4.52.E

AUTOMATIC SELF FEEDING FASTENING

sira S.p.A.

SPECIALISTI IN AVVITATURA

WHO WE ARE

SIRA was founded in 1972 as a spin-off from Scaglia Utensili, initially serving as an exclusive importer of pneumatic tools for the Italian market. Today, the company employs 32 people and operates in a covered area of approximately 3,000 square meters.

We specialize in the Industrial Assembly sector, focusing on providing specialized technologies for both manual and automated requirements.

Our offerings are complemented by a wide range of measuring and controlling instruments for the tightening process. Our strong points include the ready availability of finished products, spare parts, servicing, and repair.

More than 1,200 Italian and international customers choose SIRA as a preferred partner for quality, innovation, and service.

OUR PARTNERS

INDEX

OUR PARTNERS INTO AUTOMATIC FASTENING **2**

SIRATEC: SPECIALISTS INTO... ..... **3**

STRUCTURE OF FEEDMAT - PRODUCT CONFIGURATION **7**

FEEDERS **8**

NITTO SEIKO: BLADEHOPPER SYSTEM FEEDERS **9**

TUMBLING BARREL AUXILIARY HOPPER SH-300 ..... **10**

POWER SUPPLY TRANSFORMER FM503H **10**
- NUT FEEDERS 11
- OHTAKE: AUTOMATIC SCREW FEEDERS WITH INTERCHANGEABLE RAILS 12
- OTAKE OM26 SERIES LARGE CAPACITY FEEDER 12

SIRATEC **13**
- SLIDING UNITS (UA) 13
- UA-L SERIES (LIGHT) 13
- UA-LZ SERIES 13
- UA-LZM SERIES 13
- UA-H SERIES (HEAVY) 14
- UA-HZ SERIES 14
- UA-HZM SERIES 14
- UA-MAGNUM SERIES 15
- ELECTRONIC ROBOT-CYLINDER UA-LR SERIES 15
- OPTION: VACUUM SYSTEM 15
- TELESCOPIC SPINDLE 16
- JOY-JET SEMI-AUTOMATIC FASTENING UNIT 16
- HANDY7 SERIES ERGONOMIC ARMS 17

ACCESSORIES **18**
- CHUCK UNITS 18
- VACUUM HEADS 20
- SELECTORS 20
- POSITIONERS 20

AXIAL SLIDING SPINDLES **21**
- ESTIC SLIDING SPINDLES 21

VESSEL BITS **22**

SENSORS **22**

DRIVERS **23**
- NX MOTORS 24
- SIRATEC SY-100 MOTORS 25
- CURRENT-ABSORBING SCREWDRIVERS FOR AUTOMATION 25

ROBOT SCREWING SOLUTIONS **26**
- COLLABORATIVE ROBOT SOLUTIONS 26
- SCARA ROBOT SOLUTIONS 27

SPECIAL APPLICATIONS **28**
- STAND-ALONE SCREWING STATION 28
- SEMI-AUTOMATIC BENCH-TOP FASTENING STRUCTURE 28
- AUTOMATIC SCREWING BENCH WITH PNEUMATIC WORKPIECE CENTRING 28
- MANUAL CONTROLLED SCREWING SYSTEM 29
- FLAP SELECTOR SCREW/BLOCK 29

OUR PARTNERS INTO AUTOMATIC FASTENING

ESTIC Corporation was founded in 1993. The company's guiding principles soon focused on high-precision screwdrivers, automation, and intelligent electronic controls. Within a short period, ESTIC became a leader in the development, production, and sale of tools and tightening systems in the Japanese automotive industry, a sector where safety and quality are the core values of the entire production cycle. In a constantly evolving industry, introducing innovative concepts is challenging. However, the creative efforts of ESTIC engineers have produced distinctive solutions, making their products unique in the A-class electronic screwdrivers market.

NITTO SEIKO was founded in the 1930s as a manufacturer of X-ray gauges and has since developed into a producer of screws, automotive components, and integrated systems for automatic tightening. Their mission, "solutions that support our daily life," involves implementing NITTO SEIKO products in the assembly processes of everyday items such as cars, smartphones, glasses, and generally wherever industrial fastening is required. They are one of the most appreciated manufacturers in the market.
The exceptional quality of their products, their longevity, and the ability to customize each solution have allowed NITTO SEIKO to gain global appreciation.

Since their foundation in 1915 as pioneer manufacturers of pneumatic tools in Japan, they have continued to develop and maintain a leading position in the eastern market. Appreciated by Europeans and others who value quality, usability, and longevity, Uryu today offers a vast range of screwdrivers and pneumatic tools, leveraging over 100 years of expertise.

Since 1968, its goal has been to export Japanese quality around the world. Today, it is present in over 30 countries as one of the main players in the supply of equipment for screw feeding systems, catering to both manual applications and automatic solution.

The growing need to automate assembly processes, improve productivity, and offer increasingly high-quality products has made it indispensable to seek customized solutions to meet our customers' requirements. SIRA is able to provide total support, from design to construction, for both semi-automatic and fully automatic tightening stations. All SIRA stand-alone and/or integrated solutions with other systems comply with the highest quality and safety standards.
This is SIRATEC—SIRA's commitment to providing its customers with integrated and integrable technological systems tailored to their production needs. The solutions, applicable in a wide range of assembly processes, are designed to generate benefits through simplicity, speed, flexibility, and reliability.

SIRATEC: SPECIALISTS INTO...

- Industrial Assembly
- Automotive
- Electronics
- Earth-moving machines and heavy vehicles
- White industry
- Food and Medical
- Bicycles and Motorcycles

SKILLS:

The in-depth knowledge of the industrial assembly process, the competence, experience and professionalism of our team allows SIRA to satisfy almost every need.

TECHNICAL ADVICE:

Good counseling implies proactive interaction that guides the customer throughout the entire journey. We like to think that for our customers, we are not just suppliers of equipment but real consultants who guide them through the process of studying the problem and identifying the solution. Our 50 years of experience and acquired know-how allow us to provide a complete service that starts with the technical feasibility request of our customers, develops into the search for the best solution through the realization of demo units and on-site tests, and ends with the supply and commissioning of the product. This synergy has enabled us to gain the loyalty of our customers over the years.

CUSTOM PROJECTS:

The term "custom" describes an artifact, device, or component that is designed and made to measure according to the needs of the purchaser or the specific function it is intended to perform. With this in mind, our engineering department designs and manufactures components such as slides, heads, arms, selectors, and positioners specifically for each application, adapting the solutions to the needs of our customers. The experience accumulated over the years enables us to create innovative solutions to the countless challenges our customers present us with..

CUSTOMER CARE:

Taking care of our customers is our number one priority at all times. Our presence at the customer's side does not end with the sale but continues over time. It is not just direct assistance in solving technical problems; we help customers obtain more value from the product they have purchased. Our technicians, agents, and territorial dealers, with their expertise, are available to meet every request promptly.

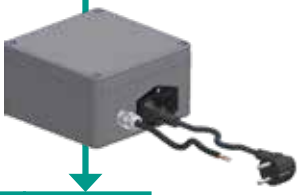
MODEL
SERIAL NO.
DATE
NITTO SEIKO CO.,LTD.
Assembly Machine Div.
MADE IN JAPAN
Warning

GENERAL DIAGRAM OF THE COMPOSITION OF AUTOMATIC SCREWING FEEDING SYSTEM

SCREW FEEDERS

AUTOMATIC MANUAL

CONTROL PANEL

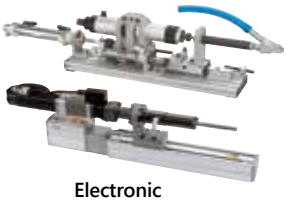


Electronic Electric Pneumatic

DRIVERS AND MOTORS

SLIDING SPINDLES

Pneumatic



Electronic

CHUCK UNITS

ACCESSORIES

- Driving unit (Easy Jet)
- Auxiliary screw hopper
- Sliding spindles
- Sensors and Bits
- Screw feeding hoses
- Selectors

SPECIAL ERGONOMIC ARMS

Reliable screwdriver to innovate screwfastening

NITTOSEIKO

FEEDMAT allows you to fasten screws with one hand several times more efficiently than with a manual screwdriver. This is achieved by an air feed system, which automatically feeds screws to the chuck on the tip instantly and allows stable, continuous screwfastening.

