

Automatic Screw Feeder

自動ネジ供給機

NSR Series

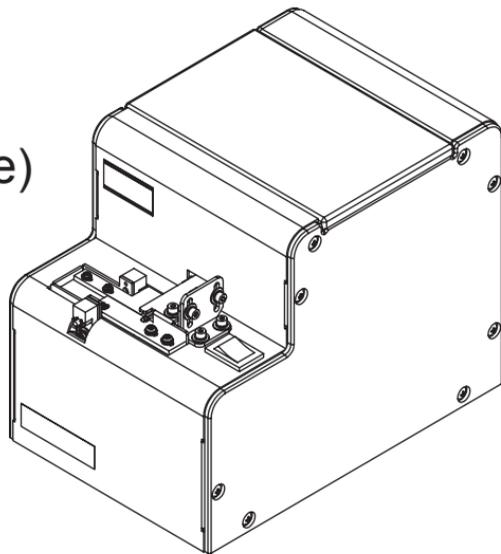
Operation Manual (Maintenance)

Read these instructions for the proper use of this machine.
After having read these instructions,
keep them in a convenient place so you
or the operator can refer to them whenever 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。



NSR1MA01Ma

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1. Checking before Operating the Machine

Thank you very much for selecting our Automatic Screw Feeder "NSR series". Please check the following accessories before operating the machine.

| | | | |
|----------------------|---------|------------------------|--|
| - Instruction Manual | 1 copy | - Passing plate | 2 pieces (One of them is already installed.) |
| - AC adapter | 1 unit | - Hexagonal wrench key | 1 piece |
| - Screwdriver | 1 piece | | |

※ For feeder machines purchased outside of Japan, no adaptor will be supplied with the feeder. Please purchase separate adapter with equivalent output specification as required.

2. Precautions on Use

Installation place



CAUTION

Install the machine in a stable and level place.

Installing the machine in an unstable place will result in a drop or injury.

Do not operate the machine in a place that is exposed to inflammable gas, explosive gas or moisture.

Power supply



CAUTION

The transformer-type AC adapter attached with the machine has nominal output of DC12V-500mA; during application, it is designed to supply an average output at about 15V to the screw feeder.

In the case where a different type of adapter or external power source is used, it is recommended to use a 15V switching type adapter, or regulated power supply which can provide constant output at 15V.

- Unplug the AC adapter from the wall outlet during closing hours and if the machine will be left unused for any extended period of time.

Rail

Do not bend, alter or damage the rail. Do not apply any oil.
We recommend the user to clean the rail periodically.

Screws that must not be used

Do not use any screw that is out of the specified range or any screw that is stained with oil or dust.

Precautions on picking up screws

When picking up screws, do not exert excessive force or shock to the screws.

Handling during operation



CAUTION

Do not allow any foreign material to enter into the machine while it is in operation.
Do not put fingers into the machine while it is in operation, otherwise an injury will result.

Abnormality during operation



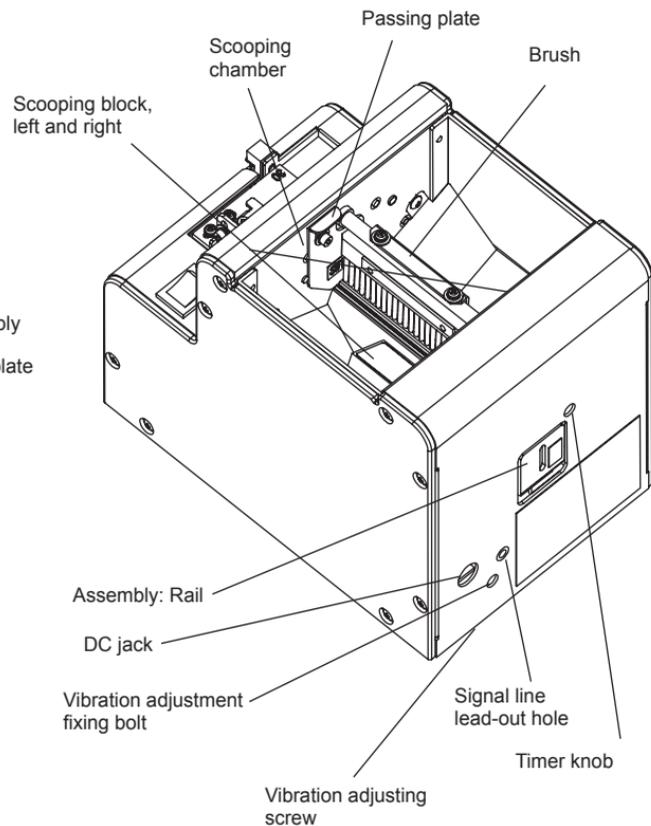
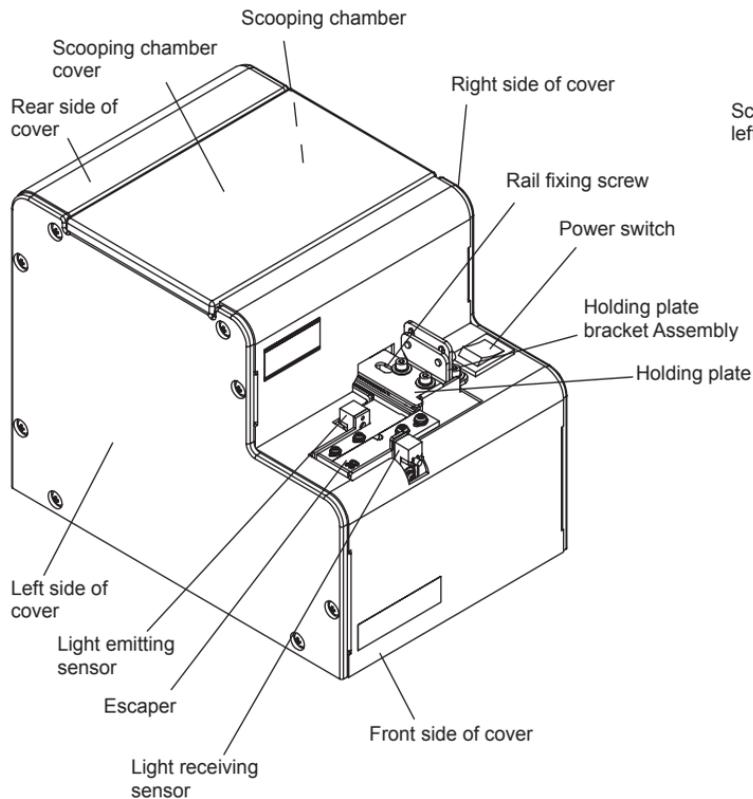
CAUTION

When any abnormality is found while the machine is in operation, pull out the AC adapter from the plug socket.
If the machine operation is continued in the abnormal status, it will cause a fire, electric shock, or injury. When an abnormality is detected, consult your dealer.

Repair

Do not attempt to repair, disassemble or modify this machine except where specified by this manual. Consult your dealer for service of this machine.

3. Names of Machine Parts



4. Checking and Adjustment before Operating the Machine

4.1 Checking the Main Body Model

Check if the nominal diameter of the screws to be loaded matches the main body model, and then use the machine.

