

Clevises

Industrievertretung Miebach GmbH
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BÖNNEKAMP
MECHANICAL COMPONENTS

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BÖNNEKAMP

Bönnekamp is a very well-known brand with a strong market share owned by ATB Automation.

More than 30 years of high quality mechanical components have been applied in various (OEM) industries.
The main focus is on Clevises, Rod Ends and Ball Joints.

Our standard products, but also custom made products, are produced on machines which fulfill the highest quality requirements.
Non standard products can be designed or copied by samples / drawings.
The Bönnekamp mechanical components are quality tested with modern professional testing machines.
The whole production process is under control of ISO9001:2008 and ISO/TS16949.

Excellent Products, remarkable Performance and... interesting Price!
Real value for money! This is where the Bönnekamp brand stands and cares for.

Based on the service principle of direct availability, faithfulness and custom-orientation our quality products are being sold all over Europe.

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Your inquiry will be processed with the utmost care to offer a perfect solution.

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Clevises

Clevises - G Series 04
DIN71752 / DIN ISO8140 / CETOP
Clevises with Rotating Shaft - GR Series 06
Clevises with Male Thread - GT Series 07
DIN71752 / DIN ISO8140 / CETOP
Knuckle Eyes - GE Series 08
Knuckle Eyes - GKE Series 09
Self-aligned Articulated Couplings - GI Series 10
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Clevises

AVAILABLE ▶ ZINC PLATED | SS 304 | SS 316



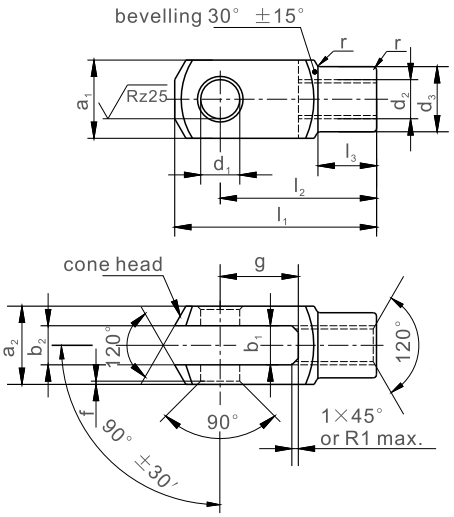
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Clevises - G Series

DIN71752 / DIN ISO8140 / CETOP

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Clevises

Part No.	Dimensions (mm)																Weight (kg)
	d_1	g	a_1	a_2	b_1	b_2		d_2		d_3	f	l_1	l_2		l_3	r	
	H9	±0.5	h11	+0.30 -0.16	B13		Adm. Variation	Regular thread	Fine-pitch thread	±0.3	±0.2	±0.5		Adm. Variation	±0.2		Kg≈
G 4 × 8	4	8	8	8	4	4	B13	M4 × 0.7		8	0.5	21	16	± 0.3	6.0	0.5	0.005
G 4 × 16	4	16	8	8	4	4	B13	M4 × 0.7		8	0.5	29	24	± 0.3	6.0	0.5	0.007
G 5 × 10	5	10	10	10	5	5	B13	M5 × 0.8		9	0.5	26	20	± 0.3	7.5	0.5	0.009
G 5 × 20	5	20	10	10	5	5	B13	M5 × 0.8		9	0.5	36	30	± 0.3	7.5	0.5	0.013
G 6 × 12	6	12	12	12	6	6	B13	M6 × 1		10	0.5	31	24	± 0.3	9.0	0.5	0.015
G 6 × 24	6	24	12	12	6	6	B13	M6 × 1		10	0.5	43	36	± 0.4	9.0	0.5	0.021
G 8 × 16	8	16	16	16	8	8	B13	M8 × 1.25		14	0.5	42	32	± 0.4	12.0	0.5	0.037
G 8 × 16 MF	8	16	16	16	8	8	B13		M8 × 1	14	0.5	42	32	± 0.4	12 .0	0.5	0.037
G 8 × 32	8	32	16	16	8	8	B13	M8 × 1.25		14	0.5	58	48	± 0.4	12 .0	0.5	0.054
G 8 × 32 MF	8	32	16	16	8	8	B13		M8 × 1	14	0.5	58	48	± 0.4	12.0	0.5	0.054
G 10 × 20	10	20	20	20	10	10	B13	M10 × 1.5		18	0.5	52	40	± 0.4	15 .0	0.5	0.074
G 10 × 20 MF	10	20	20	20	10	10	B13		M10 × 1.25	18	0.5	52	40	± 0.4	15 .0	0.5	0.074
G 10 × 40	10	40	20	20	10	10	+0.7 +0.15	M10 × 1.5		18	0.5	72	60	± 0.4	15.0	0.5	0.116
G 10 × 40 MF	10	40	20	20	10	10	+0.7 +0.15		M10 × 1.25	18	0.5	72	60	± 0.4	15.0	0.5	0.116
G 12 × 24	12	24	24	24	12	12	+0.7 +0.15	M12 × 1.75		20	0.5	62	48	± 0.4	18.0	0.5	0.121
G 12 × 24 MF	12	24	24	24	12	12	+0.7 +0.15		M12 × 1.25	20	0.5	62	48	± 0.4	18.0	0.5	0.121
G 12 × 48	12	48	24	24	12	12	+0.7 +0.15	M12 × 1.75		20	0.5	86	72	± 0.4	18.0	0.5	0.175
G 12 × 48 MF	12	48	24	24	12	12	+0.7 +0.15		M12 × 1.25	20	0.5	86	72	± 0.4	18.0	0.5	0.175
G 14 × 28	14	28	27	27	14	14	+0.7 +0.15	M14 × 2		24	1.0	72	56	± 0.4	22.5	1.0	0.178
G 14 × 28 MF	14	28	27	27	14	14	+0.7 +0.15		M14 × 1.5	24	1.0	72	56	± 0.4	22.5	1.0	0.178
G 14 × 56	14	56	27	27	14	14	+0.7 +0.15	M14 × 2		24	1.0	101	85	± 0.4	22.5	1.0	0.258
G 14 × 56 MF	14	56	27	27	14	14	+0.7 +0.15		M14 × 1.5	24	1.0	101	85	± 0.4	22.5	1.0	0.258
G 16 × 32	16	32	32	32	16	16	+0.7 +0.15	M16 × 2		26	1.0	83	64	± 0.4	24.0	1.0	0.282
G 16 × 32 MF	16	32	32	32	16	16	+0.7 +0.15		M16 × 1.5	26	1.0	83	64	± 0.4	24.0	1.0	0.282
G 16 × 64	16	64	32	32	16	16	+0.7 +0.15	M16 × 2		26	1.0	115	96	± 0.4	24.0	1.0	0.411
G 16 × 64 MF	16	64	32	32	16	16	+0.7 +0.15		M16 × 1.5	26	1.0	115	96	± 0.4	24.0	1.0	0.411

