



	<i>Introduction to Reliance</i>	<i>i</i>
	<i>Systems Overview</i>	<i>1</i>
	Intelligent Motors and Motorised Actuators	2
	Planetary and Right Angle Gearboxes	3
	Brass, Ground and Precision Spur Gears	4
	Worms and Wheels, Bevels and Internal Gears	5
	Round and Rectangular Racks and Pinions	6
	Leadscrews and Leadscrew Assemblies	7
	Flexible Shaft Couplings, Clutches and Collars	8
	Linear Guides and Slides	9
	Belts and Pulleys	10
	Gear Clamps and Accessories	11
	Bearings and Spacers	12
	Machine Screws, Dowel Pins and Hardware	13
	<i>Technical Information</i>	<i>14</i>
	<i>Appendices and Index</i>	<i>15</i>



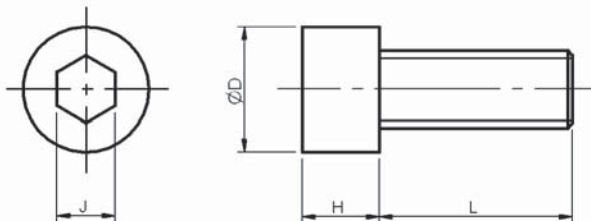
Section Contents

Plain Socket Head Screws	Page 13-2
Wire Locking Screws	Page 13-3
Captive Screws	Page 13-4
Ventilation Screws	Page 13-5
Shoulder Screws	Page 13-6
Machine Screws	
- Countersunk	Page 13-8
- Pan Head	Page 13-9
- Cheese Head	Page 13-10
Cup Point Set Screws	Page 13-11
Solder Tip Set Screws	Page 13-12
Nylon Tip Set Screws	Page 13-13
Clamp Cleats	Page 13-14
Disc Springs	Page 13-15
Nuts	Page 13-16
Washers	Page 13-17
Coiled Pins	Page 13-18
Dowel Pins.....	Page 13-19
External Circlips	Page 13-20
Internal Circlips.....	Page 13-21
Technical Information.....	Page T13-1



All dimensions in mm
 Thread specification: BS3643 Pt2
 Tolerance class: 6g
 Material: A2-70 Austenitic⁽¹⁾
 A4-70 Austenitic⁽²⁾
 Stainless steel to ISO 3506-1

Associated Products
 Disc springs: [page 13-15](#)
 Nuts: [page 13-16](#)
 Washers: [page 13-17](#)



Part number selection table

Example Part No:- S - M3 - 12 - A47						
Basic Part No	Thread Size	ØD max	H max	J nom	Standard Length L	Matl
S	M1.6	3.0	1.6	1.5	3 4 5 6 8	A27 ⁽¹⁾
	M2	3.8	2.0	1.5	4 5 6 8	
	M2.5	4.5	2.5	2.0	5 6 8 10	A47 ⁽²⁾
	M3	5.5	3.0	2.5	6 8 10 12 16 20	
	M4	7.0	4.0	3.0	8 10 12 16 20 25	
	M5	8.5	5.0	4.0	10 12 16 20 25 30	
	M6	10.0	6.0	5.0	12 16 20 25 30 40	

i Features and options

- Plain socket head cap screw to ISO 4762
- 700 MPa minimum tensile strength
- Rolled thread for excellent surface finish, superior thread strength and increased hardness properties
- Slotted head available
- Imperial sizes available
- Alternative materials available

? Technical support

- ISO metric screw threads, limits and tolerances - see [page T13-1](#)
- Torque and tension guidelines - see [page T13-1](#)
- Material properties - see [page T13-2](#)

Associated Products

Disc springs: page 13-15

Nuts: page 13-16

Washers: page 13-17

All dimensions in mm

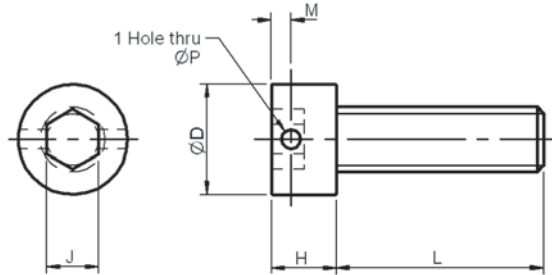
Thread specification: BS3643 Pt2

Tolerance class: 6g

Material: A2-70 Austenitic⁽¹⁾

A4-70 Austenitic⁽²⁾

Stainless steel to ISO 3506-1



Part number selection table

Example Part No:- S - M3 - 12 - A47 - XD								
Basic Part No	Thread Size	ØD max	H max	J nom	M ±0.1	ØP ±0.1	Standard Length L	Matl
S	M1.6	3.0	1.6	1.5	0.5	0.4	3 4 5 6	A27⁽¹⁾
	M2	3.8	2.0	1.5	0.7	0.6	4 5 6 8	
	M2.5	4.5	2.5	2.0	0.75	0.7	5 6 8 10	A47⁽²⁾
	M3	5.5	3.0	2.5	0.9	0.8	6 8 10 12 16 20	
	M4	7.0	4.0	3.0	1.3	1.0	8 10 12 16 20 25	
	M5	8.5	5.0	4.0	1.5	1.5	10 12 16 20 25 30	
	M6	10.0	6.0	5.0	1.8	1.5	12 16 20 25 30 40	

