



Tightening automation.
Only excellent solutions

CA:
automatic screw
feeding system

FIAM®
PEOPLE AND SOLUTIONS



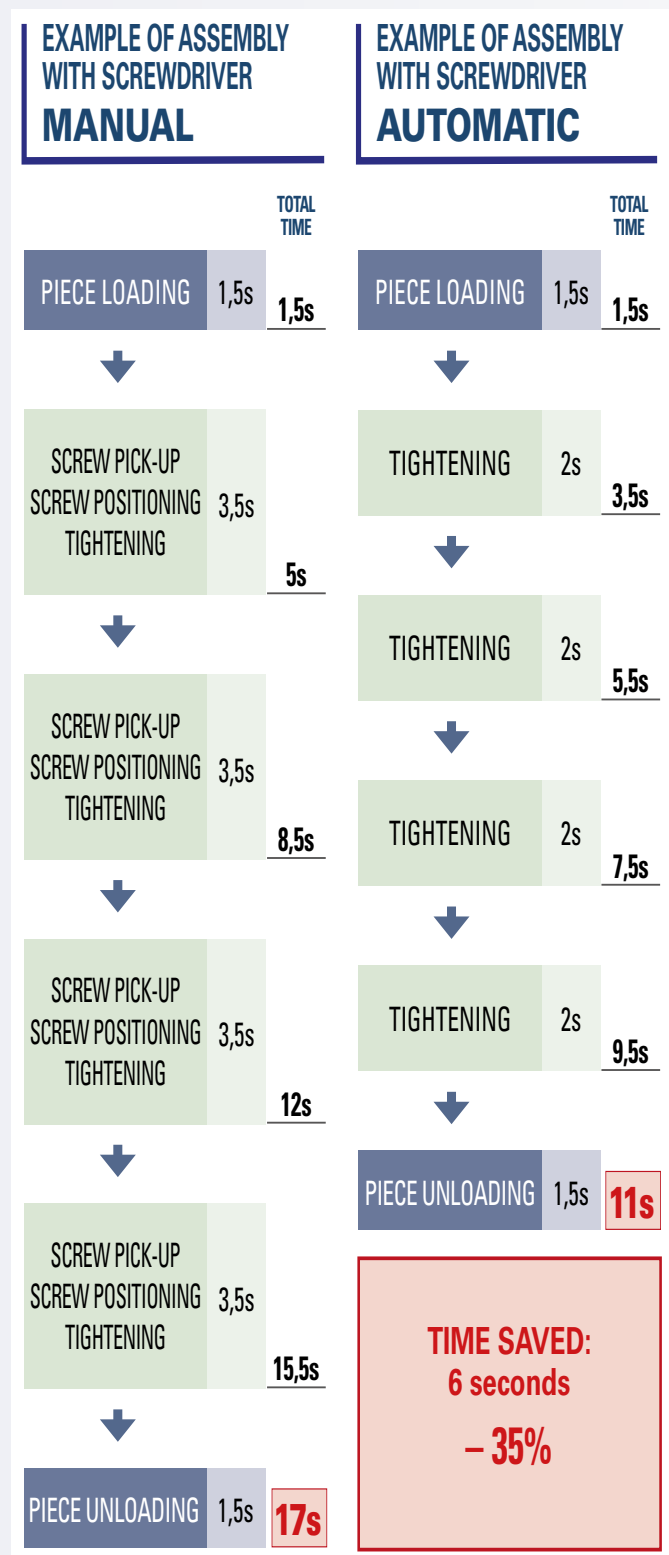
Automatic screw feeding systems

Our focus on your production cycle

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 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



le: to save you time and money

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.

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

15s → **10,20s**
TOTAL → **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!**

1

EasyDriver Screw feeder

They manage the entire working cycle with great flexibility because they manage the tightening sequences quickly and easily, customising them to the specific applications. The **INTEGRATED PLC** manages all machine parameters according to the tightening needs.

Find out all about them on page 6



EasyDriver



EasyDriver 1|1



Easy

2

Tightening device

Two devices availables:

- **Automatic forward bit stroke** (patented)
- **Telescopic.**

To tighten every kind of screw on any geometry component with maximum speed e without effort.

Find out all about them on page 8



TELESCOPIC DEVICE

3

Type of screwdriver

They can be pneumatic, electric or electronic, **they meet every need in terms of tightening accuracy.** Fiam motors guarantee constant performance for all torque requirements, even when used in heavy duty conditions.

Different torque control systems are available for different applications and types of joint and screw.

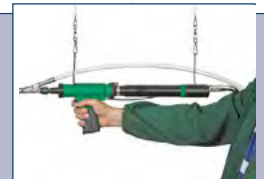
Find out all about them on page 12

PNEUMATIC

ELECTRIC

0,5 ÷ 10 Nm

0,3 ÷ 4,5 Nm



FOR EVERY TIGHTENING NEED WITH VARIOUS SCREWS:

- Metric
- Self-threading
- Self-drilling
- Three-lobe
- With knurled washer under the head
- With double thread
- ...



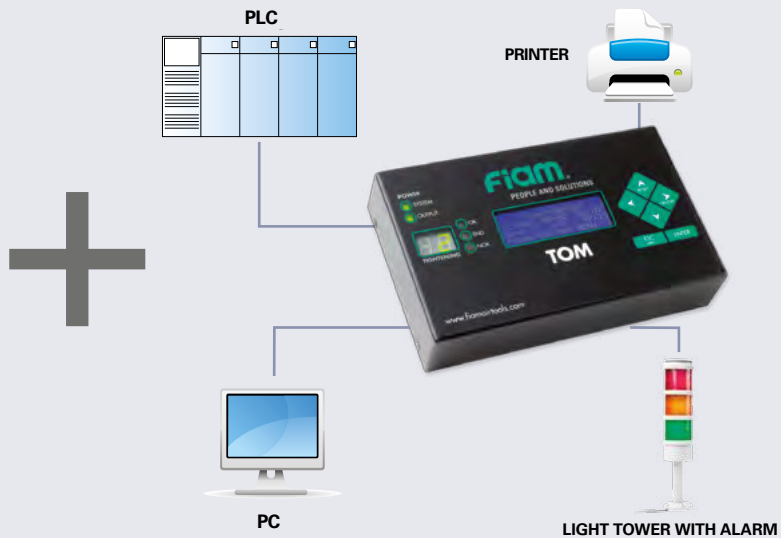
4 Tightening systems catering to all produ



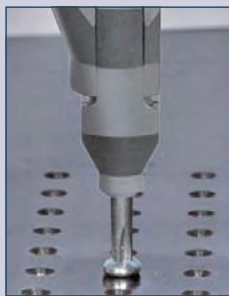
Driver Maxi 1|1



EasyDriver 2|1



AUTOMATIC FORWARD BIT STROKE DEVICE



ELECTRONIC

WITH INDIRECT CONTROL
or DIRECT CONTROL

1 ÷ 10 Nm



WITH DIRECT CONTROL

0,1 ÷ 5,6 Nm



Discover how it works!

