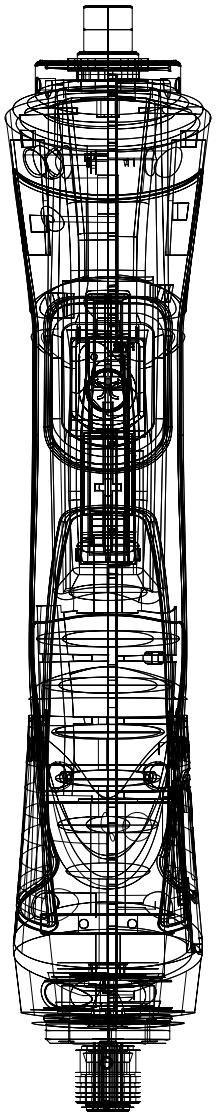
eTensil

Fiam Electric Tightening Solutions



Handheld tightening solutions with:

| Mechanical clutch and automatic shut off |
| Torque/angle current control |

24 months EXTENDED WARRANTY 1 million cycles

FIAM PEOPLE AND SOLUTIONS

eTensil.
Fiam's electrical revolution continues.

With eTensil, Fiam sets the benchmark in the world of industrial tightening. We have integrated our tried-and-tested air solutions with a range designed and manufactured to raise the level in manual and automatic tightening through **electric tools** with **different assembly process control technologies** to overcome the performance challenge.

Nowadays the components to be assembled include several variants which, besides different geometries, are designed for different types of screws and torque values. Therefore a **complete production flexibility which involves the use** of efficient, versatile and smart tools is needed.

eTensil range meets these requirements **thanks to the different control systems, which ensures a great productive versatility.**

Electric, efficient and accurate, eTensil is the Italian made response to this modern industry's demand for green, versatile and intelligent tools. We have designed them to be integrated in smart production**: from precision mechanics to automotive, from electronics to household appliances assembly.**
Design, power, manufacturing precision are the cornerstones making eTensil a proud Italian solution. A consistent project in which every detail has been taken into account aming at top performance.

A range of versatile and productive hand tools

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Tightening systems with mechanical clutch and automatic shut off

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Tightening systems with torque/angle current control

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Accessories for workstation ergonomics

- Pick&Place systems
- Positionning devices
- Poka Yoke devices
- Accessories for interconnectivity
- Reaction arms

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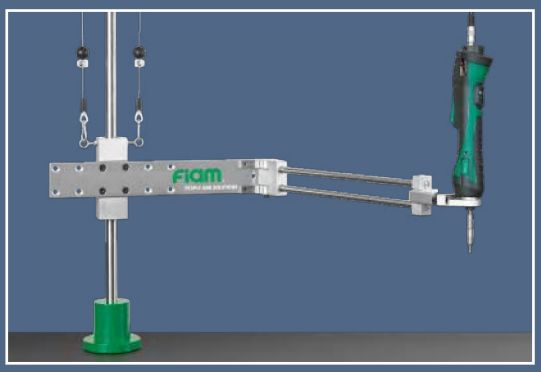

Automatic tightening systems

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Versatile and productive tools. **Efficiency at hand.**

The user can **manually programme various work processes on the tools themselves,** without having to change the mechanical setup or or directly from the combined control unit, depending on the chosen model/technology. This strategic choice defines eTensil as one of **the most advanced solutions in terms of efficiency and versatility.**

1. Ergonomic grip.

The grip has been designed and manufactured with the clear goal to reduce any fatigue and optimize productivity.
Materials, horizontal grip-shaping, and the casing layout provide a stable rest point for the hand.
All such details reveal a research for functionality and aesthetics.
The grip is made of **innovative materials** ensuring a better resistance against any form of collision or damage. It is placed close to the tightening area, making the centring easy and fast.
Easy to handle, **combining low** weight and dimensions.
Suitable for both left and righthanded users, as **well** as for the **smaller and female hands**.

2. Signaling LEDs.

Three LEDs ensure precise and efficient signaling. It is a simple solution that ensures the screwdrivers' settings and correct functioning are immediately apparent to the user. **The blue LED** near the reverse button remains lit to signal that the screwdriver is in "untighten" mode (leftwards rotation). The **white LED in the same** area shows the tool is ready for use.
The **LED at the front**, next to the quick change chuck, lights up the area of work as well as indicating anomalous functioning at the end of a tightening cycle (in conjunction with the blue LED). Once the same LED flashes constantly it means that the programmed maintenance is required.
Pistol grip and angle models do not have a front LED.

3. Reversibility.

The reverse command is encased within the screwdriver body to protect it from wear, collision or damage and accidental activation. A single press of the **button when the screwdriver is** not in action inverts the rotation (indicated by the blue LED). Holding the button for at least four seconds starts up the "SMART PRO" **programming mode** (indicated by the LED flashing).

4. Start up ergonomics.

The pressure required to activate lever start up **is much lower than others available on the market: only 9 N!**
Reducing the effort the user needs to sustain over the course of the working day, will result in increase of production efficiency
The **start up lever** is a **"smart"** device in the system, designed to grant maximum freedom in terms of use. An analogic sensor with **exceedingly sturdy mechanics/electronics** that are **not susceptible to wear** mean it can be **contactless**. Pressed, it slots perfectly into the tool's casing thus **ergonomically supporting to the user's hand**.

PWR

Ergonomic design.
Perfection in handling.

eTensil design takes care of both **appearance and functionality.** Ergonomics has always been the central point of Fiam design and key strength in provided solutions. In perfect Italian style, the design also adheres to the combination of form and matter, with linearity and refined layout.

5.
Multiple models to reach every tightening point.

Straight models, suitable for tightening on horizontal surfaces, are characterized by a low grip, close to the tightening point, which favors easy and immediate centering.

Angle models, with lever start only, are functional not only on automotive and household appliance industries, where tightening has to be done in tight and hard-to-reach spaces - for instance, up against walls, near to frame members and profiles.
Their 30° or 90° heads - which are extremely compact to reach awkward tightening sites - have been designed and manufactured with innovative materials that make them wear resistant (and hence low maintenance), while delivering impressive tightening precision.

When tightening onto vertical walls, for the operation to be perfectly ergonomic **models should be used pistol-type,** with supply cable from below or above, whose grip facilitates correct wrist posture and makes the grip extremely balanced. The pistol grip is also suitable where hanging systems are not an option and where particular thrust is not required along the tightening axis.

Among these models there are also the exclusive **UpGrip models with reversed pistol grip:** a unique screwdriver patented by Fiam which allows access to points otherwise unreachable by traditional pistol screwdrivers such as example in the household appliances field, e.g. in the assembly of ovens or refrigerators.

6.
Noise level and comfort.

eTensil ergonomic design also ensures low noise and comfort. All of the screwdrivers' mechanical elements have been designed to be **noiseless** - motor, gears.
The tool is equipped with **quick change chuck:** easy and safe to use, it allows the user to quickly change bits.
The presence of a **suspension device** eliminates the need for the user to support the tools. All of these features are essential to eTensil's unparalleled ergonomics.

7.
Pick & Place systems.

Pick & Place systems represent an innovative solution to simplify and make assembly operations fluid and continuous by **eliminating the manual screws gripping and positioning.**
The various devices that can be connected to obtain Pick & Place operations can be integrated into operational layouts with all eTensil straight screwdrivers.
It is sufficient to apply a special head connected to a vacuum pump to the straight screwdriver.
A particular nozzle is applied to the head to be customized to suit screws or the part to be assembled.
The bits are also adapted based on the type of screws.
Discover the Pick & Place systems on page 30.

Safety. Green performance.

Fiam has always **considered as a priority the safety of the working tools**, which play a vital role in the assembly process. The eTensil project has grown into its current strategical importance over a long **certification process** that has involved collaboration between Fiam and three external laboratories in a series of “pre-compliance” tests. Fiam guarantees that its range of electric screwdrivers **fully complies with latest electrical safety**, **EMC and ESD directives**.

8. Low environmental impact.

No sliding electrical contact in the brushless electric motors prevents carbon and blade dust emissions thus creating a safer working environment.
All eTensil components are made of **recyclable materials**, making it easy to dispose of them.
The entire system in every element of the eTensil screwdriver range has been designed with the Life Cycle Assessment in mind: from supply chain to finalisation, from production to product transport, from usage to disposal.

9. ESD certification.

Casing of eTensil range has been made using the latest technology in ESD dissipative plastic, **thus avoiding the build up of electrostatic charge**. Any electrical charges transferred by the user to the tool (and vice versa) are discharged to the ground **without intruding upon the tightening area**.
In compliance with the latest European Directives, the eTensil range **is immune to electromagnetic disturbances** generated by cables or as a result of the interference of other devices. The tools do **not influence** other devices either. This is a huge advantage when **assembling high-quality electrical components** that must be protected from the build up of electrostatic charge.

10. “Dust proof” construction.

The casing of eTensil is designed and manufactured to reduce as much as possible dust and other waste or substances infiltrations, that can compromise functionality of the tool. The most exposed parts of the screwdrivers are **duly sealed**. This greatly reduces potential functioning issues linked to external, damaging factors.
In addition, all labels are enclosed within the casing to keep them protected from wearing and ensure traceability.

11. Maximum safety.

Operating at low-voltage (32 volts) means **maximum safety**. Special ergonomic grips guarantee perfect **thermal isolation**.

Reliability.
A project for the long-term.

eTensil components are built to guarantee the highest levels of **reliability and safety** throughout the life cycle of any operation. The engineering involved in the mechanics, the elegance of this executive range and performance tests passed, all arise from **Fiam's existing wealth of knowledge and specialist patents in the industrial tightening industry**.

12. Latest generation brushless motor.

Brushless motors are the avant-garde in efficient and consistent performance, due to their **high-precision mechanics**.
eTensil has been designed in order to obtain endless electric lifespan, thanks to the implementation of low wearing components, to low motor inertia and to a lower heating of the assembly. Hall sensors allow the user to **have full control of rotation** and ironless systems **make the motor so light**.

13. Reduction assembly.

Increased performance in output, **duration and noise level are the principles** that guide the latest designs in gear assembly - aims we have achieved through research focused on ensuring gear lifespan and efficiency as well as the careful sizing and the incorporation of treatment options into the manufacturing cycle. **Such innovative** ways of working mean the gear assembly remains practically **unchanged** even after **thousands of operational hours**, as our lab tests prove.

14. Modular structure.

Functionalities integrated into the circuit board, reduced and simplified electrical connections, its clean design, the modularity and the seamless integration of electronic components
into the mechanics; all bases of the constructive **strength, designed to last and guarantee safe** and efficient servicing.

15. Connection cable screwdriver - power supply.

The cable is **extremely flexible**, with **sturdy connectors**, designed to last over time and made entirely in Italy upon Fiam's specifications.
Standard length is 3 metres, which can be increased by adding additional cables.
Extremely resilient, flame resistant and hallogen-free, designed to resist oils and to face extreme conditions of use in an industrial environment.
Also available with 90 angled fitting to adapt the tool to the different operational needs imposed by the layout/application.

SCREWDRIVERS WITH MECHANICAL CLUTCH AND AUTOMATIC SHUT OFF.

Production efficiency.

Production efficiency defines eTensil. The whole project is tightly wound around perfecting the key functions that ensure **precision, power and control** at all times when using a screwdriver. The advantage to this is a **high-quality final product**.

Torque control system with mechanical clutch.

This control system is vital to **tightening torque**, as it automatically cuts off the power supply.
This ensures **high repeatability** - in other words a low Mean Shift value - **even when faced with a variable joint softness level**.
Values remain unchanged over **million of cycles**, guaranteeing high quality that is consistent over time.

On board electronics.

FIAM has designed and created an **innovative on board electronics** so as the user can easily configure various **settings directly on the tool, instead than on the power supply unit.**
As a result the system is easier to use, workplace layout is tidier, and data exchange between the tool and the power unit is faster.

- **Reversibility:**
A single press of the button inverts the rotation (indicated by the blue LED).

- **Programming:**
Holding the button for at least four seconds starts up the “SMART PRO” programming mode, indicated by the LED flashing.

Mechanical clutch control.

eTensil comes in two versions:

SAFE CLUTCH CONTROL
A **protective device** controls access to the mechanical clutch, ensuring adjustments are made safely. This **keeps tightening torque repeatability consistent** and tightening precise and safe, so as to adhere to the highest manufacturing quality standards.

QUICK CLUTCH ADJUSTMENT
When dealing instead with the need to **swap often between the components to be assembled and relevant screws,** models with external clutch adjustment are the ideal solution, allowing you to **quickly and repeatedly adjust tightening torque on the outside of the unit.**
The ring is numbered for even easier immediate adjustment.

TPU-1 and TPU-2:
Exclusive “Smart Pro” Programming, directly on the tool.

With TPU-1 and TPU-2 units, **it is possible to set manually various work processes on the tools themselves,** without having to change the mechanical setup or having to deal with an external accessory. This strategic choice defines eTensil as one of the most evolved solutions in terms of efficiency and versatility.

Pressing the reverse button for at least 4 seconds activates the programming of the different functions that can be selected by clicking on the lever.

