

Tightening automation. Only excellent solutions.

EasyDriver MCA: autofeed tightening module

- Screw feeding system
- Air or electric nutrunner motor
- Fastening slide



The right solution to improve the productivity

Designed entirely by Fiam, this solution is a must when large and medium batches of the same screws have to be tightened, when it has to be integrated on pre-existing productive systems and when it is necessary to optimize the times of the productive process.

It offers concrete benefits in productivity because:

- the screw is automatically sent from the bowl to the screw holding device
- the positioning and the tightening of the screw on the workpiece is automatic and accurate.

EasyDriver MCA is a solution, that can be integrated on preexisting productive systems: it is sufficient to introduce an external start (from PLC, pedal-key or start button) in order to obtain an indipendent semi-automatic tightening system.

EasyDriver MCA consists of:

EasyDriver screw feeding system

It manages the working cycle and guarantees high flexibility, as it is possible to quickly and easily set and manage the tightening cycle basing on the specific application.

Air or electric nutrunner motor

They are specifically designed and manufactured for industrial automation. Extremely robust, Fiam motors guarantee constant performances, for each torgue need, also when used in heavy duty conditions. Different torque control systems are available and can be chosen depending on application and type of joint and fastener.

Fastening slide

Thanks to its movement, it ensures a perfect approach stroke of the motor - screw head to the component to be tightened, guaranteeing a high quality of the assembled product, since all screws are tightened correctly and precisely. Manufactured with aluminium alloy, it is so light and compact (only 40 mm in width) that it can be used on solutions with manipulators, electrical axis, robot; it supports important axial thrusts (for example with self-drilling screws).

Soundproof transparent cover

for a better view of the inside without having to open the machine

PLC

manages all machine parameters depending on tightening needs allows to connect the

system to automatic air and electric solutions

integrates into automatic productive systems

manages input signals: tightening start, anomaly reset, emergency

gives output signals: anomaly, tightening result



Functional keypad

it adjusts easily and directly the machine parameters



Filter. regulator and lubricator group

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



High capacity vibrating bowl

for improved working autonomy; coated with anti-wear material



New 'overload' sensor with photocell

makes sure no screw gets stuck in the selection duct guaranteeing high and uninterrupted production

The screw is shot inside a closed chamber which optimises screw

speed and consequently

the productive process

optimizing the use of compressed air

Embedded screw passage sensor

controls also very small screws and it isn't influenced by other sensors

Comfortable and rational hose

that includes the air and electric cables between slide and feeder

Pneumatic cylinders

equipped with built-in air decelerators

Fastening slide available in three versions

Air or electric nutrunner motor

Structure in stainless steel to guarantee long lifetime

Double advantage It can work with torque control or with tightening height control

Light leds to monitor the different phases of working cycle



The selector increases speed and productivity and guarantees unvaried

calibrations in time

External structure of small dimensions, which can be dismantled easily for

maintenance







Example of EasyDriver MCA integrated on pre-existing machine with electrical cartesian axis X, Y



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

Be demanding

Reliability

A careful design guarantees long lifetime and reliability of the components which results in high productive process, less maintenance and repair costs

Innovative **screw feeder** designed and manufactured by Fiam in compliance with Directive 2006/42/ EC. New design in stainless steel guarantees long lifetime

The **PLC** (Programmable Logic Controller) manages the working cycle and guarantee high flexibility, as it is **possible to set and manage the tightening cycle basing** on the specific application

- the production cycle can be monitored and diagnosed as it can be **interfaced** with operator panels, LED, piece counting devices, coloured lights
- it can be integrated into automated production systems: since it can be interfaced with other "master" PLCs, it is easy to use with existing automatic processes

The 'overload' sensor with photocell makes sure no screw gets stuck in the selection duct guaranteeing high and uninterrupted production (the optical fibre detects the screws and activates an electrovalve which is producing an air flow eliminating excess screws) The **selector** is still **extremely reliable** even when the EasyDriver

is subject to logistic moves: the selector's calibration parameters do not change