Automatic screw feeders EasyDriver

The right solution to improve the productivity

Screw feeders Easy Driver are a concentrate of innovation for a **faster productive process**.

It is particularly suitable for **large and medium batch of equal screws**; it offers important benefits to improve the productivity: the **screw is automatically sent** from the bowl to the screwdriver head and it is possible to **start tightening immediately**.

They manage the entire working cycle with great flexibility because they manage the tightening sequences quickly and easily, customising them to the specific applications.

TECHNICAL FEATURES		EASY DRIVER			
		STANDARD	1 1	MAXI 1 1	2 1
Aluminium bowl	Ø 240mm	1	1	×	2
	Ø 420mm	×	×	1	×
Air - Electric system	Complete with solenoid valves on control board	✓	✓	✓	✓
	FESTO components	✓	✓	✓	✓
	Siemens PLC [LOGO!]	✓	✓	✓	✓
Enclosure	Stainless steel with plastic top cover	✓	×	×	×
	Steel/painted aluminium with plastic top cover	×	✓	✓	✓
	Sound absorbing	×	✓	✓	✓
Dimensions	Length [mm]	450	600	800	900
	Width [mm]	340	530	700	600
	Height [mm]	400	430	530	430
	Weight [Kg]	36	75	110	105
Tube carrying hoses and cables	Length 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	Air auto feed screwdriver	180	180	320	360
	Electronic 15 CB auto feed screwdriver	780	780	920	1560
	Electronic SD 2500 auto feed screwdriver	780	780	920	1560

EasyDriver

Standard version, feeds the screws optimally without jams.



For screws between 10 and 35 mm in length

Key:
Standard version, 1 x 240mm Ø bowl feeds a screwdriver

EasyDriver 1|1

Used when the job calls for powerful air screwdrivers that entail the use of larger FRL units.



For screws between 10 and 35 mm in length

Key:
1|1 = 1 240mm Ø bowl feeds 1 screwdriver

EasyDriver MAXI 1|1

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, even when working with small screws.



For screws between 35 and 60 mm in length

Key:
MAXI 1|1 = 1 420mm Ø bowl feeds 1 screwdriver

EasyDriver 2|1

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 slide (one way). Screw choice is managed by the feeder's PLC through a selector or by an external signal.



For screws between 10 and 35 mm in length

Key:
2|1 = 2 240mm Ø bowls feed 1 screwdriver

High working autonomy

The vibrating bowls guarantee high working autonomy (1 or 3 litres) and the vibrator timed system, managed by the PLC, automatically stops screw feeding when not needed thereby reducing the consumption of electricity



High frequency selector

It increases speed and productivity; able to feed up to 60 screws per minute



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. For high and constant system productivity



PLC Siemens LOGO! integrated into the feeder to adjust all machine parameters

The machine is supplied with all the parameters already set based on the custom tightening cycle. Through the PLC it is possible to set the different functions of the raccorded screwdriver: pneumatic, electric or electronic. It supplies the output signals of RUN and TIGHTENING OK.

Immediate monitoring

Thanks to light leds to monitor the different phases of working cycle
S1 - READY
S2 - START
S3 - CYCLE OK



Fast screw shooting

The screw is shot inside a closed chamber which optimises the productive process

Soundproofed and everything visible

The transparent cover is big and soundproof for a better view of the inside without having to open the machine

Internal structure in stainless steel

To guarantee long lifetime



External keypad for immediate adjustments

The operator can make adjustments without opening the machine



Pressure under control

Filter, regulator and lubricator group with air pressure gauge, filters the inlet air and maintains constant the machine feed guaranteeing suitable tool lubrication



Tightening mode selection

- torque and depth control, or
- depth control



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 in compliance with Directive 42/2006/EC

Forward bit stroke device: technology and advantages

The patented forward bit stroke, designed and manufactured by Fiam, is available for all air, electric and electronic screwdrivers. It provides **automatic bit ejection** reducing operator fatigue, **keeps the screw visible** and **prevents it from going back**. In addition, during the tightening phase, the head of the screwdriver does not touch the surfaces of the component, thereby avoiding any friction.

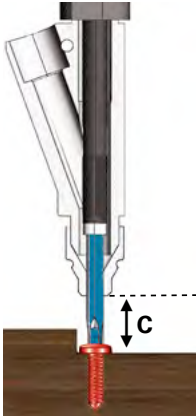
Consequently, the forward bit stroke device is suitable for tightening **without effort where space is limited, such as close to sidewalls, or inside small diameter holes or holes that are very deep**.

The forward bit stroke device can be supplied in a variety of versions with different bit strokes to be chosen according to the tightening needs (see the chart at the side).

The auto feed screwdrivers equipped with this device have a start lever: with a click the tightening starts, with a double click the screw is shot.



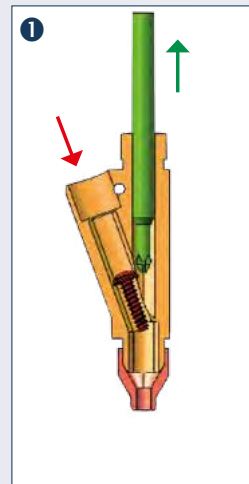
The advantages



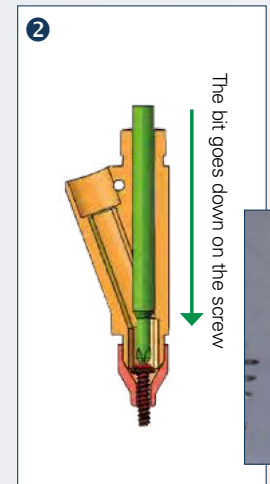
C = BIT EJECTION			
TYPE OF FORWARD BIT STROKE DEVICE	HEAD TTV-P	HEAD TTV-G	HEAD TTV-M
WITH STANDARD STROKE	21	18	15
WITH MEDIUM STROKE	46	43	40
WITH LONG STROKE	21	18	15

Ejection of the bit from the head (part C) can be different depending on the type of forward bit stroke device and on the dimensions of the head used

(measurements are indicative and may differ depending on the application and the screw used)



SCREW LOADING: automatic screw feed



TOOL READY: the tool always leaves the screw visible

**PATENTED
by FIAM**

Components are not damaged

Screw tip is in sight and the bit forward stroke automatically retracts screwdriver's nozzle thus, parts surface is left untouched (varnished surfaces, electronic cards)

Fastening process is speeded up

Screw tip is visible to the operator therefore easing centering on screw hole, streamlining process time and safety.

