



Air screwdrivers & nutrunners



Tightening system

with computerised torque monitoring

comprising:

- **Air screwdrivers** featuring the Jointech-Plus torque control system (with immediate automatic air shut-off) and built-in strain gauge torque transducer
 - Straight grip
- **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 tightening 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 air screwdrivers 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.**



Layout example: CSE 10 RA-TC air screwdriver, TOCS-TC computerised control unit and OK/KO signal light column.



The transducer incorporated in the screwdriver **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.).

QUALITY OF THE TIGHTENING CYCLE

Fiam air screwdrivers are **excellent, proven tools that are highly successful in the world market**. They are widely used in assembling components in various sectors, including the electronics industry, household appliances and car components. The **elevated quality of the tightening process** is achieved by the torque control system of the screwdrivers which allows **high torque repeatability standards both on single joints (CM/CMK ≥ 1.67) and on different joints (low MEAN SHIFT)**, the latter being a frequent event in all industrial tightening processes.



Fiam screwdrivers are designed for use with either lubricated or unlubricated compressed air.

TYPE OF SCREWDRIVER		GRIP		TIGHTENING TORQUE			STARTING SYSTEM	REVERSIBILITY	WEIGHT	DIMENSIONS	AIR CONSUMPTION	ACCESSORIES	NOISE LEVEL	VIBRATION LEVEL
Model	Code	Type	Nm	Nm	r.p.m.	Type								
CZE 5 RA-TC	112509515	↓	0,7+5	0,6+5	550	↓	↻	0,850	50x265	5,5	⊕ F 1/4"	< 70	< 1	
CSE 8 RA-TC	114809728	↓	2,5+8	2,5+8	1000	↓	↻	1,200	53x285	8	⊕ F 1/4"	77	< 1	
CSE 10 RA-TC	114809725	↓	2,5+10	2,5+10	500	↓	↻	1,200	53x285	8	⊕ F 1/4"	77	< 1	

REVERSIBILITY: All models are suitable for tightening and untightening operations

PUSH START

TECHNICAL FEATURES OF TRANSDUCER

- Sensitivity: mV/V: 2,000
- Precision: ± 1% FS

- The figures shown are measured at a pressure of 6.3 bar (ISO 2787), the recommended operating pressure.
- Tightening torque values have been measured in accordance with ISO 5393 standard.
- Noise level has been measured in accordance with ISO 3744 and PN8NTC1.2 standards.
- Vibrations level has been measured in accordance with ISO 8662.1 and ISO 8662.7 standards.
- Accessory drive: female hexagonal drive 1/4", 6.35 mm (ISO 1173).
- The code number must be used when ordering.

The models highlighted in green are usually available from stock

The data given in the table are indicative and can be changed without prior notice. The torque values are purely indicative and may be influenced by the softness of the type of joint, by the type and length of the screw, by the pressure and quantity of air supply, and by the type of accessory used. The values indicated for noise and vibration levels were obtained in the laboratory, performing tests that comply with the standards stated, but alone are not sufficient for calculating risks. Values measured in the single work places may be higher than those stated. The values of actual exposure and consequent risks are specific and depend on the operator's method of work, the type of work piece and the work place, as well as the operator's time of exposure and his physical conditions. Fiam cannot be held responsible for any consequences deriving from the use of the information in the table when evaluating risks in the work place over which Fiam has no control. For all further details, please apply to the **Fiam Technical Assistance Service**.

Other technical features

Series of models	Air inlet coupling	Recommended air flow
CZE...RA-TC	1/8" gas	Ø 5 mm
CSE...RA-TC	1/4" gas	Ø 8 mm

Standard equipment (supplied with the tool)

- Clutch adjustment key.
- 5 m connection cable, required to connect the screwdriver to the control unit (code 676300195).
- Additional clutch spring (only for models CZE5RA-TC).
- Hanging ring.
- Use and maintenance manual.
- Eco-friendly packaging.

Models available on request:

- Pistol and angle models with built-in torque transducer: please contact our **Technical Assistance Service**.

Accessories available on request

- Bits, hexagonal sockets, balancers, conveyors and compressed air system accessories (Accessories Catalogue).

- **Swing arm supports:** the CZE...RA-TC and CSE...RA-TC screwdrivers have been designed to be fixed to the mod. BA 15 swing arm which optimises the tightening operations (Ø tool support connector: CZE... 31.5 mm; CSE... 36 mm - see Accessories Catalogue).



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

Fiam

INDUSTRIAL AIR TOOLS

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