

Tightening automation. Only excellent solutions.







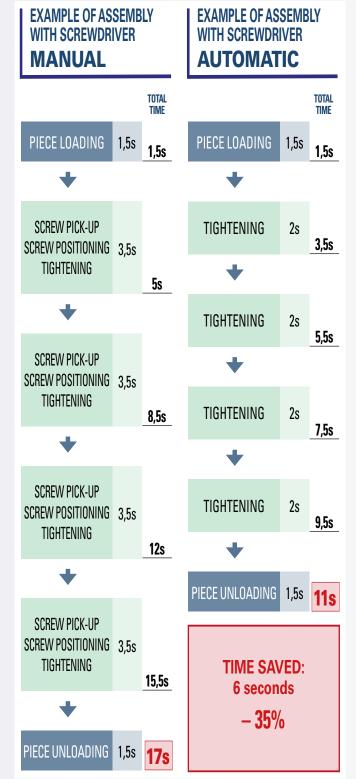
Automatic screw feeding systems Our focus on your production cycle

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





e: 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.

		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	9 6			
5	Screw positioning on screwdriver	0,5	0 /6			
6	Component/screwdriver approach	1	1			
7	Tightening screw 1 on insert	0,2	0,2			
8	Screw 2 pick-up 0,8					
9	Screw positioning on screwdriver	0,5	96			
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	×			
15	Screw positioning on screwdriver	0,5	06			
16	Component/screwdriver approach	1	1			
17	Tightening screw 3 on insert	0,5	0,5			
18	Screw 4 pick-up	0,5	9 6			
19	Screw positioning on screwdriver	0,5	06			
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			
		15s	10,20s			
		TOTAL _3	32% TOTAL			
		-	conds/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!**

Automatic screw feeding system

EasyDriver, the right solution to improve the productivity

A concentrate of innovation for a **faster productive process**: this is the tightening system EasyDriver.

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.

Evident reduction of the tightening cycle times, saving almost **35%**: the **manual phases are eliminated**; they considerably reduce the rhythm of the assembly process.

Technical features						
Air connection:	3/8″ F					
Power features:	220V/50Hz - Optional: 220V/60 Hz and 110V/60 Hz					
Maximum feed:	60 screws/minute					
Air consumption:	max 16 l/s					
Noise level:	< 80 dBA					
Diameter of the bowl:	Ø 220 mm					
Capacity of the bowl:	1 lt					
Weight:	36 kg					
Connecting hose to the screwdriver: Dimensions (mm): Internal hose diameter:	5 mt L 450 x Width 340 x h 400 14 mm					
Current absorption of the complete system:	2 Ampere					

Circular feeders with higher bowl capacity available on request: see pag. 21, Models available upon request.

High working autonomy

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



Immediate monitoring

Thanks to light leds to monitor the different phases of working cycle

PLC integrated into the feeder to adjust all machine parameters

This innovative solution customizes the efficiency of the system with great flexibility, depending on the assembly needs. It is possible to make several adjustments: bowl vibrating time, screw shooting time, parameters of optical sensor, min. tightening time to prevent false start, screw shooting delay time, visible screw advance



External keypad for immediate adjustments

To adjust the machine parameters, to monitor and change the production cycle. In an ergonomic position: the operator can make adjustments without opening the machine