Features

1. Greatly speed up screwfastening

Screws are automatically fed. Max 30 screws can be fastened in a minute with one hand as easily as with a manual screwdriver (the tightening capacity depends on the conditions)

2. Widely used for ease of use

Years of improvements have made the bladehopper system, which is less prone to failures, and all other mechanisms easy and highly reliable.

3. Highly reliable feed system

Our own horizontal shoot-rail system is used to ensure that screws of all shapes are fed reliably.

4. Compatible with the major power supply voltage levels of the world (FM503H)

FM503H can be used safely not only in Japan but also worldwide.

Standard performance by model

In: mm

Model	Max length	Screw size								
		2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	8.0
FM-503H	25									
FM-801H	30 (50)									

Note: The figure in the parentheses is the optional length.
Note: Consult us for nonstandard specifications.
Note: The maximum lengths are the capacity of the feeders.
For screw shapes of different screw size, refer to the table on the last page.

Applications

By automatically feeding headed parts such as rivets and using an air cylinder for the driver rotating part, they can be automatically inserted.

By automatically feeding threaded rivets and coverting the driver rotating part into an air hammer, they can be automatically hammered in.

STRUCTURE OF FEEDMAT - PRODUCT CONFIGURATION

Hopper Basket

Put loose screws in the hopper. The hopper serves as a screw storage, and Nitto Seiko's own vertical drive truck feeds screws to the shoot rail quietly without scattering or damaging them.

Filter plate

The filter plate allows the passage of only screws of the proper shape. Our own mechanism that does not damage the head and other parts of screws is employed.

Electric control

A compact non-contact control circuit containing a set of controls for controlling optimum screwfastening conditions ensures stable perfomance and durability.
FM503H allows adjustment to obtain the optimum screw feed for the screw size and type.

Fasten screws easily with one hand.

Our screwdrivers greatly improve the efficiency of screwfastening in an assembly or cell production process.

Shoot rail

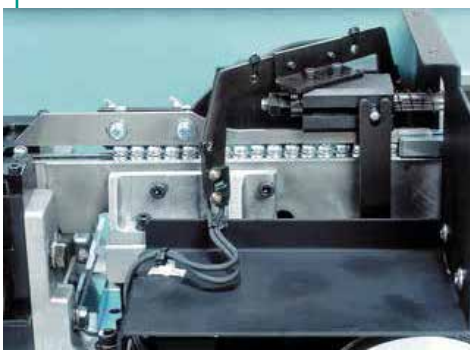
The shoot rail aligns screws and moves them from the hopper to the escape unit. FM503H employs our own inverter system, which allows the jam-free, smooth flow of screws.

Escape unit

The escape unit is an important, reliable mechanism based on technologies we have accumulated over many years, which separates aligned screws from each other and instantly feeds them to the tip of the driver by air pressure.

Driver unit

Screw fed by air pressure are held and fastened by the chuck on the tip of the driver.
A compact design, maintenance-free driver unit based on years of experience is employed.



FEEDERS

SOLUTIONS

- **SCREW FEEDING SYSTEMS**: The screws are fed by air pressure instantly from a feeder to the driver chuck, to efficiently perform continuous fastening.
- **PICK & PLACE**: the screws are proposed at the pick-up point to be engaged by the screwdriver.

Model	Image	Screw Range	Destination of use
FM-503H		M2÷M5	• Automatic • Semi-automatic • Robot • Pick & Place
FM-801		M3÷M8	
NUT FEEDER		M3÷M8	
NJR		M2÷M5	• Semi-automatic • Robot • Pick & Place Manuals
OM-R		M2÷M6	

NITTO SEIKO: BLADEHOPPER FEEDERS

They can be used in manual, semi-automatic or fully automatic applications.
The hopper serves as a screw/nut/stud storage; Nitto Seiko's own vertical drive truck feeds elements to the shoot rail quietly without scattering or damaging them.
The filter plate allows the passage of only screws of the proper shape.
A compact contactless control circuit ensures stable performance and durability.

- ACCURATE
- SILENT
- RELIABLE

Main features

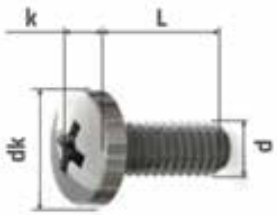
- Enabling the operating cycle.
- Parameter set via multifunctional keypad.
- Start/stop and speed settings.
- Shooting time setting up.
- Screw missing signal on shoot rail.
- I/O connector for connection to PLC.

Model	Screw Ø mm	Screw length mm	No. of screws minutes	Weight Kg	Dimensions mm	Supply voltage	Feed pressure Mpa	Escapement
FM-503H	2-6	MAX 30	50/min	19	215x412x338	24 VCC	0,6	1-2
FM-801H	3-8	MAX 50	50/min	50	288x595x546	24 VCC	0,6	1-2

HOW TO CALCULATE THE QUANTITY OF SCREWS IN THE HOPPER

FF503H = {450 ÷ (0.785 x dK^2 x (L+k))} x 0.9

FF801H = {2000 ÷ (0.785 x dK^2 x (L+k))} x 0.9



TUMBLING BARREL AUXILIARY HOPPER SH-300

Rotary barrel type auxiliary hopper.
* Hanger type sub hopper that is easy to mount and dismount.
* Low noise. Motor driven type that generates much less noise compared with a vibrator type.

- Tank capacity: approx. 2 L
- Supply voltage and current consumption:
  24 VDC ± 10 / 300 mA approx. / Power supply from FM-503H

POWER SUPPLY TRANSFORMER FM503H

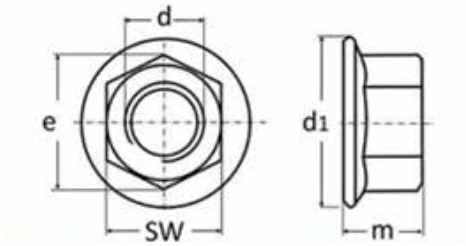
Code: 730A000.23

Only to be employed with FM503H in manual configuration.
Input: 220VAC. Output: 24VDC PELV

NUT FEEDERS

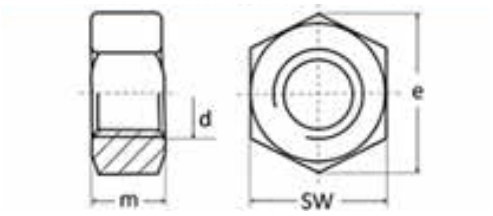
Code	Technical details	Flanged	Dimensions L x W x H (mm)	Weight (kg)	Capacity (cc)	Tube dimensions (mm)	Tension Pressure (VCC)	Pressure power supply (Mpa)
FF503H-N	Type 3 /DIN934 M3-M5	x	412x220x335	25	450	*M3 -12 x 7,5 M4 - 13 x 8,5 M5 - 10 x 16,5	24	0,4 - 0,5
FF801H-N	Type 3 /DIN934 M6-M8	x	635x292x544	55	2000	M6 - 17,5 x 11,5 M8 - 23 x 13,5		
FF503H-FN	Type 3 / DIN6923 M3-M4	yes	475 x 220 x 335	25	450	custom		
FF801H-FN	Type 3 / DIN6923 M5-M8	yes	635 x 292 x 495	55	2000	custom		

Flanged nut



d (mm)	d1 (mm)	m (mm)	e (mm)	SW (mm)
M3	7,7	3,5	6,1	5,4
M4	9,8	4,4	7,6	6,8
M5	11,5	5,1	8,8	7,8
M6	13,2	5,9	11,2	9,8
M8	17,6	7,9	14,6	12,8

Nut



d (mm)	m (mm)	e (mm)	SW (mm)
M2	1,6	4,38	4
M2,5	2	5,51	5
M3	2,4	6,08	5,5
M4	3,2	7,74	7
M5	4	8,8	8
M6	5	11,05	10
M8	6,5	14,38	13

OHTAKE: AUTOMATIC SCREW FEEDERS WITH INTERCHANGEABLE RAILS

This system is suitable for both handheld and fully automatic applications. It can accommodate screws up to M5 size and features a 150cc storage capacity.
The device provides a stable feeding supply for spring-washer screws and other standard screws. In the robotic station configuration, the selected screw is moved to a pick-up point for suction heads via a guide.
The system ensures continuous screw feeding without delays, utilizing a linear screw escaper.

