

# OPERATION MANUAL



## FFLS325 Laser Screed

PERFORMANCE · EFFICIENT · RELIABLE

**Master** sincerely thanks you for selecting the Plate Compactor Machine. For your Safety and proper operation, before you start to operate or carry out any maintenance on this equipment, **YOU MUST READ** and **STUDY** this manual carefully. Be sure to always keep it ready for reference.

**Produced By Henan Master Machinery Co.,Ltd**

**Dear Customer,**

**Thanks for choosing Master machine.**

**To ensure the safety and proper use of the machine,  
please read the instruction book carefully before use.**

**Also, please fill this card and save it for warranty  
use.**

Buyer Name		Purchase Time	
Tel		Contact Person	
Address			
Product Name	Laser Screed		
MODEL	FFLS325		
Motor Model			
Note			

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# Foreword

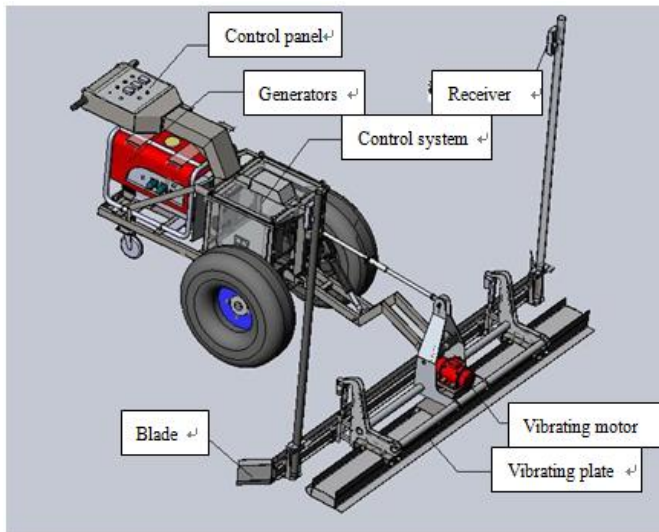
Thank you for using LS-325 laser concrete leveling machine:

LS-325 laser concrete leveling machine is mainly used for road construction and ground leveling. It uses advanced laser control technology, computer control technology, sensor technology, servo drive technology and much other high-end technology with a high degree of automation, simple operation, small construction workers, low cost, high efficiency, good quality and other advantages.

For you to know and use the machine as soon as possible for safe operation, good maintenance and extending the life of the machine, please read the manual carefully and follow its instructions to operate the machine. In reading this manual, pay special attention to the content of "CAUTION" or "WARNING".

If you have any problem with this machine, please don't hesitate to contact with us. We are willing to provide you complete and quality services at any time.

I. Machine Structure



Pic 1.1 Laser screed



Pic 1.2 Transmitter

As it is shown in Pic 1.1, the machine can be divided into two parts as below.

Vibrating leveling part: vibration motor, vibration plate, blade and laser receiver, etc.

Power part: Control panel, generators, control systems and drive assembly etc.

## II. LS-325 Model Configuration Chart

L×W×H (working condition)	2748×2900×2044 (mm)
L×W×H (in transit)	2597×1057×1158 (mm)
Weight	352kg
Generators	ELEMAX SHR3900EX
Tyre	733mm ATV tyre (1.8~2.2BAR) 3.0-21 narrow (1.6~2.1BAR)
Driving system	Servo drive
Laser detecting and control system	receiver +transmitter + control
Leveling	Electric leveling sensor

Chart 2.1 LS-325 Model Configurations

## III. Application\Performance\Features

### 3.1 Application

All kinds of concrete floor(including industrial floor with reinforcing mat)

Construction conditions:

- 1) concrete slump 90 ~ 150mm
- 2) base roughness  $\leq 100\text{mm}$

### 3.2 Performance

- (1) Ground Flatness:  $\leq \pm 4\text{mm}/2\text{m}$
- (2) The ground elevation error: diameter range  $\leq \pm 7\text{mm}/100\text{m}$
- (3) The maximum construction radius  $\leq 200\text{m}$
- (4) construction area per hour:  $200\text{m}^2/\text{h} \sim 350\text{m}^2/\text{h}$

