



## INSTALLATION INSTRUCTIONS

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**6686**  
**REAR AXLE FLIP-KIT**  
**2004 DODGE RAM REGULAR CAB, QUAD CAB**

**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 of the 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 vehicle until all work has been completed and checked. Torque all hardware to values specified.
- Reminder: Proper use of safety equipment and eye/face/hand protection is absolutely necessary when using these tools to perform procedures!
- Note: It is very helpful to have an assistant available during installation.

### **Addendum 1/25/06 "Welding axle saddles" page 6**

#### **RECOMMENDED TOOLS:**

- Properly rated floor jack and six (6) support stands
- Wheel chocks
- Metric socket set up to 27mm
- Metric box wrench set up to 27mm
- Air powered ½" drive impact wrench
- Metal cutting saw
- Safety Glasses

## 1. JACKING, SUPPORTING AND PREPARING THE VEHICLE

- a) Block the front wheels of the vehicle with appropriate wheel chocks. Make sure the vehicle's transmission is in "Park" (automatic) or 1<sup>st</sup> 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 AND PERSONAL INJURY! MAKE SURE THAT 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 safe vehicle stability before proceeding under the vehicle to begin the following procedures. Never work under a vehicle supported by only a jack. Always use properly rated support stands to support the vehicle.

## 1. LEAF SPRING REMOVAL

- a. Properly support the axle using a jack or lifting device so that it can be raised and lowered.

**! CAUTION: Leaf springs may be under tension. Springs under tension store a great amount of energy. Use caution** during the following steps to avoid personal injury and/or damage to vehicle. Be careful not to damage the brake hoses and/or driveline while relocating rear axle assembly.

- b. Remove the rear shocks.
- c. Remove the U-bolts using a 21mm socket. (Photo # 1)
- d. Remove the upper shackle bolt that connects it to the rear hanger and leave the shackle connected to the spring at this time.
- e. Remove the front spring hanger bolt using a socket and or wrench.
- f. Mark the leaf springs "Left" and "Right". Also mark each forward spring end with a forward pointing arrow so that the springs can be properly reinstalled into their original locations.
- g. Remove both leaf springs from under the vehicle. It might be necessary to lower the axle before they can be removed.

## 2. LEAF SPRING PREPARATION

- a. Remove the stock shackle.
- b. Install the new Belltech shackle onto the leaf spring. Do not tighten the shackle in place it will be tightened after the vehicle has been set down.
- c. Repeat this process on the other leaf spring.

## 3. LEAF INSTALLATION

- a. Raise the axle upward into the vehicle so the springs may pass under the axle and bolted onto the chasses (Photo # 3).
- b. Starting from one side place the leaf spring in the front spring hanger and insert the bolt, once in rotate the spring back and insert the shackle bolt in the rear hanger. Torque the front spring hanger bolt to 95 ft lbs; leave the rear shackle bolt loose it will be tightened after the vehicle has been set down. (Photo # 5)
- c. Repeat this process on the other leaf spring.
- d. Install the two axle saddles onto the leaf springs with the two locating center pin holes forward on the saddles.
- e. Lower the axle into the saddles ensuring the two tabs are positioned up inside the factory spring mount.
- f. We suggest cutting two inches off the four supplied U-bolts. (Photo # 6)
- g. Install the new U-bolts and the new U-bolt plates onto the axle loosely threading the hardware in place. (Photo # 7)
- h. Tighten all the U-bolts.
- i. Attach shocks to shock mounts.

- ! The axle adapter saddles have been design to properly position the rear axle pinion shaft relative to the driveline, so that vibrations can be eliminated. If driveline vibrations are experienced, take vehicle to driveline service shop immediately, for driveline angle inspection and necessary adjustments. **DO NOT** drive vehicles exhibiting extreme driveline vibrations, as U-joint wear could occur prematurely. Be sure to lubricate the U-joints if deemed necessary.
- ! Due to installation variables and factory manufacturing variances beyond our control, we highly recommend that the driveline angles present in the vehicle after modification to be checked and compared to the driveline angles present before modification and, if necessary, be brought back within factory specifications. Installation of shims and/or center-carrier bearing adjustments may be required.

