

# **Operator's Manual**

## **100/150/200 Amp Automatic Transfer Switch**

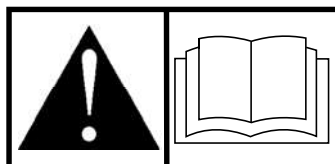
**with Service Disconnect and  
Symphony™ II Power Management System**

**Questions?**

**Help is just a moment away!**

**Call: Transfer Switch Helpline**

**800-743-4115 Monday - Friday 8:00 AM - 5:00 PM Central Time**



**Thank you** for your purchase of this Briggs & Stratton® automatic transfer switch. This product is designed for use with specific home standby generators and may not function with generators or remote modules produced by other manufacturers. Seek a qualified electrical professional to determine applicability of this equipment to equipment manufactured by others. When operated and maintained according to the instructions in this manual, your system will provide many years of dependable service.

This manual contains safety information to make you aware of the hazards and risks associated with this system and how to avoid them. We have made every effort to provide for a safe, streamlined and cost-effective installation. As each installation is unique, it is impossible to know of and advise of all conceivable procedures and methods by which installation might be achieved. We do not know all possible hazards and/or the results of each possible method or procedure. It is important that you read and understand these instructions thoroughly before attempting to install or operate this equipment. **Save these original instructions for future reference.**

This transfer switch and optional remote modules require professional installation before use. Refer to the Installation Manual and the installation instructions packaged with the remote modules for instructions on installation procedures. Only licensed electrical contractors should install transfer switches and remote modules. Installations must strictly comply with all applicable federal, state and local codes, standards and regulations. Your installer should follow the instructions completely.

## **Where to Find Us**

You never have to look far to find Briggs & Stratton support and service for your system. Consult your Yellow Pages. There are many authorized service dealers who provide quality service. You can also contact Technical Service by phone at 800-743-4115 between 8:00 AM and 5:00 PM CT, or click on Find a Dealer at [BRIGGSandSTRATTON.COM](http://BRIGGSandSTRATTON.COM), which provides a list of authorized dealers.

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# Save These Instructions

## Important Safety Instructions

**SAVE THESE INSTRUCTIONS** - This manual contains important instructions that should be followed during installation and maintenance of the equipment.

### Safety Symbols and Meanings



Electrical Shock



Read Manual

**▲** The safety alert symbol indicates a potential personal injury hazard. A signal 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 hazard which, if not avoided, will result in death or serious injury.

**▲ WARNING** indicates a hazard which, if not avoided, could result in death or serious injury.

**▲ CAUTION** indicates a hazard which, if not avoided, could result in minor or moderate injury.

**NOTICE** addresses practices not related to personal injury.

The manufacturer cannot possibly 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, you must satisfy yourself that it is safe for you and others. You must also make sure that the procedure, work method or operating technique that you choose does not render the equipment unsafe.

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

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

**▲ WARNING** Shock Hazard. Installing low and high voltage wire in same conduit could result in death or serious injury.

- Do not run low and high voltage wire in the same conduit unless the insulation rating on ALL wiring is rated for 600V. See NEC for more information.

**▲ WARNING** Shock Hazard. Failure to properly ground equipment could cause electrocution resulting in death or serious injury.

- 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 operate or 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.

**▲ WARNING** Shock Hazard. Equipment contains high voltage that could cause electrocution resulting in death or serious injury.

- Do not operate this equipment imprudently, carelessly or neglect its maintenance.

**NOTICE** Improper treatment of equipment could damage it and shorten its life.

- Use equipment only for intended uses.
- If you have questions about intended use, ask dealer or contact Briggs & Stratton Power Products.
- 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.

## Installation

We sincerely appreciate your patronage and have made significant effort to provide for a safe, streamlined and cost-effective installation. Because each installation is unique, it is impossible to know of and advise the trade of all conceivable procedures and methods by which installation might be achieved. Neither could we know of possible hazards and/or the results of each method or procedure.

