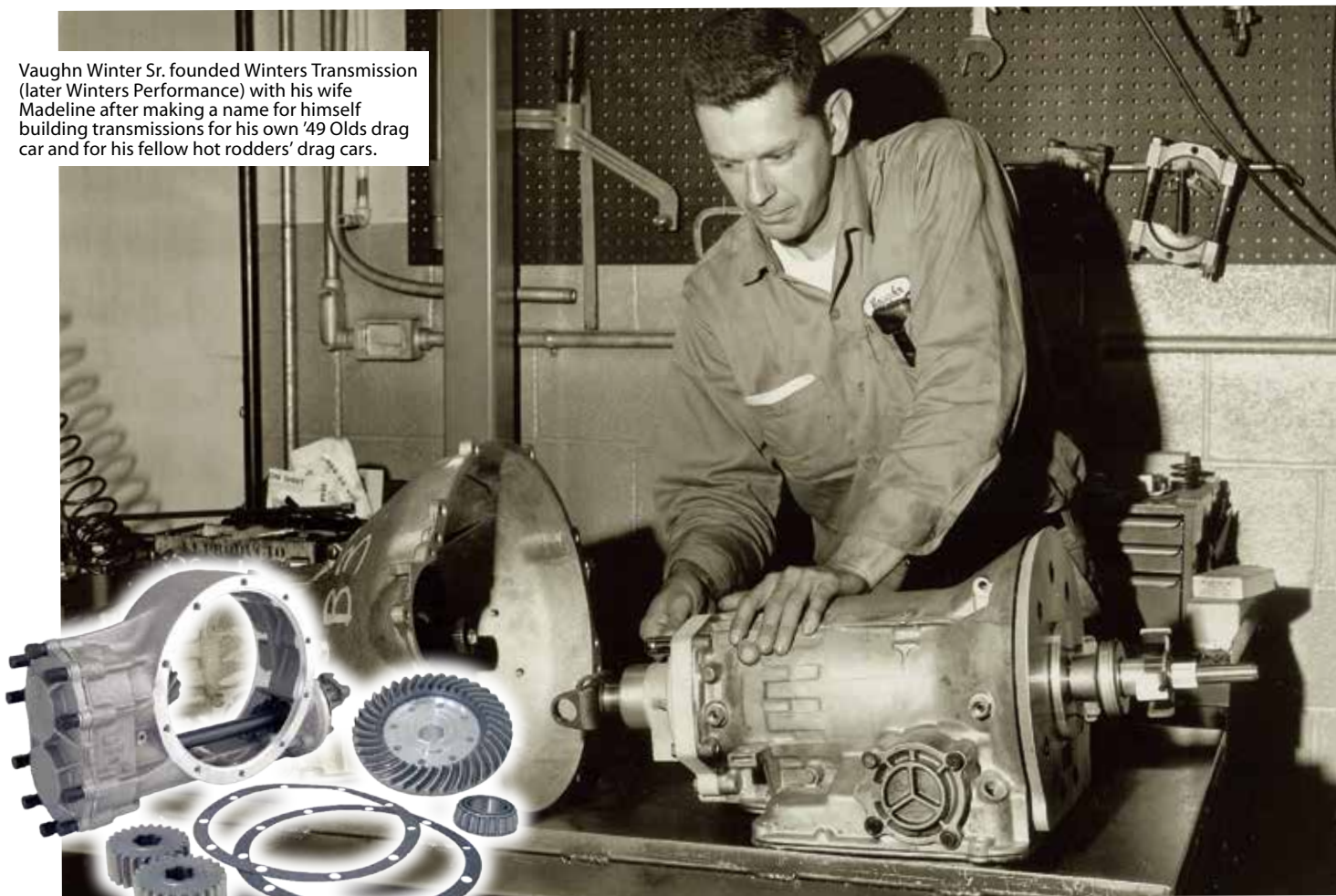


# WINTERS PERFORMANCE SINCE 1958

TEXT: CURT ISELI  
PHOTOGRAPHY: CURT ISELI AND BRAD GOSSERT

Vaughn Winter Sr. founded Winters Transmission (later Winters Performance) with his wife Madeline after making a name for himself building transmissions for his own '49 Olds drag car and for his fellow hot rodders' drag cars.



