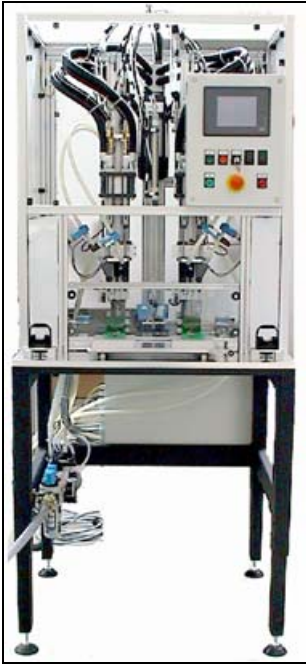


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DEPRAG – 4-Spindle Screwdriving Unit

This Screwdriving Station was designed for the assembly of automotive fog lamps. This machine drives two screws to attach a light to the lamp bracket. Two lamps are assembled at one time.



Total Machine View

Machine Function:

The operator loads two unassembled parts [bracket, light and grommets and adjustment screw retainer] into the dual part fixture and activates the 2-hand start buttons. The machine proceeds as follows:

1. The slide table will locate the parts under the spindles.
2. Sensors will verify the presence of the rubber grommets.
3. The mouthpiece plate will move down to position the screws near the screw holes and presses a adjustment screw retainer into place.
4. The spindle plate will move down and the spindles will drive the four screws (two per part).
5. After the drive is complete, the plates will move back up.
6. The correct assembly in regards to depth and torque is verified.
7. Four new screws will be feed.
8. The slide table will move to the unload position and the operator will remove the finished assemblies.

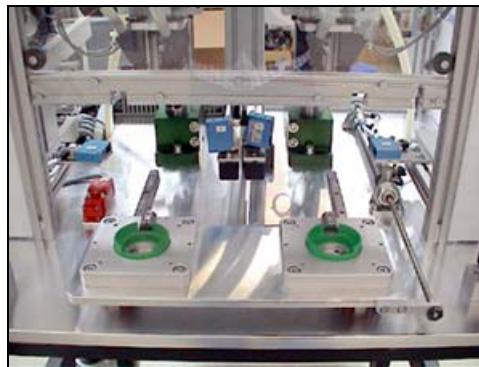


Two Dual SFM [Screwdriver Function Module]

Screw Driving:

The system consists of two Dual-Spindle SFM's [Screwdriver Function Modules], which are mounted so that the screwdriving axis is vertical from top. The Screwdriver of choice is a pneumatic, size-2 Screwdriver Spindle with a highly accurate [$\pm 3\%$] shut-off clutch, a function feedback port [driver start/stop indicator] and a lateral guide bolt, which assures a controlled end-load pressure during the screwdriving cycle.

The complete machine cycle time, including feeding, screw assembly and assembly verification is five [5] seconds for every two parts.



Slide Table with Part Fixtures

Screw Feeding:

The Screwfeeder of choice is a DEPRAG standard capacity Twin-Screwfeeder, which allows the feeding of two [2] screws out of the same feeder bowl. A 10-liter refill hopper assures that a sufficient quantity of screws is in the feeder bowl at all times.

Controls:

A Mitsubishi PLC and OIT touch screen control the machine cycle. Each Screwdriver Spindle is equipped with a "point-of-use" oiler in addition to a central Filter/Regulator.