

# Backlash-free Servo-insert Couplings

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GERWAH



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# GERWAH The Company

GERWAH GmbH was founded in 1980. The idea of new, innovative products has made GERWAH a recognized partner in the machine tool industry. We are a dynamic, spirited and fast growing company with clear goals and open mind that is reflected in the architecture of our new headquarters.

## Our Goals

- To add value for our customers by providing innovative product solutions
- To develop solutions in cooperation with our customers
- Satisfied customers

## Our Advantages

- Know-how, innovative designs and cutting edge manufacturing plants
- Customer oriented employees
- Technical assistance and service, both locally and internationally
- Qualified sales force
- Economic stability
- Worldwide presence with subsidiaries and dealers



*Our new headquarters in Grosswallstadt, Germany*



**GERWAH - You Can Rely On Us!**

*We are certified according to DIN EN ISO 9001:2000 (Cert.-No. 0063-D)*

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# Backlash-free Servo-insert Couplings Product Range

## Special Features

- Backlash free
- Simple, plug-in mounting
- Vibration damping
- Compensation of radial, axial and angular misalignment

- Transmission of torque values between 0.5 and 650 Nm

## Common Applications

- Encoder
- Precision drives
- Feed drives

- Grinding and milling spindles
- Machine tools
- Packaging machines
- Industrial robots
- Transfer lines
- Multi-spindle heads

- Wood processing equipment
- Textile machinery
- Conveying equipment
- Linear motion
- Measuring equipment and controls
- Test rigs

EK/GS miniature



Miniature Servo-insert Coupling with set screw style hubs

**Technical Data Page 4**

Servo-insert Coupling with shrink disc style hubs

**Technical Data Page 8**

ASS/A



DK/GS



Servo-insert Coupling with clamping style hubs and single slit

**Technical Data Page 5**

High Speed Servo-insert Coupling with shrink disc style hubs for short spindles acc. to DIN 69002

**Technical Data Page 9**

ASS/A-P



ADS



Servo-insert Coupling with clamping style hubs and dual slits

**Technical Data Page 6**

Combination Servo-insert Coupling and zero backlash torque limiter

**Technical Data Page 10**

DMK/EKn-Kn



ADS/R



Servo-insert Coupling – interchangeable with competitor's

**Technical Data Page 7**

Combination Servo-insert Coupling and zero backlash ball detent torque limiter

**Technical Data Page 11**

DMK/EKn-Ki



**Technical information Page 12**

**Checklist for ordering Page 15**

The information in this catalogue contains product descriptions and does not constitute any specific promises. The user must define

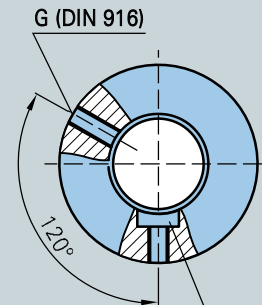
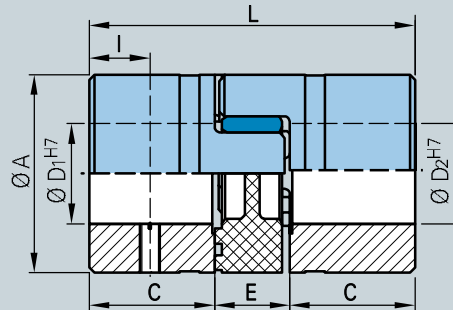
and check the technical features for use in each specific application. All data is subject to change without notice.

Only individual agreements are binding for products supplied. Zero backlash torque limiters are critical components in potentially

dangerous areas and need to be protected against unintended contacts during operation.

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# Backlash-free Servo-insert Coupling Type EK/GS



keyway acc. DIN 6885-1 optionally

## Technical data series EK/GS

Type			5	7	9	14	19	24
Nominal torque	(Nm)	TKN (92ShA)	0,5	1,2	3,0	7,5	10	35
Moment of inertia of coupling	(10 <sup>-6</sup> kgm <sup>2</sup> )	J <sup>1)</sup>	0,034	0,196	1,08	5,7	36	162
Tightening torque of screws	(Nm)	MA	1,3	1,3	3	10	10	10
Weight per hub	(app. g)	m	0,9	2,6	7,3	18	70	160
Max. speed	(rpm)	n <sub>max</sub>	47500	34000	24000	16000	12000	8500
Standard shore hardness			92 SH A (yellow)					

## Dimensions (mm) series EK/GS

Type		5	7	9	14	19	24
L		15	22	30	35	66	78
A		10	14	20	30	40	55
C		5	7	10	11	25	30
Ø D <sub>1</sub> <sup>H7</sup> / Ø D <sub>2</sub> <sup>H7</sup>	min. - max.	2-5	3-7	4-11	4-16	6-24	8-28
E		5	8	10	13	16	18
I		2,5	2,5	5	5	10	10
G (DIN 916)		1xM	1xM	2xM	2xM	2xM	2xM
Hub material		aluminium alloy					

## Bore range D1/D2 and corresponding transmissible torque values (Nm) of the coupling

Type	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8	Ø 9	Ø 10	Ø 11	Ø 12	Ø 13	Ø 14	Ø 15	Ø 16	Ø 17	Ø 18	Ø 20	Ø 24	Ø 28
5	0,1	0,4	0,5	0,5																
7		0,4	1	1,2	1,2	1,2														
9			1	2	3	3	3	3	3	3										
14			1	2	3,6	6	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5						
19					3,6	6	9	10	10	10	10	10	10	10	10	10	10	10	10	
24							9	12	17	22	29	35	35	35	35	35	35	35	35	35

<sup>1)</sup> Moment of inertia and weight (mass) are calculated with reference to the largest bore size.

