



M35⁺

Dual Load Capacity
Modular Pull Tester

SPECIFICATIONS

- Pull-out load range: 0-65kN/14,613lbf
 - Max torque: @35kN = 9.8Nm/7.2ft-lbs
@65kN = 18.8Nm/13.9ft-lbs
 - Weight: Tester only: 3.7kg/8.16lbs
Standard kit with Rucksack: 8.7kg/17.6lbs
 - Hydraulic Oil: Light Mineral DTE Type VISCOSITY 32
 - Certification: CE; UKCA
 - Gauge IP Rating: IP54 *
 - Operating temp. range: -10°C to +50°C (14°F to 122°F)
 - Configurable units: kN, lbf
 - Operating voltage: 9V
 - Battery type: Rechargeable **
- * BS EN 60529: 1992 + A2: 2013: Degrees of Protection Provided by Enclosures
 ** Battery model: EBL TB9500, PP3



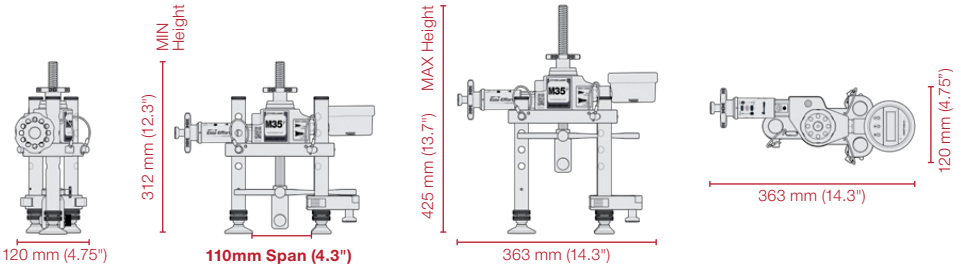
Rechargeable battery MUST be charged before first use. Refer to the 'Hydrajaws Rechargeable Digital Gauge' section for more details.

Bridge Footprint and Tester dimensions

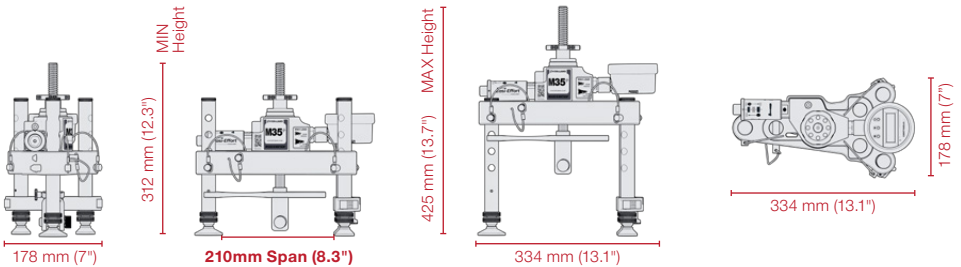
The standard bridge can test most applications up to 35kN (7,868lbf).

Two optional bridges are available for loads up to 65kN (14,613lbf) and allows for greater span and spacing requirements.

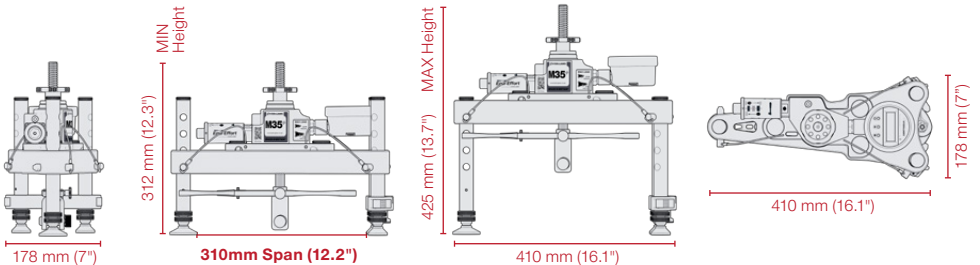
STANDARD BRIDGE



MEDIUM BRIDGE



LARGE BRIDGE



M35+ General Description

The Hydrajaws M35+ Dual Load Capacity Modular Pull Tester is designed for establishing linear loading of mechanical and resin anchors, eye type anchors, threaded bar and structural bolts and fixings to a load of 35kN (7,868lbf) with the standard bridge or maximum 65kN (14,613lbf) with medium or large bridge.

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USE OF THE TESTER AS DIRECTED

The tester is intended for use by skilled personnel with the appropriate training and knowledge of the applicable safety precautions.

SAFETY RULES

- Modification of the tester, or tampering with its parts is not permissible.
- Observe the information printed in the operating instructions applicable to operation care and maintenance.
- The tester and its accessories may present hazards when used incorrectly by untrained personnel or not as directed.
- Use only the genuine Hydrajaws accessories or ancillary equipment listed in the operating instructions.

It is essential that the operating instructions are read before the tester is operated for the first time.



Always keep these operating instructions together with the tester.

Ensure that the operating instructions are with the tester when it is given to other persons.

1. OVERVIEW: M35+ DUAL LOAD MODULAR PULL TESTER

The M35+ is a compact, lightweight, dual load capacity modular digital pull tester designed to test eye bolts and anchors.

Built-in 'Easi-Effort®' technology enables the load to be applied in a effortless and consistent action at high loads.

