

SERVICE MANUAL



GLOBUG MODEL GBX12SK LIGHT TOWER

Revision #0 (04/30/25)

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www.mqpower.com



THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.

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GBX12SK Light Tower

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NOTICE

Specifications are subject to change without notice.

INTRODUCTION

GBX12SK Service Manual

Introduction

This is the service manual for GBX12SK (serial number xxx~).

Please use this as a reference for performing safe maintenance on this floodlight.

Please note that this manual mainly explains floodlights.

For detailed engine maintenance, please also use the Z482 OPERATOR'S MANUAL and DIESEL ENGINE WORKSHOP MANUAL.

Please note that in order to improve the quality of our floodlights, changes are made to specifications and parts.

If any changes occur to the contents of the product, we will inform you via a revision list.

Safety Information

Basic

Before performing any maintenance, read, understand and follow the safety rules and operating instructions contained in the Operation Manual.

This manual provides detailed routine maintenance information for floodlight owners and users.

Most of the instructions are written for people with certain skills and knowledge.

People without certain skills and knowledge should not follow the instructions in this manual.

In addition, maintenance may require mechanical licenses, skills, and equipment.

We strongly recommend that you contact your GBX dealer for any difficult repairs.

For difficulty levels AA and above, special tools and equipment are required. Please contact your local dealer for repairs.

Difficulty of assembly for repair

A	easy
AA	troublesome
AAA	Special tools and equipment are required.
AAAA	Special tools and equipment are required. Danger

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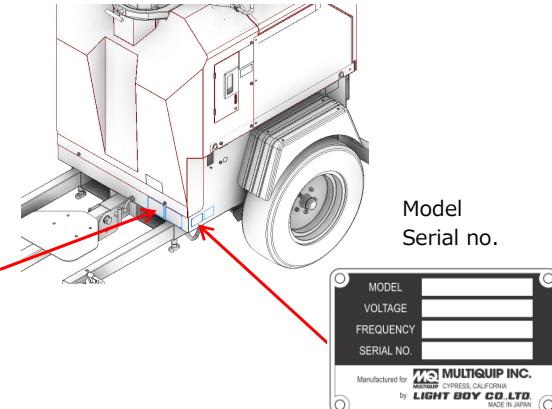
INTRODUCTION

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1. NAMEPLATE AND STAMPING LOCATION INFORMATION

1.1 Product Model Serial No.

Date of manufacture
VIN No.

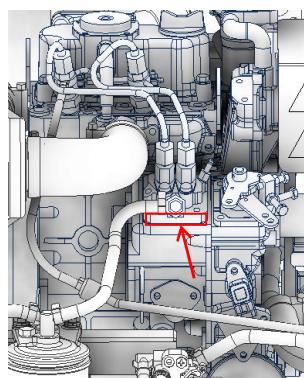
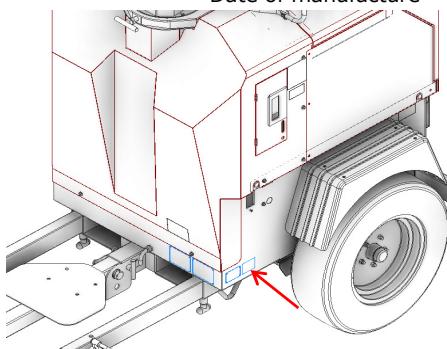


1.2 Engine Model Serial No.

Model

Serial no.

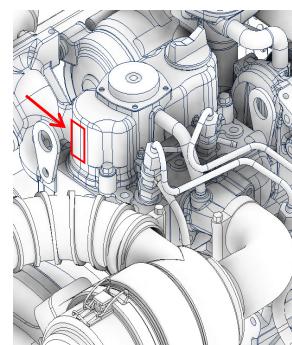
Date of manufacture



Model

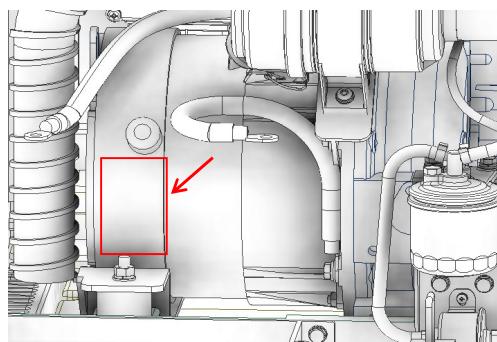
Serial no.

Date of manufacture



1.3 Model of generator Serial No.

Model
Serial no.
Date of manufacture



2. OVERALL CONFIGURATION MAINTENANCE LOG

2.1 Specification

Engine	
Engine Manufacturer	KUBOTA
Engine Model	Z482-E4B-LTLB-2
EPA/Tier	Tier 4 F/CARB
Fuel	Diesel
Cylinders	2
Horsepower	6.1 HP(4.6kW)
Rated Speed - RPM	1,800
Engine Protection	High Temp / Low Oil
Sound Level dB @ 23 ft	59.5db(A) @ 23'
Fuel Tank	
Fuel Capacity - gal (ltr)	45 GAL
Running time-hr / Lamp OPS only	200 hrs.
Fuel consumption Gal.hr	0.225 gal./hr.
Fill Neck diameter	2"
Trailer	
Axle Capacity (lbs.)	2,204
Tire size	13 in.
Standard Hitch Type	2" Ball
Support points (Jack Stands)	4
Suspension Type	Torsion beam type
Generator	
Excitation	Brushless
Model	LT3N-75/4
Insulation Class	Class H
Wattage (KW) Control	4.5
Voltage	120V
Frequency-Hz	60Hz
RPM	1,800
Regulation ±	6%
Control Panel	
Hour meter	Yes
External Receptacles	
Duplex	120V/15A GFCI
Mast Assembly	
Mast Height (MAX)	23'
Construction	Aluminum (Anodized)
Rotation	359°
Sections	5
Positive Position Lock	Yes
Lights - Projection	
Lamps	(4) LED - 300W
Type Lighting	Projection
Dimmer Switch	Yes
Lumens	212,000
Lamps Power Rating	1,200W / 11A
Color	Bright White
Dimensions	
L x W x H (deployed)	93.3" x 96.5" x 309"
L x W x H (stowed)	58.3" x 47.2" x 90.5"
Weight DRY (lbs)	1,288 lbs.
Wind Limits	45 MPH

2. OVERALL CONFIGURATION MAINTENANCE LOG

2.2 Maintenance

Note Please be sure to observe these rules.

Machine maintenance must be carried out by people who are trained and qualified.

Maintenance inspections must be carried out as specified.

every day

20 hr

100 hours

500 hours

2000 hours (1 year)

caveat Failure to follow instructions may result in death, serious injury, or substantial damage.

Immediately stop using any malfunctioning machines.

Use the correct parts to repair it.

Be sure to inspect any machinery that has not been used for a long period of time.

Routine Maintenance Procedures

Place the machine on a flat surface before operating it.

When performing an inspection without turning on the lamp, please turn the key switch OFF.

Please work after the engine has been stopped for at least 30 minutes.

In some cases, remove the battery before performing this procedure.

Move the actuator downwards so the lamp is in the stowed position.

2. OVERALL CONFIGURATION MAINTENANCE LOG

2.3 Checklist

Please use this as a checklist to do before and after work.
If you have any problems, please refer to 3 or 4.

Pre-work inspection			OK or NG
Engine	visual walk around	Oil or water leaks	
	Amount of coolant	Is the cooling water low?	
	Amount of fuel	Is there enough fuel?	
	Engine Oil	Engine oil level and contamination	
	By inserting the key into the starter switch	Proper function of glow lamp timer	
	By starting the engine	Color of exhaust fumes	
		Unusual engine noise	
	Battery	12V or more ,Water level	
LAMP	LED Lamp	Does the lamp light up?	
	Actuator & Hinge	Check if it moves up and down.	
	Tail lamp /side marker	Does the lamp light up?	
MAST	Mast	Does the mast extend up and down?	
	Wire Rope	Are there any frayed wires?	
	Winch	Are the brakes working?	
	Shackle	Does the shackle engage when lowering the mast?	
Light Tower	Jack	Does it move smoothly? Can it be locked?	
	Outrigger	Does it move smoothly? Can it be locked?	
	Back Cover	Does the gas spring work?	
	Axle components	Check that the bolts are tight	
	Lifting eye	Are there any loose screws?	
	TIRE	Is it airy? Scratched? Worn?	
	Oil dike drainage	Is there any oil or rainwater accumulation?	

Post-work inspection

LAMP	Polycarbonate Cover	Is it dirty? Is it broken?	
	NUT	Is the arm loose?	
MAST	NUT	Is the bottom nut loose?	
Engine	fuel filter	No air, water or debris	
	dust in air cleaner	Clean up	
	visual walk around	Oil or water leaks	

2. OVERALL CONFIGURATION MAINTENANCE LOG

2.4 Standard tightening torque for screws

For screw torques not specified in the manual, please see here.

2.4.1 Standard torque for fixing iron and SUS

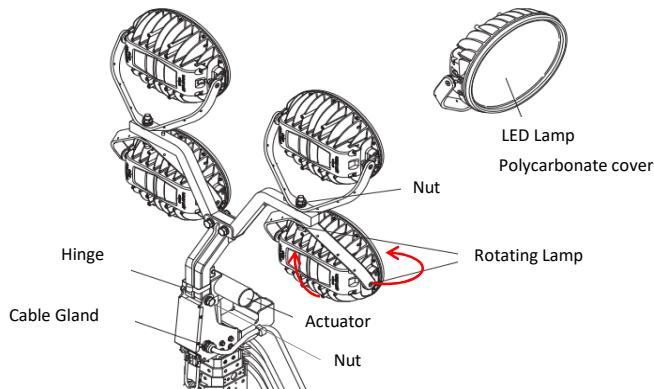
SIZE	T (Nm)	T (Kgf·cm)
M3	0.63	6.42
M4	1.5	15.3
M5	3	29.4
M6	5.2	53
M8	12.5	127
M10	24.5	250
M12	42	428
M16	106	1080
M20	204	2080

2.4.2 Standard torque for fixing aluminum and resin

SIZE	T (Nm)	T (Kgf·cm)
M3	0.315	3.21
M4	0.75	7.6
M5	1.5	14.7
M6	2.6	26.5
M8	6.2	63.2
M10	12.5	127

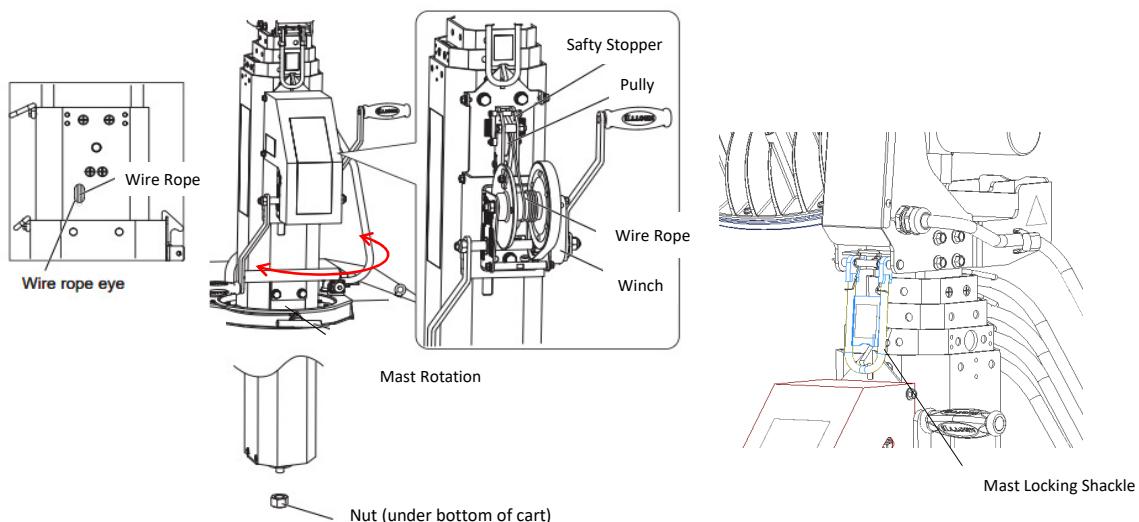
3. DAILY MAINTENANCE

3.1	LAMP	Parts	Symptom	Solution	Interval
3.1.1	LED Lamp		Does the lamp light up?	If it does not light up, see 4.1.	every day
3.1.2	Polycarbonate Cover		If it is dirty, wipe it off. If it is broken, replace it.	Exchange See 7.1.1.4	every day
3.1.3	Actuator		Check if it moves up and down.	Exchange See 4.1.7	every day
3.1.4	Cable Gland		Looseness	Tighten	20h
3.1.5	Nut		Looseness	Tighten	every day
3.1.6	Lampstand Joint		Operation	Exchange See 7.1.2	20 h
3.1.7	Rotating Lamp		Spnning smoothly ?	Apply grease.	100h



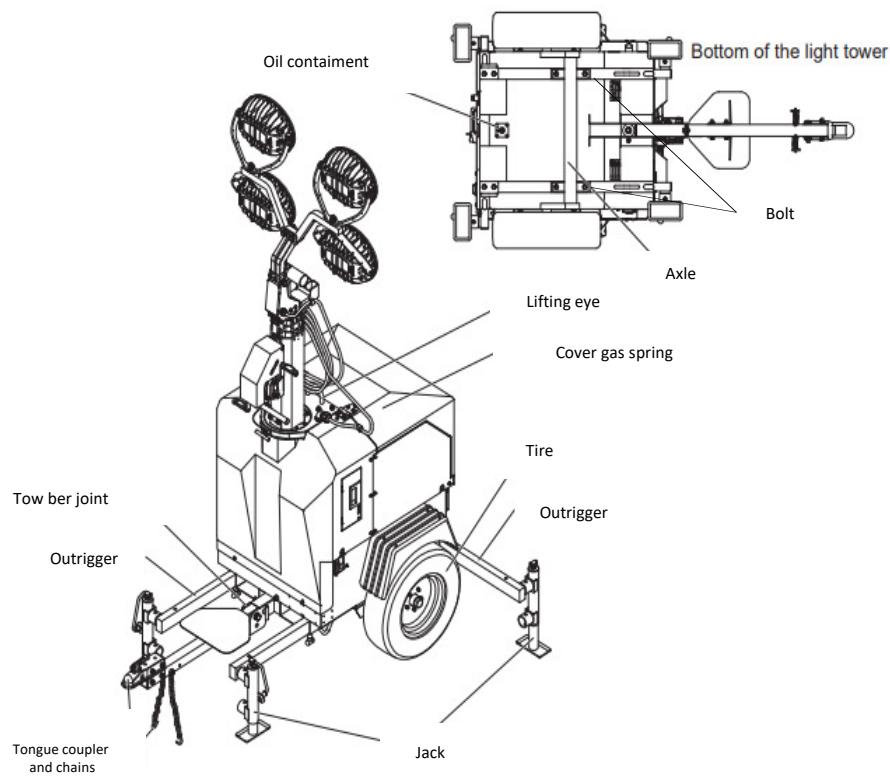
3.2	MAST	Parts	Symptom	Solution	Interval
3.2.1	Pully		Open the winch cover, raise the mast and check if the pulley is moving.	grease	100h
3.2.2	Wire Rope		Are there any loose wires?	Exchange See 7.2	every day
3.2.3	Winch		Are the brakes working?	Exchange See 7.2.2	every day
3.2.4	Safety Stopper		When you open the winch cover and raise the mast, does the Safety Stopper work? (It moves towards you)	Exchange See 7.2.2	500h
3.2.5	Mast rotation		Does the mast rotate? Check that it can be fixed with the knob.	Grease/knob replacement	every day
3.2.6	Nut under the mast		Is there any slack?	Tighten the screw so that at least one thread sticks out. Be careful not to tighten it too much, as this will prevent the mast from rotating.	20h
3.2.7	Mast Locking Shackle		Will the shackle engage when the mast is lowered?	Exchange See 7.2.3	every day

* Raise up the mast. There are the eyes (holes) in the II mast, the III mast and the IV mast. Make sure to visually check the wire rope.



3. DAILY MAINTENANCE

3.3	Light Tower	Parts	Symptom	Solution	Interval
3.3.1	Jack	Does it move smoothly? Can the pins be locked?	Grease UP/Replacement See 7.3.1	every day	
3.3.2	Outrigger	Does it move smoothly? Can the pins be locked?	Exchange See 7.3.2	every day	
3.3.3	Axle	Is the torsion spring working?	Exchange See 7.3.3	100h	
3.3.4	Gas Spring	Can you support the cover?	Exchange See 7.3.6	every day	
3.3.5	Lifting Eye	Looseness	Tighten	every day	
3.3.6	Tire	Is it scratched? Is there air in it?	Replacement See 7.3.4/Inflate/Refer to the Operation Manual	every day	
3.3.7	Coupler Chain	Damege?	Exchange See 7.3.5/Refer to the Operation Manual	100h	
3.3.8	Oil dike drainage	Is there any oil or rainwater accumulation?	put out.	every day	
3.3.9	Towbar Joint	Is there any slack?	Tighten. Replace if damaged.	100h	
3.3.10	Bolt	Is there any slack?	Tighten	20h	



3. DAILY MAINTENANCE

3.4	Engine	Maintenance Check List			Interval
3.4.1	Check	Check sump oil level/coolant leaks	See 3.4.2 3.4.3	50h	
		Check fuel filter		10h	
		Check dust in air cleaner		10h	
		Check for leaks/visual walk around		10h	
		Check loosening of parts		10h	
		Check of fuel pipes and clamp bands		50h	
		Check of fan belt tension and damage		100h	
		Check of radiator hoses and clamp bands		200h	
		Check the intake air line		200h	
	Cleaning	Water separator in fuel line		400h*	
		fuel filter		100h	
		Air cleaner element		100h	
		water jacket (radiator interior)		500h	
	Replacement	Engine oil (initial and thereafter)	See 3.4.2	50h/1000h	
		Oil filter cartridge (initial and thereafter)		50h/1000h	
		Fuel filter		400h	
		Air cleaner element		500h	
		Fan belt		1000h	
3.4.2	Engine oil				
	Engine Oil Capacity	3.8L			
	Recommended Oil	Mobile Delvac MX ESP 10W-30			
3.4.3	Engine Coolant				
	Specified amount	2.8L			
3.4.4	Battery	Voltage check 12V & water		every day	
	Recommended Battery	12V-56Ah			

* For engine details, refer to the engine operator's manual or service manual.

If disassembly is required, see 7.4.

3.5	Electrical Components	Parts	Symptom	Solution	Interval
3.5.1	Each switch and meter	Works properly?		Replacement See 7.6.3	every day
3.5.2	Tail lamp/side marker	Is it lit?		Replacement See 7.6.5-7.6.9	every day
3.5.3	Lamp cables/connectors	Is it loose or damaged?		Replacement See 7.6.1, 7.6.3	every day
3.5.4	Fuse			Refer to the Operation Manual	

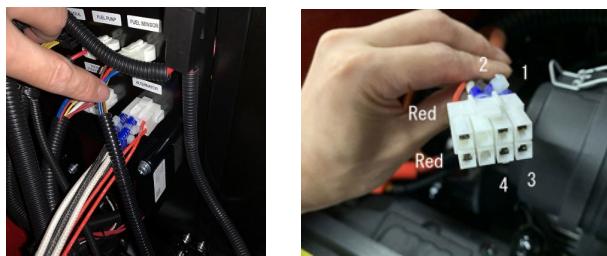
3.6	Power generation unit	Parts	Symptom	Solution	Interval
3.6.1	Power generation unit	Check the stator resistance and AC voltage of the generator		the below described	2000h
3.6.2		Capacitor Check		the below described	2000h
3.6.3		Check the rotor diode and rotor resistance of the generator		the below described	2000h

3. DAILY MAINTENANCE

How to check the power generating unit

3.6.1 Check the stator resistance and AC voltage of the generator

3.6.1.1 Open the back cover. Remove the power generator connector.



3.6.1.2 Measure the resistance of the connector.

Alternator wiring

- (4) Black & White Stator wires
- (2) Red excitation wires

Ohms resistance values:

1&2	.655 Ω ohms
3&4	.655 Ω ohms
Red	2.75 Ω ohms

The exact value is not necessary.

This is because a normal multimeter cannot accurately measure this range.

Also, check that none of the wires are shorted to earth (GBX unit).

You can use a megger meter to check the insulation of the wires.

3.6.1.3 Shut off the engine.

Reconnect the alternator connector removed in 1.

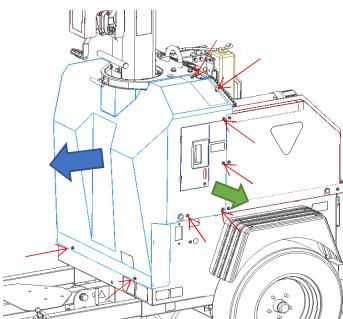
CAUTION: Stop the engine and wait at least 15 minutes before starting work.

If the capacitor is not fully discharged, there is a risk of electric shock.

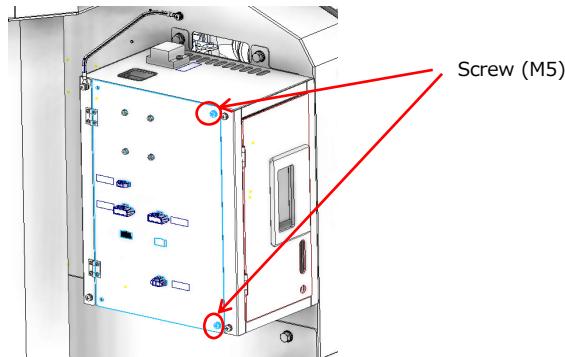
CAUTION: Do not allow tools to hit the battery.

3.6.1.4 Remove the front cover.

Remove the 14 bolts (M6). Lift the side and remove it straight out.



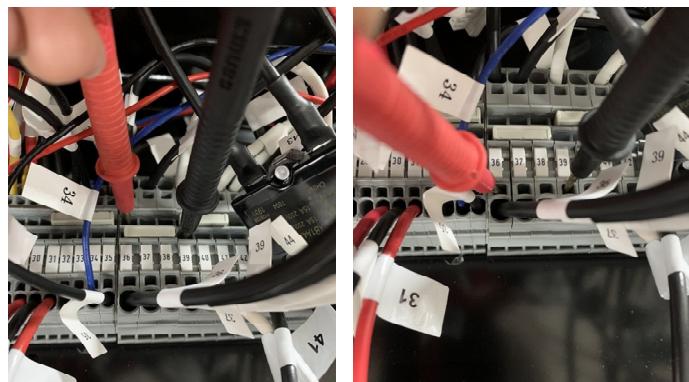
3.6.1.5 By removing the left cover you can access the terminal block and check the AC voltage and capacitors.



3. DAILY MAINTENANCE

3.6.1.6 With the engine on, measure the AC voltage between terminal block 36 and 39.

You can apply the probe as shown in the picture below.



AC voltage:

0-20V: The stator may have lost its residual magnetic field.

20-100V: Check the excitation capacitor (see Chapter 3).

100-120V: Circuit breaker 25A or LED power supply failure.

3.6.1.7 Shut off the engine.

To recover the residual magnetic field in the stator,

- Reconnect all wiring and connect the remaining terminals of the magnetizing capacitor to 120V AC (commercial power).
- Start the engine for 10 seconds and then shut it off.
- Disconnect the capacitor from 120V AC.
- Start the engine and measure the AC voltage between terminal block 36 and 39 again.
- If it doesn't work, try again.

To check the circuit breaker 25A:

- Push back the breaker (see diagram below)
- Stop the engine and check for continuity between terminal block 44 and 45.
- If there is no continuity, replace the breaker.
- Turn on the engine and LED light.

If it trips immediately, there is a short in the wiring between the breaker and the LED power source or in the power source.

If the light comes on for a while and then the breaker trips again, replace the breaker.

3. DAILY MAINTENANCE

3.6.2 Capacitor Check

3.6.2.1

Shut off the engine.

CAUTION: Stop the engine and wait at least 15 minutes before starting work.

If the capacitor is not fully discharged, there is a risk of electric shock.

CAUTION: Do not allow tools to hit the battery.

3.6.2.2

Disconnect the capacitor cable.



3.6.2.3

Use a tester or a multimeter that can measure capacitance to verify that the capacitance is greater than 20 microfarads.

If the capacitor is depleted, the generator output voltage will be low. Replace the capacitor.

If the capacitor is shorted or open, replace it.

3.6.3 Check the rotor diode and rotor resistance of the generator

3.6.3.1

To access the rotor, the generator set must be removed from the unit.

Checking the rotor includes testing the winding resistance and the two rotor diodes.

Refer to Replacement Instructions

7.5.3.1 to 7.5.3.20

7.5.3.22 (Do not disconnect the ECU cable)

7.5.9.1 to 7.5.9.3 (Remove the rotor)

3.6.3.2

Remove the two screws with a Torx wrench (size T10) and disconnect the rotor winding from the cathode (diode body).



3. DAILY MAINTENANCE

3.6.3.3 Rotor Diode

Set the multimeter to diode (forward voltage) mode.

Verify that your multimeter reads approximately 0.8V in this direction (anode to cathode).



3.6.3.4 If you turn it in the opposite direction, "OL" will be displayed.



If the meter shows 0V, it means the diode is shorted.

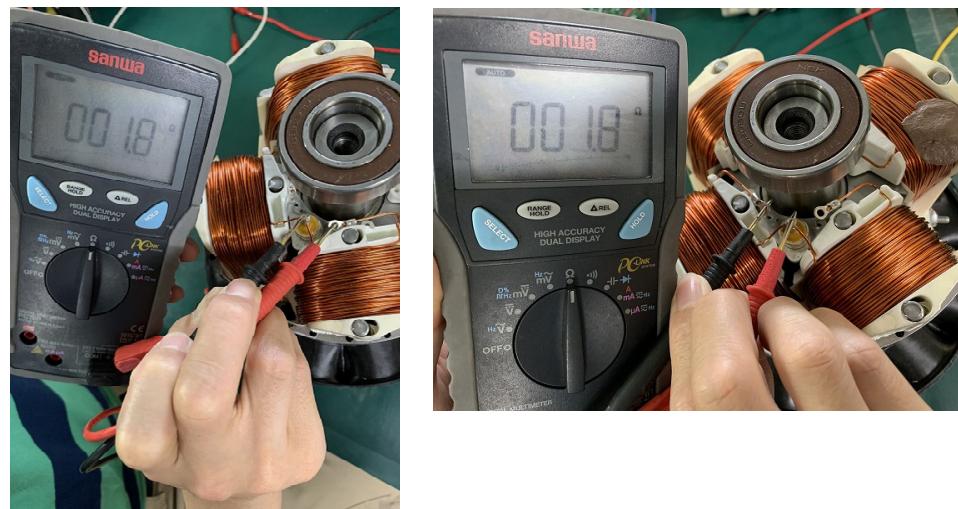
If "OL" appears in both directions, it means the diode is open.

Replace the diode.

3.6.3.5 Rotor Winding

Set the multimeter to resistance mode.

Check that the resistance of each rotor winding is approximately 1.8 ohms (see photo below)



Check to see if there is a short circuit to earth (main unit).

You can use a megger meter to check the insulation.

