

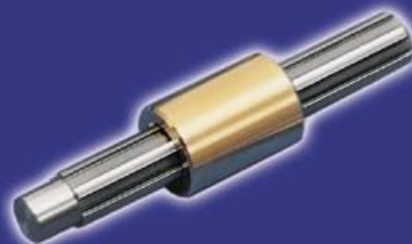


# PRODUCTCATALOG

Precision Universal Joints | Telescopic Universal Joints | Joint Drives and Accessories



**Hans Bühler & Co.**



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# 02 Universal Joints

## DIN 808-G

Also available in stainless steel



BÜCO's precision universal joints are top-quality products made of high-grade steel. All friction areas are hardened and friction polished. The joint components are assembled almost backlash-free.

Item-No.	Size		Length			Keyway DIN 6885		Square S	Shape EB		Weight kg/piece ≈
	D1 H7	D2	L1 -1	L2 ±1	L4 ±0,5	B P9	T +0,2		D h7	L -1	
100G	6	10	14	40	20	-	-	-	-	-	0,014
101G	8	13	13	42	21	2	9	6	10	12	0,024
102G	10	16	17	52	26	3	11,4	8	13	15	0,047
103G	12	20	20	62	31	4	13,8	10	16	18	0,089
104G	16	25	23	74	37	5	18,3	14	20	22	0,160
105G	20	32	25	86	43	6	22,8	19	25	25	0,310
106G	25	40	32	108	54	8	28,3	24	32	32	0,625
107G	32	50	41	132	66	10	35,3	30	40	40	1,200
108G	40	63	47	166	83	12	43,3	36	50	50	2,400

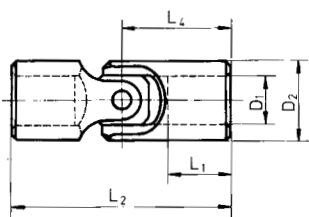
Maximum admissible speed: 1.000 r.p.m. for C45



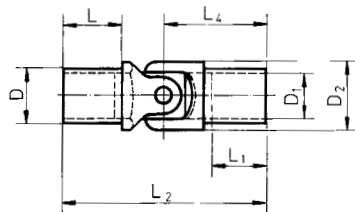
Item-No.	Size		Length			Keyway DIN 6885		Square S	Shape EB		Weight kg/piece ≈
	D1 H7	D2	L1 -1	L3 ±1	L4 ±0,5	B P9	T +0,2		D h7	L -1	
121G	8	13	13	60	21	2	9	6	10	12	0,035
122G	10	16	17	74	26	3	11,4	8	13	15	0,068
123G	12	20	20	88	31	4	13,8	10	16	18	0,130
124G	16	25	23	104	37	5	18,3	14	20	22	0,237
125G	20	32	25	124	43	6	22,8	19	25	25	0,463
126G	25	40	32	155	54	8	28,3	24	32	32	0,920
127G	32	50	41	188	66	10	35,3	30	40	40	1,800
128G	40	63	47	236	83	12	43,3	36	50	50	3,500

Maximum admissible speed: 1.000 r.p.m. for C45

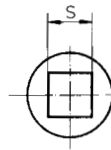
BÜCO's universal joints are also available as unhardened, unpolished, less expensive standard versions with greater backlash (UNGG). Prices upon request.



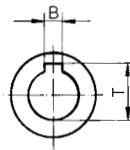
standard version: round (shape E)



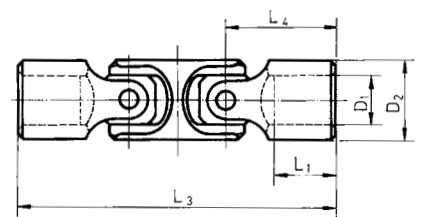
special version: round (shape EB)



square (V)



keyway (N)



standard version: round (shape D)



# 03 Universal Joints

## DIN 808-G heavy duty

Also available in stainless steel

BÜCO's precision universal joints are top-quality products made of high-grade steel. All friction areas are hardened and friction polished. The joint components are assembled almost backlash-free.



Item- No.	Size		Length			Keyway DIN 6885		Square S	Weight kg/piece ~
	D1 H7	D2	L1 -1	L2 ±1	L4 ±0,5	B P9	T +0,2		
201G	6	16	9	34	17	2	7	6	0,036
202G	8	16	10	40	20	2	9	8	0,040
203G	10	20	13	48	24	3	11,4	10	0,075
204G	12	25	15	56	28	4	13,8	10	0,145
205G	16	32	16	68	34	5	18,3	14	0,280
206G	20	40	20	82	41	6	22,8	19	0,509
207G	25	50	25	105	52,5	8	28,3	24	1,090
208G	32	63	30	130	65	10	35,3	30	2,080
209G	40	75	43	160	80	12	43,3	36	3,450
2010G	50	90	52	190	95	14	53,8	ask for	6,150

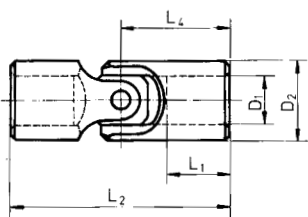
Maximum admissible speed: 1.000 r.p.m. for C45



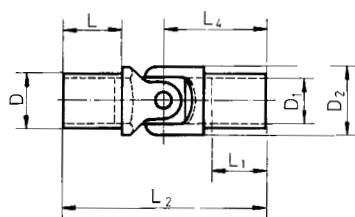
Item- No.	Size		Length			Keyway DIN 6885		Square S	Weight kg/piece ~
	D1 H7	D2	L1 -1	L3 ±1	L4 ±0,5	B P9	T +0,2		
221G	6	16	9	56	17	2	7	6	0,057
222G	8	16	10	62	20	2	9	8	0,060
223G	10	20	13	74	24	3	11,4	10	0,115
224G	12	25	15	86	28	4	13,8	10	0,212
225G	16	32	16	106	34	5	18,3	14	0,420
226G	20	40	20	129	41	6	22,8	19	0,800
227G	25	50	25	161	52,5	8	28,3	24	1,650
228G	32	63	30	200	65	10	35,3	30	3,280
229G	40	75	43	245	80	12	43,3	36	5,280
2210G	50	90	52	288	95	14	53,8	ask for	9,400

Maximum admissible speed: 1.000 r.p.m. for C45

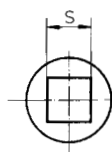
BÜCO's universal joints are also available as unhardened, unpolished, less expensive standard versions with greater backlash (UNGG). Prices upon request.



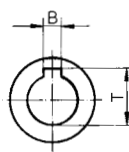
standard version: round  
(shape E)



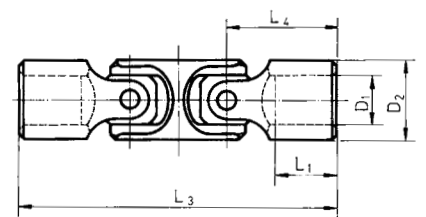
special version: round  
(shape EB)



square  
(V)



keyway  
(N)



standard version: round  
(shape D)



# 04 Universal Joints

## DIN 808-W

Material 11SMnPb30

BÜCO's precision universal joints with needle bearings are highly accurate top-quality products. They are almost backlash-free. They are maintenance-free and, due to their permanent lubrication, are preferably used in machine parts which are difficult to access.



Item- No.	Size		Length			Keyway DIN 6885		Square S	Weight kg/piece ≈
	D1 H7	D2	L1 -1	L2 ±1	L4 ±0,5	B P9	T +0,2		
103W	12	20	20	62	31	4	13,8	8	0,100
104W	16	25	23	74	37	5	18,3	10	0,160
105W	20	32	28	86	43	6	22,8	14	0,330
106W	25	40	36	108	54	8	28,3	19	0,650
107W	32	50	42	132	66	10	35,3	24	1,250
108W	40	63	54	166	83	12	43,3	30	2,900

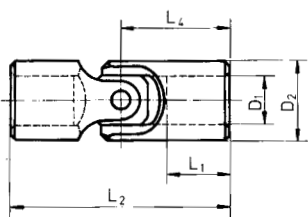
Maximum admissible speed: 5.000 r.p.m.



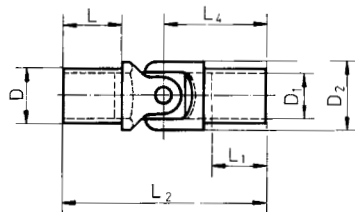
Item- No.	Size		Length			Keyway DIN 6885		Square S	Weight kg/piece ≈
	D1 H7	D2	L1 -1	L3 ±1	L4 ±0,5	B P9	T +0,2		
123W	12	20	20	88	31	4	13,8	8	0,150
124W	16	25	23	104	37	5	18,3	10	0,240
125W	20	32	28	122	43	6	22,8	14	0,440
126W	25	40	36	154	54	8	28,3	19	0,850
127W	32	50	43	187	66	10	35,3	24	1,645
128W	40	63	54	234	83	12	43,3	30	3,600

Maximum admissible speed: 5.000 r.p.m.

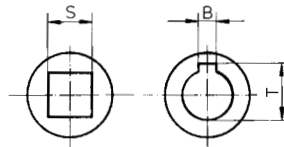
BÜCO's precision universal joints with needle bearings are filled with an extreme pressure lubricant during assembly, which suffices for the service life of the bearing.



standard version: round  
(shape E)

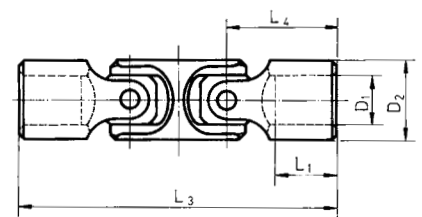


special version: round  
(shape EB)

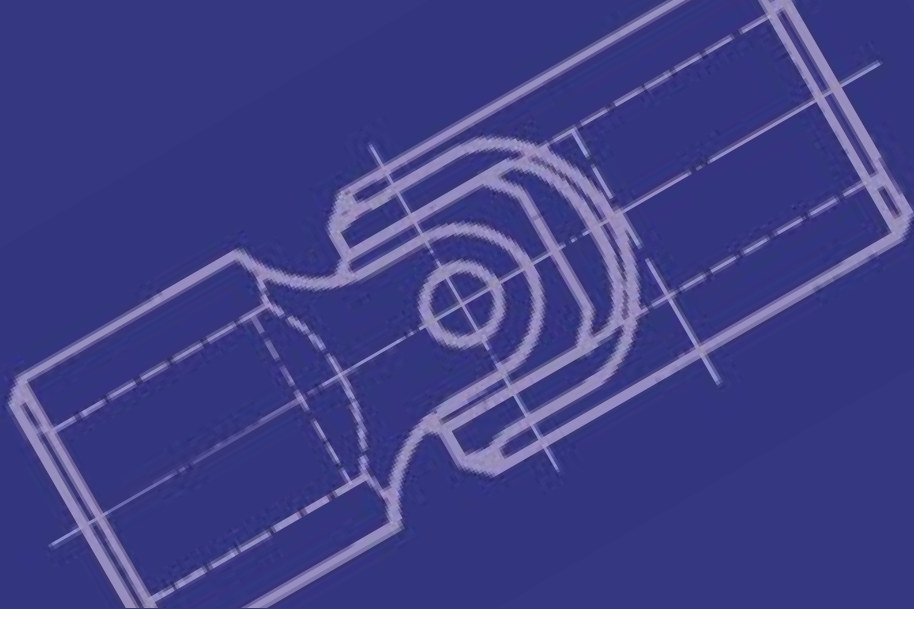


square  
(V)

keyway  
(N)



standard version: round  
(shape D)



# 05 Universal Joints

## DIN 808-W

heavy duty  
Material 11SMnPb30

BÜCO's precision universal joints with needle bearings are highly accurate top-quality products. They are almost backlash-free. They are to all intents and purposes maintenance-free and, due to their permanent lubrication, are preferably used in machine parts which are difficult to access.



