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Vortex-*dV* Motorised Torque Testing System Operating Manual

Mecmesin
FORCE & TORQUE TEST SOLUTIONS
www.mecmesin.com

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The Scope of This Document

This document refers to Mecmesin Vortex-*dV* test stands with firmware version 3.0.10 It is essential that you familiarise yourself with the contents of this Manual and the separate Guide to Safe Use of Mains Powered Test Systems before attempting to operate your Vortex-*dV* Test System.

You may also need to refer to these documents:

431-955 VectorPro™ for Mecmesin Test Stands and Instruments

431-213 Advanced Force Gauge (AFG Mk4) Operating Manual

431-398 Guide to Safe Use of Mains Powered Test Systems

Important

This reference manual covers the operation of Vortex-*dV* test stands in conjunction with the use of Mecmesin digital Advanced Force Torque Indicator (AFTI). Operation of the AFTI is covered in a separate manual.

For operating in conjunction with Vector Pro™, see the manual 431-955, *VectorPro™ for Mecmesin Test Stands and Instruments.*

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1. Items Supplied With Your Test Stand

When ordering a Vortex-*dV* you are supplied with the following parts:

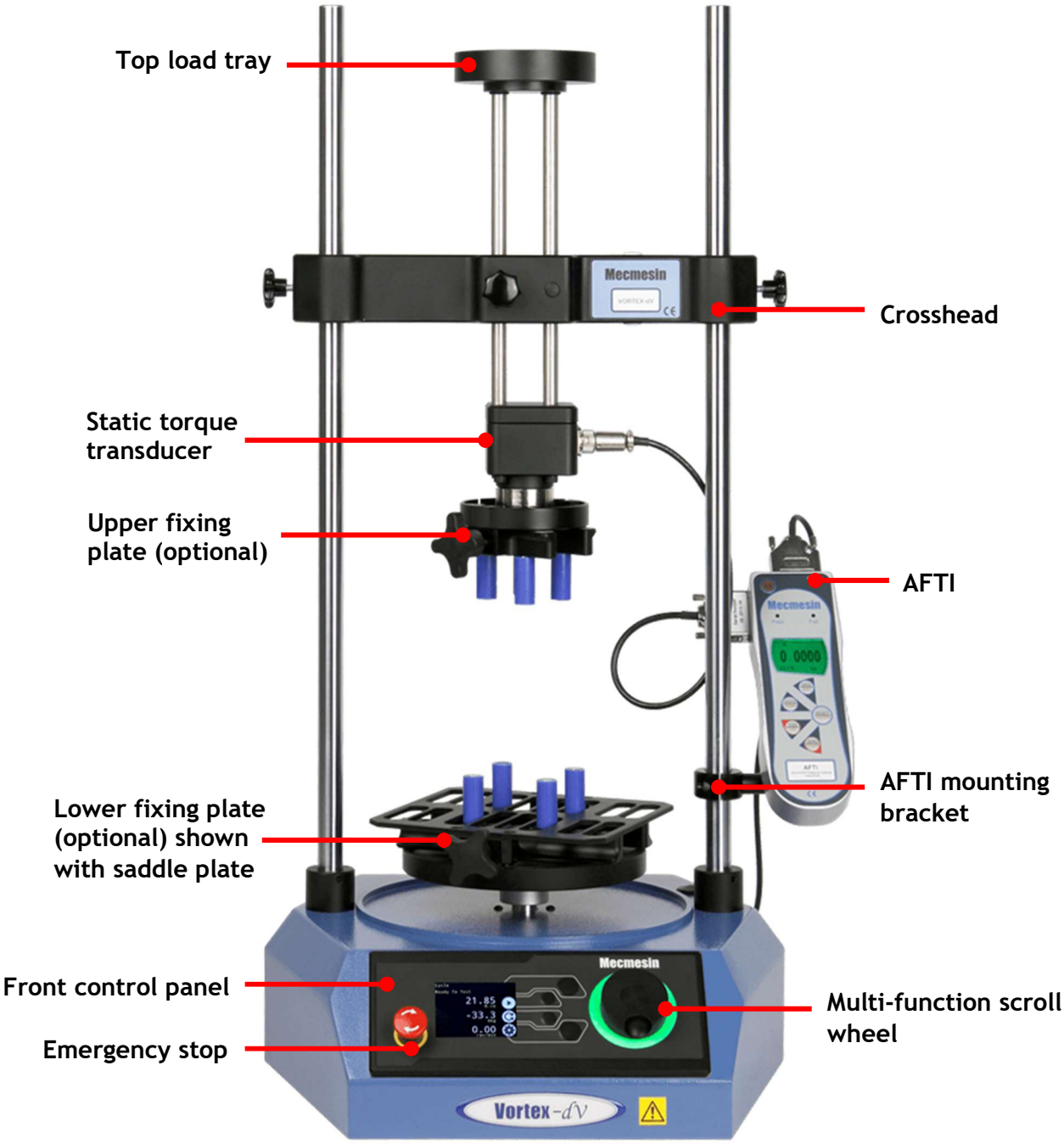
- Vortex-*dV* test stand complete with a pre-selected torque transducer (1.5, 3, 6, or 10 N.m),
- AFTI gauge bracket (for fitting an AFTI torque indicator to the column),
- Allen key for tightening crosshead to gauge bracket,
- Mains cable,
- Document: A Guide to Safe Use of Mecmesin Mains Powered Test Systems,
- Document: Vortex-*dV* Motorised Torque Testing System, Operating Manual,

Available Accessories

For a full range of digital force gauges and accessories, please go to the Mecmesin website www.mecmesin.com, or your local distributor, as listed on the back cover.

- When using Mecmesin VectorPro™ Lite software, use communications cable part no. 351-093 to connect the stand to MS-Windows computer,
- Use communications cable part no. 351-092 to connect the Mecmesin Advanced Force and Torque Indicator (AFTI) to the Vortex-*dV*.

2. Vortex-*dV* System Diagram



3. Initial Setup

3.1. Unpacking the Test Stand

When you first receive the stand, please check that there is no visible damage to the packaging. If there is any sign that the packaging or the test stand itself has been damaged, please contact Mecmesin or your authorised distributor immediately. Do not use the stand until you have done so.

