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MANUFACTURED  
PRODUCTS  
GROUP

# Hard-to-Find & Non-Standard Metric Fasteners & Hardware



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## Longevity

AMPG is a privately-owned family business started by current management in 1987. With the second generation in the business, already for many years, we are realizing a future of serving our customers, collaborating with our employees, and contributing to a vibrant domestic manufacturing economy.

## Philosophy

We're proud to be an American manufacturer dedicated to innovating, designing, and providing solutions for our diverse customer base. Our philosophy is simple...

***“...to provide unparalleled customer service, produce beautiful, precise parts and keep inventory levels high to ship at a moment’s notice.”***

We are committed to our customers and our products.

## Stock & Custom...**FAST**

As a precision manufacturer of specialized fasteners, architectural hardware, mechanical components and industrial accessories, AMPG stocks over 35,000 products. We also offer custom manufacturing supported by design, product testing and engineering services. To see the latest and most complete catalog of our over 35,000 different items, visit [www.ampg.com](http://www.ampg.com).

## How to Buy Our Products

We go to market in partnership with the largest domestic and international distributors in the world, and we thank them for their continued support. To find a distributor near you, visit [www.ampg.com/distributors](http://www.ampg.com/distributors).



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## Material Specifications

Some guidelines for choosing between the materials we produce are shown below.

Material Type	Specification	Tensile, psi	Yield, psi	Estimated Shear, psi	Elongation	Brinell Hardness	Rockwell Hardness
Aluminum 6061-T6	ASTM B211	45,000	40,000	22,500	17%	BHN 95	B56
Brass 360	ASTM B16	58,000	45,000	29,000	25%	BHN 143	B78
Nickel Alloy 405 (Monel)	ASTM B164	85,000	60,000	42,500	24%	BHN 163	B85
Stainless Steel 18-8 (303)	ASTM A582	90,000	35,000	45,000	50%	BHN 160	B83
Stainless Steel 316 (316/316L)	ASTM A276	75,000	30,000	37,500	45%	BHN 160	B83
Stainless Steel High Five® (316 H5)	ASTM A276	125,000	100,000	62,500	26%	BHN 250	C25
Stainless Steel 416	Cond A	75,000	40,000	37,500	30%	BHN 155	B82
	ASTM A582 Cond T	123,000	110,000	61,500	11%	BHN 245	C24
Stainless Steel 17-4 PH	Cond A	160,000	145,000	80,000	15%	BHN 332	C36
	ASTM A564 TYPE 630						
Stainless Steel A286	ASTM A638 GR 660	160,000	120,000	80,000	27%	BHN 248	C24
Steel 12L14	ASTM A108	78,000	60,000	39,000	15%	BHN 160	B84
Steel Alloy C4140/41L40 (Alloy)	ASTM A108 Cold	105,000	85,000	52,500	15%	BHN 187	B91
	ASTM A108 Thru Hard	140,000	n/a	70,000	n/a	BHN 300	C32
Steel Grade 2	ASTM A307 Equivalent	60,000	36,000	30,000	18%	BHN160	B70
Titanium Grade 2	ASTM B348 GR 2	75,000	55,000	37,500	20%	BHN 163	B85
Titanium Grade 5 (6AL-4V)	ASTM B348 GR 5	140,000	125,000	70,000	18%	BHN 296	C32

*Note: Listed Mechanical Properties are obtained from various suppliers and is intended for comparison of materials, only. Values are based on raw material specifications. AMPG assumes no obligation and liability for the accuracy of this information. For critical applications, product testing may be appropriate.*

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# About Our Materials

## Aluminum

- Aluminum has the strength of mild steel with one third the weight.
- Resists corrosion in wet environments.
- Lightweight material used for fittings, hardware and fasteners.
- Nonmagnetic.

## Brass

- Brass is a softer material approximately two-thirds copper and one-third zinc.
- Provides good resistance to rust and atmospheric corrosion.
- Friction-resistant material used for gears, bearings, fasteners and valves.
- Nonmagnetic.

## Nickel Alloy 405 (Monel)

- Nickel (Monel) aka nickel-copper alloy is a higher-strength material.
- Excellent resistance in corrosive environments: sea water, some acids, alkalis.
- Marine industry material used for propellers, heat exchangers and valves.
- May be mildly magnetic.

## Stainless Steel 18-8 (303)

- Type 303 stainless offers excellent corrosion resistance.
- Resists chemicals, most dyes, food and nitric acid.
- Corrosion-resistant material used for screws, bushings, nuts and hardware.
- May be mildly magnetic.

## Stainless Steel 316 (316/316L)

- Type 316 stainless offers superior corrosion resistance than Type 303 stainless.
- Resists salt water, acids, chlorides, alkalis and other industrial solvents.
- Low-maintenance material used in commercial kitchens and food processing.
- May be mildly magnetic.

*\*AMPG uses dual certified Type 316/316L stainless material. Meets all 316 stainless properties but has lower carbon content, making it more suitable for welding.*

## Stainless Steel High Five® (316H5)

- High Five® Stainless is AMPG's higher strength grade of 316 stainless steel.
- Resists salt water, acids, chlorides, alkalis and other industrial solvents.
- Corrosion-resistance material with strength equivalent to Grade 5 steel materials.
- May be mildly magnetic.

## Stainless Steel 416

- Type 416 stainless can be hardened up to Maximum Rockwell C40 after heat treatment.
- Resists acids, alkalis, fresh water and dry air.
- Non-galling and hardenable material used for fittings, gears, shafts and screws.
- Magnetic.



## Stainless Steel 17-4 PH

- Type 17-4 PH stainless maintains excellent corrosion resistance and strength at high temperatures.
- Resists chemicals, most dyes, food and nitric acid.
- High-strength material used for fittings, valves, bolts and shafts.
- Mildly magnetic.

## Stainless Steel A286

- Type A286 stainless maintains superior corrosion resistance and strength at high temperatures, exceeding 17-4 PH performance.
- Resists salt water, acids, chlorides, alkalis and other industrial solvents.
- High-strength material used for fittings, valves, bolts and shafts. Used in high heat/stress applications such as jet engines, gas turbines, and super-charges.
- Nonmagnetic.

## Steel Carbon 12L14

- 12L14 steel is used in many general-purpose applications.
- Material requires a finish to resist rust, such as black-oxide treatment or zinc plating.
- Low-strength material used for bushings, washers, inserts, fittings, screws and nuts.
- Magnetic.

## Steel Alloy 4140/41L40 (Alloy Steel)

- Alloy 4140 is a "primary" material used high strength fasteners and components.
- Material requires a finish to resist rust, such as black-oxide treatment or zinc plating.
- High-strength material that exceed Grade 8 used for socket screws, studs and components, only after heat treatment.
- Magnetic.

## Titanium Gr 2

- Titanium Grade 2 is best known for being strong, lightweight and corrosion resistant.
- Resists chlorides, hypochlorites, chlorates, perchlorates and chlorine dioxide.
- Lightweight material used for chemical-processing equipment, heat exchangers and fasteners.
- Nonmagnetic.

## Titanium Gr 5 (6AL-4V)

- Titanium Grade 5 is two times stronger than Grade 2, and four times stronger than 316 stainless at nearly half the weight.
- Resists chlorides, hypochlorites, chlorates, perchlorates and chlorine dioxide.
- Lightweight material used for higher-strength fasteners, racing components and marine hardware.
- Nonmagnetic.



ACCURATE  
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# Shoulder Screws



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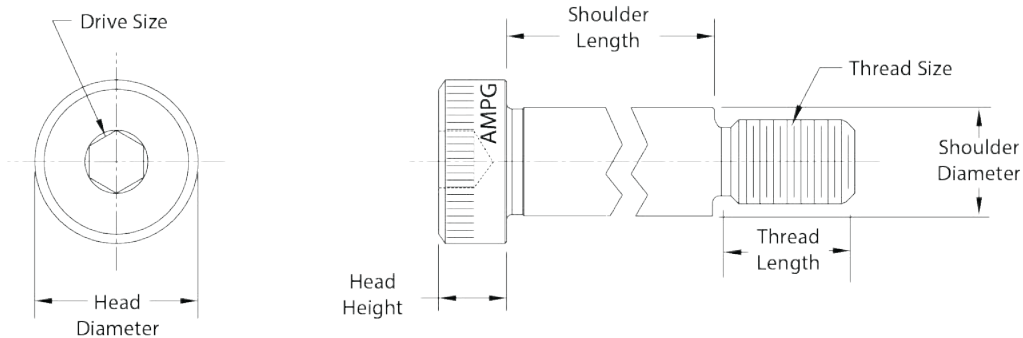
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## ASME Tolerance Knurled Head – Metric

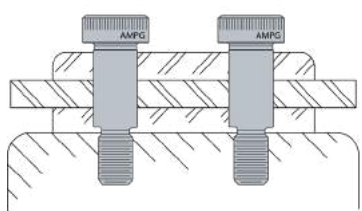
Also known as stripper bolts, they're commonly used as a stationary guide for stripper plates, as a pivot point for moving parts, and as a shaft for rolling parts. Screws are machined with a precision hex socket for maximum wrenching strength, knurled heads for sure finger grip, and an undercut portion between the thread and shoulder, allowing a close fit. AMPG shoulder screws meet or exceed general industrial acceptance for nonferrous screws and ANSI/ASME B18.3 dimensional specifications. Shoulder screws have an unthreaded shoulder made with an undersized tolerance to fit most machinery and equipment. The unthreaded shoulder is held to a precise diameter and length. Minimum to maximum shoulder diameter is listed in table. Shoulder length tolerance is  $+0.25$  to  $-0.00$ mm. Screws have a Class 5g6g thread fit.



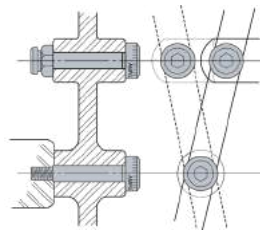
**Dimensions and Tolerance Table – Metric, mm**

Shoulder Diameter	Shoulder Diameter Min. to Max.	Head Diameter	Head Height	Drive Size	Head Appearance
3	2.96 to 2.99	5.00	2.00	2	Knurl Only
4	3.96 to 3.99	6.00	3.00	2	
5	4.96 to 4.99	9.00	4.00	2.5	
6	5.96 to 5.99	10.00	4.50	3	
8	7.95 to 7.98	13.00	5.50	4	Head Mark and Knurl
10	9.95 to 9.98	16.00	7.00	5	
12	11.94 to 11.98	18.00	9.00	6	
16	15.94 to 15.98	24.00	11.00	8	
20	19.92 to 19.98	30.00	14.00	10	Head Mark and Knurl
24	23.92 to 23.98	36.00	16.00	12	
30	29.92 to 29.98	45.00	20.00	14	
36	35.92 to 35.98	54.00	22.00	17	

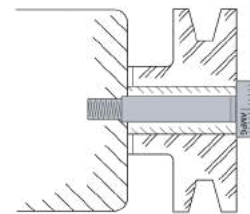
18-8 Stainless Steel is manufactured from Type 303 Stainless Steel Bar.



Shoulder Screw as a Guide



Shoulder Screw as a Pivot Point



Shoulder Screw as a Shaft

CAT.Ver.02.A

## ASME Tolerance Knurled Head – Metric

### 18-8 (A2) and 316 (A4) Stainless Steels – Hex Drive

- Shoulder diameters of 3, 4, 5, 6, 12, 30 and 36mm meet our internal specification AMPG 2013 ZS.02.
- Shoulder diameters of 8,10, 16, 20 and 24mm meet or exceed ANSI/ASME B18.3.3M, ISO 7379.
- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- 18-8 (A2) and 316 (A4) stainless steel screws adhere to environmental regulations established by European Union RoHS directive.



STR601M3X3



STR601M4X3

#### 3mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
3 x 3		STR601M3X3	STR602M3X3
3 x 4	M2 x 0.4 x 3.8	STR601M3X4	STR602M3X4
3 x 5		STR601M3X5	STR602M3X5
3 x 6		STR601M3X6	STR602M3X6
3 x 7		STR601M3X7	STR602M3X7
3 x 8	M2 x 0.4 x 3.8	STR601M3X8	STR602M3X8
3 x 9		STR601M3X9	STR602M3X9
3 x 10		STR601M3X10	STR602M3X10
3 x 12		STR601M3X12	STR602M3X12
3 x 14	M2 x 0.4 x 3.8	STR601M3X14	STR602M3X14
3 x 16		STR601M3X16	STR602M3X16
3 x 18		STR601M3X18	STR602M3X18
3 x 20		STR601M3X20	STR602M3X20
3 x 22	M2 x 0.4 x 3.8	STR601M3X22	STR602M3X22
3 x 25		STR601M3X25	STR602M3X25
3 x 30		STR601M3X30	STR602M3X30
3 x 35		STR601M3X35	STR602M3X35
3 x 40	M2 x 0.4 x 3.8	STR601M3X40	STR602M3X40
3 x 45		STR601M3X45	STR602M3X45
3 x 50		STR601M3X50	STR602M3X50

#### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
4 x 3		STR601M4X3	STR602M4X3
4 x 4	M3 x 0.5 x 4.5	STR601M4X4	STR602M4X4
4 x 5		STR601M4X5	STR602M4X5
4 x 6		STR601M4X6	STR602M4X6
4 x 7		STR601M4X7	STR602M4X7
4 x 8	M3 x 0.5 x 4.5	STR601M4X8	STR602M4X8
4 x 9		STR601M4X9	STR602M4X9
4 x 10		STR601M4X10	STR602M4X10
4 x 12		STR601M4X12	STR602M4X12
4 x 14	M3 x 0.5 x 4.5	STR601M4X14	STR602M4X14
4 x 16		STR601M4X16	STR602M4X16
4 x 18		STR601M4X18	STR602M4X18
4 x 20		STR601M4X20	STR602M4X20
4 x 22	M3 x 0.5 x 4.5	STR601M4X22	STR602M4X22
4 x 25		STR601M4X25	STR602M4X25
4 x 28		STR601M4X28	STR602M4X28
4 x 30		STR601M4X30	STR602M4X30
4 x 35	M3 x 0.5 x 4.5	STR601M4X35	STR602M4X35
4 x 40		STR601M4X40	STR602M4X40
4 x 45		STR601M4X45	STR602M4X45
4 x 50	M3 x 0.5 x 4.5	STR601M4X50	STR602M4X50

Chart continued on next page



18-8 SS (A2)  
316 SS (A4)

## ASME Tolerance Knurled Head – Metric



STR601M5X4



STR601M6X4

### 5mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
5 x 4		STR601M5X4	STR602M5X4
5 x 5	M4 x 0.7 x 4.5	STR601M5X5	STR602M5X5
5 x 6		STR601M5X6	STR602M5X6
5 x 7		STR601M5X7	STR602M5X7
5 x 8		STR601M5X8	STR602M5X8
5 x 9	M4 x 0.7 x 4.5	STR601M5X9	STR602M5X9
5 x 10		STR601M5X10	STR602M5X10
5 x 11		STR601M5X11	STR602M5X11
5 x 12		STR601M5X12	STR602M5X12
5 x 13	M4 x 0.7 x 4.5	STR601M5X13	STR602M5X13
5 x 14		STR601M5X14	STR602M5X14
5 x 16		STR601M5X16	STR602M5X16
5 x 17		STR601M5X17	STR602M5X17
5 x 18	M4 x 0.7 x 4.5	STR601M5X18	STR602M5X18
5 x 19		STR601M5X19	STR602M5X19
5 x 20		STR601M5X20	STR602M5X20
5 x 22		STR601M5X22	STR602M5X22
5 x 25	M4 x 0.7 x 4.5	STR601M5X25	STR602M5X25
5 x 30		STR601M5X30	STR602M5X30
5 x 35		STR601M5X35	STR602M5X35
5 x 40		STR601M5X40	STR602M5X40
5 x 45	M4 x 0.7 x 4.5	STR601M5X45	STR602M5X45
5 x 50		STR601M5X50	STR602M5X50
5 x 60		STR601M5X60	STR602M5X60
5 x 70	M4 x 0.7 x 4.5	STR601M5X70	STR602M5X70

### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
6 x 4		STR601M6X4	STR602M6X4
6 x 5	M5 x 0.8 x 9.5	STR601M6X5	STR602M6X5
6 x 6		STR601M6X6	STR602M6X6
6 x 7		STR601M6X7	STR602M6X7
6 x 8		STR601M6X8	STR602M6X8
6 x 10	M5 x 0.8 x 9.5	STR601M6X10	STR602M6X10
6 x 11		STR601M6X11	STR602M6X11
6 x 12		STR601M6X12	STR602M6X12
6 x 13		STR601M6X13	STR602M6X13
6 x 14	M5 x 0.8 x 9.5	STR601M6X14	STR602M6X14
6 x 16		STR601M6X16	STR602M6X16
6 x 17		STR601M6X17	STR602M6X17
6 x 18		STR601M6X18	STR602M6X18
6 x 19	M5 x 0.8 x 9.5	STR601M6X19	STR602M6X19
6 x 20		STR601M6X20	STR602M6X20
6 x 22		STR601M6X22	STR602M6X22
6 x 25		STR601M6X25	STR602M6X25
6 x 30	M5 x 0.8 x 9.5	STR601M6X30	STR602M6X30
6 x 35		STR601M6X35	STR602M6X35
6 x 40		STR601M6X40	STR602M6X40
6 x 45		STR601M6X45	STR602M6X45
6 x 50	M5 x 0.8 x 9.5	STR601M6X50	STR602M6X50
6 x 52		STR601M6X52	STR602M6X52
6 x 60		STR601M6X60	STR602M6X60
6 x 70		STR601M6X70	STR602M6X70
6 x 80	M5 x 0.8 x 9.5	STR601M6X80	STR602M6X80
6 x 90		STR601M6X90	STR602M6X90
6 x 100		STR601M6X100	STR602M6X100
6 x 110	M5 x 0.8 x 9.5	STR601M6X110	STR602M6X110

## ASME Tolerance Knurled Head – Metric



STR601M8X6



STR601M10X6

### 8mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
8 x 6		STR601M8X6	STR602M8X6
8 x 8	M6 x 1 x 11	STR601M8X8	STR602M8X8
8 x 9		STR601M8X9	STR602M8X9
8 x 10		STR601M8X10	STR602M8X10
8 x 11	M6 x 1 x 11	STR601M8X11	STR602M8X11
8 x 12		STR601M8X12	STR602M8X12
8 x 13		STR601M8X13	STR602M8X13
8 x 14		STR601M8X14	STR602M8X14
8 x 16	M6 x 1 x 11	STR601M8X16	STR602M8X16
8 x 17		STR601M8X17	STR602M8X17
8 x 18		STR601M8X18	STR602M8X18
8 x 19		STR601M8X19	STR602M8X19
8 x 20	M6 x 1 x 11	STR601M8X20	STR602M8X20
8 x 22		STR601M8X22	STR602M8X22
8 x 25		STR601M8X25	STR602M8X25
8 x 28		STR601M8X28	STR602M8X28
8 x 30	M6 x 1 x 11	STR601M8X30	STR602M8X30
8 x 35		STR601M8X35	STR602M8X35
8 x 40		STR601M8X40	STR602M8X40
8 x 45		STR601M8X45	STR602M8X45
8 x 50	M6 x 1 x 11	STR601M8X50	STR602M8X50
8 x 55		STR601M8X55	STR602M8X55
8 x 60		STR601M8X60	STR602M8X60
8 x 70		STR601M8X70	STR602M8X70
8 x 80	M6 x 1 x 11	STR601M8X80	STR602M8X80
8 x 90		STR601M8X90	STR602M8X90
8 x 100		STR601M8X100	STR602M8X100
8 x 110		STR601M8X110	STR602M8X110
8 x 120	M6 x 1 x 11	STR601M8X120	STR602M8X120
8 x 130		STR601M8X130	STR602M8X130
8 x 140		STR601M8X140	STR602M8X140

### 10mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
10 x 6		STR601M10X6	STR602M10X6
10 x 8	M8 x 1.25 x 13	STR601M10X8	STR602M10X8
10 x 9		STR601M10X9	STR602M10X9
10 x 10		STR601M10X10	STR602M10X10
10 x 11	M8 x 1.25 x 13	STR601M10X11	STR602M10X11
10 x 12		STR601M10X12	STR602M10X12
10 x 13		STR601M10X13	STR602M10X13
10 x 14		STR601M10X14	STR602M10X14
10 x 16	M8 x 1.25 x 13	STR601M10X16	STR602M10X16
10 x 17		STR601M10X17	STR602M10X17
10 x 18		STR601M10X18	STR602M10X18
10 x 19		STR601M10X19	STR602M10X19
10 x 20	M8 x 1.25 x 13	STR601M10X20	STR602M10X20
10 x 22		STR601M10X22	STR602M10X22
10 x 25		STR601M10X25	STR602M10X25
10 x 30		STR601M10X30	STR602M10X30
10 x 35	M8 x 1.25 x 13	STR601M10X35	STR602M10X35
10 x 40		STR601M10X40	STR602M10X40
10 x 45		STR601M10X45	STR602M10X45
10 x 50		STR601M10X50	STR602M10X50
10 x 55	M8 x 1.25 x 13	STR601M10X55	STR602M10X55
10 x 60		STR601M10X60	STR602M10X60
10 x 70		STR601M10X70	STR602M10X70
10 x 80		STR601M10X80	STR602M10X80
10 x 90	M8 x 1.25 x 13	STR601M10X90	STR602M10X90
10 x 100		STR601M10X100	STR602M10X100
10 x 110		STR601M10X110	STR602M10X110
10 x 120		STR601M10X120	STR602M10X120
10 x 130	M8 x 1.25 x 13	STR601M10X130	STR602M10X130
10 x 140		STR601M10X140	STR602M10X140
10 x 150		STR601M10X150	STR602M10X150

Chart continued on next page

18-8 SS (A2)  
316 SS (A4)

## ASME Tolerance Knurled Head – Metric



STR601M12X6



STR601M16X10

### 12mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
12 x 6		STR601M12X6	STR602M12X6
12 x 8	M10 x 1.5 x 16	STR601M12X8	STR602M12X8
12 x 9		STR601M12X9	STR602M12X9
12 x 10		STR601M12X10	STR602M12X10
12 x 11		STR601M12X11	STR602M12X11
12 x 12	M10 x 1.5 x 16	STR601M12X12	STR602M12X12
12 x 13		STR601M12X13	STR602M12X13
12 x 14		STR601M12X14	STR602M12X14
12 x 16		STR601M12X16	STR602M12X16
12 x 17	M10 x 1.5 x 16	STR601M12X17	STR602M12X17
12 x 18		STR601M12X18	STR602M12X18
12 x 19		STR601M12X19	STR602M12X19
12 x 20		STR601M12X20	STR602M12X20
12 x 22	M10 x 1.5 x 16	STR601M12X22	STR602M12X22
12 x 25		STR601M12X25	STR602M12X25
12 x 30		STR601M12X30	STR602M12X30
12 x 35		STR601M12X35	STR602M12X35
12 x 40	M10 x 1.5 x 16	STR601M12X40	STR602M12X40
12 x 45		STR601M12X45	STR602M12X45
12 x 50		STR601M12X50	STR602M12X50
12 x 55		STR601M12X55	STR602M12X55
12 x 60	M10 x 1.5 x 16	STR601M12X60	STR602M12X60
12 x 70		STR601M12X70	STR602M12X70
12 x 80		STR601M12X80	STR602M12X80
12 x 90		STR601M12X90	STR602M12X90
12 x 100	M10 x 1.5 x 16	STR601M12X100	STR602M12X100
12 x 110		STR601M12X110	STR602M12X110
12 x 120		STR601M12X120	STR602M12X120
12 x 130		STR601M12X130	STR602M12X130
12 x 140	M10 x 1.5 x 16	STR601M12X140	STR602M12X140
12 x 150		STR601M12X150	STR602M12X150
12 x 160		STR601M12X160	STR602M12X160
12 x 170		STR601M12X170	STR602M12X170
12 x 180	M10 x 1.5 x 16	STR601M12X180	STR602M12X180
12 x 180		STR601M12X180	STR602M12X180

### 16mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
16 x 10		STR601M16X10	STR602M16X10
16 x 12	M12 x 1.75 x 18	STR601M16X12	STR602M16X12
16 x 16		STR601M16X16	STR602M16X16
16 x 20		STR601M16X20	STR602M16X20
16 x 22		STR601M16X22	STR602M16X22
16 x 25	M12 x 1.75 x 18	STR601M16X25	STR602M16X25
16 x 30		STR601M16X30	STR602M16X30
16 x 35		STR601M16X35	STR602M16X35
16 x 40		STR601M16X40	STR602M16X40
16 x 45	M12 x 1.75 x 18	STR601M16X45	STR602M16X45
16 x 50		STR601M16X50	STR602M16X50
16 x 55		STR601M16X55	STR602M16X55
16 x 60		STR601M16X60	STR602M16X60
16 x 70	M12 x 1.75 x 18	STR601M16X70	STR602M16X70
16 x 80		STR601M16X80	STR602M16X80
16 x 90		STR601M16X90	STR602M16X90
16 x 100		STR601M16X100	STR602M16X100
16 x 110	M12 x 1.75 x 18	STR601M16X110	STR602M16X110
16 x 120		STR601M16X120	STR602M16X120
16 x 130		STR601M16X130	STR602M16X130
16 x 140		STR601M16X140	STR602M16X140
16 x 150	M12 x 1.75 x 18	STR601M16X150	STR602M16X150
16 x 160		STR601M16X160	STR602M16X160
16 x 170		STR601M16X170	STR602M16X170
16 x 180		STR601M16X180	STR602M16X180
16 x 190	M12 x 1.75 x 18	STR601M16X190	STR602M16X190

Chart continued on next page

## ASME Tolerance Knurled Head – Metric



STR601M20X12



STR601M24X12

### 20mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
20 x 12		STR601M20X12	STR602M20X12
20 x 16	M16 x 2 x 22	STR601M20X16	STR602M20X16
20 x 20		STR601M20X20	STR602M20X20
20 x 25		STR601M20X25	STR602M20X25
20 x 30		STR601M20X30	STR602M20X30
20 x 35	M16 x 2 x 22	STR601M20X35	STR602M20X35
20 x 40		STR601M20X40	STR602M20X40
20 x 45		STR601M20X45	STR602M20X45
20 x 50		STR601M20X50	STR602M20X50
20 x 55	M16 x 2 x 22	STR601M20X55	STR602M20X55
20 x 60		STR601M20X60	STR602M20X60
20 x 70		STR601M20X70	STR602M20X70
20 x 80		STR601M20X80	STR602M20X80
20 x 90	M16 x 2 x 22	STR601M20X90	STR602M20X90
20 x 100		STR601M20X100	STR602M20X100
20 x 110		STR601M20X110	STR602M20X110
20 x 120		STR601M20X120	STR602M20X120
20 x 130	M16 x 2 x 22	STR601M20X130	STR602M20X130
20 x 140		STR601M20X140	STR602M20X140
20 x 150		STR601M20X150	STR602M20X150
20 x 160		STR601M20X160	STR602M20X160
20 x 170	M16 x 2 x 22	STR601M20X170	STR602M20X170
20 x 180		STR601M20X180	STR602M20X180
20 x 190		STR601M20X190	STR602M20X190

### 24mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
24 x 12		STR601M24X12	STR602M24X12
24 x 16	M20 x 2.5 x 27	STR601M24X16	STR602M24X16
24 x 20		STR601M24X20	STR602M24X20
24 x 25		STR601M24X25	STR602M24X25
24 x 30		STR601M24X30	STR602M24X30
24 x 35	M20 x 2.5 x 27	STR601M24X35	STR602M24X35
24 x 40		STR601M24X40	STR602M24X40
24 x 45		STR601M24X45	STR602M24X45
24 x 50		STR601M24X50	STR602M24X50
24 x 55	M20 x 2.5 x 27	STR601M24X55	STR602M24X55
24 x 60		STR601M24X60	STR602M24X60
24 x 70		STR601M24X70	STR602M24X70
24 x 80		STR601M24X80	STR602M24X80
24 x 90	M20 x 2.5 x 27	STR601M24X90	STR602M24X90
24 x 100		STR601M24X100	STR602M24X100
24 x 110		STR601M24X110	STR602M24X110
24 x 120		STR601M24X120	STR602M24X120
24 x 130	M20 x 2.5 x 27	STR601M24X130	STR602M24X130
24 x 140		STR601M24X140	STR602M24X140
24 x 150		STR601M24X150	STR602M24X150
24 x 160		STR601M24X160	STR602M24X160
24 x 170	M20 x 2.5 x 27	STR601M24X170	STR602M24X170
24 x 180		STR601M24X180	STR602M24X180
24 x 190		STR601M24X190	STR602M24X190



STR601M30X50

### 30mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
30 x 50		STR601M30X50	STR602M30X50
30 x 60	M27 x 3 x 35	STR601M30X60	STR602M30X60
30 x 70		STR601M30X70	STR602M30X70
30 x 80		STR601M30X80	STR602M30X80
30 x 90		STR601M30X90	STR602M30X90
30 x 100	M27 x 3 x 35	STR601M30X100	STR602M30X100
30 x 120		STR601M30X120	STR602M30X120



STR601M36X50

### 36mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
36 x 50		STR601M36X50	STR602M36X50
36 x 60	M33 x 3.5 x 40	STR601M36X60	STR602M36X60
36 x 70		STR601M36X70	STR602M36X70
36 x 80		STR601M36X80	STR602M36X80
36 x 90		STR601M36X90	STR602M36X90
36 x 100	M33 x 3.5 x 40	STR601M36X100	STR602M36X100
36 x 120		STR601M36X120	STR602M36X120

Chart continued on next page

## ASME Tolerance Knurled Head — Metric

## 17-4 PH SS, 316H5 SS, Aluminum, Nickel (Monel), and Grade 2 Titanium — Hex Drive

- Shoulder diameters of 4, 5 and 12mm meet our internal specification AMPG 2013 ZS.02.
- Shoulder diameters of 8 and 10mm meet or exceed ANSI/ASME B18.3.3M, ISO 7379.
- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- Largest line of shoulder screws offered in high performance materials: 17-4 PH SS, High Five SS, Aluminum, Nickel (Monel) and Grade 2 Titanium.



STR705M4X4

## 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	17-4 PH SS Part Number	316H5 SS Part Number	Aluminum Part Number	Nickel (Monel) Part Number	Titanium Gr2 Part Number
4 x 4		STR744M4X4	STR616M4X4	STR720M4X4	STR710M4X4	STR705M4X4
4 x 5	M3 x 0.5 x 4.5	STR744M4X5	STR616M4X5	STR720M4X5	STR710M4X5	STR705M4X5
4 x 6		STR744M4X6	STR616M4X6	STR720M4X6	STR710M4X6	STR705M4X6
4 x 8		STR744M4X8	STR616M4X8	STR720M4X8	STR710M4X8	STR705M4X8
4 x 10	M3 x 0.5 x 4.5	STR744M4X10	STR616M4X10	STR720M4X10	STR710M4X10	STR705M4X10



STR705M5X4

## 5mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	17-4 PH SS Part Number	316H5 SS Part Number	Aluminum Part Number	Nickel (Monel) Part Number	Titanium Gr2 Part Number
5 x 4		STR744M5X4	STR616M5X4	STR720M5X4	STR710M5X4	STR705M5X4
5 x 5	M4 x 0.7 x 4.5	STR744M5X5	STR616M5X5	STR720M5X5	STR710M5X5	STR705M5X5
5 x 6		STR744M5X6	STR616M5X6	STR720M5X6	STR710M5X6	STR705M5X6
5 x 8		STR744M5X8	STR616M5X8	STR720M5X8	STR710M5X8	STR705M5X8
5 x 10		STR744M5X10	STR616M5X10	STR720M5X10	STR710M5X10	STR705M5X10
5 x 12	M4 x 0.7 x 4.5	STR744M5X12	STR616M5X12	STR720M5X12	STR710M5X12	STR705M5X12
5 x 16		STR744M5X16	STR616M5X16	STR720M5X16	STR710M5X16	STR705M5X16
5 x 20		STR744M5X20	STR616M5X20	STR720M5X20	STR710M5X20	STR705M5X20
5 x 25	M4 x 0.7 x 4.5	STR744M5X25	STR616M5X25	STR720M5X25	STR710M5X25	STR705M5X25
5 x 30		STR744M5X30	STR616M5X30	STR720M5X30	STR710M5X30	STR705M5X30

## ASME Tolerance Knurled Head – Metric



STR705M6X4

### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	17-4 PH SS Part Number	316H5 SS Part Number	Aluminum Part Number	Nickel (Monel) Part Number	Titanium Gr2 Part Number
6 x 4		STR744M6X4	STR616M6X4	STR720M6X4	STR710M6X4	STR705M6X4
6 x 5	M5 x 0.8 x 9.5	STR744M6X5	STR616M6X5	STR720M6X5	STR710M6X5	STR705M6X5
6 x 6		STR744M6X6	STR616M6X6	STR720M6X6	STR710M6X6	STR705M6X6
6 x 8		STR744M6X8	STR616M6X8	STR720M6X8	STR710M6X8	STR705M6X8
6 x 10	M5 x 0.8 x 9.5	STR744M6X10	STR616M6X10	STR720M6X10	STR710M6X10	STR705M6X10
6 x 12		STR744M6X12	STR616M6X12	STR720M6X12	STR710M6X12	STR705M6X12
6 x 16		STR744M6X16	STR616M6X16	STR720M6X16	STR710M6X16	STR705M6X16
6 x 20		STR744M6X20	STR616M6X20	STR720M6X20	STR710M6X20	STR705M6X20
6 x 25	M5 x 0.8 x 9.5	STR744M6X25	STR616M6X25	STR720M6X25	STR710M6X25	STR705M6X25
6 x 30		STR744M6X30	STR616M6X30	STR720M6X30	STR710M6X30	STR705M6X30



STR705M8X8

### 8mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	17-4 PH SS Part Number	316H5 SS Part Number	Aluminum Part Number	Nickel (Monel) Part Number	Titanium Gr2 Part Number
8 x 8		STR744M8X8	STR616M8X8	STR720M8X8	STR710M8X8	STR705M8X8
8 x 10	M6 x 1 x 11	STR744M8X10	STR616M8X10	STR720M8X10	STR710M8X10	STR705M8X10
8 x 12		STR744M8X12	STR616M8X12	STR720M8X12	STR710M8X12	STR705M8X12
8 x 16		STR744M8X16	STR616M8X16	STR720M8X16	STR710M8X16	STR705M8X16
8 x 20	M6 x 1 x 11	STR744M8X20	STR616M8X20	STR720M8X20	STR710M8X20	STR705M8X20
8 x 25		STR744M8X25	STR616M8X25	STR720M8X25	STR710M8X25	STR705M8X25
8 x 30		STR744M8X30	STR616M8X30	STR720M8X30	STR710M8X30	STR705M8X30
8 x 40	M6 x 1 x 11	STR744M8X40	STR616M8X40	STR720M8X40	STR710M8X40	STR705M8X40
8 x 50		STR744M8X50	STR616M8X50	STR720M8X50	STR710M8X50	STR705M8X50

Chart continued on next page

## ASME Tolerance Knurled Head – Metric



STR705M10X8

### 10mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	17-4 PH SS Part Number	316H5 SS Part Number	Aluminum Part Number	Nickel (Monel) Part Number	Titanium Gr2 Part Number
10 x 8	M8 x 1.25 x 13	STR744M10X8	STR616M10X8	STR720M10X8	STR710M10X8	STR705M10X8
10 x 10		STR744M10X10	STR616M10X10	STR720M10X10	STR710M10X10	STR705M10X10
10 x 12		STR744M10X12	STR616M10X12	STR720M10X12	STR710M10X12	STR705M10X12
10 x 16		STR744M10X16	STR616M10X16	STR720M10X16	STR710M10X16	STR705M10X16
10 x 20	M8 x 1.25 x 13	STR744M10X20	STR616M10X20	STR720M10X20	STR710M10X20	STR705M10X20
10 x 25		STR744M10X25	STR616M10X25	STR720M10X25	STR710M10X25	STR705M10X25
10 x 30		STR744M10X30	STR616M10X30	STR720M10X30	STR710M10X30	STR705M10X30
10 x 40		STR744M10X40	STR616M10X40	STR720M10X40	STR710M10X40	STR705M10X40
10 x 50	M8 x 1.25 x 13	STR744M10X50	STR616M10X50	STR720M10X50	STR710M10X50	STR705M10X50



STR705M12X8

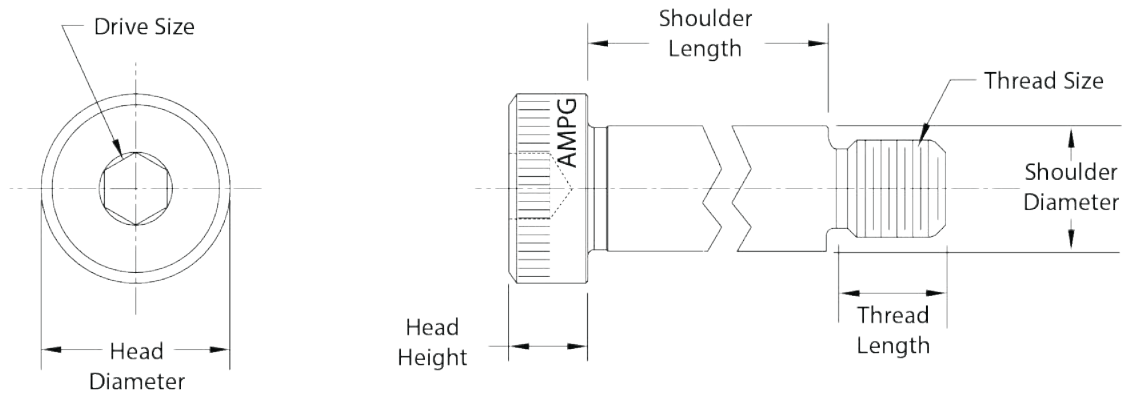
### 12mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	17-4 PH SS Part Number	316H5 SS Part Number	Aluminum Part Number	Nickel (Monel) Part Number	Titanium Gr2 Part Number
12 x 8	M10 x 1.5 x 16	STR744M12X8	STR616M12X8	STR720M12X8	STR710M12X8	STR705M12X8
12 x 10		STR744M12X10	STR616M12X10	STR720M12X10	STR710M12X10	STR705M12X10
12 x 12		STR744M12X12	STR616M12X12	STR720M12X12	STR710M12X12	STR705M12X12
12 x 16		STR744M12X16	STR616M12X16	STR720M12X16	STR710M12X16	STR705M12X16
12 x 20	M10 x 1.5 x 16	STR744M12X20	STR616M12X20	STR720M12X20	STR710M12X20	STR705M12X20
12 x 25		STR744M12X25	STR616M12X25	STR720M12X25	STR710M12X25	STR705M12X25
12 x 30		STR744M12X30	STR616M12X30	STR720M12X30	STR710M12X30	STR705M12X30
12 x 40		STR744M12X40	STR616M12X40	STR720M12X40	STR710M12X40	STR705M12X40
12 x 50	M10 x 1.5 x 16	STR744M12X50	STR616M12X50	STR720M12X50	STR710M12X50	STR705M12X50

## Shortened Thread Knurled Head – Metric

### 18-8 (A2) and 316 (A4) Stainless Steels – Hex Drive

These speciality shoulder screws have thread lengths that are shorter than our standard knurled head shoulder screws. Nonstandard metric shoulder screws with thread lengths to fit shortened internal thread depth applications. Made in the USA with DFARS compliant material, each screw is manufactured in one complete operation, which produces a tightly controlled consistent and concentric product. Shoulder length tolerance is  $+.25\text{mm}/-.0\text{mm}$ . Alloy Steel Screw material exceeds Grade 8 steel in strength and has a black-oxide finish. Screws have a Class 5g6g thread fit.