4. TROUBLESHOOTING

4.1	LAMP	phenomenon	Cause	correspondence
4.1.1	4 lights not lit (engine is running)		1: Did you turn on the switch?	Turn on the control panel switch. No⇒2
			2: Has the breaker been tripped?	If the breaker on the panel is tripped, press the breaker. No ⇒ If the breaker trips again, stop using it. Check the wiring.
			3: Is there any output?	Open the lamp stand cover and check if there is 120V on the lamp cable. No ⇒ Stop using Check the wiring. If the power source does not output 120V, refer to 3.6. Yes ↓ Lamp failure ⇒ Discontinue use. Check the LED lamp (see 4.1.3.1).
4.1.2	The top or bottom two lights are not lit		1: Have you installed the switch?	Turn on the control panel switch No⇒2
			2: Is there output? Incorrect wiring, lamp failure	Open the cover of the lamp stand and check if the lamp cable of the lamp that is out is receiving 120V. No ⇒ Discontinued Faulty wiring Check the wiring. Yes ↓ Lamp failure ⇒ Discontinue use. Check the LED lamp (see 4.1.3.1).
4.1.3	One does not light up		1: Is there output? Incorrect wiring, lamp failure	Open the cover of the lamp stand and check if the lamp cable of the lamp that is out is receiving 120V. No ⇒ Discontinued Faulty wiring Check the wiring. Yes ↓ Check for LED lights that do not light up. Check that the LED lamp wiring is securely connected. No ⇒ Connect securely. If it does not light up, proceed to the next step. Yes ↓ Replace the power supply with another LED lamp's power supply and check if the lamp lights up. Or is DC47.5±0.3 not coming out of the secondary side? No ⇒ DC47.5V is output. Replace the LED board (see 7.1.1.2). Yes ↓ It lit up with another power source. DC47.5V is not being output. Replace the power supply (see 7.1.1.3).

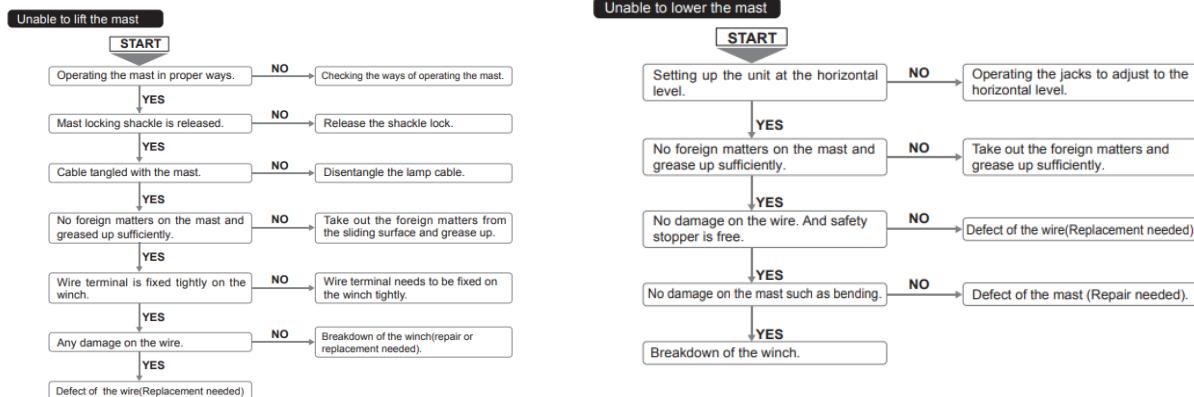
4. TROUBLESHOOTING

4.1.4	Blink or It disappears midway	1: Foreign matter has accumulated on the heat sink	Remove the object No⇒2
		2: The ambient temperature is high	Move to a cooler place. If the lamp is pointing straight down, tilt it slightly. No⇒3
		3: Is AC120V being output?	Is there 120V coming out of the GFCI? No ⇒ If the voltage is below 100V, the capacitor or power generator is faulty (see 3.6). Yes ↓ Check the LED lamp (see 4.1.3).
4.1.5	Some of the LEDs are off	LED Board	Replacing the LED board (see 7.1.1.2)
4.1.6	It's darker than other GBXs of the same type.	Inspect the LED board or power supply.	See 4.1.3.1
4.1.7	Actuator Does not move. Moves slowly	1: The key switch is not turned on 2: The connection between the lamp cable and the actuator is loose. 3: Is 12V coming to the lamp cable? Yes ↓ Replace the actuator. 4: The 50A fuse is blown. 5: The battery capacity is low. 6: Actuator switch or cable failure	Turn on the key switch. No ⇒ If it doesn't work even when turned ON, go to 2 Connect the lamp cable and the actuator securely. Check that DC12V is coming to the lamp cable Yes ↓ Replace the actuator. Please replace the fuse. No⇒5 Increase the battery capacity. No⇒6 Remove the wiring box and check the continuity of the actuator switch and cable. See 7.6.3

4.2	Mast	phenomenon	Cause	correspondence
4.2.1		The mast does not extend	Wire Rope, Winch	The chart below Exchange (see 7.2)
4.2.2		The mast won't lower	Wire Rope, Safety Stopper	The chart below Exchange (see 7.2)

■ Trouble with lifting up and down the mast

- ◎ Ensure the safety around you.
- ◎ Be careful not to pinch your fingers.



4. TROUBLESHOOTING

4.3	Engine	phenomenon	Cause	correspondence
4.3.1	Glow lamp does not light	1: Battery wiring	Connect the wiring securely.	No problem with wiring Go to 2
		2: 50A fuse	If the fuse is blown, replace it (Refer to the Operation Manual).	The fuse is not blown. Go to step 3.
		3. Battery	Is the battery voltage normal (12-14V)? Charge the battery. If the battery fluid is low, fill it to the specified level. Replace the battery.	Battery is fine. Go to 4.
		4: ECU is broken	Try swapping it for another ECU.	No problem with ECU Go to 5
		5: Key switch is broken	Remove the wiring box and check the continuity between the key switch and the glow lamp. See 7.6.3.	No problem with key switch Go to 6
		6: Glow lamp is broken	Remove the wiring box and replace the glow lamp.	Check the continuity of other wiring.
4.3.2	Error Indicator		Refer to the Operation Manual	
4.3.3	The generator does not output 120V.	Capacitor or generator failure	See 3.6 Power Generation Units	

4.4	Electrical Components	phenomenon	Cause	correspondence
4.4.1	No 120V at the outlet (light is on)	1: The panel breaker has been activated.	Press the breaker button on the panel.	No⇒2
		2: The outlet breaker has been tripped.	Press the outlet breaker button.	No⇒3
		3: Incorrect wiring	Open the wiring box and check if any wires have come loose. Check to see where the 120V is coming from.	
4.4.2	The outlet breaker trips	1: Over 15A	Reduce the load.	
		2: The load side is shorted	Investigate the cause of the short circuit on the load side.	
		3: Breaker (15A) failure	Replace the breaker (15A).	

5. SPECIAL TOOLS

There are special tools required for assembly. We recommend that repairs that require such tools be carried out at your local dealer.

name	specification	Where used
Monkey wrench	Maximum opening 43mm Thin type For narrow spaces	Cable gland for lamp cable
Thin Bending Spanner	Face width 13mm Thin type Rise angle 25 degrees	Mast lamp cable attachment part
Mast assembly rod	See Appendix 7.2	mast
Actuator switch mounting jig	inquiry	Control Panel
Bearing Puller		Power generation unit
BOLT M10 x 100	M10x100	Power generation unit
WASHER	Outer diameter 70mm, inner diameter 10.5mm	Power generation unit
NUT M10	M10	Power generation unit
Torque Wrench	5 to 95 Nm	
Torque Driver	1 to 5 N m	

6. GREASE AND SEALING MATERIALS

name	specification	Where used
Lithium grease	Explanation: All purpose grease using mineral oil for base oil and lithium soap for thickener. • Operating temperature range: - 15~130°C • Material: Mineral oil • Color: cream • Hardness: No.2	For Pully For Mast
Lithium grease	Explanation: Various kinds of rope such as construction machinery, chairs of a worklift Lubricate. • Operating temperature range: - 10 to 150°C • Main ingredient: mineral oil, bentonite, disulfided molybdenum • Color: gray black • Hardness: No .00	For Wire Rope
Thermal grease	inquiry	
Screw locking material	LOCTITE 242	For Wire Rope For Outrigger Pull Pin For Knob etc.
Screw locking material	Three Bond 1401	For resin mounting
Screw locking material	LOCTITE 565	For Drain Bolt

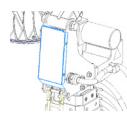
7. PARTS REPLACEMENT AND ASSEMBLY

7.1 Lamp.

7.1.1.

Remove the lamp

7.1.1.1.1 Remove the cover



tool

7.1.1.1.2 Remove the wires from the lamp you want to remove.

7.1.1.1.3 Remove the wire band.

7.1.1.1.4 Remove the nut (M16).

7.1.1.1.5 Remove the lamp.

7.1.1.1.6 Replace with a new one (in reverse order).

Important points to note
The two washers that are placed under the nuts (M16) should have their rounded corners aligned.

Nut (M16) torque : 80Nm



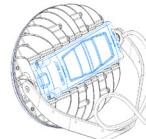
driver

Nippers
Spanner 24

7.1.1.2

In case of LED replacement (from 7.1.1.1.5)

7.1.1.2.1 Remove the power supply cover.



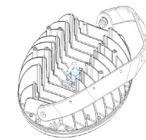
Hexagonal wren

7.1.1.2.2

Remove the wire band and corrugated tube from the cable.

7.1.1.2.3 Disconnect the power supply and the LED.

7.1.1.2.4 Remove the cable gland attached to the wire coming from the LED.



Nippers

7.1.1.2.5

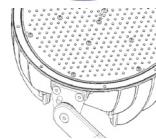
Remove all tapping screws from the heat sink. The cover and gasket can then be removed.



driver

7.1.1.2.6

Point the LED board upwards and remove the screws (M4x6).



7.1.1.2.7

Insert a flat head screwdriver underneath the board and remove it.

Special silicone required (please inquire)

7.1.1.2.8

Wipe off the white silicone on the heat sink side to some extent. Apply the special silicone. Apply while avoiding the screw holes and the Gore vent filter holes.

7.1.1.2.9

Pass the board's wires through the holes in the heat sink. Be sure to align them with the holes in the Gore vent filter.

7.1.1.2.10

The board is attached with screws (M4x6?) in 16 places.

Tightening torque: 1N·m

7.1.1.2.11

Fit the gasket onto the cover.

7.1.1.2.12

Pass the washer (M5) and waterproof washer through the tapping screw. Tighten the screw evenly.

Tightening torque: 1.5N·m

7.1.1.2.13

Attach the cable gland to the LED board cable. Tighten the cable gland by hand until there are two threads remaining.

7.1.1.2.14

Assemble in reverse (7.1.1.2.3).

7.1.1.3

In case of power supply replacement (from 7.1.1.2.3)

7.1.1.3.1 Remove the screw (M5x12) securing the power supply.

7.1.1.3.2 Remove the truss screws (M4x8) securing the plate.

7.1.1.3.3 Replace with a new one. Reassemble in reverse.

Important points to note

Pay attention to the installation direction. L and R are different.

7.1.1.4

In case of replacing the LED cover (from 7.1.1.1.5)

7.1.1.4.1 Remove all tapping screws from the heat sink. The cover and gasket can then be removed.

7.1.1.4.2 Place the gasket on the new LED cover.

7.1.1.4.3

Pass the washer (M5) and waterproof washer through the tapping screw. Tighten the screw evenly.

Note

Tightening torque: 1.5N·m

driver

7. PARTS REPLACEMENT AND ASSEMBLY

7.1.2 Remove the lamp stand & Replace the actuator.

7.1.2.1 Remove the lamp stand.

7.1.2.1.1 The lamp stand is kept facing downwards using an actuator switch. driver

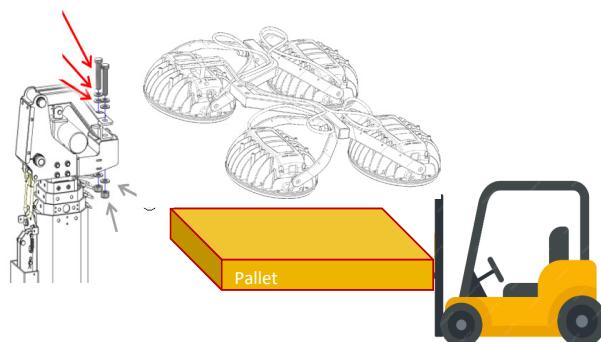
7.1.2.1.2 Remove the cover

Note It is a good idea to put a cover on top of the mast to prevent small screws from falling into the gaps in the mast.

7.1.2.1.3 Remove all wiring.

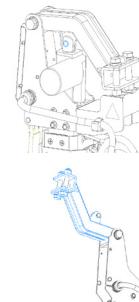
Note It is a good idea to put a cover on top of the mast to prevent small screws from falling into the gaps in the mast. Nippers

7.1.2.1.4 Load the pallet onto a forklift and place it under the stand. Remove the two bolts and lower the stand. forklift



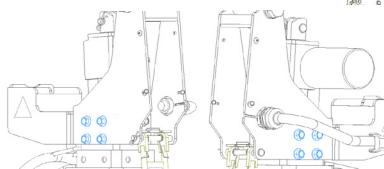
7.1.2.2 Replace the actuator (With the lamp stand removed, see 7.1.2.1).

7.1.2.2.1 Remove the actuator pin.



7.1.2.2.2 Remove the wire band securing the actuator cable.

7.1.2.2.3 Rotate the lamp stand as shown in the illustration.

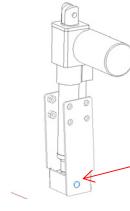


7.1.2.2.4 Remove the eight adapter bolts (M8 x 20).

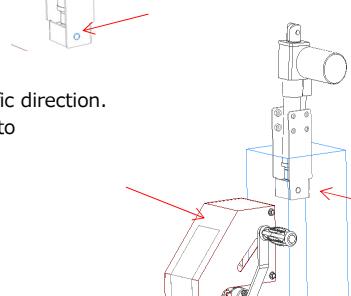


Socket 13

7.1.2.2.5 Pull the actuator straight up out of the adapter.



7.1.2.2.6 Remove the lower pin of the bracket.



7.1.2.2.7 Note Install the new actuator. Reassemble in reverse order. Be careful when installing the bracket as it has a specific direction. The correct direction is for the pin position to be close to the winch side. If it is installed the other way around, the actuator may get damaged due to interference.

Note The bolts of the support (lamp stand) and the adapter are different lengths, so be careful not to mix them up. Apply Loctite 242 to the bolts (M8 x 20) .

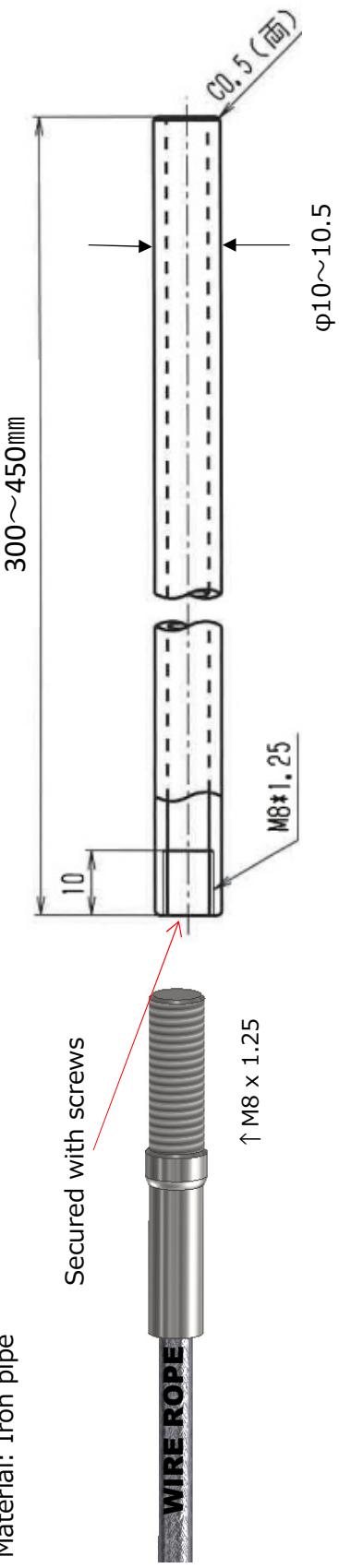
7. PARTS REPLACEMENT AND ASSEMBLY

About the Dedicated JIG

This jig is used to prevent the wire rope from getting lost or caught in the corners of the mast when assembling the mast. It's good to have two.

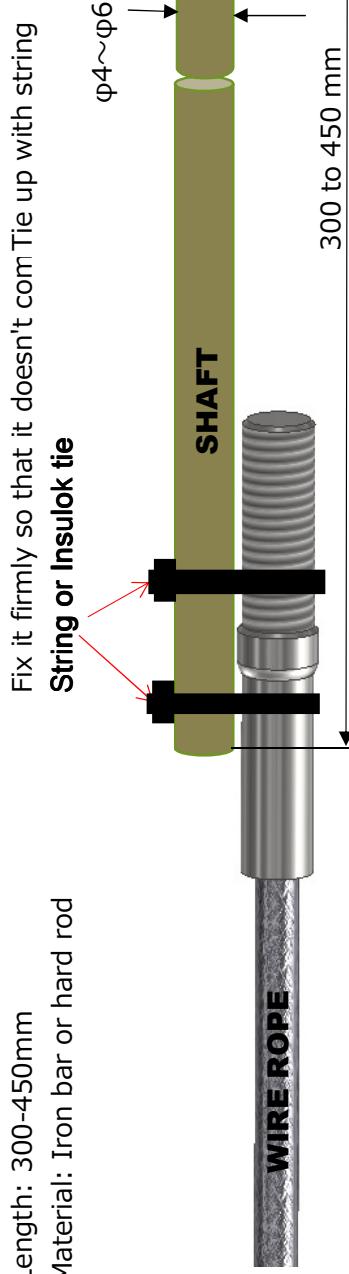
■JIG Ver.1 (Ideal)

Outer diameter: $\phi 10$ to $\phi 10.5$
Length: 300-450mm
Material: Iron pipe



■JIG Ver.2 (fasten with string or cable ties)

Outer diameter: $\phi 4$ to $\phi 6$
Length: 300-450mm
Material: Iron bar or hard rod



7. PARTS REPLACEMENT AND ASSEMBLY

7.2 Mast

7.2.1 Replace the mast

When replacing the entire wire rope

<Things to use>

• forklift	• Driver No.2	• Driver No.3	• Thin spanner 13
• Ratchet and spanner	• Monkey 32mm or mo	• JIG (dedicated) x 2	• 2 sets of units
• Ratchet and spanner Nippers	- Pallet (large enough to hold the spot)		
Ratchet 8, 13, 17, 19, 30	- 2 sling belts or ropes		
• Ratchet extension	• Thin face width 13 spanner Bent spanner		



Methods

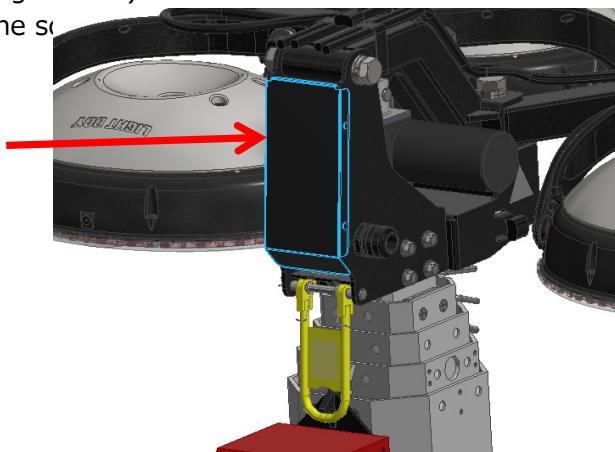
7.2.1.1

Remove the cover (wiring section).

Be careful not to drop the screws.

Truss Screw

M4 x 8 - 4 pieces



7.2.1.2

Remove the wiring and wire bands.

Be careful not to drop the screws.

White coupler



Actuator terminal



↑ In the case of balloons ↑ In the case of spot

Ground wire

Ground wire

Truss Screw*

Truss Screw*

M4 x 8 - 2 pieces

M4 x 8 - 4 pieces

*with Thoosed Lock Washer M4

7. PARTS REPLACEMENT AND ASSEMBLY

7.2.1.3

Remove the lamp.

Load the pallet onto the forklift and move it down the ramp.

Remove the lamp stand and place the lamp on the forklift.

<In the case of Spots>

BOLT

M16x80…2 pieces

SPRING WASHER

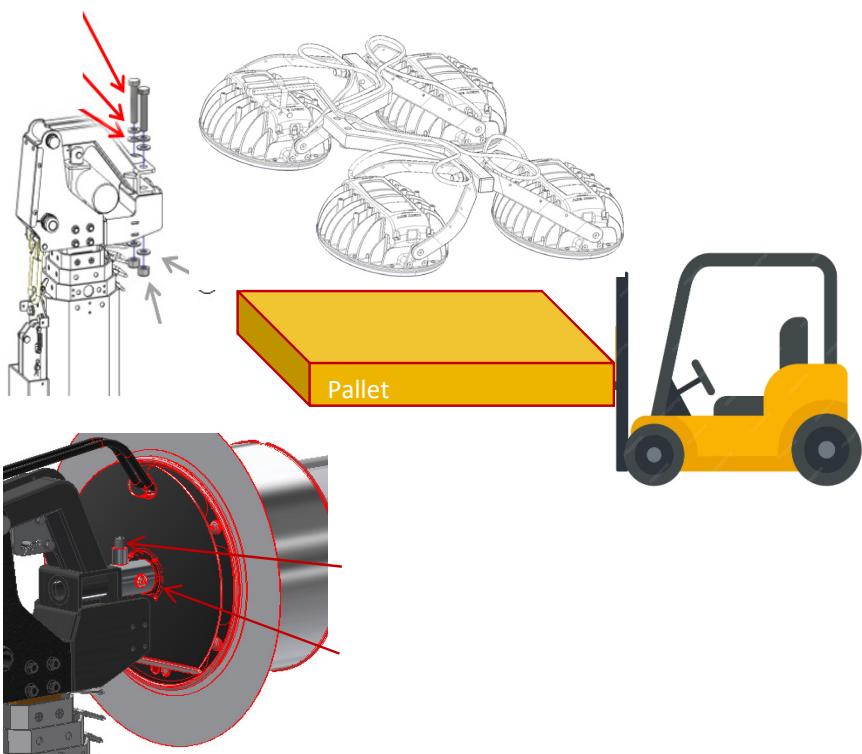
M16 - 2 pieces

WASHER

M16…4 pieces

NUT

M16 - 2 pieces



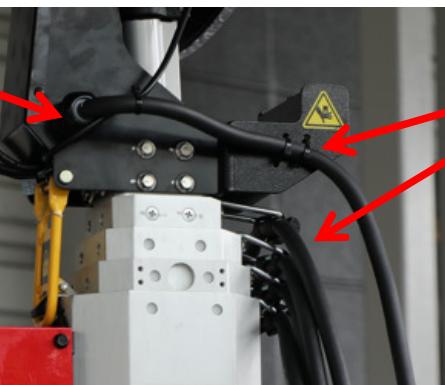
7.2.1.4

Remove the lamp cable.

Cable Gland

Remove the nut.

Remove all the bands



7.2.1.5

Remove the front cover. M6 flange bolt

You should loosen the knob
Easy to remove.



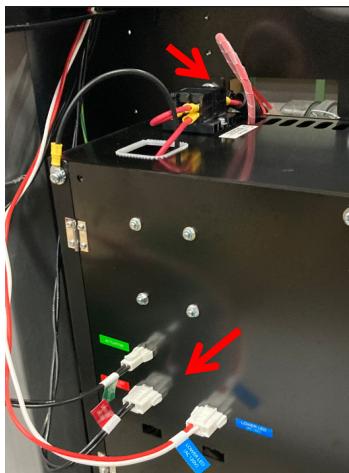
7. PARTS REPLACEMENT AND ASSEMBLY

7.2.1.6

Disconnect the lamp cable and any connecting wires and ground wire.

Screw M5x10...1 piece (With Tooth Lock Washer)

12SK



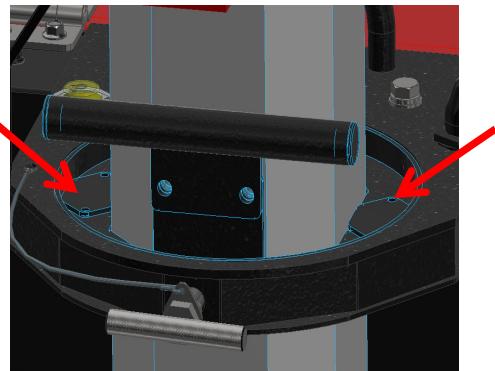
24BK



Remove the cable gland nut.

7.2.1.7

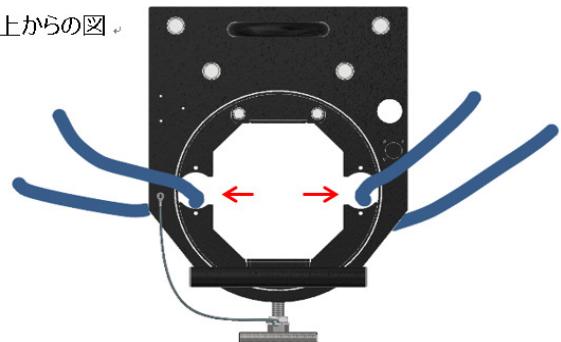
Remove the plates on both sides of the mast. Bolts M5x10 x 4



7.2.1.8

Pass two sling belts or ropes through the mast. Attach it to a forklift. Support the mast to prevent it from falling over.

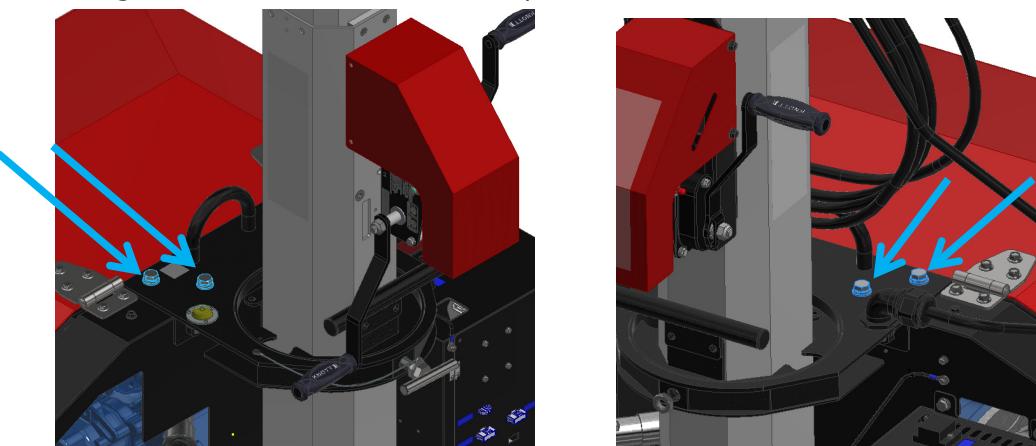
上からの図。



7. PARTS REPLACEMENT AND ASSEMBLY

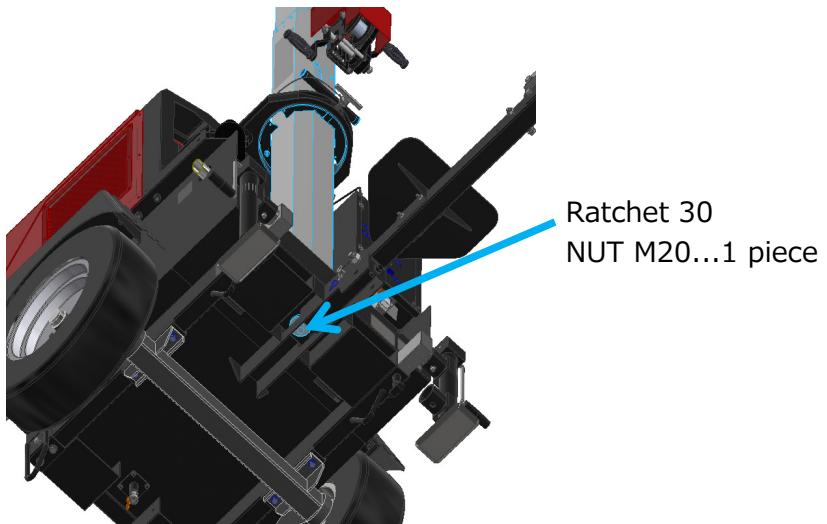
7.2.1.9

Remove the guide mast bolts. M12x25...4 pieces



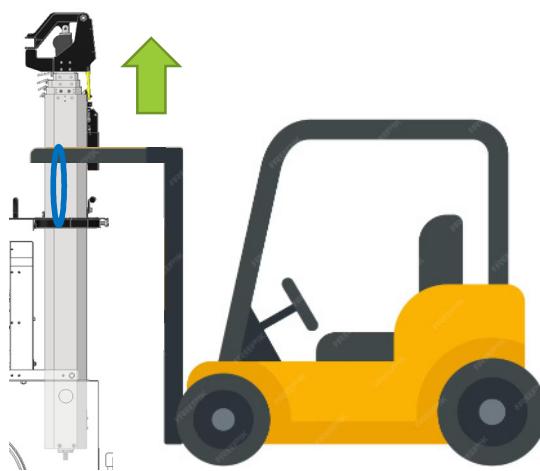
7.2.1.10

Remove the nut at the bottom of the mast.