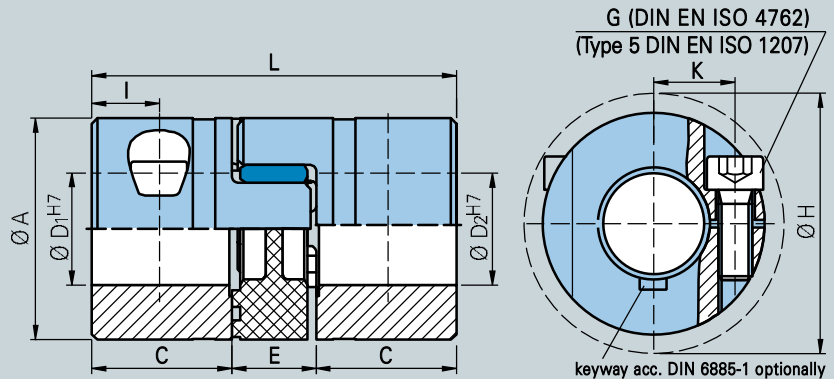
## Ordering data

<b>EK/GS 14</b>	-	<b>10<sup>H7</sup></b>	-	<b>14<sup>H7</sup></b>	-	<b>xxxxx</b>
Type						
Bore size D1						
Bore size D2						
Additional details, e.g. different shore hardness (p. 14), keyway						

- Compact design
- Economically priced
- Axial assembly
- Vibration damping
- Electrically isolating

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# Backlash-free Servo-insert Coupling Type DK/GS



## Technical data series DK/GS

Type			5	7	9	14	19
Nominal torque	(Nm)	T <sub>KN</sub> (92ShA)	0,5	1,2	3,0	7,5	10
Moment of inertia of coupling	(10 <sup>-6</sup> kgm <sup>2</sup> )	J <sup>1)</sup>	0,034	0,196	1,08	5,7	36
Tightening torque of screws	(Nm)	MA	0,25	0,35	0,75	5	10
Weight per hub	(app. g)	m	0,9	2,6	7,3	18	70
Max. speed	(rpm)	n <sub>max</sub>	38000	27000	19000	13000	10000
Standard shore hardness			92 SH A (yellow)				

## Dimensions (mm) series DK/GS

Type		5	7	9	14	19
L		15	22	30	35	66
A		10	14	20	30	40
C		5	7	10	11	25
Ø D <sub>1</sub> <sup>H7</sup> / Ø D <sub>2</sub> <sup>H7</sup>	min. - max.	2-4	3-7	4-11	9-14	10-20
K		3,2	5	7,3	10,5	15
E		5	8	10	13	16
I		2,5	3,5	5	5	6
G (DIN EN ISO 4762)		M1,6	M2	M2,5	M4	M5
H (clearance diameter)		11,5	16,5	23,5	34	45
Hub material		aluminium alloy				

## Bore range D1/D2 and corresponding transmissible torque values (Nm) of the coupling

Type	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8	Ø 9	Ø 10	Ø 11	Ø 12	Ø 13	Ø 14	Ø 15	Ø 16	Ø 17	Ø 18	Ø 20
5	0,1	0,4	0,5															
7		0,4	0,9	0,95	1	1,1												
9			1	2	2,3	2,4	2,5	2,6	2,7	2,8								
14								7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5			
19									10	10	10	10	10	10	10	10	10	10

<sup>1)</sup> Moment of inertia and weight (mass) are calculated with reference to the largest bore size.

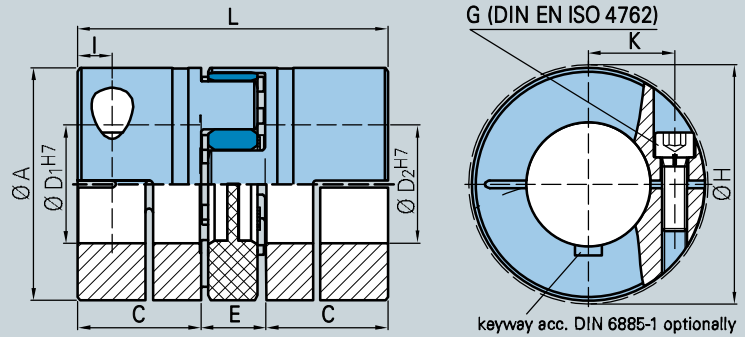
## Ordering data

<b>DK/GS 9</b>	-	<b>4H7</b>	-	<b>10H7</b>	-	<b>xxxxx</b>
Type						
Bore size D <sub>1</sub>						
Bore Size D <sub>2</sub>						
Additional details, e.g. different shore hardness (p.14), keyway						

- Economical hub design
- Installation-friendly
- Electrically isolating
- Vibration damping
- Fail-safe design

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# Backlash-free Servo-insert Coupling Type ADS



## Technical data series ADS

Type		14	19	24	28	38	42	48
Nominal torque (Nm)	TKN (98ShA)	12,5	17	60	160	325	450	525
Moment of inertia of coupling (10 <sup>-6</sup> kgm <sup>2</sup> )	J <sup>1)</sup>	0,0057	0,036	0,15	0,33	1,04	6,1	14,6
Tightening torque of screws (Nm)	MA	5	10	18	43	84	84	145
Weight per hub (app. kg)	m	0,018	0,07	0,15	0,24	0,45	2,06	2,6
Max. speed (rpm)	n <sub>max</sub>	13000	10000	7000	6000	5000	4000	3600
Standard shore hardness		98 SH A (red)						