i Features and options

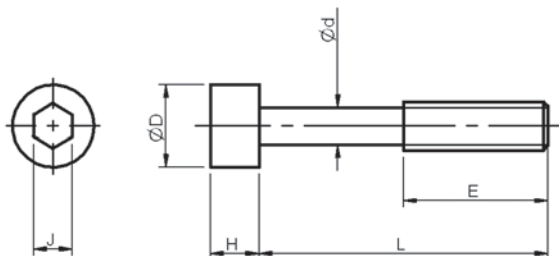
- Plain socket head cap screw to ISO 4762 with cross-drilled head to allow fastener retention by wire locking
- 700 MPa minimum tensile strength
- Rolled thread for excellent surface finish, superior thread strength and increased hardness properties
- Imperial sizes available
- Alternative materials available

? Technical support

- ISO metric screw threads, limits and tolerances - see [page T13-1](#)
- Torque and tension guidelines - see [page T13-1](#)
- Material properties - see [page T13-2](#)

All dimensions in mm
Thread specification: BS3643 Pt2
Tolerance class: 6g
Material: A2-70 Austenitic⁽¹⁾
A4-70 Austenitic⁽²⁾
Stainless steel to ISO 3506-1

Associated Products
Disc springs: [page 13-15](#)
Nuts: [page 13-16](#)
Washers: [page 13-17](#)



Part number selection table

Example Part No:- S - M3 - 16 - A47 - CA								
Basic Part No	Thread Size	ØD max	H max	J nom	Ød ±0.1	E ±0.1	Standard Length L	Matl
S	M2	3.8	2.0	1.5	1.4	4.0	10	A27 ⁽¹⁾
	M2.5	4.5	2.5	2.0	1.8	5.0	12	A47 ⁽²⁾
	M3	5.5	3.0	2.5	2.2	6.0	16 20	
	M4	7.0	4.0	3.0	3.0	8.0	20 25 30	
	M5	8.5	5.0	4.0	3.8	10.0	25 30 40	
	M6	10.0	6.0	5.0	4.5	12.0		

i Features and options

- Socket head cap screw to ISO 4762 with plain shank length for captive assembly of the screw to prevent fastener loss
- Ideal for service covers
- Rolled thread for excellent surface finish, superior thread strength and increased hardness properties
- Slotted head available on sized M2 to M5
- Imperial sizes available
- Alternative materials available

? Technical support

- ISO metric screw threads, limits and tolerances - see [page T13-1](#)
- Torque and tension guidelines - see [page T13-1](#)
- Material properties - see [page T13-2](#)

Associated Products

Disc springs: [page 13-15](#)

Nuts: [page 13-16](#)

Washers: [page 13-17](#)

All dimensions in mm

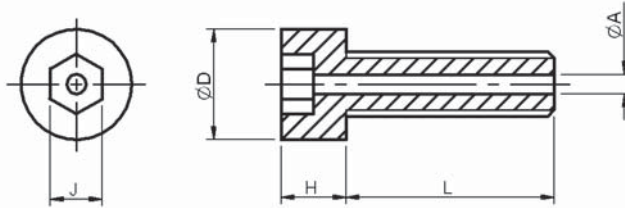
Thread specification: BS3643 Pt2

Tolerance class: 6g

Material: A2-70 Austenitic⁽¹⁾

A4-70 Austenitic⁽²⁾

Stainless steel to ISO 3506-1



Part number selection table

Example Part No:- S - M3 - 12 - A47 - AD							
Basic Part No	Thread Size	ØD max	H max	J nom	ØA ±0.05	Standard Length L	Matl
S	M1.6	3.0	1.6	1.5	0.6	3 4 5 6	A27⁽¹⁾
	M2	3.8	2.0	1.5	0.7	4 5 6 8	
	M2.5	4.5	2.5	2.0	0.8	5 6 8 10	A47⁽²⁾
	M3	5.5	3.0	2.5	1.0	6 8 10 12 16 20	
	M4	7.0	4.0	3.0	1.0	8 10 12 16 20 25	
	M5	8.5	5.0	4.0	1.5	10 12 16 20 25 30	
	M6	10.0	6.0	5.0	1.5	12 16 20 25 30 40	

i Features and options

- Socket head cap screw to ISO 4762 drilled through on axis to assist cavity ventilation in vacuum assemblies
- Rolled thread for excellent surface finish, superior thread strength and increased hardness properties
- Slotted head available
- Imperial sizes available
- Alternative materials available

? Technical support

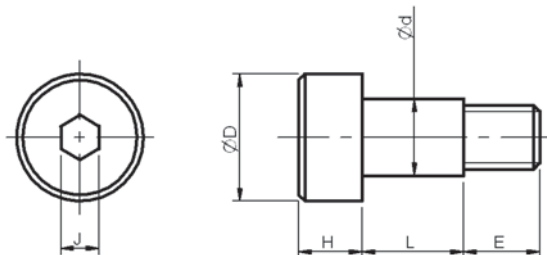
- ISO metric screw threads, limits and tolerances - see [page T13-1](#)
- Torque and tension guidelines - see [page T13-1](#)
- Material properties - see [page T13-2](#)

