🔿 James Heal



OPERATOR'S GUIDE

Titan⁵ Universal Strength Tester Model 1710/05

TestWise™ Test Analysis Software

Covering Serial Numbers 1710/05/17/1001 and upwards

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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 145 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 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
- Tensile Strength and Tear Resistance of Rubber (requires Titan "E" version)

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 seven (7) 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®10, Windows [®] 8/8.1, Windows [®] 7, Windows [®] Vista (SP2). Compatible with 32-bit or 64-bit OS where applicable. The Microsoft dotNET Framework must be installed – dotNet is part of Windows 10 and 8/8.1, and some releases of Windows 7 – TestWise will advise if required.
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).
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. PDF generation is available within TestWise, an additional "PDF printer" is not required.
Internet	Broadband – Optional, but required to take advantage of the James Heal Online Support Package.

James Heal have made 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 the USB Licensing Dongle (USB drive). The **Titan** instrument cannot be used without **TestWise and the Licensing Dongle**.

The PC must be running Windows Vista, Windows 7, Windows 8/8.1 or Windows 10. Other operating systems or Windows running in a virtual machine (VM) are not supported. **TestWise** is optimised for Windows 7and above.

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 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 also a USB 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

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.

] ≠ Test	Results				TestWise 2015 - 1	fest Analysis Software
int Copy Co Graph Res	lin XII X copy Export Exp isults Data Exe neral	art Add Delet	Reset Select Show Data Offs Test	set Force kgf - Office Force		Mean Range Conf Limits Min Median Coeff Of Var Max Std Dev Statistics
					TestWise cannot	detect a valid license dongle
ecimens		Graph	sults			
1	10.61 k	f Results				
2	10.04 k	f	No. 5 (1-6)	ton from Question	//D	Edución da Como Como
		f	Max Force (kgf)	ómm Seam Opening	; Force (kgf)	Extension at 6mm Seam Openin
2	10.04 k	gf Specimen	Max Force (kgf) 20.08	émm Seam Opening 10.61	; Force (kgf)	Extension at 6mm Seam Openin 12.66
2	10.04 k 10.68 k	gf Specimen			; Force (kgf)	
2	10.04 k 10.68 k	f Specimen 1	20.08	10.61	; Force (kgf)	12.66
2	10.04 k 10.68 k	f Specimen 1	20.08 22.51	10.61 10.04	; Force (kgf)	12.66 12.32
2	10.04 k 10.68 k	sf sf sf 1 2 3	20.08 22.51 24.72 22.44	10.61 10.04 10.68	; Force (kgf)	12.66 12.32 11.80

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

∎ II - File Test	Results				TestW	Wise 2015 - Test Analy	sis Software	
Print Copy Co Graph Res Genu Specimens	ults Data Excel	Specimen	Reset Select Show Data Offset	Extension mm • Force kgf • Units	Max Force Max Force form Seam Opening Force Extension at 6mm Seam Opening Columns	bservations V M	n 🗍 Median	Conf Limits Coeff Of Var
1 2 3	10.61 kgf 10.04 kgf 10.68 kgf	Graph Resul Results Specimen	Max Force (kgf)		6mm Seam Opening Force (kgf)	E	xtension at 6m	um Seam Opening (mm)
Mean	10.44 kgf	1 2 3	20.08 22.51 24.72		10.61 10.04 10.68	1	2.66 2.32 1.80	
		Mean Conf Limits Coeff Of Var	22.44 ±5.77 10.34%		10.44 ±0.8678 3.34%	±	2.26 1.08 .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 may be installed on some operating systems.



The licensing dongle is now installed.

Leave the licensing dongle permanently inserted into the USB port.

Software Installation



Insert the **TestWise** Licensing Dongle into a free USB port on the Titan PC.

₫	TestWise 2015 Setup 📃 🗖 🗙
🔿 James Heal	Welcome to the TestWise 2015 Setup Wizard
	The Setup Wizard allows you to change the way TestWise 2015 features are installed on your computer or to remove it from your computer, Click Next to continue or Cancel to exit the Setup Wizard.
	Back Next Cancel





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

Click Next to continue.

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

This is the default folder in Windows 7, 8/8.1, Vista and Windows 10.

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

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

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









TestWise is being installed, please wait.

During the installation process, the TestWise installer will also run another installer for the communications driver.

Also follow the instructions and allow this driver to be installed.

Click **Next** to continue.

Click $\underline{\textbf{F}inish}$ to complete the installation of the driver.





TestWise has been successfully installed.

Click Finish

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 if required.

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.



Work Offline Connecting using COM99	 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. 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. Continue	Setting up new users is detailed on the next page.
Edt	Click the Continue button to begin using TestWise .
Non- Non- <th< th=""><th>You will then be taken to the TestWise main screen.</th></th<>	You will then be taken to the TestWise main screen.
2015 International and a second	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.



From the main screen

To manage users, go to File then Options.



The **TestWise** Options will be displayed. Choose Users.

To create a new user, firstly click on the type of user you want to create, then click New.