Item- No.	Size		Length			Keyway DIN 6885		Square S	Weighth kg/piece ≈
	D1 H7	D2	L1 -1	L2 ±1	L4 ±0,5	B P9	T +0,2		
203W	10	20	13	48	24	3	11,4	8	0,075
204W	12	25	15	56	28	4	13,8	10	0,150
205W	16	32	19	68	34	5	18,3	14	0,260
206W	20	40	23	82	41	6	22,8	19	0,500
207W	25	50	29	105	52,5	8	28,3	24	1,000
208W	32	63	36	130	65	10	35,3	30	2,000
209W	40	75	44	160	80	12	43,3	36	3,300
2010W	50	90	54	190	95	14	53,8	ask for	5,200

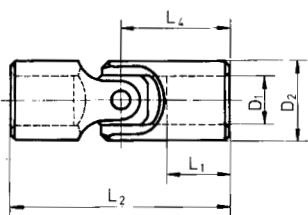
Maximum admissible speed: 5.000 r.p.m.



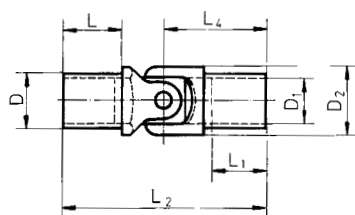
Item- No.	Size		Length			Keyway DIN 6885		Square S	Weighth kg/piece ≈
	D1 H7	D2	L1 -1	L3 ±1	L4 ±0,5	B P9	T +0,2		
223W	10	20	13	74	24	3	11,4	8	0,120
224W	12	25	15	86	28	4	13,8	10	0,200
225W	16	32	19	104	34	5	18,3	14	0,370
226W	20	40	23	128	41	6	22,8	19	0,700
227W	25	50	29	160	52,5	8	28,3	24	1,400
228W	32	63	36	198	65	10	35,3	30	2,800
229W	40	75	44	245	80	12	43,3	36	5,100
2210W	50	90	54	290	95	14	53,8	ask for	7,800

Maximum admissible speed: 5.000 r.p.m.

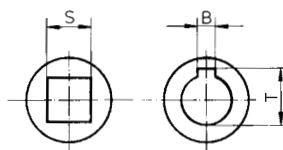
BÜCO's precision universal joints with needle bearings are filled with an extreme pressure lubricant during assembly, which suffices for the service life of the bearing.



standard version: round  
(shape E)

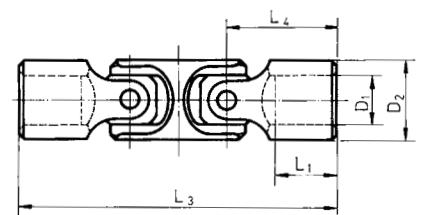


special version: round  
(shape EB)



square  
(V)

keyway  
(N)

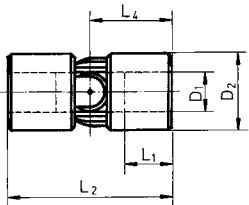


standard version: round  
(shape D)

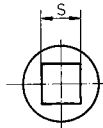


# 06 Universal Joints bracket version

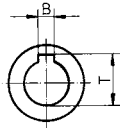
BÜCO's precision universal joints are top-quality products made of high-grade steel. All friction areas are hardened and polished. The brackets are mounted almost backlash-free.



standard version: round  
(shape E)



square  
(V)



keyway  
(N)

Item- No.	Size		Length			Keyway DIN 6885		Square S	Weight kg/piece ≈
	D1 H7	D2	L1 -1	L2 ±1	L4 ±0,5	B P9	T +0,2		
300G	6	16	9	34	17	-	-	6	0,038
301G	8	18	11	40	20	-	-	8	0,057
302G	10	22	14	48	24	3	11,4	10	0,100
303G	12	26	16	56	28	4	13,8	12	0,160
304G	14	29	17	60	30	5	16,3	14	0,215
305G	16	32	20	68	34	5	18,3	16	0,300
306G	18	37	21	74	37	6	20,8	18	0,425
307G	20	42	23	82	41	6	22,8	20	0,620
308G	22	47	25	95	47,5	6	24,8	22	0,896
309G	25	52	29	105	52,5	8	28,3	25	1,200
3010G	30	58	34	122	61	8	33,3	30	1,715













Maximum admissible speed: 1.000 r.p.m.

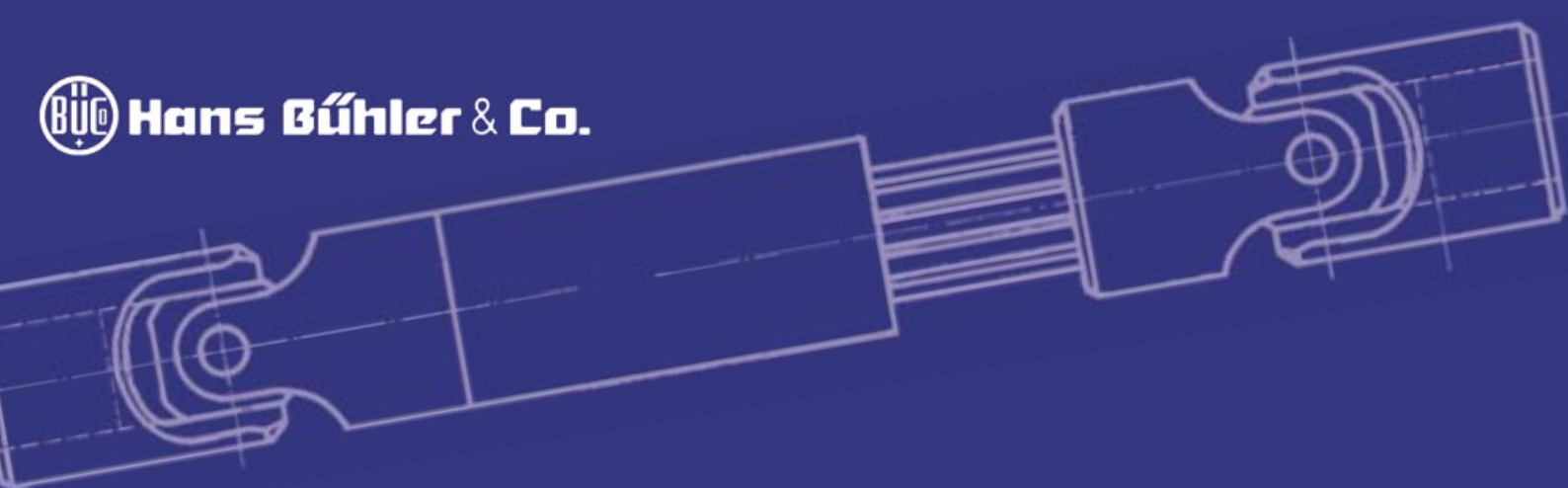
When drilling the pin holes for Büco universal joints, it is important to make sure that the brackets are not damaged.





# 07 Order sample

	Version round round		Version N N		Version V V		Version round N		Version round V		Version N V	
												
<b>Universal Joint „G”</b>												
for Shape E	Universal Joint 106G DIN 808-E25x40-G		Universal Joint 106G DIN 808-EN25x40-G		Universal Joint 106G DIN 808-EV24x40-G		Universal Joint 106G DIN 808-E25xN25x40-G		Universal Joint 106G DIN 808-E25xV24x40-G		Universal Joint 106G DIN 808-EN25xV24x40-G	
for Shape EB	Universal Joint 106G EB25x32x40-G											
for Shape D	Universal Joint 126G DIN 808-D25x40-G		Universal Joint 126G DIN 808-DN25x40-G		Universal Joint 126G DIN 808-DV24x40-G		Universal Joint 126G DIN 808-D25xN25x40-G		Universal Joint 126G DIN 808-D25xV24x40-G		Universal Joint 126G DIN 808-DN25xV24x40-G	
for Shape DB (ohne Abb.)	Universal Joint 126G DB25x32x40-G											
<b>Universal Joint „W”</b>												
for Shape E	Universal Joint 106W DIN 808-E25x40-W		Universal Joint 106W DIN 808-EN25x40-W		Universal Joint 106W DIN 808-EV24x40-W		Universal Joint 106W DIN 808-E25xN25x40-W		Universal Joint 106W DIN 808-E25xV24x40-W		Universal Joint 106W DIN 808-EN25xV24x40-W	
for Shape D	Universal Joint 126W DIN 808-D25x40-W		Universal Joint 126W DIN 808-DN25x40-W		Universal Joint 126W DIN 808-DV24x40-W		Universal Joint 126W DIN 808-D25xN25x40-W		Universal Joint 126W DIN 808-D25xV24x40-W		Universal Joint 126W DIN 808-DN25xV24x40-W	
<b>Universal Joint „bracket version”</b>												
for Shape E	Universal Joint 309G LAS-E25x52-G		Universal Joint 309G LAS-EN25x52-G		Universal Joint 309G LAS-EV25x52-G		Universal Joint 309G LAS-E25xN25x52-G		Universal Joint 309G LAS-E25xV25x52-G		Universal Joint 309G LAS-EN25xV25x52-G	
<b>Shaft Joint</b>												
	Shaft Joint 416G GW-25x40-G		Shaft Joint 416G GW-N25x40-G		Shaft Joint 416G GW-V24x40-G		Shaft Joint 416G GW-25xN25x40-G		Shaft Joint 416G GW-25xV24x40-G		Shaft Joint 416G GW-N25xV24x40-G	
	Shaft Joint 416W GW-20x40-W		Shaft Joint 416W GW-N20x40-W		Shaft Joint 416W GW-V19x40-W		Shaft Joint 416W GW-20xN20x40-W		Shaft Joint 416W GW-20xV19x40-W		Shaft Joint 416W GW-N20xV19x40-W	
Explanation: $D_1 = 25\text{mm}$ , $D_2 = 40\text{mm}$ , $D = 32\text{mm}$ , N = keyway B 8mm x T 28,3mm, V = square S 24mm												
Abbreviations: E = single, EB = single + special version, D = double, DB = double + special version, N = keyway, V = square, LAS = joint with bracket version, DIN 808-W = rolling or needle bearing, GW = shaft joint, Lmin = contracted, Lmax = extended												



# 08 Shaft Joints

## DIN 808-G

Also available in stainless steel

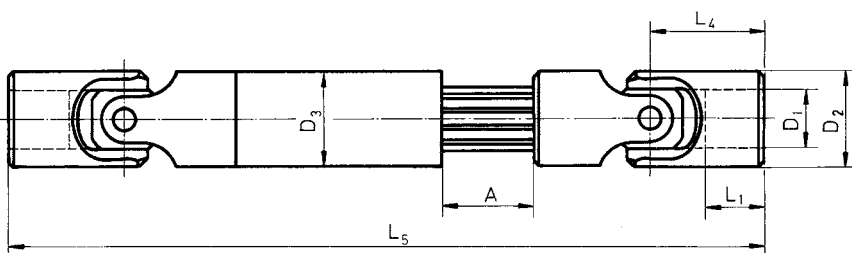
BÜCO's precision shaft joints are top-quality products made of high-grade steel. The universal joints are hardened and friction polished. The joint parts are assembled almost backlash-free. The universal joints are also available with brackets.