**M3 - M10**

Shoulder Screws

All dimensions in mm
 Material: 303 Stainless steel
 Tolerance class: 6g

Associated Products
 Disc springs: page 13-15
 Nuts: page 13-16
 Washers: page 13-17



Part number selection table

Example Part No:- MSS2 - M6 - 35								
Basic Part Number	Thread Size	Ød +0.000 -0.025	ØD	J nom	H	E ±0.1	Length L +0.05 -0.00	Length Code
MSS2	M3	3.987	6	2	3	4	4.013	1
							5.013	2
							6.013	3
							8.013	4
							10.013	5
	M4	4.987	8	2.5	4	5	4.013	6
							5.013	7
							6.013	8
							8.013	9
							10.013	10
							12.013	11
							14.013	12
							16.013	13
							20.013	14
							25.013	15
							30.013	16
	M5	5.987	10	3	5	6	4.013	17
							5.013	18
							6.013	19
							8.013	20
							10.013	21
							12.013	22
							14.013	23
							16.013	24
							20.013	25
							25.013	26
							30.013	27

Basic Part Number	Thread Size	Ød +0.000 -0.025	ØD	J nom	H	E ±0.1	Length L +0.05 -0.00	Length Code				
MSS2	M6	7.987	12	4	6	11	6.013	28				
							8.013	29				
							10.013	30				
							12.013	31				
							16.013	32				
							20.013	33				
		9.987					8.013	34				
							10.013	35				
							12.013	36				
							16.013	37				
	M8	9.987	14	5	7	12	8.013	38				
							10.013	39				
							12.013	40				
							16.013	41				
	M10	11.987	20	6	8	16	12.013	42				
							16.013	43				
							20.013	44				
							25.013	45				

i Features and options

- Socket head screw with accurate diameter shoulder for precision assemblies
- May be used to replace components such as shafts, pivots, pins and guides
- Used for linkages and stationary guides
- Slotted head and Phillips head available
- Imperial sizes available
- Alternative materials available (416)
add -4 to the end of the part number
- Alternative lengths available

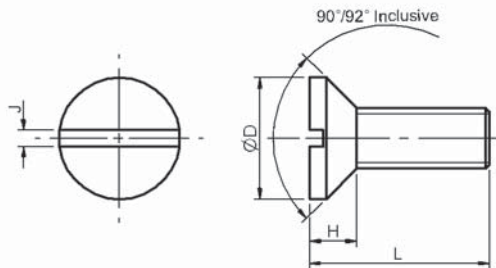
? Technical support

- ISO metric screw threads, limits and tolerances
- see [page T13-1](#)
- Torque and tension guidelines - see [page T13-1](#)
- Material properties - see [page T13-2](#)



All dimensions in mm
 Thread specification: BS3643 Pt2
 Head specification: BS4183
 Tolerance class: 6g
 Material: Stainless steel 300 series

Associated Products
 Disc springs: [page 13-15](#)
 Nuts: [page 13-16](#)
 Washers: [page 13-17](#)



Part number selection table

Example Part No:-					K - M3 - 12									
Basic Part No	Thread Size	ØD max	H max	J nom	Standard Length									
					L									
K	M2	4.4	1.20	0.63	3	4	5	6	8	10	12	16	20	
	M2.5	5.5	1.50	0.73			5	6	8	10	12	16	20	25
	M3	6.3	1.65	0.93			5	6	8	10	12	16	20	25 30
	M4	8.4	2.20	1.13				6	8	10	12	16	20	25 30 35
	M5	10.0	2.50	1.38					8	10	12	16	20	25 30 35
	M6	12.0	3.00	1.78						10	12	16	20	25 30 35

i Features and options

- Imperial sizes available
- Alternative materials available

? Technical support

- ISO metric screw threads, limits and tolerances - see [page T13-1](#)
- Torque and tension guidelines - see [page T13-1](#)

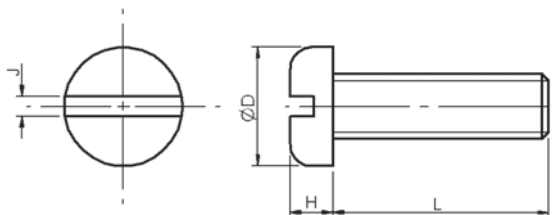
Associated Products

Disc springs: page 13-15

Nuts: page 13-16

Washers: page 13-17

All dimensions in mm
Thread specification: BS3643 Pt2
Head specification: BS4183
Tolerance class: 6g
Material: Stainless steel 300 series



Part number selection table

Example Part No:- P - M3 - 12					
Basic Part No	Thread Size	ØD max	H max	J nom	Standard Length L
P	M2	4.0	1.2	0.63	3 4 5 6 8 10 12 16 20
	M2.5	5.0	1.5	0.73	5 6 8 10 12 16 20 25
	M3	6.0	1.8	0.93	5 6 8 10 12 16 20 25 30
	M4	8.0	2.4	1.13	6 8 10 12 16 20 25 30 35
	M5	10.0	3.0	1.38	8 10 12 16 20 25 30 35
	M6	12.0	3.6	1.78	10 12 16 20 25 30 35

i Features and options

- Imperial sizes available
- Alternative materials available

? Technical support

- ISO metric screw threads, limits and tolerances - see [page T13-1](#)
- Torque and tension guidelines - see [page T13-1](#)

