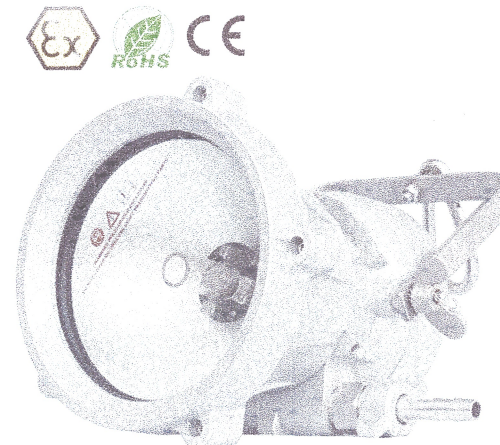


# Operation and maintenance guidelines

## Centurion BTL-2400 Part List

Code	Description	Code	Description	Code	Description
T-6	Screw Air Inlet Plate A-105 (6)	T-109	Air Regulating Plate	T-869	Silencer
T-7	Screw for Stator (3)	T-110	Piston Complete	T-871	Connecting Stud for Bulb Holder (2)
T-8	Wing Nut for A-11 (2)	T-114	Spring for Piston (silver passivated)	T-872	Bulb Holder Nut (8)
T-10	Hanger Screw (2)	T-115	Diaphragm	T-873	Bearing Retaining Ring Screws (3)
T-11	Bridle Bolt (2)	T-116	LockScrew for Piston Chamber	T-874	Rotor Shaft
T-12	Hanger	T-129	Bulb 24V 250W Tungsten Halogen	T-875	Nut for Rotor Shaft
T-13	Bridle with Safety Hook	T-133	The Inlet Pipe	T-882	Generator Housing Seal
T-18	Stainless Steel Fastening Screw (9)	T-134	The Inlet Connector	T-883	Split Ring (2)
T-28	Lock Nut for Regulating Screw	T-139	Grooved Rubber Washer	T-884	Shakeproof Washer (2)
T-29	Regulating Screw	T-140A	Glass Disc 15mm (toughened)	T-900	Bulb holder Assembly
T-30	Shim	T-146	Multipurpose Wrench	T-903	Self Tapping Screw (2)
T-31	Spring	T-151	Long Spring Bulbholder	T-908	Glass Tube with Bayonet Clip
T-33	Air Filter Sieve	T-152	Short Spring Bulbholder		
T-34	Connecting Piece	T-170	2mm Hexagonal Key (for Fastening Screws)		
T-38	Turbine Wheel	T-171	5mm Hexagonal Key		
T-52	Insulating Bush (2)	T-216	Aluminum Housing Cover		
T-54	Stator Winding	T-226	Aluminum Generator Housing		
T-57M	Frosted Reflector	T-623	Aluminum Reflector Head		
T-72	Lock Washer for Bridle (2)	T-624A	Aluminum Lens Ring		
T-74	Lock Screw for Reflector Head	T-861	Circlip for Rotor Shaft		
T-77	'O' Ring Seal for Reflector Head	T-862	Sealed Bearing (2)		
T-80B	Magnet	T-863	Spacer for Turbine		
T-87	Washer for Bulb Holder Studs (2)	T-865	Spacer for Magnet		
T-98	Collar for Lock Screw-Piston Chamber	T-866	Rotor Shaft Lock Collar		
T-105	Air Inlet Plate (3)	T-867	Waved Spring Washer for Bearing (2)		
T-106	"O" Ring Seal for Air Inlet Plate (3)	T-868	Bearing Retaining Ring		



# Operation and maintenance guidelines

## 1. Product Description:

- (1) Product Name: Explosion Proof Air Turbo Lamp
- (2) Product mode and their meaning



- (3) Product explosion proof type: "eb" Increase Safe; "pxb" Positive Pressure; "tb" Dust Ignition Protection by Enclosure
- (4) Product Standard: EN IEC 60079-0:2018, EN 60079-2:2014+AC:2015, EN IEC 60079-7:2015+A1:2018, EN 60079-31:2014
- (5) Announcement institutions: Ente Certificazione Macchine Sri, Notify Body: 1282. Approval Code: II 2 G Ex eb pxb IIC T6 Gb/II 2 D Ex tb IIIC T85°C Db
- (6) Announcement number: OB190222.FSJ0563
- (7) European Design Patent No.: 002429449-0001; Chinese Design Patent No.: 201330638092.2; Singapore Design Patent No.: D2014/344/A

