Tightening automation.

Productivity and ergonomics
within your reach.

CA.

**Handheld tightening system
with automatic screw feeding**

Fiam®
PEOPLE AND SOLUTIONS

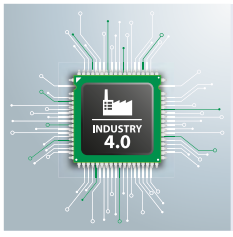
HANDHELD TIGHTENING SYSTEM
WITH AUTOMATIC SCREW FEEDING

To save you time and money.

The time needed for tightening becomes more and more essential for increasing productivity: tightening solutions with automatic screw feeding are the correct answer for setting up workstations which strongly increase productivity, allowing a return on the investment in just a short time.

This is why:

- The **manual phases** involving picking up the screw and positioning it correctly on the workpiece **are eliminated**
- They are ideal to tighten **large and medium batch of equal screws**
- They guarantee a continuous supply of **screws which are «shot» automatically** from the feeder
- **They reduce the tightening cycle times (–35%)** (see example on the next page)
- They facilitate a recovery of efficiency and **increased productivity**
- **They guarantee reduced operator fatigue** because they are easy to use and perfectly ergonomic



INDUSTRY 4.0 SOLUTIONS

CA tightening solutions are entirely designed and manufactured by Fiam to **integrate with plant management systems (INDUSTRY 4.0)** and may be eligible for the tax incentives available under current regulations.

Return on investment in a very short time.

With regard to the **return on investment,** here below we describe the example of one of our customers and how the tightening system with automatic screw feeding has modified their production times with tangible benefits.

		HOW IT WAS	HOW IT IS NOW
PHASE		OPERATOR TIME (seconds)	OPERATOR TIME (seconds)
1	Component pick-up	1	1
2	Right insert pick-up	0,5	0,5
3	Right insert placement	0,5	0,5
4	Screw 1 pick-up	0,5	~~0,5~~
5	Screw positioning on screwdriver	0,5	~~0,5~~
6	Component/screwdriver approach	1	1
7	Tightening screw 1 on insert	0,2	0,2
8	Screw 2 pick-up	0,8	~~0,8~~
9	Screw positioning on screwdriver	0,5	~~0,5~~
10	Component/screwdriver approach	1	1
11	Tightening screw 2 on insert	0,5	0,5
12	Left insert pick-up	1,5	1,5
13	Left insert placement	0,5	0,5
14	Screw 3 pick-up	1	~~1~~
15	Screw positioning on screwdriver	0,5	~~0,5~~
16	Component/screwdriver approach	1	1
17	Tightening screw 3 on insert	0,5	0,5
18	Screw 4 pick-up	0,5	~~0,5~~
19	Screw positioning on screwdriver	0,5	~~0,5~~
20	Component/screwdriver approach	0,5	0,5
21	Tightening screw 4 on insert	0,5	0,5
22	Component placement on bench	1	1
		15 s TOTAL	**10,20 s** TOTAL

–32%

(4,80 seconds/piece)

With a production of 2,000 pieces per day, the payback in this case is only 98 days: **a return on the investment in a very short time!**

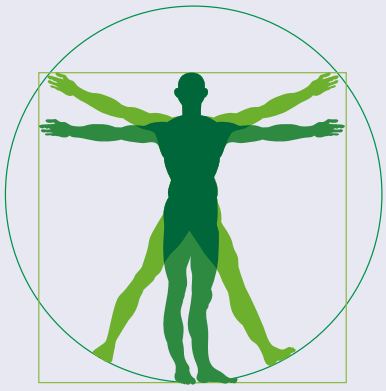
HANDHELD TIGHTENING SYSTEM
WITH AUTOMATIC SCREW FEEDING

To work with precision, reliability and great ergonomics.

Together with the high productivity given by the automatic screws feeding that present directly on the tightening point, these latest generation systems allow **precise, reliable and constant assembly**, cycle after cycle in every production sector.

Designed and built entirely by Fiam, they are:

- available with **pneumatic or electric technology**
- equipped with **different levels** of tightening parameters (torque / angle / time), to be chosen according to production needs
- they monitoring assembly cycles with **Poka Yoke systems**
- characterized by **low weights** thanks to construction materials in light alloys
- equipped with **several ergonomic features** useful to make the operators' work easy and safe.



ERGONOMIC AIDS FOR THE OPERATOR'S WELL-BEING

CA handheld tightening systems are designed to be combined with effective ergonomic aids which, in addition to preserving operator from **physical fatigue** are also useful for **reducing mental and organizational fatigue** by acting on factors such as:

- Reduction of the continuous supervision of the machine
- Facilitated management of operating flows that are increasingly varied
- Facilitation to work organization
- Immediate access to various operational information

Pistol grip
For vertical tightening points, is equipped with "multi-position" suspension device to facilitate the best tool balance.

Low noise level
The systems are very quiet especially with electric automatic screwdrivers.

High-precision mechanics and modularity
The careful design ensures the reduction to a minimum of the torque dispersion transmitted by the motor and the modular structure, allows fast maintenance interventions and a reduction of components.
For an increasingly advantageous T.C.O.

Easy and fast clutch adjustment
In pneumatic and electric eTensil automatic screwdrivers,to increase or decrease tightening torque you can adjust from the outside and therefore without intervening inside the screwdriver, through a protected access device.

Programmable screw recall
Functionality managed by the PLC located in the screw feeder. Through a dedicated command the customer is free to recall the screw as needed of its production process.

Efficient grips
The grip position, close to the tightening point, helps the operator in centering the component to be tightened.

Easy and functional starting system

Fast screw shooting
Thanks to the selector in the closed chamber, there is no dissipation of compressed air and excellent reliability of screw feeding is guaranteed.

No jamming
Blade exit synchronized with screw shooting through tightening cycle set and managed by the PLC: no jamming and continuous work cycles.

Maximum ergonomics
The hanging ring that eliminates the necessary effort in supporting the tool, the silence of the system, the grip handling and the numerous accessories available for these solutions are only some elements designed to increase ergonomics for operators.

1

EasyDriver
Screw feeders

They manage the entire working cycle with great flexibility: they manage tightening sequences quickly and easily, customizing them to the different applications.
The **INTEGRATED PLC** governs all machine parameters according to the assembly needs.

Page 8

EasyDriver ED B

EasyDriver ED B 1|1

2

Tightening devices

- **Forward bit stroke** (patented)
- **Telescopic**

To tighten all kinds of screws on any component geometry and with maximum speed and without effort.

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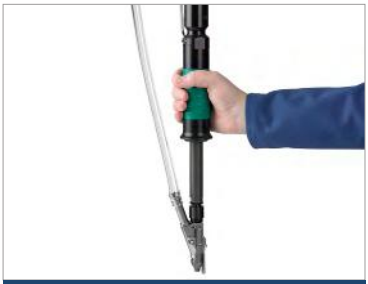

TELESCOPIC DEVICE

3

Type of screwdriver

They meet every need in terms of tightening accuracy.
Extremely sturdy, Fiam screwdrivers guarantee constant performance for all torque requirements, even when used in heavy duty conditions.
Different torque and torque/angle control systems are available for different applications and types of joint and screw.

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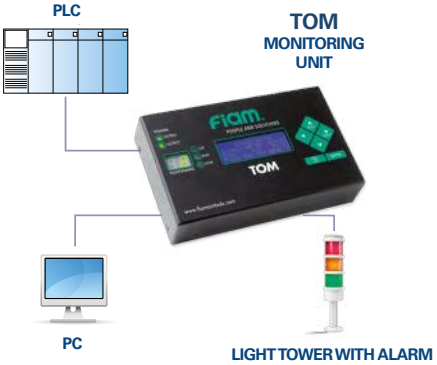
PNEUMATIC

0,4 ÷ 10 Nm

+

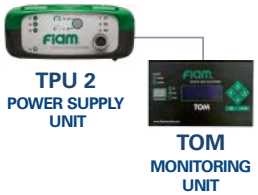


ELEC

WITH MECHANICAL CLUTCH AND AUTOMATIC SHUT OFF

0,3 ÷ 4,5 Nm

+



TPU 2
POWER SUPPLY UNIT

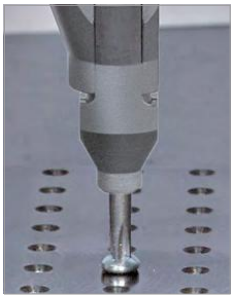
TOM
MONITORING UNIT

TPU-M1
POWER SUPPLY AND MONITORING UNIT

EasyDriver ED B M 1|1

EasyDriver ED B 2|1

FORWARD BIT STROKE DEVICE



EVEN WITH PISTOL GRIP:

ELECTRIC

TORQUE/ANGLE BY CURRENT CONTROL

0,3 ÷ 7 Nm

+

TPU-C1
CONTROL UNIT

TPU-C3
CONTROL UNIT

TORQUE/ANGLE CONTROL BY: - CURRENT CONTROL - BUILT-IN TRANSDUCER AND RESOLVER

1 ÷ 10 Nm

+

TCS-B
CONTROL UNIT

TORQUE/ANGLE CONTROL BY BUILT-IN TRANSDUCER AND RESOLVER

0,1 ÷ 5,6 Nm

+

CT 2500 A
CONTROL UNIT

EasyDriver screw feeders

High working autonomy

The vibrating bowl of models available, ensure different working autonomies and the vibrator timed system, managed by the PLC, automatically stops screw feeding when not needed thereby reducing the consumption of electricity

Selector

The high selection speed allows to reach high screw feeding frequencies; the screw shooting in a closed chamber ensures a low noise level and there are no compressed air dissipations and any screw jam is eliminated

No jamming

The 'overload' photocell makes sure no screws get jammed in the selection duct by emitting a jet of air to eliminate excess screws

INTEGRATED Siemens LOGO! PLC to manage all machine parameters

EDMI *EasyDriver Machine Interface* to connect remotely

"Poka yoke" connections

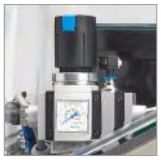
For quick and error-free installations

All clearly visible

Large transparent cover for a good internal view without having to open the machine

External keypad for immediate adjustments

Conveniently positioned: the operator does not have to open the machine to adjust parameters



Pressure under control

The air treatment unit eliminates condensation and dust present in the compressed air supply. It also regulates max supply pressure. Lubricator is also present in case of use of air screwdrivers

Analogic line pressure switch

Controls the incoming air pressure to ensure the proper functioning of all system functions

For any type of screws

For metric, self-tapping, self-drilling, trilobate screws, with double thread etc ...

Removable structure

In stainless steel and long lasting, it can easily be dismantled for maintenance. Designed to ensure all maintenance operations easy, safe and reliable

EasyDriver ED B screw feeder

Feeds screws optimally without jams.

Bowl:	**Circular, 240 mm in Ø**
Screws:	**For screws between 10 and 35 mm in lenght**
	1 x 240 mm Ø bowl feeds an air/electric screwdriver

Upon request

- **Low level sensor:** device for the bowl feeder indicates when the bowl needs screw reloading. The signal can be managed by the PLC of the tightening system or by external PLC.
- **Basic structure to support the feeder,** equipped with aluminum base plate already prepared with the holes that allow to fix the suitable feeder on it. With aluminum profiles with channels for cables and tube bundles inside the slots positioned under the support surface, is available with support adjustable feet in height even for floor fixing or with wheels.
- **Module complete with hopper** with 5 or 10 Lt capacity and to be joined to the basic structure that must be equipped in this case of fixed feet.