Extremely **safe and reliable packing for shipment** to guarantee system integrity and performance. Upon request, packing in wooden case is available

High quality air components



Example of EasyDriver MCA for anthropomorphic arm

Don't be satisfied with the maximum

Perfection is in your hands

Naturally innovative

Productivity Ergonomics Ecology

Considerable increase of the efficiency of the productive cycle thanks to innovative systems

Optimization of performances in regard to operator safety in working environments

The system is equipped with I/O to be **connected with PLC master**

Good capacity of the bowl: 1lt. for improved working autonomy

The screw feeder is designed to ensure **all maintenance operations easy, safe and reliable** (the exterior structure is easily and quickly removed) in compliance with Directive 2006/42/EC

Thanks to the **PLC** (Programmable Logic Controller) 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**

The high frequency selector increases speed considerably and therefore system productivity

The screw is shot inside a closed chamber which optimises screw speed considerably: there is no longer any dissipation of compressed air and power is concentrated entirely on speeding

The system can operate with torque control or with tightening height control

up the screw's path

Volumes have been reduced for easy integration in the production areas and for **easy** logistics management

The **transparent cover is bigger** for a **better view** of the inside without having to open the machine

New materials used for improved soundproofing

The system design is compliant with **Directive 2006/42/EC** to guarantee a greater operator's safety



Example of system with electric nutrunner motor integrated into production lines

Innovative systems designed paying even more attention with respect to environment and of its safeguard

Reduction of electricity

consumption: the vibrator's special timed system stops the screw feed automatically when it is not required, thus eliminating unnecessary electricity consumption

The screw is shot inside a closed chamber which optimises the power of compressed air because there is **no longer dissipation**

All the components are **easy to dispose** of because they are built using recyclable materials; therefore they do not represent any danger for environmental pollution

All Fiam products are supplied with **eco-friendly packaging**

Eco-contribution WEEE acquitted:

for electronic accessories, Fiam carries out its obligations of producer, with full respect for the environment, **and without any extra charge for the customer**



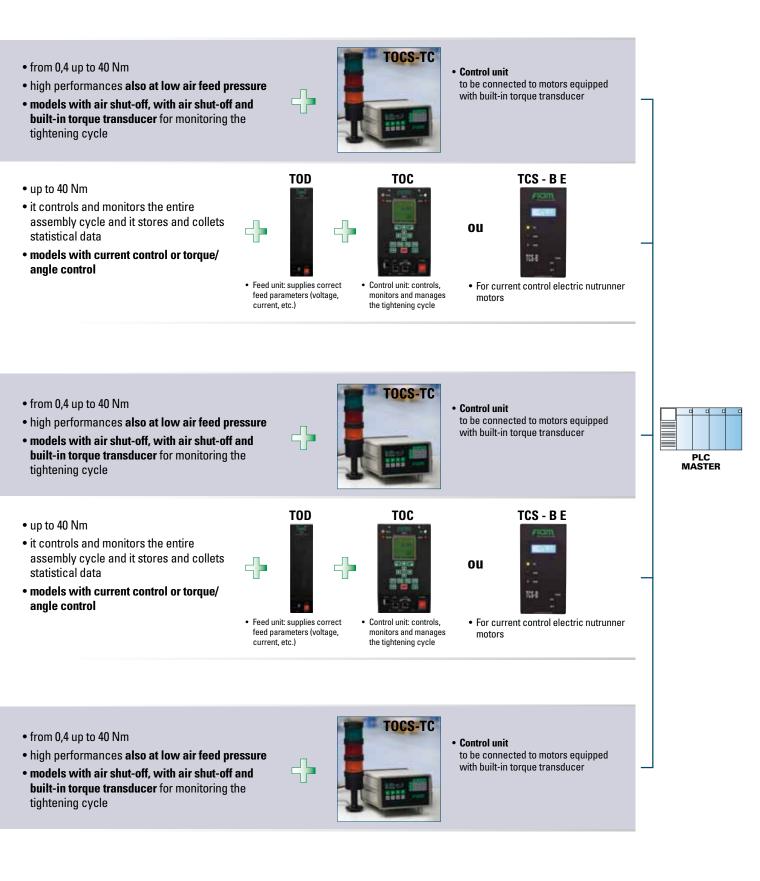
Screw feeder with 'over-unloaded' sensor for activation of screw feed (upon request)

