



INSTALLATION INSTRUCTIONS

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**6613 and 6617
REAR C-SECTION KIT
1999-2006 GM SILVERADO / SIERRA 1500**

Thank you for being selective enough to choose our high quality BELLTECH PRODUCT. We have spent many hours developing our line of products so that you will receive maximum performance with minimum difficulty during installation.

- Note:** Confirm that all hardware listed in the Parts List is in the kit. **Do not** begin installation if any part is missing. Read the instructions thoroughly before beginning this installation.
- Warning:** **DO NOT** work under a vehicle supported by only a jack. Place support stands securely under the vehicle in the manufacturer's specified locations unless otherwise instructed.
- Warning:** **DO NOT** drive the vehicle until all work has been completed and checked. Torque all hardware to specified values.
- Reminder:** Proper use of safety equipment and eye/face/hand protection is necessary when using these tools to perform procedures!
- Note:** It is very helpful to have an assistant available during installation.

This kit has been specifically engineered for the 1999 to 2006 GMT 800 series 1/2 Ton trucks. **PLEASE NOTE** that this *Belltech* rear C-section kit will increase the axle to frame clearance of vehicles using the OEM leaf springs, hangers, and shackles. We **DO NOT RECOMMEND** using this kit on vehicles where other aftermarket suspension components have been previously installed. **If the vehicle's suspension has been modified from stock, please return it to its exact original configuration prior to installing this kit.**

To properly lower your vehicle, **we recommend** using only high quality Belltech lowering coil springs, spindle kits, flip-kits, and Nitro-Drop® or Street Performance® shock absorbers. Note that shorter shocks are required following installation of this kit.

We recommend the installation of Belltech front and rear anti-sway bars to further improve your vehicle's handling and performance.

NOTE: In order to properly install this REAR C-SECTION KIT, it is important to follow, in sequential order, the step-by-step procedures listed on the following pages. Belltech engineers have simplified the step-by-step installation procedure to minimize any difficulties that may arise during installation.

TOOLS RECOMMENDED:

- Properly rated floor jack and six (6) support stands
- Wheel chocks
- Die grinder equipped with abrasive cut-off wheel
- Drill motor with 1/4" & 1/2" twist drill bits
- Standard socket wrench set, including: 3/4", 9/16", 15/16" (deep)
- Standard box wrenches, including: 3/4", 9/16", 15/16"
- Metric sockets, including: 1mm, 23mm
- Metric box wrenches, including: 15mm, 21mm
- Medium weight ball peen hammer
- Metal file
- Grinder with abrasive disc
- Flat bladed screwdriver
- Cleaning solvent and rag
- C-clamps
- Masking tape
- Tape measure (inches)
- Air powered 3/8" drive ratchet
- Air powered 1/2" drive impact wrench
- Felt-tipped pen or paint pen
- Steel construction square
- 1/2" drive torque wrench
- Safety Glasses

SAFETY REMINDER: PROPER USE OF SAFETY EQUIPMENT AND EYE/FACE/HAND PROTECTION IS NECESSARY WHEN USING THESE TOOLS TO PERFORM THE FOLLOWING PROCEDURES!

! IT IS VERY HELPFUL TO HAVE AN ASSISTANT AVAILABLE DURING THIS INSTALLATION. !

KIT INSTALLATION

This is a complex installation; **we recommend** that a qualified mechanic at a properly equipped facility perform it. **We also recommend** that the installation be performed on a firm, flat and level surface, such as seasoned asphalt or concrete. **The use of safe and properly maintained equipment is very important!** To document any possible irregularities in the factory ride height of your vehicle, please take a few moments to record the original ride heights prior to installation. We also **recommend** measuring and recording all stock driveline angles prior to installing this kit. This information may be helpful if vibration problems arise after installation.

1. FRAME IDENTIFICATION:

Be aware that General Motors has produced several different style rear frame modules for the GMT800 1/2-ton trucks. **Prior to beginning the installation, confirm that you have the correct parts for your vehicle's frame style.** Refer to Figure A below and Table A to confirm that you have obtained the correct kit.

