



Titus damper

Multipurpose
damping technology

Important Information

Technical information

While every effort has been made in the production of this catalogue to ensure the accuracy of information, our products are continually being revised and users should confirm the up to date specification before ordering. Due to constant improvement of products presented in the catalogue, we can make changes at any time and without notice.

Responsibility

It is the responsibility of the user to ensure the fitness of hardware for the intended purpose. We recommend assessment by appropriate testing in the application and by technical enquiry to our representatives.

Intellectual property

Titus Group owns the intellectual property rights in its products worldwide whether as trademarks, patents, intellectual, copyright, designs, illustrations, drawings and the 'know how' contained in their design and production. Titus Group respects the equivalent rights in competitors and all other relevant product design rights. To our knowledge our products do not infringe any intellectual property rights of competitors or other parties. Titus Group takes infringements of its rights seriously and will rigorously defend these rights to the full extent of the law.

*Non preferred articles

All Item numbers in the catalogue marked with * are for non preferred items available on extended delivery times.

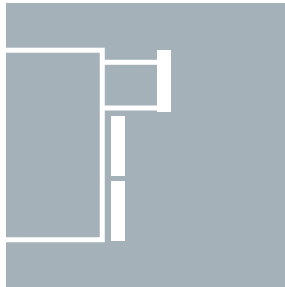
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Multipurpose damping technology for high volume applications



Furniture doors



Drawers



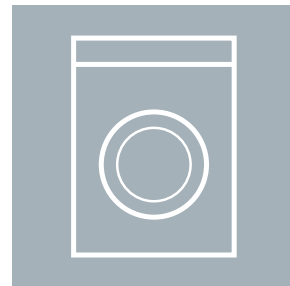
Lids for various purposes



Interior doors



Sanitary equipment



House-hold appliances

Efficient modular design

- A low number of assembly parts enables quick development of customised solutions
- Engineered for efficient and high precision manufacturing
- Wide range of applications
- Customised solutions for various furniture and other applications

Uniform damping action

- Smooth and even soft closing action
- Reliable damping at any closing speed

Titus damper



Life-long consistent damping

- Life-time warranty

Quality

- Integrated quality checks assure consistency over high volume production runs
- Sealing process prevents oil leakage

'Totally Integrated Engineering'

- Titus Group has the competence, experience and resources to offer support in all phases of the product life-cycle; from product design to efficient high volume manufacturing
- All manufacturing phases at one location

Damping technology

Design and functional principles

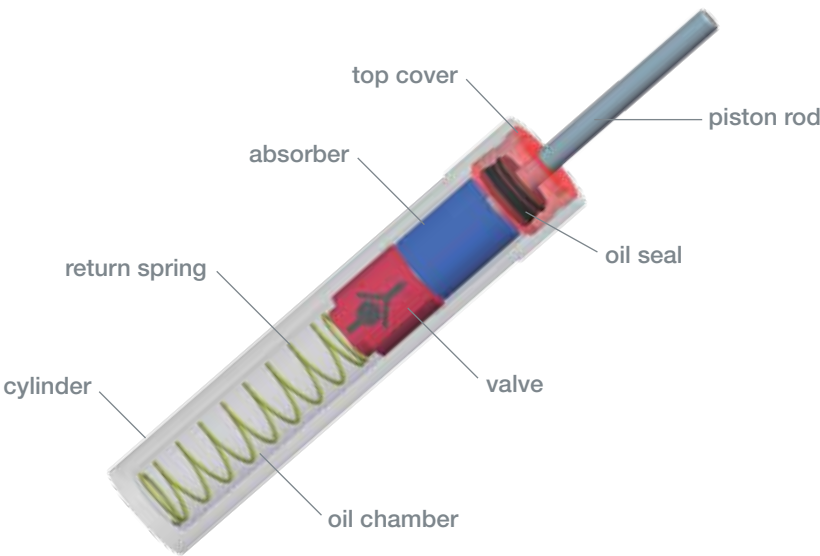
Titus dampers slow down linear or rotary movement before reaching a resting position.



Functional principles

By converting kinetic energy into thermal energy, hydraulic dampers reduce hard shocks and oscillation amplitudes. In a linear damper, the kinetic energy of the moving object is transferred through the steel rod to the valve in the damping cylinder.

Hydraulic fluid is pushed through the valve and heat is generated. As the spring returns the valve to its original position hydraulic fluid flows back into the damping chamber.



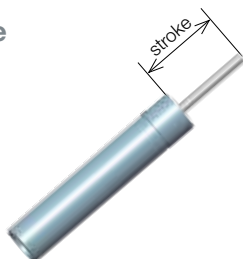
Types of dampers

Titus dampers are single-directional linear hydraulic dampers.

