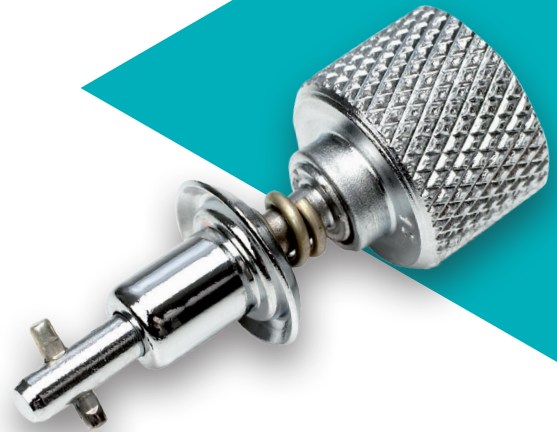




**HOWMET
AEROSPACE**



Camloc 
Traditionally Innovative

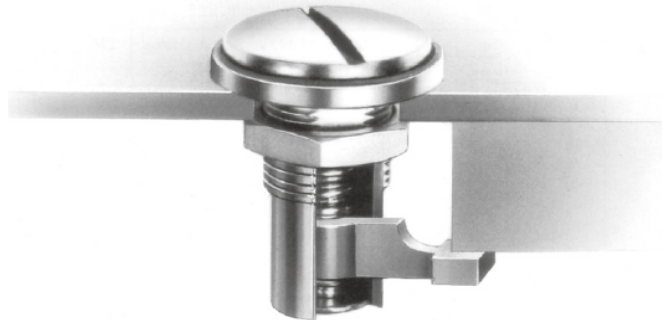
Quick Release Fasteners



Latches



Specials



Inserts





	Pages
General information	A-2
Important information about the 1/4-Turn Fasteners	A-3 - A-4
General Installation Instructions for 1/4-Turn Fasteners	A-5
Overview Quick-Operating Fasteners	A-6
 1/4-Turn Fasteners	
5F Series	B-1 - B-4
99F Series	C-1 - C-3
50F Series (650 N Working Load)	D-1 - D-7
50F Series (2.600 N Working Load)	E-1 - E-6
2600 / 2700 Series	F-1 - F-12
D4002 Series	G-1 - G-13
991F Series.....	H-1 - H-6
V34F Series.....	I-1 - I-3
 One-Piece Fasteners	
V936F Series.....	J-1 - J-2
713F Series.....	K-1 - K-2
 Push Button Fasteners	
15F Series.....	L-1 - L-4
 Push-Turn Fasteners	
715F Series	M-1 - M-3
716F Series	N-1 - N-3
717F Series	O-1 - O-3
PT10 Series	P-1 - P-4
 Index	



electrical cabinets



laboratory equipment



machine construction



agriculture



construction



solar



truck



electronic equipment



lighting interior



mould making



automotive/ racing



rail



trailer



wind

The Camloc brand was established in 1937. Since that time our fastening systems have been successfully integrated into numerous applications within many different industries.

Our customers benefit from more than 80 years of fastening experience.

We provide local support for innovative, high quality fastening systems supplied globally to the strictest environmental and working conditions.



IATF 16949:2016



ISO 14001: 2015

Your Howmet Fastening Systems team

Disclaimer

Parts listed are subject to technical changes. All dimensions in mm. All information is correct to the best of our knowledge at the time of printing. No liability for disadvantages caused by printing errors or false application.

Advantages of the Camloc-1/4-Turn Fasteners

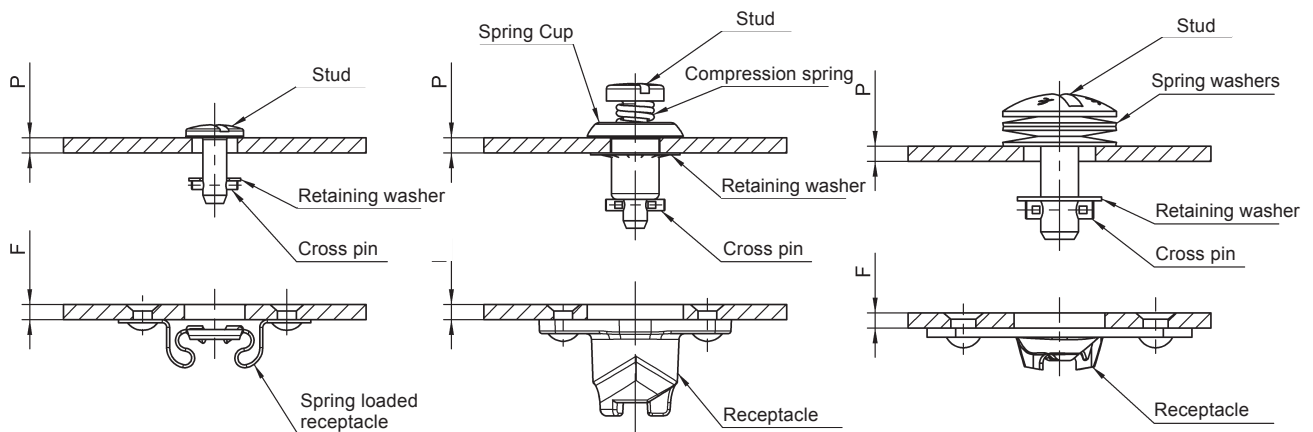
- Secure quick release fastener system
- Locking and unlocking by a quarter turn
- Long life - high number of operating cycles
- Hand or tool-operated
- Easy to use and fast operation reduces assembly costs
- Camloc fasteners are standardised worldwide
- Wide range of sizes
- Stud assemblies are captive in the panel
- Tolerance compensating
- Vibration-resistant

Components

The 1/4-turn fastener consists of a stud, retaining ring and receptacle.

1/4 turn fasteners require a spring element in the joint to enable them to work correctly. Depending upon the fastener type and mounting requirements the spring element can be part of the stud assembly or incorporated in the receptacle.

Stud assemblies with snap-in grommets are available on some Series giving a captive assembly without the need for a retaining washer.



Design Principles

Quarter-turn fasteners connect components under an elastic preload.

The spring element to produce the preload can be part of the stud or receptacle.

Fastener tensile loads specified in the catalogue are reached after overcoming the spring element generated preload.

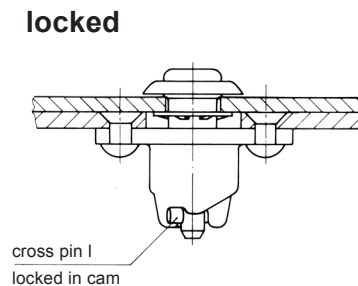
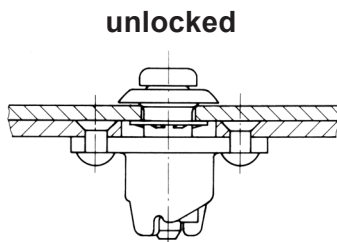
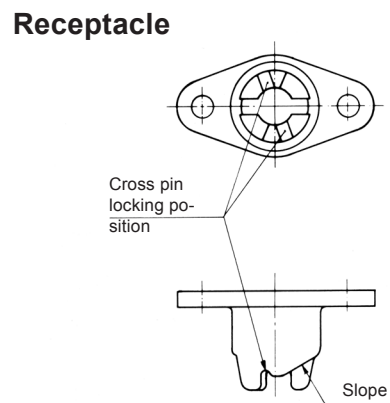
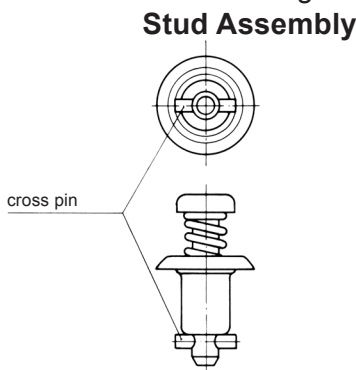
Unlike threaded fasteners, Camloc fasteners do not rely on the elasticity of joint and fastener materials to accomplish preload. The stud assembly or receptacle is designed with a spring element which allows repeated application of controlled preload with assured reliability over an high number of cycles.



[Click here: Camloc Quarter Turn Fastener](#)

How it operates

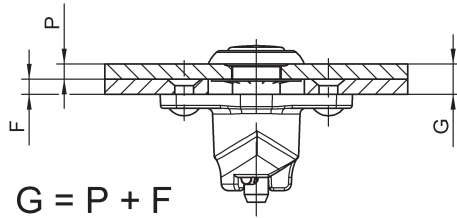
When the stud assembly is rotated, the stud cross pin rides up the cam causing a controlled joint preload to be applied. This action is accomplished by rotating the stud 90°. At this point a positive mechanical stop is reached and the cross pin falls into the locking detent. Excellent resistance to vibration induced loosening is assured.



Lock and unlock the stud by a quarter turn.

For general installation instructions please refer to the next page.

Selecting the Fastener



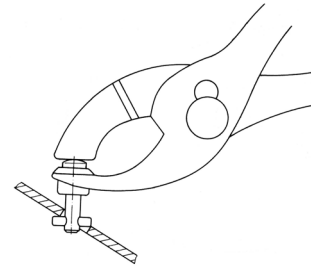
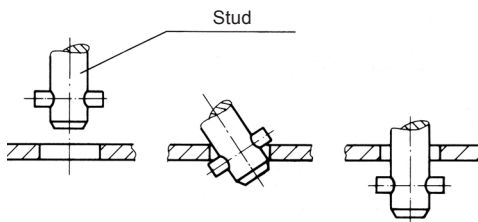
P = Panel thickness (stud assembly)

F = Frame thickness (receptacle)

G = total thickness, consisting of P + F as well as possible gaskets, paint thickness or gaps. This dimension gives the stud length number in the corresponding series tables.

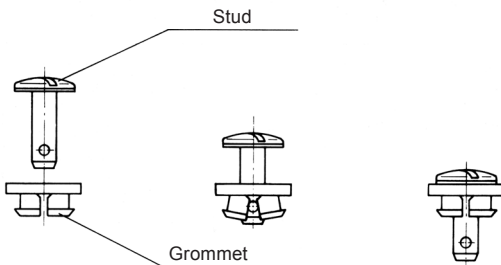
Installation

Stud

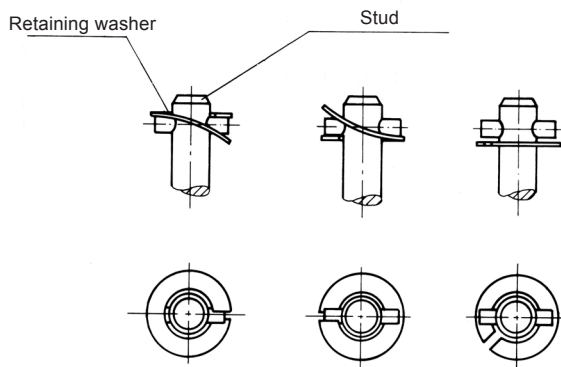


For short, spring-loaded stud assemblies, the use of 4P3-1 pliers is recommended..

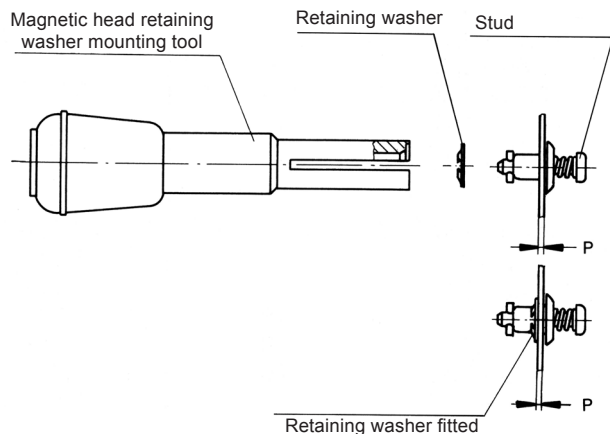
With Grommet



With retaining washer (slotted)



With retaining washer



Overview Quick-Operating Fasteners

Series	Max. Tensile Strength*	Working Load*	Slotted Recess Head	Cross Recess Head	Hex Head	Hex Recess Head	Fixed Wing Handle	Offset Fixed Wing Handle	Folding Bail Handle	Pages
5F	670 N	450 N	X	X						B1-B4
99F	700 N	480 N	X							C1-C3
50F	900 N	650 N	X	X	X	X	X	X	X	D1-D6
50F	3.700 N	2.600 N	X	X	X	X	X	X	X	E1-E6
2600	1.330 N	900 N	X	X			X		X	F1-F12
2700	1.330 N	900 N	X	X						F1-F12
D4002	4.700 N	3.100 N	X	X		X	X		X	G1-G13
991F	10.000 N	7.000 N			X	X	X	X	X	H1-H5
V34F	44.482 N	28.913 N			X					I1 - I3
V936F	300 N	200 N	X							J1-J2
715F	700 N	600 N	X							M1-M3
716F	1.400 N	1.200 N	X							N1-N3
PT10	1.200 N	800 N	X	X						P1-P4
717F	3.000 N	2.500 N	X							O1-O3

Series	Max. Tensile Strength*	Working Load*	Plastic Star Form Handle	Fixed Wing Handle Plastic	Square Head	Knurled Head	Triangular Plastic Handle	Folding Wing Handle	Push Button	Pages
50F	900 N	650 N	X	X						D1-D6
50F	3.700 N	2.600 N	X	X	X					E1-E6
2600	1.330 N	900 N	X	X		X	X			F1-F12
D4002	4.700 N	3.100 N	X							G1-G13
991F	10.000 N	7.000 N	X					X		H1-H5
15F	1.330 N	930 N							X	K1-K4
V936F	300 N	200 N				X				J1-J2
715F	700 N	600 N				X				M1-M3
716F	1.400 N	1.200 N				X				N1-N3
PT10	1.200 N	800 N		X						P1-P4
717F	3.000 N	2.500 N				X				O1-O3

* Load limitations within series are possible. Please check the footnotes on the relevant catalogue pages.



Features

Max. tensile strength 670 N, Working Load 450 N
Plastic washer stud assembly to protect decorative surfaces.
Spring loaded receptacle.

Selection Instructions

1. Select stud assembly and receptacle, page B-2 und B-4.
2. Select retaining washer or grommet, page B-3.
3. Select stud length number from total thickness G using the formula and table below (e.g. V5S5-*AGV).

Determining the stud length number:

With retaining washer

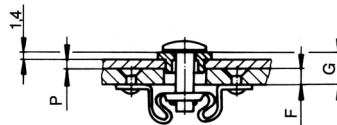
$$G = P + F$$



with Grommet

$$G = P + F + 1,4$$


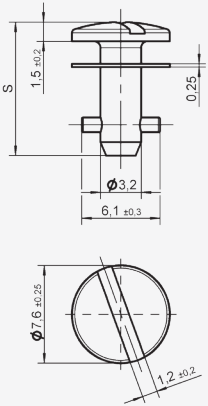

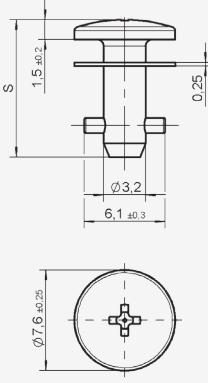
$$G_{\min} = 3,9 \text{ mm}$$




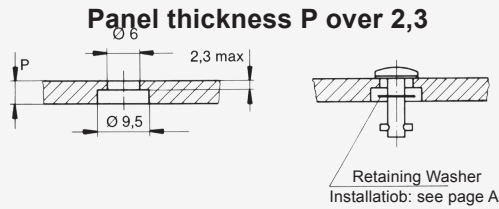
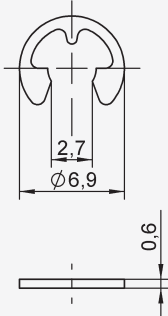
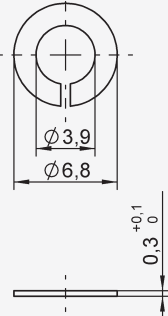
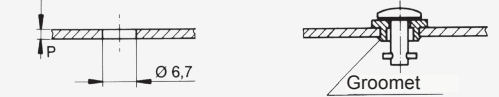
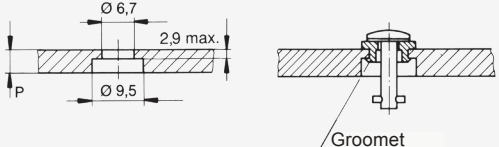
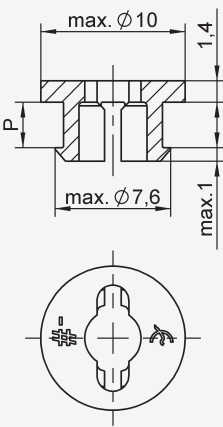
Stud Length Table

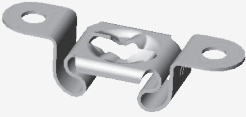
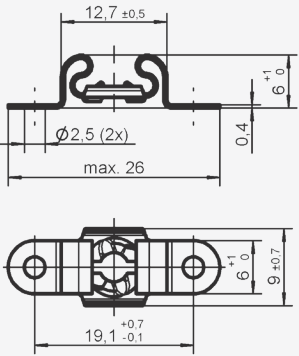
Total Thickness G	Stud Length No. When Using Receptacles	Total Thickness G	Stud Length No. When Using Receptacles
0,50 - 0,90	1	4,70 - 5,10	12
0,90 - 1,30	2	5,10 - 5,45	13
1,30 - 1,65	3	5,45 - 5,85	14
1,65 - 2,05	4	5,85 - 6,20	15
2,05 - 2,40	5	6,20 - 6,60	16
2,40 - 2,80	6	6,60 - 7,00	17
2,80 - 3,20	7	7,00 - 7,35	18
3,20 - 3,55	8	7,35 - 7,75	19
3,55 - 3,95	9	7,75 - 8,15	20
3,95 - 4,30	10	8,15 - 8,50	21
4,30 - 4,70	11		

Other lengths on request.

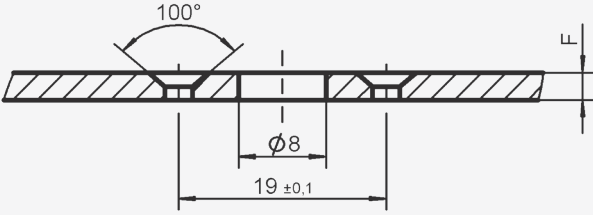
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Slotted Recess Head</p> 	 <p>S = 6,70 + (0,38 x length no.)</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation with plastic washer (PA6)</p> <p>Steel / nickel-plated with plastic washer (PA6)</p>	<p>100</p> <p>100</p>	<p>V5S5- *AGV</p> <p>5S27-*</p>
<p>Cross Recess Head</p> 	 <p>S = 6,70 + (0,38 x length no.)</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation with plastic washer (PA6)</p> <p>Stainless steel with stainless steel washer (tensile strength 470 N max. working load 300 N)</p>	<p>100</p> <p>200</p>	<p>V5S21- *AGV</p> <p>5S15-*</p>

* Length no. from Table, Page B-1.
For installation dimensions see page B-3.

Installation Dimensions	Accessories	Materials / Finish	Panel Thickness P	Part No.						
<p style="text-align: center;">Slotted Recess Head Panel thickness P up to 2,3</p>  <p style="text-align: center;">Panel thickness P over 2,3</p>  <p style="text-align: center;">* For P up to 1,4 : Ø 5,6 or installation without retaining washer</p>	<p>Retaining Washer</p>  <p>Retaining Washer</p> 	<p>Steel / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel</p>	<p></p> <p></p>	<p>V5W3-1AG</p> <p>5S3-2</p>						
<p style="text-align: center;">Snap-In Grommet Panel thickness P up to 2,9</p>  <table border="1" data-bbox="207 1713 383 1792"> <thead> <tr> <th>P max</th> <th>G min</th> </tr> </thead> <tbody> <tr> <td>1,4</td> <td>2,0</td> </tr> <tr> <td>2,9</td> <td>3,5</td> </tr> </tbody> </table> <p style="text-align: center;">Panel thickness P over 2,9</p> 	P max	G min	1,4	2,0	2,9	3,5	<p>Grommet</p> 	<p>Plastic (PA6) black</p>	<p>up to 1,4</p> <p>1,8 - 2,9</p>	<p>5S72-5-1AA</p> <p>5S72-9-1AA</p>
P max	G min									
1,4	2,0									
2,9	3,5									

Style	Dimensions	Materials / Finish	°C	Part No.
Type 1 Rivet / Screw Mounting 		Steel / zinc flake coated	180	V5R2-1AK7
		Stainless steel	200	5R2-3

Receptacle Installation Instructions

Installation Dimensions
<p style="text-align: center;">Rivet / Screw Mounting</p> 

Features

Max. tensile strength 700 N, working load 480 N.

Increased grip range.

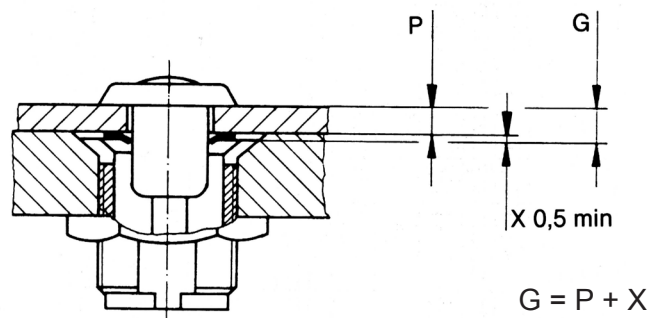
Externally threaded receptacles for use in castings or on panels with a retaining nut (see page C-3).

Encapsulated design, splash-proof.

Selection Instructions


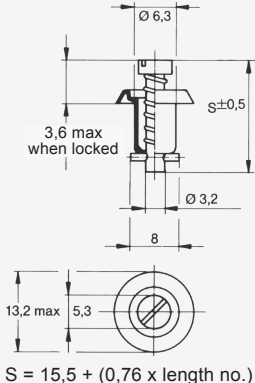
1. Select stud assembly and receptacle, page C-2 and C-3.
2. Select hex nut for receptacle, if necessary, page C-3.
3. Select stud retaining washer, page C-2.
4. Select stud length number from total thickness G using the formula and table below (e.g. 99S10-01AG).

Determining the stud length number:



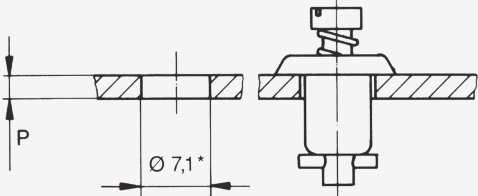
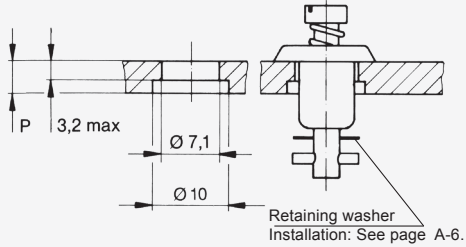
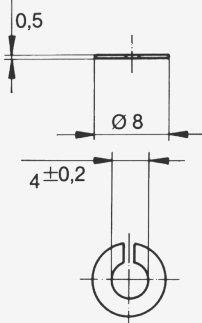
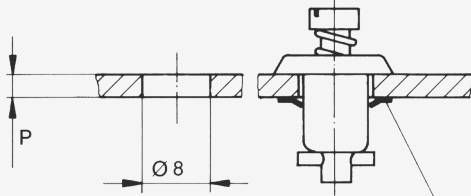
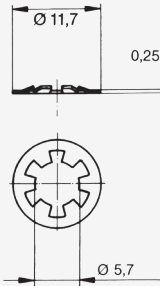
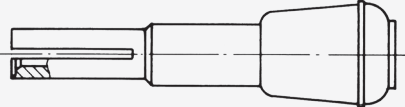
Total Thickness G	Stud Length no.
0,5 - 1,5	01
1,5 - 3,0	03
3,0 - 4,5	05
4,5 - 6,0	07
6,0 - 7,5	09
7,5 - 9,0	11
9,0 - 10,5	13
10,5 - 12,0	15
12,0 - 13,5	17
13,5 - 15,0	19


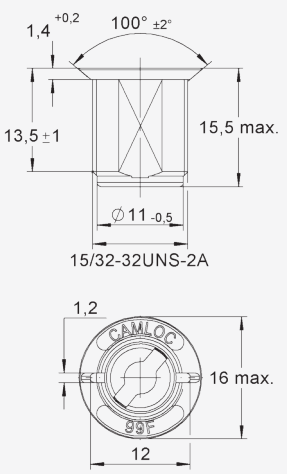

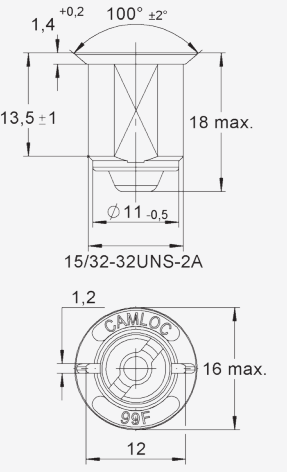
Other lengths on request.

Style	Dimensions	Materials / Finish	°C	Part No.
Slotted Recess Head 	 <p>S = 15,5 + (0,76 x length no.)</p>	Steel / zinc-plated, CrVI-free, clear passivation	100	V99S10-*AG

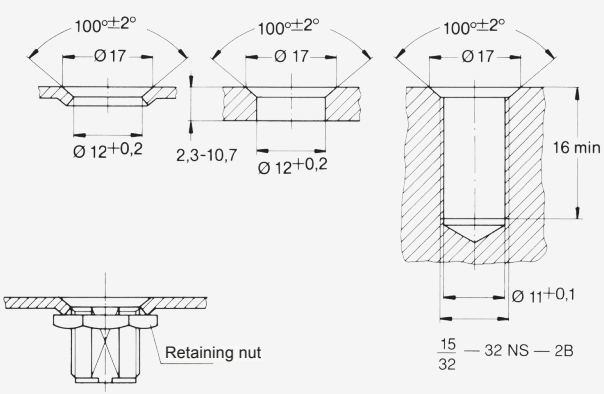
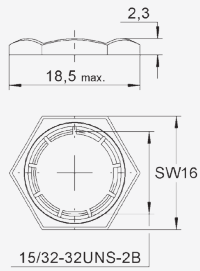
* Length no. from Table, see page C-1.

Stud Installation Instructions

Installation Dimensions	Accessories	Materials / Finish	Part No.
Panel thickness P 0,5 - 3,2  <p>* For P up to 1,65 m 6,5 for installation without retaining washer</p>	Retaining washer	Stainless steel	2600-SW
Panel thickness P over 3,2  <p>Retaining washer Installation: See page A-6.</p>			
Panel thickness P 0,50 - 4,75  <p>Retaining washer Installation: See page A-6.</p>	Retaining Washer	Steel / zinc-plated, CrVI-free, transparent passivated	99W10-01A1
		Stainless steel	V2600-LW-7
	Mounting tool for retaining washer V2600-LW-7 and 99W10-01A1		T98-1

Style	Dimensions	Materials / Finish	°C	Part No.
<p>open</p> 		Zinc die casting / zinc-plated, CrVI-free, transparent passivated	100	99R10-01A1
<p>Encapsulated</p> 		Zinc die casting / zinc-plated, CrVI-free, transparent passivated Capsule: Stainless steel	100	99E10-01

Receptacle Installation Instructions

Installation Dimensions	Accessories	Materials / Finish	Part No.
 <p>Installation torque 3 Nm</p>	<p>Retaining nut</p>  <p>Tap</p>	Steel / zinc-plated, CrVI-free, transparent passivated	99N10-01A1 15/32-32NS-2B

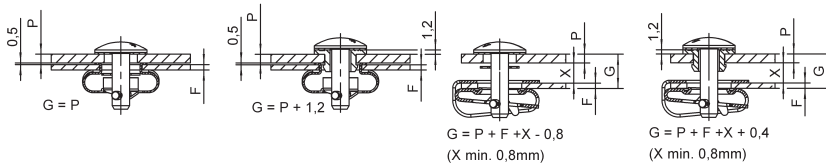


Features

- Max. tensile strength 900 N, working load 650 N.
- Stud assembly incorporates a plastic washer to protect decorative surfaces.
- Snap-in or clip-on spring loaded receptacle.
- Snap-in grommet for quick stud installation without a retaining washer.

Selection Instructions


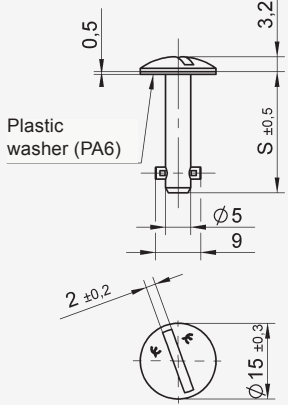

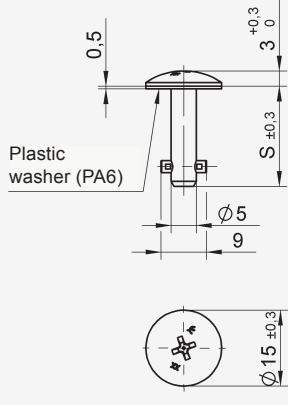

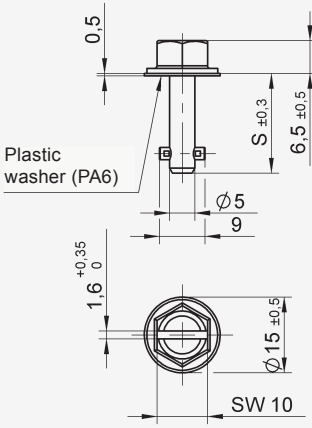
- Select stud assembly and receptacle, page D-2 to D-4 and D-6.
- Select retaining washer or grommet, page D-5.
- Select stud length number from total thickness G using the formula and table below (e.g. 50E21-*AGV)




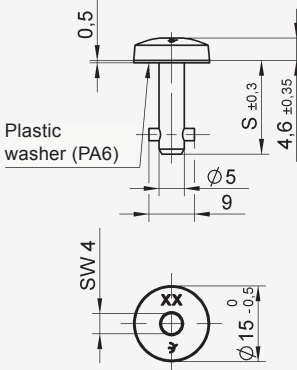

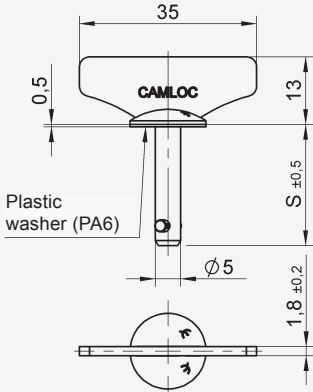

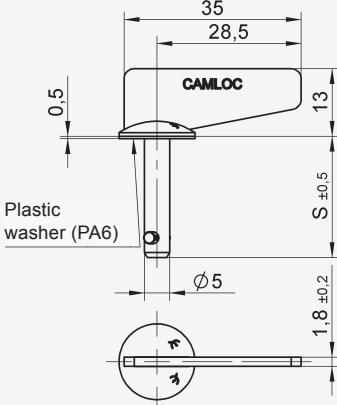
Stud Length Table

Total Thickness G	Stud Length No. when using Receptacles Typee 1 1 F= 1,0 - 2,1	Total Thickness G	Stud Length No. when using Receptacles Typee 2 F= 2,1 - 3,0	Total Thickness G	Stud Length No. when using Receptacles Typee 3
0,50 - 1,10	5	0,50 - 1,10	7	2,30 - 2,90	5
1,10 - 1,70	6	1,10 - 1,70	8	2,90 - 3,50	6
1,70 - 2,30	7	1,70 - 2,30	9	3,50 - 4,10	7
2,30 - 2,90	8	2,30 - 2,90	10	4,10 - 4,70	8
2,90 - 3,50	9	2,90 - 3,50	11	4,70 - 5,30	9
3,50 - 4,10	10	3,50 - 4,10	12	5,30 - 5,90	10
4,10 - 4,70	11	4,10 - 4,70	13	5,90 - 6,50	11
4,70 - 5,30	12	4,70 - 5,30	14	6,50 - 7,10	12
5,30 - 5,90	13	5,30 - 5,90	15	7,10 - 7,70	13
5,90 - 6,50	14	5,90 - 6,50	16	7,70 - 8,30	14
6,50 - 7,10	15	6,50 - 7,10	17	8,30 - 8,90	15
7,10 - 7,70	16	7,10 - 7,70	18	8,90 - 9,50	16
7,70 - 8,30	17	7,70 - 8,30	19	9,50 - 10,10	17
8,30 - 8,90	18	8,30 - 8,90	20	10,10 - 10,70	18
8,90 - 9,50	19	8,90 - 9,50	21	10,70 - 11,30	19
9,50 - 10,10	20	9,50 - 10,10	22	11,30 - 11,90	20
10,10 - 10,70	21	10,10 - 10,70	23	11,90 - 12,50	21
10,70 - 11,30	22	10,70 - 11,30	24	12,50 - 13,10	22
11,30 - 11,90	23	11,30 - 11,90	25	13,10 - 13,70	23
11,90 - 12,50	24	11,90 - 12,50	26	13,70 - 14,30	24
12,50 - 13,10	25	12,50 - 13,10	27	14,30 - 14,90	25
13,10 - 13,70	26	13,10 - 13,70	28	14,90 - 15,50	26
13,70 - 14,30	27	13,70 - 14,30	29	15,50 - 16,10	27
14,30 - 14,90	28	14,30 - 14,90	30	16,10 - 16,70	28
14,90 - 15,50	29	14,90 - 15,50	31	16,70 - 17,30	29
15,50 - 16,10	30	15,50 - 16,10	32	17,30 - 17,90	30


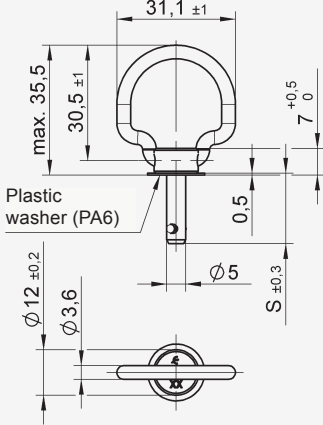

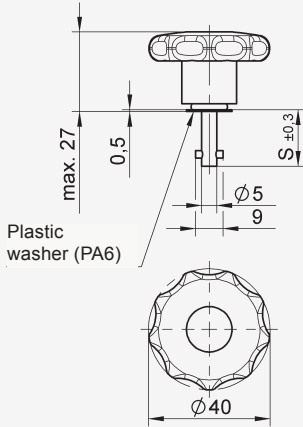

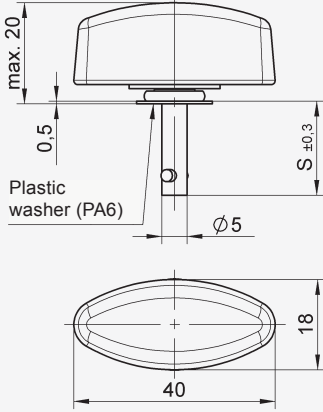
Other lengths on request.

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Slotted Recess Head</p> 	 <p>S = 11,4 + (0,6 x length no.)</p>	<p>Steel / zinc-plated, CrVI-free, transparent clear passivation with plastic washer (PA6)</p> <p>Stainless steel with plastic washer (PA6)</p>	<p>80</p> <p>80</p>	<p>50E21-*AGV</p> <p>50E21-*S</p>
<p>Cross Recess Head</p> 	 <p>S = 11,4 + (0,6 x length no.)</p>	<p>Steel / zinc-plated, CrVI-free, transparent clear passivation with plastic washer (PA6)</p>	<p>80</p>	<p>50E70-*AGV</p>
<p>Hex Head Slotted Recess</p> 	 <p>S = 11,4 + (0,6 x length no.)</p>	<p>Steel / zinc-plated, CrVI-free, transparent clear passivation with plastic washer (PA6)</p>	<p>80</p>	<p>50E90-*AGV</p>

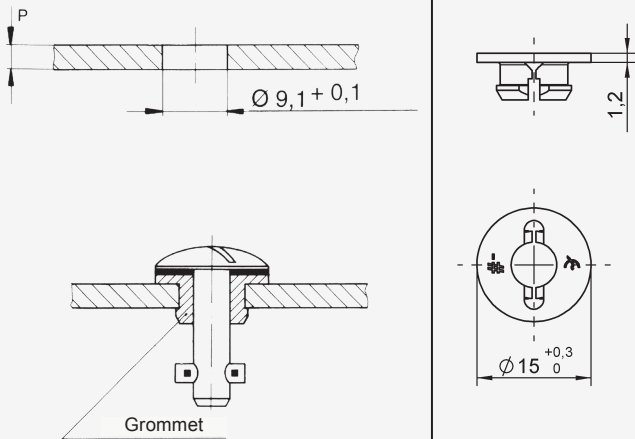
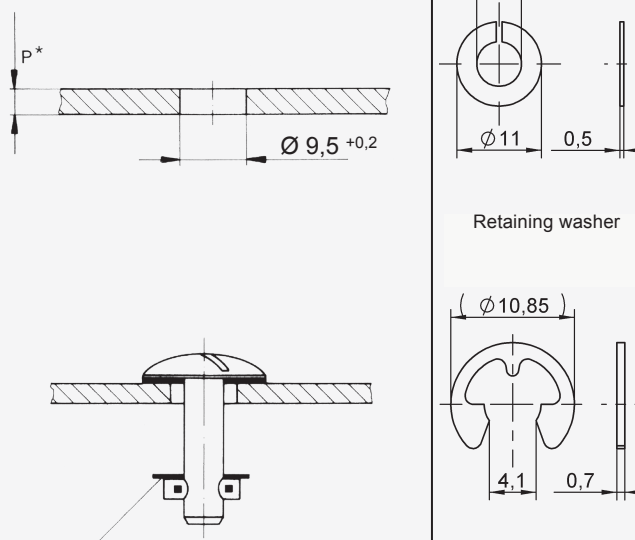
* Length no. from Table, Page D-1.

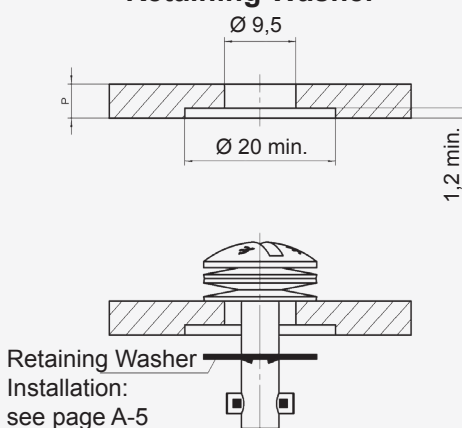
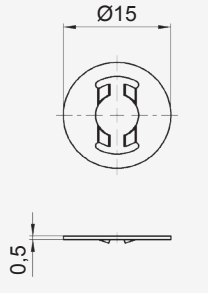
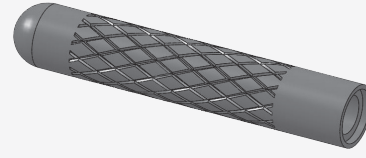
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Hex Reces</p> 	 <p>S = 11,4 + (0,6 x length no.)</p>	Steel / zinc-plated, CrVI-free, transparent clear passivation with plastic washer (PA6)	80	50E60-*AGV
<p>Fixed Wing Handle</p> 	 <p>S = 11,4 + (0,6 x length no.)</p>	Steel / zinc-plated, CrVI-free, transparent clear passivation with plastic washer (PA6) Stainless steel with plastic washer (PA6)	80 80	50E21-*WAGV 50E21-*WS
<p>Offset Fixed Wing Handle</p> 	 <p>S = 11,4 + (0,6 x length no.)</p>	Steel / zinc-plated, CrVI-free, transparent clear passivation with plastic washer (PA6)	80	50E21-*W0AGV

* Length no. from Table, Page D-1.

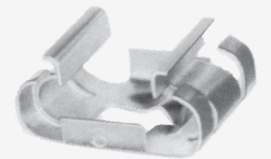
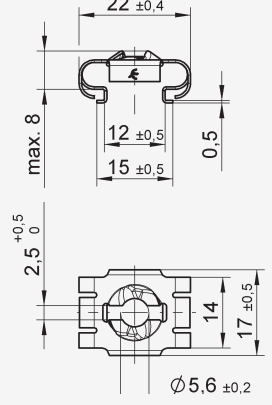
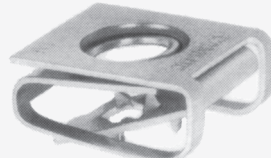
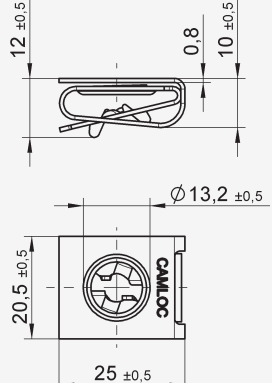
Style	Dimensions	Materials / Finish	°C	Part No.
Folding Bail Handle 180° 		Steel / zinc-plated, CrVI-free, clear passivation with plastic washer (PA6)	80	50E18-*AGV
Plastic Star Form Handle 		Steel / zinc-plated, CrVI-free, clear passivation with plastic head and plastic washer (PA6) Stainless steel with plastic head and plastic washer (PA6)	- 40 up to + 60 - 40 up to + 60	50E80-*AGV 50E80-*CP
Fixed Wing Handle Plastic 		Steel / zinc-plated, CrVI-free, clear passivation with plastic head and plastic washer (PA6) Stainless steel with plastic head and plastic washer (PA6)	- 40 up to + 60 - 40 up to + 60	50E82-*AGV 50E82-*CP

* Length no. from Table, Page D-1.

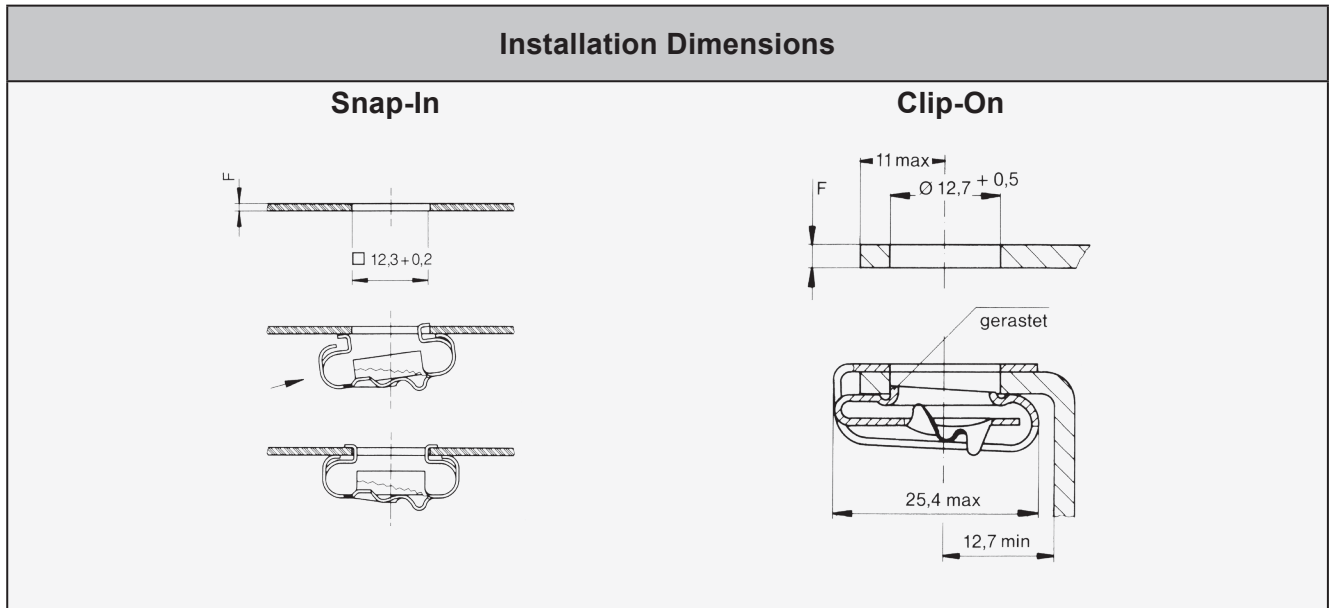
Style	Dimensions	Materials / Finish	P	Part No.
<p>Snap-In Grommet</p>  <p>Grommet</p>	<p>Grommet</p>	<p>Plastic (PA6) / natural colour</p> <p>Working temperature: -40°C + 120°C</p>	up to 1,60	50S12-0-1AA
			1,70 - 2,80	50S12-1-1AA
			2,90 - 4,00	50S12-2-1AA
			4,10 - 5,30	50S12-3-1AA
			5,40 - 6,65	50S12-4-1AA
<p>Retaining Washer</p>  <p>Retaining washer</p> <p>Retaining washer</p> <p>Retaining washer</p> <p>Installation: See page A-5.</p>	<p>Retaining washer</p>	<p>Stainless steel</p> <p>Stainless steel</p> <p>Plastic (PA6) / natural colour</p> <p>Working temperature: -40°C + 120°C</p> <p>ADVANTAGE: Plastic retaining washer can be assembled without tooling</p>		4002-SW-SS
				50E2-3BP
				50W204-01K
<p>*For P up to 2mm Ø 8 +0,2 for installation without retaining washer</p>				

<p>Retaining Washer</p> 	<p>Retaining washer (loose)</p> 	<p>Stainless steel</p>	<p>50W17-1BP</p>
	<p>Mounting tool for retaining washer 50W17-1BP</p>		<p>50T01-1DR</p>

Receptacle

Style	Dimensions	Materials / Finish	Panel Thickness P	°C	Part No.
<p>Snap-In</p> 		<p>Spring steel / zinc flake coated</p> <p>Spring steel / zinc flake coated</p> <p>Max. tensile strength 250 N max. Working Load 170N</p>	<p>F=1,0 - 2,0</p> <p>F=2,1 - 3,0</p>	<p>170</p> <p>170</p>	<p>50E20-1AK7 (Type 1)</p> <p>50E20-2AK7 (Type 2)</p>
<p>Clip-On</p> 		<p>Spring steel / zinc flake coated</p>	<p>F=0,8 - 5,6</p>	<p>170</p>	<p>V50R4-2-1AK7 (Type 3)</p>

Receptacle Installation Instructions

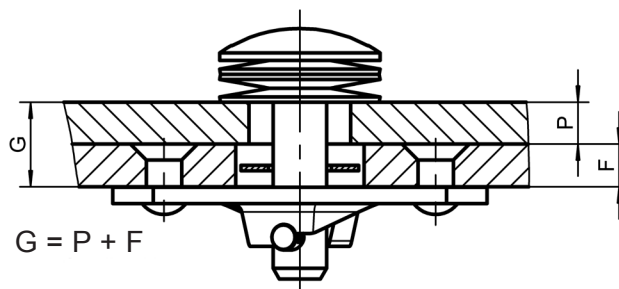


Features

Max. tensile strength 3.700 N, working load 2.600 N.
Small fastener giving high tensile load.
Flat receptacle.
High preload.

Selection Instructions


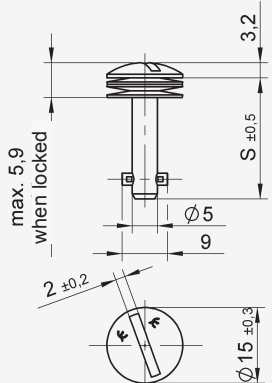

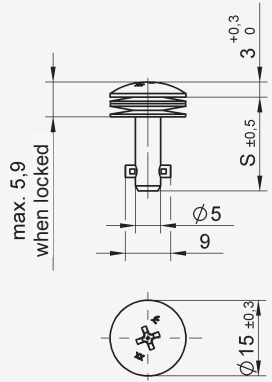

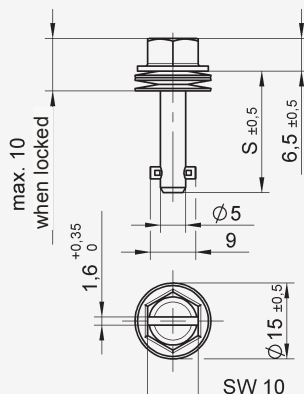
1. Select stud assembly and receptacle, page E-2 to E-4 and E-6.
2. Select retaining washer, page E-5.
3. Select stud length number from total thickness G using the formula and table below (e.g. 50E8-*AGV).



Stud Length Table


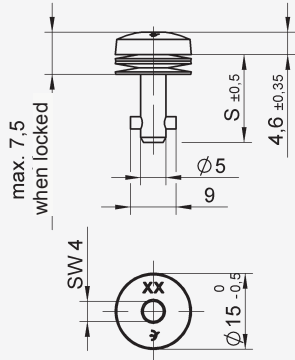

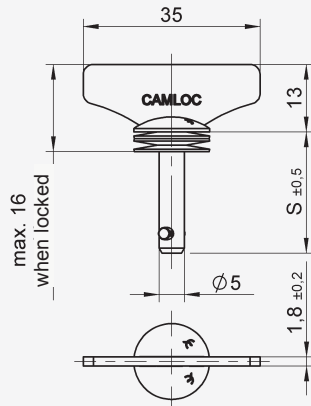

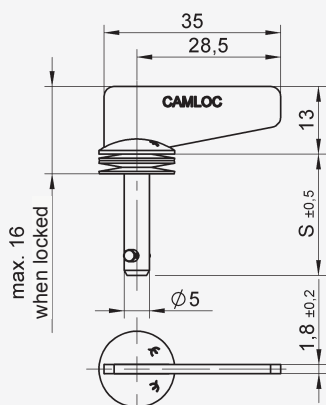
Total Thickness G	Stud Length no.	Total Thickness G	Stud Length no.
0,50 - 1,10	2	10,70 - 11,30	19
1,10 - 1,70	3	11,30 - 11,90	20
1,70 - 2,30	4	11,90 - 12,50	21
2,30 - 2,90	5	12,50 - 13,10	22
2,90 - 3,50	6	13,10 - 13,70	23
3,50 - 4,10	7	13,70 - 14,30	24
4,10 - 4,70	8	14,30 - 14,90	25
4,70 - 5,30	9	14,90 - 15,50	26
5,30 - 5,90	10	15,50 - 16,10	27
5,90 - 6,50	11	16,10 - 16,70	28
6,50 - 7,10	12	16,70 - 17,30	29
7,10 - 7,70	13	17,30 - 17,90	30
7,70 - 8,30	14	17,90 - 18,50	31
8,30 - 8,90	15	18,50 - 19,10	32
8,90 - 9,50	16	19,10 - 19,70	33
9,50 - 10,10	17	19,70 - 20,30	34
10,10 - 10,70	18	20,30 - 20,90	35

Other lengths on request.

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Slotted Recess Head</p> 	 <p>$S = 11,4 + (0,6 \times \text{length no.})$</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel ¹⁾</p>	<p>120</p> <p>200</p>	<p>50E8-*AGV</p> <p>50E8-*S</p>
<p>Cross Recess Head</p> 	 <p>$S = 11,4 + (0,6 \times \text{length no.})$</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation</p>	<p>120</p>	<p>50E71-*AGV</p>
<p>Hex Head Slotted Recess</p> 	 <p>$S = 11,4 + (0,6 \times \text{length no.})$</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation</p>	<p>120</p>	<p>50E91-*AGV</p>

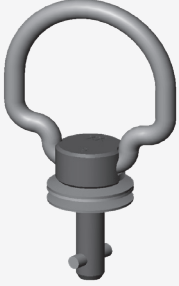
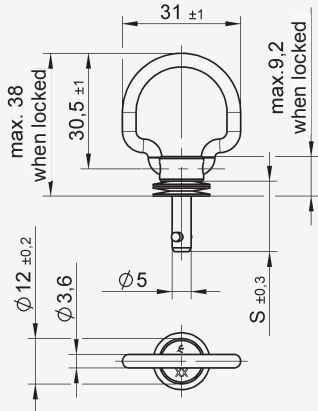
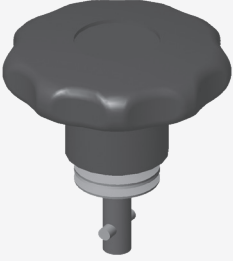
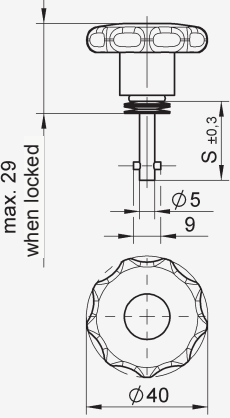

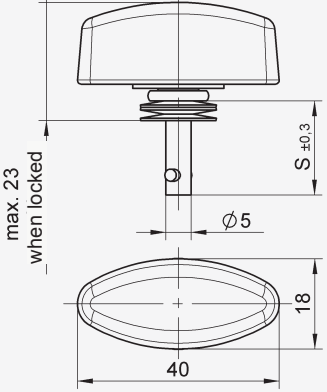
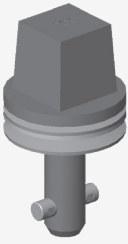
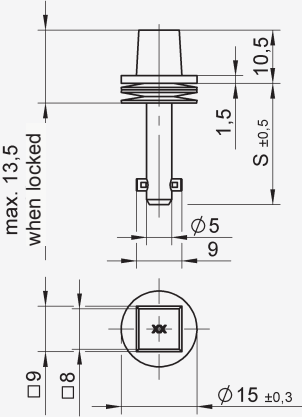
* Length no. from Table, Page E-1.