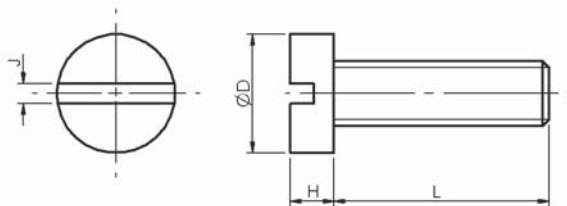


M2 - M6

Cheese Head Machine Screws

All dimensions in mm
Thread specification: BS3643 Pt2
Head specification: BS4183
Tolerance class: 6g
Material: Stainless steel 300 series

Associated Products
Disc springs: [page 13-15](#)
Nuts: [page 13-16](#)
Washers: [page 13-17](#)



Part number selection table

Example Part No:- C - M3 - 12					
Basic Part No	Thread Size	ØD max	H max	J nom	Standard Length L
C	M2	3.8	1.3	0.63	3 4 5 6 8 10 12 16 20
	M2.5	4.5	1.6	0.73	5 6 8 10 12 16 20 25
	M3	5.5	2.0	0.93	5 6 8 10 12 16 20 25 30
	M4	7.0	2.6	1.13	6 8 10 12 16 20 25 30 35
	M5	8.5	3.3	1.38	8 10 12 16 20 25 30 35
	M6	10.0	3.9	1.78	10 12 16 20 25 30 35

i Features and options

- Imperial sizes available
- Alternative materials available

? Technical support

- ISO metric screw threads, limits and tolerances - see [page T13-1](#)
- Torque and tension guidelines - see [page T13-1](#)

Associated Products

Gears: [page 4-1](#)

Reli-a-Flex® couplings: [page 8-6](#)

All dimensions in mm

Thread specification: BS3643 Pt2

Tolerance class: 6g

Material: Stainless steel

Manufactured to: BS EN ISO 4029



Part number selection table

Example Part No:-		SS - M4 - 12									
Basic Part Number	Thread Size	J nom	Standard Lengths L								
SS	M2	0.9	2	3	4	5	6	8	10		
	M2.5	1.3		3	4	5	6	8	10		
	M3	1.5		3	4	5	6	8	10	12	
	M4	2			4	5	6	8	10	12	16
	M5	2.5				5	6	8	10	12	16 20
	M6	3					6	8	10	12	16 20 25

i Features and options

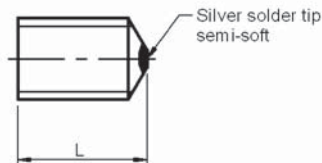
- Used for quick, permanent location of gears, collars and pulleys on shafts
- Suitable for high torque transmission
- Imperial sizes available
- Alternative materials available

? Technical support

- ISO metric screw threads, limits and tolerances - see [page T13-1](#)
- Torque and tension guidelines - see [page T13-1](#)



All dimensions in mm
 Thread specification: BS3643 Pt2
 Tolerance class: 6g
 Material: Stainless steel 300 series with
 silver solder tip

Associated ProductsGears: [page 4-1](#)Couplings: [page 8-1](#)**Part number selection table**

Example Part No:- SGSS - M6 - 17				
Basic Part Number	Thread Size	J nom	Standard Lengths L	Length Code
SGSS	M2	0.9	3	1
			4	2
			5	3
			6	4
	M3	1.5	3	5
			4	6
			5	7
			6	8
	M4	2	4	9
			6	10
			10	11
			14	12
	M5	2.5	6	13
			10	14
			14	15
			20	16
	M6	3	6	17
			10	18
			16	19
			25	20

i Features and options

- Stainless steel set screw with semi-soft silver solder tip
- Prevents shaft marking
- Imperial sizes available

? Technical support

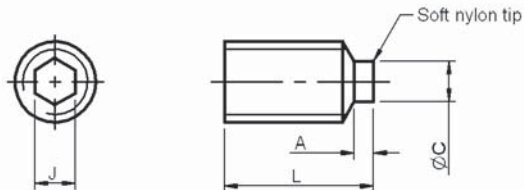
- ISO metric screw threads, limits and tolerances - see [page T13-1](#)
- Torque and tension guidelines - see [page T13-1](#)

Associated Products

Gears: [page 4-1](#)

Couplings: [page 8-1](#)

All dimensions in mm
Thread specification: BS3643 Pt2
Tolerance class: 6g
Material: Stainless steel screw
Nylon insert



Part number selection table

Example Part No:- NMSS - M5 - 16						
Basic Part Number	Thread Size	ØC	A	J nom	Standard Lengths L	Length Code
NMSS	M2	0.8	0.8	0.9	3.8	1
					4.8	2
					5.8	3
					6.8	4
	M3	1.6	0.8	1.5	3.8	5
					4.8	6
					5.8	7
					6.8	8
	M4	2.4	1.2	2	5.2	9
					7.2	10
					11.2	11
					15.2	12
	M5	2.4	1.2	2.5	7.2	13
					11.2	14
					15.2	15
					21.2	16
	M6	3.2	1.6	3	7.6	17
					11.6	18
					17.6	19
					26.6	20

i Features and options

- Stainless steel set screw with nylon tip insert
- Used to prevent shaft marking
- Self locking
- Full face contact
- Imperial sizes available

