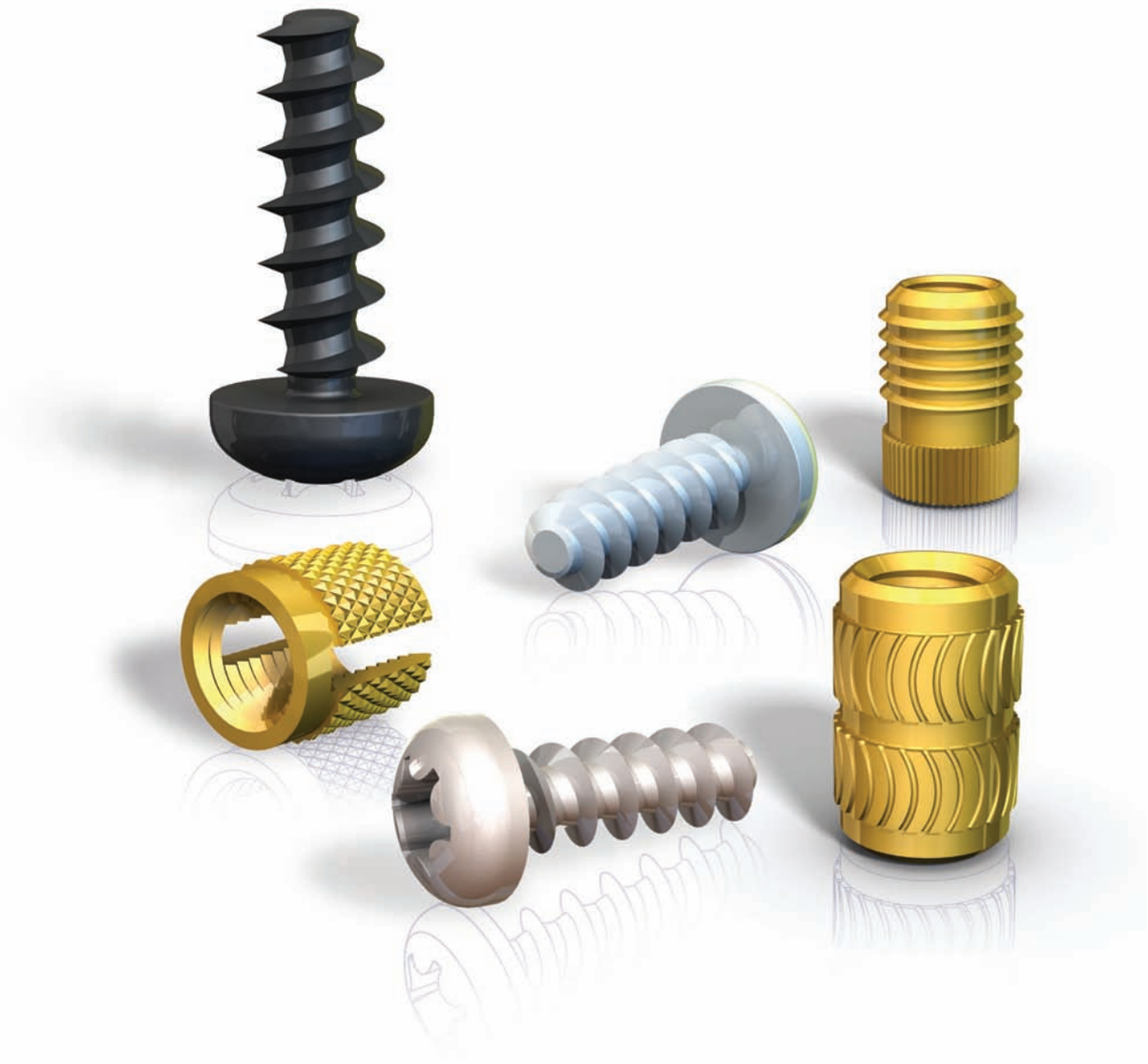
TR FASTENINGS
Fasteners for Plastics



TR Fastenings is recognised throughout the industry for world-class products and services.
We manufacture, stock and distribute a vast range of industrial fasteners and associated components.

SPECIFY • MANUFACTURE • DELIVER • INTERNATIONALLY

www.trfastenings.com

Fasteners for Plastics

Contents

Conversion Table

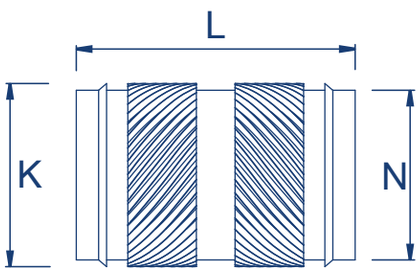
Old TR Insert range		New TR Insert range		PSM Insert range	
Part No	**Description**	**Part No**	**Description**	**Part No**	**Description**
I1HEBR	TR1 Inva-Sert	UHBRHE	Heat Sert	HL	Heat Lok
I1HHBR	TR1 Headed Inva-Sert	HEBRHE	Headed Heat Sert	HLH	Headed Heat Lok
I2PSBR	TR2 Broach-Sert	UHBRSP	Spirol Sert	SP	Spiro
I2HPBR	TR2 Headed Broach-Sert	HEBRSP	Headed Spirol Sert	HSR	Headed Spiro
I3TSBR	TR3 Rota-Sert	UHBRTH	Thread Sert	SCT	Screw Sert
		HEBRTH	Headed Thread Sert	HSCT	Headed Screw Sert
I4ESBR	TR4 Expan-Sert	UHBREX	Expansion Sert	N41	Banc Lok
I4EHBR	TR4 Headed Expan-Sert	HEBREX	Headed Expansion Sert	N42	Headed Bank Lok
I4ERBR	TR4 R/Headed Expan-Sert	RHBREX	R/Headed Expansion Sert	N42R	R/Headed Bank Lok
I5SSBR	TR5 Uni-Sert	UHBRSO	Sonic Sert	SL	Sonic Lok
I5SKBR	TR5 Headed Uni-Sert	HEBRSO	Headed Sonic Sert	SHK	Headed Sonic Lok
16TTBR	TR6 Duo-Sert	UHBRTE	Tec Sert	TEC	Tech-Sonic
17CBBR	TR7 Combi-Sert	UHBRFI	Fin Sert	FL	Fin-Lok
I7CHBR	TR7 Headed Combi-Sert	HEBRFI	Headed Fin Sert	FLH	Headed Fin-Lok
		UHBRMI	Mini Sert	MTEC	Mini Tech
		HEBRMI	Headed Mini Sert	MTH	Headed Mini Tech
		UHBRFL	Flow Sert	FTC	Flo Tech

