

GMN

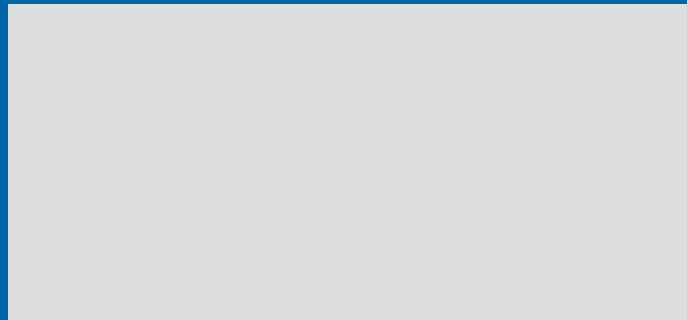


High speed spindles Series UH for manual tool change

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GMN spindle technology

High speed spindles for manual tool change Series UH

With the new spindle series UH, GMN presents a future-oriented development in spindle technology. Significant optimizations of performance characteristics have been taken out that offer new possibilities in metalworking.

The integrated electric motors of the new GMN spindle models of the UH series are equally powerful and compact synchronous motors. Even in critical load ranges, they are characterized by stable performance values at up to 50% lower operating temperatures.

With comparable operating requirements, the synchronous motor with its excellent power density and increased bearing size and shaft diameters, the synchronous motor allows the use of larger tool interfaces.

With the fixing of stable tools and the shorter shaft lengths, UH spindles from GMN achieve the highest dynamic stiffness in extreme speed ranges as well smooth running in cutting and grinding manufacturing processes.

New dimensions in space

GMN spindles of the UH series realize demanding performance profiles in an extremely small installation space. The connected peripherals of the spindle, such as inverters and control cabinets, are also suitable for high requirements under limited space conditions.

The intelligent spindle solution from GMN

All new models of the UH series are equipped with the digital IO-Link interface and "IDEA-4S". IDEA-4S processes the incoming sensor signals, continuously provides extensive information about the current operating condition and enables immediate adjustments to be made to possible changes during the production process.

Focus on performance

Based on exceptional performance data and intelligent digital machine management, GMN spindles of the UH series combine maximum productivity and profitability with the highest possible manufacturing quality in a compact size.

