

MILBANK MANUAL TRANSFER SWITCH



30 & 50 AMP

OWNER'S & INSTALLATION MANUAL

MODEL #

MMTS301SYS

MMTS301

MMTS501SYS

MMTS501



**California
Proposition 65 Warning**

Certain components in this product and its related accessories contain chemicals known to the state of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling.

DISCLAIMERS:

All information, illustrations and specifications in this manual are based on the latest information available at the time of publishing. The illustrations used in this manual are intended as representative reference views only. Moreover, because of our continuous product improvement policy, we may modify information, illustrations and/or specifications to explain and/or exemplify a product, service or maintenance improvement. We reserve the right to make any change at any time without notice. Some images may vary depending upon which model is shown.

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ORIGINAL INSTRUCTIONS (English):

The English version of this manual controls over any error in or conflicting interpretation of any translation.

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INTRODUCTION

Thank you for your purchase of a Milbank Manual Transfer Switch (MMTS). This product is designed for use with portable generators. This Manual Transfer Switch may have different installation requirements depending on the generator manufacturer or design. When operated and maintained according to the instructions in this manual, your system will provide many years of electrical energy service for utility outages.

This Manual Transfer Switch requires professional installation before use. Refer to the installation section of this manual for instructions on installation procedures. Only licensed electricians should install the MMTS.

This manual contains important safety instructions for installation and operation of this MMTS. Every effort was made to provide safe, efficient instructions for installation and operation. However, as all installations are unique, it is impossible to anticipate every possible procedure and method to achieve a properly installed unit. It is important that you read and understand these instructions thoroughly before attempting to install or operate this unit. Your equipment is supplied with this combined Owner's and Installation Manual. This is an important document and should be retained by the owner after the installation has been completed. An electronic version can be downloaded at milbankworks.com.

Every effort has been made to ensure that the information in this manual is both accurate and current; however, the manufacturer reserves the right to change, alter or otherwise improve the system at any time without prior notice.

This User and Installation Guide describes how to install, configure, and use the Milbank Manual Transfer Switch (MMTS). This manual describes the configuration, features, and operation of models MMTS301SYS and MMTS501SYS. The MMTS301 and MMTS501 is a reduced functionality unit that does not include the power monitoring feature.

The instructions are to be used to properly install and configure the Manual Transfer Switch to the home wiring system. Installations must comply with all federal, state and local codes, standards and regulations. Your installer should follow these instructions completely.

This manual only covers the MMTS operation, the portable generator manual is to be used for proper operation of the generator.

CONTACT INFORMATION

There are several ways to contact us for answers to questions you may have about your product. Please contact Technical services by phone at (816) 410-7346, Monday through Friday 8a.m. to 5 p.m, Central Time. Electronic communication can be made through our website milbankworks.com where you can locate an authorized repair technician, or by email at techservices@milbankworks.com.

For your future reference please record the following pertinent information. This information will help to identify product information should you need to contact Milbank's Technical Services department.

MANUAL TRANSFER SWITCH

Model Number:

Description:

Serial Number:

Installation Date: _____

GENERATOR

Model Number: _____

Description: _____

Serial Number: _____

Installation Date: _____

END USER RESPONSIBILITIES

To ensure you make informed choices and decisions, communicate effectively with your licensed electrician and familiarize yourself with the installation options available. The equipment warranty is void unless the system is installed by a licensed electrician. All installations of Milbank systems must comply with all applicable codes, industry standards, and regulations. Your installer must check local codes and obtain permits before installing the system.

LICENSED ELECTRICIAN RESPONSIBILITIES

- Read and observe the safety rules.
- Read and follow instructions given in this manual.
- Check federal, state, and local codes and authority having jurisdiction for questions on installation.
- Ensure the generator is not overloaded with selected loads.
- Perform an installation that will pass the final electrical inspection.

TO BE SUPPLIED BY INSTALLER:

- Connecting wire and conduit
- Tools and equipment needed to perform the installation

IMPORTANT SAFETY INSTRUCTIONS



SAVE THESE INSTRUCTIONS.

- This manual contains important information that should be used during installation, maintenance and operation of this unit.

SAFETY LABELS



WARNING



Only qualified electricians should attempt installation of this equipment, which must strictly comply with all applicable codes, standards and regulations.



Certain components in this product and related accessories may contain chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Wash hands after handling.



The safety alert symbol indicates a potential personal injury hazard. A single word (DANGER, WARNING, OR CAUTION) is used with the alert symbol to designate a degree or level of hazard seriousness. A safety symbol may be used to represent the type of hazard. The signal word NOTICE is used to address practices not related to personal injury.



DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE addresses practices not related to personal injury.

The manufacturer of this product cannot reasonably anticipate every possible circumstance that might involve a hazard. The warnings in this manual, and the tags and decals affixed to the unit are therefore, not all-inclusive. If you use a procedure, work method or operating technique that the manufacturer does not specifically recommend, work method or operating technique that you choose does not render the equipment unsafe.

IMPORTANT SAFETY INSTRUCTIONS



CONSERVER CES INSTRUCTIONS

- Ce manuel contient des informations importantes qui doivent être utilisés lors de l'installation, l'entretien et le fonctionnement de cet appareil.

SÉCURITÉ SYMBOLE SIGNIFICATION



AVERTISSEMENT



Seuls des électriciens qualifiés devraient tenter l'installation de cet équipement, qui doit se conformer strictement aux codes, aux normes et réglementations.



Certains composants de ce produit et les accessoires connexes peuvent contenir des produits chimiques reconnus par l'État de Californie pour causer le cancer, des malformations congénitales ou d'autres problèmes de reproduction.

Se laver les mains après manipulation.



Le symbole d'alerte de sécurité, indique un danger potentiel de blessures. Un seul mot (DANGER, AVERTISSEMENT ou ATTENTION) est utilisé avec le symbole d'alerte pour indiquer le degré ou niveau de risque sérieux. Un symbole de sécurité peut être utilisé pour représenter le type de risque. Le mot AVIS de signal est utilisé pour lutter contre les pratiques ne sont pas liées à des blessures.



DANGER

Indique un risque qui, s'il n'est pas évité, entraînera la mort ou des blessures graves.



AVERTISSEMENT

Indique un danger qui, s'il n'est pas évité, peut entraîner la mort ou des blessures graves.



ATTENTION

Indique un danger qui, s'il n'est pas évité, pourrait entraîner des blessures mineures ou modérées.

AVIS pratiques les adresses ne sont pas liés à des blessures.

