

Instructions:

TJ/LJ Rear LCA Geometry Correction™ Template

Kit Part Numbers & Applications	Nth20290 (any TJ Wrangler or LJ Unlimited)
Assumptions Equipment that must already be present on your vehicle	REQUIRED PRODUCT: Nth° Stinger™ (Nth141xx xx) center-mounted rear torque arm OR Nth14000 Short-Arm Handling Improvement Kit.
	REQUIRED PRODUCT: Nth° Lower Control Arms (Nth20100) or equivalent that use a round tube to hold an axle-end bushing of stock-or-smaller diameter. NOTE: non-adjustable rear LCAs should be of stock length (~15-3/4" from bolt-to-bolt)...If not follow notes.
	NOTE: This redrill template works with all Nth° ShortArm systems including Nth14001 GyroJoint system and is included and must be used with all Nth° LongArm TJ suspension systems (Nth015xx and Nth016xx).
	The suspension/lift being used does NOT utilize a rear upper A-arm or 'triangulated 4-link'. The geometry correction created by this template can only be used with a track bar.
Required Tools and Equipment (in addition to common hand tools)	Floor jack and short piece of 4x4 post (or vehicle lift with a tall jack stand)
	Angle Master or pendulum level (to check drive shaft and pinion angles)
	Drill and drill bits (must have 1/4" bit for pilot holes through template)
	9/16" drill bit (for drilling new LCA holes on TJs and other coil Jeeps, etc.)
	Sawzall or Plasma Cutter + grinder (for trimming LCA brackets)

NOTES: Proper Suspension configuration when using Corrected Geometry™. This template provides an accurate means for locating and drilling new control arm mounting holes in existing stock TJ frame and/or rear axle brackets for the lower control arms. While this allows the rear lower arms to be re-located to a more horizontal position when a suspension 'lift' is installed, this change can only be performed if the rear upper control arms (RUCAs) are also corrected via use of Nth-14000 (Short-Arm Handling Improvement Kit, which consists of Nth23040 & Nth23041), or eliminated via use of an Nth° Stinger™ center-mounted rear torque arm. All Nth° suspension systems +3.0" or higher include one of these sub-kits to work with this template. Failure to use one of these products after performing these procedures will result in incorrect Anti-Squat percentage, instant center height, and pinion angle geometry – which can lead to handling issues and/or driveshaft failure. It is the owner/installer's responsibility to assure that this template is properly used!

Be aware that re-drilling the LCA holes should be done accurately in order to keep the rear axle thrust angle near zero (axle square to frame rails) – otherwise your TJ will want to 'dog track' (vehicle not aligned to direction of travel). Using this drill guide virtually eliminates this possible issue, but Nth° also recommends using adjustable LCAs so that you have a means to adjust thrust angle in the event that your re-drilled LCA brackets are slightly uneven side-to-side. All Nth° systems that include GyroJoints™ (ShortArm: Nth14001 or LongArm: Nth14002 or Nth14003) kits help even more because not only are they adjustable, they eliminate the need to redrill the frame brackets.

Please take the time to read these instructions completely before beginning – they are long because we want you to get the installation right the first time with no unnecessary delays.

Step 1: Read all of the following instruction steps before beginning! Do not disassemble vehicle unless all needed products/parts are present and all tools and facilities required are available. Do not start or attempt this procedure if you are unsure of your abilities or do not have the resources listed above.

Step 2: Remove rear brake assemblies from axle. In order to have clear access for re-drilling the LCA bracket holes, the rear brakes must be removed from the axle. The procedures for this vary depending on whether you have disc or drum brakes and whether you have a c-clip ('90-later Dana

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35c) or non-C-clip axle. This will require removal of the wheels and axle shafts as well, and for c-clip axles the differential must be drained and the cover removed to access the c-clips, so be prepared as required for your axle. Consult a service manual or knowledgeable friend if you are not familiar with your rear axle and brakes. NOTE: You may be able to avoid removing the rear brakes for access if you use an angle-head air-drill to perform the drilling from the inboard sides, but you will also need a shortened 9/16" drill bit to complete the holes this way.

Step 3: Redrill Lower Control Arm (LCA) Axle Brackets.

