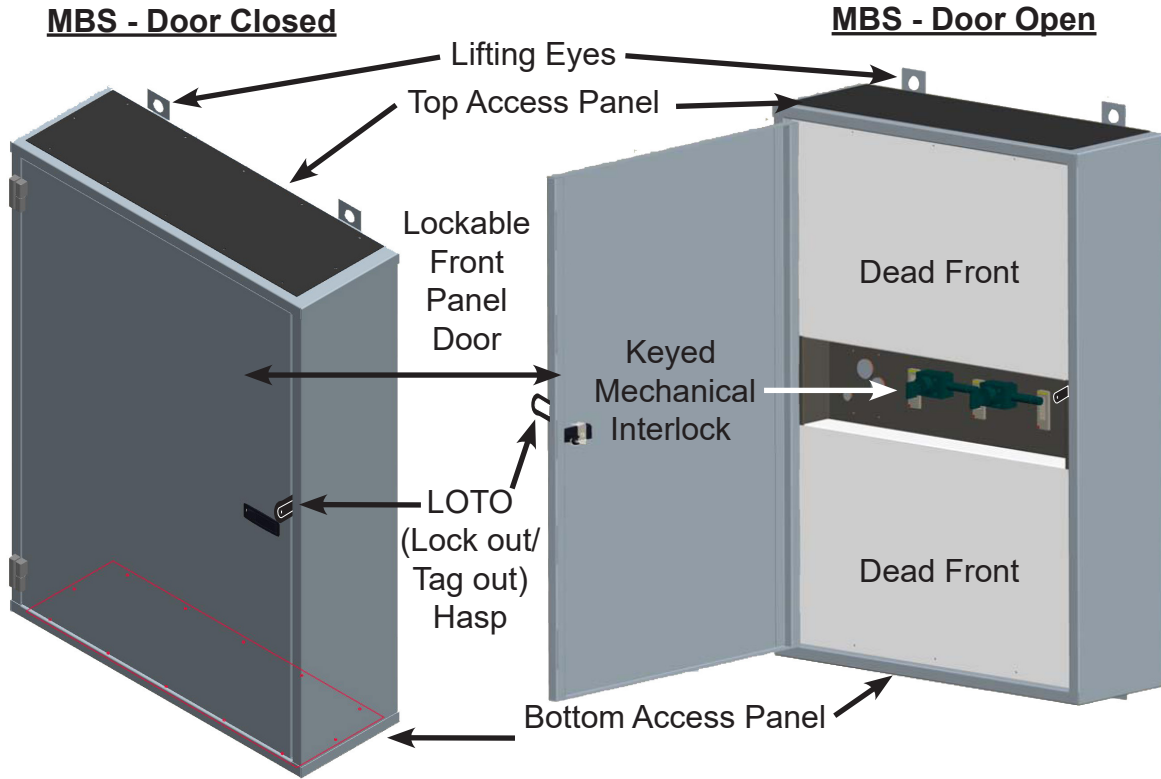


## Maintenance Bypass Switch - Wall-Mount Cabinet



### MBS BREAKER OPTIONS (All cabinets are ANSI-61 Gray (Munsell No. 8.3G 6.10/0.54.))

Part Number*	Dim. W x D x H (in)	Wt (lb)	UPS kVA	Voltage	Breaker Size	Withstand kAIC
MBSWH-150-F3-KK	30.1 x 10.8 x 42.1	130	15	208/120V	60A	65,000
MBSWH-250-F3-KK	30.1 x 10.8 x 42.1	130	25	208/120V	100A	65,000
MBSWH-300-F3-KK	30.1 x 10.8 x 42.1	130	30	208/120V	125A	65,000
MBSWH-500-F3-KK	30.1 x 10.8 x 42.1	130	50	208/120V	200A	65,000
MBSWH-800-F3-KK	36 x 12.8 x 48.1	280	80	208/120V	300A	65,000
MBSWH-10K-F3-KK	36 x 12.8 x 48.1	385	100	208/120V	400A	65,000
MBSWH-150-S3-KK	30.1 x 10.8 x 42.1	130	15	480V	40A	35,000
MBSWH-250-S3-KK	30.1 x 10.8 x 42.1	130	25	480V	40A	35,000
MBSWH-300-S3-KK	30.1 x 10.8 x 42.1	130	30	480V	50A	35,000
MBSWH-500-S3-KK	30.1 x 10.8 x 42.1	130	50	480V	100A	35,000
MBSWH-800-S3-KK	30.1 x 10.8 x 42.1	130	80	480V	125A	35,000
MBSWH-10K-S3-KK	30.1 x 10.8 x 42.1	130	100	480V	175A	35,000
MBSWH-12K-S3-KK	30.1 x 10.8 x 42.1	130	125	480V	200A	35,000
MBSWH-15K-S3-KK	30.1 x 10.8 x 42.1	130	150	480V	250A	35,000
MBSWH-16K-S3-KK	30.1 x 10.8 x 42.1	130	160	480V	250A	35,000
MBSWH-22K-S3-KK	36 x 12.8 x 48.1	280	225	480V	350A	35,000
MBSWH-30K-S3-KK	36 x 12.8 x 48.1	280	300	480V	500A	65,000
MBSWH-37K-S3-KK	36 x 12.8 x 48.1	280	375	480V	600A	65,000
MBSWH-50K-S3-KK	36 x 12.8 x 48.1	280	500	480V	800A	65,000