We strongly recommend that the packaging is retained, as this can be useful if the machine needs to be returned for calibration.

Section 1 lists items that should be included with your test stand. Please contact Mecmesin or your authorised distributor if any items are missing or damaged.

3.2. Lifting the Test Stand

The unpackaged weight of the test stand is given in the Specification table at the back of this manual. Do not try to lift heavy loads unaided. Use suitable lifting equipment if necessary.

3.3. Environment Conditions

In line with BS EN 61010-1 it is recommended that your Mecmesin Vortex-*dV* test stand is operated in an environment that matches the following conditions:

- Indoor use only, recommended to be operated in a lab environment.
- Altitude up to 2 000 m,
- Temperature range between 10 °C to 35 °C. Please note that the instrument should not be used for long durations at higher temperatures.
- The maximum relative humidity is 80 % for temperatures up to 31 °C decreasing linearly to 50 % at 40 °C. It is crucial that the surrounding environment does not cause water to form on the device.
- Mains supply voltage fluctuations up to a maximum of ±10 % of the nominal voltage.
- The environments should also take considerations of excessive dust or metal particulates as ingress of these into the device can cause damage to the system.

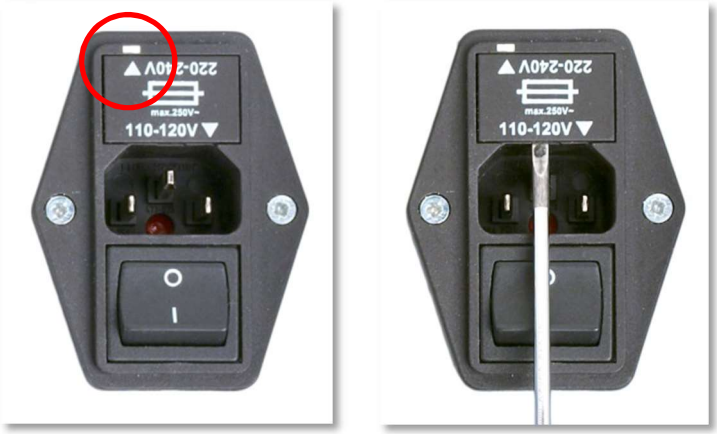
3.4. Locating the Stand

The test stand should be positioned on a suitable, level, stable work surface.

3.5. Mains Power Supply

Vortex-*dV* test stands can be used on 110–120 or 220–240 Vac 50-60 Hz supplies. The rear fuse carrier is set for your local requirement but is reversible, so should you replace a fuse, the correct local voltage must be selected.

The voltage that is selected is indicated by which the arrow is pointing to the white line located at the bottom of the device. This is illustrated in the image below, shown within the red circle:



▲ **Removing the fuse holder**

3.6. Fuse Specification

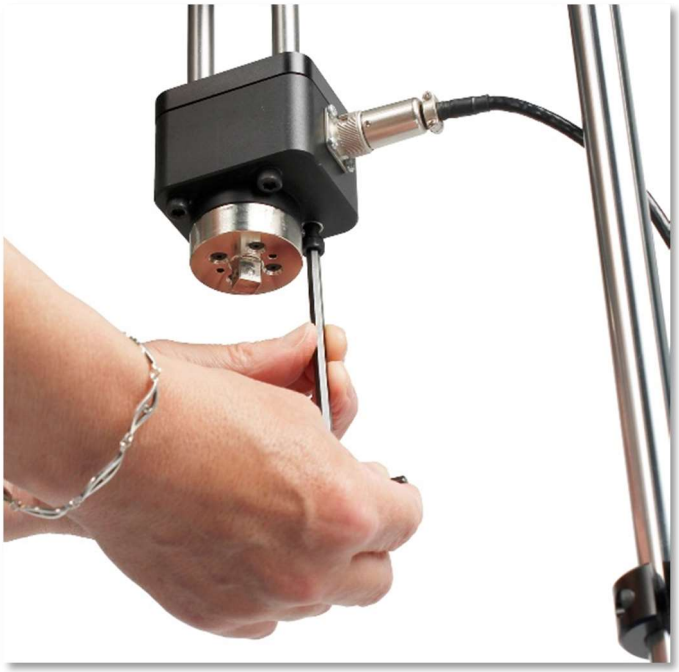
A Vortex-*dV* test stand uses two 2A - Speed T, 5 x 20mm fuses. If replacing a blown fuse only replace the fuse on the active side of the inlet filter with the fuse specified above, or equivalent.

If you are in doubt, please contact your local Mecmesin support agent for more information.

3.7. Attaching the Torque Sensor

The torque cell attaches to the crosshead using the four supplied M6 caphead screws. To fit the torque cell, first, ensure that the cable exit is towards the side that you plan to fit the AFTI.

Then, align the transducer with the mounting plate and secure using one the M6 bolts, if needed have one person hold the transducer while the other fits the screws. Make sure the transducer is seated centrally before fulling tightening all of the screws.



▲ **Tightening the four M6 screws to secure the transducer**

Note: Take care when handling lower capacity torque transducers, as damage can occur from mishandling.

It is also essential to ensure that the attached grips and fixtures cannot cause excess leverage on the torque transducer or exhibit excessive axial load on the transducer.

3.8. Fitting the AFTI Torque Indicator

The AFTI can be fitted to either the left or right-hand of the test stand, but it is important to ensure that the cable coming from the transducer points to the side that the gauge is mounted, as this prevents any unnecessary kinking.

The fixing bracket can be easily fitted, adjusted or removed and transferred to the opposite column using a 4 mm Allen key to loosen the retention screws.

