

AW NUTS! AND BOLTS, TOO

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Individual storage bins should be labeled with all the necessary information to make locating a part as efficient as possible.

HOW MANY TIMES a week do you find you need to go out chasing around town for a small part — a nut or bolt, perhaps a spark plug? How much time is wasted in the process? Does the person retrieving the parts have something more productive to do with that time? The smaller the part needed, the more frustrating the whole situation is. Granted, no one can have every part ever needed in inventory, but assorted hardware, filters, fluids, and regular wear items should be stocked to accomplish normal maintenance.

Starting with the Nuts and Bolts

Searching through a box of mixed hardware is not much of a storage system. A supply of nuts and bolts, common to any

repair shop, should be in a well-organized storage cabinet. Clearly labeled bins that designate fractional size, threads per inch, and overall length are a necessity. Labeling would read, for example: “ $\frac{1}{4}$ -20 \times 1. This designates a $\frac{1}{4}$ ” diameter bolt with 20 threads per inch and an overall length of 1 inch. Multiple cabinets or bins may be required to organize both fine and coarse thread sizes, along with metrics commonly found on turf equipment. Since $\frac{1}{4}$ ”, $\frac{3}{16}$ ”, and $\frac{1}{2}$ ” diameter bolts are the more popular dimensions found on turf equipment, a larger assortment of these sizes should be kept on hand.

Do Your Bolts “Make the Grade”?

The Society of Automotive Engineers (SAE) sets standards on the tensile strength

rating of bolts. These ratings are identified through a series of lines radiating outwards on the bolt head. Plain-headed bolts without markings, commonly found at the hardware store, are grade 1 or 2. These are lower-standard bolts considered adequate for fastening of accessories (lights, etc.) or sheet metal covers. If you are purchasing bolts at a hardware store, though, you may be causing yourself and your mechanic unnecessary grief through a higher than normal failure rate!

Bolts with three lines on the head are grade 5, generally recognized as the common replacements in automotive and commercial applications. Grade 5 bolts have approximately double the tensile strength of the plain-headed grade 1 or 2 bolt. Grade 6 and

7 are marked with four and five lines, respectively, and offer only a slightly higher strength rating than grade 5. Topping off the list for standard commercial use is grade 8, with six lines marking the head. Grade 8 bolts are found at high-stress points, and are commonly used on heavy-duty trucks and construction equipment. Allen head cap screws are unmarked, but usually are grade 8 or higher. Carriage and stove bolts are not recommended for replacement of even the lowest SAE grade bolts for commercial equipment applications.

Machine screws with special heads, such as flat, round, and pan designations, are not usually marked except in aircraft grades. Sheet metal screws, another special item, may look like a common wood screw; however, this particular variety is hardened, to allow threading into a punched hole. That kind of abuse would twist off the head of an ordinary wood screw. Other fastening items such as set screws, self-locking "nylock" nuts, and flat and lock washers should be available to the mechanic in all popular sizes. Other essential small hardware items are key stock, woodruff keys, roll pins, and cotter pins.

Ignition and Electrical Supplies

One replacement set of spark plugs for each engine found in the equipment inven-

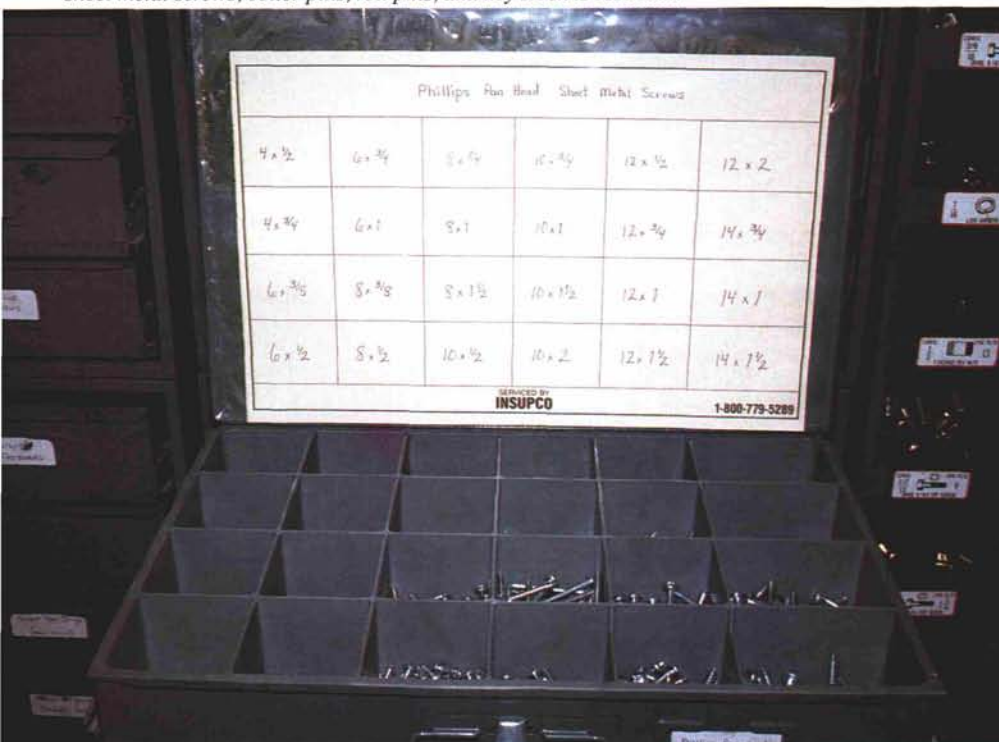
tory should always be on the shelf. Contact points and condensers may also be necessary on early vintage units not equipped with electronic ignitions. Fouled spark plugs should be considered throwaway items, as the cleaning of fouled spark plugs with sand blasters is frowned upon by most mechanics. Using a sand blaster can lodge sand into the cavity of the electrode that later may free itself during the combustion cycle of the engine. You don't have to be a master mechanic to realize the damage caused to the piston, rings, and cylinder wall when sand is introduced into the picture!