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)	Tes	tWise Options	
General Graph	Edit the people allowed	to use TestWise	
Jawa	New Dele	te	
Jaw Schemes Load Cells	Administrator		A N Other
TestWise Settings	Operator	Username:	ano
Titan Settings	A N Other	Password:	•••••
Titles		Account Type:	Administrator •
Users			
Manual			
Firmware			
	Edit the people allowed	to use TestWise	
General Graph	Edit the people allowed	to use TestWise	
Jaws	New Dele	te	
		te Name:	Tech
Jaw Schemes Load Cells	New Dete Administrator Operator	Name:	
Jaw Schemes Load Cells TestWise Settings	Administrator	Name: Username:	Tech
Jaw Schemes Load Cells TestWise Settings Titan Settings	Administrator Operator	Name: Username: Password:	Tech
Titan Settings Titles	Administrator Operator A N Other	Name: Username:	Tech
Jaw Schemes Load Cells TestWise Settings Titan Settings Titles Users	Administrator Operator A N Other	Name: Username: Password:	Tech
Jaw Schemes Load Cells TestWise Settings Titan Settings Titles Users Manual	Administrator Operator A N Other	Name: Username: Password:	Tech
Jaw Schemes Load Cells TestWise Settings Titan Settings Titles Users	Administrator Operator A N Other	Name: Username: Password:	Tech
Jaw Schemes Load Cells TestWise Settings Titan Settings Titles Users Manual Firmware	Administrator Operator A N Other Tec.Is	Name: Username: Password: Account Type:	Tech
Jaw Schemes Load Cells TestWise Settings Titan Settings Titles Users Manual	Administrator Operator A N Other Tec.Is	Name: Username: Password:	Tech

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:	
Password:	Login
	Exit

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.

	Test Wise 2015 - Test Analysis Software	- 6 💌
Test Test Nort Specifier Spec	No No No No Rest Sector No No Rest No No No	
Velcome to TestWise 2015 3 Max Recent Standards	Yere Versent Texts	Titas SN: 1410/15/1001 Licesser: James Heal Version: 5.4.11.0 Connected: Yes Load Cell: 5000 M Emergency 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 Standards Arcadia AG39 (07.12) SEAN SLIPPAGE - GARMENT SEAN METHOD	The 5 most recently used standards are displayed. If you click the standard it will be selected ready to start a new test.
5 Most Recent Tests Example Manual Seam Opening Test Standard: Arcadia AG39 (07.12) File: C:\Users\pg.JHEAL\Desktop\Example Manual Seam Opening Test.xml	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	
Trouser Tear Example #5 Standard: EN ISO 13937-2:2000 File: C:\Test Results\Trouser Tear Example #5.xml	If the mouse if hovered over the test it is highlighted.
5 Most Recent Tests	
Trouser Tear Example #5 Standard: EN ISO 13937-2:2000 Create a new test based on this one Tear Example #5.xml	If Sis clicked then a new test based on this standard and any customisations will be setup ready to start a new test.
5 Most Recent Tests	L _
Trouser Tear Example #5 Standard: EN ISO 13937-2:2000 File: C:\Test Results\Trouser Tear Example #5.xml Remove this item from the list	If si clicked then this test is removed from the Most Recent list. Please note it is not deleted.
Titan SN: 1710-05/17/1001 Licensee: James Heal	The top right of the TestWise start screen shows some useful information about TestWise and your Titan.
Version: 7.1.20.0	Licensee will normally display your company name.
Connected:	
Load Cell:	
Emergency Stop:	
Firmware:	

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	
Javs Jav Schemes Load Cells TestWies Settings Tilan-Settings Tilan- Users Manual Firmware	Communications Version: 5.0.11.0 Serial Port: C0M98 • C Offline Sample Freq (Test): 50.00 © ms Sample Freq (Other): 200.00 © ms Test Files Default Path: Languages Languages	
	Use operating system language English	
	Licerening PTESS/Chickes (Fraditional) TestWise Version: 5.0.11.0 English TestWise Version: 5.0.11.0 English Titan SH: 1410/14/100 Espainio Licersee: James Heal Truk Turkish	
	Download Configuration to	Titan
	Apply OK C	ancel

> 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.

J	TestWise Options
General	General options for working with TestWise
Graph	
Jaws	Communications
Jaw Schemes Load Cells	Version: 5.0.11.0
TestWise Settings	Serial Port: COM98 🔹 🗌 Offline
Titan Settings	Sample Freq (Test): 50.00 🔹 ms
Titles	Sample Freq (Other): 200 00 ms
Users	Sample Freq (Other): 200.00 🗘 ms
Manual	Test Files
Firmware	Default Path: CATest Results
	Languages
	Vuse operating system language English
	Licensing
	TestWise Version: 5.0.11.0
	Titan SN: 1410/14/1001
	Licensee: James Heal
	Download Configuration to Titan
	Apply OK Cancel

0	Test	Wise Options		×
General Graph	Titan settings			
Jaws	Changes to settings shall only ap	ply to newly created tests		
Jaw Schemes	Pretension Speed:	20.00	mm/min 💌	
Load Cells	Speed:	100.00	mm/min 🔻	
TestWise Settings	Home Speed:	2000.00	mm/min 💌	
Titan Settings Titles	Click Threshold:	500	ms	
Users	Hold Threshold:	2000	ms	
Manual	Air Pressure (Soft):	2.00	bar	
Firmware	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	8	
	Air Pressure Offset (ITV):	0.1000	bar	
	FlexoLed Brightness:	100		
	L	Ap	olv OK Cancel	-1

1		TestWise Opti	ions	
General Graph	0	Specify names for the test attributes		
Jaws	1;	Test Name		
Jaw Schemes	2:	Customer	×	
Load Cells			_	
TestWise Settings	31	Reference	×	
Titan Settings	4:	Material	×	
Titles	5:	Comments	×	
Users				Add
Manual				Add
Firmware				



Specify names for the test attributes

1:	Batch Number	×
2:	Customer	×
3:	Article Number	×
4:	Composition	×
5:	Colour	×



> 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 dt another title field

Add

— Optional Informati	on
Test Name	
Customer	
Reference	
Material	
Comments	
Remove	
+ Standard Customi	ation



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:

3 Save Ao	1. Select Standard			line come
Geen Conter Recover Texts	seo 🗙 Group	Test Type	Naterial	Search
ecent	Fivewrites	Texsile Texr/Peel/Adhesion	Maveri Hanvavan	
	Custaw	Sean Attachawrit Compression	Coated/Lawinated Lawther Yers/Thread	×
tandards		Stretch/Recovery	Kritted Fisercontring	
			Component	1
erification obug	EN ISO 23910:2007 (IUP 44) Leather - Physical and mechanical tests - Neasurem	ent of stitute tear resistance		
Options	EN ISO 3376:2011 (IUP 4) (large test pleco Leather - Physical and mechanical tests - Determine		stor	
) Dit	EN ISO 3376:2811 (JUP 6) (stavdard test, p Leather - Physical and mechanical bosts - Selermin		ator	
	EN ISO 3377-1:2011 (IUP 40-1) (Jarge test Leather - Revical and mechanical tests - Determine			
	EN ISO 3377-1:2011 (IUP 40-1) (standard to Leather - Physical and mechanical tests - Setermin			
	EN ISO 3377-2:2002 (IUP 8) Leather - Prusical and mechanical tests - Determin			

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.



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.



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



 Processor
 Sector 2013
 Relative Mathematic

 The sector and sect

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.

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.



Filo Tost			TestWise 2015	Test Analysis Software
Save Save As Copen	1. Select Standard Refine your results			Search
🖆 Close 🕂 Recover Tests	Group	Test Type	Material	<u>*</u>
Info	Favourites 🗶 👷	Tensile Tear/Peel/Adhesion	Waven	_
Recent	Custom	Sean	Coated/Laminated	-
New		Attachment Compression	Leather Yarn/Thread	
Standards		Stretch/Recovery	Knitted Floorcovering	
Print			Component	
Verification	ASTM D2261-13 (IP units) Tearing Strength of Fabrics by the Tongue (Single Rip) Procedure		1
Debug	ASTM D5034-09 (2013) (20s) (IP units) Breaking Strength and Elongation of Textle Fabrics	(feab Test)		* 🗹
✓ Options U Exit	EN ISO 13934-1:2013 Textiles - Tersile properties of fabrics - Part 1: Deter		n at maximum force using the strip method	* V
	EN ISO 13937-2:2000 (auto-stop) Textiles - Tear properties of fabrics - Part 2: Determ	ination of tear force of trouser-shaped to	est specimens (Single tear method)	1

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

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





You then simply click the standard required and start testing.

Favourites

Creating Favourite Groups for Standards

						-		
File Test								
Save	1. Select	Standa	rd				_	
Save As	Refine y							avourites Group then click
🚰 Open						on the st	ar+.	
+ Recover Tests	Group			Test Type		C		
Info	Favourit Built-in	es	Add New Favourite Group	Tensile Tear/Peel/Adhesion		Group		
Recent	Custom			Seam Attachment				
New				Compression Stretch/Recovery		Favourit	tes	¥
Standards				sactenniceorery		Built-in		Add New Favourite Group
Print Verification	16 CFR	1500.51	-53 Tension Test			Custom		
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	Ac	dd N	lew Favourite C	Group	×			
Group	p Name	Ent	er name for this favo	ourite group				
		Right	click the Standard to a	add to your favouri	te group			
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	_							
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Group								
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Favour	ites				×			
Built-ir	n				Ø			
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Next						The new	Favourite	es Group name is now
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						Right clic	ck on anv	standards you want to add
						to the Fa	avourites	Group and then click in the
						box Add	to Group	
NEXT© TM1	16 (Janu	ary 2	2008)					
			AGE OF WOVEN FABRI	CS	Add to	Group: Next		
					1			



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 click o

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.

	<u></u>			A. Set lader (share)	- 1 - 1
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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



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).

uired Information						
Jaw Scheme:	T27 Pneumatic Grips SkN				Θ	
	Top Jaw; 127 Botton Jaw; 127			Confirm		
Jaw Separation:		•	Manual	mm		
Pretension:	(2N) ± 200g/m ²		•			
Speed:	100.00		Manual	mm/min		
	100.00					
	20.00			Start		
Optional Informat	ion					
nter Test Details						
uired Information						
Jaw Scheme:	T27					
	Pneumatic Grips 3M4				-	
	Pneumatic Grips 3MI Top Jaw: 122		•	Confirm	-	_
	Presumatic Grips 3MM Top Jaws 122 Bottom Jaws 122		Manual			
Jaw Separation:	Pneumatic Grips 36H Top Java 172 Botton Java 172 200.00		Manual		•	
Jaw Separation: Pretension:	Prevanst: Grips 5MH Top Jave: 122 Bottom Jave: 122 200.00 (2N) s 200g/m ¹			mm	0	
Jaw Separation:	Prevanst: Grips 5MH Top Jave: 122 Bottom Jave: 122 200.00 (2N) s 200g/m ¹	•			/	
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Jaw Separation: Pretension:	Provanstic Grip: 3341 Top Jave 122 Botten Jave 122 200.00 (2N) s 200g/m ¹ 304.8	•		mm mm/min	/	
Jaw Separation: Pretension: Speed:	Provanstic Grip: 3341 Top Jave 122 Botten Jave 122 200.00 (2N) s 200g/m ¹ 304.8			mm mm/min	/	
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Jaw Separation: Protension: Speed: Optional Informati Diptional Informati t Name tomor	Provinski Colp: 344 Top Jave 172 Bottan Jave 122 200.00 (2N) ≤ 200g/m³ 304.8 On Example Tensile Test[ABC Fabrics Ltd	•		mm mm/min	/	

3 🗔 📨 📼	TestWi		ise 2013 - Test Analysis Sof	
File Test	Results			
📊 Save	Test Details			
🚰 Save As	Test Name: Customer:	Example Tensile Test ABC Fabrics		
Close	Reference: Material: Comments:	PO123456789 CP6020 Bleached Only	Edit	
Recent	Specimens: Required Directions:	5		
New	Jaw Scheme: Jaw Separation: Load Cell:	T17 200.00 mm 600 N		
Standards	Load Cell SN: Version:	696456 2.5.9.0		
Print	Firmware: Tested by:	V2.3 Peter Goodwin		
Exit	Procedure Details			
	Break Detection: 10 % Pretension Applies a pretension force to the material 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/m	nin		

Select the Speed required.