For these reasons, **only current licensed electrical professionals should attempt system installations. Installations must strictly comply with all applicable codes, industry standards and regulations.**

Your equipment is supplied with this Operator's Manual and an Installation Manual. These are important documents and should be retained by the owner after the installation has been completed.

Every effort has been made to make sure 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.

**NOTICE** Before drilling conduit entry holes, or any other holes, cover and protect the switch and electronics to prevent dirt and metal fragments from entering the mechanical and electrical components. Failure to do so may result in damage or malfunction of the switch.

**NOTICE** Use a vacuum to clean any dirt or metal shavings inside the transfer switch. Do not use a blower or compressed air to clean the inside of the transfer switch because debris may become lodged in the electrical and mechanical components causing damage or malfunction.

## Home Owner Responsibilities

To help you make informed choices and communicate effectively with your installation contractor(s), **read and understand Owner Orientation before contracting or starting your equipment installation.**

To arrange for proper installation, contact the store at which you purchased your equipment, your dealer, or your utility power provider.

**The equipment warranty is VOID unless the system is installed by licensed electrical professionals.**

## Owner Orientation

The illustrations provided are for typical circumstances and are meant to familiarize you with the installation options available with your system.

Local codes, appearance, and distances are the factors that must be considered when negotiating with an installation professional. As the distance from the existing electrical service increases, compensation in wiring materials must be allowed for. This is necessary to comply with local codes and overcome electrical voltage drops.

**These factors will have a direct effect on the overall price of your equipment installation.**

Your installer must check local codes AND obtain permits before installing the system.

- Read and follow the instructions given in this manual.
- Follow a regular schedule in caring for and using your equipment, as specified in this manual.

## Installing Dealer/Contractor Responsibilities

- Read and observe the Important Safety Instructions.
- Read and follow the instructions given in this manual.
- The installer may need to provide appropriate rated contactors based on loads to be controlled.
- Discuss with owner their load priority preferences to decide on remote module priority settings.
- Check federal, state and local codes and authority having jurisdiction, for questions on installation.
- Ensure generator is not overloaded with selected loads.

If you need more information about the transfer switch, call 800-743-4115, between 8:00 AM and 5:00 PM CT.

## Equipment Description

The transfer switch is designed to transfer selected loads found in normal residential installations to standby power in the event of a primary power outage. The load is connected either to utility power (normal) or home standby power (generator). The transfer switch monitors utility and generator voltages and will automatically connect loads to the appropriate source of power.

The Symphony™ II Power Management System is highly flexible and utilizes individual high and low voltage modules that can be mounted anywhere between the home's main distribution panel and the managed appliance. Designed to communicate via your home's existing power wiring, the power demand and priority sequence of up to 8 appliance loads are relayed back to the standby generator, effectively preventing generator overload while expanding power range and performance. The system is scalable and additional relays can be added as a homeowner's power management needs change over time.

Only a licensed electrician should complete a home standby installation. Service conduit and conductors can be wired directly from the watt-hour meter to the transfer switch. A separate service entrance disconnect and associated wiring is not required when installed per applicable federal, state and local codes, standards and regulations.

Major components of the transfer switch are a 2 pole utility disconnect circuit breaker, a 2 pole generator disconnect circuit breaker, a 2 pole double throw transfer switch, transfer switch control circuit board, Symphony II power management system control circuit board, fused utility terminals and interconnecting wiring. All of these components are housed in a NEMA 3R enclosure that is suitable for both indoor and outdoor installations.

The transfer switch is solenoid-operated from utility or generator inputs and contain suitable mechanical and electrical interlock switches to eliminate the possibility of connecting the utility service to the generator output. It has ratings capable of switching full utility power into the residence. In addition, a manual override lever is provided for the transfer function.

The transfer switch control board has active circuits sensing utility and generator voltages. It creates a signal for generator start-up, switch transfer and retransfer when utility is restored. The transfer switch control board provides status LED's to indicate the power source available.

The Symphony™ II power management system control board contains a test button, a status LED and eight priority load LED's. It creates and sends signals to optional remote modules, instructing them when to add (turn power on) or shed (turn power off) the managed load.