Electrical supplies such as fuses, fusible links, crimp connectors, and wire should be available in various sizes. Electrical wire, like irrigation pipe, must be properly sized to handle the flow of current. Sizes ranging from #10 gauge through #18 gauge are most commonly found. However, if battery cables are to be fabricated on site, other sizes from #6 gauge to #0 may also be required. Kits to make battery cables and spark plug wires can prove very convenient, as turf equipment often requires odd sizes not commonly found over the counter at auto parts stores.

Belts

Belts found on turf equipment come in two basic varieties — standard automotive

An organized storage area for miscellaneous hardware such as sheet metal screws, cotter pins, roll pins, and key stock is essential.



type V-series and fractional horsepower (FHP). Automotive V-belts are primarily found on engines driving the water pump, alternator, or an auxiliary hydraulic pump. Fractional horsepower belts are commonly found driving reels, rotary blades, and other power-driven implements. The dimensions of these two types of belts differ, and they should not be considered interchangeable. The FHP belt has a more broad shape, allowing for a greater transfer of horsepower at lower RPMs.

Hoses

Radiator hoses for key pieces of equipment generally should be stocked. Flexible *universal* type hoses can be found at auto parts stores to help get by in a pinch. Regular equipment inspections by the turf equipment technician should spot failing hoses ahead of time. In a real emergency



Having the right parts on hand in a well-stocked repair shop can assist in getting equipment out on the golf course instead of waiting for repairs.

the world famous roll of duct tape may be able to bail you out for an afternoon! Hose clamps of various sizes are often used in a variety of quick fixes around the golf course, and an assorted supply should be kept on hand.

Do-It-Yourself Hydraulic Hoses?

Hydraulic hoses offer two options. The first is to purchase hoses of every shape, size, and configuration from your equipment distributor. This could cost thousands of dollars, depending on your needs. The second option is to purchase the necessary equipment to make hoses on site. This equipment, including a selection of fittings and hose, can be purchased for approximately \$2,500. It requires 10 to 15 minutes to make a hose at a savings of 40% or more. This specialized equipment is available through automotive and industrial supply houses.

Filters and Fluids

It has been said that changing the oil without changing the filter is like taking a bath without soap! Complete sets of filters for each unit should be on hand at all times. Not having a filter available guarantees that the fluids will not be changed on schedule, or that changing the filter itself will not occur. Air, fuel, oil, transmission, and hydraulic filters all should be *on-the-shelf* items.

A one-month supply of anti-freeze, greases, hydraulic oil, transmission fluids, and motor oils would be a minimum to keep stocked at all times. It is very important that fluids specified by the manufacturer or of equal quality are used. Failure to use specified fluids can result in major mechanical failures. Bulk dispensers can eliminate the hazardous waste disposal problems associated with small containers. Many equipment technicians now opt for synthetic lubricants

because of lengthened change intervals and the superior wear protection. This reduces labor requirements for fluid changes and the quantity of waste oil generated for recycling.

Tire Repair Supplies

Patches, plugs, replacement valve systems, and sealant are commonly found in most repair shops. A *plug gun* can allow the repair of a tire without removal from the rim, saving a considerable amount of time. Sealant in a pressurized can is expensive, but can save you in an emergency situation.

OEM and Aftermarket Parts

Certain parts and supplies must be purchased from the turf equipment distributor, also known as the OEM (original equipment manufacturer). Selected parts, including bedknives, reels, and bearings are also available through

aftermarket suppliers. Experience has shown that specialized applications such as bedknife retaining screws require OEM replacements for optimum performance. Local industrial suppliers and auto parts stores can provide a majority if not all of the small hardware items; however, the best advice is to shop around. Prices on nuts and bolts alone can vary greatly, and be sure you are receiving the quality that is needed. If you are looking for service, auto parts distributors often have outside sales staff who can call on the mechanic. They will help set up reasonable stocking quantities and then regularly check inventory levels, relieving the mechanic of this duty.

Stocking the shop with the basic essential hardware items results in a more efficient operation. So stop running around town, and take a little time to get your parts supply stocked right down to the nuts and bolts.