

Automatic Screw Feeder

自動ネジ供給機

LS-HM Series

Maintenance Manual

- Prior to application, please read through this manual carefully.
- After having read these instructions, please keep this manual in a convenient location for the operator to access when necessary.

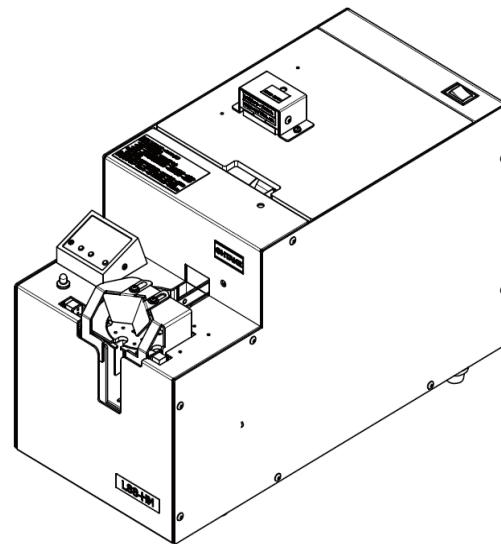
ATTENTION : www.ohtake-root.co.jp is the only web site associated with our company.

We do not have any branches in China.

各位顾客请注意！：「www.ohtake-root.co.jp 是敝司唯一的官方网站，
目前，敝司在中国没有办事处与所谓的中国官网。」

注意！：www.ohtake-root.co.jp が当社唯一の HP アドレスです。

弊社の名を騙る偽サイトにご注意下さい。現在、当社は中国国内に支店はございません。



LSHMMAE01c

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1. Before Use

Thank you for purchasing the LS-HM series Automatic Screw Feeder. Before using this machine, please make sure that the following accessories are supplied with the machine.

Accessories: Maintenance manual x1 AC adaptor x1 Allen wrench x1 Adjustment screwdriver x1


In order to use this machine efficiently and correctly, please thoroughly read over this manual carefully.


This machine is only designed for application of steel or ferrite screws.

Please be aware that stainless or plastic screws CANNOT be use with this product.

2. Operating Precautions

Installation

 **Caution!** Please make sure the machine is installed and operated on a horizontal and stable working surface. If the machine is installed in an unstable location, it may be displaced or cause personal injury.

 **Caution!** Please do NOT operate this machine near flammable liquids, gas, or locations with high humidity. It is hazardous to operate this machine under such conditions. Please use this machine in a safe surrounding.

In case of long period of no active use of product



Caution! When the machine is not to be used for an extended time or at the end of operations, please detach the adaptor from power supply.

AC Adaptor



Caution! Please only use the attached adaptor for this machine.

Rail Maintenance

Please avoid damaging the rail or make any scratch or dent on the rail. Do not apply any oil or grease on the rail groove.

Picking up screws

When picking up screws with a screwdriver, please do not use excess force otherwise it may cause malfunction.

Incompatible screws

Please do not use any screws other than specified dimension or type. Screws coated with grease or oil shall not be used.

Avoid any foreign objects



Caution! During operation, please do not insert your hand or any tools into the machine, as it may cause severe injuries. Please do not insert any foreign objects other than screw used into the machine.

Abnormality during operation



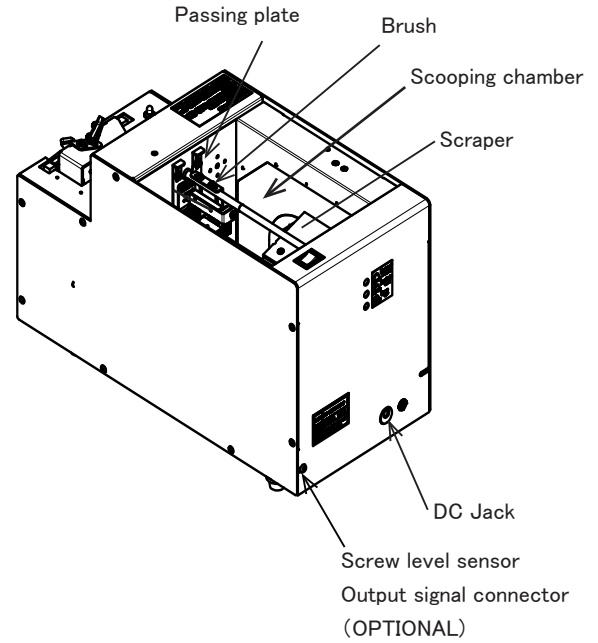
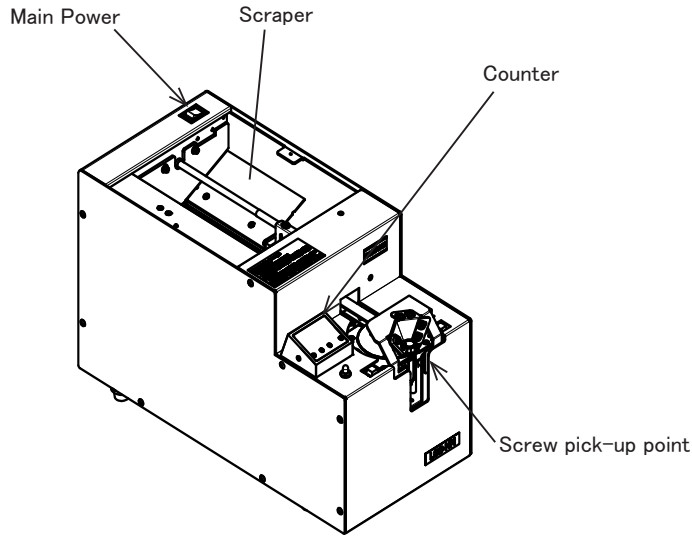
Caution! In case where the machine operation is not normal, please turn off the power and disconnect the AC adapter from the outlet, or it may result in damage to the machine, or cause a fire or electric shock. Please contact your local dealer.

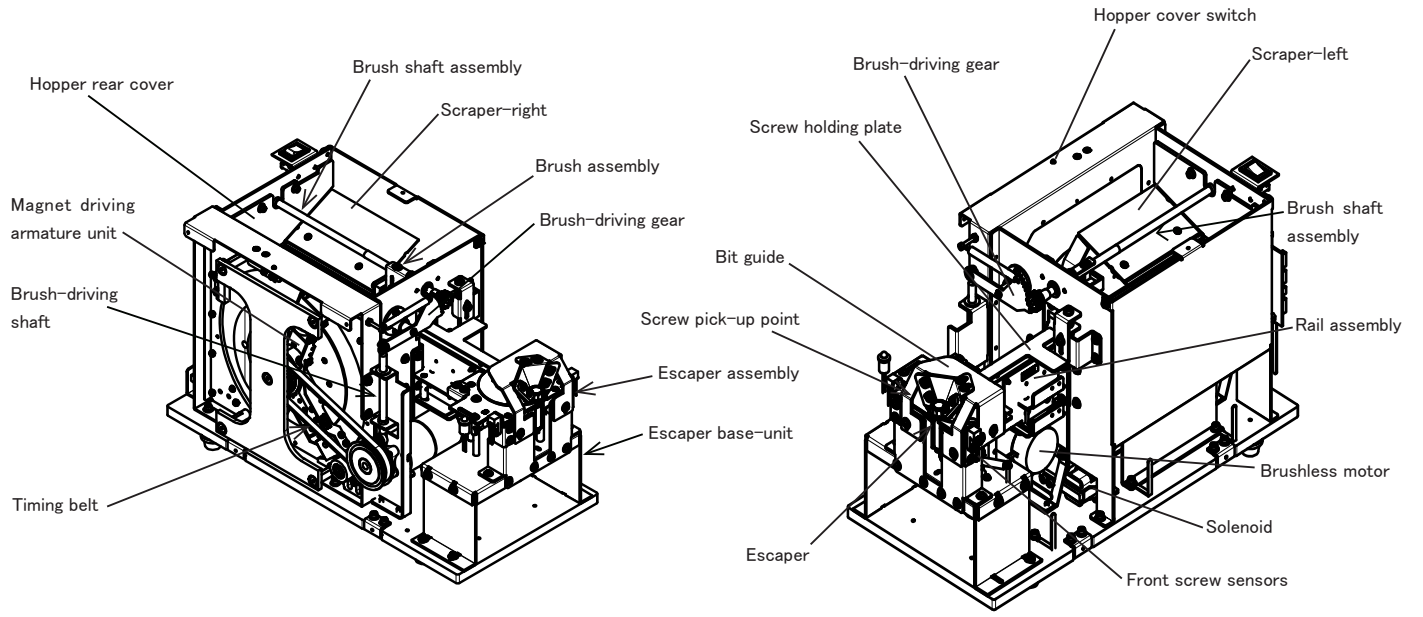
Please do not attempt to repair, disassemble, or modify this machine to avoid injuries



Caution! When this machine is in need of repair or services, please contact your local dealer or distributor.

3. Components





4. Model Number and Screw Size Confirmation

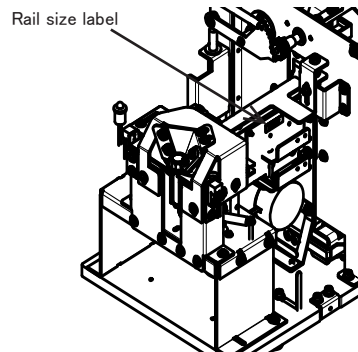
Prior to application of screws, first please make sure that the screw size is compatible with the model number.

To confirm the model number, please remove the right side cover, and check the rail size label on the right side of rail.

The rail size label is marked in the format of L****, as shown in following table.

This machine can be made compatible with different screw sizes with replaceable parts of rail assembly, escaper, escaper-guide, and passing plate. First please confirm that the actual screw dimension is compatible with rail size specified.

Screw Feeder Model No.	Exchange Kit No.	Rail Part No.	Escaper Part No.	Escaper Guide Left Part No.	Escaper Guide Right Part No.	Passing Plate No.
LS 25- HM 30	LS2530MSET	L2530	SE30	HMG30L	HMG30R	LW30
LS 25- HM 35	LS2535MSET	L2535	SE35	HMG35L	HMG35R	LW3540
LS 25- HM 40	LS2540MSET	L2540	SE40	HMG40L	HMG40R	
LS 25- HM 50	LS2550MSET	L2550	SE50	HMG50L	HMG50R	LW5060
LS 25- HM 60	LS2560MSET	L2560	SE60	HMG60L	HMG60R	
LS 25- HM 80	LS2580MSET	L2580	SE80	HMG80L	HMG80R	LW80
LS 50- HM 30	LS5030MSET	L5030	SE30	HMG30L	HMG30R	LW30
LS 50- HM 35	LS5035MSET	L5035	SE35	HMG35L	HMG35R	LW3540
LS 50- HM 40	LS5040MSET	L5040	SE40	HMG40L	HMG40R	
LS 50- HM 50	LS5050MSET	L5050	SE50	HMG50L	HMG50R	LW5060
LS 50- HM 60	LS5060MSET	L5060	SE60	HMG60L	HMG60R	
LS 50- HM 80	LS5080MSET	L5080	SE80	HMG80L	HMG80R	LW80




Model No.	Compatible screw thread length	Storage capacity
LS25	Max. 25mm	1300 cc.
LS50	Max. 50mm	1000 cc.

