



MARLIN CRAWLER H.D. LCA FRAME BRACE INSTALLER

FOREWORD

This Installer shows how to install our patent-pending Heavy Duty Lower Control Arm Frame Brace Kit onto a 2004+ 120-platform (4Runner/GX470/FJ Cruiser) and 2005+ Tacoma.

This installer can be used in the following two ways:

- The **experienced technician** can refer to the photos and major headings for quick step-by-step instructions. Important specifications are printed in bold type at the point needed.
- The **new technician** will find the details of how to perform each step particularly helpful. By studying the photos and carefully following the instructions, a new technician can readily install or service this Marlin Crawler component.

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HD Lower Control Arm Frame Brace Kit

HOW TO USE THIS INSTALLER

The procedures are presented in a step-by-step format:

- The task heading tells *what* to do.
- The photo or illustration shows *where* to do it.

The detailed text tells *how* to perform the task and gives other information such as specifications and warnings.

GENERAL REPAIR INSTRUCTIONS

1. Use fender, seat, and floor covers to keep the vehicle clean and prevent damage.
2. During disassembly, keep parts in order to facilitate reassembly.
3. Care must be taken when lifting and supporting the vehicle.
 - a. If the vehicle is to be jacked up only on one end, be sure to block the opposing wheels to ensure safety.
 - b. After the vehicle is lifted, be sure to support it on jack stands. It is extremely dangerous to do any work on a vehicle raised with a jack alone, even for small jobs that can be finished quickly.

TOOLS REQUIRED

- Sand paper or power tool with flap disc
- Welder

TOOLS OPTIONAL

- Tools required to remove Lower Control Arms
- Painters tape, scrap cardboard, or similar
- Spray paint, or similar
- Mist spray bottle with water
- Small hammer and punch

PARTS REFERENCE



Front HD
Lower Brace (x 2)



Front HD
Upright (x 4)



Rear HD
Lower Brace (x 2)



Rear HD
Upright (x 4)



INSTRUCTIONS



1. REMOVE LOWER CONTROL ARMS (optional)

- (a) Mark positions of all camber (cam) eccentrics prior to removal.
- (b) Refer to Factory Service Manual for specific application.

NOTE: This step is **optional and may be skipped** to avoid loss of suspension alignment. However, in order to complete inner flange welds and paint from more angles, removing both Lower Control Arms results in a better finish. *Having said that*, if you have suspension plans down the road, you could always add inner flange welds at a later date. 💡



2. PREPARE FRAME FOR WELD ADHESION

- (a) Hold HD Lower Braces and HD Uprights against frame and mark where each part contacts the frame and flange assemblies.
- (b) Using sand paper or grinder with flap disc, remove paint or debris from frame and flange assemblies exposing bare metal for best welding performance.



Offset Position



Centered Position

3. DETERMINE ALIGNMENT OF HD UPRIGHTS

To accommodate frame and cam tab variances, slack is provided for adjustability.

- (a) **OFFSET POSITION:** Offset each HD Upright. This provides a nice gap to later weld HD Upright to tab in **Step 5**.
- (b) **CENTER POSITION:** This position accommodates frames with damaged cam tabs, or frames that have thicker-than-stock cam tabs fitted. Position as necessary. Depending on degree of damage to existing cam tabs, a chisel and hammer may be necessary to massage bent cam tabs back into their factory position. In such case, ensure cam eccentrics may still freely rotate. Later in **Step 5**, add weld over the top of any excessive gap being careful not to weld to the inside of either cam tab.

OPTIONAL TIP for those not removing LCA: If you carefully mark the position of cam eccentrics, you could loosen hardware one-at-a-time to fix cam tab issues as needed and retighten in their original position.



