

# **Instructions**



**P5050**  
**10X Passive Probe**  
**071-1018-01**

**[www.tektronix.com](http://www.tektronix.com)**



071101801

Copyright © Tektronix, Inc. All rights reserved.

Tektronix products are covered by U.S. and foreign patents, issued and pending. Information in this publication supercedes that in all previously published material. Specifications and price change privileges reserved.

Tektronix, Inc., P.O. Box 500, Beaverton, OR 97077-1000

TEKTRONIX and TEK are registered trademarks of Tektronix, Inc.

## WARRANTY

Tektronix warrants that the products that it manufactures and sells will be free from defects in materials and workmanship for a period of one (1) year from the date of purchase from an authorized Tektronix distributor. If any such product proves defective during this warranty period, Tektronix, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product. Batteries are excluded from this warranty.

In order to obtain service under this warranty, Customer must notify Tektronix of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by Tektronix, shipping charges prepaid, and with a copy of customer proof of purchase. Tektronix shall pay for the return of the product to Customer if the shipment is to a location within the country in which the Tektronix service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Tektronix shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than Tektronix representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of non-Tektronix supplies; or d) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

**THIS WARRANTY IS GIVEN BY TEKTRONIX WITH RESPECT TO THE LISTED PRODUCTS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. TEKTRONIX AND ITS VENDORS DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TEKTRONIX' RESPONSIBILITY TO REPAIR OR REPLACE DEFECTIVE PRODUCTS IS THE SOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR BREACH OF THIS WARRANTY. TEKTRONIX AND ITS VENDORS WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IRRESPECTIVE OF WHETHER TEKTRONIX OR THE VENDOR HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES.**

## Contacting Tektronix

|                          |                                                                                                                                                           |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Phone</b>             | 1-800-833-9200*                                                                                                                                           |
| <b>Address</b>           | Tektronix, Inc.<br>14200 SW Karl Braun Drive<br>P.O. Box 500<br>Beaverton, OR 97077<br>USA                                                                |
| <b>Web site</b>          | <a href="http://www.tektronix.com">www.tektronix.com</a>                                                                                                  |
| <b>Sales support</b>     | 1-800-833-9200, select option 1*                                                                                                                          |
| <b>Service support</b>   | 1-800-833-9200, select option 2*                                                                                                                          |
| <b>Technical support</b> | Email: <a href="mailto:techsupport@tektronix.com">techsupport@tektronix.com</a><br>1-800-833-9200, select option 3*<br>6:00 a.m. – 5:00 p.m. Pacific time |

---

\* **This phone number is toll free in North America. After office hours, please leave a voice mail message.**  
**Outside North America, contact a Tektronix sales office or distributor; see the Tektronix web site for a list of offices.**

# General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. To avoid potential hazards, use this product only as specified.

*Only qualified personnel should perform service procedures.*

While using this product, you may need to access other parts of the system. Read the *General Safety Summary* in other system manuals for warnings and cautions related to operating the system.

## To Avoid Fire or Personal Injury

**Connect and Disconnect Properly.** Connect the probe output to the measurement instrument before connecting the probe to the circuit under test. Disconnect the probe input and the probe ground from the circuit under test before disconnecting the probe from the measurement instrument.

**Observe All Terminal Ratings.** To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the product manual for further ratings information before making connections to the product.

Connect the ground lead of the probe to earth ground only.

Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.

**Do Not Operate Without Covers.** Do not operate this product with covers or panels removed.

**Avoid Exposed Circuitry.** Do not touch exposed connections and components when power is present.

**Do Not Operate With Suspected Failures.** If you suspect there is damage to this product, have it inspected by qualified service personnel.

**Do Not Operate in Wet/Damp Conditions.**

**Do Not Operate in an Explosive Atmosphere.**

**Keep Product Surfaces Clean and Dry.**

## Symbols and Terms

**Terms in this Manual.** These terms may appear in this manual:



---

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

---



---

**CAUTION.** *Caution statements identify conditions or practices that could result in damage to this product or other property.*

---

**Terms on the Product.** These terms may appear on the product:

DANGER indicates an injury hazard immediately accessible as you read the marking.

WARNING indicates an injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.

**Symbols on the Product.** The following symbols may appear on the product:



CAUTION  
Refer to Manual



Double  
Insulated



Protective Ground  
(Earth) Terminal

# Operating Basics

The P5050 is a compact, high impedance, passive probe designed for use with Tektronix TDS5000 Series Digital Phosphor Oscilloscopes. The P5050 has a 1.3 meter cable and is fully compatible with the Tektronix family of compact size (3.5 millimeter) probe accessories. The *Replaceable Parts* list beginning on page 10 identifies the standard and optional accessories for the P5050 probe.



