

Precision Universal Joint

A detailed photograph of a precision universal joint assembly is shown in the center of the page. The assembly is made of polished metal and is shown in a disassembled state, with various components like the yokes and shafts arranged vertically. The background is a light teal color with a faint, larger-scale image of the same assembly.

**PRECISION UNIVERSAL JOINT**

## Sit universal joints with plain or needle roller bearings

### Series “P” - “E” - “H” (DIN 808)

P series joints are precision products made by 4 forks and solid pins machined from one piece, to have an extremely compact central block. Types E are with sliding bushes while type H has needle roller bearings.

It's produced in one only version:

- **P series according with DIN 808;**

Joints with plain bearings are available in 2 versions:

- **E series according with DIN 808;**
- **EB series according with DIN 808/7551**

Joints with roller bearings are available in 2 versions:

- **H series according with DIN 808;**
- **HB series according with DIN 808/7551**

Every execution is made by 2 hubs with forks and a central block. Between pins and bores there are:

- P series: 4 bearings with solid pins
- E series: with sliding bushes
- H series: with needle roller bearings

In the central blocks of P and E series there are the holes for the lubrication.

For the H series (for high speed applications) no lubrication is needed, because the roller bearing are maintenance free.

P series joints is designed for high precision and lifetime applications. E series joint with sliding bushes are used for low-medium speed and when some shock load can occur.

For high speed and medium torque, we suggest the type H with roller bearings.

The maximum working angle is 45° for single joints, 90° for double joints.

The maximum speed is 1000 rpm for P and E series, 4000 rpm for H series.

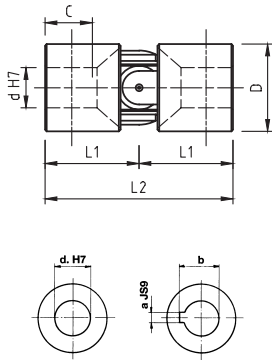
Every execution can be supply with extensible shaft.



# Precision joint

## Series "P" (DIN 808)

- Central block and forks from one piece of Ni-Cr cemented steel (HRC > 60)
- High wear resistance
- Long life
- Pre-lubricated with greaser built-in
- Max angle: 45°
- Max speed: 1000 rpm
- Standard executions: circular bore
- Special executions on request: bore and keyway

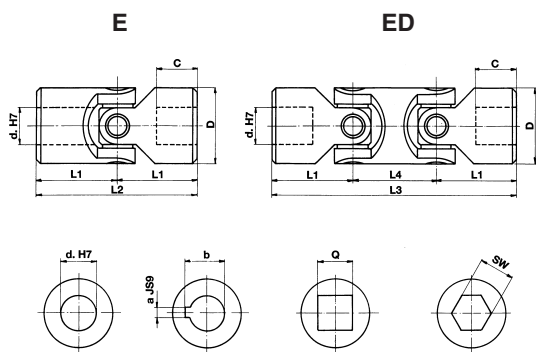


Type	d [mm]	a [mm]	b [mm]	D [mm]	L1 [mm]	C [mm]	L2 [mm]	Weight [kg]
GU01P	6	-	-	16	17	9	34	0,05
GU02P	8	-	-	18	20	11	40	0,06
GU03P	10	3	11,4	22	24	14	48	0,11
GU04P	12	4	13,8	26	28	16	56	0,17
GU05P	14	5	16,3	29	30	17	60	0,22
GU1P	16	5	18,3	32	34	20	68	0,32
GU2P	18	6	20,8	37	37	21	74	0,47
GU3P	20	6	22,8	42	41	23	82	0,67
GU4P	22	6	24,8	47	47,5	25	95	1,00
GU5P	25	8	28,3	52	54	29	108	1,35
GU6P	30	8	33,3	58	61	34	122	1,85

# Precision joint

## Series "E" (DIN 808)

- Wear resistant sliding bushes from cemented and hardened steel.
- Strong, precise, and versatile; wide application field.
- Max. angle: 45° type "E", 90° type "ED". max. speed 1.000 rpm.
- Max. temperature 150 °C
- Standard executions: circular bore  
Special executions on request: bore and keyway, square bore, hexagonal bore



Type	Type	d [mm]	D [mm]	L2 [mm]	L1 [mm]	C [mm]	L4 [mm]	L3 [mm]	a [mm]	b [mm]	Q [mm]	SW [mm]	Weight [kg]	
													E	ED
GU01E	GU01ED	6	16	34	17	8	22	56	2	7	6	6	0,05	0,08
GU02E	GU02ED	8	16	40	20	11	22	62	2	9	8	8	0,05	0,08
GU03E	GU03ED	10	22	48	24	12	26	74	3	11,4	10	10	0,10	0,15
GU04E	GU04ED	12	25	56	28	13	30	86	4	13,8	12	12	0,16	0,25
GU05E	GU05ED	14	28	60	30	14	36	96	5	16,3	14	14	0,20	0,40
GU1E	GU1ED	16	32	68	34	16	36	104	5	18,3	16	16	0,30	0,45
GU2E	GU2ED	18	36	74	37	17	40	114	6	20,8	18	18	0,45	0,70
GU3E	GU3ED	20	42	82	41	18	46	128	6	22,8	20	20	0,60	1,00
GU4E	GU4ED	22	45	95	47,5	22	50	145	6	24,8	22	22	0,95	1,55
GU5E	GU5ED	25	50	108	54	26	55	163	8	28,3	25	25	1,20	2,00
GU6E	GU6ED	30	58	122	61	29	68	190	8	33,3	30	30	1,85	2,90
GU6E1	GU6ED1	32	58	130	65	33	68	198	10	35,3	30	30	2,00	3,00
GU7E	GU7ED	35	70	140	70	35	72	212	10	38,3	••	••	3,15	4,75
GU8E	GU8ED	40	80	160	80	39	85	245	12	43,3	••	••	4,60	7,20
GU9E	GU9ED	50	95	190	95	46	100	290	14	53,8	••	••	7,60	12,00