\* -KK: Keyed Mechanical Interlock Key (2-key)

-KS: Solenoid Key (SKRU)

## GENERAL SAFETY

### GENERAL SAFETY INSTRUCTIONS

DO NOT attempt to install, operate, maintain or dispose of this equipment until you have read and understood all of the product safety information and directions that are contained in this manual.

#### Safety Alert Symbol



The Safety Alert Symbol indicates that a potential personal injury hazard exists. The symbol is comprised of an equilateral triangle enclosing an exclamation mark.

#### Signal Words

Listed below are the signal words that are used throughout this manual followed by their descriptions and associated symbols. When the words DANGER, WARNING, CAUTION and NOTICE are used in this manual they will be followed by important safety information that must be carefully adhered to.

Warnings in this manual may appear in any of the following ways:



#### DANGER

*Danger warning* — The word DANGER in capital letters preceded by the safety alert symbol indicates that an imminently hazardous situation exists, and if not avoided will result in loss of life or serious injury to personnel.



#### WARNING

*Warning warning* — The word WARNING in capital letters preceded by the safety alert symbol indicates that a potentially hazardous situation exists, and if not avoided may result in loss of life or serious injury to personnel.



#### CAUTION

*Caution warning* — The word CAUTION in capital letters preceded by the safety alert symbol indicates that a potentially hazardous situation exists, and if not avoided may result in minor or moderate injury.

#### NOTICE

*Notice warning* — The word NOTICE in capital letters without the safety alert symbol indicates a potentially hazardous situation exists, and if not avoided may result in equipment and property damage.

Other warning symbols may appear along with the Danger and Warning symbol and are used to specify special hazards. These warnings describe particular areas where special care and/or procedures are required in order to prevent serious injury and possible death.



1. *Electrical warning* — The electrical warning symbol is a lightning bolt enclosed in a triangle. The Electrical warning symbol is used to indicate high voltage locations and conditions that may cause serious injury or death if the proper precautions are not observed.



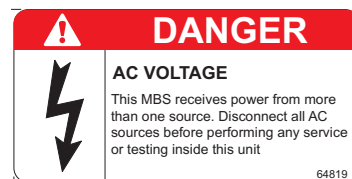
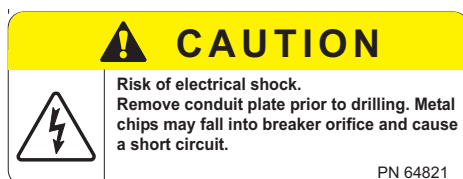
2. *Explosion warning* — The explosion warning symbol is an explosion image enclosed in a triangle. The Explosion warning symbol is used to indicate locations and conditions where molten exploding parts that may cause serious injury or death if the proper precautions are not observed.


### EQUIPMENT WARNING LABELS


DO NOT attempt to install, operate, maintain or dispose of this equipment until you have read and understood all of the product warnings and user directions that are contained in this instruction manual.

Shown below are examples of warning labels that may be found attached to the equipment. DO NOT remove or cover any of the labels. If the labels are damaged or if additional labels are required, contact your TOSHIBA representative for additional labels.

The following are examples of the warning labels that may be found on the equipment. The labels are there to provide useful information or to indicate an imminently hazardous situation that may result in serious injury, severe property and equipment damage, or death if the instructions are not followed.