For details see p. 34

EasyDriver ED B 1|1 screw feeder

It is used when it is necessary to use screwdrivers with air motors that require larger FRL units and when better sound proofing is required in the work environment.

Bowl:	**Circular, 240 mm in Ø**
Screws:	**For screws between 10 and 35 mm in lenght**
Key:	**1|1 = 1 x 240 mm Ø bowl feeds an air/electric screwdriver**

Upon request

- **Low level sensor:** device for the bowl feeder indicates when the bowl needs screw reloading. The signal can be managed by the PLC of the tightening system or by external PLC.
- **Basic structure to support the feeder,** equipped with aluminum base plate already prepared with the holes that allow to fix the suitable feeder on it. With aluminum profiles with channels for cables and tube bundles inside the slots positioned under the support surface, is available with support adjustable feet in height even for floor fixing or with wheels.
- **Module complete with hopper** with 5 or 10 Lt capacity and to be joined to the basic structure that must be equipped in this case of fixed feet.

For details see p. 34

EasyDriver ED B MAXI 1|1 screw feeder

Used when the job involves large screws and also in the event of high production rates to allow the system to run unaided for longer.

Bowl:	**Circular, 420 mm in Ø**
Screws:	**For screws between 35 and 60 mm in lenght**
Key:	**MAXI 1|1 = 1 x 420 mm Ø bowl feeds an air/electric screwdriver**

Upon request

- **Low level sensor:** device for the bowl feeder indicates when the bowl needs screw reloading. The signal can be managed by the PLC of the tightening system or by external PLC.
- **MAXI structure to support the feeder,** equipped with aluminum base plate already prepared with the holes that allow to fix the suitable feeder on it. With aluminum profiles with channels for cables and tube bundles inside the slots positioned under the support surface, is available with support adjustable feet in height even for floor fixing.
- **Module complete with hopper** with 10 or 50 Lt capacity and to be joined to the MAXI structure.

For details see p. 34

EasyDriver ED B 2|1 screw feeder

With its dual circular bowls, it can process **2 geometrically similar screws,** for example differing in length or made from different materials (e.g. stainless steel / browned steel) to feed a screwdriver (one way).
Screw selection is managed by an input provided specifically for that purpose.

Bowl:	**2 circular bowls with 240 mm in Ø**
Screws:	**For screws between 10 and 35 mm in lenght**
Key:	**2|1 = 2 x 240 mm Ø bowls feeds an air/electric screwdriver**

Upon request

- **Low level sensor:** device for the bowl feeder indicates when the bowl needs screw reloading. The signal can be managed by the PLC of the tightening system or by external PLC.
- **Structure to support the feeder** equipped with aluminum base plate already prepared with the holes that allow to fix the suitable feeder on it. With aluminum profiles with channels for cables and tube bundles inside the slots positioned under the support surface, is available with support adjustable feet in height even for floor fixing.

For details see p. 34

TECHNICAL FEATURES		EASY DRIVER SCREW FEEDERS			
		ED B	ED B 1|1	ED B MAXI 1|1	ED B 2|1
					
Aluminium bowl	Ø 240mm (Capacity 1 liter)	1	1	✘	2
	Ø 420mm (Capacity 3 liters)	✘	✘	1	✘
Air - Electric system	FESTO components	✔	✔	✔	✔
Dimensions	Length [mm]	395	600	800	900
	Width [mm]	500	530	700	600
	Height [mm]	340	430	530	430
	Weight [Kg]	36	75	110	105
Tube carrying hoses and cables	Lenght 5 [m]	✔	✔	✔	✔
Filter-Regulator-Lubricator unit complete with built-in pressure gauge	G3/8 (flow rate 20 l/s)	✔	✘	✘	✘
	G1/2 (flow rate 40 l/s)	✘	✔	✔	✔
Air consumption [l/s]	Min.	2	2	2	2
	Max.	16	16	16	16
Electricity consumption, apparent power [VA] 230V/50Hz 230V/60Hz 110V/60Hz	With air nutrunner motor	180	180	320	360
	With eTensil electric nutrunner motor	255	255	400	400
	With 15 MCB electric nutrunner motor	780	780	920	1560
	With SD2500 electric nutrunner motor	780	780	920	1560
PLC Siemens LOGO! For the flexible and detailed management of the individual features of screw feeder	The machine is supplied with the parameters already set according to the cycle of customized tightening and the integrated PLC allows • Setting of the different functions of the combined nutrunner motor • Protection of the various "key" functions with 4 passwords • System configuration • Absolute counts of OK and NOK tightenings • Setting of the minimum threshold of the operating pressure through line pressure switch (minimum	✔	✔	✔	✔
Micro SD	Present in the Siemens LOGO! PLC allows to record the main tightening data which are stored at each tightening cycle or at each fault status	✔	✔	✔	✔
DATA LOG By means of a PC-readable SD card	Examples of stored **data values:** • I/O status • Internal memories • Screw shot time • Fastening time • Machine cycle time • Line pressure • Insufficient line pressure (machine stopped), • Insufficient line pressure (machine in work: tightening)	✔	✔	✔	✔
Test method	To carry out empty tightening cycles that can be set without the need for an external PLC. Useful for machine installation, setting and troubleshooting	✔	✔	✔	✔
It features a Modbus TCP/IP connection to communicate with the Factory management System (Industry 4.0)	Parameter control of: • Screw shooting time • Cycle time • Tightening time • Line pressure Using Network I/O: • Reception, in output, of all the foreseen signals (eg details of anomalies and types of NOK verified) Remote modification of machine operating parameters instead of intervening on-board PLC display	✔	✔	✔	✔
Analogic line pressure switch	For feedback on the inlet air pressure and the definition of the minimum operating pressure Useful for the correct functioning of the following features: • blows from screw overturning and overflow on vibrating bowl • power supply of the connected air tool • forward bit stroke device • screw shooting • preventing the start machine if air feeding conditions are not aligned with those set	✔	✔	✔	✔
EDMI: Web Server Interface ***(EasyDriver Machine Interface)***	• Login password • Remote connections with the main functions of machine PLC with access from PC / Mobile / Tablet • Real-time functionality: - Values Display: Screw shooting time | Cycle time | Tightening time The maximum, minimum and average time values can be displayed for them. - Monitoring of exchange I / O signals - Access to diagnostics - Line pressure display - Access to system statistics / counters regarding anomalies and cycles performed - Flowchart showing current activities and main features • Interface language: English	✔	✔	✔	✔

Interconnectivity: a key element for Industry 4.0

Not just tightening reliability, in-process checks and planning for any possible operating situation, but above all **interaction with the plant management systems.**

CA handheld tightening systems can be managed remotely just using freely programmable I/O signals or via the Modbus TCP/IP protocol; they can also **interface with line PLCs and various devices,** interacting for example with:

- Bar Code reader
- Conveyor belt
- Workpiece clamping jig activation/ deactivation systems
- Signalling and monitoring mechanisms such as LEDs, part counters, light towers.

Analysis and monitoring KPIs

In addition to checking the production cycle in real time, **data storage** can **provide statistics** to monitor the machine operating cycle, and therefore productivity, and convert this data into analysis KPIs (key performance indicators) to **optimise the tightening process cycle time.**

Built-in PLC

Included in all EasyDriver screw feeders, it manages the numerous available machine parameters and drives the coupled screwdriver.

The **integrated Modbus TCP/IP protocol** provides interconnectivity with the factory system to monitor, for example:

- the tightening results
- the screw count/work cycles for triggering maintenance or automatic screw feeder reloading
- OK sequences, i.e. the correct pre-set tightening sequence
- in-process management of process faults, e.g. stripped threads, emergencies, fault reset.

The Modbus protocol also offers a "real time" connection with the machine, and consequently remote management of the various feeder parameters.

WITH EDMI SERVICE IS IN REAL TIME

The *EDMI WebServer interface* is user-friendly and effective, allowing you to connect your MCA tightening system to a PC, mobile or tablet. With access to the main functions of the machine PLC software, you can view the machine performance and monitor its main functions; and service is made easier because the tightening system behaviour can be checked in real time.