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Clevises - G Series

DIN71752 / DIN ISO8140 / CETOP

AVAILABLE ► ZINC PLATED | SS 304 | SS 316

BÖNNEKAMP

Part No.	Dimensions (mm)																Weight (kg)
	d_1	g	a_1	a_2	b_1	b_2		d_2		d_3	f	l_1	l_2		l_3	r	
	H9	±0.5	h11	+0.50 -0.20	B13		Adm. Variation	Regular thread	Fine-pitch thread	±0.3	±0.2	±0.5		Adm. Variation	±0.3		Kg≈
G 18 × 36	18	36	36	36	18	18	+0.7 +0.15	M18 × 2.5		30	1.0	94	72	± 0.4	27.0	1.5	0.39
G 18 × 36 MF	18	36	36	36	18	18	+0.7 +0.15		M18 × 1.5	30	1.0	94	72	± 0.4	27.0	1.5	0.39
G 20 × 40	20	40	40	40	20	20	+0.7 +0.15	M20 × 2.5		34	1.0	105	80	± 0.4	30.0	1.5	0.55
G 20 × 40 MF	20	40	40	40	20	20	+0.7 +0.15		M20 × 1.5	34	1.0	105	80	± 0.4	30.0	1.5	0.55
G 20 × 80	20	80	40	40	20	20	+0.7 +0.15	M20 × 2.5		34	1.0	145	120	± 0.4	30.0	1.5	0.80
G 20 × 80 MF	20	80	40	40	20	20	+0.7 +0.15		M20 × 1.5	34	1.0	145	120	± 0.4	30.0	1.5	0.80
G 25 × 50	25	50	50	50	25	25	+0.7 +0.15	M24 × 3		42	1.5	132	100	± 0.4	36.0	1.5	1.10
G 25 × 50 MF	25	50	50	50	25	25	+0.7 +0.15		M24 × 2	42	1.5	132	100	± 0.4	36.0	1.5	1.10
G 28 × 56	28	56	55	55	28	28	+0.7 +0.15	M27 × 3		48	1.5	148	112	± 0.4	40.0	2.0	1.50
G 28 × 56 MF	28	56	55	55	28	28	+0.7 +0.15		M27 × 2	48	1.5	148	112	± 0.4	40.0	2.0	1.50
G 30 × 54 MF	30	54	55	55	30	30	+0.7 +0.15		M27 × 2	48	1.5	148	110	± 0.4	40.0	2.0	1.44
G 30 × 60	30	60	60	60	30	30	+0.7 +0.15	M30 × 3.5		52	1.5	160	120	± 0.4	42.0	2.0	1.97
G 30 × 60 MF	30	60	60	60	30	30	+0.7 +0.15		M30 × 2	52	1.5	160	120	± 0.4	42.0	2.0	1.97
G 35 × 54 MF	35	54	70	70	35	35	+0.7 +0.15		M36 × 2	60	2.0	188	144	± 0.4	54.0	3.0	2.93
G 35 × 72	35	72	70	70	35	35	+0.7 +0.15	M36 × 4		60	2.0	188	144	± 0.4	54.0	3.0	2.93
G 35 × 72 MF	35	72	70	70	35	35	+0.7 +0.15		M36 × 2	60	2.0	188	144	± 0.4	54.0	3.0	2.93
G 36 × 72	35	72	70	70	36	36	+0.7 +0.15	M36 × 4		60	2.0	188	144	± 0.4	54.0	3.0	2.93
G 36 × 72 MF	35	72	70	70	36	36	+0.7 +0.15		M36 × 2	60	2.0	188	144	± 0.4	54.0	3.0	2.93
G 40 × 84 MF	40	84	85	85	40	40	+0.7 +0.15		M42 × 2	70	3.0	232	168	± 0.4	63.5	5.0	5.64
G 42 × 84	42	84	85	85	42	42	+0.7 +0.15	M42 × 4.5		70	3.0	232	168	± 0.4	63.5	5.0	5.34
G 42 × 84 MF	42	84	85	85	42	42	+0.7 +0.15		M42 × 2	70	3.0	232	168	± 0.4	63.5	5.0	5.34
G 50 × 96	50	96	96	96	50	50	+0.7 +0.15	M48 × 5		82	3.0	265	192	± 0.4	73.0	5.0	7.86
G 50 × 96 MF	50	96	96	96	50	50	+0.7 +0.15		M48 × 2	82	3.0	265	192	± 0.4	73.0	5.0	7.86

Code of thread: fine-pitch thread - MF, left-handed thread - L, fine-pitch and left-handed thread-MFL.

Material and surface treatments:

1) Low carbon steel. Coated with rust-proof oil or zinc plating.
2) Alternative stainless steel 304 or stainless steel 316.

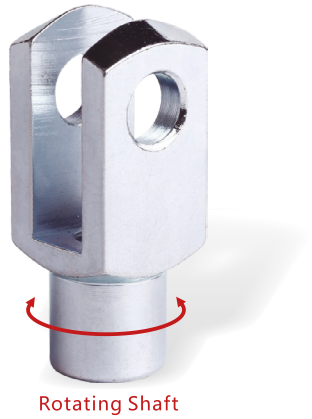
Specials on request (only volumes).

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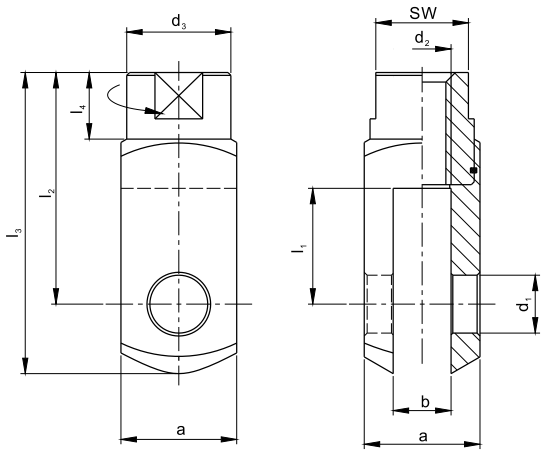
Clevises - GR Series

BÖNNEKAMP

WITH ROTATING SHAFT — AVAILABLE ► ZINC PLATED



Rotating Shaft



Part No.	Dimensions (mm)										Static load (N)	Weight (kg)
	a	b	d_1	d_2	d_3	l_1	l_2	l_3	l_4	sw		
												Kg
GR 4 × 8	8	4	4	M4	8	8	16	21	3.0	6	500	0.006
GR 4 × 16	8	4	4	M4	8	16	24	29	3.0	6	500	0.008
GR 5 × 10	10	5	5	M5	9	10	20	26	4. 0	7	800	0.010
GR 5 × 20	10	5	5	M5	9	20	30	36	4.0	7	800	0.014
GR 6 × 12	12	6	6	M6	10	12	24	31	5.5	9	2400	0.016
GR 6 × 24	12	6	6	M6	10	24	36	43	5.5	9	2400	0.023
GR 8 × 16	16	8	8	M8	14	16	32	42	8.0	12	3400	0.038
GR 8 × 32	16	8	8	M8	14	32	48	58	8.0	12	3400	0.055
GR 10 × 20	20	10	10	M10	18	20	40	52	11.5	16	6000	0.080
GR 10 × 40	20	10	10	M10	18	40	60	72	11.5	16	6000	0. 120
GR 12 × 24	24	12	12	M12	20	24	48	62	14.0	18	14000	0. 125
GR 12 × 48	24	12	12	M12	20	48	72	86	14.0	18	14000	0. 180
GR 14 × 28	27	14	14	M14	24	28	56	72	18.5	22	16000	0. 190
GR 14 × 56	27	14	14	M14	24	56	85	101	18.5	22	16000	0.265
GR 16 × 32	32	16	16	M16	26	32	64	83	20.0	24	18000	0.300
GR 16 × 64	32	16	16	M16	26	64	96	115	20.0	24	18000	0.430

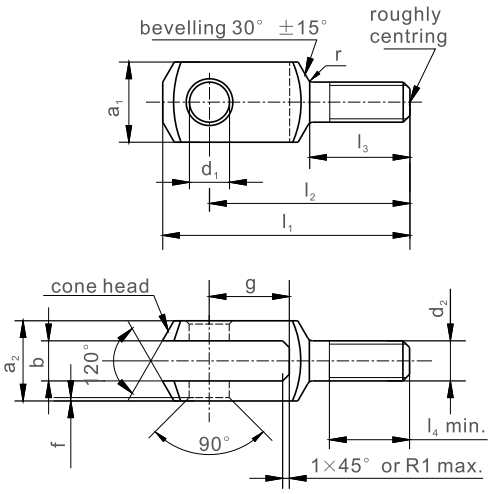
Code of thread: fine-pitch thread - MF, left-handed thread-L, fine-pitch and left-handed thread-MFL.
Material and surface treatments:
Fork: low carbon steel. Coated with rust-proof oil or zinc plating.
Shaft: medium carbon steel. Coated with rust-proof oil or zinc plating.
Ring: spring steel. Coated with rust-proof oil or zinc plating.
Specials on request (only volumes).