Types of dampers	Linear, hydraulic
Operation	smooth, released
Operating temperature	0 to 40 °C (32 °F to 104 °F) 0 to 120 °C (32 °F to 248 °F)
Storage temperature	-20 °C to 70 °C (-4 °F to 158 °F) -20 °C to 120 °C (-4 °F to 248 °F)
Piston rod material	Stainless steel
Product range-stroke	Short stroke dampers (stroke up to 16 mm) Long stroke dampers (stroke from 16 mm to 50 mm)
Product range-size	Standard product range: Ø9, Ø10 Customised solutions

Application

Stroke



S Series

Short stroke dampers are dampers with a maximum stroke of 16mm. They are suitable for solutions requiring the damping action to be spread over a short course.

L Series

Long stroke dampers have a stroke greater than 16mm. They are suitable for solutions that require the damping action to be spread over a long course. Long stroke dampers are usually needed for systems with heavier weights or faster initial speeds.

Areas of application

Interior home or commercial application



swinging doors



drawers, pull-out systems in base cabinets, pantry pull-out systems, office filing systems, waste bin pull-out systems



lift-up doors



drop-down doors



sliding doors



interior doors



house-hold appliances



bathroom and sanitary equipment

Automotive industry



Various other purposes

Standard range

Overview

Technical details

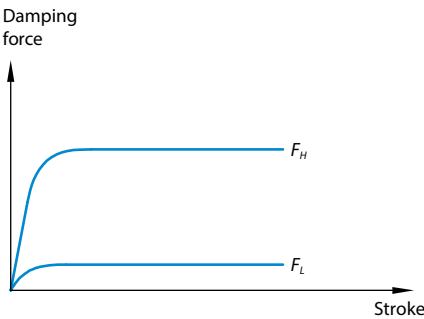
Diameter of cylinder	9mm, 10mm
Damping forces S Series dampers (at 740mm/min) L Series dampers (at 1000mm/min)	from 5.5N to 350N from 3.5N to 20N
Standard stroke lengths	from 10mm to 50mm
Damper type	Hydraulic
Damping characteristics	Flat, ramp, reverse ramp
Operating temperature	0 to 40 °C (32 °F to 104 °F) 0 to 120 °C (32 °F to 248 °F)
Storage temperature	-20 °C to 70 °C (-4 °F to 158 °F) -20 °C to 120 °C (-4 °F to 248 °F)
Material of piston rod	Stainless steel
Material of cylinder	Plastic

For optimal damping performance standard dampers can be customised with: damper connection, damping force, damping characteristics, body colour, type of self closing mechanism.

Piston rod return (resetting)

Automatic – with spring The piston rod is automatically reset by the internal spring.	Mechanical – without spring The piston rod is manually pulled out into the starting position.
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Operating scope



- High coefficient γ of Titus damper assures efficient damping at any closing speed
- Damping force can be easily adapted to customer needs

$$\gamma = \frac{F_H}{F_L}$$

F_H - damping force at slam speed (740mm/min)

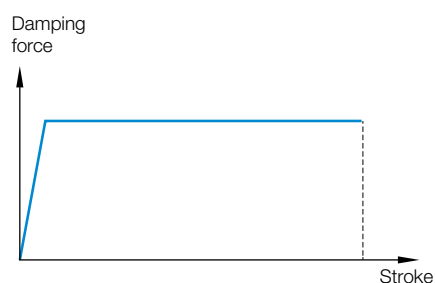
F_L - damping force at slow speed (60mm/min)

Reliable damping and closing at any speed



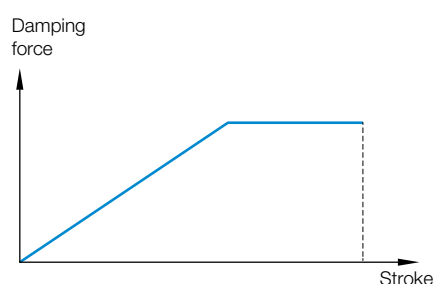
Higher coefficient γ means reliable damping at high speed and ensures that the system will reach its final position even at very slow speed.

Damping action

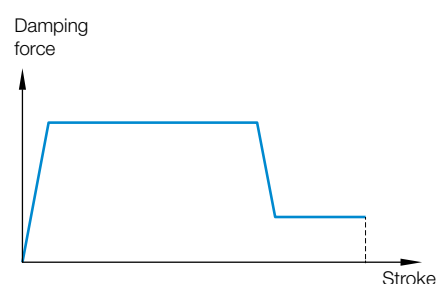


Flat damping curve shows the uniform action produced during damper closing at a defined speed.

- Even and smooth soft closing action
- Soft and reliable closing



Ramp damping curve shows the progressive action produced during damper closing at a defined speed.

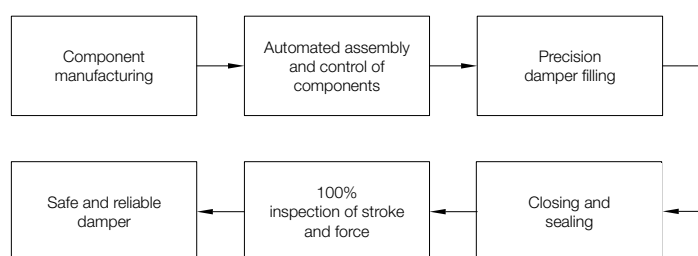


Reverse damping curve shows the uniform action produced during damper closing at a defined speed and drop of the force before the damper reaches the end position.