In this case, the common default speed is 100 mm/min. However, some tests require a slower speed of 20 mm/min.

If a non-standard speed is required, click Manual and type in the required speed.

Click Manual again to revert to standard speed selection.

Enter details which describe the sample. This information will be stored with the test results and printed on the Test Report.

These fields can be left blank and populated at any time via File > Info > Edit. See below.

This information can be edited at any time.

After making any changes, click Apply.

To exit without saving changes, click Cancel.

- 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.





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.







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.
No.
Enseme 1.0 Environment of the Contraction of the Co
Test Completed View Results
Tester (10/00-00) Sector Sectors Sector
Add Specimen • Delete Test
No.
Enterthine year 0 Interthine Leader Sector 1 Lead Col. (2011)
Add Specimen + Delete Reset Select Show Data Offset Reset Test

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 Ruptur	e 🔄 Estension et 0,00 N
👿 Elongation at Max. Force	🔲 Time To Break	Observations
Force at Rupture	Force at 0.00 %	
	Columns	

To display any additional Statistics, check the boxes in the Ribbon. As soon as the box is check (or unchecked) the statistics will update.

🖌 Mean	Range	Conf Limits
Min 🗌	Median	Coeff Of Var
Max 🗌	Std Dev	
	Statist	ics

		1/2	Extension	% •	Maxim
Add Delete		v Data Offset	Force	N v	😿 Elonga
pecimen +	 AL → Po Test 	pints	Un	N	Force
	lest		Un	CN	
Graph Resul	ts			mN kgf	
Kara Basulta				gf	
Varp Results				lbf	
Constant on	Havingung Farrag	(11)		ozf	
Specimen	Maximum Force	2 (N)			
specimen 1	965.54	2 (N)		daN kN	
		2 (N)		daN	
1	965.54	2 (N)		daN	
1 2	965.54 913.62	2 (N)		daN	
1 2 3	965.54 913.62 909.36	2 (N)		daN	

					TestWise 2015 - Tes	t An
Add Delete	+ AL+ Points	Extension Force	m mm	Maximum Force Elongation at Max. Force Force at Rupture	Force at 0.00 %	1
Graph Resu	Test	Un	cm in %		Columns	
Varp Results Specimen	Maximum Force (kgf)			Elonga	tion at Max. Force (%)
	Maximum Force (kgf) 98.46			Elonga 13.34	tion at Max. Force (%)
					tion at Max. Force (%))

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	41/51-0		16.16	11.00	The advance listed		
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	1124144	Garliants		1.00			
	Sec.28.4ad	intina	5.045	1.45			
		Taleri a quella	an in digilaj filo rendis				
		later (a quant	n na				



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

Print



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

Test Name	Example Tensile Test
Customer	ABC Fabrics Ltd
Reference	P0123456789
Material	100% Cotton twill
Comments	Dyed and Finished

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



180.08

these Detections 10

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.



S 🕞 🖉 🔻	Results
Start Stop Observe	Top Bottom Run Jaw Jaw L
Specimen Spe	Mach • #
Warp	
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.



Tare

Jog

0) 4 45

•

E

Jog Up

Graph Results

50

40

35

25 20 Force

30

kgf

Bottom Jaw

Run

45.60 kgf

45.47 kgf

45.84 kgf 45.63 kgf

31.72 kgf

32.68 kgf

31.29 kgf

31.90 kgf

Top Jaw

An additional specimen has been added to the weft direction.

Click Start to continue testing.



Obser

Stop

Warp

Weft

1

2

3

1

2

3

Mean

Mean



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.







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:

int Copy Copy Graph Results Da General		e Reset Select Sh	ow Data Offset Points Units	Max Force Time To Break Wax Force Time To Break Wetherston Energy At Break Columns	Observations Mean Range Min Mediar Max Std De Statis	v Coeff Of Var
pecimens	~ ậ	Graph Resul	ts			-
arp		Warp Results				
2	44.98 kgf 44.83 kgf	Specimen	Max Force (kgf)	Extension (%)	Force at 5.00 % (kgf)	Extension at 20.00 kgf (%)
3	44.03 kgr 43.79 kgf	1	44.98	6.25	34.75	3.15
Mean	44.53 kgf	2	44.83	6.30	35.57	3.18
eft		3	43.79	6.17	34.85	3.17
1	30.04 kgf	Mean	44.53	6.24	35.06	3.17
2	30.09 kgf	Conf Limits	±1.61	±0.17	±1.11	±0.04
3	31.29 kgf	Coeff Of Var	1.45%	1.12%	1.28%	0.53%
Mean	30.48 kgf	Weft Results				
		Specimen	Max Force (kgf)	Extension (%)	Force at 5.00 % (kgf)	Extension at 20.00 kgf (%)
		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%



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.