## IV. Core Parts Introduction

### 4.1 Generators ELEMEX SHR3900EX from Japanese

#### 1. Specifications of Generators

Generator	
Model	Variable frequency generator
Phase	Single
Power factor	1
Rated voltage (V)	220
Rated current (A)	8.5A
Frequency (Hz)	50

Max. output (KVA)	2.5
Rated output (KVA)	2.0
Generator	
Type	4-cycle air-cooled OHRV
Rated power (KW/rpm)	4.8/3600
Displacement (cm <sup>3</sup> )	196
Others	
Fuel	93# unleaded gasoline
Size (L×W×H) (mm)	623×438×491
Net weight (kg)	46
Starting mode	Manual
Fuel tank (L)	17
Oil specification /capacity (L)	SAE 10W-30/ 0.6L
Noise level (dBA/7m)	65
Continuous working time ( no load~rated load ) (hr)	6

Chart 4.1 Specifications of Generators (for reference)

## 2. Inspection of Generators before Operating

### Detecting oil

1) Before checking or adding oil, make sure the machine is horizontal and has been shut down. (Pic 4.1, replace new oil for every 100 accumulated working hours)

### Detecting fuel



Stop generators and open the cap.

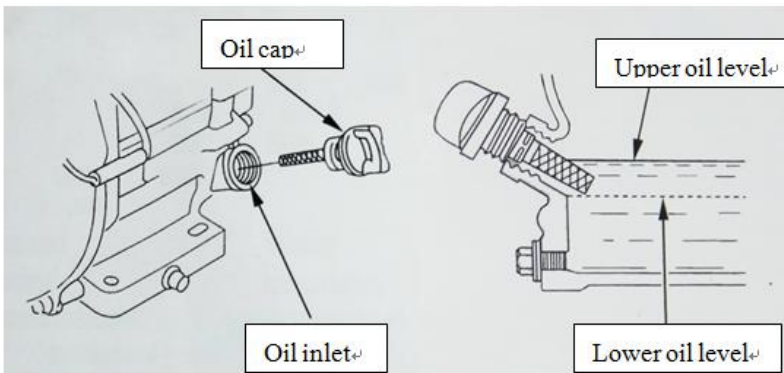
Apply 93# gasoline.

Please turn off the fuel plug before adding fuel. (Pic 4.2)

The fuel shouldn't go above the top of the filter when adding it.

Tight the fuel cap clockwise after adding fuel

Please clean the fuel splashed.