Check the rail model No., escaper model No., and passing plate model No. by referring to the following table.

| Screw feeder series | Screw feeder model | Screw size | Exchange kit No. | Rail model No. | Escaper model No. | Passing plate model No. |
|---------------------|--------------------|------------|------------------|----------------|-------------------|-------------------------|
| NSR | NSR10 | φ 1.0 | SRR10SET | SRR10 | SE10 | SW1017 |
| | NSR12 | φ 1.2 | SRR12SET | SRR12 | SE12 | |
| | NSR14 | φ 1.4 | SRR14SET | SRR14 | SE14 | |
| | NSR17 | φ 1.7 | SRR17SET | SRR17 | SE17 | |
| | NSR20 | φ 2.0 | SRR20SET | SRR20 | SE20 | SW2030 |
| | NSR23 | φ 2.3 | SRR23SET | SRR23 | SE23 | |
| | NSR26 | φ 2.6 | SRR26SET | SRR26 | SE26 | |
| | NSR30 | φ 3.0 | SRR30SET | SRR30 | SE30 | |

Note: Screws, with a different nominal diameter, can be used by replacing the rail, escaper, passing plate and the robot escaper guide for the robot. The parts, for replacement, are available separately.

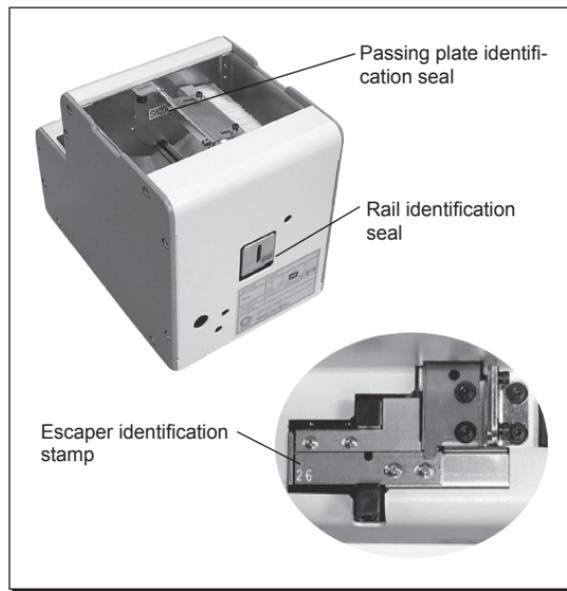
Before delivery, each section of the machine is checked and adjusted with the pan head screws matching the ordered model. Most screws may be usable in the initial status of adjustment.

However, if the height or shape of screw head is different or if the operation is regarded as abnormal, each section must be readjusted. In this case, make the following checks and adjustments:

- Checking the screw load amount
- Checking and adjusting the brush
- Checking and adjusting the passing plate
- Checking and adjusting the rail vibration
- Checking and adjusting the holding plate
- Checking and adjusting the front and rear sides of the rail
- Checking and adjusting the timer.

If the rail, escaper, and passing plate of the machine are replaced, screws with a different nominal diameter are usable.

After these parts are replaced, a fine adjustment is required. The respective adjusting procedures will be described in other paragraphs. Please read these paragraphs.



4.2 Screw Load Amount

An excessive screw load amount will have an adverse effect on the screw alignment and transport. The figure shown at right, roughly indicates the maximum screw load amount. Load the screws referring to it.

- Turn on and off the power switch so that the scooping block may be at the lower limit position.
- Load screws up to an approximately 2 to 3 mm lower position than the rail groove surface.
- At this time, check that the front inclined surface of the inclined plate is not concealed by the loaded screws.
- Be sure to determine a proper screw load amount by observing the machine operation while the machine is in operation.

The screws must not conceal the rail groove surface.
(The screws must be about 2 to 3 mm lower than the rail groove surface.)



This inclined surface of each of the left and right inclined plates should be visible.

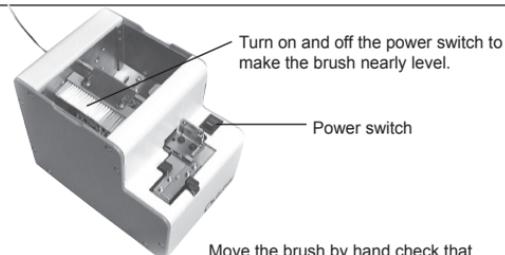
4.3 Checking and Adjusting the Brush

CAUTION Turn off the power supply before starting checking and adjusting.

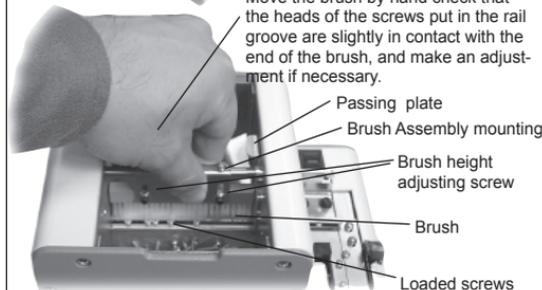
Put the screws to be loaded into the scooping chamber, turn on and off the power switch, and put the screws to be loaded into the rail groove.

- Turn on and off the power switch to make the brush nearly level as shown in the figure at right.
- Check that the heads of the screws to be loaded are in slight contact with the end of the brush.
- When the brush height is too low or high, this will have an adverse effect on the screw alignment and transport.
- If any adjustment is needed, loosen the brush height adjusting screw to adjust the brush height.
- If the front side of the brush plastic portion comes into contact with the passing plate, loosen the brush Assembly mounting screw and make an backward/forward adjustment.
- Operate the machine body to check that the brush operation is normal.

Turn on and off the power switch to make the brush nearly level.



Move the brush by hand check that the heads of the screws put in the rail groove are slightly in contact with the end of the brush, and make an adjustment if necessary.



4.4 Checking and Adjusting the Passing Plate

CAUTION Turn off the power switch before starting checking and adjustment.

- Check that the passing plate is adjusted to a height that permits screws to be loaded to pass just within the limit.
- When the passing plate is too low, screws cannot pass. When the passing plate is too high, these screws are easily caught by it.
- When an adjustment is required, loosen the passing plate mounting screws and adjust the height.
- After making an adjustment, make an operational check.

Note: Using the half-presses on both sides of the passing plate as guides, slide the passing plate up and down.

4.5 Checking and Adjusting the Rail Vibration

In this machine, the rail vibration can be adjusted.

The screw transport speed differs depending on each screw type. Check the screw transport speed. If the rail vibration constitutes a hindrance as a matter of use, it can be adjusted.

- Loosen the anti-vibration screw in the rear part of the machine and turn the vibration adjusting screw on the bottom surface of the machine to adjust the vibration.