**Dimensions and Tolerance Table – Metric, mm**

Shoulder Diameter	Shoulder Diameter Min. to Max.	Head Diameter	Head Height	Drive Size	Head Appearance
3	2.96 to 2.99	5.00	2.00	2	Knurl Only
4	3.96 to 3.99	6.00	3.00	2	
5	4.96 to 4.99	9.00	4.00	2.5	
6	5.96 to 5.99	10.00	4.50	3	

18-8 Stainless Steel is manufactured from Type 303 Stainless Steel Bar.



STR601M3X4-SHORT



STR601M4X4-SHORT

### 3mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
3 x 4	M2 x 0.4 x 2.5	STR601M3X4-SHORT	STR602M3X4-SHORT
3 x 5		STR601M3X5-SHORT	STR602M3X5-SHORT
3 x 6		STR601M3X6-SHORT	STR602M3X6-SHORT
3 x 8		STR601M3X8-SHORT	STR602M3X8-SHORT
3 x 10		STR601M3X10-SHORT	STR602M3X10-SHORT

### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
4 x 4	M3 x 0.5 x 3.8	STR601M4X4-SHORT	STR602M4X4-SHORT
4 x 5		STR601M4X5-SHORT	STR602M4X5-SHORT
4 x 6		STR601M4X6-SHORT	STR602M4X6-SHORT
4 x 8		STR601M4X8-SHORT	STR602M4X8-SHORT
4 x 10		STR601M4X10-SHORT	STR602M4X10-SHORT
4 x 12	M3 x 0.5 x 3.8	STR601M4X12-SHORT	STR602M4X12-SHORT
4 x 14		STR601M4X14-SHORT	STR602M4X14-SHORT



## Shortened Thread Knurled Head — Metric

### 18-8 and 316 Stainless Steels — Hex Drive

- Shoulder diameters of 3, 4 and 6 meet our internal specification AMPG 2013 ZS.02.
- Nonstandard metric shoulder screws with thread lengths to fit shortened internal thread depth applications.

- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- 18-8 (A2) and 316 (A4) stainless steel screws adhere to environmental regulations established by European Union RoHS directive.



STR601M4X4-SHORT

#### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
4 x 16		STR601M4X16-SHORT	STR602M4X16-SHORT
4 x 18	M3 x 0.5 x 3.8	STR601M4X18-SHORT	STR602M4X18-SHORT
4 x 20		STR601M4X20-SHORT	STR602M4X20-SHORT
4 x 25		STR601M4X25-SHORT	STR602M4X25-SHORT
4 x 30		STR601M4X30-SHORT	STR602M4X30-SHORT
4 x 35	M3 x 0.5 x 3.8	STR601M4X35-SHORT	STR602M4X35-SHORT
4 x 40		STR601M4X40-SHORT	STR602M4X40-SHORT
4 x 45		STR601M4X45-SHORT	STR602M4X45-SHORT
4 x 50	M3 x 0.5 x 3.8	STR601M4X50-SHORT	STR602M4X50-SHORT



STR601M5X4-SHORT

#### 5mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
5 x 4		STR601M5X4-SHORT	STR602M5X4-SHORT
5 x 5	M4 x 0.7 x 4.5	STR601M5X5-SHORT	STR602M5X5-SHORT
5 x 6		STR601M5X6-SHORT	STR602M5X6-SHORT
5 x 8		STR601M5X8-SHORT	STR602M5X8-SHORT
5 x 10		STR601M5X10-SHORT	STR602M5X10-SHORT
5 x 12	M4 x 0.7 x 4.5	STR601M5X12-SHORT	STR602M5X12-SHORT
5 x 16		STR601M5X16-SHORT	STR602M5X16-SHORT
5 x 20		STR601M5X20-SHORT	STR602M5X20-SHORT
5 x 25	M4 x 0.7 x 4.5	STR601M5X25-SHORT	STR602M5X25-SHORT
5 x 30		STR601M5X30-SHORT	STR602M5X30-SHORT



STR601M6X4-SHORT

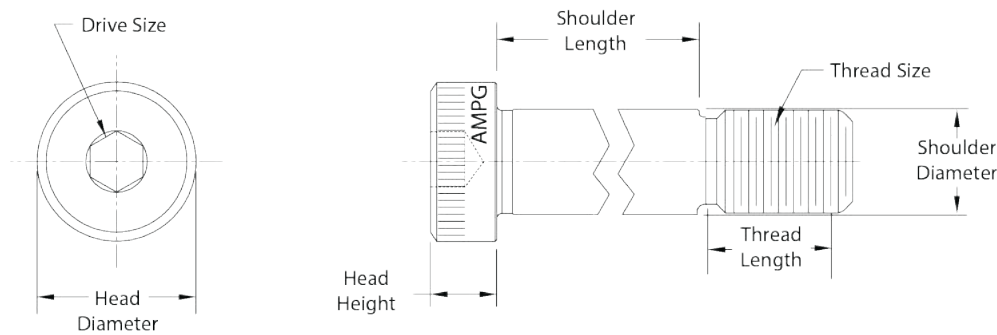
#### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
6 x 4		STR601M6X4-SHORT	STR602M6X4-SHORT
6 x 5	M5 x 0.8 x 8	STR601M6X5-SHORT	STR602M6X5-SHORT
6 x 6		STR601M6X6-SHORT	STR602M6X6-SHORT
6 x 7		STR601M6X7-SHORT	STR602M6X7-SHORT
6 x 8		STR601M6X8-SHORT	STR602M6X8-SHORT
6 x 10	M5 x 0.8 x 8	STR601M6X10-SHORT	STR602M6X10-SHORT
6 x 12		STR601M6X12-SHORT	STR602M6X12-SHORT
6 x 16		STR601M6X16-SHORT	STR602M6X16-SHORT
6 x 20		STR601M6X20-SHORT	STR602M6X20-SHORT
6 x 25	M5 x 0.8 x 8	STR601M6X25-SHORT	STR602M6X25-SHORT
6 x 30		STR601M6X30-SHORT	STR602M6X30-SHORT
6 x 40		STR601M6X40-SHORT	STR602M6X40-SHORT
6 x 50	M5 x 0.8 x 8	STR601M6X50-SHORT	STR602M6X50-SHORT
6 x 70		STR601M6X70-SHORT	STR602M6X70-SHORT

## Oversized Thread Knurled Head – Metric

18-8 Stainless Steel (A2), 316 Stainless Steel (A4), and Alloy Steel

These shoulder screws are also known as Same-Sized Thread Shoulder Screws. With threads the same size as the shoulder, these screws offer higher strength properties than standard sized shoulder screws. Made in the USA with DFARS compliant material, each screw is manufactured in one complete operation, which produces a tightly controlled consistent and concentric product. Dimensions are based on shoulder diameter and meet or exceed ANSI/ASME B18.3. The diameter tolerance is  $-0.1\text{mm}$  to  $-0.04\text{mm}$  and the shoulder length tolerance is  $+0.25\text{mm}$  to  $-0\text{mm}$ . Screws have a Class 5g thread fit. Alloy Steel screws have a Class 6g thread fit and has a black-oxide finish.



**Dimensions and Tolerance Table – Metric, mm**

Shoulder Diameter	Shoulder Diameter Min. to Max.	Head Diameter	Head Height	Drive Size	Head Appearance
3	2.96 to 2.99	5.00	2.00	2	Knurl Only
4	3.96 to 3.99	6.00	3.00	2	
5	4.96 to 4.99	9.00	4.00	2.5	
6	5.96 to 5.99	10.00	4.50	3	Head Mark and Knurl
8	7.96 to 7.99	13.00	5.50	4	
10	9.96 to 9.99	16.00	7.00	5	
12	11.96 to 11.99	18.00	9.00	6	
16	15.94 to 15.98	24.00	11.00	8	Head Mark and Knurl
20	19.92 to 19.98	30.00	14.00	10	

18-8 Stainless Steel is manufactured from Type 303 Stainless Steel Bar.

## Oversized Thread Knurled Head – Metric

### 18-8 Stainless Steel (A2), 316 Stainless Steel (A4), and Alloy Steel – Hex Drive

- Shoulder diameters of 6, 8, 10 and 12mm meet our internal specification AMPG 2013 OT.02.
- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- 18-8 (A2) and 316 (A4) stainless steel screws adhere to environmental regulations established by European Union RoHS directive.



STR601M3X4-OST

### 3mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	18-8 SS, Black Ox. Part Number	Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	18-8 SS, Black Ox. Part Number
3 x 4		STR601M3X4-OST	STR601M3X4-OST-B	3 x 18		STR601M3X18-OST	STR601M3X18-OST-B
3 x 5	M3 x 0.5 x 4	STR601M3X5-OST	STR601M3X5-OST-B	3 x 19	M3 x 0.5 x 4	STR601M3X19-OST	STR601M3X19-OST-B
3 x 6		STR601M3X6-OST	STR601M3X6-OST-B	3 x 20		STR601M3X20-OST	STR601M3X20-OST-B
3 x 7		STR601M3X7-OST	STR601M3X7-OST-B	3 x 21		STR601M3X21-OST	STR601M3X21-OST-B
3 x 8		STR601M3X8-OST	STR601M3X8-OST-B	3 x 22		STR601M3X22-OST	STR601M3X22-OST-B
3 x 9	M3 x 0.5 x 4	STR601M3X9-OST	STR601M3X9-OST-B	3 x 23	M3 x 0.5 x 4	STR601M3X23-OST	STR601M3X23-OST-B
3 x 10		STR601M3X10-OST	STR601M3X10-OST-B	3 x 24		STR601M3X24-OST	STR601M3X24-OST-B
3 x 11		STR601M3X11-OST	STR601M3X11-OST-B	3 x 25		STR601M3X25-OST	STR601M3X25-OST-B
3 x 12		STR601M3X12-OST	STR601M3X12-OST-B	3 x 30		STR601M3X30-OST	STR601M3X30-OST-B
3 x 13	M3 x 0.5 x 4	STR601M3X13-OST	STR601M3X13-OST-B	3 x 35	M3 x 0.5 x 4	STR601M3X35-OST	STR601M3X35-OST-B
3 x 14		STR601M3X14-OST	STR601M3X14-OST-B	3 x 40		STR601M3X40-OST	STR601M3X40-OST-B
3 x 15		STR601M3X15-OST	STR601M3X15-OST-B	3 x 45		STR601M3X45-OST	STR601M3X45-OST-B
3 x 16	M3 x 0.5 x 4	STR601M3X16-OST	STR601M3X16-OST-B	3 x 50	M3 x 0.5 x 4	STR601M3X50-OST	STR601M3X50-OST-B
3 x 17		STR601M3X17-OST	STR601M3X17-OST-B	3 x 55		STR601M3X55-OST	STR601M3X55-OST-B



STR601M4X4-OST

### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	18-8 SS, Black Ox. Part Number	316 SS Part Number
4 x 4		STR601M4X4-OST	STR601M4X4-OST-B	STR602M4X4-OST
4 x 5	M4 x 0.7 x 4.5	STR601M4X5-OST	STR601M4X5-OST-B	STR602M4X5-OST
4 x 6		STR601M4X6-OST	STR601M4X6-OST-B	STR602M4X6-OST
4 x 7		STR601M4X7-OST	STR601M4X7-OST-B	—
4 x 8		STR601M4X8-OST	STR601M4X8-OST-B	STR602M4X8-OST
4 x 9	M4 x 0.7 x 4.5	STR601M4X9-OST	STR601M4X9-OST-B	—
4 x 10		STR601M4X10-OST	STR601M4X10-OST-B	STR602M4X10-OST
4 x 12		STR601M4X12-OST	STR601M4X12-OST-B	STR602M4X12-OST
4 x 14	M4 x 0.7 x 4.5	STR601M4X14-OST	STR601M4X14-OST-B	—

Chart continued on next page

## Oversized Thread Knurled Head – Metric



STR601M4X16-OST

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	18-8 SS, Black Ox. Part Number	316 SS Part Number
4 x 16		STR601M4X16-OST	STR601M4X16-OST-B	STR602M4X16-OST
4 x 18	M4 x 0.7 x 4.5	STR601M4X18-OST	STR601M4X18-OST-B	—
4 x 20		STR601M4X20-OST	STR601M4X20-OST-B	—
4 x 25		STR601M4X25-OST	STR601M4X25-OST-B	—
4 x 30		STR601M4X30-OST	STR601M4X30-OST-B	—
4 x 35	M4 x 0.7 x 4.5	STR601M4X35-OST	STR601M4X35-OST-B	—
4 x 40		STR601M4X40-OST	STR601M4X40-OST-B	—
4 x 45		STR601M4X45-OST	STR601M4X45-OST-B	—
4 x 50		STR601M4X50-OST	STR601M4X50-OST-B	—
4 x 60	M4 x 0.7 x 4.5	STR601M4X60-OST	STR601M4X60-OST-B	—
4 x 70		STR601M4X70-OST	STR601M4X70-OST-B	—



STR601M5X4-OST

### 5mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	18-8 SS, Black Ox. Part Number	316 SS Part Number
5 x 4		STR601M5X4-OST	STR601M5X4-OST-B	STR602M5X4-OST
5 x 5	M5 x 0.8 x 9.5	STR601M5X5-OST	STR601M5X5-OST-B	STR602M5X5-OST
5 x 6		STR601M5X6-OST	STR601M5X6-OST-B	STR602M5X6-OST
5 x 8		STR601M5X8-OST	STR601M5X8-OST-B	STR602M5X8-OST
5 x 10		STR601M5X10-OST	STR601M5X10-OST-B	STR602M5X10-OST
5 x 12	M5 x 0.8 x 9.5	STR601M5X12-OST	STR601M5X12-OST-B	STR602M5X12-OST
5 x 14		STR601M5X14-OST	STR601M5X14-OST-B	—
5 x 16		STR601M5X16-OST	STR601M5X16-OST-B	STR602M5X16-OST
5 x 18		STR601M5X18-OST	STR601M5X18-OST-B	—
5 x 20	M5 x 0.8 x 9.5	STR601M5X20-OST	STR601M5X20-OST-B	—
5 x 25		STR601M5X25-OST	STR601M5X25-OST-B	—
5 x 30		STR601M5X30-OST	STR601M5X30-OST-B	—
5 x 35		STR601M5X35-OST	STR601M5X35-OST-B	—
5 x 40	M5 x 0.8 x 9.5	STR601M5X40-OST	STR601M5X40-OST-B	—
5 x 45		STR601M5X45-OST	STR601M5X45-OST-B	—
5 x 50		STR601M5X50-OST	STR601M5X50-OST-B	—

\*Alloy Steel screws have a Class 6g thread fit.

Chart continued on next page

## Oversized Thread Knurled Head – Metric



STR601M6X4-OST

### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	18-8 SS, Black Ox. Part Number	316 SS Part Number	Alloy Steel* Part Number
6 x 4	M6 x 1 x 11	STR601M6X4-OST	STR601M6X4-OST-B	–	–
6 x 5		STR601M6X5-OST	STR601M6X5-OST-B	–	–
6 x 6		STR601M6X6-OST	STR601M6X6-OST-B	STR602M6X6-OST	STR700M6X6-OST
6 x 8		STR601M6X8-OST	STR601M6X8-OST-B	STR602M6X8-OST	STR700M6X8-OST
6 x 10	M6 x 1 x 11	STR601M6X10-OST	STR601M6X10-OST-B	STR602M6X10-OST	STR700M6X10-OST
6 x 12		STR601M6X12-OST	STR601M6X12-OST-B	STR602M6X12-OST	STR700M6X12-OST
6 x 14		STR601M6X14-OST	STR601M6X14-OST-B	–	–
6 x 16		STR601M6X16-OST	STR601M6X16-OST-B	STR602M6X16-OST	STR700M6X16-OST
6 x 18	M6 x 1 x 11	STR601M6X18-OST	STR601M6X18-OST-B	–	–
6 x 20		STR601M6X20-OST	STR601M6X20-OST-B	STR602M6X20-OST	STR700M6X20-OST
6 x 25		STR601M6X25-OST	STR601M6X25-OST-B	STR602M6X25-OST	STR700M6X25-OST
6 x 30		STR601M6X30-OST	STR601M6X30-OST-B	STR602M6X30-OST	STR700M6X30-OST
6 x 35	M6 x 1 x 11	STR601M6X35-OST	STR601M6X35-OST-B	STR602M6X35-OST	–
6 x 40		STR601M6X40-OST	STR601M6X40-OST-B	STR602M6X40-OST	–
6 x 45		STR601M6X45-OST	STR601M6X45-OST-B	STR602M6X45-OST	–
6 x 50		STR601M6X50-OST	STR601M6X50-OST-B	STR602M6X50-OST	–
6 x 60	M6 x 1 x 11	STR601M6X60-OST	STR601M6X60-OST-B	–	–
6 x 70		STR601M6X70-OST	STR601M6X70-OST-B	–	–



STR601M8X4-OST

### 8mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	18-8 SS, Black Ox. Part Number	316 SS Part Number	Alloy Steel* Part Number
8 x 4	M8 x 1.25 x 13	STR601M8X4-OST	STR601M8X4-OST-B	–	–
8 x 5		STR601M8X5-OST	STR601M8X5-OST-B	–	–
8 x 6		STR601M8X6-OST	STR601M8X6-OST-B	STR602M8X6-OST	STR700M8X6-OST
8 x 8		STR601M8X8-OST	STR601M8X8-OST-B	STR602M8X8-OST	STR700M8X8-OST
8 x 10	M8 x 1.25 x 13	STR601M8X10-OST	STR601M8X10-OST-B	STR602M8X10-OST	STR700M8X10-OST
8 x 12		STR601M8X12-OST	STR601M8X12-OST-B	STR602M8X12-OST	STR700M8X12-OST
8 x 14		STR601M8X14-OST	STR601M8X14-OST-B	–	–
8 x 16		STR601M8X16-OST	STR601M8X16-OST-B	STR602M8X16-OST	STR700M8X16-OST
8 x 18	M8 x 1.25 x 13	STR601M8X18-OST	STR601M8X18-OST-B	–	–
8 x 20		STR601M8X20-OST	STR601M8X20-OST-B	STR602M8X20-OST	STR700M8X20-OST
8 x 25		STR601M8X25-OST	STR601M8X25-OST-B	STR602M8X25-OST	STR700M8X25-OST

## Oversized Thread Knurled Head – Metric



STR601M8X30-OST

### 8mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	18-8 SS, Black Ox. Part Number	316 SS Part Number	Alloy Steel* Part Number
8 x 30		STR601M8X30-OST	STR601M8X30-OST-B	STR602M8X30-OST	STR700M8X30-OST
8 x 35	M8 x 1.25 x 13	STR601M8X35-OST	STR601M8X35-OST-B	STR602M8X35-OST	—
8 x 40		STR601M8X40-OST	STR601M8X40-OST-B	STR602M8X40-OST	—
8 x 45		STR601M8X45-OST	STR601M8X45-OST-B	STR602M8X45-OST	—
8 x 50		STR601M8X50-OST	STR601M8X50-OST-B	STR602M8X50-OST	—
8 x 60	M8 x 1.25 x 13	STR601M8X60-OST	STR601M8X60-OST-B	—	—
8 x 70		STR601M8X70-OST	STR601M8X70-OST-B	—	—



STR601M10X4-OST

### 10mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	18-8 SS, Black Ox. Part Number	316 SS Part Number	Alloy Steel* Part Number
10 x 4		STR601M10X4-OST	STR601M10X4-OST-B	—	—
10 x 6	M10 x 1.5 x 16	STR601M10X6-OST	STR601M10X6-OST-B	STR602M10X6-OST	STR700M10X6-OST
10 x 8		STR601M10X8-OST	STR601M10X8-OST-B	STR602M10X8-OST	STR700M10X8-OST
10 x 10		STR601M10X10-OST	STR601M10X10-OST-B	STR602M10X10-OST	STR700M10X10-OST
10 x 12		STR601M10X12-OST	STR601M10X12-OST-B	STR602M10X12-OST	STR700M10X12-OST
10 x 14	M10 x 1.5 x 16	STR601M10X14-OST	STR601M10X14-OST-B	—	—
10 x 16		STR601M10X16-OST	STR601M10X16-OST-B	STR602M10X16-OST	STR700M10X16-OST
10 x 18		STR601M10X18-OST	STR601M10X18-OST-B	—	—
10 x 20		STR601M10X20-OST	STR601M10X20-OST-B	STR602M10X20-OST	STR700M10X20-OST
10 x 25	M10 x 1.5 x 16	STR601M10X25-OST	STR601M10X25-OST-B	STR602M10X25-OST	STR700M10X25-OST
10 x 30		STR601M10X30-OST	STR601M10X30-OST-B	STR602M10X30-OST	STR700M10X30-OST
10 x 35		STR601M10X35-OST	STR601M10X35-OST-B	STR602M10X35-OST	—
10 x 40		STR601M10X40-OST	STR601M10X40-OST-B	STR602M10X40-OST	—
10 x 45	M10 x 1.5 x 16	STR601M10X45-OST	STR601M10X45-OST-B	STR602M10X45-OST	—
10 x 50		STR601M10X50-OST	STR601M10X50-OST-B	STR602M10X50-OST	—
10 x 60		STR601M10X60-OST	STR601M10X60-OST-B	—	—
10 x 70		STR601M10X70-OST	STR601M10X70-OST-B	—	—
10 x 80	M10 x 1.5 x 16	STR601M10X80-OST	STR601M10X80-OST-B	—	—
10 x 90		STR601M10X90-OST	STR601M10X90-OST-B	—	—
10 x 100		STR601M10X100-OST	STR601M10X100-OST-B	—	—

\*Alloy Steel screws have a Class 6g thread fit.

Chart continued on next page

Oversized Thread Knurled Head – Inch



STR601M12X6-OST

12mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	18-8 SS, Black Ox. Part Number	316 SS Part Number	Alloy Steel* Part Number
12 x 6		STR601M12X6-OST	STR601M12X6-OST-B	STR602M12X6-OST	STR700M12X6-OST
12 x 8	M12 x 1.75 x 18	STR601M12X8-OST	STR601M12X8-OST-B	STR602M12X8-OST	STR700M12X8-OST
12 x 10		STR601M12X10-OST	STR601M12X10-OST-B	STR602M12X10-OST	STR700M12X10-OST
12 x 12		STR601M12X12-OST	STR601M12X12-OST-B	STR602M12X12-OST	STR700M12X12-OST
12 x 16		STR601M12X16-OST	STR601M12X16-OST-B	STR602M12X16-OST	STR700M12X16-OST
12 x 20	M12 x 1.75 x 18	STR601M12X20-OST	STR601M12X20-OST-B	STR602M12X20-OST	STR700M12X20-OST
12 x 25		STR601M12X25-OST	STR601M12X25-OST-B	STR602M12X25-OST	STR700M12X25-OST
12 x 30		STR601M12X30-OST	STR601M12X30-OST-B	STR602M12X30-OST	STR700M12X30-OST
12 x 35		STR601M12X35-OST	STR601M12X35-OST-B	STR602M12X35-OST	–
12 x 40	M12 x 1.75 x 18	STR601M12X40-OST	STR601M12X40-OST-B	STR602M12X40-OST	–
12 x 45		STR601M12X45-OST	STR601M12X45-OST-B	STR602M12X45-OST	–
12 x 50		STR601M12X50-OST	STR601M12X50-OST-B	STR602M12X50-OST	–
12 x 60		STR601M12X60-OST	STR601M12X60-OST-B	–	–
12 x 70	M12 x 1.75 x 18	STR601M12X70-OST	STR601M12X70-OST-B	–	–
12 x 80		STR601M12X80-OST	STR601M12X80-OST-B	–	–
12 x 90		STR601M12X90-OST	STR601M12X90-OST-B	–	–
12 x 100		STR601M12X100-OST	STR601M12X100-OST-B	–	–
12 x 110	M12 x 1.75 x 18	STR601M12X110-OST	STR601M12X110-OST-B	–	–
12 x 120		STR601M12X120-OST	STR601M12X120-OST-B	–	–
12 x 130		STR601M12X130-OST	STR601M12X130-OST-B	–	–
12 x 140	M12 x 1.75 x 18	STR601M12X140-OST	STR601M12X140-OST-B	–	–

\*Alloy Steel screws have a Class 6g thread fit.

## Oversized Thread Knurled Head – Metric



STR601M16X7-OST



STR601M20X15-OST

### 16mm Shoulder Diameter

### 20mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	18-8 SS, Black Ox. Part Number	Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	18-8 SS, Black Ox. Part Number
16 x 7		STR601M16X7-OST	STR601M16X7-OST-B	20 x 15		STR601M20X15-OST	STR601M20X15-OST-B
16 x 20	M16 x 2 x 22	STR601M16X20-OST	STR601M16X20-OST-B	20 x 20	M20 x 2.5 x 27	STR601M20X20-OST	STR601M20X20-OST-B
16 x 25		STR601M16X25-OST	STR601M16X25-OST-B	20 x 25		STR601M20X25-OST	STR601M20X25-OST-B
16 x 30		STR601M16X30-OST	STR601M16X30-OST-B	20 x 30		STR601M20X30-OST	STR601M20X30-OST-B
16 x 35		STR601M16X35-OST	STR601M16X35-OST-B	20 x 35		STR601M20X35-OST	STR601M20X35-OST-B
16 x 40	M16 x 2 x 22	STR601M16X40-OST	STR601M16X40-OST-B	20 x 40	M20 x 2.5 x 27	STR601M20X40-OST	STR601M20X40-OST-B
16 x 45		STR601M16X45-OST	STR601M16X45-OST-B	20 x 45		STR601M20X45-OST	STR601M20X45-OST-B
16 x 50		STR601M16X50-OST	STR601M16X50-OST-B	20 x 50		STR601M20X50-OST	STR601M20X50-OST-B
16 x 60		STR601M16X60-OST	STR601M16X60-OST-B	20 x 55		STR601M20X55-OST	STR601M20X55-OST-B
16 x 70	M16 x 2 x 22	STR601M16X70-OST	STR601M16X70-OST-B	20 x 60	M20 x 2.5 x 27	STR601M20X60-OST	STR601M20X60-OST-B
16 x 80		STR601M16X80-OST	STR601M16X80-OST-B	20 x 70		STR601M20X70-OST	STR601M20X70-OST-B
16 x 90		STR601M16X90-OST	STR601M16X90-OST-B	20 x 80		STR601M20X80-OST	STR601M20X80-OST-B
16 x 100		STR601M16X100-OST	STR601M16X100-OST-B	20 x 90		STR601M20X90-OST	STR601M20X90-OST-B
16 x 110	M16 x 2 x 22	STR601M16X110-OST	STR601M16X110-OST-B	20 x 100	M20 x 2.5 x 27	STR601M20X100-OST	STR601M20X100-OST-B
16 x 120		STR601M16X120-OST	STR601M16X120-OST-B	20 x 120		STR601M20X120-OST	STR601M20X120-OST-B
				20 x 130		STR601M20X130-OST	STR601M20X130-OST-B
				20 x 140	M20 x 2.5 x 27	STR601M20X140-OST	STR601M20X140-OST-B
				20 x 150		STR601M20X150-OST	STR601M20X150-OST-B



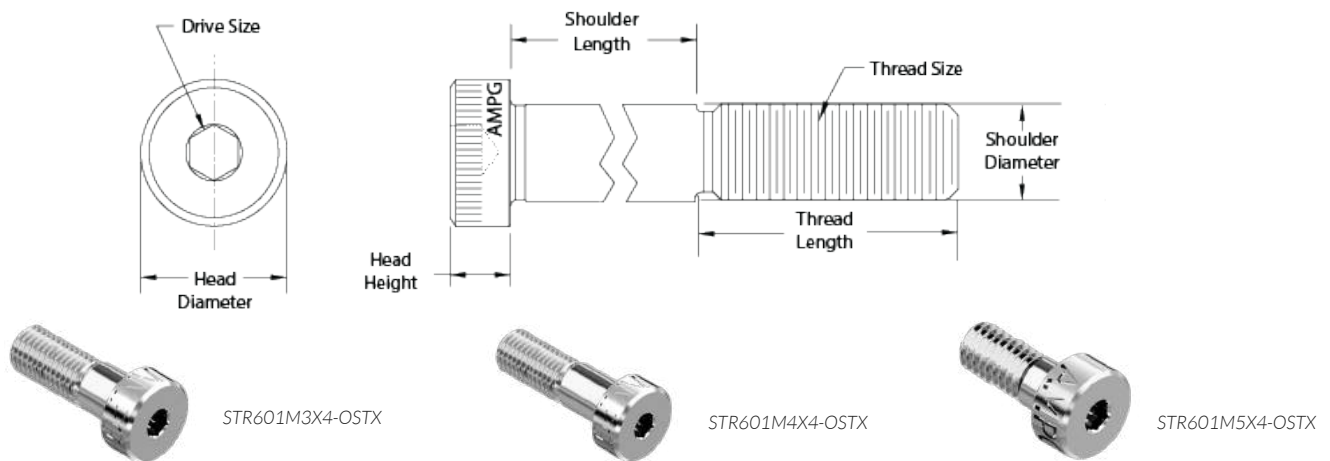
## Oversized Extended Thread Knurled Head – Metric

These specialty Oversized Shoulder Screws have thread lengths that are twice as long as standard Oversized Thread Shoulder Screws. Longer thread lengths are provided to facilitate fastening of materials using a hex nut and washer while still offering the higher strength properties with the oversized thread. Made in the USA with DFARS compliant material, each screw is manufactured in one complete operation, which produces a tightly controlled consistent and concentric product. The diameter tolerance is  $-.01\text{mm}$  to  $-.04\text{mm}$  and the shoulder length tolerance is  $+.25\text{mm}$  to  $-.0\text{mm}$ . Screws have a Class 5g6g thread fit.

### Dimensions and Tolerance Table – Metric, mm

Shoulder Diameter	Shoulder Diameter Min. to Max.	Head Diameter	Head Height	Drive Size	Head Appearance
3	2.96 to 2.99	5.00	2.00	2	Knurl Only
4	3.96 to 3.99	6.00	3.00	2	
5	4.96 to 4.99	9.00	4.00	2.5	
6	5.96 to 5.99	10.00	4.50	3	
8	7.96 to 7.99	13.00	5.50	4	Head Mark and Knurl
10	9.96 to 9.99	16.00	7.00	5	
12	11.96 to 11.99	18.00	9.00	6	

18-8 Stainless Steel is manufactured from Type 303 Stainless Steel Bar.



### 3mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number
3 x 4	M3 x 0.5 x 8	STR601M3X4-OSTX
3 x 5		STR601M3X5-OSTX
3 x 6		STR601M3X6-OSTX
3 x 8		STR601M3X8-OSTX
3 x 10	M3 x 0.5 x 8	STR601M3X10-OSTX
3 x 12		STR601M3X12-OSTX
3 x 16		STR601M3X16-OSTX

### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number
4 x 4	M4 x 0.7 x 9	STR601M4X4-OSTX
4 x 5		STR601M4X5-OSTX
4 x 6		STR601M4X6-OSTX
4 x 8		STR601M4X8-OSTX
4 x 10	M4 x 0.7 x 9	STR601M4X10-OSTX
4 x 12		STR601M4X12-OSTX
4 x 16		STR601M4X16-OSTX
4 x 20		STR601M4X20-OSTX
4 x 25	M4 x 0.7 x 9	STR601M4X25-OSTX
4 x 30		STR601M4X30-OSTX

### 5mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number
5 x 4	M5 x 0.8 x 18	STR601M5X4-OSTX
5 x 5		STR601M5X5-OSTX
5 x 6		STR601M5X6-OSTX
5 x 8		STR601M5X8-OSTX
5 x 10	M5 x 0.8 x 18	STR601M5X10-OSTX
5 x 12		STR601M5X12-OSTX
5 x 16		STR601M5X16-OSTX
5 x 20		STR601M5X20-OSTX
5 x 25	M5 x 0.8 x 18	STR601M5X25-OSTX
5 x 30		STR601M5X30-OSTX

CAT.Ver.01.A

Chart continued on next page

## Oversized Extended Thread Knurled Head – Metric

18-8 Stainless Steel (A2), 316 Stainless Steel (A4), and Alloy Steel – Hex Drive

- Shoulder diameters of 6, 8, 10 and 12mm meet our internal specification AMPG 2013 OT.02.
- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- 18-8 (A2) and 316 (A4) stainless steel screws adhere to environmental regulations established by European Union RoHS directive.



STR601M6X4-OSTX

### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number
6 x 4	M6 x 1 x 22	STR601M6X4-OSTX
6 x 5		STR601M6X5-OSTX
6 x 6		STR601M6X6-OSTX
6 x 8		STR601M6X8-OSTX
6 x 10	M6 x 1 x 22	STR601M6X10-OSTX
6 x 12		STR601M6X12-OSTX
6 x 16		STR601M6X16-OSTX
6 x 20		STR601M6X20-OSTX
6 x 25	M6 x 1 x 22	STR601M6X25-OSTX
6 x 30		STR601M6X30-OSTX
6 x 35		STR601M6X35-OSTX
6 x 40		STR601M6X40-OSTX
6 x 45	M6 x 1 x 22	STR601M6X45-OSTX
6 x 50		STR601M6X50-OSTX



STR601M8X6-OSTX

### 8mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number
8 x 6	M8 x 1.25 x 25	STR601M8X6-OSTX
8 x 8		STR601M8X8-OSTX
8 x 10		STR601M8X10-OSTX
8 x 12		STR601M8X12-OSTX
8 x 16	M8 x 1.25 x 25	STR601M8X16-OSTX
8 x 20		STR601M8X20-OSTX
8 x 25		STR601M8X25-OSTX
8 x 30		STR601M8X30-OSTX
8 x 35	M8 x 1.25 x 25	STR601M8X35-OSTX
8 x 40		STR601M8X40-OSTX
8 x 45		STR601M8X45-OSTX
8 x 50		STR601M8X50-OSTX



STR601M10X6-OSTX

### 10mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number
10 x 6	M10 x 1.5 x 30	STR601M10X6-OSTX
10 x 8		STR601M10X8-OSTX
10 x 10		STR601M10X10-OSTX
10 x 12		STR601M10X12-OSTX
10 x 16	M10 x 1.5 x 30	STR601M10X16-OSTX
10 x 20		STR601M10X20-OSTX
10 x 25		STR601M10X25-OSTX
10 x 30		STR601M10X30-OSTX
10 x 35	M10 x 1.5 x 30	STR601M10X35-OSTX
10 x 40		STR601M10X40-OSTX
10 x 45		STR601M10X45-OSTX
10 x 50		STR601M10X50-OSTX



STR601M12X6-OSTX

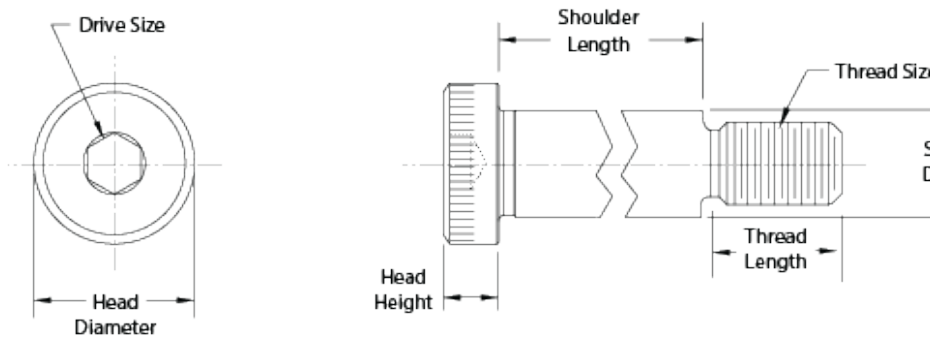
### 12mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number
12 x 6	M12 x 1.75 x 35	STR601M12X6-OSTX
12 x 8		STR601M12X8-OSTX
12 x 10		STR601M12X10-OSTX
12 x 12		STR601M12X12-OSTX
12 x 16	M12 x 1.75 x 35	STR601M12X16-OSTX
12 x 20		STR601M12X20-OSTX
12 x 25		STR601M12X25-OSTX
12 x 30		STR601M12X30-OSTX
12 x 35	M12 x 1.75 x 35	STR601M12X35-OSTX
12 x 40		STR601M12X40-OSTX
12 x 45		STR601M12X45-OSTX
12 x 50		STR601M12X50-OST
12 x 60	M12 x 1.75 x 35	STR601M12X60-OSTX

## Low Profile Knurled Head Shoulder Screw – Metric

Alloy Steel – Black Oxide – Hex Drive

These speciality shoulder screws have 2/3 the head height of a standard shoulder screw. Made in the USA with DFARS compliant material, each screw is manufactured in one complete operation, which produces a tightly controlled consistent and concentric product. Shoulder length tolerance is  $+.25\text{mm}/-.0\text{mm}$ . Alloy Steel Screw material exceeds Grade 8 steel in strength and has a black-oxide finish. Screws have a Class 5g6g thread fit.



**Dimensions and Tolerance Table – Metric, mm**

Shoulder Diameter	Shoulder Diameter Min. to Max.	Head Diameter	Head Height	Drive Size	Head Appearance
6	5.96 to 5.99	10.00	3.00	3	Knurl Only
8	7.96 to 7.99	13.00	3.50	4	
10	9.96 to 9.99	16.00	4.50	5	
12	11.96 to 11.99	18.00	6.00	6	

CATVer.01.A

## Low Profile Knurled Head Shoulder Screw – Metric

Alloy Steel – Black Oxide – Hex Drive

- Steel Alloy Shoulder Screws meet our internal specification AMPG 2018 LOW.05.
- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- Certified test reports are available for both the corrosion resistance and physical properties.
- Black oxide finish offers mild resistance from rust.



