Tightening automation.
Only excellent solutions.

EasyDriver MCA: new autofeed tightening module

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

Fiam®
PEOPLE AND SOLUTIONS

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 pre-existing 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:

New 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 torque 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).

High capacity vibrating bowl

for improved working autonomy; coated with anti-wear material

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

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

New 'overload' sensor with photocell
makes sure no screw gets stuck in the selection duct guaranteeing high and uninterrupted production

Pneumatic cylinders
equipped with built-in air decelerators

The screw is shot inside a closed chamber
which optimises screw speed and consequently the productive process optimizing the use of compressed air

Fastening slide available in three versions

Air or electric nutrunner motor

Structure in stainless steel
to guarantee long lifetime

The selector
increases speed and productivity and guarantees unvaried calibrations in time

Light leds
to monitor the different phases of working cycle

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 electro-valve 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

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

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 up the screw's path

Ergonomics

Optimization of performances in regard to operator safety in working environments

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

Screw feeder with 'over-unloaded' *sensor for activation of screw feed*

Ecology

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**

EASYDRIVER SCREW FEEDER

SINGLE-STROKE FASTENING SLIDE

- characterized by the only movement performed by the motor. Ideal for manipulators, robots and anthropomorphic arms
- for air nutrunner motors: ø max 36 mm
- for electric nutrunner motors: ø max 42,5 mm

SL15 model
- Distance between the centre: 41 mm

SL20 model
- Distance between the centre: 51 mm

AIR NUTRUNNER MOTOR

ELECTRIC NUTRUNNER MOTOR

DUAL-STROKE FASTENING SLIDE

- characterized by stroke of the motor and approach stroke of the head
- for air nutrunner motors: ø max 36 mm
- for electric nutrunner motors: ø max 42,5 mm

SL15 model
- Distance between the centre: 41 mm

SL20 model
- Distance between the centre: 51 mm

AIR NUTRUNNER MOTOR

ELECTRIC NUTRUNNER MOTOR

TRIPLE-STROKE FASTENING SLIDE

- characterized by an **anti-overturning** device to handle screws having a ratio total length/head diametre equal more or less to 1. This device prevents screws from getting stuck with consequent production stop.
- for air nutrunner motors: ø max 36 mm
- for electric nutrunner motors: ø max 42,5 mm

SL15 model
- Distance between the centre: 41 mm

AIR NUTRUNNER MOTOR

For further information about fastening slides and air/electric nutrunner motors, see catalogues available on our website www.fiamairtools.com

ons for every need

- from 0,4 up to 40 Nm
- high performances **also at low air feed pressure**
- **models with air shut-off, with air shut-off and built-in torque transducer** for monitoring the tightening cycle

TOCS-TC

- **Control unit**
  to be connected to motors equipped with built-in torque transducer

- up to 40 Nm
- it controls and monitors the entire assembly cycle and it stores and collets statistical data
- **models with current control or torque/ angle control**

TOD

- Feed unit: supplies correct feed parameters (voltage, current, etc.)

TOC

- Control unit: controls, monitors and manages the tightening cycle

or

TCS-B

- For current control electric nutrunner motors

- from 0,4 up to 40 Nm
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TOCS-TC

- **Control unit**
  to be connected to motors equipped with built-in torque transducer

Technical features of the autofeed tightening module EasyDriver MCA

EASYDRIVER SCREW FEEDER + **FASTENING SLIDE** + **NUTRUNNER MOTOR** + **• SCREW HEAD • BUSH • SCREW FEED HOSE**

	Model	Nm	R.P.M.	Version	Type
Air shut-off	15MC3...A	0,4 ÷ 5	650 ÷ 2700	SL15	Single/dual/triple
	MCSEZ...A	0,9 ÷ 4	2500	SL15	Single/dual/triple
	MCG...A	12 ÷ 40	450 ÷ 600	SL20	Single/dual/triple
	MCSE...A	0,9 ÷ 10	500 ÷ 2500	SL15	Single/dual/triple
Electric with current control*	15MCB...C1	1 ÷ 20	350 ÷ 1700	SL20	Single/dual
	17MCB...C1	6 ÷ 30	600	SL20	Single/dual
Electric with torque/angle control	15MCB...A1	0,5 ÷ 20	350 ÷ 1700	SL20	Single/dual
	17MCB...A1	3 ÷ 30	600	SL20	Single/dual

