

**DRAPER**<sup>®</sup>  
*Expert*

GB

# ADBLUE<sup>®</sup> REFRACTOMETER

23193



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.

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## 3. WARRANTY

### 3.1 WARRANTY

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 Help Line (023) 8049 4344.**

A proof of purchase must be provided with the tool.

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 warranty period covering labour is 12 months from the date of purchase except where tools are hired out when the warranty period is 90 days from the date of purchase. The warranty is extended to 24 months for parts only. This warranty does not apply to any consumable parts, any type of battery or 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 warranty applies in lieu of any other warranty expressed or implied and variations of its terms are not authorised.

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

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

**Draper Tools Limited.**

## 4. INTRODUCTION

### 4.1 SCOPE

Precision refractometer suitable for measuring Urea concentration in Adblue® exhaust fluid on petrol and diesel vehicles and will also measure anti-freeze strength.

### 4.2 SPECIFICATION

Stock No. .... 23193

Part No. .... ARFR

Urea measuring range ..... 0 - 40%

Anti-freeze measuring range ..... -50 - 0°C

### 4.3 HANDLING AND STORAGE

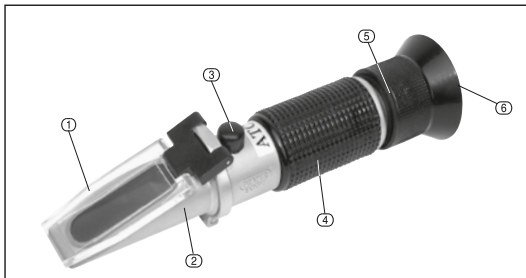
Do not drop the inspection lamp as this can damage and shorten the life span of the unit.

Store in a dry location as damp conditions can damage the inspection lamp.

Charging on a regular bases in advised to prolong the life of the battery cells.

## 5. TECHNICAL DESCRIPTION

### 5.1 IDENTIFICATION



① Cover plate.

② Main prism assembly.

③ Calibration screw.

④ Rubber grip.

⑤ Focus adjustment.

⑥ Eyepiece

## 6. UNPACKING AND CHECKING

### 6.1 PACKAGING

Carefully remove the product 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 Help Line (the telephone number appears on the Title page) and do not attempt to use the product.

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.

### 6.2 WHAT'S IN THE BOX

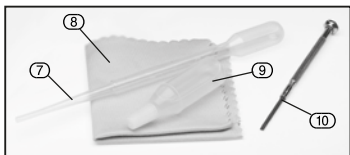
As well as the main product, there are also several other parts not fitted or attached to it:

⑦ Pipette.

⑧ Lens cleaning cloth.

⑨ Calibration fluid.

⑩ Precision screwdriver.



## 7. PREPARING THE REFRACTOMETER

### 7.1 CALIBRATION

This refractometer is a precision optical measuring device. Before first use it must be calibrated. This device is fitted with Automatic Temperature Compensation (ATC) and must be initially calibrated at 20°C (68°F) ambient temperature for both the calibration fluid and the refractometer.

Open cover plate and place 2-3 drops of calibration fluid (distilled water) on the main prism (Fig.1). Close the cover plate so the water spreads across the entire surface of the prism without air bubbles or dry spots.

Allow the sample to temperature adjust on the prism for approximately 30 seconds before proceeding further. (This allows the sample to adjust to the ambient temperature of the refractometer).

Hold cover plate in the direction of a light source and look into the eyepiece. You will see a circular field with graduations down the centre (you may need to focus the eyepiece to clearly see the graduations). The upper measurement field should be blue, while the lower up to the waterline should be white (Fig.2).

Remove the rubber cap above the calibration screw and look into the eyepiece slowly turn the Calibration screw until the boundary between the upper blue field and the lower white field meet exactly on the waterline, shown in Fig.3. That is the end of the calibration process.

Once calibrated, shifts in ambient temperature within the acceptable range between 10°C-30°C should not affect accuracy. Recalibration can be conducted as required by the user.



FIG.1

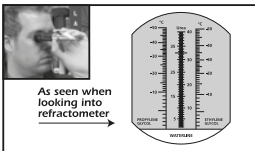


FIG.2

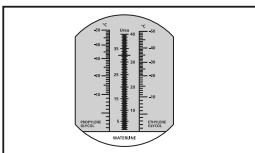


FIG.3

## 8. BASIC REFRACTOMETER OPERATION

Ensuring the prism and cover plate are clean and dry, place a few drops of the sample to be tested onto the main prism, close the cover plate and check reading. Take the reading where the boundary line of blue and white cross the graduated scale. The scale will provide a direct reading of the concentration on the relevant scale to the fluid being measured. After use, clean and dry the prism face and cover plate. Always store in carry case when not in use and do not drop or immerse in fluid as this will irrevocably damage the refractometer.

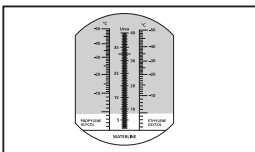


FIG.4

## 9. MAINTENANCE

- Accurate measurement depends on careful calibration. The prism and test fluid sample must be at the same temperature for accurate results (20°C recommended).
- Do not expose the instrument to damp working conditions and do not immerse the instrument in water. If the instrument becomes foggy, water has entered the body. Call a qualified service technician or contact your dealer.
- Do not measure abrasive or corrosive chemicals with this instrument. They can damage the prism's coating.
- Clean the instrument between each measurement using a soft, damp cloth. Failure to clean the prism on a regular basis will lead to inaccurate results and damage to the prism's coating.
- This is an optical instrument, it requires careful handling and storage. Failure to do so can result in damage to the optical components and its basic structure. With care, this instrument will provide years of reliable service.

## 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.

# 1. TITLE PAGE

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## 1.1 INTRODUCTION:

USER MANUAL FOR: Adblue® Refractometer

Stock No: 23193

Part No: ARFR

## 1.2 REVISIONS:

Date first published April 2019.

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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>

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## 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:

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## CONTACTS

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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

MSKC0419

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