▲ Fitting the AFTI bracket using a 4mm Allen key

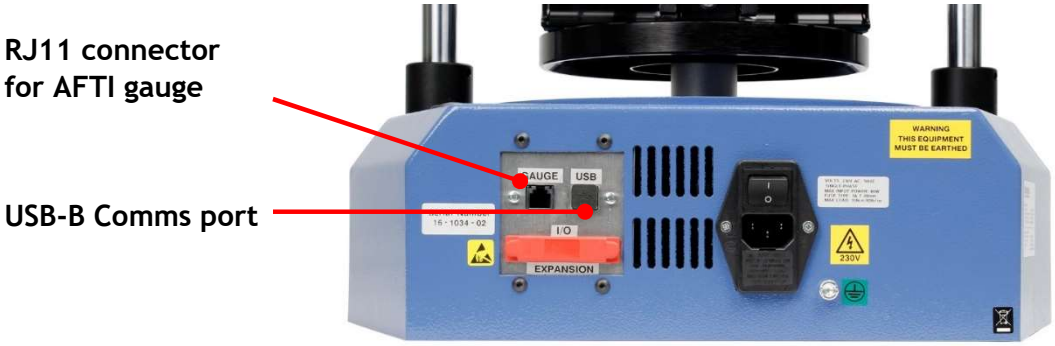
To fit the AFTI to the bracket use the two supplied screws. These pass through the bracket into the back of the gauge and are secured using a 4mm Allen key. The angle the AFTI sits at can be adjusted by loosening the screw located on the side of the bracket.

▲ The left-hand image shows the AFTI being secured to the bracket, while the image on the right shows how to adjust the angle of the AFTI.

Connecting the AFTI and the Vortex-*dV*

First, connect the transducer to the side port of the AFTI, using the cable from the transducer.

Connect the top port of the AFTI to the RJ11 port marked 'Gauge' on the back of the Vortex-*dV*, using the supplied cable, part no. 351-092. This cable enables AFTI torque control testing and passes the torque readings to the Vortex-*dV*.



▲ **Rear view of Vortex-*dV***

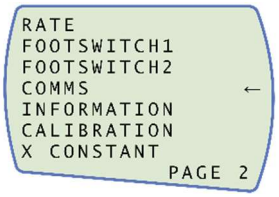
Note: The gauge can also be run from its power supply rather than internal batteries.

AFTI Communication Settings

To achieve communication between your Vortex–*dV* test system and your AFTI gauge you need to apply the correct settings within the AFTI's communication menu (BAUD rate must be 115200). Use the following steps to configure the AFTI:

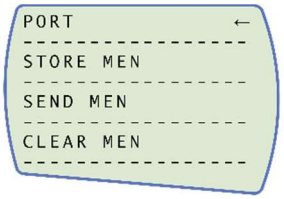
1. Hold UNITS/MENU on the AFTI until the main menu is displayed →

2. Press UNITS/MENU once until you are on page 2 →



3. Scroll down using the ZERO/DOWN button, then RESET/ENTER press to select the "COMMS" menu →

4. Now press RESET/ENTER on port →



5. Set TX Units On press RESET/ENTER →

```
TX UNITS
----------------
OFF
----------------
ON              ←
----------------

----------------
```

6. Set TX Sign On press RESET/ENTER →

```
TX SIGN
----------------
OFF
----------------
ON              ←
----------------

----------------
```

7. Set 115200, press RESET/ENTER →

```
9600
----------------
19200
----------------
57600
----------------
115200          ←
----------------
```

8. Set CR LF press RESET/ENTER →

```
NULL
----------------
CR
----------------
LF
----------------
CR LF           ←
----------------
```

9. Ensure the line delay is set to 0 press RESET/ENTER →

```
LINE DELAY
----------------
SECONDS: 0
----------------

----------------

----------------
```

10. Ensure TX threshold is set to 0 press RESET/ENTER →

```
TX THRESHOLD
----------------
SET%      0
----------------

----------------

----------------
```

11. Set RS232 press RESET/ENTER →

```
RS232           ←
----------------
DIGIMATIC
----------------
DUAL
----------------

----------------
```

12. Then press MAX/ESC twice to return to the primary measurement screen.

Note: If using the stand in conjunction with VectorPro please ensure that the units selected on the gauge match the unit selected within the software.

3.9. Connect the Test Stand to a PC (VectorPro™ Users Only)

If you are using VectorPro software, connect the USB B port, located on the test stand, to a PC using cable part no. 351-093.

Important! Please install VectorPro software on your desired PC before connecting the test stand to your computer. Once the software is installed and the stand is connected, the stand will show as connected. This is shown in the image to the left.

Cable Management

It is essential that no cables interfere with the controls or any moving parts. Failure to do so could lead to injury or damage to the equipment.

3.10. Attaching Grips and Fixtures

The most commonly-used upper fixture used is the 100 mm upper fixing plate with a diameter capacity of 10 mm to 78 mm. This is fixed to the adaptor on the torque transducer using a 2.5 mm Allen key to secure the four countersunk screws supplied.

The fixture can also be quickly removed using the two grub screws in the adapter, accessed through slots in the sides of the fixing plate, as shown below.

The most commonly-used lower fixture is the 188 mm diameter lower fixing plate with a diameter capacity of 10 mm to 190 mm. This is fixed to the Vortex-*dV* spindle using a 2.5 mm Allen key to secure the four countersunk screws supplied.

A range of other torque testing fixtures is available, including saddle plates that help support samples in the fixing plates, longer grip fingers, mandrels, and chucks.

Important! Take care not to apply excess torque on the transducer when securing the fixtures.

