

# *The Super Beast*

Secondary Service Conductor Testers

- ▲ Indicates problems on secondary service
- ▲ Detects open neutral quickly, accurately
- ▲ Isolates and identifies overhead or underground complaints on utility side
- ▲ Verifies condition of secondary conductors and associated connections
- ▲ Now available in two models: analog and digital meters!



## The Best in the Business...Just Got Better

For more than 30 years, in over 500 electric utilities, *The Super Beast* has saved time and money in determining the condition of secondary service. Within seconds, a troubleshooter can tell if the conductor is open, resistive, or functioning properly - even when temporary or intermittent faults may be masking a deteriorating conductor.



*H.J. Arnett Industries, L.L.C. - Innovative Instruments for Utilities & Industry*

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7500 S.W. Tech Center Dr. #130 Portland, OR 97223 Phone (503) 684-9844 Fax (503) 684-8360

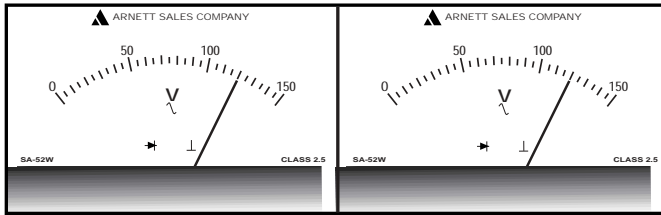
# It's this easy...

**1** Remove the KWH meter.  
Safety note: always wear protective safety glasses or face shield and rubber protective insulating gloves when working around meter.

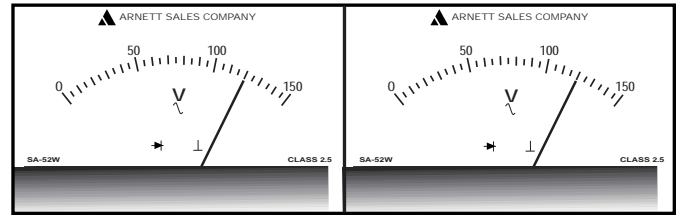
**2** Inspect the meter base for loose connections or other visual problems.  
Connect the green clip to neutral. Insert Super Beast in the meter base.

**3** Push the switch to the left, read meters.  
You will see *one* of the following sets of readings:

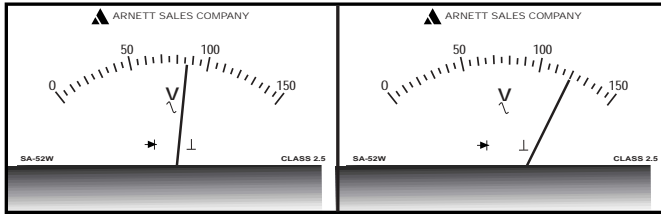
**4** Push the switch to the right, read meters.  
You will see *one* of the following sets of readings:



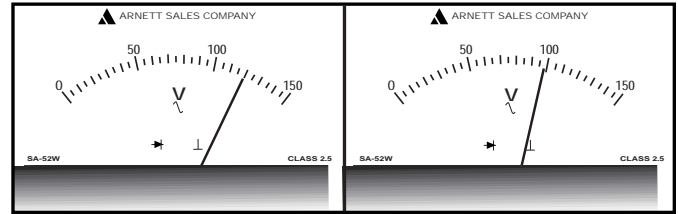
Left meter reads 120V, so left conductor is OK.



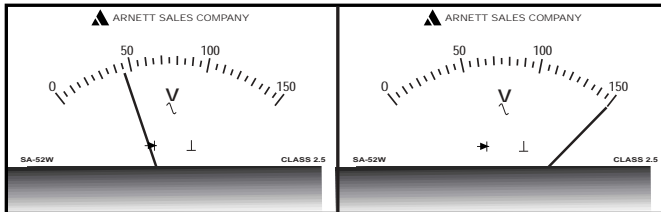
Right meter reads 120V, so right conductor is OK.



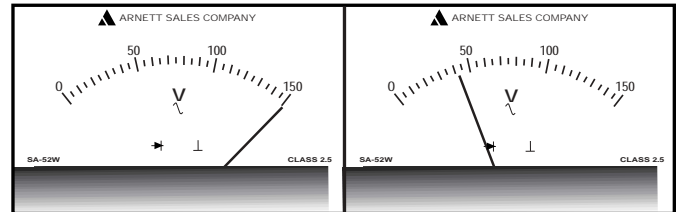
Only left meter drops, so left conductor is partially open. If left meter drops to zero, left conductor is fully open.



Only right meter drops, so right conductor is partially open. If right meter drops to zero, right conductor is fully open.



Left meter drops, right meter increases, so neutral is open. This picture shows a partial open. If left conductor goes blank and the right meter reads 240 Volts on the digital meter, then the neutral is completely open.



