

Accessories for ergonomic workplace



- Cartesian arms
- Positioning devices
- Poka Yoke systems
- Pick & Place systems
- Other accessories

Fiam[®]
PEOPLE AND SOLUTIONS



Ergonomics improves workers' work and well-being.

There is a big difference between working and working well. A workstation based on an ergonomic approach serves to improve both the efficiency and well-being of **peoples**. Safe and orderly work lines have a positive effect on operability, but also on **physical** and **mental** health.

It is not enough just to provide operators with tools that prevent any physical fatigue, are not very noisy and keep working environments healthy.

Nor is it enough to arrange the components to be assembled comfortably, conveniently and correctly on the work bench.

It is necessary to think of **advanced workstations** that contemplate not only physical ergonomics but also **cognitive** ergonomics which considers the mental processes involved in performing various tasks, as well as the **organizational** one which concerns the processes involved in organizing the work.

Where to act ?

Today, the well-being of workers depends on many factors, some of which were not assessed until a few years ago. Action is needed to make operators feel good and allow them to give their best performance.

MENTAL FATIGUE

Continuously supervising a machine leads to mental fatigue.

ADVANCED TOOL MANAGEMENT

Electric tools are becoming increasingly demanding to program.

VARIABLE OPERATING FLOWS

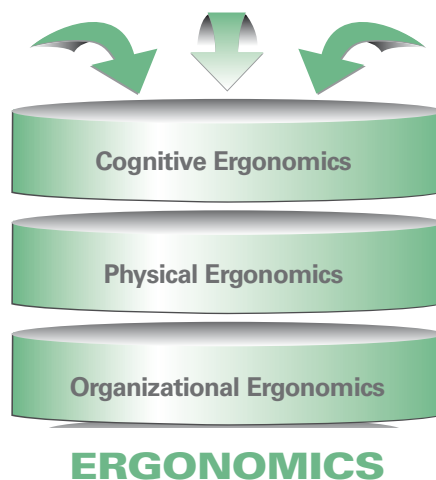
Increasingly diversified workflows require considerable operational flexibility.

ORGANIZATIONAL CAPACITY

Mental activity is constantly called upon to organize work.

FINDING INFORMATION

The constant search for new operational information requires continuous effort.



Considering all these variations when designing an ergonomic workstation therefore becomes an essential choice to safeguard the health and promote the psycho-physical well-being of the worker. Allowing them to "work better" will also provide benefits in productivity as well as in the quality of the finished product.

The 4 factors that make a workstation an ergonomic workstation.

1. New generation tools

The latest tools reduce fatigue, precisely because they are designed to reduce effort and improve working conditions. The tools must be chosen according to the type of joint, of screws, of operator's position at workplace (sitting or standing) but also based on flows production and their variability.

2. Choice of accessories

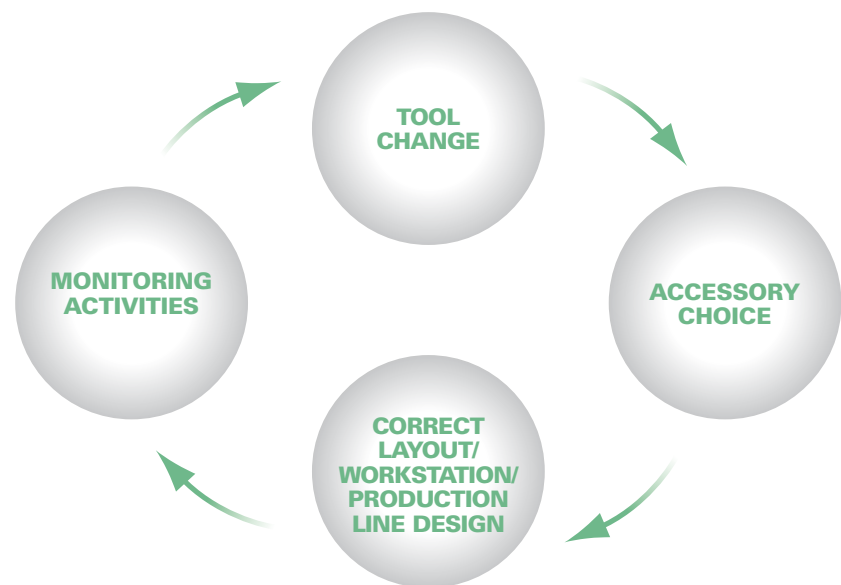
Poka Yoke systems, screw or component feed systems and reaction arms improve productivity as well as physical, organizational and cognitive ergonomics. Accessories must be chosen according to tool type, type and dimensions of workplace, type and dimensions of workpiece. Accessories also include screwdriver bits, which can promote vibrations if, for example, they are very long.

3. Correct design of the workstation

The tools and various accessories must be arranged in a logical and appropriate manner to allow operators to work comfortably without adopting incongruous positions.

4. Monitoring activities

Seeing how tools are used and promoting training is essential for working in optimal conditions.



COLLABORATIONS AND SERVICES, FOR THE BEST POSSIBLE WORKSTATION

Producing state-of-the-art tools, having modern laboratories, and employing specialist personnel is essential to creating ergonomic workstations, but we want more. That is precisely why we work with Certified European Ergonomists, Occupational Doctors and Specialists who support us to continually innovate every solution we offer. In addition to this, we also provide customers with **services to ensure operators work in the best possible conditions.**

- Measurement of noise and vibrations from tools
- Analysis of the workplace
- Verification of operating methods to combine ergonomics and safety with production needs

For all further details, please contact **Fiam Technical Advice service.**

To learn more about ergonomics and safety in industrial tightening, read our publication, which you can request from Fiam Customer Service info@fiamgroup.com, or ask to register for our training webinars: find out about them at www.fiamgroup.com



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BT-MG MAGNESIUM TELESCOPIC ARMS

Innovative range of telescopic arms in magnesium alloy, designed and produced by Fiam.

Conform for use **with any kind of tool** (screwdrivers/nutrunners, drills, tappers) being **extremely resistant to mechanical stress** thus guaranteeing reliability and long life span, thanks to accurate manufacturing process and applied innovative materials.

Designed with different telescopic extension elements (3 for all models and 2 for BT-MG 10...), they are conform for working areas according to different productive needs: from a minimum of 45,5 cm to a maximum of over 2 meters.

Double terminal coupling guarantees great handiness and maximum freedom of action also for inclined tightening operations.

They can be **easily installed** on existing workplaces on ceiling or wall using a simple plate with reduced dimensions.



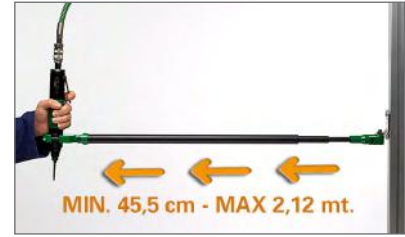
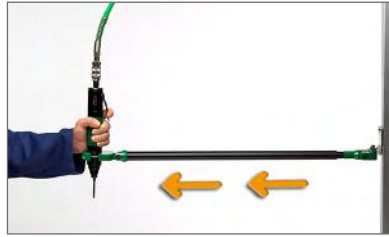
Why magnesium?

Magnesium competes with many other polymeric materials and is increasingly used in industrial contexts, from automotive, through aeronautics to biomechanics as it offers many benefits:

- it is lighter than aluminum (-30%), making the tool easier to handle
- it is highly resistant to wear and impact, comparable to the carbon fiber arms
- it has excellent vibration damping and electro-magnetic shielding properties
- it bears a yield stress similar to that of aluminium alloys
- the "alodine"[®] treatment ensures that it is long-lasting and corrosion resistant
- it is fully recyclable and biocompatible with human contact, making it ecological.

• **Wide operating area**

• **Wide rotation of the tool around its axis**

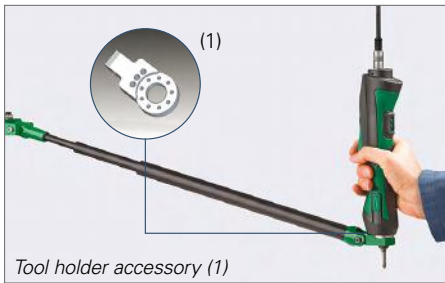


- They eliminate any counterblow to operator's hands
- They reduce vibrations caused by the tool
- Reduce the worker's fatigue in handling the equipment
- They assure a comfortable and immediate taking of the tool next to the point of work
- Enable the operator to keep a good wrist position
- They prevent musculoskeletal diseases caused by repeated mechanical stresses
- Fiam BT-MG arms absorb the reaction 30% more than the other arms on the work point





Model	Code	Max torque (Nm) in lb		Max work range (mm)	Min work range (mm)	Ø max tool (mm)
BT-MG 10 800	692071420	10	88.50	660	480	26.5-50
BT-MG 10 1000	692071421	10	88.50	800	550	26.5-50
BT-MG 15 800	692071409	15	132.70	860	505	26.5-46
BT-MG 15 1000	692071401	15	132.70	1070	575	26.5-46
BT-MG 15 1500	692071404	15	132.70	1580	745	26.5-46
BT-MG 40 800	692071410	40	354	860	505	26.5-46
BT-MG 40 1000	692071402	40	354	1070	575	26.5-46
BT-MG 40 1500	692071405	40	354	1580	745	26.5-46
BT-MG 40 2000	692071407	40	354	2120	925	26.5-46
BT-MG 70 800	692071411	70	619.50	860	505	34-50
BT-MG 70 1000	692071403	70	619.50	1070	575	34-50
BT-MG 70 1500	692071406	70	619.50	1580	745	34-50
BT-MG 70 2000	692071408	70	619.50	2120	925	34-50

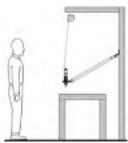


Standard equipment (supplied with arm)

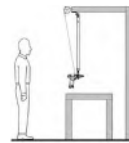
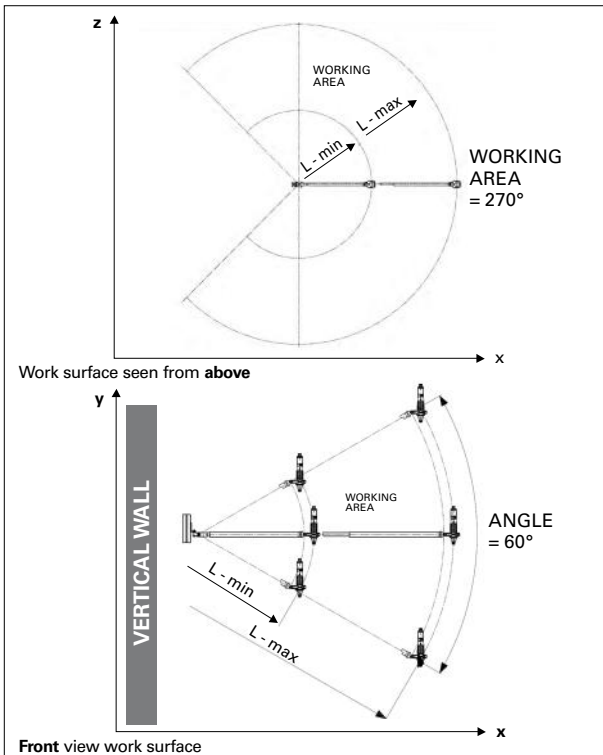
- Universal clamp with 2 kits of screws with different lengths to install tools with different diameter from 26.5 up to 50 mm
- Eco-friendly packaging
- Use and maintenance manual

Accessories available upon request

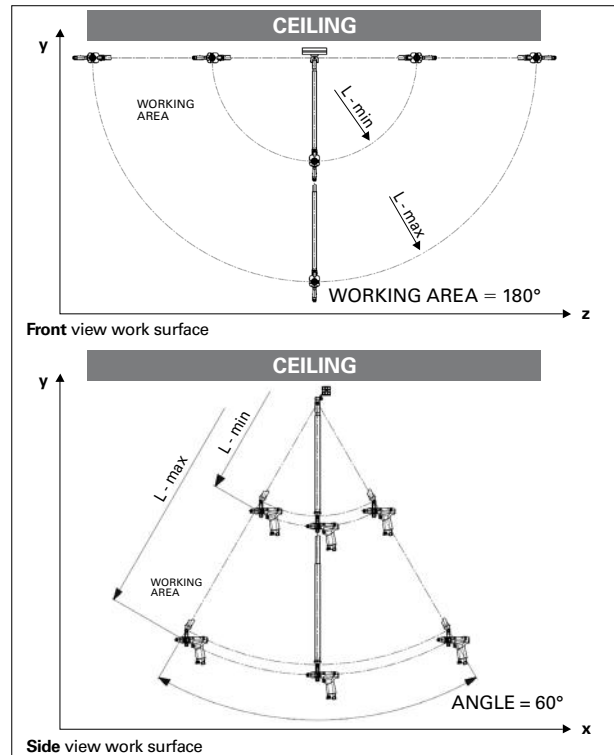
- Tool holder accessory (1) for electric screwdrivers eTensil code 692079180. Manages 9 positions of rotations.



WORK AREA WHEN USING HORIZONTALLY
(arm fixed on vertical wall)



WORK AREA WHEN USING VERTICALLY
(arm fixed to the ceiling)



BT-TOP TELESCOPIC ARMS

The BT-TOP arms are designed and produced by Fiam **to be mounted on the top of the workbench**, offering an ergonomic and compact layout that allows to work effortlessly, allowing the fluid sliding of any type of tool along the vertical axis of the arm.

Their telescopic stroke and wide range of action offer flexibility and precision in the several activities in which they can be used.

