

## Fixing Tables, Clamps and Mandrels for Torque Testing

Mecmesin offers a selection of fixturing solutions for use with all of our torque testers, each designed to provide the adjustability to securely hold different sample shapes and sizes.

Our manual torque testers (Orbis, Tornado and CAPTEST) are supplied as standard with a Torque Fixing Table and a set of 4 rubber-coated, threaded fixing pegs of 35 mm height for gripping samples. Optional longer Fixing Pegs or V-jaw Clamps are available to fit onto the Fixing Table to grip more awkwardly-shaped samples.

Torque Fixing Tables have also been developed as optional accessories specifically to fit to the motorised Vortex or Helixa range of torque testers. Rubber-coated pegs and V-jaw Clamps are available to fit onto these Torque Fixing Tables to securely grip the sample.



432-321 Upper Fixing Table (Vortex) shown with 35 mm high standard Pegs



432-600 Precision Lower Fixing Table (Helixa) shown with 432-602 V-jaws fitted



PSV18155 V-Jaw with Toggle Clamp (Tornado/Orbis/Vortex)

### Description

#### Fixing Tables

Fixing Tables are a useful general-purpose grip offering highly versatile clamping of specimens, since they are fully adjustable to accommodate a variety of forms.

For the Helixa and Vortex motorised torque testing systems; **Upper Fixing Tables** connect directly to the respective torque sensor and **Lower Fixing Tables** connect to the motor spindle.

Upper and Lower Fixing Tables can be used in combination with each other. Alternatively, they can be used individually to hold one end of a sample, whilst the other end is held in a different torque grip or a custom-built fixture.

Fixing Tables feature a stainless-steel leadscrew with adjustable running-plates that have threaded holes. These holes accept Fixing Pegs and V-jaw Clamps within which specimens are held.

Note: To avoid the risk of damaging the torque sensor by excessive tightening of the handle; it is recommended that the Upper Fixing Table only be used with sensors of 6 N.m and above.

#### Saddle Plates

To provide extra support for containers which may not have a flat base, the Saddle Plate is a popular option. It easily connects to the Lower Fixing Table and is available in 2 sizes to suit the Vortex / Orbis / Tornado 6 & 10 N.m (432-424) and the Tornado 1.5 & 3 N.m (432-407).

See separate datasheet for more details.



432-321 Upper Fixing Table and 432-447 Pegs gripping a thermostatic radiator valve control



432-424 Large and 432-407 Small saddle plate

## Fixing Pegs

Four rubber-coated pegs for 35 mm height support are supplied as standard with the Upper and Lower Fixing Tables (432-321 and 432-320) for the Vortex. They are screwed into appropriate threaded holes to suit your specimen dimensions. The pegs are then tightened using the handle and leadscrew to secure the specimen in place. Longer fixing pegs of 100 mm are available for securing taller specimens.

See separate datasheet for more details.



432-424 Large Saddle Plate and 432-250 Extended length (height) Pegs gripping a tall petaloid base plastic bottle

## V-Jaw Clamps

Rubber-faced V-jaw clamps are available as an alternative solution to standard fixing pegs. They may be more appropriate for gripping specimens which require a greater area of surface contact to avoid slipping. Particularly useful for testing of smooth or low-friction materials.

## V-jaw Clamps for Helixa (432-602)

Features V-shaped rubber faces with an angle of both 90 and 120 degrees to suit various specimen geometries. The jaws can be easily removed and reversed by means of the fixing screws. Stable clamping is achieved by two vertically-spaced jaws on one side, stacked above and below the single opposing jaw. This accessory fits to the Helixa's Precision Lower Fixing Table (432-600) and is ideal for gripping small and/or low-friction surfaces of specimens.



432-600 Precision Lower Fixing Table and 432-602 V-jaws

## V-jaw Clamps for Vortex/Orbis/Tornado

PSV18155 (with toggle clamp for quick release) and PSV18221 (screw adjustment) are designed to fit onto the Vortex Lower Fixing Table (432-320) or the table supplied as standard with the Orbis and Tornado manual torque testers. Stable clamping is achieved by two vertically-spaced jaws on one side, stacked above and below the single opposing jaw. The serrated rubber jaw faces make these accessories ideal for gripping low-friction specimen surfaces such as hard plastic or glass bottles.

Note: In situations where torque is significant, or specimens have an awkward shape or a smooth finish, it may be preferable to develop a custom gripping solution. If you are in any doubt please consult Mecmesin's experienced application engineers for advice.



PSV18155 V-jaw (toggle clamp)



PSV18221 V-jaw (screw-action clamp)

## Dedicated mandrels for closures

Lower Fixing Tables (432-320 and 432-600) are often well-suited to holding containers. However, in situations where a thin-walled plastic closure is connected to a container, the closure can be deformed slightly when tightened within the jaws of an Upper Fixing Table. Such deformation can significantly influence the repeatability of torque measurement values.

