



Servisavor®

Series of Temporary
Power Restoration Devices

SSR

Benefits:

- **Get your customers' electricity back on in minutes, not days**
- **Eliminate hassle and liability of temporary above ground cabling**
- **Find secondary faults on YOUR time, not the cable's time**

Description:

The Servisavor® is a highly mobile unit designed to temporarily restore power to customers who have a single faulted conductor. By connecting the Servisavor® between the customers' meter socket and his meter, power can be restored without immediately locating and repairing the cable fault or running temporary above ground conductors.

Model # 15, 15M, 15E, 20, 20M, 20E, 25, 25M, 25E

	Model 15	Model 15M	Model 15E	Model 20	Model 20M	Model 20E	Model 25	Model 25M	Model 25E
Auto Transformer Rating	15kVA	15kVA	15kVA	20kVA	20kVA	20kVA	25kVA	25kVA	25kVA
Circuit Breaker	80 Amp Magnetic	80 Amp Magnetic	80 Amp	100 Amp Magnetic	100 Amp Magnetic	100 Amp	125 Amp	125 Amp	125 Amp
Breaker Box	Sealed Aluminium	Sealed Aluminium	Commercial Breaker Box	Sealed Aluminium	Sealed Aluminium	Commercial Breaker Box	Sealed Aluminium	Sealed Aluminium	Commercial Breaker Box
Adaptor Hanger	Included	Included		Included	Included		Included	Included	
0-250V Meter for Phase to Phase and Phase to Ground Voltages		Included			Included			Included	
Weight	236lbs. (107 kg)	236lbs. (107 kg)	236lbs. (107 kg)	220 lbs. (100 kg)	220 lbs. (100 kg)	220 lbs. (100 kg)	305 lbs. (139 kg)	305 lbs. (139 kg)	305 lbs. (139 kg)

Specifications Subject to Change Without Notice



Breaker Box of Metered Unit



Meter Adapter with Neutral Pigtail



Model 25E

**FOR FURTHER INFORMATION
PLEASE CONTACT:**

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SERVISAVOR® INSTRUCTIONS

IN ALL CASES, YOUR COMPANY SAFETY RULES TAKE PRECEDENT OVER THESE INSTRUCTIONS!

Determine whether there are two good conductors available (either one hot leg and the neutral or two hot legs and no neutral). The SERVISAVOR® must not be used unless there are two good conductors.

Have customer turn off his main breaker.

To eliminate an outage during fault location, you may determine which leg is bad and disconnect at both the source and the meter pan.

Position the SERVISAVOR® near the meter pan away from buried utilities. You may install a temporary screw type ground rod close to the SERVISAVOR®, connecting it to the brass ground stud on the left side of the SERVISAVOR®.

Install the ground tab on the SERVISAVOR® meter adapter under the ground lug in meter pan. **BE SURE THIS CONNECTION IS TIGHT** because it may carry the most current when the SERVISAVOR® is operating.

Turn the SERVISAVOR® breaker to the "OFF" position to avoid inrush current damage to its meter adapter contacts. Install SERVISAVOR® meter adapter into the meter pan.

Turn the SERVISAVOR® breaker to the "ON" position and check voltage.

Install meter. Seal both the meter and the SERVISAVOR® meter adapter.

Notify customer that service has been restored temporarily. Instruct customer to turn on his main breaker. If the breaker on the SERVISAVOR® trips, the customer should be advised to reduce his load until permanent repairs can be completed.

Temporarily barricade immediate area with safety cones.

SERVISAVOR® TECHNICAL EXPLANATION WITH EXAMPLES

The following explanation is provided to show how the SERVISAVOR® temporarily restores power to customers served with underground secondary aluminum cable with one faulted conductor. The SERVISAVOR® will not restore power when two conductors have faulted. Circuit diagrams of a typical customer with two different faults are provided to illustrate SERVISAVOR® operation. Voltages and currents are shown at the customer's meter and at the utility's secondary cable. The example customer has a 25 ampere load on one hot leg and a 50 amp load on the other hot leg. We have assumed there is no voltage drop due to the size of the service conductor. We have shown the customer's load as fixed resistances across each hot leg to simplify the example. The restored voltage on the faulted leg will actually be somewhat less than shown on the diagrams due to the voltage drop caused by the internal resistance of the autotransformer. All company safety practices must be followed when connecting and disconnecting the SERVISAVOR®. Normal practice is to identify and disconnect the faulted cable before installing the SERVISAVOR®. Many companies do not disconnect the faulted cable since aluminum conductor faults to a high resistance.