Different configurations for every r



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Technical features of the autofeed tig

EASYDRIVER SCREW FEEDER FASTENING SLIDE

NUTRUNNER MOTOR

SCREW HEAD **BUSH** SCREW FEED HOSE

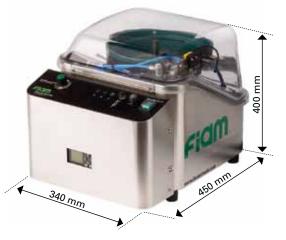
SCREW FEEDING SYSTEM

I/O (Inputs/Outputs):

Air connection: **Power features:**

Maximum feed: Air consumption: Sound pressure level: Diameter of the bowl: Capacity of the bowl: Weight: Connecting hose to the screwdriver: **Dimensions (mm):** I/O (Inputs/Outputs)

3/8″ F
220 V/50 Hz - Optional:
220V/60 Hz and 110 V/60 Hz
120 screws/minute
13 l/s
<80 dB(A)
ø 220 mm
1 litre
36 Kg
4 mt.
L 450 x Width 340 x h 400
to be connected to PLC master



NUTRUNNER MOTOR + FASTENING SLIDE

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	Model	Nm	R.P.M.	Version	Туре
	15MC3A	0,4 ÷ 5	650 ÷ 2700	SL15	Single/dual/triple
ut-ofi	MCSEZA	0,9 ÷ 4	2500	SL15	Single/dual/triple
Air shut-off	MCGA	12 ÷ 40	450 ÷ 600	SL20	Single/dual/triple
٩	MCSEA	0,9 ÷ 10	500 ÷ 2500	SL15	Single/dual/triple
Electric with current control*	15MCBC1	1 ÷ 20	350 ÷ 1700	SL20	Single/dual
Electric with torque/angle control	15MCBA1	0,5 ÷ 20	350 ÷ 1700	SL20	Single/dual

* Broches de vissage électriques à contrôle indirect (par intensité à absorption de courant). ** Broches de vissage électriques à contrôle direct (jauge de contrainte)

Current control electric nutrunner motors

** Electric nutrunner motors with torque and angle control

For further information about Fiam nutrunner motors see correspondent catalogue

• n. 90 Air nutrunner motors

Electric with Electric

•n. 71 MCB: high technology electric nutrunner motors

Air nutrunner motors:

Air nutrunner motors: The torque values are to be considered purely indicative and may be influenced by the softness of the type of joint, the type and length of the screw, the pressure and quantity of the feeding air, etc. In order to ensure the best performances and long life of air nutrunner motors, in particularly harsh work conditions (high number of cycles per minute and/or high torque values), we advise using motors with a torque no more than 80% bidder lifection value than the maximum indicated in the table. higher (indicative value) than the maximum indicated in the table.

Electric nutrunner motors:

Data shown in the table are indicative and can be changed without prior notice. Torque values are purely indicative and may be influenced by the softness of the type of joint, by the type and length of the screw, and by the type of accessory used.

For all further details, please apply to Fiam Technical Consultancy Service.

ghtening module EasyDriver MCA

Standard equipment (supplied with the system)

• Air nutrunner motors:

- Clutch adjustment key
- Supplementary clutch spring
- Electric nutrunner motors equipped with feed unit, control unit and kit of cables
 - -Test certificate
- Fastening slide:

It slides on ball recirculating runners, complete with magnetic cylinders and sensors for stroke limit, pneumatic decelerators, pneumatic fittings and supporting bracket

- Embedded screw passage sensor
- Screw head complete with bush customized depending on screw
- Screw feed hose
- Use and maintenance manual
- Eco-friendly packaging (weight kg 3) Dimensions mm: L 600 x 450 x h 520