- COMPACT
- ADAPTABLE
- RELIABLE

OHTAKE NJR 23

Model Automation	Width x Height x Depth mm	Weight Kg	VDC power supply	Feeding speed sec	Container capacity cc	Max. screw length mm	Guide for Screws mm
NJR-12xx	130x136x215	3,2	12V	0,6	150	10	1,4; 1,7
NJR-23xx						18	2,0-2,3-2,6-3,0
NJR-45xx							3,5-4,0-5,0
LONG SCREWS							
NJRL-23xx	130x136x215	3,2	12V	0,6	150	25	2,0-2,3-2,6-3,0
NJRL-45xx							3,5-4,0-5,0

Note xx when ordering, specify screw diameter (see column "Screw guide")

OTAKE OM26 SERIES LARGE CAPACITY FEEDER

- Interchangeable rail allows the system to accommodate different screw diameters.
- Disc escaper separates screws one by one, achieving high precision without screw jamming.
- Stable feeding supply for spring-washer screws and other standard screws.
- Large capacity of 300cc.
- Screw level sensor is available for automatic notification of low remaining screws.
- Additional hopper is available for storage expansion.

OM26M OM26R

Model	Width x Height x Depth mm	Weight Kg	VDC power supply	Feeding speed sec	Container capacity cc	Max. screw length mm	Guide for Screws mm
OM-26Rxx	119X226X152	3	15	0,6	300	25	M2-M3-M4-M5-M6

Note xx when ordering, please specify screw diameter
OM26-M = Manual version for magnetic screws
OM26-R = Robot version for automatic enforcement or non-magnetizable screws

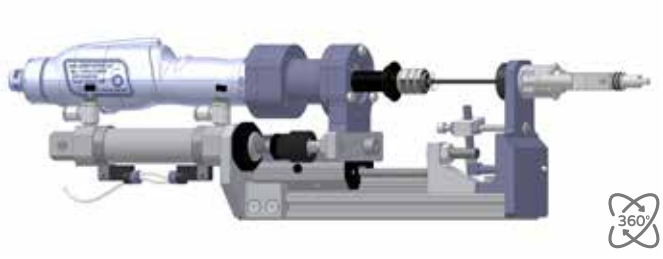
SIRATEC

SLIDING UNITS (UA)

UA-L series (Light)

Single movement: 1 cylinder. The screwdriver moves towards the screw. The chuck head is on the fastening site.

- Base interface with **Aluminum profiles**;
- **Medium/low** tightening torques;
- Sealed bearing linear rail guides;
- Multi-spindle available (from UA-L2);
- No lubrication needed.
- Can be integrated into different automation systems: Multi axis, Scara robots, Cobots.



UA-LZ series

Double movement: 2 cylinders. In addition to the screwdriver, also the chuck head moves towards the tightening site (approach).

Same hallmarks to the UA-L sliding unit.

UA-LZM series

Double movement: 1 cylinder + 1 compression spring. The pneumatic cylinder and the screwdriver get into the task throughout a compressed spring.

Same hallmarks to the UA-L sliding unit.

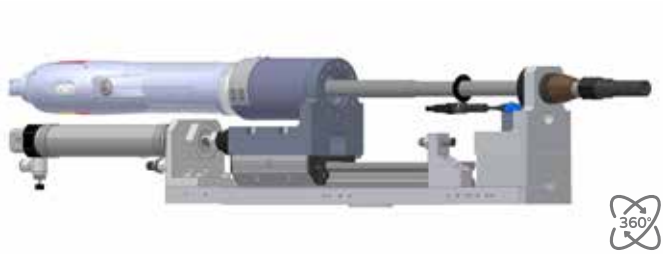
Model	Max. torque (Nm)	Linear guides	Trolleys	Total stroke (mm)	Approach stroke (mm)	Dimensions (mm)	Weight base slide (kg)	Pressure (mpa)
UA-L1	12	1	1	100	-	400x60	2,5	0,6
UA-LZ1	12	1	2	100	50	480x80	3	0,6
UA-LZM1	12	1	2	100	-	480x60	3	0,6
UA-L2	25	2	1	100	-	350x120	4,5	0,6
UA-LZ2	25	2	2	160	80	420x120	6	0,6

1 shuttle: Single movement
2 shuttles: Double movement

UA-H series (Heavy)

Single movement: 1 cylinder. The screwdriver moves towards the screw. The chuck head is on the fastening site.

- Base interface with **aluminum profiles**.
- **Medium/Hi** tightening torques.
- Sealed bearings linear guideway.
- Also available multi-spindle (available from UA-H2).
- No lubrication needed.
- Can be integrated into different automation systems, Multi axis, Scara robots and Cobots.



UA-HZ series

Double movement: 2 cylinders. In addition to the screwdriver, also the chuck head moves towards the tightening site (approach).

Same hallmarks to the UA-H sliding unit.

UA-HZM series

Double movement: 1 cylinder + 1 compression spring. The pneumatic cylinder and the screwdriver get into the task throughout a compressed spring.

Same hallmarks to the UA-H sliding unit.

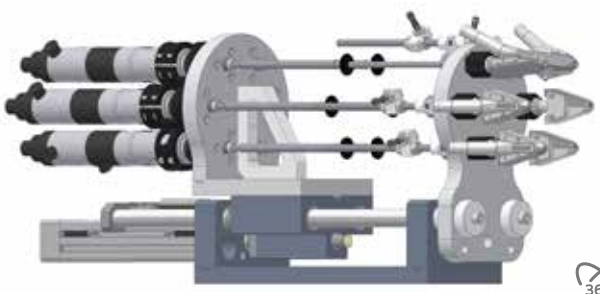
Model	Max. torque (Nm)	Linear guides	Shuttle	Total stroke (mm)	Approach stroke (mm)	Dimensions (mm)	Weight base slide (kg)	Pressure (mpa)
UA-H1	18	1	1	125	-	440x70	3,5	0,6
UA-HZ1	18	1	2	125	80	440x70	4	0,6
UA-HZM1	25	1	2	160	-	420x70	4	0,6
UA-H2	30	2	1	250	-	520x143	4,5	0,6
UA-HZ2	30	2	2	160	100	520x143	5	0,6
UA-H3	75	2	1	100	-	400x165	5	0,6
UA-HZ3	75	2	2	160	80	580x165	7	0,6
UA-H4	120	2	1	200	-	600x350	14	0,6

1 shuttle: Single movement
2 shuttles: Double movement

UA-MAGNUM series

Single and double movement.

- Suited to multiple spindles.
- High tightening torque applicable.
- Spindles can be fixed at different heights and centre distances.
- ball recirculation linear guideway.