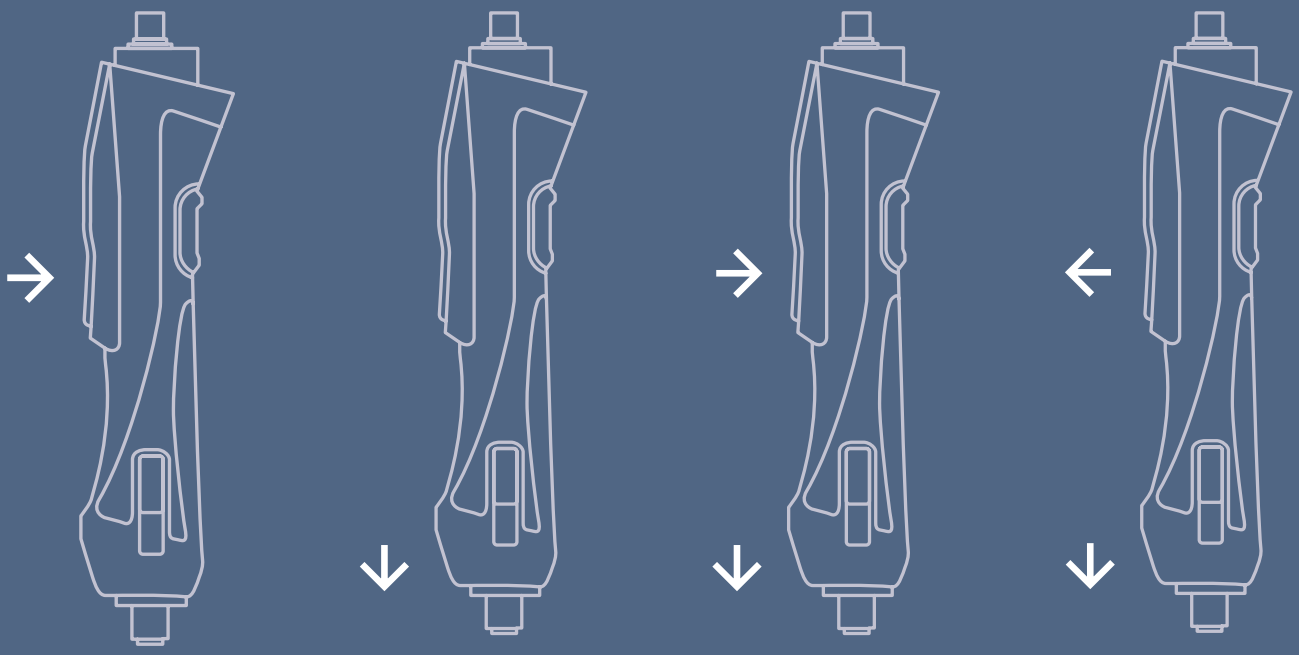
FOUR DIFFERENT PRE-SET START UP MODALITIES and selectable directly from the tool

The modalities are:
- Lever start
- Push to start
- Lever start + push to start
- “Latched lever” + push to start

For pistol models, only push-button starting is available.

This procedure allows to switch the following functions on/off:

- front **ILLUMINATION LED**
- **INHIBITION OF UNTIGHTENING** by setting this option the tool will no longer start in left rotation
- **SOFT START:** slow screwdriver start (from stopped to rated speed in approx. 1.5 seconds)
- **PRE-AUTO UNTIGHTENING** by 4 turns (1440 degrees). A useful feature when you have previously tightened parts that need loosening before being tightened to the set torque
- **POST-AUTO UNTIGHTENING** by 4 turns (1440 degrees). A useful feature when needing to tighten to the set torque and then loosen for a subsequent assembly.



Lever start

Push to start

Lever start + push to start

*** “Latched lever” + push to start**

* The “latched lever” + push to start mode allows the screwdriver to work without need to keep the lever pressed. For safety, the screwdriver activates only when pushing on the bit. In this mode, the first pressure applied to the lever starts the screwdriver until clutch shuts off, whereas a second pressure can eventually stop it before the working cycle is completed.

Power supply TPU-1 and TPU-2. Intelligent energy.

The basic power supply units work in perfect synergy with the tool providing the **right electrical power levels appropriate for each operational mode** while constantly monitoring screwdriver's status and the whole tightening process.

Functional design.

Functionality and aesthetics combine into a power supply design perfectly matched to Fiam's style. Designed in the Research and Development department in conjunction with an Italian design studio, these units capture the same colours and style as the screwdriver range. The casing has been created using an exclusive mould, in a shape perfect for housing the internal technology that still **allows the user practical access** to required functions while the visual signals on the back remain visible. These features are accompanied by a **sturdiness** that makes each unit perfect for a vertical clamp, as a practical alternative to placing the unit on the working horizontally.

LEDs.

A power supply and control system is installed inside the unit, which Fiam has designed and created so that **tightening can be managed in a synchronised and efficient way**. High-visibility LEDs are linked to the control devices inside so that the status of key procedures (such as **correct functioning, selected speed, clutch being engaged, anomalies, emergencies**) can be consistently monitored. This means all production activities continuously increase in efficiency.

Two models, endless possibilities.

The TPU-1 model guarantees each screwdriver receives the **correct electrical supply**, as well as allowing the user to monitor key working procedures. The TPU-2 model with "optoisolated" input and output signals allows **activation and remote control of some functionalities and results**. The unit can handle 5 input signals for activating various functionalities and 5 output signals to indicate the completion of a work process or the screwdriver's status.

Tool/motor speed selection.

A membrane switch allows the user to set **two rotation speeds** LOW/HIGH (slow / fast) both in tightening and untightening. LOW is a reduction of a screwdriver's maximum speed (on the motor nameplate) by approximately 20%. The parameter is independent and it is possible to use HIGH in tightening and LOW in untightening and vice versa.

A.
Green LED: clutch shut off and motor stop.

B.
Red LED: error (stalled motor) or *“Button” + push to start* activated - straight models.

C.
Red LED: screwdriver not enabled (external signal stop, activable only in the TPU-2 model).

D.
Status LED (system on/off).

E.
S1
- In the TPU-1 model the LED is always on
- In the TPU-2 model, the LED lights up indicating the activation of the emergency on an external signal.

S2
- Tool ready to use.

S3
- Tool in use (RUN).

F.
Button for selectong LOW/ HIGH (slow / fast) tool speed.

G.
Port for connecting the supply cable to the screwdriver.

H.
Start up button with light.

I.
Port for electrical power supply cable.

L.
Port in TPU-2 version:

Input signals
1. H/L speed
2. Motor stop
3. Reverse
4. Emergency
5. Start

Output signals
1. Ready
2. Stalled Motor
3. Run
4. Reverse
5. Clutch engaged

SCREWDRIVERS WITH MECHANICAL CLUTCH AND AUTOMATIC SHUT OFF.

TPU-M1 Monitoring Unit.
To manage your tightening processes correctly and quickly.

TPU-M1 monitoring unit represents a **great innovation able to monitor and manage all the functions of the matched tool.** A sophisticated instrument designed not only to provide the tools with the correct power supply, but also to handle **large number of functions that can be programmed quickly, easily and intuitively.**
Designed and built entirely by Fiam, it represents a strategic choice providing one of the most advanced solutions for the industrial production

AUTOMATICALLY AND IMMEDIATELY RECOGNIZING THE CONNECTED TOOL
and setting the applicable parameters range for it.

SCREW COUNTING
this function turns the system into an effective Poka Yoke device.

STORING
the outcome of the last 99 cycles.

SIGNALING LEDS.
The high-visibility LEDs placed above the display allow immediate viewing of the process status.
For a synchronized and efficient tightening management:
Red LED = Nok
Yellow LED = End of cycle
Green LED = Cycle progress (screws tightened) according to the set number of screws.

INDUSTRY 4.0.
Prepared for data exchange on CLOUD platforms for read/ manage tightening processes even remotely.

CHECK TIGHTENING TIME
to detect process anomalies like overtreading and already tightened screws.

COMMUNICATION WITH MASTER PLC
and others devices:
8 + 8 signals I/O freely programmable that offer several functionalities to be chosen from 21 + 22 signals.
Allow to communicate the phase, the system status and to control the tool in **remote.**

DISPLAYING OF TIGHTENING RESULTS OK/NOK
in addition to the tightening time.

INTERFACING WITH WORKING STATIONS
if there are workpiece clamping jigs, the piece locking devices can be activated / deactivated.

8 MONITORING PROGRAMS
The programs can be managed remotely in single mode or with binary combination.
Also, with each program, there can set **both the number of screws to tighten and the time-frame window to conclude the tightening cycle.**
For example, if there are 5 screws to tighten, out of which 3 with 5 mm length and 2 with 10 mm length: there can be set two programs to work in sequence.
The first program will include 3 screws and a maximum time 0.5 sec. Second program for 2 screws with a maximum time of 1.1 sec.
So, through the stop - by - time tightening, it is possible to discriminate the length of different screws.

SOLVE TIGHTENING WITH CRITICAL JOINTS
An advantageous **Poka Yoke system** to manage for example assembly with elastic gaskets, or components made of rubber or other materials.

TPU-M1
• 8 programs to control tightening process
• 1 programmable sequence up to a max of 8 steps
• Automatic recognition of the tool and configuration
• Screw counter - Poka Yoke system
• OK / NOK: tightening result displayed
• Min / Max tightening time control - Poka Yoke system
• Settable untightening speed
• 2 levels password: to protect the set parameters or totally block the system
• Serial communication (RS232)
• Language selection (IT, EN, DE, FR, ES)
• Log of the last 99 tightenings
• Interfacing with working stations
• 8 + 8 programmable I/O (21 + 22 signal types)
• Industry 4.0: ready to access the FIAM 4.0/OPC-UA cloud
• Selection of programs from I / 0 (remotely)
• Min / Max tightening angle control - Poka Yoke system
SMART PRO EVO PROGRAMMING
- 4 start-up modes selectable on the unit
- Soft Start - acceleration ramp
- Settable rotation speed
- Pre-auto untightening (can be activated with all tightening strategies)
- Post-auto untightening (can be activated with all tightening strategies)
TIGHTENING STRATEGIES
■ Torque control with mechanical clutch
■ Torque control with mechanical clutch and tightening time monitoring
■ Time control (Stop-by-time tightening)
■ Angle control and tightening time monitoring

In all these situations, it is possible to **verify that gaskets are in place** by comparison of the detected angle respect to the set range.
An essential stratagem for the productivity and final product quality.

FUNCTIONAL DESIGN
Functionality and aesthetics combined in the monitoring unit design, allowing **practical access to the operating panel.**
These features together with the sturdiness make this unit perfect for a **vertical clamp**.

Smart Pro Evo Programming.

In addition to the Smart Pro programming modes directly on the tool illustrated on page 13, with this advanced unit and the Smart Pro Evo programming, you can also manage:

FOUR DIFFERENT PRE-SET START UP MODALITIES can be set on the monitoring unit:

Modalities are:
- lever start
- push to start
- Lever start + push to start
- “Latched lever” + push to start.
  For pistol models, only push-button starting is available.

FRONT ILLUMINATION LED with intensity adjustable from 0 to 100%.

UNTIGHTENING FUNCTION activable/ deactivable. Settable untightening speed.

SOFT START function settable: it is possible to set the time acceleration to ease screw engagement

TOOL SPEED can be freely set within minimum and maximum range, both in tightening and in untightening.

Other additional adjustable features:

• PRE-AUTO UNTIGHTENING it is possible to set the **untightening angle and the pause between the untightening and the subsequent tightening.** This strategy finds its application in the electrical / electronic field, for example when it is necessary to open and then close connectors to insert electrical wires.

• POST-AUTO UNTIGHTENING the **untightening angle** is settable as well as the time pause of left rotation start after the tightening end.

• STOP-BY-TIME TIGHTENING when it is necessary to tighten in **depth and not to defined torque**, by controlling the cycle with set tightening time.

SCREWDRIVERS WITH MECHANICAL CLUTCH AND AUTOMATIC SHUT OFF.

FUNCTIONALITY	STRAIGHT MODELS		ANGLE MODELS		PISTOL MODELS	
	With TPU-1 | TPU-2	With TPU-M1	With TPU-1 | TPU-2	With TPU-M1	With TPU-1 | TPU-2	With TPU-M1
START UP	4 type	4 type	Lever start only	Lever start only	Push-button only	Push-button only
SMART PRO from the tool via lever/button	●		●			●
SMART PRO from the unit		●		●		●
Reduced-Effort **Start Up**	●	●	●	●	●	●
UNTIGHTENING **ACTIVABLE/DEACTIVABLE**	●	●	●	●	●	●
BLU LED Untightening	●	●	●	●	●	●
WHITE LED Ready	●	●	●	●	●	●
WHITE+BLU LED Allert	●	●	●	●	●	●
FRONT ILLUMINATION LED On/Off	●					
FRONT ILLUMINATION LED Adjustable		●				
TOOL SPEED	low/high	adjustable	low/high	adjustable	low/high	adjustable
SOFT START hight / slow from stopped to rated speed	●		●		●	
INHIBITION OF UNTIGHTENING	●	●	●	●	●	●
UNTIGHTENING with adjustable speed		●		●		●
SOFT START adjustable		●		●		●
PRE AND POST AUTO UNTIGHTENING by 4 turns (1440 degrees)	●		●		●	●
PRE AND POST AUTO UNTIGHTENING adjustable		●		●		●
STOP-BY-TIME TIGHTENING tighten in depth and not to torque		●		●		●
EXTERNAL CLUTCH Adjustable	●	●				
PICK AND PLACE SYSTEMS	●	●				
ESD	●	●	●	●	●	●
Interconnection CLOUD		●		●		●
Software **TOOLMANAGER**		●		●		●
Connecting cable (3 mt) included	●	●	●	●	●	●
Extended warranty 24 months/1 million cycles	●	●	●	●	●	●

Screwdrivers technical features: straight and angle models.