Pic4.2 Fuel Plug shut

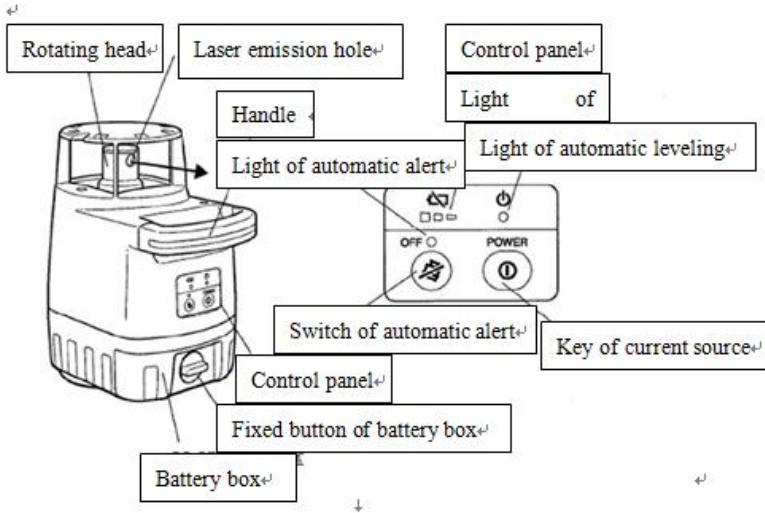
## 4.2 Introduction of Laser System

### 1. Specification of transmitter

Item	Transmitter
Precision	±1.9mm/50m
Automatic adjusting angle	±3°
Application range	2~700m
Automatic correction time	Within 2min (Please reset the transmitter if no correction in 2min)
Current source	NI-MH battery BT-49Q (chargeable, working time about 60hr)
Temperature for operating	-20℃ ~ +50℃
Temperature for keeping	-20℃ ~ +70℃ ( lower than 40℃ when keeping for long time )
Weight	2.8kg

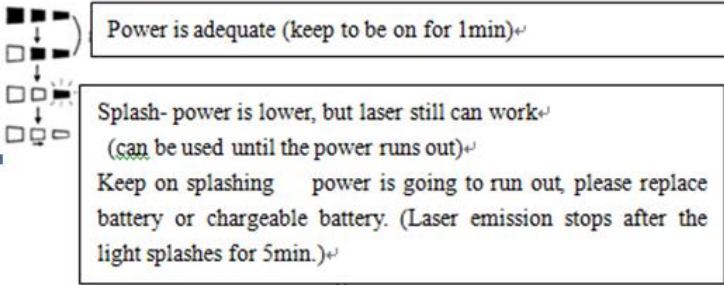
Pic 4.2 Specification of Transmitter

## 2.Keys on transmitter ( Pic 4.3 )



Pic 4.3 Structure of Transmitter

- (1) Press the power button shortly to light the power indicator, then the laser transmitter starts.
- (2) If the power light flashes after the laser is activated, it shows that the battery is low and you shall replace it.(Pic 4.4)
- (3) Please try to charge the battery after it runs out completely and charge it fully once, not halfway off. (First charging shall be 12hr, after that, charging 8hr is all right. Please unplug the power cord after the battery is fully charged to avoid damage to battery and transmitter)



Pic 4.4 Charge indicators

### 3. Specification of receiver

Item	Receiver
Detecting width	250mm
Detecting direction	360° (horizontal)
Detecting precision	Mode 1: ±3mm; Mode 2: ±6mm; Mode 3: ±15mm; Mode 4: ±30mm (Mode 1 is default, which can't be changed by users)
Application range	800m
Current source	Out source: DC10~30V
Temperature for operating	-20℃~+50℃
Temperature for keeping	-20℃~+70℃ (lower than 40℃ when keeping for long time)
Weight	2.0kg

Pic 4.3 Specifications of receiver

4.Keys on receiver (图 4.5)

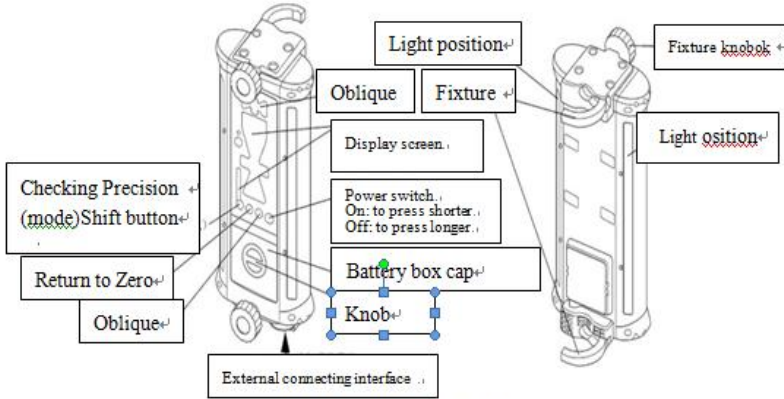
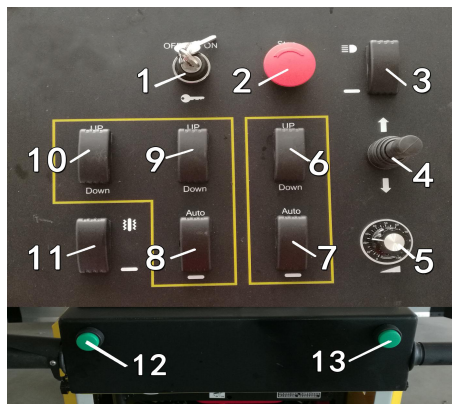