STR700M6X8-LOW

### 6mm Shoulder Diameter

Shoulder Length	Thread Size x Lg.	Alloy Steel Part Number
6 x 8		STR700M6X8-LOW
6 x 10	M5 x 0.8 x 10	STR700M6X10-LOW
6 x 12		STR700M6X12-LOW
6 x 16		STR700M6X16-LOW
6 x 20		STR700M6X20-LOW
6 x 25	M5 x 0.8 x 10	STR700M6X25-LOW
6 x 30		STR700M6X30-LOW



STR700M8X6-LOW

### 8mm Shoulder Diameter

Shoulder Length	Thread Size x Lg.	Alloy Steel Part Number
8 x 6		STR700M8X6-LOW
8 x 8	M6 x 1 x 11	STR700M8X8-LOW
8 x 10		STR700M8X10-LOW
8 x 12		STR700M8X12-LOW
8 x 16		STR700M8X16-LOW
8 x 20	M6 x 1 x 11	STR700M8X20-LOW
8 x 25		STR700M8X25-LOW
8 x 30		STR700M8X30-LOW



STR700M10X10-LOW

### 10mm Shoulder Diameter

Shoulder Length	Thread Size x Lg.	Alloy Steel Part Number
10 x 10		STR700M10X10-LOW
10 x 12	M8 x 1.25 x 13	STR700M10X12-LOW
10 x 16		STR700M10X16-LOW
10 x 20		STR700M10X20-LOW
10 x 25		STR700M10X25-LOW
10 x 30	M8 x 1.25 x 13	STR700M10X30-LOW



STR700M12X12-LOW

### 12mm Shoulder Diameter

Shoulder Length	Thread Size x Lg.	Alloy Steel Part Number
12 x 12		STR700M12X12-LOW
12 x 16	M10 x 1.5 x 16	STR700M12X16-LOW
12 x 20		STR700M12X20-LOW
12 x 25		STR700M12X25-LOW
12 x 30	M10 x 1.5 x 16	STR700M12X30-LOW


Chart continued on next page

## How to Order Custom Shoulder Screws – Metric


Custom order stainless steel shoulder screws. Metric shoulder tolerance: diameter is  $-.072\text{mm}$  to  $-.010\text{mm}$ ; length is  $\pm .050\text{mm}$ . Shoulder screws thread Class 5g6g.

Select Material, Shoulder Diameter, Shoulder Length and Thread Size. Certification is available upon request.

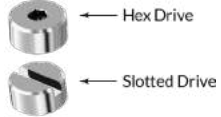
**1** Choose shoulder diameter from the table below.




**2** Specify shoulder length, measured from under the head to the end of the shoulder. Order in 0.25mm increments.



**3** Select Hex, or Slotted Drive.



**4** Select 1 of 3 thread sizes available per shoulder diameter.



**5** Select from the following materials:

Material	Part # Code
18-8 Stainless	STR601
316 Stainless	STR602

Made-To Order Dimensions – Metric						Threads		
Shoulder Diameter	Shoulder Length	Head Diameter	Head Height	Drive Size	Thread Length	Reduced Threads	Standard	Same Size
3		5.00	2.00	2mm	4.00	M1.6 x 0.35	M2 x 0.4	M3 x 0.5
4	4.00 - 150.00 <i>(order in .25mm increments)</i>	6.00	3.00	2mm	5.00	M2 x 0.4	M3 x 0.5	M4 x 0.7
5		9.00	4.00	2.5mm	5.00	M3 x 0.5	M4 x 0.7	M5 x 0.8
6		10.00	4.50	3mm	10.00	M4 x 0.7	M5 x 0.8	M6 x 1
8	4.00- 150.00 <i>(order in .25mm increments)</i>	13.00	5.50	4mm	11.00	M5 x 0.8	M6 x 1	M8 x 1.25
10		16.00	7.00	5mm	13.00	M6 x 1	M8 x 1.25	M10 x 1.5
12	6.00 - 150.00 <i>(order in .25mm increments)</i>	18.00	9.00	6mm	16.00	M8 x 1.25	M10 x 1.5	M12 x 1.75
16		24.00	11.00	8mm	18.00	M10 x 1.5	M12 x 1.75	M16 x 2
20	13.00 - 150.00 <i>(order in .25mm increments)</i>	30.00	14.00	10mm	22.00	M12 x 1.75	M16 x 2	M20 x 2.5
24		36.00	16.00	12mm	27.00	M16 x 2	M20 x 2.5	M24 x 3

For custom metric shoulder screws that differ from table specifications, please email us more information at [sales@ampg.com](mailto:sales@ampg.com)

## Tight Tolerance Smooth Head – Metric

Tight Tolerance Smooth Head shoulder screws are available with Standard Profile Head Heights, Low Profile Head Heights, and Ultra Low Profile Head Heights.

The head height of a Low Profile screw is 2/3 the height of a standard profile screw, whereas an Ultra Low Profile screw is 1/3 the height of a standard profile screw.



Smooth Head

Low Profile Smooth Head

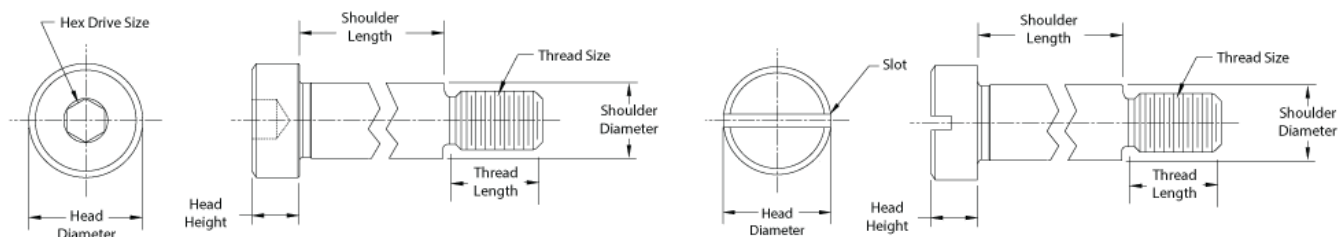
Ultra Low Smooth Head

Dimensions and Tolerance Table – Metric, mm				
Shoulder Diameter	Head Diameter	Standard Profile Head Height	Low Profile Head Height	Ultra Low Profile Head Height
3	5.00	2.00	–	–
4	6.00	3.00	2.00	1.30
5	8.00	4.00	2.50	1.30
6	10.00	5.00	3.00	1.70
8	12.00	6.00	3.50	2.00
10	12.00 or 14.00	6.00 or 7.00	4.50	–
12	20.00	8.00	6.00	–

## Tight Tolerance Smooth Head – Metric

These are manufactured in our Indiana facility for mechanical and electronic applications. Screws have shoulders that are held to precise diameter. All product is turned (not headed or forged) on our advanced Swiss Lathes, and we produce the finest looking parts available today. Each bolt is manufactured in one complete operation, which produces a tightly controlled, consistent, and concentric product. Extra care is taken in our cleaning and packaging processes to protect the product after it is manufactured, so they arrive at your door looking like jewelry. Shoulder length tolerance is  $\pm 0.05\text{mm}$  to  $-0\text{mm}$ . Screws have a Class 6g thread fit.

Note : Alloy Steel Screws have a black-oxide finish to offer mild resistance to rust.



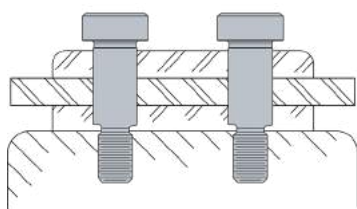
Dimensions and Tolerance Table – Metric					
Shoulder Diameter	Thread Size	Shoulder Diameter Min. to Max.	Head Diameter	Head Height	Hex Drive Size
3	M2 x 0.4	2.97 to 3.00	5.00	2.00	1.5
4	M3 x 0.5	3.97 to 4.00	6.00	3.00	2
5	M4 x 0.7	4.97 to 5.00	8.00	4.00	2.5
6	M5 x 0.8	5.97 to 6.00	10.00	5.00	3
8	M6 x 1	7.97 to 8.00	12.00*	6.00	4
10	M6 x 1	9.97 to 10.00	12.00**	6.00	4
10	M8 x 1.25	9.97 to 10.00	14.00**	7.00	5
12	M10 x 1.5	11.97 to 12.00	20.00	8.00***	6

18-8 Stainless Steel is manufactured from Type 303 Stainless Steel Bar.

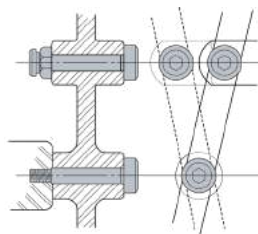
\*Head diameter is 13.00 for 316 stainless steel screws.

\*\*Head diameter is 16.00 for 316 stainless steel screws.

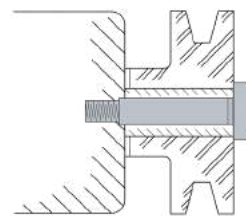
\*\*\*Head height is 9.00 for 316 stainless steel screws.



Shoulder Screws as a Guide



Shoulder Screws as a Pivot Point



Shoulder Screws as a Shaft

## Tight Tolerance Smooth Head – Metric

### 18-8 (A2), 316 (A4), 416, A286 Stainless Steels and Alloy Steel – Hex Drive

- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- All stainless steel screws adhere to environmental regulations established by European Union RoHS directive.
- All shoulder diameters meet or exceed accepted industry standards and AMPG's internal specification AMPG 2006 ZR.02.



ZR1680-303H

#### 3mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
3 x 2	M2 x 0.4 x 4	ZR1680-303H	ZR1680-316H	ZR1680-416H	ZR1680-286H	ZR1680-414H
3 x 3		ZR1681-303H	ZR1681-316H	ZR1681-416H	ZR1681-286H	ZR1681-414H
3 x 4		ZR1682-303H	ZR1682-316H	ZR1682-416H	ZR1682-286H	ZR1682-414H
3 x 5		ZR1683-303H	ZR1683-316H	ZR1683-416H	ZR1683-286H	ZR1683-414H
3 x 6	M2 x 0.4 x 4	ZR1684-303H	ZR1684-316H	ZR1684-416H	ZR1684-286H	ZR1684-414H
3 x 7		ZR1685-303H	ZR1685-316H	ZR1685-416H	ZR1685-286H	ZR1685-414H
3 x 8		ZR1688-303H	ZR1688-316H	ZR1688-416H	ZR1688-286H	ZR1688-414H
3 x 10		ZR1686-303H	ZR1686-316H	ZR1686-416H	ZR1686-286H	ZR1686-414H
3 x 12	M2 x 0.4 x 4	ZR1687-303H	ZR1687-316H	ZR1687-416H	ZR1687-286H	ZR1687-414H
3 x 14		ZR1689-303H	ZR1689-316H	ZR1689-416H	ZR1689-286H	ZR1689-414H
3 x 16		ZR1691-303H	ZR1691-316H	ZR1691-416H	ZR1691-286H	ZR1691-414H
3 x 18		ZR1693-303H	ZR1693-316H	ZR1693-416H	ZR1693-286H	ZR1693-414H
3 x 20	M2 x 0.4 x 4	ZR1694-303H	ZR1694-316H	ZR1694-416H	ZR1694-286H	ZR1694-414H
3 x 25		ZR1695-303H	ZR1695-316H	ZR1695-416H	ZR1695-286H	ZR1695-414H



ZR1697-303H

#### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
4 x 2	M3 x 0.5 x 4	ZR1697-303H	ZR1697-316H	ZR1697-416H	ZR1697-286H	ZR1697-414H
4 x 3		ZR1698-303H	ZR1698-316H	ZR1698-416H	ZR1698-286H	ZR1698-414H
4 x 4		ZR1700-303H	ZR1700-316H	ZR1700-416H	ZR1700-286H	ZR1700-414H
4 x 5		ZR1704-303H	ZR1704-316H	ZR1704-416H	ZR1704-286H	ZR1704-414H
4 x 6	M3 x 0.5 x 4	ZR1708-303H	ZR1708-316H	ZR1708-416H	ZR1708-286H	ZR1708-414H
4 x 7		ZR1699-303H	ZR1699-316H	ZR1699-416H	ZR1699-286H	ZR1699-414H
4 x 8		ZR1712-303H	ZR1712-316H	ZR1712-416H	ZR1712-286H	ZR1712-414H
4 x 10		ZR1716-303H	ZR1716-316H	ZR1716-416H	ZR1716-286H	ZR1716-414H
4 x 12	M3 x 0.5 x 4	ZR1718-303H	ZR1718-316H	ZR1718-416H	ZR1718-286H	ZR1718-414H
4 x 14		ZR1721-303H	ZR1721-316H	ZR1721-416H	ZR1721-286H	ZR1721-414H
4 x 16		ZR1719-303H	ZR1719-316H	ZR1719-416H	ZR1719-286H	ZR1719-414H
4 x 18		ZR1722-303H	ZR1722-316H	ZR1722-416H	ZR1722-286H	ZR1722-414H
4 x 20	M3 x 0.5 x 4	ZR1723-303H	ZR1723-316H	ZR1723-416H	ZR1723-286H	ZR1723-414H
4 x 25		ZR1720-303H	ZR1720-316H	ZR1720-416H	ZR1720-286H	ZR1720-414H
4 x 30		ZR1724-303H	ZR1724-316H	ZR1724-416H	ZR1724-286H	ZR1724-414H
4 x 35		ZR1725-303H	ZR1725-316H	ZR1725-416H	ZR1725-286H	ZR1725-414H

Chart continued on next page



## Tight Tolerance Smooth Head – Metric



ZR1730-303H

### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
4 x 40		ZR1730-303H	ZR1730-316H	ZR1730-416H	ZR1730-286H	ZR1730-414H
4 x 45	M3 x 0.5 x 4	ZR1732-303H	ZR1732-316H	ZR1732-416H	ZR1732-286H	ZR1732-414H
4 x 50		ZR1734-303H	ZR1734-316H	ZR1734-416H	ZR1734-286H	ZR1734-414H



ZR1748-303H

### 5mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
5 x 2		ZR1748-303H	ZR1748-316H	ZR1748-416H	ZR1748-286H	ZR1748-414H
5 x 3	M4 x 0.7 x 5	ZR1749-303H	ZR1749-316H	ZR1749-416H	ZR1749-286H	ZR1749-414H
5 x 4		ZR1750-303H	ZR1750-316H	ZR1750-416H	ZR1750-286H	ZR1750-414H
5 x 5		ZR1754-303H	ZR1754-316H	ZR1754-416H	ZR1754-286H	ZR1754-414H
5 x 6		ZR1758-303H	ZR1758-316H	ZR1758-416H	ZR1758-286H	ZR1758-414H
5 x 7	M4 x 0.7 x 5	ZR1760-303H	ZR1760-316H	ZR1760-416H	ZR1760-286H	ZR1760-414H
5 x 8		ZR1762-303H	ZR1762-316H	ZR1762-416H	ZR1762-286H	ZR1762-414H
5 x 10		ZR1766-303H	ZR1766-316H	ZR1766-416H	ZR1766-286H	ZR1766-414H
5 x 12		ZR1770-303H	ZR1770-316H	ZR1770-416H	ZR1770-286H	ZR1770-414H
5 x 14	M4 x 0.7 x 5	ZR1774-303H	ZR1774-316H	ZR1774-416H	ZR1774-286H	ZR1774-414H
5 x 16		ZR1778-303H	ZR1778-316H	ZR1778-416H	ZR1778-286H	ZR1778-414H
5 x 18		ZR1779-303H	ZR1779-316H	ZR1779-416H	ZR1779-286H	ZR1779-414H
5 x 20		ZR1782-303H	ZR1782-316H	ZR1782-416H	ZR1782-286H	ZR1782-414H
5 x 25	M4 x 0.7 x 5	ZR1786-303H	ZR1786-316H	ZR1786-416H	ZR1786-286H	ZR1786-414H
5 x 30		ZR1790-303H	ZR1790-316H	ZR1790-416H	ZR1790-286H	ZR1790-414H
5 x 35		ZR1791-303H	ZR1791-316H	ZR1791-416H	ZR1791-286H	ZR1791-414H
5 x 40		ZR1793-303H	ZR1793-316H	ZR1793-416H	ZR1793-286H	ZR1793-414H
5 x 45	M4 x 0.7 x 5	ZR1795-303H	ZR1795-316H	ZR1795-416H	ZR1795-286H	ZR1795-414H
5 x 50		ZR1799-303H	ZR1799-316H	ZR1799-416H	ZR1799-286H	ZR1799-414H



ZR1702-303H

### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
6 x 2		ZR1702-303H	ZR1702-316H	ZR1702-416H	ZR1702-286H	ZR1702-414H
6 x 3	M5 x 0.8 x 6	ZR1798-303H	ZR1798-316H	ZR1798-416H	ZR1798-286H	ZR1798-414H
6 x 4		ZR1800-303H	ZR1800-316H	ZR1800-416H	ZR1800-286H	ZR1800-414H
6 x 5		ZR1804-303H	ZR1804-316H	ZR1804-416H	ZR1804-286H	ZR1804-414H
6 x 6	M5 x 0.8 x 6	ZR1808-303H	ZR1808-316H	ZR1808-416H	ZR1808-286H	ZR1808-414H

Chart continued on next page

## Tight Tolerance Smooth Head – Metric



ZR1809-303H

### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
6 x 7	M5 x 0.8 x 6	ZR1809-303H	ZR1809-316H	ZR1809-416H	ZR1809-286H	ZR1809-414H
6 x 8		ZR1812-303H	ZR1812-316H	ZR1812-416H	ZR1812-286H	ZR1812-414H
6 x 10		ZR1816-303H	ZR1816-316H	ZR1816-416H	ZR1816-286H	ZR1816-414H
6 x 12		ZR1820-303H	ZR1820-316H	ZR1820-416H	ZR1820-286H	ZR1820-414H
6 x 14	M5 x 0.8 x 6	ZR1824-303H	ZR1824-316H	ZR1824-416H	ZR1824-286H	ZR1824-414H
6 x 16		ZR1828-303H	ZR1828-316H	ZR1828-416H	ZR1828-286H	ZR1828-414H
6 x 18		ZR1829-303H	ZR1829-316H	ZR1829-416H	ZR1829-286H	ZR1829-414H
6 x 20		ZR1832-303H	ZR1832-316H	ZR1832-416H	ZR1832-286H	ZR1832-414H
6 x 25	M5 x 0.8 x 6	ZR1836-303H	ZR1836-316H	ZR1836-416H	ZR1836-286H	ZR1836-414H
6 x 30		ZR1840-303H	ZR1840-316H	ZR1840-416H	ZR1840-286H	ZR1840-414H
6 x 35		ZR1842-303H	ZR1842-316H	ZR1842-416H	ZR1842-286H	ZR1842-414H
6 x 40		ZR1844-303H	ZR1844-316H	ZR1844-416H	ZR1844-286H	ZR1844-414H
6 x 45	M5 x 0.8 x 6	ZR1846-303H	ZR1846-316H	ZR1846-416H	ZR1846-286H	ZR1846-414H
6 x 50		ZR1848-303H	ZR1848-316H	ZR1848-416H	ZR1848-286H	ZR1848-414H
6 x 55		ZR1850-303H	ZR1850-316H	ZR1850-416H	ZR1850-286H	ZR1850-414H
6 x 60		ZR1852-303H	ZR1852-316H	ZR1852-416H	ZR1852-286H	ZR1852-414H
6 x 65	M5 x 0.8 x 6	ZR1854-303H	ZR1854-316H	ZR1854-416H	ZR1854-286H	ZR1854-414H



ZR1901-303H

### 8mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
8 x 4	M6 x 1 x 11	ZR1901-303H	ZR1901-316H	ZR1901-416H	ZR1901-286H	ZR1901-414H
8 x 5		ZR1902-303H	ZR1902-316H	ZR1902-416H	ZR1902-286H	ZR1902-414H
8 x 6		ZR1900-303H	ZR1900-316H	ZR1900-416H	ZR1900-286H	ZR1900-414H
8 x 7		ZR1903-303H	ZR1903-316H	ZR1903-416H	ZR1903-286H	ZR1903-414H
8 x 8	M6 x 1 x 11	ZR1904-303H	ZR1904-316H	ZR1904-416H	ZR1904-286H	ZR1904-414H
8 x 10		ZR1908-303H	ZR1908-316H	ZR1908-416H	ZR1908-286H	ZR1908-414H
8 x 12		ZR1912-303H	ZR1912-316H	ZR1912-416H	ZR1912-286H	ZR1912-414H
8 x 14		ZR1914-303H	ZR1914-316H	ZR1914-416H	ZR1914-286H	ZR1914-414H
8 x 16	M6 x 1 x 11	ZR1916-303H	ZR1916-316H	ZR1916-416H	ZR1916-286H	ZR1916-414H
8 x 18		ZR1918-303H	ZR1918-316H	ZR1918-416H	ZR1918-286H	ZR1918-414H
8 x 20		ZR1920-303H	ZR1920-316H	ZR1920-416H	ZR1920-286H	ZR1920-414H
8 x 25		ZR1921-303H	ZR1921-316H	ZR1921-416H	ZR1921-286H	ZR1921-414H
8 x 30	M6 x 1 x 11	ZR1922-303H	ZR1922-316H	ZR1922-416H	ZR1922-286H	ZR1922-414H
8 x 35		ZR1935-303H	ZR1935-316H	ZR1935-416H	ZR1935-286H	ZR1935-414H
8 x 40		ZR1924-303H	ZR1924-316H	ZR1924-416H	ZR1924-286H	ZR1924-414H
8 x 45		ZR1926-303H	ZR1926-316H	ZR1926-416H	ZR1926-286H	ZR1926-414H
8 x 50	M6 x 1 x 11	ZR1928-303H	ZR1928-316H	ZR1928-416H	ZR1928-286H	ZR1928-414H

Chart continued on next page

## Tight Tolerance Smooth Head – Metric



ZR1950-303H

### 10mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
10 x 8	M6 x 1 x 11	ZR1950-303H	ZR1950-316H	ZR1950-416H	ZR1950-286H	ZR1950-414H
10 x 8	M8 x 1.25 x 12	ZR1966-303H	ZR1966-316H	ZR1966-416H	ZR1966-286H	ZR1966-414H
10 x 10	M6 x 1 x 11	ZR1954-303H	ZR1954-316H	ZR1954-416H	ZR1954-286H	ZR1954-414H
10 x 10	M8 x 1.25 x 12	ZR1970-303H	ZR1970-316H	ZR1970-416H	ZR1970-286H	ZR1970-414H
10 x 12	M6 x 1 x 11	ZR1958-303H	ZR1958-316H	ZR1958-416H	ZR1958-286H	ZR1958-414H
10 x 12	M8 x 1.25 x 12	ZR1974-303H	ZR1974-316H	ZR1974-416H	ZR1974-286H	ZR1974-414H
10 x 14		ZR1968-303H	ZR1968-316H	ZR1968-416H	ZR1968-286H	ZR1968-414H
10 x 16	M6 x 1 x 11	ZR1962-303H	ZR1962-316H	ZR1962-416H	ZR1962-286H	ZR1962-414H
10 x 16	M8 x 1.25 x 12	ZR1978-303H	ZR1978-316H	ZR1978-416H	ZR1978-286H	ZR1978-414H
10 x 18		ZR1969-303H	ZR1969-316H	ZR1969-416H	ZR1969-286H	ZR1969-414H
10 x 20		ZR1971-303H	ZR1971-316H	ZR1971-416H	ZR1971-286H	ZR1971-414H
10 x 25		ZR1972-303H	ZR1972-316H	ZR1972-416H	ZR1972-286H	ZR1972-414H
10 x 30	M8 x 1.25 x 12	ZR1973-303H	ZR1973-316H	ZR1973-416H	ZR1973-286H	ZR1973-414H
10 x 35		ZR1975-303H	ZR1975-316H	ZR1975-416H	ZR1975-286H	ZR1975-414H
10 x 40		ZR1976-303H	ZR1976-316H	ZR1976-416H	ZR1976-286H	ZR1976-414H
10 x 45		ZR1977-303H	ZR1977-316H	ZR1977-416H	ZR1977-286H	ZR1977-414H
10 x 50	M8 x 1.25 x 12	ZR1979-303H	ZR1979-316H	ZR1979-416H	ZR1979-286H	ZR1979-414H



ZR1981-303H

### 12mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
12 x 8	M10 x 1.5 x 16	ZR1981-303H	ZR1981-316H	ZR1981-416H	ZR1981-286H	ZR1981-414H
12 x 10		ZR1983-303H	ZR1983-316H	ZR1983-416H	ZR1983-286H	ZR1983-414H
12 x 12		ZR1980-303H	ZR1980-316H	ZR1980-416H	ZR1980-286H	ZR1980-414H
12 x 14		ZR1982-303H	ZR1982-316H	ZR1982-416H	ZR1982-286H	ZR1982-414H
12 x 16	M10 x 1.5 x 16	ZR1984-303H	ZR1984-316H	ZR1984-416H	ZR1984-286H	ZR1984-414H
12 x 18		ZR1986-303H	ZR1986-316H	ZR1986-416H	ZR1986-286H	ZR1986-414H
12 x 20		ZR1988-303H	ZR1988-316H	ZR1988-416H	ZR1988-286H	ZR1988-414H
12 x 25		ZR1992-303H	ZR1992-316H	ZR1992-416H	ZR1992-286H	ZR1992-414H
12 x 30	M10 x 1.5 x 16	ZR1993-303H	ZR1993-316H	ZR1993-416H	ZR1993-286H	ZR1993-414H
12 x 35		ZR1994-303H	ZR1994-316H	ZR1994-416H	ZR1994-286H	ZR1994-414H
12 x 40		ZR1996-303H	ZR1996-316H	ZR1996-416H	ZR1996-286H	ZR1996-414H
12 x 45		ZR1998-303H	ZR1998-316H	ZR1998-416H	ZR1998-286H	ZR1998-414H
12 x 50	M10 x 1.5 x 16	ZR1999-303H	ZR1999-316H	ZR1999-416H	ZR1999-286H	ZR1999-414H

## Friction Resistant Smooth Head – Metric

### Brass – Hex Drive

- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- All shoulder diameters meet or exceed accepted industry standards and AMPG's internal specification AMPG 2012 BR.02.
- Brass material adheres to environmental regulations established by European Union RoHS directive. Current RoHS exemption allows alloying element containing up to 4% lead by weight.



STR550M4X4



STR550M5X4



STR550M6X4

### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	Brass Part Number
4 x 4		STR550M4X4
4 x 5	M3 x 0.5 x 4	STR550M4X5
4 x 6		STR550M4X6
4 x 8		STR550M4X8
4 x 10	M3 x 0.5 x 4	STR550M4X10
4 x 25		STR550M4X25

### 5mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	Brass Part Number
5 x 4		STR550M5X4
5 x 5	M4 x 0.7 x 5	STR550M5X5
5 x 6		STR550M5X6
5 x 8		STR550M5X8
5 x 10		STR550M5X10
5 x 12	M4 x 0.7 x 5	STR550M5X12
5 x 14		STR550M5X14
5 x 16		STR550M5X16
5 x 20		STR550M5X20
5 x 25	M4 x 0.7 x 5	STR550M5X25
5 x 30		STR550M5X30

### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	Brass Part Number
6 x 4		STR550M6X4
6 x 5	M5 x 0.8 x 6	STR550M6X5
6 x 6		STR550M6X6
6 x 8		STR550M6X8
6 x 10		STR550M6X10
6 x 12	M5 x 0.8 x 6	STR550M6X12
6 x 14		STR550M6X14
6 x 16		STR550M6X16
6 x 20		STR550M6X20
6 x 25	M5 x 0.8 x 6	STR550M6X25
6 x 30		STR550M6X30



STR550M8X6



STR550M10X8



STR550M12X12

### 8mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	Brass Part Number
8 x 6		STR550M8X6
8 x 8	M6 x 1 x 11	STR550M8X8
8 x 10		STR550M8X10
8 x 12		STR550M8X12
8 x 16	M6 x 1 x 11	STR550M8X16
8 x 20		STR550M8X20

### 10mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	Brass Part Number
10 x 8		STR550M10X8
10 x 10	M8 x 1.25 x 12	STR550M10X10
10 x 12		STR550M10X12
10 x 16		STR550M10X16

### 12mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	Brass Part Number
12 x 12		STR550M12X12
12 x 16	M10 x 1.5 x 16	STR550M12X16
12 x 20		STR550M12X20
12 x 25		STR550M12X25

## Tight Tolerance Smooth Head – Metric

### 18-8 (A2), 316 (A4), 416, A286 Stainless Steels and Alloy Steel – Slotted Drive

- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- All stainless steel screws adhere to environmental regulations established by European Union RoHS directive.
- All shoulder diameters meet or exceed accepted industry standards and AMPG's internal specification AMPG 2006 ZR.02.



ZR1680-303S

#### 3mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
3 x 2		ZR1680-303S	ZR1680-316S	ZR1680-416S	ZR1680-286S	ZR1680-414S
3 x 3	M2 x 0.4 x 4	ZR1681-303S	ZR1681-316S	ZR1681-416S	ZR1681-286S	ZR1681-414S
3 x 4		ZR1682-303S	ZR1682-316S	ZR1682-416S	ZR1682-286S	ZR1682-414S
3 x 5		ZR1683-303S	ZR1683-316S	ZR1683-416S	ZR1683-286S	ZR1683-414S
3 x 6		ZR1684-303S	ZR1684-316S	ZR1684-416S	ZR1684-286S	ZR1684-414S
3 x 7	M2 x 0.4 x 4	ZR1685-303S	ZR1685-316S	ZR1685-416S	ZR1685-286S	ZR1685-414S
3 x 8		ZR1688-303S	ZR1688-316S	ZR1688-416S	ZR1688-286S	ZR1688-414S
3 x 10		ZR1686-303S	ZR1686-316S	ZR1686-416S	ZR1686-286S	ZR1686-414S
3 x 12		ZR1687-303S	ZR1687-316S	ZR1687-416S	ZR1687-286S	ZR1687-414S
3 x 14	M2 x 0.4 x 4	ZR1689-303S	ZR1689-316S	ZR1689-416S	ZR1689-286S	ZR1689-414S
3 x 16		ZR1691-303S	ZR1691-316S	ZR1691-416S	ZR1691-286S	ZR1691-414S
3 x 18		ZR1693-303S	ZR1693-316S	ZR1693-416S	ZR1693-286S	ZR1693-414S
3 x 20	M2 x 0.4 x 4	ZR1694-303S	ZR1694-316S	ZR1694-416S	ZR1694-286S	ZR1694-414S
3 x 25		ZR1695-303S	ZR1695-316S	ZR1695-416S	ZR1695-286S	ZR1695-414S



ZR1697-303S

#### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
4 x 2		ZR1697-303S	ZR1697-316S	ZR1697-416S	ZR1697-286S	ZR1697-414S
4 x 3	M3 x 0.5 x 4	ZR1698-303S	ZR1698-316S	ZR1698-416S	ZR1698-286S	ZR1698-414S
4 x 4		ZR1700-303S	ZR1700-316S	ZR1700-416S	ZR1700-286S	ZR1700-414S
4 x 5		ZR1704-303S	ZR1704-316S	ZR1704-416S	ZR1704-286S	ZR1704-414S
4 x 6		ZR1708-303S	ZR1708-316S	ZR1708-416S	ZR1708-286S	ZR1708-414S
4 x 7	M3 x 0.5 x 4	ZR1699-303S	ZR1699-316S	ZR1699-416S	ZR1699-286S	ZR1699-414S
4 x 8		ZR1712-303S	ZR1712-316S	ZR1712-416S	ZR1712-286S	ZR1712-414S
4 x 10		ZR1716-303S	ZR1716-316S	ZR1716-416S	ZR1716-286S	ZR1716-414S
4 x 12		ZR1718-303S	ZR1718-316S	ZR1718-416S	ZR1718-286S	ZR1718-414S
4 x 14	M3 x 0.5 x 4	ZR1721-303S	ZR1721-316S	ZR1721-416S	ZR1721-286S	ZR1721-414S
4 x 16		ZR1719-303S	ZR1719-316S	ZR1719-416S	ZR1719-286S	ZR1719-414S
4 x 18		ZR1722-303S	ZR1722-316S	ZR1722-416S	ZR1722-286S	ZR1722-414S

Chart continued on next page

## Tight Tolerance Smooth Head – Metric



ZR1723-303S

### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
4 x 20	M3 x 0.5 x 4	ZR1723-303S	ZR1723-316S	ZR1723-416S	ZR1723-286S	ZR1723-414S
4 x 25		ZR1720-303S	ZR1720-316S	ZR1720-416S	ZR1720-286S	ZR1720-414S
4 x 30		ZR1724-303S	ZR1724-316S	ZR1724-416S	ZR1724-286S	ZR1724-414S
4 x 35		ZR1725-303S	ZR1725-316S	ZR1725-416S	ZR1725-286S	ZR1725-414S
4 x 40	M3 x 0.5 x 4	ZR1730-303S	ZR1730-316S	ZR1730-416S	ZR1730-286S	ZR1730-414S
4 x 45		ZR1732-303S	ZR1732-316S	ZR1732-416S	ZR1732-286S	ZR1732-414S
4 x 50		ZR1734-303S	ZR1734-316S	ZR1734-416S	ZR1734-286S	ZR1734-414S



ZR1748-303S

### 5mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
5 x 2	M4 x 0.7 x 5	ZR1748-303S	ZR1748-316S	ZR1748-416S	ZR1748-286S	ZR1748-414S
5 x 3		ZR1749-303S	ZR1749-316S	ZR1749-416S	ZR1749-286S	ZR1749-414S
5 x 4		ZR1750-303S	ZR1750-316S	ZR1750-416S	ZR1750-286S	ZR1750-414S
5 x 5		ZR1754-303S	ZR1754-316S	ZR1754-416S	ZR1754-286S	ZR1754-414S
5 x 6	M4 x 0.7 x 5	ZR1758-303S	ZR1758-316S	ZR1758-416S	ZR1758-286S	ZR1758-414S
5 x 7		ZR1760-303S	ZR1760-316S	ZR1760-416S	ZR1760-286S	ZR1760-414S
5 x 8		ZR1762-303S	ZR1762-316S	ZR1762-416S	ZR1762-286S	ZR1762-414S
5 x 10	M4 x 0.7 x 5	ZR1766-303S	ZR1766-316S	ZR1766-416S	ZR1766-286S	ZR1766-414S
5 x 12		ZR1770-303S	ZR1770-316S	ZR1770-416S	ZR1770-286S	ZR1770-414S
5 x 14		ZR1774-303S	ZR1774-316S	ZR1774-416S	ZR1774-286S	ZR1774-414S
5 x 16		ZR1778-303S	ZR1778-316S	ZR1778-416S	ZR1778-286S	ZR1778-414S
5 x 18	M4 x 0.7 x 5	ZR1779-303S	ZR1779-316S	ZR1779-416S	ZR1779-286S	ZR1779-414S
5 x 20		ZR1782-303S	ZR1782-316S	ZR1782-416S	ZR1782-286S	ZR1782-414S
5 x 25		ZR1786-303S	ZR1786-316S	ZR1786-416S	ZR1786-286S	ZR1786-414S
5 x 30	M4 x 0.7 x 5	ZR1790-303S	ZR1790-316S	ZR1790-416S	ZR1790-286S	ZR1790-414S
5 x 35		ZR1791-303S	ZR1791-316S	ZR1791-416S	ZR1791-286S	ZR1791-414S
5 x 40	M4 x 0.7 x 5	ZR1793-303S	ZR1793-316S	ZR1793-416S	ZR1793-286S	ZR1793-414S
5 x 45		ZR1795-303S	ZR1795-316S	ZR1795-416S	ZR1795-286S	ZR1795-414S
5 x 50		ZR1799-303S	ZR1799-316S	ZR1799-416S	ZR1799-286S	ZR1799-414S



ZR1702-303S

### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
6 x 2	M5 x 0.8 x 6	ZR1702-303S	ZR1702-316S	ZR1702-416S	ZR1702-286S	ZR1702-414S
6 x 3		ZR1798-303S	ZR1798-316S	ZR1798-416S	ZR1798-286S	ZR1798-414S
6 x 4		ZR1800-303S	ZR1800-316S	ZR1800-416S	ZR1800-286S	ZR1800-414S
6 x 5		ZR1804-303S	ZR1804-316S	ZR1804-416S	ZR1804-286S	ZR1804-414S

Chart continued on next page

## Tight Tolerance Smooth Head – Metric



ZR1808-303S

### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
6 x 6	M5 x 0.8 x 6	ZR1808-303S	ZR1808-316S	ZR1808-416S	ZR1808-286S	ZR1808-414S
6 x 7		ZR1809-303S	ZR1809-316S	ZR1809-416S	ZR1809-286S	ZR1809-414S
6 x 8		ZR1812-303S	ZR1812-316S	ZR1812-416S	ZR1812-286S	ZR1812-414S
6 x 10		ZR1816-303S	ZR1816-316S	ZR1816-416S	ZR1816-286S	ZR1816-414S
6 x 12	M5 x 0.8 x 6	ZR1820-303S	ZR1820-316S	ZR1820-416S	ZR1820-286S	ZR1820-414S
6 x 14		ZR1824-303S	ZR1824-316S	ZR1824-416S	ZR1824-286S	ZR1824-414S
6 x 16		ZR1828-303S	ZR1828-316S	ZR1828-416S	ZR1828-286S	ZR1828-414S
6 x 18		ZR1829-303S	ZR1829-316S	ZR1829-416S	ZR1829-286S	ZR1829-414S
6 x 20	M5 x 0.8 x 6	ZR1832-303S	ZR1832-316S	ZR1832-416S	ZR1832-286S	ZR1832-414S
6 x 25		ZR1836-303S	ZR1836-316S	ZR1836-416S	ZR1836-286S	ZR1836-414S
6 x 30		ZR1840-303S	ZR1840-316S	ZR1840-416S	ZR1840-286S	ZR1840-414S
6 x 35		ZR1842-303S	ZR1842-316S	ZR1842-416S	ZR1842-286S	ZR1842-414S
6 x 40	M5 x 0.8 x 6	ZR1844-303S	ZR1844-316S	ZR1844-416S	ZR1844-286S	ZR1844-414S
6 x 45		ZR1846-303S	ZR1846-316S	ZR1846-416S	ZR1846-286S	ZR1846-414S
6 x 50		ZR1848-303S	ZR1848-316S	ZR1848-416S	ZR1848-286S	ZR1848-414S
6 x 55		ZR1850-303S	ZR1850-316S	ZR1850-416S	ZR1850-286S	ZR1850-414S
6 x 60	M5 x 0.8 x 6	ZR1852-303S	ZR1852-316S	ZR1852-416S	ZR1852-286S	ZR1852-414S
6 x 65		ZR1854-303S	ZR1854-316S	ZR1854-416S	ZR1854-286S	ZR1854-414S



ZR1901-303S

### 8mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
8 x 4	M6 x 1 x 11	ZR1901-303S	ZR1901-316S	ZR1901-416S	ZR1901-286S	ZR1901-414S
8 x 5		ZR1902-303S	ZR1902-316S	ZR1902-416S	ZR1902-286S	ZR1902-414S
8 x 6		ZR1900-303S	ZR1900-316S	ZR1900-416S	ZR1900-286S	ZR1900-414S
8 x 7		ZR1903-303S	ZR1903-316S	ZR1903-416S	ZR1903-286S	ZR1903-414S
8 x 8	M6 x 1 x 11	ZR1904-303S	ZR1904-316S	ZR1904-416S	ZR1904-286S	ZR1904-414S
8 x 10		ZR1908-303S	ZR1908-316S	ZR1908-416S	ZR1908-286S	ZR1908-414S
8 x 12		ZR1912-303S	ZR1912-316S	ZR1912-416S	ZR1912-286S	ZR1912-414S
8 x 14		ZR1914-303S	ZR1914-316S	ZR1914-416S	ZR1914-286S	ZR1914-414S
8 x 16	M6 x 1 x 11	ZR1916-303S	ZR1916-316S	ZR1916-416S	ZR1916-286S	ZR1916-414S
8 x 18		ZR1918-303S	ZR1918-316S	ZR1918-416S	ZR1918-286S	ZR1918-414S
8 x 20		ZR1920-303S	ZR1920-316S	ZR1920-416S	ZR1920-286S	ZR1920-414S
8 x 25		ZR1921-303S	ZR1921-316S	ZR1921-416S	ZR1921-286S	ZR1921-414S
8 x 30	M6 x 1 x 11	ZR1922-303S	ZR1922-316S	ZR1922-416S	ZR1922-286S	ZR1922-414S
8 x 35		ZR1935-303S	ZR1935-316S	ZR1935-416S	ZR1935-286S	ZR1935-414S
8 x 40		ZR1924-303S	ZR1924-316S	ZR1924-416S	ZR1924-286S	ZR1924-414S
8 x 45		ZR1926-303S	ZR1926-316S	ZR1926-416S	ZR1926-286S	ZR1926-414S
8 x 50	M6 x 1 x 11	ZR1928-303S	ZR1928-316S	ZR1928-416S	ZR1928-286S	ZR1928-414S

