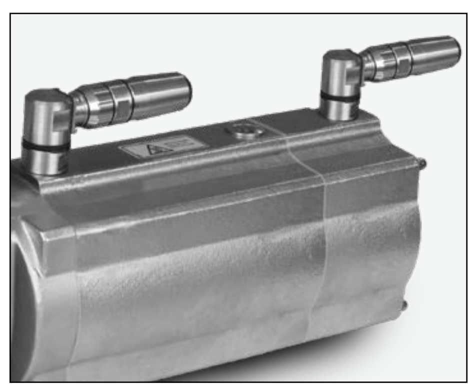
Fully-integrated, non-ventilated, highly efficient Gear Motor

IP67/ IP69K



Fully encapsulated brakes or encoders are available upon request

Sizing and Selection

1. Identify Output RPM, Output Torque and Duty Cycle required for application.

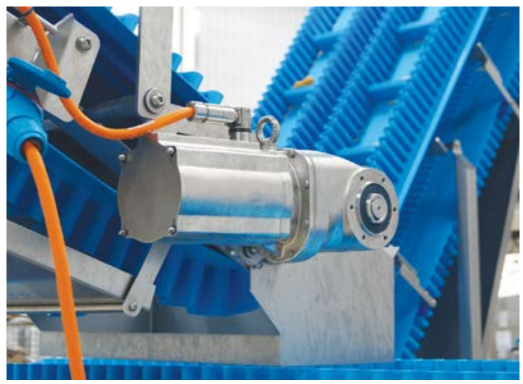
2. Identify any application constraints.

3. Use Performance charts (p.61-62) to select Model # that meets Output RPM, Output Torque and Duty Cycle

4. Build full part number (p.60) with mounting and feature preferences.

5. Use Specification tables (p.60) to identify electrical requirements for operation.

6. Ensure available envelope with Dimensions table (p.64).



Ordering Information

GEARING OPTIONS — BK 08 - 7 4 / **MOTOR OPTIONS** — DAPE09XA4 - TF / **SHAFT OPTIONS** — AV / VA

Type	Size	Mounting	Shaft Style
BK - Helical Bevel	04 08 17	7 - Shaft mount machined face	1 - Solid 4 - Hollow

Type (see Chart 1)	Feature
DAPE08YA4-2	Blank - none
DAPE09XA4	TF (thermistors)
DA09XA4	
SA5E08MA4	
SA5E09SA4	
SA5E09XA4	
SA09XA4	

Shaft Options	Stainless Exterior
AV - Inch	
AM - Metric	

Customer must provide selected OUTPUT RPM from Selection Table on pages 61-62, along with SUPPLY VOLTAGE at time of order.

Part Number Examples:

BK04-74/DAPE08YA4-2/AV/VA

BK17-71/SA5E09SA4-TF/AV/VA

Chart 1

Motor Type	Gearing Size			Description
	BK04	BK08	BK17	
DAPE08YA4-2	X	X		ASM Asynchronous
DAPE09XA4		X	X	ASM Asynchronous
DA09XA4		X	X	ASM Asynchronous
SA5E08MA4	X	X		PMSM Permanent Magnet
SA5E09SA4		X	X	PMSM Permanent Magnet
SA5E09XA4		X	X	PMSM Permanent Magnet
SA09XA4		X	X	PMSM Permanent Magnet

Gearbox Specifications

Model	Torque Rating (lbf-in)	Solid Shaft Sizes	
		Inch AV Option	Metric AM Option
BK04-71 (Solid)	700	1”	25mm
BK08-71 (Solid)	1770	1.25”	30mm
BK17-71 (Solid)	2920	1.375”	35mm

Model	Torque Rating (lbf-in)	Hollow Bore Sizes	
		Inch AV Option	Metric AM Option
BK04-74 (Hollow)	700	0.75"	20mm
BK08-74 (Hollow)	1770	1.375"	35mm*
BK17-74 (Hollow)	2920	1.50"	40mm*

