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Diamond-Shaped Tillage Chain Catches On Worldwide

The diamond harrow design of Kelly disc chains is unique in the tillage world with its four diagonal rolling chains. Known as prickle chains in Australia, they include interspersed discs. Peter Kelly was the first to attach them in a diamond formation. He did so for use on his own farm originally and then started building them for neighbors. He and his son Shane have continued modifying and expanding the systems for use in seedbed preparation, cover crop termination, and weed control.

"In the early 1990's, the Kelly farm was dealing with extremely heavy residue loads and needed a tool to manage them," says Taylor Reid, Kelly Tillage. "Prickle chains were not unique at the time, but his design with its overlapping wing fold was highly original and effective. He realized he could increase the chain's effectiveness by increasing the working area of each link."

Kelly disc chains operate at only 1 to 2-in. depths, depending on soil type, blade sharpness, disc weight, and density/

distribution of crop residue. This minimalist approach to tillage has made the system a popular option for spring cover crop termination.

"The disc chain mulches and incorporates the cover crop, returning the nutrients and organic matter to the soil, providing a fertile growing environment for the cash crop," says Reid.

Kelly disc chains are manufactured and assembled in Australia and by a local partner in Argentina. A North American assembly plant in Missouri was recently announced. Reid reports the machines are used in 34 countries on every continent aside from Antarctica.

The tillage systems are offered in five overlapping wing models and the 12X, a new, low horsepower, fixed frame model. Each model can be customized with one or a combination of four different disc chains. They vary from the 20-lb. W36 with a chain weight of 36 lb./ft. to the CL2 with its 53-lb. discs and 74-lb./ft. chain weight. Three of the disc chains are full discs, while the spiked disc chain features 10 spikes per disc center. It's recommended for weed removal.

The 12X is the latest product added to the Kelly Tillage System line. Reid describes it as a combination of the effectiveness of the disc chain with the simplicity and low hp. requirements of a sturdy frame. It requires only 60 to 80 hp.



Rolling or "prickle" chains use interspersed discs.

"The larger Kelly Tillage Systems are intended for broad acre cropping," says Reid. "The 12X has a range of uses from smoothing wheel ruts in dirt roads or irrigation ruts in a field to preparing food plots and controlling weeds in rice turn rows."

The tillage systems can be fitted with seeders, both Kelly-designed and Montag. Hoppers vary in size from 30 bu. to 70 bu., depending on the system's center frame.

"Contact your Kelly dealer to customize a Kelly disc chain system to your soils, vegetation residue, and weed control needs," says Reid.

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Skid Steer-Mounted Cement Mixer

John Krueger can scoop up cement, sand and water and then mix it on the way to where the finished concrete is needed. His shop-built mixer rides in the bucket of his skid steer. When he gets to the form he wants to fill, he has complete control of where, when and how fast he dumps.

"I had an old tumbler drum, once used for polishing ball bearings, laying around and decided to put it to use," recalls Krueger. "I welded a 2 1/2-in. shaft to the center of the drum's bottom and made a housing for the shaft from 3/8-in. steel plate. Two pillow block bearings on the inside of the housing hold the shaft in place."

He designed the housing so he can drive into it with the bucket and scoop it up. The housing has a slot on the bottom that fits over the bucket lip. Two steel straps on the sides of the housing pin to clevis hitches welded to the top lip of the bucket.

"I mounted paddles to the inside of the drum at 35 to 40-degree angles to mix the materials as they are added," says Krueger. "A commercial mixer rides on rollers, but it can't be dumped. Because mine is fixed to the bucket, I can tip it to a vertical position." To drive the mixer, he mounted a #80



Tumbler drum was once used for polishing ball bearings.

chain sprocket on the shaft between the housing and the mixer. The chain runs to a jackshaft driven in turn by a chain from a sprocket on a hydraulic wheel motor. It runs on the skid steer's auxiliary hydraulics.

"Because it's a hydraulic motor, I didn't have to worry about sprocket ratios," says Krueger. "I can control the rotation speed from the skid steer cab or alongside it."



Mixer can handle up to 4 1/2 cu. ft. of concrete at one time.

Krueger's older-style skid steer has two levers for control of the machine and two spring-loaded floor pedals for control of auxiliary valves. Each floor pedal rotates the drum in a different direction.

"I rigged up a remote set of levers, which I mounted to the side of the skid steer," says Krueger. "It presses down on one of the floor pedals, as I only need the drum turning in one direction. When released, it goes back to a neutral position, and the drum stops turning."

Krueger notes that the mobile mixer is a big improvement from his previous small



Shaft welded to center of drum bottom have a steel plate housing and two pillow block bearings inside.

stationary cement mixer.

"I can drive over to a stack of 94-lb. bags of cement and tip the bucket to slide in a bag," says Krueger. "The tumbler is big enough to handle making the full 4 1/2 cu. ft. at one time."

Meanwhile, Krueger's wife has found a new use for the old mixer - making compost for her garden.

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2-pt. Backhoe Mounts On Skid Steer Bucket

When John Krueger needed a backhoe for work around his farm, he built one for his 2-pt. lift Deere M. When he later bought a skid steer, it only made sense to convert the backhoe to a bucket mount.

"I originally powered it with a hydraulic pump driven by a belt pulley on the M," recalls Krueger. "When I modified it for the skid steer, I built a mount that slides onto the bucket. I just drive up to it, scoop it up, and drop in two pins to hold it in place."

Auxiliary hydraulics on the skid steer replaced the pump, but Krueger kept the spool valve and the seat. The spool valve has three functions for the bucket plus the right and left swing.

"I get into position with the skid steer and then get out of it and onto the backhoe seat," says Krueger. "It's a little inconvenient, but

it beats using a shovel."

If he wants to dig a trench, he leaves the skid steer in neutral. As he grabs a bite with the backhoe, it pulls the skid steer along.

"If I want to stay in one position to dig a larger hole, I put down pressure on the bucket for added friction, and the skid steer doesn't move," says Krueger.

Krueger based his backhoe design on commercial units, making the main boom about 6 ft. long. With the 4-ft. stick or bucket arm, Krueger can reach down about 8 ft. He added heavy-duty gusset plates to strengthen joints and as mounts for his hydraulic cylinders.

"I used 3 to 3 1/2-in. cylinders I salvaged from other equipment or picked up at auctions," says Krueger. "I used ones that provided the stroke I needed. The gusset



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plates are 1/2-in. steel. I may have overdone the strength, but I wanted it to be safe. I welded most of it with 718 rods. It's harder to grind down, but it's better for penetration

and seems to hold better."

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