PEOPLE AND SOLUTIONS
Name:
Password:
Log on
WEB SITE
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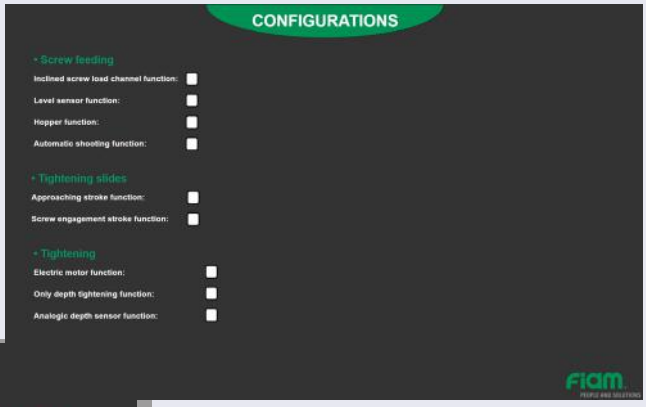
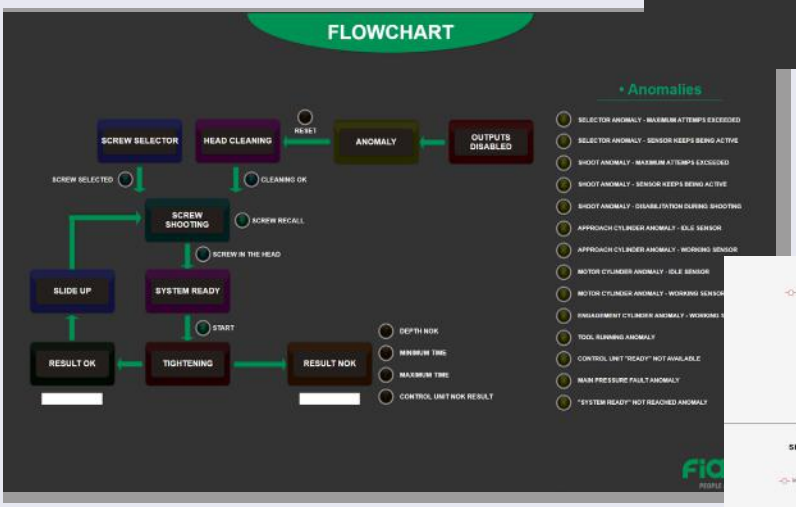
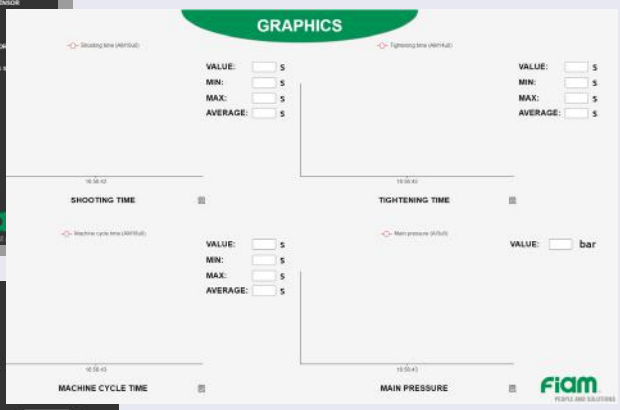
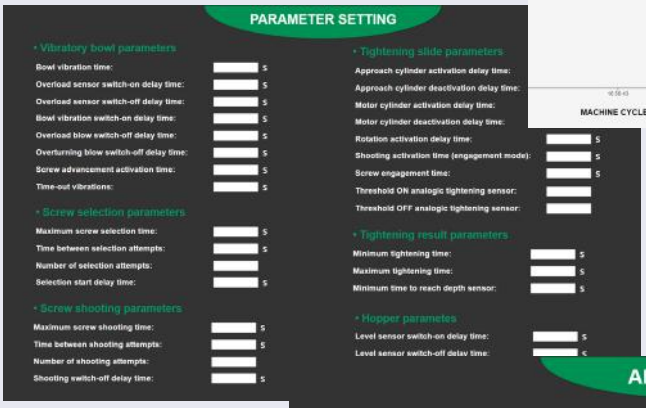
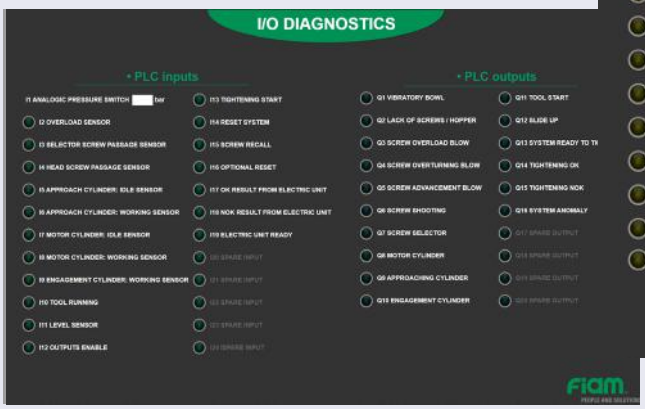
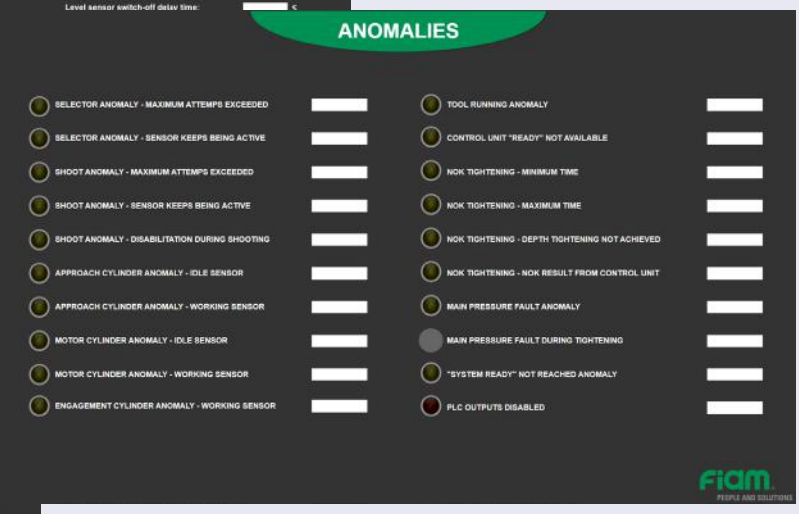

CONFIGURATIONS
• Screw feeding
Inclined screw load channel function:
Level sensor function:
Hopper function:
Automatic shooting function:
• Tightening slides
Approaching stroke function:
Screw engagement stroke function:
• Tightening
Electric motor function:
Only depth tightening function:
Analogic depth sensor function:


FLOWCHART
SCREW SELECTOR
HEAD CLEANING
RESET
ANOMALY
OUTPUTS DISABLED
SCREW SELECTED
CLEANING OK
SCREW SHOOTING
SCREW RECALL
SCREW IN THE HEAD
SLIDE UP
SYSTEM READY
START
RESULT OK
TIGHTENING
RESULT NOK
DEPTH NOK
MINIMUM TIME
MAXIMUM TIME
CONTROL UNIT NOK RESULT
• Anomalies
SELECTOR ANOMALY - MAXIMUM ATTEMPS EXCEEDED
SELECTOR ANOMALY - SENSOR KEEPS BEING ACTIVE
SHOOT ANOMALY - MAXIMUM ATTEMPS EXCEEDED
SHOOT ANOMALY - SENSOR KEEPS BEING ACTIVE
SHOOT ANOMALY - DISABILITATION DURING SHOOTING
APPROACH CYLINDER ANOMALY - IDLE SENSOR
APPROACH CYLINDER ANOMALY - WORKING SENSOR
MOTOR CYLINDER ANOMALY - IDLE SENSOR
MOTOR CYLINDER ANOMALY - WORKING SENSOR
ENGAGEMENT CYLINDER ANOMALY - WORKING SENSOR
TOOL RUNNING ANOMALY
CONTROL UNIT "READY" NOT AVAILABLE
MAIN PRESSURE FAULT ANOMALY
"SYSTEM READY" NOT REACHED ANOMALY


GRAPHICS
VALUE:
MIN:
MAX:
AVERAGE:
SHOOTING TIME
TIGHTENING TIME
MACHINE CYCLE TIME
MAIN PRESSURE
bar


PARAMETER SETTING
• Vibratory bowl parameters
Bowl vibration time:
Overload sensor switch-on delay time:
Overload sensor switch-off delay time:
Bowl vibration switch-on delay time:
Overload blow switch-off delay time:
Overturning blow switch-off delay time:
Screw advancement activation time:
Time-out vibrations:
• Screw selection parameters
Maximum screw selection time:
Time between selection attempts:
Number of selection attempts:
Selection start delay time:
• Screw shooting parameters
Maximum screw shooting time:
Time between shooting attempts:
Number of shooting attempts:
Shooting switch-off delay time:
• Tightening slide parameters
Approach cylinder activation delay time:
Approach cylinder deactivation delay time:
Motor cylinder activation delay time:
Motor cylinder deactivation delay time:
Rotation activation delay time:
Shooting activation time (engagement mode):
Screw engagement time:
Threshold ON analogic tightening sensor:
Threshold OFF analogic tightening sensor:
• Tightening result parameters
Minimum tightening time:
Maximum tightening time:
Minimum time to reach depth sensor:
• Hopper parametes
Level sensor switch-on delay time:
Level sensor switch-off delay time:


I/O DIAGNOSTICS
• PLC inputs
I1 ANALOGIC PRESSURE SWITCH
I2 OVERLOAD SENSOR
I3 SELECTOR SCREW PASSAGE SENSOR
I4 HEAD SCREW PASSAGE SENSOR
I5 APPROACH CYLINDER: IDLE SENSOR
I6 APPROACH CYLINDER: WORKING SENSOR
I7 MOTOR CYLINDER: IDLE SENSOR
I8 MOTOR CYLINDER: WORKING SENSOR
I9 ENGAGEMENT CYLINDER: WORKING SENSOR
I10 TOOL RUNNING
I11 LEVEL SENSOR
I12 OUTPUTS ENABLE
I13 TIGHTENING START
I14 RESET SYSTEM
I15 SCREW RECALL
I16 OPTIONAL RESET
I17 OK RESULT FROM ELECTRIC UNIT
I18 NOK RESULT FROM ELECTRIC UNIT
I19 ELECTRIC UNIT READY
• PLC outputs
Q1 VIBRATORY BOWL
Q2 LACK OF SCREWS / HOPPER
Q3 SCREW OVERLOAD BLOW
Q4 SCREW OVERTURNING BLOW
Q5 SCREW ADVANCEMENT BLOW
Q6 SCREW SHOOTING
Q7 SCREW SELECTOR
Q8 MOTOR CYLINDER
Q9 APPROACHING CYLINDER
Q10 ENGAGEMENT CYLINDER
Q11 TOOL START
Q12 SLIDE UP
Q13 SYSTEM READY TO TI
Q14 TIGHTENING OK
Q15 TIGHTENING NOK
Q16 SYSTEM ANOMALY


ANOMALIES
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ENGAGEMENT CYLINDER ANOMALY - WORKING SENSOR
TOOL RUNNING ANOMALY
CONTROL UNIT "READY" NOT AVAILABLE
NOK TIGHTENING - MINIMUM TIME
NOK TIGHTENING - MAXIMUM TIME
NOK TIGHTENING - DEPTH TIGHTENING NOT ACHIEVED
NOK TIGHTENING - NOK RESULT FROM CONTROL UNIT
MAIN PRESSURE FAULT ANOMALY
MAIN PRESSURE FAULT DURING TIGHTENING
"SYSTEM READY" NOT REACHED ANOMALY
PLC OUTPUTS DISABLED

2 Tightening devices

FORWARD BIT STROKE

The patented forward bit stroke, designed and manufactured by Fiam, is available for all air and electric screwdrivers and it provides **automatic bit ejection** during tightening.

Wide range of stroke of the blade
Tightening strokes can be chosen within the wide range of 100 mm and allow you to tighteng anywhere, even in very limited spaces, close to sidewalls or inside small diameter holes or very deep holes.

Reduced fatigue
Automatic bit ejection replaces operator's physical force to tighten and operation becomes even more ergonomic if the screwdriver is combined with Cartesian arm that counteracts the axial bit thrust.

Components are not damaged
The bit, in addition to always leaving the screw tip is in sight, during the tightening phase, the head of the screwdriver does not touch the component surfaces, thereby avoiding any friction.

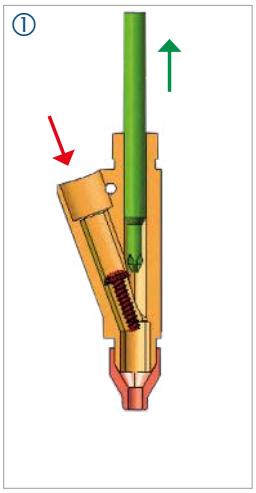
No screws loss
The screw is held by the doors and the bit while the screw shank always remains "visible", this allows the operator to easily center the tightening point and work quickly and safely. This mechanical system ensures the screw is held perfectly every time by jaws and prevents loss of screws during work or worse inside components.

Automatic contrast on the blade
The thrust of over 25 kg exerted by the blade ensures reliable tightening on any type of joint and allows to work without the bit moving backs, even for example in the case of self-drilling screws.

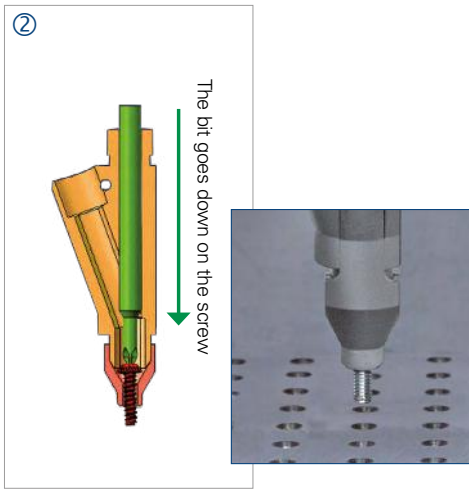
Effortless starting
The lever start, with a new generation electronic sensor, durable and reliable over time, requires a single pressure of the lever to start the tightening and a "double click" for the possible screw recall.

