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**Parallel Redundancy On-Line UPS
Parallel System Installation Guide**

6-10KVA

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1. Important Safety Instructions

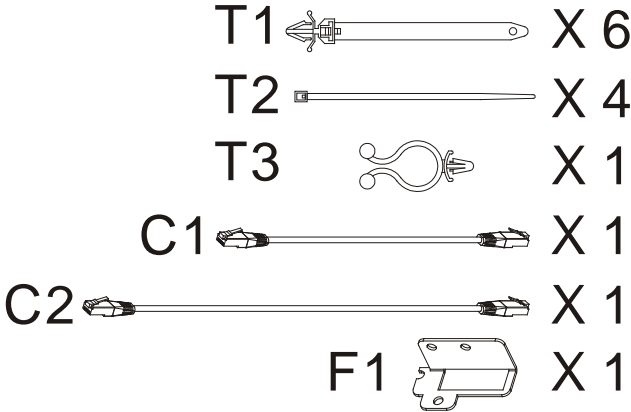
- 1.1 Only qualified Electrical Engineer or trained technical personnel are allow to commission and repair this UPS.
- 1.2 Please read the Installation guide carefully before installing this UPS to avoid any electrical hazard or damage to the UPS.
- 1.3 This UPS is equipped with an EMI filter. To prevent potential leakage current hazard, ensure that the AC main supply is securely grounded.
- 1.4 Please note that the Parallel function of the UPS can only be enabled in “Normal Mode” operation.
- 1.5 Prior to a parallel installation, please ensure the tolerance of the output voltage of each UPS at zero-load condition shall be less than 1Vac. Please consult your authorized dealer if any of the UPS output voltage has the tolerance over 1Vac.
- 1.6 Please ensure the RJ45 communicating wire is connected securely during parallel mode to avoid damage to both the UPS and the output devices.
- 1.7 Please ensure that the terminal resistors on the rear panel of the 2 units of UPS in parallel shall be set at “On” position. If 3 units of UPS in parallel, only UPS 1 & 3 terminal resistor shall be set to On. If 4 units of UPS in parallel, only UPS 1 & 4 terminal resistor shall be set to On.
- 8.8 Please note that only UPS with the same rating and type can be installed in parallel. For instance, the UPS without galvanic transformer cannot be connected in parallel with the UPS with galvanic transformer. While installing these UPS, please ensure to add a 40Arms/250Vac and 30Arms/250Vac NFB(Non-fuse Breaker)at the input and output of each UPS respectively. This is to avoid any potential hazard when the UPS is in the maintenance mode

2. Parallel System Installation Operation

2.1. Unpacking parallel kit (Optional)

If you have purchased the parallel kit from your authorized reseller, please kindly check the following accessories are complete:

- 2.1.1. 1 set of RJ-45 communication wire for parallel system (C1, C2)
- 2.1.2. 1 set of metal bracket (F1)
- 2.1.3. 1 set of cable tie (T1 or T2 and T3)



2.2. Selecting Installation Position

2.2.1. Air Flow Explanation for Tower and Convertible Types

- 2.2.1.1. The design of the air flow of the tower UPS is to flow in from the bottom of the ventilation holes then flow out from the top of the ventilation holes as indicated in Fig. 2-1.

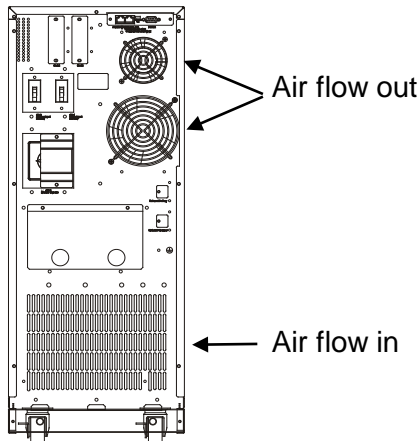


Fig. 2-1

2.2.1.2. The design of the air flow of the convertible UPS is to flow in from the front ventilation holes to the rear ventilation holes as indicated in Fig. 2.2.

