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The Bobcat skid-steer loader can turn in its own tracks.

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Bobcat also offers value. A Bobcat is well-built, and backed by a dealer service and parts network second to none. No matter where you put your Bobcat to work, there's a Bobcat dealer nearby with genuine Bobcat parts and service by factory-trained mechanics. In fact, Bobcats are so well-built and maintained that they keep their value at trade-in time, which gives you a big return on your initial investment.

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*Selected by Fortune Magazine as one of America's top 100 products.



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<p>Grader</p> 	<p>Grapples and Forks</p> 	<p>Hydraulic Breaker</p> 	<p>Landscape Rake</p> 	<p>Sweeper</p> 

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The 700 series features three models with a rated capacity up to 1300 lbs.



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Two ocean holes are at sea level, but inland the elevation gets as high as 800 feet on the Kapalua golf courses.

PARADISE FOUND

Maintenance at the Kapalua, Hawaii, golf courses is sometimes a 24-hour-a-day proposition. But superintendent Short Honma and his people have risen to the occasion in the past. And the course shows it.

It is 5 a.m. the day of the 1987 Isuzu Kapalua International Pro-Am. It is the Kapalua Bay Golf Course. A fleet of triplex mowers moves up and down the fairways. The crew's only light comes from the headlamps of pick-up trucks.

Because of the six-hour difference in time between the Hawaiian island of Maui and the Eastern Time Zone back on the mainland where the matches were being shown on television, tee times were very early in the morning, which meant that superintendent Short Honma and his lieuten-

ants were up even earlier.

And there were complications, too. "Because of the rain earlier in the tournament, I ended up using all my extra triplexes. I couldn't take the big equipment out," notes Harry Pali.

And what better superintendents for the Kapalua Golf Courses than native Hawaiians? Pali, in particular, knows the land well: he was born on what is now the fifth hole of the Bay course.

Besides Honma and Pali, Kent "Herb" Nishigima and Andy Tiara round out the managerial team of the

two 18-hole golf courses, known as Bay and Village. Honma oversees the entire operation. Nishigima is supervisor of the Bay course and Tiara super of the Village course.

Lovable tourists

Kapalua is situated in the northern portion of the Hawaiian island of Maui. Visible across the water, providing an idyllic background, is the island of Molokai. Tourists love the place.

"We take pride in what Kapalua is, and what it stands for," says Honma,



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Teamwork is evident among top management: left to right, Short Honma, Andy Tiara, Harry Pali and Herb Nishigima, who split the work.

who oversees up to 43 employees.

The biggest event of the year is the Izuu Kapalua International, played on the 6,731-yard Bay course. The 5,981-yard Village course, however, is referred to in one tourist brochure as "Hawaii's most challenging." Both are open to tourists.

And because of the largely tourist clientele, a large emphasis is put on beauty. Most of the colorful vegetation has been imported: bougainvillea, African tulips, eucalyptus trees, Christmas berries and a Madagascar olive that is called the "Autograph Tree."

Pali is in charge of special projects, which last year included installation of a new sod farm, new tees on some holes and a complete renovation of one Bay course hole.

The original designs came from Arnold Palmer and Ed Seay. Pro golfer Ben Crenshaw has designed an additional 18 holes on which construction begins this month.

"The course had to be designed around 'no-man's-land valleys,'" says Tiara of the Village course. One of

The clayey soil has to be continually aerated.

Kapalua's attractions is its radical change in elevation because of its proximity to the ocean. Two ocean holes are at sea level, but inland the elevation gets as high as 800 feet.

Hard as a rock

One of the major problems is compaction, due in part to the traffic but due also to a clayey soil that has to be continually aerated. The tradewinds also tend to dry the course quickly, complicating the problem.

Common Bermudagrass fairways are mowed at $\frac{3}{16}$ -inch in the winter and at $\frac{1}{2}$ -inch in the summer on the Village course and at $\frac{1}{2}$ -inch on the Bay course, where most of the championship matches are played. "We groom the course finer for tournaments," notes Pali. Stimpmeter readings rise to $8\frac{1}{2}$ for tournaments from the "high sevens" for non-tournament play. "Our goal every year is to make the course the best possible for the International," adds Tiara.

Village Course greens are mowed at $\frac{3}{16}$ -inch in winter and $\frac{1}{8}$ -inch in summer and tees at $\frac{1}{4}$ -

inch. Rough areas are at a standard $1\frac{1}{2}$ inches.

As preparations continue for the new course, excitement grows. Tidwarf sod is being grown on the four-acre sod farm for the fairways of what will be called the Plantation Golf Club.