Le fabricant de ce produit ne peut pas raisonnablement anticiper toutes les circonstances potentielles pouvant comporter un danger. Les avertissements dans ce manuel, et les balises et les décalques apposés sur l'appareil sont donc pas exhaustive. Si vous utilisez une procédure, une méthode de travail ou la technique d'exploitation que le fabricant ne recommande pas spécifiquement, vous devez vous assurer qu'il est sécuritaire pour vous et les autres. Vous devez également vous assurer que la procédure, la méthode de travail ou la technique d'exploitation que vous choisissez ne rende pas l'équipement dangereux.

WARNING

⚠ WARNING

Electrical shock hazard. May cause injury or death. Disconnect all sources of supply before servicing.

Failure to properly ground equipment can result in electrocution.

- Do not touch bare wires.
- Do not use equipment with worn, frayed, bare or otherwise damaged wiring.
- Do not handle electrical cords while standing in water, while barefoot, or while hands or feet are wet.
- If you must work around a unit while it is operating, stand on an insulated dry surface to reduce shock hazard.
- Do not allow **unqualified** persons or children to service equipment.
- In case of an accident caused by electrical shock, immediately shut down all sources of electrical power and contact local authorities. **Avoid direct contact with the victim.**

GENERAL SAFETY PRECAUTIONS



DANGER



DANGER! Equipment contains high voltage that can cause personal injury or death.

Despite the safe design of the system, operating this equipment imprudently, neglecting its maintenance or being careless can cause possible injury or death.

NOTICE

Improper treatment of equipment can damage it and shorten its life.

- *Use equipment only for intended uses.*
- *If you have questions about intended use, ask dealer or contact Milbank Manufacturing.*
- *Do not expose equipment to excessive moisture, dust, dirt, or corrosive vapors.*
- *Remain alert at all times while working on this equipment. Never work on the equipment when you are physically or mentally fatigued.*
- *If connected devices overheat, turn them off and turn off their circuit breaker/fuse.*

AVERTISSEMENT



Un défaut de terre le matériel peut entraîner une électrocution.

- Ne pas toucher les fils nus.
- Ne pas utiliser de matériel avec des cordons électriques usés, effilochés ou dénudés, ou autrement endommagé.
- Ne pas manipuler les fils électriques tout en restant dans l'eau, pieds nus ou avec les mains ou les pieds mouillés.
- Si vous devez travailler autour d'une unité pendant son fonctionnement, tenir sur une surface sèche isolée pour réduire les risques de choc.
- Ne laissez pas des personnes **non qualifiées** ou des enfants pour le matériel.
- Dans le cas d'un accident causé par un choc électrique, arrêter immédiatement toutes les sources d'alimentation électrique et contacter les autorités locales. Éviter le contact direct avec la victime.

PRÉCAUTIONS GÉNÉRALES DE SÉCURITÉ



DANGER! Équipement contient haute tension qui peut provoquer des blessures ou la mort.

En dépit de la conception sécuritaire du système, d'utiliser cet équipement de façon imprudente, négliger son entretien ou être négligent peut causer des blessures ou la mort.

AVIS

Le traitement inadéquat de l'équipement peut endommager et de raccourcir sa durée de vie. Use equipment only for intended uses.

- *Si vous avez des questions concernant les utilisations prévues, demandez à votre distributeur ou contactez Milbank fabrication.*
- *Ne pas exposer le matériel à l'humidité, la poussière, la saleté ou à des vapeurs corrosives.*
- *Demeurez alerte en tout temps lorsque vous travaillez sur cet équipement. Ne jamais travailler sur l'équipement si vous êtes fatigué physiquement ou mentalement.*
- *Si les appareils branchés sont en surchauffe, éteignez-les et mettez leur disjoncteur / fusible.*

PACKAGE CONTENTS

Before installation, please refer to the following chart to ensure you have received the appropriate components for your model of Manual Transfer Switch.

MILBANK 30A MANUAL SWITCH OPTIONS

	60A Utility Breaker	30A Generator Breaker	6 Branch Breakers	6' Wiring harness Included	30A Inlet Installed in MTS	LED Digital Meter with Learn Function	Separate power inlet box with 30A Plug (Nema 3R)	10' Cord	25' Cord
MMTS301	X	X							
MMTS301L	X	X			X				
MMTS301SYSX	X	X	X	X		X	X		
MMTS301SYSX1C	X	X	X	X		X	X	X	
MMTS301SYSX2C	X	X	X	X		X	X		X
MMTS301SYSL	X	X	X	X	X	X			
MMTS301SYSL1C	X	X	X	X	X	X		X	
MMTS301SYSL2C	X	X	X	X	X	X			X

MILBANK 50A MANUAL SWITCH OPTIONS

	100A Utility Breaker	50A Generator Breaker	6 Branch Breakers	6' Wiring harness Included	50A Inlet Installed in MTS	LED Digital Meter with Learn Function	Separate power inlet box with 50A Plug (Nema 3R)	10' Cord	25' Cord
MMTS501	X	X							
MMTS501L	X	X			X				
MMTS501SYSX	X	X	X	X		X	X		
MMTS501SYSX1C	X	X	X	X		X	X	X	
MMTS501SYSX2C	X	X	X	X		X	X		X
MMTS501SYSL	X	X	X	X	X	X			
MMTS501SYSL1C	X	X	X	X	X	X		X	
MMTS501SYSL2C	X	X	X	X	X	X			X

Utilizing a portable generator, your Manual Transfer Switch will power to selected circuits in the event that utility power is interrupted. The MMTS normal operation is to connect the Utility to the selected circuits using the internal Load Subpanel. The MMTS system can manually switch up to 8 AC circuits when operating on generator power. MMTS301SYS and MMTS501SYS systems monitors and displays power being consumed by the selected circuits, using Light Emitting Diodes (LED's), to allow the home owner to manually control the loads on the generator. A survey of power usage of the selected circuits should be performed to achieve the desired performance from the portable generator.

UNPACKING AND HANDLING

After unpacking inspect the Manual Transfer Switch for any damage that may have occurred during shipping. If any missing parts or damage is discovered when unpacking, do not return the unit to the place of purchase; please contact Milbank Technical Services for instructions on how to proceed. Never install a Manual Transfer Switch that has been damaged.

The MMTS enclosure is NEMA type 3R rated and is suitable for indoor or outdoor installations.