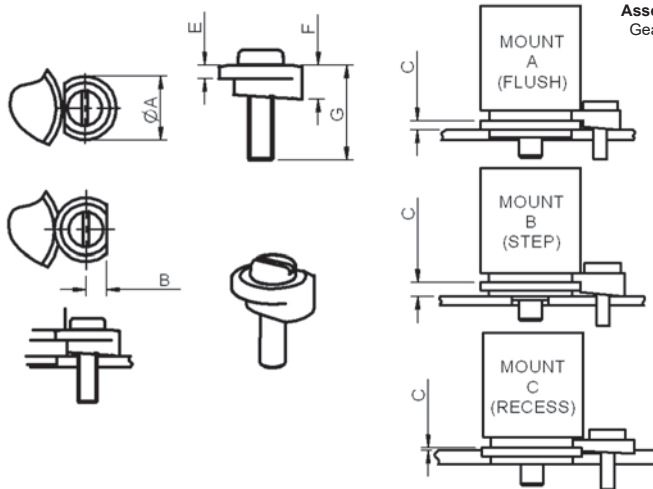
? Technical support

- ISO metric screw threads, limits and tolerances - see [page T13-1](#)
- Torque and tension guidelines - see [page T13-1](#)

**M3**

Clamp Cleats

All dimensions in mm
 General tolerances ± 0.13 mm
 Material: Stainless steel clamp
 Nylon locking insert



Associated Products
 Gearboxes: [page 3-1](#)

Part number selection table

Part Number	Mount Type	Height C ±0.08	Flat B	Lip E ±0.08	Height F	Length G +0.0/-0.8	Thread Size	O/D ØA +0.00/-0.13
SQM-6	A & C	0.79	3.18	1.02	1.80	7.0	M3 x 0.5	9.90
SQM-7	A	1.57		1.02	2.59	9.5		
SQM-8		1.57		1.27	2.84			
SQM-9		1.57		1.60	3.18			
SQM-10		1.98		1.60	3.58			
SQM-11		2.36		1.02	3.38			
SQM-12		2.36		1.27	3.63			
SQM-13		2.36		1.60	3.96			
SQM-14	B	3.18		1.27	4.45	11.0		
SQM-15		3.96		1.02	4.98			
SQM-16		5.72		1.60	7.32			
SQM-17	A	6.35		1.60	7.92	15.0		

i Features and options

- Ideal for use with resolvers, encoders and potentiometers
- Imperial sizes available
- Self locking
- Quick releasing

Associated Products

Shafts: [page 11-2](#)

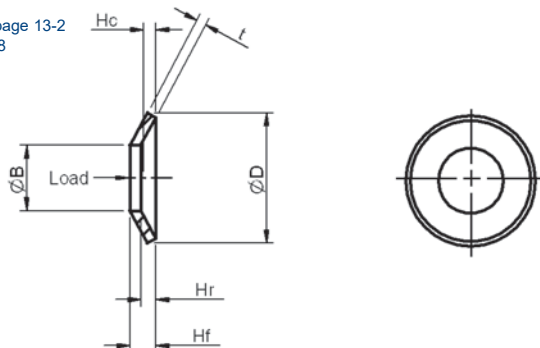
Bearings: [page 12-2](#)

Socket head cap screws: [page 13-2](#)

Machine screws: [page 13-8](#)

Nuts: [page 13-16](#)

All dimensions in mm
General tolerances ± 0.13 mm
Material: Stainless steel X12CrNi 17 7
Manufactured to: DIN2093



Part number selection table

Example Part No:- BW - M6								
Basic Part Number	Screw Size	$\varnothing D$	$\varnothing B$	t	Free Height H_f	Ref. Height H_r	Compressed Height H_c (75% Defl.)	Force to Compress to H_c (N)
BW	M4	8.0	4.2	0.40	0.60	0.20	0.45	193
	M5	10.0	5.2	0.50	0.75	0.25	0.56	300
	M6	12.5	6.2	0.70	0.95	0.25	0.76	503
	M7	14.0	7.2	0.80	1.10	0.30	0.87	735
	M8	16.0	8.2	0.90	1.25	0.35	0.99	934
	M10	20.0	10.2	1.10	1.55	0.45	1.21	1403
	M11	22.5	11.2	1.25 ¹	1.65	0.40	1.35	1411
	M12	25.0	12.2	1.50 ¹	1.90	0.40	1.60	1944

¹ Material: stainless steel X7CrNiAl 17 7

i Features and options

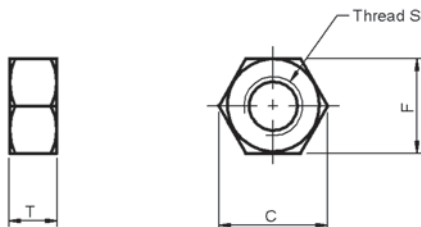
- For use where controlled axial force is required
- Good for bearing pre-load configurations
- Imperial sizes available



All dimensions in mm
General tolerances ± 0.13 mm
Material: Stainless steel
Thread: BS3692, DIN 934

Associated Products

Disc springs: [page 13-15](#)
Plain socket head cap screws: [page 13-2](#)
Pan head machine screws: [page 13-9](#)
Cheese head machine screws: [page 13-10](#)
Washers: [page 13-17](#)