Note: PSM codes are made up of Product 1st. Material type 2nd and Diameter 3rd
Example : Customer asks for an alternative to a PSM Headed Sonic Lok, M3 in Brass. Or they may quote a PSM code for this which would be SHK-B-M3.
Our TR alternative would be M3 - HEBRSO

Fasteners for Plastics Tech-Sert™

Unheaded (UHBRTE)

Brass/Self Colour



Unheaded (UHBRTE) Metric and Unified Dimensions

Thread size										
	Metric	M2*	M2.5*	M3	M3.5	M4	M5	M6	M8*	M10*
	Unified	2*	-	4*	6*	8*	10*	¼”*	5/16”*	3/8”*
L mm		4.0	5.7	5.7	7.1	8.1	9.5	12.7	12.7	12.7
K mm		3.5	4.4	4.4	5.2	6.1	6.8	8.5	10.0	12.3
N mm		3.1	3.9	3.9	4.7	5.5	6.3	7.9	9.5	11.8
Recommended Hole Size mm (-0.0/+0.1)		3.2	4.0	4.0	4.8	5.6	6.4	8.0	9.6	11.9
Minimum Wall Thickness mm		1.3	1.6	1.6	1.8	2.1	2.6	3.3	4.5	6.0

***Non preferred - Please enquire for availability**
Non standard lengths and stud versions available on request
All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

Tech-Sert™ Information for designers

The Tech-Sert™ has been designed for post mould installation into thermoplastics using heat or ultrasonics with the opposing knurls and vanes providing high levels of pull out and torque resistance. The symmetrical design means the insert can be installed either way round which allows for automated installation.

Advantages:

- Rapid installation
- Symmetrical design for automated installation
- Allows for thin walls in the boss
- High pull out and torque resistance

Installation Data

The Tech-Sert™ is installed using either heat or ultrasonics.

Heat Installation

Where heat is used you must ensure that the insert softens, but does not melt the plastic, which helps avoid flash forming around the top of the insert.

Ultrasonic Installation

Ultrasonic installation works best with low amplitude vibrations and enough power to soften the surrounding plastic.

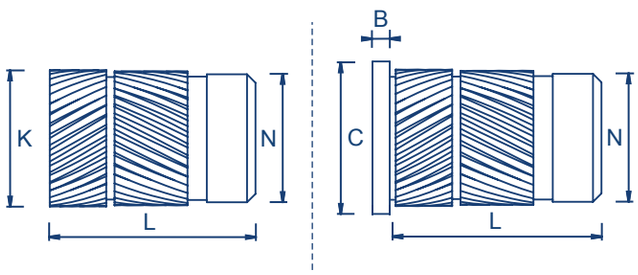
Care should be taken to avoid excessive downward pressure being applied during installation which can result in the insert being forced into the hole rather than allowing the plastic to soften around it.

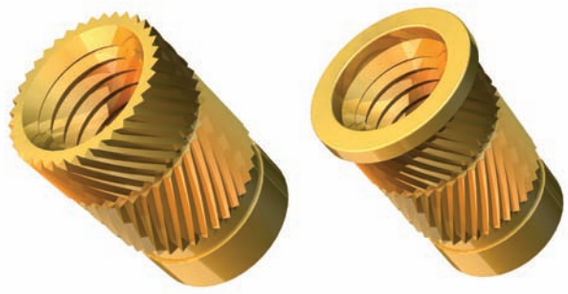
How to specify part numbers for Fasteners for Plastics:

Thread - Product
e.g. M3 - Unheaded = **M3 - UHBRTE**
e.g. 4 UNC - Unheaded = **4 UNC - UHBRTE**

Fasteners for Plastics Sonic-Sert™
Unheaded (UHBRSO) Headed (HEBRSO)

Brass/Self Colour





Unheaded (UHBRSO) Headed (HEBRSO) Metric and Unified Dimensions

Thread size	Metric	M2*	M2.5*	M3	M3.5	M4	M5	M6	M8*	M10*
	Unified	2*	-	4*	6*	8*	10*	¼"*	5/16"*	3/8"*
L mm		4.0	5.7	5.7	7.1	8.1	9.5	12.7	12.7	12.7
K mm		3.6	4.6	4.6	5.4	6.3	7.1	8.7	10.2	12.6
B mm		0.53	0.61	0.61	0.76	0.91	1.09	1.35	1.35	1.60
C mm		4.8	5.5	5.5	6.4	7.1	7.9	9.5	11.1	14.0
N mm		3.1	3.9	3.9	4.7	5.5	6.3	7.9	9.5	11.8
Recommended Hole Size mm (-0.0/+0.1)		3.2	4.0	4.0	4.8	5.6	6.4	8.0	9.6	11.9
Minimum Wall Thickness mm		1.3	1.6	1.6	1.8	2.1	2.6	3.3	4.5	6.0

***Non preferred - Please enquire for availability**
Non standard lengths and stud versions available on request
All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

Sonic-Sert™ Information for designers

The Sonic-Sert™ has been designed for post mould installation into thermoplastics using heat or ultrasonics with the opposing knurls providing a combination of high pull out and torque resistance.

Advantages:
- Rapid installation
- Allows for thin walls in the boss
- High pull out and torque resistance

Installation Data
The Sonic-Sert™ is installed using either heat or ultrasonics.

Heat Installation
Where heat is used you must ensure that the insert softens, but does not melt the plastic, which helps avoid flash forming around the top of the insert.

Ultrasonic Installation
Ultrasonic installation works best with low amplitude vibrations and enough power to soften the surrounding plastic.

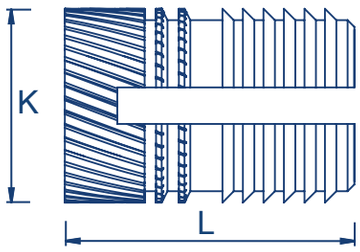
Care should be taken to avoid excessive downward pressure being applied during installation which can result in the insert being forced into the hole rather than allowing the plastic to soften around it.