Quality control system

100% quality check of all dampers

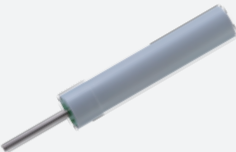

- High precision manufacturing
- Automated assembly technology minimises variations in performance
- Integrated 100% quality checks ensure consistency over high volume production runs
- Proprietary assembly and quality assurance equipment



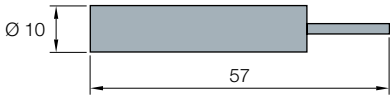
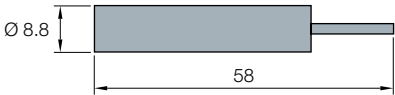
Process chart

Standard range

Product guide

Product group	S Series - Short stroke dampers	
Product	For standard temperature range	For extended temperature range
		
Technical characteristics		
Length (mm)	42	42
Ø piston rod (mm)	2	2
Ø cylinder (mm)	9	10
Max. stroke (mm)	16	15
Max. damping force (N)	60	350
Damping characteristics	flat	flat, ramp
Piston rod return	spring	spring
Operating temperature	0 °C to 40 °C (32 °F to 104 °F)	0 to 120 °C (32 °F to 248 °F)
Storage temperature	-20 °C to 70 °C (-4 °F to 158 °F)	-20 °C to 120 °C (-4 °F to 248 °F)
Material of the piston rod	Stainless steel	Stainless steel
Damper type	hydraulic	hydraulic

***Max. space requirements**



Stroke limits



*Space requirements = Minimum extent of space required to place the damper



Titus dampers can be altered for customised solutions

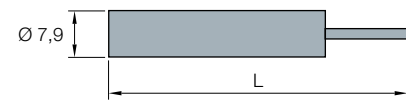
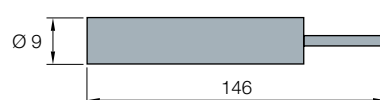
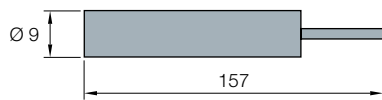
For additional information please contact Titus group representative or submit the criteria form available on www.titusplus.com

L Series - Long stroke dampers

For standard temperature range



97	88	80
2	2	2
9	9	7.9
50	50	45
7	20	5.5
flat, reverse	flat	flat, reverse
mechanical	mechanical	spring, mechanical
0 °C to 40 °C (32 °F to 104 °F)	0 °C to 40 °C (32 °F to 104 °F)	0 °C to 40 °C (32 °F to 104 °F)
-20 °C to 70 °C (-4 °F to 158 °F)	-20 °C to 70 °C (-4 °F to 158 °F)	-20 °C to 70 °C (-4 °F to 158 °F)
Stainless steel	Stainless steel	Stainless steel
hydraulic	hydraulic	hydraulic



spring L = 126
mechanical L = 133



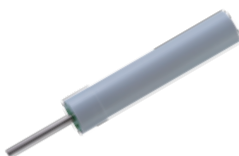
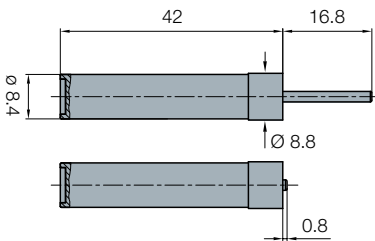

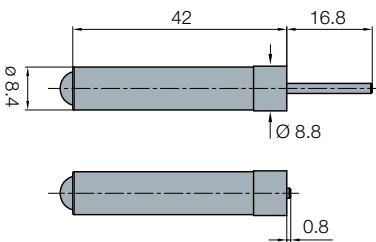

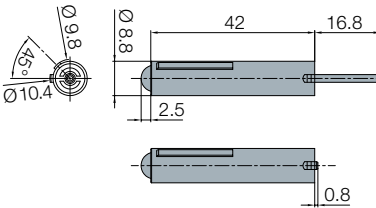


spring SL = 36 max
mechanical SL = 45 max

S Series

For standard temperature range

- Series of standard dampers for various applications requiring low force
- Applications: furniture doors, various lids
- Damping force, stroke and damping characteristics can be tuned to customer requirements

 		Technical details				Damping force at v=740mm/min (N)	Working stroke (mm)	Piston rod return	Damping characteristics	Item number
SD 42 – 8 – 16  		5	16	spring	flat	*963-OE73				
		12	16	spring	flat	*963-0358				
		17	16	spring	flat	*963-0375				
		28	16	spring	flat	*963-OE75				
		35	16	spring	flat	*963-0X33				
		45	16	spring	flat	963-0X31				
		60	16	spring	flat	*963-OE77				
		Damping characteristics → see page 7				*Available upon special request.				
SD 42 – 8 – 16 with rubber tip  		45	16	spring	flat	963-0X20				
		Damping characteristics → see page 7				Dampers with rubber tips should be used if object of damping comes in direct contact with the damper. The tip softens the impact.				
SD 42 – 8 – 16 with rubber tip adjustable  		5	16	spring	flat	963-0F07				
		17	16	spring	flat	963-0F20				
		28	16	spring	flat	963-0F21				
		35	16	spring	flat	963-0X37				
		45	16	spring	flat	963-0X26				
		60	16	spring	flat	963-0X73				
		Damping characteristics → see page 7				Dampers with rubber tips should be used if object of damping comes in direct contact with the damper. The tip softens the impact.				

