armfield

Manual data entry software included

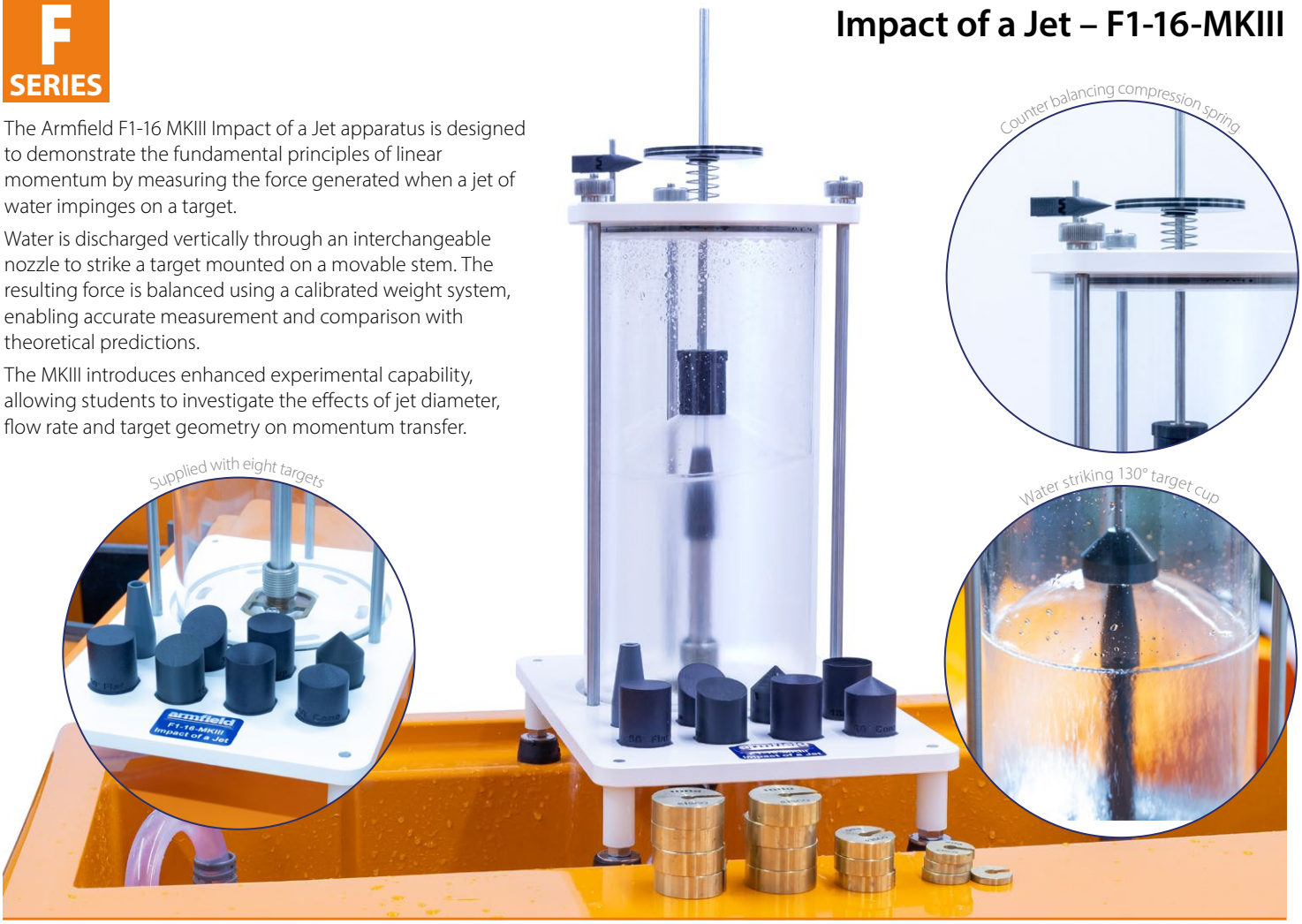
F SERIES

Impact of a Jet – F1-16-MKIII

The Armfield F1-16 MKIII Impact of a Jet apparatus is designed to demonstrate the fundamental principles of linear momentum by measuring the force generated when a jet of water impinges on a target.

Water is discharged vertically through an interchangeable nozzle to strike a target mounted on a movable stem. The resulting force is balanced using a calibrated weight system, enabling accurate measurement and comparison with theoretical predictions.

The MKIII introduces enhanced experimental capability, allowing students to investigate the effects of jet diameter, flow rate and target geometry on momentum transfer.



Experimental Capabilities

The F1-16 MKIII enables investigation of:

- The principle of conservation of momentum in fluid flow
- Reaction forces generated by jet impingement on surfaces
- The effect of jet velocity and flow rate on impact force
- The influence of target shape and deflection angle
- The effect of jet diameter (6 mm vs 8 mm) on momentum transfer
- Validation of theoretical relationships through experimental measurement

Students can validate the governing equation: $W=\rho Av^2(\cos\theta+1)$ by plotting applied force against velocity squared and comparing experimental results with theory.

Key Features

- Dual interchangeable nozzles: 6 mm and 8 mm for extended experimental range
- Eight target geometries for comprehensive flow deflection studies
- Quick-change nozzle and target system for efficient laboratory use
- Transparent acrylic test chamber for clear visualisation of jet behaviour
- Spring-balanced force measurement system for accurate and repeatable results
- Integrated level gauge to ensure consistent calibration
- Designed for use with the Armfield F1-10 Hydraulics Bench

Technical specifications (Requires Hydraulics Bench Service unit F1-10/F1-10-2)

Nozzle diameter	8mm and 6mm supplied - *The interchangeable nozzle system enables direct comparison of jet momentum under different flow conditions.*	
Distance between nozzle & target plate	40mm	
Weight masses supplied	100G X 8	
	50G X 3	
	20G X 3	
	10G X 1	
Target plate	90° Flat Target	120° Target Cup
	45° Cone Target	135° Target Cup
	60° Cone Target	180° Target Cup
	15° Oblique Target	30° Oblique Target

Overall dimensions

Length	0.325m
Width	0.20m
Height	0.50m

Ordering codes

- F1-16-MKIII

UK office - email: sales@armfield.co.uk tel: +44 (0) 1425 478781 (for ROW)
USA office - email: info@armfield.inc tel: +1 (609) 208-2800 (USA only)

Issue: 1
URL: http://www.armfield.co.uk/f1
Applications: ChE ME CE IP

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