**Figure 1: P5050 10X Passive Probe**

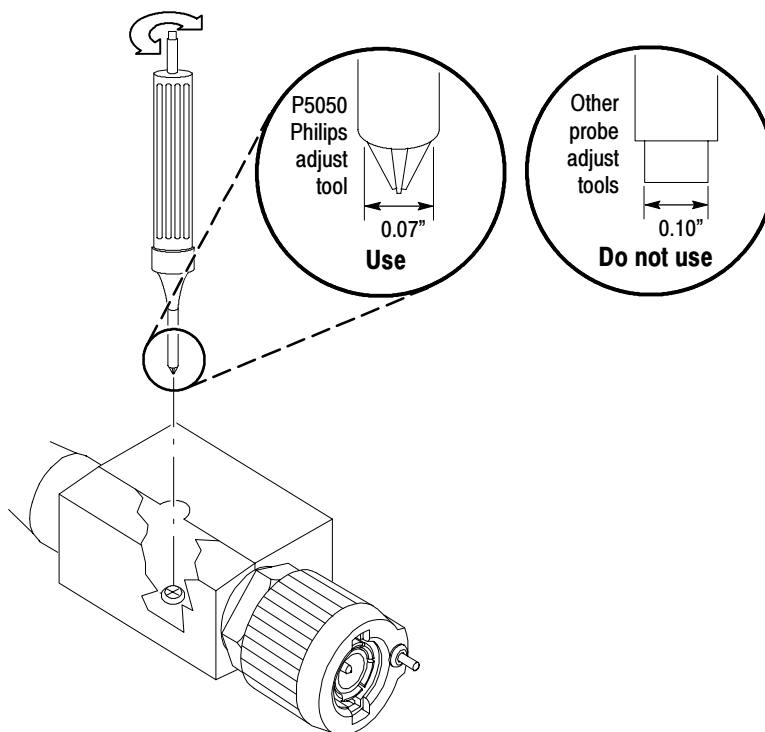
## Probe Compensation

Due to variations in oscilloscope input characteristics, you may need to adjust the low-frequency compensation of the probe when you move it from one oscilloscope to another. If a 1 kHz calibrated square wave displayed at 1 ms/division shows significant differences between the leading and trailing edges, perform the following steps to optimize low-frequency compensation:

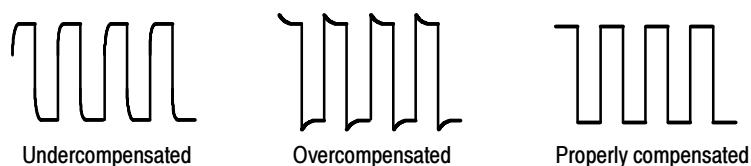
1. Connect the probe to the calibration signal on the oscilloscope front panel.
2. Press **AUTOSET** or otherwise adjust your oscilloscope to display a meaningful waveform.
3. Adjust the trimmer in the probe (accessible through the compensation box) until you see a square wave with perfectly flat top on the display. See Figure 3 on page 3.



**WARNING.** To avoid damaging the trimmer, use the Philips head adjustment tool supplied with your P5050 probe. Adjustment tools from some probe models may not be compatible with the P5050 probe. See Figure 2 below.



**Figure 2: Adjusting the trimmer with the P5050 Philips head adjustment tool**

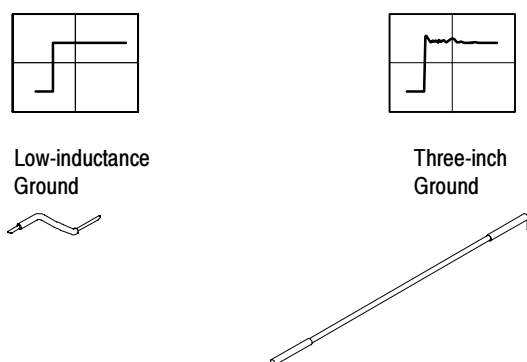


**Figure 3: Probe compensation waveforms**

## Ground Lead Length

When you are probing a circuit, you should always use as short a ground lead as possible between the probe head and circuit ground.

The series inductance added by the probe tip and ground lead can result in a resonant circuit; this circuit may cause parasitic ringing within the bandwidth of your oscilloscope. Refer to Figure 4.