* Current control electric nutrunner motors
** Electric nutrunner motors with torque and angle control

The electric nutrunner motors have to be connected to feed unit and control unit through kit of cable.

For further information about Fiam nutrunner motors see correspondent catalogue
- n. 90 Air nutrunner motors
- n. 71 MCB: high technology electric 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% 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.**

• Screw feeding system

Air connection: 3/8" F
Power features: 220 V/50 Hz - Optional: 220V/60 Hz and 110 V/60 Hz
Maximum feed: 120 screws/minute
Air consumption: 13 l/s
Sound pressure level: <80 dB(A)
Diameter of the bowl: ø 220 mm
Capacity of the bowl: 1 litre
Weight: 36 Kg
Connecting hose to the screwdriver: 4 mt.
Dimensions (mm): L 450 x Width 340 x h 400

Standard equipment (supplied with the system)

- **Air nutrunner motors:**
  - Clutch adjustment key
  - Supplementary clutch spring
- **Electric nutrunner motors**
  - Feed unit
  - Control unit
  - 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

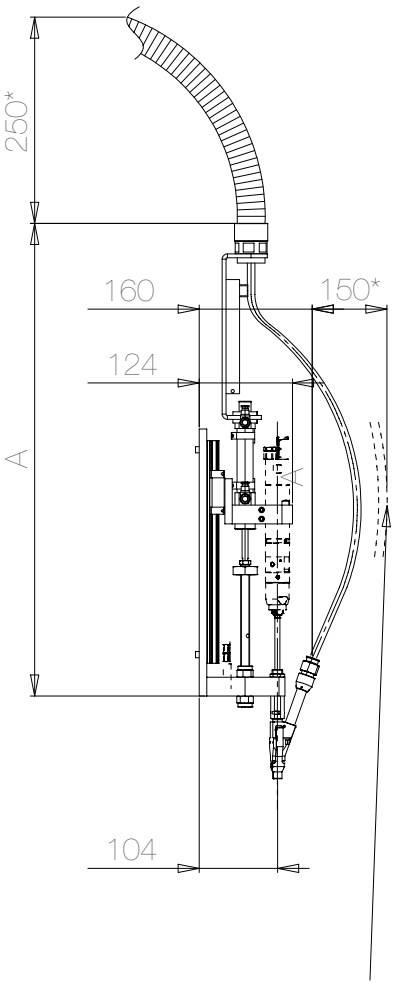
Models available upon request

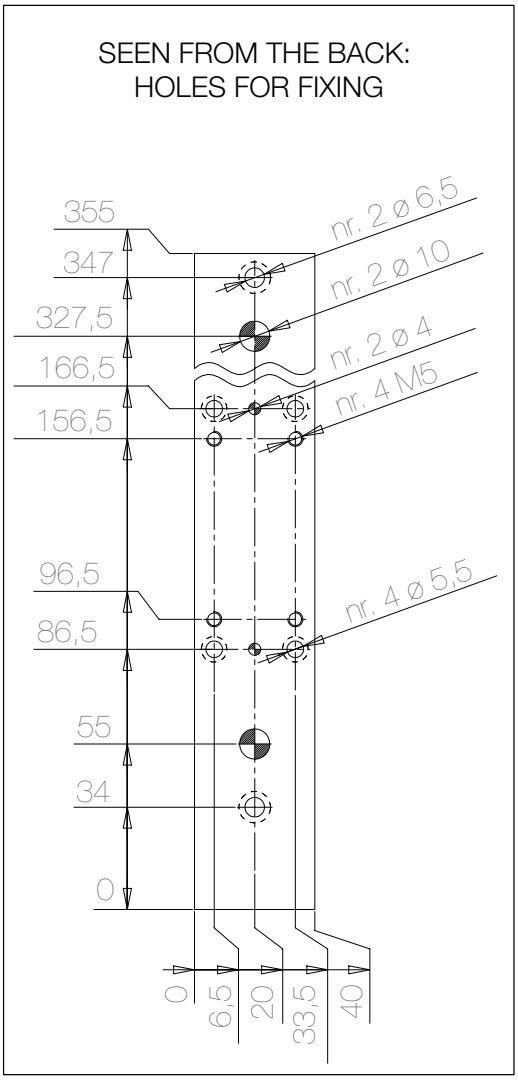
