

# **Operation Manual**

## **Green sand spreader**

### ***MWX-400***

**IHI Shibaura Machinery Corporation**

Green Operation Department 1-1-1 Ishishiba, Matsumoto-shi  
TEL: 0263 (25) 4502 FAX: 0263 (26) 7517

Thank you for purchasing the Green sand spreader.

This handling manual shall describe the handling procedures and the notes for using the Green sand spreader.

Please ensure to read this handling manual before using the spreader for correct usage.

- Ensure to store this handling manual near the spreader after reading.
- Ensure to attach this handling manual to the spreader when loaning or selling the sand spreader.
- The parts may be modified/changed for quality/performance improvement or safety. In such a case, some photos or illustrations contained in the handling manual may not match the actual parts.
- Please consult the shop at which you bought the spreader, our agent or outlet store near you for further inquiry or questions.
- Take the spreader in the condition as it is to the outlet store when a fault or damage occurs during use. Our warranty may not apply even under warranty if the spreader is disassembled by a customer.

**Warning** Death or serious injury will occur if the warning text is neglected

**Danger** Death or serious injury may occur if the warning text is neglected

**Caution** Injury may occur if the warning text is neglected

- Ensure to read the “safe work” stated for safety points in this handling manual for safe work.
- Please contact us and obtain another handling manual if the handling manual is lost or damaged.

## 1. Safe work

Serious damage or accidents including death or machine breakage/fault may occur if the warning texts/notes are neglected.

- **General warning texts/notes**

### **Warning**      **Be aware of exhaust gas**

Do not run the engine inside the closed building. Start the engine outside the building where air is ventilated. Ensure to secure sufficient ventilation if the engine needs to be started inside the building.

**[If neglected]**

Exhaust gas toxicity may be caused, resulting in death.

### **Warning**      **Do not run the sand spreader**

- When not being able to concentrate on work due to fatigue, illness, drugs or other reasons
- When consuming/having consumed alcohol
- When pregnant
- If under 18 years old

### **Warning**      **Attire appropriately for work**

Do not wear a towel as a headband and/or around a neck and/or hang a towel from a pocket. Ensure to wear shoes with slip-stop, appropriate protective gear and avoid bulky clothes.

**[If neglected]**

A user can be caught in the sand spreader, slip or fall.

### **Warning**      **Explain the handling procedure when loaning the sand spreader to someone.**

Ensure to explain the handling procedures in details and request a user to read the handling manual before using.

**[If neglected]**

Accidental death, serious injury or machine breakage/fault may occur.

### **Warning**      **Do not take on another person other than a driver**

The maximum capacity of the vehicle type sand spreader MWX-4 is 1 person. Do not take on more person(s).

The pull-type sand spreader M-4 does not take on any passengers. Do not ride on it.

**[If neglected]**

An expected accident may occur.

**Caution      Be aware of a hot muffler**

The muffler still remains very hot while it runs or just after the engine is turned off.

Do not touch the muffler.

**[If neglected]**

Burn injury may occur.

**Caution      Prohibition on altering the sand spreader**

Do not add/install/mount attachments/accessories other than those authorized or specified.

Do not alter the sand spreader.

**[If neglected]**

An accident, injury or mechanical fault may occur.

**Caution      Inspection/Maintenance**

Inspect and maintain before and after using the sand spreader. Ensure to inspect/maintain the operating devices and running devices including the steering wheel, brake and levers for proper and smooth performance.

**[If neglected]**

An accident injury or mechanical fault may occur.

- **Notes for checks before/after work and storing**

**Warning      Lubricate and/or fuel after the engine cools down**

Do not lubricate or fuel while the engine is still running or remains hot.

**[If neglected]**

The fuel may catch fire, resulting in fire

**Warning      Keep fire away when supplying fuel**

Do not smoke or do not use open flame while refilling fuel.

**[If neglected]**

Fuel may catch fire, resulting in fire.

**Warning      Keep fire away when checking on the batteries**

Keep fire away when checking on or charging the batteries.

**[If neglected]**

The batteries may catch fire, causing an explosion and/or burn injury.

**Warning      Keep yourself away from the battery fluid**

Ensure not to catch the battery fluid on your body or clothes. Wash off the fluid immediately if caught.