Quick release
The sturdy quick relase chuck ensures stability and the easy and quick engagement of the bit takes place without having to disassemble the entire device.

Smart design
The modular construction and the reduced number of components facilitate maintenance interventions. There is also a screw passage sensor that allows better monitoring of the tightening process.



SCREW LOADING:
automatic screw feed



TOOL READY:
the tool always leaves the screw visible

The versatility of the auxiliary grip to use with Cartesian arms: one handle, 3 different positions


Horizontal grip


Upper vertical grip


Bottom vertical grip

If you use the screwdriver with a Cartesian arm or one of the numerous ergonomic accessories available, you get:

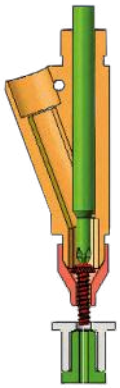
- **No effort in supporting** the screwdriver and in making the tightening
- **Smooth movements**
- Keeping the **wrist in an ergonomic** position at all times
- **Automatic contrast to the thrust** caused by the tool blade: the force is discharged onto the mechanical arm e not on that of the operator!

Find out how it works in the video and on p. 32 all features.

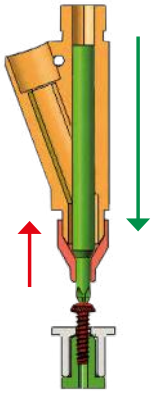
BC CARTESIAN ARM

ZERO FATIGUE!

③

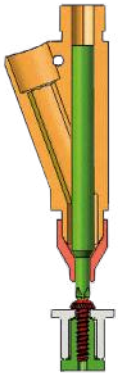

WITH SCREW VISIBLE: tightening starts, positioning is easier because the screw is visible

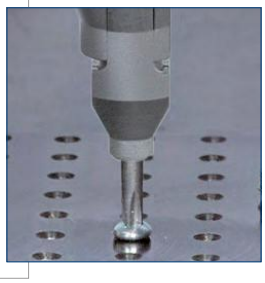
④




TIGHTENING: press the lever, the bit tightens, the screwdriver head moves away and **never** touches the surface

⑤




END OF TIGHTENING: the screw is tightened

2 Tightening devices

TELESCOPIC

This device, which can be used on pneumatic and electric auto feed screwdrivers, allows to reach tightening points in inaccessible spaces or at great depths and therefore to **tighten also inside holes thanks to its telescopic stroke of 40, 60 and100 mm.**

Its main features are:

Tighteng without fatigue

The **straight and pistol grips** provide for push or push button starting system depending on the working needs and the great smoothness of telescopic shaft allows to tighten in any operational layout.
For perfectly ergonomic station work, you can use it with Cartesian arms, articulated Cartesiam arms as well as the assisted one equipped with positioning device (discover them on pages 32 and 33).

Working with 2 tightening modes:
- with torque control
- with tightening height control

There are two built-in sensors that allow for the great operational versatility.

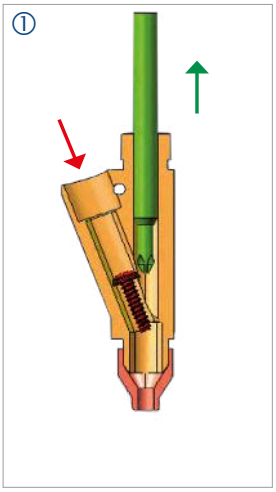
- **The first rest sensor:** always active, monitoring the head's stroke, it does not allow the screw to be called while tightening is still in progress. **The cycle stops when the set tightening torque is reached.**
- **The second depth control sensor:** allows the cycle to be stopped once **screw height reaches the preset height** above the surface the screw retaining head is resting on.

While the first sensor is always active, the second one can be activated directly from the PLC keypad of the Easy Driver screw feeder.

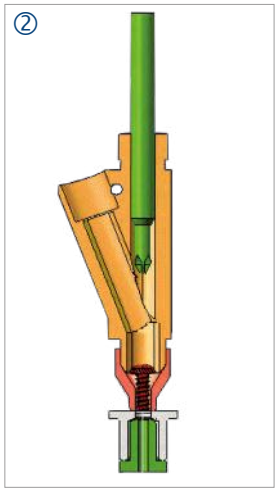
In this case, the motor is not stopped by the automatic and instantaneous torque control system, but by the sensor that cuts off the power to the motor when the tightening height is reached.

The sensor must be adjusted to the tightening height to advance or retard the motor cut out.

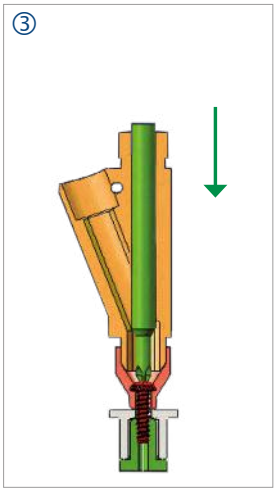
HERE'S HOW IT WORKS!



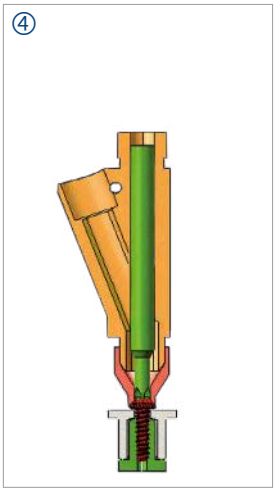
SCREW LOADING:
automatic screw feed



TOOL CONTACT:
the jaws of the screwdriver head touch the surface



TIGHTENING:
Push start system, the bit goes down and tightens



END OF TIGHTENING:
The screw is tightened, the jaws always remain in contact with the surface

Type of screwdriver

The motorization technologies that can be used with CA handheld tightening systems are numerous and to be chosen according to the application, the type of joint and screw, the production layout and the type of production rates required and also the level of monitoring and control that you want to have on the production cycle.

Those available are:

• **Air auto feed screwdrivers**	**torque control by mechanical clutch**
• **eTensil electric auto feed screwdrivers**	**torque control by mechanical clutch**
• **eTensil electric auto feed screwdrivers**	**torque/angle by current control**
• **MCB electric auto feed screwdrivers**	**torque/angle control by: - current control - built-in transducer and resolver**
• **X-PAQ electric auto feed screwdrivers**	**torque/angle control by built-in transducer and resolver**

AIR AUTO FEED SCREWDRIVERS

They are able to tighten correctly at every level of need and their sturdiness ensures constant performance over time, for torques up to 10 Nm even in heavy duty conditions and at low supply pressures.

Air auto feed screwdrivers have a mechanical clutch for torque control which automatically and instantly stops the supply air and guarantees **high torque repeatability** and low **Mean Shift, even when joint elasticity changes.**
This system makes it possible to keep torque values unaltered for hundreds of thousands of cycles and reduces the reaction to the operator's hand. Thanks to careful study of the internal gears, the vibration levels are below 2,5 m/s^2.

Clutch adjustment is easy as well fast and can be done from the outside through an access slot protected by a band device.

Screwdrivers are also equipped with a device for picking up the pneumatic signal to use Poka Yoke production cycle monitoring systems, for example with the TOM unit (see Accessories available upon request on page 32).

Features of the combinable monitoring unit (upon request)

TOM - Monitoring unit

DOUBLE DISPLAY VISUALIZATIONS

- OK / END OF CYCLE / NOK
- No. Program in use
- No. of set sequence
- No. of screws to be tightened
- No. of screws tightened on the total

- 1 sequence of 8 programs
- 99 tighten for each program
- Work cycle stop case of error

ACOUSTIC SIGNALS

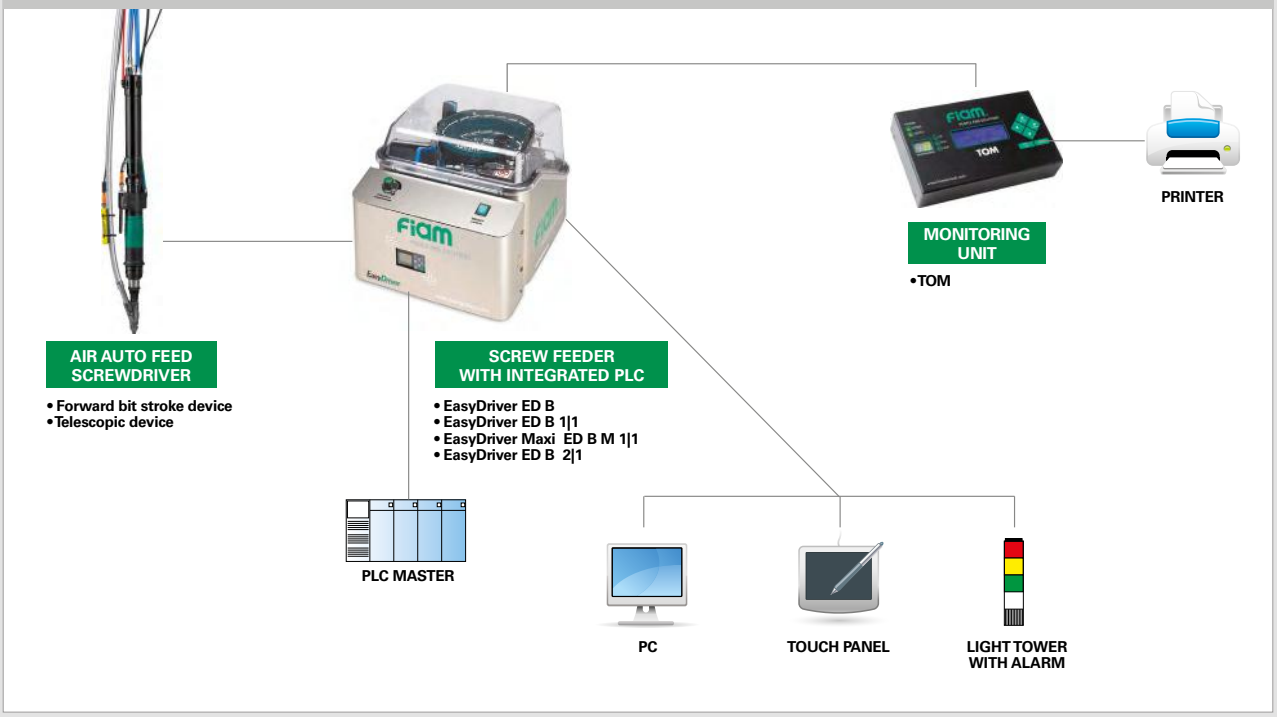
- Screw ok
- Program end
- Error
- Sequence end

For an in-depth study of the different features offered by the unit, consult the online catalog 99.

- **Language selection (IT, EN, ES, DE, FR)**
- **I/O 20 + 24**
- Statistical memory and print of tightening outcomes
- Memory up to 6.000.000 screws (pieces OK, wrong screws, Reset pressed, total screws)
- Tool functionality test
- RS 232 port for printing results
- Supplied with power supply

The features shown are those **expressed by the unit when matched with CA handheld tightening system.**
For more information, Fiam Technical Assistance Service is at your disposal.