FIGURE A

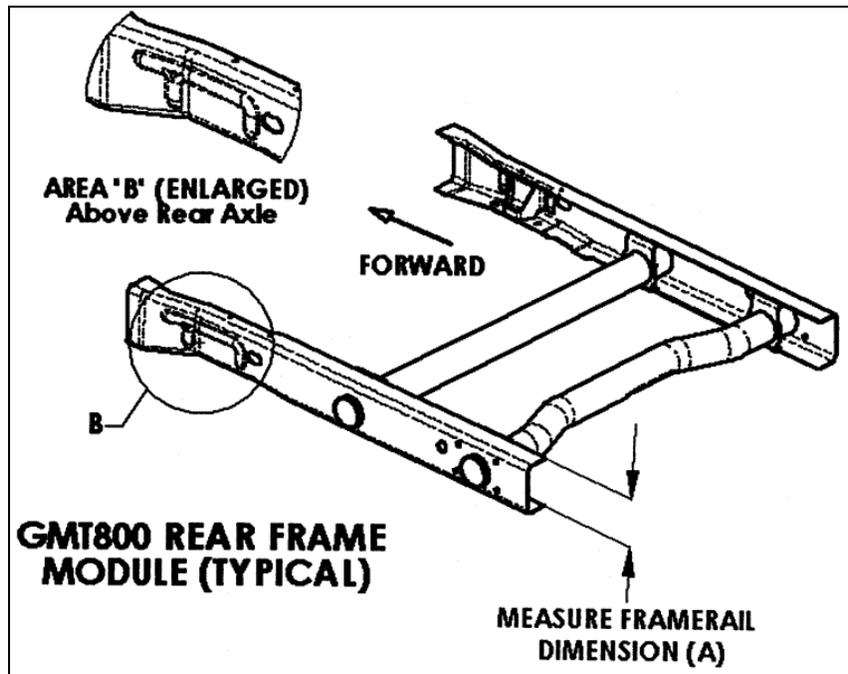


TABLE A: Frame style and Flip Kit identification information

Vehicle Year	Dimension "A"	Area B	Belltech C-Section P/N
1999	5.0"	Flat without dimple	6613
Late '99-2000	5.0"	Dimpled (as shown)	6613
Late 2000-2006	5.25"	Flat without dimple	6617

2. JACKING, SUPPORTING AND PREPARING THE VEHICLE

- a) Block the front wheels of the vehicle with appropriate wheel chocks. Ensure the vehicle's transmission is in "Park" (automatic) or 1st gear (manual). Activate the parking brake.
- b) Loosen, but **DO NOT REMOVE**, the rear wheel lug nuts.
- c) Using a properly rated floor jack, lift the rear of the vehicle off the ground. Lift the vehicle so that the rear tires are approximately 6-8 inches off the ground surface.
- d) Support the vehicle using four (4) support stands, rated for the vehicle's weight. The stands should be positioned, two on each of the frame rails, just forward of the front leaf spring hangers and just below the rear leaf spring shackle hangers. Prior to lowering the vehicle onto stands, make sure the supports will securely contact the straight, flat portions of the frame rails.

! It is very important that the vehicle is properly supported during this installation to prevent frame damage or personal injury. Ensure the support stands are properly placed prior to performing the following procedures.

- e) Slowly lower the vehicle onto the stands and, before placing the vehicle's weight on them, again check that they properly and securely contact the frame rails as described above. Check for possible interference with any lines, wires, or cables.
- f) Remove the rear wheels from the vehicle.

SAFETY REMINDER: Check for vehicle stability before proceeding under the vehicle to begin the following procedures. Never work under a vehicle supported by only a floor jack. Always use properly rated support stands to support the vehicle.

- g) For Step Side models, remove the rear inner-fender liners from the vehicle.
- h) Using the floor jack located directly below the differential, lift the axle housing just enough to remove a significant portion of the axle load from the leaf springs. This step is required to minimize the load applied to frame rails during notching operations. **DO NOT TO LIFT THE VEHICLE OFF OF THE SUPPORT STANDS.**
- i) Support the axle housing with two additional supports at this height. Ensure the support stands securely contact the axle housing tubes so that the axle housing cannot fall when detached from leaf springs.