Fig 4.5 Structure of receiver



1. Receiver has a battery slot for 2# batter, which is useless.
2. Power must be cut when pulling or inserting the air plug.
3. Adjust the height of the receiver manually.

4.3 Switches on Control Panel



Pic 4.6 control panel

Switches on the control panel (Pic 4.6)

No.	Item	Function
1	Power switch	Master switch
2	Emergency switch	Emergency stop
3	Switch of LED	Control LED light
4	Forward/back	Control the machine forward or back
5	Adjust speed	Adjust the walking speed
6	Up/down (Lift arm)	Adjust the machine level
7	Manual/automatic	Adjust the level of the machine manually or automatically
8	Manual/automatic (blade)	adjustment of the height of the blade manually or automatically
9	Up/down right (blade)	Control the left of the blade to be up or down
10	Up/down left (blade)	Control the left of the blade to be up or down
11	Vibration switch	Control vibrating motor to work or stop
12	Turn left	Turn left
13	Turn right	Turn right

Pic 4.4 Introduction of switches

## V. Operation

### 5.1 Start the machine

#### 1. Preparations before starting

1.	Connect the vibrating leveling part and the power part correctly
2.	Check if the joints are tightened, especially the screws on vibration part
3.	Check if the fuel in generator is adequacy (see P7 for generators detecting before operation)
4.	Check the switches are working normally and make them at "0" or "Manual"

5.	Check the battery power
6.	Installed laser transmitter correctly
7.	Installed laser receiver correctly

Chart 5.1 Preparations before starting

## 2. Starting procedures

### (I) Installation and starting of transmitter and receiver

#### (1) Installation of transmitter (Pic 5.1、5.2)



Pic 5.1 Adjustment of Transmitter

- 1) Placed the tripod near the construction site, smooth and unobstructed, and adjust the three feet to make the bubble on the top platform in the black circle.



Pic 5.2 Installation of transmitter

2). Fix the transmitter to the tripod platform

3). Adjust the height of the tripod platform ( $\geq 1.8\text{m}$ ) and press the switch to start the transmitter. (Note: After a few seconds the transmitter will automatically adjust the leveling, the laser turns off, and then turns on automatically after about 30s).

(2) Receiver installation



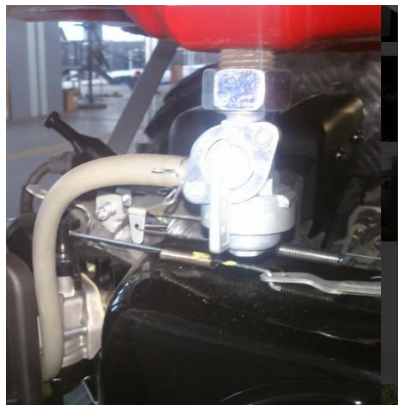


### Pic 5.3 Installation of receiver

- 1) As it is shown in Pic 5.3, two receivers are fixed to the two aluminum poles.
- 2) In the case of the transmitter is installed, aim first handheld receiver at transmitter height, make the bottom end of the rod touch just touch the concrete surface, and then adjust the height of the receiver so that the center position of the transmitter laser beam alignment.
- 3). Put the handheld receiver on one side of the blade perpendicularly, adjust electric cylinder manually until the digital display of handheld receiver is "0", that is, the handheld receiver lever aligned with the central position of the laser beam emitter again. (Note that both of the sides shall be adjusted as above-mentioned.)
- 4) Finally adjust the two receivers on the aluminum poles to aim their center at the transmitter beams.