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 (kg) 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	ır 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 Select Show Data Offset
Test
Reset
Reset the selected specimens or the entire test. This will delete all data,
results and recorded observations.
💽 💽 🎊 🎊
Reset Select Show Data Offset
Selected Specimens
Current Test
Reset Select Show Data Offset + All + Points
Selected Specimens
Current Test
Confirm Reset?
Are you sure you want to reset these specimens. All data and observations will be deleted.
<u>Y</u> es
💽 💽 📯 🔅
Reset Select Show Data Offset
All Points Selected Specimens
AL Points Selected Specimens Current Test
Al Points Selected Specimens Current Test
Al Points Selected Specimens Current Test Confirm Reset? Are you sure you want to reset this test. All data and observations will be deleted. Yes No
Al Points Selected Specimens Current Test Confirm Reset? Are you sure you want to reset this test. All data and observations will be deleted.
Al Points Selected Specimens Current Test Confirm Reset? Are you sure you want to reset this test. All data and observations will be deleted. Yes No

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.

1	TestWise Options
General Graph Jaws	Commands for manual control of Titan
Jaw Schemes Load Cells TestWise Settings	Load Cell: 5000 N Position: 400.00 mm Force: 0.0000 N
Titan Settings Titles Users	Home Home Stop
Firmware	Indite Loodeen Top
	Apply OK Cancel

Load Cell: Position: Force:	5000 N 400.00 mm 0.0000 N	Live Data showing the currently connected loadcell, current position and current force are displayed.
Home		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	Bottom 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 Jog Down		The 4 arrow keys on the keyboard can also be used.
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 Specime	ns: 5		0
Directio	ns: Both	•	0
Break Detecti	on: 5	%	0

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

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

To reverse 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.



	Select Standard			Edit Standard		
tana ini. Speen	Reflection years reader		Search	-Gmeid Settings		
GHF	13041 🗶		Autorial Appy	Name: 60 (203+1 (M00)		
	Group Easter Ten	Test Type Tesule		Description: Tenalle Strength a Number of Speciment: 3	ed Extension	
	Builtin Carlore	Tear: Feel/Adhesion Seam	Harwayeen Looked Language	Direction: Wet	*	
-		Attachment Compensation	Leeffer Terriffered	Jaw Separation: 280.08	put.	
-		South/Receivery	Roltsud Hausrumanlag Component	Units: Select		_
			Technew	-Presentary Sectings Break Detection: 3		
			Composite Composite	Preferator: [25] +280g/s ²		
	EN ISO 13934-1-2013 (Tenties - Tensie propertie al mortuui force unity th	(100enanj es-of Neterics - Parit in Determination e	f maximum lyings and dongation	Speed: 180.06	· ISt parties	
	EN ISO 13934-1:3913 (Testies - Testie propertie at no count face using th	(200mm) is of highlics - Part is Determination o e disponethed	Financianan Promps and Alargadium	+ Result Settings		
lit S	tandard					
- G	eneral Setti	ings				
			me: ISO 13934-1 (/	-]	
	Numbe	Description of Specime		gth and Extension		Đ
			ons: Weft		1	0
	,	Jaw Separati			mm	
		Un	its: Select			
		Direction	ns: Both Warp	•		0
	J	aw Separatio	on: Weft		mm	
		Uni	Both]	
Ger	neral Settin	gs				
		Name				
	Number	Description of Specimen:			0	
	Humber	Directions		•	0	
	1.	aw Separation		mr		
	50	Unit				
-			. Jelect	×	Γ	
A)	Selec	t Lloute				
2	Selec	t Units			1	
2		t Units Position	: mm	•		
2				•		
2		Position (tension	: mm	•		
2		Position	: mm : N	•		
2		Position (tension	: mm : N	• • •		
	Đ	Position Atension Force	:: mm :: N :: mm/mi	• • • •		
	Đ	Position Atension Force Speed	:: mm :: N :: mm/mi	• • • • • • •		

The parameter settings for the selected Standard are displayed.

Type in a Name and Description for the new Standard. We have also reduced the number of specimens from 5 to 3, testing weft only specimens.

We only want to test specimens in the weft direction.

To change the units used in the standard, click Units: Select.

Select Units	
Position:	mm 🔻
Extension:	m mm
Force:	cm in
Speed:	mm/min 🔻
Linear Density:	tex 🔹
ОК	Cancel
Select Units	×
Position:	mm 💌
Extension:	mm 🔻
Force:	m mm
Speed:	cm in %
Linear Density:	tex •
ОК	Cancel
Select Units	X
Position:	mm 🔻
Extension:	mm 🔹

Position units.

Extension units. Note "%" is also available.

Force units.

Force:

Speed:

Linear Density:

OK

N

Ν

сN mΝ kgf gf

Шbf ozf

daN

•

Select Units	×
Position:	mm 🔹
Extension:	mm 💌
Force:	N -
Speed:	mm/min 🔻
Linear Density:	mm/min mm/s cm/min cm/s
ОК	in/min
	in/s
Select Units	×
Position:	none
Extension:	tex dtex den
Force:	NeC Nm
Speed:	NeK NeW NeL

tex

Cancel



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

Linear Density:

OK

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	
	(100) > 500g/m-	If the fabric has an automaion at break of
Speed: 100.0		If the fabric has an extension at break of less than 8% then change the speed to
20.00		20 mm/min.
🕘 Edit Opt	tions	Alternatively, different speed values can
Units: N		be specified by clicking Edit which displays this dialogue box.
1:	20.00 Delete	
2:	100.00 Delete	
	New	
_		
	OK Cancel	
🕘 Edit Opt	tions	
Units: N	I	
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	
Sedit Opt	tions	
Units: N		
1:	100.00 Delete	Pressing Delete will remove the specified option.
2:	300.00 Delete	
	New	
_		
	OK Cancel	