**[If neglected]**

Burn injury or clothes damage may occur.

**Warning      Be aware of fuel leak**

The damaged fuel pipe may cause fuel leak. Ensure to inspect the fuel pipe.

**[If neglected]**

A fire accident may occur.

**Warning      Close the fuel cap and wipe off the spilled fuel**

Ensure to close the fuel cap and wipe off the spilled fuel completely when fuel is supplied.

**[If neglected]**

A fire accident may occur.

**Warning      Perform inspection on the flat and stable place**

Position the sand spreader on a flat and stable place and place the stopper to the front wheels for inspection/maintenance.

**[If neglected]**

An expected accident may occur if the sand spreader falls.

**Warning      Remove rubbish around the muffler/engine**

Check to see if cut grasses, rubbish and/or fuel remain in the areas around the muffler/engine daily before work.

**[If neglected]**

Fire may occur.

**Warning      Inspect the electrical parts/cables**

Check the distributing cables for any contact with the other parts, the coating for peeling and the contact parts for looseness daily before work.

**[If neglected]**

Short-circuit may occur, resulting in fire.

**Warning      Check for the brake/steering wheel**

Check the brake for appropriate and balanced functions and the steering wheel for backlash and looseness.

**[If neglected]**

An accident may occur.

**Caution      Install and remove the batteries in an orderly manner.**

Install the batteries on the + side first, and remove the batteries on the – side first.

**[If ignored/or neglected]**

Short-circuit may occur, resulting in burn injury and/or fire.

**Caution      Stop the engine during inspection and maintenance**

Stop the engine without failure during inspection/maintenance/repair or cleaning.

**[If ignore/neglected]**

Injury accidents including being crushed under the sand spreader may occur.

**Caution      Ensure to mount the covers**

Ensure to re-place the covers that have been removed for inspection/maintenance.

**[If neglected]**

Injury accidents including being caught in the sand spreader may occur.

**Caution      Perform inspection/maintenance once the over-heated parts become sufficiently cool.**

Perform inspection/maintenance once the over-heated parts including the muffler and the engine become cool.

**[If neglected]**

Burn injury may occur.

**Caution      Use the purpose-designed tools appropriately**

Control the tools required for inspection/maintenance appropriately and use the tools that meet the usage purpose in a correct manner. In addition, keep the tools required for inspection in the sand spreader.

**[If neglected]**

An accident may occur due to poor and insufficient maintenance.

- Notes on the sand spreader

**Warning      Do not go under the sand spreader or place a foot under the sand spreader**

Do not go under the sand spreader or place a foot under the sand spreader.

**[If neglected]**

An injury accident may occur.

**Warning      Use a plank with sufficient strength/length/width**

Turn off the truck engine and set on the side brake in a flat and safe place for loading and unloading. Select a plank with sufficient width, length and strength and slip-stop properties.

**[If neglected]**

Accidents such as a fall may occur.

**Warning**      **Move the sand spreader backward when loading it up and forward when unloading it down**

Move the sand spreader backward when loading it up to the truck and move the sand spreader forward when unloading it down from the truck.

**[If neglected]**

The sand spreader may become unbalanced, resulting in falling.

**Warning**      **Fix and secure the sand spreader onto the truck firmly with rope.**

When transferring the sand spreader on to the truck, ensure to fix and secure it on the truck with strong rope while the truck is parked with a side brake on.

**[If neglected]**

The sand spreader may fall from the truck, causing an accident.

**Warning**      **Do not start or stop moving the sand spreader suddenly, turn around or over-speed.**

Start or stop moving the sand spreader slowly. Slow down when turning around, on a slope or uneven ground.

**[If neglected]**

Over-turning /falling or mechanical breakage may occur.

**Warning**      **Do not free-wheel drive on a slope**

Drive the sand spreader on a slope with an extra care. Do not free-wheel drive.

**[If neglected]**

Over-turning/falling or mechanical breakage may occur.

**Caution**      **Set side brake on during warm-up**

**[If neglected]**

The sand spreader will start moving by itself, resulting in an accident.

- Notes during work

**Warning**      **Park the sand spreader on a flat ground and turn off the engine when leaving from the sand spreader.**

Park the sand spreader on a flat and stable ground, set the parking brake and turn off the engine when leaving from the sand spreader.