How to specify part numbers for Fasteners for Plastics:

Thread - Product
e.g. M3 - Unheaded = **M3 - UHBRSO**
e.g. 4 UNC - Headed = **4 UNC - HEBRSO**

Fasteners for Plastics Press-Sert™
Unheaded (UHBRPR)

Brass/Self Colour



Unheaded (UHBRPR) Metric and Unified Dimensions

Thread size	Metric	M2*	M2.5*	M3	M3.5	M4	M5	M6	M8*
	Unified	2*	-	4*	6*	8*	10*	¼"*	5/16"*
L mm		4.0	5.8	5.8	7.2	8.2	9.5	12.7	12.7
K mm		3.7	4.5	4.5	5.3	6.2	6.9	8.5	10.1
Recommended Hole Size mm (-0.0/+0.1)		3.2	4.0	4.0	4.8	5.6	6.4	8.0	9.6
Minimum Wall Thickness mm		1.6	2.0	2.0	2.4	2.8	3.2	4.0	4.8

***Non preferred - Please enquire for availability**
Non standard lengths are available on request
All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

Press-Sert™ Information for designers

The Press-Sert™ is a press-in insert, designed for post mould installation into thermoplastics. The combination of plain and knurled vanes provides good levels of pull out and torque resistance.

Advantages:
- Simple, press-in installation
- Provides self-locking action on mating screw
- Good pull out and torque resistance

Installation Data
The Press-Sert™ should be installed with a press that can provide a steady squeezing action to prevent damage to the mating boss.

The mating screw should always be installed into the knurled end of the insert to allow it to expand. It is important that the screw fully penetrates the insert to achieve full expansion and optimum pull-out resistance.

Press-Sert™ inserts should not be used in notch-sensitive plastics.

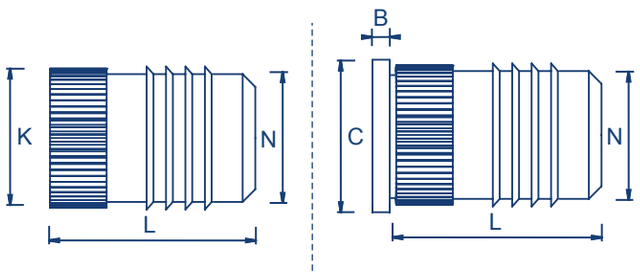
How to specify part numbers for Fasteners for Plastics:

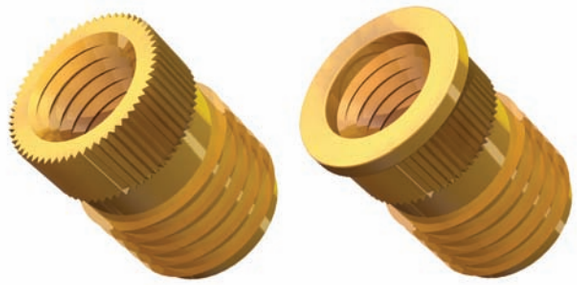
Thread - Product
e.g. M3 - Unheaded = **M3 - UHBRPR**
e.g. 4 UNC - Unheaded = **4 UNC - UHBRPR**

Fasteners for Plastics Fin-Sert™

Unheaded (UHBRFI) Headed (HEBRFI)

Brass/Self Colour





Unheaded (UHBRFI) Headed (HEBRFI)* Metric and Unified Dimensions

Thread size	Metric	M2*	M2.5*	M3	M3.5	M4	M5	M6	M8*
	Unified	2*	-	4*	6*	8*	10*	¼"*	5/16"*
L mm		4.0	4.8	4.8	6.4	7.9	9.5	12.7	12.7
K mm		3.7	4.5	4.5	5.3	6.1	7.0	8.6	10.2
B mm		0.45	0.58	0.58	0.74	0.89	1.07	1.32	1.32
C mm		4.8	5.5	5.5	6.4	7.1	7.9	9.5	11.1
N mm		3.1	3.9	3.9	4.7	5.5	6.3	7.9	9.5
Recommended Hole Size mm (-0.0/+0.1)		3.2	4.0	4.0	4.8	5.6	6.4	8.0	9.6
Minimum Wall Thickness mm		1.6	2.0	2.0	2.4	2.8	3.2	4.0	4.8

***Non preferred - Please enquire for availability**
Non standard lengths are available on request
All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

Fin-Sert™ Information for designers

The Fin-Sert™ is a press-in insert, designed for post mould installation into thermoplastics. The combination of fins and knurls provides good levels of pull out and torque resistance.

Advantages:

- Simple, press-in installation
- Free running female thread
- Good pull out and torque resistance

Installation Data

The Fin-Sert™ should be installed with a press that can provide a steady squeezing action to prevent damage to the mating boss.

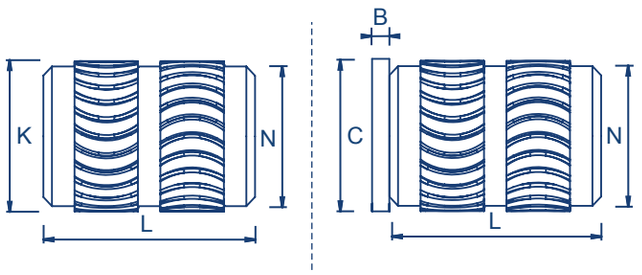
How to specify part numbers for Fasteners for Plastics:

Thread - Product
e.g. M3 - Unheaded = **M3 - UHBRFI**
e.g. 4 UNC - Headed = **4 UNC - HEBRFI**

Fasteners for Plastics Heat-Sert™

Unheaded (UHBRHE) Headed (HEBRHE)

Brass/Self Colour



Unheaded (UHBRHE) Headed (HEBRHE) Metric and Unified Dimensions

Thread size	Metric	M2*	M2.5*	M3	M3.5	M4	M5	M6	M8*
	Unified	2*	-	4*	6*	8*	10*	¼"*	5/16"*
L mm		3.9	5.8	5.8	7.1	8.1	9.5	12.7	12.7
K mm		3.5	4.4	4.4	5.2	6.1	6.9	8.5	10.0
B mm		0.51	0.58	0.58	0.74	0.89	1.07	1.32	1.32
C mm		4.8	5.5	5.5	6.4	7.1	7.9	9.5	11.1
N mm		3.1	3.9	3.9	4.7	5.5	6.3	7.9	9.5
Recommended Hole Size mm (-0.0/+0.1)		3.2	4.0	4.0	4.8	5.6	6.4	8.0	9.6
Minimum Wall Thickness mm		1.4	1.8	1.8	2.1	2.4	2.8	3.6	5.0

***Non preferred - Please enquire for availability**
Non standard lengths are available on request
All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

Heat-Sert™ Information for designers

The Heat-Sert™ has been designed for post mould installation into notch-sensitive thermoplastics using heat. The rounded knurls alleviate stress in the mating boss.