* Indicates max value shown

Motor Specifications

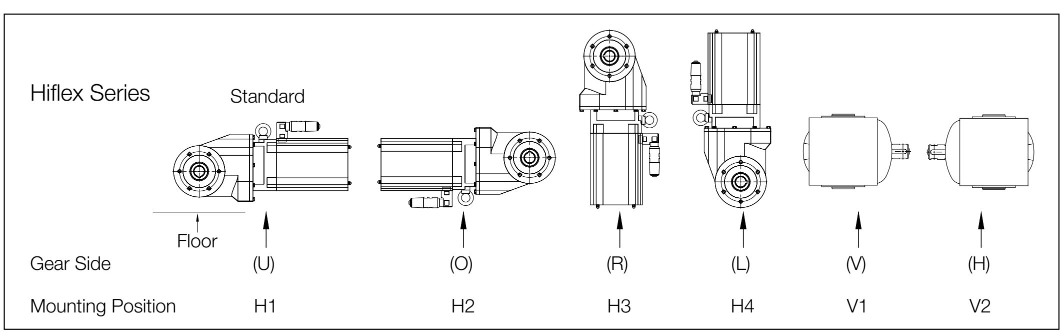
Type	Voltage	Nominal Motor Speed	Frequency	Enclo-sure	Turndown (for short durations)
ASM Asynchronous	230V or 460V**	1800rpm	50/60Hz	TENV	up to 20:1
PMSM Permanent Magnet*	460V** (230-500V)	1800rpm (0-3600rpm)	50/60Hz (0 – 120Hz)	TENV	full torque at virtually zero speed

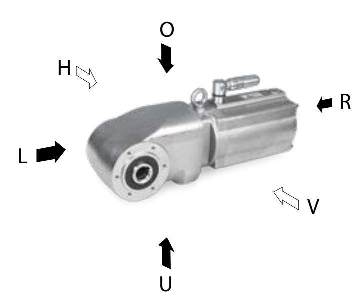
* Requires use of VFD Variable Frequency Drive suitable for use with Permanent Magnet Motors.
** Contact factory for voltages not shown

Important Ordering Comments:

- Additional Output Shaft options are also available (contact factory for more info)
- Additional Motor Options (contact factory for more info): Brakes; encoders; special voltages; Non-std cable exits; variable cable lengths
- Supplied with H1 food grade synthetic oil
- Unless advised, Right-Angle Gearmotors are specified for standard H1 mounting position (see table below)

Right-Angle Mounting Positions





Ratios and Performance: ASM Asynchronous Motor Selection Tables

0.5HP

S1 Continuous Duty

Output RPM	Ratio	Output Torque (in-lbs)	Model
395	4.44	73	**BK08 / DAPE08YA4-2**
290	6.02	99	
240	7.25	119	**BK04 / DAPE08YA4-2**
180	9.71	159	
150	11.67	190	
114	15.29	248	
97	18.00	288	
81	21.54	345	
67	26.36	416	
53	33.33	531	
46	38.18	611	
36.5	47.78	761	
36	48.96	770	**BK08 / DAPE08YA4-2**
28.5	61.68	974	
24.5	72.31	1115	
20	89.30	1389	

1.5HP

S3 40% - Intermittent Duty

Output RPM	Ratio	Output Torque (in-lbs)	Model
395	4.44	199	**BK08 / DA09XA4**
290	6.02	270	
230	7.68	344	
186	9.40	421	
164	10.70	217	
147	11.93	534	
121	14.50	635	
104	16.92	741	
95	18.52	811	
78	22.65	992	
61	28.76	1260	
51	34.25	1500	
43	40.79	1787	
41	42.70	1871	**BK17 / DA09XA4**
34.5	51.22	2219	
29	61.30	2656	
23	*76.79*	*3289*	

0.75HP

S1 Continuous Duty

Output RPM	Ratio	Output Torque (in-lbs)	Model
395	4.44	108	**BK08 / DAPE09XA4**
290	6.02	146	
230	7.68	186	
186	9.40	226	
164	10.70	257	
147	11.93	292	
121	14.50	345	
104	16.92	403	
95	18.52	443	
78	22.65	540	
61	28.76	681	
51	34.25	814	
43	40.79	965	
36	48.96	1142	
28.5	61.68	1451	
24.5	72.31	1664	
23	76.79	1770	**BK17 / DAPE09XA4**
20	88.12	1991	
16.5	108.60	2390	

2.0HP

S3 20% - Intermittent Duty

Output RPM	Ratio	Output Torque (in-lbs)	Model
395	4.44	296	**BK08 / DA09XA4**
290	6.02	402	
230	7.68	513	
186	9.40	628	
164	10.70	699	
147	11.93	796	
121	14.50	947	
104	16.92	1105	
95	18.52	1210	
78	22.65	1479	
73	24.29	1586	**BK17 / DA09XA4**
62	28.66	1872	
48	36.69	2396	
41	42.70	2789	
34.5	*51.22*	*3308*	