¹⁾Max. tensile strength 2.600 N max., Working Load 1.700 N

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Hex Reces Head</p> 	 <p>$S = 11,4 + (0,6 \times \text{length no.})$</p>	Steel / zinc-plated, CrVI-free, clear passivation	120	50E61-*AGV
<p>Fixed Wing Handle</p> 	 <p>$S = 11,4 + (0,6 \times \text{length no.})$</p>	Steel / zinc-plated, CrVI-free, clear passivation Stainless steel ¹⁾	120 200	50E8-*WAGV 50E8-*WS
<p>Offset Fixed Wing Handle</p> 	 <p>$S = 11,4 + (0,6 \times \text{length no.})$</p>	Steel / zinc-plated, CrVI-free, clear passivation Stainless steel ¹⁾	120 200	50E8-*W0AGV 50E8-*W0S

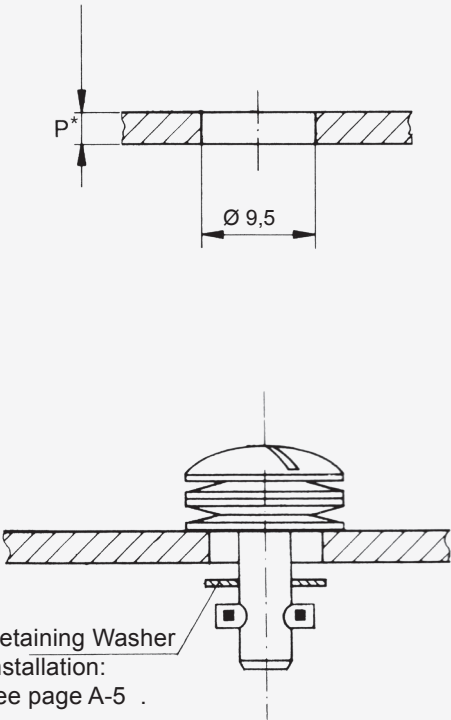
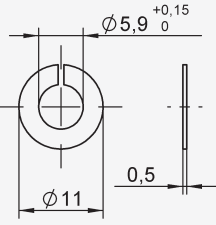
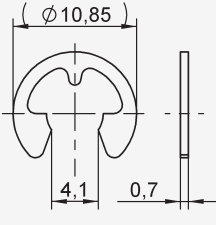
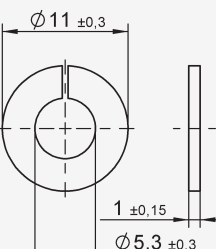
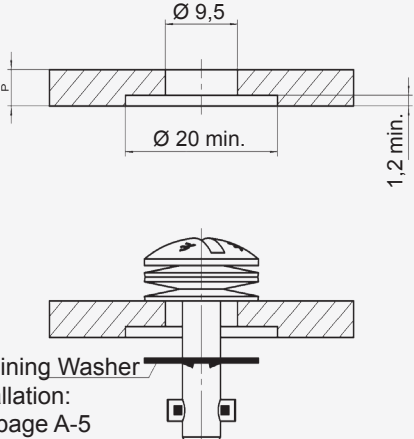
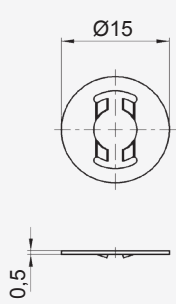
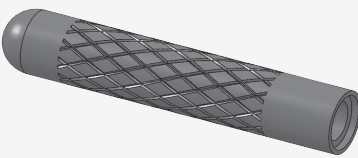
* Length no. from Table, Pages E-1.


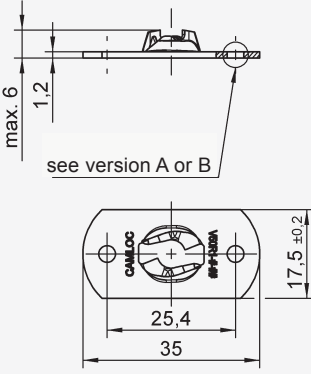
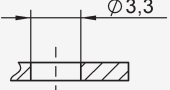
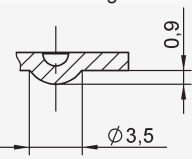
¹⁾ Max. tensile strength 2.600 N max., Working Load 1.700 N

Style	Dimensions	Materials / Finish	°C	Part No.
Folding Bail Handle 180° 		Steel / zinc-plated, CrVI-free, clear passivation	120	50E19-*AGV
Plastic Star Form Handle 		Steel / zinc-plated, CrVI-free, clear passivation with plastic knob (PA 6) Stainless steel ¹⁾ with plastic knob (PA 6)	-40 up to +60 -40 up to +60	50E81-*AGV 50E81-*CP
Fixed Wing Handle Plastic 		Steel / zinc-plated, CrVI-free, clear passivation with plastic knob (PA 6) Stainless steel ¹⁾ with plastic knob (PA 6)	-40 up to +60 -40 up to +60	50E83-*AGV 50E83-*CP
Square Head 		Steel / zinc-plated, CrVI-free, clear passivation	120	50E7-*AGV

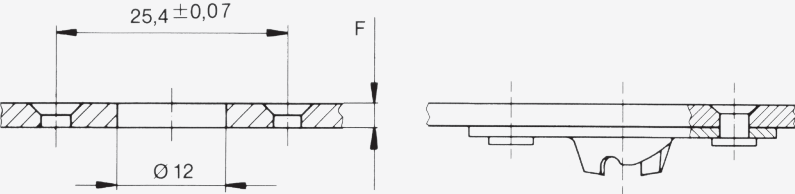
* Length no. from Table, Page E-1.

¹⁾ Max. tensile strength 2.600 N max., Working Load 1.700 N

Installation Dimensions	Accessories	Materials / Finish	Part No.
 <p>Retaining Washer Installation: see page A-5 .</p> <p>For P up to 2mm Ø 8 ^{+0,2} for installation without retaining washer</p>	<p>Retaining washer (loose)</p>  <p>Retaining washer (fixed)</p>  <p>Retaining washer (loose)</p> 	<p>Stainless steel</p> <p>Stainless steel</p> <p>Plastic (PA6) / natural colour Working temperature: -40°C + 120°C ADVANTAGE: Plastic retaining washer to be assembled without tooling.</p>	<p>4002-SW-SS</p> <p>50E2-3BP</p> <p>50W204-01K</p>
 <p>Retaining Washer Installation: see page A-5</p>	<p>Retaining washer (loose)</p> 	<p>Stainless steel</p>	<p>50W17-1BP</p>
	<p>Mounting tool for retaining washer 50W17-1BP</p>	<p>50T01-1DR</p>	

Style	Dimensions	Materials / Finish	°C	Part No.
Rivet- / Screw or Weld Mounting 	 <p>Version A Rivet/Screw Mounting</p>  <p>Version B Welding</p> 	Rivet / Screw Mounting (A) Steel / zinc-plated, CrVI-free, clear passivation	120	V50R1-1-1AGV
		Stainless steel	200	V50R1-1-1BP
		Welding (B) Steel / zinc-plated	-	V50R1-1-2AZ
		Steel / oil coated	-	V50R1-1-2AR

Receptacle Installation Instructions

Installation Dimensions
<p>Rivet- / Screw or Weld Mounting</p> 

Features

Max. tensile strength 1.330 N, working load 900 N.

Small fastener giving a high tensile load.

Wide range of stud head styles and receptacles.

Selection Instructions

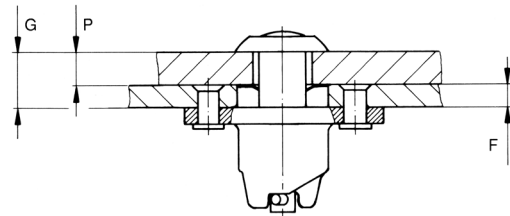
1. Select stud assembly and receptacle, page F-3 up to F-5, F-7 up to F-10.
2. Select stud accessories (retaining washer, gasket), page F-6 and F-7.
3. Select hex nut for receptacle, if necessary, page F-11.
4. Select stud length number from total thickness G using the formula and table on page F-2 (e.g. V26S01-*AGV).

Determining the stud length number when using receptacle:

Type 1 + 3*

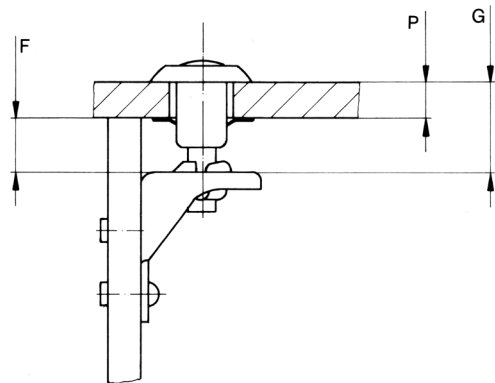
$$G = P + F$$

* For Type 3: G = 9,9 mm min.



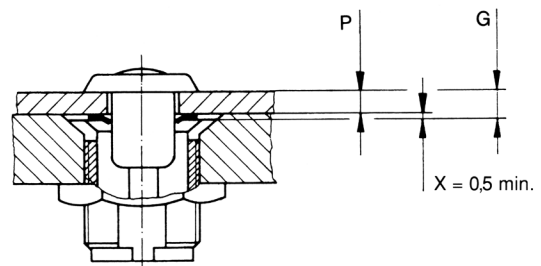
Type 2

$$G = P + F \text{ (0,75 min.)}$$



Type 4

$$G = P + X \text{ (0,5 min.)}$$


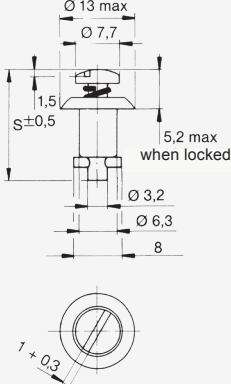

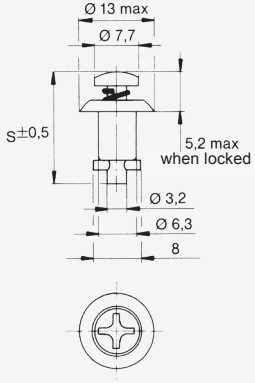

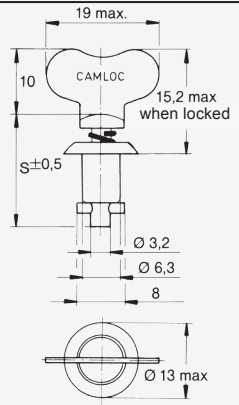


Total Thickness G	Stud Length No. when using Receptacles Typee 1 1 + 4
0,75 - 1,50	1
1,50 - 2,30	2
2,30 - 3,05	3
3,05 - 3,80	4
3,80 - 4,60	5
4,60 - 5,35	6
5,35 - 6,10	7
6,10 - 6,85	8
6,85 - 7,60	9
7,60 - 8,40	10
8,40 - 9,15	11
9,15 - 9,90	12
9,90 - 10,65	13
10,65 - 11,40	14
11,40 - 12,20	15
12,20 - 12,95	16
12,95 - 13,70	17
13,70 - 14,50	18
14,50 - 15,25	19
15,25 - 16,00	20
16,00 - 16,75	21
16,75 - 17,50	22
17,50 - 18,30	23
18,30 - 19,05	24
19,05 - 19,80	25
19,80 - 20,60	26
20,60 - 21,35	27
21,35 - 22,10	28
22,10 - 22,85	29
22,85 - 23,60	30
23,60 - 24,40	31
24,40 - 25,15	32
25,15 - 25,90	33
25,90 - 26,65	34
26,65 - 27,40	35
27,40 - 28,20	36
28,20 - 28,95	37
28,95 - 29,70	38
29,70 - 30,50	39
30,50 - 31,25	40

Total Thickness G	Stud Length No. when using Receptacles Typee 1 2
0,75 - 1,50	2
1,50 - 2,30	3
2,30 - 3,05	4
3,05 - 3,80	5
3,80 - 4,60	6
4,60 - 5,35	7
5,35 - 6,10	8
6,10 - 6,85	9
6,85 - 7,60	10
7,60 - 8,40	11
8,40 - 9,15	12
9,15 - 9,90	13
9,90 - 10,65	14
10,65 - 11,40	15
11,40 - 12,20	16
12,20 - 12,95	17
12,95 - 13,70	18
13,70 - 14,50	19
14,50 - 15,25	20
15,25 - 16,00	21
16,00 - 16,75	22
16,75 - 17,50	23
17,50 - 18,30	24
18,30 - 19,05	25
19,05 - 19,80	26
19,80 - 20,60	27
20,60 - 21,35	28
21,35 - 22,10	29
22,10 - 22,85	30
22,85 - 23,60	31
23,60 - 24,40	32
24,40 - 25,15	33
25,15 - 25,90	34
25,90 - 26,65	35
26,65 - 27,40	36
27,40 - 28,20	37
28,20 - 28,95	38
28,95 - 29,70	39
29,70 - 30,50	40

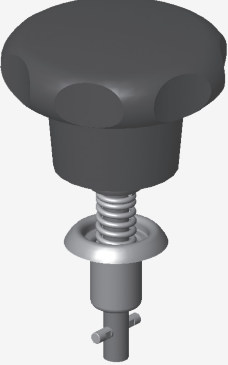
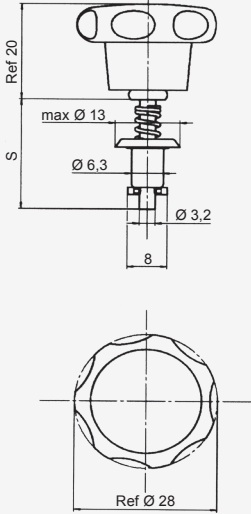
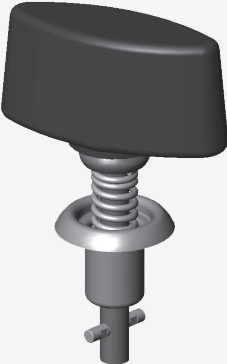
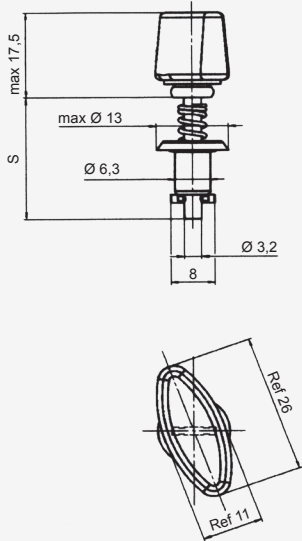
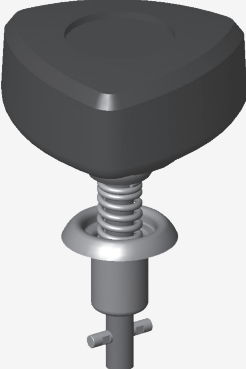
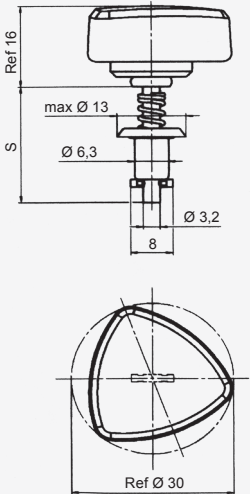
Total Thickness G	Stud Length No. when using Receptacles Typee 1 3
9,90 - 10,65	1
10,65 - 11,40	2
11,40 - 12,20	3
12,20 - 12,95	4
12,95 - 13,70	5
13,70 - 14,50	6
14,50 - 15,25	7
15,25 - 16,00	8
16,00 - 16,75	9
16,75 - 17,50	10
17,50 - 18,30	11
18,30 - 19,05	12
19,05 - 19,80	13
19,80 - 20,60	14
20,60 - 21,35	15
21,35 - 22,10	16
22,10 - 22,85	17
22,85 - 23,60	18
23,60 - 24,40	19
24,40 - 25,15	20
25,15 - 25,90	21
25,90 - 26,65	22
26,65 - 27,40	23
27,40 - 28,20	24
28,20 - 28,95	25
28,95 - 29,70	26
29,70 - 30,50	27
30,50 - 31,25	28
31,25 - 32,00	29
32,00 - 32,75	30
32,75 - 33,50	31
33,50 - 34,30	32
34,30 - 35,05	33
35,05 - 35,80	34
35,80 - 36,60	35
36,60 - 37,35	36
37,35 - 38,10	37
38,10 - 38,85	38
38,85 - 39,60	39
39,60 - 40,40	40

Other lengths on request.


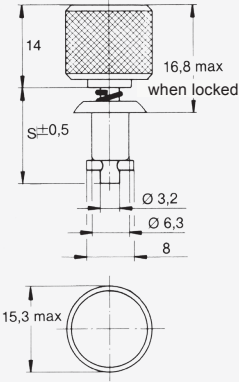
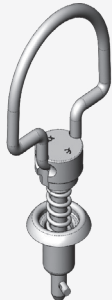
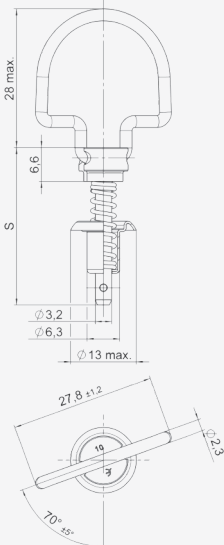
Style	Dimensions	Materials / Finish	°C	Part No.
Slotted Recess Pan Head 	 $S = 18,54 + (0,76 \times \text{length no.})$	Steel / zinc-plated, CrVI-free, clear passivation	120	V26S01-*AGV
		Steel / chrome-plated	120	26S38-*
		Stainless steel ¹⁾	200	2600-*S
		Steel / nickel-plated	120	26S42-*
Cross Recess Pan Head 	 $S = 18,54 + (0,76 \times \text{length no.})$	Steel / zinc-plated, CrVI-free, clear passivation	120	V26S02-*AGV
		Steel / nickel-plated	120	26S39-*
		Stainless steel ¹⁾	200	26S51-*
Fixed Wing Handle 	 $S = 18,54 + (0,76 \times \text{length no.})$	Steel / zinc-plated, CrVI-free, clear passivation	120	V26S04-*AGV
		Stainless steel ¹⁾	200	2600-*SW

* Length no. from Table, see page F-2.


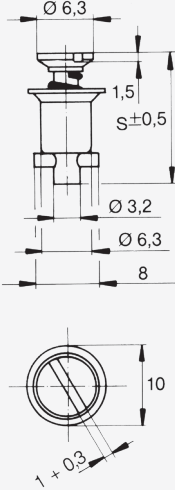

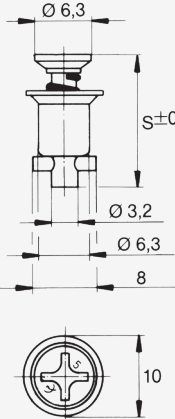
¹⁾ Max. tensile strength 1.000 N max., Working Load 700 N

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Plastic Star Form Handle</p> 		<p>Steel / zinc-plated, CrVI-free, clear passivation with plastic knob (PA 6)</p> <p>Note: Not to be used with encapsulated receptacles</p>	-40 up to +60	V26S06- *AGV
<p>Fixed Wing Handle Plastic</p> 		<p>Steel / zinc-plated, CrVI-free, clear passivation with plastic knob (PA 6)</p> <p>Note: Not to be used with encapsulated receptacles</p>	-40 up to +60	V26S07- *AGV
<p>Triangular Plastic Handle</p> 		<p>Steel / zinc-plated, CrVI-free, clear passivation with plastic knob (PA 6)</p> <p>Note: Not to be used with encapsulated receptacles</p>	-40 up to +60	V26S08- *AGV

* Length no. from Table, see page F-2.

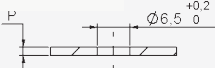

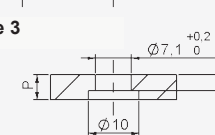


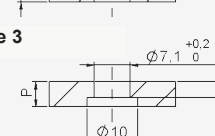
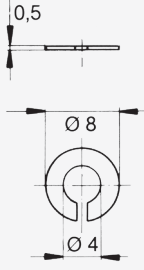

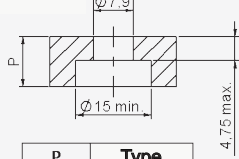
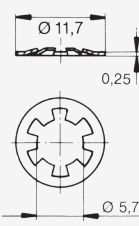
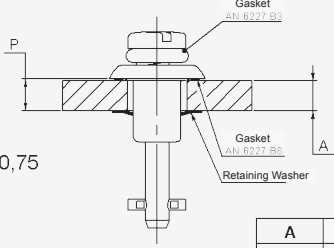
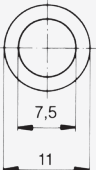
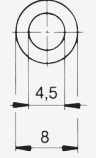
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Knurled Head</p> 	 <p>$S = 16,76 + (0,76 \times \text{length no.})$</p>	Steel / chrome-plated	120	26S34 -*
<p>Folding Bail Handle 180°</p> 		Steel / zinc-plated, CrVI-free, clear passivation	120	V26S22 - *AGV

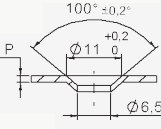
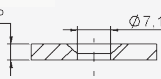
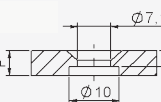
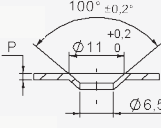
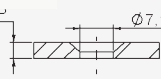
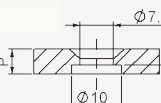
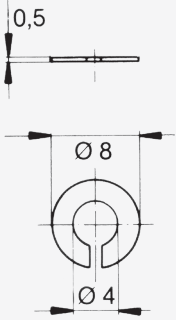
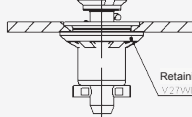
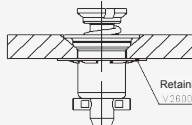
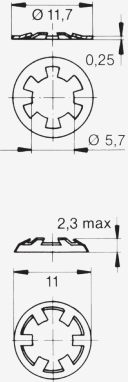
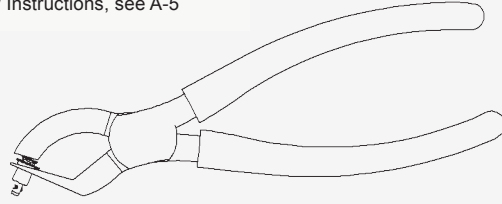
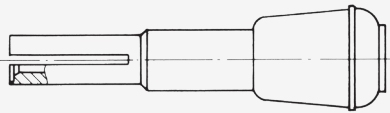
* Length no. from Table, see page F-2.


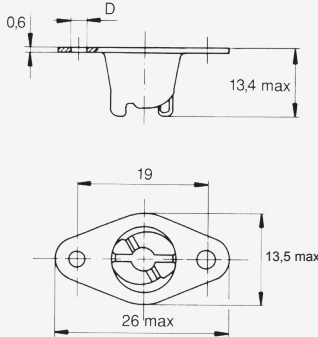
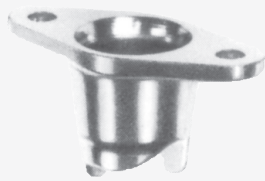
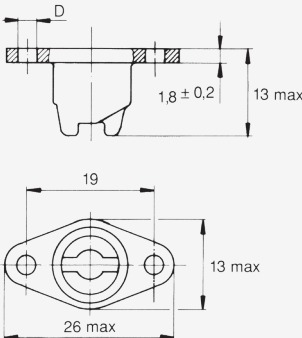
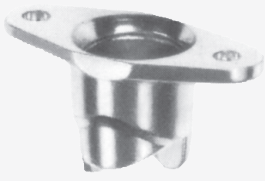
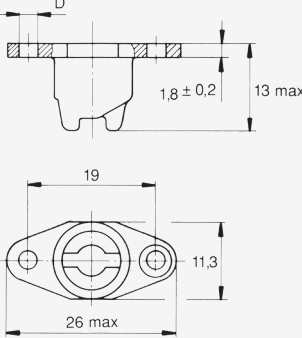

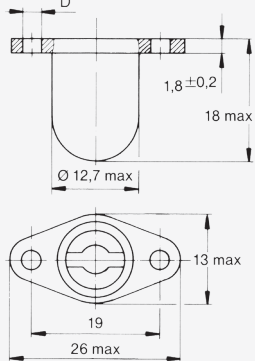
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Slotted Recess Flush Head</p> 	 <p>S = 14,73 + (0,76 x length no.)</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel ¹⁾</p>	<p>120</p> <p>200</p>	<p>V27S01-*AGV</p> <p>2700-*S</p>
<p>Cross Recess Flush Head</p> 	 <p>S = 14,73 + (0,76 x length no.)</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation</p>	<p>120</p>	<p>V27S02-*AGV</p>

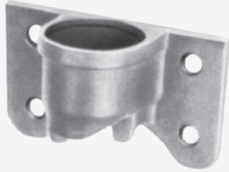
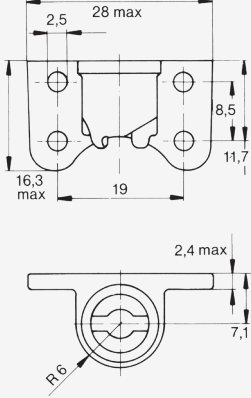

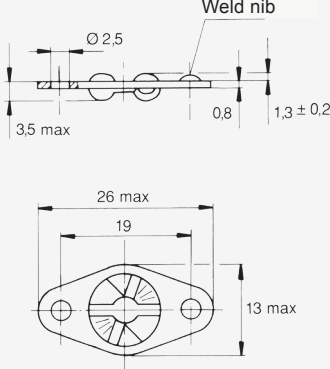
* Length no. from Table, Page F-2.


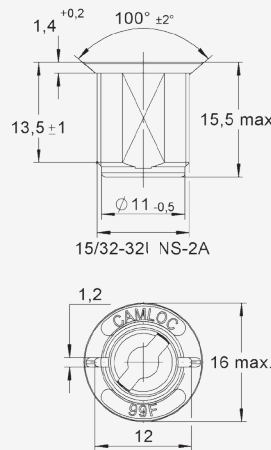

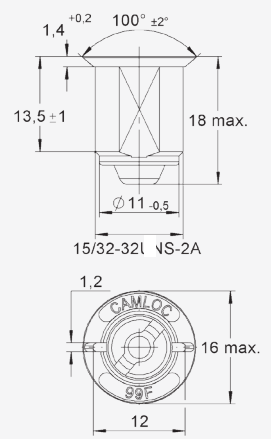
¹⁾Max. tensile strength 1.000 N max., Working Load 700 N

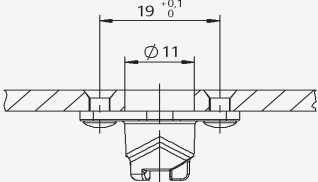
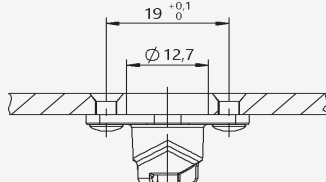
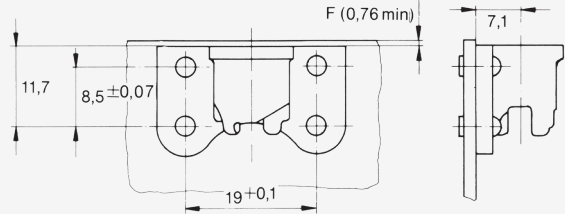
Installation Dimensions	Accessories	Materials / Finish	Part No.								
<p>Stud Retention up to Dash No. 4 without Retaining Washer Floating Type</p> <p>Type 1 </p> <p>Type 2 </p> <p>Type 3 </p> <table border="1" data-bbox="547 607 780 723"> <thead> <tr> <th>P</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>$\leq 1,65$</td> <td>1</td> </tr> <tr> <td>$1,65 < P \leq 3,2$</td> <td>2</td> </tr> <tr> <td>$> 3,2$</td> <td>3</td> </tr> </tbody> </table> <p>4P3-1 installation pliers, see F-8</p>	P	Type	$\leq 1,65$	1	$1,65 < P \leq 3,2$	2	$> 3,2$	3	-	-	-
P	Type										
$\leq 1,65$	1										
$1,65 < P \leq 3,2$	2										
$> 3,2$	3										
<p>Stud Retention from Dash No. 5 with Retaining Washer Floating Type</p> <p>Type 1 </p> <p>Type 2 </p> <p>Type 3 </p> <table border="1" data-bbox="547 1043 780 1160"> <thead> <tr> <th>P</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>$\leq 1,65$</td> <td>1</td> </tr> <tr> <td>$1,65 < P \leq 3,2$</td> <td>2</td> </tr> <tr> <td>$> 3,2$</td> <td>3</td> </tr> </tbody> </table> <p>4P3-1 installation pliers, see F-8</p>	P	Type	$\leq 1,65$	1	$1,65 < P \leq 3,2$	2	$> 3,2$	3	Retaining Washer 	Stainless steel Note: Retaining Washer only use above length no. 5	2600-SW
P	Type										
$\leq 1,65$	1										
$1,65 < P \leq 3,2$	2										
$> 3,2$	3										
<p>Stud Retention with Retaining Washer Fixed installed</p> <p>Type 4 </p> <p>Type 5 </p> <table border="1" data-bbox="592 1518 764 1608"> <thead> <tr> <th>P</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>$\leq 4,75$</td> <td>4</td> </tr> <tr> <td>$> 4,75$</td> <td>5</td> </tr> </tbody> </table> <p>4P3-1 installation pliers, see F-8 T98-1 installation tool, see F-8</p>	P	Type	$\leq 4,75$	4	$> 4,75$	5	Retaining Washer 	Stainless steel not for chrome-plated parts	V2600-LW-7		
P	Type										
$\leq 4,75$	4										
$> 4,75$	5										
<p>Series 2600 Sealed only for Recess Types Slotted or Cross only in combination with Retaining Washer V2600-LW-7</p> <p></p> <p>$P = A + 0,75$</p> <table border="1" data-bbox="596 1951 767 2040"> <thead> <tr> <th>A</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>$\leq 4,00$</td> <td>4</td> </tr> <tr> <td>$> 4,00$</td> <td>5</td> </tr> </tbody> </table> <p>4P3-1 installation pliers, see F-8 T98-1 installation tool, see F-8</p>	A	Type	$\leq 4,00$	4	$> 4,00$	5	Gaskets  	Rubber (100°C) Rubber (100°C)	AN6227-B6 AN6227-B3		
A	Type										
$\leq 4,00$	4										
$> 4,00$	5										

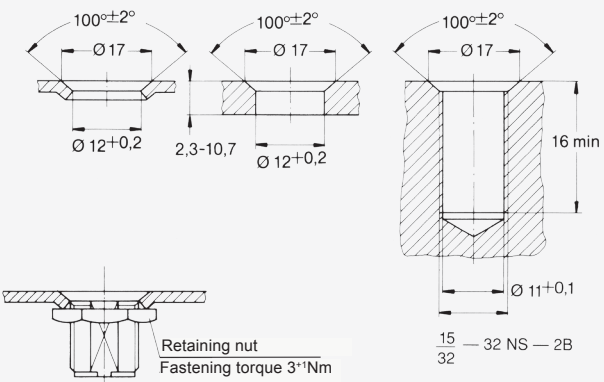
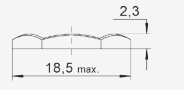
Installation Dimensions	Accessories	Materials / Finish	Part No.								
<p>Stud Retention up to Dash No. 4 without Retaining Washer Floating Type</p> <p>Type 1 </p> <p>Type 2 </p> <p>Type 3 </p> <table border="1" data-bbox="507 609 746 721"> <thead> <tr> <th>P</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>≤ 1,65</td> <td>1</td> </tr> <tr> <td>1,65 < P ≤ 3,2</td> <td>2</td> </tr> <tr> <td>> 3,2</td> <td>3</td> </tr> </tbody> </table> <p>4P3-1 installation pliers, see below</p>	P	Type	≤ 1,65	1	1,65 < P ≤ 3,2	2	> 3,2	3	-	<p>Note: Dash “4” stud and smaller are self-captivating</p>	-
P	Type										
≤ 1,65	1										
1,65 < P ≤ 3,2	2										
> 3,2	3										
<p>Stud Retention from Dash No. 5 with Retaining Washer Floating Type</p> <p>Type 1 </p> <p>Type 2 </p> <p>Type 3 </p> <table border="1" data-bbox="507 1046 746 1158"> <thead> <tr> <th>P</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>≤ 1,65</td> <td>1</td> </tr> <tr> <td>1,65 < P ≤ 3,2</td> <td>2</td> </tr> <tr> <td>> 3,2</td> <td>3</td> </tr> </tbody> </table> <p>4P3-1 installation pliers, see below</p>	P	Type	≤ 1,65	1	1,65 < P ≤ 3,2	2	> 3,2	3	<p>Retaining Washer </p>	Stainless steel	2600-SW
P	Type										
≤ 1,65	1										
1,65 < P ≤ 3,2	2										
> 3,2	3										
<p>Stud Retention with Retaining Washer Fixed installed</p> <p>Type 4 </p> <p>Type 5 </p> <table border="1" data-bbox="555 1516 730 1606"> <thead> <tr> <th>P</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>≤ 4,75</td> <td>4</td> </tr> <tr> <td>> 4,75</td> <td>5</td> </tr> </tbody> </table> <p>4P3-1 installation pliers, see F-8 T98-1 installation tool, see F-8</p>	P	Type	≤ 4,75	4	> 4,75	5	<p>Retaining Washer </p>	<p>Stainless steel</p> <p>Steel / nickel-plated</p>	<p>V2600-LW-7</p> <p>V27W01-1AN</p>		
P	Type										
≤ 4,75	4										
> 4,75	5										
<p>Assembly Instructions, see A-5</p> 	<p>Stud Installation pliers</p>		4P3-1								
<p>Assembly Instructions, see A-5</p> 	<p>Installation tool for retaining washer V2600-LW-7 und V27W01-1AN</p>		T98-1								

Style	Dimensions	Materials / Finish	Loch- Ø	°C	Part No.
<p>Type 1 Lightweight</p> 		Steel / zinc-plated, CrVI-free, clear passivation	2,6	120	V26R6-1AGV
<p>Type 1 Cast</p> 		<p>Hard bronze / zinc-plated, CrVI-free, clear passivation</p> <p>Hard bronze / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel</p>	<p>2,5</p> <p>3,3</p> <p>2,5</p>	<p>120</p> <p>120</p> <p>200</p>	<p>V212-12-1FGV</p> <p>V212-12-2FGV</p> <p>212-12S</p>
<p>Type 1 Narrow Width</p> 		Hard bronze / zinc-plated, CrVI-free, clear passivation	2,5	120	V212-12N-1FGV
<p>Type 1 Encapsulated</p> 		<p>Hard bronze / zinc-plated, CrVI-free, clear passivation</p> <p>Capsule: Steel / zinc-plated CrVI-free, clear passivation</p> <p>Stainless steel</p>	<p>2,5</p> <p>2,5</p>	<p>120</p> <p>150</p>	<p>26R16-1FGV</p> <p>26R18-1-1AA</p>

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Type 2 Side Mounting</p> 		Aluminium / anodized	175	26R1-1
<p>Type 3 Rivet / Screw or Weld Mounting</p> 		<p>Rivet / Screw Mounting Steel / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel</p> <p>Welding Stainless steel</p>	<p>120</p> <p>200</p>	<p>V312-12AGV</p> <p>312-12S</p> <p>312-12WS</p>

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Type 4 Single Hole Mounting</p> 		<p>Zinc die casting / zinc-plated, CrVI-free, transparent passivated</p>	<p>100</p>	<p>99R10-01A1</p>
<p>Type 4 Single Hole Mounting Encapsulated</p> 		<p>Zinc die casting / zinc-plated, CrVI-free, transparent passivated</p> <p>Capsule: Stainless steel</p>	<p>100</p>	<p>99E10-01</p>

Installation Dimensions	
<p>Type 1 + 3 Receptacles Hole Pattern when using the retaining washer 2600-SW</p> 	<p>Type 1 + 3 Receptacles Hole Pattern when using the retaining washer V2600-LW-7</p> 
<p>Type 2 Receptacle Hole Pattern (Side Mounting)</p> 	

Installation Dimensions	Accessories	Materials / Finish	Part No.
<p>Installation Options Type 4 Receptacle</p> 	<p>Retaining nut</p>  <p>15/32-32UNS-2B</p> <p>Tap</p>	<p>Steel / zinc-plated, CrVI-free, transparent passivated</p>	<p>99N10-01A1</p> <p>15/32-32NS-2B</p>

Features

Max. tensile strength 4.700 N, working load 3.100 N.

Small fastener for high tensile load.

Large range of stud assemblies with fixed and floating receptacles.

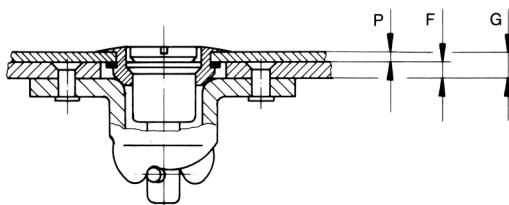
Selection Instructions

1. Select stud assembly, page G-4 and G-5, grommet and snap-on retaining ring, page G-7 and receptacle, page G-8 and G-9.
2. Select retaining washer, page G-6, for studs from length no. 5.
3. Select stud length number from total thickness G using the formula and the table on page G-2 and G-3 (e.g. D4002-*AGV).

Determining the stud length number when using receptacle:

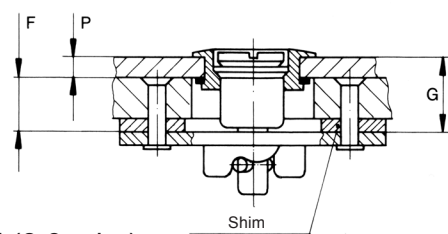
Standard Version

Type 1 + 2



$$G = P + F$$

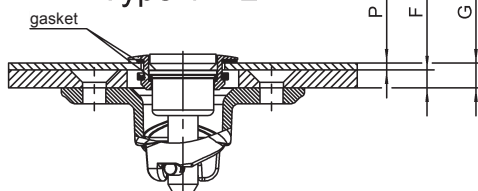
Type 3



$$G = P + F (8,9 \text{ min.})$$

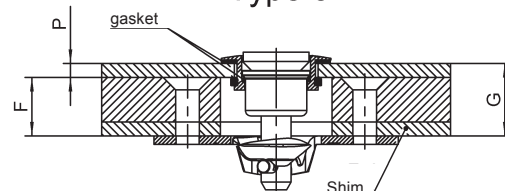
Sealed Version

Type 1 + 2



$$G = P + F + 0,75$$

Type 3



$$G = P + F (8,9 \text{ min.}) + 0,75$$

**When Using the Following Grommet and Receptacles:
Flush Mounting Grommets
D4002-G-AGV D4002-H-AGV
4002-GS 4002-HS**

Stud Length No. When Using

Total Thickness G	Type 1	Type 2	Type 3	Total Thickness G	Type 1	Type 2	Type 3
0,50 - 1,30	-	-	-	27,20 - 27,95	35	36	26
1,30 - 2,05	-	-	-	27,95 - 28,70	36	37	27
2,05 - 2,80	-	3	-	28,70 - 29,50	37	38	28
2,80 - 3,55	3	4	-	29,50 - 30,20	38	39	29
3,55 - 4,30	4	5	-	30,20 - 31,00	39	40	30
4,30 - 5,10	5	6	-	31,00 - 31,75	40	41	31
5,10 - 5,85	6	7	-	31,75 - 32,50	41	42	32
5,85 - 6,60	7	8	-	32,50 - 33,30	42	43	33
6,60 - 7,30	8	9	-	33,30 - 34,05	43	44	34
7,30 - 8,15	9	10	-	34,05 - 34,80	44	45	35
8,15 - 8,90	10	11	-	34,80 - 35,55	45	46	36
8,90 - 9,65	11	12	-	35,55 - 36,30	46	47	37
9,65 - 10,40	12	13	3	36,30 - 37,10	47	48	38
10,40 - 11,20	13	14	4	37,10 - 37,85	48	49	39
11,20 - 11,95	14	15	5	37,85 - 38,60	49	50	40
11,95 - 12,70	15	16	6	38,60 - 39,35	50	51	41
12,70 - 13,50	16	17	7	39,35 - 40,10	51	52	42
13,50 - 14,20	17	18	8	40,10 - 40,90	52	53	43
14,20 - 15,00	18	19	9	40,90 - 41,65	53	54	44
15,00 - 15,75	19	20	10	41,65 - 42,40	54	55	45
15,75 - 16,50	20	21	11	42,40 - 43,15	55	56	46
16,50 - 17,30	21	22	12	43,15 - 43,90	56	57	47
17,30 - 18,00	22	23	13	43,90 - 44,70	57	58	48
18,00 - 18,80	23	24	14	44,70 - 45,45	58	59	49
18,80 - 19,55	24	25	15	45,45 - 46,20	59	60	50
19,55 - 20,30	25	26	16	46,20 - 46,95	60	-	51
20,30 - 21,10	26	27	17	46,95 - 47,70	-	-	52
21,10 - 21,85	27	28	18	47,70 - 48,50	-	-	53
21,85 - 22,60	28	29	19	48,50 - 49,25	-	-	54
22,60 - 23,40	29	30	20	49,25 - 50,00	-	-	55
23,40 - 24,15	30	31	21	50,00 - 50,75	-	-	56
24,15 - 24,90	31	32	22	50,75 - 51,50	-	-	57
24,90 - 25,65	32	33	23	51,50 - 52,30	-	-	58
25,65 - 26,40	33	34	24	52,30 - 53,05	-	-	59
26,40 - 27,20	34	35	25	53,05 - 53,80	-	-	60


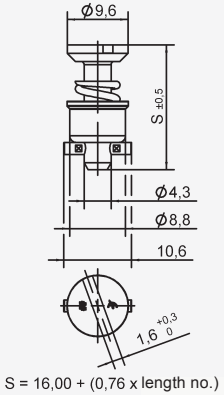

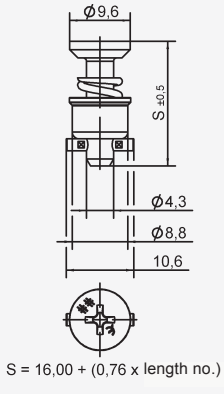

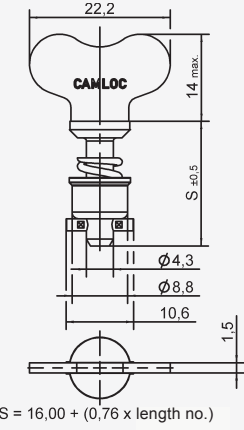
Other lengths on request.

**When Using the Following Grommet and Receptacles:
Plus Flush Mounting Grommets**
D4002-N-AGV D4002-O-AGV D4002-P-AGV D4002-R-AGV D4002-S-AGV D4002-T-AGV
4002-NS 4002-OS D4002-P-BP D4002-R-BP D4002-S-BP D4002-T-BP

Stud Length No. When Using


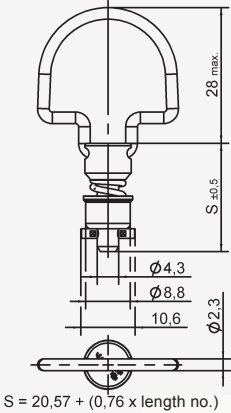

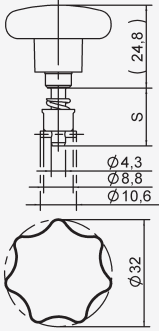
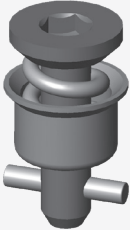
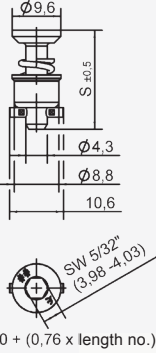
Total Thickness G	Type 1	Type 2	Type 3	Total Thickness G	Type 1	Type 2	Type 3
0,50 - 1,30	-	-	-	27,20 - 27,95	36	37	27
1,30 - 2,05	-	3	-	27,95 - 28,70	37	38	28
2,05 - 2,80	3	4	-	28,70 - 29,50	38	39	29
2,80 - 3,55	4	5	-	29,50 - 30,20	39	40	30
3,55 - 4,30	5	6	-	30,20 - 31,00	40	41	31
4,30 - 5,10	6	7	-	31,00 - 31,75	41	42	32
5,10 - 5,85	7	8	-	31,75 - 32,50	42	43	33
5,85 - 6,60	8	9	-	32,50 - 33,30	43	44	34
6,60 - 7,30	9	10	-	33,30 - 34,05	44	45	35
7,30 - 8,15	10	11	-	34,05 - 34,80	45	46	36
8,15 - 8,90	11	12	-	34,80 - 35,55	46	47	37
8,90 - 9,65	12	13	3	35,55 - 36,30	47	48	38
9,65 - 10,40	13	14	4	36,30 - 37,10	48	49	39
10,40 - 11,20	14	15	5	37,10 - 37,85	49	50	40
11,20 - 11,95	15	16	6	37,85 - 38,60	50	51	41
11,95 - 12,70	16	17	7	38,60 - 39,35	51	52	42
12,70 - 13,50	17	18	8	39,35 - 40,10	52	53	43
13,50 - 14,20	18	19	9	40,10 - 40,90	53	54	44
14,20 - 15,00	19	20	10	40,90 - 41,65	54	55	45
15,00 - 15,75	20	21	11	41,65 - 42,40	55	56	46
15,75 - 16,50	21	22	12	42,40 - 43,15	56	57	47
16,50 - 17,30	22	23	13	43,15 - 43,90	57	58	48
17,30 - 18,00	23	24	14	43,90 - 44,70	58	59	49
18,00 - 18,80	24	25	15	44,70 - 45,45	59	60	50
18,80 - 19,55	25	26	16	45,45 - 46,20	60	-	51
19,55 - 20,30	26	27	17	46,20 - 46,95	-	-	52
20,30 - 21,10	27	28	18	46,95 - 47,70	-	-	53
21,10 - 21,85	28	29	19	47,70 - 48,50	-	-	54
21,85 - 22,60	29	30	20	48,50 - 49,25	-	-	55
22,60 - 23,40	30	31	21	49,25 - 50,00	-	-	56
23,40 - 24,15	31	32	22	50,00 - 50,75	-	-	57
24,15 - 24,90	32	33	23	50,75 - 51,50	-	-	58
24,90 - 25,65	33	34	24	51,50 - 52,30	-	-	59
25,65 - 26,40	34	35	25	52,30 - 53,05	-	-	60
26,40 - 27,20	35	36	26	53,05 - 53,80	-	-	-

Other lengths on request.

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Slotted Recess Head</p> 	 <p>S = 16,00 + (0,76 x length no.)</p>	<p>Steel / zinc-plated CrVI-free, clear passivation</p> <p>Stainless steel ¹⁾</p>	<p>120</p> <p>200</p>	<p>D4002-*AGV</p> <p>D4002-*BP</p>
<p>Cross Recess Head</p> 	 <p>S = 16,00 + (0,76 x length no.)</p>	<p>Steel / zinc-plated CrVI-free, clear passivation</p> <p>Stainless steel ¹⁾</p>	<p>120</p> <p>200</p>	<p>D40S5-*AGV</p> <p>D40S5-*BP</p>
<p>Fixed Wing Handle</p> 	 <p>S = 16,00 + (0,76 x length no.)</p>	<p>Steel / zinc-plated CrVI-free, clear passivation</p> <p>Stainless steel ¹⁾</p>	<p>120</p> <p>200</p>	<p>D4002-*WAGV</p> <p>D4002-*WBP</p>


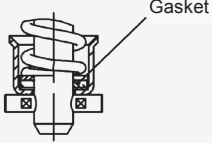
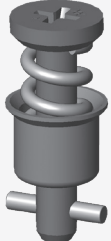
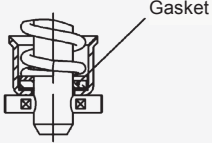
* Length no. from Table, see page G-2 and G-3

¹⁾ Max. tensile strength 3.300 N, Working load 2.200 N

Style	Dimensions	Materials / Finish	°C	Part No.
Folding Bail Handle 180° 	 <p>S = 20,57 + (0,76 x length no.)</p>	Steel / zinc-plated CrVI-free, clear passivation	120	D40S47-*AGV
Plastic Star Form Handle 	 <p>S = 20,57 + (0,76 x length no.)</p>	Steel / zinc-plated CrVI-free, clear passivation	-40 up to +60	D40E22-*AGV
Hex Reces 	 <p>S = 16,00 + (0,76 x length no.)</p>	Steel / zinc-plated CrVI-free, clear passivation Stainless steel ¹⁾	120 200	D40E28- *AGV D40E28-*BP

* Length no. from Table, see page G-2 and G-3

¹⁾ Max. tensile strength 3.300 N, Working load 2.200 N

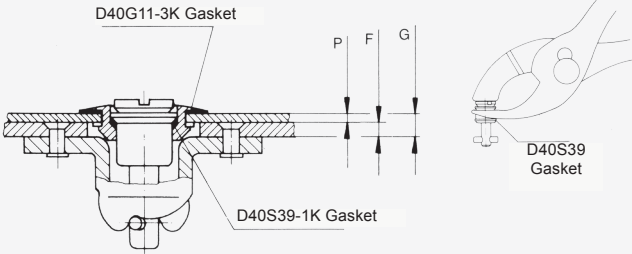
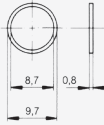
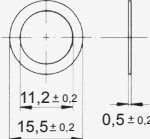
Style	Dimensions	Materials / Finish	°C	Part No.
Sealed Slotted Recess Head 	 Additional required gasket, see page G-4	Steel / zinc-plated CrVI-free, clear passivation Gasket: Vulkollan®* Available from length no. 4 Stainless steel ¹⁾	-15 up to +80	D4002I-*AGV
			200	D4002I-*BP
Sealed Cross Recess Head 	 Additional required gasket, see page G-4	Steel / zinc-plated CrVI-free, clear passivation Gasket: Vulkollan®* Available from length no. 4 Stainless steel ¹⁾	-15 up to +80	D40S5I-*AGV
			200	D40S5I-*BP

* Vulkollan® is a registered brand of Bayer AG.

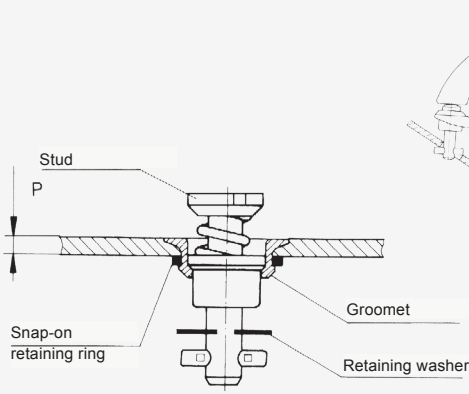
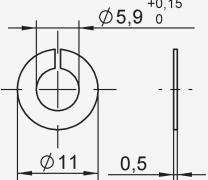
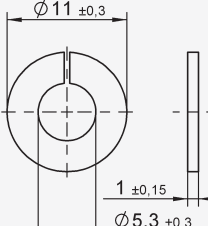
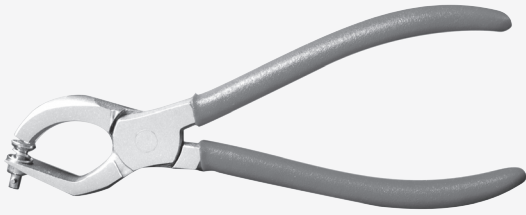
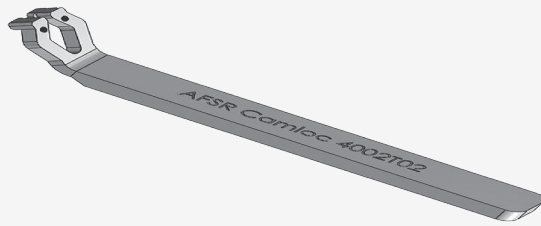
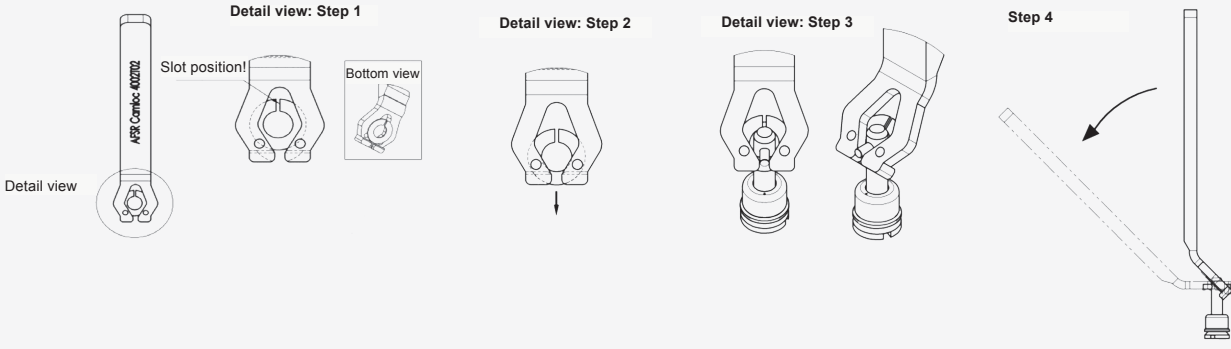
¹⁾ Max. tensile strength 3.300 N, Working load 2.200 N

Click here: [D4002 installation – including new Camloc Mounting Tool 4002T02](#)




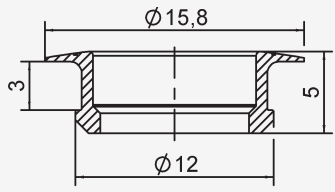

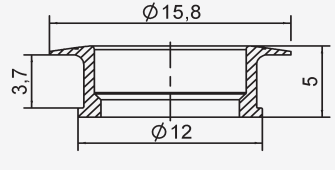

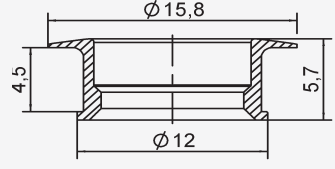

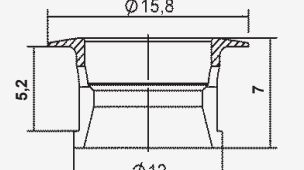

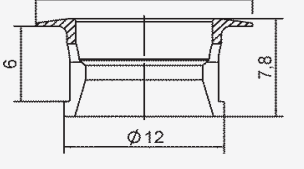

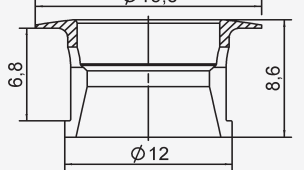

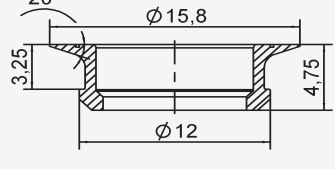

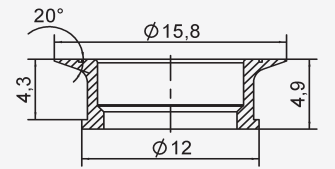
Installation Dimensions	Accessories	Materials / Finish	Part No.
Gasket to be ordered in addition to the sealed stud assembly 	Gasket 	Plastic / (PA6)	D40S39-1K
	Gasket 	EPDM black	D40G11-3K


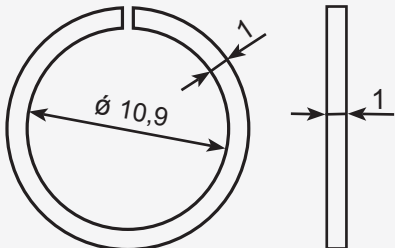
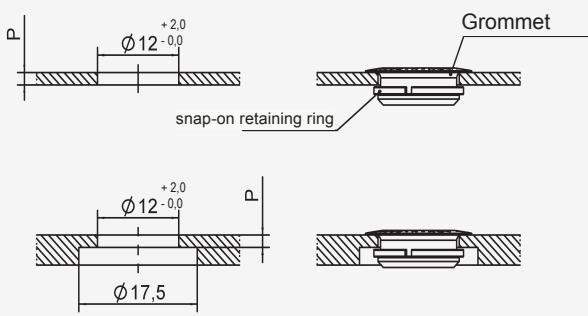
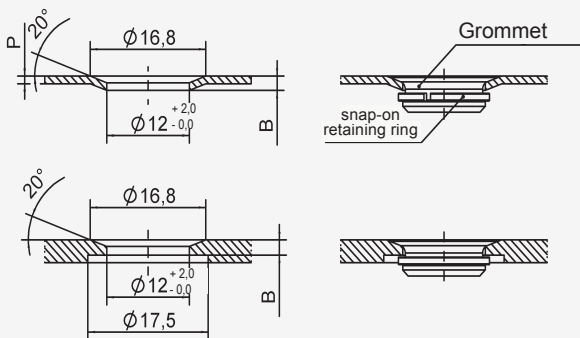
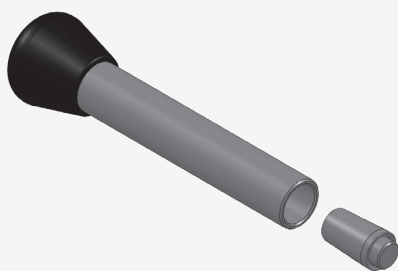
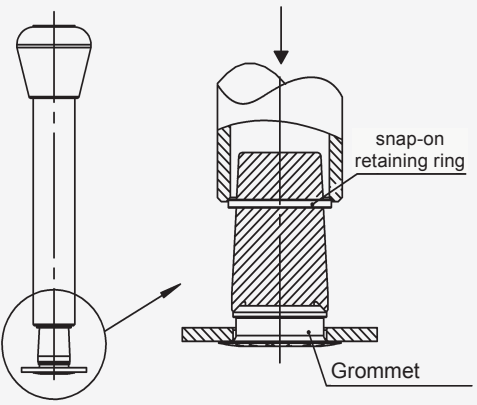
* Length no. from Table, see page G-2 and G-3.


