

# Introduction

Thanks for purchasing FINE 2000XF/4000XF product. It's a most recently developed follow-spot with brilliant light intensity. This follow-spot is a perfect integration of advanced electronic controlling technology and exceptional user friendly design.

This follow-spot characterizes itself by advanced designs, workmanship and streamlined profile. Sharp beam edges are provided by the advanced optical system. It allows smooth linear dimming within the full range of 0 - 100%. It comes with detachable color exchanger and manual-manipulated frost filter. An ideal Color Temperature of 6000K and its excellent Color Rendering Index makes it unprecedented and widely favored in its field.

This follow-spot is complete in functions and provided with multiple safety protecting means, e.g. supplies provided to the lamp will be automatically cut off when the lamp casing is removed.

FINE 2000XF/4000XF follow-spot is widely used in TV studios, arena, disco room, dancing hall, night clubs, large performance venues, and other events.

## Declaration

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This product has passed the final check for both functionalities and package when delivered from the factory. All users should observe the instructions and pay attentions to the warnings covered by this manual. Unreasonable damages resulting from unintended operations or not heeding instructions covered by this manual will void the warranty. Specifications in this manual intend for reference only, the fixture delivered takes the priority. Any future modification pertaining to content of this manual, there will be no particular notifications. CAIYI reserves all copyrights. To obtain the latest information about software update, hardware and other files, please visit CAIYI online website.

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P/N:390383000002 Edition: E

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The following symbols are used to identify important safety information on the product and in this manual:

						
<b>DANGER!</b> Hazardous voltage. Risk of severe or lethal electric shock.	<b>DANGER!</b> Safety hazard. Risk of severe injury or death.	<b>DANGER!</b> Refer to manual before installing, powering or servicing.	<b>Warning!</b> Fire hazard.	<b>Warning!</b> Burn hazard. Hot surface. not touch. Do not touch.	<b>Warning!</b> Risk of eye injury. Safety glasses must be worn.	<b>Warning!</b> Risk of hand injury. Safety gloves must be worn.
						
Luminaires not suitable for direct mounting on normally flammable surfaces (suitable only for mounting on non-combustible surfaces)	For indoor use only	Do not direct lens to sun ray or strong light!	Do not actuate during operation	Replace any cracked protective shield	Minimum distance from lighted objects (metres)	Rated maximum ambient temperature

## Safety information



### WARNING!

Read the safety precautions in this section before installing, powering, operating or servicing this product.

After receiving the fixture, please unpack and check if there is any damage due to transportation. If any obvious damage or flaw is found, do not put it into use and contact the distributor or manufacturer as soon as possible.



This fixture is intended for professional use only. When operating the fixture, attentions should be drawn to fire/electrical shock hazards, ultraviolet radiation, lamp shattering or lethal injuries caused by fall.



Read this User Manual before mounting and energizing the fixture. Observe the safety guideline and notice the warnings both in this User Manual and on the fixture. Yet any safety concerns not covered hereby, contact the distributor or service hot-line.



### Protection against over heat

The fixture is intended for indoor application, its protection rating is IP20. The fixture should be kept dry and avoid working in presence of moisture, over-heat or heavy smokes.

$t_a = 40^\circ\text{C}$

The natural working temperature should be lower than 40 degrees. If the ambient temperature exceeds 40 degrees, please stop operating the unit immediately.



### Protection against explosion

Shields, lenses and ultraviolet screens must be replaced if they have become visible damaged to such an extent that their effectiveness is impaired. Replace the lamp immediately if it becomes visually deformed, damaged or in any way defected.



### Protection against injury due to falls

Do not handle the device alone when unpacking or moving it. Before installing the device, make sure the supporting stand or other mounting device is capable of bearing 10 times the weight of the device. Make sure all installing hardware is in good conditions and no obvious defect exists.



### Protection against ultraviolet radiation

Prolonged exposure to an unshielded discharged lamp can cause eye and skin burns. Do not stare directly into the light output. Never look at an exposed lamp while it is lit.

Never operate the fixture with missing or damaged lenses and/or covers. Change the damaged head lens, shields or covers immediately.



### Protection against electrical shock

All electrical connections must be performed by a qualified person with technical certificate.

Make sure that the mains power supply you use is up to local construction and electronic code regulation, the over-load protection reliable earthing is essential.

Each fixture must be grounded correctly, and be installed according to related regulation.

Disconnect the fixture from AC power before removing or installing any cover or part, including the lamp and fuses, and when not in use.

Do not expose the fixture to rain or moisture.



### Protection against burning or fire

Please do not install the fixture onto combustible surface.

Do not attempt to bypass the thermostat switch or fuse.

Replace defective fuses with specified ratings only.

Keep flammable and explosive materials far away from the follow-spot.

Minimum distance from combustible materials is 0.5m for FINE 2000XF, and 0.7m for FINE 4000XF.

Under the steady working state, the max temperature of the exterior surface of FINE 2000XF is 85°C while FINE 4000XF is 80°C.

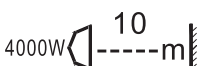
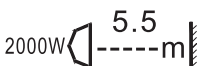
The minimum distance between FINE 2000XF and the lighted objects is 5.5m. the minimum distance between FINE 4000XF and the lighted objects is 10m. Prohibit projecting object in short distance.

Ensure a minimum clearance of 0.1m around the cooling fans and ventilations.

Do not place any filter or other object onto the optical lens.

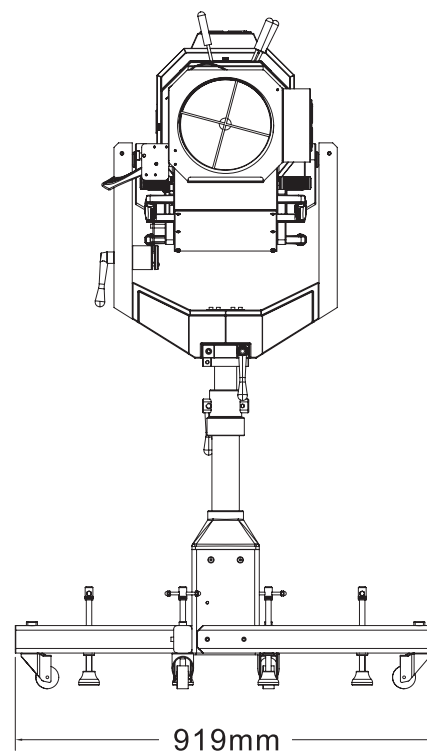
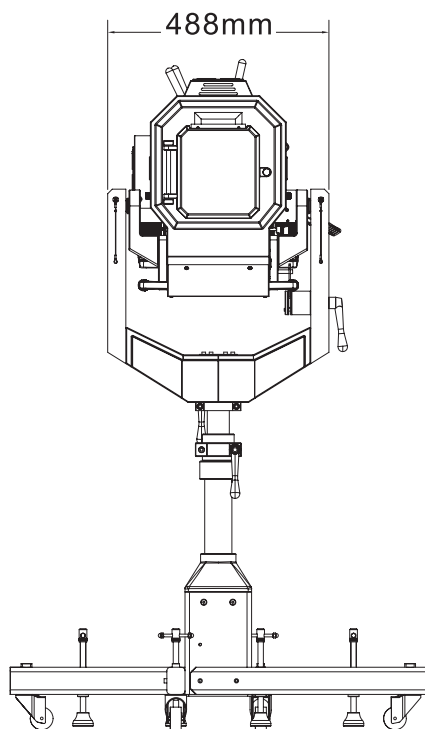
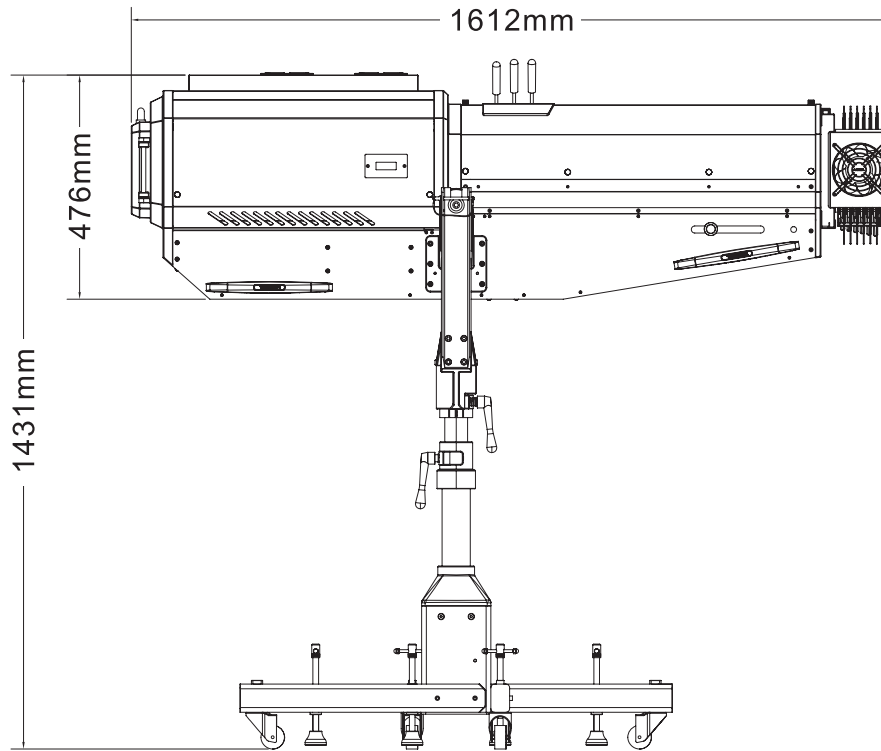
Allow the fixture to cool for at least 15 minutes before transit.