Advantages:
- Designed specifically for notch-sensitive plastics
- Symmetrical design for automated installation
- High pull out and torque resistance

Installation Data
The Heat-Sert™ is installed using heat and you must ensure that the insert softens, but does not melt the plastic which helps avoid flash forming around the top of the insert.

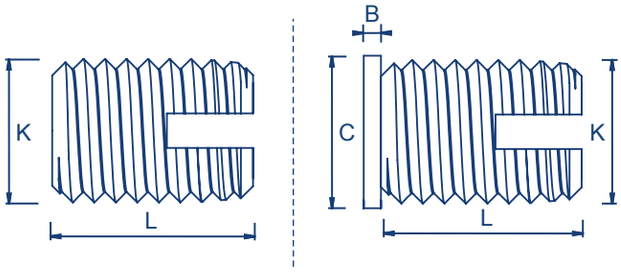
How to specify part numbers for Fasteners for Plastics:

Thread - Product
e.g. M3 - Unheaded = **M3 - UHBRHE**
e.g. 4 UNC - Headed = **4 UNC - HEBRHE**

Fasteners for Plastics Thread-Sert™

Unheaded (UHBRTH) Headed (HEBRTH)

Brass/Self Colour



Unheaded (UHBRTH) Headed (HEBRTH)* Metric and Unified Dimensions

Thread size	Metric	M2.5*	M3	M3.5	M4	M5	M6	M8*	M10*
	Unified	-	4*	6*	8*	10*	1/4" *	5/16" *	3/8" *
L mm		6.0	6.0	8.0	8.0	10.0	14.0	15.0	18.0
B mm		0.58	0.58	0.73	0.89	1.06	1.32	1.32	1.57
C mm		6.0	6.5	7.5	8.0	9.5	12.0	14.0	16.0
K max mm		4.5	5.0	6.0	6.5	8.0	10.0	12.0	14.0
Recommended Hole Size Thermoplastics mm		4.0-4.1	4.5-4.6	5.3-5.4	5.8-5.9	7.1-7.2	8.6-8.8	10.6-10.8	12.6-12.8
Recommended Hole Size Thermosets mm		4.1-4.3	4.6-4.8	5.5-5.7	6.0-6.2	7.3-7.6	9.0-9.4	11.0-11.4	13.0-13.4

***Non preferred - Please enquire for availability**
Minimum wall thickness can only be advised by pre-production evaluation.
All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

Thread-Sert™ Information for designers

The Thread-Sert™ is a self-tapping insert, designed for post mould installation into thermoplastics and thermosets. They are ideally suited to applications which may involve high jack-out loading.

Advantages:
- Simple, self-tapping installation
- Helps prevent jack-out
- High torque resistance

Installation Data
The Thread-Sert™ is installed by tapping using a hand tool, vertical drill with tapping attachment or standard tapping machine. Max RPM 35-40. Mandrel must not go past slot.

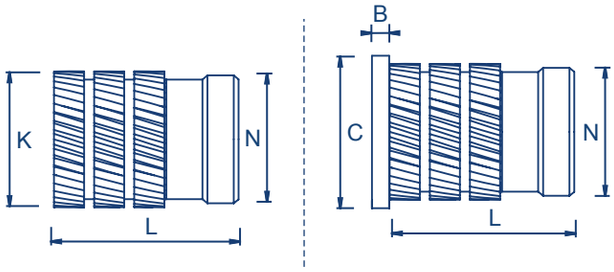
How to specify part numbers for Fasteners for Plastics:

Thread - Product
e.g. M3 - Unheaded = **M3 - UHBRTH**
e.g. 4 UNC - Headed = **4 UNC - HEBRTH**

Fasteners for Plastics Spirol-Sert™

Unheaded (UHBRSP) Headed (HEBRSP)

Brass/Self Colour



Unheaded (UHBRSP) Headed (HEBRSP) Metric and Unified Dimensions

Thread size	Metric	M2*	M2.5*	M3	M3.5	M4	M5	M6	M8*	M10*
	Unified	2*	-	4*	6*	8*	10*	¼"*	5/16"*	3/8"*
L mm		4.1	5.3	5.3	6.3	7.4	8.3	9.2	9.2	9.2
B mm		0.51	0.58	0.58	0.74	0.89	1.07	1.32	1.32	1.57
C mm		4.8	5.5	5.5	6.4	7.1	7.9	9.5	11.1	14.0
K mm		3.3	4.2	4.2	5.0	5.8	6.6	8.2	9.7	12.7
N mm		3.0	3.7	3.7	4.5	5.3	6.1	7.7	9.3	12.3
Recommended Hole Size mm (-0.0/+0.1)		3.1	3.8	3.8	4.6	5.4	6.2	7.8	9.3	12.3
Minimum Wall Thickness mm		1.6	2.0	2.0	2.5	2.5	2.5	2.8	3.8	5.0

***Non preferred - Please enquire for availability**

All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

Spirol-Sert™ Information for designers

The Spirol-Sert™ is a press-in insert, designed for post mould installation into thermosets. The sharp knurls of the insert cut into the mating material during installation thereby reducing stress in brittle thermosets.

Advantages:

- Simple, press-in installation
- Allows for thin walls in the boss
- Good pull out and torque resistance

Installation Data

The Spirol-Sert™ should be installed with a press that can provide a steady squeezing action to prevent damage to the mating boss.

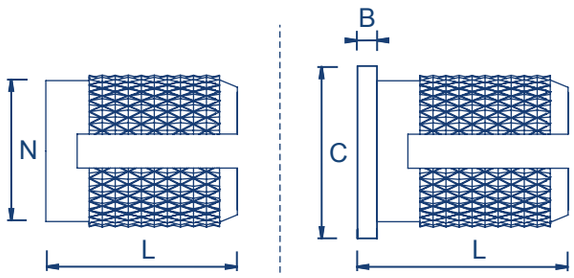
The insert should be allowed to freely rotate during installation.