**Q**uick change rear ends have been a staple of our hobby since the first hot rodders adapted the race-bred rears to their street cars over 70 years ago. The premise is simple: instead of the driveshaft connecting directly to the ring and pinion as it does in a traditional fixed-ratio rear, on a quick change, it connects to a lower shaft running beneath the ring and pinion to a pair of vertically-oriented spur gears that drive the pinion. These spur gears can quickly and easily be changed in the

pits, the parking lot, or the side of the road in just a few minutes, allowing you to dial in the perfect rear end ratio for any conditions—whether you're cruising down the highway or blasting from stoplight to stoplight (or Christmas tree to big end of the track).

Winters Performance has been manufacturing speed equipment for hot rods and racecars since 1958, and over the last 50 years, their name has become synonymous with quick changes in particular. Their quick change rears were born on the racetracks, where Winters is still the

leading quick change manufacturer among Sprint, Midget, Modified, and Late Model racers. But they've also applied their race-proven technology to rear ends that look right at home in today's hot rods while delivering the strength and performance that's earned them their reputation on the track.

For hot rodders, the two most popular rears Winters makes are the V8 Quick Change, which has an 8-3/8" 3.78 ring and pinion, and the larger Champ Quick Change, with its 10" 4.12 ring and pinion. The V8 rear is rated to handle up to 550 horsepower, and the Champ is



Completed Independent Quick Changes in natural cast and thermal dispersant-coated finishes are bound for the shipping department.



Winters manufactures a wide range of driveline components for the dirt and asphalt racing world. These are pallets of live axles for Sprint cars.



Quick changes are available in natural cast or polished finishes. Here a cart of polished center sections, tapered steel tubes and bells, and axles await final assembly.



Halfway through final assembly, this Steel Tube & Bell V8 Quick Change already has its Wedgelock differential and bearing cone installed.



An overview of the final assembly area shows a variety of street and racing rears in process.





Quality Control lead Josh Forbes pulls the first and last sample out of every component run, as well as random samples in between, to check the part's specifications against a computer model using this Coordinate Measuring Machine.



Winters tries to make sure their customers are ready to race come Friday night by keeping plenty of components like these driveshafts and axles on the shelves, ready to ship.



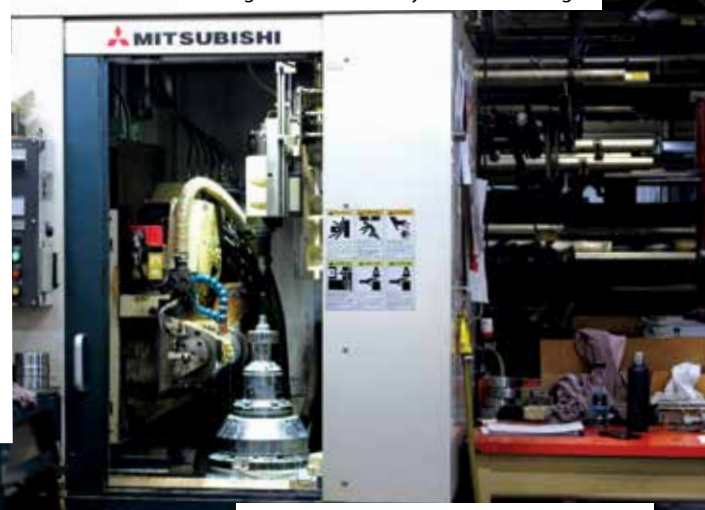
Bins of gear blanks await their turn in the hobbing machine where they're made into quick change gears.