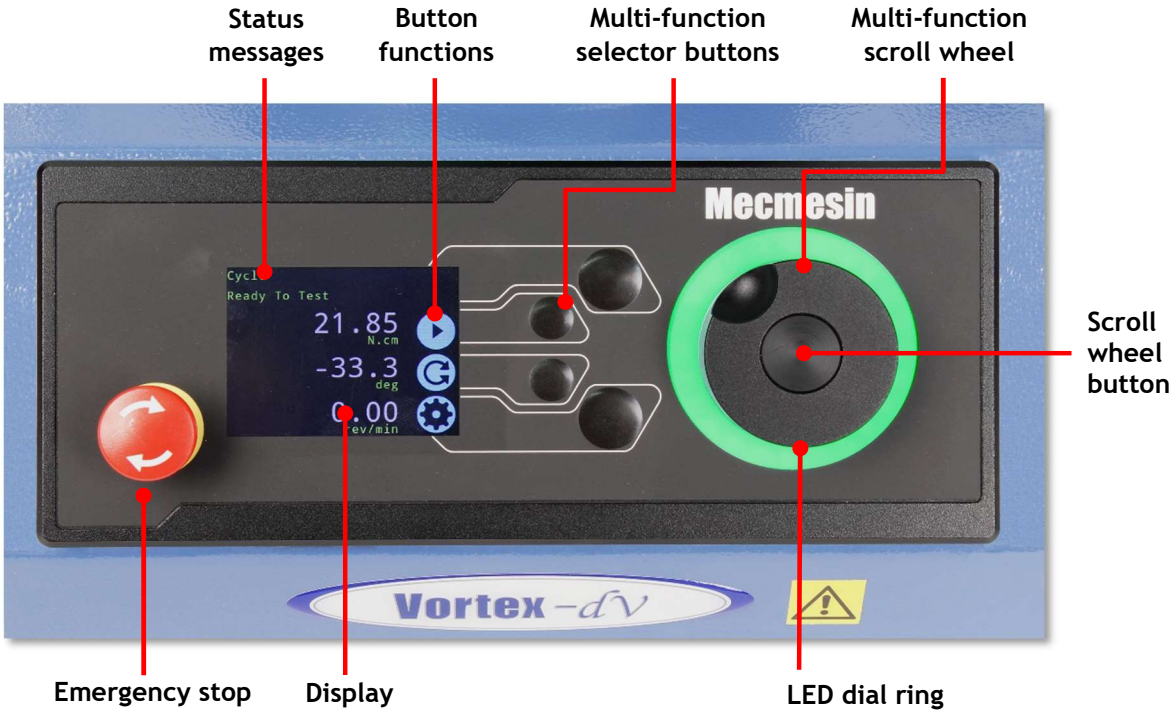
3.11. Test Stand States

The test stand can be in one of five states:

1. **Test readiness** - ready to start, or complete,
2. **Testing –** test operation sequence is running,
3. **Stopped** - test interrupted or emergency stop pressed,
4. **Jog mode** - for jogging or positioning the crosshead manually,
5. **Settings menu –** for adjusting your test stands settings,

In each state, the selector buttons have functions described by the on-screen icons.

4. Front Panel Controls



Emergency Stop Button

Push to stop the spindle movement. Rotate the button to release it and resume spindle control. If pressed during a test, do not simply restart a test, ensure you remove any residual torque using the test stand's jog controls.

Dial control

The lights

The lights surrounding the wheel illuminate in three colours, indicating the status of the test stand:

Green Light

Pulsating: Ready to start test
Rotating: Scrolling through a menu

Amber Light

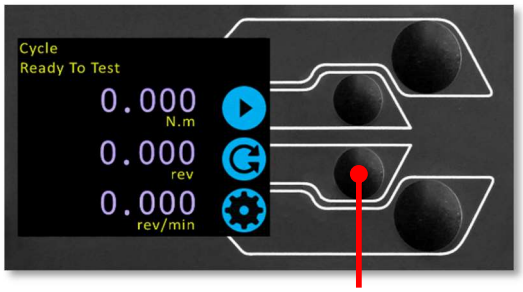
Static: Test completed
Rotating: Spindle moving

Red Light

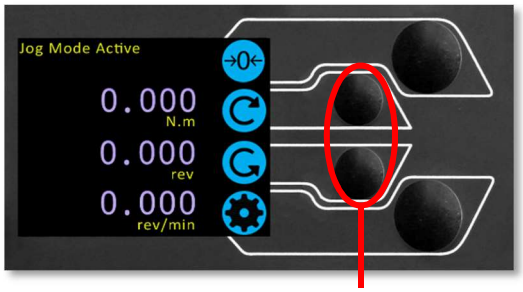
Static: Test stopped/limit triggered

The wheel

When in jog mode the wheel drives the Vortex-dV clockwise or anticlockwise, matching the direction the wheel is turned. This method offers more variable control when compared to the two fixed-speed jog control buttons (circled in red below).



Enter jog mode



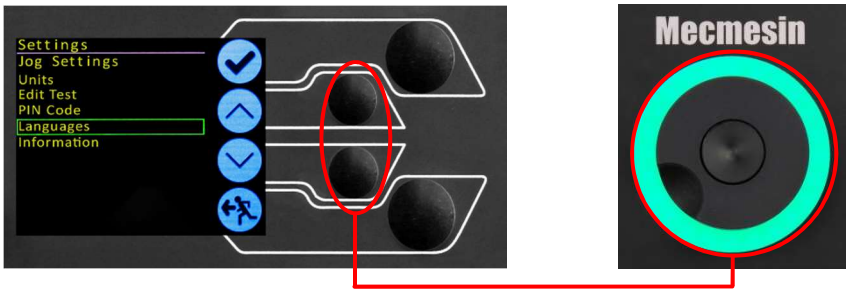
Jog control buttons

The scroll wheel can also be used as a speed controller. The jog buttons move the spindle at the set speeds (configured in the 'Jog Settings' menu picture below). Rotating the wheel clockwise while holding a jog button increases the speed and rotating the wheel anticlockwise while holding a jog button decreases the speed

Vortex-*dV* test stands also feature a precision jog mode, rotating the scroll wheel while holding the central scroll wheel button moves the test stand at its minimum speed; this is useful when fitting specimens into grips for example.

Navigational Control

The scroll wheel can also be used to navigate the menus. When in a selection menu, the scroll wheel cycles through the selections and their values. This is an alternate navigational option to using the up and down arrow buttons.



Menu: operates with buttons or wheel

The button

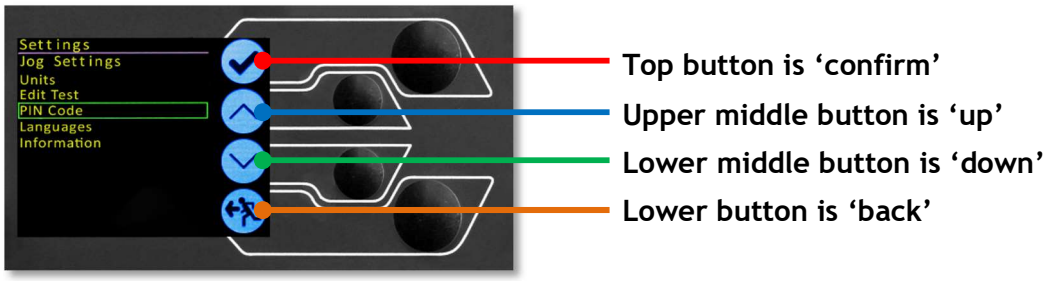
The central button is used to confirm a menu selection. It is equivalent to the tick button.