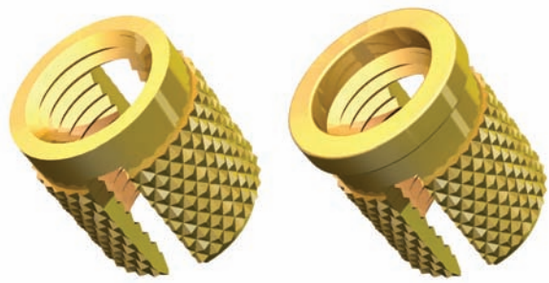
How to specify part numbers for Fasteners for Plastics:

Thread - Product
e.g. M3 - Unheaded = **M3 - UHBRSP**
e.g. 4 UNC - Headed = **4 UNC - HEBRSP**

Fasteners for Plastics Expansion-Sert™
Unheaded (UHBREX) Headed (HEBREX)

Brass/Self Colour





Unheaded (UHBREX) Headed (HEBREX)* Metric and Unified Dimensions

Thread size	Metric	M2*	M2.5*	M3	M3.5	M4	M5	M6	M8*
	Unified	2*	-	4*	6*	8*	10*	¼"*	5/16"*
L mm		3.9	4.7	4.7	6.3	7.9	9.4	12.6	12.6
B mm		0.43	0.51	0.51	0.66	0.82	0.99	1.25	1.25
C mm		4.8	5.5	5.5	6.4	7.1	7.9	9.5	11.1
N max mm		3.2	4.0	4.0	4.7	5.5	6.3	7.9	9.5
Recommended Hole Size mm (-0.0/+0.1)		3.2	4.0	4.0	4.8	5.6	6.4	8.0	9.6
Minimum Wall Thickness mm		2.4	3.2	3.2	3.6	4.0	4.8	6.0	7.0

***Non preferred - Please enquire for availability**
Non standard lengths are available on request - Reverse headed also available on request.
All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

Expansion-Sert™ Information for designers

The Expansion-Sert™ is a press-in insert, designed for post mould installation into thermosets. The knurl pattern makes this insert ideal for hard thermosets.

Advantages:
- Simple, press-in installation
- Provides self-locking action on mating screw
- Good pull out and torque resistance

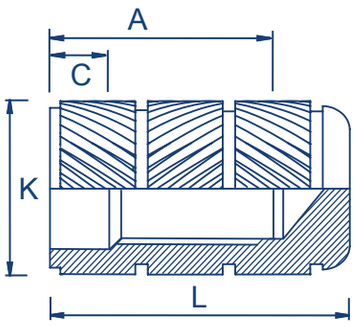
Installation Data
The Expansion-Sert™ should be installed with a press that can provide a steady squeezing action to prevent damage to the mating boss. It is important that the mating screw fully penetrates the insert to achieve full expansion and optimum pull-out resistance.

How to specify part numbers for Fasteners for Plastics:

Thread - Product
e.g. M3 - Unheaded = **M3 - UHBREX**
e.g. 4 UNC - Headed = **4 UNC - HEBREX**

Fasteners for Plastics Flow-Sert™
Unheaded (UHBRFL)

Brass/Self Colour



Unheaded (UHBRFL) Metric and Unified Dimensions

Thread size	Metric	M2*	M2.5*	M3	M3.5	M4	M5	M6	M8*	M10*
	Unified	2*	-	4*	6*	8*	10*	¼"*	5/16"*	3/8"*
L mm		5.5	6.4	7.3	9.2	10.2	11.2	14.4	16.5	17.9
K mm		3.4	4.3	4.7	5.5	6.3	7.3	9.8	11.4	13.8
A min. mm		3.6	4.0	4.6	6.0	6.7	7.4	8.1	11.1	11.9
C mm		1.0	1.2	1.3	1.6	1.8	2.0	2.0	2.3	2.4

***Non preferred - Please enquire for availability**
All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

Flow-Sert™ Information for designers

The Flow-Sert™ is a blind insert, designed to be installed during the moulding process.

Advantages:
- The blind end prevents plastic ingress during moulding
- Very high pull out and torque resistance

Installation Data
The Flow-Sert™ is designed to be installed during moulding. It is critical that the mould pin used is designed to locate the Flow-Sert™ and prevent plastic ingress.

Please contact your nearest TR location for mould pin design assistance.

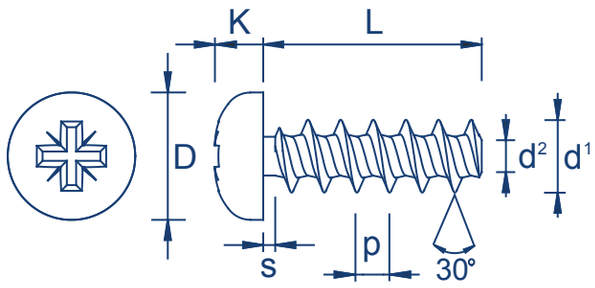
How to specify part numbers for Fasteners for Plastics:

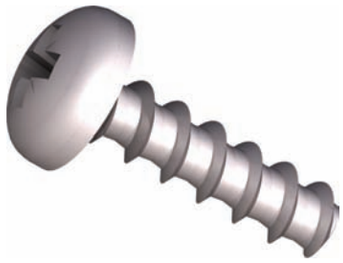
Thread - Product
e.g. M3 - Unheaded = **M3 - UHBRFL**
e.g. 4 UNC - Unheaded = **4 UNC - UHBRFL**

Fasteners for Plastics (PR30)

Pan Head 30 - PoziDriv®

10.9 Through hardened Steel/Zinc & clear de-embrittled | Stainless Steel/Self colour





Dimensions

Thread Dimensions	d1	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	d2	1.04	1.25	1.40	1.66	1.91	2.17	2.68	3.19	3.70
	p	0.80	0.98	1.12	1.34	1.57	1.79	2.24	2.69	3.14
	s (L > 3 x d1)	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	s (L < 3 x d1)	0.9	1.1	1.3	1.5	1.8	2.0	2.5	3.0	3.5
Head Dimensions	D	3.2	3.9	4.4	5.3	6.1	7.0	8.8	10.5	12.3
	K	1.2	1.5	1.7	2.0	2.5	2.7	3.4	4.0	4.5
	Recess No.	0	1	1	1	2	2	2	3	3

Preferred Lengths

		Length (L)										
		5	6	8	10	12	14	16	18	20	25	30
Thread (d1)	2.2	ST	ST	ST	ST							
	2.5	ST	ST	ST	ST	ST	ST	ST	ST			
	3.0		ST	ST	ST	ST	ST	ST	ST	ST	ST	ST
	3.5			ST	ST	ST	ST	ST	ST	ST	ST	ST
	4.0			ST	ST	ST	ST	ST	ST	ST	ST	ST
	5.0				ST	ST	ST	ST	ST	ST	ST	ST
	6.0					ST		ST		ST	ST	ST