<b>⚠ DANGER</b>	
	<p><b>HAZARDOUS VOLTAGES</b>            Hazardous voltages are used in the operation of this equipment and could cause severe personal injury or loss of life.            The following precautions should be observed to reduce the risk of injury or death.</p>
<p>Only qualified technicians familiar with this equipment and the information supplied with it should be permitted to install and operate this equipment.</p> <p>Installation of electrical equipment must be done in accordance with National Electrical Code and any other state or local codes. Proper grounding and conductor sizing must be installed for safe operation.</p> <p>During operation, keep all covers in place and cabinet doors shut.</p> <p>When performing visual inspections and maintenance, if possible, be sure the MBS is turned off and the incoming AC feed is turned off and locked out.  <b>The UPS and Battery Cabinet will have hazardous voltages present even after the AC feed is turned off.</b></p> <p>If it is necessary to make measurements with the power on, do not touch any electrical connection points. Remove all jewelry from wrists and fingers. Make sure test equipment is in good, safe operating condition.</p> <p>While servicing, stand on some type of insulation, and be sure not to be grounded.</p> <p>Follow the safety instructions given in the equipment manual carefully and observe all danger, warning and caution notices.</p>	
64818	

USE COPPER CONDUCTORS ONLY! REFER TO INSTRUCTION MANUAL FOR WIRE SIZE <b>ENSURE PROPER PHASING</b>			
A	B	C	
3/8" BOLT-SAE GRADE 8 TORQUE SPEC: 47 FT LB		<b>LINE IN</b>	1/2" BOLT-SAE GRADE 8 TORQUE SPEC: 119 FT LB
USE COPPER CONDUCTORS ONLY! REFER TO INSTRUCTION MANUAL FOR WIRE SIZE <b>ENSURE PROPER PHASING</b>			
A	B	C	
3/8" BOLT-SAE GRADE 8 TORQUE SPEC: 47 FT LB		<b>LOAD IN</b>	1/2" BOLT-SAE GRADE 8 TORQUE SPEC: 119 FT LB
USE COPPER CONDUCTORS ONLY! REFER TO INSTRUCTION MANUAL FOR WIRE SIZE <b>ENSURE PROPER PHASING</b>			
A	B	C	
3/8" BOLT-SAE GRADE 8 TORQUE SPEC: 47 FT LB		<b>UPS IN</b>	1/2" BOLT-SAE GRADE 8 TORQUE SPEC: 119 FT LB
USE COPPER CONDUCTORS ONLY! REFER TO INSTRUCTION MANUAL FOR WIRE SIZE <b>ENSURE PROPER PHASING</b>			
A	B	C	
3/8" BOLT-SAE GRADE 8 TORQUE SPEC: 47 FT LB		<b>UPS OUT</b>	1/2" BOLT-SAE GRADE 8 TORQUE SPEC: 119 FT LB
 GND	<b>CB1</b>	<b>CB2</b>	<b>CB3</b>
<b>NEUTRAL</b>		<b>SKRU</b>	<b>TB1</b> 1 2

## IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

This manual contains important instructions that should be followed during the installation, maintenance, and operation of the MBS to assure safe and proper operation.

1. Turn off, lockout, and tagout all power sources before connecting the power and SKRU wiring to the equipment or when performing maintenance.
2. Verify the MBS is de-energized before removing the cabinet dead fronts.
3. Verify cables and terminals are de-energized before installing cable in terminals.

### Qualified Personnel ONLY!

Qualified Personnel is one that has the skills and knowledge relating to the construction, installation, operation, and maintenance of the electrical equipment and has received safety training on the hazards involved (Refer to the latest edition of NFPA 70E for additional safety requirements).

Qualified Personnel shall:

1. Have read the entire operation manual.
2. Be trained and authorized to safely energize, de-energize, ground, lockout and tag circuits and equipment, and clear faults in accordance with established safety practices.
3. Be trained in the proper care and use of protective equipment such as safety shoes, rubber gloves, hard hats, safety glasses, face shields, flash clothing, etc., in accordance with established safety practices.
4. Be trained in rendering first aid.
5. Be knowledgeable of batteries and the required handling and maintenance precautions.

For further information on workplace safety visit [www.osha.gov](http://www.osha.gov).

## SHIPPING DIMENSIONS

The shipping dimensions for the wall-mount MBS are given in the table below.

Table 1: Shipping Dimensions

ITEM	Shipping Dim. (LxWxH)
Medium MBS Case	36" x 47" x 14"
Large MBS Case	41" x 53" x 19"

## MOUNTING INSTRUCTIONS

The Toshiba wall-mounted Maintenance Bypass cabinet comes fully assembled. The units are equipped with two lifting eyes each on the top and bottom of the cabinet. Inside on the back panel are four keyholes sized for 1/2" mounting bolts (customer supplied) that are for mounting the unit to cement wall or metal channel support. **See the appropriate drawing for the support dimensions and spacing.**

Removable 14 gage steel access plates are provided at the top and bottom for anchoring power cable conduit.

## LOCK-OUT/TAG-OUT (LOTO) HASP



A pair of interleaving tabs are included to provide a LOTO hasp to satisfy applications that require Lock-out/Tag-out capability. Instructions for installing this hasp are given in Appendix A.