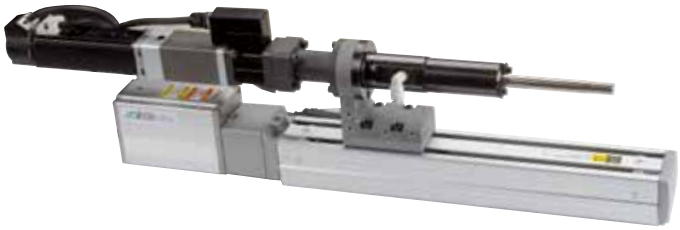


Model	Max. torque (Nm)	Rail guides	Trolleys	Total stroke (mm)	Approach stroke (mm)	Dimensions (mm)	Weight base slide (kg)	Pressure (mpa)
MAGNUM	60	2	1	125	-	333x128	10	0,6
MAGNUM-G	80	2	1	250	-	460x200	12	0,6

1 shuttle: Single movement
2 shuttles: Double movement

ELECTRONIC ROBOT-CYLINDER UA-LR series

Single movement: electrical programmable single spindle axis



Model	Support material	Max. torque (Nm)	Total stroke (mm)	Dimensions (mm)	No. of drivers
UA-LR1	Electronic axis	*	*	*	1

* upon specification

Option: VACUUM SYSTEM

Every SIRATEC sliding spindle can be added with a vacuum generating system, allowing fastenings into critical points/ sites.

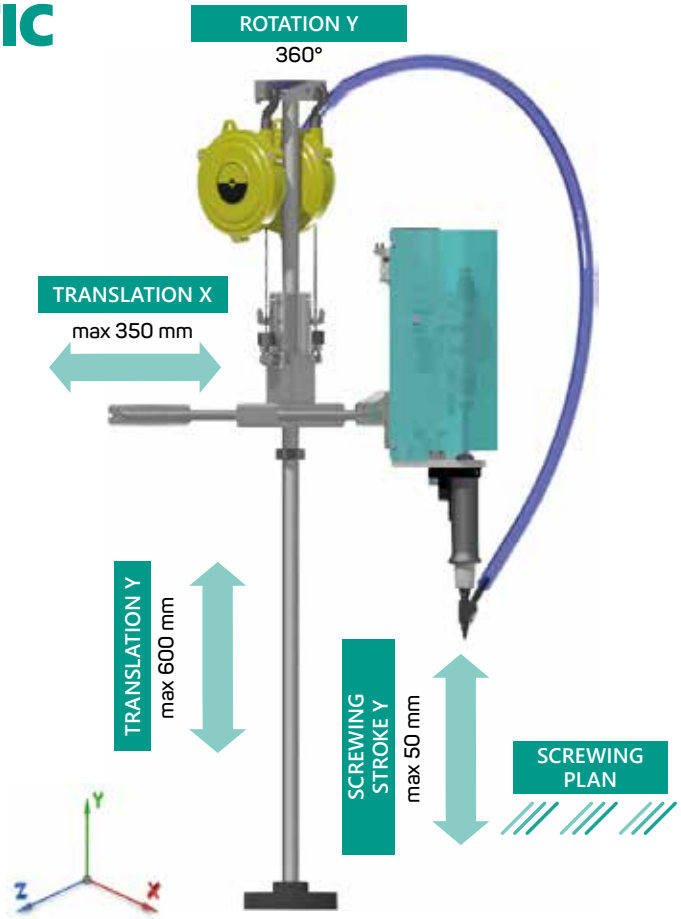
TELESCOPIC SPINDLE

Available with different strokes. Suitable to pneumatic or electric screwdrivers.

JOY-JET SEMI-AUTOMATIC FASTENING UNIT

The ideal solution to combine innovation trought the employment of an ergonomic device with the advantages of a hand-held automatic tightening tool and a complete reaction absorber system:

- The configured system eliminates torsion stresses.
- The pneumatic lock eliminates the axial torque reaction during tightening and grants accurate assemblies even at multiple heights.
- Available with push (JOY-JET/P) or lever start (JOY-JET/L).

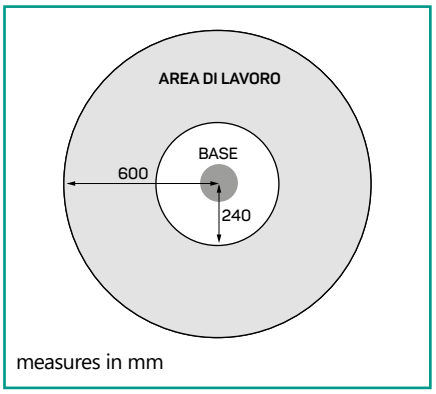


Model	Maximum tightening torque [Nm]	SCREW DIMENSIONS		Screw head diameter mm	Screw feeding capacity [screws/min.]	Clamping start-up	Air pressure [MPa]	Air consumption [L/cycle]	Operating temperature [°C]	Weight [Kg]
		Diameter nominal mm	Length mm							
JOY-JET/P	25	2 - 8	5 - 50	5 - 16	< 30	Pressure	0,6	1,7 - 2	10 - 50	10 - 15
JOY-JET/L						Lever				

Note: The specifications of the JOY-JET units are referred to standard models; the units can be manufactured according to customer-specific requirements.
The JOY-JET fastening units can be equipped with air, electric or electronic motors.

HANDY7 SERIES ERGONOMIC ARMS

- Great maneuverability for quick and precise arm positioning
- Working range 360°
- Horizontal working stroke 260 mm, with adjustable minimum and maximum
- Universal tool clamp.



HANDY7-KX100

Model	Application	Useful horizontal stroke mm	Reach max. mm	Vertical stoke mm	Max. weight applicable Kg	Max. applicable torque Nm	Ø applicable tool mm	ø Base mm	Fixing holes
HANDY7-25/40	electric and pneumatic screwdrivers	260	240-600	650	4	25	26-40	130	3xM8
HANDY7-25/50	electric and pneumatic screwdrivers	260	240-600	650	4	25	36-50	130	3xM8
HANDY7-KX100	NX electric motors	260	240-600	650	4	25	KX100	130	3xM8
HANDY7-60	Electronic screwdrivers	420	180-600	650	10	60	26-40/36-50	130	3xM8
HANDY7-100	Electronic screwdrivers	350	120-470	650	12	100	26-40/36-50	130	3xM8
HANDY7-250	Electronic screwdrivers	600	200-800	650	38	250	26-40/36-50	300	4xM12
HANDY7-PP	Linear guide arm with lockscrewdriver rotation and pneumatic thrust								
HANDY7-PE	Linear guide arm with lockscrewdriver rotation and electric thrust								

Note: Accessories such as balancers, clamps and hoses must be ordered separately

ACCESSORIES

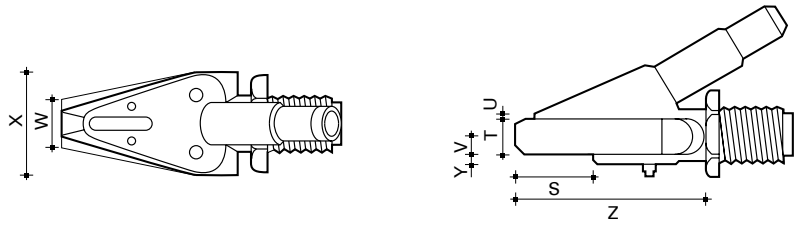
CHUCK UNITS

Ensuring screw correct position to the workpiece.

- **3K SERIES**: The system is compatible with the most common types of screws. The claws securely hold the selected screw even when subjected to axial force.
- **9K SERIES**: anti tumble chuck unit, ideal for very short length screws.
- **CAR SERIES**: uncomfortable deployment areas: where standard claws cannot open properly (proximity to walls or recessed areas). The screw is hold through a ball ring and guided into a tube.
- **CAR CHUCK/SPRING**: a CAR head with a special nose clamper aided to guidance and centering.
- **QRS, QH, QN SERIES**: when required a retaining system with vacuum.