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Clevises - GT Series

WITH MALE THREAD - DIN71752 / DIN ISO8140 / CETOP — AVAILABLE ► ZINC PLATED | SS 304 | SS 316





Part No.	Dimensions (mm)												Weight (kg)
	d_1	g	a_1	a_2	b	d_2		f	l_1	l_2	l_3	l_4	r	
	H9	±0.5	h11	+0.50 -0.20	+0.7 -0.15	Regular thread	Fine-pitch thread	±0.2	±0.2	±0.4	±0.2			Kg≈
GT 6 × 12	6	12	12	12	6	M6 × 1	-	0.5	44	37	20	15	0.8	0.015
GT 8 × 16	8	16	16	16	8	M8 × 1.25	-	0.5	57	47	25	20	0.8	0.036
GT 10 × 20	10	20	20	20	10	M10 × 1.5	-	0.5	69	57	30	25	0.8	0.068
GT 12 × 24	12	24	24	24	12	M12 × 1.75	-	0.5	82	68	35	30	0.8	0.122
GT 14 × 28	14	28	27	27	14	M14 × 2	-	1.0	94	78	40	35	1.2	0.171
GT 16 × 32	16	32	32	32	16	M16 × 2	-	1.0	108	89	45	40	1.2	0.288
GT 20 × 40	20	40	40	40	20	M20 × 2.5	-	1.0	134	109	55	50	1.5	0.550

Code of thread: fine-pitch thread - MF, left-handed thread - L, fine-pitch and left-handed thread-MFL.

Material and surface treatments:

1) Low carbon steel. Coated with rust-proof oil or zinc plating.
2) Alternative stainless steel 304 or stainless steel 316.

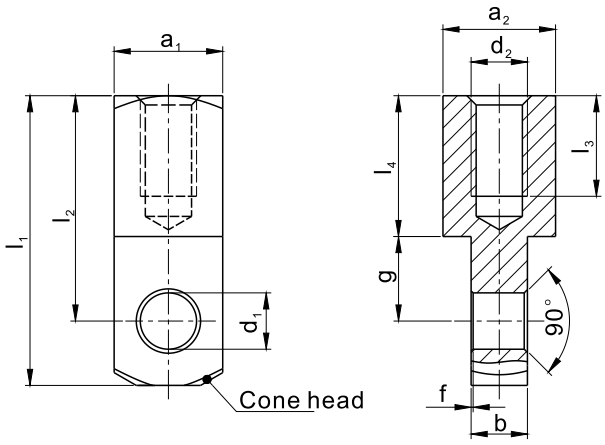
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Knuckle Eyes - GE Series

AVAILABLE ► ZINC PLATED | SS 304 | SS 316





Part No.	Dimensions (mm)												Weight (kg)
	d_1	g	a_1	a_2	b	d_2		f	l_1	l_2	l_3	l_4	
	H9	±0.5	h11	h11	-0.2	Regular thread	Fine-pitch thread	±0.2	±0.5	±0.3		±0.2	Kg≈
GE 4 × 8	4	6	8	8	4	M4 × 0.7		0.5	21	16	6	10.0	0.006
GE 5 × 10	5	7.5	10	10	5	M5 × 0.8		0.5	26	20	8	12.5	0.012
GE 6 × 12	6	9	12	12	6	M6 × 1		0.5	31	24	11	15.0	0.021
GE 8 × 16	8	12	16	16	8	M8 × 1.25		0.5	42	32	14	20.0	0.051
GE 8 × 16MF	8	12	16	16	8		M8 × 1	0.5	42	32	14	20.0	0.051
GE 10 × 20	10	15	20	20	10	M10 × 1.5		0.5	52	40	18	25.0	0.098
GE 10 × 20MF	10	15	20	20	10		M10 × 1.25	0.5	52	40	18	25.0	0.098
GE 12 × 24	12	18	24	24	12	M12 × 1.75		0.5	62	48	22	30.0	0.168
GE 12 × 24MF	12	18	24	24	12		M12 × 1.25	0.5	62	48	22	30.0	0.167
GE 14 × 28	14	21	27	27	14	M14 × 2		1.0	72	56	25	35.0	0.247
GE 14 × 28MF	14	21	27	27	14		M14 × 1.5	1.0	72	56	25	35.0	0.245
GE 16 × 32	16	24	32	32	16	M16 × 2		1.0	83	64	30	40.0	0.397
GE 16 × 32MF	16	24	32	32	16		M16 × 1.5	1.0	83	64	30	40.0	0.395
GE 20 × 40	20	30	40	40	20	M20 × 2.5		1.0	105	80	38	50.0	0.783
GE 20 × 40MF	20	30	40	40	20		M20 × 1.5	1.0	105	80	38	50.0	0.776

Code of thread: fine-pitch thread - MF, left-handed thread - L, fine-pitch and left-handed thread - MFL.

Material and surface treatments:

1) Low carbon steel. Coated with rust-proof oil or zinc plating
2) Alternative stainless steel 304 or stainless steel 316.

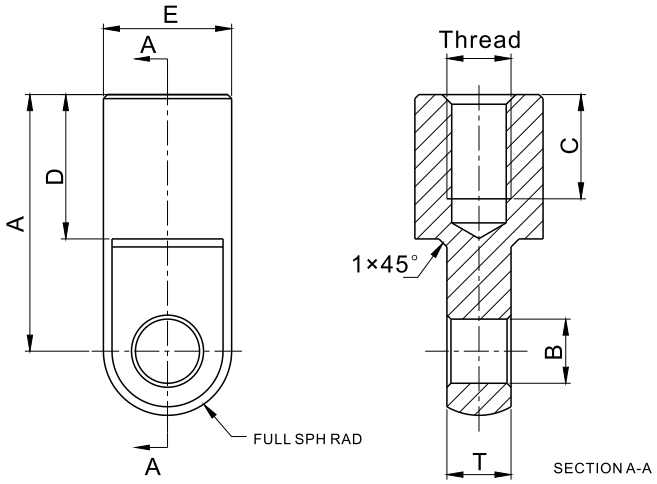
Specials on request (only volumes).

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Knuckle Eyes - GKE Series

AVAILABLE ► ZINC PLATED | SS 304 | SS 316





Part No.	Dimensions (mm)						
	Thread	A	B	C	D	E	T
	6H	±0.25	+0.1 -0	min	±0.25	±0.12	±0.12
GKE 5	M5 × 0.8	22	6.10	9.00	12.50	12.70	5.00
GKE 6	M6 × 1	25	8.10	10.50	14.00	12.70	6.00
GKE 8	M8 × 1.25	32	8.10	12.70	18.00	16.00	8.00
GKE 10	M10 × 1.5	32	10.10	12.50	18.00	16.00	10.00

Code of thread: fine-pitch thread - MF, left-handed thread - L, fine-pitch and left-handed thread - MFL.