The standard unit has a load capacity of 35kN (7,868lbf), and by coupling to one of the larger bridges the load capacity is increased to a maximum of 65kN (14,613lbf) with the benefit of an increased span.

The drop rod incorporates a primary clevis adaptor (11) which accepts a bolt test adaptor (13) for use with slotted and threaded button adaptors which are included with the kit. It also accepts the mini-clevis adaptor (12).

The three height adjustable legs (7) offer four height positions 30mm apart. They are held in place with steel ball pins, and the back two legs kept parallel by a brace (10). The brace will extend to allow the legs to fit optional larger bridges.

The swivel feet offer 12mm of usable fine adjustment.

The drop rod handwheel (5) is used to secure and apply a pre-load to the fixing.

The 'Anti-rotation device' (8) prevents the adaptor turning during pre-load.

Load is applied with either the operating handwheel (6) or ratchet driver (16).

The load is displayed by the rechargeable digital gauge (3), and can be recorded by the Hydrajaws Verify App.

Tester lanyard and ratchet tether are included for work at height.



Featuring Easi-Effort® technology, the M35+ can increase testing frequency whilst reducing operator effort.

M35+ Tester Standard Kit Contents



1. M35+ Load Cell
2. 35kN (7,868lbf) Standard Bridge
3. 0-65kN (14,613lbf) Digital Gauge
4. 'Easi-Effort®' Indicator
5. Drop rod handwheel
6. Operating handwheel
7. 3 x height adjustable legs with fully adjustable swivel feet
8. Anti-rotation device
9. 3 x Removable leg caps
10. Leg brace
11. Drop rod with Clevis adaptor
12. Mini Clevis adaptor
13. Bolt test adaptor
14. Slotted adaptors:
(Available in Metric or Imperial, subject to kit)
15. Threaded adaptors:
(Available in Metric or Imperial, subject to kit)
16. Ratchet Driver
17. Ratchet Tether
18. 24mm Single Spanner
19. Rucksack with Foam Filler
20. Operating Instructions
21. Calibration Certificate
22. Tester Lanyard (Not shown)
23. 3mm Ball Driver (Not shown)
24. Gauge Cover (Not shown)
25. USB Charging Cable (Not shown)


Optional items: (Not shown)

Medium Bridge; Large Bridge;
M20 to M24 Hex Adaptor;
M20 to M30 Hex Adaptor;
Leg Extensions



2. GENERAL TESTING PROCEDURE — SET UP

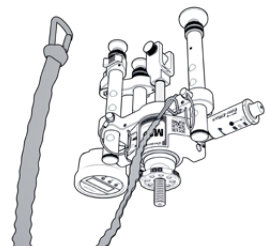
PREPARE FOR TESTING

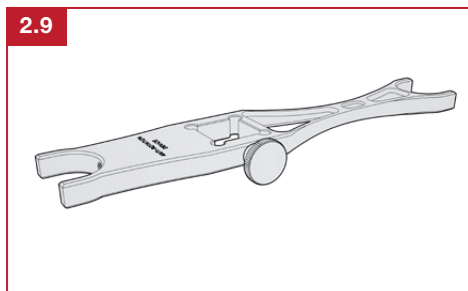
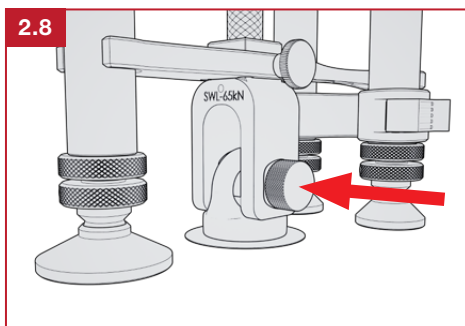
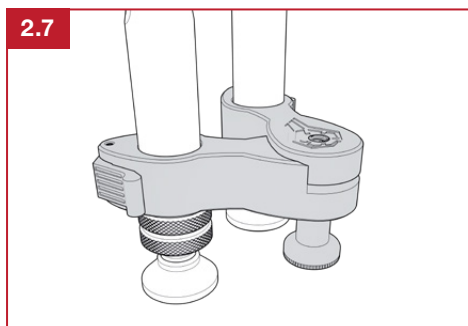
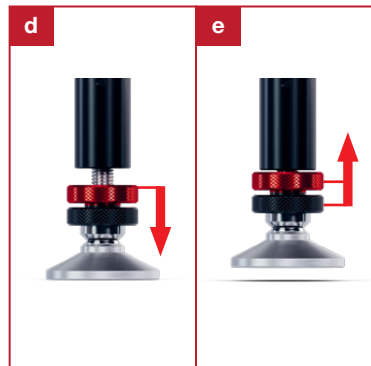
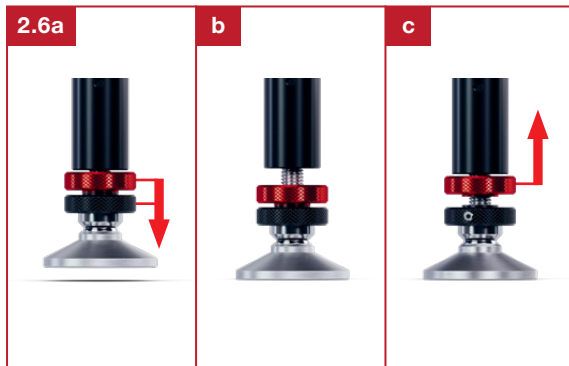
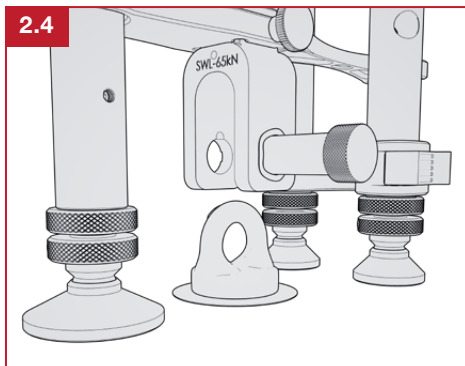
- 2.1 The M35+ is supplied with the standard bridge. If appropriate, secure the M35+ tester to the medium or large bridge (See Section 5 – Modular Bridges)
- 2.2 Ensure that the position of the Operating Nut is at the start position. The window shows  (fig 2.2).
- 2.3 Attach the drop rod with an appropriate adaptor if required (See Section 4 – Adaptors).
- 2.4 Position the tester and bridge over the fixing.
- 2.5 Adjust the length of the adjustable legs so that all three are in contact with the base material and the tester is aligned and level referring to the bubble levels on the bridge.
- 2.6 If required adjust the swivel feet to aid levelling. Start by bringing both adjustment screw wheels (2.6a) down together to the required position (2.6b). Then screw the top wheel back up to lock into place (2.6c).