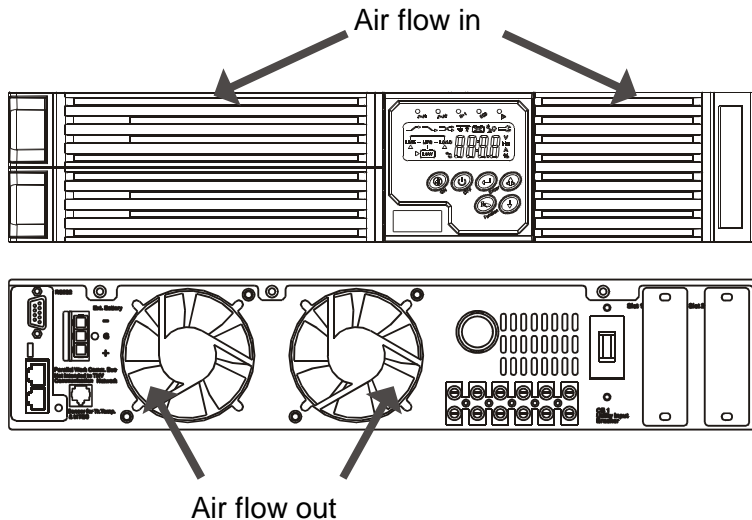


Fig 2-2

2.2.2. Select an installation position with at least 30 cm around the UPS and Battery bank, where may provide a good ventilation condition as indicated in Fig. 2-3 & 2-4.

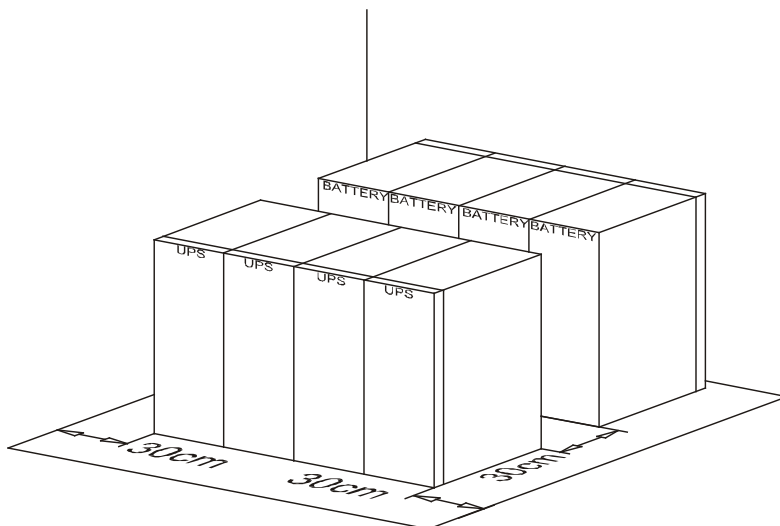


Fig. 2-3 For Tower Type

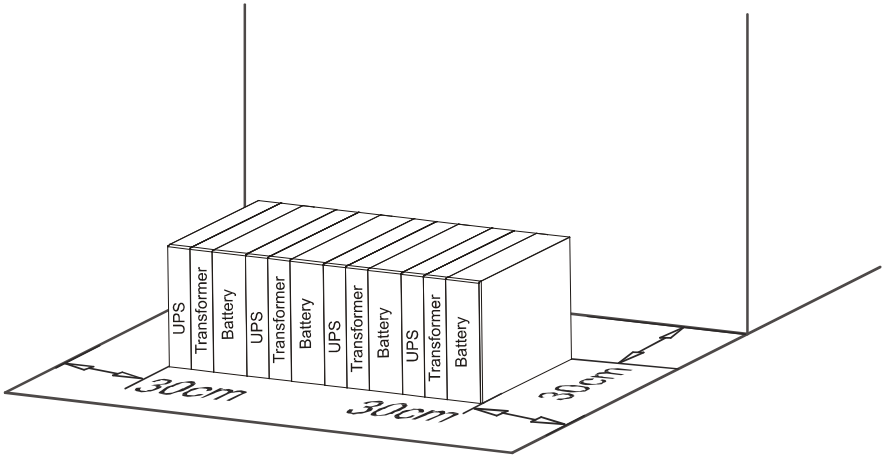


Fig. 2-4 for Convertible Type

2.2.3. After the installation position of the UPS is properly arranged, Please lock the casters of the Tower Type UPS (not applicable for Rack/Tower convertible type) firmly as indicated in Fig. 2-5.