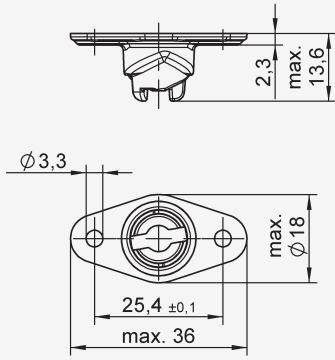

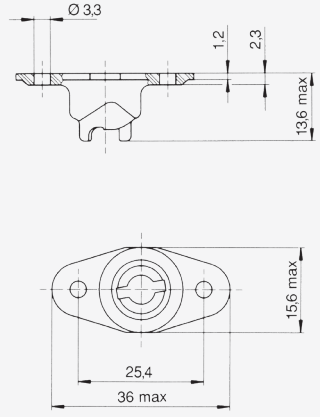

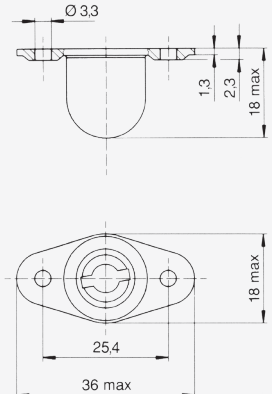
Installation Dimensions	Accessories	Materials / Finish	Part No.
 <p>Stud P Snap-on retaining ring Grommet Retaining washer</p> <p>4P3-1 installation pliers, see below</p>	<p>retaining ring loose on stud use for stud length no. 5 and up</p>  <p>retaining ring loose on stud use for stud length no. 5 and up</p> 	<p>Stainless steel</p> <p>Plastic</p>	<p>4002-SW-SS</p> <p>50W204-01K</p>
	<p>Stud Installation pliers</p>	<p>4P3-1</p>	
	<p>Installation tool for Retaining Washer**</p>	<p>4002T02-1BP</p>	
<p style="text-align: center;">Installation Instructions für 4002-SW-SS</p> 			

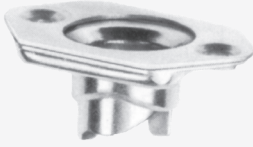
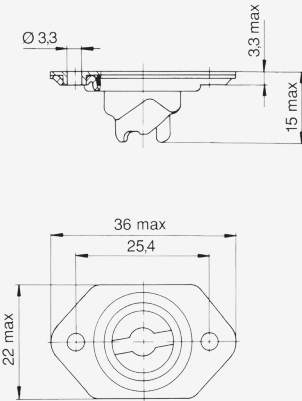

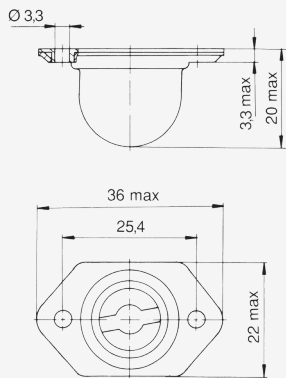

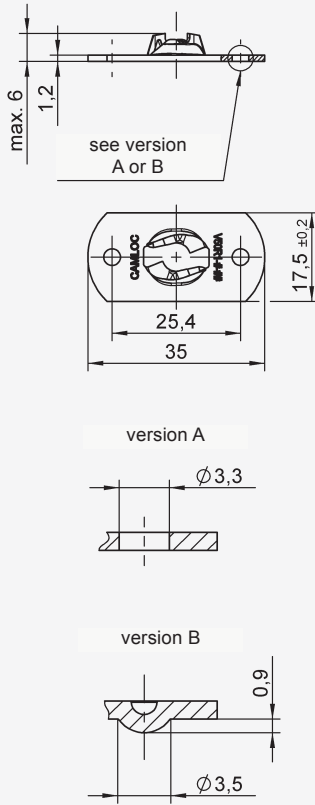
* Optional to be used from Stud length No. 5..

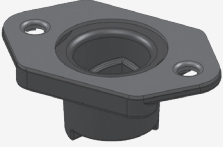
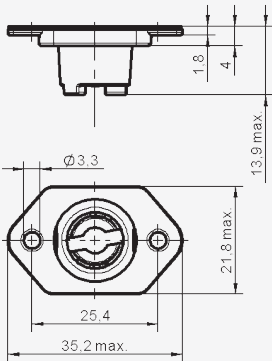
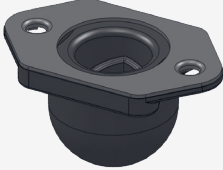
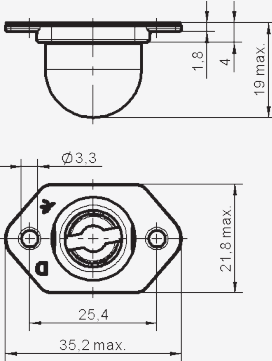

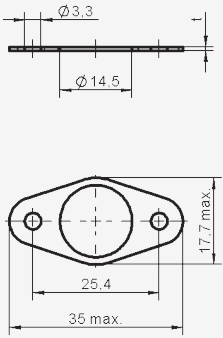
** Mounting tool 4002T02 is only for retaining washers of (D)4002 Series.

Style	Dimensions	Werkstoff/ Oberfläche	°C	Part No.
Plus Flush Mounting for Panel Thickness up to 1,65 		Steel/ zinc-plated CrVI-free, clear passivation stainless steel	120 200	D4002-N-AGV 4002-NS
Plus Flush Mounting for Panel Thickness from 1,65 up to 2,40 		Steel/ zinc-plated CrVI-free, clear passivation stainless steel	120 200	D4002-P-AGV 4002-OS
Plus Flush Mounting for Panel Thickness from 2,40 up to 3,20 		Steel/ zinc-plated CrVI-free, clear passivation stainless steel	120 200	D4002-P-AGV D4002-P-BP
Plus Flush Mounting for Panel Thickness from 3,20 up to 3,95 		Steel/ zinc-plated CrVI-free, clear passivation stainless steel	120 200	D4002-R-AGV D4002-R-BP
Plus Flush Mounting for Panel Thickness from 3,95 up to 4,75 		Steel/ zinc-plated CrVI-free, clear passivation stainless steel	120 200	D4002-S-AGV D4002-S-BP
Plus Flush Mounting for Panel Thickness from 4,8 up to 5,60 		Steel/ zinc-plated CrVI-free, clear passivation stainless steel	120 200	D4002-T-AGV D4002-T-BP
Flush Mounting for Panel Thickness up to 1,88 		Steel/ zinc-plated CrVI-free, clear passivation stainless steel	120 200	D4002-G-AGV 4002-GS
Flush Mounting For Panel Thickness from 1,88 up to 2,97 		Steel/ zinc-plated CrVI-free, clear passivation stainless steel	120 200	D4002-H-AGV 4002-HS

Style	Dimensions	Materials/ Finish	Part No.									
		Steel/ zinc-plated, CrVI-free, clear passivation Stainless steel Stainless steel / non-magnetic	R4G-3 V40G26-1BP V40G26-1N									
		Grommet plus flush Part No.	P_{max} <table border="1"> <tr> <td>D4002-N-AGV / 4002-NS</td> <td>1,65</td> </tr> <tr> <td>D4002-P-AGV / 4002-OS</td> <td>2,40</td> </tr> <tr> <td>D4002-P-AGV / D4002-P-BP</td> <td>3,20</td> </tr> <tr> <td>D4002-T-AGV / D4002-T-BP</td> <td>5,60</td> </tr> </table>	D4002-N-AGV / 4002-NS	1,65	D4002-P-AGV / 4002-OS	2,40	D4002-P-AGV / D4002-P-BP	3,20	D4002-T-AGV / D4002-T-BP	5,60	
D4002-N-AGV / 4002-NS	1,65											
D4002-P-AGV / 4002-OS	2,40											
D4002-P-AGV / D4002-P-BP	3,20											
D4002-T-AGV / D4002-T-BP	5,60											
		Grommet flush Part No.	<table border="1"> <thead> <tr> <th></th> <th>P_{max}</th> <th>B_{max}</th> </tr> </thead> <tbody> <tr> <td>D4002-G-AGV / 4002-GS</td> <td>1,65</td> <td>1,88</td> </tr> <tr> <td>D4002-H-AGV / 4002-HS</td> <td>2,18</td> <td>2,97</td> </tr> </tbody> </table>		P_{max}	B_{max}	D4002-G-AGV / 4002-GS	1,65	1,88	D4002-H-AGV / 4002-HS	2,18	2,97
	P_{max}	B_{max}										
D4002-G-AGV / 4002-GS	1,65	1,88										
D4002-H-AGV / 4002-HS	2,18	2,97										
		T26										

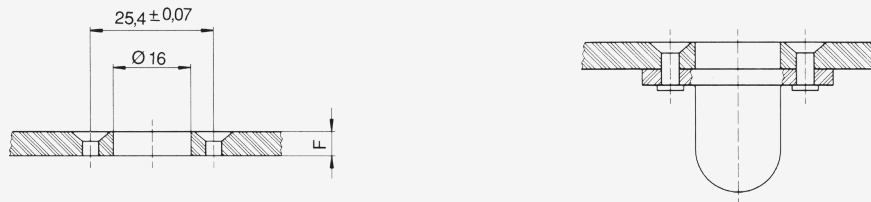
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Type 1 cast</p> 		<p>Hard bronze / zinc-plated, CrVI-free, clear passivation Stainless steel</p>	<p>120</p> <p>200</p>	<p>D214-16FGV</p> <p>214-16S</p>
<p>Type 1 cast, narrow width</p> 		<p>Hard bronze / zinc-plated, CrVI-free, clear passivation</p>	<p>120</p>	<p>D214-16NFGV</p>
<p>Type 1 cast, encapsulated</p> 		<p>Hard bronze / zinc-plated, CrVI-free, clear passivation Capsule: Brass / zinc-plated, CrVI-free, clear passivation</p>	<p>120</p>	<p>D40R12-1FGV</p>

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Type 2 Float up to 0,75 mm (cast receptacle)</p> 		<p>Hard bronze / zinc-plated, CrVI-free, clear passivation Cage: Steel / zinc-plated, CrVI-free, clear passivation Stainless steel</p>	<p>120</p> <p>200</p>	<p>D244-16-FGV</p> <p>244-16S</p>
<p>Type 2 Float up to 0,75 mm Encapsulated</p> 		<p>Hard bronze / zinc-plated, CrVI-free, clear passivation</p> <p>Capsule: Steel / zinc-plated, CrVI-free, clear passivation Stainless steel</p>	<p>120</p> <p>200</p>	<p>D244-16C-FGV</p> <p>244-16SC</p>
<p>Type 3 Flat Rivet- / Screw or Weld Mounting</p> 		<p>Rivet / Srew Mounting (A) Steel / zinc-plated, CrVI-free, clear passivation Stainless steel</p> <p>Welding (B) Steel / zinc-plated, CrVI-free</p> <p>Stainless steel, oil-coated</p>	<p>120</p> <p>200</p> <p>-</p> <p>-</p>	<p>V50R1-1-1AGV</p> <p>V50R1-1-1BP</p> <p>V50R1-1-2AZ</p> <p>V50R1-1-2AR</p>

Style	Dimensions	Materials / Finish	°C	Part No.
Type 2 Float up to 0,75 mm (Torlon) 		Torlon base plate: Steel / zinc-plated, CrVI-free, clear passivation	120	V244-16T1
		Torlon Base plate: Stainless steel	120	V244-16TS1
Type 2 Float up to 0,75 mm (Torlon) encapsulated 		Torlon Base plate: Steel / zinc-plated, CrVI-free, clear passivation	120	V244-16T1C
		Torlon Base plate: Stainless steel	120	V244-16TS1C
Shim 		Aluminium t=0,8mm	175	D40W02-1DR
		Aluminium t=1,5mm to be used with: D214-16FGV 214-16 S D214-16 NFGV D40R12-1FGV	175	D40W02-2DR

Installation Dimensions

Receptacle Hole Pattern
Type 1, 2 and 3



Features

Max. tensile strength 10.000 N, Working Load 7.000 N

High tensile strength and preload.

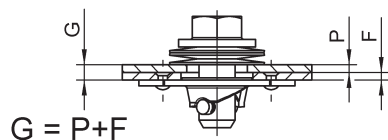
Typical applications:

Commercial vehicles, coaches, agricultural machinery, chemical engineering, heating systems etc.

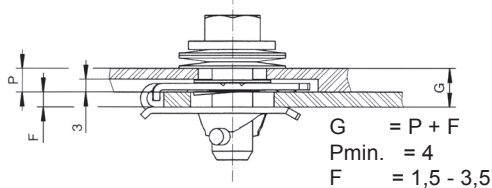
1. Select stud assembly and receptacle, pages H-2, H-3 and H-5.
2. Sealed: Also select rubber gasket and buffer plate, page H-4.
3. Select retaining washer, page H-4.
4. Select stud length number from total thickness G using the formula and table below (e.g. 991S01-*AGV).

Determining the stud length number when using:

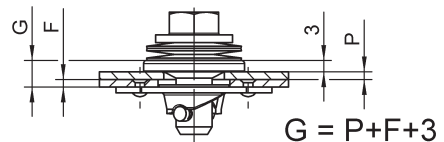
Rivet, Screw and Weld mounting Receptacle



Clip-On Receptacle



Sealed Stud Assemblies



Click here:

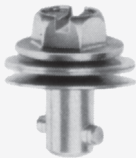
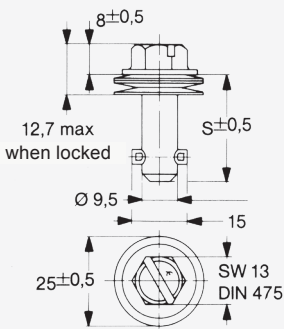
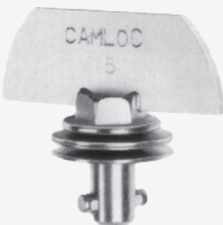
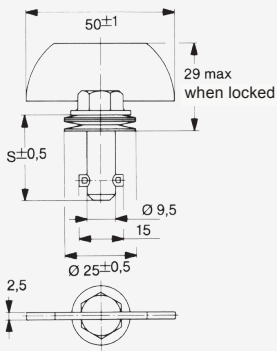
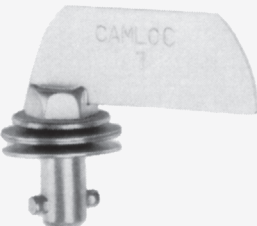
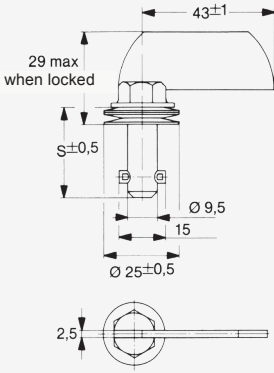

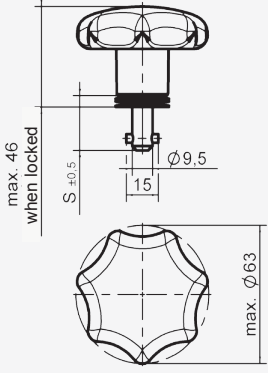
[Quarter Turn Installation \(991F Series\)](#)



Stud Length Table


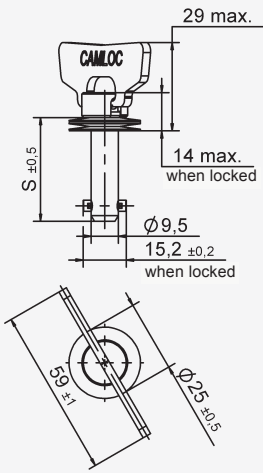

Total Thickness G	Stud Length no.	Total Thickness G	Stud Length no.	Total Thickness G	Stud Length no.
0,90 - 1,65	1	13,85 - 14,60	18	26,80 - 27,55	35
1,65 - 2,40	2	14,60 - 15,35	19	27,55 - 28,30	36
2,40 - 3,15	3	15,35 - 16,15	20	28,30 - 29,10	37
3,15 - 3,95	4	16,15 - 16,90	21	29,10 - 29,85	38
3,95 - 4,70	5	16,90 - 17,65	22	29,85 - 30,60	39
4,70 - 5,45	6	17,65 - 18,40	23	30,60 - 31,35	40
5,45 - 6,20	7	18,40 - 19,20	24	31,35 - 32,15	41
6,20 - 7,00	8	19,20 - 19,95	25	32,15 - 32,90	42
7,00 - 7,75	9	19,95 - 20,70	26	32,90 - 33,65	43
7,75 - 8,50	10	20,70 - 21,45	27	33,65 - 34,40	44
8,50 - 9,25	11	21,45 - 22,25	28	34,40 - 35,20	45
9,25 - 10,05	12	22,25 - 23,00	29	35,20 - 35,95	46
10,05 - 10,80	13	23,00 - 23,75	30	35,95 - 36,70	47
10,80 - 11,55	14	23,75 - 24,50	31	36,70 - 37,45	48
11,55 - 12,30	15	24,50 - 25,25	32	37,45 - 38,25	49
12,30 - 13,10	16	25,25 - 26,05	33	38,25 - 39,00	50
13,10 - 13,85	17	26,05 - 26,80	34		

Other lengths on request.

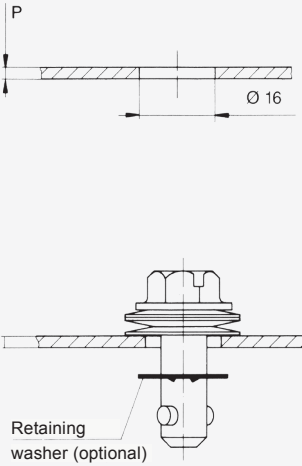
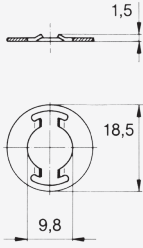
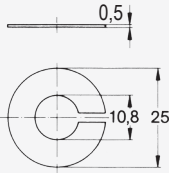
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Hex Head Slotted Recess</p> 	 <p>$S = 16,26 + (0,76 \times \text{length no.})$</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel ¹⁾</p>	<p>120</p> <p>200</p>	<p>991S01- *-1AGV</p> <p>991S01- *-1BP</p>
<p>Fixed Wing Handle</p> 	 <p>$S = 16,26 + (0,76 \times \text{length no.})$</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel ¹⁾</p>	<p>120</p> <p>200</p>	<p>991S02- *-1AGV</p> <p>991S02- *-1BP</p>
<p>Offset Fixed Wing Handle</p> 	 <p>$S = 16,26 + (0,76 \times \text{length no.})$</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel ¹⁾</p>	<p>120</p> <p>200</p>	<p>991S03- *-1AGV</p> <p>991S03- *-1BP</p>
<p>Plastic Star Form Handle</p> 	 <p>$S = 16,26 + (0,76 \times \text{length no.})$</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation</p>	<p>-40 up to +60</p>	<p>991S04- *-1AGV</p>

* Length no. from Table, see page H-1.

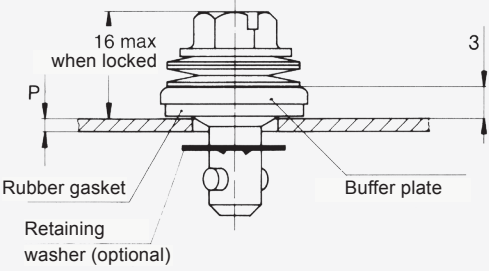
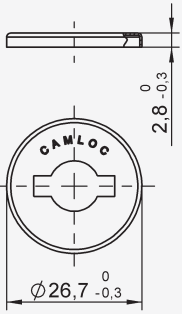
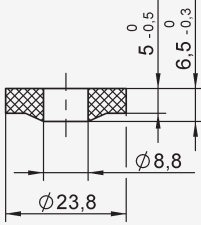
¹⁾ Max. tensile strength 7.000 N, Working load 4.500 N


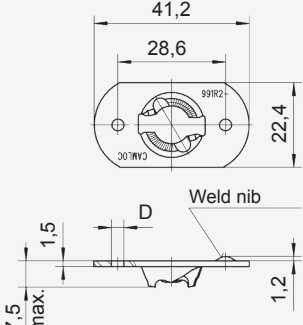

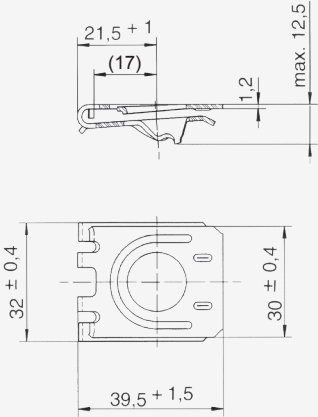
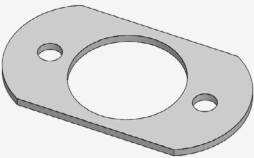
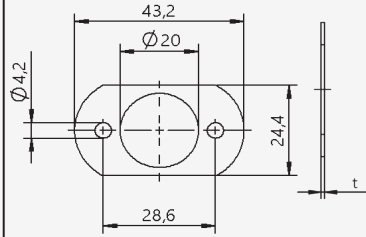
Style	Dimensions	Materials / Finish	°C	Part No.
Folding Wing Handle 180° 	 <p>$S = 16,26 + (0,76 \times \text{length no.})$</p>	Steel / zinc-plated, CrVI-free, clear passivation	80	991S500*-1AGV
Hex Reces Head 		Steel / zinc-plated, CrVI-free, clear passivation	120	991S30*-AGV
Folding Bail Handle 180° 	 <p>$S = 15,03 + (0,76 \times \text{length no.})$</p>	Steel / zinc-plated, CrVI-free, clear passivation	120	991S2991*-AGV

* Length no. from Table, see page H-1.

Installation Dimensions	Accessories	Materials / Finish	Part No.
 <p>Retaining washer (optional)</p>	<p>Retaining Washer</p>  <p>Slotted retaining Washer</p> 	<p>Stainless steel</p> <p>Stainless steel</p>	<p>991W04-1BP</p> <p>991W02-1BP</p>

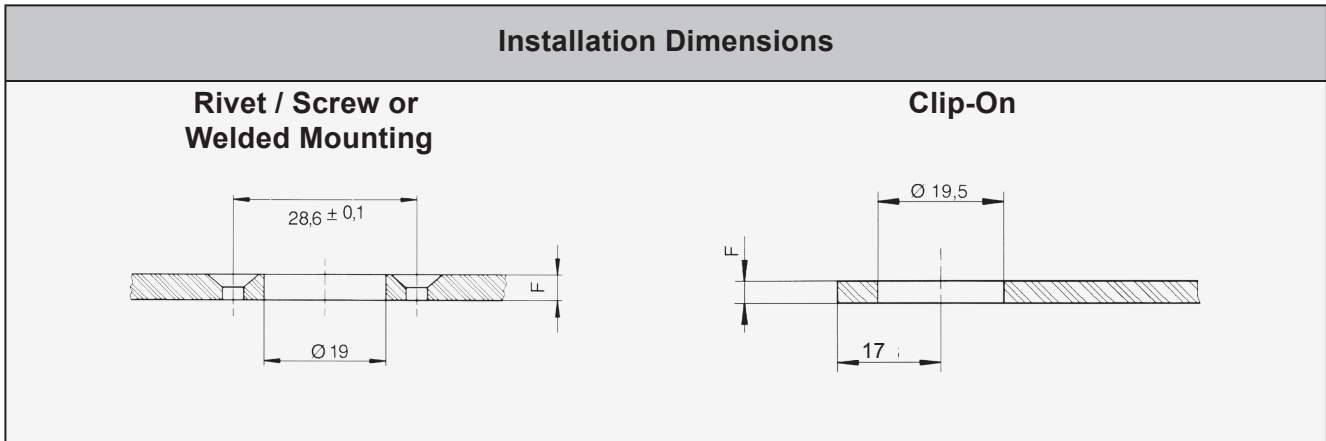
Sealed Stud Assemblies

Installation Dimensions	Accessories	Materials / Finish	Part No.
 <p>Rubber gasket</p> <p>Retaining washer (optional)</p> <p>Buffer plate</p>	<p>Buffer plate</p>  <p>Rubbinging</p> 	<p>Stainless steel</p> <p>SBR/NBR or alternative SBR/NR black (max. 100°C)</p>	<p>991W03-1BP</p> <p>991S17-1K</p>

Style	Dimensions	Materials / Finish	Mounting- Ø	°C	Part No.
Rivet- / Screw or Weld Mounting 		Rivet / Screw Steel / zinc-plated, CrVI-free, clear passivation	3,3	120	991R2-1AGV
		Steel / zinc-plated, CrVI-free, clear passivation	4,1	120	991R2-3AGV
		Stainless steel	3,3	200	991R2-1BP
		Stainless steel	4,1	200	991R2-3BP
		Welding Steel / zinc-plated	-	-	991R2-2AZ
		Steel / oil-coated	-	-	991R2-2AR
Clip-On 		Steel / zinc-plated, zinc flake coated Frame thickness F= 1,5mm - 3,5mm		150	991R6-1AK7
Distanzbase plate* 		POM black/ t=0,8	4,2	100	991W120-08K
		POM black/ t=1,0	4,2	100	991W120-10K
		POM black/ t=1,5	4,2	100	991W120-15K
		POM black/ t=2,0	4,2	100	991W120-20K

* If you have slightly different clamping thicknesses in an application, it is possible to compensate them with our distance plates, which are fixed under the retaining cam. This makes it possible to use only one stud length.

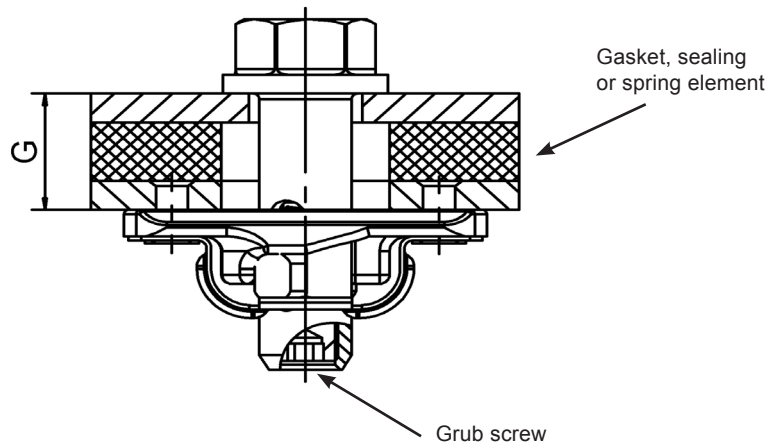
Receptacle Installation Instructions



Special features

Max. tensile strength (ultimate) 10.000 lbs / 44.482 N, rated working load 6.500 lbs / 28.913 N. The fastener is capable of absorbing high tensile loads and withstanding mechanical damage under severe operating conditions, such as shipbuilding or military applications. A unique adjustable cross pin allows for adjustable clamp lengths within a chosen grip length.

Determination of the length no. of the stud:



1. Determine clamping thickness „G“.
Attention: Increase the clamping thickness „G“ by the thickness of surface treatments and the compressed thickness of a gasket, sealing or spring element.
2. You will find the total clamping thickness „G“ you have determined in the left column of the following table.
3. Select the appropriate stud length in the right column.

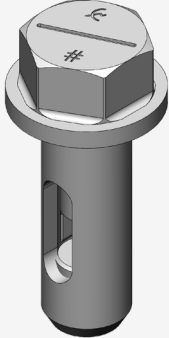
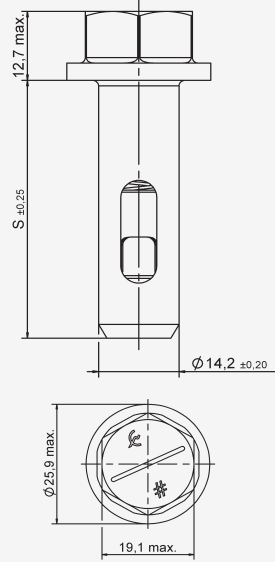
If not using a gasket, sealing or spring element, please contact us for further information.

Stud Length Table

Total Thickness „G“	Stud Length no.
6,35 - 12,67	1
12,70 - 19,02	2
19,05 - 25,37	3
25,40 - 31,72	4
31,75 - 38,07	5
38,10 - 44,42	6
44,45 - 50,77	7

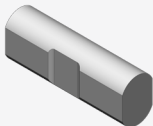
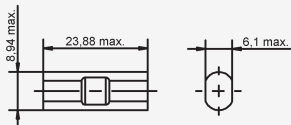
Other lengths on request..

Stud

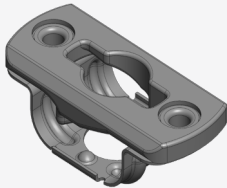
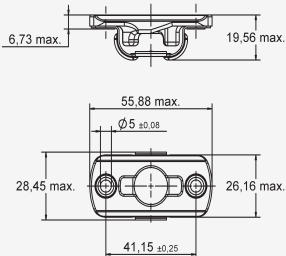
Style	Dimensions	Materials / Finish	°C	Part No.
Hex Head Stud 	 <p>*S = 34,8 + (6,35 x pin length)</p>	Steel / zinc-nickel, silver, CrVI-free passivated and sealed	215	V34S01-* -1ASNV

* Length no. from Table, see page I-1.

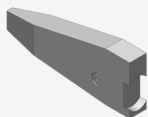
Cross pin

Style	Dimensions	Materials / Finish	°C	Part No.
Cross pin 		Steel / zinc-nickel, silver, CrVI-free passivated and sealed		V34S02-1- -1ASNV

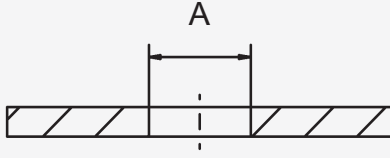
Receptacle

Style	Dimensions	Materials / Finish	°C	Part No.
Rivet / Screw Mounting 		Steel / zinc-nickel, silver, CrVI-free passivated and sealed		V34R01-2- -1BSNV

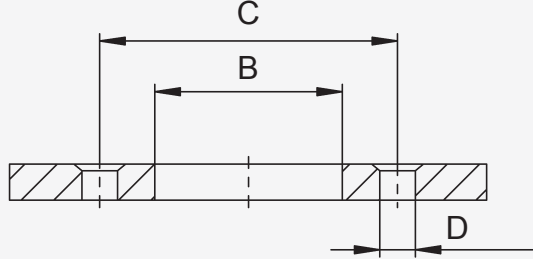
Cross pin assembly tool

Style	Materials / Finish	°C	Part No.
	stainless Steel		VT135-1-1B

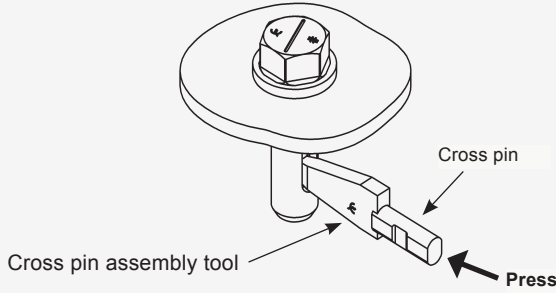
Panel preparation for stud

Installation Dimensions				
	<table border="1"> <tr> <td rowspan="2" style="font-size: 2em; vertical-align: middle;">A</td> <td>17,48 mm ± 0,25</td> </tr> <tr> <td>0.688 inch ± 0,010</td> </tr> </table>	A	17,48 mm ± 0,25	0.688 inch ± 0,010
A	17,48 mm ± 0,25			
	0.688 inch ± 0,010			

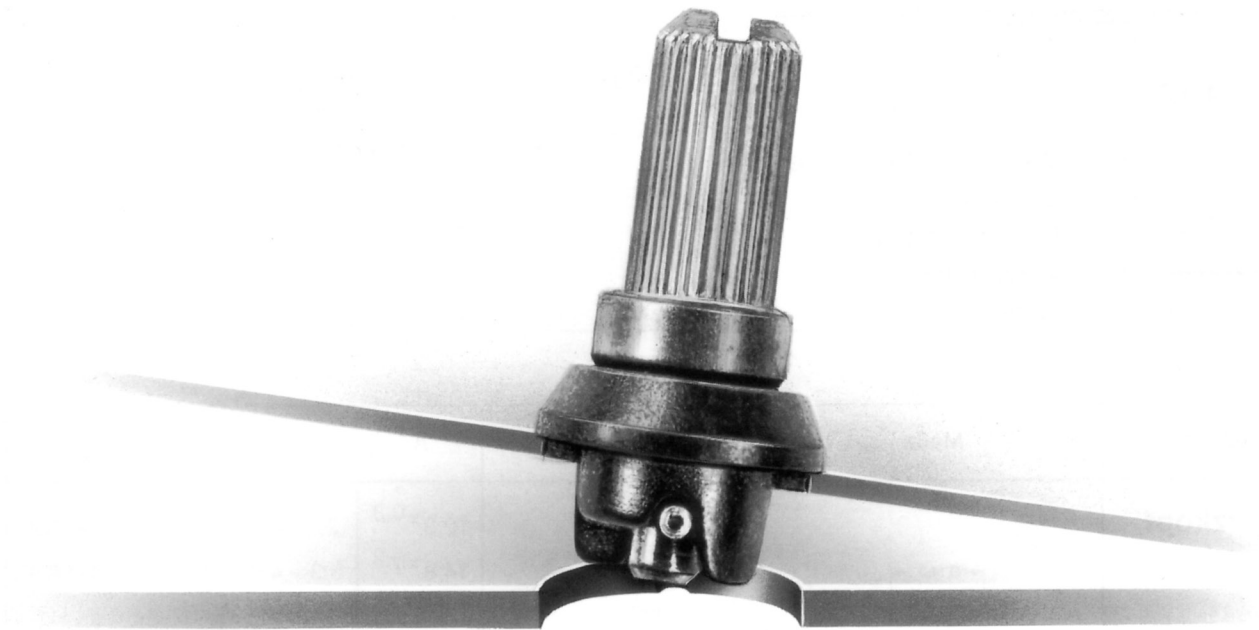
Panel preparation for receptacle

Installation Dimensions										
	<table border="1"> <tr> <td rowspan="2" style="font-size: 2em; vertical-align: middle;">B</td> <td>25,91 mm ± 0,25</td> </tr> <tr> <td>1.020 inch ± 0,010</td> </tr> <tr> <td rowspan="2" style="font-size: 2em; vertical-align: middle;">C</td> <td>41,15 mm ± 0,25</td> </tr> <tr> <td>1.620 inch ± 0,010</td> </tr> <tr> <td rowspan="2" style="font-size: 2em; vertical-align: middle;">D</td> <td>5,0 mm ± 0,010</td> </tr> <tr> <td>0.197 inch ± 0,004</td> </tr> </table>	B	25,91 mm ± 0,25	1.020 inch ± 0,010	C	41,15 mm ± 0,25	1.620 inch ± 0,010	D	5,0 mm ± 0,010	0.197 inch ± 0,004
B	25,91 mm ± 0,25									
	1.020 inch ± 0,010									
C	41,15 mm ± 0,25									
	1.620 inch ± 0,010									
D	5,0 mm ± 0,010									
	0.197 inch ± 0,004									

Stud installation instructions

Installation	Adjustment of the cross pin
<div style="text-align: center;">  </div> <ol style="list-style-type: none"> 1. Insert the stud into the prepared hole. 2. Install the cross pin by using the assembly tool. 3. When the tool has been pushed completely through the stud, the cross pin will automatically lock into place. This makes the stud captive. 	<p>Adjust the cross pin by turning the grub screw (located on the underside of the bottom of the stud) with an allen wrench (type 5) to achieve the desired clamping load.</p>

One-Piece Fasteners



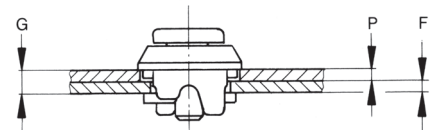
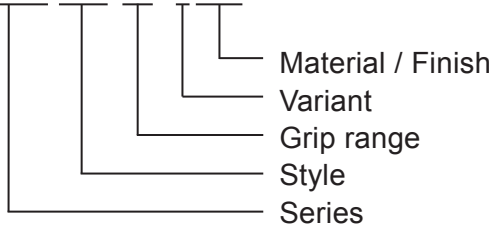
Features

- Max. tensile strength 300 N, working load 200 N.
- Same hole shape for panel and frame.
- Available in slotted recess or knurled head styles .
- Fastener position indication by stud slot.
- Stud assembly captive in the panel.
- Vibration resistant.
- Grip ranges from 2,0 mm to 4,6 mm.
- Lock and unlock by a quarter turn.
- Typical applications are in electro-mechanical and electronic equipment.
- Quick installation without tools.

Part no. example


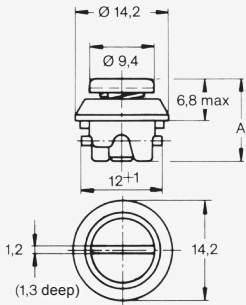

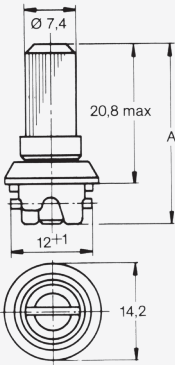
Knurled head for 3,3 mm to 4,6 mm grip range.

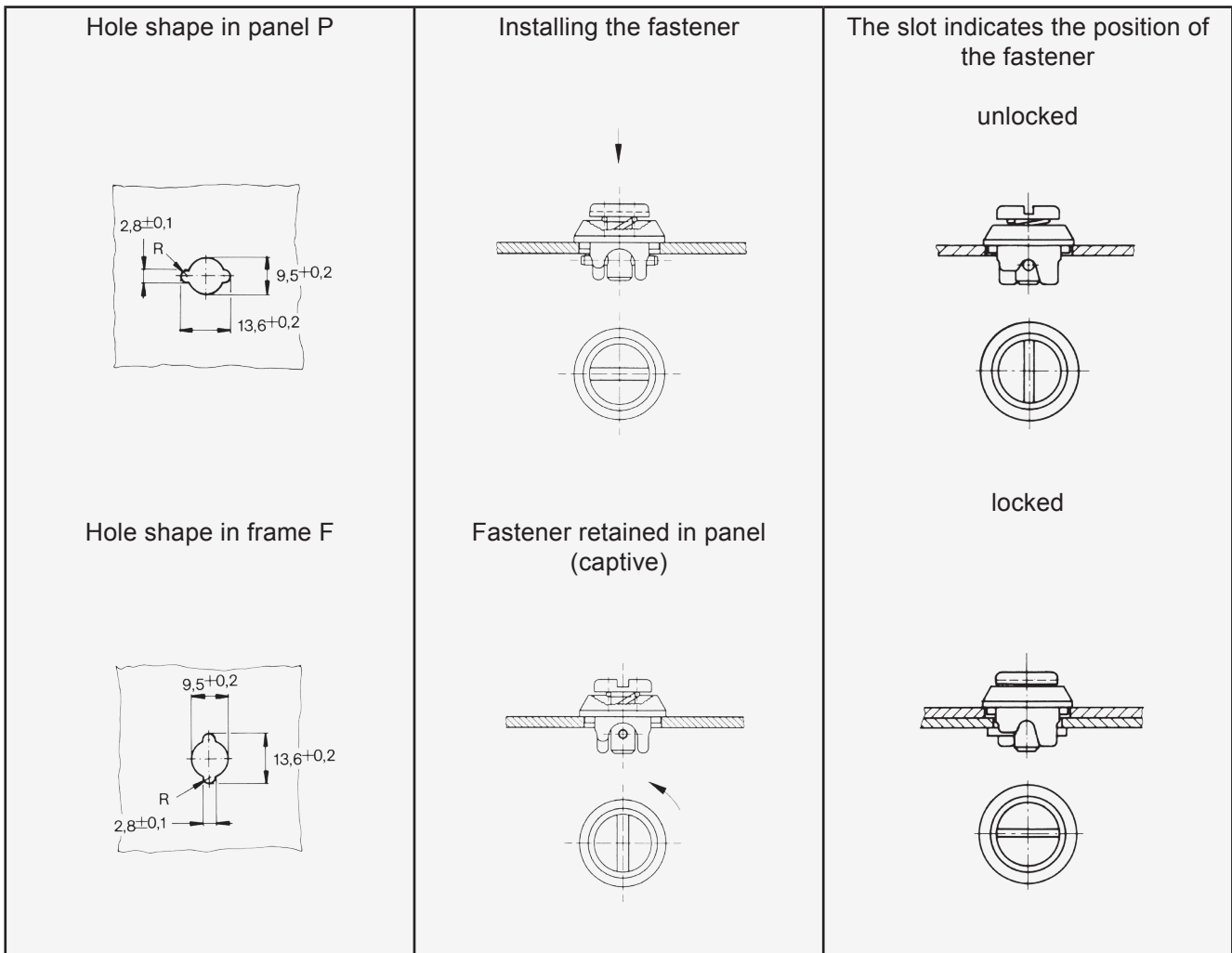
V936 S11 - 4 -1 AA



$$G = P + F$$

$$P_{min} = 1,2 \text{ mm}$$

Style	Dimensions	Materials / Finish	A	Grip range G	°C	Part No.
Slotted Recess Head 		stud, spiral pin: Steel / zinc-plated, CrVI-free, clear chromate Compression spring: Stainless steel Casing: Zinc die casting / zinc-plated, CrVI-free, clear chromate	12,6 max	2,0 - 3,3	100	V936S05-3-1AA
			15,1 max	3,3 - 4,6	100	V936S05-4-1AA
Knurled Head 		stud, casing: Zinc die casting / zinc-plated, CrVI-free, clear chromate Compression spring: Stainless steel Spiral pin: Steel / zinc-plated, CrVI-free, clear chromate	26,6 max	2,0 - 3,3	100	V936S11-3-1AA
			29,2 max	3,3 - 4,6	100	V936S11-4-1AA





Features

This fastener fastens panels in electrical switch cabinets (e.g. 19"-equipment) to modular bars.

Selection Instructions

The dimensions of the front panel and the modular bar as well as the colour determine the final design of the fasteners.

To enable us to offer you the custom-tailored fastener, we need your drawings with the dimensions and tolerances of:

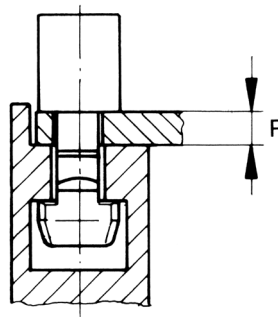
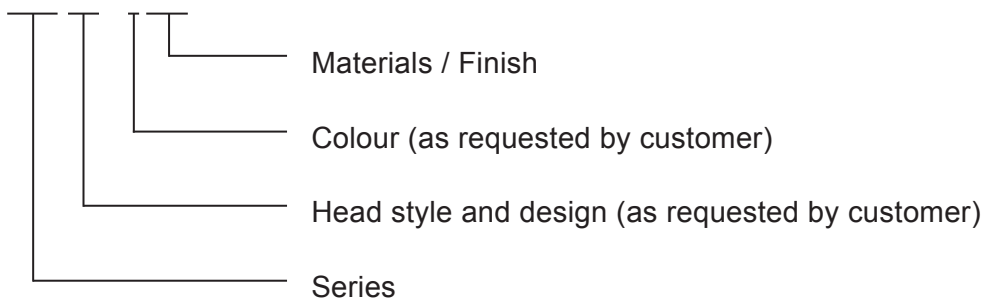
1. the front panel
2. the shape of the modular bar
3. the colour, if necessary

In addition, please send us samples of your modular bar and front panel.


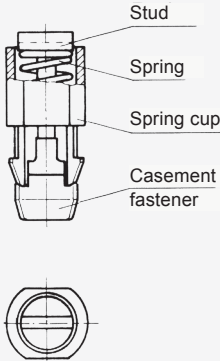

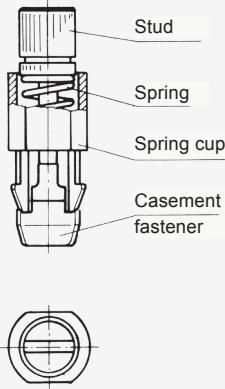
Part no. example

One-piece fastener

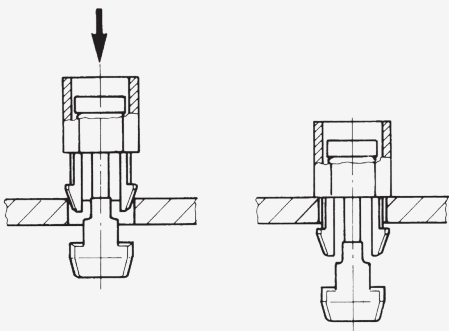
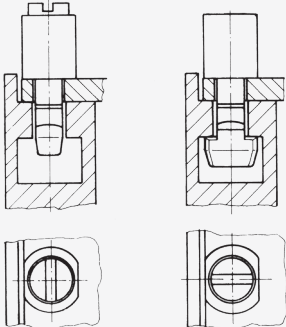
713 S* - * AE



Due to the various front panel thickness, hole shapes and modular bar shapes, it is not possible to offer one standard design. We will individually issue the final part number only after determining the front panel and modular bar dimensions and the colour..

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Slotted Recess Head</p> 		<p>Spring cup: Plastic (POM) stud: Steel / nickel-plated spring: Steel / zinc-plated, CrVI-free, clear chromate Casement fastener: Zinc die casting / zinc-plated, CrVI-free, clear chromate</p>	-25 up to +90	713S* - *AE
<p>Knurled Head</p> 		<p>Spring cup: Plastic (POM) stud: Steel / nickel-plated spring: Steel / zinc-plated, CrVI-free, clear chromate Casement fastener: Zinc die casting / zinc-plated, CrVI-free, clear chromate</p>	-25 up to +90	713S* - *AE

* Design and colour as requested by the customer.

Dimensions	Fastener position
<p>Installing the fastener</p>  <p>1. Insert fastener with spring cup into hole. 2. Push stud until snap-in hooks lock in..</p>	<p>unlocked locked</p>  <p>To lock push stud and turn 90°C.</p> <p>The slot indicates the position of the fastener.</p>

Push Button Fasteners



Features

Max. tensile strength 1.330 N, Working Load 930 N

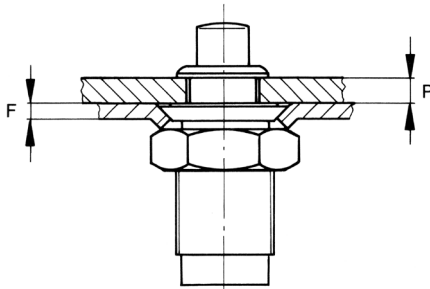
Quick opening and closing by a push of the finger.

Easy installation with single hole mounting.

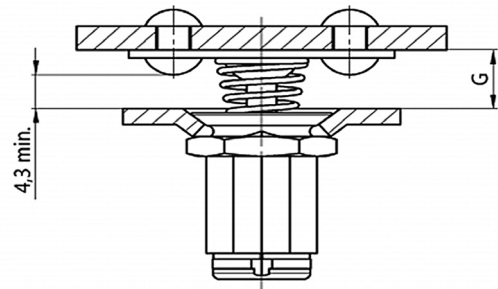
Selection Instructions

1. Select stud assembly, page L-2 or L-3 and receptacle pages L-4.
2. Select retaining washer, page L-2 and retaining hexnut, page L-3, if necessary.
3. Select stud length number from panel thickness P or panel distance G using the table below.

Push Button



Push Panel



Stud Length Table

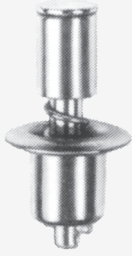
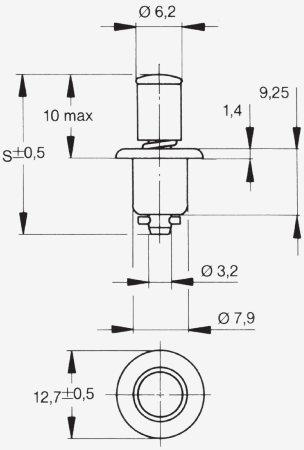
Panel thickness P	Stud Length no.
0,7 - 2,3	1
2,3 - 3,8	3
3,8 - 5,3	5
5,3 - 6,9	7
6,9 - 8,4	9
8,4 - 9,9	11
9,9 - 11,4	13
11,4 - 13,0	15

Other lengths on request.

Stud Length Table

Panel Distance „G“	Stud Length no.
6,1 - 6,9	8
6,9 - 7,6	9
7,6 - 8,4	10
8,4 - 9,1	11
9,1 - 9,9	12
9,9 - 10,7	13
10,7 - 11,4	14
11,4 - 12,2	15

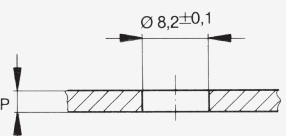
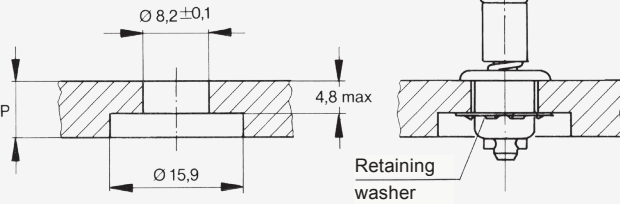
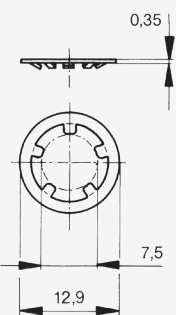
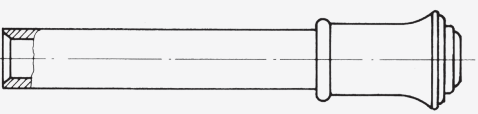
Other lengths on request.

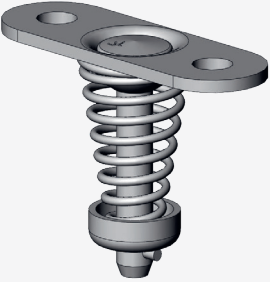
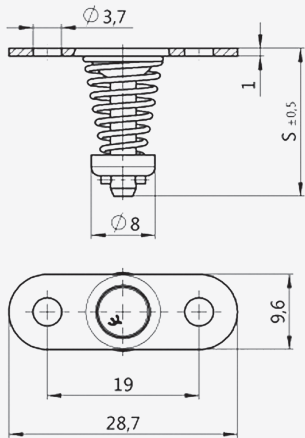
Style	Dimensions	Materials / Finish	°C	Part No.
Push Button 	 <p>S=22,4 + (0,76 x length no.)</p>	Steel / nickel-plated	120	15S1- *-1AD
		Steel / zinc-plated, CrVI-free, clear passivation	120	15S1- *-1AJ

* Length no. from table „Push Button“, see page L-1.

Other lengths and surfaces can be ordered upon request.

Stud Installation Instructions

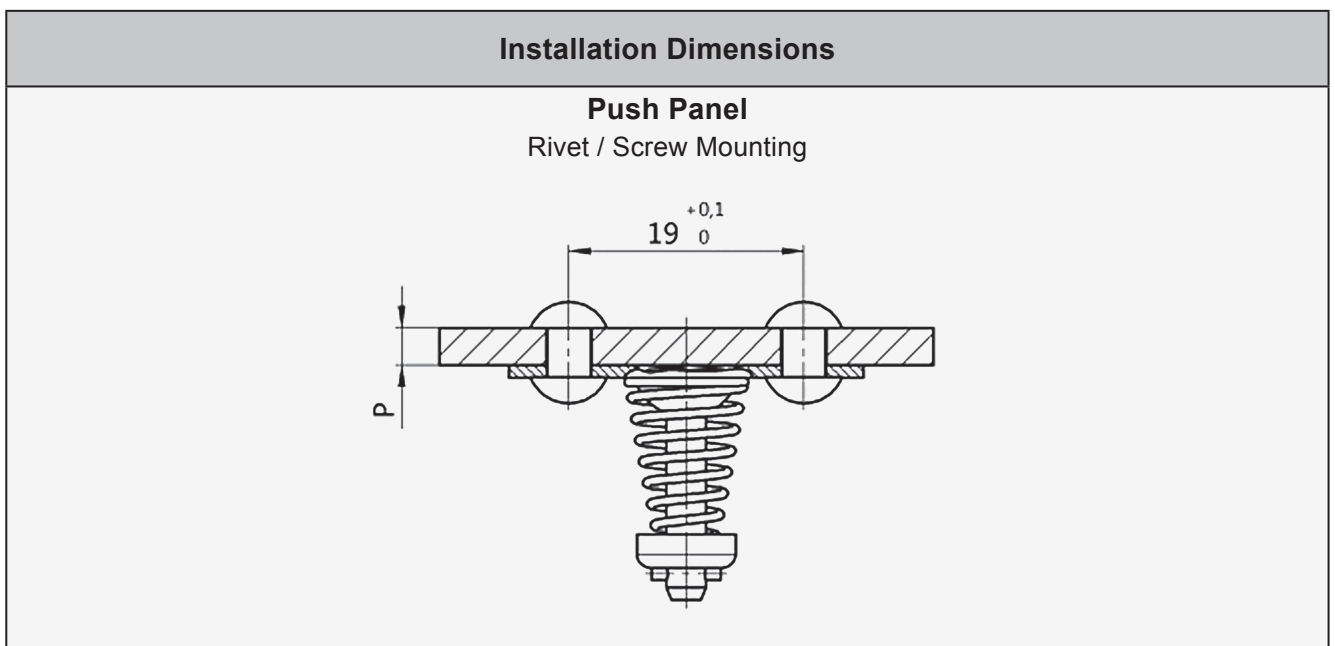
Installation Dimensions	Accessories	Materials / Finish	Part No.
Panel thickness up to 4,8  Panel thickness from 4,8 + up 	Retaining Washer 	Stainless steel	15S11-1CJ
	Installation tool for retaining washer 15S11-1CJ		T107-1


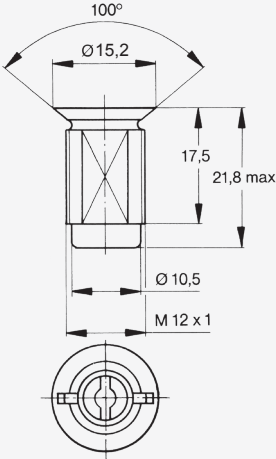
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Push Panel</p> 	 <p>$S = 13,7 + (0,76 \times \text{length no.})$</p>	<p>Steel / zinc-plated CrVI-free, clear passivation</p>	<p>230</p>	<p>V15S20- *-1AGV</p>

* Length no. from Table „Push Panel“, see page L-1.