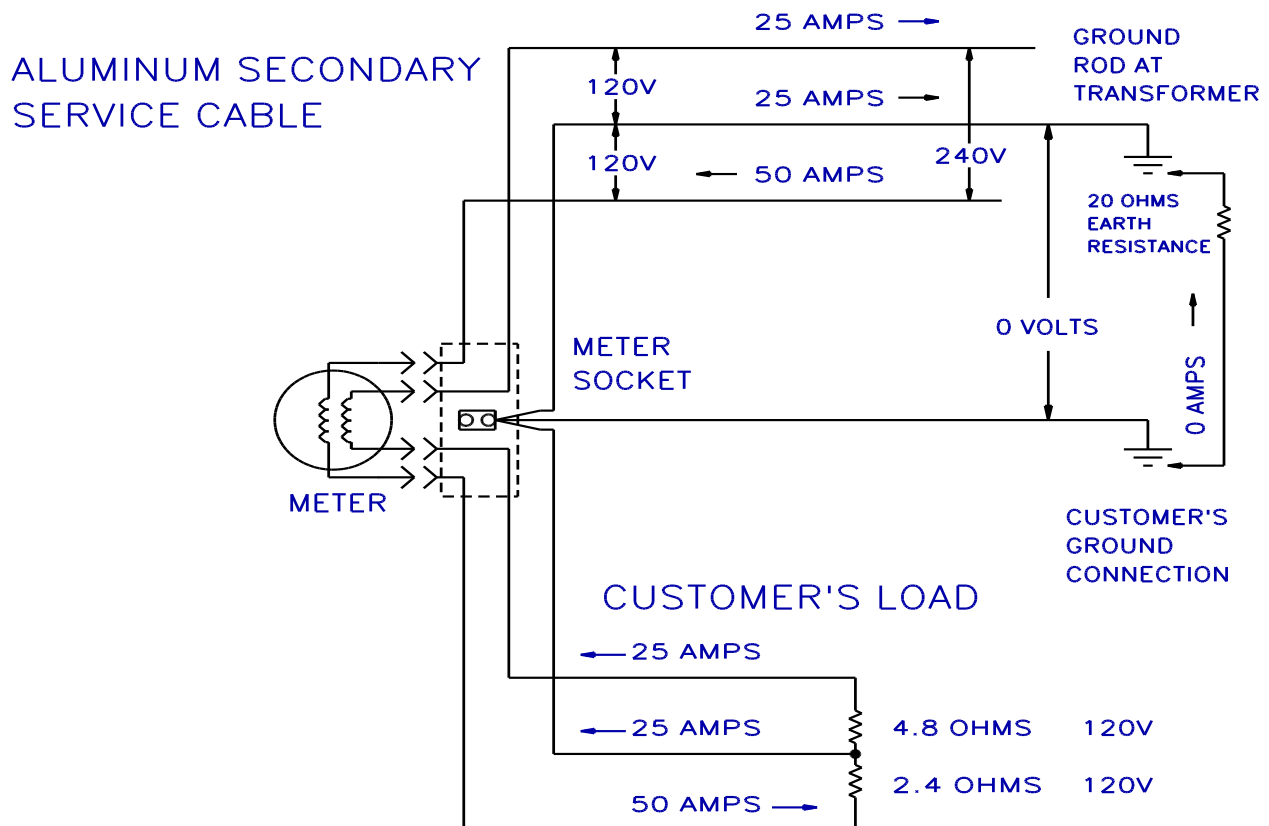


Figure 1 - CUSTOMER SERVICE EXAMPLE WITHOUT FAULTED CABLE

SERVICE WITH AN OPEN HOT LEG

When there is one faulted hot leg the customer loses that portion of his load. The neutral now carries exactly the same current as the good hot leg. Loading a 15 kva SERVISAVORS® to the maximum requires the neutral to carry 160 amps. Loading a 20 kva SERVISAVOR® to the maximum requires the neutral to carry 200 amps. 200 amps exceeds the continuous rating of many services that use reduced neutral conductors so repair the service as soon as possible.