No jamming

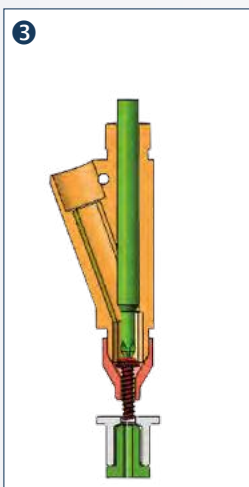
Bit ejection is synchronized with the screw being shot, by the cycle managed by PLC, to prevent any jamming and ensure continuous work cycles

Long bit stroke

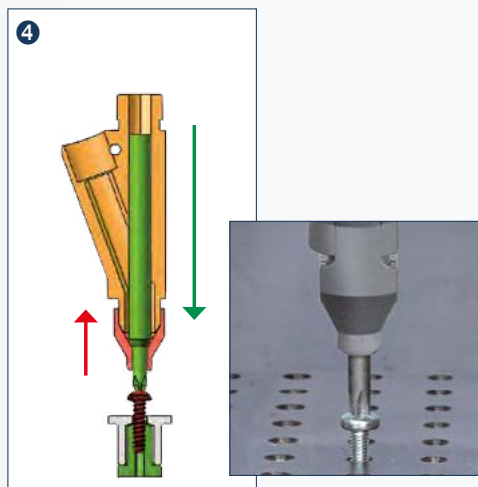
Allows reaching tightening points with difficult access (such as close to sidewalls) or narrow recesses

High bit contrasting force

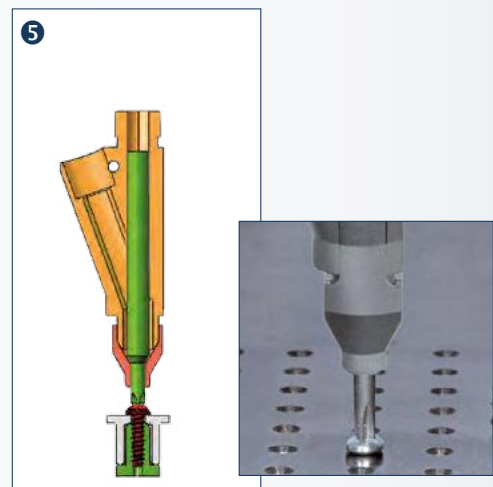
With over 30 kg of thrust, this ensures reliable tightening on all types of joint and makes it possible to work without the bit moving back, also with self-drilling screws for example



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



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



END OF TIGHTENING:
the screw is tightened

Choose the telescopic device, for working in depth

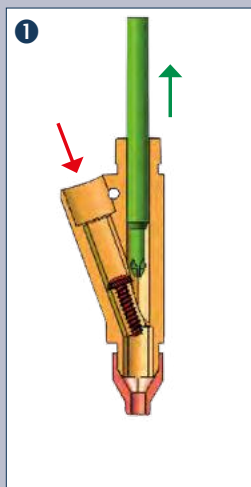
The telescopic device allows you to **reach tightening points up against walls, in awkward spaces or inside holes**. The various telescopic stroke options are: 40, 60 and 100 mm.

Designed and manufactured by Fiam, the device is available for all air, electric and electronic auto feed screwdrivers.

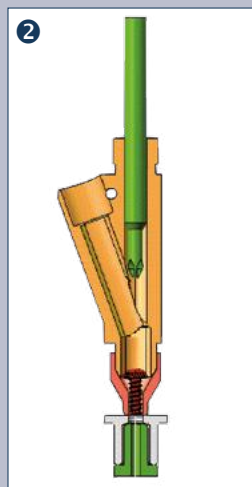
With straight and pistol grip, the screwdrivers can have push or push button starting system depending on the working needs and they **provide also tightening on screws with left thread**.

The new telescopic device is completely re-designed to ensure great smoothness: a great benefit for operators who can tighten without fatigue.

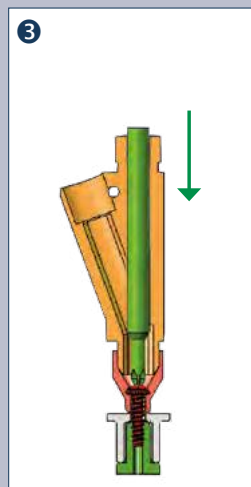
For perfectly ergonomic station work, you can use it with Cartesian arms, articulated Cartesian arms as well as the assisted one equipped with positioning device (discover them on pages 25 and 26).



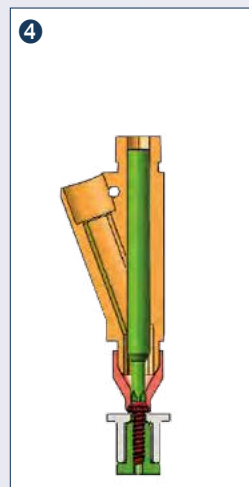
SCREW LOADING:
automatic screw feed



TOOL CONTACT:
the jaws of the screwdriver
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