Higher Efficiency

Bigger Bearing Diameter

Bigger Tool Interfaces

Digital Interface IDEA-4S

Less Lubricant/Air

Lower Vibration

Lower Noise

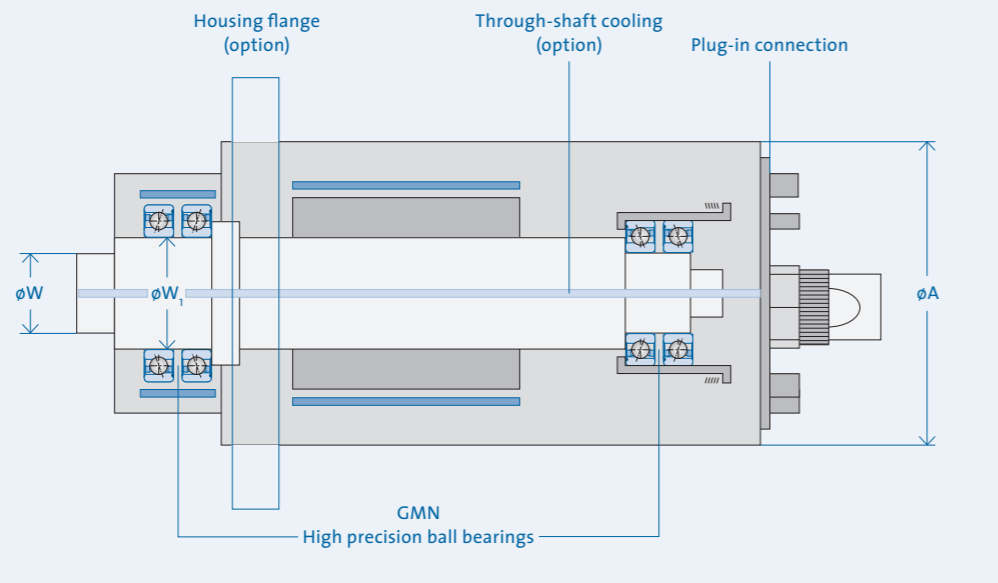


Legend and features

Tool interfaces

Legend

- Dimensions:
 ϕW = flat face ϕ [mm]
 ϕW_1 = shaft ϕ front [mm]
 ϕA = spindle housing ϕ [mm]
- Motor data:
 f = frequency max. [Hz]
 M = torque moment [Nm]
 n = speed [rpm]
- Rated power:
 P = power [kW]
 I = current [A]



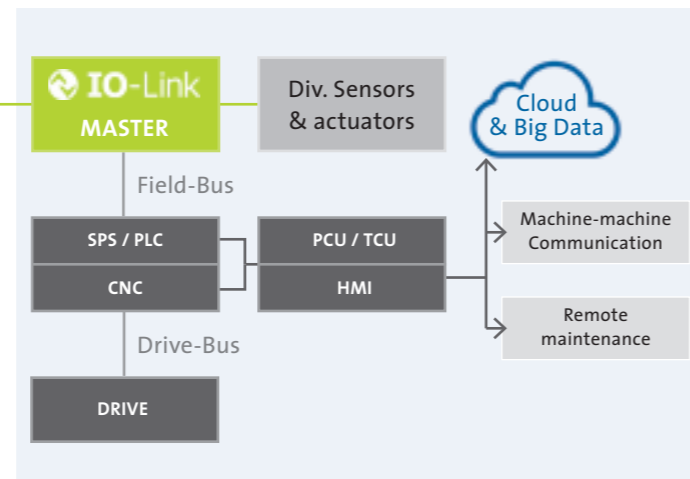
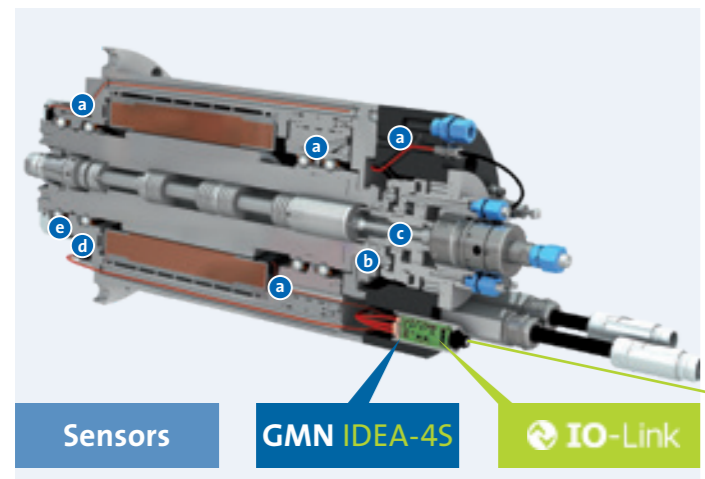
IoT ready with IDEA-4S

The embedded system IDEA-4S (Integrated Data Acquisition and Evaluation for Spindles) is already integrated as standard for this spindle series. It records and processes continuous data from the bearing and cooling temperature sensors as well as from the speed sensor and vibration sensor.

To obtain information based on this data, the IDEA-4S evaluates the measurement values right in the spindle and transmits its results via bidirectional IO-Link communication to the machine

control and within the production network. Thus, the user is constantly informed about how to improve the application of the spindle.

Additionally, a digital nameplate is available to the user which simplifies the commissioning and identification of the spindle with all its product-related data. For all sensors, the operating data is recorded as statistical values. Furthermore, it is possible to store application data in the system and to read from an error memory.



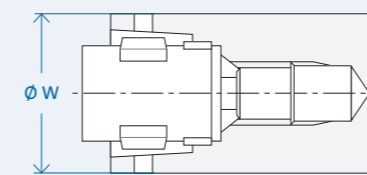
Taper hollow shaft with flat contact face: HSK-C for Tools according to DIN 69893-1



Taper hollow shafts (HSK) with flat contact faces are standardized per DIN 69893-1. The various shapes differ with respect to drive key slots and contact surface. Form C has been especially developed for use with manual tool change systems.

