Leetx砺星

Leetx_Automatic Screw Feeding System_202412_V1.2

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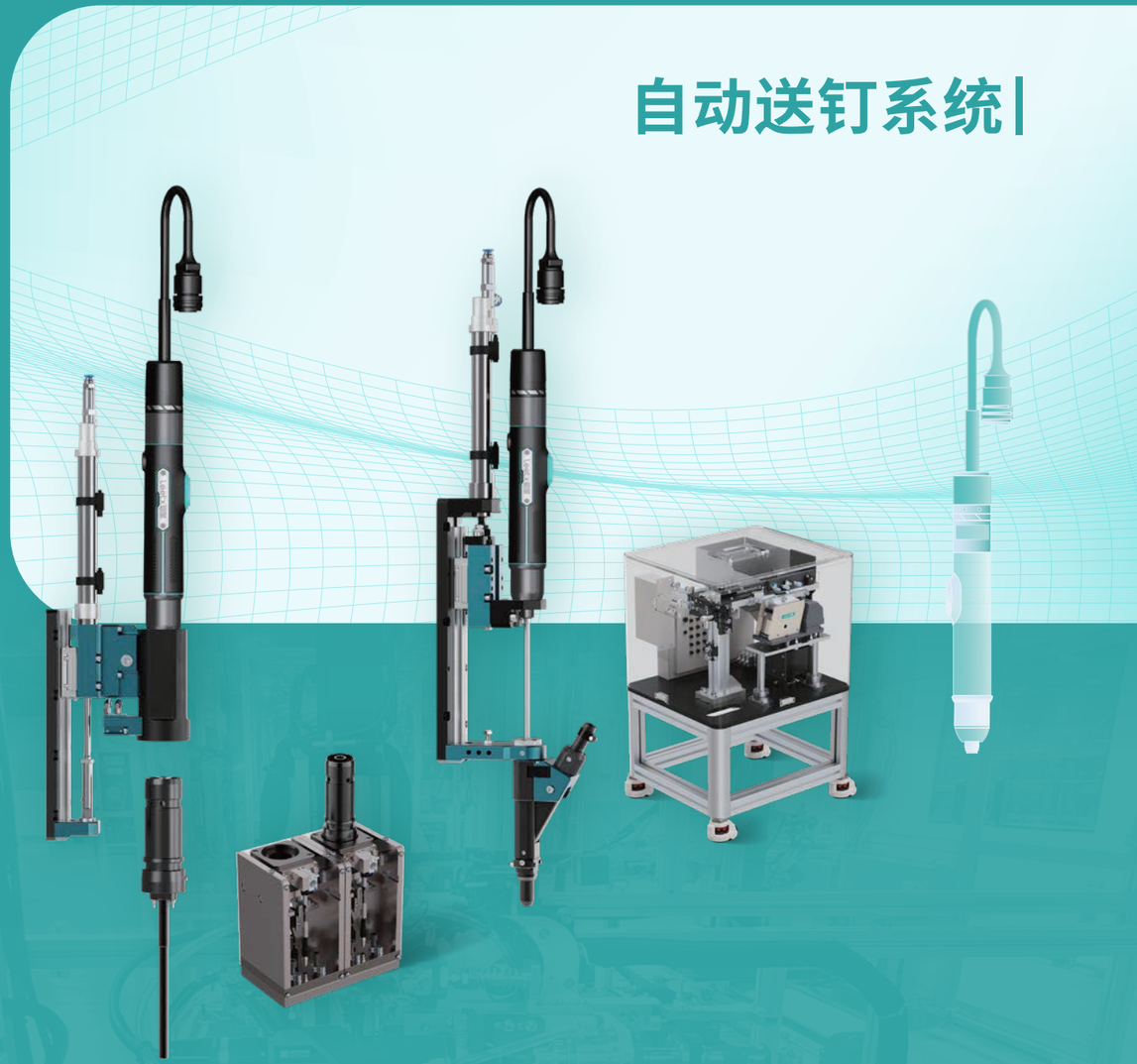
AUTOMATIC SCREW FEEDING SYSTEM

自动送钉系统

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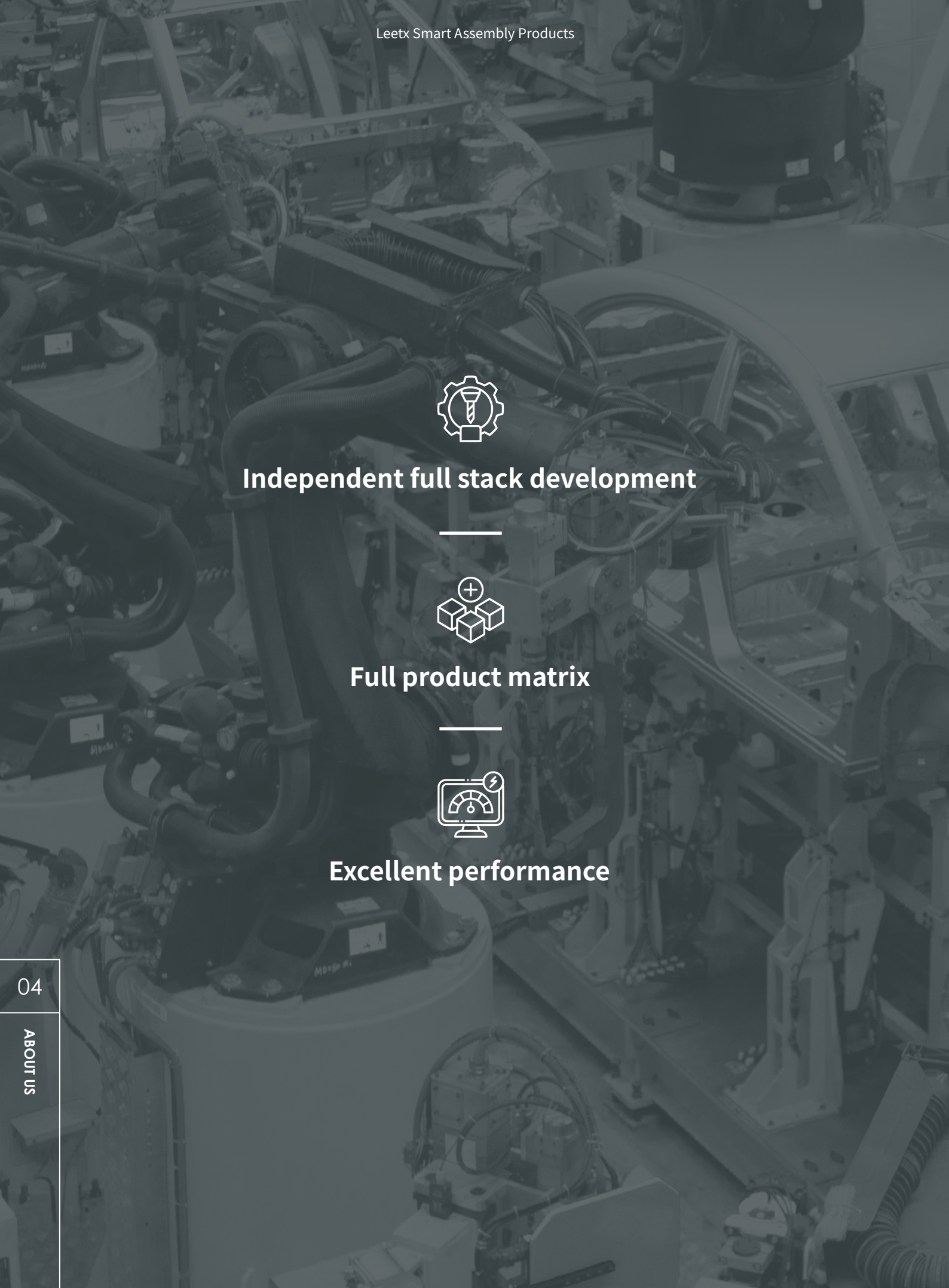


Independent full stack development

Full product matrix

Excellent performance

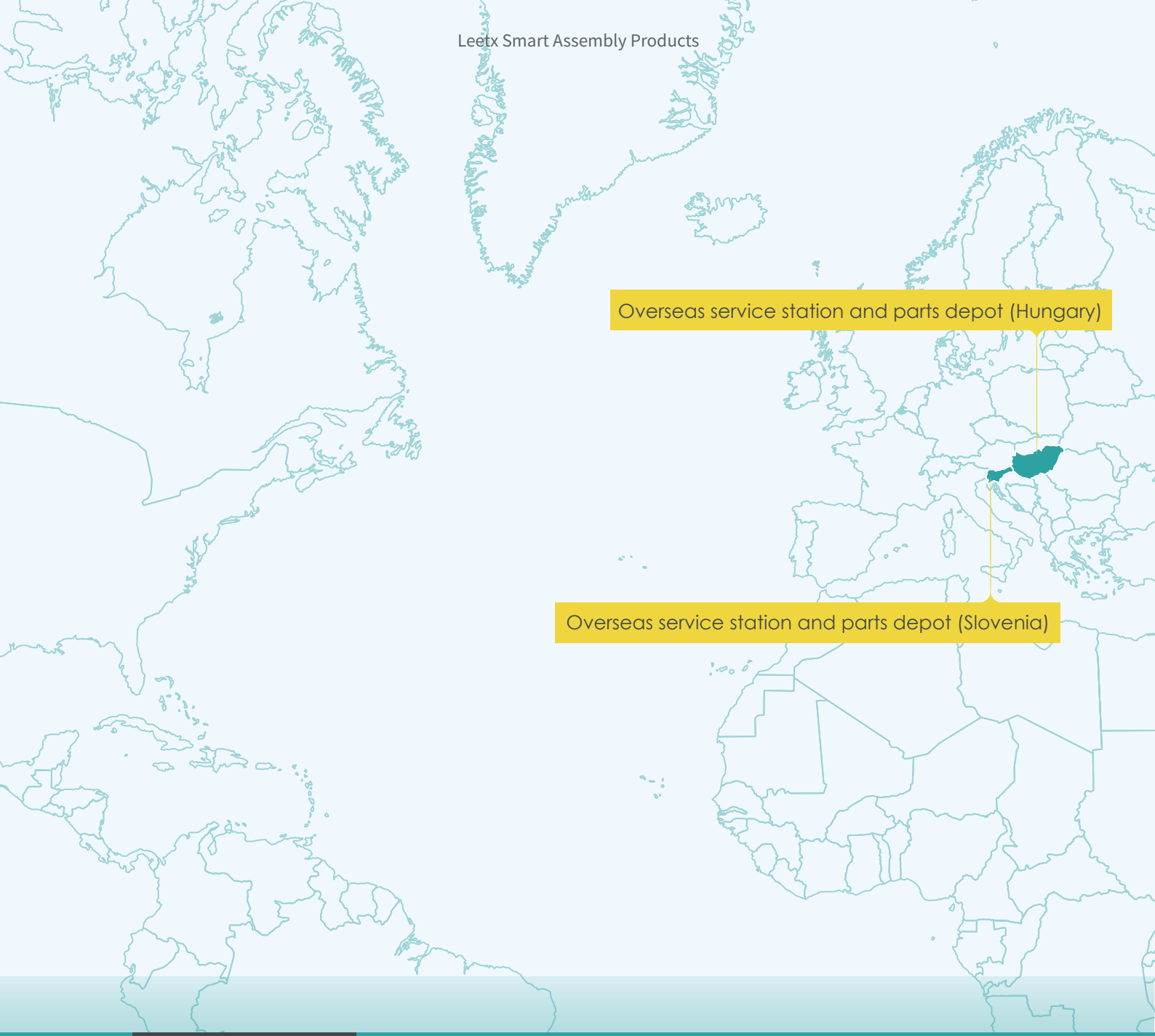
ABOUT US

Leetx®

Premium smart assembly product manufacturer

Leetx® is a company specializing in the development, production, and sales of smart assembly products.

We offer transducerized tightening system, automatic screw feeding system, and servo press system to the market. Our end users including EV battery, E-motor, NEV, automobile tiers, consumer electronics, rolling stock, aerospace, off-road machinery, medical, etc.