DIN 808

Type	Type	d [mm]	D [mm]	L2 [mm]	L1 [mm]	C [mm]	L4 [mm]	L3 [mm]	a [mm]	b [mm]	Q [mm]	SW [mm]	Weight [kg]	
													E	ED
GU03EB	GU03EBD	10	16	52	26	15	22	74	3	11,4	8	8	0,05	0,08
GU04EB	GU04EBD	12	22	62	31	18	26	88	4	13,8	10	10	0,12	0,20
GU1EB	GU1EBD	16	25	74	37	21	30	104	5	18,3	12	12	0,20	0,30
GU3EB	GU3EBD	20	32	86	43	24	38	124	6	22,8	16	16	0,35	0,50
GU5EB	GU5EBD	25	42	108	54	31	48	156	8	28,3	20	20	0,80	1,20
GU6EB	GU6EBD	30	50	132	66	38	56	188	8	33,3	25	25	1,20	1,70
GU8EB	GU8EBD	40	70	166	83	47	72	238	12	43,3	••	••	2,90	4,30

DIN 808/7551

•• = upon request

UNIVERSAL JOINT

## Extensible transmissions

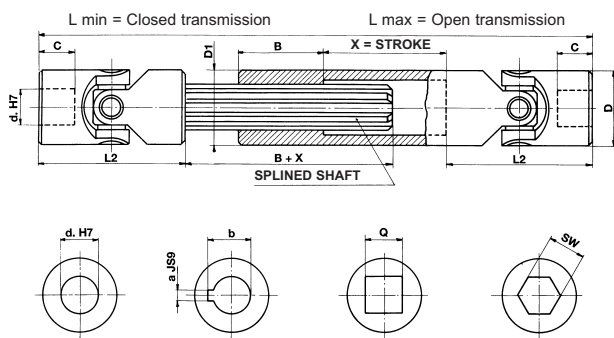
### Series "E" (DIN 808)

- Joints series "E" type "EA" with wear resistant sliding bushes.
- Min. and max. length upon request:

$$L_{MIN} \geq \frac{L_{MAX} + 2 L_2 + B}{2}$$

$$\text{Stroke } X \leq \frac{L_{MAX} - 2 L_2 - B}{2}$$

- Standard executions: bore and keyway on both sides  
Special executions on request: circular bore, square bore, hexagonal bore, custom lengths



Type	d [mm]	D [mm]	L2 [mm]	C [mm]	Lmin [mm]	Lmax [mm]	X [mm]	B [mm]	a [mm]	b [mm]	Q [mm]	SW [mm]	Shaft profile	D1 [mm]	Weight [kg]
GU01EA	6	16	34	8	••	••	••	25	2	7	6	6	SW 8	16	-
GU02EA	8	16	40	11	••	••	••	25	2	9	8	8	SW 8	16	-
GU03EA	10	22	48	12	140	170	30	30	3	11,4	10	10	11 x 14 Z6	22	0,310
					160	200	40								0,360
					180	240	60								0,380
					230	330	100								0,500
GU04EA	12	25	56	13	160	190	30	40	4	13,8	12	12	13 x 16 Z6	26	0,500
					180	225	45								0,560
					200	270	70								0,620
					220	300	80								0,670
					250	355	105								0,760
					280	420	140								0,840
GU05EA	14	28	60	14	170	200	30	40	5	16,3	14	14	13 x 16 Z6	29	0,620
					180	220	40								0,640
					200	260	60								0,720
					220	300	80								0,780
					250	350	100								0,870
					280	420	140								0,960
					300	450	150								1,030
					350	550	200								1,170
					400	650	250								1,330
GU1EA	16	32	68	16	190	220	30	40	5	18,3	16	16	16 x 20 Z6	32	0,900
					210	250	40								0,980
					240	320	80								1,100
					250	350	100								1,140
					275	390	115								1,240
					300	430	130								1,330
					380	590	210								1,600
					400	630	230								1,730

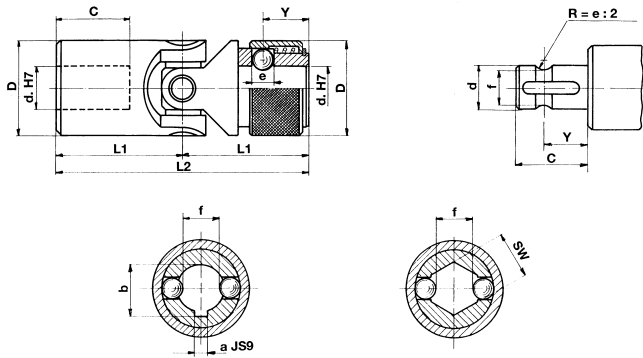
Type	d [mm]	D [mm]	L2 [mm]	C [mm]	Lmin [mm]	Lmax [mm]	X [mm]	B [mm]	a [mm]	b [mm]	Q [mm]	SW [mm]	Shaft profile	D1 [mm]	Weight [kg]
GU2EA	18	36	74	17	230	280	50	40	6	20,8	18	18	18 x 22 Z6	37	1,350
					250	320	70								1,460
					270	370	100								1,550
					290	400	110								1,660
					300	415	115								1,710
					400	620	220								2,230
					500	820	320								2,750
GU3EA	20	42	82	18	250	300	50	45	6	22,8	20	20	21 x 25 Z6	42	1,990
					270	340	70								2,120
					290	380	90								2,250
					320	440	120								2,460
					380	560	180								2,860
					420	640	220								3,130
					500	800	300								3,660
GU4EA	22	45	95	22	250	280	30	45	6	24,8	22	22	23 x 28 Z6	47	2,350
					270	320	50								2,510
					290	350	60								2,670
					330	430	100								3,000
					350	470	120								3,160
					470	710	240								4,130
GU5EA	25	50	108	26	295	345	50	45	8	28,3	25	25	26 x 32 Z6	52	3,390
					310	375	65								3,520
					350	450	100								3,920
					380	500	120								4,200
					420	590	170								4,590
					460	660	200								4,980
					500	745	245								5,370
GU6EA	30	58	122	29	330	380	50	50	8	33,3	30	30	32 x 38 Z8	58	4,900
					350	420	70								5,170
					370	455	85								5,420
					400	510	110								5,850
					450	620	170								6,480
					500	720	220								7,140
					540	795	255								7,690
GU7EA	35	70	140	35	••	••	••	70	10	38,3	••	••	36 x 42 Z8	70	-
GU8EA	40	80	160	39	••	••	••	80	12	43,3	••	••	42 x 48 Z8	80	-
GU9EA	50	95	190	46	••	••	••	90	14	53,8	••	••	46 x 54 Z8	95	-

