

MODEL JF-10
PORTABLE X-RAY UNIT

OPERATION MANUAL



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I INTRODUCTION

This unit is a portable diagnostic X-ray unit r-ray-proof with a single focus. It can be use for medical fluoroscopy and radiography on bone, heart, skull and foreign body in the body, etc. It is easy to assemble and operate.

II SPECIFICATIONS

1. Operation condition of the unit

Environmental temperature: 10-40℃

Relative humidity: 30%-75%

Atmospheric pressure: 70-106kPa

2. Power condition: AC 220V \pm 10%(single phase) ,50Hz/60Hz,

Net resistant $\leq 2\Omega$

3. The maximum tube voltage: 75kVp

4. The maximum tube current : 10mA

5. Selection scope of time: 0.2-9.9sec.

6. The focus of X-ray tube:1.5 \times 1.5mm²

7. Horizontal turning angle of the X-ray unit head: 360°

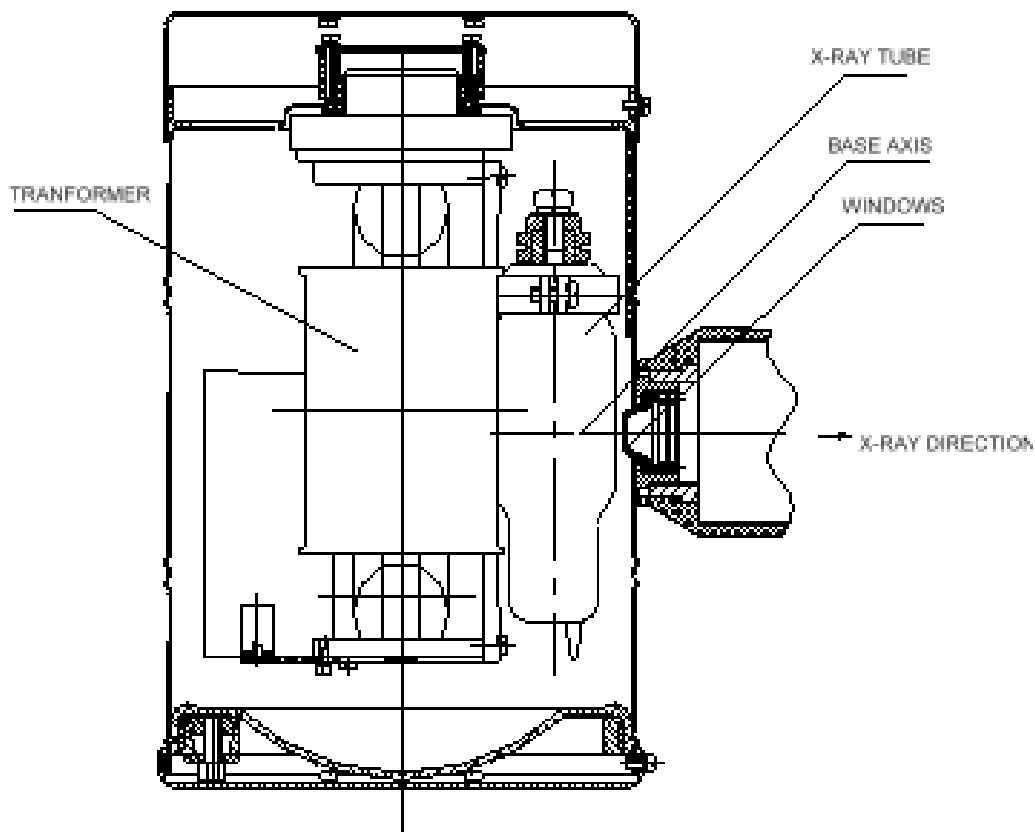
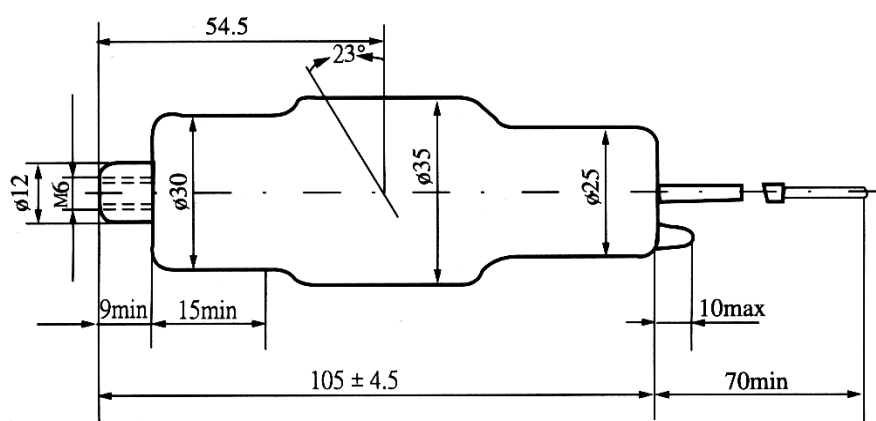
8. X-ray unit head turning angle around the horizontal axis: 270°