Material and surface treatments:

1) Low carbon steel. Coated with rust-proof oil or zinc plating.
2) Alternative stainless steel 304 or stainless steel 316.

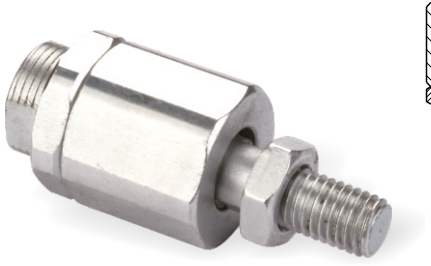
Specials on request (only volumes).

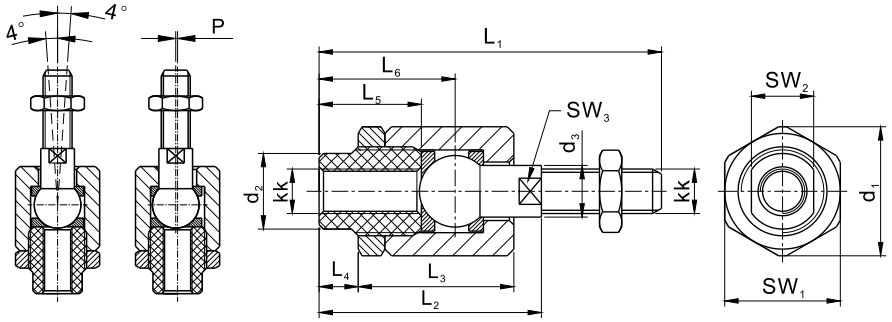
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Self-aligned Articulated Couplings - GI Series

BÖNNEKAMP

AVAILABLE ▶ ZINC PLATED SS 304





Part No.	Dimensions (mm)														Weight (kg)
	d_1	d_2	d_3	kk	L_1	L_2	L_3	L_4	L_5	L_6	SW_1	SW_2	SW_3	P	
GI M4 × 0.7	/	/	3.8	M4 × 0.7	33.0	24.0	16.5	4.5	12.5	16.0	11	11	3.2	0.5	0.015
GI 6-32	/	/	3.8	6-32 UNC-2B	33.0	24.0	16.5	4.5	12.5	16.0	11	11	3.2	0.5	0.015
GI 10-32	/	/	3.8	10-32 UNF-2B	33.0	24.0	16.5	4.5	12.5	16.0	11	11	3.2	0.5	0.015
GI M5 × 0.8	14.5	8.5	5.8	M5 × 0.8	38.5	25.0	17.5	4.4	11.5	15.7	13	7	5	0.5	0.020
GI M6 × 1	14.5	8.5	5.8	M6 × 1	37.0	25.0	17.5	4.4	11.5	15.7	13	7	5	0.5	0.023
GI M8 × 1 .25	19.0	12.5	7.8	M8 × 1.25	49.0	34.0	23.5	6.0	14.0	20.5	17	10	7	0.5	0.050
GI 5/16-24	19.0	12.5	7.8	5/16-24 UNF-2B	49.0	34.0	23.5	6.0	14.0	20.5	17	10	7	0.5	0.050
GI M10 × 1.5	32.5	21.4	13.8	M10 × 1.5	67.5	49.5	34.0	9.0	23.0	31.0	30	19	12	0.7	0.210
GI M10 × 1.25	32.5	21.4	13.8	M10 × 1.25	69.5	49.5	34.0	9.0	23.0	31.0	30	19	12	0.7	0.210
GI 3/8-24	32.5	21.4	13.8	3/8-24 UNF-2B	69.5	49.5	34.0	9.0	23.0	31.0	30	19	12	0.7	0.210
GI M12 × 1.75	32.5	21.4	13.8	M12 × 1.75	70.5	49.5	34.0	9.0	23.0	31.0	30	19	12	0.7	0.210
GI M12 × 1.25	32.5	21.4	13.8	M12 × 1.25	74.5	50.5	34.0	10.0	24.0	32.0	30	19	12	0.7	0.215
GI 1/2-20	32.5	21.4	13.8	1/2-20 UNF-2B	74.5	50.5	34.0	10.0	24.0	32.0	30	19	12	0.7	0.215
GI M16 × 2	45.0	33.8	22.0	M16 × 2	97.0	71.0	53.0	10.0	32.0	44.5	41	30	19	1.0	0.670
GI M16 × 1.5	45.0	33.8	22.0	M16 × 1.5	103.0	71.0	53.0	10.0	32.0	44.5	41	30	19	1.0	0.650
GI 5/8-18	45.0	33.8	22.0	5/8-18 UNF-2B	103.0	71.0	53.0	10.0	32.0	44.5	41	30	19	1.0	0.650
GI M20 × 1.5	45.0	33.8	22.0	M20 × 1.5	120.0	80.0	53.0	19.0	41.0	53.5	41	30	19	1.0	0.720
GI 3/4-16	45.0	33.8	22.0	3/4-16 UNF-2B	120.0	80.0	53.0	19.0	41.0	53.5	41	30	19	1.0	0.720
GI M27 × 2	62.0	61.7	27.9	M27 × 2	156.9	102.9	79.0	12.2	42.0	62.6	55	55	24	1.0	2.100
GI 1-12	62.0	61.7	27.9	1-12 UNF-2B	156.9	102.9	79.0	12.2	42.0	62 .6	55	55	24	1.0	2.100
GI M36 × 2	80.0	80.0	38.0	M36 × 2	251.0	179.0	136.0	22.0	78.0	110.0	75	75	32	1.0	5.800
GI 1 1/2-12	80.0	80.0	38.0	11/2-12 UNF-2B	251.0	179.0	136.0	22.0	78.0	110.0	75	75	32	1.0	5.800

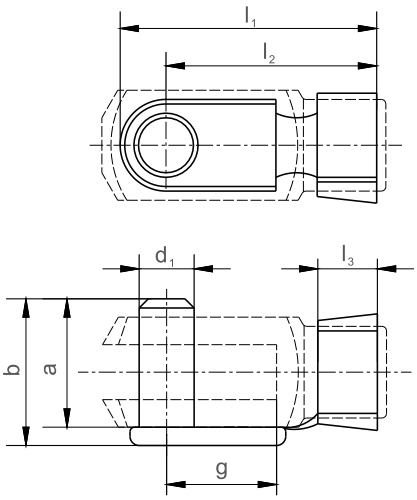
Material and surface treatments:
Ball stud and spherical washer: 20CrMo; Heat treatment and zinc plating.
Housing, threaded bushing and hex nut: low carbon steel and zinc plating.
Alternative material: stainless steel 304.
Specials on request (only volumes).