	Type of screwdriver		Grip	Tightening torque Min. / Max.		✦Idle speed range with TPU-M1	✦Idle speed slow-L / fast-H with TPU-1 and TPU-2	Starting system	Reversibility	Weight		Dimensions mm	Power consumption	Accessories
	Model	**Code**	**Type**	**Nm**	**in lb**	**r.p.m.**	**r.p.m.**	**Type**	**Type**	**kg**	**lb**	**L x Ø**	**Volt**	**Drive**
STRAIGHT MODELS	E8C1A-1200	111712011		0,3÷1,6	2,6÷14.1	590÷1180	980 / 1180	*	↻	0,78	1.72	257x39	32	⬡ F1/4”
	E8C1A-900	111712012		0,3÷1,6	2,6÷14.1	435÷870	740 / 870	*	↻	0,78	1.72	257x39	32	⬡ F1/4”
	E8C1A-650	111712013		0,3÷1,6	2,6÷14.1	320÷640	530 / 640	*	↻	0,78	1.72	257x39	32	⬡ F1/4”
	E8C2A-2000	111712000		0,6÷2,5	5,3÷22.1	1000÷2000	1650 / 2000	*	↻	0,78	1.72	257x39	32	⬡ F1/4”
	E8C3A-1200	111712001		0,6÷3,0	5,3÷26.5	590÷1180	980 / 1180	*	↻	0,78	1.72	257x39	32	⬡ F1/4”
	E8C3A-900	111712002		0,6÷3,5	5,3÷31.0	435÷870	740 / 870	*	↻	0,78	1.72	257x39	32	⬡ F1/4”
	E8C4A-650	111712003		0,6÷4,0	5,3÷35.4	320÷640	530 / 640	*	↻	0,78	1.72	257x39	32	⬡ F1/4”
	E8C5A-350	111712004		0,6÷4,5	5,3÷39.8	170÷340	285 / 340	*	↻	0,78	1.72	257x39	32	⬡ F1/4”
MODELS WITH EXTERNAL CLUTCH ADJUSTMENT	E8C1ARE-1200	111712076		0,3÷1,6	2,6÷14.1	590÷1180	980 / 1180	lever start	↻	0,84	1.85	287x39	32	⬡ F1/4”
	E8C1ARE-900	111712077		0,3÷1,6	2,6÷14.1	435÷870	740 / 870	lever start	↻	0,84	1.85	287x39	32	⬡ F1/4”
	E8C1ARE-650	111712078		0,3÷1,6	2,6÷14.1	320÷640	530 / 640	lever start	↻	0,84	1.85	287x39	32	⬡ F1/4”
	E8C2ARE-2000	111712070		0,6÷2,5	5,3÷22.1	1000÷2000	1650 / 2000	lever start	↻	0,84	1.85	287x39	32	⬡ F1/4”
	E8C3ARE-1200	111712071		0,6÷3,0	5,3÷26.5	590÷1180	980 / 1180	lever start	↻	0,84	1.85	287x39	32	⬡ F1/4”
	E8C3ARE-900	111712072		0,6÷3,5	5,3÷31.0	435÷870	740 / 870	lever start	↻	0,84	1.85	287x39	32	⬡ F1/4”
	E8C4ARE-650	111712073		0,6÷4,0	5,3÷35.4	320÷640	530 / 640	lever start	↻	0,84	1.85	287x39	32	⬡ F1/4”
	E8C5ARE-350	111712074		0,6÷4,5	5,3÷39.8	170÷340	285 /340	lever start	↻	0,84	1.85	287x39	32	⬡ F1/4”
90° ANGLE MODELS	E8C2A90-2000	111712030	90°	0,6÷2,5	5,3÷22.1	1000÷2000	1650 / 2000	lever start	↻	0,84	1.85	309x39	32	□ M1/4”
	E8C3A90-1200	111712031	90°	0,6÷3,0	5,3÷26.5	590÷1180	980 / 1180	lever start	↻	0,84	1.85	309x39	32	□ M1/4”
	E8C3A90-900	111712032	90°	0,6÷3,5	5,3÷31.0	435÷870	740 / 870	lever start	↻	0,84	1.85	309x39	32	□ M1/4”
	E8C4A90-650	111712033	90°	0,6÷4,0	5,3÷35.4	320÷640	530 / 640	lever start	↻	0,84	1.85	309x39	32	□ M1/4”
	E8C5A90-350	111712034	90°	0,6÷4,5	5,3÷39.8	170÷340	285 / 340	lever start	↻	0,84	1.85	309x39	32	□ M1/4”
	E8C2A90-2000-BITS	111712040	90°	0,6÷2,5	5,3÷22.1	1000÷2000	1650 / 2000	lever start	↻	0,84	1.85	309x39	32	⬡ F1/4” BITS
	E8C3A90-1200-BITS	111712041	90°	0,6÷3,0	5,3÷26.5	590÷1180	980 / 1180	lever start	↻	0,84	1.85	309x39	32	⬡ F1/4” BITS
	E8C3A90-900-BITS	111712042	90°	0,6÷3,5	5,3÷31.0	435÷870	740 / 870	lever start	↻	0,84	1.85	309x39	32	⬡ F1/4” BITS
	E8C4A90-650-BITS	111712043	90°	0,6÷4,0	5,3÷35.4	320÷640	530 / 640	lever start	↻	0,84	1.85	309x39	32	⬡ F1/4” BITS
	E8C5A90-350-BITS	111712044	90°	0,6÷4,5	5,3÷39.8	170÷340	285 / 340	lever start	↻	0,84	1.85	309x39	32	⬡ F1/4” BITS
30° ANGLE MODELS	E8C2A30-2000	111712035	30°	0,6÷2,5	5,3÷22.1	1000÷2000	1650 / 2000	lever start	↻	0,84	1.85	322x39	32	□ M1/4”
	E8C3A30-1200	111712036	30°	0,6÷3,0	5,3÷26.5	590÷1180	980 / 1180	lever start	↻	0,84	1.85	322x39	32	□ M1/4”
	E8C3A30-900	111712037	30°	0,6÷3,5	5,3÷31.0	435÷870	740 / 870	lever start	↻	0,84	1.85	322x39	32	□ M1/4”
	E8C4A30-650	111712038	30°	0,6÷4,0	5,3÷35.4	320÷640	530 / 640	lever start	↻	0,84	1.85	322x39	32	□ M1/4”
	E8C5A30-350	111712039	30°	0,6÷4,5	5,3÷39.8	170÷340	285 / 340	lever start	↻	0,84	1.85	322x39	32	□ M1/4”

Legend

E8C4A-650 = Electric screwdriver with automatic shut off
E = Electric
8 = Power of motor in watt/10
C = Screwdriver
4 = Maximum tightening torque in Nm

4 = Maximum tightening torque in Nm
A = Torque control with automatic shut off
90 = 90° angle model
30 = 30° angle model
RE = External clutch adjustment

650 = Speed
BITS = female hexagonal output coupling for inserting tools

Legend

↻ **Reversibility:** all models are suitable for tightening and untightening operation

✦ Tools speed range varies according to the unit used:
- **with TPU-1 and TPU-2,** the LOW (slow) speed is approximately equal to 80% of the max speed indicated in the table and can only be set through the LOW/HIGH (slow / fast) speed setting
- **with TPU-M1,** the speed is adjustable and the minimum speed value is equal to 50% of the max speed, as indicated in the table.

*** Starting system: 4 modalities availables for straight models**

- Lever start
- ↓ Push to start
- +↓ Lever start + push to start
- → +↓ Latched lever + push to start

• Accessory drive: female hexagonal drive 1/4”, 6,35 mm (ISO 1173); Male square drive (ISO 1174).
• The code number must be used when ordering.

Torque values refer to analysis of laboratory performing tests that comply with the standard ISO 5393 with screwdriver set at to the maximum speed and should be considered as indicative. The values in real applications can be influenced by many factors such as, for example: joint (type of joint, degree of elasticity), screw (type and length), accessory used (type or length of the blade), tightening speed, assembly conditions (free standing screwdriver, screwdriver mounted on a torque arm), operator behavior during the tightening phase.
For any further details, please address to **Fiam Technical Service**.

Screwdrivers technical features: pistol models.

	Type of screwdriver		Grip	Tightening torque Min. / Max.		*Idle speed range with TPU-M1	*Idle speed slow-L / fast-H with TPU-1 and TPU-2	Starting system	Reversibility	Weight		Dimensions mm	Power consumption	Accessories
	Model	**Code**	**Type**	**Nm**	**in lb**	**r.p.m.**	**r.p.m.**	**Type**	**Type**	**kg**	**lb**	**L x H x Ø**	**Volt**	**Drive**
PISTOL MODEL	E8C1AP-1200	111712149	↑	0,3÷1,6	2,6÷14.1	590÷1180	980 / 1180	P	↻	0,85	1.87	251x174x44	32	⬡ F1/4"
	E8C1AP-900	111712150	↑	0,3÷1,6	2,6÷14.1	435÷870	740 / 870	P	↻	0,85	1.87	251x174x44	32	⬡ F1/4"
	E8C1AP-650	111712151	↑	0,3÷1,6	2,6÷14.1	320÷640	530 / 640	P	↻	0,85	1.87	251x174x44	32	⬡ F1/4"
	E8C2AP-2000	111712144	↑	0,6÷2,5	5,3÷22.1	1000÷2000	1650 / 2000	P	↻	0,85	1.87	251x174x44	32	⬡ F1/4"
	E8C3AP-1200	111712145	↑	0,6÷3,0	5,3÷26.5	590÷1180	980 / 1180	P	↻	0,85	1.87	251x174x44	32	⬡ F1/4"
	E8C3AP-900	111712146	↑	0,6÷3,5	5,3÷31.0	435÷870	740 / 870	P	↻	0,85	1.87	251x174x44	32	⬡ F1/4"
	E8C4AP-650	111712147	↑	0,6÷4,0	5,3÷35.4	320÷640	530 / 640	P	↻	0,85	1.87	251x174x44	32	⬡ F1/4"
	E8C5AP-350	111712148	↑	0,6÷4,5	5,3÷39.8	170÷340	285 / 340	P	↻	0,85	1.87	251x174x44	32	⬡ F1/4"
	E8C1APT-1200	111712157	↓	0,3÷1,6	2,6÷14.1	590÷1180	980 / 1180	PT	↻	0,85	1.87	251x177x44	32	⬡ F1/4"
	E8C1APT-900	111712158	↓	0,3÷1,6	2,6÷14.1	435÷870	740 / 870	PT	↻	0,85	1.87	251x177x44	32	⬡ F1/4"
	E8C1APT-650	111712159	↓	0,3÷1,6	2,6÷14.1	320÷640	530 / 640	PT	↻	0,85	1.87	251x177x44	32	⬡ F1/4"
	E8C2APT-2000	111712152	↓	0,6÷2,5	5,3÷22.1	1000÷2000	1650 / 2000	PT	↻	0,85	1.87	251x177x44	32	⬡ F1/4"
	E8C3APT-1200	111712153	↓	0,6÷3,0	5,3÷26.5	590÷1180	980 / 1180	PT	↻	0,85	1.87	251x177x44	32	⬡ F1/4"
	E8C3APT-900	111712154	↓	0,6÷3,5	5,3÷31.0	435÷870	740 / 870	PT	↻	0,85	1.87	251x177x44	32	⬡ F1/4"
	E8C4APT-650	111712155	↓	0,6÷4,0	5,3÷35.4	320÷640	530 / 640	PT	↻	0,85	1.87	251x177x44	32	⬡ F1/4"
	E8C5APT-350	111712156	↓	0,6÷4,5	5,3÷39.8	170÷340	285 / 340	PT	↻	0,85	1.87	251x177x44	32	⬡ F1/4"
	E8C1APU-1200	111712165	↓	0,3÷1,6	2,6÷14.1	590÷1180	980 / 1180	PU	↻	0,85	1.87	251x175x44	32	⬡ F1/4"
	E8C1APU-900	111712166	↓	0,3÷1,6	2,6÷14.1	435÷870	740 / 870	PU	↻	0,85	1.87	251x175x44	32	⬡ F1/4"
	E8C1APU-650	111712167	↓	0,3÷1,6	2,6÷14.1	320÷640	530 / 640	PU	↻	0,85	1.87	251x175x44	32	⬡ F1/4"
	E8C2APU-2000	111712160	↓	0,6÷2,5	5,3÷22.1	1000÷2000	1650 / 2000	PU	↻	0,85	1.87	251x175x44	32	⬡ F1/4"
	E8C3APU-1200	111712161	↓	0,6÷3,0	5,3÷26.5	590÷1180	980 / 1180	PU	↻	0,85	1.87	251x175x44	32	⬡ F1/4"
	E8C3APU-900	111712162	↓	0,6÷3,5	5,3÷31.0	435÷870	740 / 870	PU	↻	0,85	1.87	251x175x44	32	⬡ F1/4"
	E8C4APU-650	111712163	↓	0,6÷4,0	5,3÷35.4	320÷640	530 / 640	PU	↻	0,85	1.87	251x175x44	32	⬡ F1/4"
	E8C5APU-350	111712164	↓	0,6÷4,5	5,3÷39.8	170÷340	285 / 340	PU	↻	0,85	1.87	251x175x44	32	⬡ F1/4"

Legend

E8C1AP-1200 = Electric screwdriver with automatic shut off
E = Electric
8 = Power of motor in watt/10
C = Screwdriver
1 = Maximum tightening torque in Nm
A = Torque control with automatic shut off
P = Pistol Grip
1200 = Speed

Legend

↻ **Reversibility:** all models are suitable for tightening and untightening operation

✦ Tools speed range varies according to the unit used:
- **with TPU-1 and TPU-2,** the LOW (slow) speed is approximately equal to 80% of the max speed indicated in the table and can only be set through the LOW/HIGH (slow / fast) speed setting
- **with TPU-M1,** the speed is adjustable and the minimum speed value is equal to 50% of the max speed, as indicated in the table.

