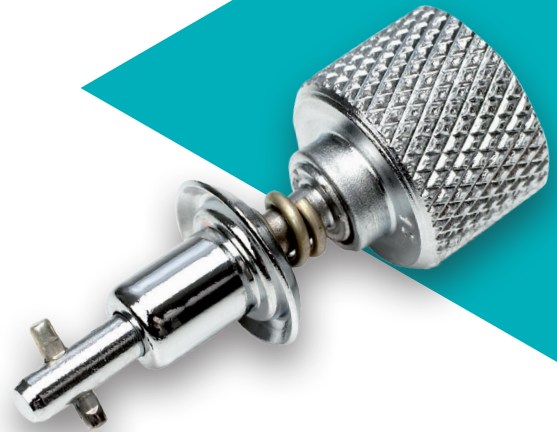




**HOWMET
AEROSPACE**



Camloc 
Traditionally Innovative[®]

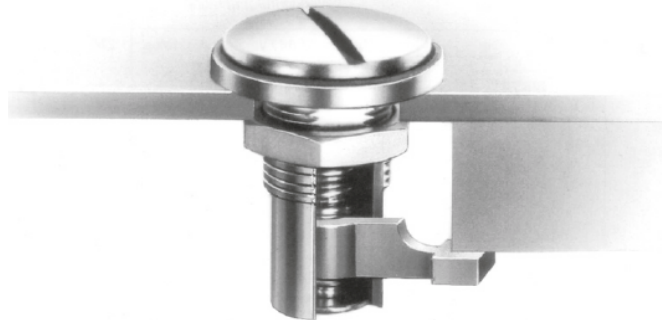
Quick Release Fasteners



Latches



Specials



Inserts





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1/4-Turn Fasteners

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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

D4002Series G-1 - G-13

991F Series H-1 - H-6

One-Piece Fasteners

V936F Series I-1 - I-2

713F Series J-1 - J-2

Push Button Fasteners

15F Series K-1 - K-4

Push-Turn Fasteners

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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.

Advantages of the Camloc 1/4-Turn Fastener

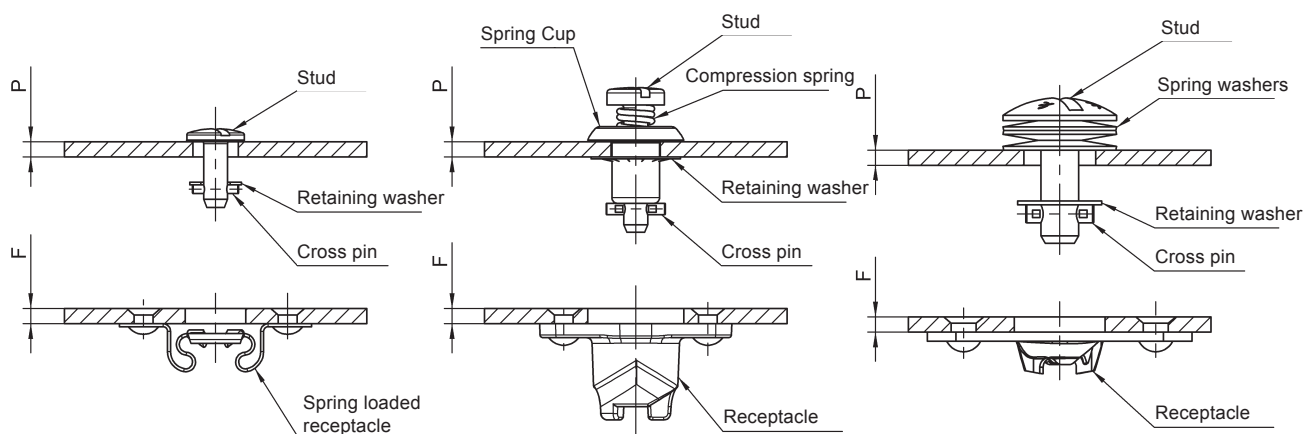
- Secure quick release fastener system
- Locking and unlocking by a quarter turn
- Long life - high number of operating cycles
- Hand or tool-operated
- Easy to use and fast operation reduces assembly costs
- Camloc fasteners are standardised worldwide
- Wide range of sizes
- Stud assemblies are captive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

Components

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

¼ 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.

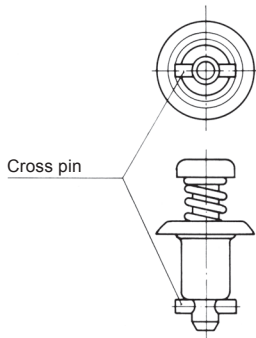
Click here: [Camloc Quarter Turn Fastener](#) (Youtubelink)



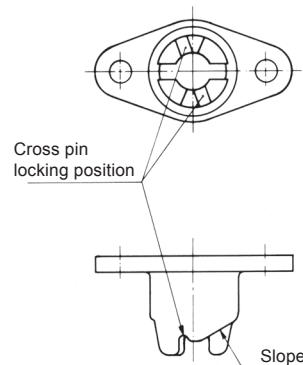
How it Operates

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.

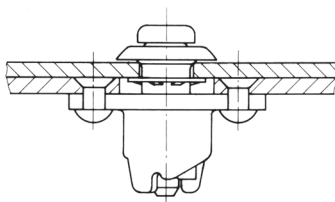
Stud Assembly



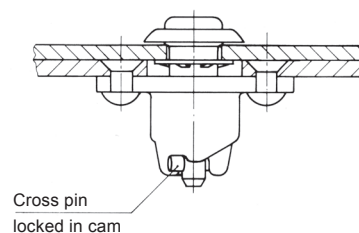
Receptacle



Unlocked



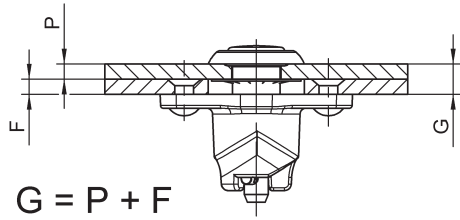
Locked



Lock and unlock the stud by a quarter turn.

For general installation instructions please refer to the next page.

Selecting the Fastener

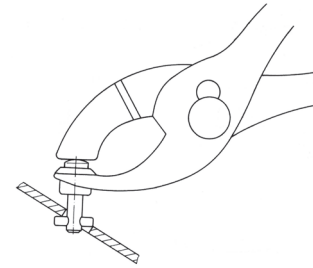
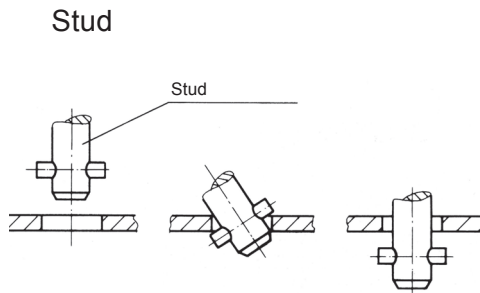


P = panel thickness (stud assembly)

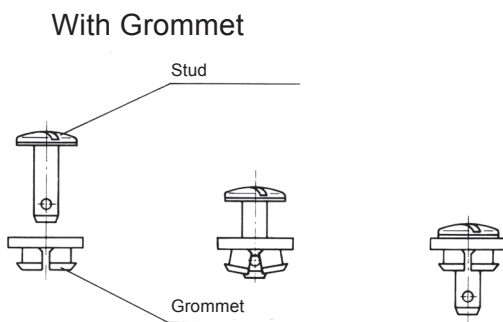
F = frame thickness (receptacle)

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.

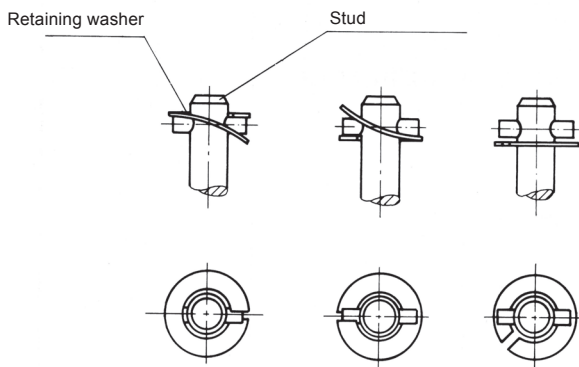
Installation



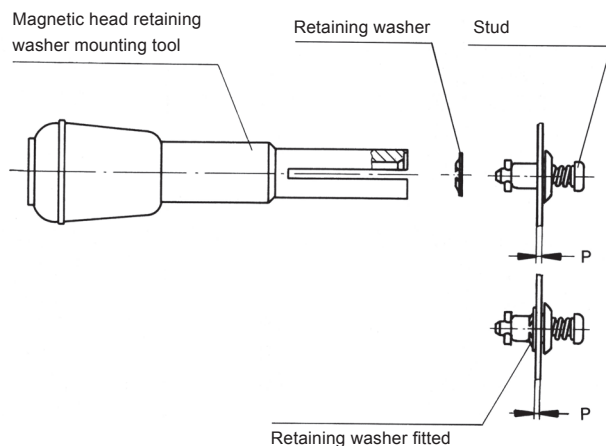
For short, spring-loaded stud assemblies, the use of 4P3-1 pliers is recommended.



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
V936F	300 N	200 N	X							I1-I2
715F	700 N	600 N	X							L1-L3
716F	1.400 N	1.200 N	X							M1-M3
PT10	1.200 N	800 N	X	X						O1-O4
717F	3.000 N	2.500 N	X							N1-N3

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				I1-I2
715F	700 N	600 N				X				L1-L3
716F	1.400 N	1.200 N				X				M1-M3
PT10	1.200 N	800 N		X						O1-O4
717F	3.000 N	2.500 N				X				N1-N3

* 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

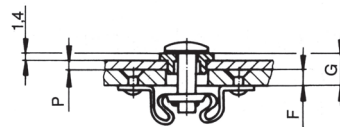
1. Select stud assembly and receptacle, page B-2 und B-4.
2. Select retaining washer or grommet, page B-3.
3. Select stud length number from total thickness G using the formula and table below (e.g. V5S5-*AGV).

Determining the stud length number:

With retaining washer
 $G = P + F$




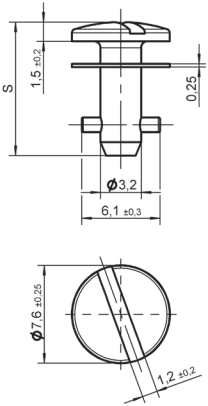

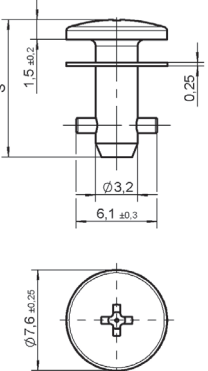
With Grommet
 $G = P + F + 1,4$
 $G_{\min} = 3,9 \text{ mm}$



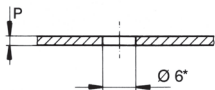
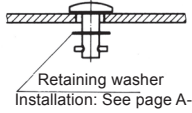
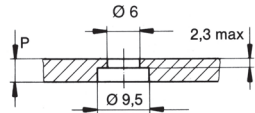
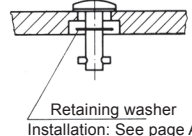
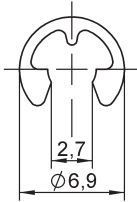
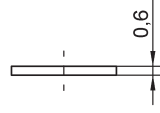
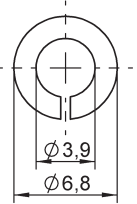
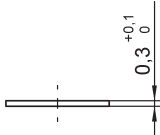
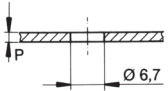
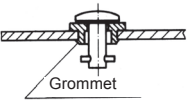
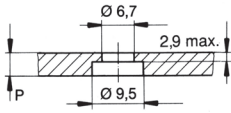
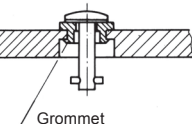
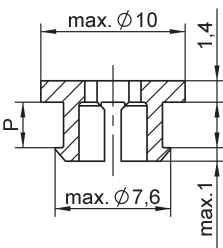
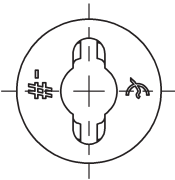
Stud Length Table


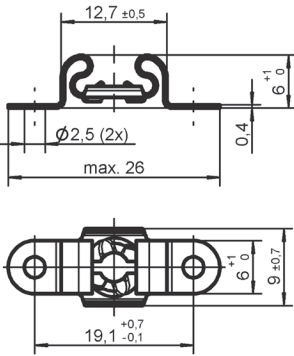
Total Thickness G	Stud Length No. When Using Receptacles
0,50 - 0,90	1
0,90 - 1,30	2
1,30 - 1,65	3
1,65 - 2,05	4
2,05 - 2,40	5
2,40 - 2,80	6
2,80 - 3,20	7
3,20 - 3,55	8
3,55 - 3,95	9
3,95 - 4,30	10
4,30 - 4,70	11
4,70 - 5,10	12
5,10 - 5,45	13
5,45 - 5,85	14
5,85 - 6,20	15
6,20 - 6,60	16
6,60 - 7,00	17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

Other lengths on request.

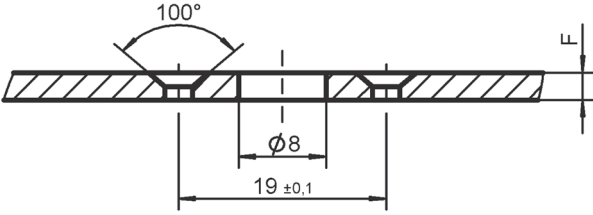
Style	Dimensions	Materials / Finish	°C	Part No.
Slotted Recess Head 	 S = 6,70 + (0,38 x length no.)	Steel / zinc-plated, CrVI-free, clear passivation with plastic washer (PA6)	100	V5S5- *AGV
		Steel / nickel-plated with plastic washer (PA6)	100	5S27-*
Cross Recess Head 	 S = 6,70 + (0,38 x length no.)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

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

Installation Dimensions	Accessories	Material / Finish	Panel Thickness P	Part No.						
<p>Retaining Washer Panel Thickness P up to 2,3</p>   <p>Retaining washer Installation: See page A-5</p> <p>Panel thickness P over 2,3</p>   <p>Retaining washer Installation: See page A-5</p> <p>* For P up 1,4 : Ø 5,6 for 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>Panel Thickness P</p>	<p>V5W3-1AG</p> <p>5S3-2</p>						
<p>Snap-In Grommet Panel thickness P up to 2,9</p>   <p>Grommet</p> <table border="1" data-bbox="215 1668 391 1747"> <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>Panel thickness P over 2,9</p>   <p>Grommet</p>	P max	G min	1,4	2,0	2,9	3,5	<p>Grommet</p>  	<p>Plastic (PA6) black</p>	<p>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

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

Features

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

Increased grip range.

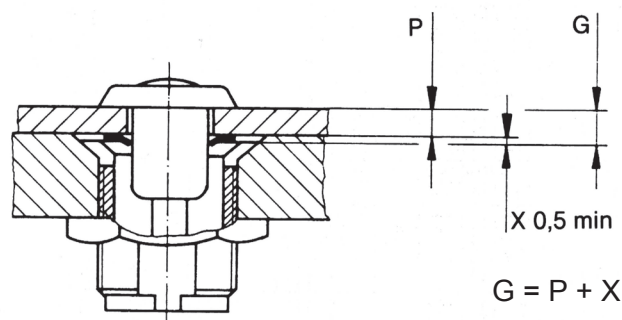
Externally threaded receptacles for use in castings or on panels with a retaining nut (see page C-3).

Encapsulated design, splash-proof.

Selection Instructions


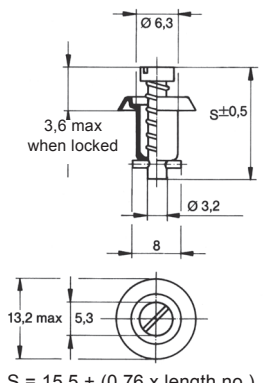
1. Select stud assembly and receptacle, page C-2 and C-3.
2. Select hex nut for receptacle, if necessary, page C-3.
3. Select stud retaining washer, page C-2.
4. Select stud length number from total thickness G using the formula and table below (e.g. 99S10-01AG).

Determining the stud length number:



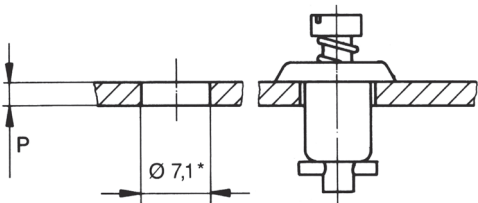
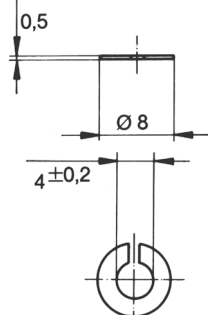
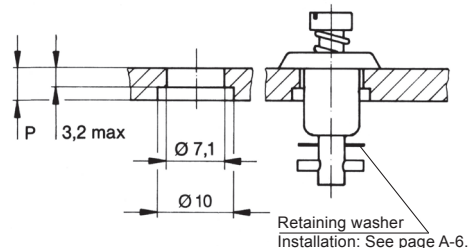
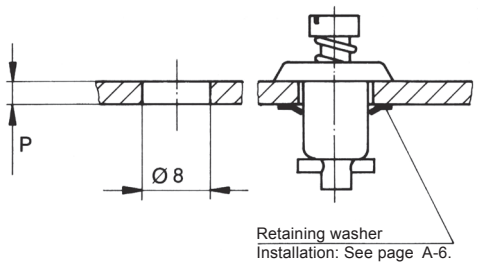
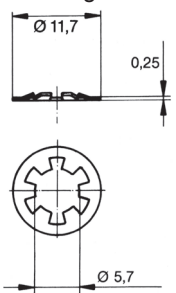
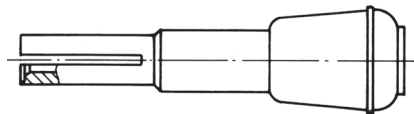
Total Thickness G	Stud Length No.
0,5 - 1,5	01
1,5 - 3,0	03
3,0 - 4,5	05
4,5 - 6,0	07
6,0 - 7,5	09
7,5 - 9,0	11
9,0 - 10,5	13
10,5 - 12,0	15
12,0 - 13,5	17
13,5 - 15,0	19


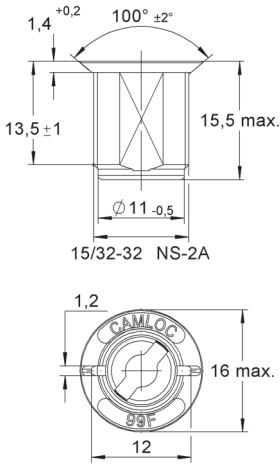

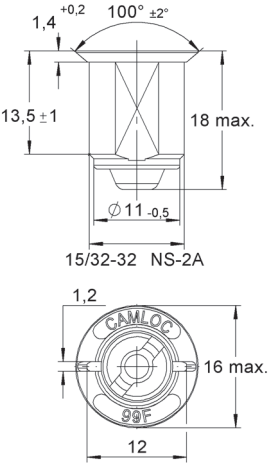
Other lengths on request.

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

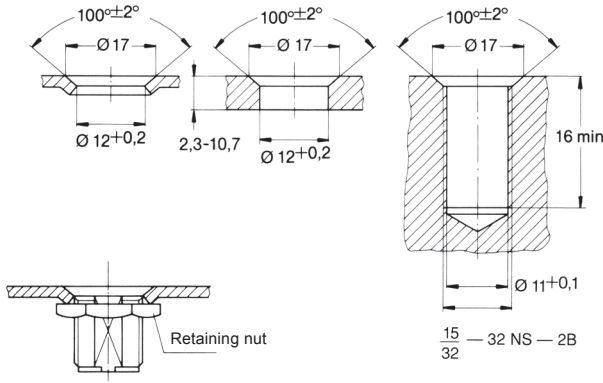
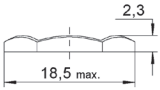
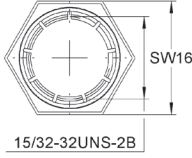
* Length no. from Table, see page C-1.

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 Ø 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 Stainless steel	99W10-01A1 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, clear passivation	100	99R10-01A1
<p>Encapsulated</p> 		Zinc die casting / zinc-plated, CrVI-free, clear passivation 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, clear passivation	99N10-01A1 15/32-32 NS-2B

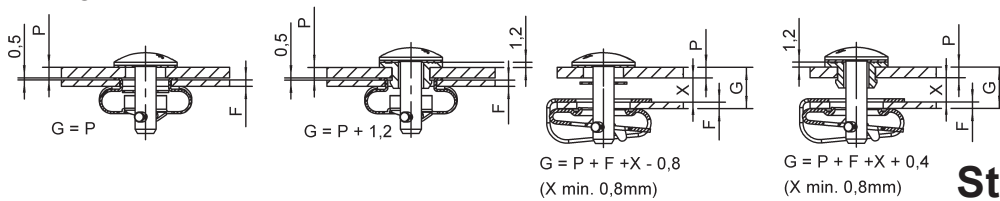


Features

- 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


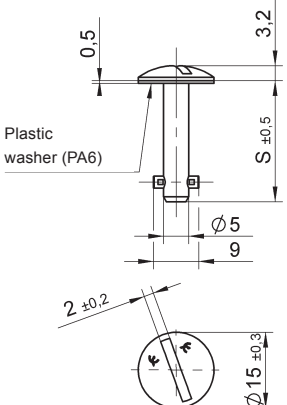

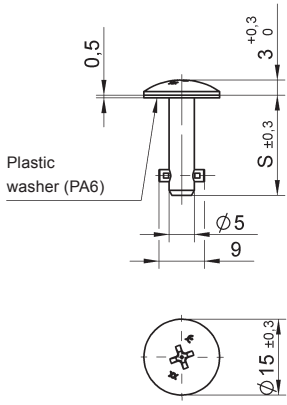

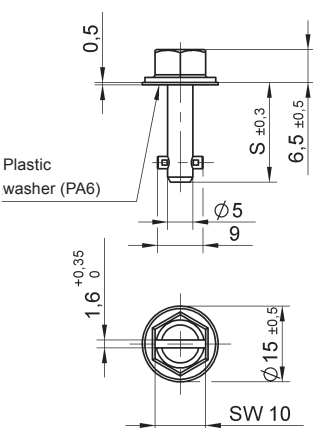
- Select stud assembly and receptacle, page D-2 to D-4 and D-6.
- Select retaining washer or grommet, page D-5.
- Select stud length number from total thickness G using the formula and table below (e.g. 50E21-*AGV).