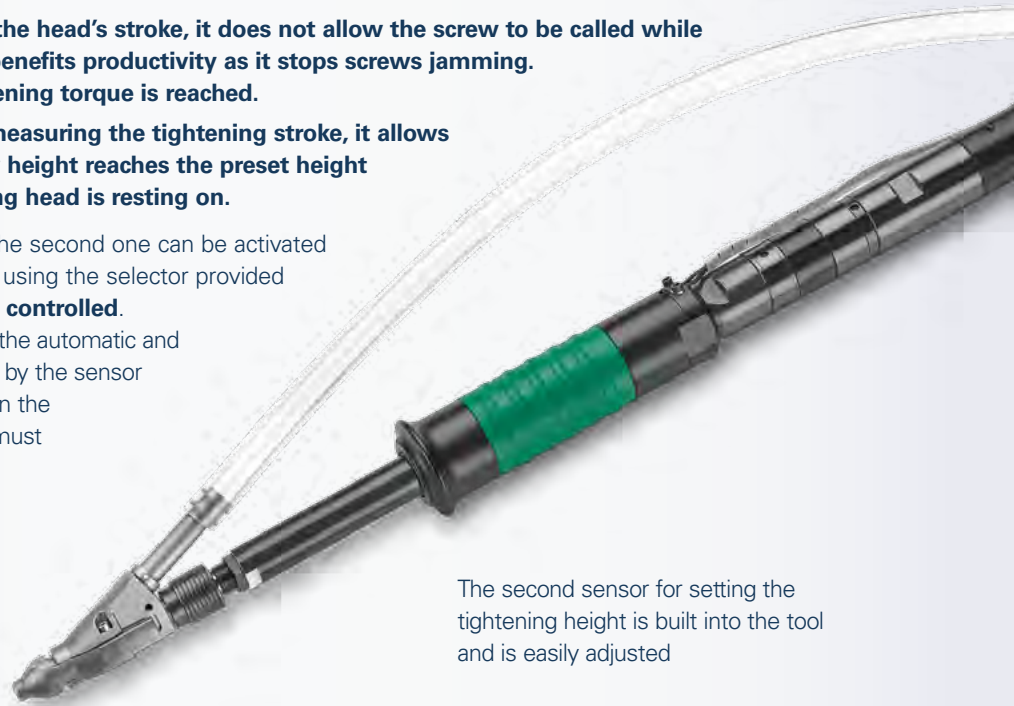
Telescopic device is equipped with 2 sensors: to work with torque control or height control

The device's mechanical design includes two sensors:

- **call screw sensor:** monitoring the head's stroke, it does not allow the screw to be called while tightening is still in progress. This benefits productivity as it stops screws jamming. The cycle stops when the set tightening torque is reached.
- **stroke detection sensor:** by measuring the tightening stroke, it allows the cycle to be stopped once screw height reaches the preset height above the surface the screwretaining head is resting on.

While the first sensor is always active, the second one can be activated or disabled directly on the screw feeder using the selector provided and allows the **tightening height to be controlled**.

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.



The second sensor for setting the tightening height is built into the tool and is easily adjusted



Selector for opting to work with either torque control or tightening height control



Extremely reliable and accurate screwdrivers

In addition to the high productivity provided by automatic screw feeding, these latest generation air screwdrivers **guarantee accurate, reliable and constant tightening, cycle by cycle** in every production field.

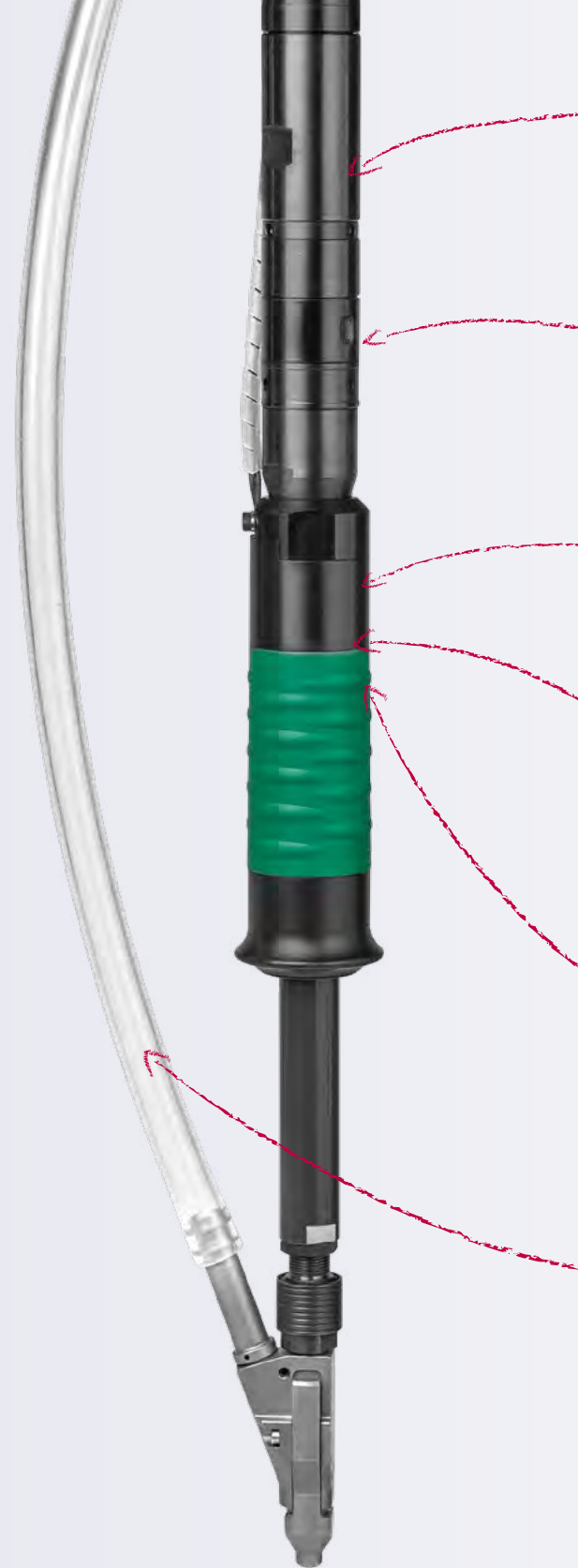
Designed and manufactured by Fiam, they are equipped with **innovative high output motors** and with an automatic and immediate torque control system that maintains the **same torque values for hundreds of thousands of cycles**.

With **low weight** by virtue of the light alloy construction materials, they are equipped with an attachment for a suspension (balancers) and set up for the removal of exhaust air.

There are two models of Fiam auto feed air screwdrivers: with the **FORWARD BIT STROKE** or with the **TELESCOPIC** device.

Discover the features on pages 8 and 10.