Chart continued on next page

## Tight Tolerance Smooth Head – Metric



ZR1950-303S

### 10mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
10 x 8	M6 x 1 x 11	ZR1950-303S	ZR1950-316S	ZR1950-416S	ZR1950-286S	ZR1950-414S
10 x 8	M8 x 1.25 x 12	ZR1966-303S	ZR1966-316S	ZR1966-416S	ZR1966-286S	ZR1966-414S
10 x 10	M6 x 1 x 11	ZR1954-303S	ZR1954-316S	ZR1954-416S	ZR1954-286S	ZR1954-414S
10 x 10	M8 x 1.25 x 12	ZR1970-303S	ZR1970-316S	ZR1970-416S	ZR1970-286S	ZR1970-414S
10 x 12	M6 x 1 x 11	ZR1958-303S	ZR1958-316S	ZR1958-416S	ZR1958-286S	ZR1958-414S
10 x 12	M8 x 1.25 x 12	ZR1974-303S	ZR1974-316S	ZR1974-416S	ZR1974-286S	ZR1974-414S
10 x 14		ZR1968-303S	ZR1968-316S	ZR1968-416S	ZR1968-286S	ZR1968-414S
10 x 16	M6 x 1 x 11	ZR1962-303S	ZR1962-316S	ZR1962-416S	ZR1962-286S	ZR1962-414S
10 x 16		ZR1978-303S	ZR1978-316S	ZR1978-416S	ZR1978-286S	ZR1978-414S
10 x 18	M8 x 1.25 x 12	ZR1969-303S	ZR1969-316S	ZR1969-416S	ZR1969-286S	ZR1969-414S
10 x 20		ZR1971-303S	ZR1971-316S	ZR1971-416S	ZR1971-286S	ZR1971-414S
10 x 25		ZR1972-303S	ZR1972-316S	ZR1972-416S	ZR1972-286S	ZR1972-414S
10 x 30		ZR1973-303S	ZR1973-316S	ZR1973-416S	ZR1973-286S	ZR1973-414S
10 x 35	M8 x 1.25 x 12	ZR1975-303S	ZR1975-316S	ZR1975-416S	ZR1975-286S	ZR1975-414S
10 x 40		ZR1976-303S	ZR1976-316S	ZR1976-416S	ZR1976-286S	ZR1976-414S
10 x 45		ZR1977-303S	ZR1977-316S	ZR1977-416S	ZR1977-286S	ZR1977-414S
10 x 50	M8 x 1.25 x 12	ZR1979-303S	ZR1979-316S	ZR1979-416S	ZR1979-286S	ZR1979-414S



ZR1981-303S

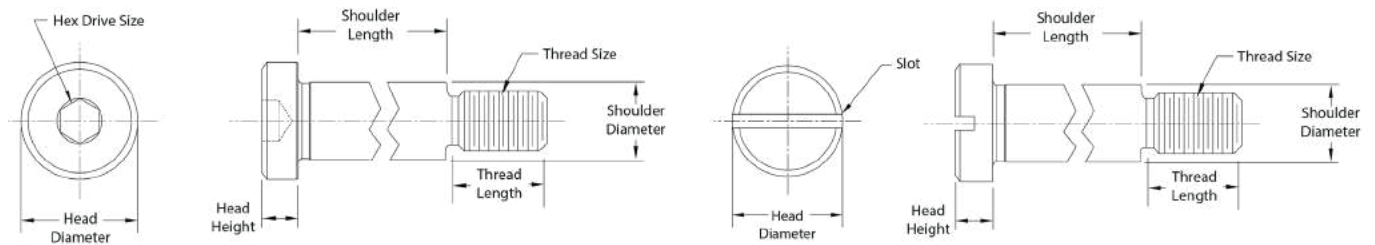
### 12mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number	416 SS Part Number	A286 SS Part Number	Alloy Steel Part Number
12 x 8		ZR1981-303S	ZR1981-316S	ZR1981-416S	ZR1981-286S	ZR1981-414S
12 x 10	M10 x 1.5 x 16	ZR1983-303S	ZR1983-316S	ZR1983-416S	ZR1983-286S	ZR1983-414S
12 x 12		ZR1980-303S	ZR1980-316S	ZR1980-416S	ZR1980-286S	ZR1980-414S
12 x 14		ZR1982-303S	ZR1982-316S	ZR1982-416S	ZR1982-286S	ZR1982-414S
12 x 16		ZR1984-303S	ZR1984-316S	ZR1984-416S	ZR1984-286S	ZR1984-414S
12 x 18	M10 x 1.5 x 16	ZR1986-303S	ZR1986-316S	ZR1986-416S	ZR1986-286S	ZR1986-414S
12 x 20		ZR1988-303S	ZR1988-316S	ZR1988-416S	ZR1988-286S	ZR1988-414S
12 x 25		ZR1992-303S	ZR1992-316S	ZR1992-416S	ZR1992-286S	ZR1992-414S
12 x 30		ZR1993-303S	ZR1993-316S	ZR1993-416S	ZR1993-286S	ZR1993-414S
12 x 35	M10 x 1.5 x 16	ZR1994-303S	ZR1994-316S	ZR1994-416S	ZR1994-286S	ZR1994-414S
12 x 40		ZR1996-303S	ZR1996-316S	ZR1996-416S	ZR1996-286S	ZR1996-414S
12 x 45		ZR1998-303S	ZR1998-316S	ZR1998-416S	ZR1998-286S	ZR1998-414S
12 x 50	M10 x 1.5 x 16	ZR1999-303S	ZR1999-316S	ZR1999-416S	ZR1999-286S	ZR1999-414S



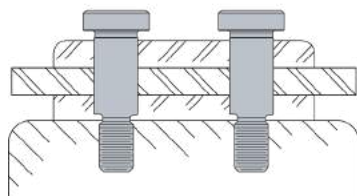
## Low Profile Smooth Head – Metric

The shallow head makes these screws the right size to hold components in tight spaces. Low Profile screws are 2/3 the head height of standard head height shoulder screws. Shoulder diameters are held to the same precise tolerance as other smooth head screws, at +0mm to -.025mm. Shoulder length tolerance is +.05mm to -0mm. All screws have a Class 6g thread fit.

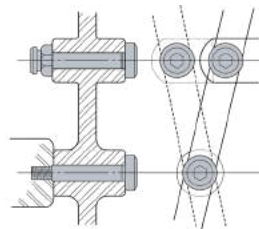


**Dimensions and Tolerance Table – Metric**

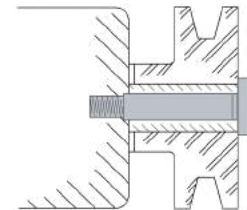
Shoulder Diameter	Shoulder Diameter Min. to Max.	Head Diameter	Head Height	Drive Size (Hex)
4	3.97 to 4.00	6.00	2.00	2
5	4.97 to 5.00	8.00	2.50	2.5
6	5.97 to 6.00	10.00	3.00	3
8	7.97 to 8.00	12.00	3.50	3.5
10	9.97 to 10.00	14.00	4.50	5
12	11.97 to 12.00	20.00	6.00	6



Shoulder Screws as a Guide



Shoulder Screws as a Pivot Point



Shoulder Screws as a Shaft

## Low Profile Smooth Head — Metric

### 18-8 (A2) and 316 (A4) Stainless Steels — Hex Drive

- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- All stainless steel screws adhere to environmental regulations established by European Union RoHS directive.
- All shoulder diameters meet or exceed accepted industry standards and AMPG's internal specification AMPG 2013 LP.02.



STR401M4X4

#### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
4 x 4		STR401M4X4	STR402M4X4
4 x 5	M3 x 0.5 x 4	STR401M4X5	STR402M4X5
4 x 6		STR401M4X6	STR402M4X6
4 x 8		STR401M4X8	STR402M4X8
4 x 10		STR401M4X10	STR402M4X10
4 x 12	M3 x 0.5 x 4	STR401M4X12	STR402M4X12
4 x 16		STR401M4X16	STR402M4X16
4 x 20		STR401M4X20	STR402M4X20



STR401M6X4-ST

#### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
6 x 4		STR401M6X4-ST	STR402M6X4-ST
6 x 5	M5 x 0.8 x 6	STR401M6X5-ST	STR402M6X5-ST
6 x 6		STR401M6X6-ST	STR402M6X6-ST
6 x 8		STR401M6X8-ST	STR402M6X8-ST
6 x 4		STR401M6X4-LT	STR402M6X4-LT
6 x 5	M5 x 0.8 x 9.5	STR401M6X5-LT	STR402M6X5-LT
6 x 6		STR401M6X6-LT	STR402M6X6-LT
6 x 8		STR401M6X8-LT	STR402M6X8-LT
6 x 10		STR401M6X10-ST	STR402M6X10-ST
6 x 12	M5 x 0.8 x 6	STR401M6X12-ST	STR402M6X12-ST
6 x 16		STR401M6X16-ST	STR402M6X16-ST
6 x 20		STR401M6X20-ST	STR402M6X20-ST
6 x 10		STR401M6X10-LT	STR402M6X10-LT
6 x 12	M5 x 0.8 x 9.5	STR401M6X12-LT	STR402M6X12-LT
6 x 16		STR401M6X16-LT	STR402M6X16-LT
6 x 20		STR401M6X20-LT	STR402M6X20-LT



STR401M5X4-ST

#### 5mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
5 x 4		STR401M5X4-ST	STR402M5X4-ST
5 x 5	M4 x 0.7 x 5	STR401M5X5-ST	STR402M5X5-ST
5 x 6		STR401M5X6-ST	STR402M5X6-ST
5 x 8		STR401M5X8-ST	STR402M5X8-ST
5 x 4		STR401M5X4-LT	STR402M5X4-LT
5 x 5	M4 x 0.7 x 8.3	STR401M5X5-LT	STR402M5X5-LT
5 x 6		STR401M5X6-LT	STR402M5X6-LT
5 x 8		STR401M5X8-LT	STR402M5X8-LT
5 x 10		STR401M5X10-ST	STR402M5X10-ST
5 x 12	M4 x 0.7 x 5	STR401M5X12-ST	STR402M5X12-ST
5 x 16		STR401M5X16-ST	STR402M5X16-ST
5 x 20		STR401M5X20-ST	STR402M5X20-ST
5 x 10		STR401M5X10-LT	STR402M5X10-LT
5 x 12	M4 x 0.7 x 8.3	STR401M5X12-LT	STR402M5X12-LT
5 x 16		STR401M5X16-LT	STR402M5X16-LT
5 x 20		STR401M5X20-LT	STR402M5X20-LT
5 x 25		STR401M5X25-ST	STR402M5X25-ST
5 x 30	M4 x 0.7 x 5	STR401M5X30-ST	STR402M5X30-ST
5 x 25	M4 x 0.7 x 8.3	STR401M5X25-LT	STR402M5X25-LT
5 x 30		STR401M5X30-LT	STR402M5X30-LT

Chart continued on next page

18-8 SS (A2)  
316 SS (A4)

## Low Profile Smooth Head – Metric



STR401M6X25-LT



STR401M8X6

### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
6 x 25	M5 x 0.8 x 6	STR401M6X25-LT	STR402M6X25-LT
6 x 30		STR401M6X30-LT	STR402M6X30-LT
6 x 35		STR401M6X35-LT	STR402M6X35-LT
6 x 40		STR401M6X40-LT	STR402M6X40-LT
6 x 25	M5 x 0.8 x 9.5	STR401M6X25-ST	STR402M6X25-ST
6 x 30		STR401M6X30-ST	STR402M6X30-ST
6 x 35		STR401M6X35-ST	STR402M6X35-ST
6 x 40		STR401M6X40-ST	STR402M6X40-ST

### 8mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
8 x 6	M6 x 1 x 11	STR401M8X6	STR402M8X6
8 x 8		STR401M8X8	STR402M8X8
8 x 10		STR401M8X10	STR402M8X10
8 x 12		STR401M8X12	STR402M8X12
8 x 16	M6 x 1 x 11	STR401M8X16	STR402M8X16
8 x 20		STR401M8X20	STR402M8X20
8 x 25		STR401M8X25	STR402M8X25
8 x 30		STR401M8X30	STR402M8X30
8 x 35	M6 x 1 x 11	STR401M8X35	STR402M8X35
8 x 40		STR401M8X40	STR402M8X40



STR401M10X8



STR401M12X8

### 10mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
10 x 8	M8 x 1.25 x 13	STR401M10X8	STR402M10X8
10 x 10		STR401M10X10	STR402M10X10
10 x 12		STR401M10X12	STR402M10X12
10 x 16		STR401M10X16	STR402M10X16
10 x 20	M8 x 1.25 x 13	STR401M10X20	STR402M10X20
10 x 25		STR401M10X25	STR402M10X25
10 x 30		STR401M10X30	STR402M10X30
10 x 35		STR401M10X35	STR402M10X35
10 x 40	M8 x 1.25 x 13	STR401M10X40	STR402M10X40

### 12mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
12 x 8	M10 x 1.5 x 16	STR401M12X8	STR402M12X8
12 x 10		STR401M12X10	STR402M12X10
12 x 12		STR401M12X12	STR402M12X12
12 x 16		STR401M12X16	STR402M12X16
12 x 20	M10 x 1.5 x 16	STR401M12X20	STR402M12X20
12 x 25		STR401M12X25	STR402M12X25
12 x 30		STR401M12X30	STR402M12X30
12 x 35		STR401M12X35	STR402M12X35
12 x 40	M10 x 1.5 x 16	STR401M12X40	STR402M12X40

## Low Profile Smooth Head — Metric

### 18-8 (A2) and 316 (A4) Stainless Steel — Slotted Drive

- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- All stainless steel screws adhere to environmental regulations established by European Union RoHS directive.
- All shoulder diameters meet or exceed accepted industry standards and AMPG's internal specification AMPG 2013 LP.02.



STR401M4X4S

#### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
4 x 4		STR401M4X4S	STR402M4X4S
4 x 5	M3 x 0.5 x 4	STR401M4X5S	STR402M4X5S
4 x 6		STR401M4X6S	STR402M4X6S
4 x 8		STR401M4X8S	STR402M4X8S
4 x 10		STR401M4X10S	STR402M4X10S
4 x 12	M3 x 0.5 x 4	STR401M4X12S	STR402M4X12S
4 x 16		STR401M4X16S	STR402M4X16S
4 x 20		STR401M4X20S	STR402M4X20S



STR401M6X4S-ST

#### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
6 x 4		STR401M6X4S-ST	STR402M6X4S-ST
6 x 5	M5 x 0.8 x 6	STR401M6X5S-ST	STR402M6X5S-ST
6 x 6		STR401M6X6S-ST	STR402M6X6S-ST
6 x 8		STR401M6X8S-ST	STR402M6X8S-ST
6 x 4		STR401M6X4S-LT	STR402M6X4S-LT
6 x 5	M5 x 0.8 x 9.5	STR401M6X5S-LT	STR402M6X5S-LT
6 x 6		STR401M6X6S-LT	STR402M6X6S-LT
6 x 8		STR401M6X8S-LT	STR402M6X8S-LT
6 x 10		STR401M6X10S-ST	STR402M6X10S-ST
6 x 12	M5 x 0.8 x 6	STR401M6X12S-ST	STR402M6X12S-ST
6 x 16		STR401M6X16S-ST	STR402M6X16S-ST
6 x 20		STR401M6X20S-ST	STR402M6X20S-ST
6 x 10		STR401M6X10S-LT	STR402M6X10S-LT
6 x 12	M5 x 0.8 x 9.5	STR401M6X12S-LT	STR402M6X12S-LT
6 x 16		STR401M6X16S-LT	STR402M6X16S-LT
6 x 20		STR401M6X20S-LT	STR402M6X20S-LT



STR401M5X4S-ST

#### 5mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
5 x 4		STR401M5X4S-ST	STR402M5X4S-ST
5 x 5	M4 x 0.7 x 5	STR401M5X5S-ST	STR402M5X5S-ST
5 x 6		STR401M5X6S-ST	STR402M5X6S-ST
5 x 8		STR401M5X8S-ST	STR402M5X8S-ST
5 x 4		STR401M5X4S-LT	STR402M5X4S-LT
5 x 5	M4 x 0.7 x 8.3	STR401M5X5S-LT	STR402M5X5S-LT
5 x 6		STR401M5X6S-LT	STR402M5X6S-LT
5 x 8		STR401M5X8S-LT	STR402M5X8S-LT
5 x 10		STR401M5X10S-ST	STR402M5X10S-ST
5 x 12	M4 x 0.7 x 5	STR401M5X12S-ST	STR402M5X12S-ST
5 x 16		STR401M5X16S-ST	STR402M5X16S-ST
5 x 20		STR401M5X20S-ST	STR402M5X20S-ST
5 x 10		STR401M5X10S-LT	STR402M5X10S-LT
5 x 12	M4 x 0.7 x 8.3	STR401M5X12S-LT	STR402M5X12S-LT
5 x 16		STR401M5X16S-LT	STR402M5X16S-LT
5 x 20		STR401M5X20S-LT	STR402M5X20S-LT
5 x 25		STR401M5X25S-ST	STR402M5X25S-ST
5 x 30	M4 x 0.7 x 5	STR401M5X30S-ST	STR402M5X30S-ST
5 x 25	M4 x 0.7 x 8.3	STR401M5X25S-LT	STR402M5X25S-LT
5 x 30		STR401M5X30S-LT	STR402M5X30S-LT

Chart continued on next page

## Low Profile Smooth Head – Metric



STR401M6X25S-LT



STR401M8X6S

### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
6 x 25	M5 x 0.8 x 6	STR401M6X25S-ST	STR402M6X25S-ST
6 x 30		STR401M6X30S-ST	STR402M6X30S-ST
6 x 35		STR401M6X35S-ST	STR402M6X35S-ST
6 x 40		STR401M6X40S-ST	STR402M6X40S-ST
6 x 25	M5 x 0.8 x 9.5	STR401M6X25S-LT	STR402M6X25S-LT
6 x 30		STR401M6X30S-LT	STR402M6X30S-LT
6 x 35		STR401M6X35S-LT	STR402M6X35S-LT
6 x 40		STR401M6X40S-LT	STR402M6X40S-LT

### 8mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
8 x 6	M6 x 1 x 11	STR401M8X6S	STR402M8X6S
8 x 8		STR401M8X8S	STR402M8X8S
8 x 10		STR401M8X10S	STR402M8X10S
8 x 12		STR401M8X12S	STR402M8X12S
8 x 16	M6 x 1 x 11	STR401M8X16S	STR402M8X16S
8 x 20		STR401M8X20S	STR402M8X20S
8 x 25		STR401M8X25S	STR402M8X25S
8 x 30		STR401M8X30S	STR402M8X30S
8 x 35	M6 x 1 x 11	STR401M8X35S	STR402M8X35S
8 x 40		STR401M8X40S	STR402M8X40S



STR401M10X8S



STR401M12X8S

### 10mm Shoulder Diameter

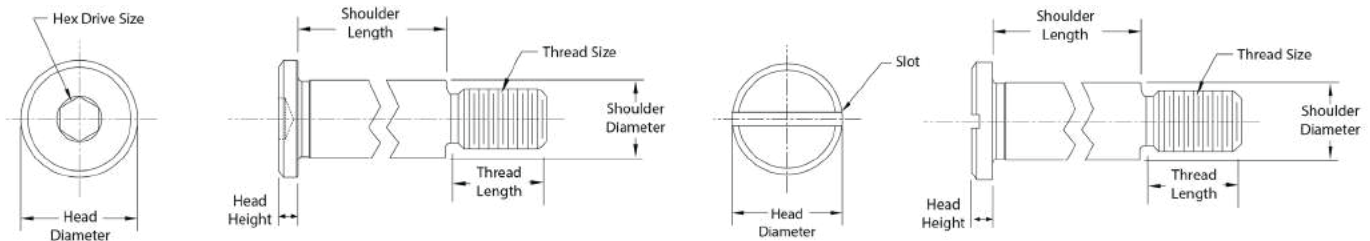
Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
10 x 8	M8 x 1.25 x 13	STR401M10X8S	STR402M10X8S
10 x 10		STR401M10X10S	STR402M10X10S
10 x 12		STR401M10X12S	STR402M10X12S
10 x 16		STR401M10X16S	STR402M10X16S
10 x 20	M8 x 1.25 x 13	STR401M10X20S	STR402M10X20S
10 x 25		STR401M10X25S	STR402M10X25S
10 x 30		STR401M10X30S	STR402M10X30S
10 x 35		STR401M10X35S	STR402M10X35S
10 x 40	M8 x 1.25 x 13	STR401M10X40S	STR402M10X40S

### 12mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	18-8 SS Part Number	316 SS Part Number
12 x 8	M10 x 1.5 x 16	STR401M12X8S	STR402M12X8S
12 x 10		STR401M12X10S	STR402M12X10S
12 x 12		STR401M12X12S	STR402M12X12S
12 x 16		STR401M12X16S	STR402M12X16S
12 x 20	M10 x 1.5 x 16	STR401M12X20S	STR402M12X20S
12 x 25		STR401M12X25S	STR402M12X25S
12 x 30		STR401M12X30S	STR402M12X30S
12 x 35		STR401M12X35S	STR402M12X35S
12 x 40	M10 x 1.5 x 16	STR401M12X40S	STR402M12X40S

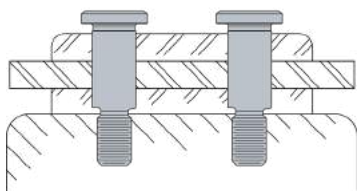
## Ultra Low Profile Smooth Head Shoulder Screw – Metric

The shallow head makes these screws the right size to hold components in tight spaces. Ultra Low Profile screws are 1/3 the head height of standard head height shoulder screws. Shoulder diameters are held to the same precise tolerance as other smooth head screws, at +0 to -0.25mm. Shoulder length tolerance is +.05 to -0mm. All screws have a Class 6g thread fit.

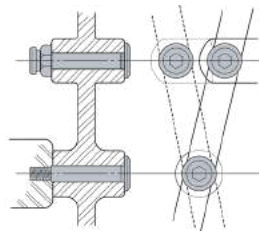


**Dimensions and Tolerance Table – Metric**

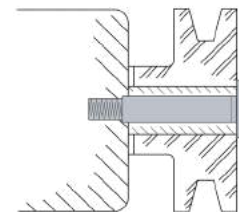
Shoulder Diameter	Shoulder Diameter Min. to Max.	Head Diameter	Head Height	Drive Size (Hex)
4	3.97 to 4.00	6.00	1.30	2
5	4.97 to 5.00	8.00	1.30	2.5
6	5.97 to 6.00	10.00	1.70	3
8	7.97 to 8.00	12.00	2.00	4



Shoulder Screws as a Guide



Shoulder Screws as a Pivot Point



Shoulder Screws as a Shaft

## Ultra Low Smooth Head – Metric

### 316 (A4) Stainless Steel – Hex Drive

- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- All stainless steel screws adhere to environmental regulations established by European Union RoHS directive.
- All shoulder diameters meet or exceed accepted industry standards and AMPG's internal specification AMPG 2013 UL.02.



STR402M4X4HUL

#### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	316 SS Part Number
4 x 4		STR402M4X4HUL
4 x 5	M3 x 0.5 x 4	STR402M4X5HUL
4 x 6		STR402M4X6HUL
4 x 8		STR402M4X8HUL
4 x 10	M3 x 0.5 x 4	STR402M4X10HUL



STR402M5X4HUL

#### 5mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	316 SS Part Number
5 x 4		STR402M5X4HUL
5 x 5	M4 x 0.7 x 5	STR402M5X5HUL
5 x 6		STR402M5X6HUL
5 x 8		STR402M5X8HUL
5 x 10		STR402M5X10HUL
5 x 12	M4 x 0.7 x 5	STR402M5X12HUL
5 x 16		STR402M5X16HUL
5 x 20		STR402M5X20HUL



STR402M6X4HUL

#### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	316 SS Part Number
6 x 4		STR402M6X4HUL
6 x 5	M5 x 0.8 x 6	STR402M6X5HUL
6 x 6		STR402M6X6HUL
6 x 8		STR402M6X8HUL
6 x 10		STR402M6X10HUL
6 x 12	M5 x 0.8 x 6	STR402M6X12HUL
6 x 16		STR402M6X16HUL
6 x 20		STR402M6X20HUL



STR402M8X6HUL

#### 8mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	316 SS Part Number
8 x 6		STR402M8X6HUL
8 x 8	M6 x 1 x 11	STR402M8X8HUL
8 x 10		STR402M8X10HUL
8 x 12		STR402M8X12HUL
8 x 16	M6 x 1 x 11	STR402M8X16HUL
8 x 20		STR402M8X20HUL

## Ultra Low Smooth Head – Metric

### 316 Stainless Steel – Slotted Drive

- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- All shoulder diameters meet or exceed accepted industry standards and AMPG's internal specification AMPG 2013 UL.02.
- All stainless steel screws adhere to environmental regulations established by European Union RoHS directive.



STR402M4X4UL

#### 4mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	316 SS Part Number
4 x 4	M3 x 0.5 x 4	STR402M4X4UL
4 x 5		STR402M4X5HL
4 x 6		STR402M4X6UL
4 x 8		STR402M4X8UL
4 x 10	M3 x 0.5 x 4	STR402M4X10UL



STR402M5X4UL

#### 5mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	316 SS Part Number
5 x 4	M4 x 0.7 x 5	STR402M5X4UL
5 x 5		STR402M5X5UL
5 x 6		STR402M5X6UL
5 x 8		STR402M5X8UL
5 x 10	M4 x 0.7 x 5	STR402M5X10UL
5 x 12		STR402M5X12UL
5 x 16		STR402M5X16UL
5 x 20		STR402M5X20UL



STR402M6X4UL

#### 6mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	316 SS Part Number
6 x 4	M5 x 0.8 x 6	STR402M6X4UL
6 x 5		STR402M6X5UL
6 x 6		STR402M6X6UL
6 x 8		STR402M6X8UL
6 x 10	M5 x 0.8 x 6	STR402M6X10UL
6 x 12		STR402M6X12UL
6 x 16		STR402M6X16UL
6 x 20		STR402M6X20UL



STR402M8X6UL

#### 8mm Shoulder Diameter

Shoulder Dia. x Lg.	Thread Size x Lg.	316 SS Part Number
8 x 6	M6 x 1 x 11	STR402M8X6UL
8 x 8		STR402M8X8UL
8 x 10		STR402M8X10UL
8 x 12		STR402M8X12UL
8 x 16	M6 x 1 x 11	STR402M8X16UL
8 x 20		STR402M8X20UL





ACCURATE  
MANUFACTURED  
PRODUCTS  
GROUP

# Barrels, Screws, & Posts



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8090 Woodland Drive  
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## Barrels, Screws and Post Index

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## Button Head Socket Drive Posts (Architect Designed)



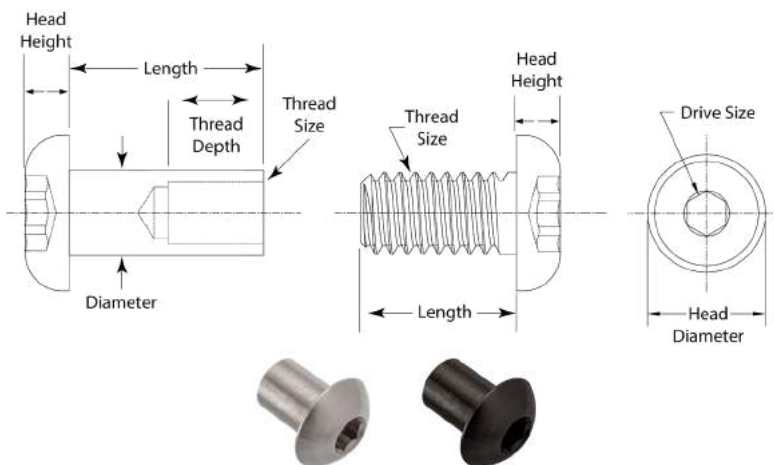
### 18-8 SS

These Architect Designed Socket Drive Binding Barrel and Screw Sets provide a contemporary look, the combination of an AMPG button head barrel with a button head screw delivers a high-tech look in applications where both heads are exposed. These sex bolts consist of a socket drive barrel and a socket drive screw with complimentary sized heads engineered to spread the load across a wide area. Accurate Manufactured Products Group offers stock button head sex bolts made from durable and corrosion-resistant stainless steel. Black-oxide 18-8 stainless steel binding posts have a matte-black finish.

Thread fit is 6H for barrels; 6H for screws.

#### Materials and finishes offered in:

- 18-8 Stainless Steel (300 series), Plain Finish
- 18-8 Stainless Steel (300 series), Black Oxide



### Socket Drive Barrels

Thread Length	Length	Diameter	Head Diameter	Head Height	Thread Depth	Drive Size	18-8 SS, Plain Part Number	18-8 SS, Black Ox. Part Number
M4 x 0.7	12.00	6.00	10.50	4.00	7.50	2.5	Z1602M	Z1602M-BX
	16.00	6.00	10.50	4.00	7.50	2.5	Z1603M	Z1603M-BX
	20.00	6.00	10.50	4.00	9.50	2.5	Z1604M	Z1604M-BX
	25.00	6.00	10.50	4.00	9.50	2.5	Z1606M	Z1606M-BX
M4 x 0.7	30.00	6.00	10.50	4.00	9.50	2.5	Z1608M	Z1608M-BX
	40.00	6.00	10.50	4.00	9.50	2.5	Z1610M	Z1610M-BX
M6 x 1	12.00	10.00	17.50	5.00	7.50	4	Z1616M	—
	16.00	10.00	17.50	5.00	9.50	4	Z1617M	Z1617M-BX
	20.00	10.00	17.50	5.00	9.50	4	Z1618M	Z1618M-BX
	25.00	10.00	17.50	5.00	9.50	4	Z1620M	Z1620M-BX
M6 x 1	30.00	10.00	17.50	5.00	9.50	4	Z1622M	Z1622M-BX
	40.00	10.00	17.50	5.00	9.50	4	Z1624M	Z1624M-BX
M8 x 1.25	12.00	12.00	21.00	6.00	11.50	5	Z1630M	—
	16.00	12.00	21.00	6.00	11.50	5	Z1631M	—
	20.00	12.00	21.00	6.00	11.50	5	Z1632M	Z1632M-BX
	25.00	12.00	21.00	6.00	11.50	5	Z1634M	Z1634M-BX
M8 x 1.25	40.00	12.00	21.00	6.00	11.50	5	Z1636M	Z1636M-BX
	50.00	12.00	21.00	6.00	11.50	5	Z1638M	Z1638M-BX

## Button Head Socket Drive Posts – Metric



18-8 SS | Plain and Black Oxide



### Socket Drive Screws

Thread Size	Length	Head Diameter	Head Height	Drive Size	18-8 SS, Plain Part Number	18-8 SS, Black Ox. Part Number
M4 x 0.7	6.00	10.50	4.00	2.5	Z1838M	Z1838M-BX
	8.00	10.50	4.00	2.5	Z1839M	Z1839M-BX
M6 x 1	8.00	17.50	5.00	4	Z1840M	Z1840M-BX
	10.00	21.00	6.00	5	Z1843M	Z1843M-BX



### Socket Drive Sets

Thread Size	Barrel						Screw				Set	
	For Material Thickness (min, max)	Length	Dia.	Head Dia.	Head Height	Thread Depth	Length	Head Dia.	Head Ht.	Drive Size	18-8 SS, Plain Barrel & Screw Set	18-8 SS, Black Ox. Barrel & Screw Set
M4 x 0.7	12 to 14	12.00	6.00	10.50	4.00	7.50	6	10.50	4.00	2.5	Z1602MPAK	Z1602MPAK-BX
	16 to 18	16.00	6.00	10.50	4.00	7.50	6	10.50	4.00	2.5	Z1603MPAK	Z1603MPAK-BX
	20 to 22	20.00	6.00	10.50	4.00	9.50	8	10.50	4.00	2.5	Z1604MPAK	Z1604MPAK-BX
	25 to 27	25.00	6.00	10.50	4.00	9.50	8	10.50	4.00	2.5	Z1606MPAK	Z1606MPAK-BX
M4 x 0.7	30 to 32	30.00	6.00	10.50	4.00	9.50	8	10.50	4.00	2.5	Z1608MPAK	Z1608MPAK-BX
	40 to 42	40.00	6.00	10.50	4.00	9.50	8	10.50	4.00	2.5	Z1610MPAK	Z1610MPAK-BX
M6 x 1	16 to 18	16.00	10.00	17.50	5.00	9.50	8	17.50	5.00	4	Z1617MPAK	Z1617MPAK-BX
	20 to 22	20.00	10.00	17.50	5.00	9.50	8	17.50	5.00	4	Z1618MPAK	Z1618MPAK-BX
	25 to 27	25.00	10.00	17.50	5.00	9.50	8	17.50	5.00	4	Z1620MPAK	Z1620MPAK-BX
	30 to 32	30.00	10.00	17.50	5.00	9.50	8	17.50	5.00	4	Z1622MPAK	Z1622MPAK-BX
M6 x 1	40 to 42	40.00	10.00	17.50	5.00	9.50	8	17.50	5.00	4	Z1624MPAK	Z1624MPAK-BX
M8 x 1.25	20 to 23	20.00	12.00	21.00	6.00	11.50	10	21.00	6.00	5	Z1632MPAK	Z1632MPAK-BX
	25 to 28	25.00	12.00	21.00	6.00	11.50	10	21.00	6.00	5	Z1634MPAK	Z1634MPAK-BX
	40 to 43	40.00	12.00	21.00	6.00	11.50	10	21.00	6.00	5	Z1636MPAK	Z1636MPAK-BX
	50 to 53	50.00	12.00	21.00	6.00	11.50	10	21.00	6.00	5	Z1638MPAK	Z1638MPAK-BX

## Spanner Drive Posts



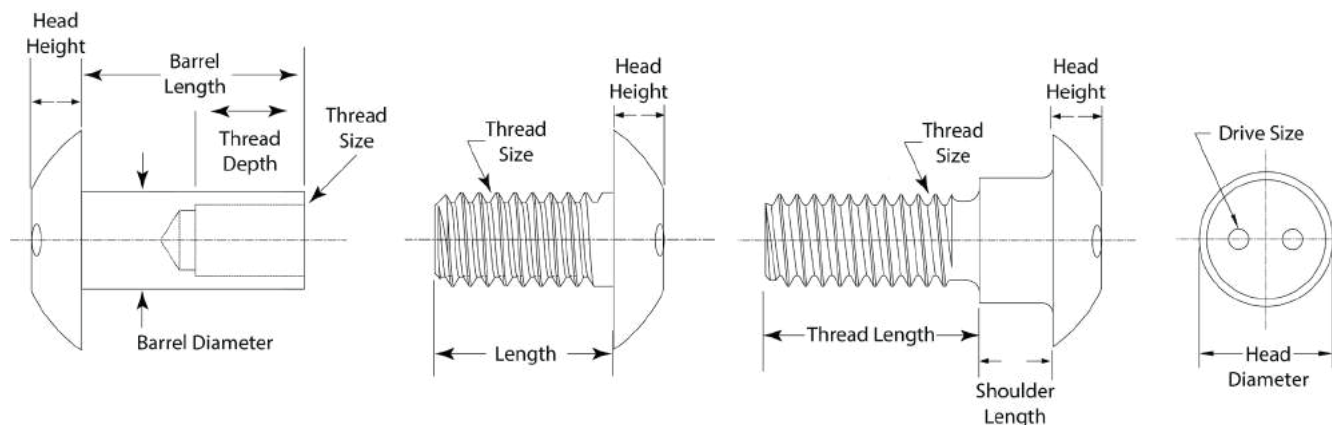
### 18-8 SS (A2)

Binding Barrels and Screws are known by many names: Mating Fasteners, Architectural Screws, Binding Screws, Binding Bolts, Binding Posts, Chicago Screws, Male & Female Bolts, Post & Screw, Sex Bolts and Threaded Rivets. A binding barrel and screw are designed to clamp material between the head of the barrel and the head of the screw, or to bridge the gap between two parts, like going through a hollow door.

AMPG has developed a metric line of Tamper-Resistant Binding Barrel and Screw Sets. These mating fasteners consist of a barrel with an internal thread and a complimentary threaded screw. Both the barrel and screw have identical truss heads with drilled spanner drives, also known as snake-eye spanner drives. A truss head distributes holding pressure to reduce the likelihood of crushing thin and softer materials and provides more bearing surface for improved holding power. Barrel lengths are measured from under the head to end of barrel. Thread fit is Class 6H for barrels; Class 6g for screws.

#### Materials and finishes offered in:

- 18-8 Stainless Steel (300 series), Plain Finish



**Spanner Drive Dimensions – Metric**

Barrel Dia.	Thread Size	Head Dia.	Head Height	Drive Size
6	M4 x 0.7	10.50	4.00	#14
8	M6 x 1	17.50	4.00	#14



18-8 SS

## Spanner Drive Posts – Metric



18-8 SS | Plain Finish



### Spanner Drive Barrels

Barrel Diameter	Barrel Length	Thread Size	Thread Depth	Drive* Size	Part Number
6.00	10.00	M4 x 0.7	7.50	#14	Z1700SDM
	12.00	M4 x 0.7			Z1702SDM
6.00	20.00	M4 x 0.7	9.50	#14	Z1706SDM
	40.00	M4 x 0.7			Z1712SDM
8.00	12.00	M6 x 1	7.50	#14	Z1716SDM
8.00	20.00	M6 x 1	9.50	#14	Z1720SDM
	30.00	M6 x 1			Z1724SDM



### Binding Post Sets

Grip Range	Barrel Length	Thread Size	Screw Length	Shoulder Screw Lg.	Set Part Number
10 to 12mm	10.00	M4 x 0.7	6.00	–	Z1700SDMPAK
12 to 14mm	12.00	M4 x 0.7	6.00	–	Z1702SDMPAK
16 to 18mm	12.00	M4 x 0.7	6.00	4.00	Z1704SDMPAK
20 to 22mm	20.00	M4 x 0.7	8.00	–	Z1706SDMPAK
25 to 27mm	20.00	M4 x 0.7	8.00	5.00	Z1708SDMPAK
30 to 32mm	20.00	M4 x 0.7	8.00	10.00	Z1710SDMPAK
40 to 42mm	40.00	M4 x 0.7	8.00	–	Z1712SDMPAK
50 to 52mm	40.00	M4 x 0.7	8.00	10.00	Z1714SDMPAK
12 to 14mm	12.00	M6 x 1	6.00	–	Z1716SDMPAK
16 to 18mm	12.00	M6 x 1	6.00	4.00	Z1718SDMPAK
20 to 22mm	20.00	M6 x 1	8.00	–	Z1720SDMPAK
25 to 27mm	20.00	M6 x 1	8.00	5.00	Z1722SDMPAK
30 to 32mm	30.00	M6 x 1	8.00	–	Z1724SDMPAK
40 to 42mm	30.00	M6 x 1	8.00	10.00	Z1726SDMPAK

### Spanner Drive Dimensions – Metric

Barrel Dia.	Thread Size	Head Dia.	Head Height	Drive Size
6	M4 x 0.7	10.50	4.00	#14
8	M6 x 1	17.50	4.00	#14



### Spanner Drive Screws

Thread Size	Length	Drive* Size	Part Number
M4 x 0.7	6.00	#14	Z1952SDM
M4 x 0.7	8.00		Z1954SDM
M6 x 1	6.00		Z1956SDM
M6 x 1	8.00		Z1958SDM



### Spanner Drive Shoulder Screws

Thread Size	Thread Length	Shoulder Length	Drive* Size	Part Number
M4 x 0.7	6.00	4.00	#14	Z1900SDM
M4 x 0.7	8.00	5.00		Z1910SDM
M4 x 0.7	8.00	10.00		Z1920SDM
M6 x 1	6.00	4.00	#14	Z1930SDM
M6 x 1	8.00	5.00	#14	Z1940SDM
M6 x 1	8.00	10.00		Z1950SDM

\*Drilled Spanner #14 designed for Head Diameters of .414" to .687 (10.5mm - 17.5mm). Hole Ctr.-to-Ctr. is .250" (6.35mm).