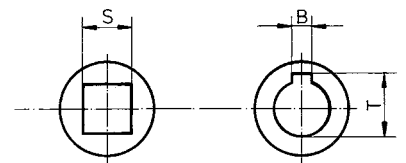
Item-No.	Size			Length		Lmin	Tele-scope	Lmax	Splined shaft profile	Keyway DIN 6885		Square S	Weight kg/piece ≈
	D1 H7	D2	D3	L1 -1	L4 ±0,5					L5-A	A		
411G	8	13	13	13	21	130	40	170	mit Vierkant	2	9	6	0,100
412G	10	16	19,5	10	20	150	50	200	6 x 11 x 14	3	11,4	8	0,234
413G	12	20	19,5	13	24	190	60	250	6 x 11 x 14	4	13,8	10	0,341
414G	16	25	26,5	23	37	230	70	300	6 x 13 x 16	5	18,3	14	0,657
415G	20	32	31,5	25	43	270	80	350	6 x 16 x 20	6	22,8	19	1,214
416G	25	40	39,5	32	54	400	100	500	6 x 21 x 25	8	28,3	24	2,500
417G	32	50	51,5	41	66	500	150	650	6 x 26 x 32	10	35,3	30	5,350
418G	40	63	59,5	47	83	550	200	750	8 x 32 x 38	12	43,3	36	8,780
419G	40	75	59,5	43	80	570	200	770	8 x 32 x 38	12	43,3	36	11,230
4110G	50	90	79,5	52	95	700	200	900	8 x 42 x 48	14	53,8	Anfrage	21,600

Intermediate lengths are also possible. Please contact us for further details.  
 Maximum admissible speed: 1.000 r.p.m. for C45

BÜCO's precision shaft joints are marked during assembly. When putting the shaft joint together again, make sure that the markings on both halves of the joint are opposite to each other.

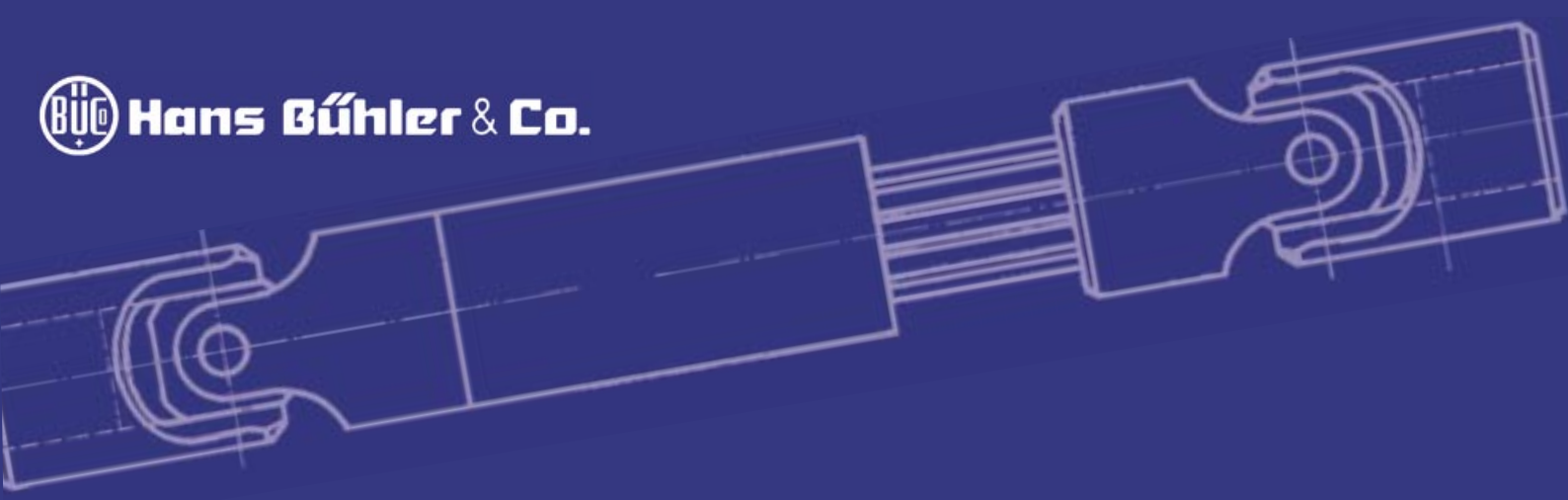


standard version: round (shape E)



square (V)

keyway (N)



# 09 Shaft Joints

## DIN 808-W

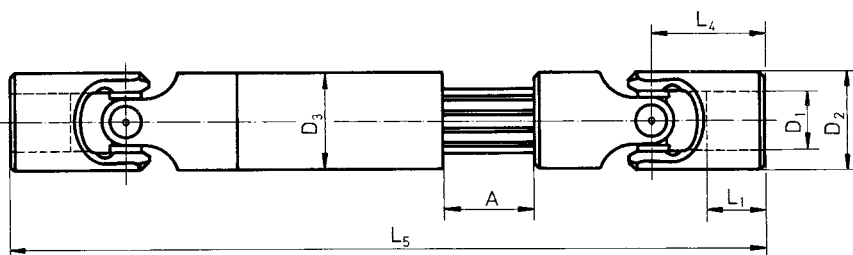
BÜCO's precision shaft joints are top-quality products made of high-grade steel. The universal joint parts are assembled almost backlash-free and are to all purposes and intents maintenance-free. The shaft joints are preferably fitted with folding bellows with filled lubrication grease for use in machine parts which are difficult to access.



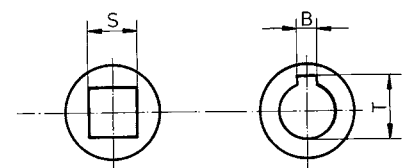
Item- No.	Size			Length		L <sub>min</sub> L5-A	Tele- scope A	L <sub>max</sub> L5 ±1	Splined shaft profile DIN ISO 14	Keyway DIN 6885		Square S	Weight kg/piece ≈
	D1 H7	D2	D3	L1 -1	L4 ±0,5					B P9	T +0,2		
413W	10	20	19,5	13	24	190	60	250	6 x 11 x 14	3	11,4	8	0,341
414W	12	25	26,5	15	28	212	70	282	6 x 13 x 16	4	13,8	10	0,630
415W	16	32	31,5	19	34	252	80	332	6 x 16 x 20	5	18,3	14	1,110
416W	20	40	39,5	23	41	374	100	474	6 x 21 x 25	6	22,8	19	2,300
417W	25	50	51,5	29	52,5	473	150	623	6 x 26 x 32	8	28,3	24	5,150
418W	32	63	59,5	36	65	514	200	714	8 x 32 x 38	10	35,3	30	8,650
419W	40	75	59,5	44	80	570	200	770	8 x 32 x 38	12	43,3	36	11,230
4110W	50	90	79,5	54	95	700	200	900	8 x 42 x 48	14	53,8	Anfrage	21,600

Intermediate lengths are also possible. Please contact us for further details.  
Maximum admissible speed: 5.000 r.p.m.

BÜCO's precision shaft joints are marked during assembly. When putting the shaft joint together again, make sure that the markings on both halves of the joint are opposite to each other.

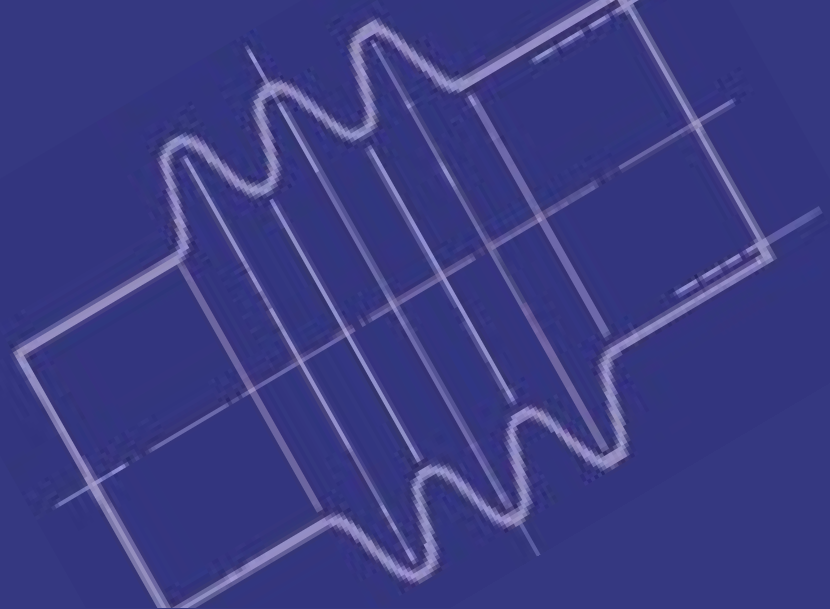


standard version: round (shape E)



square (V)

keyway (N)



# 10 Folding Bellows for universal joint

BÜCO's folding bellows are made of high quality chrome tanned, black impregnated leather. They are resistant to oil, water and weather and serve as a protection for the joints against dust, humidity, and acidic vapors. By filling the folding bellows with lubrication grease and then securing them with folding bellow band clamp fittings, you achieve life-long self-lubrication.

## for single

Item-No.	Size		Length		Number of folds
	D1	D2	L1	L2	
20 246	13	30	12	42	2
20 262	16	32	15	40	2
20 247	16	32	15	52	2
20 248	20	35	20	62	2
20 249	25	40	20	74	3
20 250	32	55	20	86	3
20 251	40	65	25	108	3
20 263	50	75	25	105	3
20 252	50	75	25	132	4
20 264	63	95	30	130	4
20 253	63	95	30	166	5
20 265	75	105	40	160	5
20 266	90	120	40	190	6

temperature range: from - 100°C to + 80°C

## for double

Item-No.	Size		Length		Number of folds
	D1	D2	L1	L2	
20 254	13	30	12	60	3
20 267	16	32	15	62	3
20 255	16	32	15	74	3
20 256	20	35	20	88	3
20 257	25	40	20	104	5
20 258	32	55	20	124	5
20 259	40	65	25	156	6
20 260	50	75	25	188	6
20 261	63	95	30	238	9
20 268	75	105	40	245	11
20 269	90	120	40	290	11

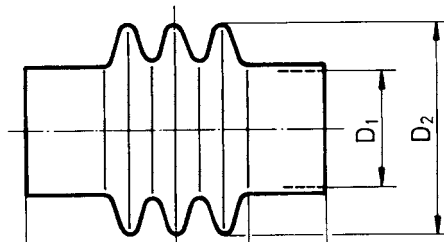
higher temperatures and other designs upon request