It can also be used to activate fine jog control, by rotating the scroll wheel while holding the central scroll wheel button moves the test stand at its minimum speed.

Vortex-dV Display Panel

The display indicates the stand's status, displays live values and is used to configure the test stands settings.

The purpose of the four multi-function button is indicated on screen by an adjacent icon. Below is an image showing a typical example of the on-screen icons in relation to the physical buttons.



On-Screen Icons

On-screen icons vary depending on the current state of the test stand and what functions the physical buttons perform at that point. Below are reference tables to help explain the icon definitions, in relation to the test stand state.

1. Test Readiness

Icon	Action
	No AFTI connected.
	Start test sequence.
	Go to jog mode.
	Go to settings.

2. Testing

Icon	Action
	Pause test: This stops spindle movement, leaving the stand in a state of test readiness. The message is 'Interrupted: User' and the play button is displayed as well as the stop button.
	Emergency stop button pushed: Message: 'Emergency Stop!!!'. Release the emergency stop to regain control and remedy the situation before resuming testing. Note there is no on-screen icon for the emergency stop.

3. Stopped

Icon	Action
	Continue test sequence.
	Stop test: This ends the test at this point
	Move to the home position (start position from the beginning of the previous test). This icon is only visible after pressing the stop
	Exit to the test ready screen, leaving the spindle in its current position.

4. Jog Mode

Icon	Action
	Zero (tare) all system values.
	Rotate the Vortex-dV clockwise at the set jog speed.
	Rotate the Vortex-dV anticlockwise at the set jog speed.
	Go back to the previous screen.

5. Settings Menu

Icon	Action
	Confirm selection (or press the scroll wheel button).
	Navigate up a menu selection or value (or turn the wheel clockwise).
	Navigate down a menu selection or value (or turn the wheel anticlockwise).
	Go back to the previous screen.

5. Vortex-dV Settings

Settings: Jog settings

Within the jog settings menu, you can configure the jog speed limits while in jog mode. Below is a detailed breakdown of each setting and the options available for each setting.

Setting	Action	Range
Clockwise Speed	Configure the jog speed in a clockwise direction	0.1 to 30 rev/min
Anticlockwise Speed	Configure the jog speed in an anticlockwise direction	0.1 to 30 rev/min
Clockwise Limit	Configure the clockwise torque limit while in jog mode	0 to 10 N.m
Anticlockwise Limit	Configure the anticlockwise torque limit while in jog mode	0 to 10 N.m
Tare AFTI	Configure whether or not the AFTI is tared when pressing the tare button in jog mode.	Yes or No

Settings: Units

Within the units menu, you can configure the test stands units for displacement and speed. Torque settings are configured using the AFTI.

Setting	Units Available
Angle	rev, deg
Speed	rev/min, rev/sec, deg/min, deg/sec
Torque	N.m, N.cm, mN.m, gf.cm, kgf.cm, kgf.m, lbf.ft, lbf.in, ozf.in

Settings: Edit Test

Important

For more information relating to 'Start Direction' and 'Move to Start', please see **Vortex-*dV* Operation Sequence and Move to Start.**

Cycle (by Angular Displacement)

In a cyclic test, the spindle moves between two reference angles that are relative to tared zero.

Setting	Options
Cycle Count	0-8000
Clockwise Speed	0-30rev/min
Anticlockwise Speed	0-30rev/min
Clockwise Angle	A positive value is clockwise from tared zero and a negative value is below
Anticlockwise Angle	A positive value is clockwise from tared zero and a negative value is below
Start Direction	Choose whether the test direction is clockwise or anticlockwise
Move to Start	Select if the test moves to the start position first

Example

- **Clockwise Angle:** +1000˚
- **Anticlockwise Angle** -30˚
- **Initial stroke:** Clockwise
- **Move to Start:** Yes

Unless already at -30˚ the spindle will first travel to that point. The stand will then move to +1000˚ from tared zero, followed by a final movement back to -30˚.

AFTI Control/Torque Control

The AFTI control test operation consists of two main functions:

- **AFTI Control -** Control of the test stand using the AFTI's limit or break settings,
- **Torque Control -** Control of the test stand using the front panel to program limit, break or cycle settings,

Within AFTI Control/Torque Control there are four subtests:

Sub-Test	Description
AFTI Control	Move in a set direction until a torque limit or break condition is hit and then stop. Configured using the AFTI.
Torque Limit	Move in the configured direction until a torque limit is hit and then stop. Configured using the front panel.
Torque Cycle	Cycle between a limit torque and a return torque. Configured using the front panel.
Break	Move in the configured direction until a break condition is detected. Configured using the front panel.

AFTI Control Test

With an additional cable (351-092), a Mecmesin AFTI gauge can be used to set torque limits to control stand movement.

Torque setpoint, action (reverse/stop) are all set on the gauge under the 'STAND' menu. Here you can select the action when the limit is reached; 'REVERSE' or 'STOP' and the type of control limit 'BREAK' or 'LIMIT'.