**[If neglected]**

The sand spreader may start moving, resulting in an accident.

**Warning**      **Inspect/repair immediately when abnormal vibration is found.**

Turn off the engine immediately and repair the problem when abnormal vibration is found.

**[If neglected]**

An accident, injury or mechanical fault may occur.

**Warning**      **Do not turn around suddenly**

Do not turn around the sand spreader suddenly. Slow down when turning the sand spreader around.

**[If neglected]**

The sand spreader, with 3-wheels, may over turn.

**Caution**      **Do not drive on an open road**

Do not drive the sand spreader on an open road since this sand spreader type is not approved.

**[If neglected]**

It may be fined due to violation of the traffic laws.

**Warning**      **Do not drive on a steep slope**

Do not drive this sand spreader on a slope of which angle is 10 degrees or larger.

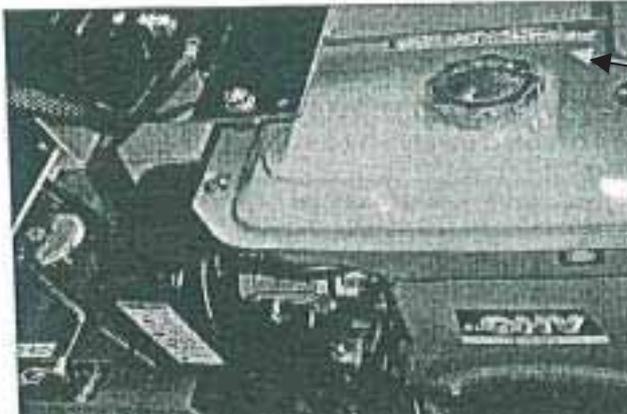
**[If neglected]**

The sand spreader may over turn, causing injury.

## 2. Mounting position for the safety board

The position for the safety board is marked as shown below for safe work.

The other parts are also marked with a sticker. Ensure to keep the safety stickers free from soil, breakage and/or dirt. Replace the soiled, broken, damaged sticker with a new sticker if necessary.



## 3. How to handle a new sand spreader

A new sand spreader must be handled with extreme care in the initial 50 hours. The initial 50 hours will largely affect the life of the sand spreader.

### (1) How to handle it in the initial 50 hours

Avoid heavy work, sudden start/stop. Perform break-in. Forceful operation will accelerate wearing.

### (2) How to care in the initial 50 hours

Replace the engine oil. For details, refer to the section for inspection and maintenance.

### (3) Before working

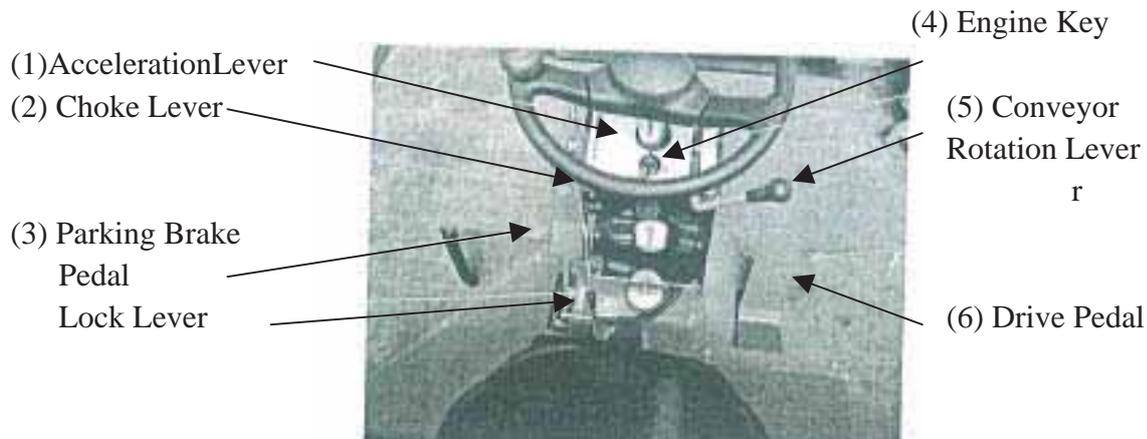
Warm up the sand spreader by leaving the engine idling (load free, low-speed rotation)

### (4) Keep the manufacturing numbers

Keep the manufacturing numbers for future use including part orders.