Do not revise the fixture or install any parts not from Guangzhou CHAI YI LIGHT Co.Ltd.

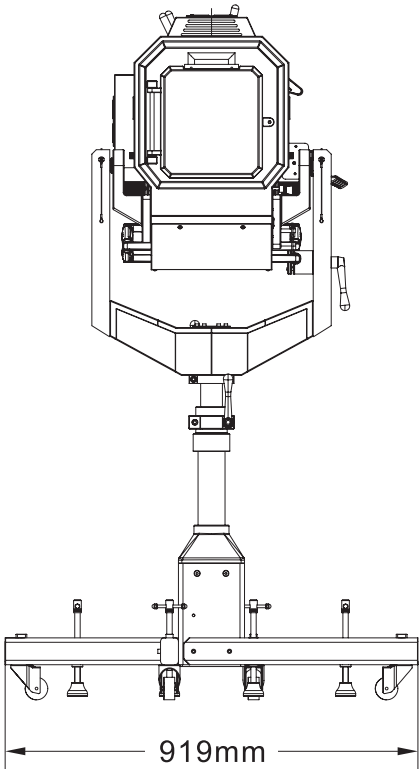
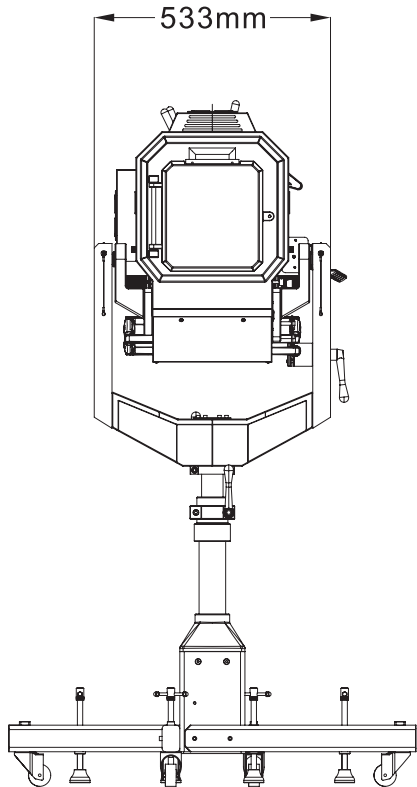
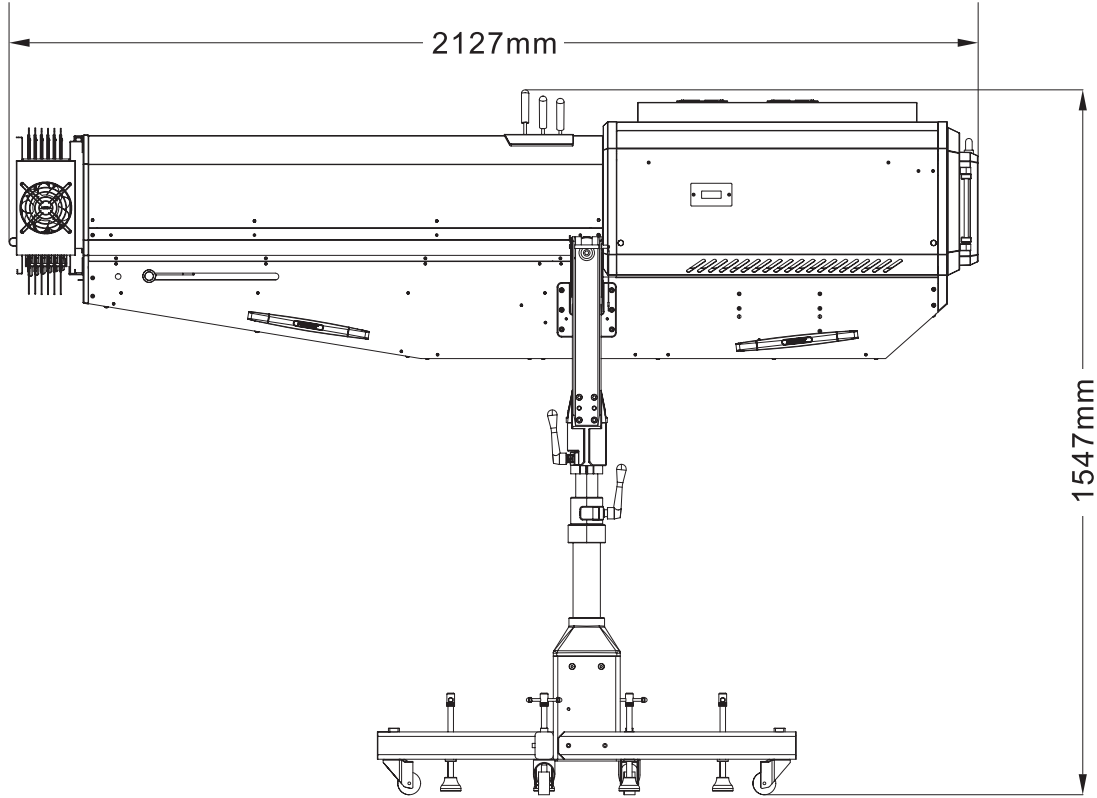


