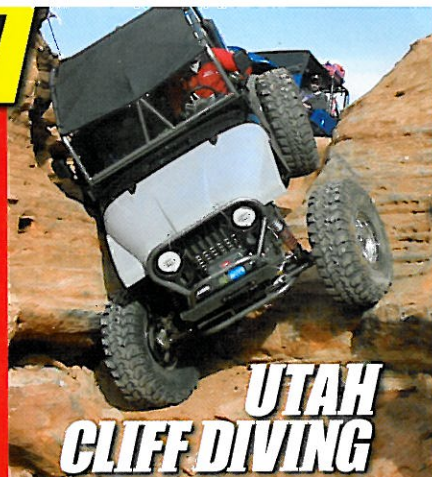


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A FULL-FLOAT 5-ON-5½ FORD, JEEP, OR SAMURAI AXLE

BY Fred Williams
PHOTOGRAPHY FRED WILLIAMS

EARLY FORDS, JEEPS, AND Suzuki 4x4s often came with 5-on-5½ bolt pattern axles. They weren't always the strongest tire spinners. In the realm of rear axles, Ford's 9-inchers aren't great, and Suzuki's little Samurai axles are, well, little. Don't get us wrong; these axles all hold up fine when it

comes to spinning stock size tires, but add deep gearing, bigger motors, heavy rubber, and an American work boot wrapped around an adrenalin-junky driver's right foot, and things can get messy.

You can upgrade axles completely, or just upgrade the axleshafts to stronger alloys. Or you can upgrade to full-floater hubs and alloy axleshafts from Solid Axle and Spidertrax, the option we like.

We started with a junkyard Dana 60 housing and built it into an overkill idiot-proof bash axle that'll laugh off whatever the numbskull behind the wheel throws at it.

This project is a good mid- to high-skilled endeavor, requiring precision machining and welding, so if your barn has a lathe and a MIG machine you're in business, if not, you may want to take it to a professional.



1 We wanted to build a rugged rear for an old Jeep with a passenger offset rear transfer case output, so we started with this oddball low-pinion, driver-side front Dana 60. This was a custom front axle that didn't use off-the-shelf shafts, and all the internals and steering knuckles were missing.

2 We took our project to Fabworx Off Road in Santa Rosa, California, to get it done quickly. Getting the inner Cs (also known as end forgings) off the axletube requires heating and beating. First the welds were cut out with an air arc cutter. This is similar to plasma cutting but uses a carbon rod similar to stick welding and compressed air to feed the cutter.

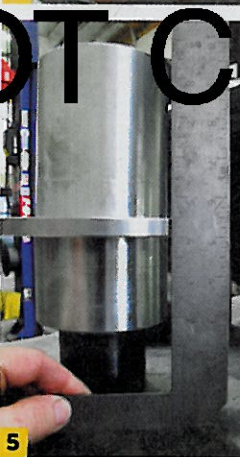
3 Once the welds have been cut and the ground with a grinder, the housing is put in a press and the Cs pressed off using nearly 39,000 pounds of pressure.

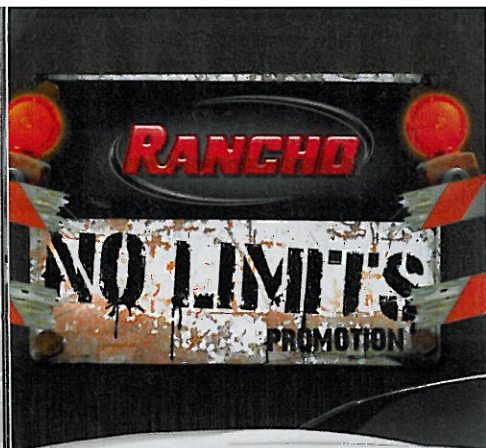
4 We then hauled the housing to Custom Coatings of Ukiah for a thorough sandblasting. The cost of prepping an axlehousing is worth it because it leaves you with a clean canvas upon which to build.

5 We needed to determine how much width Solid Axle's full-float kit would add to our housing, where we want the pinion offset, and what overall width we are shooting for. The spindle and hub assembly measures 5½ inches from the base, but we planned for 1½ inches of the spindle to be pressed into the axletube. This meant that each spindle hub combo would add 4 inches per side.

6 We decided that an overall housing of 48 inches, plus 8 inches of spindle and hub, would net our old Jeep an axle that was 56 inches from wheel mount to wheel mount. This required trimming the long side tube slightly. The pinion is offset and aligned with the transfer case output. You'll want to consider room for suspension mounts at this point also.

7 The spindles must be machined down in a lathe to fit in the axletube. Dean Albertson mans the Fabworx lathe to turn the spindles down. Our Dana 60 axletube has a ½-inch wall and an internal diameter of 2.128 inches, so we machined the spindle to 2.130 for a 0.002 press fit.