- Models with air nutrunner motor **without clutch** (stall type) or with **slip clutch**
- Fastening slide:
  - Models with **different approaching strokes**
  - Models with a device to **control precision depth**
- Models with air motors with **only left rotation**
- Models with air nutrunner motors 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...)

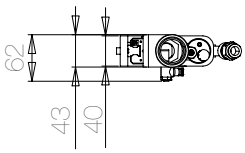
Dimensions of the fastening slide

SL15 models: • only for air nutrunner motors

SINGLE-MOVEMENT







Component	Single-stroke fastening slide	Size (dimension of rail)	Tightening stroke	Ø cylinder
		mm	mm	mm
15	SL 15D20 050-00 36	15	50	20
15	SL 15D20 050-00 32	15	50	20
15	SL 15D20 080-00 36	15	80	20
15	SL 15D20 080-00 32	15	80	20
15	SL 15D25 050-00 36	15	50	25
15	SL 15D25 050-00 32	15	50	25
15	SL 15D25 080-00 36	15	80	25
15	SL 15D25 080-00 32	15	80	25

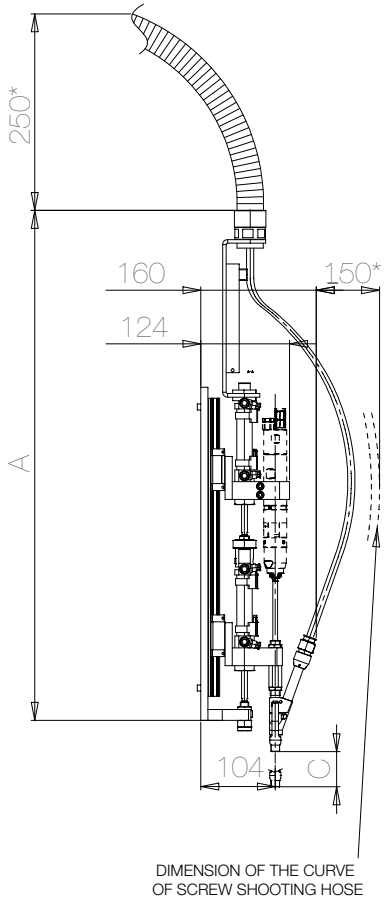
Legend

SL = Fastening slide • **15** = Dimension of rail in mm • **D 20** = Ø Cylinder in mm • **050** = Tightening stroke in mm • **50** = Approaching stroke in mm • **36** = Ø brackets in mm

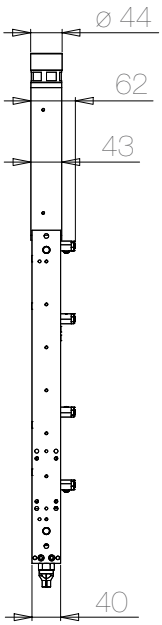
Dimensions of the fastening slide

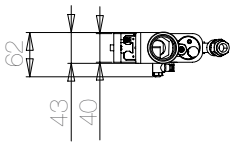
SL15 models: • only for air nutrunner motors