3K SERIES

- Through the calibrated hose, screws are shot from the feeder to the chuck head,
- Chuck claws hold the screw into the position even when subjected to an axial force



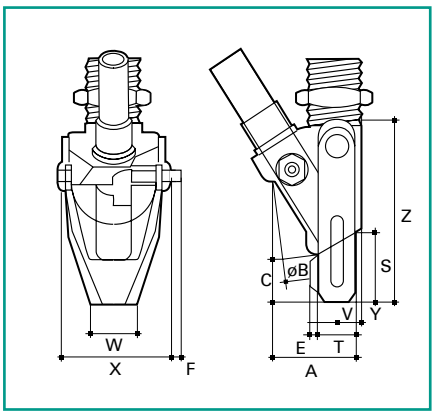
3K and 9K series screw heads are available with M20X1 or M14X1 threaded connection

Model	Ø Screw	S	T	V	Y	U	Z	X	W
3KZ	2-2,6	13	6,3	3,5	3	1	37	22	9
3KC100	2-3,5	20	8	4,5	3,5	2	57	29	10
3KC300	3-5	24	11	6	3	1	61	32	15
3KF300	4-6	27	14	8	3	2	65	36	18
3KL300	5-8	36,5	18	10	4	2	78,5	40	23

Evidences in mm

9K SERIES ANTI-TUMBLING

- The series is designed for very short-length screws that can tumble inside the chuck head.
- Screws are sent through the shooting hose using pressurized air from the feeder to the screwing table, which holds and guides the screws during the initial screwing



Model	Ø Screw	T	V	Y	W	X	F	A	C	B	S	Z
9KC100	2-3	8	4,5	3,5	10	29	2	21	10	9	20,3	35,5
9KC300	2,6-4,5	11	6	3	15	32	2,5	25	13	11	25.1	56
9KF300	4-6	14	8	3	18	36	4	30	16	14	27,6	61
9KL300	5-8	18	10	4	23	40	4	36	23	17	27,6	73

Evidences in mm

CAR SERIES

This series is designed for extremely narrow screwing spaces, such as those close to walls or for assembly in recessed locations. Screws are launched through pressurized air from the feeder to the chuck unit, which holds and guides them during the initial screwing phase. They are retained by a ball ring and guided within a tube. Screw sizes are specific to the required application.

Model	A	X	S	Z
CAR100	26	13	33	57
CAR300	30	18	37	64
CAR300L	30	18	37	75
CAR350	34	21	37	75

Evidences in mm

All CAR series screw heads are supplied with M14X1 threaded connection

CAR CHUCK

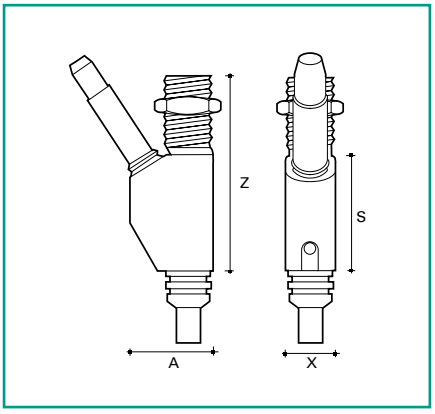
CAR SPRING

- CAR CHUCK Head

The CAR CHUCK head is a variant of the CAR unit equipped with a special gripper nose aid to enforce guidance and centering. The dimensions of the 'CHUCK' clip are specific to the required application.

- CAR SPRING Head

The CAR SPRING head is a CAR CHUCK equipped with a special tube nozzle featuring radial screw holding springs on the tube. This design provides the benefit of guiding the screw all the way to the tightening point.



VACUUM HEADS

QRS SERIE

QH AND QN SERIES

Model	Screw thread	Screw head
QN-Vacuum	M1,4 - M12	2,3-18
QH-Vacuum	M2 - M12	4-18
QRS-Vacuum	M1-M5	1,5-8

Suitable for Pick & Place applications for semi-automatic and automatic screws and nuts.

Vacuum pump to be ordered according to the power and type of application required.

SELECTORS

To supply several screw heads simultaneously, it is necessary to install a selector switch and switchboard to manage concurrent screw firing. These components are located downstream of the auto feeder unit and sort the screws from the head to the different spindles or units.
SIRATEC selectors can handle up to 8 shots. The movement of the start selector is facilitated by two pneumatic cylinders, each equipped with two sensors to define the cycle (start and end of stroke).

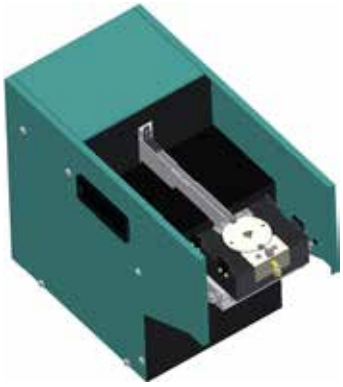
Code	No. of automatic feeders	No. of feeder shots	No. of utilities/users that can be served
SEL-2	1	Single	2
SEL-3	1	Single	3
SEL-4	1	Double	4
SEL-6	1	Double	6
SEL-8	2	Double	8

SCREW SELECTOR SWITCH SEL-2

POSITIONERS

Special Selector Functionality
For special applications beyond firing, these selectors replace the original selector in all respects. Positioned downstream of the linear guide of the FM-503H feeder, they deliver a single screw at a time to a predefined point, making it available for automated picking (pick and place).
The vacuum version allows screws, plugs, or pick-up dowels to be positioned from the bottom upwards using a suction system.

LATERAL POSITIONER



ROTARY POSITIONER

AXIAL SLIDING SPINDLES

Screw Connection Compensation to ensure correct screwing, it is essential to balance the number of screwdriver revolutions with the axis feed speed. Depending on the torque requirements and the type of application, we offer various models of compensators. For single-spindle screw connections, a pressure regulator can be used as an alternative to compensators.

CO/F CO/FQR CO/FCP CO/C CO/AFM CO/R CO/S

Abbreviation	Description
CO/F	Fixed Compensators
CO/FQR	Quick Release Compensators
CO/FCP	Fixed Compensators Heavy Load
CO/C	Cardan compensators
CO/AFM	Compensators for Multiple Spindles
CO/R	Recordable compensators
CO/S	Slotted compensators with 25/40 mm stroke

ESTIC SLIDING SPINDLES

Model	Applicable to:	Outgoing framework (in)
TNA1-SA02-30	ENRZ-TU0R5R-S	3/8"
	ENRZ-TU001R-*	3/8"
	ENRZ-TU003R-*	3/8"
TNA1-SA05-35	ENRZ-TU004R-S	1/2"
	ENRZ-TU008R-*	1/2"
TNA1-SA20-45C	ENRZ-TU013R-*	5/8"
TNA1-SA20-45Z	ENRZ-TU020R-*	5/8"
TNA1-SA40-70	ENRZ-TU040R-S	1"
	ENRZ-TU060R-S	1"
TNA1-SA80-80	ENRZ-TU080R-S	1+1/4"
TNA1-SA150-50	ENRZ-TU150R-S	1+1/2"
TNA1-SA150-120	ENRZ-TU150R-S	1+1/2"

Suffix*: S for straight models, O for offset models
Other types according to application available on request.

Adapters

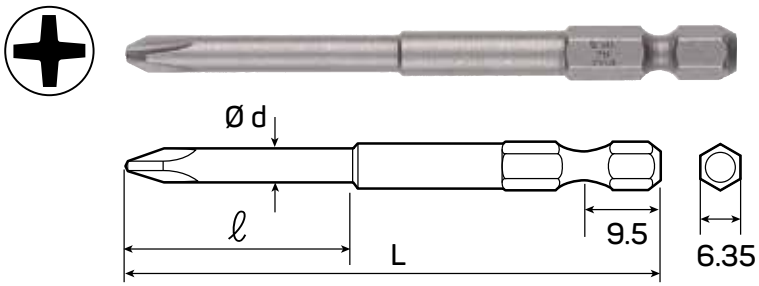
Model	Outgoing framework (in)
TNA1-AD01-01	3/8" - 3/8"
TNA1-AD05-01	1/2" - 1/2"
TNA1-AD05-02	1/2" - 3/8"
TNA1-AD20-01	5/8" - 5/8"
TNA1-AD20-02	5/8" -1/2"
TNA1-AD20-03	5/8" - 3/4"
TNA1-AD40-01	1" - 1"
TNA1-AD40-02	1" - 3/4"
TNA1-AD80-01	1+1/4" - 1+1/4"
TNA1-AD80-02	1+1/4" - 1"
TNA1-AD150-01	1+1/2" - 1+1/2"
TNA1-AD150-02	1+1/2" - 1"

VESSEL BITS

Blade Manufacturing Process
Within their respective groups and families, each individual blade is crafted with:

- Specific Heat Treatment: Each blade undergoes its own specific heat treatment to optimize contextual operational performance.
- Careful Element Selection: A meticulous selection of elements, including Carbon, Silicon, Magnesium, Nickel, Chromium, Molybdenum, and Vanadium, is blended with the base steel to create unique characteristics.
- Constructive Precision: High levels of accuracy and quality control are maintained in the production of every single blade, with constant reference to international ISO and JIS standards.

