

FRAMELESS HIGH SPEED MOTOR HKW SERIES

Description

HKW motors are high performance permanent magnet synchronous servomotors for spindle applications up to 276 kW.

Delivered as separate components to be integrated into the mechanical structure of the machine, HKW motors benefit from the use of field weakening, in order to achieve both high torque at slow speed, and very high maximum speed at constant power.

Advantages

- High speed
- High power
- Large hollow shaft
- High resistance (oil proof on request)
- Compatible with Parker drives and third parties
- Accurate speed for the spindle
- for the best surface finish
- for a shorter cycle time
- for a longer tool life time
- Cold permanent magnet technology: reduced heating in the bearings compared to induction motors, low dilatation effect
- Global cost reduction
- Increased reliability and reduced maintenance
- High dynamic performance and power density: increased productivity and reduced size when compared to induction motors
- Simple, light and compact machine design
- No coupling systems needed
- Greater stiffness and robustness of the system
- Low noise level
- Integration assistance available

Applications

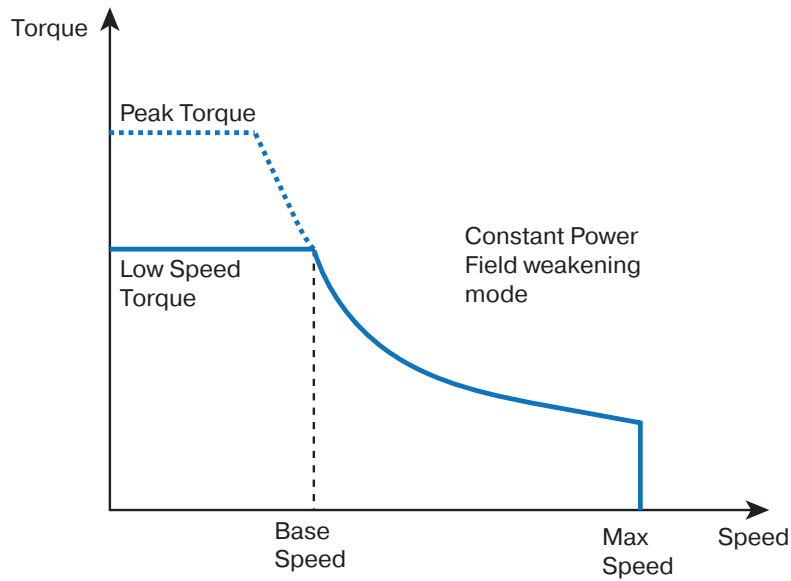
- Machines Tools
- Special Machines
- Textile Machines
- Centrifuges
- Compressors



Technical Characteristics Overview

Cooling		Water cooling
Power	[kW]	2.3...276
Torque	[Nm]	4.5...1840
Max Speed	[min ⁻¹]	50000
Number of poles		4 - HKW085 6 - HKW108 / HKW155 / HKW195 8 - HKW242 16 - HKW310
Diameter	[mm]	85/108/155/195/242/310

Torque/Speed Curve



Technical Data

Motor	S1 Power Ps1 [kW]	Max. Speed Nmax [min ⁻¹]	Frequency at max speed [Hz]	Low speed torque Mo [Nm]	Low speed Current Io [Arms]	Peak Torque M peak [Nm]	Peak Current I peak [Arms]	Base Speed Nb [min ⁻¹]	Moment of Inertia J [kgm ²]
400 VAC power supply - three-phased - Water cooled									
HKW085_066BAU	2.3	50000	1667	4.9	6.8	7.3	13.5	4480	0.00049
HKW085_066BAP	4.9	50000	1667	4.5	12.2	7.3	27	10400	0.00049
HKW085_066BAK	10.2	50000	1667	4.2	22.4	7.3	54	23200	0.00049
HKW085_099BAQ	4.7	50000	1667	7.4	12.6	11	25.1	6070	0.00068
HKW085_099BAL	10	50000	1667	7.3	24.7	11	50.2	13100	0.00068
HKW085_099BAI	15.6	50000	1667	6.8	35	11	78.1	21900	0.00068
HKW108_140CAI	10.2	30000	1500	20	21.9	30	33	4870	0.00143
HKW108_140CAF	15.6	30000	1500	20	32.9	30	49.6	7450	0.00143
HKW108_140CAD	25	30000	1500	20	49.4	30	74.3	11900	0.00143
HKW155_120CAK	23	24000	1200	48	49.5	75	82.5	4600	0.0078
HKW155_120CAH	32	24000	1200	46	65.1	75	113	6640	0.0078
HKW155_120CAF	43	24000	1200	44	82.9	75	151	9330	0.0078
HKW155_160CAP	16	24000	1200	68	36.3	100	56.7	2250	0.0104
HKW155_160CAH	32	24000	1200	68	72.6	100	113	4500	0.0104
HKW155_160CAF	44	24000	1200	66	93.8	100	151	6370	0.0104