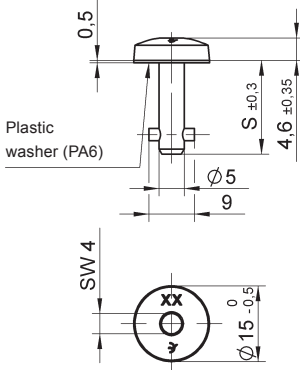

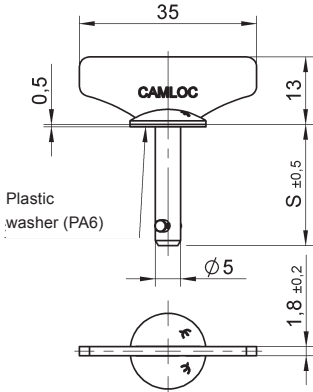

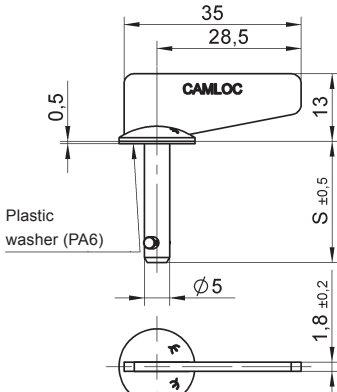
Stud Length Table

Total Thickness G	Stud Length No. when using Receptacles Type 1 F= 1,0 - 2,1	Total Thickness G	Stud Length No. when using Receptacles Type 2 F= 2,1 - 3,0	Total Thickness G	Stud Length No. when using Receptacles Type 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


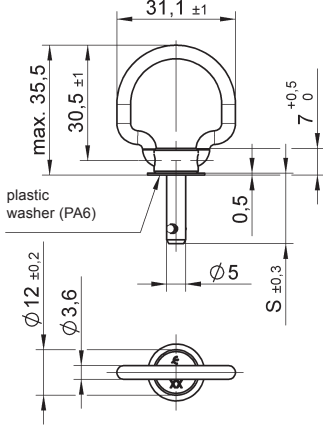

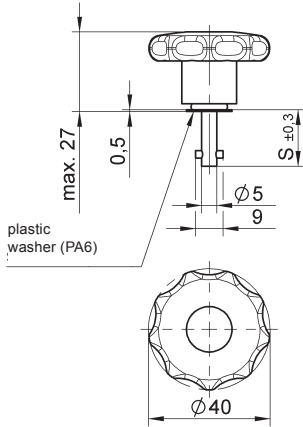

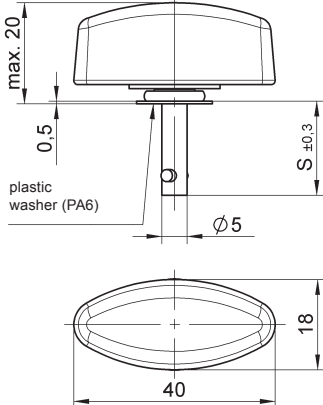
Other lengths on request.

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Slotted Recess Head</p> 	 <p>S = 11,40 + (0,6 x length no.)</p>	<p>Steel / zinc-plated, CrVI-free, 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 = 11,40 + (0,6 x length no.)</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation with plastic washer (PA6)</p>	<p>80</p>	<p>50E70-*AGV</p>
<p>Hex Head Slotted Recess</p> 	 <p>S = 11,40 + (0,6 x length no.)</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation with plastic washer (PA6)</p>	<p>80</p>	<p>50E90-*AGV</p>

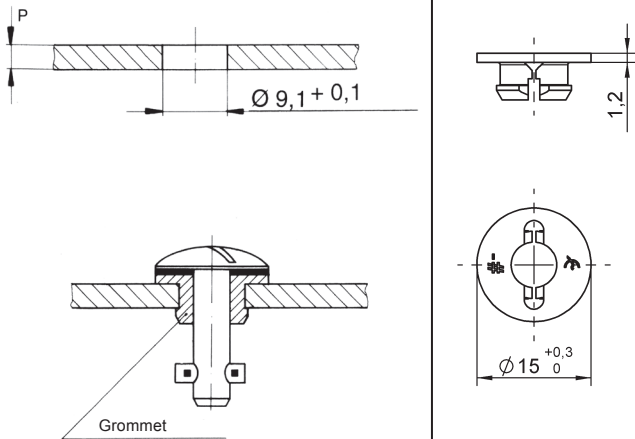
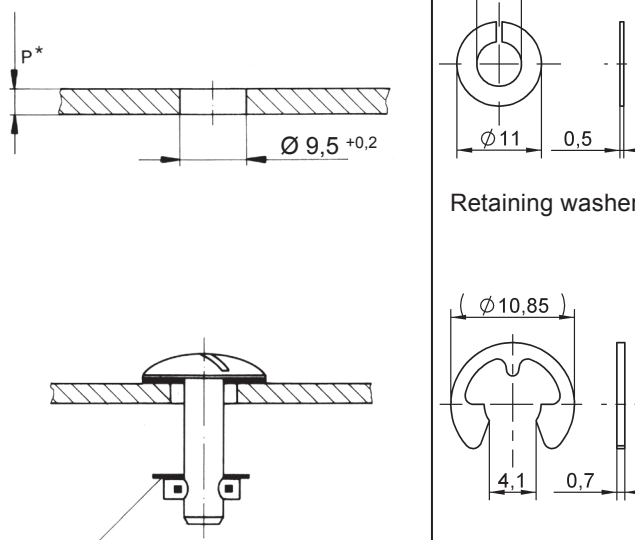
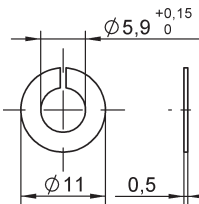
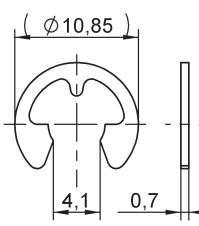
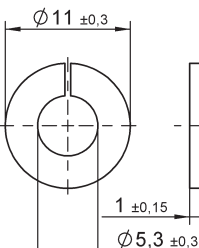
* Length no. from Table, see page D-1.

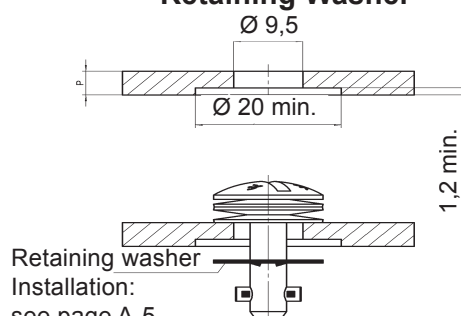
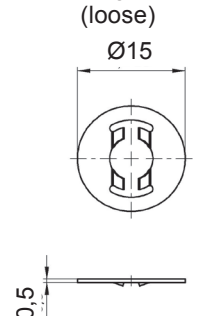
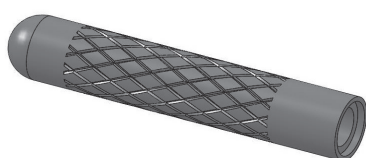
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Hex Recess Head</p> 	 <p>$S = 11,40 + (0,6 \times \text{length no.})$</p>	Steel / zinc-plated, CrVI-free, clear passivation with plastic washer (PA6)	80	50E60-*AGV
<p>Fixed Wing Handle</p> 	 <p>$S = 11,40 + (0,6 \times \text{length no.})$</p>	Steel / zinc-plated, CrVI-free, 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>$S = 11,40 + (0,6 \times \text{length no.})$</p>	Steel / zinc-plated, CrVI-free, clear passivation with plastic washer (PA6)	80	50E21-*W0AGV

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

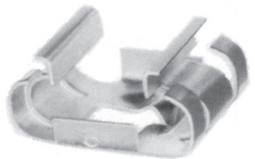
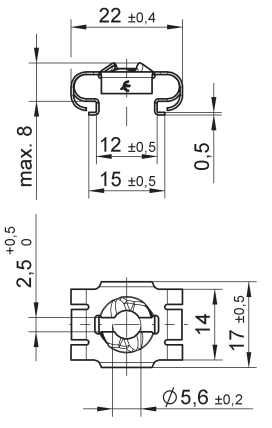
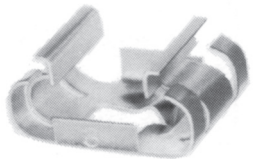
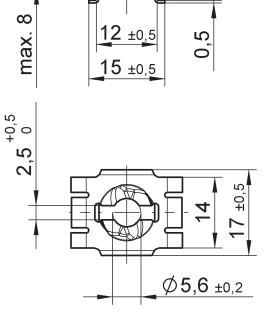
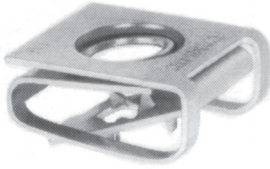
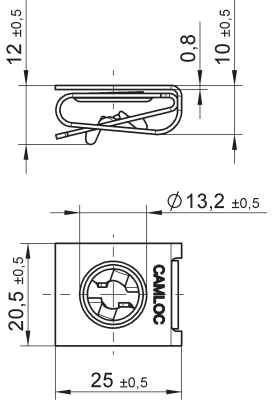
Style	Dimensions	Materials / Finish	°C	Part No.
Folding Bail Handle 180° 		Steel / zinc-plated, CrVI-free, clear passivation with plastic washer (PA6)	80	50E18-*AGV
Star Form Handle Plastic 		Steel / zinc-plated, CrVI-free, clear passivation with plastic head and plastic washer (PA6) Stainless steel with plastic head and plastic washer (PA6)	- 40 up to + 60 - 40 up to + 60	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, see page D-1.

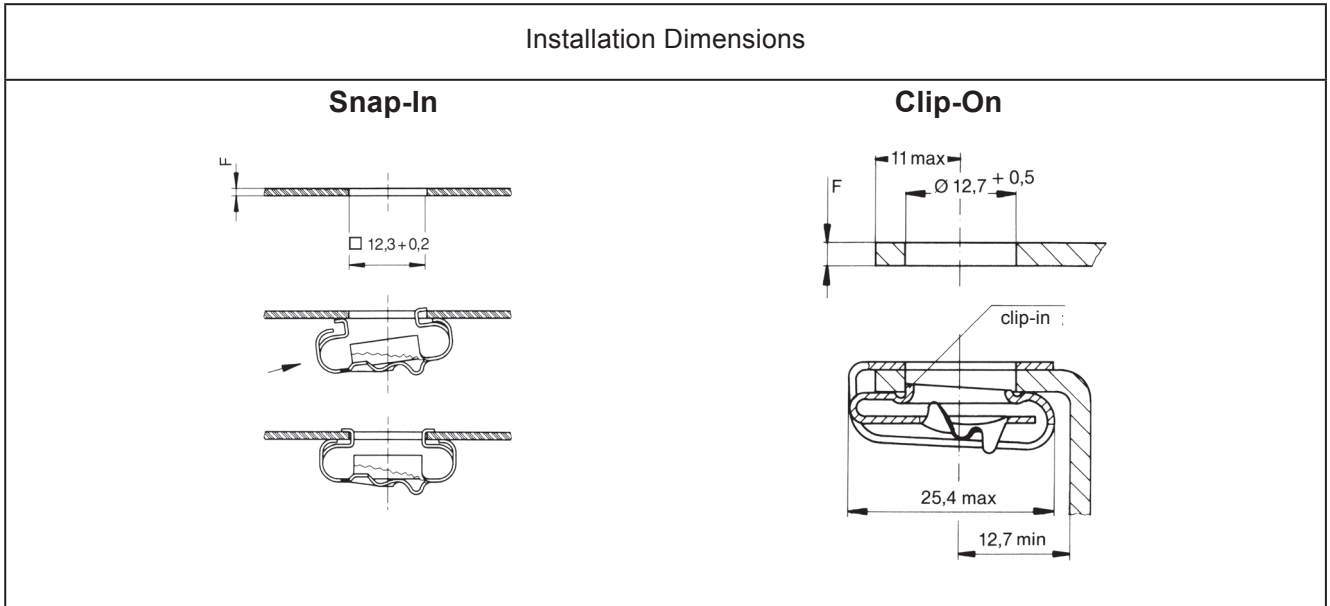
Style	Dimensions	Materials / Finish	P	Part No.
<p>Snap-In Grommet</p>  <p>Grommet</p>	<p>Grommet</p>	<p>Plastic (PA6) / natural colour</p> <p>Working temperature: -40°C + 100°C</p>	Up to 1,60	50S12-0-1AA
			1,70- 2,80	50S12-1-1AA
			2,90 - 4,00	50S12-2-1AA
			4,10 - 5,30	50S12-3-1AA
			5,40 - 6,65	50S12-4-1AA
<p>Retaining Washer</p>  <p>Retaining washer Installation: see page A-5.</p>	<p>Retaining washer</p>  <p>Retaining washer</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 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>

Receptacles

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</p>	<p>F = 1,0 - 2,0</p>	<p>170</p>	<p>50E20-1AK7 (Type 1)</p>
<p>Snap-In</p> 		<p>Spring steel / zinc-flake coated</p>	<p>F = 2,1 - 3,0</p>	<p>170</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

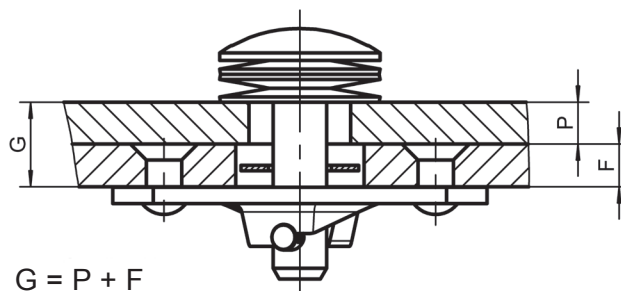


Features

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

Selection Instructions


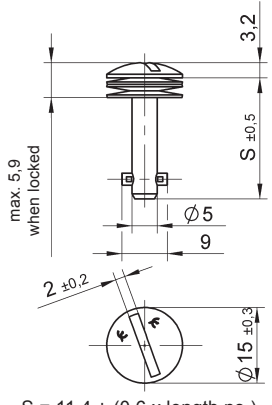

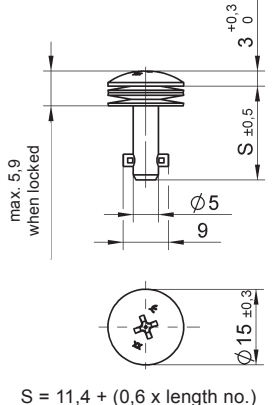

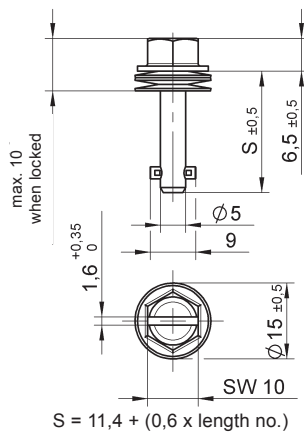
1. Select stud assembly and receptacle, page E-2 to E-4 and E-6.
2. Select retaining washer, page E-5.
3. Select stud length number from total thickness G using the formula and table below (e.g. 50E8-*AGV).



Stud Length Table


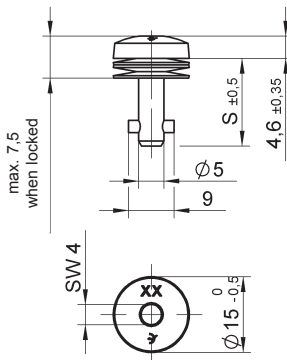

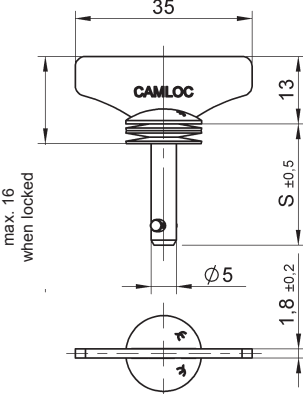

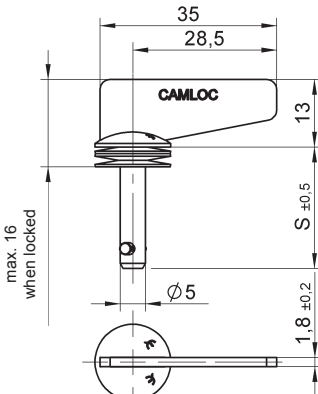
Total Thickness G	Stud Length No.	Total Thickness G	Stud Length No.
0,50 - 1,10	2	10,70 - 11,30	19
1,10 - 1,70	3	11,30 - 11,90	20
1,70 - 2,30	4	11,90 - 12,50	21
2,30 - 2,90	5	12,50 - 13,10	22
2,90 - 3,50	6	13,10 - 13,70	23
3,50 - 4,10	7	13,70 - 14,30	24
4,10 - 4,70	8	14,30 - 14,90	25
4,70 - 5,30	9	14,90 - 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>

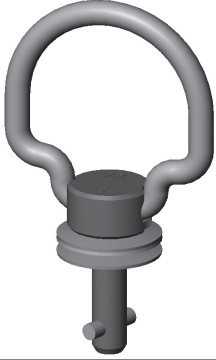
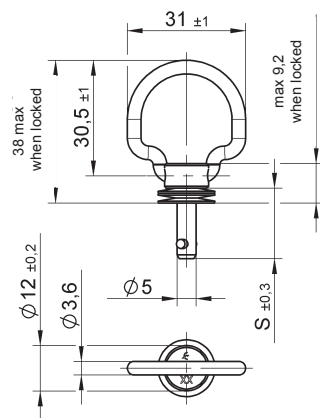
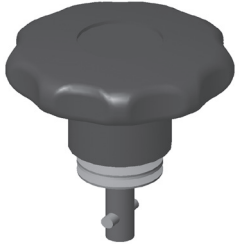
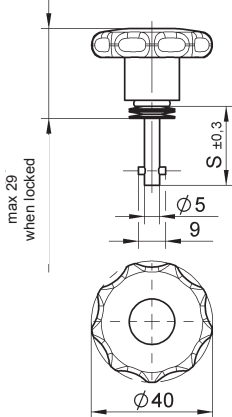

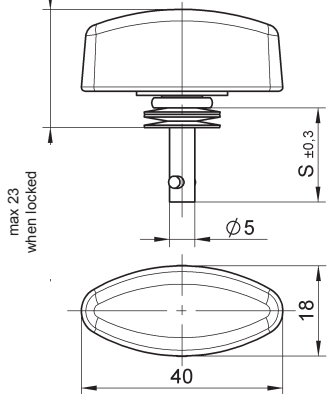

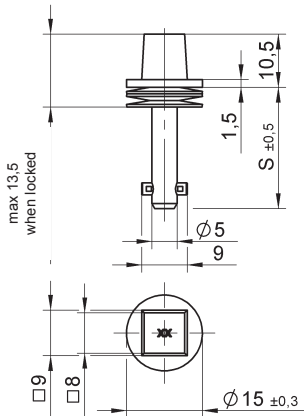
* Length no. from Table, page E-1.

¹⁾Max. tensile strength 2.600 N, working load 1.700 N.

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Hex Recess 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

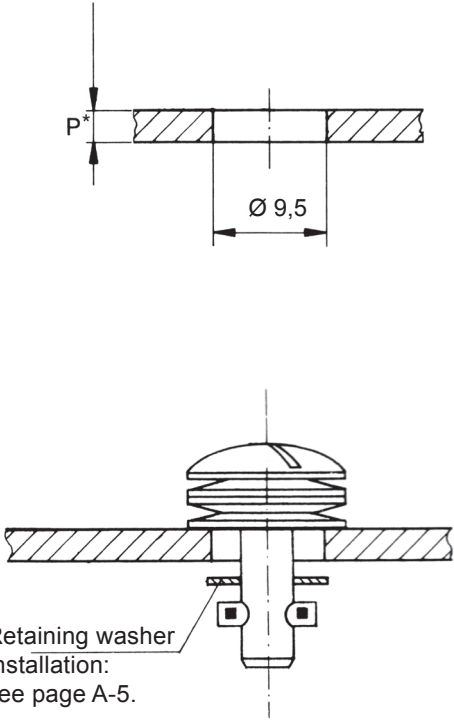
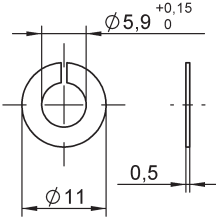
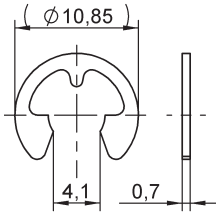
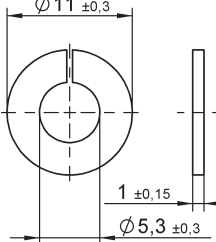
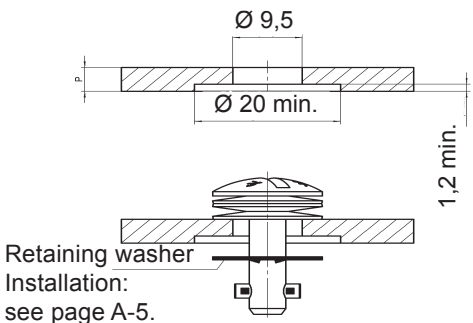
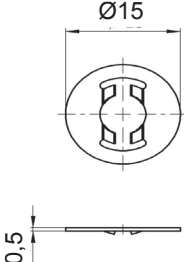
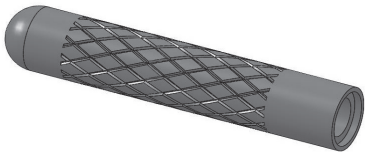
* Length no. from Table, page E-1.


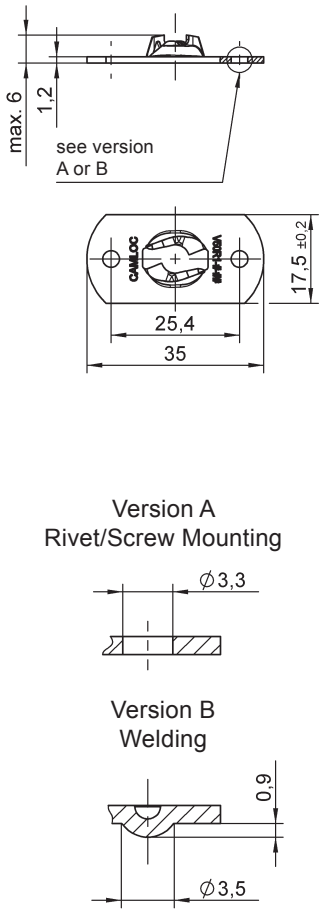
¹⁾Max. tensile strength 2.600 N, working load 1.700 N.