#### 4. How to handle each device

Driving seat



(1) Acceleration lever

Controls the engine rotation.

(2) Choke lever

Helps the engine to start smoothly when the engine is not warmed up yet.

(3) Parking brake

Ensure to set the parking brake on after the sand spreader is turned off. Push in the brake pedal and pull the lock lever to the driver while the brake pedal is still being pushed in. Then, take a foot off the pedal. Push in the brake pedal for releasing the parking brake.

(4) Engine key

(OFF)	Centre -	Turning off the engine or the engine is switched off
(ON)	Right 1 <sup>st</sup> row -	Engine is running
(ST)	Right 2 <sup>nd</sup> row -	Turning on the engine

(5) Conveyor rotating lever

Will be used when sand is spread

(6) Drive pedal

The sand spreader will go forward when the drive pedal is pushed in the front side and will reverse when the drive pedal is pushed in the back side. The brake will be set when the brake pedal is returned.

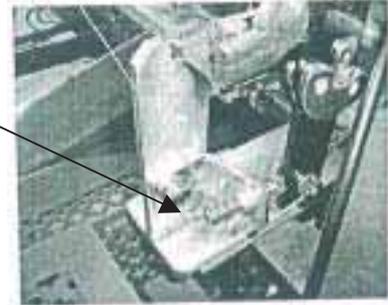
Right side of the driver's seat



(1) DEFLOCK lever

(2) Speed fix lever

(3) Adjust bolt



(1) DEFLOCK lever

Shall be used for emergency escape when the roller on one side runs idle.

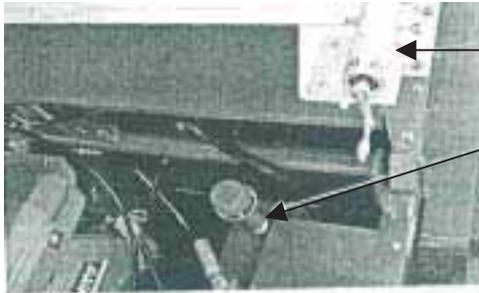
(2) Speed fix lever

Shall be used when working at a fixed speed.

(3) Adjust bolt

Contact for the speed fix lever. Shall be used for adjusting to a desired speed.

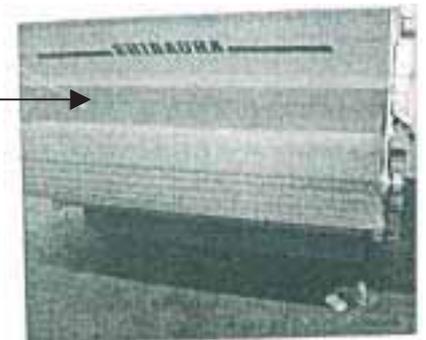
Left side of the driver's seat



(1) Shutter adjusting lever

(2) HST oil tank

Shutter



(1) Shutter adjusting lever

Shall adjust the opening angle of the shutter. Use the scale at the wheel as standards.

(2) HST oil tank

Hydraulic oil tank for running. It's maximum capacity is 5 liters, but check and supply oil up to approximately eight out of ten. The oil type shall be of SAE 10W-30 CD class engine oil.

## 5. Start-up inspection

### 5-1. Pre-work inspection

#### **Warning**

- Do not smoke or use open flame while supplying fuel.
- Do not add or supply oil while the engine is running or the engine still remains hot.
- Ensure to close the fuel cap and wipe off the spilled fuel completely when fuel is supplied.
- Remove dried-up grasses, rubbish and spilled fuel completely from the areas around the batteries, wiring cables, mufflers and engine. If not, fire may be caused.

#### **Warning**

- Perform inspection/maintenance on the sand spreader on a flat and stable place free from traffic, so that the sand spreader will not move, fall or turn over.

#### **Caution**

- Ensure to stop the engine when inspection, maintenance or repair is conducted. If not, a user can be caught in the sand spreader, resulting in injury.
- Ensure to conduct inspection/maintenance after the over-heated parts including the muffler and the engine become cool. If not, burn injury may occur.
- Ensure to place the covers that have been removed for inspection/maintenance. If not, a user can be caught in the sand spreader, resulting in injury.