4 EasyDriver: a concentrate of innovation



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



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

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





Removable structure

2

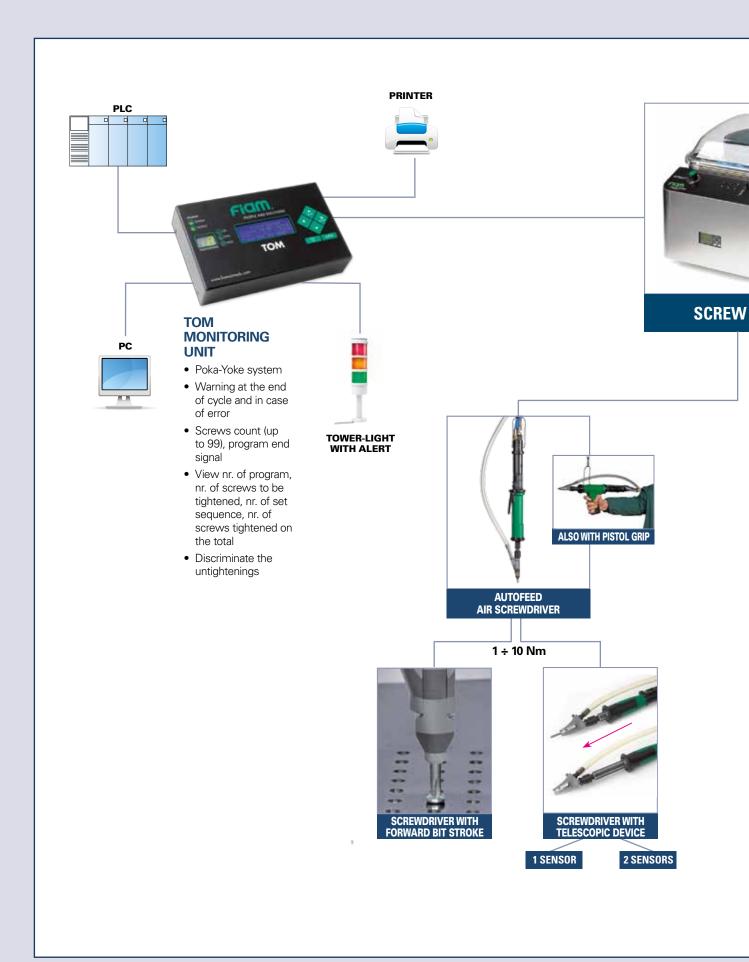
In stainless steel and long lasting, it can easily be dismantled for maintenance. Designed to ensure all maintenance operations easy, safe and reliable in compliance with Directive 42/2006/EC



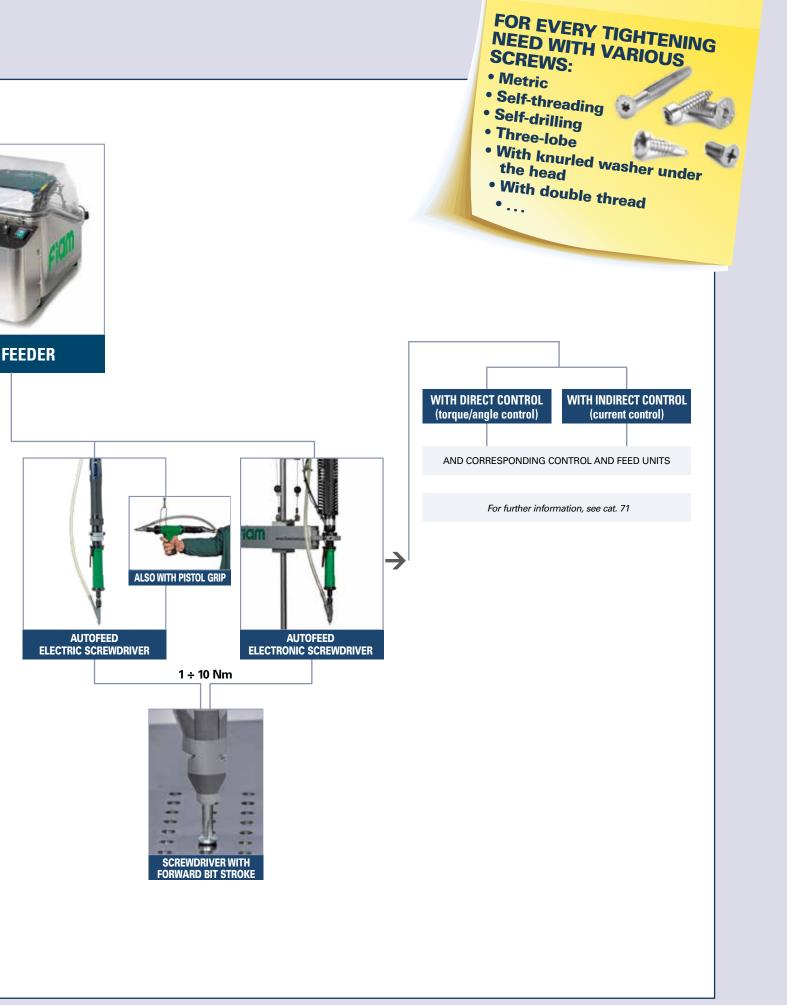
High frequency selector It increases speed and productivity; able to feed up to 60 screws per minute

Internal structure in stainless steel

To guarantee long lifetime



A variety of use configurations



Forward bit stroke device: techn



PATENTED by FIAM







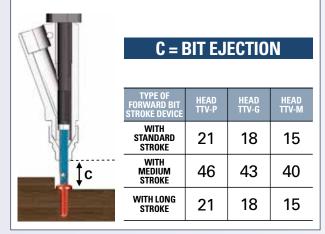
The patented forward bit stroke, designed and manufactured by Fiam, is available for all air, electric and electronic screwdrivers. It provides automatic bit ejection reducing operator fatigue, keeps the screw visible and prevents it from going back. In addition, during the tightening phase, the head 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).