Core Technology

Independent full stack development

Forward development and technological platformization. Breakthroughs in application development technology are achieved by mastering the underlying logic and establishing a novel technology platform that caters to both embedded systems and upper computers.

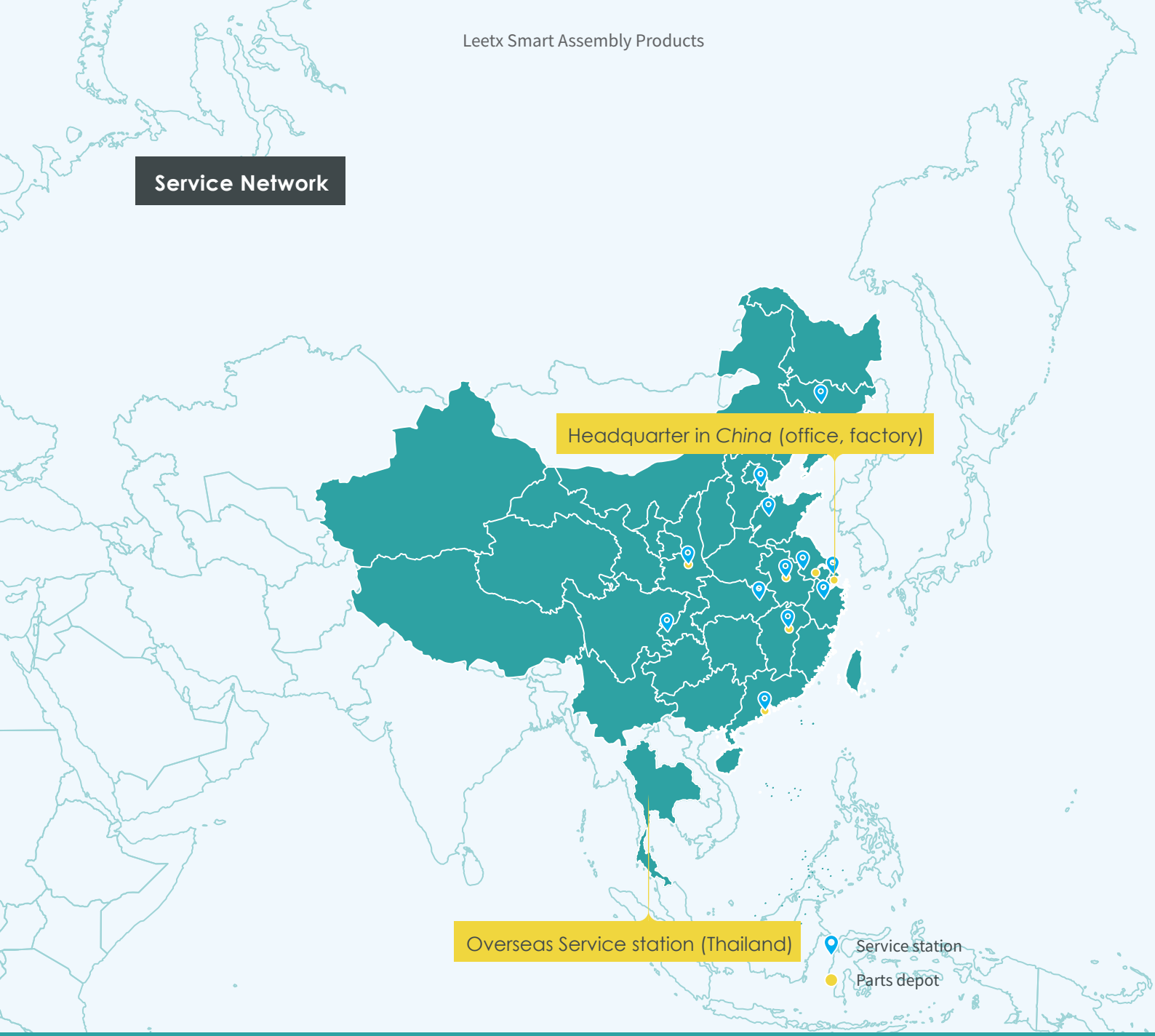
Product synergy

With full product matrix, we offer solutions for transducerized tightening system, automatic screw feeding system, and servo press system, to maximize the synergistic effect of each product line, adapting to a variety of application scenarios and meeting the development demands of the high-end smart assembly requirement.

Team Innovation Driven

We are committed to advancing the smart assembly sector, consistently enhancing the assembly level of manufacturing industry. Refusing to settle for mediocrity, we embrace the entrepreneurial spirit, and based on the development of the assembly industry, we deliver exceptional results for our customers.

Service Network

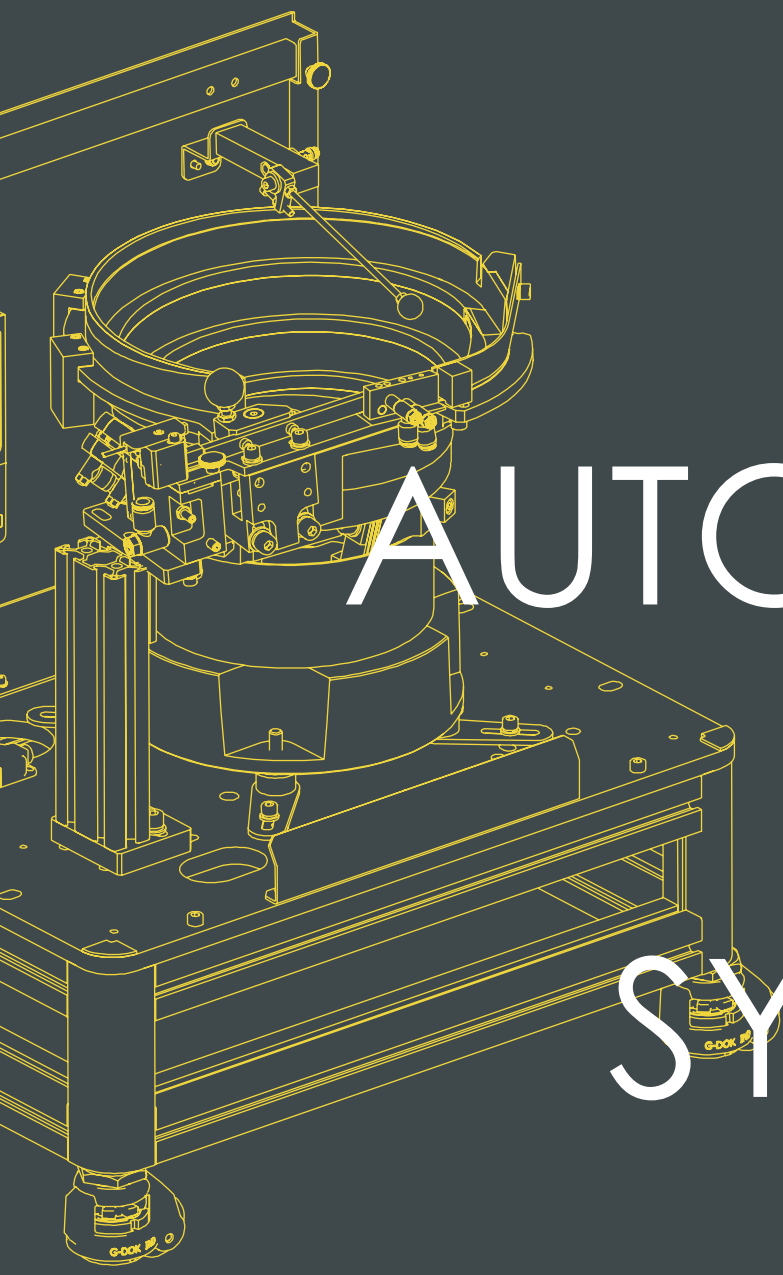


60+
service engineers

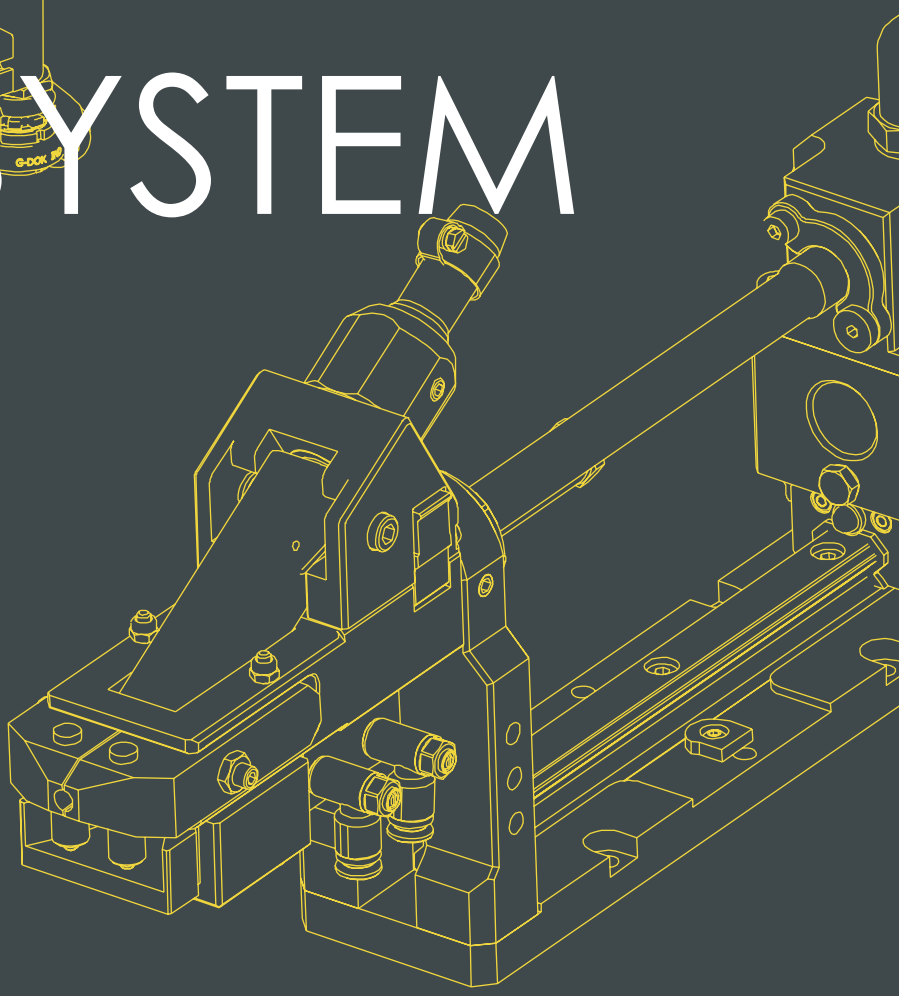
12
regional service centers
Shanghai/Shenzhen/Changchun/Wuhan/Chongqing/Xi' an/Jinan/Hefei/Fuzhou/Ningbo/Nanjing/Tianjin