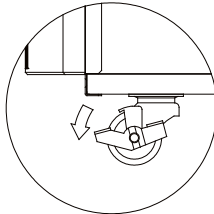
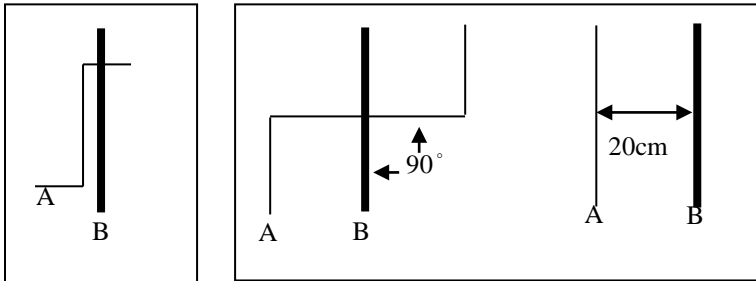


Fig. 2-5

2.3. Installation Instruction

- 2.3.1. Make sure those wires & cables used in the input, output and battery are separately installed. Do not intercross or mix those wires & cables together to avoid from any unnecessary noise interference.
- 2.3.2. The communication connecting wires for parallel function and other wires for control signals, including RJ45, RS232, RS485, USB, EPO and Shutdown shall be kept away from those wires and cables mentioned in 2.3.1. If there is no possibility to avoid such from happening, please put them at 90 degree or least distance 20cm as indicated in Fig. 2-6.



Incorrect

Correct

A → Communication or Control signal wires
B → Power wires & cables

Fig. 2-6

- 2.3.3. This UPS is equipped with an EMI filter. To prevent potential leakage current hazard, ensure that the AC main supply is securely grounded.
- 2.3.4. Please refer to the specs of input current, output current and recommended conductors listed as below:

AC input and output

Model	Maximum Current	Conductor Section
6KVA	33A	AWG #9
10KVA	54.3	AWG #7

Battery input

Model	Maximum Current	Conductor Section
6KVA	25A	AWG #10
10KVA	41	AWG #10

Recommended Circuit Breaker installed in the input/output of the UPS shall be type "C" or "D" and their current ratings shall be as listed.

Model	Input	Output
6KVA	40A	30A
10KVA	63A	63A

2.4. Start-up Operation Procedure

2.4.1. Arranged the UPS in the positions as shown in chapter. 2-2

2.4.2. The maximum length of the communication connecting wires shall be less than 7M. it shall be connected as a “Ring” loop as indicated in Fig. 2.7.

