Automatic Battery Chargers

Kohler Automatic Battery Chargers are designed for installation in Kohler transfer switches to keep starting batteries fully charged.

Accessory No. Kit No. Assembly No.	**KA-24-C PA-295743 A-293274**	**KA-24-D PA-295744 A-293295**	**KA-24-G PA-295747 A-295090**	**KA-24-F PA-295746 A-293647**	**KA-24-E PA-295745 A-293656**	**KA-24-H PA-295748 A-295087**
Input Voltage	120 Volt, 50/60 Hz.	240 Volt, 50/60 Hz.	220 Volt, 50/60 Hz.	480/600 Volt 50/60 Hz.	208 Volt, 50/60 Hz.	380/416 Volt, 50/60 Hz.
Safety Features	Grounding stud & UL & CSA approval	Grounding stud & UL & CSA approval	Grounding stud	Grounding stud & UL & CSA approval	Grounding stud & UL & CSA approval	Grounding stud
Primary Circuit Protection	1.5 Amp slo-blo fuse	.75 Amp slo-blo fuse	1.5 Amp slo-blo fuse	.5 Amp slo-blo fuse	1.5 Amp slo-blo fuse	.5 Amp slo-blo fuse
Output Voltage	12 or 24 Volt, 2 Amp. rated					
Secondary Circuit Protection	4 Amp. automatic reset circuit breaker					
Maintains Voltage Level (preset-at factory)	12-Volt Charger - 13.7 Volts 24-Volt Charger - 27.4 Volts					
Voltage Adjusting Rheostat	±.5 Volt adjustment from factory preset value					
Power On Lamp	Indicates primary circuit is energized					

⚠ WARNING

EXPLOSIVE BATTERY GASES! The gases generated by a battery being charged are highly explosive. Do not smoke or permit flame or spark to occur near a battery at any time, particularly when it is being charged. Avoid contacting terminals with tools, etc., to prevent burns and to prevent sparks that could cause an explosion. Remove wristwatch, rings and any other jewelry before handling battery. Any compartment containing batteries should be well ventilated to prevent accumulation of explosive gases. To avoid sparks, do not disturb battery charger connections while battery is being charged and always turn charger off before connecting or disconnecting charger clips to battery terminals.

⚠ WARNING

DANGEROUS ACID! Avoid contact with battery electrolyte. It contains acid which can eat holes in clothing, burn skin, and cause permanent damage to eyes. Always wear splash-proof safety goggles when working around the battery. If battery electrolyte is splashed in the eyes or on skin, immediately flush the affected area for 15 minutes with large quantities of clean water. In the case of eye contact, seek immediate medical aid. Never add acid to a battery once the battery has been placed in service. Doing so may result in dangerous spattering of electrolyte.

⚠ WARNING

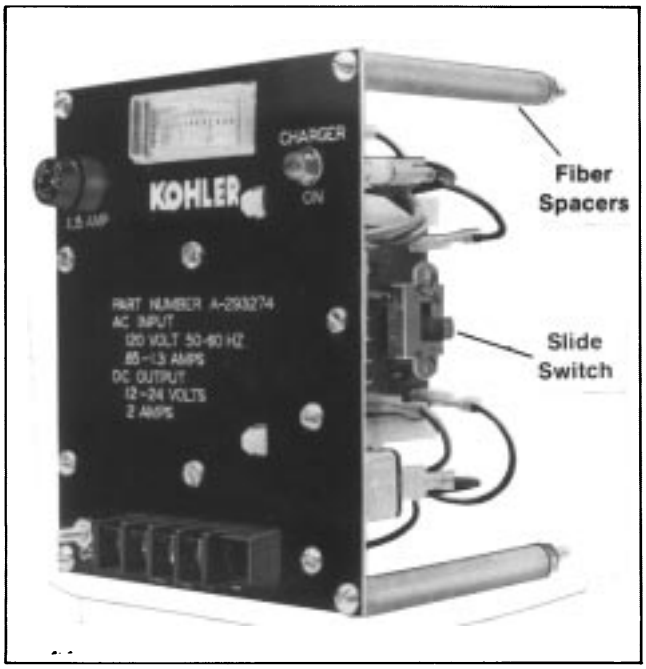
UNIT STARTS WITHOUT NOTICE! Units with Automatic Transfer Switch start automatically. Potential injury or electrocution can result. De-energize both normal and emergency power source before proceeding. Turn Generator Master Switch on controller to OFF position, and disconnect battery cables (remove negative lead first and reconnect it last) to disable generator set before working on any equipment connected to generator. Turn the transfer switch selector switch to the OFF position.

