



# Reliance<sup>®</sup>

Precision Mechatronics



**Standard and Customised  
Components and Assemblies**

A complete source for precise motion control

# Machine Screws, Dowel Pins and Hardware

## Stainless steel fasteners

Selected to interface with the standard Reliance range.



### Screws

Plain, wire locking and ventilation socket head screws, M1.6 to M6  
Captive, shoulder, machine and set screws



### Clamp Cleats

M3 clamp cleats, ideal for clamping gearboxes and adaptor plates



### Pins

Stainless steel dowel pins, 1mm to 6mm diameter  
Chrome stainless coiled pins, 0.8mm to 3.0mm diameter



### Circlips and Disc Springs

Stainless steel internal and external circlips  
Stainless steel disc springs to suit screw sizes M4 to M12

## Section Contents

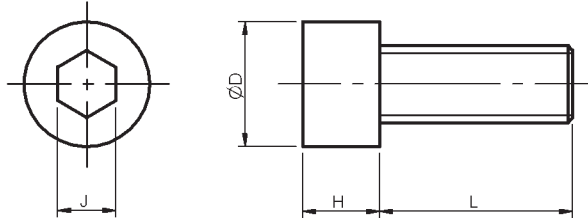
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please see [Page T13-1](#)



All dimensions in mm  
 Thread specification: BS3643 Pt2  
 Tolerance class: 6g  
 Material: A2-70 Austenitic<sup>(1)</sup>  
           A4-70 Austenitic<sup>(2)</sup>  
 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:-							<b>S - M3 - 12 - A47</b>								
Basic Part No	Thread Size	ØD max	H max	J nom	Standard Length										Matl
					L										
<b>S</b>	<b>M1.6</b>	3.0	1.6	1.5	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>8</b>						<b>A27<sup>(1)</sup></b>
	<b>M2</b>	3.8	2.0	1.5		<b>4</b>	<b>5</b>	<b>6</b>	<b>8</b>						
	<b>M2.5</b>	4.5	2.5	2.0			<b>5</b>	<b>6</b>	<b>8</b>	<b>10</b>					
	<b>M3</b>	5.5	3.0	2.5				<b>6</b>	<b>8</b>	<b>10</b>	<b>12</b>	<b>16</b>	<b>20</b>	<b>A47<sup>(2)</sup></b>	
	<b>M4</b>	7.0	4.0	3.0					<b>8</b>	<b>10</b>	<b>12</b>	<b>16</b>	<b>20</b>		<b>25</b>
	<b>M5</b>	8.5	5.0	4.0						<b>10</b>	<b>12</b>	<b>16</b>	<b>20</b>		<b>25</b>
<b>M6</b>	10.0	6.0	5.0							<b>12</b>	<b>16</b>	<b>20</b>	<b>25</b>		<b>30</b>

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- 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

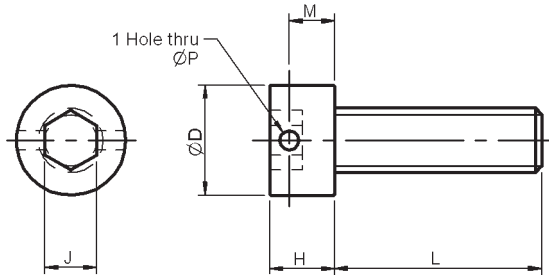
## Non-standard options, please contact our sales team

- Slotted head
- Imperial sizes
- Alternative materials



**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<sup>(1)</sup>  
 A4-70 Austenitic<sup>(2)</sup>  
 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 ±0.05	ØP ±0.05	Standard Length				Matl		
							L						
S	M1.6	3.0	1.6	1.5	1.1	0.4	3	4	5	6	A27 <sup>(1)</sup>		
	M2	3.8	2.0	1.5	1.3	0.6	4	5	6	8			
	M2.5	4.5	2.5	2.0	1.75	0.7	5	6	8	10	A47 <sup>(2)</sup>		
	M3	5.5	3.0	2.5	2.1	0.8	6	8	10	12		16	20
	M4	7.0	4.0	3.0	2.7	1.0	8	10	12	16		20	25
	M5	8.5	5.0	4.0	3.5	1.5	10	12	16	20		25	30
M6	10.0	6.0	5.0	4.2	1.5	12	16	20	25	30	40		