Technical Data

Motor	S1 Power Ps1 [kW]	Max. Speed Nmax [min ⁻¹]	Frequency at max speed [Hz]	Low speed torque Mo [Nm]	Low speed Current Io [Arms]	Peak Torque M peak [Nm]	Peak Current I peak [Arms]	Base Speed Nb [min ⁻¹]	Moment of Inertia J [kgm ²]
400 VAC power supply - three-phased - Water cooled									
HKW195_180CAJ	31	20000	1000	120	75.7	180	137	2470	0.024
HKW195_180CAF	52	20000	1000	120	126	180	228	4140	0.024
HKW195_180CAC	101	20000	1000	110	227	180	456	8770	0.024
HKW195_300CAE	63	20000	1000	200	151	300	274	3010	0.04
HKW195_300CAC	105	20000	1000	200	252	300	456	5010	0.04
HKW195_300CAX	175	20000	1000	200	454	300	821	8350	0.04
HKW242_225DAD	50	13000	867	280	112	360	150	1710	0.105
HKW242_225DAC	67	13000	867	275	146	360	199	2330	0.105
HKW242_225DAB	101	13000	867	260	206	360	299	3710	0.105
HKW242_375DAC	67	13000	867	480	154	600	199	1330	0.175
HKW242_375DAB	101	13000	867	480	230	600	299	2010	0.175
HKW242_375DAA	200	13000	867	460	439	600	598	4150	0.175
HKW242_375DBY	276	13000	867	585	578	800	870	4500	0.175
HKW310_200HAE	77	8000	1067	575	166	900	282	1280	0.23
HKW310_200HAD	95	8000	1067	565	204	900	353	1610	0.23
HKW310_200HAC	115	8000	1067	550	265	900	471	2000	0.23
HKW310_300HAE	76	8000	1067	930	180	1350	282	780	0.34
HKW310_300HAD	95	8000	1067	920	223	1350	353	990	0.34
HKW310_300HAC	120	8000	1067	900	290	1350	471	1270	0.34
HKW310_400HAF	62	8000	1067	1250	152	1800	235	475	0.45
HKW310_400HAC	120	8000	1067	1250	303	1800	471	910	0.45
HKW310_400HAY	230	8000	1067	1080	520	1800	942	2030	0.45
HKW310_500HBY	270	7000	933	1840	616	2700	949	1400	0.56

Associated Drives

540 VDC voltage supply

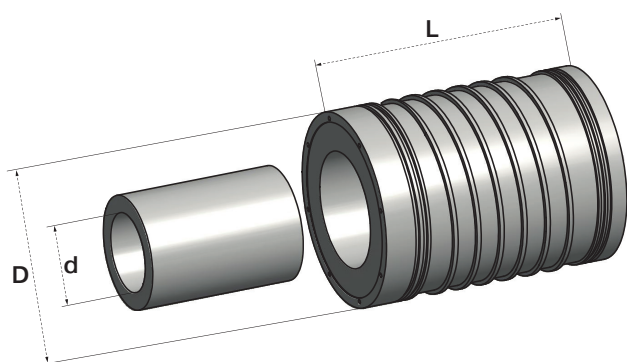
Motor	PARKER AC890SD	
	Drive	Speed limit ⁽¹⁾ N_{max} [min ⁻¹]
HKW085_066BAU	890SD-532160B0-B00-...	13800
HKW085_066BAP	890SD-232300C0-B00-...	27500
HKW085_066BAK	890SD-532450D0-B00-...	30000
HKW085_099BAQ	890SD-232300C0-B00-...	17000
HKW085_099BAL	890SD-532450D0-B00-...	30000
HKW085_099BAI	890SD-432730E0-0...	30000
HKW108_140CAI	890SD-532390D0-B00-...	11300
HKW108_140CAF	890SD-532590D0-B00-...	17000
HKW108_140CAD	890SD-432870E0-0...	20000
HKW155_120CAP	890SD-532450D0-B00-...	7300
HKW155_120CAK	890SD-432730E0-0...	10700
HKW155_120CAH	890SD-433105F...	14700
HKW155_120CAF	890SD-433156F...	19600
HKW155_160CAR	890SD-532390D0-B00-...	3500
HKW155_160CAP	890SD-532590D0-B00-...	5500
HKW155_160CAH	890SD-433105F...	11000
HKW155_160CAF	890SD-433156F...	14700
HKW195_180CAJ	890SD-433156F...	6200
HKW195_180CAF	890SD-433316G...	10400
HKW195_180CAC	890SD-433520H...	20000
HKW195_300CAE	890SD-433361G...	7500
HKW195_300CAC	890SD-433520H...	12400
HKW195_300CAX	consult us	

