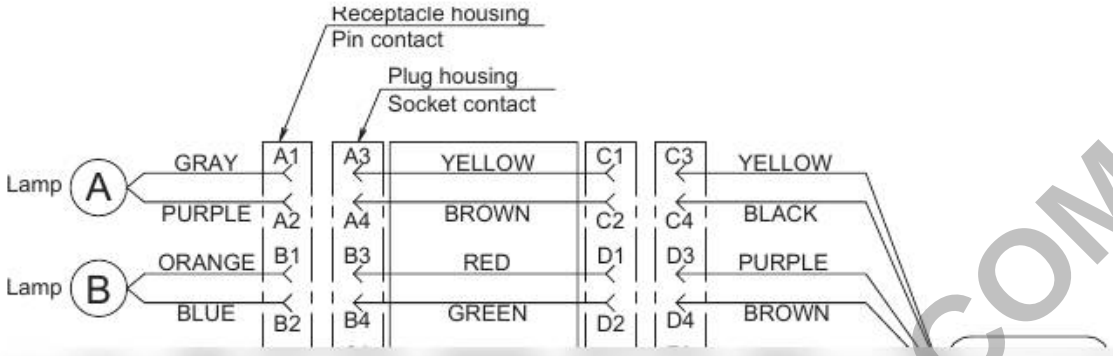


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18. Loosen the screw and washer (M4X8) **41**, and then remove frame pipes **15** from each joint block 1 **40**.
19. Loosen four screw & washers (M4X8) **42**, and then remove the bracket (contactor) **43** from the plate (bottom) **44**.
20. Pull out the cable 1 (balloon) **24** and remove the free bush **45** from the plate (bottom) **44**.
21. Loosen three button screws (M10X35) **46**, and then remove the plate (bottom) **44**, seal (packing) **47**, sheet (bottom) **48** and the seal (normal) **49** from the flange **5**.

Tightening torque: 25 to 34 N-m (2.6 to 3.5 kgf-m)

22. Pull out four joint block 1 **40** from the motor cover 2 **33**, and then remove four washers (34DX21dX3.0t) **50**, spacers (motor side) **51** and the vessel **52**.
23. Loosen two screws (M3X6) **53**, and then remove the buzzer **38** from the motor cover 2 **33**.
24. Loosen two screw (M4X30) **54**, and then remove the micro switch **39** and the micro switch cover **55** from the motor cover 2 **33**.

