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DEPRAG – INVERTED SCREWDRIVING STATION

This inverted Screwdriving Station was designed for the assembly of industrial grade pumps. This machine drives four screws to attach a cover to the pump housing.



Total Machine View

Machine Function:

The pump housing is presented to the DEPRAG Screwdriving station by a Bosch palletized conveyor system. The DEPRAG auto feed and screw assembly multifunction tooling achieves the following requirements:

- Provides pallet lift stroke to lift the assembly against a counter-holding fixture for stabilization during screw assembly.
- Allows the tooling to align with the screw locations on the pump housing prior to assembly.
- Auto feeds four screws to the screwdriver heads.
- Assembles four screws simultaneously, insuring the correct torque and screw depth/travel.



SFM [Screwdriver Function Module] on "service slide"

Screw Driving:

The system consists of a 4-Spindle SFM [Screwdriver Function Module], which is mounted so that the screwdriving axis is inverted [driving screws from underneath]. The Screwdriver of choice is a pneumatic, size-3 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 actual screwdriving.

The 4-Spindle SFM [Screwdriver Function Module] is mounted on a manual "service slide", so that it can be moved outside the footprint of the machine for easy access during maintenance.



Screwfeeder with Hopper

Screw Feeding:

The Screwfeeder of choice is a DEPRAG standard capacity Screwfeeder with a 4-Fold Distributor, which allows the feeding of four [4] 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:

An Allen-Bradley 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.

The complete machine cycle time, including lifting of pallet, screw assembly and release of pallet is six [6] seconds.