To undo, screw the top wheel down to meet the bottom wheel (2.6d) then move them both back up together (2.6e).
- 2.7 Always ensure the leg brace is fitted to give the tester stability when under load.
- 2.8 Connect the adaptor to the fixing.
- 2.9 The Anti-rotational device will prevent the adaptor turning around the fixing during pre-loading.
- 2.10 Switch the digital gauge on (see Rechargeable Digital Gauge instructions – Section 6). If using the Hydrajaws VERIFY app, connect it to the gauge.






It is recommended when testing on ceilings (inverted) and/or vertically, that a safety line is attached around the tester body (either through the loop hole or through the middle) and attached to a suitable solid fixing point. This will stop the tester falling and prevent injury to personnel and/or damage to test unit.





3. GENERAL TESTING PROCEDURE — OPERATING THE TESTER

TESTING

- 3.1 Apply a pre-load using the drop rod handwheel until a load of up to 0.4kN (90lbf) is displayed on the gauge.
- 3.2 Commence applying the load to the fixing by using either the operating handwheel (up to 10kN (2,248lbf)) or the ratchet driver in a clockwise direction  and observe the reading on the gauge until the required test load is reached.
- 3.3 Due to the accuracy of the digital gauge, relaxation will occur from the required test load. An allowance of +5% over the required load (ie. 6kN +5%= 6.3kN (1,348lbf +5%= 1,416lbf)) is accepted.
- 3.4 If the reading continues to relax, further investigation of the fixing would be required.
- 3.5 When testing is complete turn the handwheel or ratchet driver anti-clockwise  to the stop position .
- 3.6 If using Verify app it is important to release the pre-load from the drop rod handwheel to enable a zero reading.

3.7 Extra Pre-load (Fixings with more displacement)

Firstly, apply higher load by using the 24mm single spanner on the drop-rod handwheel to the main piston (up to approximately 15kN (3,372lbf)). Then continue testing using the ratchet driver.

By using this method, more working stroke is available by operating the ratchet driver on the slave piston.



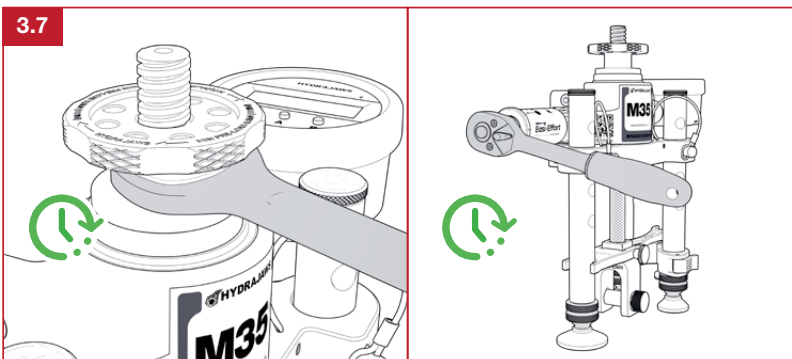
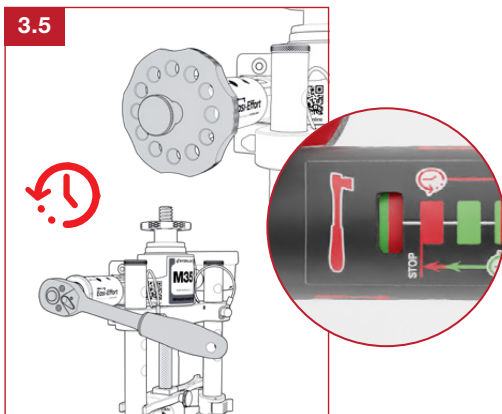
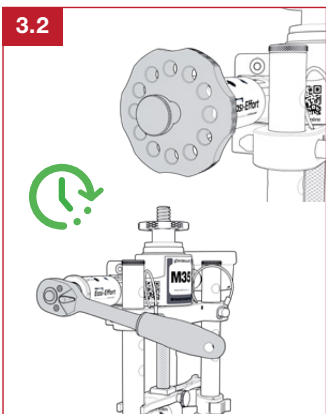
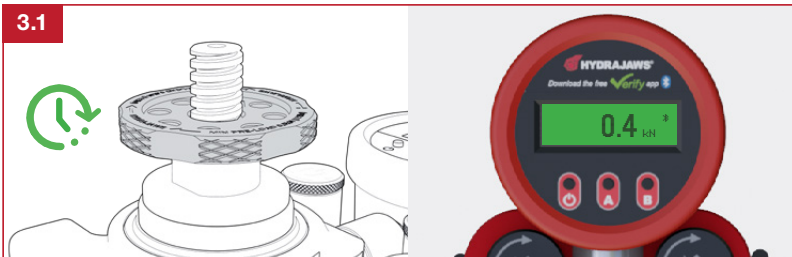
DO NOT CONTINUE TO WIND AGAINST THE STOPS, OTHERWISE DAMAGE MAY OCCUR