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

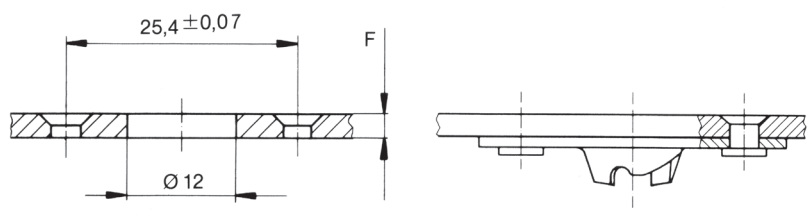
* Length no. from Table, page E-1.

¹⁾ Max. tensile strength 2.600 N, working load 1.700 N.

Installation Dimensions	Accessories	Material / Finish	Part No.
 <p>Retaining washer Installation: see page A-5.</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</p> <p>Working temperature: -40°C + 120°C</p> <p>ADVANTAGE: Plastic retaining washer to be assembled without tooling.</p>	<p>4002-SW-SS</p> <p>50E2-3BP</p> <p>50W204-01K</p>
<p>*For P up to 2 mm Ø 8 +0,2 for installation without retaining washer</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>max. 6 1.2 see version A or B</p> <p>Version A Rivet/Screw Mounting Ø3,3</p> <p>Version B Welding 0.9 Ø3,5</p>	Rivet / Screw Mounting Steel / zinc-plated, CrVI-free, clear passivation	120	V50R1-1-1AGV
		Stainless steel	200	V50R1-1-1BP
		Welding Steel / zinc-plated	-	V50R1-1-2AZ
		Steel / oil coated	-	V50R1-1-2AR

Receptacle Installation Instructions

Installation Dimensions
<p align="center">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

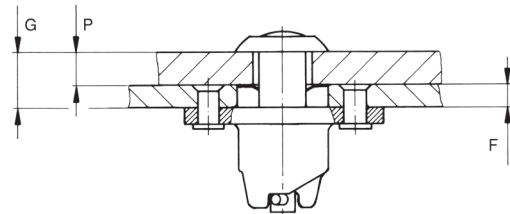
1. Select stud assembly and receptacle, page F-3 up to F-5, F-7 up to F-10.
2. Select stud accessories (retaining washer, gasket), page F-6 and F-7.
3. Select hex nut for receptacle, if necessary, page F-11.
4. Select stud length number from total thickness G using the formula and table on page F-2 (e.g.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

Determining the stud length number when using receptacle:

Type 1 + 3*

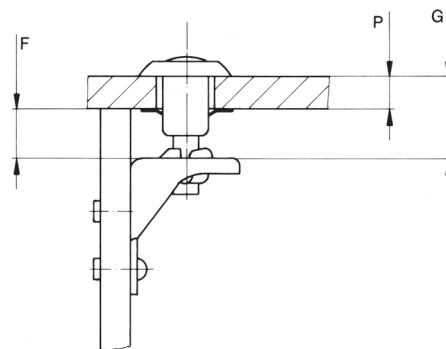
$$G = P + F$$

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



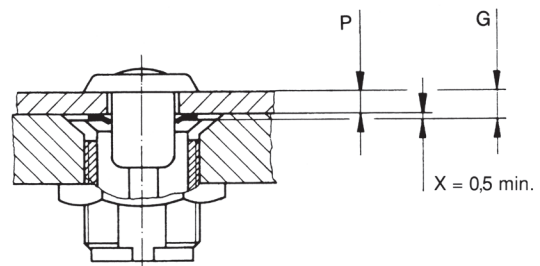
Type 2

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




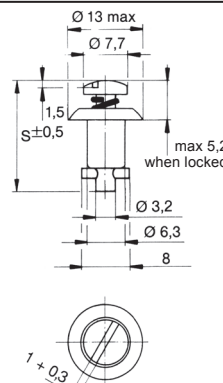

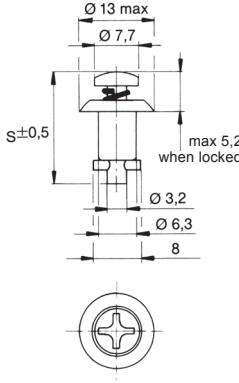

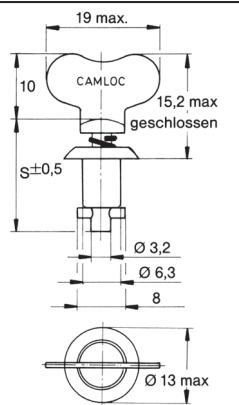
Type 4

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



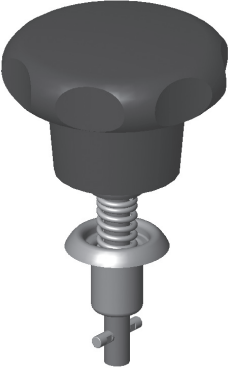
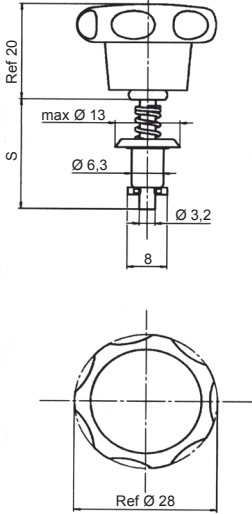

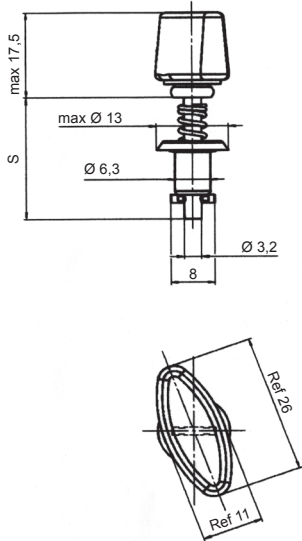

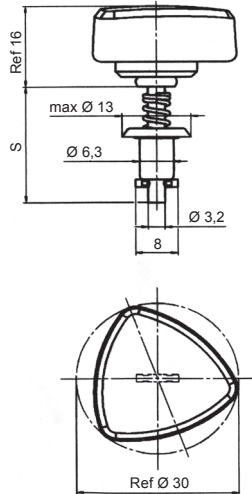
Total Thickness G	Stud Length No. When Using Type 1 + 4 Receptacles	Total Thickness G	Stud Length No. When Using Type 2 Receptacles	Total Thickness G	Stud Length No. When Using Type 3 Receptacles
0,75 - 1,50	1	0,75 - 1,50	2	9,90 - 10,65	1
1,50 - 2,30	2	1,50 - 2,30	3	10,65 - 11,40	2
2,30 - 3,05	3	2,30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

Other lengths on request.


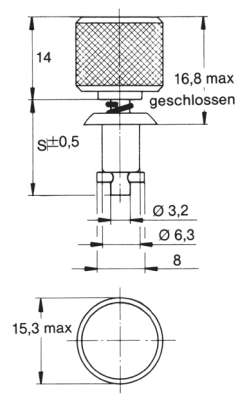

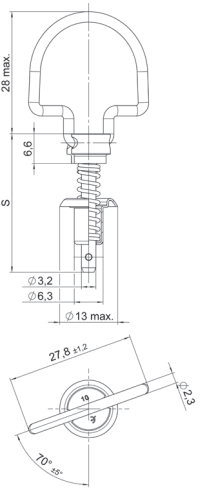
Style	Dimensions	Materials / Finish	°C	Part No.
Slotted Recess Pan Head 	 <p>$S = 18,54 + (0,76 \times \text{length no.})$</p>	Steel / zinc-plated, CrVI-free, clear passivation	120	V26S01-*AGV
		Steel / chrome-plated	120	26S38-*
		Stainless steel ¹⁾	200	2600-*S
		Steel / nickel-plated	120	26S42-*
Cross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

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


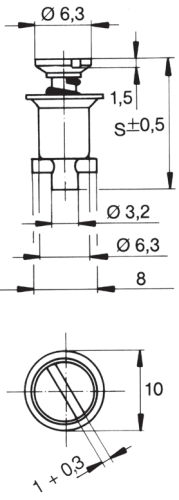

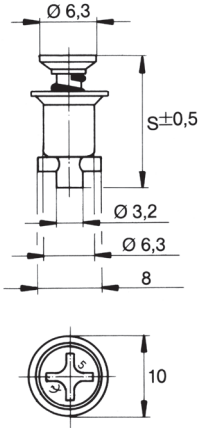
¹⁾ Max. Tensile strength 1.000 N, working load 700 N.

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Star Form Handle Plastic</p> 		<p>Steel / zinc-plated, CrVI-free, clear passivation with plastic knob (PA6)</p> <p>Note: Not to be used with encapsulated receptacles</p>	<p>-40 up to +60</p>	<p>V26S06- *AGV</p>
<p>Fixed Wing Handle Plastic</p> 		<p>Steel / zinc-plated, CrVI-free, clear passivation with plastic knob (PA6)</p> <p>Note: Not to be used with encapsulated receptacles</p>	<p>-40 up to +60</p>	<p>V26S07- *AGV</p>
<p>Triangular Handle Plastic</p> 		<p>Steel / zinc-plated, CrVI-free, clear passivation with plastic knob (PA6)</p> <p>Note: Not to be used with encapsulated receptacles</p>	<p>-40 up to +60</p>	<p>V26S08- *AGV</p>

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

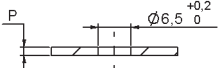
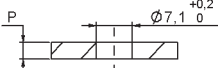
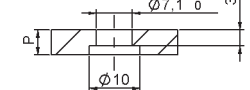
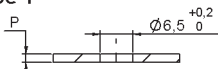
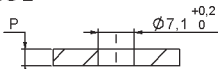
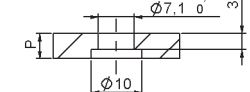
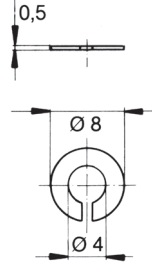
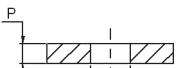
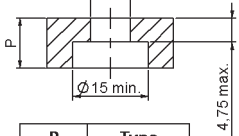
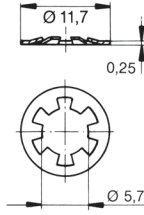
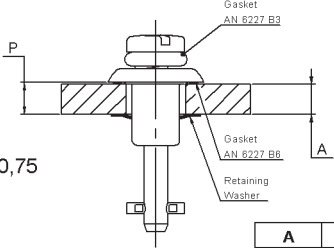
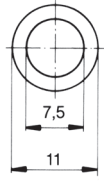
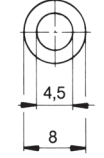
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Knurled Head</p> 	 <p>$S = 16,76 + (0,76 \times \text{length no.})$</p>	Steel / chrome-plated	120	26S34-*
<p>Folding Bail Handle 180°</p> 		Steel / zinc-plated, CrVI-free, clear passivation	120	V26S22 - *AGV

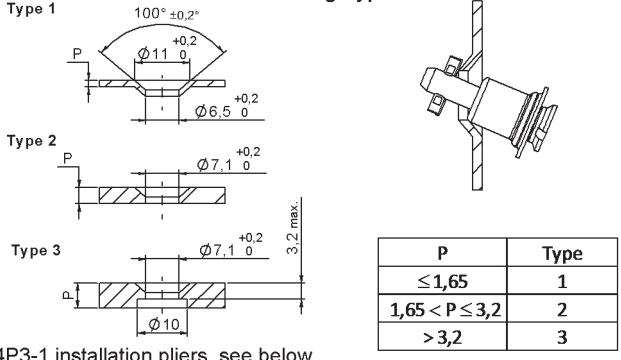
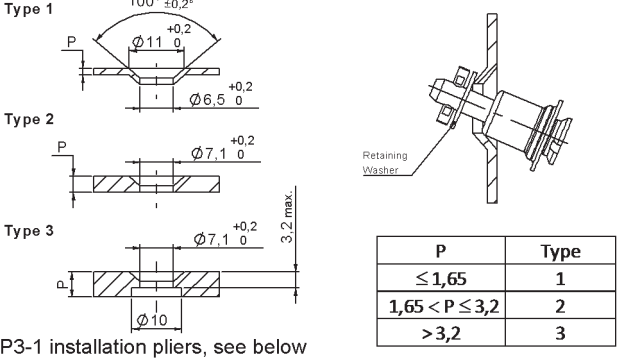
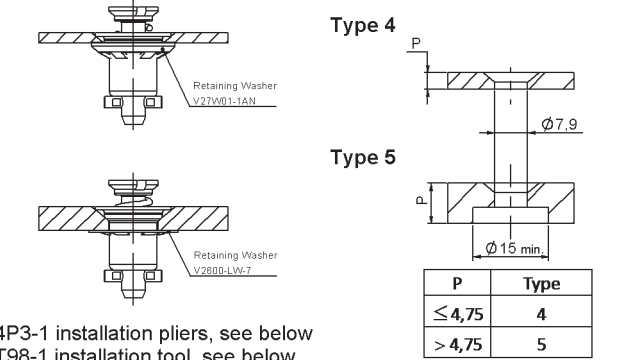
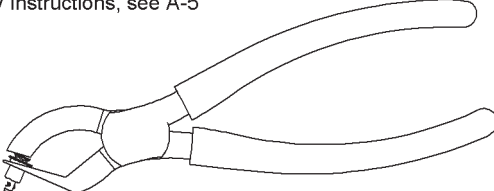
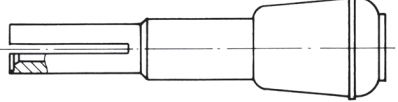
* Length no. from Table, page F-2.


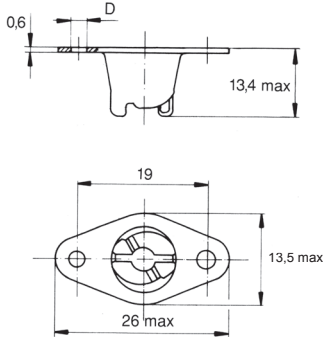

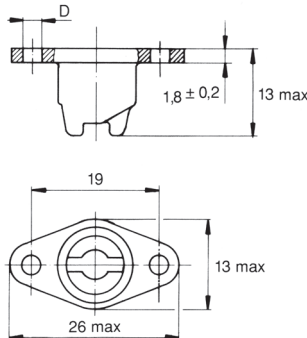
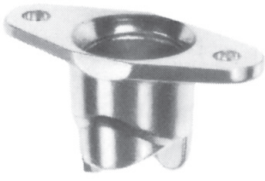
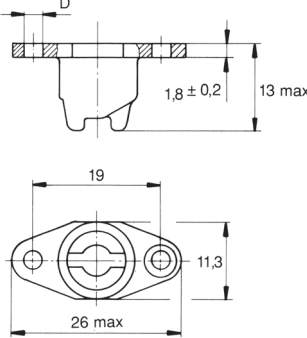

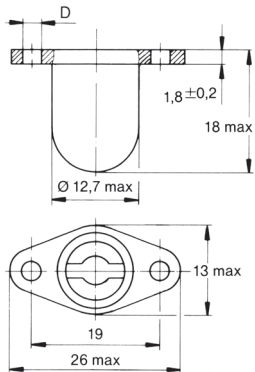
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Slotted Recess Flush Head</p> 	 <p>$S = 14,73 + (0,76 \times \text{length no.})$</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel ¹⁾</p>	<p>120</p> <p>200</p>	<p>V27S01-*AGV</p> <p>2700-*S</p>
<p>Cross Recess Flush Head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

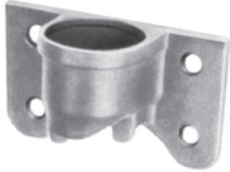
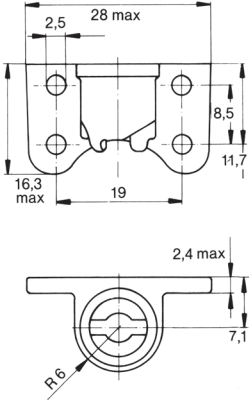

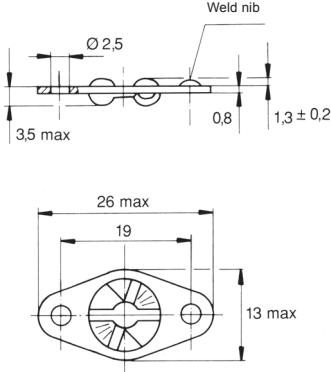
* Length no. from Table, page F-2.


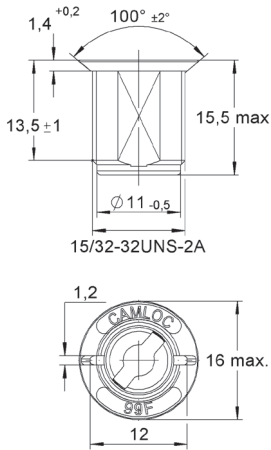

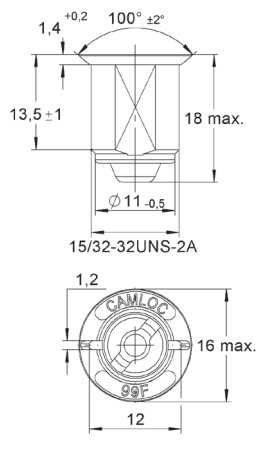
¹⁾Max. Tensile strength 1.000 N, working load 700

Installation Dimensions	Accessories	Material / 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="550 604 790 728"> <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="550 1041 805 1164"> <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	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="598 1523 774 1612"> <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, siehe 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="598 1960 774 2049"> <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, siehe 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	Material / Finish	Part No.								
<p>Stud Retention up to Dash No. 4 without Retaining Washer Floating Type</p>  <table border="1" data-bbox="510 604 758 716"> <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	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>  <table border="1" data-bbox="510 1052 758 1164"> <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	Retaining washer	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>  <table border="1" data-bbox="558 1512 726 1601"> <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 below T98-1 installation tool, see below</p>	P	Type	≤ 4,75	4	> 4,75	5	Retaining washer	Stainless steel Steel / nickel-plated	V2600-LW-7 V27W01-1AN		
P	Type										
≤ 4,75	4										
> 4,75	5										
<p>Assembly Instructions, see A-5</p> 	Stud Installation pliers		4P3-1								
<p>Assembly Instructions, see A-5</p> 	V2600-LW-7 and V27W01-1AN retaining washer installation tool		T98-1								

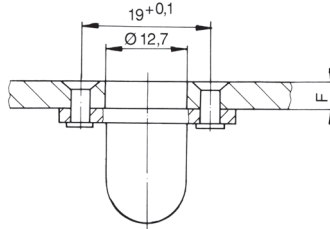
Style	Dimensions	Materials / Finish	D	°C	Part No.
<p>Type 1 Lightweight</p> 		Steel / zinc-plated, CrVI-free, clear passivation	2,6	120	V26R6-1AGV
<p>Type 1 Cast</p> 		<p>Hard bronze / zinc-plated, CrVI-free, clear passivation</p> <p>Hard bronze / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless 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> 		<p>Aluminium / anodized</p>	<p>175</p>	<p>26R1-1</p>
<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>-</p>	<p>V312-12AGV</p> <p>312-12S</p> <p>312-12WS</p>

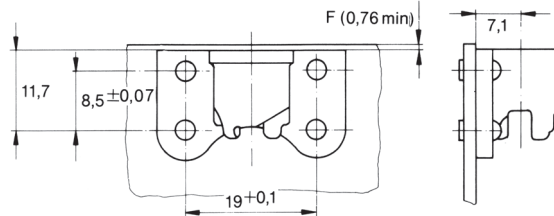
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Type 4 Single Hole Mounting</p> 		<p>Zinc die cast / zinc-plated, CrVI-free, clear chromate</p>	<p>100</p>	<p>99R10-01A1</p>
<p>Type 4 Single Hole Mounting Encapsulated</p> 		<p>Zinc die cast / zinc-plated, CrVI-free, clear chromate</p> <p>Capsule: Stainless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

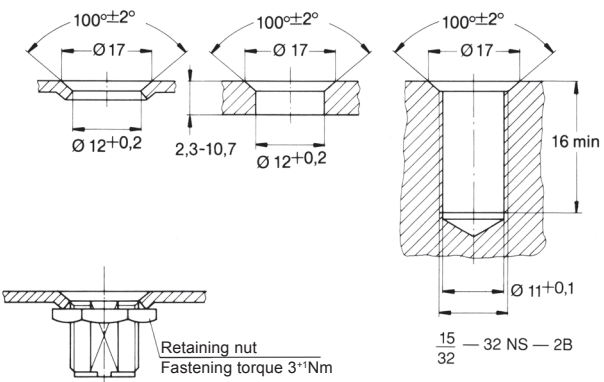
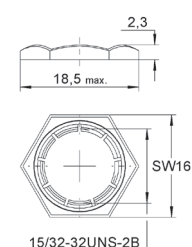
Installation Dimensions

Type 1 + 3 Receptacles Hole Pattern



Type 2 Receptacle Hole Pattern (Side Mounting)



Installation Dimensions	Accessories	Materials / Finish	Part No.
<p>Installation Options Type 4 Receptacle</p>  <p>Retaining nut Fastening torque 3⁺Nm</p>	<p>Retaining nut</p>  <p>Tap</p>	<p>Steel / zinc-plated, CrVI-free, clear chromate</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.

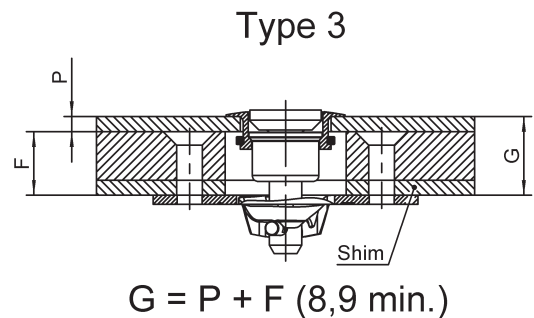
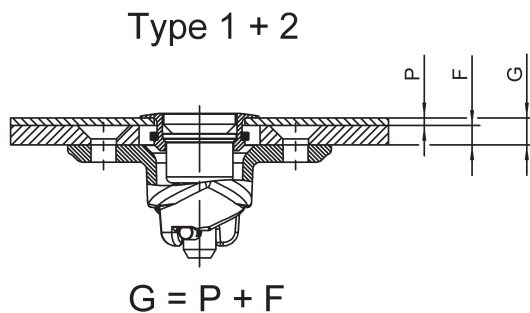
Large range of stud assemblies with fixed and floating receptacles

Selection Instructions

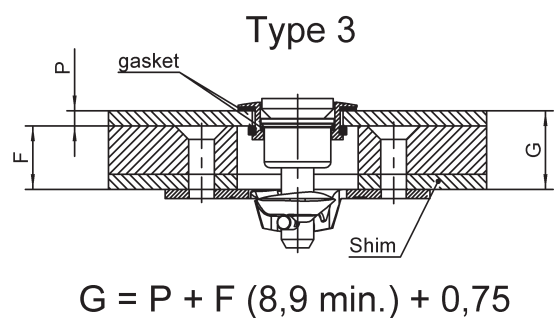
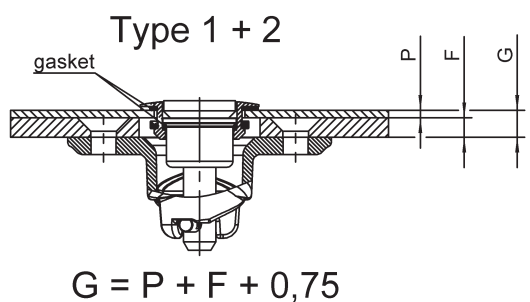
1. Select stud assembly, page G-4 and G-5, grommet and snap-on retaining ring, page G-7 and receptacle, page G-8 and G-9.
2. Select retaining washer, page G-6, for studs from length no. 5.
3. Select stud length number from total thickness G using the formula and the table on page G-2 and G-3 (e.g. D4002-*AGV).