Front components tacked in place

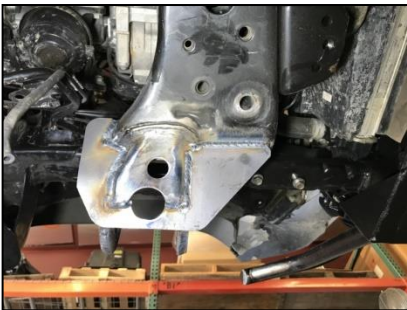


Rear components tacked in place

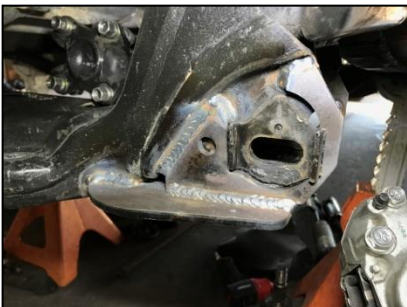
4. TACK-WELD PARTS TO EACH LCA FLANGE

- (a) The Front Lower HD Brace mounts at about a 35° slant.
- (b) The Rear Lower HD Brace mounts flat.

NOTE: If you removed your LCA, then re-insert cam eccentric hardware to ensure they may be rotated from neutral alignment a total of 85-degrees in both CW and CCW directions without interference. Adjust position of HD Uprights as needed.



Front LCA Parts Welded



Rear LCA Parts Welded

(except for HD Upright plug weld)

5. FINAL WELD ALL PARTS

- (a) Final weld all components to frame and each LCA flange.

NOTE: If you did not remove your Lower Control Arms, then weld in small increments at a time, moving from mount-to-mount to minimize heat soak to suspension components. Periodically monitor the temperature of each Control Arm bushing areas and use a spray bottle to mist water onto each arm for temperature control as necessary.

Bouncing around from mount-to-mount during welding allows parts to cool between each pass thus preventing heat soak from reaching control arm bushings.

**6. DRESS WELDS (recommended)**

- (a) Using painters tape or similar, cover areas nearby all newly welded surfaces to limit overspray of paint.
- (b) Paint over welds as directed by the paint manufacture.

NOTE: This step is optional however we highly recommend dressing welds to prevent corrosion and extend the life of your vehicle. For large exposed areas, trim cardboard into appropriate shapes and hold or tape into position while painting.

TIP: If you did not remove your Lower Control Arms, then first apply grease to exposed camber bolt and eccentric hardware with a small brush, then apply spray paint. After the paint has dried, use a towel or rag to easily wipe away the painted grease exposing the hardware in its original unpainted condition.

7. REINSTALL LOWER CONTROL ARMS (if necessary)

- (a) Refer to Factory Service Model for specific application.

BREAK IN PROCEDURE

There is no break in procedure for this product. If you dressed your welds, please allow the paint to fully dry.

Thank you for choosing Marlin Crawler for your Rock Crawling and Off-road needs!



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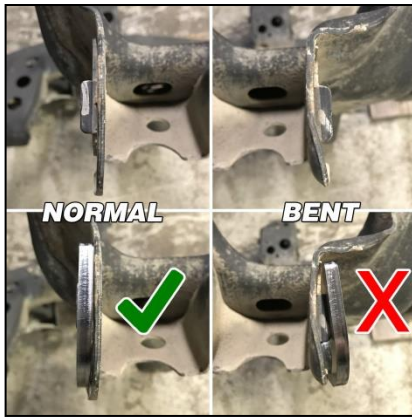
TROUBLESHOOTING



Hardware Upside Down

Toyota alignment hardware is supposed to be upright and away from objects passing underneath, not upside down as shown in this example from forum member *HawaiianSON*.

In this case, you must rotate your eccentrics up in order to install our Heavy Duty Kit, potentially requiring an alignment check *at preferably a new alignment shop!*



Single Flange Bent

From the factory, the bottoms of each flange pair is slightly flared to aid lower control arm installation. These flared or radiused lower sections are normal; Each HD Upright simply rests against and is welded directly to each unmodified factory flange (see: NORMAL).

You may have, however, flanges that are bent from miles and miles of normal trail abuse (see: BENT). In such case, you'll need to bend or hammer the flange back to its original shape.



Flange Pair Bent

In the severe case of completely displaced flanges, you'll have to do your best to hammer the flanges back into their vertical and parallel position. Compare with an undamaged mount or another vehicle for reference.