



CARACTÉRISTIQUES

- Léger et portable
- Facile à utiliser
- Indication des défauts par alarme sonore et visuelle
- Écran LCD rétro-éclairé
- Clavier à membrane pour l'utilisation
- Contrôlé par microprocesseur
- Sélecteur de tension automatique (*la tension de test est fixée sur la base de la valeur de l'épaisseur du revêtement*)
- Contrôle précis de la sensibilité
- Affichage du courant DC à l'électrode
- Contrôle du volume pour les environnements calmes
- Limitation du courant pour éviter d'endommager le revêtement
- Les accessoires PHD existants peuvent être utilisés
- Garantie de 1 an 'remise à l'état d'origine'
- Approbation CE

Le Kit de test pour les pipelines DP 130 de Buckleys a été spécialement créé pour permettre aux agents chargés des inspections de tester rapidement des revêtements ou garnissages de Pipes non-conducteurs pour détecter la porosité, des piqûres et d'autres défauts. Il est adapté pour tester des épaisseurs de revêtement de 16 µm à 14,4 mm et contient tous les composants nécessaires pour effectuer les tests de base.

Des électrodes additionnelles en bronze phosphoreux, droites ou courbes (en demi-lune), peuvent être fournies pour une utilisation avec le kit (voir fiche de données E1). Alternativement, les électrodes à ressort circulaire offrent une solution efficace pour tester les revêtements de Pipes extérieurs et existent dans la plupart des tailles pour s'adapter aux diamètres du marché (voir fiche de données E3).

Les revêtements de Pipes de plus petite taille (moins de 100 mm / 4 pouces) peuvent être testés en utilisant une électrode en caoutchouc siliconé (avec un trou de taille adéquate) à travers lequel le Pipe peut être passé (voir la fiche de données E2).

LE KIT DE TEST DE PIPELINES (réf : DP30P) comprend :

L'unité DP 130 avec chargeur de batteries et 4 batteries rechargeables, bloc d'alimentation, sac d'épaule, poignée de sonde de test, câble d'interconnexion spiralé, câble de terre souple, 1 tige d'extension de 460 mm, semelle d'électrode, tournevis, électrode balai en bronze phosphoreux de 250 mm et calculateur de tension de test. Un certificat de calibrage est inclus dans le manuel d'instructions complet.

SPÉCIFICATIONS TECHNIQUES

- Plage tension de sortie ajustable : 1-30 kV DC
- Alarme DC avec sensibilité ajustable : 10 – 450 µA
- Adapté aux épaisseurs de revêtement de 16 microns à 14,4 mm
- Durée d'utilisation : 10 heures (*testée BSEN-50356 @ 30 kV. Unité adaptée aux piles 10 000 mAh NiMH*)
- Formule tension de test : NACE RP0274
- Poids (unité, sac d'épaule & batteries) : 1,6 kg
- Dimensions (unité seulement) : 16 cm (L) x 6 cm (H) x 20 cm (P)
- Poids (emballé) : 5,25 kg
- Dimensions (emballé) : 35 cm x 35 cm x 35 cm

Note : Compte tenu des évolutions techniques permanentes, toutes les informations fournies sont typiques et susceptibles de modifications sans avis préalable ou obligation

SERVICE APRÈS-VENTE / ASSISTANCE TECHNIQUE

Tous les produits Buckleys sont fabriqués en respectant les contrôles établis par un système de gestion de la qualité répondant aux exigences de la norme BS EN ISO 9001:2008 et sont livrés avec une garantie d'un an « remise à l'état d'origine ». Cet appareil présente une solidité et une fiabilité avérée et assurera une durée d'utilisation de plusieurs années si sa maintenance est assurée en se conformant à nos instructions.

Un re-calibrage annuel est recommandé pour les détecteurs de porosité à balai électrique de la série DP (Pinhole/Holiday Detectors). Buckleys assure des services de réparation et de calibrage complets et un service de retour rapide pour les appareils des clients.