7.2.1.11

Use a forklift to lift the mast straight up and remove it from the trailer.
The mast is very heavy so be careful when moving it.

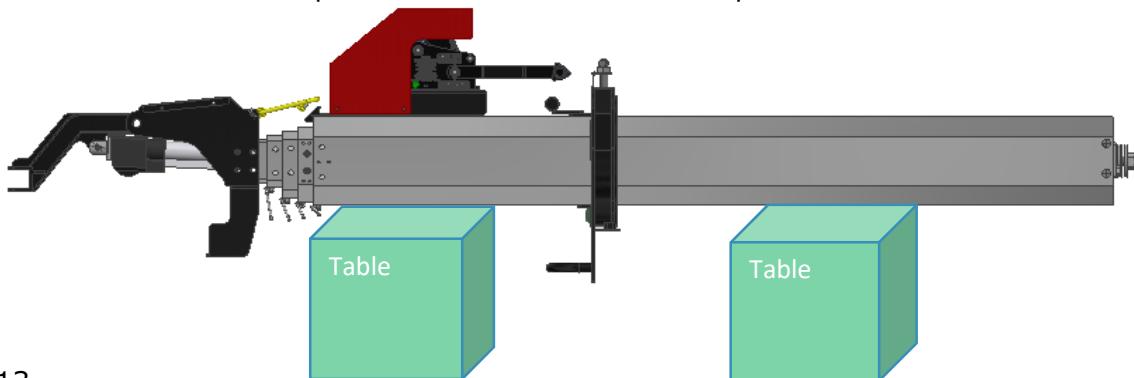


7. PARTS REPLACEMENT AND ASSEMBLY

7.2.1.12

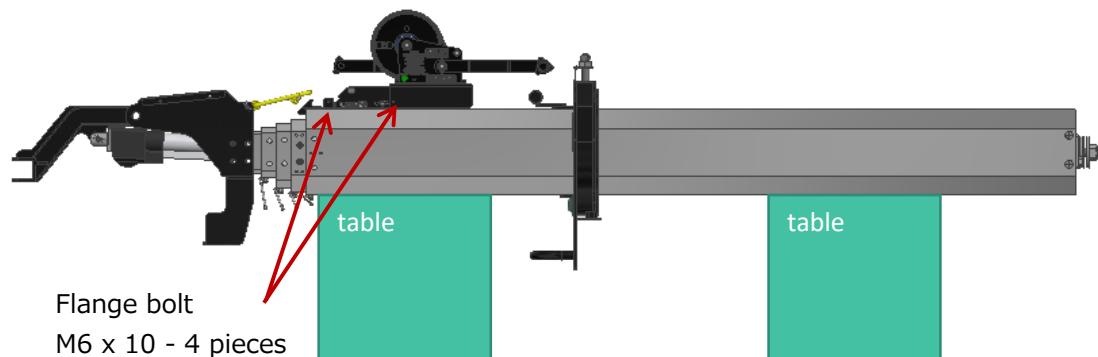
Lay the mast aside.

It would be nice to have a square stand like the one in the picture.



7.2.1.13

Remove the winch cover.



7.2.1.14

Remove the wire rope from the winch and then remove the winch.

BOLT

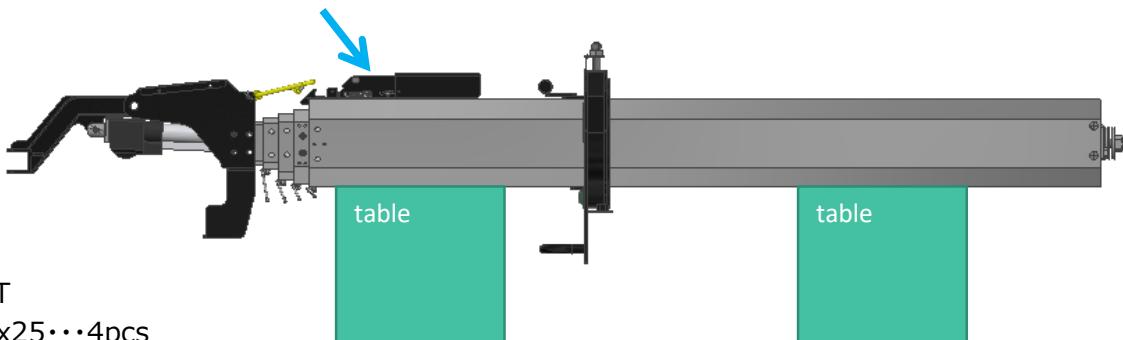
M10x25…2 pieces



7. PARTS REPLACEMENT AND ASSEMBLY

7.2.1.15

Remove the bracket (pully).



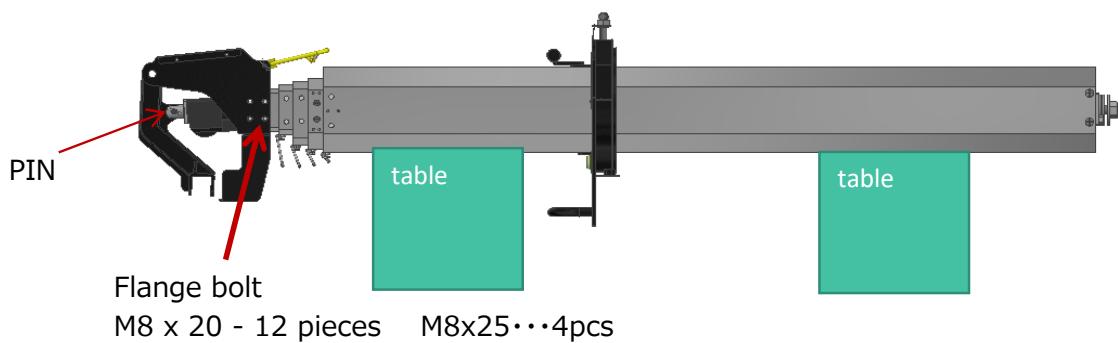
BOLT

M10x25...4pcs

7.2.1.16

Remove the Adapter (Stand) together with the Actuator.

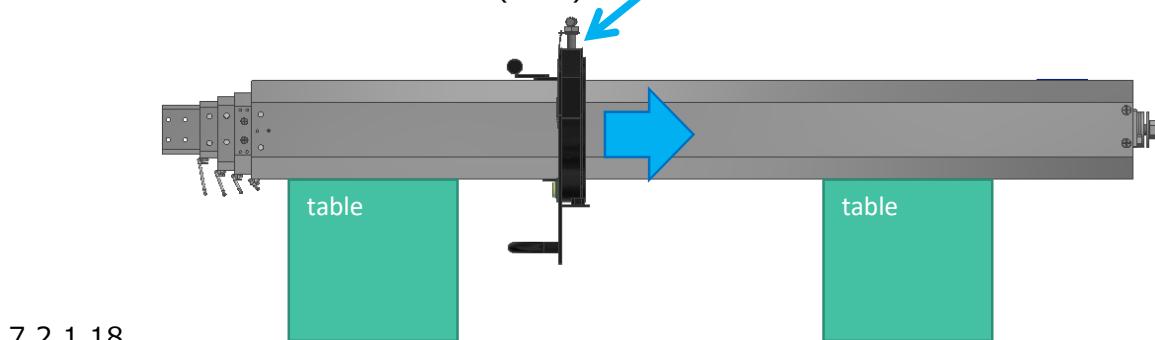
If it is difficult to remove, try removing the actuator pin.



Flange bolt
M8 x 20 - 12 pieces M8x25...4pcs

7.2.1.17

Loosen the knob and remove Guide (Mast) 1.



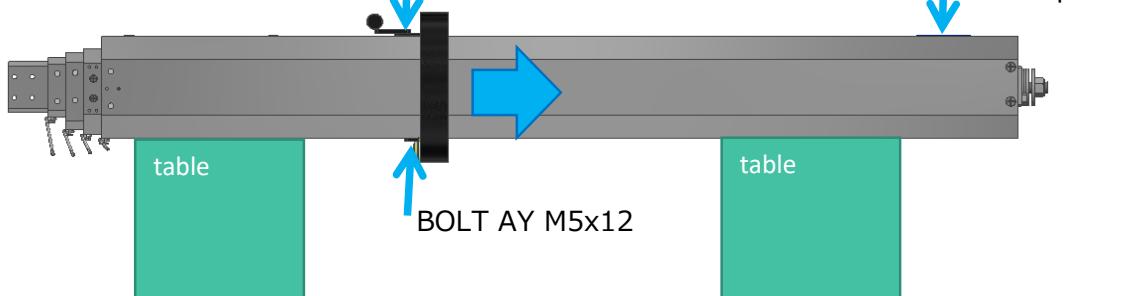
7.2.1.18

Remove Cover (Mast) and Guide (Mast) 2.

BOLT AY M10x30...2 pieces

Screw M5x10

4 pieces

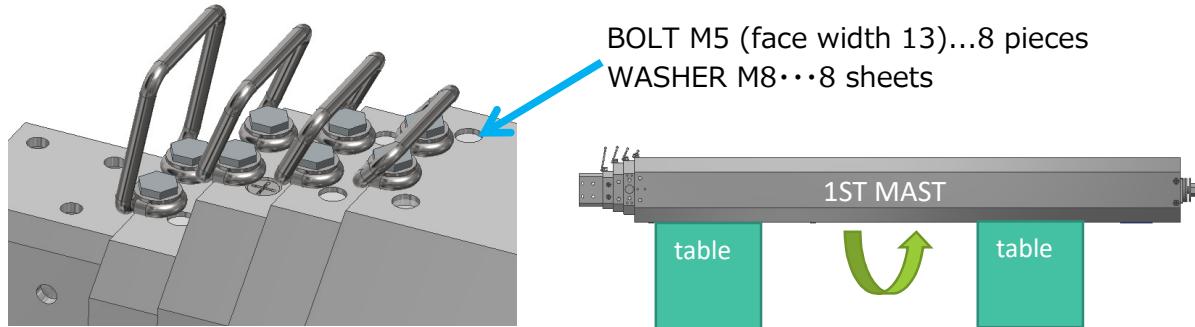


7. PARTS REPLACEMENT AND ASSEMBLY

7.2.1.19

Remove the bracket (cable).

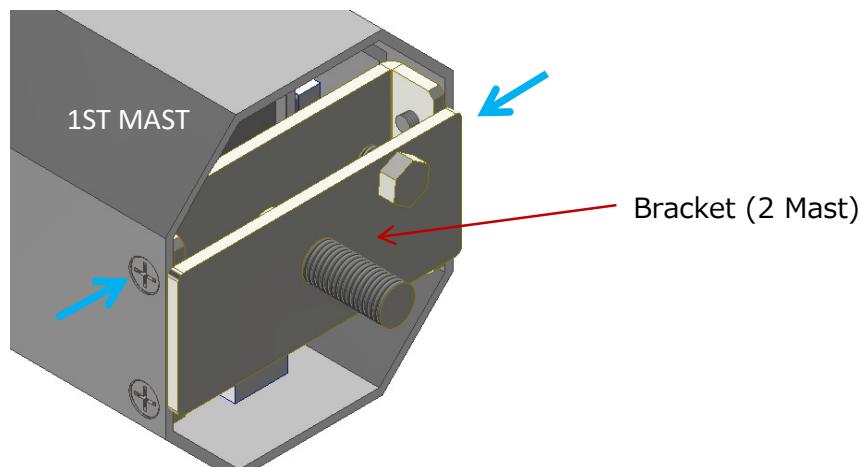
Rotate the mast and remove the bolt. Use a thin-faced 13-width wrench.



7.2.1.20

Remove the bracket (2Mast) under the 1ST MAST. Use the screwdriver No.3.

M8x16 Countsunk Screw...4 pieces

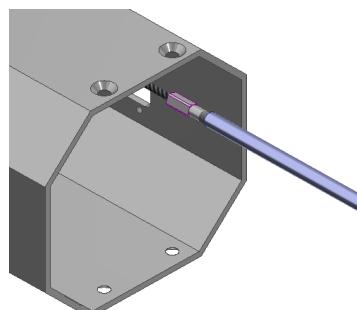
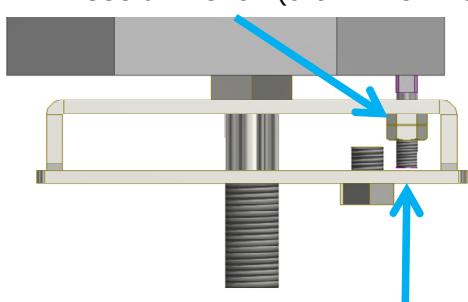


7.2.1.21

Remove the Hard-Lock NUT from the WireRope. Attach the jig (※) to the screws of the WireRope.

Hard-Lock Nut (M8) - 1 set

Use a wrench (a thin M8 wrench).



7. PARTS REPLACEMENT AND ASSEMBLY

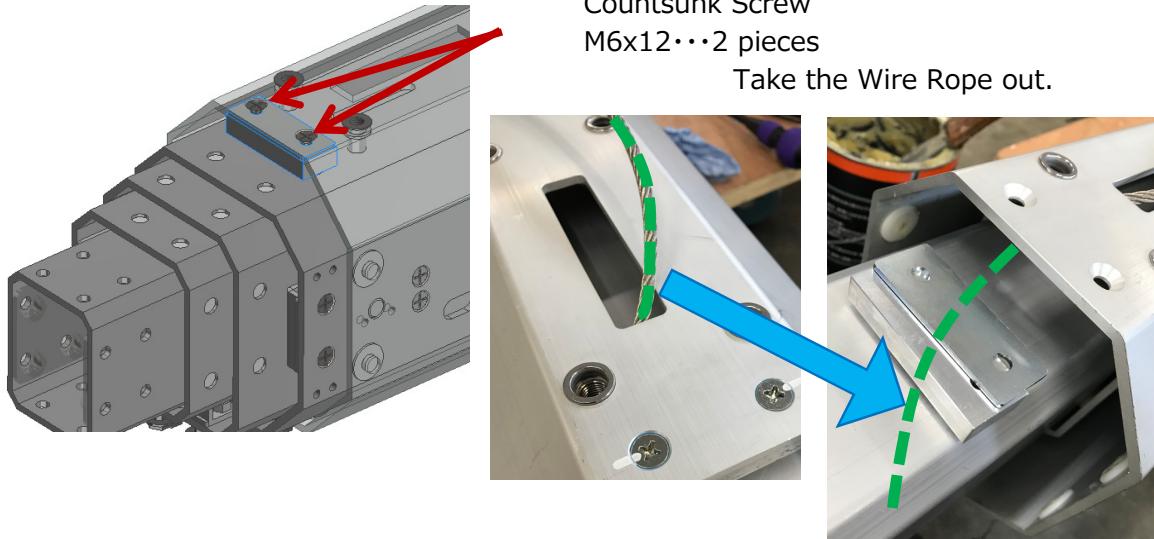
7.2.1.22

Remove Plate (Slider) and Plate (Slider) 1-2. Use screwdriver No. 3.

Countsunk Screw

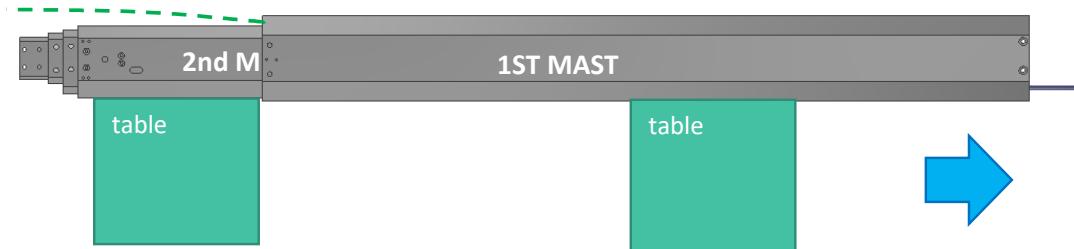
M6x12…2 pieces

Take the Wire Rope out.



7.2.1.23

Remove the 1ST MAST.



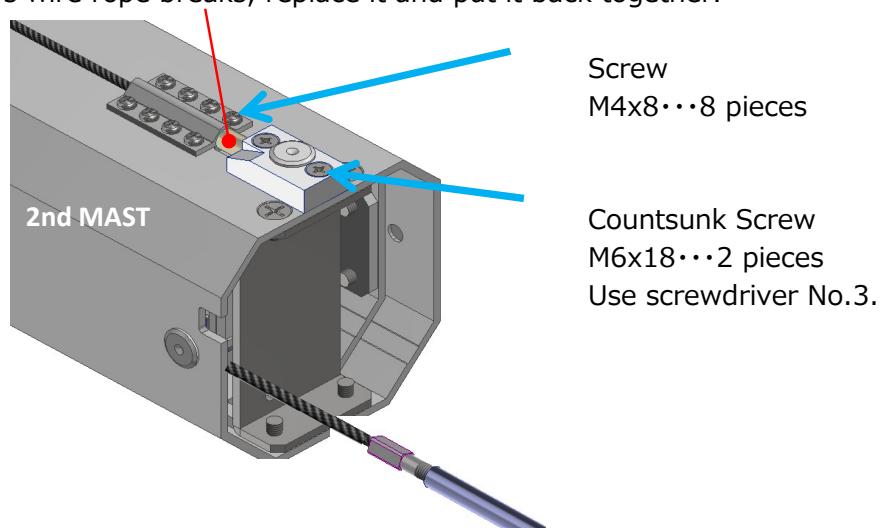
7.2.1.24

Remove the Bracket (Wire) and Plate (Slider3) attached to the 2nd MAST.

Be careful not to damage the M4 cross recess!!

This Wire Rope will be the Winch's Wire Rope.

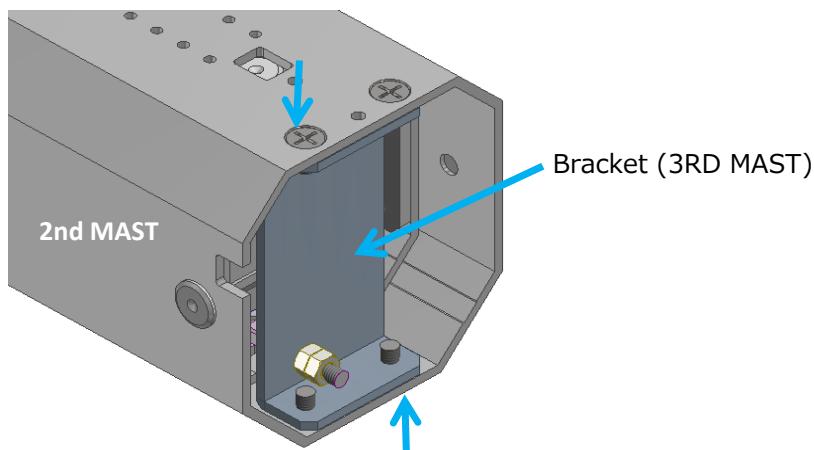
If the winch's wire rope breaks, replace it and put it back together.



7. PARTS REPLACEMENT AND ASSEMBLY

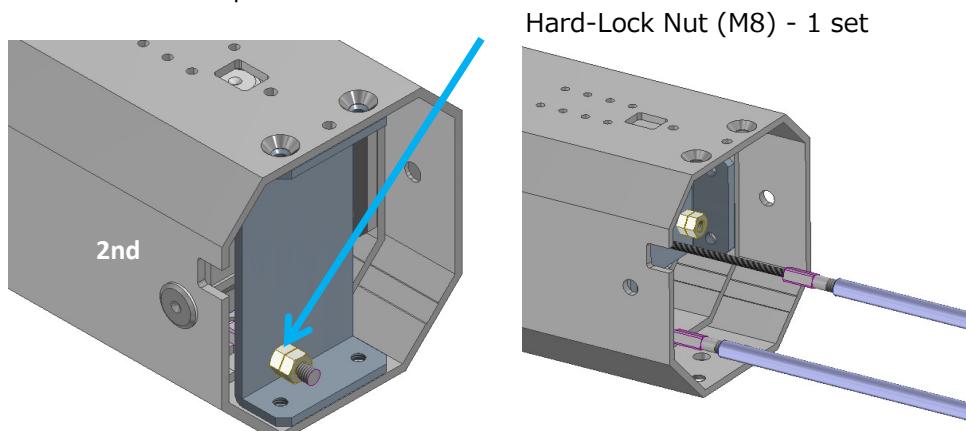
7.2.1.25

Remove the bracket (3RD MAST) from the 2nd MAST. Use the No. 3 driver.
M8x16 Countsunk Screw...4 pieces



7.2.1.26

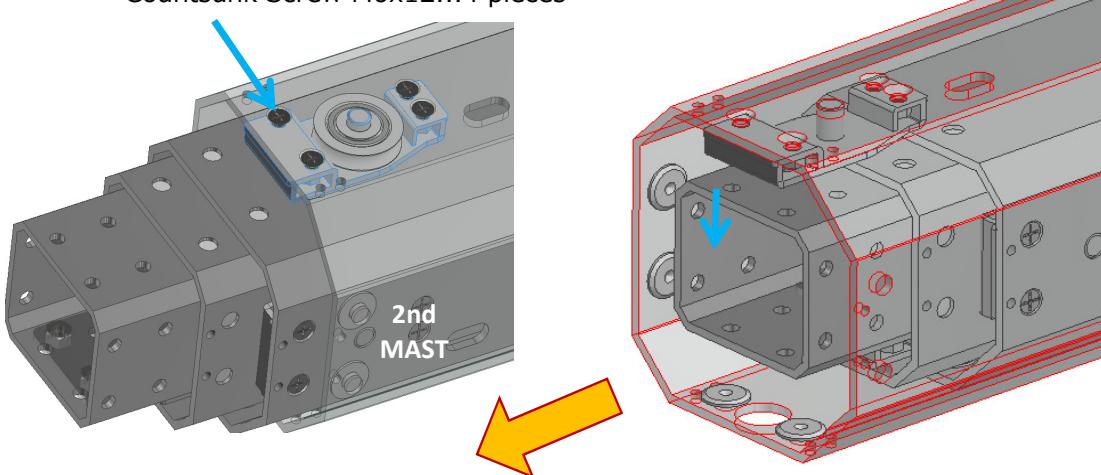
Remove the Hard-Lock NUT. After removing the Beacket (3RD MAST), attach the JIG to the Wire Rope.



7.2.1.27

Remove the screws from the 2nd MAST bracket (Pully2). Use a No. 3 screwdriver. Pull the 2nd MAST forward to remove it.

Countsunk Screw M6x12...4 pieces

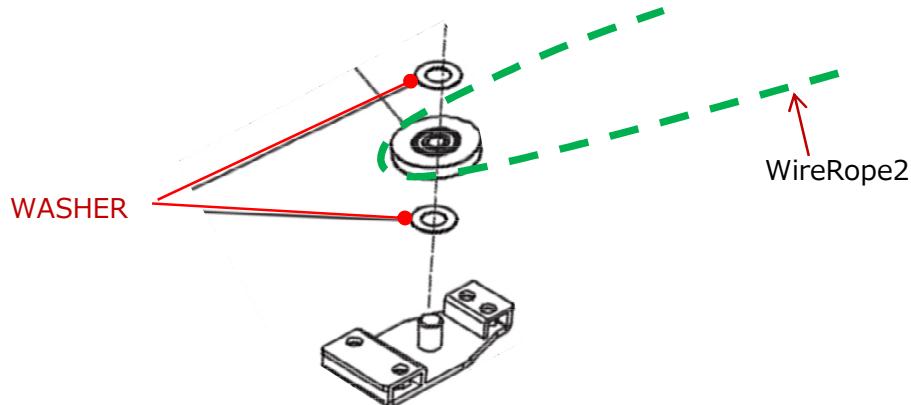


7. PARTS REPLACEMENT AND ASSEMBLY

7.2.1.28

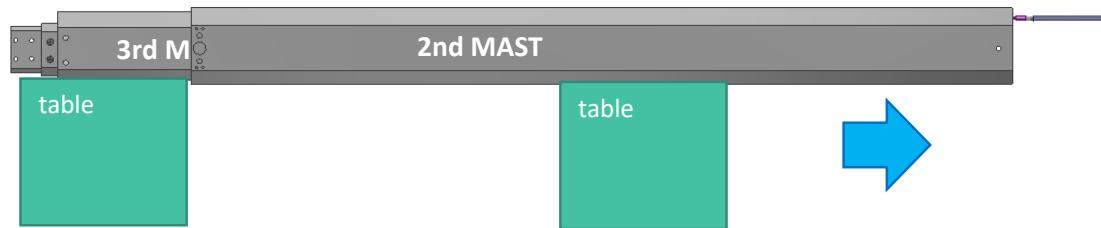
The bracket (Pully2) has a pulley and two washers. Leave the wire rope as it is.

!! Check that the WASHER is not left in the 2ndMAST!! Be sure to remove it.



7.2.1.29

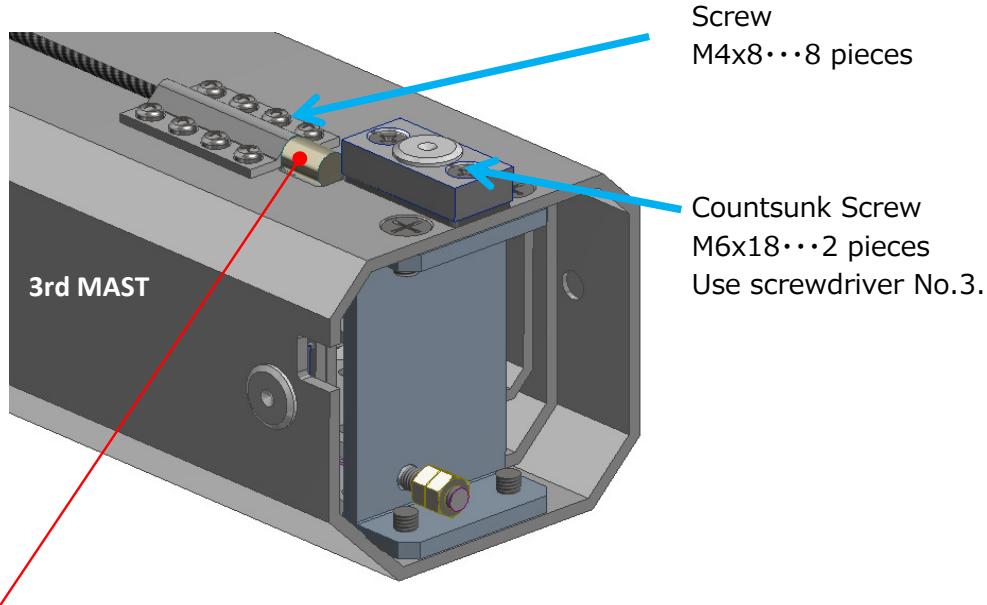
Remove the 2nd MAST.



7.2.1.30

Remove the Bracket (Wire), Plate (Slider2), and Plate (Slider2-2) attached to the 3rd MAST.

Be careful not to damage the M4 cross recess!!