**Figure 4: Waveform distortion from ground lead length**

## Maximum Working Voltage

Observe Maximum Working Voltage. Do not use the P5050 probe above 300 V<sub>RMS</sub> CAT II. Refer to the operating chart in Figure 5 on page 7.



**WARNING.** To avoid electric shock when using the probe, do not touch the metallic portions of the probe head while connected to a voltage source.

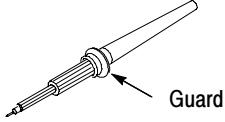
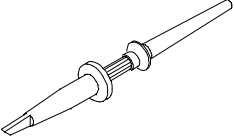
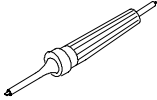
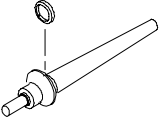
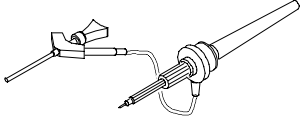
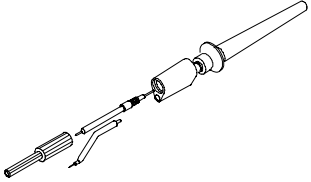
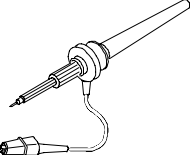
## **Cleaning**

To remove accumulated dirt from the probe exterior, use a soft cloth dampened with a mild detergent and water solution, or use isopropyl alcohol. Do not use solvents such as benzene, toluene, xylene, or acetone. Avoid abrasive cleaners.

# Features and Accessories

Table 1 illustrates the features and standard accessories of the P5050 probe.

**Table 1: Features and Accessories**

| Feature/Accessory                                                                   | Description                               | Applications/Notes                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Guard                                     | This feature keeps fingers away from the probe tip for protection against electric shock.                                                                                                                                                                                              |
|    | Retractable hook tip                      | Connects the probe tip to wires and component leads for hands-free measurement.<br><br><b>NOTE.</b> For a solid connection, firmly push and twist the hook tip onto the probe tip before using.                                                                                        |
|    | Adjustment tool                           | This Philips head tool is used to adjust probe compensation. Access the adjustment through the opening in the compensation box.<br><br><b>CAUTION.</b> To avoid damage to the trimmer, use only this adjustment tool for adjusting probe compensation.                                 |
|  | Color marker bands                        | Color codes the probe to the oscilloscope input when more than one probe is in use. Clip one band around the strain relief of the probe head and the matching band on the strain relief of probe output.                                                                               |
|  | SMT KlipChip™ and ground lead             | Connects the probe ground to small or hard to reach ground reference points. Refer to Figure 4 on page 3 for ground lead length guidelines.                                                                                                                                            |
|  | Low-inductance ground                     | The ground collar and short lead connect the probe ground to a ground reference close to the signal source. The short lead minimizes aberrations on high-frequency signals caused by the inductance of the ground lead. Refer to Figure 4 on page 3 for ground lead length guidelines. |
|  | Ground lead with insulated alligator clip | Connects the probe ground to ground reference. Refer to Figure 4 on page 3 for length guidelines for the ground lead.<br><br><b>NOTE.</b> To remove the ground lead from the probe, first unscrew the collar, and then gently pull off the ground lead.                                |



**WARNING.** To avoid electric shock when using the probe, keep fingers behind the guard on the probe body.

# Specifications

The characteristics listed in Table 2 apply to a P5050 probe installed on a Tektronix TDS5000 Series oscilloscope unless otherwise noted.

Specifications apply when the instrument warms up for a period of at least 20 minutes in an environment that does not exceed the limits described in Table 3 on page 7.