⚠ WARNING

ELECTRICAL SHOCK! Battery can cause electrical burns and shocks. Exercise reasonable care when working near the battery to avoid electrical connections through tools. Remove wristwatch, rings, and any other jewelry.

CAUTION

These chargers are designed strictly for use in Kohler Transfer Switches and conform with UL and CSA listing requirements where specified. Do not attempt to use battery charger before reading instructions.



To Mount Charger

1. Disconnect battery, negative lead first.
2. Remove nuts holding fiber spacers to charger.
3. Thread screw in pre-tapped holes in transfer switch enclosure. See panel layout drawing and wiring diagram for location and connection.
4. The automatic charger is factory set for 12 Volt systems. If installing on a 24 Volt system, set the slide switch on the circuit board for 24 Volts. Refer to figure above.

Information Prior to Charging

Battery

This charger is specifically designed for charging wet cell (lead-acid) batteries. Do not use charger on any other batteries.

When using a dry charge battery, it must be given a conditioning charge right after the electrolyte fluid has been added. An automatic charger will not operate properly on this type of battery unless it has been given a conditioning charge. Follow the battery manufacturer's recommendations for length of charge.

"Cycling"

The charger is equipped with an automatic reset thermal circuit breaker to protect from overloads. In the event of an overload the circuit breaker will trip; after a short cooling off period the breaker will automatically reset (this process is referred to as "cycling" and can be determined by an audible clicking sound). During the generator cranking cycle this circuit breaker may operate.

A severely discharged battery can cause the circuit breaker to cycle repeatedly. If the battery is otherwise in good condition, the cycling can continue until the battery has recovered sufficiently to allow a normal charging rate.

A battery with a shorted cell(s) can cause the circuit breaker to cycle indefinitely. The battery will have to be replaced. Regardless of cause, the circuit breaker must not cycle indefinitely. Battery charger should not be left unattended under these conditions.

To Connect/Disconnect Charger

⚠ WARNING

EXPLOSIVE BATTERY GASES! The gases generated by a battery being charged are highly explosive. Do not smoke or permit flame or spark to occur near a battery at any time, particularly when it is being charged. Avoid contacting terminals with tools, etc., to prevent burns and to prevent sparks that could cause an explosion. Remove wristwatch, rings and any other jewelry before handling battery. Any compartment containing batteries should be well ventilated to prevent accumulation of explosive gases. To avoid sparks, do not disturb battery charger connections while battery is being charged and always turn charger off before connecting or disconnecting charger clips to battery terminals.

CAUTION

CHARGER DAMAGE! Connect charger only to a battery with the same DC voltage as selected by the 12 or 24 Volt slide switch on the circuit board or damage will incur to charger.