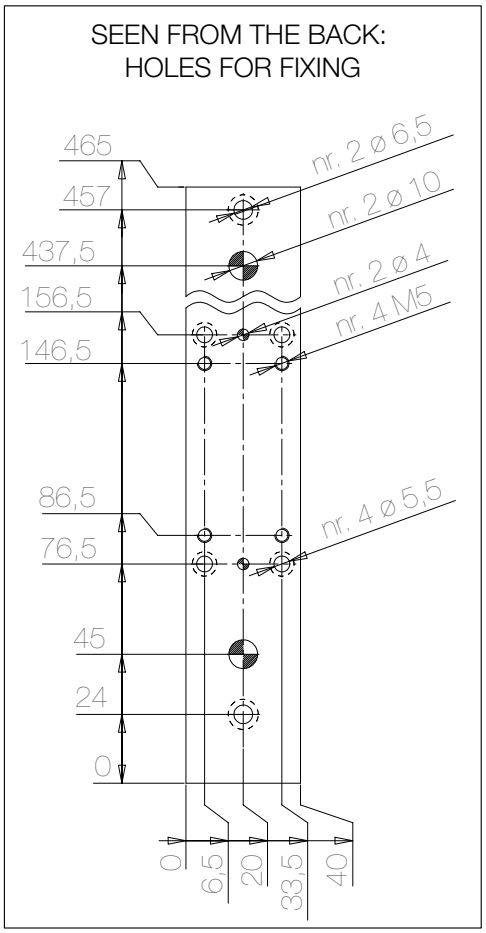
DUAL-MOVEMENT



DIMENSION OF THE CURVE
OF SCREW SHOOTING HOSE







Component	Dual-stroke fastening slide	Size (dimension of rail)	Tightening and approaching strokes	Ø cylinder
		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
15	SL 15D25 080-80 36	15	80-80	25
15	SL 15D25 080-80 32	15	80-80	25