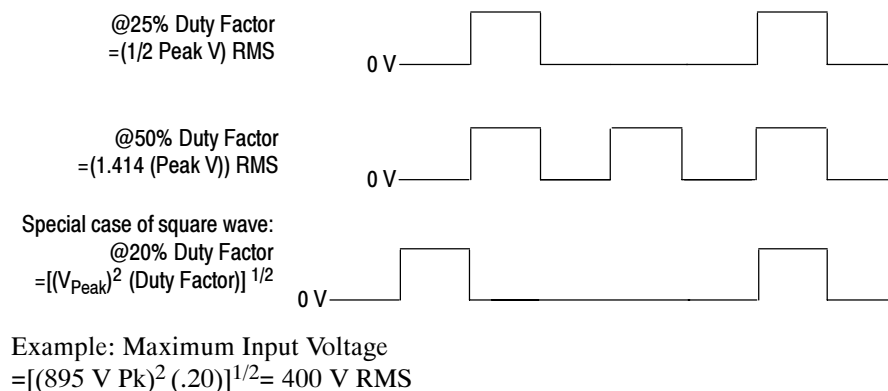
**Table 2: Electrical characteristics**

| Characteristic                         | Description                                                                                                                                                                                                                                                                           |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Attenuation <sup>1</sup> (System)      | 10X $\pm$ 0.5% at DC                                                                                                                                                                                                                                                                  |
| Input Resistance <sup>1</sup> (System) | 10 M $\Omega$ $\pm$ 0.5% at DC                                                                                                                                                                                                                                                        |
| Input Capacitance                      | 11.1 pF $\pm$ 0.3 pF at probe tip (at 1 KHz, 1 V p-p)                                                                                                                                                                                                                                 |
| Compensation Range                     | 16 pF to 22 pF                                                                                                                                                                                                                                                                        |
| Rise Time, Typical                     | 0.8 nsec, 10% to 90% with TDS5000 series, $\geq$ 50 mV / div                                                                                                                                                                                                                          |
| System Bandwidth (-3 dB)               | DC to 500 MHz with TDS5000 series                                                                                                                                                                                                                                                     |
| Propagation Delay (Probe), Typical     | 5.5 ns                                                                                                                                                                                                                                                                                |
| Probe Coding                           | 10X                                                                                                                                                                                                                                                                                   |
| Maximum Input Voltage <sup>2,3</sup>   | 400 V RMS CAT I or 400 V DC CAT I<br>300 V RMS CAT II or 300 V DC CAT II<br>150 V RMS CAT III or 150 V DC CAT III<br>565 V peak, <50% DF, <1 sec PW<br>895 V peak, <20% DF, <1 sec PW<br>1250 V peak, <10% DF, <50 $\mu$ sec PW<br>See Figure 7 on page 8 for voltage derating curve. |

<sup>1</sup> System characteristic.

<sup>2</sup> As defined in EN61010-1. See Certifications and compliances in Table 4 on page 9.

<sup>3</sup> RMS=Root Mean Square=rms=The square root of the average of the sum of the squares of the instantaneous voltage in one cycle =  $\sqrt{\sum (fx_i)^2 / n}$  .  
300 VDC=300V RMS, 420 V Peak (sinewave)=300 V RMS. See Figure 5 on page 7.



**Figure 5: Maximum input voltage calculation example**

**Table 3: Physical and environmental characteristics**

| Characteristic                     | Description                                                                               |
|------------------------------------|-------------------------------------------------------------------------------------------|
| Net Weight (Including Accessories) | <0.24 lb (110 g)                                                                          |
| Temperature Range                  |                                                                                           |
| Operating                          | +5° F to +149° F (–15° C to +55° C)                                                       |
| Nonoperating                       | –80° F to +185° F (–62° C to +85° C)                                                      |
| Humidity <sup>1</sup>              | Five cycles (120 hr) at 95% to 97% relative humidity                                      |
| Altitude                           | < 9842.5 feet (< 3000 meters), operating<br>< 50,000 feet (< 15,240 meters), nonoperating |

<sup>1</sup> Tektronix standard 062-2847-00, class 3. Refer to MIL-E-16400F, paragraph 4.5.9 through 4.5.9.5.1, class 4.