Accessories available upon request

- For electric solution: test/checking service of assembly system at the client's production lines directly
- Customized support column
- Wooden case for shipment: code 683050046 (kg. 11 of case weight) Dimensions mm: L 650 x 500 x h 715
- 'Over-unloaded' sensor for activation of screw feed

Models available upon request

- Models with air nutrunner motor without clutch (stall type) or with slip clutch
- Fastening slide:
 - Models with different approaching strokes
 - Models with a device to control precision depth
- Models with air motors with only left rotation
- Models with air nutrunner motors to obtain higher torque range than what stated in the above chart
- Fastening slides with **carter for protection** in transparent polycarbonate for internal view and greater safety for operator
- Special fastening slide for tightening points with a very close distance to centre (20 mm)
- Models with special air industrial motors with different speeds and type of material (stainless steel...)
- Models with vibrating bowl with capacity higher than 1 lt.

Dimensions of the fastening slide

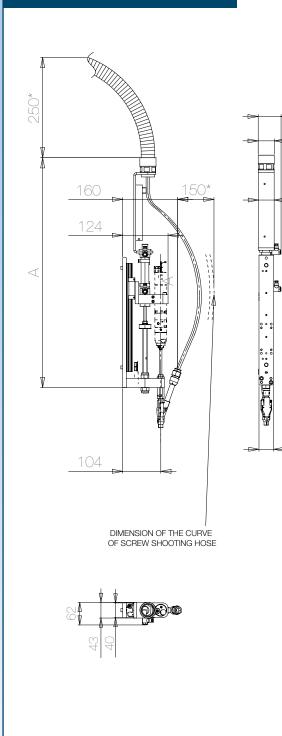
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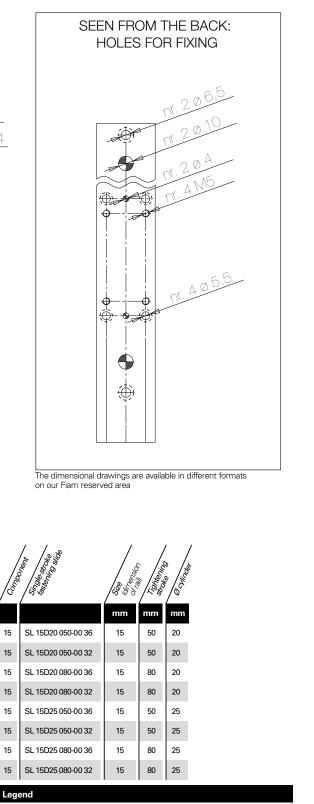
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SL15 models: • only for air nutrunner motors



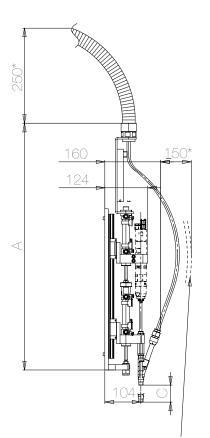




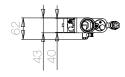
$\begin{array}{l} SL = \mbox{Fastening slide} \bullet 15 = \mbox{Dimension of rail in mm} \bullet D \ 20 = \ \ensuremath{\varnothing} \ Cylinder \ in mm \\ \bullet \ 050 = \mbox{Tightening stroke in mm} \bullet \ 50 = \mbox{Approaching stroke in mm} \\ \bullet \ 36 = \ \ensuremath{\varnothing} \ brackets \ in mm \end{array}$

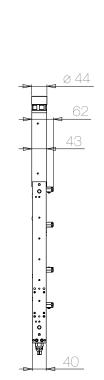
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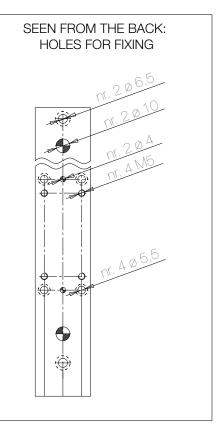
SL-15 DUAL-MOVEMENT