1.0HP

S3 60% - Intermittent Duty

Output RPM	Ratio	Output Torque (in-lbs)	Model
395	4.44	148	**BK08 / DA09XA4**
290	6.02	201	
230	7.68	256	
186	9.40	314	
164	10.70	349	
147	11.93	398	
121	14.50	474	
104	16.92	553	
95	18.52	605	
78	22.65	740	
61	28.76	939	
51	34.25	1118	
43	40.79	1332	
36	48.96	1581	
34.5	51.22	1654	**BK17 / DA09XA4**
29	61.30	1980	
23	76.79	2452	
20	88.12	2782	
16.5	*108.60*	*3389*	

Above tables based on 60Hz supply and ambient temperature of up to 40°C (104°F).

Ratings are thermally limited based on the duty cycle noted in accordance with EN 60034-1.

All continuous duty rated gearmotors have an efficiency rating of IE3

Intermittent duty defines the percentage of time over a 10 minute cycle that the gearmotor can be operating at full rated torque with the remainder of the cycle at dwell.

For operating conditions not listed above, please contact the factory.

Service factor > 1.0 for all values except those in italics font.

Ratios and Performance: PMSM Permanent Magnet Motor Selection Tables

0.5HP

S1 Continuous Duty

Output RPM	Ratio	Output Torque (in-lbs)	Model
395	4.44	87	**BK08 / SA5E08MA4**
290	6.02	117	
240	7.25	142	**BK04 / SA5E08MA4**
180	9.71	186	
150	11.67	226	
114	15.29	292	
97	18.00	341	
81	21.54	412	
67	26.36	496	
53	33.33	628	
46	38.18	726	
36.5	47.78	903	
36	48.96	920	**BK08 / SA5E08MA4**
28.5	61.68	1159	
24.5	72.31	1345	
20	*89.30*	*1646*	

0.75HP

S1 Continuous Duty

Output RPM	Ratio	Output Torque (in-lbs)	Model
395	4.44	126	**BK08 / SA5E08MA4**
290	6.02	171	
240	7.25	204	**BK04 / SA5E08MA4**
180	9.71	274	
150	11.67	332	
114	15.29	429	
97	18.00	496	
81	21.54	593	
67	26.36	735	
61	28.76	797	**BK08 / SA5E08MA4**
51	34.25	947	
43	40.79	1133	
36	48.96	1345	
28.5	61.68	1699	
23	76.79	2080	**BK17 / SA5E09SA4**
20	88.12	2345	
16.5	*108.60*	*2876*	

1.0HP

S1 Continuous Duty

Output RPM	Ratio	Output Torque (in-lbs)	Model
395	4.44	173	**BK08 / SA5E09SA4**
290	6.02	235	
230	7.68	296	
186	9.40	367	
164	10.70	407	
147	11.93	460	
121	14.50	549	
104	16.92	646	
95	18.52	708	
78	22.65	858	
61	28.76	1097	
51	34.25	1301	
43	40.79	1558	
41	42.70	1628	**BK17 / SA5E09SA4**
34.5	51.22	1903	
29	61.30	2301	
23	76.79	2832	
20	*88.12*	*3230*	
16.5	*108.60*	*3938*	

1.5HP

S1 Continuous Duty

Output RPM	Ratio	Output Torque (in-lbs)	Model
395	4.44	252	**BK08 / SA5E09XA4**
290	6.02	341	
230	7.68	434	
186	9.40	531	
164	10.70	593	
147	11.93	673	
121	14.50	805	
104	16.92	938	
95	18.52	1027	
78	22.65	1257	
61	28.76	1602	
48	36.69	2036	**BK17 / SA5E09XA4**
41	42.70	2345	
34.5	51.22	2788	
29	*61.30*	*3363*	
23	*76.79*	*4160*	

2.0HP

S3 60% - Intermittent Duty

Output RPM	Ratio	Output Torque (in-lbs)	Model
395	4.44	345	**BK08 / SA09XA4**
290	6.02	468	
230	7.68	597	
186	9.40	731	
164	10.70	814	
147	11.93	928	
121	14.50	1103	
104	16.92	1287	
95	18.52	1409	
78	22.65	1723	
73	24.29	1848	**BK17 / SA09XA4**
62	28.66	2180	
48	36.69	2791	
41	*42.70*	*3248*	
34.5	*51.22*	*3853*	

(Requires use of VFD Variable Frequency Drive suitable for use with Permanent Magnet Motors)

Above tables based on 60Hz supply and ambient temperature of up to 40°C (104°F).