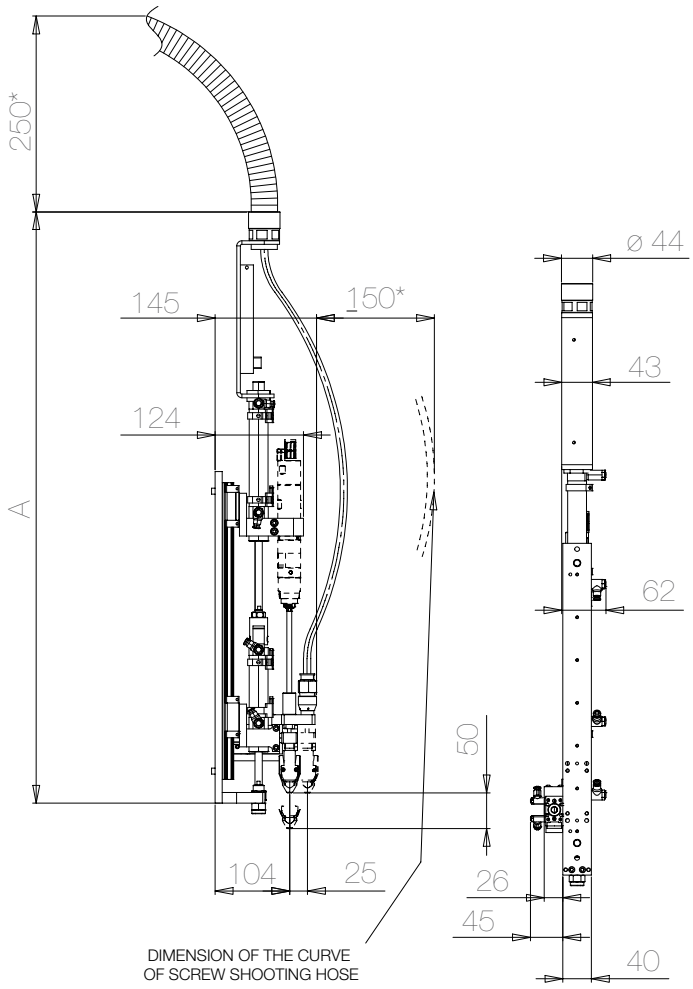
Legend

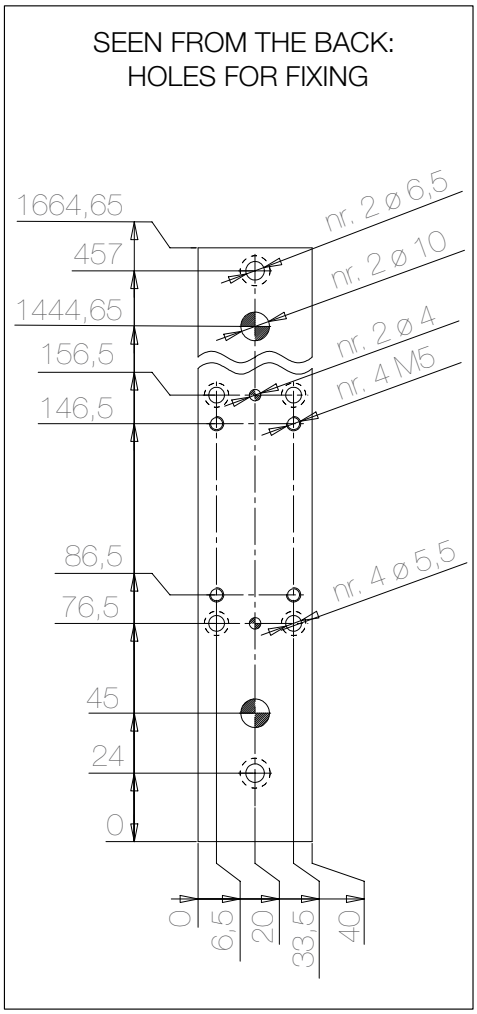
SL = Fastening slide • 15 = Dimension of rail in mm • D 20 = Ø Cylinder in mm • 050 = Tightening stroke in mm • 50 = Approaching stroke in mm • 36 = Ø brackets in mm

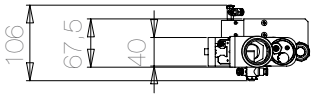
Dimensions of the fastening slide

SL15 models: • only for air nutrunner motors

TRIPLE-MOVEMENT







Component	Fastening slides with anti-overturning device	Size (dimension of rail)	Tightening and approaching strokes	Ø cylinder
		mm	mm	mm
15	SL 15 D20 100-50 32 AR	15	100 - 50	20
15	SL 15 D20 100-50 36 AR	15	100 - 50	20
15	SL 15 D25 100-50 32 AR	15	100 - 50	25
15	SL 15 D25 100-50 36 AR	15	100 - 50	25