S Series

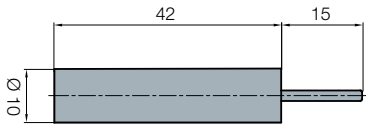
For extended temperature range

- Series of short stroke dampers for various application in areas with bigger temperature fluctuations and areas where higher damping force is required
- Applications: kitchen ovens, refrigerators, heavier furniture doors or lids, toilet seats
- Damping force, stroke and damping characteristics can be tuned to customer requirements



Technical details

SD 42 - 10 - 15



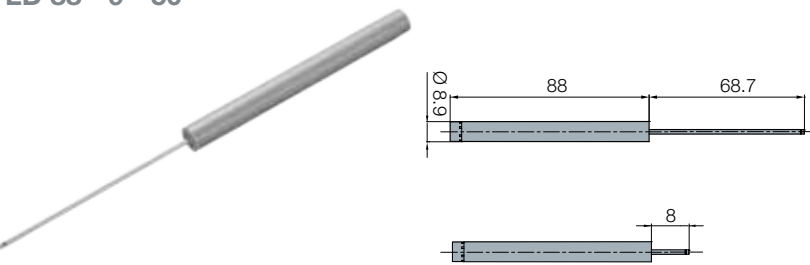
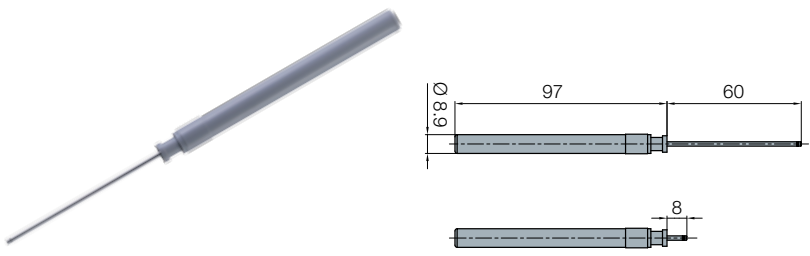
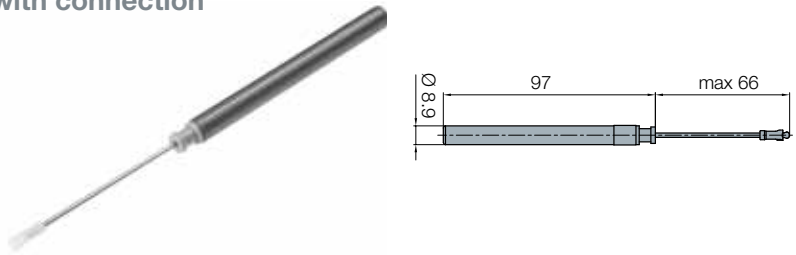
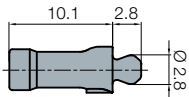
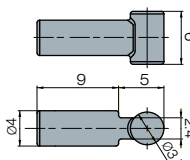
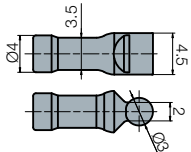


Damping force at v=740mm/min (N)	Working stroke (mm)	Piston rod return	Damping characteristics	Item number
90	16	spring	flat	960-0N68
150	12	spring	flat	960-0219
150	15	spring	flat	960-0N88
200	12	spring	flat	960-0E98
200	15	spring	flat	960-0N92
200	15	spring	ramp	960-0N84
240	15	spring	flat	960-0N29
280	12	spring	flat	960-0X98
280	15	spring	flat	960-0N28
315	15	spring	flat	960-0M86
350	10	spring	flat	960-0L31
350	15	spring	flat	960-0M97

Damping characteristics → see page 7

L Series


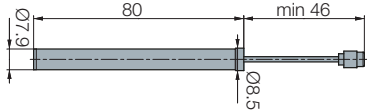


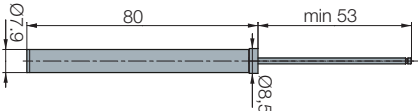
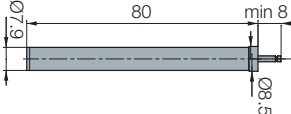
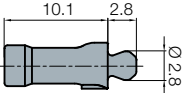
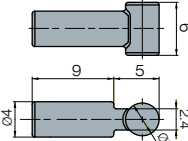
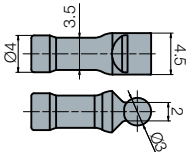
For standard temperature range