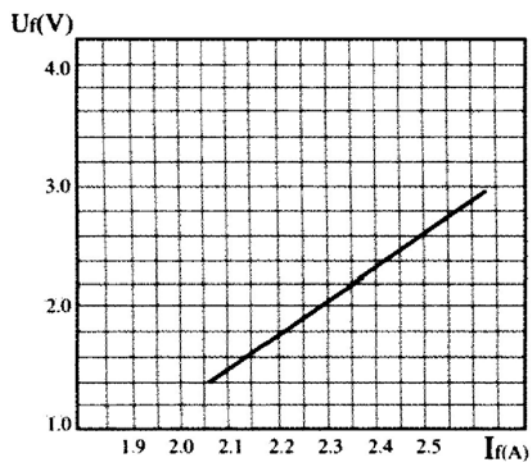
9. Stretching & retracting range of the X-ray unit head: 700mm

10.Weight: 25Kg

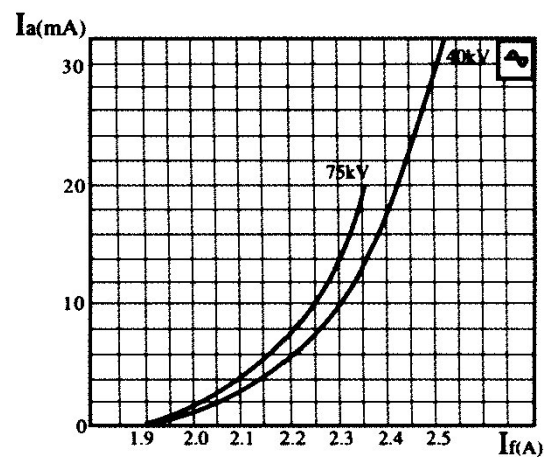
11.Working current of the equipment: 5A

X TUBE

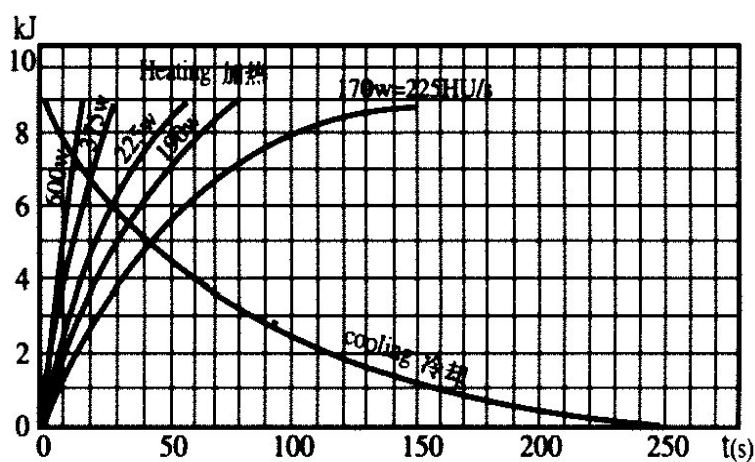




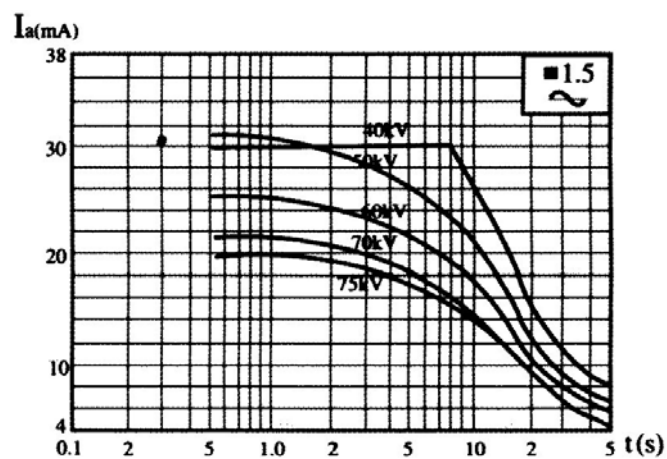
Filament characteristics



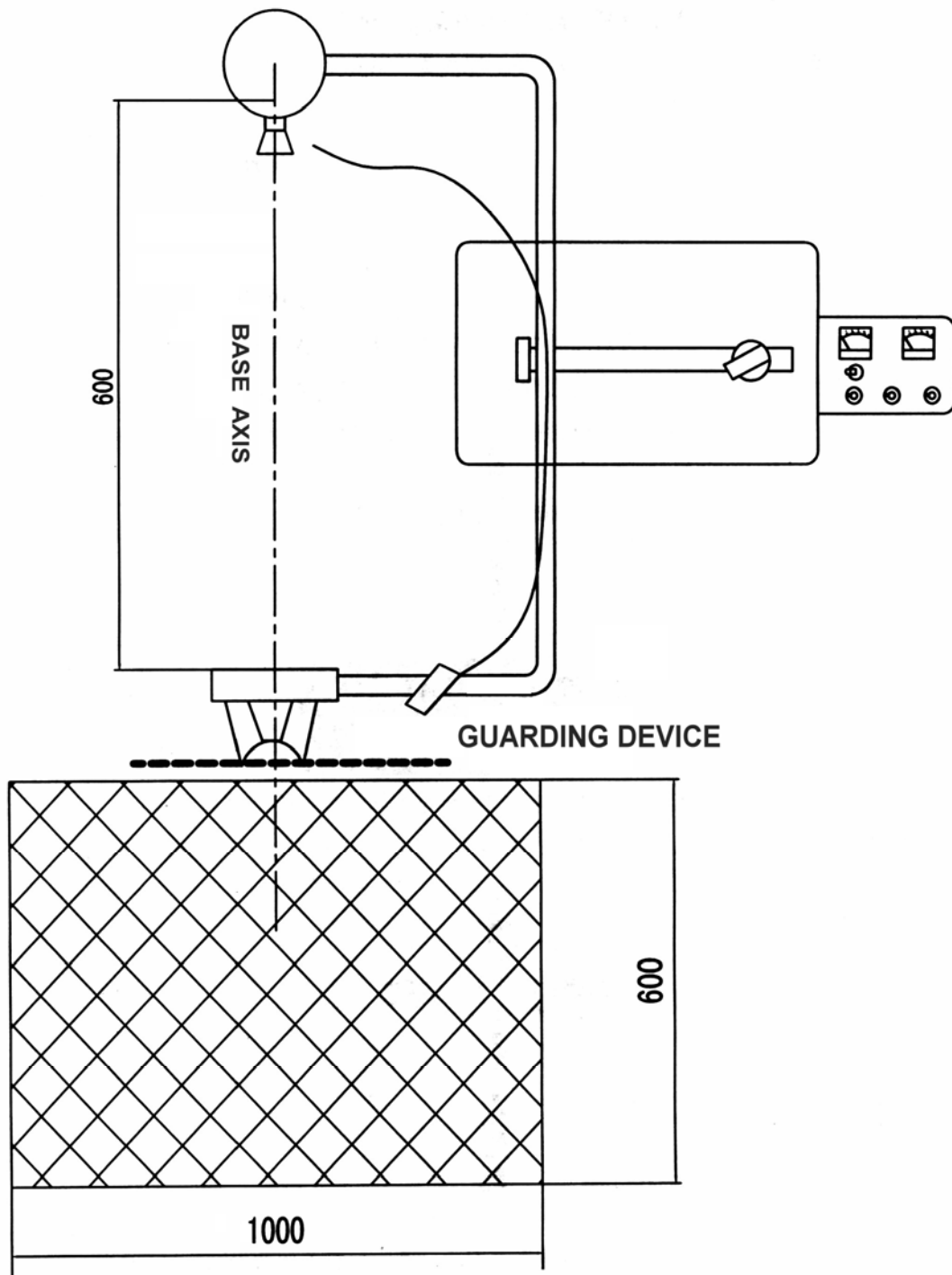
Filament emission characteristics



Anode heating and cooling characteristics



Rating characteristics



III ASSEMBLY

1. Take out everything from the case.
2. Latch the case tight, place it on a sound spot.
3. First insert the horizontal track into the horizontal hole of the fixture and fix it. Then relax the behind fender and insert it into the hole with a angle of 45° and screw tight, preventing it from sliding out.



4. Attach the controller to right side of the case for balance. Insert the vertical frame into the square hole on the case and ensure to put the frame into the bottom of the case.