For safe and smooth work, an operator must check the sand spreader once a day before work. Ensure to repair abnormal parts immediately, and re-check to see if any further abnormality is found or not after work.

### 5-2. Abnormal parts found a day before

Check to see if work can be performed without any trouble, if any abnormality is experienced during work conducted a day before.

### 5-3. Inspection around the sand spreader

- (1) Deformation, damage, stain and/or oil leak around each part
- (2) Air pressure, cracks and/or damage of tyres

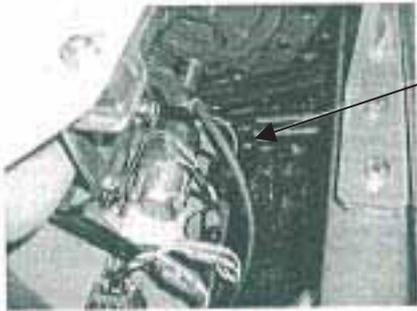
Standard air pressure

	Tyre sizes	Air pressure (kg/cm)
Front wheel	400-5 4PR (double tyre)	2.0

Check the tyre for any damage, crack or extreme wear as well as nails or cobble stone in the tyre.

- (3) Each part

### 5-4. Inspection on engine oil



Engine oil gauge

Check the oil for a quantity and stain with a gauge.

### 5-5. Inspection on air cleaner



Fuel gauge

The fuel gauge is located on the top of the engine.

Air cleaner

Open the air cleaner cover and check for cleanliness every 50 hours. If soiled, clean and replace.

### 5-6. Inspection on batteries

The batteries are located under the cover left to the engine.

### 5-7. Inspection of fuel

The fuel gauge is located on the top part of the engine. Supply petrol if insufficient.

## 6. Work procedure

### 6-1. Operation procedure

## Warning

- Ensure to read the operation manual attached to the sand spreader before running. If neglected, mechanical fault or injury may occur.
- Check the lever for the position while sitting in the driver's seat and check the surrounding condition for safety before starting the engine. If neglected, injury may occur.
- Do not turn on the engine inside the building with no ventilation. Turn on the engine outside the building where sufficient ventilation is available. If the engine needs to be turned on inside the building, ensure to secure sufficient ventilation. If neglected, exhaust gas toxicity may be caused, resulting in death.
- Ensure to climb up and down to the right angle when on a slope. (Do not run on contour.) Avoid sudden start or stop. If turning around the direction on a slope, turn around very slowly. If neglected, the sand spreader may over-turn or fall, causing injury.
- Rotate at very low speed.

## Caution

- Ensure to set the parking brake during warm-up. If neglected, the sand spreader may start moving, resulting in an accident.
- Do not use the sand spreader at night. If neglected, an unexpected accident may occur.

### [Notes]

During normal running or work, do not lock the def lock. Use the def lock for emergency escape.

### 6-2. Work procedure

This work procedure, describing the general usage, shall be used as reference.

- (1) Check the surrounding areas for safety and start the work engine.
- (2) Move to the desired destination and supply sand in the hopper.
- (3) Adjust the opening angle of the shutter.
- (4) Start running and start the conveyor belt.

Remove the sand and dust completely after work, conduct inspection, referring to 7.

Regular Inspection and store the sand spreader inside the building.

## 7. Regular inspection/maintenance

### Warning

- Ensure to perform inspection/maintenance on a flat, stable and traffic-free area, while the stoppers are placed to the tyres, so that the sand spreader will not over turn or fall. If neglected, an accident may occur.

### Caution

- Conduct annual inspection/maintenance, keeping every part in good condition. If neglected, an accident or mechanical fault may occur, due to insufficient maintenance.
- Ensure to turn off the engine when conducting inspection/maintenance/repair.
- Ensure to re-place the covers that have been removed for inspection/maintenance. If neglected, a user may be caught in the sand spreader, causing injury.

