

OPERATION MANUAL



FLS400 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	FLS400		
Motor Model			
Note			

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Foreword

Thank you for using LS-400 laser concrete leveling machine:

LS-400 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



Henan Master Machinery Co., Ltd

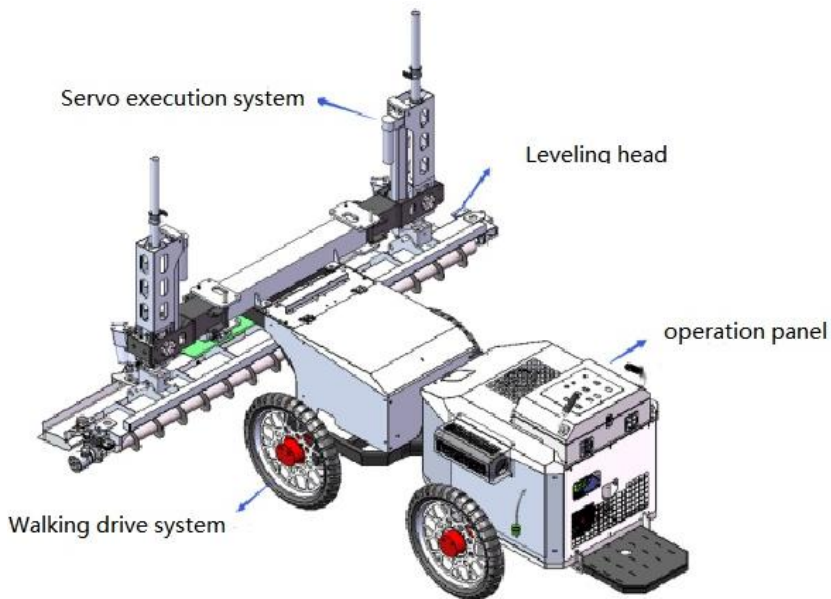
Tel:(+86)17737606271 www.mastermachinerys.com

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



Picture 1.1 Overall structure diagram



Figure 1.2 Laser transmitter schematic

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

- (1) . Vibrating leveling part: Vibration plate, Auger and Laser Receiver, etc.
- (2) . Machine body: Operation panel, Generator Set, Control Systems, Driving Assembly etc.

II. LS-400 Model configuration

L×W×H (working condition)	3310×3165×2224 (mm)
L×W×H (in transit)	2750×1277×1758 (mm)
Weight	800kg
Generators Set	Briggs & Stratton 3564
Tire	3.0-21 Narrow tire (Solid type)
Driving system	Hydraulic driving
Laser system	Laser Receiver +Laser Transmitter + Control System
Leveling Adjustment	Electric leveling sensor

Chart 2.1 LS-400 Model Configurations

We reserve the rights to change the above specification with further notice.

III. Application\Performance\Features

3.1 Application

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

(2). 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: $\leq \pm 7\text{mm}/100\text{m}$ diameter range
- (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. Main parts Introduction

4.1 Generator: Briggs & Stratton 3564

1. Specifications

Generator	
Model	Inverter generator
Phase	Single Phase
Power factor	1
Rated voltage (V)	220
Rated current (A)	9
Frequency (HZ)	50
Max. output (KVA)	2.5
Rated output (KVA)	2.0
Engine	
Type	V-type twin-cylinder 4-stroke air-cooled, gasoline
Rated power (KW/hp)	14.2 (19hp)
Displacement (cm ³)	674

Others	
Fuel	93# unleaded gasoline
Size (L×W×H) (mm)	355.6×449.6×482.6
Net weight (kg)	50
Engine Starting	Electric start
Fuel tank (L)	20
Lubricating Oil specification /capacity (L)	SAE 10W-30/ 2L
Continuous working time (no load ~ rated load) (hr)	6

Table 4.1 Generator set specification (Only for reference, We reserve the rights to change the above specification with further notice.)

