

Mecmesin

testing to perfection

Mecmesin Page Pull Tester

User Guide



This document is a guide to the safe and proper use of the Mecmesin Page Pull Tester.

See also: *Basic Force Gauge Operating Manual* (Part no.431-221)

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Part no. 431-475-01

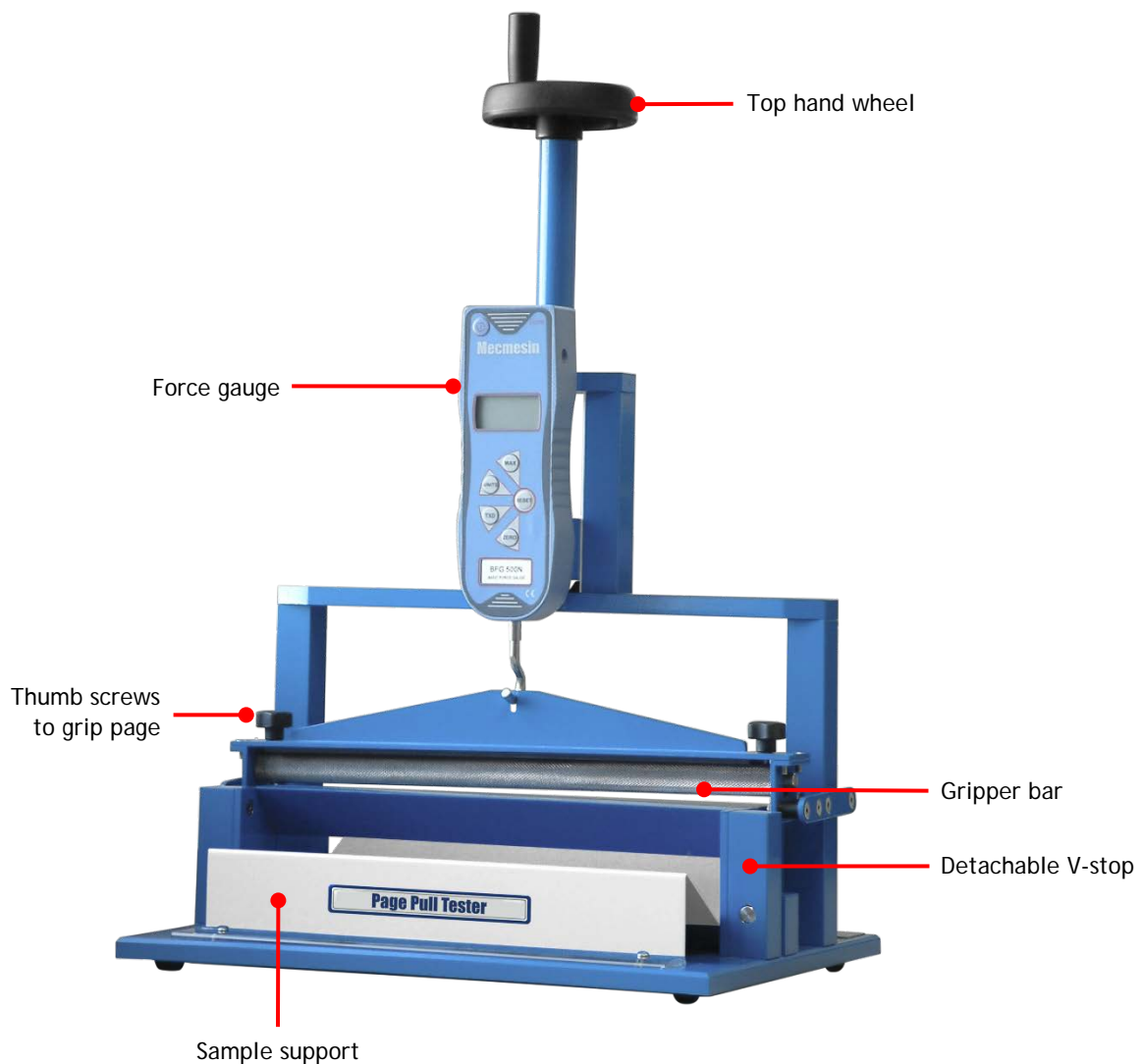
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1. The Page Pull Tester

Used in many book binders in the UK and Europe, the Mecmesin Page Pull Tester provides a robust, economical and reproducible method of measuring the page pull strength of adhesive-bound books and magazines.