TINKER & RASOR

CORROSION MITIGATION INSTRUMENTATION

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PRODUCT INSTRUCTIONS

MODEL AP/W HIGH VOLTAGE HOLIDAY DETECTOR (NEW PRODUCT RELEASE 2012)



1. HOLIDAY DETECTOR FUNCTION

The Tinker & Rasor Model AP/W Holiday Detector is an all-purpose electrical inspection instrument which maintains a given inspection voltage in spite of the electrical load on the circuit. It is recommended for use on any pipe diameter as well as on flat surfaces when such surfaces are coated with a highly electrical resistance material, and when the surface beneath the coating is electrically conductive. The detector works equally well on damp or dry surfaces, and is especially desirable where humid conditions prevail.

The purpose of this instrument manual is to inform the user on the operation of this particular instrument and is not meant as an instruction guide to holiday detection in general. It is recommended that only knowledgeable and trained operators use this equipment. We suggest NACE International (www.nace.org) for this type of training.

2. INSTRUCTIONS FOR UNPACKING & INSPECTION

1) Open the shipping carton and make note of the various accessories.

Includes:

- (1) Instrument w/ Battery
- (1) Powerpak w/ Cable
- (1) Battery Charger (115v or 230v)
- (1) Screwdriver
- (1) Ground Cable (20')
- (1) Wand Handle (18") w/ Compax Connector (for Spring Electrodes)
- (1) Wand Extension Handle
- (1) Carrying case w/ Foam Insert
- (1) Electrode of Choice*

NOTE: Additional accessories may ship in separate packaging.

2) INSPECTION should be made upon receipt. If damage has occurred during shipment, file a claim with the carrier immediately.

3) If it is necessary to contact your supplier or the manufacturer concerning damaged or missing items, be sure to include the serial number, purchase order number, and invoice number of the instrument in question.

* Instrument ships with electrode of choice. Electrode may be Full Circle Spring Electrode (up to 16" pipe diameter), Half Circle Spring Electrode (up to 8" pipe diameter) or Silicone Rubber Electrode (up to 8" pipe diameter). Wire Brush Electrodes, larger size electrodes and additional electrodes available at additional cost.



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3. CHECK-OUT INSTRUCTIONS

- Remove all accessories from the shipping carton.
- Connect high voltage wand by screwing onto front of PowerPak. Connect PowerPak to instrument by lining up the wide key of the connector with the mating connector on the front of the instrument. Insert the connector fully into its mate and turn clockwise $\frac{1}{4}$ turn. If the connector does not turn easily, try pushing the cable connector more firmly into the instrument case connector mate. A positive lock will be felt when the cable connector is properly attached to the instrument.
- Attach the ground cable to instrument. The cable connector is pushed into its mating connector located on the front of the instrument case, in the lower Left corner. Insert and twist clockwise to lock.

NOTE: Never connect or disconnect the ground cable or PowerPak when the instrument is turned on.

- The Model AP/W Holiday Detector is now ready to be set for a specific voltage.
- Remove the dust cover with the supplied screwdriver, to reveal the voltage adjustment knob.
- Push and HOLD the Power button on the panel of the Instrument case. Then push either the LOW or HIGH button to set the voltage range.

NOTE: LOW voltage range is 800v to 8,000v, in 100v increments. HIGH voltage range is 3,500v to 35,000v in 100v increments

- Continue holding the Power button on the panel of the AP/W Instrument case and use the screwdriver to adjust the voltage setting, using the digital display for reference.

NOTE: When the Power button on the panel of the Instrument case is held, there is NO output from the PowerPak. The PowerPak will output voltage only when the Safety handle of the PowerPak is held and the PowerPak ON button is pressed.

- Once the voltage has been set, as shown by the LCD on the panel of the Instrument Case, the Power button on the panel of the Instrument case may be released.