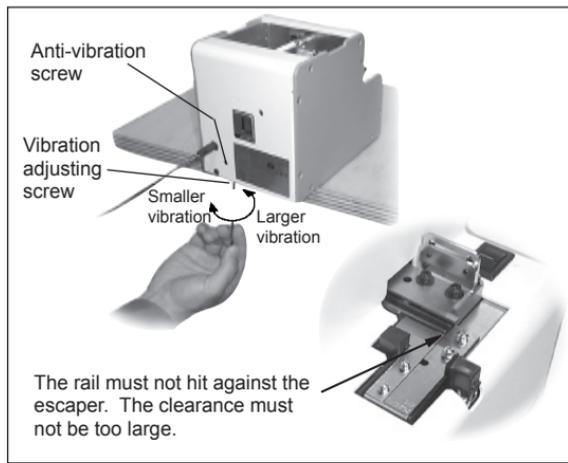
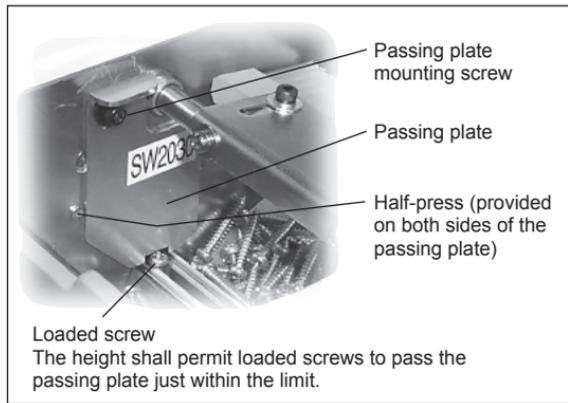
When this screw is turned clockwise as viewed from the bottom surface, the vibration will increase.

When the screw is turned counterclockwise, the vibration will decrease.

- If the vibration is adjusted to a too large value to increase the transport speed, the rail will hit against the escaper and screws may fall down into the machine from the clearance, failing to unload screws normally. Adjust the vibration to a proper value that matches the loaded screws.

(Related item: Checking and adjusting the front and rear positions of the rail)

- After making an adjustment, be sure to tighten the anti-vibration screw.
- After making an adjustment, make an operational check.



4.6 Checking and Adjusting the Holding Plate

Check the holding plate position.

- Check that the clearance between the head of the loaded screw put in the rail groove and the holding plate is about 0 to 1 mm.
- If there is no clearance, a screw will be caught. If the clearance is too large, a screw pileup or screw jump will take place.
- If any adjustment is required, loosen the clamp plate bracket 1 mounting screw and make an up/down adjustment.
- If the holding plate hits against the escaper, a hindrance is caused to the escaper motion. In this case, make a readjustment so that the holding plate may not hit against the escaper or loosen the holding plate bracket Assembly mounting screw or holding plate mounting screw, and make a backward/forward adjustment.
- After making an adjustment, check the machine operation.

4.7 Checking and Adjusting the Front/Rear Position of the Rail

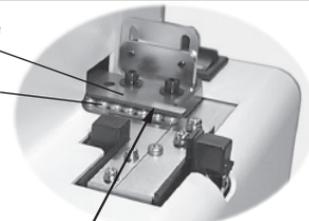
If the rail hits against the escaper or the clearance between the rail and the escaper is too large when the machine is operated, loosen the rail fixing screw and adjust the rail Assembly backward or forward. After making an adjustment, be sure to tighten the rail fixing screw. If the rail hits against the escaper, the escaper cannot be normally operated.

If the clearance between the rail and escaper is too large, screws may fall down into the machine.

After making an adjustment, try to make a vibration readjustment by referring to "Checking and Adjusting the Rail Vibration".

Holding plate

Loaded screw

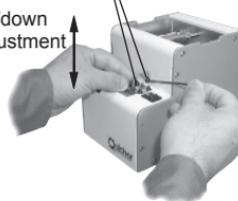


The clearance between the holding plate and the head of the loaded screw should be 0 to 1 mm.

The holding plate should be parallel to the rail groove surface.

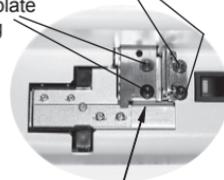
Holding plate bracket
1 mounting screw

Up/down
adjustment



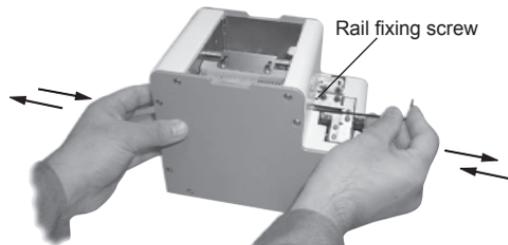
Holding plate bracket
Assembly mounting

Holding plate
mounting
screw



The holding plate must not hit
against the escaper.

Rail fixing screw



Adjust the rail Assembly backward and forward.

4.8 Checking and Adjusting the Timer

The screw transport speed differs depending on each screw type.

This machine can make screw unloading smooth through timer adjustment. For screws with a low transport speed, set the timer long. For screws with a high transport speed, set the timer short.

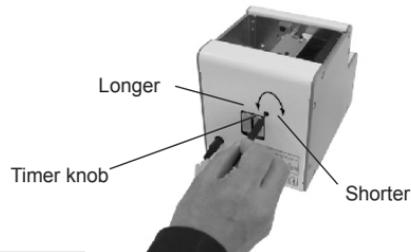
- This machine continues its operation when no screw is found at the screw unloading position, and holds a screw at the screw unloading position, and stops its operation after the lapse of a certain time. When the screw at the screw unloading position is taken out, the machine restarts its operation. This time can be varied by adjusting the timer.
- Check the operation by intercepting the optical axis of the sensor.
- Make an adjustment with the timer knob at the rear of the machine body as shown in the figure at right.
- When the timer knob is turned clockwise as viewed from the rear side, the time becomes shorter.

When this knob is turned counterclockwise, the time becomes longer.

- Make this adjustment within the allowable turning range without giving excessive force.
- Make an operational check by using loaded screws and set the timer properly.

Adjust the timer with the timer knob.

When the optical axis of the sensor is intercepted, the timer will function to stop the operation of the main body.



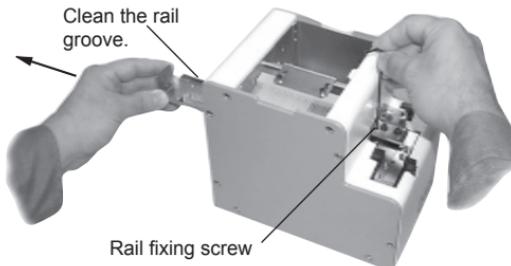
5. Maintenance

If the rail groove becomes dirty, the loaded screw transport speed may be slow.

In case the rail groove is very dirty, clean it with a thin and clean cloth dipped in alcohol. If cleaning is difficult, detach the rail from the main body and clean the rail groove. If the rail is detached from the main body, be sure to turn off the power supply and take out loaded screws in the scooping chamber beforehand.

If there is any dirt or a flaw in the rail groove that may cause an impediment to use, we recommend the user to replace the rail.

Loosen the rail fixing screw, and the rail can be detached from the rear side of the main body.



6. Replacing and Adjusting Parts

The brush, main motor, and escaper motor are consumables. The replacement rail, passing plate required after a change of nominal diameter of loaded screw, rail, and escaper must be ordered separately. The replacing and adjusting procedures are described below. When replacing parts after changing the nominal diameter, especially, a fine adjustment is required. Make this fine adjustment by reading the corresponding contents carefully.

Take out all the loaded screws put in the main body before starting the parts replacement work.

6.1 Replacing and Adjusting the Brush

CAUTION Turn off the power switch before starting replacement and adjustment.