## (II). Generators starting

- 1) Open fuel plug, see Pic 5.4



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Pic 5.4 fuel plugs stop switch on

- 2) Turn the arrow on stop switch of generations to ON, see 5.5



Pic 5.5 stop switch of generators

- 3) Pull throttle switch on generators ( turn on it according to the specific temperature. Pull it less if temperature is higher.



Pic 5.6 Throttle switch of Generations

- 4) Pull the starter handle slowly until you feel a repulsive force, then pull out quickly! After starting the generators, still grasp the handle, and then let it recover the naturally.
- 5) After the starting the generators, let the throttle switch recover slowly. (Don't shut the choke completely suddenly if the generators are cold or the temperature is low, otherwise, generators is easily

shutdown);

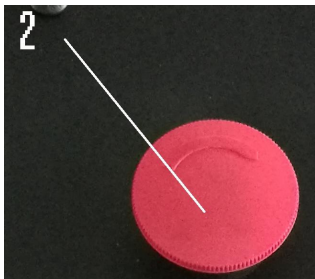
(III) Open the key switch on the operation frame



5.7 power switch of the operation frame

(IV). Use the function keys to operate the machine (Key introduction in page 10)

(V). Clench the security armrest in the left hand to control the machine walking. (Emergency circumstances, loose the security armrest then the machine will stop waling, then use the urgent stop switch to stop the machine and the electric parts, after that, shut off the generator) See picture 5.8、picture 5.9



5.8 Urgent stop switch



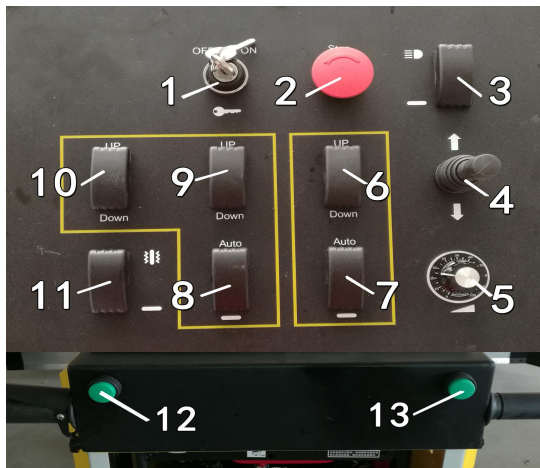
5.9 Security armrest(left hand)

## 5.2 Automatic mode/Manual mode of machine

### 1. Manual mode operation instructions

“Manual/Automatic” selector switch on the operation frame,corresponding to “upper eft/left

(1). lower”“upper right/low right”和“up/down” those three switch。 (Drawing the corresponding range with yellow line in the operation frame ) , as picture 5.10:



5.10 “Manual/Automatic” selector switch

(2). When the “Manual/Automatic” in the left yellow part to “Manual”, push “upper left/left lower” “upper right/low right” to control the left/right linear actuator, to control the both side of the vibrating plate floating up and down (this only for correct the laser receiver in both side of the scraper blade by

manual )

- (3). When the “Manual/Automatic” in the right yellow part to “Manual” place, the motor “up/down” to control the linear actuator in the front of the machine, up and down the vibration leveling plate ( Attention: need press the handles, that will come when the machine is not move; the machine will fluctuate up and down as the gravity when no person work on, this usually used for the “Automatic”, the machine will adjust the leveling self-motion )

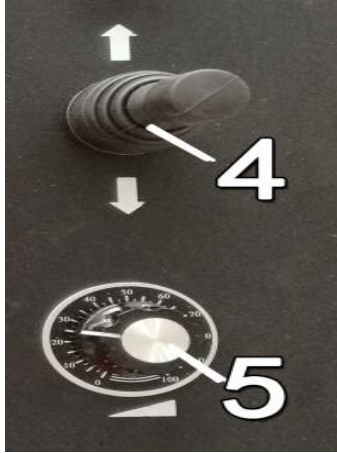
## 2. Machine Automatic mode Instruction