Starting system: push button

↑ P= Pistol
With feeding from the BOTTOM

↓ PT = Pistol Top
With feeding from the TOP

↓ PU= Pistol UpGrip
With feeding from the TOP

- Accessory drive: female hexagonal drive 1/4", 6,35 mm (ISO 1173).
- The code number must be used when ordering.

Torque values refer to analysis of laboratory performing tests that comply with the standard ISO 5393 with screwdriver set at to the maximum speed and should be considered as indicative. The values in real applications can be influenced by many factors such as, for example: joint (type of joint, degree of elasticity), screw (type and length), accessory used (type or length of the blade), tightening speed, assembly conditions (free standing screwdriver, screwdriver mounted on a torque arm), operator behavior during the tightening phase.
For any further details, please address to **Fiam Technical Service**.

Standard equipment (supplied with the tool)

- Connection cable to power supply unit (code 686903834); lenght 3 mt and with error proof connection system
- Clutch adjustment key (except for models with external adjustment)
- Hanging ring
- Eco-friendly packaging
- Use and maintenance manual.

Accessories available upon request

Discover the many accessories from page 30 of this catalogue.

Power supply unit technical features.

Model	Code	Speed	Nr. of connectable tools	Tool feed tension	Feed input	I/O	Visual indicators	Weight kg	lb	L x Width x H mm
TPU-1	686200100	LOW / HIGH (slow / fast)	1	32 VDC	230 Vac ±10% 50-60 Hz	-	6 LED	0,6	1.32	185x150x63
TPU-1 120V	686200102	LOW / HIGH (slow / fast)	1	32 VDC	120 Vac ±10% 50-60 Hz	-	6 LED	0,6	1.32	185x150x63
TPU-2	686200101	LOW / HIGH (slow / fast)	1	32 VDC	230 Vac ±10% 50-60 Hz	5 inputs 5 outputs	6 LED	0,6	1.32	185x150x63
TPU-2 120V	686200103	LOW / HIGH (slow / fast)	1	32 VDC	120 Vac ±10% 50-60 Hz	5 inputs 5 outputs	6 LED	0,6	1.32	185x150x63

Monitoring unit technical features.

Model	Code	Speed	Nr. of connectable tools	Tool feed tension	Feed input	I/O	Visual indicators	Weight kg	lb	L x Width x H mm
TPU-M1	686200109	Adjustable	1	32 VDC	230 Vac ±10% 50-60 Hz	8 inputs 8 outputs	7 LED DISPLAY	0,8	1.76	185x150x105
TPU-M1 120V	686200110	Adjustable	1	32 VDC	120 Vac ±10% 50-60 Hz	8 inputs 8 outputs	7 LED DISPLAY	0,8	1.76	185x150x105

Standard equipment

- I/O Connector (only for TPU-2 model)
- Use and maintenance manual
- Eco-friendly packaging
- The TPU-M1 unit is equipped with adjustable tilt foot.

Accessories available upon request

- **Fixing plate to position** the power supply unit on any surface. It is supplied complete with screws, and can be anchored vertically or on a horizontal support (code 692080000).

eTensil screwdrivers, nutrunner motors and TPU control units, are covered by an extended warranty of 24 months or 1.000.000 cycles (first goal achieved).

SCREWDRIVERS WITH TORQUE/ANGLE CURRENT CONTROL.

Production flexibility.

Flexibility in operational lines is a constant need and having tools that intelligently adapt to the **variability of production batches** and therefore the screws to be used depending on the numerous variations of components, represents a fundamental element of choice.

Torque/angle current control system.

This technology offers the **possibility of adjusting the torque during operation.** This can be done simply **by changing the specific parameter on the control unit,** which is the "smart core" of this range of solutions.
In this system the torque is **detected by measuring the current used by the motor.** The angle is detected through specific hall sensors built-in.

"Smart Pro Evo" Programming from the unit.

From the control unit it's possible to change screwdriver starting mode without modifying the mechanical configuration.

FOUR DIFFERENT PRE-SET START UP MODALITIES
- lever start
- push to start
- Lever start + push to start
- "Latched lever" + push to start

For pistol models, only push-button starting is available. For straight and 90° angle models with high torques above 4 Nm, only lever start is provided.

Other functions can be activated / deactivated acting directly on the control unit
- **CONFIRMATION REQUESTED FOR ANOMALY** (by pressing ESC button)
- **CONFIRMATION REQUESTED FOR END OF CYCLE** (by press ENTER button)
- **UNTIGHTENING**
- **CLOCKWISE** or tightening **COUNTERCLOCKWISE** tightening.

The main feature of these advanced units is the **possibility to set different control functions:**
- **SOFT START** the ramp speed acceleration is not fixed but it is possible to set the **time** acceleration to ease screw engagement
- **TOOL SPEED** can be set within the minimum / maximum range
- **MANAGEMENT OF ALLOWED ERRORS**
- **FRONT LED LIGHTING** adjustable with intensity from 0 to 100%.

Signalling LEDS.

The **high-visibility** LEDs, with adjustable intensity, placed above the display, allow immediate viewing of the process status.
For a synchronized and efficient tightening management:
Red LED = Nok
Yellow LED = End of cycle
Green LED = Cycle progress (screws tightened) according to the set number of screws.

Common features for versatile efficiency.

The two control units, TPU-C1 basic model and TPU-C3 advanced model, with a fast and intuitive programming, offer essential functions to correctly and quickly manage a tightening process and make it reliable as well as versatile.

AUTOMATICALLY AND IMMEDIATELY RECOGNIZING THE CONNECTED TOOL
and setting the applicable parameters range for it.

ALLOW IN-PROCESS TORQUE ADJUSTMENTS
by modifying the relevant parameter on the operating panel.

SCREW COUNTING
this function turns the system into an effective Poka Yoke device.
The tightening results are visualized on the unit display, highlighted by the leds.

STORING
the outcome of the last 99 tightening.

CHECK TIGHTENING TIME
to detect process anomalies like over-treading and already tightened screws.

COMMUNICATION WITH MASTER PLC
and others devices:
8 + 8 signals I/O freely programmable that offer several functionalities to be chosen from 9 + 11 signals (TPU-C1) and 21 + 22 signals (TPU-C3).
Allow to communicate:
- outcome of a phase
- system status
- the remote control of the tool.

DISPLAYING OF TIGHTENING RESULTS

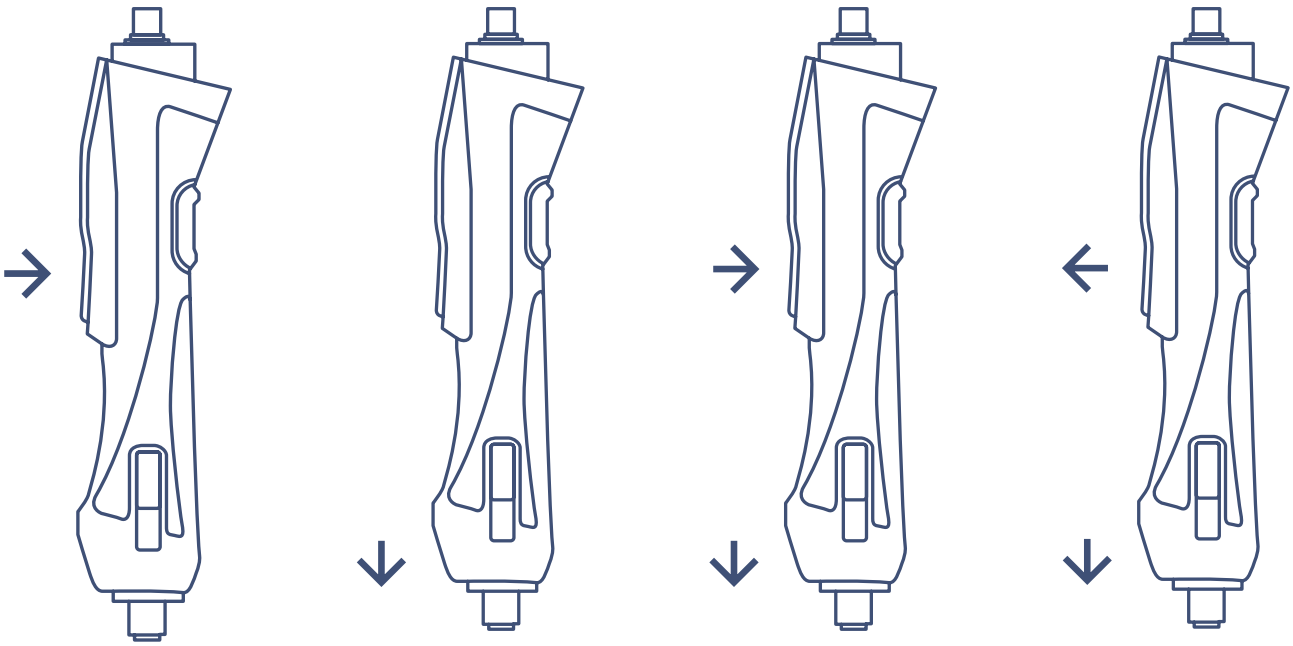
TPU-C1 model:
- OK/ NOK status
- torque value in Nm or other unit of measurement
- tightening time value

TPU-C3 model:
- OK/ NOK status
- torque value in Nm in Nm or other unit of measurement
- tightening time value
- angle value.

INTERFACING WITH WORKING STATIONS
in presence of Jigs, workpieces locking devices can be activated/deactivated.

"SMART THREAD" FUNCTION
for processing of self-threading, self-tapping, self-drilling screws, or else where the **final torque value is lower than thread forming torque.**

"SMART SPEED" FUNCTION
useful for speeding up the production process.
It is possible to create a "two-phase" tightening strategy:
- The first with a high-speed screwdriver rotation until reaching the set angle
- The second with a pre-defined speed that allows to maintain the accuracy of the result.



Lever start

Push to start

Lever start + push to start

*** "Latched lever" + push to start**

* The "latched lever" + push to start mode allows the screwdriver to work without need to keep the lever pressed. For safety, the screwdriver activates only when pushing on the bit. In this mode, the first pressure applied to the lever starts the screwdriver until clutch shuts off, whereas a second pressure can eventually stop it before the working cycle is completed.

TPU-C3 control unit.
Advanced model with additional features.

The advanced TPU-C3 control unit is equipped with all the features of the basic model. It guarantees the status control of the tool and of the assembly process with **additional programming features.**

Programming.

Possibility to set up to **8 tightening programs with torque, angle and time control/monitoring. The programs can be managed in sequence and can also be selected remotely in single mode or with binary combination,** which allow to **set both the number of screws and the torque/ angle/time values.**

Displaying all tightening paramethers.

The advanced **TPU-C3 model displays** the **angle value at the end of each cycle** together with tightening time and torque values.
To always keep the assembly process under control.

Monitoring of the tightening angle.

Another key difference comparing this unit with the basic version TPU-C1 is represented by this functionality. For example, **it can work as Poka Yoke system when tightening critical joints.**
Should you have elastic gaskets, rubber elements or other materials, **the control unit verifies that these are present or not during the process.**
This is made by measuring the angle and comparing it with a range set by the operator during the programming phase.
A fundamental measure for the productivity and quality of the finished product.

Smart Pro Evo functions.

Other additional settable features are:

- **PRE-AUTO UNTIGHTENING:** it is possible to set the **untightening angle and the pause between the untightening and the subsequent tightening.** This strategy finds its application in the electrical / electronic field, for example when it is necessary to open and then close connectors to insert electrical wires.
- **POST-AUTO UNTIGHTENING:** it is possible to set the **untightening angle** as the pause **time** between untightening and subsequent tightening.
- **STOP-BY-TIME TIGHTENING** when it is necessary to tighten threaded fasteners to a certain **height and not to a defined torque.** This is made by checking the tightening time.

TPU-C3 control unit, advanced model.