Spindles in type series UH-P can accept tools with taper hollow shafts of form A and C. The HSK interface allows these spindles to be operated in both directions of rotation.

Series UH-P



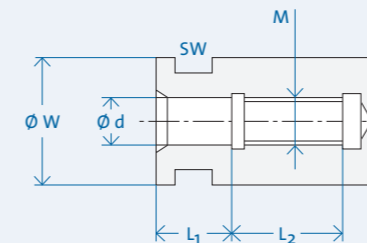
Interface	W [mm]	Dimensions
HSK-C25	25	for tools according to DIN 69893-1
HSK-C32	32	
HSK-C40	40	
HSK-C50	50	
HSK-C63	63	
HSK-C80	80	
HSK-C100	100	

GMN standard: Fitting bores with flat contact face



High-speed spindles in type series HS, HSX, HV-X and UH-X are equipped with the GMN standard – fitting bore/flat contact face and internal threads – that has proven itself over many decades.

Series HS, HV-X, HSX, UH-X



Interface	d [mm]	d Tolerance [μm]	W [mm]	M	L ₁ [mm]	L ₂ [mm]	SW
D 04/08	4	+5 / +2	8	M4 (x 0.7)	6	8	7
D 06/12	6	+5 / +2	12	M6 (x 1)	9	11	11
D 08/14	8	+5 / +2	14	M8 (x 1.25)	12	14	13
D 09/16	9	+5 / +2	16	M9 (x 1.25)	13	14	14
D 10/18	10	+5 / +2	18	M10 (x 1.5)	15	19	16
D 14/23	14	+7 / +2	23	M14 x 1.5	20	19	20
D 16/28	16	+7 / +2	28	M16 x 1.5	24	19	24
D 16/33	16	+7 / +2	33	M16 x 1.5	24	19	24
D 22/38	22	+7 / +2	38	M22 x 2	34	25	32
D 28/43	28	+8 / +3	43	M28 x 2	42	25	38
D 32/53	32	+8 / +3	53	M32 x 2	46	25	48
D 36/63	36	+8 / +3	63	M36 x 2	50	30	55
D 36/68	36	+8 / +3	68	M36 x 2	50	30	60

Series: UH 100

Tool interface:

- GMN standard
- HSK (DIN 69063-1)

Bearing arrangement:

- GMN hybrid ball bearings

Lubrication:

- Oil-air lubrication

Motor:

- Synchronous motor
- ** 200 V on request

TECHNICAL DATA		
Spindle housing $\varnothing A$	[mm]	
Speed max.	n_{max} [rpm]	
Bearing \varnothing front	W_1 [mm]	
Tool interface		
Flat contact face $\varnothing W$	[mm]	
Motor design		
Frequency max.	f_{max} [Hz]	
Nominal converter voltage ¹⁾	[V]	
Power	P_{S1} [kW]	
Torque	M_{S1} [Nm]	
... at speed	n [rpm]	
Current	I_{S1} [A]	
Power	$P_{S6-60\%}$ [kW]	
Torque	$M_{S6-60\%}$ [Nm]	
... at speed	n [rpm]	
Current	$I_{S6-60\%}$ [A]	
---	$P_{S6-60\%}$ [kW]	
---	$M_{S6-60\%}$ [Nm]	
Speed	[rpm] x 1,000	

¹⁾ Minimum required output voltage of the frequency converter

UH-X 100 - 120000/1.7		
UH-X		
100		
120,000		
17		
D 09/16		
16		
350 V		
2,000		
350		
1.7		
0.135		
120,000		
4.3		
2		
0.156		
120,000		
4.9		

UH-X 100 - 105000/3		
UH-X		
100		
105,000		
20		
D 10/18		
18		
350 V		
1,750		
350		
3		
0.27		
105,000		
6.2		
3.5		
0.31		
105,000		
7.1		

UH-X 100 - 90000/4		
UH-X		
100		
90,000		
25		
D 14/23		
23		
200 V**		
400 V		
1,500		
200	396	
4		
0.5		
77,000		
15	7.5	
4.6		
0.57		
77,000		
17	8.6	