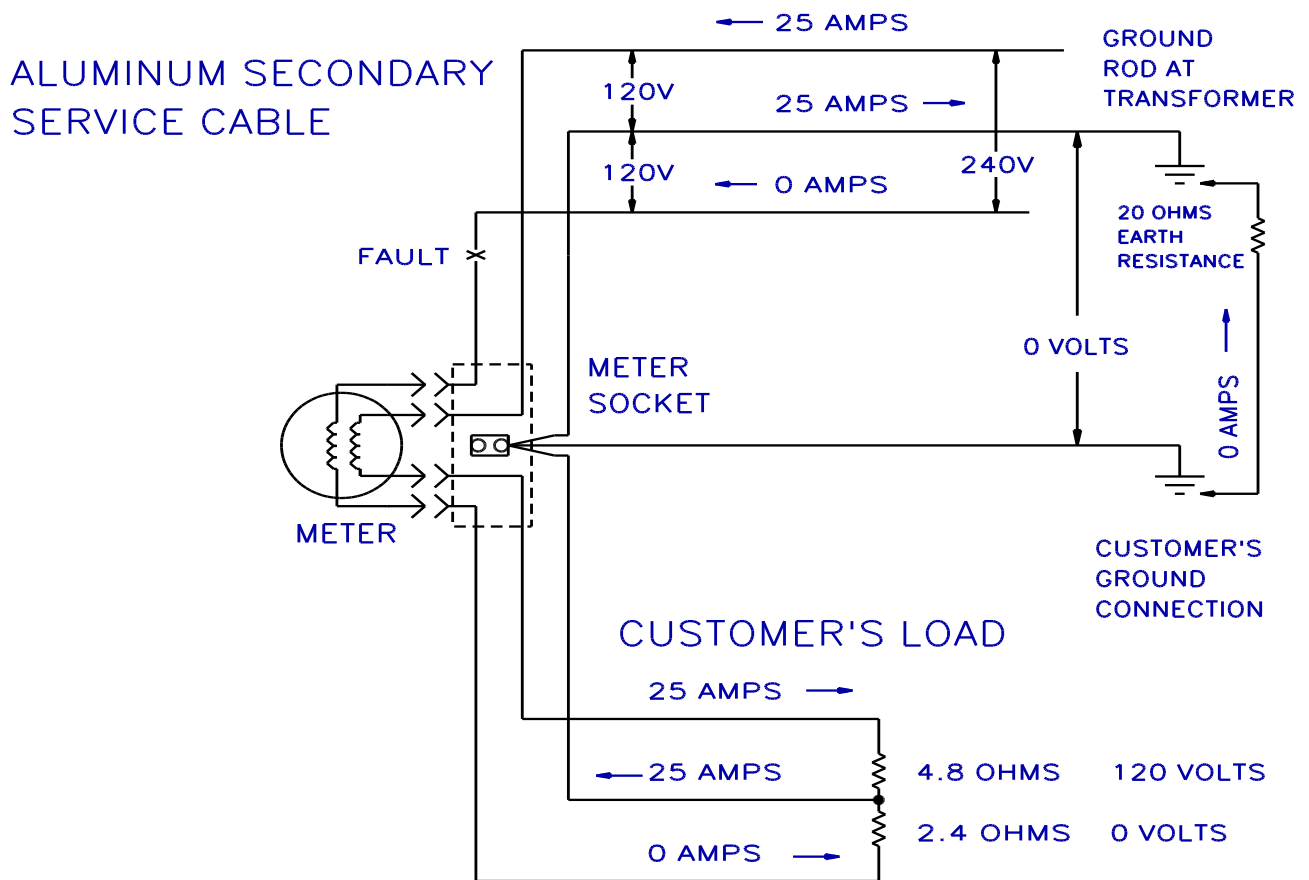


Figure 2 - CUSTOMER SERVICE WITH FAULT ON ONE HOT LEG

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SERVISAVOR® INSTALLED ON SERVICE WITH AN OPEN HOT LEG

When the SERVISAVOR® is installed between the meter socket and the meter up to 80 amps can be restored to the faulted leg. Have the customer turn off his main breaker. The technician disconnects the service and removes the watt-hour meter from its socket following his employer's safety practices. He checks to insure the neutral is connected to the ground rod at the service entrance. He installs a temporary ground rod close to the SERVISAVOR® and connects it to the brass stud on the left side of the SERVISAVOR®. The 80 amp circuit breaker in SERVISAVOR® is turned "OFF". The neutral pigtail from the meter adapter is connected into the neutral lug in the meter socket. The SERVISAVOR® meter adapter is installed in the meter socket and secured. The circuit breaker in the SERVISAVOR® is turned "ON". The customer's watt-hour meter can now be installed into the meter adapter and secured. Seals are then installed on the meter, adapter, and socket. The service is reconnected and the customer turns on his main breaker. If the circuit breaker in the SERVISAVOR® trips, the customer's load must be reduced. The good hot leg must carry its normal load current plus all the load current provided to the faulted leg by the SERVISAVOR®. The service cable neutral must carry the same current as the good hot leg. When the load on the faulted hot leg may exceed 80 amps, inform the customer that power is restored and that he should not increase his load significantly until the faulted cable can be repaired or replaced.