Note: The replaceable components such as rail, escaper, screw guide, passing plate are sold separately, as an exchangeable kit by screw diameter. For screws with narrow head dimension, additional fine-adjustment may be necessary.

* When specific screw dimension is not provided by the customer, this feeder will be adjusted with regular pan-head screws or hex-flanged bolts prior to shipment. Please pay attention to the following parts upon receiving the machine, and make adjustments as necessary:

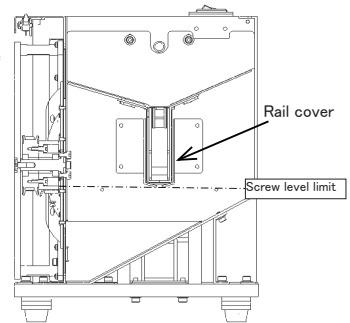
- Brush adjustment & check-up
- Passing plate adjustment & check-up
- Screw holding plate adjustment & check-up
- Rail assembly, escaper and associated components adjustment & check-up

 **Caution!** For your safety, prior to making adjustment or machine check-up, please **MAKE SURE** that the main power is switched OFF first.

5. Instruction for Operation Start-up

5- 1. Inserting Screws

By switching the main power on and off, please adjust position of the brush at where it stops right above the the upper lid, and insert screws evenly on both sides of the brush into the storage scooping chamber.



***Note: The screw level inside the hopper shall NOT be higher than the**



Caution! lowest line of the rail cover, as shown in figure on right.

*Please use extra attention with the amount of screws supplied into the feeder, as the screw level shall not be higher than bottom edge of the rail-cover plates. If screws stack up to higher than rail surface level, it may interfere with regular flow of screw delivery and produce jamming.

*Please be aware that this feeder may only be used with steel or ferrite screws, NOT with stainless or plastic screws.

* Please be aware of any different kind of screws supplied to the feeder at once. If more than one kind of screws were being placed into the feeder, it may introduce jamming.

5- 2. Operation Start-up

Connect the adaptor jack to the back of the machine, and plug in to the power supply source. Turn on the power switch on top of the machine, and the counter will start along with the supply. Install the top cover on the machine.

After the power is turned ON, the rail vibration will start, and the main motor will start operating. This will start screw delivery from the rail to the escaper. This will continue until a screw is delivered to the pick-up location and detected by the screw sensors. Screw feeding will start again after screws are picked up from the escaper.



Caution! Attention: There is a safety switch installed with the top cover. When the top cover is removed, the screw feeding and vibration will stop instantly. If the cover is removed in the middle of the screw feeding process, the operation will stop as well. To start the feeding again, please place the cover back on the machine.

5-3. Screw Pick-up

When there is no specific screw dimensions provided by the customer, this feeder will be adjusted with regular pan-head screws or hex-flanged bolts prior to shipment. Upon receiving the machine, please read through the following items carefully, and make sure the components are compatible with screw to be applied, and make adjustments as necessary:

- Bit guide adjustment & check
- Brush adjustment & check
- Passing plate adjustment & check
- Holding plate adjustment & check
- Rail assembly, Escaper and associated components adjustment & check

– A screw will be sent to the stopper, ready for pickup by the screwdriver. When it is ready, follow the center groove of the bit guide, place the driver bit right over the applied screw, and pull the screw horizontally and steadily towards the front, and pick up the screw.

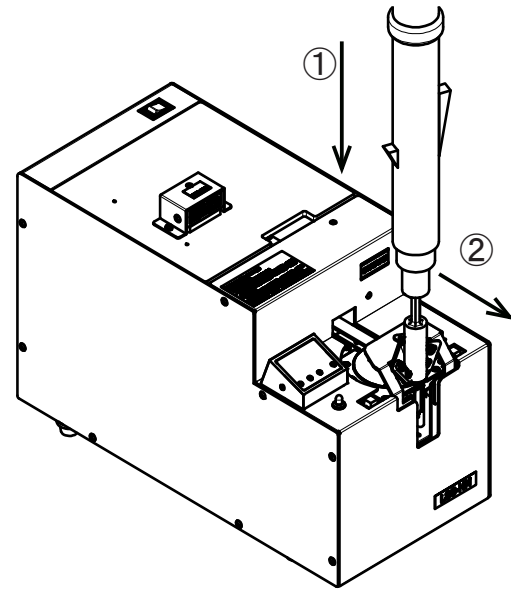
– When pushing the driver down towards the screw (before picking up a screw), please do not use too much force. If too much force is applied, it may cause the escaper to deform and feeding malfunctions.

– When the driver bit touches the screw, if you twist the screwdriver slightly, the screw will fit in to the driver bit easily.

– Please make sure that the driver bit size is matching the screw's nominal size.

– After the screw is picked up, the escaper will rotate 180° to the left → stops for about 0.6 seconds → rotate 180° again → and repeats continuously.

– This machine is designed to continue operation automatically when there is no screw detected. When the screw is delivered to the pick-up point, the vibration and feeding will continue for a short time and stop automatically; it will start again after the screw is picked up. This time delay until vibration stops can be adjusted



by the user as needed.

(Please refer to Section 6-10, Adjustment of Timer)

– In addition, when there is no screw being fed to the pickup point for a certain period of time, the rail vibration will increase automatically. If there is still no screw being delivered, the vibration and feeding operation will stop automatically. To start operation again, please reset the power.

5- 4. External Signal Output

(1) Screw Pick-up Signal Output

Output signal notification is sent through the signal jack on the back of the machine cover, after the screw pick-up process is finished.

[Function:] Signal = ON after a screw is delivered and picked up. (pickup finished)

Current consumption: Shall be limited to below 100mA

[Capacity:] DC Current Max 100mA

External supply voltage 5 ~ 24VDC (max. 27VDC)

[*Caution:] Please use a micro-type signal plug with a diameter of 3.5~3mm.

Recommended product: MP-019LC (Straight-type)

MP-012LN (Bent-type) by Marushin Electronics

Recommended cable jack product: MC-35ST or MC-35STL

by Marushin Electronics

(2) Screw Level Sensor (OPTIONAL)

With the back cover removed, the blue/green wiring provided with the circuit board can be used for external signal output. When in use, please pull it through the grommet on the back cover.

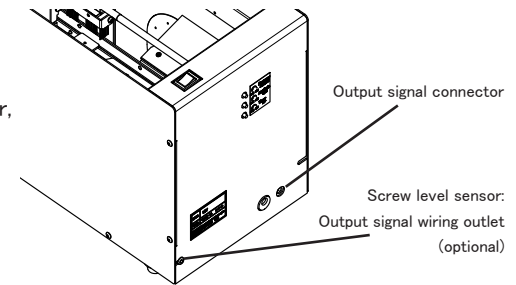
[Function] When the screw level is below the threshold limit, an external signal output will be provided. (as ON-state signal) The blue terminal will be the higher potential, and green terminal will be the lower terminal. Please be cautious when making associated wiring connections

[Capacity] DC Current Max 100mA

External supply voltage 5 ~ 24VDC (Max. 27VDC)

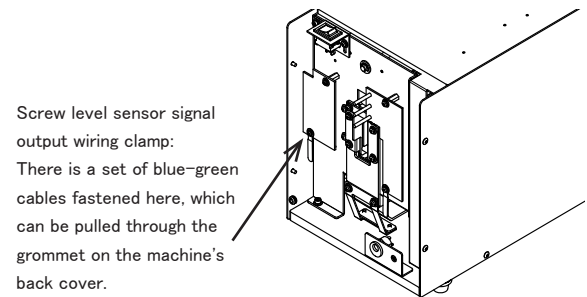
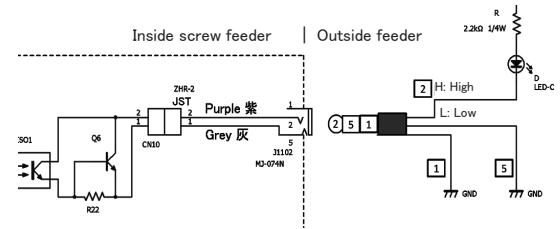
[*Caution] If wires are connected reversely, the circuit board may be damaged. Please use extra caution with wiring arrangement.

* For further details, please refer to instruction manual of the screw level sensor.



Screw pick-up signal

Wiring example:



5- 5. Counter Setting

(1) Counter Display

① Screw pickup

After a screw is picked up, the SET number displayed on the screen will continue decrease by one. When the last screw of the set number is picked up, to indicate the end of cycle the buzzer will go off and the LED will turn ON. At this time, the SET number will reset to the original fullset number, and the SET TOTAL count will increase by 1.

② Adjusting the number displayed

After a screw is picked up, sometime it may fallout and not used. In this case, to cancel the screw count, please use the NO COUNT button. When it is pressed, the SET number and the LED will blink instantaneously. The blinking will stop after the next screw is picked up, and matchup and number of screws counted, and return to the regular counting mode. While the screen and number is blinking, if the NO COUNT button is pressed again, the counter will return to regular operation.

(2) Counter display and setup

For instructions on the counter LCD display and setup methods, please refer to the following pages.

LCD Panel Display

《SET: Screw Number》

- Displays the set number of screws to be supplied.
- When a screw is picked up, the number will count down.
- When the SET number of screws is taken out, the Set Total will reset.
- During reset-mode of the Set number, the number will be blinking.
- During the pickup process, if NO COUNT button is pressed, the number will blink.
- If a screw is present at the pick-up point at the escaper, feeding will stop.
When there is no screw at the pick-up point, the feeding will continue.

《Set Total Display》

- Displays the total number of sets picked up.
- When the Set number of screws is taken out, the Set Total will increase by 1.
- If a screw is present at the pick-up point at the escaper, feeding will stop.
When there is no screw at the pick-up point, the feeding will continue.