A practical solution to this problem is to use a dedicated mandrel designed to fit uniformly and snugly around the closure without deforming it. The mandrel is designed to suit the exact form and profile of the closure thereby providing maximum contact area to optimise gripping.

Dedicated mandrels can be 'single-form' to suit one diameter, or 'split' to accommodate a limited range of diameters. Single-form mandrels are placed by hand onto the closure and are rotated by a 'Mandrel Peg Drive', which is connected to the torque sensor and applies tightening and release torque.

Split mandrels typically fit to an Upper Fixing Table and are gently tightened around the closure form to grip securely.

## Single-form mandrels

These can be produced in metal by CNC machining or spark-eroding and are suitable for higher torque applications. Becoming increasingly common, as a lower cost alternative where torque values are not so high, are mandrels produced from a durable resin material by 3D printers.

Mecmesin offers both the metal and 3D resin types of single-form mandrel. Simply send us a sample or drawing of your closure to receive a quotation for the most appropriate mandrel.

Requires Mandrel Peg Drive.



Dedicated single-form mandrels for cork, plastic and metal closures

## Mandrel Peg Drive (PDV15094-A)

This fixture is connected to the torque sensor of the Vortex or Helixa. It has 4 metal pegs with an internal opening of 54mm into which the single-form mandrel can be positioned. The pegs drive the mandrel and thereby apply the tightening and release torque.

Other sizes of Mandrel Peg Drive also available.



PDV15094-A Peg Drive fitted to Vortex

## Split mandrels

These mandrels are designed to provide as much contact area around the closure as possible and are often rubber-coated to increase friction and grip securely. They are particularly suited to hard-plastic closures, such as those found on cosmetic jars, or other slippery surfaces e.g. cork. Each half-round mandrel is fitted to the running plate of an Upper Fixing Table and is gently tightened around the diameter of the closure.

Split mandrels can often be produced with a 'stepped' half-round design so you have a single fixture to suit closures of varying diameters.

To receive a quotation for the most appropriate mandrel simply send us a sample or drawing of your closure.

See separate datasheet for more details.



Dedicated split mandrels for cork and plastic cosmetics jar closures

## Specifications

### Vortex

Part no:	Type	Thread 1	Max & Min opening diameter	Plate diameter (A)	Height	Weight	Fixing pegs (35mm high)
432-320	Lower Fixing Table	4 x M4	10 - 190 mm	188 mm	35 mm	950 g	included
432-321	Upper Fixing Table	4 x M4	10 - 78 mm	100 mm	35 mm	475 g	included