## 6-Lobe with Pin Tamper Resistant Posts



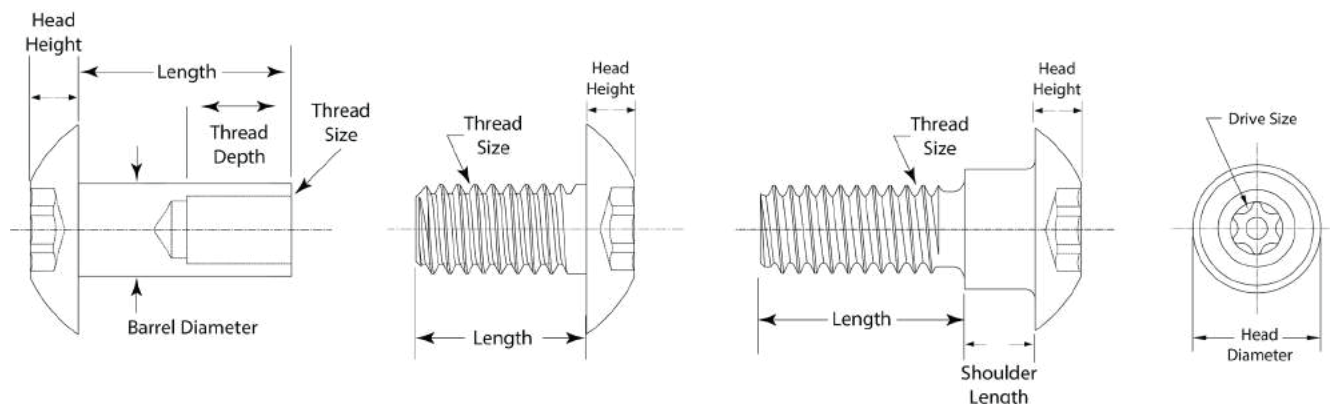
### 18-8 SS

Binding Barrels and Screws are known by many names: Mating Fasteners, Architectural Screws, Binding Screws, Binding Bolts, Binding Posts, Chicago Screws, Male & Female Bolts, Post & Screw, Sex Bolts and Threaded Rivets. A binding barrel and screw are designed to clamp material between the head of the barrel and the head of the screw, or to bridge the gap between two parts, like going through a hollow door.

AMPG has developed a metric line of tamper-resistant post. These mating fasteners consist of a female threaded barrel & a complimentary threaded screw. Both the barrel and screw have identical truss heads with 6-Lobe pin-in-head tamper-resistant drives. A truss head distributes holding pressure to reduce the likelihood of crushing thin and softer materials and provides more bearing surface for improved holding power. Barrel lengths are measured from under the head to end of barrel. Male screws are available with or without shoulders. Available in Inch and Metric sizes.

#### Materials and finishes offered in:

- 18-8 Stainless Steel, Plain Finish



### Binding Post Barrels

Thread Size	Barrel Length	Diameter	Head Diameter	Head Height	Thread Depth	Drive Size	Order Number
M4 x 0.7	10	6.00	10.50	4.00	7.50	T20	Z1300M
	12	6.00	10.50	4.00	7.50	T20	Z1302M
	20	6.00	10.50	4.00	9.50	T20	Z1306M
	40	6.00	10.50	4.00	9.50	T20	Z1312M
M6 x 1	12	8.00	17.50	4.00	7.50	T27	Z1316M
	20	8.00	17.50	4.00	9.50	T27	Z1320M
	30	8.00	17.50	4.00	9.50	T27	Z1324M

## 6-Lobe with Pin Tamper Resistant Posts – Metric

18-8 SS | Plain Finish



### 6-Lobe with Pin Shoulder Screws

Thread Length	For Barrel Diameter	Length	Head Diameter	Head Height	Shoulder Diameter	Shoulder Length	Drive Size	Order Number
M4 x 0.7	6.00	6	10.50	4.00	6.00	4.00	T20	Z1500M
	6.00	8	10.50	4.00	6.00	5.00	T20	Z1510M
	6.00	8	10.50	4.00	6.00	10.00	T20	Z1520M
M6 x 1	8.00	6	17.50	4.00	8.00	4.00	T27	Z1530M
	8.00	8	17.50	4.00	8.00	5.00	T27	Z1540M
	8.00	8	17.50	4.00	8.00	10.00	T27	Z1550M



### 6-Lobe with Pin Hex Key

Drive Size	Steel Part Number
T20	KEYT20
T27	KEYT27
T40	KEYT40
T45	KEYT45



### 6-Lobe with Pin Screws

Thread Size	Length	Head Diameter	Head Height	Drive Size	Order Number
M4 x 0.7	6.00	10.50	4.00	T20	Z1560M
M4 x 0.7	8.00	10.50	4.00	T20	Z1570M
M6 x 1	6.00	17.50	4.00	T27	Z1580M
M6 x 1	8.00	17.50	4.00	T27	Z1590M



### 6-Lobe with Pin Bit

Drive Size	Hex Size	Steel Part Number
T20		BITT20
T27		BITT27
T40	1/4	BITT40
T45		BITT45



### Binding Post Set

Barrel							Screw					Set
Thread Size	For Material Thickness (min,max)	Length	Diameter	Head Diameter	Head Height	Thread Depth	Length	Shoulder Length	Head Diameter	Head Height	Drive Size	Barrel & Screw Set (1 barrel & 1 screw)
M4 x 0.7	10 to 12	10	6.00	10.50	4.00	7.50	6	no shldr	10.50	4.00	T20	Z1300MPAK
	12 to 14	12	6.00	10.50	4.00	7.50	6	no shldr	10.50	4.00	T20	Z1302MPAK
	16 to 18	12	6.00	10.50	4.00	7.50	6	4.00	10.50	4.00	T20	Z1304MPAK
	20 to 22	20	6.00	10.50	4.00	9.50	8	no shldr	10.50	4.00	T20	Z1306MPAK
M4 x 0.7	25 to 27	20	6.00	10.50	4.00	9.50	8	5.00	10.50	4.00	T20	Z1308MPAK
	30 to 32	20	6.00	10.50	4.00	9.50	8	10.00	10.50	4.00	T20	Z1310MPAK
	40 to 42	40	6.00	10.50	4.00	9.50	8	no shldr	10.50	4.00	T20	Z1312MPAK
	50 to 52	40	6.00	10.50	4.00	9.50	8	10.00	10.50	4.00	T20	Z1314MPAK
M6 x 1	12 to 14	12	8.00	17.50	4.00	7.50	6	no shldr	17.50	4.00	T27	Z1316MPAK
	16 to 18	12	8.00	17.50	4.00	7.50	6	4.00	17.50	4.00	T27	Z1318MPAK
	20 to 22	20	8.00	17.50	4.00	9.50	8	no shldr	17.50	4.00	T27	Z1320MPAK
	25 to 27	20	8.00	17.50	4.00	9.50	8	5.00	17.50	4.00	T27	Z1322MPAK
M6 x 1	30 to 32	30	8.00	17.50	4.00	9.50	8	no shldr	17.50	4.00	T27	Z1324MPAK
	40 to 42	30	8.00	17.50	4.00	9.50	8	10.00	17.50	4.00	T27	Z1326MPAK



## Slotted Drive Barrel

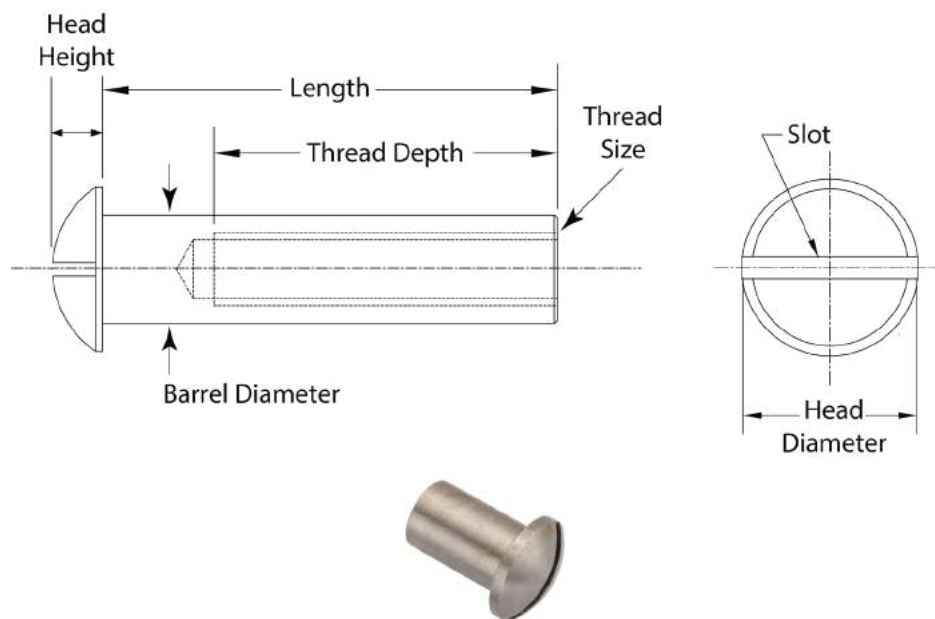
### 18-8 SS (A2)

When combining a slotted barrel with a screw, this mating fastener sometimes referred to as a threaded rivet and a rivet nut, is designed to clamp material between the head of the barrel and the head of the screw, or to bridge the gap between two parts, like going through a hollow panel.

A slotted barrel has a truss style head which is a wider and lower version of a round head. A truss head distributes holding pressure to reduce the likelihood of crushing thin and softer materials and provides more bearing surface for improved holding power. Barrel length is measured from under the head. Under the head/flange is smooth; screws are sold separately.

#### Materials and finishes offered in:

- 18-8 Stainless Steel, Plain Finish



### Slotted Drive Barrels

Thread Size	Length	Barrel Diameter	Head Diameter	Head Height	Thread Depth	18-8 SS Part Number
M4 x 0.7	6.00	6.00	10.50	3.00	4.00	Z4700M
M4 x 0.7	12.00	6.00	10.50	3.00	7.50	Z4705M
M4 x 0.7	20.00	6.00	10.50	3.00	11.50	Z4710M
M4 x 0.7	25.00	6.00	10.50	3.00	11.50	Z4715M
M6 x 1	8.00	8.00	14.00	4.00	7.50	Z4720M
M6 x 1	8.00	8.00	14.00	4.00	11.50	Z4725M
M6 x 1	10.00	10.00	17.50	5.00	7.50	Z4730M
M6 x 1	10.00	10.00	17.50	5.00	9.50	Z4731M
M6 x 1	10.00	10.00	17.50	5.00	9.50	Z4732M
M6 x 1	10.00	10.00	17.50	5.00	9.50	Z4734M

## Furniture Posts (Connector Bolts)

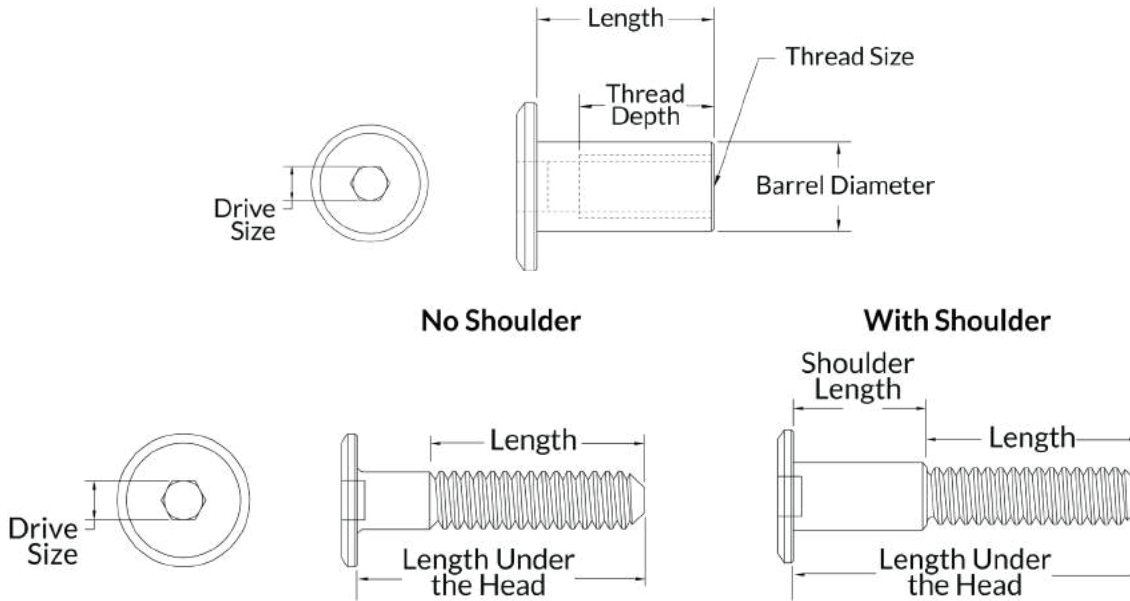


### Steel

Furniture Posts and Nuts are used for joining any two parts or pieces together, with a finished appearance. Most commonly used to join panels together, such as cabinets, book cases, and other furniture fixtures. The hex drive allows maximum leverage and force to be applied to the connection. These fasteners have a low profile and beveled edges on the exposed head, presenting a decorative and finished look.

#### Materials and finishes offered in:

- Steel, Plain Finish, Brass Plated, Black-Oxide, Dark Bronze Plated, Nickel Plated, Zinc Plated



**Screw Grip Range and Drive Size Table**

Thread Size	Length Under The Head	12MM Nut Grip Range	17MM Nut Grip Range	Drive Size	Thread Size	Length Under The Head	12MM Nut Grip Range	17MM Nut Grip Range	Drive Size
1/4-20	20mm (.787)	21 - 25mm	21 - 30mm	4mm	1/4-20	90mm (3.543)	91 - 95mm	91 - 100mm	4mm
1/4-20	23mm (.906)	24 - 28mm	24 - 33mm	4mm	1/4-20	100mm (3.937)	101 - 105mm	101 - 110mm	4mm
1/4-20	25mm (.984)	26 - 30mm	26 - 35mm	4mm	1/4-20	110mm (4.331)	111 - 115mm	111 - 120mm	4mm
1/4-20	30mm (1.184)	31 - 35mm	31 - 40mm	4mm	1/4-20	120mm (4.724)	121 - 125mm	121 - 130mm	4mm
1/4-20	35mm (1.378)	36 - 40mm	36 - 45mm	4mm	5/16-18	40mm (1.575)	N/A	41 - 50mm	5mm
1/4-20	40mm (1.575)	41 - 45mm	41 - 50mm	4mm	5/16-18	50mm (1.969)	N/A	51 - 60mm	5mm
1/4-20	45mm (1.772)	46 - 50mm	46 - 55mm	4mm	5/16-18	60mm (2.362)	N/A	61 - 70mm	5mm
1/4-20	50mm (1.969)	51 - 55mm	51 - 60mm	4mm	5/16-18	70mm (2.756)	N/A	71 - 80mm	5mm
1/4-20	60mm (2.362)	61 - 65mm	61 - 70mm	4mm	5/16-18	80mm (3.150)	N/A	81 - 90mm	5mm
1/4-20	70mm (2.756)	71 - 75mm	71 - 80mm	4mm	5/16-18	100mm (3.937)	N/A	101 - 110mm	5mm
1/4-20	80mm (3.150)	81 - 85mm	81 - 90mm	4mm					

Steel

## Furniture Posts Barrles – Inch/Metric



Steel, Plain



Steel, Brass



Steel, Black-Oxide



Steel, Dark Bronze



Steel, Nickel



Steel, Zinc

### Furniture Post Binding Barrels

Thread Size	Barrel Diameter	Barrel Length	Thread Depth	Steel, Plain Part Number	Steel, Brass Part Number	Steel, Bk-Oxide Part Number	Steel, Bronze Part Number	Steel, Nickel Part Number	Steel, Zinc Part Number
1/4-20	9mm (.354)	12mm (.472)	8mm (.315)	Z4452-A	Z4452-BR	Z4452-BX	Z4452-BZ	Z4452-NI	Z4452-ZN
1/4-20*	9mm (.354)	12mm (.472)	8mm (.315)	—	—	—	Z4453-BZ	—	—
1/4-20	9mm (.354)	17mm (.699)	13mm (.512)	Z4456-A	Z4456-BR	Z4456-BX	Z4456-BZ	Z4456-NI	Z4456-ZN
5/16-18	11mm (.433)	17mm (.699)	13mm (.512)	Z4460-A	Z4460-BR	Z4460-BX	Z4460-BZ	Z4460-NI	Z4460-ZN

\*Tapped Thru Head



Steel, Plain



Steel, Brass



Steel, Black-Oxide



Steel, Dark Bronze



Steel, Nickel



Steel, Zinc

### Furniture Post Shoulder Screws

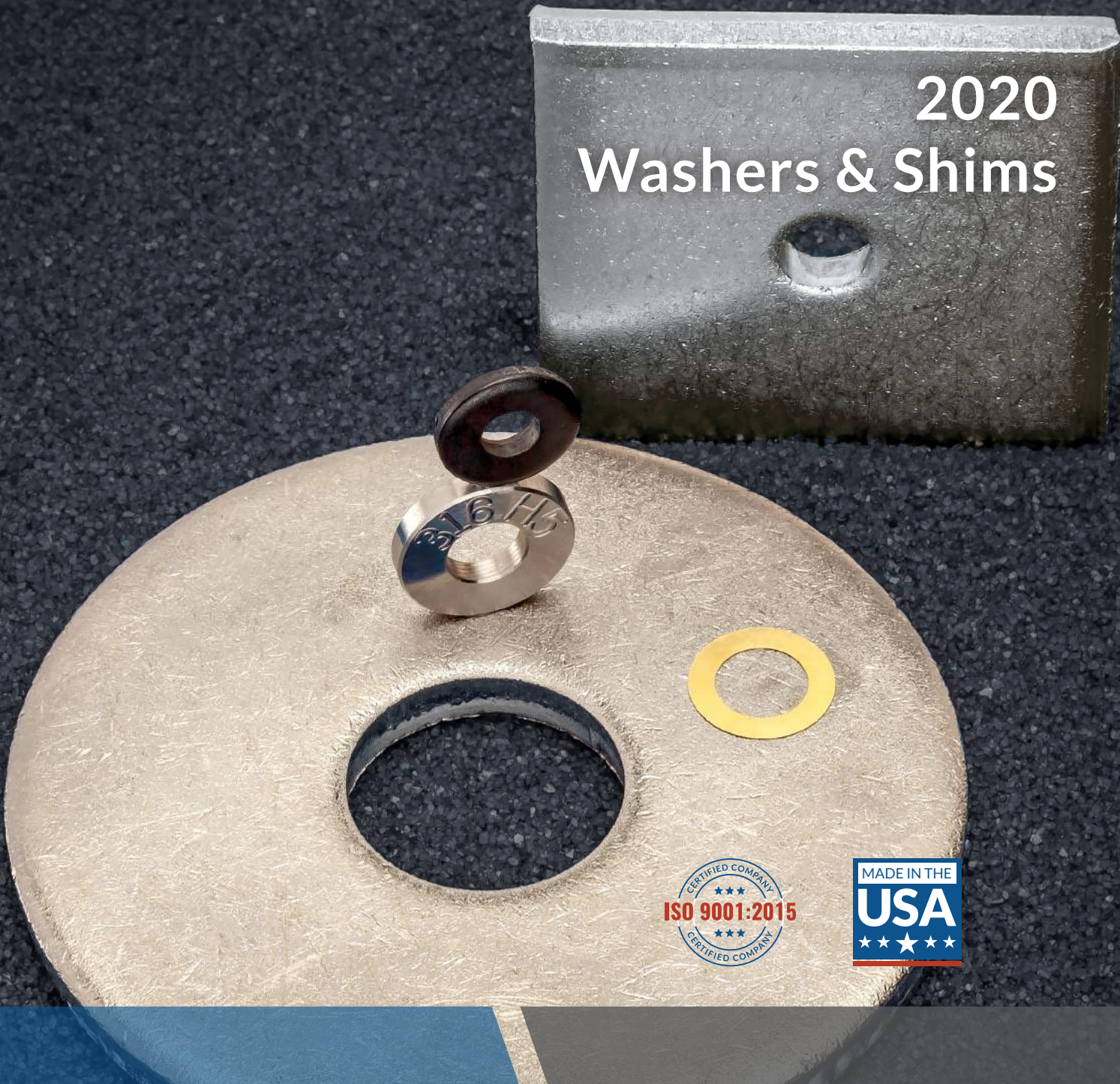
Thread Size	Length Under The Head	Thread Length	Shoulder Length	Steel, Plain Part Number	Steel, Brass Part Number	Steel, Bk-Oxide Part Number	Steel, Bronze Part Number	Steel, Nickel Part Number	Steel, Zinc Part Number
1/4-20	23mm (.906)	13mm (.512)	10mm (.394)	Z4467-A	Z4467-BR	Z4467-BX	Z4467-BZ	Z4467-NI	Z4467-ZN
1/4-20	30mm (1.181)	20mm (.787)	10mm (.394)	Z4468-A	Z4468-BR	Z4468-BX	Z4468-BZ	Z4468-NI	Z4468-ZN
1/4-20	35mm (1.378)	25mm (.984)	10mm (.394)	Z4469-A	Z4469-BR	Z4469-BX	Z4469-BZ	Z4469-NI	Z4469-ZN
1/4-20	40mm (1.575)	30mm (1.181)	10mm (.394)	Z4470-A	Z4470-BR	Z4470-BX	Z4470-BZ	Z4470-NI	Z4470-ZN
1/4-20	45mm (1.772)	35mm (1.378)	10mm (.394)	Z4471-A	Z4471-BR	Z4471-BX	Z4471-BZ	Z4471-NI	Z4471-ZN
1/4-20	50mm (1.969)	40mm (1.575)	18mm (.709)	Z4472-A	Z4472-BR	Z4472-BX	Z4472-BZ	Z4472-NI	Z4472-ZN
1/4-20	60mm (2.362)	35mm (1.378)	18mm (.709)	Z4473-A	Z4473-BR	Z4473-BX	Z4473-BZ	Z4473-NI	Z4473-ZN
1/4-20	70mm (2.756)	35mm (1.378)	18mm (.709)	Z4474-A	Z4474-BR	Z4474-BX	Z4474-BZ	Z4474-NI	Z4474-ZN
1/4-20	80mm (3.150)	35mm (1.378)	18mm (.709)	Z4475-A	Z4475-BR	Z4475-BX	Z4475-BZ	Z4475-NI	Z4475-ZN
1/4-20	90mm (3.543)	35mm (1.378)	18mm (.709)	Z4476-A	Z4476-BR	Z4476-BX	Z4476-BZ	Z4476-NI	Z4476-ZN
1/4-20	100mm (3.937)	35mm (1.378)	18mm (.709)	Z4477-A	Z4477-BR	Z4477-BX	Z4477-BZ	Z4477-NI	Z4477-ZN

		DECIMALS	MM			DECIMALS	MM	
1/16	1/64	0.0156	0.397	9/16	33/64	0.5156	13.097	
	1/32	0.0313	0.794		17/32	35/64	0.5313	13.494
	3/64	0.0469	1.191		37/64	39/64	0.5469	13.891
	5/64	0.0625	1.588		19/32	41/64	0.5625	14.288
1/8	7/64	0.0781	1.984	5/8	43/64	0.5781	14.684	
	9/64	0.0938	2.381	21/32	45/64	0.5938	15.081	
	11/64	0.1094	2.778	23/32	47/64	0.6094	15.478	
	13/64	0.1250	3.175	25/32	49/64	0.6250	15.875	
3/16	15/64	0.1406	3.572	3/4	51/64	0.6406	16.272	
	17/64	0.1563	3.969	11/16	53/64	0.6563	16.669	
	19/64	0.1719	4.366	27/32	55/64	0.6719	17.066	
	21/64	0.1875	4.763	29/32	57/64	0.6875	17.463	
1/4	23/64	0.2031	5.159	7/8	59/64	0.7031	17.859	
	25/64	0.2188	5.556	15/16	61/64	0.7188	18.256	
	27/64	0.2344	5.953	1	63/64	0.7344	18.653	
	29/64	0.2500	6.350			0.7500	19.050	
5/16	31/64	0.2656	6.747			0.7656	19.447	
	33/64	0.2813	7.144			0.7813	19.844	
	35/64	0.2969	7.541			0.7969	20.241	
	37/64	0.3125	7.938			0.8125	20.638	
3/8	39/64	0.3281	8.334			0.8281	21.034	
	41/64	0.3438	8.731			0.8438	21.431	
	43/64	0.3594	9.128			0.8594	21.828	
	45/64	0.3750	9.525			0.8750	22.225	
7/16	47/64	0.3906	9.922			0.8906	22.622	
	49/64	0.4063	10.319			0.9063	23.019	
	51/64	0.4219	10.716			0.9219	23.416	
	53/64	0.4375	11.113			0.9375	23.813	
1/2	55/64	0.4531	11.509			0.9531	24.209	
	57/64	0.4688	11.906			0.9688	24.606	
	59/64	0.4844	12.303			0.9844	25.003	
	61/64	0.5000	12.700			1.0000	25.400	



ACCURATE  
MANUFACTURED  
PRODUCTS  
GROUP

# 2020 Washers & Shims



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## About Our Finishes



Black Oxide

### Black Oxide

Black oxide by itself provides virtually no protection against corrosive environments. Black oxide only offers moderate protection and thus ideally suited for indoor applications. This treatment provides an attractive and matte black finish. While steel is the usual substrate, other materials including stainless steel, alloy steel, copper and brass react equally well.



Nickel Plated

### Nickel Plated

Nickel is used in plating fasteners primarily for esthetics purposes. It provides comparable corrosion resistance to zinc plating, but at a much higher cost.



Galvanized



Hot-Dipped Galvanized

### Galvanized and Hot-Dipped Galvanized

Galvanizing involves the application of a layer of zinc. Galvanized metal has a thicker sacrificial protective finish than zinc plated metals. Hot dipped galvanizing puts the thickest possible coating on the metal resulting in superior corrosion resistance. Hot-dipped galvanized steel washers are 10 times as corrosion resistant as zinc plated washers. Hot dipped galvanized fasteners are frequently used in coastal environments. Hot-dipped galvanized washers are tapped slightly larger than regular washers to accommodate this thick coating.



Passivation

### Passivation

Passivation is a non-electrolytic process typically using nitric or citric acid to remove contamination from the surface of stainless steel and titanium finished parts. During manufacturing, sulfides added to raw material for improved machinability or particles of iron from machining center cutting tools may transfer to the surface of the finished parts. Surface contamination can result in premature rust and can inhibit the formation of the oxide film which protects the material from corrosion. Passivation renders the material more rust resistant due to lack of iron to react with the atmosphere.



Plain and Oiled

### Plain and Oiled

Plain steel fasteners with oil added provides mild rust resistance. For components used in indoor dry environment.



Zinc Plated



Yellow Zinc Plated

### Zinc Plated, Yellow Zinc Plated

Steel fasteners can be electro-plated with zinc for better corrosion resistance and usually to a thickness .0002" - .0003". Fasteners that have been zinc plated have a silver finish. It is a sacrificial finish that corrodes before the underlying steel. Zinc plated washers are fairly corrosion resistant but will rust over time and quicker if the coating is damaged or if exposed to harsh elements. Applying a [zinc yellow-chromate](#) passivate over the zinc, improves corrosion resistance and yellow is commonly used to identify high-strength components such as Grade 8 materials.

## Washers and Shims Index

Page	Description
60	Flat Washers
61 - 62	Component Thick Washers
63 - 64	Alignment (Spherical) Washers
65	Countersunk Washers
66	Square Flat Washers

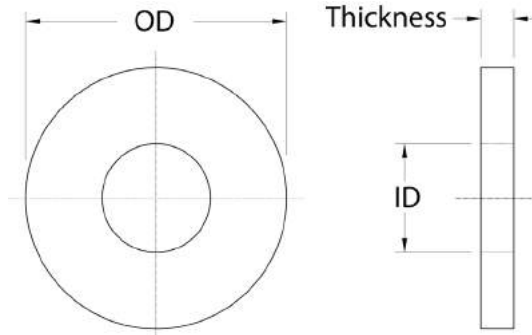
## Flat Washer – Metric



Flat washers distribute pressure of a threaded fastener to prevent damage during tightening. AMPG 316 H5 offers comparable strength and corrosion resistant properties as Bumax 88. AMPG is using a special grade of Type 316 Stainless Steel to manufacture the only domestic line of products that have the superior corrosion resistance of 316 stainless and the strength equivalent to Grade 5 steel materials. Use these fasteners in chemical, food, and marine applications. Maybe mildly magnetic. Titanium Grade 2 is best known for being strong, lightweight, and corrosion resistant. This material resists chlorides, hypochlorites, chlorates, perchlorates and chlorine dioxide. SAE washers generally have a smaller ID and OD than other standard flat washers. These SAE style washers meet DIN 125.

### Materials and finishes offered in:

- 316 Stainless Steel High Five
- 17-4 PH Stainless Steel
- Titanium Grade 2



### 316 H5 Flat Washers

Size	ID	OD	Thickness	316 H5 Part Number
M5	5.30	10.00	.90 - 1.10	WAS407M5
M6	6.40	12.00	1.40 - 1.80	WAS407M6
M8	8.40	16.00	1.40 - 1.80	WAS407M8
M10	10.50	20.00	1.80 - 2.20	WAS407M10
M12	13.00	24.00	2.30 - 2.70	WAS407M12



### Titanium Grade 2 Flat Washers

Size	ID	OD	Thickness	Ti2 Part Number
M2	2.20	5.00	.20 - .40	WAS406M2
M2.5	2.70	6.00	.40 - .60	WAS406M2.5
M3	3.20	7.00	.40 - .60	WAS406M3
M3.5	3.70	8.00	.40 - .60	WAS406M3.5
M4	4.30	9.00	.70 - .90	WAS406M4
M5	5.30	10.00	.90 - 1.10	WAS406M5
M6	6.40	12.00	1.40 - 1.80	WAS406M6
M8	8.40	16.00	1.40 - 1.80	WAS406M8
M10	10.50	20.00	1.80 - 2.20	WAS406M10
M12	13.00	24.00	2.30 - 2.70	WAS406M12



### 17-4 PH SS Flat Washers

Size	ID	OD	Thickness	17-4 PH Part Number
M6	6.40	12.00	1.40 - 1.80	WAS174M6
M8	8.40	16.00	1.40 - 1.80	WAS174M8
M10	10.50	20.00	1.80 - 2.20	WAS174M10
M12	13.00	24.00	2.30 - 2.70	WAS174M12



18-8 SS, 316 SS,  
17-4 PH SS, Alloy

## Component Thick Washers – Metric



### Materials and finishes offered in:

- 18-8 Stainless Steel, Plain Finish
- 316 Stainless Steel, Plain Finish
- 17-4 PH Stainless Steel, Plain Finish
- Alloy Hardened Steel, Black-Oxide Finish



18-8 Stainless Steel



316 Stainless Steel



17-4 PH Stainless Steel



Alloy Hardened Steel,  
Black Oxide

Bolt Size	ID	OD	Thickness	18-8 SS Part Number	316 SS Part Number	17-4 PH Part Number	Alloy Hardened Steel, Black Oxide Part Number
M03	3.20	8.00	2.00	–	–	–	Z8803
M03	3.20	12.00	3.00	–	–	–	Z8840
M04	4.30	10.00	2.00	Z8804SS	Z8804-316	–	Z8804
M04	4.30	14.00	2.00	Z8842SS	Z8842-316	–	Z8842
M05	5.30	11.00	2.00	Z8805SS	Z8805-316	–	Z8805
M05	5.30	12.00	2.80 - 3.40	–	–	Z90M05-174	–
M05	5.30	15.00	2.00	Z8844SS	Z8844-316	–	Z8844
M06	6.40	13.00	2.50	Z8806SS	Z8806-316	–	Z8806
M06	6.40	16.00	2.80 - 3.40	–	–	–	–
M06	6.40	18.00	2.50	Z8846SS	Z8846-316	–	Z8846
M08	8.40	16.00	3.00	Z8808SS	Z8808-316	–	Z8808
M08	8.40	19.00	2.80 - 3.40	–	–	Z90M08-174	–
M08	8.40	22.00	3.00	Z8848SS	Z8848-316	–	Z8848
M10	10.50	19.00	3.00	Z8810SS	Z8810-316	–	Z8810
M10	10.50	22.00	2.80 - 3.40	–	–	Z90M10-174	–
M10	10.50	23.00	3.00	Z8850SS	Z8850-316	–	Z8850
M10	10.50	25.00	4.30 - 4.80	–	–	–	–
M12	13.00	22.00	3.00	Z8812SS	Z8812-316	–	Z8812
M12	13.00	26.00	3.00	Z8852SS	Z8852-316	Z90M12-174	Z8852
M12	13.00	35.00	4.50 - 5.40	–	–	Z92M12-174	–
M12	13.00	38.00	6.00 - 6.60	Z8851SS	–	–	–
M12	13.00	50.00	6.00 - 6.60	Z8853SS	–	–	–
M12	13.00	76.00	6.00 - 6.60	Z8855SS	–	–	–
M14	15.00	25.00	3.00	Z8814SS	Z8814-316	–	Z8814
M14	15.00	26.00	2.80 - 3.40	–	–	Z90M14-174	–
M14	15.00	27.00	3.00	Z8854SS	Z8854-316	–	Z8854
M14	15.00	35.00	4.50 - 5.40	–	–	Z92M14-174	–
M16	17.00	28.00	3.50	Z8816SS	Z8816-316	–	Z8816
M16	17.00	28.00	3.50	Z8818SS	Z8818-316	–	–

## Component Thick Washers — Metric



18-8 Stainless Steel



316 Stainless Steel



17-4 PH Stainless Steel



Alloy Hardened Steel,  
Black Oxide

Bolt Size	ID	OD	Thickness	18-8 SS Part Number	316 SS Part Number	17-4 PH Part Number	Alloy Hardened Steel, Black Oxide Part Number
M16	17.00	32.00	3.50	Z8856SS	Z8856-316	—	Z8856
M16	17.00	35.00	2.80 - 3.40	—	—	Z90M16-174	—
M16	17.00	35.00	4.50 - 5.40	—	—	Z92M16-174	—
M18	20.00	32.00	3.00 - 3.90	Z8819SS	—	—	—
M18	20.00	38.00	6.00 - 6.60	Z8857SS	—	—	—
M18	20.00	42.00	3.60 - 4.20	—	—	Z90M18-174	—
M18	20.00	42.00	6.00 - 6.60	—	—	Z92M18-174	—
M18	20.00	50.00	6.00 - 6.60	Z8858SS	—	—	—
M18	20.00	76.00	6.00 - 6.60	Z8859SS	—	—	—
M20	21.00	35.00	3.50	Z8820SS	Z8820-316	—	Z8820
M20	21.00	35.00	3.50	Z8860SS	Z8860-316	—	Z8860
M20	22.00	38.00	6.00 - 6.60	Z8861SS	—	—	—
M20	22.00	45.00	3.60 - 4.20	—	—	Z90M20-174	—
M20	22.00	45.00	6.00 - 6.60	—	—	Z92M20-174	—
M20	22.00	50.00	6.00 - 6.60	Z8862SS	—	—	—
M20	22.00	76.00	6.00 - 6.60	Z8863SS	—	—	—
M24	25.00	40.00	4.00	Z8824SS	Z8824-316	—	Z8824
M24	25.00	43.00	4.00	Z8864SS	Z8864-316	—	Z8864
M24	26.00	76.00	6.00 - 6.60	Z8825SS	—	—	—
M24	26.00	76.00	9.30 - 9.80	Z8826SS	—	—	—
M03	3.20	8.00	2.00	Z8803SS	Z8803-316	—	—
M03	3.20	12.00	2.00	Z8840SS	Z8840-316	—	—
M30	31.00	44.00	4.00	Z8830SS	Z8830-316	—	Z8830
M30	31.00	48.00	4.00	Z8870SS	Z8870-316	—	Z8870
M30	32.00	76.00	6.00 - 6.60	Z8871SS	—	—	—
M30	32.00	76.00	9.30 - 9.80	Z8872SS	—	—	—
M36	37.00	50.00	5.00	Z8836SS	Z8836-316	—	Z8836
M36	37.00	50.00	5.00	Z8876SS	Z8876-316	—	Z8876
M36	38.50	76.00	6.00 - 6.60	Z8877SS	—	—	—
M36	38.50	76.00	9.30 - 9.80	Z8878SS	—	—	—

## Alignment (Spherical) Washers



Also known as equalizing, leveling, self-aligning, and spherical washers. A male & female pair are a great solution for fastening a non-parallel surface and clamping uneven parts together. The male washer has a convex bottom surface, while the female has a matching concave top. The male washer has a slightly narrower ID than the female washer while both have the same radius. This allows a bolt to pass through both washers to compensate for misaligned surfaces. A pair of spherical washers have a 3-4° angle of correction. Ideal for die and fixturing applications.