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Folding Spring Bolts - ES Series

AVAILABLE ► ZINC PLATED





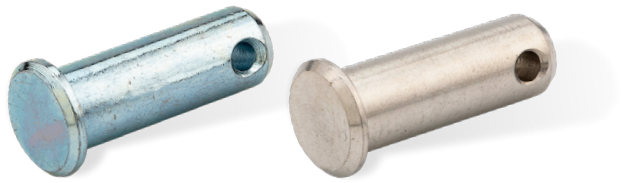
Part No.	Suitable for clevis	Dimensions (mm)							Weight (kg)
		d_1 h11	g	a	b	l_1 ≈	l_2 ≈	l_3 ≈	Kg/100 pieces
ES 4 × 8	**G 4 × 8**	4	8	9.5	11.0	19.0	15.0	4.5	0.145
ES 4 × 16	**G 4 × 16**	4	16	9.5	11.0	26.0	23.5	4.5	0.174
ES 5 × 10	**G 5 × 10**	5	10	12.0	13.5	23.0	19.0	5.5	0.254
ES 5 × 20	**G 5 × 20**	5	20	12.0	13.5	33.0	29.0	5.5	0.310
ES 6 × 12	**G 6 × 12**	6	12	14.0	16.0	28.0	23.0	6.5	0.458
ES 6 × 24	**G 6 × 24**	6	24	14.0	16.0	40.0	35.0	6.5	0.516
ES 8 × 16	**G 8 × 16**	8	16	19.0	21.5	37.0	30.0	8.0	1.059
ES 8 × 32	**G 8 × 32**	8	32	19.0	21.5	52.0	46.0	8.0	1.155
ES 10 × 20	**G 10 × 20**	10	20	23.0	26.0	46.0	38.0	10.0	1.938
ES 10 × 40	**G 10 × 40**	10	40	23.0	26.0	66.0	58.0	10.0	2.046
ES 12 × 24	**G 12 × 24**	12	24	28.0	31.0	53.0	45.0	12.0	3.306
ES 12 × 48	**G 12 × 48**	12	48	28.0	31.0	78.0	69.0	12.0	3. 500
ES 14 × 28	**G 14 × 28**	14	28	31.0	34.0	62.0	52.0	14.0	4.722
ES 14 × 56	**G 14 × 56**	14	56	31.0	34.0	92.0	82.0	14.0	5.076
ES 16 × 32	**G 16 × 32**	16	32	36.0	39.0	73.0	62.0	16.0	6.940
ES 16 × 64	**G 16 × 64**	16	64	36.0	39.0	103.0	92.0	16.0	7.440
ES 20 × 40	**G 20 × 40**	20	40	45.0	50.0	87.5	71.5	16.0	13.00

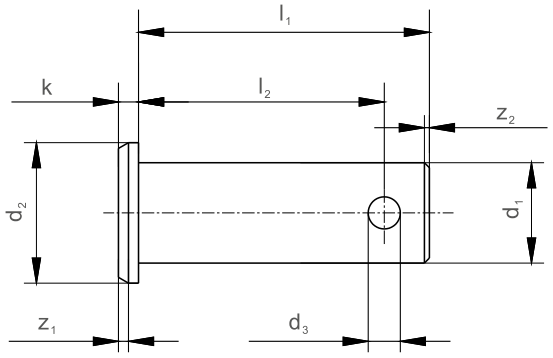
Material and surface treatments:
Bolt: low carbon steel. Spring: spring steel, hardness approx. 430-500HV.
Coated with rust-proof oil or zinc plating.
Specials on request (only volumes).

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Bolts - GPA Series

AVAILABLE ► ZINC PLATED | SS 304 | SS 316





Part No.	Dimensions (mm)								Weight (kg)
	d_1 h11	d_2 h14	d_3 H14	l_1 js15	l_2 +0.5	k js14	Z_1	Z_2	Kg/100 pieces
GPA 4	4	6	1.0	12	10.0	1.0	0.5	0.8	0.13
GPA 5	5	8	1.0	15	12.3	1.5	0.5	0.8	0.26
GPA 6	6	9	1.6	18	15.3	1.5	0.5	1.0	0.46
GPA 8	8	12	2.0	23	19.5	2.0	1.0	1.0	1.00
GPA 10	10	14	3.2	29	24.5	2.0	1.0	1.5	1.90
GPA 12	12	17	4.0	35	29.5	3.0	1.5	1.5	3.40
GPA 14	14	19	4.0	40	32.5	3.0	1.5	1.5	5.30
GPA 16	16	20	4.0	45	38.2	3.5	1.5	1.5	7.20
GPA 18	18	25	5.0	50	43.5	3.5	1.5	1.5	10.4
GPA 20	20	28	5.0	53	47.0	4.0	2.0	1.5	13.9
GPA 25	25	34	6.3	67	59.0	5.5	3.0	1.5	26.6
GPA 28	28	34	6.3	72	63.2	5.5	3.0	2.0	36.1
GPA 30	30	36	6.3	67	59.0	5.5	3.0	2.0	38.3
GPA 30-1	30	36	6.3	77	68.2	5.5	3.0	2.0	42.8
GPA 35	35	45	8.0	87	76.5	7.0	3.0	2.0	67.7
GPA 40	40	48	8.0	100	90.0	6.0	3.0	5.0	103.5
GPA 42	42	48	8.0	100	90.0	7.0	3.0	5.0	115.1
GPA 50	50	58	10.0	115	103.0	7.0	3.0	6.0	184.6

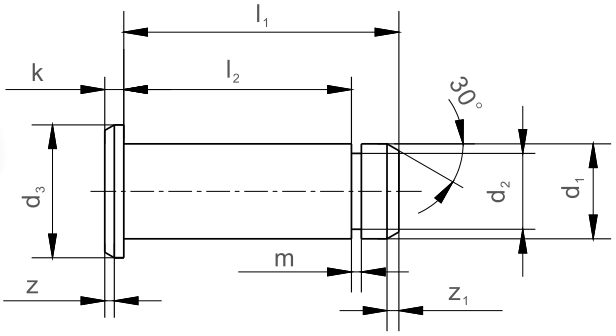
Material and surface treatments:

1) Low carbon steel. Coated with rust-proof oil or zinc plating.
2) Alternative stainless steel 304 or stainless steel 316.

Specials on request (only volumes).

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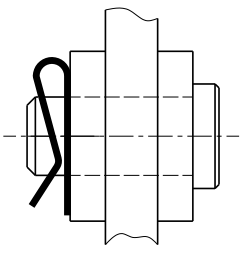




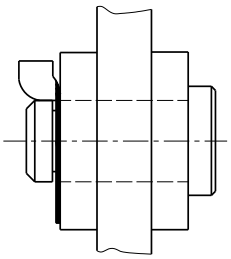
Part No.	Suitable		Dimensions (mm)									Weight (kg)
	GPB-KL	GPB-SL	d_1 h11	d_3 h14	l_1 js15	l_2 +0.3	k js14	d_2 -0.2	m +0.1	z	z_1	Kg/100 pieces
GPB 4	4	4	4	6	10.5	8.5	1.0	3.2	0.64	0.5	0.50	0.12
GPB 5	5	5	5	8	13.0	10.5	1.5	4.0	0.74	0.5	0.50	0.24
GPB 6	6	6	6	9	15.5	12.5	1.5	5.0	0.74	0.5	0.75	0.42
GPB 8	8	8	8	12	20.0	16.5	2.0	6.0	0.94	1.0	1.00	0.90
GPB 10	10	10	10	14	25.0	20.5	2.0	8.0	1.05	1.0	1.00	1.70
GPB 12	12	12	12	17	30.0	24.5	3.0	9.0	1.15	1.5	1.25	2.95
GPB 14	14	14	14	20	33.0	27.5	2.5	10.0	1.25	1.5	1.25	4.10
GPB 16	16	16	16	20	38.5	32.5	3.5	12.0	1.35	1.5	1.50	6.20
GPB 18	16	-	18	25	42.0	36.5	3.5	13.0	1.35	2.0	1.50	8.95
GPB 20	24	-	20	28	46.0	40.5	4.0	17.5	1.80	2.0	1.50	12.1
GPB 25	24	-	25	34	57.0	50.5	5.5	18.0	1.80	2.0	1.50	23.1

Example of application:

GPB-SL



GPB-KL



Material and surface treatments:

1) Low carbon steel. Coated with rust-proof oil or zinc plating.
2) Alternative stainless steel 304 or stainless steel 316.