#### 7-1. Inspection on/replacement of the engine oil

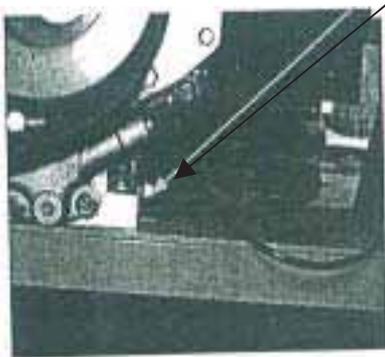
### Danger

- Do not supply or add petrol while the engine is still running or remains hot. If neglected, fire or burn injury may occur.

### Caution

- Do not replace the oil immediately after the engine is turned off. If neglected, burn injury may occur.

#### (1) Replacement of the engine oil



Oil discharge cap

Replace the engine oil after the initial 50 hours, and every 100 hour after the initial replacement.

1. Remove the oil discharge cap, and drain the old oil.
2. Close the oil discharge cap once the old oil is completely discharged.
3. Supply the new oil from the supply port located on the top of the engine.

For details, please refer to the Kubota Handling Manual.

#### (2) Inspection on engine oil

For details, please refer to the Kubota Handling Manual and 5-4 “Inspection on the engine oil”.

## 7-2. Inspection on the batteries

### **Danger**

- Keep fire away while inspecting or charging the batteries. If neglected, the batteries may catch fire, causing in an explosion and/or burn injury.
- Ensure not to catch the battery fluid on your body or clothes. Wash off the fluid immediately if caught. If neglected, burn injury or clothes damage may occur.

### **Caution**

- Install the batteries on the + side first, and remove the batteries on the – side first. If neglected, short-circuit may occur, resulting in burn injury.

For the battery replacement and/or other details, please refer to the Kubota Handling Manual.

## 7-3. Cleaning/Replacement of the battery filters

### **Danger**

- Do not clean or supply oil while the engine is still running or remains hot. If neglected, fire may be caught, resulting in burn injury.

For details, please refer to the Kubota Handling manual.

## 7-4. Air discharge

For details, please refer to the Kubota Handling Manual

## 7-5. Cleaning/Replacement of the air cleaner

For details, please refer to the Kubota Handling Manual

## 7-6. Grease

Grease the following parts.

- Chains and sprockets relating to the brush rotation
- Rotating part of the shutter
- Speed gear fulcrum

Please contact your nearest sales outlet for any inquiry.

## 7-7. Inspection on the pipes

### **Danger**

- Ensure to inspect the fuel pipes as they will cause fuel leak when damaged. If neglected, fire may be caught.

Inspection on the fuel pipes

For the fuel pipe inspection, please refer to the handling manual for the engine.

## 7-8. Inspection on the electrical wiring

### Warning

- Check the electrical wiring for any contact to the other parts, the coating for any peeling and the contact parts for any looseness before work daily.

Check the electrical wiring for any contact to the other parts which may be causing the coating peeling or scratch and the contact parts for any looseness. If damaged, replace or repair as soon as possible.

## 7-9. Inspection/Maintenance during a long period of storage

### Danger

- Ensure to discharge the fuel after the engine cools down completely. If neglected, fire may be caught.

### Warning

- Remove the batteries and the key when storing the sand spreader. If neglected, an accident may occur. If the sand spreader will not be stored for a long period of time, ensure to conduct the following inspection/maintenance.

#### (1) Cleaning

Remove dirt, soil, cut grasses and oil completely.

#### (2) Oil change

Change the oil. Once the oil is changed, turn on the engine for warming up for approximately 5 minutes, and run each part.

#### (3) Greasing

Grease the moving parts including the parts designed to be greased.

#### (4) Fuel system

Clean the fuel filters. Discharge the petrol in the fuel tank and fuel pre-filter.

#### (5) Tyre air pressure

Set the air pressure slightly higher than the standard values. Place the tyres on the board to keep them away from moist.

#### (6) Batteries

Remove the batteries from the sand spreader and charge them. Then, store the sand spreader in the sufficiently ventilated indoor. Charge the batteries every 1 ~ 2 month while they are stored as the batteries self-discharges.

#### (7) Bolts and nuts

Check the bolts and nuts for looseness. Tighten them when loose.

#### (8) Storage

Store the sand spreader in a dry and rain-free space.

#### (9) Others

Repair any defective parts including coat peeling.

