Maintenance Bypass Switch (MBS) Operation & Installation Manual

Basic Maintenance Bypass Switches for Powerware 9155 & 9355 up to 15kVA

Part Numbers:
>   **For 9155 8-15kVA: 9155MBS15kVA**
>   **For 9355 8-15kVA: 9355MBS15kVA**

The maintenance bypass switch may be supplied as an integrated MBS mounted on the back of the UPS, or may be supplied as a separate MBS for wall mounting near the UPS.

The operation of the MBS is allowed for a trained person only who is familiar with the UPS behaviour and functions. The full UPS wiring diagram with a MBS switch is presented in the installation part of the manual.

Note!   The MBS consists of three switches and failure to understand the correct sequence may drop the critical load.
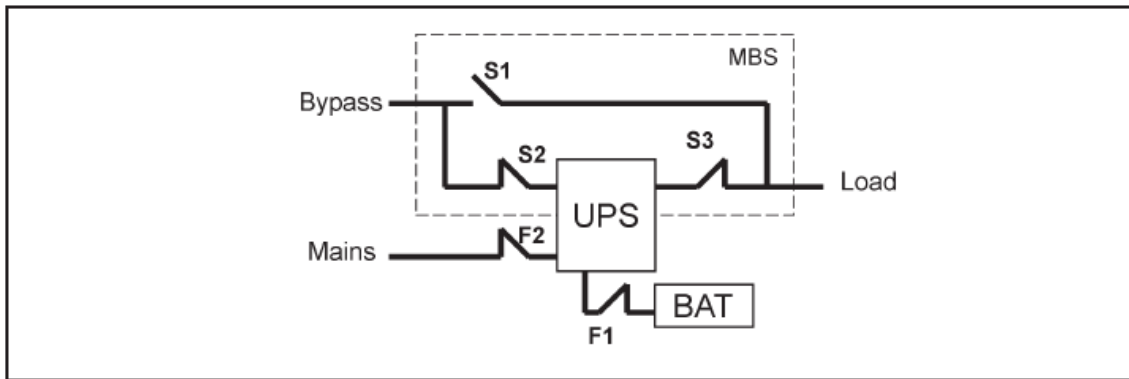

Figure 1. The normal positions of the three MBS switches.

Turn UPS from normal mode to mechanical bypass

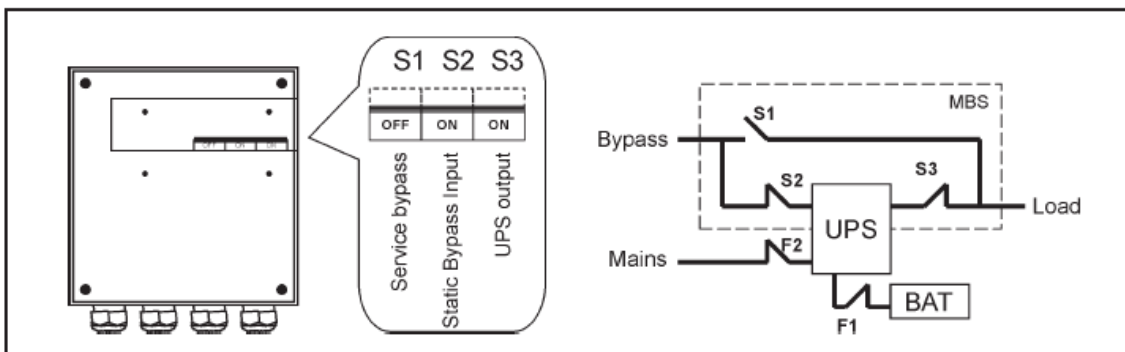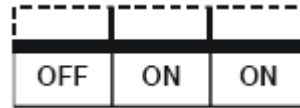The procedure to turn the UPS to mechanical bypass switch is described below.

Figure 2. The normal (UPS supplying the load) positions of the three MBS switches.