### Materials and finishes offered in:

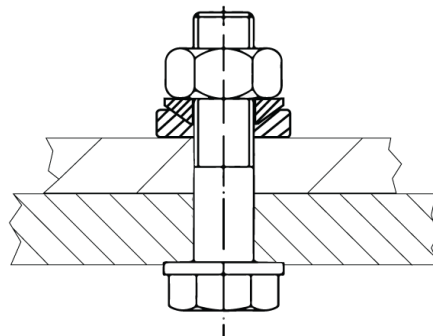
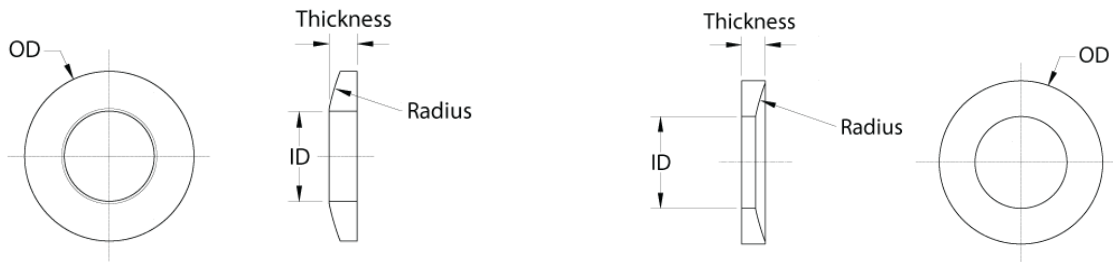
- 18-8 Stainless Steel, Plain Finish
- 316 Stainless Steel, Plain Finish
- Alloy Hardened Steel, Black-Oxide Finish
- Alloy Hardened Steel, Zinc-Plated Finish



Male Washer



Female Washer



Spherical set transmitting the clamping pressure

## Alignment (Spherical) Washers – Metric



18-8 SS Male Washer



18-8 SS Female Washer



18-8 SS Set

Bolt Size	Radius	Male				Female				Set	
		ID	OD	Thickness	18-8 SS Male Part Number	ID	OD	Thickness	18-8 SS Female Part Number	Thickness	18-8 SS Spherical Set Part Number
M6	M9	6.40	12.00	2.30	Z9521M	7.10	12.00	2.80	Z9521F	4.20	Z9521SET
M8	M12	8.40	17.00	3.20	Z9523M	9.60	17.00	3.50	Z9523F	5.60	Z9523SET
M10	M15	10.50	21.00	4.00	Z9525M	12.00	21.00	4.20	Z9525F	6.50	Z9525SET
M12	M17	13.00	24.00	4.60	Z9527M	14.20	24.00	5.00	Z9527F	8.00	Z9527SET
M16	M22	17.00	30.00	5.30	Z9531M	19.00	30.00	6.20	Z9531F	9.60	Z9531SET
M20	M27	21.00	36.00	6.30	Z9533M	23.20	36.00	7.50	Z9533F	11.70	Z9533SET
M24	M32	25.00	44.00	8.20	Z9535M	28.00	44.00	9.50	Z9535F	15.20	Z9535SET
M30	M41	31.00	56.00	11.20	Z9537M	35.00	56.00	12.00	Z9537F	19.20	Z9537SET



Steel, Black Oxide Male Washer



Steel, Black Oxide Female Washer



Steel, Black Oxide Set

Bolt Size	Radius	Male				Female				Set	
		ID	OD	Thickness	Steel, Black Oxide Male Part Number	ID	OD	Thickness	Steel, Black Oxide Female Part Number	Thickness	Steel, Black Oxide Spherical Set Part Number
M6	M9	6.40	12.00	2.30	Z9520M	7.10	12.00	2.80	Z9520F	4.20	Z9520SET
M8	M12	8.40	17.00	3.20	Z9522M	9.60	17.00	3.50	Z9522F	5.60	Z9522SET
M10	M15	10.50	21.00	4.00	Z9524M	12.00	21.00	4.20	Z9524F	6.50	Z9524SET
M12	M17	13.00	24.00	4.60	Z9526M	14.20	24.00	5.00	Z9526F	8.00	Z9526SET
M14	M22	15.00	28.00	5.00	Z9528M	16.50	28.00	5.60	Z9528F	9.00	Z9528SET
M16	M22	17.00	30.00	5.30	Z9530M	19.00	30.00	6.20	Z9530F	9.60	Z9530SET
M20	M27	21.00	36.00	6.30	Z9532M	23.20	36.00	7.50	Z9532F	11.70	Z9532SET
M24	M32	25.00	44.00	8.20	Z9534M	28.00	44.00	9.50	Z9534F	15.20	Z9534SET
M30	M41	31.00	56.00	11.20	Z9536M	35.00	56.00	12.00	Z9536F	19.20	Z9536SET



## Countersunk Washers – Metric

A countersunk washer is also known as a finishing washer and dress washer, AMPG washers are machined to be sturdier, offer a larger OD, and provide greater bearing surface than stamped countersunk washers. Flat and oval head screws sit flush within them for a neater appearance. For inch screws, washers are available in 90° and 100° countersunk angles. For metric screws, washers are available with a 90° and 100° countersunk angles. The 90° countersunk is the common angle for commercial metric flat head screws. The majority of military specification screws and rivets are 100°. The 100° countersink angle distribute pressure over a wide area to prevent crushing soft materials. The greater the angle, the greater the bearing surface and the less likely the screw is to pull through thinner materials such as sheet metal. Inch made to AMPG 2002. FIN.05. Made in the USA.

**Tolerances:** ±.010 inch

**Materials and finishes offered in:**

- 18-8 Stainless Steel, Plain Finish
- 316 Stainless Steel, Plain Finish
- Alloy Hardened Steel, Black-Oxide Finish



18-8 Stainless Steel

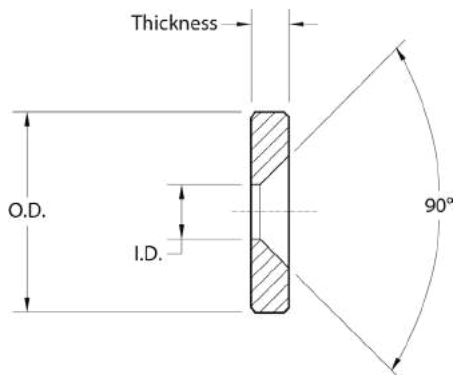


316 Stainless Steel



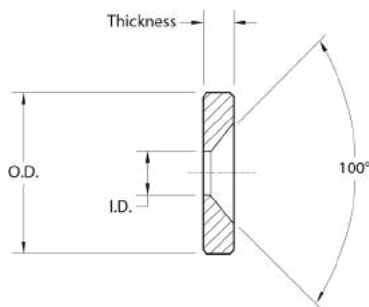
Alloy Hardened Steel, Black Oxide

## 90° Countersunk Washers – Metric



Bolt Size	ID	OD	Thickness	18-8 SS Part Number	316 SS Part Number	Steel, Black Oxide Part Number
M3	3.20	12.00	2.50	Z9972MSS	Z9972M-316	Z9972M
M3.5	3.70	14.00	2.50	Z9979MSS	Z9979M-316	Z9979M
M4	4.30	16.00	3.00	Z9920SS	Z9920-316	Z9920
M4	4.30	20.00	3.00	–	–	Z9921
M5	5.30	22.00	3.50	Z9922SS	Z9922-316	Z9922
M5	5.30	25.00	3.50	Z9923SS	–	Z9923
M5	5.30	28.00	3.50	–	–	Z9924
M6	6.40	32.00	4.00	Z9925SS	Z9925-316	Z9925
M6	6.40	36.00	4.00	–	–	Z9926
M6	6.40	40.00	4.00	Z9927SS	–	Z9927
M6	6.40	45.00	4.00	–	–	Z9928
M6	6.40	52.00	4.00	–	–	Z9929
M8	8.40	32.00	2.50	Z9973MSS	Z9973M-316	Z9973M

## 100° Countersunk Washers – Metric



Bolt Size	ID	OD	Thickness	18-8 SS Part Number	316 SS Part Number	Steel, Black Oxide Part Number
M3	3.20	12.00	2.50	Z9972ME-SS	Z9972ME-316	Z9972ME
M3.5	3.70	14.00	2.50	Z9979E-SS	Z9979E-316	Z9979E
M4	4.30	16.00	3.00	Z9920E-SS	Z9920E-316	Z9920E
M5	5.30	22.00	3.50	Z9922E-SS	Z9922E-316	Z9922E
M6	6.40	32.00	4.00	Z9925E-SS	Z9925E-316	Z9925E

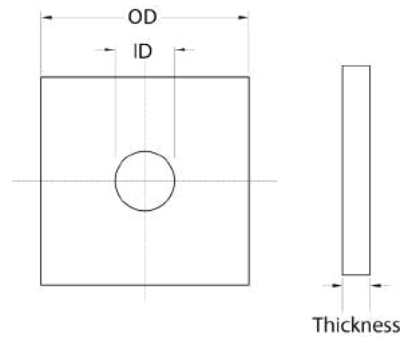


## Square Flat Washers — Metric

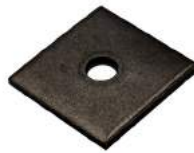
Square and rectangular washers are used in array of fastening applications. With their flat sides, square and rectangular washers are designed to prevent rotation and fit in restricted spaces that do not accommodate round washers, such as slots and channels. An excellent part for shimming and providing a large and extra thick bearing surface. They are commonly used in machining and metal working, construction, electrical and automotive applications. Square washers offer wider and thicker dimensions making them good for distributing heavier loads than round washers. One popular use is with woodwork and timber construction. Since they develop more friction when tightened against wood, this type of washer is specified for seismic applications. Testing has shown square washers function better than round washers which tend to fold up and split during an earthquake. Other specialty square & rectangular washers are Case-Hardened Tooling Washers for Work Holding, Bearing Plate Washers for Anchor Bolts, Back-Up Washers for Blind Rivets and Square and Slotted ID Washers.

### Materials and finishes offered in:

- 18-8 Stainless Steel, Plain Finish
- Alloy Hardened Steel, Black-Oxide Finish
- Steel, Galvanized Finish



18-8 Stainless Steel



Alloy Hardened Steel, Black Oxide



Steel, Galvanized

Bolt Size	ID	OD	Thickness	18-8 SS Part Number	Steel, Black Oxide Part Number	Steel, Galvanized Part Number
M6	9.00	50.00	6.00	Z8906SS	Z8908	Z8908-G
M8	11.00	50.00	6.00	Z8908SS	Z8910	Z8910-G
M10	13.00	50.00	6.00	Z8910SS	Z8912	Z8912-G
M12	16.00	50.00	6.00	Z8912SS	Z8914	Z8914-G
M14	18.00	50.00	6.00	Z8914SS	Z8916	Z8916-G
M16	22.00	50.00	6.00	Z8916SS	Z8920	Z8920-G
M20	26.00	50.00	6.00	Z8920SS	Z8922	Z8922-G
M22	28.00	50.00	6.00	Z8922SS	Z8924	Z8924-G
M24	32.00	50.00	6.00	Z8924SS	Z8930	Z8930-G
M30	38.00	50.00	6.00	Z8930SS	Z8906	Z8906-G



ACCURATE  
MANUFACTURED  
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# Screws and Bolts



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Indianapolis, IN 46278

p: 317.472.9000  
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## Screws and Bolts Index

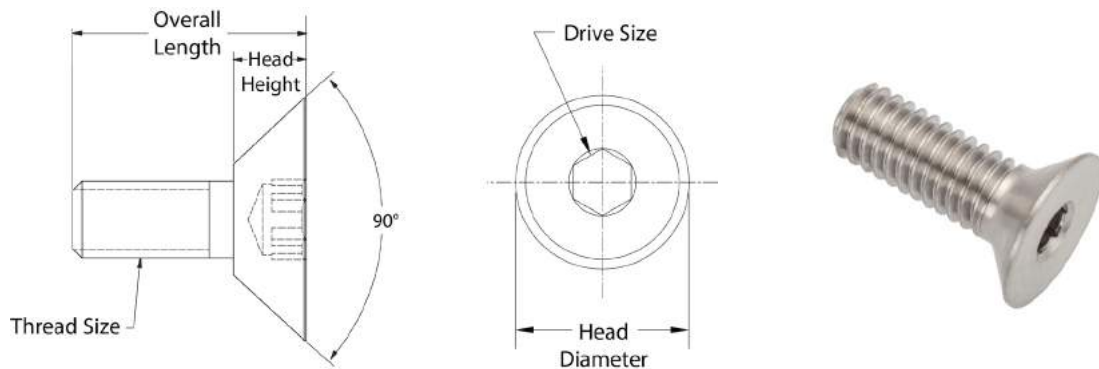
Page	Description
69 - 72	90° Flat Head Socket Screws
73 - 74	90° Flat Head Left Hand Socket Screws
75	100° Flat Head Socket Screws
76 - 80	Socket Head Cap Screws
81 - 82	Ultra Low Head Socket Cap Screws
83 - 85	Hex Head Cap Screws



## 90° Flat Head Socket Screws — Metric 18-8 SS (A2) — Passivated — Hex Drive

Flat head screws are designed for light-duty fastening applications. They're angled under the head to sit flush within countersunk holes. Metric flat head screws have a standard 90° bevel. Passivated stainless steel screws provide added protection against oxidation and corrosion. Class 6g thread fit. Length is measured from the top of the head.

- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- 18-8 SS (A2) hex drive screws meet DIN 7991 specifications.
- All stainless steel screws adhere to environmental regulations established by European Union RoHS directive.



**Dimensions Table — Metric, mm**

Thread Size	Head Diameter	Head Height	Drive Size
M3.5 x 0.6mm	7.00	2.00	2
M4.5 x 0.75mm	9.00	2.50	2.5
M6 x 1mm	12.00	3.30	4
M6.3 x 1mm	12.60	3.50	4
M7 x 1mm	14.00	3.85	4.5
M8 x 1.25mm	16.00	4.40	5
M9 x 1.25mm	18.00	5.00	5.5
M10 x 1.5mm	20.00	5.50	6
M11 x 1.5mm	22.00	6.00	6

## 90° Flat Head Socket Screws — Metric

18-8 SS (A2) — Passivated — Hex Drive



### M3.5 x 0.6mm Thread Size

Length	18-8 SS Part Number
6	ZF601M3.5X6
8	ZF601M3.5X8
10	ZF601M3.5X10

### M7 x 1mm Thread Size

Length	18-8 SS Part Number
16	ZF601M7X16
20	ZF601M7X20
25	ZF601M7X25
30	ZF601M7X30
35	ZF601M7X35

### M4.5 x 0.75mm Thread Size

Length	18-8 SS Part Number
8	ZF601M4.5X8
10	ZF601M4.5X10
12	ZF601M4.5X12
16	ZF601M4.5X16
20	ZF601M4.5X20

### M8 x 1.25mm Thread Size

Length	18-8 SS Part Number
8	ZF601M8X8

### M6 x 1mm Thread Size

Length	18-8 SS Part Number
6	ZF601M6X6

### M9 x 1.25mm Thread Size

Length	18-8 SS Part Number
20	ZF601M9X20
25	ZF601M9X25
30	ZF601M9X30

### M6.3 x 1mm Thread Size

Length	18-8 SS Part Number
12	ZF601M6.3X12
16	ZF601M6.3X16
20	ZF601M6.3X20
25	ZF601M6.3X25
30	ZF601M6.3X30

### M10x 1.5mm Thread Size

Length	18-8 SS Part Number
12	ZF601M10X12

### M11 x 1.5mm Thread Size

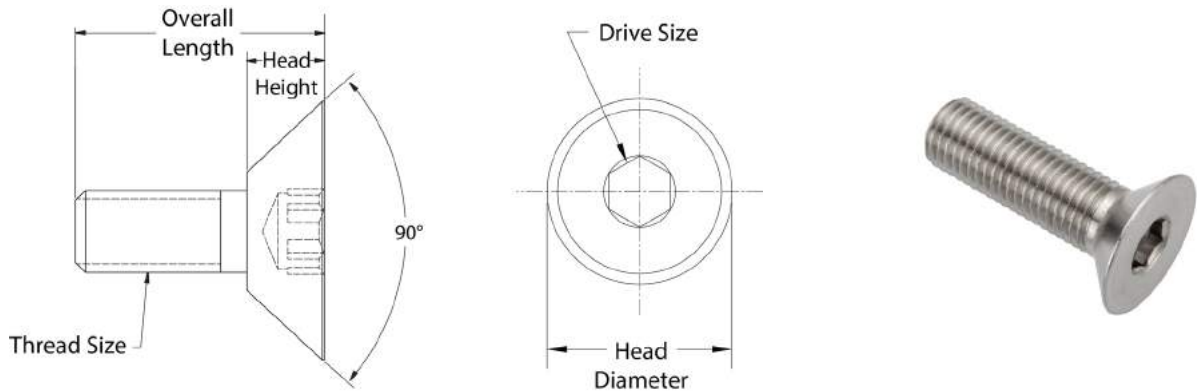
Length	18-8 SS Part Number
20	ZF601M11X20
25	ZF601M11X25
30	ZF601M11X30

## 90° Flat Head Socket Screws — Metric 316 SS (A4) — Passivated — Hex Drive

### Product Information

These metric screws have fine threads with special thread pitches. Flat head screws are designed for light-duty fastening applications. They're angled under the head to sit flush within countersunk holes. Metric flat head screws have a standard 90° bevel. Passivated stainless steel screws provide added protection against oxidation and corrosion. Class 6g thread fit. Length is measured from the top of the head.

- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- 316 SS (A2) hex drive screws meet DIN 7991 specifications.
- All stainless steel screws adhere to environmental regulations established by European Union RoHS directive.



Dimensions Table — Metric, mm

Thread Size	Head Diameter	Head Height	Drive Size
M3 x 0.35mm	6.00	1.70	2
M4 x 0.5mm	8.00	2.30	2.5
M5 x 0.5mm	10.00	2.80	3
M6 x 0.75mm	12.00	3.30	4
M8 x 1mm	16.00	4.40	5

### M3 x 0.35mm Thread Size

Length	316 SS Part Number
6	ZF602M3X6F
8	ZF602M3X8F
10	ZF602M3X10F

### M4 x 0.5mm Thread Size

Length	316 SS Part Number
6	ZF602M4X6F
8	ZF602M4X8F
10	ZF602M4X10F

### M6 x 0.7mm Thread Size

Length	316 SS Part Number
12	ZF602M6X12F
16	ZF602M6X16F
20	ZF602M6X20F

### M5 x 0.5mm Thread Size

Length	316 SS Part Number
10	ZF602M5X10F
12	ZF602M5X12F
16	ZF602M5X16F

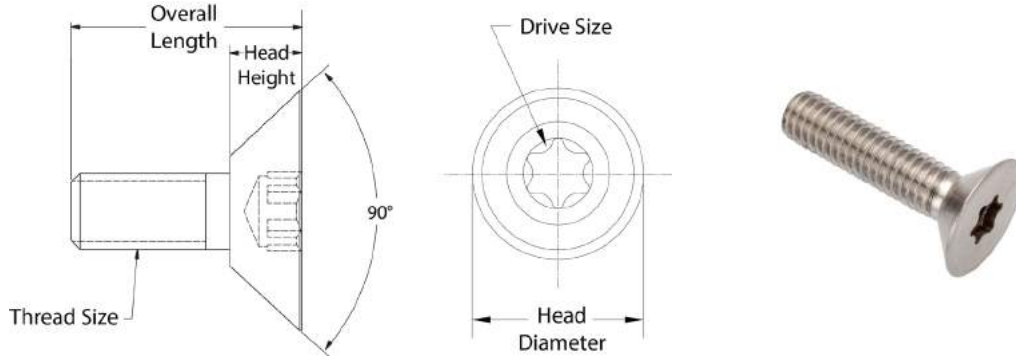
### M8 x 1mm Thread Size

Length	316 SS Part Number
16	ZF602M8X16F
20	ZF602M8X20F
25	ZF602M8X25F

## 90° Flat Head Socket Screws — Metric A286 SS — 6-Lobe Drive

Flat head screws are designed for light-duty fastening applications. They're angled under the head to sit flush within countersunk holes. Metric flat head screws have a standard 90° bevel. Class 6g thread fit. Length is measured from the top of the head.

- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- A286 6-lobe screws meet AMPG's internal specifications of AMPG 2017.ZFT.01.
- All stainless steel screws adhere to environmental regulations established by European Union RoHS directive.



**Dimensions Table — Metric, mm**

Thread Size	Head Diameter	Head Height	Drive Size
M3 x 0.5mm	6.40	2.10	T8
M4 x 0.7mm	9.10	2.80	T20
M5 x 0.8mm	10.20	3.20	T25
M6 x 1mm	13.40	4.10	T30
M8 x 1.25mm	16.50	5.00	T40

### M3 x 0.5mm Thread Size

Length	A286 SS Part Number
5	ZFT286M3X5
6	ZFT286M3X6
8	ZFT286M3X8
10	ZFT286M3X10
12	ZFT286M3X12

### M4x 0.7mm Thread Size

Length	A286 SS Part Number
6	ZFT286M4X6
8	ZFT286M4X8
10	ZFT286M4X10
12	ZFT286M4X12
16	ZFT286M4X16

### M5 x 0.8mm Thread Size

Length	A286 SS Part Number
8	ZFT286M5X8
10	ZFT286M5X10
12	ZFT286M5X12
16	ZFT286M5X16
20	ZFT286M5X20

### M6 x 1mm Thread Size

Length	A286 SS Part Number
12	ZFT286M6X12
16	ZFT286M6X16
20	ZFT286M6X20
25	ZFT286M6X25
30	ZFT286M6X30

### M8 x 1.25mm Thread Size

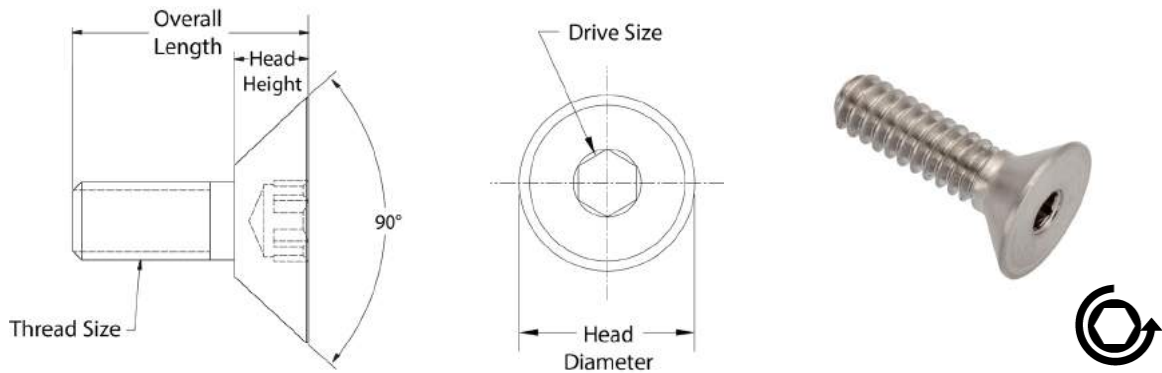
Length	A286 SS Part Number
16	ZFT286M8X16
20	ZFT286M8X20
25	ZFT286M8X25
30	ZFT286M8X30

## 90° Flat Head Left Hand Socket Screws — Metric 18-8 SS (A2) — Passivated — Hex Drive

### Product Information

Prevent loosening in parts subject to counterclockwise motion. These screws tighten when turned to the left. Flat head screws are designed for light-duty fastening applications. They're angled under the head to sit flush within countersunk holes. Metric flat head screws have a standard 90° bevel. Passivated stainless steel screws provide added protection against oxidation and corrosion. Class 6g thread fit. Length is measured from the top of the head.

- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- Screws meet AMPG's internal specifications specifications 18-8 SS (A2) hex drive meets the AMPG 2017 ZF.02.
- Made from stainless steel, these screws have good chemical resistance and maybe mildly magnetic.

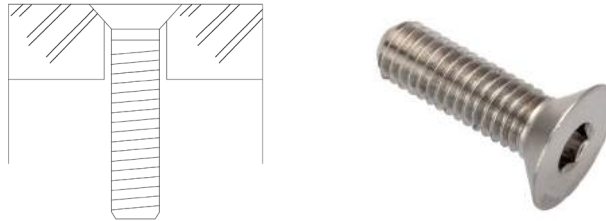


Dimensions Table — Metric, mm			
Thread Size	Head Diameter	Head Height	Drive Size
M3 x 0.5mm	6.00	1.70	2
M4 x 0.7mm	8.00	2.30	2.5
M5 x 0.8mm	10.00	2.80	3
M6 x 1mm	12.00	3.30	4
M8 x 1.25mm	16.00	4.40	5

18-8 Stainless Steel is manufactured from Type 303 Stainless Steel Bar.

## 90° Flat Head Left Hand Socket Screws – Metric

18-8 SS – Passivated – Hex Drive



### M3 x 0.5mm Thread Size

Length	18-8 SS Part Number
6	ZFLH601M3X6
10	ZFLH601M3X10

### M5 x 0.8mm Thread Size

Length	18-8 SS Part Number
10	ZFLH601M5X10
16	ZFLH601M5X16

### M4 x 0.7mm Thread Size

Length	18-8 SS Part Number
8	ZFLH601M4X8
12	ZFLH601M4X12

### M6 x 1mm Thread Size

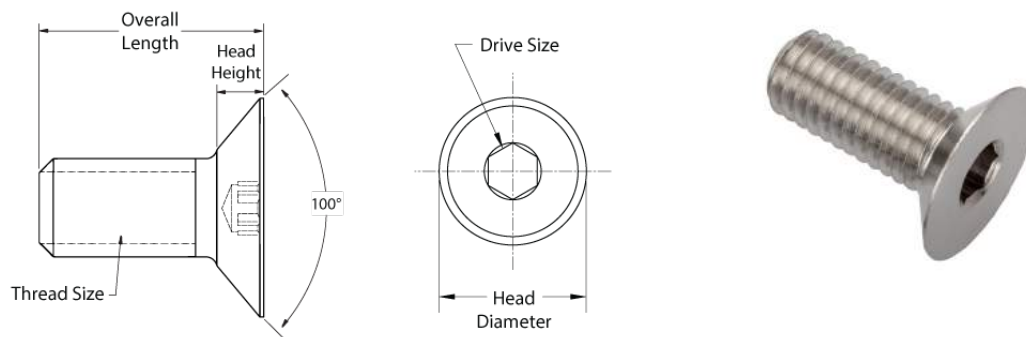
Length	18-8 SS Part Number
12	ZFLH601M6X12
20	ZFLH601M6X20

### M8 x 1.25mm Thread Size

Length	18-8 SS Part Number
16	ZFLH601M8X16
25	ZFLH601M8X25

## 100° Flat Head Socket Screws — Metric

Screws are beveled 100° which provides a larger bearing surface to distribute holding force. These screws perform better than standard 82° flat head screws especially in softer materials. Flat head screws are designed for light-duty fastening applications. They're angled under the head to sit flush within countersunk holes. Passivated stainless steel screws provide added protection against oxidation and corrosion. Class 3A thread fit. Length is measured from the top of the head.



**Dimensions Table — Metric, mm**

Thread Size	Head Diameter	Head Height	Drive Size
M3 x 0.5mm	6.00	1.30	2
M4 x 0.7mm	8.00	1.60	2.5
M5 x 0.8mm	10.00	1.90	3
M6 x 1mm	12.00	2.20	4
M8 x 1.25mm	16.00	2.80	5

### M3 x 0.5mm Thread Size

Length	316 SS Part Number
5	ZHF602M3X5
6	ZHF602M3X6
8	ZHF602M3X8
10	ZHF602M3X10
12	ZHF602M3X12

### M5 x 0.8mm Thread Size

Length	316 SS Part Number
8	ZHF602M5X8
10	ZHF602M5X10
12	ZHF602M5X12
16	ZHF602M5X16
20	ZHF602M5X20

### M4 x 0.7mm Thread Size

Length	316 SS Part Number
6	ZHF602M4X6
8	ZHF602M4X8
10	ZHF602M4X10
12	ZHF602M4X12
16	ZHF602M4X16

### M6 x 1mm Thread Size

Length	316 SS Part Number
12	ZHF602M6X12
16	ZHF602M6X16
20	ZHF602M6X20
25	ZHF602M6X25
30	ZHF602M6X30

### M8 x 1.25mm Thread Size

Length	316 SS Part Number
16	ZHF602M8X16
20	ZHF602M8X20
25	ZHF602M8X25
30	ZHF602M8X30

## Socket Cap Screws — Metric

Socket heads are the standard for high-strength fastening. Each screw is manufactured on state of the art CNC Swiss lathes in one operation. This ensures concentricity, tight tolerances, and products easily recognized for their uniformity & function. Socket head cap screws have heavy heads with a hex socket drive. They can be installed in a counterbored hole or above the surface. Length is measured from under the head.

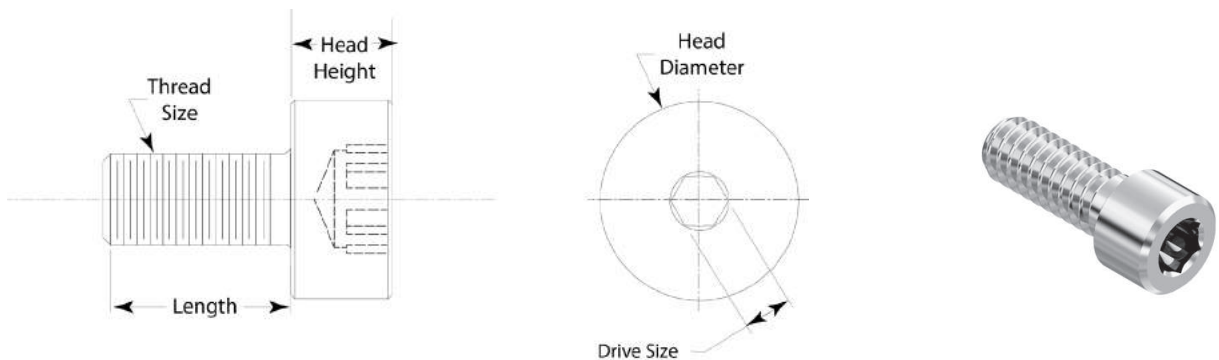
**AMPG 316 H5** stainless steel offers comparable strength and corrosion resistant properties as Bumax 88. AMPG is using a special grade of Type 316 Stainless Steel to manufacture the only domestic line of products that have the superior corrosion resistance of 316 stainless and the strength equivalent to Grade 5 steel materials. Screws have a Class 6g thread fit. Use these fasteners in chemical, food, and marine applications. Maybe mildly magnetic.

**17-4 PH** stainless steel maintains excellent corrosion resistance and strength at high temperatures. 17-4 PH stainless steel has a Rockwell hardness of C28 and meets Material Specification ASTM A564. 17-4 PH Stainless Steel Socket Head Cap Screws meet DIN 912 and ISO 4762 standards. These screws have a Class 6g thread fit.

**Titanium Grade 2** is best known for being strong, lightweight, and corrosion resistant. This material resists chlorides, hypochlorites, chlorates, perchlorates and chlorine dioxide. Screws are nonmagnetic and have a Class 5g6g thread fit and meets DIN 912.

**Titanium Grade 5** is two times stronger than Grade 2, and four times stronger than 316 stainless at nearly half the weight. This material resists chlorides, hypochlorites, chlorates, perchlorates and chlorine dioxide. Screws are nonmagnetic and have a Class 5g6g thread fit and meets DIN 912.

**Brass** screws are corrosion resistance, nonmagnetic and electrically conductive. All screws have a Class 6g thread fit. Brass screws meet or exceed DIN 912 and AMPG's internal specification AMPG 2013 SC.02.



**Dimensions Table — Metric, mm**

Thread Size	Head Diameter	Head Height	Drive Size
M2 x 0.4mm	3.80	2.00	1.5
M3 x 0.5mm	5.50	3.00	2.5
M4 x 0.7mm	7.00	4.00	3
M5 x 0.8mm	8.50	5.00	4
M6 x 1mm	10.00	6.00	5
M8 x 1.25mm	13.00	8.00	6
M10 x 1.5mm	16.00	10.00	8
M12 x 1.75mm	18.00	12.00	10



## Socket Cap Screws — Metric 316 High Five Stainless Steel — Hex Drive



### M2 x 0.4mm Thread Size

Length	316 H5 Part Number
6	ZSS616M2X6
8	ZSS616M2X8

### M3 x 0.5mm Thread Size

Length	316 H5 Part Number
6	ZSS616M3X6
8	ZSS616M3X8
10	ZSS616M3X10
12	ZSS616M3X12
14	ZSS616M3X14
16	ZSS616M3X16

### M4 x 0.7mm Thread Size

Length	316 H5 Part Number
8	ZSS616M4X8
10	ZSS616M4X10
12	ZSS616M4X12
14	ZSS616M4X14
16	ZSS616M4X16
20	ZSS616M4X20
25	ZSS616M4X25
30*	ZSS616M4X30

\*Partially threaded, 20mm minimum

### M5 x 0.8mm Thread Size

Length	316 H5 Part Number
10	ZSS616M5X10
12	ZSS616M5X12
14	ZSS616M5X14
16	ZSS616M5X16
20	ZSS616M5X20
25	ZSS616M5X25

### M6 x 1mm Thread Size

Length	316 H5 Part Number
10	ZSS616M6X10
12	ZSS616M6X12
14	ZSS616M6X14
16	ZSS616M6X16
18	ZSS616M6X18
20	ZSS616M6X20
25	ZSS616M6X25
30	ZSS616M6X30
35*	ZSS616M6X35
40*	ZSS616M6X40

\*Partially threaded, 24mm minimum

### M8 x 1.25mm Thread Size

Length	316 H5 Part Number
12	ZSS616M8X12
16	ZSS616M8X16
18	ZSS616M8X18
20	ZSS616M8X20
25	ZSS616M8X25
30	ZSS616M8X30

### M10 x 1.5mm Thread Size

Length	316 H5 Part Number
18	ZSS616M10X18
20	ZSS616M10X20
25	ZSS616M10X25
30	ZSS616M10X30

### M12 x 1.75mm Thread Size

Length	316 H5 Part Number
25	ZSS616M12X25
30	ZSS616M12X30
40	ZSS616M12X40
50	ZSS616M12X50

## Socket Head Cap Screws — Metric

17-4 PH SS — Hex Drive



### M2 x 0.4mm Thread Size

Length	17-4 PH SS Part Number
6	ZS744M2X6
8	ZS744M2X8

### M5 x 0.8mm Thread Size

Length	17-4 PH SS Part Number
10	ZS744M5X10
12	ZS744M5X12
14	ZS744M5X14
16	ZS744M5X16
20	ZS744M5X20
25	ZS744M5X25

### M3 x 0.5mm Thread Size

Length	17-4 PH SS Part Number
6	ZS744M3X6
8	ZS744M3X8
10	ZS744M3X10
12	ZS744M3X12
14	ZS744M3X14
16	ZS744M3X16

### M6 x 1mm Thread Size

Length	17-4 PH SS Part Number
10	ZS744M6X10
12	ZS744M6X12
14	ZS744M6X14
16	ZS744M6X16
20	ZS744M6X20
25	ZS744M6X25
30	ZS744M6X30
35*	ZS744M6X35
40*	ZS744M6X40

### M4 x 0.7mm Thread Size

Length	17-4 PH SS Part Number
8	ZS744M4X8
10	ZS744M4X10
12	ZS744M4X12
14	ZS744M4X14
16	ZS744M4X16
20	ZS744M4X20
25	ZS744M4X25
30*	ZS744M4X30

\*Partially threaded, 24mm minimum

### M8 x 1.25mm Thread Size

Length	17-4 PH SS Part Number
20	ZS744M8X20
25	ZS744M8X25
30	ZS744M8X30

\*Partially threaded, 20mm minimum

## Socket Head Cap Screws – Metric

Grade 2 Titanium (Ti2), Grade 5 Titanium (Ti5) – Hex Drive



### M2.5 x 0.45mm Thread Size

Length	Ti2 Part Number	Ti5 Part Number
4	ZS705M2.5X4	ZS755M2.5X4
5	ZS705M2.5X5	ZS755M2.5X5
6	ZS705M2.5X6	ZS755M2.5X6
8	ZS705M2.5X8	ZS755M2.5X8
10	ZS705M2.5X10	ZS755M2.5X10
12	ZS705M2.5X12	ZS755M2.5X12

### M8 x 1.25mm Thread Size

Length	Ti2 Part Number	Ti5 Part Number
12	ZS705M8X12	ZS755M8X12
16	ZS705M8X16	ZS755M8X16
18	ZS705M8X18	ZS755M8X18
22	ZS705M8X22	ZS755M8X22
20	ZS705M8X20	ZS755M8X20
25	ZS705M8X25	ZS755M8X25
30	ZS705M8X30	ZS755M8X30
35	ZS705M8X35	ZS755M8X35

### M3 x 0.5mm Thread Size

Length	Ti2 Part Number	Ti5 Part Number
5	ZS705M3X5	ZS755M3X5
6	ZS705M3X6	ZS755M3X6
8	ZS705M3X8	ZS755M3X8
10	ZS705M3X10	ZS755M3X10
12	ZS705M3X12	ZS755M3X12
16	ZS705M3X16	ZS755M3X16
18	ZS705M3X18	ZS755M3X18
20	ZS705M3X20	ZS755M3X20

### M5 x 0.8mm Thread Size

Length	Ti2 Part Number	Ti5 Part Number
6	ZS705M5X6	ZS755M5X6
10	ZS705M5X10	ZS755M5X10
12	ZS705M5X12	ZS755M5X12
16	ZS705M5X16	ZS755M5X16
18	ZS705M5X18	ZS755M5X18
20	ZS705M5X20	ZS755M5X20
25	ZS705M5X25	ZS755M5X25
30*	ZS705M5X30	ZS755M5X30

### M10 x 1.5mm Thread Size

Length	Ti2 Part Number	Ti5 Part Number
18	ZS705M10X18	ZS755M10X18
22	ZS705M10X22	ZS755M10X22
20	ZS705M10X20	ZS755M10X20
25	ZS705M10X25	ZS755M10X25
30	ZS705M10X30	ZS755M10X30

### M4 x 0.7mm Thread Size

Length	Ti2 Part Number	Ti5 Part Number
6	ZS705M4X6	ZS755M4X6
10	ZS705M4X10	ZS755M4X10
12	ZS705M4X12	ZS755M4X12
16	ZS705M4X16	ZS755M4X16
18	ZS705M4X18	ZS755M4X18
20	ZS705M4X20	ZS755M4X20
25	ZS705M4X25	ZS755M4X25

### M6 x 1mm Thread Size

Length	Ti2 Part Number	Ti5 Part Number
10	ZS705M6X10	ZS755M6X10
12	ZS705M6X12	ZS755M6X12
16	ZS705M6X16	ZS755M6X16
18	ZS705M6X18	ZS755M6X18
22	ZS705M6X22	ZS755M6X22
20	ZS705M6X20	ZS755M6X20
25	ZS705M6X25	ZS755M6X25
30	ZS705M6X30	ZS755M6X30
40*	ZS705M6X40	ZS755M6X40

### M12 x 1.75mm Thread Size

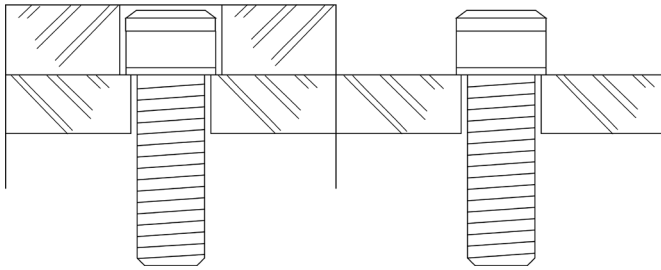
Length	Ti2 Part Number	Ti5 Part Number
20	ZS705M12X20	ZS755M12X20
25	ZS705M12X25	ZS755M12X25
30	ZS705M12X30	ZS755M12X30
40	ZS705M12X40	ZS755M12X40
50	ZS705M12X50	ZS755M12X50

\*Partially threaded, 22mm minimum

\*Partially threaded, 24mm minimum

## Socket Head Cap Screws — Metric

Brass — Hex Drive



### M2 x 0.4mm Thread Size

Length	Brass Part Number
6	ZS550M2X6
8	ZS550M2X8

### M5 x 0.8mm Thread Size

Length	Brass Part Number
10	ZS550M5X10
12	ZS550M5X12
16	ZS550M5X16
20	ZS550M5X20
25	ZS550M5X25

### M3 x 0.5mm Thread Size

Length	Brass Part Number
5	ZS550M3X5
6	ZS550M3X6
8	ZS550M3X8
10	ZS550M3X10
12	ZS550M3X12
16	ZS550M3X16
20	ZS550M3X20

### M6 x 1mm Thread Size

Length	Brass Part Number
10	ZS550M6X10
12	ZS550M6X12
14	ZS550M6X14
16	ZS550M6X16
20	ZS550M6X20
25	ZS550M6X25
30	ZS550M6X30
35	ZS550M6X35

### M4 x 0.7mm Thread Size

Length	Brass Part Number
8	ZS550M4X8
10	ZS550M4X10
12	ZS550M4X12
14	ZS550M4X14
16	ZS550M4X16
20	ZS550M4X20
25	ZS550M4X25

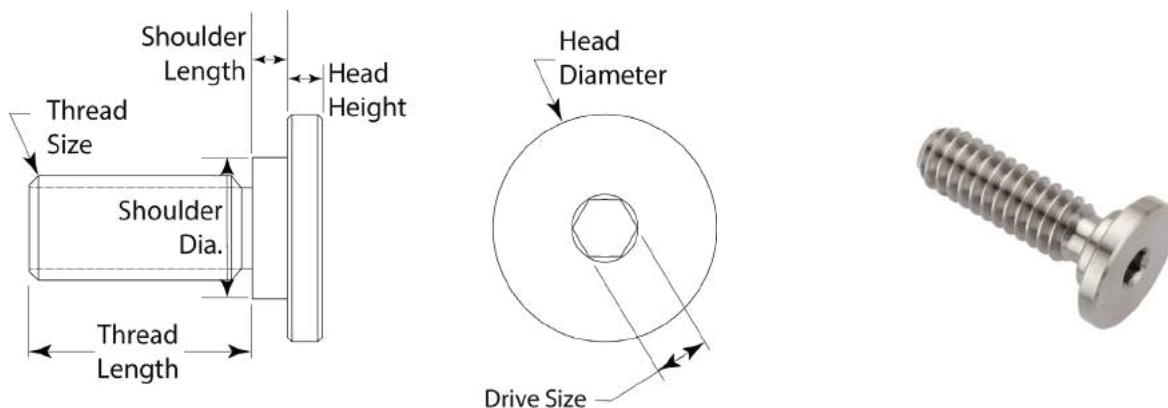
### M8 x 1.25mm Thread Size

Length	Brass Part Number
16	ZS550M8X16
20	ZS550M8X20
25	ZS550M8X25
30	ZS550M8X30

## Ultra Low Head Socket Cap Screws – Metric

Excellent for tight areas and fastening applications which will not accept a countersunk flat head screw. Ultra Low Head screws have reduced head heights about 1/3 less than the height of standard low head socket cap screws. A lower profile head reduces the chance of anything snagging on the head. In addition, all screw sizes are made with extra-wide heads that offer 33% more bearing surface and holding power than standard low head screws. The larger diameter head improves holding power especially when fastening lower strength materials. Made of corrosion-resistant Type 316 stainless steel. Screws have a Class 6g Thread Fit. All screws are fully threaded. Length is measured from under the shoulder. Low head screws are not recommended for high strength applications.