## POWER CABLING INSTRUCTIONS

The MBS Circuit Breakers are equipped with terminal bus strips. The terminal bus strips are pre-drilled with standard 2-hole NEMA patterns to facilitate installation of power cables:

Medium Case - 3/8 in. bolt holes on 1.75 in. centers

Large Case - 1/2 in. bolt holes on 1.75 in. centers

Use of NEMA two-hole cable terminations is recommended.

**NOTE: Cables, Cable Lugs (Fittings), and fastening bolts/hardware are to be provided by others.**

Table 2: Recommended Bolt Tightening Specifications

ITEM	Fasteners	Torque
Medium MBS Case	Grade 8, 3/8 in. Bolts	47 ft-lb (5.3 N•M)
Large MBS Case	Grade 8, 1/2 in. Bolts	119 ft-lb (13.4 N•M)

The following table lists examples of recommended 2 hole compression type fittings.

Table 3: Compression Fittings: 2 hole, 3/8 in. x 1.75"

IlSCO P/N	Description	Hole Diameter	Hole Spacing	Conductor Size	Fitting Color
CLND-6-38-134	Long Barrel	3/8 in.	1.75 in.	#6	Blue
CLND-2-38-134	Long Barrel	3/8 in.	1.75 in.	#2	Brown
CSWD -2-38-134	Short Barrel				
CLND-1/0-38-134	Long Barrel	3/8 in.	1.75 in.	1/0	Pink
CSWD -1/0-38-134	Short Barrel				
CLND-2/0-38-134	Long Barrel	3/8 in.	1.75 in.	2/0	Black

IlSCO P/N	Description	Hole Diameter	Hole Spacing	Conductor Size	Fitting Color
CLND-3/0-12-134	Long Barrel	3/8 in.	1.75 in.	3/0	Orange
CLND-4/0-38-134 CSWD -4/0-38-134	Long Barrel Short Barrel	3/8 in.	1.75 in.	4/0	Purple
CLND-250-38-134 CSWD -250-38-134	Long Barrel Short Barrel	3/8 in.	1.75 in.	250	Yellow
CLND-350-38-134	Long Barrel	3/8 in.	1.75 in.	350	Red
CLND-500-38-134	Long Barrel	3/8 in.	1.75 in.	500	Brown

Table 4: Compression Fittings: 2 hole, 1/2 in. x 1.75"

IlSCO P/N	Description	Hole Diameter	Hole Spacing	Conductor Size	Fitting Color
CLND-6-12-134 CSWD -6-12-134	Long Barrel Short Barrel	1/2 in.	1.75 in.	#6	Blue
CLND-4-12-134	Long Barrel	1/2 in.	1.75 in.	#4	Grey
CLND-3-12-134	Long Barrel	1/2 in.	1.75 in.	#3	White
CLND-2-12-134 CSWD -2-12-134	Long Barrel Short Barrel	1/2 in.	1.75 in.	#2	Brown
CLND-1-12-134	Long Barrel	1/2 in.	1.75 in.	#1	Green
CLND-1/0-12-134 CSWD -1/0-12-134	Long Barrel Short Barrel	1/2 in.	1.75 in.	1/0	Pink
CLND-2/0-12-134 CSWD -2/0-12-134	Long Barrel Short Barrel	1/2 in.	1.75 in.	2/0	Black
CLND-3/0-12-134	Long Barrel	1/2 in.	1.75 in.	3/0	Orange
CLND-4/0-12-134 CSWD -4/0-12-134	Long Barrel Short Barrel	1/2 in.	1.75 in.	4/0	Purple
CLND-250-12-134 CSWD -250-12-134	Long Barrel Short Barrel	1/2 in.	1.75 in.	250	Yellow
CLND-300-12-134 CSWD -300-12-134	Long Barrel Short Barrel	1/2 in.	1.75 in.	300	White
CLND-350-12-134 CSWD -350-12-134	Long Barrel Short Barrel	1/2 in.	1.75 in.	350	Red
CLND-400-12-134 CSWD -400-12-134	Long Barrel Short Barrel	1/2 in.	1.75 in.	400	Blue
CLND-500-12-134 CSWD -500-12-134	Long Barrel Short Barrel	1/2 in.	1.75 in.	500	Brown

Connect the power cables as indicated below.  
Verify phasing is correct before applying power.