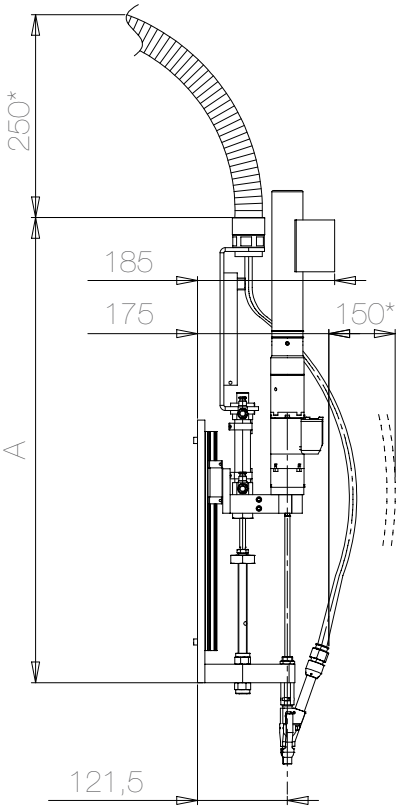
Legend

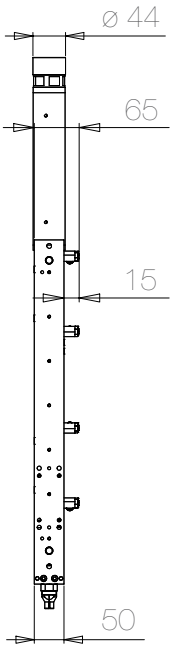
SL = Fastening slide • **15** = Dimension of rail in mm • **D 20** = Ø Cylinder in mm • **100** = Tightening stroke in mm • **50** = Approaching stroke in mm • **36** = Ø brackets in mm

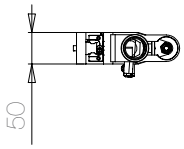
Dimensions of the fastening slide

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

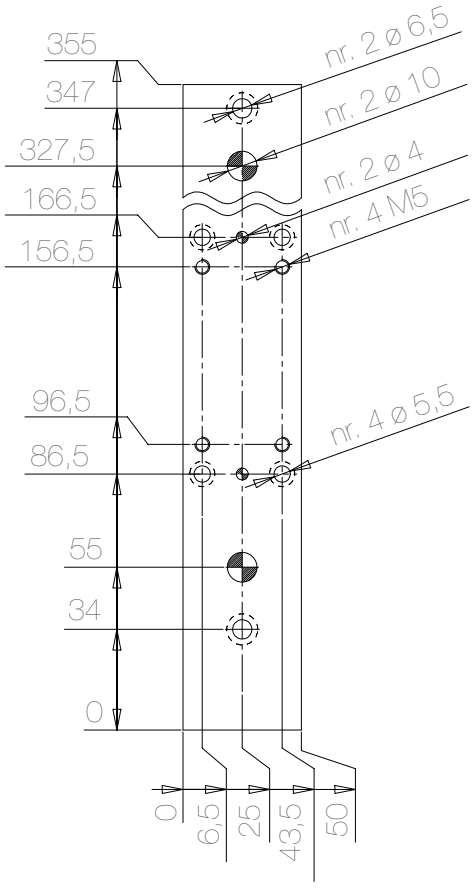
SINGLE-MOVEMENT







SEEN FROM THE BACK:
HOLES FOR FIXING



Component	Single-stroke fastening slide	Size (dimension of rail)	Tightening stroke	Ø cylinder
		mm	mm	mm
15	SL 20D25 050-00 42,5	20	50	25
15	SL 20D25 080-00 42,5	20	80	25