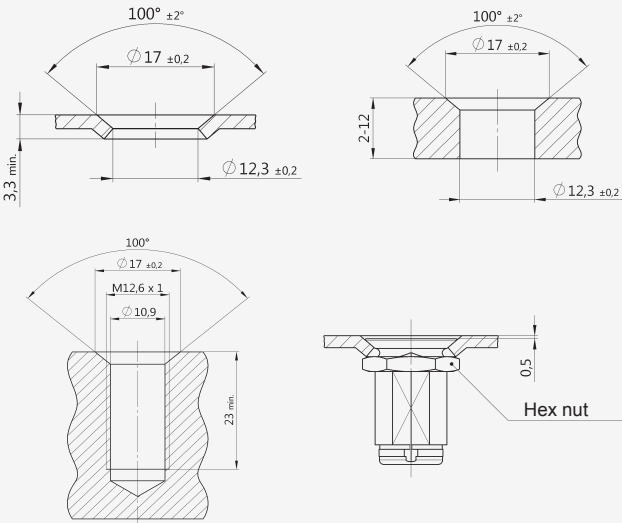
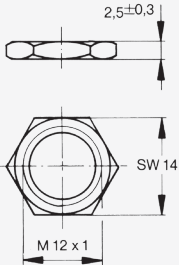
Other lengths and surfaces can be ordered upon request.

Stud Installation Instructions



Style	Dimensions	Materials / Finish	°C	Part No.
		Zinc die casting / zinc-plated CrVI-free, clear passivation	120	V15R13-1-1AB

Receptacle Installation Instructions

Installation Dimensions	Accessories	Materials / Finish	Part No.
	Hex nut  Recommended torque for the hex nut: 2,3 Nm to 3,0 Nm.	Steel / zinc-plated, CrVI-free, clear passivation	V15R14-1-1AB

Push-Turn Fasteners



Features

Max. tensile strength 700 N, working load 600 N.

Easy and economic clip-in installation for stud and receptacle.

Also suitable for automatic installation.

1/4 turn to open - close by a push of the finger.

Due to their small size they are particularly suited for use in electrical engineering and electronics.

Selection Instructions

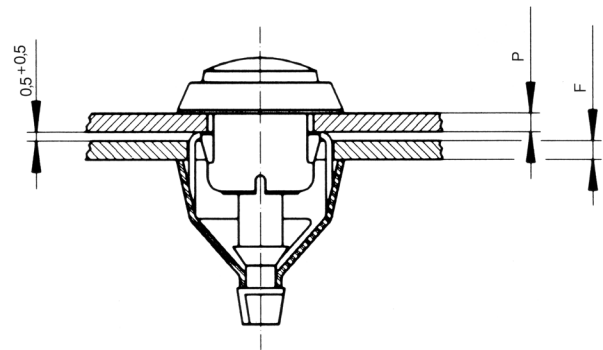
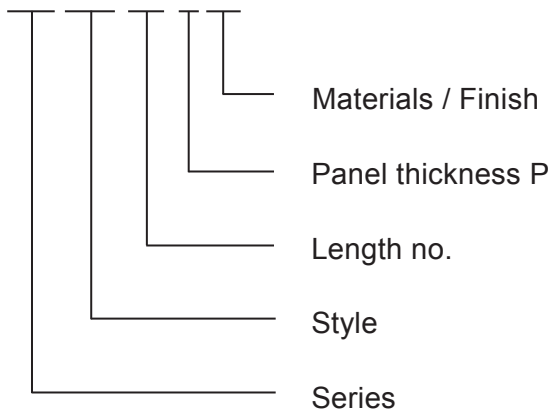
1. Select stud assembly according to panel thickness P, page M-2 and spring clip according to frame thickness F, page M-3.

2. Select stud length number from panel thickness G using the table below, insert into stud part number * (e.g. 715S12-* -1BP).

Part no. example

Stud, slotted recess head


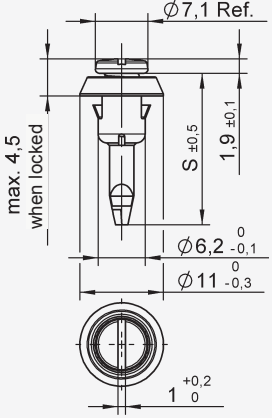

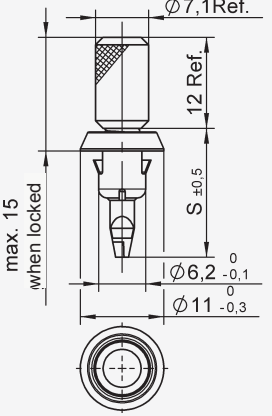
715 S12 -07 -3BP



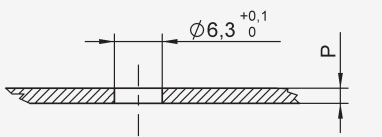
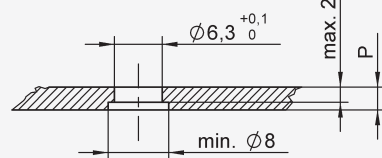
Stud Length Table

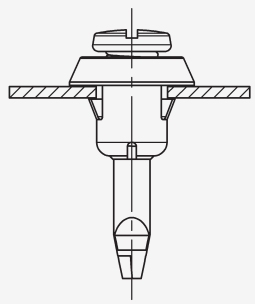
Panel thickness P	Slotted Recess Head Stud Length no.	Knurled Head Stud Length no.	Panel thickness P	Slotted recess Head Stud Length no.	Knurled Head Stud Length no.
0,50 - 1,25	5	5	6,50 - 7,25	13	-
1,25 - 2,00	6	6	7,25 - 8,00	14	-
2,00 - 2,75	7	7	8,00 - 8,75	15	-
2,75 - 3,50	8	8	8,75 - 9,50	16	-
3,50 - 4,25	9	9	9,50 - 10,25	17	-
4,25 - 5,00	10	10	10,25 - 11,00	18	-
5,00 - 5,75	11	-	11,00 - 11,75	19	-
5,75 - 6,50	12	-	11,75 - 12,50	20	-


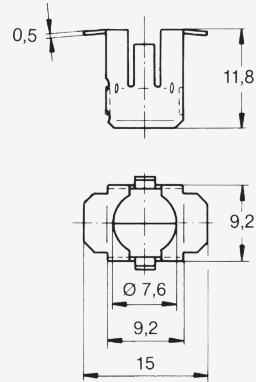
Other lengths on request.

Style	Dimensions	Materials / Finish	Panel Thickness P	°C	Part No.
<p>Slotted Recess Head</p> 	 <p>S = 13,25 + (0,75 x length no.)</p>	Stainless steel spring cup: Plastic (POM) / black	0,5 - 1,0 1,0 - 1,5 1,5 - 2,0	-25 up to +90	715S12- *-1BP 715S12- *-2BP 715S12- *-3BP
<p>Knurled Head</p> 	 <p>S = 13,25 + (0,75 x length no.)</p>	Stainless steel spring cup: Plastic (POM) / black	0,5 - 1,0 1,0 - 1,5 1,5 - 2,0	-25 up to +90	715S13- *-1BP 715S13- *-2BP 715S13- *-3BP

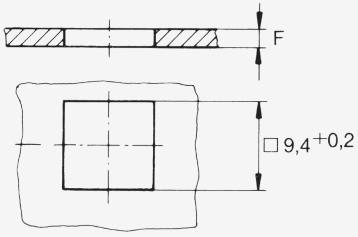
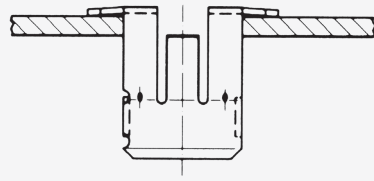
Stud Installation Instructions

Installation Dimensions	
Panel up to 2 mm	
Panel over 2 mm	



Style	Dimensions	Materials / Finish	Frame Thickness F	°C	Part No.
Spring Clip 		Stainless steel	0,5 - 1,0	-25 up to +90	715R02-1BP
			1,0 - 1,5		715R02-2BP
			1,5 - 2,0	(See stud- assem- blyfen)	715R02-3BP
			2,0 - 2,5		715R02-4BP

Installation Instructions

Installation Dimensions	
	

Features

Max. tensile strength 1.400 N, working load 1.200 N.
Easy and economic clip-in installation for stud and receptacle.
Also suitable for automatic installation.
1/4 turn to open – close with a push of the finger.

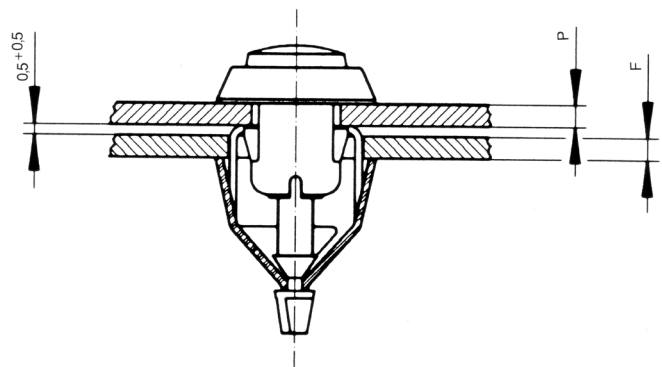
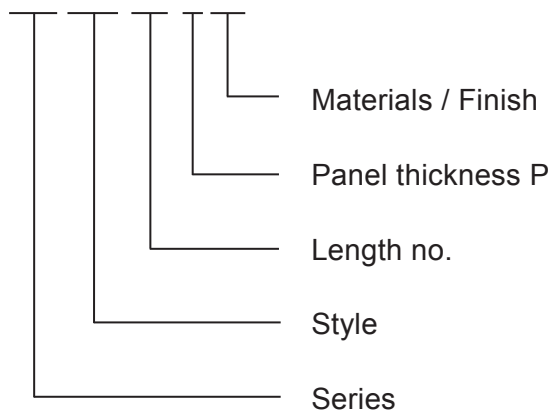
Selection Instructions

1. Select stud assembly according to panel thickness P, page N-2 and spring clip according to frame thickness F, page N-3.
2. Select stud length number from panel thickness P using table below, insert into stud part number* (e.g. 716S12-* -1BP).

Part no. example

Stud, slotted ecess Head


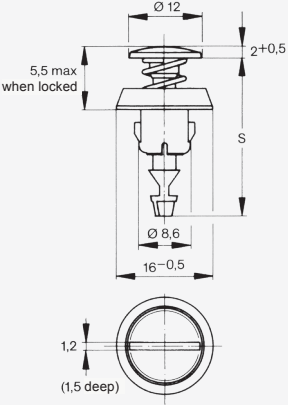

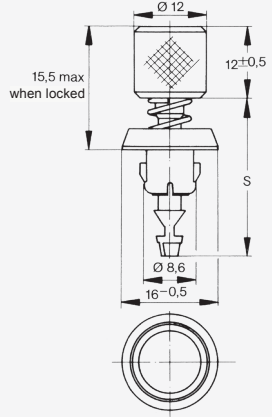
716 S12 -03 -2BP



Stud Length Table

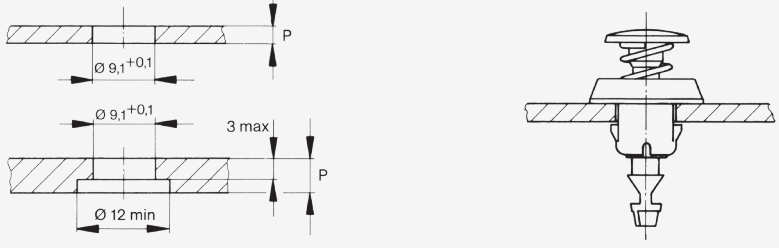
Panel thickness P	Stud Length no.
1,0 - 2,0	02
2,0 - 3,0	03
3,0 - 4,0	04
4,0 - 5,0	05
5,0 - 6,0	06
6,0 - 7,0	07
7,0 - 8,0	08
8,0 - 9,0	09
9,0 - 10,0	10

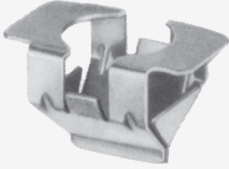
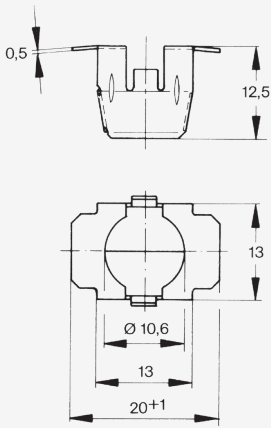
Other lengths on request.

Style	Dimensions	Materials / Finish	Panel Thickness P	°C	Part No.
Slotted Recess Head 	 <p>S = 18,5 + length no.</p>	Stainless steel Spring cup: Plastic (POM) / black	0,5 - 1,0	-25 up to +90	716S12- *-1BP
			1,0 - 1,5		716S12- *-2BP
			1,5 - 2,0		716S12- *-3BP
			2,0 - 2,5		716S12- *-4BP
			2,5 - 3,0		716S12- *-5BP
Knurled Head 	 <p>S = 18,5 + length no.</p>	Stainless steel Spring cup: Plastic (POM) / black	0,5 - 1,0	-25 up to +90	716S13- *-1BP
			1,0 - 1,5		716S13- *-2BP
			1,5 - 2,0		716S13- *-3BP
			2,0 - 2,5		716S13- *-4BP
			2,5 - 3,0		716S13- *-5BP

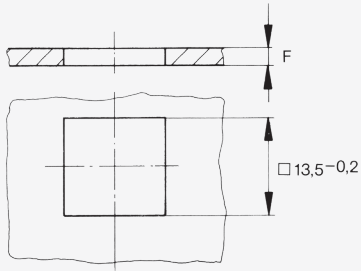
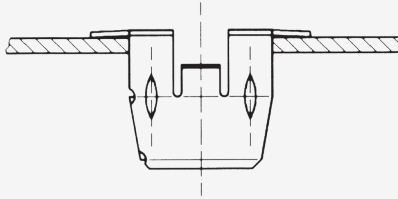
* Length no. from Table, see page N-1.

Stud Installation Instructions

Installation Dimensions	
Panel up to 3 mm	
Panel plate over 3 mm	

Style	Dimensions	Materials / Finish	Frame Thickness F	°C	Part No.
Spring Clip 		Stainless steel	1,0 - 1,5	-25 up to +90	720R01-1B
			1,5 - 2,0	(See stud- assem- bly)	720R01-2B
			2,0 - 2,5		720R01-3B
			2,5 - 3,0		720R01-4B

Installation Instructions

Installation Dimensions	
	

Features

- Max. tensile strength 3.000 N, working load 2.500 N.
- Robust design - high strength.
- Stud assembly with protective, compensating and retaining washers.
- Rivet or screw mounting spring receptacle.
- 1/4 turn to open - close by a push of the finger.

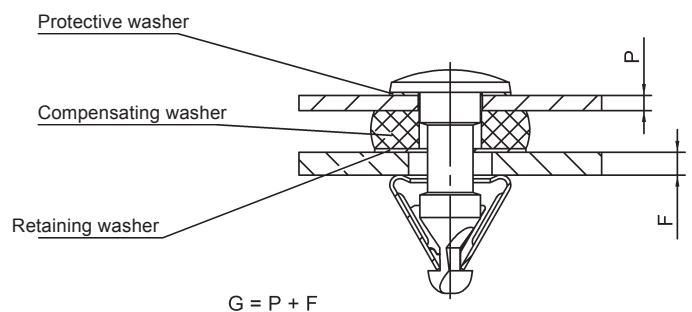
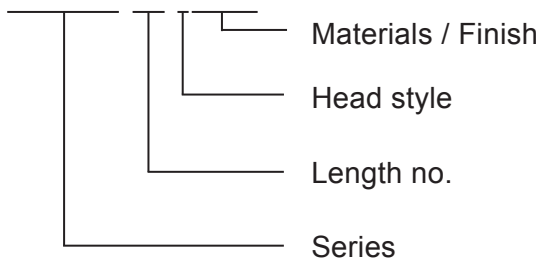
Selection Instructions

1. Select stud assembly and spring clip, page O-2 and O-3.
2. Select compensating and retaining washers, page O-2.
3. Select stud length number from grip range G using the table below, insert into stud part number * (e.g. 717S01-* -1AGV)

Part no. example

Spring clip, rivet / screw mounting


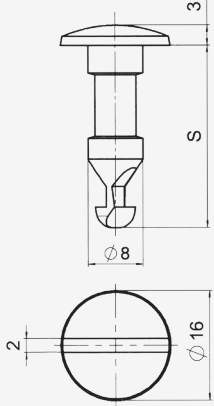

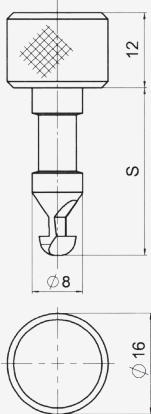
717 S01 -2 -1AGV



Stud Length Table

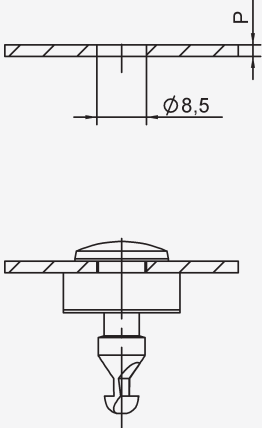
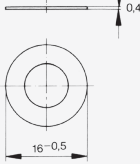
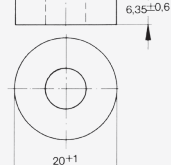

Total Thickness G	Stud Length no.
1,0 - 3,0	1
3,0 - 5,0	2
5,0 - 7,0	3
7,0 - 9,0	4
9,0 - 11,0	5
11,0 - 13,0	6

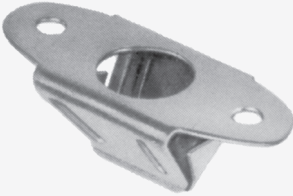
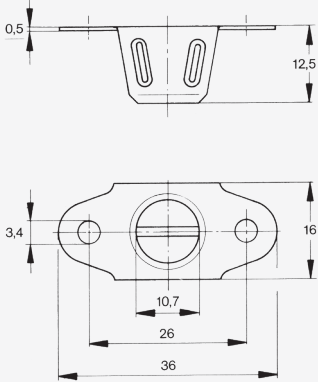
Other lengths on request.

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Slotted Recess Head</p> 	 <p>S = 20,5 + (2 x length no.)</p>	Steel / zinc-plated, CrVI-free, clear passivation	-40 up to +100	717S01- *-1AGV
<p>Knurled Head</p> 	 <p>S = 20,5 + (2 x length no.)</p>	Steel / zinc-plated, CrVI-free, clear passivation	-40 up to +100	717S01- *-2AGV

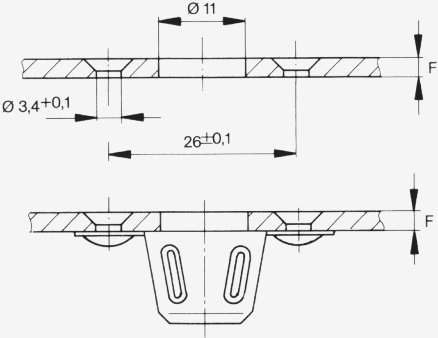
* Length no. from Table, see page O-1.

Stud Installation Instructions

Style	Dimensions	Materials / Finish	°C	Part No.
	<p>protective washer</p> 	Plastic (PA6) / natural colour	-40 up to +100	717W02-1K
	<p>compensating washer</p> 	Plastic (PU-foam) / anthracite	-40 up to +100	717W03-1K
	<p>Retaining Washer</p> 	Plastic (PA6) / natural colour	-40 up to +100	717W01-1K

Style	Dimensions	Materials / Finish	°C	Part No.
Rivet / Screw Mounting 		Steel / zinc flake coated	-40 up to 100	717R01-1AK7

Installation Instructions

Installation Dimensions


Features

- Max. tensile strength 1.200 N, working load 800 N.
- 1/4 turn to open, close with a push of the finger
- Wide grip range
- Tool or hand operated
- Fast installation of snap-in spring receptacle.
- No tools required for the installation of the stud and washer.
- Tool operated stud has combination recess.

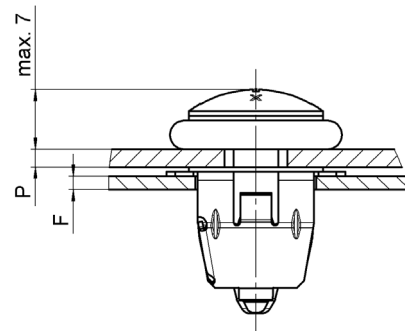
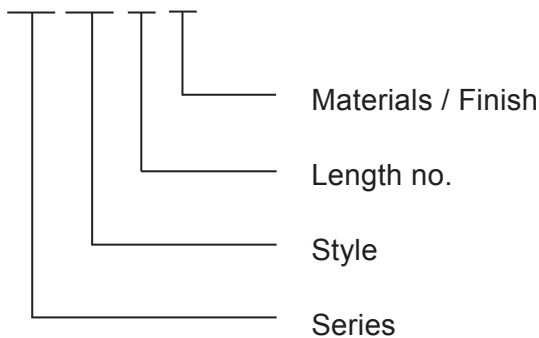
Selection Instructions

- Select stud assembly according to panel thickness P, page O-2 and spring clip according to frame thickness F, page O-4.
- Select Compensating washer and Retaining washer, page O-3.
- Select stud length number from panel thickness P using the formula and table below (e.g. 720S01-*B).


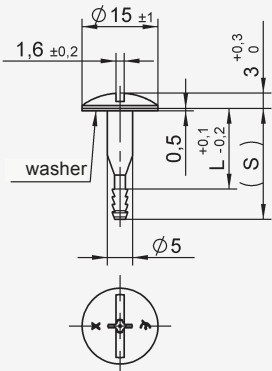

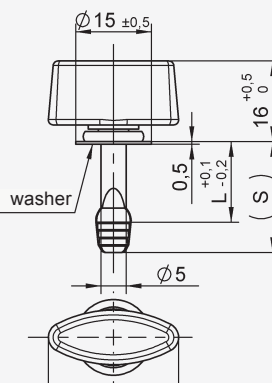
Part no. example

Stud Assembly, combi-slot

720 S01 -1 B

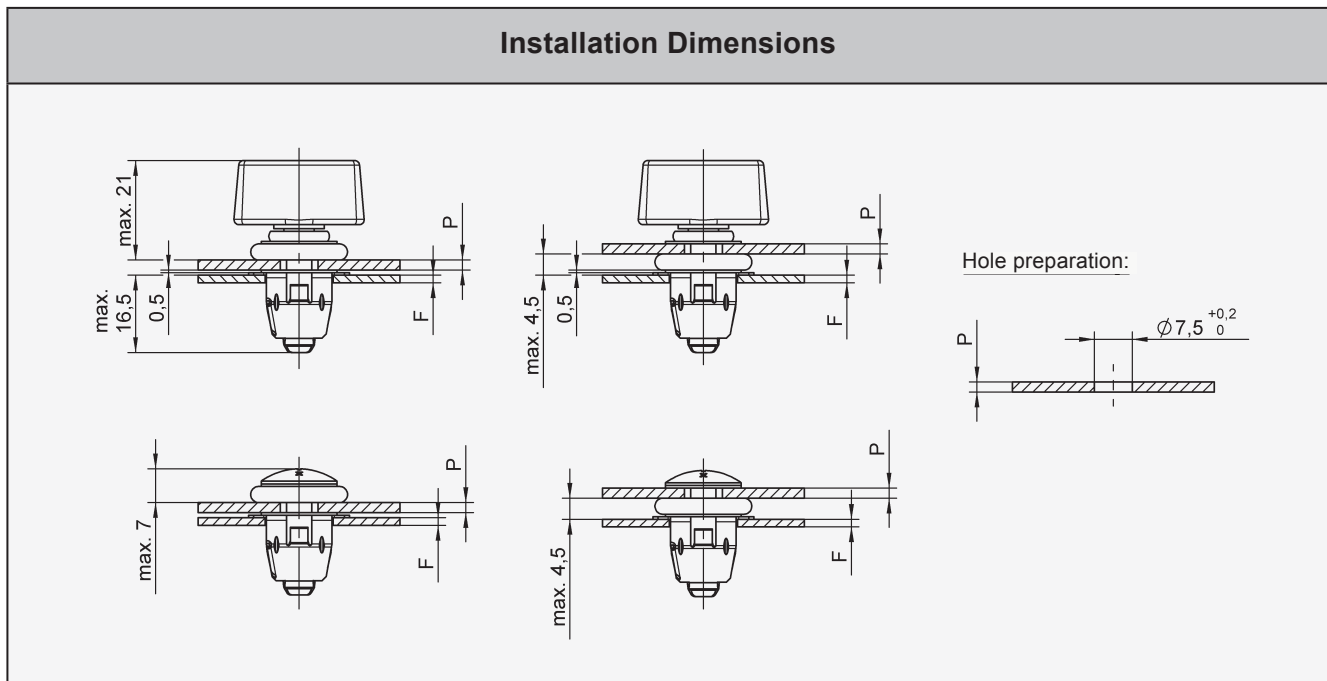


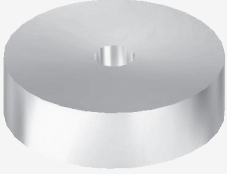
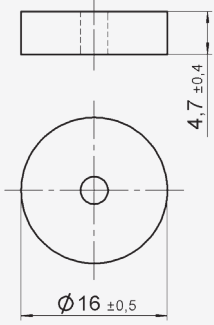
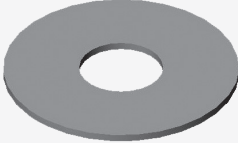
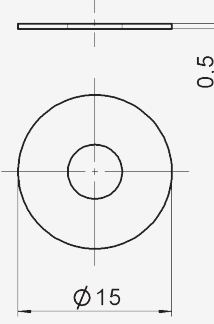
Panel thickness P	Slot-Cross Recess Length No.	Wing Head Stud Length No	Dimension L +0,1/-0,2	Dimension (S)
1,00 - 4,00	1	1	16	21
4,00 - 7,00	2	2	19	24
7,00 - 10,00	3	3	22	27

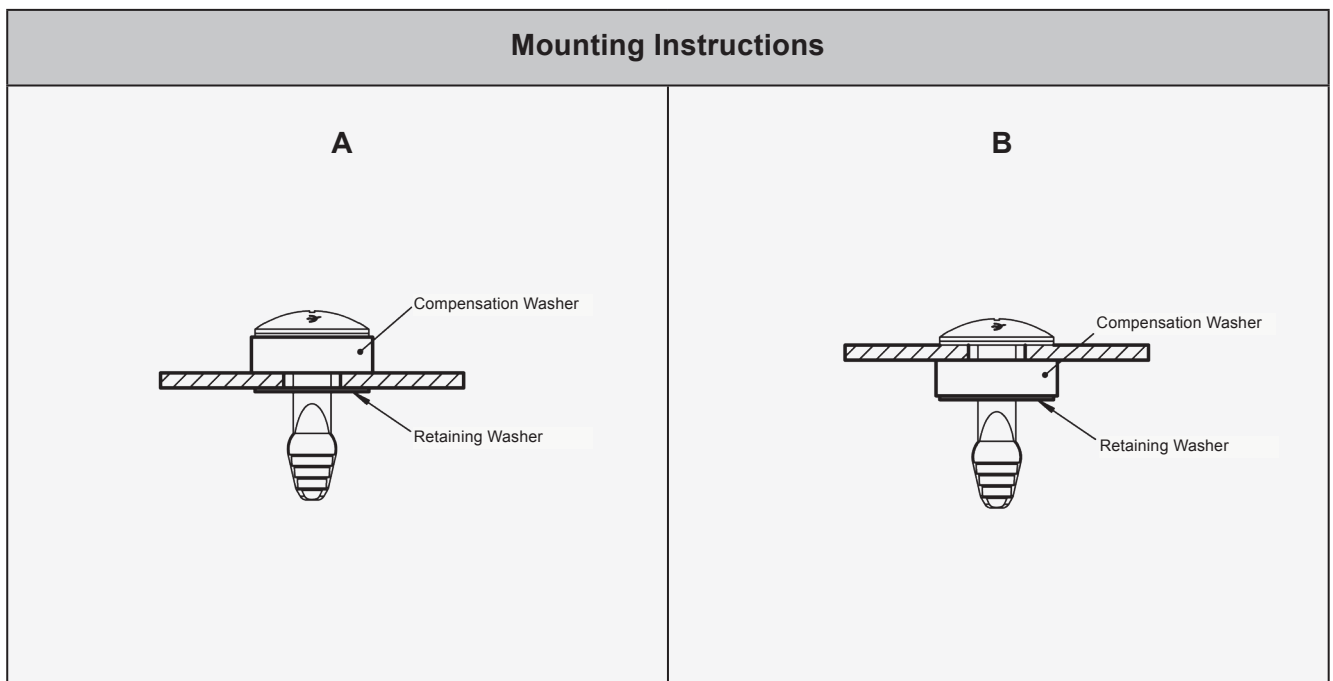
Style	Dimensions	Materials / Finish	°C	Part No.
Slot-Cross Recess Head 	 <p>L + (S) see table page P-1</p>	Stainless steel Washer: PA6 natural	-20 up to +70	720S01-*B
Fixed Wing Handle Plastic 	 <p>L + (S) see table page P-1</p>	Stainless steel Knob: PA6 black Washer: PA6 natural	-20 up to +70	720S02-*B

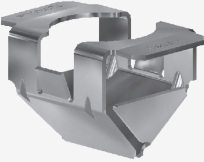
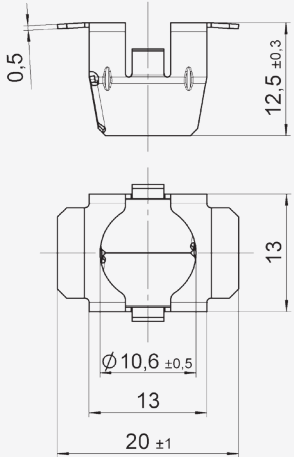
* Length no. from Table, see page P-1.

Stud Installation Instructions

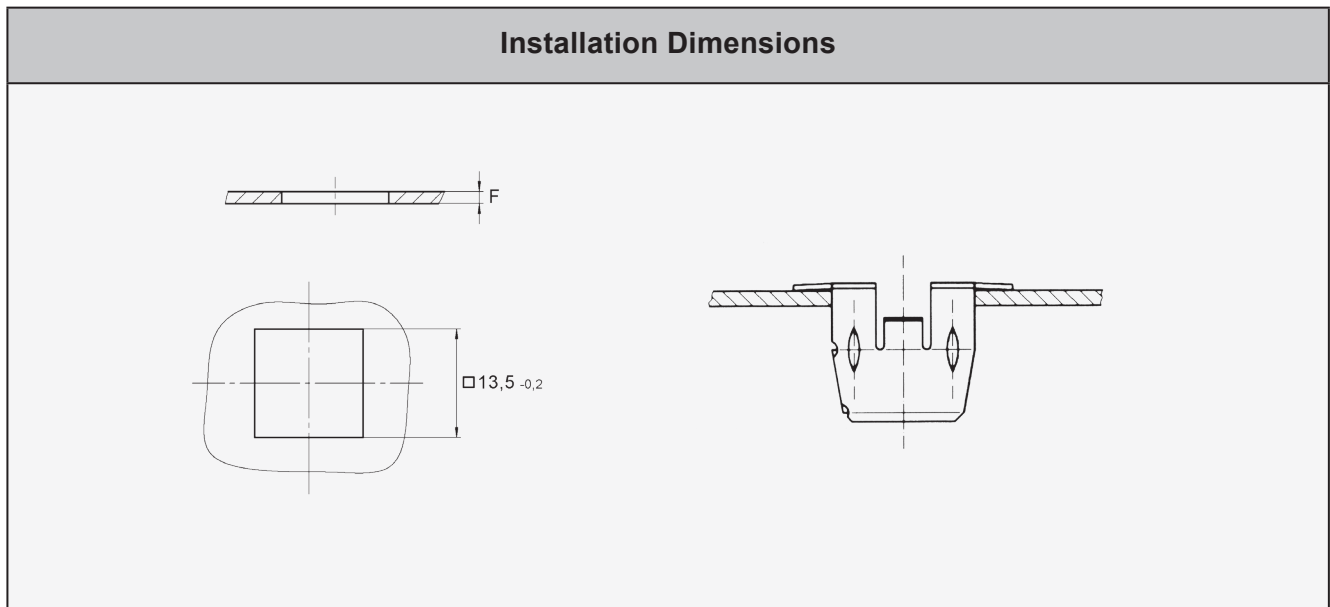


Style	Dimensions	Materials / Finish	°C	Part No.
<p>Compensating Washer</p> 		PU - Elastomer yellow	-20 up to +70	720W01-2K
<p>Retaining Washer</p> 		Polyamid natural	-20 up to +70	50E15-1K



Style	Dimensions	Materials / Finish	Frame Thickness F	°C	Part No.
Spring Clip 		Stainless steel	1,0 - 1,5	-40 up to +100	720R01-1B
			1,5 - 2,0		720R01-2B
			2,0 - 2,5		720R01-3B
			2,5 - 3,0		720R01-4B

Receptacle-Installation Instructions



Part No.	Pages	Part No.	Pages	Part No.	Pages
15/32-32NS-2B	C3,F12	50E70-*AGV	D2	716S12- *-1BP	N2
15S1- *-1AD	L2	50E71-*AGV	E2	716S12- *-2BP	N2
15S1- *-1AJ	L2	50E8-*AGV	E2	716S12- *-3BP	N2
15S11-1CJ	L2	50E8-*S	E2	716S12- *-4BP	N2
212-12S	F9	50E8-*W0AGV	E3	716S12- *-5BP	N2
214-16S	G10	50E8-*WAGV	E3	716S13- *-1BP	N2
244-16S	G11	50E8-*WS	E3	716S13- *-2BP	N2
244-16SC	G11	50E8-W0S	E3	716S13- *-3BP	N2
2600-*S	F3	50E80-*AGV	D4	716S13- *-4BP	N2
2600-*SW	F3	50E80-*CP	D4	716S13- *-5BP	N2
2600-SW	C2,F7,F8	50E81-*AGV	E4	717R01-1AK7	O3
26R1-1	F10	50E81-*CP	E4	717S01- *-1AGV	O2
26R16-1FGV	F9	50E82-*AGV	D4	717S01- *-2AGV	O2
26R18-1-1AA	F9	50E82-*CP	D4	717W01-1K	O2
26S34-*	F5	50E83-*AGV	E4	717W02-1K	O2
26S38-*	F3	50E83-*CP	E4	717W03-1K	O2
26S39-*	F3	50E90-*AGV	D2	720R01-1B	N3,P4
26S42-*	F3	50E91-*AGV	E2	720R01-2B	N3,P4
26S51-*	F3	50S12-0-1AA	D5	720R01-3B	N3,P4
2700-*S	F6	50S12-1-1AA	D5	720R01-4B	N3,P4
312-12S	F10	50S12-2-1AA	D5	720S01-*B	P2
312-12WS	F10	50S12-3-1AA	D5	720S02-*B	P2
4002-GS	G8	50S12-4-1AA	D5	720W01-2K	P3
4002-HS	G8	50T01-1DR	D6,E5	991R2-1AGV	H5
4002-NS	G8	50W17-1BP	D6,E5	991R2-1BP	H5
4002-OS	G8	50W204-01K	D5,E5,G7	991R2-2AR	H5
4002-SW-SS	D5,E5,G7	5R2-3	B4	991R2-3AZ	H5
4002T02-1BP	G7	5S3-2	B3	991R2-3AGV	H5
4P3-1	F8,G7	5S15-*	B2	991R2-3BP	H5
50E15-1K	O3	5S27-*	B2	991R6-1AK7	H5
50E18-*AGV	D4	5S72-5-1AA	B3	991S01- *-1AGV	H2
50E19-*AGV	E4	5S72-9-1AA	B3	991S01- *-1BP	H2
50E20-1AK7	D6	713S*- *AE	J2	991S02- *-1AGV	H2
50E20-2AK7	D6	715R02-1BP	M3	991S02-*-1BP	H2
50E21-*AGV	D2	715R02-2BP	M3	991S03- *-1AGV	H2
50E21-*S	D2	715R02-3BP	M3	991S03-*-1BP	H2
50E21-*W0AGV	D3	715R02-4BP	M3	991S04-*-1AGV	H2
50E21-*WAGV	D3	715S12- *-1BP	M2	991S500-*-1AGV	H3
50E21-*WS	D3	715S12- *-2BP	M2	991S17-1K	H4
50E2-3BP	D5,E5	715S12- *-3BP	M2	991S2991-*AGV	H3
50E60-*AGV	D3	715S13- *-1BP	M2	991S30-*AGV	H3
50E61-*AGV	E3	715S13- *-2BP	M2	991W02-1BP	H4
50E7-*AGV	E4	715S13-*-3BP	M2	991W03-1BP	H4

Part No.	Pages
991W04-1BP	H4
991W120-08K	H5
991W120-10K	H5
991W120-15K	H5
991W120-20K	H5
99E10-01	C3,F11
99N10-01A1	C3,F12
99R10-01A1	C3,F11
991R2-2AR	H5
99W10-01A1	C2
AN6227-B3	F7
AN6227-B6	F7
D214-16FGV	G10
D214-16NFGV	G10
D244-16-FGV	G11
D244-16C-FGV	G11
D4002-*AGV	G4
D4002-*BP	G4
D4002-*WAGV	G4
D4002-*WBP	G4
D4002-N-AGV	G8
D4002-P-AGV	G8
D4002-P-AGV	G8
D4002-P-BP	G8
D4002-R-AGV	G8
D4002-R-BP	G8
D4002-S-AGV	G8
D4002-S-BP	G8
D4002-T-AGV	G8
D4002-T-BP	G8
D4002-G-AGV	G8
D4002-H-AGV	G8
D4002I-*AGV	G6
D40E22-*AGV	G5
D40E28-*AGV	G5
D40E28-*BP	G5
D40G11-3K	G6
D40R12-1FGV	G10
D40S39-1K	G6
D40S47-*AGV	G5
D40S5-*AGV	G4
D40S5I-*AGV	G6
D40S5-*BP	G4

Part No.	Pages
D40W02-1DR	G12
D40W02-2DR	G12
R4G-3	G9
T107-1	L2
T26	G9
T98-1	C2,F8
V15R13-1-1AB	L4
V15R14-1-1AB	L4
V15S20-* -1AGV	L3
V212-12-1FGV	F9
V212-12-2FGV	F9
V212-12N-1FGV	F9
V244-16T1	G12
V244-16T1C	G12
V244-16TS1	G12
V244-16TS1C	G12
V2600-LW-7	C2,F7,F8
V26R6-1AGV	F9
V26S01-*AGV	F3
V26S02-*AGV	F3
V26S04-*AGV	F3
V26S06-* -1AGV	F4
V26S07-* -1AGV	F4
V26S08-* -1AGV	F4
V26S22-*AGV	F5
V27S01-*AGV	F6
V27S02-*AGV	F6
V27W01-1AN	F8
V312-12AGV	F10
V34S01-* -1ASNV	I1
V34S02-1-ASNV	I2
V34R01-2-1BSNV	I3
V40G26-1BP	G9
V40G26-1N	G9
V50R1-1-1AGV	E6, G11
V50R1-1-1BP	E6, G11
V50R1-1-2AR	E6, G11
V50R1-1-2AZ	E6, G11
V50R4-2-1AK7	D6
V5R2-1AK7	B4
V5S21-*AGV	B2
V5W3-1AG	B3
V5S5-*AGV	B2

Part No.	Pages
V936S05-3-1AA	J1
V936S05-4-1AA	J1
V936S11-3-1AA	J1
V936S11-4-1AA	J1
V99S10-*AG	C2
VT135-1-1B	I2



	Page
General Information	A-2
Important Information	A-3
Overview on latches	A-4

Tension Latches

V934L Series	B-1 - B-2
V95L Series	C-1 - C-2
V96L Series	D-1 - D-2
1429L Series	E-1 - E-5
V951L Series	F-1 - F-8
V917L & 1449L Series	G-1 - G-5
V18L Series	H-1 - H-4
V46L Series	I-1 - I-2

Index



The Camloc brand was established in 1937. Since that time our fastening systems have been successfully integrated into numerous applications within many different industries.

Our customers benefit from our more than 80 years of fastening experience.

We provide local support for innovative, high quality fastening systems supplied globally to the strictest environmental and working conditions.



IATF 16949:2016



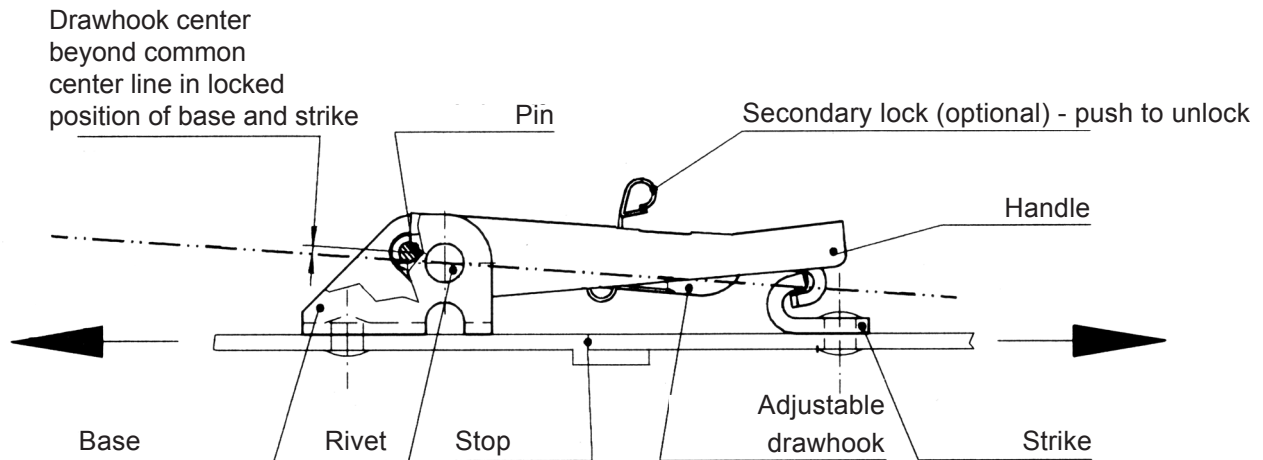
ISO 14001:2015

Your Howmet Fastening Systems team

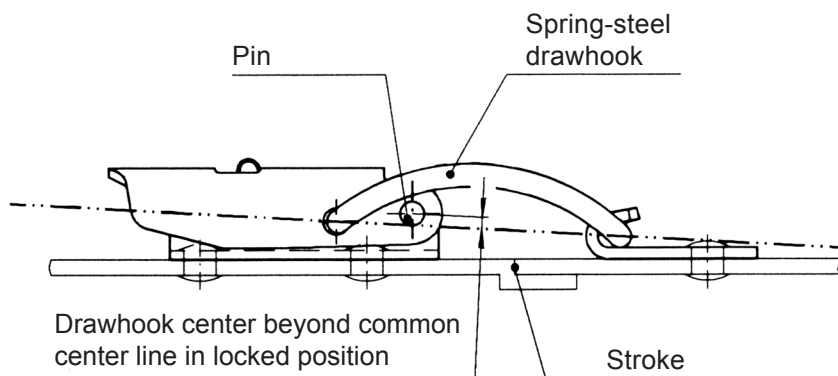
Disclaimer:

Parts listed are subject to technical changes. All dimensions in mm. All information is correct to the best of our knowledge at the time of printing. No liability for disadvantages caused by printing errors or false application.

How It Operates



- Tension latches provide a quick release yet secure locking mechanism. They can take high tensile loads. Shear forces must be kept off the tension latch by the assembly design.
- Through lever action, the panels connected with the tension latch and the strike are pulled together. If necessary, a stop must be provided.
- Positive lock is achieved when drawhook center is beyond the common center line of the base and strike.



- For unlocking, the secondary lock, if fitted, is operated and the handle lifted. For locking, the secondary lock automatically engages.
- Most of the tension latches can be adjusted by a threaded drawhook. For non-threaded drawhook series the spring steel or wire drawhook gives tolerance compensation and joint tension.

Click here: [Camloc Draw Latch](#) (Youtubelink)



Overview Latches

Series	Max. tensile strength	Working load	without secondary lock	with secondary lock	with hasp	to rivet on or to screw on	to weld on	adjustable drawhook	carbon steel with surface treatment	Stainless steel	Pages
V934L	550 N	310 N	X	X		X			X	X	B1-B2
V95L	445 N	220 N	X			X			X	X	C1-C2
V96L	1.000 N	650 N	X			X			X		D1-D2
1429L	1.500 N	1.000 N	X	X		X			X	X	E1-E5
V951L	2.300 N	1.550 N	X	X	X	X	X	X	X	X	F1-F6
V917L	3.600 N	2.700 N	X	X	X	X	X	X	X	X	G1-G5
V18L	6.000 N	4.200 N	X	X	X	X	X	X	X	X	H1-H4
V46L	4.400 N	3.000 N	X			X	X	X	X		I1

* Limitations within series possible. Please see (foot) notes at catalogue pages.

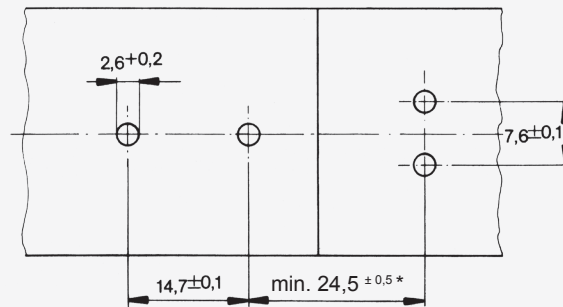
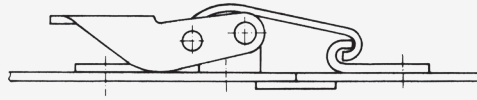
Max. tensile strength 550 N
Working load 310 N

Style	Dimensions	Materials / Finish	Part No.
		Stainless steel Steel / zinc-plated, CrVI-free, clear passivation	V934L01-1-1BP V934L01-1-1AGV
With secondary lock 		Stainless steel Steel / zinc-plated, CrVI-free, clear passivation	V934L01-1X1BP V934L01-1X1AGV

Strikes

Style	Dimensions	Materials / Finish	D	Part No.
		Stainless steel ¹⁾ Steel / zinc-plated, CrVI-free, clear passivation	2,6	V934L02-1BP V934L02-1AGV


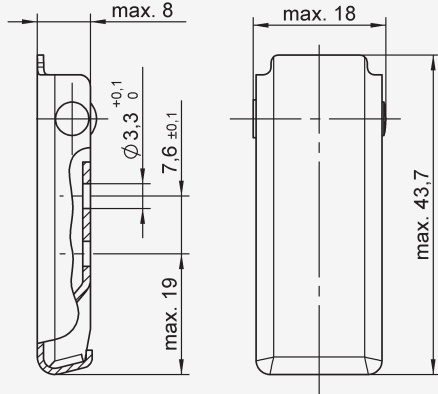

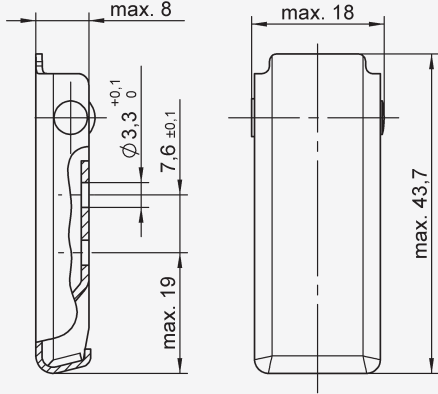
Dimensions




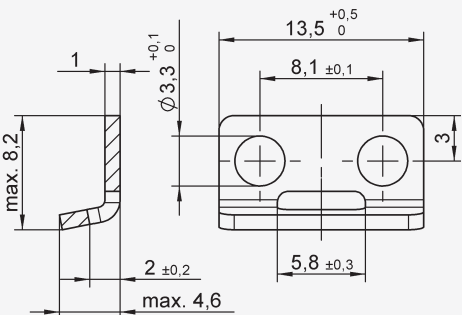
*please take into account the application preload and tolerance requirements



Max. tensile strength 445 N, working load 220 N
 Handle conceals all interior parts and strike
 Self-compensating spring steel drawhook
 Low profile

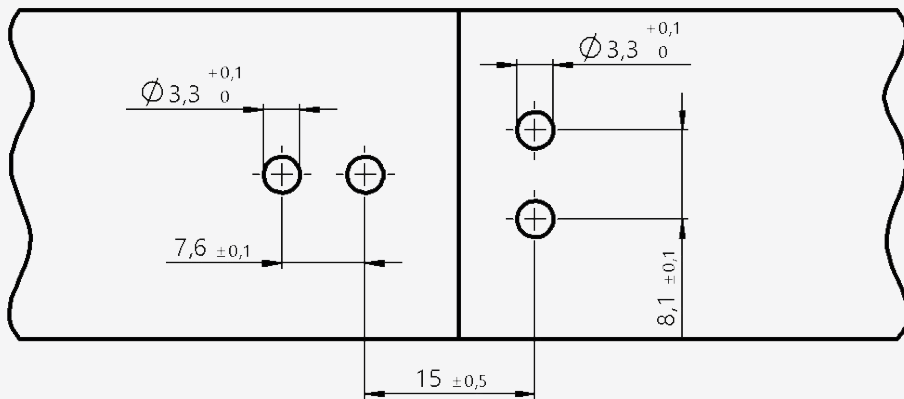
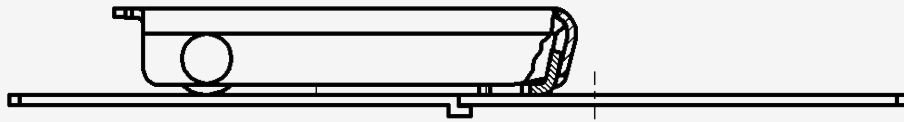
Style	Dimensions	Materials / Finish	Part No.
<p>Self-compensating spring steel drawhook</p> 		Stainless steel	V95L07-1-1BC
<p>Self-compensating spring steel drawhook</p> 		Steel / chrome-plated Interior parts: Steel / zinc-plated, CrVI-free, clear passivation	V95L15-1BD

Strike

Style	Dimensions	Materials / Finish	Part No.
		Stainless steel	V95H07-1-1BP


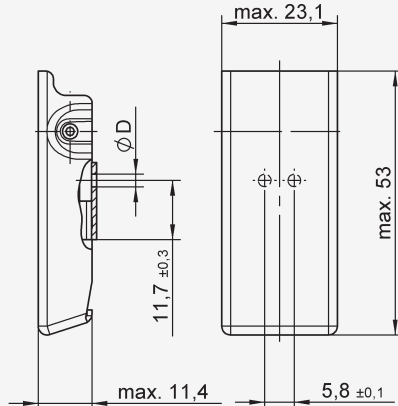
Dimensions

Spring steel drawhook tension latch / strike

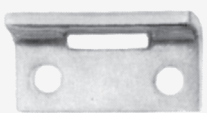
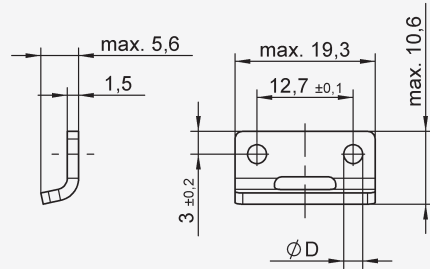




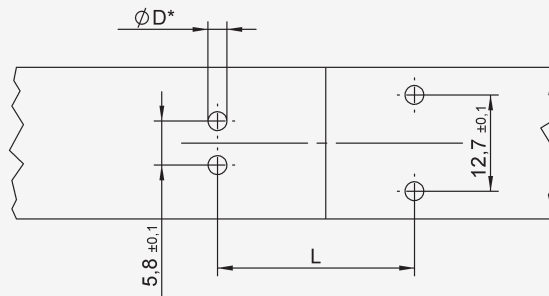
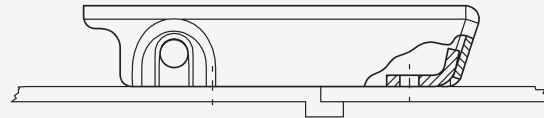
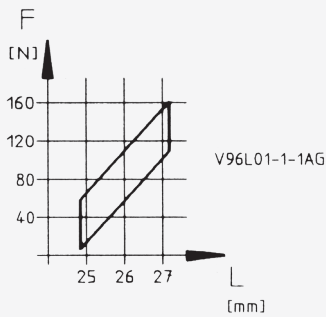
Max. tensile strength 1.000 N, working load 650 N.
Handle conceals all interior parts and strike
Self-compensating spring steel drawhook
Low profile

Style	Dimensions	Materials / Finish	D	Part No.
Self-compensating spring steel drawhook 		Steel / zinc-plated, CrVI-free, clear passivation	2,5	V96L01-1-1A0
			3,2	V96L01-1-2A0
		Steel / chrome-plated Interior parts: Steel / zinc-plated, CrVI-free, clear passivation	2,5	V96L01-1-1AG
			3,2	V96L01-1-2AG

Strike


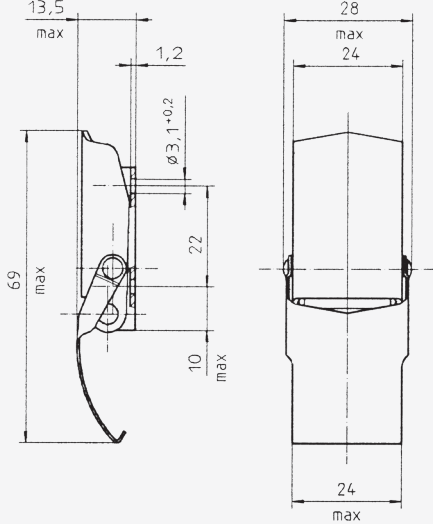

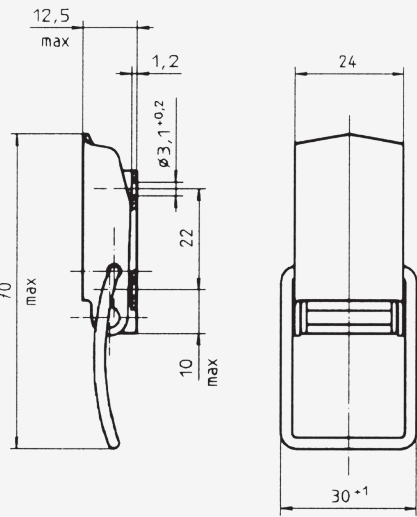
Style	Dimensions	Materials / Finish	D	Part No.
		Steel / zinc-plated, CrVI-free, clear passivation	2,5	V96H01-1-1A0
			3,2	V96H01-1-2A0

Dimensions



* Ø D see selected version.