When applying load, stop when the window is fully red.



When releasing load, stop when the window is red with a green stripe. Do not wind further past the white line as stated on the inner sleeve.



4. ADAPTORS

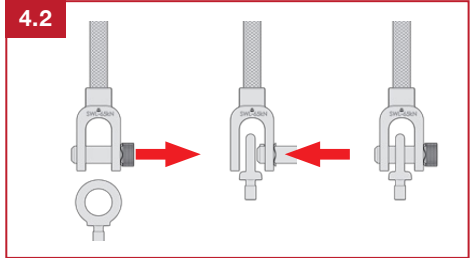
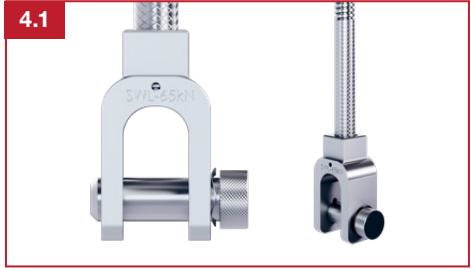
CLEVIS

For testing ring bolts the Clevis adaptor is used.

Turn and release the crosspin from the clevis adaptor.

Press to engage the crosspin through the eye of the anchor and turn it 90° to secure.

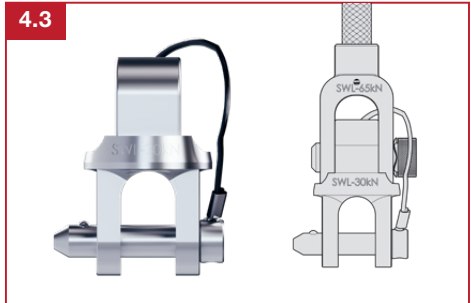
The clevis can be rotated in 90° increments to better engage an anchor (**fig 4.2**).



MINI-CLEVIS

For smaller diameter fall arrest eye bolts, the mini clevis is required.

Affix to the main clevis by attaching it through the large crosspin.



THE HEXAGON ADAPTOR

Suitable for testing sleeve and stud anchors.

To use the optional M24 and M30 hexagon adaptors, first attach the adaptor onto the rod to be tested (**fig 4.8a**).

Then screw on a M20 threaded adaptor on to the thread of the hexagon (**4.8b**), and then offer this in the jaws of the bolt adaptor (**4.9**).



BOLT ADAPTOR

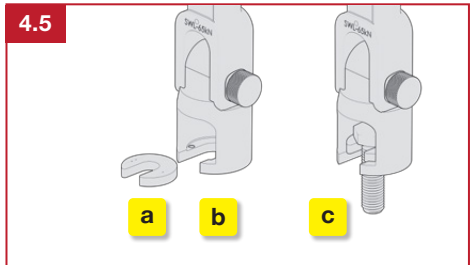
The bolt test adaptor is utilised by attaching it to the clevis through the crosspin.

The bolt test adaptor is used in conjunction with the supplied slotted button and threaded button adaptors, which are easily located into the magnetised adaptor. Larger headed bolts can also be directly located into the adaptor.

Using the bolt test adaptor with the slotted button adaptor

For testing fixings where a connection is made underneath the head of the fixing or anchor the slotted button adaptor is used.

The slotted button adaptor (4.5a) slots into the bolt tester adaptor with the aid of magnets (4.5b) and engages the fixing (4.5c).

