🔿 James Heal



OPERATOR'S GUIDE

Titan⁵ Universal Strength Tester Model 1410

TestWise™ Test Analysis Software

Covering Serial Numbers 1410/14/1001 and upwards

Extraordinary Testing Solutions

James H. Heal & Co. Ltd. Halifax, England



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Setting the Standard

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JAMES HEAL

At James Heal, we are dedicated to designing and developing high precision testing instruments and test materials for physical and colour fastness testing. Our worldwide service and calibration division and expert technical assistance complement our product range, adding real value to your laboratory testing activities.

Setting the Standard

We are committed to forming close relationships and have established numerous partnerships within the textile industry, from trade and standards organizations, to test houses, customers and distribution partners.

With a heritage spanning more than 140 years, we have evolved and grown through a culture of continuous improvement, resulting in a thorough understanding of the applications, operating conditions and requirements of customers worldwide – from independent testing laboratories and test houses, to fabric suppliers, manufacturers and retailers.

Using knowledge and expertise, we consistently set the industry standard through product innovation and technology, with customer and user needs, present and future, driving our technological advancements. You can be assured that with James Heal, you will always receive the highest levels of product quality and customer service. We have Agents and Distribution partners all over the globe, ensuring locally available product whenever, and wherever you need it.

Areas of Expertise

Textile: Colour Fastness

- Chlorinated Water
- Dry Cleaning
- Dry Heat
- Hot Pressing
- Laundering
- Light

Textile: Physical

- Abrasion
- Bursting Strength
- Compression and Puncture
- Crease and Wrinkle Recovery
- Crimp
- Drape
- Durability
- Flammability
- Mass per unit area
- Pilling and Fuzzing

- Perspiration
- Phenolic Yellowing
- Print Durability
- Rubbing
- Washing
- Water
- Security of Attachments
- Seam Slippage
- Shrinkage
- Snagging
- Spray Rating
- Stretch and Recovery
- Surface Deterioration
- Tear Strength
- Tensile Strength
- Washing and Drying

Non-Textile

- Bursting strength of nonwovens, plastics, paper and medical products
- Micro-scratching of laminates, wooden, painted, automotive and high gloss surfaces
- Physical and colour fastness testing of leather
- Rubbing fastness of laminates and wooden surfaces
- Tear strength of paper and plastics

TITAN - UNIVERSAL STRENGTH TESTER

Titan⁵ is an outstanding, fourth generation Universal Strength Tester, designed specifically for testing textiles, nonwovens and leather in various forms : yarns, fabrics, garments and security of attachments.

Innovative engineering and intuitive understanding of your needs are combined to produce an aesthetically pleasing and ergonomic instrument, with intelligent, easy-to-use TestWise Test Analysis Software, an extensive range of specimen grips and a comprehensive library of international standards and retailers' own test methods.

Features and Benefits

- Compact, desk top, standards-compliant Universal Strength Tester
- Operates as standard in both tension and compression
- Extensive range of tool-free, interchangeable specimen grips
- Choice of three load cells up to 5000N (approx. 500kg): load cells supplied in cartridge form to improve protection and to facilitate safe handling and storage
- Microsoft Windows look and feel and familiar industry specific terminology
- Single Software Package for yarn, leather, fabric and nonwovens: tensile strength, seam slippage, security of attachments, button strength, pile loop extraction, tear strength, peel bond (delamination), stretch and recovery (cyclic), ball burst, puncture and crushing
- Extensive library of pre-loaded, national and international standards and of retailers' test methods
- 'Standards Editor' making it easy to modify existing standards or create new methods
- Automatic setting of test parameters including gauge length after selection of required standard or method
- 'Three Clicks' to start testing !

Service and Calibration

- Worldwide Service
- UKAS (ISO 17025 based) Accredited Calibration Service (tension and/or compression)
- 18 Months' Warranty



Technical Assistance

- Operator Training
- Knowledge transfer
- TestWise Software Online Maintenance and User Support
- Applications Support
- Engineering Support

INSTALLING TESTWISE

Recommended Specification for PC and Printer

Computer	Personal Computer (PC). The use of Apple MACs running Windows in a Virtual Machine (VM) is not supported.
Processor	As specified or required by the operating system. (Use the "recommended" specification).
RAM (memory)	As specified or required by the operating system. (Use the "recommended" specification).
Operating System	Windows [®] 8, Windows [®] 7, Windows [®] Vista (SP2). Compatible with 32-bit or 64-bit OS where applicable. The Microsoft dotNET Framework must be installed.
Graphics Card	None required.
Monitor	Minimum resolution of 1024x768 pixels.
Hard Drive	250 GB (2 GB equates to about 1 year's testing for a typical Laboratory, without archiving).
Optical Drive	CD-ROM or DVD-ROM drive compatible with CD-R media.
Ports	At least 2 free USB 2.0, one for communications cable, one for licensing dongle
Printer	Any Windows compatible printer can be used. Colour printer recommended but not required.
Internet	Broadband – Optional, but required to take advantage of the James Heal Online Support Package.
Please note: James Heal have made	e every effort to ensure TestWise software is compatible with the above

specification. The company cannot, however, accept responsibility for any additional or resident software which may compromise the operation of the PC or TestWise software.

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Installing TestWise Test Analysis Software

TestWise is the name of the software used to control and view results from the **Titan** instrument. It is installed from one CD. The **Titan** instrument cannot be used without **TestWise**.

The PC must be running Windows Vista, Windows 7 or Windows 8. Other operating systems or Windows running in a virtual machine (VM) are not supported. **TestWise** is optimised for Windows 7 and 8.

Before installing **TestWise** ensure your dotNET Framework is up to date using the Windows Update service or visiting <u>http://www.microsoft.com/net/downloads</u>

Ensure the PC to be used to run **TestWise** and control **Titan** meets the requirements described on the previous page.

IMPORTANT LICENSING NOTE:

TestWise uses a licensing dongle. Whenever possible keep this permanently inserted into a USB port. **TestWise** will not operate unless the licensing dongle is present. Charges will apply for replacement licensing dongles.

Licensing Dongle

TestWise 2013 and later is licensed using a USB dongle.

If a valid licensing dongle is not detected TestWise will disable all its functionality.

The licensing dongle must be plugged into the PC before running TestWise. It must then remain in place in the PC for TestWise to function correctly.

The licensing dongle is not a memory stick or flash drive.



TestWise checks for the presence of a valid licensing dongle at launch and will only allow login if a valid licensing dongle is present. If is not detected you will see:

Username:		
Password:		Login
🗙 TestWise	cannot detect a valid lice	<u>Exit</u> nse dongle

Whilst TestWise is running it also checks for the licensing dongle at random intervals. If the licensing dongle has been removed then the entire application is disabled.

∎ = File Test Re	esults				т	festWise 2015 - Tes	st Analysis Software
Print Copy Graph Results General	X X Export Export Data Excel	Add Specimen	Reset Select Show Data C All + Points	Force kgf - Units	Max Force Max Force Max Force Extension at 6mm Seam Opening Columns	Observations	Ø Mean Range Ø Conf Limits Min Median Ø Coeff Of Var Max Std Dev Statistics
					TestWis	se cannot d	etect a valid license dongle
Specimens	-	Graph Result	ts				
1	10.61 kgf	Results					
3	10.68 kgf	Specimen	Max Force (kgf)		6mm Seam Opening Force (k	sgf)	Extension at 6mm Seam Opening (mm)
Mean	10.44 kgf	1	20.08		10.61		12.66
		2	22.51		10.04		12.32
		3	24.72		10.68		11.80
		Mean	22.44		10.44		12.26
		Conf Limits	±5.77		±0.8678		±1.08
		Coeff Of Var	10.34%		3.34%		3.53%

If the dongle is subsequently re-inserted it will take up to 5 seconds to be detected by TestWise and enable the interface.

∎ I - File Test	Results					TestWise 2015 - 1	fest Analysis Software
Print Copy Graph Result Gener	/ Export Ex ts Data E	xport Excel	Add Specimen	Reset Select Show Data O All Points	Force kgf Units	Wax Force Ø Observations Image: Seam Opening Force Extension at 6mm Seam Opening Columns Columns	Mean Range Conf Limits Min Median Coeff Of Var Max Std Dev Statistics
Specimens		- ↓	Graph Res	ults			
1 2	10.61 10.04	kgf kgf	Results				
3	10.68	kgf	Specimen	Max Force (kgf)		6mm Seam Opening Force (kgf)	Extension at 6mm Seam Opening (mm)
Mean	10.44	kgf	1	20.08		10.61	12.66
			2	22.51		10.04	12.32
			3	24.72		10.68	11.80
			Mean	22.44		10.44	12.26
			Conf Limits	±5.77		±0.8678	±1.08
			Coeff Of Var	r 10.34%		3.34%	3.53%

Charges will apply for replacement licensing dongles therefore please take good care of it.

Licensing Dongle Installation

Installing the licensing dongle is simple.

Before starting TestWise, insert the licensing dongle into a free USB 2.0 port. After a few seconds the green LED will illuminate.

The driver for the licensing dongle will be installed.



The licensing dongle is now installed.

Leave the licensing dongle permanently inserted into the USB port.

Software Installation









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Insert the **TestWise** CD into the CD or DVD drive on your PC.

The setup will auto-run and you will first be prompted with this dialogue box.

Click **<u>N</u>ext** to continue.

We recommend installing **TestWise** to the default location.

This is the default folder in Windows 7 and 8. Windows Vista may show different default locations.

Click **<u>Next</u>** to continue.

The setup procedure is now ready to install TestWise on you PC.

Click **<u>N</u>ext** to continue.



Back Ensh Cancel



TestWise is being installed, please wait.

TestWise has been successfully installed.

Click Close.

Before attempting to run **TestWise**, please use the Windows Update service or by visiting <u>http://www.microsoft.com/net/downloads</u> to check for any updates to the Microsoft dotNET Framework.

You will now see the TestWise icon on your Windows Desktop.

Starting TestWise for the First Time

Before using **Titan** and **TestWise** together you must configure **TestWise** with Load Cell and Jaws Schemes data. This is a simple process which takes only a few minutes and is required only once.





Double-click the **TestWise** icon on your Windows Desktop to start **TestWise**.

While the **TestWise** application loads, the following splash screen displayed.





This is the first run screen.

Once this procedure is completed you will not see this again.

	IMPORTANT - Please Wait for TestWise to establish a connection with Titan.
	Allow TestWise a few moments to find the correct USB port connection for communications.
Work Offline Connecting using COM99	When the red text clears connection has been established.
Welcome to TestWise. Click the button below to upload your configuration data from Titan. Start Upload Use Factory Defaults	Click the Start Upload button to begin the upload of configuration data from Titan .
Welcome to TestWise. Click the button below to upload your configuration data from Titan.	The upload of your loadcell calibration data and jaw scheme data commences. This usually takes less than 10 seconds.
The configuration has been uploaded from Titan and TestWise is ready to use. A user account has been created for you: admin/password. User accounts can be edited through the Options dialog.	Setting up new users is detailed on the next page.
Edt	Click the Continue button to begin using TestWise .
Weicher In TestWise Image: Section of the section o	You will then be taken to the TestWise main screen.
2015 Dengan bagi di Tan Anar Katalan International Section (2)	The various elements of this screen will be explained later.

User Management

TestWise creates a new user called "Admin" using a password of "password".

We recommend you add at least one user with Administrator level and one user with Operator level.

Administrator level users can make changes to the TestWise system and make tests. Operator level users can make tests, including saving, printing and retrieval.



Manual

0	Test	Vise Options		×
General Graph	Edit the people allowed to	o use TestWise		
Jaws	New Delete]		
Jaw Schemes	Administrator	Name:	A N Other	
Load Cells TestWise Settings	Operator	Username:	ano	
Titan Settings	A N Other	Password:	•••••	
Titles		Account Type:	Administrator	•
Users				
Manual				
Firmware				
0	Test	Vise Options		×
General	(1)			
Graph	Edit the people allowed to	use lestwise		
Jaws	New Delete	1		
Jaw Schemes	Administrator	Name:	Tech	
Load Cells	Operator	Username:	Tech	
Titan Settings	A N Other	Password:	••••	
Titles	Tech	Account Type:	Operator	
Users				
Manual				
Firmware				
Apply		OK	Can	icel

In this example we will create a user with Administrator privileges.

Enter the user details and then click Apply.