Chart 4.1 Specifications of Generators (for reference)

2. Check before running the Generator set

Checking the engine 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)

Checking the fuel

- 1) . Stop the generators set and open the cap.
- 2). Suggest: 93# gasoline.
- 3). Please turn off the fuel plug before adding fuel. (Pic 4.2)
- 4). Keep the fuel lower than the top of the filter when adding it.

- 5). Tight the fuel cap after adding fuel
- 6). Please clean the fuel splashed, before starting the engine.

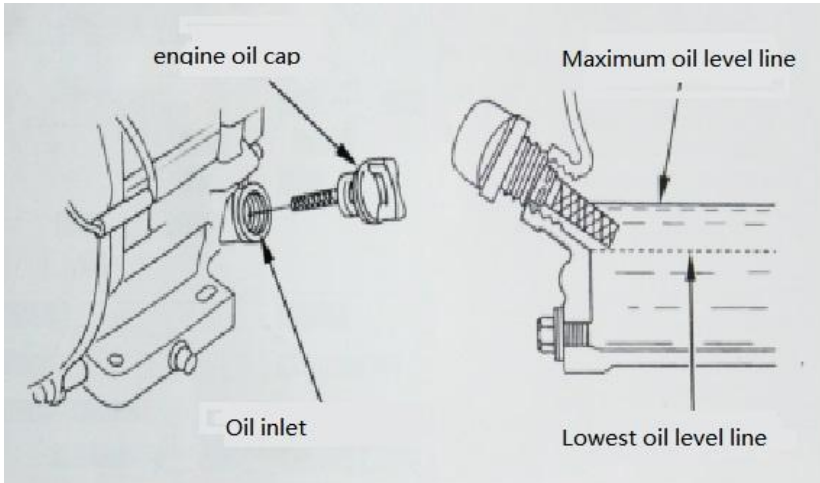


Figure 4.1 Checking the engine oil



Figure 4.2 Fuel plug closed

4.2 LASER SYSTEM

1. Specification of transmitter

Item	Transmitter
Precision	±1.5mm/30m
Automatic angle adjustment	±6°
Range of use	5~700m
Automatic time correction	≤2min (uncorrected for more than 2min, please relocate the transmitter frame and transmitter)
Power	Lithium ion rechargeable battery (Endurance 50h)
Charge	Voltage 12V; 2.5A; 5hs
Working temperature	-20°C~+50°C
Storage temperature	-40°C~+70°C (For long-term storage, 0~40°C)
Weight	2.8kg

Table4.2 Laser emitter specifications

2.Button function of the transmitter (Figure 4.3)

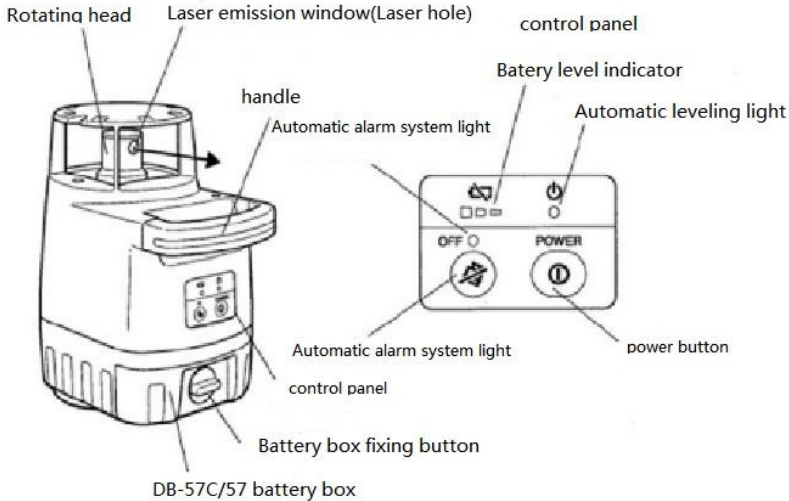


Figure 4.3 Transmitter structure

- (1) Press the power button shortly, the power indicator lights, and the laser transmitter goes to start
- (2) After the laser is started, the power indicator flashes, indicating that the battery is insufficient, please replace the battery in time. (Figure 4.4)
- (3) Please not to use the transmitter when charging, (unless emergency use.)