## Folding bellow band clamp fittings

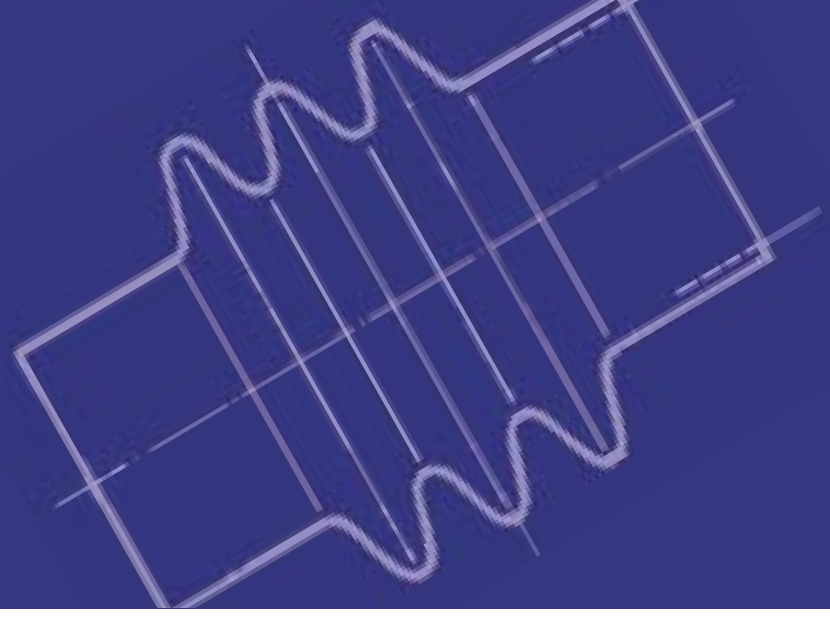
Item No.	Dimensions	
	band width	clamping range
20 523	9	12 – 22
20 524	9	16 – 27
20 525	9	30 – 45
20 526	9	40 – 60
20 527	9	60 – 80
20 528	9	80 – 100

## Stainless steel

Item No.	Dimensions	
	band width	clamping range
20 529	9	12 – 22
20 538	9	16 – 27
20 530	9	30 – 45
20 531	9	40 – 60
20 533	9	60 – 80
20 534	9	80 – 100



The folding bellow band clamp fittings are equipped with a worm drive hose clip with a hexagon screw and slot in accordance with DIN 3017. The flex and chromated yellow. For applicational specifications, e.g. maintenance and lubrication, see Technical Appendix.



# 11 Folding Bellows

**for universal joints –  
bracket version**

Item- No.	Size		Length		Number of folds
	D1	D2	L1	L2	
20 491	16	32	12	34	2
20 270	18	35	12	40	2
20 271	22	40	12	48	2
20 272	26	45	12	56	2
20 273	29	50	12	60	3
20 274	32	55	15	68	3
20 275	37	65	15	74	3
20 276	42	70	20	82	3
20 277	47	75	20	95	3
20 278	52	80	20	105	3
20 279	58	90	25	122	4

temperature range: from – 100°C to + 80°C

**for shaft joints –  
extendable**

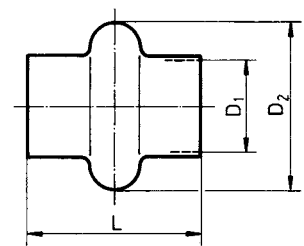
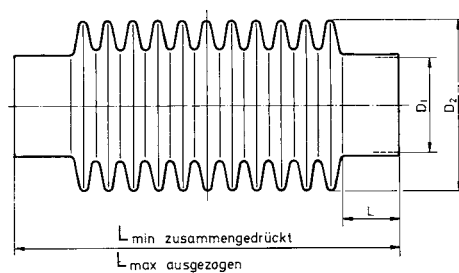
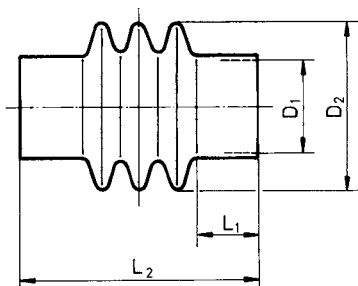
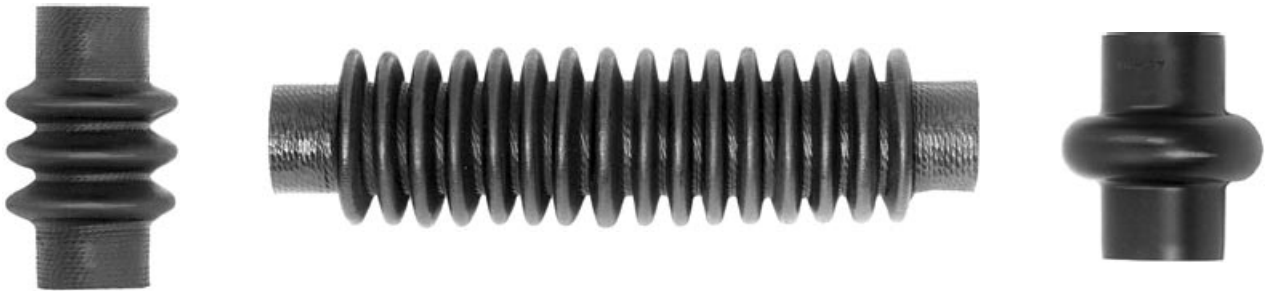
Item- No.	Size		Length			Number of folds
	D1	D2	L	L <sub>min</sub>	L <sub>max</sub>	
20 254	13	30	12	40	80	3
20 280	16	32	15	52	102	4
20 281	20	35	20	62	122	6
20 282	25	40	20	67	137	7
20 283	32	55	20	70	150	6
20 259	40	65	25	73	175	6
20 284	50	75	25	95	245	9
20 285	63	95	30	117	317	11
20 286	75	105	40	137	337	11
20 269	90	120	40	122	360	11

higher temperatures and different designs  
upon request

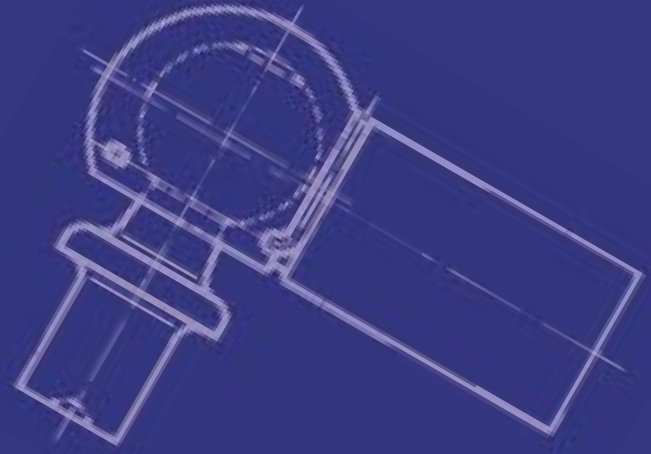
**for UJ – bracket  
version - Simrit**

Item No.	Size		Length L
	D1	D2	
20 287	16	36	32
20 288	18	38	38
20 289	22	44	40
20 290	26	50	45
20 291	29	53	50
20 292	32	58	60
20 293	37	65	65
20 294	42	71	75
20 295	47	76	90
20 296	52	88	95
20 297	58	98	95

temperature range:  
from – 30°C to + 100°C



The folding bellows band clamp fittings are equipped with a worm drive hose clip with a hexagon screw and slot in accordance with DIN 3017. The flexible stainless steel band encircles the bellows thus ensuring that it is completely sealed off. Casing and screw are galvanized and chromated yellow. The stainless steel band clamp fittings are used where rust resistant materials are required.

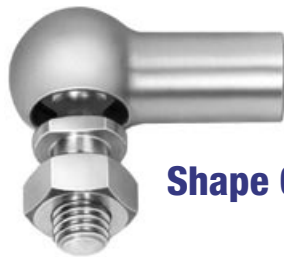


# 12 Angle Joints

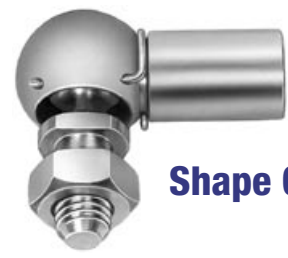
## DIN 71 802

with threaded stem

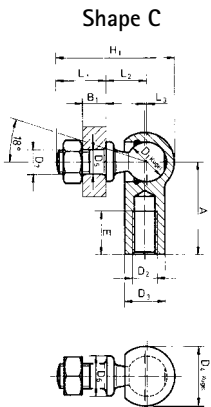
Also available in stainless steel



Shape C

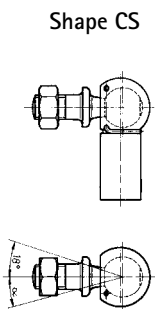


Shape CS



Shape C

Item-No.		Shape C with threaded stem and hexagon nut														Static pressure and tension load kp	Weight kg/1000 piece ≈
D2 right handed thread	D2 left handed thread LH	Ball D1 H9 / h8	A	B <sub>1</sub>	D <sub>2</sub> +D <sub>7</sub>	D <sub>3</sub>	Ball D4 ≈	D <sub>5</sub> H11/ h11	D <sub>6</sub>	E	H <sub>1</sub> ≈	L <sub>1</sub> ≈	L <sub>2</sub> ≈	L <sub>3</sub> ≈			
20 298	20 332	8	22	5	M5	8	12,8	5	8	10,2	25,2	10,2	9	0,3	24,3	15,2	
20 299	20 333	10	25	6	M6	10	14,8	6	10	11,5	30,2	12,5	11	0,5	56,7	25,2	
20 300	20 334	13	30	8	M8	13	19,3	8	13	14	38,2	16,5	13	0,8	121,5	53,1	
20 301	20 335	16	35	10	M10	16	24	10	16	15,5	47,5	20	16	0,5	162	103,8	
20 302	20 336	16	35	10	M12	16	24	12	16	15,5	47,5	20	16	0,5	162	103,8	
20 303	20 337	19	45	14	M14x1,5	22	30	14	19	21,5	62,5	28	20	0,5	243	220,9	
20 304	20 338	19	45	14	M14	22	30	14	19	21,5	62,5	28	20	0,5	243	220,9	
20 190	-	19	45	14	M16	22	30	16	19	21,5	62,5	28	20	0,5	243	220,9	



Shape CS

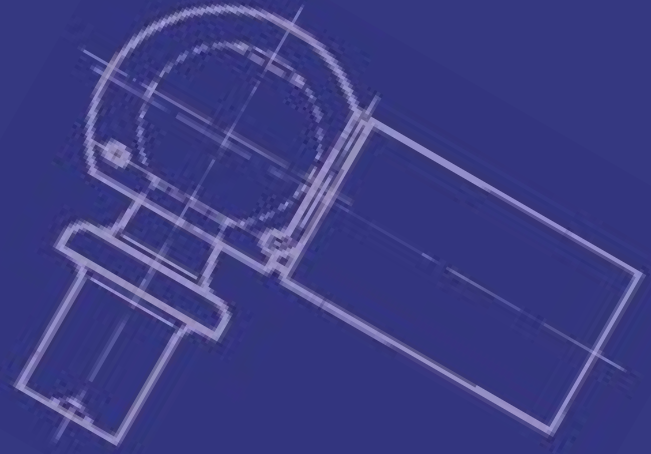
Item-No.		Shape C with threaded stem, hexagon nut and security clip															Static pressure and tension load kp	Weight kg/1000 piece ≈
D2 right handed thread	D2 left handed thread LH	Ball D1 H9 / h8	A	B <sub>1</sub>	D <sub>2</sub> +D <sub>7</sub>	D <sub>3</sub>	Ball D4 ≈	D <sub>5</sub> H11/ h11	D	E	H <sub>1</sub> ≈	L <sub>1</sub> ≈	L <sub>2</sub> ≈	L <sub>3</sub> ≈	α			
20 305	20 339	8	22	5	M5	8	12,8	5	8	10,2	25,2	10,2	9	0,3	10°	24,3	15,2	
20 306	20 340	10	25	6	M6	10	14,8	6	10	11,5	30,2	12,5	11	0,5	15°	56,7	25,2	
20 307	20 341	13	30	8	M8	13	19,3	8	13	14	38,2	16,5	13	0,8	15°	121,5	53,1	
20 308	20 342	16	35	10	M10	16	24	10	16	15,5	47,5	20	16	0,5	15°	162	103,8	
20 309	20 343	16	35	10	M12	16	24	12	16	15,5	47,5	20	16	0,5	15°	162	103,8	
20 310	20 344	19	45	14	M14x1,5	22	30	14	19	21,5	62,5	28	20	0,5	15°	243	220,9	
20 311	20 345	19	45	14	M14	22	30	14	19	21,5	62,5	28	20	0,5	15°	243	220,9	
20 171	-	19	45	14	M16	22	30	16	19	21,5	62,5	28	20	0,5	15°	243	220,9	