– Resu	ılt Settings					
		Columns:	Max For Extension Energy A Time To Force at Extension Observa	on At Brea Break t 0.00 r on at 0	nm	
		Statistics:	Mean Min Max Range Median Std Dev Conf Lin Coeff Of	nits		
	Fi	nd Force At:	0.00			mm
	Find E	xtension At:	0.00			Ν
– Resu	ılt Settings					
		Columns:	Max For Extension Energy Time To Force at Extension Observation	on At Brea Break t 10.00 on at 2	mm	
		Statistics:	 ✓ Mean Min Max Range Median Std Dev ✓ Conf Lin ✓ Coeff Of 	nits		
	Fi	nd Force At:	10.00			mm
	Find E	xtension At:	250.00			Ν
File Test			Tercinian 201	2 Teni Androis bi	Track of Concession, Name	
E Sans AL	Select Standard Refine your results		Search		Edit Standard + Growns Settings	
IS CON	12826-1 🗙				+ Procedure Setting	
Recent	Group	Teri Type	Austorial	(C) Acoly	# Realt Settings	
New	Paraurties Built-is Custon	Texelle Texel Indhedan Sean	Woven Nameowee Coated Lastinated	Cancel		
The Lock		Attachment	Leather Revo/Thread			
Print Veterios		Congression Stantuk Racovery	Reitland Floorcavering			
Debug			Component Poolwaar Section the Related			
V Options			SectorBellerBelated Composite			
C 648	EN 50 13934-1:2013 (10 Texture - Texture pagemine at reaction force using the o	Bronj Klabrics - Part 's Celevanution of a	animum for un and changed for			
	et rescinan force using the s ENE 60 13934-1:3913 (20 Sections - Trende properties o et rescinan force using the s	Annanij Annanij				
	Social Tendes appendix a at readman force using the a ISO 12904-1 [MOD] Tende Monight and Education	tra-nethol	tantman force and energed for			
	Second Strength and Extension					

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** 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.

Table T200 Subscription Titles T22 Custom Offset: 0.00 mr	TestWise Options				ala ala a				-
Jans New Detect Log Mode Jaws Schemes 15 T17/LC Tatking Settings T20A Tates T20A Users T22 Manaul T17/LC Firmware T18-8 Manaul T17/LC T17 T22 Load Separation 00.0 Manaul T17/V Firmware T17 Current Jaw Schemes: Current Jaw Schemes:		Configure	jaws sche	emes					
Lack Cells T5 Name: 117 TextWise Settings T20A Description Tital: T280 Source Position Ubers T18.8 Lack Separation: Manual T4 117 To game TV Botton Jaw T17 Itro Botton Jaw T17 Current Jaw Scheme: Current Jaw Scheme: Source Jaw Scheme:			New	Delete				Jog	Mode
Tot/LC Description Universal Pneumatic Jaws Trans Settings T20A Paference Pusition 550.66 mm Titles T22 Cutron Offset 0.00 mm Manual T4 177 Top Jaws 117 Firmware T17 Bottom Jaws 117 Outron of Operations Tension International Section Sectio					Name:	T17			
Titan Setting: T200 Reference Fusition: 550.6 mm Users T12 Custom Offset: 0.00 mm Manual T18-8 Lad Separation: 0.00 mm T17 W Top.Jane: T17 Node of Operation: T07 • Mode of Operation: Tension • • • •					Description:	Universal Pr	neumatic Jaws		
T12 Coston Grant 0.00 m Manual T14 T17 Load Separation: 0.00 m Firmware T17 Top Jave: 117 m T17 Botton Jave: TTO m Mode of Operation: Tension m Current. Jav Scheme: Current. Jav Scheme: Trop Jave: Tension	-				Reference Position:	559.06			mm
Maraat Firmware Current Jaw Scheme: Tres Lad Separation: 0.00 mm Top Jaw: 117 Bottom Jaw: 117 Top Jaw: 117 Bottom Jaw: 117 Top Jaw: 117 Mode of Operation: Temsion		T22			Custom Offset:	0.00			mm
Firmware T17 W Bottom Jaw 117 • Hode of Operation: Temsion • Current Jaw Scheme:									mm
Mode of Operation: Temsion Current Jaw Scheme:	Firmware							•	
Current. Jaw Scheme:		117							
					Mode of Operation:	Terbion		•	
11/ •			me:						
		11/		•					



Move to Jaw Schemes in TestWise Options.

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

Т5
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	Gonfigure jaws schemes	
Jaws	Save Reference Position Go	Back
Jaw Schemes		_
Load Cells	0	
TestWise Settings	qU goL	
Titan Settings	534.38 mm	
Titles	0.02 N	
Users		
Manual		
Firmware	Jog Down	
	100.00 mm/min	
	hisantaa taashaa ka ahaa ka ah	
	Apply OK Canc	al

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 T20B	Reference Position:	534.38	mr
Titles	T22	Custom Offset:	17.50	mr
Users Wanual	T18-8	Load Separation:	0.00	mr
Firmware	T4 T17	Top Jaw:	T18-8	•
	117	Bottom Jaw:	T17	-
	T18-8 T17	Mode of Operation:	Tension	•
	Current Jaw Scheme:			
	T17	•		

Т5	Name:	T20A	
T17 LC	Description:	T20A Ball Burst (Compression)	
T20A T20B	Reference Position:	562.72	mm
T22	Custom Offset:	0.00	mm
T18-8	Load Separation:	250.00	mm
T4 T17	Top Jaw:	T20Aball	•
T17 W	Bottom Jaw:	T20Ash	•
T17		-	_
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** 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.



