

Cordless finish nailer

BY ROB YAGID

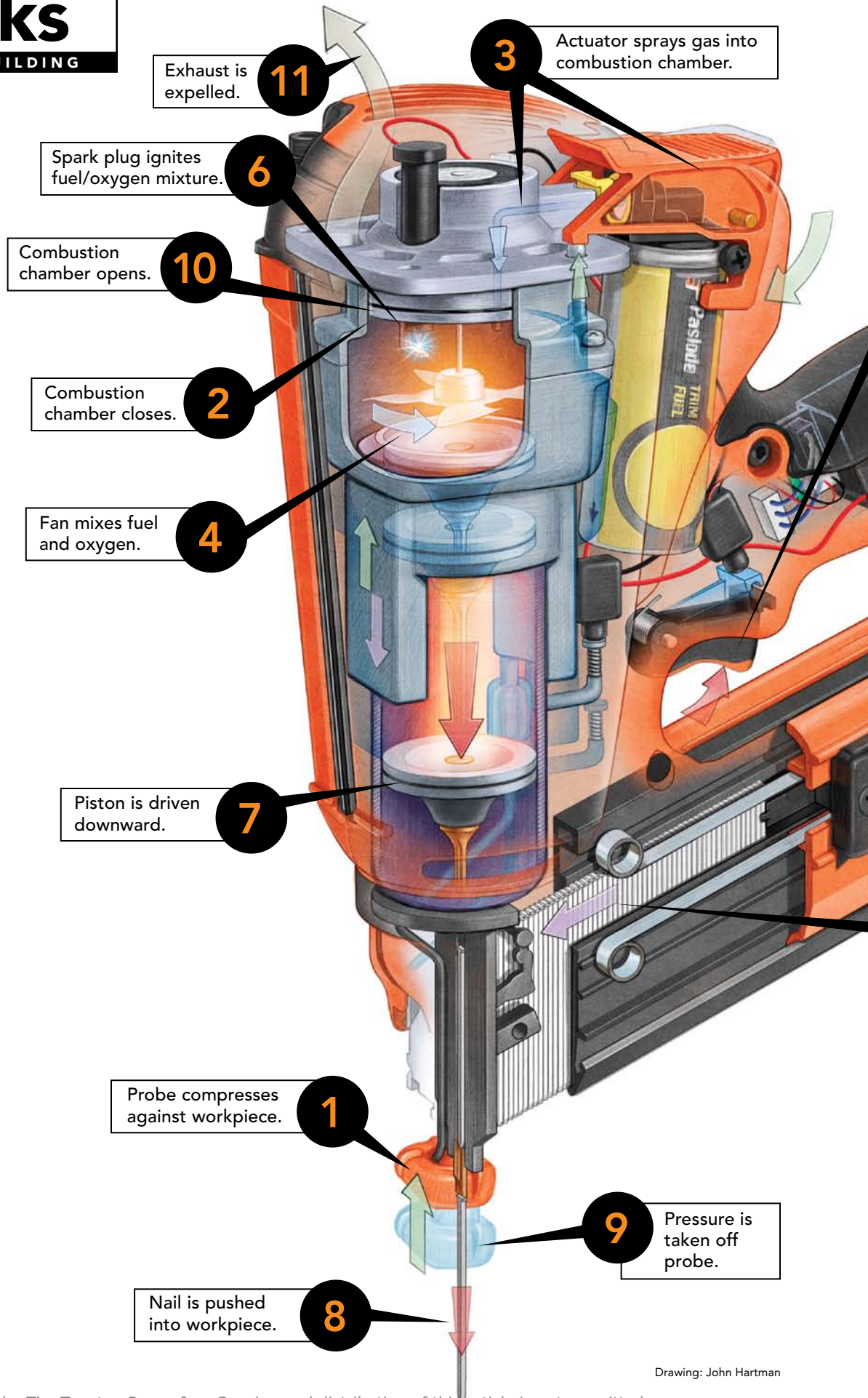
While he struggled with a bound-up air hose, I once heard a Southern trim carpenter mutter, "If you ever have to jump from a plane, be sure you're holding on to one of these, 'cause it's sure to get hung up on something before you reach the ground."