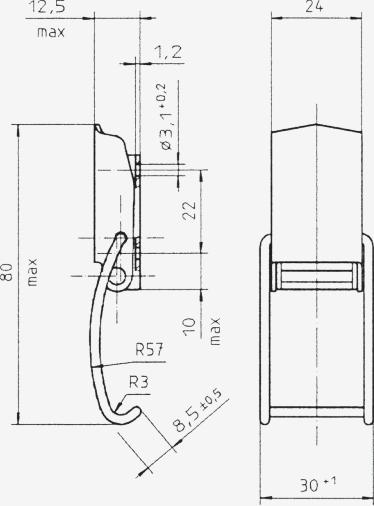

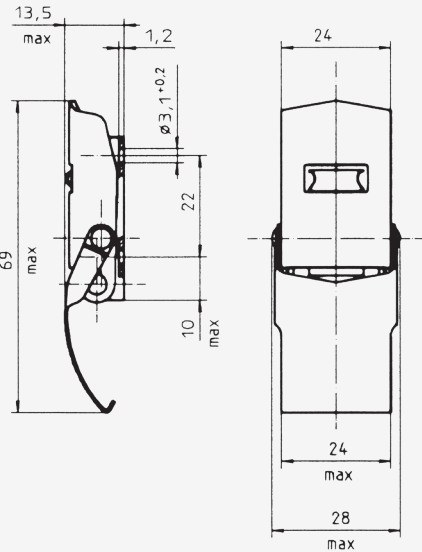
Max. tensile strength 1.500 N, working load up to 1.000 N, see footnotes.
Available with secondary lock
Three different drawhook types available

Style	Dimensions	Materials / Finish	D	Part No.
Spring steel drawhook 		Steel / zinc-plated, CrVI-free, clear passivation ¹⁾	3,1	1429L02-1-1AG
		Stainless steel ²⁾	3,1	1429L02-1-1BP
Wire drawhook 		Steel / zinc-plated, CrVI-free, clear passivation ¹⁾	3,1	1429L02-2-1AG
		Stainless steel ³⁾	3,1	1429L02-2-1BP

¹⁾ Max. tensile strength: 450 N with 1429L8-1AG strike, working load 330 N.

²⁾ Max. tensile strength: 300 N with 1429L8-1BP strike, working load 210 N.


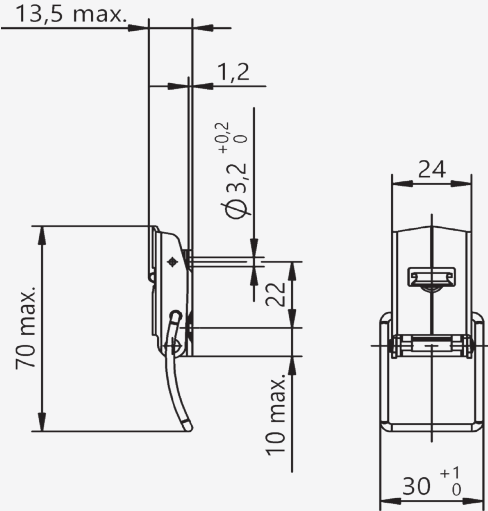
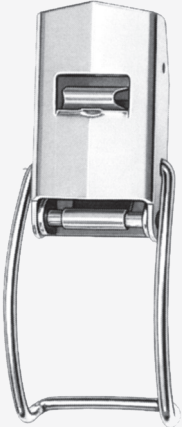
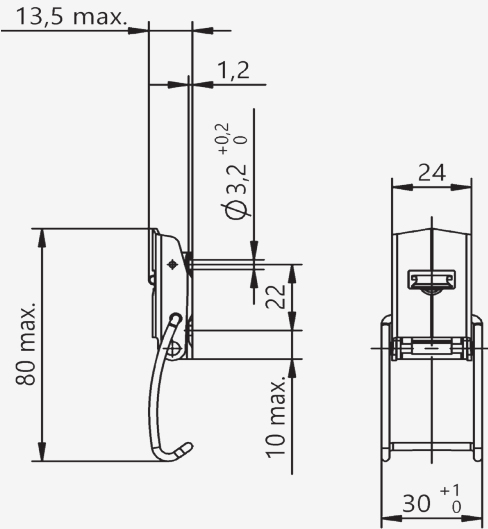
³⁾ Max. tensile strength: 1.500 N with 1429L9-1AG / -1BP strike, working load 1.000 N.

Style	Dimensions	Materials / Finish	D	Part No.
Hooked wire drawhook 		Steel / zinc-plated, CrVI-free, clear passivation ¹⁾	3,1	1429L02-3-1AG
		Stainless steel ¹⁾	3,1	1429L02-3-1BP
Spring steel drawhook and secondary lock 		Steel / zinc-plated, CrVI-free, clear passivation ²⁾	3,1	1429L02-1X1AG
		Stainless steel ³⁾	3,1	1429L02-1X1BP

¹⁾ Max. tensile strength: 1.100 N with 1429L9-1AG / -1BP strike, working load 800 N.
or in conjunction with mating component profile.


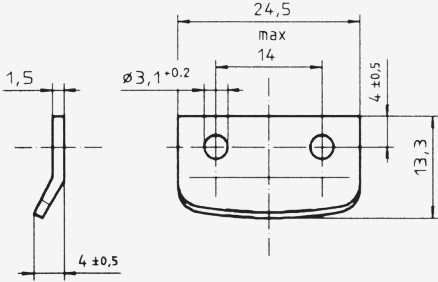

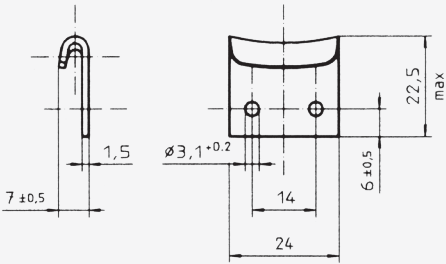
²⁾ Max. tensile strength: 450 N with 1429L8-1AG strike, working load 330 N.

³⁾ Max. tensile strength: 300 N with 1429L8-1BP strike, working load 210 N.

Style	Dimensions	Materials / Finish	D	Part No.
Wire drawhook and secondary lock 		Steel / zinc-plated, CrVI-free, clear passivation ¹⁾	3,1	1429L02-2X1AG
		Stainless steel ¹⁾	3,1	1429L02-2X1BP
Hooked wire drawhook and secondary lock 		Steel / zinc-plated, CrVI-free, clear passivation ²⁾	3,1	1429L02-3X1AG
		Stainless steel ²⁾	3,1	1429L02-3X1BP

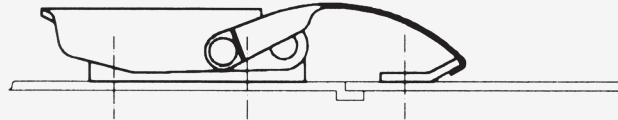
¹⁾ Max. tensile strength: max. 1.500 N with 1429L9-1AG / -1BP strike, working load 1.000 N.

²⁾ Max. tensile strength: max. 1.100 N with 1429L9-1AG / -BP strike, working load 800 N.
or in conjunction with mating component profile.

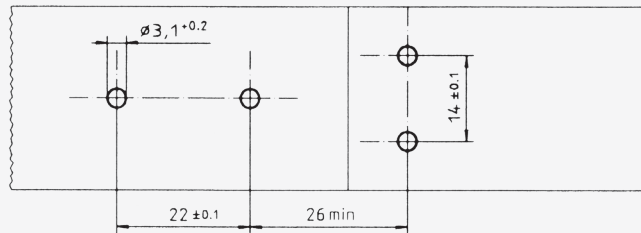
Style	Dimensions	Materials / Finish	D	Part No.
<p>For use with spring steel drawhook</p> 		<p>Steel / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel</p>	<p>3,1</p> <p>3,1</p>	<p>1429L8-1AG</p> <p>1429L8-1BP</p>
<p>For use with wire drawhook</p> 		<p>Steel / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel</p>	<p>3,1</p> <p>3,1</p>	<p>1429L9-1AG</p> <p>1429L9-1BP</p>

Dimensions

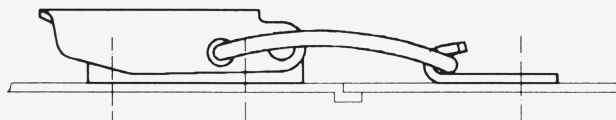
Spring steel drawhook tension latch / strike



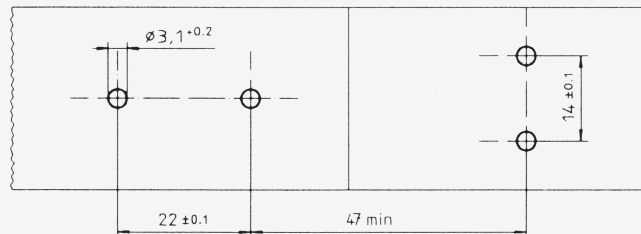
1429L02-1-^{*}
1429L8-^{*}



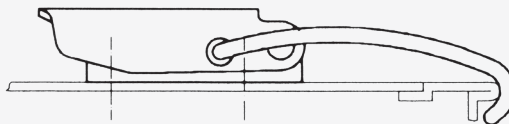
Wire drawhook tension latch / strike



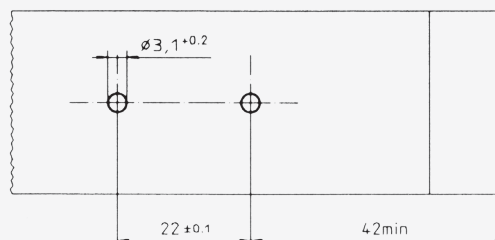
1429L02-2-^{*}
1429L9-^{*}



Hooked wire drawhook tension latch / mating component profile




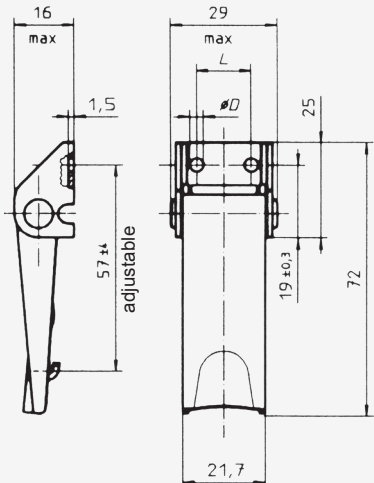

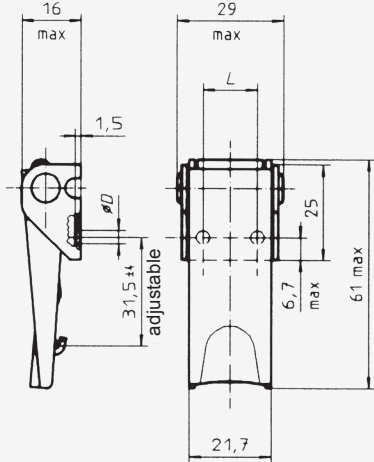
1429L02-3-^{*}
(1429L9-^{*})



Max. tensile strength 2.300 N, working load max 1.550 N, see footnotes.

Adjustable drawhook

Available with secondary lock and hasp

Style	Dimensions	Materials / Finish	Mounting Type ¹⁾	D	L	Part No.
Open base 		Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	3,6	14,3	V951L02-1-1AGV
		Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	4,2	12,7	V951L02-1-5AGV
		Steel / zinc-plated, CrVI-free, clear passivation Base: Steel / zinc-plated ²⁾	S	-	-	V951L02-1-2AGV
		Steel / chrome-plated Interior parts: Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	3,6	14,3	V951L02-1-1AD
		Stainless steel ³⁾	N	3,6	14,3	V951L02-1-1BP
		Stainless steel ³⁾	N	4,2	12,7	V951L02-1-5BP
		Stainless steel ³⁾	S	-	-	V951L02-1-2BP
Concealed base ⁴⁾ 		Steel / zinc-plated, CrVI-free, clear passivation	N	3,6	14,3	V951L03-1-1AGV
		Steel / zinc-plated, CrVI-free, clear passivation	N	4,2	12,7	V951L03-1-5AGV
		Steel / chrome-plated Interior parts: Steel / zinc-plated, CrVI-free, clear passivation	N	3,6	14,3	V951L03-1-1AD
		Stainless steel	N	3,6	14,3	V951L03-1-1BP
		Stainless steel	N	4,2	12,7	V951L03-1-5BP

¹⁾ Mounting type: N = With holes for riveting or screw fixing

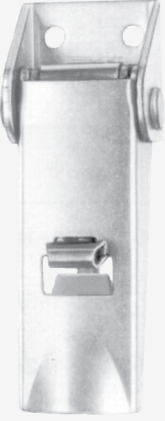
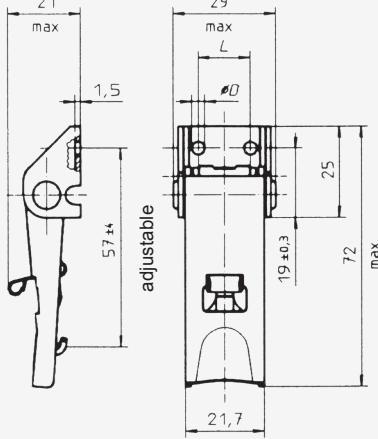

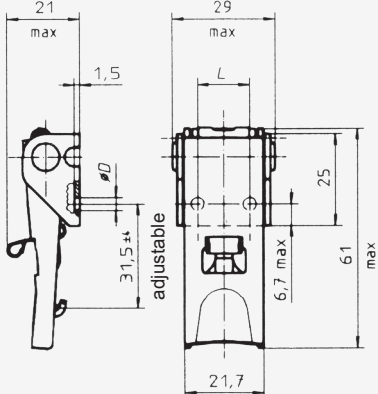
S = Without holes, for welding

²⁾ Max. tensile strength: 2.300 N with V951L7-*A*, V951L52-1A* strike, working load 1.550 N.


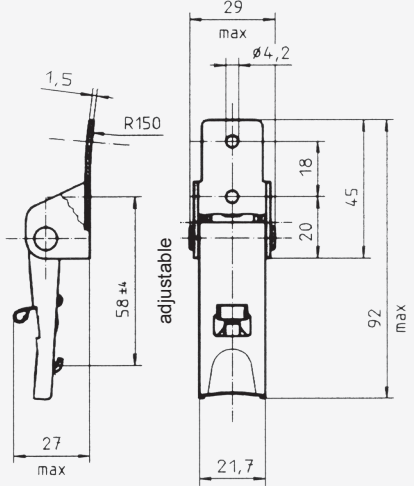

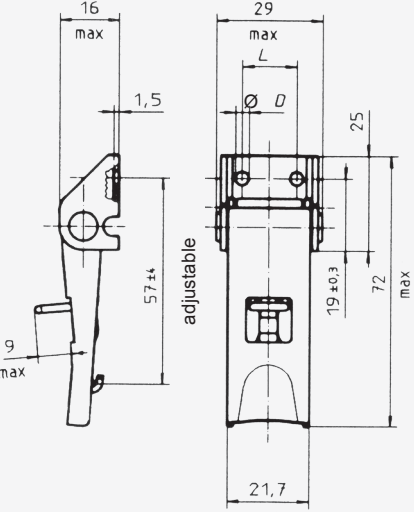
2.000 N with V951L50-1A* strike, working load 1.300 N.

³⁾ Max. tensile strength: 1.500 N with V951L7-*BP*, V951L50-1BP, V951L52-1BP strike, working load 1.000 N.

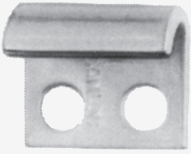
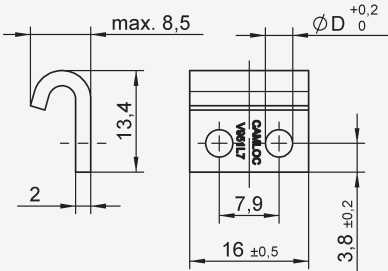

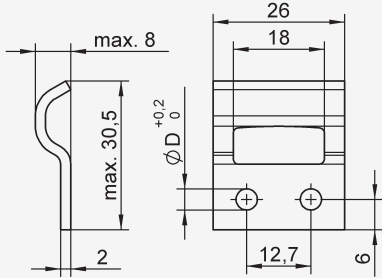

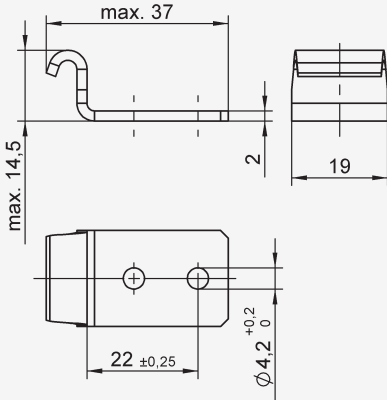
⁴⁾ Due to the mounting geometry, tensile strength reduced to approx. 1200 N, working load 800 N.

Style	Dimensions	Materials / Finish	Mounting Type ¹⁾	D	L	Part No.
Secondary lock, open base 		Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	3,6	14,3	V951L04-1X1AGV
		Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	4,2	12,7	V951L04-1X5AGV
		Steel / chrome-plated Interior parts: Steel / zinc-plated, CrVI-free, clear passivation Secondary lock: Stainless steel	N	3,6	14,3	V951L04-1X1AD
		Stainless steel ³⁾	N	3,6	14,3	V951L04-1X1BP
		Stainless steel ³⁾	N	4,2	12,7	V951L04-1X5BP
		Stainless steel ³⁾	S	-	-	V951L04-1X2BP
Secondary lock, concealed base ⁴⁾ 		Steel / zinc-plated, CrVI-free, clear passivation	N	4,2	12,7	V951L03-1X5AGV
		Steel / chrome-plated Interior parts: Steel / zinc-plated, CrVI-free, clear passivation Secondary lock: Stainless steel	N	3,6	14,3	V951L03-1X1AD
		Stainless steel	N	3,6	14,3	V951L03-1X1BP
		Stainless steel	N	4,2	12,7	V951L03-1X5BP

For footnotes refer to page F-1.

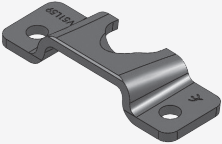
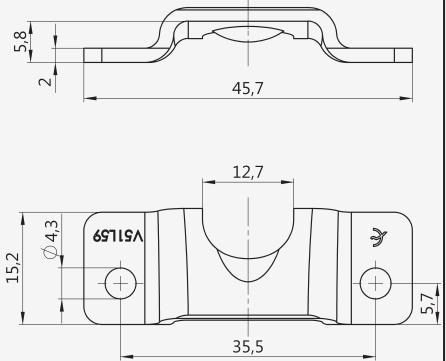
Style	Dimensions	Materials / Finish	Mounting Type ¹⁾	D	Part No.
Secondary lock, high base 		Steel / zinc-plated, CrVI-free, clear passivation Secondary lock: Stainless steel ²⁾	N	4,2	V951L05-1X1AGV
		Stainless steel ³⁾	N	4,2	V951L05-1X1BP
Hasp 	 <p>Hasp for Padlock Ø 6 max.</p>	Steel / zinc-plated, CrVI-free, clear passivation ²⁾ Base: Steel / zinc-plated	S	-	V951L01-1Y2AGV
		Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	4,2	V951L01-1Y5AGV

For footnotes refer to page F-1.

Style	Dimensions	Materials / Finish	Mounting Type ¹⁾	D	Part No.
Open 		Steel / zinc-plated, CrVI-free, clear passivation	N	3,6	V951L7-1AGV
		Steel / zinc-plated, CrVI-free, clear passivation	N	4,2	V951L7-5AGV
		Steel / zinc-plated	S ²⁾	-	V951L7-2AZ
		Steel / chrome-plated	N	3,6	V951L7-1AD
		Stainless steel	N	3,6	V951L7-1BP
		Stainless steel	N	4,2	V951L7-5BP
		Stainless steel	S	-	V951L7-2BP
Closed 		Steel / zinc-plated, CrVI-free, clear passivation	N	4,2	V951L50-1AGV
		Stainless steel	N	4,2	V951L50-1BP
		Stainless steel	N	3,6	V951L50-2BP
		Stainless steel	S	-	V951L50-3BP
Corner mounting 		Steel / zinc-plated, CrVI-free, clear passivation	N	4,2	V951L52-1AGV
		Stainless steel	N	4,2	V951L52-1BP

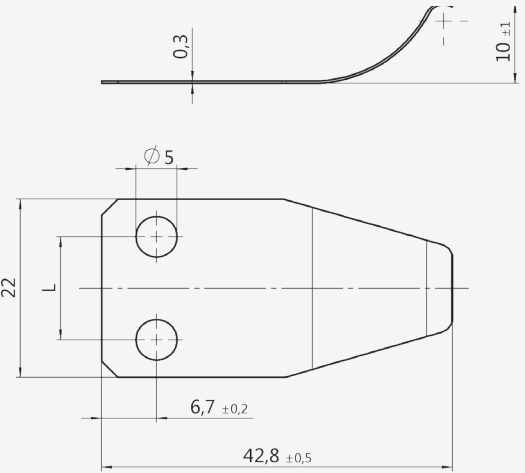
¹⁾ Mounting type: N = With holes for riveting or screw fixing
S = Without holes, for welding

²⁾ Material C45, HRC 36-39 steel, please use high-alloy filler welding rods

Product	Dimensions	Materials / Finish	Mounting Type	D	Part No.
<p>wide Version</p> 		zinc-nickel plated transparent, CrVI-free passivated and sealed	N	4,3	V51L59-1ASNV

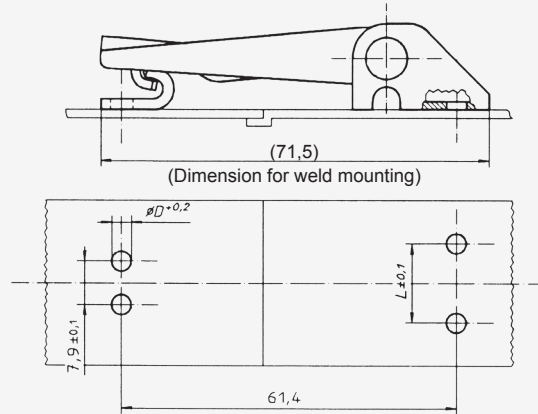
- 1) Befestigung: N = mit Bohrungen zum Nieten bzw. Schrauben
S = ohne Bohrungen zum Schweißen
- 2) Werkstoff: Stahl C45, HRC 36-39, bitte hochlegierte Schweißzusatzwerkstoffe verwenden.

Accessories

Dimensions	Material / Finish	Hole Distance L	D	Part No.
<p>Lift Spring</p> 	stainless steel / passivated	14,3	5,0	V951L61-4BP
<p>This lift spring can only be used in combination with latches of V951L series with <u>open base</u>.</p>	stainless steel / passivated	12,7	5,0	V951L61-5BP

Dimensions

Open-base tension latch / open strike

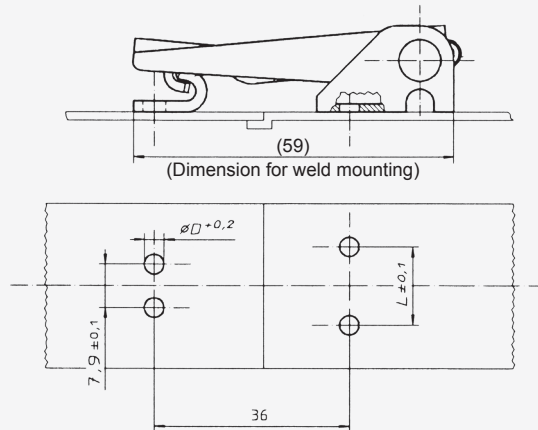


V951L02-*
V951L04-*
V951L01-*

V951L7-*

Select diameter D and distance L in accordance with the strike and tension latch style.

Concealed-base tension latch / open strike

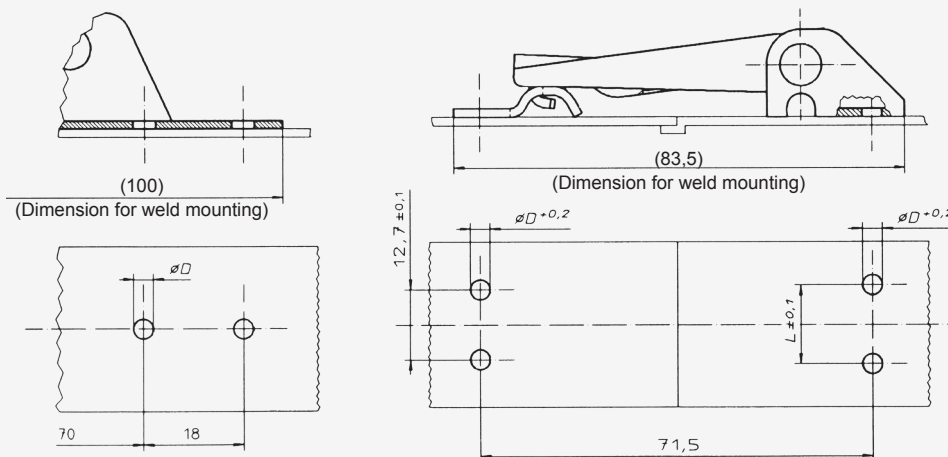


V951L03-*

V951L7-*

Select diameter D and distance L in accordance with the strike and tension latch style.

Open-base tension latch / closed strike



V951L02-*
V951L04-*
V951L01-*

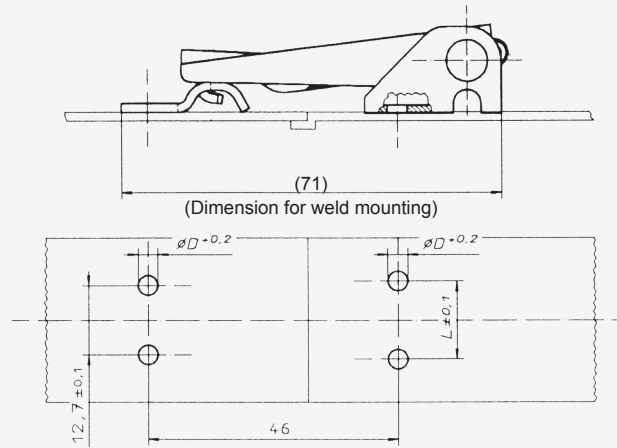
V951L50-*

V951L05-

Select diameter D and distance L in accordance with the strike and tension latch style.

Dimensions

Concealed-base tension latch / closed strike

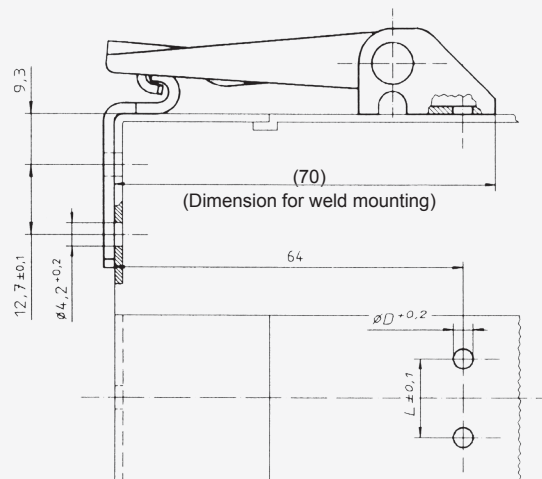


V951L03-*

V951L50-*

Select diameter D and distance L in accordance with the strike and tension latch style.

Open-base tension latch / corner-mounting strike



V951L02-*

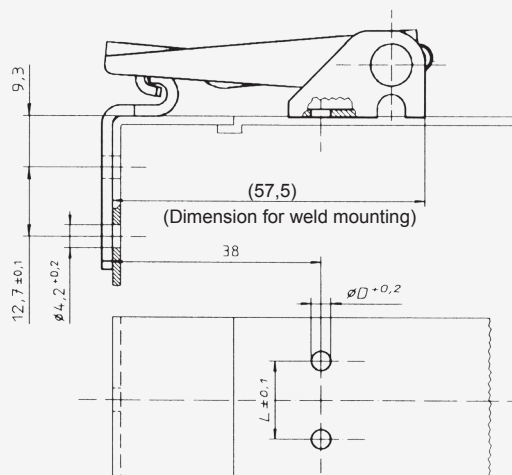
V951L04-*

V951L01-*

V951L52-*

Select diameter D and distance L in accordance with the strike and tension latch style.

Concealed-base tension latch / corner-mounting strike



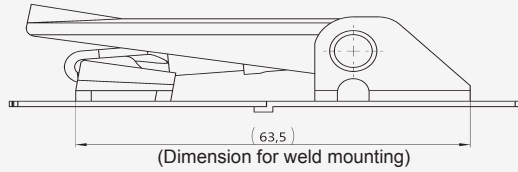
V951L03-*

V951L52-*

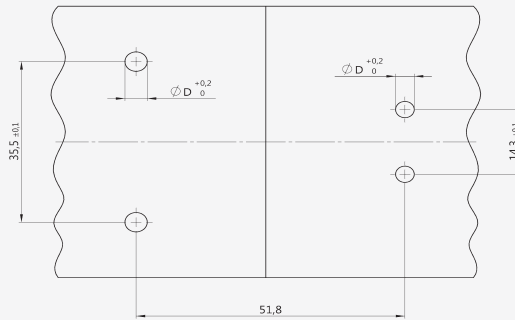
Select diameter D and distance L in accordance with the strike and tension latch style.

Dimensions

Open-base tension latch / wide strike



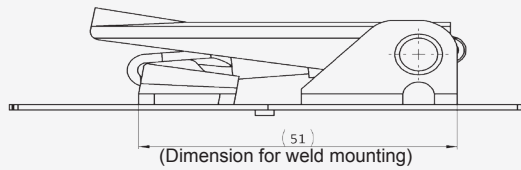
V951L01-*
V951L02-*
V951L04-*



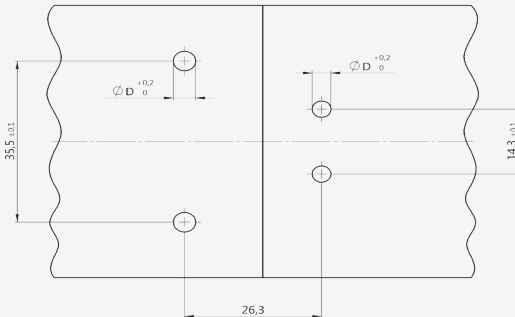
V51L59-*

Select diameter D and distance L in accordance with the strike and tension latch style.

Concealed-base tension latch / wide strike



V951L03-*



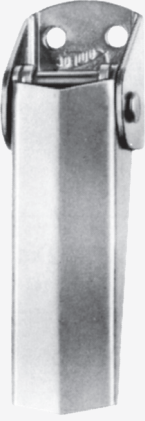
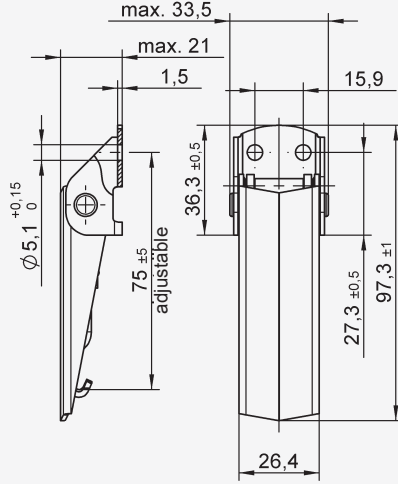
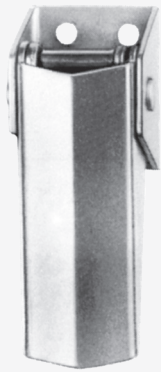
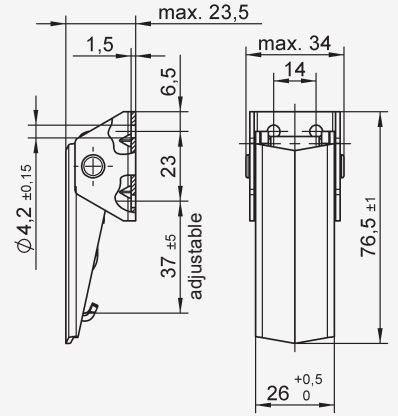
V951L59-*

Select diameter D and distance L in accordance with the strike and tension latch style.

Max. tensile strength 3.600 N, working load max. 2.700 N, see footnotes.

Adjustable drawhook

Available with secondary lock and hasp

Style	Dimensions	Materials / Finish	Mounting Type ¹⁾	D	Part No.
Open base 		Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	5,1	V917L01-1-1AG
		Stainless steel ³⁾	N	5,1	V917L01-1-1BP
High base 		Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	4,2	V17L12-1-1AA

¹⁾ Mounting type: N = With hole for riveting or screw fixing


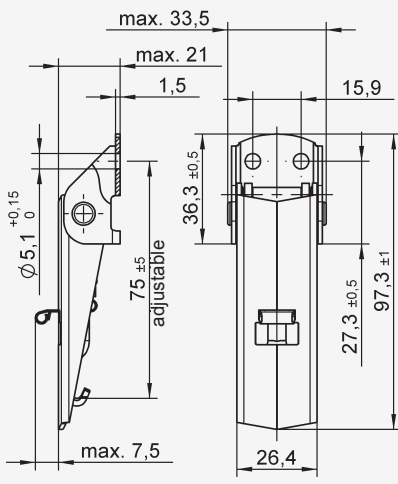
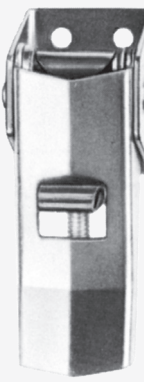
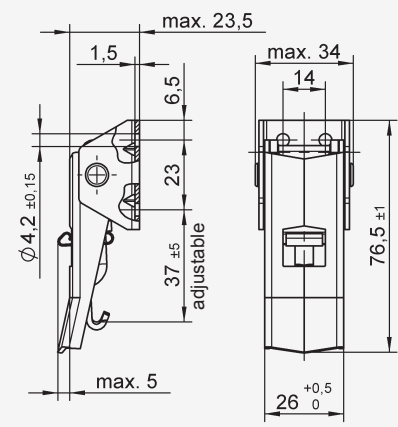

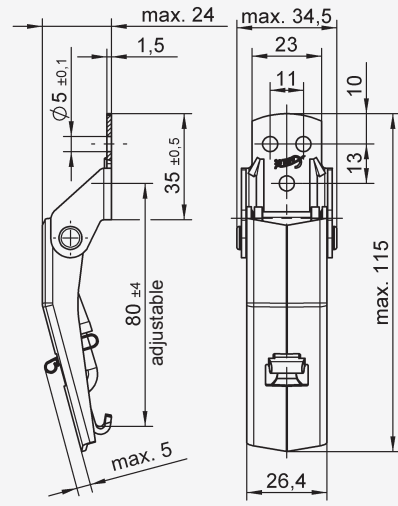
S = Without holes, for welding

²⁾ Max. tensile strength: 3.200 N with V917L11-1- *AG strike, working load 2.200 N.


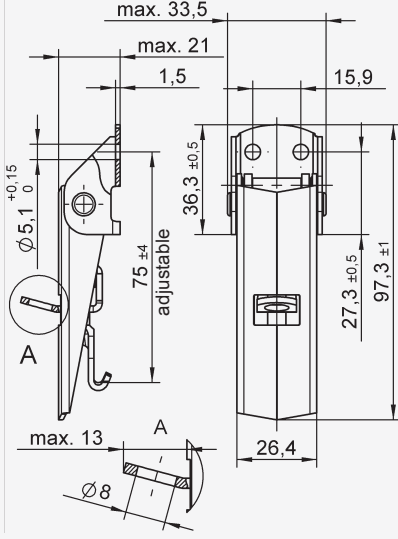
2.200 N with V951L50-1- *AGV strike, working load 1.500 N.

³⁾ Max. tensile strength: 3.600 N with V951L50-1- *BP strike, working load 2.700 N.

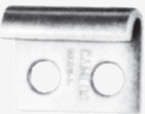
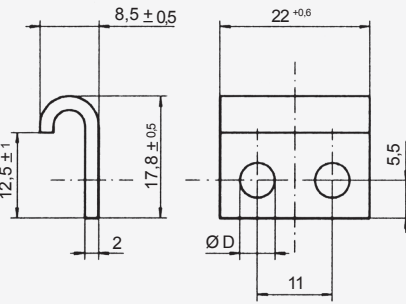

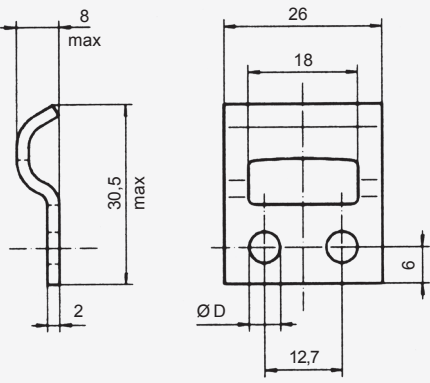
max. 2.300 N with V917L11-1-1BP strike, working load 1.550 N.

Style	Dimensions	Materials / Finish	Mounting Type ¹⁾	D	Part No.
Secondary lock, open base 	 <p>max. 33,5 max. 21 1,5 15,9 max. 7,5 26,4 27,3 ±0,5 97,3 ±1 36,3 ±0,5 75 ±5 adjustable Ø 5,1 ±0,15</p>	Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	5,1	V917L01-1X1AG
		Stainless steel ³⁾	N	5,1	V917L01-1X1BP
		Stainless steel ³⁾	S	-	V917L01-1X2BP
		Stainless steel V4A ³⁾	N	5,1	V917L01-1X1CP
		Stainless steel V4A ³⁾	S	-	V917L01-1X2CP
Secondary lock, high base 	 <p>max. 23,5 1,5 6,5 23 37 ±5 adjustable max. 5 26 ^{+0,5}/₀ 76,5 ±1 max. 34 14</p>	Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	4,2	V17L12-2X1AA
Secondary lock, for curved surfaces (R min = 125 mm) 	 <p>max. 24 1,5 max. 34,5 23 11 10 13 max. 115 26,4 35 ±0,5 80 ±4 adjustable max. 5 Ø 5 ±0,1</p>	Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	5,0	1449L02-1X1AG
		Stainless steel ³⁾	N	5,0	1449L02-1X1BP

For footnotes refer to page G-1.

Style	Dimensions	Materials / Finish	Mounting Type ¹⁾	D	Part No.
<p>Open base, with hasp</p> 		Steel / zinc-plated, CrVI-free, clear passivation ²	N	5,1	V917L01-1Y1AG

Strikes

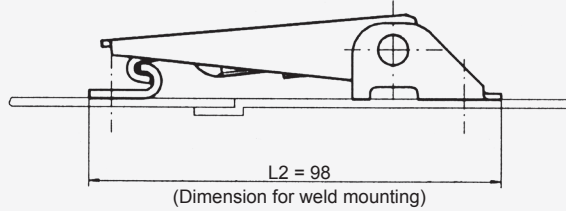
Style	Dimensions	Materials / Finish	Mounting Type ¹⁾	D	Part No.
<p>Open</p> 		Steel / zinc-plated, CrVI-free, clear passivation	N	5,1	V917L11-1-1AG
		Steel / zinc-plated, CrVI-free, clear passivation	N	4,2	V917L11-1-3AG
		Stainless steel	N	5,1	V917L11-1-1BP
<p>Closed</p> 		Steel / zinc-plated, CrVI-free, clear passivation	N	4,2	V951L50-1AGV
		Steel / zinc-plated, CrVI-free, clear passivation	N	5,1	V951L50-5AGV
		Stainless steel	N	4,2	V951L50-1BP
		Stainless steel	S	-	V951L50-3BP

For footnotes refer to page G-1.

Dimensions

Open-base tension latch / open strike

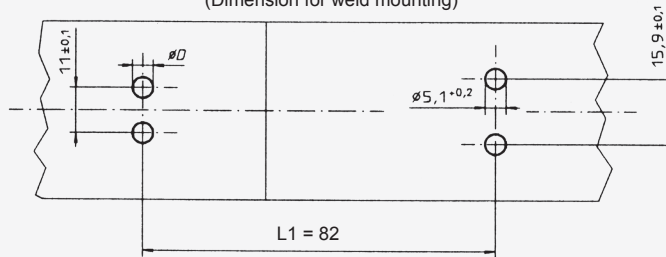
Type	L2	L2 min.	L2 max.
1-1	98	-10,5	+3,5
1Y1		-5,5	+3,5
1X1		-4,5	+2,5



V917L01-*

V917L11-*

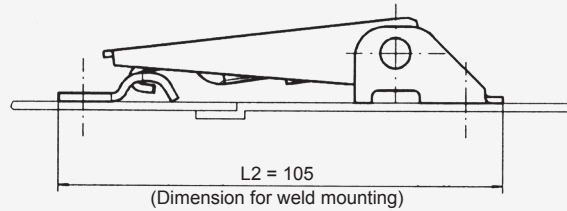
Type	L1	L1 min.	L1 max.
1-1	82	-9	+5
1Y1		-4	+5
1X1		-3	+4



Select diameter D in accordance with the strike style.

Open-base tension latch / closed strike

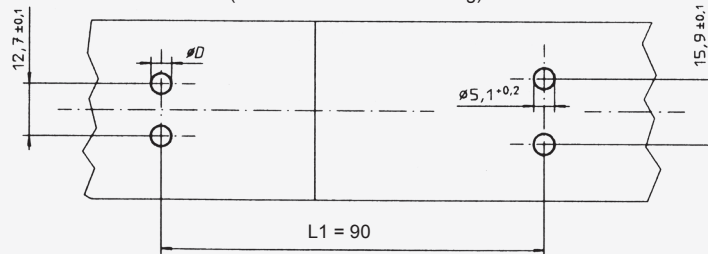
Type	L2	L2 min.	L2 max.
1-1	105	-9	+5
1Y1		-5	+5
1X1		-4	+3



V917L01-*

V951L50-*

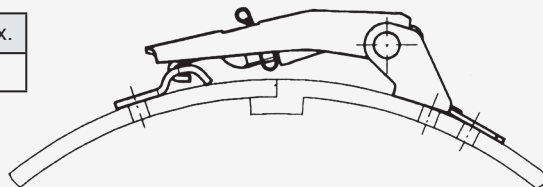
Type	L1	L1 min.	L1 max.
1-1	90	-9	+5
1Y1		-5	+5
1X1		-4	+3



Select diameter D in accordance with the strike style.

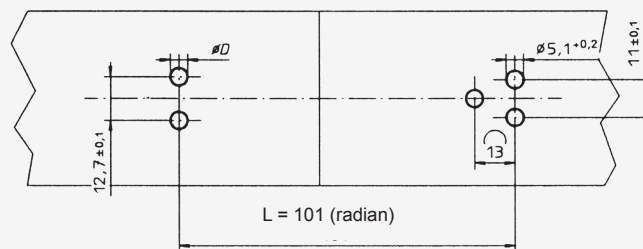
Tension latch for curved surfaces

Type	L	L min.	L max.
1X1	101	-8	-



1449L02-*

V951L50-*

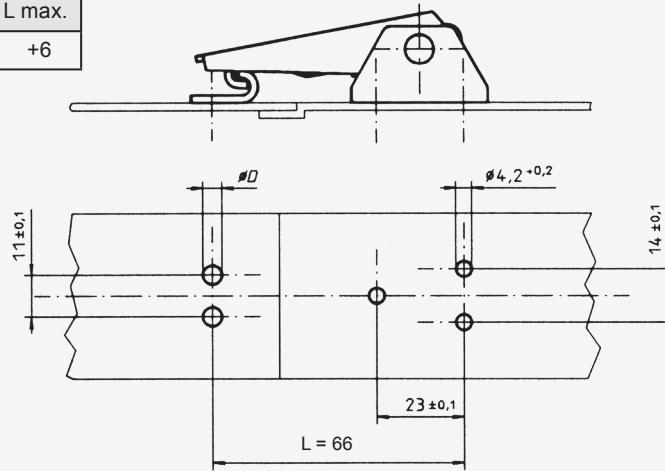


Select diameter D in accordance with the strike style.

Dimensions

High-base tension latch / open strike

Type	L	L min.	L max.
2X1	66	-4	+6



V17L12-*

V917L11-*

Select diameter D in accordance with the strike style.

Max. tensile strength 6.000 N, working load max. 4.200 N, see footnotes.

Adjustable drawhook

Available with secondary lock, hasp and lift spring

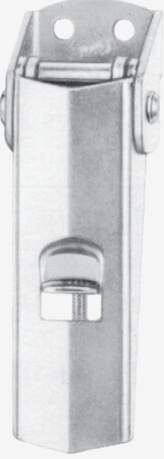
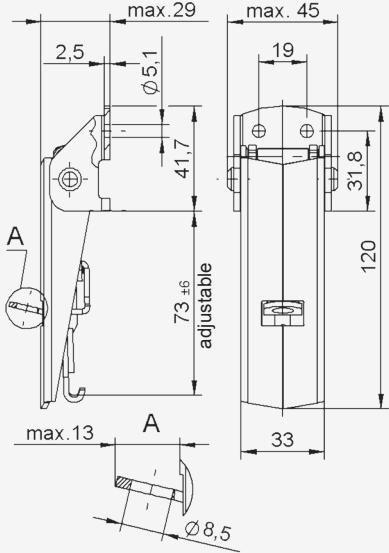
Style	Dimensions	Materials / Finish	Mounting Type ¹⁾	D	Part No.
		Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	5,1	V18L01-1-1AA
		Stainless steel ³⁾	N	5,1	V18L01-1-1BF
		Stainless steel ³⁾	S	-	V18L01-1-2BF
With secondary lock 		Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	5,1	V18L01-1X1AA
		Stainless steel ³⁾	N	5,1	V18L01-1X1BF
		Stainless steel ³⁾	S	-	V18L01-1X2BF

¹⁾ Mounting type: N = With hole for riveting or screw fixing

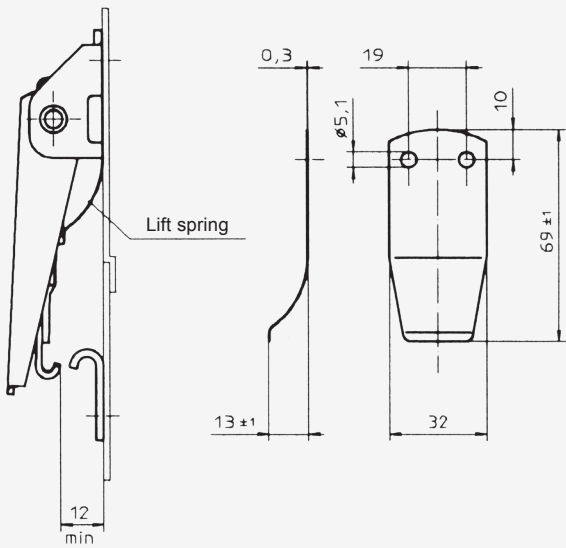
S = Without holes, for welding

²⁾ Max. tensile strength: 6.000 N with V18L13-1-1AA strike, working load 4.200 N.


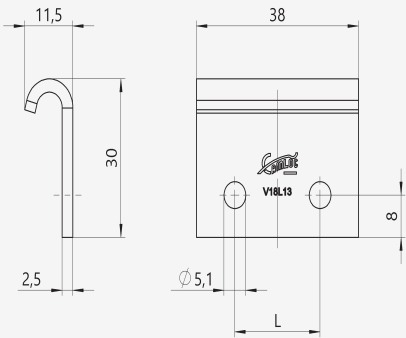

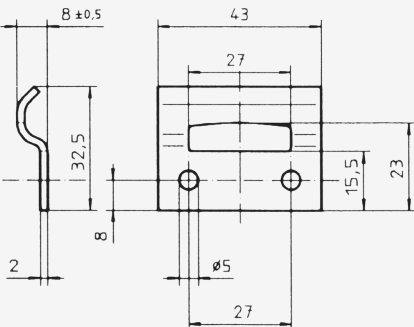
³⁾ Max. tensile strength: 4.600 N with V18L13-1-*BF or 1449L07-1BP strike, working load 3.100 N.

Style	Dimensions	Materials / Finish	Mounting Type ¹⁾	D	Part No.
<p>Hasp</p> 		Steel / zinc-plated, CrVI-free, clear passivation ²⁾	N	5,1	V18L01-1Y1AA

Accessories

Dimensions	Materials / Finish	Mounting Type ¹⁾	D	Part No.
<p>Lift spring</p> 	Stainless steel	N	5,1	V18L45-1BP

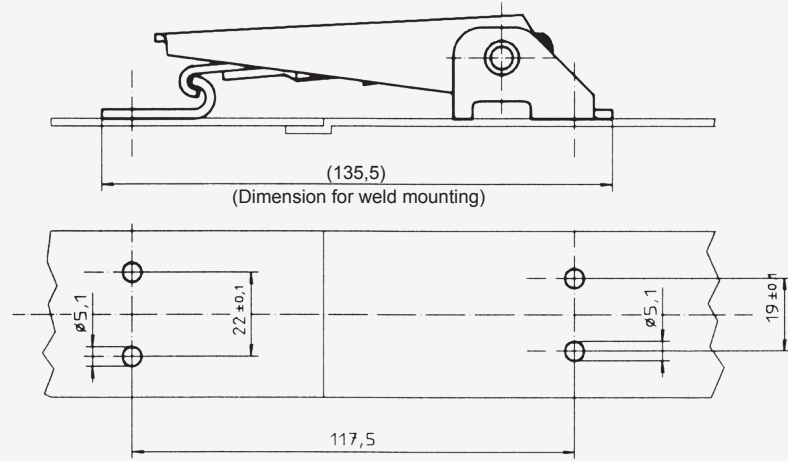
For footnotes refer to page H-1.

Style	Dimensions	Materials / Finish	L	Mounting Type ¹⁾	D	Part No.
Open 		Steel / zinc-plated, iridescent passivated and sealed	22	N	5,1	V18L13-1-1AGV
		Steel / zinc-plated, iridescent passivated and sealed	19	N	5,1	V18L13-1-3AGV
		Stainless steel	22	N	5,1	V18L13-1-1BP
		Stainless steel	-	S	-	V18L13-1-2BP
Closed 		Stainless steel		N	5,0	1449L07-1BP

For footnotes refer to page H-1.