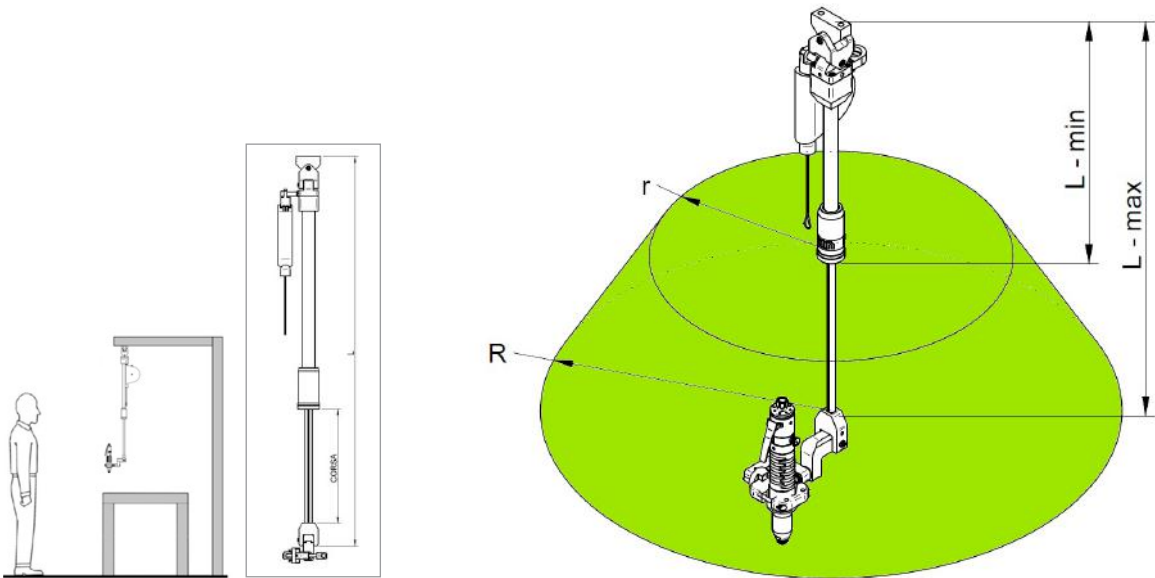


Here all the benefits:

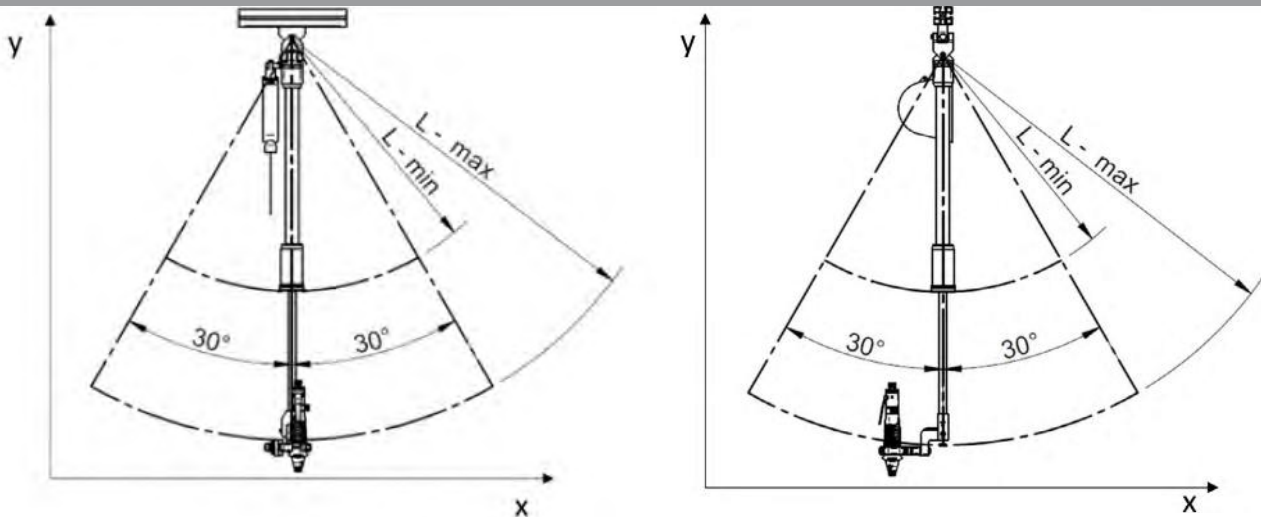
- **Vertical use:** BT-TOP arms are designed to be mounted vertically on top of the operator's workbench, offering a streamlined workstation layout.
- **NO SPIN device:** we have integrated a NO SPIN anti-rotation device that prevents the boom from rotating on its axis by counteracting the reaction on the operator's hand as the counterblow is unloaded on the telescopic arm.
- **Vertical movement:** thanks to their design, operators can work effortlessly by sliding the tool along vertical arm axis.
- **Adaptability:** are the ideal choice in spaces with side encumbrances or for working on workpiece clamping jig.
- **Versatility:** each arm is supplied with a **tool clamp** ready to be used with a wide range of straight air and electric tools. Additional clamps can be requested e.g. for integration with eTensil electric screwdrivers or angle tools.
- **Customise strokes:** stroke limiters are also available on request, useful for reducing the telescopic stroke offered and adapting it to the different needs of operational lay out.
- **Integrated balancer:** each arm is supplied as standard with the balancer already integrated, to support the weight of the specific tool. needs of the operational layout.
- **Easy to install:** whether it is on an existing location, ceiling or wall, the installation of BT-TOP arms is extremely simple thanks to their intuitive clamping.

Working area:

CEILING



CEILING



Model	L max (mm)	R - Working Radius (mm) with L max	L min (mm)	r - Working radius (mm) with L min	Telescopic stroke (mm)
BT-TOP 12-800	800	450	500	290	300
BT-TOP 12-1000	1000	570	700	400	300
BT-TOP 25-1000	1000	570	700	400	300
BT-TOP 25-1500	1500	870	900	520	600
BT-TOP 40-1100	1100	640	700	400	400



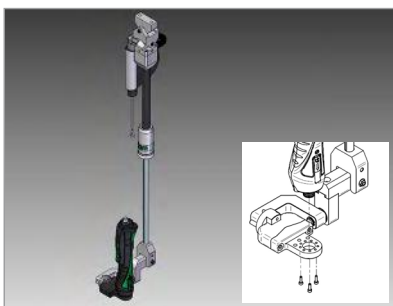
- They eliminate any counterblow on the operator's hands
- They reduce vibrations
- They eliminate the need for force in holding the tool
- Minimize worker fatigue when moving the equipment
- They guarantee a comfortable and immediate grip of the tool near the work point
- They allow you to maintain a good wrist position
- They prevent the onset of musculoskeletal diseases due to repeated mechanical stress.

Model	Code	Max torque Nm	Min load kg	Max load kg	Tool diameter ø mm	Max length mm	Telescopic Stroke mm	Min stroke length mm	Max stroke length mm
BT-TOP 12-800 Telescopic Arm	692071450	12	0,4	1,3	26,5 ÷ 50	800	300	500	800
BT-TOP 12-1000 Telescopic Arm	692071451	12	0,4	1,3	26,5 ÷ 50	1000	300	700	1000
BT-TOP 25-1000 Telescopic Arm	692071452	25	1,2	3,7	26,5 ÷ 50	1000	300	700	1000
BT-TOP 25-1500 Telescopic Arm	692071453	25	1,2	3	26,5 ÷ 50	1500	600	900	1500
BT-TOP 40-1100 Telescopic Arm	692071454	40	0,3	3,2	34 ÷ 50	1100	400	700	1100

Standard equipment (supplied with arm)

- Tool clamp equipped with 2 kits of different screws to install tools with different diameter
- Balancer
- Use and maintenance manual
- Eco-friendly packaging

Accessories for BT-TOP arms

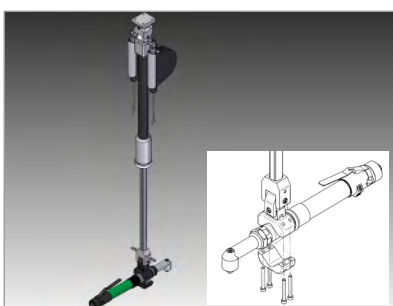


CLAMP FOR BT-TOP WITH STRAIGHT eTensil SCREWDRIVERS

Code **692078060**

It is specific for installing straight eTensil electric screwdrivers. The clamp promotes safe anchoring without damaging the tool and ensures an optimal position of the operator's hand-arm system. Supplied with screws kit to install tool.

For technical details see page 28

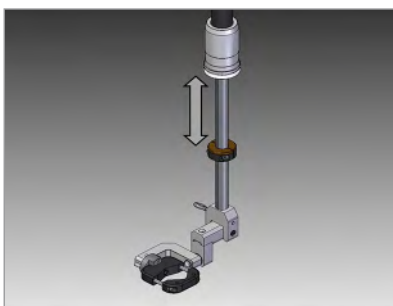


CLAMP FOR BT-TOP WITH ANGLE NUTRUNNERS

Code **692078059**

It is specific for installing angle nutrunners. The clamp promotes safe anchoring without damaging the tool and ensures an optimal position of the operator's hand-arm system. Supplied with screws kit to install tool.

For technical details see page 28



TELESCOPIC STROKE LIMITER

Code **692079254** for BT-TOP 12 models

Code **692039088** for BT-TOP 25 models

Code **692039089** for BT-TOP 40 models

Useful when the component to be tighten changes and it is necessary to adapt the arm stroke to the operational layout.

CARTESIAN ARMS

Fiam Cartesian arms represent fundamental solutions for ergonomics workplace. They are completely **designed and manufactured by Fiam** and can be used with any type of tool with a diameter up to 50 mm and weight up to 11 kg. A universal clamp is supplied but, upon request, numerous accessories are available for correctly fitting different Fiam tools to ensure maximum safety and functionality.

Available in several versions:

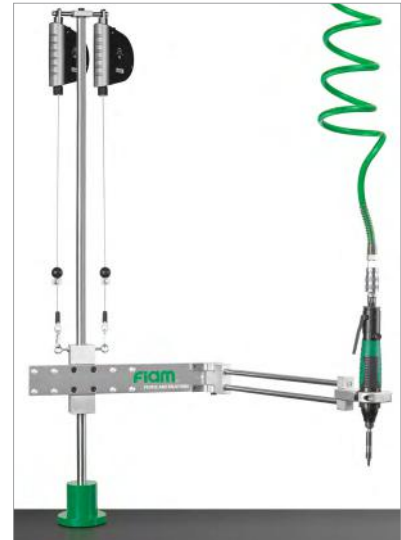
- **Cartesian arms**
- **Articulated Cartesian arms**
- **Cartesian arms and Articulated Cartesian arms to be fixed to the surface or upper structure (TOP)**
- **Assisted Cartesian arms**

Thanks to these arms, all work operations take place without any oscillation and their movements are **extremely fluid and flowing** and this translates into a significant increase in work precision, the consequent quality of the production process as well as ergonomics for the operator.

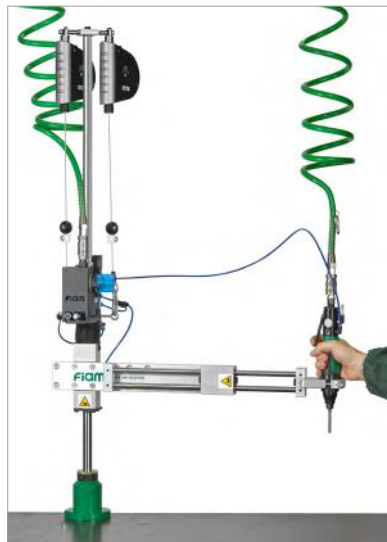
All models are also **available with a position monitoring device for processing the angular and linear displacement of the tool on the work point** (see page 20).



BC Cartesian arm



BCA Articulated Cartesian arm



BC25 PK with pneumatic pushing force



BC40 LK with pneumatic locking device for auto feed screwdrivers with automatic forward bit stroke



- They eliminate any counterblow on the operator's hands
- They eliminate the need for force in holding the tool
- They drastically reduce or eliminate vibrations
- They allow the maintenance of a good wrist position
- Maintain the perpendicularity of the tool at the work point
- Improve work accuracy and the quality of the production process
- Extremely high performance even with self-tapping / self-drilling screws
- By improving the coverage of the work area, they reduce the fatigue of the hand / arm system operator



BCA-TOP Articulated Cartesian arm

BC CARTESIAN ARMS

Double balancer provided

Two balancers are available to **support the tool** (weight up to 11 Kg.) and other hanging elements (models for heavier tools are available upon request)

Sturdy vertical column

Its increased diameter **avoids any swings**

Upon request: adjustable vertical stroke limiters

(clamps with rubber protection) are available to prevent the horizontal arm from getting too close to the work area (and to avoid damaging the workpiece with the tool)

Ball recirculating runners

Vertical and horizontal movements **running on ball recirculating runners** to guarantee smoothness, handiness and accuracy

Safety magnet which keeps the horizontal stroke locked

- and therefore the tool - when the arm is in the rest position

Rubber bumpers

Magnet

"Rubber bumpers" useful to cushion the limit switches in horizontal movement

Clamp to be used with **every type of tool** with diameter up to 50 mm

Robust structure

Columns of vertical and horizontal axis made of **tempered and chrome steel** for longer lifespan