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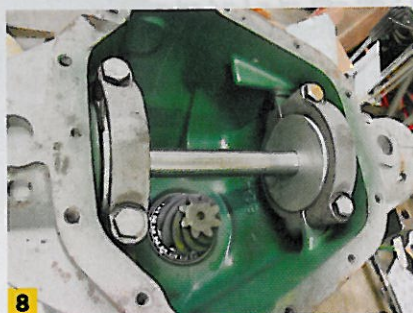
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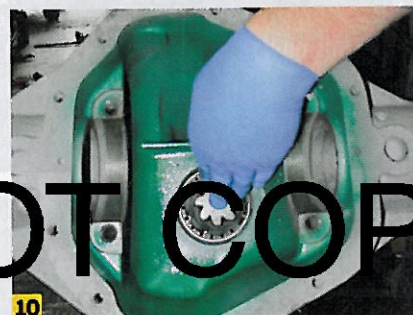
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8 The spindles are pressed into the axle housing, and an alignment bar located off bearing pucks in place of the carrier bearings is used to ensure that the spindles are straight and true with the differential. If the spindles are not perfectly in line, the axle shaft will wear against the inside of the spindle. Pressing and welding can pull the spindles in line slightly, but major misalignment would require remachining the spindles.

9 Once aligned and tacked in place so the spindles won't pull, Forrest Moore began welding them in. We machined a deep bevel in the spindle to allow a nearly 1/2-inch-deep weld to adhere. Bryan McCully slowly turns the housing on the stand as Moore runs the Miller MIG welder. Care should be taken to protect the spindle bearing and seal surface from weld spatter.

10 To fill our full-floater rear axle, McCully set up a new 5.38 Yukon ring-and-pinion on a 35-spline Dana 60 spool. Yukon also supplied a full installation kit with new pinion and carrier bearings.

11 In addition to the spool, we also used a forged 1350 pinion yoke from Yukon Gear. A spool can be hard on tire wear because of the lack of differentiation during turns, but



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it always applies power to both tires, making it simple and very strong.

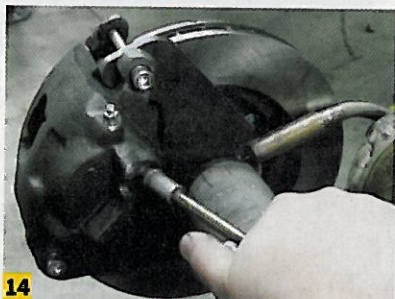
12 The ARB high-tensile nodular iron differential cover is unique because it has both a magnetic fill and drain plug as well as a dipstick to easily check fluid level. ARB also designed the diff cover to strengthen the housing to assist gear and bearing support.

13 Solid Axle's 5-on-5 1/2 full-floater conversion kit includes everything needed to build the axle, even new wheel studs and vented brake rotors. We used a large press to assemble the hubs and rotors. Solid Axle also offers 6-on-5 1/2 and 8-on-6 1/2 full-floater kits.

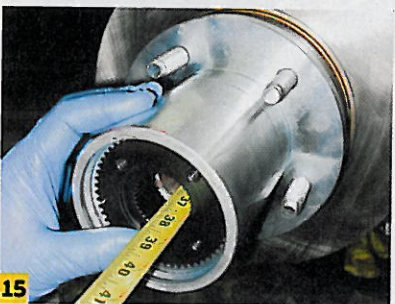
14 With the rotors and hubs assembled and installed on the axle we installed the caliper mount. To get the mounts properly aligned, we applied air pressure to the caliper to center it on the rotor and then tack-welded the stands to the housing. Be sure the bleeder valve is up and the brakes do not interfere with the suspension before you weld them on.

15 The axle needs to be completely assembled before you can measure for axleshafts. Carefully measure from the inside of the splines in the carrier (spool) to the outside of the splines in the Solid Axle drive gear

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in the hub. Then add 1/4-inch for a snap-ring groove, and you have a final length.

16 We had Spidertrax custom-make our axleshafts out of 300M chromoly. This high-tensile alloy is much stronger than normal axleshafts. Plus, these axleshafts are machined to length at Spidertrax's facility in Colorado, not overseas. Notice how the axle is turned down after the splined section. This offers optimal shaft torsional twist and reduces the stress on the splines.

17 After the axleshafts are machined to length and the splines cut, the axleshafts are sent out for heat treating. This is followed by a cryogenic freeze. These high- and low-temperature treatments align the molecules of the material to reduce internal stress and increase strength significantly over the raw material.

18 The final step of the assembly is bolting on the aluminum drive flange caps to protect the hub internals. The full-floating design allows for the spindle and housing to support all the weight of the vehicle while the axle's only job is to transmit the drive energy. Add to that the strong Spidertrax axleshafts, always-locked Yukon spool, and large disc brakes, and you have a fool-proof full-floater. 



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STRONG? YES. CHEAP? NO.

Solid axle	Full-floater kit	\$1,120
Solid axle	Drive flanges	200
ARB	Diff cover	170
Yukon Gear	Gears & install kit	365
Yukon Gear	Spool	240
SpiderTrax	300M axleshaft	900
TOTAL		*\$2,995

*Plus the cost of a junkyard housing and labor to machine, weld, and set up gears

SOURCES

ARB USA
800.761.8158
www.arbusa.com

FABWORX OFFROAD
707.578.9679
www.fabworxoffroad.com

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