



## Solid Axle Swap Instructions

### Bill Of Materials

2 – Hy-Steer Arms (1 ea Left and Right)	2 – Frame Jigs (1 left, 1 right)	3 – Short Front U-Bolts
1 - Pitman Arm	1 – Steering Stabilizer Shock	1 – Long Front U-Bolt
1 - Tie Rod	1 – Steering Stabilizer Bracket w/U-Bolts	2 – Front Extended Brake Hoses
1 - Drag Link	2 – Steering Stabilizer Mount Tabs w/Bolt	2 – Bump Stops
2 - FJ80 Tie Rod Ends w/Jam Nuts, RH	4 – Shackle Plates	2 – 1.5” Wheel Spacers w/Lug Nuts
2 - FJ80 Tie Rod Ends w/Jam Nuts, LH	4 – 18mm x 150mm Bolt w/Locknut	2 – Shock Hoops
1 – Front Spring Hanger	4 – ¾” Shackle Spacer	4 – Shock Hoop Tube Braces
2 – 18mm x 120mm Bolt w/Locknut	2 – Front Leaf Springs	2 – Front Shock Absorbers
12 – Small Spring Bushings	1 – 3/8” Thick Spring Pad	
2 – Frame Tubes	2 – U-Bolt Plates	

The All-Pro Solid Axle kit is a top quality solid axle swap for your 1986 - 1995 IFS truck. The best parts and materials have been fabricated and combined in this kit to provide the highest quality swap possible. You need only supply a Toyota front solid axle with 1982-85 8 hole hubs (6 for the studs, 2 for the attachment bolts) and drive shaft. Cutting, grinding and welding are required. Once the IFS suspension and brackets are removed it's fairly easy to install the kit & only takes about a day's worth of work to install the solid axle. These instructions are intended only as a general guide for installing All-Pro products. Metal fabrication and welding skills are needed to install this kit. If you have any doubts or questions about installing these or other parts, please call us or contact a competent fabricator / mechanic. Please inventory all parts and make sure they are correct and complete before beginning. If you are missing anything contact us before beginning, we will not be responsible for express shipping because the truck is torn apart before everything is delivered.

Aftermarket accessories are intended to modify and/or prepare a vehicle for uses which exceed conditions anticipated by the vehicle manufacturer. These uses include high performance demands and negotiation of rough terrain. These conditions have extreme variance and cannot be controlled by the vehicle manufacturer or aftermarket accessory manufacturer. Therefore, the safe control of your vehicle is entirely your responsibility. Do not purchase parts from All-Pro Off Road unless you are willing to accept this responsibility. Do not install any All-Pro part that you do not feel competent at installing without causing present or future injury to yourself or others; consult a professional installer. All parts sold by All-Pro Off Road are for off road racing use only and are not intended for use on the street. Modification of your vehicle to enhance performance with the parts sold by All-Pro Off Road can result in dangerous situations that may result in bodily harm. The buyer hereby assumes all risks associated with any such modifications. All-Pro Off Road will not accept responsibility for personal injury or property damage arising from the failure of any parts manufactured or sold by All-Pro Off Road.

### Axle Setup

The most desirable axle to use for this swap is the 1984-85 Toyota axle. These two years use a fully welded truss on the bottom of the housing. If you purchase a housing from a junkyard we recommend replacing the seals, gaskets, and knuckle bearings before installing the axle in your truck. We have a knuckle bearing rebuild kit that contains all the parts needed to service the front axle, and we strongly recommend having a factory service manual for that process.

Remove the steering arms on top of the knuckles and replace with the Hy-Steer™ crossover steering arms. It may be necessary to re-shim the knuckles to factory spec (See your factory service manual). The steering arm with one tie rod end hole goes on the driver side and the arm with two holes goes on the passenger side of the axle. The tie rod and drag link will be connected to these holes later.

Front axles sold in the US come with an open 4cyl differential housing and typically with 4.10 gears. Assuming you are planning to use larger tires with a stock or similar engine we recommend changing the gears in the differentials and possibly add a locking differential for more traction. Other differential upgrades include V6 and FJ-80 third

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members for added strength and reliability. The front axle comes with a bracket for the factory torque rod. This rod restricts front axle movement and is needed when using stock type steering. Our kit comes with Hy-Steer™ crossover steering system, which moves the tie rod above the leaf springs and out of harms way. It also reduces bump-steer and totally eliminates the need for the torque rod. Before installing your axle we recommend removing the torque rod and steering stabilizer brackets as they are no longer needed. The 1979-85 front axle used a non-vented solid brake rotor and small caliper. IFS calipers and rotors are far better but the IFS rotors won't fit on the solid axle. Our kit includes a set of special vented rotors that will fit on the solid axle spindles and allow for the continued use of your larger IFS calipers on the solid front axle without modifications. When setting up the front axle simply install the rotors included in the kit onto your 8 hole bearing hubs (6 for the studs, 2 for the attachment bolts). Another difference between the IFS and solid axle is the width. In 1986 Toyota widened the front suspension and rear axle. The rear IFS style 1986 - 1995 axle is about 2" wider than the front 1985 and older solid axle. Our kit includes 1 1/2" spacers for the hubs. In order to use the same leaf spring for the left and right sides it is necessary to install a small 3/8" thick pad on the left side spring perch. This pad needs to be welded into place on the top of the driver side spring pad.