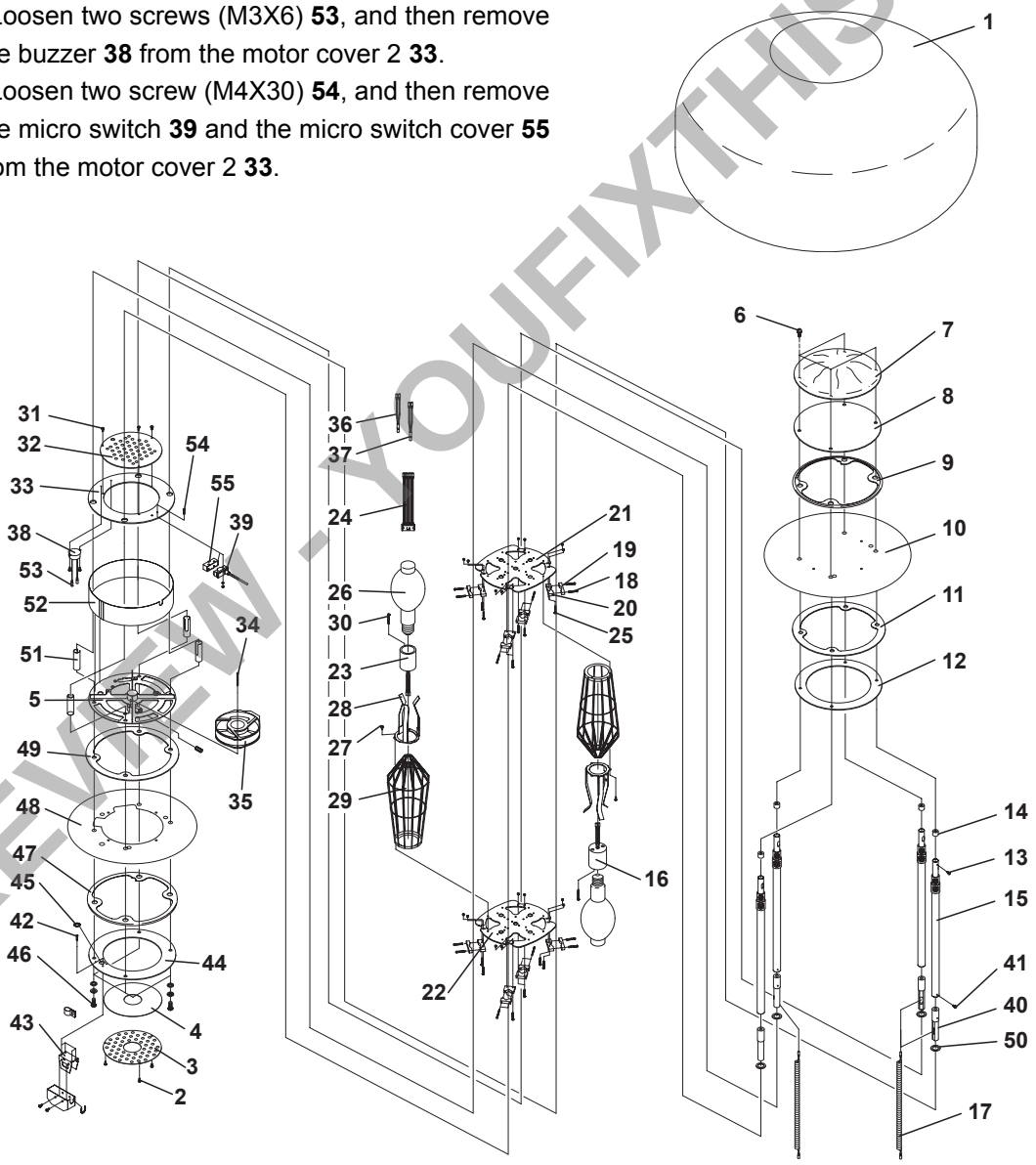


Fig. 4.2.12 Disassembling balloon unit

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9-2. Major Bolts and Nuts

Table 9.2 Standard tightening torque list

For major bolts and nuts of lighting tower

Part	Name	Thread diameter x pitch	Head surface width (mm)	Tightening torque N-m (kgf-m)
Base plate (earth)	Bolt (M6X10)	M6 x 1.0	10	5.9 to 7.8 (0.6 to 0.8)

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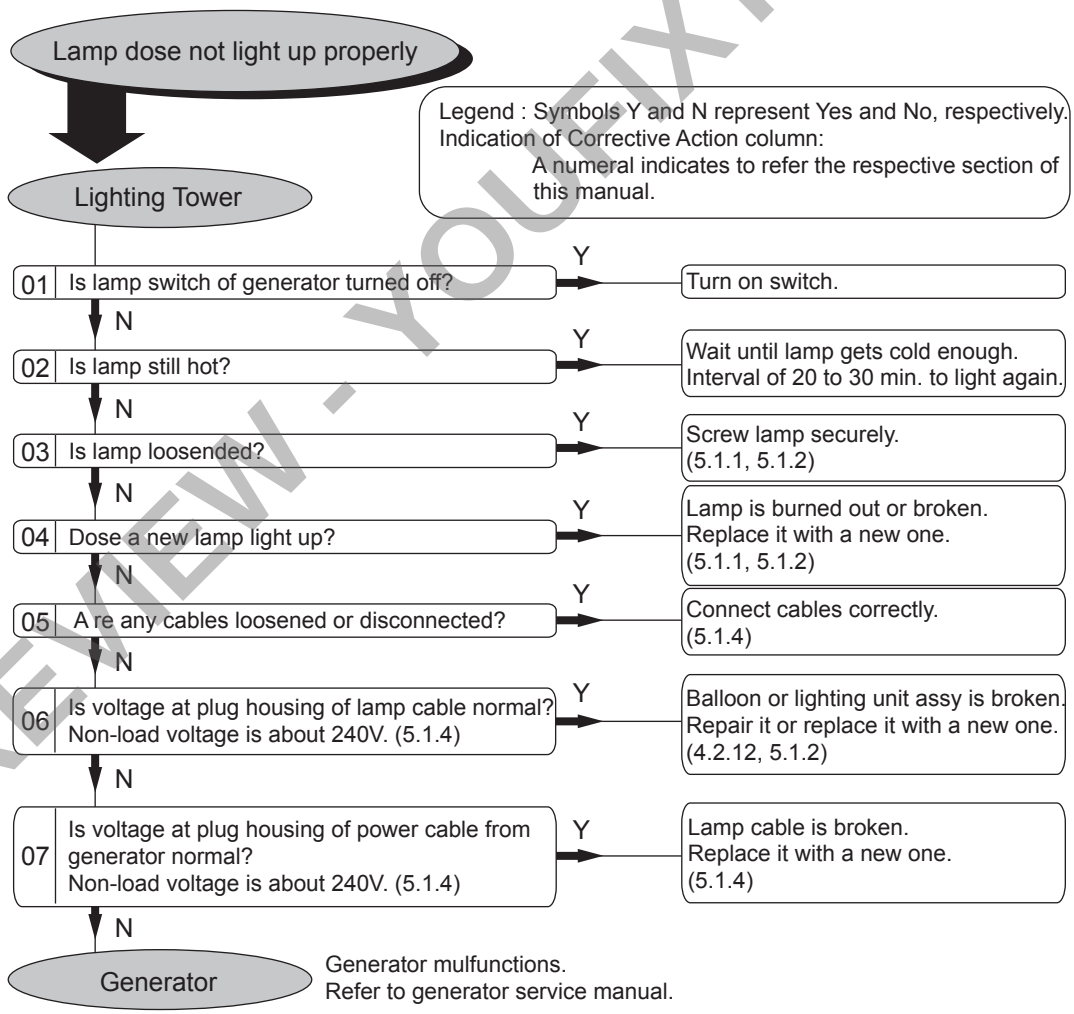
10. Troubleshooting