- (1). You can start the Automatic mode when the machine already in the working place, and had finished the adjustable of the receiver in two side of the vibrating plate.
- (2). Switch two “Manual/Automatic” to place “Automatic”, the machine is in automatic mode. ( Strictly prohibited to use the automatic mode in any case, only use to working and adjust the receiver )

## 5.3 Machine working process

1. Control the left operation handle, make sure
2. accessible around, turn the walking direction to the “forward”, then turn the knob “speed” the right hand clockwise, turn to a proper speed, then move the machine to construction region ( if turn a corner, please press the knob the left-handed rotation / dextroversion in two flanks

of the machine.)



#### 5.11 Forward/backward and speed switch

3. Driving the machine to the construction region, then put the machine to the initial position, and then turn the walking direction knob to the center, after that turn the level adjustment and the scraper adjustment switch to the “Automatic”, then turn the vibrating switch to “start”, finally turn the walking direction to

the “backward”, operate the handles, and start work. If need to change the speed, please in your right hand.

4. After working, please shut off the walking switch and the vibration motor, then turn all “Manual/Automatic” to “Manual”, then press the “up” knob, lifting the vibration pate, driving the machine leave the construction region.

## 5.4 Machine stop

1. Shut off all the switch or in the “manual”;
2. Shut off the key.
3. Shut off the output switch of the generator。
4. Turn the switch of the generator to the OFF.
5. Close the fuel switch.

## VI. Product Maintenance and Cleaning

### 6.1 Machine Cleanness

- (1). After working, please raise the screed part with the button, then driving out the construction site。Strictly prohibit to moving the machine when the vibration plate touch with the ground, to avoid the damage of  
  
the vibration plate.
- (2). Please keep dry of the place where put the machine, and should not with the debris and flammable products.
- (3). Please washing the machine with the water cannons after finishing working。 (Strictly prohibit to washing the mesh part, to avoid the water enter the machine and cause short circuit and so on)。
- (4). Please pay special attention to the concrete mud on the Vibration plate, screed, wheels and motor protect frame. You can clean the parts you can remove like the motor protect frame.

- (5). Please check if the screws and the coupling of the oil hose loose or not after working.
- (6). Please use the rain wear when put outdoor in the rain day.
- (7). Please package all plug with plastic wrap, to prevent water or knock against.

## 6.2 The maintenance of the Laser Transmitter

### 1. Maintenance after working

- (1). Wipe the dirt, grease, moisture with a soft and dry cloth.
- (2). If too much stains, please, please clean with the soft cloth which soaked in the neutral detergent diluted water after twist dry. Never use benzene, thinner, gasoline, chemicals.

### 2. Cleaning the Liquid Crystal surface

- (1). Please use the organic resin or the cloth for glasses to clean the dirt.
- (2). If too much dirt, can use the glasses cleaning fluid.

### 3. Battery disposal

- (1). If not use the machine for long time, please take out all the battery in the machine and the remote control, and keep them in good way.
- (2). The charging time of the rechargeable battery of the Laser Transmitter is 8 hours.



- (3). Please try to charge after the battery power is completely used up. Ensure as far as possible when charging a full, do not outage of the power. (The first charge time is suggest to be 12 hours, afterwards will be 8 hours. In order to avoid damage to the battery, and the emitter, please full the plug after a full charge.)

## VII. Transportation

### 7.1 Disassembly:

Please according to the following methods, to keep the transport safety and convenient:

- (1). First, the machine should stop the working, check if you had shut down all the parts.
- (2). Disassembly the laser transmitter and the laser receiver (Forbid to pull the plug when not cut the power), and put them back in the right boxes.
- (3). Disassembly the vibration plate from the machine, take out the aluminium tubes, pull out the pin which connect the vibration plate and the machine, then you can separate them (Attention, before disassembly the above parts, you should assemble the wheel as below first.)



