



ugo basile®

TRANSFORMING IDEAS  
INTO INSTRUMENTS

www.ugobasile.com

TISSUE BATHS, TRANSDUCERS, STIMULATORS

## Isometric Transducers

Cat. No. 7003 / 7004 / 7005 & 7010

### General

The three models 7003-7004-7005 cover the range from 0 to 50 g (see table on the facing page). The high sensitivity 7010 is designed for the mg range.

The force exerted on a hollow carbon fibre beam is converted into proportional electric signal via strain-gauges, conveniently wired in Wheatstone bridge circuit.

### Model Selection

Ugo Basile transducers are of robust construction and can withstand forces of up to 5-10 times the rated value.

It is possible to use 7003 which is generally used for trachea rings or artery strips, where forces of 5-10 grams are involved, by operating at minimum amplifier sensitivity; however, the cantilever will deflect with a load of the mentioned magnitude

Generally speaking, it is advisable to use a stiff transducer, operating at high amplifier sensitivity, and use the most sensitive transducer only when



The picture shows an Isometric Transducer (right) & an Isotonic Transducer (left), see separate datasheet

### Also available from Ugo Basile:

- Tissue Baths, 1, 2, 4-chambers
- Digital Recorder DataCapsule-Evo
- Electrodes & Stimulators

### Main Features

- Ugo Basile transducers have been designed for precise measurement of force in muscular preparations under isometric conditions
- An Isometric Transducer measures changes in force at constant length whereas an Isotonic Transducer is basically a displacement meter under constant load

Ugo Basile: more than 25,000 citations

## Isometric Transducer Specifications

| Model                                    | 7010              | 7003              | 7004              | 7005              |
|--|-------------------|-------------------|-------------------|-------------------|
| <b>Electrical</b>                        |                   |                   |                   |                   |
| Excitation Voltage (max.)                | 6V                | 6V                | 6V                | 6V                |
| Excitation Voltage (typical)             | 3V                | 3V                | 3V                | 3V                |
| Sensitivity ( $\mu\text{V}$ per g per V) | 110               | 70                | 25                | 10                |
| Non linearity & Hysteresis               | +/-3%             | +/-3%             | +/-3%             | +/-3%             |
| <b>Mechanical</b>                        |                   |                   |                   |                   |
| <b>Force Range</b>                       | <b>0-800 mg</b>   | <b>0-2g</b>       | <b>0-10g</b>      | <b>0-50g</b>      |
| Overload Rating                          | 5g                | 20g               | 50g               | 200g              |
| Moment of Inertia                        | 7gcm <sup>2</sup> | 7gcm <sup>2</sup> | 7gcm <sup>2</sup> | 7gcm <sup>2</sup> |
| Lever Arm Displacement                   | 0.5 mm/g          | 0.3 mm/g          | 0.1 mm/g          | 0.06 mm/g         |
| <b>Physical</b>                          |                   |                   |                   |                   |
| Weight                                   | 270g              | 270g              | 270g              | 270g              |
| Shipping Weight                          | 900g              | 900g              | 900g              | 900g              |
| Packing                                  | 29x26x29cm        |                   |                   |                   |

## Compatibility

**Before ordering, check the connection compatibility** of your amplifier/recording system.

The Isometric & Isotonic Transducers are normally supplied with a connector (type -F) designed for Ugo Basile DataCapsule-Evo Recorder (see datasheet).

If the customer wishes to make use of other recording apparatus, the transducers can be supplied with appropriate connector on request: we will be glad to provide transducer with different connectors, if available, or to provide wiring information and instruction.

## Ordering Information

- 7003** Isometric Force Transducer , type DY1
- 7004** Isometric Force Transducer , type DY2
- 7005** Isometric Force Transducer , type DY3
- 7010** High-Sensitivity Transducer , type DY0

## Bibliography

### Isometric Transducers 7003, 7004, 7005

- H. Ellers et alia: "Pungent General Anesthetics Activate Transient Receptor Potential-A1 to Produce Hyperalgesia and Neurogenic Bronchoconstriction" *Anesthesiology* 112: 1452-63, 2010
- A. Rizzo et alia: "Effects of rosiglitazone, a PPAR-c agonist, on the contractility of bovine uterus in vitro" *J. vet. Pharmacol. Therap.* 32, 548-551, 2009
- L. Natale et alia: "Interleukins 1 Beta and 6 Induce Functional Alteration of Rat Colonic Motility: An In Vitro Study" *Eur. J. Clin. Investigation* 33 (8): 704-712, 2003
- D. Mitolo-Chieppa et alia: "Involvement of  $\kappa$ -Opioid Receptors in Peripheral Response to Nerve Stimulation in  $\kappa$ -Opioid Receptor Knockout Mice" *Autonomic & Autacoid Pharmacology* 22:4: 233-239, 2002
- M.R. Accomazzo et alia: "Leukotriene D4-Induced Activation of Smooth-Muscle Cells From Human Bronchi Is Partly Ca<sup>2+</sup>-Independent" *Am. J. Respir. Crit. Care Med.* 163:1: 266-272, 2001
- M. Shalev et alia: "Stimulation of P2y Purinoceptors Induces, Via Nitric Oxide Production, endothelium-Dependent Relaxation of Human isolated Corpus Carnosum" *J. Urol.* 161: 955-959, 1999
- M.C Breschi et alia: "Effects of Noise Stress on EFS-Mediated Cholinergic and Inhibitory NANC Responses in Tracheae from Normal and Sensitized Guinea-Pigs" *J. Autonomic Pharmacol.* 17:6: 353-363, 1997
- M.K. Sim et alia: "Presence of an Endothelial Esterase in the Rat Aorta: Effects on the Actions of Ester and Non-Ester Muscarinic Antagonists" *Endothelium* 1: 109-114, 1993

### High-Sensitivity Transducer 7010

- L.W. Tait et alia: "Hagfish natriuretic peptide changes urine flow rates and vascular tensions in a hagfish" *Comparative Biochemistry and Physiology C* (150) 45-49, 2010
- G. Foldi et alia et alia: "Activity of saps from Croton lechleri on rat vascular and gastric smooth muscles" *Phytomedicine* 16: 768-775, 2009