UH-X/P 100 - 75000/5		
UH-X / UH-P		
100		
75,000		
30		
D 16/28 / HSK-C 25		
28 / 25		
200 V**		
400 V		
1,250		
200	400	
5		
0.76		
63,000		
19	9.2	
5.8		
0.87		
63,000		
22	11	

UH-X/P 100 - 60000/9		
UH-X / UH-P		
100		
60,000		
35		
D 16/33 / HSK-C 32		
33 / 32		
200 V**		
400 V		
2,000		
200	400	
9		
2.4		
36,000		
46	24	
10.3		
2.7		
36,000		
54	28	

UH-X/P 100 - 45000/9		
UH-X / UH-P		
100		
45,000		
45		
D 28/43 / HSK-C 40		
43 / 40		
400 V		
1,500		
400		
9		
3.2		
27,000		
24	24	
10.3		
3.7		
27,000		
27	27	

Series: UH 120

Tool interface:

- GMN standard
- HSK (DIN 69063-1)

Bearing arrangement:

- GMN hybrid ball bearings

Lubrication:

- Oil-air lubrication

Motor:

- Synchronous motor
- ** 200 V on request

TECHNICAL DATA		
Spindle housing $\varnothing A$	[mm]	
Speed max.	n_{max} [rpm]	
Bearing \varnothing front	W_1 [mm]	
Tool interface		
Flat contact face $\varnothing W$	[mm]	
Motor design		
Frequency max.	f_{max} [Hz]	
Nominal converter voltage ¹⁾	[V]	
Power	P_{S1} [kW]	
Torque	M_{S1} [Nm]	
... at speed	n [rpm]	
Current	I_{S1} [A]	
Power	$P_{S6-60\%}$ [kW]	
Torque	$M_{S6-60\%}$ [Nm]	
... at speed	n [rpm]	
Current	$I_{S6-60\%}$ [A]	
---	$P_{S6-60\%}$ [kW]	
---	$M_{S6-60\%}$ [Nm]	
Speed	[rpm] x 1,000	

¹⁾ Minimum required output voltage of the frequency converter

UH-X/P 120 - 75000/8		
UH-X / UH-P		
120		
75,000		
30		
D 16/28 / HSK-C 25		
28 / 25		
200 V**		
420 V		
1,250		
200	412	
10		
1.3		
75,000		
39	16	
11.5		
1.5		
75,000		
45	18	

UH-X/P 120 - 60000/8		
UH-X / UH-P		
120		
60,000		
35		
D 16/33 / HSK-C 32		
33 / 32		
200 V**		
420 V		
1,000		
200	412	
8		
1.3		
60,000		
38	16	
11.5		
1.5		
60,000		
44	18	

UH-X/P 120 - 60000/11		
UH-X / UH-P		
120		
60,000		
35		
D 16/33 / HSK-C 32		
33 / 32		
200 V**		
400 V		
2,000		
200	288	
11		
3.6		
29,000		
76	49	
12.6		
4.2		
29,000		
87	56	

UH-X/P 120 - 45000/10		
UH-X / UH-P		
120		
45,000		
45		
D 28/43 / HSK-C 40		
43 / 40		
200 V**		
425 V		
1,500		
200	425	
10		
4.8		
19,500		
52	26	
11.3		
5.5		
19,500		
62	31	

UH-X/P 120 - 30000/10		
UH-X / UH-P		
120		
30,000		
55		
D 32/53 / HSK-C 50		
53 / 50		
200 V**		
400 V		
1,000		
200	400	
10		
7.9		
12,000		
54	27	
11.5		
9.1		
12,000		
65	33	

Series: UH 150

Tool interface:
· GMN standard
· HSK (DIN 69063-1)

