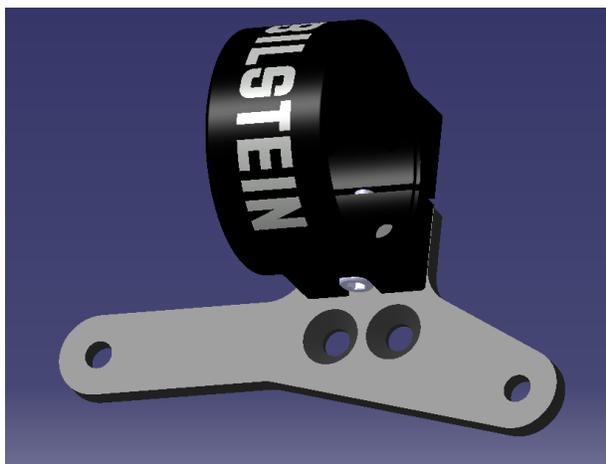
In wheel well

### **4Runner & GX470 Right Side Reservoir Installation Procedure:**

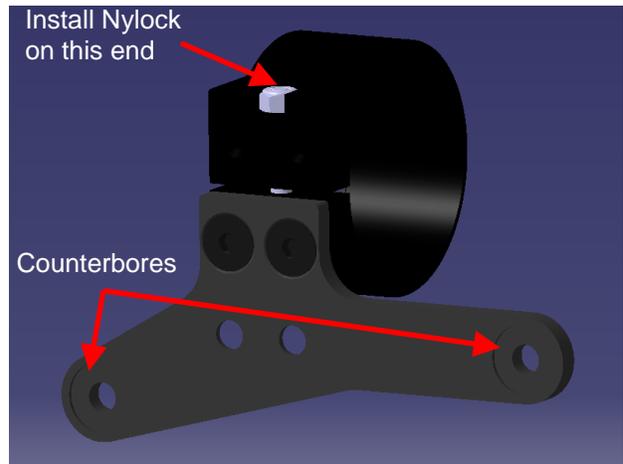
[Steps BB-FF can be skipped for GX460]

BB. Prepare the following assembly by applying non-permanent thread locker on two Flat Head Screws (BOM item #13). Mount the Reservoir Clamp (BOM item #12) to the Reservoir Mount Plate (BOM item #11) as shown below using the two Flat Head Screws (BOM item #13). Tighten using a 5mm hex.  
**Torque both Flat Head Screws to 16 ft-lb (22 Nm).**

CC. Place the Nylock (BOM item #3) in the upper slot of the Reservoir Clamp as shown below. Then place the Socket Head Cap Screw (BOM item #14) through the hole in the Reservoir Clamp, threading it into the Nylock. Thread in a few turns for now with a 5mm hex but leave loose enough so the reservoir can be installed in the next step. Note that the counterbores are facing the frame for this side. This is so the plate will still mount flush to the frame if the Threaded Inserts are required.



Front side



Back side

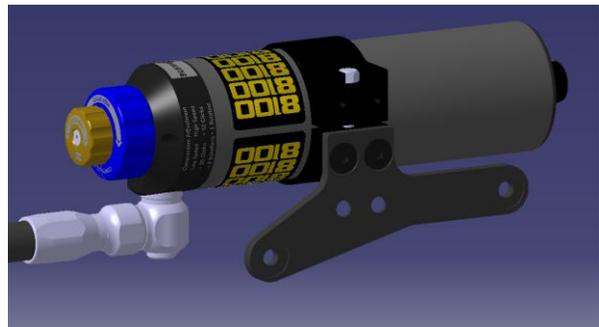
# E-WM05-0000169 MOUNTING INSTRUCTION



DD. Slide the reservoir through the Reservoir Clamp as shown below. Snug up the Socket Head Cap Screw (BOM item #14) so that the reservoir bracket assembly doesn't fall off the reservoir. But leave loose enough to be able to slide the reservoir back and forth in the Reservoir Clamp.



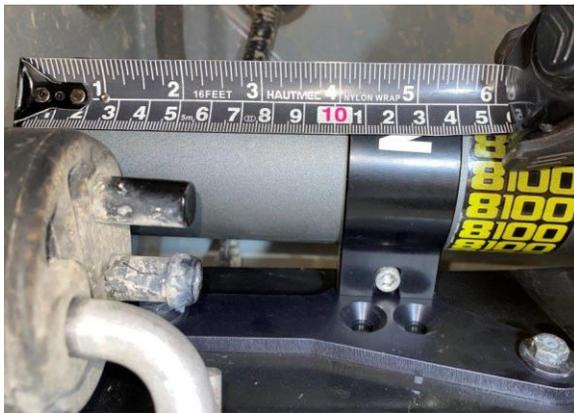
Front side



Back side

EE. Place the entire reservoir/bracket assembly shown above under the rear quarter panel and mount to the two holes in the frame. If threaded holes exist, apply non-permanent thread locker to two of the Flange Head Cap Screws (BOM item #15) and use a 13mm wrench to mount the assembly to the frame. If Threaded Inserts were installed, apply non-permanent thread locker to two of the Hex Head Cap Screws (BOM item #16) and use two of the Washers (BOM item #2) and a 7/16" wrench to mount the assembly to the frame. Now, slide the reservoir back until there is approximately 1/4" clearance to the exhaust hanger bracket. This should yield more than 1/4" clearance to the fender on the front side.