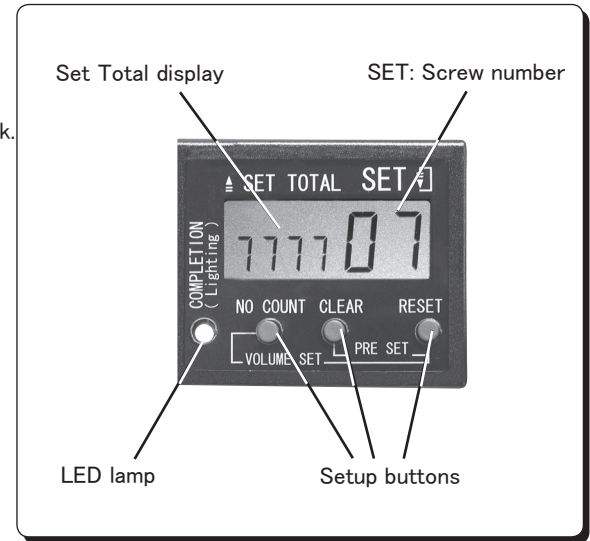
《LED Display》

- After the set number of screw are taken out, the LED will be lit. After the set is finished, when another screw is picked up again, the LED will turn off.
- During the pickup process, if NO COUNT button is pressed, the LED will blink.
- The LED will blink during the buzzer volume adjustment.

《Setup buttons》

- Enables change-up of the SET number setting.

* When the power is turned off or at the loss of power, all display status on the screen will maintain the same and stays in the internal memory.



Setting up the LCD panel prior to use

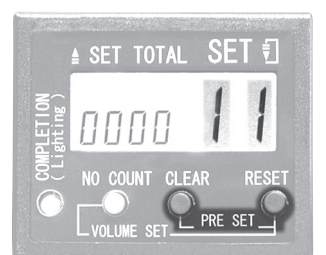
When the power is turned on, the setup can be changed when the feeding operation is stopped.

《To change the SET number → PRE SET》

- The Set Total will be clear to “0000”
- Pressing the right button of PRE-SET will change the single digit, and the left button will change the tenth digit setting.
- Press and hold the PRE-SET button continuously for 2 seconds, the buzzer will sound once. CONTINUE and hold the PRE-SET button for 2 more seconds, the buzzer will sound again, and the number display will blink.
- When blinking, pressing one of the PRE-SET buttons will change the display setting.
- If not operated while the display is blinking, the last number displayed will be set automatically. Or, by pressing the button of a digit not being used, the number setting can be finished as well.

《PRE SET》

Changing the SET
screw number

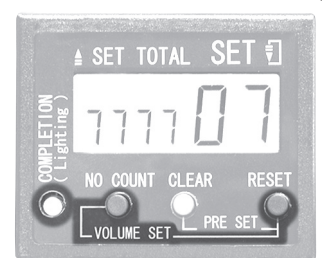


《Buzzer volume change → VOLUME SET》

- Press down and hold the two button marded as Volume Set for more than 4 seconds, the LED will blink, and enable the volume to be changed.
- When the LED is blinking, pressing the button on furthest right will change the volume level in the following cycle pattern:
“Medium → High → Mute → Low → Medium → ……”
- At the end of adjustment, if none of the buttons is pressed for more than 2 seconds, the LED will stop blinking, and the volume will be reset automatically.

《VOLUME SET》

Reset the buzzer volume



Setting up the LCD panel during screw feeding

When the power is on, the setting can be changed when the feeding operation is stopped.

《To reset the screw Set number during feeding → by RESET button》

– Press the RESET button for about 2 seconds during screw feeding process, the buzzer will sound, and the screw Set number can be reset.

《Clear-out the Set Total → by CLEAR button 》

– Press the CLEAR button for about 2 seconds until the buzzer sounds, the Set Total will be reset as “0000” .

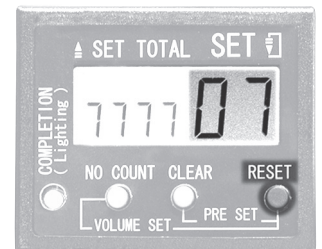
《Not counting the pick-up miss → by NO COUNT button》

– When the picked up screw has dropped, or screwdriver missed and took no screws, the screw counted screw number can be modified by one.
– During the regular Set number supply mode, pressing the NO-COUNT button once, the buzzer will sound, the Set number display and LED will blink.
– As screw pickup continues, the LED blink will stop, and return to the regular count-down setting. The Set Total will remain unchanged.

– At the state when the Set number and LED are both blinking, press the NO COUNT button again, the buzzer will sound, blinking will stop, and the regular count-down mode will resume.

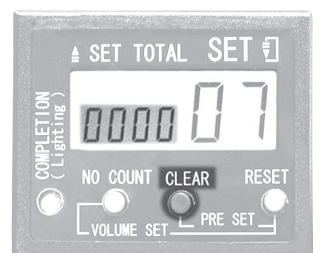
《RESET》

During the screw feeding, change the Set number



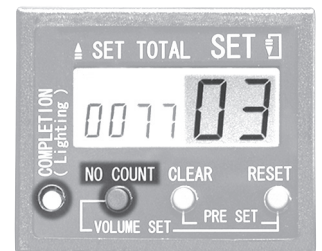
《CLEAR》

Set Total will be reset as “0000”



《NO COUNT》

Will not count the missed screw pickup by user



5- 6. Optional Screw Level Sensor

There is an optional attachment sensor available, which monitors the quantity of remaining screws in the scooping hopper. When remaining screws in the hopper decreased to a low level, an external alarm will be automatically sent through output signal, with supplied wiring on the back of the machine, available to be connected to external notification devices or systems.

If the screw level sensor is requested after shipment of the product, installation will be furnished with return service of the feeder.

Regarding installation details of the output signal and associated wiring, please refer to Section 5-4.

Main Components:

Green LED: Indicates power of sensor unit.

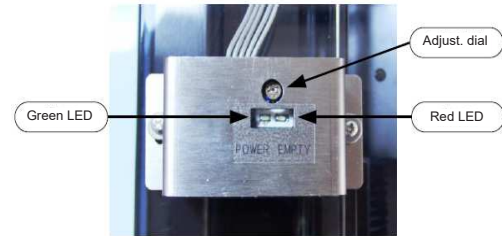
Red LED: Indicates remaining screw level has decreased to below threshold.

Adjustment dial: For threshold adjustment.

Setup method:

Preset threshold value is adjusted to to turn on when the screw level has become less than 10-20% of the available storage capacity, at which an output signal will be ON.

Please refer to the level sensor's operation manual for detailed description.



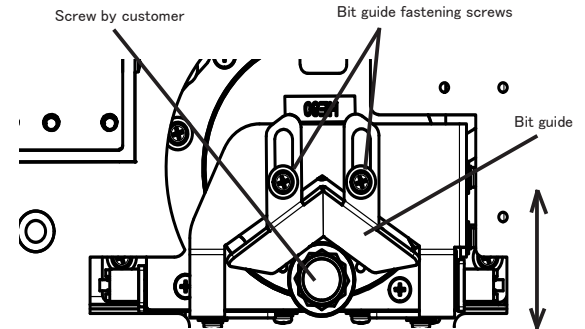
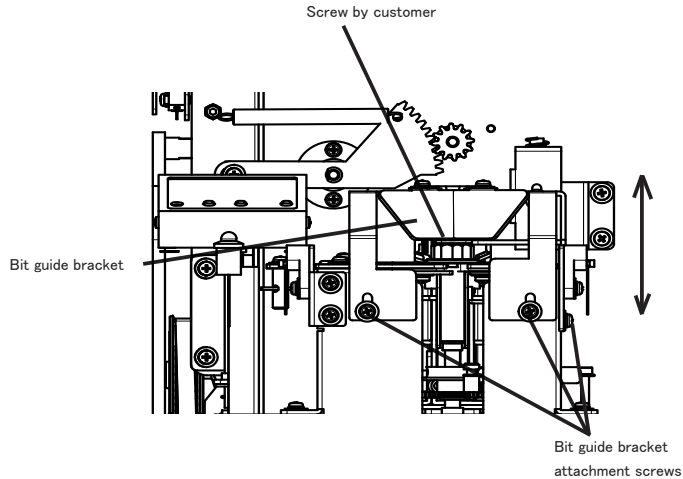
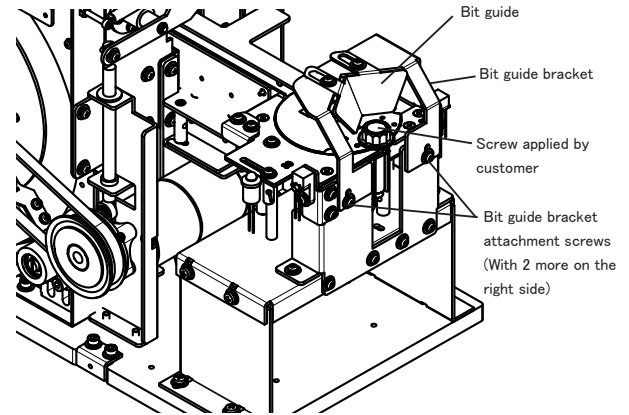
6. Adjustments

6- 1. Adjustment of the Bit Guide

Upon receiving the feeder, please check the height of the bit guide. The bit guide and the head of screw should maintain a clearance of 2mm. Please loosen the screws (4 in total, as shown in figure on right), and the height of the bit guide can be adjusted.

The center of the V-shape on the bit guide should be aligned with center point of the screw at the escaper pick-up point. After adjusting, please take a screwdriver and try to pick up the screw, and make sure it can be done smoothly a few times.

If the center of screw at pickup point is offset from the bit guide, please refer to Section 6-5-3, and adjust center of the escaper with screw position.



Center of the Bit guide and the centerpoint of the screw should be aligned.

6- 2. Adjustment of the Brush

Please check the height of the brush. When making adjustment, the brush shall be stopped at the position as shown on right. Turn on and off the power switch to adjust the brush position.

With the power turned OFF, put in 2-3 screws into the rail below the brush. When the brush stops at the position as shown, swing the brush by hand, and check that screws in the rail groove are in slight contact with the brush bristles. If the tip of brush touch the head of screw slightly (clearance of about 0mm), it is OK and no further adjusting is necessary. The small brush on the back end will be lower than the top of screws, which is normal.

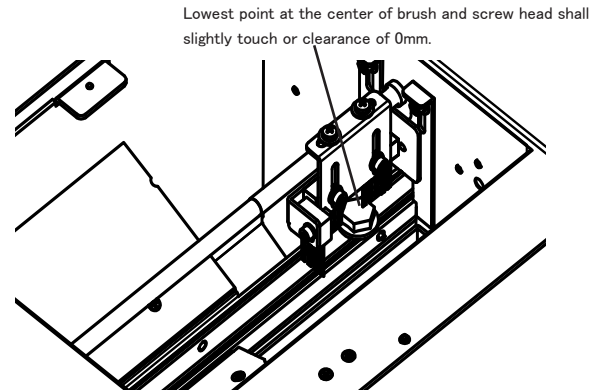
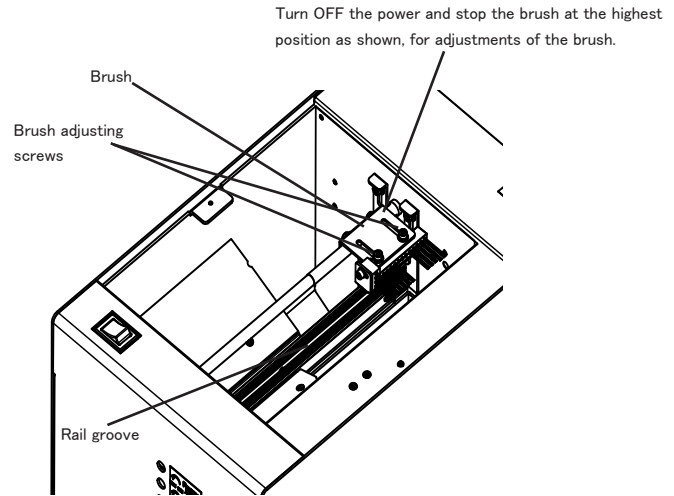
When adjustment is necessary, please refer to the following steps:

Loosen the brush adjusting screws. (x2)

Adjust the height of the brush so that it is just touching top of the screws, but not too low. (About 0mm between screw and brush)

When finished, please fix the screws firmly.