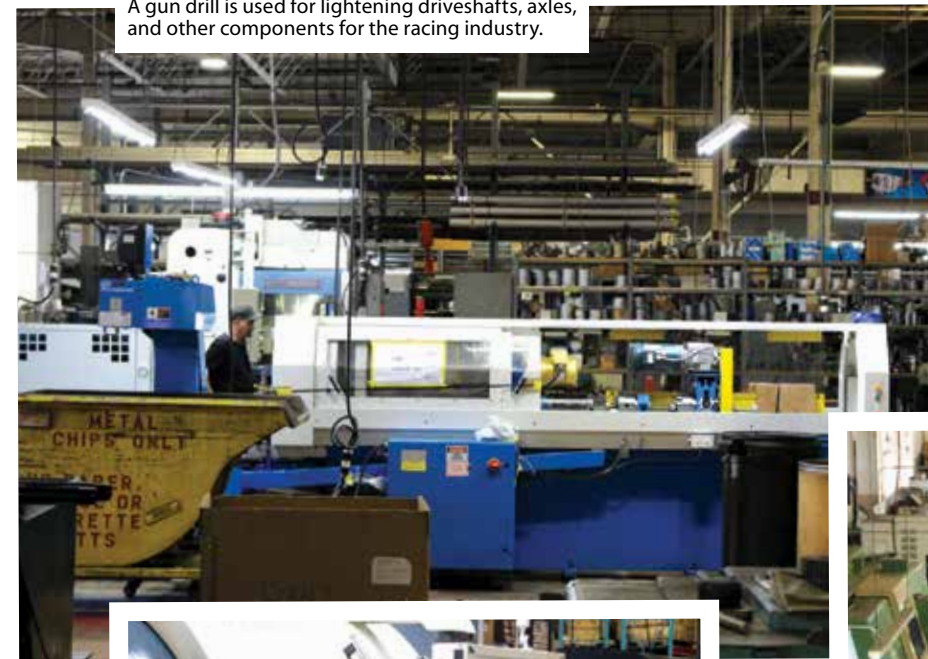
What started as blank slugs have been cut to make gears that are ready for heat treating.



Winters offers nearly 100 gear sets collectively for their quick change rears—which equates to nearly 200 available ratios.



The CNC hobbing machine cuts gear blanks into gears in a matter of about a minute.



A gun drill is used for lightening driveshafts, axles, and other components for the racing industry.



In addition to their CNC machines, Winters employs a great deal of manual equipment like these hobbing machines for cutting splines in shafts and performing other operations.



A CNC lathe creates lower shafts from slugs of titanium that will be used in Midget quick changes.



The lathe department includes a variety of standard and CNC lathes and twin-spindle gantries for making quick change gears, Sprint car axles, and other components.

rated for about 1,000, though both can take more depending on factors like tire size (drift racers are putting 1,500+ through Winters rears without any trouble). Both sizes feature a limited-slip differential (Winters Wedglock in the V8 and Winters Track in the Champ), and they're available with 31-spline Big Bearing or Big Bearing Torino flanged axles as well as various drum and disc brake kits (including the popular Boling Brothers Lincoln or Buick-style drums). Solid axle quick changes come with factory Ford-style steel tubes and bells for an early, nostalgic appearance or ribbed aluminum side bells and straight tubes. And for more contemporary, high-performance builds, Winters makes an Independent version of the V8 and Champ rears.

Winters worked with the late Dick Spadaro to develop a couple of center kits that allow builders to use original '35-'48 Ford parts. Their Vintage Bell V8

Center Kit mates the early Ford tubes and bells with a complete Winters center and internals. The Early Ford V8 Center Kit allows for the use of '35-'48 Ford carrier assemblies, axles, and bells with a Winters center section and components.

For those looking to replace their tired banjo rear but maintain the factory look, there's both a V8 and Champ-size "No Change" Banjo rear with either ribbed aluminum side bells or OE-style steel tubes and bells. And for more heavy-duty applications, there's the Champ Heavy Duty Quick Change, with a reinforced center section and deeper gear cover, as well as the land speed racing-geared Xtremeliner, which features its own unique center section, 22-spline spur gears (compared to the 6-spline V8 and 10-spline Champ gears), and either a 3.08 or 2.00 ring and pinion. They even manufacture custom aluminum 9-Inch housings and rears as an alternative to the ubiquitous

stamped-steel housings that have been pressed into duty for decades.