Guidelines for mounting the unit include:

- Ensure that mounting surface can support the 25 pound weight of the MMTS and adheres to all local codes
- The enclosure must be installed with NEMA type 3R hardware and connections
- Level and plumb the unit enclosure to prevent deformation
- Never install the MMTS where any corrosive substance may come in contact with the enclosure
- Protect the MMTS at all times against excessive moisture, dust, dirt, lint, construction grit and corrosive vapors
- An optional inlet box can be used to permit installing the generator outside while installing the MMTS inside next to the Main distribution panel/ load center

MMTS WIRING DIAGRAM

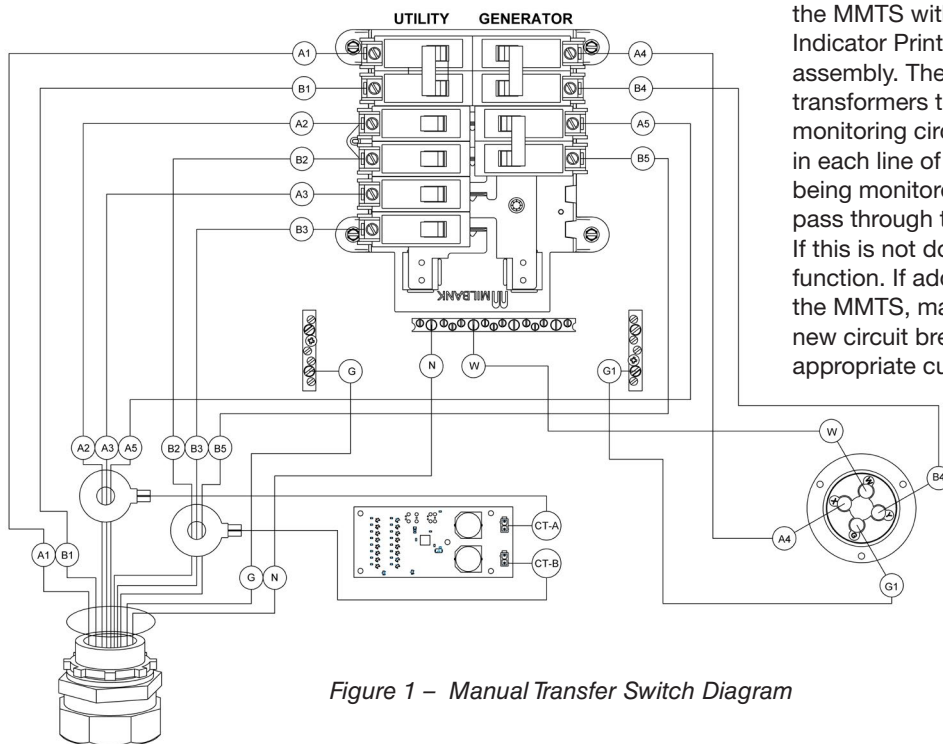


Figure 1 – Manual Transfer Switch Diagram

The schematic shows the internal wiring of the MMTS with the Manual Transfer Switch Indicator Printed Circuit Board (MTSI PCB) assembly. The MTSI PCB uses 2 current transformers to acquire power for the monitoring circuitry and to measure power in each line of the input power. Each circuit being monitored must have the circuit wire pass through the A or B current transformer. If this is not done the monitoring will not function. If additional circuits are added to the MMTS, make sure that the wire to the new circuit breaker is passed through the appropriate current transformer.

OPERATION & INSTALLATION



The installation of the MMTS shall conform to national and local electrical codes and should only be performed by a licensed electrician.

Each installation of a manual transfer switch is unique and as such it is not possible for this manual to cover every configuration and procedure necessary to complete the installation; neither can potential hazards and/or the result of each method or procedure be anticipated in this manual. See Figure 2 for a typical install.

The MMTS is installed between the Main Distribution Panel/ Load Center, portable generator and the selected loads through conduit. The selected loads must be connected to the proper size circuit breaker for each load per electrical code. The portable generator is connected to the MMTS through the 30

AMP or 50 AMP Inlet depending on the size of generator used. The inlet may be located outside in the optional inlet box that is hardwired to the MTS. Selected loads that are to be powered by the portable generator must not exceed the capacity of the generator to prevent unwanted stalls. The homeowner is responsible for manually controlling the selected loads that are attached to the portable generator to obtain the desired operation.

During installation the installer should check that the load of the selected circuits are balanced on each phase of the generator to achieve optimum generator performance. When on generator power the home owner must monitor the loads to prevent stalling the generator due to an overload.

Please read before beginning installation of MMTS:

1. Ensure that you have access to a lighting source that is powered independently of the utility service.
2. Turn off main utility breaker



Even with the main power switch turned off the wires on the utility side of the breaker contain live voltage and contact with them can cause serious injury or death.

3. The transfer switch circuit breakers must be connected only to branch circuit breakers of the same size and configuration in the load center.



- Connecting to the too small of a breaker can cause poor performance



- Connecting to too large of a breaker could result in exceeding the ampacity rating of the wiring and create a dangerous or an unsafe condition.

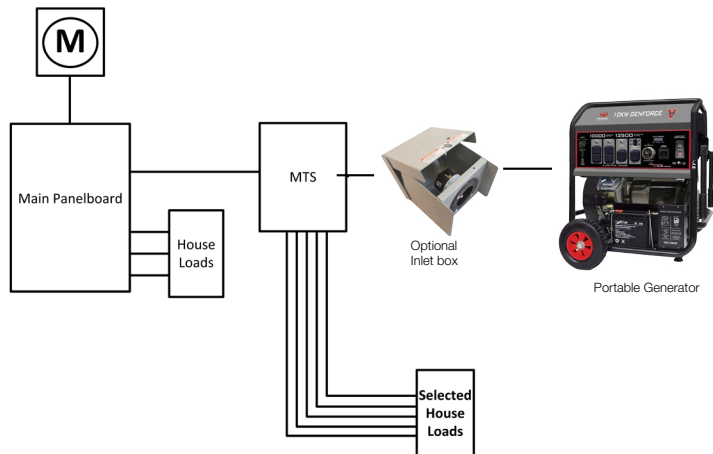


Figure 2 – Typical install with optional external inlet

It is recommended to install the manual transfer switch next to the Main , either inside or outside of the house.



Changes to existing electrical service should be finalized and approved by the local regulatory agencies before installation begins. Install the MMTS as a subpanel to the Main Circuit Breaker Panel and move the selected house loads to the MMTS subpanel. The portable generator may be directly connected to the MMTS or through an optional inlet box.



If the optional inlet box is used then the inlet opening on the MMTS must be sealed with the inlet cover to prevent potential shock. The inlet box wiring must be the proper size and supported by appropriate conduit or raceways. All wiring and conduit sizes and types should be in accordance with federal, state and local codes, standards and regulations.