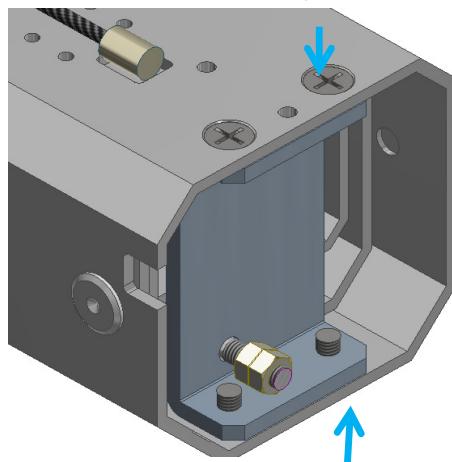


This WireRope is WireRope 2, which was connected to the 1st MAST and 3rd MAST. If this WireRope2 breaks, replace it and put it back together.

7. PARTS REPLACEMENT AND ASSEMBLY

7.2.1.31

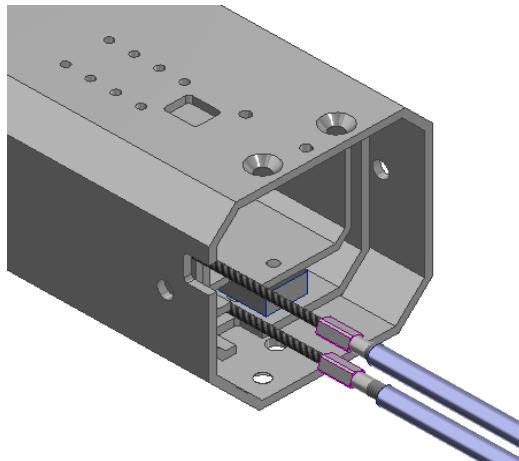
Remove the bracket (4th Mast) attached to the 3rd MAST. Use the screwdriver No.3. M8x16 Countsunk Screw...4 pieces



7.2.1.32

Remove the Hard-Lock NUT. After removing the Beacket (4th MAST), attach the JIG to WireRope1.

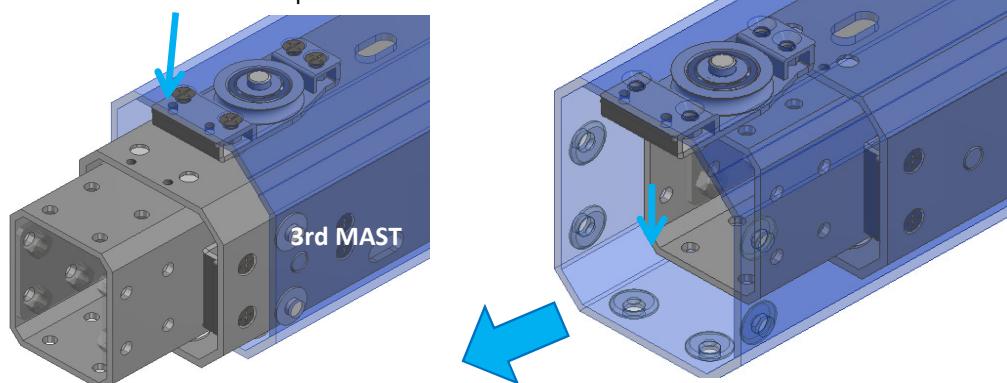
Hard-Lock Nut (M8) - 1 set



7.2.1.33

Remove the screws from the 3rd MAST bracket (Pully 2). Use a No. 3 screwdriver. Pull the 3rd Mast towards you to remove it.

Countsunk Screw M6x12...4 pieces

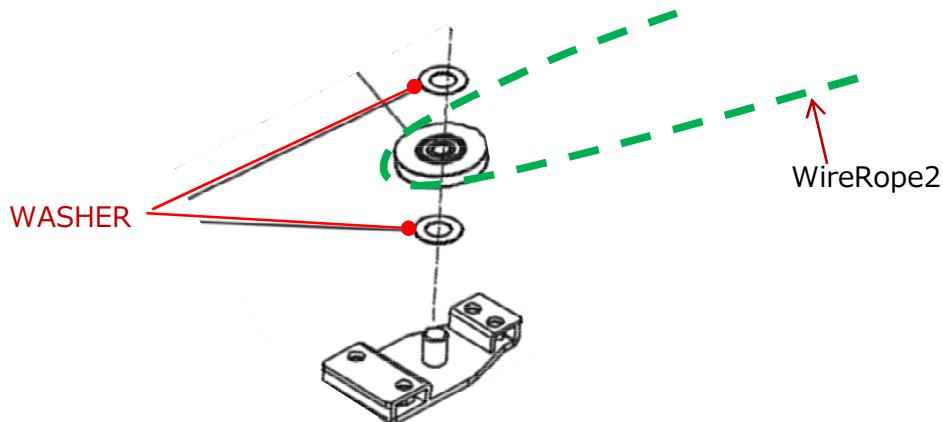


7. PARTS REPLACEMENT AND ASSEMBLY

7.2.1.34

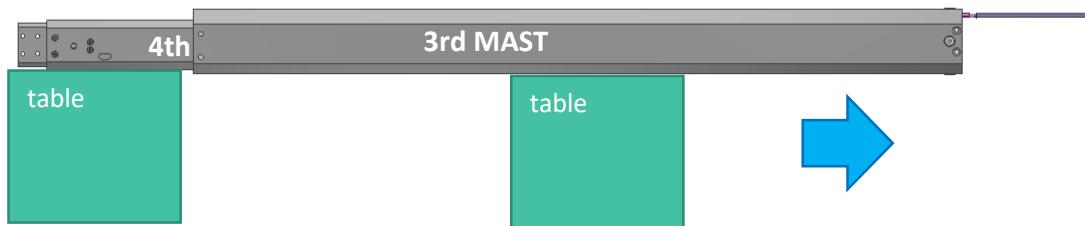
The bracket (Pully2) has a pulley and two washers. Leave the wire rope as it is.

!! Check that the WASHER is not left in the 3rd MAST!! Be sure to remove it.



7.2.1.35

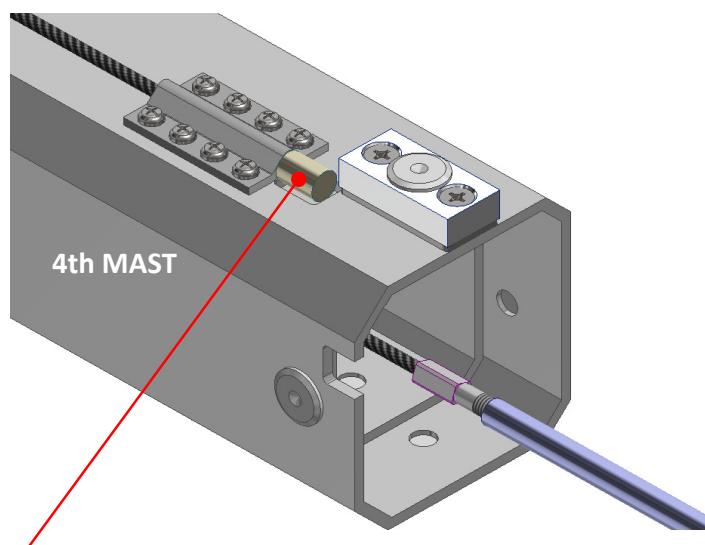
Remove the 3rd Mast.



7.2.1.36

Remove the Bracket (Wire) attached to the 4th MAST.

Be careful not to damage the M4 cross recess!!

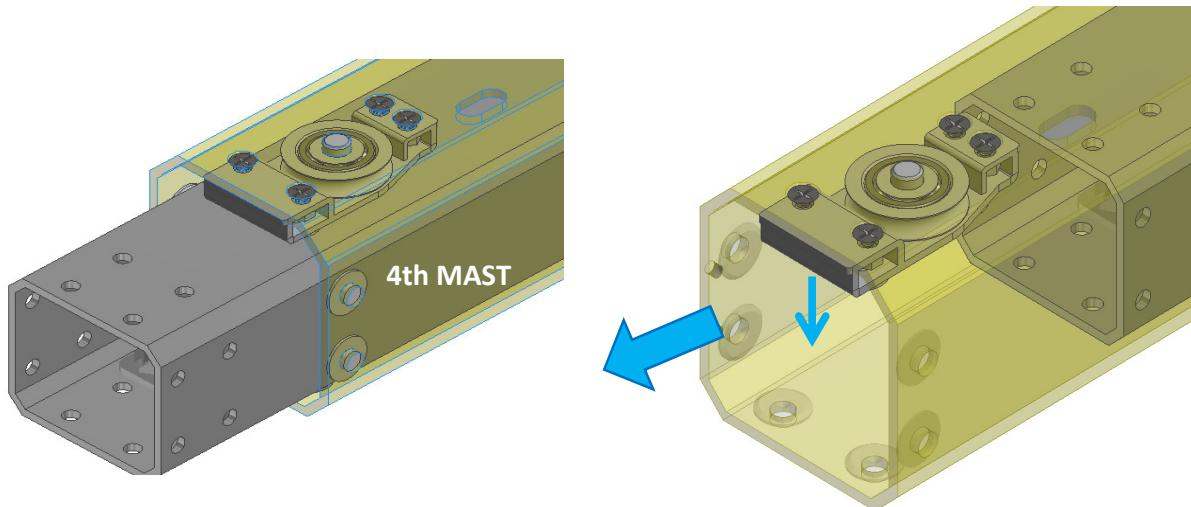


This WireRope is WireRope 2, which was connected to 2nd MAST and 4th MAST. If this WireRope2 breaks, replace it and put it back together.

7. PARTS REPLACEMENT AND ASSEMBLY

7.2.1.37

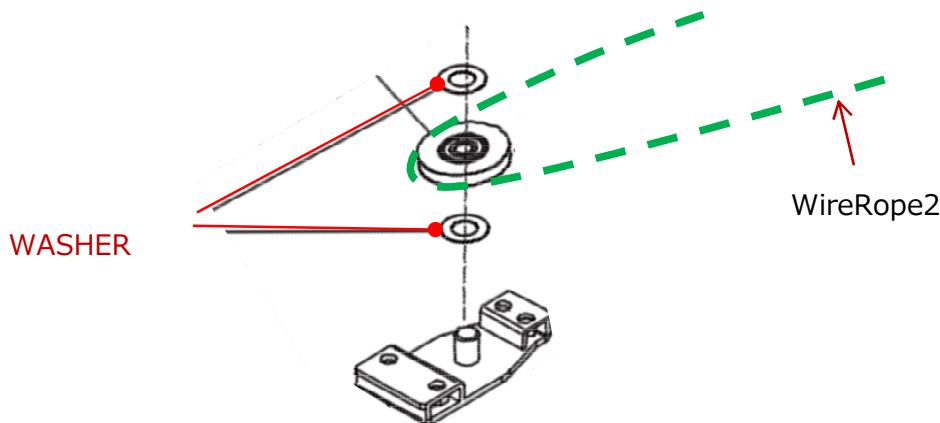
Remove the screws from the 4th MAST bracket (Pully 2). Use a No. 3 screwdriver. Pull the 4th Mast towards you to remove it. Countsunk Screw M6x12...4 pieces



7.2.1.38

The bracket (Pully2) has a pulley and two washers. Leave the wire rope as it is.

!! Check if the WASHER is still in the 4th MAST!! Be sure to remove it.



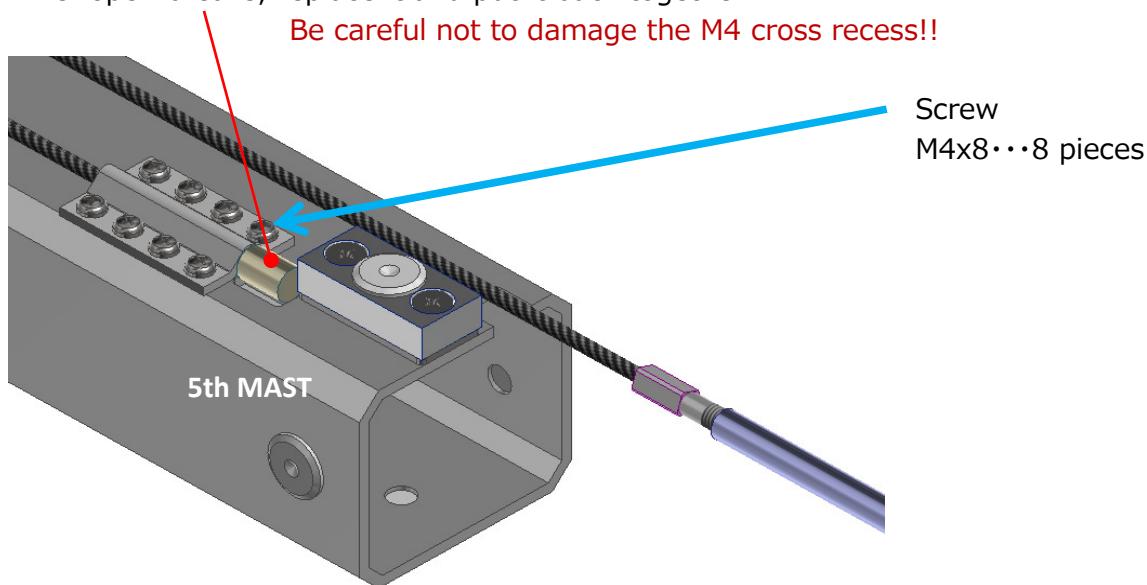
7.2.1.39

Remove the 4th MAST.



7. PARTS REPLACEMENT AND ASSEMBLY

This WireRope is WireRope 1, which was connected to 3rd MAST and 5th MAST.
If WireRope1 breaks, replace it and put it back together.



7. PARTS REPLACEMENT AND ASSEMBLY

7.2.2 Winch wire rope replacement

*Continued from what to do when the mast won't lower

*For products manufactured after April 2021

<Things to use>

- Ratchet or spanner 10
- Ratchet and spanner 13

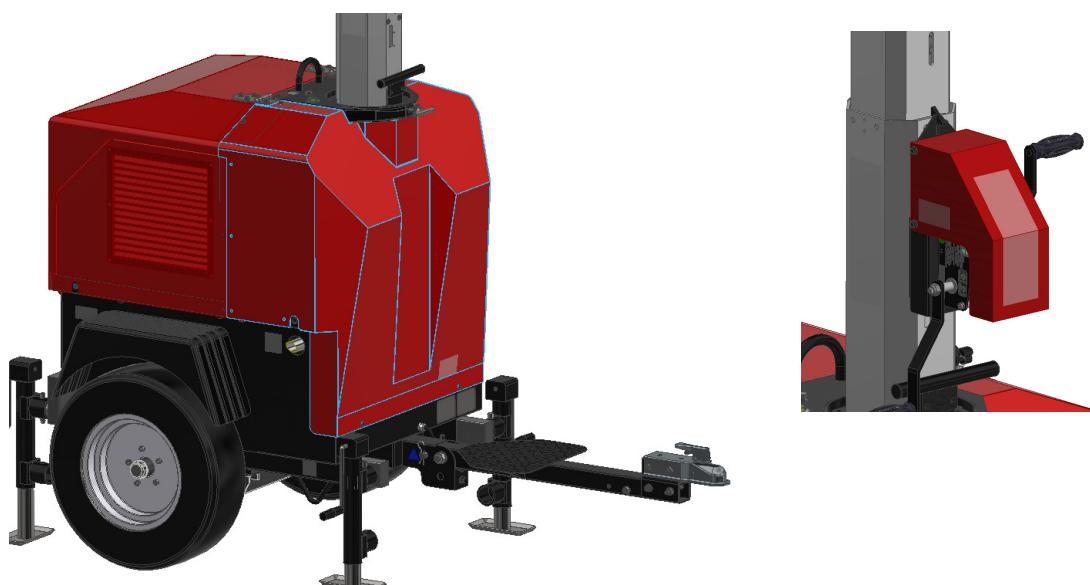
Ratchet 17

- Driver with a short handle

Methods

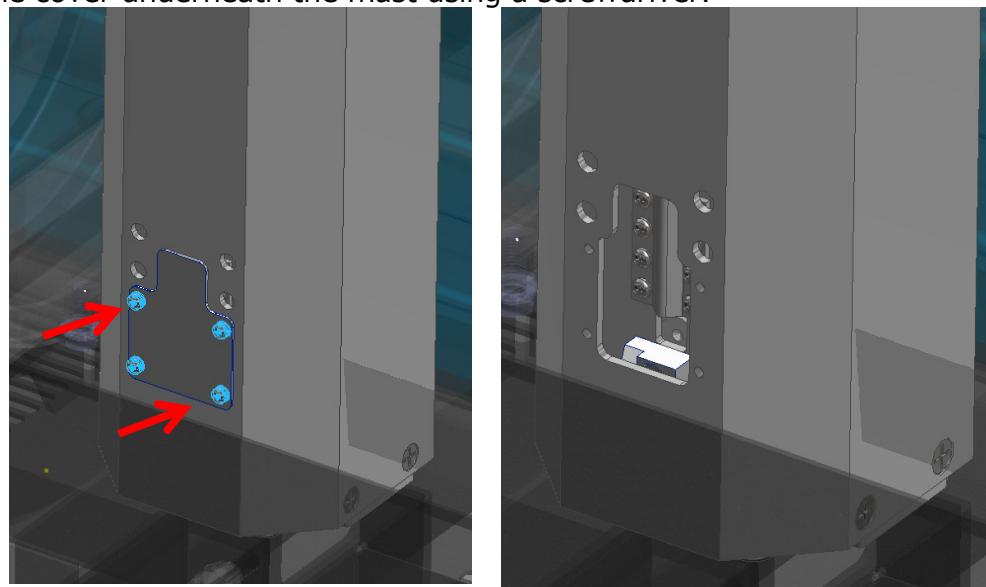
7.2.2.1

Remove the front cover. M6 flange bolt



7.2.2.2

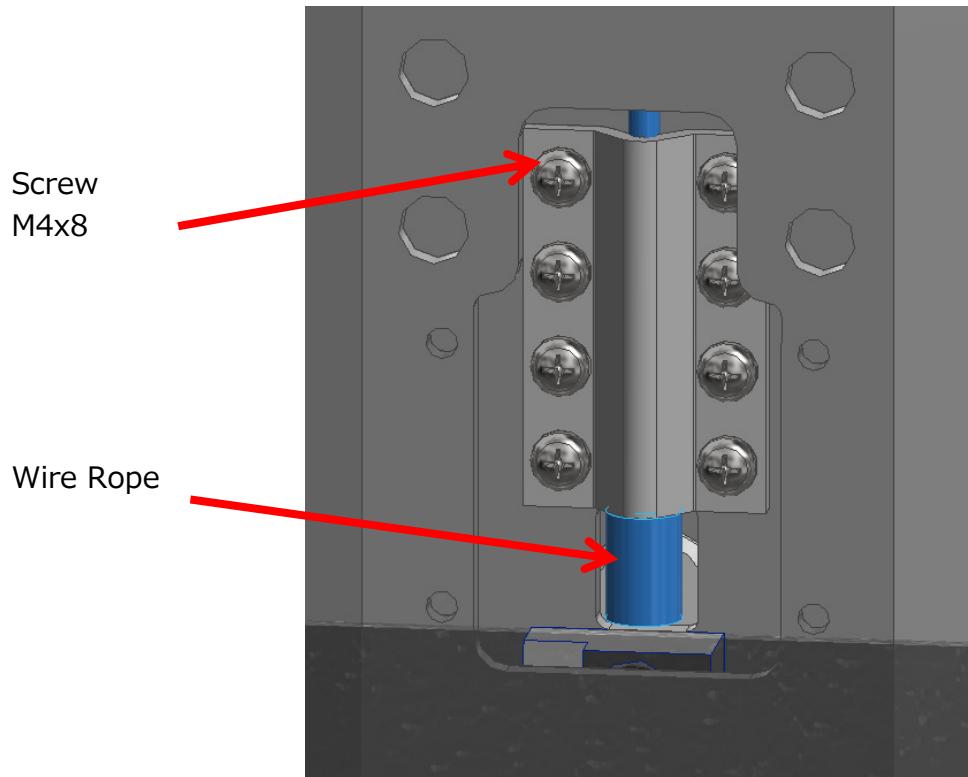
Remove the cover underneath the mast using a screwdriver.



7. PARTS REPLACEMENT AND ASSEMBLY

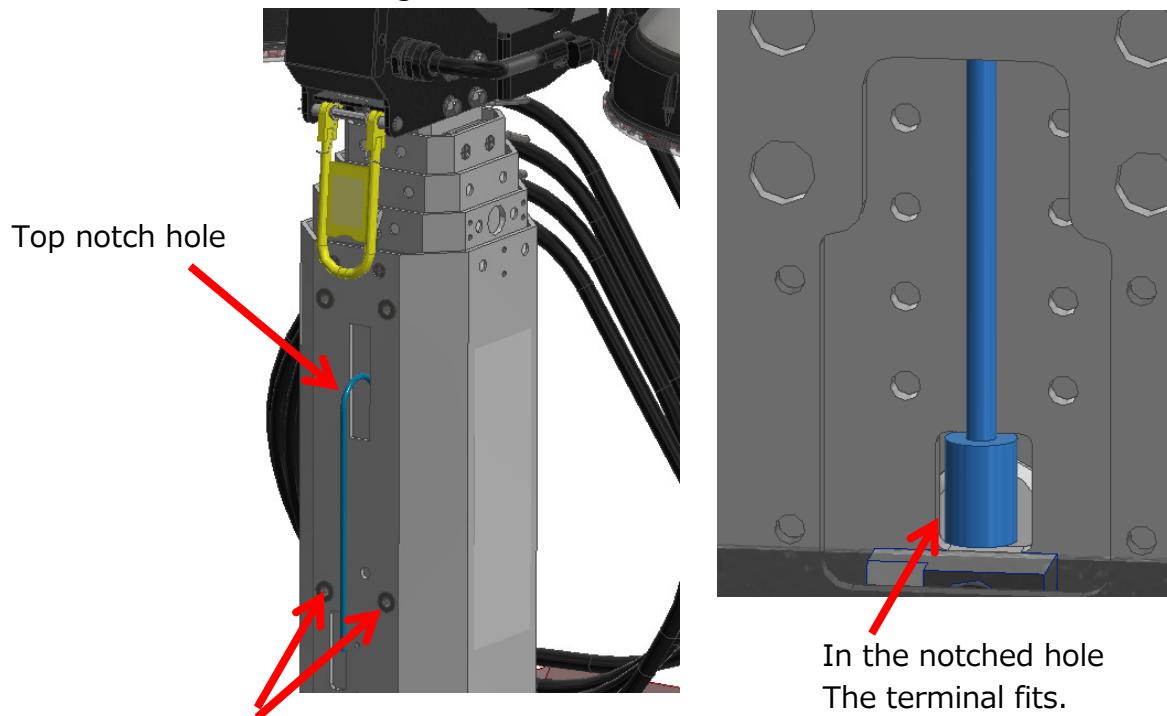
7.2.2.3

Remove the screws on the plate that secures the wire inside. Remove the wire rope.



7.2.2.4

Thread the new wire through.



Pass the wire between the insert nuts.

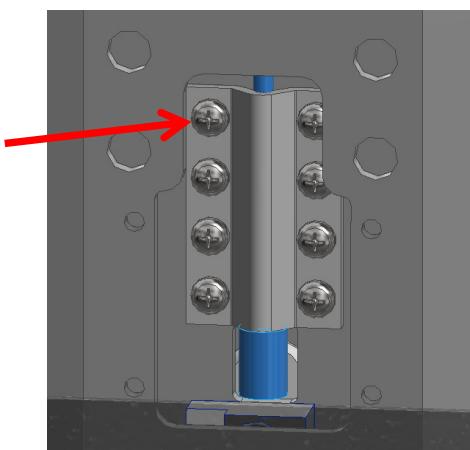
7. PARTS REPLACEMENT AND ASSEMBLY

7.2.2.5

Secure the wire rope.

Apply a small amount of LockTite to the screw and then attach the screw.

Screw
M4x8••8
pieces



Three Bond (1401B)
Or LOCTITE (243)
Apply to the tip of the screw



7.2.2.6

Remove the broken wire rope on the winch side.

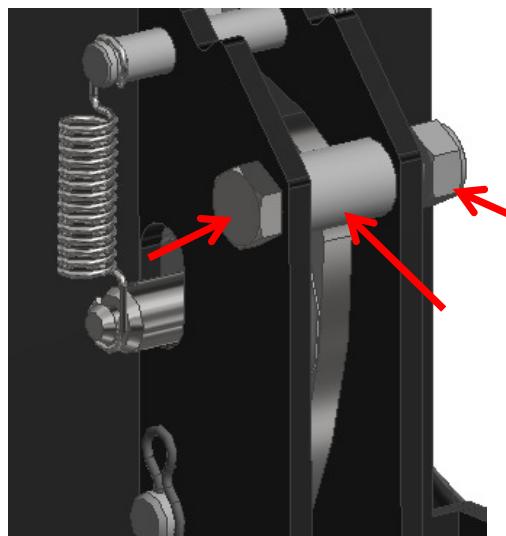
Loosen



7.2.2.7

Remove the bolt and spacer from the bracket (pully).

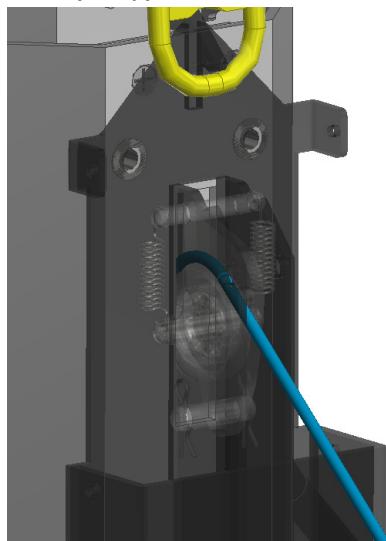
BOLTM8x40
NUT M8
Spacer



7. PARTS REPLACEMENT AND ASSEMBLY

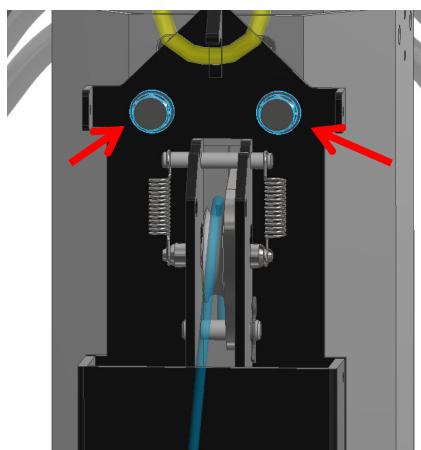
7.2.2.8

Place the Bracket (Pully) on the mast and pass the wire rope through the pulley.



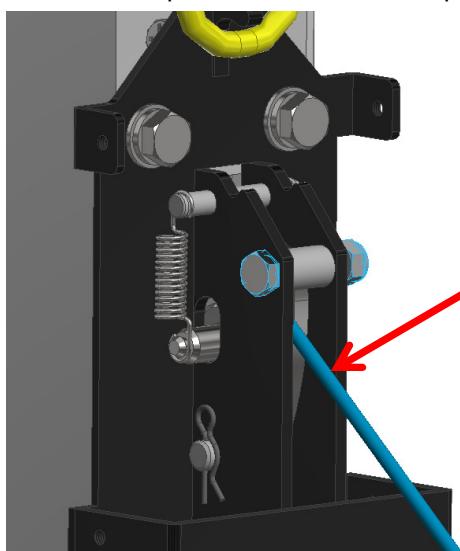
7.2.2.9

Secure temporarily with bolts.



7.2.2.10

Install the bolt and spacer removed in step 7.

