



The compact Harlo HP5000 is ideal for narrow-row orchards. The forklift meets Final Tier 4/Stage IV emissions with the EWX 4.5L engine.

A FORKLIFT FACE-LIFT

**Harlo Products Corporation
put a lower-horsepower
diesel engine in its
rough-terrain forklift
without compromising speed
and lifting power**

California's fertile soils and numerous sun-filled days give rise to a tapestry of vineyards, citrus orchards, and vegetable crops. During harvest, bins of fresh produce burst with color — displaying a visual reward for a season of hard field labor.

For the Harlo HP5000 forklift, the work is just getting started. Equipped with bin-carrying attachments, the forklift loads the produce-packed bins onto trucks — flexing its muscles fueled by a diesel engine that's well acquainted with work on the farm.

John Deere engines have been powering Harlo forklifts for decades, stemming from a history that began in the 1980s when Harlo collaborated with John Deere to build rough-terrain forklifts. Today, Harlo Products Corporation of Grandville, Michigan, continues to build rough-terrain forklifts to meet a variety of needs. John Deere-powered models include the HP5000, HP6500, and HP8500, whose numeric model numbers reflect their lift capacity in pounds. The forklifts find work on farms, construction sites, oil and gas pipeline projects, scrap yards, and lumberyards.

For years, Harlo Products powered its forklifts with 74-kW (99-hp) John Deere engines. In anticipation of tightening emissions regulations over the years, Harlo engineers redesigned its forklifts with an engine that would not require diesel exhaust fluid (DEF) to meet Final Tier 4/Stage IV emissions. Harlo Products found that solution in the 55-kW (74-hp) John Deere PowerTech™ EWX 4.5L engine.

Lowering the forklift's power from 74 to 55 kW (99 to 74 hp) led Harlo to rethink a few design elements to maintain the same speed and lift capacity as previous John Deere-powered forklift models. Some of the forklift design improvements began several years ago. Harlo engineers improved the hydraulic system by incorporating a piston pump for more controlled pressure

efficiencies. They also enhanced the cooling system, which is now more durable and has better convection numbers to meet Final Tier 4 requirements.

“Our main goal was for the operator to hop on our unit and not see any difference when they drive it.”

— Mike Birkmeier, Harlo Products Corp.

Harlo purchases customized drop-in power units from its John Deere distributor, Superior Diesel. The new forklift design required the aftertreatment system to be repositioned away from the vehicle's hydraulic tank. To accomplish this, Superior Diesel engineers designed and fabricated a cradle for the diesel particulate filter (DPF), including custom mounts and exhaust

The EWX 4.5L engine does its job, too. Running at 2400 rpm, the EWX 4.5L engine delivers 304 Nm (224 ft-lb) of peak torque.

“Torque is king,” says engineering manager Mike Erhardt. “That's what you use to power the hydraulic system and to turn the wheels at the same time.”

While customers may notice some external changes, deep down, it's still the same reliable, powerful forklift they've always known.

“Our main goal was for the operator to hop on our unit and not see any difference when they drive it,” says COO Mike Birkmeier. And he believes the EWX 4.5L engine will deliver the goods, just like its 4.5L predecessor engines. “A lot of people like the 4045 (4.5L) engine,” says Birkmeier. “It's a tried-and-true workhorse in the John Deere lineup.”

 Distributor: Superior Diesel in Rhinelander, Wisconsin; www.sdiezel.com



A Harlo HP5000 loads bins of harvested mandarins onto trucks near Fresno, California.

tubing. Superior Diesel also supplied cab controls so operators could monitor the engine and aftertreatment system.

“We've had very, very minimal challenges with this changeover to EWX 4.5L Final Tier 4 engines,” says Dean McCarrick, director of sales and marketing. “People are very happy that we went with the smaller engine to steer away from the DEF and that we still maintained the same speed and lifting power as before.”



Harlo has the engineering design expertise to customize forklifts, such as this HP6500.