CA HANDHELD TIGHTENING SYSTEM CONFIGURATION WITH AIR SCREWDRIVER



eTensil ELECTRIC AUTO FEED SCREWDRIVERS WITH MECHANICAL CLUTCH

The innovative auto feed screwdrivers eTensil ensure **high levels of performance and reliability with maximum safety** given their low voltage operation and perfect thermal insulation.

They stand out for:

- **Torque control with mechanichal clutch and automatich shut off.** This ensures **high repeatability** – in other words a low Mean Shift value – **even when faced with a variable joint softness level** as well as to manage low torque
- Cutting-edge brushless technology in terms of performance stability: **the high-precision mechanics and the absence of brushes ensure limited maintenance and absence of dust in the workplace**
- **Modular construction and constructive strength, designed to last and guarantee safe** and efficient servicing
- Combination with power supply or monitoring units which, in addition to providing the correct power supply parameters, integrate numerous programming functions and accurate monitoring of each phase of tightening process
- High silence and safety.

eTensil
Fiam Electric Tightening Solutions

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

Units features

It is possible to combine TPU 2 power supply unit or TPU-M1 monitoring unit which is able not only to supply the tools with the correct power supply but also to **monitor and manage all tool functions thanks to the large number of functions available** and programmable, such as detecting process anomalies such as threads or screws already tightened.

TPU-2 - POWER SUPPLY UNIT

- 5 "opto-isolated" signals in input and 5 in output
- Correct functioning LED
- Clutch shut off LED
- Anomalies / emergencies LED
- Two rotation speeds: LOW / HIGH

TPU-M1- MONITORING UNIT

- 8 programs to control tightening process
- 1 programmable sequence up to a max of 8 steps
- Screw counter - Poka Yoke system
- OK / NOK: tightening result displayed
- Min / Max tightening time control - Poka Yoke system
- Serial communication (RS232)
- Language selection (IT, EN, DE, FR, ES)
- Log of the last 99 tightenings
- Programmable I/O
- Selection of programs from I / 0 (remotely)
- Min / Max tightening angle control - Poka Yoke system

SMART PRO EVO PROGRAMMING

- Soft Start - acceleration ramp
- Settable rotation speed

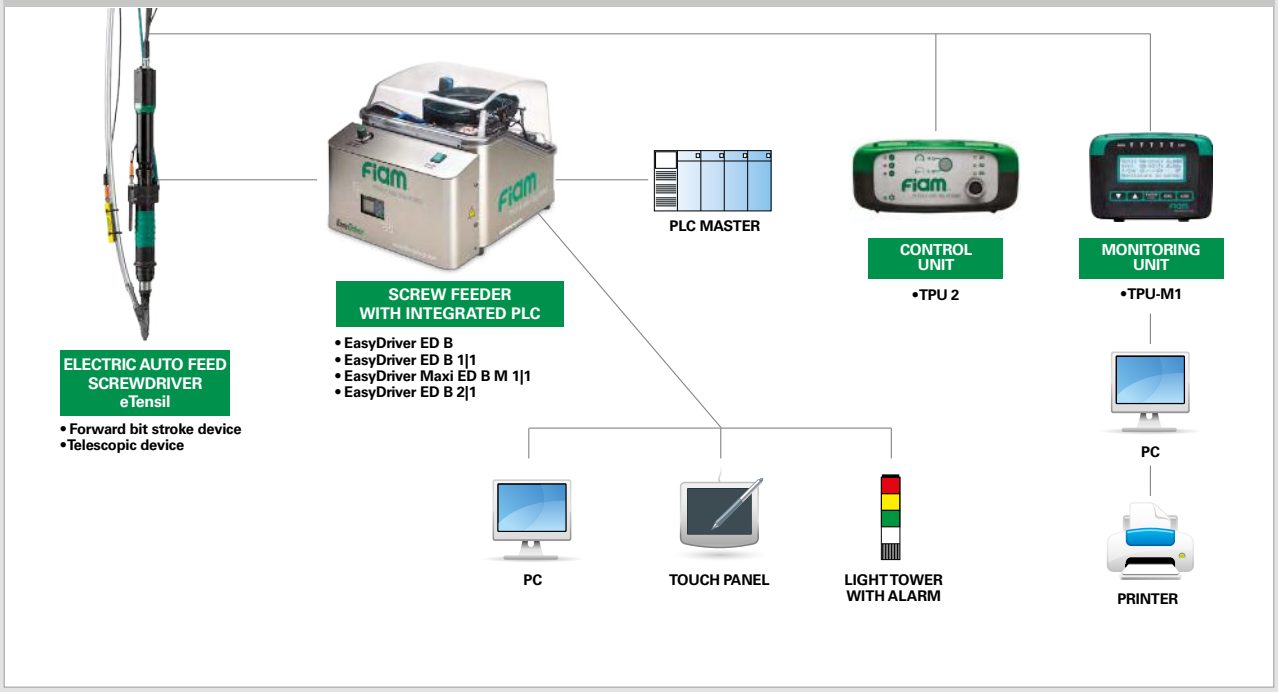
TIGHTENING STRATEGIES

- 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

For an in-depth study of the different features offered by the units, consult the online catalog 105.

The features shown are those **expressed by the units when matched with CA handheld tightening system.**
For more information, Fiam Technical Assistance Service is at your disposal.

CA HANDHELD TIGHTENING SYSTEM CONFIGURATION WITH eTensil ELECTRIC SCREWDRIVER WITH MECHANICAL CLUTCH



eTensil ELECTRIC AUTO FEED SCREWDRIVERS WITH TORQUE/ANGLE CURRENT CONTROL

The innovative control system that distinguishes these brushless electric auto feed screwdrivers is in great demand in assembly lines where components to be assembled include several variants are processed which imply, with the different geometries and different types of screws, extreme operational flexibility.

Great production flexibility

With these screwdrivers **various assemblies are possible with different parameters of torque, speed, etc. and therefore they can be used for different applications:** the same tightening system can tighten the same screw on different joints by simply adapting the programs on the mached unit. A considerable advantage in terms of investment costs.

These are their main features:

- The **torque** is detected by measuring the current used by the motor while the **angle** is detected through integrated Hall sensors
- Cutting-edge brushless technology in terms of performance stability: **the high-precision mechanics and the absence of brushes ensure limited maintenance and absence of dust in the workplace**
- **Modular construction and constructive strength, designed to last and guarantee safe** and efficient servicing
- Combination with control units that allow **controls, monitoring, analysis, diagnostics e real-time scheduling** of production process and **eliminate post-process controls**.

eTensil
Fiam Electric Tightening Solutions

24 months EXTENDED WARRANTY 1 million cycles

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

Units features

TPU-C1 - CONTROL UNIT

- 1 program to control tightening process
- Automatic recognition of the tool and configuration
- Screw counter - Poka Yoke system
- OK / NOK and torque value display in Nm or other unit of measurement
- "Smart Thread" function
- "Smart Speed" function
- Min / Max tightening time control - Poka Yoke system
- 2 levels password: to protect the set parameters or totally block the system
- Unit calibration
- Available measurement units Nm / Lb / In. / Kgf.cm
- Serial communication (RS232)
- Language selection (IT, EN, DE, FR, ES)
- Log of the last 99 tightenings
- Interfacing with working stations
- Programmable I/O

SMART PRO EVO PROGRAMMING

- Soft Start - acceleration ramp
- Settable rotation speed

TIGHTENING STRATEGIES

- Torque control
- Torque control with tightening time monitoring

TPU-C3 - CONTROL UNIT

- 8 programs to control the 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 and torque value display in Nm or other unit of measurement
- "Smart Thread" function and "Smart Speed" function
- Min / Max tightening time control - Poka Yoke system
- 2 levels password: to protect the set parameters or totally block the system
- Unit calibration • Language selection (IT, EN, DE, FR, ES)
- Available measurement units Nm / Lb / In. / Kgf.cm
- Serial communication (RS232)
- Log of the last 99 tightenings
- Interfacing with working stations
- Programmable I/O
- Selection of programs from I / 0 (remotely)
- Min / Max tightening angle control - Poka Yoke system

SMART PRO EVO PROGRAMMING

- Soft Start - acceleration ramp
- Settable rotation speed

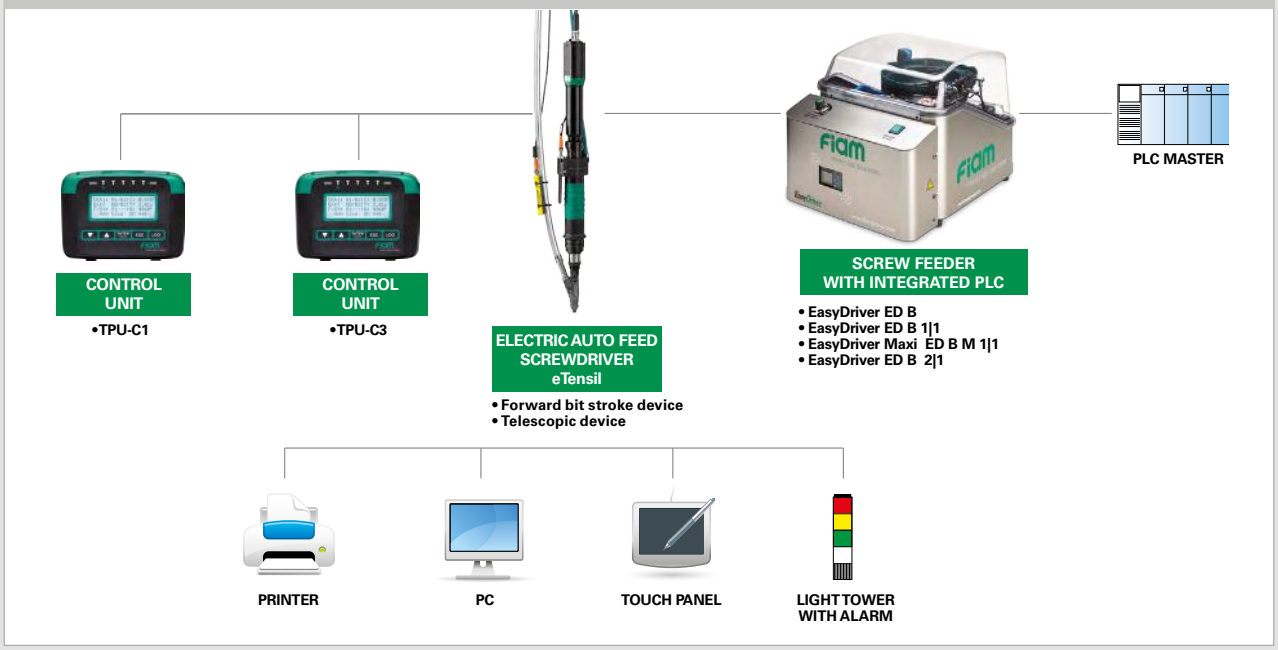
TIGHTENING STRATEGIES

- 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)

For an in-depth study of the different features offered by the units, consult the online catalog 106.

The features shown are those **expressed by the units when matched with CA handheld tightening system.**
For more information, Fiam Technical Assistance Service is at your disposal.