## 2. The main application & the application Scope

Explosion-proof air turbo lamp (referred to as Turbo Lamp) mainly used in Zones 1 & 2, Gas group IIA, IIB, IIC, Temp. classification T1-T6 explosive gas atmosphere, Zones 21 & 22, Dust Group IIIA, IIIB, IIIC in dust environment, use as a lighting source in workplaces without power.

Air Turbo Lamp could work reliably under the following conditions:

- (1) The elevation is not more than 2000 m.
- (2) The ambient temperature is -20°C to +40°C.
- (3) Air relative humidity is not more than 95% (when the temperature is +25°C).
- (4) Application scope: In Zones 1, 2, Gas group IIA, IIB, IIC. Class T1-T6 Group explosive in a gas environment, and Zones 21 & 22. Dust Group IIIA, IIIB, IIIC in dust environment.
- (5) No insulation damage in gas or vapor environment.
- (6) No leak or liquid intrusion environment.
- (7) No significant shake or impact vibration environment.

**\*\*\*{8} Must use dry and clean compressed air, pollution degrees 3. If the air quality cannot be guaranteed, a compressed air filter must be used; otherwise, it may damage the light fixture.**

- (9) Installation type: Class II. Must use anti-static air hose (Surface resistance  $\geq 10^4\Omega$ ,  $\leq 10^8\Omega$ , to BS 2050).

Note: The lamp's performance may be affected by the length of the supply hose; it is recommended that the hose's length should not exceed 4 meters.

## 3. Main specification and technical parameters (Table 1)

Product code No.	Ex mark	Protection class	Operating pressure	Voltage(V)	Power(W)
BTL-2400	II 2 G Ex eb pxb IIC T6 Gb II 2 D Ex tb IIIC T85°C Db	IP66(working)/IP40(not working)	4.0-8.0 bar(58-116 psi)	24	250

## 4. Product Case and Installation Size (see Figure 1)

## 5. Structure Features

This product is a positive pressure type product. The features are as follow:

- (1) ADC 12 cast aluminum alloy case, surface polishing in nice outer look.
- (2) Each joint surface in IP66 protection, specially sealed.
- (3) No need for external wires, using compressed air to drive the generator.
- (4) Air cooling and reduce the light source lamp's surface temperature.
- (5) Can be mounted on a tripod stand and used in an unconditionally suspended environment (supplied as needed).

# Operation and maintenance guidelines

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## 6. Basic Principles & Performances

Air Turbo Lamp is under the control of the automatic control system through the protective gas (driven with compressed air, the adjustable valve control output power) so that the pressure inside the positive pressure chamber is higher than the outside itself, forming a micro-positive pressure safety environment; therefore, the flammable gas is prevented from entering the positive pressure chamber. Simultaneously, the compressed air drives the turbine to transmit the power to the shaft and then drives the generator to rotate to generate power for the light source to ensure the lamp's safety.

## 7. Use & Maintenance: -

### A. Remove the Lamp Cover

Before opening the Aluminum Housing Cover (T-216) of the turbo lamp, the three Stainless Steel Fastening Screws (T-18) need to unscrew first. The housing cover's assembly structure is quite tight; the attraction force of the magnet will hold back the removal of the cover, so do not force the cover to open. After disassembling the rotor shaft assembly, you could see the Bearing Retaining Ring (T-868) and the three Bearing Retaining Ring Screws (T-873). Unscrew these screws to disassemble the rotor shaft and remove the cover. To remove the cover, use a hard plastic hammer or stick to tap on the edges to release the cover. Before reassembling, make sure that the outer bearing ring and the generator seat inner ring are clean. Do not use detergents for cleaning. It is advisable to apply a small amount of anaerobic adhesive or similar alternative thread fixing adhesive to the generator seat bearing's inner hole. Check carefully before installation to ensure that the magnet hasn't attracted any tiny objects.