No break transfer from normal mode to Service Bypass:

1. The normal start position is as shown:
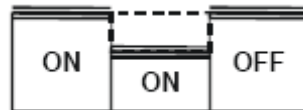
OFF	ON	ON

2. Use the UPS LCD commands to transfer the UPS to internal static bypass mode(refer UPS User Manual). Remember to verify the transfer before proceeding to the next step.

3. Remove the locking plate of the S1-3 switches.
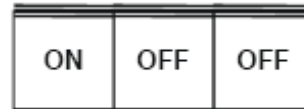
4. Turn ON the S1 switch to bypass UPS:

ON		
	ON	ON

5. Turn OFF the S3 switch to disconnect UPS output:

ON		OFF
	ON	

6. Use the UPS LCD commands to turn the UPS OFF (refer UPS User Manual).

7. Turn **F1** battery breakers and **F2** input breaker in UPS to OFF position.

8. Turn OFF the S2 switch to disconnect UPS bypass input:

ON	OFF	OFF

9. Remount the locking plate of the S1-3 switches to the position to prevent the use of them.

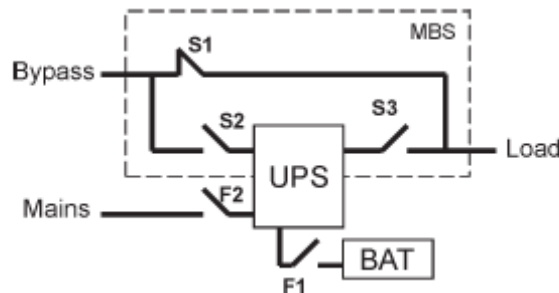10. UPS is now in the mechanical bypass mode, see below:

Figure 3. Bypass Mode switch positions

Turn UPS from mechanical bypass to normal mode

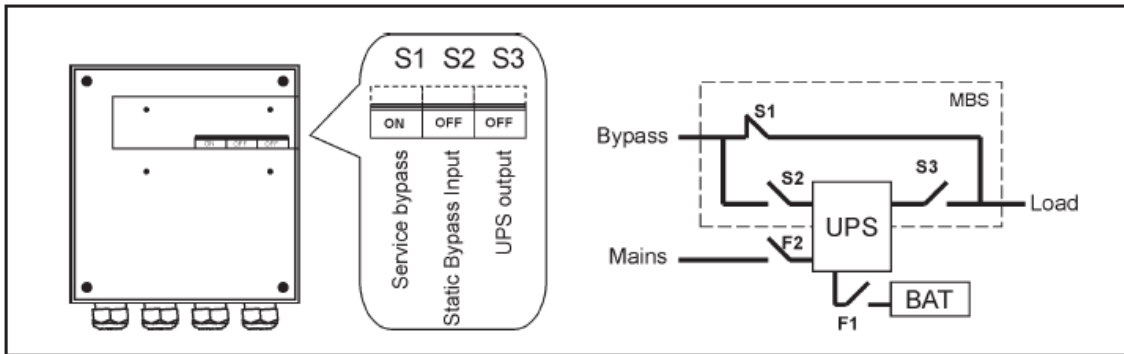The procedure to turn the UPS back to normal mode is described below.

Figure 4. The service (bypass supplying the load) positions of the three MBS switches.

No break transfer from Mechanical Bypass to normal mode:

1. The normal start position should be as shown:

ON	OFF	OFF

2. Remove the locking plate of the S1-3 switches.

3. Turn ON S2 switch to connect bypass input to UPS:

ON	ON	OFF

4. Turn the F1 battery and F2 input breakers in UPS to ON position.

5. Use the UPS LCD commands to "Turn UPS on" and wait until it is fully started.
    - Make sure the UPS is not displaying any alarms.
    - You may verify the output voltage from the meters screen of the LCD.

6. Use the UPS LCD commands to transfer the UPS to internal static bypass. Remember to verify the transfer before proceeding to the next step.