CA HANDHELD TIGHTENING SYSTEM CONFIGURATION WITH eTensil ELECTRIC SCREWDRIVER
WITH TORQUE/ANGLE CURRENT CONTROL



MCB ELECTRIC AUTO FEED SCREWDRIVERS
WITH TORQUE/ANGLE CONTROL BY:
- CURRENT CONTROL
- BUILT-IN TRANSDUCER AND RESOLVER

MCB brushless auto feed screwdrivers can be integrate perfectly with the network control systems of the production plant.
They allow **real-time checks, monitoring, analysis, diagnostics and programming of the production process** in each industrial sector and the consequent quality of the products they assemble.
CA handheld tightening systems with these screwdrivers boast extremely advanced features: they can **perform different assemblies with different parameters of torque, speed, etc. and therefore be used for different applications** thus guaranteeing a considerable advantage in terms of investment costs.

MCB auto feed screwdrivers are available only with **FORWARD BIT STROKE** device and can be paried to a control unit which integrates both power functions (voltage, current ...) than those of programming and careful control of each stage of the assembly process.

Available two types of control:

- **Torque/angle current control:** the torque is detected by measuring the current used by the motor while the angle is detected through integrated Hall sensors
- **Torque/angle control by transducer and the resolver integrated:** they perform torque control and angle in direct mode; for a high resolution in the measurement of the values of torque and angle and excellent control of the tightening process.

Units features

TCS-B E - CONTROL UNIT

TIGHTENING STRATEGIES

- Screw engagement, torque, torque/angle, angle/torque
- OK, NOK and RUN **LEDs**
- **I/O:** 5 +5
- RS232 connection for programming, diagnostics and data acquisition
- **Torque/angle/speed adjustment through** pre-set grid
- **Programs storage:** programs can be saved in txt format too, exported and printed
- **Data printout** including main information about last performed tightening strategy

PROGRAMMING

- **Simple, intuitive installation** on a PC with the standard equipment supplied (RS232 cable)
- **System configuration** through the quick guide
- **System calibration:** all parameters are automatically set
- **OFF LINE programming:** it is possible to create, modify and save the tightening programs without connection to TCS-B E system
- **ON LINE programming:** management of tightening programs with PC directly connected to the unit; it is possible to upload and save the tightening data directly to the PC while the tightening program works

DIAGNOSTIC CHECK

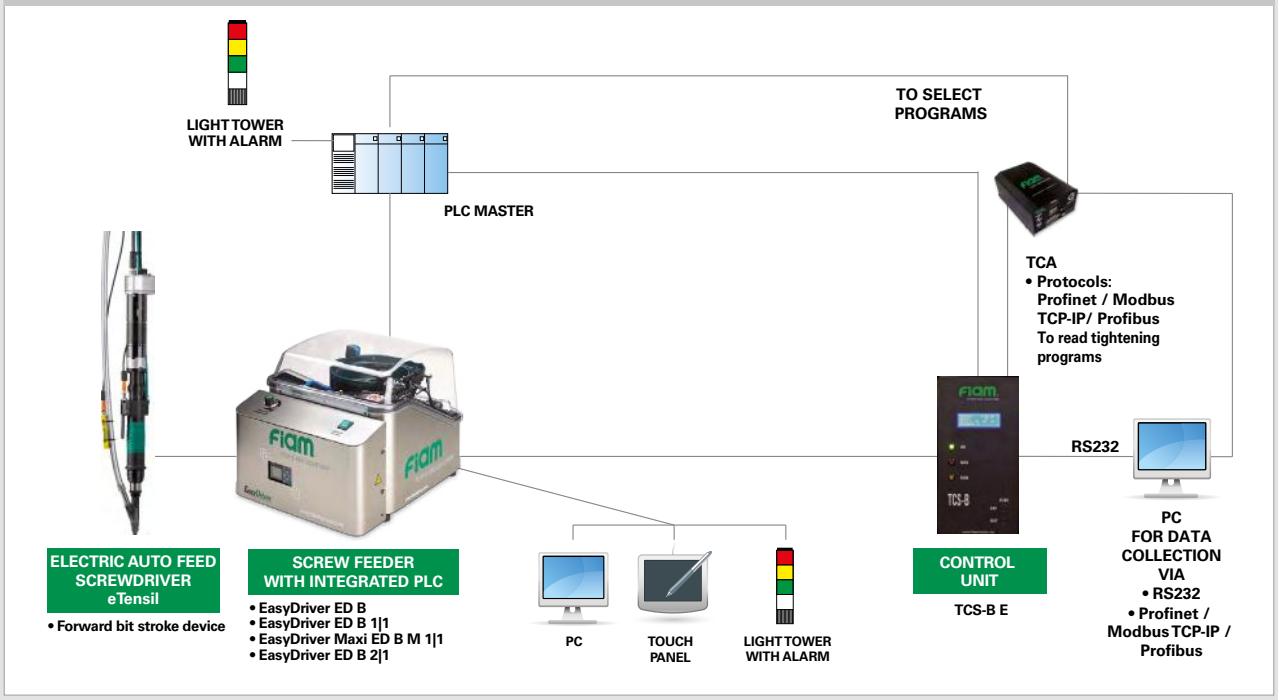
- **Displays the number and type of errors detected** (temperature, feeding tension, diagnostic test, check of motor sensors, resolver, transducer and system)
- **Following checks may be carried out:** motor rotation check, analogic measurement of the supply voltage, motor feedback signals check

The features shown are those **expressed by the unit when matched with CA handheld tightening system.**
For more information, Fiam Technical Assistance Service is at your disposal.

For an in-depth study of the different features offered by the units, consult the online catalog 71.

CA HANDHELD TIGHTENING SYSTEM CONFIGURATION WITH MCB ELECTRIC SCREWDRIVER

WITH TORQUE/ANGLE CONTROL BY:
- CURRENT CONTROL
- BUILT-IN TRANSDUCER AND RESOLVER



X-PAQ ELECTRIC AUTO FEED SCREWDRIVERS WITH TORQUE/ ANGLE CONTROL BY BUILT-IN TRANSDUCER AND RESOLVER

The high technology offered by X-PAQ electric auto feed screwdrivers fulfills every need in terms of accuracy and precision of tightening. They represent a versatile investment as well as beneficial as each system **can be programmed to perform various assembly operations** with different torque, speed, etc. parameters **so it can be used for several applications.** A conversion which ensures a considerable advantage in terms of investment costs.
Very light and silent, they tighten with perfect control over the tightening process, resulting in high finished product quality.

They are equipped with:

- **Built-in torque transducer and resolver** to ensure high resolution torque/angle parameter measurements
- **Indicator LED** to check the result of the tightening cycle directly on the tool.
  - ✔ OK (green)
  - ✔ NOK (red): when the maximum value set for the parameter (torque or angle) has been exceeded
  - ✔ NOK (yellow): when the minimum value set for the parameter (torque or angle) has not been reached
- Latest generation **brushless technology**
- **Innovative control unit** that combines the power supply (voltage, current, etc. parameters) and programming functions, with accurate control of each step of the assembly process
- **Traceability** of all assembly job data.

X-PAQ™ PRECISION | ACCURACY | QUALITY

Units features

CT2500A - CONTROL UNIT

- **Quick programming on color touch screen**
- Fully **displays the tightening process: parameters and strategies**
- **Graphic display of the tightening**
- **Instantaneously controls** the tightening torque and angle, and indicates the outcome by colouring the whole display
- **32 pre-settable "tasks"** that can be recalled
- **8 programs available for each task,** within which it is possible to set **3 different tightening strategies** available (torque control, torque control-angle, monitoring, angle control-torque monitoring) and setting of the other tightening cycle parameters
- **Screw counter**
- **Controls tightening sequences**
- **Exports tightening result files /tasks /tightening graphs**
- **Programmable I/O (input/output)** for process control and remote commands
- **DEDICATED INTERFACE DEVICE** designed to communicate with the screw feeder and the exterior
- Automatic recognition of the tool and parameters
- Password protection for three different users
- High internal memory. All tighting stored are downloadable
- Display of the last 100 cycles performed

NW2500 - Combinable module (upon request)

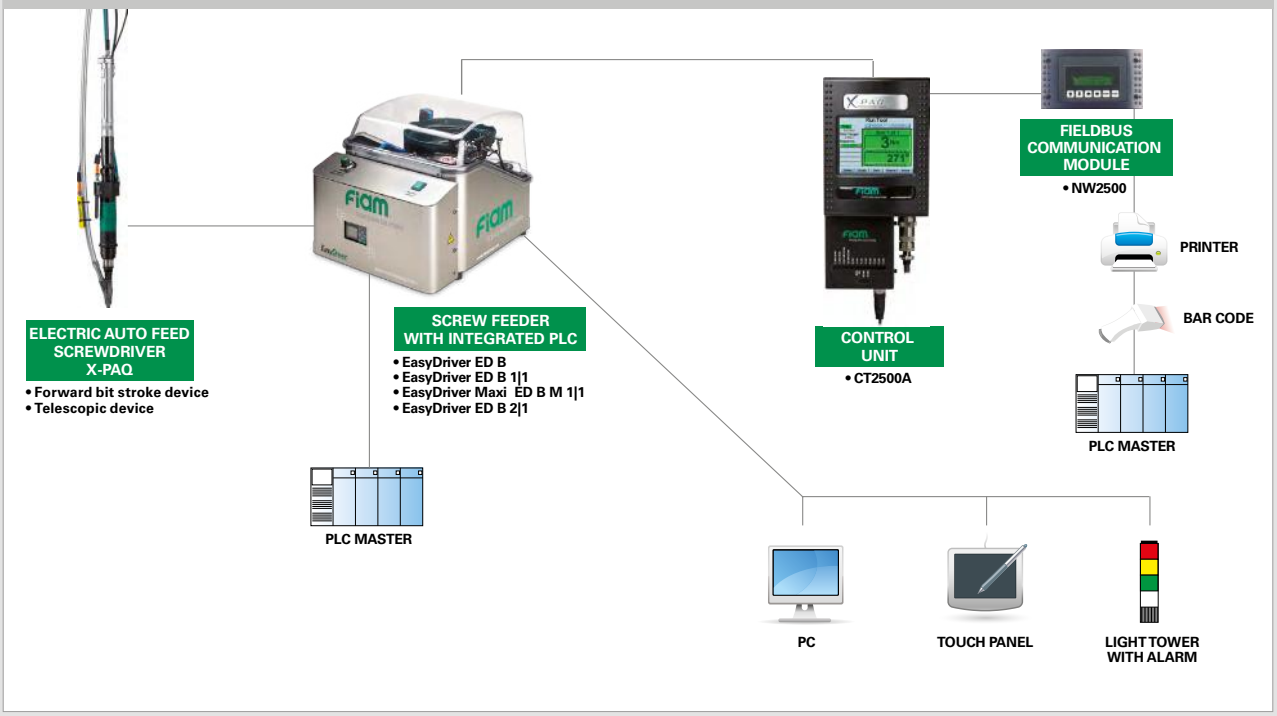
- **Module to interface the system with printers, PLCs and PCs via RS232 serial port or Ethernet port with communications protocols ACOP, Ethernet IP, ToolsNet and Profinet**
- **Allows the 32 programs available in the CT2500 unit to be recalled in sequence**
- **99 programs/sequence**

For an in-depth study of the different features offered by the units, consult the online catalog 104.