In this example we have created a user with Operator privileges.

When users have been added, click Apply followed by OK.

The **TestWise** Options will close when you click OK.

From the main screen, choose Logout.

Then Login again using the users details you entered.



Username:	Å
Password:	Login
	<u>Exit</u>

TestWise Start Screen

The TestWise start screen has been designed like a dash board so that the most popular tasks are easily and quickly available.

0 =	TestWise 2015 - Test Analysis Software	- 8 💌
FLO Test Diana Add Diana Add Specther S	Come Rest: See: See: Statistic See: See: Statistic See: See: See: See: See: See: See: See	
Welcome to TestWise 2015 9 Most Recent Standards	New Copen Foroutes Annual	Titan SN: 1410/14/1001 Licensee: James Heal Version: 5.0.11.0 Connected: Yes Load Cell: 5500 N Eimergency Stop: Off Firmware: V2.7





The **New** shortcut takes you to the Standard Library ready to select a standard and start a new test.

The **Open** shortcut takes you to the Open Test File dialogue. This is used to look at tests you have previously made and stored.

The **Favourites** shortcut takes you to your selected favourite standards in the Standard Library ready to select a standard and start a new test. This is a great time saver.

Favourites will be explained in more detail later. The **Manual** shortcut brings up a screen to allow manual control of Titan outside of the test environment.

5 Most Recent Tests The 5 most recent tests are displayed. The Title of the test, the standard used and the folder location is shown. If you click the test title, the test file will be opened. 5 Most Recent Tests If the mouse if hovered over the test it is highlighted. 5 Most Recent Tests If the mouse if hovered over the test it is highlighted. 5 Most Recent Tests If the mouse if hovered over the test it is highlighted. 5 Most Recent Tests If Touser Tear Example #5 Standard: EN ISO 13937-22000 If Touser Tear Example #5 Standard: EN ISO 13937-22000 If If the mouse if hovered over the test it is highlighted. 5 Most Recent Tests If If If the mouse if hovered over the test based on this test is removed for the test. 5 Most Recent Tests If If If the mouse if hover test based on this test is removed from the test.	•
S Most Recent Tests If the mouse if hovered over the test it is highlighted. S Most Recent Tests If the mouse if hovered over the test it is highlighted. S Most Recent Tests If I the mouse if hovered over the test it is highlighted. S Most Recent Tests If I the mouse if hovered over the test is test is test is the test is the test is test is test is test is the test is test is test is test is the test is test is test is the test is test is test is test is test is test is the test is t	
5 Most Recent Tests If the mouse if hovered over the test it is highlighted. If the mouse if hovered over the test it is highlighted. 5 Most Recent Tests Image: Standard: EN ISO 13937-2:2000 Image: Standard: EN ISO 13937-2:2000 <td></td>	
 Trouser Tear Example #5 Standard: EN ISO 13937-2:2000 File: Cittest Results'Trouser Tear Example #5.xmt If the mouse if hovered over the test it is highlighted. S Most Recent Tests If C is clicked then a new test based on this standard and any customisations will be set ready to start a new test. S Most Recent Tests If S is clicked then this test is removed from the standard test. 	
5 Most Recent Tests Image: Standard: EN ISO 13937-2:2000 Image: Standard: Stan	
5 Most Recent Tests 9 Trouser Tear Example #5 Structure FN ISO 12027-22000 If Since the Most Recent List Placese pate it is path	is tup
Remove this item from the list	m
Titan SN:1410/14/1001The top right of the TestWise start screen shows some useful information about TestWise and your Titan.Licensee:James Heal	
Version: 5.0.11.0 Licensee will normal display your company name.	
Connected: Yes Load Cell: 5000 N Emergency Stop: Off Firmware: V2.7	;e

TestWise Options and Customisation

Before you begin testing there are some Options which you should change to suit you preferences. Below are some of the options which you may like to change before you start any testing.

If you are unsure about what effect changing an option maybe then we recommend not making the change, keeping the default settings.

Go to File > Options.

•	TestWise Options
General Graph	General options for working with TestWise
Javy Javy Schemes Load Cells TestWise Settings Titan Settings Titae Titles Users Manual Firmware	Communications Version: Serial Port: COMPR Sample Freq (Test): Sample Freq (Cither): 200.00 ms
	Larguages Use operating system language Fuglish Use operating system language Fuglish Tuglish TestWise Version: So.11.0 Function: TestWise Version: Download Configuration to Titan
	Apply OK Cancel

> General > Language

If you change the Language settings then you must Apply the changes and then close and re-start TestWise.

> General > Test Files

Set the preferred path to save test files.

For example, you may wish to save your test files to a network location.

Browse using the witton.

Click Apply when finished.

0	TestWise Options
General Graph	General options for working with TestWise
Graph Jaws Jaw Schemes Load Cells TestWise Settings Titan Settings Titan Settings Titas Users Manual Firmware	Communications Version: 5.0.11.0 Serial Port: Offline Sample Freq (Test): 50.00 mmodel{minication} mis Sample Freq (Other): 200.00 mmodel{minication} mis Test File Default Path:
	Apply OK Cancel

		Test	Wise Options	×	
Genera Graph	ı	Titan settings			
Jaws		Changes to settings shall only apply to newly created tests			
Jaw Scl	hemes	Pretension Speed:	20.00	mm/min 👻	
Load Co	ells	Speed:	100.00	mm/min 👻	
TestWis Titan S	se Settings ettings	Home Speed:	2000.00	mm/min 🔻	
Titles		Click Threshold:	500	ms	
Users		Hold Threshold:	2000	ms	
Manual		Air Pressure (Soft):	2.00	bar	
Firmwa	re	Air Pressure (Test):	7.00	bar	
		Air Pressure Stabilisation:	2500	ms	
		Air Pressure Stabilisation (Off):	500	ms	
		Ignore Low Air Pressure:			
		Gravity (Local):	9.80665	m/s ²	
		Hold Force Threshold:	90	\$	
		Air Pressure Offset (ITV):	0.1000	bar	
		FlexoLed Brightness:	100		
· · · · ·		L	Ap	oly OK Cancel	

3	TestWise Options	×
General	Specify names for the test attributes	
Graph		
Jaws	1: Test Name	
Jaw Schemes	2: Customer	
Load Cells		
TestWise Settings	3: Reference	
Titan Settings	4: Material	
Titles	5: Comments	
Users		
Manual		Add
Firmware		



Specify names for the test attributes





> Titan Settings

We recommend you only change these values when requested by James Heal.

If you know your Local Gravity value, enter it here, followed by Apply.

If you don't know your Local Gravity Value, do not change this value.

> Titles

These are perhaps the most practical settings as they are used in the Test Report.

The Titles are used to describe the sample/specimens.

For example, you may want to change Test Name to Batch Number or Job Number.

Try to decide these Titles before you begin testing.

When finished click Apply followed by OK.

Title fields can be added or removed.

Click 📕 to remove



Click diamond to add another title field

Add

- Optional Information				
Test Name				
Customer				
Reference				
Material				
Comments				
Remove				

+ Standard Customisation



Title fields can also be changed at the time of testing after the Standard has been selected.

Any changes to the Titles are also saved in the test data file.

> TestWise Settings

Check these options if you would prefer them applied globally throughout TestWise.

Always display observation result column: 🗐

Display test report when all samples are complete:

If you always want Observations to be shown in the test report.

If you always want to skip the results/graph display and go straight to the test report print preview.

Using Search Filters to Find a Standard

TestWise uses a variety of search filters which enable you to quickly find the standard you need. You can simply search or use any of the special filters. Special filters reduce the standards list by Group (see Favourites later), by Test Type or by Material. The filters can be used in combination. The search is applied to both the standard reference (standard number) and the standard title. It is also possible to apply a filter on your Favourites group.

Here are some examples to illustrate searching:

Tart					
Save	1. Salara Strendard				
Save As	1. select standard				
Open					Searc
Close	iup 🗙				
Recover Tests					
	Group		Test Type	Material	
	Favourites	*	Tensile	Waven	
:ent	Built-in	٢	Tear/Peel/Adhesion	Nonwoven	
	Custom		Seam	Coated/Laminated	
			Attachment	Leather	×
ndards			Stratch/Recovery	Koitted	
			Juccennice of a g	Floorcovering	
				Component	
ification	EN ISO 23910:2007 (IUP 4	9			1
bug	Leather - Physical and mechanic	al tests - Measuremen	t of stitch tear resistance		
008	EN ISO 3376:2011 (IUP 6)	(large test piece)			[
Options	Leather - Physical and mechanic	al tests - Determinati	on of tensile strength and percentage extr	nsion	
Exit	EN ISO 3376:2011 (IUP 6) Leather - Physical and mechanic	(standard test ple al tests - Determinati	ice) on of tensile strength and percentage extr	ension	[
	EN ISO 3377-1:2011 (IUP 4 Leather - Physical and mechanic	0-1) (large test pi al tests - Determinati	ece) on of tear load - Part 1: Single edge tear		[
	EN ISO 3377-1:2011 (IUP 4 Leather - Physical and mechanic	0-1) (standard te al tests - Determinati	st piece) on of tear load - Part 1: Single edge tear		
	EN ISO 3377-2:2002 (IUP 8 Leather - Physical and mechanic	i) :ai tests - Determinati	on of tear load - Part 2: Double edge tear		(

Typing *IUP* and clicking Search and also clicking Leather will find all standards with *IUP* in the reference/title which are classified as being standards for testing Leather.

• Test	TestWise 2011	i - Test Analysis Softw
Save Save As Open	1. Select Standard	Search
 Close Recover Tests fo 	Longression Harry Invess Stretch/Recovery Rotted Brease-senters	-
cent	Component Footwear Gestentille/Related	*
andards in t	Composite Postic Robberr	
rification abug Options	ASTM 0-633.11 Trapector likening Strength of Geotestiles ASTM 0-632.08 Come Breaking Load and Strengthon of Geotestiles	
Exit	AST/M D4833-07 Index Purcture Desistance of Geomembranes and Related Products	
	ASTM D5884-04a (2010) Determining Teoring Strength of Internally Reinforced Geomembranes	
	ASTM.D6241-04 (2009) Static Nucture Strength of Geotextile-Related Products Using a 50-mm Probe	
	ASTM D6636-01 (2011) Determination of Ply Athesion Strength of Deinforced Geomembranes	
	ASTM D7005-03 (2008) Determing the Bond Strength (Ply Athesiser) of Geocomposites	

Typing *astm* and clicking Search and also clicking Tensile and Geotextile will find all standards with *astm* in the reference/title which are classified as being standards for the tensile testing of Geotextiles.

🖬 🛛 🖉			TestWise 2015 -	Test Analysis Software
File Test				
Save As	1. Select Standard			
📑 Open	1			Search
e5 Oose	en 🗶 71 🗶			
+ Recover Tests				
la fo	Group	Test Type	Material	<u>*</u>
	Favourites 👷	Tensile	Waven	
Recent	Built-in 🥏	Tear/Peel/Adhesion	Norwoven	=
Nour	Custom	Sean	Coated/Laminated	
		Attachment	Leather	
Standards		Compression	Yarn/Thread	
		sueconnecovery	Baarcmaring	
Print			Component	w
Verification	EN 13571:2001			
Debug	Footwear - Test methods for uppers - Tear strength			-
Debug	EN 71-1 (Compression Test: 110N)			
Options	Safety of toys - Part 1: Mechanical and physical prop	rties		-
🖕 Exit	EN 71-1 (Seam Test) Safety of toys - Part 1: Mechanical and physical prope	erties		
	EN 71-1 (Seam Test) (VS) Safety of toys - Part 1: Mechanical and physical prope	erties		
	EN 71-1 (Tension Test) Safety of toys - Part 1: Mechanical and physical prop	erties		
	EN 71-1 (Tension Test) (VS) Safety of toys - Part 1: Mechanical and physical prop	NTHES		

Typing *en* and 71 followed by clicking Search will find all standards with *en* and 71 in the reference/title.





Clicking *Stretch/Recovery* and *Knitted* will find stretch & recovery standards for knitted fabrics.

Typing *NEXT* and also clicking Tensile will find all standards with *NEXT* in the reference/title which are tensile tests.

NEXT® TM27 (January 2008) DETERMINATION OF BREAKING STREM

NEXT® TM36 (January 2008) BRAWIRE PENETRATION

Debug

📝 Optio

TH AND ELONGATION OF W

IEN FABRICS (REVELLED STRIP

Your Favourite Standards in One-Click

The concept of Favourites is well known when we use web browsers. In TestWise we can add or remove any standard to our Favourites group and use the Favourites shortcut to display only our favourite standards.