## 4. BUMP STOP RE-LOCATION PLATES

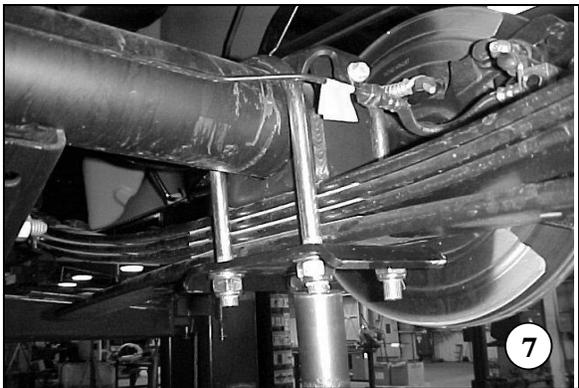
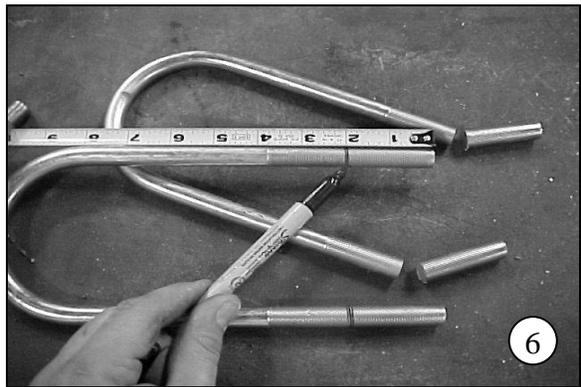
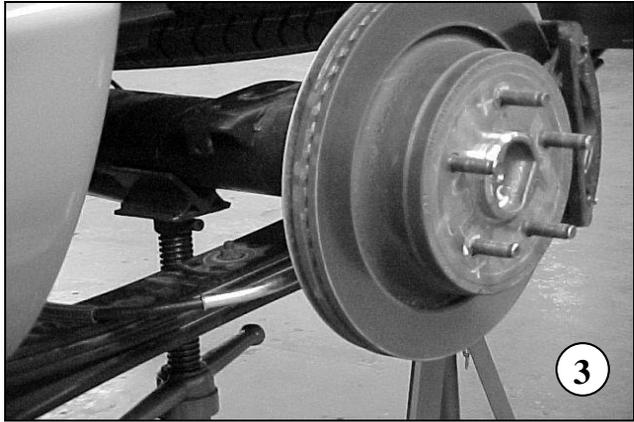
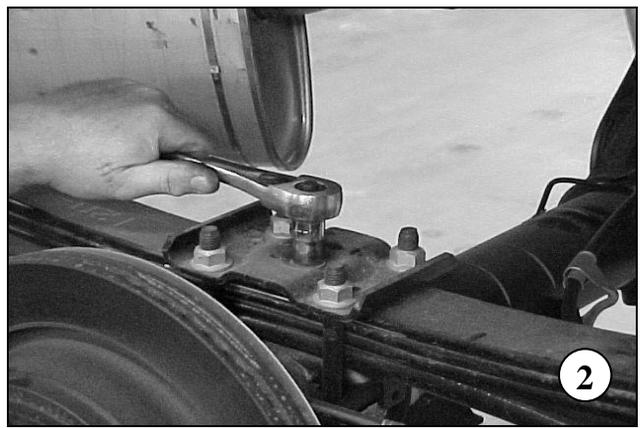
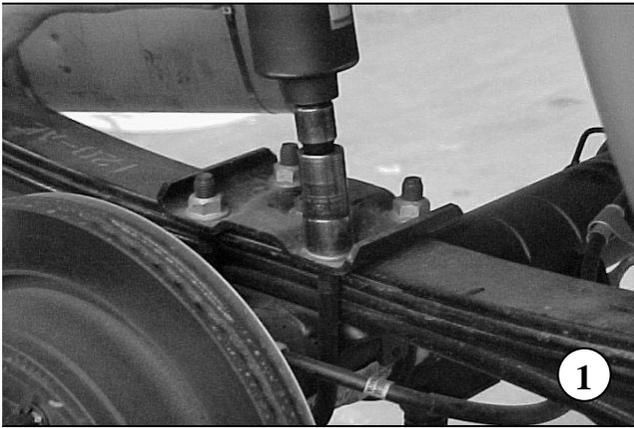
- a. Remove the stock bump stops from both sides.
- b. Attach the new bump stops to the plates prior to installation. Install the new bump stops and locating plates onto the chasse using the stock hardware (Photo # 8). The bump stops should face towards the inside of the vehicle directly over the axle tube. Tighten and torque to 20ft. lbs