ST = Steel

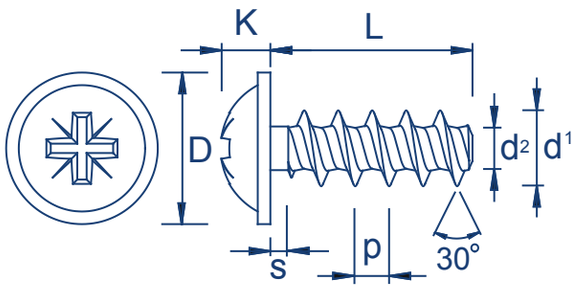
All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

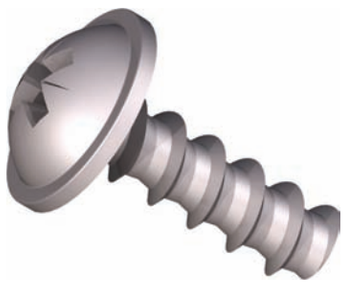
How to specify part numbers for Fasteners for Plastics:

Thread (d1) - Product - Material
e.g. **3.0 - PR30 - Steel**

Fasteners for Plastics (FL30)
Flange Head 30 - PoziDriv®

10.9 Through hardened Steel/Zinc & clear de-embrittled | Stainless Steel/Self colour





Dimensions

Thread Dimensions	d1	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	d2		1.25	1.40	1.66	1.91	2.17	2.68	3.19	3.70
	p		0.98	1.12	1.34	1.57	1.79	2.24	2.69	3.14
	s (L > 3 x d1)		2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	s (L < 3 x d1)		1.1	1.3	1.5	1.8	2.0	2.5	3.0	3.5
Head Dimensions	D		4.4	5.0	6.0	7.0	8.0	10.0	12.0	14.0
	K		1.6	1.8	2.1	2.4	2.5	3.2	4.0	4.6
	t		0.5	0.6	0.7	0.8	0.9	1.1	1.3	1.5
	Recess No.		1	1	1	2	2	2	3	3

Preferred Lengths

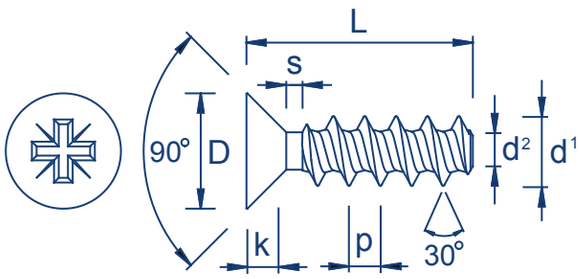
		Length (L)										
		5	6	8	10	12	14	16	18	20	25	30
Thread (d1)	2.2	ST	ST	ST	ST							
	2.5	ST	ST	ST	ST	ST						
	3.0		ST	ST	ST	ST	ST	ST	ST	ST		
	3.5			ST	ST	ST	ST	ST	ST	ST		
	4.0			ST	ST	ST	ST	ST	ST	ST	ST	ST
	5.0					ST	ST	ST	ST	ST	ST	ST
	6.0					ST		ST		ST	ST	ST

How to specify part numbers for Fasteners for Plastics:

Thread (d1) - Product - Material
e.g. **3.0 - FL30 - Steel**

Fasteners for Plastics (KR30)
Countersunk Head 30 - PoziDriv®

10.9 Through hardened Steel/Zinc & clear de-embrittled | Stainless Steel/Self colour



Dimensions

Thread Dimensions	d1	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	d2	1.04	1.25	1.40	1.66	1.91	2.17	2.68	3.19	3.70
	p	0.80	0.98	1.12	1.34	1.57	1.79	2.24	2.69	3.14
	s (L > 3 x d1)	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	s (L < 3 x d1)	0.9	1.1	1.3	1.5	1.8	2.0	2.5	3.0	3.5
Head Dimension	D	3.4	3.8	4.7	5.5	7.3	8.4	9.3	11.3	13.6
	K	0.35	0.45	0.35	0.35	0.40	0.45	0.50	0.55	0.60
	Recess No.	1	1	1	1	2	2	2	3	3

Preferred Lengths

		Length (L)										
		5	6	8	10	12	14	16	18	20	25	30
Thread (d1)	2.2	ST	ST	ST	ST							
	2.5	ST	ST	ST	ST	ST	ST	ST	ST			
	3.0		ST	ST	ST	ST	ST	ST	ST	ST	ST	
	3.5			ST	ST	ST	ST	ST	ST	ST	ST	
	4.0				ST	ST	ST	ST	ST	ST	ST	ST
	5.0					ST	ST	ST	ST	ST	ST	ST
	6.0					ST		ST		ST	ST	ST

ST = Steel

All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

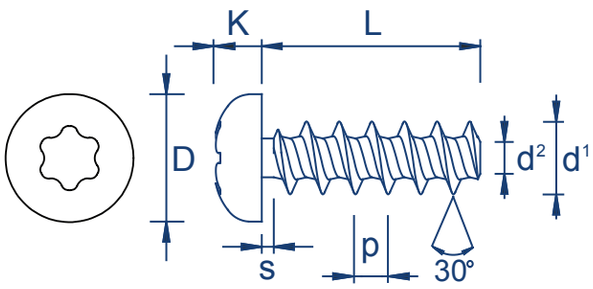
How to specify part numbers for Fasteners for Plastics:

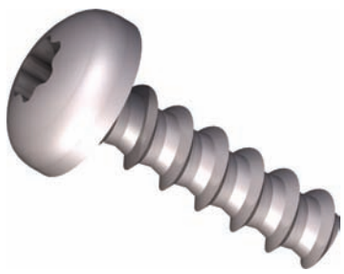
Thread (d1) - Product - Material
e.g. **3.0 - KR30 - Steel**

Fasteners for Plastics (PT30)

Pan Head 30 - T-Drive

10.9 Through hardened Steel/Zinc & clear de-embrittled | Stainless Steel/Self colour





Dimensions

Thread Dimensions	d1	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	d2	1.04	1.25	1.40	1.66	1.91	2.17	2.68	3.19	3.70
	p	0.80	0.98	1.12	1.34	1.57	1.79	2.24	2.69	3.14
	s (L > 3 x d1)	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	s (L < 3 x d1)	0.9	1.1	1.3	1.5	1.8	2.0	2.5	3.0	3.5
Head Dimensions	D	3.6	4.0	4.2	5.6	6.9	7.5	8.2	10.8	12.5
	K	1.3	1.5	1.6	2.1	2.3	2.6	2.9	3.8	4.4
	Recess No.	T6	T6	*T8	T10	T10	T20	T20	T25	T30