Ratings are thermally limited based on the duty cycle noted in accordance with EN 60034-2.

All continuous duty rated gearmotors have an efficiency rating of IE5.

Intermittent duty defines the percentage of time over a 10 minute cycle that the gearmotor can be operating at full rated torque with the remainder of the cycle at dwell.

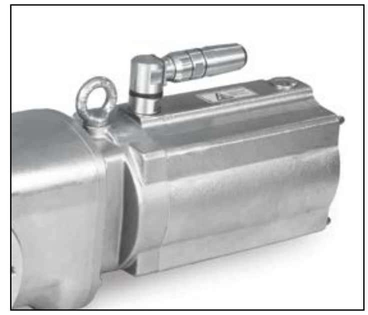
For operating conditions not listed above, please contact the factory.

Service factor > 1.0 for all values except those in italics font.

Contact the factory for recommendations of VFD Variable Frequency Drives suitable for use with permanent magnet motors.

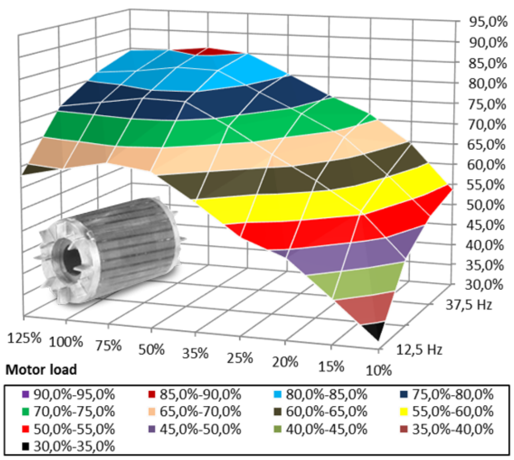
Motor Options

Sustainable Performance Motor Design

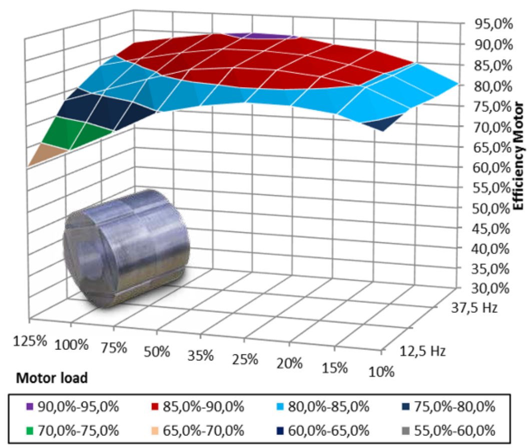


- Smooth motor housing and graded surfaces promote water runoff and easy cleaning.
- Non-ventilated motor avoids contaminant dispersion common to fan-cooled models.
- ASM Asynchronous motor offer simple install and start-up for a wide range of applications, providing reliable, high efficiency operation.
- PMSM Permanent Magnet motors offer savings of up to 40% on energy consumption based on variation of loading common in many applications when utilized with a VFD. By using its turndown capability, the PMSM motor allows the user to consolidate a wide range of ratios into one stocked gearmotor and maintain high efficiency across the expanded RPM range.