**Torque both Flange Head Cap Screws to 18 ft-lb (25 Nm)  
OR both Hex Head Cap Screws to 14 ft-lb (19 Nm).**



Depicted above with Hex Head Cap Screws and Washers (Threaded Inserts were used)

FF. Once the reservoir has been positioned as shown and confirmed to not be contacting anything on the vehicle, tighten the Socket Head Cap Screw that was snugged down in step DD.

**Torque the Socket Head Cap Screw to 6 ft-lb (8 Nm).**



### GX460 Right Side Reservoir Installation Procedure:

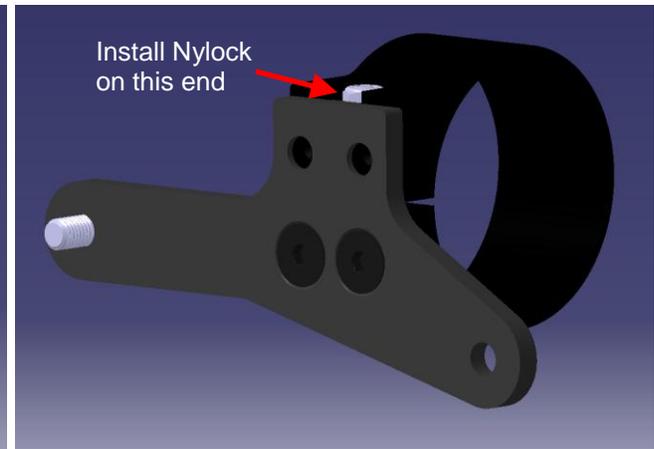
GG. Prepare the assembly below by applying non-permanent thread locker to two Flat Head Screws (BOM item #13). Mount the Reservoir Clamp (BOM item #12) to the Reservoir Mount Plate (BOM item #11) as shown below using the two Flat Head Screws. Tighten using a 5mm hex.

**Torque both Flat Head Screws to 16 ft-lb (22 Nm).**

HH. Place the Nylock (BOM item #3) in the upper slot of the Reservoir Clamp as shown below. Then place the Socket Head Cap Screw (BOM item #14) through the hole in the Reservoir Clamp, threading it into the Nylock. Thread in a few turns for now with a 5mm hex but leave loose enough so the reservoir can be installed in the next step. Apply non-permanent thread locker to one Flange Head Cap Screw (BOM item #15) and place it through the hole in the Reservoir Mount Plate as shown below.

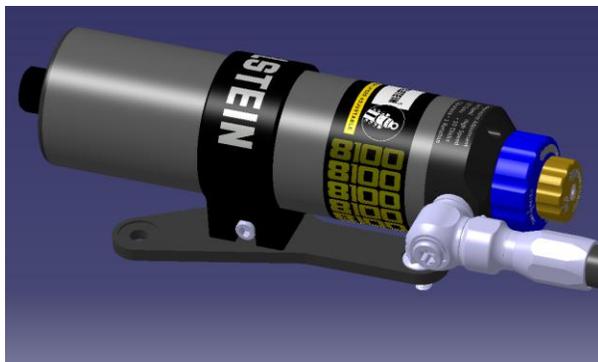


Front side

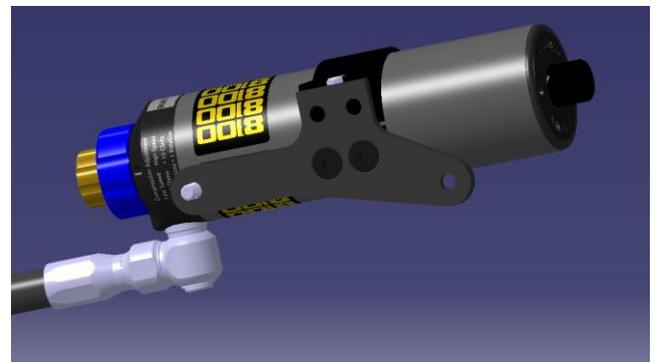


Back side

II. Slide the reservoir through the Reservoir Clamp as shown below. Snug up the Socket Head Cap Screw (BOM item #14) so that the reservoir bracket assembly doesn't fall off the reservoir. But leave loose enough to be able to slide the reservoir back and forth in the Reservoir Clamp.