Please note for cyclic tests the front panel torque control must be used. AFTI cycling is not compatible with Vortex-*dV* test stands

Example Test Setup

1. On the test stand's front panel under 'Edit Test' select the test type 'AFTI Control' and sub-type 'AFTI Control',

2. Configure the speed and direction settings located within the 'Edit Test' menu,

3. On the AFTI gauge hold

4. On page one of the AFTI menus select 'STAND' using RESET ENTER the button,

5. Next select the action when the limit is hit, either 'REVERSE' or 'STOP'. For reverse you need to select the reverse direction either 'UP' or 'DOWN',

6. Once the action has been selected configure the limit control. This limit can be either a 'BREAK' condition or torque 'LIMIT'. For 'BREAK' set the break threshold, for 'LIMIT' select the limit torque,

Torque Control Test – Torque Limit, Torque Cycle and Move to Break

Torque control tests can be used to set torque limits or a break condition to control stand movement. Within the three sub-tests (Torque Limit, Torque Cycle and Move to Break) the following settings are available, please note some of the settings are specific to the test type:

Setting	Options
Up Speed	0-30 rev/min
Down Speed	0-30 rev/min
Start Direction	Choose whether the test direction is clockwise or anticlockwise.
Test Sub-Type	Select the test sub-type (Options are listed above).
Limit Torque	**Limit and Cyclic Tests Only -** Enter the target torque for the test.
Return Torque	**Cyclic Tests Only -** Enter the start torque for the test
Cycle Count	**Cyclic Tests Only -** Enter the number of cycles to be completed
Break Threshold	Enter the break threshold (percentage of the torque cells capacity that the test value needs to be above for a break condition to be detected).

Examples

Torque Limit

- **Speed:** 5 rev/min
- **Start Direction:** Anticlockwise
- **Test Sub-Type:** Torque Limit
- **Limit Torque:** 5 N.m

The stand moves anticlockwise at 5 rev/min until the applied torque is 5 N.m from tared zero, once the limit torque is reached the test stops.

Torque Cycle

- **Clockwise Speed:** 10 rev/min
- **Anticlockwise Speed:** 20 rev/min
- **Start Direction:** Clockwise
- **Test Sub-Type:** Torque Cycle
- **Limit Torque:** 2 N.m
- **Return Torque:** 0.5 N.m
- **Cycle Count:** 10

The stand moves clockwise at 10 rev/min until the applied torque is 2 N.m from tared zero. Once the limit torque is reached the stand moves anticlockwise at 20 rev/min until a torque of 0.5 N.m is reached, this cycle repeats 10 times at which point the test stops.

Break

- **Clockwise Speed:** 2 rev/min
- **Anticlockwise Speed:** 30 rev/min
- **Start Direction:** Clockwise
- **Test Sub-Type:** Break
- **Break Threshold:** 5 %

The stand moves clockwise at 2 rev/min until a break condition is detected. The break event must also occur above 5% of the connected torque cell's capacity.

Data Capture within VectorPro™

To use AFTI Control/Torque Control tests in conjunction with VectorPro first program the test settings using the stand's front panel and/or AFTI and then create a VectorPro test using the AFTI/Torque control operation, ensuring the speed and test orientation match your configuration.

Please note the speed and test direction use the settings configured within VectorPro, while other test settings are loaded from the front panel. For more information please refer to the VectorPro user manual, part no. 431-955.

> At the end of a test, or in a stopped condition, you may need to move the crosshead to clear a sample, or the drive spindle to remove a torque.
>
> Never restart a test from a stopped condition with a residual torque, and always Reset the gauge before a subsequent test.

If the AFTI is switched off or loses power during an active test in AFTI Control mode, the drive spindle will stop.

Half Cycle

A half-cycle test is to an angular displacement relative to tared zero. A cycle starts when the crosshead is at the first displacement position and ends back at the second position.

Setting	Options
Cycle Count	0-8000
Clockwise Speed	0-30rev/min
Anticlockwise Speed	0-30rev/min
Clockwise Angle	A positive value is clockwise from tared zero and a negative value is below
Anticlockwise Angle	A positive value is clockwise from tared zero and a negative value is below
Start Direction	Choose whether the test direction is clockwise or anticlockwise
Move to Start	Select if the test moves to the start position first

Example

- **Clockwise Angle:** +180˚
- **Anticlockwise Angle** -90˚
- **Initial stroke:** Clockwise
- **Move to Start:** Yes

Unless already at -90˚ from tared zero, the spindle will travel to that point and then move to +180˚ from tared zero, and stop.

Vortex-*dV* Operation Sequence and Move to Start

Vortex-*dV* operations, such as the half cycle consist of two datum points, a clockwise angle and anticlockwise angle.

For operations with the primary movement being clockwise, the following is true:

- The 'Anticlockwise Angle' is the start position for the test and the 'Clockwise Angle' is the finishing position.

For operations with the primary movement being anticlockwise, the following is true:

- The 'Clockwise Angle' is the start position for the test and the 'Anticlockwise Angle' is the finishing position.

Within the 'Edit Test' display on your test stands front panel there is an option called 'Move to Start', setting this feature to 'Yes' means that the stand always moves to the start position.

In some instances, this means the first direction of movement is opposite to the primary test movement. Jog settings

Settings: PIN Code

Within the PIN code menu, it is possible to set a four-digit number that can be used to lock the menu feature of your Vortex-*dV*. Please note once this has been set you cannot access the menu without the PIN, so it is crucial that you keep a record of this safe. If the PIN code has been set and then lost or is unknown, please contact your local agent or Mecmesin Technical Support

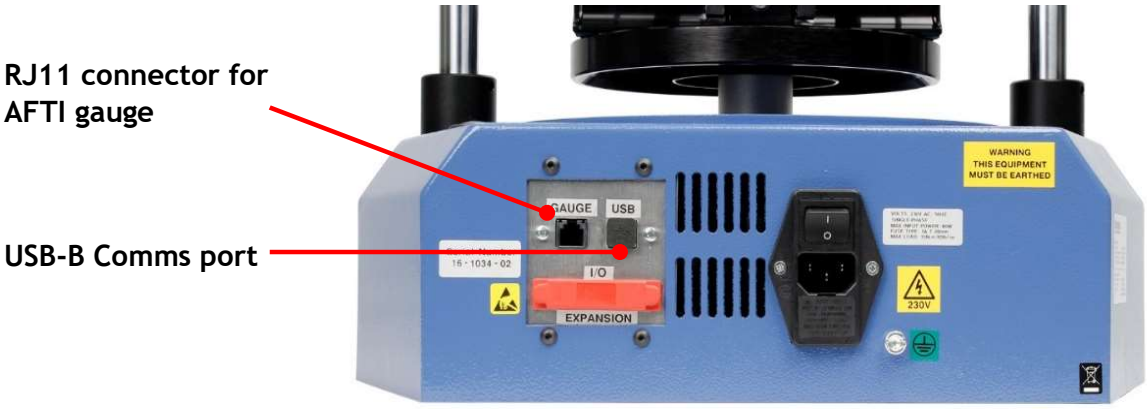
Settings: Languages

Select your desired language. Upon confirmation, you are returned to the settings menu in the language chosen.