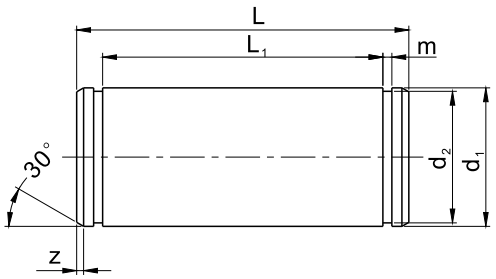
Specials on request (only volumes).

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Bolts - GPC Series

AVAILABLE ► ZINC PLATED | SS 304 | SS 316





Part No.	Dimensions (mm)						Weight (kg)
	d_1 h11	L $^{+0.50}_{0}$	d_2 h11	L_1 $^{+0.20}_{0}$	z min	m h13	Kg/pieces
GPC 6	6	17.0	5.7	12.5	0.5	0.80	0.005
GPC 8	8	20.0	7.6	16.5	0.5	0.90	0.008
GPC 10	10	25.0	9.6	20.5	0.5	1.10	0.015
GPC 12	12	30.0	11.5	24.5	1.0	1.10	0.026
GPC 14	14	35.0	13.4	27.5	1.0	1.10	0.042
GPC 16	16	39.0	15.2	32.5	1.0	1.10	0.061
GPC 20	20	48.0	19.0	40.5	1.0	1.30	0.118
GPC 25	25	60.0	23.9	50.5	1.0	1.30	0.230
GPC 30	30	65.0	28.6	55.5	1.0	1.60	0.350
GPC 35	35	84.0	33.4	70.5	1.0	1.60	0.820
GPC 40	40	104.3	37.5	89.0	2.0	1.85	1.020
GPC 42	42	104.3	39.5	89.0	2.0	1.85	1.100
GPC 50	50	117.3	47.0	100.0	2.0	2.15	1.720

Material and surface treatments:

1) Low carbon steel. Coated with rust-proof oil or zinc plating.
2) Alternative stainless steel 304 or stainless steel 316.

Specials on request (only volumes).

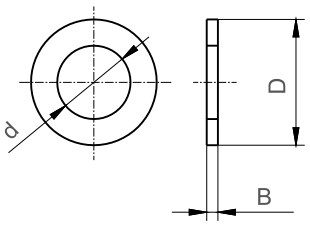
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R Washers / C Clips for Bolt GPA

BÖNNEKAMP

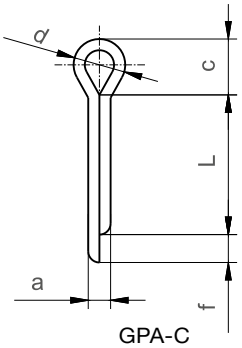
AVAILABLE ► ZINC PLATED | SS 304 | SS 316





GPA-R





GPA-C

Part No.	Dimensions (mm)			Weight (kg)
	d	D	B	
				≈Kg/1000 pcs
GPA-R4	4.3	7.5	0.8	0.15
GPA-R5	5.3	9.5	1.0	0.39
GPA-R6	6.4	11.0	1.6	0.70
GPA-R8	8.4	15.0	1.6	1.52
GPA-R10	10.5	18.0	1.6	2.11
GPA-R12	13.0	20.0	2.0	2.85
GPA-R14	15.0	24.0	2.0	4.30
GPA-R16	17.0	27.0	2.0	5.42
GPA-R20	21.0	33.0	2.5	9.98
GPA-R25	25.0	39.0	4.0	14.50

Part No.	Dimensions (mm)				
	d	a	c	f	L
GPA-C4/5	1.5	1.0	2.5	1.5	10
GPA-C6	3.6	1.6	4.0	2.5	10
GPA-C8	5.8	2.0	6.4	3.2	16
GPA-C10	7.4	3.2	8.0	4.0	20
GPA-C12/16	7.4	4.0	8.0	4.0	32
GPA-C20/25	9.2	4.0	10.0	4.0	32

Material and surface treatments:

1) Low carbon steel. Coated with rust-proof oil or zinc plating.
2) Alternative stainless steel 304 or stainless steel 316.

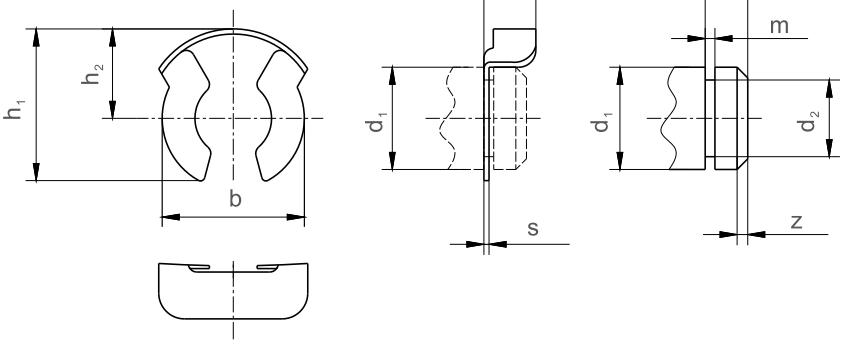
Specials on request (only volumes).

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KL Retainers for Bolt GPB

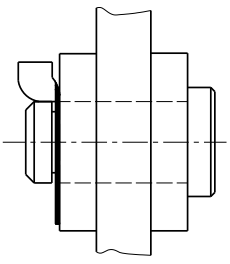
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Part No.	Nom. Size	Retainer					Max. axial thrust ca. N	Weight (kg)	Bolts				
	d_1	≈b	≈h_1	≈h_2	a	s		100 pcs	d_1 h11	d_2 h11	m +0.1	n	z
GPB-KL3	3	4.3	5.0	3.0	2.0	0.4	1050	0.0049	3	2.3	0.64	1.5	0.50
GPB-KL4	4	6.5	7.0	4.3	2.7	0.4	1500	0.0109	4	3.2	0.64	2.0	0.50
GPB-KL5	5	7.5	8.7	5.2	2.8	0.5	3000	0.0195	5	4.0	0.74	2.5	0.50
GPB-KL6	6	10.4	11.5	6.8	3.5	0.5	4850	0.0332	6	5.0	0.74	3.0	0.75
GPB-KL8	8	11.5	12.1	7.2	4.1	0.5	5500	0.0408	8	6.0	0.94	3.5	1.00
GPB-KL10	10	15.6	16.3	9.5	5.9	0.6	9500	0.0899	10	8.0	1.05	4.5	1.00
GPB-KL12	12	16.7	18.0	10.5	6.1	0.6	10700	0.1102	12	9.0	1.15	5.0	1.25
GPB-KL14	14	19.0	20.0	11.5	6.5	0.7	12700	0.1578	14	10.0	1.25	5.5	1.50
GPB-KL16	16	22.7	23.5	13.8	7.8	0.8	14000	0.2282	16	12.0	1.35	6.0	1.50
GPB-KL20-25	24	34.5	34 .0	20.0	9.0	1.0	-	0.6171	20-25	16-18	1.80	8.0	1.50

Example of application:



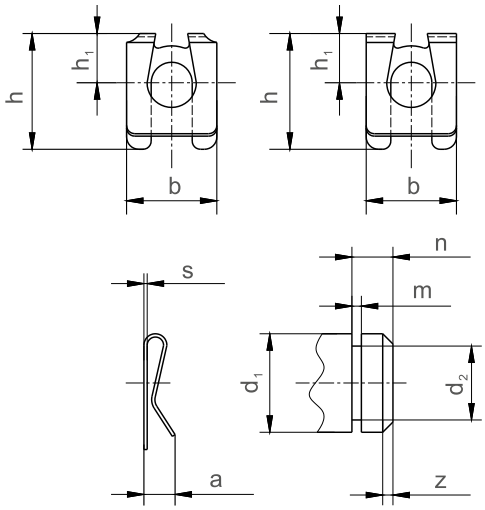
Material: Spring steel.
Surface treatment: Coated with rust-proof oil or zinc plating.
Specials on request (only volumes).