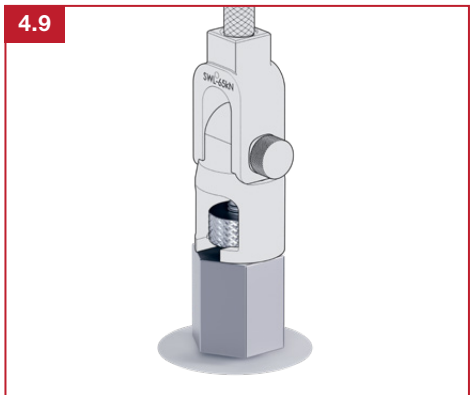
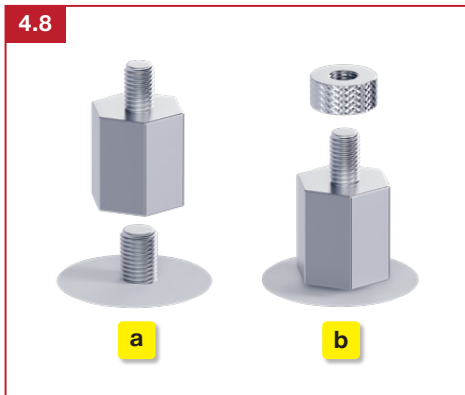
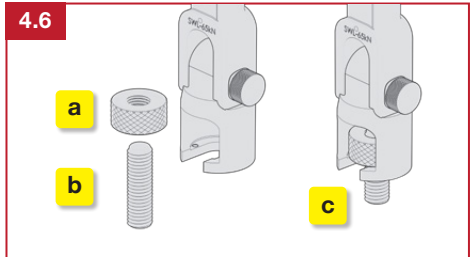


Using the bolt test adaptor with the threaded button adaptor

For testing threaded fixings the threaded button adaptor is used.

The threaded button adaptor (fig 4.6a) threads on to the fixing (4.5b) and then slots into the bolt tester adaptor (4.5c).

Ensure the button adaptor has been threaded enough that the top of the rod is flush with the top of the fixing thread.



5. MODULAR BRIDGES

SELECTING THE CORRECT BRIDGE

The modular nature of the M35+ tester allows the standard unit to be easily extended by utilising the same legs and pins in all three bridge configurations.



The Standard bridge allows for testing up to **35kN (7,868lbf)**. Its footprint allows for a span of **110mm**.



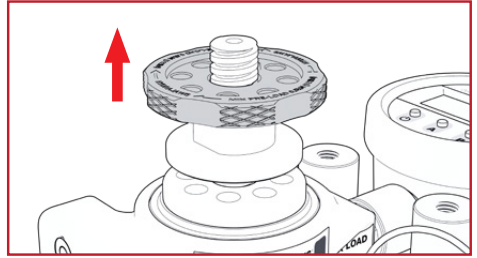
The optional Medium bridge can test up to **65kN (14,613lbf)**, with a span of **210mm**.



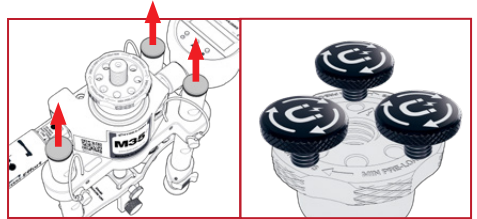
The optional Large bridge can span **310mm** and can test loads of up to **65kN (14,613lbf)**.

To use a larger bridge:

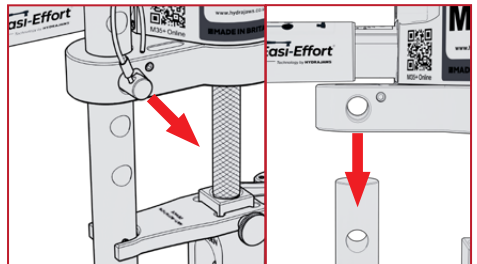
1. Begin by standing the unit on a flat surface. Remove the drop rod handwheel from the drop rod.



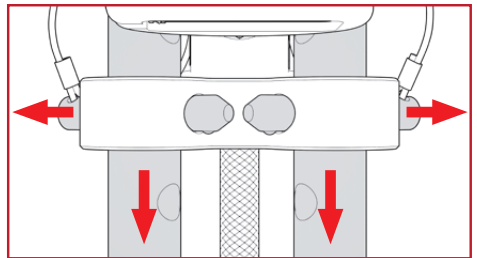
2. Unscrew and release the caps located at the top of the legs. These caps are magnetic and can be conveniently attached to the drop rod handwheel for safekeeping.



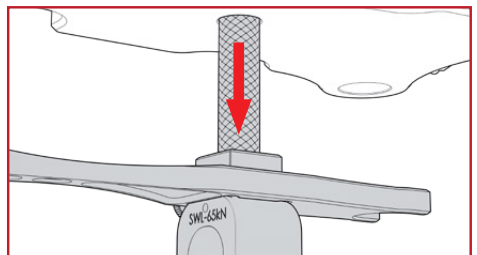
3. Remove single leg pin and slide out leg.



4. Then remove the two remaining leg pins and slide out the legs together.



5. Now slide out the drop rod from the load cell and bridge unit.

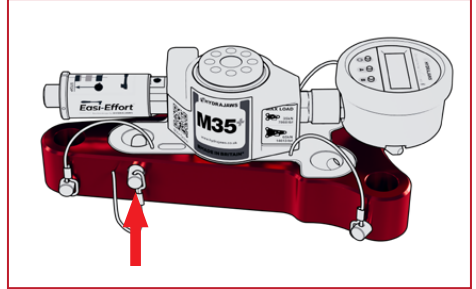


5. MODULAR BRIDGES — *Continued*

6. Slot into your chosen bridge:

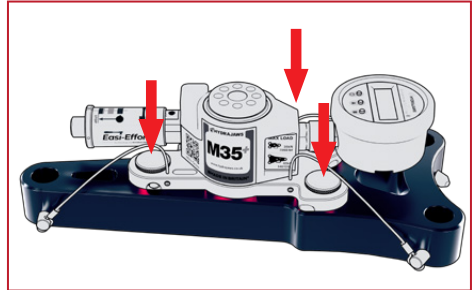
MEDIUM BRIDGE

Position the standard bridge into the slot of the Medium bridge and secure it in place using the bridge retaining pin.