1. Inspect battery for defective cables, loose posts or terminals. Battery terminals and battery charger clips must be tight and cleaned of all corrosion for efficient battery charging.
2. Check fluid level in each cell; if low, add distilled water until fluid is at proper level. If using a sealed type battery no maintenance is required.
3. A battery may be charged without disconnecting it from the generator or disturbing the cable connectors at the battery posts by making the connections as listed.
   a. Connect positive (+) charger terminal to battery positive (+) post and negative (-) charger terminal to battery negative (-).
   b. Connect to correct voltage, 50/60 Hz, AC power source as indicated by nameplate or transfer switch wiring diagram.
4. The charge rate the charger is delivering to the battery is indicated on the ammeter. The initial charging rate may be higher or lower than the charger capacity, depending on the internal condition of the battery; a higher or lower than 120 Volt AC supply will cause a correspondingly higher or lower charging rate. The two Amps charging maximum may be exceeded because of battery condition or during cranking period. A battery is being charged when:
   a. When battery reaches 80-85% of full charge, bubbles appear on surface of fluid. Vigorous bubbling occurs when nearing total charge.
   b. A battery in good condition should have a specific gravity reading (using a hydrometer) between 1.250 and 1.285 at an electrolyte temperature of 80°F (26.7° C).
   c. As the battery becomes charged, charging rate will often taper to near zero. The ammeter needle may fluctuate indicating a continuous supply of pulsating current which automatically keeps the battery in a charged condition.
5. To disconnect charger: first disconnect charger from AC power; then disconnect charger from the battery posts, first disconnecting the charger connection to battery negative (-).

Voltage Control

Unlike new batteries, older batteries can and usually do exhibit various degrees of sulphation. The degree of sulphation increases with the age of the battery. The effect of this sulphation is to cause a decrease in the battery voltage. For this reason it is necessary to check the voltage of the battery and, if necessary, adjust the charger to meet the requirements of the battery at least once every six months or whenever the battery is replaced. The voltage control of the charger was factory set to properly maintain a voltage of 13.7 Volts for 12 Volt batteries and 27.4 Volts for 24 Volt batteries.

When the battery reaches the cutoff voltage, the ammeter will oscillate. The amount of oscillation will vary on the condition of the battery. Oscillation is normal and should not be misunderstood as a problem. The best way to check the battery is to take a hydrometer reading, if possible, and a voltage reading. A good quality voltmeter should be used, preferably with at least 20,000 ohms per volt sensitivity. The charger is equipped with a voltage control that will allow a slight voltage variation from the preset reading. If adjustments are necessary, disconnect the AC power and adjust voltage control slightly (clockwise, increase — counterclockwise, decrease).