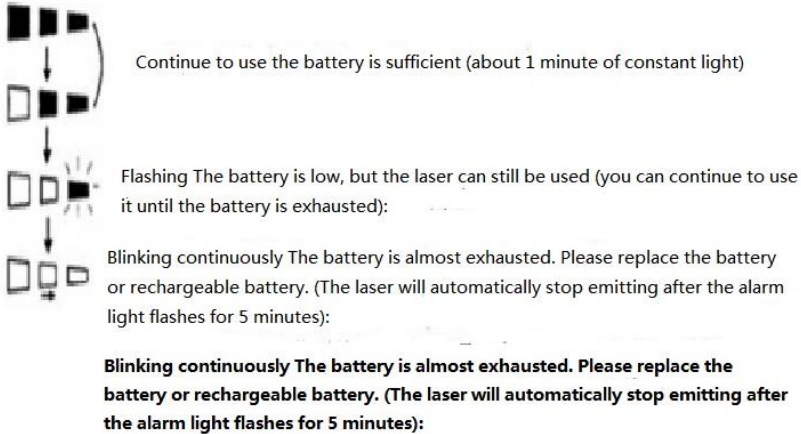


Figure 4.4 Description of battery indicator

3. Laser receiver specifications

Item	Laser receiver
Detection width	250mm
Detection direction	360° (Level)
Detection accuracy	Mode 1: ± 3mm; Mode 2: ± 6mm; Mode 3: ± 15mm; Mode 4: ± 30mm (The default mode is Mode 1, the user must not change)
Range of use	800m
Power	External power supply: DC10~30V
Working temperature	-20°C~+50°C
Storage temperature	-20°C~+70°C (for long time Storage: <40°C)

Weight	2.0kg
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Table 4.3 Laser receiver specifications

4.Button function of the Laser receiver (Figure 4.5)