The two control units compared

TPU-C1	TPU-C3
• 1 program to control tightening process	• 8 programs to control the tightening process
• Automatic recognition of the tool and configuration	• 1 programmable sequence up to a max of 8 steps
• Screw counter - Poka Yoke system	• Automatic recognition of the tool and configuration
• OK / NOK and torque value display in Nm or other unit of measurement	• Screw counter - Poka Yoke system
• “Smart Thread” function	• OK/NOK and torque value display in Nm or other unit of measurement
• “Smart Speed” function	• “Smart Thread” function
• Min / Max tightening time control - Poka Yoke system	• “Smart Speed” function
• Settable untightening speed	• Min / Max tightening time control - Poka Yoke system
• Clockwise or Counterclockwise tightening	• Settable untightening speed
• 2 levels password: to protect the set parameters or totally block the system	• Clockwise or Counterclockwise tightening
• Unit calibration	• 2 levels password: to protect the set parameters or totally block the system
• Available measurement units Nm / Lb / In. / Kgf.cm	• Unit calibration
• Serial communication (RS232)	• Available measurement units Nm / Lb / In. / Kgf.cm
• Language selection (IT, EN, DE, FR, ES)	• Serial communication (RS232)
• Log of the last 99 tightenings	• Language selection (IT, EN, DE, FR, ES)
• Interfacing with working stations	• Log of the last 99 tightenings
• 8 + 8 programmable I/O (9 + 11 signal types)	• Interfacing with working stations
• Industry 4.0: ready to access the FIAM 4.0/OPC-UA cloud	• 8 + 8 programmable I/O (21 + 22 signal types)
SMART PRO EVO PROGRAMMING	• Industry 4.0: ready to access the FIAM 4.0/OPC-UA cloud
- 4 start-up modes selectable on the unit	• Selection of programs from I / 0 (remotely)
- Soft Start - acceleration ramp	• Min / Max tightening angle control - Poka Yoke system
- Settable rotation speed	**SMART PRO EVO PROGRAMMING**
TIGHTENING STRATEGIES	- 4 start-up modes selectable on the unit
▪ Torque control	- Soft Start - acceleration ramp
▪ Torque control with tightening time monitoring	- Settable rotation speed
	• Pre-auto Untightening (can be activated with all tightening strategies)
	• Post-auto Untightening (can be activated with all tightening strategies)
	TIGHTENING STRATEGIES
	▪ Torque control
	▪ Torque control with tightening time monitoring
	▪ Torque control with tightening angle monitoring
	▪ Torque control with time and tightening angle monitoring
	▪ Angle control and torque monitoring
	▪ Time control and torque monitoring (Stop-by-time tightening)

Additional features of TPU-C3 compared to the basic unit are highlighted in red on the chart above

SCREWDRIVERS WITH TORQUE/ANGLE CURRENT CONTROL.

FUNCTIONALITY	STRIGHT MODELS		ANGLE MODELS		PISTOL MODELS	
	With TPU-C1	With TPU-C3	With TPU-C1	With TPU-C3	With TPU-C1	With TPU-C3
START UP	4 type (models E8CC10/14A... lever start only)	4 type (models E8CC10/14A... lever start only)	Lever start only	Lever start only	Push-button only	Push-button only
SMART PRO from the unit	●	●	●	●	●	●
Reduced-Effort **Start Up**	●	●	●	●	●	●
UNTIGHTENING **ACTIVABLE/DEACTIVABLE**	●	●	●	●	●	●
BLU LED Untightening	●	●	●	●	●	●
WHITE LED Ready	●	●	●	●	●	●
WHITE+BLU LED Allert	●	●	●	●	●	●
FRONT ILLUMINATION LED Adjustable	● (except for models E8CC10/14A...)	●				
TOOL SPEED	adjustable	adjustable	adjustable	adjustable	adjustable	adjustable
SOFT START	adjustable	adjustable	adjustable	adjustable	adjustable	adjustable
SMART THREAD	●	●	●	●	●	●
SMART SPEED “two-phase” tightening	●	●	●	●	●	●
PRE AND POST AUTO UNTIGHTENING adjustable		●		●		●
STOP-BY-TIME TIGHTENING tighten in depth and not to torque		●		●		●
PICK AND PLACE SYSTEMS	●	●				
ESD	●	●	●	●	●	●
Interconnection CLOUD	●	●	●	●	●	●
Software **TOOLMANAGER**	●	●	●	●	●	●
Connecting cable (3 mt) included	●	●	●	●	●	●
Extended warranty 24 months/1 million cycles	●	●	●	●	●	●

Screwdrivers technical features: straight and angle models.

	Type of screwdriver		Grip	Tightening torque on soft joint Min. / Max.		Idle speed Min. / Max.	Starting system	Reversibility	Weight		Dimensions mm	Power consumption	Accessories
	Model	**Code**	**Type**	**Nm**	**in lb**	**r.pm.**	**Type**	**Type**	**kg**	**lb**	**L x Ø**	**Volt**	**Drive**
STRAIGHT MODELS	E8CC2A-2000	111712100		0,3 ÷ 2	2.6 ÷ 17.7	300 ÷ 2000	*	↻	0,76	1.68	257x39	32	⬡ F1/4”
	E8CC3A-1200	111712101		0,3 ÷ 3	2.6 ÷ 26.5	180 ÷ 1200	*	↻	0,76	1.68	257x39	32	⬡ F1/4”
	E8CC4A-900	111712102		0,3 ÷ 4	2.6 ÷ 35.4	135 ÷ 900	*	↻	0,76	1.68	257x39	32	⬡ F1/4”
	E8CC5A-650	111712103		0,3 ÷ 5	2.6 ÷ 44.2	100 ÷ 650	*	↻	0,76	1.68	257x39	32	⬡ F1/4”
	E8CC7A-350	111712104		0,4 ÷ 7	3.5 ÷ 61.9	55 ÷ 350	*	↻	0,76	1.68	257x39	32	⬡ F1/4”
	E8CC10A-200	111712201		3 ÷ 10	26.5 ÷ 88.5	30 ÷ 200	lever start	↻	0,80	1.76	255,5x40	32	⬡ F1/4”
	E8CC14A-160	111712202		4 ÷ 14	35.4 ÷ 123.9	25 ÷ 160	lever start	↻	0,80	1.76	255,5x40	32	⬡ F1/4”
30° ANGLE MODELS	E8CC2A30-2000	111712135	30°	0.3 ÷ 2	2.6 ÷ 17.7	300 ÷ 2000	lever start	↻	0,76	1.68	322x39	32	☐ M1/4”
	E8CC3A30-1200	111712136	30°	0.3 ÷ 3	2.6 ÷ 26.5	180 ÷ 1200	lever start	↻	0,76	1.68	322x39	32	☐ M1/4”
	E8CC4A30-900	111712137	30°	0.3 ÷ 4	2.6 ÷ 35.4	135 ÷ 900	lever start	↻	0,76	1.68	322x39	32	☐ M1/4”
	E8CC5A30-650	111712138	30°	0.3 ÷ 4,5	2.6 ÷ 39.8	100 ÷ 650	lever start	↻	0,76	1.68	322x39	32	☐ M1/4”
90° ANGLE MODELS	E8CC2A90-2000	111712130	90°	0.3 ÷ 2	2.6 ÷ 17.7	300 ÷ 2000	lever start	↻	0,76	1.68	309x39	32	☐ M1/4”
	E8CC3A90-1200	111712131	90°	0.3 ÷ 3	2.6 ÷ 26.5	180 ÷ 1200	lever start	↻	0,76	1.68	309x39	32	☐ M1/4”
	E8CC4A90-900	111712132	90°	0.3 ÷ 4	2.6 ÷ 35.4	135 ÷ 900	lever start	↻	0,76	1.68	309x39	32	☐ M1/4”
	E8CC5A90-650	111712133	90°	0.3 ÷ 4,5	2.6 ÷ 39.8	100 ÷ 650	lever start	↻	0,76	1.68	309x39	32	☐ M1/4”
	E8CC8A90-250	111712134	90°	0,5 ÷ 8	4.4 ÷ 70.8	40 ÷ 250	lever start	↻	0,93	2.05	309x39	32	☐ M3/8”
	E8CC10A90-140	111712203	90°	5 ÷ 12	44.2 ÷ 106.2	20 ÷ 140	lever start	↻	1,20	2.64	344,5x40	32	☐ M3/8”
	E8CC14A90-100	111712204	90°	6 ÷ 16	53.1 ÷ 141.6	16 ÷ 100	lever start	↻	1,20	2.64	344,5x40	32	☐ M3/8”
	E8CC2A90-2000-BITS	111712140	90°	0,3 ÷ 2	2.6 ÷ 17.7	300 ÷ 2000	lever start	↻	0,76	1.68	309x39	32	⬡ F1/4” BITS
	E8CC3A90-1200-BITS	111712141	90°	0,3 ÷ 3	2.6 ÷ 26.5	180 ÷ 1200	lever start	↻	0,76	1.68	309x39	32	⬡ F1/4” BITS
	E8CC4A90-900-BITS	111712142	90°	0,3 ÷ 4	2.6 ÷ 35.4	135 ÷ 900	lever start	↻	0,76	1.68	309x39	32	⬡ F1/4” BITS
	E8CC5A90-650-BITS	111712143	90°	0,3 ÷ 4,5	2.6 ÷ 39.8	100 ÷ 650	lever start	↻	0,76	1.68	309x39	32	⬡ F1/4” BITS

Legend

E8CC2A-2000 = Electric screwdriver with torque/angle current control system
E = Electric
8 = Power of motor in watt/10
C = Screwdriver
C = Torque/angle current control system
2 = Maximum tightening torque in Nm
A = Torque control with automatic shut off
90 = 90° angle model
30 = 30° angle model
2000 = Speed
BITS = Female hexagonal output coupling for inserting tools

All screwdrivers are supplied with a working speed equal to 25% of the nominal one to guarantee tightening quality and precision.
In order to obtain the nominal torque and speed range, it is necessary to set parameters following the instructions given in Use and Maintenance Manual.
For any further information, contact the **Fiam Technical Service**.

Legend

↻ **Reversibility:** all models are suitable for tightening and untightening operation

*** Starting system: 4 available modalities for straight models**

- Lever start
- ↓ Push to start
- +↓ Lever start + push to start
- → +↓ Latched lever + push to start

The “latched lever” + push to start mode allows the screwdriver to work ↻ without need to keep the lever pressed. For safety, the screwdriver activates only when pushing on the bit. In this mode, the first pressure applied to the lever starts the screwdriver until clutch shuts off, whereas a second pressure can eventually stop it before the working cycle is completed.

- Accessory drive: female hexagonal drive 1/4”, 6,35 mm (ISO 1173); Male square drive (ISO 1174).
- The code number must be used when ordering.

Torque values refer to analysis of laboratory performing tests that comply with the standard ISO 5393 with screwdriver set at to the maximum speed and should be considered as indicative. The values in real applications can be influenced by many factors such as, for example: joint (type of joint, degree of elasticity), screw (type and length), accessory used (type or length of the blade), tightening speed, assembly conditions (free standing screwdriver, screwdriver mounted on a torque arm), operator behavior during the tightening phase.
For any further details, please address to **Fiam Technical Service**.

Screwdrivers technical features: pistol models.

	Type of screwdriver		Grip	Tightening torque on soft joint Min. / Max.		Idle speed range	Starting system	Reversibility	Weight		Dimensions mm	Power consumption	Accessories
	Model	**Code**	**Type**	**Nm**	**in lb**	**r.pm.**	**Type**	**Type**	**kg**	**lb**	**L x Ø**	**Volt**	**Drive**
PISTOL MODELS	E8CC2AP-2000	111712176		0,3 ÷ 2,0	2.6 ÷ 17.7	300 ÷ 2000	P	↻	0,67	1.32	196x174x44	32	⎔ F1/4"
	E8CC3AP-1200	111712177		0,3 ÷ 3,0	2.6 ÷ 26.5	180 ÷ 1200	P	↻	0,67	1.32	196x174x44	32	⎔ F1/4"
	E8CC4AP-900	111712178		0,3 ÷ 4,0	2.6 ÷ 35.4	135 ÷ 900	P	↻	0,67	1.32	196x174x44	32	⎔ F1/4"
	E8CC5AP-650	111712179		0,3 ÷ 5,0	2.6 ÷ 44.2	100 ÷ 650	P	↻	0,67	1.32	196x174x44	32	⎔ F1/4"
	E8CC7AP-350	111712180		0,4 ÷ 7,0	3.5 ÷ 61.9	55 ÷ 350	P	↻	0,67	1.32	196x174x44	32	⎔ F1/4"
	E8CC2APT-2000	111712181		0,3 ÷ 2,0	2.6 ÷ 17.7	300 ÷ 2000	PT	↻	0,67	1.32	196x177x44	32	⎔ F1/4"
	E8CC3APT-1200	111712182		0,3 ÷ 3,0	2.6 ÷ 26.5	180 ÷ 1200	PT	↻	0,67	1.32	196x177x44	32	⎔ F1/4"
	E8CC4APT-900	111712183		0,3 ÷ 4,0	2.6 ÷ 35.4	135 ÷ 900	PT	↻	0,67	1.32	196x177x44	32	⎔ F1/4"
	E8CC5APT-650	111712184		0,3 ÷ 5,0	2.6 ÷ 44.2	100 ÷ 650	PT	↻	0,67	1.32	196x177x44	32	⎔ F1/4"
	E8CC7APT-350	111712185		0,4 ÷ 7,0	3.5 ÷ 61.9	55 ÷ 350	PT	↻	0,67	1.32	196x177x44	32	⎔ F1/4"
	E8CC2APU-2000	111712186		0,3 ÷ 2,0	2.6 ÷ 17.7	300 ÷ 2000	PU	↻	0,67	1.32	196x175x44	32	⎔ F1/4"
	E8CC3APU-1200	111712187		0,3 ÷ 3,0	2.6 ÷ 26.5	180 ÷ 1200	PU	↻	0,67	1.32	196x175x44	32	⎔ F1/4"
	E8CC4APU-900	111712188		0,3 ÷ 4,0	2.6 ÷ 35.4	135 ÷ 900	PU	↻	0,67	1.32	196x175x44	32	⎔ F1/4"
	E8CC5APU-650	111712189		0,3 ÷ 5,0	2.6 ÷ 44.2	100 ÷ 650	PU	↻	0,67	1.32	196x175x44	32	⎔ F1/4"
	E8CC7APU-350	111712190		0,4 ÷ 7,0	3.5 ÷ 61.9	55 ÷ 350	PU	↻	0,67	1.32	196x175x44	32	⎔ F1/4"

Legend

E8CC2AP-2000 = Electric screwdriver brushless
E = Electric
8 = Power of motor in watt/10
C = Screwdriver
2 = Maximum tightening torque in Nm
A = Torque control with automatic shut off
P = Pistol grip
2000 = Speed

All screwdrivers are supplied with a working speed equal to 25% of the nominal one to guarantee tightening quality and precision.
In order to obtain the nominal torque and speed range, it is necessary to set parameters following the instructions given in Use and Maintenance Manual.
For any further information, contact the **Fiam Technical Service**.