## Dimensions (mm) series ADS

Type		14	19	24	28	38	42	48	
L		35	66	78	90	114	126	140	
A		30	40	55	65	80	95	105	
C		11	25	30	35	45	50	56	
Ø D <sub>1</sub> <sup>H7</sup> / Ø D <sub>2</sub> <sup>H7</sup>	min. - max.	10-14	10-20	20-28	24-38	32-44	35-50	40-60	
K		10,5	15	20	24	30	35	40	
E		13	16	18	20	24	26	28	
l		5	6	10	11	13	14	15	
G (DIN EN ISO 4762)		M4	M5	M6	M8	M10	M10	M12	
H (clearance diameter)		34	45	57	70	89	96	110	
Hub material		aluminium alloy					steel		

## Bore range D1/D2 and corresponding transmissible torque values (Nm) of the coupling

Type	Ø 10	Ø 11	Ø 13	Ø 14	Ø 16	Ø 18	Ø 19	Ø 20	Ø 24	Ø 25	Ø 28	Ø 30	Ø 32	Ø 35	Ø 38	Ø 40	Ø 42	Ø 44	Ø 48	Ø 50	Ø 60
14	12,5	12,5	12,5	12,5																	
19	17	17	17	17	17	17	17	17													
24								60	60	60	60										
28									160	160	160	160									
38													325	325	325	325	325	325			
42														415	427	435	443	450	450	450	
48																525	525	525	525	525	525

<sup>1)</sup> The moment of inertia and the weight (mass) are calculated with reference to the largest bore size.

## Ordering data

**ADS 42** - **40H7** - **44H7** - **xxxxx**

Type

Bore size D<sub>1</sub>

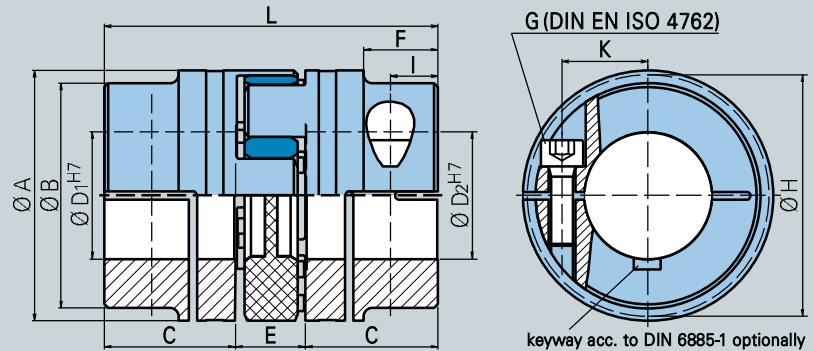
Bore size D<sub>2</sub>

Additional details, e.g. different shore hardness (p.14), keyway

- Clamping hub for higher torque capacity
- Simple assembly
- Vibration damping
- Electrically isolating

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# Backlash-free Servo-insert Coupling Type ADS/R



## Technical data series ADS/R

Type			14	19	24	28	38	42	48
Nominal torque (Nm)	TKN (98ShA)		12,5	17	60	160	325	450	525
Moment of inertia of coupling (10 <sup>-6</sup> kgm <sup>2</sup> )	J <sup>1)</sup>		0,0057	0,036	0,15	0,33	0,96	4,92	8,26
Tightening torque of screws (Nm)	MA		1,5	11	11	25	25	69	120
Weight per hub (app. kg)	m		0,018	0,07	0,15	0,22	0,45	1,78	2,4
Max. speed (rpm)	n <sub>max</sub>		13000	10000	7000	6000	5000	4000	3600
Standard shore hardness			98 SH A (red)						

## Dimensions (mm) series ADS/R

Type		14	19	24	28	38	42	48	
L		35	66	78	90	114	126	140	
A		30	40	55	65	80	95	105	
B		only for sizes 42 and 48						85	95
C		11	25	30	35	45	50	56	
Ø D <sub>1</sub> <sup>H7</sup> / Ø D <sub>2</sub> <sup>H7</sup>	min. - max.	5-16	8-20	10-28	14-38	15-45	20-48	25-55	
F		only for sizes 42 and 48						28	32
K		11	14,5	20	24,5	30	32,5	36	
E		13	16	18	20	24	26	28	
I		5	12	10,5	11,5	15,5	18	21	
G (DIN EN ISO 4762)		M3	M6	M6	M8	M8	M10	M12	
H (clearance diameter)		32,2	46	57	71	83	91	104,5	
Hub material		aluminium alloy						steel	

## Bore range D1/D2 and corresponding transmissible torque values (Nm) of the coupling

Type	Ø11	Ø14	Ø16	Ø18	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55
14	5,6	6,1	6,5																
19	17	17	17	17	17	17													
24	22	45	47	49	50	51	54	55	57										
28		46	68	97	98	100	105	107	111	114	117	121	126						
38			68	99	114	116	121	123	127	130	133	137	141	144	147	152			
42						134	230	261	301	308	314	324	333	340	346	356	366		
48								261	366	450	494	508	522	525	525	525	525	525	525

<sup>1)</sup> Moment of inertia and weight (mass) are calculated with reference to the largest bore size.  
Hub design: up to size 19 one slit, from size 24 up two slits.