# Product introduction

## FINE 2000XF profile dimensions

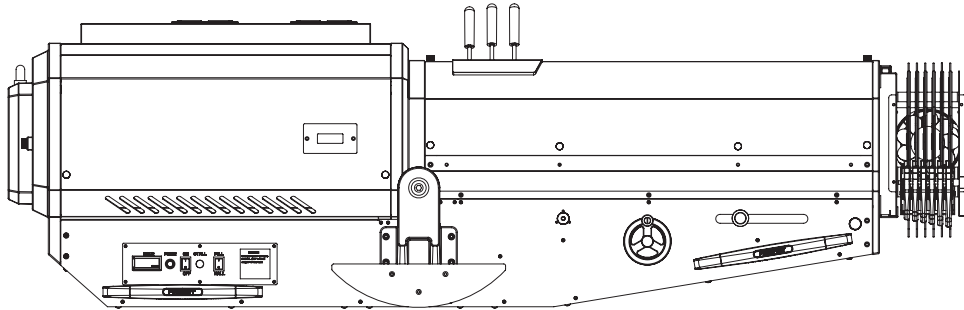


# FINE 4000XF profile dimensions

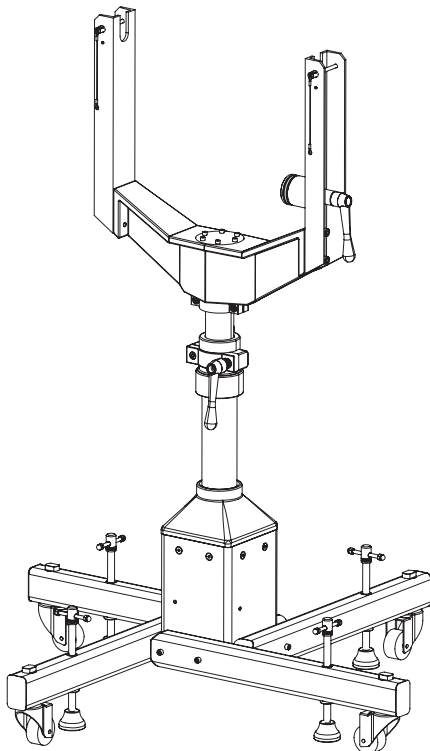


# Physical modules

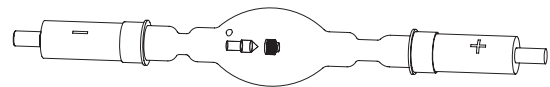
## Module illustration



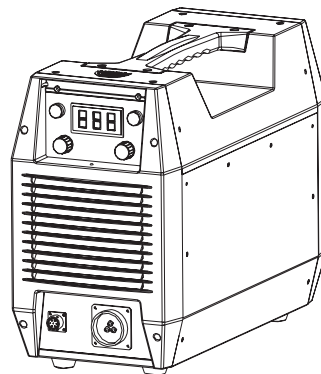
Main body  
(with one power cable and one signal cable)



Stand  
(foldaway)



Xenon lamp  
(with a power cable  
connected to the negative pole)



Ballast  
(with an input power cable)

# Assembling

## Stand assembling

### 1. Stand setup

The stand is provided with four foldable beam legs connected to the quadrangular base of the stand. There are two threaded holes on each beam leg, a first hole immediately adjacent to one end of the beam leg and a second hole separated from the first one.

On the left section of Fig.4.1-1 shows a stand with all beam legs folded and parallel with axis of the stand. To set up the stand, firstly, release the two screws on each beam leg. Then clockwise rotate a leg till the second hole is coaxial with a threaded hole on the quadrangular base, as shown in the middle of Fig.4.1-1. Now the beam leg is substantially horizontal, screw tight both screws. Repeat the steps above, and the final stand should look like something on the right of Fig.4.1-1.

