

Pulsair intelliPuff



Our most comfortable and intelligent Non Contact Tonometer ever

**Keeler**





## intelliPuff® the intelligence inside

intelliPuff® - the Keeler intelligent puff system giving you a quantum leap forwards in accuracy and ease of use. intelliPuff® embodies electronic and optical technology to deliver you the speed, accuracy and ease of use you and your patients deserve. Accuracy guaranteed.

### **Ease of use**

intelliPuff® automatically senses when there is difficulty – perhaps a dry eye or a damaged cornea and adjusts the automatic firing criteria accordingly – simple.

Keeler's unique algorithm will constantly evaluate your readings and ensure the tightest range is used to give you the final and perfect result every time.

When the intelligent system considers you have enough reliable readings for an eye, the sound system will let you know – no more guesswork and the minimum puffs per patient.



## Our softest puff ever

**Gentle is understating the new system** – and if the patient has high pressures the puff will automatically increase for the next measurement. Kind, intelligent and simple. Technology working for you.

**Engineered to perfection** – this 5th generation device is better than ever – there are no limits. This is the most accurate, smallest, quietest, lightest, fastest Pulsair ever.

**No more bulbs to change** – our new LED (Light Emitting Diode) illuminated targeting system will last a lifetime and never need changing. Cooler, 100% reliable, 100% consistent.

**Cost effective** – no sterile consumables to purchase, and printing is optional, so your ownership costs are insignificant.



**Time on target system** – easier to use

**Algorithm to ensure best readings** – greater accuracy

**Sounds to inform of the status of data gathered** – greater confidence

**Lighter puff** – soft and gentle for your patients

intelliPuff

## More information, more control

intelliPuff® displays the 'rolling average' of your readings – the more data you have the better the result delivered. Outlying readings are automatically excluded by our algorithms. User control allows you to select your preferred user options, printing, sound notifications, display characteristics. intelliPuff® will self check the system and tell you all is well, confidence inspired.

You can choose how  
your intelliPuff® is configured



# Keeler

Name:

Date:

Time:

Right Eye:

Avg IOP: 10.4 mmHg

Data: (20), 10, 10, 10

Left Eye:

Avg IOP: 10.5 mmHg

Data: 10, 11, 10, 10



## Hand-held and Non Contact

Save time, increase flexibility. Conventional chinrest devices take time to get the patient aligned and comfortable – just consider the total time wasted over a 12 month period adjusting table and chinrest heights and settling your patients. Time is our most precious commodity. Pulsair intelliPuff® gives you more time

Add to this time saving the flexibility to measure IOP's on patients that are unsuitable for a chinrest device – those with disabilities, children, the elderly or infirm.

Save time and cost. Pulsair intelliPuff® does not touch the eye and hence virtually eliminates any possibility of cross infection. Pulsair intelliPuff® requires no anaesthetic or fluorescein, has no need for any disinfection or sterilisation regime and requires no single use consumables. Usage costs – virtually nil.

### Objective Tonometry

The Pulsair intelliPuff® will only fire when perfect alignment and patient position have been achieved, thus removing all subjectivity from the measured result.

Tonometry you can trust.



No need to get the patient to a chinrest – any patient, anywhere, supine or sitting it makes no difference – total versatility



For additional stability and to ensure the perfect conditions are met every time use the new 'pop out' forehead stabiliser

## Desk top or wall mount

Save valuable space – Pulsair IntelliPuff® uses less than 50% of the space of conventional non contact tonometers and is the only model that can be wall mounted.

Whether you wall mount or prefer to place it on you desk you win the 'space war' every time. No special instrument table is required – put it where you want it. Move it when you want to. Total flexibility.



Space saving flexibility -  
IntelliPuff® is the only model  
that can be wall mounted!



## Technical Information

### Keeler Pulsair intelliPuff® subsystems

Air impulse tonometry is an extremely complex process. Reliable, repeatable and accurate objective tonometry relies upon the performance of two critical subsystems:

#### Position detection

It is important that the instrument knows its position and orientation relative to the eye being measured. When an air packet is released towards the cornea, the release position and the direction of the air travel have significant effect on the reaction of the cornea to the puff and therefore the measurement result.

This position detection in the case of a hand-held instrument in which neither the patient's eye nor the operator's movements are restricted becomes of critical importance.

In the latest Keeler instrument this is carried out through the use of 3 optical sensors working at infra-red wavelength. A continuously monitored and controlled LED infra red light source provides a precisely directed beam whose reflection from cornea is registered by the 3 sensors. These sensors provide the critical alignment data related to the distance, pitch and the alignment of the instrument from the cornea. The signals are converted to digital form at rates of up to 100K bytes per second.



It is the intelligent processing of these signals which enable the on-board processor to calculate precisely the instruments position relative to the patient's eye every fraction of a millisecond thus allowing an event (air release) only when alignment is perfect.

#### The quantized "air puff"

Here, our instrument design departs from the more conventional motor/rotary-actuator driven piston for generation of the air puff. In a hand-held instrument it is of paramount importance that the measurement is carried out in the shortest possible time, reducing the possibility of hand/eye movement which can lead to errors in the measurement.

Following extensive research at Keeler, we have perfected a pressurised plenum chamber and solenoid-valve technique which enables the instrument to perform its measurement within a maximum period of 10ms of data capture (typically 3ms).

Accurate control and measurement of the reservoir pressure together with high speed measurement of each individual generated air puff and the tracking of individual solenoid valve characteristic has enabled the instrument to achieve repeatability of operation well beyond that experienced in instruments of this type in the past.



## Specifications

|                       |                                  |
|-----------------------|----------------------------------|
| Calibration range     | 5mmHg to 50mmHg                  |
| Measurement scale     | mmHg (millimetres of mercury)    |
| Displayed accuracy    | 0.1mmHg                          |
| Display               | 4 character dot matrix scrolling |
| Firing system         | Automatic and objective          |
| Illumination system   | LED infra red                    |
| Working distance      | 20mm                             |
| Mounting system       | Table/desktop/wall               |
| Base unit dimensions  | 260 x 215 x 220mm (H x D x W)    |
| Base unit weight      | 2.465Kg                          |
| Handpiece dimensions  | 315 x 150 x 46mm (H x D x W)     |
| Handpiece weight      | 0.890Kg                          |
| Umbilical cord length | 2.0m                             |
| Printer               | Thermal line printer             |

|               |                                |
|---------------|--------------------------------|
| Part Numbers: | 2414-P-2001 intelliPuff unit   |
|               | 2414-L-7008 Printer paper roll |



Complies with: Safety (Medical) EN 60601-1:1990 plus amendments A1:1993, A11:1993, A12:1993, A2:1995 and A13:1996. EN ISO 15004:1998, Clause 6.3 optical radiation hazard, Clause 7.3 environmental conditions. EN60601-1-2 for EMC.

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