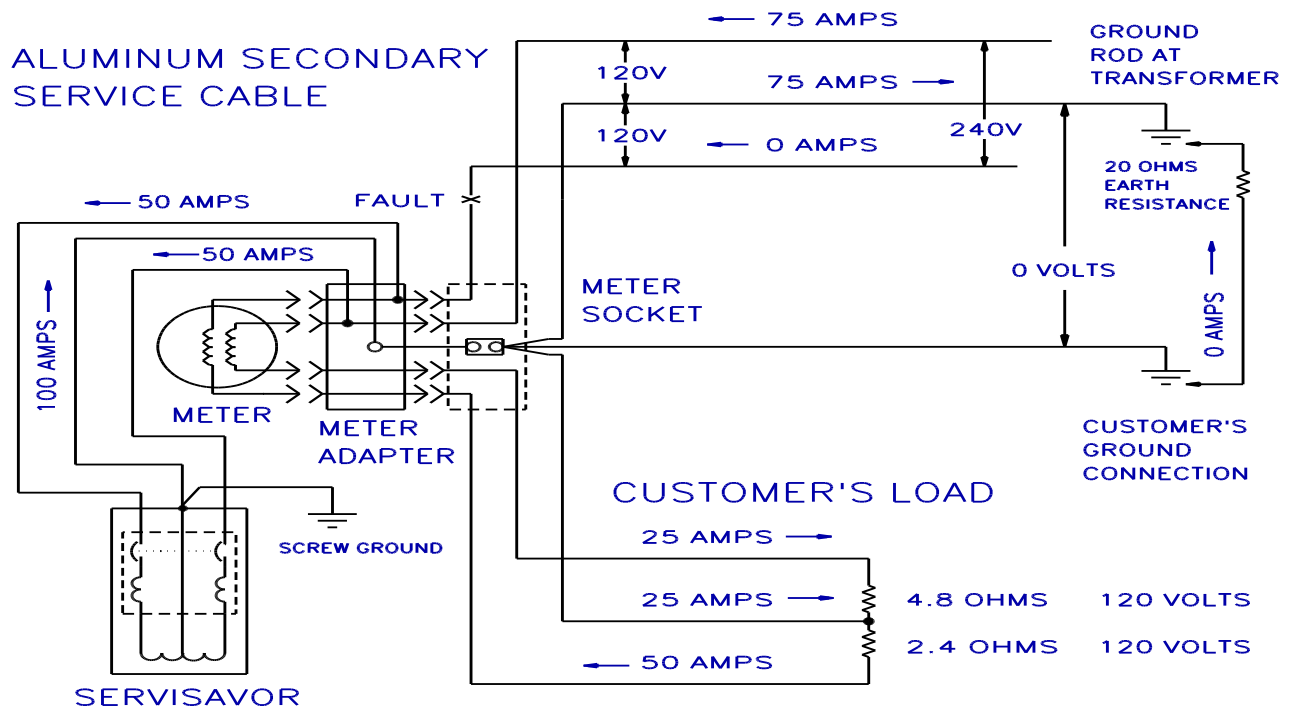


Figure 3 - SERVISAVOR® RESTORES CUSTOMER SERVICE WITH OPEN HOT LEG

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SERVICE WITH AN OPEN NEUTRAL

The customer has lots of problems with his voltage when the neutral on his service is open. His ground system will normally carry a small part of the neutral current caused by his unbalanced loads. The input voltage divides across the loads on each side of the circuit and divides across the loads and the customer's ground earth resistance.

In the example below fixed resistors are shown as the load. The input voltage divides according to its load resistance. When a large load such as a motor attempts to start, the resistance of its hot leg will be lowered. Since the voltage divides across the resistances, the voltage on the other hot leg will increase as the voltage between the customer's ground and the source transformer ground increases.