FUNCTIONAL TESTING

At the completion of the installation, test for proper operation;

1. Attach the portable generator to the MMTS through the inlet.
2. Turn off all sub panel circuit breakers and the utility circuit breaker.
3. Start the backup Generator.
 - Turn on circuit breaker A2 and verify that the lower left and the upper right LED's are illuminated. If the LED's are not illuminated verify that the circuit has a load attached to the circuit.
 - Turn on circuit breaker B2 and verify that the lower right LED is illuminated. If the LED is not illuminated verify that the circuit has a load attached to the circuit.
 - Turn on circuit breaker A3 and verify that the middle left LED's are illuminated. If the LED's are not illuminated verify that the circuit has a load attached to the circuit.
 - Turn on circuit breaker B3 on and verify that the middle right LED's are illuminated. If the LED's are not illuminated verify that the circuit has a load attached to the circuit.
 - Turn on ganged circuit breakers A4 and B4 and verify that the upper left and right LED's are illuminated. If the LED's are not illuminated check the load attached to the circuits.
4. Perform the Learn function described in the Setup section. - See page 15
5. Restore the Utility power by turning on the Utility Circuit Breaker which will toggle off the Generator Circuit Breaker.
6. Turn off the portable generator and disconnect from the MMTS and store the generator per the manufacturers instructions.
7. The system is now properly installed.

At the end of the Functional Test, train the home owner on the operation of the MMTS system and generator.

ELECTRICAL

All wiring must be the proper size and supported by appropriate conduit or raceways. All wiring and conduit sizes and types should be in accordance with federal, state and local codes, standards and regulations.

Location	Wire Size	Torque specification
Circuit Breaker Terminals	Use wire specification on breaker	Use Torque specification on breaker
Neutral Terminals	Use wire specification on breaker	50 in-lb
Ground Terminals	1/0 - 14 AWG CU	50 in-lb



The MMTS only switches the two hot wires coming from the generator; with this configuration the neutral wire will always maintain contact between the generator and your main panel. Most portable generators have a neutral ground bond for safe remote operation. In order to avoid an unsafe ground loop situation when using a portable generator with this switch the generator should be converted to operate with a floating neutral. Making this change should only be done by a licensed electrician. Consult your generator manual for details on this procedure.

MOUNTING DIMENSIONS

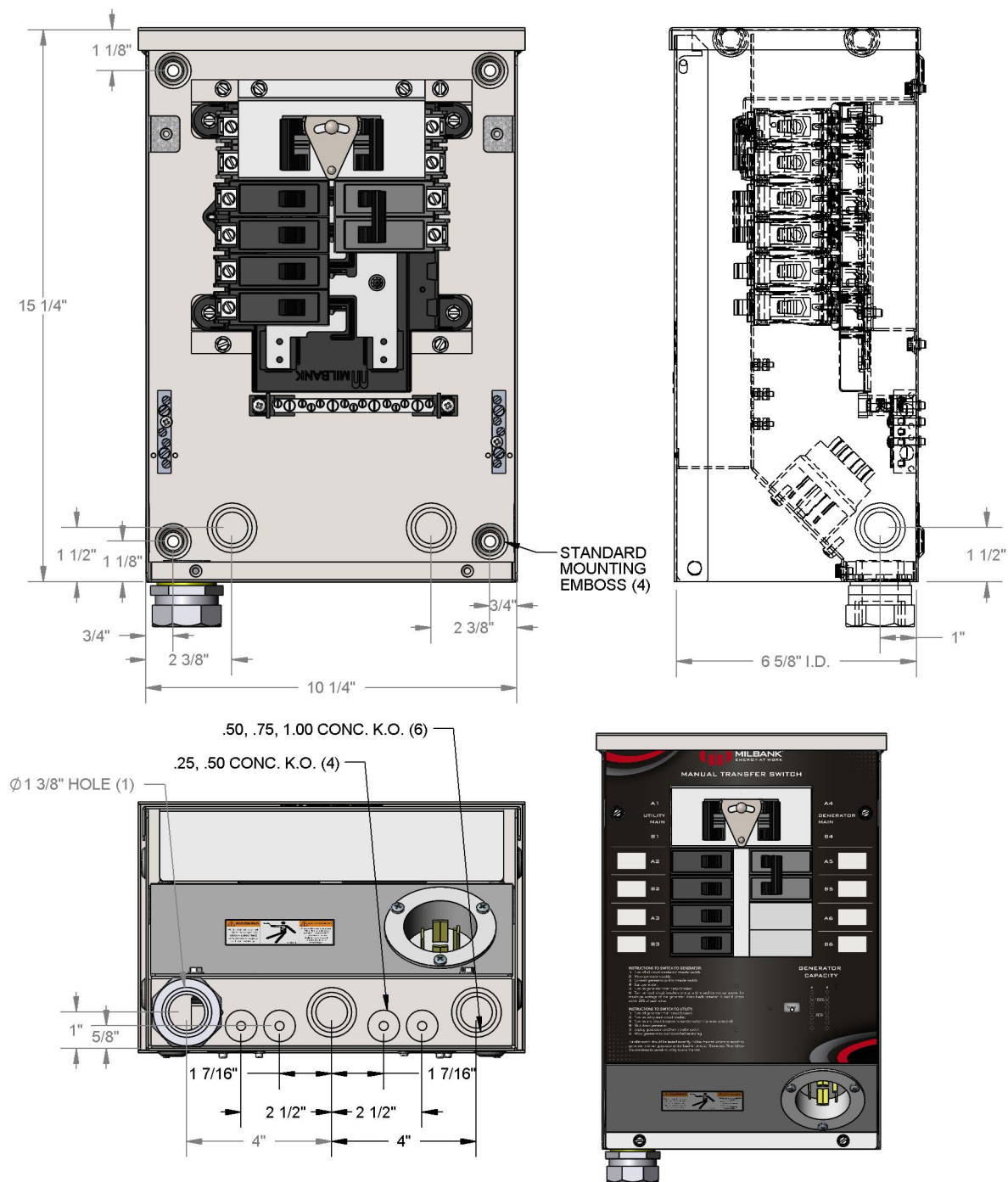


Figure 3 – Mounting Dimensions

The MMTS monitors power of the selected loads connected to the MMTS and displays the power output on each Phase using 8 LED's for each Phase. After the MMTS is installed the breakers should be shut off before applying power to the MMTS. To test the unit turn on the Utility circuit breaker and turn on each load circuit breaker.