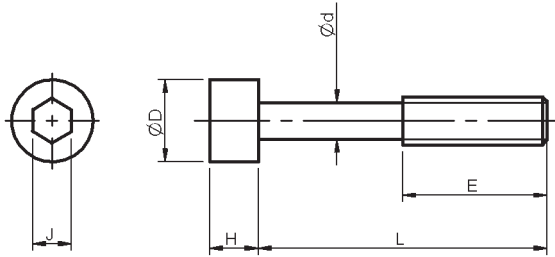
- Socket head cap screw to ISO 4762 with cross-drilled head to allow fastener retention by wire locking
- 700 MPa minimum tensile strength
- Rolled thread for excellent surface finish, superior thread strength and increased hardness properties

## Non-standard options, please contact our sales team

- Imperial sizes
- Alternative materials

All dimensions in mm  
 Thread specification: BS3643 Pt2  
 Tolerance class: 6g  
 Material: A2-70 Austenitic<sup>(1)</sup>  
 A4-70 Austenitic<sup>(2)</sup>  
 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 <sup>(1)</sup>
	M2.5	4.5	2.5	2.0	1.8	5.0	12	
	M3	5.5	3.0	2.5	2.2	6.0	16 20	A47 <sup>(2)</sup>
	M4	7.0	4.0	3.0	3.0	8.0	20 25	
	M5	8.5	5.0	4.0	3.8	10.0	25 30	
	M6	10.0	6.0	5.0	4.5	12.0	30 40	

- Socket head cap screw in accordance with 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

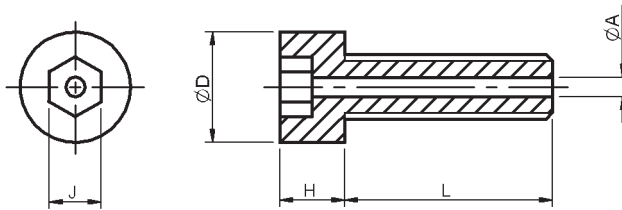
## Non-standard options, please contact our sales team

- Slotted head available on sizes M2 to M5
- Imperial sizes
- Alternative materials



**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<sup>(1)</sup>  
 A4-70 Austenitic<sup>(2)</sup>  
 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				Matl		
						L						
S	M1.6	3.0	1.6	1.5	0.6	3	4	5	6	A27 <sup>(1)</sup>		
	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 <sup>(2)</sup>		
	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		

- Socket head cap screw in accordance with 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

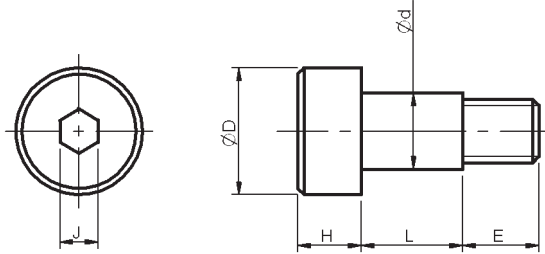
## Non-standard options, please contact our sales team

- Slotted head
- Imperial sizes
- Alternative materials



All dimensions in mm  
Material: 303 Stainless steel

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



Part number selection table

Example Part No:- <b>MSS2 - M6 - 35</b>								
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
	M5	5.987	10	3	5	6	14.013	12
							16.013	13
							20.013	14
							25.013	15
30.013							16	
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							

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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
	M8	9.987	14	5	7	12	8.013	34
							10.013	35
							12.013	36
	M10	11.987	20	6	8	16	16.013	37
							12.013	38
							16.013	39
20.013							40	
							12.013	41
							16.013	42
							20.013	43
							25.013	44
								45

