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Screwdriving Station for Actaris Gas-Meter

This vertical Screwdriving Station was designed for the assembly of industrial gas-meters. This machine drives a multitude of screws [either 24 or 32] to attach a cover to the meter housing. The machine is capable of processing two different parts on a 4-position rotary index table. The part fixtures are designed to accept the first product on Stations 1 and 3, and the second product on stations 2 and 4. The selection of which part needs to be assembled is made on the control panel.



Gas-Meter prior to Assembly

Machine Components:

The machine consists of a Single-Spindle Screwdriving Function Module [SFM], mounted inside a machine frame and above a 4-position rotary index-table. The index-table is equipped with four [4] part fixtures, which allow the Operator to load / unload while screwdriving is in progress. The Function Module contains a pneumatic, size-3 Screwdriver Spindle 345-330-31 generating a torque of 2 – 14 Nm [18 - 123 in.lbs.] at a speed of 800 rpm. The tooling is custom designed mouthpiece with integrated jaws, to allow access to the tight lip of the housing, while still being flexible enough to clear the rather high cover. For even more flexibility, two linear axes and one swivel axis position the SFM.

The Screwfeeder of choice is a DEPRAG standard capacity [0.75-liters] Screwfeeder, which feeds one [1] screw at a time. A 10-liter refill hopper assures that a sufficient quantity of screws is in the feeder bowl at all times. The screw is a Torx pan-head screw with a head diameter of 12-mm [0.475-inches] and an overall length of 16.6-mm [0.654-inches].

A Siemens S7 Controller, OP17 Operator Interface and a set of light curtains complete the machine.



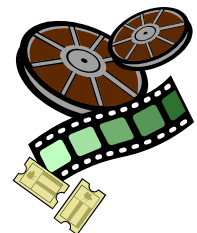
Gas-Meter after Assembly

Cycle Description:

The Operator loads the required metal seals and the lower housing into the part fixture at station 1. Thereafter, a sealant is applied and then the upper housing is loaded. Once the light curtain is cleared and a single opto touch-button is activated, the rotary-table indexes the part 180-degrees. The SFM is actuated and drives the necessary screws to correct torque and depth. At the same time, the Operator can load another part, after a lift-station has pushed the already completed part out of the part-fixture on the load/unload station.



Total Machine View



Please click the movie icon to access our web page and view a movie clip, showing this assembly machine in action!

[Movie No. 9: Gas-Meter Machine]