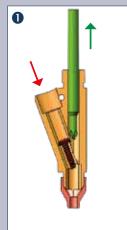
The autofeed screwdrivers equipped with this device have a start lever: with a click the tightening starts, with a double click the screw is shot.

The advantages

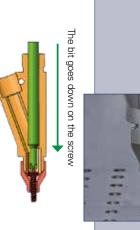


Ejection of the bit from the head (part C) can be different depending on the type of forward bit stroke device and on the dimensions of the head used

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

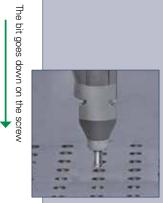


SCREW LOADING: automatic screw feed



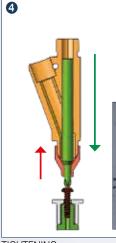
TOOL READY the tool always leaves the screw visible

2





ß





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

The patented forward bit stroke device

ology and advantages

U

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

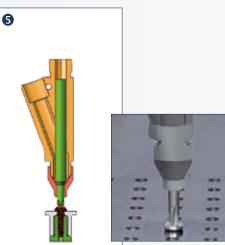
Bit ejection is synchronized with the screw being shot, by the cycle managed by PLC, to prevent any jamming and ensure continuous work cycles

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



Choose the telescopic device, for workin





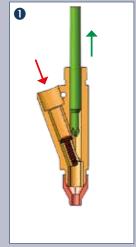


When it is necessary to reach tightening points close to sidewalls, in limited or very deep spaces, the ideal choice is the **telescopic device designed to be used with Fiam air screwdrivers.**

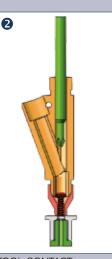
The device makes it possible to reach the required depths and therefore to tighten inside holes. Screwdrivers with an internal telescopic stroke of 75 mm and 105 mm are available.

The internal mechanics of the device feature a **built-in screw shooting sensor** by monitoring the head stroke, **avoids shooting a new screw until the current tightening cycle has been completed:** a great advantage for operator productivity because it prevents screw jams. The device provides screwdrivers with a lever or push button starting system, depending on the working needs.

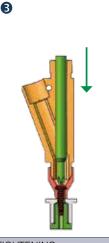
Model T with a sensor



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

10 Telescopic device

g in depth

Double advantage of the model with 2 sensors that can work with torque control or height control

The telescopic device can be equipped with two sensors. In addition to the first one that prevents a new screw from being shot out, this second sensor 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.

Model T2 with two sensors

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 autofeed 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 on request: see pag. 21 models available on request).







12 Autofeed Air Screwdrivers

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 m/s²

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



Can be connected to tightening control systems (Poka Yoke)

The TOM monitoring unit verifies in real-time the tightening process status. It guarantees reliability regardless of operator influence and allows skipping

the post process quality check.

At the end of the tightening sequence, the operator is warned about the outcome thus can quickly move to the next assembly job. Any errors in the tightening sequence are intercepted and the work cycle can be stopped.



FORWARD BIT STROKE

No maintenance: brushless electric motors

Maximum accuracy, minimum maintenance

ELECTRIC AUTOFEEUERS

They are suitable for specific assembly work with smalland very small screws and are therefore used in the following sectors: electronic and electromechanical components, toys, plastic objects and everywhere **high accuracy** is required also at low torque values.

These screwdrivers have a control system with automatic motor shut off that cuts off the power supply to the tool upon reaching the established tightening value. Production efficiency is facilitated by the possibility of adjusting the slow start (screw feeding speed) from 30% to 100% of nominal speed, in addition to the possibility of selecting two working speeds: slow and fast.

Equipped with innovative brushless motors that,

thanks to the absence of carbon dust in the working area, guarantee long lifetime, no pollution in the working environment and higher tool productivity.