Preferred Lengths

		Length (L)										
		4	5	6	8	10	12	14	16	18	20	25
Thread (d1)	1.8	ST	ST	ST	ST	ST						
	2.2	ST	ST	ST	ST	ST	ST		ST			
	2.5		ST	ST	ST	ST	ST	ST	ST			
	3.0				ST	ST	ST	ST	ST	ST	ST	
	3.5				ST	ST	ST	ST	ST	ST	ST	ST
	4.0				ST	ST	ST	ST	ST	ST	ST	ST
	5.0											

ST = Steel

All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

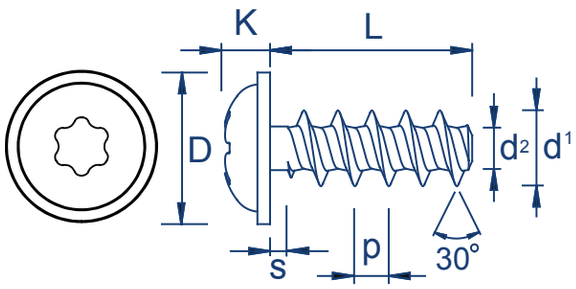
How to specify part numbers for Fasteners for Plastics:

Thread (d1) - Product - Material
e.g. **3.0 - PT30 - Steel**

Fasteners for Plastics (FT30)

Flange Head 30 - T-Drive

10.9 Through hardened Steel/Zinc & clear de-embrittled | Stainless Steel/Self colour



Dimensions

Thread Dimensions	d1	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	d2		1.25	1.40	1.66	1.91	2.17	2.68	3.19	3.70
	p		0.98	1.12	1.34	1.57	1.79	2.24	2.69	3.14
	s (L > 3 x d1)		2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	s (L < 3 x d1)		1.1	1.3	1.5	1.8	2.0	2.5	3.0	3.5
Head Dimensions	D		4.5	5.0	6.0	7.0	8.0	10.0	12.0	14.0
	K		1.4	1.5	2.1	2.4	2.6	3.3	3.6	4.2
	t		0.5	0.5	0.6	0.7	0.8	1.0	1.2	1.4
	Recess No.		T6	T6	T10	T10	T20	T20	T25	T30

Preferred Lengths

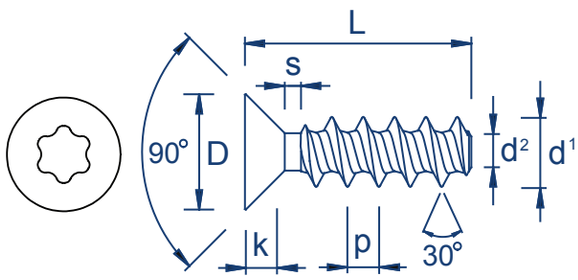
		Length (L)										
		4	5	6	8	10	12	14	16	18	20	25
Thread (d1)	1.8											
	2.2											
	2.5											
	3.0				ST	ST	ST					
	3.5				ST	ST	ST					
	4.0				ST	ST	ST					
	5.0											

How to specify part numbers for Fasteners for Plastics:

Thread (d1) - Product - Material
e.g. **3.0 - FT30 - Steel**

Fasteners for Plastics (KT30)
Countersunk Head 30 - T-Drive

10.9 Through hardened Steel/Zinc & clear de-embrittled | Stainless Steel/Self colour



Dimensions

Thread Dimensions	d1	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	d2	1.04	1.25	1.40	1.66	1.91	2.17	2.68	3.19	3.70
	p	0.80	0.98	1.12	1.34	1.57	1.79	2.24	2.69	3.14
	s (L > 3 x d1)	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	s (L < 3 x d1)	0.9	1.1	1.3	1.5	1.8	2.0	2.5	3.0	3.5
Head Dimensions	D	3.4	3.8	4.7	5.5	7.3	8.4	9.3	11.3	13.6
	K	0.35	0.35	0.35	0.35	0.40	0.45	0.50	0.55	0.60
	Recess No.	T6	T6	T8	T8	T15	T20	T20	T30	T30

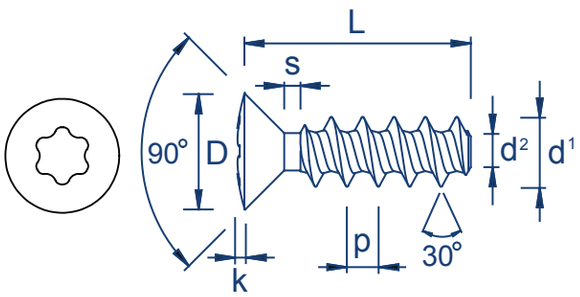
All sizes non-preferred - Please enquire for availability
All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

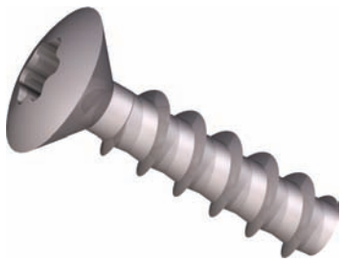
How to specify part numbers for Fasteners for Plastics:

Thread (d1) - Product - Material
e.g. **3.0 - KT30 - Steel**

Fasteners for Plastics (IT30)
Raised Countersunk Head 30 - T-Drive

10.9 Through hardened Steel/Zinc & clear de-embrittled | Stainless Steel/Self colour





Dimensions

Thread Dimensions	**d1**	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	d2				1.66	1.91	2.17	2.68	3.19	3.70
	p				1.34	1.57	1.79	2.24	2.69	3.14
	s (L > 3 x d1)				3.0	3.5	4.0	5.0	6.0	7.0
	s (L < 3 x d1)				1.5	1.8	2.0	2.5	3.0	3.5
Head Dimensions	**D**				5.6	6.5	7.5	9.2	11.0	12.5
	K (nom.)				1.10	1.30	1.45	1.75	2.05	2.40
	Recess No.				T10	T15	T20	T25	T30	T40

All sizes non-preferred - Please enquire for availability
All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