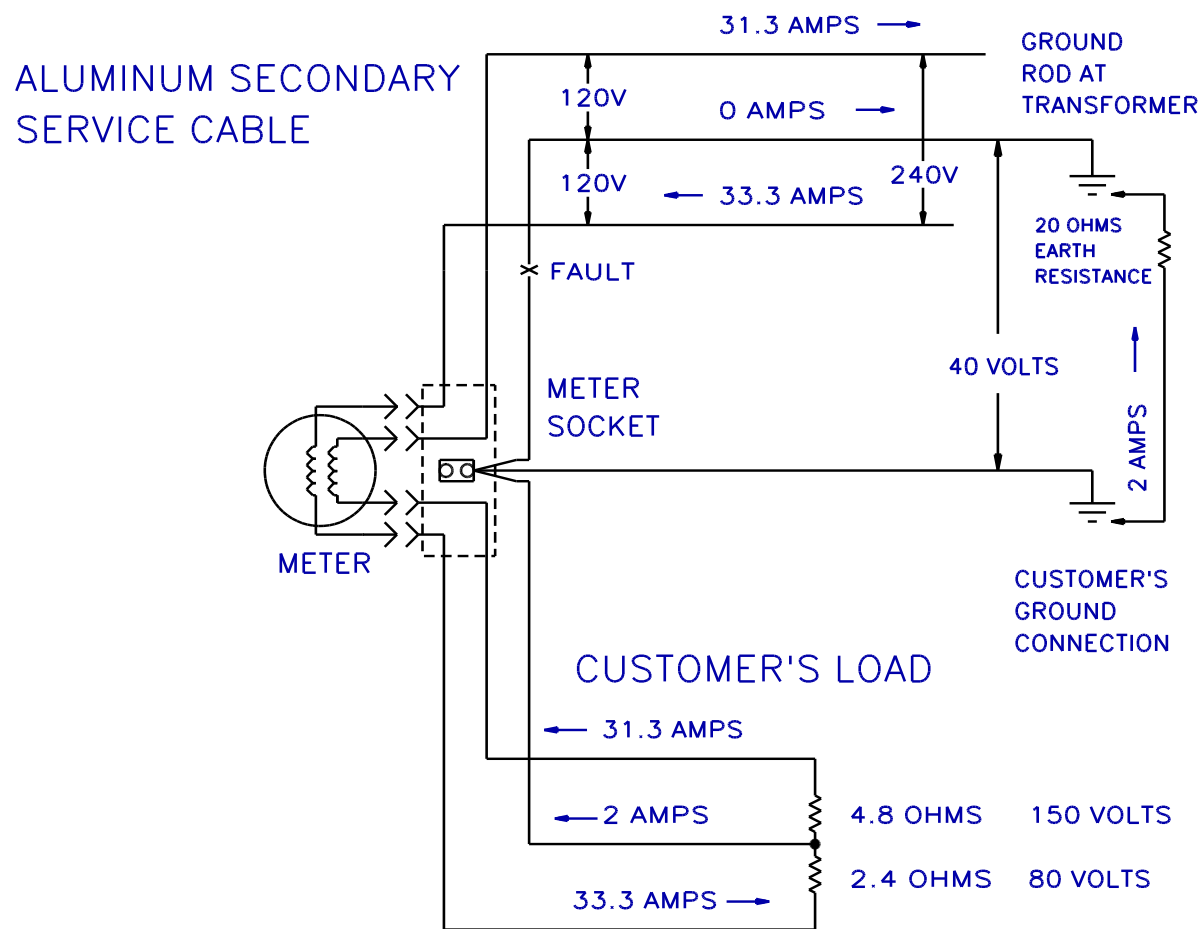


Figure 4 - CUSTOMER SERVICE WITH AN OPEN NEUTRAL

SERVISAVOR® INSTALLED ON SERVICE WITH AN OPEN NEUTRAL

When the SERVISAVOR® is installed between the meter socket and the meter it forces the two hot legs to the same voltage and creates a neutral point at the meter socket ground connection. Have the customer turn off his main breaker. The technician disconnects the service and removes the watt-hour meter from its socket following his employer's safety practices. He checks to insure the neutral is connected to the ground rod at the service entrance. He installs a temporary ground rod close to the SERVISAVOR® and connects it to the brass stud on the left side of the SERVISAVOR®. The 80 amp circuit breaker in SERVISAVOR® is turned "OFF". The neutral pigtail from the meter adapter is connected into the neutral lug in the meter socket. The SERVISAVOR® meter adapter is installed in the meter socket and secured. The circuit breaker in the SERVISAVOR® is turned "ON". The customer's watt-hour meter is now installed into the meter adapter and secured. Seals are then installed on the meter, adapter, and socket. The service is reconnected and the customer turns on his main breaker. If the circuit breaker trips, the customer's load must be reduced. When the unbalance of the load may exceed 80 amps, the customer should be informed that power is restored and that he should not increase his load significantly until the faulted cable can be repaired or replaced.