3. **FRAME NOTCH SUPPORT (C-SECTION) INSTALLATION LEFT-HAND**

Due to the design of the included Belltech Frame Notch Supports (referred to as "C-sections"), truck bed removal is not required with this kit. However, some installers may prefer to remove the bed to facilitate access to the frame. If you decide to remove the bed assembly, please refer to the appropriate *General Motors Service Manual* for recommendations regarding the Truck bed Removal Procedures.

- a) Working from the LH rear wheel opening, remove the small plastic clip (Photo 1), which secures the rear brake line and wiring harness to the top of the frame rail. This is accomplished by removing the small rivet from its mounting hole. The clip is located on the top of the LH frame rail just rearward of the fuel tank. This clip will not be reused.

! To prevent chassis damage, **perform the following procedures to only ONE frame rail at a time.**

- b) Remove the rear brake line bracket from the top of the driver's side (LH) frame rail (Photo 2) by removing two hex-head sheet metal screws using a 13mm wrench. The bracket is located above and just behind the rear axle. To avoid damage, temporarily secure the rear brake line, bracket and brake hose, away from the frame rail, using zip ties or elastic straps secured to the rear axle housing or frame cross-member.
- c) Remove factory jounce stop by loosening and removing the attachment nut, located within the frame rail internal support, using a 15mm wrench.
- d) Clean frame rail area (Photo 3) with solvent to remove the factory coating. **Do not use flammable solvents around sparks or open flames.**
- e) Using the supplied template, align the slot in template with the slot located on the LH frame rail above and just behind rear axle housing (Photo 4). Align the top and bottom edges of the

template parallel with the frame rail edges. Ensure that the arrow points forward (towards front of truck). If necessary, fasten template to frame rail using tape.

! It is important that the template be positioned exactly as shown/described to ensure the C-Section assembly fits over the frame rail properly. **Check for proper alignment PRIOR to cutting into the frame!**

! The template properly aligns the C-Section notch with the axle **only when using the stock leaf springs, hangers, shackles, and other stock components.**

- f) Using a pen, mark the exact shape of the C-Notch opening onto the outside face of the LH frame rail (Photo 5).
- g) Using a center punch, mark the center location of the 1/4" hole, provided on the template, as shown (Photo 6). This hole is made so that there will be a round corner at the intersection of the cuts. This will eliminate the possibility of cracks forming at the intersections of the cuts. The rear corner of the C-notch cut intersects within the slot; therefore NO hole is required there.
- h) Remove the template. Extend marked lines in places covered by template (Photo 7).
- i) Using a steel square, transfer and mark the lower corners of the C-notch opening, perpendicular to the outer face of the frame rail, back to the underside portion of the frame rail (Photo 8). Ensure the lines are perpendicular (90°) to the outer face of frame rail.

SAFETY REMINDER: As gasoline fumes are extremely flammable, ensure the fuel tank cap is properly installed, secured, and the fuel tank is fully sealed.

! Check the backside of the frame rail to be sure that all lines, electrical wiring, control cables and other components are cleared from this area to avoid damaging them in the following steps.

- j) Using a drill equipped with a 1/4" drill bit, drill a hole through frame centered on the mark made above in Step 3g (Photo 9).
- k) With the frame properly supported as described above, use a die-grinder equipped with a cut-off wheel to cut the C-Notch opening along the scribed lines (Photo 10& 11). Use the forward 1/4" hole to form the front C-Notch corner. If required, a reciprocating saw may be used to cut through the internal OEM jounce-stop reinforcement.

! When cutting the frame rail, **DO NOT** remove any material from the frame rail that is not shown or described here. Do not damage any lines or other components located behind the frame rail. Avoid creating any sharp corners or other defects that may cause unnecessary stress-concentrated areas in the frame rail. Avoid overheating frame rail.