5. Unit the angular arm, fit it upon the horizontal assembly and screw tight.



6. Set up the X-ray generator and the fluorescent screen. Use the shutter when fluoroscoping and the cone for radiography.



7. Connect all the wirings properly.



IV TRAINING AND ADJUSTING

1. TRAINING

A new or laid-off unit should go through a training process for heightening the degree of vacuum in the x-ray tube, thereby prolonging its years of service.

Begin fluoroscopic exposure from the lowest KV gradually up to its highest, exposing once on each KV step. If all is in order, training is finished. If there appears any abnormal case, repeat the process until the desired result is gained.

2. ADJUSTING

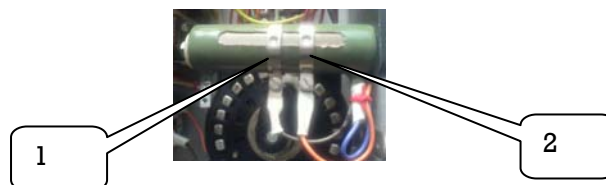
(1) Adjustment of the fluoroscopic current.

Turn the power switch to make sure the voltage is 220V and turn the KV switch to 65KV. The amperemeter should display 3-5mA when pressing the footswitch. If it is over, adjust the adjustment ring on the resistor R1 in the controlling box.

(2) Adjustment of the radiographic current.

Turn the power switch to make sure the voltage is 220V and turn the KV switch to 75KV. The amperemeter should display 10mA when pressing the timer. If it is short or over, adjust the another adjustment ring on the resistor R1 in the controlling box.

Note: Before adjusting the ring of the resistor, loosen the screw (don't take it off) and lightly shift the ring until the sought-for position is reached. Then tighten the screw back.




Note: 1 stand for fluoroscopic resistance ring

2 stand for radiographic resistance ring


V DIRECTIONS FOR OPERATION

Before the current is on , be sure that the unit as a whole is well connected with the ground.

1.Fluoroscope

- (1) Turn the switch to 
- (2) Turn power switch till it reads 220V.
- (3) Select the required KV.
- (4) Let the patient stand or sit between the x-ray tube and screen.
- (5) Press the foot-switch continuously which means fluoroscope. The doctor can observe through the screen.
- (6) Cut off the source and turn the switch to its lowest position.

2.Radiography

- (1) Turn the switch to 
- (2) Turn power switch till it reads 220V.
- (3) Select the required KV and exposure time.
- (4) Let the patient stand or lie between the x-ray tube and photo.
- (5) Press the timer continuously until it stops automatically. Then Develop the photo.
- (6) Cut off the source and turn the switch to its lowest position.

VI GENERAL DESCRIPTION OF PRINCIPLE

Referring to the principle diagram of the unit's circuit. Put AC power on and turn the power switch on. The auto-transformer T is powered on , adjust the line voltage regulator S until the voltage display screen is 220V Regard T1 as power, and primary coil of high voltage transformer T2 as load, after it is powered on through resistor R2 and the counter-voltage for the X-ray tube.