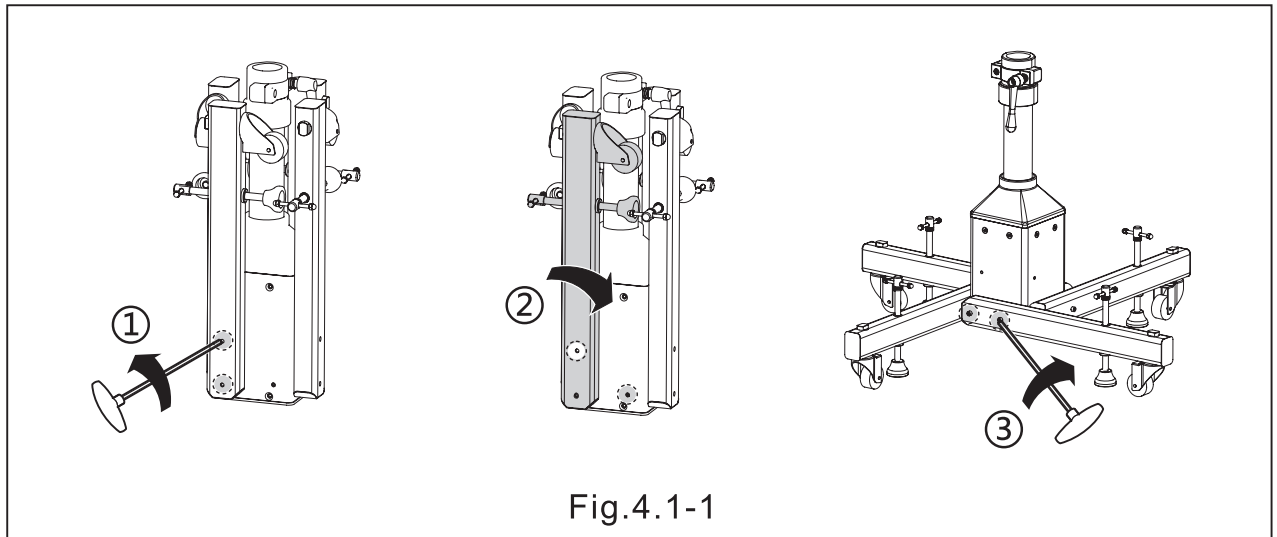


Fig.4.1-1

### 2. Support setup

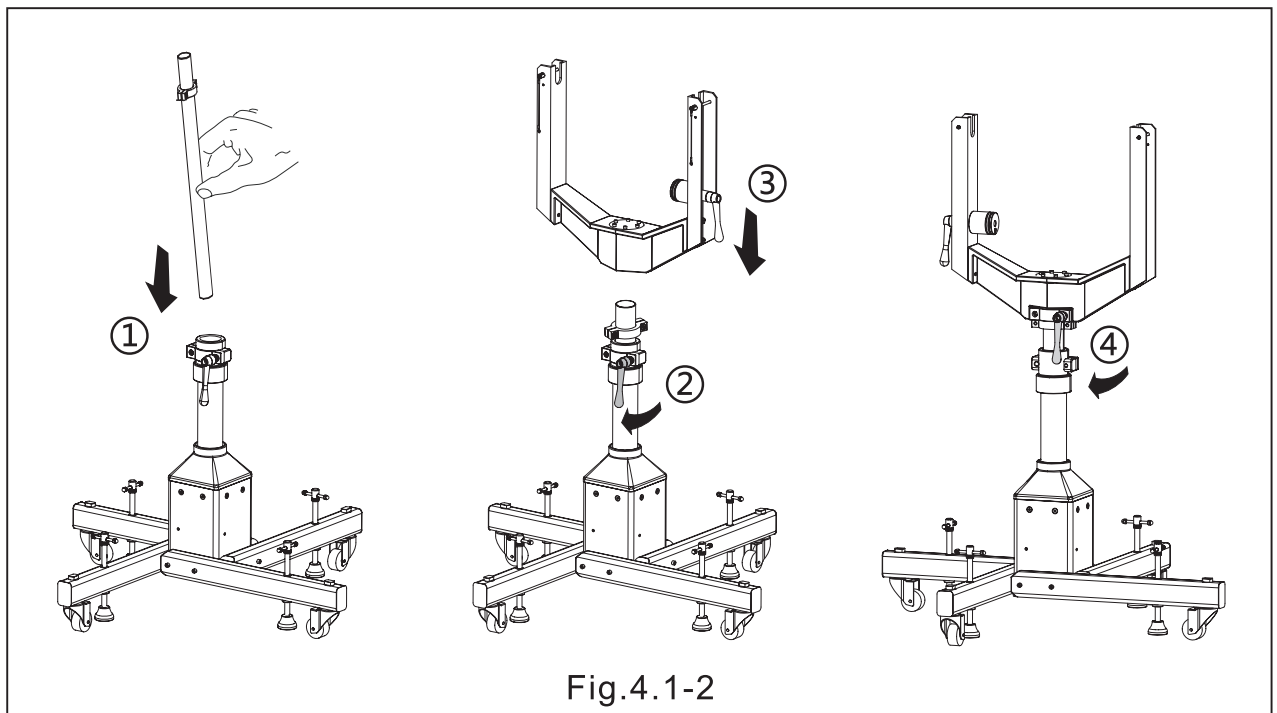


Fig.4.1-2



### Setup steps:

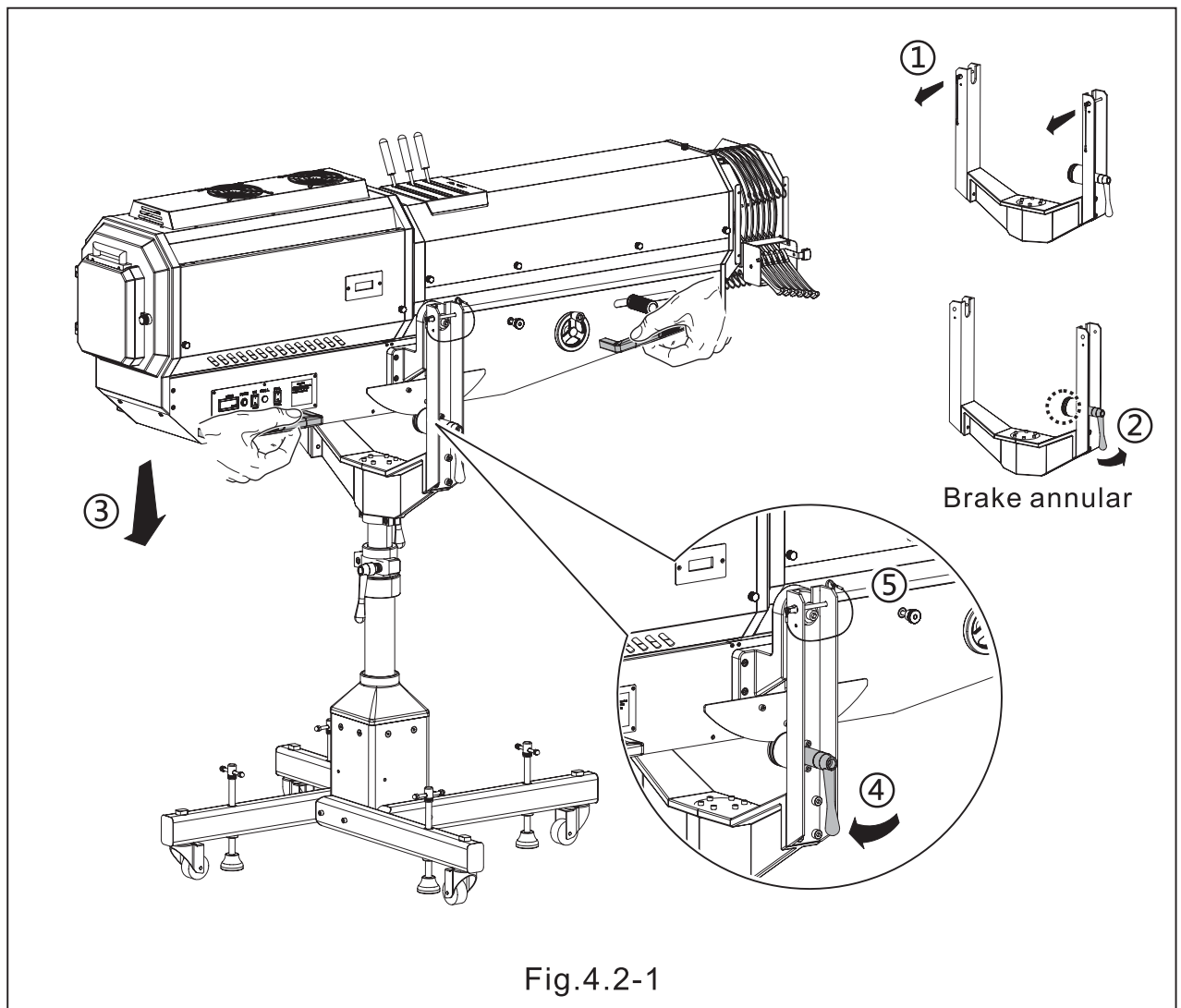
1. Insert a shaft support into the stand.
2. Tighten the "up-down" lock.
3. Attach a yoke to the shaft support.
4. Tighten the "pan" lock.

All the above steps are illustrated in Fig.4.1-2.

An adjustable cushion is provided adjacent to the castor of each beam leg. To fix the stand to a specific position, rotate the adjustable cushions to come into contact with the floor. When the primary weight is supported by the cushions rather than the castors, it will prevent the stand moving around resulting from inadvertent forces.

### Whole assembling

1. Remove set pins from both arms of the yoke. Separate two annular brake elements by rotating the lever.
2. Four men lift up the main body, each man holding a handle attached to the main body, and rest it upon the yoke, wherein an outward pin projecting from each side of the main body rests upon an open cut on each arm of the yoke. Meanwhile, a brake element on the main body inserts into between said two annular brake elements of the yoke.
3. Adjust the tilt angle of the main body, tighten the lever and put on the set pins, as shown in Fig.4.2-1.



## Main body adjustment

Height adjustment: loosen the "up-down" lock, four men lift up the main body (together with the yoke and shaft support), each man holding a handle attached to the main body. Adjust the main body to a suitable height and tighten the "up-down" lock.

Loosen the semi-coupler and move it until its upper surface contacts with the shaft support, and then tighten the semi-coupler. As a result, this semi-coupler will serve as a secondary security means. In the case the "up-down" lock is inadvertently loosen, the semi-coupler will prevent the main body from falling.

When no color exchanger is used, remove the counterweight from the rear end of the main body.