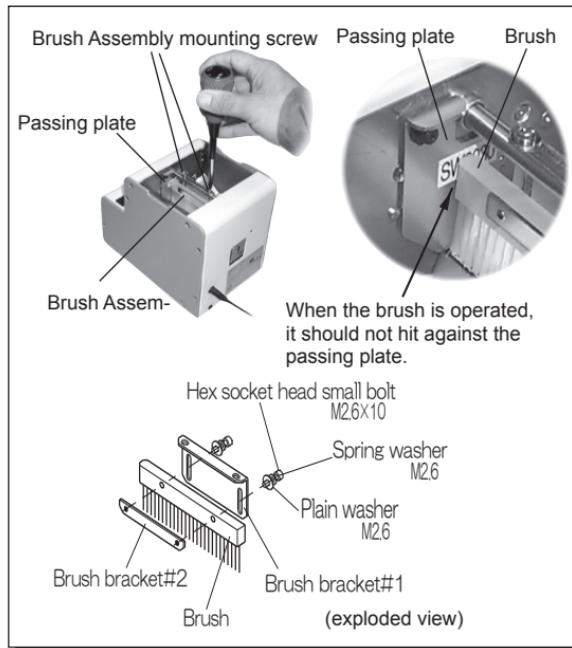
If the end of the brush is too worn out to sweep out the screws of abnormal posture, replace the brush with a new one.

A more bristly brush than the standard brush is available as an option. Make use of it when necessary.

- Turn on and off the power switch of the main body. Set the brush at the position shown in the figure at right and detach the brush Assembly.
- (Set the brush Assembly mounting screw to an easy-to-detach position.)
- The brush Assembly can be disassembled as shown in the figure at right.
- For assembly, reverse the disassembling procedure.
- After completion of assembly, check that when the brush Assembly is operated, the front side of the brush plastic portion may not hit against the passing plate. The ideal clearance is zero.
- For adjustment, refer to "Checking and Adjusting before Operating the Machine".

Part number of brush assembly:

- NSB 02053 #01 (standard part)
- NSB 02053 #02 (option: a more bristly brush)



6.2 Replacing the Main Motor

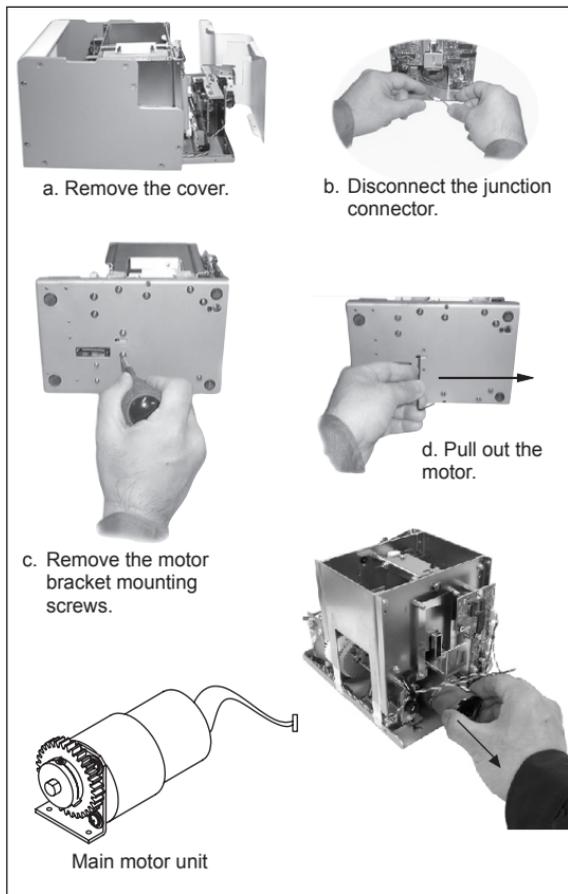
 **CAUTION** Turn off the power switch before starting to replace and adjust the main motor.

When the motor is damaged, please replace it with a new one.

- Remove the cover from the main body.
(In the case of the front cover with the power switch, disconnect the connector of the power switch and then detach this front cover from the main body.)
- Disconnect the motor junction connector.
- Remove the motor mounting screws on the bottom of the main body.
- Pull out the motor from the rear side of the main body.
(At this time, if the motor is hard to pull out, insert a hexagonal wrench key into the oblong hole of the main body base and push the motor mounting bracket backward.)
- For assembly into the main body, reverse the disassembling procedure.
However, the relation with the operation timing is shown on the next page.

Note: To avoid wire breakage, do not use excessive force with the motor wiring.

Welding: Part No. of main motor unit NSB 03056

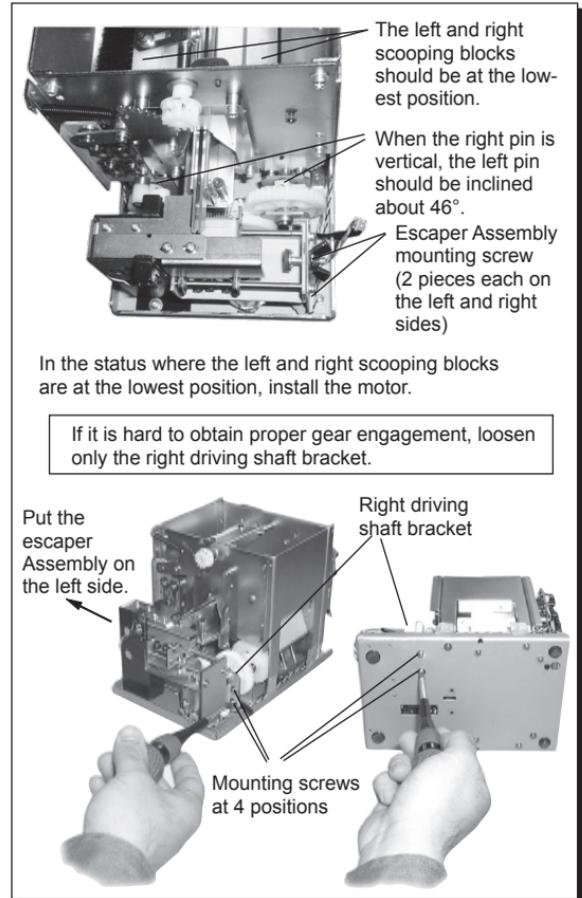


Operation Timing in Replacing the Main Motor

CAUTION Turn off the power switch before starting to replace and adjust the main motor.

- To adjust the scooping block to the brush in respect of operation timing, it is necessary to adjust the gear engagement.
- When the motor has been removed from the main body, adjust the gear engagement of the motor as shown in the figure at right, and the operation timing can be adjusted.
- When it is hard to engage the driving gear of the motor with the driven gear, remove the escaper Assembly mounting screws and put it on the left side. After that, when the installed driving shaft bracket (right) is loosened, this will facilitate the assembly work. (Refer to the figure at right.)
After installing the motor, be sure to tighten the loosened screws once again. Readjust the escaper Assembly.
- After installing the motor, energize the motor and check the operation timing. (Check that both left and right scooping blocks can be operated almost simultaneously.)
- After making an operation check, return the wire arrangement to its original status. When installing the cover, take care not to cause the wire to be caught. Give consideration so that the wiring may not be a hindrance to the operation of this machine.
The wiring should not be a hindrance when adjustments are made from the outside.

Note: To avoid wire breakage, do not use excessive force with the motor wiring.