Before Kapalua opened in 1974, Honma worked at Sea Mountain Golf Course on the island of Hawaii. None of the other three have previous golf course experience. Tiara went from the hotel business to the golf business; Nishigima was a construction worker. They all started as laborers at Kapalua and worked their way up the ladder. To a man, they like working for Honma.

"Short is strict, but an honest and straight-forward kind of guy," observes Tiara.

Honma's direction shows up in solid team management and respect for co-workers evident on the staff. And they need it, to keep the Kapalua golf courses among the most popular in the world. **LM**

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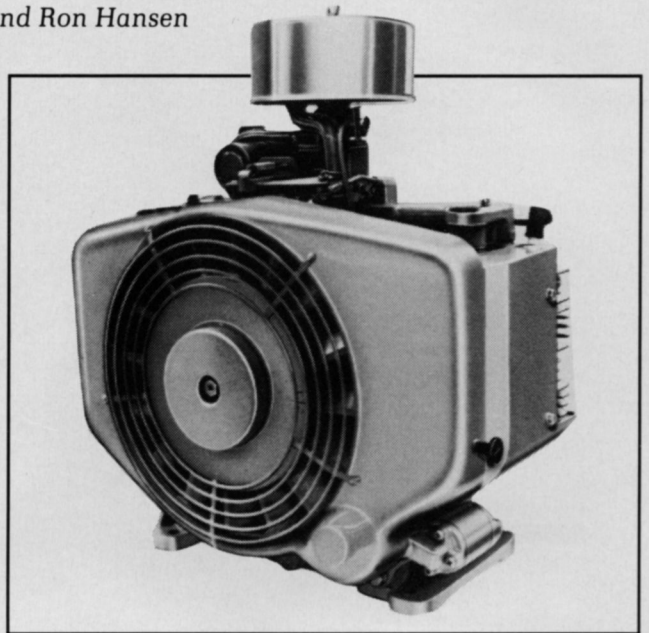
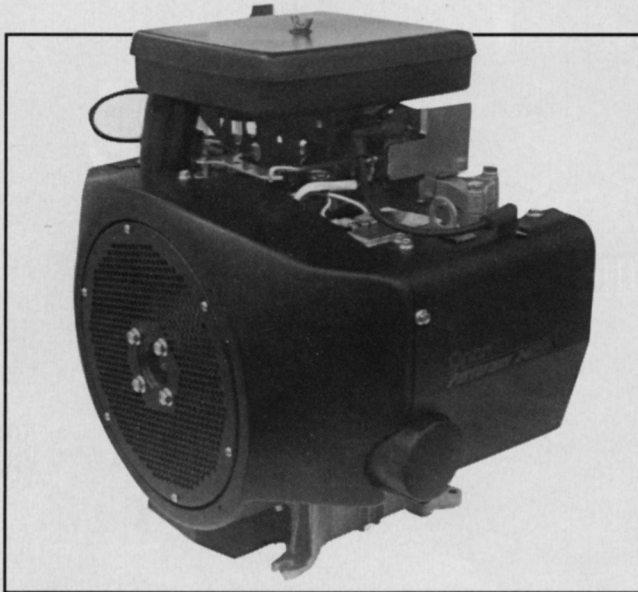
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FILLING THE ENGINE TRAINING GAP

The high-tech features of today's internal combustion engines require a new approach to training.

by Al Jacobsen and Ron Hansen



The improved technology of modern engines is evidenced by this new 24-hp engine (left), which is of comparable size to the older 13-hp model.

Revolutionary changes in automotive engine design have made the engines used on today's commercial turf equipment considerably better than those of just a few years ago.

Engines in the 10 to 25 hp range now boast many high-tech features, including fuel injection, electronic ignition, pressure lubrication and more. Today's engines also offer more horsepower in a smaller package. For example, today's typical 24-hp engine takes no more space than many engines in the 10-14 hp range of just 10 years ago.

While these improvements bring a host of benefits to users of commercial turf equipment, the advantages are not free. As engines have become more sophisticated, they've also gotten more complex.

Today's engines last longer, are more reliable, run quieter and use less fuel than ever before. But at the same

time, the increased level of technology, closer tolerances and the need to more carefully assure proper air flow and lubrication have all placed greater demands on service.

More training needed

As engine maintenance gets more important and repairs more critical, many equipment owners and operators are finding they need added training support from engine manufacturers to get the most out of their lawn care equipment.

In typical turf equipment, the engine accounts for about one-third of the initial cost and at least half of the continuing maintenance cost. Equipment downtime often costs as much as \$100 per hour, not to mention the poor customer service that often follows.

Users at all levels are finding it pays to have an awareness and understanding of engine fundamentals. The need for more knowledge extends beyond service personnel. They need proper training to ensure maintenance and repairs are done in accordance with factory specifications. But

operating efficiency improves dramatically when people at all levels of the organization acquire better knowledge of the service function.

