



**DRAPER**<sup>®</sup>

# BATTERY DIAGNOSTIC TOOL

81164



These instructions accompanying the product are the original instructions. This document is part of the product, keep it for the life of the product passing it on to any subsequent holder of the product. Read all these instructions before assembling, operating or maintaining this product.

This manual has been compiled by Draper Tools describing the purpose for which the product has been designed, and contains all the necessary information to ensure its correct and safe use. By following all the general safety instructions contained in this manual, it will ensure both product and operator safety, together with longer life of the product itself.

All photographs and drawings in this manual are supplied by Draper Tools to help illustrate the operation of the product.

Whilst every effort has been made to ensure the accuracy of information contained in this manual, the Draper Tools policy of continuous improvement determines the right to make modifications without prior warning.

# 1. TITLE PAGE

---

## 1.1 INTRODUCTION:

**USER MANUAL FOR: Battery Diagnostic Tool**

**Stock No: 81164**

**Part No: BDT/M**

## 1.2 REVISIONS:

**Date first published November 2017.**

---

---

---

---

As our user manuals are continually updated, users should make sure that they use the very latest version.

**Downloads are available from:** <http://drapertools.com/manuals>

Draper Tools Limited  
Hursley Road  
Chandler's Ford  
Eastleigh  
Hampshire  
SO53 1YF  
UK

**Website:** [drapertools.com](http://drapertools.com)

**Product Helpline:** +44 (0) 23 8049 4344

**General Fax:** +44 (0) 23 8026 0784

## 1.3 UNDERSTANDING THIS MANUALS SAFETY CONTENT:

**WARNING!** – Information that draws attention to the risk of injury or death.

**CAUTION!** – Information that draws attention to the risk of damage to the product or surroundings.

## 1.4 COPYRIGHT © NOTICE:

Copyright © Draper Tools Limited.

Permission is granted to reproduce this publication for personal and educational use only. Commercial copying, redistribution, hiring or lending is prohibited.

No part of this publication may be stored in a retrieval system or transmitted in any other form or means without written permission from Draper Tools Limited.

In all cases this copyright notice must remain intact.

---

## 2. CONTENTS

---

<b>1. TITLE PAGE</b>	
1.1 INTRODUCTION.....	2
1.2 REVISION HISTORY .....	2
1.3 UNDERSTANDING THIS MANUAL .....	2
1.4 COPYRIGHT NOTICE .....	2
<b>2. CONTENTS</b>	
2.1 CONTENTS .....	3
<b>3. GUARANTEE</b>	
3.1 GUARANTEE .....	4
<b>4. INTRODUCTION</b>	
4.1 SCOPE.....	5
4.2 SPECIFICATION .....	5
4.3 HANDLING AND STORAGE .....	5
<b>5. HEALTH AND SAFETY INFORMATION</b>	
5.1 SAFETY INFORMATION.....	6
5.2 SAFETY MESSAGE CONVENTIONS USED .....	6
5.3 IMPORTANT SAFETY INSTRUCTIONS.....	6
<b>6. TECHNICAL DESCRIPTION</b>	
6.1 IDENTIFICATION .....	7
<b>7. UNPACKING AND CHECKING</b>	
7.1 PACKAGING .....	8
<b>8. BATTERY DIAGNOSTIC TOOL INSTRUCTION</b>	
8.1 HOW TO USE .....	9
8.2 SELECT LANGUAGE	
- 1) <b>Battery Test</b> .....	9
- 2) <b>Cranking Test</b> .....	9-10
- 3) <b>Charging Test</b> .....	10
<b>9. EXPLANATION OF SYMBOLS</b>	
9.1 EXPLANATION OF SYMBOLS .....	11
<b>10. DISPOSAL</b>	
10.1 DISPOSAL.....	12
<b>DECLARATION OF CONFORMITY</b> .....	ENCLOSED

## 3. GUARANTEE

---

### 3.1 GUARANTEE

Draper tools have been carefully tested and inspected before shipment and are guaranteed to be free from defective materials and workmanship.

Should the tool develop a fault, please return the complete tool to your nearest distributor or contact:

**Draper Tools Limited, Chandler's Ford, Eastleigh, Hampshire, SO53 1YF. England.**

**Telephone Sales Desk: (023) 8049 4333** or:

**Product Helpline (023) 8049 4344.**

A proof of purchase must be provided.

If upon inspection it is found that the fault occurring is due to defective materials or workmanship, repairs will be carried out free of charge. This guarantee period covering parts/labour is 12 months from the date of purchase except where tools are hired out when the guarantee period is 90 days from the date of purchase. This guarantee does not apply to normal wear and tear, nor does it cover any damage caused by misuse, careless or unsafe handling, alterations, accidents, or repairs attempted or made by any personnel other than the authorised Draper warranty repair agent.

Note: If the tool is found not to be within the terms of warranty, repairs and carriage charges will be quoted and made accordingly.