6.3 Replacing the Escaper Motor

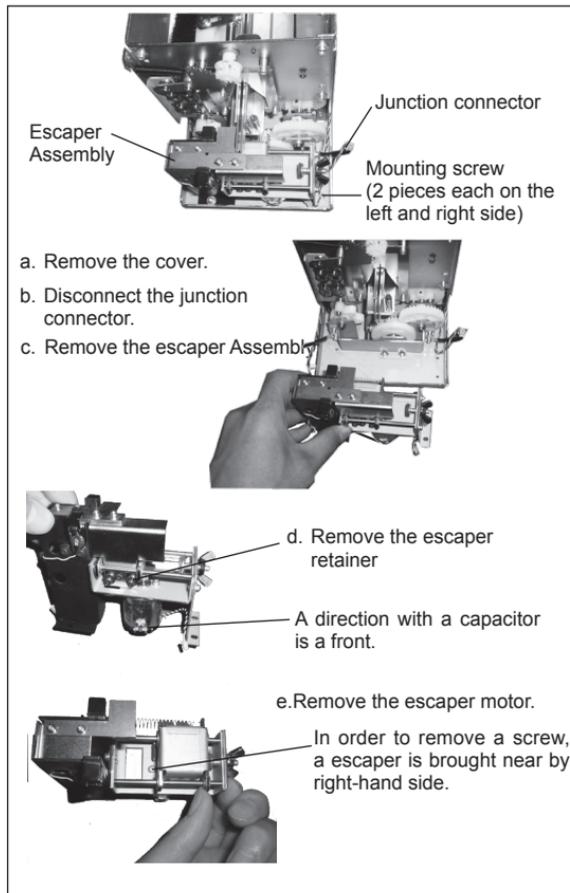
CAUTION Turn off the power switch before starting to replace and adjust the escaper motor.

When the motor is damaged, replace it with a new one.

- Remove the cover from the main body.
(In the case of the front cover with power switch, remove the connector of the power switch and detach it from the main body.)
- Disconnect the motor junction connector.
- Remove the 4 escaper Assembly mounting screws and detach the escaper Assembly from the main body.
- Remove three escaper mounting screws, and remove the escaper retainer.
- Remove two escaper motor mounting screws. The escaper is moved to right-hand side, and a left-hand side screw removes it.
- Attach a new escaper motor. Backlash is adjusted and it fixes so that the escaper may return smoothly by means of a spring.
- For assembly into the main body, reverse the disassembling procedure. At installation, the escaper must be adjusted.
- After making an operation check, return the wire arrangement into its original status. When installing the cover, take care not to cause the wire to be caught by it. Give consideration so that the wiring may not be a hindrance to the operation of this machine.

Note: To avoid wire breakage, do not use excessive force with the motor wiring.

Welding: Part No. of escaper motor NSR 09682 #07



6.4 Replacing the Rail Assembly

CAUTION Turn off the power supply before starting to replace and adjust the rail Assembly.

The rail Assembly of this machine can be easily replaced.

When there is any dirt or a flaw on the rail groove that may constitute a hindrance to the operation, we recommend the user to replace the rail.

When using screws with a different nominal diameter, replace the rail Assembly as well as the escaper and passing window as a means.

Before replacement and adjustment, take out the loaded screws in the machine.

Loosen the rail fixing screws and pull out the rail Assembly from the rear side of this machine.

After replacing the rail, each portion must be adjusted.

Loosen the rail fixing screws, and the rail can be removed from the rear side of the main body.



6.5 Replacing the Passing Plate

CAUTION Turn off the power supply before starting to replace and adjust the passing plate.

For using screws with a different nominal diameter, replace the passing plate as well as the rail and escaper as a means.

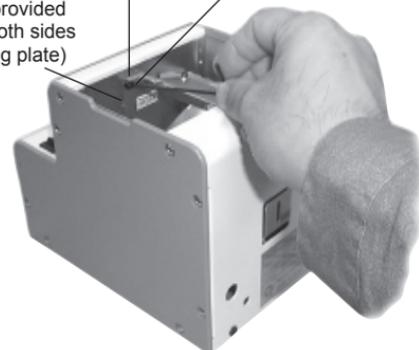
Remove the passing plate mounting screws, then remove the passing plate.

Take care not to loosen the mounting screws.

At installation, use the half-press on each of both sides of the passing plate as a guide.

After replacement, it is necessary to make an adjustment in accordance with loaded screws.

Passing plate
Mounting screw
Half-press (provided on each of both sides of the passing plate)



6.6 Replacing and Adjusting the Escaper

CAUTION Turn off the power supply before starting to replace and adjust the escaper.

For using screws with a different nominal diameter, replace the escaper as well as the rail and passing plate as a means.

Replace and adjust the escaper after removing the cover.

Replace the escaper after removing the escaper mounting screws.

After replacement, be sure to adjust and check the parts related to the escaper.

Adjust the escaper on the basis of the rail.

In the direction of height, the rail groove surface should be lower than the escaper surface and counter-screw surface should be lower than the escaper surface.

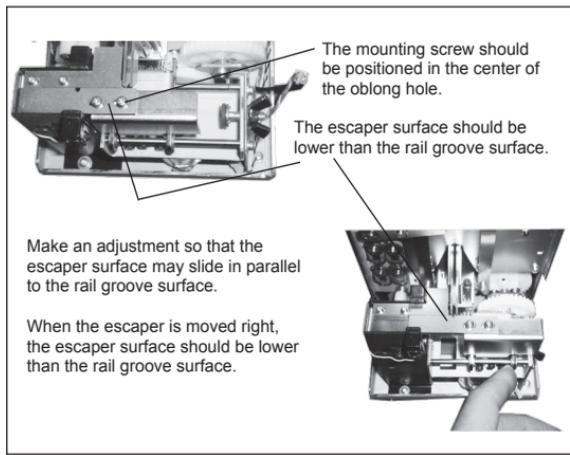
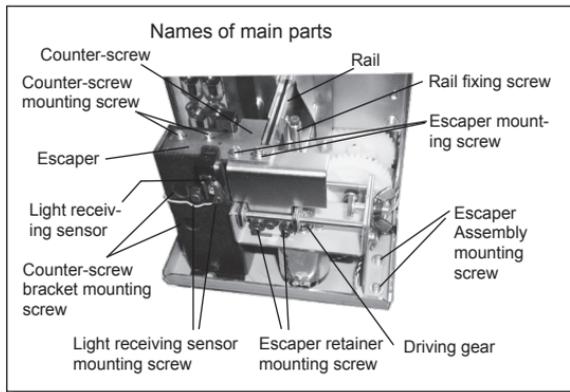
In the direction of width, the rail groove should be adjusted to the escaper groove in operation and also the rail side surface should not make contact with the counter-screw end surface.

In addition, adjust the sensor level in the status where no screws are loaded.

① Adjust the height of the escaper surface.

Install the escaper. At this time, the mounting screw should be positioned in the center of the oblong hole.

Adjust the height of the escaper retainer so that the escaper surface may be equal to or a little lower than to the rail groove surface. At this time, move the escaper to right so that the escaper surface may slide in parallel to the rail groove surface.

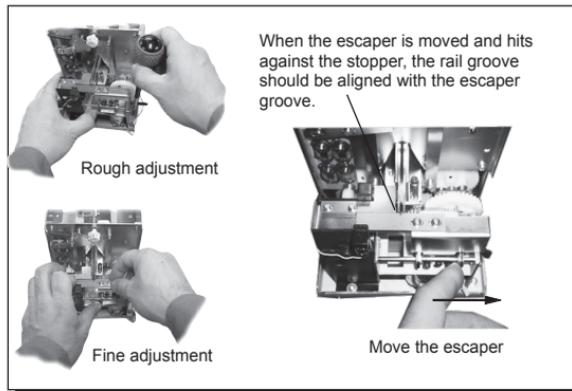


② Adjust the escaper groove position.