3 TestWise Option 3 ual control of Titan nds for i Graph Jaws Load Cell: 600 N Jaw Schemes Position: Force: 500.00 mm 0.00 N Load Cells TestWise Setting Titan Settings Contraction of the second Titles 0 Users Manual Firmware 0 Apply OK Cancel 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.

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.

e e e e e e e e e e e e e e e e e e e	aling the data welling DN f5D 13934 12013 (208m)	nica - Parti ti Galanomianian di nava	Annual Contraction	1 Cons Tao Back 1 Cons Tao Back 10 Cons Tao Back 10 Constant 10 Constant	0 0 eshir Set	Select the T17. Set the weight. Speed of option of	for 13934 and select the correct option. The correct Jaw Scheme, in this case Pretension value based on the fabric lefaults to 100 mm/min but there is an f 20 mm/min which is used for fabrics how very little elongation.
	along the days welling Eth (5D) (3834-3-1999) (X08m Tentien - Tensic properties of the Eth (5D) (3954-3-1999) (Zhenri	tý tiz - Tait ≥ Determation of navi	8	Annual United Day		Speed:	100.00 • 20.00 100.00
						Enter sa	ample details.

Change number of specimens and test directions if required.

Click Start.





Specimen in the jaws ready for testing



Specimen after testing

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

File Test Re	esults		Tes	tWise 2013 - Test Analysis Software			- 0 <u>×</u>
rint Copy Copy E		ete Reset Select Select Test	Show Data Offset Points Units	Max Force Time To Break Observations Extension Force at 0.00 mm Energy At Break Extension at 0.00 N Columns	V Mean Range C Min Median C Max Std Dev Statistics	Conf Limits Coeff Of Var	
pecimens	~ ₽	Graph Resu	ults			Results Settings	•
Varp		Warp Results				Find Force At:	0.00
1 2	447.15 N 445.88 N	Specimen	Max Force (N)	Extension (mm)		Find Extension At:	0.00
3	449.52 N	1	447.15	13.21			
4	448.15 N	2	445.88	12.80			
5	449.33 N	3	449.52	12.89			
Mean	448.01 N	4	448.15	13.14			
/eft		5	449.33	13.29			
1	311.06 N	Mean	448.01	13.07			
2	296.82 N		10.01	10107			
<u> </u>	320.45 N 309.90 N	Weft Results					
5	318.82 N	Specimen	Max Force (N)	Extension (mm)			
Mean	311.41 N	1	311.06	12.96			
		2	296.82	12.46			
		3	320.45	13.04			
		4	309.90	12.65			
		5	318.82	12.72			
		Mean	311.41	12.77		•	_
						Titan Data Results Se	ttings
tandard: EN ISO 1393	34-1:2013 (200mm)	Test Name: Ex	ample Tensile Test #1			Jaw Scheme: T17 Loa	ad Cell: 600

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.

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**.

🔕 🔚 🖉 📼			TestWise 2013 -	Test Analysis Sof	tware	- 0 ×
File Test		_	_			
Save	1. Select Standard				2. Enter Test Details	
🚰 Open	Refine your results			Search	Required Information	
🖆 Close	5034 💥				Jaw Scheme: T17 Universal Pneumatic Jaws	•
Info	Group	Test Type	Material		Top Jaw: <u>117</u> Bottom Jaw: <u>117</u>	
Recent	Favourites	Tensile	Woven		Recommended: T17 (click to select)	
New	Built-in Custom	Tear/Peel/Adhesion Seam	Nonwoven Coated/Laminated		Pretension: No Pretension (pretension off)	• 0
Standards		Attachment Compression	Leather Yarn/Thread			
Print		Stretch/Recovery	Knitted Floorcovering			Start
Verification			Component			art F9
Debug			Geotextile/Related		+ Optional Information St.	art the current test
P Options			Composite			
🔀 Exit	ASTM D5034-09 (20s)				- Standard Customisation	
		ation of Textile Fabrics (Grab Test)			Number of Specimens: 8	0
	ASTM D5034-09 (300mr Breaking Strength and Elong	n/min) ation of Textile Fabrics (Grab Test)			Directions: Both	• 0
					Break Detection: 5	% 💽
	L					



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 $(20\pm3s)$ 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.



estWise 2013 - Test Analysis Sof 🕹 🔚 🚰 = File 🛛 Test Top Bottom Jaw Jog Down Change Logout Exit 00 Tare Loadce Jog Up 0 0 * * • avourites 0 0 Exte 1 % 65 Force N Show Data Points Offsel All Test Completed View Results Specin Titan D Warp --: 1287.61 N 1 2000 484.06 mm 1230.69 N (Ô) 2 -0.16N 3 1257.32 N 1258.54 N Mean Current Task 1500 Force - N 😣 ŧ 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.

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Standard: ASTM	D5034-09 (20s)	Test Name: G	rab 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



> Current Task Set Jaw Separation Use the buttons below to set the jaw separation Jog Up Jog Down 50.00 mm/min

> > Save Jaw Separation



Search for **skein** and select the required option.

Enter the yarn linear density if required.

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

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

Click Start.

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.