After the adjustment is finished, please turn on the power and check if the brush moves smoothly without trouble.



6-3. Adjustment of the Passing Plate

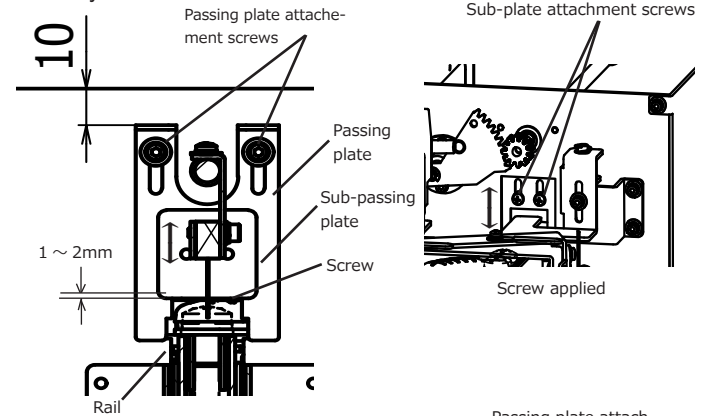
In regular operations, screws fall into the rail and being carried forward by the rail vibration, moving towards the passing plate (at the front side of the scooping chamber). Opening of the passing plate and the screw on rail shall maintain a clearance of 1-2mm. If the screws can be moved freely with the original setting, adjustment is not necessary.

When necessary, please make adjustment as the following:

□ Vertical Adjustment

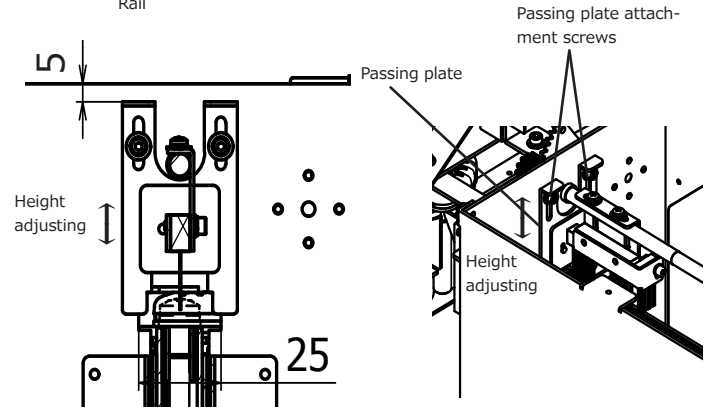
Unfasten the attached screws as shown. Move the sub-passing plate so that it is 1-2mm above the screw. Fasten the sub-plate screws again.

Note: Passing plate shall be approximately 10mm from top end of the chamber wall as shown in regular setting. IF the plate is set too high, screws may get trapped in the opening. IF the plate is set too low, it may interfere rail vibration and affect screw delivery speed.



□ Adjustment when applied screw has a large washer

Please loosen attached screws of the passing plate, and move the passing plate so that top of the passing plate is approximately 5mm from upper edge of the chamber wall. This will allow a 25mm opening, about 1-2mm clearing the rail for the washer to pass through. Afterwards, make vertical adjustment with the sub-passing plate as described above.



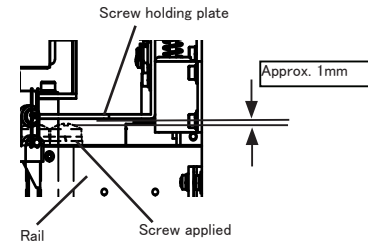
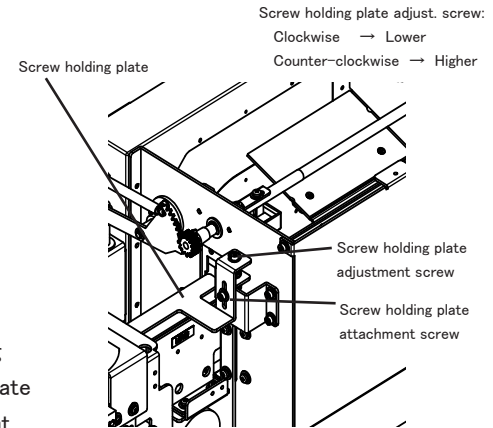
6- 4 Adjustment of the Holding Plate

Start the machine operation and wait until about 10 screws fall into the rail. If the space between screws and the holding plate is too tight, the screws may not move forward smoothly. It is recommended to maintain a clearance of 1–2mm between the screw and the holding plate for the screws to move freely. If so, no adjustment would be needed.

Note: After starting the machine, if the vibration stops right after a screw is delivered to the front of the escaper, please adjust the timer at the back of the machine.

When adjustment is necessary, loosen the attachment screws as shown, and change the height by the adjustment screw on top of holding plate, so that the bottom of the holding plate is about 1–2mm above top of the screw. Please make sure bottom of the holding plate stays horizontal and parallel to the rail after adjustment is finished, and fix the attachment screw on the front.

In cases where screws with very flat head dimension are applied, please make fine adjustment so that the clearance between the holding plate and the top of screw heads are less than 1mm, to ensure smooth delivery.



6- 5. Adjustment of Rail Assembly and Escaper-Associated Components

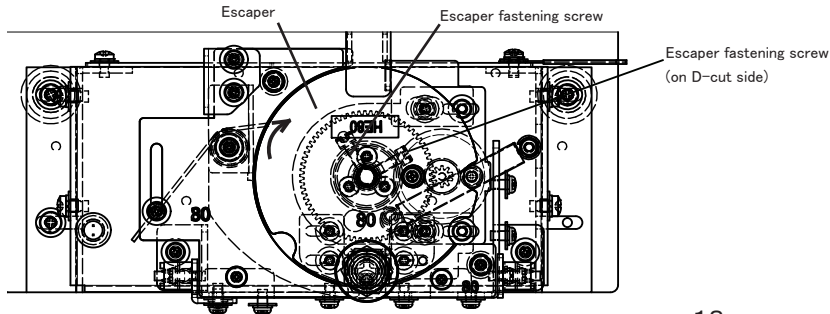
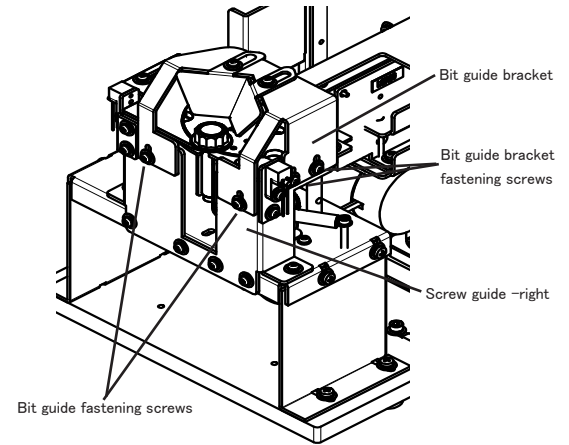
* When making adjustments, please remove all outside cover plates of the machine.

Note: In cases of rail or escaper replacement for the change of screw size or cleaning of rail, re-adjustment of the rail and the escaper unit would be necessary after those operations. For detailed replacement method, please refer to instructions in Section 8.

6-5-1 Escaper Height Adjustment

■ Relative Height Adjustment

Compared to the screw guide, the escaper disc shall be set roughly at the same height, or at most 0.2mm higher than the screw guide. The height of the escaper can be adjusted by loosening the 2 fastening screws below the escaper as shown in image below. The orientation of the escaper is also determined by where the screws are fixed against the D-cut of the axle, therefore please use extra caution when fastening those two screws for the escaper, starting with the one at the D-cut side.



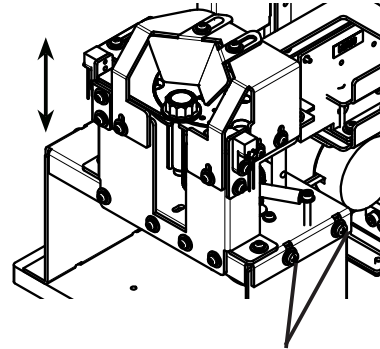
■ Height Adjustment between Escaper and Rail

The escaper shall be set roughly 0.2 – 0.5mm lower than upper edge of the rail. The adjustment can be made by adjusting the escaper fastening screws as described in previous section.

** Relative height-setting reference:

Escaper guide \leq Escaper $<$ Rail

- Escaper guide shall be at the same height or lower than escaper.
- Rail should be higher than escaper.

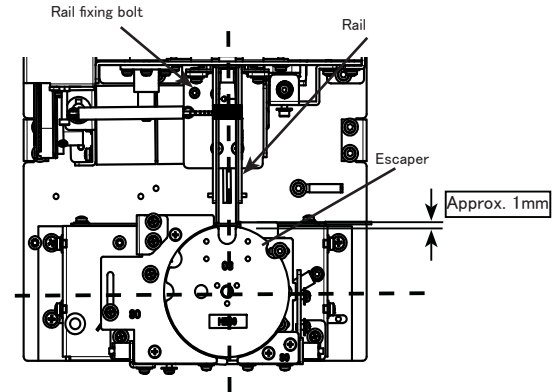


Escaper fastening screws
(same on the opposite side)

6-5-2 Clearance between Escaper and Rail

The clearance between escaper and rail shall be approximately 1.0mm. Position of the rail can be adjusted by loosening the rail fixing bolt as shown on right.

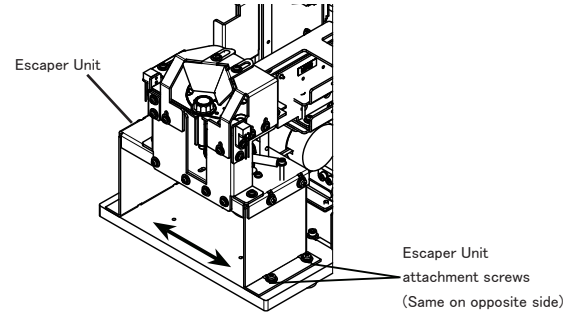
*After adjusting, please turn on the power and enable rail vibration to make sure that front tip of the rail does not touch the escaper when vibrating starts, as during normal feeding operation.