The tester will accommodate a maximum spine width of 320 mm.



Contents of the gauge kit



- BFG 500 N
- 4 × AAA rechargeable batteries
- Power supply/charger
- 2 × countersunk screws
- Round hook
- Ball-end Allen key

Installation Environment

The Mecmesin Page Pull Tester should be placed on a flat, level and sturdy bench top. Safe access to a 230 V, 50 Hz mains power supply is periodically required to charge the force gauge internal battery pack.

Due to the hygroscopic nature of paper and some adhesives, page pull strength may vary with local environmental conditions, nominally 23°C and 50%rh.

Configuration

The Mecmesin Page Pull Tester consists of two major components:

- **Test chassis.** An aluminium chassis designed to support the tested book or catalogue and remove a page in a safe and reproducible manner.
- **Force gauge.** A Mecmesin BFG 500 N force gauge is used to determine the peak page removal force.

Installation

Turn the top wheel until the gauge mounting plate is a few centimetres from its lowest position.

Screw the hook onto the underside of the gauge.

Present each M5 countersunk screw through the back of the blue mounting plate and secure the gauge to the front of the plate using the ball-end Allen key provided.



Wind the gauge down until the hook is just above the central slot in the gripper bar, and lift the bar onto the hook.

Note: The force gauge batteries may require charging before operation.

Calibration

The force gauge is supplied factory calibrated by Mecmesin with a certificate of calibration.

2. Operating the Page Pull Tester

Take care when lifting, handling or moving the Page Pull Tester, and beware of entrapment hazards when turning the top hand wheel. Before use, ensure the Tester is steady, and secure on a sturdy bench, where the top hand wheel is at a suitable working height.

Power up the force gauge and set it to display the maximum (peak) tension force. For information on operating the force gauge see the gauge operating manual.

Insert the test subject

Place a book on the sample support, with the open pages uppermost. For larger books it may be necessary to remove the sample support. Ensure that the book is centred under the gripper bar and between the uprights. Open the V-stop by pulling the detachable bar forwards:



Book placed on Page Pull Tester, V-stop opened

To accommodate larger books, it may be necessary to completely remove the detachable V-stop.

Lower the gripper bar by turning the top hand wheel anti-clockwise until the gripper bar is *close to* the V-stops.

Warning: Do not lower the gripper bar into the V-stops as this can cause permanent damage to the force gauge.

Prepare the page to be pulled

Feed the desired page, or pages, between the V-stops:



Tester with page fed between the open V-stops

Slide the removable V-stop back into position.

Adjust the position of the gripper bar to approximately 1 cm from the V-stop using the top hand wheel, to allow sufficient vertical travel to complete the test. Loosen the gripper bar clamp thumbscrews, and feed the page, or pages, between the gripper bar and rubber covered clamp bar:



Tester with page passed into the gripper bar

Ensure the force gauge is on, zeroed and in the correct operation mode (set to max and tension). Tighten the gripper bar clamp thumbscrews, ensuring that the page is straight and centred in the clamp. As the top wheel is turned, the book spine is drawn up against the V-stop.



Tester pulled up for page removal

Pull the test page

Turn the top wheel clockwise at a constant speed until complete failure of the book binding has occurred. Record the displayed maximum load in N. To attain a result in N/cm units, the recorded value can be divided by the length of the book in cm.

Loosen the gripper bar clamp thumbscrews and remove the torn page.



The binding has failed



Release the page

Lower the gripper bar by turning the top wheel anti-clockwise until the gripper bar is close to the V-stops as at the start.