Right meter drops, left meter increases, so neutral is open. This picture show a partial open. If right conductor goes blank and the left meter reads 240 Volts on the digital meter, then the neutral is completely open.

## Voltmeter Test Jacks

The banana jacks on the front panel are used as test points to measure A.C. voltage on a digital voltmeter or analog meter. The yellow test point is common to both *The Super Beast* meters: connect it to the common of the digital voltmeter.

To measure the voltage across the right meter, simply touch the other lead of the digital voltmeter to the "Right Conductor" test point on *The Super Beast* face plate. Repeat the process with the "Left Conductor" to measure voltage across the left meter.

## 3-Phase Application

*The Super Beast* can be used effectively on 120/208 volt 3-phase Wye systems using a portable meter base adapter (*catalog # HJA-469-500*) as follows:

1. Connect clips of the adapter to neutral, Line 1 and Line 2.
2. Take readings on Line 1 and Line 2.
3. Move one clip lead from either Line 1 or Line 2 to Line 3.
4. Take readings again.

Interpret the results the same as for single phase operation (see meter drawings above).

### Note:

*The Super Beast* is *NOT* designed for use on 120/240 volt 3-phase Delta, because 208 volts are present between ground and "height phase" of a standard 3-phase Delta System.

# How the Super Beast works...

## "Good" Service Conductors

When the "burden switch" is in the center position (load, or "burden" OFF), each meter reads 120 volts, since they are tied across each 120 volt hot leg to neutral. See Figure A, below.

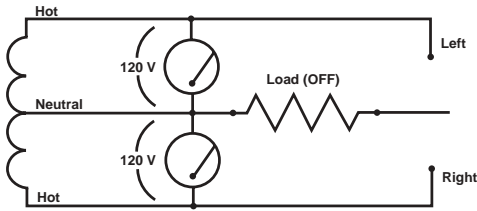


Fig. A - Good Conductors Connected to Super Beast

When the burden switch is flipped to *either* the Left or Right position (load connected), good conductors respond as shown below, with 120 volts across the load and the meter. See Figure B, below.

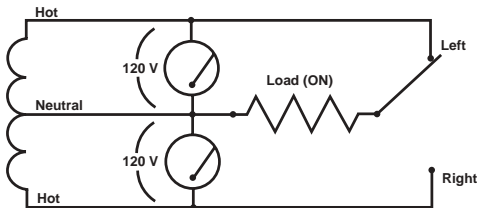


Fig. B - Good Conductors with Burden on Left

The meter should read 120 volts and the load should operate. The selected meter may drop (usually only a couple of volts for conductors in good shape) due to the load being put on the transformer. The other meter is across the other leg to neutral and should read 120 volts. The Super Beast reads as below when connected to good service conductors.

Switch Position	Load (Burden)	Left Meter	Right Meter
Center	OFF	120 volts	120 volts
Left	ON	120 volts	120 volts
Right	ON	120 volts	120 volts

## Open Neutral

Since there are 240 volts across the meter socket terminals with an open neutral, one display will go blank and the other display will show 240 volts. See Figure C, below.

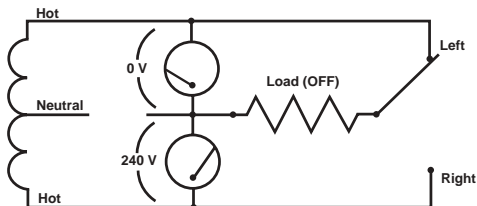


Fig. C - Open Neutral Connected to Super Beast

When the burden switch is flipped to either side, the load current must flow through the opposite meter since the neutral is open. The high resistance of the meter will not let enough current flow through it to allow the load to operate. This means nearly all of the 240 VAC is dropped across the opposite meter, registers 240 VAC on the digital meter.

Since very little voltage is dropped across the load, the selected meter reads zero volts.

See Figure D, below.

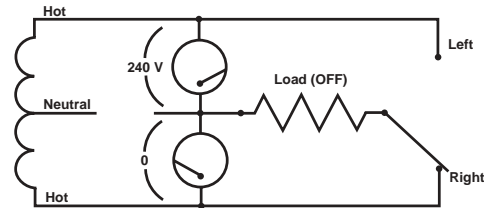


Fig. D - Open Neutral on Right

The Super Beast operates as below with an open service neutral.

Switch Position	Load (Burden)	Left Meter	Right Meter
Center	OFF	120 volts	120 volts
Left	OFF	0 volts	240 volts
Right	OFF	240 volts	0 volts

## Open "Hot" Service Conductors

The last service problem occurs when one of the "hot" conductors is open, Figure E. Since one conductor lead is broken, no voltage will show across that meter. The other meter will have 120 volts across it and the load will operate, since the conductor lead and neutral feeding it are still o.k.