6-5-3 Alignment of Escaper, Rail, and Bit-Guide positioning

■ Alignment of Escaper –Rotational Center and Rail

Center of the Escaper's rotation shall be aligned with center of the rail opening, which can be confirmed visually. In case of where the two are offset, please unfasten the attachment screws of the escaper unit at the bottom, and adjust the unit's position left or right as shown. After the escaper unit is adjusted properly, please fixed the four screws again firmly.

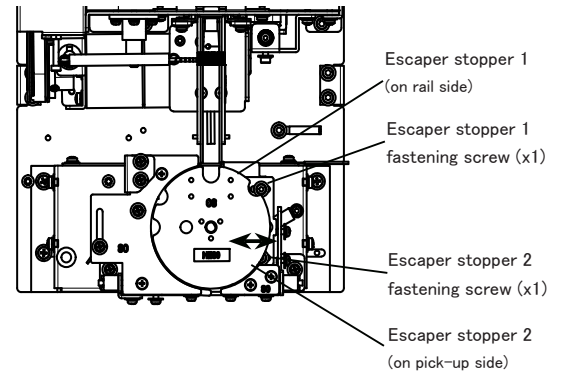


■ Alignment of the Opening on Escaper and Rail Center

Center of the escaper's opening and the rail centreline can be checked visually. In case where adjustment is necessary, please loosen the fastening screws of the Escaper stopper 1 as shown, and adjust the stopper left or right. After the adjustment is finished, please fix the screws firmly.

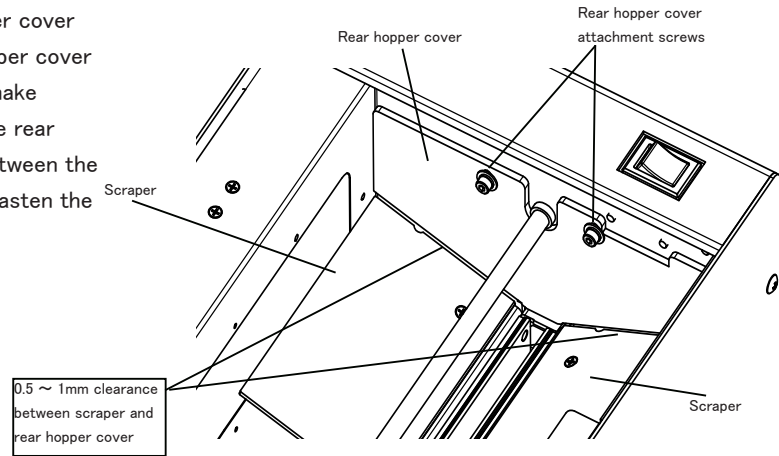
■ Alignment of Center of the Escaper opening and Bit-guide Positioning

Center of the escaper's opening and the bit guide can be checked visually. In case where adjustment is necessary, please refer to Section 6-5-1, and remove the bit guide bracket and screw guide right according to the figure. Loosen the Escaper stopper 2's fastening screws, and adjust the stopper left or right. After the adjustment is finished, please fix the screw again firmly.



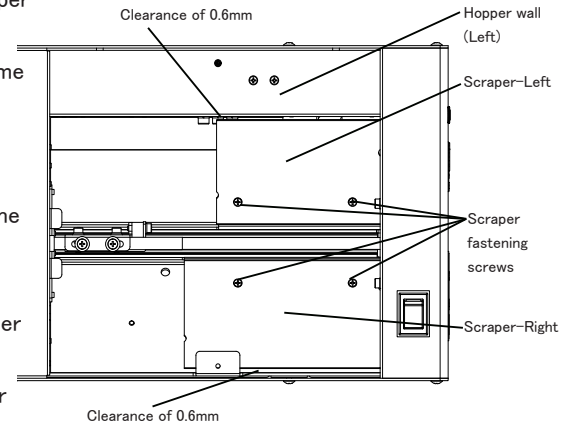
6- 6. Adjustment of the Rear Hopper Cover

Please check that the clearance between the rear hopper cover and the scraper is set between 0.5–1mm. If the rear hopper cover touches the scraper, it will affect the rail vibration and make delivery of screws on the rail slower than usual. Or, if the rear hopper cover is set too high, screws may get trapped between the extra opening. When adjustment is necessary, please unfasten the attachment screws to adjust the height as shown.



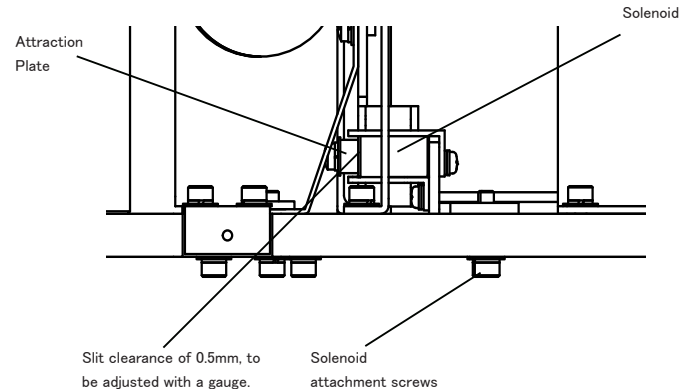
6- 7. Adjustment of Scrapers

- Please check that the clearances between the scraper right/left and the hopper walls are roughly 0.5mm.
- If the scrapers make contact with the hopper wall, the rail vibration will become weaker and the screw delivery will slow down. If the clearance between the scraper and the hopper wall is too large, screws may be caught.
- When adjustment is necessary, please loosen the scraper attachment screws and move the scraper plate up or down, as shown in diagram. When loosening the screws, please be aware not to loosen these screws all the way out, otherwise the fastening plates on the bottom may fall into the machine.
- After such adjustments, if deformation on the plates was so severe that proper clearance and adjustment cannot be achieved, or scratches on the plates are causing trouble in screw movement, please purchase new replacement parts for best performance of the feeder.
- Scraper Left part no.: PLM00008 / Scraper Right: PLM00108



6- 8. Adjustment of the Vibration Solenoid

When necessary, please check the clearance between the solenoid and the rail attraction plate. The clearance shall be set at 0.5mm, as shown on right. When adjustment is necessary, please unfasten the 2 attachment screws on the bottom, and insert a 0.5mm-thick slit or gauge plate between the two parts. Slightly press the solenoid against the rail attraction plate with gauge, and fasten the two attachment screws on the bottom firmly.



6- 9. Adjustment of Rail Vibration

The amplitude and frequency of the rail vibration can be adjusted.

The vibration has been adjusted at the factory for screws that correspond with the rail.

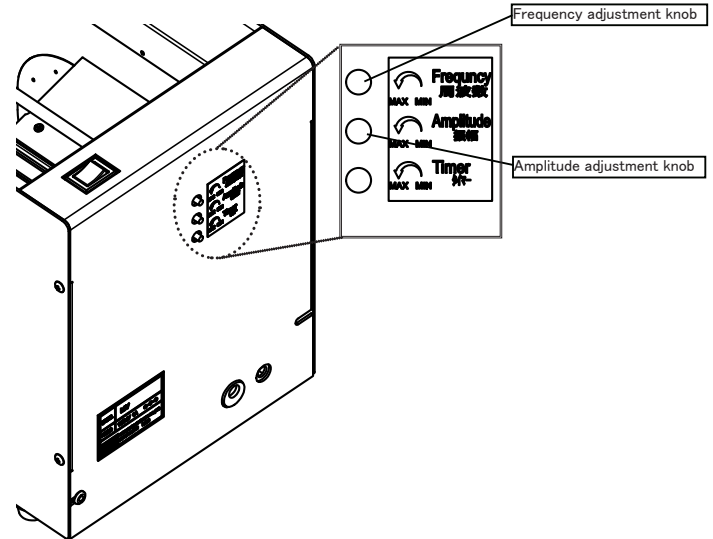
Please place some screws into the rail and turn on the power. If the screws are delivered smoothly, there is no need for adjustment.

The screw delivery speed differs depending on actual screw type.

For screws with a low delivery speed, or screws that jump violently, an adjustment is necessary.

- ① Turn the amplitude adjusting knob (second hole from the top) using the accompanying screwdriver, and turn to the maximum amplitude.
- ② Turn the frequency adjusting knob (first hole at the top in the back of the machine) using the accompanying screwdriver. Find the frequency at which the rail vibrates the most.
- ③ Adjust the amplitude adjusting knob again to the point where screws move smoothly.

- If the vibration is adjusted to a too large a value to increase the delivery speed, screws may jump out from the rail and fall into the machine internally, causing troubles to the machine operation. Please adjust the vibration to a proper value according to actual screw speed.
- With the accompanying plastic screwdriver, please turn the knob slowly without using excessive force during adjustment.
- If no screw are scooped onto the rail for a certain period of time, the rail vibration will magnify to accelerate the delivery. If still there is no screws being delivery from the rail, the operation/vibration will stop automatically.

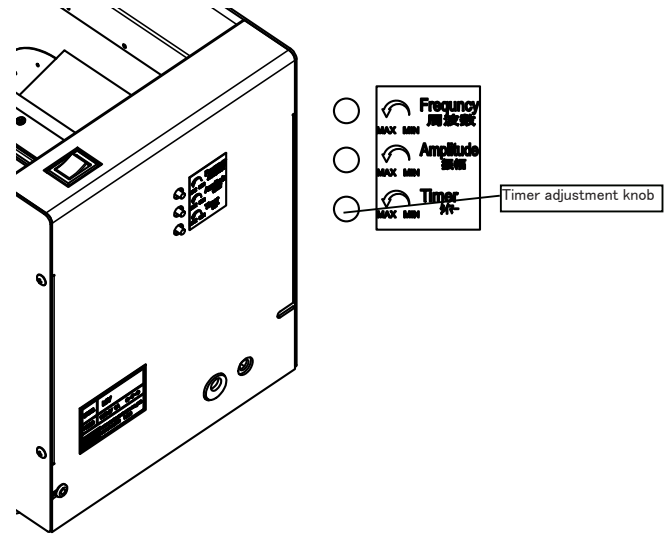


6- 10. Adjustment of Timer

The screw delivery speed differs by the actual screw type or shape. The screw feeding process can be adjusted and become smoother through timer adjustment. For screws with a low delivery speed, please set the timer longer. For screws with a faster delivery speed, set the timer shorter.

The machine operation continues when no screw is found at the screw pick-up point on the escaper. The machine continues operating when a screw is sent to the pick-up point, but vibration will stop after a certain lapse of time, if the screw is not picked up. This time lapse can be adjusted by setting the timer knob. After the screw is picked up, the machine starts operating again.