Also available with a rotating piston device upon request: to tighten on flat surfaces, in particular conditions of encumbrances and with the screw visible.



TELESCOPIC

Tightening that is always reliable: high torque repeatability is guaranteed on both soft and hard joints thanks to the automatic and instantaneous torque control system

Quick and easy clutch adjustment through an access slot protected by a band spring

Maximum ergonomics: the modern torque control system reduces the reaction to the operator's hand. Thanks to careful study of the internal gears, the vibration levels are below $2,5 \text{ m/s}^2$

Easy and functional starting system. For models with forward bit stroke device, one click of the lever starts the tightening process and with a double click the screw is shot. Its operation is managed by the PLC located in the screw feeder and therefore, besides being reliable, it can be programmed and customised (for example to delay the screw shooting). The telescopic models have a push-start system

Efficient grips: these ensure the screwdriver is in line with the component to be tightened. The grip position, close to the tightening point, helps the operator in centering the component to be tightened

The screw is shot inside a closed chamber which **optimises screw speed considerably:** there is no longer any dissipation of compressed air

Also with pistol grip: for vertical tightening points



**FORWARD
BIT STROKE**

eTensil. Fiam's electrical revolution

Auto feed screwdrivers can be equipped with eTensil electric motors that stands out for the **high levels of performance and reliability**.

Its main features are:

- **Automatic shut off with mechanical clutch that ensures high repeatability even when faced with a variable joint softness level**
- **On board electronics:** the user can easily configure various settings directly on the tool, instead than on the power supply unit
- Brushless motors used are the avant-garde in efficient and consistent performance, due to their **high-precision mechanics**
- **Modular structure** and constructive **strength, designed to last and guarantee safe** and efficient servicing.

Fiam auto feed electric screwdrivers are available with FORWARD BIT STROKE or TELESCOPIC devices: discover all features on pages 8 and 10.



**FORWARD
BIT STROKE**

Great accuracy even at low torques thanks to the automatic power shut-off

Maximum safety of use due to low voltage operation and perfect thermal insulation

No maintenance: brushless electric motors

Easy and fast clutch adjustment to increase or decrease the tightening torque through milled rig nut

Low noise level and safe: the absence of electrical power devices on the head of the tool avoids any danger of electric shock

Maximum ergonomics: the modern torque control system reduces the reaction to the operator's hand. Thanks to careful study of the internal gears, the vibration levels are below $2,5 \text{ m/s}^2$

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Also with pistol grip: for vertical tightening points



TELESCOPIC

Tightening and monitoring with TOM: the intelligent simplicity

Fiam auto feed screwdrivers can be combined with tightening monitoring systems such as TOM (Tightening Operation Monitor): a "Poka Yoke" system, entirely designed and manufactured by Fiam. It **verifies in real-time the tightening process status**, it guarantees reliability regardless of operator influence and allows skipping the post process quality check. It is an innovative, practical and inexpensive **Poka Yoke system (anti-error)**: at the end of the tightening sequence, the operator is warned about the outcome thus can quickly move to the next assembly job.



- It warns the operator at the end of cycle
- It warns the operator in case of error
- It can stop the working cycle in case of error caused by the operator



TOWER-LIGHT (optional)
In addition to OK, CYCLE END, NOK, also other functions can be connected e.g. program end, untightening, screwdriver stop

3,2,1

NUMBER OF SCREWS TO BE TIGHTENED

➤ Easy to use: through a **SINGLE PROGRAM** or a **SEQUENCE of PROGRAMS** (up to 8) with **99 screws each**. The programs can be selected also from external PLC through the available I/O signals

➤ **Production shifts efficiency and efficacy under control**: thanks to the statistics, it is possible to check the efficiency of production at the end of each shift



LARGE DISPLAY

- nr. of program in use
- nr. of screws to be tightened
- nr. of set sequence
- nr. of screws tightened on the total

Discover how it works.



ACOUSTIC SIGNALS

- = Screw OK
- = Program end
- = Error
- = Sequence end

- OK
- CYCLE END
- NOK

5 LANGUAGES

The language can be selected at any stage of programming

- Italian
- French
- English
- Spanish
- Deutsch

▶ **Printing of each tightening outcomes:** connected to a printer, it allows to have a written report of all tightenings performed

A reliable and quick check which allows moving smoothly to the next process steps without additional post process verification

Equipped with I/O signals to interface with PLC Master PLC or other external units

For a simply perfect production process

They can be integrated perfectly with the network control systems of the production site.

They make it possible to **control, monitor, analyse, diagnose and programme in real-time** production processes in every industrial field and consequently guarantee the quality of the assembled products.

These innovative auto feed electronic screwdrivers have extremely advanced features; it can perform different assemblies at different torque and therefore it can be suitable for different applications, thus providing a considerable advantage in terms of investment costs.

Fiam auto feed electronic screwdrivers are available with the **FORWARD BIT STROKE** device: discover all features on pag. 8.

There are **two types of auto feed electronic screwdrivers**: with direct control (torque/angle control) or with indirect control (current control). They are always connected to modern feed and control units that integrate the screwdriver's feed features (power, current...) as well as the programming and control features of every assembly process

SCREWDRIVERS WITH DIRECT CONTROL

(torque/angle control) have a **transducer and an encoder** which effect the **control of the torque and angle with DIRECT modality**; this ensures high resolution in the measurement of torque and angle values guaranteeing an **excellent tightening process control**

No need for *post-process* controls: compared to standard assembly systems, the computerised electronic solutions reduce the time taken and consequently production costs

SCREWDRIVERS WITH INDIRECT CONTROL

(current control): the parameters are achieved by measuring the current absorbed by the brushless motor and by appropriate sensors

The screw is shot inside a closed chamber which **optimises screw speed considerably**: there is no longer any dissipation of compressed air

Easy and functional starting system. For models with forward bit stroke device, one click of the lever starts the tightening process and with a double click the screw is shot. Its operation is managed by the PLC located in the screw feeder and therefore, besides being reliable, it can be programmed and customised (for example to delay the screw shooting)

Efficient grips: these ensure the screwdriver is in line with the component to be tightened. The grip position, close to the tightening point, helps the operator in centering the component to be tightened. Pistol grip versions also available (with push-start or push button)

No maintenance: brushless electric motors

Versatile and advantageous investment: the system can be adjusted to perform different assemblies at different torque and therefore it can be suitable for different applications, thus providing a considerable advantage in terms of investment costs

Same screw on different joints
To tighten the same screw on different joints, it's enough to set the programs: a considerable advantage of time spare



FORWARD BIT STROKE

AUTO FEED ELECTRONIC SCREWDRIVERS WITH DIRECT/INDIRECT CONTROL

The latest generation brushless screwdrivers can work with direct or indirect control of torque and angle.