Type	d [mm]	D [mm]	L2 [mm]	C [mm]	Lmin [mm]	Lmax [mm]	X [mm]	B [mm]	a [mm]	b [mm]	Q [mm]	SW [mm]	Shaft profile	D1 [mm]
GU03EBA	10	16	52	14	••	••	••	25	3	11,4	8	8	SW 8	16
GU04EBA	12	22	62	18	••	••	••	30	4	13,8	10	10	11 x 14 Z6	22
GU1EBA	16	25	74	21	••	••	••	40	5	18,3	12	12	13 x 16 Z6	26
GU3EBA	20	32	86	24	••	••	••	40	6	22,8	16	16	16 x 20 Z6	32
GU5EBA	25	42	108	31	••	••	••	45	8	28,3	20	20	21 x 25 Z6	42
GU6EBA	30	50	132	38	••	••	••	45	8	33,3	25	25	26 x 32 Z6	52
GU8EBA	40	70	166	47	••	••	••	75	12	43,3	••	••	36 x 42 Z8	70

•• = upon request

## Precision joints Series "ER" (sliding bushes)

- Type "ER": max. speed 1.000 rpm.
- Max. angle 45°.
- Executions:
  - quick coupling side: bore and keyway or hexagonal bore
  - other side: circular bore

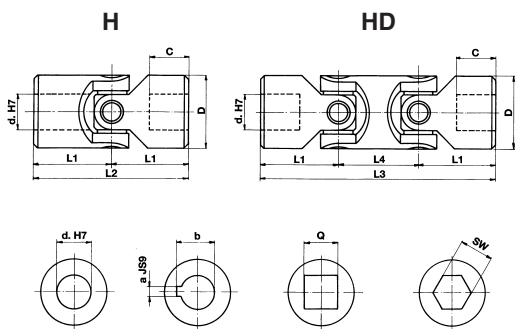


Type	d [mm]	D [mm]	L2 [mm]	L1 [mm]	C [mm]	Y [mm]	e [mm]	f [mm]	a [mm]	b [mm]	SW [mm]
GU02ER	8	16	52	26	14	9,5	3,5	6,3	2	9	8
GU03ER	10	22	62	31	17	11,5	4	8,7	3	11	10
GU04ER	12	25	74	37	21	13,5	4	11	4	13,3	12
GU05ER	14	25	74	37	21	13,5	4	13	5	15,3	14
GU1ER	16	32	86	43	24	14	6,35	14,8	5	17,3	16
GU2ER	18	36	96	48	28	19	8	16	6	19,8	18
GU3ER	20	42	108	54	31	19	8	18	6	22,8	20
GU4ER	22	45	120	60	34	20,5	10	20	6	24,8	22
GU5ER	25	50	132	66	38	20,5	10	23	8	28,3	25
GU6ER	30	58	166	83	49	25	10	28	8	33,3	30

# High speed precision joints with needle roller bearings

## Series “H” (DIN 808)

- Roller bearings lubricated for life. No maintenance required.
- Precise and versatile, silent and smooth running; wide application field.
- Max. angle: 45° type “H”, 90° type “HD”, max. speed 4.000 rpm.
- Standard executions: circular bore  
Special executions on request: bore and keyway, square bore, hexagonal bore



Type	Type	d [mm]	D [mm]	L2 [mm]	L1 [mm]	C [mm]	L4 [mm]	L3 [mm]	a [mm]	b [mm]	Q [mm]	SW [mm]	Weight [kg]	
													H	HD
GU03H	GU03HD	10	22	48	24	12	26	74	3	11,4	10	10	0,10	0,15
GU04H	GU04HD	12	25	56	28	13	30	86	4	13,8	12	12	0,16	0,25
GU05H	GU05HD	14	28	60	30	14	36	96	5	16,3	14	14	0,20	0,40
GU1H	GU1HD	16	32	68	34	16	36	104	5	18,3	16	16	0,30	0,45
GU2H	GU2HD	18	36	74	37	17	40	114	6	20,8	18	18	0,45	0,70
GU3H	GU3HD	20	42	82	41	18	46	128	6	22,8	20	20	0,60	1,00
GU4H	GU4HD	22	45	95	47,5	22	50	145	6	24,8	22	22	0,95	1,55
GU5H	GU5HD	25	50	108	54	26	55	163	8	28,3	25	25	1,20	2,00
GU6H	GU6HD	30	58	122	61	29	68	190	8	33,3	30	30	1,85	2,90
GU6H1	GU6HD1	32	58	130	65	33	68	198	10	35,3	30	30	2,00	3,00
GU7H	GU7HD	35	70	140	70	35	72	212	10	38,3	••	••	3,15	4,75
GU8H	GU8HD	40	80	160	80	39	85	245	12	43,3	••	••	4,60	7,20
GU9H	GU9HD	50	95	190	95	46	100	290	14	53,8	••	••	7,60	12,00