- (1) Before installation, please check whether the basic technical data listed on the nameplate meet the actual conditions.
- (2) Maintain the lamp in a safe place.
- (3) Adjust the ideal running pressure and set the pressure to 5.5 bar (80 psi) before use. The pressure regulator on the lamp is usually used to compensate for pressure fluctuations in different environments. The inner hole  $\Phi 12\text{mm}$  high-pressure hose can connect with the BTL-2400.

### Warning:

- There is high pressure on the cover. Please check according to the instructions before the operation. Please keep enough distance while working on it.
- Dust and moisture from the unfiltered air will deposit on the inside of the glass, which will affect the lighting output.
- All maintenance operations are only performed in a safe area. Open the lamp or maintain it in a hazardous area is strictly prohibited.
- Please turn off the air supply source before disassembling the lamp and wait 2 minutes before proceeding.
- Do not cover or block the translucent parts of the lamp.

### B. Remove and replace the light source (Figure A-1, E-1):

To remove the bulb, loosen the Stainless Steel Lock Screws(T-18) first, remove the following: Aluminum Lens Ring (T-624A), Grooved Rubber Washer(T-139), Glass Disc(T-140), and the Frosted Reflector (T-57M). Next step, remove the Bulb 24V 250W Tungsten Halogen (T-129) inside; when you install the bulb, please be careful, as the pins of the bulb are very fragile. The bulb sets have a Glass Tube with a Bayonet Clip (T-908), which can reduce pollution effectively and extend the lamp's life. To remove this, move up the spring clip first and clockwise rotation of the glass tube.

\*\*\* When you reinstall the lamp, ensure that the O Ring Seal for Reflector Head(T-77) of the lamp head and the Groove Rubber Washer (T-139) is in the sealing part. After pressurize and seal, then lock the Lock Screw (T-74).

### C. Method of replacing the glass lens and the reflector method (Figure D-1):

Unscrew the Stainless Steel Fastening Screws(T-18), remove the Glass Disc(T-140), and Frosted Reflector(T-57M) for cleaning or replacement. Inspect the Glass Disc (T-140), do not use it if damaged.

(Note): These screws' strength is decisive; use only the part which complies with the specification. Incorrect tighten these screws may lead to:

- ± Lamp shade broken
- ± Damaged rubber gasket
- ± Weaken the effect of fixed nut makes the reflection lens fall off

# Operation and maintenance guidelines

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## D. Inspection and maintenance:

According to the guidelines, the recycling and maintenance of damaged lamps should be carried out by trained or qualified personnel.

- Check and replace the generator and bearing parts regularly.
- The inspection, cleaning, and testing of the lamp should be taken every three months or after 1000 hours of operation. For detailed inspection and maintenance instructions, please refer to EN IEC 60079-0:2018, EN 60079-2:2014+AC:2015, EN IEC 60079-7:2015+A1:2018, EN 60079-31:2014.
- Use or assembly of improper parts will fail the product safety certificate and manufacturer's liability and warranty and lead to unsafe conditions. If you have any questions, please contact the manufacturer.

### (1) Check and replace the generator sealed bearings (Figure A-1, B-1 & B-2):

To open the Aluminum Housing Cover (T-216) of the generator part, first, loosen the three Stainless Steel Fastening Screws (T-18). The cover structure is tightly assembled; the magnet's attraction force will prevent the cover from being removed and do not forcefully open the cover. After disassembling the rotor shaft assembly, you will see the Bearing Retaining Ring (T-868) and the three Bearing Retaining Ring Screws (T-873). Unscrew these screws; then, you can disassemble the rotor shaft and remove the cover.

Before reassembling, the magnet must ensure that no small objects are absorbed. When placed on the rotor shaft, the magnet will create a robust and attractive force on the generator stator. Ensure that the sealed bearing is in the correct position on the generator base. Take care to avoid pinching fingers on the generator base and cover.