Figures 1 and 2 show the drill guide in place on the outer and inner portions, (respectively) of the stock rear axle LCA bracket. Use the original LCA bolt through the large hole in the guide and place the small 1/4" bolt into the hole at the tail end of the arrow with one 'feather'; swing the guide up until the threads of the 1/4" bolt rest against the front edge of the LCA bracket and clamp the guide in place – the other 1/4" hole at the head-end of the same arrow now locates your new hole. Drill a 1/4" pilot hole directly through the guide to minimize the chance of the bit 'walking' out of position; drill carefully (straight and steady) so as not to enlarge the hole in the guide. Repeat this procedure on the inner side of the LCA axle bracket by drilling through the outer pilot hole you just drilled. Once both 1/4" pilot holes are drilled, re-drill them up to 9/16" using intermediate drill sizes to prevent 'walking' the holes out of position.

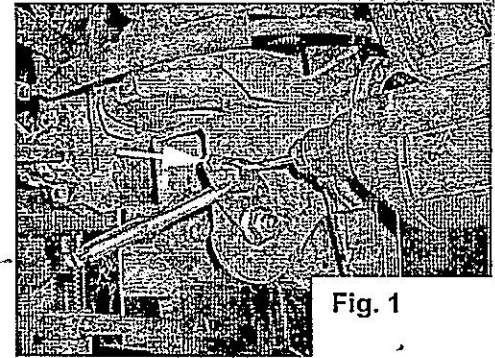


Fig. 1

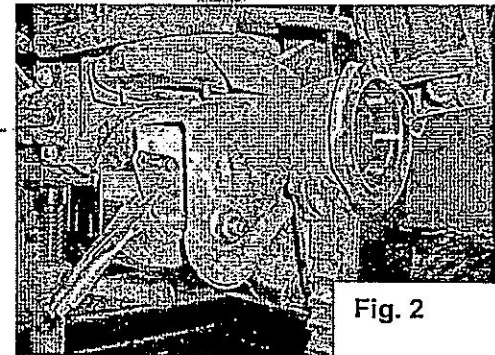


Fig. 2

Step 4: Trim Axle LCA brackets for clearance. In addition to the new holes, you will relieve the top surface of the stock LCA bracket to allow full movement of the LCA and possibly for clearance to any zerk fittings on your control arms. Figure 3 shows the typical 'half moon' of material removed – how deep to cut depends on your specific LCAs, but generally you cut though the small existing hole in the top of the bracket you

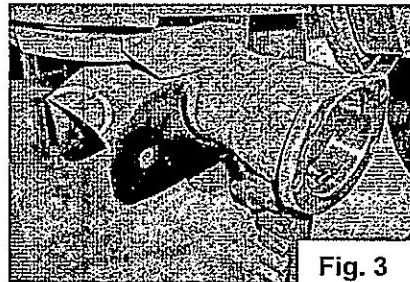


Fig. 3

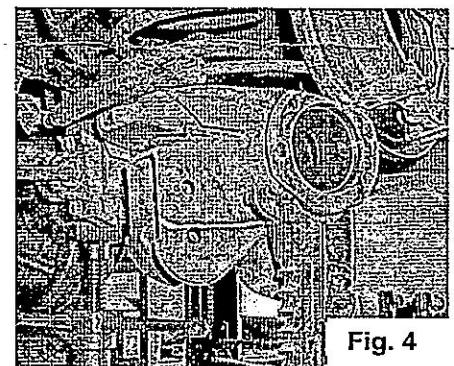


Fig. 4

You may also cut off the unneeded lower portion of the LCA bracket to gain approximately 2" of under-axle clearance. If you cut through the top of the original LCA holes as marked in figure 4 you will leave enough material around the new holes for sufficient strength. You may choose to only cut off the inboard half of each bracket if there is any chance that you will want to return the axle to 'normal' – this way the inboard part can be relocated using the outer half as a reference point (Cutting off the outer half has minimal ground clearance benefit since it is close to the tire, especially if using Nth Degree's Shock Shifter kit.)

will be deep enough.