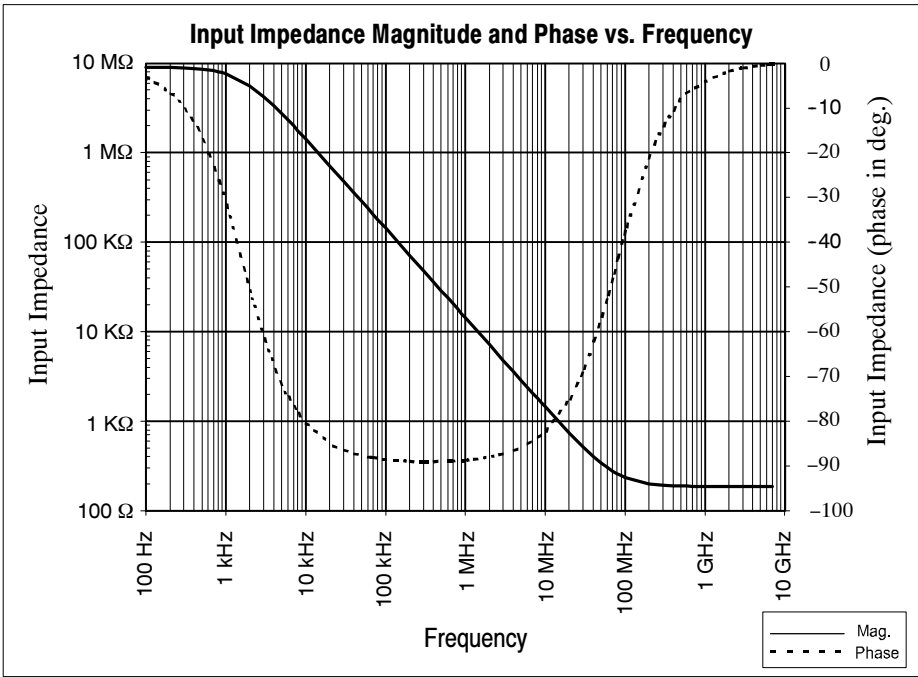


Figure 6: Typical P5050 input impedance

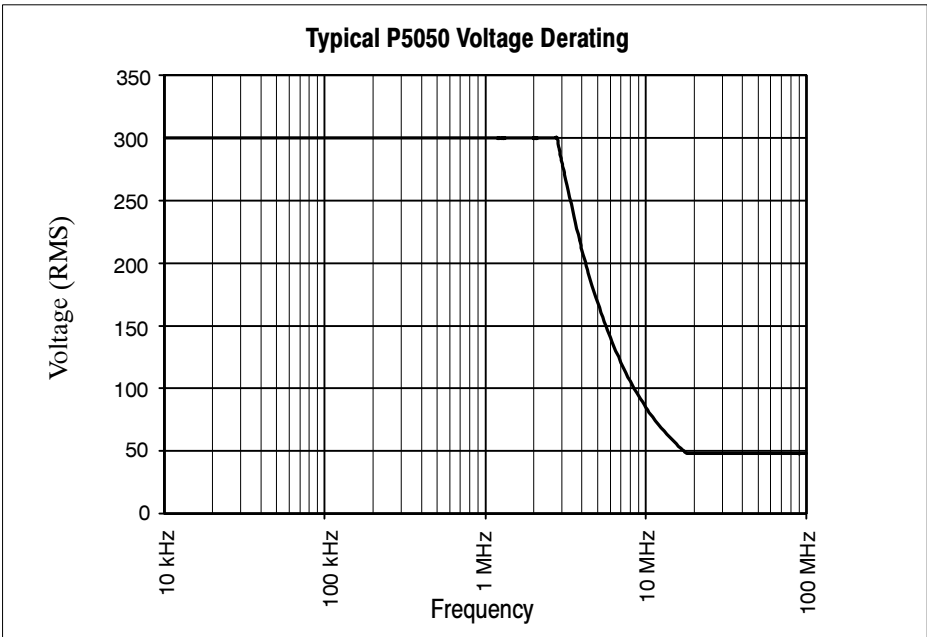
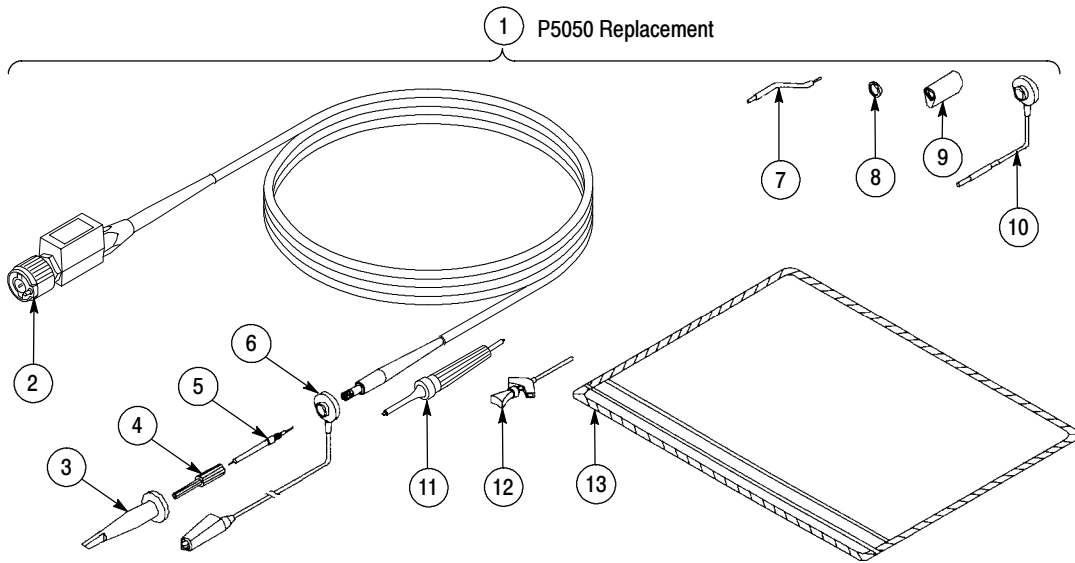