Determining the stud length number when using receptacle:

Standard version



Sealed version



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


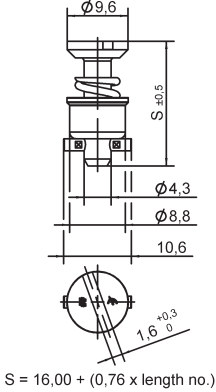

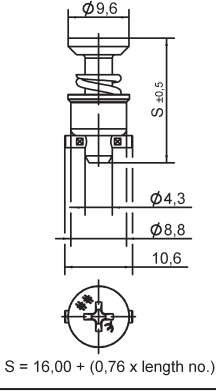

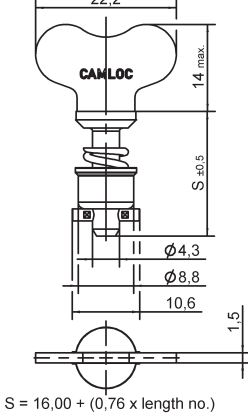
Stud Length No. When Using

Total Thickness G	Type 1 Receptacles	Type 2 Receptacles	Type 3 Receptacles	Total Thickness G	Type 1 Receptacles	Type 2 Receptacles	Type 3 Receptacles
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.


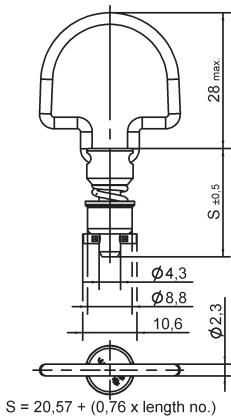

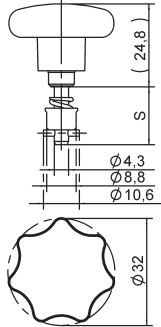
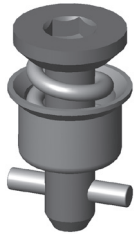
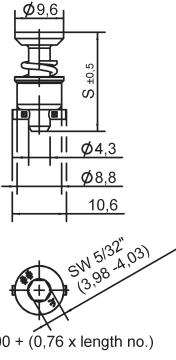
When Using the Following Grommet and Receptacles: Plus Flush Mounting Grommets											
D4002-N-AGV		D4002-O-AGV		D4002-P-AGV		D4002-R-AGV		D4002-S-AGV		D4002-T-AGV	
4002-NS		4002-OS		D4002-P-BP		D4002-R-BP		D4002-S-BP		D4002-T-BP	
Stud Length No. When Using											
Total Thickness G	Type 1 Receptacles	Type 2 Receptacles	Type 3 Receptacles	Total Thickness G	Type 1 Receptacles	Type 2 Receptacles	Type 3 Receptacles	Total Thickness G	Type 1 Receptacles	Type 2 Receptacles	Type 3 Receptacles
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>


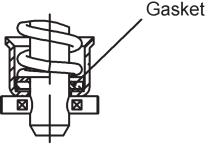

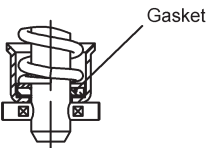
* Length no. from Table, page G-2 and G-3

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

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

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

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

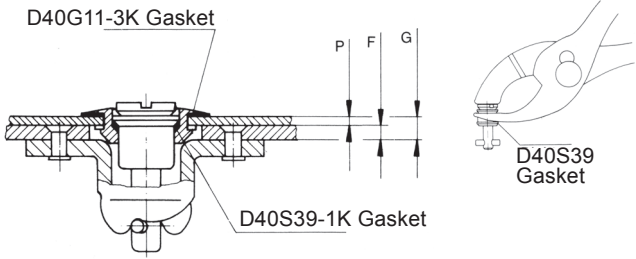
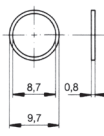
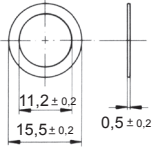
Style	Dimensions	Materials / Finish	°C	Part No.
Sealed Slotted Recess Head 	 Additional required gasket see page G-4	Steel / zinc-plated, CrVI-free, clear passivation Gasket: Vulkollan®* Available in Stud Length no. 4 and above	-15 to +80	D4002I-*AGV
		Stainless steel ¹⁾	200	D4002I-*BP
Sealed Cross Recess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

* Vulkollan® is a registered brand of Bayer AG.

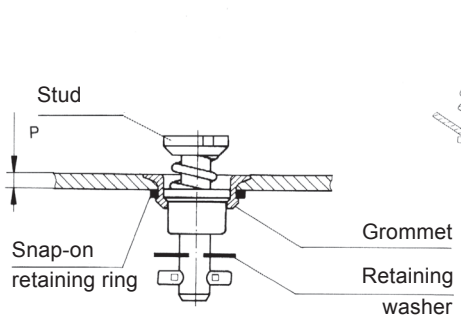
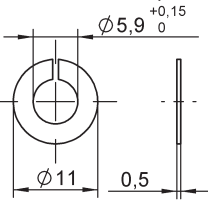
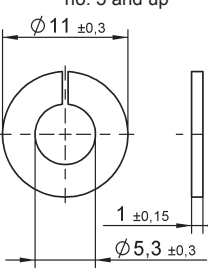
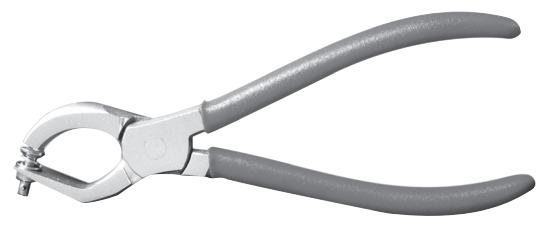

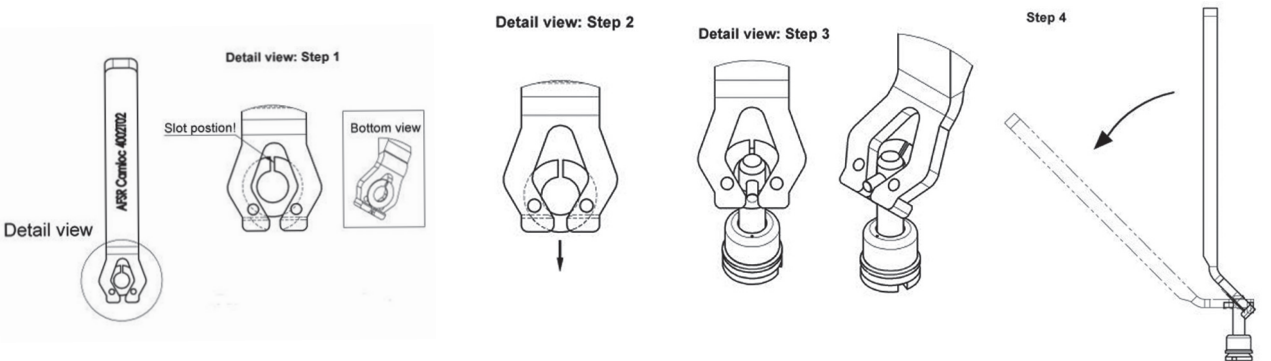
¹⁾ Max. tensile strenght 3.300 N, working load 2.200 N

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


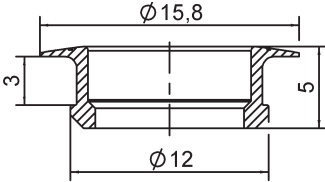

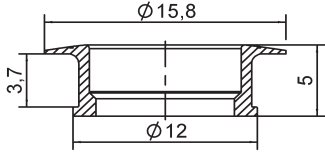

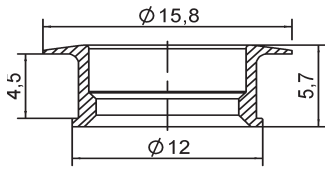

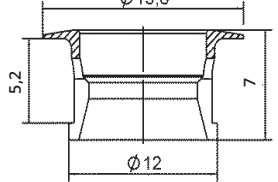

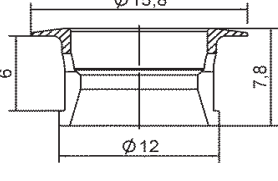
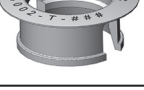
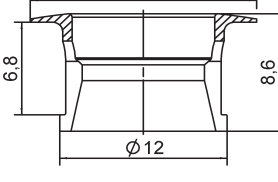

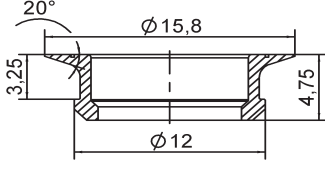

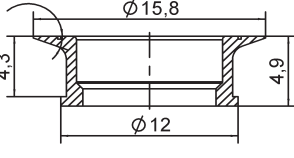



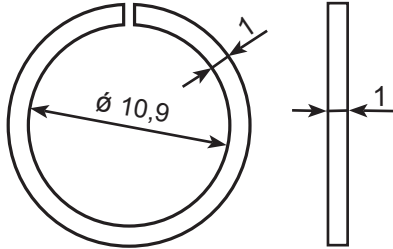
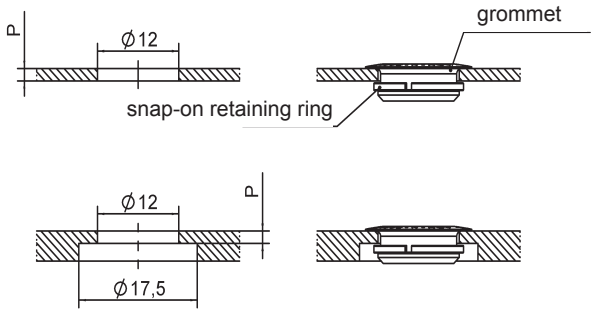
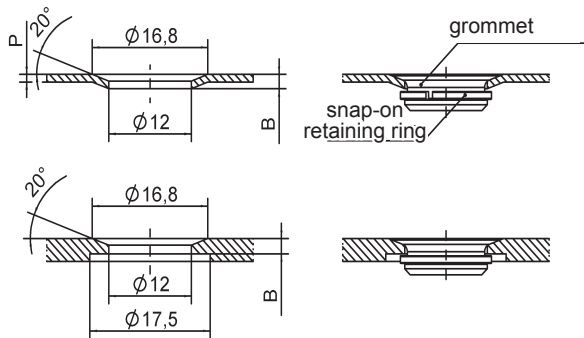
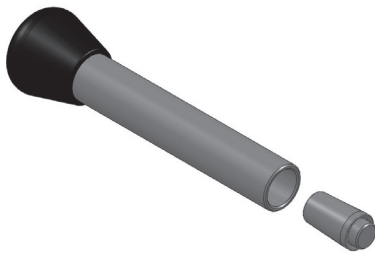
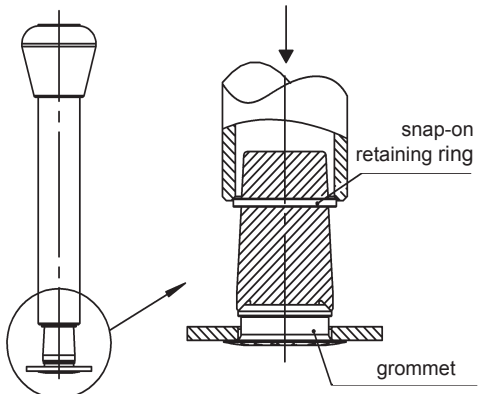
Installation Dimensions	Accessories	Materials / Finish	Part No.
<p>Gasket to be ordered in addition to the sealed stud assembly</p> 	Gasket 	Plastic / (PA6)	D40S39-1K
	Gasket 	EPDM black	D40G11-3K


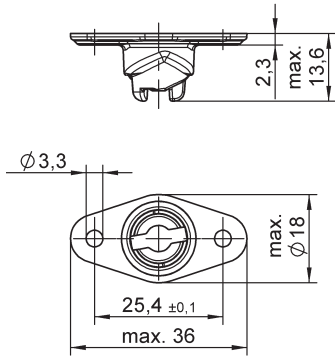

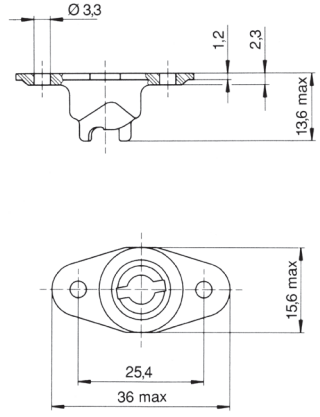

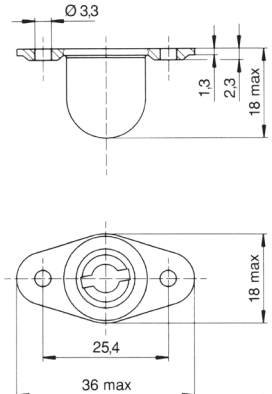
* Length no. from Table, page G-2 and G-3

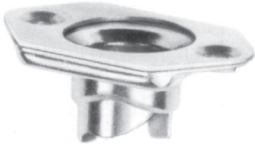
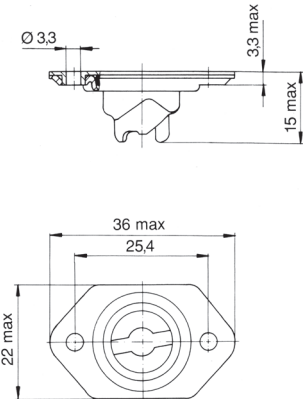

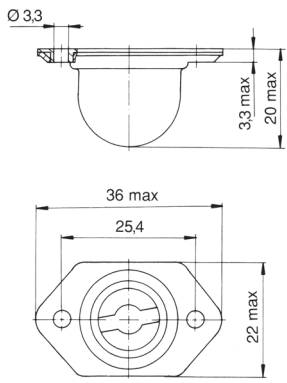

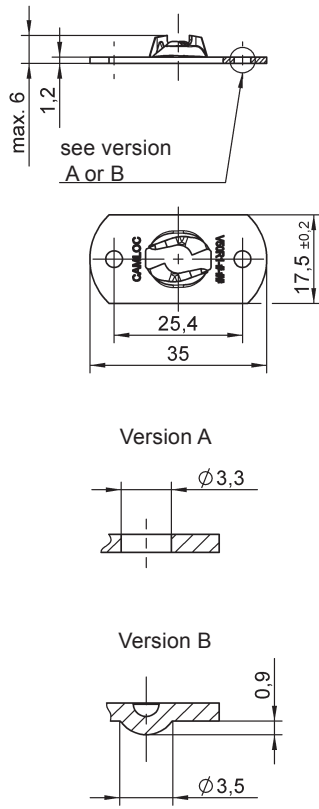
Installation Dimensions	Accessories	Materials / Finish	Part No.
 <p>4P3-1 installation pliers, see below</p>	<p>retaining ring loose on stud use for stud length no. 5 and up</p>  <p>retaining ring loose on stud use for stud length no. 5 and up</p> 	<p>Stainless steel</p> <p>Plastic</p>	<p>4002-SW-SS</p> <p>50W204-01K</p>
	<p>Stud installation pliers</p>		<p>4P3-1</p>
	<p>Mounting tool for retaining washers*</p>		<p>4002T02-1BP</p>
<p style="text-align: center;">installation of 4002-SW-SS</p>  <p>Detail view Detail view: Step 1 Detail view: Step 2 Detail view: Step 3 Step 4</p>			

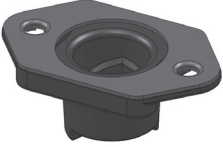
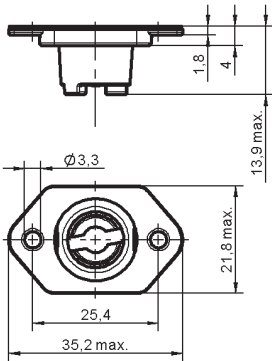
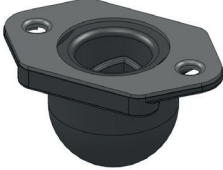
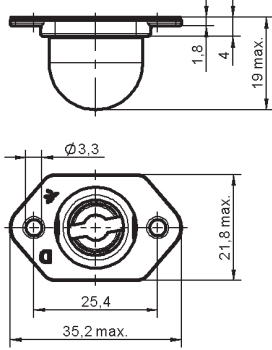

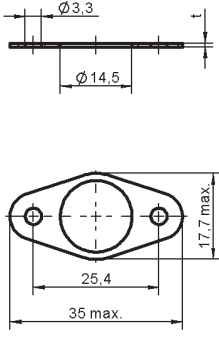
* Mounting tool 4002T02 is only for retaining washers of (D)4002 Series.

Style	Dimensions	Materials/ Finish	°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 to 2,40 		Steel/ zinc-plated CrVI-free, clear passivation stainless steel	120 200	D4002-O-AGV 4002-OS
Plus Flush Mounting For Panel Thickness from 2,40 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 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 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 4,80 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 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}
		D4002-N-AGV / 4002-NS D4002-O-AGV / 4002-OS D4002-P-AGV / D4002-P-BP D4002-T-AGV / D4002-T-BP	1,65 2,40 3,20 5,60
		Grommet Flush Part no.	P_{max} B_{max}
		D4002-G-AGV / 4002-GS D4002-H-AGV / 4002-HS	1,65 1,88 2,18 2,97
			T26

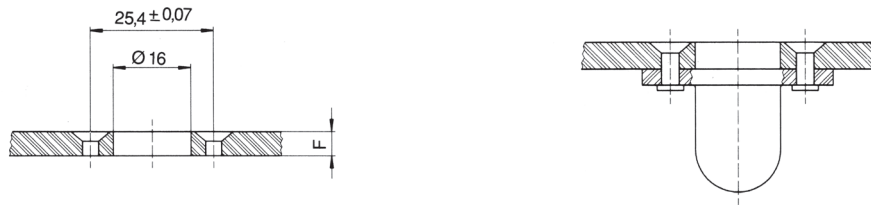
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Type 1 Cast</p> 		<p>Hard bronze / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel</p>	<p>120</p> <p>200</p>	<p>D214-16FGV</p> <p>214-16S</p>
<p>Type 1 Cast Narrow Width</p> 		<p>Hard bronze / zinc-plated, CrVI-free, clear passivation</p>	<p>120</p>	<p>D214-16NFGV</p>
<p>Type 1 Cast Encapsulated</p> 		<p>Hard bronze / zinc-plated, CrVI-free, clear passivation</p> <p>Capsule: Brass / zinc-plated, CrVI-free, clear passivation</p>	<p>150</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</p> <p>Cage: Steel / zinc-plated, CrVI-free, clear passivation</p> <p>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</p> <p>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 / Screw Mounting</p> <p>Steel / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel</p> <p>Welding (B) Steel / zinc-plated</p> <p>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 		Aluminum t=0,8mm	175	D40W02-1DR
		Aluminum t=1,5mm to be used with: D214-16FGV 214-16 S D214-16 NFGV D40R12-1FGV	175	D40W02-2DR

Installation Dimensions

Types 1, 2 and 3
Receptacle Hole Pattern



Features

Max. tensile strength 10.000 N, working load 7.000 N.

High tensile strength and preload.

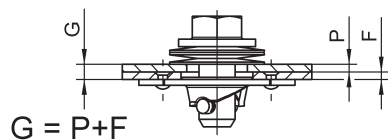
Typical applications:

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

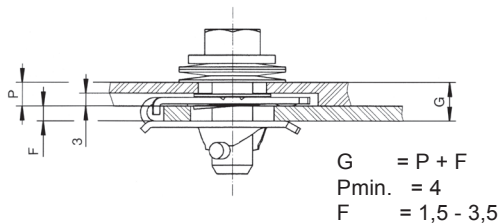
1. Select stud assembly and receptacle, pages H-2, H-3 and H-5.
2. Sealed: Also select rubber gasket and buffer plate, page H-4.
3. Select retaining washer, page H-4.
4. Select stud length number from total thickness G using the formula and table below (e.g. 991S01-*AGV).