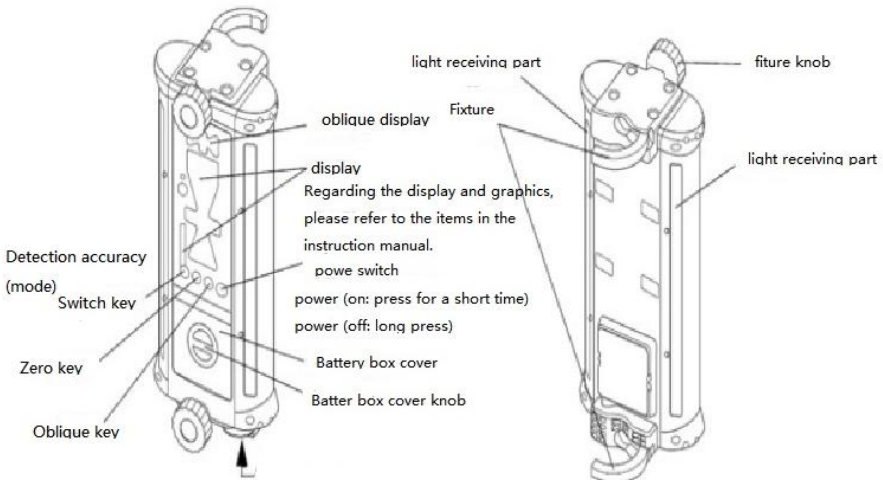


Figure 4.5 Receiver structure



1. The receiver has a battery slot with No. 2 battery, but no battery is required.

2. The power supply must be disconnected when plugging and unplugging the aviation plug.

3. Manually adjust the height of the receiver.



4.3
Introduction
to the switch
functions of
the control
panel

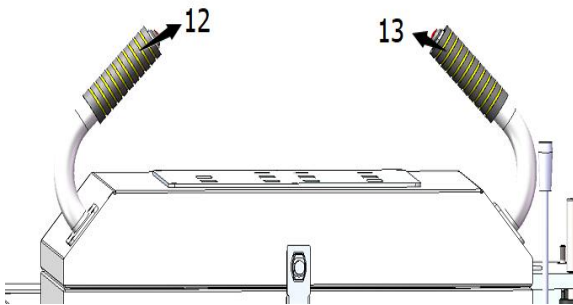


Figure 4.6 Control Panel

Function description of each switch on the control panel (Figure 4.6)

Number	Name	Function
1	Voltmeter	Voltage display
2	Power switch	Switch of the machine
3	Emergency Stop switch	Stop the machine
4	Angle switch	Adjust the angle of the leveling plate manual
5	Vibration switch	Control vibration motor
6	Auger switch	Control auger operation
7	Horn switch	Control speaker sound
8	LED light switch	Control the LED light
9	Up / down-right	Control the lifting of the right side of the leveling plate
10	Up / down-left	Control the lifting of the left side of the leveling plate
11	Finishing / manual / rough finishing	Working mode switch
12\13	Turn left \ turn right	Control the machine to turn left and right

Table 4.4 Function description of each switch

V. Operation

5.1 Machine startup

1. Preparation before starting

1.	Correctly connect the vibration leveling part and the power part
2.	Check the connection parts of the machine are tight well, especially the screws in the vibration part are loose or not
3.	Check the fuel of the engine group is sufficient (see P7 engine group before operation for details)
4.	Check all switches is faulty and whether it is in "0" position or "manual" position
5.	Check battery power
6.	Install the laser transmitter correctly
7.	Install the laser receiver correctly

Table 5.1 Preparations before starting

2. Startup steps、

一， Laser transmitter and laser receiver installation and startup (hereinafter referred to as transmitter and receiver)

(1) Transmitter install, (Figure 5.1、 5.2)



Figure 5.1 Transmitter tripod adjustment

1) . Place the tripod on a stable and unobstructed surface near the construction site, and adjust the three feet so that the horizontal bubbles on the top platform are within the black circle of the meter.



Figure 5.2 Transmitter installation

2). Fixed the Transmitter on the tripod platform.

3). Adjust the height of the tripod platform($\geq 2.3\text{m}$), press the key to turn on the transmitter. (Note: The transmitter will automatically lever after a few seconds, at this time the laser is turned off, and then will turn on automatically after about 30 seconds) .

(2). Receiver installation



Figure 5.3 Receiver installation

1). As figure 5.3, fix the two receivers on the aluminum tubes.

2). After installing the transmitter, first align the height of the handheld receiver and the transmitter, so that the bottom of the handheld rod is in direct contact with the concrete surface, and

then adjust the height of the receiver to keep its' center position in the line with the transmitter beam.

3). Then put the handheld rod vertically on one end of the scraper, and manually adjust the electric cylinder until the displayed number of the handheld receiver is “0”, that mean the center position of the receiver on the handheld rod is aligned with the laser beam of the transmitter again(Note: the above adjustments must be made at both ends).

4). Finally adjust the two receivers on the aluminum pole, align the center position with the transmitter beam.