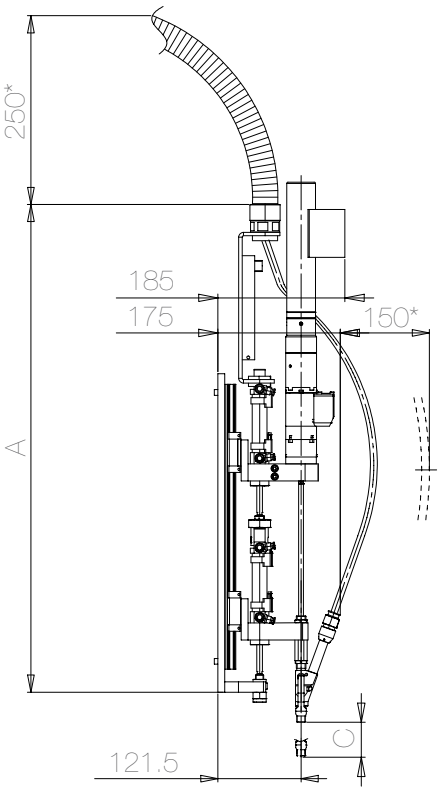
Legend

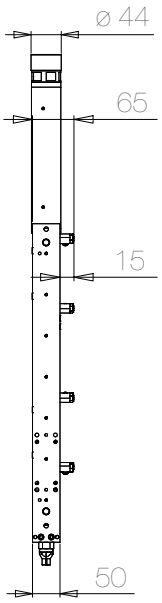
SL = Fastening slide • **15** = Dimension of rail in mm • **D 20** = Ø Cylinder in mm • **050** = Tightening stroke in mm • **00** = Approaching stroke in mm • **36** = Ø brackets in mm

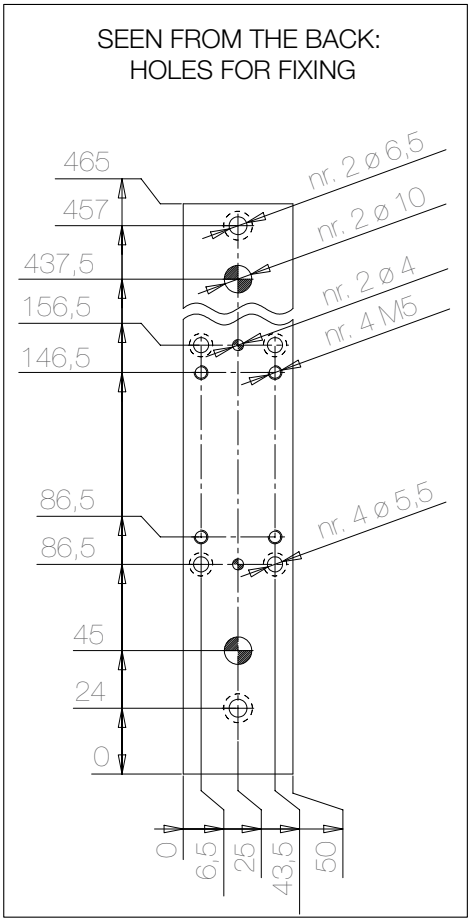
Dimensions of the fastening slide

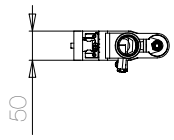
SL20 models: • for electric nutrunner motors
• for air nutrunner motors

DUAL-MOVEMENT









Component	Dual-stroke fastening slide	Size (dimension of rail)	Tightening and approaching strokes	Ø cylinder
		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

SL = Fastening slide • 15 = Dimension of rail in mm • D 20 = Ø Cylinder in mm • 050 = Tightening stroke in mm • 50 = Approaching stroke in mm • 36 = Ø brackets in mm

How to choose a autofeed tightening module EasyDriver MCA

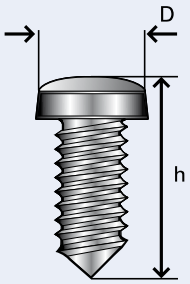
To choose a autofeed tightening module EasyDriver MCA we have to consider:
- Material to tighten (plastic, wood, steel, etc.)
- Dimensions and encumbrance of component to assemble
- Tightening torque and speed
  but **the most important is the screw.**

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

Dimensions of the head (D): ø 4,5÷10,5* mm
Total length of the screw (h): from 8 up to 35 mm
Screws with hexagonal head: hexagon max 7 mm

* for maxi heads the maximum length 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.

EXAMPLE

Customer need:
To tighten in vertical position a plastic profile with a auto-formante screw. Plane surface without obstruct.
It is required the positioning of the slide of the workpiece.