The Symphony II system power line carrier technology has been rigorously tested and has proven to be very robust. However, certain types of devices and appliances in the home generate 'noise' on the power line. Such devices may include non-residential fluorescent ballasts, dimmers, speed controls (lighting and fans), bathroom equipment, kitchen equipment, power tools, phone chargers, and power supplies. These types of devices have the greatest impact on power line communication when located close to a remote module.

AM broadcast radio, X10, power line carrier (PLC), uninterrupted power supply (UPS), transient voltage surge suppression (TVSS) systems, and power filter technology may also cause the Symphony II system to not operate as intended. They may cause interference with the Symphony II system during standby power operation.

If it is determined that power line noise is causing a communication issue with the Symphony II system, the following changes may remedy the issue.

- Have commercial (non consumer use) fluorescent ballasts replaced with residential use ballasts.
- Have a EMI/RFI filter installed in series and near the problematic device.
- Have the remote module rewired to the opposite power line (Line 1 or Line 2) from that of the problematic device.
- Refer to Troubleshooting section.

The optional 50 Amp remote module is designed for control by the Symphony II system to add or shed appliance loads connected to it based on a user-defined priority setting. This remote module manages 120VAC or 240VAC, single or double pole loads up to 50 amperes. The remote module's relay state is normally open. Its components are housed in a NEMA 4 enclosure suitable for indoor and outdoor installations.

The optional low voltage remote module is designed for control by the Symphony II system to add or shed an air conditioner, heat pump, or low voltage contactor controlled loads based on a user-defined priority setting. The remote module is housed in a NEMA 4 enclosure suitable for indoor and outdoor installations.

## Delivery Inspection

After opening the carton, carefully inspect the transfer switch components for any damage that may have occurred during shipment.

If loss or damage is noted at time of delivery, have the person(s) making delivery note all damage on the freight bill and affix his signature under the consignor's memo of loss or damage. If loss or damage is noted after delivery, contact the carrier for claim procedures. Missing or damaged parts are not warranted.

### Shipment contents:

- Automatic transfer switch
- Installation and operator's manuals
- Current transformers (2)

### Optional components:

- 50 Amp module
- Low voltage module (single or dual models)
- Symphony™ II power monitor

### To be supplied by installer:

- Connecting wire and conduit
- Various specialty tools/equipment

## Testing the Automatic Transfer Switch



**WARNING** Shock Hazard. Equipment contains high voltage that could cause electrocution resulting in death or serious injury.

- Testing must only be performed by qualified personnel.
- Do not operate this equipment imprudently, carelessly or neglect its maintenance.

Turn the utility service disconnect circuit breaker feeding the transfer switch contactor to the OFF position. The system's automatic sequence described below will initiate. To return to utility power, turn the utility service disconnect circuit breaker to the ON position.

### Utility Fail

The generator senses when utility voltage is below 70 percent of nominal. Engine start sequence is initiated after 6 second time delay.

### Engine Warm-Up

Time delay to allow for engine warm-up before transfer. Use jumper on transfer switch control board to select delay of 20 seconds or 50 seconds.

### Transfer

Transfer from utility to generator supply occurs after voltage is above set levels. The transfer switch control board LED lights will change from green (utility) to red (generator) and the Symphony II status light will change blink status from Blink\_Blink\_Pause\_Blink\_Blink to Blink\_Pause\_Blink. Minimum engine run time is 5 minutes after transfer.

### Load Management

Five minutes after transfer to generator power, the remote modules energize connected load(s) if generator power is available, starting with the highest priority (1) through the lowest priority (8). There is a 10 second delay between each sequential activation.

The P1 through P8 LED's (A) on the Symphony II control board will illuminate to show loads being added.

Loads connected to remote modules set to priorities 9 and 10 remain off for the duration of a utility power outage.

### Utility Pickup

Voltage pickup level is 80 percent of nominal voltage.