Determining the stud length number when using:

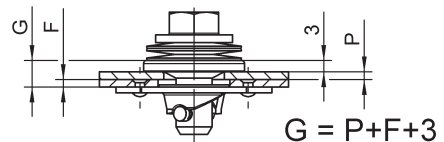
Rivet, Screw and Weld Mounting Receptacle



Clip-On Receptacle



Sealed Stud Assemblies



Click here:

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


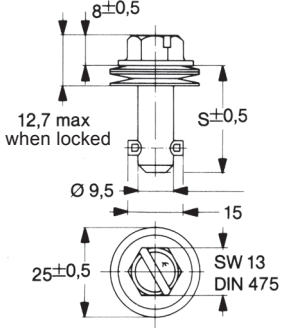
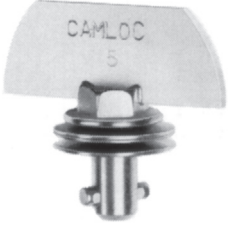
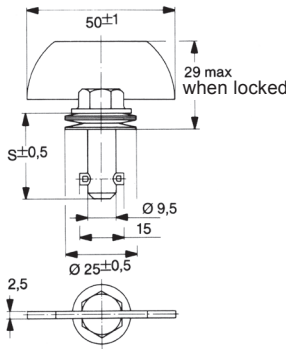
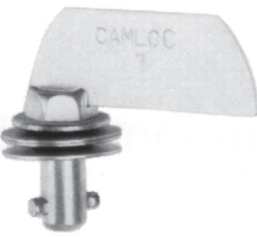
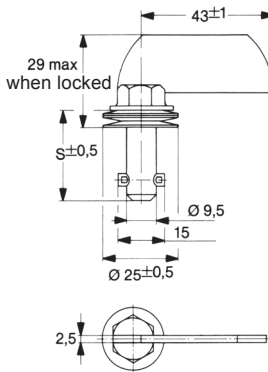

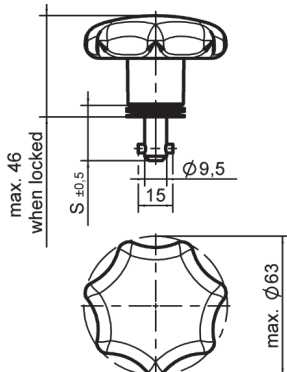
(Youtubelink)



Stud Length Table


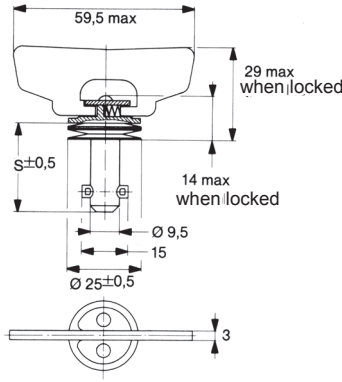

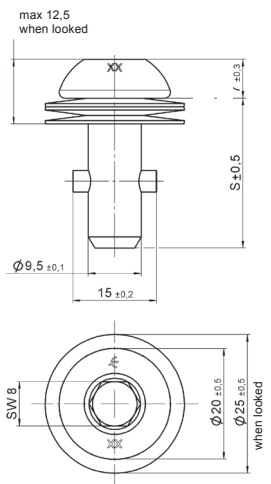

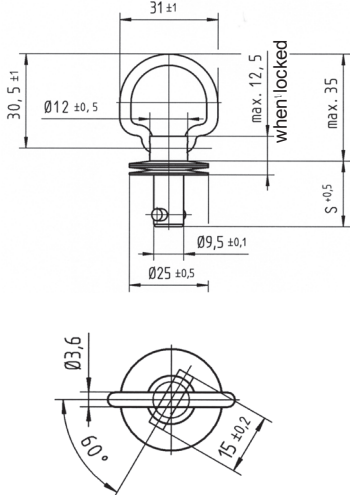
Total Thickness G	Stud Length No.	Total Thickness G	Stud Length No.	Total Thickness G	Stud Length No.
0,90 - 1,65	1	13,85 - 14,60	18	26,80 - 27,55	35
1,65 - 2,40	2	14,60 - 15,35	19	27,55 - 28,30	36
2,40 - 3,15	3	15,35 - 16,15	20	28,30 - 29,10	37
3,15 - 3,95	4	16,15 - 16,90	21	29,10 - 29,85	38
3,95 - 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.

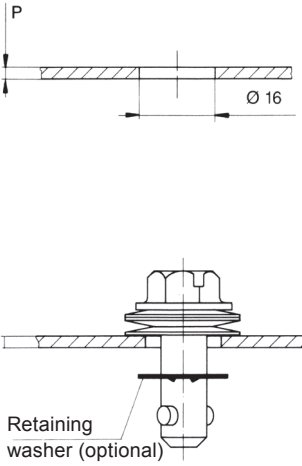
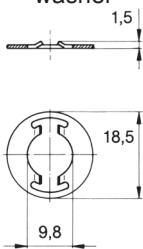
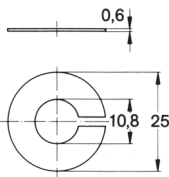
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Hex Head Slotted Recess</p> 	 <p>$S = 16,26 + (0,76 \times \text{length no.})$</p>	<p>Steel / zinc-plated, CrVI-free, clear passivation</p> <p>Stainless steel ¹⁾</p>	<p>120</p> <p>200</p>	<p>991S01- *-1AGV</p> <p>991S01- *-1BP</p>
<p>Fixed Wing Handle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

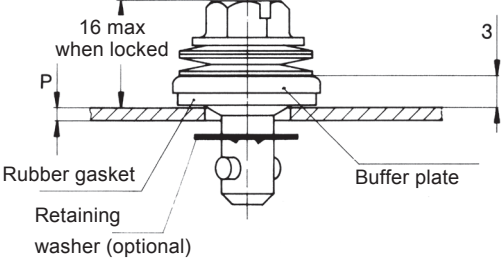
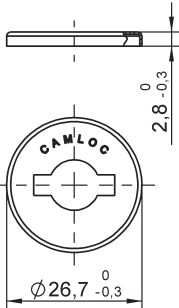
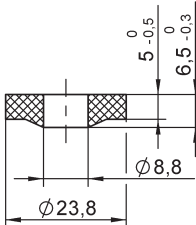
¹⁾ Max. tensile strength 7.000 N, working load 4.500 N.


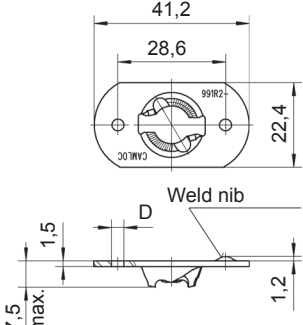

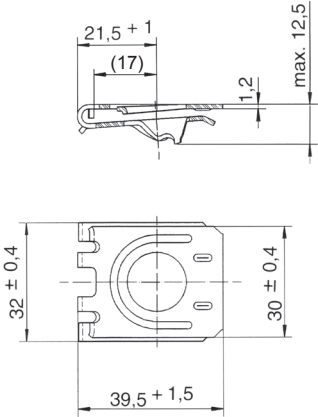
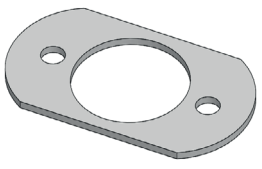
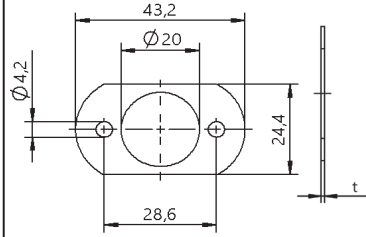
Style	Dimensions	Materials / Finish	°C	Part No.
Folding Wing Handle 180° 	 <p>$S = 16,26 + (0,76 \times \text{length no.})$</p>	Steel / zinc-plated, CrVI-free, clear passivation	120	991S05- *-1AGV
Hex Recess Head 		Steel / zinc-plated, CrVI-free, clear passivation	120	991S30-*AGV
Folding Bail Handle 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	Material / 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>

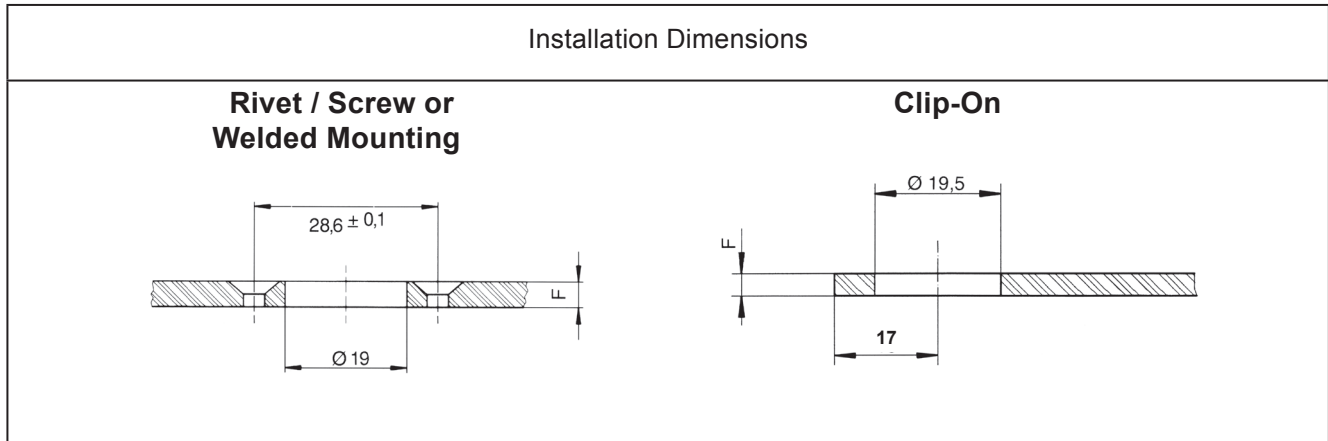
Sealed Stud Assemblies

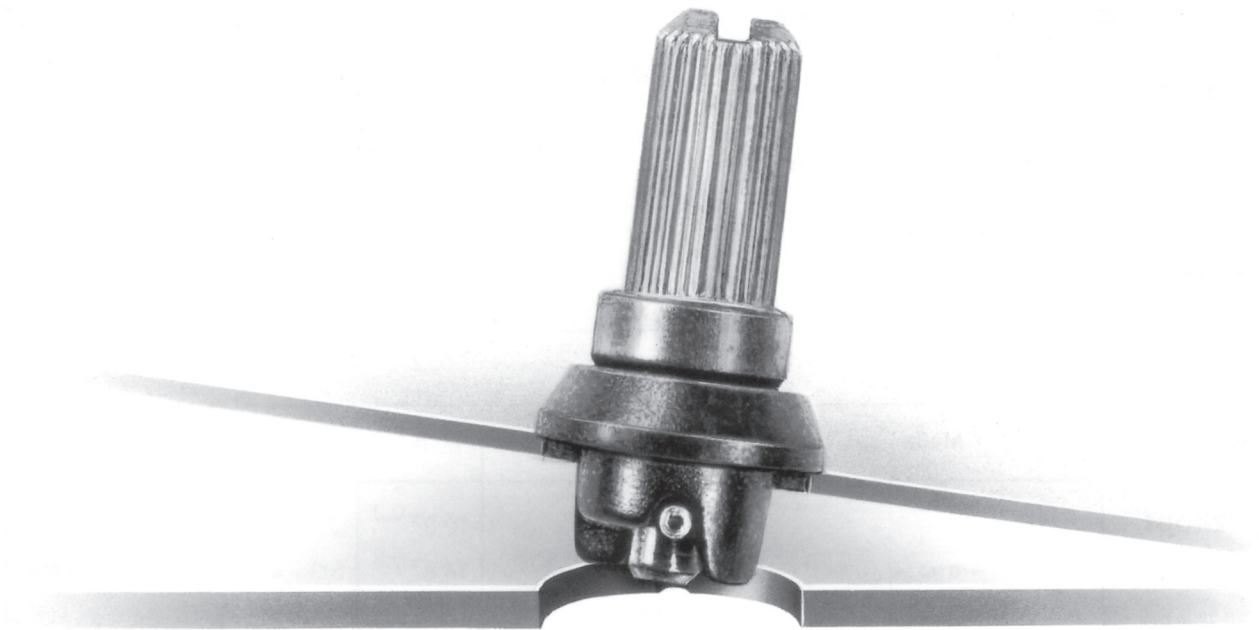
Installation Dimensions	Accessories	Material / Finish	Part No.
 <p>Rubber gasket</p> <p>Retaining washer (optional)</p> <p>Buffer plate</p>	<p>Buffer plate</p>  <p>Rubber gasket</p> 	<p>Stainless steel</p> <p>SBR/NBR or alternative SBR/NR black (100°C max.)</p>	<p>991W03-1BP</p> <p>991S17-1K</p>

Style	Dimensions	Materials / Finish	Mounting Ø	°C	Part No.
Rivet / Screw Mounting 		Rivet / Screw Mounting 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
Distance Plate* 		POM schwarz/ t=0,8	4,2	100	991W120-08K
		POM schwarz/ t=1,0	4,2	100	991W120-10K
		POM schwarz/ t=1,5	4,2	100	991W120-15K
		POM schwarz/ 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





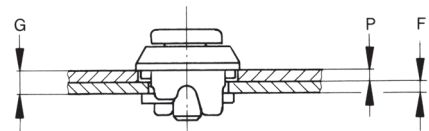
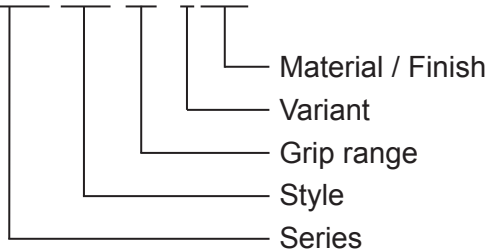
Features

- 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


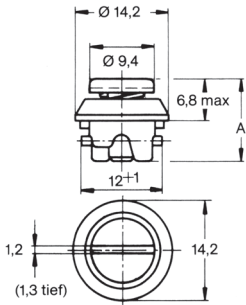

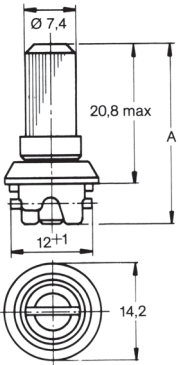
Knurled head for 3,3 mm to 4,6 mm grip range.

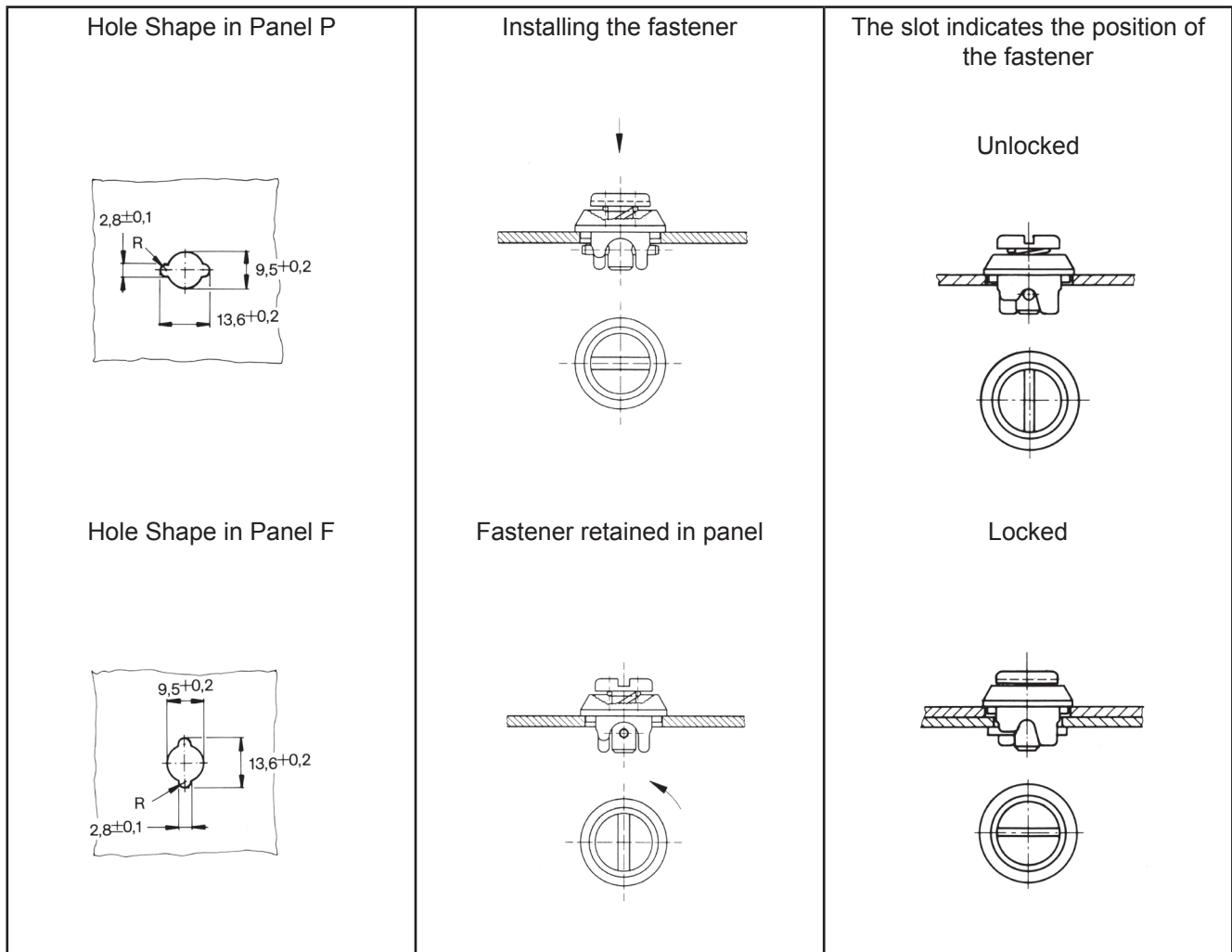
V936 S11 -4 -1 AA



$$G = P + F$$

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

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	12,3 ^{±0,3}	2,0 - 3,2	100	V936S05-3-1AA
			14,8 ^{±0,3}	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	26,4 ^{±0,3}	2,0 - 3,2	100	V936S11-3-1AA
			28,9 ^{±0,3}	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 fastener.

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

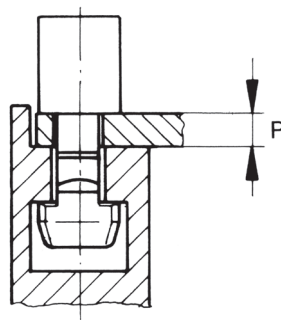
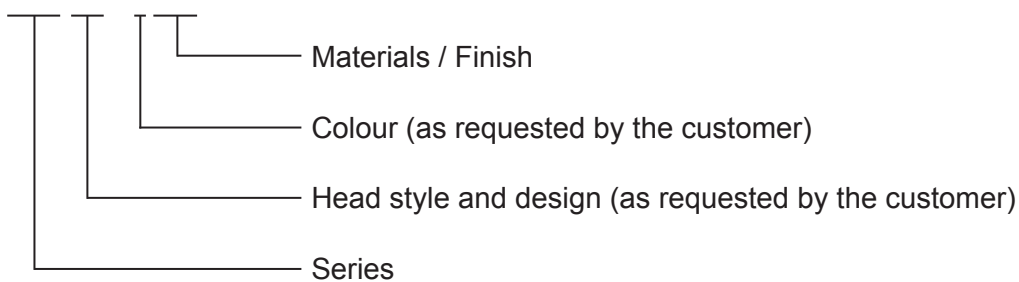
1. the front panel
2. the shape of the modular bar
3. the colour, if necessary

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


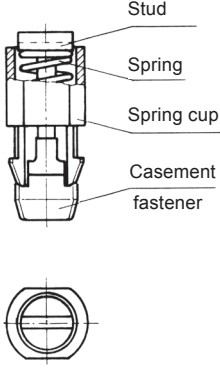

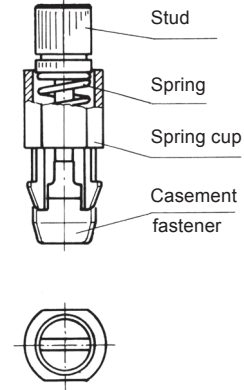
Part no. example

One-piece fastener

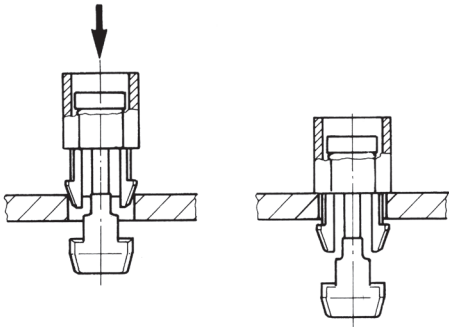
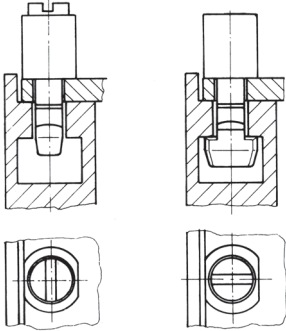
713 S* - * AE

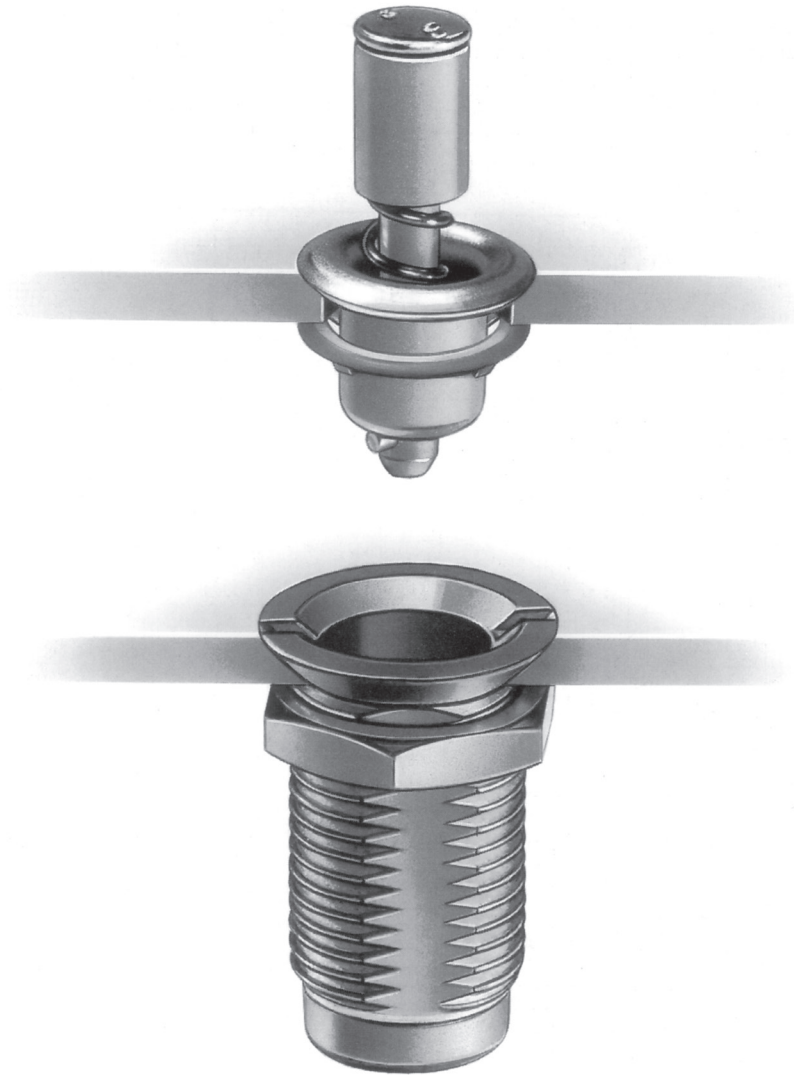


Due to the various front panel thickness, hole shapes and modular bar shapes, it is not possible to offer one standard design. We will individually issue the final part number only after determining the front panel and modular bar dimensions and the colour.

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



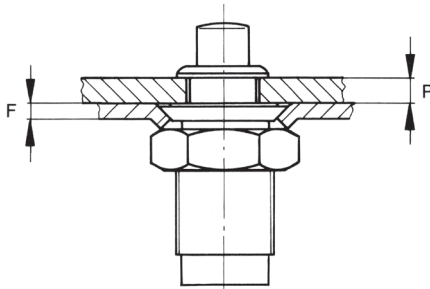
Features

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.