## Ordering data

**ADS/R 42** - **20<sup>H7</sup>** - **25<sup>H7</sup>** - **xxxxx**

Type

Bore size D<sub>1</sub>

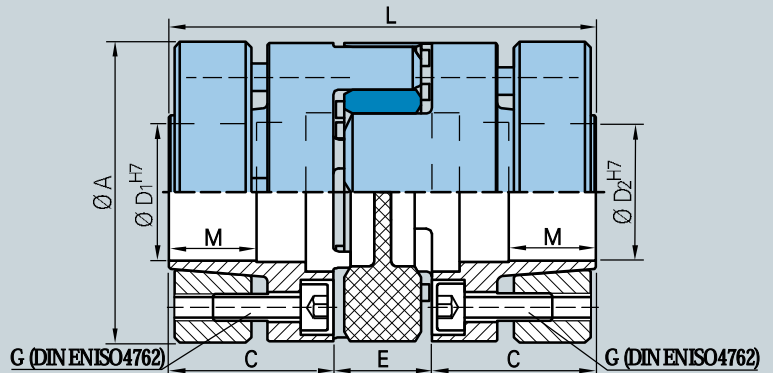
Bore size D<sub>2</sub>

Additional details, e.g. different shore hardness (p.14), keyway

- Dimensionally equivalent to competitor's type

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# Backlash-free Servo-insert Coupling Type ASS/A



## Technical data series ASS/A

Type	14	19	24	28	38	42	48
Nominal torque (Nm) T <sub>KN</sub> (98ShA)	12,5	17	60	160	325	450	525
Moment of inertia of coupling (10 <sup>-6</sup> kgm <sup>2</sup> ) J <sup>1)</sup>	0,014	0,063	0,26	0,63	1,96	6,43	10,54
Tightening torque of screws (Nm) M <sub>A</sub>	1,8	3	6	6	10	35	69
Weight per hub (app. kg) m	0,049	0,12	0,28	0,45	0,95	2,3	3,08
Max. speed (rpm) n <sub>max</sub>	25400	19000	13800	11700	9550	8050	7200
Standard shore hardness	98 SH A (red)						

## Dimensions (mm) series ASS/A

Type	14	19	24	28	38	42	48
L	50	66	78	90	114	126	140
A	32	40	55	65	80	95	105
C	18,5	25	30	35	45	50	56
Ø D <sub>1</sub> <sup>H7</sup> / Ø D <sub>2</sub> <sup>H7</sup> min. - max.	6-14	10-20	11-25	15-36	20-41	27-50	30-55
E	13	16	18	20	24	26	28
G (DIN EN ISO 4762)	4xM	6xM4	4xM5	8xM5	8xM6	4xM8	4xM10
M	3	14	16	21	28	28	30
Hub material	aluminium alloy					steel	

## Bore range D1/D2 and corresponding transmissible torque values (Nm) of the coupling

Type	Ø6	Ø10	Ø11	Ø13	Ø14	Ø15	Ø17	Ø19	Ø20	Ø24	Ø25	Ø27	Ø30	Ø32	Ø36	Ø38	Ø41	Ø42	Ø44	Ø48	Ø50	Ø55
14	3,6	12,5	12,5	12,5	12,5																	
19		17	17	17	17	17	17	17	17													
24			22	37	46	56	60	60	60	60	60											
28						56	68	114	134	160	160	160	160	160								
38									134	230	261	325	325	325	325	325	325					
42												329	450	450	450	450	450	450	450	450	450	450
48													450	525	525	525	525	525	525	525	525	525

<sup>1)</sup> Moment of inertia and weight (mass) are calculated with reference to the largest bore size.

## Ordering data

**ASS/A 42** - **32<sup>H7</sup>** - **41<sup>H7</sup>** - **xxxxx**

Type

Bore size D<sub>1</sub>

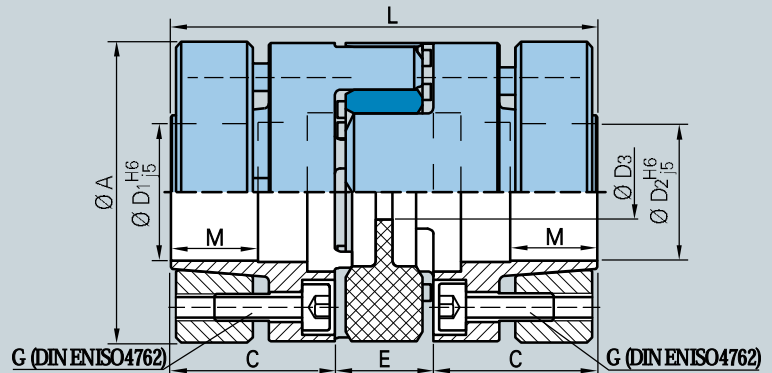
Bore size D<sub>2</sub>

Additional details, e.g. different shore hardness (p.14)

- Very high torque transmission
- Well suited for alternating loads
- Vibration damping
- Easy to install
- Electrically isolating

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# Backlash-free Servo-insert Coupling Type ASS/A-P



## Technical data series ASS/A-P

Type		14	19	24	28	38	42	48
Nominal torque (Nm)	TKN (98ShA)	12,5	17	60	160	325	450	525
Moment of inertia of coupling (10 <sup>-6</sup> kgm <sup>2</sup> )	J <sup>1</sup>	0,022	0,092	0,41	0,87	2,7	6,5	10,6
Tightening torque of screws (Nm)	MA	1,9	3	8,5	8,5	14	35	69
Weight per hub (app. kg)	m	0,08	0,19	0,44	0,64	1,32	2,23	3,09
Max. speed (rpm)	n <sub>max</sub>	31800	23800	17300	14700	11900	10000	9100
Standard shore hardness		98 SH A (red)						

## Dimensions (mm) series ASS/A-P

Type	14	19	24	28	38	42	48
L	50	66	78	90	114	126	140
A	32	40	55	65	80	95	105
C	18,5	25	30	35	45	50	56
Ø D <sub>1</sub> <sup>H6</sup> / Ø D <sub>2</sub> <sup>H6</sup>	14	19	25	35	40	42	45
Ø D <sub>3</sub>	8,5	9,5	12,5	14,5	16,5	18,5	20,5
E	13	16	18	20	24	26	28
G (DIN EN ISO 4762)	4xM3	6xM4	4xM5	8xM5	8xM6	4xM8	4xM10
M	11	14	16	21	28	28	30
Hub material	steel						

## Transmissible torque capacity of the coupling (Nm)

Type	Ø14	Ø19	Ø25	Ø35	Ø40	Ø42	Ø45
14	12,5						
19		17					
24			60				
28				160			
38					325		
42						450	
48							525

Clamping hub material: alloy steel  
 Push-off threads between the locking screws for size G  
 Dynamically balanced to G 6.3 specification according to ISO 1940-1.

