Give your application the professional look & performance...

NitroStruts

COMPREHENSIVE RANGE OF GAS STRUTS.

Nito Struts Cat. 2007 Rev.1

Metrol Springs Ltd
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Introduction

Metrol Springs Ltd offers the largest range of gas springs and struts available in the UK, from miniature 8mm diameter springs up to gas springs producing 40 tonnes of force with a diameter of 250mm.

Our Nitro-Strut and Nitro-Spring ranges of gas springs are used in a wide variety of industries and applications around the world. From everyday industrial applications to specialist defence projects, our experience in gas spring design, manufacture, supply and service has gained Metrol Springs Ltd an excellent reputation. A key factor in our success is directly attributable to our experienced and enthusiastic staff combined with our extensive range of products.

Metrol Springs can help you with your applications and special projects from design, selection of the right product to prototype and production volume. We offer our customers:

- No cost engineering back up
- Project design / CAD drawing designs
- Custom design to suit your application
- Sales force with real product knowledge and technical backgrounds
- Extensive range of gas springs and struts available including variable, locking, dampers and stainless
- Comprehensive stock of brackets, end fittings and linkages.

We can supply quantities from 1 to 100,000's. Working with our customers we are able to offer stock call off orders so the parts are always in stock and available for immediate despatch. We hold a large stock of standard gas struts, end fittings and brackets for next day delivery.

As well as supplying OEM's we specialise in replacement struts on existing equipment, Nitro-Strut variable and fixed force struts gives us the flexibility to provide a suitable replacement from stock. For replacement struts, please contact us with the dimensions of your current strut or simply fill in the fax back form on page 32.

Comprehensive range of Nitro-Struts to suit most applications, also available in Stainless Steel.

Wide variety of end fittings and brackets.

What is a gas strut?

Gas struts are hydro pneumatic rams the gas/oil filled units will give smooth controlled movement to lids, hatches and doors. Gas struts are self contained units and maintenance free, when used in accordance to manufacturers guidelines they will give years of trouble free service.

How a gas strut works

A gas strut consists of a rod that slides in and out of a pressurised sealed tube. The rod has a piston riveted to one end which prevents it from being forced out of the tube when pressurised.

The force of the gas strut is provided by the gas pressure acting on the cross sectional area of the rod. The higher the gas pressure, the higher the force of the strut. The piston has a metering orifice which allows the gas to pass from one side of the piston to the other. By altering the size of this orifice the rate of extension can be varied.

The oil within the gas strut produces the damping characteristics throughout the stroke, subject to correct orientation. As the rod extends from a compressed position the oil zone will dampen the movement as it reaches its full extension, giving a smooth controlled stop. The damping characteristics can be changed by using different viscosity and volume of oil in the tube.

Characteristics of a gas strut

As a gas strut is compressed the force increases from a high initial value by approximately 30%. This increase can be expressed as a ratio (Rc) values which are shown below.

Strut Size mm	Rc%	Panel Weight kg
6-15	1.2	1-10
8-18	1.3	6-35
10-23	1.3	25-140
14-28	1.5	100-350
20-40	1.5	350+

Values are given for standard gas strut sizes.
By modifying the design of the strut, the ratio can be altered to suit the application.

Where are gas strut used?

Gas struts are used in a wide variety of industries.

- Marine
- Lorries and Trailers
- Industrial machinery
- Furniture
- Bus and coach
- Machine guards
- Caravans and motorhomes
- Rooflights and access hatches

And many more, for professional advice on your application, please call us now.

How can a gas strut be used?

Nitro-Struts are used to:

- Aid and assist in lifting
- Aid controlled movement
- Counterbalance when raising and lowering
- Damp movement
- Support an object in position
- Adjust position of an object.

Which gas strut should be used?

There are a variety of Nitro-Struts available to suit different applications.

- Fixed Force
- Variable Force
- Locking
- Dampers
- Stainless Steel

For professional advice on your gas strut requirements please call us now.

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Fixed Force Range 50 to 2500N

Supplied pressurised to order. *Pages 4 to 8*

Variable Force Range 2500 to 50N

Supplied to max pressure. *Pages 9 to 13*

IMPORTANT ADVICE - PLEASE READ CAREFULLY

Gas Strut Fitting & Adjustment Instructions *Page 32*

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Make Life Easy...

See Enquiry Form page 33

FIXED FORCE RANGE

Fixed Force Range

The Fixed Force Strut Range can be supplied to any pressure within the range listed below for the type of strut. The threaded ends allow a large variety of end fittings to be used, including bracket mountings.

Suitable Applications

The Fixed Force range of struts are suitable for most applications, examples of these can be found on page 2.

Unsure of what pressure is required?

When you require a gas strut to be used in a new application and you are unsure of what force is required we recommend the following.

- If the application only requires a small number of gas struts try using a variable force strut which can be adjusted to suit your requirement.
- If the application will require a number of struts or you require the same force struts in the future. In the first instance use a variable strut and adjust it to your satisfaction then return the struts to Metrol Springs Ltd. We will then measure the pressure in your sample struts and can set fixed force struts to this pressure for your order.

Range Specification

- Black epoxy powder coated cylinder.
- Black nitrocarburized rod ,
  Hard chrome plated available on request.
- Both rod and cylinder ends threaded, various end fittings available.
- Working temperature range –30°c to +80°c.
- Protection tube and locking tubes available, see page 19.

Also available in Stainless Steel see page 21 to 25.

Special sizes are available to order. Please contact us with your requirements or fill in the fax back form on page 32.

FIXED FORCE RANGE

Strut Reference	Rod Diameter mm	Tube Diameter mm	Force N		Maximum Stroke mm	See Page
			Minimum	Maximum		
NS FF 6	6	15	50	450	200	5
NS FF 8	8	18	100	750	250	6
NS FF 10	10	23	150	1250	500	7
NS FF 14	14	28	500	2500	500	8

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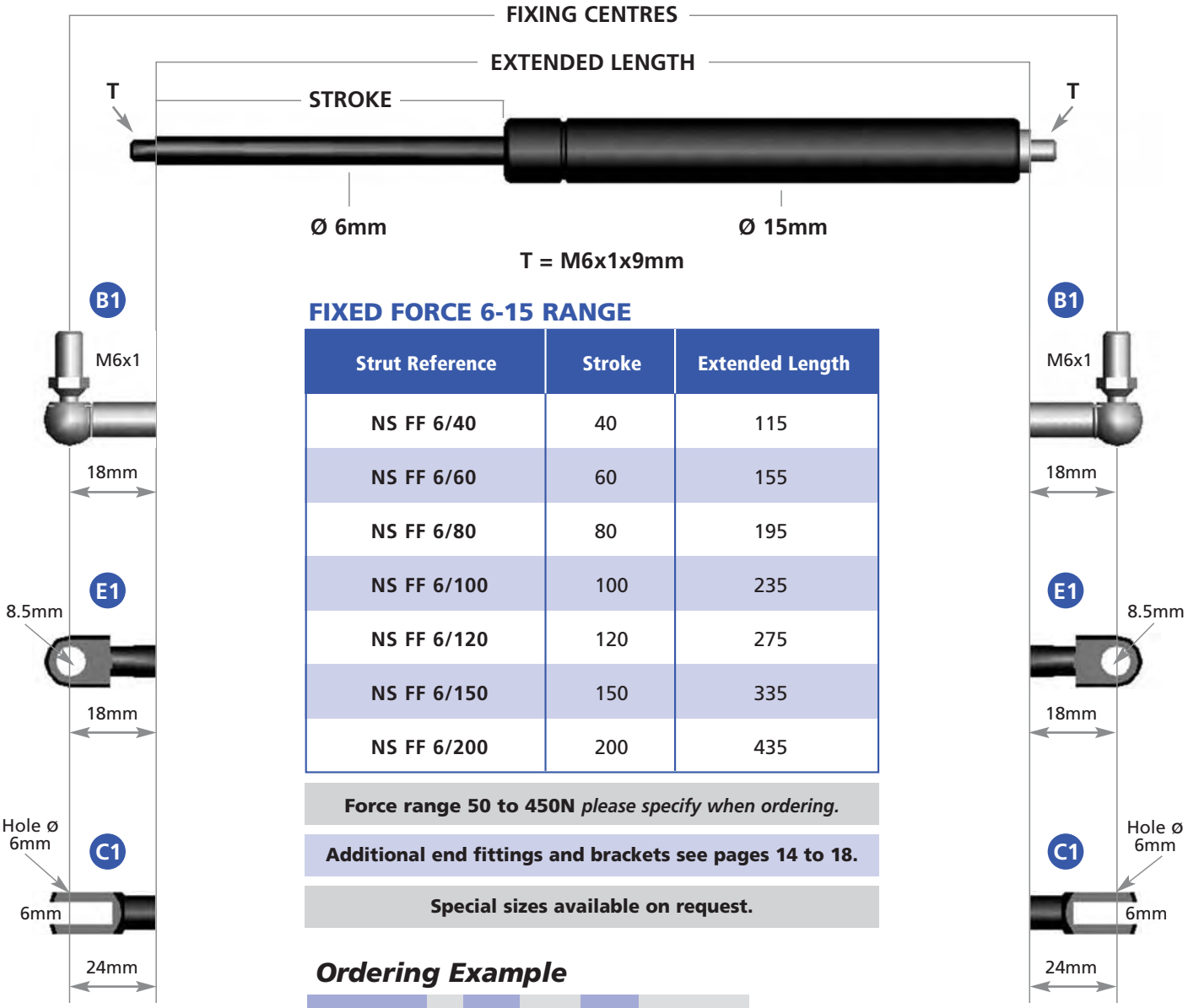

FIXED FORCE 6-15 RANGE

Strut Reference	Stroke	Extended Length
NS FF 6/40	40	115
NS FF 6/60	60	155
NS FF 6/80	80	195
NS FF 6/100	100	235
NS FF 6/120	120	275
NS FF 6/150	150	335
NS FF 6/200	200	435

Force range 50 to 450N *please specify when ordering.*

Additional end fittings and brackets see pages 14 to 18.

Special sizes available on request.

Ordering Example

NS FF 6/40/B1/E1/350N

- NS FF — TYPE
- 6 — ROD
- 40 — STROKE
- B1 — ROD END FITTING
- E1 — TUBE END FITTING
- 350N — FORCE

Also available in Stainless Steel see pages 21 to 25.

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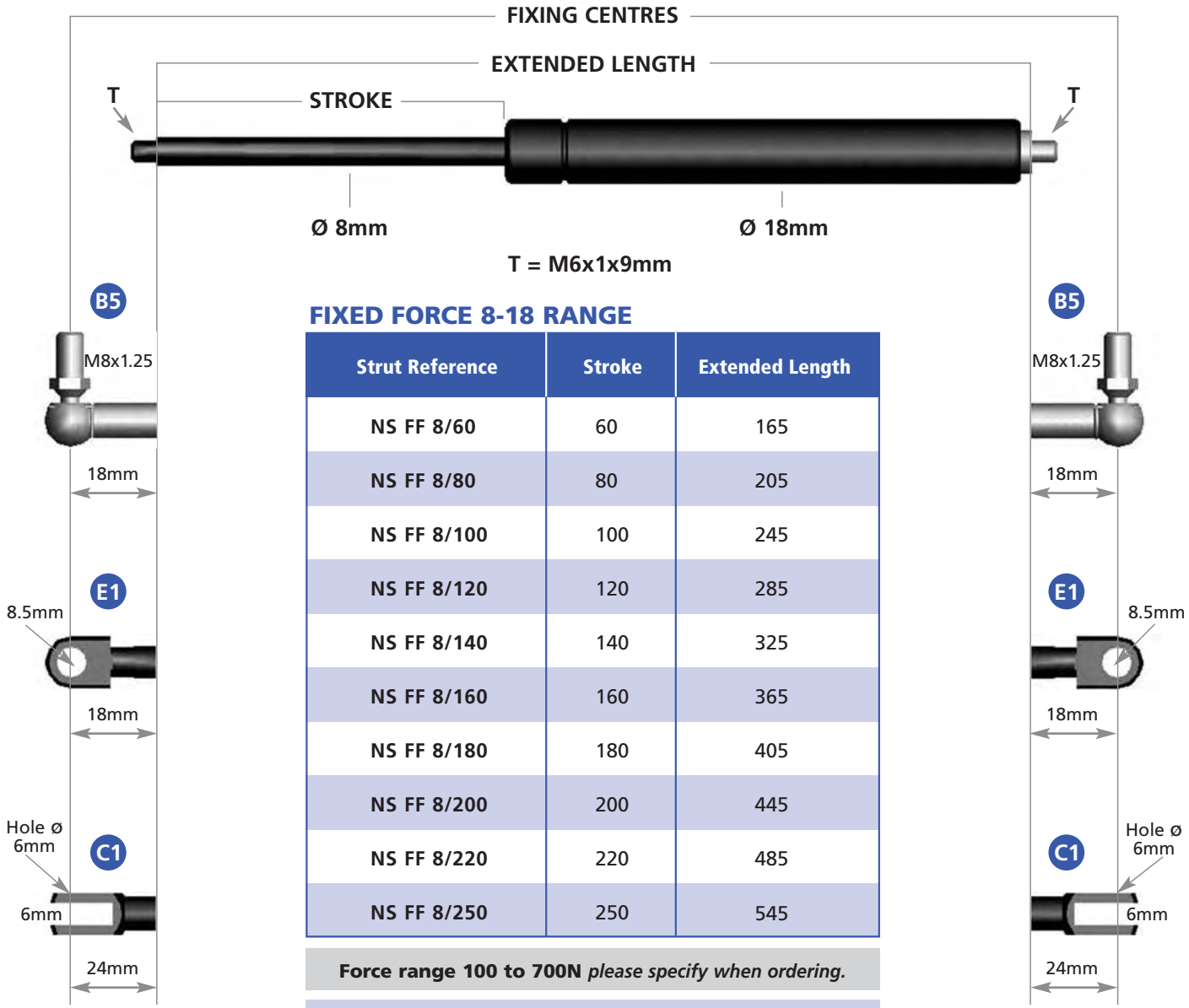


FIXED FORCE 8-18 RANGE

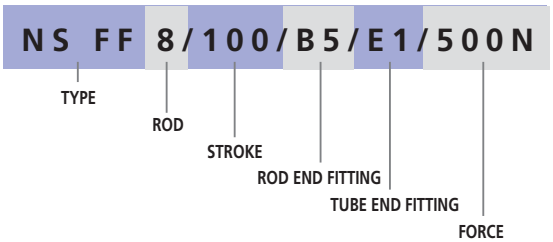
Strut Reference	Stroke	Extended Length
NS FF 8/60	60	165
NS FF 8/80	80	205
NS FF 8/100	100	245
NS FF 8/120	120	285
NS FF 8/140	140	325
NS FF 8/160	160	365
NS FF 8/180	180	405
NS FF 8/200	200	445
NS FF 8/220	220	485
NS FF 8/250	250	545

Force range 100 to 700N *please specify when ordering.*

Additional end fittings and brackets see pages 14 to 18.