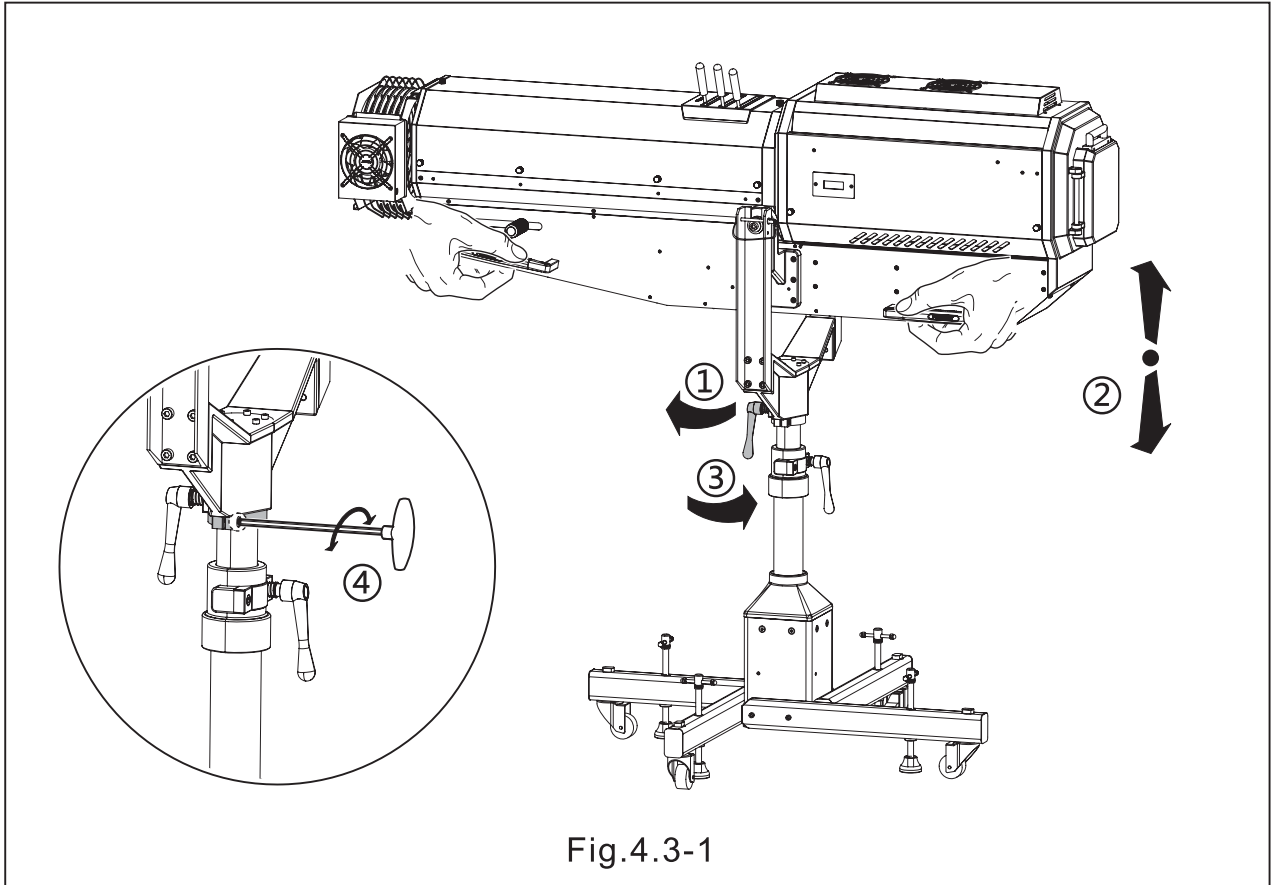


Fig.4.3-1

## AC power supply

### Power connection

The person must have the relevant qualification to connect the power supply. The AC power voltage shall be suitable to the lamp provided with over-loading or creepage protection.

1. Connecting the equipment to the power supply, do not connect to silicon box system, or else, it will destroy the equipment. The fixture is provided with standard 3-pin socket. Please according to table 5.1-1 connect to power

supply, Yellow/green line must be earthed. If you still have any question to the installation, please consultant with the experienced electrician.

2. When power is supplied, put the base switch to the position "I".


Color	Wire	Mark
Brown	Live	L
Blue	Neutral	N
Yellow/Green	Earth	

Table 5.1-1

# Lamp

## Lamp introduction

Approved lamp source for FINE 2000XF:

XBO 2000W/HTP XL OFR, color temperature = 6000K.

Approved lamp source for FINE 4000XF:

XBO 4000W/HTP XL OFR, color temperature = 6000K

### **Warning:**

- 1. The xenon lamp is fragile, please handle with cares, pack it with a dedicated box when it's not used.*
- 2. Do not touch the quartz bulb of the xenon lamp, otherwise the lamp may shatter as a result of thermal unevenness. When it's with dirt, clean it with alcohol immediately.*
- 3. A working xenon lamp will emit light with incredibly high intensity and a great amount of UV rays. So avoid staring at a working lamp.*
- 4. A working xenon lamp will generate a great deal of heat, and it needs forced cooling for dissipation. If the cooling fan is at fault, shut down the follow-spot.*
- 5. The current supplied to the xenon lamp shall not exceed its limit.*
- 6. Avoid negative cable contacting with interior wall of main body, otherwise current leakage will result in ignition failure.*
- 7. After a long run, replace the used xenon lamp with a new one if signs below occur:  
-As the negative tip worn out, flickering occurs, and the working voltage will rise beyond its rated voltage.  
-As the electric poles vaporize, the quartz bulb becomes darken, and the output brightness decrease.  
-When striking the lamp, thought sparks occur between electric poles, it's unlikely to lit up successfully.*
- 8. Don't use other types of lamps instead of the intended one, otherwise safety hazards or damages to the follow-spot may arise .*
- 9. To reduce the risk of damaging the follow-spot, replace a used lamp when it reaches its expected service life .*
- 10. Prohibit using xenon lamp with incision and damages.*

## Lamp installation



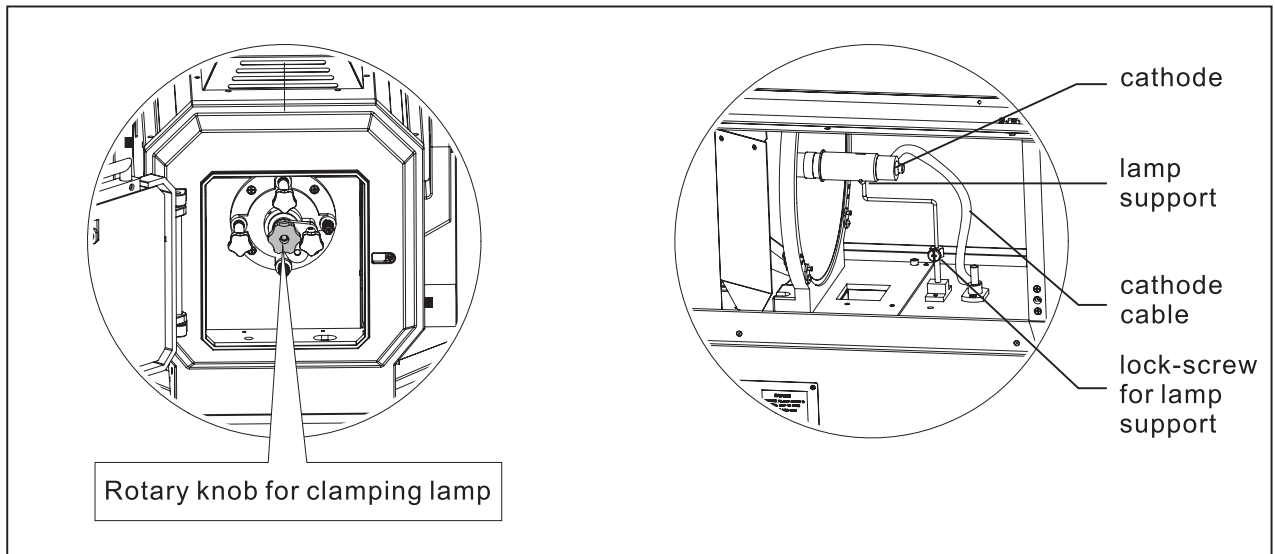
Warning

The electric pole with a power cable connected to it is a negative pole. The terminal of negative power cable should be screwed up tight onto the supply terminal. If the electric connection is loosen, the resistance increases and results in over-heat generation.



Warning

1. Do not touch the quartz bulb of the lamp by bare hand, always keep the lamp clean and free of oil, clean the lamp by alcohol with a dry cloth, especially when you accidentally touch the bulb.
2. Slide in or withdraw lamp slightly and carefully when installing or removing the lamp. Never let the lamp touch the reflector and hard-parts around to avoid any damage to lamp.



### Lamp installation:

1. PPE (personal protecting equipment) is necessary. Open the rear door and side walls of the main body.
2. Hold the negative pole of the xenon lamp with one hand, and rotate the rotary knob for clamping lamp to release with the other hand, insert the positive pole into the base within the reflector, and then tighten the rotary knob and make sure the lamp is securely fixed.
3. Loose the lock-screw for the lamp support, lift/lower the lamp support until it's in slight contact with the lamp cathode, then tighten the lock-screw.
4. Connect the terminal of negative power cable onto the negative supply pole.
5. Close and tighten the rear door and side walls of the main body, and the installation of the lamp is done.