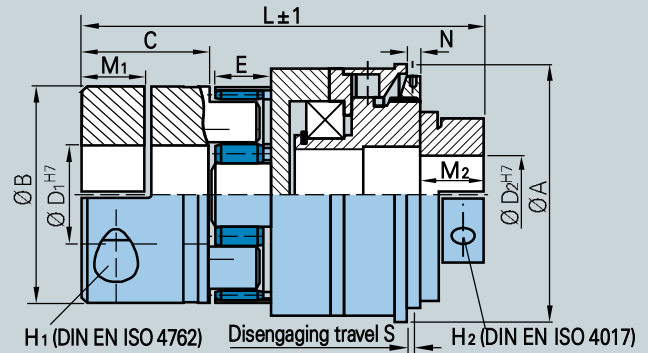
## Ordering data

<b>ASS/A-P 42</b>	-	<b>42<sup>H6</sup></b>	-	<b>42<sup>H6</sup></b>	-	<b>xxxxx</b>
Type						
Bore size D <sub>1</sub>						
Bore size D <sub>2</sub>						
Additional details, e.g. different shore hardness (p.14)						

- Extreme precision
- High torque transmission
- Very quiet running condition
- Easy to install
- Vibration damping

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# Backlash-free Safety Coupling Type DMK/EKn-Kn



## Technical data series DMK/EKn-Kn

Type		30	60	150	300	500
Disengaging torque (Nm)	TKN version a	5-20	12-5	25-75	30-140	14-350
torque adjustment range	TKN version b	15-35	20-70	65-150	100-300	250-500
Moment of inertia (10 <sup>-3</sup> kgm <sup>2</sup> )	J hub side	0,1	0,32	0,8	3	5
	J elastomer side	0,036	0,15	0,33	1,04	3,1
Weight (appr. kg)	m	0,5	1,4	2,8	4,6	7,5
Tightening torque of clamping screw (Nm) MA	H1	15	40	60/55	110/80	145
	H2	15	40	60/55	110/80	145
Max. rotational speed (rpm)	n <sub>max</sub>	8950	7000	6000	5000	3600
Disengaging travel (mm)	S	1,2	1,2	2	2	2
Standard shore hardness of spider		98 SH A (rot) - (other shore hardnesses available)				

## Dimensions (mm) series DMK/EKn-Kn

Type		30	60	150	300	500
A		65	75	95	115	129
B		40	55	65	80	105
C		25	30	35	45	56
D <sub>1</sub> <sup>H7</sup>	min. - max.	10-20	20-28	24-35	32-44	40-60
D <sub>2</sub> <sup>H7</sup>	min. - max.	12-20	15-25	20-35	30-45	35-50
E		16	18	18	24	26
H <sub>1</sub> (DIN EN ISO 4762)		M6	M8	M10	M12	M12
H <sub>2</sub> (DIN EN ISO 4762)		M6	M8	M10	M12	M12
L ± 1		100	118	132	162	180
M <sub>1</sub>		24	29	31	37	41
M <sub>2</sub>		30	40	42	50	59
N		6	6	7	9	8

## Bore size range D1/D2 and applicable transmissible torque values (Nm)

Type	Ø10	Ø11	Ø13	Ø14	Ø15	Ø17	Ø17	Ø17	Ø17	Ø20	Ø24	Ø25	Ø27	Ø30	Ø32	Ø36	Ø38	Ø41	Ø42	Ø44	Ø48	Ø50	Ø55	Ø60	
30	17	17	17	17	17	17	17	17	17																
60		22	37	46	56	60	60	60	60	60	60														
150					56	68	114	134	160	160	160	160	160	160	160										
300								134	230	261	325	325	325	325	325	325	325								
500											329	450	450	450	450	450	435	450	450	450	450	450	500	500	500

Max. allowable misalignment: see page 13.

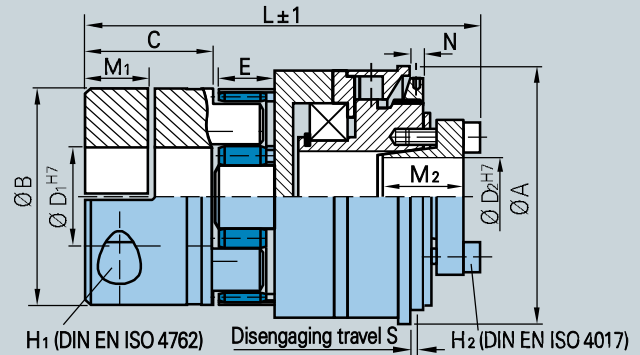
Couplings for torque ranges different from above also available!