Connected to the feeding/control unit TCSB-E which, besides powering the screwdriver, includes **programming functions and control of each stage of the tightening cycle through the following features:**

- ✓ **5 strategies:** it is possible to choose between screw drive-engagement, torque, torque/angle, angle/torque, loosening. 5 programmable modalities, to guarantee reliability and working speed
- ✓ **Optical outcomes visualization** for an immediate understanding through OK, NOK, RUN leds
- ✓ **Wide connectivity:** 5 inputs and 5 outputs for connection to signal tower light or external devices; they control and assure working continuity. RS232 connection for programming, diagnostics and data collection
- ✓ Software is supplied with standard equipment, for a simple and intuitive programming, with clear and complete instructions to set and manage the tightening strategy.



TCS-B E

The software provides for:

- **Simple, intuitive installation** on a PC with the standard equipment supplied (RS232 cable)
- **System configuration** through the quick guide, document "step by step" to immediately start the system
- **System calibration:** the screwdrivers connected to this unit are on display; it is enough to select the screwdriver connected and 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

- ✓ **Torque/angle/speed adjustment:** easy change of the parameters through pre-set grid
- ✓ **Programs storage:** programs can be saved in txt format too, exported and printed
- ✓ **Data printout:** combined with 'view/print" function available for stored programs, allows printing through serial port of a string including main information about last performed rundown.

DIAGNOSTIC CONTROLS

- ✓ **A window displaying the number and type of errors detected** (temperature, feeding tension, diagnostic test, check of motor sensors, resolver, transducer and system). Effective way to control system inputs and outputs connected to PLC.
- ✓ **Possibility to execute the following diagnostic checks:** motor rotation check, analogical measurement of the power tension, control of the motor feedback signals.



All solutions can be equipped with a **Multifunction Panel** for selecting of programs (4 or 8 depending on which TCS-B...E model it is paired with)

- managing tightening/untightening operations
- connecting connectors (pallet lock/release / led signal tower / Socket Program Selector/Enable/On Off).

The panel is equipped with 3 LED indicator which report OK NOK RUN, 2 memory statuses and 2 LEDs reporting output status.

Auto feed electronic screwdrivers with direct control of torque and angle

These auto feed screwdrivers integrate sophisticated brushless electronic nutrunner motors X-PAQ which will meet any of your needs in terms of tightening accuracy and precision.

Equipped with:

- **Built-in torque transducer and resolver:** 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.

They are very light, silent and ensure a comfortable use for the operator.

The screw is shot inside a closed chamber which **optimises screw speed considerably:** there is no longer any dissipation of compressed air

Easy and functional starting system. For models with forward bit stroke device, one click of the lever starts the tightening process and with a double click the screw is shot. Its operation is managed by the PLC located in the screw feeder and therefore, besides being reliable, it can be programmed and customised (for example to delay the screw shooting)

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No maintenance: brushless electric motors

Versatile and advantageous investment: the system can be adjusted to perform different assemblies at different torque and therefore it can be suitable for different applications, thus providing a considerable advantage in terms of investment costs

**FORWARD
BIT STROKE**

POWER SUPPLY AND CONTROL UNIT: WITH ONE TOUCH, ALL THE OPERATIONS YOU WANT

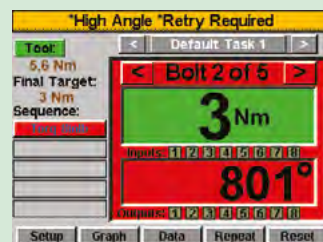
Auto feed electronic screwdrivers with direct control are combined with the CT2500 A which, besides powering the screwdriver, performs **programming functions, with accurate control of each step of the assembly process through the following features:**

- Allows immediate and practical **programming, directly on the touch screen**
- Fully **displays the tightening process**
- **Instantaneously controls** the tightening torque and angle, and indicates the outcome by colouring the whole display
- **32 pre-settable "tasks"** that can be recalled for perfect control of the tightening sequences
- **There are 8 programs available for each task**, within which it is possible to set the **3 different tightening strategies** available (torque control, torque control-angle monitoring, angle control-torque monitoring) and the other tightening cycle parameters (clockwise/counterclockwise - CW/CCW - rotation, minimum/maximum torque, speed reduction during tightening, time limit)
- **Counts screws:** among the tightening cycle control parameters, there is also the screw count, which can be used as an effective Poka Yoke system (For each screw, you can program the maximum number of repetitions for a NOK screw)
- **Controls the tightening sequence:** the unit controls the correct pre-set tightening sequence and determines the maximum number of NOK results for each screw
- **Exports the tightening result files** through the USB port, which can also be used to backup and import/export tasks, and save tightening graphs
- **Automatically recognises the tool** and its parameters: model, serial number, number of cycles executed, calibration value, etc. to aid any maintenance work
- Provides protection with **passwords for three users**
- Provides **programmable I/O (input/output)** for process control and remote commands
- The unit is equipped with an **INTERFACE DEVICE** designed to communicate with the screw feeder and the exterior (eg with the client PLC Master) through numerous I/O signals. LEDs also allow an immediate **DIAGNOSTICS** of programmed outputs.

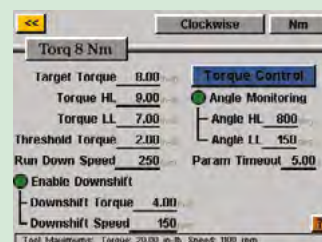


CT2500 A

Straight forward and intuitive programming



- Green display: tightening OK
- Red display: tightening NOK: when the maximum value set for the parameter (torque or angle) has been exceeded
- Yellow display: when the minimum value set for the parameter (torque or angle) has not been reached



Display of tightening parameters and strategies

Heads that make the difference!

The screw retaining heads (nose piece) used in our auto feed screwdrivers, are the result of lengthy experience and, being a fundamental element for high quality tightening, are designed and manufactured entirely by Fiam.

They **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.