7.1 Machine wheel

## 7.2 Transportation:

- (1). Pave the ramp on the end of the truck, and keep them fastness.
- (2). Make sure all the switch are shut down
- (3). Assemble the wheels in the rear side of the machine.
- (4). Start the machine。
- (5). Driving the machine on the ramp , As below pictures 7.2, please pay attention to the safety when moving。 ( Should pull the machine with the mooring rope. To prevent the machine from accidental fast falling. Not stay at the ramp for long time! )



### 7.2 Machine loading

- (6). Put the other parts on the truck, and fasten them.
- (7). Suggest to using the rain cloth to package the machine when transporting.

(8). Package the plug with the plastic wrap, to prevent water or knock against.

(9).For short distance, please move follow as the step 4.

## VIII. ATTENTION



Please confirm that you have carefully read and understand the following matters

### 8.1 Attention matters when operation:

1. The worker if not familiar with the performance and operation procedures of the machine shall not start the machine. Need to training first before operation!
2. Stay away from the working part of the machine when working
3. If the machine is working, please care of the hot part of the Generator, not allow to touch, avoid to scald!
4. Should not long time to aim the laser with eyes, avoid to burn!
5. Forbidden to touch any electrical equipment after the machine electricity, to avoid damage and interference the equipment!
6. If any abnormal after the machine start,, please shut off and check the machine. It is forbidden to use the machine with the abnormal or overload operation.

## 8.2: Attention matters when working

1. When working, It is, the concrete leveling process(refers to the leveling line under the machine effective width) should not interrupt and need to finish one time.
2. When a temporary pause, need to shut off the vibration motor first. It's forbidden to stop the machine on the concrete surface when the vibration motor is working.
3. When working on the next concrete surface, the vibration plate should has 400-500mm on the first surface which had been leveling.
4. There should be two workers in both side of the vibration plate, to help to fill the lack of concrete or remove redundant concrete.
5. Before the working of the machine, please shut of the vibration motor, and all the switch “manual/automatic”,

should be on the “manual”, and ensure the vibration plate not touch the ground.

6. The machine is not allowed to use for the early paving working of concrete, which will produce irreversible damage to the machine.
7. The machine is designed for 300mm concrete surface working, please follow this.

## 8.3 The other attention matters of the machine:

1. The machine generator capacity of gasoline is 17L, can work about 6 hour, Please add the gasoline timely.

2. Need to change the engine oil, every 100 hours working time.

## IX. The common failures and solutions

I. The Emitter cannot be started

Reason: : out of power。

Solution: Change the new battery.

3. Emitter discontinuous, intermittent emission light beam

Reason: The machine transmitter with automatically leveling, if the tripod is not stable, with the shake that make the emitter shake, will lead the emitter leveling again and again,

and that is level, meanwhile it is not a laser beam during the leveling launcher. The following three conditions is the main cause of the above problem:

①.Check the ground(or other surface) if stable or not, have any shake or vibration.

②.The damage of the tripod, the fixed surface of the emitter is not level.

③.the big wind and other reason, make the tripod or the rock or the Emitter rocking

Solution: ①Move the Emitter to the level off and not rock ground;

②Change the tripod;

③Find the shelter place, or add some weight on the tripod to prevent the rock.

3 .The edge of the concrete floor is leakiness.

Reason: The floor edge commonly with the template, the machine can not leveling well of the edge and corner.

**Solution:** Suggest to use the concrete vibrator, then use the machine to leveling.

4.The ground plane less than expected value after leveling.

**Reason:** With different slump concrete, the after vibrating

concrete slump is different.

**Solution:** Adjust leveling elevation according to the worker's experience.

4. Not working of the electrical components

**Reason:** The cable falls off or wrong cable connection.

**Solution:** Reconnect the cable.

6. Generators cannot start

**Reason:** The temperature is too high or the temperature of the generator body is too high, degree of throttle is too small; The temperature is too low, and the degree of throttle is too big.

**Solution:** Adjust the degree of the throttle.