For dimensions not listed here see shape C specifications

Order sample:

Thread \ Shape	shape C with retention spring	shape CS with retention spring and security clip
D <sub>2</sub> right-handed thread	angle joint C 16 DIN 71 802, item-No. 20 301	angle joint CS 16 DIN 71 802, item-No. 20 308
D <sub>2</sub> left-handed thread	angle joint C 16 LH DIN 71 802, item-No. 20 335	angle joint CS 16 LH DIN 71 802, item-No. 20 342

The angle joints presented here also available as galvanized or as easy running versions (L).

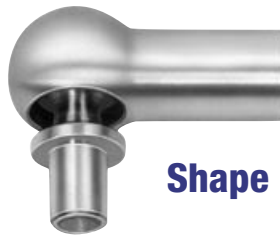


# 13 Angle Joints

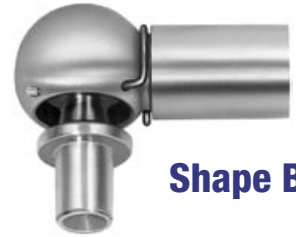
## DIN 71 802

with rivet studs

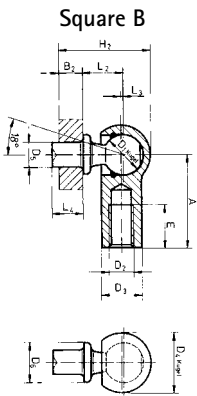
Also available in stainless steel



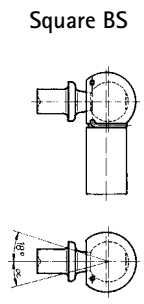
Shape B



Shape BS



Item-No.		Shape B with rivet studs														Static pressure and tension load kp	Weight kg/1000 piece
D2 right handed thread	D2 left handed thread LH	Ball D1 H9 / h8	Stud L <sub>4</sub>	A ≈	B <sub>2</sub>	D <sub>2</sub>	D <sub>3</sub>	Ball D4 ≈	D <sub>5</sub> H11/ h11	D <sub>6</sub>	E	H <sub>2</sub> ≈	L <sub>2</sub> ≈	L <sub>3</sub> ≈			
20 312	20 346	8	4	22	2,5	M5	8	12,8	5	8	10,2	17,5	9	0,3	24,3	12,850	
20 313	20 347	8	7,5	22	5	M5	8	12,8	5	8	10,2	20	9	0,3	24,3	13,350	
20 314	20 348	10	4,5	25	3	M6	10	14,8	6	10	11,5	21	11	0,5	56,7	21,300	
20 315	20 349	10	8	25	6	M6	10	14,8	6	10	11,5	24	11	0,5	56,7	22,000	
20 316	20 350	13	5	30	3,5	M8	13	19,3	8	13	14	25	13	0,8	121,5	43,100	
20 317	20 351	13	10	30	8	M8	13	19,3	8	13	14	30	13	0,8	121,5	45,000	
20 318	20 352	16	6	35	4	M10	16	24	10	16	15,5	31,5	16	0,5	162	82,300	
20 319	20 353	16	13	35	10	M10	16	24	10	16	15,5	37,5	16	0,5	162	86,600	
20 320	20 354	19	12	45	8	M14x1,5	22	30	14	19	21,5	42,5	20	0,	243	181,000	
20 321	20 355	19	18	45	14	M14x1,5	22	30	14	19	21,5	48,5	20	0,5	243	188,700	



Item-No.		Shape BS with rivet studs and security clip														Static pressure and tension load kp	Weight kg/1000 piece
D2 right handed thread	D2 left handed thread LH	Ball D1 H9 / h8	Stud L <sub>4</sub>	A ≈	B <sub>2</sub>	D <sub>2</sub>	D <sub>3</sub>	Ball D4 ≈	D <sub>5</sub> H11/ h11	D <sub>6</sub>	E	H <sub>2</sub> ≈	L <sub>2</sub> ≈	L <sub>3</sub> ≈	α		
20 322	20 356	8	4	22	2,5	M5	8	12,8	5	8	10,2	17,5	9	0,3	10°	24,3	12,850
20 323	20 357	8	7,5	22	5	M5	8	12,8	5	8	10,2	20	9	0,3	10°	24,3	13,350
20 324	20 358	10	4,5	25	3	M6	10	14,8	6	10	11,5	21	11	0,5	15°	56,7	21,300
20 325	20 359	10	8	25	6	M6	10	14,8	6	10	11,5	24	11	0,5	15°	56,7	22,000
20 326	20 360	13	5	30	3,5	M8	13	19,3	8	13	14	25	13	0,8	15°	121,5	43,100
20 327	20 361	13	10	30	8	M8	13	19,3	8	13	14	30	13	0,8	15°	121,5	45,000
20 328	20 362	16	6	35	4	M10	16	24	10	16	15,5	31,5	16	0,5	15°	162	82,300
20 329	20 363	16	13	35	10	M10	16	24	10	16	15,5	37,5	16	0,5	15°	162	86,600
20 330	20 364	19	12	45	8	M14x1,5	22	30	14	19	21,5	42,5	20	0,5	15°	243	181,000
20 331	20 365	19	18	45	14	M14x1,5	22	30	14	19	21,5	48,5	20	0,5	15°	243	188,700

For dimensions not listed here see shape B specifications

Bestell-Beispiel:

Thread \ Shape	shape B with retention spring	shape BS with retention spring and security clip
D <sub>2</sub> right-handed thread	angle joint B 16x13 DIN 71 802, item-No. 20 319	angle joint BS 16x13 DIN 71 802, item-No. 20 308
D <sub>2</sub> left-handed thread	angle joint B 16x13 LH DIN 71 802, item-No. 20 353	angle joint BS 16x13 LH DIN 71 802, item-No. 20 342

The angle joints presented here also available as galvanized or as easy running versions (L).

# 14 Splined Hubs

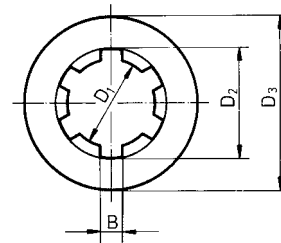
## DIN ISO14 - A

16 MnCrS 5Pb  
red bronze Rg7  
(GC-CuSn 5/7 ZnPb)  
1.4305



BÜCO's splined hubs and splined shafts are top-quality products made of high-grade materials. They are used where large torsional loads, or large torsional loads and high axial displacing loads are encountered.

Item No.		Splined hub profile A	Number of splines	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	B	Length	Weight kg/piece
16 MnCrS 5Pb	Rg7			H7	H11	D9			
00001	00009	A6 x 11 x 14	6	11	14	20	3	40	0,063
00002	00010	A6 x 13 x 16	6	13	16	28	3,5	45	0,161
00003	00011	A6 x 16 x 20	6	16	20	32	4	45	0,198
00004	00012	A6 x 21 x 25	6	21	25	40	5	55	0,265
00005	00013	A6 x 26 x 32	6	26	32	52	6	60	0,694
00006	00014	A8 x 32 x 38	8	32	38	60	6	60	0,871
00007	00015	A8 x 42 x 48	8	42	48	65	8	70	0,924
00008	00016	A8 x 42 x 48	8	42	48	80	8	70	1,876

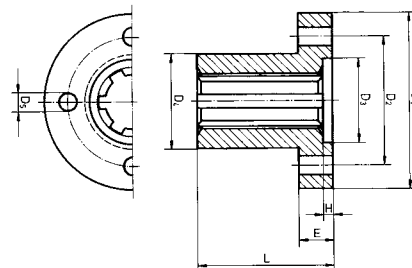


## with flange DIN ISO14 - F

steel C45  
red bronze Rg7  
(GC-CuSn 5/7 ZnPb)  
1.4305



Item-No.		Splined hub-profile F	Number of splines	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	E	H	L	Weight kg/piece
C45	Rg7			H7	D9	H13						
00017	00024	F6 x 11 x 14	6	42	28	20	20	4,5	8	3	35	0,109
00018	00025	F6 x 13 x 16	6	50	36	22	25	4,5	8	3	40	0,184
00019	00026	F6 x 16 x 20	6	52	38	25	28	5,5	10	3	40	0,218
00020	00027	F6 x 21 x 25	6	62	48	35	34	6,6	10	3,5	50	0,328
00021	00028	F6 x 26 x 32	6	70	56	40	42	6,6	10	3,5	60	0,511
00022	00029	F8 x 32 x 38	8	82	65	50	50	9	12	3,5	60	0,708
00023	00030	F8 x 42 x 48	8	95	75	60	60	11	16	4	80	1,215







# 15 Splined Shafts

## DIN ISO14 - B

**C45 cold-pulled  
1.4301**

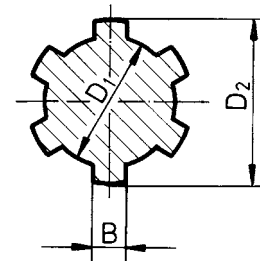
**gerichtet:  
Straightness + Twist  
0,5mm/m**



BÜCO's splined hubs and clamping rings are top-quality products made of high-grade materials. They are used where large torsional loads and/or axial displacing and/or clamping loads are produced.