A collection of standards can be grouped together in a Favourites Group.

If you make a lot of tests for a specific retailer you may want to add their standards/test methods to a named Favourites Group.

Favourites are saved individually for each user.



To add a standard to your Favourites group, simply check the box.

Favourites are always shown in bold and with a star.



File Test				Testwise 2015	- Test Analysis Softwar
Save Save As Open	1. Select Standard Refine your results				Search
+ Recover Tests	Group		Test Type	Material	
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Recent	Custom		Seam	Coated/Laminated	
New Standards			Attachment Compression Stretch/Recovery	Leather Yarn/Thread Knitted Roorcovering	
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Verification	ASTM D2261-13 (IP un Tearing Strength of Fabrics	nits) by the Tangue (Single Rip)	Procedure		*
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🖕 Exit	EN ISO 13934-1:2013 Textiles - Tensile properties	of fabrics - Part 1: Detern	nination of maximum force and elongation	n at maximum force using the strip method	* 🗹
	EN ISO 13937-2:2000 Textiles - Tear properties of	(auto-stop) fabrics - Part 2: Determin	ation of tear force of trouser-shaped te	st specimens (Single tear method)	*

To show only your Favourites, click the Favourites group filter.

You can add or remove Favourites at any time by unchecking the box.

For example, if you wanted to select a tensile test for NEXT then would click Favourites followed by the Tensile filter.



You then simply click the standard required and start testing.

Favourites

Creating Favourite Groups for Standards

∎ File Test		
Save Save As	1. Select Standard Refine your results	To create a new Favourites Group then click on the star+.
+ Recover Tests In fo Recent	Group Test Type Favourites Built-in Add New Favourite Group Custom Favourite Group Seam	Group
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Verification	16 CFR 1500.51-53 Tension Test Test Methods for Simulating Use and Abuse of Toys and Other Articles Intended for Use by Children	Custom
Group	Add New Favourite Group P Name Enter name for this favourite group Right click the Standard to add to your favourite group OK Cancel Add New Favourite Group X p Name Next Right click the Standard to add to your favourite group OK Cancel	Type a name for the Favourites Group.
Group		
Favour	ites 😽	
Built-ir	n 🌛	
Custon	D	
Next		The new Favourites Group name is now shown in Groups.
		Right click on any standards you want to add to the Favourites Group and then click in the box Add to Group.
NEXT© TM1	16 (January 2008)	
ORAD STRENGT	Add to	o Group: Next



To show only the standards in the Favourites Group, click on the Favourites Group name.

Only the standards in the Favourites Group are now listed.

To Edit a Favourites Group, either to change its name or remove (delete) the group, then click on the cicon and select the group name.

INTRODUCTION TO T27 PNEUMATIC GRIPS

T27 Pneumatic Grips can be used up to 5000N. Typical uses include tensile strength, tear strength and seam slippage tests.

T27 is supplied as a pair of grips, complete with 4 of 100 x 30 mm rubber jaw faces and 2 of 25 mm x 25 mm rubber jaw faces.

25 mm x 25 mm are typically used for grab tensile and seam tests.

The rear jaw face is pneumatically actuated while the front jaw face is static. The position of the front jaw can be adjusted using the knurled knob dependent upon the thickness of the specimen.



To change a jaw face, simple pull to the side and it will be released.

Slide the alternative jaw face over the dove-tail and ensure it locates correctly on the ball.

QUICK START

The Essential Elements of TestWise

The following section will guide you quickly through the simple steps of carrying out a tensile strength test on a woven fabric and illustrate the use of the essential features.

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Login to TestWise.

Click the New button.

Use the search filters to locate the Standard you require.

For this example we will select EN ISO 13934-1 with a 200mm Jaw Separation.

2. Enter Test Details



Required Information



Select a suitable Jaw Scheme, in this case T27.

It is important that the selected Jaw Scheme matches the Jaws actually fitted to Titan. If they do not match then the Jaw Separation will be incorrect or damage to the instrument could occur.

Change the Jaw Scheme by selecting from the drop down list.



Hovering the mouse over $\underline{T27}$ will show you an image of which grips or fixtures you have selected.

The image will stay on screen for 5 seconds.

Click the Confirm button to enable the Start button.

The Start button is enabled.

The Jaw Separation can be changed if required.

The default setting is 200mm.

100mm is used for stiff fabrics.

If required, select the required Pretension force, determined by the weight of the fabric (area mass).

2. Enter Test Details Required Information	1		Select the Speed required.
Jaw Scheme: Jaw Separation: Pretension: Speed:	T22 ///www.mitic. Gript SkN		In this case, the common default speed is 100 mm/min. However, some tests require a slower speed of 20 mm/min.
- Optional Informat	101		
2. Enter Test Details			
Required Information Jaw Scheme: Jaw Separation: Pretension: Speed:	TZ7 Prenumatic Grigs 55N Top Jave 122 Bottom Jave 122 200.00 (2K) ≤ 200g/m ³ 306.8		If a non-standard speed is required, click Manual and type in the required speed.
		(Click Manual again to revert to standard speed selection.
	Start		
— Optional Informat			
- Optional Informat	ton	I	Enter details which describe the
Test Name	Example Tensile Test		sample This information will be
Customer	ABC Fabrics Ltd		stored with the test results and
Reference	20123456789		sioned with the test results and
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Remove		-	These fields can be left blank and populated at any time via File > Info > Edit. See below.
File Test	TestWise 2013 • Test A Results Test Details	nalysis Softv	This information can be edited at any time.
Carlos Save As Save As Solution of the same of t	Test Name: Example Tensile Test Customer: ABC Fabrics Reference: P0123455789 Material: CP6020 Comments: Bleached Only Specimens: 5		After making any changes, click Apply.
New Standards Print	New Separation: both Jaw Scheme: T17 Jaw Separation: 200.00 mm Load Cell: 600 N Load Cell: 696456 Version: 2.5.9.0 Firmware: V2.3	-	To exit without saving changes, click Cancel.
2 Options	Tested by: Peter Goodwin		
Exit	Procedure Details Break Detection: 10 % Pretension		
	Pretension: 2.00 N Pull To Load Cell Maximum		
	Pulls the material until the operator stops the test or the load cell limit is reached Speed: 100.00 mm/min		

🚫 James Heal ©2014

- Standard Customisation						
Number of Specimens:	5		0			
Directions:	Both -		0			
Break Detection:	10	%	0			

Standard Customisation can be used

to change some aspects of the test

such as the number of specimens tested (assumed to be the same number on both directions), which directions are tested, Break Detection.

Titan automatically detects a break when a percentage force drop greater than or equal to the Break Detection value occurs.

To commence the test, click Start.





🖄 James Heal ©2014

Place the specimen centrally in the top jaw and close.

Place the specimen centrally in the bottom jaw and without tensioning the specimen, close the bottom jaw

If while loading the specimen into the jaws you make a mistake (for example, the specimen is not central) you can open the jaw by clicking the appropriate button on screen, pressing F2 or F3 on the keyboard.

Alternatively, if you press and hold the Titan Start Button or the Foot Pedal for 2 seconds or more then the last jaw action will be undone.



Click Run or press F9 on the keyboard to start the test.

Note that the purpose of the Function Keys changes dependent upon the task being undertaken.

On the right hand side of the **TestWise** screen you will see a notifications of the Current Task.

Throughout the test this can change many times and these are some of the more common examples.

This is a specimen in progress.

If the plot goes off scale on either axis then the graph will rescale in real time.

You can also see an area called Titan Data. This is displaying elapsed time, extension and force. The units are dictated by the Standard by default but can be changed if required.







700

In this example of a tensile strength test we are using the Break Detection feature.

This means the specimen break is detected automatically. When this occurs the test will end and if pneumatic jaws are being used, they will open.

The Current Task now shows the Force and Extension (green text).

The user now Accepts the test, with or without Observations.

Accepting saves the data and then moves on ready for the next specimen.

At this stage the test can also be rejected.

Specimens can also be deleted later.

As you proceed through the test specimens you will see the test results accumulating on the left hand side of the **TestWise** screen. For convenience the mean (average) result is also shown.

Mean

		National State - Nation		- 1
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When all specimens have been completed, the green banner advises you "Test Completed".

To see the Results, click the View Results button in the green banner.

Clicking View Results is a time saving shortcut. All the specimens will be selected for statistical calculations.

You can also click the Results tab but this does not automatically select specimens.

Each specimen is assigned a colour as shown here. For example, the red graph corresponds to the red results.

Up to ten (10) colours can be defined. If you have more than ten (10) specimens, the colours start again from the beginning.

To switch between displaying Results or Graphs, click the Results or Graph tab.

Click Offset on the Ribbon and this dialog is shown. Type in a suitable value. To cancel the Offset, click Offset again.


Enter an extension value to offset the curves.

Curves can also be sorted in ascending or descending order.

Here are the results with the graphs offset. This is useful when comparing the shape of the curves.

To add Observations check the box on the Ribbon.

Maximum Force	Elongation at Ruptu	ure 🔄 Extension at 0,00 N
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To display any additional Statistics, check the boxes in the Ribbon. As soon as the box is check (or unchecked) the statistics will update.

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🗌 Max	🔲 Std Dev					
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To change the force units ...

To change the extension units ...

To select only one direction ...



You can select a range of specimens by clicking on the first and shift-clicking on the last.



To select a discontinuous range use control-click, that is, click on each specimen while also holding down the control (CTRL) key.

To view the Test Report, click Print. This will take you to the Print Preview.

You can change:

- the default font and size
- add a logo
- choose the details in the Test Report
- change the view
- print a hard copy or PDF

Another view.

Note the page and zoom controls here.



Another view.

Clicking Print will now bring up the Windows Print dialog.

To Save the test data, select Save, Save As or Close from the File menu.

If you choose Save or Save As, the save dialogue will be displayed.

+ Recover Tests

Info



Congratulations !

You have now completed your first test using **Titan** and **TestWise**.

MAKING CHANGES DURING THE TEST

During a test it is sometimes necessary to change some of the details. This could be changing the number of specimens to be tested, deleting a specimen, adding a specimen, changing the break detection setting or changing the sample description or references (titles). This section shows how these changes can be made.

Changing the Number of Specimens

- Optional Info	rmation
Test Name	Example Tensile Test
Customer	ABC Fabrics Ltd
Reference	P0123456789
Material	100% Cotton twill
Comments	Dyed and Finished
Remove Add	

The Optional Information (or titles) can be added either at the start of the test or any time after.



By default, the selected Standard requires 5 specimens to be tested in each direction.

To change the number of specimens, press F12 or click Stop.



The test details will be displayed.

Edit the number of Specimens (and any other details) then click Apply.





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Specimens	~ ‡
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1	45.60 kgf
2	45.47 kgf
3	45.84 kgf
Mean	45.63 kgf
Weft	
→ 1	
2	
3	
Mean	-

Any test results associated with specimens 4 and 5 would be lost.

Click Start to continue testing.



Adding a Specimen



To add a specimen, click the Add Specimen button. You can add specimens to just one direction or both directions.

In this case, we are showing specimens being added to the weft direction.



An additional specimen has been added to the weft direction.

Click Start to continue testing.





USEFUL FEATURES

Selecting Jaw Schemes

Selecting the correct Jaw Scheme is an import part of the test procedure.

The user must advise TestWise which jaws or other tooling is connected to Titan in order ensure the correct jaw separation (gauge length) is obtained.

If there is a mismatch then the consequences could range from incorrect jaw separation to damage to the attached tooling and load cell !





If the mouse is hovered over Top Jaw: $\underline{T17}$ then an image of the jaw is displayed for 5 seconds.

2. Enter Test Details



If the mouse is hovered over Bottom Jaw: T17 then an image of the jaw is displayed for 5 seconds.

Show Data Points

Sometimes it is desirable to know the force and extension values of an exact point on the graph. Look at the screenshot below, we want to know the exact force and extension values at the point indicated by the red arrow.



Click Show Data Points on the TestWise ribbon.

Using the mouse, point the precise location on the graph and a popup will be displayed with the required information.



To switch back to a normal graph, click **Hide Data Points**.