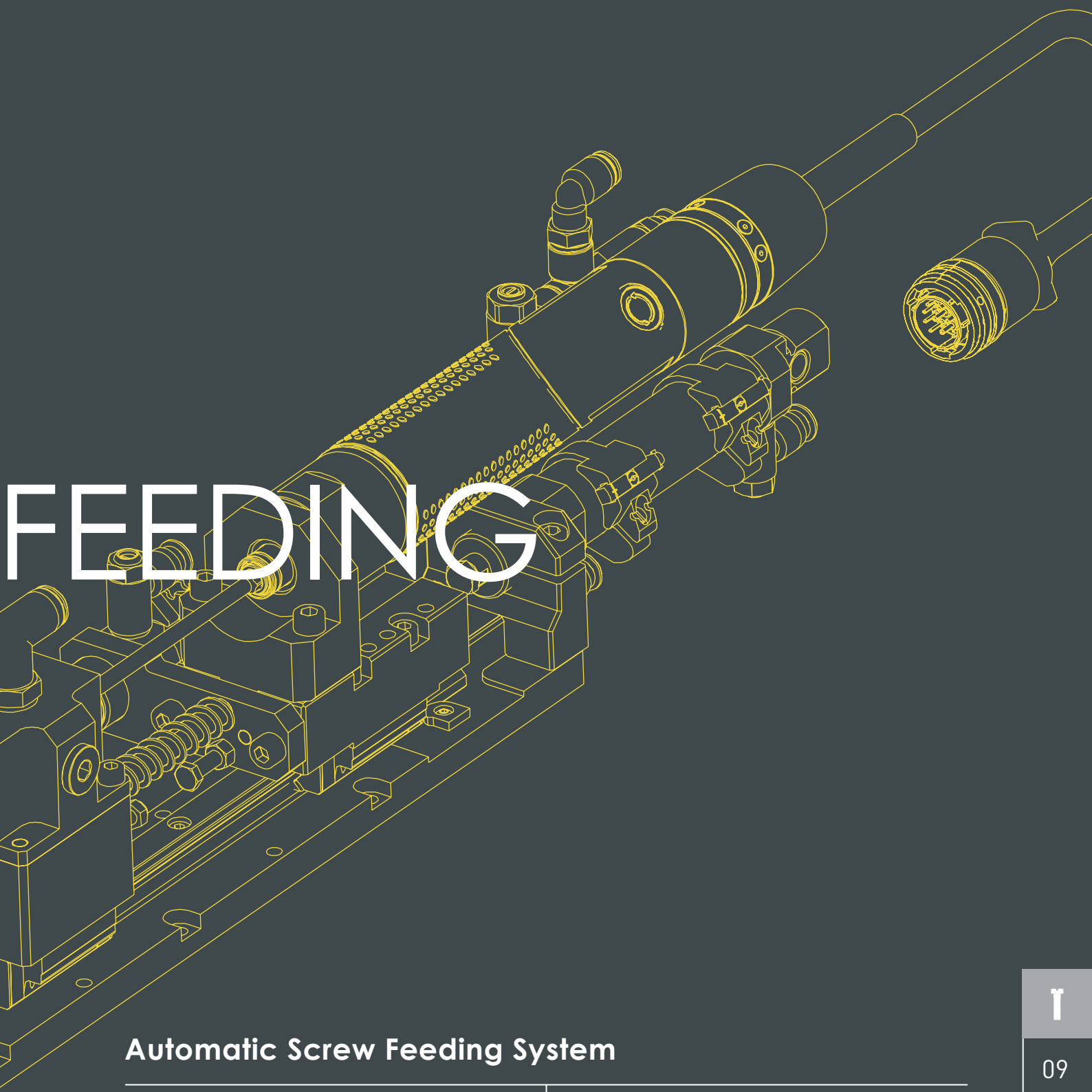
7
parts depots
- China
Shanghai/Wuxi/Xi' an/Shenzhen/Hefei/Fuzhou
- Hungary

Response time
Field support within **24** hours
Phone support within 2 hours



AUTOMATIC SCREW SYSTEM





FEEDING

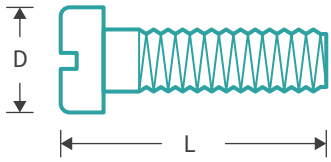
Automatic Screw Feeding System

Automatic transfer screws from storage position to tightening position without manual operation.

- Adapt to the automation needs of different scenarios
- Automatic screw feeding and tightening

Feedability Analysis

$$\text{L/D ratio} = \frac{L}{D}$$



* “D” represents the diameter of the washer for the combination screw.

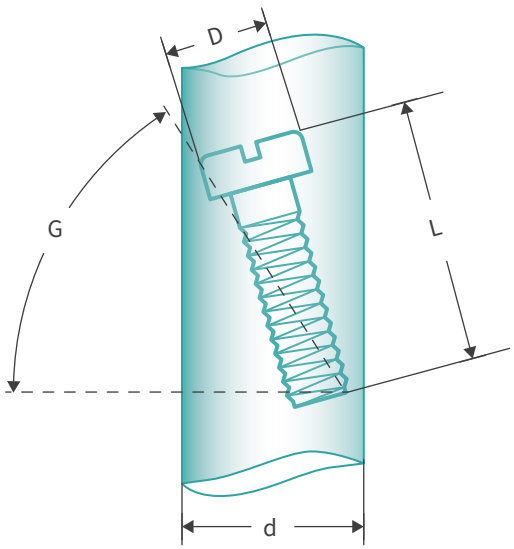
① Taking a screw as an example, the ratio of the screw length L to the diameter D is the L/D ratio. Blow feeding is allowed when L/D ratio is not less than 1.2;

② When the L/D ratio is less than 1.2, it is necessary to evaluate the passing angle G to determine if blow feeding is available.

Passing angle

The passing angle G of the screw in the feeding tube is calculated according to the screw specifications and the inner diameter of the feeding tube. Blow feeding is allowed when the passing angle is not less than 35 degrees;

Please confirm with LEETX engineers if blow feeding is possible when the L/D ratio is less than 1.2 and passing angle G is less than 35 degrees.



Tightening interference

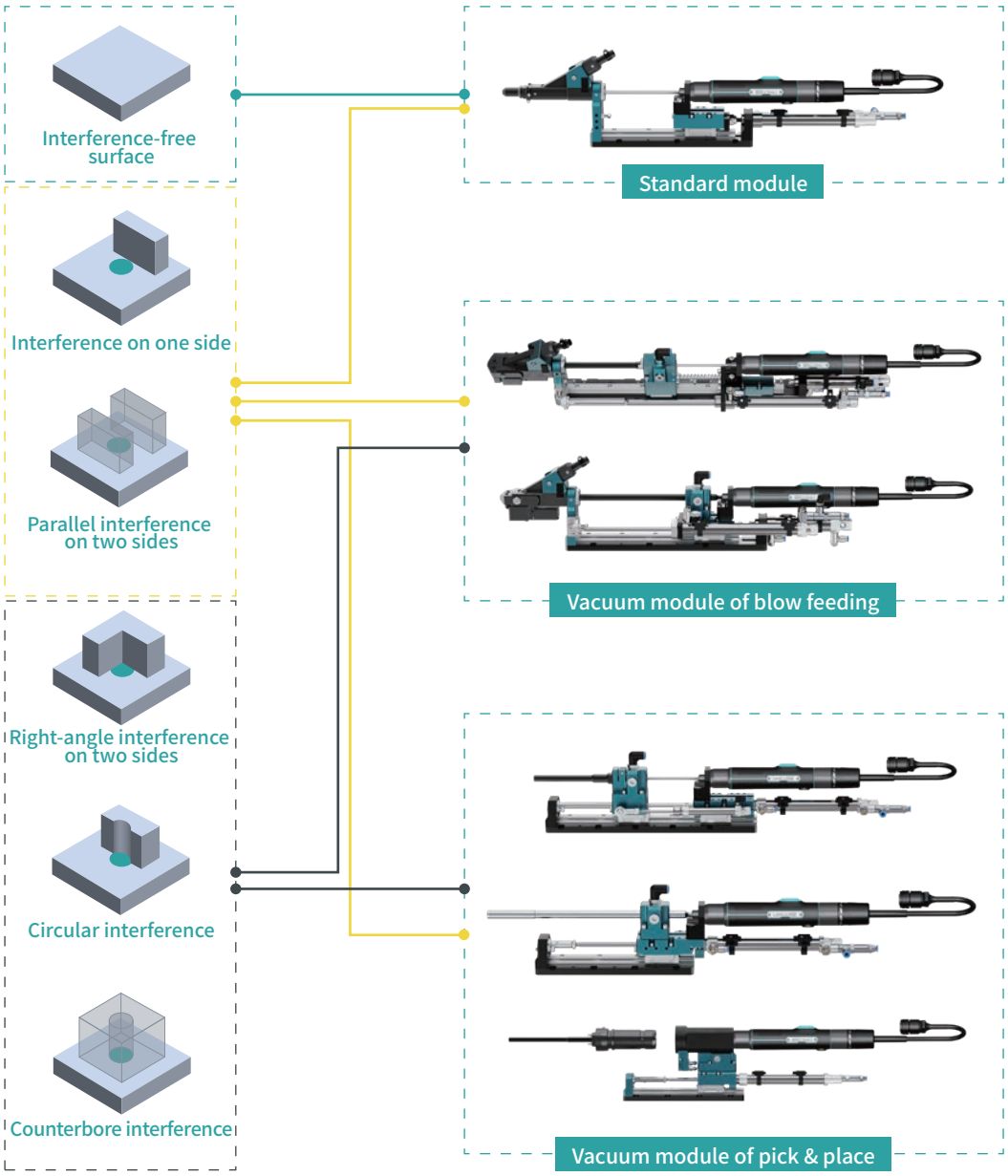
When the tightening position is very close to the workpiece, the jaws is liable to collide with the workpiece, causing tightening interference.

- In product design, it is necessary to consider locate the tightening position in an area without interference as much as possible.
- Pay attention to the space.
- Change assembly sequence.
- Change the attitude of the workpiece during assembly.

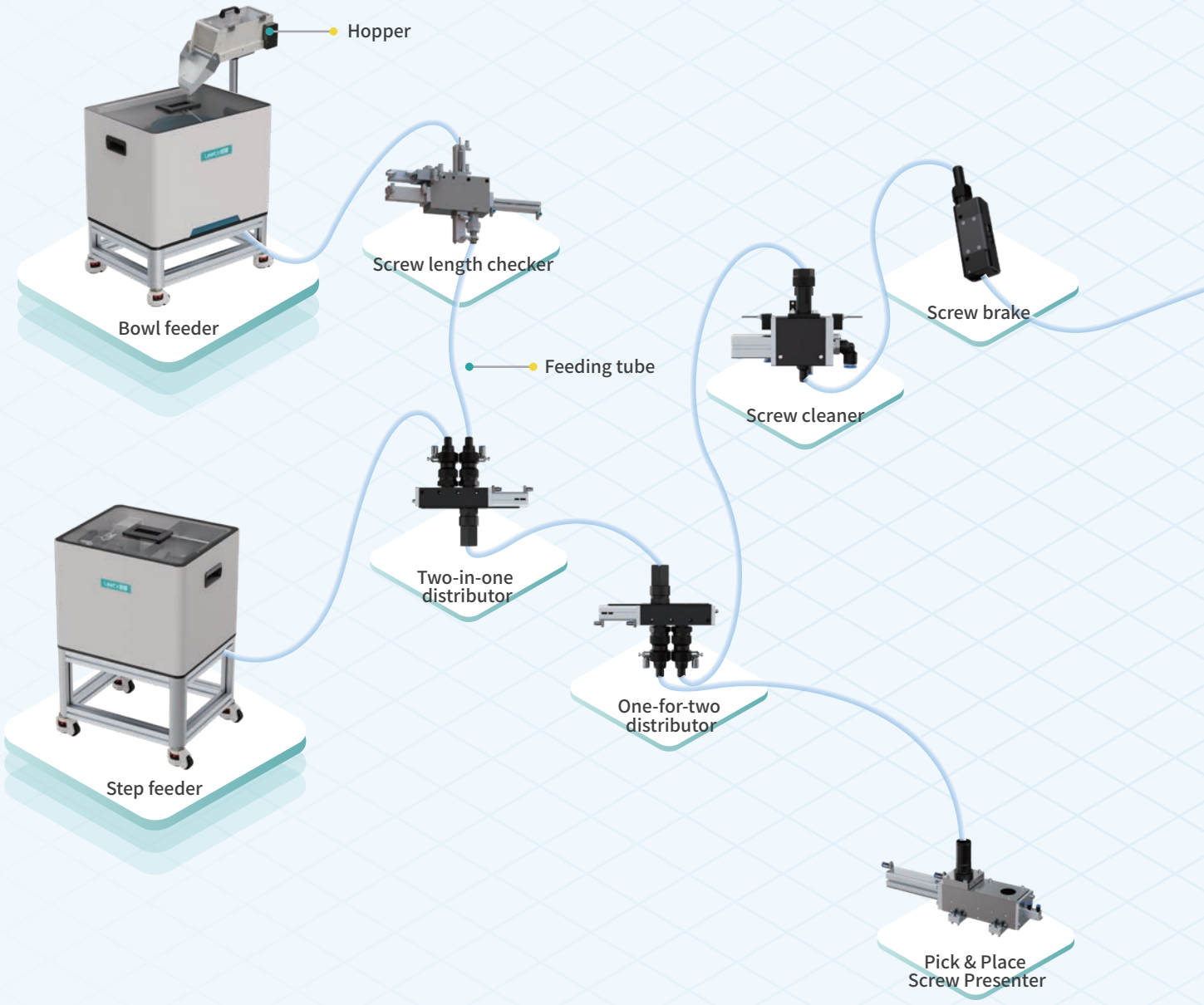
Feeding complexity

Interference-free < Interference on one side ⩽Interference on multiple sides ⩽Counterbore interference

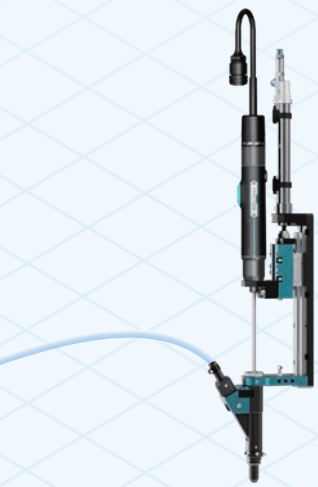
For specific feedability analysis, detailed measures and plans shall be formulated after evaluation based on actual application. Please feel free to contact the technical personnel.