Though the company is based in York, Pennsylvania, Winters' history can be traced to the drag strips of Wyoming. While stationed in Cheyenne with the U.S. Air Force, Vaughn Winter Sr. spent much of his spare time drag racing a '49 Olds 98 and building transmissions for himself and his fellow racers. Before long, his skills were in high demand, and racers and car dealerships from as far away as Denver, Colorado, began turning to him for their transmission work.

Following his discharge, Vaughn and his wife, Madeline, returned to their home state of Pennsylvania, where in 1958, they formally established Winters Transmissions (which later became Winters Performance). In the years that followed, he earned a reputation for building top-notch transmissions and driveline components

To keep up with demand for parts, you've got to keep racks of tubes, shafts and raw materials.



CNC mills and palette changing machines handle the operations necessary to take a raw center section casting to a finished piece. This first operation machines the face and interior, then drills and taps the holes to mount the bells. A five-axis mill handles the rest of the machining.



A palette of Champ center section castings awaits its turn in the milling department.

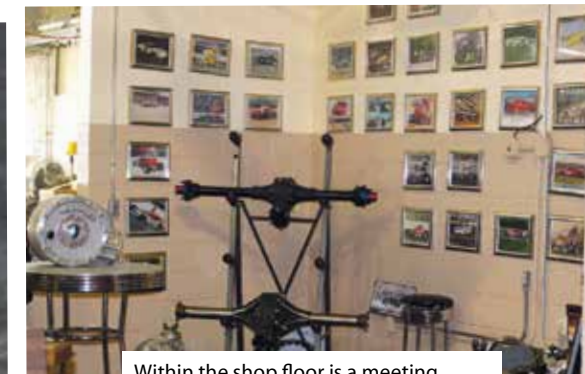


Beyond the dirt track and hot rod world, Winters' parts are found in all manner of drift cars, off-road vehicles, and other specialty automobiles. The massive milling department helps keep all those rear ends in process.



The expansive lathe department is equipped to handle a wide range of processes.

Many internal components such as these pinion gears are REM-finished, which improves lubrication and minimizes friction.



Within the shop floor is a meeting room where visitors will find all manner of Winters components and history.



Bins of ring gears await final assembly. Because strength is a priority, Winters uses ARP ring gear bolts exclusively.



Parts go to the metal finishing room for deburring and polishing of steel and aluminum, as well as REM-finishing internal components.



While hobbing machines handle parts like spur gears, these shapers are used for internal and external splines on tubes and shafts.



This overview gives some perspective on the amount of equipment required to produce all of Winters' rears and driveline components.

for the racing and high-performance communities, building on his own experience and keeping up with the latest technologies and equipment to create parts that made racers and hot rodders faster, quicker and safer.

Today Winters remains a family-owned and operated business. Unfortunately, Vaughn passed away earlier this year, just a week after his 90th birthday. The business is in the hands of his daughter and grandson Bob, who worked alongside Vaughn for decades. Along with a roster of longtime employees, they are continuing Vaughn's legacy and commitment to quality and innovation.

That commitment is evident not only in the products they make but

in their sprawling 110,000-square foot facility in the heart of York. Their team combines decades of experience, skill, and craftsmanship within its walls with the most cutting-edge manufacturing and quality control equipment available. Rows of machines—from standard mills and lathes to gun drills, CNC-driven five-axis machines, palette changers, and twin-spindle gantries—hum along as they turn raw castings and slugs of aluminum and steel into the components that go into the quick changes, transmissions, and other driveline components shipping out of the facility each day. Parts are checked in-process using a portable Faro arm to verify a sample's specs compared with the computer-generated model. Then, the finished parts are rechecked in a robotic

Coordinate Measuring Machine (CMM).