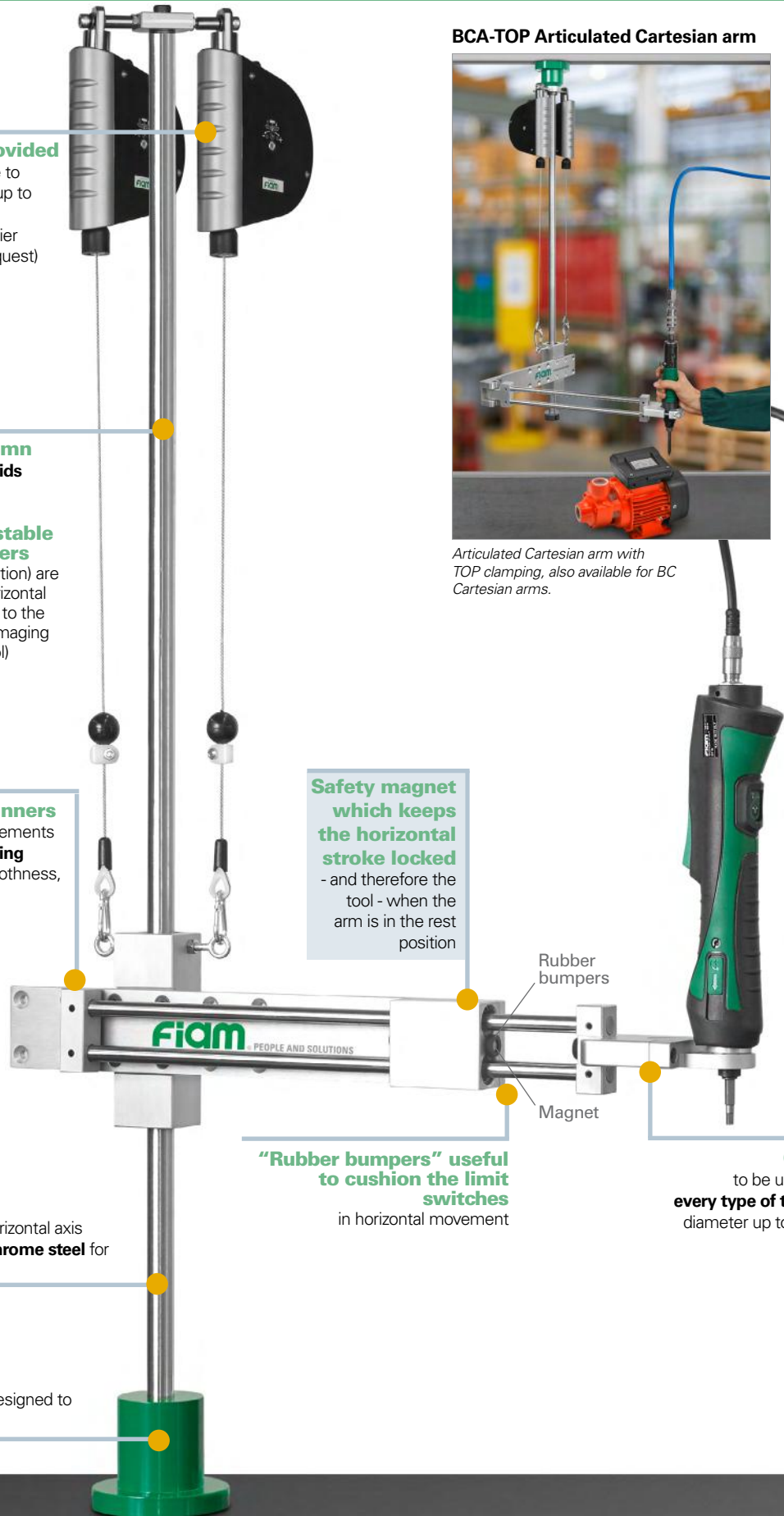
Base plate

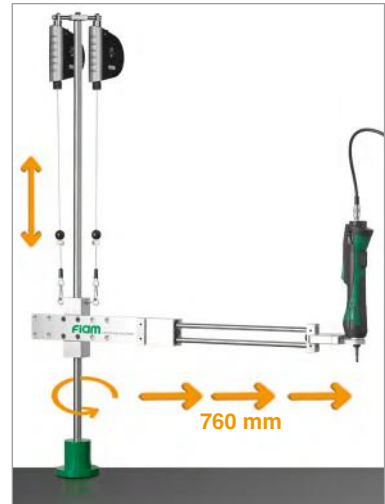
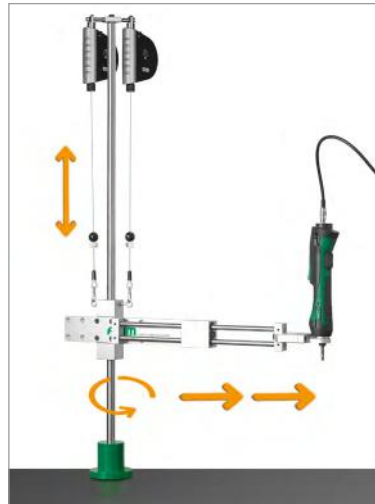
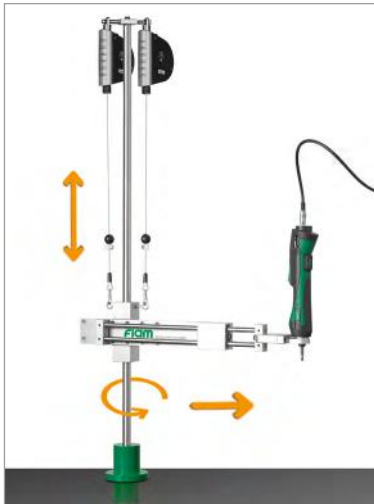
Stable drilled base plate designed to **prevent swinging risk**

BCA-TOP Articulated Cartesian arm

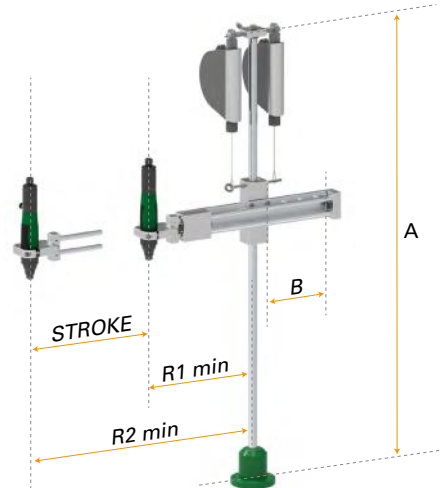
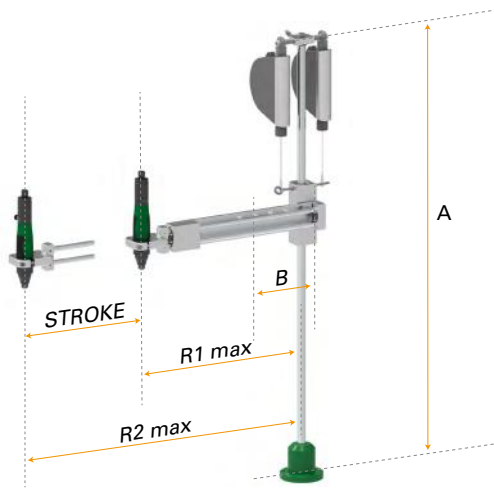


Articulated Cartesian arm with TOP clamping, also available for BC Cartesian arms.



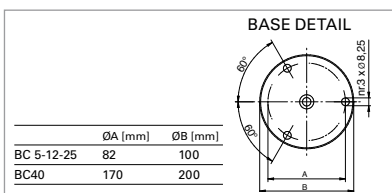


Lateral extension up to 760 mm



The horizontal bar **can be fixed in different positions** (on the internal or most external screws) to allow to reach wider working area while occupying minimum space (R1 - R2).

Description	Code	Max torque		Max load	Max tool diameter	Arm dimension A	Arm regulation B	R1 min-max	R2 min-max
		Nm	in lb						
BC5 Cartesian Arm	692031030	5	44,25	2	32 ÷ 50	1041	160	285-445	600-760
BC12 Cartesian Arm	692031031	12	106,2	2	32 ÷ 50	1065	160	285-445	600-760
BC25 Cartesian Arm	692031032	25	221,25	2	32 ÷ 50	1065	160	285-445	590-750
BC40 Cartesian Arm	692031033	40	354	2	32 ÷ 50	1047	176	274-450	564-740
BC40/7 Cartesian Arm	692031038	40	354	7	32 ÷ 50	1047	176	274-450	564-740
BC40/11 Cartesian Arm	692031040	40	354	11	32 ÷ 50	1047	176	274-450	564-740
BC5-TOP Cartesian Arm	692031065	5	44,25	2	32 ÷ 50	1041	160	285-445	600-760
BC12-TOP Cartesian Arm	692031076	12	106,2	2	32 ÷ 50	1065	160	285-445	600-760
BC25-TOP Cartesian Arm	692031066	25	221,25	2	32 ÷ 50	1065	160	285-445	590-750
BC40-TOP Cartesian Arm	692031077	40	354	2	32 ÷ 50	1047	176	274-450	564-740
BC40/7-TOP Cartesian Arm	692031078	40	354	7	32 ÷ 50	1047	176	274-450	564-740



Standard equipment (supplied with arm)

- Clamp • 2 balancers • Use and maintenance manual • Eco-friendly packaging

Accessories available upon request

- Models with positioning device (see page 19) • Universal clamp, auxiliary grip for use with CA auto feed screwdrivers , arm anti-rotation device (see pages 27-29)

BCA ARTICULATED CARTESIAN ARMS

BCA-TOP Articulated Cartesian arm



Articulated Cartesian arm with TOP clamping, also available for BC Cartesian arms.

Sturdy vertical column

Its increased diameter **avoids any swings**

Upon request: adjustable vertical stroke limiters

(clamps with rubber protection) are available to prevent the horizontal arm from getting too close to the work area (and to avoid damaging the workpiece with the tool)

Double balancer provided

Two balancers are available to **support the tool** (weight up to 11 Kg.) and other hanging elements (models for heavier tools are available upon request)

Ball recirculating runners

Vertical and horizontal movements **running on ball recirculating runners** to guarantee smoothness, handiness and accuracy

"Flag" opening from 0 to 120°

Possibility of arranging the arm both with the joint on the right and on the left depending on the field of work to be covered and up to 120°.

For an excellent reaction to the torque it is advisable to work with the angular opening between 90° and 120°.

Robust structure

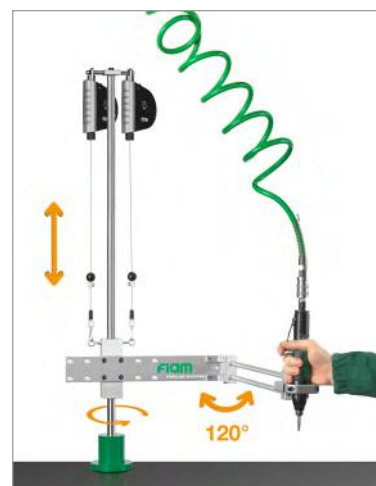
Columns of vertical and horizontal axis made of **tempered and chrome steel** for longer lifespan

Base plate

Stable drilled base plate designed to **prevent swinging risk**

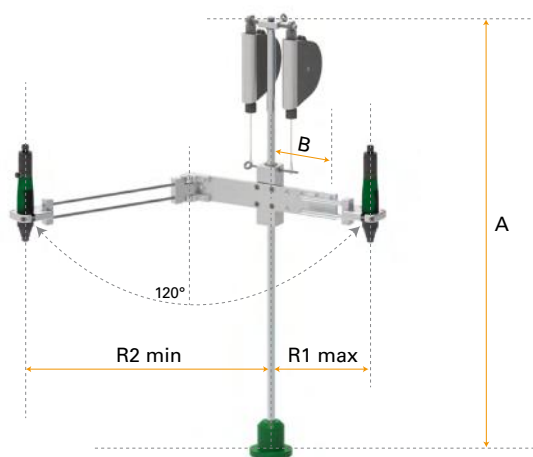
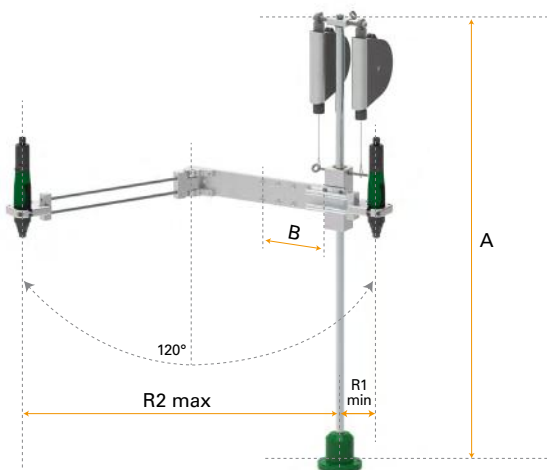
Clamp

to be used with **every type of tool** with diameter up to 50 mm



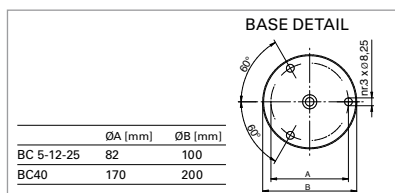
Lateral extension up to 730 mm - "Flag" opening from 0 to 120°

Possibility of arranging the arm both with the joint on the right and on the left depending on the field of work to be covered and up to 120°. For an excellent reaction to the torque it is advisable to work with the angular opening between 90° and 120°.



The horizontal bar **can be fixed in different positions** (on the internal or most external screws) to allow to reach wider working area while occupying minimum space (R1 - R2).

Description	Code	Max torque		Max load	Max tool diameter	Arm dimension A	Arm regulation B	R1 min-max	R2 min-max
		Nm	in lb						
BCA5 Articulated Cartesian Arm	692031034	5	44,25	2	32 ÷ 50	1041	160	110-260	610-730
BCA12 Articulated Cartesian Arm	692031035	12	106,2	2	32 ÷ 50	1065	160	110-260	610-730
BCA25 Articulated Cartesian Arm	692031036	25	221,25	2	32 ÷ 50	1065	160	110-260	610-730
BCA40 Articulated Cartesian Arm	692031037	40	354	2	32 ÷ 50	1047	176	110-260	610-730
BCA40/7 Articulated Cartesian Arm	692031039	40	354	7	32 ÷ 50	1047	176	110-260	610-730
BCA40/11 Articulated Cartesian Arm	692031041	40	354	11	32 ÷ 50	1047	176	110-260	610-730
BCA5-TOP Articulated Cartesian Arm	692031067	5	44,25	2	32 ÷ 50	1041	160	110-260	610-730
BCA12-TOP Articulated Cartesian Arm	692031068	12	106,2	2	32 ÷ 50	1065	160	110-260	610-730
BCA25-TOP Articulated Cartesian Arm	692031069	25	221,25	2	32 ÷ 50	1065	160	110-260	610-730
BCA40-TOP Articulated Cartesian Arm	692031070	40	354	2	32 ÷ 50	1047	176	110-260	610-730
BCA40/7-TOP Articulated Cartesian Arm	692031079	40	354	7	32 ÷ 50	1047	176	110-260	610-730



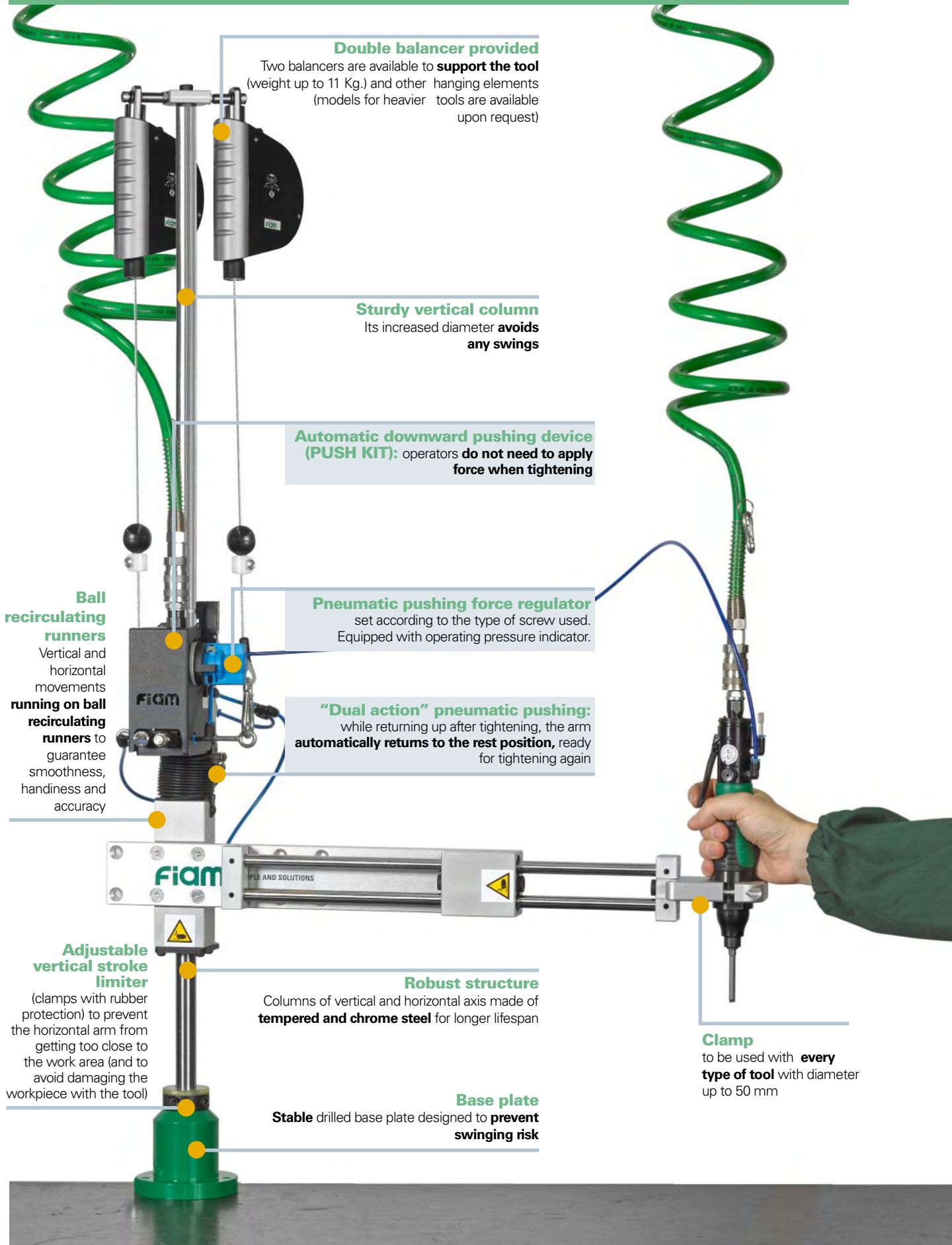
Standard equipment (supplied with arm)