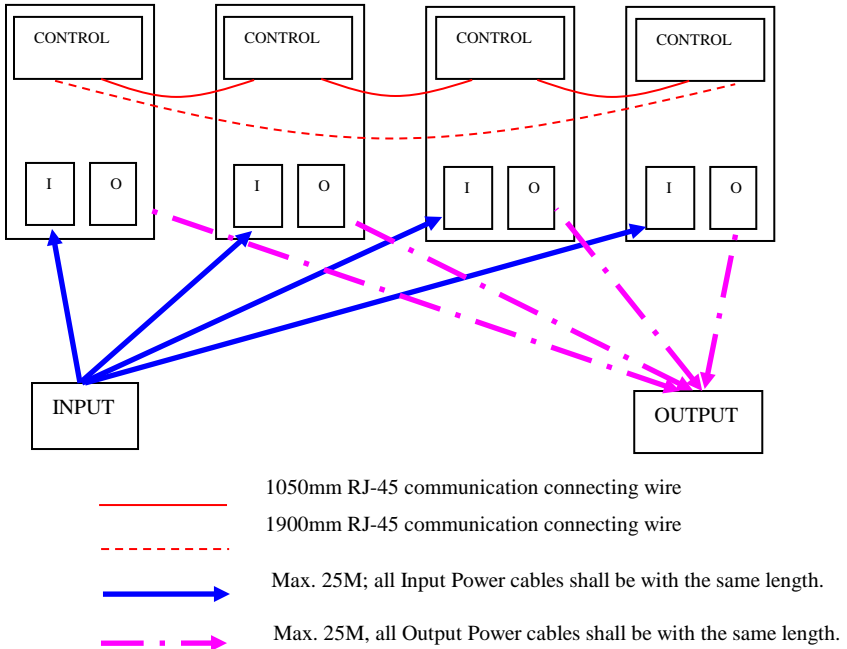


Fig. 2-7

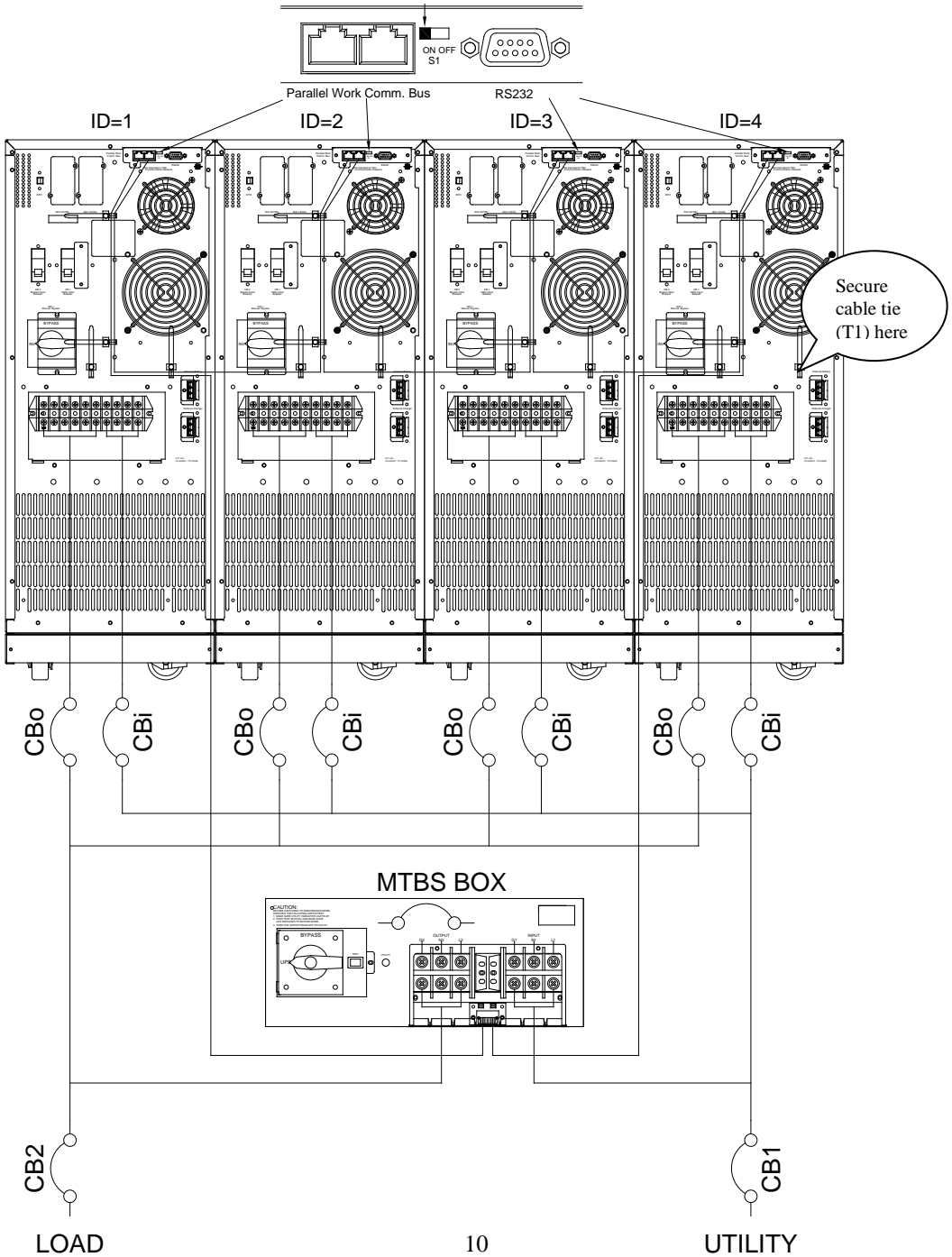
2.4.3. Arrange the power cables and the control signal cables as indicated in Fig. 2-6 & Fig. 2-7 respectively depending on the UPS type. Ensure all the circuit breakers at input & output ends are set to “Off” position.