Find Force or Find Extension

Find Force at a specified extension and/or Find Extension at a specified force are often requested in buyer's specifications. For this reason we include this feature in many tensile standards.



Select the specimen or specimens.

If it is not already selected, click Results Settings.



 Results Settings

 Find Force At:
 5.00
 %

 Find Force At:
 5.00
 %

 Find Extension At:
 20.00
 kgf

 Image: Max Force
 Time To Break
 Observations

 Image: Extension
 Image: Force at 5.00 %
 Energy At Break
 Extension at 20.00 kgf

 Columns
 Columns
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 Columns
 Columns



Extension at which to find force.

Force at which to find extension.

The values will be reflected in the Ribbon.

Check the required results.

If a single specimen is selected the graph will show the specific overlays.

This graph was copied using the Copy Graph feature which copies the graph as it is currently displayed.



Continued in next section.

Auto Hide Panes

The results for All Specimens would be displayed like this:

⊘ 🕁 😂 🔻 👘 👘 👘 😵	-	-	-	Test	Wise 2013 - Test Analy	sis Software				_	
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2 30	0.09 kgf	Conf Limits	±1.61		±0.17		±1.11		±0.04		
3 31	1.29 kgf	Coeff Of Var	1.45%		1.12%		1.28%		0.53%		
Mean 30	0.48 kgt	Weft Results									
		Specimen	Max Force ((kgf)	Extension	(%)	Force at 5.0	00 % (kgf)	Extensi	on at 20.00 k	(%)
		1	30.04		6.26		23.90		4.32		
		2	30.09		5.84		25.05		4.16		
		3	31.29		6.29		24.71		4.19		
		Mean	30.48		6.13		24.55		4.22		
		Conf Limits	±1.76		±0.63		±1.46		±0.21		
		Coeff Of Var	2.32%		4.12%		2.39%		2.00%		
Charles I. (2015) (2024 (2012) (2		T		#D					I	L	L 1 C-II- (00 M



The Titan Data / Results Settings panes can be hidden (as shown above) by clicking the Auto Hide pin.

The Specimens pane can also be hidden in the same way.

This is useful if you are displaying a large number of results columns and the display becomes congested.

To restore the panes click the Auto Hide pin again.

	_	_			×
W Mean	Range Median Std Dev Statist	✓ Conf Limits ✓ Coeff Of Var			
F	Results Sett Find Force Find Exte	ings e At: nsion At:	5.00 20.00	√ · % kgf	Titan Data
					Results Settings

Copy Graphs, Copy Results and Export Data



You can find these features in the General section of the Results ribbon.



Copy Graph and Copy Results will copy the Graph or Results as they are currently displayed.

They are copied to the Clipboard ready for pasting into other application.

Warp Results

Specimen	Max Force (kgf) Extension (%)) Force at 5.00 % (kgf	Extension at 20.00 kgf (%)
1	44.98	6.25	34.75	3.15
2	44.83	6.30	35.57	3.18
3	43.79	6.17	34.85	3.17
Mean	44.53	6.24	35.06	3.17
Conf Limits	±1.61	±0.17	±1.11	±0.04
Coeff Of Va	r 1.45%	1.12%	1.28%	0.53%

	А	В	С	D
1	0.008725	0.250206	0.009038	0.236624
2	0.057333	0.261625	0.057035	0.287539
3	0.095659	0.269786	0.09537	0.29637
4	0.13305	0.310865	0.133394	0.329989
5	0.183529	0.427099	0.18326	0.404291
6	0.220608	0.545236	0.22066	0.561924
7	0.257999	0.589574	0.258372	0.632191
8	0.308478	0.653217	0.308551	0.688846
9	0.345557	0.872515	0.345639	0.841865
10	0.382948	0.921892	0.383351	0.956911
11	0.433115	0.975867	0.433217	1.032157
12	0.470506	1.145894	0.470618	1.358401

Export Data exports the raw extension and force values for each specimen to a comma separated value (CSV) file which can be opened in Microsoft Excel.

There are no column headings.



Reset



Reset is a time saving feature which can be accessed from the Test and Results tabs.

Reset the selected specimens or the entire test. This will delete all data, results and recorded observations.

There are two Reset options, both of which should be used with caution.

Before using Reset ensure you save any important results.

This option is like deleting specimens.

After saving your test results, to carry out another test with the same standard and settings then select Reset Current Test.

Answer "Yes", the default response is "No".

Ensure you save changes to your previous test.

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Manual Control

This option is used to manipulate Titan outside of a normal testing routine. It is not designed for performing tests.

•	TestWise Options	x
General Graph Jaws Jaw Schemes Load Cells TestWise Settings Titan Settings	TestWise Options Commands for manual control of Titan Load Cell: 5000 N Position: 400.00 mm Force: 0.0000 N	×
Titles Users	Home Tare Loadcell Stop	
Firmware	line (articles) (by)	
	Apply OK Cance	l

Load Cell: Position:	5000 N 400.00 mm	Live Data showing the currently connected loadcell, current position and current force are displayed.
Home	0.0000 1	Sends the carriage to the top of the column, the Home Position.
Tare Loadcell		Tares the loadcell reading, resets the force to zero.
Stop		Stops the carriage if it is moving.
Top Jaw B	UJ ottom Jaw	Used to open or close the jaws.
		Used to move the carriage up or down and various speeds set by the slider.
Jog Up		The 4 arrow keys on the keyboard can also be used.
Jog Down 100.00 mm/min		

Collapse and Expand

Some sections of the display can be expand or collapsed to create more space on screen. This example shows the Enter Test Details sections when preparing for a new test.

- Optional Information		
Batch Nbr:		
Customer:		
Quality:		
Shade:		
Comments:		
+ Optional Information		
+ Standard Customisation		
— Standard Customisation		
Number of Specimer	s: 5	0
Direction	s: Both 🔹	0
Break Detectio	n: 5	% 🕕

This section can be collapsed by clicking anywhere on the bar.

Standard Customisation can be expanded by clicking anywhere on the bar.

To reverse the expand or collapse, click the bar again.

USING THE STANDARDS EDITOR

Creating Custom Standards

You can create a Custom standard (or "user-defined standard) by copying a Built In standard. Built In Standards are those which are supplied by James Heal and installed with **TestWise**. You can Copy Built In Standards but you cannot edit them. Once a Custom Standard is created, you can edit or copy it.

Creating a Custom Standard is useful for creating both simple and complex standards. The system relies on editing a pre-existing Standard, therefore, Standards cannot be created from a blank template. This means you must choose a Standard which most resembles what you want to do and then use this as your template. In cases where this is not possible, please contact James Heal for help and advice.

In the following example we are going to create a new tensile test.



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V (- Test mays Schwart Fest	-0-	
na se is standard men en e	Standard Standard Statogi Denorphiles: Tendis Stendard Nether of Scattage Denorphiles: Tendis Stendard Denorphiles: 2010 0 mm Denorphiles: 2010 0 mm Units: Metter Photodard Scattage State Better(Stat: 5 % 0 0 Photodards(State) State Better(Stat: 5 % 0 0) Photodards(State) State Better(Stat: 5 % 0 0) State Better(State) State Better State Better	The parameter settings for the selected Standard are displayed.
dit Standard - General Settings		
Name: ISO 13934-1 (MO))	Type in a Name and Description for the
Description: Tensile Strength	and Extension	the number of specimens from 5 to 3.
Number of Specimens: 3	•	testing weft only specimens.
Directions: Weft	•	•
Jaw Separation: 200.00	mm	
Units: Select		
Directions: Both		We only want to test specimens in the
Warp		weft direction.
Both		
onts. Seect		
eneral Settings		
Name:		
Description:		
Number of Specimens: 3	0	
Directions: Weft	•	To change the units used in the standard
Jaw Separation: 200.00	mm	click Units: Select.
Units: Select		
Select Units	×	
Desibires and		
Position: mm		
Extension: mm	•	
Force: N	-	
Speed: mm/min	•	
inear Density:		
linear bensity.		
	incet	

Select Units	X
Position:	mm 🔻
Extension:	m mm cm
Force:	in
Speed:	mm/min 🔻
Linear Density:	tex •
ОК	Cancel
Select Units	×
Position:	mm 🔹
Extension:	mm 🔹
Force:	m mm cm
Speed:	in %
Linear Density:	tex •
ОК	Cancel
Select Units	×
Position:	mm 🔹
Extension:	mm 🔹
Force:	N V
Speed:	cN mN
Linear Density:	kgf gf
ОК	ozf daN
	Jun P

Position units.

Extension units. Note "%" is also available.

Force units.

Select Units	<u> </u>	
-		
Position:	mm 🔻	
Extension:	mm -	
Force:	N •	
Speed:	mm/min 🔹	
Lines Devites	mm/min	
Linear Density:	cm/min	
ОК	cm/s	h
	in/s	Ľ,
Select Units	<u></u> Σ	
Desthings		
Position:	none tex	
Extension:	dtex	
Forces	NeC	
Force.	Nm NeK	
Speed:	NeW	
Linear Density:	tex •	
Linda bensieji	- COX	
ОК	Cancel	
Name:		
Description:		
Number of Specimens:	3	0
Directions: V	Veft	• 0
Jaw Separation:	10.00	in
Units: S	Select	
- Procedure Settings		
Break Detection:	5	%
Pretension:	$(2N) \leq 200g/m^2$	•
Speed:	100.00 -	Edit mm/min

Speed units.

Linear Density is only used in Yarn Tensile Strength tests. If a linear density is specified the results are expressed as tenacity. If no linear density is specified, the results are expressed directly as force.

Enter a Jaw Separation (also known as Gauge Length or Gage Length). In this example we are setting a value of 10 inches.

If required, change the: break detection setting default pretension setting speed

Pretension:	(2N) $\leq 200g/m^2$ •	
	No Pretension (pretension off)	
	(0.5N) Fabrics with stretch	
	$(2N) \le 200g/m^2$ (5N) $> 200g/m^2$ to $500g/m^2$	
	(10N) > 500g/m ²	
Speed: 100.0 20.00 100.0	00 • Edit mm/min 0	If the fabric has an extension at break of less than 8% then change the speed to 20 mm/min.
💿 Edit Opt	tions	Alternatively different analysis on
Units: N		be specified by clicking Edit which displays this dialogue box.
1:	20.00 Delete	
2:	100.00 Delete	
	New	
	OK Cancel	
Sedit Opt	tions	
Units: N		
1:	50.00 Delete	You can change the existing speed
2:	100.00 Delete	options or add a New option.
3:	300.00 Delete	
	New	
	OK Cancel	
🙆 Edit Opt	tions	
Units: N		
1:	100.00 Delete	Pressing Delete will remove the specified option.
2:	300.00 Delete	
	New	
	OK Cancel	

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-					
		Columns	Max Force Katension Energy At Bri Time To Brea Force at 0.00 Extension at Observations	eak ak) mm 0.00 N	
		Statistics	: Vean Min Max Range Median Std Dev Conf Limits Coeff Of Var		
	F	ind Force At	: 0.00		mm
	Find	Extension At	: 0.00		Ν
– Resul	lt Settings				
		Columns	 Max Force Extension Energy At Brian Time To Bread Force at 10.0 Extension at Observations 	eak ak 10 mm 250.00 N	
		Statistics	 Mean Min Max Range Median Std Dev Conf Limits Coeff Of Var 		
	F	ind Force At	: 10.00		mm
	Find E	Extension At	: 250.00		Ν
File Test		-	Technol 2011 - Tech analy		(i0) i0
C Spen	Select Standard Refire your results		Search	Edit Standard + General Settings	
id the	12934-1 🗙		6	+ Procedure Settlings	
Recent	Group	Test Type	Haterial Apply	+ Result Settings	
New	Bullt-Is Custon	Teac/Peel/Adbeston Seam	Natworks Control/Lankwited		
Stendards.	111111	Attachment Compression	Leather Yam/Thread		
Verification		Stretch/Recovery	Rolling Floors avering		
Debug			Factorial Factorial		
Cottons			Compacite		
	EN 50 13934-12013 (Tostike - Toske properties at reachese from using the DN 50 13934-12013 (Tostike - Toske properties at reachese from using the 50 13934-1 (MOD) Torole Strength and Dates	COmm) of Faince - Rent 1: Determination o shrip method COmm) of Marca - Rent 1: Determination o shrip method	nacimum force and disrigation		

Change which Results and Statistical values are selected and displayed.

Selected Find Force and Find Extension.