Special sizes available on request.

Ordering Example



Also available in Stainless Steel see pages 21 to 25.

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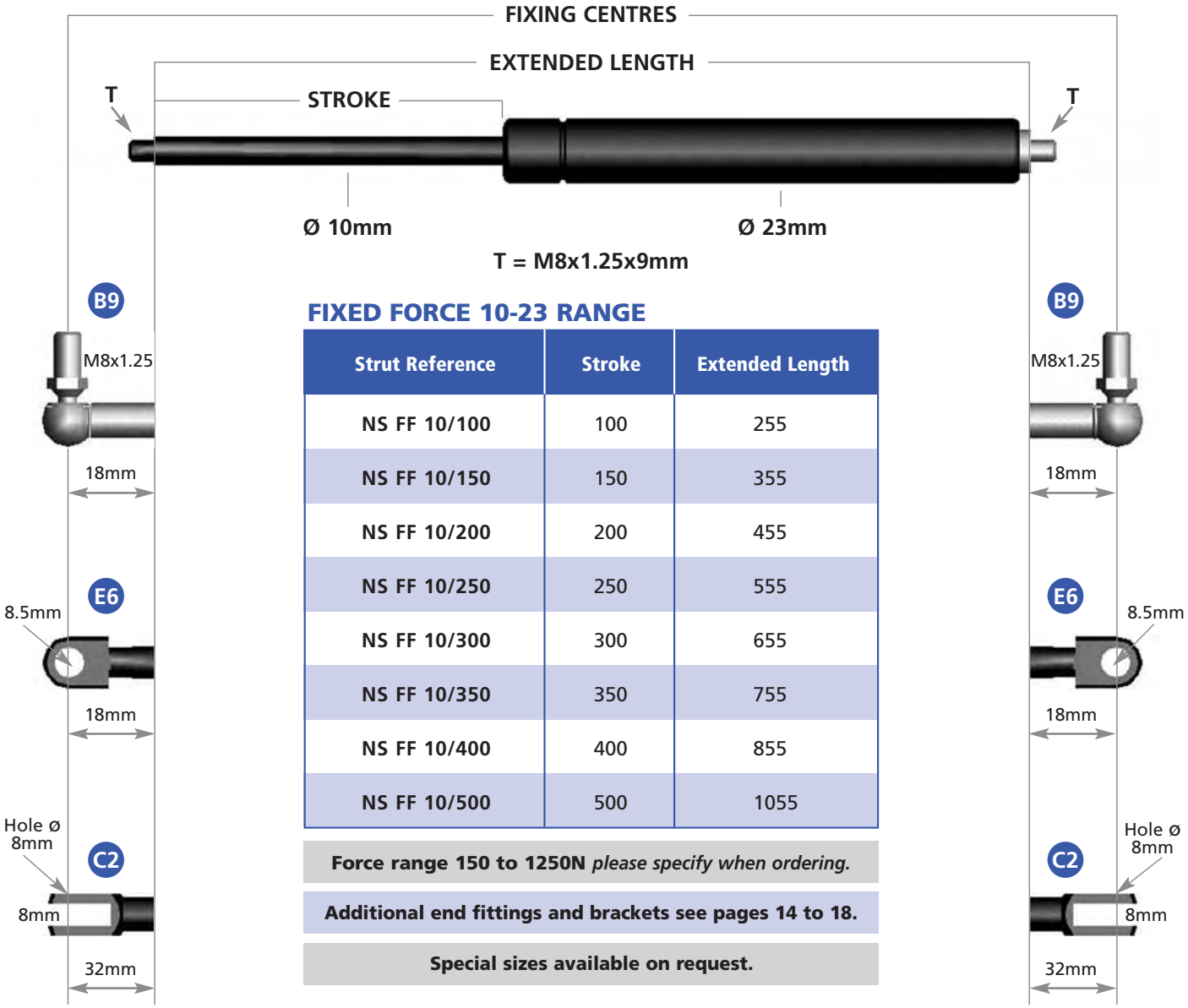


FIXED FORCE 10-23 RANGE

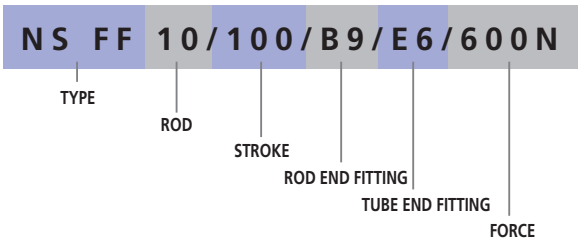
Strut Reference	Stroke	Extended Length
NS FF 10/100	100	255
NS FF 10/150	150	355
NS FF 10/200	200	455
NS FF 10/250	250	555
NS FF 10/300	300	655
NS FF 10/350	350	755
NS FF 10/400	400	855
NS FF 10/500	500	1055

Force range 150 to 1250N *please specify when ordering.*

Additional end fittings and brackets see pages 14 to 18.

Special sizes available on request.

Ordering Example



Also available in Stainless Steel see pages 21 to 25.

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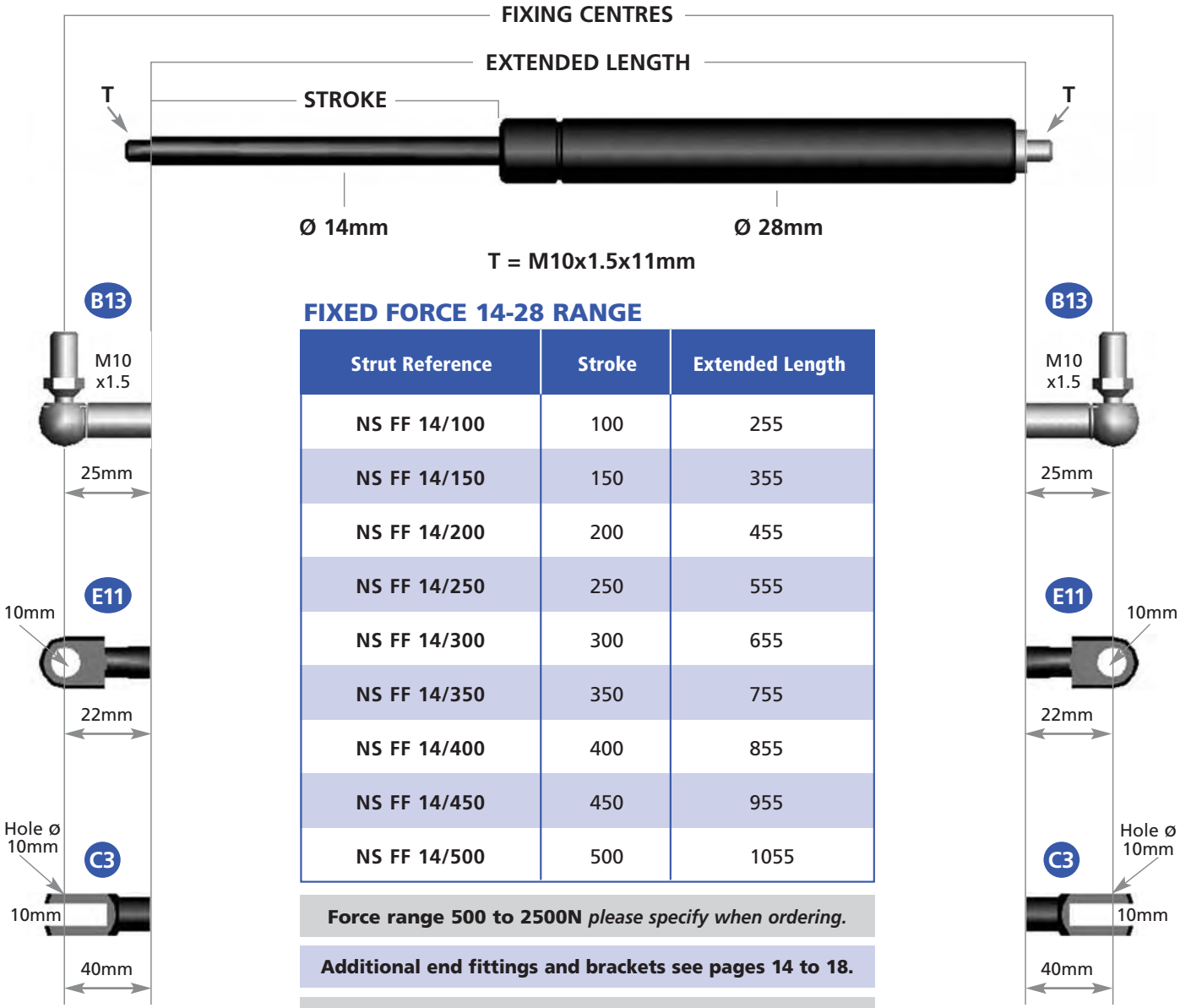


FIXED FORCE 14-28 RANGE

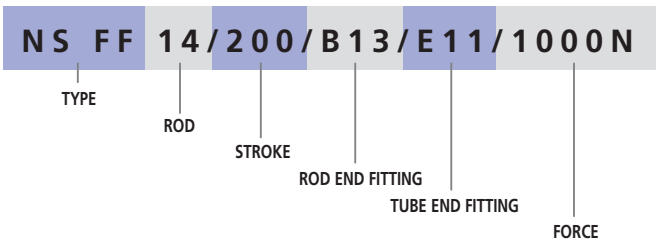
Strut Reference	Stroke	Extended Length
NS FF 14/100	100	255
NS FF 14/150	150	355
NS FF 14/200	200	455
NS FF 14/250	250	555
NS FF 14/300	300	655
NS FF 14/350	350	755
NS FF 14/400	400	855
NS FF 14/450	450	955
NS FF 14/500	500	1055

Force range 500 to 2500N *please specify when ordering.*

Additional end fittings and brackets see pages 14 to 18.

Special sizes available on request.

Ordering Example



Also available in Stainless Steel see pages 21 to 25.

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VARIABLE FORCE RANGE

Variable Force Range

The variable force gas strut range is versatile and adaptable, if you have a variety of applications, one type of gas strut can be used by simple adjustment.

They can be used for one-off applications with no need to calculate the force required for the strut.

When replacing existing struts and the force is unknown the variable gas strut is ideal. Plus the large range of end fittings available helps to match the existing strut. *See pages 14 to 18.*

Thes variable force range of gas struts are supplied charged to the maximum pressure as standard and can be reduced in situ or supplied to a pre-set pressure.

The bleed valve is located at the end of the cylinder and is accessible to adjust the pressure when the strut is in situ, this allows quick and simple installation and adjustment of the strut.

For further information and instructions on adjusting the pressure see page 32.

Range Specification

- Black epoxy powder coated cylinder.
- Black nitrocarburized piston rod.
- Both rod and cylinder ends threaded, various end fittings available.
- Working temperature range –30°c to +80°c
- Protection tube and locking tubes available. *See page 19.*

IMPORTANT NOTE
Gas strut pressure can only be reduced to necessary force *- it cannot be increased once reduced.*

ADVANTAGES

- Versatile and adaptable.
- No need to calculate forces.
- Ideal as a replacement unit.
- Easy to use - just fit and adjust.
- Useful for prototypes and one-offs.
- Adjust to your complete satisfaction.

Suitable Applications

The Fixed Force range of struts is suitable for most applications, examples of these and uses can be found on page 2.

New Applications & Made to Order

If you need a gas strut for a new application and you are unsure of the exact force required we recommend the following.

- When you only need a small number of gas struts, use a variable force strut which you can adjust to suit.
- If you want a large number of gas struts or you require the same force struts in the future - use variable force struts and adjust to your satisfaction. Send us the adjusted struts - we will measure the pressure and in future we can supply gas struts to your required force.

Also available in Stainless Steel.
See pages 26 to 30.