Dimensions

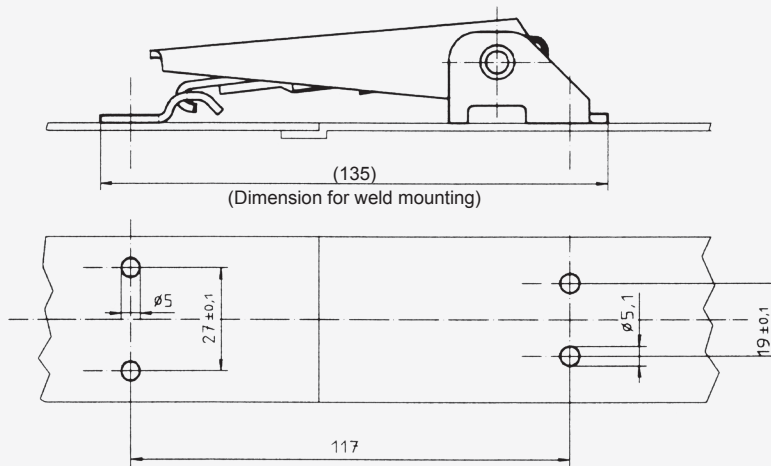
Tension latch / open strike



V18L01-*

V18L13-*

Tension latch / closed strike



V18L01-*

1449L07-*

Max. tensile strength 4.500 N, working load 3.000 N.
Adjustable drawhook

Style	Dimensions	Materials / Finish	Mounting Type ¹⁾	D	Part No.
		Steel / zinc-plated, CrVI-free, clear passivation	N	6,3	V46L38-1-6AGV
		Steel / zinc-plated, CrVI-free, clear passivation	S	-	V46L38-1-1AGV

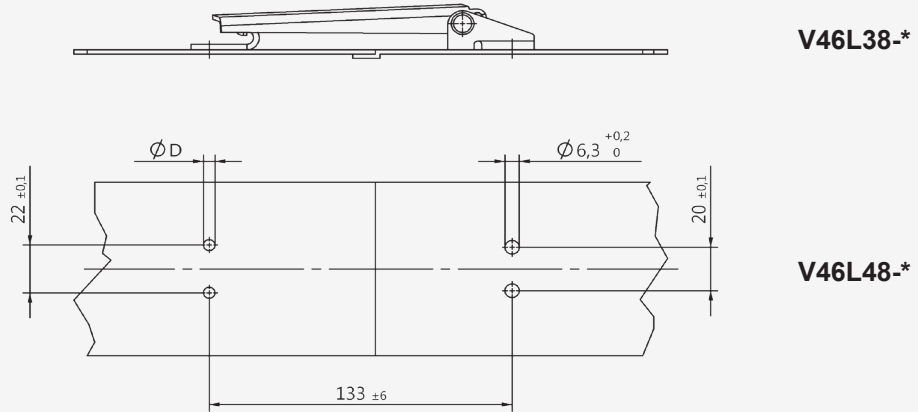
Strike

Style	Dimensions	Materials / Finish	Mounting Type ¹⁾	D	Part No.
		Steel / zinc-plated, iridescent passivated and sealed	N	6,3	V46L48-1-1AGV

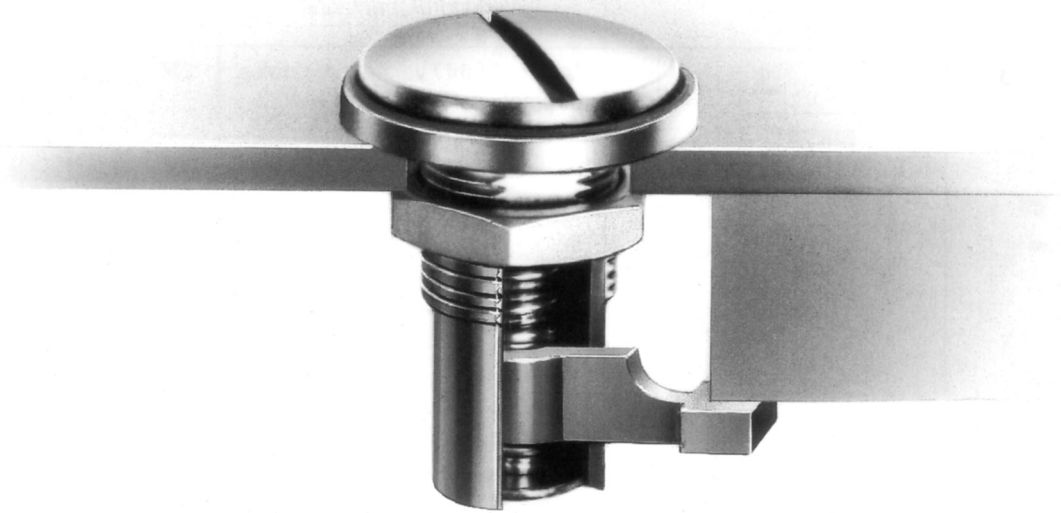
¹⁾ Mounting type: N = With hole for riveting or screw fixing
S = Without holes, for welding

Dimensions

Tension latch open base / open strike



Part No.	Page	Part No.	Page	Part No.	Page
1429L02-1-1AG	E1	V917L01-1X2CP	G2	V951L50-5AGV	G3
1429L02-1-1BP	E1	V917L11-1-1AG	G3	V951L52-1AGV	F4
1429L02-1X1AG	E2	V917L11-1-3AG	G3	V951L52-1BP	F4
1429L02-1X1BP	E2	V917L11-1-1BP	G3	V951L61-4BP	F5
1429L02-2-1AG	E1	V934L01-1-1AGV	B1	V951L61-5BP	F5
1429L02-2-1BP	E1	V934L01-1X1AGV	B1	V951L7-1AD	F4
1429L02-2X1AG	E3	V934L02-1AGV	B1	V951L7-1AGV	F4
1429L02-2X1BP	E3	V934L01-1-1BP	B1	V951L7-1BP	F4
1429L02-3-1AG	E2	V934L01-1X1BP	B1	V951L7-2AZ	F4
1429L02-3-1BP	E2	V934L02-1BP	B1	V951L7-2BP	F4
1429L02-3X1AG	E3	V95H07-1-1BP	C1	V951L7-5AGV	F4
1429L02-3X1BP	E3	V95L07-1-1BC	C1	V951L7-5BP	F4
1429L8-1AG	E4	V95L15-1BD	C1	V96H01-1-1A0	D1
1429L8-1BP	E4	V951L01-1Y2AGV	F3	V96L01-1-1AG	D1
1429L9-1AG	E4	V951L01-1Y5AGV	F3	V96L01-1-1A0	D1
1429L9-1BP	E4	V951L02-1-1AD	F1	V96H01-1-2A0	D1
1449L02-1X1AG	G2	V951L02-1-1AGV	F1	V96L01-1-2AG	D1
1449L02-1X1BP	G2	V951L02-1-1BP	F1	V96L01-1-2A0	D1
1449L07-1BP	H3	V951L02-1-2AGV	F1		
V17L12-1-1AA	G1	V951L02-1-2BP	F1		
V17L12-2X1AA	G2	V951L02-1-5AGV	F1		
V18L01-1-1AA	H1	V951L02-1-5BP	F1		
V18L01-1-1BF	H1	V951L03-1-1AD	F1		
V18L01-1-2BF	H1	V951L03-1-1AGV	F1		
V18L01-1X1AA	H1	V951L03-1-1BP	F1		
V18L01-1X1BF	H1	V951L03-1-5AGV	F1		
V18L01-1X2BF	H1	V951L03-1-5BP	F1		
V18L01-1Y1AA	H2	V951L03-1X1AD	F2		
V18L13-1-1AGV	H3	V951L03-1X1BP	F2		
V18L13-1-1BP	H3	V951L03-1X5AGV	F2		
V18L13-1-2BP	H3	V951L03-1X5BP	F2		
V18L13-1-3AGV	H3	V951L04-1X1AD	F2		
V18L45-1BP	H2	V951L04-1X1AGV	F2		
V46L38-1-6AGV	I1	V951L04-1X1BP	F2		
V46L38-1-1AGV	I1	V951L04-1X2BP	F2		
V46L48-1-1AGV	I1	V951L04-1X5AGV	F2		
V51L59-1ASNV	F5	V951L04-1X5BP	F2		
V917L01-1-1AG	G1	V951L05-1X1AGV	F3		
V917L01-1-1BP	G1	V951L05-1X1BP	F3		
V917L01-1X1AG	G2	V951L50-1AGV	F4,G3		
V917L01-1X1BP	G2	V951L50-1BP	F4,G3		
V917L01-1X2BP	G2	V951L50-2BP	F4		
V917L01-1X1CP	G2	V951L50-3BP	F4,G3		



Page

General Information A-2

Specials

V964L Series B-1 - B-2

V965L Series C-1 - C-2

2939L Series D-1

2812L Series E-1 - E-6

52F Series F-1

VKM Series G-1 - G-2

Index



electrical cabinets



laboratory equipment



machine construction



agriculture



construction



solar



truck



electronic equipment



lighting interior



mould making



automotive/ racing



rail



trailer



wind

The Camloc brand was established in 1937. Since that time our fastening systems have been successfully integrated into numerous applications within many different industries.

Our customers benefit from our more than 80 years of fastening experience.

We provide local support for innovative, high quality fastening systems supplied globally to the strictest environmental and working conditions.



IATF 16949:2016



ISO 14001: 2015

Your Howmet Fastening Systems team

Disclaimer:

Parts listed are subject to technical changes. All dimensions in mm. All information is correct to the best of our knowledge at the time of printing. No liability for disadvantages caused by printing errors or false application.



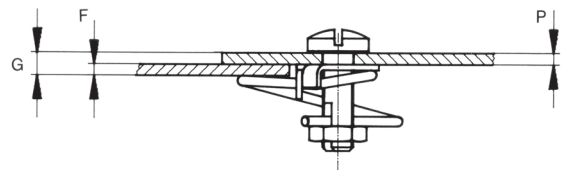
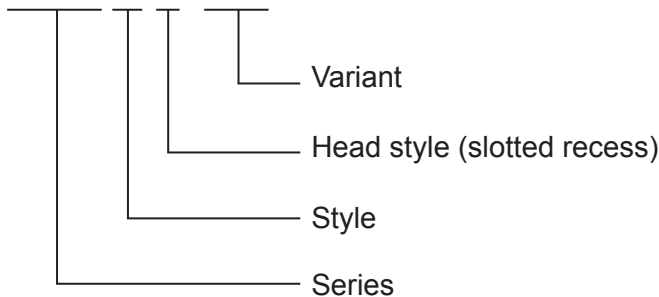
Features

- Wide grip range (total thickness G up to 15 mm).
- Suitable for a large range of applications.
- Easy installation with single-hole mounting.
- Either tool-operated (slotted recess head) or hand-operated (fixed wing head).
- Clockwise locking 3/4 turn maximum.

Part no. example

Pawl Latches, slotted recess head, with decorative washer.

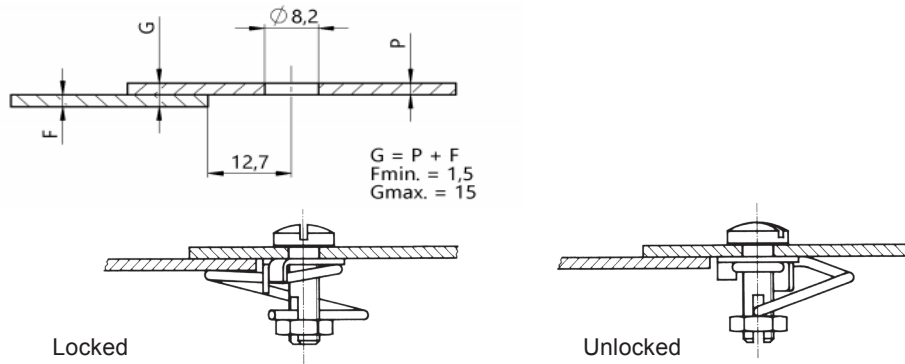
V964L 01 -1 -2AG



$$G = P + F \text{ (see page B-2)}$$

Style	Dimensions	Materials / Finish	°C	Part No.
Slotted Recess Head 		Stud: Steel / zinc-plated CrVI-free, clear passivation Spring: Stainless steel	120	V964L01-1-1AG
Slotted Recess Head with Decorative Washer 		Stud: Steel / zinc-plated CrVI-free, clear passivation Spring: Stainless steel	120	V964L01-1-2AG
Fixed Wing Handle Plastic 		Stud: Steel / zinc-plated CrVI-free, clear passivation Spring: Stainless steel Wing: Plastic (POM) black	-40 up to +100	V964L01-2-1AG

Installation Dimensions





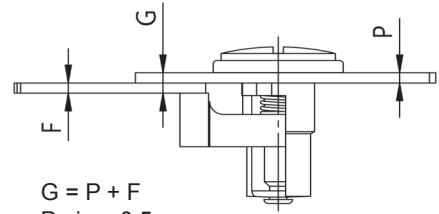
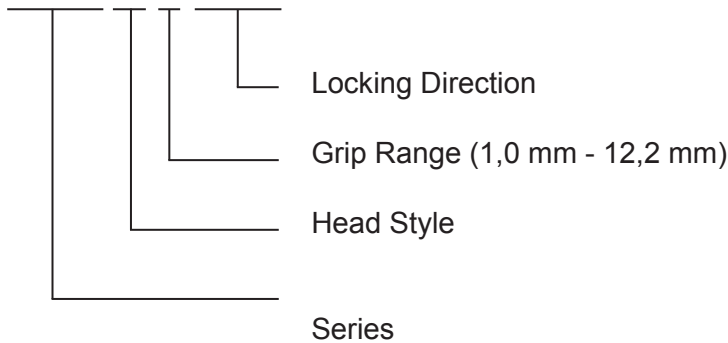
Features

- Variable grip fastener. Available in two grip ranges from 1,0 mm to 18,8 mm.
- Tool or hand operated head styles available.
- Single hole mounting - low installation cost.
- Clockwise locking as standard.
- Counterclockwise locking fasteners upon request.

Part no. example

Pawl Latches, Flat head.
Grip range 1,0 mm - 12,2 mm.

V965L 23 -1 R1AG

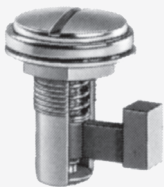
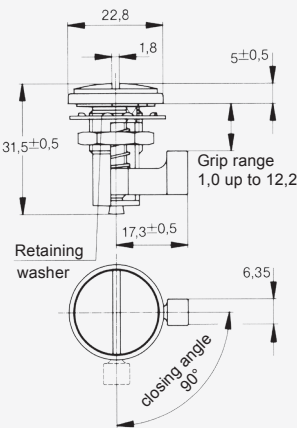

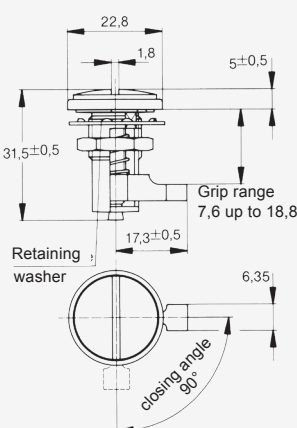



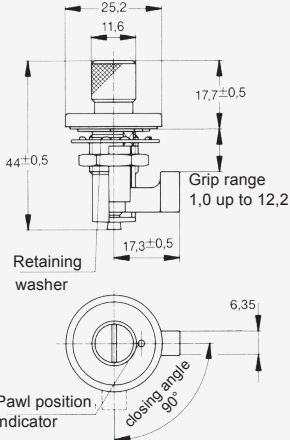

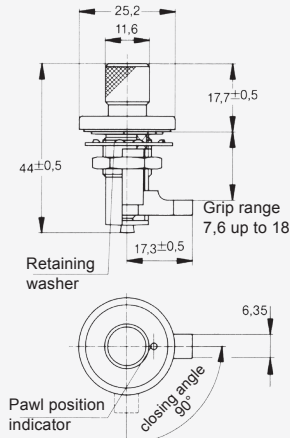
$$G = P + F$$

$$P_{min} = 0,5mm$$

$$P_{max} = 0,5mm$$

For G = 7,6mm to 18,8mm applies $P+F \geq 7,6mm$

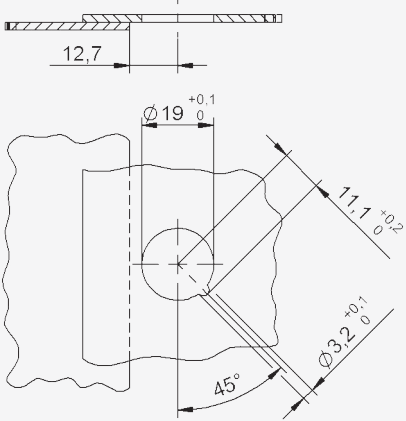
Style	Dimensions	Materials / Finish	°C	Part No.
Flat Head Grip Range 1,0 up to 12,2 		Steel / zinc-plated CrVI-free, clear passivation	-40 up to +100	V965L23-1R1AG
Flat Head Grip Range 7,6 up to 18,8 		Steel / zinc-plated CrVI-free, clear passivation	-40 up to +100	V965L23-2R1AG

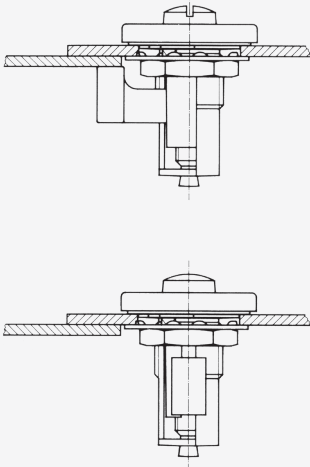
Style	Dimensions	Materials / Finish	°C	Part No.
Knurled Head Grip Range 1,0 up to 12,2 		Steel / zinc-plated CrVI-free, clear passivation	-40 up to +100	V965L1-1R1AG
Knurled Head Grip Range 7,6 up to 18,8 		Steel / zinc-plated CrVI-free, clear passivation	-40 up to +100	V965L1-2R1AG

Pawl Latches Installation Instructions

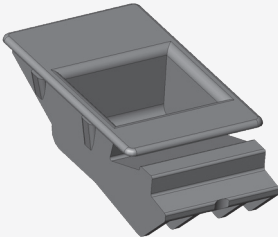
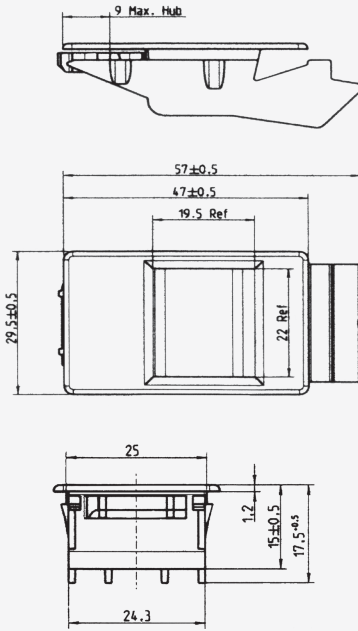
Instruction Dimensions

Clockwise locking

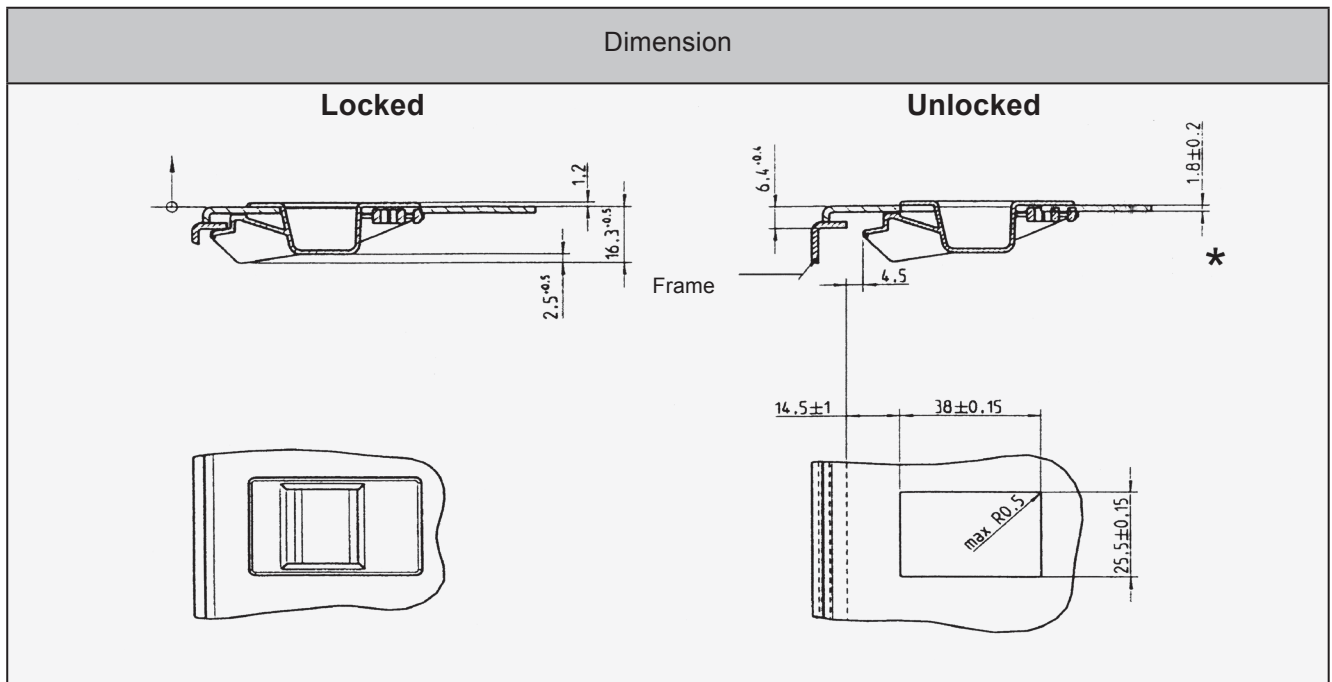




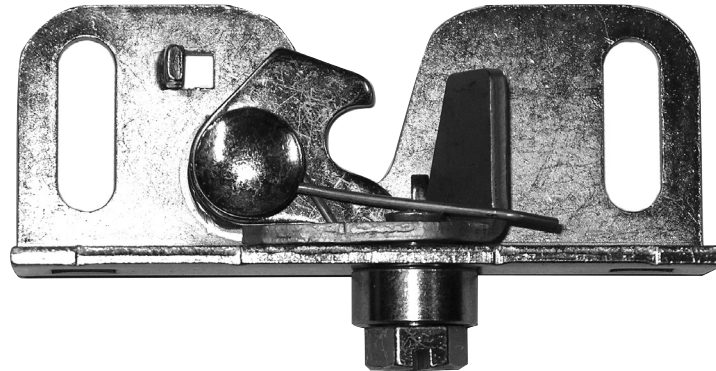


Style	Dimensions	Materials / Finish	°C	Part No.
<p>Slam latch</p> 		Plastic (POM) black	-10 up to +60	2939L01-01-1K

Installation Instructions



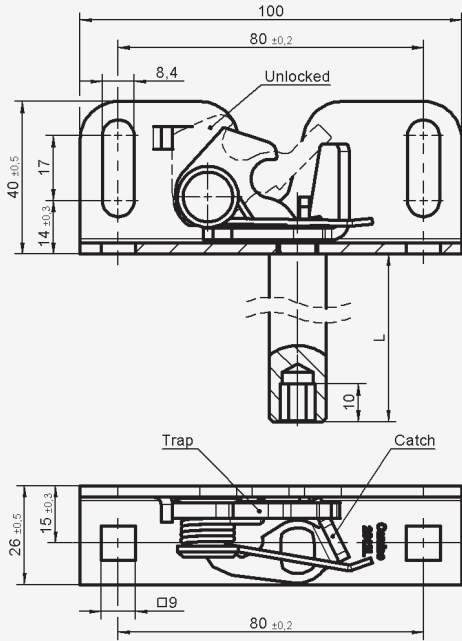
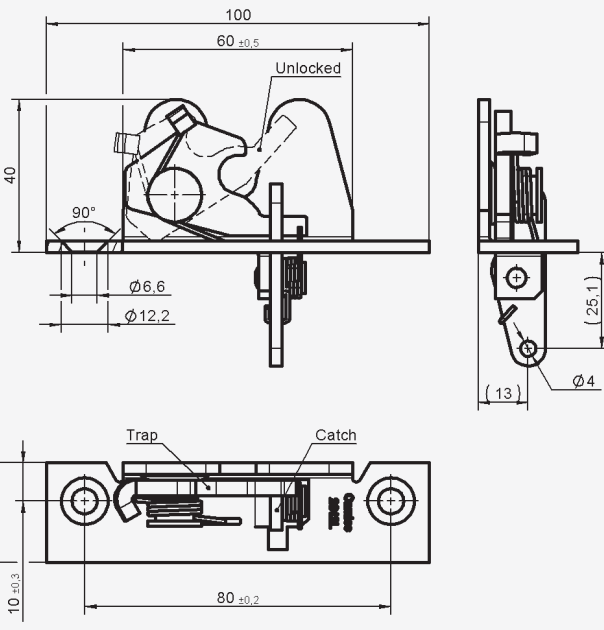
* Other panel thicknesses upon request.



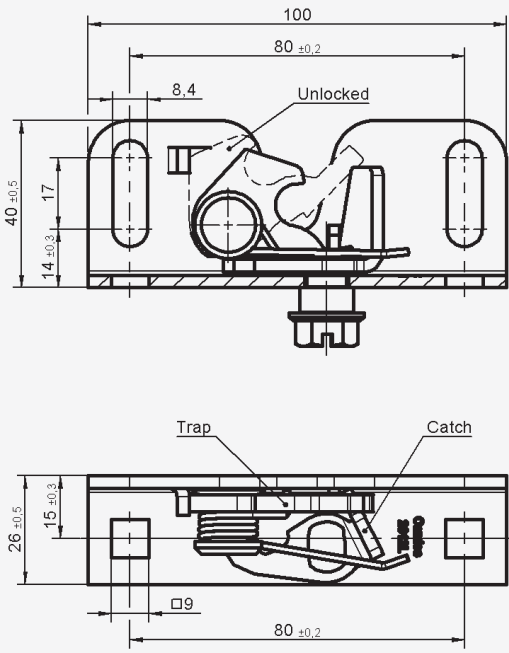
Particular Features

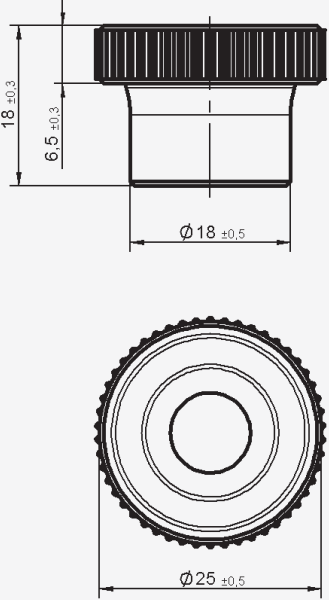
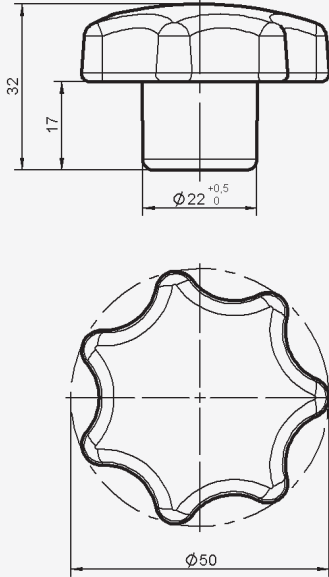
- Robust slam latch, self locking
- Max. locking force: 230 N
- Max. tension strength: 2.400 N
- Max. torque: 40 Nm

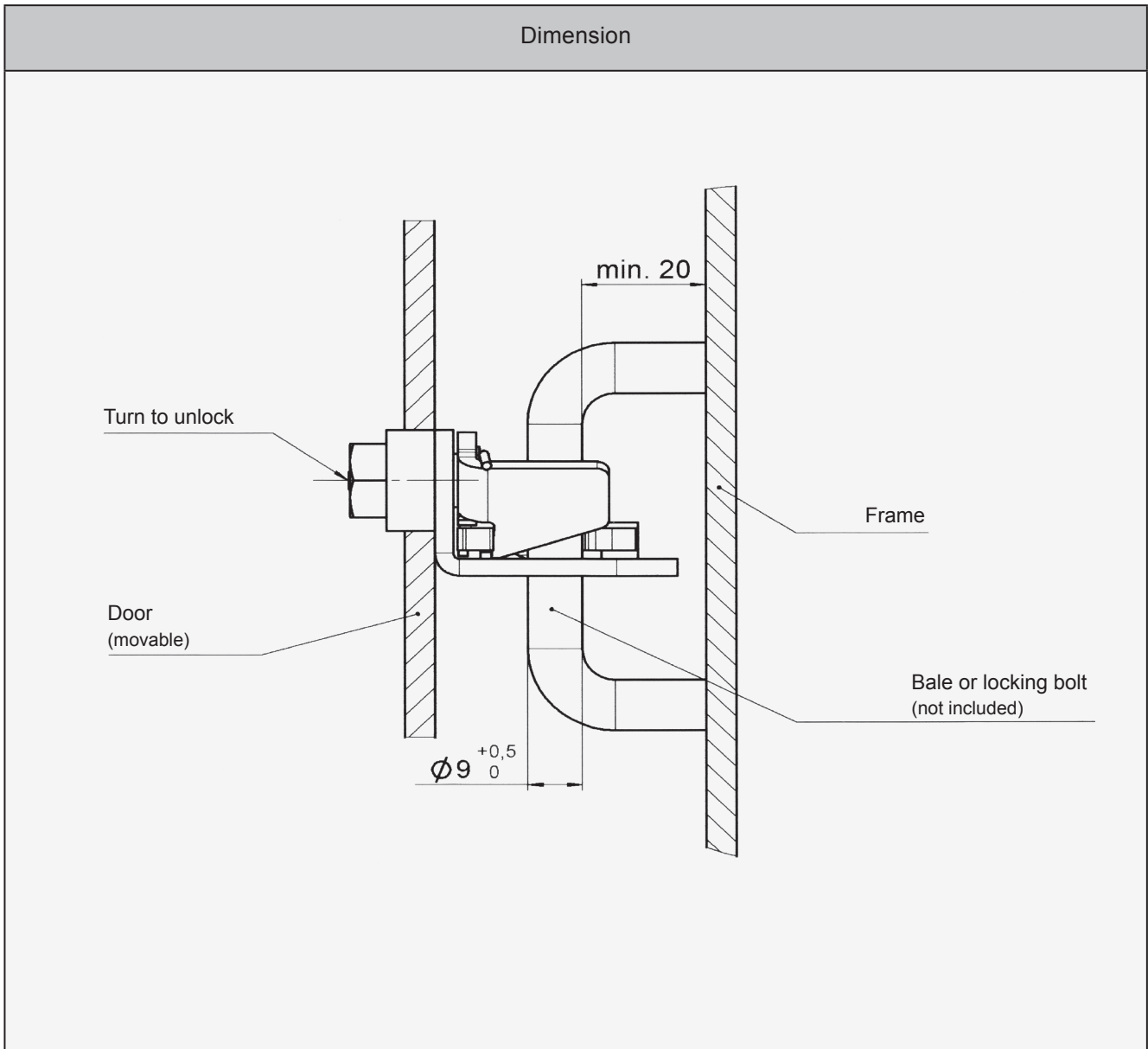
Dimensions	Materials / Finish	Type	°C	Part No.
	<p>Steel / zinc-plated and yellow chromated (CrVI free) Catch: zinc flake coated</p> <p>Steel / zinc-plated and yellow chromated (CrVI free) Catch: zinc flake coated</p>	<p>A</p> <p>B</p>	<p>100</p> <p>100</p>	<p>2812L03-1AF</p> <p>2812L03-2AF</p>

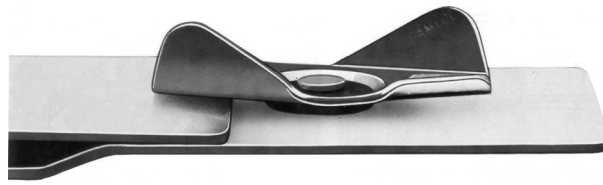
Dimensions	Materials / Finish	L	°C	Part No.
	<p>Steel / zinc-plated and yellow chromated (CrVI free) Catch: zinc flake coated</p> <p>Steel / zinc-plated and yellow chromated (CrVI free) Catch: zinc flake coated</p>	<p>110</p> <p>50</p>	<p>100</p> <p>100</p>	<p>2812L05-1AF</p> <p>2812L05-2AF</p>
	<p>Steel / zinc-plated and yellow chromated (CrVI free) Catch: zinc flake coated</p>	<p>100</p>	<p>100</p>	<p>2812L06-1AF</p>

Dimensions	Materials / Finish	°C	Part No.
	<p>Steel / zinc-plated and yellow chromated (CrVI free) Catch: zinc flake coated</p>	<p>100</p>	<p>2812L07-1AF</p>
	<p>Steel / zinc-plated and yellow chromated Catch: zinc flake coated</p>	<p>100</p>	<p>2812L08-1AF</p>

Dimensions	Materials / Finish	°C	Part No.
 <p>Technical drawing of the Camloc 2812L Series Slam Latch showing front and side views with dimensions. The front view shows a total width of 100, a mounting hole spacing of 80 ±0.2, and a height of 40 ±0.5. The side view shows a depth of 26 ±0.5 and a mounting hole spacing of 80 ±0.2. Labels include 'Unlocked', 'Trap', and 'Catch'.</p>	<p>Steel / zinc-plated and yellow chromated Catch: zinc flake coated</p>	<p>100</p>	<p>2812L09-1AF</p>

Dimensions	Materials / Finish	°C	Part No.
	<p>Plastic (POM) / black</p> <p>to be used with: 2812L03-1AF 2812L03-2AF 2812L08-1AF 2812L09-1AF</p>	<p>-25 up to +90</p>	<p>2812L80-1K</p>
	<p>Plastic (PA6) / black</p> <p>to be used with: 2812L03-1AF 2812L03-2AF 2812L08-1AF 2812L09-1AF</p>	<p>-40 up to +60</p>	<p>2812L82-1K</p>





Particular Features

Simple and economic fastener for lids, etc.

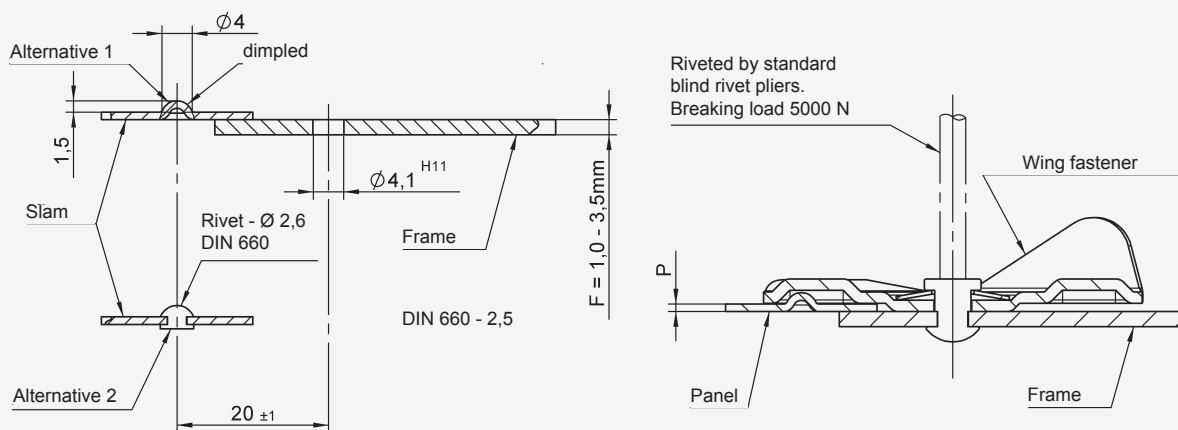
Easy installation by blind riveting.

¼ Turn to lock

Secure locking on detent.

Dimensions	Materials / Finish	°C	Part No.
	Steel / zinc-plated, CrVI-free, clear passivation	100	52E02-*-1AG

Selection and Installation Instructions



Part No.	Panel Thickness P	Height H
52E02-01-1AG	0 (flush)	0,7
52E02-02-1AG	1	1,1
52E02-03-1AG	2	1,7



Particular Features

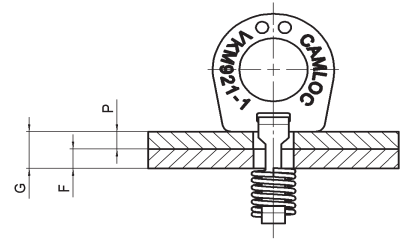
Operation by hand installation.

Easy installation with single-hole mounting.

Absorbs shock and vibration.

Ideal for sheet metal panel applications.

Delivery: spring and clip assembled, handle packed separately.



VKM1040-1AGV

VKM921-1AGV

$G = P + F$

Gmax. = 6mm

Gmin. = 1mm

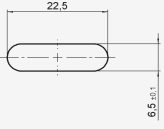
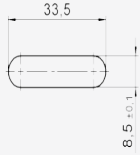
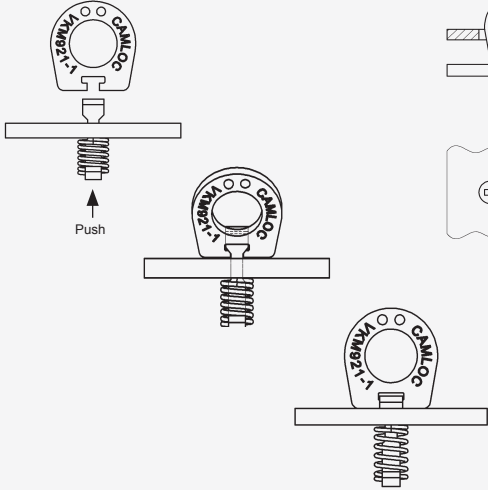
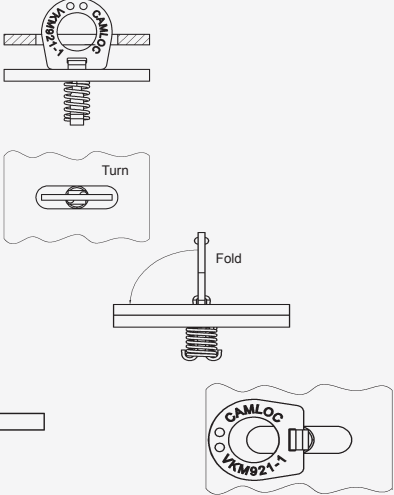


$G = P + F$

Gmax. = 6,35mm

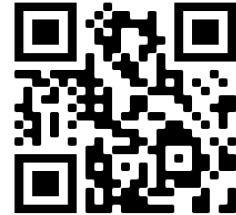
Gmin. = 1,5mm

Product	Dimensions	Materials / Finish	°C	Part No.
<p>folding handle</p>		Steel / zinc-plated, CrVI-free transparent, iricedent passivated and sealed	120	VKM921-1AGV
<p>folding handle</p>		Steel / zinc-plated, CrVI-free transparent, iricedent passivated and sealed	120	VKM1040-1AGV

Installation Instructions

Dimensions		
Hole Preparation	Installation	Operation
<p>Upper Plate</p> <p>VKM921</p>  <p>VKM1040</p> 	 <p>Push</p>	 <p>Turn</p> <p>Fold</p>
<p>Frame</p> <p>VKM921</p>  <p>VKM1040</p> 		

YouTube Video:



Part No.	Page
52E02-*-1AG	F1
2812L03-1AF	E1
2812L03-2AF	E1
2812L05-1AF	E2
2812L05-2AF	E2
2812L06-1AF	E2
2812L07-1AF	E3
2812L08-1AF	E3
2812L09-1AF	E4
2812L80-1K	E5
2812L82-1K	E5
2939L01-01-1K	D1
V964L01-1-1AG	B1
V964L01-1-2AG	B1
V964L01-2-1AG	B1
V965L1-1R1AG	C2
V965L1-2R1AG	C2
V965L23-1R1AG	C1
V965L23-2R1AG	C1
VKM921-1AGV	G1
VKM1040-1AGV	G1

KEENSERTS®

Solid inserts for solid joints

Easy installation and assembly

For every application, the
right tool for your
installation: hand-installation

Safe and durable

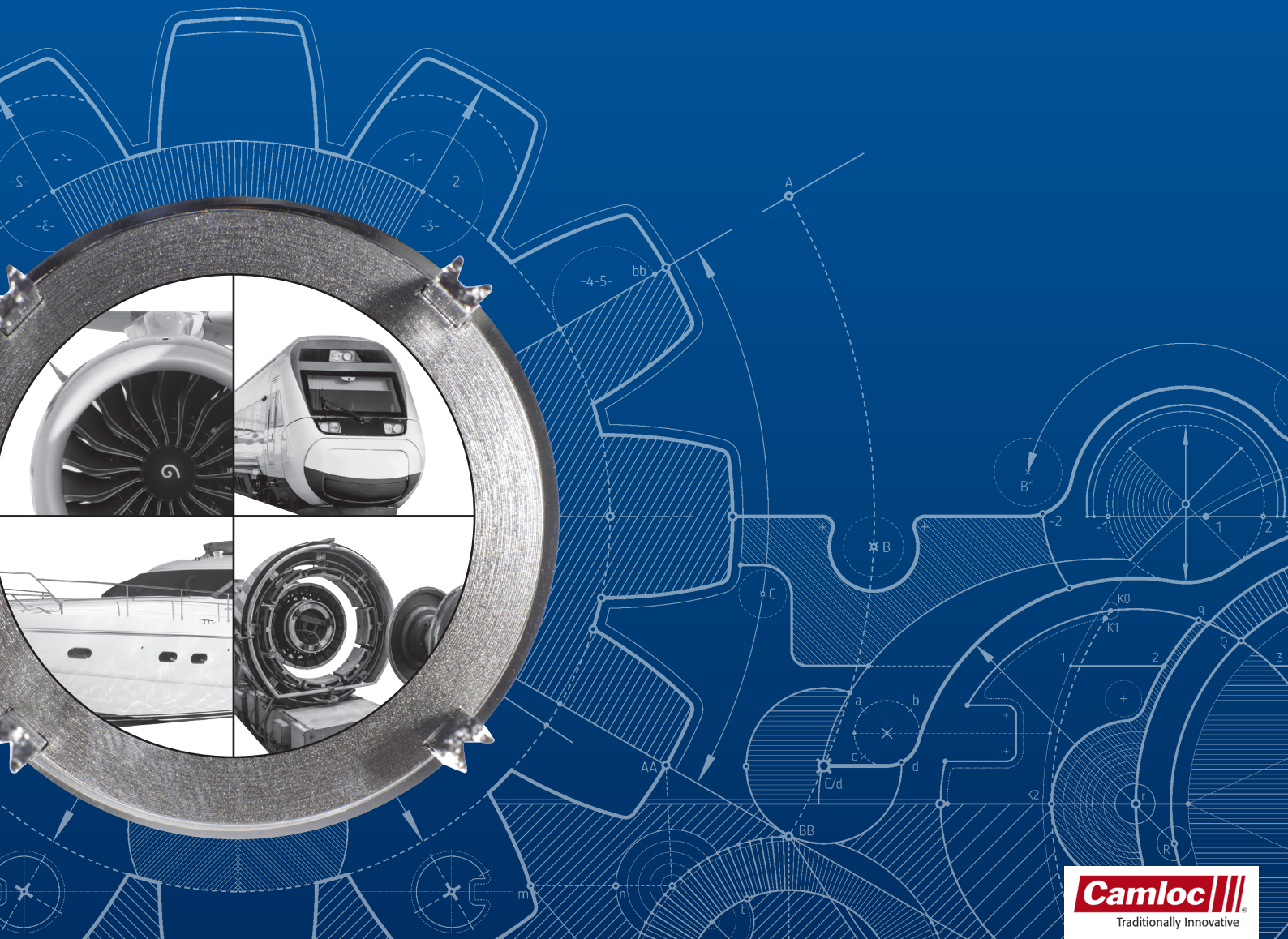
The ‚KEE‘ locking
principle enables a high
level of safety with a
maximum lifetime in all
application areas.

Demand of high quality

Our production in Germany
conform to the highest
standards. We support our
customers all over the world
with expertise and reliability.

80 years of experience

Benefit from our many
years of experience in
application and production.
With us you get the
original.



	Site
General Information	A-2
Important Information to KEENSERTS [®]	A-3 - A-4
Materials and Surfaces	A-5
Design information	A-6 - A-8
Calculation of the tensile force	A-7
Self-locking and screw preload	A-8
Mounting and installation instructions	A-9 - A-11
Expansion and special designs	A-12
Part numbers	A-13
KNCM Series (miniature metric)	B-1
KNM Series (standard version metric)	B-2
KNHM Series (heavy duty metric)	B-3 - B-4
KNCA Series (miniature inch version)	C-1
KN Series (standard version imperial)	C-2 - C-3
KNH Series (heavy duty inch version)	C-4 - C-7
KNHXH Series (extra heavy inch version)	C-8 - C-11
KEENSERTS [®] PTC POWER TOOLS	D-1
Features	D-3
technical data and contents	D-4
Nosepieces	D-5
Installation process	D-6
Available Nosepieces	D-7 - D-8
KEENSERTS [®] Hand tool series KNT	E-1
General Information	E-3
Installation process	E-4
Available tool sizes	E-5



The Camloc brand was established in 1937. Since that time our fastening systems have been successfully integrated into numerous applications within many different industries.

Our customers benefit from more than 80 years of fastening experience.

We provide local support for innovative, high quality fastening systems supplied globally to the strictest environmental and working conditions.



IATF 16949:2016



ISO 14001: 2015

Your Howmet Fastening Systems Team

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Why KEENSERTS® inserts?

The functional concept of KEENSERTS inserts is based on an increase in the surface area of the thread to enable a higher screw force. This allows higher loadable threaded connections in workpieces with lower strength. Tests have shown that already a 20% higher pull-out value can be reached with the standard version of our KEENSERTS inserts. For all designs and variants of KEENSERTS inserts, pre-mounted „KEES“ are pressed into the surrounding material, thus creating a reliable rotation prevention. KEENSERTS inserts are vibration-resistant and highly loadable.

KEENSERTS® inserts for maximum reliability for your screw connection

KEENSERTS inserts are solid precision threaded inserts and they offer high strength and reliability in their application.

They are used in the whole industry, from tooling, marine, train, defense technology, clean room applications to aerospace.

Especially for lightweight designs, they are increasingly a major factor for realizing connections with high strength despite lightweight design materials.

KEENSERTS inserts can be used in almost any material. Their bolted connection, prevents rotation of the nut body and overloading of the nut thread.

KEENSERTS inserts are pre-mounted so there are no loose parts to compromise safety. In a variety of applications from initial assembly to repair applications, KEENSERTS inserts have proven themselves millions times over.

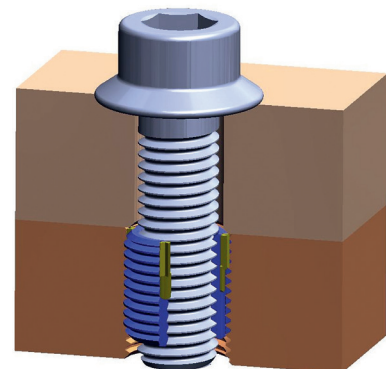
Always a perfect installation

No special skills are required for the installation of KEENSERTS inserts. Installation can be learned in a very short time. Thread damages are impossible during the installation process.

There are hand tooling tools as well as hydro-pneumatic power tools available with adjustable process parameters.

Click here:

[Here you can see the installation video.](#)



In case of replacement

If a KEENSERTS insert needs to be replaced, this can be done in the same mounting thread. The existing thread does not have to be reworked.

The perfect material and the right coating for your application

KEENSERTS inserts are in the standard version made of passivated V2A steel and are pre-assembled with locking chocks, the so-called „KEES“. Depending on your requirements, other materials are also available for the threaded bodies.

A standardized system for all types of threads

In addition to the standard version, we offer a heavy variant with enlarged external thread for particularly high load cases. Almost all versions are also available with an additional threadlocker. KEENSERTS inserts are available in many different versions to meet the various requirements. There are KEENSERTS inserts as threaded studs or KEENSERTS inserts with a closed bottom. If you require radial tolerance compensation in your assembly, KEENSERTS inserts are available as a so-called „floating variant“.

KEENSERTS inserts are alternatively available with metric or imperial thread dimensions.

Do you have a particularly difficult application?

Contact us via our website, our sales representatives or directly by phone. We are glad to assist you with your request.

Website: <https://www.hfsindustrial.com>

Mail: enquiries@hfsindustrial.com

Phone +49 (0) 6195 805 0

Information about KEENSERTS® materials

General applications

As the standard KEENSERTS inserts and bolts are made of cold-drawn, austenitic steel according to DIN EN 10088-3 with strength class A2-70 and can be used up to +150°C. Above this temperature, the tensile strength decreases significantly because the strain hardening is eliminated. The KEES, are made of AISI 302 or optionally of 1.4310.

High temperature and mechanical load applications

For applications at higher temperatures, as well as higher mechanical loads, we manufacture KEENSERTS inserts and bolts from the material AISI 660 - A286 (1.4980 / 1.4944). The aged austenite still has a yield strength of >450 MPa at +500°C and an Rp0.2 of >600 MPa at room temperature. A286 is scale-resistant up to +700°C and has very good corrosion resistance.

Seawater resistant, non-magnetic applications

If maximum corrosion resistance with good mechanical properties is required, we manufacture our KEENSERTS inserts from aluminum bronze (2.0966). This material is seawater resistant and has good mechanical properties with an Rp0.2 of >330 MPa, as well as an Rm of >650 MPa and does not gall when screwed with stainless screws due to self-lubrication. These special thread inserts are provided with KEES made of V4A. Aluminum bronze is suitable for application temperatures up to +350°C. Alternatively, threaded bodies and KEES made of V4A can be combined.

Information on KEENSERTS® coatings

Passivation

KEENSERTS inserts are passivated according to AMS 2700, method 2. This is a Cr-6 free passivation, which cleans the surface and accelerates Cr-oxide formation. The passivation is suitable for application temperatures up to +150°C.

Dry lubricant film

KEENSERTS inserts with clamping screw locking are coated with a REACH compliant dry lubricant film. This sliding film is a thermosetting, lead-free MoS₂ anti-friction coating and is suitable for application temperatures from -150°C to +200°C.

Special coatings

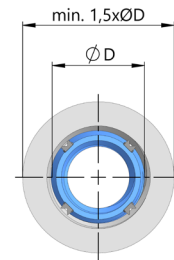
If your applications require the use of a barrier layer between the surrounding material and the thread insert, it is possible to apply a Cr-6-free ZnNi layer according to AMS 2417 or alternatively a tin coating.

It is also possible to apply other coating materials, such as wax dispersion.

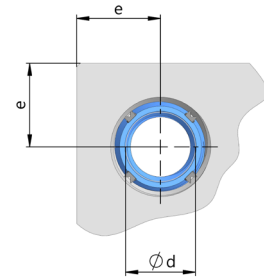
Due to increased demands on durability, contact corrosion is also a much-discussed topic. We are pleased to give advice.

Design information

If KEENSERTS inserts are installed on the end face in round designs, the installation diameter should be 1.5 x external thread diameter „ $\varnothing D$ “ or larger.

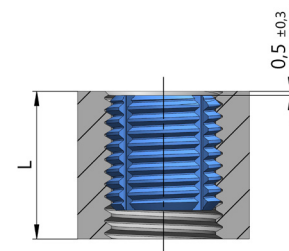


The edge or corner distance (e) of the thread inserts must be adapted to the application. Standards must be observed here if necessary. As a reference value, $e \geq 1,2 \times \varnothing d$ can be used.



For full load capacity, the minimum thickness „L“ must at least equal to the length of the thread insert.

The depth of the KEENSERTS insert under the surface of the installation material is determined by the KEES as well as the diameter of the countersink of the installation thread (see installation data tables).



The threads must be produced according to DIN13-20/21/22 with modified core holes. Installation data as well as removal data are given in the following tables..

KEENSERTS inserts are available with metric and also with imperial thread dimensions according to SAE AS 8879. Threadlocking KEENSERTS inserts are coated with a dry lubricant film to prevent galling in the deformed thread area.

Calculation of the tensile force

The tensile force of the KEENSERTS inserts depends on the shear strength of the installation material and is calculated as described below:

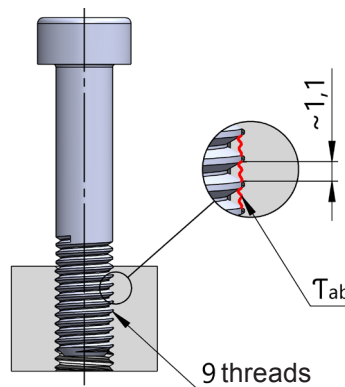
$$F_{\max} \leq A_F \times T_w$$

F_{\max} = tensile force (ultimate)
 A_F = shear engagement (see tables)
 T_w = shear strength workpiece

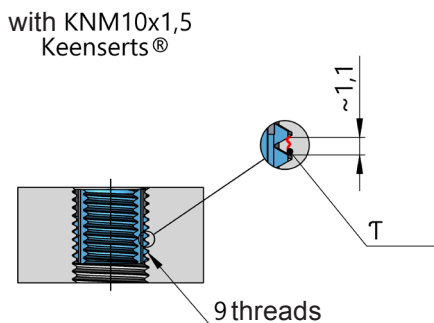
When F_{\max} is reached, the surrounding material begins to yield and shear off between the threads.

The values of the shear engagement areas are given in the dimension tables on the following pages and apply to fully screwed KEENSERTS inserts.

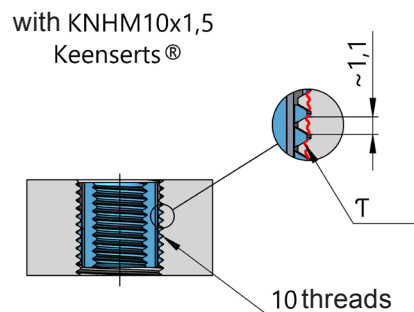
„Surface Comparison“ Screw to KEENSERTS®



M10 - screw-in depth 1,5xD
 $A_F = 282 \text{ mm}^2 \approx 100\%$



KNM10x1,5 - outer thread. M14x1,5
 $A_F = 341 \text{ mm}^2 \approx 121\%$



KNHM10x1,5 - outer thread. M16x1,5
 $A_F = 470 \text{ mm}^2 \approx 168\%$

Depending on the selection, the use of KEENSERTS inserts allows up to 68% higher screw force to be introduced into the surrounding material.

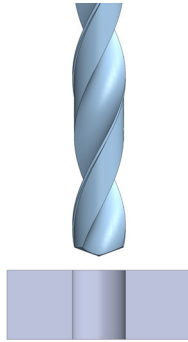
Self-locking and screw pre-tensioning

Because the thread locking feature (type L) compensates a part of the tightening torque, this part must be added to the nominal tightening torque.

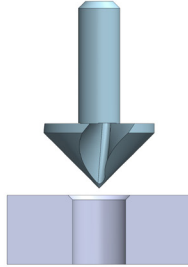
For this purpose, the locking torque is measured on two KEENSERTS inserts using a torque wrench and a lightly oiled screw. This value must be added to the tightening torque.

The thread locking torques are determined with lightly oiled screws of grade 8.8, with a standard tolerance of -6g. The thread locking torques of the KEENSERTS inserts with fine thread are set with lightly oiled bolts of grade -4h. If you have any questions, please do not hesitate to contact us.

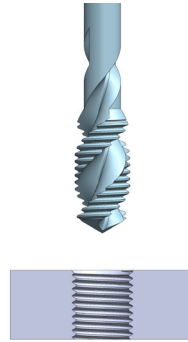
KEENSERTS® inserts hole preparation



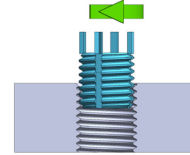
Drilling
with standard drill
(modified core diameter
according to
Table „Installation di-
mensions“)



Sink
with
Countersink
(80° - 100°)



Thread-
cutting with
Standard-
Tap



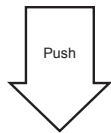
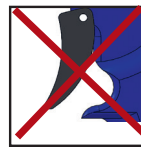
Screwing in/
Locking:
pneumatic or
manually

KEENSERTS® inserts installation

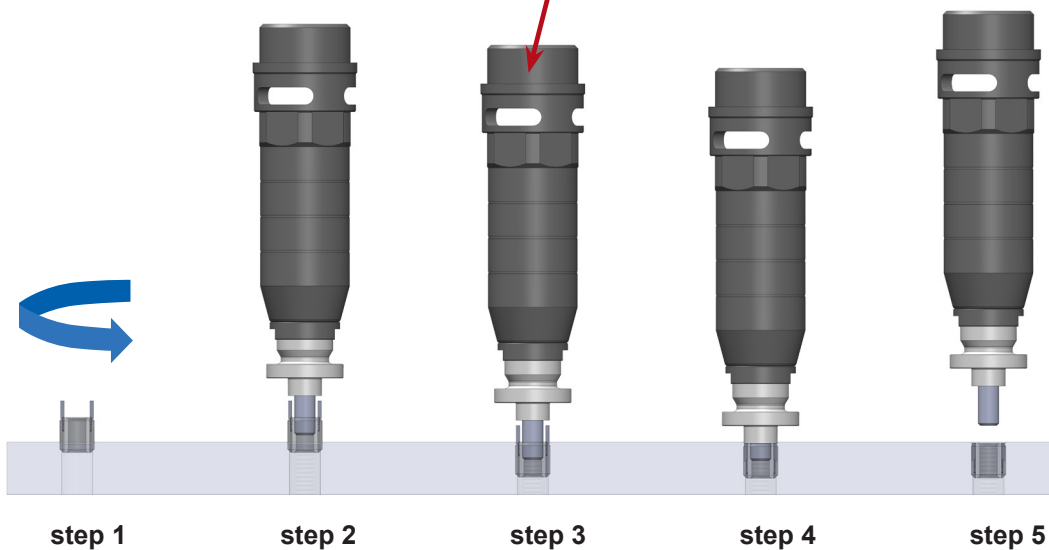
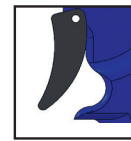
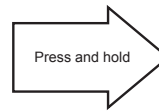
For medium and large quantities, but also for sensitive installation conditions, the use of a „Power Tool“ is the right choice. By using a Power Tool, the installation environment is maximally protected. No shocks and strong vibrations occur. Incorrect installation is almost impossible. In addition, valuable time can be saved by using a Power Tool.