The assembly steps are opposite to the above steps: check that all parts are in the correct orientation. The threaded sealed bearing and the Waved Spring Washer for Bearing (T-867) for the approach should be placed on the bearing retaining ring screw. Moreover, it must replace the complete set of fixed sealed bearings and spring washers. It is prohibited to reuse the old bearing wave washer (T-867). During the inspection and installation, ensure that the rotor shaft nut is firmly fixed. (Please refer to Figure B-2)

### (2) Regulator assembly (Figure C-1):

The regulator adjusts the output voltage of the generator. All parts of the regulator assembled in the Aluminum Generator Housing (T-226). Unscrew the Collar (T-98) and use the 5mm Hexagonal Key (T-171) to adjust the adjustment screw to control the inlet air flow to regulate the output power. Do not touch the regulator unless the machine is operating abnormally. If any parts need to be replaced or cleaned, check the Air Filter Sieve (T-33) and Silencer (T-869) if there is any blockage or damage.

### (3) **MUST USE CLEAN AND DRY COMPRESSED AIR.**

## 8. Transport & Storage

- (1) The lamp must protect from impact or strong vibration during transportation, also rain and snow.
- (2) The lamp should store in the air circulated warehouse, free from dripping water and liquids, and the environment temperature is not higher than +40°C, not lower than -25°C. The relative air humidity is not more than 98% (+25°C).
- (3) Do not contain harmful metals and their corrosive insulating gases in the surrounding environment where the lamp is stored.

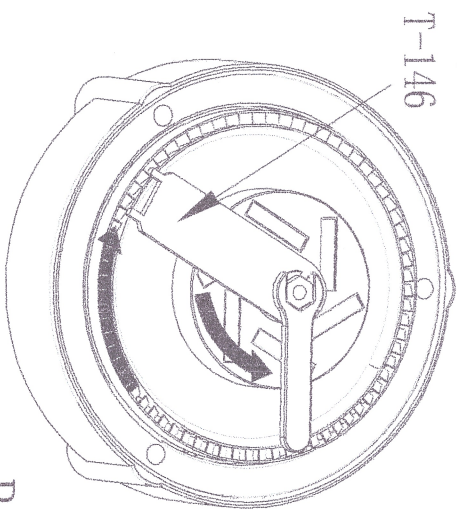
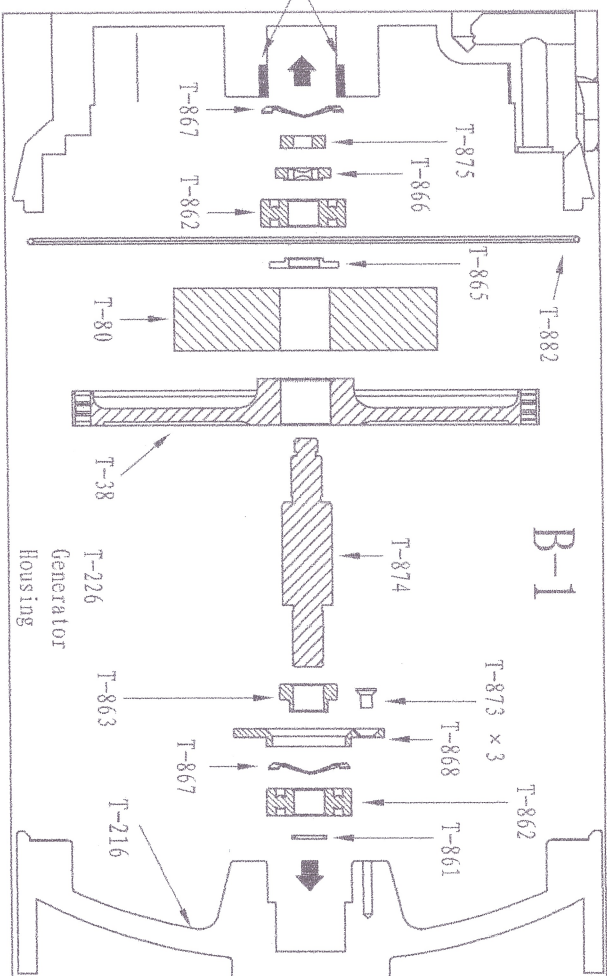
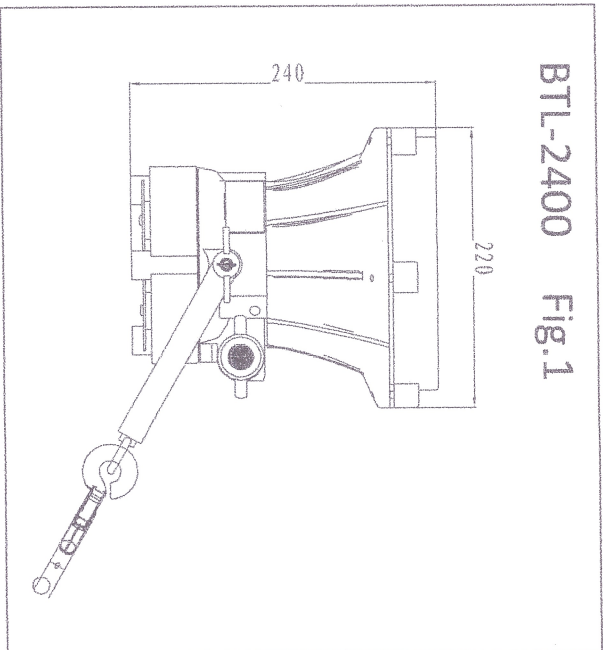
**Note: The size, technical parameters, and appearance to prevail in kind are subject to change without notice!**