Efficiency ASM; 1.5HP; IE3



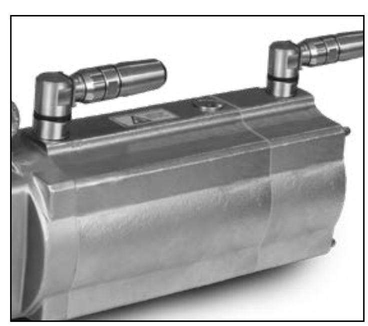
Efficiency PMSM; 1.5HP; IE3



CleanConnect™ Plug Connector

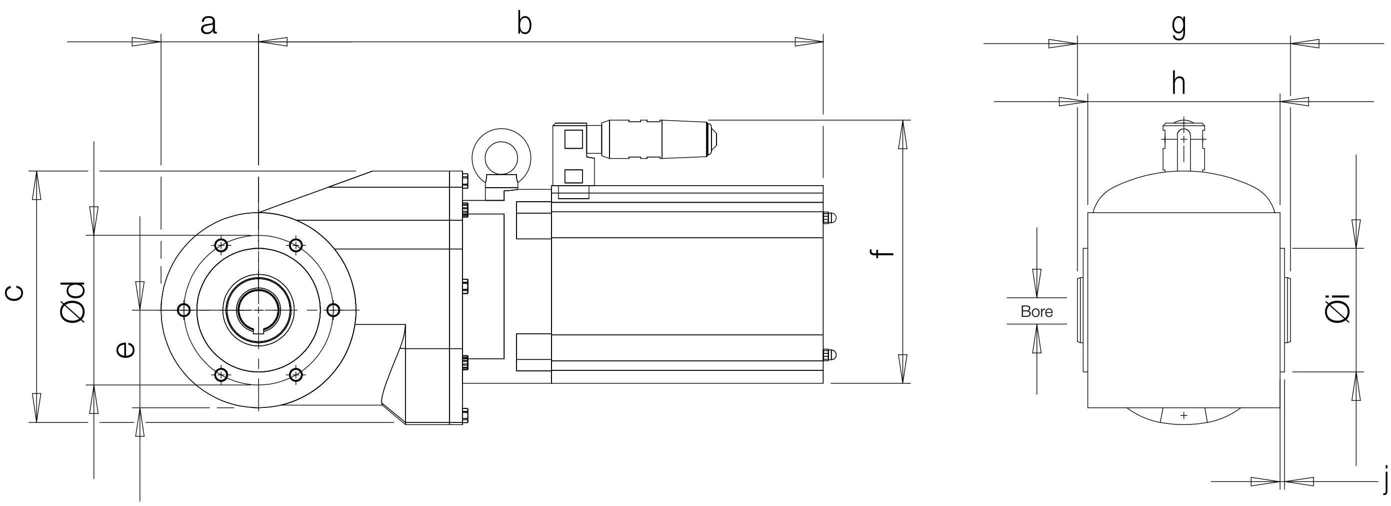
- The CleanConnect™ stainless steel plug meets the toughest requirements for corrosion protection and allows rapid installation of the drive in a few easy steps.
- The stainless steel connector maintains the ingress protection of the drive. It ensures reliable connection without accidental detachment, along with a high IP67/IP69K protection rating.
- The associated power cable, as counterpart to the stainless steel plug, resists cleaning agents from pH2 to pH12 and can be assembled in any desired length.

Brake or Encoder Options



- Brake design is spring set and electro-mechanically released. Types include holding or dynamic. Spring-loaded pressure plate instantaneously releases when power is removed to lock the rotor shaft. Pressure plate automatically resets when power is restored.
- Encoder design is optical incremental. There are various options depending on the desired signal waveform and required resolution.
- Brakes or encoders are completely integrated into the motor housing, i.e. the high protection rating IP67/IP69K and the aseptic design are completely retained.
- Contact factory to add brake or encoder options. Customer must provide application details for review to reduce the risk of exceeding thermal limits.

Dimensions



Hollow output shaft option shown

Dimensions (mm)

Type	a	b	c	d	e	f	g	h	i	j
BK04... / DAPE08YA4-2	59	356	152	85	59	205.5	131	122	70	2.5
BK04… / SA5E08MA4	59	356	152	85	59	205.5	131	122	70	2.5
BK08... / DAPE08YA4-2	62.5	374	167	100	62.5	205.5	150	134	80	3.5
BK08… / SA5E08MA4	62.5	374	167	100	62.5	205.5	150	134	80	3.5
BK08… / DAPE09SA4	62.5	413.5	167	100	62.5	216	150	134	80	3.5
BK08… / SA5E09SA4	62.5	413.5	167	100	62.5	216	150	134	80	3.5
BK08… / SA5E09XA4	62.5	413.5	167	100	62.5	216	150	134	80	3.5
BK17… / DAPE09XA4	75	434.5	195	115	75	216	164	148	95	3.5
BK17… / SA5E09SA4	75	434.5	195	115	75	216	164	148	95	3.5
BK17… / SA5E09XA4	75	434.5	195	115	75	216	164	148	95	3.5

Brake or Encoder option will add 100mm of additional length to “b” dimension. Contact factory for these options.

Metric Shaft Options (mm)

Gearbox	Hollow Bore	Solid	
		Diameter	Length
	H7 Tolerance	k6 Tolerance	
BK04	20	25	50
BK08	35	30	60
BK17	40	35	70

Inch Shaft Options (inches)

Gearbox	Hollow Bore	Solid	
		Diameter	Length
BK04	0.75	1.00	1.97
BK08	1.375	1.25	2.36
BK17	1.50	1.375	2.76

Notes