 		Technical details		Damping force at v=1000mm/min (N)	Working stroke (mm)	Piston rod return	Damping characteristics	Item number
LD 88 - 9 - 50 	10	50	mechanical	flat	961-0M69			
	12.5	50	mechanical	flat	961-0M70			
	15	50	mechanical	flat	961-0M71			
	17.5	50	mechanical	flat	961-0M72			
	20	50	mechanical	flat	961-0M76			
	Damping characteristics → see page 7							
LD 97 - 9 - 50 	3.8	50	mechanical	flat	961-0M67			
	4	50	mechanical	flat	961-0V32			
	7	50	mechanical	flat	961-0X53			
	Damping characteristics → see page 7							
LD 97 - 9 - 50 with connection 	With Connection C		4	50	mechanical	flat	961-0V36	
	Damping characteristics → see page 7							
						Connection can be customised		
Connection type A		Connection type B		Connection type C				

L Series

For standard temperature range



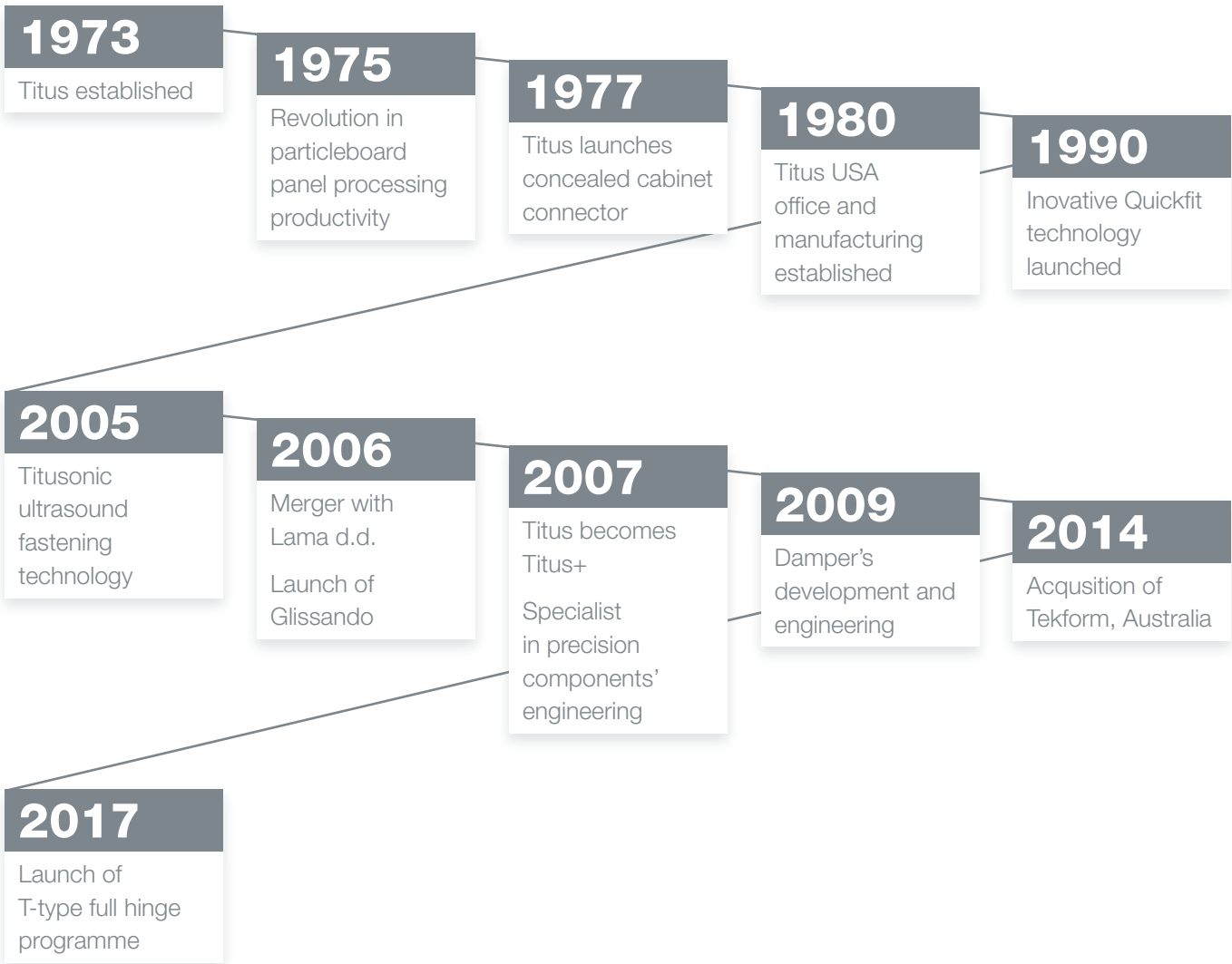
Technical details		Damping force at v=1000mm/min (N)	Working stroke (mm)	Piston rod return	Damping characteristics	Item number
LD 80-7.9-36   		4.5	36	spring	reverse	961-0G03
		Damping characteristics → see page 7				
LD 80-7.9-45       Connection type A Connection type B Connection type C		3.5	45	mechanical	flat	961-0419
		Damping characteristics → see page 7				
		Connection can be customised				

The Titus Group Profile

Titus focuses on the design, manufacture and distribution of connectors, concealed hinges drawers and soft closing mechanisms in furniture and household appliances.