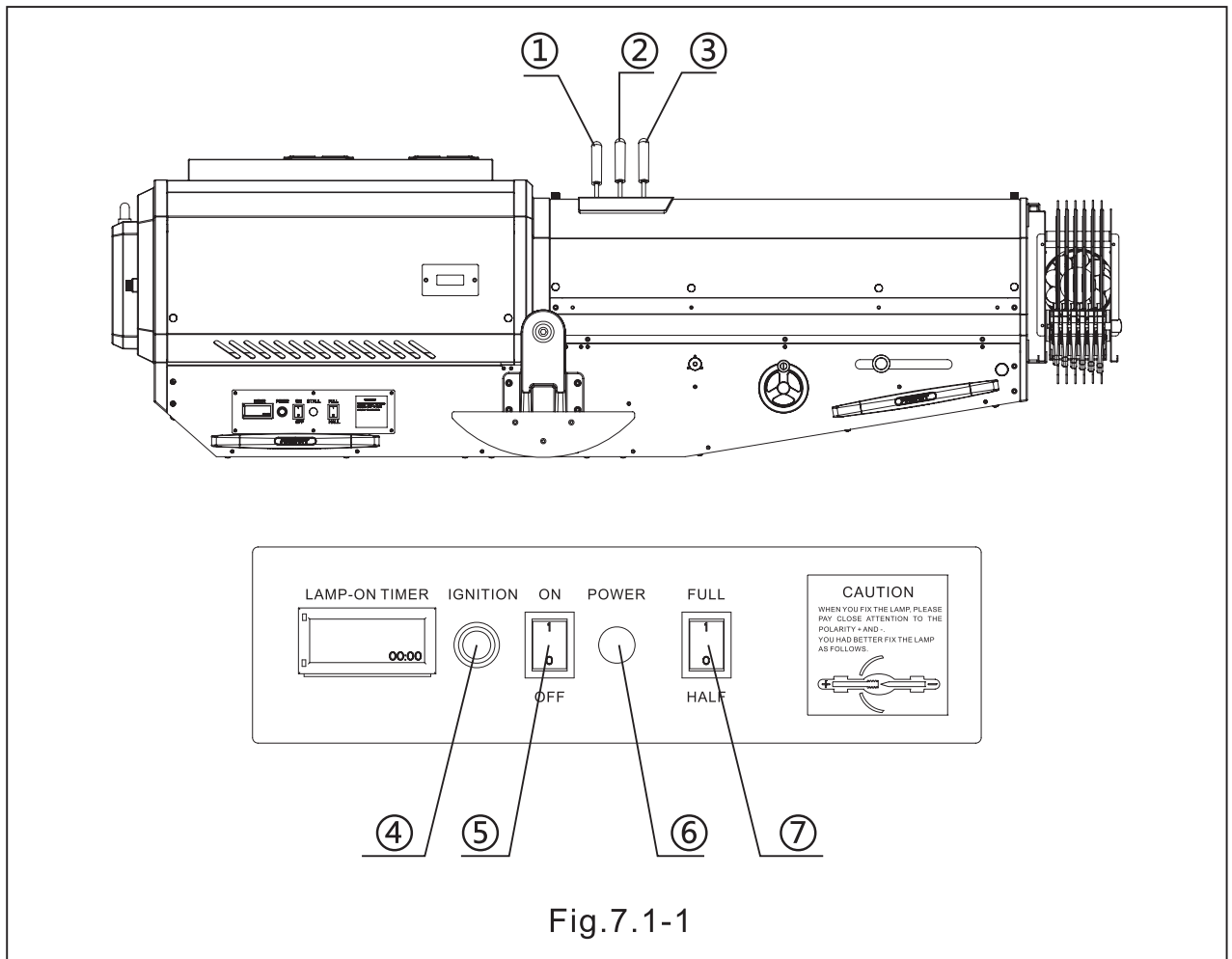
### Lamp removal:

1. Disconnect from the mains outlet and allows the product to cool down. PPE (personal protecting equipment) is necessary. Open the rear door and side walls of the main body.
2. Disconnect the power cable from the lamp cathode, loose the lock-screw of the lamp support, lower the lamp support and grasp the lamp cathode by the right hand, loose the rotary knob to release the lamp anode, repack the lamp with its original packing material.
3. Close and tighten the rear door and side walls of the main body, and the lamp removal is done.

# Lamp-on operation

## Lamp-on operation

1. First, connect the power cable and signal cable of the follow-spot to the ballast, and then connect the ballast to the mains supply.
2. Turn on the power switch of the ballast, and then the power switch of the follow-spot ⑤, power indicator ⑥ is lit, 3 seconds delay then press down ignition button ④, the xenon lamp is lit. Select the state of switch for power output. Maximum current in the full power output mode shall not exceed 80A.
3. If any lever among ① ② ③ is closed, the follow-spot will be in half-power output mode.



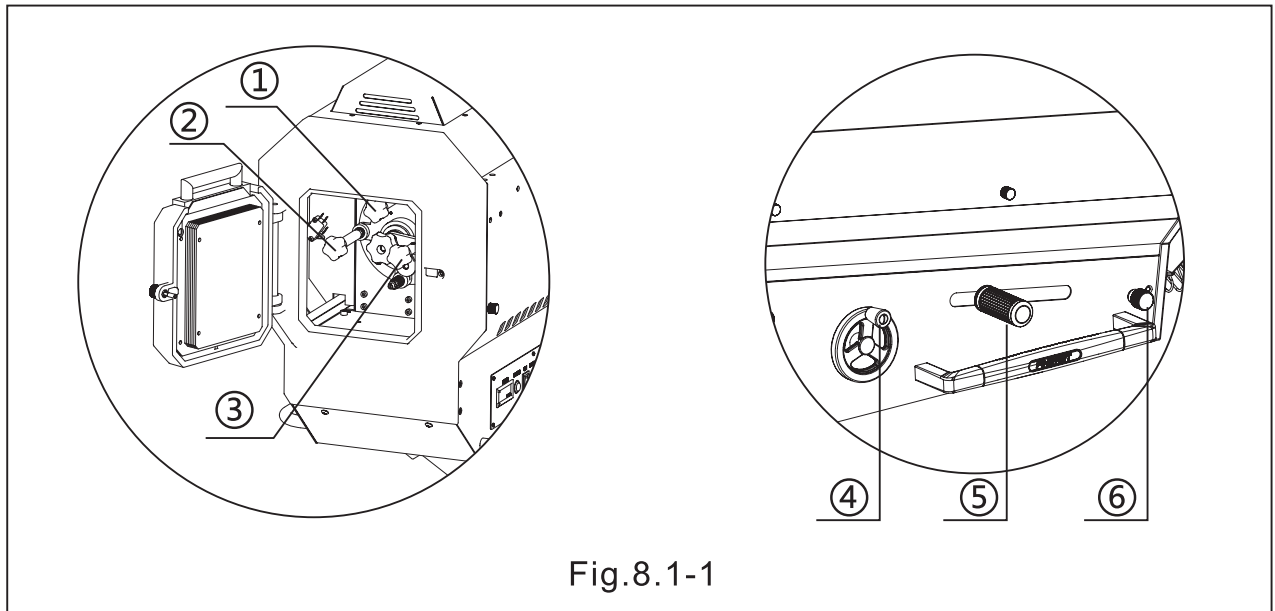
Warning

To shut down the follow-spot, do not disconnect the supply immediately after use, so as to allow the cooling fan to work a further 10 minutes.

# Focus

## Focus adjustment

Open the rear door of the main body, as shown in Fig.8.1-1.



A complete process of focus adjustment involves both the internal parts like vertical knob ①, horizontal knob ②, focus knob ③, and external parts like focus dial ④, zoom handle ⑤ and fine focus knob ⑥.

### Steps:

1. Turn on the lamp and output a beam, a blur spot is obtained as the beam hasn't been focused.
2. Primarily rotate the vertical knob and horizontal knob, the highlight point near the spot center will move in the vertical and horizontal directions accordingly.
3. Keep rotating the vertical knob and horizontal knob till the highlight point locates right at the spot center.
4. Rotate the internal focus knob, the highlight point enlarge into a larger area. Meanwhile rotate the vertical knob and horizontal knob so as to maintain the highlight area locating at the spot center.
5. Keep rotating the internal focus knob till the highlight area reaches its maximum. Now the edge of the spot is still blur. Further focus adjustment is needed.
6. Push the external focus handle to the front, rotate the fine focus knob to sharpen the edge of the spot while the spot remains maximum, and then pull the focus hand to the rear, rotate the focus knob to sharpen the edge of the spot while the spot becomes minimum.
7. Repeat step 6, repeat steps 3-5 if necessary, until the spot is brightest and the edge is sharpest in regardless of the position of the focus handle, then the focus adjustment is done.