Bearing arrangement:
· GMN hybrid ball bearings

Lubrication:
· Oil-air lubrication

Motor:
· Synchronous motor
** 200 V on request

TECHNICAL DATA	
Spindle housing \varnothing A	[mm]
Speed max. n_{max}	[rpm]
Bearing \varnothing front W_1	[mm]
Tool interface	
Flat contact face \varnothing W	[mm]
Motor design	
Frequency max. f_{max}	[Hz]
Nominal converter voltage ¹⁾ [V]	
Power P_{S1}	[kW]
Torque M_{S1}	[Nm]
... at speed n	[rpm]
Current I_{S1}	[A]
Power $P_{S6-60\%}$	[kW]
Torque $M_{S6-60\%}$	[Nm]
... at speed n	[rpm]
Current $I_{S6-60\%}$	[A]
---	$P_{S6-60\%}$ [kW]
---	$M_{S6-60\%}$ [Nm]
Speed	[rpm] x 1,000

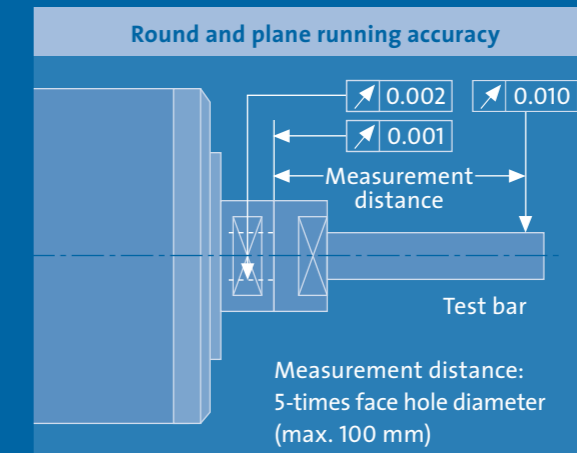
¹⁾ Minimum required output voltage of the frequency converter

UH-X/P 150 - 50000/18	
UH-X / UH-P	
150	
50,000	
45	
D 28/40 / HSK-C 40	
40 / 40	
200 V**	400 V
834	
200	
361	
18	
4	
43,000	
73	
36	
19.8	
4.4	
43,000	
80	
40	

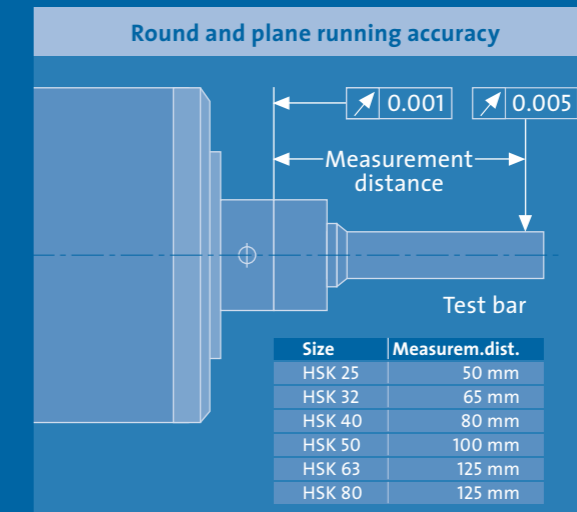
UH-X/P 150 - 40000/20	
UH-X / UH-P	
150	
40,000	
55	
D 32/53 / HSK-C 50	
53 / 50	
400 V	
1,334	
400	
20	
13.5	
14,000	
72	
23	
15.5	
14,000	
88	

UH-X/P 150 - 30000/25	
UH-X / UH-P	
150	
30,000	
65	
D 36/63 / HSK-C 63	
63 / 63	
400 V	
1,000	
400	
25	
17	
14,000	
78	
28.8	
19.6	
14,000	
98	

GMN standard tool interface



HSK interface



Series: UH 170

Tool interface:
· GMN standard
· HSK (DIN 69063-1)