Titus Group is owned and managed from its headquarters in United Kingdom. We are able to provide products and services to every customer around the world based on manufacturing facilities in Europe, North America, China, SE Asia, Australia and New Zealand.

Quickfit technology makes Titus the World leader in connectors for RTA furniture



Vision

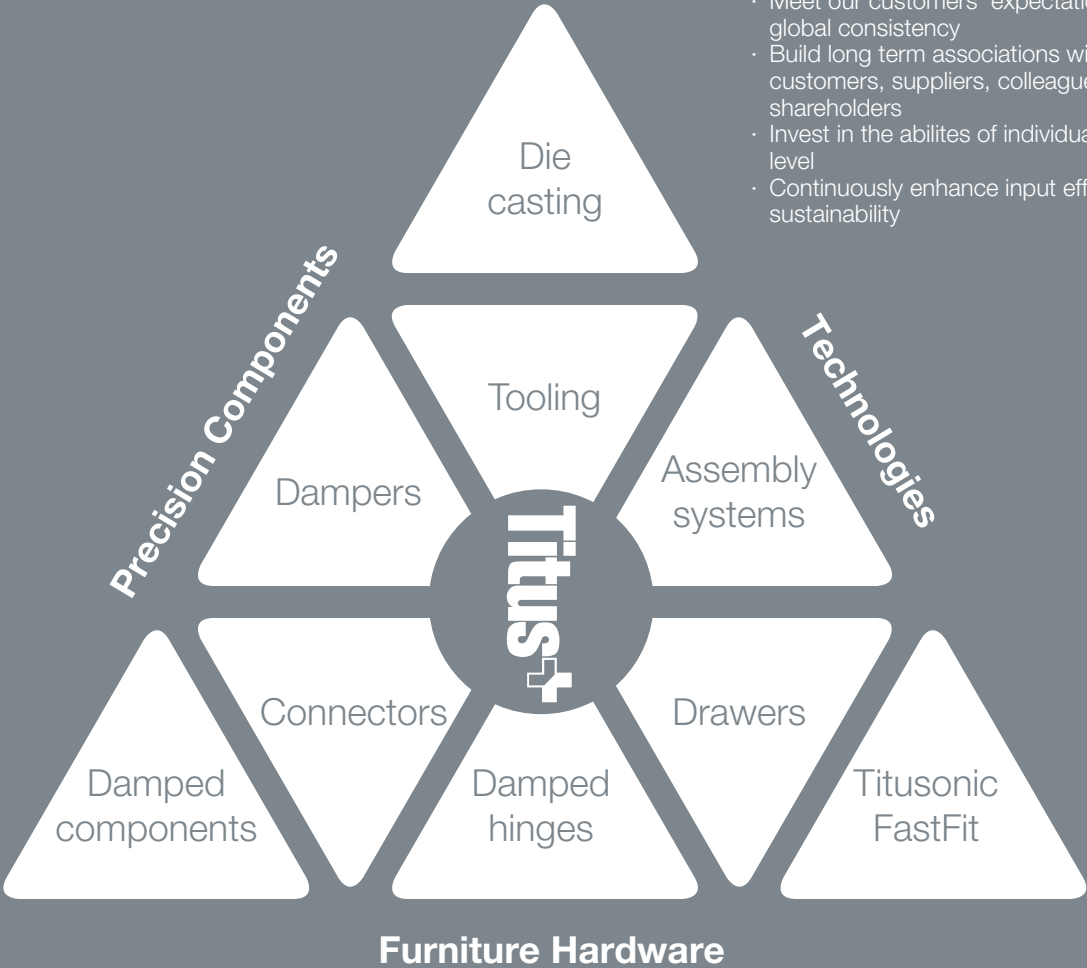
The world's best engineering for precision components

Mission

To provide manufacturers with components' solutions that improve competitiveness

Titus Business Philosophies and Principles

- Gain total knowledge of our customers and their markets
- Focus on identifying and creating high volume component niches
- Meet our customers' expectations with global consistency
- Build long term associations with customers, suppliers, colleagues and shareholders
- Invest in the abilities of individuals at every level
- Continuously enhance input efficiency and sustainability



Furniture Hardware

- Cabinet connectors
- Concealed hinges
- Soft closing systems
- Drawers and drawer systems
- Kitchen accessories
- Furniture locks
- Decorative

Components

- Dampers
- Precision components

Technologies

- Automation systems
- Precision castings
- Die cast technologies
- Tooling
- Ultrasound fastening technology
- FastFit technology

'Totally Integrated Engineering'