This guarantee applies in lieu of any other guarantee expressed or implied and variations of its terms are not authorised.

Your Draper guarantee is not effective unless you can produce upon request a dated receipt or invoice to verify your proof of purchase within the guarantee period.

Please note that this guarantee is an additional benefit and does not affect your statutory rights.

**Draper Tools Limited.**

## 4. INTRODUCTION

---

### 4.1 SCOPE

This battery diagnostic tool allows you to easily, quickly and accurately measure the actual cold cranking amps capability of the vehicle's starting battery, health state of the battery and the vehicle's starting system and charging system.

### 4.2 SPECIFICATION

Stock No. ....	81164
Part No. ....	BDT/M
Measure Range	
CCA .....	100-2000
BCI .....	100-2000
CA .....	100-2000
MCA .....	100-2000
JIS .....	26A17--245H52
DIN .....	100-1400
IEC .....	100-1400
EN .....	100-2000
SAE .....	100-2000
GB .....	100-1400
Working Environment Temp .....	-20°C-50°C

### 4.3 HANDLING AND STORAGE

Care must still be taken when handling and lifting. Dropping this machine will have an effect on the accuracy and may also result in personal injury. This machine is not a toy and must be respected.

The environment will have a negative result on its operation if you are not careful. If the air is damp, components will rust. If the machine is unprotected from dust and debris; components will become clogged: And if not cleaned and maintained correctly or regularly the machine will not perform at its best.

# 5. HEALTH AND SAFETY INFORMATION

---

## 5.1 SAFETY INFORMATION

For your own safety and the safety of others, and to prevent damage to the equipment and vehicles, read this manual thoroughly before operating your code reader. The safety messages presented below and throughout this user's manual are reminders to the operator to exercise extreme care when using this device. Always refer to and follow safety messages and test procedures provided by vehicle manufacturer. Read, understand and follow all safety messages and instructions in this manual.

## 5.2 SAFETY MESSAGE CONVENTIONS USED

We provide safety messages to help prevent personal injury and equipment damage. Below are signal words we used to indicate the hazard level in a condition.

**Danger:** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or to bystanders.

**Warning:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or to bystanders.

**Caution:** Indicates a potentially hazardous situation which, if not avoided, may result in moderate or minor injury to the operator or to bystanders.

## 5.3 IMPORTANT SAFETY INSTRUCTIONS

And always use your code reader as described in the user's manual, and follow all safety messages.

WARNING:

- Do not route the test cable in a manner that would interfere with driving controls.
- Do not exceed voltage limits between inputs specified in this user's manual.
- Always wear ANSI approved goggles to protect your eyes from propelled objects as well as hot or caustic liquids.
- Fuel, oil vapours, hot steam, hot toxic exhaust gases, acid, refrigerant and other debris produced by a malfunction engine can cause serious injury or death. Do not use the code reader in areas where explosive vapour may collect, such as in below-ground pits, confined areas, or areas that are less than 18 inches (45 cm) above the floor.
- Do not smoke, strike a match, or cause a spark near the vehicle while testing and keep all sparks, heated items and open flames away from the battery and fuel / fuel vapours as they are highly flammable.
- Keep a dry chemical fire extinguisher suitable for gasoline, chemical and electrical fires in work area.
- Always be aware of rotating parts that move at high speed when an engine is running and keep a safe distance from these parts as well as other potentially moving objects to avoid serious injury.
- Do not touch engine components that get very hot when an engine is running to avoid severe burns.
- Block drive wheels before testing with engine running. Put the transmission in park (for automatic transmission) or neutral (for manual transmission). And never leave a running engine unattended.
- Do not wear jewellery or loose fitting clothing when working on engine.

## 6. TECHNICAL DESCRIPTION

---

### 6.1 IDENTIFICATION

- ① **LCD Display** - shows menus, test results and operation tips.
- ② **Green LED Display** - indicates the battery is good and can competently hold a charge.
- ③ **Yellow LED Display** - indicates the battery needs charging.
- ④ **Red LED Display** - indicates the battery cannot sufficiently hold a charge and should be replaced.
- ⑤ **UP Key** - Select upwards via white UP keys.
- ⑥ **OK Key** - confirms the selection via white OK key.
- ⑦ **Crocodile clips** - to attach to battery terminals.
- ⑧ **DOWN Key** - Select downwards via white DOWN keys.
- ⑨ **Return key** - Return to previous menu via blue RETURN key.
- ⑩ **MENU** - Enter additional function program via white MENU key.



## 7. UNPACKING AND CHECKING

---

### 7.1 PACKAGING

Carefully remove the machine from the packaging and examine it for any sign of damage that may have happened during shipping. Lay the contents out and check them against the parts shown below. If any part is damaged or missing; please contact the Draper Helpline (the telephone number appears on the Title page) and do not attempt to use the machine.