2.4.4. For maintenance purpose, you are recommended to purchase a MTBS box (optional).

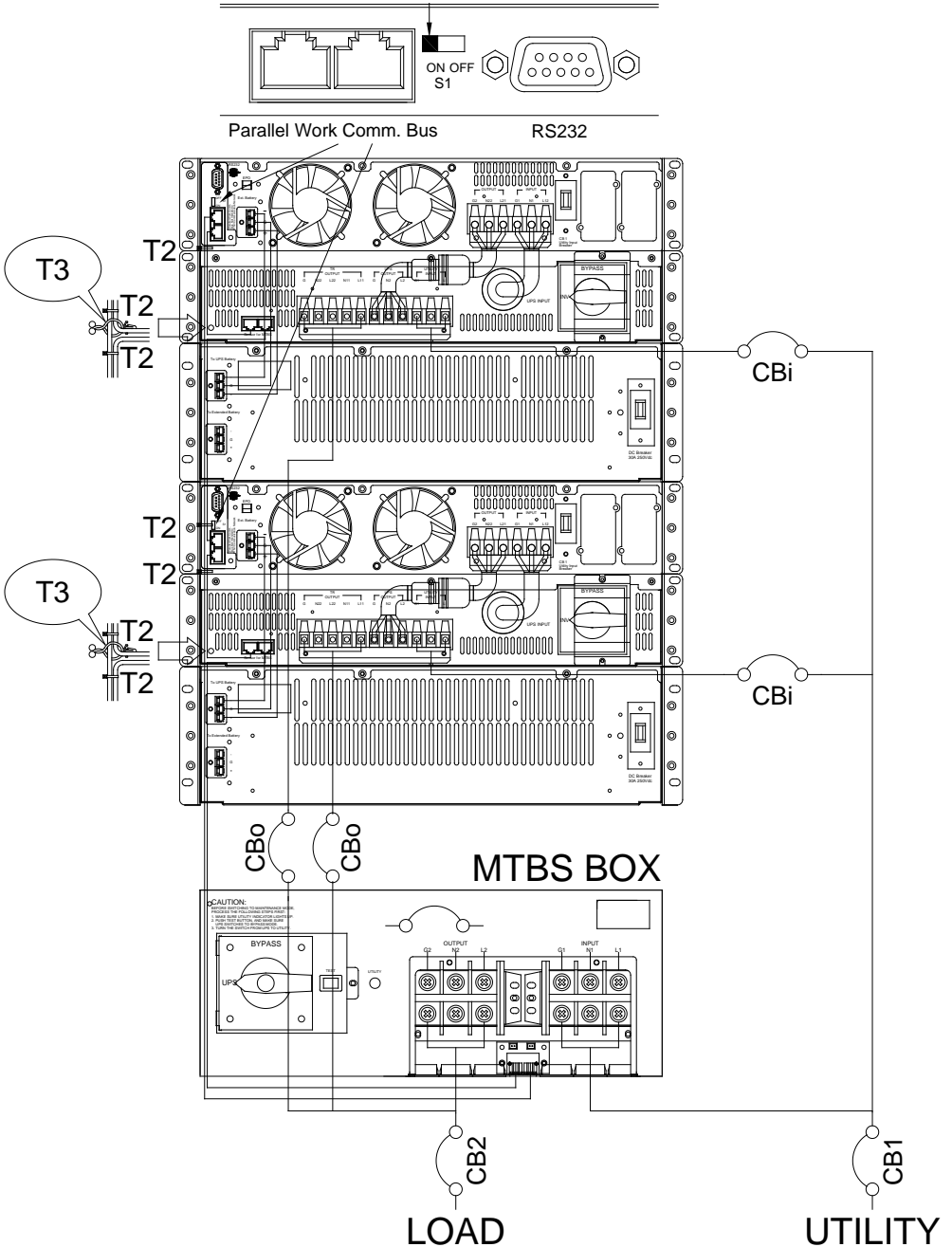
2.4.5. Only two terminal resistors of the UPS in parallel are to be set to “On” position as indicated in Fig. 2-6. (for 3 units in parallel only UPS 1 & 3 terminal resistors shall be On, for 4 units in parallel, only UPS 1 & 4 terminal resistors shall be On)

- 2.4.6. Turn on the input breaker (CB1 and CBi) of the Utility. Configure each UPS the operating mode to be “parallel mode” and set the IDs (eg. UPS 1, ID=1) of the respective UPS. Please ensure all the parameters of each UPS in parallel are set the same.
- 2.4.7. If you are using the Front panel for UPS parameters entry & setting, please switch Off and On all the UPS to exit the configuration mode after all setting have been done.
- 2.4.8. If an external MTBS box (optional) is installed, ensure the switch is on “Bypass” position. Check to see if the UPS is on Bypass mode with output voltage available.
- 2.4.9. Turn on the output breaker (CB2) and ensure the connected loads are supplied with power via the MTBS Box.
- 2.4.10. Turn on the output breaker of the UPS (CBo) and turn the switch of the MTBS Box to “UPS” position. Now the connected loads shall be supplied with power via the UPS Bypass loop.
- 2.4.11. Turn on the UPS individually and make sure the UPS are in Inverter supply mode. The installation procedures are now completed.