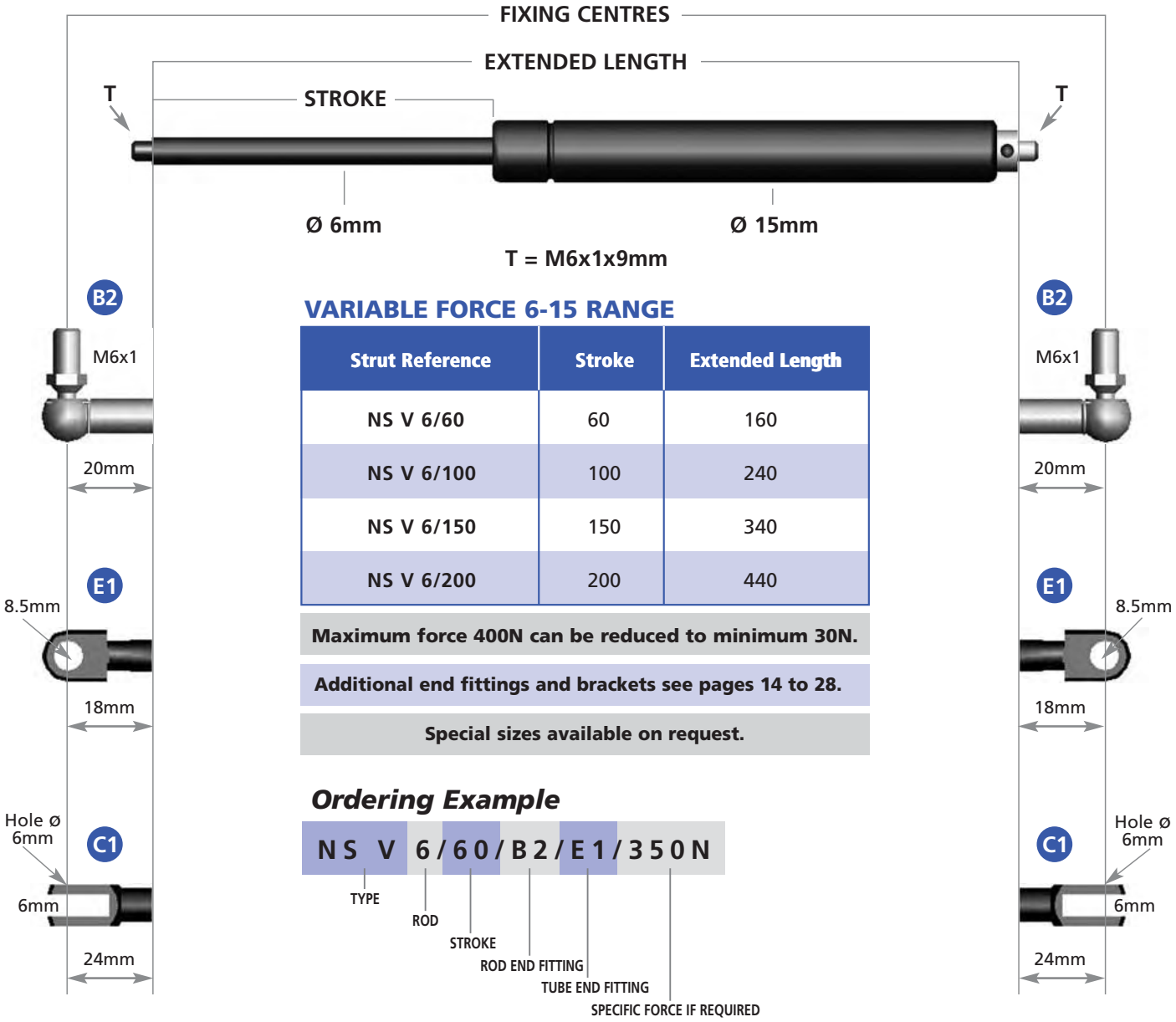
VARIABLE FORCE RANGE

Strut Reference	Rod Diameter mm	Tube Diameter mm	Force N		Maximum Stroke mm	See Page
			Minimum	Maximum		
NS V 6	6	15	30	400	200	10
NS V 8	8	18	100	650	250	11
NS V 10	10	23	150	1200	400	12
NS V 14	14	28	500	2500	500	13

Special sizes are available to order.

Please contact us with your requirements.

Supplied at maximum force unless specified



VARIABLE FORCE 6-15 RANGE

Strut Reference	Stroke	Extended Length
NS V 6/60	60	160
NS V 6/100	100	240
NS V 6/150	150	340
NS V 6/200	200	440

Maximum force 400N can be reduced to minimum 30N.

Additional end fittings and brackets see pages 14 to 28.

Special sizes available on request.

Ordering Example

NS V 6/60/B2/E1/350N

- NS V — TYPE
- 6 — ROD
- 60 — STROKE
- B2 — ROD END FITTING
- E1 — TUBE END FITTING
- 350N — SPECIFIC FORCE IF REQUIRED

IMPORTANT NOTE
Strut pressure can only be reduced to the necessary force
- it cannot be increased once reduced.

Also available in Stainless Steel see pages 26 to 30.

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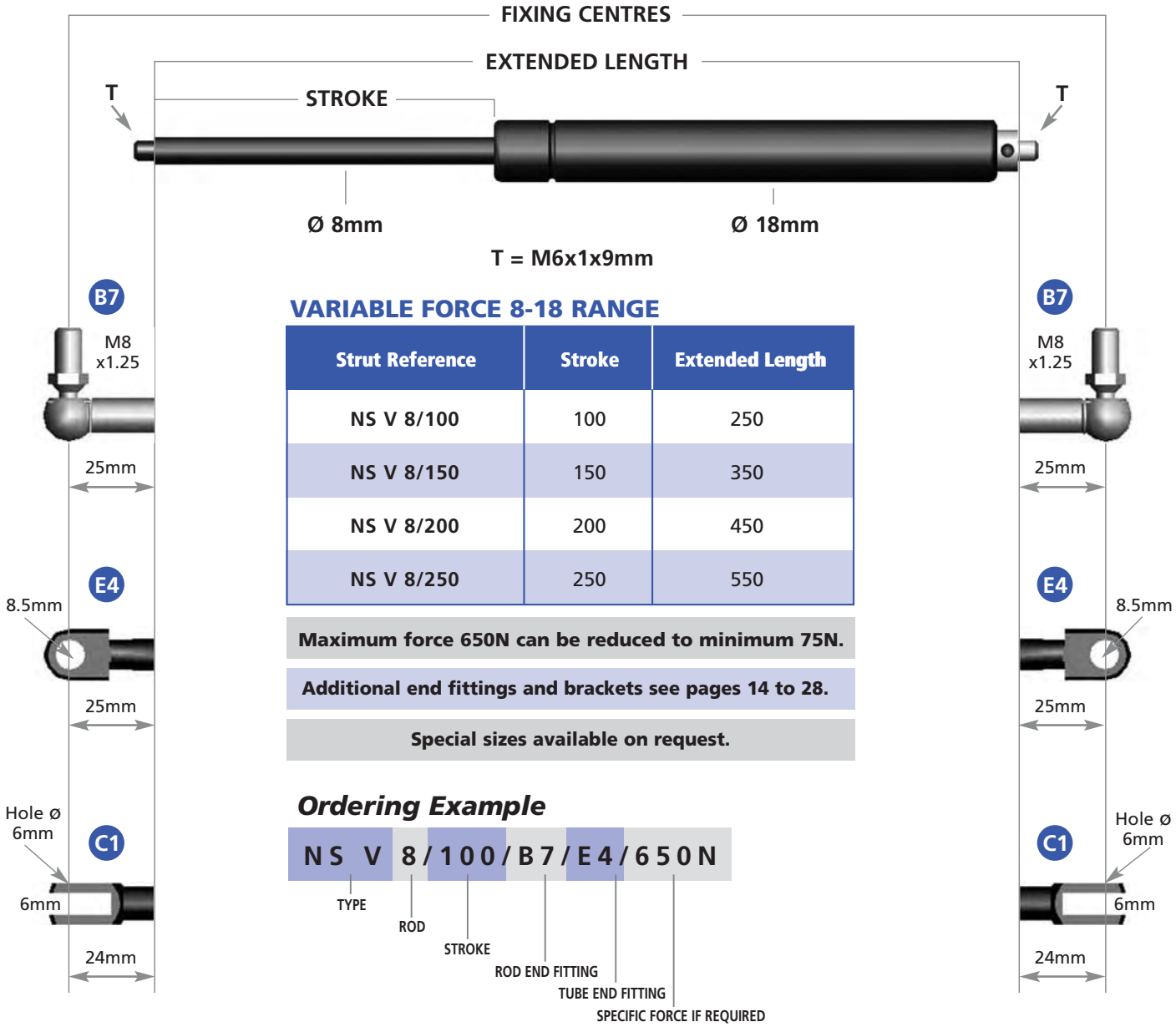

VARIABLE FORCE 8-18 RANGE

Strut Reference	Stroke	Extended Length
NS V 8/100	100	250
NS V 8/150	150	350
NS V 8/200	200	450
NS V 8/250	250	550

Maximum force 650N can be reduced to minimum 75N.

Additional end fittings and brackets see pages 14 to 28.

Special sizes available on request.

Ordering Example

NS V 8/100/B7/E4/650N

- NS V — TYPE
- 8 — ROD
- 100 — STROKE
- B7 — ROD END FITTING
- E4 — TUBE END FITTING
- 650N — SPECIFIC FORCE IF REQUIRED

IMPORTANT NOTE
Strut pressure can only be reduced to the necessary force
- it cannot be increased once reduced.

Also available in Stainless Steel see pages 26 to 30.

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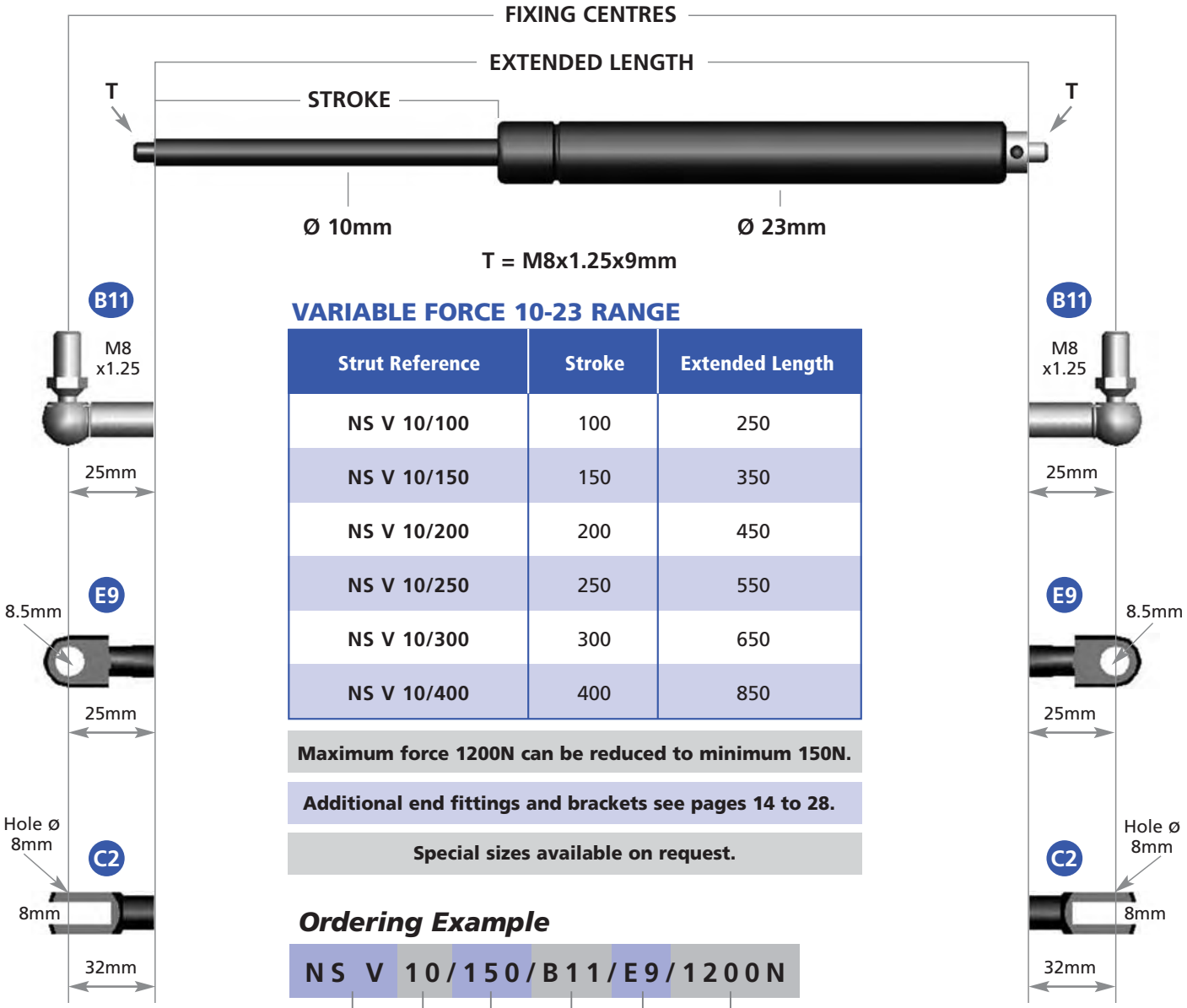

VARIABLE FORCE 10-23 RANGE

Strut Reference	Stroke	Extended Length
NS V 10/100	100	250
NS V 10/150	150	350
NS V 10/200	200	450
NS V 10/250	250	550
NS V 10/300	300	650
NS V 10/400	400	850

Maximum force 1200N can be reduced to minimum 150N.