- Clamp • 2 balancers • Use and maintenance manual • Eco-friendly packaging

Accessories available upon request

- Models with positioning device (see page 19) • Universal clamp, auxiliary grip for use with CA auto feed screwdrivers, arm anti-rotation device (see pages 27-29)

BC25PK ASSISTED CARTESIAN ARMS - WITH PNEUMATIC PUSHING FORCE



Double balancer provided

Two balancers are available to **support the tool** (weight up to 11 Kg.) and other hanging elements (models for heavier tools are available upon request)

Sturdy vertical column

Its increased diameter **avoids any swings**

Automatic downward pushing device (PUSH KIT): operators **do not need to apply force when tightening**

Ball recirculating runners

Vertical and horizontal movements **running on ball recirculating runners** to guarantee smoothness, handiness and accuracy

Pneumatic pushing force regulator

set according to the type of screw used. Equipped with operating pressure indicator.

“Dual action” pneumatic pushing:

while returning up after tightening, the arm **automatically returns to the rest position**, ready for tightening again

Adjustable vertical stroke limiter

(clamps with rubber protection) to prevent the horizontal arm from getting too close to the work area (and to avoid damaging the workpiece with the tool)

Robust structure

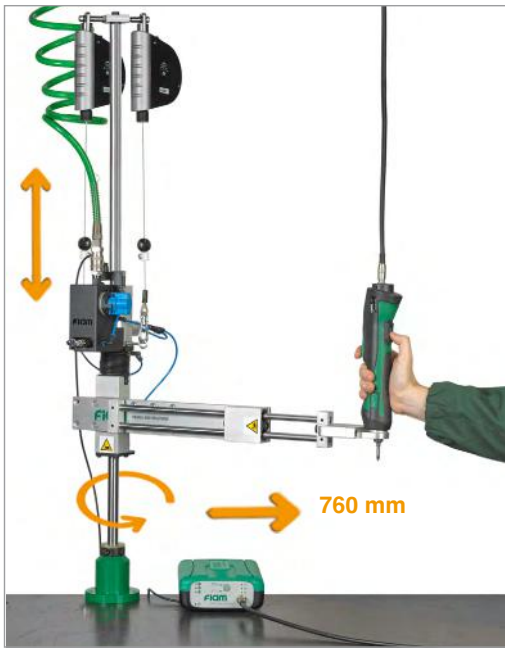
Columns of vertical and horizontal axis made of **tempered and chrome steel** for longer lifespan

Base plate

Stable drilled base plate designed to **prevent swinging risk**

Clamp

to be used with **every type of tool** with diameter up to 50 mm

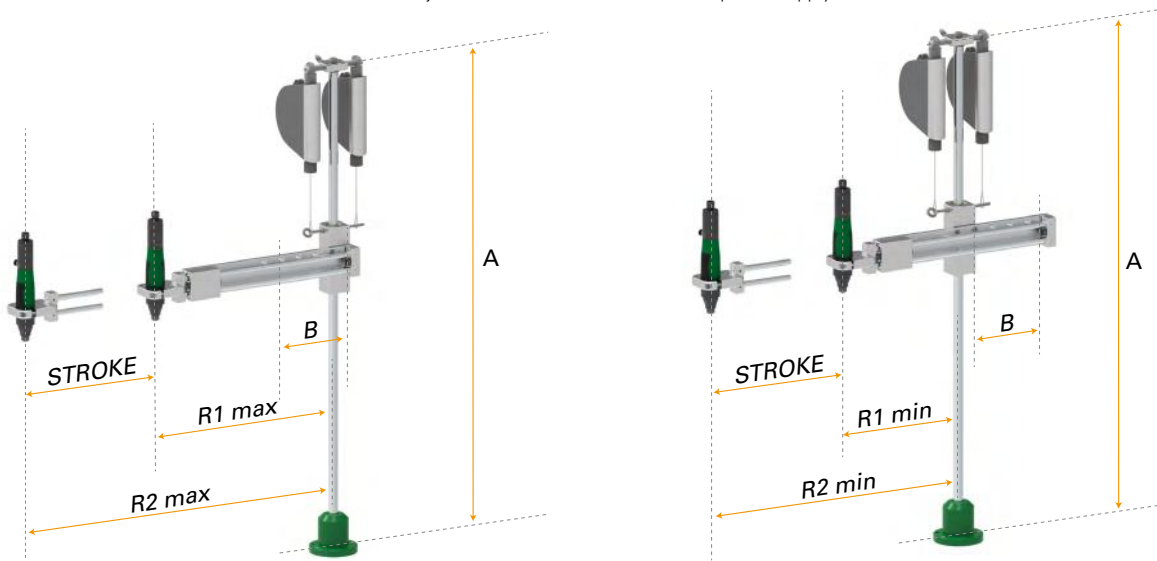


For air and electric screwdrivers with lever start

For safety reasons, the arms can only be used with models of eTensil screwdrivers that have external clutch adjustment with only lever tightening.

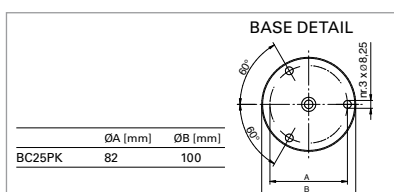
Lateral extension up to 760 mm

The arm works with 1 pneumatic signal output: so it can be used with pneumatic screwdrivers that have a pneumatic signal output and with eTensil electric screwdrivers that have external clutch adjustment combined with the TPU 2 power supply.



The horizontal bar can be fixed in different positions (on the internal or most external screws) to allow to reach wider working area while occupying minimum space (R1 - R2).

Description	Code	Max torque		Max load	Max tool diameter	Arm dimension A	Arm regulation B	R1 min-max	R2 min-max
		Nm	in lb						
BC25PK Cartesian Arm	692031054	25	221,25	4	32 ÷ 50	1041	160	285-445	590-750



Standard equipment (supplied with arm)

- Clamp
- Adjustable vertical stroke limiter
- Connection Cable for eTensil electric screwdrivers
- 2 balancers
- Use and maintenance manual
- Eco-friendly packaging

Accessories available upon request

- Models for tools weighing more than 4 Kg
- Arm anti-rotation device (see page 29)

BC40LK ASSISTED CARTESIAN ARMS - WITH PNEUMATIC LOCKING DEVICE



Double balancer provided

Two balancers are available to **support the tool** (weight up to 11 Kg.) and other hanging elements (models for heavier tools are available upon request)

Sturdy vertical column

Its increased diameter **avoids any swings**

Ball recirculating runners

Vertical and horizontal movements **running on ball recirculating runners** to guarantee smoothness, handiness and accuracy



Adjustable vertical stroke limiter

(clamps with rubber protection) to prevent the horizontal arm from getting too close to the work area (and to avoid damaging the workpiece with the tool)

Robust structure

Columns of vertical and horizontal axis made of **tempered and chrome steel** for longer lifespan

Base plate

Stable drilled base plate designed to **prevent swinging risk**

For CA auto-feed screwdrivers with forward bit stroke device



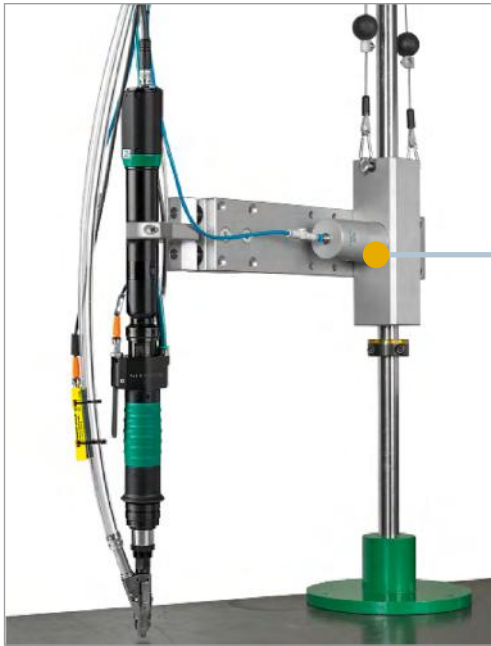
The BC40 LK arm

is for use with auto-feed screwdrivers with automatic forward bit stroke, which provide an automatic pushing force on the workpiece to aid operators so that they do not have to apply force when tightening.

Clamp

to be used with **every type of tool** with diameter up to 50 mm





Pneumatic locking

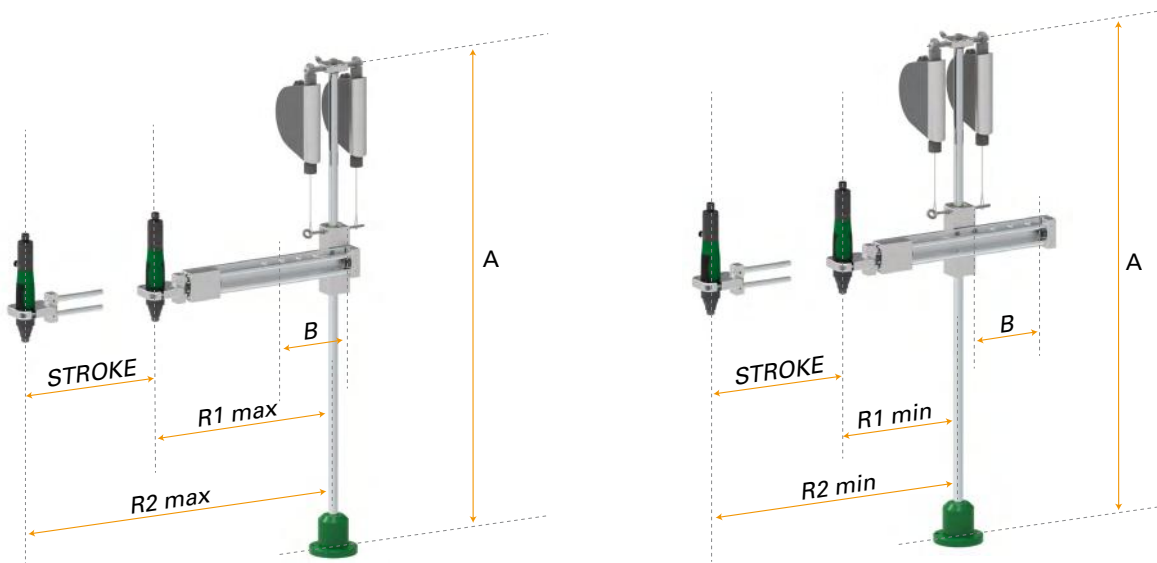
Special device that counteracts the "recoil" caused by the tool bit during tightening and redirects this force to the mechanical arm rather than that of the operator.

The pneumatic locking device is powered directly by the tightening system to which the arm is connected. It is sufficient to quickly connect the practical connection hose provided with the arm to the screwdriver.

Safety locking system

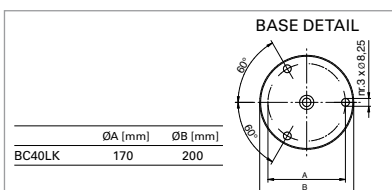
When there is no air or power supply, the system stops automatically to prevent the pneumatic device from slipping and avoid any risk of crushing and/or accidental movement.

Lateral extension up to 760 mm



The horizontal bar **can be fixed in different positions** (on the internal or most external screws) to allow to reach wider working area while occupying minimum space (R1 - R2).

Description	Code	Max torque		Max load	Max tool diameter	Arm dimension A	Arm regulation B	R1 min-max	R2 min-max
		Nm	in lb						
BC40LK Cartesian Arm	692031055	40	354	4	32 ÷ 50	1041	160	274-450	564-740



Standard equipment (supplied with arm)

- Clamp
- Connection hose complete with pneumatic fittings for connecting the auto-feeding screwdriver
- Use and maintenance manual
- Eco-friendly packaging

Accessories available upon request

- Models for tools weighing more than 4 Kg
- Auxiliary grip for use with CA auto feed screwdrivers, arm anti-rotation device (see pages 27-29)

TELESCOPIC AND CARTESIAN ARMS WITH POSITIONING 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.

Entirely designed and built by Fiam, they not only make work stations more ergonomic for the hand-arm system, but also more performant through man-machine collaboration, thereby fulfilling the needs of cognitive and organisational ergonomics.

The system **supports operators and guides them through assembly operations and sequences, reducing mental fatigue** due to the continuous attention required to control such operations.

A system to achieve the advantages of a **Smart Factory** where technology allows a better man-machine collaboration.