DIN 808

Type	Type	d [mm]	D [mm]	L2 [mm]	L1 [mm]	C [mm]	L4 [mm]	L3 [mm]	a [mm]	b [mm]	Q [mm]	SW [mm]	Weight [kg]	
													HB	HBD
GU04HB	GU04HBD	12	22	62	31	18	26	88	4	13,8	10	10	0,12	0,20
GU1HB	GU1HBD	16	25	74	37	21	30	104	5	18,3	12	12	0,20	0,30
GU3HB	GU3HBD	20	32	86	43	24	38	124	6	22,8	16	16	0,35	0,50
GU5HB	GU5HBD	25	42	108	54	31	48	156	8	28,3	20	20	0,80	1,20
GU6HB	GU6HBD	30	50	132	66	38	56	188	8	33,3	25	25	1,20	1,70
GU8HB	GU8HBD	40	70	166	83	47	72	238	12	43,3	••	••	2,90	4,30

DIN 808/7551

•• = upon request

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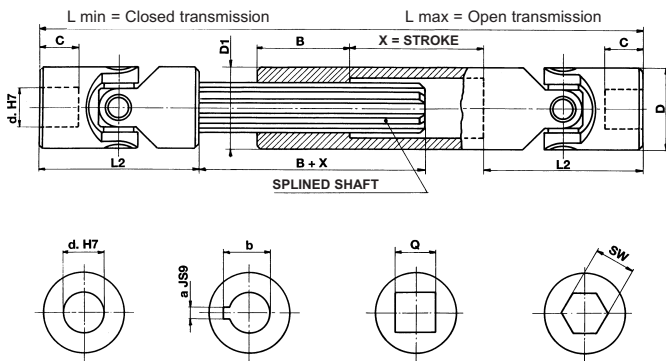
## Extensible transmissions high speed

### Series "H" (DIN 808)

- High speed joints series "H", type "HA", with needle roller bearings.
- Min. and max. length upon request:

$$L_{MIN} \geq \frac{L_{MAX} + 2 L_2 + B}{2} \quad \text{Stroke } X \leq \frac{L_{MAX} - 2 L_2 - B}{2}$$

- Standard executions: bore and keyway on both sides  
Special executions on request: circular bore, square bore, hexagonal bore, custom lengths



Type	d [mm]	D [mm]	L2 [mm]	C [mm]	Lmin [mm]	Lmax [mm]	X [mm]	B [mm]	a [mm]	b [mm]	Q [mm]	SW [mm]	Shaft profile	D1 [mm]	Weight [kg]
GU03HA	10	22	48	12	140	170	30	30	3	11,4	10	10	11 x 14 Z6	22	0,310
					160	200	40								0,360
					180	240	60								0,380
					230	330	100								0,500
GU04HA	12	25	56	13	160	190	30	40	4	13,8	12	12	13 x 16 Z6	26	0,500
					180	225	45								0,560
					200	270	70								0,620
					220	300	80								0,670
					250	355	105								0,760
					280	420	140								0,840
					300	450	150								0,900
GU05HA	14	28	60	14	170	200	30	40	5	16,3	14	14	13 x 16 Z6	29	0,620
					180	220	40								0,640
					200	260	60								0,720
					220	300	80								0,780
					250	350	100								0,870
					280	420	140								0,960
					300	450	150								1,030
					350	550	200								1,170
					400	650	250								1,330
GU1HA	16	32	68	16	190	220	30	40	5	18,3	16	16	16 x 20 Z6	32	0,900
					210	250	40								0,980
					240	320	80								1,100
					250	350	100								1,140
					275	390	115								1,240
					300	430	130								1,330
					380	590	210								1,600
					400	630	230								1,730

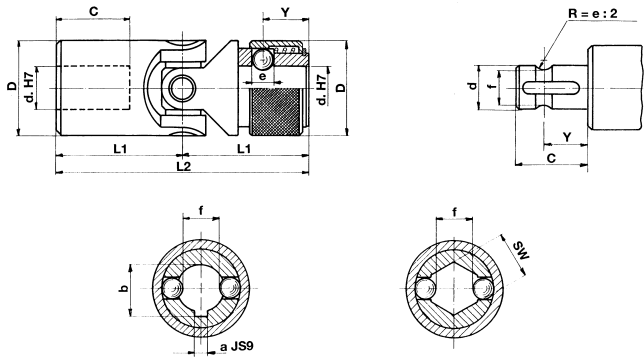
Type	d [mm]	D [mm]	L2 [mm]	C [mm]	Lmin [mm]	Lmax [mm]	X [mm]	B [mm]	a [mm]	b [mm]	Q [mm]	SW [mm]	Shaft profile	D1 [mm]	Weight [kg]
GU2HA	18	36	74	17	230	280	50	40	6	20,8	18	18	18 x 22 Z6	37	1,350
					250	320	70								1,460
					270	370	100								1,550
					290	400	110								1,660
					300	415	115								1,710
					400	620	220								2,230
					500	820	320								2,750
GU3HA	20	42	82	18	250	300	50	45	6	22,8	20	20	21 x 25 Z6	42	1,990
					270	340	70								2,120
					290	380	90								2,250
					320	440	120								2,460
					380	560	180								2,860
					420	640	220								3,130
					500	800	300								3,660
GU4HA	22	45	95	22	250	280	30	45	6	24,8	22	22	23 x 28 Z6	47	2,350
					270	320	50								2,510
					290	350	60								2,670
					330	430	100								3,000
					350	470	120								3,160
					470	710	240								4,130
					GU5HA	25	50								108
310	375	65	3,520												
350	450	100	3,920												
380	500	120	4,200												
420	590	170	4,590												
460	660	200	4,980												
500	745	245	5,370												
GU6HA	30	58	122	29	330	380	50	50	8	33,3	30	30	32 x 38 Z8	58	4,900
					350	420	70								5,170
					370	455	85								5,420
					400	510	110								5,850
					450	620	170								6,480
					500	720	220								7,140
					540	795	255								7,690
GU7HA	35	70	140	35	••	••	••	70	10	38,3	••	••	36 x 42 Z8	70	-
GU8HA	40	80	160	40	••	••	••	80	12	43,3	••	••	42 x 48 Z8	80	-
GU9HA	50	95	190	50	••	••	••	90	14	53,8	••	••	46 x 54 Z8	95	-

