

Built-From-Scratch Loader Tractor, Backhoe

By Jim Ruen, Contributing Editor

When long-time reader Brian Laine took the time to tell us about a guy who built a tractor loader with a backhoe – all from scratch – we figured it must be good because Laine is a pretty innovative guy himself (Remote-Controlled Tractor, Vol. 40, No. 3). So we chased down the tractor builder.

“I started out building a loader for my garden tractor, only to discover the garden tractor had been misrepresented to me when I bought it. It didn’t have enough power,” says Don Forgash, of Tehachapi, Calif.

Even though the garden tractor was the first tractor he’d ever owned, he decided to build a bigger tractor so he could use his new loader. Fortunately, he had a pile of 3-in. sq. stainless steel tubing to get him started.

After about 4 mos., he had a new tractor that was roughly 7 ft. long and about 4 1/2 ft. wide. He powered it with a 13 hp. Harbor Freight engine fitted with a White hydraulic pump from an old lawn tractor.

The drive consisted of transaxles with 1-in. axles and Peerless transmissions with 4 forward gears. The hydraulics powered a motor with 2 belts, one to the rear axle and one to the front for 4-WD.

“I fabricated the front steering knuckles to work with CV driveshafts to drive the front wheels,” says Don. “The biggest challenge was getting the ratios right between the variable speed White pump and the transaxles. I ended up going with a high torque, low rpm motor.”

Don even used stainless steel for the hood and tanks.

Once he had the small tractor and loader built, Don started thinking about adding a backhoe. But he realized the size backhoe he wanted would be too heavy for the tractor.

“That’s when I decided to build an even heavier-duty tractor out of automotive grade parts,” explains Don.

Knowing he would also need a larger loader for the new tractor, Don started looking around, settling on the design of a Deere 300.

“I liked the curves of the loader, but also the hood and fenders, as well as the color,” he recalls. “I borrowed some features and ended up building a loader with a little bit of Deere and a little bit of Don.”

A Ford Mustang 8.8 rear end was his starting point. He ordered skid steer wheels and tires for it, as he wanted the extra thick sidewalls.

Instead of stainless steel, he went with 2 by 6-in., 3/32-in. steel tubing for the frame. He used a solid 2-in. bar across the frame to reinforce loader mounting points.

The front axle was fabricated from 3/8-in., 4 by 4-in. square steel tubing to carry the weight of a full loader bucket. He used a 1 1/4-in. pin for the center pivot. He went with rack and pinion steering after chopping out a few inches and welding it back together. He modified the front spindles and added disc brakes.

“I also shortened the rear axles and made them into full floating axles so they turn the wheels, while the weight is supported by a wheel bearing hub.”

Don made mounts for the hubs to hold disc brake calipers instead of a drum brake. The hub also holds the axle seal. Since he had the rear end torn down, he changed the gear ratio and rebuilt the positraction disc.

“I had an old Datsun pickup truck motor that I rebuilt with new pistons, bearings, oil pump, valves and spring,” says Don. “I mounted it backward in the tractor, as I intended to power the hydraulic pump off the engine’s front pulley.”

To drive the rear axle, Don attached a disc brake to the differential, connecting it to a disc brake attached to a hydraulic wheel motor. A third disc brake was run backwards toward the engine to act as a parking brake.

Things began to get complicated when he discovered the crankshaft pulley was cracked. Unable to locate a replacement pulley, he decided to fabricate a pto shaft to transfer power to the pump.

He opted to replace the power steering pump with electric steering, reducing engine load and freeing up space in the engine compartment. “I found out about Toyota’s electric steering and got hold of a used steering column,” says Don. “A YouTube video gave me enough to get started.”

He had to shortcut control components to bypass the need for computer inputs. He also had to fabricate brackets for mounting it.

Don also upgraded the alternator to a chrome Delco 105 amp.

To get the curved fender and hood look he wanted when bending sheet metal, Don made an “English wheel” with a cast iron wheel and a caster off an engine stand mounted to 2 by 2-in., 1/4-in. tubing.

When building the loader, cutting out and assembling the arms was the easy part. Bending a 5 by 6-ft. sheet of steel for the bucket was more complicated. Don started by making a frame with 2 by 2-in., 1/4-in. tubing and a 5-ft. long, 1/2 by 6-in. flat bar of steel attached to an air-over-hydraulic jack. Once he had the bends in place, he wrapped it with 1/4 by 6-in. steel straps and added 2 hooks for chains and brackets for the loader arms.

“I added armor to the sides and a piece of 5/8 by 6-in. plow bar steel for the edge and topped it off with 7 caterpillar style teeth,” says Don. “I added similar teeth to the backhoe bucket.”

For complete details on Don’s projects, he suggests visiting www.mytractorforum.com where he has posted many photos and descriptions of the work. Just search for him under the user name “Donewrken.”

“The encouragement was really important,” says Don. “I had over half a million hits on Part One alone with people following the build from Portugal to South America, as well as from North America and elsewhere.”



Don Forgash built this loader tractor with backhoe from scratch. It’s powered by the rebuilt engine off an old Datsun pickup.



He calls his backhoe the “Don Hoe”.



Tractor is shown here before the sheet metal was added.



This is the first tractor Don built.

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AntiqueFarmEquipment.com
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