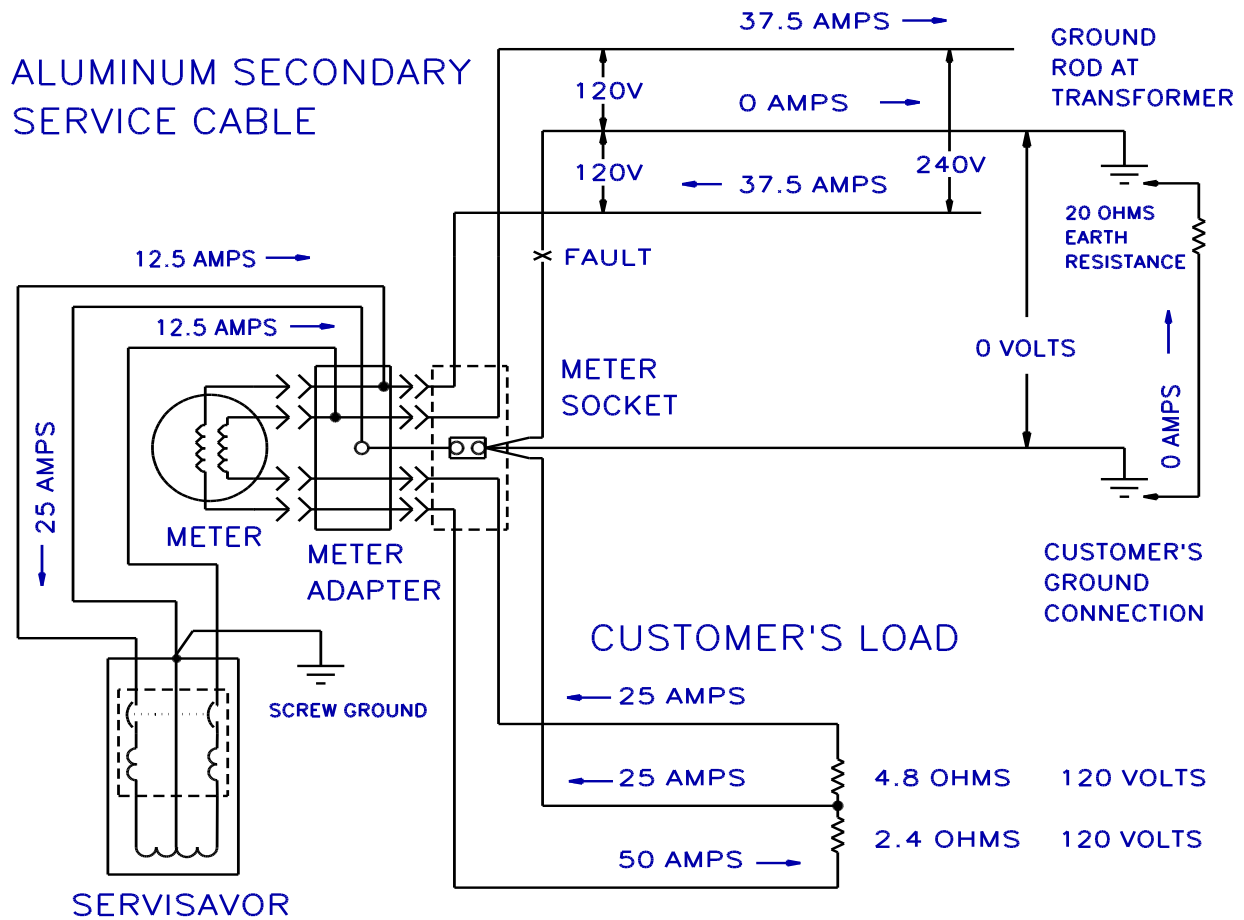


Figure 5 - SERVISAVOR® RESTORES SERVICE WITH AN OPEN NEUTRAL

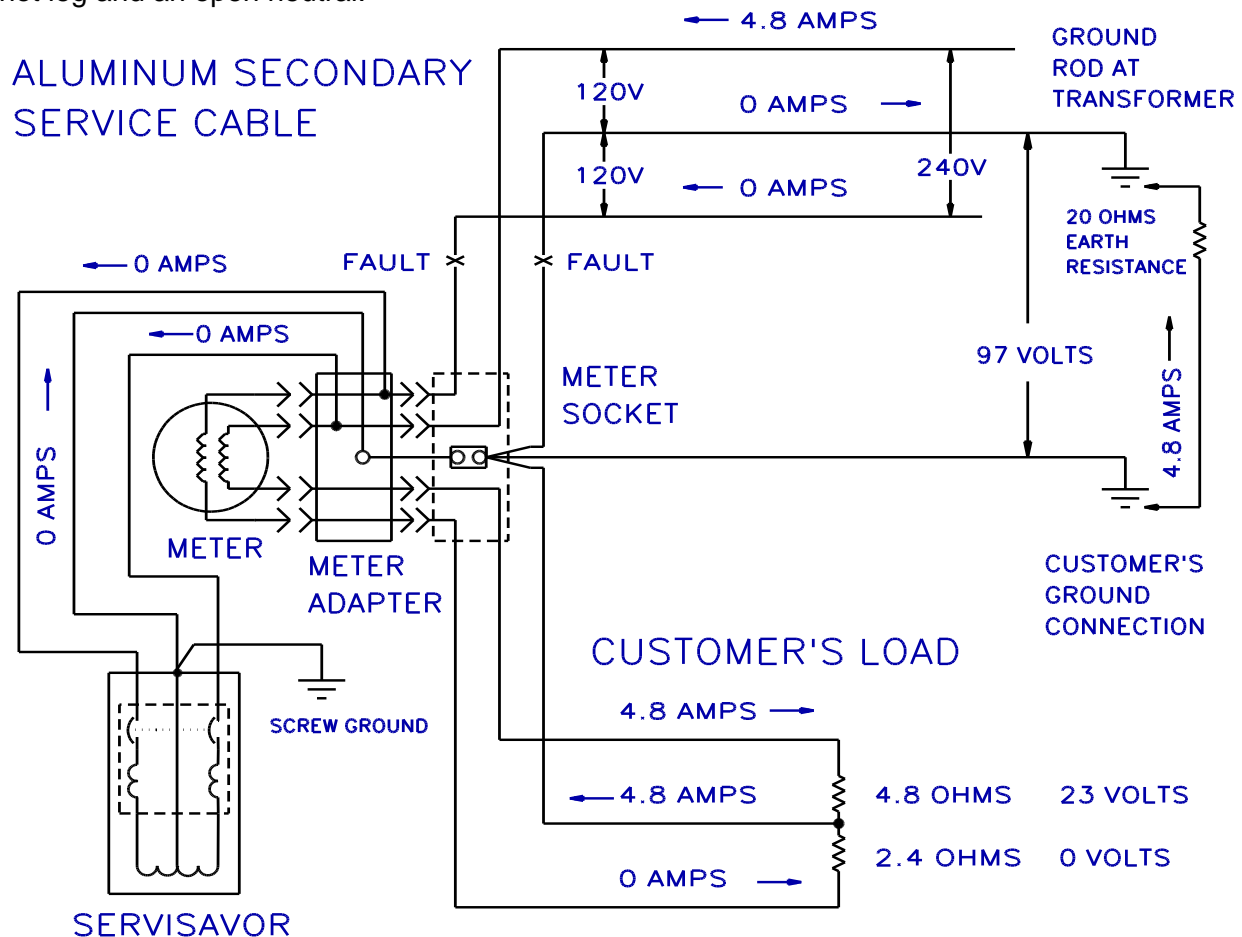
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SERVISAVOR® INSTALLED ON SERVICE WITH AN OPEN HOT LEG AND AN OPEN NEUTRAL (TWO FAULTS)

The SERVISAVOR® should **NEVER** be installed on a service with two faulted cables. If one or both of the two "good" conductors are partially faulted when the SERVISAVOR® is installed a second fault may occur if the SERVISAVOR® is left on too long. (In one instance in Pennsylvania, a second fault did occur in the neutral after the SERVISAVOR® had been left connected for 8 days).