Item No.	Splined-hub profile	Number of splines	D <sub>1</sub>	D <sub>2</sub>	B	Weight
C45	A		0 - 0,08	-0,07 - 0,27	0 - 0,08	kg/m
30001	B6 x 11 x 14	6	11	14	3	0,949
30002	B6 x 13 x 16	6	13	16	3,5	1,287
30003	B6 x 16 x 20	6	16	20	4	1,911
30004	B6 x 21 x 25	6	21	25	5	3,139
30005	B6 x 26 x 32	6	26	32	6	5,008
30006	B8 x 32 x 38	8	32	38	6	7,433
30007	B8 x 42 x 48	8	42	48	8	12,371

Available in all lengths up to 3 meters



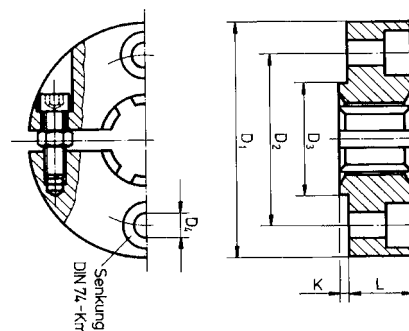
## Clamping ring

for splined hubs DIN ISO14 - G

**steel C45  
red bronze Rg7  
(GC-CuSn 5/7 ZnPb)  
1.4305**



Item-No.		Splined-hub profile	Number of splines	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	L	K	Weight
C45	Rg7	G				h6	H13			kg/piece
00031	00038	G6 x 11 x 14	6	42	28	20	4,5	12	2	0,104
00032	00039	G6 x 13 x 16	6	50	36	22	4,5	12	2	0,153
00033	00040	G6 x 16 x 20	6	52	38	25	5,5	14	2	0,178
00034	00041	G6 x 21 x 25	6	62	48	35	6,6	14	3	0,255
00035	00042	G6 x 26 x 32	6	70	56	40	6,6	15	3	0,346
00036	00043	G8 x 32 x 38	8	82	65	50	9	18	3	0,507
00037	00044	G8 x 42 x 48	8	95	75	60	11	22	3	0,834



# 16 Technical appendix

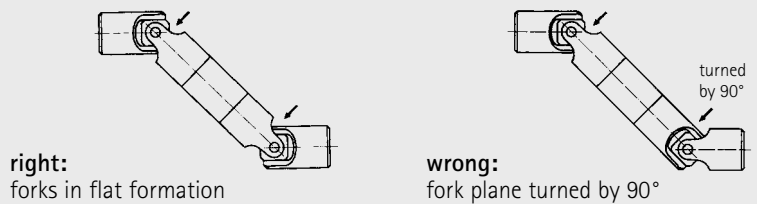
## Installation instruction

BÜCO's universal joints and shaft joints are now and will be in the future indispensable and versatile components for transmitting rotary motions.

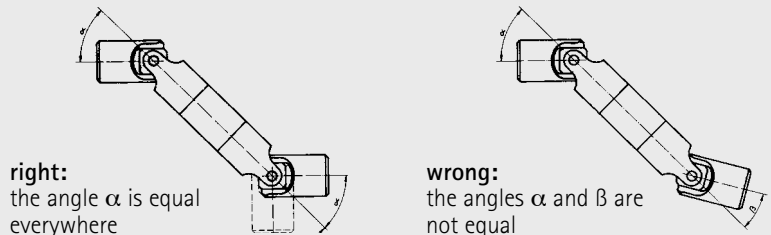
If two shafts, which are inclined towards each other at a given angle, are connected to each other via a universal joint, and if one of the shafts rotates with a constant angular speed, then the other shaft rotates with a variable angular speed. This irregularity of motion – which is also called gimbal error – causes the rotating angle to advance and lag alternately, thus effecting the second shaft to rotate with sinusoidal fluctuations. The greater the deflection angle  $\alpha$ , the greater the non uniformity of the rotating motion.

For this reason, single universal joints are only used when variable rotary motion is permissible. The non uniformity of motion can be compensated by using two single universal joints in sequence or by using a double universal joint. When properly installed the second universal joint can compensate the irregular motion of the first one under the following conditions as enumerated by DIN 808:

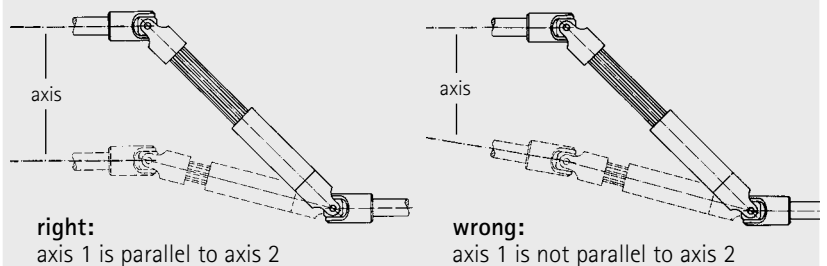
1. Correct fork position: when using two single universal joints make sure that the two inside forks or brackets (for bracket versions) are in flat formation, as in the case of double universal joints.



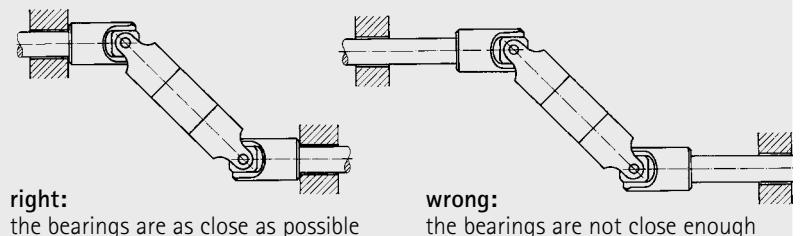
2. The deflection angles at both ends must be equal.



3. The driving and driven shafts may only be shifted in directions parallel to the shafts.



4. The bearings of the shaft joint – or of the double universal joint – should be positioned as close as possible to the universal joints.



The shaft joints are delivered without pinholes and clamping studs. The length of the clamping studs is determined by the outer diameter of the universal joint; it must be flush when set.

# 17 Technical appendix

## Maintenance and lubrication

To ensure trouble-free employment of BÜCO's precision universal joints and precision shaft joints with friction bearings or brackets you should lubricate them at regular intervals. BÜCO's precision universal joints with needle bearings are maintenance-free and, due to their permanent lubrication, are preferably used in machine components difficult to access.

**Caution:** BÜCO's precision universal joints and precision shaft joints are ready for use and are lubricated with a lithium saponified, extreme pressure lubricant on a mineral oil base.

Temperature range lubricant: from  $-30^{\circ}$  to  $+125^{\circ}\text{C}$  (permanent lubrication)

Peak temperature lubricant: maximum  $140^{\circ}\text{C}$

Please use lubricants with the same specification for re-lubrication.

## Lubricating points

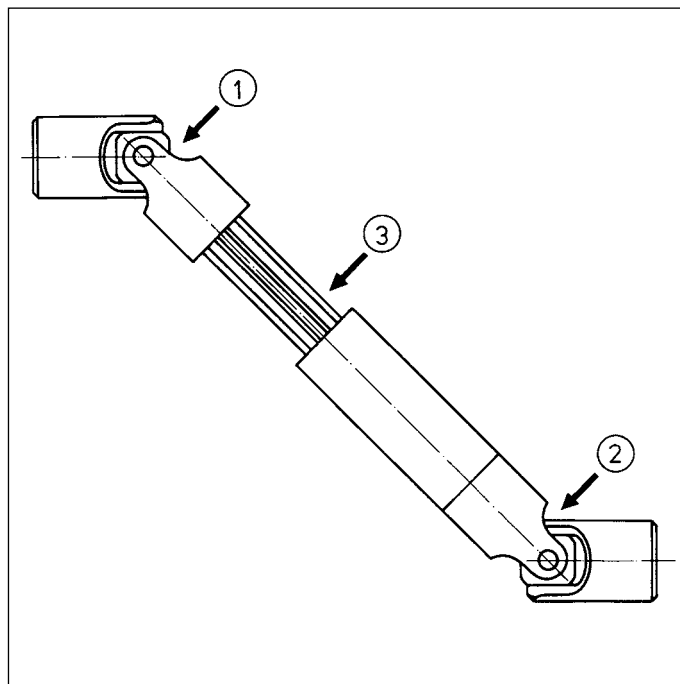
Lubrication is required at least once daily for permanent operation at the lubricating points marked with arrows.

For friction bearings and bracket version this means all the sliding parts on the cube, the fork piece and bearing pins and as well as for shaft joints the sliding parts of the extendable splined profile .

In harsh environments, the sliding parts should be protected against fibrous particles and steam by means of a folding bellow. Permanent self-lubrication for an indefinite time is achieved by filling the folding bellow with a lubricating grease.

**Note:** Maintenance work should be carried out at regular intervals; preferably while carrying out maintenance work on other machine parts.

In such cases, we recommend that noise and backlash tests be conducted, or if the working noise and/or the backlash of the joint and profile parts deviate from the standard values.



### Instructions for BÜCO's precision universal joints with needle bearings:

BÜCO's precision universal joints with needle bearings in accordance with DIN 808-W are used wherever high transmission performances together with precise load transmissions at high speeds (of up to max. 5.000 r.p.m.) are required.

Power transmission is through the center of the universal joint via a forged spider, whose four polished studs are contained in needle bearing bushes sealed off by sleeves. The special roller bearing grease is inserted during assembly and guarantees that BÜCO's precision universal joints with needle bearings remain absolutely maintenance-free due to permanent lubrication.

# 18 Technical appendix

## Calculating the dimensions of the universal joints „G”

The selection of a universal joint is not determined exclusively by the max. torque to be transmitted. There are also other operative conditions which must be taken into account, such as impact load, angular ratios, angular velocities, etc. The diagrams presented below give approximate preliminary values for calculating the dimensions of the universal joints and contain the corresponding standard values.

Figure 1 shows the power and torque values transmitted by single precision universal joints during permanent operation with a deflection angle of  $\alpha = 10^\circ$ .

Note: The loads to which double universal joints are exposed may only be about 90% of the corresponding values for single universal joints. This also applies to shaft joints.

There are no general standard values for precision universal joints with friction bearings, for which it is possible to specify the service life, as the stress and strain to which the friction surfaces are exposed is determined by the regularity of the lubrication intervals.

Figure 2 shows the adjustment value to be taken into consideration for greater deflection angles. For deflection angles less than  $10^\circ$ , e.g. between  $0^\circ$  to  $5^\circ$  you may increase the standard power value shown in figure 1 by 25%.

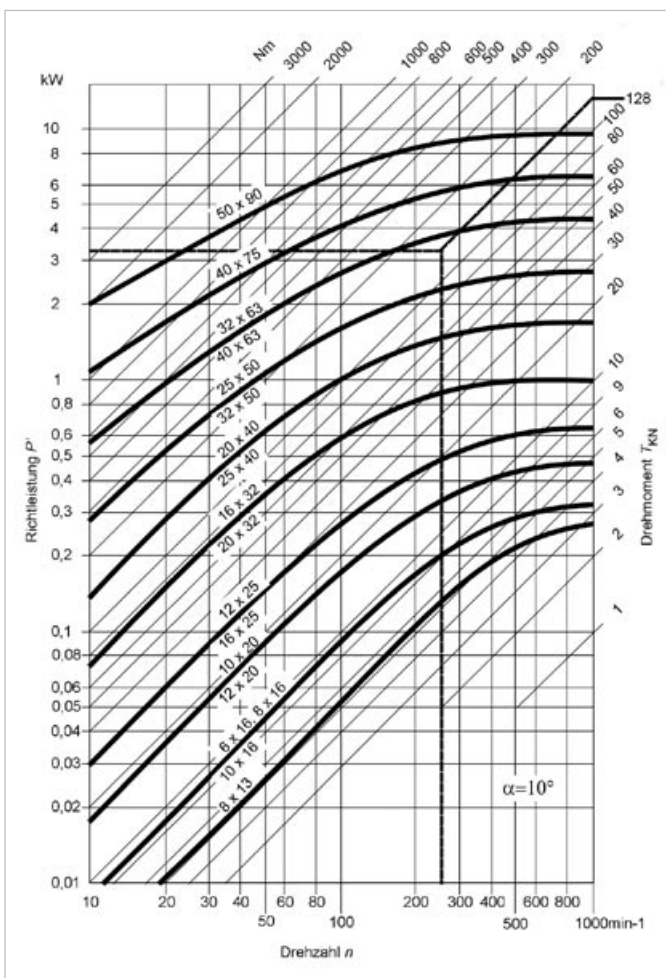


Fig. 1: Power diagram for precision universal joints with friction bearings in accordance with DIN 808-G