Copy Copy Graph Results General	Export Data	Reset Select Show D Alt Poin Test	ata Offset	Extension 🕱 🔹 Linear D Force CN 🔹 Units	ensity tex 🔻	Skein Breaking Strength Skein Break Factor (CSP Time To Break Column) Dbservations	Mean Min Max	Range Std Dev Conf Limits Statisti		
ecimens	~ û	Graph Resu	lts						⇒ R	esults Settings	
1	1630.20 cN/tex	Results									
2	2062.43 cN/tex										
3	1694.79 cN/tex	Specimen	Skein Bre tex)	aking Strength (cN/	Skein Break x lbf)	Factor (CSP) (NeC	Time To Break (s)			
4	2030.77 cN/tex	1	1630.20		2164.23		00:22				
5	2408.87 cN/tex 1756.91 cN/tex	2	2062.43		2738.06		00:23				
7	1769.69 cN/tex	3	1694.79		2249.99						
8	1700.27 cN/tex						00:21				
9	2357.22 cN/tex	4	2030.77		2696.03		00:24				
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		00:27				
		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	sults Settings
tandard: ASTM D15	578-93 (2011) - Option 2	Test Name: Ske	in Vers Terr	alla Europeia #4					-	Titan Data Re Jaw Scheme: T22	Load Cell:



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**.

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🖂 Open	Refine your results			Search	Required Information		
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	(Single tear method)	f fabrics - Part 2: Determination of tear for	ce of trouser-shaped test speci		Material: Comments:		
	(Single tear method) EN ISO 13937-2:2000 (a	f fabrics - Part 2: Determination of tear for			+ Standard Customisati	ion	







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.



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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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.

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			3	Breakdown	91.10	157.87	123.85	FIS = FADRC tears at seam		Seam Opening	g Distance:	2.00
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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.



Seam Slippage (Pull)
 Force: 60.00

 55.00
 60.00
 70.00
 80.00
 90.00
 100.00
 120.00
 120.00
 180.00

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

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	1.00 000	1	80.19	5.80		
Munist.	5.00 mm	2	80.13	6.80		
		3	80.18	4.80		
		Mean	80.14	5.80		
			ram Slippage Example 47			Titas Data Results Settings Jaw Schores: T17 Lood Cell: 600 M

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



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).

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.

- ا 🖂 🔜 🔕			TestWise 2013 - Test Ar	nalysis Software		
File Test		and the second second				
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G Open	Refine your results		Sea	rch Required Informa	ation	
🖆 Close	14704 💥			Jaw Scher	me: T17	. 0
Info	Group	Test Type	Material		Universal Pneumatic Jaws Top Jaw: <u>T17</u> Bottom Jaw: T17	
Recent	Favourites	Tensile	Woven		Bottom Saw. III	
New	Built-in Custom	Tear/Peel/Adhesion Seam	Nonwoven Coated/Laminated			
Standards	custom	Attachment	Leather			Start
Print		Compression Stretch/Recovery	Yarn/Thread Knitted	– Optional Infor	mation	
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Click Start.



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).

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**.

ile Test	Results		TestWise 2013	- Test Analysis Softwa	re		- 6
Save	1. Select Standard				2. Enter Test Details	۱ 	
🚰 Open	Refine your results			Search	Jaw Scheme:	T18 8.0mm Bars	
5 Close	14704 💥					Loop Bars	
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		od A - Fixed Elongation			Reference:		
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		od R - Fixed Load (Force Decay)				Directions: Width •	0

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

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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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Standard: EN 14704-1 9.2 Met	hod 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.

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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 in T4 and braided cord secured by T17



Button is broken and fragments remain inside T4



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).

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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.

Note::::::::::::::::::::::::::::::::::::

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.

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.





Specimen after bursting by the ball



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Specimens	- ₽ 424.32 N	Graph Resu	lts			
2	443.33 N	Results				
3	464.13 N	Specimen	Max Force (N)			
Mean	443.93 N	1	424.32			
		2 3	443.33 464.13			
		 Mean	464.13			
		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

Titan⁵ 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 5 bar, optimum pressure 7 bar.

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

For laboratories without a dedicated compressed air supply, we can offer the choice of an 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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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

TITAN⁵ DIMENSIONS AND WEIGHT

Titan5 is designed to be placed upon on a bench and is recommended the instrument is located within a conditioned atmosphere.

i (kg)	Weight (Depth	Width	Height	Dimensions (mm)
	82	500	400	1339	Titan5
	82	500	400	1339	Titan5

400 mm 568.5 mm 0 0 ÷ 1339 mm • ¢

400 mm



EU DECLARATION OF CONFORMITY

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EU DECLARATION of CONFORMITY

In accordance with EN ISO 17050-1:2010 This declaration is issued under the sole responsibility of the manufacturer. We James Heal Richmond Works, Halifax, HX3 6EP, UK of in accordance to the following directive(s): 2014/35/EU The Low Voltage Directive 2014/30/EU The Electromagnetic Compatibility Directive 2006/42/EC The Machinery Directive hereby declare that: Titan 5kN Equipment: Models: 1710/05 & 1710/05E Series Description: **Tensile Strength Tester** Serial Number: 1710/05/YY/XXXX 1710/05E/YY/XXXX Product Date: 1st Aug 2018 is in conformity with the relevant Union harmonisation legislation, based on the conformity of the following documents: Applied Harmonised Standards: Ref. No Title Edition EN 61010-1 Safety requirements for electrical equipment for measurement, 2010+A1:2019 control, and laboratory use. General requirements EN 61326-1 Electromagnetic Compatibility (EMC) equipment for 2013 measurement, control and laboratory use. I hereby declare that the above mentioned product is in conformity with the stated Standards. AUTHORISED SIGNATORY NA Payle. The technical file is available from our EU Headquarters: Neil Pryke Innovation Director James Heal Neil Pryke **Richmond Works** Halifax, UK Innovation Director HX3 6EP DATE: 1st Oct 2019 Setting the Standard James H. Heal & Co. Ltd. Halifax England www.james-heal.co.uk

REVISION HISTORY

Rev	Date	Originator	Details of revision
А	15/05/2019	PG	Original release
В	12/12/2019	PG	Added EU Declaration of Conformity