.. VII TROUBLES AND BEMEDIES

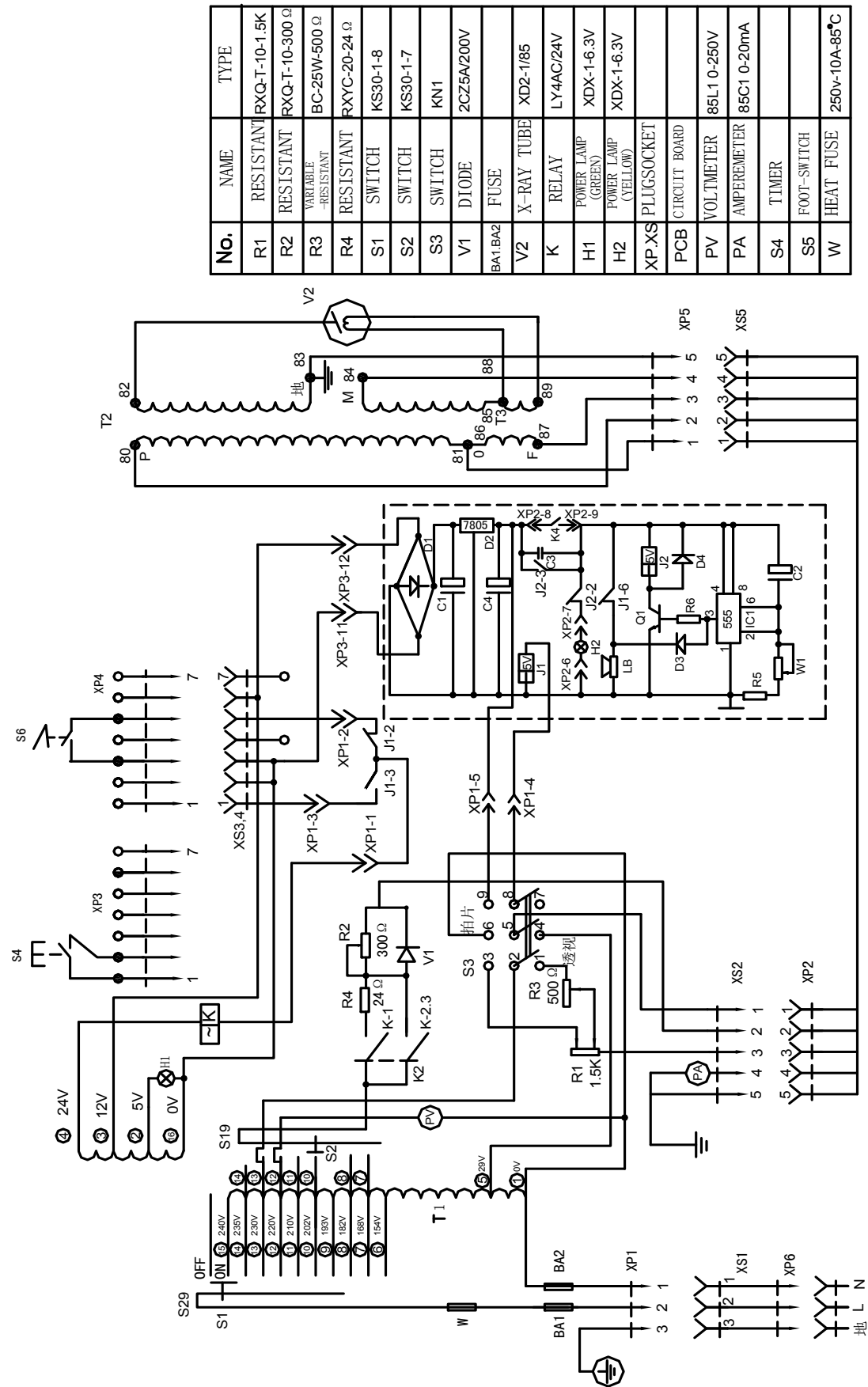
If the equipment has some problems, many of these problems can be corrected using the following problem guide.

1. Power on lame will not light ----First be sure the key switch is turned on, then check to be sure it's plugged in completely and check the building circuit breaker or fuse.
2. Lamp of the timer and audible signal are not energized by pressing, the timer----check that the power on lamp is on (If not ,see item 1).
3. Light or blank films doesn't work-----Be sure the power on and audible signal operate normally (If not , see item 1,2). When an exposure is made, be sure that the timer is depressed during the entire exposure. Do not release it until the exposure e terminates automatically.
4. X-ray doesn't stop after the selected time -----The lamp of the timer or audible signal does not terminate automatically, immediately , release the timer, turn power switch "OFF" and disconnect power.

The above steps are taken, the problems have been not soluted , require the technicians to repair it.

VIII ATTENTION CAUSE

1. In order to be safe during operation, a good ground connection wire should be fixed.
2. Because the heat capacity of the small model X-ray unit is somewhat limited, it is suggested that operated with intervals.
3. During disassembling the machine , first disassemble the unit head, then the other parts.
4. After operation , cut off the power supply , put every selector on the controlling box to its lowest position, put the X-ray tube head into balance position.
5. Attention to keep the unit well, and take all kinds of the parts slightly.



JF10 ELECTRICAL PRINCIPLE DIAGRAM

The encadement listing of model JF10 portable X-Ray Unit

Serial number	name	number
1	controller	1
2	The head of X-Ray	1
3	The collective light canister of Photography	1
4	Calculagraph	1
5	Foot brake	1
6	Power line	1
7	The line of the head and controller	1
8	The line of the ground	1
9	The level trajectory	1
10	Syphon(long,short)	2
11	The pieces of the stand pole	1
12	Coalition axes	1
13	Leaden door	1
14	Fluorescent screen	1
15	Knighthead	2
16	Drier	1
17	Operation manual	1
18	Eligible certification	1
19	Fuse	4
20	Aluminium piece 0.5mm/2mm	1/piece