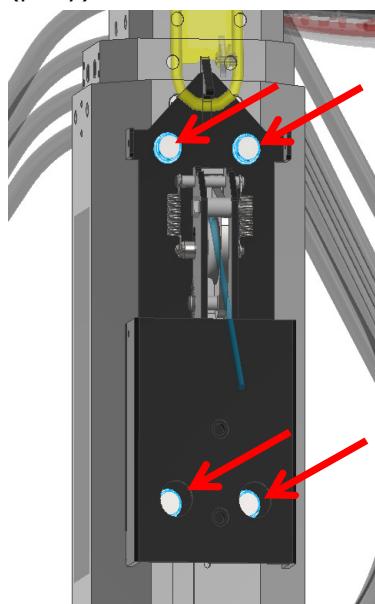


7. PARTS REPLACEMENT AND ASSEMBLY

7.2.2.11

Secure the bracket (pully) with a bolt.

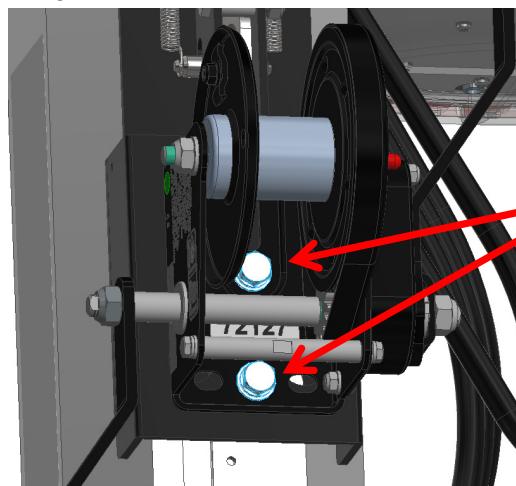
BOLT AY
M10x25
4 locations



7.2.2.12

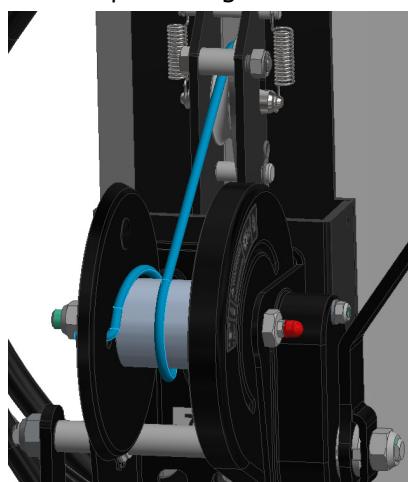
Install the winch.

BOLT AY
M10x25 2pcs



7.2.2.13

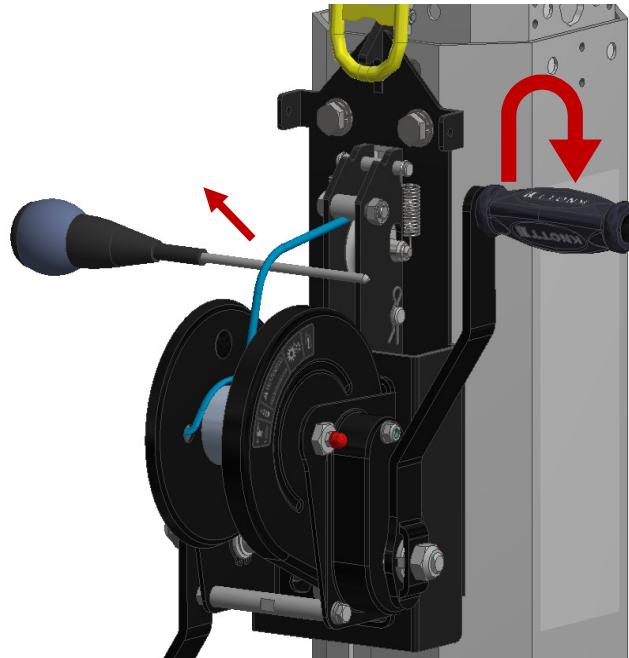
Pass the wire rope through and secure it.



7. PARTS REPLACEMENT AND ASSEMBLY

7.2.2.14

While pulling the WireRope towards you with the screwdriver, raise the winch and wind up the wire.



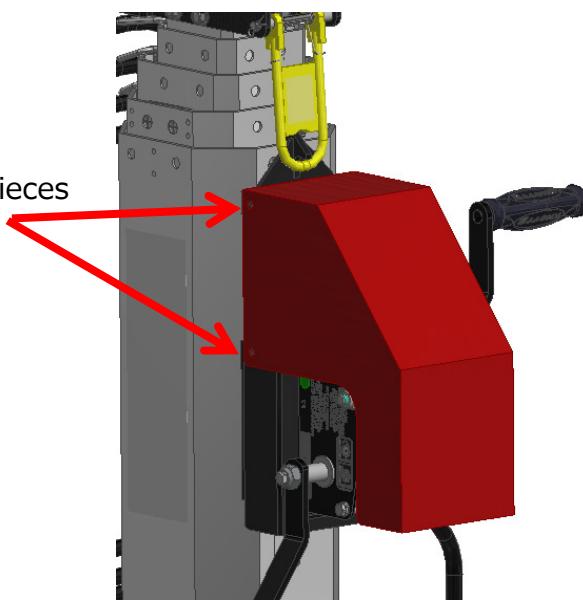
Wire Rope should be wrapped beautifully.



7.2.2.15

Place the winch cover on and tighten the screws.

Flange bolt
M6 x 10 - 4 pieces



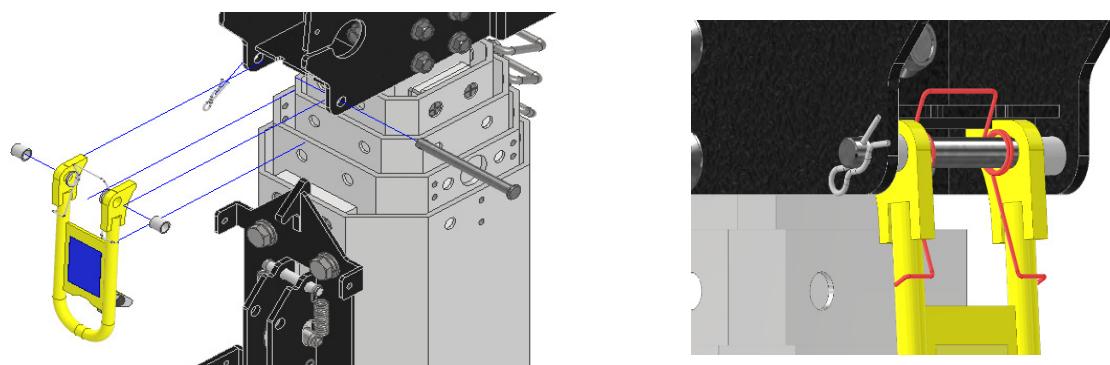
7. PARTS REPLACEMENT AND ASSEMBLY

7.2.3 Shackle replacement

- 7.2.3.1 Attach the PLATE (STOPPER) to the SHACKLE.
- 7.2.3.2 Apply LockTite to the low head bolts (M5).
- 7.2.3.3 Do not overtighten the Lock Nut (M5).
The Plate (Stopper) can move up and down.
- 7.2.3.4 Installation is as shown in the figure

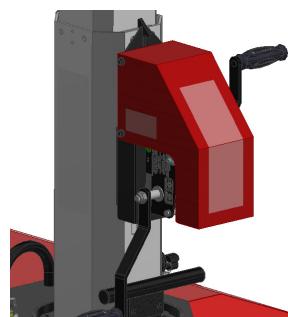


Note Cover the mast with something to prevent parts from falling inside the mast.



7.2.4 Winch Pulley replacement

- 7.2.4.1 Remove the winch cover. Bolt (M6)

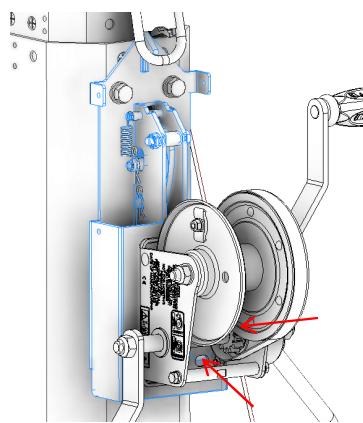


- 7.2.4.2 Remove the wire rope from the winch.
Loosen the screw and remove the wire.

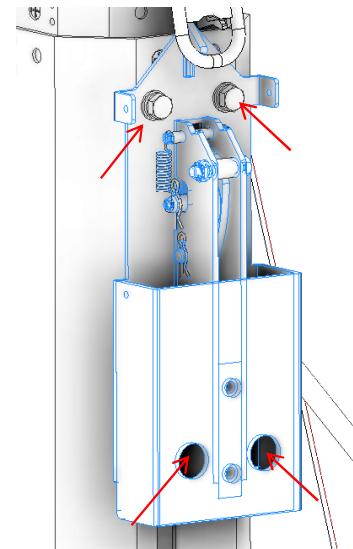
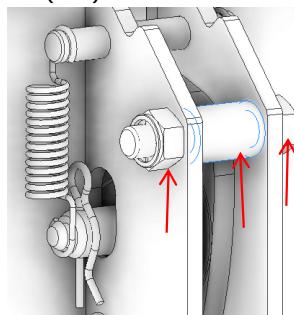


7. PARTS REPLACEMENT AND ASSEMBLY

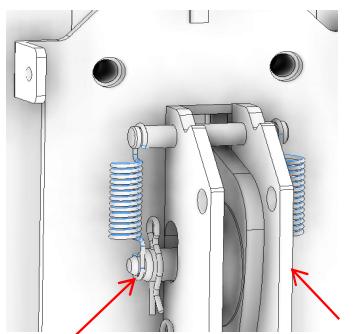
7.2.4.3 Remove the bolt (M10) that attaches the winch.



7.2.4.4 Remove the bolt (M8) that attaches the spacer.



7.2.4.5 Remove the bolt (M10) that attaches the bracket.



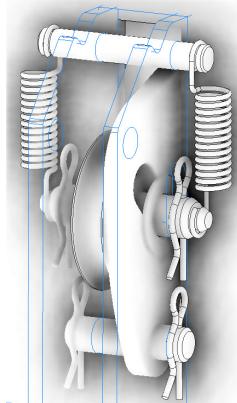
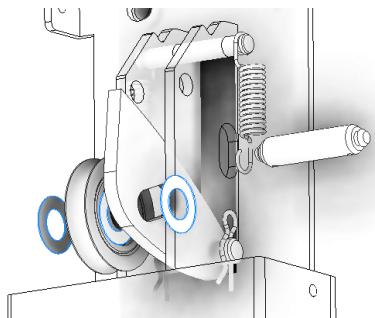
7.2.4.6 Remove the pulley side spring.

7. PARTS REPLACEMENT AND ASSEMBLY

7.2.4.7 Remove the pin to remove the Pully.

7.2.4.8 Apply grease to the pulleys and washers.

Pass the parts through the bracket in the following order: Washer, Pully, Washer, Plate (Stopper), and Washer, and secure them with pins.



7.2.4.9 Install the R pin.

Place the spring onto the pin.

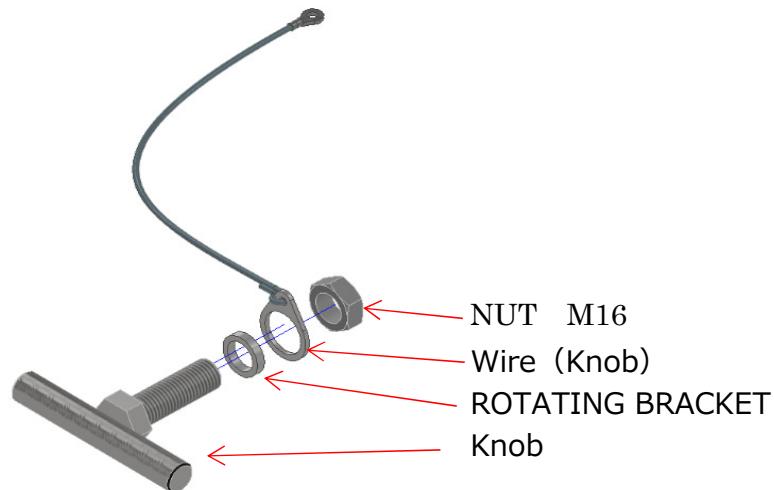
7.2.4.10 See below for assembly.

7.2.2.8 to 7.2.2.15

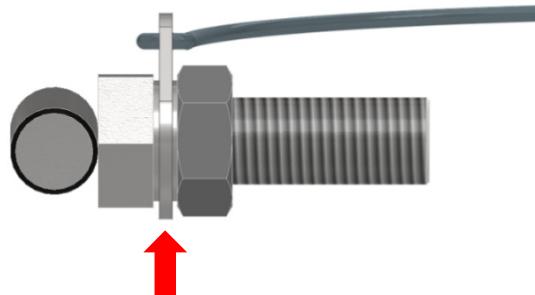
7. PARTS REPLACEMENT AND ASSEMBLY

7.2.5 Mast knob replacement

7.2.5.1 Install the parts in the order shown in the diagram.



7.2.5.2 Fix the metal plate with the wire attached so that it can rotate. Don't tighten it too much until it stops rotating.



7. PARTS REPLACEMENT AND ASSEMBLY

7.2.6 When the mast won't lower 1

What to do if the wire rope breaks

<Things you will need>

- Forklift that can lift 7m
- Two M6 bolts, 50-90mm long
- 2 climbing ropes of $\phi 5\text{-}\phi 6$, about 4m each
- '+driver
- Ratchet or spanner 10
- Ratchet with extension 17

Methods

7.2.6.1

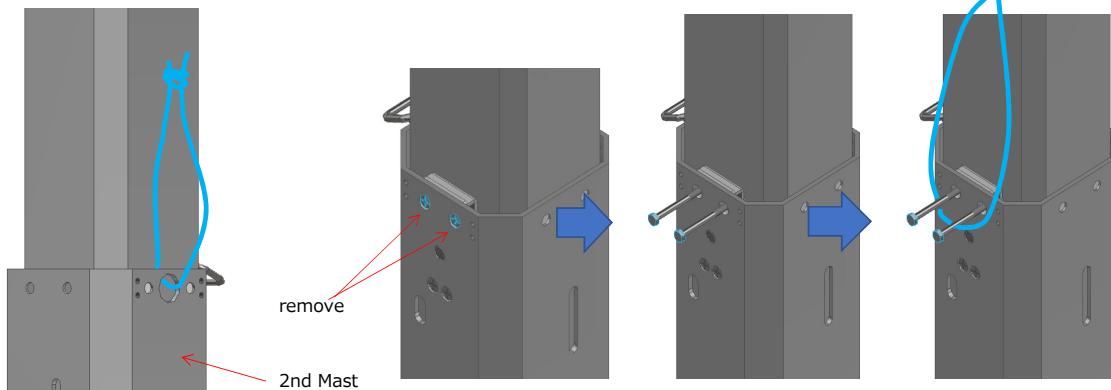
The LED lamp extends under the lamp to support the forklift and prevent it from falling.



7.2.6.2

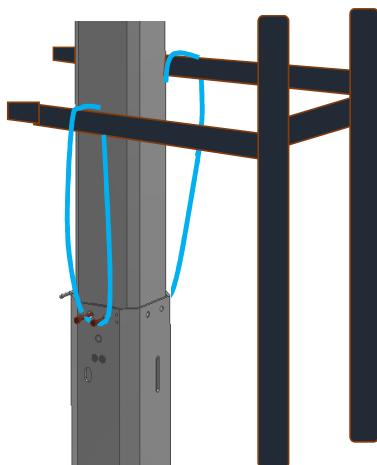
Pass the rope through the hole in the 2nd mast and make a loop. If you don't have one, you can leave it out.

Remove the two screws attaching the pulley on the other side and install two M6x60mm (front and rear) screws. Attach the rope.



7.2.6.3

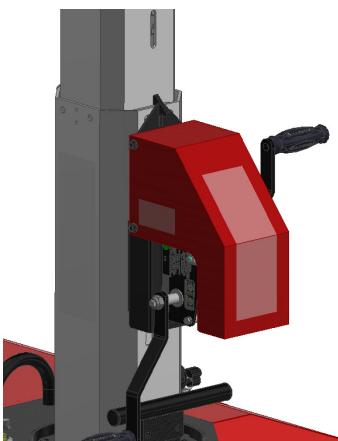
Lower the forklift 1 to the mast 2. Place the rope around the forklift claws and pull it slightly upwards (to give it tension).



7. PARTS REPLACEMENT AND ASSEMBLY

7.2.6.4

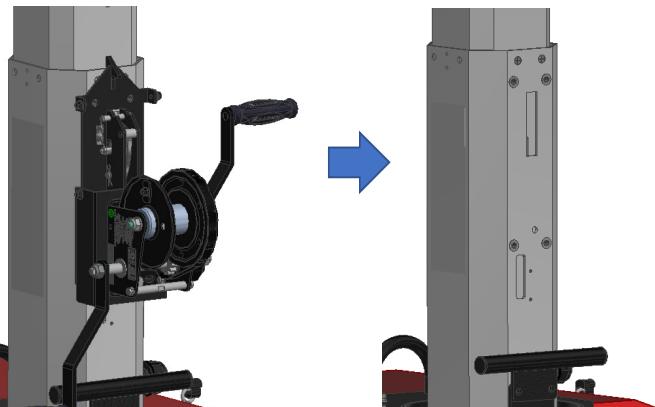
Remove the winch cover. FLANGE BOLT M6x10...4 pieces



7.2.6.5

Remove the winch and bracket from the mast.

See 7.2.4.2 through 7.2.4.5



7.2.6.6

Slowly lower the forklift (the mast will lower).

7. PARTS REPLACEMENT AND ASSEMBLY

7.2.7 When the mast won't lower 2

Something is biting and it won't come down
The winch does not move

7.2.7.1

Level the product. Try shaking the mast. The wire is not broken... If it still does not move, remove the entire mast while it is stretched.

Be careful with your balance as the light is still on!!

7.2.7.2

Hang the lamp stand using a crane or similar.



7.2.7.3

Remove the front cover. M6 flange bolt



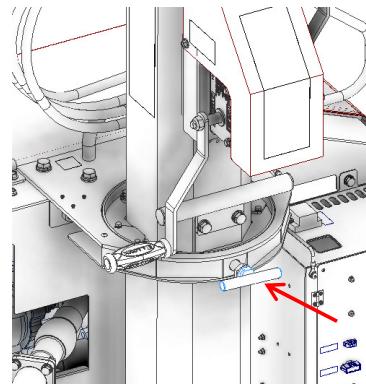
7.2.7.4

Disconnect the earth wire and connector of the lamp cable.



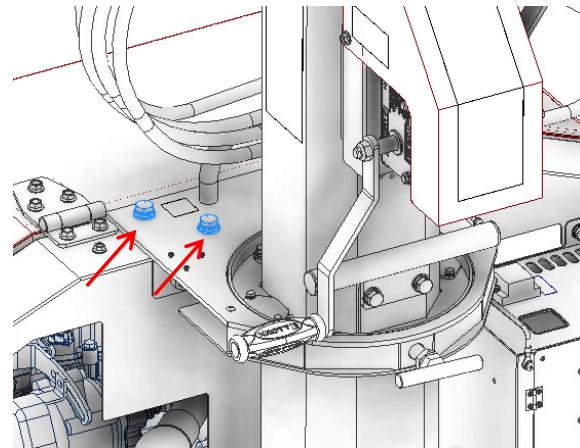
7. PARTS REPLACEMENT AND ASSEMBLY

7.2.7.5 Tighten the guide mast knob securely.



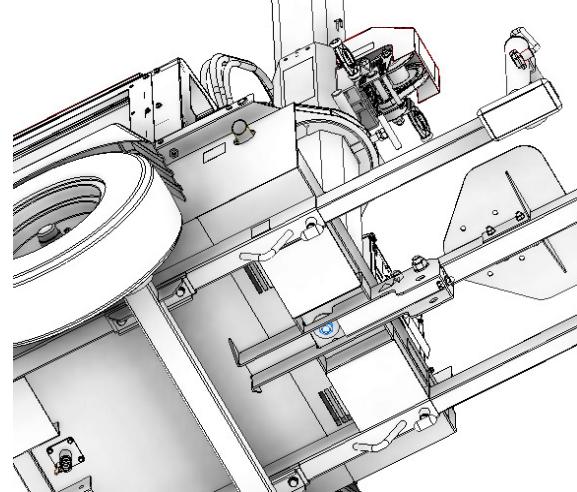
7.2.7.6

Remove the guide mast bolt. M12x25



7.2.7.7

Remove the nut at the bottom of the mast. M20



7.2.7.8

Lift it straight up with a crane and lower it slowly.

For disassembly, see 7.2.1.12 onwards.

7. PARTS REPLACEMENT AND ASSEMBLY

7.3 Light Tower

7.3.1 Jack replacement

7.3.1.1 Remove the pin and the jack will come off.
Note Replace the jacks one by one.

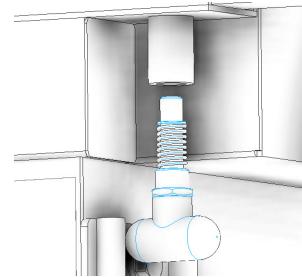
7.3.2 Outrigger pins, outrigger replacement

7.3.2.1 Lift the pull pin and pull the outrigger to remove it.
Note Replace the outriggers one by one.
Note that the L and R outriggers have different shapes.

7.3.2.2 Remove the hexagonal end of the pull pin with a wrench.
Face width 22

7.3.2.3 When installing a new pull pin, apply glue to the nut part of the frame.
Please use a glue that will not affect the plastic parts.
Recommended ThreeBond 1401

7.3.2.4 Screw in the pin and tighten with a wrench.



7.3.3 Axle replacement

7.3.3.1 Place the jack in position and extend it until the tire is lifted off the ground.
7.3.3.2 Remove the tire.
7.3.3.3 Lift the unit with a forklift.
7.3.3.4 Remove the axle bolts and replace them.
Be careful when installing the axle as it has a specific direction.
7.3.3.5 Torque Reference

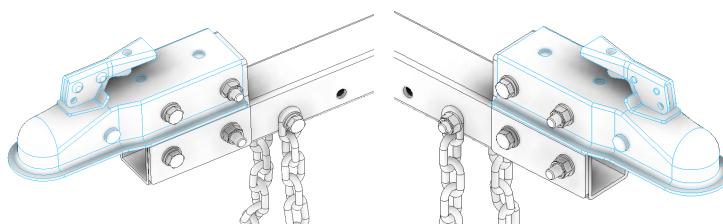
7.3.4 Tire change

7.3.4.1 Remove the tire. See 7.3.3.1
7.3.4.2 Mounting the tires. Nut torque 95N·m

7.3.5 Coupler and chain replacement

7.3.5.1 Please refer to the illustration for installation.

Apply automotive bearing grease

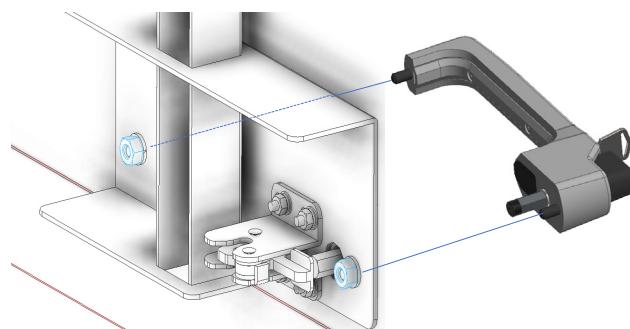


7.3.6 Gas spring replacement

7.3.6.1 Insert a stick or something similar into the back cover to support it.
7.3.6.2 Remove the two pins from the gas spring and replace them.

7.3.7 Handle replacement

7.3.7.1 Remove the two nuts (M6) and spring washers from the back cover.
Face width 10 Spanner or ratchet



7. PARTS REPLACEMENT AND ASSEMBLY

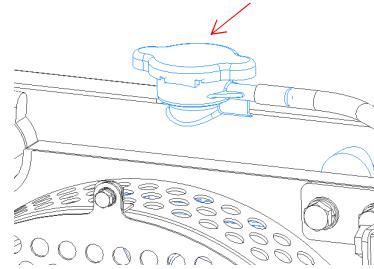
7.4 Engine

7.4.1 Radiator replacement

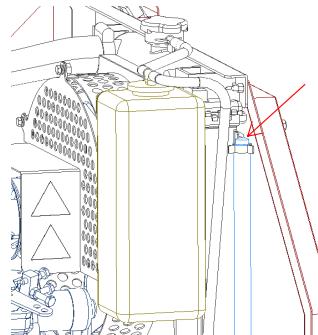
Note The coolant is hot immediately after the engine is stopped. Touching it may cause burns, so wait until the temperature has cooled to a safe level (at least 30 minutes after the engine has been stopped) before working on it.

7.4.1.1 Open the back cover.

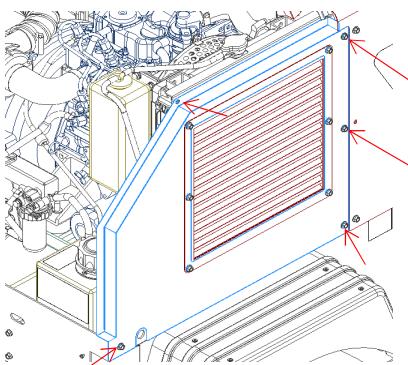
Loosen the radiator cap and let air in.



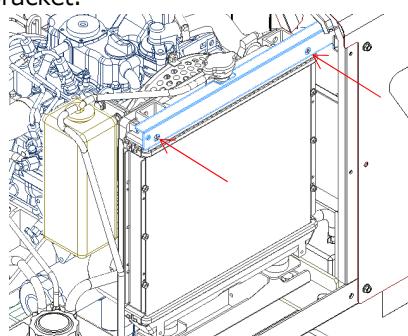
7.4.1.2 Remove the bolts and hose clamps shown in the illustration, and drain the radiator fluid.



7.4.1.3 Remove the side cover R. 5 screws

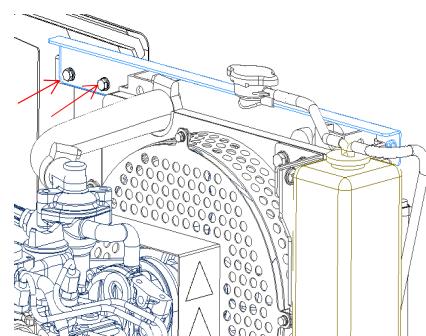


7.4.1.4 Remove the two flat head screws from the bracket.

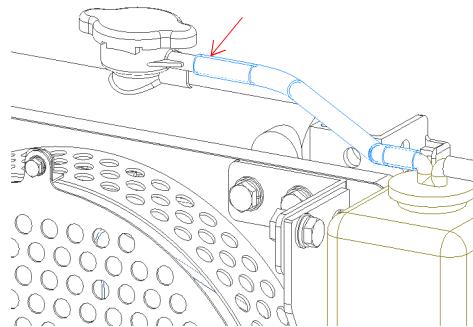


7. PARTS REPLACEMENT AND ASSEMBLY

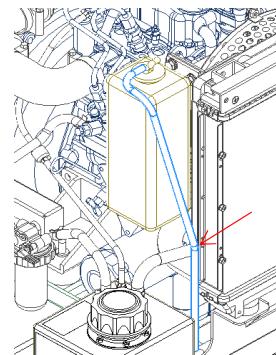
7.4.1.5 Remove the two screws inside the bracket.



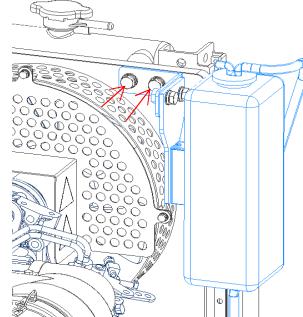
7.4.1.6 Remove the hose connecting the radiator tank and the radiator.