## Ordering data

<b>DMK/E</b>	<b>- 60</b>	<b>- EKn/25<sup>H7</sup></b>	<b>- Kn/20<sup>H7</sup></b>	<b>- 60Nm/b</b>	<b>- C</b>
type	size	hub on elastomer-side/bore-size	inner conical hub on safety element side / bore size	disengaging torque / torque adjustment range	C = single position re-engagement (360°) standard D = multi position re-engagement

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# Backlash-free Safety Coupling Type DMK/EKn-Ki



## Technical data series DMK/EKn-Ki

Type			30	60	150	300	500
Disengaging torque (Nm)	T KN version a		5-20	12-5	25-75	30-140	14-350
torque adjustment range	T KN version b		15-35	20-70	65-150	100-300	250-500
Moment of inertia (10 <sup>-3</sup> kgm <sup>2</sup> )	J hub side		0,1	0,32	0,8	3	5
	J elastomer side		0,036	0,15	0,33	1,04	3,1
Weight (appr. kg)	m		0,5	1,4	2,8	4,6	7,5
Tightening torque of screws (Nm) MA	H1 clamping screw		15	40	60/55	110/80	145
	H2 retaining screw		5	8,5	14	18	26
Max. rotational speed (rpm)	n <sub>max</sub>		8950	7000	6000	5000	3600
Disengaging travel (mm)	S		1,2	1,2	2	2	2
Standard shore hardness of spider			98 SH A (rot) - (other shore hardnesses available)				

## Dimensions (mm) series DMK/EKn-Ki

Type		30	60	150	300	500
A		65	75	95	115	129
B		40	55	65	80	105
C		25	30	35	45	56
D <sub>1</sub> <sup>H7</sup>	min. - max.	10-20	20-28	24-35	32-44	40-60
D <sub>2</sub> <sup>H7</sup>	min. - max.	12-20	15-25	20-35	30-45	35-50
E		16	18	18	24	26
H <sub>1</sub> (DIN EN ISO 4762)		M6	M8	M10	M12	M12
H <sub>2</sub> (6 x DIN EN ISO 4017)		M4	M6	M6	M6	M8
L ± 1		91	108	121	151	165
M <sub>1</sub>		24	29	31	37	41
M <sub>2</sub>		20	25	30	35	38
N		6	6	7	9	8

## Bore size range D1/D2 and applicable transmissible torque values (Nm)

Type	Ø10	Ø11	Ø13	Ø14	Ø15	Ø17	Ø19	Ø17	Ø17	Ø20	Ø24	Ø25	Ø27	Ø30	Ø32	Ø36	Ø38	Ø41	Ø42	Ø44	Ø48	Ø50	Ø55	Ø60	
30	17	17	17	17	17	17	17	17	17																
60		22	37	46	56	60	60	60	60	60	60														
150					56	68	114	134	160	160	160	160	160	160	160										
300								134	230	261	325	325	325	325	325	325	325								
500											329	450	450	450	450	450	450	450	450	450	450	450	500	500	500

Max. allowable misalignment: see page 13.

Couplings for torque ranges different from above also available!

## Ordering data

<b>DMK/E</b>	<b>- 60</b>	<b>- EK<sub>n</sub>/25<sup>H7</sup></b>	<b>- KI/20<sup>H7</sup></b>	<b>- 60Nm/b</b>	<b>- C</b>
type	size	hub on elastomer-side/bore-size	inner conical hub on safety element side / bore size	disengaging torque / torque adjustment range	C = single position re-engagement (360°) standard D = multi position re-engagement

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# Backlash-free Servo-insert Coupling Assembly Instructions

## IMPORTANT: For applications with high dynamics

For applications with high dynamics (frequent acceleration and breaking, changes of spinning direction) or high impact load (applications like presses and grinders) we recommend to use the support of the GERWAH team in doing the calculations and choosing the appropriated coupling.

## Installation

Clean and degrease both shaft surface and coupling hub bores. Re-check shaft diameters and coupling bores for proper tolerances.

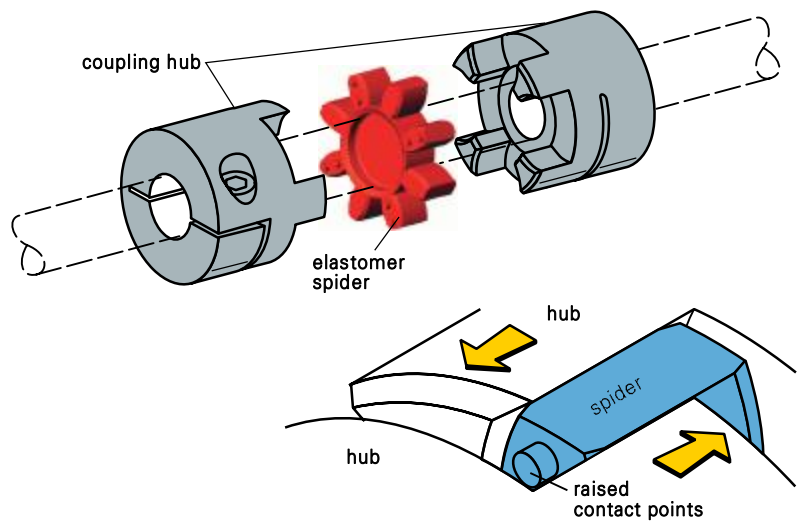
As a standard, the boreholes are equipped with a fitting in accordance with ISO-H7. For the shafts, we recommend an transition, e.g. H7/g6. When selecting other shaft fitting, the fitting should not exceed a maximum of 0.01 - 0.05 mm.

Slide a coupling hub onto each shaft and proceed to torque the screws of one clamp ring or shrink disc after checking axial dimensions. Refer to the technical data to assure correct screw tightening torque.

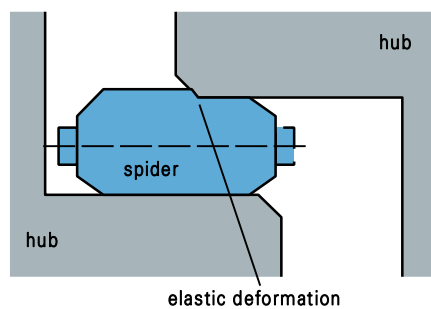
Firmly press elastomer spider into one of the two hubs. Because of the interference fit, the force necessary to install the spider may be quite high, therefore a PU tolerant grease such as Vaseline may be applied to ease assembly. The edges of the spider and the jaws of the coupling hubs are both chamfered to ease assembly.