### 8-10. List of regular service

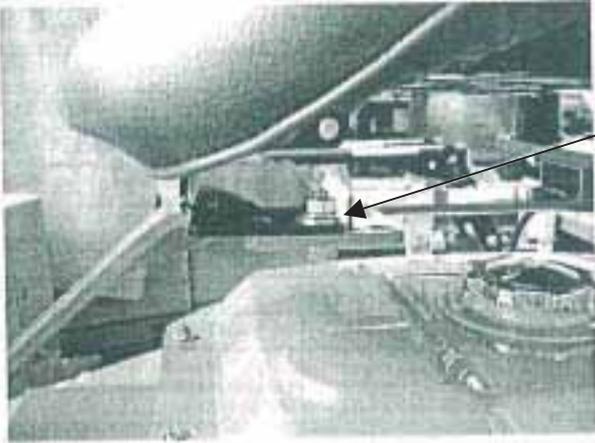
Items	Operating time													After maintenance
	50	100	150	200	250	300	350	400	450	500	550	600	650	
Engine oil														
Air cleaner element														
Fuel filter														
Fuel pipe														
Battery	Checking every starting operation													
Each grease up														
Hydraulic oil														
Hydraulic strainer	Once a half year													
Hydraulic piping	Checking every starting operation													
electric wiring	Checking every starting operation													

Change      Oil filling      Checking

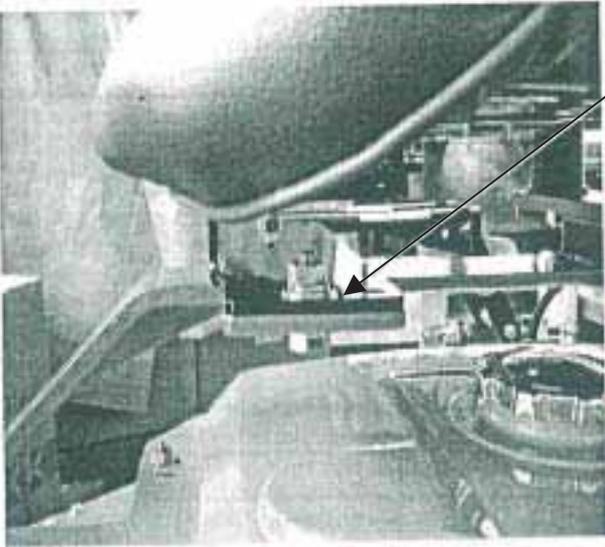
### 8-11.Specification

Model		MWX-400
Body dimensions	Total length mm	2,140
	Total width mm	1,560
	Total height mm	1,320
Weight kg		620
Engine	Model	Kubota GH400E
	Output kw(ps)	9,6 (13,0)
Hopper capacity (m <sup>3</sup> )		0,4
Application width		1,180
Sand dispersion device		Tough top conveyer Roll brush mandatory dispersion
Travel device		HST transmission