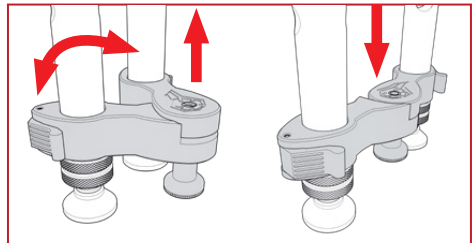


LARGE BRIDGE

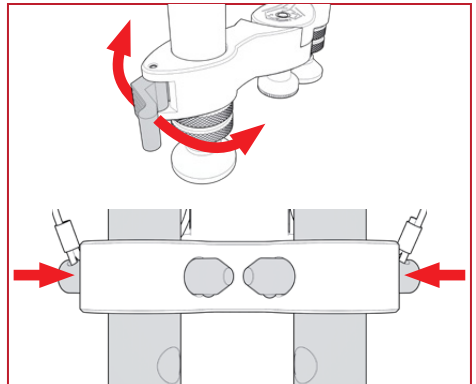
Position the standard bridge into the slot of the Large bridge and secure it in place using the three cap screws that are shipped with the large bridge.



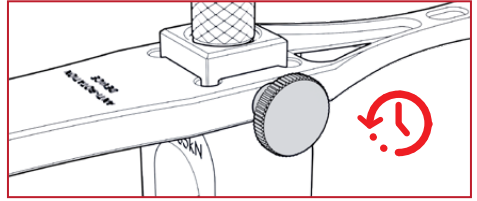
7. Take the two back legs and loosen the thumbscrew on the leg brace. Reposition the two pieces onto the appropriate lug. Tighten the thumbscrew. Then slide the legs into the larger bridge.



8. Unlock the two tabs to release the grip on the legs, rotate the legs until their holes are aligned and locked by their retaining pins, and then lock the leg brace tabs.

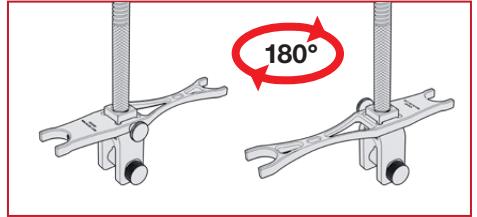


9. Loosen the thumbscrew of the Anti-Rotation Device.



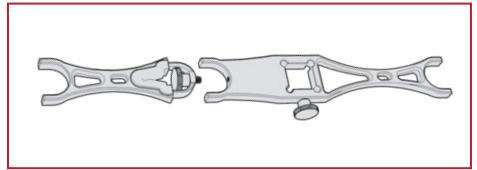
MEDIUM BRIDGE

Rotate the device 180° on the drop rod and re-tighten the thumbscrew. This will brace on to the single front leg when the leg is inserted into the bridge.



LARGE BRIDGE

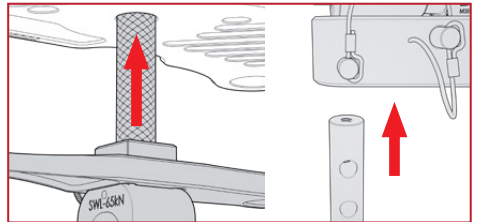
Connect the Anti-rotation device extension as shown. Rotate the device 180° so that it will brace on to the single front leg and re-tighten thumbscrew.



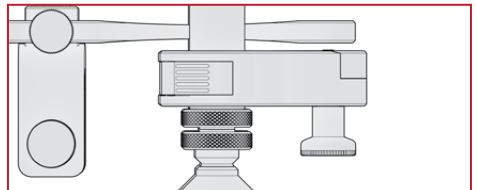
10. Insert the drop rod up through the load cell.

11. Insert the front leg into the larger bridge and fix it to your desired height with its retaining pin.

12. Replace the leg caps on all legs.

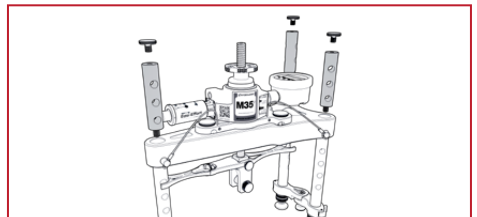


When using the leg brace on the standard bridge ensure that the thumbscrew on the leg brace faces out and down from the centre of the tester, so that it is not in the way of the anti-rotation device.