- AMPG products are made in the USA, precision machined from DFARS compliant material, and lot traceable.
- 316 stainless steel material meets ASTM A276.
- Made from stainless steel, these screws have good chemical resistance and maybe mildly magnetic.



Dimensions Table – Metric

Thread Size	Head Diameter	Head Height	Shoulder Dia.	Shoulder Lg.	Drive Size
M3 x 0.5mm	5.50	1.00	3.80	1.00	2
M4 x 0.7mm	7.00	1.30	4.50	1.30	2.5
M5 x 0.8mm	8.50	1.70	5.20	1.70	3
M6 x 1mm	10.00	2.00	6.30	2.00	4
M8 x 1.25mm	13.00	2.70	8.50	2.70	5
M10 x 1.5mm	16.00	3.30	11.00	3.30	7

## Ultra Low Head Socket Cap Screws – Metric



### M3 x 0.5mm Thread Size

Length	316 SS Part Number
5	ZUL602M3X5
6	ZUL602M3X6
8	ZUL602M3X8
10	ZUL602M3X10
12	ZUL602M3X12
16	ZUL602M3X16

### M4 x 0.7mm Thread Size

Length	316 SS Part Number
6	ZUL602M4X6
8	ZUL602M4X8
10	ZUL602M4X10
12	ZUL602M4X12
16	ZUL602M4X16
20	ZUL602M4X20
25	ZUL602M4X25
30	ZUL602M4X30
40	ZUL602M4X40

### M5 x 0.8mm Thread Size

Length	316 SS Part Number
6	ZUL602M5X6
8	ZUL602M5X8
10	ZUL602M5X10
12	ZUL602M5X12
16	ZUL602M5X16
20	ZUL602M5X20
25	ZUL602M5X25
30	ZUL602M5X30
40	ZUL602M5X40
50	ZUL602M5X50

### M6 x 1mm Thread Size

Length	316 SS Part Number
8	ZUL602M6X8
10	ZUL602M6X10
12	ZUL602M6X12
16	ZUL602M6X16
20	ZUL602M6X20
25	ZUL602M6X25
30	ZUL602M6X30
40	ZUL602M6X40
50	ZUL602M6X50

### M8 x 1.25mm Thread Size

Length	316 SS Part Number
10	ZUL602M8X10
12	ZUL602M8X12
16	ZUL602M8X16
20	ZUL602M8X20
25	ZUL602M8X25
30	ZUL602M8X30
40	ZUL602M8X40
50	ZUL602M8X50
60	ZUL602M8X60

### M10 x 1.5mm Thread Size

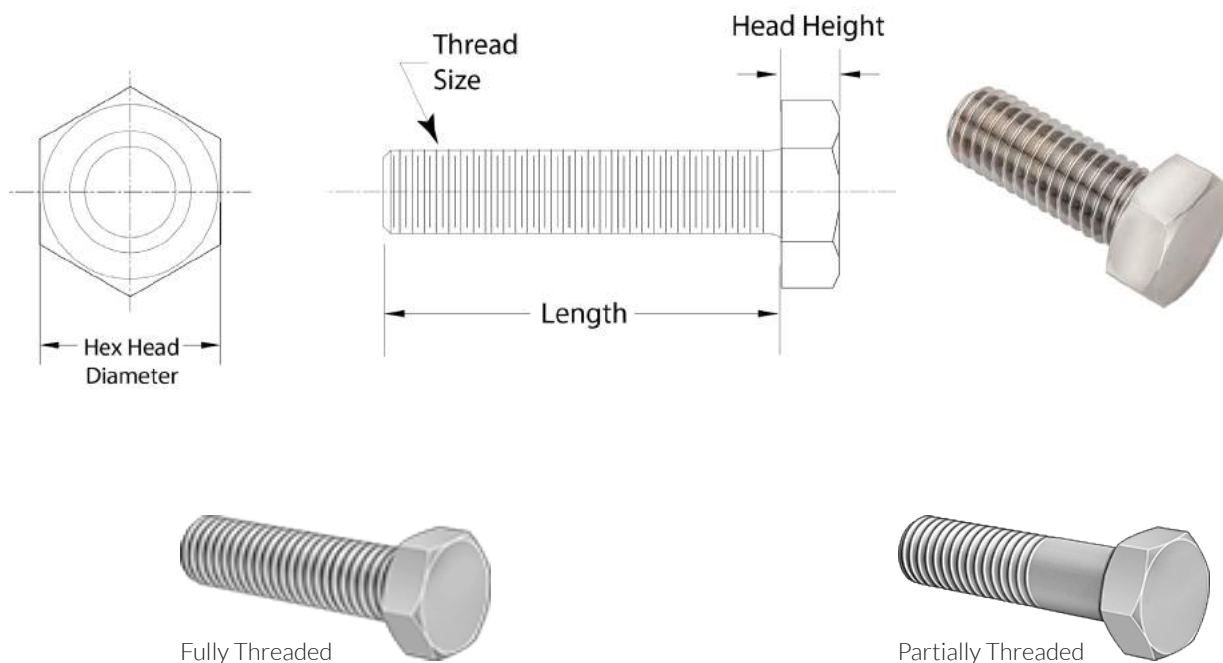
Length	316 SS Part Number
12	ZUL602M10X12
16	ZUL602M10X16
20	ZUL602M10X20
25	ZUL602M10X25
30	ZUL602M10X30
40	ZUL602M10X40
50	ZUL602M10X50
60	ZUL602M10X60

## Hex Head Cap Screws – Metric

Fully threaded hex head screws can be screwed all the way into a threaded or tapped hole. Partially threaded hex head screws have an unthreaded portion under the head that adds strength but prevents them from being screwed all the way into a threaded hole. Screws have a Class 6g thread fit.

**316 H5** stainless steel Hex Head Cap Screws meet DIN 933 standards. This higher strength stainless steel is comparable strength and corrosion resistant properties as Bumax 88. AMPG is using a special grade of Type 316 Stainless Steel to manufacture the only domestic line of products that have the superior corrosion resistance of 316 stainless and the strength equivalent to Grade 5 steel materials. Use these fasteners in chemical, food, and marine applications. Maybe mildly magnetic.

**17-4 PH** stainless steel Hex Head Cap Screws meet DIN 933 standards. 17-4 PH stainless steel has a Rockwell hardness of C28 and meets Material Specification ASTM A564. 17-4 PH stainless steel maintains excellent corrosion resistance and strength at high temperatures.



**Dimensions Table – Metric, mm**

Thread Size	Head Diameter	Head Height
M6 x 1mm	10.00	4.00
M8 x 1.25mm	13.00	5.30
M10 x 1.5mm	16.00	6.40
M12 x 1.75mm	18.00	7.50

## Hex Head Cap Screws — Metric

Stainless Steel High Five (AMPG 316 H5)



### M6 x 1mm Thread Size

Length	316 H5 Part Number
10	ZS616M6X10
12	ZS616M6X12
16	ZS616M6X16
20	ZS616M6X20
25	ZS616M6X25
30	ZS616M6X30
40	ZS616M6X40

\*Partially threaded, 24mm minimum

### M10 x 1.5mm Thread Size

Length	316 H5 Part Number
25	ZS616M10X25
30	ZS616M10X30
35	ZS616M10X35
40	ZS616M10X40
50	ZS616M10X50

### M8 x 1.25mm Thread Size

Length	316 H5 Part Number
16	ZS616M8X16
20	ZS616M8X20
25	ZS616M8X25
30	ZS616M8X30
35	ZS616M8X35
40	ZS616M8X40
50	ZS616M8X50

### M12 x 1.75mm Thread Size

Length	316 H5 Part Number
30	ZS616M12X30
35	ZS616M12X35
40	ZS616M12X40
50	ZS616M12X50



## Hex Head Cap Screws – Metric 17-4 PH SS



### M6 x 1mm Thread Size

Length	17-4 PH SS Part Number
10	ZH744M6X10
12	ZH744M6X12
14	ZH744M6X14
16	ZH744M6X16
20	ZH744M6X20
25	ZH744M6X25
30	ZH744M6X30
35	ZH744M6X35
40*	ZH744M6X40

\*Partially threaded, 24mm minimum

### M8 x 1.25mm Thread Size

Length	17-4 PH SS Part Number
16	ZH744M8X16
20	ZH744M8X20
25	ZH744M8X25
30	ZH744M8X30
35	ZH744M8X35
40	ZH744M8X40
50	ZH744M8X50

### M10 x 1.5mm Thread Size

Length	17-4 PH SS Part Number
25	ZH744M10X25
30	ZH744M10X30
35	ZH744M10X35
40	ZH744M10X40
50	ZH744M10X50

### M12 x 1.75mm Thread Size

Length	17-4 PH SS Part Number
30	ZH744M12X30
35	ZH744M12X35
40	ZH744M12X40
50	ZH744M12X50



ACCURATE  
MANUFACTURED  
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GROUP

# Nuts



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## Nuts Index

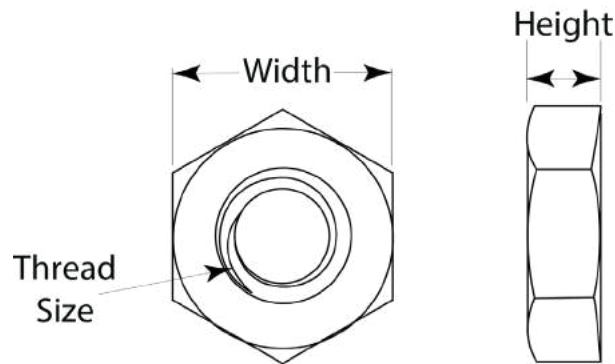
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93 - 94	Coupling Nuts
95	Insert Nuts for Screws and Bolts

## Hex Thin Nuts – Metric

Also known as jam nuts, they are about half the height of standard hex nuts. Use them in low-clearance applications or jam one against another nut to hold it in place. Nuts have a Class 6H thread fit and meet DIN 439B.

### Materials and finishes offered in:

- Aluminum
- 316 H5 Stainless Steel
- 17-4 PH Stainless Steel
- A286 Stainless Steel
- 410 Stainless Steel
- Monel
- Titanium Grade 2
- Titanium Grade 5



### Aluminum Hex Thin Nuts

Thread Size	Width	Height	Aluminum Part Number
M6 x 1	10.00	3.20	ZNJ061M6
M8 x 1.25	13.00	4.00	ZNJ061M8
M10 x 1.5	17.00	5.00	ZNJ061M10
M12 x 1.75	19.00	6.00	ZNJ061M12
M16 x 2	24.00	8.00	ZNJ061M16
M20 x 2.5	30.00	10.00	ZNJ061M20
M24 x 3	36.00	12.00	ZNJ061M24

### 316 H5 SS Hex Thin Nuts

Thread Size	Width	Height	316 H5 Part Number
M6 x 1	10.00	3.20	ZNJ616M6
M8 x 1.25	13.00	4.00	ZNJ616M8
M10 x 1.5	17.00	5.00	ZNJ616M10
M12 x 1.75	19.00	6.00	ZNJ616M12
M16 x 2	24.00	8.00	ZNJ616M16
M20 x 2.5	30.00	10.00	ZNJ616M20
M24 x 3	36.00	12.00	ZNJ616M24

## Hex Thin Nuts – Metric



### 17-4 PH SS Hex Thin Nuts

Thread Size	Width	Height	17-4 PH SS Part Number
M6 x 1	10.00	3.20	ZNJ174M6
M8 x 1.25	13.00	4.00	ZNJ174M8
M10 x 1.5	17.00	5.00	ZNJ174M10
M12 x 1.75	19.00	6.00	ZNJ174M12
M16 x 2	24.00	8.00	ZNJ174M16
M20 x 2.5	30.00	10.00	ZNJ174M20
M24 x 3	36.00	12.00	ZNJ174M24

### Monel Hex Thin Nuts

Thread Size	Width	Height	400 Nickel Part Number	C276 Nickel Part Number
M6 x 1	10.00	3.20	ZNJ405M6	ZNJ276M6
M8 x 1.25	13.00	4.00	ZNJ405M8	ZNJ276M8
M10 x 1.5	17.00	5.00	ZNJ405M10	ZNJ276M10
M12 x 1.75	19.00	6.00	ZNJ405M12	ZNJ276M12
M16 x 2	24.00	8.00	ZNJ405M16	ZNJ276M16
M20 x 2.5	30.00	10.00	ZNJ405M20	ZNJ276M20
M24 x 3	36.00	12.00	ZNJ405M24	ZNJ276M24

### A286 SS Hex Thin Nuts

Thread Size	Width	Height	A286 SS Part Number
M6 x 1	10.00	3.20	ZNJ286M6
M8 x 1.25	13.00	4.00	ZNJ286M8
M10 x 1.5	17.00	5.00	ZNJ286M10
M12 x 1.75	19.00	6.00	ZNJ286M12
M16 x 2	24.00	8.00	ZNJ286M16
M20 x 2.5	30.00	10.00	ZNJ286M20
M24 x 3	36.00	12.00	ZNJ286M24

### Titanium Grade 2 Hex Thin Nuts

Thread Size	Width	Height	Ti2 Part Number
M6 x 1	10.00	3.20	ZNJT12M6
M8 x 1.25	13.00	4.00	ZNJT12M8
M10 x 1.5	17.00	5.00	ZNJT12M10
M12 x 1.75	19.00	6.00	ZNJT12M12
M16 x 2	24.00	8.00	ZNJT12M16
M20 x 2.5	30.00	10.00	ZNJT12M20
M24 x 3	36.00	12.00	ZNJT12M24

### 410 SS Hex Thin Nuts

Thread Size	Width	Height	410 SS Part Number
M6 x 1	10.00	3.20	ZNJ410M6
M8 x 1.25	13.00	4.00	ZNJ410M8
M10 x 1.5	17.00	5.00	ZNJ410M10
M12 x 1.75	19.00	6.00	ZNJ410M12
M16 x 2	24.00	8.00	ZNJ410M16
M20 x 2.5	30.00	10.00	ZNJ410M20
M24 x 3	36.00	12.00	ZNJ410M24

### Titanium Grade 5 Hex Thin Nuts

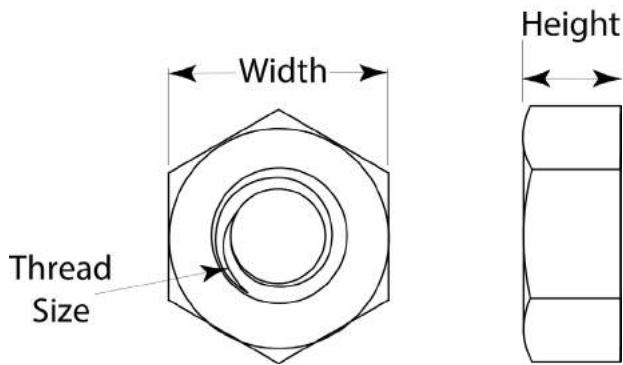
Thread Size	Width	Height	Ti5 Part Number
M6 x 1	10.00	3.20	ZNJT15M6
M8 x 1.25	13.00	4.00	ZNJT15M8
M10 x 1.5	17.00	5.00	ZNJT15M10
M12 x 1.75	19.00	6.00	ZNJT15M12
M16 x 2	24.00	8.00	ZNJT15M16
M20 x 2.5	30.00	10.00	ZNJT15M20
M24 x 3	36.00	12.00	ZNJT15M24

## Hex Nuts – Metric

Hex Nuts are the most common nuts for general fastening applications. Nuts may be mildly magnetic and have a Class 6H thread fit.

### Materials and finishes offered in:

- 18-8 Stainless Steel, Black Oxide finish
- 316 Stainless Steel, Black Oxide finish
- 17-4 PH Stainless Steel
- A286 Stainless Steel
- Alloy 20 Stainless Steel
- Monel
- Titanium Grade 2
- Titanium Grade 5



### 18-8 SS, Black Oxide Hex Nuts

Thread Size	Width	Height	18-8 SS Part Number
M2 x 0.4	4.00	1.60	NUT202M2-B
M2.5 x 0.45	5.00	2.00	NUT202M2.5-B
M3.5 x 0.6	6.00	2.80	NUT202M3.5-B
M7 x 1	11.00	5.50	NUT202M7-B
M14 x 2	22.00	11.00	NUT202M14-B
M18 x 2.5	27.00	15.00	NUT202M18-B
M22 x 2.5	32.00	18.00	NUT202M22-B
M27 x 3	41.00	22.00	NUT202M27-B
M30 x 3.5	46.00	24.00	NUT202M30-B
M36 x 4	55.00	29.00	NUT202M36-B
M42 x 4.5	65.00	34.00	NUT202M42-B
M48 x 5	75.00	38.00	NUT202M48-B

### 316 SS, Black Oxide Hex Nuts

Thread Size	Width	Height	316 SS Part Number
M2 x 0.4	4.00	1.60	NUT203M2-B
M2.5 x 0.45	5.00	2.00	NUT203M2.5-B
M3 x 0.5	5.50	2.40	NUT203M3-B
M3.5 x 0.6	6.00	2.80	NUT203M3.5-B
M4 x 0.7	7.00	3.20	NUT203M4-B
M5 x 0.8	8.00	4.00	NUT203M5-B
M6 x 1	10.00	5.00	NUT203M6-B
M7 x 1	11.00	5.50	NUT203M7-B
M8 x 1.25	13.00	6.50	NUT203M8-B
M10 x 1.5	17.00	8.00	NUT203M10-B
M12 x 1.75	19.00	10.00	NUT203M12-B
M14 x 2	22.00	11.00	NUT203M14-B

## Hex Nuts – Metric

### 17-4 PH SS Hex Nuts

Thread Size	Width	Height	17-4 SS Part Number
M3 x 0.5mm	5.50	2.40	NUT174M3C
M4 x 0.7mm	7.00	3.20	NUT174M4C
M5 x 0.8mm	8.00	4.00	NUT174M5C
M6 x 1mm	10.00	5.00	NUT174M6C
M8 x 1.25mm	13.00	6.50	NUT174M8C
M10 x 1.5mm	17.00	8.00	NUT174M10C
M12 x 1.75mm	19.00	10.00	NUT174M12C
M16 x 2mm	24.00	13.00	NUT174M16C
M20 x 2.5mm	30.00	16.00	NUT174M20C
M24 x 3mm	36.00	19.00	NUT174M24C

### A286 SS Hex Nuts

Thread Size	Width	Height	A286 SS Part Number
M3 x 0.5mm	5.50	2.40	NUT286M3C
M4 x 0.7mm	7.00	3.20	NUT286M4C
M5 x 0.8mm	8.00	4.00	NUT286M5C
M6 x 1mm	10.00	5.00	NUT286M6C
M8 x 1.25mm	13.00	6.50	NUT286M8C
M10 x 1.5mm	17.00	8.00	NUT286M10C
M12 x 1.75mm	19.00	10.00	NUT286M12C
M16 x 2mm	24.00	13.00	NUT286M16C
M20 x 2.5mm	30.00	16.00	NUT286M20C
M24 x 3mm	36.00	19.00	NUT286M24C

### Alloy 20 SS Hex Nuts

Thread Size	Width	Height	Alloy 20 SS Part Number
M3 x 0.5mm	5.50	2.40	NUT020M3C
M4 x 0.7mm	7.00	3.20	NUT020M4C
M5 x 0.8mm	8.00	4.00	NUT020M5C
M6 x 1mm	10.00	5.00	NUT020M6C
M8 x 1.25mm	13.00	6.50	NUT020M8C
M10 x 1.5mm	17.00	8.00	NUT020M10C
M12 x 1.75mm	19.00	10.00	NUT020M12C
M16 x 2mm	24.00	13.00	NUT020M16C
M20 x 2.5mm	30.00	16.00	NUT020M20C
M24 x 3mm	36.00	19.00	NUT020M24C

### Monel Hex Nuts

Thread Size	Width	Height	400 Nickel Part Number	C276 Nickel Part Number
M3 x 0.5mm	5.50	2.40	NUT405M3C	NUT276M3C
M4 x 0.7mm	7.00	3.20	NUT405M4C	NUT276M4C
M5 x 0.8mm	8.00	4.00	NUT405M5C	NUT276M5C
M6 x 1mm	10.00	5.00	NUT405M6C	NUT276M6C
M8 x 1.25mm	13.00	6.50	NUT405M8C	NUT276M8C
M10 x 1.5mm	17.00	8.00	NUT405M10C	NUT276M10C
M12 x 1.75mm	19.00	10.00	NUT405M12C	NUT276M12C
M16 x 2mm	24.00	13.00	NUT405M16C	NUT276M16C
M20 x 2.5mm	30.00	16.00	NUT405M20C	NUT276M20C
M24 x 3mm	36.00	19.00	NUT405M24C	NUT276M24C

### Titanium Grade 2 Hex Nuts

Thread Size	Width	Height	Specifications Met	Ti2 Part Number
M2 x 0.4mm	4.00	1.60	DIN 934	NUT950M2C
M2.5 x 0.45mm	5.00	2.00	DIN 934	NUT950M2.5C
M3 x 0.5mm	5.50	2.40	DIN 934	NUT950M3C
M4 x 0.7mm	7.00	3.20	DIN 934	NUT950M4C
M5 x 0.8mm	8.00	4.70	ISO 4032	NUT950M5C
M6 x 1mm	10.00	5.20	ISO 4032	NUT950M6C
M8 x 1.25mm	13.00	6.80	ISO 4032	NUT950M8C
M10 x 1.5mm	16.00	8.40	ISO 4032	NUT950M10C
M12 x 1.75mm	18.00	10.80	ISO 4032	NUT950M12C
M16 x 2mm	24.00	13.00	DIN 934	NUT950M16C
M20 x 2.5mm	30.00	16.00	DIN 934	NUT950M20C
M24 x 3mm	36.00	19.00	DIN 934	NUT950M24C

### Titanium Grade 5 Hex Nuts

Thread Size	Width	Height	Specifications Met	Ti5 Part Number
M2 x 0.4mm	4.00	1.60	DIN 934	NUT951M2C
M2.5 x 0.45mm	5.00	2.00	DIN 934	NUT951M2.5C
M3 x 0.5mm	5.50	2.40	DIN 934	NUT951M3C
M4 x 0.7mm	7.00	3.20	DIN 934	NUT951M4C
M5 x 0.8mm	8.00	4.70	ISO 4032	NUT951M5C
M6 x 1mm	10.00	5.20	ISO 4032	NUT951M6C
M8 x 1.25mm	13.00	6.80	ISO 4032	NUT951M8C
M10 x 1.5mm	16.00	8.40	ISO 4032	NUT951M10C
M12 x 1.75mm	18.00	10.80	ISO 4032	NUT951M12C
M16 x 2mm	24.00	13.00	DIN 934	NUT951M16C
M20 x 2.5mm	30.00	16.00	DIN 934	NUT951M20C
M24 x 3mm	36.00	19.00	DIN 934	NUT951M24C

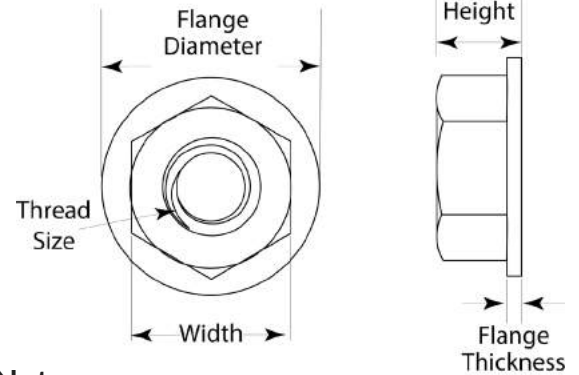
## Hex Flange Nut – Metric

### Product Information

Hex Flange Nuts distribute pressure where the nut meets the material surface, eliminating the need for a separate washer. These Hex Flange Nuts meet AMPG 2018 ZNF.02 and have a Class 6H thread fit. Small pattern sizes meet DIN 6923. Height includes the flange.

### Materials and finishes offered in:

- 18-8 Stainless Steel, Black Oxide finish
- 316 Stainless Steel, Black Oxide finish
- 17-4 PH Stainless Steel
- A286 Stainless Steel
- 316 H5 Stainless Steel



### Stainless Steel Hex Flange Nuts

Thread Size	Width	Height	Flange Diameter	Flange Thickness	18-8 SS Part Number	316 SS Part Number	17-4 PH SS Part Number	A286 SS Part Number
M6 x 1mm	12.70	7.94	15.88	2.29	ZNF188M6	ZNF316M6	ZNF174M6	ZNF286M6
M8 x 1.25mm	14.29	9.53	19.05	2.29	ZNF188M8	ZNF316M8	ZNF174M8	ZNF286M8
M10 x 1.5mm	17.46	12.70	22.23	3.30	ZNF188M10	ZNF316M10	ZNF174M10	ZNF286M10
M12 x 1.75mm	22.23	17.46	28.58	4.06	ZNF188M12	ZNF316M12	ZNF174M12	ZNF286M12
M16 x 2mm	26.99	20.64	34.93	4.83	ZNF188M16	ZNF316M16	ZNF174M16	ZNF286M16
M20 x 2.5mm	31.75	25.40	41.28	6.35	ZNF188M20	ZNF316M20	ZNF174M20	ZNF286M20
M24 x 3mm	41.28	31.75	50.80	6.35	ZNF188M24	ZNF316M24	ZNF174M24	ZNF286M24

### 316 H5 Hex Flange Nuts

Thread Size	Width	Height	Flange Diameter	Flange Thickness	316 H5 Part Number
M6 x 1mm	10.00	6.00	14.20	1.19	NUT931M6C*
M6 x 1mm	12.70	7.94	15.88	2.29	ZNF616M6
M8 x 1.25mm	13.00	8.00	17.90	1.31	NUT9311M8C*
M8 x 1.25mm	14.29	9.53	19.05	2.29	ZNF616M8
M10 x 1.5mm	15.00	10.00	21.80	1.81	NUT9311M10C*
M10 x 1.5mm	17.46	12.70	22.23	3.30	ZNF616M10
M12 x 1.75mm	18.00	12.00	26.00	2.20	NUT9311M12C*
M12 x 1.75mm	22.23	17.46	28.58	4.06	ZNF616M12
M16 x 2mm	26.99	20.64	34.93	4.83	ZNF616M16
M20 x 2.5mm	31.75	25.40	41.28	6.35	ZNF616M20
M24 x 3mm	41.28	31.75	50.80	6.35	ZNF616M24

\* Small pattern flange nuts.

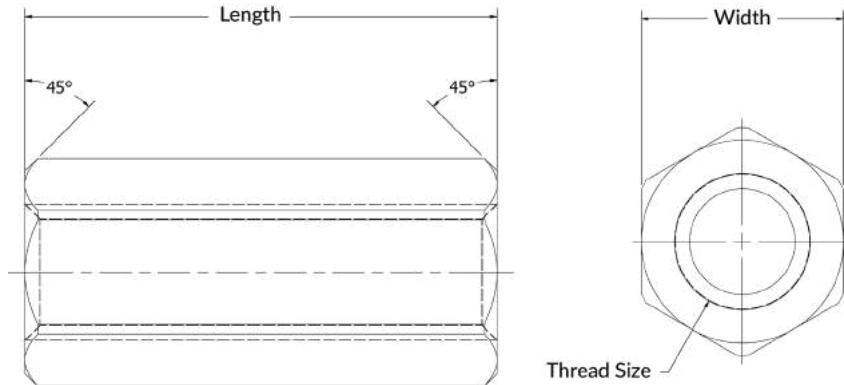


## Coupling Nuts – Metric

Also known as extension nuts, use them to connect and extend threaded rods. They are about three-times taller than standard hex nuts.

### Materials and finishes offered in:

- 18-8 Stainless Steel, 18-8 Stainless Steel Black Oxide
- 316 Stainless Steel, 316 Stainless Steel Black Oxide
- Aluminum
- Brass



### 18-8 SS Coupling Nuts

Thread Size (mm)	Pitch	Length	Width	Specs Met	18-8 SS Part Number	18-8 SS, Black Oxide Part Number
M2	0.4	6	4	—	NUT651M2X0.4	NUT651M2X0.4-B
M2.5	0.45	6	4	—	NUT651M2.5X0.45	NUT651M2.5X0.45-B
M3	0.5	9	5	—	NUT651M3X0.5	NUT651M3X0.5-B
M4	0.7	12	8	DIN 6334	NUT651M4X0.7	NUT651M4X0.7-B
M5	0.8	15	8	DIN 6334	—	NUT651M5X0.8-B
M6	1	18	10	DIN 6334	—	NUT651M6X1-B
M8	1.25	24	13	DIN 6334	—	NUT651M8X1.25-B
M10	1.5	30	17	DIN 6334	—	NUT651M10X1.5-B
M12	1.75	36	19	DIN 6334	—	NUT651M12X1.75-B
M14	2	42	22	DIN 6334	NUT651M14X2	NUT651M14X2-B
M16	2	48	24	DIN 6334	—	NUT651M16X2-B
M18	2.5	54	27	DIN 6334	NUT651M18X2.5	NUT651M18X2.5-B
M20	2.5	60	30	DIN 6334	—	NUT651M20X2.5-B
M22	2.5	66	32	DIN 6334	NUT651M22X2.5	NUT651M22X2.5-B
M24	3	72	36	DIN 6334	NUT651M24X3	NUT651M24X3-B
M27	3	81	41	—	NUT651M27X3	NUT651M27X3-B
M30	3.5	90	46	DIN 6334	NUT651M30X3.5	NUT651M30X3.5-B

## Coupling Nuts – Metric

### 316 Stainless Steel Coupling Nuts

Thread Size (mm)	Pitch	Length	Width	Specs Met	316 SS Part Number	316 SS, Black Oxide Part Number
M2	0.4	6	4	–	NUT652M2X0.4	NUT652M2X0.4-B
M2.5	0.45	6	4	–	NUT652M2.5X0.45	NUT652M2.5X0.45-B
M3	0.5	9	5	–	NUT652M3X0.5	NUT652M3X0.5-B
M4	0.7	12	8	DIN 6334	NUT652M4X0.7	NUT652M4X0.7-B
M5	0.8	15	8	DIN 6334	–	NUT652M5X0.8-B
M6	1	18	10	DIN 6334	–	NUT652M6X1-B
M8	1.25	24	13	DIN 6334	–	NUT652M8X1.25-B
M10	1.5	30	17	DIN 6334	–	NUT652M10X1.5-B
M12	1.75	36	19	DIN 6334	–	NUT652M12X1.75-B
M14	2	42	22	DIN 6334	NUT652M14X2	NUT652M14X2-B
M16	2	48	24	DIN 6334	NUT652M16X2	NUT652M16X2-B
M18	2.5	54	27	DIN 6334	NUT652M18X2.5	NUT652M18X2.5-B
M20	2.5	60	30	DIN 6334	NUT652M20X2.5	NUT652M20X2.5-B
M22	2.5	66	32	DIN 6334	NUT652M22X2.5	NUT652M22X2.5-B
M24	3	72	36	DIN 6334	NUT652M24X3	NUT652M24X3-B
M27	3	81	41	–	NUT652M27X3	NUT652M27X3-B
M30	3.5	90	46	DIN 6334	NUT652M30X3.5	NUT652M30X3.5-B

### Brass Coupling Nuts

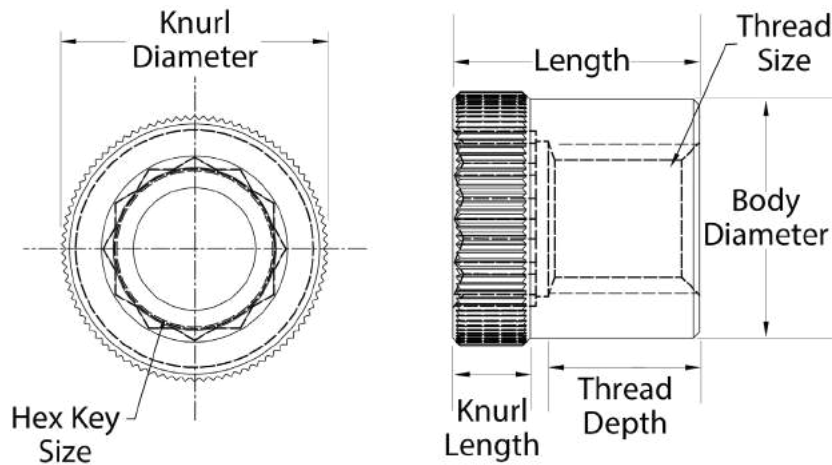
Thread Size (mm)	Pitch	Length	Width	Specs Met	Brass Part Number
M2	0.4	6	4	–	NUT609M2X0.4
M2.5	0.45	6	4	–	NUT609M2.5X0.45
M3	0.5	9	5	–	NUT609M3X0.5
M4	0.7	12	8	DIN 6334	NUT609M4X0.7
M5	0.8	15	8	DIN 6334	NUT609M5X0.8
M6	1	18	10	DIN 6334	NUT609M6X1
M8	1.25	24	13	DIN 6334	NUT609M8X1.25
M10	1.5	30	17	DIN 6334	NUT609M10X1.5
M12	1.75	36	19	DIN 6334	NUT609M12X1.75
M14	2	42	22	DIN 6334	NUT609M14X2
M16	2	48	24	DIN 6334	NUT609M16X2
M18	2.5	54	27	DIN 6334	NUT609M18X2.5
M20	2.5	60	30	DIN 6334	NUT609M20X2.5
M22	2.5	66	32	DIN 6334	NUT609M22X2.5
M24	3	72	36	DIN 6334	NUT609M24X3
M27	3	81	41	–	NUT609M27X3
M30	3.5	90	46	DIN 6334	NUT609M30X3.5
M33	3.5	99	50	DIN 6334	NUT609M33X3.5
M36	4	108	55	DIN 6334	NUT609M36X4

### Aluminum Coupling Nuts

Thread Size (mm)	Pitch	Length	Width	Specs Met	Aluminum Part Number
M2	0.4	6	4	–	NUT608M2X0.4
M2.5	0.45	6	4	–	NUT608M2.5X0.45
M3	0.5	9	5	–	NUT608M3X0.5
M4	0.7	12	8	DIN 6334	NUT608M4X0.7
M5	0.8	15	8	DIN 6334	NUT608M5X0.8
M6	1	18	10	DIN 6334	NUT608M6X1
M8	1.25	24	13	DIN 6334	NUT608M8X1.25
M10	1.5	30	17	DIN 6334	NUT608M10X1.5
M12	1.75	36	19	DIN 6334	NUT608M12X1.75
M14	2	42	22	DIN 6334	NUT608M14X2
M16	2	48	24	DIN 6334	NUT608M16X2
M18	2.5	54	27	DIN 6334	NUT608M18X2.5
M20	2.5	60	30	DIN 6334	NUT608M20X2.5
M22	2.5	66	32	DIN 6334	NUT608M22X2.5
M24	3	72	36	DIN 6334	NUT608M24X3
M27	3	81	41	–	NUT608M27X3
M30	3.5	90	46	DIN 6334	NUT608M30X3.5

## Insert Nuts for Screws and Bolts – Metric

Also known as Allen nuts, you can use these versatile fasteners as both threaded inserts and nuts. To use as inserts, press or draw them into any nonhardened steel, cast iron, or soft nonferrous metal. You can even mold them into plastics, ceramics, fiber, and similar materials. 18-8 stainless steel inserts have excellent corrosion resistance and may be mildly magnetic. Heat Treated steel inserts have the same strength properties as ASTM A194 Grade 2H nuts - Medium Carbon Steel Quenched and Tempered. To use as nuts, tighten them with a 6-point hex key. Thread class is 6H and they are partially threaded.