Pneumatic Power Tool 3352PT1/2.

Click here:
[Installation video](#)



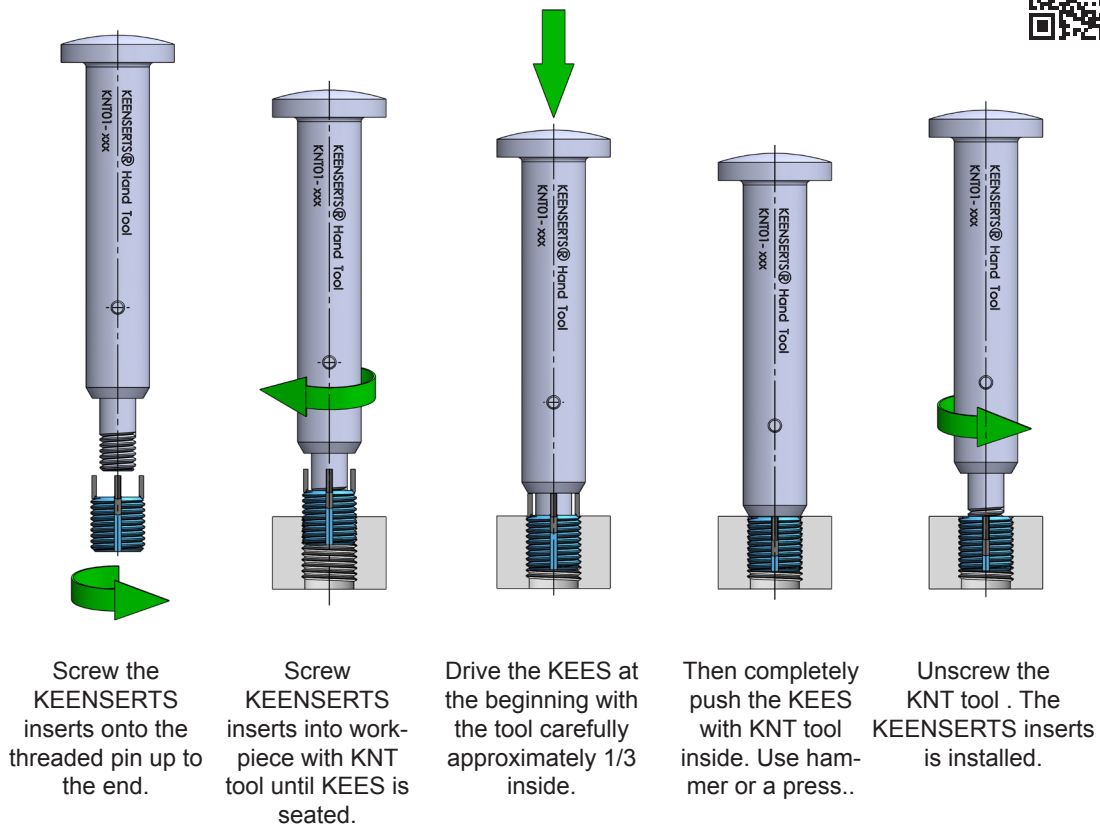
auto stop



step 1	step 2	step 3	step 4	step 5
Screw in the first pitches by hand (1-2 turns).	Screwing in the KEENSERT insert with the Power Tool by a push movement against the insert. No button operation necessary (self-activation).	Hold the tool horizontally, at a 90° angle. The screwing-in process stops automatically as soon as the KEES touch the surrounding material. The insert reaches its final screw-in depth.	Driving in the KEES by pressing the trigger.	Hold the trigger until the mandrel automatically rotates counter-clockwise and is completely rotated out of the KEENSERTS inserts.

If only a few inserts need to be installed, mounting with a hand installation tool is also possible. The series of KNT hand tools offers a repeatable and reliable installation process in addition to simple, safe and fast handling.

Click here:
[Installation video KNT](#)



Groove punches / pre-broaching

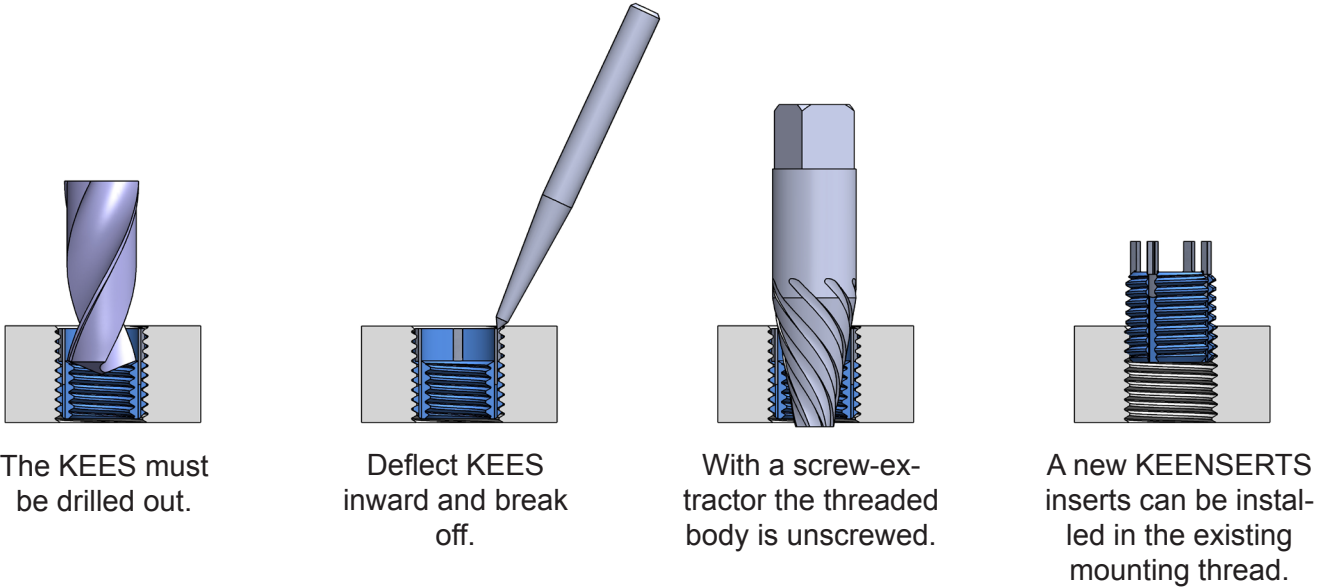
For installation materials with a strength of 30 HRC (980MPa) and more, the groove must be pre-broached. This is necessary to prevent buckling of the KEES during driving in, may also be necessary for anodized aluminum. Corresponding broaching tools are available.



Depending on the strength of the installation material, it is possible that the internal thread tolerance after the installation of the KEES is no longer -5H (the plug gauge is difficult to move). This does not influence on typical screw connections with 6g screws. The thread tolerances of the KEENSERTS insert apply to the unmounted delivery condition.

KEENSERTS® expansion

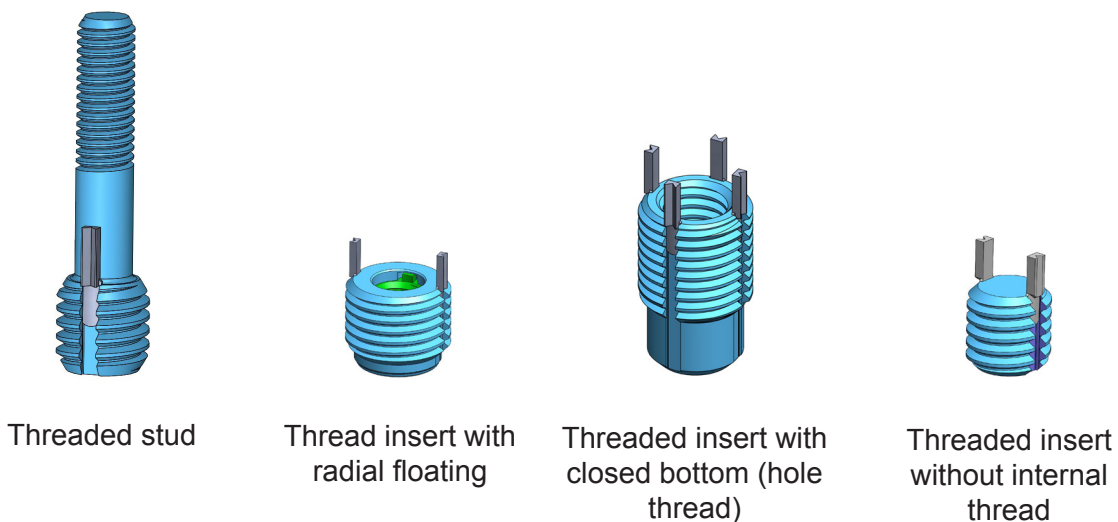
In case of damage, the Keenserts inserts can be replaced up to two times, depending on the damage, and a new insert can be mounted in the same mounting thread. Please note that shear surface is lost depending on the size of the insert.



The data for the expansion are given in the tables starting on page B-1.

KEENSERTS® special designs

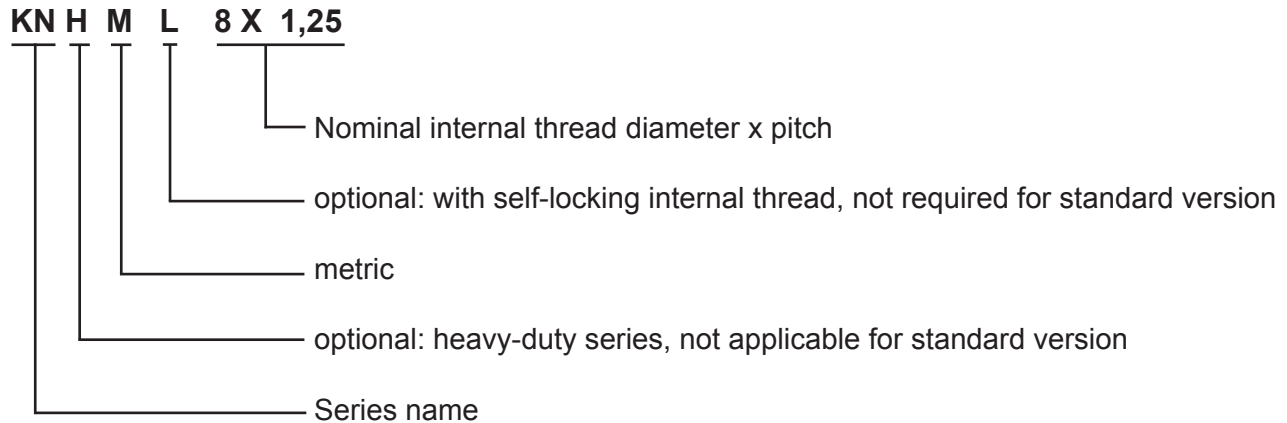
In addition to the standard KEENSERTS inserts, special designs are also available on request:



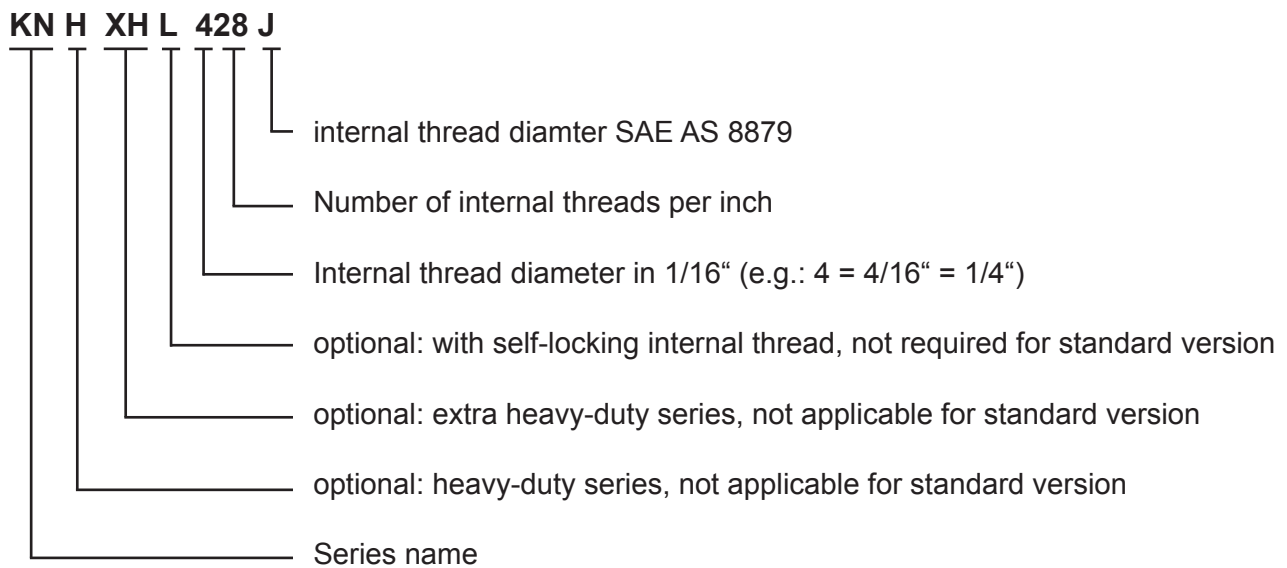
Other versions are available on request.

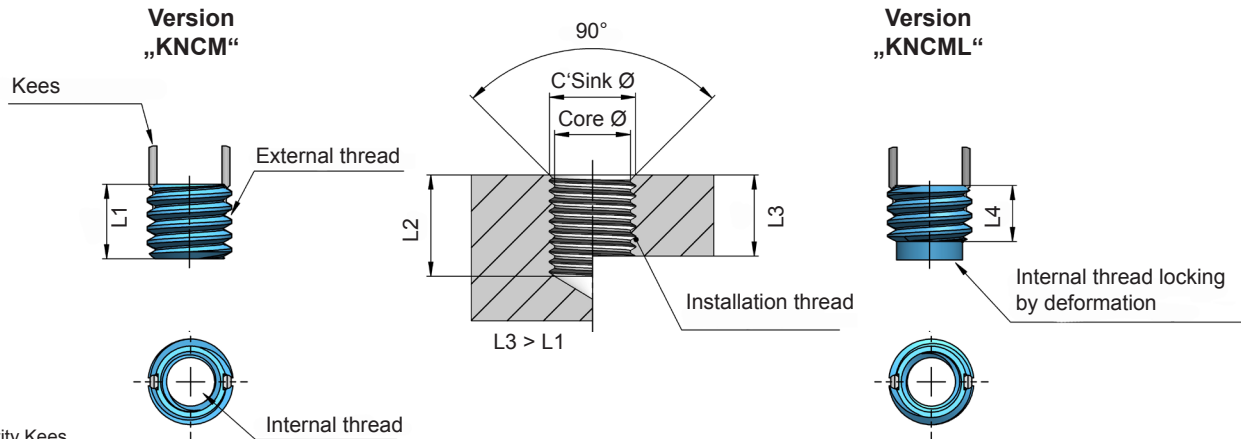
Examples of KEENSERTS® inserts part numbers

The part no. for metric KEENSERTS inserts is composed as follows:



The part no. for inch KEENSERTS inserts is composed as follows:





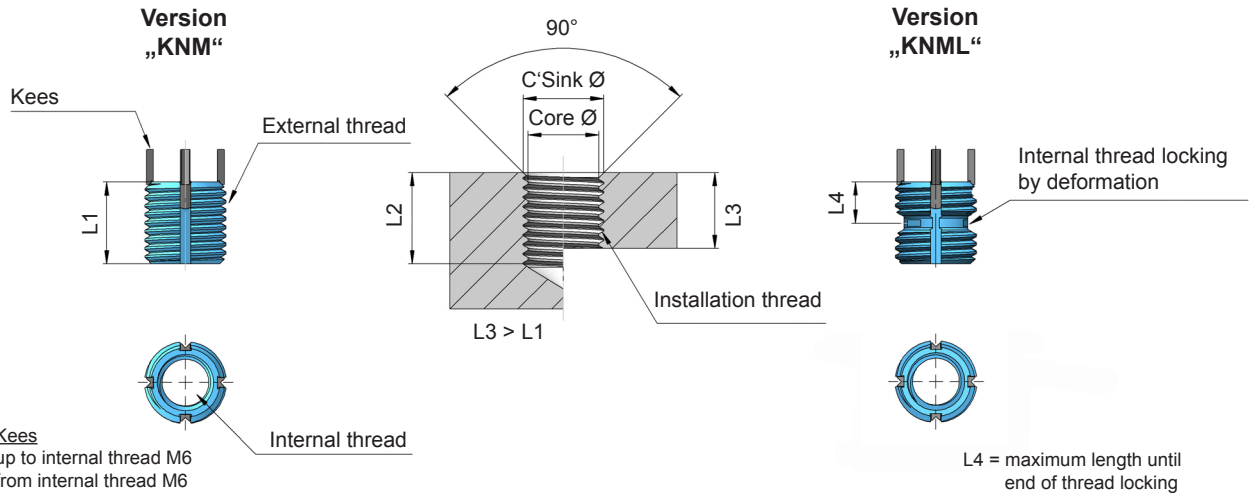
Quantity Kees
2 pieces up to internal thread M6
4 pieces from internal thread M6

L4 = maximum length until end of thread locking

Part number		Dimensions				
Standard "KNCM"	Self-locking "KNCML"	Internal thread Ø Tol.- 5H	External thread Ø Tol.- 4h	Shear engagement mm ²	L1 ± 0,25	L4
KNCM2X0,4		M2X0,4	M4X0,7	16,5	3	
	KNCML2X0,4			10,3		2,2
KNCM2,5X0,45		M2,5X0,45	M4,5X0,75	26,5	3,8	
	KNCML2,5X0,45			15,9		2,7
KNCM3X0,5		M3X0,5	M5X0,8	33,1	4,25	
	KNCML3X0,5			21,4		3,1
KNCM4X0,7		M4X0,7	M6X0,75	58,4	5,25	
	KNCML4X0,7			42,9		4,1

Part number	Installation dimensions				Hand installation tool part-no.	Removal dimensions	
	modified Core-Ø*	C'Sink-Ø +0,25	Installation thread			Drill	
			Thread Tol.- 6H	Depth L2 min.		Ø	Depth
KNCM2X0,4	3,4 +0,080 -0,025	4,1	M4X0,7	4,0	KRTM2-01	2,8	2,00
KNCML2X0,4							
KNCM2,5X0,45	3,9 +0,080 -0,025	4,6	M4,5X0,75	5,0	KRTM2,5-01	3,0	2,00
KNCML2,5X0,45							
KNCM3X0,5	4,4 +0,080 -0,025	5,1	M5X0,8	5,5	KRTM3-01	3,5	2,25
KNCML3X0,5							
KNCM4X0,7	5,5 +0,080 -0,025	6,1	M6X0,75	6,5	KRTM4-01	4,6	2,50
KNCML4X0,7							

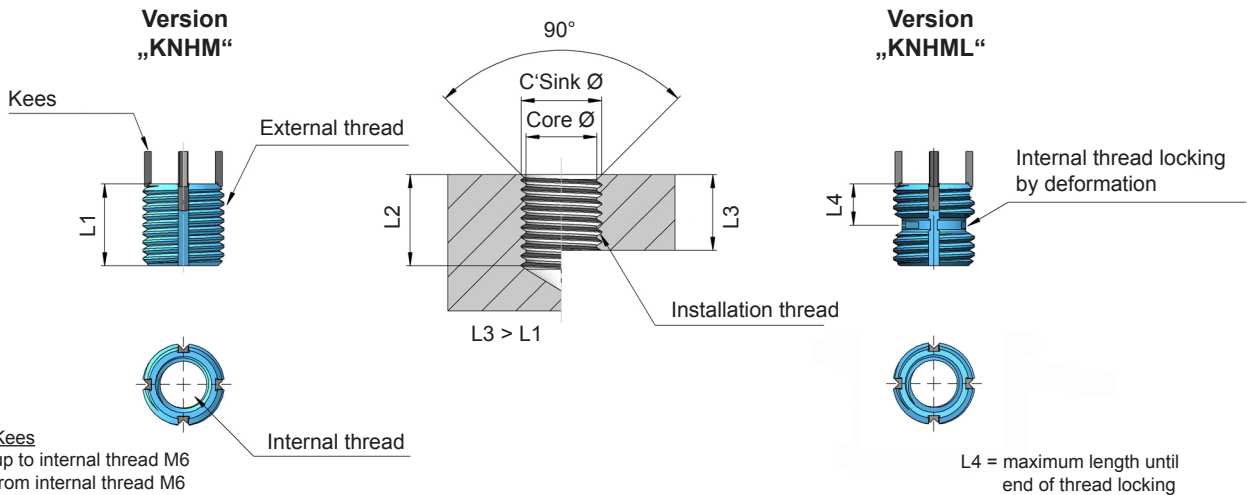
*the core Ø are different from DIN 13-20 / 21 / 22



Part number		Dimensions				
Standard "KNM"	Self-locking "KNML"	Internal thread Ø Tol.- 5H	External thread Ø Tol.- 4h	Shear engagement mm ²	L1 ± 0,3	L4
KNM5X0,8		M5X0,8	M8X1,25	104,9	8	
	KNML5X0,8			83,1		7,6
KNM6X1,0		M6X1,0	M10X1,25	177,7	10	
	KNML6X1,0			152,7		8,2
KNM8X1,25		M8X1,25	M12X1,25	266,7	12	
	KNML8X1,25			242,5		9,5
KNM10X1,5		M10X1,5	M14X1,5	341,6	14	
	KNML10X1,5			316,4		10,0
KNM12X1,75		M12X1,75	M16X1,5	470,2	16	
	KNML12X1,75			441,4		11,2

Part number	Installation dimensions					Removal dimensions	
	modified Core-Ø*	C'Sink-Ø +0,25	Installation thread		Hand installation tool part-no.	Drill	
			Thread Tol.- 6H	Depth L2 min.		Ø	Depth
KNM5X0,8	6,90 ^{+0,100} _{-0,025}	8,25	M8X1,25	9,5	KRTM5-01/ KNT01-M5X0,8AU	5,5	4,00
KNML5X0,8							
KNM6X1,0	8,80 ^{+0,100} _{-0,025}	10,25	M10X1,25	11,5	KRTM6-01/ KNT01-M6X1,0AU	7,5	4,75
KNML6X1,0							
KNM8X1,25	10,80 ^{+0,100} _{-0,025}	12,25	M12X1,25	13,5	KRTM8-01/ KNT01-M8X1,25AU	9,5	4,75
KNML8X1,25							
KNM10X1,5	12,80 ^{+0,130} _{-0,025}	14,25	M14X1,5	15,5	KRTM10-01/ KNT01-M10X1,5AU	11,5	4,75
KNML10X1,5							
KNM12X1,75	14,75 ^{+0,130} _{-0,025}	16,25	M16X1,5	17,5	KRTM12-01/ KNT01-M12X1,75AU	13,5	4,75
KNML12X1,75							

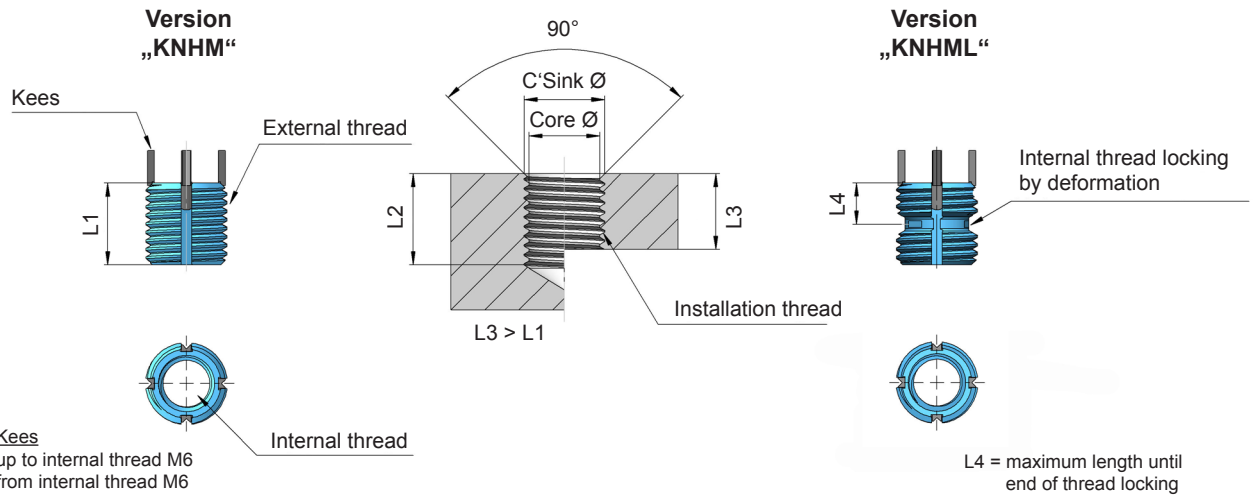
**the core Ø are different from DIN 13-20 / 21 / 22



Part number		Dimensions				
Standard “KNHM”	Self-locking “KNHML”	Internal thread Ø Tol.- 5H	External thread Ø Tol.- 4h	Shear engagement mm ²	L1 ± 0,3	L4
KNHM4X0,7		M4X0,7	M8X1,25	104,9	8	
	KNHML4X0,7			83,1		8,0
KNHM5X0,8		M5X0,8	M10X1,25	177,7	10	
	KNHML5X0,8			152,7		8,7
KNHM6X1,0		M6X1,0	M12X1,25	266,7	12	
	KNHML6X1,0			242,5		9,5
KNHM8X1,25		M8X1,25	M14X1,5	341,6	14	
	KNHML8X1,25			316,4		10,0
KNHM10X1,5		M10X1,5	M16X1,5	470,2	16	
	KNHML10X1,5			441,4		10,0
KNHM12X1,75		M12X1,75	M18X1,5	608,5	18	
	KNHML12X1,75			561,8		10,7

Part number	Installation dimensions					Removal dimensions	
	modified Core-Ø*	C'Sink-Ø +0,25	Installation thread		Hand installation tool part-no.	Drill	
			Thread Tol.- 6H	Depth L2 min.		Ø	Depth
KNHM4X0,7	6,90 +0,100 -0,025	8,25	M8X1,25	9,5	KRTM4-02 / KNT01-HM4X0,7AU	5,5	4,00
KNHML4X0,7							
KNHM5X0,8	8,80 +0,100 -0,025	10,25	M10X1,25	12,5	KRTM5-02 / KNT01-HM5X0,8AU	7,5	4,75
KNHML5X0,8							
KNHM6X1,0	10,80 +0,100 -0,025	12,25	M12X1,25	14,5	KRTM6-02 / KNT01-HM6X1,0AU	9,5	4,75
KNHML6X1,0							
KNHM8X1,25	12,80 +0,130 -0,025	14,25	M14X1,5	16,5	KRTM8-02 / KNT01-HM8X1,25AU	11,5	4,75
KNHML8X1,25							
KNHM10X1,5	14,75 +0,130 -0,025	16,25	M16X1,5	18,5	KRTM10-02 / KNT01-HM10X1,5AU	13,5	4,75
KNHML10X1,5							
KNHM12X1,75	16,75 +0,130 -0,025	18,25	M18X1,5	20,5	KRTM12-02 / KNT01-HM12X1,75AU	15,5	4,75
KNHML12X1,75							

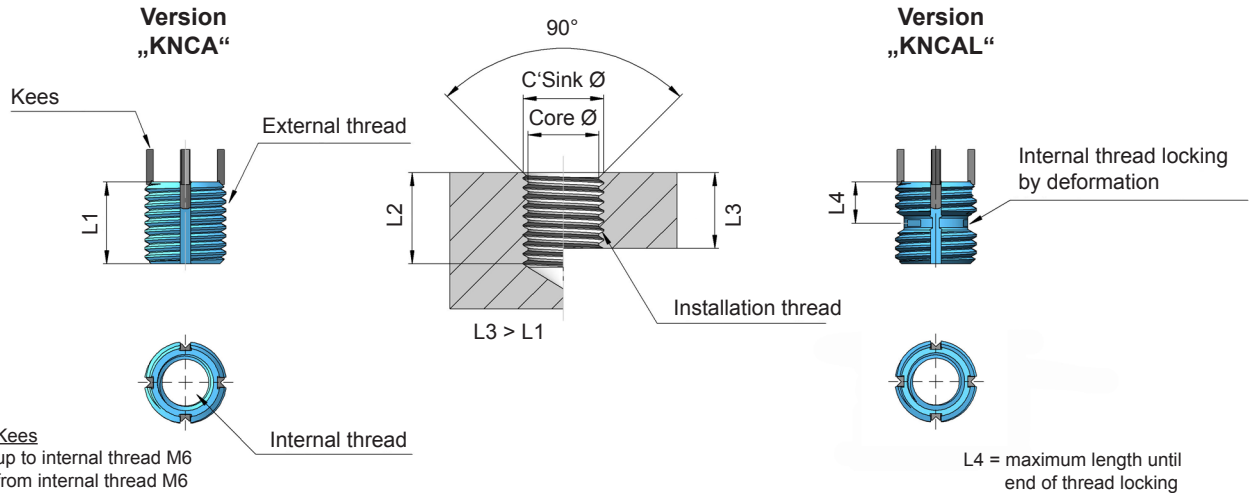
*the core Ø are different from DIN 13-20 / 21 / 22



Part number		Dimensions				
Standard “KNHM”	Self-locking “KNHML”	Internal thread Ø Tol.- 5H	External thread Ø Tol.- 4h	Shear engagement mm ²	L1 ± 0,3	L4
KNHM14X2,0		M14X2,0	M20X1,5	770,5	20	12,4
	KNHML14X2,0			724,4		
KNHM16X2,0		M16X2,0	M22X1,5	896,8	22	12,4
	KNHML16X2,0			855,2		
KNHM18X1,5		M18X1,5	M24X1,5	1084,4	24	16,8
	KNHML18X1,5			1051,5		
KNHM20X2,5		M20X2,5	M30X2,0	1774,3	30	17,5
	KNHML20X2,5			1736,4		
KNHM24X3,0		M24X3,0	M33X2,0	2189,4	33	19,0
	KNHML24X3,0			2161,9		

Part number	Installation dimensions				Hand installation tool part-no.	Removal dimensions	
	modified Core-Ø*	C'Sink-Ø +0,25	Installation thread			Drill	
			Thread Tol.- 6H	Depth L2 min.		Ø	Depth
KNHM14X2,0	18,75 ^{+0,130} -0,025	20,25	M20X1,5	22,5	KRTM14-02 / KNT03-HM14X2,0AU	17,50	4,75
KNHML14X2,0							
KNHM16X2,0	20,50 ^{+0,130} -0,025	22,25	M22X1,5	24,5	KRTM16-02 / KNT03-HM16X2,0AU	17,75	6,35
KNHML16X2,0							
KNHM18X1,5	22,50 ^{+0,130} -0,025	24,25	M24X1,5	26,5	KRTM18-02 / KNT03-HM18X1,5AU	19,75	6,35
KNHML18X1,5							
KNHM20X2,5	28,00 ^{+0,130} -0,025	30,25	M30X2,0	34,5	KRTM20-02 / KNT03-HM20X2,5AU	25,75	6,35
KNHML20X2,5							
KNHM24X3,0	31,00 ^{+0,130} -0,025	33,25	M33X2,0	37,5	KNT03-HM24X3,0AU	28,75	6,35
KNHML24X3,0							

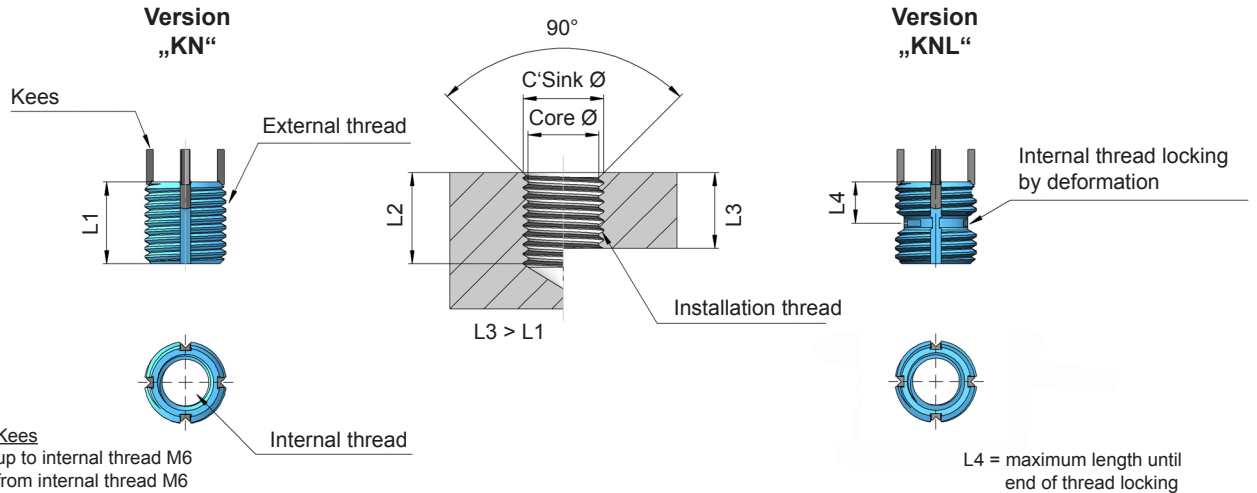
*the core Ø are different from DIN 13-20 / 21 / 22



Part number		Dimensions				
Standard "KNCA"	Self-locking "KNCAL"	Internal thread Ø	External thread Ø	Shear engagement inch ² (mm ²)	L1 inch (mm)	L4 inch (mm)
KNCA0256J		2-56"	8-32"	0,0157 (10,1)	0,12 (3,05)	0,088 (2,24)
	KNCAL0256J	UNJC-3B	UNC-3A	0,0157 (10,1)		
KNCA0440J		4-40"	10-32"	0,0302 (19,5)	0,17 (4,32)	0,125 (3,18)
	KNCAL0440J	UNJC-3B	UNF-2A	0,0302 (19,5)		
KNC0632J		6-32"	12-28"	0,0329 (21,2)	0,17 (4,32)	0,125 (3,18)
	KNCL0632J	UNJC-3B	UNF-2A	0,0329 (21,2)		
KNCA0832J		8-32"	1/4-28"	0,0669 (43,2)	0,22 (5,59)	0,175 (4,45)
	KNCAL0832J	UNJC-3B	UNF-2A	0,0669 (43,2)		

Part number	Installation dimensions				Hand installation tool part-no.	Removal dimensions	
	modified Core-Ø* inch	C'Sink-Ø inch	Installation thread			Drill	
			Thread	L2 min. inch (mm)		Ø inch (mm)	Depth inch (mm)
KNCA0256J	.134 ^{+0,003} -0,001	.166 ^{+0,001} - .000	8-32	0,140 (3,56)	TKNC02	0,113 (2,87)	1/16 (1,59)
KNCAL0256J			UNC-2B				
KNCA0440J	.161 ^{+0,003} -0,001	.194 ^{+0,001} - .000	10-32	0,160 (4,06)	TKNC04	0,136 (3,45)	3/32 (2,38)
KNCAL0440J			UNF-2B				
KNC0632J	.187 ^{+0,003} -0,001	.220 ^{+0,001} - .000	12-28	0,160 (4,06)	TKNC06	0,159 (4,04)	3/32 (2,38)
KNCL0632J			UNF-2B				
KNCA0832J	.228 ^{+0,003} -0,001	.255 ^{+0,001} - .000	1/4-28	0,210 (5,33)	TKNC08	0,199 (5,05)	1/8 (3,18)
KNCAL0832J			UNF-2B				

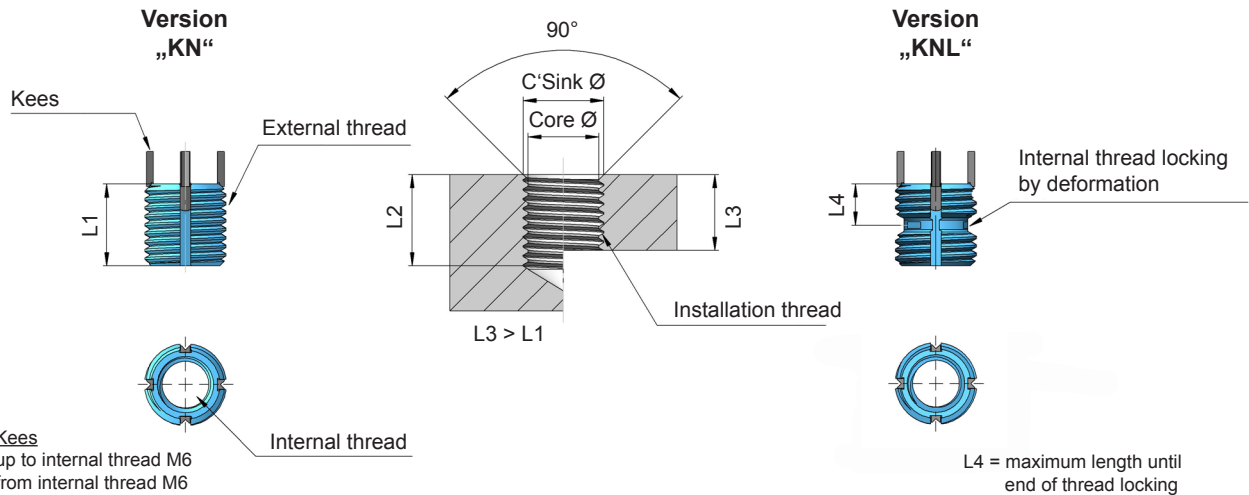
*the core Ø are different from SAE AS 8879



Part number		Dimensions				
Standard "KN"	Self-locking "KNL"	Internal thread Ø Tol.- 3B	External thread Ø Tol.- 2A mod.	Shear engagement inch ² (mm ²)	L1 inch (mm)	L4 inch (mm)
KN1032J		10-32	5/16-18	0,1517 (97,9)	0,31 (7,87)	
	KNL1032J			0,0945 (61,0)		0,31 (7,87)
KN1024J		10-24	5/16-18	0,1517 (97,9)	0,31 (7,87)	
	KNL1024J			0,0945 (61,0)		0,31 (7,87)
KN428J		1/4-28	3/8-16	0,2371 (153,0)	0,37 (9,40)	
	KNL428J			0,1726 (111,4)		0,33 (8,38)
KN420J		1/4-20	3/8-16	0,2371 (153,0)	0,37 (9,40)	
	KNL420J			0,1726 (111,4)		0,36 (9,14)
KN524J		5/16-24	7/16-14	0,3049 (196,7)	0,43 (10,9)	
	KNL524J			0,2321 (149,7)		0,34 (8,64)
KN518J		5/16-18	7/16-14	0,3049 (196,7)	0,43 (10,9)	
	KNL518J			0,2321 (149,7)		0,37 (9,40)

Part number	Installation dimensions					Removal dimensions	
	modified Core-Ø* inch (mm)	C'Sink-Ø inch +0,01 (mm) +0,25	Installation thread		Hand installation tool part-no.	Drill	
			Thread Tol. - 2B	L2 min. inch (mm)		Ø inch (mm)	Depth inch (mm)
KN1032J	0,272 (6,91)	0,323 (8,20)	5/16-18	0,37 (9,4)	TD1032L	7/32 (5,56)	5/32 (3,97)
KNL1032J							
KN1024J	0,272 (6,91)	0,323 (8,20)	5/16-18	0,37 (9,4)	TD1024L	7/32 (5,56)	5/32 (3,97)
KNL1024J							
KN428J	0,332 (8,43)	0,385 (9,78)	3/8-16	0,43 (10,9)	TD428L	9/32 (7,14)	3/16 (4,76)
KNL428J							
KN420J	0,332 (8,43)	0,385 (9,78)	3/8-16	0,43 (10,9)	TD420L	9/32 (7,14)	3/16 (4,76)
KNL420J							
KN524J	0,397 (10,08)	0,447 (11,35)	7/16-14	0,50 (12,7)	TD524L	11/32 (8,73)	3/16 (4,76)
KNL524J							
KN518J	0,397 (10,08)	0,447 (11,35)	7/16-14	0,50 (12,7)	TD518L	11/32 (8,73)	3/16 (4,76)
KNL518J							

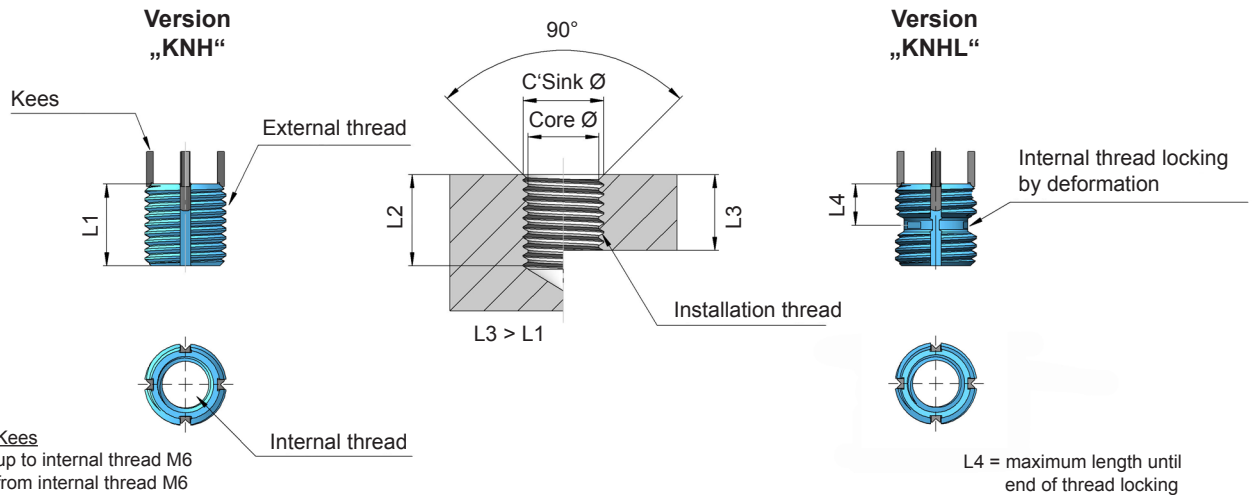
*the core Ø are different from SAE AS 8879



Part number		Dimensions				
Standard "KN"	Self-locking "KNL"	Internal thread Ø Tol.- 3B	External thread Ø Tol.- 2A mod.	Shear engagement inch² (mm²)	L1 inch (mm)	L4 inch (mm)
KN624J		3/8-24	1/2-13	0,4299 (277,4)	0,50 (12,7)	
	KNL624J			0,3366 (217,2)		0,36 (9,14)
KN616J		3/8-16	1/2-13	0,4299 (277,4)	0,50 (12,7)	
	KNL616J			0,3366 (217,2)		0,40 (10,16)
KN720J		7/16-20	9/16-12	0,5665 (365,5)	0,56 (14,2)	
	KNL720J			0,4606 (297,2)		0,41 (10,41)
KN714J		7/16-14	9/16-12	0,5665 (365,5)	0,56 (14,2)	
	KNL714J			0,4606 (297,2)		0,45 (11,43)
KN820J		1/2-20	5/8-11	0,7175 (462,9)	0,62 (15,8)	
	KNL820J			0,5906 (381,0)		0,42 (10,67)
KN813J		1/2-13	5/8-11	0,7175 (462,9)	0,62 (15,8)	
	KNL813J			0,5906 (381,0)		0,47 (11,94)

Part number	Installation dimensions				Hand installation tool part-no.	Removal dimensions	
	modified Core-Ø* inch (mm)	C'Sink-Ø inch +0,01 (mm) +0,25	Installation thread			Drill	
			Thread Tol.- 2B	L2 min. inch (mm)		Ø inch (mm)	Depth inch (mm)
KN624J	0,453 (11,51)	0,510 (12,95)	1/2-13	0,56 (14,2)	TD624L	13/32 (10,32)	3/16 (4,76)
KNL624J							
KN616J	0,453 (11,51)	0,510 (12,95)	1/2-13	0,56 (14,2)	TD616L	13/32 (10,32)	3/16 (4,76)
KNL616J							
KN720J	0,516 (13,11)	0,572 (14,53)	9/16-12	0,62 (15,7)	TD720L	15/32 (11,91)	3/16 (4,76)
KNL720J							
KN714J	0,516 (13,11)	0,572 (14,53)	9/16-12	0,62 (15,7)	TD714L	15/32 (11,91)	3/16 (4,76)
KNL714J							
KN820J	0,578 (14,68)	0,635 (16,13)	5/8-11	0,68 (17,3)	TD820L	17/32 (13,49)	3/16 (4,76)
KNL820J							
KN813J	0,578 (14,68)	0,635 (16,13)	5/8-11	0,68 (17,3)	TD813L	17/32 (13,49)	3/16 (4,76)
KNL813J							

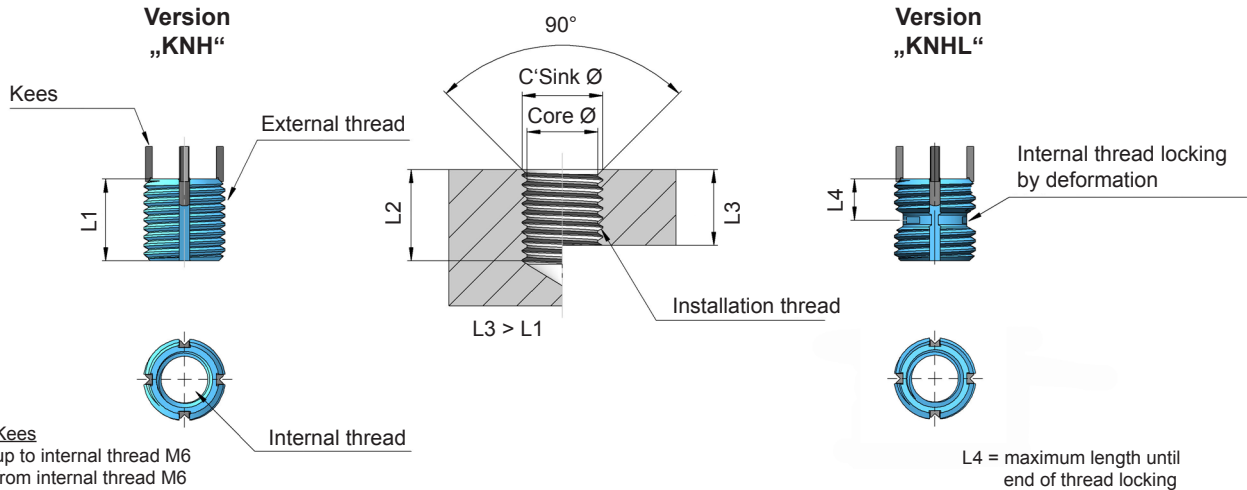
*the core Ø are different from SAE AS 8879



Part number		Dimensions				
Standard "KNH"	Self-locking "KNHL"	internal-thread Ø Tol.- 3B	outer-thread Ø Tol.- 2A mod.	Shear engagement inch² (mm²)	L1 inch (mm)	L4 inch (mm)
KNH0832J		8-32	5/16-18	0,1517 (97,87)	0,31 (7,87)	0,29 (7,37)
	KNHL0832J			0,0945 (60,97)		
KNH1032J		10-32	3/8-16	0,1901 (122,7)	0,31 (7,87)	0,31 (7,87)
	KNHL1032J			0,1156 (74,6)		
KNH1024J		10-24	3/8-16	0,1901 (122,7)	0,31 (7,87)	0,31 (7,87)
	KNHL1024J			0,1156 (74,6)		
KNH428J		1/4-28	7/16-14	0,2842 (183,4)	0,37 (9,40)	0,33 (8,38)
	KNHL428J			0,1970 (127,1)		
KNH420J		1/4-20	7/16-14	0,2842 (183,4)	0,37 (9,40)	0,36 (9,14)
	KNHL420J			0,1970 (127,1)		
KNH524J		5/16-24	1/2-13	0,3588 (231,5)	0,43 (10,9)	0,34 (8,64)
	KNHL524J			0,2608 (168,3)		

Part number	Installation dimensions				Hand installation tool part-no.	Removal dimensions	
	modified Core-Ø* inch (mm)	C'Sink-Ø inch +0,01 (mm) +0,25	Installation thread			Drill	
			Thread Tol. - UNC 2B	L2 min. inch (mm)		Ø inch (mm)	Depth inch (mm)
KNH0832J	0,272 (6,91)	0,323 (8,20)	5/16-18	0,37 (9,4)	THD0832L	7/32 (5,56)	1/8 (3,18)
KNHL0832J							
KNH1032J	0,332 (8,43)	0,385 (9,78)	3/8-16	0,37 (9,4)	THD1032L	9/32 (7,14)	1/8 (3,18)
KNHL1032J							
KNH1024J	0,332 (8,43)	0,385 (9,78)	3/8-16	0,37 (9,4)	THD1024L	9/32 (7,14)	1/8 (3,18)
KNHL1024J							
KNH428J	0,397 (10,08)	0,447 (11,35)	7/16-14	0,43 (10,9)	THD428L	11/32 (8,73)	3/16 (4,76)
KNHL428J							
KNH420J	0,397 (10,08)	0,447 (11,35)	7/16-14	0,43 (10,9)	THD420L	11/32 (8,73)	3/16 (4,76)
KNHL420J							
KNH524J	0,453 (11,51)	0,510 (12,95)	1/2-13	0,50 (12,7)	THD524L	13/32 (10,32)	3/16 (4,76)
KNHL524J							

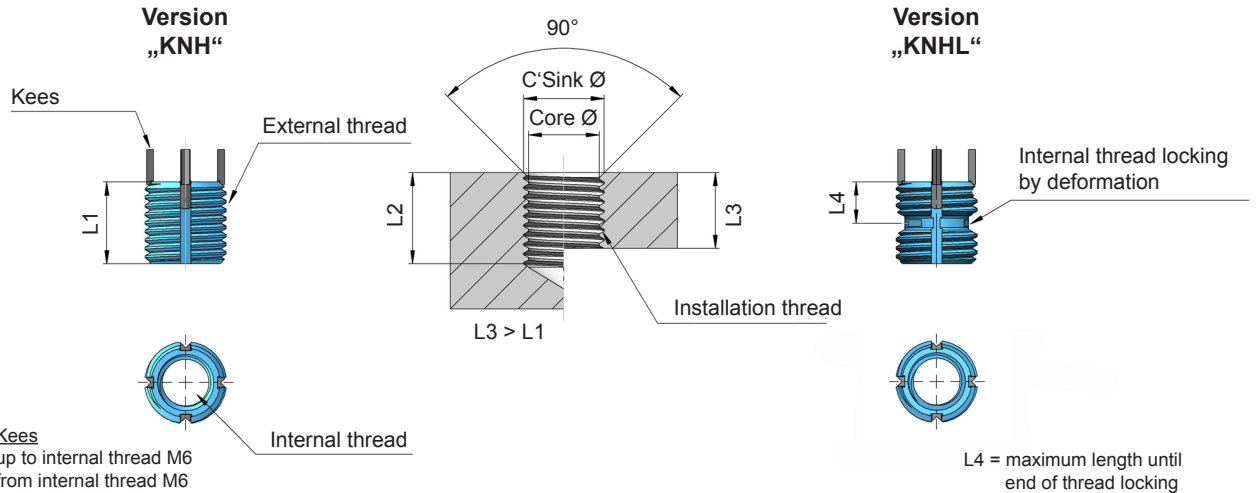
*the core Ø are different from SAE AS 8879



Part number		Dimensions				
Standard "KNH"	Self-locking "KNHL"	internal-thread Ø Tol.- 3B	outer-thread Ø Tol.- 2A mod.	Shear engagement inch ² (mm ²)	L1 inch (mm)	L4 inch (mm)
KNH518J		5/16-18	1/2-13	0,3588 (231,5)	0,43 (10,9)	0,37 (9,40)
	KNHL518J			0,2608 (168,3)		
KNH624J		3/8-24	9/16-12	0,4975 (321,0)	0,50 (12,7)	0,37 (9,40)
	KNHL624J			0,3843 (248,0)		
KNH616J		3/8-16	9/16-12	0,4975 (321,0)	0,50 (12,7)	0,41 (10,41)
	KNHL616J			0,3843 (248,0)		
KNH720J		7/16-20	5/8-11	0,7172 (462,7)	0,62 (15,8)	0,42 (10,67)
	KNHL720J			0,5831 (376,2)		
KNH714J		7/16-14	5/8-11	0,7172 (462,7)	0,62 (15,8)	0,46 (11,68)
	KNHL714J			0,5831 (376,2)		

Part number	Installation dimensions				Hand installation tool part-no.	Removal dimensions	
	modified Core-Ø* inch (mm)	C'Sink-Ø inch +0,01 (mm) +0,25	Installation thread			Drill	
			thread Tol.- UNC 2B	L2 min. inch (mm)		Ø inch (mm)	Depth inch (mm)
KNH518J	0,453 (11,51)	0,510 (12,95)	1/2-13	0,50 (12,7)	THD518L	13/32 (10,32)	3/16 (4,76)
KNHL518J							
KNH624J	0,516 (13,11)	0,572 (14,53)	9/16-12	0,56 (14,2)	THD624L	15/32 (11,91)	3/16 (4,76)
KNHL624J							
KNH616J	0,516 (13,11)	0,572 (14,53)	9/16-12	0,56 (14,2)	THD616L	15/32 (11,91)	3/16 (4,76)
KNHL616J							
KNH720J	0,578 (14,68)	0,635 (16,13)	5/8-11	0,68 (17,27)	THD720L	17/32 (13,49)	3/16 (4,76)
KNHL720J							
KNH714J	0,578 (14,68)	0,635 (16,13)	5/8-11	0,68 (17,27)	THD714L	17/32 (13,49)	3/16 (4,76)
KNHL714J							