## **FINALIZING THE INSTALLATION**

- a) Re-install wheels and torque to the Manufacturer's specifications.
  - b) Check that all components and fasteners have been properly installed, tightened and torqued.
  - c) Lift vehicle and remove support stands. Carefully lower vehicle to ground.
  - d) Check brake hoses, cables and other components for any possible interference.
  - e) If necessary, check driveline angles as described above.
  - f) Check for wheel/tire to chassis/body interference.
  - g) Once vehicle has been lowered to the ground securely fasten the shackle bolts in place.
  - h) Immediately test-drive the vehicle in a remote location so that you can become accustomed to the revised driving characteristics and handling. Be aware that the vehicle will handle substantially different now that it has been lowered.
  - i) Take the vehicle to a qualified shop for 4-wheel alignment.
  - j) Check all of the hardware and re-torque at intervals for the first 10, 100, and 1000 miles.
- ! The front of the vehicle MUST be lowered accordingly for proper handling and performance and also to maintain warranty. See the current *Belltech Application Guide* or contact your nearest *Belltech Dealer* for the appropriate part numbers for your application.**

### **Parts List: 6686 Axle Flip Kit**

Part #	Description	Quantity
4903-001	Bump Stop Rear	2
6686-888	Installation Instructions	1
6405-888	Installation Instructions	1
6686-020	Saddles	2
6486-100	Shackle	2
6419-002	U-Bolt 9/16 –18 X 8"	4
110670	Flat Washer 9/16"	8
110455	Nylon Lock Nut 9/16"-18	8
6686-012	U-Bolt Plate	2
6686-002	Bump Stop Relocator	2



## Addendum 1/25/06 “Welding axle saddles”

### WARNING:

It is known on this application that the factory leaf spring mount might not hold up to the applied torque loads from the new axle saddles. **We highly recommend** the new axle saddle be welded onto the axle after the complete installation.



This factory spring mount did not hold up to the upward applied load.

Apply a min. 2” long weld on each side of each axle saddle.

### WARNING:

When installing an axle flip-kit on a vehicle with a high output engine we suggest welding the new axle saddles onto the axle for additional strength. **We recommend** that the installer complete the entire installation prior to welding, and then carefully drive the vehicle to ensure proper installation. Once the installation is complete **we recommend** having the new saddled welded in place by a qualified welder.

## **Steps**

### **Preparation**

1. Prior to installation remove a portion of the powder coating on the axle saddle around the edges that contact the axle housing. **This needs to have a clean metal surface for proper welding.**
2. Remove any paint, rust or possible contaminants on the axle. **This needs to have a clean metal surface for proper welding.**

### **Installation**

3. Install the axle flip kit per instructions.

### **Test Drive**

4. To ensure the kit is properly installed, moderately test drive the vehicle. If there are any problems, they can be easily fixed at this time. (i.e. axle saddles are installed backwards or drive line vibrations occur).

### **Welding Instructions**

5. Now that the kit is completely installed and setup with no problems, it is ready to be welded.

**NOTE:** We recommend a qualified welder perform this process.

**WARNING:** Use precaution when welding on a vehicle. Vehicles contain combustible materials such as GAS, OIL and PAINT. Check for any leaks or openings that could cause potential fires or explosions.

6. Check that the surface area is free of contaminants.
7. Ground the welder directly to the outer axle housing to prevent any possibility of internal damage to the gears.
8. Apply a minimum 2 inch long weld on each side of each axle saddle. Preferably centered along the saddle.
9. Let the weld cool naturally. Inspect the welds.

### **Final Instructions**

10. Paint the raw metal surfaces to prevent corrosion.
11. Double check all hardware to ensure it is properly torqued.