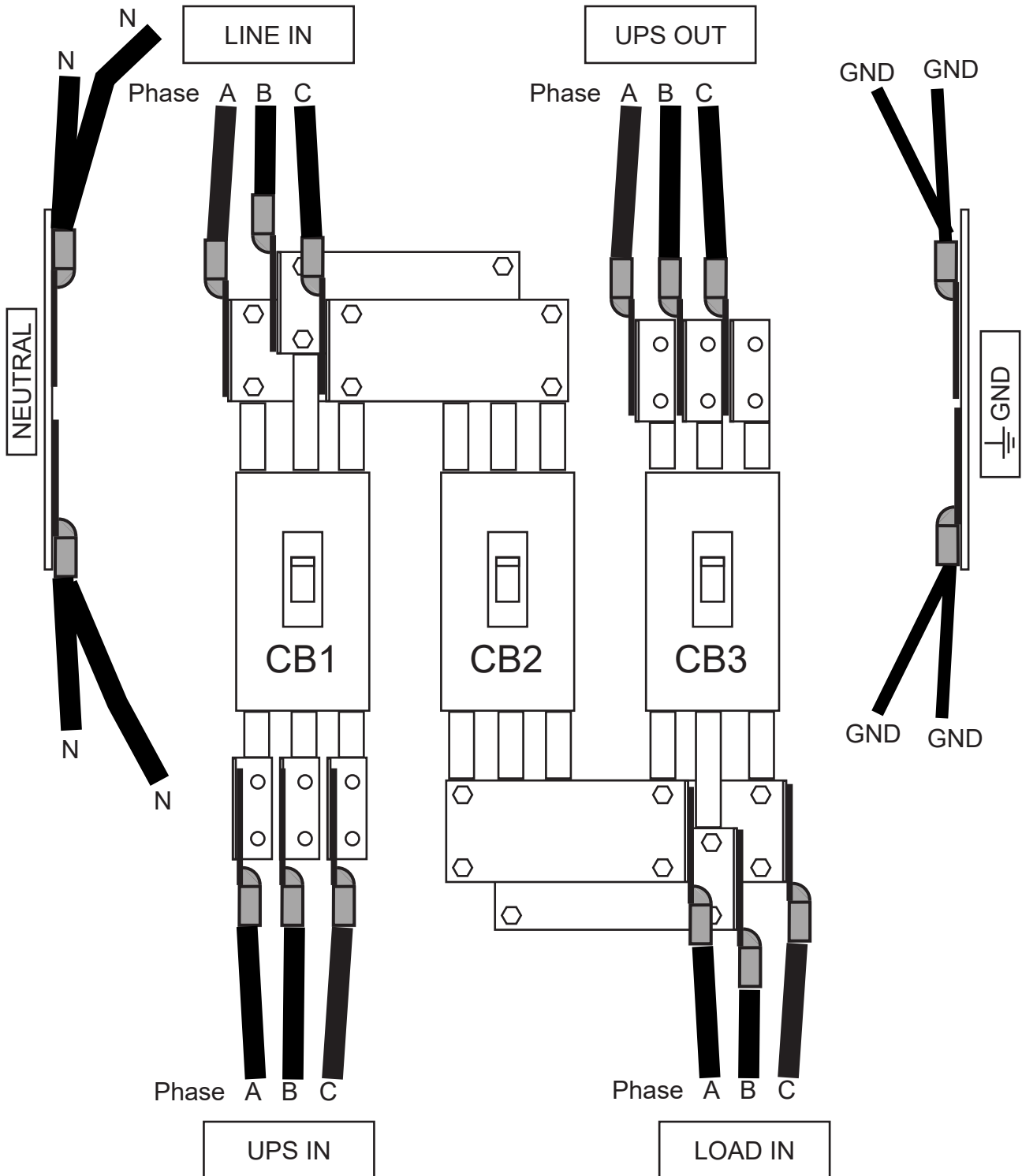


Figure 1 - MBS Power Cabling Connections

## SKRU Wiring

If the Wall Mount MBS is equipped with a SKRU (Solenoid Key Release Unit) it comes with the SKRU factory-wired to the MBS Terminal Strip TB-1. TB-1 is mounted on the lower left side of the MBS.

Complete wiring the MBS TB-1 SKRU to the UPS dry contacts TB before energizing the MBS or UPS. The SKRU is powered from the load side of the MBS output breaker.

Connect one end of the user-supplied 16-18 Gage twisted pair wiring to MBS TB-1 terminals 1 and 2. Connect the other end to the UPS "Bypass Enable" dry contact TB terminals. See the figure below.