The features shown are those **expressed by the unit when matched with CA handheld tightening system.**
For more information, Fiam Technical Assistance Service is at your disposal.

CA HANDHELD TIGHTENING SYSTEM CONFIGURATION WITH X-PAQ ELECTRIC SCREWDRIVER

WITH TORQUE/ANGLE CONTROL BY BUILT-IN TRANSDUCER AND RESOLVER



Heads that make the difference!

The screw retaining heads (nose piece) **hold the screw coming from the feeder and guide it correctly and safely** to allow the bit to go down and tighten on the component.

They are the result of lengthy experience and, being a fundamental element for high quality tightening, are designed and manufactured entirely by Fiam.

The benefits:

- **an excellent screw hold**
- **perfect control of the screw on the tightening point**
- **any depth can be reached**
- **quick and easy assembly and disassembly**

High resistance to breaking and wearing:
they are built with highest quality materials through precise and accurate machining together with the treatments

Safe and reliable screw holding:
heads are equipped with jaws which are opening to release the screw when the bit starts tightening the screw on the component. They can be of different types, depending on the screw or dimensions of the component to be tightened

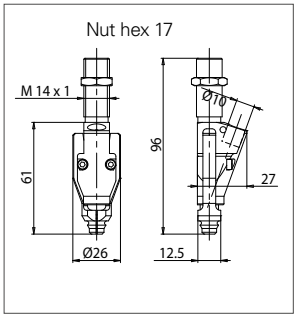
For all types of screw:
the heads have 3 different sizes to take all the various screw types on the market and additionally they can always be customised

Examples of special heads with friction jaws to access to deep tightening points, behind shoulders or for entering very narrow holes.

EVERY SCREW HAS ITS SIZE

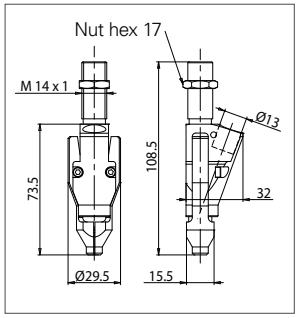
TTV - P

Ø screw head (mm)	L Total length of the screw (mm)
4,5 ÷ 7,0	max 25



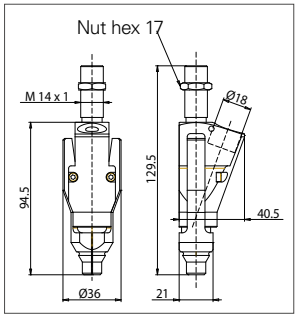
TTV - G

Ø screw head (mm)	L Total length of the screw (mm)
7,1 ÷ 10,0	max 35



TTV - M

Ø screw head (mm)	L Total length of the screw (mm)
10,1 ÷ 13,5	max 35



SOME OF THE MODELS AVAILABLE

WITH ANTI-OVERTURNING DEVICE

when you have screws with screw length / head diameter, between 1.1 (approx) and 1.5, to avoid the screw jamming

WITH FRICTION JAWS

that hold the screw on the head and not on the stem: no opening to allow the head to insert, without further encumbrances, even inside holes and deep tightening points

FOR BIG SCREWS

to tighten screws up to 45 mm length

WITH HOSE

to reach deep tightening points or inside holes

WITH SUPPORTS OR WITH SPECIAL MATERIALS

to facilitate safe and easy positioning. Special materials and geometries are designed not to damage the components during assembly

See how it works in the video!

WITH ELASTIC HOSE AND MECHANICAL SCREW GRIPPING

the hose not only holds the screw perfectly on the head but it rotates together with the screw during tightening. Ideal situation not only for embedded tightening points but also as a substitute for screw suction systems that can become inefficient in the case of assemblies on materials that create dust during tightening

CA WITH AUTO FEED SCREWDRIVERS **WITH FORWARD BIT STROKE DEVICE**

TYPE OF SCREWDRIVER Technology	Model	Tightening torque range of nutrunner motor, on soft joint Nm	Tightening torque range of nutrunner motor, on soft joint in lb	Idle speed RPM	Grip Type	Reversibility Type	Air consumption l/s	Type of matched control unit
PNEUMATIC SCREWDRIVERS torque control by mechanical clutch	CA ... D AA	0,4÷12	3,5÷106,2	500 ÷ 2700			5÷9	-
	CA ... PA AA							
ELECTRIC SCREWDRIVERS "eTensil" torque control by mechanical clutch	CA E8MC D AA U2/M1...	0,3÷4,5	2,6÷39,8	285÷2000*			5÷9	TPU2 /TPU-M1
	CA E8MC PA AA U2/M1...							
ELECTRIC SCREWDRIVERS "eTensil" torque/angle by current control	CA E8MCC D AA C1/C3...	0,3÷7	2,6÷62	55÷2000**			-	TPU-C1 /TPU-C3
	CA E8MCC PA AA C1/C3 ...							
ELECTRIC SCREWDRIVERS "X-paq" torque/angle control by built-in transducer and resolver	CA SD2500 D AA CT ...	0,1÷5,6	1÷50	500÷1700			-	CT2500A
	CA SD2500 PA AA CT ...							
ELECTRIC SCREWDRIVERS "MCB" torque/angle by current control	CA 15MCBC D AA T1 ...	1÷10	8,8÷88,5	700÷1700			-	TCS-B15E
	CA 15MCBC P AA T1 ...							
ELECTRIC SCREWDRIVERS "MCB" torque/angle control by built-in transducer and resolver	CA 15MCBA D AA T1 ...	1÷10	8,8÷88,5	700÷1700			-	TCS-B15E
	CA 15MCBA PA AA T1 ...							

Values to be considered reduced by 20% if used screw feeder EasyDriver ED B

CA WITH AUTO FEED SCREWDRIVERS **WITH TELESCOPIC DEVICE**

TYPE OF SCREWDRIVER Technology	Model	Tightening torque range of nutrunner motor, on soft joint Nm	Tightening torque range of nutrunner motor, on soft joint in lb	Idle speed RPM	Grip Type	Reversibility Type	Air consumption l/s	Type of matched control unit
PNEUMATIC SCREWDRIVERS torque control by mechanical clutch	CA 20MC D TE ...	0,4÷12	3.5÷106,2	650 ÷ 2700			5÷9	-
	CA 20MC PA TE ...							
	CA MCSE D TE ...	0,3÷4,5	2,6÷39,8	500 ÷2500			5÷9	-
	CA MCSE PA TE ...							
	CA MCY D TE ...	0,3÷7	2,6÷62	550 ÷800			5÷9	-
	CA MCY PA TE ...							
	CA 15C P TE ...	0,4÷12	1÷50	650 ÷2200			5÷9	-
	CA 26C P TE ...			400 ÷2000				
ELECTRIC SCREWDRIVERS "eTensil" torque control by mechanical clutch	CA E8MC D TE U2/M1 ...	0,3÷4,5	2,6÷39,8	285÷2000*			-	TPU2 /TPU-M1
	CA E8MC PA TE U2/M1 ...							
ELECTRIC SCREWDRIVERS "eTensil" torque/angle by current control	CA E8MCC D TE C1/C3 ...	0,3÷7	2,6÷62	55÷2000**			-	TPU-C1 /TPU-C3
	CA E8MCC PA TE C1/C3 ...							
ELECTRIC SCREWDRIVERS "X-paq" torque/angle control by built-in transducer and resolver	CA SD2500 D TE CT ...	0,1÷5,6	1÷50	500÷1700			-	CT2500A
	CA SD2500 PA TE CT ...							

Values to be considered reduced by 20% if used screw feeder EasyDriver ED B

Key:

Tightening system	CA	
Type of screwdriver	20MC	Pneumatic technology
	MCSE	Pneumatic technology
	MCY	Pneumatic technology
	15C	Pneumatic technology
	26C	Pneumatic technology
	E8MC	Electric technology eTensil
	E8MCC	Electric technology eTensil
	SD2500	Electric technology X-paq
	15MCBC	Electric technology
	15MCBA	Electric technology
Type of grip	D	Straight
	P	Pistol
	PA	Forward pistol
Tightening device	AA	Forward bit stroke device
	TE	Telescopic device
Type of control units	TM =	TOM – Monitoring unit
	U2 =	TPU 2 – Power supply unit eTensil
	M1 =	TPU-M1 - Monitoring unit eTensil
	C1 =	TPU-C1 - Control unit eTensil
	C3 =	TPU-C3 - Control unit eTensil
	CT =	CT2500A - Control unit X-paq
	T1 =	TCS-B 15 E - Control unit
Type of screw feeder	B =	Easy Driver ED B
	B11 =	Easy Driver ED B 1|1
	BM11=	Easy Driver ED B M 1|1
	B21 =	Easy Driver ED B 2|1

Air inlet: 1/4" gas
Recommended air passage: ø 8 mm
Accessories drive: ⬡ ¼

TOM monitoring unit: see page 19
TPU 2 power supply unit: see page 21
TPU-M1 monitoring unit: see page 21

TPU-C1 e TPU-C3 control units: see page 23
CT2500A control unit: see page 25
TCS-B 15 E control unit:see page 27

* For eTensil solutions with mechanical clutch, tool speed range varies according to the unit used:
- with **TPU 2,** LOW speed is approximately 80% of the maximum speed specified in the table, and can only be set with the LOW/HIGH button
- 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.

For torques and speeds other than those indicated, contact **Fiam Technical Consultancy Service**

** eTensil screwdrivers with torque/angle current control, 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.

Standard equipment

- **EasyDriver feeder**
- **With air auto feed screwdrivers:**
  - Clutch adjustment key
  - Clutch spring
- **With eTensil auto feed screwdrivers:**
  - Power supply unit/control unit with connection cables
  - Clutch adjustment key (for models with mechanical clutch)
- **With electric auto feed screwdrivers (MCB/X-paq):**
  - Control Unit
  - Kit of cables
  - Test certificate
- **Ethernet connection cable**
- **Screw-retaining head** customized for the screw, completed with bush
- **4 tightening bits** (1 fitted + 3 spares)
- **Extension for spare blade**
- **Screw shooting hose**
- **Shielded screw transit sensor** (only for screwdrivers with forward bit stroke device)
- **Hanging ring**
- **Operation and maintenance manual**
- **Eco-friendly packaging**
  Dimensions mm: L 600 x 450 x h 520

Models available upon request

- **Models equipped with rotating piston device:** for tightening on flat surfaces with particular encumbrances and with the screw visible
- **Models with screw heads** ifferent from those shown in the catalogue, all customised depending on the component
- **UpGrip pistol models:** an exclusive model to access to those working places otherwise unreachable by the traditional screwdrivers
- **Pistol models with double grip** for ergonomic access to tightening points placed at different heights on vertical surfaces

Pistol model

"UpGrip" pistol model

Accessories available upon request

TOM – MONITORING UNIT FOR THE TIGHTENING PROCESS

For real-time verification of the tightening process to eliminate the need for post process controls.
Available for all models except the auto feed air screwdriver with telescopic device.
Code TOM: **685001062.**
Code connecting cable TOM/CA: **685001074**

For more information, please see page 19 and the on-line catalogue.