- 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

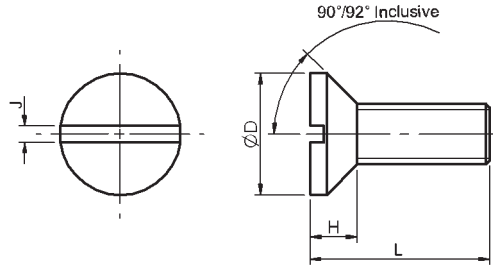
### Non-standard options, please contact our sales team

- Slotted head, Phillips head
- Imperial sizes
- Alternative material (416)
- Alternative lengths



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			

**Non-standard options, please contact our sales team**

- Imperial sizes
- Alternative materials



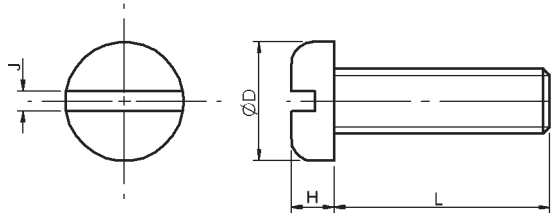
### Associated Products

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

### Non-standard options, please contact our sales team

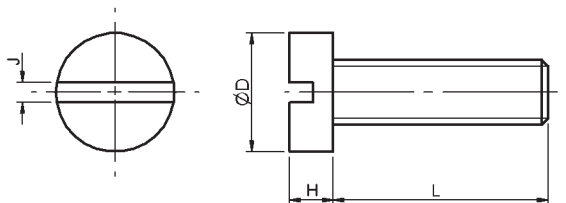
- Imperial sizes
- Alternative materials



# 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:-						<b>C - M3 - 12</b>														
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			

## Non-standard options, please contact our sales team

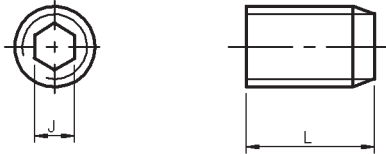
- Imperial sizes
- Alternative materials



**Associated Products**

Gears: [page 4-1](#)  
 Reli-a-Flex® couplings: [page 8-4](#)

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

- Used for quick, permanent location of gears, collars and pulleys on shafts
- Suitable for high torque transmission

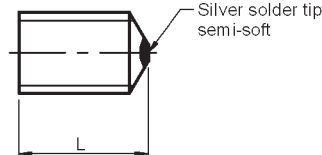
### Non-standard options, please contact our sales team

- Imperial sizes
- Alternative materials



All dimensions in mm  
 Thread specification: BS3643 Pt2  
 Tolerance class: 6g  
 Material: Stainless steel screw  
 Silver solder tip

**Associated Products**  
 Gears: [page 4-1](#)  
 Couplings: [page 8-1](#)



## Part number selection table

Example Part No:- <b>SGSS - M6 - 17</b>				
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

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

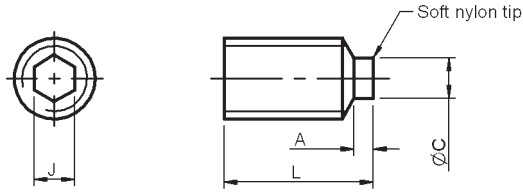
## Non-standard options, please contact our sales team

- Imperial sizes
- Alternative material



**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:- <b>NMSS - M5 - 16</b>						
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

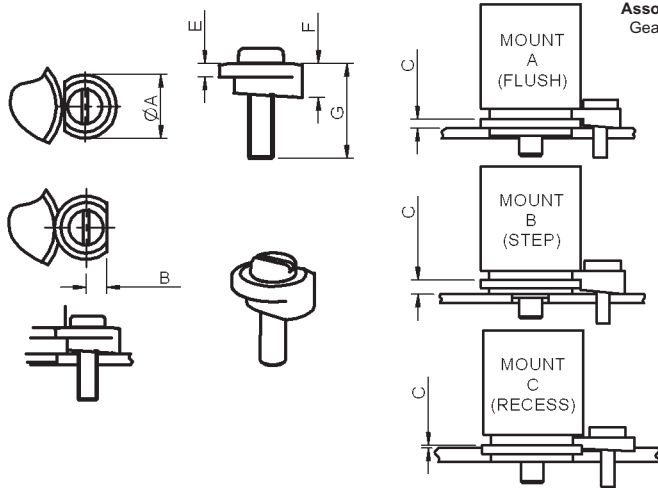
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- Stainless steel set screw with nylon tip insert
- Used to prevent shaft marking
- Self locking
- Full face contact