When a malfunction occurs to the floodlight projector, it is necessary to isolate the part (position) causing the failure. Further, the true cause must be identified from the symptom of the part for correct recovery action under consideration of recurrence prevention.
This section gives a method for efficient troubleshooting work.

10-1. Troubleshooting Procedures

If isolating the problem cause or faulty part is difficult, it is necessary to sequentially check component parts in an orderly manner. The figure below illustrates the check sequence.
First read the question in the text box and go to be next box in the direction of Y if the answer is Yes or N if the answer is No. At the end, some component parts that possibly can cause the problem are listed. Check them and then isolate the true cause of the problem.

Table 10.1-1 Troubleshooting chart (1/4)



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6. Periodic Inspection Items

This section gives the minimum inspection items that should be checked in order to maintain the lighting towerat excellent operating quality.

Contents of inspection vary greatly according to the operating conditions including the total operating hours, load conditions and place of operation. Here, inspection items and intervals are described on the assumption that the lighting toweris operated at the normal condition.

Understand the floodlight projectorís maintenance history and condition by checking past records before beginning a periodic inspection in order to ensure appropriate overhaul maintenance and adjustments.

6-1. Inspection Items and Intervals

Table 6.1 Periodic maintenance schedule

Items and inspection intervals

Figure			Part	Check item	Service item	
	*B	S				
Lamp	L1	-	Fan motor	Check if it works well.	Replace.	◎
	L2	-	Frame pipe	Check if it is not skew.	Replace.	◎
	L3	-	Lamp brace	Check if it is not loosened.	Replace.	◎
	L4		Lamp (Base)	Check if it is not loosened.	Screw in securely.	◎
	L5		Lamp	Check if bulb is not burned out or lamp is broken.	Replace.	◎
	L6		Pin contact	Check if it is not disconnected or loosened.	Connect securely.	○
		L7	Fold lever	Check if it locks and releases by force of 35 lbs.(16kg).	Adjust.	◎
	-	L8	Nut	Check if it is not too loose.	Tighten properly.	◎
	-	L9	Hinge for lamp stand	Check if it moves smoothly.	Supply grease.	●
	-	L10	Shaft for lamp stand	Check if it turns smoothly.	Apply grease.	●
	-	L11	Front glass	Check if it is not dirty.	Wipe off dirt.	◎
	-	L12	Reflex mirror	Check if it is not too dirty or broken.	Wipe off dirt or replace.	◎
Balloon	B1	-	Envelope	Check if it is not broken or dirty.	Replace.	◎
	B2	-	Zipper	Check if it is not broken.	Replace.	◎
Mast	M1		Hanger	Check if installation is not loosened.	Fasten securely.	○
	M2		Mast sliding surface	Check if mast slides smoothly.	Apply grease.	●
	M3		Wire rope	Check if it not damaged.	Apply grease or replace.	◎
	M4		Wire rope end	Check if end is not damaged caulking.	Replace.	◎
	M5		Winch	Check if brake works well.	Replace.	◎
	M6		Safety stopper	Slacken wire rope and check if latch sticks out.	Repair.	△
Cart	C1		Weight	Check if it moves smoothly.	Spray grease.	●
	C2		Outrigger	Check if it moves smoothly.	Spray grease.	●
	C3		Link of handle and wheels	Check if it is not loose linking.	Tighten securely	○
	C4		Bolt for handle	Check if it is not loosened.	Tighten securely	○
	C5		Brake pedal	Check if linking part moves smoothly.	Spray grease.	◎
	C5		Brake pedal	Check if notch is not worn.	Replace.	◎
	C6		Wheel stopper	Check if bolt is not loosened.	Tighten securely.	●
	C7		Front wheel shaft	Check if it turns smoothly.	Supplying grease.	●
	C8		Tire	Check if air pressure in tire is between 28.4 and 35.5 psi (245 and 294 kPa).	Adjust.	◎
	C9		Link for front shaft	Check linkage moves smoothly.	Spray grease.	●
	C10		Brake	Check if it works well.	Adjust.	◎
Electric	E1		Cable	Check if wire is not bared.	Replace.	◎
	E2		Coupler	Check if it is not disconnected or loosened.	Connect securely.	○
	E3		Non-load voltage	Check if voltage is about 240 V.	Repair.	▲

◎ ...Daily check ○ ...Every 20 hrs. ● ...Every 100 hrs. △ ...Every 500 hrs. ▲ ...Every 1000 hrs.