### Reflector adjustment

In generally, going through the steps above will result in a satisfactory focused beam. Otherwise the reflector needs to be adjusted.



### Steps:

1. Turn off the power switch of the follow-spot while the power switch of the ballast shall remain on, so as to cool down the follow-spot for at least 15 minutes, and then open the rear door of the main body.
2. Adjust the adjusting screws for the reflector, as shown in Fig.8.1-2, until the axis of the reflector is coaxial with that of the optical system. And then close the rear door, turn on the power switch and press down Start button, repeat the above steps 1-7 and complete the focus adjustment.

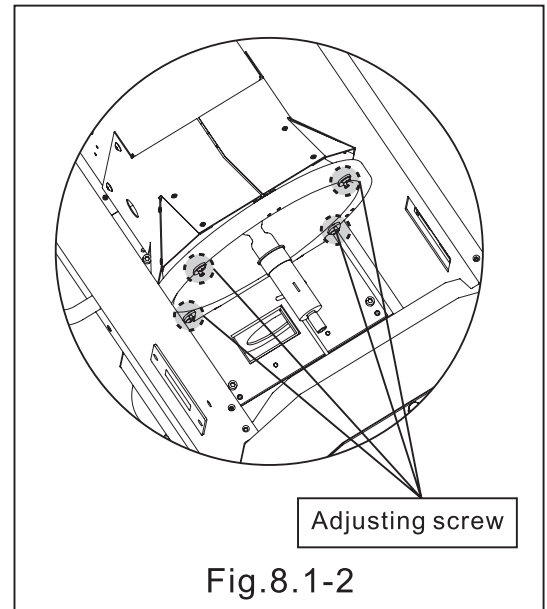


Fig.8.1-2

## Technical feature

### Production feature explanation

- FINE 2000XF light source: XBO 2000W/HTP XL OFR.  
FINE 4000XF light source: XBO 4000W/HTP XL OFR.
- Manual variable iris: 0 - 100% linear adjustment.
- Manual framing: 0 - 100% linear adjustment.
- Manual dimming: 0 - 100% linear adjustment.
- One manual variable frost filter.
- Manual focus, zoom. Variable beam angle of FINE 2000XF: 4° - 8°.  
Manual focus, zoom. Variable beam angle of FINE 4000XF: 2° - 4°.
- Provided with lamp-on timer.
- Detachable color exchanger, six retainers for color filters.
- Color temperature = 6000K.
- Both FINE 2000XF/4000XF: Pan - 360°, tilt - 60°.
- Safety switch: it will automatically cut off the lamp supply when the side casing of the main body is removed.
- Stand with castors, easy to move the follow-spot from one place to another.
- Portable supply case, electronic ballast support lamp hot-strike, it reaches 80% of the full output of light when actuated.
- Automated half-power function, the lamp power will automatically reduce to half of the full power if any iris, framing or dimmer is closed.
- Supply: AC200 - 240V, 50/60Hz.
- FINE 2000XF rated power: 2700W.  
FINE 4000XF rated power: 4800W.
- FINE 2000XF heat generation: 0.66 kWh.  
FINE 4000XF heat generation: 1.32 kWh.
- FINE 2000XF Net weight:  
main body (with stand): 114kg, ballast: 18.6kg.

- FINE 4000XF Net weight:  
main body (with stand): 141kg, ballast: 23.8kg.
- FINE 2000XF physical size: 1612 × 1431 × 488 mm.  
FINE 4000XF physical size: 2127 × 1547 × 533 mm.
  - Compliant with CE standards: EN60598-2-17:1989+A2:1991; EN60598-1:2008+A11:2009; EN55103-1:2009; EN55103-2:2009; EN61000-3-2:2006+A2:2009; EN61000-3-3:2008.

# Functional introduction

## Dimming

Mechanical-optical dimming system, manual dimming range: 0 - 100%. Manual manipulation to achieve desired spot effect.

## Framing

It's provided with a dedicated framing system with framing blades of precise movement. Manually regulate the framing blades to achieve various shapes, framing range: 0 - 100%.

## Iris

It's provided with a mechanical iris. Manually regulate the iris to suit the need.

## Frost

It's provided with an effective frost filter. It can be instantly switched into the beam path to impart frost effect.

## Focus

It's provided with a focus optics and a manual focus dial. These elements are used to sharpen the spot.

## Zoom

Both FINE 2000XF and 4000XF are provided with a zoom optics and two zoom in/out handle. Variable beam angle range for FINE 2000XF is 4°- 8°. While variable beam angle range for FINE 4000XF is 2°- 4°.

## Fine focus adjustment

It's used to move the focus lens along the beam path with fine displacement to achieve fine adjustment.



# Ordering P/N

## Spare parts for FINE 2000XF

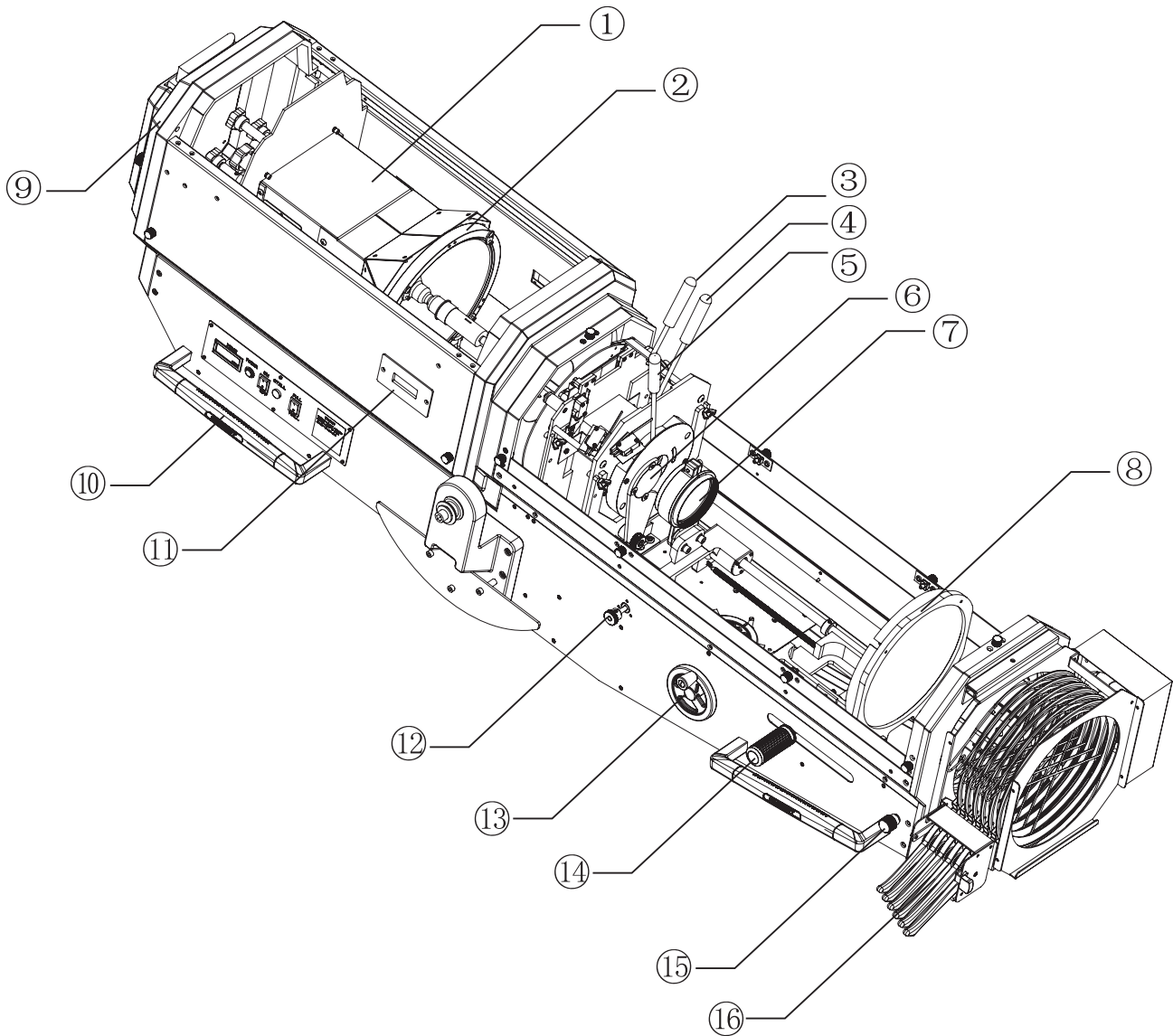
Item	Name	Specification	Ordering index
1	Plastic blade	AC220V-240V-50/60HZ 120X120X38	159911022011
2	Optical lens	Φ200	209912000001
3	DC fan with polymer blade	AD1212MB-F91GP	159901101245
4	Lenslet module	—	209942000007
5	Travel switch 1	—	299901060006
6	Black lever	—	359903020002
7	Frost filter	Φ52	200383000008
8	Travel switch 2	—	299901060008
9	Dimmer	—	200383000007
10	Handle module	—	359903020001
11	Steel safety wire	Φ1X142	161001000008
12	Pin	—	170383000139
13	Ignition controlling board	—	339903833903
14	3-pin XLR (male)	32A	309908030203
15	AC power indicator	220V	289906600004
16	Power switch	MR-2	299901010002
17	Non-interlock button switch	CX-R13-507	299901040004
18	Thermostat switch	145°C(±3 )	299902030012
19	Time timer	ZYL03	400601000004
20	Supply case unit	—	239903830025
21	DC fan with polymer blade	AD1212MB-F91GP	159901101245
22	Xenon lamp	XBO 2000W/HTP XL OFR	189921020002
23	Turbine fan	DC12V 15W	159902101205