NOTE: Steps 5 and 6 are for "short-arm" TJ Wranglers using conventional lower control arms (i.e. not using the Nth Degree GyroJoint™ kit Nth14001). This step is an additional geometry correction benefit that compounds the handling and hill climbing benefits gained with the axle-end re-drilling. If you are installing a non-Nth° suspension kit that retains the factory LCAs, you can *only* drill the frame holes (because the stock LCAs won't fit the redrilled axle holes). Also note that you should NOT use this template at all for suspension lifts (such as Nth012xx) that are +2.0" or less because there is no corresponding correction of the upper control arms.

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Step 5: Redrill Lower Control Arm (LCA) Frame Brackets. For 'Short Arm' Jeps that are using conventional LCAs (such as Nth01300, Nth01400, Nth01420), the frame hole can/should be lowered to further level the LCAs. Use the same basic procedure of step 5, but on the frame brackets the new hole will be *below* the original hole as shown in **figure 5**. If your LCAs are adjustable or fixed at stock length (~15-3/4"), you can use the optional Nth Drill Guide (NthSTGR7900) for these holes as well – simply invert it so the large hole for the original bolt location is at the top, then use the two holes at each end of the arrow with two feathers in the same manner as in step 5 (see **figure 6**).

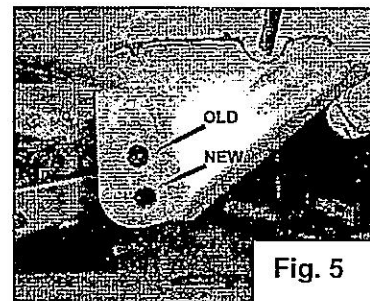


Fig. 5

NOTE: If your LCAs are non-adjustable and are longer than stock (such as Rubicon Express), the combined effect of the too-long LCA plus the redrilled holes using the Nth drill guide may push your rear axle too far rearward, resulting in fuel tank interference and tires too far back in the wheelwells. In this case you can compensate by re-drilling the frame bracket holes about 1/4" farther forward than the Nth hole template provides (mark using the template, then measure forward 1/4" before drilling).

Step 6: Trim Frame brackets for LCA clearance. If using conventional LCAs, you may need to clearance the stock rear frame brackets slightly. This is due to the shape of the factory TJ rear brackets - when the LCA position is lowered the arm may touch the forward edge. To solve this, some material needs to be removed to if needed, trim the bottom sloped surface of the frame bracket as marked in **figure 7**.

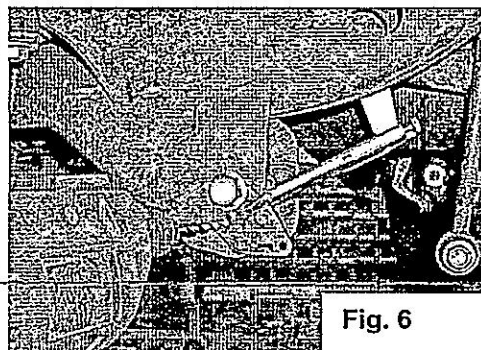


Fig. 6

Step 7: Re-install LCA into New Axle (and Frame) holes.

Once you have re-drilled the holes that apply to your installation, reassemble the axle shaft and brakes to the axle, then return to the instructions for your Nth system (Nth-SHIK or Nth-STGR kits) for guidance on completing your LCA installation into the new holes. Return to Step 4 for the other side of the vehicle, then continue with the Stinger installation below.



Fig. 7

Step 17: Test Drive. If your TJ was already lifted with a conventional short-arm suspension, the effects of Geometry Correction™ will be very apparent on a test drive. You will notice much less roll-steer from the rear suspension – making it easier to stay on the track/path you intended when driving winding, curvy roads, etc.

Step 18: Chassis Alignment. It is recommended that you have your vehicle professionally re-aligned after completing the re-drill process and the associated Nth° products required to work with the new geometry. Make sure to mention to the mechanic that you want to check the rear thrust angle and that it can be adjusted using your adjustable rear LCAs if necessary.

If you do not have adjustable LCAs and the thrust angle has changed enough due to the redrilling, you will notice before visiting the alignment shop that the steering wheel is no longer straight while driving straight. In this case the alignment shop will be able to center your steering wheel, but will not be able to correct the thrust angle, and your Jeep will 'dogtrack' slightly when driving straight – typically this will be so slight that it will not be noticeable to either the driver or an outside observer.