Since 1954, our dedication to the development and production of industrial bits has included continuous upgrades and improvements, ensuring that VESSEL remains one of the world's leading manufacturers of industrial tools.
Special heat treatments are available upon request for all products, providing hardness levels between 53 HRC and 62 HRC.
For more information, please refer to Catalogue 2 in the Compasses and Blades section, or contact our office for further assistance.



SENSORS

Height sensors, inductive loop sensors and torque sensors complete the slide supplies.
Available on request depending on the application.

DRIVERS

Selecting the Right Screwdriver for Every Application
Every application requires the right screwdriver, which is central to our philosophy. With automatic screw feeding, different types of screwdrivers can be utilized in semi-automatic (with operator presence) or fully automated stations, including pneumatic, electric, or electronic options.
Pneumatic screwdrivers with torque control and automatic stop, such as URYU models, are ideal for both manual and automatic applications at high production speeds. They offer precise torque regulation through a mechanical clutch, ensuring reliability.
For applications requiring higher clamping quality, the electric version with automatic stop, like those from KILEWS, utilizes high-efficiency brushless motors and manages electrical interface signals effectively.
At the top of our range are the ESTIC brand electronic torque and angle control screwdrivers. These products provide sophisticated tightening control through torque/angle transducers and enable objectification and traceability of the entire assembly cycle via data networks.

PNEUMATIC
Class B Accuracy ± 10%

ELECTRICAL / CURRENT ABSORPTION
Class A or B Accuracy up to ± 10%

ELECTRONIC
Class A Accuracy ± 5%

Note 1: Specific information on SIRA products in Catalogue 1
Note 2: SIRATEC-Nitto Seiko systems are also available for use with third-party motors and screwdrivers.

NX MOTORS

- Nitto Seiko brushless DC electric motor with NX series transducer
- Equipped with integrated strain gauge transducer, which guarantees higher clamping accuracy
- Illuminated display to show torque value
- No. 16 different screwing strategies programmable independently or in sequence
- Torque control via transducer
- Rotation angle control via encoder
- Synchronisation of motors
- Signal output to PLC - NC/NA signals
- Programmable with front keypad/display or via programming and diagnostic software.

Model	Torque Nm	Speed rpm	Power W	Weight Kg	Shaft	N. Progr.
NX020T3-07S1-20	0,5-2,0	840	200	1	3/8"	16
NX050T3-07S1-20	1,0-5,0	840	500	1,1	3/8"	16
NX100T3-07S1-20	2,5-9,0	840	1000	1,2	3/8"	16
NXXXXT3-XXMX-XX	Motors available with M8 shaft on request, order code distinguished by the letter M instead of S					

Controller	Weight Kg	Power supply Vac	Assorb. VA
SD600T03-2020-*	0,75	230 Vac 50/60 Hz	450
SD600T03-2020-*	0,75	230 Vac 50/60 Hz	600
SD600T05-2020-*	0,75	230 Vac 50/60 Hz	750

Model	Torque Nm	Speed rpm	Power W	Weight Kg	Shaft	N. Progr.
NX180T3-05S1-20	5-18	1100	180	2	3/8"	16
NX250T3-07S1-20	8-24	840	250	2,4	1/2"	16
NX500T3-0ES1-20	15-45	420	500	2,6	1/2"	16
NX800T3-1BS1-20	30-80	220	800	2,6	3/4"	16

Controller	Weight Kg	Power supply Vac	Assorb. VA
SD600T10-200	1	230 Vac 50/60 Hz	1300
SD600T10-200	1	230 Vac 50/60 Hz	1300
SD600T10-200	1	230 Vac 50/60 Hz	1300
SD600T10-200	1	230 Vac 50/60 Hz	1300

* 0= without signal analysis; 1= with signal analysis
Component details (included/not included)
Standard motor cable: 5m; on request lengths of 2.5m, 7.5m, 10m
Standard encoder cable: 5m; on request lengths of 2.5m, 7.5m, 10m
Power connector: Not included, must be ordered separately.
Connector: I/O Not included, must be ordered separately.

SIRATEC SY-100 MOTORS

CURRENT-ABSORBING SCREWDRIVERS FOR AUTOMATION

- Highly efficient brushless gear motor
- 3 models to cover the range from 0.2 Nm to 9 Nm
- Reduced commissioning time: the tightening algorithm is programmed on the control unit: only speed and torque parameters need to be configured.

- The controller can handle 4 tightening channels selectable via 2 digital inputs. The system is flexible and easily expandable
- The controller is interfaced to the PC/PLC via digital I/O (7DI/4DO)

- Via the (optional) operator interface, the torque and speed parameters of the channels can be changed, giving the system integrator or end customer the possibility of adapting programmes to any new specifications

Model	Rid.	Torque Nm	Max. speed rpm	Description
SY100-T012-05	no	0,3-1,2	6000	100W motor, controller and cables 5m
SY100-T012-05	1:5	1-4,5	1200	100W motor, controller and cables 5m
SY100-T012-05	1:10	2-9	600	100W motor, controller and cables 5m

Options:

Model	Description
H41-71A41-0	Graphical user interface 4.3''
001.026.12	Shaft adapter 1/4'' hex
411A002.01	Axial compensator 1/4'' 20 mm

ROBOT SCREWING SOLUTIONS

Automation Trends in Manufacturing

The increasing level of digitization and connectivity is transforming automation requirements in manufacturing. Rigid and complex systems are no longer suitable for today's factories, which must instead logically combine 'advanced traditional' machining and control technologies. Cobots and industrial robotics offer companies access to the benefits of advanced robot automation without the additional costs associated with traditional robots. Collaborative robots facilitate automation for small and medium-sized enterprises, providing a cost-efficient, secure, and flexible solution.
The industrial assembly process, particularly tightening, has now matured to the point where robots and cobots coupled with electronic screwdrivers can perform tasks that were previously exclusive to human operators.

Turnkey Automation Solutions

For fully automatic or pick & place applications, SIRA's product range enables it to provide customers with complete turnkey systems, from automatic screw feeders to cobots or Nitoman robots coupled with screwdrivers. These solutions cater to various sectors, including:

- Automotive
- Electronics
- Metallurgy and machining
- Food
- Medical

COLLABORATIVE ROBOT SOLUTIONS

Collaborative robots, or cobots, are anthropomorphic robots with six-axis movements designed to meet criteria for safety, flexibility, and compactness. They can work in close proximity to operators without the need for protective barriers.

Advantages

- Easy Integration: Cobots can be seamlessly integrated into production processes, allowing for work positions that require simple manual accompaniment.
- Collaborative: The operator-robot collaboration occurs safely, enabling smooth execution of various processes. The robot can learn working positions through simple manual guidance.
- Safe: Safety barriers or safety cells can be eliminated because the safe zone is everywhere. Users can configure their own safety zones, and the robot will stop at the first sign of contact.
- Cobots offer immediate integration with major cobot manufacturers on the market.