Cordless finish nailers take the hassle, and certainly some of the frustration, out of working with pneumatic nailers that are tied to an air hose and a compressor.

Although cordless finish nailers may not be fit to serve all tasks, they excel on small-scale projects. On pp. 46-50, associate editor Patrick McCombe reviews the newest cordless finish nailers and has found that gas models, like the Paslode IM250A featured here, perform the best.

Unlike other nailers, a gas model demands regular maintenance to function properly, regardless of brand. To know why, you need to understand how it works.

Rob Yagid is an associate editor.





5

Trigger is pulled, sending electronic pulse to spark plug.

12

New fastener is pushed into nail channel.

FASTENING

The combustion and nailing sequence occurs extremely quickly. This nailer can drive up to three nails per second with 30 joules of energy, which is roughly 22 ft.-lb.—enough to drive the 2½-in. 16-ga. nails into even the densest trim materials.

POWER

Instead of an air hose and compressor, gas nailers are powered by a rechargeable battery and a 0.6-oz. fuel cartridge.

A 6v battery powers the fan on top of the motor and an electronic spark unit in the handle of the tool, which—when activated by the trigger—controls the firing of the spark plug.

Maintenance: A 6v battery has enough power to drive roughly 4000 nails before having to be recharged. Roughly 2000 nails are driven in an average working day.

A fixed-dose gas cartridge has a plastic metering valve that regulates how much fuel is sprayed into the combustion chamber during each nailing sequence. Fixed-dose technology ensures consistent power, but can lead to erratic tool performance above 5000 ft. Paslode offers altitude-specific metering valves. Hitachi and Bostitch do not, and don't recommend their nailers to be used over 5000 ft.

Maintenance: A cartridge provides enough fuel to drive roughly 1200 nails. After 1200 nails, it may sound like there is fuel in the cartridge when shaken. This is the propellant, not the combustion fuel.

COMBUSTION

Gas finish nailers use a linear-drive motor, which operates under the same principles as most modern engines. Air and fuel are mixed together and ignited. The energy from the small explosion is harnessed to drive an internal piston.

A fan on top of the motor mixes air and fuel in the combustion chamber. The fan also expels exhaust after the firing sequence and cools the motor.

Maintenance: To ensure a proper air-to-fuel ratio and to be sure the motor cools properly after firing, the filter above the fan should be cleaned with soap and water every two days. On dusty sites, like those that incorporate a lot of MDF trim, consider cleaning more often.

The spark plug ignites the fuel/air mixture, which drives a piston down on top of the nail head.

Maintenance: A dirty spark plug can lead to misfires and should be cleaned, but when the point of the spark plug becomes rounded over, it should be replaced.

The combustion chamber is above the piston assembly. The fuel is ignited in the chamber, and the resulting energy drives the piston downward.

Maintenance: The chamber and metal seals in the cylinder head should be periodically cleaned of combustion residue, which looks like old varnish, and lightly oiled. Dirty or damaged seals in the cylinder head can result in blow-by, in which the energy from combustion leaks out of the chamber instead of driving the piston. When lubricating the chamber and seals, use oil specified for high temperatures. Other oils may burn off too quickly.

The piston drives the nail, shearing it away from the strip of fasteners and into the workpiece. When pressure on the probe is released, the combustion chamber opens; the fan then expels exhaust and cools the motor. The cooling of the combustion gases creates a vacuum above the piston, pulling it to its top position.

Maintenance: The cylinder sleeve and piston rings need to be checked for combustion residue, and cleaned and oiled regularly. Residue on the cylinder walls and rings can create drag on the piston rings and prevent the piston from cycling to the top of its stroke. This reduces tool performance and overall nailing power.