Additional end fittings and brackets see pages 14 to 28.

Special sizes available on request.

Ordering Example

NS V 10/150/B11/E9/1200N

- NS V — TYPE
- 10 — ROD
- 150 — STROKE
- B11 — ROD END FITTING
- E9 — TUBE END FITTING
- 1200N — SPECIFIC FORCE IF REQUIRED

IMPORTANT NOTE
Strut pressure can only be reduced to the necessary force
- it cannot be increased once reduced.

Also available in Stainless Steel see pages 26 to 30.

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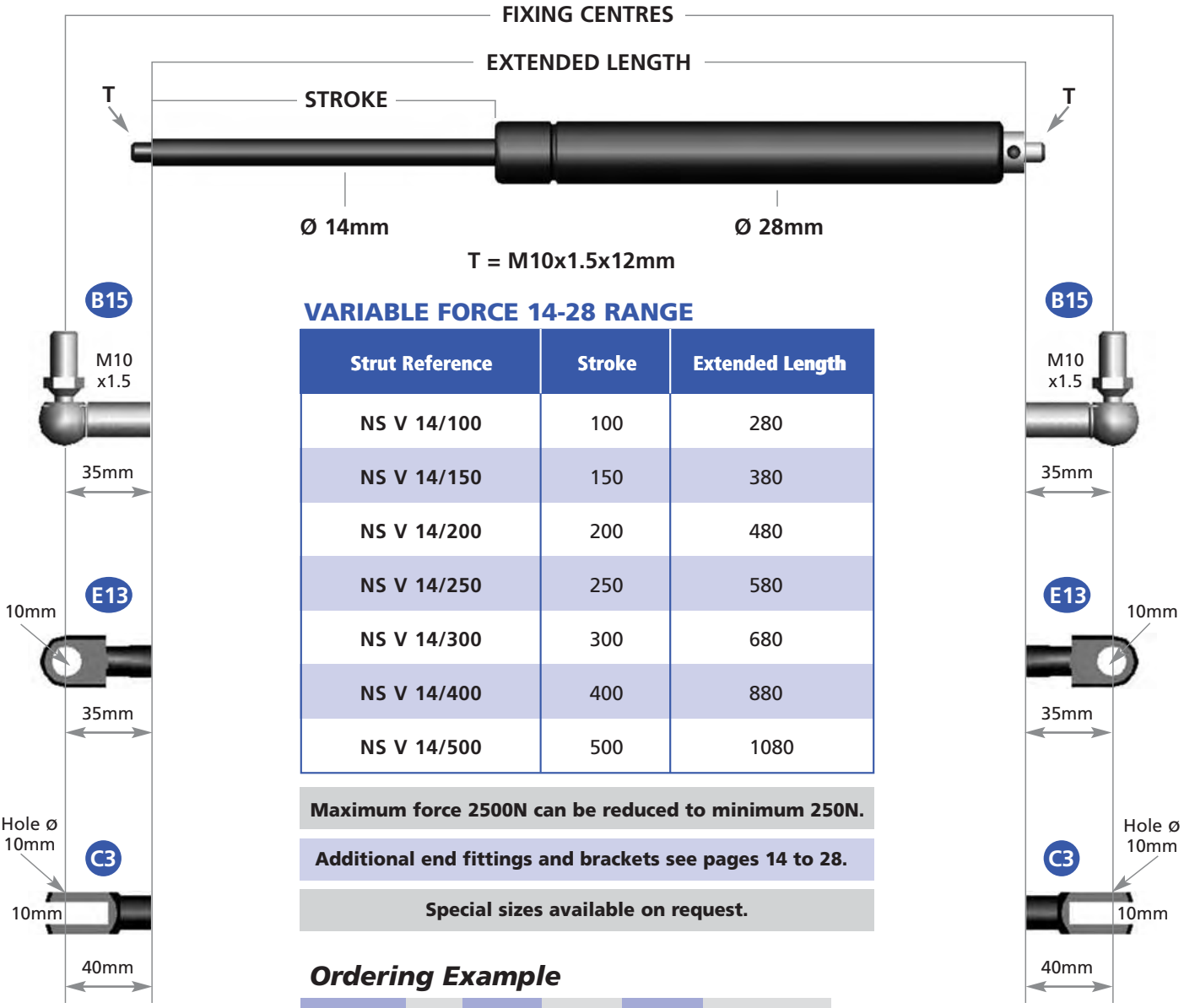

VARIABLE FORCE 14-28 RANGE

Strut Reference	Stroke	Extended Length
NS V 14/100	100	280
NS V 14/150	150	380
NS V 14/200	200	480
NS V 14/250	250	580
NS V 14/300	300	680
NS V 14/400	400	880
NS V 14/500	500	1080

Maximum force 2500N can be reduced to minimum 250N.

Additional end fittings and brackets see pages 14 to 28.

Special sizes available on request.

Ordering Example

NS V 14/200/B14/E11/2500N

- NS V — TYPE
- 14 — ROD
- 200 — STROKE
- B14 — ROD END FITTING
- E11 — TUBE END FITTING
- 2500N — SPECIFIC FORCE IF REQUIRED

IMPORTANT NOTE
Strut pressure can only be reduced to the necessary force
- it cannot be increased once reduced.

Also available in Stainless Steel see pages 26 to 30.

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End Fittings

Ball Joints & Eye Ends

Pages 15 & 16

Brackets

Comprehensive Selection

Pages 17 & 18

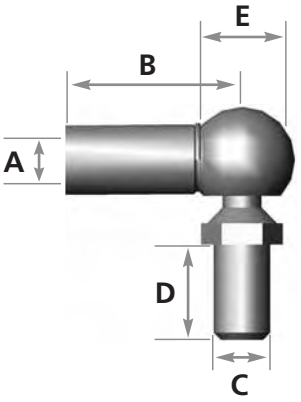
Safety Locking Tubes
Protection Tubes

Page 19

METAL BALL JOINTS

Metrol Reference	A	B	C	D	E	Strut Size
B1	M6	18	M6	13	10	6-15 & 8-18
B2	M6	20	M6	13	10	6-15 & 8-18
B3	M6	25	M6	13	10	6-15 & 8-18
B4	M6	30	M6	13	10	6-15 & 8-18
B5	M6	18	M8	13	10	6-15 & 8-18
B6	M6	20	M8	13	10	6-15 & 8-18
B7	M6	25	M8	13	10	6-15 & 8-18
B8	M6	30	M8	13	10	6-15 & 8-18
B9	M8	18	M8	16	13	10-23
B10	M8	20	M8	16	13	10-23
B11	M8	25	M8	16	13	10-23
B12	M8	30	M8	16	13	10-23
B13	M10	25	M10	20	16	14-28
B14	M10	30	M10	20	16	14-28
B15	M10	35	M10	20	16	14-28

Different length studs are available on request.

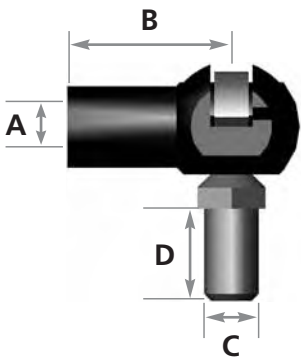


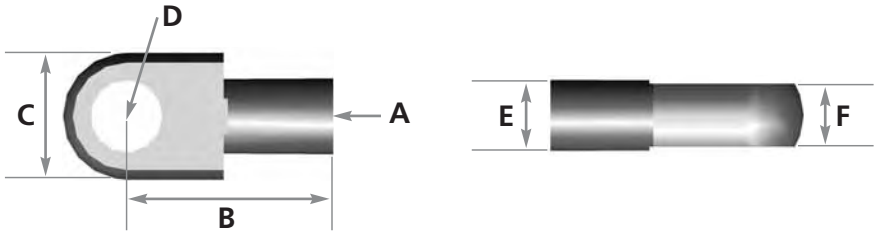
Advice on use of End Fittings

- **Where possible use ball joints to avoid side loading**
- **Always ensure end fittings are fully screwed to the strut**
- **Ensure end fittings are in line to avoid side loading**
- **When using ball joints ensure the stud is fixed to the socket and the clip is in position**
- **Ensure the gas strut matches the chosen end fittings**

PLASTIC BALL JOINTS Socket diameter 10mm

Metrol Reference	A	B	C	D	Strut Size
PB1	M6x1	18	M6x1	13	6-15 & 8-18
PB2	M6x1	25	M6x1	13	6-15 & 8-18
PB3	M6x1	18	M8x1.25	13	6-15 & 8-18
PB4	M6x1	25	M8x1.25	13	6-15 & 8-18
PB5	M8x1.25	25	M8x1.25	16	10-23





METAL EYE ENDS

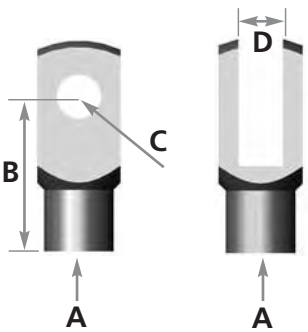
Metrol Reference	A	B	C	D	E	F	Strut Size
E1	M6x1	18	15	8.5	12	5	6-15 & 8-18
E2	M6x1	20	15	8.5	12	5	6-15 & 8-18
E3	M6x1	22	15	8.5	12	5	6-15 & 8-18
E4	M6x1	25	15	8.5	12	5	6-15 & 8-18
E5	M6x1	30	15	8.5	12	5	6-15 & 8-18
E6	M8x1.25	18	18	8.5	18	10	10-23
E7	M8x1.25	20	18	8.5	18	10	10-23
E8	M8x1.25	22	18	8.5	18	10	10-23
E9	M8x1.25	25	18	8.5	18	10	10-23
E10	M8x1.25	30	18	8.5	18	10	10-23
E11	M10x1.5	22	20	10	20	12	14-28
E12	M10x1.5	30	20	10	20	12	14-28
E13	M10x1.5	35	20	10	20	12	14-28

PLASTIC EYE ENDS

Metrol Reference	A	B	C	D	E	F	Strut Size
PE2	M6x1	17.5	25	15	8.1	8	6-15 & 8-18
PE3	M6x1	23.5	31	17	8.5	8	6-15 & 8-18

METAL CLEVIS FORKS

Metrol Reference	A	B	C	D	Strut Size
C1	M6x1	24	6	6	6-15 & 8-18
C2	M8x1.25	32	8	8	10-23
C3	M10x1.5	40	10	10	14-28



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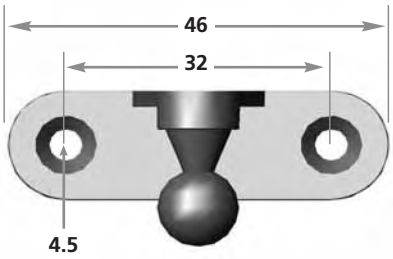
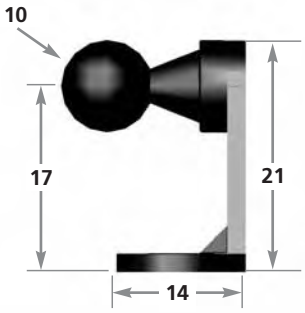
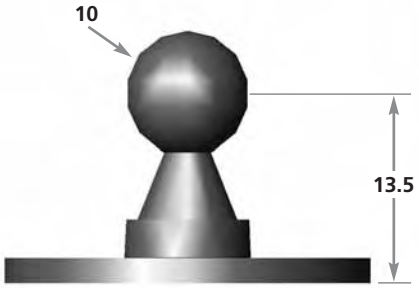
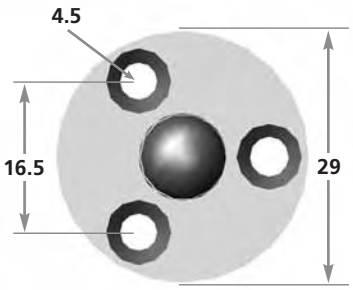




Bracket Type 1 Suitable for use with 6/15 gas struts and End Fittings B1 to B4 & PB1 to PB2

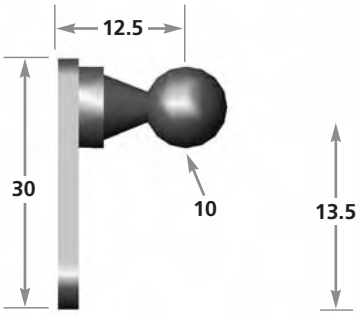
2

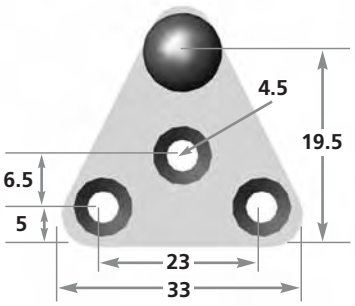




Bracket Type 2 Suitable for use with 6/15 gas struts and End Fittings B1 to B4 & PB1 to PB2