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- Attach electrode to the high voltage wand handle assembly and apply to the structure to be inspected. The electrode should always make intimate contact with the surface under inspection.
- Turn the instrument ON by holding the safety switch handle of the PowerPak firmly against the instrument handle. (Instrument handle has neoprene rubber grip), then pressing the "ON" button on the PowerPak.

NOTE: The instrument will turn OFF when the safety handle is released.

- The instrument will "remember" the last HIGH or LOW and voltage setting selected, after being turned OFF and then ON again.
- The instrument is now ready to use.

4. INTEGRATED VOLTMETER

The Model AP/W Holiday Detector includes an integrated voltmeter displayed on the front panel of the main instrument.

The LCD of the voltmeter measures and displays the output voltage of the holiday detector. This display gives the user the ability to tune the AP/W to a specific voltage within the 800v – 8,000v Low range and the 3,500v – 35,000v High range. Voltages increment in 100v steps.

Because the Model AP/W includes this integrated peak reading voltmeter, it is not suggested that an external peak reading voltmeter be used with this instrument. Most external peak reading voltmeters currently available are not as accurate as the integrated voltmeter of the AP/W, and will not show accurate results.

If it is desired that the Model AP/W be compared with an external measuring device to ensure the accuracy of the instrument, it is suggested that a digital oscilloscope and high voltage probe be used for this purpose. As of the writing of this manual, T&R uses Tektronix TDS 2002 oscilloscope and P6015A high voltage probe for calibration, as examples of the type of equipment suggested.

5. ACCURACY & CALIBRATION

The Model AP/W voltmeter is accurate to +/- 5% of the output voltage, as shown on the LCD display on the instrument panel.

It is recommended that the Model AP/W follow an annual calibration cycle to ensure the instrument is in good working order and that the LCD of the integration voltmeter is accurate.

6. OPERATING METHODS

A good ground return system for both the pipe and the detector will always provide the best and most reliable inspection. The pipe to be inspected must be grounded from

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the bare pipe to earth at some point along the pipe. If individual joints of the pipe are to be inspected that are not electrically connected, each joint must be grounded.

The speed of the electrode's travel along the pipe should never be excessive, as faulty inspection may result.

Occasional checks of the detector operation should be made, particularly if no holidays are being found. This can be accomplished by testing for the spark and signal at the edge of the coating where bare pipe exists or by touching the probe end to the bare pipe and noting the length of the spark and the visual and audible signal effectiveness. If the visual and audible signal do not both occur when the spark discharges from the electrode into a known holiday, the ground return (i.e. the path between the metallic pipe and earth and the earth to the ground trail of the detector) is of high resistance. In this case, a better ground is required and a direct connection between the metal pipe and the ground wire may be necessary. This type of grounding is extremely uncommon unless the soil is very dry (if using a grounding rod) or the detectors output is low.

The most accurate and recommended inspection voltage should be obtained from the coating manufacturer spec or by contacting the coating manufacture or rep. Correct voltage output for a given thickness of coating has long been a matter of controversy. However, formulas have been suggested which may be used as a guide for correct peak voltages on various coating thickness. The calculation is as follows:

$$V = K \sqrt{T}$$

WHERE
V = Peak voltage in volts
T = Thickness of coating in mils
K = Constant of 1,250 for coatings over 20 mils thick

NOTE: Formula taken from NACE International Standard RP0274-04. This standard and others available for free download to members at: www.nace.org

A common practice used in setting inspection voltages in the field is to adjust the output voltage by visual observation. It is the general consensus that a spark discharge across a gap distance of at least twice the thickness of the coating will give adequate inspection voltage and compensate for any irregularity in coating thickness and grounding conditions. If this practice is desired for determining inspection voltage, it should be done while the electrode is in the normal operating position and under actual grounding conditions.

The formula and suggestions for setting voltage are supplied as a guide, and are not necessarily recommended by the manufacturer of this detector.

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Consult the coating manufacturer for recommended voltage applications.