In some companies, everyone from service personnel to operators, first-level maintenance personnel, supervisors and, in some cases, administrative personnel attend factory-sponsored training sessions on engine maintenance. Reports from these attendees give convincing evidence that such company-wide training results in improved operating efficiency and reduced cost.

Course depth increasing

Engine manufacturers have been quick to respond to the user's needs for more training by offering specialized courses and innovative teaching techniques. Onan Corporation, manufacturer of one- and two-cylinder gas engines, is a good example. The company offers specialized training on each product line. The standard engine training class lasts a full week and includes not only engine repair and maintenance, but ways to increase engine longevity,

Al Jacobsen and Ron Hansen work for Onan Corp. in Minneapolis, Minn. Jacobsen is manager of service training and Hansen is engine division merchandising manager.

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To find out more about Jaguar Turf-Type Tall Fescue contact the distributor nearest you or circle the number below on the card in back.

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economy and serviceability.

Other allied training available from manufacturers in a variety of forms includes customer relations, electrical and mechanical fundamentals, even telephone etiquette and more. For larger groups, companies offer on-site training in the field and tailored training to a particular company's needs.

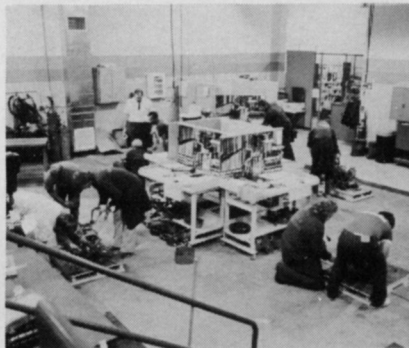
Some manufacturers' training facilities have fully equipped service shops and modern classrooms manned by a full-time staff. The classrooms today are vastly improved over training facilities of the past. In Onan's courses, for example, video monitors are used to zoom in on the most minute engine parts as the instructor explains to students the workings and adjustments of each engine component.

Company trainers stress hands-on training, including complete engine teardown, repair, rebuild and test. Most of this hands-on experience takes place in service training shops, where complete facilities are set up to simulate typical maintenance and repair operations.

Onan's facility has the tools and equipment to support training among



Equipment owners have found that it pays to get additional training



Modern training facilities at Onan feature a fully equipped service shop and staffed classroom.

other things, in valve grinding, cylinder resizing, bearing fitting, electrical test and engine evaluation. Continuing education and updates to existing classes on videotape are also offered. And for those really tough problems, there's an 800 hotline number for immediate help.

Training as an investment

Study after study has shown that investment in training pays off. And the payoff is not only monetary. Training also builds employee pride, teamwork and customer satisfaction.

Progressive companies view training as an investment in the future that is essential to compete in today's ever increasing-technical world.

Engines are too complex and turf equipment is too expensive to rely solely on a maintenance manual and standard tools for proper care. Turf equipment operators, service personnel and supervisors now need more extensive skills to adequately do their job. It takes a dedicated training staff with a properly equipped training facility to impart those skills.

Call your engine manufacturer for information on training best suited for your needs. **LM**

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JACOBSEN. UP FRONT IN LIGHTWEIGHT FAIRWAY MOWING.

Introducing the all-new Jacobsen LF-100, the 5-gang designed to increase your lightweight mowing productivity.

The wing mowers are up front for better visibility. So the operator can hold a closer line—even at mowing speeds over 5 mph—to take full advantage of the 100" cutting width. This unique, up-front configuration also gives better access to all mowing units to quickly empty catchers and make mower adjustments easy.

Heavy-duty reels deliver a greens-like cut. New heavy-duty reel construction provides extra strength for long life in demanding fairway conditions. The fully floating, 22-inch steerable 7-blade reels are heavier, to follow ground contours closely, for that smooth, consistent Jacobsen cut that's the envy of the industry.

True lightweight mowing. Newly designed low-profile turf tires produce the lightest ground pressure, and the rear wheels roll on a different track than the front,

so your tender turf thrives with less compaction. And the wide 4-wheel stance offers excellent traction, increased stability and a tight turning radius.

Built to last. The LF-100 has a proven, rugged chassis, a durable and simple hydraulic system and liquid-cooled diesel engine for a longer, trouble-free life on your fairways.

What's more, the entire machine is backed by your Jacobsen distributor, so you're never far from dependable parts and service support.

See all the LF-100 differences. Ask your Jacobsen distributor for a free demonstration. Attractive lease and finance plans available.