7. Turn ON S3 switch to connect UPS output to load:

ON	ON	ON

8. Turn OFF S1 switch to disconnect bypass output:

OFF	ON	ON

9. Use the UPS LCD commands to transfer the UPS to normal mode.

10. Remount the locking plate of the S1-3 switches to the position to prevent the operation of the switches.
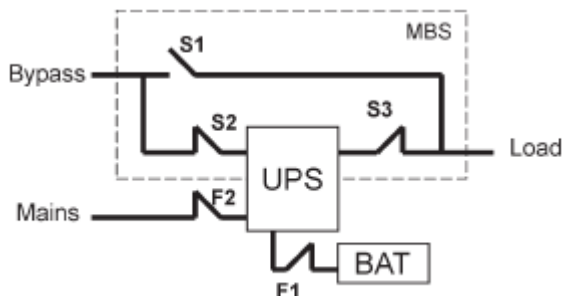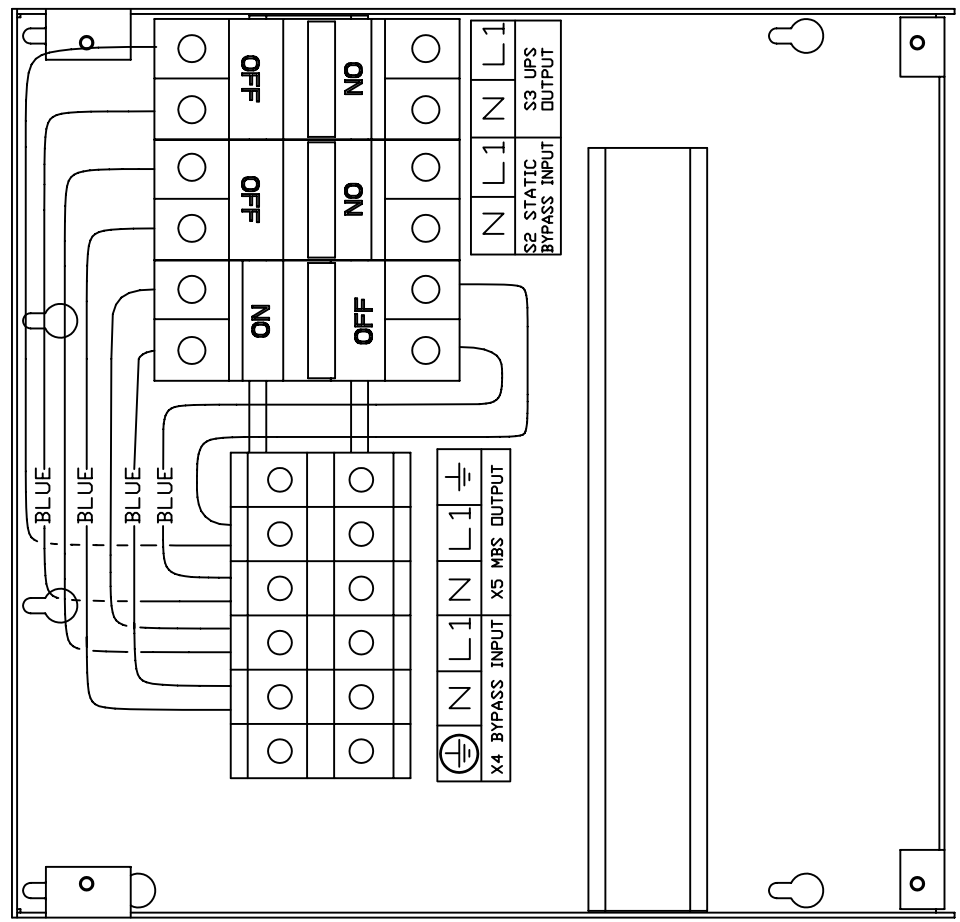
11. UPS is now in Normal mode, see below:
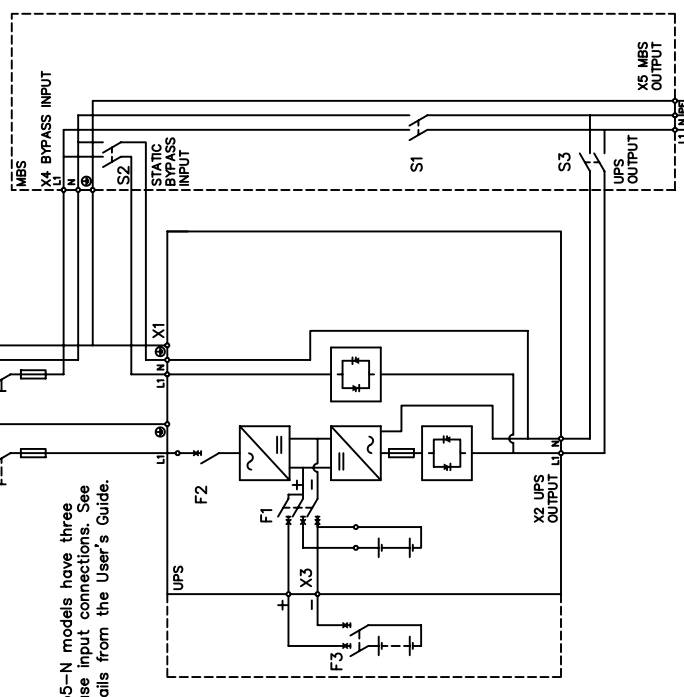