### Retransfer

Retransfer from generator to utility power is approximately 10 seconds after utility voltage supply is above pickup level and minimum run time is completed. All remote module(s) will remain OFF for five minutes after the power transfer.

### Engine Cool Down

Engine will run for 60 seconds after retransfer.



## Controls

Other than a Manual Override lever, there are no operator controls because this is an automatic transfer switch. The manual override is to be used only by licensed professionals. Information on handle use can be obtained by calling Technical Service at 800-743-4115.

## Operation

To select automatic transfer operation, do the following:

1. In transfer switch, set utility disconnect circuit breaker to **ON** position.
2. In transfer switch, set generator disconnect circuit breaker to **ON** position.
3. Install 15 Amp fuse in generator's control panel.
4. Set generator's circuit breaker to **ON** position.
5. Set generator's system switch to **AUTO** position.

The system will now be in automatic operation mode.

When the generator is providing power to the transfer switch, the transfer switch control board is constantly monitoring generator power and communicating with the Symphony II system control board.

The Symphony II system will control up to 8 priorities, with priority 9 and 10 as lockouts. When total generator load meets a preset value, the Symphony II system control board will start shedding loads, starting with the lowest priority (highest number) load. The Symphony II system will add or shed managed loads based on the generator output capacity and priority settings.

The Symphony II system waits 10 seconds between adding or shedding each load to permit the system to stabilize. If too much load demand is seen, the Symphony II system will shed all managed loads quickly to prevent the generator from overloading. Once the load demand has stabilized, the Symphony II system will re-load the generator after a 5 minute delay, as described above.

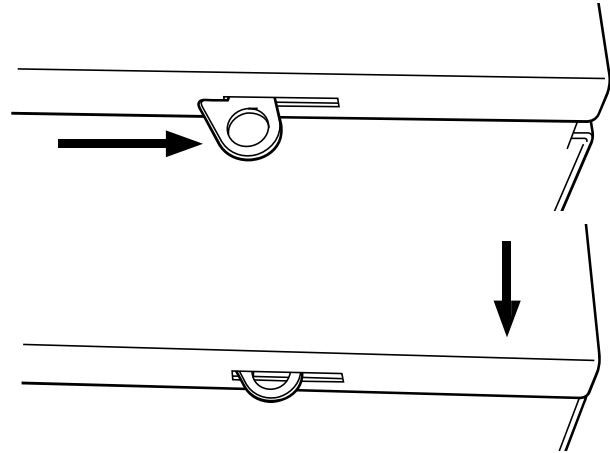
There is a minimum five minute delay between the time utility power is lost and priority 1 loads are energized by the Symphony II system.

Be aware that managed heating element energy loads (such as electric range burners, oven, or space heaters) that were ON when utility power was lost, will be ON when the generator begins supplying power. It is advised that the owner check all such managed devices to ensure they are turned OFF before generator power appears.

Managed devices like clothes dryers that require pressing a START button will not resume operation unless the START button is pressed after generator power begins.

## Enclosure Door

To open transfer switch door, press the spring-load door lock to the right and pull down on the door.

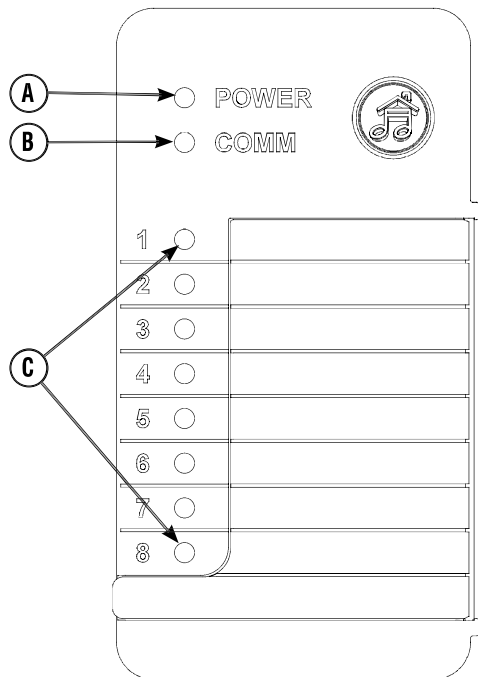


To close and latch door, push door closed against enclosure. While in this position, push door upwards. This will cause spring-load door lock to engage and latch door in place. Enclosure door **MUST** be closed and latched at all times except when system is being serviced.