Adjust the escaper groove position so that when the escaper is moved to the right side until it hits against the stopper, the rail groove may be aligned with the escaper groove.

For a rough adjustment, loosen the 2 escaper Assembly mounting screws on each of both left and right sides. For a fine adjustment, loosen the 2 escaper mounting screws.

After completion of the above adjustments, move the escaper to the right side until it hits against the stopper and check the groove position once again.

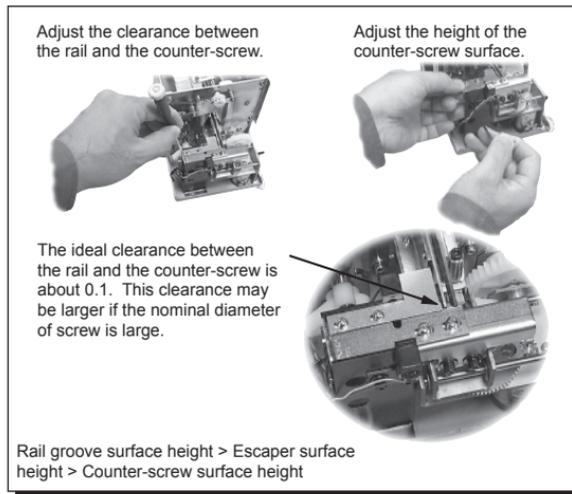


③ Adjust the counter-screw surface position

Loosen the counter-screw mounting screws and adjust the clearance between the rail side surface and the counter-screw end face. This clearance should be such that does not cause a collision when the rail is vibrated.

Loosen the counter-screw bracket mounting screws and adjust the height of the counter-screw surface.

This height should be equal to or a little lower than to the escaper surface.



④ Adjust the sensor voltage level.

Adjust the sensor voltage level for the case where no loaded screws are in the escaper unloading section.

For the voltage level, measure the pin No.7 of IC4050 on the main board.

Be sure to ground the metal portion of the main body.

Adjust the sensor voltage level to 0.25 V to 1.5 V in the status where no loaded screws are in the escaper unloading section.

Note: When no loaded screws are: 0.25 V to 1.5 V

When loaded screws are: 3.5 V or more

Electrically, it is judged by using 2.5 V as a boundary whether loaded with screws or not.

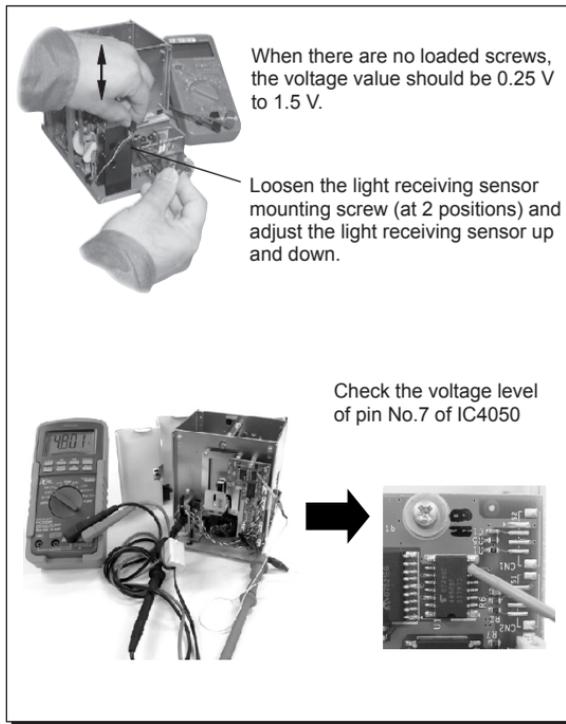
After checking and adjusting each portion, make an operational check of the machine actually with loaded screws.

If any abnormality is found, make the said adjustment once again in addition to the rail vibration and front/rear position adjustments.

After completion of the operational check, return the wiring arrangement to its original status.

When installing the cover, take care not to cause the wire to be caught by it.

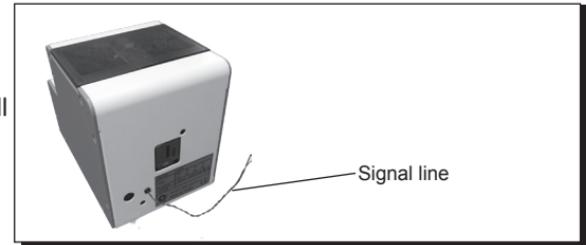
Give consideration so that the wiring may not be a hindrance to the operation of this machine.



7. Application with Robotic System

7-1. External output signals

The wires coming out from the back of the machine serves as the detection of presence of screws on the rotational escaper, which shall be used with automatic assembly machines or external screw counters.



[Function]: Screw present: signal high (ON)

Incoming current: shall be limited to less than 100mA

****CAUTION:** Additional resistor is required on external circuit for regulating current **

[Capacity]: Max DC current: 100mA

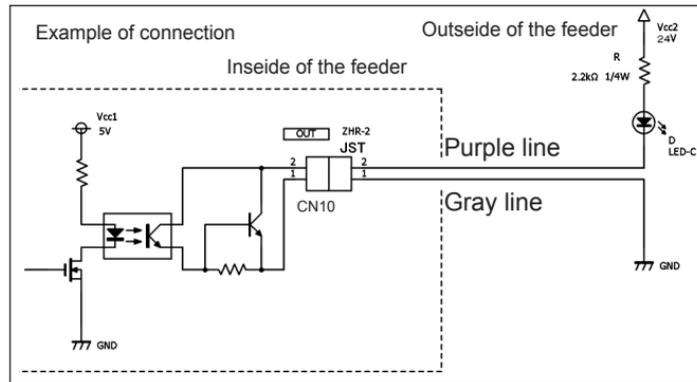
External supply voltage: 5 ~24VDC (Max: 27VDC)

[caution]: Please keep the length of output signal wire less than 3m;

* The purple wire functions as signal output high (Collector end), with the gray wire as common (Emitter end)

Purple line--->Signal line (OFF when no screw is present)
(On when a screw is present)

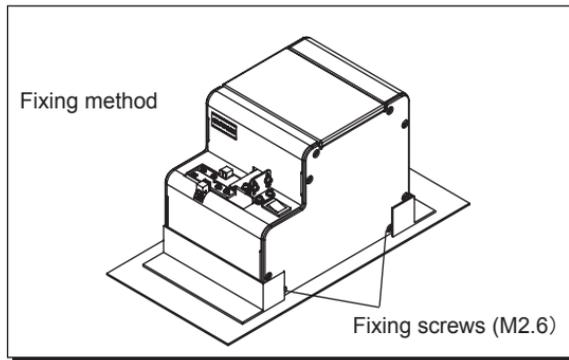
Gray line --->Common line



7- 2. Installation with Robotic System

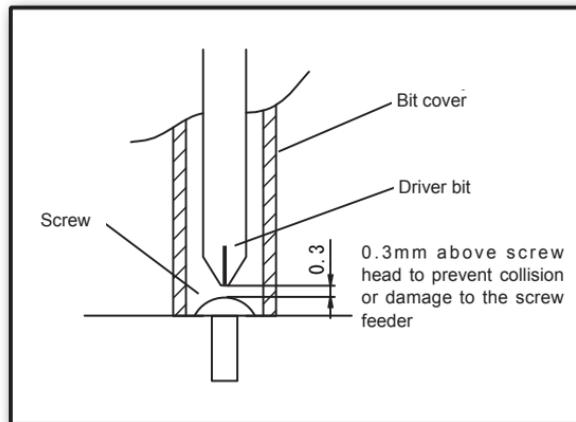
When installed with a robotic assembly, the screw feeder shall be fastened by lower edges of the cover. (Please refer to diagram on the right side) Fastening screws on bottom edge of the cover can be used for this purpose as well.