SAFETY REMINDER: Due to the proximity of the fuel tank to the working area, **we DO NOT recommend using a flame-cutting torch or plasma cutter** to perform these operations. Excess heat can damage the frame rail and other adjoining components.

! Observe caution when cutting through the center portion of the C-Notch, as the factory jounce stop reinforcement bracket is located within the frame rail in this area. Secondary cutting may be required from the inside of the frame rail to remove any portion of this bracket that might interfere with subsequent C-Section installation.

- l) This step is **only required for vehicles with a 5.25" frame rail** as described in Table A. An additional notch is required in the lower frame rail flange just behind the C-notch cut out.

- Working from the inside of the frame area, use a solvent soaked rag to clean the inside upper surface of the lower frame flange (Photo 12).
- Use a pen and tape measure, mark out a line 3-1/2" back towards rear of vehicle, parallel to the rear C-Notch cut made in Step 3k (Photo 13).
- Mark a line, parallel to the inner edge of the frame rail flange, 1-1/4" towards inner area of the frame rail (Photo 14). Photo 15 shows the proper notch layout.
- Using the die-grinder equipped with cut-off wheel, cut the notch as shown. (Photo 16).

- m) Deburr all freshly cut edges using file or grinder.
- n) Paint all bare metal surfaces and edges to prevent rust.
- o) Install the outer C-section shell over the frame rail, aligning the C-notch support portion with the C-notch cut made in the frame rail. Ensure the C-section fits properly over the frame rail and that all profiles align correctly (Photo 17). Check that the support is properly aligned to where the square notch, located in the top surface of C-section, is evenly aligned with central bed cross-member (Photo 18).

! It may be necessary to use a soft-faced hammer to position the C-Section shell over the frame rail. Ensure the C-section is properly installed prior to proceeding with following hole-drilling procedures.

- q) With the C-section installed tightly against the outside face of frame rail, use a drill equipped with a 1/2" drill bit to transfer the nine 1/2" holes to the frame rail. Use the C-section holes to locate the drill bit (Photo 19). Use cutting lubricant or light oil to facilitate the drilling and to extend drill bit life. To prevent movement while drilling, use C-clamps to fix the C-section shell to the frame rail. **Do not damage lines or other components located behind the frame rail.**

! **Observe caution when drilling these holes as the fuel tank is located directly behind this area (LH only). While drilling, we recommend placing a protective metal plate in the fuel tank area to prevent puncture and/or other damage.**

- r) Working from the outside of the frame rail, insert four 1/2"-20 x 1-1/4" (short) hex head bolts with washers into the two most forward and two most rearward holes (Photo 20). Secure these bolts with washers and locknuts. These four nuts and washers should directly contact the inner surface of frame rail. Torque these bolts to 110 ft lbs.

! **NOTE:** the shorter outermost bolts be installed and tightened **PRIOR** to the internal stiffener installation procedures (below), as the forward holes cannot be accessed after the stiffener is in position. **Follow these instructions exactly as the bolt installation sequence is IMPORTANT!**

- s) Install the supplied jounce stop to the C-section shell with the supplied locknut (Photo 21). It may be necessary to bend the rearward ear of the internal factory jounce stop reinforcement bracket (cut in Step 3k) forward to clear the replacement jounce stop stud and nut. The jounce stop **must be installed PRIOR to stiffener plate installation below.**
- t) Insert five 1/2"-20 x 3 1/2" (long) hex head bolts with washers, from outside and through the remaining holes drilled in Step 3q (Photo 22).
- u) From the inside of the frame rail, install five tubular spacers over the threaded ends of these bolts. Position the brake line and electrical wiring harness so that they route outside of frame rail and the Internal stiffener. Zip-tie the wiring harness to the brake line as shown (Photo 23). Ensure that none of these components are pinched or damaged by the hardware.
- v) Locate the LH C-section Internal Stiffener inside the C-section shell so that the five bolts pass through the appropriate holes and the tubular spacers are located between the frame rail and Internal Stiffener (Photo 24). The tabs on the Stiffener should point towards the inside of the vehicle, so that they align with the tabs on the C-section shell.