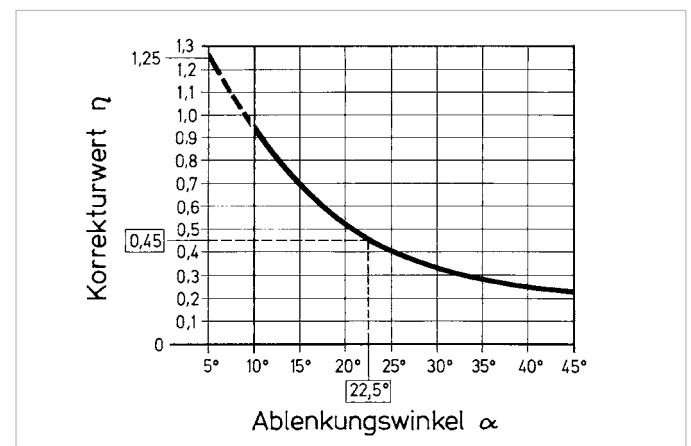


Fig. 2: Adjustment value in relation to the deflection angle

### Example

Given values: the power to be transmitted  $P = 1,5$  kW  
 speed  $n = 250$  r.p.m.  
 deflection angle  $\alpha = 22^\circ 30'$

Calculation: adjustment value from fig. 2  $n = 0,45$

$$\text{standard power } P' = \frac{P}{n} = \frac{1,5}{0,45} = 3,3 \text{ kW}$$

Figure 1 yields for  $n = 250$  r.p.m. and  $3,3$  kW: shaft joint E 32 x 63 (or E 40 x 63) with the admissible torque value of  $M = 125$  Nm.

The universal joints are delivered without pinholes and clamping studs. The length of the clamping studs is determined by the outer diameter of the universal joint; it must be flush when set.

# 19 Technical appendix

## Calculating the dimensions of the universal joints „W”

Figure 5 shows the service life of BÜCO's maintenance-free precision universal joints with needle bearings depending on the impact factor (e.g. standard value 1.5 for an electromotor drive without flexible coupling), the adjustment value for the deflection angle and the torque value to be transmitted.

Figure 6 shows the adjustment value for calculating the service life of BÜCO's maintenance-free precision universal joints with needle bearings.

Note: The loads to which double universal joints are exposed may only be about 90% of the corresponding values for single universal joints. This also applies to shaft joints.

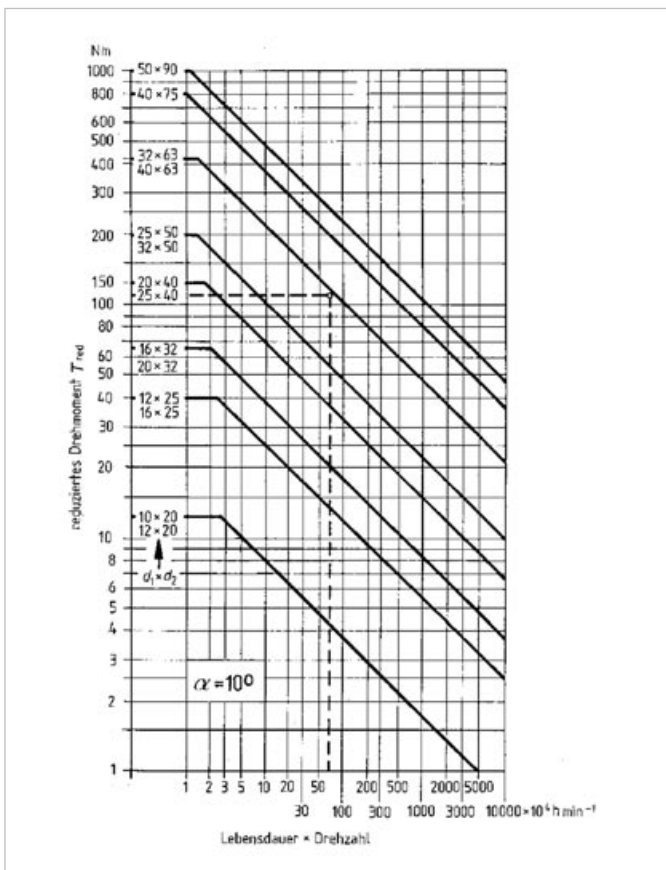


Fig. 5: Service life diagram for precision universal joints with needle bearings DIN 808-W

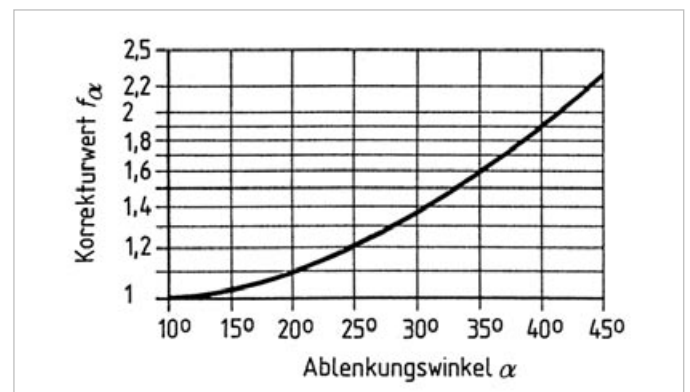


Fig. 6: Adjustment values with relation to the deflection angle

$f_z$  = impact factor (see technical questionnaire)

$n$  = adjustment value (from figure 6)

$M$  = torque value to be transmitted

$$M_{red} = M \times f_z \times n$$

### Example

Given values: the power to be transmitted  $M = 70$  Nm

speed  $n = 1400$  r.p.m.

service life  $L = 500$  h

deflection angle  $\alpha = 20^\circ$

impact factor  $f_z = 1,5$

adjustment value from fig. 6  $n = 1,1$

reduced torque

$$M_{red} = M \times f_z \times n = 70 \times 1,5 \times 1,1 = 116$$

$$L \times n = 500 \times 1400 = 700\,000 = 70 \times 10^4$$

Figure 5 yields: universal joint E 32 x 63.

The universal joints are delivered without pinholes and clamping studs. The length of the clamping studs is determined by the outer diameter of the universal joint; it must be flush when set.

# 20 Technical appendix

## Calculating the dimensions of the universal joints „bracket version”

Figure 3 shows the power and torque values transmitted by single precision universal joints (bracket version) during permanent operation and with a deflection angle of  $\alpha = 10^\circ$ .

Figure 4 shows the adjustment value to be taken into consideration for greater deflection angles. For deflection angles between  $0^\circ$  to  $5^\circ$  you may increase the standard power value by 25%.

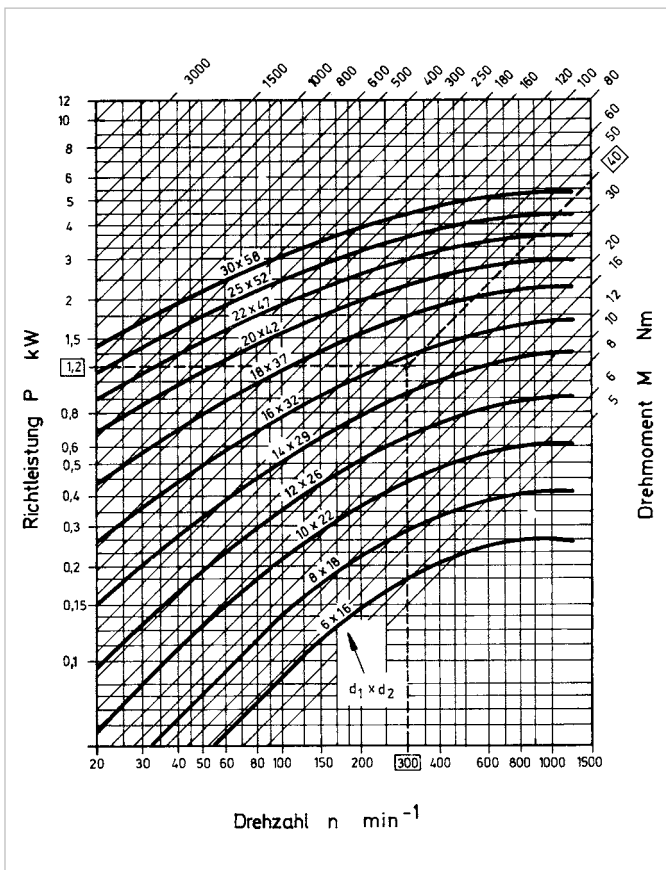


Fig. 3: Power diagram for precision bracket joints with friction bearings

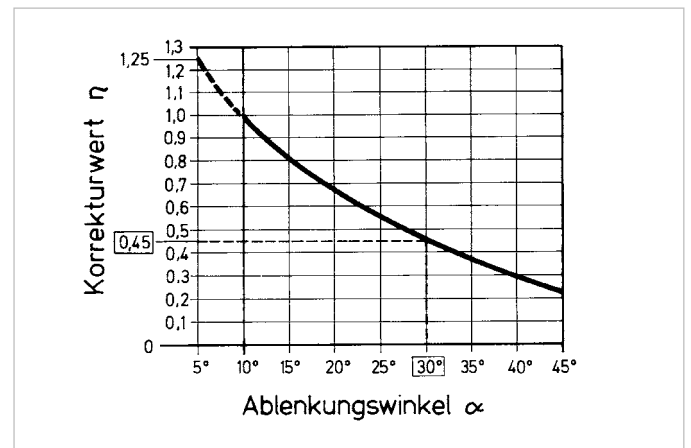


Fig. 4: Adjustment values with relation to the deflection angle

### Example

Given values: the power to be transmitted  $P = 0,540$  kW  
 speed  $n = 300$  r.p.m.  
 deflection angle  $\alpha = 30^\circ$

Calculation: adjustment value from fig. 4  $n = 0,45$

$$\text{standard power } P' = \frac{P}{n} = \frac{0,540}{0,45} = 1,2 \text{ kW}$$

Figure 3 yields for  $n = 300$  r.p.m. and  $1,2$  kW a universal joint E  $16 \times 32$  with the admissible torque value of  $M = 40$  Nm.

The universal joints are delivered without pinholes and clamping studs. The length of the clamping studs is determined by the outer diameter of the universal joint; it must be flush when set.