Figure 7: Typical P5050 voltage derating curve

**Table 4: Certifications and compliances**

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |                                                                                           |                     |                                                                                            |        |                                                   |       |                                                                                           |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------------------------------------|--------|---------------------------------------------------|-------|-------------------------------------------------------------------------------------------|
| EC Declaration of Conformity | <p>Compliance was demonstrated to the following specification as listed in the Official Journal of the European Communities:</p> <p>Low Voltage Directive 73/23/EEC as amended by 93/68/EEC:</p> <table> <tr> <td data-bbox="756 489 1003 520">EN 61010-1/A2</td><td data-bbox="1024 489 1477 552">Safety requirements for electrical equipment for measurement, control, and laboratory use</td></tr> <tr> <td data-bbox="756 579 1003 611">EN 61010-2-031:1994</td><td data-bbox="1024 579 1477 674">Particular requirements for hand-held probe assemblies for electrical measurement and test</td></tr> </table>                    | EN 61010-1/A2 | Safety requirements for electrical equipment for measurement, control, and laboratory use | EN 61010-2-031:1994 | Particular requirements for hand-held probe assemblies for electrical measurement and test |        |                                                   |       |                                                                                           |
| EN 61010-1/A2                | Safety requirements for electrical equipment for measurement, control, and laboratory use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |                                                                                           |                     |                                                                                            |        |                                                   |       |                                                                                           |
| EN 61010-2-031:1994          | Particular requirements for hand-held probe assemblies for electrical measurement and test                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |                                                                                           |                     |                                                                                            |        |                                                   |       |                                                                                           |
| Overvoltage Category         | <table> <tr> <td data-bbox="756 684 1003 716">Category:</td><td data-bbox="1024 684 1477 716">Examples of Products in this Category:</td></tr> <tr> <td data-bbox="756 758 1003 789">CAT III</td><td data-bbox="1024 758 1477 789">Distribution-level mains, fixed installation</td></tr> <tr> <td data-bbox="756 800 1003 831">CAT II</td><td data-bbox="1024 800 1477 863">Local-level mains, appliances, portable equipment</td></tr> <tr> <td data-bbox="756 873 1003 905">CAT I</td><td data-bbox="1024 873 1477 940">Signal levels in special equipment or parts of equipment, telecommunications, electronics</td></tr> </table> | Category:     | Examples of Products in this Category:                                                    | CAT III             | Distribution-level mains, fixed installation                                               | CAT II | Local-level mains, appliances, portable equipment | CAT I | Signal levels in special equipment or parts of equipment, telecommunications, electronics |
| Category:                    | Examples of Products in this Category:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |                                                                                           |                     |                                                                                            |        |                                                   |       |                                                                                           |
| CAT III                      | Distribution-level mains, fixed installation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |                                                                                           |                     |                                                                                            |        |                                                   |       |                                                                                           |
| CAT II                       | Local-level mains, appliances, portable equipment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |                                                                                           |                     |                                                                                            |        |                                                   |       |                                                                                           |
| CAT I                        | Signal levels in special equipment or parts of equipment, telecommunications, electronics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |                                                                                           |                     |                                                                                            |        |                                                   |       |                                                                                           |
| Pollution Degree 2           | Do not operate in environments where conductive pollutants may be present.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |                                                                                           |                     |                                                                                            |        |                                                   |       |                                                                                           |
| Safety                       | <p>UL3111-1, First Edition &amp; UL3111-2-031, First Edition<br/>         CSA C22.2 No. 1010.1-92 &amp; CAN/CSA C22.2 No. 1010.2.031-94<br/>         EN61010-1/A2<br/>         EN61010-2-031<br/>         Pollution Degree 2</p>                                                                                                                                                                                                                                                                                                                                                                                                        |               |                                                                                           |                     |                                                                                            |        |                                                   |       |                                                                                           |