* B...Balloon type S...Spotlight type

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4-2-12. Disassembly of Balloon Assembly

Fig.4.2.12 illustrates the scope of work and parts configurations.

1. Remove the envelope **1** from the balloon assembly by opening the zipper at the both side of the balloon assembly.
2. Loosen three screw & washers (M4X12) **2**, and then remove the plate (air) **3** and the filter Ø200 **4** from the flange **5**.
3. Loosen four button screw & washers (M8X25) **6**, and then remove the primary cover **7**, plate (cap) **8**, seal (packing) **9**, sheet (top) **10**, seal (normal) **11** and the plate (top) **12**.

Tightening torque: 14 to 19 N-m (1.4 to 1.9 kgf-m)

4. Loosen the screw & washer (M4X8) **13**, and then remove the joint blocks 2 **14** from each frame pipe **15**.
5. Disconnect four cables of two sockets (E40) **16** from four curl codes **17** coming from the top of the frame pipes **15**.

Note: *Connect the cables securely when reassembling. Refer to Section "7-1-2. Electrical Circuit Diagram" for reconnection of the cables.*

6. Loosen two screws (M4X35) **18**, and then remove the stoppers 2 **19** from each stopper 1 **20** on the upper and lower plates **21**,**22**.
7. Pull out upper plate **21** from the frame pipes **15**.
8. Disconnect four cables of two sockets (E40) **23** from the cable 1 (balloon) **24**, and then pull out lower plate **22** from the frame pipes **15**.

Note: *Connect the cables securely when reassembling. Refer to Section "7-1-2. Electrical Circuit Diagram" for reconnection of the cables.*

9. Loosen two screw & washers (M4X16) **25**, and then remove the stoppers 1 **20** from the upper and lower plates **21**,**22**.
10. Remove the lamps **26** from each socket (E40) **16**,**23** by loosening them.
11. Loosen three screw & washers (M4X12) **27**, and then remove two lamp guards **28** and lamp holders **29** each from the upper and lower plates **21**,**22**.
12. Loosen two screw & washers (M4X20) **30**, and then remove two sockets (E40) **23** each from the upper and lower plates **21**,**22**.
13. Loosen three screw & washers (M4X12) **31**, and then remove the motor cover 1 **32** from the motor cover 2 **33**.
14. Loosen the screw & washer (M4X50) **34**, and then remove the fan motor **35** from the flange **5**.
15. Disconnect the cable (joint) 1 **36** and the cable (joint) 2 **37** from the cable 1 (balloon) **24**, buzzer **38** and the micro switch **39**.

Note: *Connect the cables securely when reassembling. Refer to Section "7-1-2. Electrical Circuit Diagram" for reconnection of the cables.*

16. Disconnect four curl codes **17** from the cable 1 (balloon) **24**.

Note: *Connect the cables securely when reassembling. Refer to Section "7-1-2. Electrical Circuit Diagram" for reconnection of the cables.*

17. Cut the wire bands at each top of four curl codes **17**, and then pull out them from each frame pipe **15** through the joint block 1 **40**.

Note: *Replace new wire bands when installing the curl codes **17**.*

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1. Safety

1-1. Warning Symbols

●Most accidents are caused by negligence of basic safety rules and precautions.
Avoiding possible cause is important for accident prevention. Be sure to read this manual carefully for full understanding of safety precautions and appropriate service/inspection procedures before starting actual repair or service jobs. Repair or service jobs without sufficient knowledge may lead to unexpected accidents.

●It is not possible to cover all possible accidents in repair or service in the manual.
It is, therefore, necessary to pay sufficient attention to safety in various jobs not indicated with the following warning symbols. Especially for the safety in conducting various jobs not covered herein, receive instructions from a knowledgeable leader.

●The warning symbols used in this manual and their meanings are as follows:

⚠ DANGER — **DANGER- Indicates an imminently hazardous job which, if not conducted correctly, will result in death or serious injury.**

⚠ CAUTION — **CAUTION- Indicates a potentially hazardous job which, if not conducted correctly, may result in minor or moderate injury.**

●The notice sign used in this manual and its meaning are as follows:

[NOTICE] — **NOTICE- Indicates an important point in service operation which, if not observed, the product performance and quality may not be guaranteed.**

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