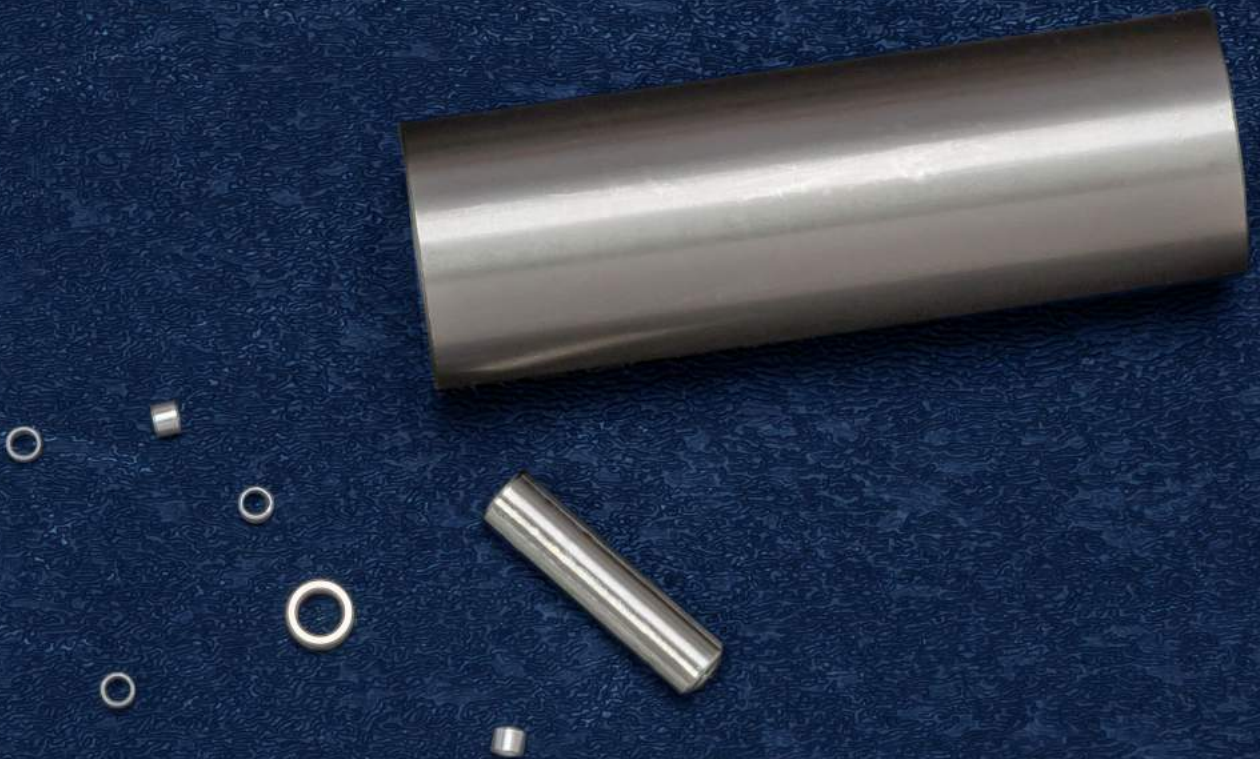
### Insert Nuts for Screws and Bolts

Thread Size (mm)	Body Diameter (min, max)	Length (min, max)	Knurl Diameter (min, max)	Thread Depth	Drill Bit	Hex Key Size	Hole Size	Knurl Length (min)	18-8 SS Part Number	Steel, Black Oxide Part Number
Size - Metric										
Insert Nuts Dimensions - Inches										
M3 x 0.5	.183 - .187	.172 - .179	.205 - .209	.080	13/64	1/8	.202	.046	Z1960MSS	Z1960M
M4 x 0.7	.275 - .280	.266 - .273	.302 - .307	.125	19/64	3/16	.298	.084	Z1963MSS	Z1963M
M5 x 0.8	.302 - .307	.309 - .319	.331 - .336	.170	21/64	3/16	.327	.096	Z1964MSS	Z1964M
M6 x 1	.398 - .403	.409 - .419	.425 - .430	.225	27/64	1/4	.421	.136	Z1966MSS	Z1966M
M8 x 1.25	.493 - .498	.512 - .522	.521 - .526	.285	33/64	5/16	.516	.165	Z1968MSS	Z1968M
M10 x 1.5	.585 - .590	.606 - .621	.615 - .620	.325	39/64	3/8	.610	.195	Z1970MSS	Z1970M
M12 x 1.75	.705 - .710	.718 - .733	.738 - .743	.360	47/64	7/16	.733	.235	Z1972MSS	Z1972M
M14 x 2	.795 - .800	.821 - .836	.836 - .841	.445	53/64	1/2	.831	.265	Z1974MSS	Z1974M
M18 x 2.5	.980 - .986	.995 - 1.010	1.034 - 1.040	.500	1-1/64	5/8	1.028	.325	Z1976MSS	Z1976M
M20 x 2.5	1.152 - 1.158	1.170 - 1.185	1.209 - 1.215	.600	1-13/64	3/4	1.203	.385	Z1978MSS	Z1978M
M24 x 3	1.527 - 1.533	1.517 - 1.532	1.612 - 1.620	.810	1-9/16	1	1.605	.495	Z1979MSS	Z1979M



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# Spacers, Pins and Rods



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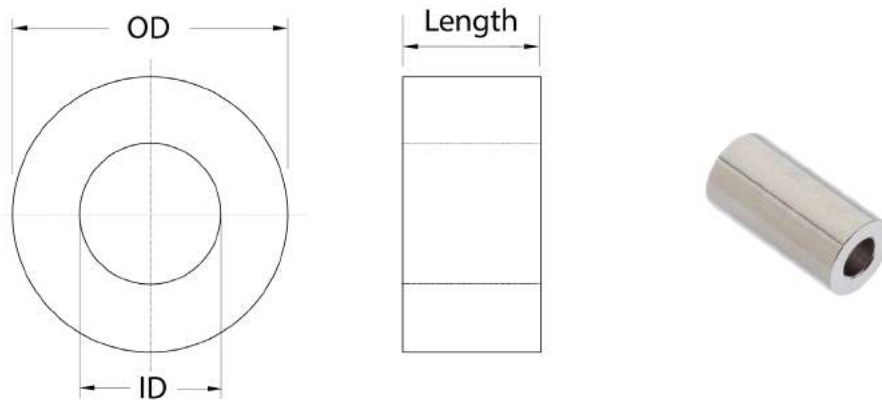
## Unthreaded Spacers – Metric

Spacers are also known as sleeves, bushings and clear-hole spacers. Spacers are unthreaded hollow tubes that are primarily used to maintain space between components in assemblies. They are also selected to provide heat or electrical isolation and to connect parts to each other. Spacers are used in many applications that include circuit board spacing, furniture fastening, signage mounting, and gear/bearing assembly.

Spacers are ordered by OD and by Length. OD tolerance is plus to minus .13mm. The ID tolerance is plus .3mm to minus 0. The Length tolerance is plus to minus .13mm. They are available to fit standard screw and bolt sizes. These spacers have excellent corrosion resistance.

### Materials and finishes offered in:

- 18-8 Stainless Steel
- Aluminum



### 4.5mm OD

Length	Screw Size	ID	18-8 SS Part Number
7	M3	3.20	ZSUM4.5X7-3-188
9	M3	3.20	ZSUM4.5X9-3-188
11	M3	3.20	ZSUM4.5X11-3-188
12	M3	3.20	ZSUM4.5X12-3-188
15	M3	3.20	ZSUM4.5X15-3-188
17	M3	3.20	ZSUM4.5X17-3-188
18	M3	3.20	ZSUM4.5X18-3-188

### 6mm OD

Length	Screw Size	ID	18-8 SS Part Number
7	M4	4.20	ZSUM6X7-4-188
9	M4	4.20	ZSUM6X9-4-188
11	M4	4.20	ZSUM6X11-4-188
12	M4	4.20	ZSUM6X12-4-188
15	M4	4.20	ZSUM6X15-4-188
17	M4	4.20	ZSUM6X17-4-188
18	M4	4.20	ZSUM6X18-4-188
22	M4	4.20	ZSUM6X22-4-188
24	M4	4.20	ZSUM6X24-4-188
26	M4	4.20	ZSUM6X26-4-188
28	M4	4.20	ZSUM6X28-4-188

18-8 SS

## Round Unthreaded Spacers – Metric 18-8 (A2) SS



### 8mm OD

Length	Screw Size	ID	18-8 SS Part Number
7	M5	5.30	ZSUM8X7-5-188
9	M5	5.30	ZSUM8X9-5-188
11	M5	5.30	ZSUM8X11-5-188
12	M5	5.30	ZSUM8X12-5-188
15	M5	5.30	ZSUM8X15-5-188
17	M5	5.30	ZSUM8X17-5-188
18	M5	5.30	ZSUM8X18-5-188
22	M5	5.30	ZSUM8X22-5-188
24	M5	5.30	ZSUM8X24-5-188
26	M5	5.30	ZSUM8X26-5-188
28	M5	5.30	ZSUM8X28-5-188

### 10mm OD

Length	Screw Size	ID	18-8 SS Part Number
7	M5	5.30	ZSUM10X7-5-188
9	M5	5.30	ZSUM10X9-5-188
11	M5	5.30	ZSUM10X11-5-188
12	M5	5.30	ZSUM10X12-5-188
15	M5	5.30	ZSUM10X15-5-188
17	M5	5.30	ZSUM10X17-5-188
18	M5	5.30	ZSUM10X18-5-188
22	M5	5.30	ZSUM10X22-5-188
24	M5	5.30	ZSUM10X24-5-188
26	M5	5.30	ZSUM10X26-5-188
28	M5	5.30	ZSUM10X28-5-188

### 13mm OD

Length	Screw Size	ID	18-8 SS Part Number
7	M6	6.30	ZSUM13X7-6-188
9	M6	6.30	ZSUM13X9-6-188
11	M6	6.30	ZSUM13X11-6-188
12	M6	6.30	ZSUM13X12-6-188
15	M6	6.30	ZSUM13X15-6-188
17	M6	6.30	ZSUM13X17-6-188
18	M6	6.30	ZSUM13X18-6-188
22	M6	6.30	ZSUM13X22-6-188
24	M6	6.30	ZSUM13X24-6-188
26	M6	6.30	ZSUM13X26-6-188
28	M6	6.30	ZSUM13X28-6-188
50	M6	6.30	ZSUM13X50-6-188

### 16mm OD

Length	Screw Size	ID	18-8 SS Part Number
5	M10	10.00	ZSUM16X5-10-188
10	M10	10.00	ZSUM16X10-10-188
15	M10	10.00	ZSUM16X15-10-188
20	M10	10.00	ZSUM16X20-10-188
25	M10	10.00	ZSUM16X25-10-188
30	M10	10.00	ZSUM16X30-10-188
35	M10	10.00	ZSUM16X35-10-188
40	M10	10.00	ZSUM16X40-10-188
45	M10	10.00	ZSUM16X45-10-188
50	M10	10.00	ZSUM16X50-10-188
51	M10	10.00	ZSUM16X51-10-188

### 19mm OD

Length	Screw Size	ID	18-8 SS Part Number
5	M12	12.00	ZSUM19X5-12-188
10	M12	12.00	ZSUM19X10-12-188
15	M12	12.00	ZSUM19X15-12-188
20	M12	12.00	ZSUM19X20-12-188
25	M12	12.00	ZSUM19X25-12-188
30	M12	12.00	ZSUM19X30-12-188
35	M12	12.00	ZSUM19X35-12-188
40	M12	12.00	ZSUM19X40-12-188
45	M12	12.00	ZSUM19X45-12-188
50	M12	12.00	ZSUM19X50-12-188
51	M12	12.00	ZSUM19X51-12-188

## Round Unthreaded Spacers – Metric Aluminum



### 4.5mm OD

Length	Screw Size	ID	Aluminum Part Number
7	M3	3.20	ZSUM4.5X7-3-ALU
9	M3	3.20	ZSUM4.5X9-3-ALU
11	M3	3.20	ZSUM4.5X11-3-ALU
12	M3	3.20	ZSUM4.5X12-3-ALU
15	M3	3.20	ZSUM4.5X15-3-ALU
17	M3	3.20	ZSUM4.5X17-3-ALU
18	M3	3.20	ZSUM4.5X18-3-ALU

### 6mm OD

Length	Screw Size	ID	Aluminum Part Number
7	M3	3.20	ZSUM6X7-3-ALU
9	M3	3.20	ZSUM6X9-3-ALU
11	M3	3.20	ZSUM6X11-3-ALU
12	M3	3.20	ZSUM6X12-3-ALU
15	M3	3.20	ZSUM6X15-3-ALU
17	M3	3.20	ZSUM6X17-3-ALU
18	M3	3.20	ZSUM6X18-3-ALU
22	M3	3.20	ZSUM6X22-3-ALU
24	M3	3.20	ZSUM6X24-3-ALU
26	M3	3.20	ZSUM6X26-3-ALU
28	M3	3.20	ZSUM6X28-3-ALU



### 8mm OD

Length	Screw Size	ID	Aluminum Part Number
7	M5	5.30	ZSUM8X7-5-ALU
9	M5	5.30	ZSUM8X9-5-ALU
11	M5	5.30	ZSUM8X11-5-ALU
12	M5	5.30	ZSUM8X12-5-ALU
15	M5	5.30	ZSUM8X15-5-ALU
17	M5	5.30	ZSUM8X17-5-ALU
18	M5	5.30	ZSUM8X18-5-ALU
22	M5	5.30	ZSUM8X22-5-ALU
24	M5	5.30	ZSUM8X24-5-ALU
26	M5	5.30	ZSUM8X26-5-ALU
28	M5	5.30	ZSUM8X28-5-ALU

### 10mm OD

Length	Screw Size	ID	Aluminum Part Number
7	M5	5.30	ZSUM10X7-5-ALU
9	M5	5.30	ZSUM10X9-5-ALU
11	M5	5.30	ZSUM10X11-5-ALU
12	M5	5.30	ZSUM10X12-5-ALU
15	M5	5.30	ZSUM10X15-5-ALU
17	M5	5.30	ZSUM10X17-5-ALU
18	M5	5.30	ZSUM10X18-5-ALU
22	M5	5.30	ZSUM10X22-5-ALU
24	M5	5.30	ZSUM10X24-5-ALU
26	M5	5.30	ZSUM10X26-5-ALU
28	M5	5.30	ZSUM10X28-5-ALU



## Round Unthreaded Spacers – Metric

### Aluminum



#### 13mm OD

Length	Screw Size	ID	Aluminum Part Number
7	M6	6.30	ZSUM13X7-6-ALU
9	M6	6.30	ZSUM13X9-6-ALU
11	M6	6.30	ZSUM13X11-6-ALU
12	M6	6.30	ZSUM13X12-6-ALU
15	M6	6.30	ZSUM13X15-6-ALU
17	M6	6.30	ZSUM13X17-6-ALU
18	M6	6.30	ZSUM13X18-6-ALU
22	M6	6.30	ZSUM13X22-6-ALU
24	M6	6.30	ZSUM13X24-6-ALU
26	M6	6.30	ZSUM13X26-6-ALU
28	M6	6.30	ZSUM13X28-6-ALU
50	M6	6.30	ZSUM13X50-6-ALU

#### 16mm OD

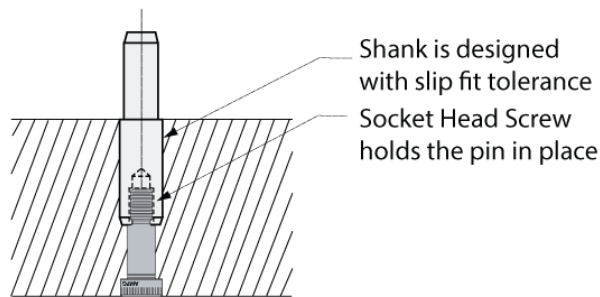
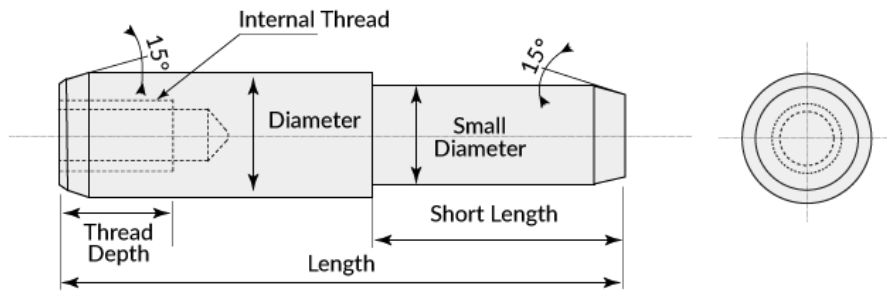
Length	Screw Size	ID	Aluminum Part Number
5	M10	10.00	ZSUM16X5-10-ALU
10	M10	10.00	ZSUM16X10-10-ALU
15	M10	10.00	ZSUM16X15-10-ALU
20	M10	10.00	ZSUM16X20-10-ALU
25	M10	10.00	ZSUM16X25-10-ALU
30	M10	10.00	ZSUM16X30-10-ALU
35	M10	10.00	ZSUM16X35-10-ALU
40	M10	10.00	ZSUM16X40-10-ALU
45	M10	10.00	ZSUM16X45-10-ALU
50	M10	10.00	ZSUM16X50-10-ALU
51	M10	10.00	ZSUM16X51-10-ALU

#### 19mm OD

Length	Screw Size	ID	Aluminum Part Number
5	M12	12.00	ZSUM19X5-12-ALU
10	M12	12.00	ZSUM19X10-12-ALU
15	M12	12.00	ZSUM19X15-12-ALU
20	M12	12.00	ZSUM19X20-12-ALU
25	M12	12.00	ZSUM19X25-12-ALU
30	M12	12.00	ZSUM19X30-12-ALU
35	M12	12.00	ZSUM19X35-12-ALU
40	M12	12.00	ZSUM19X40-12-ALU
45	M12	12.00	ZSUM19X45-12-ALU
50	M12	12.00	ZSUM19X50-12-ALU
51	M12	12.00	ZSUM19X51-12-ALU

## Threaded Stepped Dowel Pins – Metric

These pins have two different diameters in body for more unique applications. Type 416 Stainless Steel has a Rockwell Hardness of C36. Diameter tolerance is  $+.010\text{mm}/+.005\text{mm}$ . Length tolerance is  $+.5\text{mm}/-.0\text{mm}$ . Breaking strength not rated. Breaking strength is measured as double shear, which is the force required to break a pin into three pieces. To aid insertion, the ends are beveled at  $.015/010 \times 45^\circ$ .

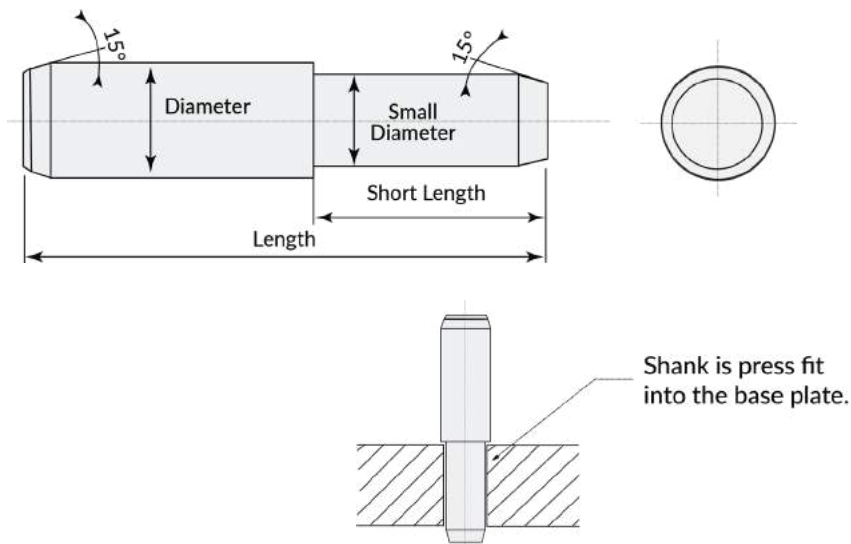


**Threaded Stepped Dowel Pins, Metric**

Diameter, mm	Length, mm	Small Diameter, mm	Short Length, mm	Internal Thread, mm	Thread Depth, mm
6	30	5	15	M3 x 0.5	6
8	25	6	10	M4 x 0.7	8
8	35	6	15	M4 x 0.7	8
10	35	8	15	M5 x 0.8	8
10	40	8	15	M5 x 0.8	8
13	45	10	20	M6 x 1	10
13	55	10	25	M6 x 1	10
13	70	10	30	M6 x 1	10

## Unthreaded Stepped Dowel Pins

These pins have two different diameters in body for more unique applications. Type 416 Stainless Steel has a Rockwell Hardness of C36. Diameter tolerance is  $+0.010\text{mm}/+0.005\text{mm}$ . Length tolerance is  $+0.5\text{mm}/-0\text{mm}$ . Breaking strength not rated. Breaking strength is measured as double shear, which is the force required to break a pin into three pieces. To aid insertion, the ends are beveled at  $.015/010 \times 45^\circ$ .

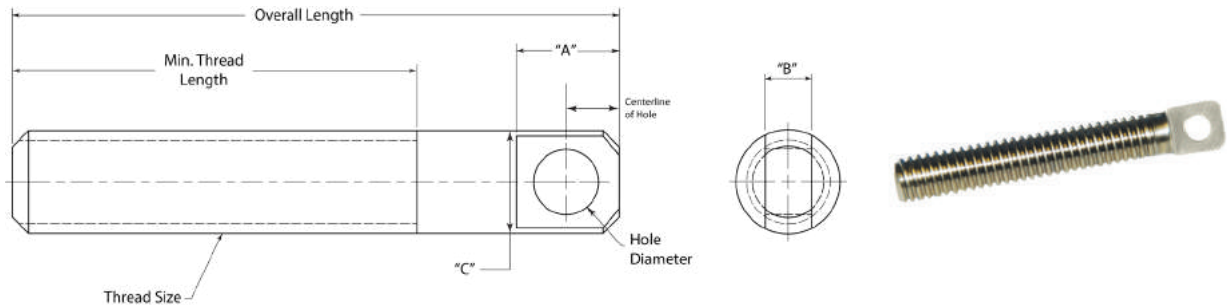


**Unthreaded Stepped Dowel Pins, Metric**

Diameter, mm	Length, mm	Small Diameter, mm	Short Length, mm
5	15	4	5
5	25	4	10
6	20	5	10
6	30	5	15
8	25	6	10
8	35	6	15
10	35	8	15
10	40	8	15
13	45	10	20
13	55	10	25
13	70	10	30

## Extension Spring Stud Anchors – Metric

Attach an extension spring to a stud and then thread the stud into your part for a secure connection. Class 6g thread fit.



### 18-8 SS Extension Spring Stud Anchors

Thread Size	Overall Length	Min. Thread Lg.	Hole Dia	Centerline of Hole to Top of Head	"A"	"B"	"C"	AMPG 18-8 SS Part Number
M3.5	16.00	10.00	2.00	1.80	3.80	1.60	3.50	Z2000M3.5SS
M4	22.00	16.00	2.50	2.10	4.10	1.80	4.00	Z2000M4SS
M5	28.00	19.00	3.00	2.60	4.80	2.20	5.00	Z2000M5SS
M6	32.00	22.00	4.00	2.60	6.30	2.70	6.00	Z2000M6SS
M8	38.00	25.00	5.00	4.20	7.90	3.60	8.00	Z2000M8SS
M10	41.00	28.00	6.00	4.80	9.10	4.00	10.00	Z2000M10SS



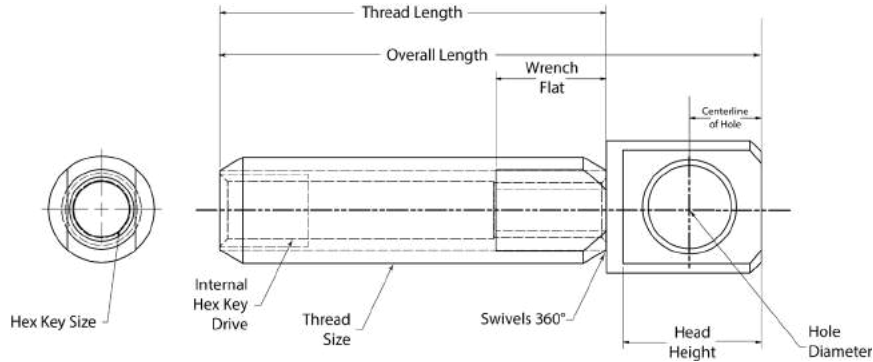
### Steel, Black Oxide Extension Spring Stud Anchors

Thread Size	Overall Length	Min. Thread Lg.	Hole Dia	Centerline of Hole to Top of Head	"A"	"B"	"C"	AMPG Steel Part Number
M3.5	16.00	10.00	2.00	1.80	3.80	1.60	3.50	Z2000M3.5
M4	22.00	16.00	2.50	2.10	4.10	1.80	4.00	Z2000M4
M5	28.00	19.00	3.00	2.60	4.80	2.20	5.00	Z2000M5
M6	32.00	22.00	4.00	2.60	6.30	2.70	6.00	Z2000M6
M8	38.00	25.00	5.00	4.20	7.90	3.60	8.00	Z2000M8
M10	41.00	28.00	6.00	4.80	9.10	4.00	10.00	Z2000M10

## Z-Swivel Spring Anchors – Metric

AMPG's Z Swivel Spring Anchors allow for the adjustment of tension on the spring, without twisting it. The attachment point to the spring is on a swivel, allowing the spring to be drawn tighter, without changing or twisting the spring position.

They are two ways to adjust the anchor, with a hex key from the bottom of the anchor, or by using the wrench flats on the top of the anchor. Class 6g thread fit. Overall length tolerance is  $\pm 2$ mm. Hole size tolerance is  $\pm .12$ mm.



### 18-8 SS Z-Swivel Spring Stud Anchors

Thread Size	Thread Pitch	Min. Thread Length	Nominal Overall Length	Min. Overall Length	Max. Overall Length	Head Height	Diameter	Hole Dia	Centerline of Hole to Top of Head	Hex Key Size	AMPG 18-8 SS Part Number
M3.5	.06	10.00	16.00	14.00	18.00	3.80	3.50	2.00	1.80	0.9	Z2001M3.5SS
M4	.07	16.00	22.00	20.00	24.00	4.10	4.00	2.50	2.10	1.3	Z2001M4SS
M5	.08	19.00	28.00	26.00	30.00	4.80	5.00	3.00	2.60	1.5	Z2001M5SS
M6	1.00	22.00	32.00	30.00	34.00	6.30	6.00	4.00	3.10	2	Z2001M6SS
M8	1.25	25.00	38.00	36.00	40.00	7.90	8.00	5.00	4.20	2.5	Z2001M8SS
M10	1.50	28.00	41.00	39.00	43.00	9.10	10.00	6.00	4.80	3	Z2001M10SS



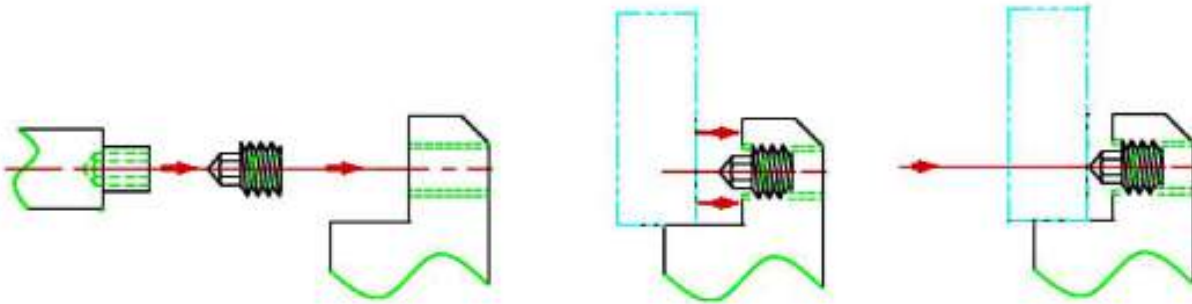
### Z-Swivel Spring Stud Anchors, Metric

Thread Size	Thread Pitch	Min. Thread Length	Nominal Overall Length	Min. Overall Length	Max. Overall Length	Head Height	Diameter	Hole Dia	Centerline of Hole to Top of Head	Hex Key Size	AMPG Steel Part Number
M3.5	.06	10.00	16.00	14.00	18.00	3.80	3.50	2.00	1.80	0.9	Z2001M3.5
M4	.07	16.00	22.00	20.00	24.00	4.10	4.00	2.50	2.10	1.3	Z2001M4
M5	.08	19.00	28.00	26.00	30.00	4.80	5.00	3.00	2.60	1.5	Z2001M5
M6	1.00	22.00	32.00	30.00	34.00	6.30	6.00	4.00	3.10	2	Z2001M6
M8	1.25	25.00	38.00	36.00	40.00	7.90	8.00	5.00	4.20	2.5	Z2001M8
M10	1.50	28.00	41.00	39.00	43.00	9.10	10.00	6.00	4.80	3	Z2001M10

## Threaded Hole Transfer Punches – Metric

Also known as transfer screws, these punches can be used in any threaded hole to transfer the hole location. Each set includes six steel punches stored in the handle. Use the handle to screw a punch into a hole. Place your workpiece against the punch and strike it with a hammer to mark the hole location.

Useful for tool and machine maintenance, die making and other general repairs. Handles are engraved with thread size. Threaded Hole Transfer Punches are made from 1144 stress-proof steel while the caps are made from 18-8 stainless steel. Made in the USA.



## Threaded Hole Transfer Punches – Metric

1144 Stress-Proof Steel



### Threaded Hole Transfer Punches, Metric

Thread Size	Description	1144 Steel Part Number
M2.5 x 0.45	(6) Heat Treated M2.5 x 0.45 Punches and (1) Handle/Wrench/Carrying Case	ZTPM2.5
M2.6 x 0.45	(6) Heat Treated M2.6 x 0.45 Punches and (1) Handle/Wrench/Carrying Case	ZTPM2.6
M3 x 0.50	(6) Heat Treated M3 x 0.5 Punches and (1) Handle/Wrench/Carrying Case	ZTPM3
M3.5 x 0.60	(6) Heat Treated M3.5 x 0.60 Punches and (1) Handle/Wrench/Carrying Case	ZTPM3.5
M4 x 0.70	(6) Heat Treated M4 x 0.70 Punches and (1) Handle/Wrench/Carrying Case	ZTPM4
M5 x 0.80	(6) Heat Treated M5 x 0.80 Punches and (1) Handle/Wrench/Carrying Case	ZTPM5
M6 x 1.00	(6) Heat Treated M6 x 1.00 Punches and (1) Handle/Wrench/Carrying Case	ZTPM6
M8 x 1.25	(6) Heat Treated M8 x 1.25 Punches and (1) Handle/Wrench/Carrying Case	ZTPM8
M10 x 1.50	(6) Heat Treated M10 x 1.50 Punches and (1) Handle/Wrench/Carrying Case	ZTPM10
M12 x 1.75	(6) Heat Treated M12 x 1.75 Punches and (1) Handle/Wrench/Carrying Case	ZTPM12
M14 x 2.00	(6) Heat Treated M14 x 2.00 Punches and (1) Handle/Wrench/Carrying Case	ZTPM14
M16 x 2.00	(6) Heat Treated M16 x 2.00 Punches and (1) Handle/Wrench/Carrying Case	ZTPM16
M18 x 2.50	(6) Heat Treated M18 x 2.50 Punches and (1) Handle/Wrench/Carrying Case	ZTPM18
M20 x 2.50	(6) Heat Treated M20 x 2.50 Punches and (1) Handle/Wrench/Carrying Case	ZTPM20
M22 x 2.50	(6) Heat Treated M22 x 2.50 Punches and (1) Handle/Wrench/Carrying Case	ZTPM22
M24 x 3.00	(6) Heat Treated M24 x 3.00 Punches and (1) Handle/Wrench/Carrying Case	ZTPM24
M27 x 3.00	(6) Heat Treated M27 x 3.00 Punches and (1) Handle/Wrench/Carrying Case	ZTPM27
M30 x 3.50	(6) Heat Treated M30 x 3.50 Punches and (1) Handle/Wrench/Carrying Case	ZTPM30

### Threaded Hole Transfer Punches Sets, Metric

Description	AMPG Part Number
(4) M3 x 0.5, (4) M4 x 0.7, (4) M5 x 0.8, (4) M6 x 1.0 Punches, (1) Wrench, (1) Plastic Fitted Case	ZTPSET4
(4) M6 x 1.0, (4) M8 x 1.25, (4) M10 x 1.5, (4) M12 x 1.75 Punches, (1) Wrench, (1) Plastic Fitted Case	ZTPSET5
(4) M14 x 2.0, (4) M16 x 2.0, (4) M20 x 2.5, (4) M24 x 3.0 Punches, (1) Wrench, (1) Plastic Fitted Case	ZTPSET6



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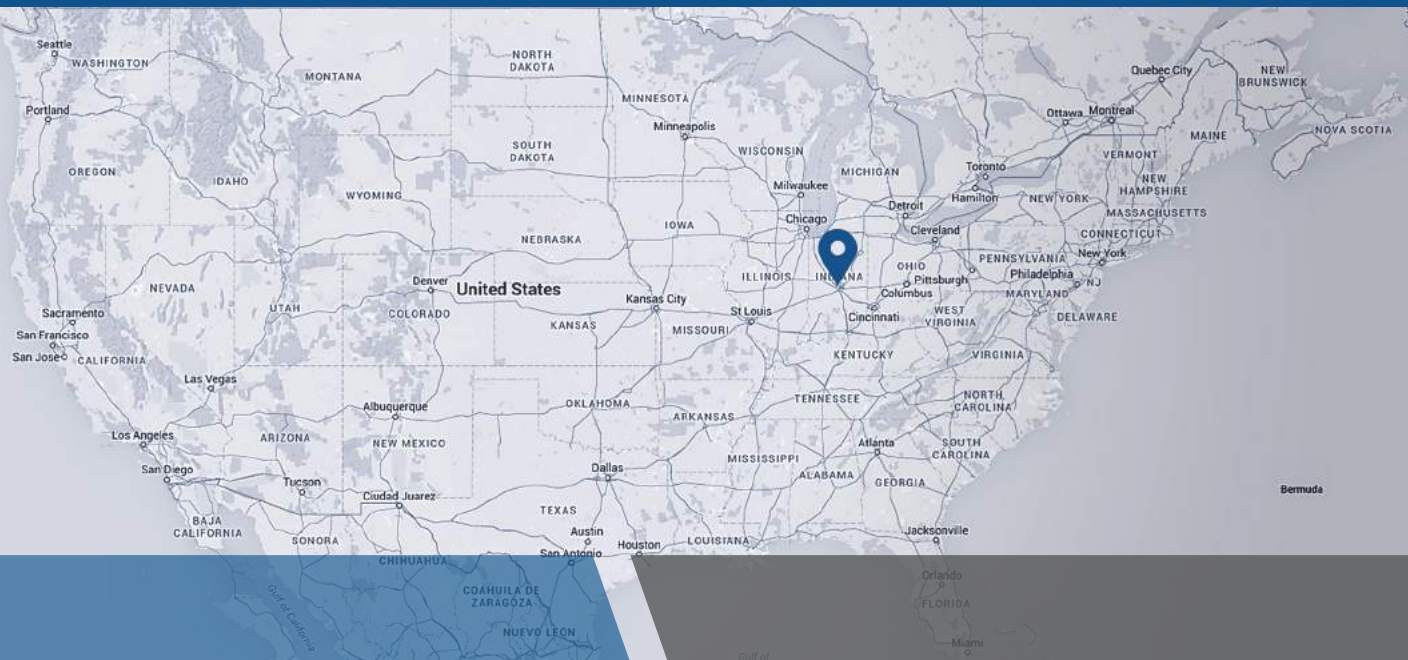
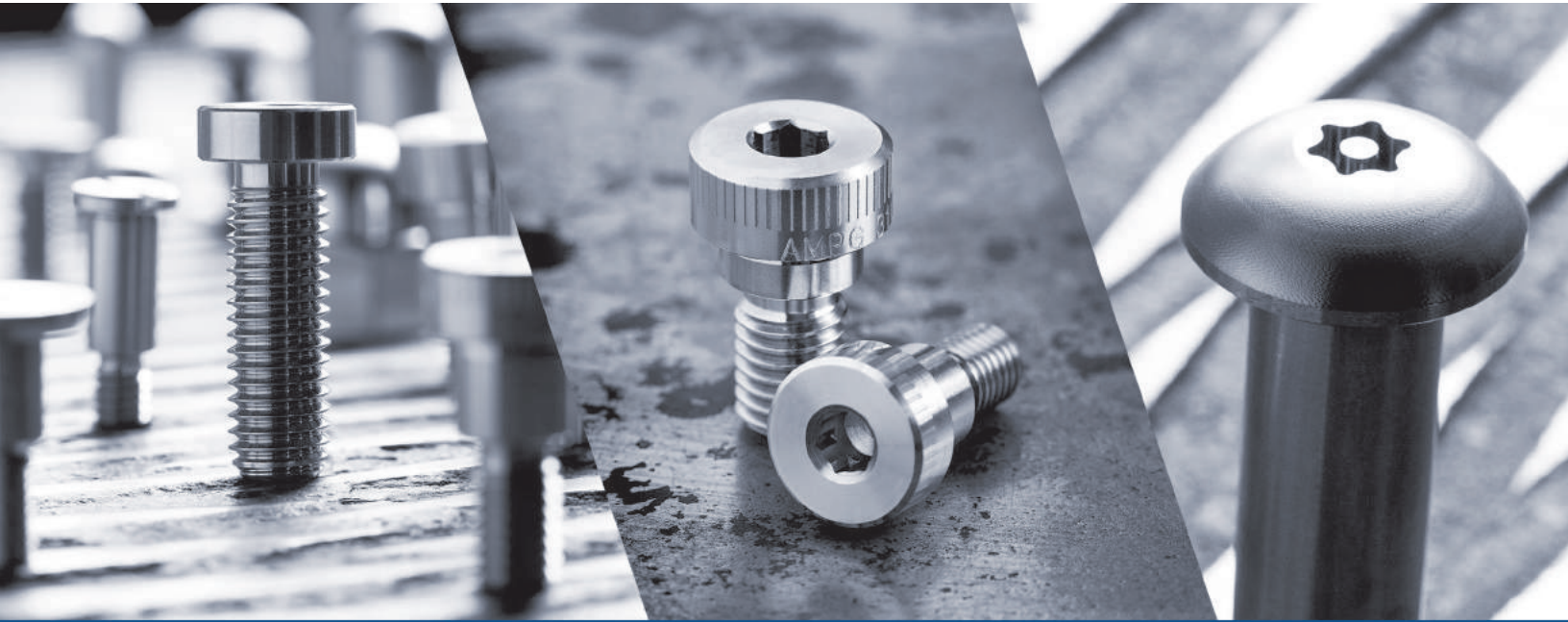
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