Selected Confidence Limits and Coefficient of Variation.

Specified default Find Force and Find Extension values. These can be changed at test time.

Click Apply to save the new Standard.



<u>Cancel</u>

Your new standard is now available in the Standards Library ready to make a new test as normal.



Custom standards can be found quickly by clicking the Custom Group.

SETTING UP A NEW JAW SCHEME

Any Jaws which are purchased at the same as the **Titan**⁴ instrument will be configured ready for use. However, Jaws purchased subsequently need to be setup manually using the following instructions. In addition you may wish to set up unusual combinations of Jaws to provide the best gripping and holding options for the specimen under test.

In this example we will pair T18 and T17 Jaws.



First, provide enough space between the top and bottom Jaw connection to be able to fit the new Jaws.

From TestWise File > Options > Manual

If the instrument has not been "Homed" since switch on then click the Home button.



Then use the Jog Up and Jog Down buttons to move the top and bottom Jaw connections to a suitable position for fitting the new Jaws.

TestWise Options		1000	and a state of the		-
General Graph	(Configure	jaws schemes			
Jaws		New Delete			Jog Mode
Jaw Schemes	T5		Name:	T17	
Load Cells	T17 LC		Description:	Universal Pneumatic Jaws	
Titan Settings	T20A		Reference Position:	559.06	mm
Titles	T206		Custom Offset:	0.00	mm
Users	T18-8		Load Separation:	0.00	mm
Manual	T4 T17		Top Jaw:	T17	•
rimware	T17 W		Bottom Jaw:	T17	•
	T17		Mode of Operation:	Tension	
	Current Jaw Scher T17	ne:			
]					



Move to Jaw Schemes in TestWise Options.

The list shown here are the Jaw Schemes currently set up:

T5
T17 LC
T20A
T20B
T22
T18-8
T4 T17
T17 W
T17

To begin the process of creating a new Jaw Scheme, click the New button.

Enter the details required.

Enter a Name and Description for the Jaw Scheme.

Reference Position, Custom Offset and Load Separation will be covered later.

Select the Top Jaw and Bottom Jaw from the drop-down lists.

Select the Mode of Operation: Tension or Compression:

This selection dictates the direction of movement of the carriage.

Selecting Tension results in the Carriage moving up, selecting Compression results in the Carriage moving down.





General Graph	Configure jaws schemes
Jaws	Save Reference Position Go Back
Jaw Schemes	
Load Cells	
TestWise Settings	Jog Up
Titan Settings	534.38 mm
Titles	0.02 N
Users	
Manual	
Firmware	Jog Dawn
	Apply OK Cased

To set the Reference Position, select Jog Mode.

The Reference Position is the point at which the top and bottom Jaws just touch without producing any force on the Load Cell.

Using the Slider, set a suitable speed, e.g., 100 mm/min.

Custom Offset

Some Jaw Schemes require a Custom Offset because the "nip" points cannot be brought together.

In this case the Custom Offset is 17.5mm.



Use the Jog Up and Jog Down buttons to move the Top Jaw carefully downwards until it just touches the Bottom Jaw without producing any force on the Load Cell.

As the Top and Bottom Jaws come in close proximity you can reduce the speed.

Once the Jaws are touching, click the Save Reference Position button, then the Go Back button.

General Graph	Configure jaws schemes			
Jaws	New Delet	e		Jog Mode
Jaw Schemes	Т5	Name:	T18-8 T17	
TestWise Settings	T17 LC	Description:	T18-8 Top T17 Bottom	
Titan Settings	T20A	Reference Position:	534.38	mm
Titles	T22	Custom Offset:	17.50	mm
Users Manual	T18-8	Load Separation:	0.00	mm
Firmware	T4 T17	Top Jaw:	T18-8	•
	T17	Bottom Jaw:	T17	•
	T18-8 T17	Mode of Operation:	Tension	•
	found by Schurz			
	T17	•		

Т5	Name:	T20A	
T17 LC	Description:	T20A Ball Burst (Compression)	
T20A	Reference Position:	562.72	mm
T20B	Custom Offset:	0.00	mm
T18-8	Load Separation:	250.00	mm
T4 T17	Top Jaw:	T20Aball	•
T17 W	Bottom Jaw:	T20Ash	•
T18-8 T17	Mode of Operation:	Compression	•

You can see that the Reference Position has been saved (534.38 mm).

To finish, click Apply and OK.

The "T18 T17" Jaw Scheme has now been created and set up.

Load Separation is used mostly in compression tests when the tooling may be dangerous or prevents loading a new specimen.

When the test has completed, the carriage will move up, 250 mm in this case, providing good and safe access to the specimen holder.

USING THE NEW JAW SCHEME





Place the specimen on the bar.

Using the Jog Down button (or Jog Up button if required), move the Top Jaw until the specimen can be gripped by the Bottom Jaw.



Current Task		
Set Jaw Separation Use the buttons below to set the jaw separation		
Jog Up		
Jog Down		
100.00 mm/min		
Save Jaw Separation		
Titan Data Results Settings		

When the position is suitable, click the Save Jaw Separation button.

Save Jaw Separation

This Jaw Separation will now be used during the test.

Note: the Jaw Separation can only be set manually for the first specimen.

Continue testing as usual.

T19 CALIBRATION CHECK WEIGHT SET

The T19 Calibration Check Weight Set should be used periodically, between annual loadcell calibrations, to determine the load reading accuracy on the **Titan**⁴ Universal Strength Tester.

The T19 Calibration Check Weight Set *cannot* be used on Titan¹, Titan² or Titan³. If you require a Check Weight Set for these models then contact your James Heal Agent and ask for 794-817.

Instructions for Use

Power on the Titan instrument and start the TestWise software and Login as normal.

Allow the instrument 30 minutes to "warm up" so that the loadcell and its associated electronics stabilise at room temperature. This is good practise in general whenever you are using Titan and is always done prior to calibration.



Remove both the top and bottom jaws from the screw thread adaptor.

Fit the Check Weight Holder in place of the top jaw. This allows the five circular weights to be centrally positioned below the loadcell.



0

Apply OK Cancel

Wise (

3

General

Jaw Sche

Load Cells TestWise Settings Titan Settings

Titles

Users Manual Firmware

Graph Jaws the for manual control of TRan Load Cell: 600 N Position: 500.00 mm Force: 0.00 N Home Torce: 0.00 N Home Torce: 0.00 N Home Torce Toro Barry Return Jave

From the File menu, choose Options, then Manual.



Click Tare Loadcell to zero the loadcell reading.





One at a time, carefully place all 5 circular check weights on to the Check Weight Holder, ensuring they are mounted centrally.

Record the Force reading after the $\underline{\text{fifth}}$ (final / last) weight has been added.

First weight:

Load Cell:	600 N
Position:	572.55 mm
Force:	10.01 N

Second weight:

Load Cell:	600 N
Position:	572.55 mm
Force:	20.02 N





Third weight:

Load Cell:	600 N
Position:	572.55 mm
Force:	30.03 N

Fourth weight:

Load Cell:	600 N
Position:	572.55 mm
Force:	40.04 N

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The fifth and final weight:

Load Cell:	600 N
Position:	572.55 mm
Force:	50.05 N

The total force added is 50N. The load reading on the screen should confirm this. You can use this value to determine the accuracy of the calibrated loadcell fitted to **Titan**. For 0.5% this value should be between 49.75 N and 50.25 N.

In your log you should record:

- Date and time
- Loadcell capacity and serial number
- The final reading from all 5 weights
- Pass / fail according to the tolerances above
- Initials of the operators carrying out the check

If the reading is out of tolerance and the loadcell fails the check, please repeat the check to ensure no errors have been made in the procedure. If the loadcell still fails the check, please contact your James Heal Agent to arrange for recalibration.

APPLICATIONS

This section of the Operator's is to provide an insight into Testing on Titan. It is by no means an exhaustive compilation of examples but hopes to give users and operators an understanding of the use of Titan and TestWise along with the specific tooling used in the examples.

It is import when carrying out any tests to consult an up-to-date copy of the relevant standard. The actual standard contains a wealth of detail which it is not possible to cover in this Operator's Guide and furthermore standards are constantly being revised and updated.

The applications covered in this section are based on textiles and leather, and the majority of textile tests are designed for the testing of fabrics, either woven, knitted or nonwoven.



This camera indicates that the Operator's Guide CD contains a movie relevant to the discussion. The movie files are in wmv or avi formats and require the appropriate media player to view them, e.g., Windows Media Player. Most of the videos do not require sound speakers.

Tensile Strength and Elongation

A wide variety of techniques have been developed to measure tensile strength and elongation. Two very popular methods are described below. Strength tests for yarn are covered separately later in this section.

Fabric – strip test

This example is based on ISO 13934-1.

The specimen is approximately 300mm in length and threaded down to a width of 50mm. If the fabric cannot be threaded down then it can be carefully cut to 50mm. The gauge length, or initial jaw separation is typically 200mm.



6 6

9990 0 899

450 -400 -350 -300 -250 -250 -250 -250 -250 -

The Operator's Guide CD contains a simple movie of this test.

900

			Test Wise 2013 • Test analysis 9	CANE .		- 0 -
Save	1. Select Standard Refine your results		Search	2. Enter Test Details Required Information	n	
S Cose Info	12934 🗙 Group	Test Type	Material	Jaw Scheme:	T17 Internal Presentiti Jant Top Jaw: 117 Bottom Jaw: 117	0
Recent New Standards Print Print Print Cotions	Fensettes Built-In Casten	Tervile Tear/Peel/Advertion Sean Attachment Componision Stretch-Recovery	Woren Nonesown Carboli Lawlunde Laebbar Yans/Thraud Keithied Cargostert Cargostert Gostontif/Felsited Cargosthe	Protession: Speed: — Optional Informat Test Name:	(25) + 200g/m ² + 100.00 - Restur Edu Dampie Tessile Tost	em/min Start
	EN 50 13934-12013 (1 Tottles - Tortle properties unit the trip restrict EN 50 13934-12013 (2 Tottles - Tortle properties unit the strip method EN 50 13934-21999 (7 Tottles - Tortle properties EN 50 13934-21999 (7	00mm) of fabrics - Part 1: Determination of maxis 00mm) of fabrics - Part 1: Determination of maxis 00mm) of fabrics - Part 1: Determination of maxis 5mm) of fabrics - Part 1: Determination of maxis	num force and dangation at maximum force num force and dangation at maximum force man force using the gain method man force using the gain method	Customer: Reference: Material: Comments: + Standard Contored	ABC Fabrics P0423456789 CP4020 Bleached Only Etticion	

Search for **13934** and select the correct option. Select the correct Jaw Scheme, in this case T17.

Set the Pretension value based on the fabric weight.

Speed defaults to 100 mm/min but there is an option of 20 mm/min which is used for fabrics which show very little elongation.

Speed:	100.00 -	
	20.00	1
	100.00	

Enter sample details. Change number of specimens and test directions if required.

Click Start.

Place the specimen centrally in the jaws.

When the specimen breaks the force and extension at break are shown in green.

Press Accept.

When the results are accepted, the breaking force is displayed on the left against the specimen number.

Continue with the remaining specimens.



Specimen in the jaws ready for testing



Specimen after testing

🔕 🔚 File	27 ▼ Test	Results						_		Test	tWise 2013 - Test Analy	rsis Software		_	_	_		_	_	
Print	Copy Graph General	Export 5 Data	Add Specimen •	Delete	Rese	t Select AL+ Test	Show Dat Points	a Offset	Extension mm Force N Units	•	Max Force Extension Energy At Break	Time To Break Force at 0.00 mm Extension at 0.00 N Columns	Observations	Vean Min Max	Range Median Std Dev Statist	Cont	f Limits ff Of Var			
Speci	nens		-	- Ą	Grap	h Re:	sults									÷	Results	Settings		→ û
Warp					Warp	Results											Find	Force At:		0.00
			447.15	5 N		simon		Force	(N)			Extension (—	Find	Extension A	t:	0.00
H	2		445.88		- 1	ennen	447	15	,,,,			12 21	,			—				
	, 1		448.15	5 N			445	.15				13.21								
	j		449.33	3 N	2	2 440.52 42.00														
٨	\ean		448.0	1 N			447	.JZ				12.07								
Weft					-		440	. 15				13.14								
	I		311.06	5 N			449	.33				13.29								
	2		296.82	2 N	Me	an	448	.01				13.07								
	3		320.45	5 N	Weft	Results														
	i i		309.90					Farra	(M)			Extension (—				
_	Nean		311.4	1 N		cimen	Max	rorce (N)			Extension (I	mm)			—				
					-		207	.00				12.90								
					-2		290	.02				12.46								
							320	.45				13.04								
					4		309	.90				12.65								
					5		318	.82				12.72								
					Me	an	311	.41				12.77					4			×
																	Titan	Data Resu	ilts Setti	ngs
Stand	lard: EN ISO 1	3934-1:2	.013 (200mi	n)	Test	Name: E	xample 1	[ensile]	Fest #1								Jaw S	cheme: T17	Load	Cell: 600 N

Switch between Results and Graph views.