Composition of automatic screw feeding system



Blow feeding module



ASG Standard Module
(Blowing)

AIV-AT Inner Drive Vacuum Module
(Blowing+Suction+Actively Opening)

AOV Outer Drive Vaccum Module
(Blowing+Suction+Searching)

AHB Handheld Standard Module

AHV Handheld Vacuum Module

Pick & place Module

APP Standard Module
(Pick & Place)

APPQ Quick-Exchange Module
(Quick-Exchanging pick & place)

AHP Standard Module

AHPQ Quick-Exchange Handhold Module

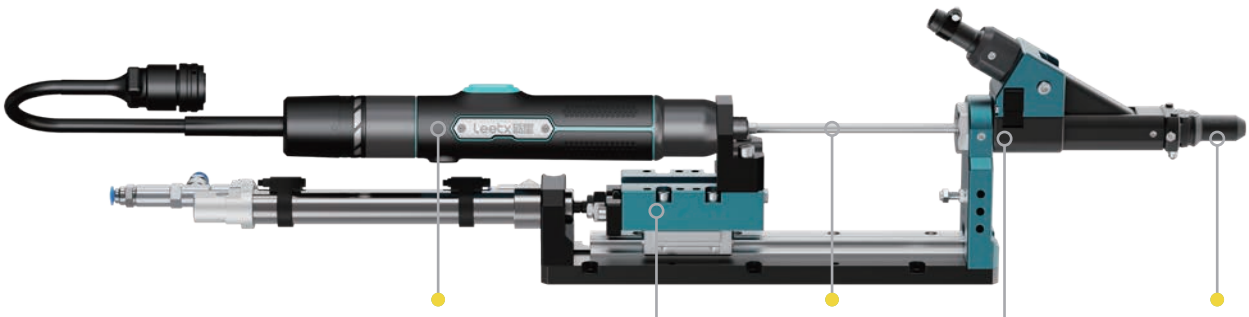
Tightening module

ASG Series - Standard Tightening Module

ASG series module – blow feeding the screw into the jaws for tightening.

Applications:

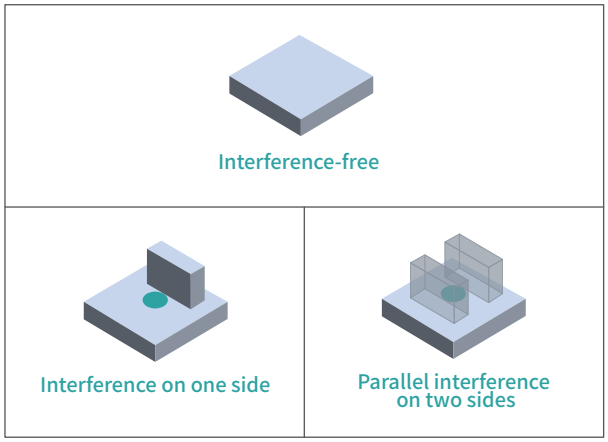
Phillips | Inner Hex | Inner Torx | Inner Double-Torx | Outer Hex Flange | Outer Torx Flange | Outer Hex



Features

- Compactable Length
- Comprehensive screw guidance
  High stability
- High automation level and short cycle time
  Quick tightening
- Lightweight, easy to install on cylinders/actuators/servos/multi-axis robots
- Small center distance

Application condition of ASG series



The jaws in the module serves as a buffer mechanism for the screw, which opens in both directions of movement in the tightening process to eject the screw. Therefore, sufficient space is required to avoid mechanical interference.

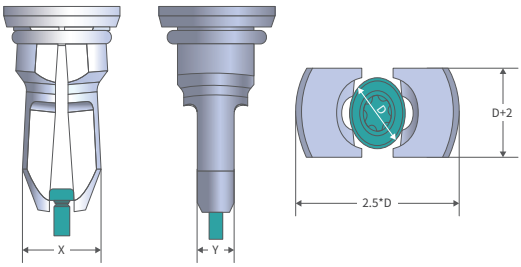
- Required space size for movement direction: X ⩾Screw (washer) D*2.5;
- Required space size for other direction: Y ⩾Screw (washer) D+2.

Optimal surface

- Clear and interference-free area 2.5D from tightening center.
- The tightening system does not require consideration of avoidance.

Interference on one side

- Avoidance through extended design of the jaws.
- Avoidance through a specific angle.



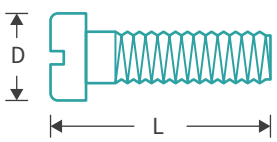
Product model description and selection

ASG - S/M/L/X - SA - PA

ASG Standard Series | Size | Swivelling arm | Passive jaws

ASG Series Model Specifications Table

Series Model	Maximum Screw Diameter (mm)	Length-to-Diameter Ratio (L/D)
ASG-S-SA-PA	7	Length-to-Diameter Ratio＞1.2
ASG-M-SA-PA	11	
ASG-L-SA-PA	14	
ASG-X-SA-PA	23	



Selection Guide

The Leetx Automatic Screw Feeder Model Selection consists of two parts: application description and series model. The application description and model description are connected by the symbol "+" to form a complete model selection. The application description consists of: screw type - drive head - screw specification. The series model can be determined based

Selection Example

Application Description	Series Model	Selection Result
Pan Head - Inner Torx - M3	ASG-S-SA-PA	Pan Head - Inner Torx - M3+ASG-S-SA-PA
Pan Head Combo - Phillips - M5	ASG-M-SA-PA	Pan Head Combo - Phillips - M5+ASG-M-SA-PA
Outer Drive Large Flange Outer Hex - M8	ASG-X-SA-PA	Outer Drive Large Flange Outer Hex - M8+ASG-X-SA-PA

Quick Selection Guide for Common Screw of ASG Series: Inner Drive

Screw Type	Drive Head	Screw Specification	Maximum Diameter (mm)	Standard Product Coverage		Series Model
				Mini. L (mm)	Max. L (mm)	
Pan Head 	Inner Torx, Phillips	M2.5	5	6	20	ASG-S-SA-PA
		M3	5.6	6	25	
		M4	8	8	25	ASG-M-SA-PA
		M5	9.5	10	30	
		M6	12	12	35	ASG-L-SA-PA
		M8	16	12	45	ASG-X-SA-PA
		M10	20	16	55	
		M12	24	16	60	
Cylindrical Head 	Inner Torx, Inner Hex	M2.5	4.5	5	20	ASG-S-SA-PA
		M3	5.5	5	20	
		M4	7	6	20	
		M5	8.5	8	25	ASG-M-SA-PA
		M6	10	10	30	
		M8	13	12	30	ASG-L-SA-PA
		M10	16	16	30	ASG-X-SA-PA
		M12	18	20	50	
Pan Head Combo 	Inner Torx, Inner Hex, Phillips	M3	7	8	35	ASG-S-SA-PA
		M4	9	10	40	ASG-M-SA-PA
		M5	10	12	40	
		M6	12	14	35	ASG-L-SA-PA
Cylindrical Head Combo 	Inner Torx, Inner Hex	M4	9	8	40	ASG-M-SA-PA
		M5	10	10	30	
		M6	12	12	25	ASG-L-SA-PA
		M8	16	14	25	ASG-X-SA-PA
Flat Round Head 	Inner Torx, Inner Hex, Phillips	M4	9.4	12	40	ASG-M-SA-PA
		M5	11.8	16	45	ASG-L-SA-PA
		M6	13.6	16	50	
		M8	17.8	20	60	ASG-X-SA-PA
		M10	21.9	25	70	
Round Head Self-Tapping 	Inner Torx, Inner Hex, Phillips	PT25	5.5	9.5	19	ASG-S-SA-PA
		PT30	6.5	9.5	19	
		PT35	7.5	13	25	ASG-M-SA-PA
		PT40	9	13	32	
		PT45	10	13	38	
		PT50	11	13	38	
		PT60	13.5	16	38	ASG-L-SA-PA

Quick Selection Guide for Common Screw of ASG Series: Outer Drive

Screw Type	Drive Head	Screw Specification	Maximum Diameter (mm)	Standard Product Coverage		Series Model
				Mini. L (mm)	Max. L (mm)	
Outer Drive 	Outer Hex, Outer Torx	M4	8.1	11	32	ASG-M-SA-PA
		M5	9.2	11	31	
		M6	11.5	13	42	ASG-L-SA-PA
		M8	15	17	52	ASG-X-SA-PA
		M10	18.5	18	54	
Outer Drive Flange 	Outer Hex, Outer Torx	M5	11.4	10	42	ASG-L-SA-PA
		M6	13.6	12	42	
		M8	17	13	56	ASG-X-SA-PA
		M10	20.8	15	56	
Outer Drive Large Flange 	Outer Hex, Outer Torx	M5	11.8	12	42	ASG-L-SA-PA
		M6	14.2	12	41	ASG-X-SA-PA
		M8	18	15	57	
		M10	22.3	17	58	
Outer Drive Combo 	Outer Hex, Outer Torx	M3	7	9	27	ASG-S-SA-PA
		M4	9	11	25	ASG-M-SA-PA
		M5	10	12	36	
		M6	12	14	28	ASG-L-SA-PA
		M8	16	18	28	ASG-X-SA-PA
		M10	20	22	30	

AIV-AT Series-Inner Drive Vacuum Tightening Module

AIV-AT series module - The screw is fed into the jaws, sucked by the vacuum tube assembly and then delivered to the workpiece surface for tightening.

AIV-AT is a special module for inner drive screws.

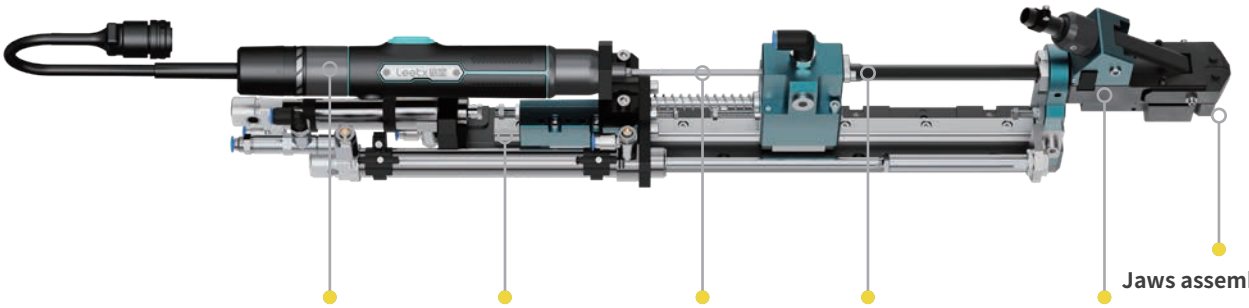
Applications:


Phillips


Inner Hex


Inner Torx


Inner Double-Torx



Tightening Tool

Stroke assembly
With fall prevention function

Bit assembly
Integrated bit

Vacuum tube assembly
The diameter of the vacuum tube can be consistent with the diameter of the screw head to adapt to complex tightening environments.