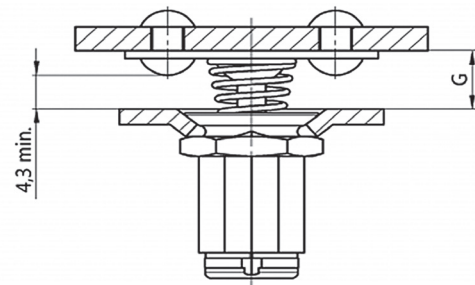
Selection Instructions

1. Select stud assembly, page K-2 or K-3 and receptacle, page K-4.
2. Select retaining washer, page K-2 and retaining hexnut, page K-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


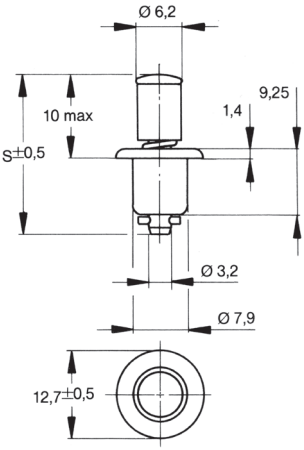
Panel Thickness P	Stud Length No.
0,7 - 2,3	1
2,3 - 3,8	3
3,8 - 5,3	5
5,3 - 6,9	7
6,9 - 8,4	9
8,4 - 9,9	11
9,9 - 11,4	13
11,4 - 13,0	15

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

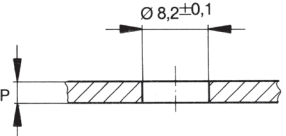
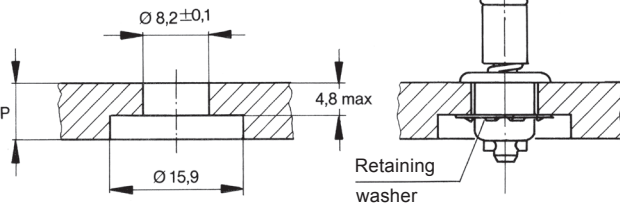
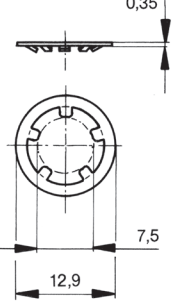
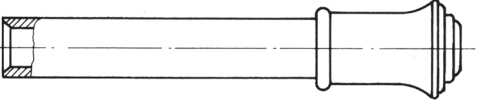
Other lengths on request.

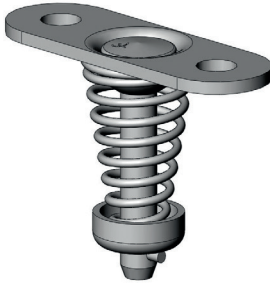
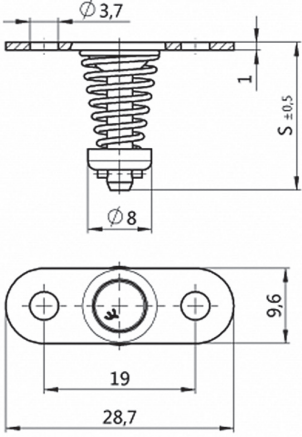
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Push Button</p> 	 <p>S=22,4 + (0,76 x length no.)</p>	Steel / nickel-plated	120	15S1- *-1AD
		Steel / zinc-plated CrVI-free, clear passivation	120	15S1- *-1AJ

* Length no. from Table „Push Button“, see page K-1.

Other lengths and surfaces can be ordered upon request.

Stud Installation Instructions

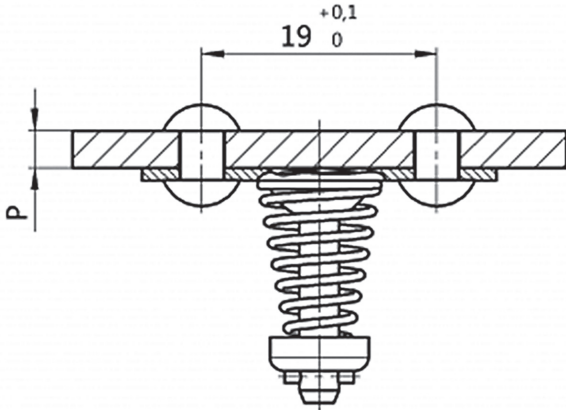
Installation Dimensions	Accessories	Materials / Finish	Part No.
<p>Panel thickness up to 4,8</p>  <p>Panel thickness from 4,8 + up</p> 	<p>Retaining washer</p> 	Stainless steel	15S11-1CJ
	<p>Installation Tool for 15S11-1CJ retaining washer</p>		T107-1


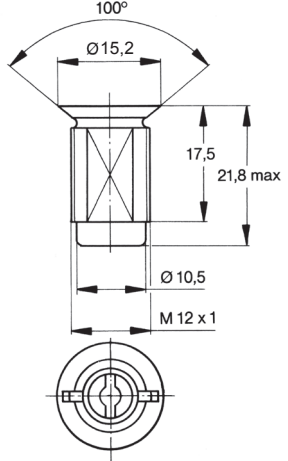
Style	Dimensions	Materials / Finish	°C	Part No.
<p>Push Panel</p> 	 <p>$S=22,4 + (0,76 \times \text{length no.})$</p>	<p>Steel / zinc-plated CrVI-free, clear passivation</p>	120	V15S20- *-1AGV

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

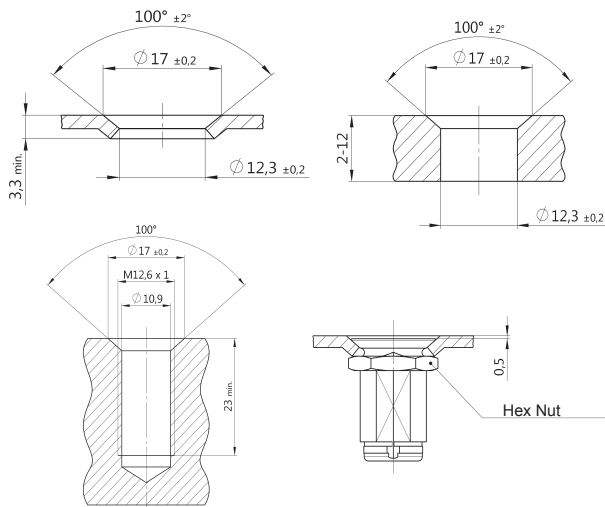
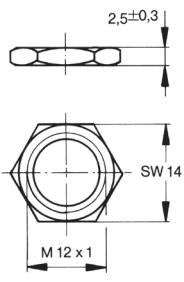
Other lengths and surfaces can be ordered upon request.

Stud Installation Instructions

Installation Dimensions
<p>Push Panel Rivet-/ Screw Mounting</p> 

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: 2.3Nm to 3.0Nm	Steel / zinc-plated, CrVI-free, clear passivation	V15R14-1-1AB





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.

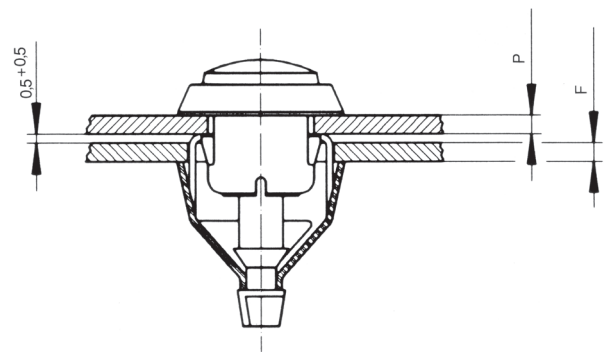
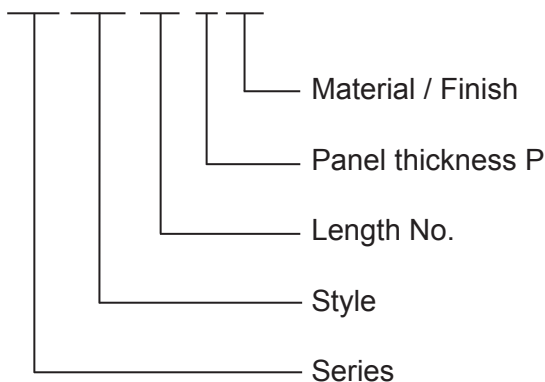
Selection Instructions

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


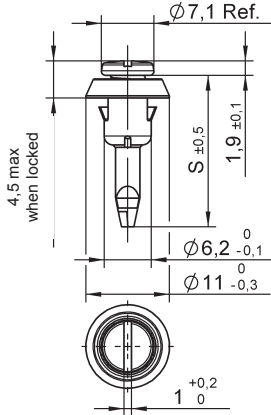

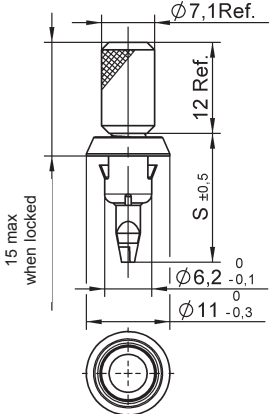
715 S12 -07 -3BP



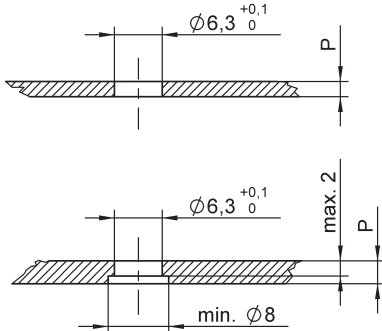
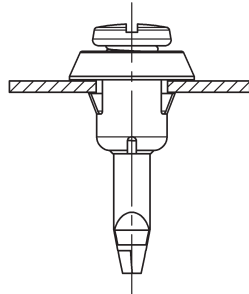
Stud Length Table


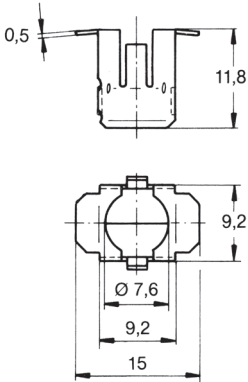
Panel Thickness P	Slotted Recess Head Stud Length No.	Knurled Head Stud Length No.	Panel Thickness P	Slotted Recess Head Stud Length No.	Knurled Head Stud Length No.
0,50 - 1,25	5	5	6,50 - 7,25	13	-
1,25 - 2,00	6	6	7,25 - 8,00	14	-
2,00 - 2,75	7	7	8,00 - 8,75	15	-
2,75 - 3,50	8	8	8,75 - 9,50	16	-
3,50 - 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.

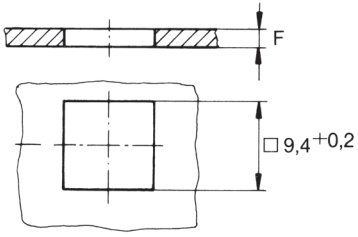
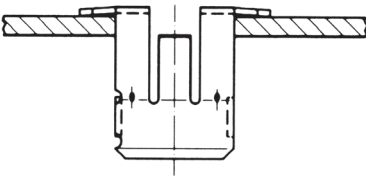
Style	Dimensions	Materials / Finish	Panel Thickness P	°C	Part No.
Slotted Recess Head 	 <p>S = 13,25 + (0,75 x length no.)</p>	Stainless steel Spring cup: Plastic (POM) / black	0,5 - 1,0	-25 up to +90	715S12- *-1BP
			1,0 - 1,5		715S12- *-2BP
			1,5 - 2,0		715S12- *-3BP
Knurled Head 	 <p>S = 13,25 + (0,75 x length no.)</p>	Stainless steel Spring cup: Plastic (POM) / black	0,5 - 1,0	-25 up to +90	715S13- *-1BP
			1,0 - 1,5		715S13- *-2BP
			1,5 - 2,0		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.
Receptacle 		Stainless steel	0,5 - 1,0	-25 up to +90 (See stud assembly)	715R02-1BP
			1,0 - 1,5		715R02-2BP
			1,5 - 2,0		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.

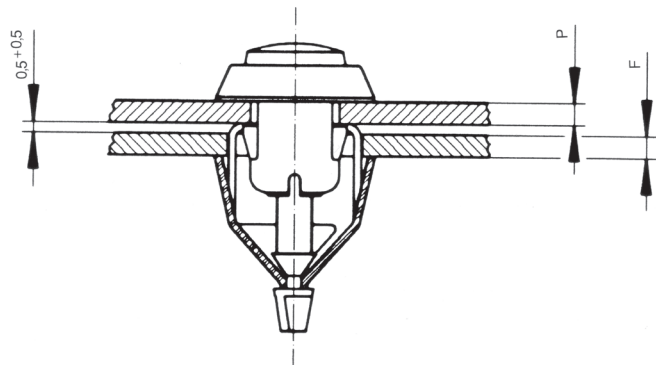
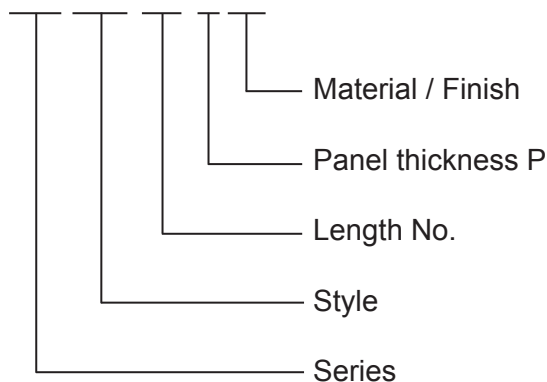
Selection Instructions

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


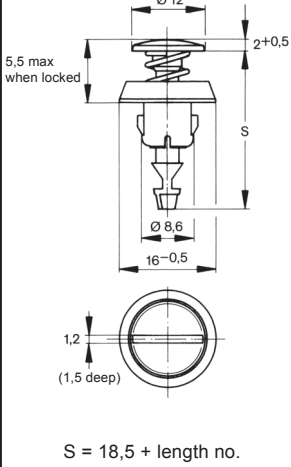

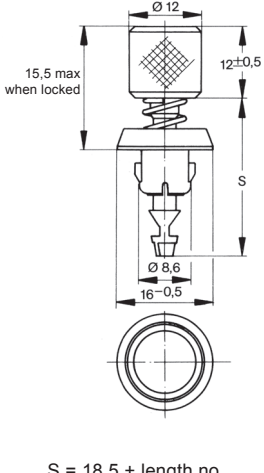
716 S12 -03 -2BP



Stud Length Table

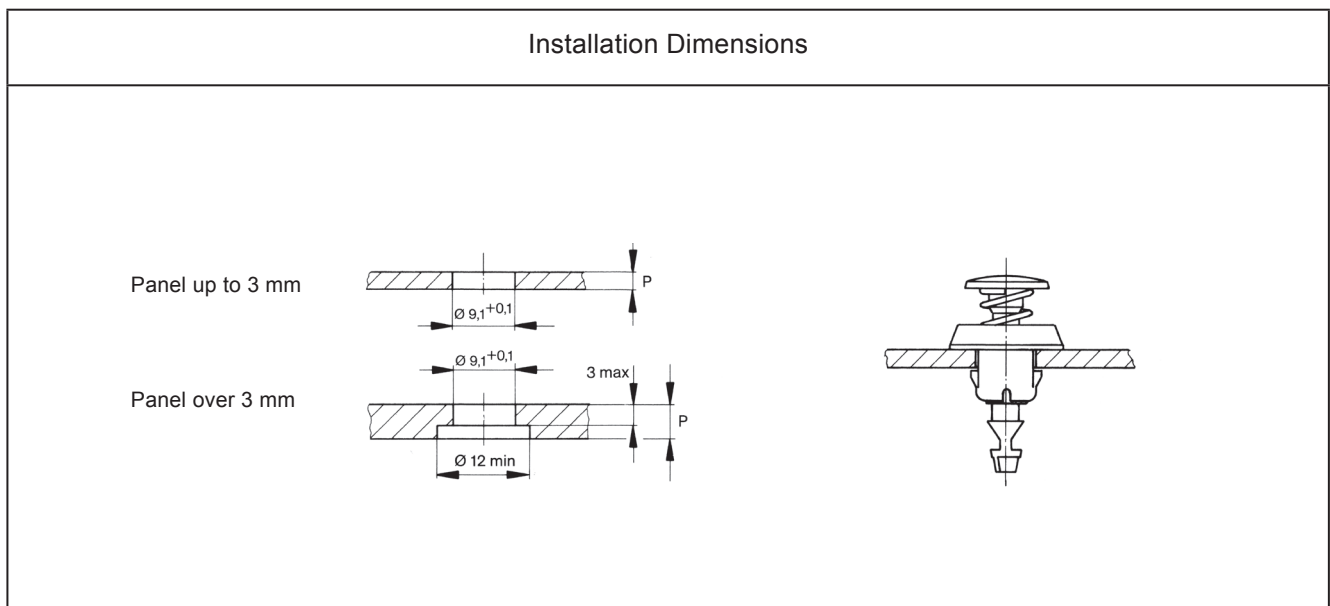
Panel Thickness P	Stud Length No.
1,0 - 2,0	02
2,0 - 3,0	03
3,0 - 4,0	04
4,0 - 5,0	05
5,0 - 6,0	06
6,0 - 7,0	07
7,0 - 8,0	08
8,0 - 9,0	09
9,0 - 10,0	10

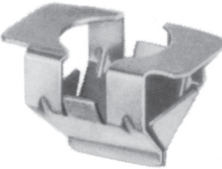
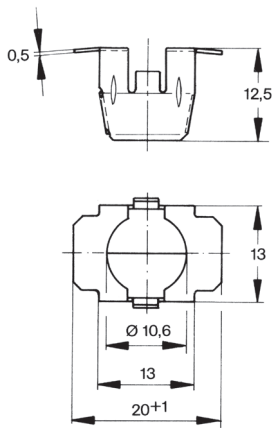
Other lengths on request.

Style	Dimensions	Materials / Finish	Panel Thickness P	°C	Part No.
Slotted Recess Head 		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 		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

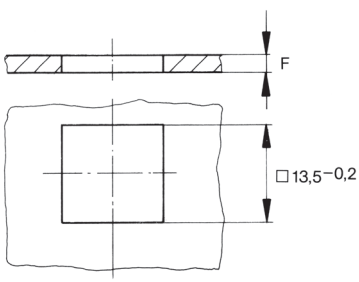
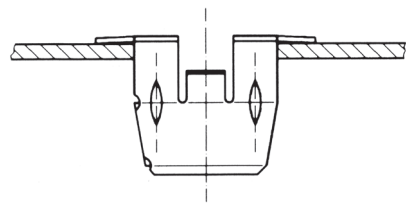
* Length no. from Table, page M-1.

Stud Installation Instructions



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

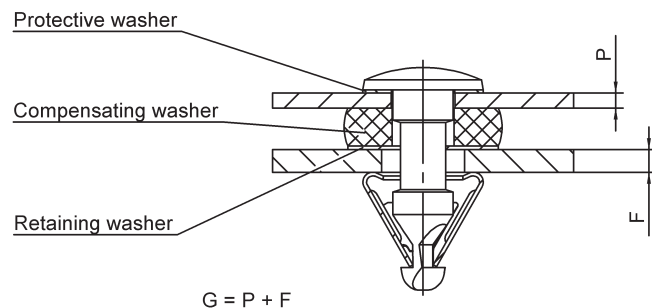
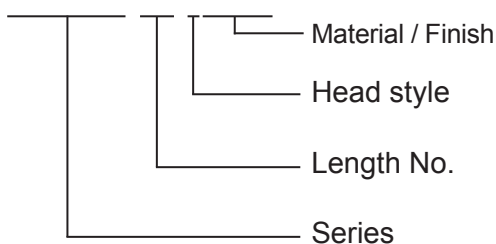
Selection Instructions

1. Select stud assembly and spring clip, page N-2 and N-3.
2. Select compensating and retaining washers, page N-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


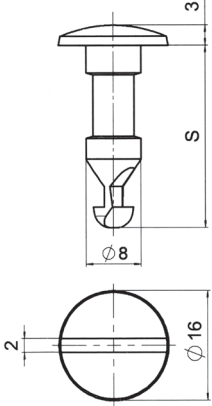

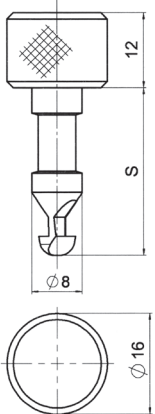
717 S01 -2 -1AGV



Stud Length Table

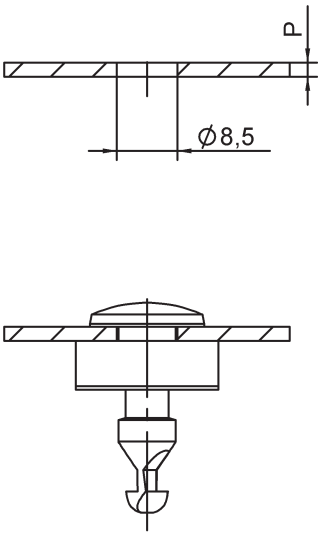
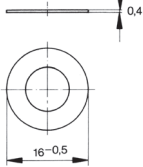
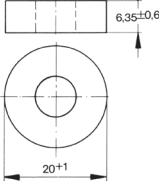
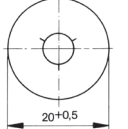
Griprange G	Stud Length No.
1,0 - 3,0	1
3,0 - 5,0	2
5,0 - 7,0	3
7,0 - 9,0	4
9,0 - 11,0	5
11,0 - 13,0	6


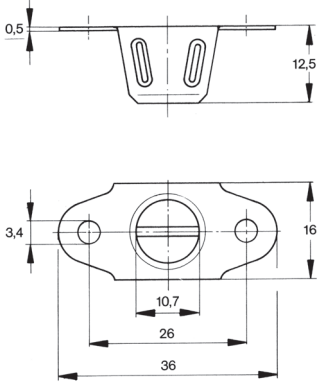
Other lengths on request.

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

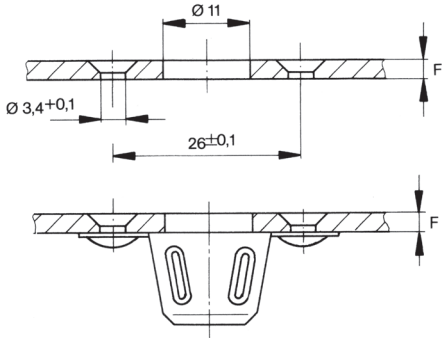
* Length no. from Table, see page N-1.

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.