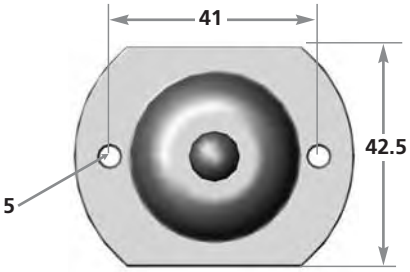
3

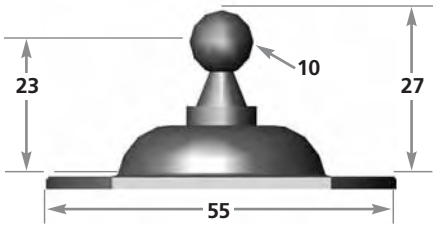




Bracket Type 3 Suitable for use with 6/15 gas struts and End Fittings B1 to B4 & PB1 to PB2

4





Bracket Type 4 Suitable for use with 6/15 and 8/18 gas struts and End Fittings B1 to B12 & PB1 to PB5

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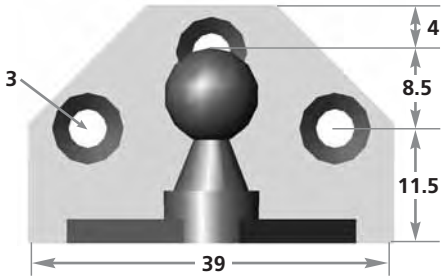
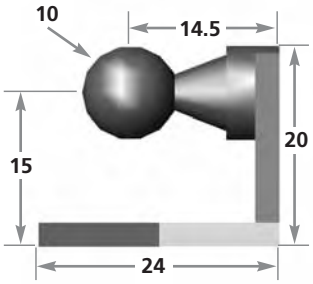
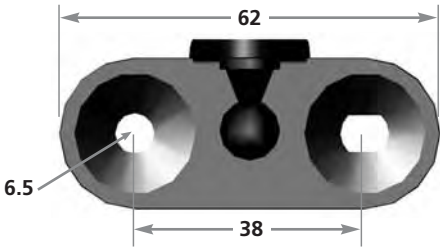
5

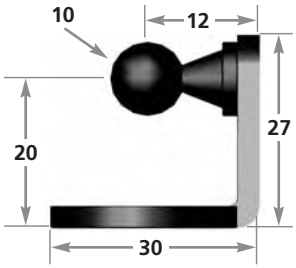




Bracket Type 5 Suitable for use with 6/15 and 8/18 gas struts and End Fittings B1 to B8 & PB1 to PB4

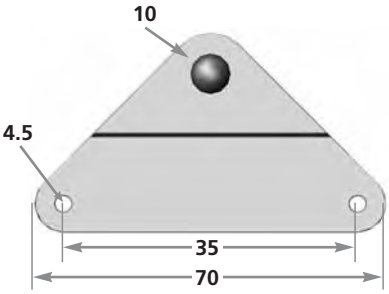
6

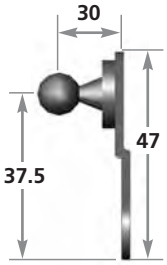




Bracket Type 6 Suitable for use with 6/15, 8/18 and 10/23 gas struts and End Fittings B1 to B12 & PB1 to PB5

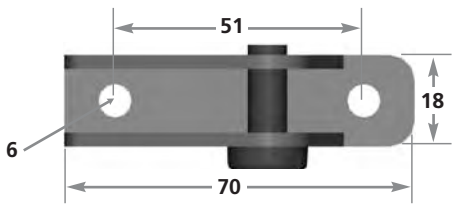
7

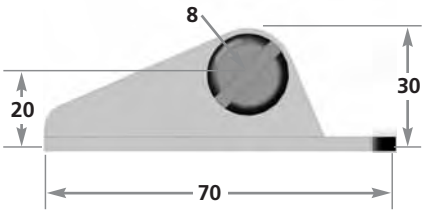




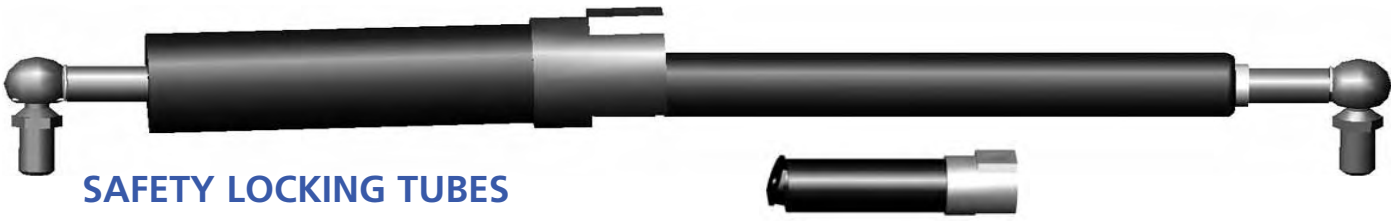
Bracket Type 7 Suitable for use with 6/15, 8/18 and 10/23 gas struts and End Fittings B1 to B12 & PB1 to PB5

8





Bracket Type 8 Suitable for use with the complete range of gas struts and End Fittings E1 to E13



SAFETY LOCKING TUBES

Nitro-Struts safety locking tubes are designed to be simple to use and prevent injury to the operator in the unlikely event of a loss of gas pressure in the strut.

Features:

- Unit positively locks on full extension of the gas strut.
- Simple to use, locks automatically on extension and is released by pushing the safety tube at the correct point to allow the strut to compress.
- Single locking gas strut can be used in conjunction with a standard Nitro-Strut on an application.
- No need for separate safety locking mechanisms, keeping the unit neat and easy to use.
- Metal locking tube can be used on all Nitro-Struts.
- Ensure peace of mind when working under a heavy object.

Also available in Stainless Steel.

SAFETY LOCKING TUBES

Metrol Reference	Strut Size	Locking Tube Diameter
MLT6	6-15	22
MLT8	8-18	25
MLT10	10-23	28
MLT14	14-28	32

TO ORDER

The Safety Locking Tube should be ordered along with the required gas strut and will be delivered fully assembled.

Order example:
NS-FF-6-100-235-B1-B1-250N-**MLT6**

PLEASE NOTE There is a 20mm reduction in the stroke of the gas strut if a Safety Locking Tube is fitted.

PROTECTION TUBES

Protection Tubes are fitted to gas struts where they are to be used in an environment where the gas strut piston can be damaged from scratches or dents or where contamination of the piston rod area can damage the seals.

- Available in plastic, metal or stainless steel.
- Suitable for use with NS-FF, NS-V and NS-SS Nitro-Struts.
- Protection tubes can prolong the life of the gas strut in dirty and dusty environments.

Available in Stainless Steel.

PLEASE NOTE
There is a 2mm reduction in the stroke of the gas strut if a Protection Tube is fitted.

PROTECTION TUBES

Metrol Reference			Strut Size	Protection Tube Diameter
Plastic	Metal	Stainless Steel		
PPT6	MPT6	SSPT6	6-15	22
PPT8	MPT8	SSPT8	8-18	25
PPT10	MPT10	SSPT10	10-23	28
PPT14	MPT14	SSPT14	14-28	32

TO ORDER

The Protection Tube should be ordered along with the required gas strut and will be delivered fully assembled.

Order examples:
Metal Protection Tube = NS-FF-6-100-235-B1-B1-250N-**MPT6**
Plastic Protection Tube = NS-FF-6-100-235-B1-B1-250N-**PPT6**
Stainless Steel Protection Tube = NS-FF-6-100-235-B1-B1-250N-**SSPT6**

Nito Struts Cat. 2007 Rev.1

STAINLESS STEEL

Fixed Force Range 50 to 2500N

Supplied pressurised to order. *Pages 21 to 25*

STAINLESS STEEL

Variable Force Range 2500 to 50N

Supplied to max pressure. *Pages 26 to 29*

IMPORTANT ADVICE - PLEASE READ CAREFULLY

Gas Strut Fitting & Adjustment Instructions *Page 32*

END FITTINGS

Stainless Steel Ball Joints

Page 30

Stainless Steel Eye Ends

Page 31

Stainless Steel Clevis Forks

Page 31

Make Life Easy...

See Enquiry Form page 33

Nito Struts Cat. 2007 Rev.1

ULTRA 316 Stainless Steel FIXED FORCE RANGE

Fixed Force Range

The Fixed Force Strut Range can be supplied to any pressure within the range listed below for the type of strut. The threaded ends allow a large variety of end fittings to be used, including bracket mountings.

Suitable Applications

The Fixed Force range of struts are suitable for most applications, examples and uses of these can be found on page 2.

Unsure of what pressure is required?

When you require a gas strut to be used in a new application and you are unsure of what force is required we recommend the following.

- If the application only requires a small number of gas struts try using a variable force strut which can be adjusted to suit.
- If the application will require a number of struts or you require the same force struts in the future. In the first instance use a variable strut and adjust it to your satisfaction then return the struts to Metrol Springs Ltd. We will then measure the pressure in the struts and on future orders can set fixed force struts to your requirement.

Range Specification

- 316 Stainless Steel Tube.
- 316 Stainless Steel Hard Chrome Plated Rod .
- Both rod and cylinder ends threaded, various end fittings available.
- Working temperature range –30°c to +80°c.
- Protection tube and locking tubes available. *See page 19.*

Advantages

- 3 Year Guarantee.
- 120,000 Cycle Life.
- Built in rod wiper to protect seal from contamination.
- Suitable for all Marine, Healthcare, Outdoor and Corrosive applications.
- Suitable for Food Industry with food grade oil as standard.

Special sizes are available to order. Please contact us with your requirements or fill in the fax back form on page 33.

FIXED FORCE RANGE

Strut Reference	Rod Diameter mm	Tube Diameter mm	Force N		Maximum Stroke mm	See Page
			Minimum	Maximum		
NS SS FF 6	6	15	50	450	200	22
NS SS FF 8	8	18	100	750	250	23
NS SS FF 10	10	23	150	1250	500	24

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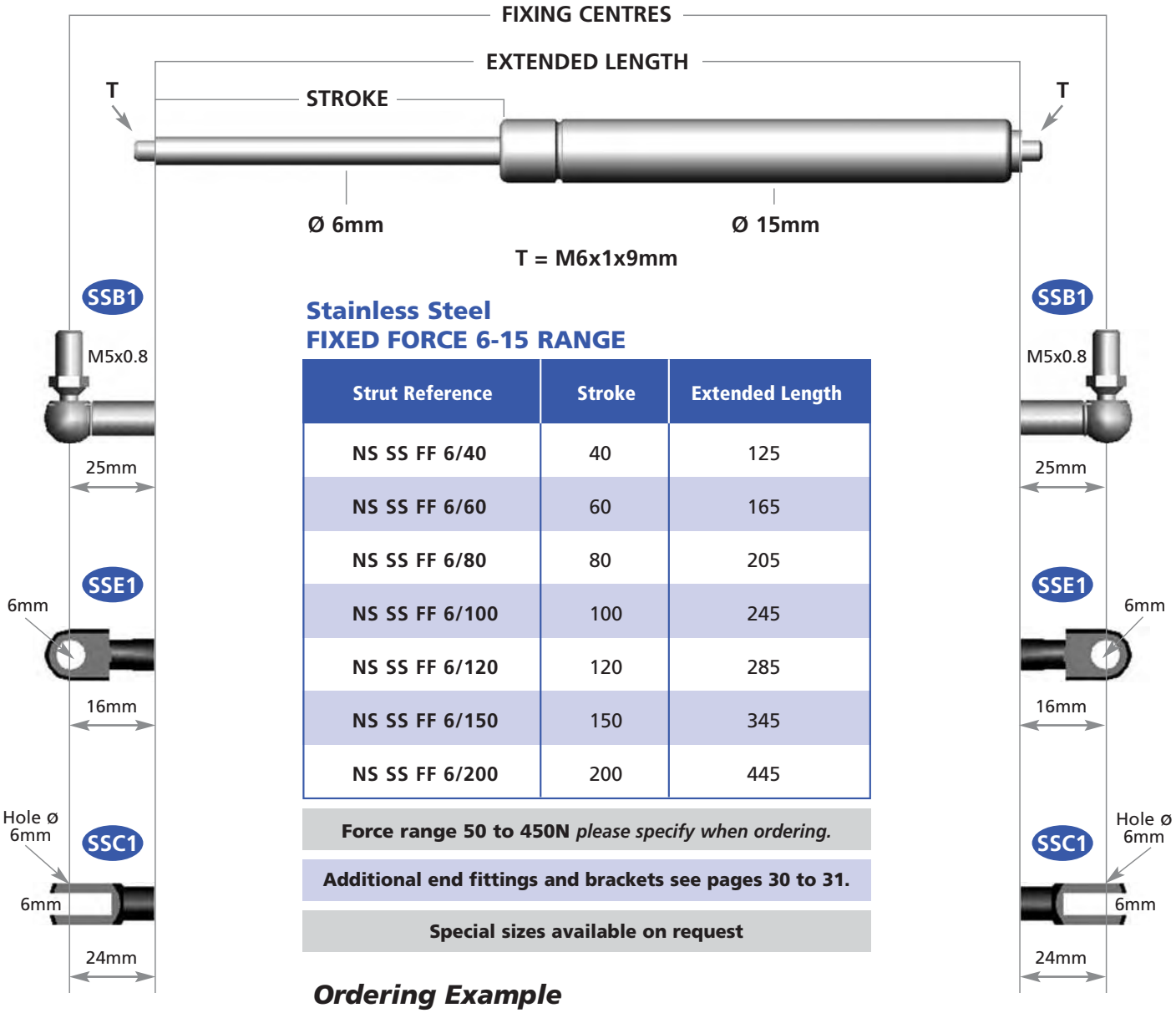
Give your application the professional look & performance...