# 21 Technical questionnaire

## for calculating the dimensions of the universal joints

Hans Bühler & Co.  
 Inh. Kurt-Giesler-Stiftung  
 Postfach 1240

D-73249 Wernau/Neckar

### Customer's address

Company \_\_\_\_\_  
 Street \_\_\_\_\_  
 Zip code \_\_\_\_\_  
 Contact person \_\_\_\_\_  
 Phone/Fax \_\_\_\_\_  
 Date \_\_\_\_\_  
 Signature \_\_\_\_\_

The following specifications are required for calculating the dimensions of universal joints:

1. enquiry regarding catalog item or special design ?      catalog-item       special design
2. driving side: electromotor \_\_\_\_\_       combustion engine \_\_\_\_\_   
    power output \_\_\_\_\_ kW      at speed \_\_\_\_\_ r.p.m.  
    torque max. \_\_\_\_\_ Nm      at speed \_\_\_\_\_ r.p.m.  
    coupling type: \_\_\_\_\_  
    flexible intermediate element      yes       no
3. driven side      drive       axis differential       pump

### 4. Operative environment:

#### 4.1 Impact factors (fz) for most widely used drives, e.g.:

drive	with flexible intermediate element	(x)	without flexible intermediate element	(x)
electromotor	1,0	<input type="checkbox"/>	1,0 - 1,5	<input type="checkbox"/>
gasoline engine more than 4 cyl.	1,25	<input type="checkbox"/>	1,75	<input type="checkbox"/>
gasoline engine less than 4 cyl.	1,5	<input type="checkbox"/>	2,0	<input type="checkbox"/>
diesel engine more than 4 cyl.	1,5	<input type="checkbox"/>	2,0	<input type="checkbox"/>
diesel engine less than 4 cyl.	2,0	<input type="checkbox"/>	2,5	<input type="checkbox"/>
other drive:				

- 4.2 special conditions:    intense dust contamination and pollution  yes       no  
 ambient temperature \_\_\_\_\_ C°  
 peak temperature \_\_\_\_\_ C°  
 humidity or steam       yes       no  
 acidic steam       yes       no

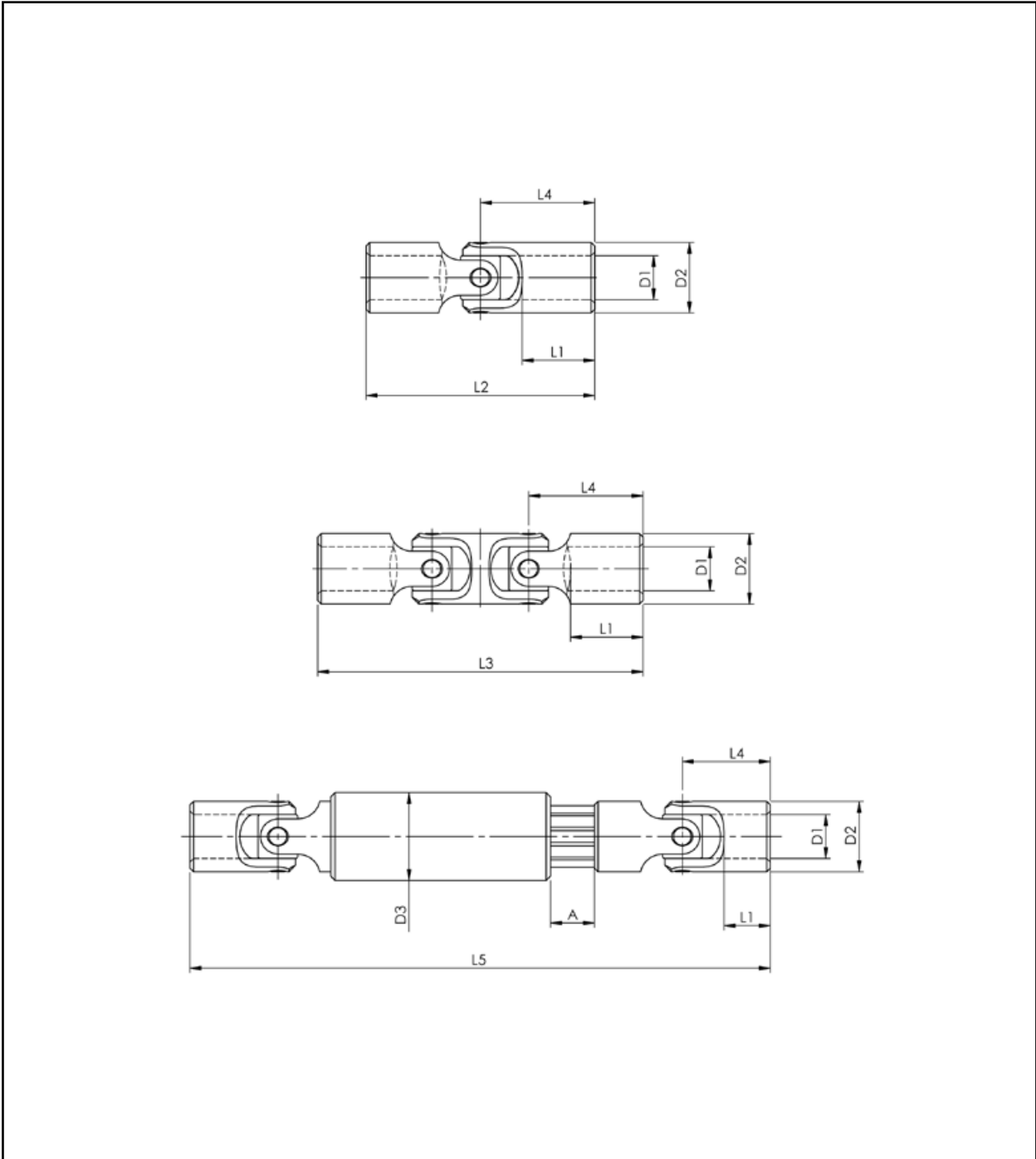
5. Joint specifications:    max. torque \_\_\_\_\_ Nm  
 permanent torque \_\_\_\_\_ Nm  
 max. speed \_\_\_\_\_ r.p.m.  
 deflection angle a \_\_\_\_\_ degrees  
 length contracted (for shaft joints) \_\_\_\_\_ mm  
 length extended (for shaft joints) \_\_\_\_\_ mm  
 installation position       horizontal       vertical  
 service life required (approx.) \_\_\_\_\_ hours

# 22 Technical questionnaire

## for calculating the dimensions of the universal joints

6. amounts required/frequency: once  continually   
 continually needed amounts – skeleton agreement desired yes  no   
 Do you wish for our representative to contact you for a consultation yes  no

7. Remarks (explanations, diagrams, specifications, etc.)





# 23 World Wide Web

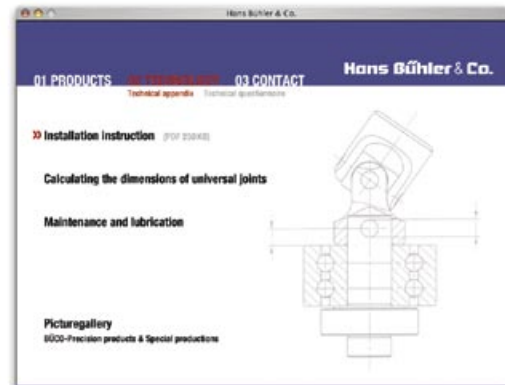
[www.hansbuehler.com](http://www.hansbuehler.com)



The homepage with language selection: german, english, french



Products: product overview universal joints



Technology: PDFs with technical information

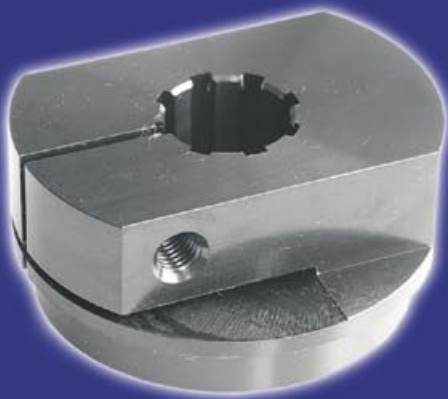


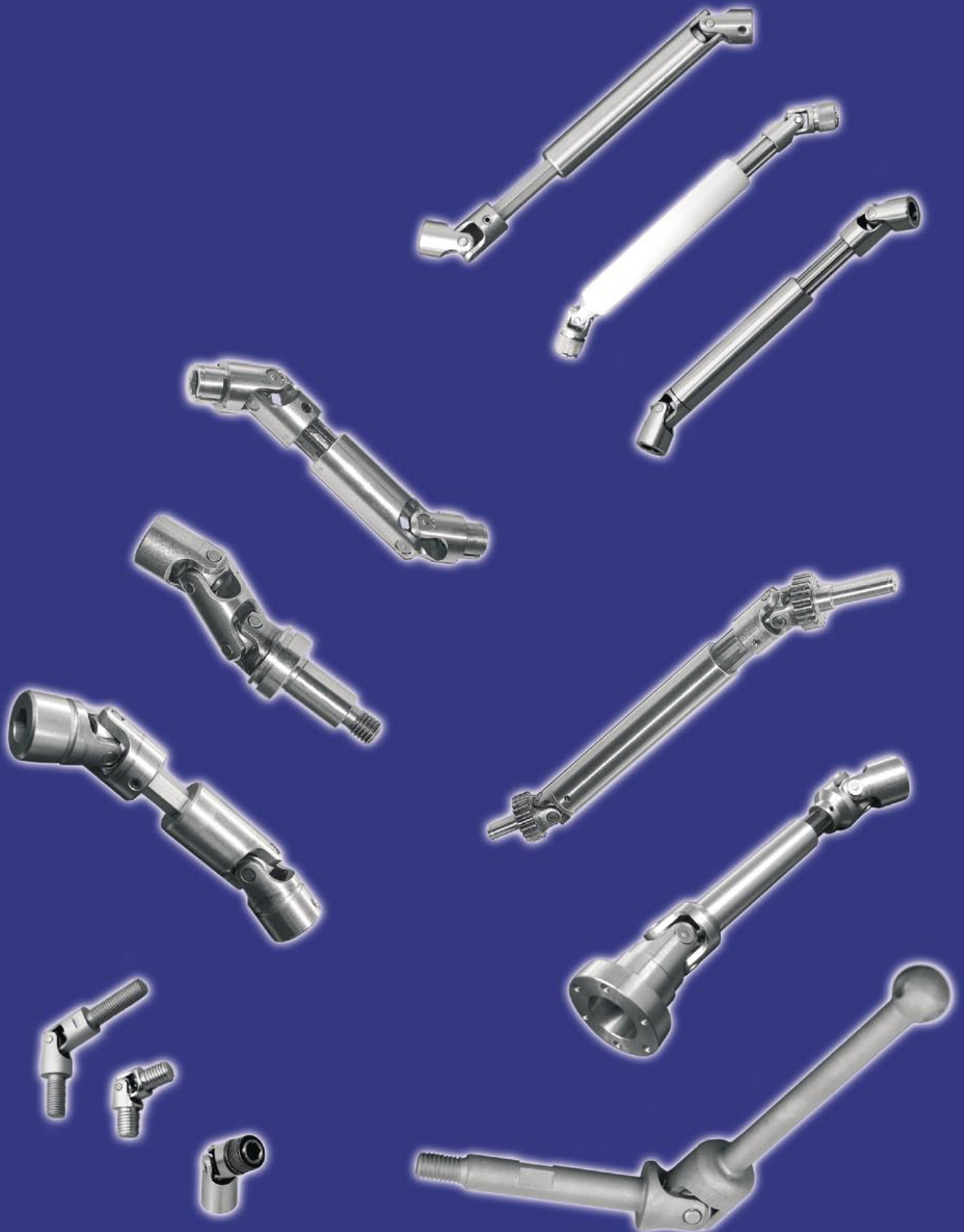
Productdetails: universal joints DIN 808-G



Contact: the representatives in germany

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## **Hans Bühler & Co.**

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