- Please check the operation by intercepting the optical axis, by covering one of the sensors.
- Adjustment can be made by turning the timer adjusting knob (the 3rd hole from the top) at the rear cover of the machine. (As shown in the figure on right)
- When the timer knob is turned clockwise, as viewed from the back, the time becomes shorter. When the knob is turned counterclockwise, the time becomes longer. (This time can be set between 1-14 sec.)



7. Maintenance



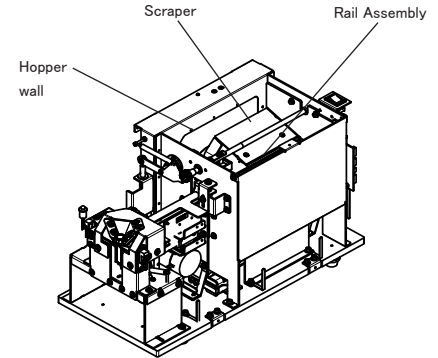
Caution!

Please make sure the power is OFF prior to maintenance.

Please take out all screws inside the machine before maintenance work.

7- 1. Cleaning Inside the Hopper

If dust and debris had built up inside the hopper, please remove covers from the machine body as shown on right, and blow-clean throughout the internal parts to take away small metal debris or dusts. Also, with a piece of fabric with cleaning alcohol, please wipe clean inside the hopper walls, scrapers, and insides of the rail.



7- 2. Grease Up

The following moving components are applied with machinery grease.

Moving components shall be checked roughly once a month, and if the grease had got low or gone away, please apply grease as necessary.

- ① Brush-driving shaft
- ② Brush shaft assembly
- ③ Brush-driving gear
- ④ Escaper axle
- ⑤ Escaper driving gear

For ①~④ : Recommended grease:

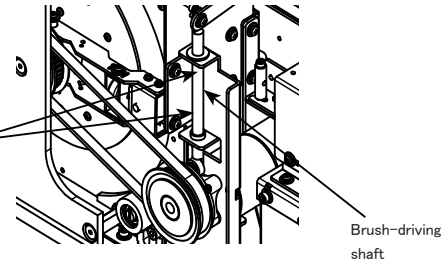
MOLYKOTE BR-2 Plus by Dow Corning Toray Co. (or equivalent)

For ⑤ : Recommended grease:

GREASE MATE spray grease by KURE (or equivalent)

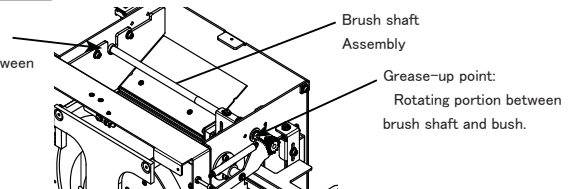
① Brush-driving Shaft

Grease-up point:
Sliding portion between
brush-driving shaft and
bushes (x2).

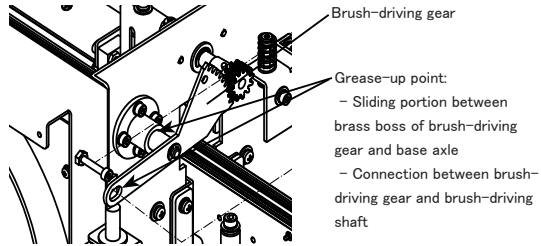


② Brush Shaft Assembly

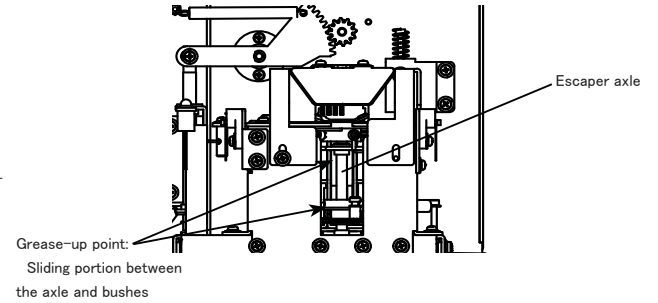
Grease-up point:
Contacting portion between
brush shaft and bush.



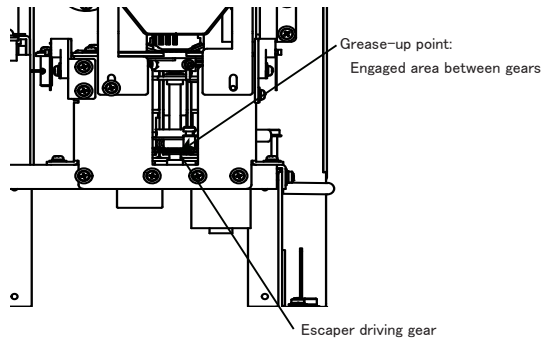
③ Brush-driving Gear



④ Escaper Axle



⑤ Escaper Gear



8. Parts Replacement and Adjustment

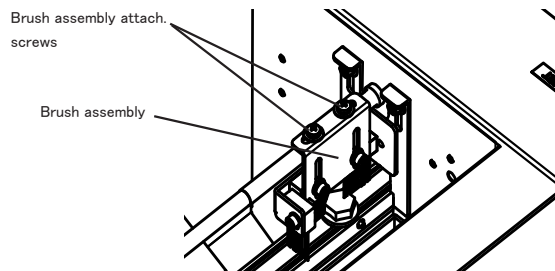
Replaceable parts include brush assembly, escaper assembly, rail assembly, scrapers, magnet driving armature, brush driving shaft roller, escaper motor.

8— 1 Brush Assembly Replacement

When the tip of brush has been worn out and not able to brush away improperly aligned screws on the rail, please replace it with a new brush. Loosen the brush assembly attachment screws, and replace the brush assembly. Re-assemble the brush again in opposite order.

– For fine adjustment of the brush height, please refer to Section 6–2, Brush Adjustment.

– Brush assembly part no.: PBS00694

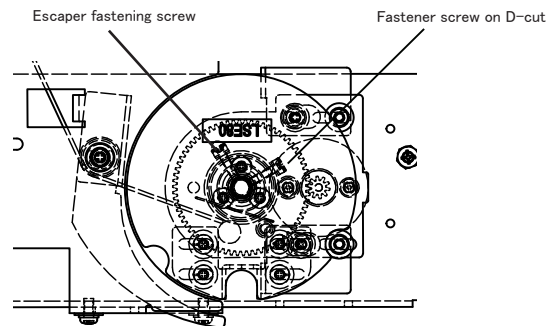
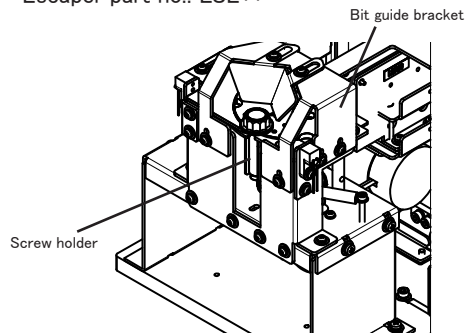


8—2 Replacement of Escaper

When using screws of a different diameter, along with the rail and passing plate, the escaper shall to be replaced as well. Loosen the escaper fastening screws on the shaft, and the escaper disc can be pulled away upwards. The new escaper can be installed with same steps in opposite order. When installing the new escaper, one of the fastening screws shall be aligned with the D-cut on the rotation axle.

– For adjusting position of the escaper, please refer to Section 6–5, Adjustment of Rail Assembly and Escaper-Associated Components

– Escaper part no.: LSE**



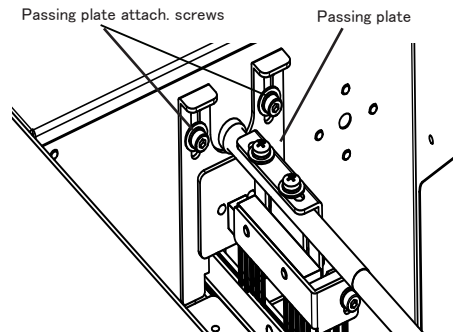
8-3 Passing Plate Replacement

In case when the passing plate is deformed or worn-out , please replace it with a new one. The passing plate can be removed by loosening the two attachment screws as shown on right.

*Please be careful and not to drop or misplace attachment screws into the scooping chamber.

- For adjusting position of the passing plate, please refer to Section 6-3, Adjustment of the Passing Plate.

- Passing plate part no.: LSW**

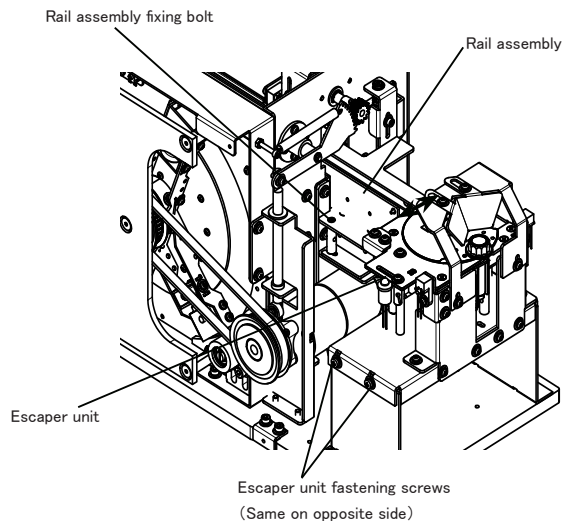


8-4 Rail Assembly Replacement

When using screws of a different diameter, the rail assembly shall be replaced along with the escaper and passage plate. Prior to replacing the rail, please remove the entire escaper unit as shown in diagram on right. Next, loosen the attachment screw as shown, and the rail assembly can be pulled out from the front. Insert the new rail and install the escaper unit in opposite order.

- For adjusting position of the escaper unit and rail assembly, please refer to Section 6-5, Adjustment of Rail Assembly and Escaper-Associated Components

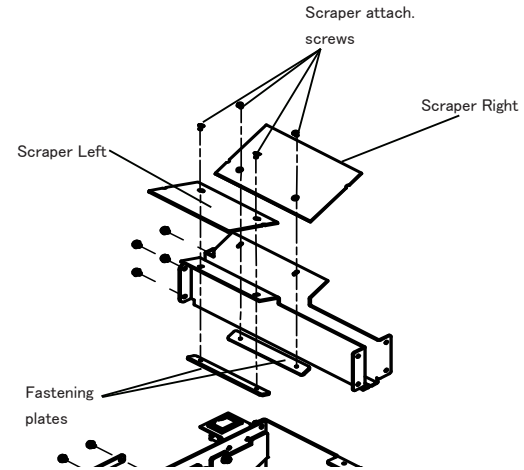
- Rail assembly part no.: LSR**



8—5 Scraper Replacement

When the scraper has become worn-out and difficult to be adjusted, please replace it with new parts. Loosen attached screws as shown in diagram, and install the new plates with fastening plates on the bottom.