Legend

↻ **Reversibility:** all models are suitable for tightening and untightening operation

Starting system: push button

- P= Pistol, With feeding from the BOTTOM
- PT = Pistol Top With feeding from the TOP
- PU= Pistol UpGrip With feeding from the TOP

- Accessory drive: female hexagonal drive 1/4", 6,35 mm (ISO 1173).
- The code number must be used when ordering.

Torque values refer to analysis of laboratory performing tests that comply with the standard ISO 5393 with screwdriver set at to the maximum speed and should be considered as indicative. The values in real applications can be influenced by many factors such as, for example: joint (type of joint, degree of elasticity), screw (type and length), accessory used (type or length of the blade), tightening speed, assembly conditions (free standing screwdriver, screwdriver mounted on a torque arm), operator behavior during the tightening phase.
For any further details, please address to **Fiam Technical Service**.

Standard equipment (supplied with the nutrunner motor)

- Connection cable to control unit (code 686903834); lenght 3 mt and with error proof connection system
- Hanging ring
- Eco-friendly packaging
- Use and maintenance manual

Accessories available upon request

Discover the many accessories from page 30 of this catalogue.

Control unit technical features.

Model	Code	Speed	Nr. of connectable tools	Tool feed tension	Feed input	I/O	Visual indicators	Weight kg	lb	L x Width x H mm
TPU-C1	686200105	Adjustable	1	32 VDC	230 Vac ±10% 50-60 Hz	8 inputs 8 outputs 9 + 11 signal types	7 LED DISPLAY	0,8	1.76	185x150x105
TPU-C3	686200107	Adjustable	1	32 VDC	230 Vac ±10% 50-60 Hz	8 inputs 8 outputs 21 + 22 signal types	7 LED DISPLAY	0,8	1.76	185x150x105
TPU-C1-120V	686200106	Adjustable	1	32 VDC	120 Vac ±10% 50-60 Hz	8 inputs 8 outputs 9 + 11 signal types	7 LED DISPLAY	0,8	1.76	185x150x105
TPU-C3-120V	686200108	Adjustable	1	32 VDC	120 Vac ±10% 50-60 Hz	8 inputs 8 outputs 21 + 22 signal types	7 LED DISPLAY	0,8	1.76	185x150x105

Standard equipment

- Use and maintenance manual
- Eco-friendly packaging
- The unit is equipped with adjustable tilt foot

Accessories available upon request

- **Fixing plate to position** the power supply unit on any surface. It is supplied complete with screws, and can be anchored vertically or on a horizontal support (code 692080000)

eTensil screwdrivers, nutrunner motors and TPU control units, are covered by an extended warranty of 24 months or 1.000.000 cycles (first goal achieved).

Accessories.

Pick and Place sistems.

Screw suction system.

Screw suction head.

The screw suction system allows effective picking even with types of screws where the blade/screw head engagement is often critical (see screws with Torx head print).
A particular nozzle is applied to the head of the straight screwdriver, to be customized according to the screws or the piece to be assembled, to be sent to Fiam as a sample.
The blades will also be evaluated and proposed based on the type of screws. The SSU vacuum pump must be connected to the screw suction head.

Position	Type	Code
1	Nozzle	Standard or customized
2	Screw suction head (equipped with a suction hose to be connected to the SSU vacuum pump)	682119050
3	Ring connection kit for connecting the suction head to eTensil screwdriver	681041036
	Ring connection kit for connecting the suction head to eTensil nutrunner motor	681041038
4	Bits	Standard or customized
5	Type of tools: - eTensil electric screwdrivers - eTensil electric nutrunner motors	

SSU

SSU-E

SSU - Vacuum pump.

Designed and manufactured by Fiam. Necessary for the suction of the screws.Supplied with power cable.

The model **SSU-E**, to be combined with eTensil TPU-2, TPU-M1, TPU-C1 and TPU-C3 units, in addition to the features of the SSU model, it features a screw presence detection system on the nozzle of the screw suction device to which it is connected and that automatically manages, via an external signal, the switch-on and switch-off, optimizing the energy saving and reducing noise.
Is equipped with a LED device on the front which indicates the functioning when in the suction phase.

Model	Feed input	Code
Vacuum pump SSU	230Vac-50Hz	676000120
Vacuum pump SSU	120Vac-60Hz	676000132
Vacuum pump SSU-E	230Vac-50Hz	676000121
Vacuum pump SSU-E	120Vac-60Hz	676000133
Connection cable DB15/M - L 3 mt • To connect SSU-E to TPU-2		686990058
Connection cable DB25/M - L 3 mt • To connect SSU-E to TPU-C1, TPU-C3, TPU-M1 or to the client PLC		686990059

Automatic screws presenters.

The supply includes screw presenter, 1 rail compliant with the chosen model and magnetizing device. The screw presenter is supplied with **linear rail already installed and calibrated.** It also works at 120V with the adapter provided.

For manual Pick & Place with magnetic blade.

NJ automatic screw presenters effectively feed:
- **Magnetisable screws** with PHILLIPS (or POZIDRIV) head print
- **Different screws** (shank diameter 2 ÷ 5 mm, max shank length 18 mm) simply replacing the rails.

Model	Code	For screws with shank ø mm
NJ23-R20	199923020	2,0
NJ23-R23	199923023	2,3
NJ23-R26	199923026	2,6
NJ23-R30	199923030	3,0
NJ45-R35	199923035	3,5
NJ45-R40	199923040	4,0
NJ45-R50	199923050	5,0

Rail model	Code	Screws with shank ø mm
R/RR20	649021001	2,0
R/RR23	649021002	2,3
R/RR26	649021003	2,6
R/RR30	649021004	3,0
R/RR35	649021005	3,5
R/RR40	649021006	4,0
R/RR50	649021007	5,0

The supply includes screw presenter, 1 rail compliant with the chosen model and magnetizing device. The screw presenter is supplied with **linear rail already installed and calibrated.** It also works at 120V with the adapter provided.

For manual Pick & Place with magnetic blade or screw suction systems.

NJR automatic screw presenters effectively feed:
- **Any type of screw/head** print even those with Torx or hexagon sockets
- **Different screws** (shank diameter 2 ÷ 5 mm, max shank length 18 mm) simply replacing the rails
- **Convenient pick-up point:** has a screw detection sensor with a signal output cable. The built-in cable provides a signal (on/off) that indicates if there is a screw in the pick-up area and therefor connect the screw presenter to Poka Yoke devices as e.g. LED INDICATORS

Model	Code	For screws with shank ø mm
NJR23-RR20	199923120	2,0
NJR23-RR23	199923123	2,3
NJR23-RR26	199923126	2,6
NJR23-RR30	199923130	3,0
NJR45-RR35	199923135	3,5
NJR45-RR40	199923140	4,0
NJR45-RR50	199923150	5,0

Rail model	Code	Screws with shank ø mm
RR20	649021101	2,0
RR23	649021102	2,3
RR26	649021103	2,6
RR30	649021104	3,0
RR35	649021105	3,5
RR40	649021106	4,0
RR50	649021107	5,0

The supply includes screw presenter, 1 rail compliant with the chosen model and magnetizing device. The screw presenter is supplied with **linear rail already installed and calibrated.** It also works at 120V with the adapter provided.

For manual Pick & Place with magnetic blade and magnetizable steel screws.

OM automatic screw presenters effectively feed:
- **Exclusively magnetizable steel screws** from M2 to M6 with under-head length up to 25 mm
- **Convenient pick-up point** on the rotating escape: has a screw detection sensor with a signal output cable. The built-in cable provides a signal (on/off) that indicates if there is a screw in the pick-up area and therefor connect the screw presenter to Poka Yoke devices as e.g. LED INDICATORS.

Model	Code	For screws with shank ø mm
OM-26M20	*	2,0
OM-26M23	199924023	2,3
OM-26M26	*	2,6
OM-26M30	199924030	3,0
OM-26M35	199924035	3,5
OM-26M40	*	4,0
OM-26M50	199924050	5,0
OM-26M60	199924060	6,0

Rail model	Code	Screws with shank ø mm
OMM20SET	*	2,0
OMM23SET	649021042	2,3
OMM26SET	*	2,6
OMM30SET	649021044	3,0
OMM35SET	649021045	3,5
OMM40SET	*	4,0
OMM50SET	649021047	5,0
OMM60SET	649021048	6,0

Automatic nuts presenters.

For manual Pick & Place with 5,5 ÷ 13 mm hexagonal nuts with each type of metal, self-locking nuts (upon request)

- **presenting station** (for nut pick) with special pick up socket supplied complete with retaining spring
- **integrated electronic unit** for controlling and adjusting the feeding speed of nuts

To be used with straight lever start screwdrivers (electric and pneumatic).

Model	Code	EXAGONAL NUTS			Special socket mm	Code	Retaining spring (as spare part) code
		Minimum height mm	Maximum height mm	Hexagon mm			
AM55B	199971001	2,15	2,4	5,5	5,5	605181055	528505500
AM60B	199971002	2,55	3	6	6	605181060	528506000
AM70B	199971003	2,75	3,2	7	7	605181070	528507000
AM80B	199971004	3,7	4	8	8	605181080	528508000
AMB100B	199971005	4,7	5	10	10	605181100	528510000
AMB110B	199971006	5,2	5,5	11	11	605181110	528511000
AMB130B	199971007	6,15	6,5	13	13	605181130	528513000

Poka Yoke devices.

LED Indicator.

3 colours bulb, to be connected to units through 1,5 mt long cable included in suplly.
It allows the immediate feedback of the tightening process status. It can be fixed to the workbench.

Model	For units	Code
LED Indicator	TPU-2	686990034
LED Indicator	TPU-M1	686990039
LED Indicator	TPU-C1 / TPU-C3	686990039

Tower-light with audible buzzer.

3 colours tower-light, equipped with an audible buzzer to be connected to TPU C1/TPU C3 control units. through 3 mt long cable included in supply. It allows, with lights and sound signals, the immediate feedback of the tightening process status. Diameter of 55 mm, it can be fixed to the workbench.

Model	For units	Code
Tower-light with audible buzzer	TPU-M1	686990040
Tower-light with audible buzzer	TPU-C1 / TPU-C3	686990040

SPS - Socket and Program Selector.

Poka Yoke device for selection of fastening program by picking up of sockets/bits, can work together with TPU control units. It allows the selection of up to 8 sockets or bits (with diameter up to 80 mm) and checks correspondence between socket and pre-set tightening program as indicated from linked controller. Selection LEDS and socket pick-up acoustic signal (buzz): each socket spot is indeed connected to a particular program in the controller so that, when the worker picks one socket the controller is automatically set in accordance.
Available for OPS-Open Program Selection or CPS-Controlled Program Selection.

For further information refer to the catalogue No. 97: SPS - Socket Program Selector.

Model	Code	Unit to use	Dimensions (hxpxL) mm	Weight Kg
SPS for TPU-M1	687010055	TPU-M1	239x310x63	5,8
SPS for TPU-C3	687010055	TPU-C3	239x310x63	5,8

- For diameters higher tan 42 mm, special socket tray:
  until 64 mm code 687019016 / until 80 mm code 687019022

TOM – Tightening Operation Monitor.

Production cycle monitoring unit: it accelerates the cycle time ensuring in-process control of assembled element. To be connected with the TPU-2 power unit (code 686200101) with the connection cable code 685001093.