Type	d [mm]	D [mm]	L2 [mm]	C [mm]	Lmin [mm]	Lmax [mm]	X [mm]	B [mm]	a [mm]	b [mm]	Q [mm]	SW [mm]	Shaft profile	D1 [mm]
GU04HBA	12	22	62	18	••	••	••	30	4	13,8	10	10	11 x 14 Z6	22
GU1HBA	16	25	74	21	••	••	••	40	5	18,3	12	12	13 x 16 Z6	26
GU3HBA	20	32	86	24	••	••	••	40	6	22,8	16	16	16 x 20 Z6	32
GU5HBA	25	42	108	31	••	••	••	45	8	28,3	20	20	21 x 25 Z6	42
GU6HBA	30	50	132	38	••	••	••	45	8	33,3	25	25	26 x 32 Z6	52
GU8HBA	40	70	166	47	••	••	••	70	12	43,3	••	••	36 x 42 Z8	70

•• = upon request

## Precision joints Series "HR" (needle roller bearings)

- Type "ER": max. speed 4.000 rpm.
- Max. angle 45°.
- Executions:
  - quick coupling side: bore and keyway or hexagonal bore
  - other side: circular bore

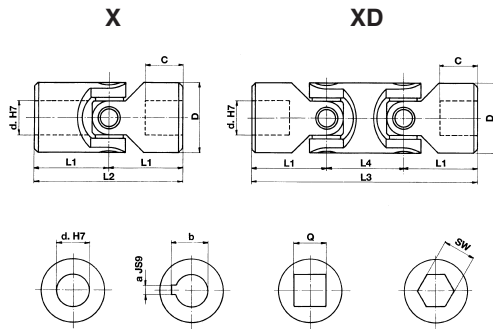


Type	d [mm]	D [mm]	L2 [mm]	L1 [mm]	C [mm]	Y [mm]	e [mm]	f [mm]	a [mm]	b [mm]	SW [mm]
GU03HR	10	22	62	31	17	11,5	4	8,7	3	11	10
GU04HR	12	25	74	37	21	13,5	4	11	4	13,3	12
GU05HR	14	25	74	37	21	13,5	4	13	5	15,3	14
GU1HR	16	32	86	43	24	14	6,35	14,8	5	17,3	16
GU2HR	18	36	96	48	28	19	8	16	6	19,8	18
GU3HR	20	42	108	54	31	19	8	18	6	22,8	20
GU4HR	22	45	120	60	34	20,5	10	20	6	24,8	22
GU5HR	25	50	132	66	38	20,5	10	23	8	28,3	25
GU6HR	30	58	166	83	49	25	10	28	8	33,3	30

# Stainless steel joints

## Series "X" (DIN 808)

- Max. speed 250 rpm.
- Max. angle: 45° type "X", 90° type "XD".
- Max. temperature 200 °C
- Standard executions: circular bore  
Special executions on request: bore and keyway, square bore, hexagonal bore



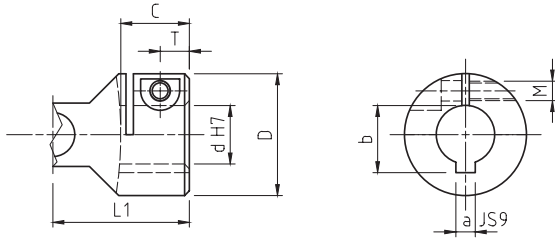
Type	Type	d [mm]	D [mm]	L2 [mm]	L1 [mm]	C [mm]	L4 [mm]	L3 [mm]	a* [mm]	b* [mm]	Q* [mm]	SW* [mm]	Weight [kg]	
													X	XD
GU01X	GU01XD	6	16	34	17	8	22	56	2	7	6	6	0,05	0,08
GU02X	GU02XD	8	16	40	20	11	22	62	2	9	8	8	0,05	0,08
GU03X	GU03XD	10	22	48	24	12	26	74	3	11,4	10	10	0,10	0,15
GU04X	GU04XD	12	25	56	28	13	30	86	4	13,8	12	12	0,16	0,25
GU1X	GU1XD	16	32	68	34	16	36	104	5	18,3	16	16	0,30	0,45
GU3X	GU3XD	20	42	82	41	18	46	128	6	22,8	20	20	0,60	1,00
GU5X	GU5XD	25	50	108	54	26	55	163	8	28,3	25	25	1,20	2,00
GU6X	GU6XD	30	58	122	61	29	68	190	8	33,3	30	30	1,85	2,90

