Fig 1. How to use the **In-Check M**

1. 
2. 
3. 
4. 
5. 
6. 

**Clinically Effective Flow Rate**
30-60 L/Min
Instructions for Use

Consult ‘Instructions for Use’.

Introduction

The *In-Check M* is an inhalation airflow meter that can help educate and assess patients who use inhaler devices.

Pressurised inhaler devices are designed to deliver medication to the respiratory tract, and the speed of inhalation through them (the inspiratory flow) can have a significant effect on the quantity of drug delivered and the clinical efficacy of the product.

The *In-Check M* is designed to simulate the “internal resistance” of pressurised inhaler devices, and measure inspiratory flow. These measurements enable the healthcare professional to encourage patients to modify their inspiratory technique (by inhaling correctly, i.e. not too fast), in order to achieve a flow rate consistent with clinical efficacy. The green zone shows the clinically effective flow ranges for pMDI inhaler devices.

Patients that cannot achieve the suggested inspiratory flow for their inhaler may not gain maximum benefit from their prescribed medication. Healthcare professionals may wish to take this factor into account when selecting the device that is the most suitable with the patient.

Inspiratory Flow and Clinically Effective Flow Range

The inspiratory flow through an inhaler is one of the factors that will influence the clinical effect of the drug delivery from that device. The most effective delivery occurs when the patient achieves a flow within the clinically effective flow range. Flow rates outside this range, may result in a diminished deposition and clinical efficacy.
Pressurised Metered Dose Inhalers (pMDIs)
With most pMDIs, the aerosol is delivered under pressure at high speed (often over 90 kilometres per hour). The inhalation should be timed with actuation of the device and should be slow and steady. Inhaling too fast may cause a greater proportion of the aerosol to impact at the back of the throat and be subsequently swallowed, thus reducing the beneficial clinical effect and increasing the potential for local and systemic side effects.

pMDIs with Holding Chamber/Spacer
It is recognised that the optimum inhalation technique for using a pMDI with a holding chamber/spacer is a slow inhalation (30 to 60 l/min). As the resistances of most chamber/spacer devices are low, the In-Check M can be used to provide an approximate resistance for inspiratory flow measurements to be made.

In-Check M
The In-Check M is a low-range inspiratory flow meter (15 to 120 l/min) that has an inbuilt resistance, it is calibrated to enable the measurement of airflow as if the patient was using a pMDI.

⚠️ IMPORTANT
As with any inhalation device, it is important to check for loose foreign objects before the device is used. The transparent material used in the construction of the In-Check M enables the user to make a visual check before inhalation. Patients should be prevented from exhaling through the device prior to use.
To reset the *In-Check M*

Hold the instrument vertically with the mouthpiece uppermost, so that the rounded end of the meter can be tapped against the other hand or a horizontal surface, such as a table.

A hard tap will dislodge the magnetic resetting weight, which will return the red cursor to a start position. With the cursor now at the bottom, tip the meter through 180 degrees to return the magnetic weight to its resting position at the mouthpiece end of the device.

**Do Not** try to reset the *In-Check M* as if it were a mercury thermometer – this action causes serious damage to the piston and pointer.

**How to use the In-Check M** - see Fig 1

1. Reset the *In-Check M*.
2. Attach a clean mouthpiece (small mouthpieces can be used with the supplied adaptor). *Disposable one-way inspiratory mouthpieces are preferred.*
3. Ask the patient to exhale fully.
4. Seal lips around the mouthpiece and inhale.
5. Record the inspiratory flow from the position of the red cursor against the scale. Reset, and repeat two more times, ensuring to inhale correctly each time.
6. Compare values achieved with target flow. To operate an inhaler device correctly, the patient should be able to achieve a flow rate within the clinically effective range.

*If after repeated training the patient is not able to achieve these values, then the healthcare professional may wish to assess the patient’s ability to use an alternative type of inhaler.*

**Performance Accuracy**

Accuracy +/- 10% or 10 l/min (whichever is the greater) and repeatability of +/- 5 l/min.
Cleaning your *In-Check M*
Where local infection control guidelines exist, these should be respected.

Immerse *In-Check M* in warm (but not hot) mild detergent solution for 2-3 minutes (maximum 5 minutes). Agitate the meter to ensure thorough cleaning.

Rinse in warm water and shake to remove any excess water. It is important to rinse thoroughly to prevent salt spots appearing on the inside of the body and the spindle.

To shake excess water from the *In-Check M*, hold only at the end furthest away from the mouthpiece.

Allow to dry thoroughly before using again.

The expected life of the *In-Check M*, in normal use, is two years.

⚠️ To maintain hygiene the *In-Check M* should be used with disposable inspiratory one-way mouthpieces. If use of this product is governed by local infection control guidance, that guidance should be respected in the absence of local guidance.
Interpreting information from the *In-Check M*

*In-Check M* was introduced in March 2013, in response to customer feedback, to provide information about inspiratory flow rates that are associated with clinical efficacy when using pMDI devices.

The information provided is for guidance only. It does not imply that any particular product will be clinically effective. There are other aspects than inspiratory flow that contribute towards clinical efficacy. The information is based on published clinical studies. In some cases studies may have been performed on a particular formulation with a specific device and may be suggestive that other formulations will behave similarly.

The target flow rate is in the green zone on the scale. If a patient inhales at a flow rate in the red or yellow zone they should be encouraged to inhale more gently.
Some common mistakes to look out for when using pMDIs:

**Handling problems (examples)**
- Failure to shake the cannister
- Failure to ‘prime’ the cannister
- Failure to remove mouthpiece cover
- Failure to put the inhaler into the mouth
- Actuating multiple times in quick succession
- Failure to gargle after inhaling steroid
- Failure to seal lips around mouthpiece

**Inhalation technique problems (examples)**
- Exhaling while actuating
- Stopping inhalation on actuation
- Inhaling too fast
- Actuating at the end of inhalation
- Failure to hold breath
Bibliography for In-Check

(Please note that references for Clinical Efficacy of different inhaler systems are provided on the laminated card.)


Disposable one-way mouthpieces (Inspiratory, bulk, 200) Ref. 3122063
Disposable cardboard mouthpieces (Adult, 5 x 20) Ref. 3125030
Disposable cardboard mouthpieces (Adult, 500) Ref. 3122003
Disposable cardboard mouthpieces (Child, 500) Ref. 3103030
Universal plastic mouthpieces (Sterilisable, 15’s) Ref. 3103095
Adult to paediatric mouthpiece adaptor Ref. 3105027

⚠️ Note
Please contact manufacturers for additional information

Clement Clarke International Ltd
Edinburgh Way Harlow
Essex CM20 2TT UK

Tele: +44 (0)1279 414969
Fax: +44 (0)1279 456300
e-mail: resp@clement-clarke.com

Part no: 1902991
Issue no: 2 09/15