Cartesian arms

These completely counteract the reaction on the operator's hand, the force required to support the tool and the vibrations to the hand-arm system. They make it possible to keep the wrist in a good position with the tool perpendicular to the work point, improving working accuracy and production process quality. Designed and manufactured entirely by Fiam.

BC Cartesian Arm

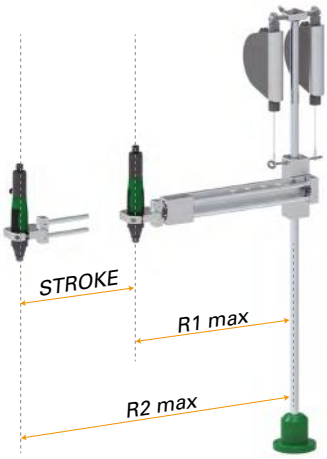
BCA Articulated Cartesian Arm

BC40LK Cartesian Arm

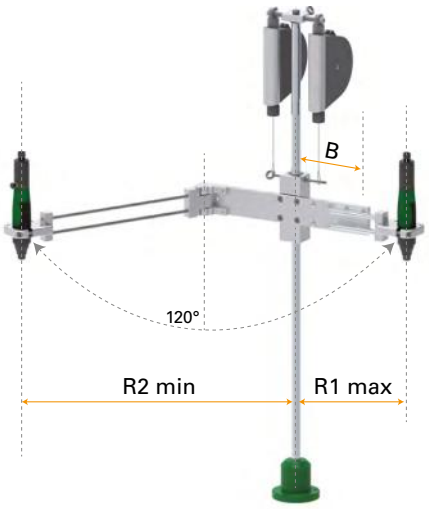
ALSO WITH PNEUMATIC LOCKING DEVICE

The BC40LK model is specific for use with auto feed screwdrivers with forward bit stroke device, which provide an automatic pushing force on the workpiece to aid operators so that they do not have to apply force while tightening.
With this Cartesian arm, in addition to all the benefits offered by Fiam Cartesian arms, operators can also profit from a **special device that counteracts the "recoil" caused by the tool bit during tightening and redirects this force to the mechanical arm rather than that of the operator.**
When there is no power supply, the system stops automatically to prevent the pneumatic device from slipping and avoid any risk of crushing and/or accidental movement. Cartesian arms are also available in the "TOP" version, with TOP clamping.

- **Cartesian Arm**



- **Articulated Cartesian Arm**



Model	Code	Max torque Nm	Max torque lb	Min - max work range R1 (mm)	Min - max work range R2 (mm)
BC40 Cartesian Arm	692031033	40	354	274-450	564-740
BC40/7 Cartesian Arm	692031038	40	354	274-450	564-740
BC40-TOP Cartesian Arm	692031077	40	354	274-450	564-740
BC40/7-TOP Cartesian Arm	692031078	40	354	274-450	564-740
BCA40 Articulated Cartesian Arm	692031037	40	354	110-260	610-730
BCA40-TOP Articulated Cartesian Arm	692031070	40	354	110-260	610-730
BC40LK Cartesian Arm	692031055	40	354	274-450	564-740

Maximum applicable load:
Models BC40 - BCA40: 2 Kg
Model BC 40/7: 7 Kg
Model BC40LK: 4 Kg

For more information, please see the on-line catalogue 79.

ERGONOMIC GRIP

To use with screwdrivers iinstalled on BC and BCA Cartesian Arms.
It allows correct gripping at any point in which the arm can operate, preventing incongruous hand-arm system positions.
The grip can be installed on the right or left of the boom, with vertical or horizontal gripping.
In all these positions, **the grip turns around its axis or can be locked, depending on how it needs to be used.**
It has a housing for the screwdriver connector as well as a lever to load and shoot screws.

Model	Code
Grip for auto feed screwdrivers	692039237

TPM - Monitoring unit

Code 692078019

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

For more information, please see on-line catalogue n. 79.

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.
The system locates the positions of the screwdriver on the different tightening points and it memories the sequence (up to 35 positions/program for 8 programs).

There are two types:
- BC... TPM1 arms, models with **single angle** movement detection
- BC...TPM2 arms, which also measure the **linear** movement of the arm in addition to its **angular** movement.

MODELS WITH SINGLE ANGLE MOVEMENT DETECTION

Model	Code	Max torque Nm	Max torque lb	Min - max work range R1 (mm)	Min - max work range R2 (mm)
BC40 - TPM1	692031049	40	354	274-450	564-740

MODELS WITH ANGLE AND LINEAR MOVEMENT DETECTION

Model	Code	Max torque Nm	Max torque lb	Min - max work range R1 (mm)	Min - max work range R2 (mm)
BC40 - TPM2	692031045	40	354	274-450	564-740
BCA40 - TPM2	692031053	40	354	110-250	564-740

The BC40 / 7 models with position detection device are available only upon request.

BA75 BALANCING ARM

Practical **bench** suspension to support **tools with diameters ranging from 25 to 50 mm and a maximum torque of 75 Nm.** Ensure **extremely high working accuracy** since the tool is held perfectly perpendicular to the workpiece being assembled. This **prevents** accidental **damage** to the materials and **improves finished product quality.**

Description	Code
BA75 Bbalancing arm	692031008

LED INDICATOR

Provide 3 types of bright, to be connected to control and monitoring units through 1,5 mt long cable included in supplly. It allows the immediate feedback of the tightening process status. It can be fixed to the workbench.

Model	For units	Code
Led indicator	TPU-C1	686990039
	TPU-C3	686990039
	TPU 2	686990034
	TPU-M1	686990039

SEMAFORO A TORRE SONORO

3 colour tower-light equipped with a sound device. To be connected to control unit through the supplied cable 3 meters long. It allows immediate verification of the state of the tightening process. With a diameter of 55 mm, it can be fixed to the workbench.

Model	For units	Code
Light tower with alarm	TPU-C1	686990040
	TPU-C3	
	TPU-M1	

SUPPORTING STRUCTURES AND HOPPERS

Entirely designed and manufactured by Fiam, they are useful to support EasyDriver feeders and their hoppers when used to solve needs production at high rates. They ensure greater cleanliness and functionality of the operational layout thanks to:

- **An aluminum base plate already prepared with the holes** that allow to fix the suitable feeder on it
- **Aluminum profiles with channels for cables and tube bundles inside the slots** positioned under the support surface
- **Support adjustable feet in height** and possibility of having additional brackets for floor fixing through a simple anchoring with supplied squares.

SUPPORTING STRUCTURES AND HOPPERS	EASY DRIVER			
	ED B	ED B 1|1	ED B M 1|1	ED B 2|1
				
Basic structure	✔	✔		
Basic structure with wheels (not suitable for the combination with modules for hoppers)	✔	✔		
Double bowl structure (not suitable for the combination with modules for hoppers)				✔
Module with hopper 5 Lt for basic structure	✔	✔		
Module with hopper 10 Lt for basic structure	✔	✔		
Basic structure complete with module with hopper 5 Lt	✔	✔		
Basic structure complete with module with hopper 10 Lt	✔	✔		
MAXI structure			✔	
Module with hopper 10 Lt for MAXI structure			✔	
Module with hopper 50 Lt for MAXI structure			✔	
MAXI structure complete with module with hopper 10 Lt			✔	
MAXI structure complete with module with hopper 50 Lt			✔	
Single Hopper 5 Lt	✔	✔		
Single Hopper 10 Lt	✔	✔	✔	
Single Hopper 50 Lt	✔	✔	✔	
*** Upon request: Low level sensor** (see characteristics pages 7 - 8)	✔	✔	✔	✔

BASIC STRUCTURE

EasyDriver ED B

EasyDriver ED B 1|1

MODULE WITH HOPPER 5/10 LT

BASIC STRUCTURE COMPLETE WITH MODULE WITH HOPPER 5/10 LT

DOUBLE BOWL STRUCTURE

EasyDriver ED B 2|1

MAXI STRUCTURE

EasyDriver ED B M 1|1

MODULE WITH HOPPER 10/50 LT

MAXI STRUCTURE COMPLETE WITH MODULE WITH HOPPER 10/50 LT

OTHER ACCESSORIES FOR WORKSTATION ERGONOMICS

- **Balancer** (code 690011220); this suspension device for tools allows the operators:
  - working safely (tools and accessories suspended in a bad way may hit the operator) and comfortably, eliminating any effort to lift the tool
  - keeping a good wrist position
- **Exhaust air hose conveyors:** suitable for CA systems with pneumatic screwdriver, they are used to convey and drive away the tool exhaust air from the operator.

CRITICAL TRANSPORT PACKAGING

A wooden crate is available for critical transport. Dimensions: mm L650x500xh715; Weight: 11 kg.

EasyDriver screws feeders: a solution also for automation.

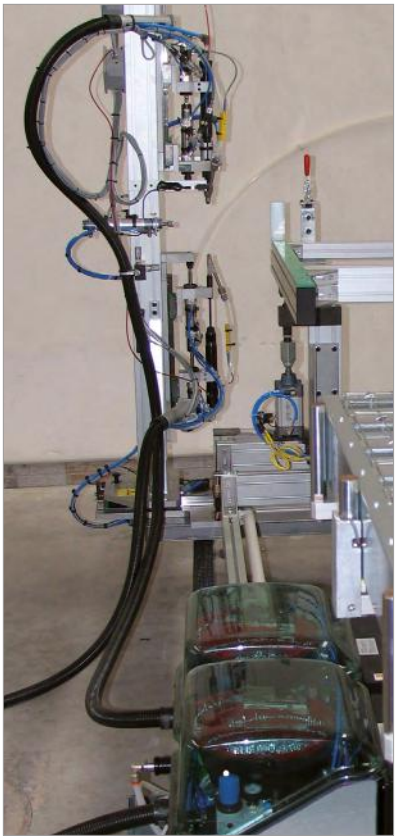
EasyDriver screw feeder, if used in conjunction with fastening slide and electric or pneumatic nutrunner motor, can become a versatile tightening module to be **incorporated into existing production systems** such as **assembly lines, manipulators, electric Cartesian axes and collaborative robots,** in order to obtain complete and independent tightening cycles using a simple external start (from PLC, dual command, start button, pedal, etc.)

This tightening module offers concrete productivity benefits because the **approach** and subsequent **tightening** of the screw on the component is fully automatic and accurate and the whole tightening cycle is **controlled and monitored by the integrated PLC** that interfaces with the automated production systems (Industry 4.0).

Find out in the online catalog 73.

EasyDriver screw feeder + **Fastening slide or module for Cobot** + **Air or electric nutrunner motor**

Example of MCA tightening module with collaborative robot



Example of MCA tightening module for shutters field: assembly from the top towards the bottom and from bottom towards the top

REQUEST A FREE QUOTATION!

To choose a CA handheld tightening system with automatic screw feeding, we have to consider:

- **Material to tighten** (plastic, wood, steel, etc.)
- **Dimensions and encumbrance** of component to assemble
- Tightening **torque and speed**
  But the most important element to consider is the **screw**.

By sending us the features through **the configurator "Data Entry 4.0" you can directly compile on our website,** you will receive a quick and no obligation,"turnkey" solution that will save you time and money!

https://www.fiamgroup.com/en/request-a-quotation/

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Quality Management System Certificate

Environmental Management System Certificate