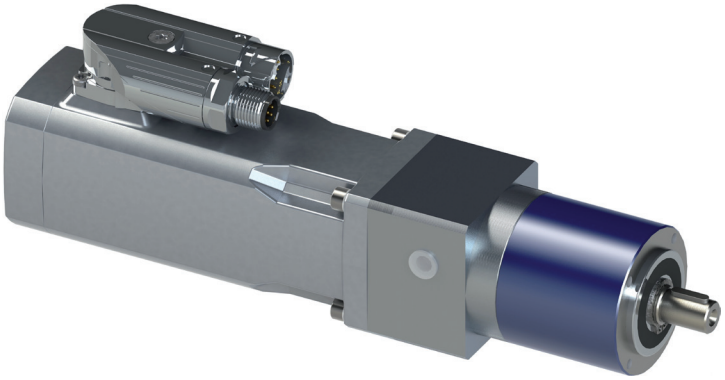
ENGEL ELEKTROANTRIEBE



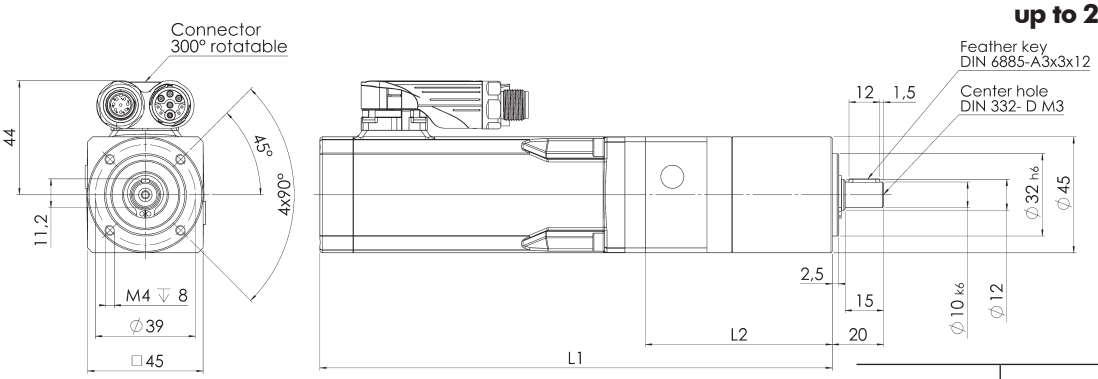
HBR 22 - GPK 45

Geared Synchronous Servo Motors

with permanent magnetic field

Motor series HBR 22
with linear hall sensor system
with or without parking brake

Planetary gear series GPK 45
up to 20 Nm peak torque



Type	Gear Ratio	Dimension L1 *) **)	Dimension L2 **)
HBR2230-GPK45	4 :1 - 7:1(1-stage)	170	73
HBR2230-GPK45	9 :1 - 49:1(2-stage)	185	88
HBR2230-GPK45	64 :1 - 196:1(3-stage)	200	103
HBR2260-GPK45	4 :1 - 7:1(1-stage)	200	73
HBR2260-GPK45	9 :1 - 49:1(2-stage)	215	88
HBR2260-GPK45	64 :1 - 196:1(3-stage)	230	103

*) Designs with parking brake respectively 32 mm longer.
**) Shorter designs with teethed motorshaft on request.

type		HBR 22 - GPK 45
series		-
operation acc. to standards VDE 0530		S1
isolation acc. to standards VDE 0530		F
protection acc. to standards VDE 0530		IP 54
kind of connection		flange connector
rotating direction		reversible
bearing (motor and gear box)		ball bearing
gear box		not self-locking
parking brake B 7.01:		
nominal voltage	V	24
nominal current	A	0,45
static break torque	Nm	1

for detailed motor data please refer to data sheet HBR 22

Motor design:

The Synchronous Servo Motors of series HBR 22 are fitted with a 3-phase concentrated stator-winding system. The 6-pole rotor-magnet system is made of plastic-bonded Neodymium Iron Boron ring magnets.

The motors have a sinusoidal Back EMF.

The position information of the rotor will be generated using the integrated linear hall sensor system with 12Bit resolution and pure digital interface (BiSS).

To avoid thermal overload a PTC resistor is embedded in the stator winding.

All geared motors are also available with integrated parking brake.

Special designs on request.

Gearbox design:

The planetary gear GPK 45 splits the torque to be transmitted into three symmetrical parts. In conjunction with the one-piece gear housing and with the combination of output bearing and centring flange it leads to a very compact design.

The connection to the motor shaft is done via a clamping hub and offers easy possibilities of interchanging.

All toothing parts are made of heat-treated high-strength steel.

The gearbox has a synthetic grease lifetime lubrication.

The planet wheels are equipped with needle bearings.

The output shaft is double-supported by roller bearing which leads to high axial and radial load capabilities.

Through the very robust construction the gearboxes series GPK 45 are well suited for industrial applications.