- For adjustment, please refer to Section 6-5, Adjustment of Scraper
- Scraper Left part no.: PLM 00008 ; Scraper Right part no.: PLM 00108

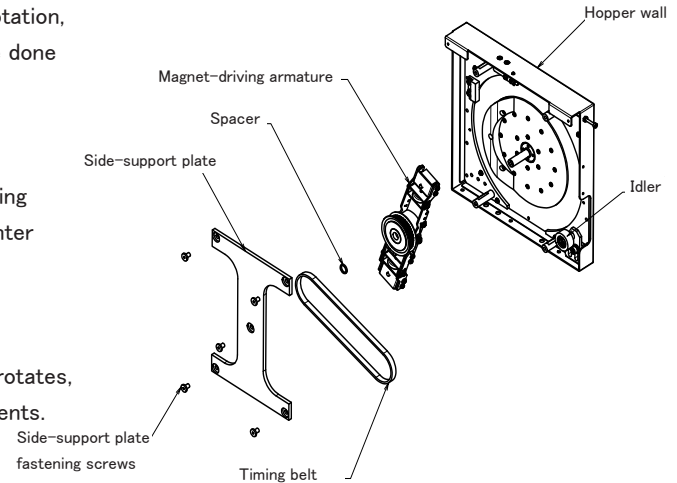


8-6 Magnet-Driving Armature Replacement

In case where the magnet makes contact with the hopper wall during rotation, the magnet-driving armature shall be replaced. The replacement can be done as follows:

1. Remove the side-support plate
2. Loosen the idler on lower right corner.
3. Remove the magnet-driving armature with the timing belt. (The bearing installed inside the core of the magnet armature shall be left on the center shaft, and only remove the magnet armature.)
4. Install the new parts with same instructions in reverse order.
5. Install the idler against the timing belt so that it is suppressed with moderate tension. Please also confirm that when the magnet armature rotates, the idler's position is not too close or make contact with other components.

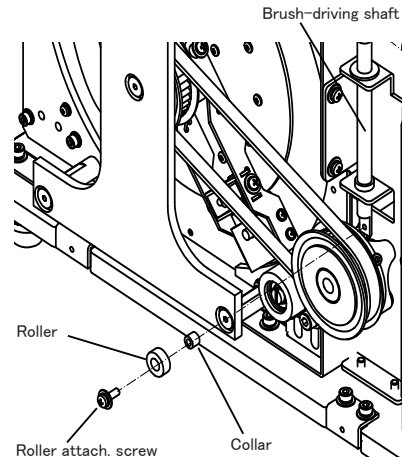
- Magnet driving armature assembly: PLMB0039



8-7 Brush-Driving Shaft Roller Replacement

The brush-driving shaft roller can get worn out after a long period of use. When movement of the brush shaft does not function normally, please replace the roller with instructions as shown on the right.

- Roller part no.: TPO90982

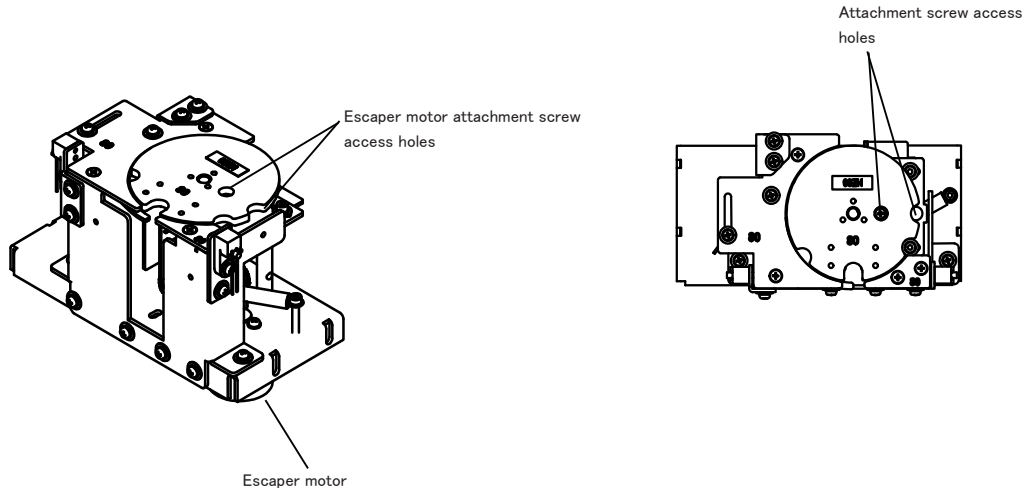


8-8 Escaper Motor Replacement

First, please remove the bit guide bracket prior to replacement (Please refer to 6-5)

Insert the tip of screw driver through maintenance holes as shown below, and unfasten the two attached screws of the escaper motor. After the escaper motor is removed from the bottom, install the new motor with same steps, and install the assembly back on the machine body; and reinstall the bit guide bracket as well. Wiring of the motor should be routed through opening on the back of the escaper unit. Finally, please apply some grease on contacting portions of the Escaper motor gear and Escaper gear.

- Regarding alignment and adjustment of the escaper, please refer to Section 6-5: Adjustment of Rail Assembly and Escaper associate parts.
- Part no. of escaper motor: PLM09101#14



9. Trouble-Shooting



Caution! Please make sure the power is OFF when performing any adjustment or trouble-shooting.

Problem	Cause	Solution
9-1 When the power is switched ON, the machine does not start operation.	<ul style="list-style-type: none"> - Power is not connected to the machine or adaptor. - Top acrylic cover is not installed on the machine. 	<ul style="list-style-type: none"> - Make sure the adaptor is connected to the power supply. - Place the top cover properly on the machine.
9-2 No screw is delivered to the escaper or pick-up point.	<ul style="list-style-type: none"> - Screw size is different than the nominal rail size. - Remaining screw in the feeder has decreased and not enough for supply. - Too much screws had been applied and caused jamming. - A screw had been jammed between the rail and passing plate, at an angle which it cannot be removed by regular brush movement. - Threaded part of a screw is jammed at the passing plate and blocking screw flow. - A screw has been jammed between the rail and passing plate at an angle, not being carried by the rail. 	<ul style="list-style-type: none"> - Please confirm and use the correct feeder according to actual screw size. - Please confirm and use the correct rail size. - Adjust the amount of screws inserted into feeder, or decrease the amount if needed. In some cases, the jamming of screws can be resolved by putting in less screws. - Adjust the brush height, or the passing plate. - Remove jammed screw at the passing plate; adjust the passing plate to proper height setting. - If a screw is jammed between the rail and holding plate, remove the screw with the following steps: Move up the holding plate → Remove the jammed screw → Adjust the holding plate again to proper height.

Problem	Cause	Solution
9-2 No screw is delivered to the escaper or pick-up point.	<ul style="list-style-type: none"> -The rail vibration is not working properly or affected by screw jam. - There may be a screw or other objects jammed between the rail and holding plate. - Other alien objects is jammed between the vibration mechanism. - Vibration frequency or amplitude is not adjusted properly. - The timer is not set properly according to the screw size. 	<ul style="list-style-type: none"> - Please check and confirm that there is no screws or alien objects jammed between the rail and holding plate. - Regarding vibration, please check the following: <ul style="list-style-type: none"> - The clearance between the rear hopper cover and the rail. - If there is enough clearance between the scraper and hopper wall. - If the slit of the vibration solenoid is set properly. - Please adjust the rail vibration or the timer setting again.
9-3 Screws had fallen into the rail	<ul style="list-style-type: none"> - Screw size is different than the nominal rail size. - Total screw length is shorter than rail groove opening. 	<ul style="list-style-type: none"> - Please confirm and use the correct screw size with machine spec. - Please use the correct rail size. - The machine may not be compatible with customer's screw.
9-4 The flow of screw delivery is too slow or jammed.	<ul style="list-style-type: none"> - The holding plate or screw guide is set too close to the rail or the screw head. - Possibly debris or grease is attached inside the rail groove. - Smaller screw or large debris is jammed inside the rail groove, and affects the vibration. 	<ul style="list-style-type: none"> - Adjust the holding plate higher. - Reset the timer setting. - Clean the rail. - Remove the debris and clean the rail groove.
9-5 Screws get carried over the passing plate with improper position. The screw body gets jammed by the passing plate.	<ul style="list-style-type: none"> - The passing plate is not adjusted properly. - The passing plate is not correct size with the screw used. - The vibration is too strong and make screws overly pressing against the passing plate too much. 	<ul style="list-style-type: none"> - Adjust the passing plate. - Use new size of passing plate for the applied screw. - Lower the rail vibration, and reduce screw jamming at the passing plate on the rail.
9-6 Screws cannot get delivered to the escaper	<ul style="list-style-type: none"> - During the delivery, screws had stopped on the rail. - Screws cannot be properly transferred from the rail to escaper. 	<ul style="list-style-type: none"> - Please refer to 9-2 and adjust the rail accordingly. - Check the clearance between the rail and the escaper.

Problem	Cause	Solution
<p>9-7</p> <p>The machine operation had stopped suddenly.</p>	<p>-The motor is being overloaded. When the circuit detects an overload, the motor will reverse momentarily, and continue in forward direction again. After this pattern repeats twice, if the cause of overload still exists, the machine will display an error message and stop.</p> <p>- No screw is delivered to front sensors for a long time. If no screw is delivered to the sensors for more than 30 seconds, an error message will be displayed with operation stopped.</p>	<p>- Clear out the cause of motor overload, possible reason as follows:</p> <ul style="list-style-type: none"> - Brush movement is jammed. - Magnet armature rotation is jammed or interfered. - When screws are being carried up, the load is too much and not delivered smoothly. - If there is not enough screws, please supply more. - If screws are jammed inside the scooping chamber, turn off and clear up the jamming, and restart the machine.
<p>9-8</p> <p>Even when screws are delivered to the pick-up point, screw scooping does not stop.</p>	<ul style="list-style-type: none"> - Timer setting is not set properly. - Screw sensors at the front are not set properly. Screws cannot be seen by sensors. 	<ul style="list-style-type: none"> - Adjust the vibration again. - Check sensor position.
<p>9-9</p> <p>Although screws are delivered, the escaper does not rotate.</p>	<ul style="list-style-type: none"> - Front screw sensors are not set properly. (The sensors are mistaken with screws present) - Escaper motor malfunction - Escaper is not installed properly 	<ul style="list-style-type: none"> - Clean up the sensor lens and slit plate. - Replace the sensors. - Replacement of escaper motor. - Adjustment of escaper.
<p>9-10</p> <p>Screws have dropped inside the machine.</p>	<ul style="list-style-type: none"> - Screw holding plate is not adjusted properly. - Rail position is not set properly. 	<ul style="list-style-type: none"> - Re-adjust the screw holding plate height. - Re-adjust the rail position and maintain correct clearance.