! Ensure the five bolt spacers are sandwiched between the inside portion of the frame rail and the C-section stiffener.

Loosely secure the five bolts, installed in Step 3t, with washers and locknuts but do not torque yet.

- w) Adjust the C-section stiffener position until the remaining five holes and tabs align with the corresponding holes in the C-section shell. It may be necessary to bend some of the stiffener plate tabs slightly to align with the corresponding tabs of the C-section shell. In some cases, it may be

necessary to enlarge one or more of the holes slightly using a die-grinder or round file to achieve proper alignment.

- x) Install two 3/8"-24 x 1" bolts with washers through the top two forward holes of the C-section shell and then through the tabs of the Internal Stiffener.
- y) Install one 3/8"-24 x 1" bolt through the factory rear brake line bracket (removed in Step 3b), then through the rearward most top bolt hole of the C-section and finally through the rear Stiffener tab (Photo 25). The hole in the OEM bracket may need to be enlarged slightly using a round file.
- z) Secure the three 3/8"-24 x 1" bolts with washers and locknuts but do not torque yet.
- aa) Install two 3/8"-24 x 1" bolts through the two lower holes of the C-section shell and then through the tabs of the Internal Stiffener (Photo 26) from the bottom. Secure with washers and locknuts but do not torque yet.
- bb) Torque the five 1/2" bolts and locknuts installed to 110 ft lbs.
- cc) Torque the five 3/8" bolts and locknuts installed to 45 ft lbs.

4. **FRAME NOTCH SUPPORT (C-SECTION) INSTALLATION RIGHT-HAND**

Repeat Steps 3a through 3dd for passenger's side (RH) of vehicle. **NOTE:** the brake line and fuel tank Steps are not applicable for the RH side. Ensure to have the LH side is fully installed prior to beginning RH side C-section installation. The completed installation is shown in Photo 27.

5. **FINALIZING THE INSTALLATION**

- a) On Step Side models, replace the rear inner-fender liners.
- b) Install the wheels and torque to 140 ft lbs.
- c) Check that all components and fasteners have been properly installed, tightened and torqued.
- d) Lift vehicle and remove support stands. Carefully lower vehicle to ground.
- e) Check brake hoses, cables and other components for any possible interference.
- f) Check for wheel/tire to chassis/body interference.
- g) Immediately test-drive the vehicle in a remote location so that you can become accustomed to the revised driving characteristics and handling.
- h) If the suspension has been modified, take the vehicle to a qualified shop for a wheel alignment.
- i) Check all the hardware and torque at intervals for the first 10, 100, and 1000 miles.

Parts List: 6613

Part #	Description	Quantity
6612-001	LH C-section Frame Support	1
6612-003	RH C-section Frame Support	1
6612-008	LH C-section Stiffener	1
6612-010	RH C-section Stiffener	1
6612-014	C-section Bolt Spacer	10
110424	1/2"-20 x 3-3/4" Bolt	10
110408	1/2"-20 x 1-1/4" Bolt	8
110403	1/2"-20 Locknut	18
110660	1/2" Washer	36
110251	3/8"-24 x 1" Bolt	10
110254	3/8"-24 Locknut	10
110625	3/8" Washer	20
5922-001	Bump Stop	2
9999-975	7" Zip-Tie	2
6612-887	C-section Template	1

Parts List: 6617

Part #	Description	Quantity
6616-001	LH C-section Frame Support	1
6616-003	RH C-section Frame Support	1
6616-008	LH C-section Stiffener	1
6616-010	RH C-section Stiffener	1
6612-014	C-section Bolt Spacer	10
110424	1/2"-20 x 3-3/4" Bolt	10
110408	1/2"-20 x 1-1/4" Bolt	8
110403	1/2"-20 Locknut	18
110660	1/2" Washer	36
110251	3/8"-24 x 1" Bolt	10
110254	3/8"-24 Locknut	10
110625	3/8" Washer	20
5922-001	Bump Stop	2
9999-975	7" Zip-Tie	2
6612-889	C-section Template	1