Fiam electric autofeed screwdrivers are available with the **FORWARD BIT STROKE**: device: discover all features on pag. 8.



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





14 Electric Autofeed Screwdrivers

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

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

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

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)

Can be connected to tightening control systems (Poka Yoke)



The TOM monitoring unit verifies in real-time the tightening process status. It guarantees reliability regardless of operator influence and allows skipping

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FORWARD

BIT STROKE



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 electronic autofeed 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 electric autofeed screwdrivers are available with the **FORWARD BIT STROKE**: device: discover all features on pag. 8.

There are **two types of electronic autofeed 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

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

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 need for post-process

controls: compared to standard assembly systems, the computerised electronic solutions reduce the time taken and consequently production costs

No maintenance: brushless electric motors

16 Electronic Autofeed Screwdrivers

Connected to control systems that, as well as feeding the screwdriver, take care of the **programming and control of each stage** of the tightening cycle.

Different tightening strategies can be set (slow seek, torque, torque/ angle, angle/torque, untightening etc.) all easily programmed to guarantee reliability, control of errors and fast working speeds



For further information of these feed and control units, see cat. 71

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)

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

Can be connected to tightening control systems (Poka Yoke)



The TOM monitoring unit verifies in real-time the tightening process status. It guarantees reliability regardless of operator influence and allows skipping

the post process quality check.

At the end of the tightening sequence, the operator is warned about the outcome thus can quickly move to the next assembly job. Any errors in the tightening sequence are intercepted and the work cycle can be stopped.



* When the system is used with the TCS3 unit, the TOM unit does not need to be connected because the TCS3 feed and control unit already incorporates many functions including those of monitoring the cycle.



Automatic screw feeding system

Heads that make the difference!

The screw heads used in our autofeed 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 advantages:

- an excellent screw hold
- perfect control of the screw on the tightening point
- any depth can be reached
- tightening on all screws of all sizes, thanks to the high level of customisation
- 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

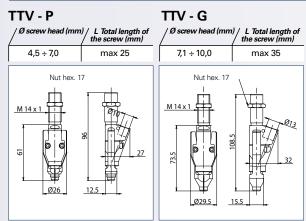
Safe and reliable screw holding: the head is equipped with jaws which are opening to release the screw when the bit starts tightening the screw on the component. They can be of different types, depending on the screw or dimensions of the component to be tightened



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



18 Screw heads



TTV - M Ø screw head (mm) / L Total length of / the screw (mm) 10,1 ÷ 13,5 max 35 Nut hex. 17 M 14 5 Ø36 21

SOME OF THE MODELS AVAILABLE



WITH ANTI-OVERTURNING DEVICE

when screws with screw length/ head diameter ratio lower than 1.5 are available. In this case the feed hoses can also be customised depending on the screw



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

* For other models see pag. 21.

				Grio	Soff Joint to	ightening rque	tale speed	Sianing system	Reversibility	Weight of the	"letool	Air consumption	Controlor monitor system connected
		Mo	odel	Туре	Nm	in lb	rpm	Туре	Туре	kg	lb	l/s	
	WITH FORWARD BIT STROKE	JOKE	CA-A-A	ļ	0,5 ÷ 10	4.43 ÷ 88.5	650 ÷ 2000	1	し	1,8	3.96	5÷9	том
AIR AUTOFEED		BITSTI	CA - A - P - A	7	0,5 ÷ 10	4.43 ÷ 88.5	650 ÷ 2000	-1	U	1,8	3.96	5÷9	том
SCREWDRIVER	TELESCOPIC	2	CA -T/T2	ļ	0,5 ÷ 10	4.43 ÷ 88.5	650 ÷ 2000	↓ ↓	し	1,1	2.42	5÷9	том
			CA - P -T/T2	-	0,5 ÷ 10	4.43 ÷ 88.5	650 ÷ 2000	Ţ	と	1,1	2.42	5÷9	том
ELECTRIC AUTOFEED	WITH FORWARD BIT STROKE	ROKE	CA-A-A	ļ	0,5 ÷ 5	4.43 ÷ 88.5	600/1000	1	U	1,5	3.30	-	BECTSSOE
SCREWDRIVER	WITH FO	BIT ST	CA-A-P-A	7	0,5 ÷ 5	4.43 ÷ 88.5	600/1000	Ţ	U	1,5	3.30	-	BECTSSOE
								1	1				
ELECTRONIC	WITH FORWARD BIT STROKE	CURRENT	CA - 15CBC - A	ł	0,5 ÷ 10	4.43 ÷ 88.5	700/1700	1	U	-	-	-	TCS - B - E
AUTOFEED SCREWDRIVER	FORWAR	ROL	CA - 15CBA - A	ļ	0,5 ÷ 10	4.43 ÷ 88.5	700/1700	1	U	-	-	-	TCS - B - E
	WITH	TORQUE/ANGLE CONTROL	CA - 12CBA - A	ł	0,5 ÷ 10	4.43 ÷ 88.5	1200/1600	1	U	-	-	-	TCS3V