The benefits:

- an excellent screw hold
- perfect control of the screw on the tightening point
- any depth can be reached
- thanks to customized design, heads can process various screws sizes, even in embedded spots
- quick and easy assembly and disassembly



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

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



Quick unlocking system of the head: for fast and safe bit replacement

Safe and reliable screw holding: the head is 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



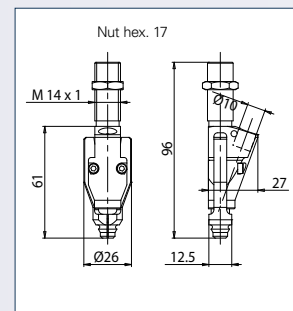
Rotation of the head at 360°: in 6 positions to adjust based on the encumbrance on tightening points

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

EVERY SCREW HAS ITS SIZE

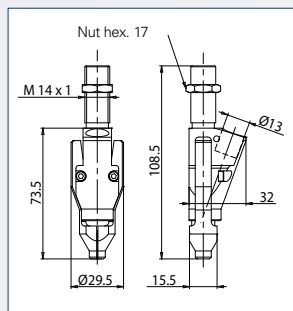
TTV - P

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





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

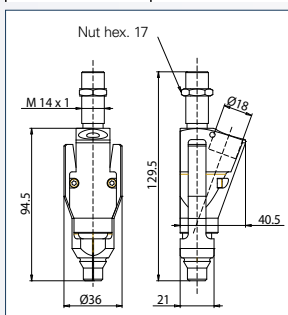


WITH ELASTIC HOSE AND MECHANICAL SCREW GRIPPING

ensures the screw is held perfectly every time, even on embedded tightening points.

TTV - M

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



* For other models see pag. 24.

Type of auto feed screwdriver	Tightening devices	Model	Grip	Motor tightening torque on soft joint	Idle speed	Starting system	Reversibility	Air consumption	Driven and control system to use	
			Type	Nm	in lb	rpm	Type	Type	l/s	
AIR SCREWDRIVER	WITH FORWARD BIT STROKE	CA...A-A	↓	0,4÷10*	3,5÷88.5	650 ÷ 2000*	↓	↻	5 ÷ 9	-
		CA...A-P-A	↘	0,4÷10*	3,5÷88,5	650 ÷ 2000*	↘	↻	5 ÷ 9	-
	TELESCOPIC	CA...A-TE	↓	0,4÷12*	3,5÷106,2	650 ÷ 2000*	↓	↻	5 ÷ 9	-
		CA...A-TE-P-A	↘	0,4÷12*	3,5÷106,2	650 ÷ 2000*	↘	↻	5 ÷ 9	-
ELECTRIC SCREWDRIVER	WITH FORWARD BIT STROKE	CA-E8C...A	↓	0,3÷4,5*	2,6÷39,8	285÷2000*	↓	↻	-	TPU2
		CA-E8C...A-PA	↘	0,3÷4,5*	2,6÷39,8	285÷2000*	↘	↻	-	TPU2
	TELESCOPIC	CA...TE	↓	0,3÷4,5*	2,6÷39,8	285÷2000*	↓	↻	-	TPU2
		CA...TE-PA	↘	0,3÷4,5*	2,6÷39,8	285÷2000*	↘	↻	-	TPU2
ELECTRIC WITH CURRENT CONTROL	WITH FORWARD BIT STROKE	CA-SD2500...FX...A	↓	0,1÷5,6*	1÷50	500÷1700*	↓	↻	-	CT2500A
		CA-15CB...A-A	↘	0,5÷10*	4,4÷88,5	350÷1700*	↘	↻	-	TCS-B15 E
	TELESCOPIC	CA-SD2500...TE	↓	0,1÷5,6*	1÷50	500÷1700*	↓	↻	-	CT2500A
		CA-SD2500...TE-PA	↘	0,1÷5,6*	1÷50	500÷1700*	↘	↻	-	CT2500A
ELECTRIC WITH TORQUE/ANGLE CONTROL	WITH FORWARD BIT STROKE	CA-15CB...C-A	↓	1÷10*	8,8÷88,5	700÷1700*	↓	↻	-	TCS-B15 E

* For different torque and speed than those indicated, please contact Fiam Technical Consultancy Service.

Legend

↻ Non-reversible screwdriver (only tightening)

* The telescopic model provides also tightening on screws with left thread.

• How to order: contact your local distributor or Fiam Technical Consultancy Service.



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

Recommended hose bore

ø 8 mm

Each solution is evaluated and customized according to the type of screw, the component to be assembled and the production needs. The data in the table therefore only provide an indication.

Standard equipment (supplied with the system)

- Screw feeder EasyDriver
- With air auto feed screwdrivers:
 - Clutch adjustment key
 - Clutch spring
- With eTensil auto feed screwdrivers:
 - Power supply unit TPU 2 with connection cable
 - Clutch spring
- With electronic auto feed screwdrivers:
 - Feed and Control Unit
 - Kit of cables
 - Test certificate
- Screw-retaining head customized for the screw, completed with bush
- 4 tightening bits (1 fitted + 3 spares)
- Screw shooting hose
 - Operation and maintenance manual
 - Eco-friendly packaging

Models available upon request

- Models with screwdriver equipped with rotating piston: for tightening on flat surfaces with particular encumbrances and with the screw visible
- Models with screw heads different 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 air screwdrivers
- Pistol models with double grip for ergonomic access to tightening points placed at different heights on vertical surfaces



Pistol model with double grip



"UpGrip" pistol model



Model for reduced operating encumbrances

For all further details, please contact the Fiam Technical Consultancy Service.

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 14 and the on-line catalogue <http://tom.fiamgroup.com/>

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

BC AND BCA CARTESIAN ARMS ALSO WITH PNEUMATIC LOCKING DEVICE

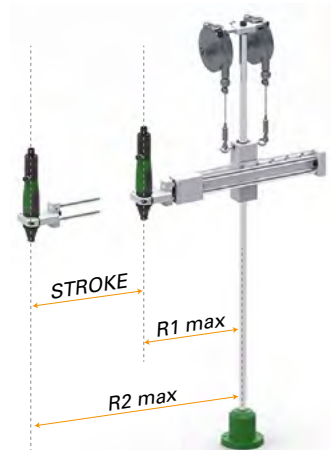
The BC40 and BCA40 Cartesian arms can be used with autofeeding screwdrivers.