7.4.1.7 Remove the band securing the radiator tank hose.

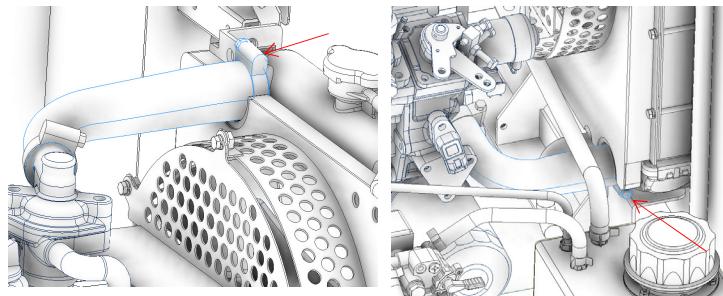


7.4.1.8 Remove the two bolts that secure the radiator tank.

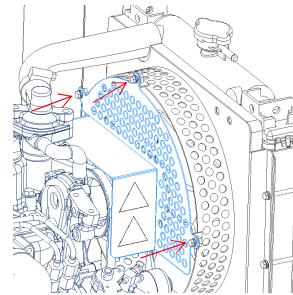


7. PARTS REPLACEMENT AND ASSEMBLY

7.4.1.9 Loosen the upper and lower hose clamps and remove the hose from the radiator.

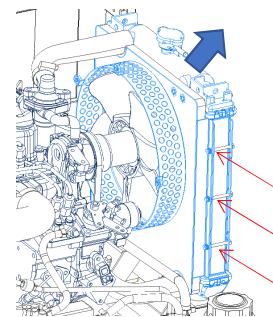
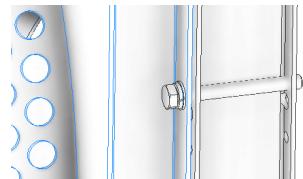


7.4.1.10 Remove the three bolts from the fan cover.



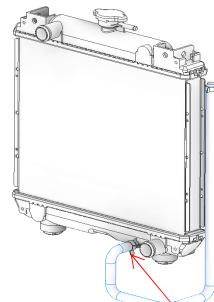
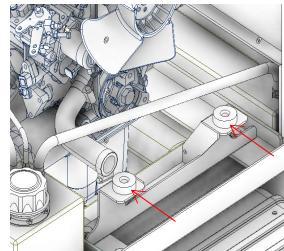
7.4.1.11 Lift the radiator diagonally upwards to remove it.
Remove the six bolts (M5) from the black cover.

Recommen 1.5N·m



7.4.1.12 Remove the radiator rubber cushion and hose.
If the cushion rubber is deteriorated, replace it.

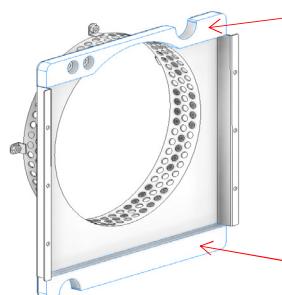
Cushion rubber part number
E-0002080-00



7.4.1.13 Replace the sponges on the top and bottom of the radiator if they have holes or are otherwise worn out.

Note

Sponge Part Number



7.4.1.14 Install the radiator in the reverse order.

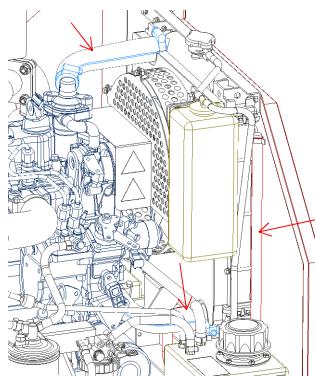
Note Make sure to insert the hoses all the way in.

7. PARTS REPLACEMENT AND ASSEMBLY

7.4.2 Radiator hose replacement

7.4.2.1

See 7.4.1.9



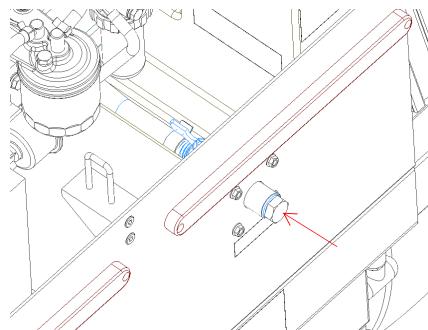
7.4.3 Engine replacement

7.4.3.1 Turn off the fuel cock and use up all the fuel in the engine.

Note The coolant and engine oil are hot immediately after the engine is stopped. Touching them may cause burns, so wait until they have cooled to a safe temperature (at least 30 minutes after the engine has been stopped) before working on them.

7.4.3.2 Drain the engine oil.

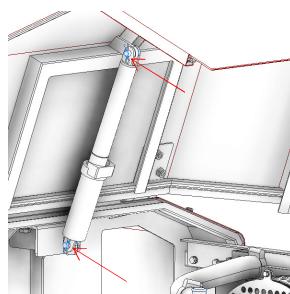
Remove the bolt (M16) and open the cock.



Note The coolant and engine oil are hot immediately after the engine is stopped. Touching them may cause burns, so wait until they have cooled to a safe temperature (at least 30 minutes after the engine has been stopped) before working on them.

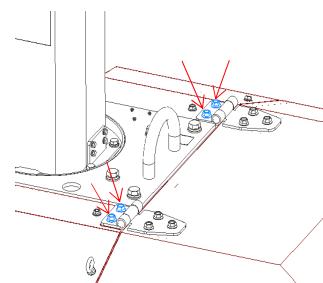
7.4.3.3 Drain the radiator fluid (see 7.4.1.2-3).

7.4.3.4 Remove the pin on the back of the back cover and remove the gas spring.



7.4.3.5 Remove the four bolts on the top of the back cover to remove the back cover.

Note The work should be done by two people.



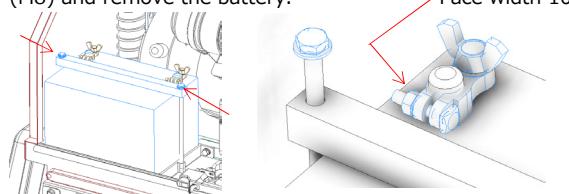
7. PARTS REPLACEMENT AND ASSEMBLY

7.4.3.6 Remove the battery.

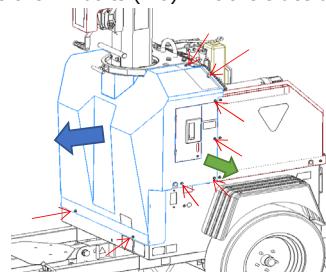
Loosen the nut on the positive pole and remove the cable. Apply insulating tape to the pole.

Loosen the negative nut and remove the cable.

Loosen the bolt (M8) and washer (M8) and remove the battery.



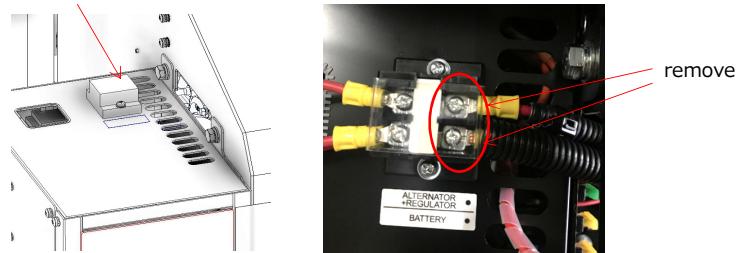
7.4.3.7 Remove the front cover. Remove the 14 bolts (M6). Lift the sides and remove it straight out.



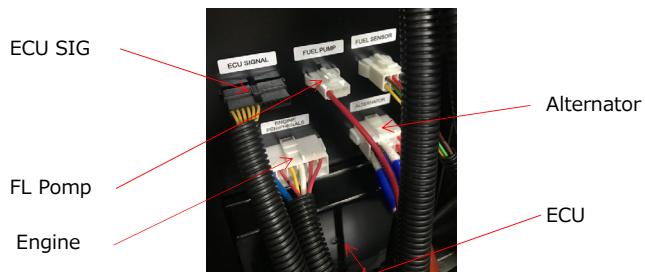
7.4.3.8 Remove the side cover R and remove the radiator.

See 7.4.1.4 to 7.4.1.12.

7.4.3.9 Disconnect the wire on the engine side of the terminal block on the control box.



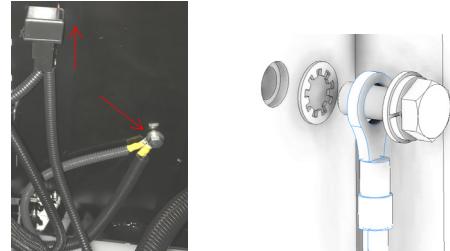
7.4.3.10 Remove the four connectors and the ECU cable from the back of the generator. Press the protrusions on the connectors and pull them. The ECU is hard, so you can remove it with the bolts.



7.4.3.11 Remove the bolt (M8) and washer (M8)

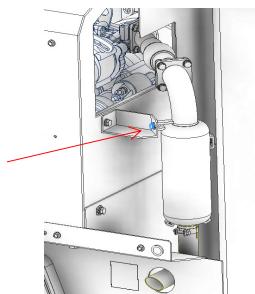
The two earth wires come loose.

Lift the 50A fuse box up and remove it.



7. PARTS REPLACEMENT AND ASSEMBLY

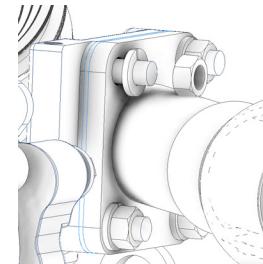
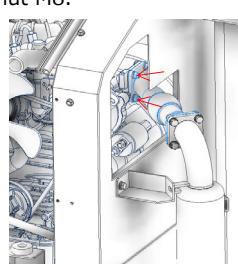
7.4.3.12 Remove the M6 screw from the muffler.



7.4.3.13 Attached to the engine side of the muffler

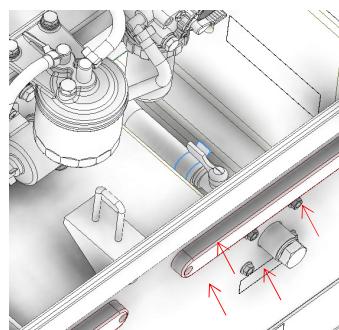
Remove the gasket, spring seat side (M8), and nut M8.

If the packing is cracked, replace it.
E-0002095-00



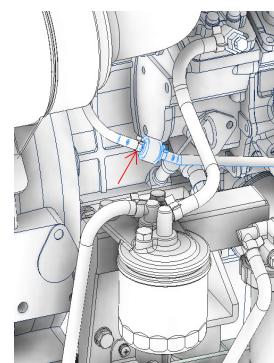
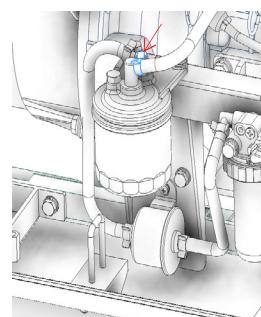
7.4.3.14 Remove the engine oil hose clamp.

Remove the four outer bolts (M6).

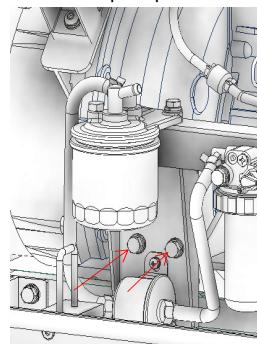


7.4.3.15 Remove the hose clamp from the fuel filter and pull out the hose.

Remove one side of the hose clamp from
the check valve and pull out the hose.



7.4.3.16 Remove the bolts (M10) from the bracket that mounts the pump.

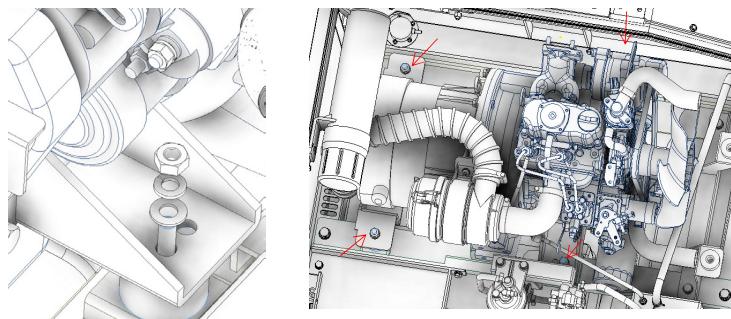


7. PARTS REPLACEMENT AND ASSEMBLY

7.4.3.17 Cut the band of the corrugated tube attached to the generator.

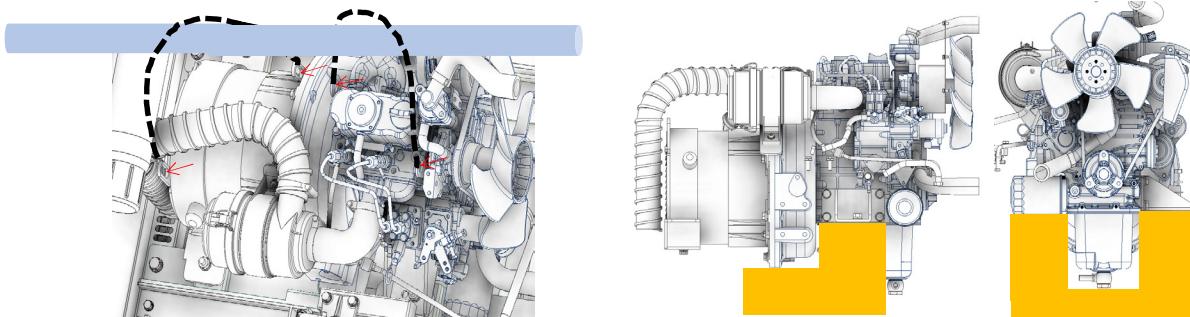


7.4.3.18 Remove the four anti-vibration rubber nuts (M10).



7.4.3.19 Attach a carabiner or similar to the engine and generator and slowly lift them up.

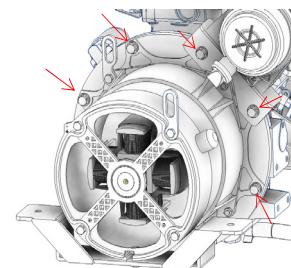
Place the oil pan on a pallet so that it floats.



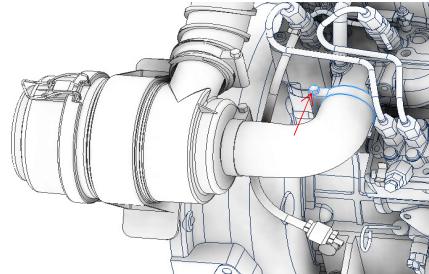
7.4.3.20 Remove the generator and the 8 bolts (3/8-30).

Earth and battery (negative) cables,
The air cleaner bracket will come off.

[When installing]
Tightening torque: 35N·m



7.4.3.21 Remove the air cleaner hose clamp. The air cleaner set will come off.

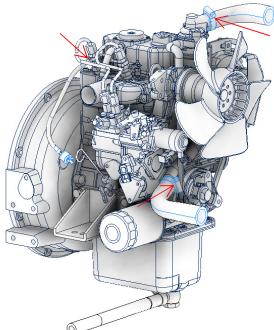


7. PARTS REPLACEMENT AND ASSEMBLY

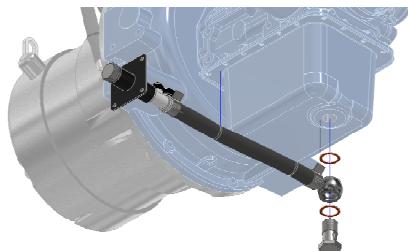
7.4.3.22 Disconnect the ECU and battery (positive) cable.



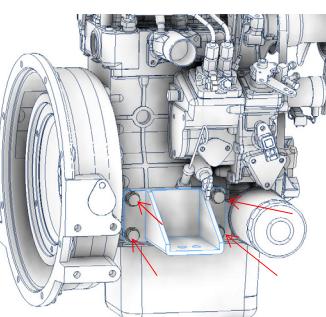
7.4.3.23 Remove the three hoses.



7.4.3.24 Remove the banjo bolt from the oil tank.



7.4.3.25 Remove the bracket (engine).
Fine bolts (M10) 8 places

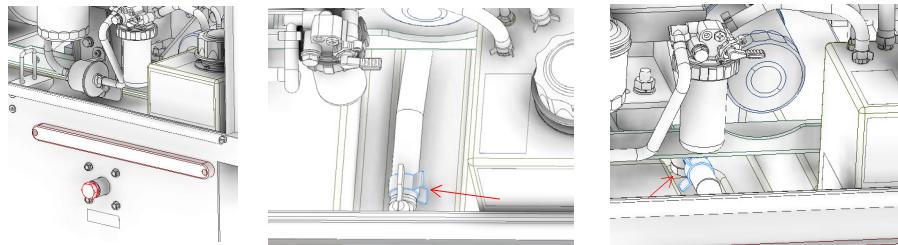


7.4.3.26 Now the engine is out.
To install the engine, follow the steps in reverse.

7. PARTS REPLACEMENT AND ASSEMBLY

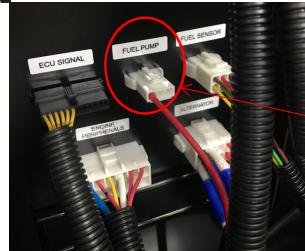
7.4.4 Oil hose replacement

- 7.4.4.1 Remove the bolts, open the cock and drain the engine oil.
- 7.4.4.2 Remove the two hose clips. Replace the hose.



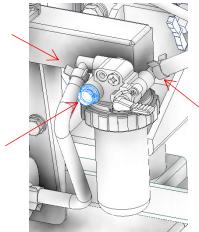
7.4.5 Fuel pump replacement

- 7.4.5.1 Empty the fuel or turn off the water separator cock. see 7.4.3.1
- 7.4.5.2 Remove the two screws (M5) that stop the pump. The negative wire is also connected at the bottom. Remove the connector.
- 7.4.5.3 When replacing the pump cable, remove the connector on the back of the generator. Cut and remove the band that secures the cable.
- 7.4.5.4 Now the fuel pump is removed. Install the fuel pump in reverse order.



7.4.6 Water Separator Replacement

- 7.4.6.1 Remove the bolt (M8).
- 7.4.6.2 Remove the hose.



Install the water separator in the reverse order.

7.4.7 Fuel hose replacement

- 7.4.7.1 Turn off the water separator cock, start the engine and use up all the fuel. Note The coolant and engine oil are hot immediately after the engine is stopped. Touching them may cause burns, so wait until they have cooled to a safe temperature (at least 30 minutes after the engine has been stopped) before working on them.

Note Hoses and rubber products will age even if the engine is not used. Please replace it according to the engine's regular inspection sheet. Refer to the Operator's Manual



- 7.4.7.2 Cut the band with pliers

- 7.4.7.3 While holding the hose clamp with your fingers, move it inward to remove the hose. Replace it with a new one.

Note If the hose on the tank side is difficult to remove, use pliers or something similar to cut it off. If you pull it too hard, the nipple may come off and you will have to replace the entire tank.

- 7.4.7.4 Bleed the engine when it is running. See Operator's Manual

7. PARTS REPLACEMENT AND ASSEMBLY

7.4.8 ECU replacement

7.4.8.1 Be sure to remove the battery.

Note Do not place tools or touch the battery while working on it, as this may cause a short circuit.

7.4.8.2 Remove the screw (M6).

7.4.8.3 Press the protrusion on the connector and pull downward to remove the cable.

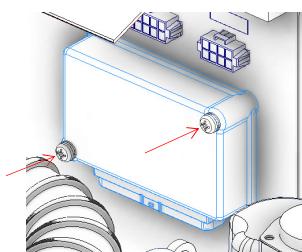
7.4.8.4 To replace the cable, you must remove the front cover.

See 7.4.3.9

7.4.3.7

7.4.3.22

7.4.8.5 Install the ECU in the reverse order.



7. PARTS REPLACEMENT AND ASSEMBLY

7.4.9 Power generator replacement

7.4.9.1 Refer to the engine replacement procedure.

See 7.4.3.1 to 7.4.3.20

7.4.3.22 There is no need to disconnect the ECU cable.

7.4.9.2 Separate the new power generator.

E-AL00002-00

Use a bearing puller.

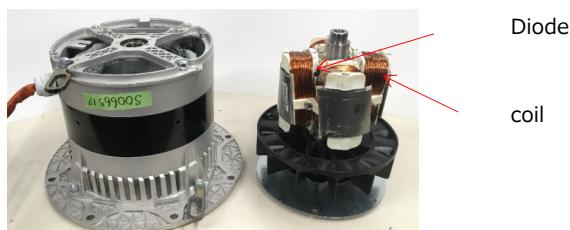


7.4.9.3 Install the bearing puller as shown in the illustration.

Tighten the bolt on the top of the bearing puller and separate it into rotor and stator sides.



The stator and rotor are separated.



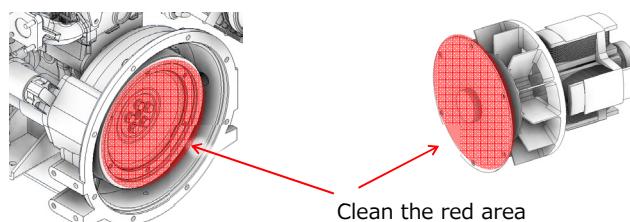
Note When installing the bearing puller, be sure to install it so that the tips of the claws do not interfere with the bearings and cause damage.

Note Be careful not to damage the alternator coil and diodes.

Note When handling the alternator, be careful not to damage the engine mounting surface.

7.4.9.4 Install the rotor.

Clean the mounting surface.



Note Be careful not to damage the alternator coil and diodes.

Note The work should be carried out by two or more people.

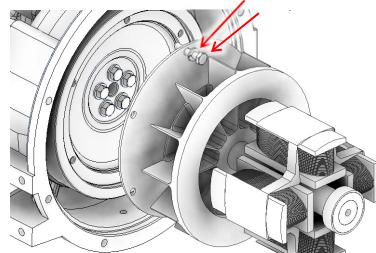
7. PARTS REPLACEMENT AND ASSEMBLY

7.4.9.5 Install the rotor onto the engine.

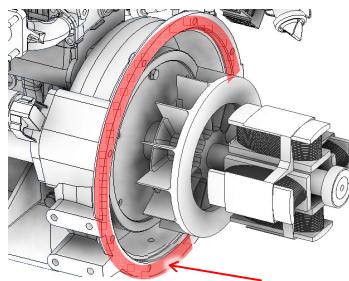
Bolts (5/16-3/4in) 6 places
Spring washer (M8)
Tightening torque: 21N·m

Note Tighten in diagonal order.

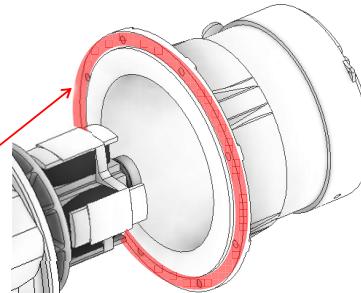
Note Be careful not to damage the alternator coil and diodes.



7.4.9.6 Use parts cleaner and a rag to clean the mounting surfaces on the engine and stator sides.



Clean the red area



7.4.9.7 Temporary fixing of the stator

Cover the rotor with the stator.

Dedicated jig and finger-tighten the bolts.

Align the screw holes on the engine and stator.

Tighten the nut with the tool until there is no gap between the engine and the stator.

Dedicated jig

Bolt M10 x 100

Washer

Large washer

Nut M10

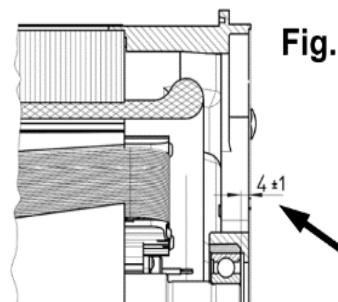
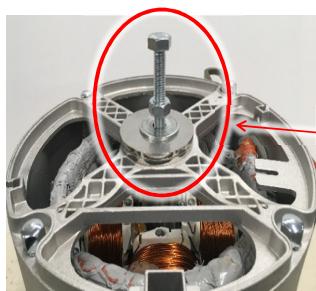


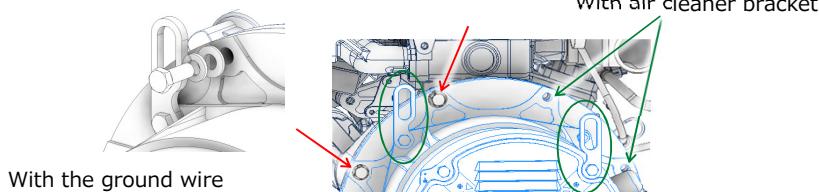
Fig. 5

7. PARTS REPLACEMENT AND ASSEMBLY

7.4.9.8 Install the engine and stator.

The installation direction is as shown in the figure.

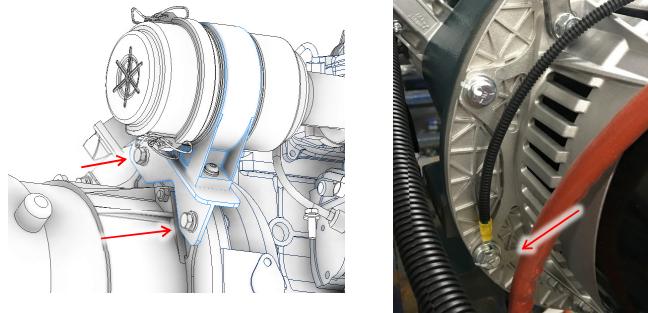
Bolt 3/8-30
Spring washer M10
Washer M10
Eight locations each



7.4.9.9 Install the air cleaner bracket

The installation direction is as shown in the figure.

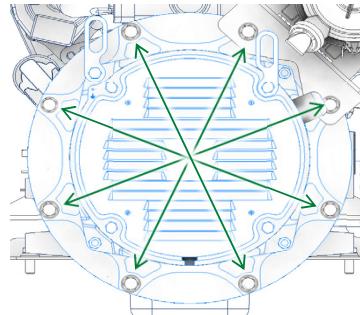
Attach the ground wire together.



7.4.9.10 Tighten the bolts in diagonal order.

Note Tightening torque: 35N·m

Note Pay attention to the installation direction



7.4.9.11 For how to mount the engine, see 7.4.3.

7.4.10 Capacitor replacement

7.4.10.1 Be sure to remove the battery.

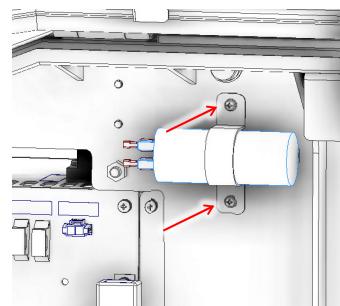
Note Do not place tools or touch the battery while working on it, as this may cause a short circuit.

7.4.10.2 The capacitor is located at the back of the power generation unit.

Remove the screw (M4).

You can remove it by removing the connector and replace it.

Installation is done in reverse order.



7. PARTS REPLACEMENT AND ASSEMBLY

7.5 Tank

7.5.1 Oil tank level sensor replacement

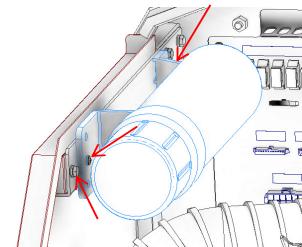
7.5.1.1 Please remove the battery.

Note same

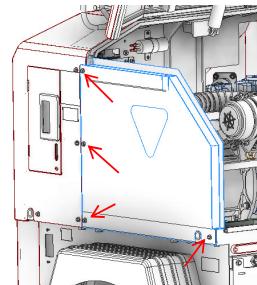
7.5.1.2 Remove the cover of the Document tool.

Remove the two screws (M5) that attach the Document tool.

Remove the bolts (M6) that secure the side cover.

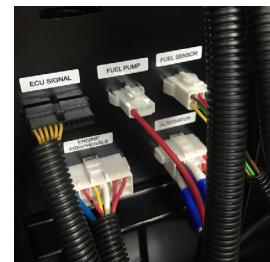


7.5.1.3 Remove the side cover L.



7.5.1.4 Disconnect the cable.

Remove the connector while pressing the protrusion.



