



Air screwdrivers & nutrunners



Tightening system

with computerised torque monitoring

comprising:

- **Air screwdriver motors**
featuring the Jointech-Plus torque control system (with immediate automatic air shut-off) and built-in strain gauge torque transducer
- **Computerised control unit**

TOCS-TC

(Tightening Operations Control System - Torque Control)



FIAM

INDUSTRIAL AIR TOOLS

Tightening system with computerised torque monitoring

Tightening and controlling

In order to guarantee the final quality of a product, one of the necessary steps is to check the assembly process, in which nutrunning is often the principal operation. This is why the **regularity of the tightening cycle and torque must be ascertained with precise and reliable systems**, especially when operating in conformity with ISO 9000. Fiam has therefore developed a practical and competitively priced solution to

ensure the regularity of the tightening process, the maximum quality of the finished product and the reduction of production waste.

The systems comprise one or more air screwdriver with the Jointech Plus torque control system (with automatic air shut-off) **featuring a built-in strain gauge torque transducer** and a TOCS-TC (Tightening Operations Control System-Torque Control) computerised control unit which **monitors the tightening cycle and picks up the tightening torque value**. The transducer incorporated in the motor **converts the torque applied into an electrical signal that is then processed by the TOCS-TC computerised unit**: it is therefore possible to process the tightening cycle by

- reading and memorising the tightening torque obtained;
- checking the tightening cycle and identifying any errors (partially tightened screws, screw already tightened, etc.).

Elevated repeatability Jointech Plus torque control system

Built-in strain gauge torque transducer



The built-in strain gauge torque transducer can be applied to air motors tightening with the **MCZE and MCSE** Jointech Plus torque control system (with automatic and immediate air shut-off) the characteristics of which can be found in the Air Screwdriver Motors catalogue n° 27.

The air motors with torque transducers are supplied complete with a cable for connection to the unit (5m long) code 676300195.

For assistance with choosing the motor or further information, please contact our **Customer Assistance Service**.

QUALITY OF THE TIGHTENING CYCLE

Fiam air screwdriver motors are **excellent, proven tools that are highly successful in the world market**. They are widely used in manually or automatically controlled tightening units featuring one or more spindles, or they are incorporated in automatic assembly lines, turntable machines, etc..

The **elevated quality of the tightening process** is achieved by the torque control system of the motors which allows **high torque repeatability standards both on single joints** ($CM/CMK \geq 1.67$) **and on different joints** (low MEAN SHIFT), the latter being a frequent event in all industrial tightening processes.

Tightening system



TOCS-TC control unit (Tightening Operations Control System - Torque Control)



TOCS-TC...G



TOCS-TC...A

indaco

These leading-edge computerised control units monitor the tightening cycle and display both OK and KO cycle results and torque/time values which can easily be memorised. The computerised control units are available in **two versions** with alphanumerical display (TOCS-TC...A) and graphic display (TOCS-TC...G); the latter allows the torque-time curve to be visualised.

The TOCS-TC 2CH version can also be connected to two different or similar tools working at the same time (synchronous) or at different time (asynchronous).

Standard equipment (supplied with unit)

- 2m electric power cable.
- Use and maintenance manual.
- Eco-friendly packaging.

Accessories available on request

- OK/KO signal light column with built-in buzzer (code 686000128)
- Transport handle.

Models available on request

- Version with network board for communicating with specific software (computerised unit programming + data acquisition).

The computerised control unit must be set up in accordance with the operating conditions of the screwdriver (intake pressure); please contact our Technical Assistance Service.

The models highlighted in green are usually available from stock

Software features

The complete and simple programming menus offer:

- Up to **20 programme** settings (MIN torque, MAX torque, MIN time, MAX time) and password protection;
- Tightening sequences settings with a maximum of 99 screws and a maximum number of repetitions in the event of a reject.

The I/O's of the unit offer:

- OK/KO signalling for each cycle and general OK/KO (end-of-sequence);
- 3 user configurable on-line printing modes;
- The type of possible rejects required can be detected through the correct programming of tightening cycle;
- The internal memory stores torque/time/result data concerning the last 1,000 tightening cycles (circular buffer).

The system can be networked (proprietary protocol) with supervision (programming + data acquisition) and optional software.

Technical features

- **Built-in membrane programming keyboard**
- **Electrically powered (a.c.)**; if power is interrupted, the data memory is maintained by a battery.
- **Illuminated liquid crystal display** with 4 lines of 20 characters (version ...A) or graphic (version ...G).
- **RS232 output and LPT output** for connection to printer.
- **Visual indicators for signalling tightening status**, located on the panel:
RED = Tightening KO (incorrect)
GREEN = Tightening OK (correct) + pallet release signal.
- **I/O connectors** with contacts powered at 24 Vdc (max. 0.5A) for connection to PLC and/or signal lights to indicate OK and KO tightening.

Model	Description	Code	Dimensions mm Width x Depth x H
TOCS-TC 1CH A	Control unit	686000131	210x330x125
TOCS-TC 2CH A	Control unit	686000132	210x330x125
TOCS-TC 1CH G	Control unit	686000133	210x330x125
TOCS-TC 2CH G	Control unit	686000134	210x330x125

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Quality Certification
UNI EN ISO 9001 / ICIM 0250

Environmental Management System Certificate
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