Jaws assembly

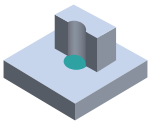
Head assembly
200-degree rotation, adapting to different installation interference
Quick nozzle release.

Features

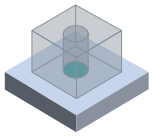
- Wide applications
- Suction detection
- Adjustable down force
- "0" Wall Thickness Vacuum Tube, the diameter of the vacuum tube can be consistent with the diameter of the screw head to adapt to complex tightening environments. adapt to complex tightening environments.

Application condition of AIV-AT series

Right-angle interference on two sides



Circular interference



Counterbore interference

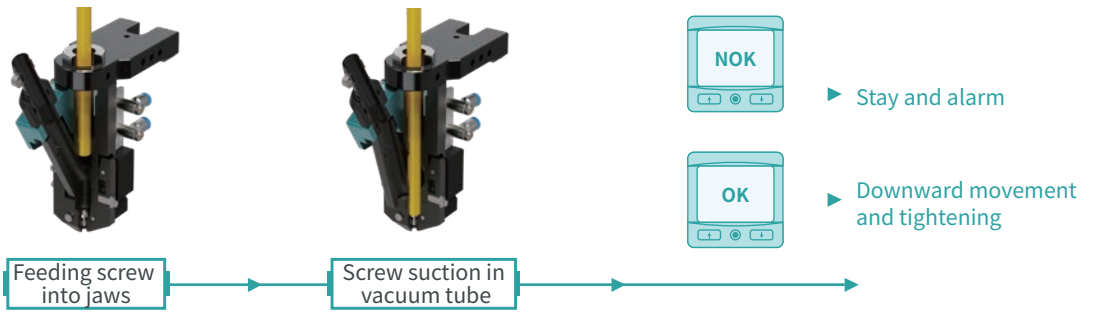
Interference on multiple sides

- 90° Right-angle interference on two sides
- 180° Circular interference
- 360°Counterbore interference

AIV-AT suction detection

Working principle

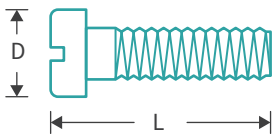
The suction condition is detected when vacuum tube picks up screws;
During the screw suction of the vacuum tube, vacuum is present inside the tube, and vacuum sensor checking the status during the process.
If the vacuum reached the threshold, the jaws open and vacuum tube hold the screw to the workpiece for tightening; otherwise, system alarm after certain time.



Product model description and selection

AIV Series Model Specifications Table		
Series Model	Maximum Screw Diameter (mm)	Length-to-Diameter Ratio (L/D)
AIV-M-SA-AT-XX	11	Length-to-Diameter Ratio> 1.2
AIV-L-SA-AT-XX	14	
AIV-X-SA-AT-XX	23	

The "XX" suffix indicates the vacuum stick-out length (mm)
50
100
150



Selection Guide

The Leetx Automatic Screw Feeder Model Selection consists of two parts: application description and series model. The application description and model description are connected by the symbol "+" to form a complete model selection.
The application description consists of: screw type - drive head - screw specification. The series model can be determined based on the model specifications table (or quick selection table).

Selection Example

Application Description	Series Model	Selection Result
Pan Head - Inner Torx - M3	AIV-M-SA-AT-XX	Pan Head - Inner Torx - M3+AIV-M-SA-AT-100
Pan Head Combo - Inner Hex - M6	AIV-L-SA-AT-XX	Pan Head Combo - Inner Hex - M6+AIV-L-SA-AT-150

Quick Selection Guide for Common Screw of AIV Series: Inner Drive

Screw Type	Drive Head	Screw Specification	Maximum Diameter (mm)	Standard Product Coverage		Series Model
				Mini. L (mm)	Max. L (mm)	
Pan Head	Inner Torx, Phillips	M2.5	5	6	20	AIV-M-SA-AT-XX
		M3	5.6	6	25	
		M4	8	8	25	
		M5	9.5	10	30	
		M6	12	12	35	AIV-L-SA-AT-XX
		M8	16	12	45	AIV-X-SA-AT-XX
		M10	20	16	55	
		M12	24	16	60	
Cylindrical Head	Inner Torx, Inner Hex	M2.5	4.5	5	20	AIV-M-SA-AT-XX
		M3	5.5	5	20	
		M4	7	6	20	
		M5	8.5	8	25	
		M6	10	10	30	AIV-L-SA-AT-XX
		M8	13	12	30	AIV-X-SA-AT-XX
		M10	16	16	30	
		M12	18	20	50	
Pan Head Combo	Inner Torx, Inner Hex, Phillips	M3	7	8	35	AIV-M-SA-AT-XX
		M4	9	10	40	
		M5	10	12	40	
		M6	12	14	35	AIV-L-SA-AT-XX
Cylindrical Head Combo	Inner Torx, Inner Hex	M4	9	8	40	AIV-M-SA-AT-XX
		M5	10	10	30	
		M6	12	12	25	AIV-L-SA-AT-XX
		M8	16	14	25	AIV-X-SA-AT-XX
Flat Round Head	Inner Torx, Inner Hex, Phillips	M4	9.4	12	30	AIV-M-SA-AT-XX
		M5	11.8	16	45	AIV-L-SA-AT-XX
		M6	13.6	16	50	
		M8	17.8	20	60	AIV-X-SA-AT-XX
		M10	21.9	25	70	
Round Head Self-Tapping	Inner Torx, Inner Hex, Phillips	PT25	5.5	9.5	19	AIV-M-SA-AT-XX
		PT30	6.5	9.5	19	
		PT35	7.5	13	25	
		PT40	9	13	32	
		PT45	10	13	32	
		PT50	11	13	32	
		PT60	13.5	16	38	AIV-L-SA-AT-XX

AOV Series - Outer Drive Vacuum Tightening Module

AOV series module - The screw is fed into the jaws, aligned properly before being sucked by the vacuum socket, and then delivered to the surface of the workpiece for tightening.

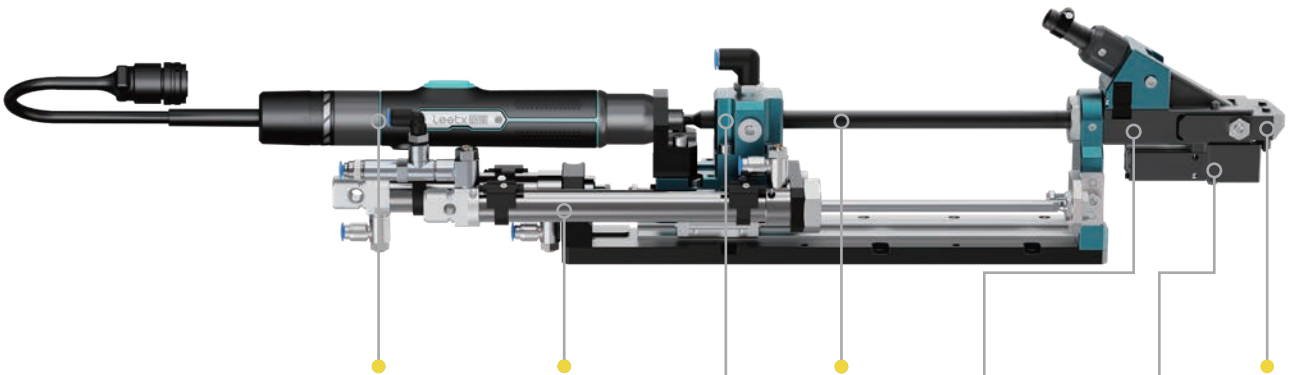
The AOV series is a special actuator for outer drive screws.

Applications:


Outer Hex Flange


Outer Torx Flange


Outer Hex



Tightening Tool

Stroke assembly
With fall prevention function

Vacuum socket assembly

Jaws assembly

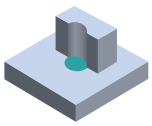
Vacuum seat
The floating design before the socket and the vacuum seat allows for floating under an external force, and automatic return to the center position after unstressing; It can adapt to a certain amount of eccentricity in hole entry and tightening.

Head assembly
200-degree rotation, adapting to different installation interference
Quick nozzle release

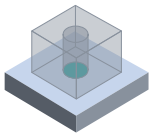
Jaws lock assembly
During search sequence, the screw can be clamped to create a speed difference between the socket and the screw for searchig sequence

Application condition of AOV series

Right-angle interference on two sides



Circular interference



Counterbore interference

Interference on multiple sides

- 90° Right-angle interference on two sides
- 180° Circular interference
- 360°Counterbore interference

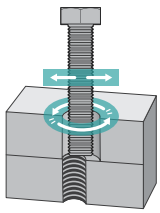
Features

Vacuum socket floating design

The vacuum socket is supported and positioned by a double floating combination socket, which can deflect under external force and automatically return to the center after unstressing.

This design can achieve:

- Increased success rate of searching sequence of vacuum socket and reduced search time
- higher success rate of hole entry when the screw and hole are eccentric
- reduced additional torque caused by eccentricity between the screw and the hole



Eccentric tightening

Product model description and selection

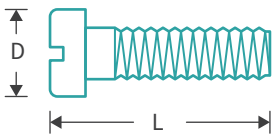
AOV - M/L/X - SA - PA - XX

- AOV: AOV Outer Drive Vacuum Module
- M/L/X: Size
- SA: Swivelling Arm
- PA: Passive Opening Jaws
- XX: Vacuum Stick-out Length

AOV Series Model Specifications Table

Series Model	Maximum Screw Diameter (mm)	Length-to-Diameter Ratio (L/D)
AOV-M-SA-PA-XX	11	Length-to-Diameter Ratio > 1.2
AOV-L-SA-PA-XX	14	
AOV-X-SA-PA-XX	23	

The "XX" suffix indicates the vacuum stick-out length (mm)
50
100
150



Selection Guide

The Leetx Automatic Screw Feeder Model Selection consists of two parts: application description and series model. The application description and model description are connected by the symbol "+" to form a complete model selection. The application description consists of: screw type - drive head - screw specification. The series model can be determined based on the model specifications table (or quick selection table).

Selection Example

Application Description	Series Model	Selection Result
Outer Drive Flange - Outer Hex- M6	AOV-L-SA-PA-XX	Outer Drive Flange - Outer Hex - M6+AOV-L-SA-PA-50
Outer Drive Combo - Outer Torx - M8	AOV-X-SA-PA-XX	Outer Drive Combo - Outer Torx - M8+AOV-X-SA-PA-100

Quick Selection Guide for Common Screw of AOV Series: Outer Drive

Screw Type	Drive Head	Screw Specification	Maximum Diameter (mm)	Standard Product Coverage		Series Model
				Mini. L (mm)	Max. L (mm)	
Outer Drive 	Outer Hex, Outer Torx	M4	8.1	11	32	AOV-M-SA-PA-XX
		M5	9.2	11	31	
		M6	11.5	13	42	AOV-L-SA-PA-XX
		M8	15	17	52	AOV-X-SA-PA-XX
		M10	18.5	18	54	
Outer Drive Flange 	Outer Hex, Outer Torx	M5	11.4	10	42	AOV-L-SA-PA-XX
		M6	13.6	12	42	
		M8	17	13	56	AOV-X-SA-PA-XX
		M10	20.8	15	56	
Outer Drive Large Flange 	Outer Hex, Outer Torx	M5	11.8	12	42	AOV-L-SA-PA-XX
		M6	14.2	12	41	AOV-X-SA-PA-XX
		M8	18	15	57	
		M10	22.3	17	58	
Outer Drive Combo 	Outer Hex, Outer Torx	M3	7	9	27	AOV-M-SA-PA-XX
		M4	9	11	25	
		M5	10	12	36	
		M6	12	14	28	AOV-L-SA-PA-XX
		M8	16	18	28	AOV-X-SA-PA-XX
		M10	20	22	30	

APP Series - Picking&Place Tightening Module

APP series module - vacuum suction of screws and nuts to specific positions through vacuum tubes.