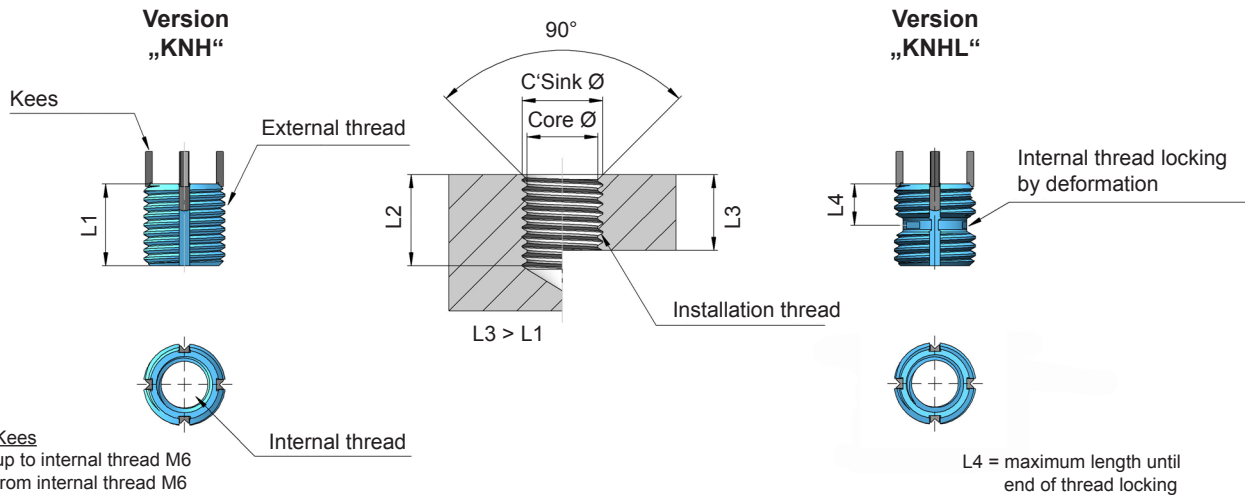
*the core Ø are different from SAE AS 8879



Part number		Dimensions				
Standard "KNH"	Self-locking "KNHL"	Internal thread Ø Tol.- 3B	External thread Ø Tol.- 2A mod.	Shear engagement inch² (mm²)	L1 inch (mm)	L4 inch (mm)
KNH820J		1/2-20	11/16-11NS	0,8884 (573,2)	0,68 (17,3)	
	KNHL820J			0,7368 (475,4)		0,42 (10,67)
KNH813J		1/2-13	11/16-11NS	0,8884 (573,2)	0,68 (17,3)	
	KNHL813J			0,7368 (475,4)		0,47 (11,94)
KNH918J		9/16-18	13/16-16	1,2493 (806,0)	0,81 (20,6)	
	KNHL918J			1,0247 (661,1)		0,48 (12,19)
KNH912J		9/16-12	13/16-16	1,2493 (806,0)	0,81 (20,6)	
	KNHL912J			1,0247 (661,1)		0,54 (13,72)
KNH1018J		5/8-18	7/8-14	1,4866 (959,1)	0,87 (22,1)	
	KNHL1018J			1,2415 (801,0)		0,49 (12,47)
KNH1011J		5/8-11	7/8-14	1,4866 (959,1)	0,87 (22,1)	
	KNHL1011J			1,2415 (801,0)		0,57 (14,48)

Part number	Installation dimensions				Hand installation tool part-no.	Removal dimensions	
	modified Core-Ø* inch (mm)	C'Sink-Ø inch +0,01 (mm) +0,25	Installation thread			Drill	
			Thread Tol. - UNC 2B	L2 min. inch (mm)		Ø inch (mm)	Depth inch (mm)
KNH820J	0,641 (16,28)	0,700 (17,80)	11/16-11NS	0,75 (19,06)	THD820L	19/32 (15,08)	3/16 (4,76)
KNHL820J							
KNH813J	0,641 (16,28)	0,700 (17,80)	11/16-11NS	0,75 (19,06)	THD813L	19/32 (15,08)	3/16 (4,76)
KNHL813J							
KNH918J	0,766 (19,46)	0,822 (20,88)	13/16-16UN	0,94 (23,88)	THD918L	23/32 (18,26)	3/16 (4,76)
KNHL918J							
KNH912J	0,766 (19,46)	0,822 (20,88)	13/16-16UN	0,94 (23,88)	THD912L	23/32 (18,26)	3/16 (4,76)
KNHL912J							
KNH1018J	0,828 (21,03)	0,885 (22,48)	7/8-14UNF	1,00 (25,40)	THD1018L	25/32 (19,84)	3/16 (4,76)
KNHL1018J							
KNH1011J	0,828 (21,03)	0,885 (22,48)	7/8-14 UNF	1,00 (25,40)	THD1011L	25/32 (19,84)	3/16 (4,76)
KNHL1011J							

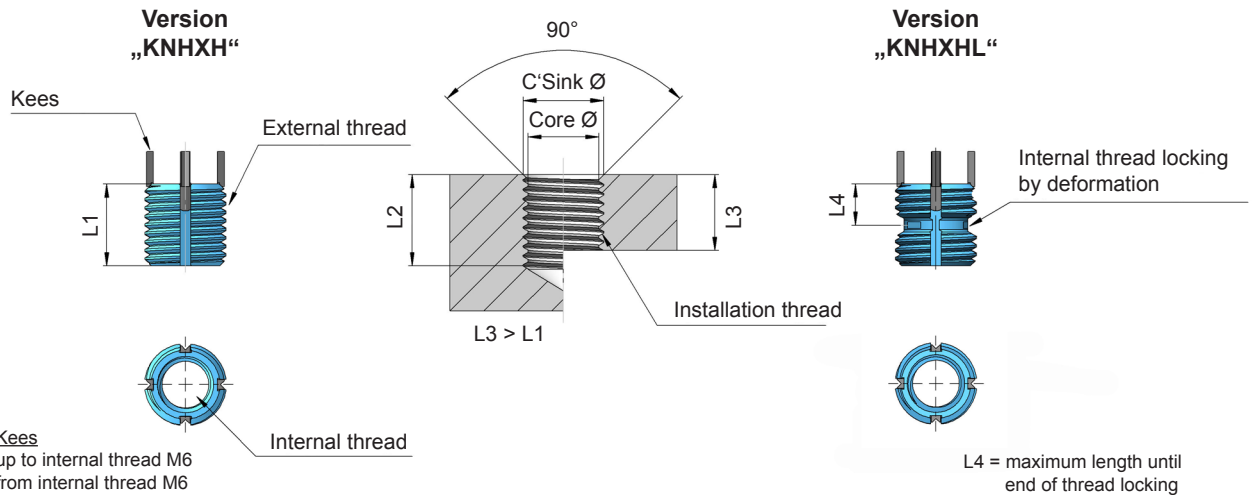
*the core Ø are different from SAE AS 8879



Part number		Dimensions				
Standard “KNH”	Self-locking “KNHL”	Internal thread Ø Tol.- 3B	External thread Ø Tol.- 2A mod.	Shear engagement inch² (mm²)	L1 inch (mm)	L4 inch (mm)
KNH1216J		3/4-16	1-1/8-12	2,4901 (1606,5)	1,12 (28,5)	
	KNHL1216J			2,4478 (1579,3)	1,25 (31,8)	0,68 (17,27)
KNH1210J		3/4-10	1-1/8-12	2,4901 (1606,5)	1,12 (28,5)	
	KNHL1210J			2,4478 (1579,3)	1,25 (31,8)	0,75 (19,05)
KNH1414J		7/8-14	1-1/4-12	3,1370 (2024,1)	1,25 (31,8)	
	KNHL1414J			3,0775 (1985,6)	1,37 (34,8)	0,69 (17,53)
KNH1409J		7/8-9	1-1/4-12	3,1370 (2024,1)	1,25 (31,8)	
	KNHL1409J			3,0775 (1985,6)	1,37 (34,8)	0,77 (19,56)
KNH1612J		1-12	1-3/8-12	3,8381 (2476,3)	1,37 (34,8)	
	KNHL1612J			3,7929 (2447,0)	1,50 (38,1)	0,78 (19,81)
KNH1608J		1-8	1-3/8-12	3,8381 (2476,3)	1,37 (34,8)	
	KNHL1608J			3,7929 (2447,0)	1,50 (38,1)	0,86 (21,84)

Part number	Installation dimensions				Hand installation tool part-no.	Removal dimensions	
	modified Core-Ø* inch (mm)	C'Sink-Ø inch +0,01 (mm) +0,25	Installation thread			Drill	
			Thread Tol. - UNC 2B	L2 min. inch (mm)		Ø inch (mm)	Depth inch (mm)
KNH1216J	1,062 (26,97)	1,145 (29,08)	1-1/8-12 UNF	1,31 (33,27)	THD1216L	31/32 (24,61)	5/16 (7,94)
KNHL1216J				1,44 (36,58)			
KNH1210J	1,062 (26,97)	1,145 (29,08)	1-1/8-12 UNF	1,31 (33,27)	THD1210L	31/32 (24,61)	5/16 (7,94)
KNHL1210J				1,44 (36,58)			
KNH1414J	1,187 (30,15)	1,270 (32,26)	1-1/4-12 UNF	1,44 (36,58)	THD1414L	1-3/32 (27,78)	5/16 (7,94)
KNHL1414J				1,56 (39,62)			
KNH1409J	1,187 (30,15)	1,270 (32,26)	1-1/4-12 UNF	1,44 (36,58)	THD1409L	1-3/32 (27,78)	5/16 (7,94)
KNHL1409J				1,56 (39,62)			
KNH1612J	1,312 (33,32)	1,395 (35,43)	1-3/8-12 UNF	1,56 (39,62)	THD1612L	1-7/32 (30,96)	5/16 (7,94)
KNHL1612J				1,68 (42,67)			
KNH1608J	1,312 (33,32)	1,395 (35,43)	1-3/8-12 UNF	1,56 (39,62)	THD1608L	1-7/32 (30,96)	5/16 (7,94)
KNHL1608J				1,68 (42,67)			

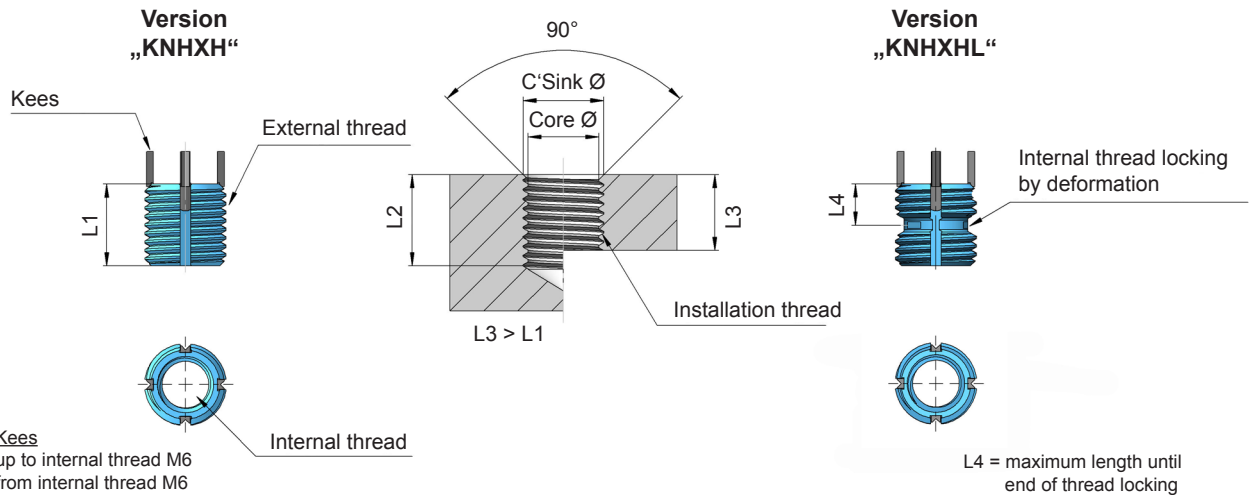
*the core Ø are different from SAE AS 8879



Part number		Dimensions				
Standard "KNHXH"	Self-locking "KNHXHL"	Internal thread Ø Tol.- 3B	External thread Ø Tol.- 2A mod.	Shear engagement inch² (mm²)	L1 inch (mm)	L4 inch (mm)
KNHXH1032J	KNHXHL1032J	10-32	7/16-14	0,2299 (148,3)	0,31 (7,9)	0,31 (7,90)
				0,1403 (90,5)		
KNHXH1024J	KNHXHL1024J	10-24	7/16-14	0,2299 (148,3)	0,31 (7,9)	0,31 (7,90)
				0,1403 (90,5)		
KNHXH428J	KNHXHL428J	1/4-28	1/2-13	0,2997 (193,4)	0,37 (9,4)	0,33 (8,38)
				0,2005 (129,4)		
KNHXH420J	KNHXHL420J	1/4-20	1/2-13	0,2997 (193,4)	0,37 (9,4)	0,36 (9,14)
				0,2005 (129,4)		
KNHXH524J	KNHXHL524J	5/16-24	9/16-12	0,4163 (268,6)	0,43 (10,9)	0,34 (8,64)
				0,3029 (195,4)		

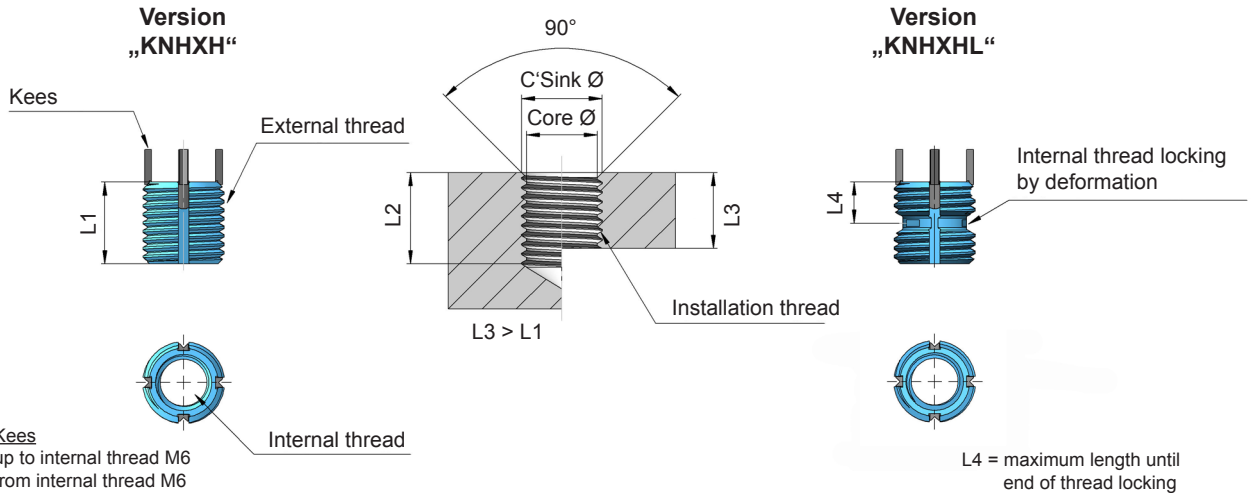
Part number	Installation dimensions				Hand installation tool part-no.	Removal dimensions	
	modified Core-Ø* inch (mm)	C'Sink-Ø inch +0,01 (mm) +0,25	Installation thread			Drill	
			Thread Tol.- UNC 2B	L2 min. inch (mm)		Ø inch (mm)	Depth inch (mm)
KNHXH1032J	0,397 (10,08)	0,447 (11,35)	7/16-14	0,37 (9,40)	THXHD1032L	11/32 (8,73)	3/16 (4,76)
KNHXHL1032J							
KNHXH1024J	0,397 (10,08)	0,447 (11,35)	7/16-14	0,37 (9,40)	THXHD1024L	11/32 (8,73)	3/16 (4,76)
KNHXHL1024J							
KNHXH428J	0,453 (11,51)	0,510 (12,95)	1/2-13	0,44 (11,18)	THXHD428L	13/32 (10,32)	3/16 (4,76)
KNHXHL428J							
KNHXH420J	0,453 (11,51)	0,510 (12,95)	1/2-13	0,44 (11,18)	THXHD420L	13/32 (10,32)	3/16 (4,76)
KNHXHL420J							
KNHXH524J	0,516 (13,11)	0,572 (14,53)	9/16-12	0,50 (12,70)	THXHD524L	15/32 (11,91)	3/16 (4,76)
KNHXHL524J							

*the core Ø are different from SAE AS 8879



Part number		Dimensions				
Standard “KNHXH”	Self-locking “KNHXHL”	Internal thread Ø Tol.- 3B	External thread Ø Tol.- 2A mod.	Shear engagement inch ² (mm ²)	L1 inch (mm)	L4 inch (mm)
KNHXH518J		5/16-18	9/16-12	0,4163 (268,6)	0,43 (10,9)	
	KNHXHL518J			0,3029 (195,4)		0,37 (9,40)
KNHXH624J		3/8-24	5/8-11	0,5584 (360,3)	0,50 (12,7)	
	KNHXHL624J			0,4234 (273,8)		0,37 (9,40)
KNHXH616J		3/8-16	5/8-11	0,5584 (360,3)	0,50 (12,7)	
	KNHXHL616J			0,4234 (273,8)		0,41 (10,41)
KNHXH720J		7/16-20	11/16-11 NS	0,8000 (516,1)	0,62 (15,6)	
	KNHXHL720J			0,6498 (419,2)		0,42 (10,67)
KNHXH714J		7/16-14	11/16-11 NS	0,8000 (516,1)	0,62 (15,6)	
	KNHXHL714J			0,6498 (419,2)		0,46 (11,68)

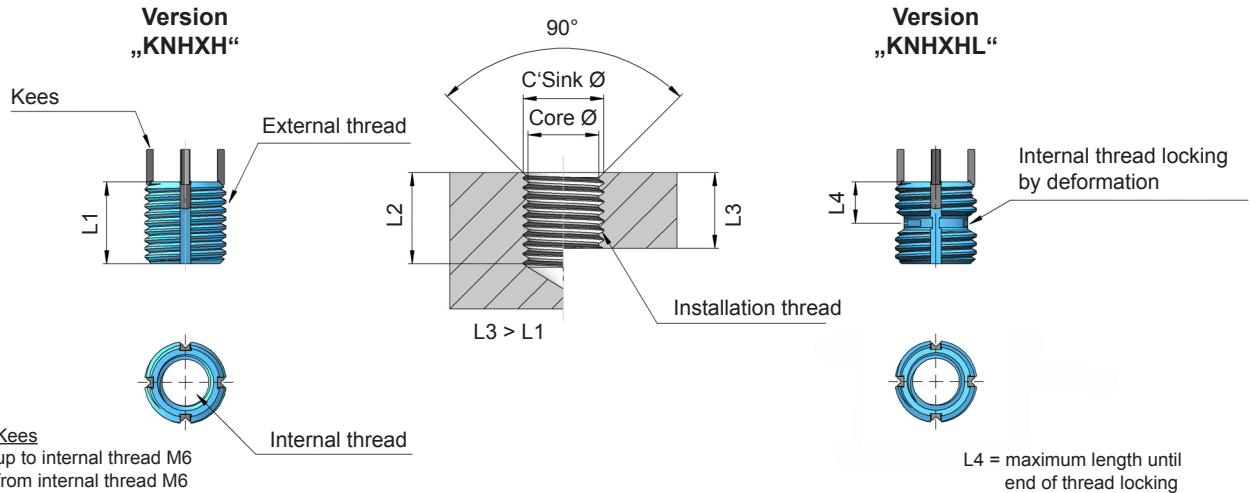
Part number	Installation dimensions				Hand installation tool part-no.	Removal dimensions	
	modified Core-Ø* inch (mm)	C'Sink-Ø inch +0,01 (mm) +0,25	Installation thread			Drill	
			Thread Tol.- UNC 2B	L2 min. inch (mm)		Ø inch (mm)	Depth inch (mm)
KNHXH518J	0,516 (13,11)	0,572 (14,53)	9/16-12	0,50 (12,70)	THXHD518L	15/32 (11,91)	3/16 (4,76)
KNHXHL518J							
KNHXH624J	0,578 (14,68)	0,635 (16,13)	5/8-11	0,56 (14,22)	THXHD624L	17/32 (13,49)	3/16 (4,76)
KNHXHL624J							
KNHXH616J	0,578 (14,68)	0,635 (16,13)	5/8-11	0,56 (14,22)	THXHD616L	17/32 (13,49)	3/16 (4,76)
KNHXHL616J							
KNHXH720J	0,641 (16,28)	0,700 (17,80)	11/16-11 NS	0,68 (17,27)	THXHD720L	19/32 (15,08)	3/16 (4,76)
KNHXHL720J							
KNHXH714J	0,641 (16,28)	0,700 (17,80)	11/16-11 NS	0,68 (17,27)	THXHD714L	19/32 (15,08)	3/16 (4,76)
KNHXHL714J							



Part number		Dimensions				
Standard “KNHXH”	Self-locking “KNHXHL”	Internal thread Ø Tol.- 3B	External thread Ø Tol.- 2A	Shear engagement inch² (mm²)	L1 inch (mm)	L4 inch (mm)
KNHXH820J		1/2-20	13/16-16	1,0293 (664,1)	0,68 (17,3)	
	KNHXHL820J			0,8642 (557,6)		0,42 (10,67)
KNHXH813J		1/2-13	13/16-16	1,0293 (664,1)	0,68 (17,3)	
	KNHXHL813J			0,8642 (557,6)		0,47 (11,94)
KNHXH918J		9/16-18	7/8-14	1,3761 (887,8)	0,81 (20,6)	
	KNHXHL918J			1,1131 (718,1)		0,48 (12,19)
KNHXH912J		9/16-12	7/8-14	1,3761 (887,8)	0,81 (20,6)	
	KNHXHL912J			1,1131 (718,1)		0,54 (13,72)
KNHXH1018J		5/8-18	1-12	1,6420 (1059,4)	0,87 (22,1)	
	KNHXHL1018J			1,2770 (823,9)		0,51 (12,95)
KNHXH1011J		5/8-11	1-12	1,6420 (1059,4)	0,87 (22,1)	
	KNHXHL1011J			1,2770 (823,9)		0,59 (14,99)

Part number	Installation dimensions				Hand installation tool part-no.	Removal dimensions	
	modified Core-Ø* inch (mm)	C'Sink-Ø inch +0,01 (mm) +0,25	Installation thread			Drill	
			Thread Tol.- UNC 2B	L2 min. inch (mm)		Ø inch (mm)	Depth inch (mm)
KNHXH820J	0,766 (19,46)	0,822 (20,88)	13/16-16 UNF	0,75 (19,05)	THXHD820L	23/32 (18,26)	3/16 (4,76)
KNHXHL820J							
KNHXH813J	0,766 (19,46)	0,822 (20,88)	13/16-16 UNF	0,75 (19,05)	THXHD813L	23/32 (18,26)	3/16 (4,76)
KNHXHL813J							
KNHXH918J	0,828 (21,03)	0,885 (22,48)	7/8-14 UNF	0,94 (23,88)	THXHD918L	25/32 (19,84)	3/16 (4,76)
KNHXHL918J							
KNHXH912J	0,828 (21,03)	0,885 (22,48)	7/8-14 UNF	0,94 (23,88)	THXHD912L	25/32 (19,84)	3/16 (4,76)
KNHXHL912J							
KNHXH1018J	0,937 (23,80)	1,020 (25,91)	1-12 UNF	1,00 (25,40)	THXHD1018L	27/32 (21,43)	5/16 (7,94)
KNHXHL1018J							
KNHXH1011J	0,937 (23,80)	1,020 (25,91)	1-12 UNF	1,00 (25,40)	THXHD1011L	27/32 (21,43)	5/16 (7,94)
KNHXHL1011J							

*the core Ø are different from SAE AS 8879



Part number		Dimensions				
Standard “KNHXH”	Self-locking “KNHXHL”	Internal thread Ø Tol.- 3B	External thread Ø Tol.- 2A	Shear engagement inch² (mm²)	L1 inch (mm)	L4 inch (mm)
KNHXH1216J		3/4-16	1-1/4-12	2,7966 (1804,2)	1,12 (28,5)	
	KNHXHL1216J			2,5505 (1645,5)	1,25 (31,8)	0,57 (14,48)
KNHXH1210J		3/4-10	1-1/4-12	2,7966 (1804,2)	1,12 (28,5)	
	KNHXHL1210J			2,5505 (1645,5)	1,25 (31,8)	0,64 (16,26)
KNHXH1414J		7/8-14	1-3/8-12	3,4652 (2235,6)	1,25 (31,8)	
	KNHXHL1414J			3,2769 (2114,1)	1,37 (34,8)	0,63 (16,00)
KNHXH1409J		7/8-9	1-3/8-12	3,4652 (2235,6)	1,25 (31,8)	
	KNHXHL1409J			3,2769 (2114,1)	1,37 (34,8)	0,71 (18,03)
KNHXH1612J		1-12	1-1/2-12	4,2374 (2733,8)	1,37 (34,8)	
	KNHXHL1612J			4,2135 (2718,4)	1,50 (38,1)	0,70 (17,78)
KNHXH1608J		1-8	1-1/2-12	4,2374 (2733,8)	1,37 (34,8)	
	KNHXHL1608J			4,2135 (2718,4)	1,50 (38,1)	0,78 (19,81)

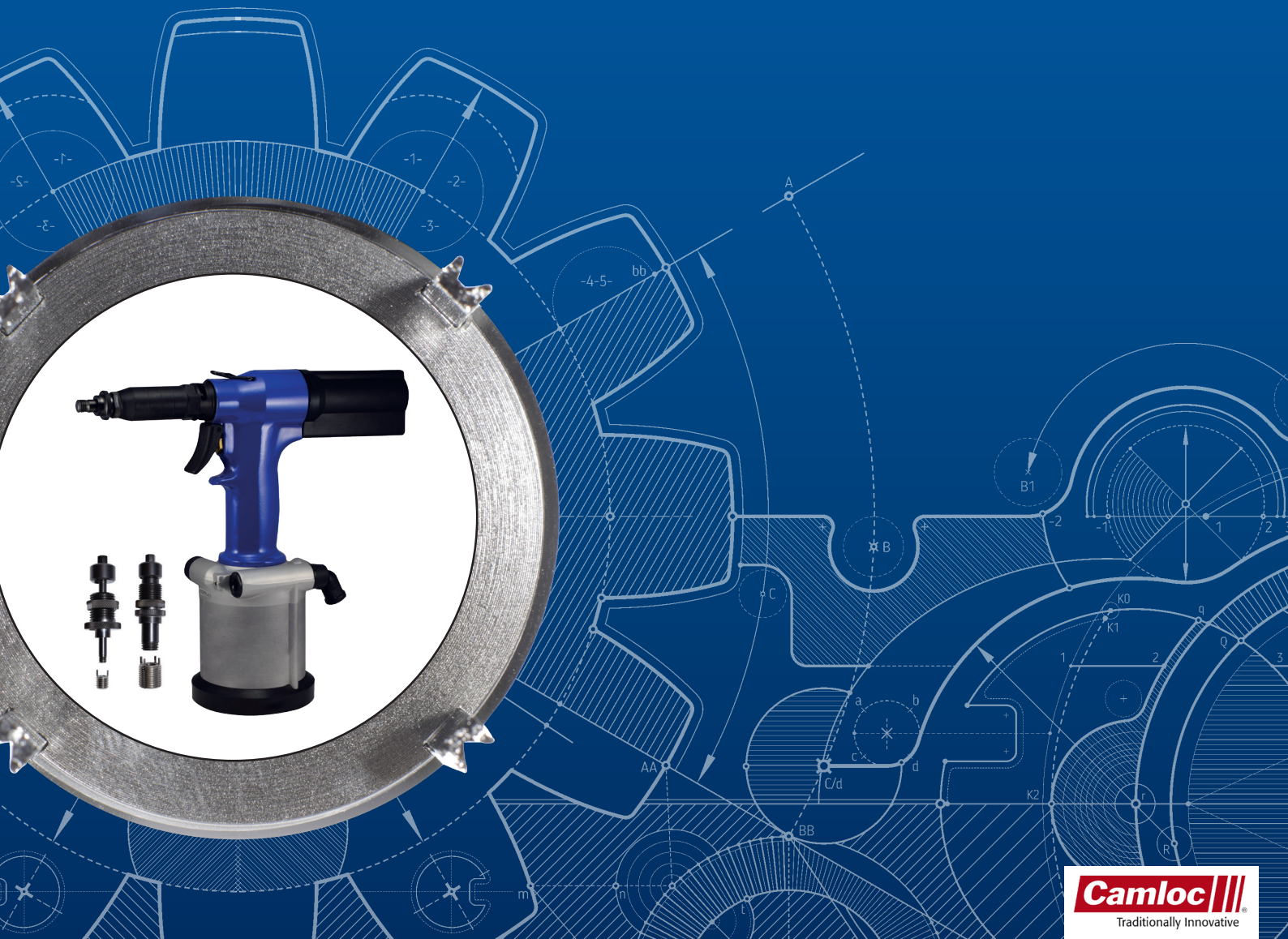
Part number	Installation dimensions				Hand installation tool part-no.	Removal dimensions	
	modified Core-Ø* inch (mm)	C'Sink-Ø inch +0,01 (mm) +0,25	Installation thread			Drill	
			Thread Tol. - UNC 2B	L2 min. inch (mm)		Ø inch (mm)	Depth inch (mm)
KNHXH1216J	1,187 (30,15)	1,270 (32,26)	1-1/4-12 UNF	1,31 (33,27) 1,44 (36,58)	THXHD1216L	1-3/32 (27,78)	5/16 (7,94)
KNHXHL1216J							
KNHXH1210J	1,187 (30,15)	1,270 (32,26)	1-1/4-12 UNF	1,31 (33,27) 1,44 (36,58)	THXHD1210L	1-3/32 (27,78)	5/16 (7,94)
KNHXHL1210J							
KNHXH1414J	1,312 (33,32)	1,395 (35,43)	1-3/8-12 UNF	1,44 (36,58) 1,56 (39,62)	THXHD1414L	1-7/32 (30,96)	5/16 (7,94)
KNHXHL1414J							
KNHXH1409J	1,312 (33,32)	1,395 (35,43)	1-3/8-12 UNF	1,44 (36,58) 1,56 (39,62)	THXHD1409L	1-7/32 (30,96)	5/16 (7,94)
KNHXHL1409J							
KNHXH1612J	1,437 (36,50)	1,520 (38,61)	1-1/2-12 UNF	1,56 (39,62) 1,68 (42,67)	THXHD1612L	1-11/32 (34,13)	5/16 (7,94)
KNHXHL1612J							
KNHXH1608J	1,437 (36,50)	1,520 (38,61)	1-1/2-12 UNF	1,56 (39,62) 1,68 (42,67)	THXHD1608L	1-11/32 (34,13)	5/16 (7,94)
KNHXHL1608J							

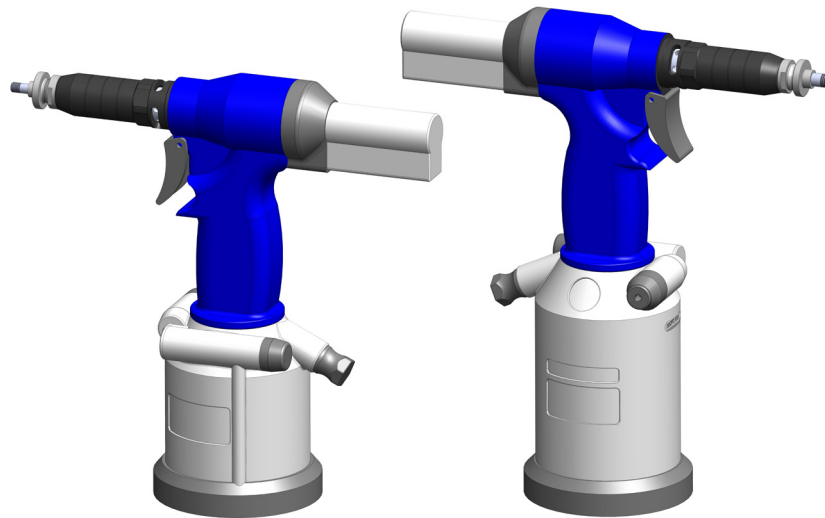
*the core Ø are different from SAE AS 8879

KEENSERTS®

POWER TOOLS

HYDRO-PNEUMATIC TOOLS FOR KEENSERTS®

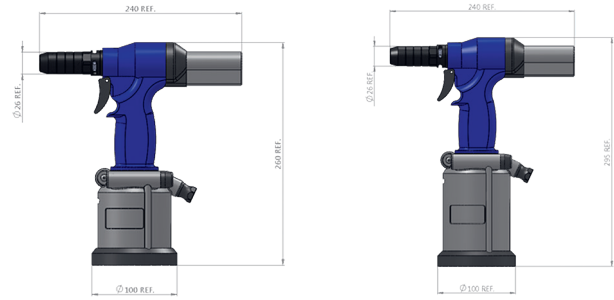




KEENSERTS® PTC POWER TOOL
HYDRO-PNEUMATIC TOOLS FOR CAMLOC® KEENSERTS® inserts

Features

- The hydro-pneumatic Power Tool 3352PTC-1 is designed to install metric KEENSERTS inserts from sizes M5 to M12 and imperial sizes from 1032/1024 to 813/820. The slightly larger Power Tool 3352PTC-2 has an extended spindle stroke. This allows even metric KEENSERTS inserts of sizes M5 to M24 to be installed quickly and efficiently.
- Due to the force control of the tools, individual adjustment is possible for the KEENSERTS inserts sizes or surrounding materials is possible.
- The one-button operation makes it easy to learn how to use the tools. The KEENSERTS inserts can be installed quickly and reliably.
- The hydro-pneumatic system is low maintenance, ergonomic and lightweight.
- Please note: Both the Power Tool 3352PTC-1 and the 3352PTC-2 are supplied in the basic version without Nosepieces has to be ordered separately.

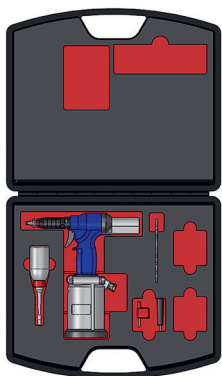


Technical Data

Tool	3352PT1	3352PT2
Air working pressure	6 bar	6 bar
Min. – Max. air pressure	5 - 7 bar	5 - 7 bar
Air consumption per cycle at 6 bar	5 Liter / 1.3 gallons	5 Liter / 1.3 gallons
Max. stroke	6,5 mm / 0.26 inch	8 mm / 0.31 inch
Max. force	19.000 N / 4,300 lbf	19.000 N / 4,300 lbf
Weight (without Nosepieces)	1,800 Kg / 4 pounds	2,200 Kg / 4.85 pounds
Vibrations	< 2,5 m/s ² / 8.2 ft/s ²	< 2,5 m/s ² / 8.2 ft/s ²
Noise Level	76 dB (A)	76 dB (A)

Standard Accessoires

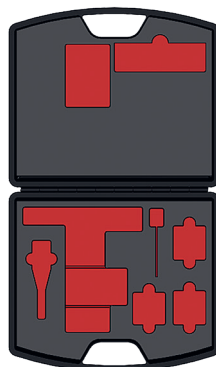
Ref.	Order Code	Quantity	Description
1	3352PTC-1/ 3352PTC-2	1	Power Tool complete, consists of:
	3352PT1/ 3352PT2	1	Power Tool
2	3352-3064400	1	Oil Bottle (Type ISO VG 32 100CC)
3	3352-1010	1	Plastic Tool Case
4	3352-0207300	1	Tool Wrench
5	3352-2533800	1	Removal Bolt
6	3352-4154200	1	Allen Wrench 3,0mm
	MNL-3352-1	1	Instruction Manual
	MNL-3352-2	1	Installation Manual



1



2



3



4



5



6

Nosepieces

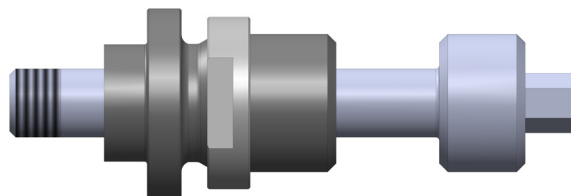
The power tool (3352PT1 or 3352PT2) is supplied without Nosepieces for installing the KEENSERTS inserts.

Please order the Nosepieces that is appropriate for your application in addition to the basic tool.

Nosepieces < M12

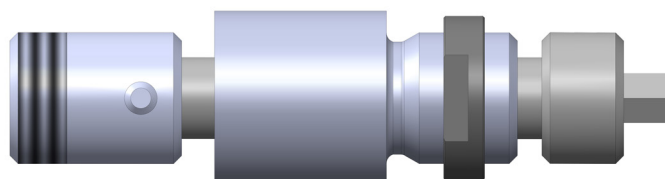
Mandrel, driver and lock nut are part of a nosepiece set for KEENSERTS inserts installation.

The Nosepiece for various KEENSERTS types are of modular design. In addition to each Nosepiece set, all components of the set are also available as individual parts. In addition to simplified spare parts ordering and reduced inventory, multiple use of components can be realized. For example, the same mandrel and lock nut can be used for both KEENSERTS inserts type KNM6 and KNHM6. Only a different driver piece is required. For the self-locking variant, the same nose piece can be used.



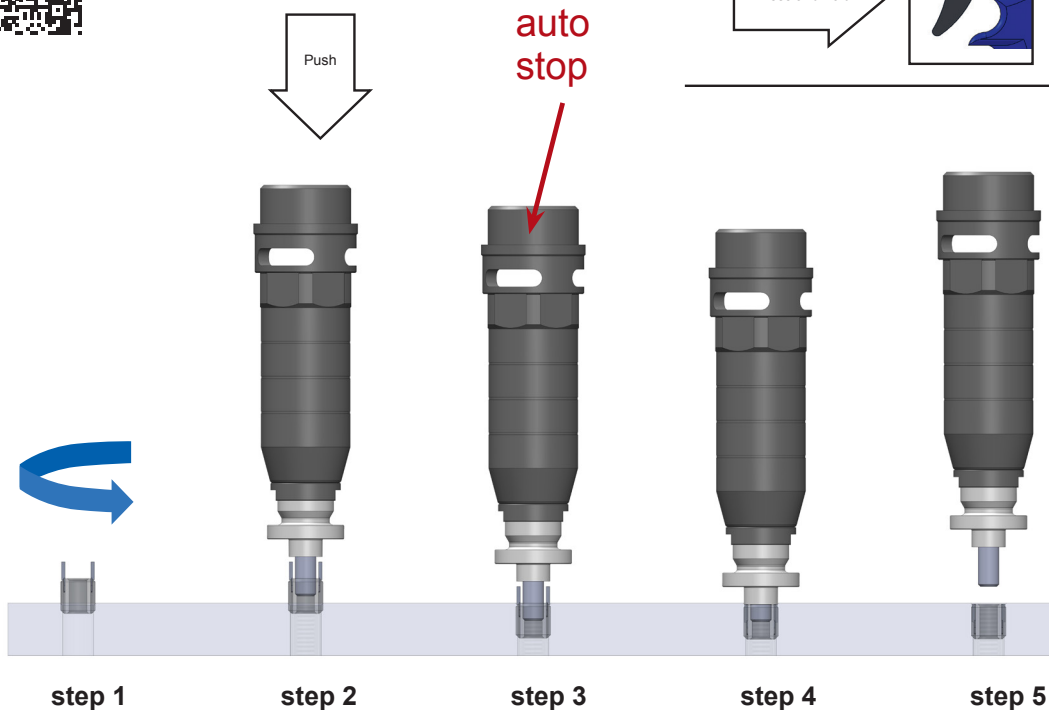
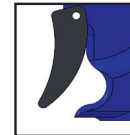
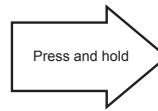
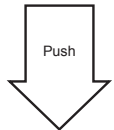
Nosepieces > M16

For metric KEENSERTS inserts with an internal thread of M16 (KNHM16x2.0) and above, the Nosepieces are constructed differently and cannot be offered in a modular system.



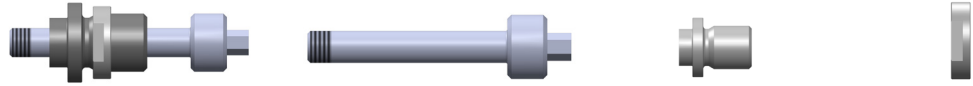
Installation process

Click here:
[Installation video](#)



step 1	step 2	step 3	step 4	step 5
Screw in the first pitches by hand (1-2 turns).	Screwing in the KEENSERT insert with the Power Tool by a push movement against the insert. No button operation necessary (self-activation).	Hold the tool horizontally, at a 90° angle. The screwing-in process stops automatically as soon as the KEES touch the surrounding material. The insert reaches its final screw-in depth.	Driving in the KEES by pressing the trigger.	Hold the trigger until the mandrel automatically rotates counter-clockwise and is completely rotated out of the KEENSERTS inserts.

Available metric Nosepieces



KEENSERTS Size	Nosepiece set	Spare Part Mandrel	Spare Part Driver	Spare Part Lock Nut
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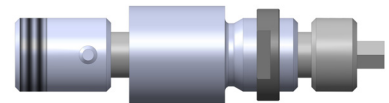
KNM Series

KNM(L)5x0,8	3352TM5x0,8AY	3352S04M5x0,8BY	3352S05M5AY	3352S03-1AY
KNM(L)6x1,0	3352TM6x1,0AY	3352S04M6x1,0BY	3352S05M6AY	
KNM(L)8x1,25	3352TM8x1,25AY	3352S04M8x1,25BY	3352S05M8AY	
KNM(L)10x1,5	3352TM10x1,5AY	3352S04M10x1,5BY	3352S05M10AY	
KNM(L)12x1,75	3352TM12x1,75AY	3352S04M12x1,75BY	3352S05M12AY	

KNHM Series

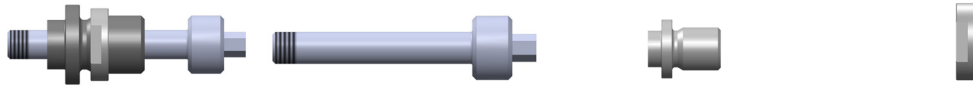
KNHM(L)5x0,8	3352THM5x0,8AY	3352S04M5x0,8BY	3352S05HM5AY	3352S03-1AY
KNHM(L)6x1,0	3352THM6x1,0AY	3352S04M6x1,0BY	3352S05HM6AY	
KNHM(L)8x1,25	3352THM8x1,25AY	3352S04M8x1,25BY	3352S05HM8AY	
KNHM(L)10x1,5	3352THM10x1,5AY	3352S04M10x1,5BY	3352S05HM10AY	
KNHM(L)12x1,75	3352THM12x1,75AY	3352S04M12x1,75BY	3352S05HM12AY	

KNHM Series above M16, one-part nosepiece (3352PTC-2 required)



KNHM16x2,0	3352THM16x2,0AY	No single components available
KNHM18x1,5	3352THM18x1,5AY	
KNHM20x2,5	3352THM20x2,5AY	
KNHM24x3,0	3352THM24x3,0AY	

Available imperial Nosepieces



KEENSERTS Size	Nosepiece set	Spare Part Mandrel	Spare Part Driver	Spare Part Lock Nut
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KNJ Series

KN(L)1032J	3352T1032AY	3352S01-1032BY	3352S02-10AY	3352S03-1AY
KN(L)1024J	3352T1024AY	3352S01-1024BY		
KN(L)428J	3352T428AY	3352S01-428BY	3352S02-1/4AY	
KN(L)420J	3352T420AY	3352S01-420BY		
KN(L)524J	3352T524AY	3352S01-524BY	3352S02-5/16AY	
KN(L)518J	3352T518AY	3352S01-518BY		
KN(L)624J	3352T624AY	3352S01-624BY	3352S02-3/8AY	
KN(L)616J	3352T616AY	3352S01-616BY		
KN(L)720J	3352T720AY	3352S01-720BY	3352S02-7/16AY	
KN(L)714J	3352T714AY	3352S01-714BY		
KN(L)820J	3352T820AY	3352S01-820BY	3352S02-1/2AY	
KN(L)813J	3352T813AY	3352S01-813BY		

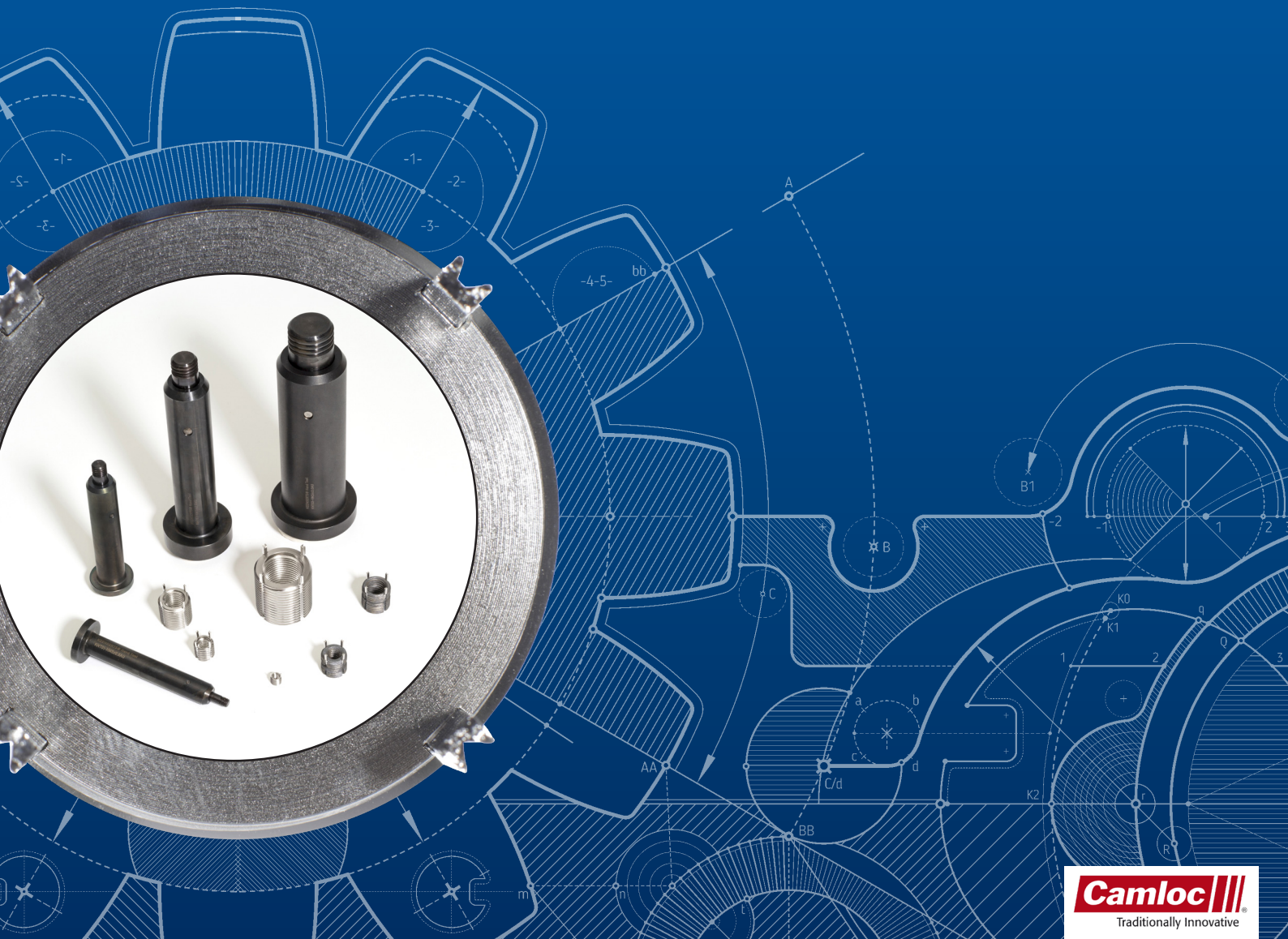
KNHJ Series

KNH(L)1032J	3352TH1032AY	3352S01-1032BY	3352S02-H10AY	3352S03-1AY
KNH(L)1024J	3352TH1024AY	3352S01-1024BY		
KNH(L)428J	3352TH428AY	3352S01-428BY	3352S02-H1/4AY	
KNH(L)420J	3352TH420AY	3352S01-420BY		
KNH(L)524J	3352TH524AY	3352S01-524BY	3352S02-H5/16AY	
KNH(L)518J	3352TH518AY	3352S01-518BY		
KNH(L)624J	3352TH624AY	3352S01-624BY	3352S02-H3/8AY	
KNH(L)616J	3352TH616AY	3352S01-616BY		
KNH(L)720J	3352TH720AY	3352S01-720BY	3352S02-H7/16AY	
KNH(L)714J	3352TH714AY	3352S01-714BY		
KNH(L)820J	3352TH820AY	3352S01-820BY	3352S02-H1/2AY	
KNH(L)813J	3352TH813AY	3352S01-813BY		

KEENSERTS®

Hand tool series

Series KNT



The new KEENSERTS® hand tool series KNT

The new hand tool series KNT is an improved version of the existing tools. In addition to simpler and faster installation, process reliability has been improved.

The new tool has a two-part design and a telescopic guide, which prevents damage to the KEES during installation. A jamming of the tool and the associated bending or breaking of the KEES is reliably prevented.

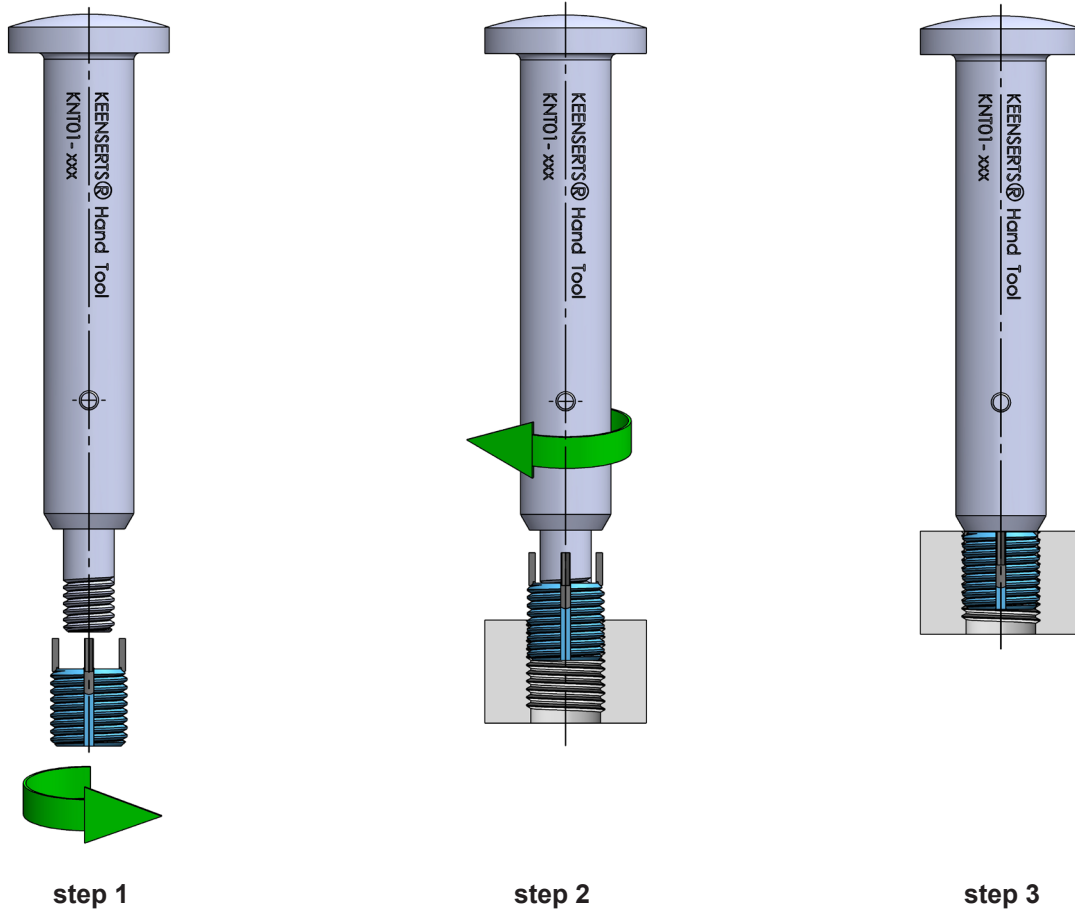


- > The hardened sleeve ensures high numbers of installation cycles.
- > Mushroom head style provides hand protection during hammering.
- > The slim diameter of the tip allows installation even into counter-sunk holes.
- > The KEES are installed flush to the KEENSERTS inserts surface.
- > The tool is made up of two parts providing easy guidance and eliminating any damage to the kees.

Click here:
KEENSERTS -
Hand Tool KNT Series



Installation process



step 1	step 2	step 3
Screw the KEENSERTS inserts onto the threaded pin up to the end.	Screw the KEENSERTS inserts into the workpiece until the KEES stop on the chamfer or the favored depth is reached (recommended hole preparation).	Drive in the KEES with short and precise hammer taps. KEES can controlled after each tap until the favored depth is reached or until the anvil stops on the chamfer (final position).

Available tool sizes

KEENSERTS Size	Part number
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KNT01

KNHM(L)4X0,7	KNT01-HM4x0,7AU
KNM(L)5X0,8	KNT01-M5x0,8AU
KNHM(L)5X0,8	KNT01-HM5x0,8AU
KNM(L)6X1,0	KNT01-M6x1,0AU
KNHM(L)6X1,0	KNT01-HM6x1,0AU
KNM(L)8X1,25	KNT01-M8x1,25AU
KNHM(L)8X1,25	KNT01-HM8x1,25AU
KNM(L)10X1,5	KNT01-M10x1,5AU
KNHM(L)10X1,5	KNT01-HM10x1,5AU
KNM(L)12X1,75	KNT01-M12x1,75AU
KNHM(L)12X1,75	KNT01-HM12x1,75AU

KNT03

KNHM(L)14x2,0	KNT03-HM14x2,0AU
KNHM(L)16x2,0	KNT03-HM16x2,0AU
KNHM(L)18x1,5	KNT03-HM18x1,5AU
KNHM(L)20x2,5	KNT03-HM20x2,5AU
KNHM(L)24x3,0	KNT03-HM24x3,0AU