The BC40LK model is specifically for use with auto-feeding 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.

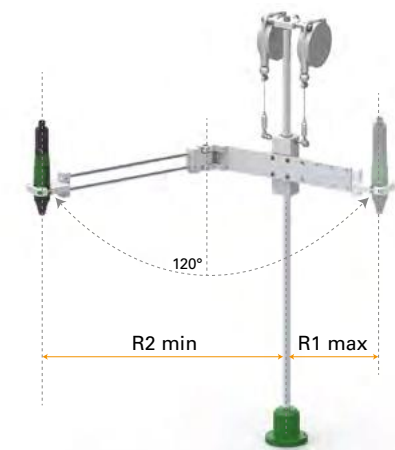
With this Cartesian arm, in addition to all the benefits offered by Fiam Cartesian arms, operators can also profit from a **special device that counteracts the "recoil" caused by the tool bit during tightening and redirects this force to the mechanical arm rather than that of the operator.**

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 Arm



• Articulated Cartesian Arm



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

TPM - Monitoring unit



Code 692078019

+

TOM



Code 685001062

+

Cable TPM/CA



FOR AUTO FEED AIR SCREWDRIVER
code 692079181

FOR AUTO FEED ELECTRONIC
SCREWDRIVER
code 692079183

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:

- B...TMP1 arms, models with **single angle** movement detection
- B...TPM2 arms, which also measure the **linear** movement of the arm in addition to its **angular** movement.

The arms must be integrated with:

FOR AUTO FEED AIR SCREWDRIVER

ARM + TPM + TOM + CABLE

FOR AUTO FEED ELECTRIC/ELECTRONIC SCREWDRIVER

ARM + TPM + CABLE

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). For more information, please see on-line catalogue.

MODELS WITH SINGLE ANGLE MOVEMENT DETECTION

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

MODELS WITH ANGLE AND LINEAR MOVEMENT DETECTION

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

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

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

BA50 BALANCING ARM

It can be used with tools with diameters varying from 25 to 50 mm and with a maximum of 50 Nm tightening torque.

This system guarantees extreme working precision because the tool is kept perfectly perpendicular to the piece being assembled: therefore it avoids any accidental damages to the materials for a higher quality of the assembled product.

Description	Code
Balancing arm BA50	692031008

SUPPORTING STRUCTURES AND HOPPERS

Entirely designed and manufactured by Fiam, they serve to support EasyDriver feeders and their hoppers when used to meet the need for fast production rhythms. They ensure **greater cleanliness and functionality** of the operational layout.

- **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.

To learn more about the features, see catalog 73 - Automatic tightening modules.

BALANCER

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

AUXILIARY GRIPS

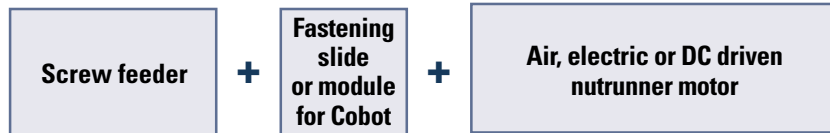
To transform straight screwdrivers into pistol screwdrivers.

EasyDriver screw feeder: a solution for automation too

If used in conjunction with slides and electric or pneumatic nutrunner motors, the EasyDriver screw feeder can become a versatile tightening module to be **incorporated into existing production systems** when **great results** in terms of **speed, productivity** and quality are required.

In this case EasyDriver manages the **entire working cycle with great flexibility** because, in a quick and easy way:

- it manages the tightening sequences according to the specific applications
- it adjusts the machine parameters
- it integrates into automatic productive systems
- it manages input signals: tightening start, anomaly reset, emergency
- it gives output signals: anomaly, tightening result



Example of MCA with collaborative robot



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

REQUEST A FREE QUOTATION!

To choose an auto feed screwdriver CA we have to consider:

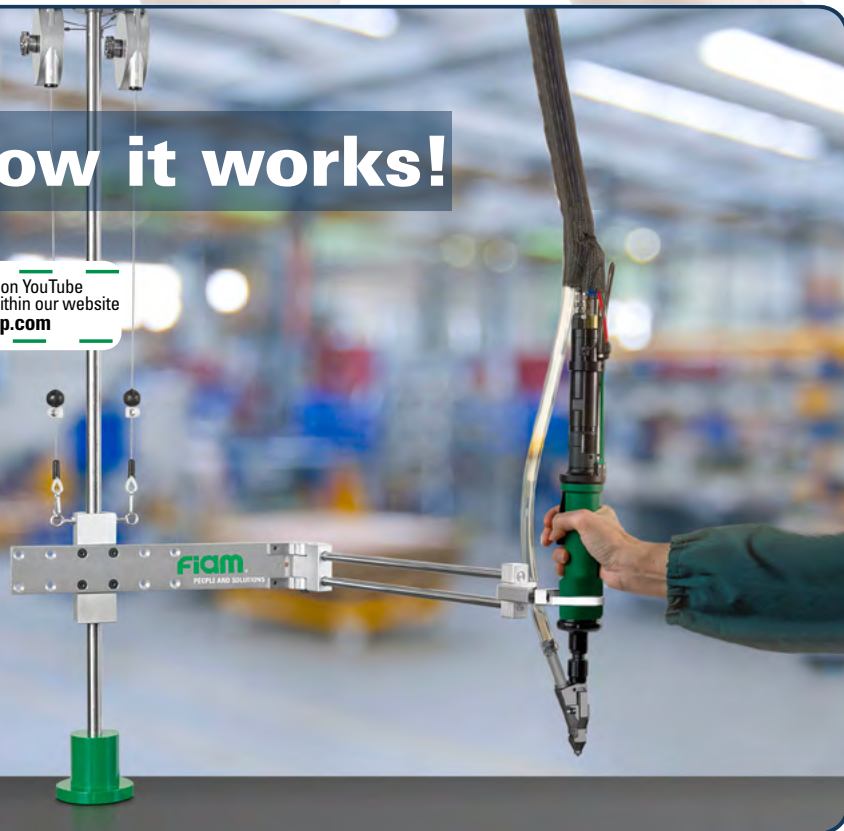
- **Material to tighten** (plastic, wood, steel, etc.)
- **Dimensions and encumbrance** of component to assemble
- Tightening **torque and speed** but the most important is the **screw**.

By sending us the features through the form "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/>

Discover how it works!



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