To see a Print Preview, click Print.

The Print Preview will show the results and graphs as they are set up in the Results tab.

To print the document, click **Print**.



Fabric – grab test

This example is based on ASTM D5034 using the time-to-break principle. The specimen is approximately 150mm in length and a width of 100mm. An alignment mark is made on the fabric 37-38mm parallel to one of the long sides. The gauge length, or initial jaw separation is typically 75mm.



The Operator's Guide CD contains a simple movie of this test.

Search for **5034** and select the "20s" option. This options changes the speed of the test so that the specimens breaks in 20 seconds.

Select the correct Jaw Scheme, in this case T17. Ensure the 25x25mm jaw faces are in place. Pretension is not normally used in this test. Enter sample details. You can do this later if required.

Change number of specimens and test directions if required.

At least 5 specimens in the warp direction and 8 specimens in the weft (filling) direction are required. Click **Start**.

⊗I 🕁 🕬 🗟 File Test		-	TestWise 2013 -	Test Analysis So	ftware	_	_	-	
Save	1. Select Standard				2. Enter Test Details				
G Open	Refine your results			Search	Required Information	1			
🖄 Close	5034 💥				Jaw Scheme:	T17 Universal Pr	eumatic laws	•	0
Info	Group	Test Type	Material			Top Ja	aw: <u>T17</u>		
Recent	Favourites	Tensile	Woven			Bottom Ja Recommend	ed: T17 (click to select)		
New	Built-in Custom	Tear/Peel/Adhesion Seam	Nonwoven Coated/Laminated		Pretension:	No Preten	sion (pretension off)	•	0
Standards		Attachment	Leather						
Print		Stretch/Recovery	Knitted						Start
Verification			Floorcovering Component					Start E0	
Debug			Footwear Geotextile/Related		+ Optional Informat	ion		Start the c	urrent test
Options			Composite		- Standard Customi	ation			
Exit	ASTM D5034-09 (20s) Breaking Strength and Elonga	ation of Textile Fabrics (Grab Test)			Number of	necimens:	8		
	ASTM D5034-09 (300mm	ı/min)				Directions:	Both	•	
	Breaking Strength and Elonga	ation of Textile Fabrics (Grab Test)			Break	Detection:	5		% 0
							-		



Specimen in the jaws ready for testing

Ensure the 25mm x 25mm jaw faces are inserted.

One only in the top grip and one only in the bottom grip.



Specimen after testing

Additional specimens may be required to establish the correct speed to achieve a fabric break in 20±3s.

In this example the first warp specimen was broken in 6s at 300mm/min. These results will be disregarded. The speed is recalculated (6/20x300=90mm/min). Press Repeat and using a new specimen carry out the test again using the new speed.



The test is repeated at the new calculated speed.



In this case the specimen has broken in 22s. If the time-to-break is within tolerance (20±3s) then press **Accept**.

If it is out of tolerance then press Repeat again.

Test the remaining warp specimens. Repeat the process for the weft (filling) specimens.



ð 🔚 🐸 I∓ File 🛛 Test estWise 2013 - Test Analysis Tun I Top Jaw Reset • Jog Up Jog Down tension % • Force N • avourites Change Logout Exit Tare Loadcell Add * \$≫ Exte 9 3 6) 0 Offset Show Data Points Test Completed View Results ▼ [‡] Graph Results Specia Warp 1287.61 N 2000 1 484.06 mm 1230.69 N (0) -0.16N 3 1257.32 N Mean 1258.54 N Current Task + 1500 Force - N 🚯 Ē 1000 500 25 5 10 15 20 30 35 40 45 50 Extension - % 🤨 Titan Data Results Settings Standard: ASTM D5034-09 (20s) Test Name: Grab Tensile Example #3 Jaw Scheme: T17 Load Cell: 3000 N

When all specimens have been tested, click View Results in the green bar.

Switch between Results and Graph views.

🔊 🔚 📂 । 🔻				Test	Wise 2013 - Test Analysis Software		
File Test	Results						
Print Copy Graph Results General	Export Data	Delete Reset	Select Show Data Offset Points	Extension % Force N Units	Max Force Deservations Extension Time To Break Columns	Y Mean Range Conf Limits Min Median Coeff Of Var Max Std Dev Statistics	
Specimens	- û	Graph Resul	ts				⇒ Results Settings 👻 ‡
Warp		Warp Results					
1	1287.61 N	Specimen	Max Force (N)		Extension (%)	Time To Break (s)	
3	1257.32 N	1	1287.61		43.68	00:22	
Mean	1258.54 N	2	1230.69		42.37	00:21	
		3	1257.32		43.54	00:21	
		Mean	1258.54		43.19	00:21	
							Titan Data Results Settings
Standard: ASTM D5	i034-09 (20s)	Test Name: Grab	o Tensile Example #3				Jaw Scheme: T17 Load Cell: 3000 N



Graphs for three warp specimens with offset curves.

Yarn – Skein / Hank / Lea strength

This example is based on ASTM D1578 Option 2.

Each specimen is a hank (or skein) of 1m circumference and with 100 wraps, i.e., 100m of yarn. This means we are always attempting to break the equivalent of 200 threads simultaneously. For this reason a high capacity load cell is usually required and we recommend starting with the 5000N load cell.





Cotton hank on Skein Spools

Deliveration	and the second second		fertiese port - test analysis	1071094	and Dates
Test ive on Ac pen set	1. Select Standard Refice your results 1578 X Croup Feasite Built-In Cutton	Test Type Terrile Two:Poel/Advesion Seas	Septide 2010 Mid Awards Search. Hotorial Woos. Panorom Cashel Carlonda	2. Does Text Setup 2. Does Text Setup Setup: 4 Control (1997) Top Janes 32 Bottom Server 33 Charar Doestry, Nos Specifi	
fards plices dl	ASTM D1578-93 (2011) Standard Test Weltoot for So ASTM D1578-93 (2011) Standard Test Nethod for So	Affactheant Cooperation Stretch/Beovery • Option 2 reading Strength of Yan's & Sein Form • Option 3 reading Strength of Yan's & Sein Form	Lather Yan:/Thead Ritited Rescuenting Cooperating Gostandio/Inisited Corporate Testime	- tytord intervation Test Name Costoner Reference: Andreid Comments:	Sur
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Test	9999		enter Security - Test Autopo	Livear Density Izz	
pecines	Machine	Down Specimen Test	AL+ PEELS	Pasta Pater Goodwin	

Enter the yarn linear density if required. Enter sample details.

Search for skein and select the required

You can do this later if required.

Change number of specimens if required. Notice this test has no direction.

Click Start.

option.

Initally the jaw seperation is a nominal 400mm.









Adjust the jaw seperation distance so that the hank can be placed on the Skein Spools by using Jog Up or Jog Down buttons.

When the jaw separetion is correct, click Save Jaw Seperation.

When the next specimen is to be tested Titan will move to this saved position.



As the Skein Spools are not pneumatic, the Close options are not shown.

Click **Run** or press the F9 function key to start the test.

Notice that because we entered a value for linear density, the force axis now shows cN/tex (tenacity).

If linear density was not entered, then the force units would simply display cN (in this case).

Notice **CSP** in the results screen below, the "Skein Break Factor" or "Count Strength Product" is always the result of multiplying the linear density in English Cotton Count (NeC) by the breaking force in Pounds Force (lbf) regardless of which units of linear density or force were originally used.

◎ 🔜 🖆 =		TestWise 20	13 - Test Analysis Software		
File Test Results	_				_
Print Copy Copy Export General General	Reset Select Show Da Alt Point Test	Extension 🕉 🔹 Linear D sata Offset	ensity tex Skein Breaking Strengt Skein Break Factor (CS Time To Break Colum	th Extension @ Mean Rang 5P) Observations Min Std D Max @ Conf ns St	je ⊋ Coeff Of Var Dev Limits tatistics
Specimens 👻 🖡	Graph Resul	ts			🗢 Results Settings 📼 🖛
■ 1 1630.20 cN/tex ■ 2 2062.43 cN/tex	Results				
3 1694.79 cN/tex	Specimen	Skein Breaking Strength (cN/ tex)	Skein Break Factor (CSP) (NeC × lbf)	Time To Break (s)	
5 2408.87 cN/tex	1	1630.20	2164.23	00:22	
6 1756.91 cN/tex	2	2062.43	2738.06	00:23	
7 1769.69 cN/tex	3	1694.79	2249.99	00:21	
8 1700.27 cN/tex	4	2030.77	2696.03	00:24	
9 2357.22 cN/tex 10 2517.83 cN/tex	5	2408.87	3197.99	00:26	
Mean 1992.90 cN/tex	6	1756.91	2332.45	00:24	
	7	1769.69	2349.42	00:25	
	8	1700.27	2257.26	00:21	
	9	2357.22	3129.42		
	10	2517.83	3342.64	00:25	
	Mean	1992.90	2645.75	00:24	
	Conf Limits	±238.29	±316.35	±00:01	
	Coeff Of Var	16.72%	16.72%	7.73%	
					Titan Data Results Settings
Standard: ASTM D1578-93 (2011) - Option 2	Test Name: Skei	n Yarn Tensile Example #4			Jaw Scheme: T22 Load Cell: 3000 N



You can change the Extension, Force and/or Linear Density units here if required.

The changes will be reflected immediately in the results.

Fabric Tear – trouser tear test

This example is based on ISO 13937-2.

The specimens are 200mm length and 50mm width.

A mark is placed 25mm from the end to indicate the end of the tear length.

A cut of 100mm is made in the specimens.

25 ± 1	100± 1	

If the red dashed-line in the diagram above is representative of the direction of the warp yarns then this is a warp specimen, i.e., we are tearing across the warp yarns.

During the test we will tear the fabric along the black dashed-line.

Search for **13937-2** and select the required option. Select the correct Jaw Scheme (T17). Enter sample details. You can do this later if required. Change number of specimens and test directions if required. Click **Start**.







Test Completed



Then Accept the specimen data.

To begin the next specimen click Start again.

When all the tests have been completed click **View Results**.

When only one specimen is selected, the graph shows overlays as illustrated here.

The red vertical dashed line is the first peak. The peaks between the first peak and blue vertical dashed line on the left is ignored.

The peaks between the two blue vertical dashed lines is analysed.

When the **View Result** button is clicked, all results are selected and displayed. When viewing multiple tear graphs at the same time it is difficult to distinguish the lines for each specimen even when they have different colours.

View Results



If you do not require graphs in your test report, uncheck the **Graph** option in the Include section. Alternatively, check Individual Specimen Graphs, as shown below.

To print the test report, click Print.



Fabric Tear – wing-rip tear test

This example is based on ISO 13937-3.

The specimens are 200mm length and 100mm width but have a special shape. A mark is placed 25mm from the end to indicate the end of the tear length. A cut of 100mm is made in the specimens.



The lines a-b and c-d are lined up parallel to the edge of the jaw faces. The test proceeds as per ISO 13937-2.



Fabric Tear – other tests

Other common examples of tear tests are the tongue tear (double-rip) and trapezoidal tear.

Note, if the tongue tear according to ISO 13937-4 is to be carried out then special wide jaw faces are required as shown below.



Tongue tear (or double-rip) tear specimen ISO 13937-4



Trapezoidal tear specimen EN 1875-3

Seam Slippage – fixed seam opening method



This example is based on ISO 13936-1. The specimens are 400mm length and 100mm width. Other standards may vary in respect of specimen dimensions.

Five (5) specimens in each direction are prepared.

The dashed line is an alignment mark to aid positioning the specimens correctly in the jaws.

Just before testing, the specimen is cut into two (2) parts producing a "seamed specimen" and "unseamed specimen".