Model	Code	Dimensions (mm)	Electric feed
TOM - Monitoring Unit	685001062	208 x 128 x 42	24 V, 110/230V - 50/60 Hz

Multi-dock Connector.

code 685001066

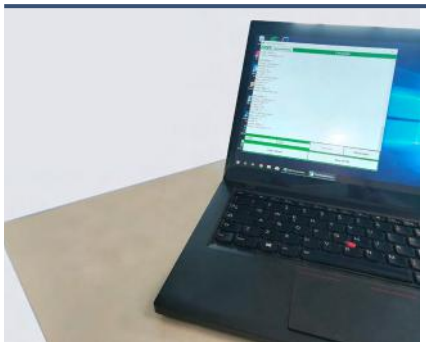
Connecting up to 8 tools (each tool has a dedicated program) that can operate individually depending on TOM programming. There are 2 LEDs for each screwdriver: one indicates the enabled screwdriver (to be used) and one indicates the tool is working. Supplied with adapter for connection with TOM and 2 connecting cables.

Interconnectivity for the Smart Factory.

Software eTensil TOOLMANAGER.

code 686200920

Software to be installed on a PC to communicate, via the serial port, with eTensil TPU-C1/C3/M1 units. It allows you to read from the units all the configurations of the tightening programs, the sequence, the I/O, as well as to save them on a PC; It is also possible to modify them or create new ones on PC and reload them on units.
Useful for facilitating configuration modification, speeding up the recall of pre-set programs and sequences and/or saved on a PC Supplied with USB stick, serial cable, RS232-to-USB adapter.



Kit Fiam HyperTerminal.

code 686200913

Fiam HyperTerminal Kit **allows to connect all Personal Computers** (including those of the latest generation) **so the network systems**, with Fiam units equipped with an RS 232 serial port.
For example, by connecting TPU control unit, it is possible to obtain the tightening results or download the configuration parameters of the set programs, thus allowing data storing to PC.

The kit includes:

USB key containing the HyperTerminal software
The exclusive software designed by Fiam with which it is possible:
• display on the PC text strings received via serial communication
• create both text files and CSV format files for Excel with the collected data
• save the data on the PC for the processing of statistics and analysis on production processes.

Adapter cable
RS232 to USB converter cable, to connect the Unit to the Personal Computer. To use this cable, it is necessary to install the relative Drivers contained in the USB key on the Personal Computer.

NULL Modem adapter
Optional adapter that can be used with other control units produced by Fiam such as shown in the table below.

Gender Changer Serial Adapter
Optional 9-pole “Female Female” type adapter that can be used with the other control units produced by Fiam as shown in the table below.

Serial cable
3 meters long with Male / Female connector to connect the unit directly to devices equipped with an RS 232 port or via the Adapter Cable.

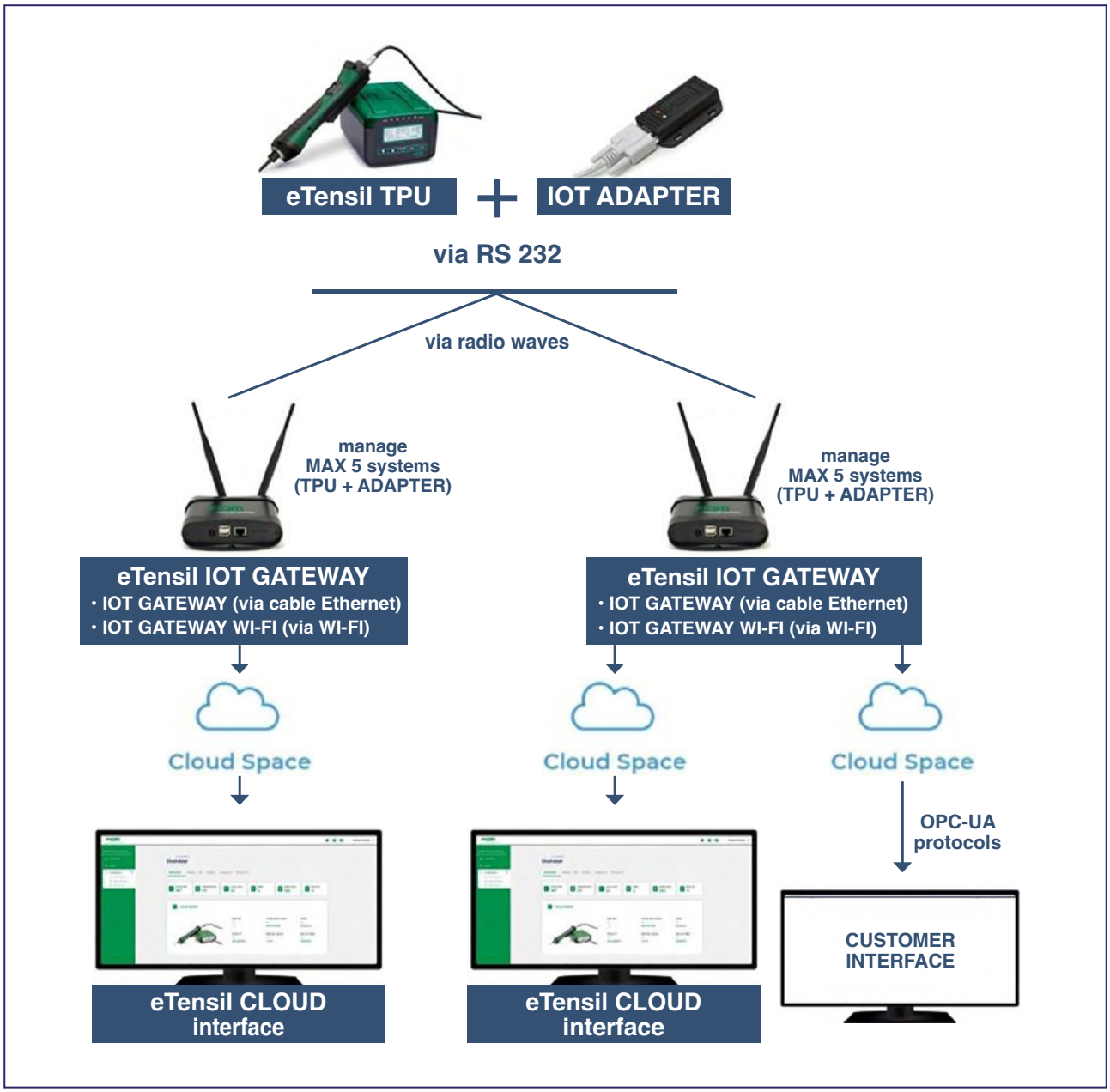
Multiple connector for I/O.

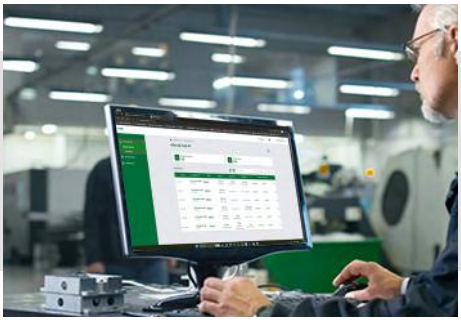
code 692079193

To be connected to the 25-pole I / O ports of Fiam TPU units. It allows to make the I/O signals available on 3 connectors and therefore the connection with 3 devices in parallel. Equipped with connection cable between unit and multiple connector and relative power supply, it has 8 status LEDs for Outputs and 8 test buttons for Input signals.

eTensil CLOUD

The eTensil TPU units interface with the management systems of production plant or they are set up for data exchange, allowing the **remote visualization, control and management of tightening processes** through “open” CLOUD platforms or eTensil Platform Cloud included with wireless Fiam devices that receive and transmit data to the CLOUD server.





REMOTE ASSISTANCE

Assistance to manage your tightening processes? It’s simple: just add Fiam as a user in eTensil CLOUD interface platform or alternatively, use an “open” application like such as, for example, TEAMVIEWER for sharing with our Technical Assistance.

eTensil IOT ADAPTER.

code 686200500

Device to be connected to the serial port of eTensil TPU-C1/C3/M1 control units. Necessary for the collection and transmission of tightening data to eTensil IOT GATEWAY. The device is equipped with diagnostics LED lights. Included 3mt length connection cable.

eTensil IOT GATEWAY.

eTensil IOT GATEWAY	Wireless device. Receives data collected by eTensil IOT ADAPTER device and transmits it to the Cloud server. The tightening data are transmitted via Ethernet cable to the included eTensil Cloud interface platform. Supplied with power supply.	code 686200550
eTensil IOT GATEWAY WIFI	Wireless device. Receives data collected by ETENSIL IOT ADAPTER device and transmits it to the Cloud server. The tightening data are transmitted via WIFI to the included eTensil Cloud interface platform. Supplied with power supply.	code 686200551
eTensil IOT GATEWAY OPC-UA	Wireless device. Receives data collected by eTensil IOT ADAPTER device and transmits it to the Cloud server. The tightening data are transmitted via Ethernet cable to the included eTensil Cloud interface platform or, via OPC-UA protocol, to the customer's platform. Supplied with power supply.	code 686200552
eTensil IOT GATEWAY OPC-UA WIFI	Wireless device. Receives data collected by eTensil IOT ADAPTER device and transmits it to the Cloud server. The tightening data are transmitted via WI-FI to the included eTensil Cloud interface platform or, via OPC-UA protocol, to the customer's platform. Supplied with power supply.	code 686200553

eTensil CLOUD INTERFACE PLATFORM.

Included in the supply of each eTensil IOT GATEWAY, it is designed to visualize, modify the set-ups and collect all the tightening data processed by eTensil systems and to remotely manage these processes in a complete and organized way.
The platform is accessible through a WEB page on the Cloud.

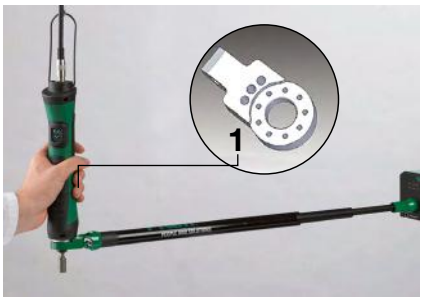
For each connected device: display of name and code, if active/offline, the settings, belonging to an operating zone and the parameters of individual programs and tightening sequences, I/O status

- Search filters for operating areas / devices / active or offline devices
- No. of screws tightened, sequences completed, screws OK/NOK, rejects/reset pressed, operating hours, no. total number of incorrect shutdowns
- Detailed display of tightening /untightening results with all parameters of date and time, tightening time and angle, torque, program reference
- The corresponding date/time print, no. of active program on the TPU unit
- Filterable table with the history of operations performed: time period up to 1 year
- All system data can also be filtered according to the desired details, displayed in a summary chart and exported as a CSV file

Accessories for ergonomics.

Reaction arms.

An advanced workstation, Smart, cannot fail to include every aspect of ergonomics, in particular the physical one which avoids any fatigue for the operator. Using Fiam reaction arms with eTensil solutions means: completely cancel the reaction on the operator's hand, the force in holding the tool as well as any vibration in the hand-arm system. They also allow you to maintain a good wrist position and the perpendicularity of the tool on the work point, improving precision and the quality of the production process.



BT-MG magnesium telescopic arms.

Telescopic arms in magnesium alloy, designed and produced by Fiam, extremely resistant to mechanical stress thus guaranteeing reliability and long life span, thanks to accurate manufacturing process and applied innovative materials.
Designed with different telescoping extension elements (3 for all models and 2 for BT-MG 10...), they are conform for working areas according to various productive needs. Double terminal coupling guarantees great handiness and maximum freedom of action also for inclined tightening operations. They can be easily installed using a simple plate with reduced dimensions.

Model	Code	Max torque (Nm)	Max torque (in lb)	Max work range (mm)	Min work range (mm)	Ø Tool (mm)
BT-MG 10 800	692071420	10	88.5	650	470	26.5÷50
BT-MG 10 1000	692071421	10	88.5	790	540	26.5÷50
BT-MG 15 800	692071409	15	132.7	860	505	26.5÷50
BT-MG 15 1000	692071401	15	132.7	1070	575	26.5÷50
BT-MG 15 1500	692071404	15	132.7	1580	745	26.5÷50

Tool holder accessory (1)

code 692079180
Only for eTensil straight models. To install the screwdriver on BT-MG reaction arm.
It allows 9 rotation positions of the screwdriver on its own axis.

BT-TOP telescopic arms.

Designed and produced by Fiam to be mounted on the top of the workbench offering an ergonomic and compact layout that allows to work effortlessly, allowing the fluid sliding of any type of tool along the vertical axis of the arm.
Their telescopic stroke and wide range of action offer flexibility and precision in the several activities in which they can be used. They integrate NO SPIN anti-rotation device that prevents the boom from rotating on its axis by counteracting the reaction on the operator's hand as the counterblow is unloaded on the telescopic arm. They are the ideal choice in spaces with side encumbrances or for working on workpiece clamping jig.

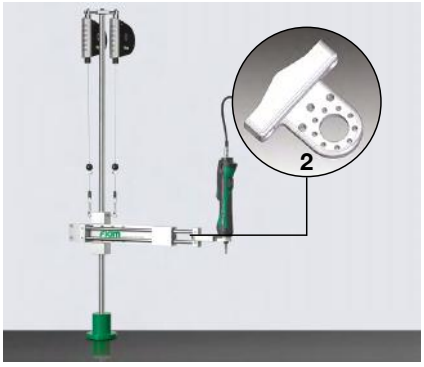
Model	Code	Max torque (Nm)	Max torque (in lb)	Ø Tool (mm)	Length max. (mm)	Telescopic stroke (mm)
BT-TOP 12 800	692071450	12	106.2	26,5÷50	800	300
BT-TOP 12 1000	692071451	12	106.2	26,5÷50	1000	300

Accessories for BT-TOP arms.