- Pick & place vacuum module to pick screws that cannot be fed
- Low cost of use
- Suitable for wide range of screw specifications
- Catering to multiple interference conditions

APP-I Inner drive pick & place vacuum module

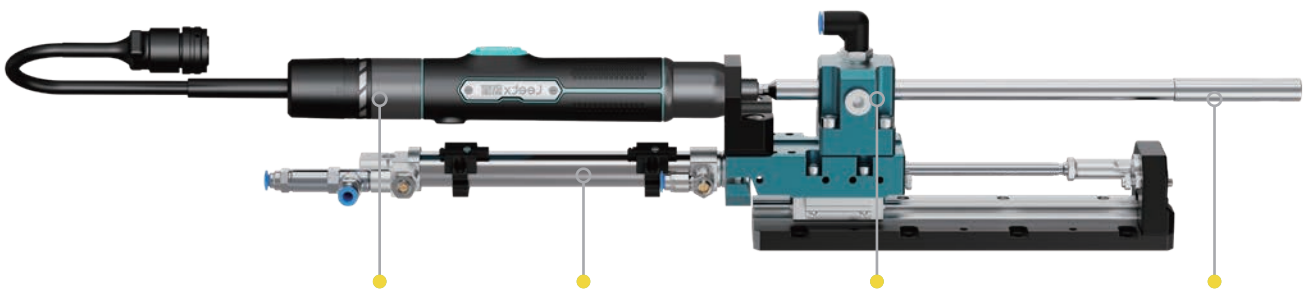
Tightening Tool

Stroke assembly
With fall prevention function

Bit assembly

Vacuum tube assembly

APP-O Outer drive pick & place vacuum module



Tightening Tool

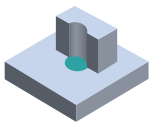
Stroke assembly
With fall prevention function

Vacuum seat
The floating design before the socket and the vacuum seat allows for floating under an external force, and automatic return to the center position after unstressing; It can adapt to a certain amount of eccentricity in hole entry and tightening.

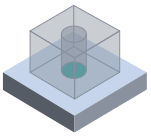
Socket assembly

Application condition of APP series

Right-angle interference on two sides



Circular interference



Counterbore interference

Interference on multiple sides

- 90° Right-angle interference on two sides
- 180° Circular interference
- 360°Counterbore interference

- Picking on dispenser
- Refilling position should be considered

- Picking on Pick & Place Screw Presenter
- Small footprint

- Picking at the end of linear track
- Large screws or nut not feedable by tube

Product model description and selection

APP - S/M/X - I/O - (C) - XX

APP	S/M/X	I/O	(C)	XX
APP Pick & Place Vacuum Module	Size	I: inner drive O: outer drive	Specific for Re-tightening	Vacuum Stick-out Length (Working Position)

APP Series Model Specifications Table

Series Model	Screw Specification
APP-S-I/O-(C)-XX	⩽ M2.5
APP-M-I/O-(C)-XX	M3 - M6
APP-X-I/O-(C)-XX	⩾ M8

The "XX" suffix indicates the vacuum stick-out length (mm)
50
100
150

Selection Guide

The Leetx Automatic Screw Feeder Model Selection consists of two parts: application description and series model. The application description and model description are connected by the symbol "+" to form a complete model selection. The application description consists of: screw type - drive head - screw specification. The series model can be determined based on the model specifications table (or quick selection table).

Selection Example

Application Description	Series Model	Selection Result
Pan Head - Inner Torx - M2.5	APP-S-I-XX	Pan Head - Inner Torx- M2.5+APP-S-I-50
Outer Drive Combo - Outer Torx-M8	APP-X-O-C-XX	Outer Drive Combo - Outer Torx-M8+APP-X-O-C-100 (Specific for Re-tightening)

Original Stick-out Length
(when picking screws)

Working Position Stick-out Length
(when tightening screws)

Original Stick-out Length (when picking screws)	Working Position Stick-out Length (when tightening screws)
I: inner drive	
15	50
20	100
70	150

Original Stick-out Length (when picking screws)	Working Position Stick-out Length (when tightening screws)
O: outer drive	
0	50
20	100
70	150

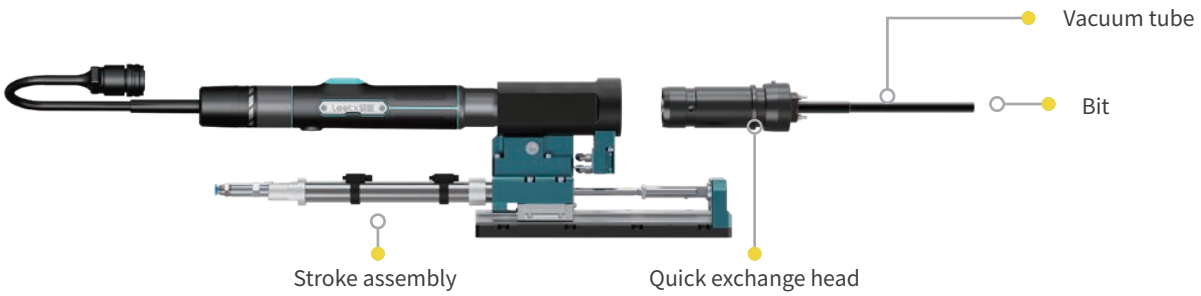
Quick Selection Guide for Common Screw of APP Series: Inner Drive

Screw Type	Drive Head	Screw Specification	Series Model
Pan Head 	Inner Torx, Phillips	M2.5	APP-S-I-(C)-XX
		M3	APP-M-I-(C)-XX
		M4	APP-M-I-(C)-XX
		M5	APP-M-I-(C)-XX
		M6	APP-M-I-(C)-XX
		M8	APP-X-I-(C)-XX
		M10	APP-X-I-(C)-XX
		M12	APP-X-I-(C)-XX
Cylindrical Head 	Inner Torx, Inner Hex	M2.5	APP-S-I-(C)-XX
		M3	APP-M-I-(C)-XX
		M4	APP-M-I-(C)-XX
		M5	APP-M-I-(C)-XX
		M6	APP-M-I-(C)-XX
		M8	APP-X-I-(C)-XX
		M10	APP-X-I-(C)-XX
		M12	APP-X-I-(C)-XX
Pan Head Combo 	Inner Torx, Inner Hex, Phillips	M3	APP-M-I-(C)-XX
		M4	APP-M-I-(C)-XX
		M5	APP-M-I-(C)-XX
		M6	APP-M-I-(C)-XX
Cylindrical Head Combo 	Inner Torx, Inner Hex	M4	APP-M-I-(C)-XX
		M5	APP-M-I-(C)-XX
		M6	APP-M-I-(C)-XX
		M8	APP-M-I-(C)-XX
Flat Round Head 	Inner Torx, Inner Hex, Phillips	M4	APP-M-I-(C)-XX
		M5	APP-M-I-(C)-XX
		M6	APP-M-I-(C)-XX
		M8	APP-X-I-(C)-XX
		M10	APP-X-I-(C)-XX
Round Head Self-Tapping 	Inner Torx, Inner Hex, Phillips	PT25	APP-S-I-(C)-XX
		PT30	APP-M-I-(C)-XX
		PT35	APP-M-I-(C)-XX
		PT40	APP-M-I-(C)-XX
		PT45	APP-M-I-(C)-XX
		PT50	APP-M-I-(C)-XX
		PT60	APP-M-I-(C)-XX

Quick Selection Guide for Common Screw of APP Series: Outer Drive			
Screw Type	Drive Head	Screw Specification	Series Model
Outer Drive 	Outer Hex, Outer Torx	M4	APP-M-O-(C)-XX
		M5	APP-M-O-(C)-XX
		M6	APP-M-O-(C)-XX
		M8	APP-X-O-(C)-XX
		M10	APP-X-O-(C)-XX
Outer Drive Flange 	Outer Hex, Outer Torx	M5	APP-M-O-(C)-XX
		M6	APP-M-O-(C)-XX
		M8	APP-X-O-(C)-XX
		M10	APP-X-O-(C)-XX
Outer Drive Large Flange 	Outer Hex, Outer Torx	M5	APP-M-O-(C)-XX
		M6	APP-M-O-(C)-XX
		M8	APP-X-O-(C)-XX
		M10	APP-X-O-(C)-XX
Outer Drive Combo 	Outer Hex, Outer Torx	M3	APP-M-O-(C)-XX
		M4	APP-M-O-(C)-XX
		M5	APP-M-O-(C)-XX
		M6	APP-M-O-(C)-XX
		M8	APP-X-O-(C)-XX
		M10	APP-X-O-(C)-XX
		M12	APP-X-O-(C)-XX

APPQ Series - Quick Change Vaccum Picking & Place Module

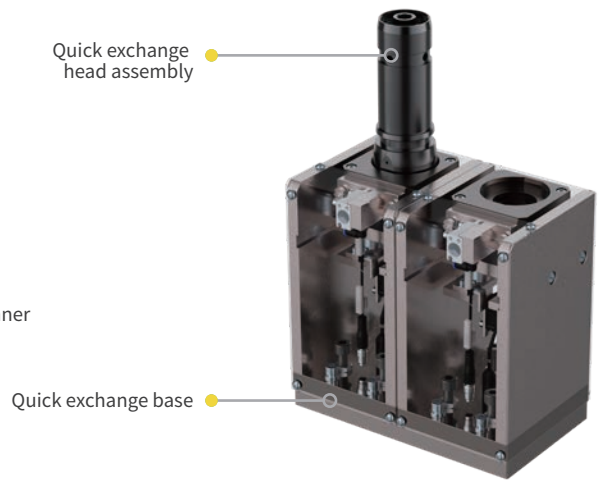
The APPQ series is suitable for single stations tasked with tightening a variety of screws. With its automatic head exchanging feature, a single tightening tool set can accommodate screws of various specifications.



Quick exchange base of QEAV

The QEAV kit consists of a quick exchange base and a quick exchange head, which is used in conjunction with the APPQ.

- Automatic quick exchange of configurations
- High compatibility
- Wide applicability
- Compatible with both inner and outer drive screws
- Modular design Free combination and expansion



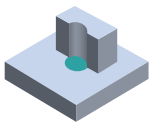
The APPQ series must be used in conjunction with the quick exchange head of QEAV.

Applications:

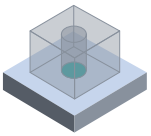
Phillips | Inner Hex | Inner Torx | Inner Double-Torx | Outer Hex Flange | Outer Torx Flange | Outer Hex

Application condition of APPQ series

Right-angle interference on two sides



Circular interference



Counterbore interference

Interference on multiple sides

- 90° Right-angle interference on two sides
- 180° Circular interference
- 360°Counterbore interference

- Picking on dispenser
- Refilling position should be considered

- Picking on Pick & Place Screw Presenter
- Small footprint

- Picking at the end of linear track
- Large screws or nut not feedable by tube

Product model description and selection

APPQ - S/M/X - I/O - (C) - XX

APPQ	S/M/X	I/O	(C)	XX
APP Quick Change Vaccum Picking & Place Module	Size	I: inner drive O: outer drive	Specific for Re-tightening	Vacuum Stick-out Length (Working Position)

APPQ Series Model Specifications Table

Series Model	Screw Specification
APPQ-S-I/O-(C)-XX	⩽ M2.5
APPQ-M-I/O-(C)-XX	M3 - M6
APPQ-X-I/O-(C)-XX	⩾ M8

The "XX" suffix indicates the vacuum stick-out length (mm)
50
100
150

Selection Guide

The Leetx Automatic Screw Feeder Model Selection consists of two parts: application description and series model. The application description and model description are connected by the symbol "+" to form a complete model selection. The application description consists of: screw type - drive head - screw specification. The series model can be determined based on the model specifications table (or quick selection table).