Raised contact points visible on the front and back side of the elastomer spider help maintain proper spacing between the two hubs assuring electrical isolation and full angular misalignment capabilities.

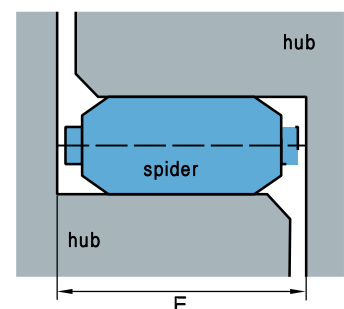
Carefully push the coupling hubs together while maintaining the necessary spacing, tighten the screws of the remaining clamp ring or shrink disc to the recommended torque. The function of the gap is to prevent the coupling hubs from restraining the axial movement of the spider. This ensures optimum life of the coupling and spider.



## While mounting



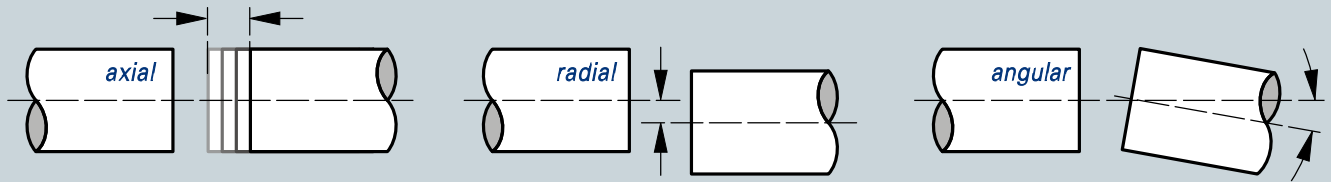
## Backlash free after final assembly preloaded



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# Backlash-free Servo-insert Coupling Assembly Instructions

## Types of misalignment



### Alignment

The picture above shows the (3) types of misalignment. The mounted coupling needs to be aligned. The more accurate the initial alignment, the better the coupling can absorb additional misalignment during operation, thereby assuring optimum lifetime and quiet running conditions. If all (3) types of misalignment occur simultaneously, each type must not reach the maximum allowable value. The combined impact of the actual misalignment types, expressed as a percentage of the maximum allowable value,

must not exceed 100%. The diagram below shows the combined misalignment.

### Removal

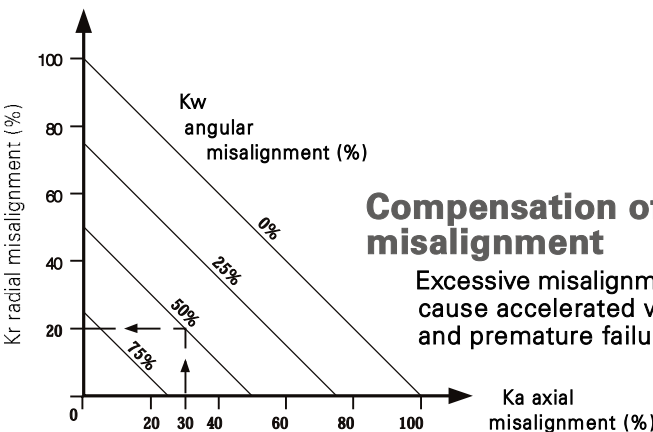
Remove the locking screws, e.g. on the motor. Pull the drive unit, including the jaw coupling apart. Inspect the spider for wear and if necessary, insert a new spider or one with a different shore hardness. After loosening the keyless clamp ring or shrink disc, the hubs can be removed.

**Please contact us for detailed installation and removal instructions.**

### Misalignments

Typ	elast. Spider	Shore-scale	Misalignment type		
			mm axial Ka <sup>1)</sup>	mm radial Kr	scale angular Kw
5	80	A	+0,4	0,12	1,1°
	92	A	-0,2	0,06	1,0°
	98	A		0,04	0,9°
7	80	A		0,15	1,1°
	92	A	+0,6	0,10	1,0°
	98	A	-0,3	0,06	0,9°
	64	D		0,04	0,8°
9	80	A		0,19	1,1°
	92	A	+0,8	0,13	1,0°
	98	A	-0,4	0,08	0,9°
	64	D		0,05	0,8°
14	80	A		0,21	1,1°
	92	A	+1,0	0,15	1,0°
	98	A	-0,5	0,09	0,9°
	64	D		0,06	0,8°
19	80	A		0,15	1,1°
	92	A	+1,2	0,10	1,0°
	98	A	-0,5	0,06	0,9°
	64	D		0,04	0,8°
24	92	A	+1,4	0,14	1,0°
	98	A	-0,5	0,10	0,9°
	64	D		0,07	0,8°
28	92	A	+1,5	0,15	1,0°
	98	A	-0,7	0,11	0,9°
	64	D		0,08	0,8°
38	92	A	+1,8	0,17	1,0°
	98	A	-0,7	0,12	0,9°
	64	D		0,09	0,8°
42	92	A	+2,0	0,19	1,0°
	98	A	-1,0	0,14	0,9°
	64	D		0,10	0,8°
48	92	A	+2,1	0,23	1,0°
	98	A	-1,0	0,16	0,9°
	64	D		0,11	0,8°

<sup>1)</sup> The Ka values need to be added to the dimension L of the coupling selected



### Compensation of misalignment

Excessive misalignment will cause accelerated wear and premature failure.

# Backlash-free Servo-insert Coupling Technical Description

The couplings can be fine tuned to the specific application requirements in terms of torsional stiffness and vibration behavior by selecting from various color coded elastomeric spiders having different grades of shore hardness.