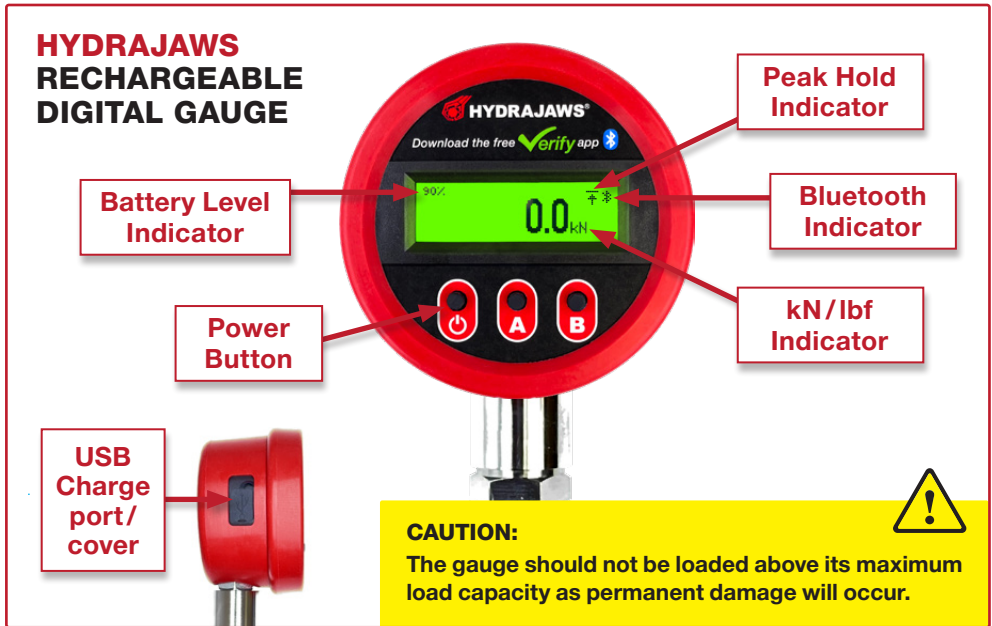
LEG EXTENSIONS

These can be fitted by removing the leg caps from the standard legs and screwing the leg extensions into place. The leg caps can then be screwed on to the top of the extension legs.



6. Hydrajaws Rechargeable Digital Gauge

The Hydrajaws rechargeable digital gauge provides accurate and clear results.



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6.1 OPERATING THE DIGITAL GAUGE

TO OPERATE GAUGE IN 'NORMAL RISE AND FALL' MODE

Press button  to switch gauge on to 'Normal rise and fall mode'.

This will give a load reading, rising as the operating handle on the tester is turned clockwise. By turning the handle anti-clockwise the load will decrease and show the reading decreasing.

Press  to switch off gauge when finished.

TO OPERATE GAUGE IN 'PEAK HOLD' MODE

1. Press button  to switch gauge on.

2. Press  to activate 'Peak Hold' mode.

This will be indicated by an arrow on screen.

Gauge is now in peak hold mode and will display the maximum load achieved and retain this even when the load has decreased.

To turn 'Peak Hold' mode on and off use the  button.



Note: When first turned on, a bluetooth symbol will flash in the right corner of the screen. This is used when connecting to the Hydr jaws Verify App and will stop flashing after 60 seconds.



6.2 ACTIVATING THE BACK LIGHT

Press and HOLD the  button to switch the back light on and off.

To preserve battery life it is recommended the backlight is used only when needed and is switched off when the gauge is not in use.



6.3 TO SWITCH FROM kN TO lbf

Press **B** button to switch between:

kN (Kilo-Newton) and **lbf** (Pound-Force).



6.4 ZEROING THE GAUGE

If the gauge is reading a small amount (0.3 for example) when no load is applied – use the following instructions to re-set the display to zero.

Press and HOLD the **A** button to zero the gauge.



CAUTION: DO NOT ZERO THE GAUGE WHEN IT IS UNDER LOAD

6.5 ACTIVATING BLUETOOTH (To connect to Hydrajaws Verify App)

Press the **Power** button to turn on the gauge. The bluetooth will start – indicated by a flashing bluetooth symbol. This will remain open for connection for 60 seconds.

When connected to a mobile device, the Bluetooth symbol will stop flashing and remain on. See separate Hydrajaws Verify app instructions on how to connect a gauge to the app.

6.6 BATTERY INDICATOR

Indicates in the charge of the battery as a percentage.



6.7 CHARGING THE BATTERY

To charge the battery, remove the port cover at the side of the gauge and insert the lead into the recharging port.



A discharged battery takes approximately 2 hours to fully charge with a 5V 1000 mA rated USB charger.

Always use the USB cable to charge the battery – Do not use a separate lithium battery charging unit.



The LED is **Red** when the battery is charging.



And is **Blue** when the battery is fully charged.



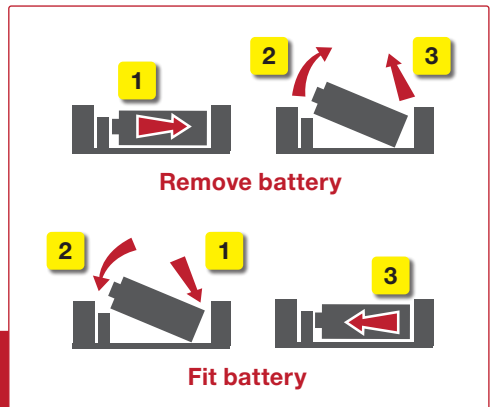
Rechargeable Battery information:
See notes on page 22

6.8 REMOVING AND REFITTING THE BATTERY (if recharging is not possible)

If the rechargeable battery is discharged, and charging is not available – then a standard alkaline 6LR 61 / PP3 9V battery may temporarily be used.

Remove the cover on the back of the gauge using the thumbscrew.

Replace and fit as shown here.