Stainless Steel
FIXED FORCE 6-15 RANGE

Strut Reference	Stroke	Extended Length
NS SS FF 6/40	40	125
NS SS FF 6/60	60	165
NS SS FF 6/80	80	205
NS SS FF 6/100	100	245
NS SS FF 6/120	120	285
NS SS FF 6/150	150	345
NS SS FF 6/200	200	445

Force range 50 to 450N *please specify when ordering.*

Additional end fittings and brackets see pages 30 to 31.

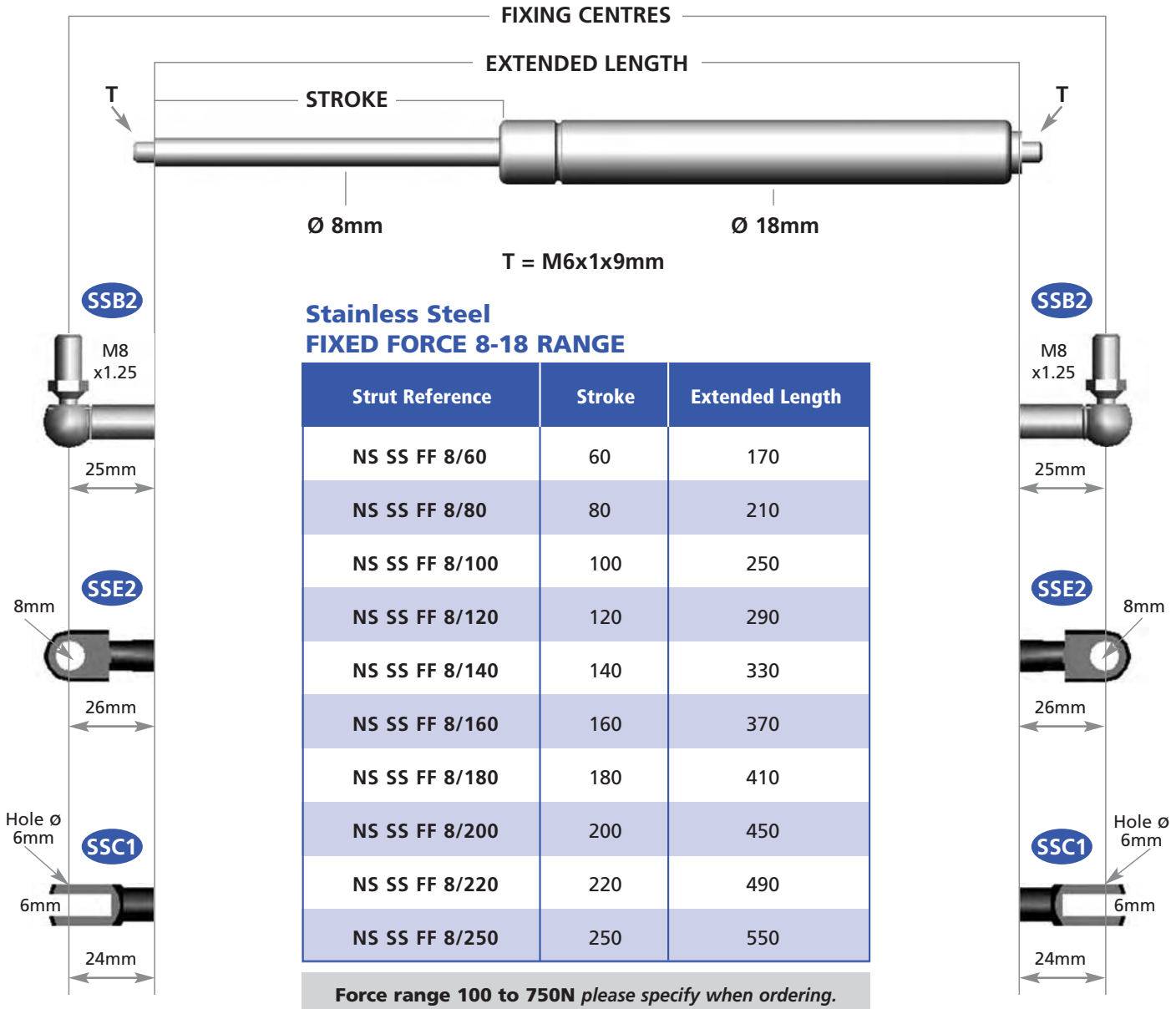
Special sizes available on request

Ordering Example

NS SS FF 6/40/PBS1/ES1/350N

- NS SS FF — TYPE
- 6 — ROD
- 40 — STROKE
- PBS1 — ROD END FITTING
- ES1 — TUBE END FITTING
- 350N — FORCE

Nito Struts Cat. 2007 Rev.1



Stainless Steel
FIXED FORCE 8-18 RANGE

Strut Reference	Stroke	Extended Length
NS SS FF 8/60	60	170
NS SS FF 8/80	80	210
NS SS FF 8/100	100	250
NS SS FF 8/120	120	290
NS SS FF 8/140	140	330
NS SS FF 8/160	160	370
NS SS FF 8/180	180	410
NS SS FF 8/200	200	450
NS SS FF 8/220	220	490
NS SS FF 8/250	250	550

Force range 100 to 750N *please specify when ordering.*

Additional end fittings and brackets see pages 30 to 31.

Special sizes available on request

Ordering Example

NS SS FF 8/100/PBS2/ES2/500N

- NS SS FF — TYPE
- 8 — ROD
- 100 — STROKE
- PBS2 — ROD END FITTING
- ES2 — TUBE END FITTING
- 500N — FORCE

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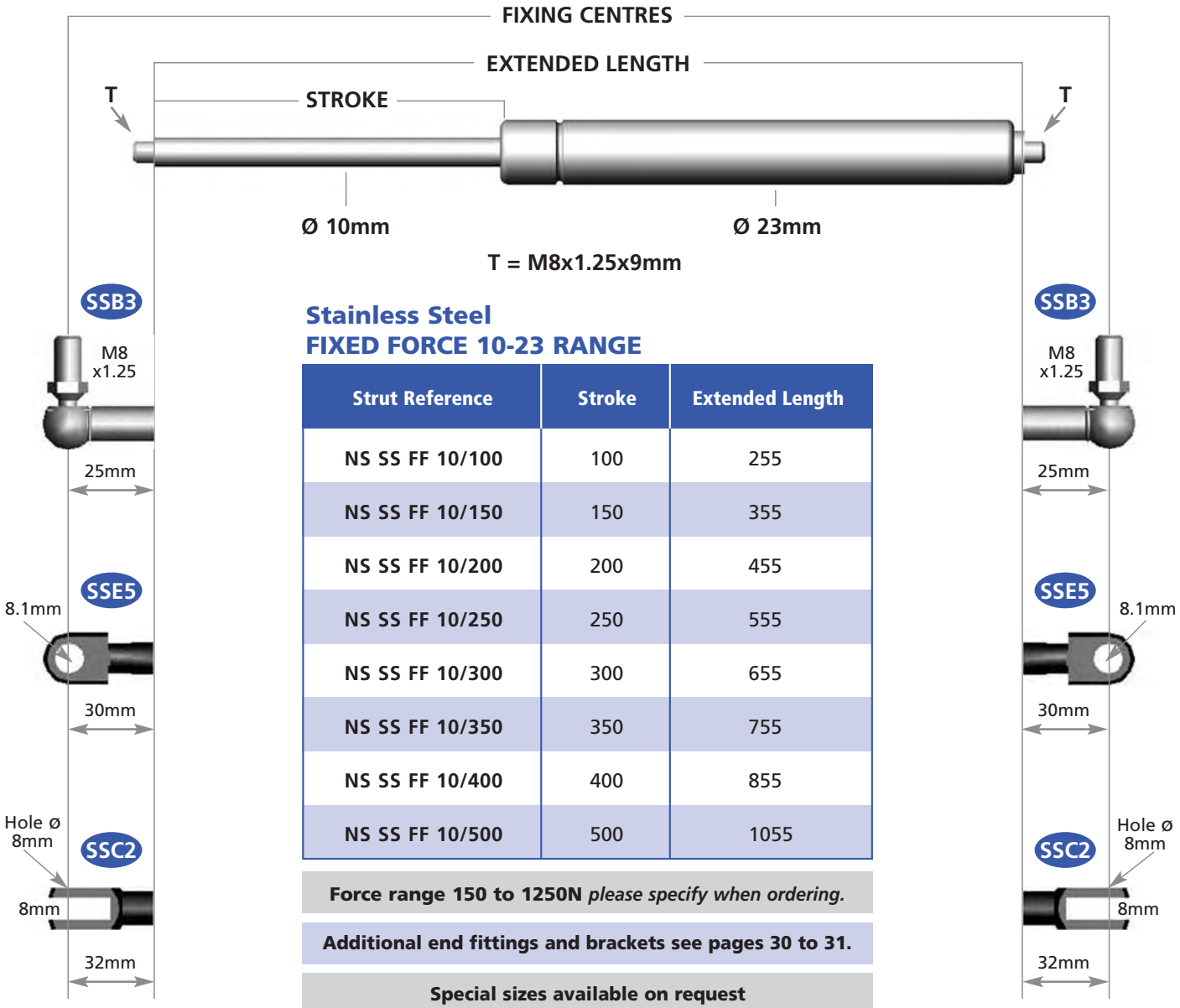


Stainless Steel
FIXED FORCE 10-23 RANGE

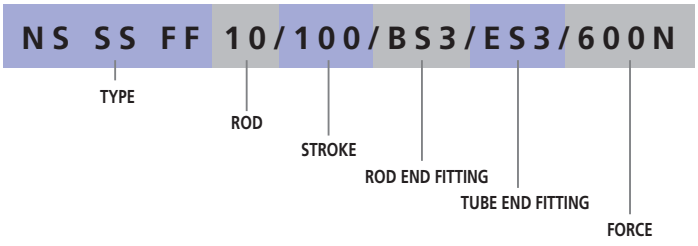
Strut Reference	Stroke	Extended Length
NS SS FF 10/100	100	255
NS SS FF 10/150	150	355
NS SS FF 10/200	200	455
NS SS FF 10/250	250	555
NS SS FF 10/300	300	655
NS SS FF 10/350	350	755
NS SS FF 10/400	400	855
NS SS FF 10/500	500	1055

Force range 150 to 1250N *please specify when ordering.*

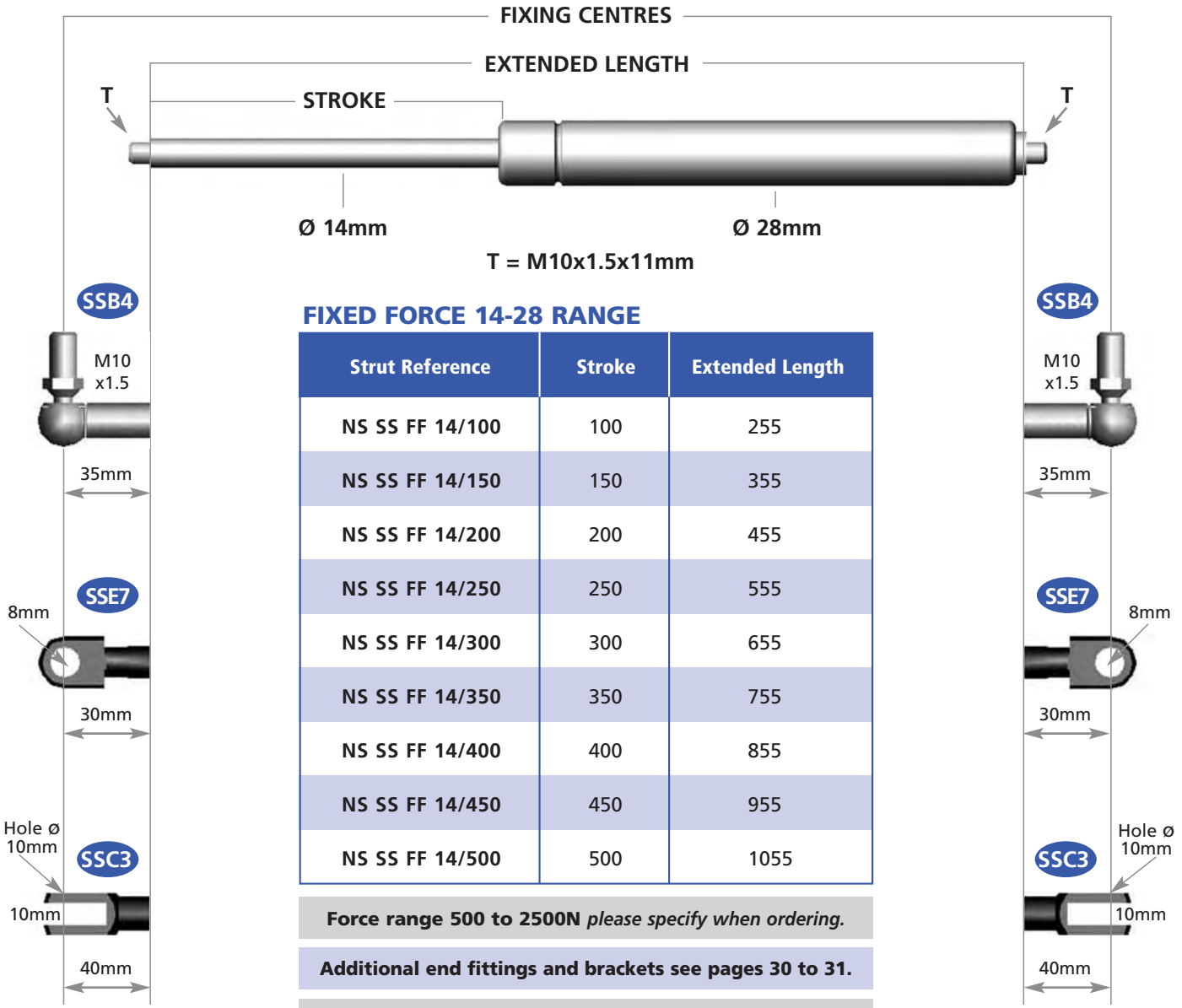
Additional end fittings and brackets see pages 30 to 31.