Spider durometer (shore hardness)	Colour code	Material	Allowable temperature range°C		Available for type	Typical applications
			continuous temperature	max. temp. short term		
80 SH A	blue	polyurethane	-50 till +80	-60 till +120	5-19	Drives in electronic measuring systems; backlash free when pre-compressed
92 SH A	yellow	polyurethane	-40 till +90	-50 till +120	5-48	Central spindle drives; backlash free when pre-compressed
98 SH A	red	polyurethane	-30 till +90	-40 till +120	5-48	Positioning drives; backlash free when pre-compressed
64 SH D-H	green	hytel	-50 till +120	-60 till +150	7-38	Machine tool spindles, control drives, feed units, planetary gearboxes; Heavy loads, torsionally stiff, high ambient temperature, water proof
64 SH D	green	polyurethane	-20 till +110	-30 till +120	42-48	

## Technical terms for the coupling design

**Pre-Compression:** The curved jaw couplings are designed to have an interference fit between the coupling hubs and elastomer element for true backlash free operation. Therefore, the flexible spider needs to be pre-compressed for proper seating during the assembly procedure. The amount of pre-compression varies widely depending on the shore harness of the spider, the size of the coupling and the machining tolerances. A light force is necessary to pre-compress the torsionally soft spiders while a large force is required to pre-compress a torsionally stiff spider.

**TkN – Nominal Torque of coupling (Nm):** Continuous torque which can be transmitted throughout the entire speed range, taking into consideration operational factors such as ambient temperature and torsional stiffness.

**Tkmax – Maximum Torque of coupling (Nm):** Torque to be transmitted  $1 \times 10^5$  times as a peak load or  $5 \times 10^4$  times as an alternating load during the entire life of the coupling taking into consideration factors such as temperature, torsional stiffness and shock loading.

Type	Servo insert	Shore-scale	Max. speed (min <sup>-1</sup> ) for type					Torque (Nm)		Static torsional stiffness (Nm/rad)	Dynamic torsional stiffness (Nm/rad) <sup>1)</sup>	Axial stiffness (Nm/mm)
			DK/GS ADS ADS/R	EK/GS	ASS/A	ASS/A-P	DMK/EKn-Kn DMK/EKn-Ki	TkN	Tkmax			
5	80	A	38000	47500				0,3	0,6	3,2	10	82
	92	A						0,5	1,0	5,2	16	154
	98	A						0,9	1,7	8,3	25	296
7	80	A	27000	34000				0,7	1,4	8,6	26	114
	92	A						1,2	2,4	14,3	43	219
	98	A						2,0	4,0	23	69	421
	64	D						2,4	4,8	34	103	630
9	80	A	19000	24000				1,8	3,6	17	52	125
	92	A						3	6	31	95	262
	98	A						5	10	51	155	518
	64	D						6	12	74	224	769
14	80	A	13000	16000	25400	31800	11450	4	8	60	180	153
	92	A						7,5	15	115	344	336
	98	A						12,5	25	172	513	654
	64	D						16	32	234	702	856
19	80	A	10000	12000	19000	23800	8950	5	10	340	1030	582
	92	A						10	20	570	1720	1120
	98	A						17	34	860	2580	2010
	64	D						21	42	1240	3720	2930
24	92	A	7000	8500	13800	17300	7000	35	70	1430	4296	1480
	98	A						60	120	2060	6189	2560
	64	D						75	150	2980	8934	3696
28	92	A	6000		11700	14700	6000	95	190	2290	6876	1780
	98	A						160	320	3440	10314	3200
	64	D						200	400	4350	13050	4348
38	92	A	5000		9550	11900	5000	190	380	4580	13752	2350
	98	A						325	650	7160	21486	4400
	64	D						405	810	10540	31620	6474
42	92	A	4000		8050	10000	4000	265	530	6300	2430	2430
	98	A						450	900	19200	5570	5570
	64	D						560	1120	27580	7170	7270
48	92	A	3600		7200	9100		310	620	7850	2580	2580
	98	A						525	1050	22370	5930	5930
	64	D						655	1310	36200	8274	8274

<sup>1)</sup> Dynamic torsional stiffness at 0.5 x TkN  
Dynamic balancing is required for speeds exceeding V=30m/s

# Checklist for Your Couplings Inquiry

For your convenience just copy, fill out and fax back to us!

<i>company</i>	<i>name</i>
<i>street</i>	<i>dpt.</i>
<i>ZIP/town</i>	<i>eMail</i>
<i>phone</i>	<i>fax</i>

**Please ask for personalized technical assistance!**

**1. Application:** How is the coupling supposed to be used? (machine, machine group or system)

**2. Type of connection**  clamp ring hub  shrink disc hub  locking assembly hub  hub with set screw  
 flange connection  outer cone  Fanuc  spec. customer drawing

**3. Dimensions**  
 Length  mm bore size D1  mm keyway  yes  no  
 Diameter  mm bore size D2  mm keyway  yes  no

**4. Misalignment of shafts** axial  mm radial  mm angular  °

**5. Drive**  
 5.1 Drive output  $P_{AN} =$   kW  
 5.2 Drive speed  $n =$   1/min  
 5.3 Nominal torque of drive  $Mt_{nenn} =$   Nm  
 5.4 Peak torque of drive  $Mt_{max} =$   Nm  
 5.5 Shaft diameter drive side =  mm  
 driven side =  mm

**6. Mass moment of inertia** 6.1 drive side  $J_A =$   Nm  
 6.2 driven side  $J_L =$   Nm

**7. Special influences**  
 7.1 Ambient temperature surrounding the coupling?  $T =$   °C  
 7.2 Are there any shock loads?  light  medium  heavy  
 7.3 Special materials (e.g. stainless steel)   
 7.4 Special circumstances

**8. Planned quantities**  production  prototype  repair yearly  quantity

**9. Target price**  /piece

Sales Representative

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