

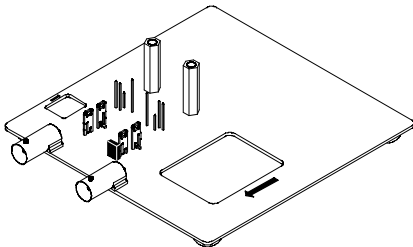
**067-1686-00**  
**Power Measurement Deskew**  
**& Calibration Fixture**  
**Instructions**

www.tektronix.com

071-1872-01



**Overview**



This fixture converts the PROBE COMPENSATION output of the oscilloscope into a set of test point connections. These connections provide you with a convenient way to compensate for timing differences between voltage and current probes.

You can also optimize the instrument gain and offset accuracy at the probe tips for both voltage and current probes.

Use the table as a guide to connect a variety of Tektronix voltage and current probes together on the fixture.

**Connecting to the Instrument**

The fixture has two BNC inputs, Port A and Port B. Use the BNC cable (included) to connect the instrument PROBE COMPENSATION output or external generator to either the Port A or Port B input. The input you use depends on the type of probes you have and the operation you want to perform.

**CAUTION.** The maximum allowable voltage applied to either input is 8 V RMS. Voltages in excess of 8 V RMS may damage the fixture.

Probe <sup>1</sup>	Operation	Use input
Passive voltage probes, including: P6139A P5050 and other 10X passive probes	Low frequency compensation <sup>2,3</sup>	B
	Gain and offset calibration <sup>2,3</sup>	B
	Compensate timing with respect to current probes	A or B, depending on current probe type
Active voltage probes, including: TAP1500 TAP2500 TAP3500 TDP0500 TDP1000 P6243 P6245 P6246 P6247 P6248	Gain and offset calibration <sup>3</sup>	B
	Compensate timing with respect to current probes	A or B, depending on current probe type
High voltage probes, including: P5200 P5205 P5210 <sup>4</sup> P6135A	Gain and offset calibration <sup>3</sup>	B
	Compensate timing with respect to current probes	A or B, depending on current probe type
Current probe TCP0030 TCP202 TCP312 TCP305	Gain and offset calibration	A
	Compensate timing with respect to voltage probes	A
Current probe TCP303	Gain and offset calibration	B
	Compensate timing with respect to voltage probes	B
Current probe A6302 A6312	Compensate timing with respect to voltage probes	A
Current probe A6303	Compensate timing with respect to voltage probes	B

- <sup>1</sup> Not all probes are useable with all instruments.
- <sup>2</sup> Gain and offset calibration for these probes is generally not needed.
- <sup>3</sup> Jumper must be removed from fixture to perform this operation.
- <sup>4</sup> Requires external signal source.

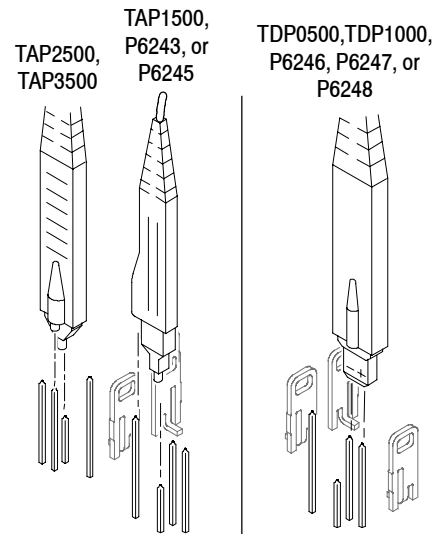
**Connecting Probes**

The following diagrams show how to attach each type of probe tip to the fixture. Refer to the ground symbols on the fixture to establish the correct polarity.

**WARNING.** To avoid personal injury, use care while connecting probe tips to the square pins on the fixture. The ends of the square pins are sharp.

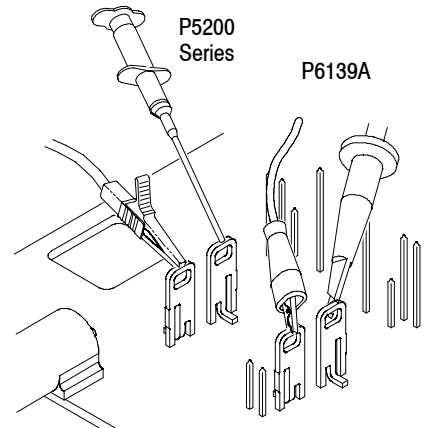
**TAP1500, TAP2500, TAP3500, P6243, or P6245**

Connect the probe tip to the short pin and the probe ground to the long pin as shown.



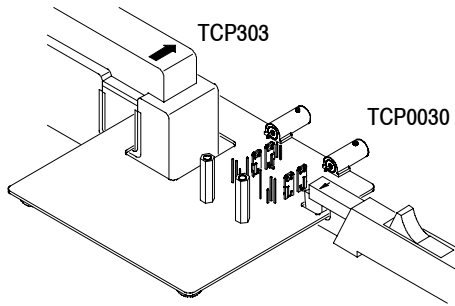
**P6139A or P5200 Series**

Connect the probe tip and the ground lead to the two terminals as shown.