Front side



Back side

# E-WM05-0000169 MOUNTING INSTRUCTION



JJ. Place the entire reservoir/bracket assembly shown above under the rear quarter panel and mount to the two holes in the frame. If threaded holes exist, apply non-permanent thread locker to two of the Flange Head Cap Screws (BOM item #15) and use a 13mm wrench to mount the assembly to the frame. If Threaded Inserts were installed, apply non-permanent thread locker to two of the Hex Head Cap Screws (BOM item #16) and use two of the Washers (BOM item #2) and a 7/16" wrench to mount the assembly to the frame. Now, slide the reservoir back until there is approximately 1/4" clearance to the body mount bracket.

**Torque both Flange Head Cap Screws to 18 ft-lb (25 Nm)  
OR both Hex Head Cap Screws to 14 ft-lb (19 Nm).**



KK. Once the reservoir has been positioned as shown and confirmed to not be contacting anything on the vehicle, tighten the Socket Head Cap Screw that was snugged down in step II.

**Torque the Socket Head Cap Screw to 6 ft-lb (8 Nm).**



## **Hose Clamp Installation Procedure** (both sides)

- LL. Place the Loop Clamp (BOM item #17) around the hose as shown below. If the hole is threaded, apply non-permanent thread locker to one of the Flange Head Cap Screws (BOM item #15) and use a 13mm wrench to mount the hose to the frame. If a Threaded Insert was installed, apply non-permanent thread locker to one of the Hex Head Cap Screws (BOM item #16) and use a 7/16" wrench to mount the hose to the frame.

**Torque either Cap Screw to 14 ft-lb (19 Nm).**



**Right side depicted. Left side is a mirror image, except for KDSS models.**

Note: On the left side of KDSS models there is a Flange Head Cap Screw already present. Remove the screw, apply non-permanent thread locker, and use it to install the Loop Clamp as shown below.

**Torque Flange Head Cap Screw to 14 ft-lb (19 Nm)**



MM. Re-install the plastic panels that were removed in steps L-O (if applicable).

NN. With the vehicle back on the ground, tighten the OE lower shock bolt/washer that was installed in step G.  
**Torque OE lower shock bolt to factory specifications.** This completes the installation.

E-WM05-0000169  
MOUNTING INSTRUCTION



Final left rear (driver) 25-294101 B8 8100 shock installed on 4Runner and GX460/470:



2016 4Runner model depicted

Final right rear (passenger) 25-294101 B8 8100 shock installed on 4Runner and GX470:



2016 4Runner model depicted

Final right rear (passenger) 25-294101 B8 8100 shock installed on GX460:



# E-WM05-0000169

## MOUNTING INSTRUCTION



### Anti Rotation component service:

The Anti Rotation Pin (BOM item #1) and Anti Rotation Plate (BOM item #4) are wear items and will need to be replaced periodically depending on usage. Check for wear every 20,000 miles and replace components if they show excessive signs of wear.

### Dual Speed Reservoir Adjustment

These dampers come equipped with independent high and low speed compression damping adjusters located on the reservoir. The high speed is the blue knob and is labeled as such, and the low speed is the gold knob and is labeled as such. The **FULL FIRM** setting for each adjuster knob is achieved when the knob is turned all the way **CLOCKWISE**. The **FULL SOFT** setting for each adjuster knob is achieved when the knob is turned all the way **COUNTER-CLOCKWISE**. To make high or low speed adjustments, simply turn each knob individually until the desired level of control is achieved. To stiffen the ride, turn the knobs clockwise. To soften the ride, turn the knobs counter-clockwise.

The factory setting of these adjusters are as follows:

- High Speed (blue knob) – 6 clicks counter-clockwise from fully firm.  
(10 total settings are available which translates to 9 clicks; 1 rotation)
- Low Speed (gold knob) – 13 clicks counter-clockwise from fully firm.  
(20 total settings are available which translates to 19 clicks; 2 rotations)

**Please note: It's normal for the high speed (blue) knob to become significantly more difficult to turn when progressing to the firmer end of the adjustment range; particularly during the last 3 to 4 settings/clicks. This increased difficulty is a result of the increasing preload of the high speed valve stack shims. To aid in ease of adjustment at the firmest end of the high speed range, it's optional to use the included Bilstein wrench part # E-XS01-0000004. Additionally, it's normal for the clicks on the high speed (blue) knob to become less pronounced at the firmer end of the adjustment range.**



**Dual Speed Reservoir Adjuster**

### B8 8100 service:

For service of your B8 8100 shocks, please contact:

THYSSENKRUPP BILSTEIN OF AMERICA  
Toll Free: 1-800-537-1085  
bilsteinus.com