7. CHARGING THE BATTERY

The Model AP/W comes with an internal rechargeable battery. The battery should be charged after each use. The Model AP/W will indicate when the battery voltage is low, by a flashing or flickering of the Green Power LED, instead of providing a steady glow. The Power LED referred to is on the panel of the Instrument case. The Red **BATT. CHARGE INDICATOR** LED will light when the battery charger is correctly connected to the Model AP/W instrument.



Beginning with AP/W serial number 588, the battery charger included with the instrument has a slide switch that will allow the charger to operate from 115V AC or 230V AC. The factory setting of this slide switch is set for 115V AC, which is correct for the US. To adjust for 230V AC, slide the switch so that 230V AC Shows.

The new battery charger also now comes with a standard computer –style AC cord that plugs into the battery charger and the wall outlet. When the charger is being used outside of the US, a different plug configuration may be required. This type of computer –style cord should make it easy to find an appropriate AC cord throughout the world.

Earlier Model AP/W units were supplied with either a 110V or 240V charger with a hardwired cable. Check the packing list or invoice of your order to verify which battery charger was included with your Model AP/W.

The battery charger has a special plug that is designed to fit into the connector on the side of the battery, so that polarity of the connection is not an issue.

The battery charger has an LED on its side. This LED will glow steady while charging the battery. The LED will begin BLINKING when the battery is fully charged.

On earlier Model AP/W instruments (up to s/n 575), to charge the battery, first connect the PowerPak to the instrument. The PowerPak connector must be connected to the main instrument to charge the battery. On newer Model AP/W instruments the PowerPak does not need to be connected to charge the battery.

Connect the charger to the instrument body, using the special connector, fitted into the charge port on the front and lower Right of the AP/W case. Attach the battery charger



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to an AC power source, ensuring the slide switch is in the appropriate AC supply position: 115v AC or 230V AC (or, on earlier versions, 120v or 240v, depending on which charger you have. Each charger has an "Inspected By" label which shows this information.) Leave on charge for 8 to 10 hours between uses. The battery charger is equipped with a trickle charge feature, so the battery will not be harmed by leaving the instrument on charge for too long.

8. INSTRUMENT SERVICING INSTRUCTIONS

- A. Cleaning:** Keep the instrument clean and dry. Clean the instrument case with a soft, damp cloth, then wipe dry. Do not use solvents such as lacquer thinner, methyl ethyl ketone, etc.

KEEP ALL ELECTRICAL CONTACTS CLEAN

B. Voltage Output Checks

a. In case of LOW output voltage:

- i. Check the LED indicator for the HIGH or LOW Range selector, to ensure the instrument is in the correct Range.
- ii. Check the display for voltage output. Voltage displayed is in kilovolts. (22,000volts = 22.0 on display)
- iii. Check green ON LED. If flashing, this indicated low battery voltage.

b. In case of NO output voltage:

- i. Check green ON LED. If flashing, this indicated low battery voltage.
- ii. Check ground cable and wand handle connections.

9. FACTORY REPAIRS

Holiday Detectors returned to the factory for repairs should be sent TRANSPORTATION PREPAID. In most cases the detector can be repaired and returned the same day it is received at the factory.

**WHEN ORDERING PARTS FOR YOUR DETECTOR OR REQUESTING FURTHER INFORMATION
ALWAYS GIVE THE DETECTOR'S SERIAL NUMBER.**

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SPECIFICATIONS

Holiday Detector Type	Pulse –type DC
Battery Type	Sealed Lead Acid
Battery Output	6 volts DC
Battery Charger Voltage Input	110v A/C, 240v A/C, or 115v – 230v A/C selectable
Max. Voltage Output	35,000 volts (35kV)
Min. Voltage Output	800 volts (0.8kV)
Max. Current Output	1.3 mA (0.0013A)
Max. Wattage	
Integrated Peak Voltmeter	
Accuracy	+/- 5% of voltage shown
Calibration Cycle	Annual