- *The positioning system facilitates the operator who is guided in assembly operations*
- *Reduces the mental overload of the operator*
- *Reduces the fatigue due to the attention given by the continuous supervision of operations*
- *Ease of programming and immediate visual and sound feedback lead to ease of work*
- *They eliminate any counterblow to the operator's hands*
- *They eliminate vibrations*
- *Enable the operator to keep a good wrist position*
- *They assure a comfortable and immediate taking of the tool next to the point of work*

The guided positioning system operates as follows:

- It locates the screwdriver position at the various tightening points and stores them (up to 35 positions/program and up to 8 programs)
- The screwdriver is enabled when it is at the first stored position (the TPM display shows POS-OK and the POS-OK LED on the telescopic arm lights)
- Each time a screw is tightened, the REMAIN display shows how many screws are left, indicating that it is ready to pass on to the next screw
- The END signal comes on when the stored cycle is complete, and gives the OK to proceed with a new work cycle
- The memorization process takes place by "self-learning": it is sufficient to carry out a work cycle and at each tightening the system stores the position realized and the number of screws
- During the memorization process, a precision tolerance can be programmed within the range: for example, for a length of 1 mm \pm 10% approximately; for the angle 0.1 degrees (maximum tolerances)

There are two models which can be paired with all Fiam air and electronic tightening solutions:

- Arms with TPM-1: models with **single angle** movement detection;
- Arms with TPM-2: models with **angle and linear** movement detection.



Click [here](#) and discover in the video how the positioning system works

Tightening systems with guided positioning

Fiam
PEOPLE AND SOLUTIONS

Available for:

- BT
Telescopic arms
- BC
Cartesian arms
- BCA
Articulated Cartesian arms



How to order?

The tightening system with a **position monitoring device**, consists of:

- Telescopic or Cartesian arm complete with sensors for the position's detection (to choose in the chart at next page)
- TPM monitoring unit code 692078019 (features at the next page)
- Connecting cable to choose according to the configuration of use (see table below)



MANUAL TIGHTENING SYSTEMS

Air Screwdriver	+	TOM Monitoring Unit code 685001062	+	Cable TPM/TOM code 692079181
eTensil electric screwdriver with mechanical clutch and automatic shut off	+	TPU 2 Power Supply Unit code 686200101	+	Cable TPM/TPU2 code 692079185
eTensil electric screwdriver with mechanical clutch and automatic shut off	+	TPU M1 Monitoring Unit code 686200109	+	Cable TPM/TPU M1 code 692079192
eTensil electric screwdriver with torque/angle current control	+	TPU C1 or TPU C3 Control unit code 686200105 code 686200107	+	Cable TPM/TPU C1 or TPU C3 code 692079192
X-PAQ hi-tech DC screwdriver With torque/angle control	+	CT2500 Feed and control unit code 686200341	+	Cable TPM/XPAQ code 692079182

AUTOMATIC SCREW FEEDING SYSTEM

Air auto feed screwdriver	+	TOM Monitoring Unit code 685001062	+	Cable TPM/TOM code 692079181
eTensil electric auto feed screwdriver with mechanical clutch and automatic shut off	+	TPU 2 Power Supply Unit code 686200101 TOM Monitoring Unit code 685001062	+	Cable TPM/TOM code 692079181
eTensil electric auto feed screwdriver with mechanical clutch and automatic shut off	+	TPU M1 Monitoring Unit code 686200109	+	Cable TPM/TPU M1 code 692079192 * Multiple connector for I/O required
eTensil electric auto feed screwdriver with torque/angle current control	+	TPU C1 or TPU C3 Control unit code 686200105 code 686200107	+	Cable TPM/TPU C1 or TPU C3 code 692079192 * Multiple connector for I/O required
X-PAQ hi-tech DC auto feed screwdriver with torque/angle control	+	CT2500A Feed and control unit code 686200345	+	Cable TPM/CT2500A code 692079183

To connect the devices together,
refer to product catalogues or contact
the Fiam Technical Advice service.



* Multiple connector for I/O code 692079193

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

TPM - Tightening Position Monitor

Model	Code	Dimensions (mm)	Feed	Technical features: TPM - Tightening Position Monitor
TPM - Monitoring Unit	692078019	208 x128 x 42	24 V, 110/230V 50/60 Hz	<ul style="list-style-type: none"> • Length accuracy (mm): 1 ± 10% • Angle accuracy (degrees): 0,1° • Maximum number of screws per program: 35 • Number of programs: 8 • Total number of screws: 280 (35 per programm, 8 programs)

		Model	Code	Max torque		Min work range (mm)	Max work range (mm)	
				(Nm)	in lb			
MODELS WITH SINGLE ANGLE MOVEMENT DETECTION	TELESCOPIC	BT-MG 15 800 - TPM1	692071425	15	132.70	630	985	
		BT-MG 15 1000 - TPM1	692071426	15	132.70	700	1195	
		BT-MG 15 1500 - TPM1	692071427	15	132.70	870	1705	
		BT-MG 40 800 - TPM1	692071428	40	354	630	985	
		BT-MG 40 1000 - TPM1	692071429	40	354	700	1195	
		BT-MG 40 1500 - TPM1	692071430	40	354	870	1705	
		BT-MG 40 2000 - TPM1	692071431	40	354	1050	2245	
		BT-MG 70 800 - TPM1	692071432	70	619.50	630	985	
		BT-MG 70 1000 - TPM1	692071433	70	619.50	700	1195	
		BT-MG 70 1500 - TPM1	692071434	70	619.50	870	1705	
		BT-MG 70 2000 - TPM1	692071435	70	619.50	1050	2245	
	BC	BC 5 - TPM1	692031046	5	44.25	445 min - 285 max	600 min - 760 max	
		BC 12 - TPM1	692031047	12	106.25	445 min - 285 max	600 min - 760 max	
		BC 25 - TPM1	692031048	25	221.25	445 min - 285 max	590 min - 750 max	
		BC 40 - TPM1	692031049	40	354	450 min - 274 max	564 min - 740 max	
	MODELS WITH ANGLE AND LINEAR MOVEMENT DETECTION	TELESCOPIC	BT-MG 15 800 - TPM2	692071422	15	132.70	630	985
BT-MG 15 1000 - TPM2			692071412	15	132.70	700	1195	
BT-MG 15 1500 - TPM2			692071415	15	132.70	870	1705	
BT-MG 40 800 - TPM2			692071423	40	354	630	985	
BT-MG 40 1000 - TPM2			692071413	40	354	700	1195	
BT-MG 40 1500 - TPM2			692071416	40	354	870	1705	
BT-MG 40 2000 - TPM2			692071418	40	354	1050	2245	
BT-MG 70 800 - TPM2			692071424	70	619.50	630	985	
BT-MG 70 1000 - TPM2			692071414	70	619.50	700	1195	
BT-MG 70 1500 - TPM2			692071417	70	619.50	870	1705	
BT-MG 70 2000 - TPM2			692071419	70	619.50	1050	2245	
BC			BC 5 - TPM2	692031042	5	44.25	445 min - 285 max	600 min - 760 max
			BC 12 - TPM2	692031043	12	106.25	445 min - 285 max	600 min - 760 max
		BC 25 - TPM2	692031044	25	221.25	445 min - 285 max	590 min - 750 max	
		BC 40 - TPM2	692031045	40	354	450 min - 274 max	564 min - 740 max	
BCA		BCA 5 - TPM2	692031050	5	44.25	110 min - 260 max	600 min - 760 max	
		BCA 12 - TPM2	692031051	12	106.25	110 min - 260 max	600 min - 760 max	
		BCA 25 - TPM2	692031052	25	221.25	110 min - 260 max	590 min - 750 max	
		BCA 40 - TPM2	692031053	40	354	110 min - 260 max	564 min - 740 max	

Standard equipment (supplied with arm)

- Clamp
- Use and maintenance manual
- 2 balancers
- Eco-friendly packaging

The BCA Cartesian arms are arranged only with the TPM2 device being configured to monitoring the angular and linear positions. BC-BCA 40/7 and BC-BCA 40/11 models with position monitoring device are available only on request.

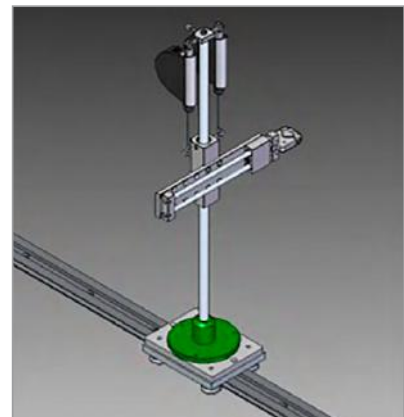
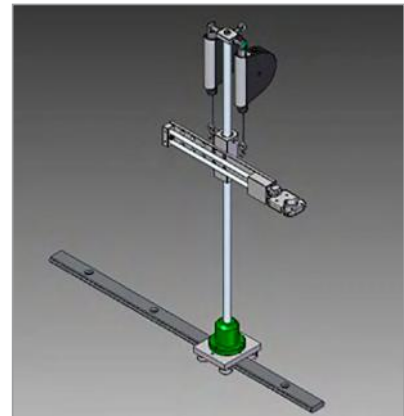
SL LINEAR SLIDE RAIL

This accessory makes the operating layout even more ergonomic as it allows the installed Cartesian or Telescopic arm **to slide along the operating area, along a single working axis.**

The system has the following features:

- The **slide rail** is made of pre-drilled steel for easy installation on the workbench. This can be done by the customer without the need to use additional brackets to secure the rail.
- The sliding rails are **available in two different sizes:** 1000 mm or 2000 mm and the guide can be cut and shortened by the customer. This offers the possibility to choose the size that best suits the specific needs of the context of use.

- **A trolley (with eccentric wheels)** that slides along the liner rail; wheels are adjustable during installation using the supplied wrenches.
- The system can be used with the following types of arms:
 - BC / BCA Cartesian arms
 - BC / BCA TOP arms
 - BC40LK Cartesian arm
 - BT - TOP Telescopic arms
- The SL linear guides used with the BT-TOP Telescopic arms are also **supplied with a drilled fixing plate** that allows the telescopic arm to be fixed on the upper trolley.



- *More functional operational areas with wider ranges of action*
- *Flexible layouts, for example to switch to manual operations only: the screwdriver with the arm can be "moved" easily, leaving the operating space free*
- *Elimination of effort in moving the tool from any point on the bench*
- *Comfortable and immediate grip of the tool near the work point*



Model	For Reaction Arms	Code	Max Length of the rail mm
SL 1000 for BT-TOP	BT - TOP	692078061	1.000
SL 2000 for BT-TOP	BT - TOP	692078062	2.000
SL 1000 for BC and BCA 12/25	BC12/25	692078063	1.000
	BCA 12/25		
	BC12/25TOP		
	BCA 12/25TOP		
SL 2000 for BC and BCA 12/25	BC 12/25	692078064	2.000
	BCA 12/25		
	BC 12/25TOP		
	BCA 12/25TOP		
SL 1000 for BC and BCA 40	BC 40	692078065	1.000
	BCA 40		
	BCA 40LK*		
	BC40TOP		
	BCA 40TOP		
SL 2000 for BC and BCA 40	BC 40	692078066	2.000
	BCA 40		
	BCA 40LK*		
	BC40TOP		
	BCA 40TOP		

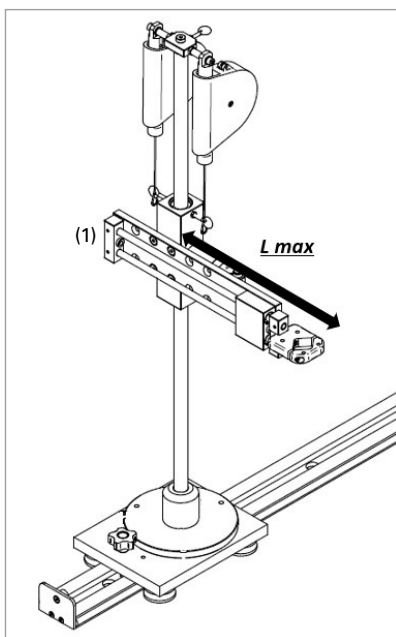
• SL = Sliding Rail • 1000/2000 = Length max in mm

Standard equipment (supplied with rail for BT-TOP arm models)

- Pre-drilled guide of 1000 or 2000 mm depending on the model chosen
- Sliding trolley
- Fixing plate for BT-TOP models
- 2 final stroke limiters and 1 guide lock system
- Wheels adjustment wrenches
- Use and Maintenance Manual
- Eco-friendly packaging

Standard equipment (supplied with the rail for BC-BCA arm models)

- Pre-drilled guide of 1000 or 2000 depending on the model chosen
- Sliding trolley
- Wheels adjustment wrenches
- 2 final stroke limiters and 1 guide lock system
- Use and Maintenance Manual
- Eco-friendly packaging



* In case of use a linear slide guide with BC40LK assisted arm, the boom (1) of the arm, during assembly, must be fixed for a maximum length of 300 mm.

BALANCING ARMS

These practical **bench** suspension devices can support **various tools**, such as pneumatic and electric screwdrivers, drills, tapping machines, riveting machines, etc. **with diameters ranging from 25 to 50 mm and a maximum torque of 20 or 75 Nm.**

They 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.**

Work can also be carried out horizontally or on two axes at the same time, simply by choosing the specific adapter.



BA20 Balancing arm



BA75 Balancing arm

Model	Code
BA20 Balancing arm	692031009
BA75 Balancing arm	692031008

Standard equipment

- Adjustable adapter (for the BA75 model)
- Bench base plate
- Eco-friendly packaging

Accessories available upon request

BA20

- To support tools of up to 2,5 Kg. max. it is necessary to order 2 reinforced springs (code 692059010)

BA75

- To support tools of up to 4 Kg. max. it is necessary to order 2 reinforced springs (code 692059022)

Technical features

	BA20	BA75
Max. work range	850 mm	950 mm
Min. work range	520 mm	550 mm
Max. torque	20 Nm	75 Nm
Max. load (with standard springs)	2 kg	2 kg
Max. load (with reinforced springs)	2,5 kg	4 kg
Max. rotation angle	360°	360°
Ø max. tool	from 25 to 50 mm	50 mm

For balancing arms that must support torque of more than 75 Nm or weights of more than 4 Kg., please contact Fiam Technical Advice service.