10. Specifications

AC power adaptor (Switching type)	Input: AC100 ~ 240V 50/60Hz Output: DC15V
Dimensions	169Wx354Dx229H (mm)
Gross weight	Approx. 15Kgf
Screw storage capacity	LS25: 1300cc / LS50: 1000cc
Applicable driver-bit size	< ϕ 18
Accessories	Operation Manual x 1
	AC adaptor x 1
	Hex wrench x 1
	Adjustment driver x 1

Installation location	Level stable place
Installation and storage condition	Temperature : 0~40°C
	Humidity : 10 to 85%(without)
Compliance standards	EMC 2014/30/EU
	RoHS 2011/65/EU
	MD 2006/42/EC

Note:

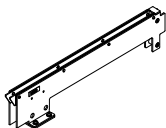
- In case of product improvement or upgrade, product specification may change without further notice.
- The noise of this unit is less than LAeq 70 dB at a distance of 1 m.
- This product complies with EU directive. Please check the EU Declaration of Conformity for compliance standards.

Product No.	Compatible Screw Dimension						Type of Screw Head						
	Nominal diameter of screw	Actual screw diameter (mm)	Screw head diameter (mm)	Washer diameter (mm)	Screw head height (mm)	Length of screw thread (mm)	Panhead			Binding head	Flat head	Hexagon flanged head	Hexagon socket head
							Cross-recessed Head	Double cross-recessed Head	Washer head				
LS25	ϕ 3.0	2.8~3.1	4.0~7	4.0~20	1.0~10	3.6~25	○	○	○	○	○	○	○
	ϕ 3.5	3.3~3.7	4.8~9.5	4.8~20	1.0~10	4.1~25	○	○	○	○	○	○	○
	ϕ 4.0	3.8~4.3	5.4~9.5	5.4~20	1.0~10	4.6~25	○	○	○	○	○	○	○
	ϕ 5.0	4.8~5.1	6.2~13	6.2~20	1.0~10	5.6~25	○	○	○	○	○	○	○
	ϕ 6.0	< 6.0	7.2~13	7.2~20	1.0~10	6.6~25	○	○	○	○	○	○	○
	ϕ 8.0	< 8.0	8.2~16.5	8.2~20	1.0~10	8.6~25	○	○	○	○	○	○	○
LS50	ϕ 3.0	2.8~3.1	4.0~7	4.0~20	1.0~10	3.6~50	○	○	○	○	○	○	○
	ϕ 3.5	3.3~3.7	4.8~9.5	4.8~20	1.0~10	4.1~50	○	○	○	○	○	○	○
	ϕ 4.0	3.8~4.3	5.4~9.5	5.4~20	1.0~10	4.6~50	○	○	○	○	○	○	○
	ϕ 5.0	4.8~5.1	6.2~13	6.2~20	1.0~10	5.6~50	○	○	○	○	○	○	○
	ϕ 6.0	< 6.0	7.2~13	7.2~20	1.0~10	6.6~50	○	○	○	○	○	○	○
	ϕ 8.0	< 8.0	8.2~16.5	8.2~20	1.0~10	8.6~50	○	○	○	○	○	○	○

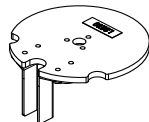
Screw Feeder Model No.	Exchange Kit No.	Rail Part No.	Escaper Part No.	Escaper Guide Left Part No.	Escaper Guide Right Part No.	Passing Plate No.
LS 25- HM 30	LS2530MSET	L2530	SE30	HMG30L	HMG30R	LW30
LS 25- HM 35	LS2535MSET	L2535	SE35	HMG35L	HMG35R	LW3540
LS 25- HM 40	LS2540MSET	L2540	SE40	HMG40L	HMG40R	
LS 25- HM 50	LS2550MSET	L2550	SE50	HMG50L	HMG50R	LW5060
LS 25- HM 60	LS2560MSET	L2560	SE60	HMG60L	HMG60R	
LS 25- HM 80	LS2580MSET	L2580	SE80	HMG80L	HMG80R	LW80
LS 50- HM 30	LS5030MSET	L5030	SE30	HMG30L	HMG30R	LW30
LS 50- HM 35	LS5035MSET	L5035	SE35	HMG35L	HMG35R	LW3540
LS 50- HM 40	LS5040MSET	L5040	SE40	HMG40L	HMG40R	
LS 50- HM 50	LS5050MSET	L5050	SE50	HMG50L	HMG50R	LW5060
LS 50- HM 60	LS5060MSET	L5060	SE60	HMG60L	HMG60R	
LS 50- HM 80	LS5080MSET	L5080	SE80	HMG80L	HMG80R	LW80

○ Replacement Parts

Rail: L****



Escaper: SE**



Escaper Guide -Left: HMG**L



Escaper Guide -Right: HMG**R



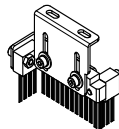
Passing Plate: LW**



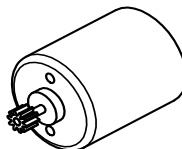
Roller: TPO90982



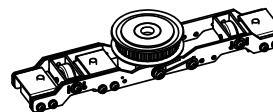
Brush assembly: PLMB0033



Escaper Motor: PLM09101#14

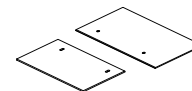


**Magnet driving armature: PLMB0039



Scraper-Left: PLM00008

Scraper-Right: PLM00108



11. Installation/ Storage Conditions

■ Installation Conditions

- Temperature of surrounding: 0~40°C
- Relative humidity level: 10~85% (Non-condensing)
- Location: Horizontal and stable working surface

■ Storage Conditions

- Temperature of surrounding: 0~40°C
- Relative humidity level: 10~85% (Non-condensing)

12. Terms of Warranty

For users within Japan, the effective term of warranty is 6 months after delivery.

Such warranty will not be applicable to purchases or users outside of Japan. If any troubles should occur, please contact your dealer.

After the warranty period, repair services will be provided.

In the following cases, the purchaser shall pay for parts and labor regardless of the terms of warranty:

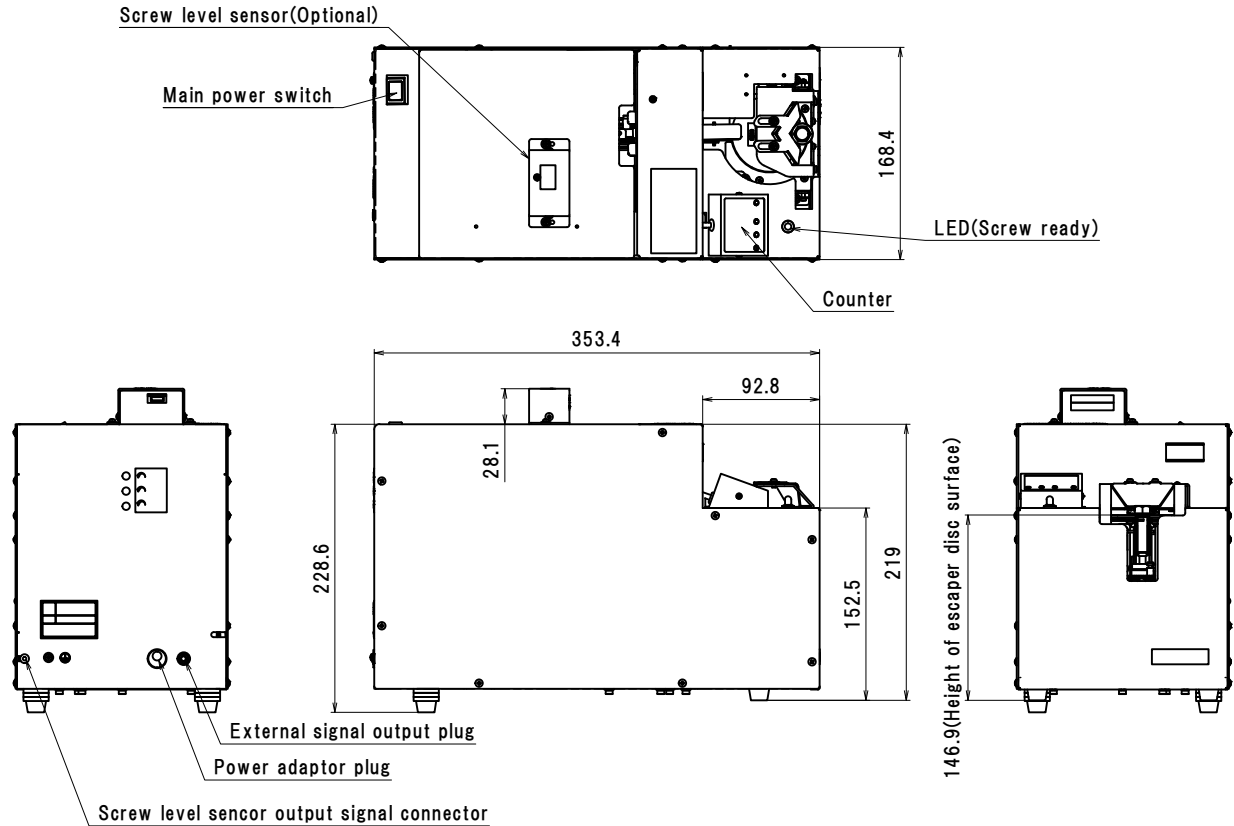
- ① Failure due to improper handling.
- ② Failure due to product modification or improper processing.
- ③ Failure due to causes beyond control (for example earthquake or fire).
- ④ Failure attributable to any cause other than this product.
- ⑤ Failure due to installation, operation, or storage conditions.
- ⑥ Consumable and replaceable parts; replacement work expenses.

For products purchased overseas, they will not be covered by the warranty terms. However, in circumstances where the malfunction was originated by product design or the manufacturer, return service or replacement would be provided with limited terms. Delivery charges are covered for domestic purchases.

In general, performance parts for repair (parts required to maintain product function) will be kept available for at least 5 years after the discontinuation of production. After this period, some repairs may be available. Please contact your dealer for details.

13. External Dimensions

[Unit: mm]





RoHS



Please note that on disposal, this product may be safely recycled in accordance with the relevant national legislation relating to electrical/ electronic products. If in doubt please contact your retailer for guidance.

部品名称	有毒有害物質或元素					
	鉛(Pb)	汞(Hg)	鎘(Cd)	六价铬(Cr(VI))	多溴联苯(PBB)	多溴二苯醚(PBDE)
驱动齿轮,轴心部件	×	○	○	○	○	○
铆钉	×	○	○	○	○	○
六角铜柱	×	○	○	○	○	○
电路板元件	×	○	○	○	○	○
连接器	×	○	○	○	○	○

○: 表示該有害物質在該部件中的含量均在GB/T 26572-2011規定的限量要求以下。
 ×: 表示該有害物質至少在該部件中的某一均質材料中的含量超出GB/T 26572-2011標準規定的限量要求。

<http://www.ohtake-root.co.jp>

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