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HBR 22 - GPK 45

1 nominal voltage	2 nominal speed	3 nominal torque [2]	4 starting torque	5 nominal power [2]	6 nominal current [1]	7 nominal current, rms	8 peak current [1]	9 power gear box input	10 nominal speed gear box input	11 ratio gear box	12 efficiency gear box	load limitations gear box: 13 max. power	14 max. continuous torque	15 max. starting torque	16 max. backlash	17 moment of inertia gear box [3]	18 total weight motor + gear box	19 total weight motor + gear box + parking brake	20 F_R (allow. radial shaft load) [4]	21 F_A (allow. axial shaft load)
V	rpm	Nm	Nm	W	A	A	A	W	rpm	i	%	W	Nm	Nm	< min	kgm²	kg	kg	N	N
HBR 2230 - GPK 45																				
24	1750	0,70	1,8	130	13,0	9,2	59,0	135	7000	4 :1	95	1280	7	15	20	0,00291x10^{-3}	1,25	1,50	500	200
48		0,70		130	6,7	4,7	30,5	135												
24	1000	1,2	3,1	130	13,0	9,2	59,0	135	7000	7 :1	95	735	7	15	20	0,00270x10^{-3}	1,25	1,50	500	200
48		1,2		130	6,7	4,7	30,5	135												
24	778	1,5	4,0	120	13,0	9,2	59,0	135	7000	9 :1	90	815	10	20	25	0,00310x10^{-3}	1,40	1,65	500	200
48		1,5		120	6,7	4,7	30,5	135												
24	438	2,7	7,0	120	13,0	9,2	59,0	135	7000	16 :1	90	640	14	20	25	0,00287x10^{-3}	1,40	1,65	500	200
48		2,7		120	6,7	4,7	30,5	135												
24	250	4,7	12	120	13,0	9,2	59,0	135	7000	28 :1	90	365	14	20	25	0,00268x10^{-3}	1,40	1,65	500	200
48		4,7		120	6,7	4,7	30,5	135												
24	143	8,2	20 [5]	120	13,0	9,2	55,0 [5]	135	7000	49 :1	90	150	10	20	25	0,00268x10^{-3}	1,40	1,65	500	200
48		8,2		120	6,7	4,7	28,5 [5]	135												
24	109	10	20 [5]	115	13,0	9,2	42,5 [5]	135	7000	64 :1	85	160	14	20	30	-	1,55	1,80	500	200
48		10		115	6,7	4,7	22,0 [5]	135												
24	63	14 [5]	20 [5]	92	10,4 [5]	7,4 [5]	25,0 [5]	110	7000	112 :1	85	90	14	20	30	-	1,55	1,80	500	200
48		14 [5]		92	5,4 [5]	3,8 [5]	13,0 [5]	110												
24	36	14 [5]	20 [5]	52	6,5 [5]	4,6 [5]	15,0 [5]	61	7000	196 :1	85	50	14	20	30	-	1,55	1,80	500	200
48		14 [5]		52	3,4 [5]	2,4 [5]	8,0 [5]	61												
HBR 2260 - GPK 45																				
48	1625	1,5	3,5	260	11,6	8,2	51,0	270	6500	4 :1	95	1190	7	15	20	0,00291x10^{-3}	1,55	1,80	500	200
48	929	2,7	6,2	260	11,6	8,2	51,0	270	6500	7 :1	95	680	7	15	20	0,00270x10^{-3}	1,55	1,80	500	200
48	722	3,2	7,9	245	11,6	8,2	51,0	270	6500	9 :1	90	755	10	20	25	0,00310x10^{-3}	1,70	1,95	500	200
48	406	5,8	14	245	11,6	8,2	51,0	270	6500	16 :1	90	595	14	20	25	0,00287x10^{-3}	1,70	1,95	500	200
48	232	10	20 [5]	245	11,6	8,2	41,5 [5]	270	6500	28 :1	90	340	14	20	25	0,00268x10^{-3}	1,70	1,95	500	200
48	133	10 [5]	20 [5]	140	6,9 [5]	4,9 [5]	24,0 [5]	155	6500	49 :1	90	140	10	20	25	0,00268x10^{-3}	1,70	1,95	500	200
48	102	14 [5]	20 [5]	150	7,8 [5]	5,5 [5]	19,0 [5]	175	6500	64 :1	85	150	14	20	30	-	1,85	2,10	500	200
48	58	14 [5]	20 [5]	85	4,8 [5]	3,4 [5]	11,5 [5]	100	6500	112 :1	85	85	14	20	30	-	1,85	2,10	500	200
48	33	14 [5]	20 [5]	49	3,1 [5]	2,2 [5]	7,0 [5]	58	6500	196 :1	85	50	14	20	30	-	1,85	2,10	500	200

Tolerances +/- 10 %.

Columns 3 and 12
Values are valid at operating temperature after run-in period.

Columns 3, 6 and 7
To avoid gearbox overload, it is necessary to limit the motor torque by adjusting the motor current in the servo controller (at higher gear ratios).

Columns 4 and 8
Values are valid assuming that the drive is loaded with peak torque. For higher ratios it is necessary to limit the peak current in the servo controller.

Columns 13, 14 and 15
To avoid gearbox overload do not exceed the mentioned values. For oscillating operation the mentioned limitations must be multiplied by 0,75.

[1] Sinusoidal-peak

[2] Values are for motor-assembling on a locating face of aluminium of at least 0,15 m² at a thickness of 10 mm or similar metal face.

[3] Values are reduced to motor shaft.

[4] Middle of the shaft-extension.

[5] Motor current must be limited in the servo controller to avoid excess of the mentioned value.