\* = check availability

## Special joints with clamping hubs

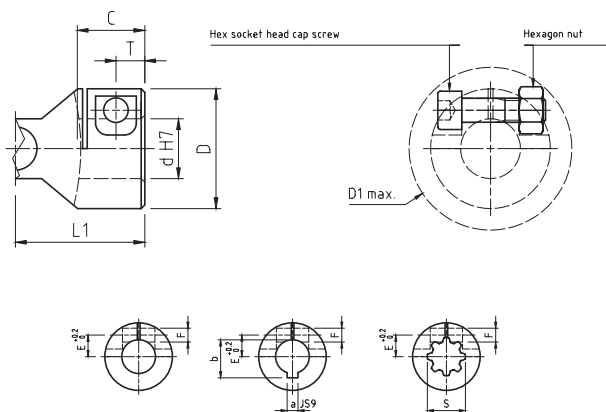
- Suitable for quick and easy connections
- Suitable for single, double and extensible joints
- With seat for the lock nut (type 2)
- Special executions on request

**Type 1**



Special Code	d [mm]	D [mm]	L1 [mm]	C [mm]	a [mm]	b [mm]	M [mm]	T [mm]	*Ta [Nm]
03CL1	10	22	24	12	3	11,4	M4	5	5
04CL1	12	25	28	13	4	13,8	M4	6	5
05CL1	14	28	30	14	5	16,3	M4	6	5
1CL1	16	32	34	16	5	18,3	M5	7	9
2CL1	18	36	37	17	6	20,8	M5	7	9
3CL1	20	42	41	18	6	22,8	M6	8	16
4CL1	22	45	47,5	22	6	24,8	M6	8	16
5CL1	25	50	54	26	8	28,3	M6	9,5	16
6CL1	30	58	61	29	8	33,3	M8	11	36
7CL1	35	70	70	35	10	38,3	M8	13	36
8CL1	40	80	80	39	12	43,3	M10	14	65
9CL1	50	95	95	46	14	53,8	M12	17,5	100

\*Ta = maximum torque screws



**Type 2: clamping hub + lock nut seat**

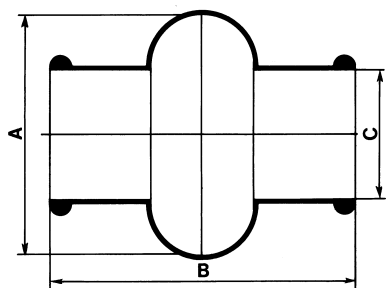


Special Code	d [mm]	D [mm]	L1 [mm]	C [mm]	a [mm]	b [mm]	F [mm]	T [mm]	E [mm]	J [mm]	R [mm]	Y [mm]	*Ta [Nm]	S DIN 5482
1CL2	16	32	43	24	5	18,3	Ø 5,2	7.5	8	13,4	3	4.5	M5= 9	17x14 Z9
2CL2	18	36	37	17	6	20,8	Ø 5,2	7.5	9	15,4	3	4.5	M5= 9	18x15 Z10
3CL2	20	42	41	18	6	22,8	Ø 5,2	8	10	17,5	3	5	M5= 9	20x17 Z12
5CL2	25	50	54	26	8	28,3	Ø 6,2	9.5	12,5	21,9	3,5	6.1	M6= 16	25x22 Z14

\*Ta = maximum torque screws

## Protection muffs Series “M”

- Special neoprene rubber.
- Resistant to acids, oils, grease, dust and moisture.
- Filled with grease to ensure constant lubrication.



Type	A [mm]	B [mm]	C [mm]	Joint external diameter D [mm]
GMU01M	28	34	15	16
GMU02M	32	40	16,5	18
GMU03M	40	45	20,5	22
GMU04M	48	50	24,5	25/26
GMU05M	52	56	27,5	28/29
GMU1M	56	65	30,5	32
GMU2M	66	72	35,5	36/37
GMU3M	75	82	40	42
GMU4M	84	95	45	45/47
GMU5M	92	108	50	50/52
GMU6M	100	122	56	58

## Selecting criteria

Matching one single joint with two shafts (of which the driving one is rotating at a constant speed), it forms an angle which causes a periodic variation of the driven shaft, exactly four fluctuations per revolution.

The difference between the maximum and the minimum speed of the driven shaft depends on the angle formed by the two shafts. The difference grows when increasing of the angle  $\alpha$ .

To have a homokinetic transmission, you have to fit either two opposite single joints (paying attention that the two central yokes lie on the same plane and the angles are equal) or a double joint. The irregularity caused by the former articulation is cancelled by the latter. The overall length resulting from the coupling of the two single joints is even more reduced using a double joint. In other words, the double joint is to be considered the shortest homokinetic transmission.

For low speed applications (max 1.000 rpm) joint with plain bearings (rubbing bearings) are suggested: types E/EB. They are able to support shock loads, drive reserves, irregular runnings and relatively high torques. The working angles must be reduced in operation between 500 and 1.000 rpm.

For high rotation speeds, relatively low torques or wide angles, joints with needle roller bearings (type V - H) are preferred. They can reach 5.000 rpm always relating to the angle.

### How to read diagrams

The joint capacity to transmit a regular torque at a constant load with no shocks for a more or less long period, mainly depends on the number of revolutions per minute and the inclination angle  $\alpha$  of the two axes.