DIMENSION OF THE CURVE OF SCREW SHOOTING HOSE







The dimensional drawings are available in different formats on our Fiam reserved area

Component	Diel. Stronge Fastering Stroke Basering Stroke	Sie laimension or aujoin	Tomening and aportaging and strokes ing	0 quinder
		mm	mm	mm
15	SL 15D20 050-50 36	15	50-50	20
15	SL 15D20 050-50 32	15	50-50	20
15	SL 15D20 050-80 36	15	50-80	20
15	SL 15D20 050-80 32	15	50-80	20
15	SL 15D20 080-50 36	15	80-50	20
15	SL 15D20 080-50 32	15	80-50	20
15	SL 15D20 080-80 36	15	80-80	20
15	SL 15D20 080-80 32	15	80-80	20
15	SL 15D25 050-50 36	15	50-50	25
15	SL 15D25 050-50 32	15	50-50	25
15	SL 15D25 050-80 36	15	50-80	25
15	SL 15D25 050-80 32	15	50-80	25
15	SL 15D25 080-50 36	15	80-50	25
15	SL 15D25 080-50 32	15	80-50	25
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15	SL 15D25 080-80 32	15	80-80	25

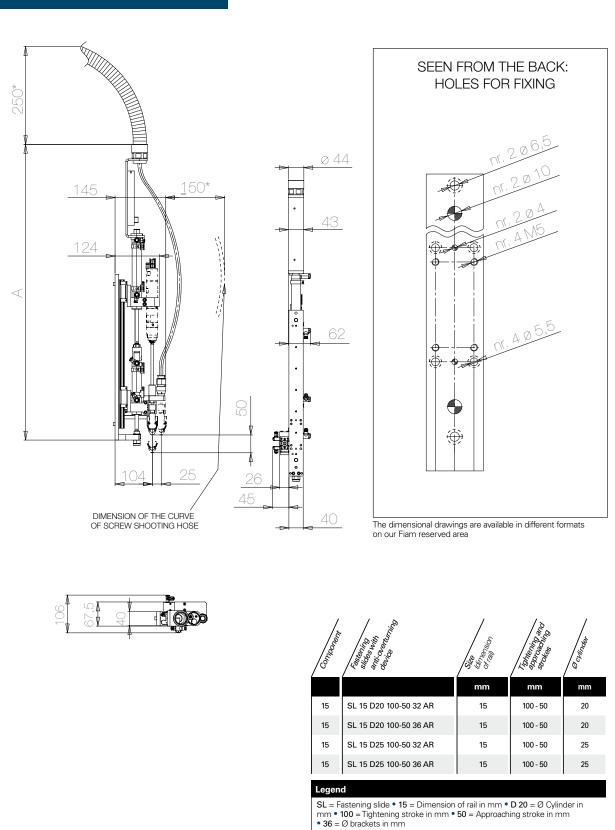
Legend

 $\begin{array}{l} SL = {\sf Fastening\ slide} \bullet \ 15 = {\sf Dimension\ of\ rail\ in\ mm\ \bullet\ D\ 20} = \varnothing\ {\sf Cylinder\ in\ mm\ \bullet\ 50} = {\sf Approaching\ stroke\ in\ mm\ \bullet\ 36} = \varnothing\ {\sf brackets\ in\ mm\ } \end{array}$

Dimensions of the fastening slide

SL15 models: • only for air nutrunner motor

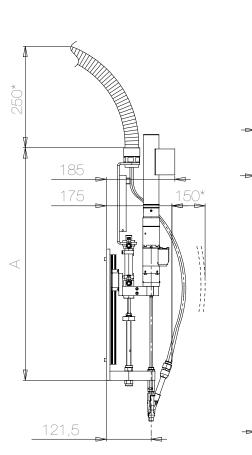




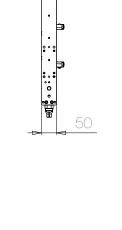
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- SL20 models: for electric nutrunner motors
 - for air nutrunner motors