Figure 4 show the MMTS circuit breakers set properly before turning on the generator. The MMTS is set for a 10 KW generator at the factory so the LED's will display the load on each phase. When first turned on 3 green lights will represent 4 KW on each side. If the load is not balanced, within 1 LED on each side, it is recommended to redistribute the loads to balance correctly. In between LED positions the top most LED will flash, it will flash at a slow rate when the represented power is close to the lower position and increase in its frequency as it approaches the next level. After the MMTS has been tested the MTS can be trained to adjust LED's to represent the size of the generator being used. This feature is described as Learn Function.

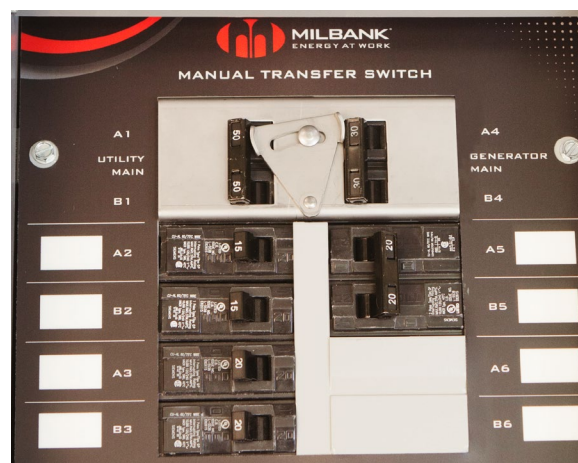


Figure 4 – Circuit breaker Setup

GENERATOR CAPACITY DISPLAY & LEARN FUNCTION: (AVAILABLE ON MMTS301SYS & MMTS501SYS)

On models with a digital meter the LED display shows power as a percentage of generator capacity and requires the MMTS to be calibrated to the size of the generator being used. To make this calibration the MMTS has a "Learn" button and can be set in a few easy steps. The MMTS' factory default is for a 10,000 watt generator so if it is not calibrated to the generator being used it will only display 100% when the power passing through the switch is at 10kw or 41.6 Amperes. Setting the capacity of the generator is the responsibility of the installer or the operator.

There are a few things to keep in mind when using the learn function:

- The display meter is nonlinear and will display a higher resolution when the unit approaches 100%, so at the lower levels the LEDs will accumulate at a faster rate.
- The LEDs on the display represent a percentage of the generator capacity and not an actual value of power. In between LED positions the top most LED will flash, it will flash at a slow rate when the represented power is close to the lower position and increase in its frequency as it approaches the next level. When the power reaches the next level it will turn solid and the next LED above will begin to flash at the slower rate.
- When operating on utility power the meter will

continue to display the percent of power based on the calibration that was set for the generator; when on utility power it will often display more than 100% and this is normal.

- The Learn Function measures power on each phase of the 240v; each side of the meter represents $\frac{1}{2}$ the calibrated capacity of your generator. To get optimal performance from your generator and to prevent premature shutdowns, it is important that you maintain a balanced load on the circuits in the switch.
- The Learn Function should only be performed after the switch is fully installed and running on generator power. The Learn Function can be rerun at any time after installation to calibrate for a different generator or to recalibrate to the original generator for better performance.

SET UP

Learn Function should be activated when on generator power to ensure that the generator can support the desired loads being controlled. The loads are should be turned on until desired generator capacity is reached. Additional loads, such as an electric heater, may be added during the Learn Mode process to force the generator to full capacity. To establish the capacity of the generator several methods may be used:

1. While applying loads to the generator listen for audible changes coming from the engine, when the engine begins to slow or bog down you are reaching the capacity of your generator and are in the range where you should consider setting your switch calibration.
2. Calculate the power by measuring the voltage and current coming from the generator (power = volts x amps).
3. Measure the frequency of the generator until a 1 hertz drop in frequency is observed

SETTING THE LEARN FUNCTION

1. Turn off the Utility power to the MTS by shutting off Circuit Breaker A1/ B1
2. Turn off all load circuit breakers, A2 through B3 and A5 through B6
3. Plug in the portable generator, start the generator and turn on A4/ B4
4. Turn on Circuit Breaker A2, verify that the bottom left LED is illuminated. If the LED is not illuminated check to see if there is a load on the circuit. If no load will be
5. Turn on each circuit breaker to load the generator to desired capacity by using one of the methods described above.
6. Push the Learn button for greater than 5 seconds until all LED's blink 3 times and turn on solid, then release the Learn button.
7. This completes the Learn Function process, turn off the generator and switch the MTS back to Utility by tuning on A1/ B1 and off A4/ B4.

placed on this circuit, turn on B2 and verify that the lower right LED is illuminated.



Figure 5 – Starting learn Function

RESETTING LEARN VALUE

1. To reset the Learn value to the factory value of 10KW, follow this sequence;
 - a. Push the Learn button for > 10 seconds
 - b. At > 5 seconds all LED's blink 3 times and turn on solid, continue to push the Learn button.
 - c. At > 10 seconds the LED's all go out and the value is reset to the factory default of 10KW.
 - d. Release the Learn button and the LED's will display the power with a 100% value at 10KW.

NORMAL OPERATION

As each circuit breaker is turned on the LED display should be examined to verify that the loads are balanced, within 2 LED's illuminated on each side. The following figures show how the LEDs advance as the circuit breakers are turned on.

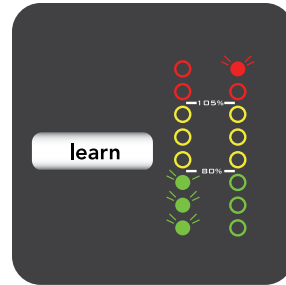
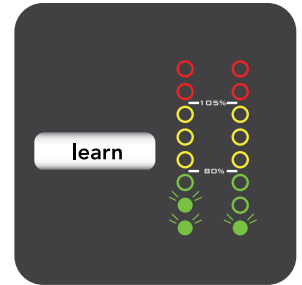


Figure 6 – Only A2 “On



A2 & B2 “On

As each circuit breaker is turned on the LED display should be examined to verify that the loads are balanced, within 2 LED's illuminated in each side. The following figures show how the LED's advances as the circuit breakers are turned on. If the LED's are not balanced then rewire the loads to balance the load on the generator.