## **IFS Removal**

The first step is to remove the IFS suspension. This includes the front differential, axles, A-arms, idler arm, tie rod, drive shaft, sway bar and torsion bars. Next, the IFS A-arm brackets need to be torched off and the frame ground smooth with a grinder. Try not to nick or cut into the frame rails. Any nicks need to be filled in with a welder before the shock hoops are installed.

## **Mounting Spring Hangers**

(Note: it is possible to install the front hanger and shackle tubes before removing the IFS)

All Pro has created a spring hanger assembly that allows for easy mounting of the spring hangers. Position the hanger under the front frame cross member with the rectangular tube between the hangers flush or even with the front of the factory frame cross member. Now verify it is centered by check side to side measurements with a tape measure. Once the hanger is centered and flush with the frame cross member, you can tack weld the mount in place. Don't fully weld the hanger in place until after the front springs are on to ensure it is properly placed. There will be a small gap between the center section of the hanger and the frame cross member, you can either fill the gap with weld, or cut some steel strap to fill the gap and weld it together.

## **Installing the Shackle Mounts**

The rear shackle hanger is a tube that is welded into the frame. In order to properly position the tubes in the frame special jigs are provided in the kit. Install the right jig on the passenger side and the left jig on the driver's side of the truck. The jig should be placed onto the frame and slid forward until the body mount stops it. The center of the hole in the jig should be approx. 45" from the front of the frame. Tack weld the jigs in place and then drill a 1 3/4" hole through the frame with a hole saw or torch. Remove the jigs and insert the tubes into the frame. The tubes should be placed so that they are offset to the outside of the frame by 1/4" when measured at the top or bottom of the tube. Tack weld the tubes in place.

## **Hang the Springs**

All-Pro long travel springs have the front pin moved forward during manufacturing. This relocates the front axle forward from a stock 1985 truck providing better fender to firewall clearance. Using the supplied bushings, shackles and bolts, mount the leaf springs with the military (double) wrap forward. Once satisfactory shackle angle has been verified (weight must be on the springs), finish welding the front spring hanger and tubes into place. When weight is on the springs the 4" will be near vertical, and the 5" & 6" will have a slight rake back at the bottom. This angle will increase as the springs settle in.

## **Install Front Axle Using Hy-Steer™ and Flip kit**

Using the front U-bolt flip kit install front axle under the springs. One of the front U bolts is longer than the other

three; this one is used on the inside of the right (passenger side) leaf spring up against the differential area. Round U-bolts are used on all years of front axles; on the 84-85 they will have a slight gap under the gusset. The U-bolt plate is installed on top of the leaf spring. The passenger side will be more of a challenge to get the u-bolt to slip into because of the shape of the housing it fits around. Squeeze the top of the u-bolt until it slips into the plate. Tighten the U-bolts to 80 ft-lbs. Re-torque the U-bolts after 100 miles and periodically check the torque of these bolts. Cut off the excess U-bolt threads just above the nuts. Install the tie rod in the only hole in the left steering arm and in the rear hole in the right arm. Turn the steering wheel from lock to lock and find the center of its movement (the steering wheel spokes may not be straight). Install the pitman arm onto the steering box. Install the drag link from the pitman arm to the right side steering arm (front hole). Torque the pitman arm nut to 130 lbs. Torque tie rod and drag link castle nuts to 67 lbs and install all four cotter pins.

### **Hoops, Shocks and Bump Stops**

Position shock hoops onto frame so that the top of the shock mount is positioned with about 1/8" - 1/4" gap between the top of the fender well and the shock hoop. Tack weld the hoops into place and test fit the shocks (tube side up). About 4"-6" of the shaft should be out of the shock tube depending on the size springs installed. Reposition the hoops on the frame if necessary (It may be necessary to clearance the inner fender-well with a hammer to create enough space to move the hoop). Brace the hoops using the supplied 2 weld-on brace tubes per side. At this time you may want to install some plate steel to cover the hole in the engine mounts. You must remove the shocks before welding. Welding spatter on the shaft will destroy the shock seals prematurely, and will void the shocks warranty. Finish welding the hoops into place. Weld the bump stops to the bottom of the frame so that they will touch in between the U-bolts on the flip plate. Bump stops must be setup so that there is a gap of 2" - 3" between the bump stop and pad of front springs. The bump stop need to be set so that it stops the spring at flat. Failure to install bump stops and allowing the spring to go into a negative arch ruins the spring and voids the warranty. On the rear spring the gap should be 4" to 5".