SL-20 MOUVEMENT SIMPLE



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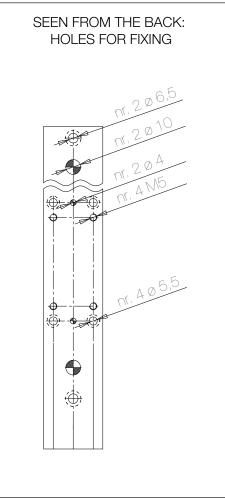
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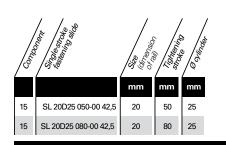
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The dimensional drawings are available in different formats on our Fiam reserved area



Legend

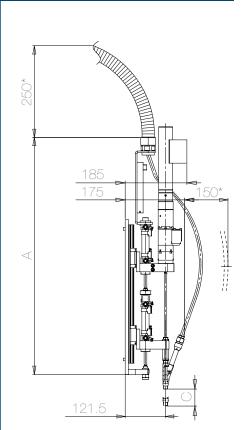
 $\begin{array}{l} SL = \mbox{Fastening slide} \bullet 15 = \mbox{Dimension of rail in }mm \bullet D \mbox{20} = \mbox{\emptyset} \mbox{Cylinder in }mm \bullet 050 = \mbox{Tightening stroke in }mm \bullet 00 = \mbox{Approaching stroke in }mm \\ \bullet \mbox{36} = \mbox{\emptyset} \mbox{brackets in }mm \end{array}$

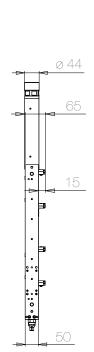
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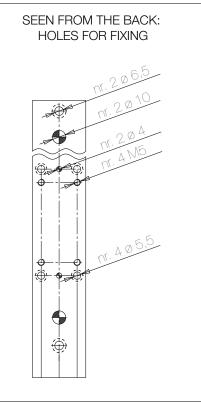
Dimensions of the fastening slide

- SL20 models: for electric nutrunner motors
 - for air nutrunner motors

SL-20 DUAL-MOVEMENT







The dimensional drawings are available in different formats on our Fiam reserved area

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Controlinent	D. and D.	Sie almension or all sig	Tightening and approximate strokes hing	O vilinder
		mm	mm	mm
15	SL 20D32 050-50 36	20	50-50	32
15	SL 20D32 050-50 42,5	20	50-50	32
15	SL 20D32 080-50 36	20	80-50	32
15	SL 20D32 080-50 42,5	20	80-50	32
15	SL 20D32 050-80 36	20	50-80	32
15	SL 20D32 050-80 42,5	20	50-80	32
15	SL 20D32 080-80 36	20	80-80	32
15	SL 20D32 080-80 42,5	20	80-80	32
15	SL 20D40 050-50 36	20	50-50	40
15	SL 20D40 050-50 42,5	20	50-50	40
15	SL 20D40 080-50 36	20	80-50	40
15	SL 20D40 080-50 42,5	20	80-50	40
15	SL 20D40 050-80 36	20	50-80	40
15	SL 20D40 050-80 42,5	20	50-80	40
15	SL 20D40 080-80 36	20	80-80	40
15	SL 20D40 080-80 42,5	20	80-80	40
Legend				

 $\begin{array}{l} SL = \mbox{Fastening slide} \bullet 15 = \mbox{Dimension of rail in mm} \bullet D \ 20 = \ 0 \ \mbox{Cylinder in mm} \\ \bullet \ 050 = \mbox{Tightening stroke in mm} \bullet \ 50 = \mbox{Approaching stroke in mm} \\ \bullet \ 36 = \ 0 \ \mbox{brackets in mm} \end{array}$

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How to choose a autofeed tightening module EasyDriver MCA

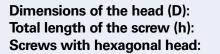
To choose a autofeed tightening module EasyDriver MCA we have to consider:

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

The autofeed tightening module EasyDriver MCA is able to **tighten**:

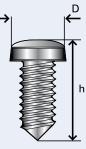
- any screws (metric, self-threading, self-tapping, self-drilling, three-lobe, etc.)
- any type of head (countersunk, flat, cylindrical, oval, etc.)
- any type of imprint (slotted, cross-slotted, torx, hex socket screw, hex head)

with following parameters



ø 4,5÷10,5* mm from 8 up to 35 mm hexagon max 7 mm

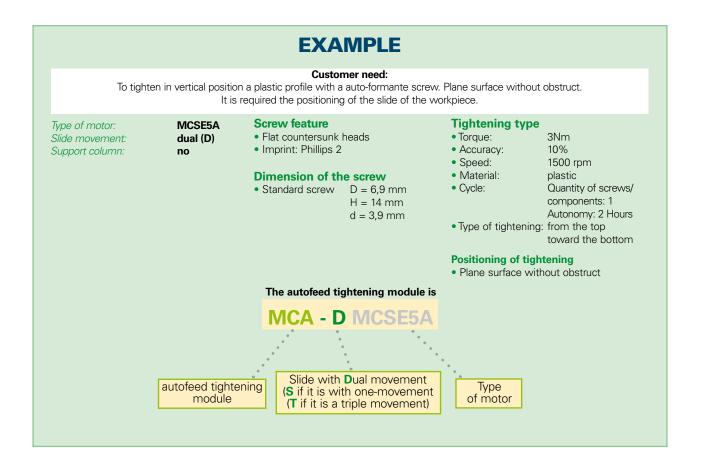
* for maxi heads the maximum diameter is 13,5mm



Total length of any screw must be minimum 1,5 times of the head diameter Example: ø head screw = 8 mm Min h (high) = 12 mm (12 : 8 = 1,5)

* A solution with triple-stroke fastening slide is required when ratio screw length/head diametre is equal more or less to 1.

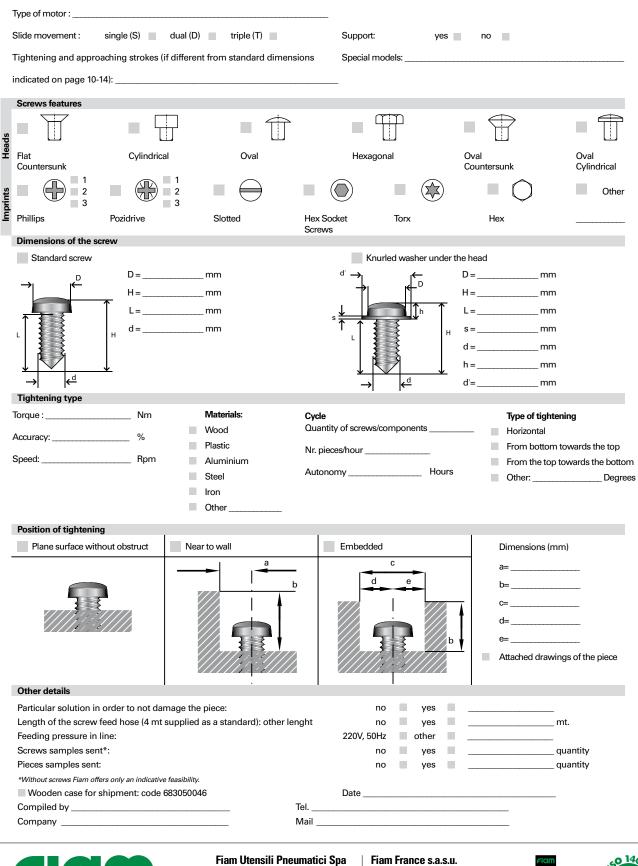
Screws samples are always required to formalize the order. For customized solutions, both screws and workpieces samples are required.





How to order a customized autofeed tightening module EasyDriver MCA

To receive in very short-time a customized offer, complete the following form and send it by fax +39 0444 385002 For information about the following form contact the Fiam Technical Consultancy Service.





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