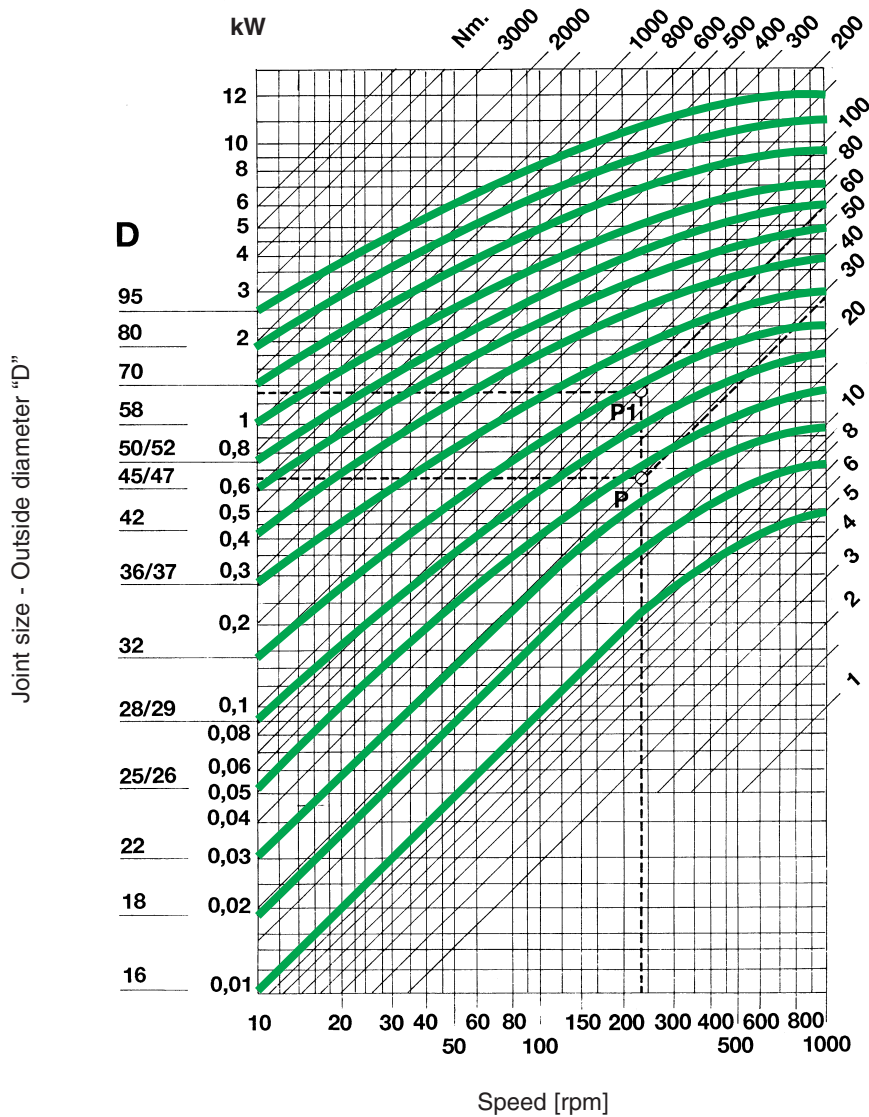
The following diagrams are based upon the criteria below. Each curve corresponds to the joint size (outside diameter D) and represents the torque that the joint can transmit depending upon speed and working angle  $\alpha$ .

The diagrams can be directly read if angle  $\alpha$  is 10°; for wider angles, torques are reduced, therefore the values are to be corrected using correction factors (F) relating to the angle shown in the table.

### Note:

Diagrams' values are merely indicative. Each application has its own particular motion characteristics, such as: shock loads, motion reversals, connected masses, type of starting, presence of elastic joints, stops and starts, etc. We, therefore, suggest calling our technical department.

# Diagram for joints Series "E"



Torque  $M_T$  in [Nm]

WORKING ANGLE "α"	5°	10°	15°	20°	25°	30°	35°	40°	45°
CORRECTION FACTOR "F"	1,25	1,00	0,80	0,65	0,55	0,45	0,38	0,30	0,25

### Example

- Power: 0,65 kW
- rpm: 230 min<sup>-1</sup>
- With working angle  $\alpha = 10^\circ$ , Factor  $F = 1,00$  ( 0,65 kW : 1,00 = 0,65 kW) we get point P and Torque  $M_T = 27$  Nm corresponding to joint size  $D = 25/26$  mm (type 04E, 1EB )
- With working angle  $\alpha = 30^\circ$ , Factor  $F = 0,45$  (0,65 kW : 0,45 = 1,44 kW) we get point P1 and Torque  $M_T = 60$  Nm corresponding to joint size  $D = 32$  mm (type 1E, 3EB).

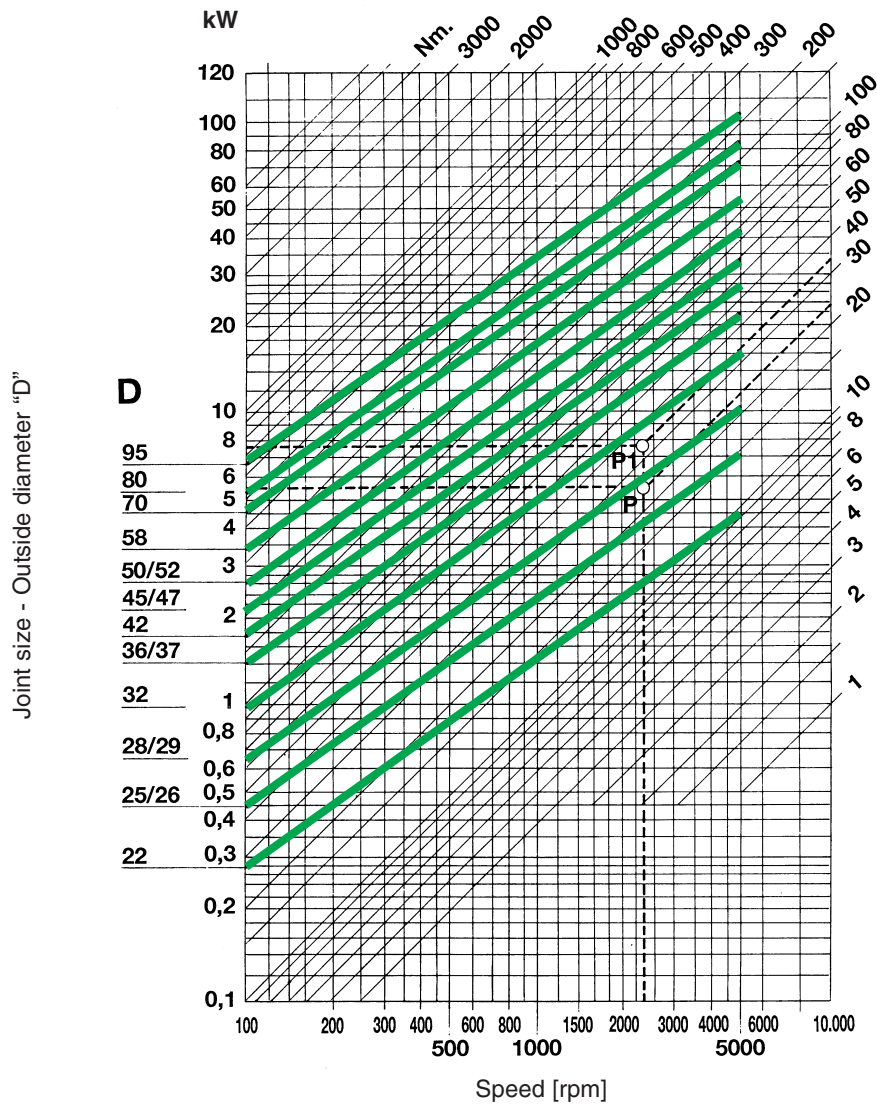
Consider that:

$$M_T = 9.550 \times \frac{\text{Power [kW]}}{\text{rpm [min}^{-1}\text{]}} \quad [\text{Nm}]$$

$$M_T = 7.020 \times \frac{\text{Power [CV]}}{\text{rpm [min}^{-1}\text{]}} \quad [\text{Nm}]$$



# Diagram for joints Series "H" - High Speed



Torque  $M_T$  in [Nm]

WORKING ANGLE "α"	5°	10°	15°	20°	25°	30°	35°	40°	45°
CORRECTION FACTOR "F"	1,25	1,00	0,90	0,80	0,70	0,50	0,40	0,30	0,25

### Example

- Power: 5,5 kW
- rpm: 2300 min<sup>-1</sup>
- With working angle  $\alpha = 10^\circ$ , Factor  $F = 1,00$  (5,5 kW : 1,00 = 5,5 kW) we get point P and Torque  $M_T = 23$  Nm corresponding to joint size  $D = 28/29$  mm (type 05H, 1HB)
- With working angle  $\alpha = 25^\circ$ , Factor  $F = 0,70$  (5,5 kW : 0,70 = 7,85 kW) we get point P1 and Torque  $M_T = 33$  Nm corresponding to joint size  $D = 32$  mm (type 1H, 3HB).

Consider that:

$$M_T = 9.550 \times \frac{\text{Power [kW]}}{\text{rpm [min}^{-1}\text{]}} \quad [\text{Nm}]$$

$$M_T = 7.020 \times \frac{\text{Power [CV]}}{\text{rpm [min}^{-1}\text{]}} \quad [\text{Nm}]$$

## Instructions for a correct fitting

Fig. 1

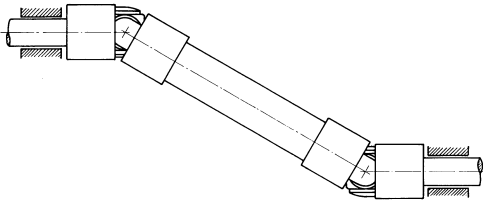
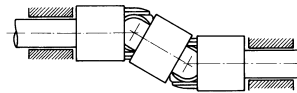


Fig. 2



To obtain a uniform rotary motion, always use two opposite single joints or one double joint. The pillow blocks must be positioned as close as possible to the joints (see Picture 1 and 2).

Fig. 3

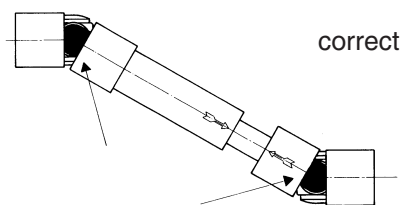
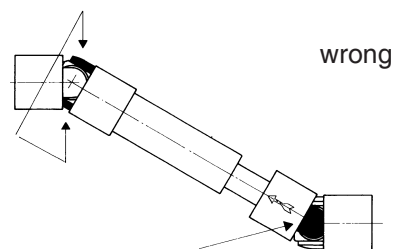


Fig. 4



When using two opposite single joints, respect the alignment of the inside yokes. In extensible transmissions also pay attention to the arrows stamped tally (see Picture 3 CORRECT, Picture 4 WRONG).

Fig. 5

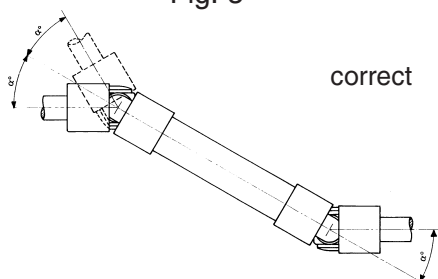
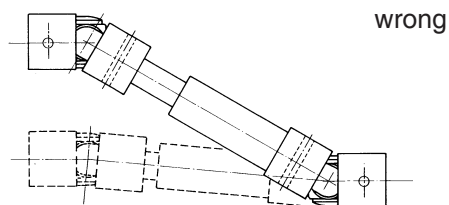


Fig. 6



The joints angle  $\alpha$  must be equal (see Picture 5). The shafts can be moved one from the other either parallel or symmetrically. Pin holes must not be executed over the yokes to avoid damage (see Picture 6).