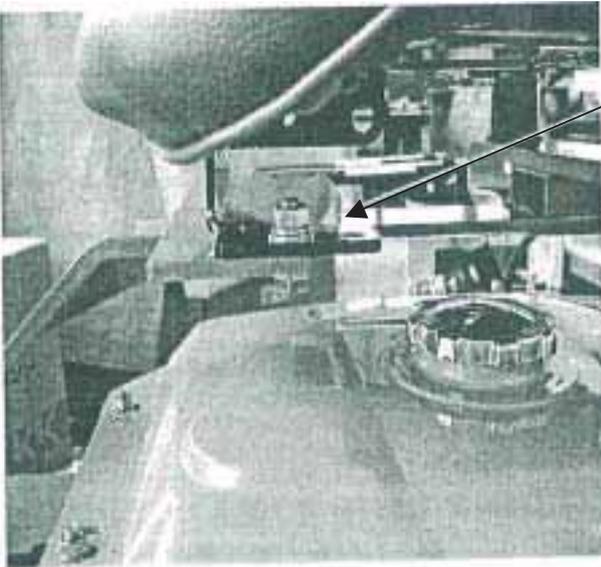
\* How to position the sea



The seat is positioned forward



The seat is positioned in the centre

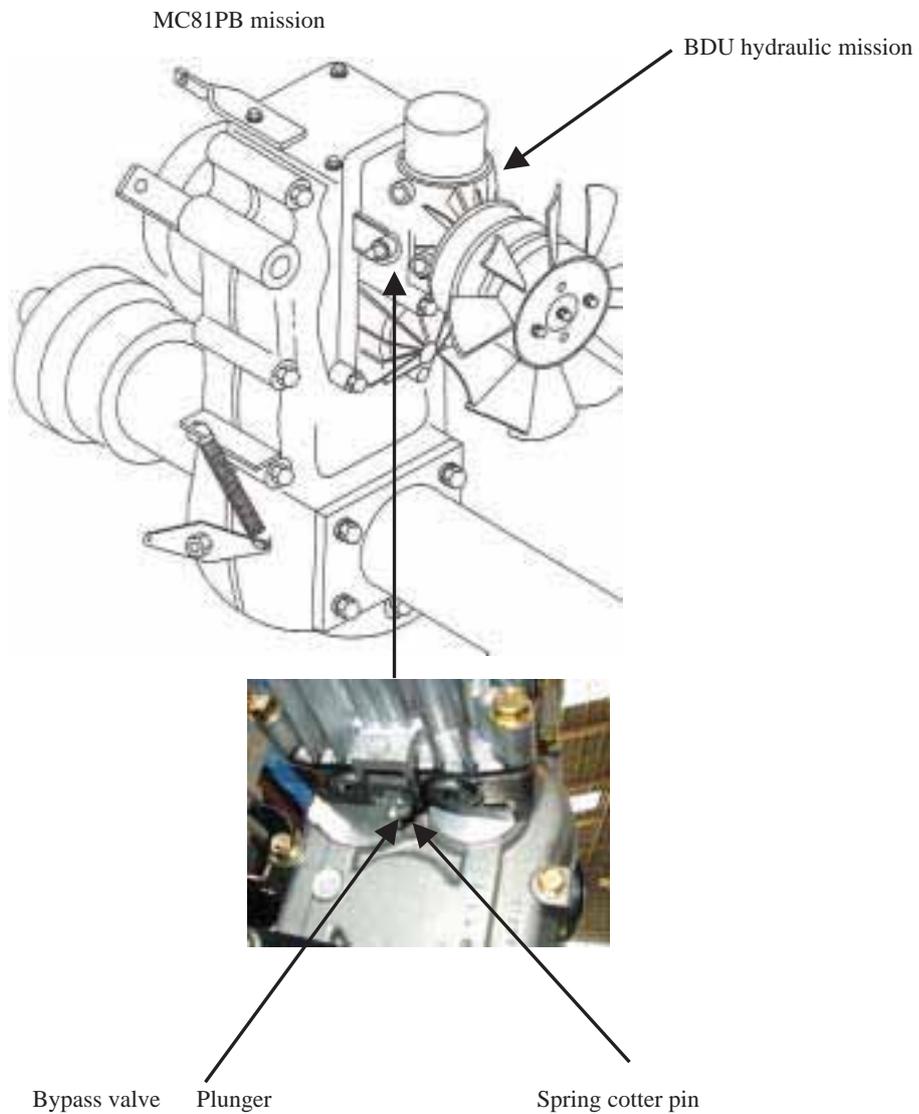


The seat is positioned backward

\* Follow the below when moving the sand spreader due to break down the engine and so on.

1) Push the plunger of bypass valve manually after take spring cotter pins which attached the bypass valve at the bottom of BDU21L hydraulic mission out of MC81PB mission. Push and move the sand spreader slowly.

2) The bypass valve shall be closed by boost pressure when turning over the engine for reversion the bypass valve. After that, ensure to mount the spring cotter pins for safety.



Model

Serial number

## Safety description checking card

I heard a presentation in relation to safety machine handling/operating and description of the warranty card from the following sales person.

• Date of explanation	Day/Month/Year
• Delivery date	Day/Month/Year
• Customer's Address	Post code
• Tel No.	
• Customer's name	[Seal]

• Agent's address	Post code	Agent's code
• Agent's name	Tel	[Seal]

• Person in charge	code	Employee's
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- Product and Serial No.

Please fill in the model name and serial number when you were explained operating machine and/or attachment as well as this machine.

Model	Serial No.

1) Copy for maker  
(Person in charge -> IHI Shibaura Machinery Corporation)