(一). Generator set: Start and Stop

1). Turn left—turn down the damper、 Turn right—increase throttle, to the place show as figure 5.4;



Figure 5.4

2) .Turn the switch clockwise about 3.5 seconds, start the engine, as figure 5.5;



Figure 5.5: Engine switch

3) . After engine starting, slowly turn right→open the damper; Turn left←open the throttle to the chute. (when the engine is cold or the temperature is low, do not close the choke completely , otherwise the generator set will easily shut down; It's recommended to open the damper after 1 minute of standby operation at this time);

3. Press the green power switch on the Operation panel



Figure 5.7 Power Switch on operation panel

3. Control the different function button to operate the machine working (check Page 10) .
4. Control the operation handle in the right side: Push—Forward; Pull---backward,

5.2 The working mode of machine

1.The manual operation

- (1). The button switch“finishing/manual/rough”, corresponds to three operation modes

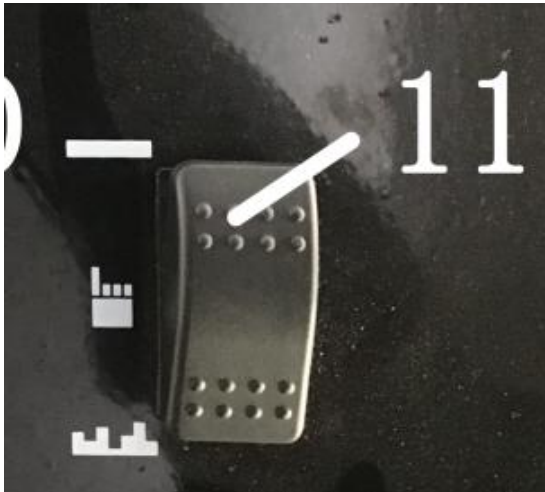


Figure 5.10 switch“finishing/manual/rough”

- (2). Switch 4, control the angle of leveling plate
- (3). Switch 9 and 10, control the head up and down

2. Operating instructions for the finishing mode

- (1). When waiting for work, Switch the mode to “finishing”. After the leveling head is automatically leveled and stabilized, switch to “manual” again.
- (2). Use switch “9” and “10” to control the machine head part up and down, adjust the height of the auger and install the receiver.
- (3). Switch to “finishing” again, used the hand-held pole to perform the secondary verification----qualified, machine is ready for working, drive the machine to working area, open the vibrating and auger to work.

3. Machine rough mode operation

Switch to “Rough mode”, the leveling head is automatically lifting 1~2cm; Convenient for the rough spreading in large areas.

5.3 Stop the machine

1. Shut off all the switch or to the “manual”;
2. Press the “stop switch”;
3. Turn the engine throttle to the right- to the end;
4. Turn the key counterclockwise to the end and remove it.

VI.Maintenance and Cleaning

6.1 Machine cleaning

- (1). After working, please raise the screed part by the manual button, and drive out the construction site. ◦ Strictly prohibit to move the machine when the vibration plate touch the ground, to avoid the damage.
- (2). Please keep the machine in the dry place, and no debris and flammable products nearby.
- (3). After working, please flush with a high-pressure water gun (it is strictly forbidden to flush at the mesh part of the machine, so as to prevent water enter and cause a circuit short problem.)◦.
- (4). Please attention to the concrete mud on the vibration plate、 Screed blade、 Tire and motor protect frame. Some parts can be removed for cleaning, as the motor protect frame.
- (5). Check if the screws and oil hose coupling loose or not, tighten before working.
- (6). Please use the rain wear when keep outdoor in the rain day.
- (7). Please package all plugs with plastic wrap, to prevent water of impacting.

6.2 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 clean with the soft cloth which soaked in water diluted with neutral detergent and after twist dry. Forbidden to use benzene, thinner, gasoline or chemicals.

2.Liquid crystal surface cleaning

(1). Use the special cleaning cloth for organic resin or lens to clean the dirt.

(2). If too much dirt, use the glasses cleaning fluid.

1、 Maintenance of Battery

(1). If not use the machine for long time, please remove all batteries in the main unit and keep them properly.

(2). The battery of the Transmitter: charging time—5hours.

(3). Please try to charge after the battery power completely used up, ensure a full charge when charging.

VII. Transportation

7.1 Disassemble:

Please follow the below, to keep the safety and convenient of transport:

(1). When the machine is stopped, carefully check whether each part is turned off and other operations which need to be turned off.