In addition, if the rubber supports shall be replaced with fastening assemblies by the user, please keep length of the screws less than 5mm going inside the machine, in order to prevent damage to internal mechanism of the screw feeder.



7- 3. Robotic Operations

When the screw feeder is used with an automatic assembly system, in order to avoid contacts between screw driver and screw feeder, please set the lowest point of the bit at least 0.3mm above the screw, so that contact or collision of the driver bit and screw feeder can be avoided.



8. Others

8.1 Overload Protective Circuit

This machine is provided with an overload protective circuit.

Usually, the driving motor rotates forward (normal rotation) to feed loaded screws to the escaper continuously, thus picking up screws one after another. However, if an overload is applied to the driving section, the driving motor rotates backward for a certain time and then returns to the normal rotation. When the cause of the overload is removed at the reverse rotation, the driving motor returns to the ordinary normal rotation and can pick up screws.

If the cause of the overload is not removed during the reverse rotation, the driving motor repeats the sequence of reverse rotation - normal rotation - reverse rotation - normal rotation for a certain time to shut off the power to the driving motor. At this time, the escaper operation is not stopped.

When the power to the driving motor is shut off, turn off the power switch and remove the cause of the overload. For example, when too many screws are put into the scooping chamber, reduce the quantity of loaded screws to a proper level. If any screw is caught by the driving section, remove it.

After removing the cause of the overload, turn on the power switch to operate this machine. (Power reset)

9. Checking before Asking for Repair



CAUTION For safety, always unplug the AC adapter from the wall outlet before making any adjustments.

| Trouble | Cause | Corrective Measures |
|---|---|--|
| <p>9.1 The machine does not operate though the power switch is turned on.</p> | <ul style="list-style-type: none">- Power is not supplied.- The machine has not unloaded screws from the unloading section for a certain time.- Too many screws were put into the scooping chamber.- A foreign material (for example, screw) was put in the main body.- The AC adapter is faulty. | <ul style="list-style-type: none">- Check the connection of the power supply of the AC power adapter.- Take out the screws from the unloading section.- Adjust the timer setting knob.- Reduce the quantity of screws in the scooping chamber to a proper level.- Remove the foreign material.- Please contact your dealer. |
| <p>9.2 Screws do not flow.</p> | <ul style="list-style-type: none">- Screws with a larger nominal diameter than the specified nominal rail size were loaded or screws with a different diameter were mixed in together.- An insufficient quantity of screws are in the scooping chamber. | <ul style="list-style-type: none">- Use screws with the specified nominal diameter.- Remove the mixed screws.- Add a proper quantity of screws into the scooping chamber. |

| Trouble | Cause | Corrective Measure |
|------------------------------------|---|--|
| <p>9.2 Screws do not flow.</p> | <ul style="list-style-type: none"> - Screws in an abnormal position in the passing plate cannot be swept away with the brush. - The axis of screw thread entered the passing plate. - A screw has stopped in an abnormal position while moving on the rail. - The rail does not move backward and forward. (For example, a screw is obstructing the clearance.) | <ul style="list-style-type: none"> - Adjust the brush. Adjust the passing plate. If a proper quantity of screws is put into the scooping chamber, the status may be improved. Use the optional brush (a more bristly). - Remove the abnormal screw. After that, adjust the passing plate. - Remove the screw in the abnormal position. The removing method is as described below. Take care not to damage the rail groove. Move the holding plate bracket Assembly upward to remove the screw. After that, adjust the position of the holding plate. - Remove the screw that is obstructing the clearance. - Check the vibration adjustment. |

| Trouble | Cause | Corrective Measure |
|--|--|---|
| <p>9.3 A screw has fallen down into the rail groove.</p> | <ul style="list-style-type: none"> - Screws with a smaller nominal diameter than the specified nominal rail size were loaded. - Screws with a smaller total length than the rail groove width were loaded. | <ul style="list-style-type: none"> - Use screws with the specified nominal diameter. - No corrective measure is available. Consult our service section. |
| <p>9.4 The screw flow on the rail is improper.</p> | <ul style="list-style-type: none"> - The clearance between the holding plate and the head of the loaded screw is narrow. - Screws with spring washer having one-step smaller than the specified nominal rail size were loaded. - Dust or oil is stuck on the rail. - The rail does not vibrate. (A screw is caught in the clearance.) - The motor is exhausted. | <ul style="list-style-type: none"> - Adjust the holding plate bracket Assembly. (Adjust the holding plate.) Adjust the vibration. Operate this machine in an inclined status. - Clean the rail. - Remove the screws caught in the clearance. - Check that the vibration is properly adjusted. - Replace the motor. |

| Trouble | Cause | Corrective Measure |
|--|---|--|
| <p>9.5 Screws tend to pass the passing plate in an abnormal position. The axis of screw thread tends to enter the passing plate.</p> | <ul style="list-style-type: none"> - The passing plate is not adjusted properly. - Too many screws are in the scooping chamber. | <ul style="list-style-type: none"> - Adjust the passing plate. - Reduce the quantity of screws into a proper level. |
| <p>9.6 No screw comes to the unloading section.</p> | <ul style="list-style-type: none"> - Screws are stopped while still on the rail. - Screws cannot be transferred smoothly from the rail to the escaper. | <ul style="list-style-type: none"> - Adjust the position of the holding plate. - Adjust the positional relation between the end of the rail and the escaper. |
| <p>9.7 This machine stops its operation suddenly.</p> | <ul style="list-style-type: none"> - The overload protective circuit was actuated. - Too many screws are in the scooping chamber. - A screw is caught in the clearance. - Screws in the unloading section could not be unloaded for a certain time. | <ul style="list-style-type: none"> - Turn the machine off and on once again. - Remove the cause of overload. - Reduce the quantity of screws to a proper level. - Remove the caught screw. - Take out screws. |

| Trouble | Cause | Corrective Measure |
|---|---|---|
| <p>9.8 The scooping operation cannot be stopped though screws are in the unloading section.</p> | <p>- The timer knob is not properly adjusted.</p> | <p>- Readjust the time knob.</p> |
| <p>9.9 The escaper operation cannot be stopped though screws are in the unloading section.</p> | <p>- The sensor does not detect a screw.</p> | <p>- Readjust the voltage level of the sensor.</p> |
| <p>9.10 A screw has fallen down into the this machine.</p> | | <p>- Shake down the screw from the hole at the back of the machine.</p> |
| <p>9.11 The noise of this machine has increased.</p> | <p>- Grease is insufficient.</p> | <p>- Apply grease to the moving section.</p> <ul style="list-style-type: none"> ○ Recommended grease: BR2 Plus of Dow Corning Asia Co., Ltd. |