Only total 2 terminal resistors (regardless if is 2,3 or 4 units UPS in parallel) are to set at "On" positions.



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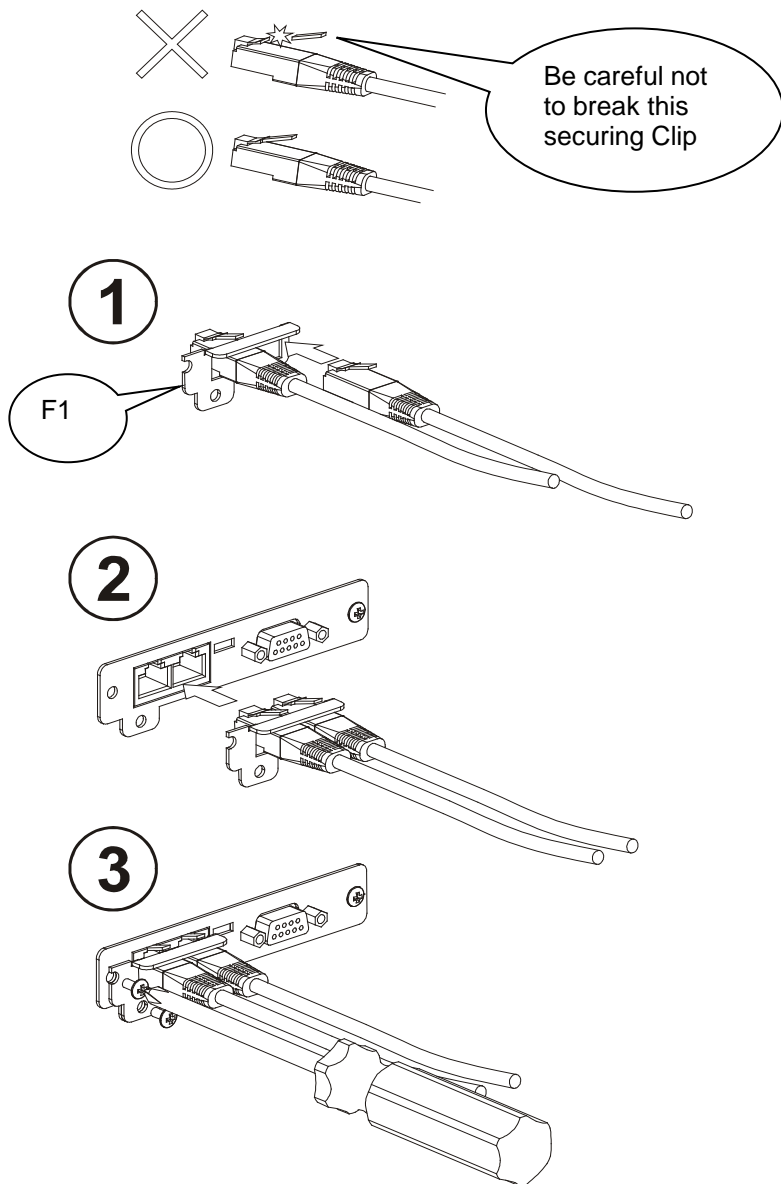


Fig. 9-7

2.5. **Maintenance Operation Procedure**

- 2.5.1. *Please refer to the user manual of the UPS to make all UPS switch to bypass supply mode.*
- 2.5.2. *Please switch MTBS BOX to BYPASS position first. And then switch off all output breakers (CBo). Now the load is supplied through MTBS BOX from Bypass.*
- 2.5.3. *Please make sure the UPS which needs to be maintained is completely shutdown first. And then switch off the output breakers(CBo) and input breakers(CBi). Now you can maintain them.*
- 2.5.4. *Please repeat steps 2.4.3 to 2.4.11 after you have completed repairing/maintaining, to ensure the load is supplied from the UPS.*
- 2.5.5. *The maintenance work is completed.*



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