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SL Retainers for Bolt GPB

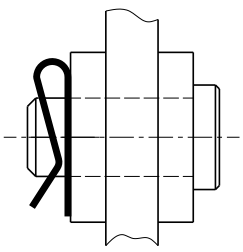
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Part No.	Nom. Size	Retainer					Max. axial thrust ca. N	Weight (kg)	Bolts				
	d_1	b	h	h_1	a≈	s			d_1	d_2	m	n	z
								100 pcs	h11	h11	+0.1		
GPB-SL4	4	7	8.5	4.0	2.3	0.3	1000	0.019	4	3.2	0.64	2.0	0.50
GPB-SL5	5	9	10.7	5.0	3.3	0.4	1300	0.034	5	4.0	0.74	2.5	0.50
GPB-SL6	6	11	14.1	6.0	3.8	0.4	1500	0.063	6	5.0	0.74	3.0	0.75
GPB-SL8	8	14	17.5	8.0	4.0	0.5	3600	0.109	8	6.0	0.94	3.5	1.00
GPB-SL10	10	18	22.1	10.0	5.0	0.5	6400	0.211	10	8.0	1.05	4.5	1.00
GPB-SL12	12	22	26.0	12.0	5.0	0.5	9600	0.280	12	9.0	1.15	5.0	1.25
GPB-SL14	14	25	30.0	13.5	6.0	0.6	11320	0.474	14	10.0	1.25	5.5	1.50
GPB-SL16	16	28	34.0	16.0	6.0	0.6	13500	0.563	16	12.0	1.35	6.0	1.50

Example of application:



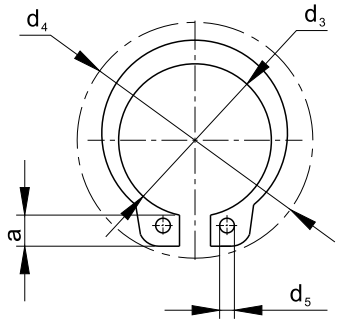
Material: Spring steel.
Surface treatment: Coated with rust-proof oil or zinc plating.
Specials on request (only volumes).

Ihr Ansprechpartner: Industrievertretung Miebach GmbH · Landsberger Str. 10 · 51491 Overath · Tel. 02206 1424 · info@iv-miebach.de · www.iv-miebach.de

E Circlips for bolt GPC

DIN471 AVAILABLE ► STEEL SS 304





Part No.	Dimensions (mm)							Weight (kg)
	d_1	s	d_3	d_4	d_5	a	b	
	h11	h11			min	max		Kg/1000 pieces
GPC-E6	6	0.7	5.6	11.7	1.15	2.70	1.3	0.084
GPC-E8	8	0.8	7.4	14.7	1.20	3.20	1.5	0.158
GPC-E10	10	1.0	9.3	17.0	1.50	3.30	1.8	0.340
GPC-E12	12	1.0	11.0	19.0	1.70	3.30	1.8	0.500
GPC-E14	14	1.0	12.9	21.4	1.70	3.50	2.1	0.640
GPC-E16	16	1.0	14.7	23.8	1.70	3.70	2.2	0.700
GPC-E20	20	1.2	18.5	28.4	2.00	4.00	2.6	1.300
GPC-E25	25	1.2	23.2	34.2	2.00	4.40	3.0	1.900
GPC-E30	30	1.5	27.0	40.5	2.00	5.00	3.5	3.320
GPC-E35	35	1.5	32.2	46.8	2.50	5.60	3.9	4.000
GPC-E40	40	1.8	36.5	52.6	2.50	6.00	4.4	6.030
GPC-E42	42	1.8	38.5	55.7	2.50	6.50	4.5	6.500
GPC-E50	50	2.0	45.8	64.5	2.50	6.90	5.1	10.200

Material and surface treatments:

1) Spring steel; Black coating.
2) Alternative stainless steel 304.

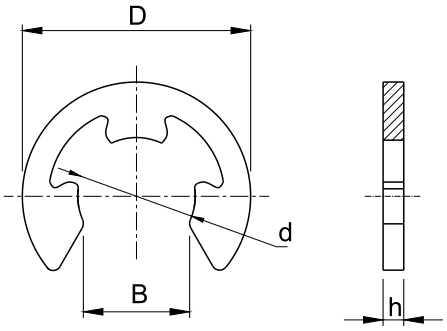
Specials on request (only volumes).

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F Retaining washers for bolt GPB

DIN6799 AVAILABLE ► STEEL SS 304





Part No.	Dimensions (mm)						Weight (kg)
	d	h		B		D	
		max	min	max	min	max	Kg/1000 pieces
GPB-F4	4	0.72	0.68	3.388	3.292	9.3	0.158
GPB-F5	5	0.72	0.68	4.158	4.062	11.3	0.236
GPB-F6	6	0.72	0.68	5.308	5.212	12.3	0.255
GPB-F7	7	0.92	0.88	5.888	5.792	14.3	0.474
GPB-F8	8	1.03	0.97	6.578	6.462	16.3	0.660
GPB-F9	9	1.13	1.07	7.688	7.572	18.8	1.090
GPB-F10	10	1.23	1.17	8.378	8.262	20.4	1.250
GPB-F12	12	1.33	1.27	10.52	10.38	23.4	1.630
GPB-F15	15	1.53	1.47	12.68	12.54	29.4	3.370
GPB-F19	19	1.78	1.72	15.99	15.85	37.6	6.420
GPB-F24	24	2.03	1.97	21.964	21.796	44.6	8.550
GPB-F30	30	2.53	2.47	25.884	25.716	52.6	13.500

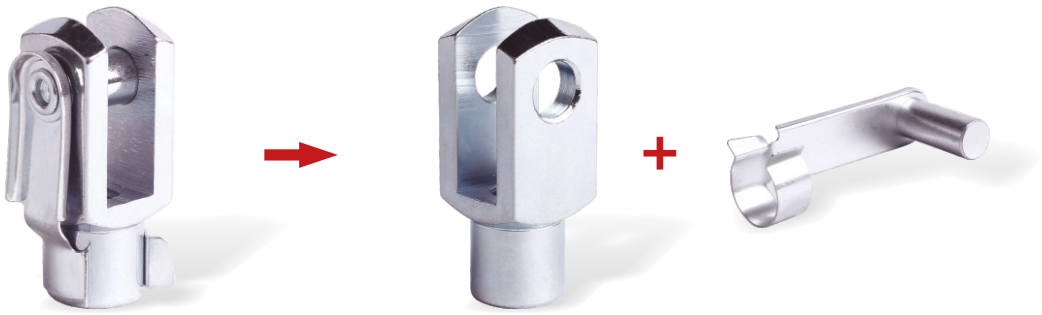
Material and surface treatments:

1) Spring steel; Black coating.
2) Alternative stainless steel 304.