### Packing List:

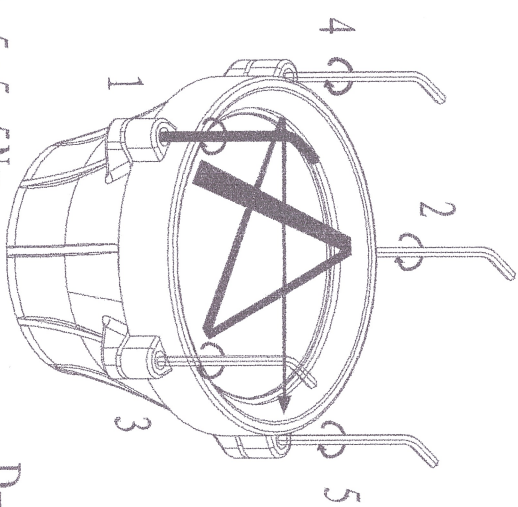
The Air Turbo Lamp (BTL-2400)  
Halogen Bulb T-129  
The Inlet Pipe T-133  
The Inlet Connector (M27) T-134  
2mm Hexagonal Key T-170  
5mm Hexagonal Key T-171  
Multipurpose Wrench T-146  
Operation and Maintenance Guidelines

# Operation and maintenance guidelines

BTL-2400 Fig.1

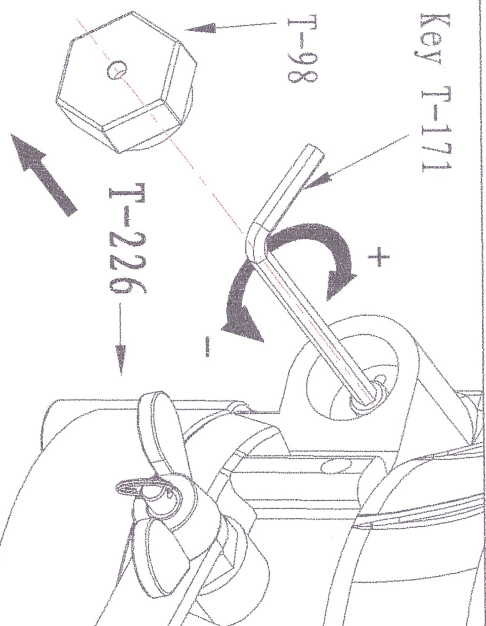


B-2



1-5=5.5 Nm

D-1



Key T-171

T-98

T-226

C-1

# Operation and maintenance guidelines

## Exploded View of BTL-2400 Air Turbo Lamp