Bearing arrangement:
· GMN hybrid ball bearings

Lubrication:
· Oil-air lubrication

Motor:
· Synchronous motor
** 200 V on request

TECHNICAL DATA	
Spindle housing \varnothing A	[mm]
Speed max. n_{max}	[rpm]
Bearing \varnothing front W_1	[mm]
Tool interface	
Flat contact face \varnothing W	[mm]
Motor design	
Frequency max. f_{max}	[Hz]
Nominal converter voltage ¹⁾ [V]	
Power P_{S1}	[kW]
Torque M_{S1}	[Nm]
... at speed n	[rpm]
Current I_{S1}	[A]
Power $P_{S6-60\%}$	[kW]
Torque $M_{S6-60\%}$	[Nm]
... at speed n	[rpm]
Current $I_{S6-60\%}$	[A]
---	$P_{S6-60\%}$ [kW]
---	$M_{S6-60\%}$ [Nm]
Speed	[rpm] x 1,000

¹⁾ Minimum required output voltage of the frequency converter

UH-X/P 170 - 40000/32	
UH-X / UH-P	
170	
40,000	
55	
D 32/53 / HSK-C 50	
53 / 50	
200 V**	500 V
1,334	
200	
496	
32	
16.1	
19,000	
167	
51	
36.8	
18.5	
19,000	
192	
64	

UH-X/P 170 - 30000/17	
UH-X / UH-P	
170	
30,000	
65	
D 36/63 / HSK-C 63	
63	
450 V	
1,000	
403	
17	
23.1	
7,000	
44	
19.6	
26.6	
7,000	
54	

UH-X/P 170 - 20000/17	
UH-X / UH-P	
170	
20,000	
70	
D 36/68 / HSK-C 63	
68 / 63	
400 V	
667	
400	
17	
36.8	
4,410	
30	
19.6	
42.3	
4,410	
35	

Drive Accessories

Spindle Type	Motor	Motor Choke	Voltage Protection
UH-X 100 - 45000/9	IPM	-	+
UH-X 100 - 60000/9	IPM	-	-
UH-X 100 - 75000/5	PM	+	-
UH-X 100 - 90000/4	PM	+	-
UH-X 100 - 105000/3	PM	+	-
UH-X 100 - 120000/1.7	PM	+	+
UH-X 120 - 30000/10	IPM	-	+
UH-X 120 - 45000/10	IPM	-	+
UH-X 120 - 60000/11	PM	+	-
UH-X 120 - 60000/8	PM	+	-
UH-X 120 - 75000/10	PM	+	-
UH-X 150 - 30000/25	IPM	-	+
UH-X 150 - 40000/20	IPM	-	+
UH-X 150 - 50000/18	PM	+	-
UH-X 170 - 20000/17	IPM	-	+
UH-X 170 - 30000/17	IPM	-	+
UH-X 170 - 40000/32	PM	+	+

+required - not required



Internet

Our Internet website www.gmn.de contains comprehensive product information for downloading.

GMN

GMN Paul Müller Industrie GmbH & Co. KG manufactures high precision ball bearings, machine spindles, freewheel clutches and seals for a broad spectrum of applications at its Nuremberg, Germany plant.

Based on many years of experience in the development and production of machine components, GMN specializes in the production of high quality products in the field of spindle technology and, beyond a comprehensive standard product line, also offers customer-oriented special solutions.

A global GMN service network offers competent customer consultation and individualized solutions.

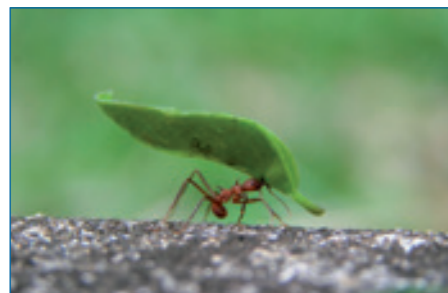


GMN quality management – audited and awarded.

GMN guarantees the highest quality products and services based on long-term reliability. Modern development and production processes ensure products are always at the leading edge of state-of-the-art engineering.

The transparent structure of all GMN company divisions and the clarity of organization flows ensure customer-oriented services and economic security.

All GMN company divisions are certified to DIN ISO 9001.



GMN – safeguarding the future.

At GMN, progress means the best possible customer support and the performance optimization of technical products.

This aspiration is turned into reality at GMN, particularly by conforming to national and international environmental standards for efficient and responsible use of ecological resources.



GMN

- High Precision Ball Bearings
- Spindle Technology
- Sprag Type Freewheel Clutches
- Non Contact Seals