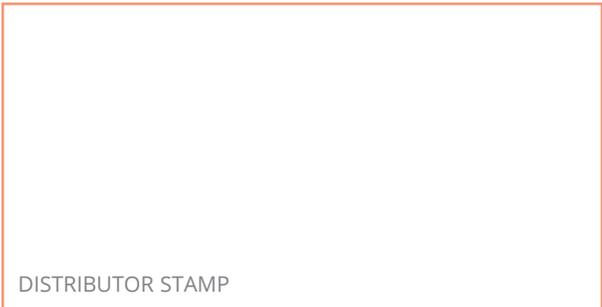
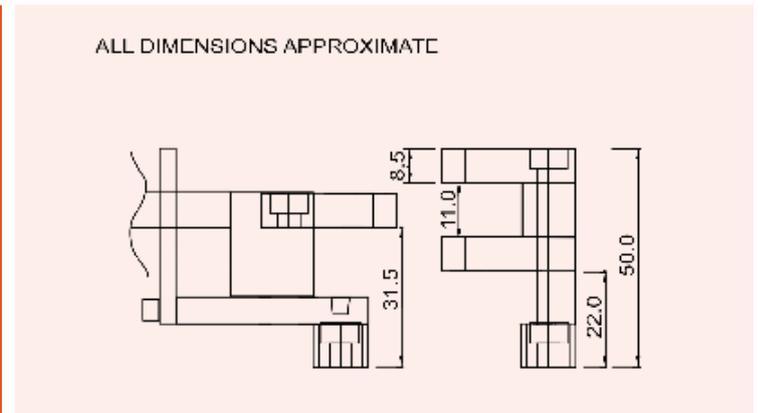
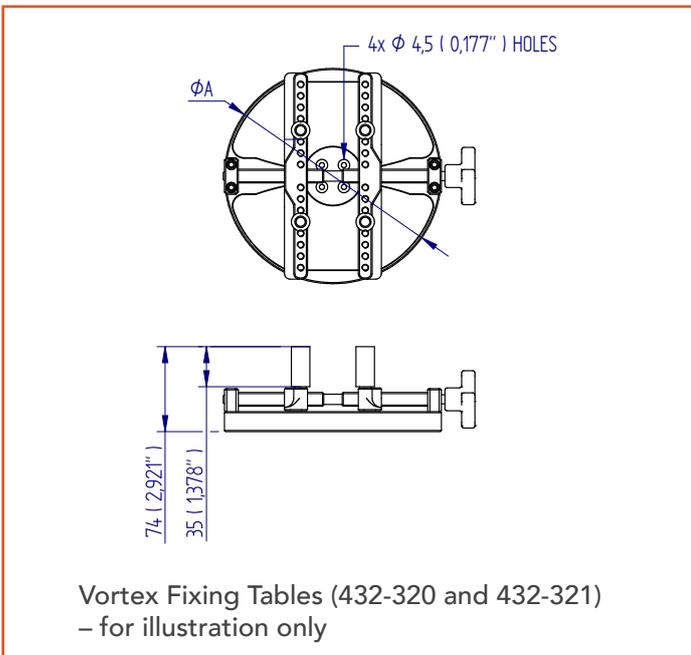
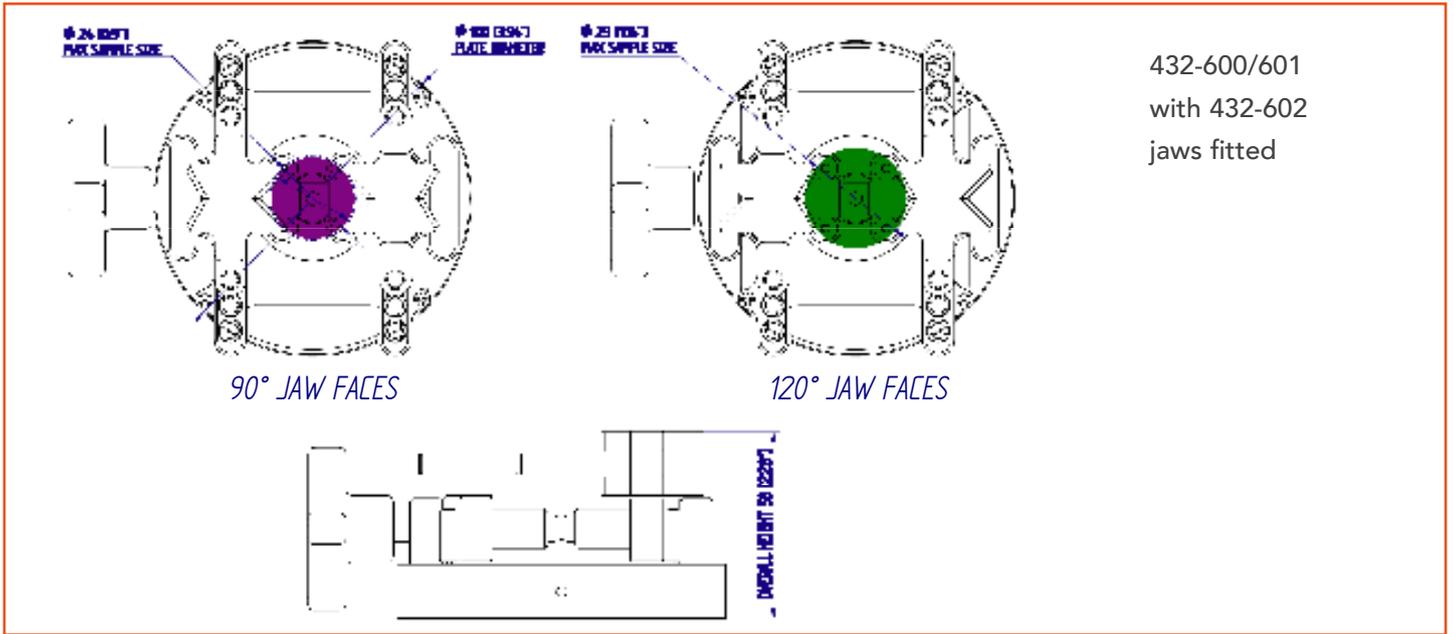
### Helixa

Part no:	Type	Thread 1	Max & Min opening diameter	Plate diameter (A)	Height	Weight	Fixing pegs (35mm high)
432-600	Precision Lower Fixing Table	4 x M4	20 - 100 mm	100 mm	40 mm	335 g	order separately
432-601	Precision Upper Fixing Table	4 x M4	20 - 100 mm	100 mm	40 mm	335 g	order separately
432-602	V-shape rubber jaws for precision tables - reversible	4 x M6	120° jaws : 1 - 30 mm 90° jaws: 1 - 25 mm	-	20 mm	50 g	-
432-447	Fixing pegs (rubber-coated), standard length (height)	4 x M6	-	-	30 mm	126 g	-
432-250	Fixing pegs (rubber-coated), long	4 x M6	-	-	100 mm	312 g	-

### Orbis/Tornado/Vortex

Part no:	Type	Thread 1	Max & Min opening diameter	Lateral Adjustment	Height
PSV18155	V-jaw Clamp with Toggle	4 x M6	N/A Determined by saddle plate	±60 mm	50 mm
PSV18221	V-Jaw Clamp	4 x M6	N/A Determined by saddle plate	±60 mm	50 mm

Dimensions mm (inch)



Mecmesin reserves the right to alter equipment specifications without prior notice. E&OE

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