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The Test	Results			_	_	_		
Save Save As	1. Select Standard				2. Enter Test Details	3		
👩 Open	Refine your results			Search	Required Information	6		
d 0054	13936 X -1 X				Jaw Scheme:	T17 Universid Presentati	v Jeen	
anfo	Group	Test Type	Haterial			Top Jew: 117		
Recent	Ferourites	Terole	Waren		Speeds	50.00	(22)	mm/min
New	Guit-In Castore	Tear/Pool/Advestor	Costed/Laminated		Force:	200.00		N
Print Verification		Corporation Stretch/Recovery	Yam/Thread Kritted Floorcovering Component Floobenar					Start
Cottons			Geotextile/Related Composite		- Optional Informat	los	1	
	EN ISO 13936-1:2004 Textiles - Determination of opening method	I the slippage reststance of yarrs at a sear	in woven fabrics - Part 1: Poed :	ean 10	Customer:		-	
					Reference:			
					Material:			
					Comments:			
					+ Standard Custore	sation		

2. Enter Test Details



Search for 13936 and select the correct option.

Select the correct Jaw Scheme (T17) and fit the 25 mm x 25 mm jaw faces.

Enter sample details. You can do this later if required.

Change number of specimens and test directions if required.

Click Start.

ISO 13936-1 specifies that specimens should be subjected to 200 N.

However, some retailers and buyers have other force requirements and these have been reflected in the drop down list.

If a different force is required then enter this via the Manual button.

Because we have two specimens which react differently to the applied force, two break detection options are provided, one for the unseamed part, the second for the seamed part.







First, clamp the unseamed part of the specimen in the jaws. When clamping ensure no tension is applied to the specimen.

Click Run.

When the specified force is reached or a break is detected, the unseamed results are automatically accepted.

Clamp the seamed part of the specimen in the jaws. When clamping ensure no tension is applied to the specimen.

Click Run.

Note that the seamed part is shown by a dashed line as opposed to a solid line for the unseamed part.



When the specified force is reached or a break is detected, press **Accept**, with or without Observations.

When all the specimens have been tested, click **View Results**. Note that in the **Results Settings** it is possible to change the **Seam Opening Distance**. The default selection is 6mm.

<u>⊗ </u> ≥ •			TestWise	2013 - Test Analysis Software			
File Test Results) 🕅 🝙		Extension mm 👻	SO Force at 6mm 🔲 SO Force	ce at 3mm 🔲 SO Force at 1mm	n 🕼 Observations	Mean Range Conf Limits
Print Copy Copy Export Ac Graph Results Data Speci	dd Delete Reset	Select Show Data Offset AL Points	Force N V	50 Force at 5mm S0 Force 50 Force at 4mm S0 Force	ce at 2.5mm 🐨 Unseamed Max F ce at 2mm 🐨 Seamed Max For	orce ce	Min Median Coeff Of Var
General Specimens - 4	Graph Poru	est .	Units		Columns		Results Settings - A
warp/WEFT	warp/WEFT Re:	sults					Seam Straightening Force: 5.00 N
Breakdown N	Specimen	SO Force at 6mm	SO Force at 4mm	Unseamed Max	Seamed Max Force	Observations	Seam Opening Distance: 6.00
3 Breakdown N	·	(N)	(N)	Force (N)	(N)		Seam Opening Distance: 5.00
Mean - N	1	Breakdown	94.30	165.83	120.53	FTS = Fabric tears at seam	Seam Opening Distance: 4.00
	2	Breakdown	99.50	163.20	120.43	FTS = Fabric tears at seam	Seam Opening Distance: 3.00
	3	Breakdown	91.10	157.87	123.85	FTS = Fabric tears	Seam Opening Distance: 2.00
	Mean		94 97	162 30	121.60	at seam	Seam Opening Distance: 1.00
				102.30	121.00		_
							4
							Titan Data Results Settings
Standard: EN ISO 13936-1:2004	Test Name: Sea	am Slippage Test Exampl	.e #6				Jaw Scheme: T17 Load Cell: 600 N
S I → File Test Results		<u> </u>	TestWise	2013 - Test Analysis Software			
) 🕅 🍘		Extension mm 🔹 📝	SO Force at 6mm 🔲 SO Force	e at 3mm 🔲 SO Force at 1mm	n 👿 Observations	Mean Range Conf Limits
Print Copy Copy Export Ac Graph Results Data Speci	dd Delete Reset imen •	Select Show Data Offset AL + Points	Force N V	SO Force at 5mm SO Force SO Force at 4mm SO Force	ce at 2.5mm 😺 Unseamed Max Fore	ce	Min Median Coeff Of Var
General	Te	est	Units		Columns		Statistics
warp/WEFT	Graph Resu	lts					Seam Straightening Force: 5.00 N
1 Breakdown N	200 -						Seam Opening Distance: 6.00
2 Breakdown N 3 Breakdown N		(0)					Seam Opening Distance: 5.00
Mean - N	-	₽		лЛ			Seam Opening Distance: 4.00
	150						Seam Opening Distance: 3.00
	-						Seam Opening Distance: 2.50
	3				M.A.		Seam Opening Distance: 2.00
	2 100 -	Ξ				<i>(</i>	Seam Opening Distance: 1.00
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	+-	5	10	15	20 25	5 30	
				Extension - mm 🤨			Titan Data Posults Sottings
							ritali Data Resutts Settings

The notation used above, i.e., weft/warp and warp/weft, spoken as "weft over warp" and "warp over weft" can often be confusing. Here are some tips

Weft over warp slippage is defined as movement in the warp direction of the fabric, such that weft yarns move over stationary warp yarns. This means the seam is in the same direction as the weft yarns and the length of the specimen is in the warp direction.

Warp over weft slippage is defined as movement in the weft direction of the fabric, such that warp yarns move over stationary weft yarns. This means the seam is in the same direction as the warp yarns and the length of the specimen is in the weft direction.

Seam Slippage – fixed load method

This example is based on ISO 13936-2.

The specimens are 200mm length and 100mm width. Other similar standards may vary in respect of specimen dimensions. The specimens comprise of one (1) part only, the seamed specimen. Five (5) specimens in each direction are prepared. The gauge length (initial jaw separation) is 100mm.

The user manually measures and inputs the seam opening measurement values.



Search for 13936 and select the correct option.

Select the correct **Jaw Scheme** (T17) and fit the 25 mm x 25 mm jaw faces.

Enter sample details. You can do this later if required.

Change number of specimens and test directions if required.

Note there are three (3) popular force values often quoted in specifications. The chosen force depends on the end-use of the article.

Apparel ≤200 gm ⁻²	60N
Apparel >200 gm ⁻²	120N
Furnishings	180N

Other, less frequently used forces are also listed.

Click Start.

Secure the specimen in the jaws with the seam mid-way between and parallel to the edges of the jaws.

For this printed cotton satin fabric for a furnishing end-use, a force of 180N will be applied.



Current Task

Measure Seam Opening

Please measure the seam opening and record the value below. You can also enter the seam measurement later in the results view







When the force returns to 5N, you have 30 seconds to manually measure the seam opening distance and enter and save the value.

If you do not enter within this time, note the measurement so that you can enter it later.

If you need to record any of the manual seam opening measurements, then click Measure-Seam Opening



This dialogue box will be presented to you.

Enter the seam opening values if required, followed by OK.

Click View Results

View Results

B 🗐 🗢 (* File – Test	Results		_	Testwise30) - Test Analysis Soft	20		_		
Print Copy C Graph Are	aby Export Presur suits Data -	All De	Reset Select Show Outs Of Text	Extension me • Net Force H •	Max Force Sean Opening Observations Columns	Arean Range Ann Ann Ann Ann Ann Ann Ann Ann Ann	Coeff Limits			
Specimens	* 0	Craph Re	ults						Results Settings	- 1
warp/WEFT	5.00 mm	warp/WEFT R	lesults							
2	6.00 mm	Specimen	Max Force (N)		Ser	m Opening (mm)				
3	4.00 mm	4	80.19		5.0	90				
Mean	5.00 mm	2	80.13		6.0	90				
		3	80.10		4.0	90				
		Mean	80.14		5.0	00				
									Titan Data	Results Settings
Standard: EN IS	50 13936-2:2004	Test Name: S	eam Slippage Example #7						Jaw Scheme: T	7 Load Cell: 600 N

Graph Res	ults	
/arp/WEFT Re	esults	
Specimen	Max Force (N)	Seam Opening (mm)
1	80.19	5.00
2	80.13	6.00
3	80.10	4.00
Mean	80.14	5.00



The Operator's Guide CD contains a simple movie of this test.

Stretch & Recovery – line contact

This example is based on EN 14704-1.

The specimens are approximately 300mm length and 50mm width. Other similar standards may vary in respect of specimen dimensions. Five (5) specimens in each direction are prepared. The gauge length (initial jaw separation) is 200mm.

EN 14704-1 describes two (2) methods, Method A and Method B. Method A uses Line Contact jaw faces and Method B uses Loop Bars (or C-Clamps).



The Operator's Guide CD contains a simple movie of this test.

Type **14704** in the search box and select an appropriate option. This examples uses the method described in section 9.1 including a 60 second force decay period.

Select the correct Jaw Scheme (T17) and fit the Line Contact jaw faces. Enter sample details. You can do this later if required.

Change number of specimens and test directions if required.

Click Start.

	-	1000	TestWise 2013 - Test	t Analysis Soft	ware		
File Test	1. Select Standard				2. Enter Test Details		
Save As	Refine your results		s	earch	Required Information		
🖉 Close	14704 💥				Jaw Scheme: T	17	. 0
Info	Group	Test Type	Material		U	Top Jaw: 117	
Recent	Favourites	Tensile	Woven		Во	ottom Jaw: T17	
New	Built-in Custom	Tear/Peel/Adhesion Seam	Nonwoven Coated/Laminated				
Standards		Attachment	Leather				Start
Print		Compression Stretch/Recovery	Knitted		- Onting of Information		
Verification			Floorcovering Component		- Optional information		
Debug			Footwear Geotextile/Related		Gustemen		
Options			Composite		Quality:		
Exit	EN 14704-1 9.1 - HB Wo	ven Fabrics ty of fabrics - Part 1: Strip tests			Shade:		
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	EN 14704-1 9.1 Method	ty of fabrics - Part 1: Strip tests					
	Determination of the elasticit	ty of fabrics - Part 1: Strip tests			+ Standard Customisat	tion	
	EN 14704-1 9.1 Method Determination of the elasticit	B ty of fabrics - Part 1: Strip tests					
	EN 14704-1 9.1 Method Determination of the elasticit	B (Force Decay) ty of fabrics - Part 1: Strip tests					
	FN 14704.1 9 7 - HR Kni	ttod Fabrics					



Above: Line Contact jaw faces Right: Specimen with Gauge Marks





If Recovered Elongation is required, measure the gauge marks at the specified periods. In this example we used 60s (1 minute). Here are all the weft results and graphs as displayed on screen with an offset. Note that it is possible to change the analysis in the Results Settings section.



Depending on the elastic characteristics of the specimen and the speed of the test, these procedures can be take a lot time relative to other types of test procedure.

Stretch & Recovery – loop bars

This example is based on EN 14704-1.

The specimens are approximately 250mm length and 75mm width. Other similar standards may vary in respect of specimen dimensions. Five (5) specimens in each direction are prepared. The gauge length (initial jaw separation) is a nominal 100mm, equivalent to the circumference of the loop specimen.

EN 14704-1 describes two (2) methods, Method A and Method B. Method A uses Line Contact jaw faces and Method B uses Loop Bars (or C-Clamps).



The Operator's Guide CD contains a simple movie of this test.

Search for 14704 and select the appropriate option. This examples uses the method described in section 9.2.

Select the correct Jaw Scheme (T18) and fit bars with a diameter between 4mm and 8mm. This example used 8mm diameter bars.

Note we have selected a force of 60N.

Enter sample details. You can do this later if required. Change number of specimens and test directions if required. Click **Start**.