### **Steering Stabilizer**

The steering stabilizer is mounted to the truck frame on one side and onto the drag link on the other. Weld the tab found in the stabilizer box to the inside bottom of the passenger side frame rail. Center the wheels of the truck so they point straight ahead. Pull the steering stabilizer out exactly 1/2 way. Attach the stabilizer using the supplied rubber bushings, bracket and U bolts to the drag link tube.

### **Front End Alignment**

Alignment of the solid front axle is very easy. With the adjuster nuts loose simply turn the tie rod to change the toe setting. The toe should be set so that its 1/16" to 1/8" toe in. The drag link can also be adjusted in the same way. It's recommended that 75% or more of the tie rod end threads be inside the tubing. Once the rods are set the nuts can be locked down. The two nuts on the passenger side can come very close to each other. It may be necessary to adjust the nuts so the flat sides come face to face. It may also be necessary to grind a little off one or both nuts to eliminate the nuts from rubbing each other when the steering is turned full left. Occasionally we have seen a few trucks that, due to manufacturing inconsistencies, have the pitman arm contact the tie rod at full compression. If your bump stops are installed correctly (so that they stop the spring at flat) and the arm still contacts the tie rod, the steering box will need to be repositioned forward until it clears. This is a rare occurrence, but has happened a few times. Unfortunately we cannot control how the truck was constructed from the factory; we only know how to remedy the problem. This happens about once out of every few hundred vehicles.

## Front Drive Shaft

All-Pro recommends using a High-Pinion front differential for better front driveshaft u-joint angle. Normally the front IFS drive shaft cannot be used in stock form as the CV joint does not allow for enough movement and it is not long enough. It may be necessary to have a custom drive shaft made to order for your truck, or to modify your CV using the guidelines here <http://www.4x4wire.com/toyota/tech/cvmod/>. If you are still experiencing binding, a custom CV may need to be used. Alternatively, you could also use other upgrades to solve the problem, such as a dual transfer case setup which will lengthen the front driveshaft by approximately 8" and lessen the angle.

To ensure the drive shaft is the proper length we recommend taking a measurement for the front drive shaft after the swap has been completed and the truck driven a few miles to settle the springs (10 or more miles). Measure the front drive shaft length from the centerline of the t/case flange to the centerline of the front differential flange. A 1984 thru 1985 drive shaft can be used but it will need to be lengthened. Due to the exceptional travel of the front suspension after installing our solid axle swap we recommend using a drive shaft that has been re-tubed with a long travel slip yoke with 8" or more of slip travel. The slip should be setup so that at static height, 3" of spline is outside the female end, and 5" is inside. This is because our suspension is designed to have more droop than compression.

## Rear Suspension Instructions

All Pro's rear 56" long 4, 5 and 6" lift springs are designed to be used on 1979 and later Toyota Pickup's and 4Runner's. When installing these springs it is possible to keep the axle location as it was or to move the axle forward or backwards depending where you mount the spring hangers. For example it is very common to move the axle back one inch to allow for a better fit of the tire in the fender well. For someone with a long wheel base extra cab that wants to reduce wheel base it is possible to move the mounting points toward the front of the truck to reduce wheel base. Whatever your choice we recommend that the spring and shackle hangers be tack welded in place and the truck placed on the ground to verify shackle angle and axle position. If you are installing new springs we recommend you add 300 lbs of weight to the bed of the truck for this test to simulate the spring height that will result after the springs have had a chance to settle. The springs will settle in after your first hard trail run or about one month of regular driving. Shackle angle should be about 15 degrees.

When installing the 56" long rear springs on 1979 - 1988 trucks, the rear shackle hanger will need to be cut off with a die grinder and moved back 1.5-2.5" (depending on desired shackle angle) and reattached. The front spring hangers cannot be reused after cutting them off so we recommend our heavy-duty spring hangers. These will need to be installed approx 6" forward of the stock hangers, measured from center to center of the bolt holes. When doing the finish welding on these mounts weld both sides of the hanger as well as filling the slots cut into the bottom of the hanger. It may be necessary to remove the fuel tank to fully weld the right side hanger.

When installing the 56" long springs on 1989 - 95 Trucks the rear shackle hanger does not need to be moved. For this application install a new hanger 5" forward of the stock hangers measured from center to center of the bolt holes.

## Spring's need to be installed with the double military wrap towards the front of the vehicle (non-shackle side).

Actual lift provided will depend on many variables. A heavy truck will be lifted less than a light truck. The springs work well on truck weighing 3,500 to 4,500 lbs. Moving the axle forward will produce more lift, moving the axle back will add less lift. After the first 100 miles re-torque all bolts including wheel lugs, upper and lower knuckle bolts, U-bolts, shocks, pitman arm, shackles, and drive shaft bolts. It's also a good idea to re-torque knuckle bolts and U-bolts each time you change the engine oil. The steering wheel can be removed and reinstalled to align the wheel spokes.