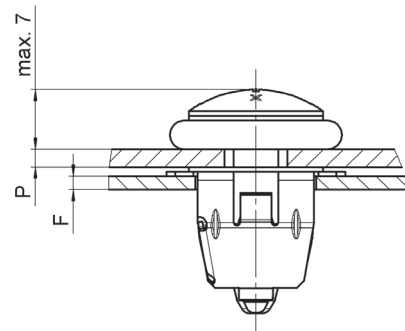
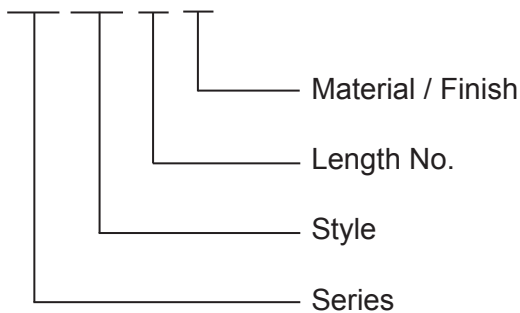
Selection Instructions

- 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).


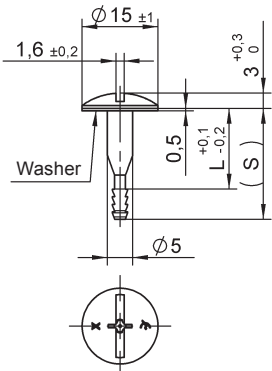

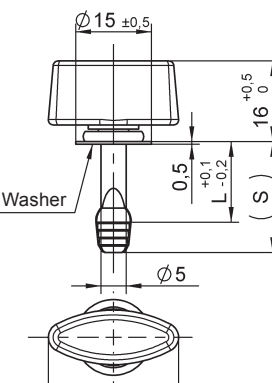
Part no. example

Stud, slot-cross recess

720 S01 -1 B

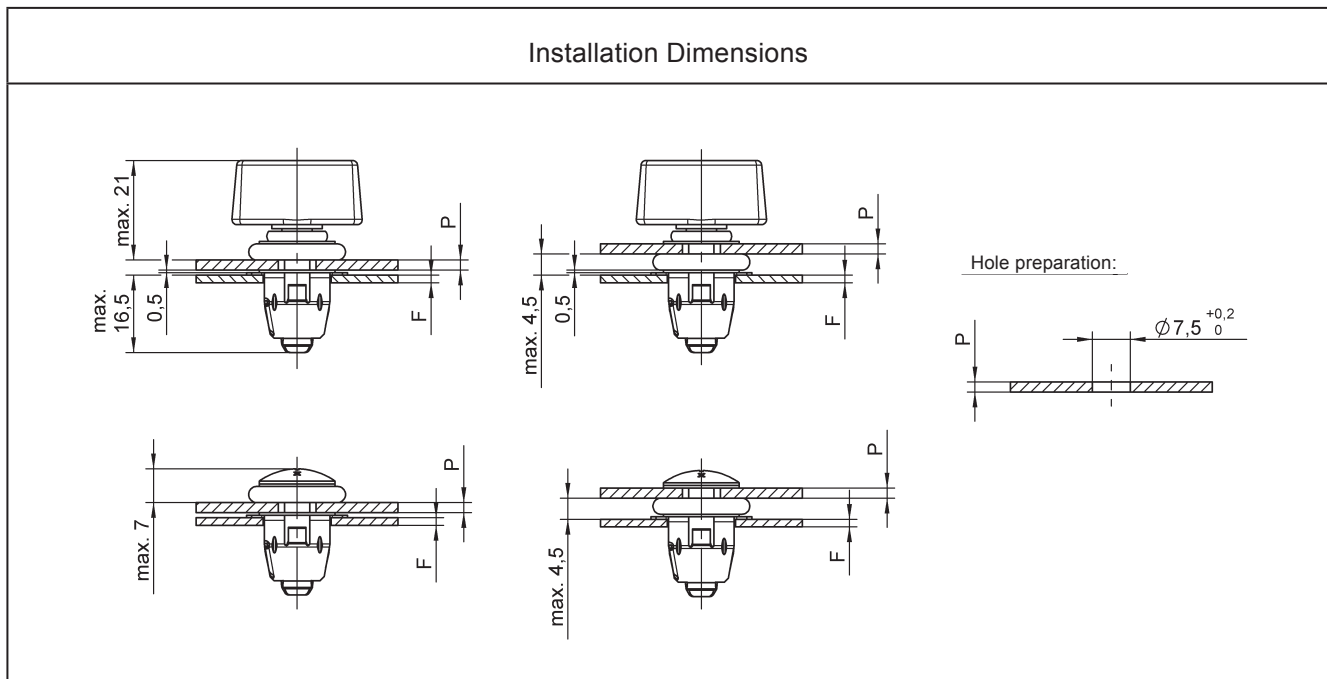



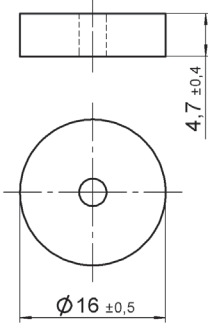
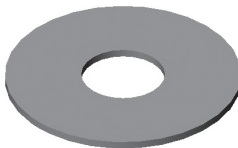
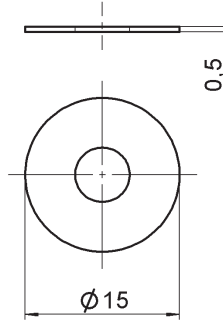
Panel Thickness P	Slot-Cross Recess Length No.	Wing Head Stud Length No.	Dimension L +0,1/-0,2	Dimension (S)
1,00 - 4,00	1	1	16	21
4,00 - 7,00	2	2	19	24
7,00 - 10,00	3	3	22	27

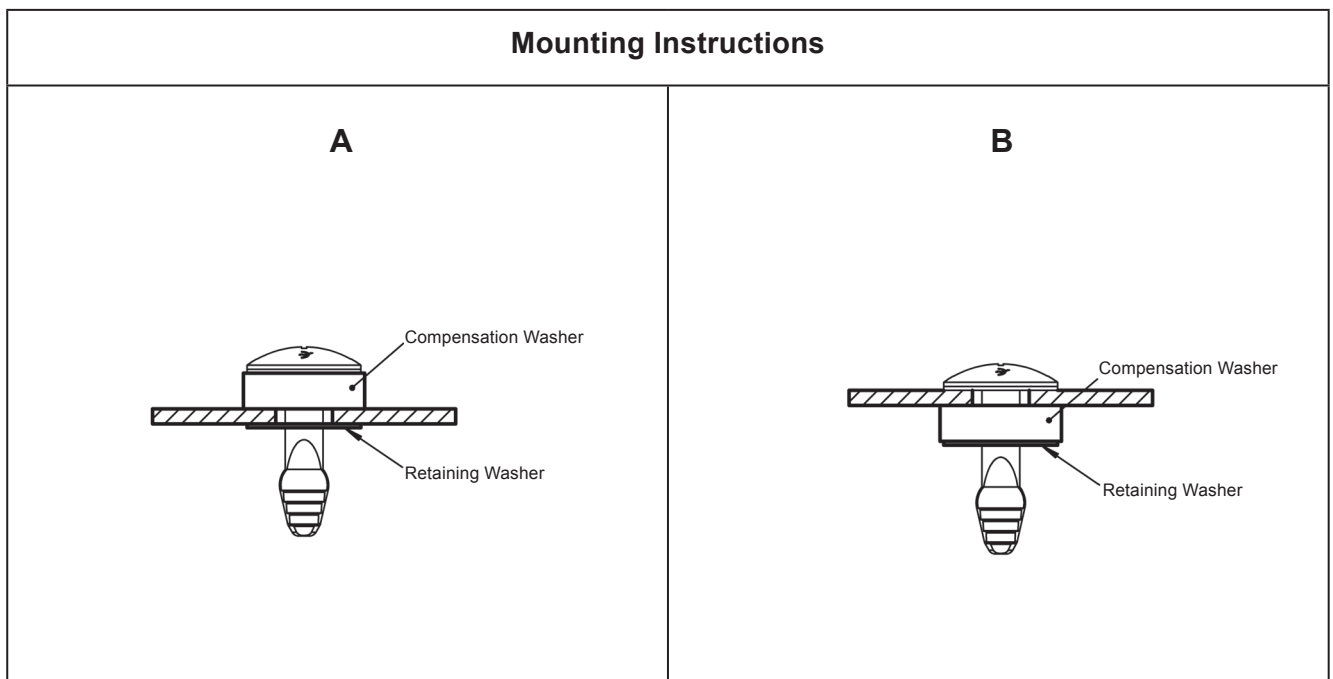
Style	Dimensions	Materials / Finish	°C	Part No.
Slot-Cross Recess Head 	 <p>L + (S) see table page O-1</p>	Stainless steel Washer: PA6 natural	-20 up to +70	720S01-*B
Fixed Wing Handle Plastic 	 <p>L + (S) see table page O-1</p>	Stainless steel Knob: PA6 black Washer: PA6 natural	-20 up to +70	720S02-*B


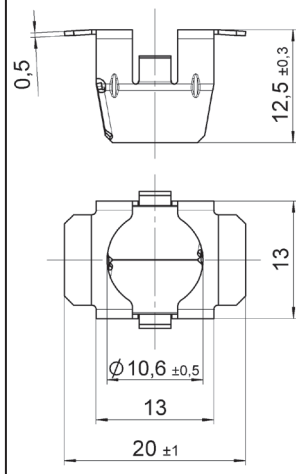
* Length no. from Table, see page O-1.

Stud Installation Instructions

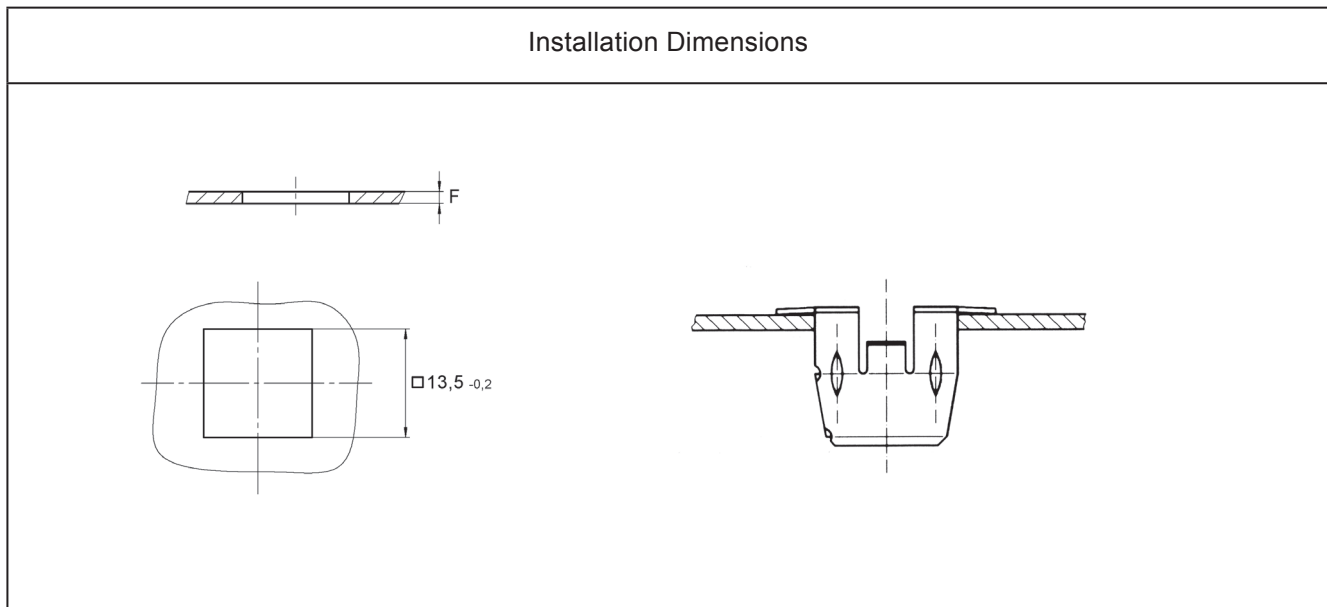


Style	Dimensions	Materials / Finish	°C	Part No.
<p>Compensating Washer</p> 		PU - Elastomer yellow	-20 up to +70	720W01-2K
<p>Retaining Washer</p> 		Polyamid natural	-20 up to +70	50E15-1K



Style	Dimensions	Materials / Finish	Frame Thickness F	°C	Part No.
Spring Clip 		Stainless steel	1,0 - 1,5	-20 up to +70	720R01-1B
			1,5 - 2,0		720R01-2B
			2,0 - 2,5		720R01-3B
			2,5 - 3,0		720R01-4B

Installation Instructions

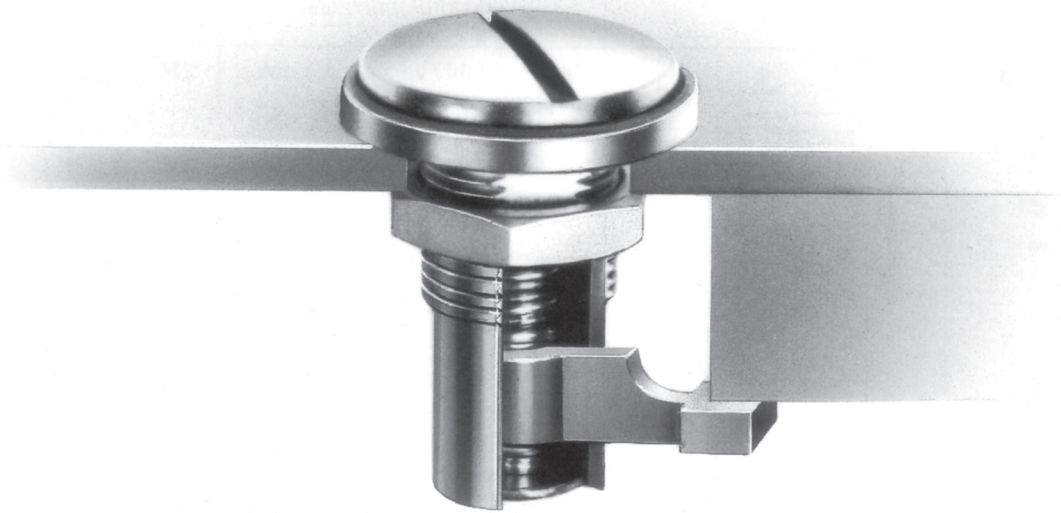


Part No.	Page	Part No.	Page	Part No.	Page
15/32-32NS-2B	C3,F12	50E70-*AGV	D2	716S12- *-1BP	M2
15S1- *-1AD	K2	50E71-*AGV	E2	716S12- *-2BP	M2
15S1- *-1AJ	K2	50E8-*AGV	E2	716S12- *-3BP	M2
15S11-1CJ	K2	50E8-*S	E2	716S12- *-4BP	M2
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214-16S	G10	50E8-*WAGV	E3	716S13- *-1BP	M2
244-16S	G11	50E8-*WS	E3	716S13- *-2BP	M2
244-16SC	G11	50E8-*W0S	E3	716S13- *-3BP	M2
2600-*S	F3	50E80-*AGV	D4	716S13- *-4BP	M2
2600-*SW	F3	50E80-*CP	D4	716S13- *-5BP	M2
2600-SW	C2,F7,F8	50E81-*AGV	E4	717R01-1AK7	N3
26R1-1	F10	50E81-*CP	E4	717S01- *-1AGV	N2
26R16-1FGV	F9	50E82-*AGV	D4	717S01- *-2AGV	N2
26R18-1-1AA	F9	50E82-*CP	D4	717W01-1K	N2
26S34-*	F5	50E83-*AGV	E4	717W02-1K	N2
26S38-*	F3	50E83-*CP	E4	717W03-1K	N2
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26S42-*	F3	50E91-*AGV	E2	720R01-2B	M3,O4
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50E19-*AGV	E4	5S72-9-1AA	B3	991S01- *-1BP	H2
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50E20-2AK7	D6	715R02-1BP	L3	991S02- *-1BP	H2
50E21-*AGV	D2	715R02-2BP	L3	991S03- *-1AGV	H2
50E21-*S	D2	715R02-3BP	L3	991S03- *-1BP	H2
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AN6227-B6	F7
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D40E28-*BP	G5
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D40S5-*AGV	G4
D40S5I-*AGV	G6
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D40W02-2DR	G12
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V212-12-2FGV	F9
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V244-16T1C	G12
V244-16TS1	G12
V244-16TS1C	G12
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V5W3-1AG	B3
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Part No.	Page
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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

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electrical cabinets



laboratory equipment



machine construction



agriculture



construction



solar



truck



electronic equipment



lighting interior



mould making



automotive/ racing



rail



trailer



wind

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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.

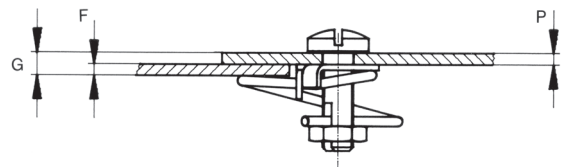
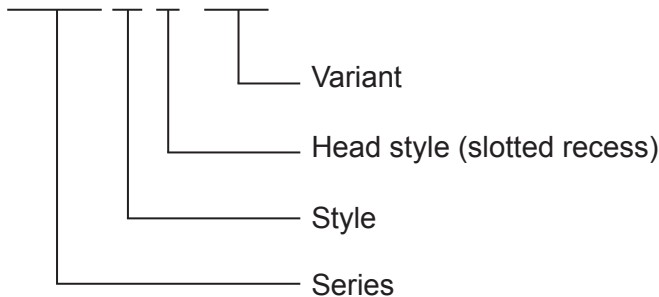
Features

- 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.

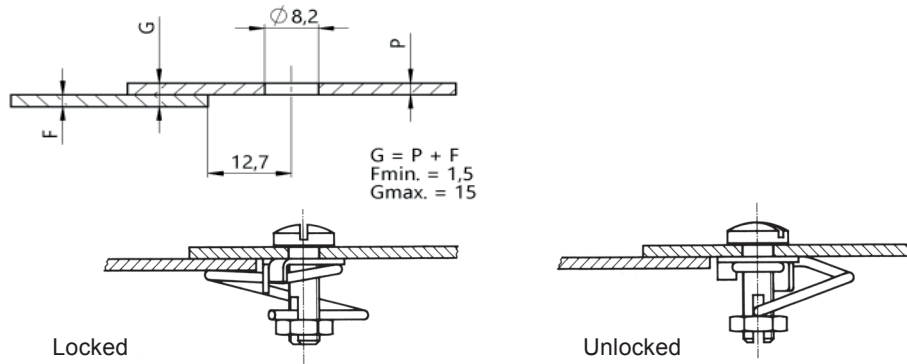
V964L 01 -1 -2AG



$G = P + F$ (see page B-2)

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

Installation Dimensions





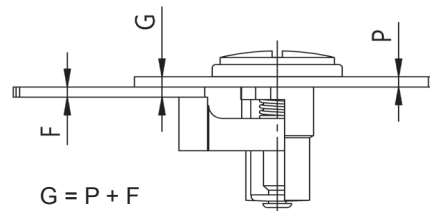
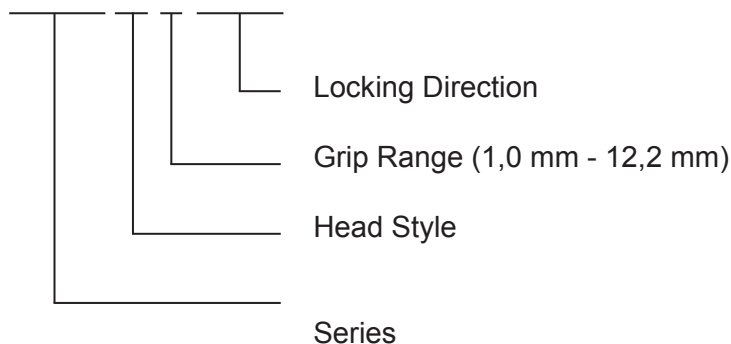
Features

- 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


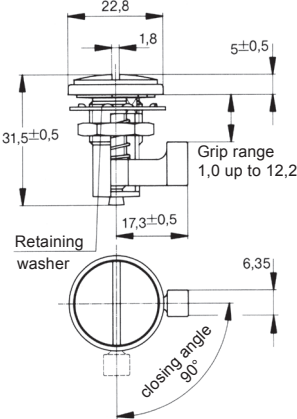

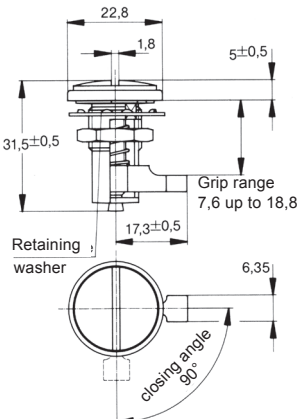



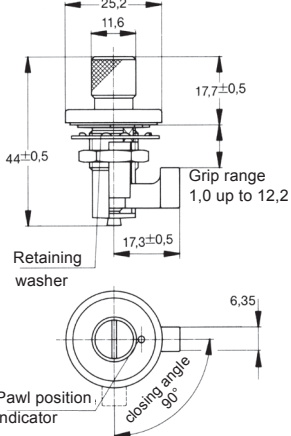

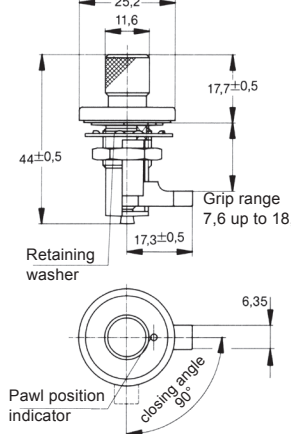
$$G = P + F$$

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

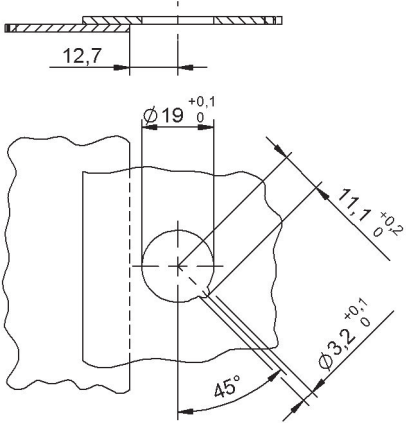
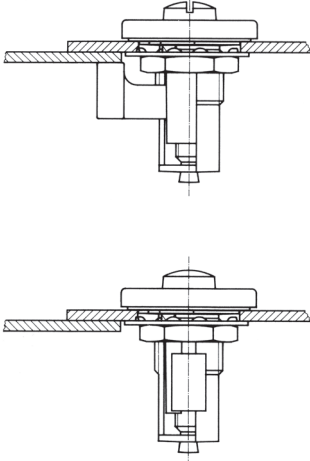
$$P_{max} = 0,5mm$$