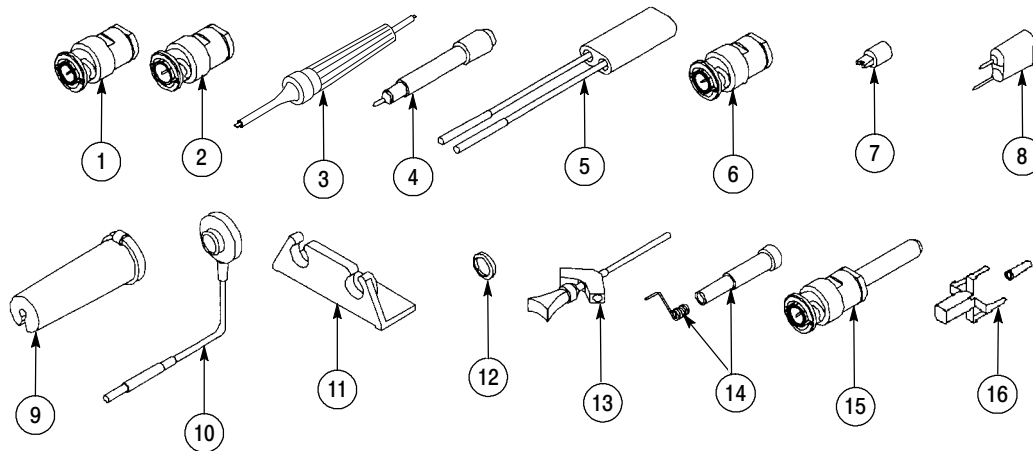
## Replaceable Parts



**Figure 8: P5050 probe with standard accessories**

# Replaceable parts: P5050 probe and standard accessories

| Fig. & index number | Tektronix part number | Serial no. effective | Serial no. discont'd | Qty | Name & description                                      | Mfr. code | Mfr. part number |
|---------------------|-----------------------|----------------------|----------------------|-----|---------------------------------------------------------|-----------|------------------|
| 8 -1                | P5050                 |                      |                      | 1   | P5050 10X PASSIVE PROBE, REPLACEMENT                    |           |                  |
|                     |                       |                      |                      |     | <b>STANDARD ACCESSORIES</b>                             |           |                  |
| -2                  | 131-3219-00           |                      |                      | 1   | CONN,RF PLUG:BNC,MALE                                   | 24931     | 28P266-3         |
| -3                  | 013-0107-07           |                      |                      | 1   | TIP,PROBE:MINIATURE/COMPACT SIZE, RETRACTABLE HOOK ASSY | 80009     | 013-0107-07      |
| -4                  | 204-1049-00           |                      |                      | 1   | BODY SHELL:TIP COVER                                    | TK2565    | 204-1049-00      |
| -5                  | 206-0378-00           |                      |                      | 1   | PROBE TIP ASSY:10X,8.0PF,10M OHM                        | 80009     | 206-0441-00      |
| -6                  | 196-3305-00           |                      |                      | 1   | LEAD,ELECTRICAL:22 AWG,6.0 L,W/CLIP                     | TK2469    | 196-3305-00      |
| -7                  | 195-4240-00           |                      |                      | 1   | LEAD,ELECTRICAL:0.025 DIA,COPPER,2.3 L                  | TK2469    | 195-4240-00      |
| -8                  | 016-0633-00           |                      |                      | 1   | MARKER SET,CA:2 EA VARIOUS COLORS                       | 80009     | 016-0633-00      |
| -9                  | 343-1003-01           |                      |                      | 1   | COLLAR,GND:P5050                                        | TK2565    | 343-1003-01      |
| -10                 | 196-3113-02           |                      |                      | 1   | LEAD,ELECTRICAL:STRD,22 AWG,6.0 L,8-N                   | TK2469    | 196-3113-02      |
| -11                 | 003-1433-02           |                      |                      | 1   | SCREWDRIVER:ADJUSTMENT TOOL                             | TK2565    | 003-1433-02      |
| -12                 | 206-0364-00           |                      |                      | 1   | TIP,PROBE:MICROCKT TEST,0.05 CTR                        | 80009     | 206-0364-00      |
| -13                 | -----                 |                      |                      | 1   | POUCH,ACCESSORY                                         |           |                  |
|                     | 071-1018-XX           |                      |                      | 1   | MANUAL,TECH:INSTRUCTIONS,P5050                          | TK2548    | 071-1018-XX      |