7.5.1.5 Remove the oil tank level sensor bolt (M5).

7.5.1.6 Oil tank level sensor installation

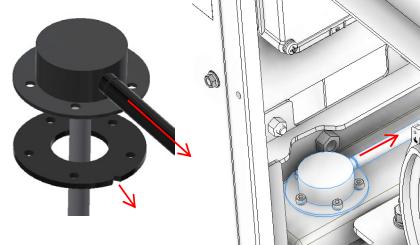
Pass the included gasket through the fuel sensor.

Align the notch so that it faces the cable side.

Install the small head bolts (M5x12) in five places.

The installation direction is

As shown in the figure



7.5.1.7 Repeat procedure in reverse from 7.5.1.4.

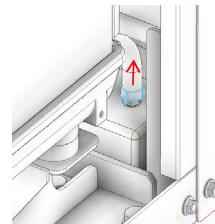
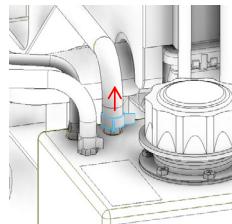
7.5.2 Air vent hose replacement

7.5.2.1 Remove the side cover R.

See 7.4.1.3

7.5.2.2 While holding the hose clamp with your fingers, move it inward to remove the hose.

Replace it with a new one.



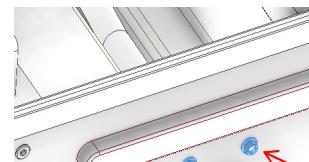
7. PARTS REPLACEMENT AND ASSEMBLY

7.5.3 Tank replacement

7.5.3.1

- See 7.4.3.4 Remove the gas spring.
- 7.4.3.5 Remove the back cover.
- 7.4.3.6 Remove the battery.
- 7.4.3.7 Remove the front cover.
- 7.4.1.3 Remove the side cover R.
- 7.4.1.4 Remove the bracket.
- 7.4.1.5 Remove the bracket.
- 7.4.1.3 Remove the side cover L.
- 7.4.1.4 Remove the side cover L.

7.5.3.2 Remove the bolts (M6) that secure the flange drain.



7.5.3.3 Remove the muffler.

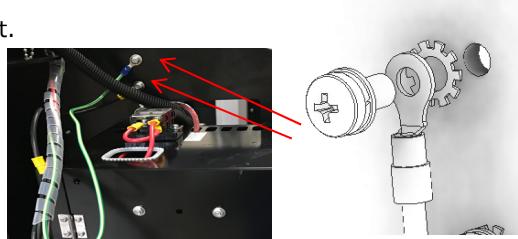
- See 7.4.3.12
- 7.4.3.13

7.5.3.4 Disconnect the wiring.

- See 7.4.3.9
- 7.4.3.10
- 7.4.3.11

7.5.3.5 Disconnect the lamp cable.

Press the protrusion on the connector and pull it out.



Remove the ground wire with a screwdriver.



7.5.3.6 Remove the mast.

7.2.1.1 to 7.2.1.12

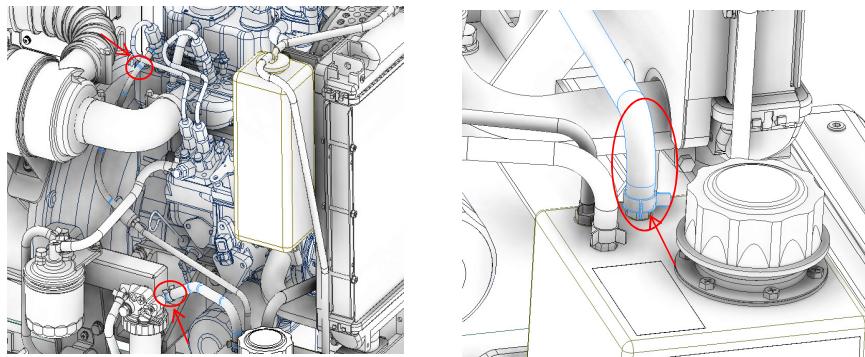
For more information, please refer to.

7.5.3.7 Cut and remove the band securing the side marker cable.



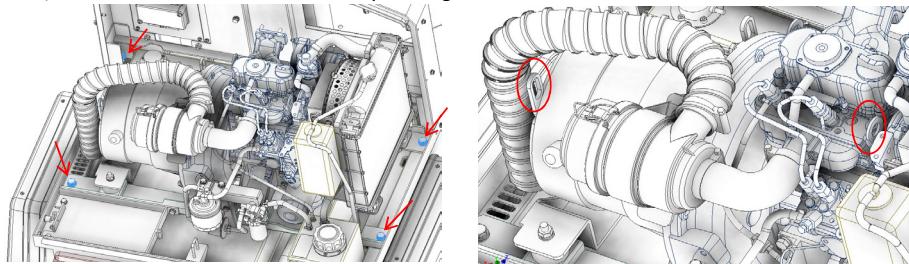
7. PARTS REPLACEMENT AND ASSEMBLY

7.5.3.8 Remove the two fuel hoses
Remove the tank hose.



7.5.3.9 Remove the bolts (M12) from the four corners.
Lift the engine and lower it.

Note Support the radiator to prevent it from falling over.
Also, be careful as the radiator is easily damaged.



7.5.3.10 Disconnect the side marker and tail light cables.
Remove the corrugated tube and disconnect the connector.

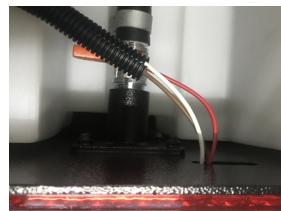
On top of the muffler



Above GFCI

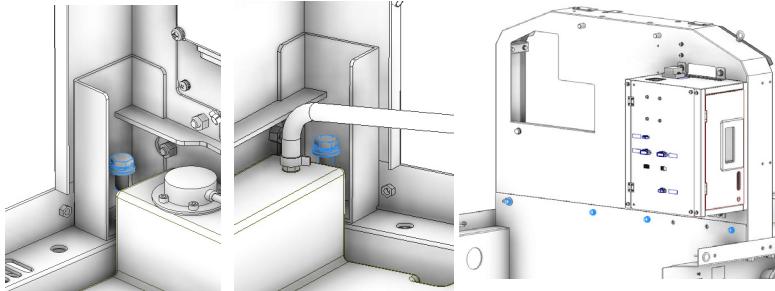


tail lamp



7.5.3.11 Remove the base.
2 inner bolts (M12)
Disconnect the Fuel sensor connector.
Remove the four outer bolts (M8) to remove the base.

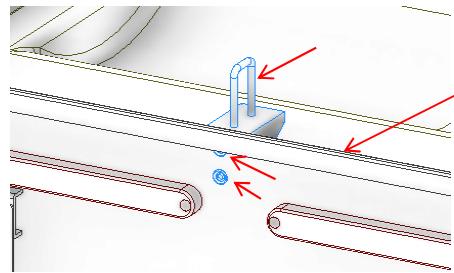
Heavy, so two or more people should work on it.



7. PARTS REPLACEMENT AND ASSEMBLY

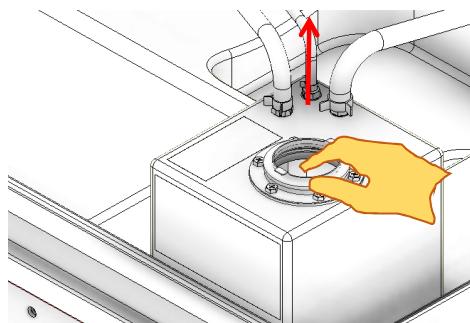
7.5.3.12 Remove Striker.

Remove the gasket from the edge of the frame.
Remove the two M8 low head bolts.

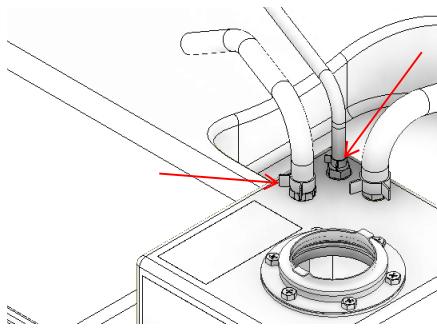


7.5.3.13 Remove the tank.

Remove the tank cap and lift it up with your hands.
Rock it left and right and lift it up.



7.5.3.14 Remove the fuel hose and attach it to the engine.



7.5.3.15 Install the tank in reverse order.

7. PARTS REPLACEMENT AND ASSEMBLY

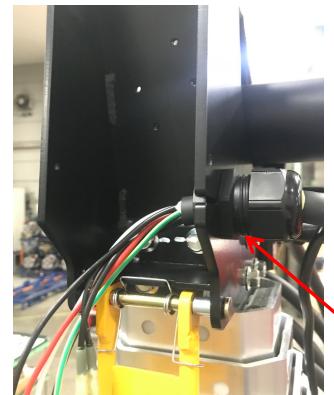
7.6 Electrical components

7.6.1 Lamp cable replacement

Note Remove the battery (see 7.4.3.6).

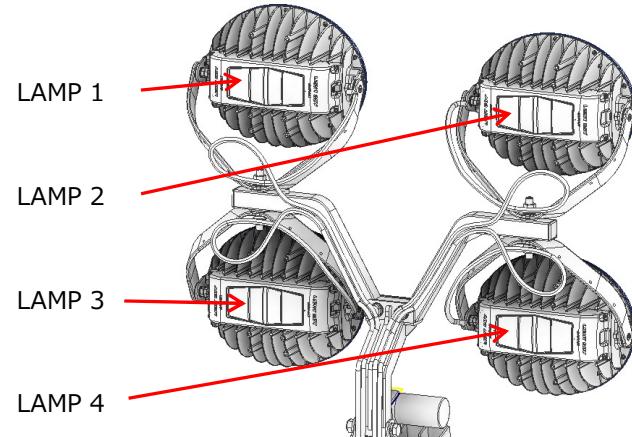
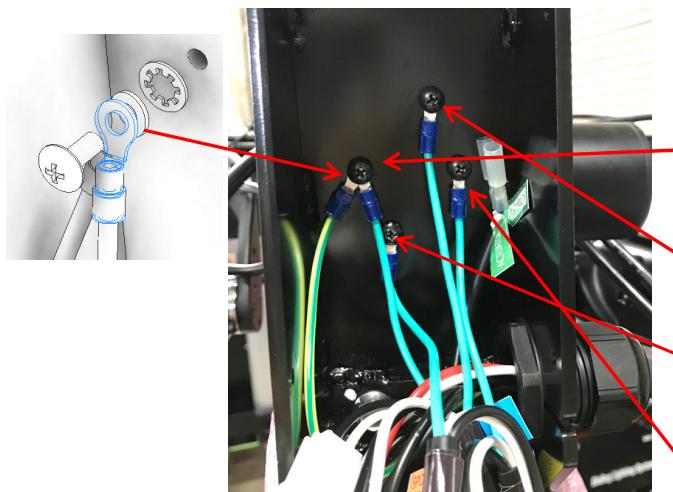
7.6.1.1 The LAMP cable is attached from the lamp stand side.
Attach the cable gland to the Adapter (Stand).

spanner



7.6.1.2 Attach the ground wire.
Attach the earth wire of the LED LAMP.
Place a star washer under the terminal.

The earth wire of the LAMP CABLE
Fasten together with LAMP1.



7.6.1.3 Connect the actuator and lamp cables.
Connect the same labels together. Push them in.

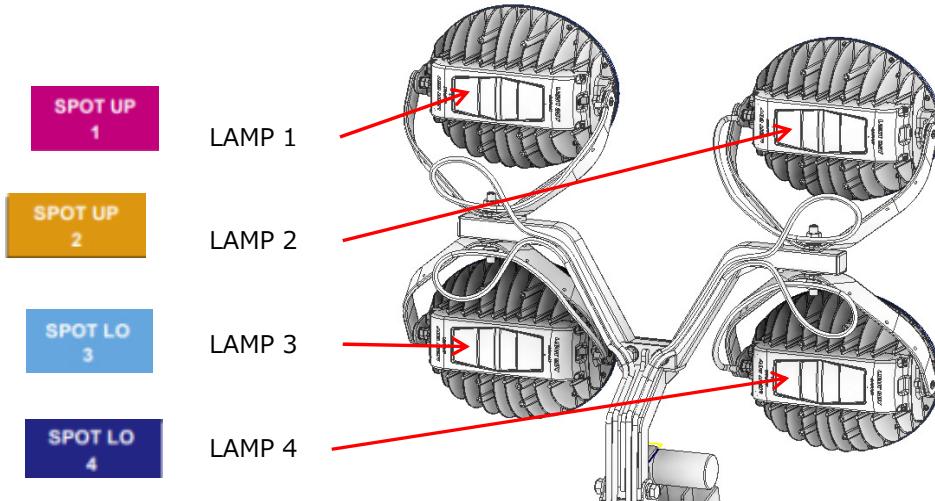
Note If the wiring is reversed, the switch will
operate in the opposite direction.



7. PARTS REPLACEMENT AND ASSEMBLY

7.6.1.4 Connect the lamp and the lamp cable.

Match the numbers on the cable labels with the lights and connect them together.



7.6.1.5 Gather the wires together and tighten the cover.

Note Check that the wiring is not pinched.



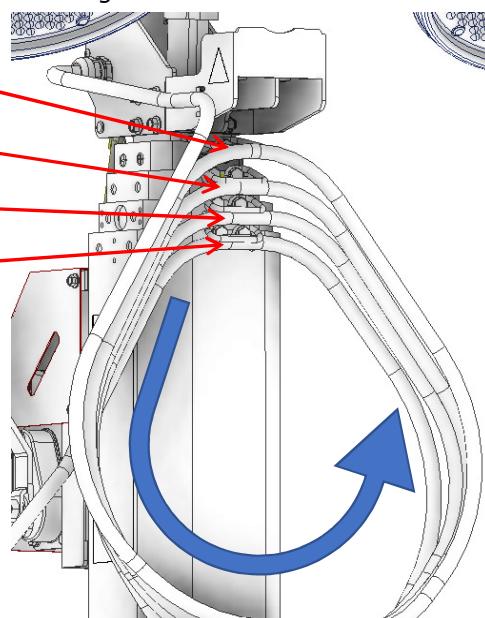
7.6.1.6 Fix the lamp cable to the lamp stand with a band

The actuator cable is also secured with a band.

7.6.1.7 Secure the lamp cable to the mast with a band.

There are marks on the cables, so secure them with bands in the correct order.

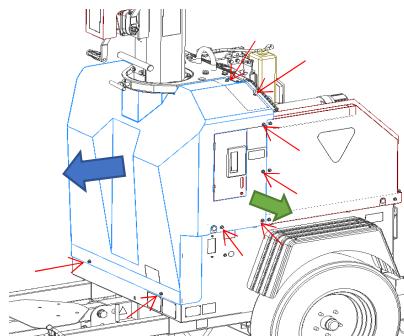
Note Do not install in reverse winding



7. PARTS REPLACEMENT AND ASSEMBLY

7.6.1.8 Remove the front cover.

Remove the 14 bolts (M6). Lift the side and remove it straight out.

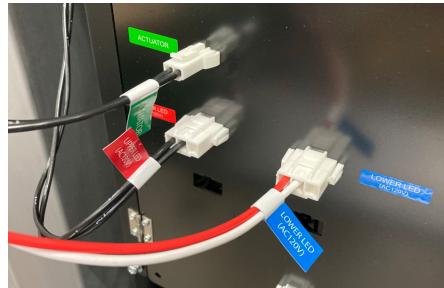


7.6.1.9 Attach the L-shaped cable clamp.

spanner

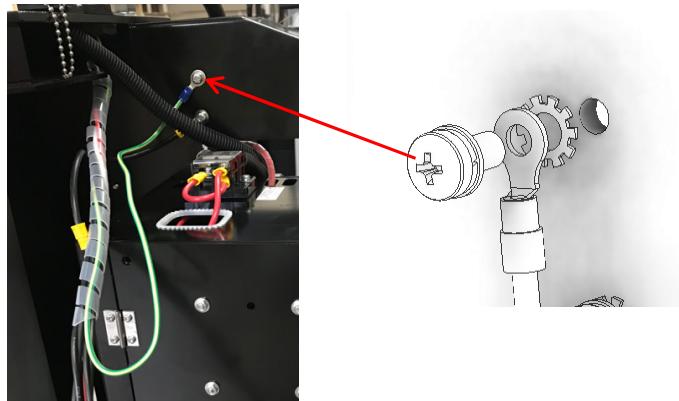


7.6.1.10 Connect to the control box.



7.6.1.11 Attach the ground wire.

Cable with band
To summarize.



7.6.1.12 Start the engine and check that the light comes on.

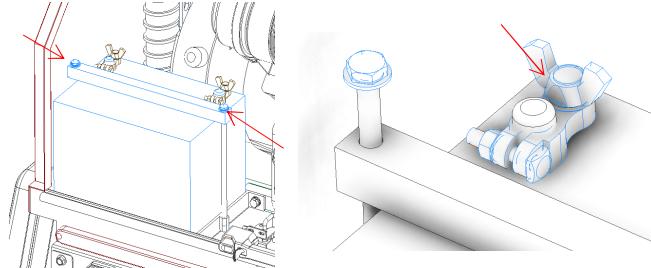
7.6.1.13 Install the front cover.

7. PARTS REPLACEMENT AND ASSEMBLY

7.6.2 Battery cable replacement

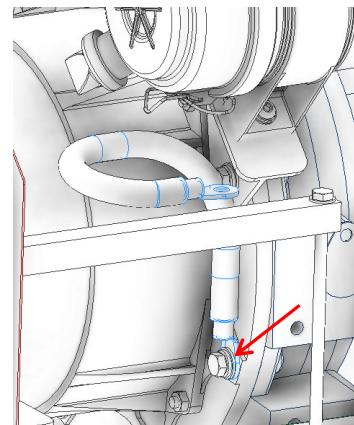
7.6.2.1 Remove the battery.
Loosen the wing bolt of the positive pole and remove the cable.
Apply insulating tape to the pole.
Also remove the cable connected to the 50A fuse.
Loosen the negative wing bolt and remove the cable.
Loosen the bolt (M8) and washer (M8) and remove the battery.

Note Be careful not to connect the battery terminals to electrical continuity with tools, etc.

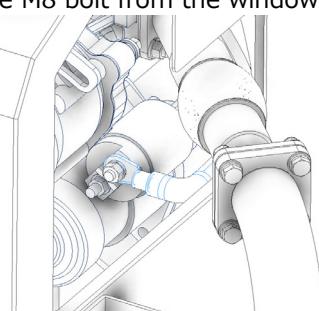


7.6.2.2 The negative cable is attached with the generator bolt.

Note Tightening torque: 35N·m



7.6.2.3 Remove the front cover.
See 7.6.1.8



7.6.2.4 You can remove the positive cable by removing the M8 bolt from the window on the muffler side.

7.6.2.5 To install the positive cable, follow these steps in reverse.

7. PARTS REPLACEMENT AND ASSEMBLY

7.6.3 Remove the control box.

7.6.3.1 Remove the front cover.

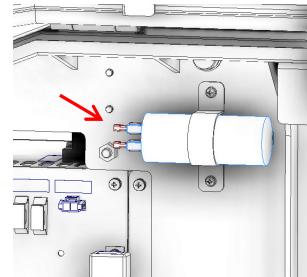
7.6.1.8 Referrals

7.6.3.2 Disconnect the cable attached to the control box.

7.4.3.9

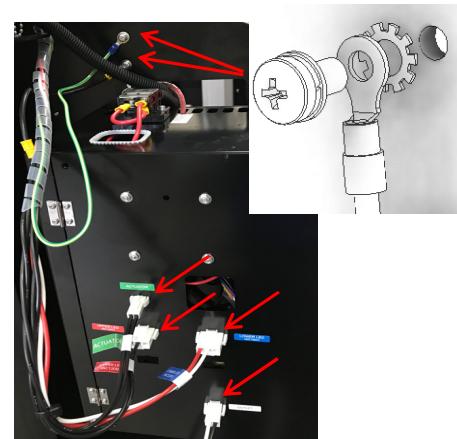
7.4.3.10 reference

7.6.3.3 Disconnect the cable from the capacitor.



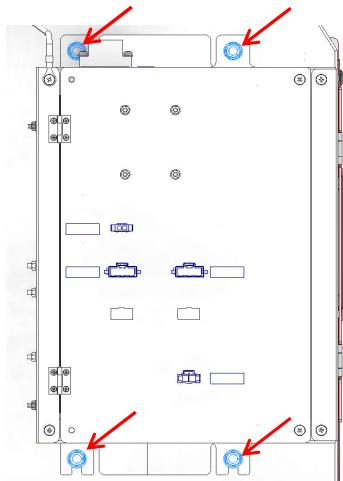
7.6.3.4 Disconnect the ground wire from the front cover.

Also remove the lamp cable and GFCI connector.



7.6.3.5 Slightly loosen the lower bolt M8x20.

Remove the top bolt and lift up to remove the control box.



7.6.3.6 Installation is done in reverse order.

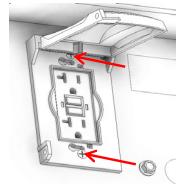
7. PARTS REPLACEMENT AND ASSEMBLY

7.6.4 Outlet Replacement

- 7.6.4.1 Remove the front cover.
- 7.7.1.8 Referrals

- 7.6.4.2 Remove the screw on the GFCI cover.
Open the cover and remove the screw at the bottom.

Keep the cover and screws
+Driver



- 7.6.4.3 Remove the wires attached to the GFCI using a Phillips head screwdriver.

- 7.6.4.4 Attach the wires to the new GFCI.



- 7.6.4.5 Install a GFCI on the frame.

Lightly tighten the screws on the cover.

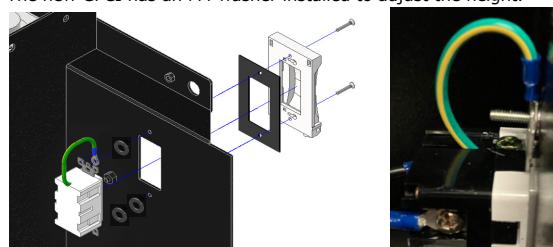
Open the cover, insert the lower screw and tighten it lightly.

Temporarily remove the upper screw, place the earth wire and one M4 washer between them, and tighten securely.

Temporarily remove the lower screw, then insert two M4 washers* between them and tighten securely.

*There are also models without washers.

The new GFCI has an M4 washer installed to adjust the height.



7.6.5 Side marker red replacement

- 7.6.5.1 When replacing the left side marker by opening the back cover

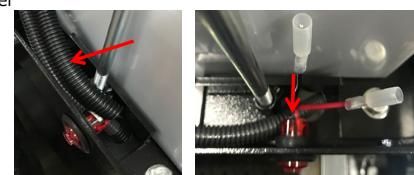
- 7.6.5.1.1 Remove the side cover L.

See 7.6.1.2

See 7.6.1.3

- 7.6.5.1.2 Remove the side marker corrugated tube.

- 7.6.5.1.3 Remove the terminal.



- 7.6.5.1.4 The side marker will come off if you push it from the inside.

- 7.6.5.1.5 Installation is done in reverse order.

First attach the gasket to the sheet metal, then insert the side marker.

Check that the light is on and then close the side cover L.

- 7.6.5.2 Open the back cover and replace the right side marker red

- 7.6.5.2.1 Remove the side cover R.

See 7.5.1.3

- 7.6.5.2.2 Remove the side marker corrugated tube.

- 7.6.5.2.3 Remove the terminal.



- 7.6.5.2.4 The side marker will come off if you push it from the inside.

- 7.6.5.2.5 Installation is done in reverse order.

First attach the gasket to the sheet metal, then insert the side marker.

Check that the light is on and then close the side cover R.

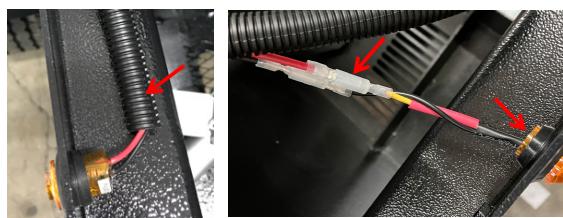
7. PARTS REPLACEMENT AND ASSEMBLY

7.6.6 Side marker amber replacement

7.6.6.1 Remove the front cover.
7.7.1.8 Referrals

7.6.6.2 Remove the side marker from the engine side.
7.7.6.2.1 Remove the side marker corrugated tube.

7.7.6.2.2 Remove the terminal.



7.7.6.2.3 The side marker will come off if you push it from the inside.

7.7.6.2.4 Installation is done in reverse order.
First attach the gasket to the sheet metal, then insert the side marker.
Check that the light is on before closing the front cover.

7.6.6.3 Remove the side marker on the control panel side.
7.7.6.3.1 Remove the side marker corrugated tube.

7.7.6.3.2 Remove the terminal.

7.7.6.3.3 The side marker will come off if you push it from the inside.



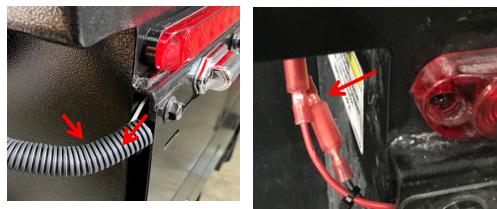
7.7.6.3.4 Installation is done in reverse order.
First attach the gasket to the sheet metal, then insert the side marker.
Check that the light is on before closing the front cover.

7.6.7 License plate lamp replacement

7.6.7.1 Remove the corrugated tube on the side.

7.6.7.2 Remove the terminal.

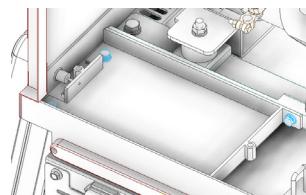
7.6.7.3 Remove the screw with a screwdriver and remove the lamp.



7.6.7.4 Installation is done in reverse order.
Pay attention to the installation direction of the lamp cover

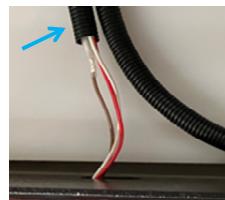
7.6.8 Tail lamp replacement

7.6.8.1 Remove the battery.
See 7.7.2.1



7.6.8.2 Remove the battery plate.
M8 bolts in 3 places

7.6.8.3 Remove the corrugated tube.



7.6.8.4 Remove the terminal.



7.6.8.5 Remove the tail lamp to be replaced.
Remove the cap with a flathead screwdriver.
Remove the screw with a screwdriver.



7.6.8.6 Installation is done in reverse order.

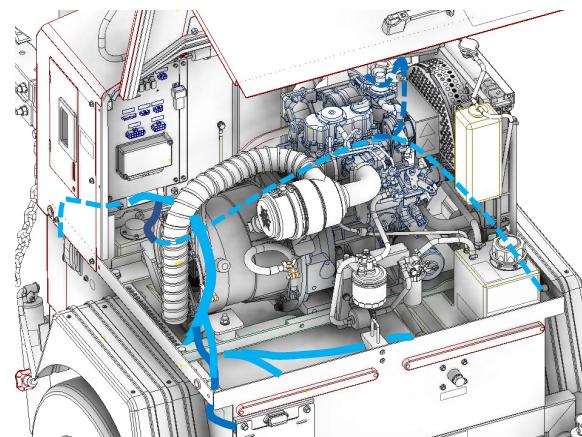
8 See wiring diagram

Check that the light is on before installing the battery plate.

7. PARTS REPLACEMENT AND ASSEMBLY

7.6.9 Trailer lamp cable assembly replacement

- 7.6.9.1 Remove the side cover L.
References 7.6.1.2
7.6.1.3
- 7.6.9.2 Remove the side cover R.
References 7.5.1.3
- 7.6.9.3 Remove the front cover.
References 7.7.1.8
- 7.6.9.4 Remove the battery.
References 7.7.2.1
7.7.8.2
- 7.6.9.5 Disconnect all the lamp terminals.
See 7.7.5 to 7.7.8
- 7.6.9.6 Disconnect the trailer cable terminal.
- 7.6.9.7 Remove the band that is holding the corrugated tube in place.
- 7.6.9.8 Installation is done in reverse order.
8 See wiring diagram
Check that the lights are on before installing the battery plate and cover.