Service

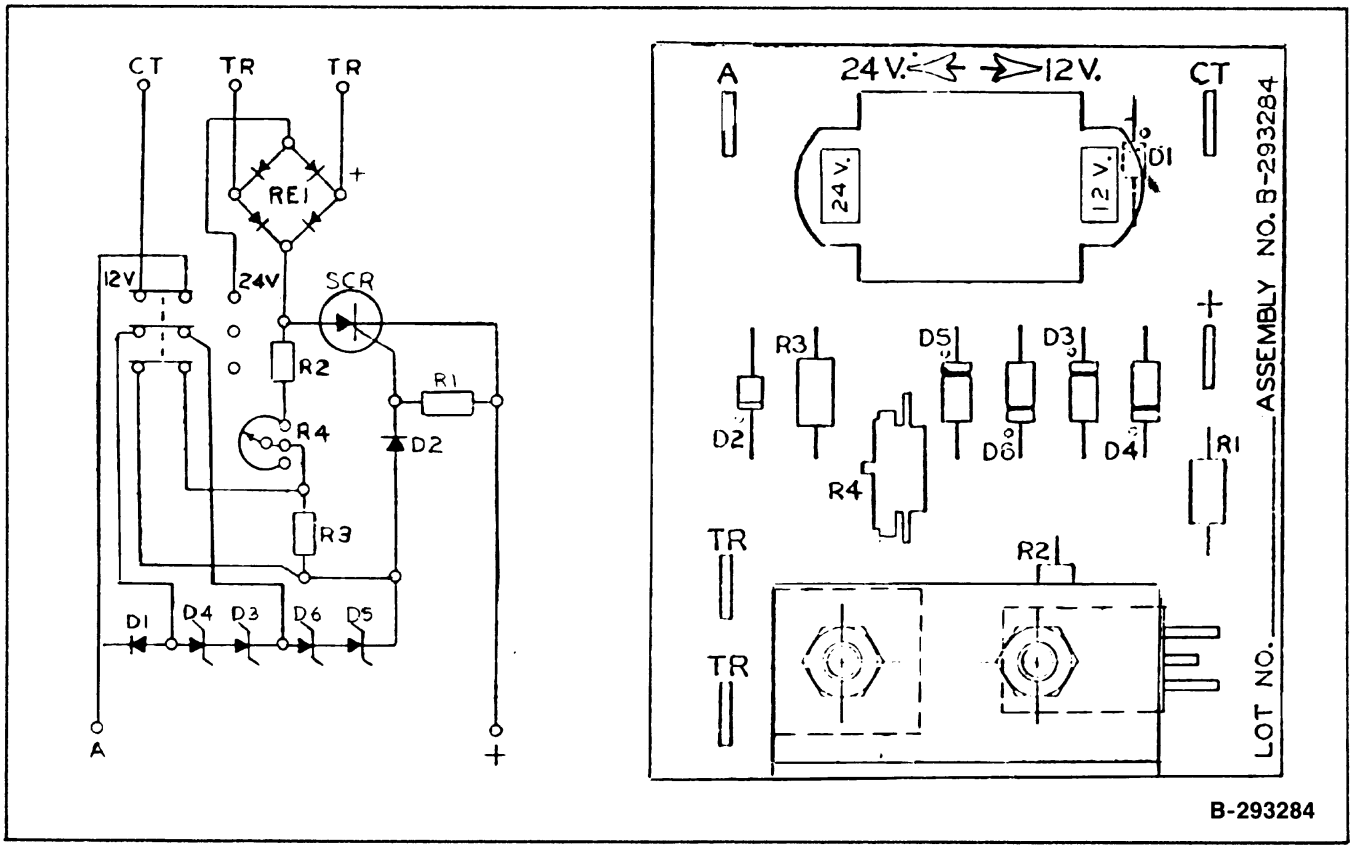
1. Check and maintain battery fluid at proper level.
2. Check battery terminals and cable connectors for clean contact surfaces.

Troubleshooting Chart

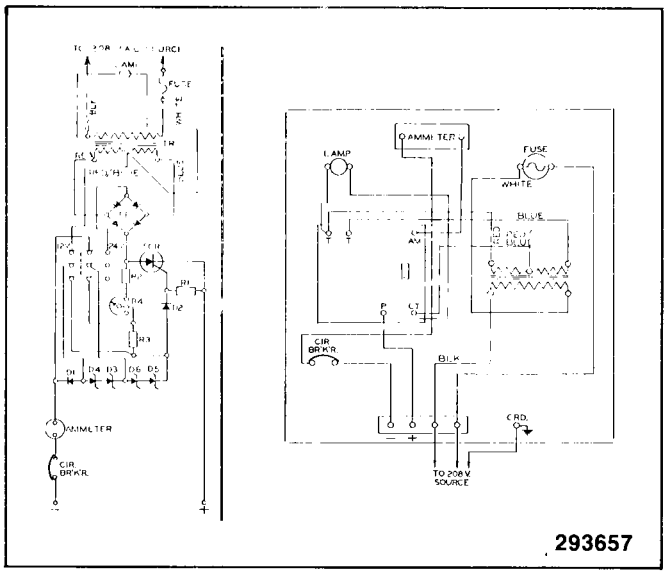
PROBLEM	REMEDY
No meter reading	—Open AC power circuit and recheck the battery charger clips for clean tight connections —Check charger connections to battery for correct polarity —Check for voltage at AC outlet —Check fuse
Ammeter pointer moves to extreme right, remains for a short time, returns to zero with a clicking sound	—12 or 24 Volt slide switch is not on proper setting to match battery voltage —A severely discharged battery may go into "cycling" process (see "Cycling")