Selection Example

Application Description	Series Model	Selection Result
Pan Head - Inner Torx - M2.5	APPQ-S-I-XX	Pan Head - Inner Torx- M2.5+APP-S-I-50
Outer Drive Combo - Outer Torx -M8	APPQ-X-O-C-XX	Outer Drive Combo - Outer Torx -M8+APP-X-O-C-100 (Specific for Re-tightening)

Quick Selection Guide for Common Screw of APPQ Series: Inner Drive

Screw Type	Drive Head	Screw Specification	Series Model
Pan Head 	Inner Torx, Phillips	M2.5	APPQ-S-I-(C)-XX
		M3	APPQ-M-I-(C)-XX
		M4	APPQ-M-I-(C)-XX
		M5	APPQ-M-I-(C)-XX
		M6	APPQ-M-I-(C)-XX
		M8	APPQ-X-I-(C)-XX
		M10	APPQ-X-I-(C)-XX
		M12	APPQ-X-I-(C)-XX
Cylindrical Head 	Inner Torx, Inner Hex	M2.5	APPQ-S-I-(C)-XX
		M3	APPQ-M-I-(C)-XX
		M4	APPQ-M-I-(C)-XX
		M5	APPQ-M-I-(C)-XX
		M6	APPQ-M-I-(C)-XX
		M8	APPQ-X-I-(C)-XX
		M10	APPQ-X-I-(C)-XX
		M12	APPQ-X-I-(C)-XX
Pan Head Combo 	Inner Torx, Inner Hex, Phillips	M3	APPQ-M-I-(C)-XX
		M4	APPQ-M-I-(C)-XX
		M5	APPQ-M-I-(C)-XX
		M6	APPQ-M-I-(C)-XX
Cylindrical Head Combo 	Inner Torx, Inner Hex	M4	APPQ-M-I-(C)-XX
		M5	APPQ-M-I-(C)-XX
		M6	APPQ-M-I-(C)-XX
		M8	APPQ-M-I-(C)-XX
Flat Round Head 	Inner Torx, Inner Hex, Phillips	M4	APPQ-M-I-(C)-XX
		M5	APPQ-M-I-(C)-XX
		M6	APPQ-M-I-(C)-XX
		M8	APPQ-X-I-(C)-XX
		M10	APPQ-X-I-(C)-XX
Round Head Self-Tapping 	Inner Torx, Inner Hex, Phillips	PT25	APPQ-S-I-(C)-XX
		PT30	APPQ-M-I-(C)-XX
		PT35	APPQ-M-I-(C)-XX
		PT40	APPQ-M-I-(C)-XX
		PT45	APPQ-M-I-(C)-XX
		PT50	APPQ-M-I-(C)-XX
		PT60	APPQ-M-I-(C)-XX

Quick Selection Guide for Common Screw of APPQ Series: Outer Drive

Screw Type	Drive Head	Screw Specification	Series Model
Outer Drive 	Outer Hex, Outer Torx	M4	APPQ-M-O-(C)-XX
		M5	APPQ-M-O-(C)-XX
		M6	APPQ-M-O-(C)-XX
		M8	APPQ-X-O-(C)-XX
		M10	APPQ-X-O-(C)-XX
Outer Drive Flange 	Outer Hex, Outer Torx	M5	APPQ-M-O-(C)-XX
		M6	APPQ-M-O-(C)-XX
		M8	APPQ-X-O-(C)-XX
		M10	APPQ-X-O-(C)-XX
Outer Drive Large Flange 	Outer Hex, Outer Torx	M5	APPQ-M-O-(C)-XX
		M6	APPQ-M-O-(C)-XX
		M8	APPQ-X-O-(C)-XX
		M10	APPQ-X-O-(C)-XX
Outer Drive Combo 	Outer Hex, Outer Torx	M3	APPQ-M-O-(C)-XX
		M4	APPQ-M-O-(C)-XX
		M5	APPQ-M-O-(C)-XX
		M6	APPQ-M-O-(C)-XX
		M8	APPQ-X-O-(C)-XX
		M10	APPQ-X-O-(C)-XX
		M12	APPQ-X-O-(C)-XX

Handheld module

AHB series module

The screw is fed directly into the head for tightening. This is the handheld version of the ASG series.

AHV series module

The screw is fed directly into the head, sucked by the vacuum tube and delivered to the surface of the workpiece for tightening. This is the handheld version of the AIV series.

AHP series module

The screw is picked by the vacuum tube from screw dispenser or presenter. This is the handheld version of the APP series.

AHPQ series module

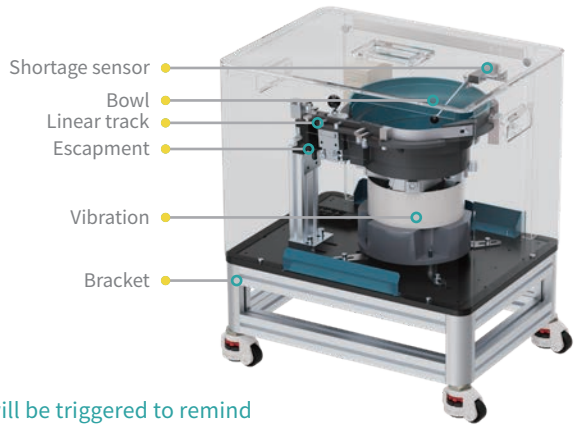
The screw is picked by the vacuum tube from screw dispenser or presenter. This is the handheld version of the APPQ series.

Feeder - Bowl Feeder

When the shortage sensor detects a shortage, an alarm will be triggered to remind you of refilling; If a hopper is available, it will complete refilling automatically.

Workflow

- Vibration through vibration source
- The screw automatically sorted by the spiral track of the bowl.
- Enter the linear track
- After being sorted by linear vibration, the screw is sent to the escapment.
- The escapment deliver a single screw into the feeding tube.
- The screw is delivered to the module through the feeding tube.



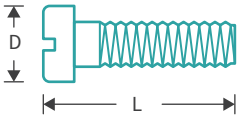
When the shortage sensor detects a shortage, an alarm will be triggered to remind refill; If a hopper is available, it will complete refilling automatically.

Product model description and selection

FBH - S/M/L

FBH Bowl Feeder Series — Size

	Minimum Screw Size (mm)	Maximum Screw Size (mm)	Maximum Screw Length(mm)
FBH-S	M2.5	M3	32
FBH-M	M3	M8	44
FBH-L	M8	M12	70



Features

- Polymer composite integrated tray
  Ultra-high consistency
- Non-magnetic metal track
  Low stucking rate
- Durable and wear-resistant
  Long service life
- A variety of cutting designs
  Adapting to different screws
- High work efficiency
  Screw output efficiency of up to 60 pcs/min
- Screw counter
  Screw quantity control
- Noise control optimization
  Noise as low as 65 dB

Selection Guide

The Leetx Automatic Screw Feeder Model Selection consists of two parts: application description and series model. The application description and model description are connected by the symbol "+" to form a complete model selection. The application description consists of: screw type - drive head - screw specification. The series model can be determined based on the model specifications table (or quick selection table).

Selection Example

Application Description	Series Model	Selection Result
Pan Head - Inner Torx - M3	FBH-S	Pan Head - Inner Torx - M3+FBH-S
Pan Head Combo - Phillips - M5	FBH-M	Pan Head Combo - Phillips - M5+FBH-M
Outer Drive with Large Flange - Outer Hex - M8	FBH-L	Outer Drive with Large Flange - Outer Hex - M8+FBH-L

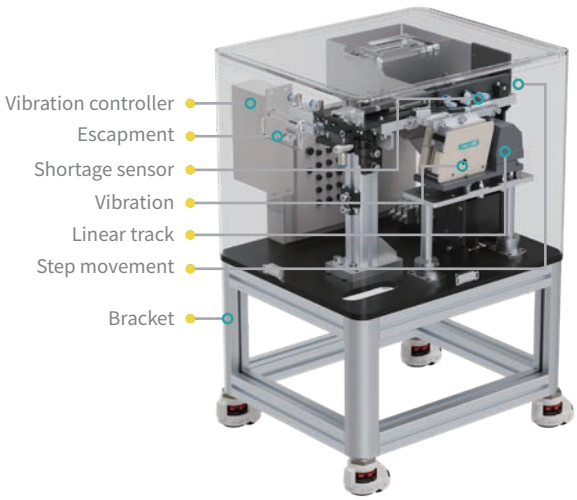
Quick Selection Guide for Common Screw of FBH Series: Inner Drive

Screw Type	Drive Head	Screw Specification	Maximum Diameter (mm)	Standard Product Coverage		Series Model
				Mini. L (mm)	Max. L (mm)	
Pan Head 	Inner Torx, Phillips	M2.5	5	6	32	FBH-S
		M3	5.6	6	30	
		M4	8	8	28	
		M5	9.5	10	42	FBH-M
		M6	12	12	40	
		M8	16	12	70	FBH-M/L
		M10	20	16	70	FBH-L
		M12	24	16	70	
Cylindrical Head 	Inner Torx, Inner Hex	M2.5	4.5	5	32	FBH-S
		M3	5.5	5	32	
		M4	7	6	30	
		M5	8.5	8	42	FBH-M
		M6	10	10	40	
		M8	13	12	38	FBH-M/L
		M10	16	16	70	FBH-L
		M12	18	20	70	
Pan Head Combo 	Inner Torx, Inner Hex, Phillips	M3	7	8	30	FBH-S
		M4	9	10	40	FBH-M
		M5	10	12	38	
		M6	12	14	36	
Cylindrical Head Combo 	Inner Torx, Inner Hex	M4	9	8	40	FBH-M
		M5	10	10	38	
		M6	12	12	36	
		M8	16	14	70	FBH-L
Flat Round Head 	Inner Torx, Inner Hex, Phillips	M4	9.4	12	32	FBH-M
		M5	11.8	16	32	
		M6	13.6	16	30	
		M8	17.8	20	70	FBH-M/L
		M10	21.9	25	70	FBH-L
Round Head Self-Tapping 	Inner Torx, Inner Hex, Phillips	PT25	5.5	9.5	32	FBH-S
		PT30	6.5	9.5	32	
		PT35	7.5	13	32	
		PT40	9	13	44	FBH-M
		PT45	10	13	44	
		PT50	11	13	42	
		PT60	13.5	16	40	

Quick Selection Guide for Common Screw of FBH Series: Outer Drive

Screw Type	Drive Head	Screw Specification	Maximum Diameter (mm)	Standard Product Coverage		Series Model
				Mini. L (mm)	Max. L (mm)	
Outer Drive 	Outer Hex, Outer Torx	M4	8.1	11	44	FBH-M
		M5	9.2	11	44	
		M6	11.5	13	42	
		M8	15	17	70	FBH-L
		M10	18.5	18	70	
Outer Drive Flange 	Outer Hex, Outer Torx	M5	11.4	12	28	FBH-M
		M6	13.6	14	26	
		M8	17	18	70	FBH-M/L
		M10	20.8	22	70	FBH-L
Outer Drive Large Flange 	Outer Hex, Outer Torx	M5	11.8	12	28	FBH-M
		M6	14.2	16	26	
		M8	18	20	70	FBH-M/L
		M10	22.3	24	70	FBH-L
Outer Drive Combo 	Outer Hex, Outer Torx	M3	7	8	28	FBH-S
		M4	9	10	42	FBH-M
		M5	10	12	40	
		M6	12	14	38	
		M8	16	18	70	FBH-M/L
		M10	20	22	70	FBH-L
		M12	24	26	70	

Feeder - Step Feeder



Workflow

- The step movement transports the screws to the linear track, where the screws are sorted through vibration. Then, the sorted screws are sent to the escapment. Afterwards, the screws are fed through the feeding tube to the module;
- When the full charge sensor detects a screw, it indicates that the tray is full and the lifting mechanism will no longer operate;
- When the shortage sensor detects a shortage, an alarm will be triggered to remind refill. If a hopper is available, it will complete refilling automatically.