### Non-standard options, please contact our sales team

- Imperial sizes
- Alternative material

All dimensions in mm  
 General tolerances  $\pm 0.13\text{mm}$   
 Material: Stainless steel clamp  
 Nylon locking insert



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

## Part number selection table

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

- Ideal for use with resolvers, encoders and potentiometers

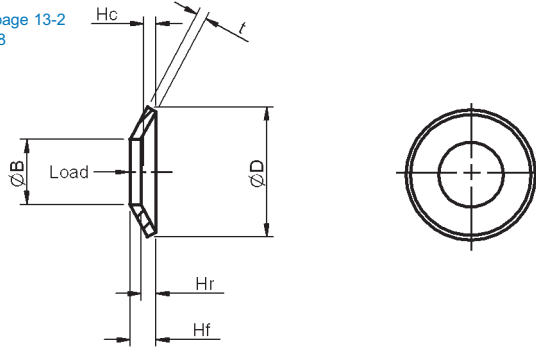
## Non-standard options, please contact our sales team

- Imperial sizes

### 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  $\pm 0.13\text{mm}$   
 Material: Stainless steel X12CrNi 177  
 DIN2093



## Part number selection table

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

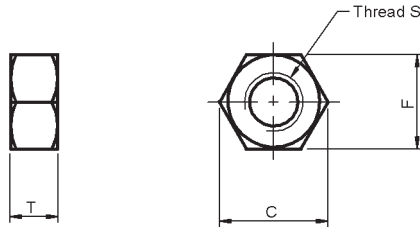
- For use where controlled axial force is required
- Good for bearing pre-load configurations

## Non-standard options, please contact our sales team

- Imperial sizes

All dimensions in mm  
 General tolerances  $\pm 0.13\text{mm}$   
 Material: Stainless steel

**Associated Products**  
 Disc springs: [page 13-15](#)  
 Socket head cap screws: [page 13-2](#)  
 Machine screws: [page 13-8](#)  
 Washers: [page 13-17](#)



## Part number selection table

Example Part No:- <b>HN - M3</b>				
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

**Non-standard options, please contact our sales team**

- Imperial sizes

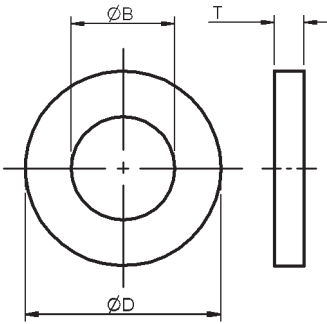
### Associated Products

Machine screws: [page 13-2](#)

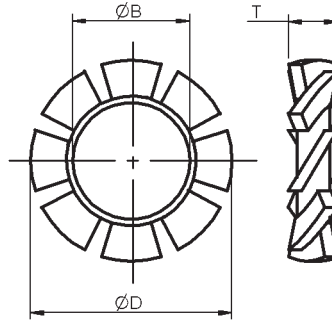
Nuts: [page 13-16](#)

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

All dimensions in mm  
General tolerances  $\pm 0.13\text{mm}$   
Material: Stainless steel



Plain Washers



Tooth Lock Washers

### Part number selection tables

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

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

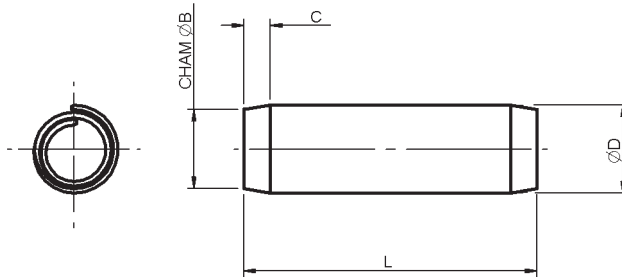
### Non-standard options, please contact our sales team