## Symphony™ II Power Monitor (Optional)

For your convenience, a Symphony II Power Monitor is available, which provides a visual “on/off” status of each managed appliance/load. A series of LED lights are ON when an appliance has generator power and OFF when the appliance is in a shed mode or does not have power. When on generator power, the consumer can see which appliances are being managed.



A decal is provided that can be labeled with the managed appliances/loads and placed next to each priority LED.

The monitor is plugged into any convenient standard outlet within the home and constantly receives system status via the power line communication technology utilized by the Symphony II Power Management System during generator power.

## Symphony II Power Monitor (Optional)

### POWER LIGHT (A)

When lit, indicates that monitor detects outlet power.

When not lit, indicates that no power is present at outlet.

### COMM (communication status) LIGHT (B)

When lit, indicates that unit is receiving signals from the Symphony II controller.

When not lit, indicates that utility power is present or a fault in Symphony II controller.

### PRIORITY LIGHTS/LED's (C)

When green LED is lit, indicates that optional remote module set to that priority is supplying power to connected load during generator power.

When not lit, indicates that optional remote module set to that priority is set to OFF (being managed and Symphony II System is not allowing power to the unit).

All lights/LED's are OFF when utility power is present.

<b>System Lights</b>	
<input type="radio"/> POWER	Monitor ON
<input type="radio"/> COMM	Modules ACTIVE
<b>Priority Lights 1-8</b>	
<input type="radio"/> GREEN	Power ON*
<input type="radio"/> NOT LIT	Power OFF*
*Possible 5 minute delay.	
<b>Blocked Items</b>	
<b>Questions?</b>	
Call 800-743-4115	

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## 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 inspections should be done at least three times each year. Access to the transfer switch and optional remote modules must not be obstructed. Keep 3 feet (92 cm) clearance around 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 transfer switch and Symphony II system at least once every three months as described in Testing the Automatic Transfer Switch and in Testing the Symphony II Power Management System unless a power outage occurs and the entire home generator system has gone through an automatic sequence. Allow generator to run for at least 10 minutes during exercise cycle.

Contact a licensed electrical professional to inspect and clean the inside of the enclosure and other components of your home generator system at least once a year.

## When Calling for Assistance

You must have the Model Number and Serial Number from each transfer switch or remote module ID label at hand if it is necessary to contact a local service center regarding service or repair. Obtain this information from the unit ID labels located on or inside device. For convenience, record the information on the inside front cover of this manual.

To contact Briggs & Stratton call **800-743-4115**, between 8:00 AM and 5:00 PM CT.

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## BRIGGS & STRATTON TRANSFER SWITCH OWNER WARRANTY POLICY

Effective November 1, 2005 replaces all undated Warranties and all Warranties dated before November 1, 2005

### LIMITED WARRANTY

Briggs & Stratton will repair or replace, free of charge, any part(s) of the equipment that is defective in material or workmanship or both. Transportation charges on product submitted for repair or replacement under this warranty must be borne by purchaser. This warranty is effective for the time periods and subject to the conditions stated below. For warranty service, find the nearest Authorized Service Dealer in our dealer locator map at [BRIGGSandSTRATTON.COM](http://BRIGGSandSTRATTON.COM).

THERE IS NO OTHER EXPRESS WARRANTY. IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO ONE YEAR FROM PURCHASE, OR TO THE EXTENT PERMITTED BY LAW. ANY AND ALL IMPLIED WARRANTIES ARE EXCLUDED. LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES ARE EXCLUDED TO THE EXTENT EXCLUSION IS PERMITTED BY LAW. Some states or countries do not allow limitations on how long an implied warranty lasts, and some states or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state or country to country.