To prevent damage to the contacts, follow the numbered steps as shown

i. HYDRAJAWS VERIFY

Hydrajaws Verify is our digital reporting system which allows on site pull tests to be automatically recorded and compiled into a digital report using our **free Hydrajaws Verify Pro App** on a mobile phone or tablet.



Digitally record all test results and store them safely in the cloud; review data and generate reports

Report from on site

Job details can be set up before going on-site and used again and again to save valuable work time. When on-site a digital report is generated showing all the test data including a pass or fail result, a visual results graph, fixing details, site location co-ordinates, date and time. In addition, any notes and photos taken can be included within the report too. The report is easily emailed directly to your customer or securely stored for future retrieval.

Prove your test results

The app captures and records the digital report and saves it securely to the cloud. The real time data is collected onto an unchangeable and unhackable platform. This system mitigates the risk of someone tampering with the results by providing a fully auditable and transparent data provenance trail that is admissible in a court of law.

PRO or TEAMS: Which one is right for me?



The Verify PRO app is fully featured and free to use with no subscription required. Ideal for single users.



Upgrading to TEAMS allows an administrator to manage your testing by creating and editing clients, sites and tasks centrally, and assign remotely to your team of field testers.

Annual subscription fee applies. Up to 3 users £300 then £125 per additional user up to 10 users. Above 10 users POA.

ii. SET UP A HYDRAJAWS VERIFY ACCOUNT



1. Open a web browser and go to the Hydrajaws portal: dashboard.hydrajaws.co.uk

2. Select **Sign up now**.

In the following page, enter your details in the form and click **Send Verification Code**.

This will send a one time code to your email address.

3. Enter the code into the corresponding field.
4. Important: For **Teams** Version go to **Manage Licenses** and click on the **Edit** button next to your name and then tick the box for **App Access required** and you will then be able to sign in via the app.
Ensure you add all your users at this stage.

iii. DOWNLOAD THE VERIFY APP AND SIGN IN

1. Please use the link below and download the app to your Android or Apple mobile device:



Download the **FREE** Hydrajaws Verify App
or visit: hydrajaws.co.uk/verify

2. Open the app and sign in using your user-name and password.

NOTE: Depending on your device, you may be asked to accept certain permissions for the app to function correctly. More information available in the Verify App manual.

iv. CONNECTING THE GAUGE TO THE VERIFY APP

1. Turn on the gauge and activate Bluetooth as shown in section 6.5 on page 18.
2. Ensure the gauge is displaying a flashing Bluetooth icon.
3. From the app home page press the **Connect** icon or go to the **Devices** page.
4. If the gauge is in the list shown then select its menu and press connect. If the gauge name is not in the list then press **Connect Device** and look for the gauge name in the list of found devices.

NOTE: The gauge will not show up in this list if it is already listed in the Devices screen.

5. When selected, the app will connect with the gauge. At the top right the battery indicator will then display a percentage of charge remaining.

You are now ready to start using the Hydrajaws VERIFY Digital Reporting System.



Please read the full
Hydrajaws Verify App Instruction
Manual available on our website:

[www.hydrajaws.co.uk/
verify-manual](https://www.hydrajaws.co.uk/verify-manual)

Appendix

RECHARGEABLE BATTERY INFORMATION

EBL TB9500 USB 9V 5400mWh (600mAh) long-lasting Li-ion rechargeable battery.

Operating temperature range: Charge: 10°C to +45°C. Discharge: -10°C to +50°C.

Quick charge in 2 hours: Advanced iQuick charging technology with DC 5V/1A MicroUSB input.

No memory effects, chargeable anytime whether fully or partially discharged.

Safety – supports over-charge, over-discharged, over-voltage, over-current and short circuit protection.

Suggestions

New batteries achieve best performance after 3-5 cycles of charging and discharging.*

Rechargeable batteries should be charged before using.*

When using a new battery for the first time or after long-term storage, please charge the battery completely before using.

Use the supplied cable to charge the battery.

Store batteries in a cool, and dry place.

Hold the connector itself when disconnecting the battery, rather than pulling the cable.

If the battery gets hot after using, it should be cooled down in a well-ventilated place out of direct sunlight before charging.

During long term storage, battery should be charged and discharged once every 3 months.

Keep away from children. If swallowed, please contact a doctor immediately.

All rechargeable batteries should be recycled.

If the battery fails, do not throw away, please recycle or dispose of any electric or electronic components in accordance with local regulations.

Warnings

* Always use the USB port and cable to charge the battery – Do not insert the battery into a lithium battery charging unit.

Please check if the battery is damaged, bulging or leaking before use. If so, please do not use.

Do not reverse charge batteries.

Do not short-circuit the battery, which may result in permanent damage.

Do not incinerate or destroy the battery, which may burst or release toxic substances.

Do not solder directly on the battery.

Do not subject the battery to adverse conditions such as extreme temperatures.

When a battery gets hot, do not touch it and handle it until it cools down.

If the battery produces noise, high temperature or leakage, please do not use.

Do not remove the outer sleeve from the battery pack and do not cut into its housing.

Never put the battery into water or seawater.

Do not attempt to disassemble the battery or subject it to pressure or shock. There may be a risk of fire.

**FOR MORE INFORMATION ON
HYDRAJAWS AND A FULL RANGE
OF TESTING APPLICATIONS
PLEASE VISIT OUR WEBSITE AT:**

WWW.HYDRAJAWS.CO.UK



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