Product Design

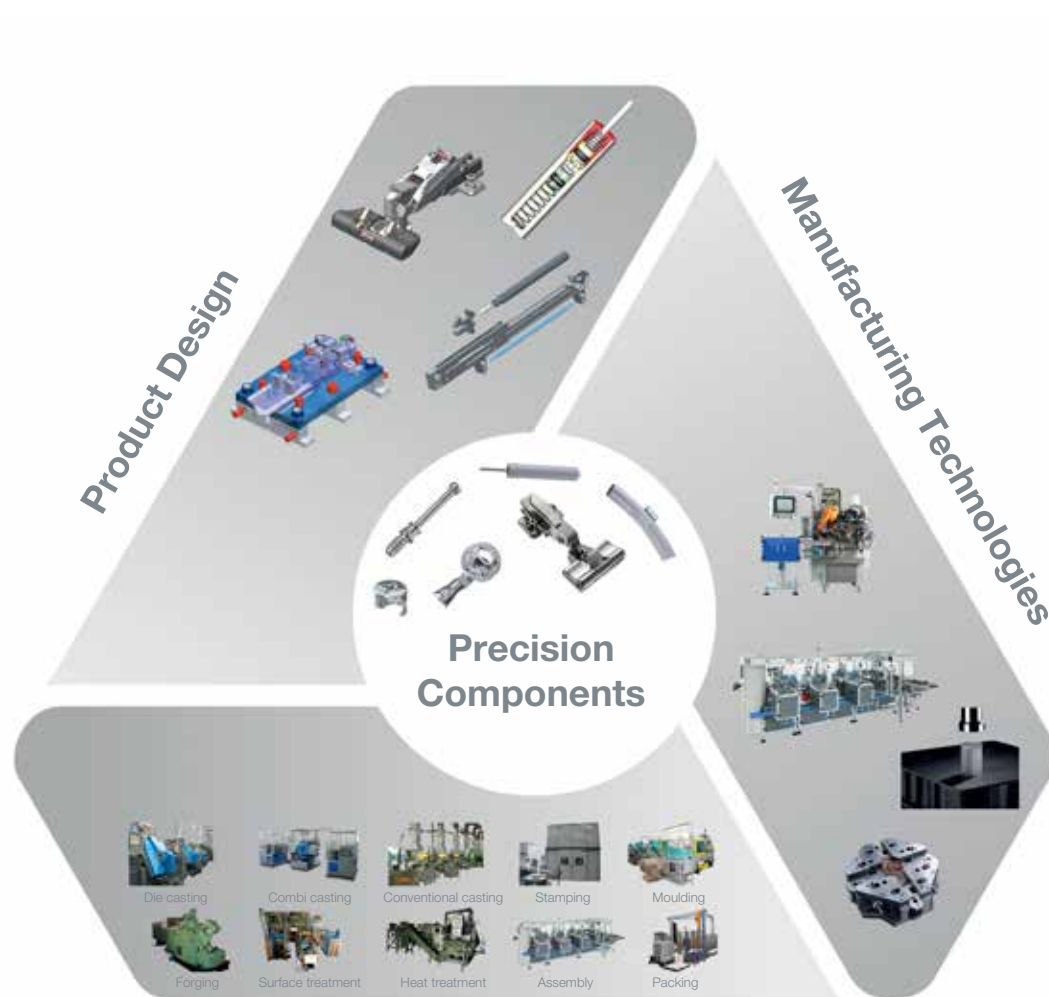
Design and engineering of unique components
Consistent and repeatable product quality

Manufacturing Technologies

to improve productivity and product quality

Manufacturing Operations

A wide array of technologies and services required for high volume production of precision components available in-house



Manufacturing Operations

Fittings for purpose

Unique product advantages for better value for money and lower 'total installed cost'

Innovations that improve

with less parts, less different parts, less preparation actions, faster assembly

Fast time-to-market

Continuous Improvement

The Titus Group Mission, to improve the competitiveness of our customers, encourages us to continuously improve our products, services, processes and competencies of our employees.

Quality

We believe that the Titus Mission is achieved most effectively through the management of our design, manufacturing and service activities in conformance with the ISO 9001 standard for quality management. Quality has a broad meaning for us: it is our guide to the selection of materials, work, processes, internal relations and cooperation with partners.