- They eliminate any counterblow action on the operators hands
- They eliminate the need for force in holding the tool
- They drastically reduce or eliminate vibrations
- They allow the maintenance of a good wrist position
- They maintain the perpendicularity of the tool at the point of work

Adapters for BA20 available upon request (to be ordered separately)

• Adapters to work on the vertical axis

Adapter	Code	Ø internal adjustable mm
AD 25/40	692059008	25÷40
AD 40/50	692059009	40÷50



• Adapter to work on the horizontal axis

Adapter	Code	Ø internal mm
AD 36	692059014	36



• Adapter to work on two axis

Adapter	Code	Ø internal mm
AD 36/2AX	692059015	36



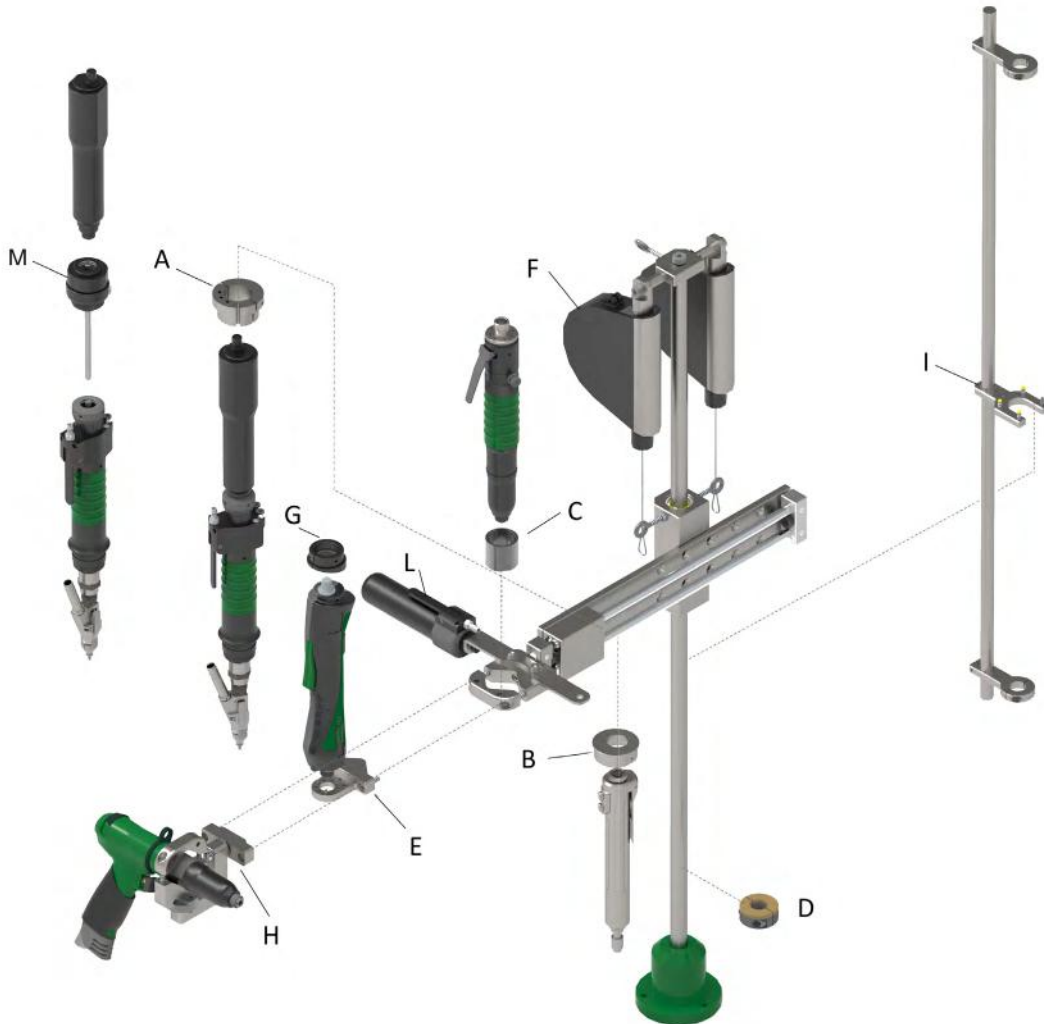
For adapters with different diameter, please contact Fiam Technical Advice service.

ACCESSORIES AVAILABLE UPON REQUEST

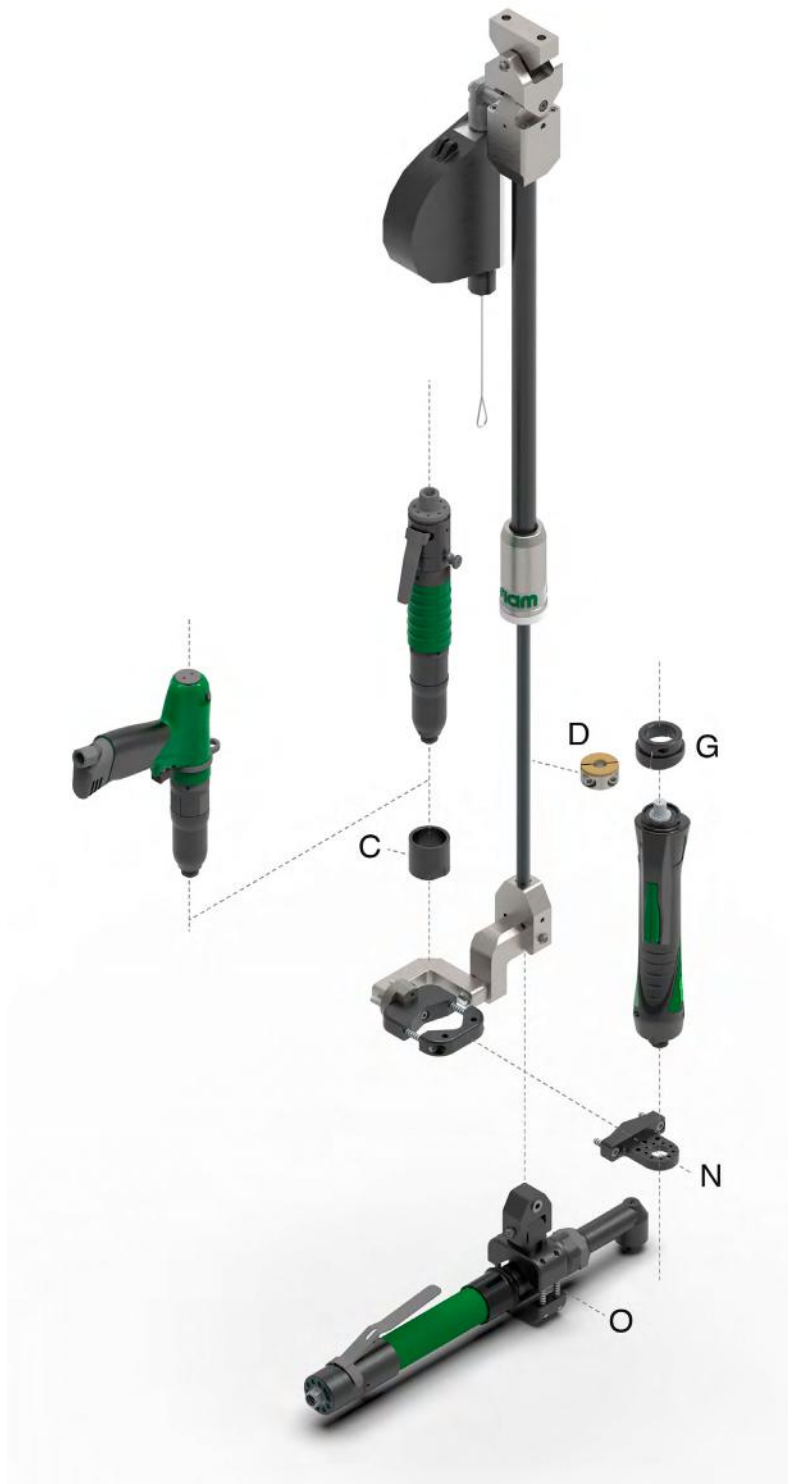
There are several accessories that allow to use all Reaction arms with Fiam tools.

They are all entirely designed and manufactured by Fiam for:

- **correctly bracket the tool** without damaging them and therefore compromising their functionality
- always ensure the **maximum arm performance** with any tool you use.



Ref.	Accessory Type	Tool type	For BC/BCA arms	Code
A	Collar bracket Ø 32	CA autofeed screwdriver (drive 20MC -MCB - SD2500)	All models	692039246
A	Collar bracket Ø 36	CA autofeed screwdriver (drive MCS -E8M)	All models	692039247
L	Auxiliary grip	CA autofeed screwdriver	All models	692039237
M	Rotary clamp for autofeed CA screwdriver with forward bit stroke L 65	CA autofeed screwdriver	All models	692039253
M	Rotary clamp for autofeed CA screwdriver with forward bit stroke L 100	CA autofeed screwdriver	All models	692039254
M	Rotary clamp for autofeed CA screwdriver with forward bit stroke L 110	CA autofeed screwdriver	All models	692039255
E	Collar bracket for eTensil screwdrivers	eTensil elettrico screwdrivers	All models	692039108
G	Upper collar for clamping eTensil screwdrivers	Straight eTensil electric screwdrivers	All models	681041034
B	Collar bracket	Straight SD (X-PAO) electric screwdrivers	All models	692039099
C	Collar bracket for screwdrivers	15C and 26C 4/5 air screwdrivers	All models	692039006
C	Collar bracket for screwdrivers	26C 8/10/12 air screwdrivers	All models	692039007
D	Vertical stroke limiter ring		BC and BCA 12 and 25	692039088
D	Vertical stroke limiter ring		BC and BCA 40	692039089
D	Vertical stroke limiter ring		BC and BCA 5	692039109
F	Increased balancer		All models	Upon request
H	Universal clamp	All tools	All models	692039233
I	Anti-rotation device		BC and BCA 5	692031071
I	Anti-rotation device		BC and BCA 12 and 25	692031072
I	Anti-rotation device		BC and BCA 40	692031073



Ref.	Accessory Type	Tool type	For BT-TOP arms	Code
C	Collar bracket for straight screwdrivers	15C and 26C 4/5 air screwdrivers	All models	692039006
C	Collar bracket for straight screwdrivers	26C 8/10/12 air screwdrivers	All models	692039007
G	Upper collar for clamping eTensil screwdrivers	Straight eTensil electric screwdrivers	All models	681041034
N	Collar bracket for eTensil screwdrivers	Straight eTensil electric screwdrivers	All models	692078060
O	Clamp for angle nutrunners	All air/electric tools	All models	692078059
D	Telescopic stroke limiter		BT-TOP 12	692079254
D	Telescopic stroke limiter		BT-TOP 25	692039088
D	Telescopic stroke limiter		BT-TOP 40	692039089

Universal clamp for BC and BCA arms

Suitable for working **on work points on vertical or inclined surfaces** using 32–50 mm diameter tools with pistol grips, angled heads or open heads.

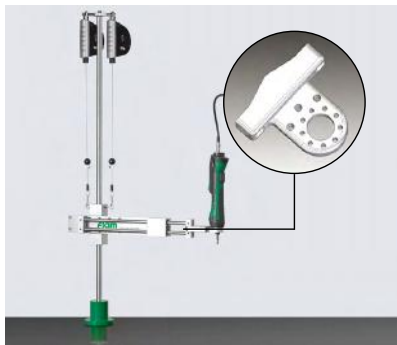
The clamp facilitates a large operating range and promotes a good hand-arm system position by rotating around two axes.

It cannot be used with BC25PK models (with pneumatic pushing device) or BC40LK models (with pneumatic locking device).

Supplied with screws kit to install tool.

Model	Code
Universal Clamp	692039233

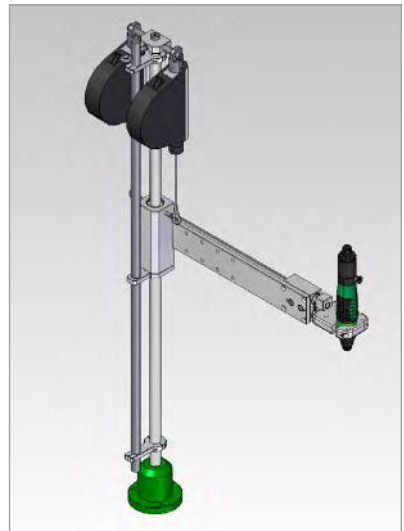
When used with eTensil pistol screwdrivers, for better installation the universal clamp can be combined with the accessory. Code: 692039108.



Anti-rotation device for BC and BCA Cartesian arms

To be applied to the Cartesian arm, it prevents rotation of the arm to the right or left with respect to the identified position, allowing it to operate exclusively vertically and along a single horizontal axis. Ideal when the operational layout varies, there are side walls or in presence of working jigs. The operator can work only on two defined axes.

Model	Code
Anti-rotation device for BC/BCA 5 arms	692031071
Anti-rotation device for BC/BCA 12 and 25 arms	692031072
Anti-rotation device for BC/BCA 40 arms	692031073



Grip for CA auto feed screwdrivers

To use with screwdrivers with automatic screw feeding installed on BC and BCA Cartesian arms.

They allow correct gripping at any point in which the arm can operate, preventing incongruous hand-arm system positions.

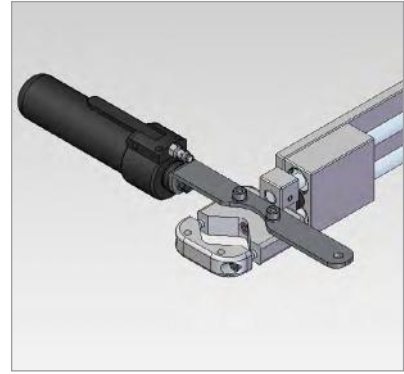
The grip can be installed on the right or left of the boom, with vertical or horizontal gripping.

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. It cannot be used with BC25PK Cartesian arms equipped with pneumatic pushing.

Model	Code
Grip for CA auto feed screwdrivers	692039237



Rotary clamp for CA autofeed screwdrivers

To use with all Fiam arms, is a specific accessory for CA auto feed screwdrivers with FORWARD BIT STROKE DEVICE on 4 Nm joints.

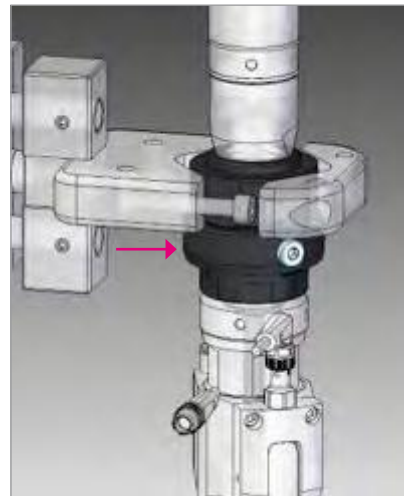
Allows the **tool to be rotated on its axis**. The rotation can be managed in 3 modes by simply placing a screw:

- With the screw on 0° = the clamp does NOT rotate
- With the screw at 220° = it is possible to operate on a limited area of 220°
- Without screw = rotation is free over 360°

Thanks to these features, the clamp has the following advantages:

- Allows the **operator to always maintain a proper grip on the tool and on start lever** even when moving the tool to different working points

- The clamp is inserted between the drive and the forward bit stroke device: in this way, the tool counterblow when the torque is reached, is completely discharged to the arm instead of to the operator's hand-arm system. The use of the clamp involves an **increase in the total length of the system (tool+clamp) by about 4.5 cm**. To compensate for this increase, a 4.5 cm long blade is supplied to replace the one already presents in the screwdriver. The clamp is available in three different models, each designed to adapt to the different strokes of the forward bit stroke device being used.