Part number selection table

Example Part No:- HN - M3				
Basic Part Number	Thread Size S	T max	F max	C nom
HN	M1.6	1.3	3.2	3.4
	M2	1.6	4.0	4.6
	M2.5	2.0	5.0	5.8
	M3	2.4	5.5	6.4
	M4	3.2	7.0	8.1
	M5	4.0	8.0	9.2
	M6	5.0	10.0	11.5

i Product options

- Imperial sizes available

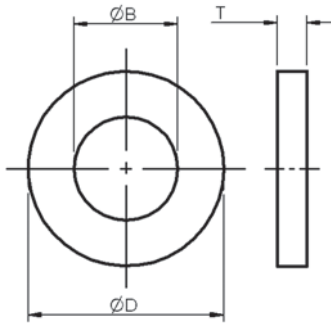
Associated Products

Screws from: page 13-2

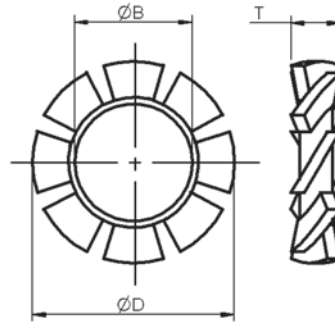
Nuts: page 13-16

Disc springs: page 13-15

All dimensions in mm
General tolerances ± 0.13 mm
Material: Stainless steel



Plain Washers



Tooth Lock Washers

Part number selection tables

Example Part No:- PW - M3				
Basic Part Number	Thread Size	ØD max	ØB min	T nom
PW	M1.6	4.0	1.7	0.3
	M2	5.0	2.2	0.4
	M2.5	6.5	2.7	0.6
	M3	7.0	3.2	0.6
	M4	9.0	4.3	0.9
	M5	10.0	5.3	1.1
	M6	12.5	6.4	1.8

Example Part No:- ETW - M3				
Basic Part Number	Thread Size	ØD max	ØB max	T nom
ETW	M2	4.5	2.2	0.9
	M3	6.0	3.2	1.2
	M4	8.0	4.3	1.5
	M5	10.0	5.3	1.8
	M6	11.0	6.4	2.1

Product options

- Imperial sizes available

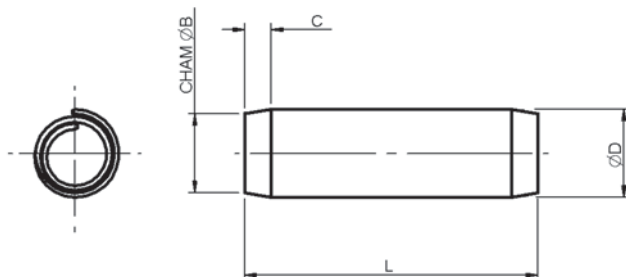


Ø0.8 - Ø3.0mm

Coiled Pins

All dimensions in mm
General tolerances ± 0.13 mm
Material: Chrome stainless steel AISI 420
Finish: Pickled and oiled

Associated Products
Pin hub gears: [page 4-13](#)
Shaft collars: [page 11-3](#)



Part number selection table

Example Part No:- MSP - 1.5 - 6 - MCP						
Basic Part Number	Actual Dia ØD	Nom Dia	Cham Dia ØB	Cham Length C	Ideal Hole Dia	Standard Lengths L
MSP	0.85/0.91	0.8	0.75	0.30	0.80/0.84	4 5 6 8
	1.05/1.15	1.0	0.95	0.30	1.00/1.04	4 5 6 8 10 12
	1.62/1.73	1.5	1.40	0.50	1.50/1.60	5 6 8 10 12 14 16
	2.13/2.25	2.0	1.90	0.70	1.99/2.10	6 8 10 12 14 16 18
	2.65/2.78	2.5	2.40	0.70	2.49/2.60	10 12 14 16 18
	3.15/3.30	3.0	2.90	0.90	2.99/3.10	14 16 18 20

i Features and options

- Coiled steel pin for location and alignment
- Suitable for locating Reliance's gears on ground shaft
- Imperial sizes available
- Alternative materials available

Associated Products

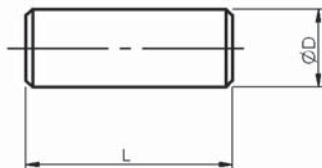
Pin hub gears: [page 4-13](#)

Shaft collars: [page 11-3](#)

All dimensions in mm

General tolerances ± 0.13 mm

Material: Stainless steel 300 series



Part number selection table

Example Part No:-			
D 020 - 10			
Basic Part Number	ØD ± 0.0025	Diameter Code	Standard Lengths L ± 0.25
D	1.00	010	3 4 5 6 8 10 12 14
	1.50	015	3 4 5 6 8 10 12 14 16 18
	2.00	020	3 4 5 6 8 10 12 14 16 18 20 22
	2.50	025	3 4 5 6 8 10 12 14 16 18 20 22
	3.00	030	5 6 8 10 12 14 16 18 20 22 25
	4.00	040	10 12 14 16 18 20 22 25
	5.00	050	12 14 16 18 20 22 25
	6.00	060	14 16 18 20 22 25

i Features and options

- Precision stainless steel dowel pin, suitable for accurate location and alignment
- Imperial sizes available
- Alternative materials available