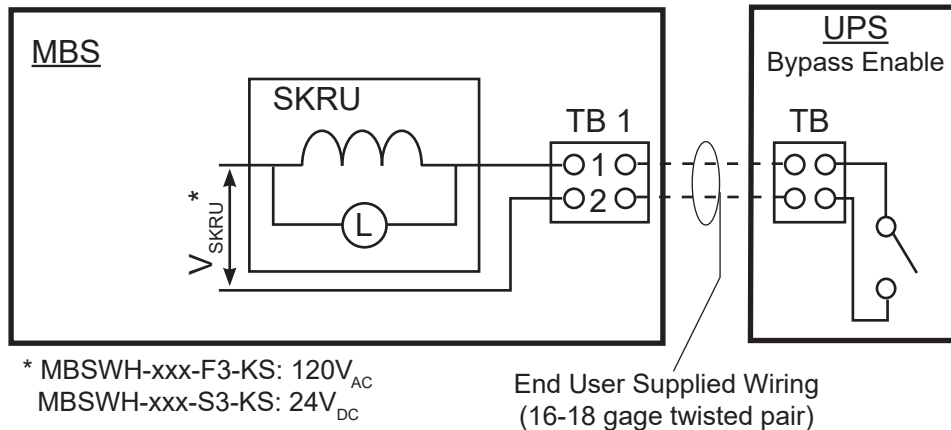


Figure 2 - MBS Wiring for SKRU

Table 5: SKRU Point to Point Wiring

From UPS Model Terminal Board	To MBSWH Terminal Board
4200FA TB2-11	MBSWH TB1-1
4200FA TB2-12	MBSWH TB1-2
4300 TB3-1	MBSWH TB1-1
4300 TB3-2	MBSWH TB1-2
4400 TB3-1	MBSWH TB1-1
4400 TB3-2	MBSWH TB1-2
G8000 TB1-10	MBSWH TB1-1
G8000 TB1-11	MBSWH TB1-2
G9000 (100-750kVA) IOAU-09 TN2-19	MBSWH TB1-1
G9000 (100-750kVA) IOAU-09 TN2-20	MBSWH TB1-2
G9000 (1000kVA) IOAU-19 TN21-25 - 19	MBSWH TB1-1
G9000 (1000kVA) IOAU-19 TN21-25 - 20	MBSWH TB1-2



## LOCK-OUT/TAG-OUT OPTION

An optional pair of tabs can be easily attached to the MBS door and frame to satisfy applications that require Lock-out/Tag-out capability. Call the factory for additional information.

---

## KEYED MECHANICAL INTERLOCK OPERATION

The MBS ships with a keyed mechanical interlock or SKRU (Solenoid Key Release Unit) interlock. Operation instructions for both models are shown below, and also displayed on the MBS breaker panel.

**NOTICE:** Both MBS procedures are make-before-break. Ensure the UPS is in BYPASS mode before switching to Maintenance Bypass.

Failure to switch the UPS to BYPASS before engaging the MBS may result in damage to the MBS, UPS or both.

### **3-Breaker MBS with Keyed Mechanical Interlock**

#### **Place MBS in Maintenance Bypass Mode**

1. Transfer the UPS to static bypass. Verify UPS is in Bypass.
2. Unlock CB2.
3. Close CB2 (Maintenance Bypass Breaker)
4. Open CB3 (UPS Output Breaker)
5. Remove the key from CB2, and insert it in CB3.
6. Lock CB3.
7. Open CB1.(UPS Input Breaker).

#### **Place MBS in UPS Online Mode**

1. Close CB1 (UPS Input Breaker).
2. Turn UPS ON. Verify UPS is in Bypass.
3. Turn ON all UPS Battery DC breakers.
4. Unlock CB3.
5. Close CB3 (UPS Output Breaker)
6. Remove the key from CB3, and insert it in CB2.
7. Open CB2 (Maintenance Bypass Breaker)
8. Lock CB2.
9. Return UPS to Online Mode.