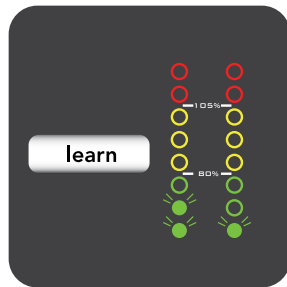
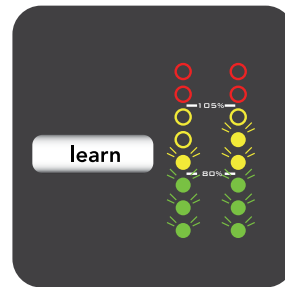


Figure 7 – A2, B2, A3 & B3 Breakers with a balanced load



A2, B2, A3, B3 A5/B5 Breakers with a balanced load

TROUBLESHOOTING

Problem	Cause	Correction
No LED's light on the control panel	1. All Circuit breakers are off 2. Utility is off and the Generator is not running or not connected 3. No load is on the circuits	1. Turn off the Circuit Breakers 2. Connect the Generator and turn on 3. Turn on loads on the circuits
The LED's are unbalanced	1. The Loads attached to the MMTS are on one phase	1. Rewire the MMTS load circuits to balance the loads
Loads are not on when Utility is restored	1. The MMTS was not switched back to Utility	1. Toggle the Utility Circuit Breaker to disconnect the Generator and reconnect to the Utility

RADIO AND TELEVISION INTERFERENCE

This equipment has been tested and certified to exceed the performance of FCC part 15 Class B devices. This ensures this Manual Transfer Switch provides the highest level of compatibility with other electronic devices. FCC requirements mandate the following statement:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You may also find helpful the following booklet, prepared by the FCC: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.

In order to maintain compliance with FCC regulations shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio & television reception.

MAINTENANCE

The Transfer switch is designed to be maintenance free under normal usage. However, inspection and maintenance checks should be made on a regular basis. Maintenance will consist mainly of keeping the transfer switch clean.

Visual inspection should be done at least once a month. Access to the transfer switch must not be obstructed. Keep 3 feet (92 cm) clearance around the transfer switch. Check for an accumulation of dirt, moisture and/ or corrosion on and around the enclosure, loose parts/ hardware cracks and/ or discoloration to insulation, and damaged or discolored components.

Exercise the MMTS at least once every three months using the Functional Testing procedure unless a power outage occurs and the portable generator has gone through a Manual sequence. Contact a licensed electrician to inspect and clean the inside of the enclosure and other components of your home generator system at least once a year.

MILBANK MANUAL TRANSFER SWITCH OWNER WARRANTY POLICY

LIMITED WARRANTY

MILBANK MANUFACTURING WILL REPAIR OR REPLACE, FREE OF CHARGE, ANY PART(S) OF THE EQUIPMENT THAT IS DEFECTIVE IN MATERIAL OR WORKMANSHIP OR BOTH PROVIDING THAT INSTALLATION OF THE EQUIPMENT COMPLIES WITH ALL APPLICABLE CODES, INDUSTRY STANDARDS, LAWS, REGULATIONS AND PROVIDED INSTALLATION MANUAL. MANUAL TRANSFER SWITCH AND ASSOCIATED COMPONENTS SHALL BE INSTALLED ONLY BY A LICENSED ELECTRICIAN, AND OTHERWISE THIS WARRANTY IS VOID. THIS WARRANTY IS EFFECTIVE FOR THE TIME PERIOD AND SUBJECT TO THE CONDITIONS STATED BELOW. FOR WARRANTY SERVICE, CONTACT [HTTP://WWW. MILBANKWORKS.COM/BLOG/INDEX.PHP/FIELD-INCIDENT-REPORT/](http://www.milbankworks.com/blog/index.php/field-incident-report/).

THERE ARE NO OTHER EXPRESS WARRANTIES OR IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ABOVE WARRANTY IS LIMITED TO THE TIME PERIOD STATED BELOW. ANY AND ALL IMPLIED WARRANTIES ARE EXCLUDED AND LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES ARE EXCLUDED TO THE EXTENT EXCLUSION IS PERMITTED BY LAW. BUYER'S SOLE REMEDY IS THE LIMITED WARRANTY STATED ABOVE. SOME STATES OR COUNTRIES DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION AND EXCLUSION MAY NOT APPLY TO YOU.

WARRANTY PERIOD

Consumer use - 4 years

Commercial use - none

WARRANTY REGISTRATION PROCESS

Thank you for choosing Milbank's Manual Transfer Switch™

1. For the fastest and most efficient way to register your Manual Transfer Switch™ warranty, please complete the online form at milbankworks.com/warranty (preferred method). Otherwise, please complete the postcard and return via mail.
2. Complete the online form or return the postcard within 10 days of installation.
3. The warranty starts as of the original purchase date by the first retail consumer when the unit is registered; if not registered, the warranty start date defaults to the manufacture date.