Special sizes available on request

Ordering Example



Nito Struts Cat. 2007 Rev.1



FIXED FORCE 14-28 RANGE

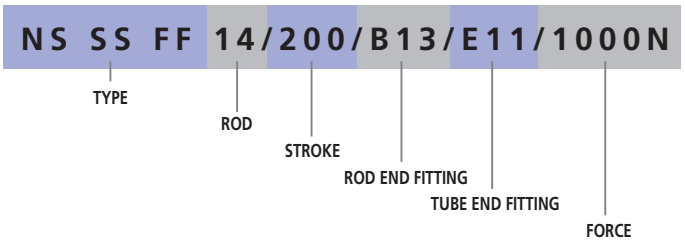
Strut Reference	Stroke	Extended Length
NS SS FF 14/100	100	255
NS SS FF 14/150	150	355
NS SS FF 14/200	200	455
NS SS FF 14/250	250	555
NS SS FF 14/300	300	655
NS SS FF 14/350	350	755
NS SS FF 14/400	400	855
NS SS FF 14/450	450	955
NS SS FF 14/500	500	1055

Force range 500 to 2500N *please specify when ordering.*

Additional end fittings and brackets see pages 30 to 31.

Special sizes available on request

Ordering Example



Nito Struts Cat. 2007 Rev.1

Stainless Steel
VARIABLE FORCE RANGE

Stainless Steel Variable Force Range

The variable force gas strut range is versatile and adaptable, if you have a variety of applications, one type of gas strut can be used by simple adjustment.

They can be used for one-off applications with no need to calculate the force required for the strut.

When replacing existing struts and the force is unknown the variable gas struts is ideal. Plus the large range of end fittings available helps to match the existing strut. *See pages 30 to 31.*

These gas struts are supplied charged to the maximum pressure as standard and can be reduced in situ or supplied to a pre-set pressure.

The bleed valve is located at the end of the cylinder and is accessible to adjust the pressure when the strut is in situ, this allows quick and simple installation and adjustment of the strut.

For further information and instructions on adjusting the pressure see page 32.

Range Specification

- Cylinder 316 Stainless Steel.
- Rod 304 Hard Chrome Stainless Steel.
- End fittings 304 Stainless Steel.
- Plastic end fittings also available.
- Both rod and cylinder ends threaded, various end fittings available.
- Working temperature range –30°c to +80°c.
- Protection tube and locking tubes available. *See page 19.*

ADVANTAGES

- Versatile and adaptable.
- No need to calculate forces.
- Ideal as a replacement unit.
- Easy to use - just fit and adjust.
- Useful for prototypes and one-offs.
- Adjust to your complete satisfaction.
- High corrosion resistance.
- Can be used in marine outdoor & corrosive environments.

Suitable Applications

The Stainless Steel Fixed Force Range is suitable for corrosive environments, outdoor use and in marine applications such as yatchs and boats.

New Applications & Made to Order

If you need a gas strut for a new application and you are unsure of the exact force required we recommend the following:

- When you only need a small number of gas struts use a variable force strut which you can adjust to suit.
- If you want a large number of gas struts or you require the same force struts in the future - use variable force struts and adjust to your satisfaction. Send us these adjusted struts - we will measure the pressure and in future we can supply gas struts to your required force.

IMPORTANT NOTE

Gas strut pressure can only be reduced to necessary force *- it cannot be increased once reduced.*

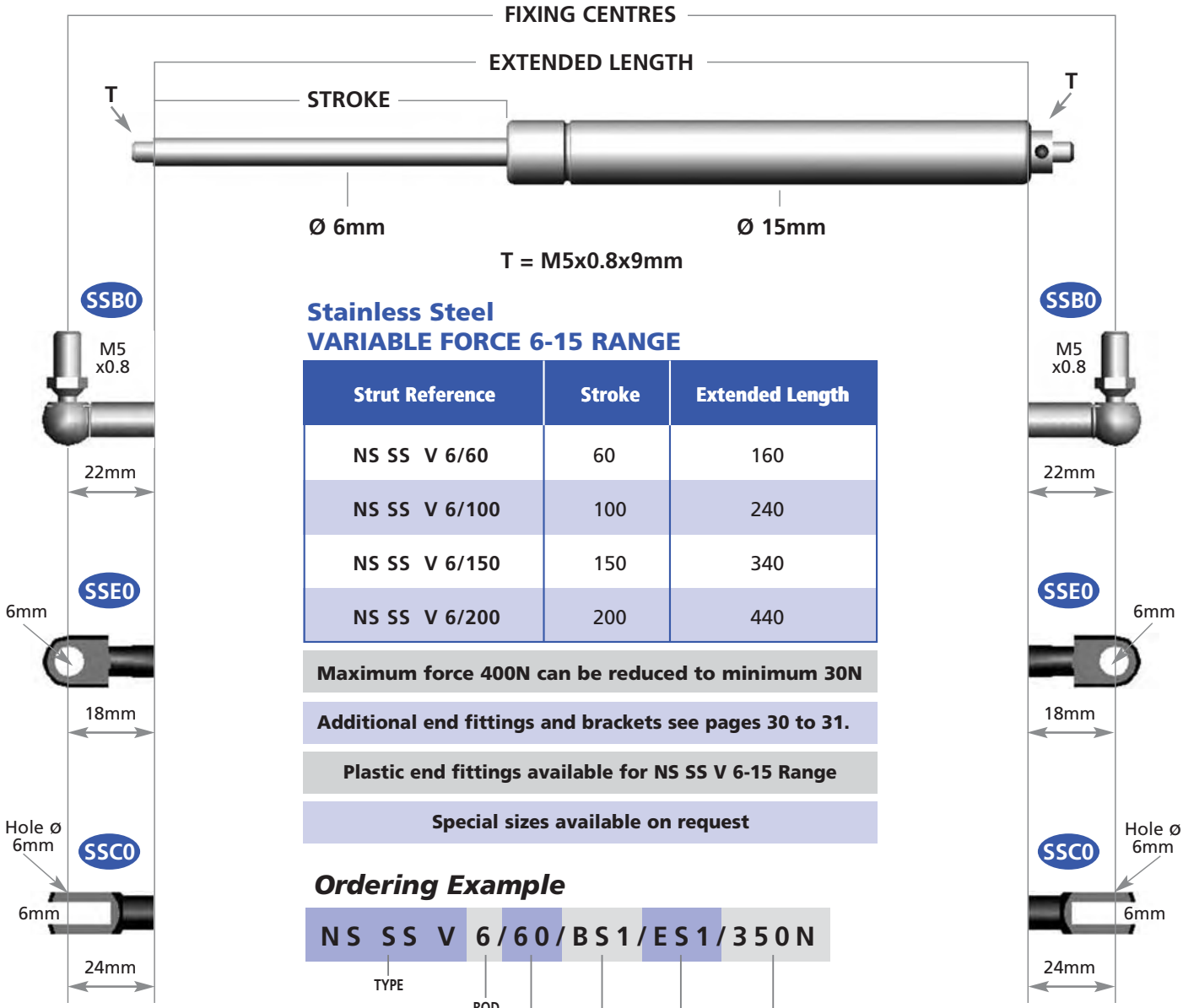
VARIABLE FORCE RANGE

Strut Reference	Rod Diameter mm	Tube Diameter mm	Force N		Maximum Stroke mm	See Page
			Minimum	Maximum		
NS V 6	6	15	30	450	200	27
NS V 8	8	18	100	650	250	28
NS V 10	10	23	150	1250	400	29
NS V 14	14	28	500	2500	500	30

Special sizes are available to order.

Please contact us with your requirements.

Supplied at maximum force unless specified



Stainless Steel
VARIABLE FORCE 6-15 RANGE

Strut Reference	Stroke	Extended Length
NS SS V 6/60	60	160
NS SS V 6/100	100	240
NS SS V 6/150	150	340
NS SS V 6/200	200	440

Maximum force 400N can be reduced to minimum 30N

Additional end fittings and brackets see pages 30 to 31.

Plastic end fittings available for NS SS V 6-15 Range

Special sizes available on request

Ordering Example

NS SS V 6/60/BS1/ES1/350N

- NS SS V — TYPE
- 6 — ROD
- 60 — STROKE
- BS1 — ROD END FITTING
- ES1 — TUBE END FITTING
- 350N — SPECIFIC FORCE IF REQUIRED

IMPORTANT NOTE
Strut pressure can only be reduced to the necessary force
- it cannot be increased once reduced.

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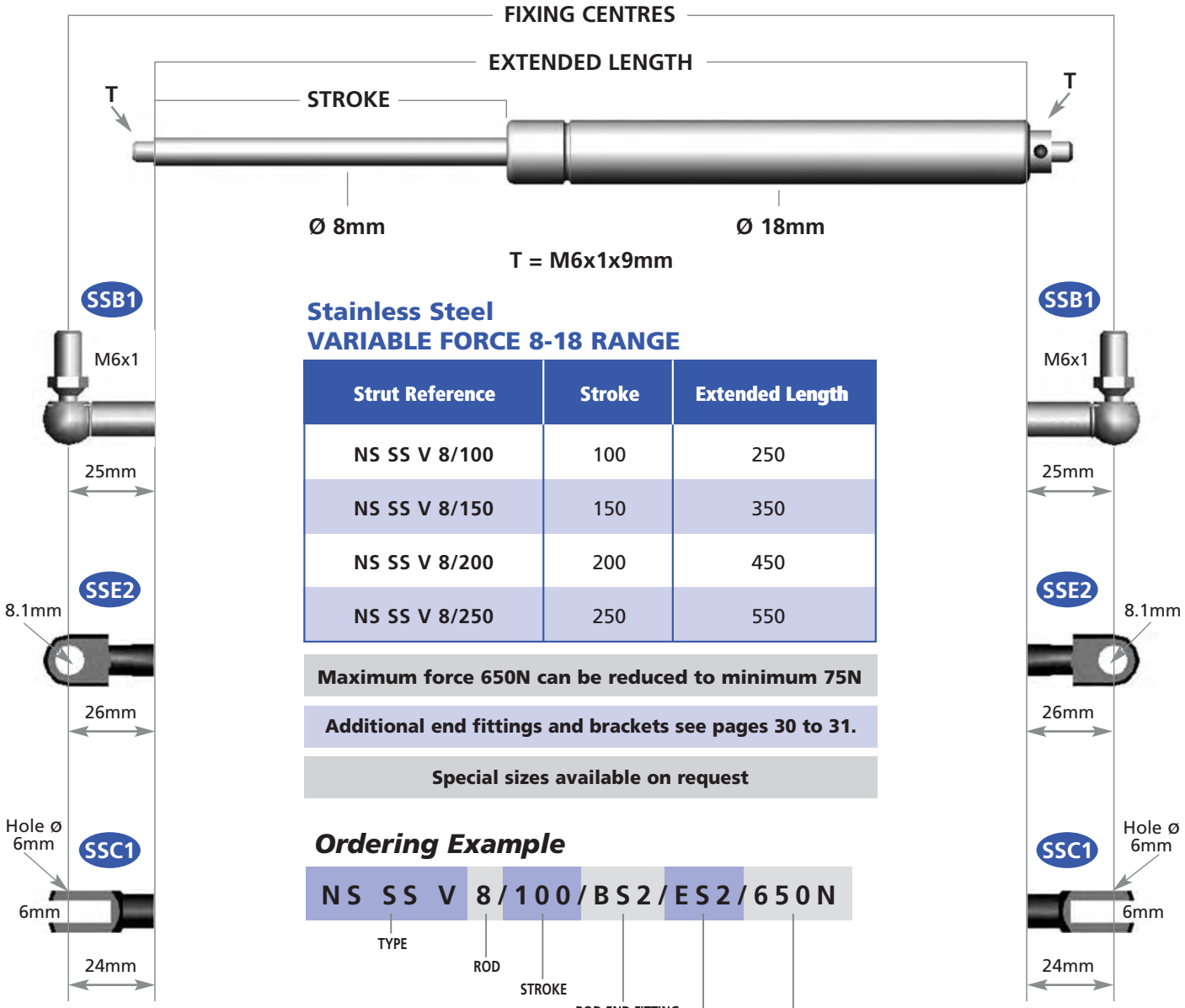

Stainless Steel
VARIABLE FORCE 8-18 RANGE

Strut Reference	Stroke	Extended Length
NS SS V 8/100	100	250
NS SS V 8/150	150	350
NS SS V 8/200	200	450
NS SS V 8/250	250	550

Maximum force 650N can be reduced to minimum 75N

Additional end fittings and brackets see pages 30 to 31.