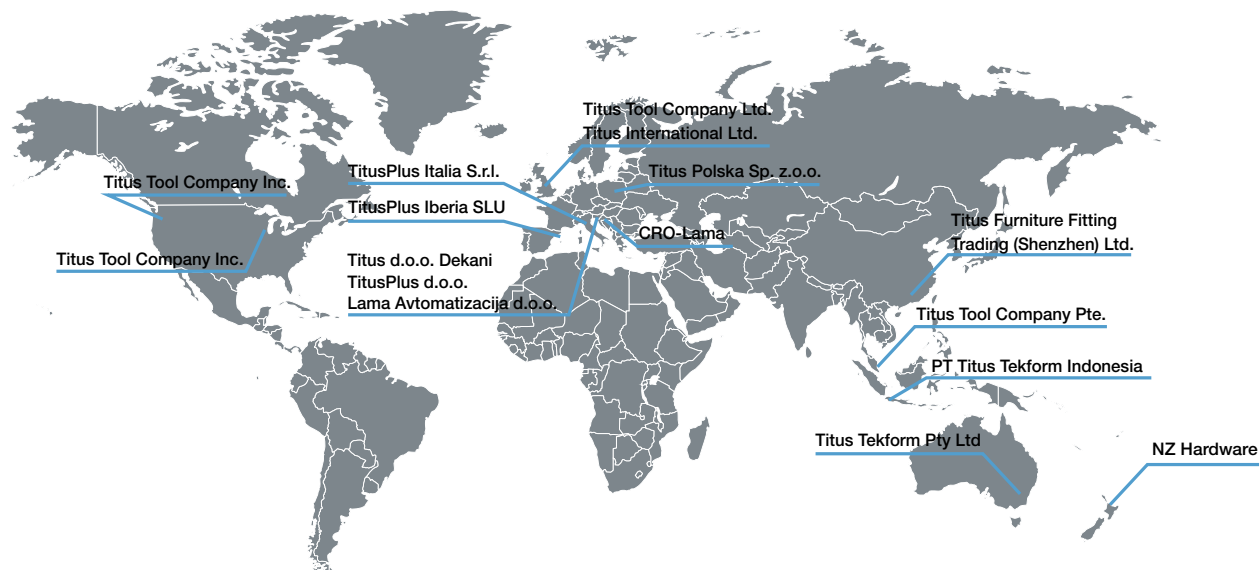
Products

Our integrated quality system produces technically optimized products of high quality. They are assessed regularly in our own test labs as well as by internationally renowned institutions, such as LGA from Germany, CTBA from France, FIRA from United Kingdom, CATAS from Italy, AIDIMA from Spain, and others.



Global player

Worldwide design, manufacturing and distribution capabilities



Europe

TitusPlus d.o.o.
Dekani 5
SI-6271 Dekani
Slovenia
+386 566 90 213
+386 566 90 205 Fax
info@titusplus.com

Titus d.o.o. Dekani
Dekani 5
SI-6271 Dekani
Slovenia
+386 566 90 213
+386 566 90 205 Fax
info@titusplus.com

Titus Technologies
Lama Avtomatizacija d.o.o.
Dekani 5
SI-6271 Dekani
Slovenia
+386 566 90 432
+386 566 90 431 Fax
titustechnologies@titusplus.com

Titus Tool Company Ltd.
10 Blackburn Industrial Estate
Enterprise Way
Sherburn in Elmet
LS256NA
United Kingdom
+44 1977682 582
+44 1977680 481 Fax
uk@titusplus.com

CRO-Lama
Rakitska 10a
Rakitje
HR-10437 Bestovje
Croatia
+385 1 3323 033
+385 1 3323 233 Fax
croatia@titusplus.com

Titus Polska Sp. z o.o.
ul. Stefańskiego 17 A
PL-62-002 Suchy Las/Poznań
Poland
+4861 811 5402 Phone/Fax
+4861 811 5684 Phone/Fax
+4861 821 9362
poland@titusplus.com

TitusPlus Italia Srl
Via Aquileia 9
Frazione Olmi
31048 San Biagio di Callalta (TV)
+39 04 221 650 120
+39 04 221 650 136 Fax
italia@titusplus.com

TitusPlus Iberia SLU
C/ Gran Bretanya 34
08520 Les Franqueses del Valles
(Barcelona)
+34 938 715 404
+34 938 605 498 Fax
iberia@titusplus.com
www.titusplusiberia.com

America

Titus Tool Co. Inc.
2800 156th Avenue SE
Suite 135
Bellevue WA 98007, USA
800 762 1616 toll free
+1 253 872 2829
+1 253 872 2827 Fax
usa@titusplus.com

Titus Tool Co. Inc.
220 Messner Drive
US-60090 Wheeling, USA
800 762 1616 toll free
+1 253 872 2829
+1 253 872 2827 Fax
usa@titusplus.com

Australia

Titus Tekform Pty Ltd
Unit 1, 41-43 Whyalla Place
Prestons NSW 2170
Australia
+61 2 9286 0007
+61 2 9286 0074 Fax
www.titustekform.com.au
info@titustekform.com.au

NZ Hardware Enterprises Ltd
34 Waipareira Avenue
Henderson
Auckland, New Zealand
+64 9 837 0886
+64 9 837 8003Fax

Asia

Titus Tool Co. Pte. Ltd.
5004 Ang Mo Kio Ave 5
Techplace II #04-01
Singapore 569872
+656383 3922
+656383 3178 Fax
singapore@titusplus.com

Titus Furniture Fitting
Trading Shenzhen Ltd
80B ShenFu Bao
Building 128
Ronghua Road
Futian Free Trade Zone
Shenzhen
China
Pc 551238
+867 558 348 0916
+867 558 359 2676 Fax
china@titusplus.com

PT Titus Tekform Indonesia
Taman Tekno block L2 No. 6-7
BSD Sector XI - Tangerang Selatan 15314
Indonesia
+ 62 21 75873578
+ 62 21 75873574 Fax
indonesia@titusplus.com

Headquarters

Titus International Ltd
325 Euston Road
London
NW1 3AD, United Kingdom
info@titusplus.com
www.titusplus.com
info@titusplus.com

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Notes

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