SCARA ROBOT SOLUTIONS

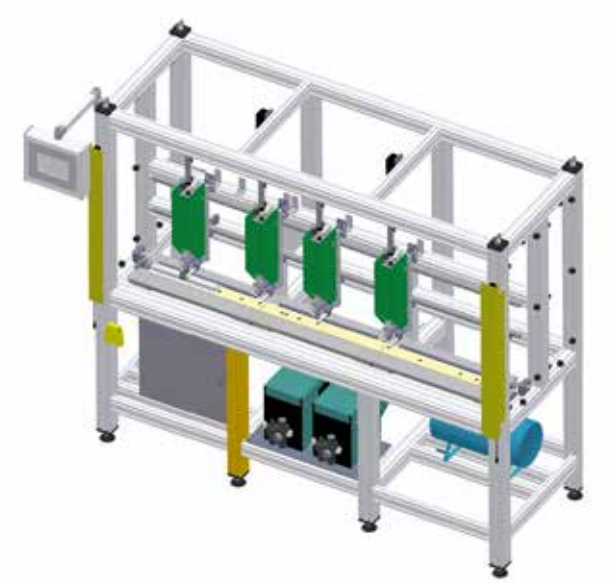
Nitoman Plug & Play Solution for Assembly Production
The Nitoman represents the ideal Plug & Play solution in assembly production processes due to its exceptional features of speed, efficiency, and adaptability in existing plants.
Versatile in design, it enables movement along all three axes (X, Y, and Z) and is flexibly adaptable for different screw types. The control of tightening parameters (torque and loop) and the integration of axis movement simplify programming, accelerate setup, and enhance tightening quality.
The robot aids in reducing production costs and minimizing waste materials. Excellent repeatability is a key element in tightening applications, and the Nitoman provides high dynamics and precision, making it perfect for high-intensity processes with minimal variability.

Advantages

- Increase production;
- Eliminate manual fatigue and operator stress;
- Screw fastening in small spaces;
- Increased precision and quality of production to industrial standards: the tightening torque is controlled for each screw;
- More flexible and faster fastening;
- A single control panel for cycle management and interfacing with the line, equipped with a Mitsubishi HMI for programming points and monitoring parameters during machine start-up.

SPECIAL APPLICATIONS

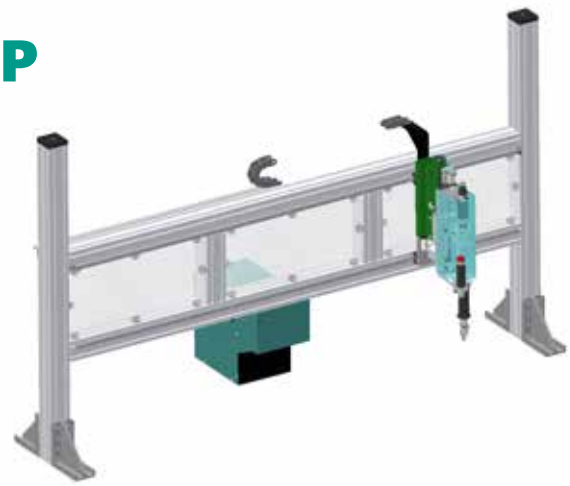
STAND-ALONE SCREWING STATION



Clamping System Features

- Variable Clamping: Designed for clamping clamps on profiles with variable dimensions and center distances (format change).
- Management Panel: Includes workpiece presence sensors, screw firing controls, and other essential functions.
- Safety Barriers/Side Guards: Ensures operator safety during operation.
- Operator Interface Panel: Provides an intuitive interface for operators to manage the system.
- Pneumatic Workpiece Clamping System: Utilizes pneumatic technology for secure clamping of workpieces.
- Screwing Units: Equipped with four screwing units, including two FM503H units operating in double firing mode.

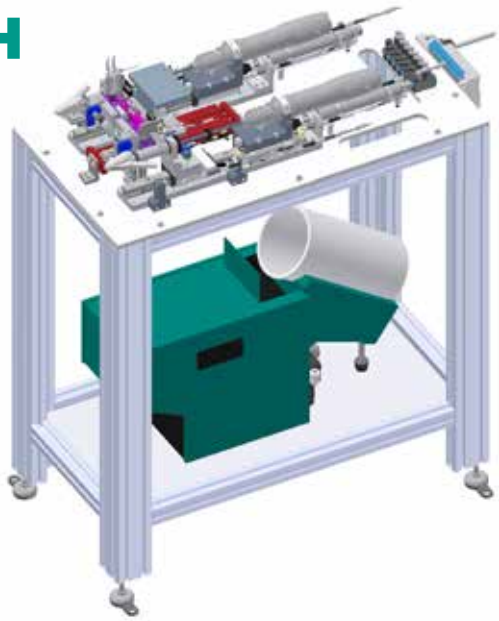
SEMI-AUTOMATIC BENCH-TOP FASTENING STRUCTURE



Series Screwing System Features

- Screwing in Series: Designed for screwing in series relative to a fixed axis, accommodating variable interaxes.
- Manual Workpiece Approach: Allows for manual positioning of workpieces prior to screwing.
- Pneumatically Driven Screwing: Utilizes pneumatic power for efficient screwing operations.
- Bimanual Drive: Requires the use of both hands for operation, enhancing safety and precision.
- Support Structure with Guards: Includes a robust support structure equipped with safety guards to protect operators.
- Screwing Unit: Features one screwing unit with the FM503H model.

AUTOMATIC SCREWING BENCH WITH PNEUMATIC SYSTEM WORKPIECE CENTRING

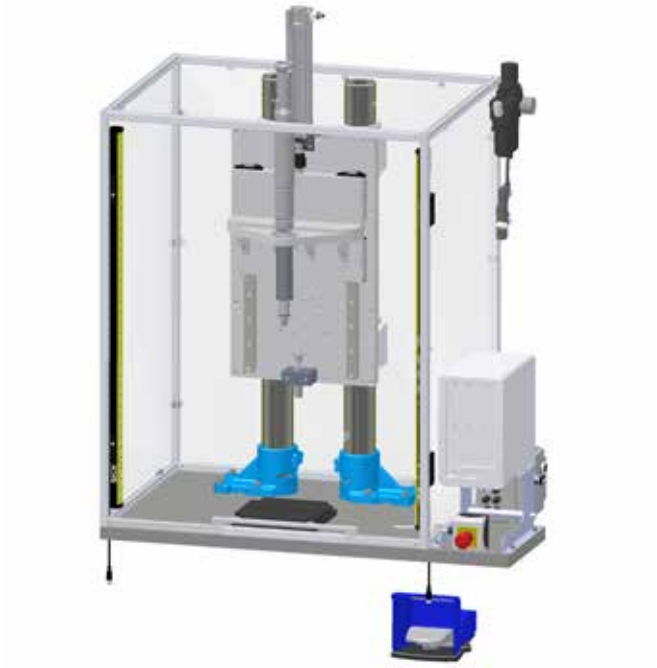


- Door Lock Fixing System Features
- Application: Specifically designed for fixing door locks.
- Plant Management: Managed at the customer's expense.
- Carrier Bench: Includes a carrier bench for efficient handling of workpieces.
- Screwing Units: Equipped with two FM503H screwing units operating in double shot mode, paired with an SH-300 magazine for enhanced productivity.
- Workpiece Centering System: Features a 'Jaw' system with five cylinders and two pneumatic grippers for precise workpiece centering

MANUAL CONTROLLED SCREWING SYSTEM

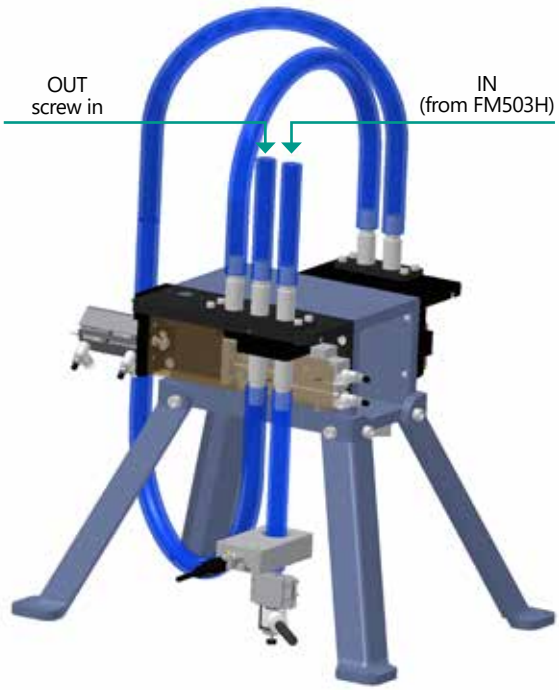
Tap Fixing System Features

- Application: Designed for fixing taps.
- Manual Workpiece Placement: Allows for manual positioning of workpieces.
- Management Framework: Includes a management framework for efficient system control.
- Safety Barriers/Protections: Incorporates safety barriers and protective measures to ensure operator safety.
- Foot Control: Enables hands-free operation through the use of a foot control.
- Controlled Screwing Unit: Features an Estic-120Nm System for precise screwing control.