Settings: Information

This screen is used to display vital information relating to your Vortex-*dV* and connected devices. Here you can see hardware and firmware properties.

6. Rear Connectors Panel

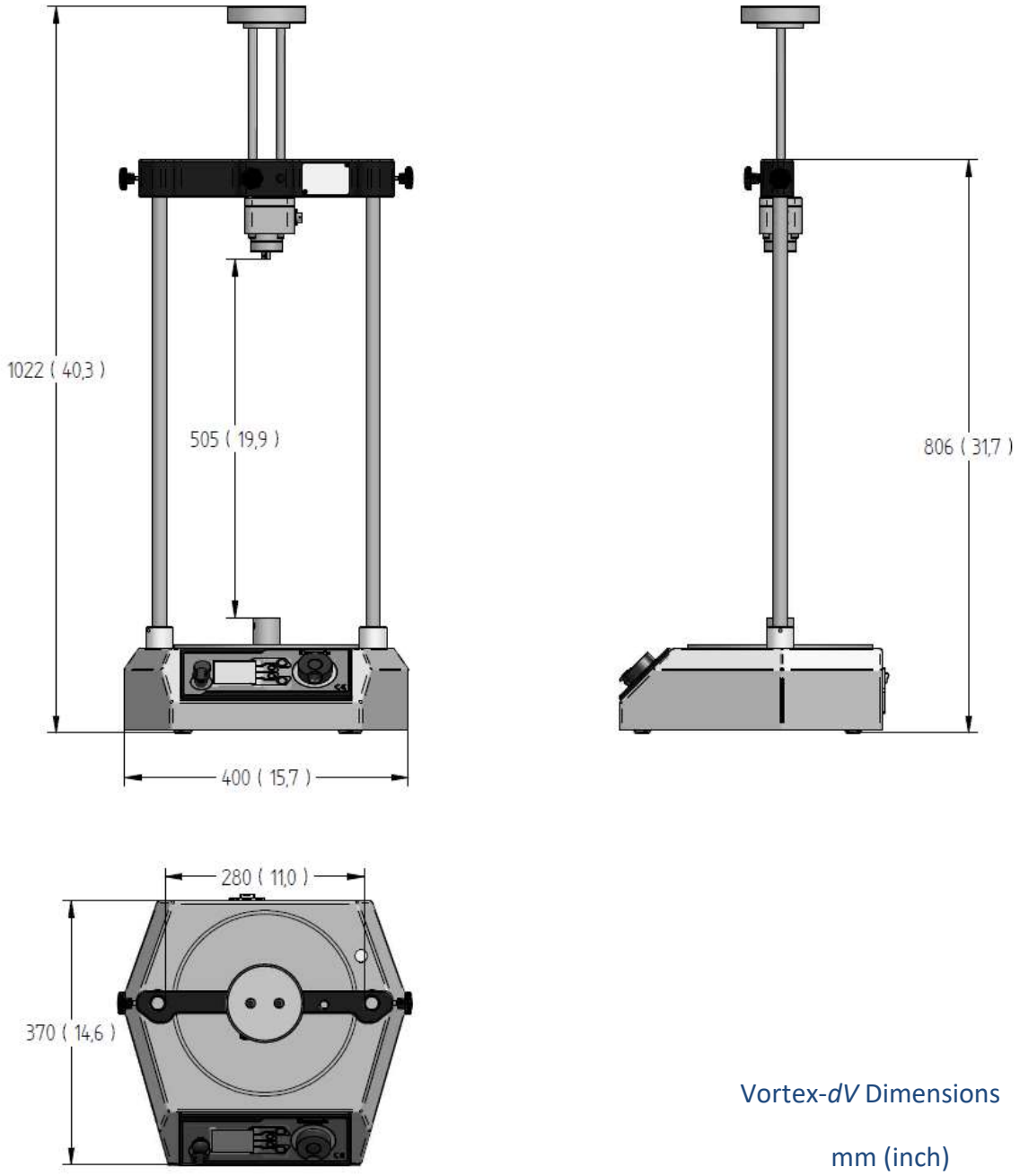


7. Vortex-*dV* Specification

Vortex-dV					
Rated capacity kN	N.m	0-1.5	0-3.0	0-6.0	0-10.0
	kgf.cm	0-15	0-30	0-60	0-100
	lbf.in	0-13	0-26	0-52	0-90
Position					
Maximum rotation		8000 revs			
Positional accuracy		0.2° per 36,000°			
Positional resolution		0.1° (0.001 rev)			
Speed					
Speed range	rev/min	0.1 to 30			
Speed accuracy		±0.1% of indicated speed			
Resolution		0.1° (0.001 rev)			
Maximum number of cycles per test		8000			
Dimensions					
Height		781 mm (30.7 ")			
Width		390 mm (13.4")			
Maximum travel of adjustable transducer carriage		182 mm (7.2")			
Maximum headroom		505mm (19.9") [448 mm (17.6")]*			
Weight		19.5 kg (48 lb)			
Capacity of lower mounting table		10 - 190 mm (0.39 - 7.5”)			
Capacity of upper mounting table		10 - 78 mm (0.39 - 3.07”)			
Electrical supply					
Voltage		230 V AC 50 Hz or 110 V AC 60 Hz			
Maximum power requirement		100W			
Torque Measurement					
Torque accuracy		0.5% of full scale			
Torque units		mN.m, N.m, kgf.cm, lbf.in, ozf.in (as per AFTI)			
Environment specification					
Operating temperature		10°C - 35°C (50°F - 95°F)			
Operating relative humidity		Normal Industry and laboratory conditions. (30% to 80% non-condensing)			
Display & Data Output					
Front Panel Display Indication		Load / Displacement / Speed			
Output of Test Results	Stand	Via USB (VectorPro™ Software - PDF, XLXS, CSV, TXT, Email and Images)			
	AFG / AFTI	Via Cable (sales@mecmesin.com)			

* With upper and lower mounting tables fitted

8. Vortex-*dV* Dimensions



Vortex-*dV* Dimensions

mm (inch)

9. Declaration of Conformity

Mecmesin Ltd
Newton House
Spring Copse Business Park
Slinfold
West Sussex, RH13 0SZ
United Kingdom

Mecmesin
FORCE & TORQUE TEST SOLUTIONS

Date of Issue 2nd August 2016

EC DECLARATION OF CONFORMITY

We confirm that the Technical Construction Files for the product(s) identified on this certificate comply with the essential safety requirements of the following EU Council directives. Technical documentation to support this is available from the above address.