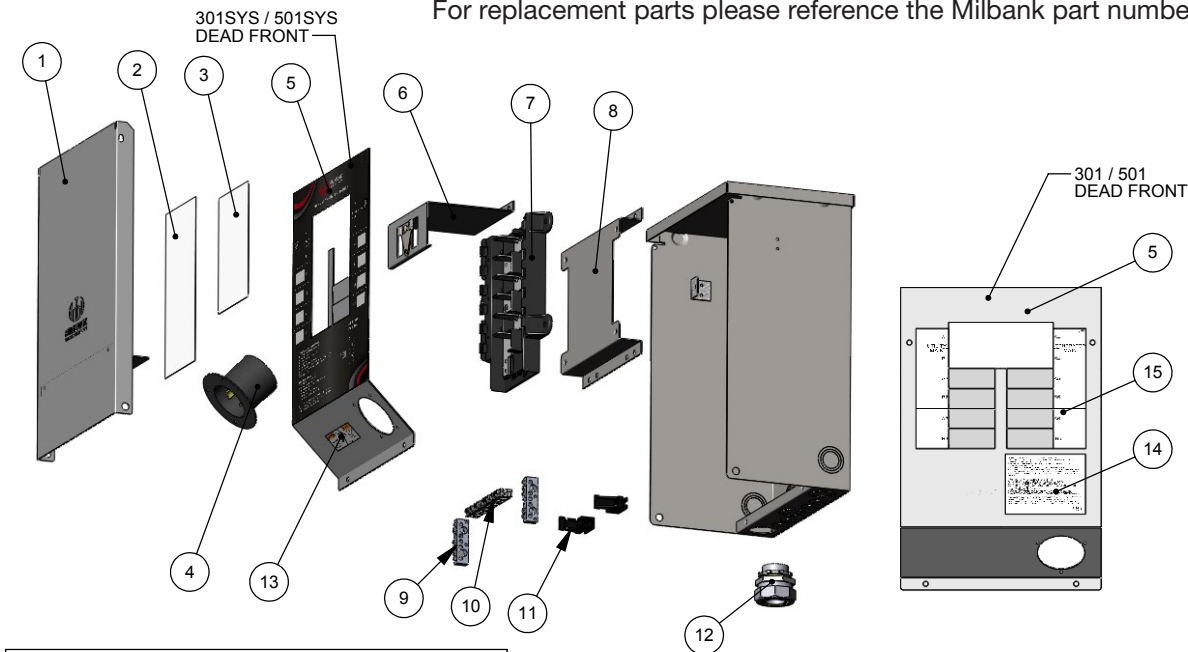
ABOUT YOUR WARRANTY

Milbank welcomes warranty repair and apologizes to you for being inconvenienced. Most warranty repairs are handled routinely, but sometimes requests for warranty service may not be appropriate. For example, warranty service would not apply if equipment damage occurred because of misuse, lack of routine maintenance, shipping, handling, warehousing or improper installation. Similarly, the warranty is void if the manufacturing date or the serial number on the equipment has been removed or has been altered or modified. During the warranty period, the Authorized Service Dealer, at its option will repair or replace any part that, upon examination, is found to be defective under normal use and service. This warranty will not cover the following repairs and equipment;

- Normal Wear: This warranty does not cover repair when normal use has exhausted the life of a part or the equipment.
- Installation: This warranty does not apply to equipment or parts that have been subjected to improper or unauthorized installation or alteration and modification, misuse, negligence, accident, overloading, improper maintenance, repair or storage so as, in Milbank's judgment, to adversely affect the unit's performance and reliability. This warranty also does not cover normal maintenance such as adjustments, cleaning and fuse replacement.
- Other Exclusions: This warranty excludes wear items or damage or malfunctions resulting from accident, abuse, modifications, alterations or improper servicing. Accessory parts are excluded from the product warranty. This warrant excludes failures due to acts of God and other force major events beyond the manufactures control. Also excluded is used, reconditioned, and demonstration equipment.

REPLACEMENT PARTS IDENTIFICATION

For replacement parts please reference the Milbank part number shown;



INLET BOX REPLACEMENT PARTS		
1	30A INLET L14-30P	Z1170217
	50A INLET CS6375	Z1169531
2	GROUND CONNECTOR	Z1002769
3	30A RATING LABEL	Z1169883
	50A RATING LABEL	Z1169884
4	COVER	Z1170465
5	WARNING LABEL	Z1168019
NOT SHOWN	COVER TO BACK SCREW	Z1001290
	GROUND CONN. TO BACK SCREW	Z1002772
	INLET TO BOTTOM SCREW	Z1094146
	GROUND WIRE	Z1169882

REPLACEMENT CIRCUIT BREAKERS		
DESCRIPTION	SIEMENS MODEL	PART #
2 POLE, 100A	Q2100	Z1031703
2 POLE, 60A	Q260	Z1047708
2 POLE, 50A	Q250	Z1047707
2 POLE 30A	Q230	Z1008151
2 POLE 20A	Q220	Z1047705
1 POLE 20A	Q120	Z1047700
1 POLE 15A	Q115	Z1047699

GENERATOR CORD	
DESCRIPTION	PART #
10', 30A	MMTS30CORD10
25', 30A	MMTS30CORD25
10', 50A	MMTS50CORD10
25', 50A	MMTS50CORD25

MANUAL TRANSFER SWITCH REPLACEMENT PARTS		
ITEM	DESC.	PART #
1	FRONT	Z1169940
2	301 RATING LABEL	Z1165840
	501 RATING LABEL	Z1169658
3	301 WIRING DIAGRAM	Z1170056
	301SYS WIRING DIAGRAM	Z1169679
	501 WIRING DIAGRAM	Z1170057
	501SYS WIRING DIAGRAM	Z1169680
	30A INLET L14-30P	Z1170217
4	50A INLET CS6375	Z1169531
	301 DEAD FRONT	Z1169653
5	301SYS DEAD FRONT	Z1169521
	501 DEAD FRONT	Z1169520
	501SYS DEAD FRONT	Z1169523
6	C/B INTERLOCK ASSEMBLY	Z1166779
7	C/B STAB ASSEMBLY	Z1127904
8	RISER	Z1165653
9	6 POSITION GROUND CONNECTOR	Z1002769
10	15 POSITION NEUTRAL CONNECTOR	Z1047095
11	NEUTRAL CONNECTOR SUPPORT	Z1002682
12	CONDUIT CONNECTOR 1"	Z1169533
13	WARNING LABEL	Z1168019
14	INSTRUCTION LABEL	Z1165843
15	C/B CHART LABEL	Z1165841
NOT SHOWN	301 COVER PLATE	Z1169935
	501 COVER PLATE	Z1169937
	FRONT HINGE SCREWS	Z1000062
	RISER TO BACK SCREW	Z1000183
	DEADFRONT TO BACK SCREW	Z1001290
	GROUND CONN. TO BACK SCREW	Z1002772
	C/B STAB ASSY TO RISER SCREW	Z1008132
	INLET / COVER PLATE SCREW	Z1094146
	NEUTRAL SUPPORT SCREW	Z1107779
	CT ASSEMBLY	Z1171658

SPECIFICATIONS

Model Number	MMTS301SYS		MMTS501SYS	
Breaker	GEN	UTIL	GEN	UTIL
Amperage	30	60	50	100
Phase	Single			
Limited Warranty	4 Years			
Circuits	Partial House, 8 circuit's maximum			
Amps	30		50	
Service entrance disconnect	YES			
Maximum Load Current	YES			
Rated AC VoltageA	120		240	
Poles	2			
Frequency	60			
Unit (Height x Width x Depth)	15.25" x 10.25" x 6.63"			
Shipping Carton	16.25" x 11.25" x 7.75"			
Weight	23 lbs.			