FLAP SELECTOR SCREW/BLOCK

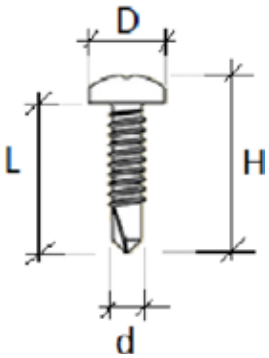
Screw Direction Reversal Device
This device reverses the direction of a screw's arrival at the tightening point. When feeding screws with these characteristics, it can be challenging to determine the correct side for insertion.
Thanks to a combined system utilizing our SEL-2/SEL-3 models and special sensors (such as vision and proximity sensors), it is possible to ensure the correct orientation of the screw as it reaches the head.



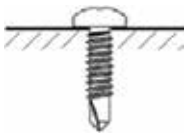
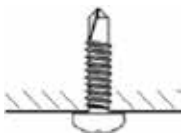
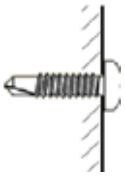
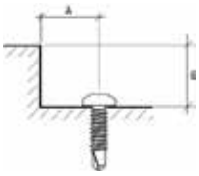
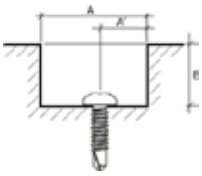
+39 02 4885271
info@sira-spa.com
www.sira-spa.com
Via della Resistenza, 53 - Buccinasco (MI) 20090 - IT

Screw feeder quotation request form			
Company		Customer Code	
Contact		Agent	
Tel.		Email	

Size and type of screw - Type of screwing

Head	Imprint		Tightening torque
O	O Phillips Measure:		Torque _____Nm
O	O Pozi Measure:		Accuracy _____%
O	O Slot Measure:		**Junction**
O	O Torx Measure:	D=_____ H=_____	O Rigid
O Washer	O Hex Measure:	d=_____ L=_____	O Elastic
O Integrated	O Other _____	O Enclosed drawing O DIN/UNI	O Other_____

Screwing position and overall dimensions

O	O	O	O	O
				
From above	From	Horizontal		

A= _____ mm B= _____ mm A'= _____ mm O Attached

Type of tool

Shape	Start	Type	Application
O Straight O Pistol O Angular	O Lever O Push O Remote	O Pneumatic O Electric with clutch or Electronic torque control	O Manual O Automatic O With slide, please specify type _____

DVEN0103/4

ISO9001 ISO14001
SIRA S.p.A.
Cap. € 3.000.000,00 i.v. - Sede legale: Piazza Matteotti, 20 - Bergamo 24122 - IT
C.F/P.IVA 01870750161 - CCIAA BG 243678
N° Iscrizione Registri: Imprese: BG 01870750161; AEE: IT8110000010930; Pile e Accumulatori: IT8110P00004983

+39 02 4885271
info@sira-spa.com
www.sira-spa.com
Via della Resistenza, 53 - Buccinasco (MI) 20090 - IT

Screw feeder quotation request form

Please enclose samples of the screws and complete and definitive part in all its parts for proper evaluation. In the absence of samples or in the absence of data, the feasibility will be drafted with

Screws samples sent	O NO	O YES	Qty _____
Parts samples sent	O NO	O YES	Qty _____
Attached drawings and other	O NO	O YES	Page no. _____

O Request a visit from one of our technicians

NOTE: Indicate in the space below whether you require components or systems, whether electronically controlled tightening, the number of tightening spindles in the case of multiples, the number of tightening spindles per minute, the cycle time, if required cycle management via SIRA supply PLC or possible connection to customer PLC, with details of phases and sequences.

Place and Date _____ Completed by _____

DVEN0103/4

ISO9001
ISO14001
SIRA S.p.A.
Cap. € 3.000.000,00 i.v. - Sede legale: Piazza Matteotti, 20 - Bergamo 24122 - IT
C.F/P.IVA 01870750161 - CCIAA BG 243678
N° Iscrizione Registri: Imprese: BG 01870750161; AEE: IT8110000010930; Pile e Accumulatori: IT8110P00004983

SIRA SERVICE

- SIRA Tailor-Made Solutions

SIRA offers tailor-made solutions based on specific requirements. Our service solutions optimize instrument performance, reduce production downtime, and prevent mishaps and unexpected extraordinary costs.
Maintenance and servicing are guaranteed for all products in our catalog, without exception, at our in-house equipped workshop, operated by a team of highly qualified technicians.

SIRA Service - **REPAIR**

- Analysis/Product Condition Assessment: Comprehensive evaluation of the product's condition.
- Repair Estimate Preparation: A detailed estimate is provided, including a list of necessary and sufficient spare parts for optimal repair.
- Product Operational Reactivation: The product is reactivated with a three-month warranty extension on replaced parts.
- Functional Testing: Ensures the product operates correctly after repair.

In accordance with our company's quality processes (ISO 9001:2015), repairs and services are conducted following the specifications and bills of materials from various manufacturers, using original spare parts to guarantee performance and restore full operational efficiency.
For tools that have reached their operational limits, a proposal for replacement with new products will be provided.

SIRA Service - **CONTROL**

- Services to adjust and set tools to the required target values.

SIRA Service - **MAINTENANCE**

- Customized Contracts for Regular/Preventive Maintenance
- Tailored Contracts: We offer customized contracts for regular and preventive maintenance, featuring predefined prices that benefit overall expenditure management.
- Quality Assurance: Our services guarantee conformity with the original manufacturer's quality standards.

SIRA Service - **START UP**

- Installation and Support Services
- On-Site Installation: We provide installation, programming, and startup services at the customer's production site.
- Regulatory Compliance: We ensure compliance with all regulatory safety aspects for operators.
- Rapid Response: Our team offers fast and competent intervention to guarantee productivity.

SIRA Service programs for electronic, electric, or pneumatic tools ensure fast, direct, and functional servicing to benefit production, reducing inconvenience at an overall low cost.

The SIRA Service program can be customized according to specific needs. Contact us for more information and to discuss your requirements.

OUR CATALOGUES

ASSEMBLAGGIO INDUSTRIALE

UTENSILI PROFESSIONALI E ACCESSORI

ASPORTAZIONE, DEFORMAZIONE E TAGLIO

AVVITATURA AUTOMATICA AUTOALIMENTATA

www.sira-spa.com

de-marchi.com - v1-2024

ISO9001 N.103
ISO14001 N.927SGA

SIRA S.p.A.
via della Resistenza, 53
20090 Buccinasco (MI) Italia
tel. 02.488527.1 - fax 02.48852760
Uff. Vendite Rivenditori tel. 02.488527.38
Uff. Vendite Riparazioni tel. 02.488527.37

www.sira-spa.com
e-mail: info@sira-spa.com

Cap. € 3.000.000,00 i.v. - Sede Legale: 24122 BG - Piazza Matteotti, 20
C.F./P. IVA 01870750161 - CCIAA BG 243678
N° Iscrizione Registri: Imprese BG 01870750161; AEE: IT8110000010930; Pile e Accumulatori: IT8110P00004983

SPECIALISTI IN AVVITATURA