7.6.10 trailer cable replacement

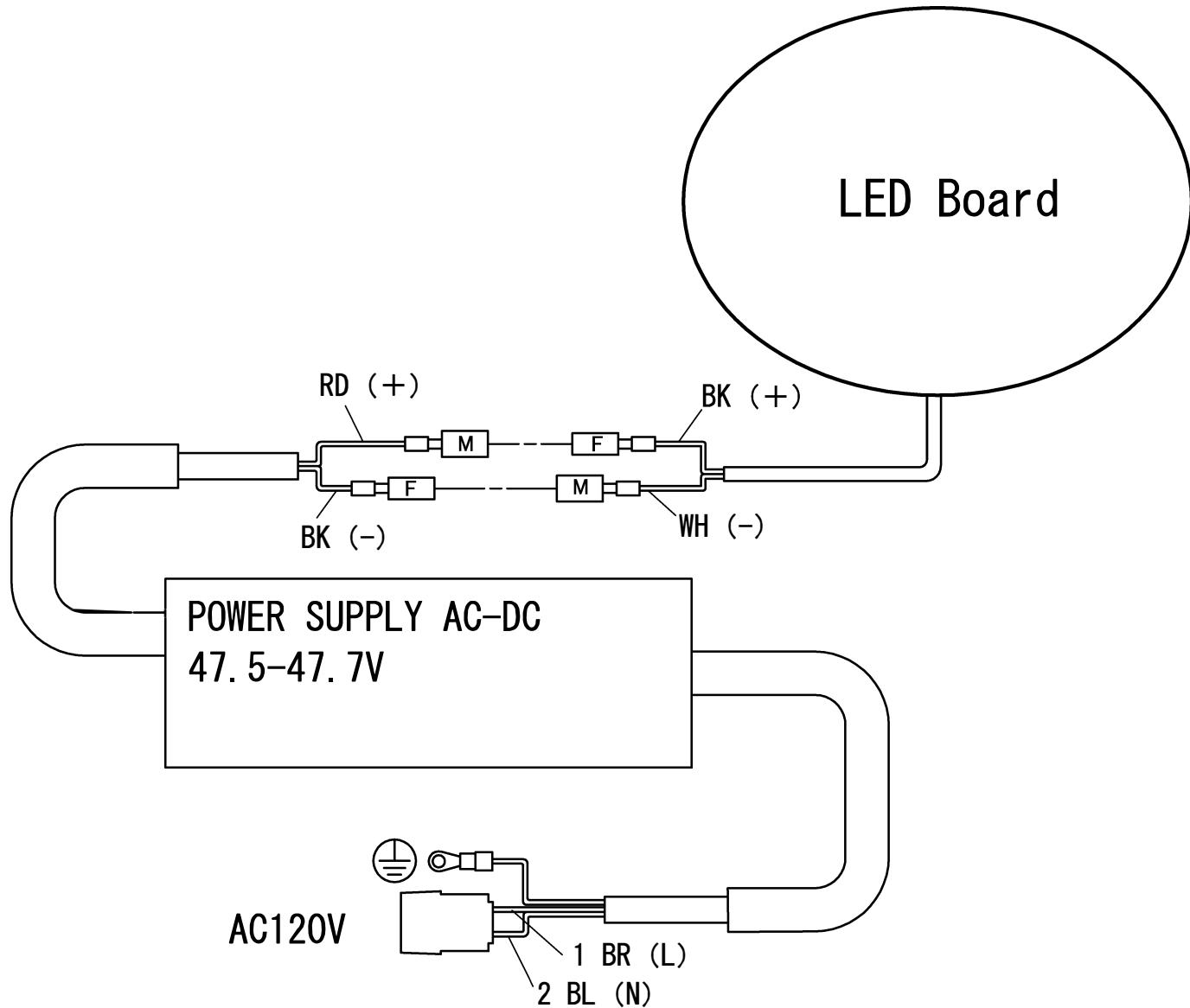
- 7.6.10.1 Remove the front cover.
References 7.7.1.8
- 7.6.10.2 Remove the corrugated tube on the right side.
- 7.6.10.3 Disconnect the trailer cable terminal.
- 7.6.10.4 Remove the cable gland nut.
Spanner face width 19
- 7.6.10.5 Remove the coupler at the end of the towbar.
Pull the cable out from the base hole.
- 7.6.10.6 Installation is done in reverse order.
8 See wiring diagram
Check that the light is on and then install the front cover.



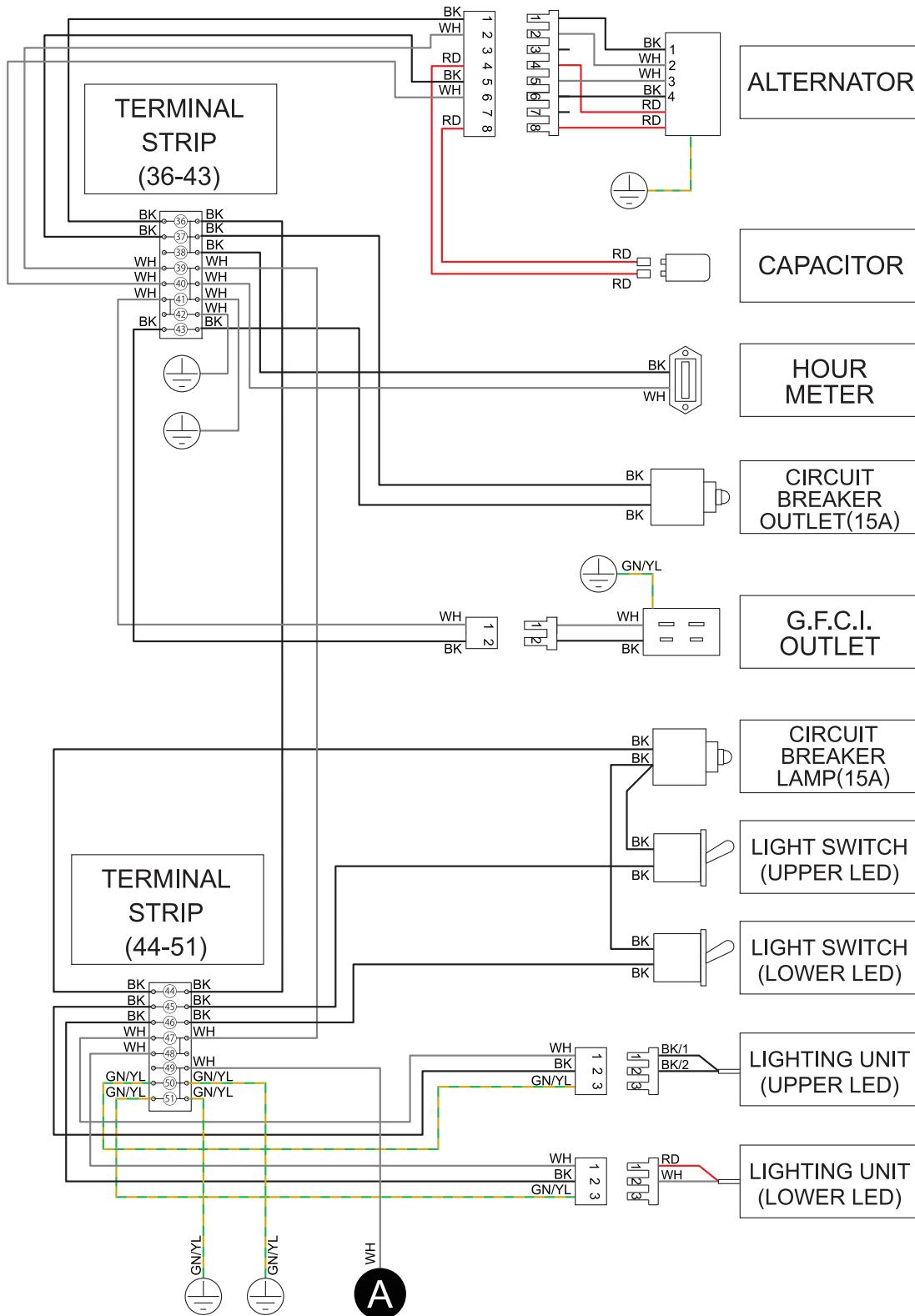
8. WIRING DIAGRAMS

8-1 LED LIGHT WIRING

300W LED SPOT Ver. 2

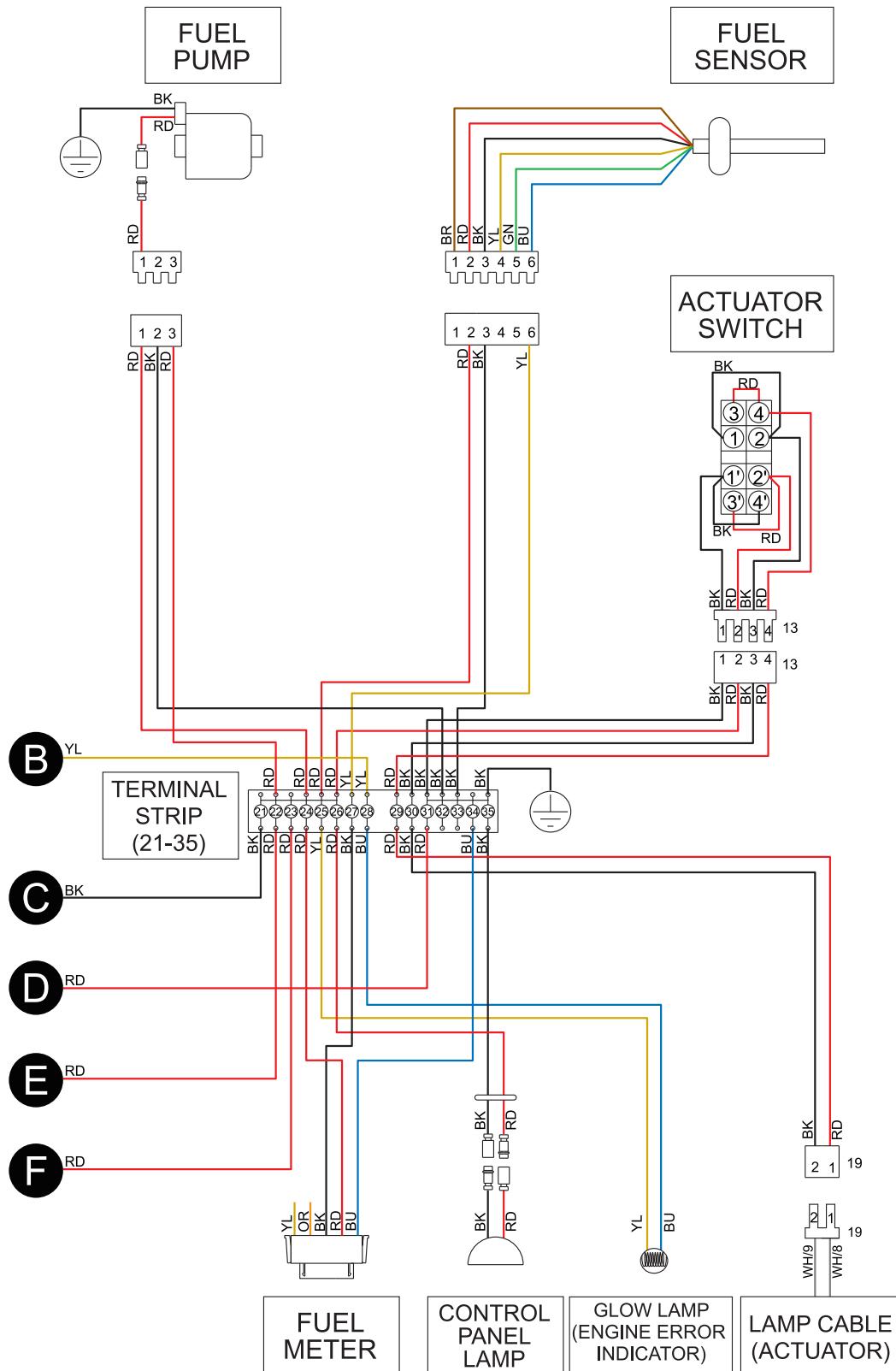


AC WIRING

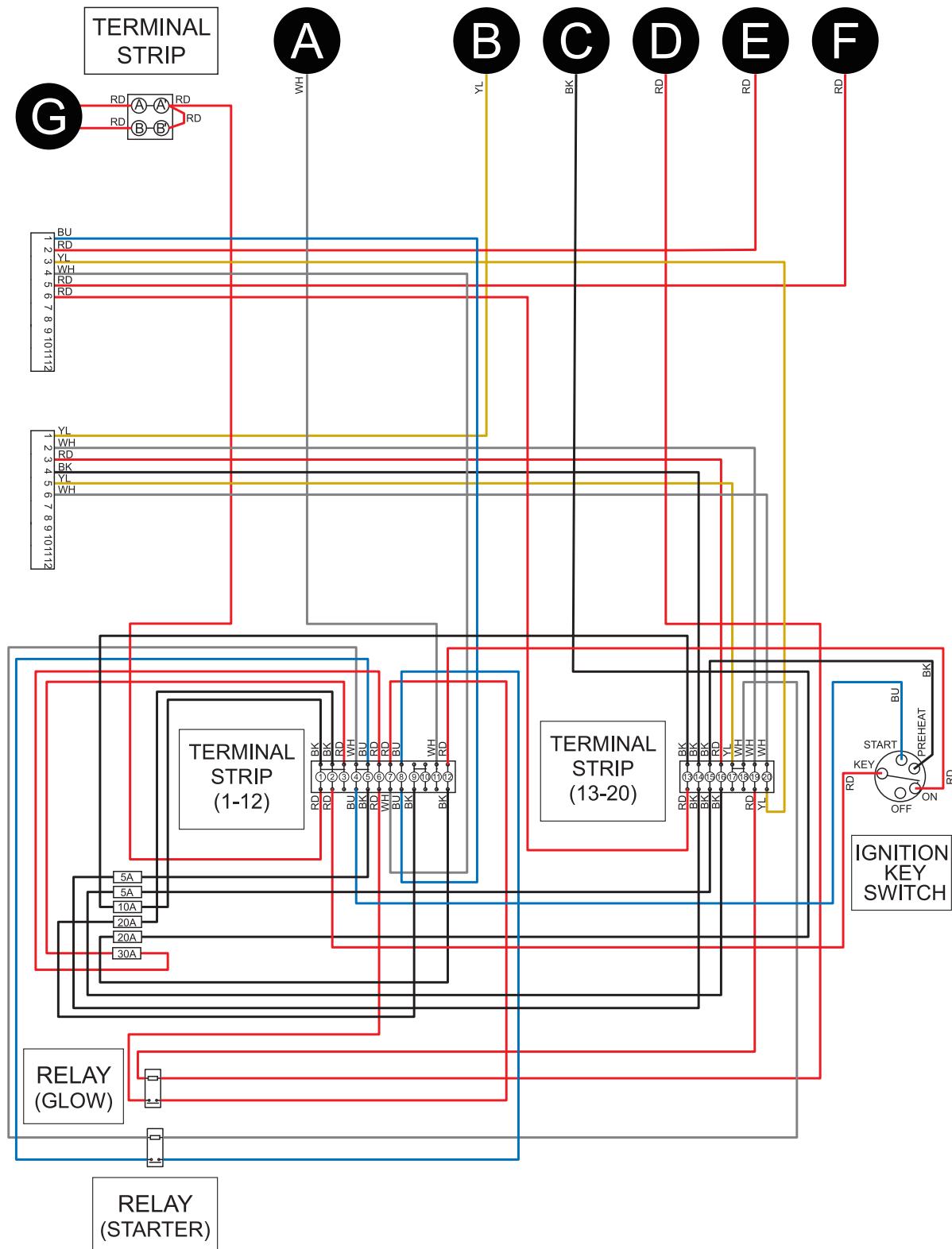


8. WIRING DIAGRAMS

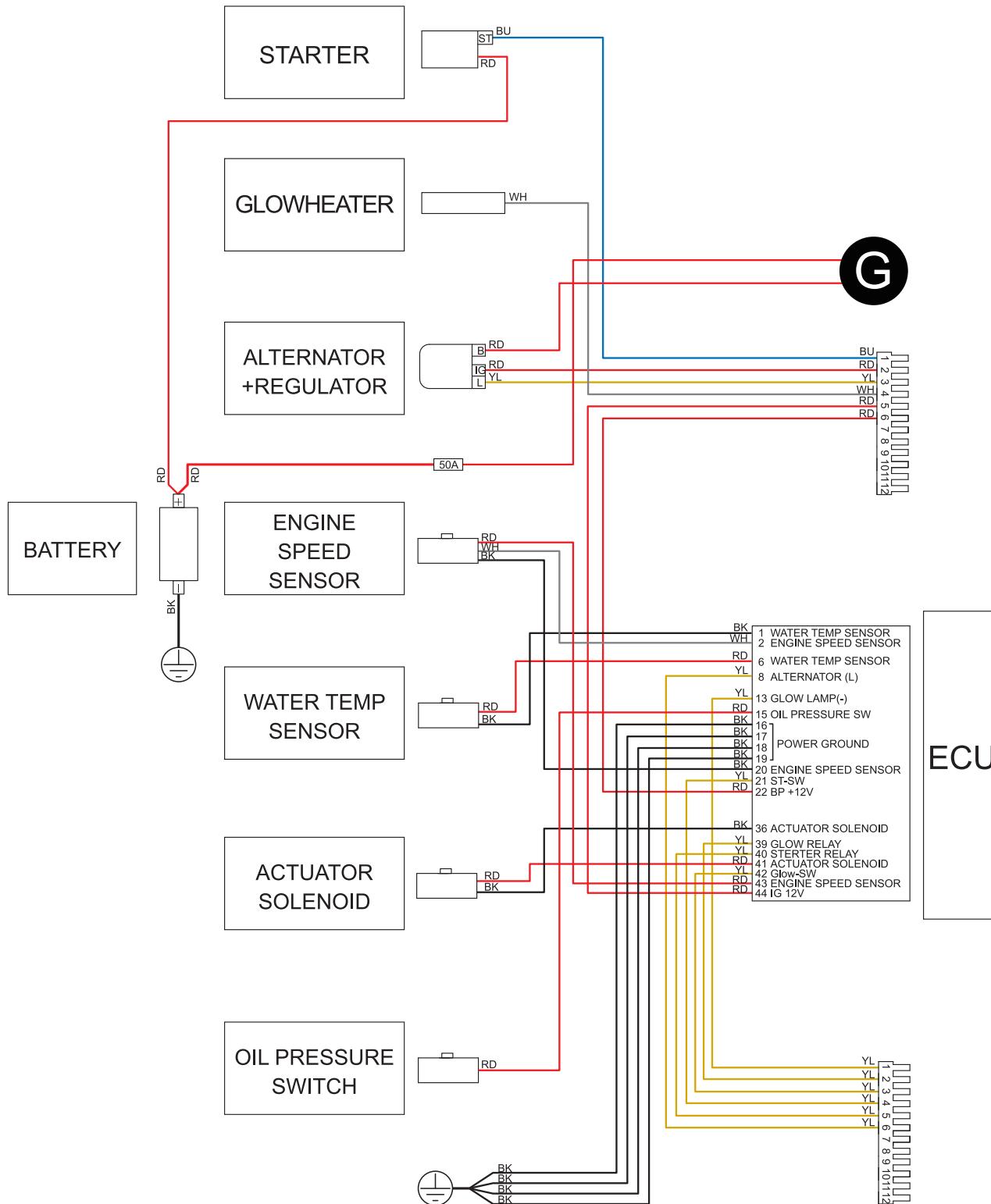
DC WIRING



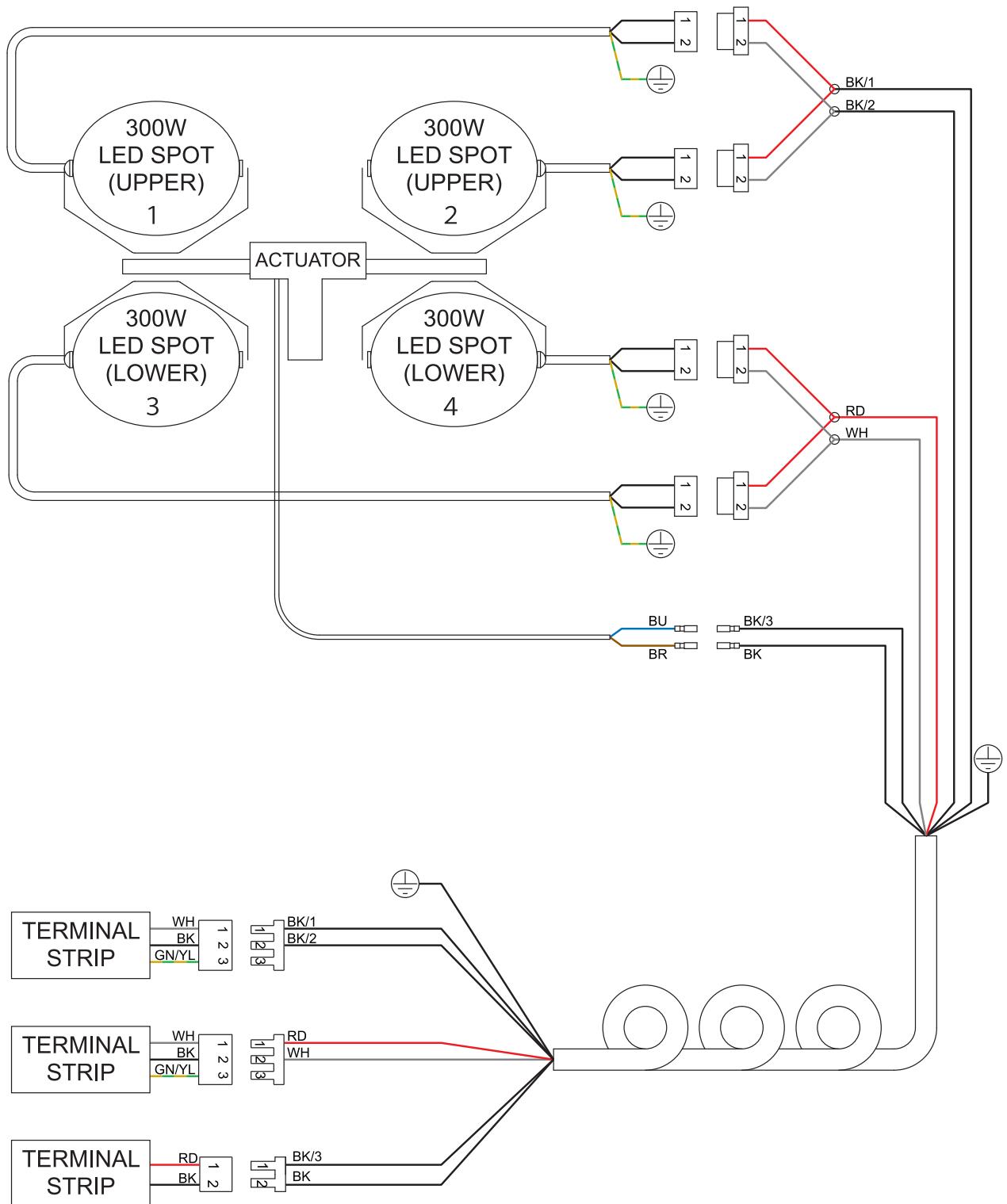
ENGINE WIRING 1



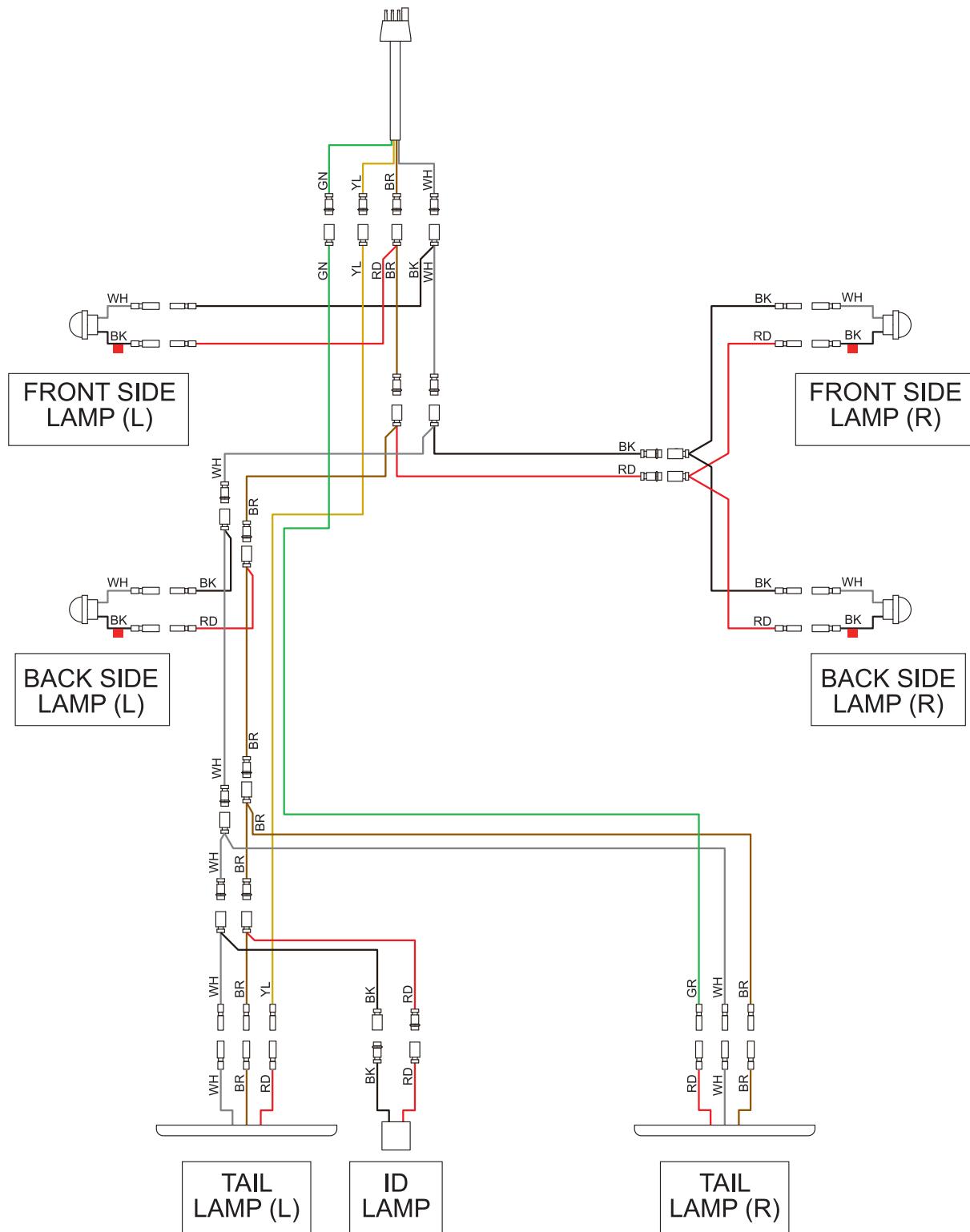
ENGINE WIRING 2



LIGHTS WIRING



TRAILER WIRING



NOTES

OPERATION MANUAL

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL
NUMBER ON-HAND WHEN CALLING

UNITED STATES

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6141 Katella Avenue Suite 200
Cypress, CA 90630
E-MAIL: mq@multiquip.com
WEBSITE: www.multiquip.com

CANADA

Multiquip

(450) 625-2244
4110 Industriel Boul.
Laval, Quebec, Canada H7L 6V3
E-MAIL: infocanada@multiquip.com

UNITED KINGDOM

Multiquip (UK) Limited Head Office

0161 339 2223
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