### WARRANTY PERIOD

Consumer Use	3 years
Commercial Use	None

The warranty period begins on the date of purchase by the first retail consumer or commercial end user, and continues for the period of time stated in the table above. "Consumer use" means personal residential household use by a retail consumer. "Commercial use" means all other uses, including use for commercial, income producing or rental purposes. Once equipment has experienced commercial use, it shall thereafter be considered as commercial use for purposes of this warranty. Equipment used for prime power in place of utility are not applicable to this warranty.

NO WARRANTY REGISTRATION IS NECESSARY TO OBTAIN WARRANTY ON BRIGGS & STRATTON PRODUCTS. SAVE YOUR PROOF OF PURCHASE RECEIPT. IF YOU DO NOT PROVIDE PROOF OF THE INITIAL PURCHASE DATE AT THE TIME WARRANTY SERVICE IS REQUESTED, THE MANUFACTURING DATE OF THE PRODUCT WILL BE USED TO DETERMINE THE WARRANTY PERIOD.

### ABOUT YOUR WARRANTY

We welcome warranty repair and apologize to you for being inconvenienced. Any Authorized Service Dealer may perform warranty repairs. 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 the equipment 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:** Outdoor Power Equipment, like all mechanical devices, needs periodic parts and service to perform well. This warranty does not cover repair when normal use has exhausted the life of a part or the equipment.
- **Installation and Maintenance:** 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 our judgment, to adversely affect its 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 accidents, abuse, modifications, alterations, or improper servicing. Accessory parts are excluded from the product warranty. This warranty excludes failures due to acts of God and other force majeure events beyond the manufacturers control. Also excluded is used, reconditioned, and demonstration equipment. 198180E, Rev. C, 12/31/2006

BRIGGS & STRATTON  
MILWAUKEE, WI, USA

# Automatic Transfer Switch

## Product Specifications

### Model 071048

Rated Maximum Load Current  
a 25°C (77°F)\* ..... 100 Amps  
Rated AC Voltage ..... 250 Volts  
Poles ..... 2  
Frequency ..... 60 Hz  
Fault Current Rating ..... 22,000 RMS Symmetrical Amperes on Utility Side  
..... 10,000 RMS Symmetrical Amperes on Generator Side  
Normal Operating Range ..... -28.8°C (-20°F) to 40°C (104°F)  
Weight ..... 27 kg (59 lbs)

### Model 071049

Rated Maximum Load Current  
a 25°C (77°F)\* ..... 200 Amps  
Rated AC Voltage ..... 250 Volts  
Poles ..... 2  
Frequency ..... 60 Hz  
Fault Current Rating ..... 25,000 RMS Symmetrical Amperes on Utility Side  
..... 10,000 RMS Symmetrical Amperes on Generator Side  
Normal Operating Range ..... -28.8°C (-20°F) to 40°C (104°F)  
Weight ..... 28 kg (63 lbs)

### Model 071054

Rated Maximum Load Current  
a 25°C (77°F)\* ..... 200 Amps  
Rated AC Voltage ..... 250 Volts  
Poles ..... 2  
Frequency ..... 60 Hz  
Fault Current Rating ..... 25,000 RMS Symmetrical Amperes on Utility Side  
..... 10,000 RMS Symmetrical Amperes on Generator Side  
Normal Operating Range ..... -28.8°C (-20°F) to 40°C (104°F)  
Weight ..... 28 kg (63 lbs)

### Model 071070

Rated Maximum Load Current  
a 25°C (77°F)\* ..... 150 Amps  
Rated AC Voltage ..... 250 Volts  
Poles ..... 2  
Frequency ..... 60 Hz  
Fault Current Rating ..... 25,000 RMS Symmetrical Amperes on Utility Side  
..... 10,000 RMS Symmetrical Amperes on Generator Side  
Normal Operating Range ..... -28.8°C (-20°F) to 40°C (104°F)  
Weight ..... 28 kg (63 lbs)

This transfer switch is a UL Listed device.