**TCP0030, TCP202, TCP312, TCP305, A6302, A6312, etc. (Small current probes), & TCP303, A6303 (Large current probes)**

Connect the current probe around the current loop as shown. Be sure to align the polarity arrows on the current probe and the fixture, and make sure the current probe slider is closed and locked.

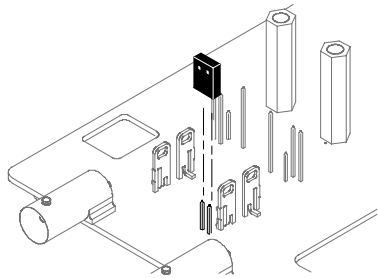


**Using the Fixture**

Do these steps to use the fixture. For best results, warm up the equipment for 20 minutes before performing these functions.

**Optimize Gain and Offset Accuracy (Not all oscilloscopes support this function)**

1. Connect the Port A or Port B side of the fixture to the instrument, depending on the probe type. (See the table in *Connecting to the Instrument*).
2. If you are optimizing the gain and offset accuracy for a voltage probe on Port B, remember to remove the small jumper over the two pins on the fixture.



3. Connect the probe to the fixture as described in *Connecting Probes*.
4. Initiate the Calibrate Probe routine.
5. When the routine is finished, remove the connections and replace the small jumper across the two pins on the fixture. Leave the jumper installed for all other functions.

**Compensate Probe Timing (Deskew)**

1. Connect the Port A or Port B side of the fixture to the instrument, depending on the probe type. (See the table in *Connecting to the Instrument*).
2. Connect the probes to the fixture.
3. Display all channels that you want to deskew.

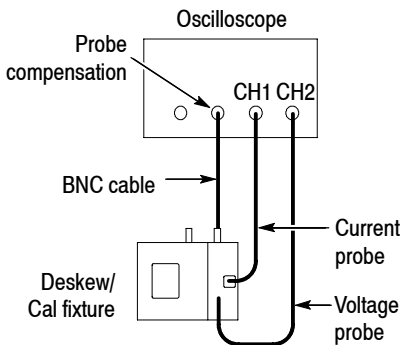
4. Push the **AUTOSET** button on the instrument front panel.
5. Adjust vertical **SCALE**, and **POSITION** (with active probes, adjusting **offset** may be required) for each channel so that the signals overlap and are centered on-screen.
6. Adjust horizontal **POSITION** so that a triggered rising edge is at center screen.
7. Adjust horizontal **SCALE** so that the differences in the channel delays are clearly visible.
8. Adjust horizontal **POSITION** again so that the first rising edge is exactly at center screen. The fastest probe is connected to this channel. (The fastest probe is probably the one with the shortest cable or the highest bandwidth.)
9. Touch the **VERT** button or use the **Vertical** menu to display the vertical control window.
10. Touch the Probe **Deskew** button to display the channel-deskew control window.
11. Select one of the slower channels.

**NOTE.** If possible, do the next step at a signal amplitude within the same attenuator range (vertical scale) as your planned signal measurements. Any change to the vertical scale after deskew is complete may introduce a new attenuation level (you can generally hear attenuator settings change) and therefore a slightly different signal path. This different path may cause a 200 ps variation in timing accuracy between channels.

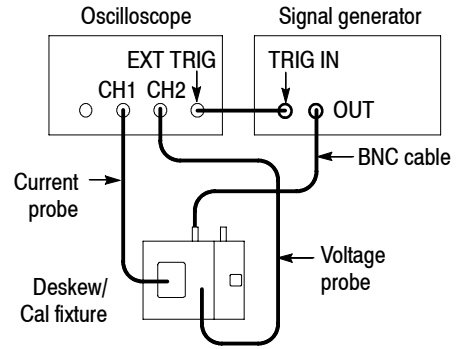
12. Adjust the deskew time for that channel so that the signal aligns with that of the fastest channel.
13. Repeat steps 11 and 12 for each additional channel that you want to deskew.
14. Remove the connections.

**Schematics**

The schematic diagrams that follow show typical connections for both small- and large-style current probes.



**Figure 1: Typical small current probe connection**



**Figure 2: Typical large current probe connection using an external signal source**

**CAUTION.** The maximum allowable voltage applied to either input is 8 V RMS. Voltages in excess of 8 V RMS may damage the fixture.

**Safety Summary**

To avoid potential hazards, use this product only as specified.

To avoid fire or personal injury, do not operate in wet/damp conditions.

Keep product surfaces clean and dry.

**Safety terms in this manual**

**WARNING.** These statements identify conditions or practices that could result in personal injury or loss of life.

**Warranty Information**

For warranty information, go to [www.tektronix.com](http://www.tektronix.com), click Support, and then use the provided links to search for your product's warranty.

**Contacting Tektronix**

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- Worldwide, visit [www.tektronix.com](http://www.tektronix.com) to find contacts in your area.