- Imperial sizes



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

**Associated Products**  
Pin hub gears: [page 4-9](#)  
Shaft collars: [page 11-5](#)



### Part number selection table

Example Part No:-							<b>MSP - 1.5 - 6 - MCP</b>													
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	<b>0.8</b>	0.75	0.30	0.80/0.84	4	5	6	8											
	1.05/1.15	<b>1.0</b>	0.95	0.30	1.00/1.04	4	5	6	8	10	12									
	1.62/1.73	<b>1.5</b>	1.40	0.50	1.50/1.60		5	6	8	10	12	14	16							
	2.13/2.25	<b>2.0</b>	1.90	0.70	1.99/2.10			6	8	10	12	14	16	18						
	2.65/2.78	<b>2.5</b>	2.40	0.70	2.49/2.60						10	12	14	16	18					
	3.15/3.30	<b>3.0</b>	2.90	0.90	2.99/3.10								14	16	18	20				

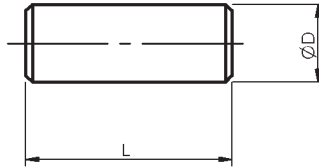
- Coiled steel pin for location and alignment
- Suitable for locating Reliance's gears on ground shaft

### Non-standard options, please contact our sales team

- Imperial sizes
- Alternative materials

**Associated Products**  
 Pin hub gears: [page 4-9](#)  
 Shaft collars: [page 11-5](#)

All dimensions in mm  
 General tolerances ±0.13mm  
 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				

- Precision stainless steel dowel pin, suitable for accurate location and alignment

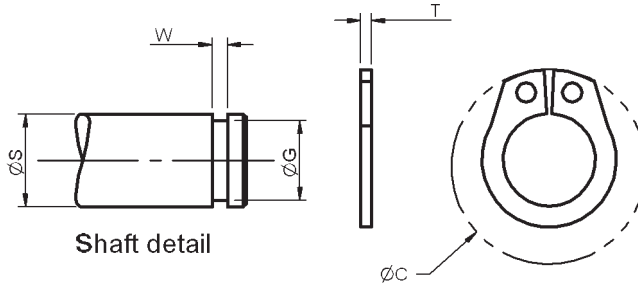
## Non-standard options, please contact our sales team

- Imperial sizes
- Alternative materials



All dimensions in mm  
General tolerances  $\pm 0.13\text{mm}$   
Material: Stainless steel

Associated Products  
Shafts: page 11-2  
Bearings: page 12-2



Part number selection table

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

- Used to axially secure components, such as bearings on shafts

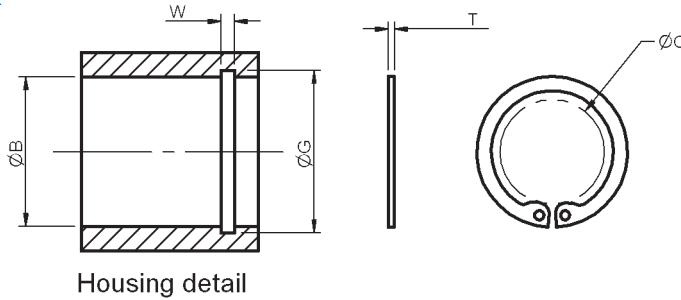
Non-standard options, please contact our sales team

- Imperial sizes
- Alternative materials



Associated Products  
Shafts: page 11-2  
Bearings: page 12-2

All dimensions in mm  
General tolerances  $\pm 0.13\text{mm}$   
Material: Stainless steel