## Spare parts for FINE 4000XF

Item	Name	Specification	Ordering index
1	Power indicator	220V,0.02A	289906600004
2	Timer	24*48*50mm	400601000004
3	Double-throw switch	250V, 6A, 2 pins	299901010002
4	Button switch	250V, 3A, 2 pins	299901040004
5	Reflector	Φ262	200383000015
6	Viewing window	-	200383000001

7	Focus knob II	Φ30mm	359903020009
8	Focus knob I	-	359903020008
9	Travel limit (belt wheel)	250V, 5A, 3 pins	299901060007
10	AC turbine fan	AC230V, 0.16A	159912022007
11	AC axial fan (iron blade)	AC230V, 0.3A	159911023002
12	AC axial fan (polymer blade)	AC230V, 0.12A	159911022011
13	Turbine fan	12V, 0.65A	159902101216
14	Electronic igniter	AC 220V input	330383300003
15	Terminal block	218*176.5*5	350601000024
16	Castor	No brake	399999990235
17	Heat filter	66*150	220383000002
18	Frost filter (both sides)	63.5*36.5	200383000007
19	Travel switch 2	250V, 5A	299901060008
20	Frost filter (fabric texture)	Φ52	200383000008
21	Travel switch 1	250V, 15A	299901060006
22	Transformer	12V output	139907004002
23	Large lens	-	200383000004
24	Xenon lamp	XBO 4000W/HTP XL OFR	189921040003
25	Color changer	-	230383000086
26	Infrared reflector sign	-	230383000101
27	Power source unit	-	230383000093

## Attached 1: Schematic diagram

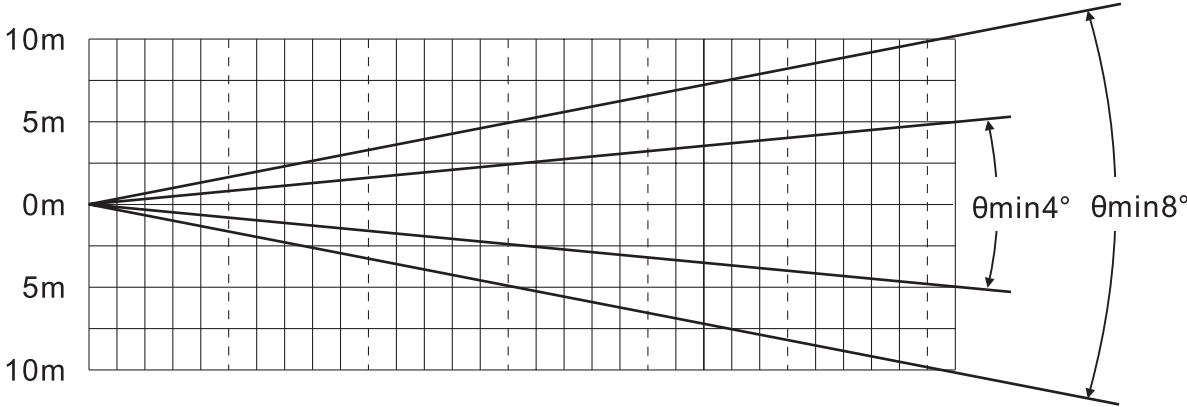


1	Lamp base	9	Counterweight
2	Reflector	10	Transport handle
3	Dimmer	11	Lamp window
4	Framing	12	Frost filter regulator
5	Iris module	13	Focus dial
6	Frost filter module	14	Zoom handle
7	Lenslet module	15	Fine focus knob
8	Lens module	16	Color exchanger

***FINE 2000XF is illustrated as an example.***

# Attached 2: FINE 2000XF Luminous intensity diagram

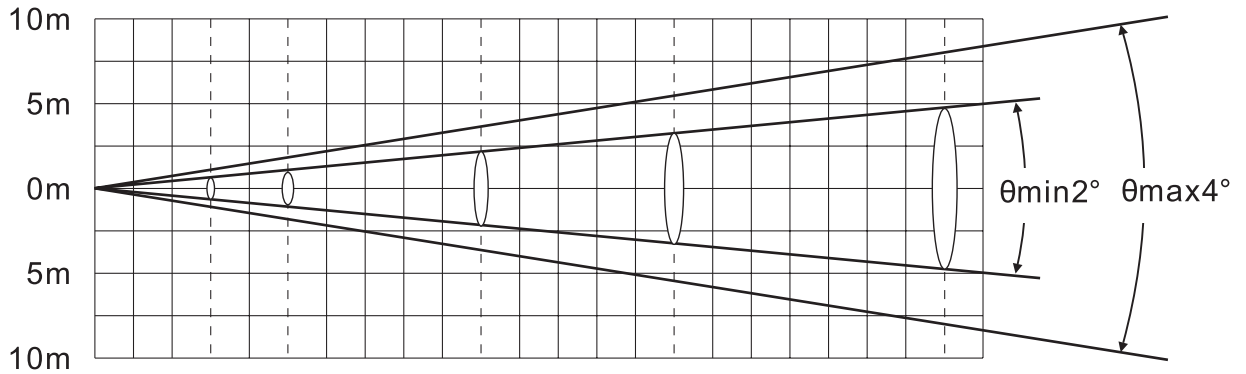
8° Illuminance(lux)	6107	2714	1110	610	364	138
4° Illuminance(lux)	18645	8287	3000	1411	788	368



Distance(m)	0	20	30	50	80	110	150
4° Diameter(m)		∅ 1.65	∅ 1.9	∅ 3.17	∅ 5	∅ 6.97	∅ 9.49
8° Diameter(m)		∅ 3.11	∅ 3.8	∅ 6.35	∅ 10.16	∅ 13.97	∅ 19.05

# Attached 3: FINE 4000XF Luminous intensity diagram

4° Illuminance (lux)	25100	8500	1900	890	90
2° Illuminance (lux)	54500	13270	3870	1570	370



Distance(m)	0	30	50	100	150	220
2° Diameter(m)		∅1.26	∅2.1	∅4.19	∅6.29	∅9.22
4° Diameter(m)		∅2.2	∅3.67	∅7.34	∅11.02	∅16.16