Model	Code
Rotary Clamp for CA autofeed screwdriver with forward bit stroke L 65	692039253
Rotary Clamp for CA autofeed screwdriver with forward bit stroke L 100	692039254
Rotary Clamp for CA autofeed screwdriver with forward bit stroke L 110	692039255

Standard equipment

- 4.5 cm long blade

Collar bracket for eTensil screwdrivers

For BC and BCA cartesian arms

To use eTensil **straight screwdrivers** on BC and BCA Cartesian arms without damaging them and therefore compromising their functionality, two type of collar bracket are available:

- one to clamp straight eTensil tool **in the lower part of the tool** (ref. 2). Not usable with eTensil screwdrivers with external clutch adjustment (...RE models).
- one to clamp the tool **in the upper part** (ref. 3) and allow a better view of tightening point.

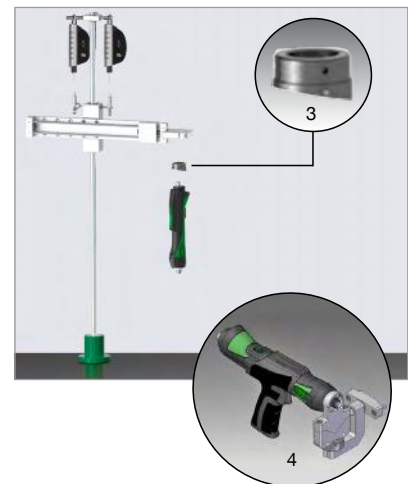
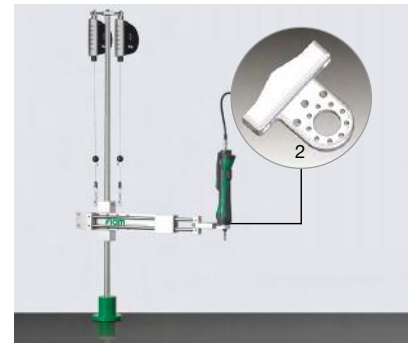
Supplied with mounting screws.

To clamp **eTensil pistol or angle models** onto the arms Cartesian BC/BCA and work ergonomically on vertical or inclined surfaces, it is sufficient to combine the universal clamp (ref. 4) with the lower clamping collar (ref. 2). This clamp, rotating on two axes, favors a wide operational range and a good position of the hand-arm system. It cannot be used with BC25PK and BC40LK arms models.

Ref.	Model	Code
1	Collar bracket for eTensil screwdrivers on BT-MG arms	692079180
2	Collar bracket for eTensil screwdrivers on BC/BCA arms	692039108
3	Upper collar bracket for eTensil screwdrivers on BC/BCA arms	681041034
4	Universal clamp for BC/BCA arms	692039233

For BT-MG telescopic arms

To use straight eTensil screwdrivers on BT-MG telescopic arms, the collar bracket (ref.1) is available which allows 9 rotation positions of the screwdriver on its axis.



Collar bracket for 15C and 26C air screwdrivers

To be adequately clamped onto the arms or supports or used with the auxiliary grip, 15C and 26C straight pneumatic screwdrivers require a specific collar bracket which safeguards the tool and its functionality.

Model	Code
For 15C (all models) and 26C (4 and 5 models)	692039006
For 26C (8/10/12 models)	692039007



THE POKA YOKE SYSTEMS: TOOLS AT THE SERVICE OF OPERATORS AND FOR OPERATIVE EFFICIENCY.

Poka Yoke comes from Japanese, Poka means error while Yokeru means avoid.

Poka Yoke devices are therefore inspired by this principle, that is, **they aim to identify the error already in the assembly phase, before the product becomes waste and therefore a cost.**

Today these devices are increasingly advanced and designed with the aim of **facilitating operational processes, preventing human errors, minimizing the risk of accidents**, intercepting defects and therefore putting into practice true Lean Production, the philosophy aimed at minimizing waste up to to cancel them.

The use of Poka Yoke systems also allows **to relieve the operators from constant monitoring of the process step by step** and the machines in operation.

This allows them to focus on more strategic tasks, reducing the burden of continuous supervision, thus contributing to improving the overall cognitive and organizational ergonomics of the work environment.



- They improve the efficiency of operational processes
- They reduce the operator's mental overload
- They lead to ease of work for operators by providing immediate visual and audible feedbacks
- They reduce the fatigue due to the attention given by the continuous supervision of operations
- They recognize the error before it becomes an irreversible waste
- They allow fixing the mistake and undertaking corrective measure
- They halt the assembly line in order to prevent that the waste reaches the end of cycle, thus adding manufacturing costs involved to the waste
- They relieve operators from the constraints of continuously monitoring the machine while it is operating so that they can become capable of supervising the process in its integrity
- Eliminate the costs of post-process controls identifying mistakes as they occur

TOM. Monitoring unit

TOM ensures exceptional quality of the end product. Right **from the assembly stage it flags up any forgotten screws or any that have not been tightened correctly** and informs the operator immediately.

In addition, to assist the production cycle even further, it can be connected to systems for **pick and place, to devices for halting the line or the individual assembly stage, or to the system for changing components**. So many opportunities but a single objective: to remove any chance of error and therefore wasted time and money.



BOX TOM includes:

TOM monitoring unit + Tool locking/unlocking device + Cable to connect TOM with locking/unlocking device + Transducer + Tower light



Model	Description	Code	Dimension L x P x H mm	Electric feed
TOM	Monitoring unit	685001062	208x128x42	24V, 110/230V 50/60 Hz
BOX TOM	Monitoring unit	685001086	300x165x265	24V, 110/230V 50/60 Hz

TOM needs to be purchased along with Fiam transducer code **687041041**, one for each tool (except when TOM is connected to CA autofeed screwdriver or eTensil electric screwdriver).

Models and accessories available upon request

MULTI-DOCK

Connecting up to 8 tools (each tool has a dedicated program).

There are 2 LEDs for each screwdriver: one indicates the enabled screwdriver (to be used) and one indicates the tool is working.

For models	Code
Pneumatic	685001065
Electric eTensil	685001066

Supplied with adapter for connection with TOM and 2 connecting cables

TOOL LOCKING/UNLOCKING DEVICE

It permits to TOM unit to enable/disable connected tool.

Including status led.

For models	Code
15C/26C	685001069

(including couplings for 10 mm Ø hose bore)

AD/AG/IHE/CY	685001070
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(including couplings for 12 mm Ø hose bore)

LED INDICATORS AND TOWER LIGHTS

For choosing the device to pair with TOM, see page 38 of this catalogue.

CONNECTING HOSES

Models	Code
Spiral multi-hose D12	693011207
Spiral multi-hose D10	693011026

Designed by Fiam, they provide specific features for use of the transducer for TOM (cod. 687041041).

The two hoses for the pneumatic signal pick-up are fixed to air supply hose, while the transducer can be placed at the opposite end of the hose rather than on the tool. A very compact solution, completely spiral shape, which maintains a tidy work area for the operator. The hoses are 2.5 M long (measured with stretched hose and including 35 mm useful linear hose for connections); this dimension is the one that guarantees the transducer perfect efficiency.

COVER

Code 687041043

Covering device for the upper part of TOM unit, compact and easy to install. It hides any anti aesthetic wiring. It prevents intentional or unintentional contacts and damages to TOM unit. It prevents modifications / tampering by unauthorized personnel. It protects the electrical contacts from any traction thanks to the presence of 3 cable glands.

CABLES

- **Cable TOM/Locking/unlocking device: Code 685001071.** To connect the two devices when a single screwdriver is used
- **Cable multi-dock connector / Locking/unlocking device: Code 685001072.** To connect the two devices when several screwdrivers are used
- **Cable TOM/TPU2: Code 685001093**
- **Cable TOM/CA auto feed screwdriver: Code 685001074**
- **Cable TOM/CA eTensil auto feed screwdriver: Code 685001094.**

[Discover all the features here](#)

TPU-M1. Monitoring unit for eTensil electric screwdrivers

It **monitors and manages** all the functions of the matching **eTensil** brushless electric **screwdrivers with mechanical clutch and automatic shut off**, and makes the operator's work easy and ergonomic.

- LEDS for an immediate viewing of the process status
- Displaying of tightening results: OK/NOK in addition to the tightening time
- Screw counting: an effective Poka Yoke device
- Detects process anomalies like overtreading or already tightened screws
- 8 monitoring programs
- Stores up to 99 tightenings
- It relates to the outside, the PLC or other devices for example the SPS socket selector, Poka Yoke device for selecting programs via accessory removal
- It can be managed remotely
- Solve tightening with critical joints for example assembly with elastic gaskets or components made of rubber or other materials: it verifies that gaskets are in place
- Automatically recognizes the connected tool and sets immediately to the relevant parameters

- **THE FOUR DIFFERENT TOOL START UP MODALITIES** can be set on the monitoring unit
- **STARTING BLOCK** in case of anomaly
- **Turns on/off the tool front LIGHT LED**
- **Turns on/off the tool UNTIGHTENING FUNCTION.** Sets the parameterizable untightening speed
- Makes **SCREW ENGAGEMENT EASIER** thanks to the Soft Start function (acceleration time can be set)
- **TOOL SPEED** can be freely set within minimum and maximum range, both in tightening and in untightening.

Other additional functions that can be parameterized within their range are:

- **PRE-AUTO UNTIGHTENING** it is possible to set the untightening angle and the pause between the untightening and the subsequent tightening. This strategy finds its application in the electrical / electronic field, for example when it is necessary to open and then close connectorsto insert electrical wires.
- **POST-AUTO UNTIGHTENING** the untightening angle is settable as well as the time pause of left rotation start after the tightening end.



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

Model	Code	Speed	Nr of connected tools	Tool feed tension	Feed input	I/O	Visual indicators	Weight	Dimensions (LxHxP)
								kg	mm
TPU-M1	686200109	Adjustable Min./Max	1	32 VDC	230 Vac ±10% 50-60 Hz	8 inputs 8 outputs	7 LED DISPLAY	0,8	185x150x105
TPU-M1 120V	686200110	Adjustable Min./Max	1	32 VDC	120 Vac ±10% 50-60 Hz	8 inputs 8 outputs	7 LED DISPLAY	0,8	185x150x105

Accessories for TPU-M1

Led indicator: code 686990039. See page 38

Tower-light with audible buzzer: code 686990040. See page 38

SPS Socket and Program Selector: code 687010055. See page 37

Multiple connector for I/O: code 692079193. See page 22

Kit Fiam HyperTerminal: code 686200913. Allows to connect all Personal Computers so the network systems, with Fiam units equipped with an RS 232 serial port.

Fixing plate: code 692080000

[**Discover all the features here**](#)

TPU-C1. Control unit for eTensil electric screwdrivers

BASIC MODEL

Controls and manages all the functions of the connected **eTensil brushless electric screwdrivers** with current control and makes the operator's job easy and ergonomic.

- LEDS for an immediate viewing of the process status
- Displays of tightening results: OK/NOK in addition to the tightening time
- Screw counting: an effective Poka Yoke device
- Allows inprocess torque adjustments by simply modifying the relevant parameter on the operating panel
- Stores up to 99 tightenings
- Detects process anomalies like overtreading or already tightened screws
- It relates to the outside, the PLC or with working stations
In presence of Jigs, workpieces locking devices can be activated/deactivated and can be managed remotely
- It signals the outcome of a phase, the state of the system or the remote control of the tool
- Automatically recognizes the connected tool and sets immediately to the relevant parameters

- **"Smart Thread" function:** For processing of selfthreading, self-tapping, self-drilling screws, or else where the final torque value is lower than thread forming torque.

- **Smart Speed" function:** Useful for speeding up the production process. It is possible to create a "two-phase" tightening strategy:

- The first with a highspeed screwdriver rotation until reaching the set angle

- The second with a pre-defined speed that allows to maintain the accuracy of the result.

- Min./Max. tightening time control - Poka Yoke system

- Settable untightening speed

- **1 program to control tightening process**

- **THE FOUR DIFFERENT TOOL START UP MODALITIES** can be set on the monitoring unit

- Turns on/off the tool **UNTIGHTENING FUNCTION.** Sets the parameterizable untightening speed

- Makes **SCREW ENGAGEMENT EASIER** thanks to the Soft Start function (acceleration time can be set)

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

- **2 TIGHTENING STRATEGIES AVAILABLE**



Model	Code	Speed	Nr of connected tools	Tool feed tension	Feed input	I/O	Visual indicators	Weight	Dimensions (LxH)
								kg	mm
TPU-C1	686200105	Adjustable Min./Max.	1	32 VDC	230 Vac ±10% 50-60 Hz	8 inputs / 8 outputs 9 + 11 signal types	7 LED DISPLAY	0,8	185x150x105
TPU-C1 120V	686200106	Adjustable Min./Max.	1	32 VDC	120 Vac ±10% 50-60 Hz	8 inputs / 8 outputs 9 + 11 signal types	7 LED DISPLAY	0,8	185x150x105

Accessories for TPU-C1

Led indicator: code 686990039. See page 38

Tower-light with audible buzzer: code 686990040. See page 38

Multiple connector for I/O: code 692079193. See page 22

Kit Fiam HyperTerminal: code 686200913. Allows to connect all Personal Computers so the network systems, with Fiam units equipped with an RS 232 serial port.

Fixing plate: code 692080000

[Discover all the features here](#)

TPU-C3. Control unit for eTensil electric screwdrivers

ADVANCED MODEL

Controls and manages all the functions of the connected **eTensil brushless electric screwdrivers** with current control and makes the operator's job easy and ergonomic.