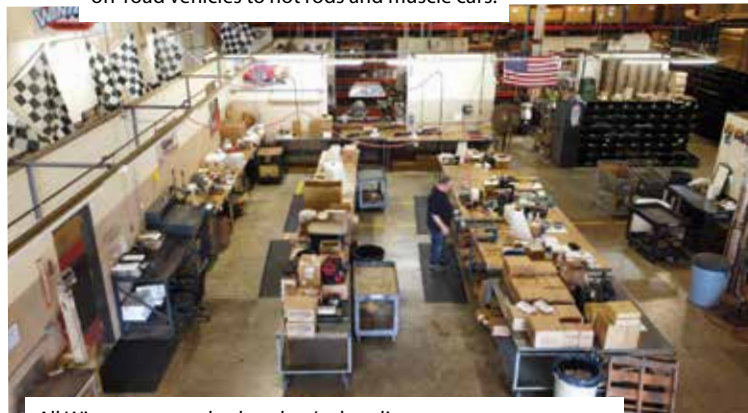
But beyond all the equipment and technology is a company with the singular goal of serving the racing and high-performance community. When you call their offices, the phone is answered by customer service staff that can answer your questions or connect you with a technician who can. So as you're planning your next project, or considering upgrading a current one with a quick change rear end, give them a call. They're happy to answer your questions, and they can also send you a copy of their Hot Rod Rears catalog. It has a great deal of technical information, from set-up tips to dimensional information, that will help you figure out the right rear for your hot rod.



Winters Sidewinder shifters are popular among all manner of performance motorsports, from rock crawlers and other off-road vehicles to hot rods and muscle cars.



The shipping department stays busy boxing completed rears and sending them to their final destinations around the world.



All Winters rears, whether they're heading to customers or to Winters' expansive dealer network, are checked one last time here in the shipping department before they leave the building.



When the company was started in 1958, it was called Winters Transmission. Late founder Vaughn Winter Sr. parked his '51 Chevy shop truck in the family garage in 1972 after years of service. His grandson, Bob, recently pulled it out of storage and is in the process of putting it back on the road.



Tapered steel tubes and bells have been welded and are on their way to be mated with their center sections in the assembly department.



Independent Quick Change assembly supervisor Scott Karl installs sleeves in an aluminum spool. Winters Quick Change rears are available with spools for racing applications or limited slip differentials for the street.



Winters has been located in York, Pennsylvania since the company's founding in 1958. They have occupied this 110,000-square foot facility on Trolley Road since 2005.



In addition to quick change rears, Winters manufactures a few styles of 9-inch housings and rear ends. This cast, polished aluminum housing accepts most OEM and aftermarket third members.



The Champ Quick Change features a 10" 4.12 ring and pinion, Winters Track differential and customer's choice of 10-spline spur gear ratio. Shown here is the Champ Adapter, which allows for the use of either Winters' V8-style tubes and bells or original '35-'48 Ford tubes and bells. Champ Quick Changes are rated to about 1,000 horsepower.



The Champ 9-inch uses a unique, rear-loading Truetrac Posi-Trac differential with a customer-specified ratio. The finned rear cover can be oriented vertically or horizontally.



These brand new Banjo rears replicate the OE banjo look but with modern ring and pinion, differential and internals. They are available in both V8 and Champ sizes with steel tubes and bells or ribbed bells with straight tubes.



For the DIY hot rodder, Winters' Early Ford V8 Center Kit allows the use of a '35-'48 Ford carrier assembly, axles, and tubes and bells with Winters' center section, ring and pinion, carrier bearing and spur gears.



V8 and Champ Quick Changes are available with either steel tubes and bells or ribbed aluminum bells with straight steel tubes. In addition to the Straight Finned cover shown here, they offer a variety of cast and billet gear covers.



Perhaps the most popular rear among hot rodders is the Steel Tube and Bell V8 Quick Change. It features an 8-3/8" 3.78 ring and pinion, Winters Wedglock differential, 6-spline spur gears in the customer's choice of ratio, and original Ford-style tapered steel tubes and bells. V8 Quick Changes are rated up to about 600 horsepower.



The Vintage Bell V8 Center Kit includes all the brand new Winters internal components, but the center section is machined to accept '35-'48 Ford tubes and bells.