Type of motor: **MCSE5A**
Slide movement: **dual (D)**
Support column: **no**

Screw feature
- Flat countersunk heads
- Imprint: Phillips 2

Dimension of the screw
- Standard screw D = 6,9 mm
  H = 14 mm
  d = 3,9 mm

Tightening type
- Torque: 3Nm
- Accuracy: 10%
- Speed: 1500 rpm
- Material: plastic
- Cycle: Quantity of screws/components: 1
  Autonomy: 2 Hours
- Type of tightening: from the top toward the bottom

Positioning of tightening
- Plane surface without obstruct

The autofeed tightening module is

MCA - D MCSE5A

- MCA: autofeed tightening module
- D: Slide with **D**ual movement (**S** if it is with one-movement (**T** se a triplo movimento)
- MCSE5A: Type of motor

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.**

Type of motor : _____

Slide movement : single (S) ☐ dual (D) ☐ triple (T) ☐ Support: yes ☐ no ☐

Tightening and approaching strokes (if different from standard dimensions indicated on page 10-14): _____

Special models: _____

Screws features

Heads

☐ Flat Countersunk ☐ Cylindrical ☐ Oval ☐ Hexagonal ☐ Oval Countersunk ☐ Oval Cylindrical

Imprints

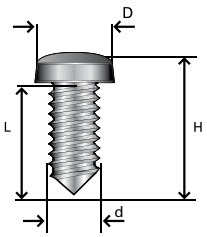
☐ Phillips ☐ 1 ☐ 2 ☐ 3

☐ Pozidrive ☐ 1 ☐ 2 ☐ 3

☐ Slotted ☐ Hex Socket Screws ☐ Torx ☐ Hex ☐ Other _____

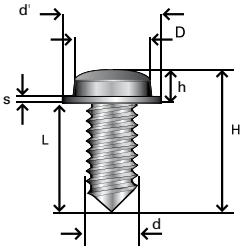
Dimensions of the screw

☐ Standard screw



D = _____ mm
H = _____ mm
L = _____ mm
d = _____ mm

☐ Knurled washer under the head



D = _____ mm
H = _____ mm
L = _____ mm
s = _____ mm
d = _____ mm
h = _____ mm
d' = _____ mm

Tightening type

Torque : _____ Nm

Accuracy: _____ %

Speed: _____ Rpm

Materials:
☐ Wood
☐ Plastic
☐ Aluminium
☐ Steel
☐ Iron
☐ Other _____

Cycle
Quantity of screws/components _____

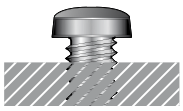
Nr. pieces/hour _____

Autonomy _____ Hours

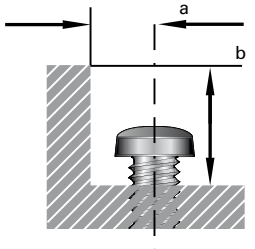
Type of tightening
☐ Horizontal
☐ From bottom towards the top
☐ From the top towards the bottom
☐ Other: _____ Degrees

Position of tightening

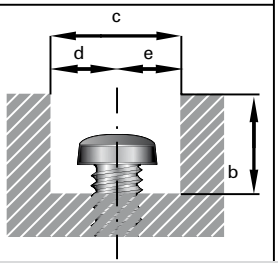
☐ Plane surface without obstruct



☐ Near to wall



☐ Embedded



Dimensions (mm)

a= _____
b= _____
c= _____
d= _____
e= _____

☐ Attached drawings of the piece

Other details

Particular solution in order to not damage the piece:	no ☐	yes ☐	_____	
Length of the screw feed hose (4 mt supplied as a standard): other lenght	no ☐	yes ☐	_____	mt.
Feeding pressure in line:	220V, 50Hz ☐	other ☐	_____	
Screws samples sent*:	no ☐	yes ☐	_____	quantity
Pieces samples sent:	no ☐	yes ☐	_____	quantity

**Without screws Fiam offers only an indicative feasibility.*

☐ Wooden case for shipment: code 683050046

Date _____

Compiled by _____ Tel. _____

Company _____ Mail _____

PEOPLE AND SOLUTIONS

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Quality Management System Certificate

Environmental Management System Certificate