Special sizes available on request

Ordering Example

NS SS V 8/100/BS2/ES2/650N

- NS SS V — TYPE
- 8 — ROD
- 100 — STROKE
- BS2 — ROD END FITTING
- ES2 — TUBE END FITTING
- 650N — SPECIFIC FORCE IF REQUIRED

IMPORTANT NOTE
Strut pressure can only be reduced to the necessary force
- it cannot be increased once reduced.

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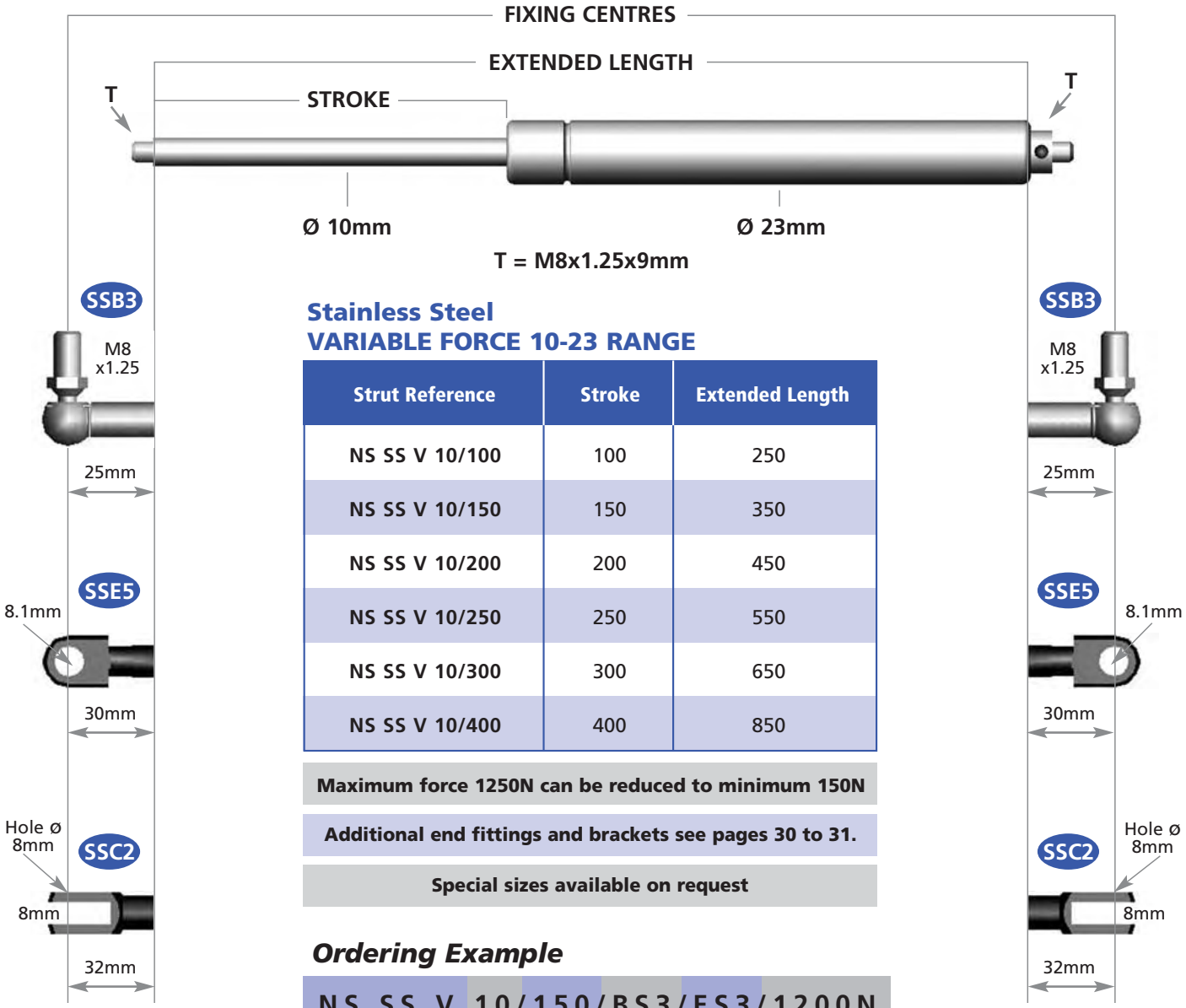

Stainless Steel
VARIABLE FORCE 10-23 RANGE

Strut Reference	Stroke	Extended Length
NS SS V 10/100	100	250
NS SS V 10/150	150	350
NS SS V 10/200	200	450
NS SS V 10/250	250	550
NS SS V 10/300	300	650
NS SS V 10/400	400	850

Maximum force 1250N can be reduced to minimum 150N

Additional end fittings and brackets see pages 30 to 31.

Special sizes available on request

Ordering Example

NS SS V 10/150/BS3/ES3/1200N

- NS SS V — TYPE
- 10 — ROD
- 150 — STROKE
- BS3 — ROD END FITTING
- ES3 — TUBE END FITTING
- 1200N — SPECIFIC FORCE IF REQUIRED

IMPORTANT NOTE
Strut pressure can only be reduced to the necessary force
- it cannot be increased once reduced.

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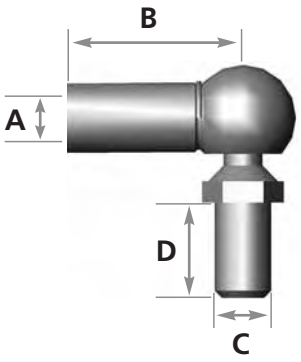
METAL BALL JOINTS

304 Stainless Steel

Metrol Reference	A	B	C	D	Strut Size
SSB0	M5	22	M5	10	6-15
SSB1	M6	25	M6	13	6-15 & 8-18
SSB2	M6	25	M8	13	6-15 & 8-18
SSB3	M8	25	M8	16	10-23
SSB4	M10	35	M10	20	14-28

Different length studs are available on request.

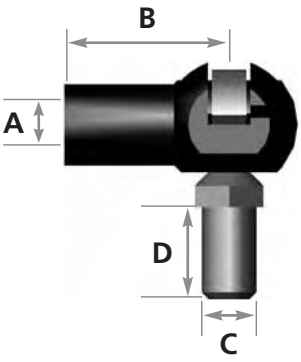


PLASTIC BALL JOINTS

304 Stainless Steel Clips & Studs

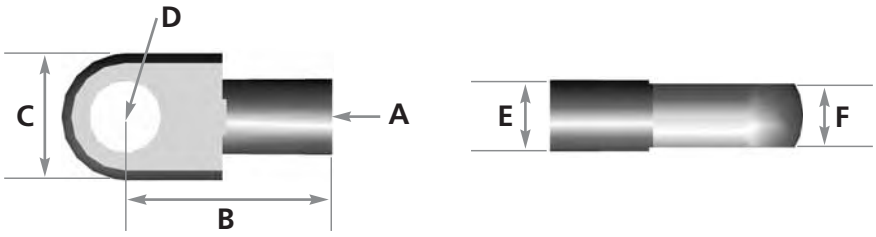
Metrol Reference	A	B	C	D	Strut Size
SSPB1	M6x1	18	M6x1	13	6-15 & 8-18
SSPB2	M6x1	18	M8x1.25	16	6-15 & 8-18

Socket Size 10mm.



Advice on use of End Fittings

- **Where possible use ball joints to avoid side loading**
- **Always ensure end fittings are fully screwed to the strut**
- **Ensure end fittings are in line to avoid side loading**
- **When using ball joints ensure the stud is fixed to the socket and the clip is in position**
- **Ensure the gas strut matches the chosen end fittings**



STAINLESS STEEL EYE ENDS

303 Stainless Steel (316 Available on request)

Metrol Reference	A	B	C	D	E	F	Strut Size
SSE1	M6x1	16	10	6.1	10	6	6-15 & 8-18
SSE2	M6x1	26	14	6.1	14	5	6-15 & 8-18
SSE3	M6x1	26	14	8.1	14	5	6-15 & 8-18
SSE4	M8x1.25	19	15	8.1	15	10	10-23
SSE5	M8x1.25	30	18	8.1	18	10	10-23
SSE7	M10x1.5	30	18	8.1	18	10	14-28

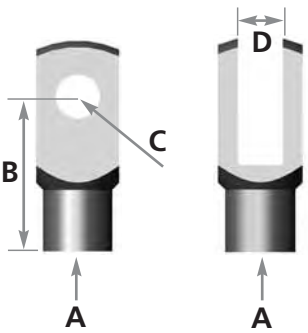
PLASTIC EYE ENDS

Metrol Reference	A	B	C	D	E	F	Strut Size
PE2	M6x1	17.5	25	15	8.1	8	6-15 & 8-18
PE3	M6x1	23.5	31	17	8.5	8	6-15 & 8-18

STAINLESS STEEL CLEVIS FORKS

303 Stainless Steel (316 Available on request)

Metrol Reference	A	B	C	D	Strut Size
SSC1	M6x1	24	6	6	6-15 & 8-18
SSC2	M8x1.25	32	8	8	10-23
SSC3	M10x1.5	40	10	10	14-28



Gas Strut Fitting & Adjustment Instructions

IMPORTANT ADVICE - PLEASE READ CAREFULLY

Introduction

Variable force gas struts fulfil a useful requirement. If for any reason you are not sure what force of gas strut is required these gas struts can easily be adjusted in situ.

The pressure is easy to adjust and it should be done **gradually and carefully** to arrive at the necessary force needed.

You should be aware that this range of gas struts are supplied fully charged and that **they can only be adjusted to lessen the force** by releasing the charged gas from a bleed valve by means of a 2mm hex key.

Once the gas has escaped the gas strut cannot be recharged.

IMPORTANT NOTE
Gas strut pressure can only be reduced to necessary force *- it cannot be increased once reduced.*

CAUTION WHEN VENTING GAS
The Struts cannot be recharged.

Fitting and adjustment instructions

1 Fit the gas spring with the cylinder or tube uppermost. The gas reduction valve grub screw will be seen at the top of the cylinder.

2 Ensure that the end fittings are tight. If you need to align the end fittings, twist the end fitting on the piston rod clockwise until the desired position is achieved. Failure to do so causes the end to fracture and snap off.*

3 Ensure that the small vent hole close to the grub screw is pointing away from yourself and others.

4 Using a 2mm hex key, undo the grub screw by half a turn or until the gas can be heard escaping. Re-tighten the grub screw almost immediately. Do not use excessive force as this can damage the valve.

While adjusting the pressure a slight mist of oil may sometimes be seen escaping - this is not abnormal.

5 Repeat this process until the required spring action is achieved.

6 If two or more struts are being used on the application, adjust each strut alternately to balance the force.

Note:

Under no circumstances should the grub screw be removed.

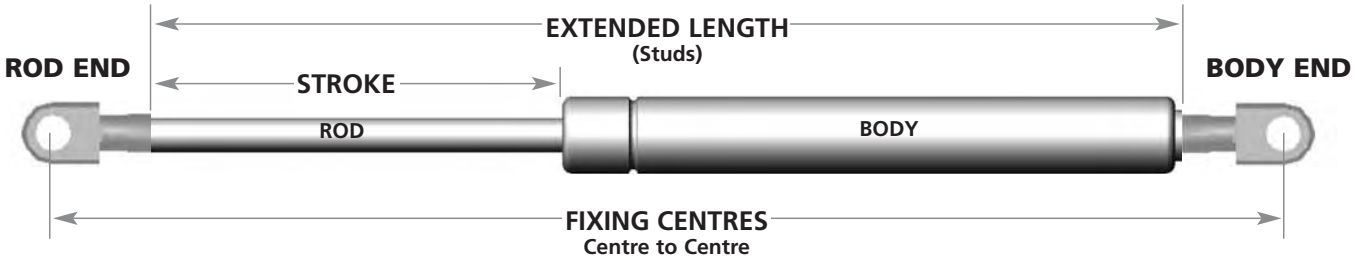
** Metrol Springs Ltd cannot be held responsible if the end fittings have not been tightened correctly and the end fractures.*

Nito Struts Cat. 2007 Rev.1

NitroStruts ENQUIRY FORM

Contact	Telephone
Company	Fax
	Email
	Quantity Required
Post Code	Per Shipment / Annual Amount

Rod Dia mm	Tube Dia mm	Stroke mm	Fixing Centres mm	Extended Length mm	Force N	Valve Required ✓	Stainless Steel ✓



ROD END
Fitting Required ✓

BALL TYPE ☐

Metal ☐ Plastic ☐
Stainless Steel ☐

Ref:

EYE TYPE ☐

Metal ☐ Plastic ☐
Stainless Steel ☐

Ref:

CLEVIS TYPE ☐

Metal ☐ Plastic ☐
Stainless Steel ☐

Ref:

NOTES

Metrol Springs Ltd
75 Tenter Road, Moulton Park,
Northampton NN3 6AX ENGLAND
Tel: +44 (0)1604 499 332

BODY END
Fitting Required ✓

BALL TYPE ☐

Metal ☐ Plastic ☐
Stainless Steel ☐

Ref:

EYE TYPE ☐

Metal ☐ Plastic ☐
Stainless Steel ☐

Ref:

CLEVIS TYPE ☐

Metal ☐ Plastic ☐
Stainless Steel ☐

Ref:

Nito Struts Cat. 2007 Rev.1