### **3-Breaker MBS with SKRU (Solenoid Key Release Unit)**

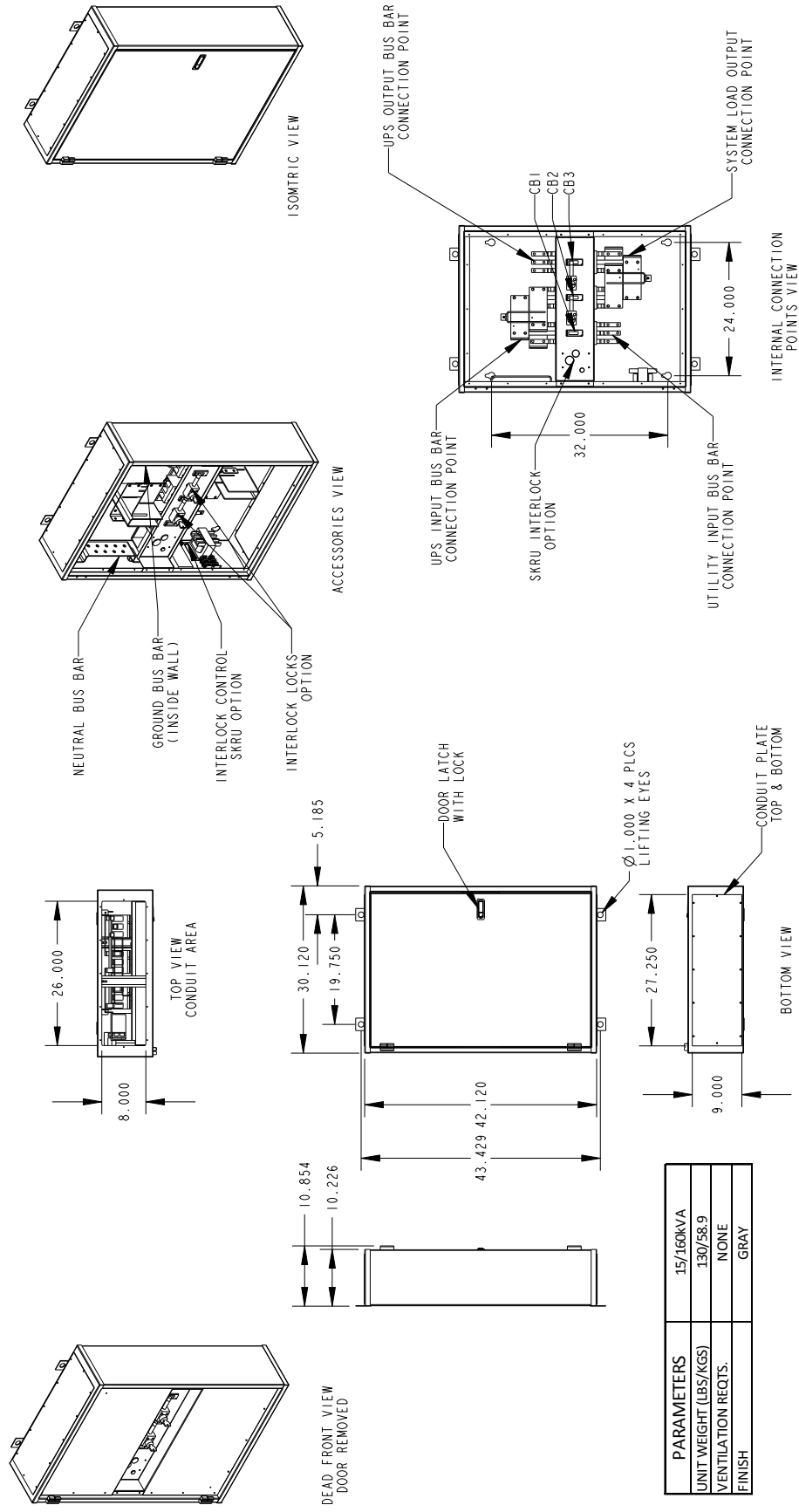
#### **Place MBS in Maintenance Bypass Mode**

1. Transfer the UPS to static bypass. Verify UPS is in Bypass.
2. Turn and extract key A-1 from the SKRU and insert the key in CB2.
3. Unlock CB2.
4. Close CB2 (Maintenance Bypass Breaker)
5. Open CB3 (UPS Output Breaker)
6. Lock CB3.
7. Remove key B-1 from the lock on CB3, and insert it in the SKRU and turn.
8. Open CB1 (UPS Input Breaker).

#### **Place MBS in UPS Online Mode**

1. Close CB1 (UPS Input Breaker).
2. Turn UPS ON. Verify UPS is in Bypass.
3. Turn ON all UPS Battery DC breakers.
4. Turn and extract key B-1 from the SKRU. Insert it in the lock on CB3.
5. Unlock CB3.
6. Close CB3 (UPS Output Breaker)
7. Open CB2 (Maintenance Bypass Breaker)
8. Lock CB2. Remove key A-1 from CB2, and insert it in SKRU and turn.
9. Return UPS to Online Mode.