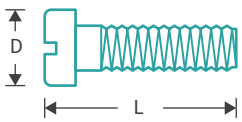
Product model description and selection

FLH - M/L

FLH Step Feeder Series

Size

	Minimum Screw Size (mm)	Maximum Screw Size (mm)	Maximum Screw Length(mm)
FLH-M	M2.5	M6	38
FLH-L	M6	M12	70



Features

- Screw surface insusceptible to damage
  Less dust
- Screw output efficiency of up to 60 pcs/min
  High work efficiency
- Non-magnetic metal track
  Low stucking rate
- Screw counter
  Screw quantity control
- A variety of cutting designs
  Adapting to different screws
- Noise control optimization
  Noise as low as 65 dB

Application scenarios

- Coated screws or adhesive-coated screws to be protected
- High cleanliness requirements for screws, such as during PCBA

Selection Guide

The Leetx Automatic Screw Feeder Model Selection consists of two parts: application description and series model. The application description and model description are connected by the symbol "+" to form a complete model selection. The application description consists of: screw type - drive head - screw specification. The series model can be determined based on the model specifications table (or quick selection table).

Selection Example

Application Description	Series Model	Selection Result
Pan Head Combo - Phillips - M5	FLH-M	Pan Head Combo - Phillips - M5+FLH-M
Outer Driver Large Flange - Outer Torx - M8	FLH-L	Outer Driver Large Flange - Outer Torx - M8+FLH-L

Quick Selection Guide for Common Screw of FLH Series: Inner Drive

Screw Type	Drive Head	Screw Specification	Maximum Diameter (mm)	Standard Product Coverage		Series Model
				Mini. L (mm)	Max. L (mm)	
Pan Head	Inner Torx, Phillips	M2.5	5	6	36	FLH-M
		M3	5.6	6	36	
		M4	8	8	36	
		M5	9.5	10	36	
		M6	12	12	34	FLH-M/L
		M8	16	12	70	FLH-L
		M10	20	16	70	
		M12	24	16	70	
Cylindrical Head	Inner Torx, Inner Hex	M2.5	4.5	5	36	FLH-M
		M3	5.5	5	36	
		M4	7	6	34	
		M5	8.5	8	34	
		M6	10	10	32	FLH-M/L
		M8	13	12	70	FLH-L
		M10	16	16	70	
		M12	18	20	70	
Pan Head Combo	Inner Torx, Inner Hex, Phillips	M3	7	8	34	FLH-M
		M4	9	10	32	
		M5	10	12	30	
		M6	12	14	28	FLH-M/L
Cylindrical Head Combo	Inner Torx, Inner Hex	M4	9	8	40	FLH-M
		M5	10	10	38	
		M6	12	12	36	
		M8	16	14	70	FLH-M/L
Flat Round Head	Inner Torx, Inner Hex, Phillips	M4	9.4	12	36	FLH-M
		M5	11.8	16	36	
		M6	13.6	16	34	FLH-M/L
		M8	17.8	20	70	FLH-L
		M10	21.9	25	70	
Round Head Self-Tapping	Inner Torx, Inner Hex, Phillips	PT25	5.5	9.5	38	FLH-M
		PT30	6.5	9.5	36	
		PT35	7.5	13	36	
		PT40	9	13	36	
		PT45	10	13	36	
		PT50	11	13	36	
		PT60	13.5	16	34	

Quick Selection Guide for Common Screw of FLH Series: Outer Drive

Screw Type	Drive Head	Screw Specification	Maximum Diameter (mm)	Standard Product Coverage		Series Model
				Mini. L (mm)	Max. L (mm)	
Outer Drive	Outer Hex, Outer Torx	M4	8.1	11	36	FLH-M
		M5	9.2	11	36	
		M6	11.5	13	34	
		M8	15	17	70	FLH-L
		M10	18.5	18	70	
Outer Drive Flange	Outer Hex, Outer Torx	M5	11.4	12	34	FLH-M
		M6	13.6	14	32	FLH-M/L
		M8	17	18	70	FLH-L
		M10	20.8	22	70	
Outer Drive Large Flange	Outer Hex, Outer Torx	M5	11.8	12	34	FLH-M
		M6	14.2	16	32	FLH-M/L
		M8	18	20	70	FLH-L
		M10	22.3	24	70	
Outer Drive Combo	Outer Hex, Outer Torx	M3	7	8	34	FLH-M
		M4	9	10	34	
		M5	10	12	32	
		M6	12	14	30	FLH-M/L
		M8	16	18	70	FLH-L
		M10	20	22	70	
		M12	24	26	70	

Feeder - Hopper

When the shortage sensor detects a shortage, the drive belt of the hopper motor will slowly convey the screws to the feeder to complete the refilling.

Features

- Prolonged refilling time
  Reduced refilling frequency
- Motor drive belt, with zero vibration
  Protecting screw coating
- Multiple capacity options
  Catering to flexibility requirement
- Optional QR code scanning and opening function
  Screw supply monitoring

Product model description and selection

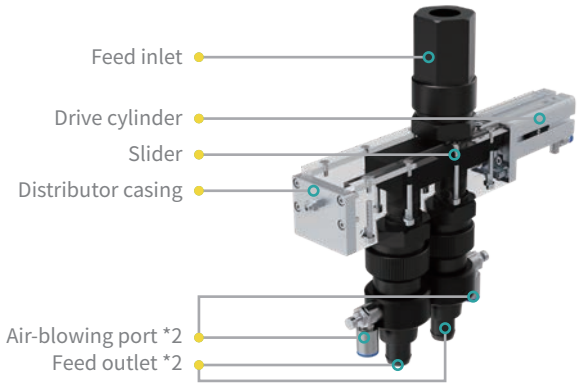
RB	—	S	—	CR
Belt Hopper	S	Small-size (3L)	CR	Standard top cover
	M	Middle-size (10L)	CS	Top cover with electromagnetic lock
	L	Large-size (25L)		

Accessory - Distributor

The distributor can be used to meet the flexibility requirement and reduce the usage cost.

It can achieve the following functions:

- One-for-multi: One feeding unit delivers screws to multiple tightening modules;
- Multi-in-one: Multiple feeding units deliver screws to one tightening module;
- Multi-to-multi: Multiple feeding units deliver screws to multiple tightening modules;



Features

- Auxiliary feeding function for relay feeding
  Reduced cycle time
- Screw counter
  Screw quantity control
- Cylinder-driven slider for channel switching
  Quick response
- Precision parts machining
  Smooth feeding channel for smooth feeding without seizure
- Non-magnetic metal materials
  Low stucking rate

Product model description and selection

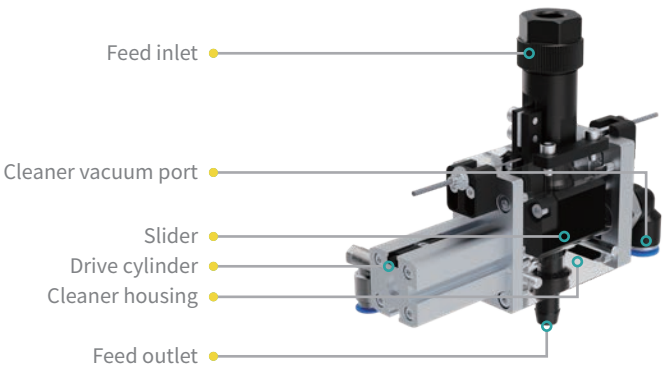
DS	–	13	–	M		
DS	Screw distributor	12	One-for-two	M	Middle-size	Dmax ⩽ 15 mm
		13	One-for-three	L	Large-size	Dmax＞15 mm
		14	One-for-four	Dmax is the max. diameter of the screw (washer).		
		21	Two-in-one			
		31	Three-in-one			
		41	Four-in-one			

Accessory - Cleaner

Working principle

The cylinder-driven slider holds the screw in place, while the high-speed airflow generated by the vacuum port removes the dust on the surface of the screw.

After cleaning, the slider returns to its original position, and the screw continues to be fed into the module.



Features

- Cylinder-driven slider for channel switching
  Quick response
- Precision machining
  Smooth feeding channel for smooth feeding without seizure
- Screw counter
  Screw quantity control
- Both the inlet and outlet of the cleaner are equipped with detector
  for screw quantity monitoring
- Non-magnetic metal materials
  Low stucking rate
- Screw storage for reduced cycle time
- Optional screw presence transducer
  for screw presence detection
- Optional double screw mechanical detector
  to avoid double screws due to exception of control system

Application scenarios

PCBA, Motor, Battery pack, Engine

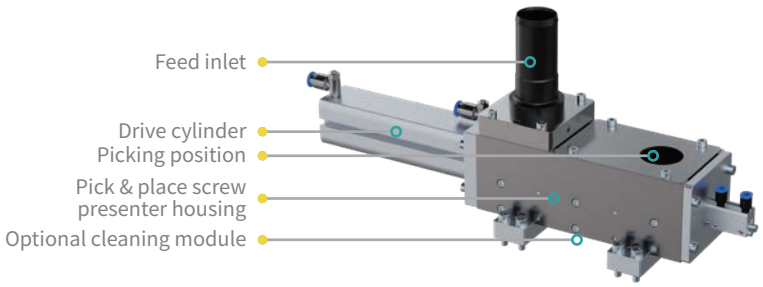
Applicable to working conditions where screw cleaning is necessary, including PCBA, motor, battery PACK, and engine interiors.

Product model description and selection

CL	—	M		
CL	Screw cleaner	M	Middle-size	Dmax ⩽ 15 mm
		L	Large-size	Dmax＞15 mm
		Dmax is the max. diameter of the screw (washer).		

Accessory - Pick & Place Screw Presenter

The pick & place dcrew presenter is suitable for scenarios where screws are fed automatically and the back end is connected to the picking module.
The screw is pushed out to the picking position by the cylinder-driven slider for easy picking;



Features

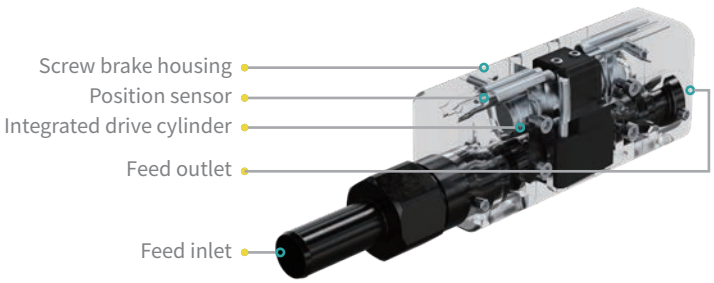
- Small size
  Easy layout on workbench
- Search sequence device for outer drive screw pick & place screw presenter
  Increased success rate of search sequence and reduced searach time
- Precision machined parts for smooth feeding channel for smooth feeding without seizure
- Non-magnetic metal materials
  Low stucking rate
- Screw counter
  Screw quantity control
- Optional presence detection feature
- Product model description and selection

Product model description and selection

PF	—	M	—	(C)
PF	Pick & place screw presenter	M	Middle-size	Dmax ⩽ 15 mm		Standards
		L	Large-size	Dmax＞15 mm	C	With cleaning feature
		Dmax is the max. diameter of the screw (washer).				

Accessory - Screw Brake

In the auto-feed tightening system, the Screw brake is suitable for operations demanding shorter cycle time and minimized feeding time.The built-inIntegrated cylinder of the buffer clamps the screw head to achieve screw storage; Once the tightening module is ready, the screws will be sent to the module as quickly as possible.



Features

- Blow feeding screws to the buffer at a high speed
  Clamping and stopping screw heads on a slope to protect threads
- Precision machining
  Smooth feeding channel for smooth feeding without seizure
- Integration at the entrance of the module
  Minimizing feeding time
- Non-magnetic metal materials
  Low stucking rate
- Integrated cylinder structure
  High integration
- Screw counter
  Screw quantity control

Product model description and selection

BK	—	M		
BK	Screw brake	M	Middle-size	Dmax ⩽ 15 mm
		L	Large-size	Dmax＞15 mm
		Dmax is the max. diameter of the screw (washer).		