Clamp for straight eTensil screwdrivers - code **692078060**
Clamp for angle nutrunners - code **692078059**
Telescopic stroke limiter - code **692079254** for model BT-TOP 12

BCA Articulated cartesian arm

BCA-TOP Articulated cartesian arm

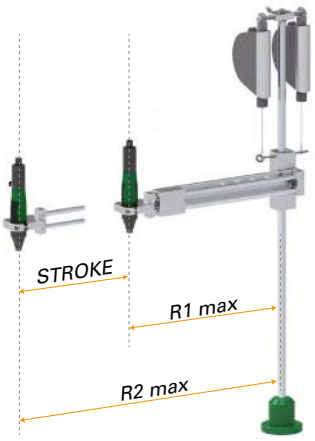


Many other accessories available for facilitate operations with maximum ergonomics (see Accessories Catalogue no. 79).

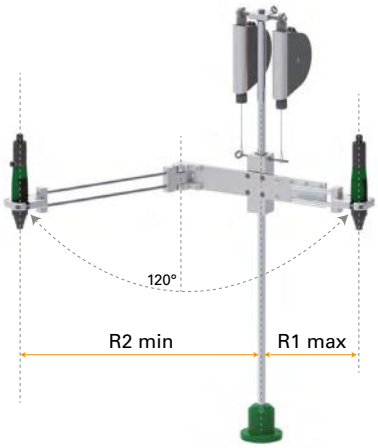
BC and BCA Cartesian arms.

Fundamental solutions for ergonomics workplace, designed and manufactured by Fiam, can be used with any type of tool with a diameter up to 50 mm and weight up to 11 kg.

- **Cartesian arms**



- **Articulated cartesian arms**



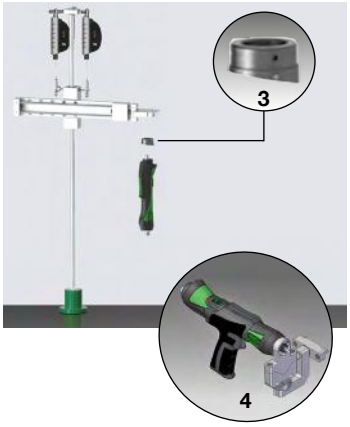
Model	Code	Max torque (Nm)	(in lb)	Max work range R1 (mm)	Min work range R2 (mm)
BC5 Cartesian arm	692031030	5	44,2	285÷445	600÷760
BC12 Cartesian arm	692031031	12	106,8	285÷445	600÷760
BCA5 Articulated cartesian arm	692031034	5	44,2	110÷260	610÷730
BCA12 Articulated cartesian arm	692031035	12	106,8	110÷260	610÷730
BC5-TOP Articulated cartesian arm	692031065	5	44,2	285÷445	600÷760
BC12-TOP Articulated cartesian arm	692031076	12	106,8	285÷445	600÷760
BCA5-TOP Articulated cartesian arm	692031067	5	44,2	110÷260	610÷730
BCA12-TOP Articulated cartesian arm	692031068	12	106,8	110÷260	610÷730

Tool holder accessories

code 692039108 (2)
For anchoring the straight screwdrivers to the Cartesian arm without damaging it or compromising its operation. Complete with assembly screws.
This accessory cannot be used with RE version eTensil screwdrivers (with external clutch adjustment).

code 681041034 (3)
An accessory for anchoring the top of the straight screwdriver to the Cartesian arm for a better view of the tightening point. Complete with assembly screws.

code 692039233 (4)
Universal clamp suitable to work on vertical or inclined surfaces using tools with pistol grip or angled heads. It promotes a good hand-arm system position by rotating around two axes. It cannot be used with BC25PK arm. For the best installation it can be combined with the accessory cod. 692039108 (ref. 2). Complete with assembly screws.



Cartesian Arm BC25PK with pneumatic pushing device.

An extraordinary aid to operators **who can take advantage of its automatic down pressure** and hence **perform tightening without having to apply pressure themselves. Pneumatic down pressure** can be set to suit the type of screw used by means of the practical control, which has an indicator showing working pressure.
While returning up after tightening, the arm **automatically returns to the rest position.**

Model	Code	Max torque (Nm)	(in lb)	Max charge (kg)	Push (kg)
BC25PK	692031054	25	221	4	3 ÷ 9

Suitable only for models with lever starting mode (straight models and external clutch adjustment screwdrivers).

SL linear slide rail for reaction arms.

This accessory makes the operating layout even more ergonomic as it allows the installed Cartesian or Telescopic arm to slide along the operating area, along a single working axis. The slide rail is made of predrilled steel for easy installation and it's equipped with a trolley (with eccentric wheels) that slides along the liner rail; wheels are adjustable during installation using the supplied wrenches. It can be bracketed above or on the workbench.

Model	For Reaction Arms	Code	Max Length of the pre-drilled rail (mm)
SL 1000 for BT-TOP	BT - TOP	692078061	1.000
SL 2000 for BT-TOP	BT - TOP	692078062	2.000
SL 1000 for BC and BCA 12/25	BC 12/25	692078063	1.000
	BCA 12/25		
	BC 12/25 TOP		
	BCA 12/25 TOP		
SL 2000 forr BC and BCA 12/25	BC 12/25	692078064	2.000
	BCA 12/25		
	BC 12/25 TOP		
	BCA 12/25 TOP		

Configuration of use of telescopic arms with positioning device.

Cartesian arm with a position monitoring device.

Arms with position monitoring device.

All Fiam arms can be fitted with **a position monitoring device and, combined with the TPM monitoring unit,** help make tightening systems very suitable for "Poka-Yoke" processes, while increasing the efficiency and speed of the production cycle.

There are two types:
- Arms with TPM-1: models with single angle movement detection
- Arms with TPM-2: models with angle and linear movement detection.

The arms must be integrated with the TPM monitoring unit code 692078019 (see below).

The guided positioning system operates as follows:

- It works through "self-learning": it locates the screwdriver position at the various tightening points and stores them together with the sequence of actions and the number of screws (up to 35 positions/program and up to 8 programs).
- The TPM unit display offers a graphical system to guide operators progressively as they approach the tightening point.
- The screwdriver is enabled when it is at the first stored position (the TPM display shows POS-OK and the POS-OK LED on the telescopic arm lights).
- Each time a screw is tightened, the REMAIN display shows how many screws are left, indicating that it is ready to pass on to the next screw.
- The END signal comes on when the stored cycle is complete, and gives the OK to proceed with a new work cycle.
- During the memorization process, a precision tolerance can be programmed within the range: for example, for a length of 1 mm ± 10% approximately; for the angle 0.1 degrees (maximum tolerances).

Model	Code	Max torque (Nm)	(in lb)	Max work range (mm)	Min work range (mm)
Models with SINGLE ANGLE movement detection					
BT-MG 15 800 - TPM1	692071425	15	132,70	985	630
BT-MG 15 1000 - TPM1	692071426	15	132,70	1195	700
BT-MG 15 1500 - TPM1	692071427	15	132,70	1705	870
BC5 -TPM1	692031046	5	44,20	285÷445	600÷760
BC12-TPM1	692031047	12	106,80	285÷445	600÷760
Models with ANGLE and LINEAR movement detection					
BT-MG 15 800 - TPM2	692071422	15	132,70	985	630
BT-MG 15 1000 - TPM2	692071412	15	132,70	1195	700
BT-MG 15 1500 - TPM2	692071415	15	132,70	1705	870
BC5 -TPM2	692031042	5	44,20	285÷445	600÷760
BCA5 -TPM2	692031050	5	44,20	110÷260	610÷730
BCA12-TPM2	692031051	12	106,80	110÷260	610÷730

The BCA Cartesian arms are arranged only with the TPM2 device being configured to monitoring the angular and linear positions.

TPM – Tightening Position Monitor.

Tightening position monitoring unit, to be used in combination with the selected arm, along with the TPU-C1 o TPU-C3 or TPU-C3 control unit and connection cable (code 692079192).
Length accuracy (mm): 1 ± 10%
Angle accuracy (degrees): 0,1°
Maximum number of screws per program: 35
Number of programs: 8
Total number of screws: 280 (35 per program, 8 programs).

Model	Code	Dimensions (mm)	Electric feed
TPM - Monitoring Unit	692078019	208 x 128 x 42	24 V, 110/230V - 50/60 Hz

In case of use with CA autofeed screwdrivers, where TPU unit I/O port is used for connection to the screw feeder, to have connection with TPM, the Multiple connector for I/O is required. Code 692076193. See page 32.

CONNECTION CABLE

Connection cable complete with 90 ° angled fitting.

code 686903841

3m-long cable connecting the screwdriver and power supply. It can be ordered separately and is useful when the screwdriver has pistol grip and the power cable drops from above.

Connection cable.

code 686903834

The 3m-long cable connecting the screwdriver and power supply unit comes with the screwdriver, though it can also be ordered separately and joined to the cable provided to achieve greater lengths.

PISTOL GRIP

AUXILIARY GRIP

Pistol grip.

code. 681041029

To convert straight models into pistol models (except for models E8CC10/14A...).

Auxiliary grip.

code 681041030

When using straight screwdrivers at torques higher than 4 Nm, it is good practice to use the auxiliary grip, which reduces the reaction by distributing it over two hands rather than one.
For models E8CC10/14A...the model code to order is 681041210.

Tightening automation. Innovating production.

The eTensil electric solutions also include a wide range of nutrunner motors which, with their compact design, dimensions and limited weight, are ideal for **multi-spindle tightening units** to assemble several fasteners simultaneously or to be installed on electronic axis to ease assembly on different surfaces or be **manipulated by anthropomorphic robots.** Multiple solutions entirely designed and produced in Fiam suitable for integration into any Smart production and with any level of control.

Nutrunner motors.

Equiped with brushless motors which are the avant-garde in efficient and consistent performance, due to their **high-precision mechanics.**
eTensil has been designed in order to obtain **endless electric lifespan,** thanks to the implementation of low wearing components, to low motor inertia and to a lower heating of the assembly. Hall sensors allow the user to have full control of rotation and ironless systems make the motor so light.
Operating at low-voltage (32 volts) means maximum safety.
They are available with different torque / angle control technologies.

CA automatic screwdrivers.

Essential when tackling tightening jobs with medium and large runs of identical screws, they are great for speeding up the production cycle with their continuous supply of screws that are automatically sent to the tightening point.
Using systems like these, which interconnect with management systems of smart factories (INDUSTRY 4.0), does away with the manual stages of picking up the screw and positioning it on the bit or on the part, **with a 30%-plus reduction in cycle times.**
Available in several versions:
- **with Auto-advance or Telescopic device**
- **with different type of screw feeders**
- **with tightening heads suitable for screw points and components**
- **with different torque / angle control.**

Equipped with EDMI software, Webserver interface for remote connection to tightening system, they interconnect with management systems production plant.

MCA tightening modules.

Tightening modules **ready and tested for integration into existent production lay out to increase production capacity.**
They comprise:
- **eTensil nutrunner motor with any type of torque/ angle control**
- **fastening slide**
- **customised screw-retaining head**
- **screw feeder.**

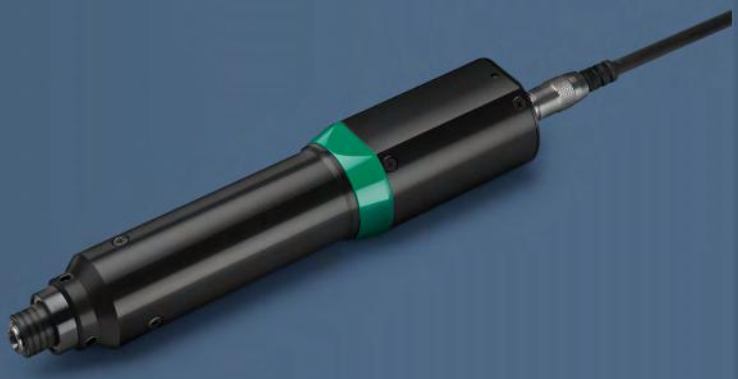
With MCA modules:
- screws are sent continuously and quickly from the bowl feeder to the screwretaining device
- the approach and subsequent tightening of the screw on the component is automatic and accurate
- the whole tightening cycle is controlled and monitored by an integrated PLC that interfaces with the automated production systems (Industry 4.0) and can be managed remotely.

The MCA module for Cobots.

These modules **pair perfectly with all collaborative robots on the market.**
There is a growing use of smaller cobots on assembly lines as they are ideal for:
- **automating repetitive operations** and making the best use of the operators' skills
- carrying out most tightening jobs automatically
- being **quickly reprogrammed** and used for different applications. Ease of programmingand very fast setup.

Strength points:
- **Auto-advance device:** the automatic bit advance to the tightening point not allows it to withdraw
- **Quality assembly:** during tightening stage, the screwdriver's head does not rest on the surfaces, protecting them from any potentially damaging contact
- **Safe:** the tip of the screw is never exposed during handling and hence cannot hit the operator.

Discover all the automation solutions here:
Automatic Solutions | Fiamgroup



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