**Figure 9: P5050 probe optional accessories**

**Replaceable parts: P5050 probe optional accessories**

| Fig. & index number         | Tektronix part number | Serial no. effective | Serial no. discont'd | Qty | Name & description                                                                                                | Mfr. code | Mfr. part number |
|-----------------------------|-----------------------|----------------------|----------------------|-----|-------------------------------------------------------------------------------------------------------------------|-----------|------------------|
| <b>OPTIONAL ACCESSORIES</b> |                       |                      |                      |     |                                                                                                                   |           |                  |
| 9 -1                        | 013-0226-00           |                      |                      | 1   | CONNECTOR,BNC:BNC TO PROBE TIP ADAPTER                                                                            | 24931     | 28P264-2         |
| -2                          | 013-0227-00           |                      |                      | 1   | CONNECTOR,BNC:50 OHM,BNC TO P TIP ADAPTER                                                                         | 24931     | 28P312-1         |
| -3                          | 003-1433-02           |                      |                      | 1   | SCREWDRIVER:ADJUSTMENT TOOL                                                                                       | 80009     | 003-1433-02      |
| -4                          | 013-0202-03           |                      |                      | 1   | ADAPTER,PROBE:SUBMINIATURE/COMPACT TO MIN                                                                         | TK2565    | 013-0202-03      |
|                             |                       |                      |                      |     | NOTE: ITEMS 5 THROUGH 9 ARE USABLE WHEN THE SUBMINIATURE/COMPACT TO MINIATURE PROBE TIP ADAPTER IS USED. (ITEM 4) |           |                  |
| -5                          | 015-0325-01           |                      |                      | 1   | ADAPTER,PROBE:PROBE TO CONNECTOR PINS                                                                             | TK2565    | 015-0325-01      |
| -6                          | 013-0084-04           |                      |                      | 1   | ADAPTER,CONN:BNC TO PROBE                                                                                         | 80009     | 013-0084-04      |
| -7                          | 015-0201-07           |                      |                      | 1   | TIP,PROBE:IC TEST,PKG OF 10                                                                                       | 80009     | 015-0201-07      |
|                             | 015-0201-08           |                      |                      | 1   | TIP,PROBE:IC TEST,PKG OF 100                                                                                      | 80009     | 015-0201-08      |
| -8                          | 013-0085-00           |                      |                      | 1   | TIP,PROBE:GROUNDING                                                                                               | 80009     | 013-0085-00      |
| -9                          | 352-0670-00           |                      |                      | 1   | HOLDER,PROBE:ATTENUATOR TIPS (3)                                                                                  | TK2565    | 352-0670-00      |
| -10                         | 196-3113-03           |                      |                      | 1   | LEAD,ELECTRICAL:STRD,22 AWG,3.0 L,8-N                                                                             | TK2469    | 196-3113-03      |
| -11                         | 352-0351-00           |                      |                      | 1   | HOLDER,PROBE:BLACK ABS P6000 SERIES                                                                               | 7X318     | 1127             |
| -12                         | 016-0633-00           |                      |                      | 1   | MARKER SET,CA:2 EA VARIOUS COLORS                                                                                 | 80009     | 016-0633-00      |
| -13                         | SMG50                 |                      |                      | 1   | SMT KLIPCHIP:20 ADAPTERS                                                                                          | 80009     | SMG-50           |
| -14                         | 016-1077-00           |                      |                      | 1   | ACCESSORY KIT:GND TIP CONTACT,PKG OF 2 EA OF 5 LENGTHS W/COVER SHELL                                              | 80009     | 016-1077-00      |
| -15                         | 013-0254-00           | 9307                 |                      | 1   | ADAPTER,CONN:BNC TO PROBE TIP,MALE                                                                                | 24931     | 28P-302-2        |
| -16                         | 131-5031-00           | 8926                 |                      | 1   | CONNECTOR,PROBE:PKG OF 25,COMPACT                                                                                 | 8009      | 131-5031-00      |

**Manufacturers cross index**

| <b>Mfr.<br/>code</b> | <b>Manufacturer</b>   | <b>Address</b>                                                     | <b>City, state, zip code</b> |
|----------------------|-----------------------|--------------------------------------------------------------------|------------------------------|
| 24931                | BERG ELECTRONICS INC  | BERG ELECTRONICS RF/COAXIAL DIV<br>2100 EARLYWOOD DR<br>PO BOX 547 | FRANKLIN, IN 46131           |
| 7X318                | KASO PLASTICS INC     | 11013 A NE 39TH                                                    | VANCOUVER, WA 98662          |
| 80009                | TEKTRONIX INC         | 14150 SW KARL BRAUN DR<br>PO BOX 500                               | BEAVERTON, OR 97077-0001     |
| TK2469               | TENSOLITE CORPORATION | 3000 LEWIS & CLARK HWY<br>SUITE 2                                  | VANCOUVER, WA 98661          |
| TK2548               | XEROX CORPORATION     | 14181 SW MILLIKAN WAY                                              | BEAVERTON, OR 97005          |
| TK2565               | VISION PLASTICS INC   | 26000 SW PARKWAY CENTER DRIVE                                      | WILSONVILLE, OR 97070        |