Legend

CA = Screw feeding system • 26 = Motor power of the screwdriver in Watt/10 • C = Air screwdriver • = Max torque in Nm • A = Torque control system with air shut-off or electric feed • P = Pistol • A = Screwdriver with forward bit stroke • T = Screwdriver with telescopic device • T2 = Double-sensor telescopic screwdriver

Legend					
Non-reversible screwdriver (only tightening)					
O Reversible screwdriver					
Lever start	Push button				
↓ Push to start					
/ Recommended hose bore					
ø 8 mm					

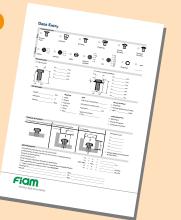
- The figures shown are measured at a pressure of 6.3 bar (ISO 2787), the recommended operating pressure.
- bar (ISO 2787), the recommended operating pressure.The tightening torque values have been measured in
- accordance with ISO 5393 standard. • Sound pressure level has been measured in accordance with ISO 3744 and ISO 15744 standards.
- with ISO 3744 and ISO 15744 standards.
 Vibrations level has been measured in accordance with ISO 28927-2 standards.
- Accessory drive: Fil. nr. 10-32 UNF (american thread).
 How to order: contact your local distributor or Fiam Technical Consultancy Service.

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. The data given in the table are indicative and can be changed without prior notice. The torque values are purely indicative andmay 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**.

DOWNLOAD THE ENTRY DATA AND REQUEST MORE INFORMATION!

By sending us the features of the screw on the component to be assembled, you will receive a quick and no obligation, "turnkey" solution that will save you time and money!

www.fiamgroup.com Section: Semi-automatic tightening systems



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
- **Models with two bowls** to process two different types of screw with a single screwdriver
- Feeders with **higher capacity bowl**: Ø 420 mm and 3 litre capacity. Equipped with sound-absorbing panels
- **Hanging ring** to install the screwdriver on a Cartesian arm or balancing arm.

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



Hanging ring for balancing arm



Autofeed screwdriver with forward bit stroke and long stroke



Feeders with special bowls



"UpGrip" pistol model



Single screwdriver for processing different types of screws





Pistol model with double grip



Telescopic autofeed screwdriver with hose



from 25 to 50 mm and with a maximum of 50 Nm tightening torque.

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.

AUXILIARY GRIPS

To transform straight screwdrivers into pistol screwdrivers.

SPECIAL PACKAGING

A wooden crate can be provided for critical transportation of CA EasyDriver Dimensions: mm L650x500xh715; Weight: kg 11

Standard equipment (supplied with the system)

4 bits

- Clutch adjustment key
- Keys for screw feeder's use and maintenance
- Hanging ring
- Use and maintenance manual
- Eco-friendly packaging in paperboard (weight kg. 3) Dimensions: mm L600x450xh520

EasyDriver: 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

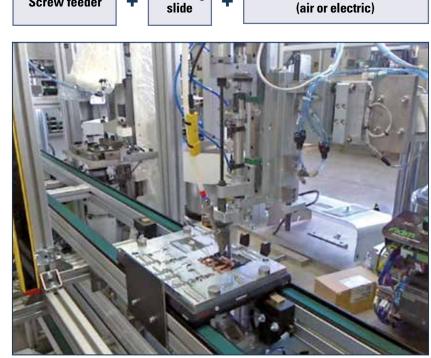
Screw feeder

• it integrates into automatic productive systems

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- it manages input signals: tightening start, anomaly reset, emergency
- it gives output signals: anomaly, tightening result

Nutrunner motor



Fastening

Example of MCA integrated on pallets line



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



Go online and choose the ideal Fiam solution for your industrial production processes: the best technology is just a click away.

www.fiamgroup.com



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System Certificate

A guide to

System Certificat