Major Parts Listing

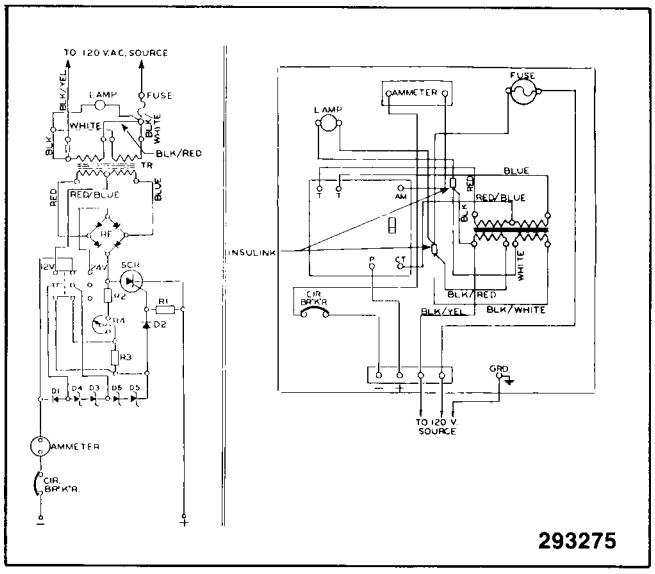
Description	Qty.	Common Parts	Assembly Numbers A-293274	A-293295	A-295090	A-293647	A-293656	A-295087
Board Assembly	1	B-293284						
Fuse	1		291207	291904	291207	293552	291207	294141
Ammeter	1	293278						
Transformer	1		293279	293279	295092	293649	293659	295089
Strip, Terminal	1		293281	293281	293281	293653	293281	293653
Circuit Breaker	1	293292						
Lamp	1		293661	293661	293655	293655	293655	293655
Panel, Silkscreen	1		293662	293663	–	–	–	–
Nameplate	1		–	–	295346	293666	–	295345
Panel	1		–	–	293283	293650	297360	293650
Fuse Holder	1		238426	238426	238426	293652	238426	293652
Sleeve (spacer)	4	265235						