To suit 3 - 12 mm Shafts

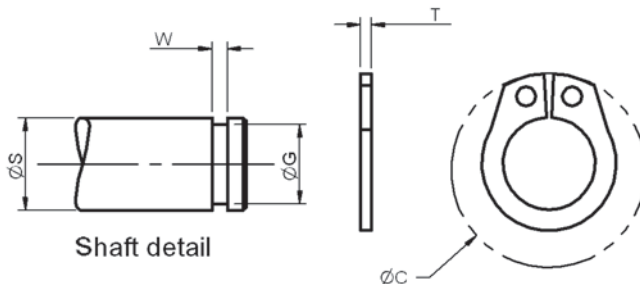
External Circlips

All dimensions in mm
General tolerances ± 0.13 mm
Material: Stainless steel

Associated Products

Shafts: page 11-2

Bearings: page 12-2



Part number selection table

Example Part No:- D1400 - 0060 - SS							
Basic Part Number	Nominal Shaft Dia (ØS)	Dia Code	Circlip		Groove		Matl
			Thickness T	Clearance Dia (ØC)	Width W	Dia ØG	
D1400	3	0030	0.40 0.35	7.00	0.64 0.50	2.80 2.76	SS
	4	0040	0.40 0.35	8.60	0.64 0.50	3.80 3.75	
	5	0050	0.60 0.55	10.30	0.84 0.70	4.80 4.75	
	6	0060	0.70 0.65	11.70	0.94 0.80	5.70 5.65	
	8	0080	0.80 0.75	14.70	1.04 0.90	7.60 7.54	
	10	0100	1.00 0.94	17.00	1.24 1.10	9.60 9.54	
	12	0120	1.00 0.94	19.00	1.24 1.10	11.50 11.39	

i Features and options

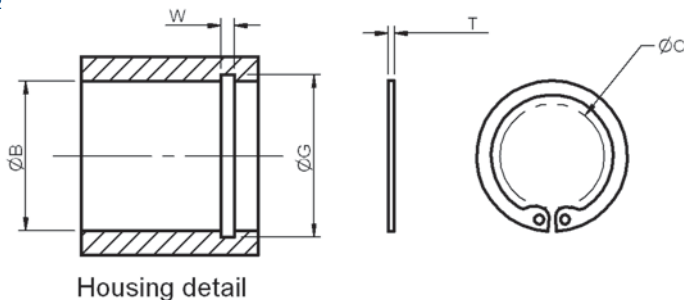
- Used to axially secure components, such as bearings on shafts
- Imperial sizes available
- Alternative materials available

Associated Products

Shafts: page 11-2

Bearings: page 12-2

All dimensions in mm
General tolerances ± 0.13 mm
Material: Stainless steel



Part number selection table

Example Part No:- D1300 - 0200 - SS							
Basic Part Number	Nominal Bore Dia ($\varnothing B$)	Dia Code	Circlip		Groove		Matl
			Thickness T	Clearance Dia ($\varnothing C$)	Width W	Dia $\varnothing G$	
D1300	12	0120	1.00 0.94	5.70	1.24 1.10	12.61 12.50	SS
	15	0150	1.00 0.94	8.30	1.24 1.10	15.81 15.70	
	16	0160	1.00 0.94	9.20	1.24 1.10	16.91 16.80	
	19	0190	1.00 0.94	11.80	1.24 1.10	20.13 20.00	
	20	0200	1.00 0.94	12.60	1.24 1.10	21.13 21.00	
	22	0220	1.00 0.94	14.60	1.24 1.10	23.13 23.00	
	24	0240	1.20 1.14	16.40	1.44 1.30	25.41 25.20	
	28	0280	1.20 1.14	19.80	1.44 1.30	29.61 29.40	
	30	0300	1.20 1.14	21.80	1.44 1.30	31.65 31.40	

i Features and options

- Used to axially secure components, such as bearings in housings
- Imperial sizes available
- Alternative materials available

ISO METRIC SCREW THREADS: LIMITS AND TOLERANCES

Thread	Pitch	Internal/ External Tol. Class	Major Diameter			Pitch Diameter			Minor Diameter		
			max	tol	min	max	tol	min	max	tol	min
M1.6	0.35	6g (screw)	1.581	0.085	1.496	1.354	0.063	1.291	-	-	1.075
		6H (nut)	-	-	1.600	1.458	0.085	1.373	1.321	0.100	1.221
M2	0.40	6g	1.981	0.095	1.886	1.721	0.067	1.654	-	-	1.408
		6H	-	-	2.000	1.830	0.090	1.740	1.679	0.112	1.567
M2.5	0.45	6g	2.480	0.100	2.380	2.188	0.071	2.117	-	-	1.839
		6H	-	-	2.500	2.303	0.095	2.208	2.138	0.125	2.013
M3	0.50	6g	2.980	0.106	2.874	2.655	0.075	2.580	-	-	2.272
		6H	-	-	3.000	2.775	0.100	2.675	2.599	0.140	2.459
M4	0.70	6g	3.978	0.140	3.838	3.523	0.090	3.433	-	-	3.002
		6H	-	-	4.000	3.663	0.118	3.545	3.422	0.180	3.242
M5	0.80	6g	4.976	0.150	4.826	4.456	0.095	4.361	-	-	3.868
		6H	-	-	5.000	4.605	0.125	4.480	4.334	0.200	4.134
M6	1.00	6g	5.974	0.180	5.794	5.324	0.112	5.212	-	-	4.597
		6H	-	-	6.000	5.500	0.150	5.350	5.153	0.236	4.917
M8	1.25	6g	7.972	0.212	7.760	7.160	0.118	7.042	-	-	6.272
		6H	-	-	8.000	7.348	0.160	7.188	6.912	0.265	6.647
M10	1.50	6g	9.968	0.236	9.732	8.994	0.132	8.862	-	-	7.938
		6H	-	-	10.000	9.206	0.180	9.026	8.676	0.300	8.376

Reference: BS3643 Pt 2, 2007.