In addition to all the features of the basic TPU-C1 model illustrated on page. 35, presents these additional functionality:

- Displays tightening results: OK/NOK, the angle value at the end of each cycle together with tightening time and torque values
- Solve tightening with critical joints for example assembly with elastic gaskets or components made of rubber or other materials: it verifies that gaskets are in place

- **8 programs to control the tightening process**
- **1 programmable sequence up to a max of 8 steps**
- **PRE-AUTO UNTIGHTENING** it is possible to set the untightening angle and the pause between the untightening and the subsequent tightening. This strategy finds its application in the electrical / electronic field, for example when it is necessary to open and then close connectors to insert electrical wires
- **POST-AUTO UNTIGHTENING** the untightening angle is settable as well as the time pause of left rotation start after the tightening end
- **STOP-BY-TIME TIGHTENING** when it is necessary to tighten in depth and not to defined torque, by controlling the cycle with set tightening time.
- **5 TIGHTENING STRATEGIES AVAILABLE**



Model	Code	Speed	Nr of connected tools	Tool feed tension	Feed input	I/O	Visual indicators	Weight	Dimensions (LxWxH)
								kg	mm
TPU-C3	686200107	Adjustable Min./Max.	1	32 VDC	230 Vac ±10% 50-60 Hz	8 inputs / 8 outputs 21 + 22 signal types	7 LED DISPLAY	0,8	185x150x105
TPU-C3 120V	686200108	Adjustable Min./Max.	1	32 VDC	120 Vac ±10% 50-60 Hz	8 inputs / 8 outputs 21 + 22 signal types	7 LED DISPLAY	0,8	185x150x105

Accessories for TPU-C3

Led indicator: code 686990039. See page 38

Tower-light with audible buzzer: code 686990040. See page 38

SPS Socket and Program Selector: code 687010055. See page 37

Multiple connector for I/O: code 692079193. See page 22

Kit Fiam HyperTerminal: code 686200913. Allows to connect all Personal Computers so the network systems, with Fiam units equipped with an RS 232 serial port.

Fixing plate: code 692080000

[**Discover all the features here**](#)

SPS. Program selector by removing the accessory

Effective Poka yoke device for selection of tightening programs by picking up of sockets/bits. Can work together with Fiam control units TPU-C3, TPU-M1, as **well as with the control unit** of X-PAQ tightening systems. It allows the selection of up to 8 sockets or bits (with diameter up to 80 mm) and checks correspondence between socket and pre-set tightening program as indicated from linked controller. Selection LEDs and socket pick-up acoustic signal (buzz): each socket spot is indeed connected to a particular program in the controller so that, when the worker picks one socket the controller is automatically set in accordance.



- Quick and easy menu navigation
- In case of partial use, it is possible to disconnect non-used sockets
- Equipped with two I/O connectors for interfacing with devices of workbench

TWO OPERATING MODES

OPEN PROGRAM SELECTION

- Depending on the accessory picked up one among preset programs is selected
- **The LED lights up after picking up the socket/bit**
- The sequence of programs used is up to the operator

CONTROLLED PROGRAM SELECTION

- The TPU-C3 / TPU-M1 unit sends a signal to SPS showing the right picking-up sequence (Poka Yoke system)
- The LED lights up before picking up the accessory showing with socketed is to be used next
- **The tool works only if the right accessory is picked-up**
- The operator is helped following the right programs sequence

Model	Code	Unit to use	Weight	Dimensions LxPxH
			kg	mm
SPS for CT2500	687010050	CT2500	5,8	239x310x63
SPS for TPU-C3 / TPU-M1	687010055	TPU-C3 / TPU-M1	5,8	239x310x63

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

LED INDICATORS AND TOWER LIGHTS WITH AUDIBLE BUZZER

Our led indicators and sound tower lights are **Poka Yoke devices** essential for controlling and improving the efficiency of production processes. Connected to the specific power supply/control units, they allow an immediate and **clear visual/sonic indication of the status of the tightening process and help operators in their work** and to avoid error situations, reducing the risk of defects to a minimum.

LED indicator

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

Tower-light with audible buzzer

3 colours tower-light, equipped with an audible buzzer to be connected to control units. It allows, with lights and sound signals, the immediate feedback of the tightening process status. Diameter of 55 mm, it can be fixed to the workbench.

Tower-light

3 colours tower-light, equipped with an audible buzzer to be connected to TOM Monitoring unit. It allows, with lights the immediate feedback of the tightening process status. Diameter of 55 mm, it can be fixed to the workbench.



Type	Cable length supplied	For tightening systems	Code
Tower-light with audible buzzer	3 mt	electric eTensil with units: - TPU-M1 - TPU- C1 - TPU -C3	686990040
Tower-light	5 mt	pneumatic with: - TOM	687041018
Led indicator	1,5 mt	electric eTensil with units: - TPU-M1 - TPU- C1 - TPU -C3	686990039
Led indicator	1,5 mt	electric eTensil with units: - TPU 2	686990034

PICK & PLACE SYSTEMS: ADVANCED ERGONOMICS FOR ASSEMBLY FAST AND EFFICIENT.

The Pick & Place systems represent an innovative solution to **simplify and make assembly operations fluid and continuous** by eliminating the manual screws gripping and positioning.

The various devices that can be connected to obtain Pick & Place operations can be integrated into operational layouts with any type of pneumatic or electric **straight screwdriver**, including the eTensil models.

The configurations of Pick & Place operations can be of different levels: from the **simple suction of the screw by the screwdriver to the subsequent translation to the tightening point to the screwdriver** configuration that takes the screw from an **automatic screw presenter**.

In **the first** case it is simply applied to the screwdriver special head to

be connected to a vacuum pump: in this way the operator does not have to retrieve screws with his hands but sucks them directly with the screwdriver for example from a simple grid where are pre-arranged and can perform operations with minimal physical effort, using only one hand and preventing the risk of finger fatigue.

In **the second case**, the screws can be taken from automatic screw presenter which makes the cycles even faster and more practical as they guarantee a workflow efficient and trouble-free and can be used both with the screw suction system and with simple magnetic blades to be used on the screwdriver.

The advanced ergonomics offered by Pick & Place systems help create more comfortable and safer workstations for operators, while promoting increased performance and quality in the assembly process.



- They offer a benefit to the fingers which are no longer stressed in repeated movements of screws gripping and positioning
- They allow operators to work with one hand and use it to move components rather than screws
- They prevent the loss of screws on workbenches or on the ground, making workstations safer and tidier
- They avoid the loss of screws inside the components to be assembled
- They promote good retention of the screw thanks to the screw suction system especially with types of screws where the blade/screw head engagement is critical (e.g. Torx screws)
- By reducing more repetitive and monotonous manual operations, less supervision is obtained and therefore less mental fatigue in carrying out the various tasks which translates into less stress for the operator
- They ensure working continuity thanks to the easy, continuous and reliable supply of screws
- They improve the efficiency of operational processes

SCREW SUCTION SYSTEMS

Screw suction head

The screw suction system allows effective picking even with types of screws where the blade/screw head engagement is often critical (see screws with Torx recesses). A particular nozzle is applied to the head of the straight screwdriver, to be customized according to

the screws or the piece to be assembled, to be sent to Fiam as a sample. The blades will also be evaluated and proposed based on the type of screws. The SSU vacuum pump must be connected to the screw suction head.

Position	Type	Code
1	Nozzle	Standard or customized
2	Screw suction head (equipped with a suction hose to be connected to the SSU vacuum pump)	682119050
3	Ring connection kit for eTensil E8C screwdrivers (for connecting the suction head to the screwdriver)	681041036
	Ring connection kit for eTensil E8MC nutrunner motors (for connecting the suction head to the nutrunner motor)	681041038
4	Bits	Standard or customized
5	Type of tools: - eTensil electric screwdrivers - eTensil electric nutrunner motor	
6	Type of tools: - Air screwdrivers (15C/26C FT) see chart below - Air nutrunner motors	

Matching air screwdriver: for features, see the corresponding models in the catalogue.

15C2A-FT	112509919	15C2AL-FT	112507073	26C4A-FT	114807634
15C3A-FT	112509920	15C3AL-FT	112507074	26C5A-FT	114807635
15C4A-FT	112507013	15C4AL-FT	112507047		
15C5A-FT	112509913	15C5AL-FT	112509949	26C4AL-FT	114807636
15C5A250-FT	112509956	15C5AL250-FT	112507075	26C5AL-FT	114807383
15C5A150-FT	112507072	15C5AL150-FT	112507076		



Vacuum pump

Designed and manufactured by Fiam, they are necessary for suction of screws. Supplied with power cable.

The **SSU-E model** is specific for eTensil TPU-2, TPU-M1, TPU-C1 and TPU-C3 units, for manual or automatic configurations. In addition to the features of the SSU model, it features a screw presence

detection system on the nozzle of the screw suction device to which it is connected and that automatically manages, via an external signal, the switch-on and switch-off, optimizing the energy saving and reducing noise. Is equipped with a LED device on the front which indicates the functioning when in the suction phase.

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



SSU



SSU-E

AUTOMATIC SCREW PRESENTERS

For manual Pick & Place with magnetic blade

NJ automatic screw presenters effectively feed:

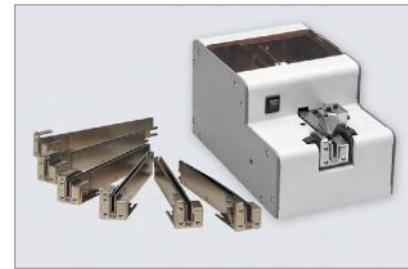
- **Magnetisable screws** with PHILLIPS (or POZIDRIV head print)

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

feeding

- **Different screws** (shank diameter 2 ÷ 5 mm, max shank length 18 mm) simply replacing the rails.

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



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

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

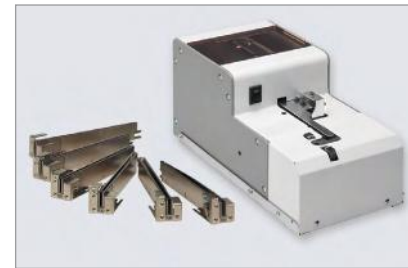
NJR automatic screw presenters effectively feed:

- **Any type of screw/head print** even those with Torx or hexagon sockets
- **Different screws** (shank diameter 2 ÷ 5 mm, max shank length 18 mm) simply replacing the rails

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

- **Convenient pick-up point:** has a screw detection sensor with a signal output cable. The built-in cable provides a signal (on/off) that indicates if there is a screw in the pick-up area and therefore connect the screw presenter to Poka Yoke devices as e.g. LED INDICATORS

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



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

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

OM automatic screw presenters effectively feed:

- **Exclusively magnetizable steel screws** from M2 to M6 with under-head length up to 25 mm
- **Convenient pick-up point** on the rotating escape: has a screw

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

detection sensor with a signal output cable. The built-in cable provides a signal (on/off) that indicates if there is a screw in the pick-up area and therefore connect the screw presenter to Poka Yoke devices as e.g. LED INDICATORS

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



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

[Discover all the features here](#)

AUTOMATIC NUTS PRESENTERS

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

- **presenting station** (for nut pick) with special auto-orientating socket

- **integrated electronic unit** for controlling and adjusting the feeding speed of nuts

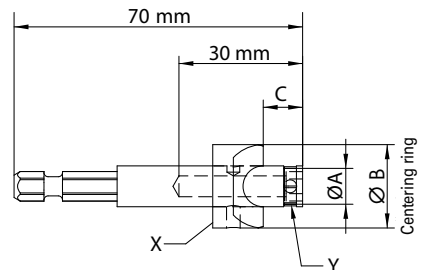
To be used with straight lever start screwdrivers (electric and pneumatic).



		EXAGONAL NUTS		
Model	Code	Minimum height mm	Maximum height mm	Hexagon mm
AM55B	199971001	2,15	2,4	5,5
AM60B	199971002	2,55	3	6
AM70B	199971003	2,75	3,2	7
AM80B	199971004	3,7	4	8
AMB100B	199971005	4,7	5	10
AMB110B	199971006	5,2	5,5	11
AMB130B	199971007	6,15	6,5	13

Special socket mm	Code	Socket dimensions with hexagonal drive 1/4"			Retaining spring code (y)
		dimension "C"	Ø A mm	Ø B mm	
5,5	605181055	9,5	8,8	20	528505500
6	605181060	9,5	9,8	20	528506000
7	605181070	9,5	11,5	21,5	528507000
8	605181080	9,5	13	23	528508000
10	605181100	8,5	14,8	25	528510000
11	605181110	8,5	18	29	528511000
13	605181130	8,5	19,8	29	528513000

SPECIAL PICK UP SOCKET



C dimension: minimum measure to avoid that the centering ring (Ø B) touches the components to be assembled during the tightening phase. Upon request customised sockets.

SELF-LOCKING NUTS

Model	Code	Type (UNI5588)
AM55A	su richiesta	M3
AM60A	su richiesta	6 mm
AM70A	su richiesta	M4
AM80A	su richiesta	M5
AMB100A	su richiesta	M6
AMB110A	su richiesta	M7
AMB130A	su richiesta	M8

* Pick-up socket: customized upon drawing

[Discover all the features here](#)



OTHER ACCESSORIES

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
- **to keep a wrist in ergonomic position allowing** the immediate grip of a tool, since the cable with long stroke, positions the tool back to its initial position.

Capacity Kg	Cable length	
min - max	mm	Code
0,3 ÷ 1,5	1600	690011200
1,2 ÷ 2,5	1600	690011201
1,5 ÷ 3	2500	690011202
3 ÷ 5,5	1400	690011203



Balancer with built-in supply

Indicated to **support and to feed at the same time** air tools.

This balancer, in addition to illustrated features, is **equipped with a highly resistant flexible hose to be connected to the main**



- They eliminate the need for force in holding the tool
- The tool by remaining always in the set position, ensures an easy and safe grip

Capacity Kg	Cable length	Ferrule coupling	
min - max	mm	Type	Code
1,2 ÷ 2,2	800	1/4" gas	690011240

air feed, so that the tool is directly supplied. Included built-in safety chain.



TOOL HOLSTER

Practical holster **to be fixed to the work bench** in order to house **pistol tools**.

This indispensable adjustable accessory **manufactured in a sturdy resin**, avoids damage to the tools by guaranteeing a **longer lifespan**.

The holster is also **extremely versatile** since inside it has a removable adapter so that it can be used for a large number of tools.



- Properly replaced tools are not dangerous for operators

Model	Ø tool - mm	Code
FP-43-24	from 32 to 42,5	681010100

AUXILIARY GRIP

When carrying out **more than one assembly cycle** or when the **torques are higher than 4 Nm** (straight tools) or **than 10 Nm** (pistol tools), it is recommended to use an auxiliary grip which permits a reduction of the **torque reaction dividing work load on both hands** (ISO 11148-6 standard).

For more information please contact Fiam Technical Advice service.

∅ internal (mm)	For screwdriver series	Code
36	CSE...P, CDE...P	681041200
38	15C, 26C (mod. 4 and 5)	681041205
40	26C (mod. 8, 10 and 12)	681041240
43	CY...P	681041011
46	CY...	681041002
48	eTensil with current control	681041030



- They eliminate any counterblow on the operator's hands
- They allow hand-arm reaction to be released on two hands
- They drastically reduce or eliminate vibrations

Choose Fiam also for bits, sockets, inserts, bushes, air hoses, nipples and whatever is needed to set up efficient and productive workplaces.



**Are you looking for a poka yoke tightening system to streamline your production process?
Do you want to eliminate scraps increasing the quality of the finished product?
Discover TOM on <https://tom.fiamgroup.com>**

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