3 🖃 🖻 🗖			TestWise 2013	- Test Analysis Sof	tware		
File Test	Results		_	_	_		
Save	1. Select Standard				2. Enter Test Details		
🚰 Open	Refine your results			Search	law Scheme:	T18 8.0mm Bars	
🚰 Close	14704 💥				sun senenie.	Loop Bars	
Info	Group	Test Type	Material			Top Jaw: 118 8.0mm bar Bottom Jaw:	
Recent	Favourites	Tensile	Woven		Force:	60.00	
New	Built-in Custom	Tear/Peel/Adhesion Seam	Nonwoven Coated/Laminated			45.00	
Standards		Attachment	Leather			75.00	
Print		Compression Stretch/Recovery	Yarn/Thread Knitted				
📝 Options			Floorcovering Component		- Optional Informat	ion	
🔀 Exit			Footwear		Test Names	Stratek Europele #0	
			Geotextile/Related Composite		Test Name:	Stretch Example #9	=
					Customer:		
	EN 14704-1 9.2 Method Determination of the elastic	I A - Fixed Elongation ity of fabrics - Part 1: Strip tests			Reference:		
	EN 14704-1 9.2 Method Determination of the elastic	d A - Fixed Load ity of fabrics - Part 1: Strip tests			Material:		
	EN 14704-1 9.2 Method Determination of the elastic	d A - Fixed Load (Force Decay) ity of fabrics - Part 1: Strip tests			Comments:		
	EN 14704-1 9.2 Method Determination of the elastic	d B - Fixed Elongation ity of fabrics - Part 1: Strip tests		=	— Standard Customi	isation	
	EN 14704-1 9.2 Method Determination of the elastic	d B - Fixed Load ity of fabrics - Part 1: Strip tests			Number of 1	Specimens: 3	•
	FN 14704.1 9 7 Methor	R . Fived Load (Force Decay)		-		Directions: Width	• • • •

When all specimens have been tested click **View Results**. Here are some typical results and graphs.

⊗ 🔜 📂 ∓ File Test R	Results	_	_		TestWise 2013	- Test Analysis Software	_	_	
Print Copy Graph Copy Results General	Export Measure	Add Deteto	e Reset Select • All• Test	Show Data Points	Extension % • Force N • Units	Clongation at 45.00 N Modulus at 40.00 % Un-recovered Elongation at 1 mins	Un-recovered Elongation at 60 min Recovered Elongation at 1 mins Recovered Elongation at 60 mins Columns	IS Force Decay (Exercising)	Mean Conf Limits Coeff Of Var Statistics
Specimens		~ û	Graph Re	sults			⇒ R	esults Settings	~ û
Weft		109 20 8	Weft Results					+ Find Extension At	
2		193.35 %	Specimen	Elongation	at 45.00 N (%)	Modulus at 40.0	0 % (N)	+ Find Force At	
3		194.56 %	1	198.20		2.35		+ Load Decay	
Mean		195.37 %	2	193.35		2.52			
			3	194.56		2.43			
			Mean	195.37		2.44			
							i	III Titan Data Results Sett	ings 🕨
Standard: EN 14704-	1 9.2 Method B	- Fixed Load	Test Name: S	tretch Example	#9			Jaw Scheme: T18 8.0mm Ba	Irs Load Cell: 120 N

We can see the graph for each specimen more clearly if we "offset" the curves.



Changing the Results Setting:

You can see that the extension is being determined at 45N. However, we applied a tension of 60N to the specimen and want to find the extension at this higher force.



Expand "Find Extension At" Force. You can see the current setting is 45 N.



Type in the new value required, in this case, 60N.

Notice that as soon as you confirm the new value by pressing the enter key, the headings and results are updated.



The Modulus is derived from the "Find Force At" Extension and a typical value is 40%. Type a new value if required and press the enter key.

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File Test Results		_	_						
Print Copy Copy Export Measure Graph Ceneral	Add Specimen*	Reset Select Show Data Test	Extension % • Force N • Units	Elongation at 60.00 N Modulus at 40.00 % Un-recovered Elongation at 1 mins	Un-recovered Recovered Elo Recovered Elo Colum	Elongation at 60 mins mgation at 1 mins mgation at 60 mins ms] Force Decay (Exercising)] Observations	 Mean Conf Limits Coeff Of Var Statistics 	
Specimens 👻 🖡	Graph Resu	lts			-	Results Settings			- ↓
Weft	Weft Results					+ Find Extension	n At		
2 206.24 %	Specimen	Elongation at 60.00 N (%)		Modulus at 40.00 % (N)		- Find Force At			
3 206.89 %	1	211.28		2.35		Extension:	40.00	%	
Mean 208.14 %	2	206.24		2.52		Cycle:	5 - 10	ad 🔹	
	3	206.89		2.43		cyde.			
	Mean	208.14		2.44		+ Load Decay			
	Conf Limits	±6.82		±0.20					
	Coeff Of Var	1.32%		3.34%					
						Titan Data Res	sults Settings		
Standard: EN 14704-1 9.2 Method I	B - Fixed Load	Test Name: Stretch Example	#9				Jaw Scheme: T18	-8 Load Cell:	: 120 N



Specimen before testing on Loop Bars



Specimen at maximum specified load

Button Strength

The example is based on BS 4162, but instead of using a welding rod to break the button it uses a strong braided cord. It is the force required to pull a loop of braided cord which has been threaded through two (2) adjacent holes and break the button.

The tooling used is a combination of T17 (to hold the braided cord) and the T4 Button Holder to hold the button.

When using the T4 Button Holder, the button is fully enclosed so that if the button should shatter when broken all of the fragments will be retained.



The Operator's Guide CD contains a simple movie of this test.



Concernance de la concernance

Search for **button** and select the appropriate option.

This examples uses the method described by a popular UK Retailer.

Select the correct Jaw Scheme (T4).

Enter sample details. You can do this later if required.

Change number of specimens if required.

Click Start.

The test will begin with a nominal jaw separation of 100 mm but this can be adjusted to suit individual specimen needs.

Click Save Jaw Separation when a suitable gauge length is obtained.


Button before testing with braided cord attached



Button is broken and fragments remain inside T4



Button in T4 and braided cord secured by T17



Button fragments removed from T4

These are the results as seen on screen.

The four buttons used were all different, hence the variation in results.



Security of Attachments

The example is based on EN 71-1. It a tension test with three (3) force options: 50, 60 or 90N. This standard was originally designed for the testing of children's toys but has been adopted for other uses mainly due to lack of alternative standards (although this is slowly changing).



The Operator's Guide CD contains a simple movie of this test.

and the second	1. Select Standard				2. Enter Test Details				
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Type **71-1** in the search box. Select the correct Jaw Scheme (T12).

Choice the appropriate force. The choice of speed is dependent on the product under test. EN 71-1 states the force should be applied within 5s, so the speed may need adjusting accordingly.

Click Start.







The initial jaw separation is 100m.

Move the grip to the correct position to hold the attachment and then click **Save Jaw Separation**.

Note that the chosen tooling may vary from that illustrated (three pronged grip) as the tooling is chosen to best grip the attachment. Here are the results as seen on screen, also showing an observation made on specimen number 4.



Ball Burst

This is a multi-axial compression test in which a ball is pushed through the specimen and the force required recorded.

This type of bursting test is not as popular as the test carried out on pneumatic or hydraulic bursting strength testers and the results obtained from the ball burst test are not comparable with those from the inflated diaphragm methods.

This example uses ASTM D6797. The test has no direction.



The Operator's Guide CD contains a simple movie of this test.



Type 6797 in the search box. Select the required Jaw Scheme (T20A). Select the required pretension.

Enter sample details. You can do this later if required.

Change number of specimens if required.

Click Start.

strength test.

When a compression Jaw Scheme is about to be used, the user is prompted to Acknowledge this.

Check that T20A is physically connected to Titan.



T20A setup ready for testing

Here are the test results as shown on screen.



Titan⁵ and TestWise Operator's Guide



This test is very similar to a basic tensile



Specimen after bursting by the ball

Sin Strat	Test Wise 2013 - Test Analysis Software	- 0' <mark>- ×</mark> -
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	Conf Limits ±49.46	
	Coeff Of Var 4.48%	
		Titan Data Results Settings
Standard: ASTM D6797-07	Test Name: Ball Burst	Jaw Scheme: T20A Load Cell: 600 N



SAFETY

General

Titan has been specifically designed with the Operator's health and safety in mind. This ensures the minimum Operator stress and fatigue. Titan is virtually silent in operation to suit the laboratory environment.

Please observe the following points at all times:

- Take extreme care when moving the machine. Never attempt to manoeuvre Titan without the appropriate lifting gear. Without jaws, Titan weighs approximately 85kg.
- Always remove both hands from the specimen area before starting a test.
- Take care when changing grips and load cell assemblies. Ensure they are always firmly and securely attached to the machine.
- Never place any obstruction in the path of the carriage.
- Always ensure the jaw faces are correctly seated.
- Always ensure pneumatic connections are secure when changing jaws.
- Some materials when tested to rupture can leave the test area either by a whipping action or as fragments. A risk assessment should be made for these types of uncommon materials.

Emergency Stop Button

Familiarise yourself with the location of the large red Emergency Stop Button at bottom left of the instrument. Use this button only in case of emergency to completely stop Titan.

Impact Protection

When the load on an obstruction, such as a hand, equals the weight of the jaw the drive will stop, this will prevent any serious injury. The Operator should, however, always be vigilant and never obstruct the motion of the jaw. If in doubt hit the Emergency Stop Button.

Soft Closing Jaws

Full jaw pressure is automatically applied when the Operator presses the **Start** button. *When loading a sample, only a low pressure is applied*, this will help prevent serious injury. The Operator should, however, always be vigilant and never place fingers between the jaw faces. If in doubt hit the Emergency Stop Button.

UNPACKING

Titan⁴ is attached to a wooden pallet and metal transport frame. These must be removed before use.



Read all of these instructions before beginning to un-pack the instrument.

Before un-packing, transport the box to the room where the instrument is to be located.

Remove the outer top cover to reveal the Accessories Tray.

Remove any additional internal packaging.

Then carefully remove the outer cardboard packaging to reveal the Yellow Transport Frame.



Before moving the instrument, remove the bolts (tools provided) which secure the Yellow Transport Frame to the wood pallet.

With the instrument still lying on its back, lift into the upright position. The 'curved heel' on the bottom lifting frame is designed to ease this lifting procedure.



Once raised into the upright position, the bottom Yellow Transport Frame can be removed from the base by unbolting the front cross member (unscrew the bolts on the left and right as indicated by the red circle).

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Then unbolt the remaining left and right sides of the bottom frame from the base of the instrument.



The top Yellow Transport Frame can now be removed from the instrument.

INSTALLATION

Installation Requirements

Desk depth750 mm recommended, 600 mm absolute minimum.Desk length1500 mm to allow for Titan, PC (laptop or desktop style), monitor and printer.



Electrical supply

Machine single phase 110 - 230Va.c. +/-10% at 10A maximum, 50/60Hz, 500W. Provision must also be made for the PC, monitor and optional printer.

Compressed Air supply



It is recommended the air supply has a minimum Free Air Delivery (FAD) of 11 litres per minute at 8 bar (116psi) and must be filtered to 5 microns (absolute) or better to remove excess particulates, oil and moisture. Minimum air supply 7 bar.

Note: Titan is fitted with onboard filtering. However, a contaminated air supply (not filtered) will result in early blockage of the onboard filter element.

For laboratories without a dedicated compressed air supply, we can offer the choice of a 110V (60Hz) or 230V (50Hz) silent laboratory compressor.

Environment

As with all physical testing, tests should be carried out in a standard atmosphere for testing textiles, i.e., 20°C and 65% RH. However, the instrument will operate satisfactorily providing temperature and humidity levels are relatively stable. The humidity conditions must be non-condensing. The surrounding area should be electrically and magnetically stable.

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Titan⁵ and TestWise Operator's Guide

TECHNICAL SPECIFICATION

Measuring Principle	Constant Rate of Extension (CRE)
Capacity (Tension & Compression)	5000N, 5kN, 500kgf and 1100lbf
Load Cells	5000N, 1000N, 500N, 200N, 100N Quick-change cartridge, auto-recognition "S" beam cells
Test / Return / Jog Speed	1 - 2000mm/min
Accuracy of Load Cells Class	0.5 (±0.5%) from 2 - 100% of load cell capacity
Speed Accuracy	± 0.005%
Maximum Stroke	560mm with T27 grips fitted
Total Vertical Space	700mm with no grips fitted
Positional Accuracy	± 0.00125mm
Calibration	Load cells: ISO 7500-1 (UKAS accredited) and ASTM E4 Instrument: ISO 7500-1 and ASTM D76
Safety	CE marked (complies with Machinery, Low Voltage and EMC Directives)
Warranty	18 months