- Machineries Directive 2006/42/EU
- EMC Directive 2014/30/EU

They were tested to the following standards and other normative documents:

- EN 61000-6-1:2007 Electromagnetic compatibility (EMC). Generic standards.
- EN 61000-4-3:2006 +A2:2010 Electromagnetic compatibility (EMC). Testing and measurement techniques.
- EN 60204-1:2006 +A1:2009 Safety of machinery. Electrical equipment of machines. General requirements
- EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements
- EN 60950-1:2006 +A2:2013 Information technology equipment. Safety. General requirements

Primary Product Name(s): Vortex dV

Derivative Product(s): n/a

Signed on behalf of Mecmesin Ltd

Technical Director: Patrick Collins

CE

Registered in England No. 1302639

431-DoC26-01 L00

10. Change Log

The latest production firmware release for Vortex-*dV* devices is 3.0.10, this section documents the changes at each production firmware release from version 2.0.11 to 3.0.10.

Please note for version numbers not listed below the changes are included with the next version, for example, bug fixes in versions 3.0.4 to 3.0.5 are listed under in 3.0.6.

All releases include performance enhancements and bug fixes to improve the use experience. Not all bug fixes are detailed here.

2.0.12 - New Features

- N/A

2.0.12 - Bug Fixes

- Correction to AFTI Min/Max reset command.

3.0.2 - New Features

- Additional menu item 'Information' screen has been added,
- **Major Feature!** User selectable PIN protection for the test stands menus added,
- **Major Feature!** 'Home' button added to return the stand to the last tared position at the end of the test,
- **Major Feature!** Within the jog settings, you can now to choose whether or not to tare the AFG/AFTI when pressing the stand's tare button,
- **Major Feature!** In the 'Edit Test Settings' menu, the user can select the test start direction and whether or not the stand moves to the start position at the beginning of the test,
- **Major Feature!** On 'AFG/AFTI' controlled tests, the return position will now be the test start position rather than the limit switch position,
- **Major Feature!** AFG/AFTI stand control torque limits now also work in jog mode, this can be used to protect damage to the system while jogging,
- **Major Feature!** You can now use the front panel control to pause, stop or continue the test,
- Swedish language option added,
- Polish language option added.

3.0.2 - Bug Fixes

N/A.

3.0.5 - New Features

- **Major Feature!** Add new command for setting the home position. This is exposed in VectorPro 5.1.2.0,
- The text for the jog settings menu has changed to CW/ACW torque limit,
- Additional AFTI control.

3.0.5 - Bug Fixes

- Jog mode on Vortex-dV is too fast (oversensitive),
- Vortex-dV reverse cycle count issue fixed,
- Corrected inversion of AFTI control signals in AFTI control test.

3.0.6 - New Features

- N/A.

3.0.6 - Bug Fixes

- Fixed issue where overload counts are missing from the device firmware,
- Resolved issue where Vortex dV with firmware 3.0.5.0 only displays increments of 10deg/min.

3.0.7 - New Features

- N/A.

3.0.7 - Bug Fixes

- Fixed issue where the AFTI wasn't tared correctly,
- Test not being terminated by over temperature reading has now been fixed,
- Stand not settling to 0 speed during jog mode,
- Extra zero issue in torque display removed,

3.0.8 - New Features

- **Major Feature!** Torque control tests are now programmed via the front panel (Previously via AFTI).

3.0.8 - Bug Fixes

- Fixed Vortex-*dV* front panel decimal rounding/missing decimal issue,
- Jog oscillation bug has been rectified,
- *dV* firmware 3.0.7.0 rounding/missing decimal in force display.

3.0.10 - New Features

- Force limits for AFTI added to Jog Settings,

3.0.10 - Bug Fixes

- Fixes Stop/Reverse function being ignored if AFTI is not seen as connected
- Fix speed settings not updating in edit test menus
- Fix Load readings frozen in Move to Break test

11. Test Stand Firmware/ Software Compatibility Table

The table below can be used to identify what versions of VectorPro can be used with your test stands firmware.

- To identify the firmware navigate to the information panel within the test stand's settings menu.
- The software version can be identified by clicking the VectorPro icon located in the centre of the top header bar or visually on the main login window.

		Vortex-dV				
		Software Version				
		1.1.0.0 to 2.1.0.0	2.1.0.0 to 2.1.7.0	3.1.0.0	5.1.0.0 to 5.1.8.0	5.2.0.0
Device Firmware Version	2.0.8 or earlier	✓	✓	✗	✗	✗
	2.0.11	✓	✓	✗	✓	✗
	3.0.2	✗	✗	✗	✓	✗
	3.0.3	✗	✗	✗	✓	✗
	3.0.4	✗	✗	✗	✓	✗
	3.0.5	✗	✗	✗	✓	✗
	3.0.6	✗	✗	✗	✓	✗
	3.0.7	✗	✗	✗	✓	✗
	3.0.8	✗	✗	✗	✓	✓
	3.0.10	✗	✗	✗	✓	✓

12. Operator Notes

Mecmesin
testing to perfection

Mecmesin : a world leader in affordable force and torque testing solutions

Since 1977, Mecmesin has assisted thousands of companies achieve enhanced quality control in design and production. The Mecmesin brand represents excellence in accuracy, build, service, and value. In production centres and research labs worldwide, designers, engineers, operators, and quality managers endorse Mecmesin force and torque testing systems for their high performance across countless applications.

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