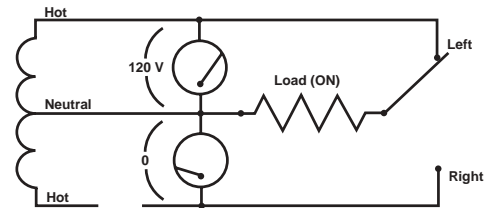


Fig. E - Hot Conductor Connected to Load

In Figure F, the conductor feeding the load and associated meter is broken, so the load and meter will not operate. However, the other meter is connected across a good conductor and neutral, so it will read 120 volts.

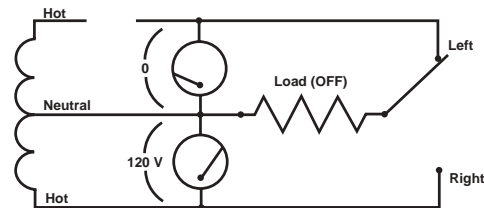


Fig. F - Open Hot Conductor Connected to Load

When connected to open "hot line" conductors the Super Beast shows:

Switch Position	Load (Burden)	Left Meter	Right Meter
<b>Open Right Conductor</b>			
Center	OFF	120 Volts	0 Volts
Left	ON	120 Volts	0 Volts
Right	OFF	120 Volts	0 Volts
<b>Open Left Conductor</b>			
Center	OFF	0 volts	120 volts
Left	OFF	0 volts	120 volts
Right	ON	0 volts	120 volts

# There's more with *The Super Beast*

## Accessories

### Super Beast Bag

Optional tote bag has thick padded sides and bottom to cushion and protect the Beast. Its rugged, water repellent, nylon-reinforced construction gives the bag excellent weather resistance and durability. Comes in our distinctive yellow.

**Catalog # HJA-469-501**



### Meter Base Adapter

Portable meter base adapter for use on non-standard meter bases and for 3-Phase applications. Has a 7' cord and spring clips to test from underground or overhead secondary junction points. To use: insert Super Beast into base, attach spring clips to the correct conductors, then systematically proceed down secondary feeder to isolate the voltage problem.

**Catalog # HJA-469-500**



## Save with the Super Combo...

The Super Combo is a complete Super Beast and accessories package at one low price. Includes one Super Beast, meter base adapter, and carrying case at lower cost than if each item is purchased separately.

**Catalog #**

**HJA-469 SCO** Super Beast (analog)

**HJA-469-DSCO** Super Beast (digital)

*And check out the complete line of service conductor test instruments -available from Arnett!*

### The Mega Beast

80 Amp Service Conductor Tester.

### The White Knight

Secondary power line tap and open faulted conductor locator.

### The Pinpointer

Underground secondary fault locator.

### The Average Beast

Field wathour meter accuracy verifier.

### The Flagship

Remote check meter monitoring.

## Specifications

### The Super Beast Catalog # HJA-469-S

#### Meters

voltage range

#### Analog

0 - 150 VAC

display resolution

5 VAC per division

accuracy

± 2 V

reading settling time

Instantaneous

Operating temperature range

-20° C to +40° C

Humidity

0 to 90% rH (non-condensing)

Storage temperature range

-40° C to +50° C

Load element

2 each, 1600 watts, 120 VAC

Base connectors

Standard KWH meter

Size

5 7/8" W x 7 1/4" D (with base)

Weight

Net 6 lbs., shipping 8 lbs.

Warranty

One year parts and labor under normal use. Not responsible for misuse.

### The Super Beast-D HJA-469-D

#### Digital

84- 264 VAC

1 VAC

± 1V (typ), ± 2V (max) @ 25° C

Approximately 4 seconds

-25° C to +50° C

0 to 90% rH (non-condensing)

-40° C to +50° C

2 each, 1600 watts, 120 VAC

Standard KWH meter

5 7/8" W x 7 1/4" D (with base)

Net 6 lbs., shipping 8 lbs.

## Replacement Parts

496-251	150 VAC meter, analog
469-252	84 -264 VAC meter, digital
469-275 or 276	Replacement meter cover (call factory)
469-350	3-way toggle switch
CBUSSHKP	Fuse holder
469-400	Load element, 1600 watts
469-425-C-FA	Meter base plate with stabs

## About the Company

H.J. Arnett Industries, L.L.C., is an Oregon company which manufactures and distributes products for the electric utilities, telecommunications, and construction industries. For over 30 years, the company has worked closely with its customers to develop practical products geared to solving everyday problems for utilities and industry. The company's line of instruments has grown out of direct discussion with and response to linemen and engineers. We welcome your inquiries and comments.

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