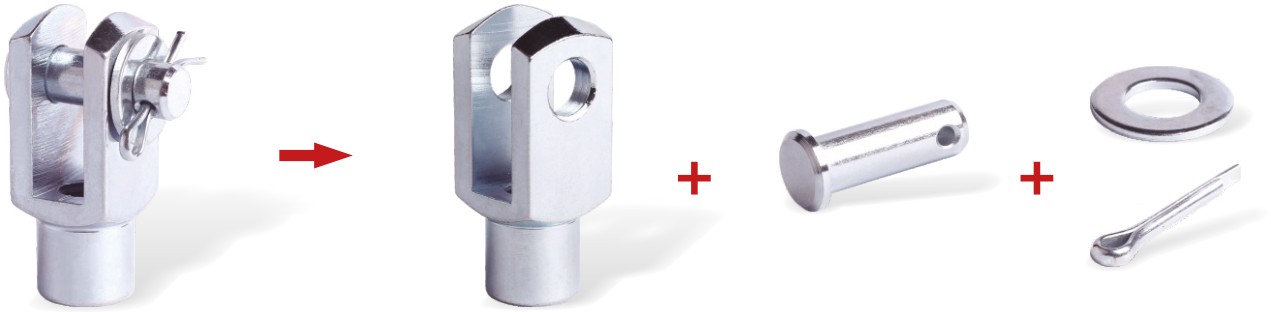
Specials on request (only volumes).

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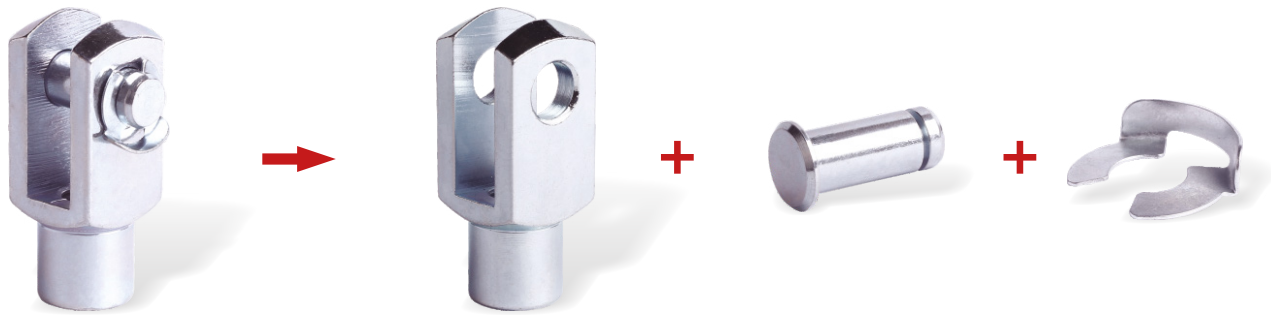
1. Part No.: G model - ASSY/01
   For example: G6 × 12-ASSY/01



2. Part No.: G model/ GT model - ASSY/02
   For example: G6 × 12-ASSY/02, GT6 × 12-ASSY/02
   Material: Low carbon steel / stainless steel are optional

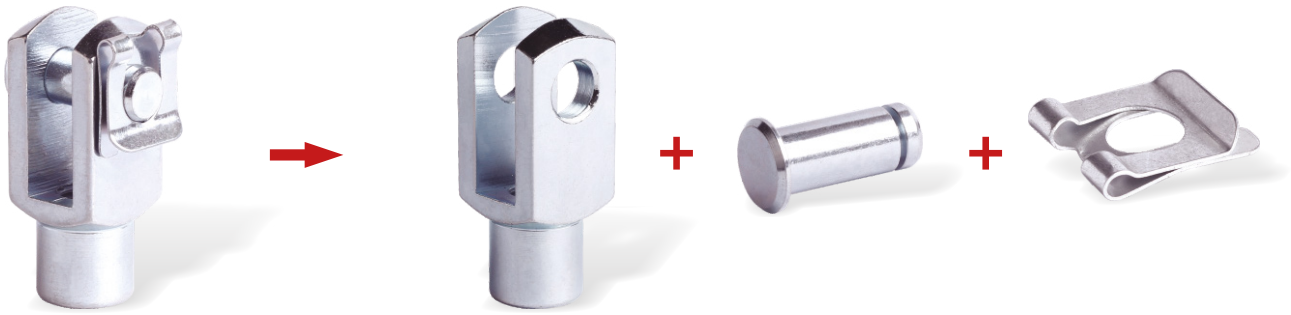


3. Part No.: G model/ GT model - ASSY/03
   For example: G6 × 12-ASSY/03, GT6 × 12-ASSY/03

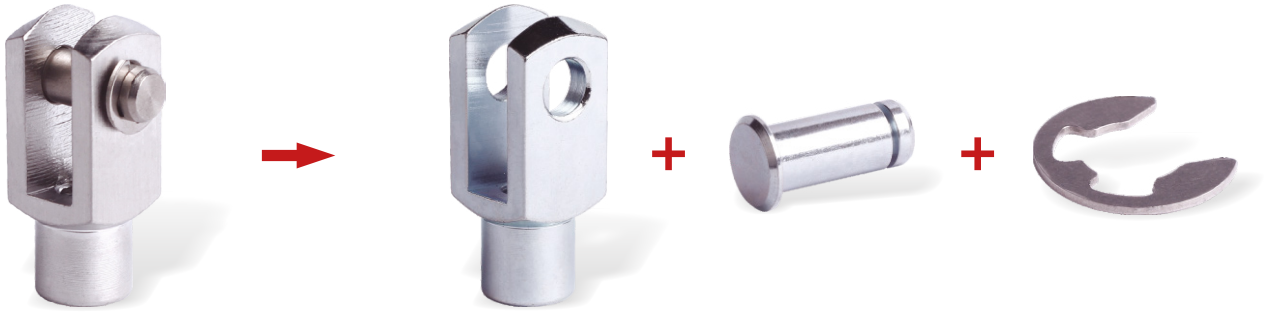


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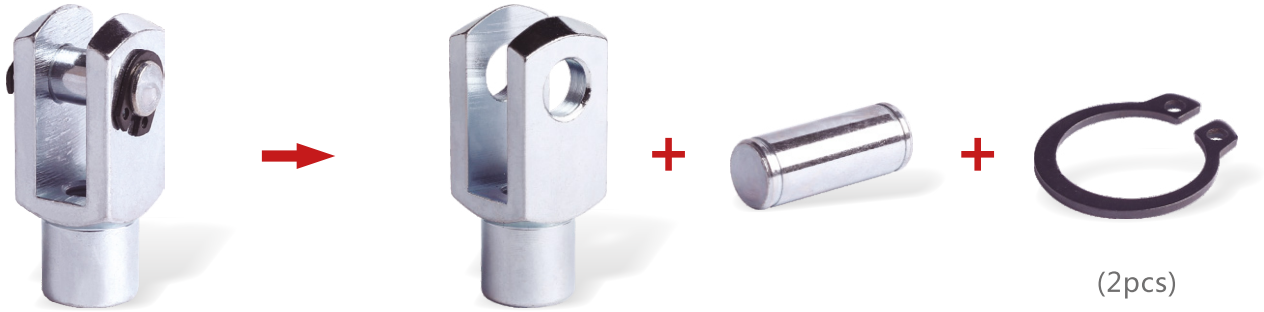
4. Part No.: G model/ GT model - ASSY/04
   For example: G6 × 12-ASSY/04, GT6 × 12-ASSY/04



5. Part No.: G model/ GT model - ASSY/05
   For example: G6 × 12-ASSY/05, GT6 × 12-ASSY/05
   Material: Low carbon steel / stainless steel are optional



6. Part No.: G model/ GT model - ASSY/06
   For example: G6 × 12-ASSY/06, GT6 × 12-ASSY/06
   Material: Low carbon steel / stainless steel are optional



Ihr Ansprechpartner: Industrievertretung Miebach GmbH · Landsberger Str. 10 · 51491 Overath · Tel. 02206 1424 · info@iv-miebach.de · www.iv-miebach.de



Authorized distributor

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