10. Specifications

| | |
|--------------------------------|---|
| Power AC adapter (linear type) | Input: AC100V 50/60Hz Output: DC12V 500mA |
| Dimensions | 123(W) × 181(D) × 145(H) (mm) |
| Weight | Approx. 3.0Kg (including rail) |
| Screw capacity | Approx. 80cc |
| Following accessories | Operation Manual 1 copy AC Adapter 1 unit Passing Plate 2 plates (one is already installed.) Hexagonal Wrench 1 piece Screwdriver 1 piece |

Notes:

- The transformer-type AC adapter attached with the machine has nominal output of DC12V-500mA; during application, it is designed to supply an average output at about 15V to the screw feeder. In the case where a different type of adapter or external power source is used, it is recommended to use a 15V switching type adapter, or regulated power supply which can provide constant output at 15V.
- For feeder machines purchased outside of Japan, no adaptor will be supplied with the feeder. Please purchase separate adapter with equivalent output specification as required.
- Check if the axis diameter of the loaded screw matches the above rail groove width.
- In the main body type, the main body model can be changed.
- To change the nominal diameter of loaded screw, replace it with a part that is mentioned in the above table.
- The rail, escaper, and passing plate for replacement are separately available.
- The design, performance, and specifications are subject to change without prior notice for the sake of improvement.

| Reference table of the specified screws | | | | | Shape of screw head | | | | | | |
|---|--------------------------|-------------------------|---------------------------|-------------------------|---------------------|-------------|-------------|------|-----------|------------------|---------------------|
| | | | | | Pan head | | | bind | Flat head | Countersunk head | hexagon flange bolt |
| Screw size | Screw shaft diameter (φ) | Screw head diameter (φ) | Screw head thickness (mm) | Screw shaft length (mm) | Sems | Double sems | Washer head | | | | |
| φ 1.0 | 0.9~0.95 | 1.2~4.5 | 0.35~1.0 | 1.6~10 | | | | | ○ | | |
| φ 1.2 | 1.1~1.15 | 1.4~4.5 | 0.35~1.0 | 1.8~10 | | | | | ○ | | |
| φ 1.4 | 1.3~1.4 | 1.7~4.5 | 0.35~1.0 | 2.0~10 | | | | | ○ | | |
| φ 1.7 | 1.6~1.7 | 2.0~4.5 | 0.35~1.0 | 2.3~10 | | | | | ○ | | |
| φ 2.0 | 1.9~2.1 | 2.4~6 | 0.35~4.5 | 2.6~20 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| φ 2.3 | 2.2~2.4 | 2.7~6 | 0.35~4.5 | 2.9~20 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| φ 2.6 | 2.5~2.7 | 3.0~6 | 0.35~4.5 | 3.2~20 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| φ 3.0 | 2.9~3.2 | 3.5~6 | 0.35~4.5 | 3.6~20 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

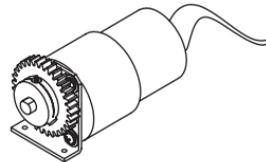
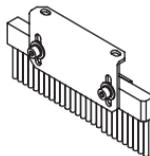
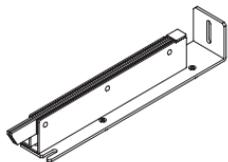
※ Compatible with washer diameter up to 9 mm, thickness 0.35 to 1.0mm.

※ In the Exchange kit ordered, Rail assembly and Escaper are included.

| Screw feeder series | Screw feeder model | Screw size | Exchange kit No. | Rail model No. | Escaper model No. | Passing plate model No. |
|---------------------|--------------------|------------|------------------|----------------|-------------------|-------------------------|
| NSR | NSR10 | φ 1.0 | SRR10SET | SRR10 | SE10 | SW1017 |
| | NSR12 | φ 1.2 | SRR12SET | SRR12 | SE12 | |
| | NSR14 | φ 1.4 | SRR14SET | SRR14 | SE14 | |
| | NSR17 | φ 1.7 | SRR17SET | SRR17 | SE17 | |
| | NSR20 | φ 2.0 | SRR20SET | SRR20 | SE20 | SW2030 |
| | NSR23 | φ 2.3 | SRR23SET | SRR23 | SE23 | |
| | NSR26 | φ 2.6 | SRR26SET | SRR26 | SE26 | |
| | NSR30 | φ 3.0 | SRR30SET | SRR30 | SE30 | |

○Replacement parts

- Rail
- Escaper
- Passing plate
- Brush assembly NSB02053 #01
- Main motor unit NSB03056

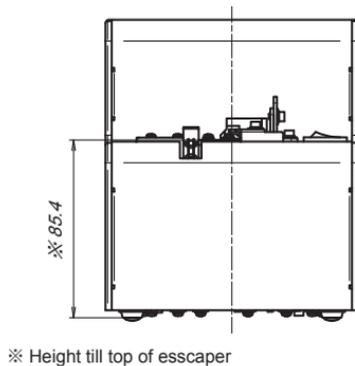
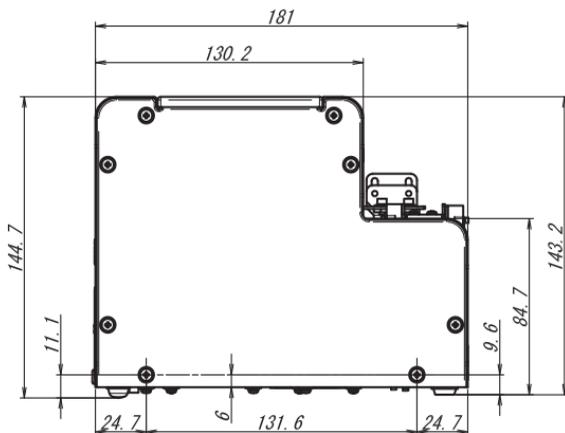
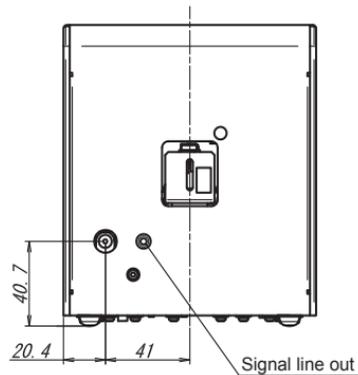
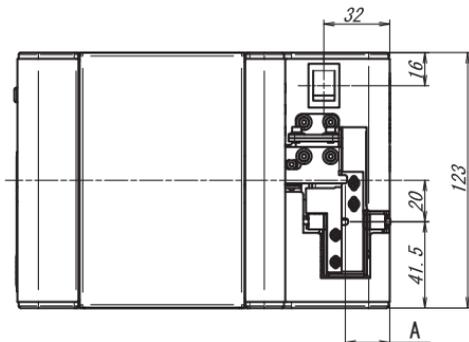


- Escaper motor (With Harness)
NSR09682 #07



11. External Dimensions

| Screw size | Approximate measurement of A |
|------------|------------------------------|
| φ 1.0 | 22.6 |
| φ 1.2 | 22.5 |
| φ 1.4 | 22.4 |
| φ 1.7 | 22.2 |
| φ 2.0 | 22.1 |
| φ 2.3 | 21.9 |
| φ 2.6 | 21.8 |
| φ 3.0 | 21.6 |



* Height till top of escaper

Unit : mm

12. 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 completed.

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. Consumables (brushes, main motor, escaper motor)
and replaceable parts and replacement work expenses.

The repair parts shall be available within 5 years after purchase.

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

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(2016年6月現在)