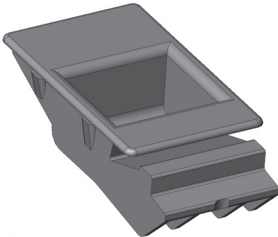
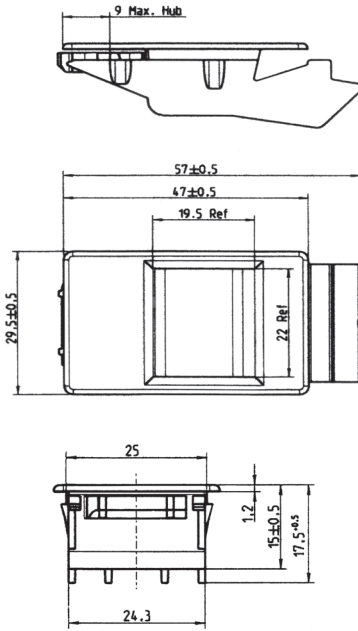
For G = 7,6mm to 18,8mm applies $P+F \geq 7,6mm$

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

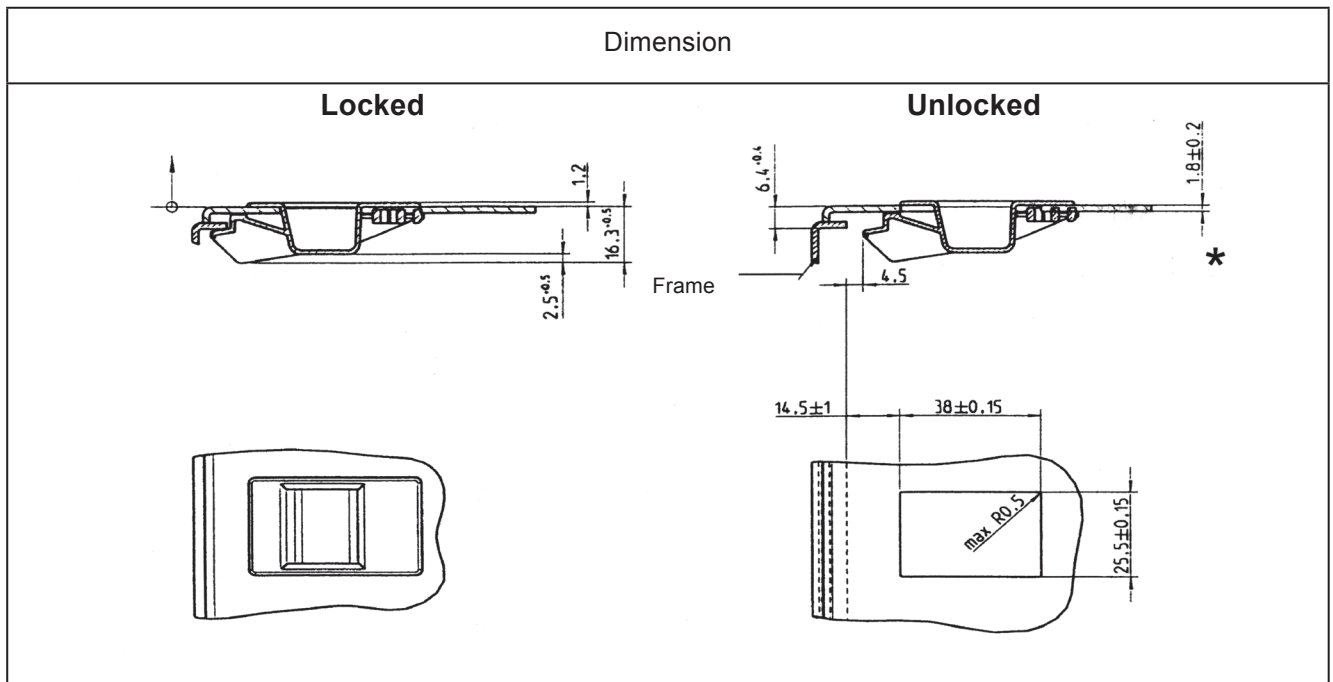
Style	Dimensions	Materials / Finish	°C	Part No.
Knurled Head Grip Range 1,0 up to 12,2 		Steel / zinc-plated CrVI-free, clear passivation	-40 up to +100	V965L1-1R1AG
Knurled Head Grip Range 7,6 up to 18,8 		Steel / zinc-plated CrVI-free, clear passivation	-40 up to +100	V965L1-2R1AG

Pawl Latches Installation Instructions

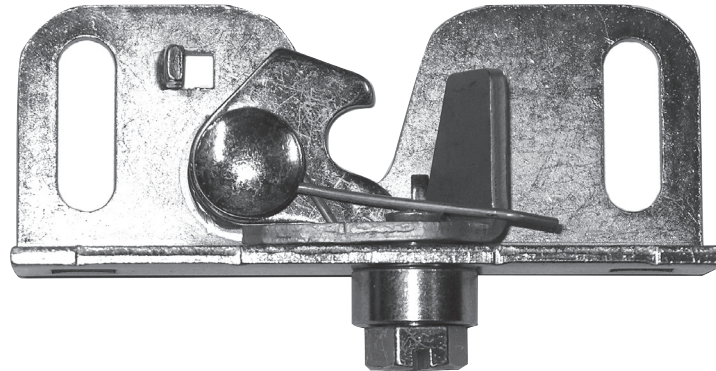
Instruction Dimensions	
<p>Clockwise locking</p> 	

Style	Dimensions	Materials / Finish	°C	Part No.
<p>Slam latch</p> 	 <p>9 Max. Hub</p> <p>57±0.5</p> <p>47±0.5</p> <p>19.5 Ref</p> <p>29.5±0.5</p> <p>22 Ref</p> <p>25</p> <p>1.2</p> <p>15±0.5</p> <p>17.5±0.5</p> <p>24.3</p>	Plastic (POM) black	-10 up to +60	2939L01-01-1K

Installation Instructions



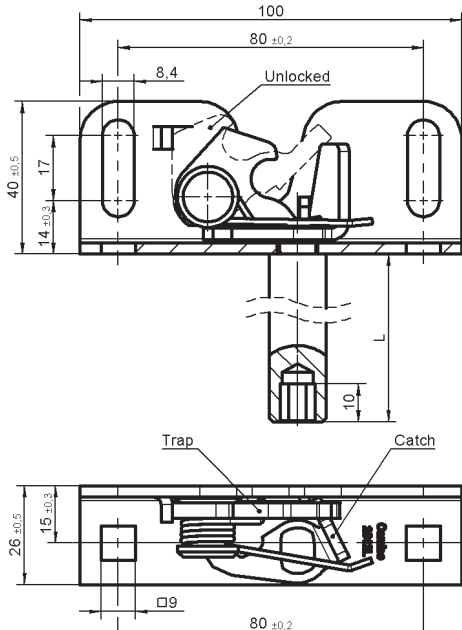
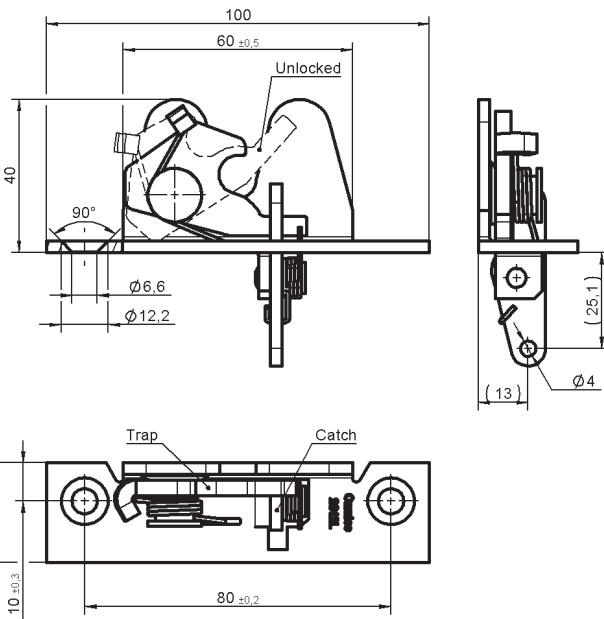
* Other panel thicknesses upon request.

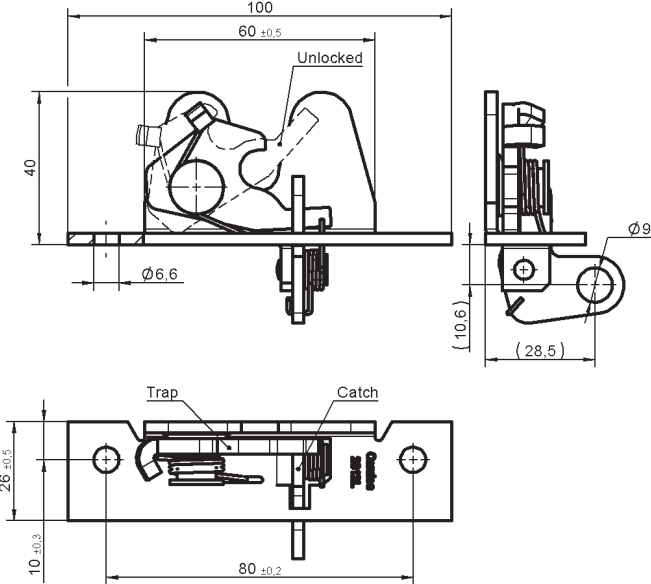
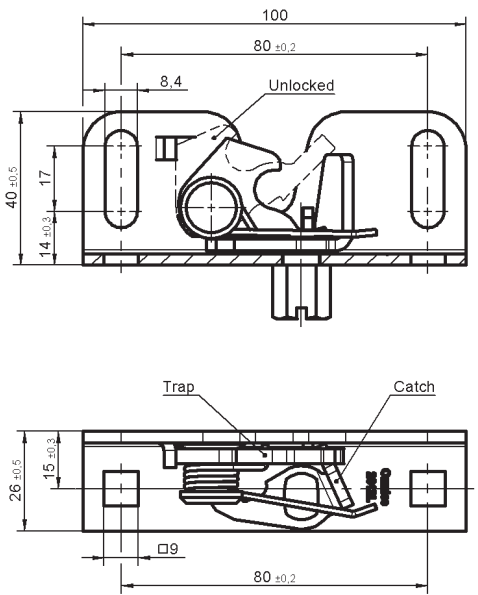


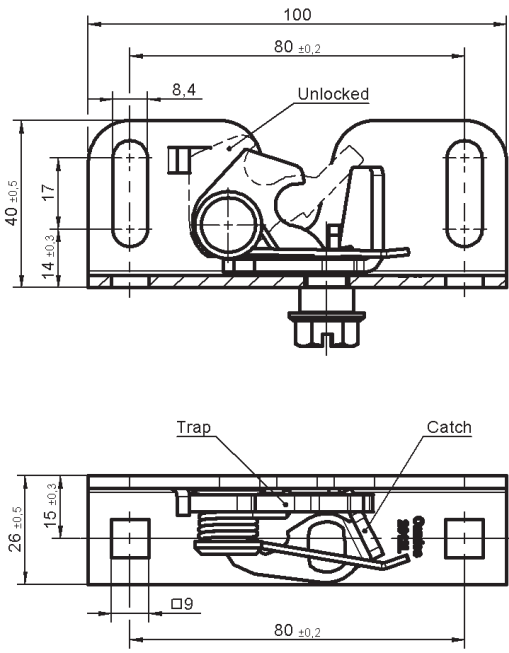
Particular Features

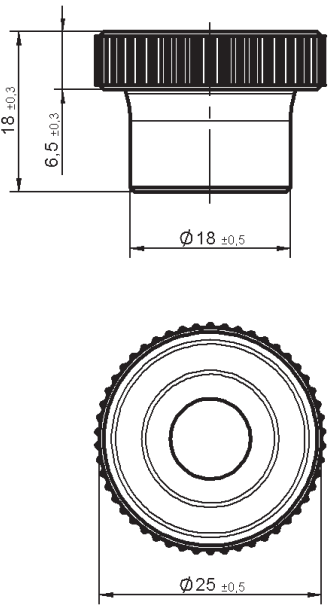
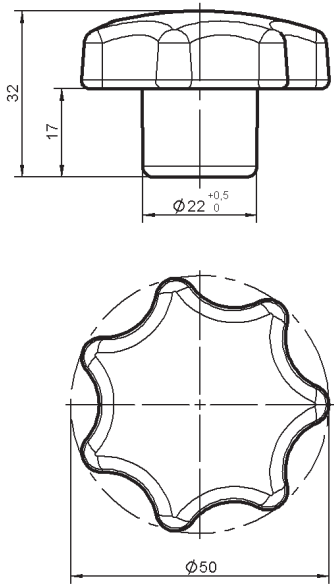
Robust slam latch, self locking
 Max. locking force: 230 N
 Max. tension strength: 2.400 N
 Max. torque: 40 Nm

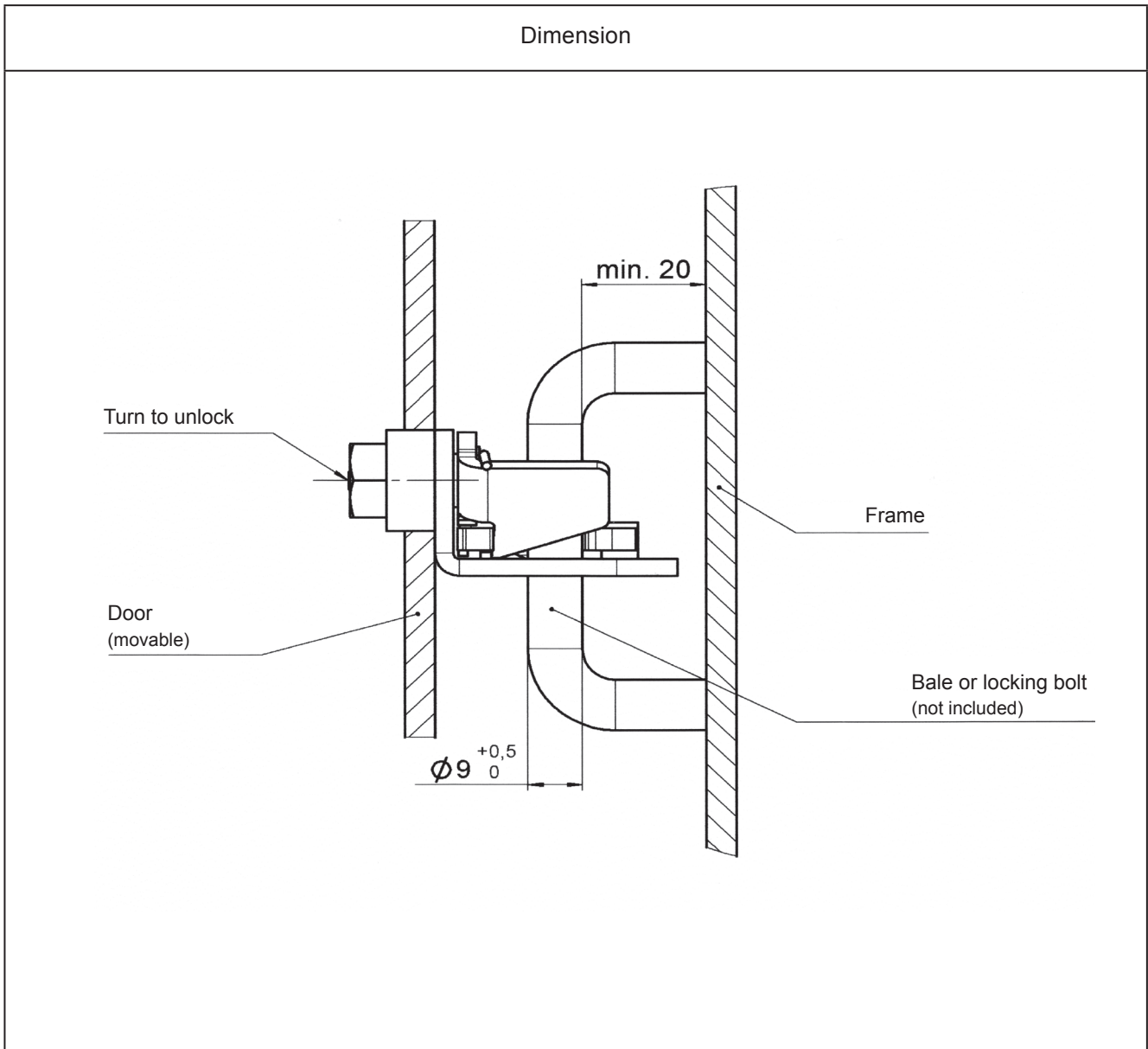
Dimensions	Materials / Finish	Type	°C	Part No.
	<p>Steel / zinc-plated and yellow chromated (CrVI free) Catch: zinc flake coated</p> <p>Steel / zinc-plated and yellow chromated (CrVI free) Catch: zinc flake coated</p>	<p>A</p> <p>B</p>	<p>100</p> <p>100</p>	<p>2812L03-1AF</p> <p>2812L03-2AF</p>

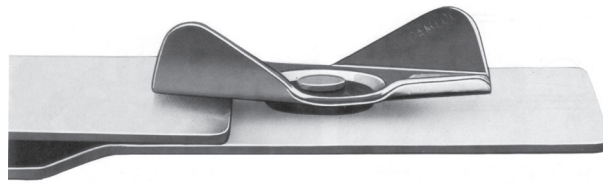
Dimensions	Materials / Finish	L	°C	Part No.
	<p>Steel / zinc-plated and yellow chromated (CrVI free) Catch: zinc flake coated</p> <p>Steel / zinc-plated and yellow chromated (CrVI free) Catch: zinc flake coated</p>	<p>110</p> <p>50</p>	<p>100</p> <p>100</p>	<p>2812L05-1AF</p> <p>2812L05-2AF</p>
	<p>Steel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

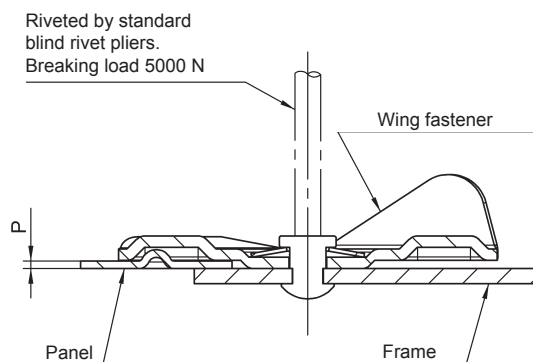
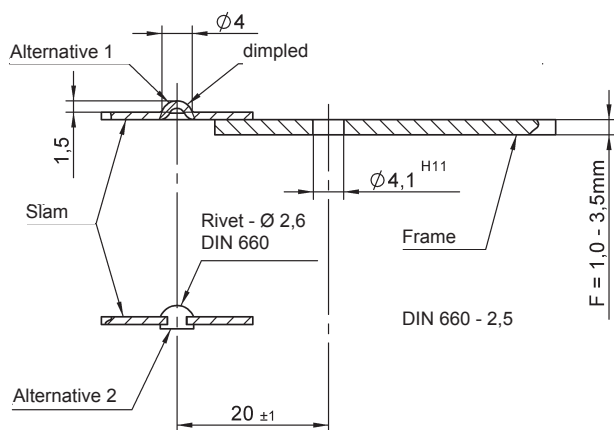
Easy installation by blind riveting.

¼ Turn to lock

Secure locking on detent.

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

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

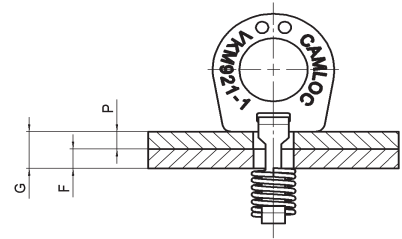
Operation by hand installation.

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

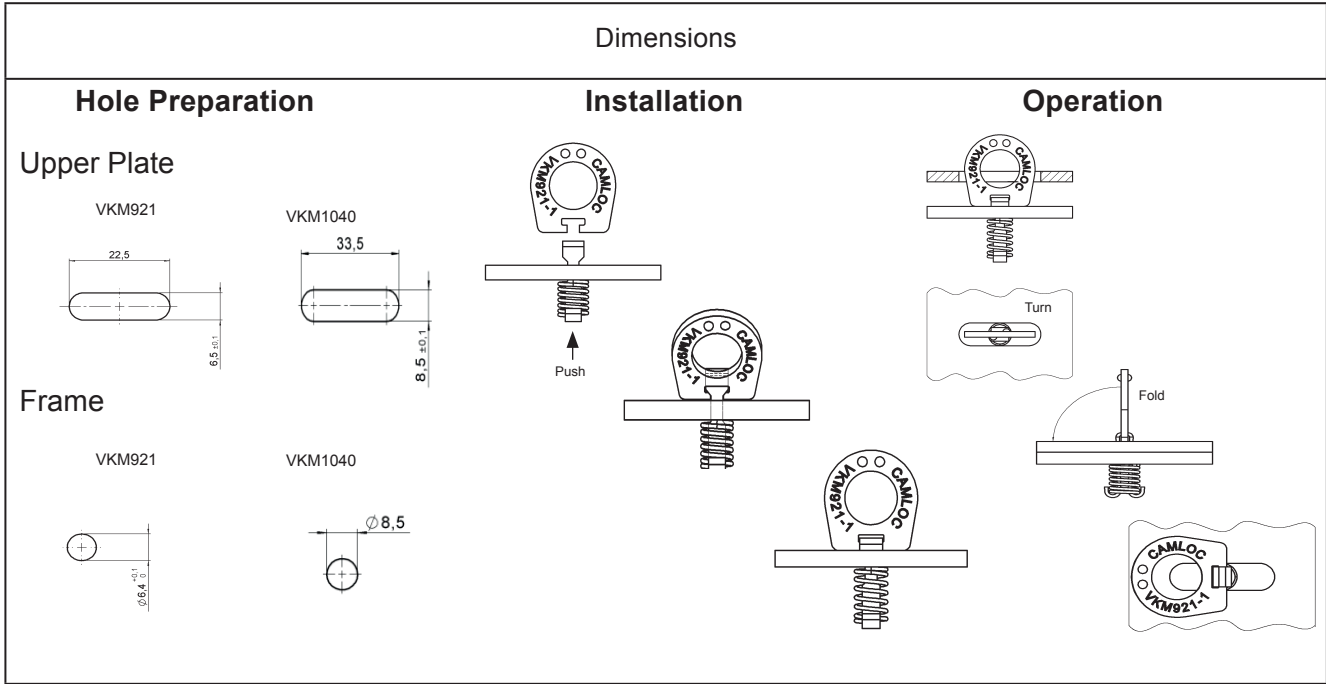
$G = P + F$

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



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