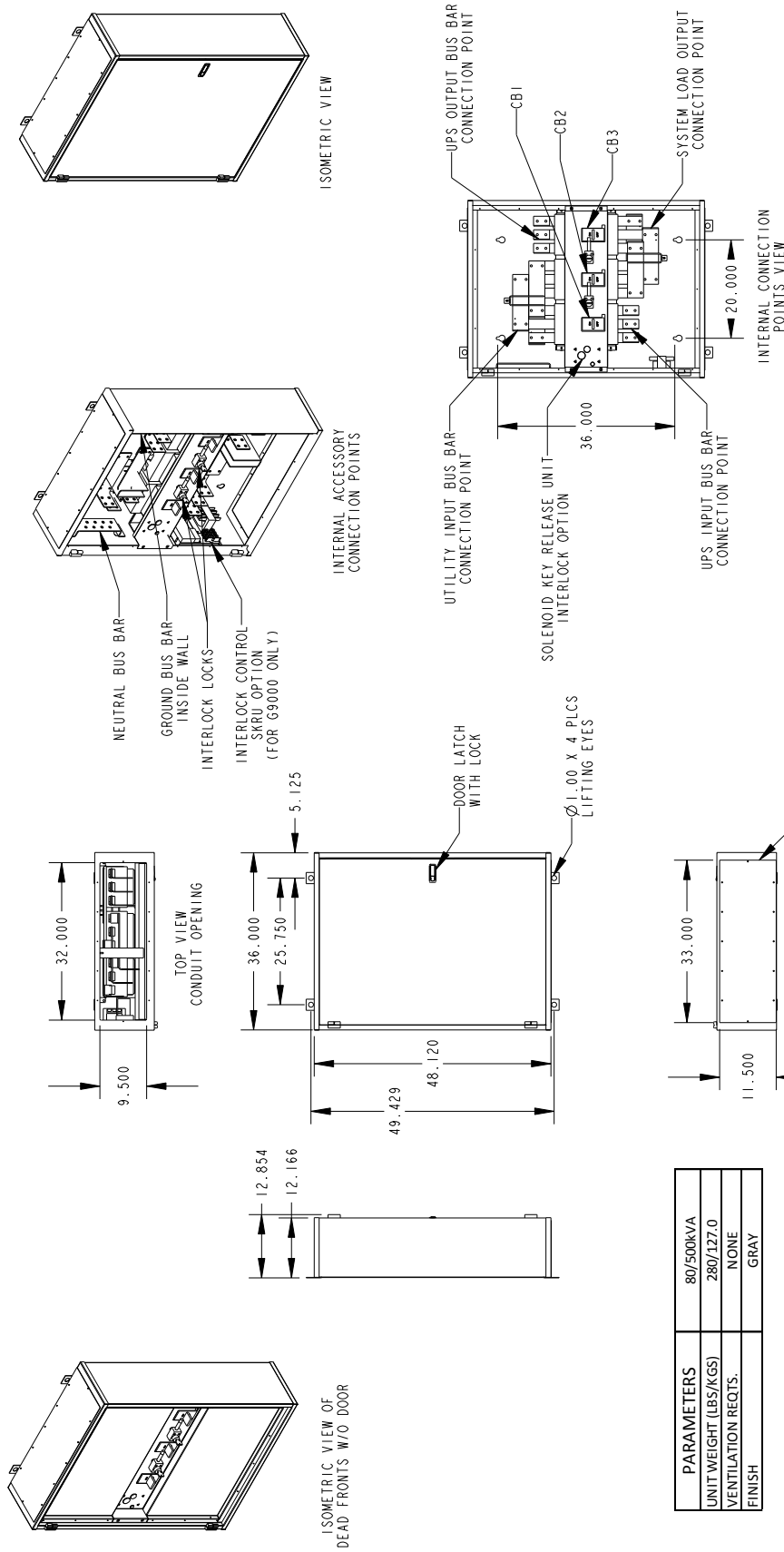




PARAMETERS	15/160KVA
UNIT WEIGHT (LBS/KGS)	130/58.9
VENTILATION REQTS.	NONE
FINISH	GRAY

NOTE:  
 1. SEE INSTALLATION SHEET FOR COMPLETE SPECIFICATIONS  
 2. CABLE LANDINGS ARE NEMA 2 HOLE.

Figure 3 - Dimensional Drawing for 0-200A MBSWH



NOTE:  
1. SEE INSTALLATION SHEET FOR COMPLETE SPECIFICATIONS  
2. CABLE LANDINGS ARE NEMA 2 HOLE

Figure 4 - Dimensional Drawing for 300A+ MBSWH

---

## Appendix A - Lock-Out/Tag-Out Hasp Installation

The Toshiba wall-mounted MBS ships with a LOTO (Lock-Out/Tag-Out) hasp to be installed by the User in those applications requiring that capability.

Installation equipment required:  
#2 Phillips Screwdriver

1. Twist the inner tongue and outer loop sections of the hasp in opposite directions, until the 0.5 mm join separates.
2. Use the factory supplied hardware to mount the outer loop of the hasp on the MBS door. The two mounting holes for the screws is located just above the door latch.
3. Use the factory supplied hardware to mount the inner tongue of the hasp on the inner edge of the door frame. The mounting holes are located just above the door latch.
4. After mounting both parts of the LOTO hasp, close the door carefully and verify the hasp loop slips over the hasp tongue without interference.
5. This completes the installation of the LOTO hasp.



# TOSHIBA

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