3. Interpreting the Results

Performance Guidelines

Page pull strength	Performance Guidelines
Below 5.00 N/cm	Unsatisfactory
5.00 - 7.25 N/cm	Satisfactory
7.25 - 9.00 N/cm	Good
Above 9.00 N/cm	Very good

Further information regarding the interpretation of page pull strength measurements is detailed in chapter seven of *Book Binding with Adhesives* by Tony Clark (Mcgraw-Hill, July 1988).

For more advanced book and book binding assessments or consultancy please contact Mecmesin.

Appendix: Page Pull Tester Risk Assessment

Location			
Outline of risk assessment Summary of what is proposed	Use of Mecmesin Page Pull Tester		
Operators List those involved			
Assessor Name Signature		Date completed	
Manager Name Signature		Date completed	

Note: This assessment does not take into account any risks associated with the test samples or their product ingredients. This assessment also excludes the general risks associated with laboratory working

Part A (General criteria)

Hazard list: select your hazards from the list below and use these to complete Part B

Situational hazards	Tick	Physical / chemical hazards	Tick	Health hazards	Tick
Assault by person		Contact with cold liquid / vapour		Disease causative agent	
Over Crowding		Contact with cold surface		Infection	
Cold/Hot Environment		Contact with hot liquid / vapour		Lack of food / water	
Crush by load		Contact with hot surface		Stress	
Working at Height		Electric shock		Physical fatigue	✓
Vehicle impact / collision		Explosive blast		Repetitive action	✓
Entanglement in moving machinery		Explosive release of stored pressure		Static body posture	✓
Ergonomic risk due to lack of space		Fire		Extra medical issues adding further risk	
Trip Hazard		Hazardous substance		Environmental hazards	
Manual Handling		Laser light		Litter	
Object falling, moving or flying		Stroboscopic Lights		Nuisance noise / vibration	
Obstruction / exposed feature		Vibration		Physical damage	
Sharp object / material		Noise		Substance released into air	
Trap in moving machinery	✓	Smoke		Substance released into soil / water	
Slippery surface		Asbestos present (see Estates for Asbestos Register)		Adverse Weather Conditions (outdoor working)	
Restriction by Work equipment or PPE		Are permits required			
Additional Assessments Required		Roof			
Manual Handling	✓	Hot Work			
Work at Height		Confined Space			
COSHH		Live Electrical			
DSE		Lone Working			

Risk Matrix: use this to determine risk for each hazard i.e. how bad and how likely

Severity of Harm	Likelihood of Harm			
	Unlikely	Possible	Likely	Probable
Negligible e.g. <i>small bruise</i>	Very low	Very low	Low	Low
Slight e.g. <i>small cut, deep bruise</i>	Very low	Low	Low	Medium
Moderate e.g. <i>deep cut, torn muscle</i>	Low	Medium	Medium	High
Severe e.g. <i>fracture, loss of consciousness</i>	Medium	High	High	Extremely high
Very Severe e.g. <i>death, permanent disability</i>	Medium	High	Extremely high	Extremely high

Part B (Risk assessment)

Activity: Use of Mecmesin Page Pull Tester

Location: where this activity will take place:

Hazards List what could cause harm from this activity e.g. working at height, trip hazard, fire, etc.	Who is exposed List who might be harmed from this activity esp. 'at risk groups' e.g. staff, public, children, disabled, elderly etc.	Risk For each hazard, decide level of risk as if you were to do the activity without your controls	Control measures For each hazard, list the measures you will be taking to minimise the risk identified e.g. appointing competent persons, training received, use of personal protective equipment, provision of first aid, etc.	Risk For each hazard, now decide level of risk once all your controls are in place
Repetitive action	Operator	Very Low	Gloves should be used to reduce the chance of blisters caused by repeated tests and loading and unloading of samples.	Very Low
Physical fatigue / static body posture	Operator	Low	Regular breaks should be taken during prolonged testing to prevent fatigue.	Very Low
Trap in moving machinery	Operator	Low	Operators to avoid entrapment when winding the handwheel.	Very Low
Manual handling	Operator	Low	Care in handling and moving the apparatus.	Very Low

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