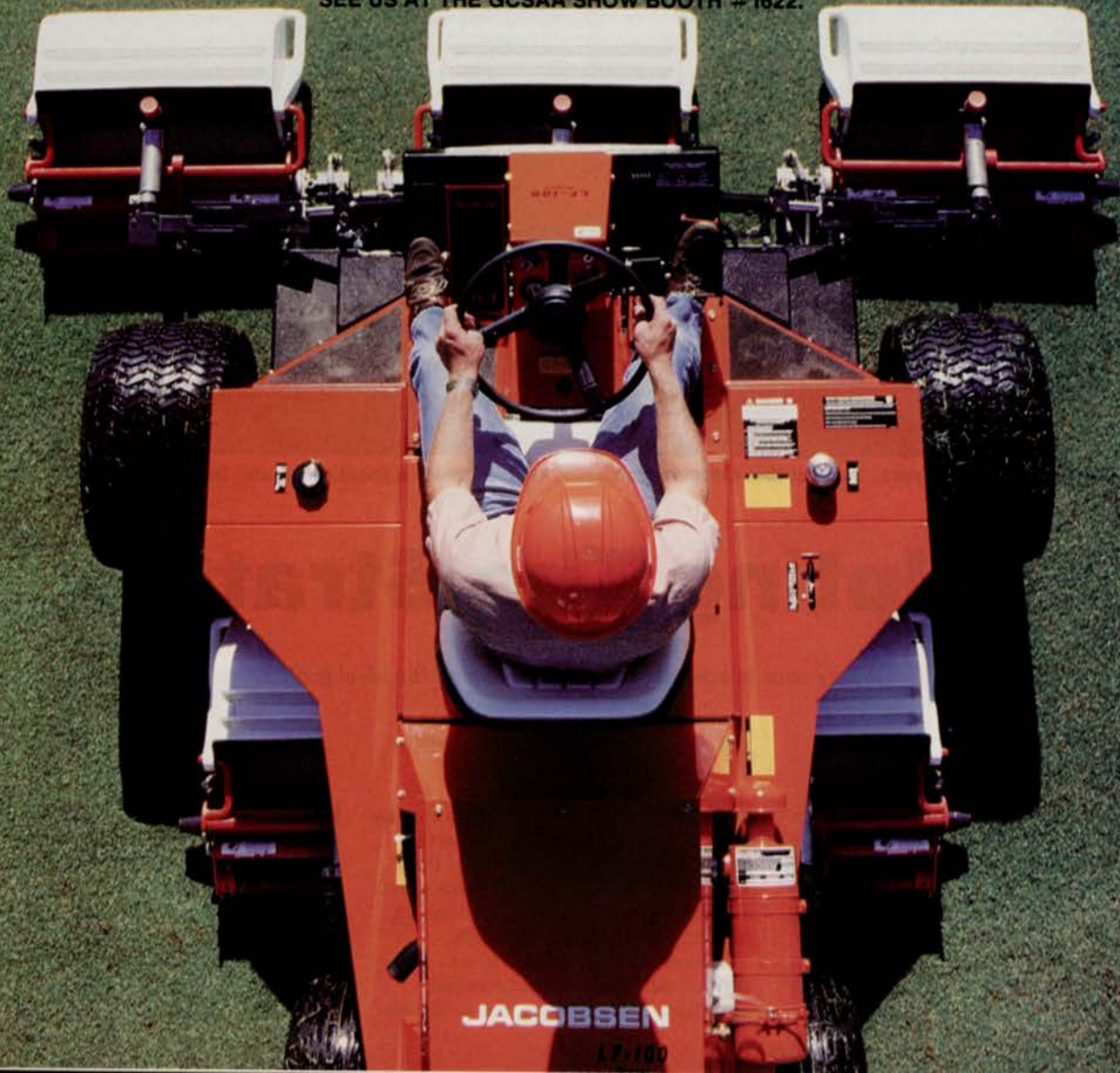
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PROJECT PROFILE



Kesterson preserved several trees at this Oregon residence, which create a focal point and balance the front entry.

Sculpting The Stratford

Every once in a while, a designer is offered the ideal project.

by Will Perry, managing editor

In many ways, landscape designer Daniel L. Kesterson couldn't have asked for a better assignment than to landscape The Stratford, a West Linn, Ore. residence to be featured in the summer house show, *Tour of Elegance*.

There was a nice budget to work with. About \$70,000 worth of

landscaping had been allotted for the 16,000 sq. ft. lot. Also, because the home was to serve as a model for a local developer, Kesterson was given a great deal of freedom in choosing and implementing his design.

There were however, some serious deficiencies that needed attention. For example, the architect

had miscalculated the site elevations on the downhill side of the house, leaving 10 feet of the foundation exposed. Also, more than eight feet of earth washed into the street off the house's north facade.

Kesterson, a designer with Drake's 7 Dees Nursery & Landscaping, Portland, responded to these