TORQUE AND TENSION GUIDELINES

The usual method for specifying and measuring fastener installation is tightening torque, as this is relatively easy to measure with a torque wrench. Unfortunately, a torque wrench does not give an accurate indication of bolt tension because it does not take friction into account. The friction is dependent on the bolt, nut and washer materials, surface smoothness, machining accuracy, degree of lubrication (including uncured retaining products) and the number of times a fastener has been installed. The torque values provided for the screws in the table below are, therefore, to be used only as a guide, the friction factors mentioned should be considered for each application.

Aluminium structural components assumed, as this is typical of the applications for which the Reliance standard products range is designed for.



Screw Size	Tightening Torque for 700 MPa Socket Head Cap Screw (Nm)	Tightening Torque for Stainless Steel Set Screws (Nm)
M1.6	0.13	0.05
M2	0.26	0.05
M2.5	0.52	0.18
M3	0.92	0.32
M4	2.10	0.75
M5	4.20	1.50



RELIANCE STANDARD MATERIALS

Reliance Precision screws are manufactured from the materials listed below. Where the product material is specified, we reserve the right to change the actual material to an equivalent specification without notice depending on availability.

Material Grade	Treatment	Grain Structure	Tensile Strength MPa (min)	Corrosion Resistance
A2-70	n/a	Austenitic	700	Excellent
A4-70	n/a	Austenitic	700	Excellent
303	n/a	Austenitic	585	Excellent
416	Hardened to 26/32 HRC	Martensitic	880	Good

General Properties of Austenitic Stainless Steels

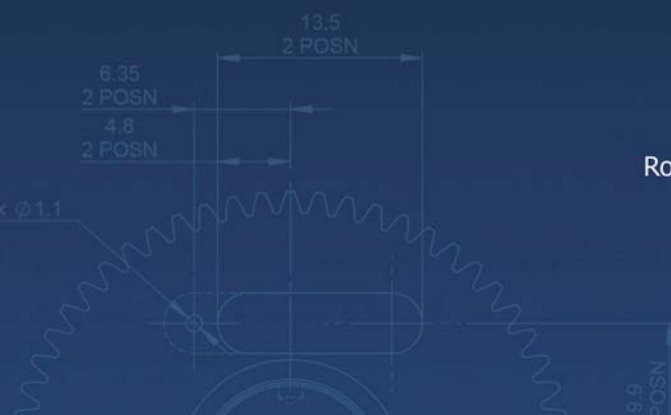
- Excellent resistance to oxidation and corrosion.
- Essentially non-magnetic.
- Cannot be hardened by heat-treatment.
- Work hardened very easily.
- Relatively high coefficient of thermal expansion of 18 microns/metre/°C, close to that of aluminium.

General Properties of Martensitic Stainless Steels

- Good resistance to oxidation and corrosion.
- Magnetic.
- Readily heat treatable to high strength condition.
- Potential for tensile strengths > 1200 MPa.
- Coefficient of thermal expansion of approximately 11 microns/metre/°C.

	<i>Introduction to Reliance</i>	<i>i</i>
	<i>Systems Overview</i>	<i>1</i>
	Intelligent Motors and Motorised Actuators	2
	Planetary and Right Angle Gearboxes	3
	Brass, Ground and Precision Spur Gears	4
	Worms and Wheels, Bevels and Internal Gears	5
	Round and Rectangular Racks and Pinions	6
	Leadscrews and Leadscrew Assemblies	7
	Flexible Shaft Couplings, Clutches and Collars	8
	Linear Guides and Slides	9
	Belts and Pulleys	10
	Gear Clamps and Accessories	11
	Bearings and Spacers	12
	Machine Screws, Dowel Pins and Hardware	13
	<i>Technical Information</i>	<i>14</i>
	<i>Appendices and Index</i>	<i>15</i>

Systems Overview	1
Intelligent Motors and Motorised Actuators	2
Planetary and Right Angle Gearboxes	3
Brass, Ground and Precision Spur Gears	4
Worms and Wheels, Bevels and Internal Gears	5
Round and Rectangular Racks and Pinions	6
Leadscrews and Leadscrew Assemblies	7
Flexible Shaft Couplings, Clutches and Collars	8
Linear Guides and Slides	9
Belts and Pulleys	10
Gear Clamps and Accessories	11
Bearings and Spacers	12
Machine Screws, Dowel Pins and Hardware	13
Technical Information	14



Rowley Mills, Penistone Road, Lepton
Huddersfield, HD8 0LE, England

+44 (0) 1484 601002

www.reliance.co.uk

sales@reliance.co.uk

RG36 Issue A2