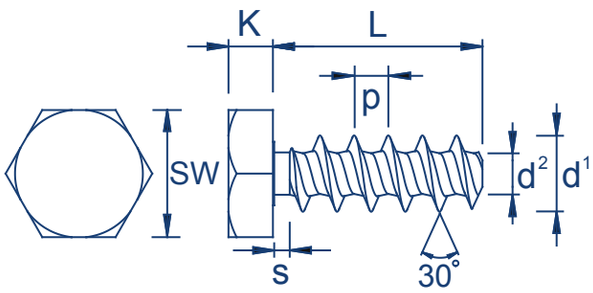
How to specify part numbers for Fasteners for Plastics:

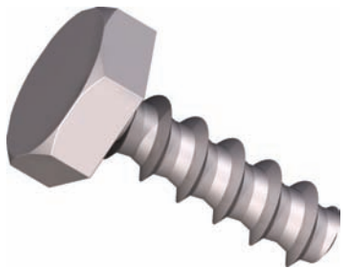
Thread (d1) - Product - Material
e.g. **3.0 - IT30 - Steel**

Fasteners for Plastics (HH30)

Hexagon Head 30

10.9 Through hardened Steel/Zinc & clear de-embrittled | Stainless Steel/Self colour





Dimensions

Thread Dimensions	d1	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	d2				1.66	1.91	2.17	2.68	3.19	3.70
	p				1.34	1.57	1.79	2.24	2.69	3.14
	s (L > 3 x d1)				3.0	3.5	4.0	5.0	6.0	7.0
	s (L < 3 x d1)				1.5	1.8	2.0	2.5	3.0	3.5
Head Dimensions	SW				5.0	5.5	7.0	8.0	10.0	10.0
	K				1.5	2.3	2.3	3.0	3.5	4.8

All sizes non-preferred - Please enquire for availability
All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

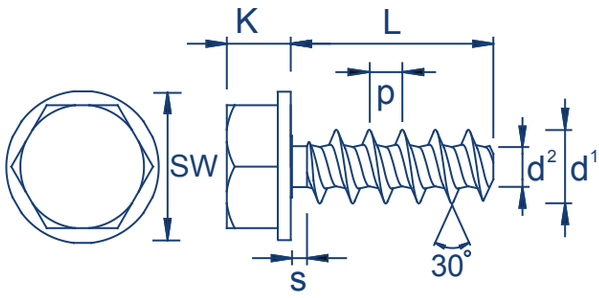
How to specify part numbers for Fasteners for Plastics:

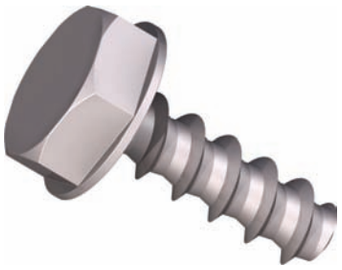
Thread (d1) - Product - Material
e.g. **3.0 - HH30 - Steel**

Fasteners for Plastics (HF30)

Hexagon Flange Head 30

10.9 Through hardened Steel/Zinc & clear de-embrittled | Stainless Steel/Self colour





Dimensions

Thread Dimensions	d1	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0
	d2				1.66	1.91	2.17	2.68	3.19	3.70
	p				1.34	1.57	1.79	2.24	2.69	3.14
	s (L > 3 x d1)				3.0	3.5	4.0	5.0	6.0	7.0
	s (L < 3 x d1)				1.5	1.8	2.0	2.5	3.0	3.5
Head Dimensions	SW				5.0	5.5	5.5	7.0	8.0	8.0
	D				6.5	7.0	8.0	10.0	12.0	14.0
	K				2.3	2.8	2.8	3.5	4.2	5.0

All sizes non-preferred - Please enquire for availability
All data is correct to the best of our knowledge, however TR cannot be held responsible for any errors or omissions.

How to specify part numbers for Fasteners for Plastics:

Thread (d1) - Product - Material
e.g. **3.0 - HF30 - Steel**

TR FASTENINGS
The TR Website

24 Hour Support

The TR Fastenings technical website has dimensional information on 1000's of products. This site also gives our customers access to the most comprehensive free fastener CAD library available. With over 20,000 configurations in the library, you can specify the exact size of fastener you require then download the correctly sized model in any one of 27 different 2D and 3D formats. These include: AutoCAD, Catia, Pro/Engineer, SolidWorks, DXF, IGES and STEP.

The project toolkit has been designed to make specifying fasteners as easy as possible. We know most engineers work on many individual projects and that these projects often need fasteners. With the Project Toolkit you can save fastener specifications from our site into individual projects making them much easier to find later. With our toolkit you can:

- Generate TR part numbers for any item on our site
- Save items into projects
- Create as many projects as you need
- Share your projects with your colleagues anywhere in the world - all they need is internet access
- Quickly send enquiries to TR

Our online product knowledge base articles have been designed to assist customer application design and assemblies.

Other functions include the animation library showing a step by step guide of how our branded fasteners work, conversion calculator and access to our engineering newsletter keeping you informed of all the latest news and developments.

TR PRODUCT RANGE
Overview

Standard Fasteners

We stock and supply a vast range of standard fasteners to DIN, ISO & ANSI standards including:

Machine screws, self-tapping screws, threadforming screws, socket products, nuts and washers.

TR Branded Products

Our own range of fastener solutions for specific industries and applications, including:

Fasteners for sheet metal, fasteners for plastic, security fasteners, thread-locking nuts and micro-diameter fasteners from M0.6

Special Manufacture

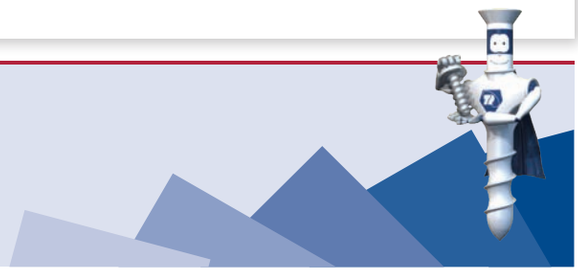
Our factories in Europe and Asia produce bar turned and cold formed fasteners from 0.6mm diameter up to 12mm diameter specifically to customer drawing.

In addition, our global network of approved sub-contractors allows us to offer practically any size of turned, cold-formed, pressed or moulded components. We can supply components in steel, stainless steel, aluminium, brass and many exotic materials such as titanium.

Other Components

For customers we supply via a Vendor Managed Inventory system such as Direct Line Feed we can include non-fastener products as part of the supply agreement. We can supply practically any high-volume, low-cost component including:

Cables, clips, plastic parts, connectors, switches, springs, batteries, hinges, levers, handles, brackets, hooks, pins, keys, spacers and stays plus much more.



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