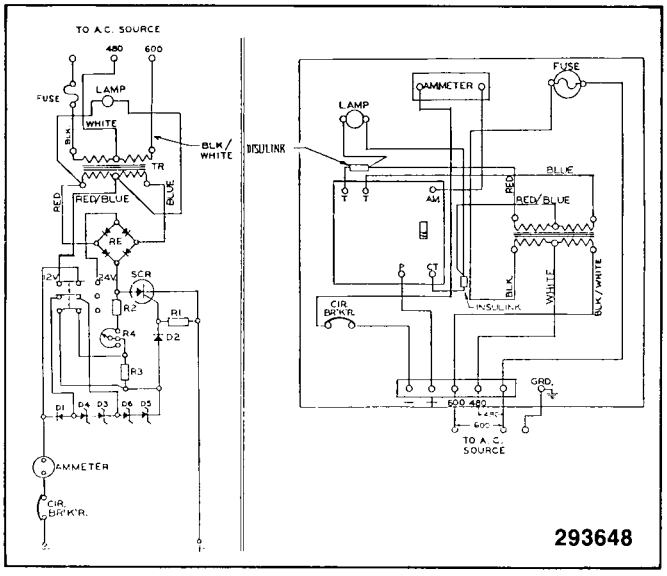
Circuit Board Wiring Diagram



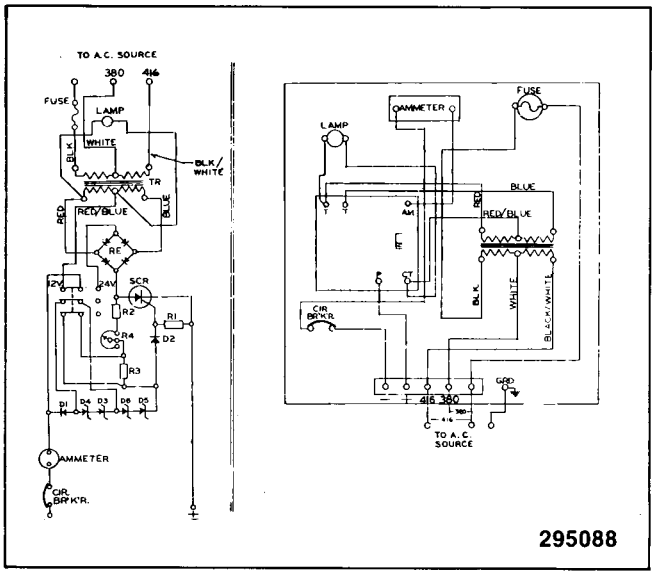
Wiring Diagram 208 Volt, 50/60 Hz



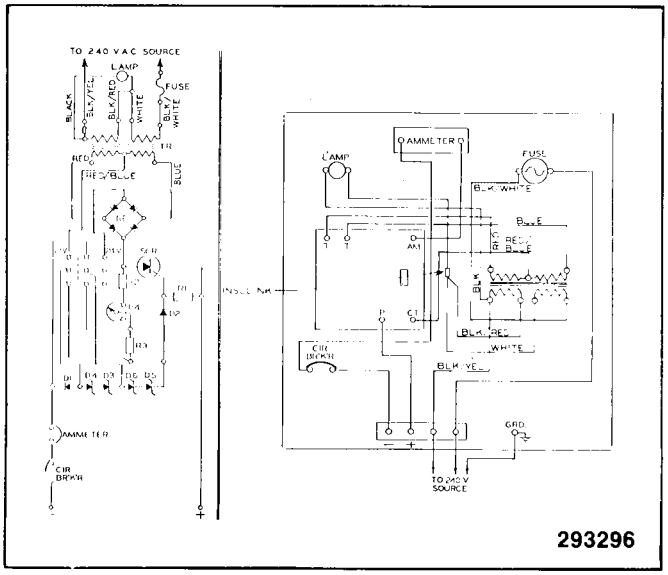
Wiring Diagram 120 Volt, 50/60 Hz



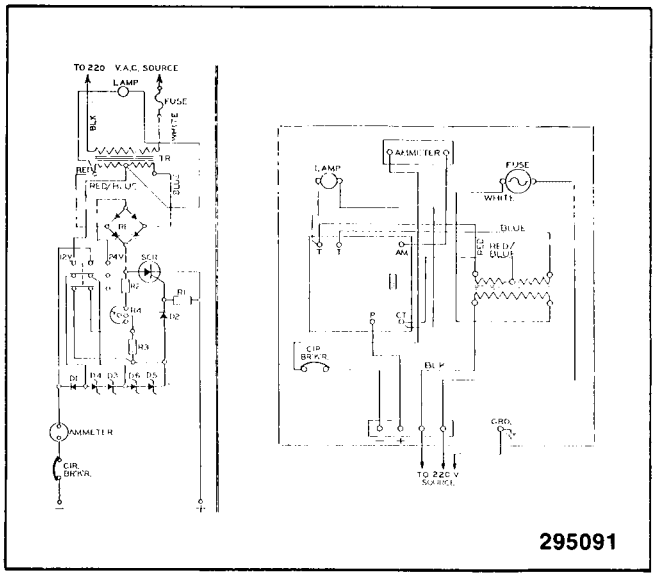
Wiring Diagram 480/600 Volt, 50/60 Hz



Wiring Diagram 380/416 Volt, 50/60 Hz



Wiring Diagram 240 Volt, 50/60 Hz



Wiring Diagram 220 Volt, 50/60 Hz