Motor	PARKER AC890SD	
	Drive	Speed limit ⁽¹⁾ N_{max} [min ⁻¹]
HKW242_225DAD	360 / 302	3800
HKW242_225DAC	360 / 301	5100
HKW242_225DAB	890SD-433361G...	7600
HKW242_375DAC	480 / 402	3100
HKW242_375DAB	890SD-433375H...	4600
HKW242_375DAA	consult us	
HKW242_375DBY	consult us	
HKW310_200HAE	890SD-433361G...	2900
HKW310_200HAD	890SD-433375H...	3600
HKW310_200HAC	890SD-433520H...	4800
HKW310_300HAE	890SD-433361G...	1900
HKW310_300HAD	890SD-433375H...	2400
HKW310_300HAC	890SD-433520H...	3200
HKW310_400HAF	890SD-433316G...	1200
HKW310_400HAC	890SD-433520H...	2400
HKW310_400HAY	consult us	
HKW310_500HBY	consult us	

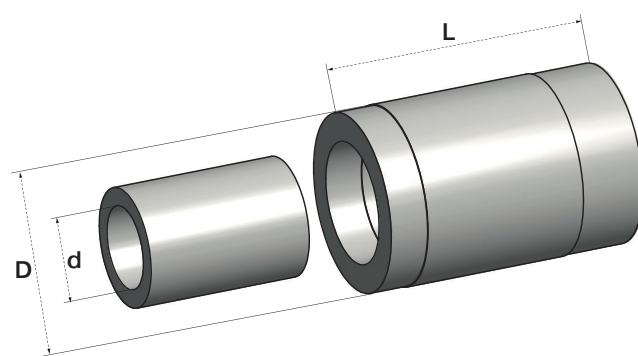
¹⁾ Due to the back emf or the maximal drive frequency

Dimensions

Stator with cooling jacket



Stator without housing



Dimensions [mm]	Without housing			With cooling jacket		
Product	d	D	L	d	D	L
HKW085_066	32	85	134	32	100	136
HKW085_099			167			169
HKW108_140	47	108	208	47	130	210
HKW155_120	75	155.5	192	75	180	194
HKW155_160			232			234
HKW195_180CAx	90	195	274	90	220	276
HKW195_180CAF			283			285
HKW195_180CAC			291			293
HKW195_300CAM/J			394			396
HKW195_300CAE/C			411			413
HKW195_300CAX			464			466

Dimensions [mm]	Without housing			With cooling jacket		
Product	d	D	L	d	D	L
HKW242_225DAD	130	242	322	130	270	324
HKW242_225DAC			330			332
HKW242_225DAB			333			335
HKW242_375DAC			480			482
HKW242_375DAB			477			479
HKW242_375DAA			513			515
HKW242_375DBY	180	310	513	180	340	515
HKW310_200HAE			328			330
HKW310_200HAD			322			324
HKW310_200HAC			325			327
HKW310_300HAE			428			430
HKW310_300HAD			422			424
HKW310_300HAC			425			427
HKW310_400HAF			525			527
HKW310_400HAC			525			527
HKW310_400HAY			540			542
HKW310_500DBY			640			642

Order Code HKW Series

	1	2	3	4	5	6	7	8	9
Order example	HK	W	155	—	080	CAP	R	1	000

1	Motor type	
	HK	Frameless permanent magnet servomotors
2	Cooling	
	W	Water cooling (standard)
3	External diameter	
	085	85 mm
	108	108 mm
	155	155 mm
	195	195 mm
	242	242 mm
	310	310 mm
4	Element	
	-	Motor (stator + rotor)
	S	Stator
	R	Rotor
5	Length L [mm]	
	140	see table "Dimensions"
	200	
	...	

6	Torque/Speed characteristics	
	BAU BAP BAK ...	see table "Technical data"
7	Fix Code	
	R	
8	Mechanical options	
	1	With housing, without hub *
	3	With housing, with hub
9	Interface	
	000	Standard motor

* Mechanical option 1 is not available with external diameter 85 mm