One example is shown in the diagram below. The customer's load resistance and his ground earth resistance are in series between the 120 volt leg of the source transformer and its ground. The voltage divides across the two resistances. The highest voltage is across the highest resistance. Since the source transformer is typically 75 feet or more from the house, the step potential between the earth and the meter pan, SERVISAVOR®, or any part of the customer's ground system should be low.

The temporary screw ground rod at the SERVISAVOR® will reduce the step potential a person could feel if they touched a SERVISAVOR® installed on a service with both an open hot leg and an open neutral.



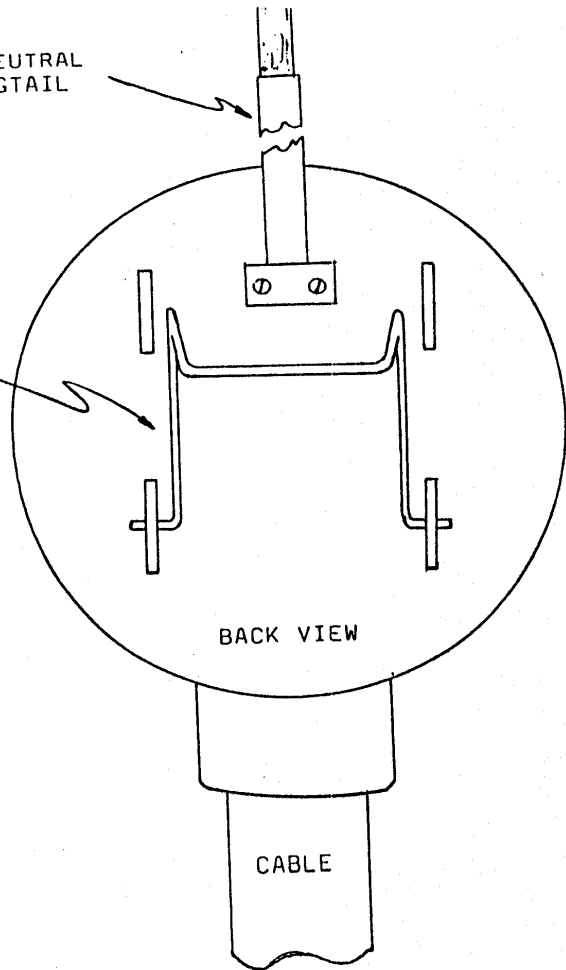
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SERVISAVER INSTALLATION INSTRUCTIONS

INSTALLATION
HANGER

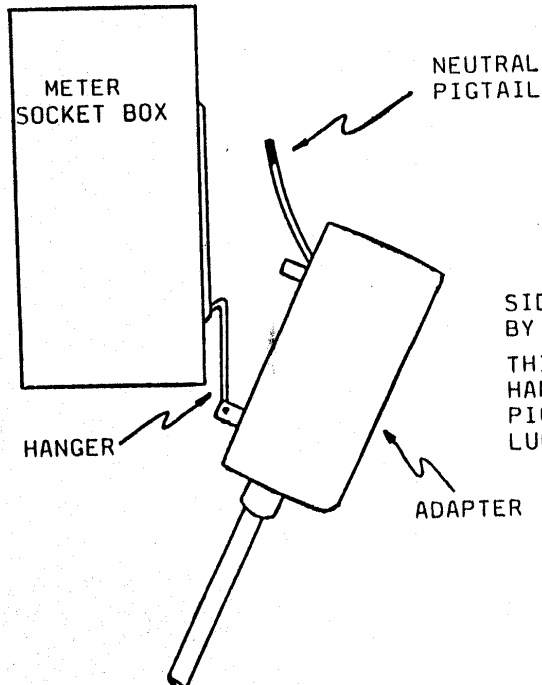
NEUTRAL
PIGTAIL



BACK VIEW

CABLE

STORE INSTALLATION
HANGER IN BOX FOR
CIRCUIT BREAKER



- A. INSTALL HANGER AS SHOWN
- B. HANG ADAPTER ON SOCKET
- C. INSTALL NEUTRAL PIGTAIL
- D. REMOVE HANGER
- E. INSTALL ADAPTER IN METER SOCKET

SIDE VIEW SHOWING ADAPTER SUPPORTED
BY HANGER, ON LIP OF METER SOCKET.
THIS ALLOWS THE OPERATOR TO USE BOTH
HANDS, WHEN INSTALLING THE NEUTRAL
PIGTAIL, INTO THE METER SOCKET GROUND
LUG.

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