Figure 5. Normal Mode switch positions

MBS TERMINALS

230/400 V, 50 or 60 Hz

L1
L2
L3
PE

9155-N models have three phase input connections. See details from the User's Guide.

MBS
X4 BYPASS INPUT
N
L1
L1

S2
STATIC BYPASS INPUT

S1

S3
UPS OUTPUT

X5 MBS OUTPUT
L1 N PE

X1
L1 N
L1

F2
F1

UPS
X3
F3

X2 UPS OUTPUT
L1 N

230/400 V, 50 or 60 Hz

L1
N
PE

OFF   OFF   NO

NO   NO   OFF

BLUE BLUE BLUE BLUE

N   L1 N   L1
S2 STATIC BYPASS INPUT   S3 UPS OUTPUT

N   L1 N   L1
X4 BYPASS INPUT   X5 MBS OUTPUT

POWERWARE	Title External MBS for 9155 8 - 15 kVA	Rev A
	Part number: 1022559	No 1026529
	Checked -	Approved 27.9.2006 -	Loc FIN	Size A2	Page 1/1

REV
REV
REV
Rev/ECO no!

REV
REV
REV
Rev/ECO no!

MBS TERMINALS

230/400 V, 50 or 60 Hz

L1
L2
L3
N
PE

MBS

X4 BYPASS INPUT
L1 L2 L3 N PE

S2

S2 STATIC BYPASS INPUT

S1

X5 MBS OUTPUT
L1 L2 L3 N PE

S3 UPS OUTPUT

UPS

F2
F1
X3
F3

X1
L1 L2 L3 N

L1 L2 L3 N

X2 UPS OUTPUT

230/400 V, 50 or 60 Hz

L1
L2
L3
N
PE

MBS Terminals detail

S1			ON	OFF
N	L1	L2	L3	

OFF NO

| S2 | | | | |
| N | L1 | L2 | L3 | |

OFF NO

| S3 | | | | |
| N | L1 | L2 | L3 | |

S3 UPS OUTPUT
L1 L2 L3

S2 STATIC BYPASS INPUT
N L1 L2 L3

blue
blue
blue
blue
blue

X5 MBS OUTPUT
N L1 L2 L3

X4 BYPASS INPUT
N L1 L2 L3

Title	External MBS for 9355 8 - 15 kVA		Rev A
Part number: 1022558			No 1026528
Checked -	Approved 27.9.2006 -	Loc FIN	Size A2 Page 1/1

POWERWARE

REV	Rev/ECO no:
REV	
REV	

REV	Rev/ECO no:
REV	
REV	