(2). Disassemble the Laser Transmitter and Receiver(Pull out the plug when the power is cut), then put them back to the right boxes.

(3). Transport the Vibration part and machine body separately.

(4). Fold the bean to reduce the space.

7.2 Transportation:

(1). Put a springboard on the rear of the truck, keep it fastness

(2). Make sure all switch “shut down” or “manual”.

(3). Assemble the wheel in the rear side.

(4). Start the machine.

(5). Driving the machine on the truck, as figure 7.2, Please pay attention to the safety when moving. (Please pull the machine with the mooring rope when loading, to prevent accidental falling. Not stay at the springboard for long time.!!)



Figure 7.2 Machine Loading

- (1). Put other parts on the truck, then fasten.
- (2).Using the rain cloth to cover the machine when transporting.
- (3).Please package all plugs with plastic wrap, to prevent water of impacting.
- (4).For short distance moving, please start the machine and driving there directly.

VIII. ATTENTION



Please make sure that you have carefully read and understood the following !

8. 1 Attention matters when operation:

1. It's not allowed the start the machine by the worker who not familiar with the performance and operation procedures. Need to training before operation!
2. Stay away from the moving part when working!
3. Attention to the hot parts when machine is working, avoid touching and burns!
4. Do not aim your eyes at the laser for long time, to avoid burning !
5. Forbidden to touch any electrical equipment after the machine electricity, to

avoid damage and interference the equipment !

6. If and abnormal after the machine start, please shut off and check the machine ! It's forbidden to use the machine with any abnormal or overload operation !

8.2 Attention matters when working:

1. When working on the floor, should not interrupt and need to finish one time in the one concrete leveling process(refers to the leveling line under the machine effective width)。
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 process, the vibration plate should cover a 400-500mm on the first process.
4. There need two workers in both side of the machine, to help to fill the lack of concrete or remove redundant concrete.
5. Before the working of the machine, must shut off the vibration motor, and all switch to “manual”, ensure the vibrating plate not touch the floor.
6. The machine is designed for 300mm concrete surface working, please follow this!

8.3 Th. e other attention matters of the machine

1The fuel tank of the gasoline Generator capacity is 20, can work 6 hours,

please add the gasoline timely.

2. Change the engine oil every 100 working hours.

IX. Faults and resolutions

1.The Laser transmitter fails to start.

Reason: Out of power.

Solution: Change the new battery.

2.The Transmitter beam is discontinuous and intermittent.

Reason: The Transmitter can automatically level, if the tripod is unstable and shakes, make the transmitter moving, it will cause the transmitter to constantly re-leveling so that the emitted beam is horizontally divergent, and during the leveling, the transmitter does not emit a laser beam. The below three conditions are the main reason cause the above problem:

- ①.Check the ground(or other surface ground) where the transmitter's tripod is placed unstable, shaking or vibration。
- ②.The damage of the tripod, the transmitter fixed surface is not level.。
- ③.There are other factors such as strong winds that make the tripod or transmitter shaking.

Solution:

- ①Move the Transmitter to a flat/unshakeable place;
- ②Change a new tripod;
- ③Find a sheltered place or hang heavy objects on the tripod to reduce shaking

3. The edge of the concrete floor is leakiness.

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

Solution: Suggest to vibrating by the concrete vibrator first, then use the Laser Screed to leveling.

4.The ground level is lower than expected after leveling.

Reason : With different slump of concrete, the slump after vibrating is different.

Solution: Adjust leveling elevation according to the experience.

5.Non work of the electrical components

Reason: The related cable is disconnected or the cable connection is incorrect.

Solution: Reconnect the cable.

6.The generator set can't start.

Reason: The temperature is too high or the temperature of the generator body is too high, the degree of opening of the damper is too small, means the damper is pulled too much.; when the temperature is too low, the degree of opening of the damper is too large, that mean the damper is pulled too litter.

Solution: Adjust the damper according to the temperature.