## Part number selection table

Example Part No:- <span style="float: right;">D1300 - 0200 - SS</span>							
Basic Part Number	Nominal Bore Dia (ØB)	Dia Code	Circlip		Groove		Matl
			Thickness T	Clearance Dia (ØC)	Width W	Dia ØG	
<b>D1300</b>	12	<b>0120</b>	1.00	5.70	1.24	12.61	<b>SS</b>
			0.94		1.10	12.50	
	15	<b>0150</b>	1.00	8.30	1.24	15.81	
			0.94		1.10	15.70	
	16	<b>0160</b>	1.00	9.20	1.24	16.91	
			0.94		1.10	16.80	
	19	<b>0190</b>	1.00	11.80	1.24	20.13	
			0.94		1.10	20.00	
	20	<b>0200</b>	1.00	12.60	1.24	21.13	
0.94			1.10		21.00		
22	<b>0220</b>	1.00	14.60	1.24	23.13		
		0.94		1.10	23.00		
24	<b>0240</b>	1.20	16.40	1.44	25.41		
		1.14		1.30	25.20		
28	<b>0280</b>	1.20	19.80	1.44	29.61		
		1.14		1.30	29.40		
30	<b>0300</b>	1.20	21.80	1.44	31.65		
		1.14		1.30	31.40		

- Used to axially secure components such as bearings in housings

## Non-standard options, please contact our sales team

- Imperial sizes
- Alternative materials

## 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, 1981.

## 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.

Screw Size	Tightening Torque For 700 MPa Screw (Nm)
M1.6	0.14
M2	0.29
M2.5	0.60
M3	1.10
M4	2.50
M5	5.00



## RELIANCE STANDARD MATERIALS

Reliance Precision screws are manufactured from the materials listed below. Where the product material is not 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 HRC 26/32	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.



In addition to these conditions of sale, our standard Conditions of Sale also apply. A copy of these is available on request and from our website [www.rpmechatronics.co.uk/en/help](http://www.rpmechatronics.co.uk/en/help)

**Minimum order charge** - Orders are subject to a minimum order charge of £25.00 unless they have been placed on our website at [www.rpmechatronics.co.uk](http://www.rpmechatronics.co.uk)

**Carriage and packing** - Additional charges are made for carriage and packing.

**Payment** - Payment terms are 30 days. New customers are requested to complete an application form for a credit account. Customers who do not have a credit account with Reliance are requested to supply cheque with order. In addition, orders may be paid for by Visa and Mastercard.

**Telephone orders** - An order number must be quoted by customers and a written confirmatory order, clearly marked "CONFIRMATION", sent within 7 days. We reserve the right to supply parts against a telephone order. All telephone orders are accepted subject to these conditions of sale and those detailed on the acknowledgement of order. An acknowledgement will normally be sent by Reliance on receipt of order and goods will be supplied in accordance with the order acknowledgement.

**Certificates of Conformance** - Reliance's quality management system is certified to AS9100 and ISO 9001. A Certificate of Conformance can be supplied at an additional charge of £10.00 per delivery. Alternatively, a Certificate with full material traceability can be supplied at a charge of £20.00 per delivery.

**Confirmation** - All orders, other than telephone orders with a value of less than £500 and orders placed through our website, are subject to acceptance in writing by Reliance Precision Mechatronics.

**Order amendments** - Order amendments are subject to our approval and a charge will be made for reasonable compensation for any costs incurred.

**Returns** - Unused items may, solely at our discretion, be accepted for credit within 90 days of delivery. Any parts so accepted will be subject to a 20% service charge for re-inspection and handling. No credit can be allowed after the above period, or for any used or modified part, or for parts manufactured to a customer's specification.

**Additional charges** - Reliance reserves the right to charge for all additional expenses and taxes incurred over and above published prices (including without limitation duty, VAT, exchange rate fluctuations etc.)

**Alterations** - As a result of continuous product development, Reliance reserves the right to alter prices and other details without prior notice and to change dimensions where this does not affect the function of the item.

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For our full range of standard and customised components together with a complete overview of Reliance's design and manufacturing capabilities, visit the Reliance websites at:

**[www.rpmechatronics.co.uk](http://www.rpmechatronics.co.uk) and [www.reliance.co.uk](http://www.reliance.co.uk)**

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