The packaging material should be retained at least during the guarantee period: in case the machine needs to be returned for repair.

**Warning!** Some of the packaging materials used may be harmful to children. Do not leave any of these materials in the reach of children.

If any of the packaging is to be thrown away, make sure they are disposed of correctly; according to local regulations.

# 8. BATTERY DIAGNOSTIC TOOL INSTRUCTION

## 8.1 HOW TO USE

Connect the red test clamp with positive battery terminal and black test clamp to the negative battery terminal, the tester will power on automatically.

**Note:** If the battery is below 7.0V, there will not be enough power for the Diagnostic tool to work, press OK key to continue.

## 8.2 SELECT LANGUAGE

Press MENU to choose Language.

Using the key pad, press UP/DOWN to choose.

Press OK to continue.

Using the key pad, press UP/DOWN to choose:

- 1) Battery Test
- 2) Cranking Test
- 3) Charging Test
- 4) Review Data

### 1) Battery Test

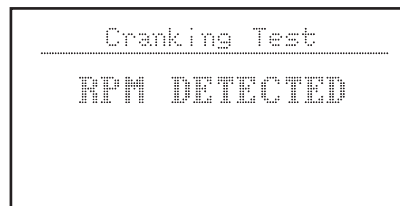
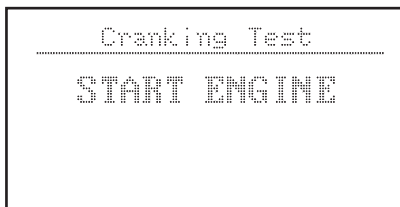
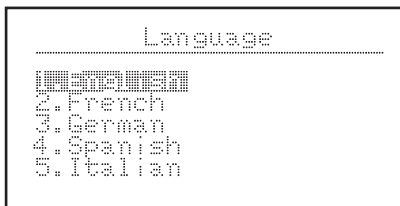
Select the battery test and press OK key to continue:

- Input testing standard: the standard can be found on the battery you are testing, such as CCA, BCI, DIN.
- Input rated capacity: this will be found on the battery. Such as BCI/300A for example.
- Then press OK key to start testing.
- The relevant LED will light up as a quick indicator of the battery's status.

### 2) Cranking Test

Select the cranking test function, press OK key to continue:

Start the engine as prompted. The diagnostic tool will automatically complete the cranking test and display the result.



## 8. BATTERY DIAGNOSTIC TOOL INSTRUCTION

Test result of the diagnostic tool includes actual cranking voltage and actual cranking time.

```
.....  
Charging Test  
.....  
TIME          1750ms  
CRANKING      NORMAL  
              12.56 V
```

```
.....  
Cranking Test  
.....  
TIME          1020ms  
CRANKING      low  
              19.12 V
```

### 3) Charging Test

Select the charging test. The diagnostic tool will prompt "RIPPLE TEST"

**Note:** Do not turn off the engine during the test. Turn on/off any electrical appliances in the vehicle during the test.

```
.....  
Charging Test  
.....  
Increase RPM to 2500  
r/min and keep it 5  
seconds.  
Press ENTER to  
continue.
```

Follow on screen instructions.

Refer to Haynes manual or similar data instructions for the recommended procedure to fix the diagnosis.

```
.....  
Charging Test  
.....  
TESTING  
  
###
```

```
.....  
Charging Test  
.....  
Loaded        13.97V  
Unloaded      14.23V  
Ripple        15mV  
CHARGING      NORMAL
```

# 9. EXPLANATION OF SYMBOLS

---

## 9.1 EXPLANATION OF SYMBOLS



**Warning!**

Read the instruction manual.



Do not dispose of WEEE\*  
unsorted municipal waste.



# 10. DISPOSAL

---

## 10.1 DISPOSAL

- At the end of the machine's working life, or when it can no longer be repaired, ensure that it is disposed of according to national regulations.
- Contact your local authority for details of collection schemes in your area.

In all circumstances:

- Do not dispose of power tools with domestic waste.
- Do not incinerate.
- Do not abandon in the environment.
- Do not dispose of WEEE\* as unsorted municipal waste.



■  
\* Waste Electrical & Electronic Equipment.







## CONTACTS

Draper Tools Limited, Hursley Road,  
Chandler's Ford, Eastleigh, Hampshire. SO53 1YF. U.K.

Helpline: (023) 8049 4344

Sales Desk: (023) 8049 4333

Internet: [drapertools.com](http://drapertools.com)

E-mail: [sales@drapertools.com](mailto:sales@drapertools.com)

General Enquiries: (023) 8026 6355

Service/Warranty Repair Agent:

For aftersales servicing or warranty repairs, please contact the  
Draper Tools Helpline for details of an agent in your local area.

YOUR DRAPER STOCKIST

DBKC1117

©Published by Draper Tools Limited.

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical photocopying, recording or otherwise without prior permission in writing from Draper Tools Ltd.