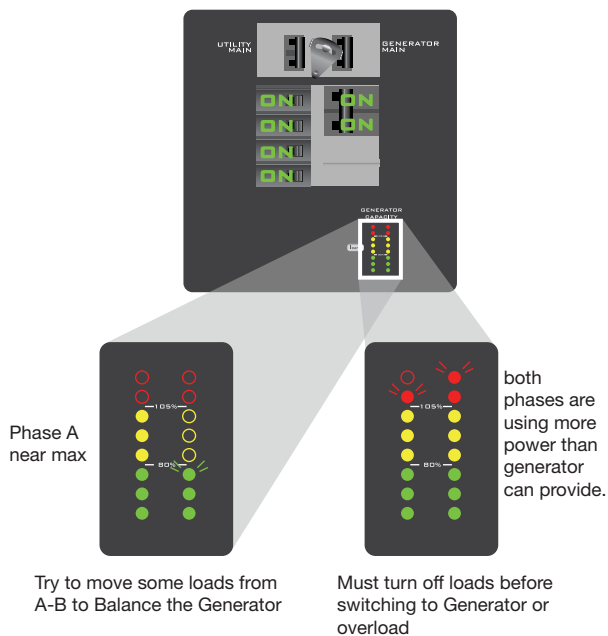
QUICK START GUIDE

The digital monitor on the Milbank Manual Transfer Switch is an added tool that enables the user to safely use their portable generator and reduce the chance of an overload condition. To effectively utilize this option we have included a learn function in the MTS that will allow you to calibrate the switch for the size of generator you are using.

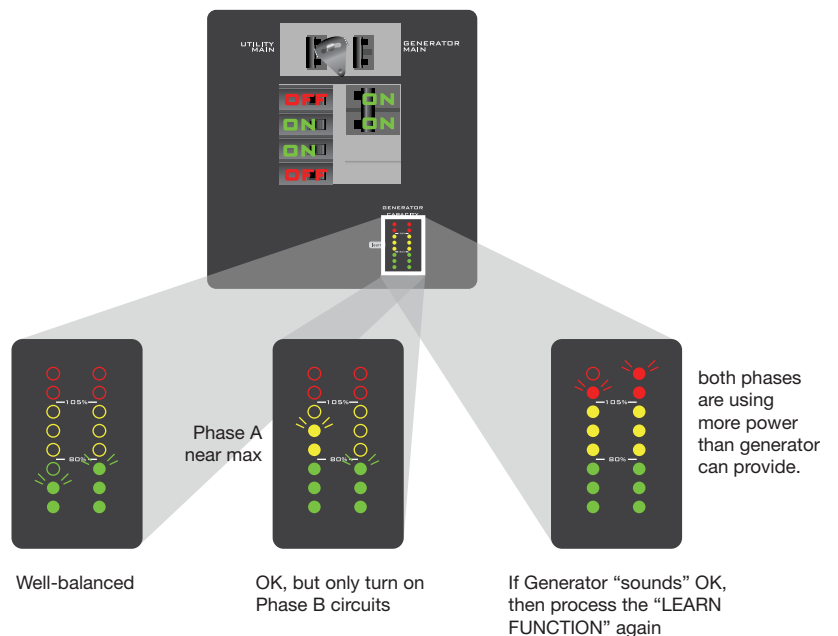
INDEX



OPERATING ON UTILITY




OPERATING ON GENERATOR



LEARN PROCESS

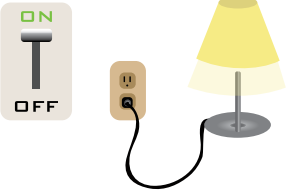
The digital monitor on the Milbank Manual Transfer Switch is an added tool that enables the user to safely use their portable generator and reduce the chance of an overload condition. To effectively utilize this option we have included a learn function in the MMTS that will allow you to calibrate the switch for the size of generator you are using.

1.




Push switch to "Generator Main"

2.



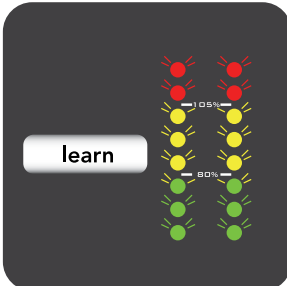
TURN ON CIRCUITS
Until Generator is "Full"
sounds "slow" or "bogged"
lights START to dim

3.



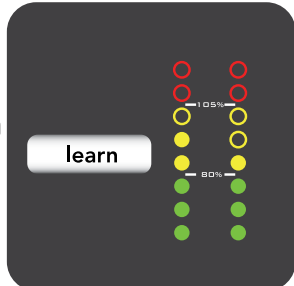
Press "learn" for 5 seconds

4.



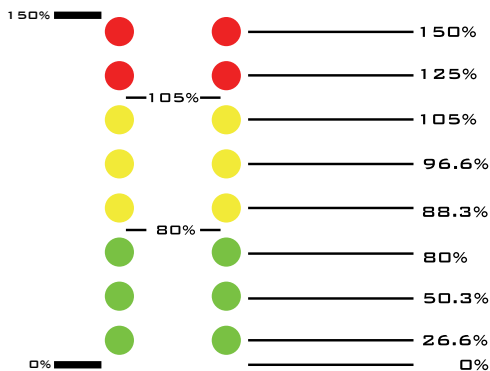
All lights should blink 3 times

5.



Learn Complete

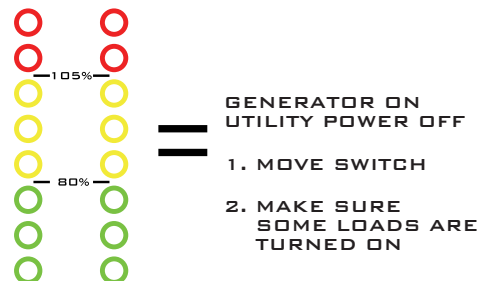
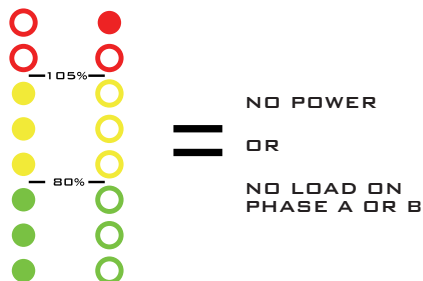
ACTUAL LOAD PERCENTAGES



FAQS

- Q: Sometimes the lights blink faster than other times.
A: Each light will blink slowly when it is at the bottom of its 'range' and blink fast when it is near the top of its 'range'. Once it goes on solid, then the LED on top of it will start blinking.
- Q: How do I know my generator is near capacity?
A: Listen to it – it will sound like a manual transmission car in too high a gear, lugging and slowing down
- A: Watch the lights – they will start to dim or flicker when the generator is over-capacity
- Q: The GFCI trips on the Generator every time I switch to it.
A: Your generator needs to be converted from 'portable' mode to 'permanent' or 'installed' mode. Consult your generator manual to defeat the GFCI, but ONLY while it is connected to your house.

BEHAVIORS



TO SET MMTS TO FACTORY SETTING (10KW) - HOLD "LEARN" FOR 15 SEC.



MILBANK MANUAL TRANSFER SWITCH