



# Hygienic Drive Solutions

FOR THE FOOD INDUSTRY



**BAUER GEAR MOTOR™**

# IT'S TIME TO CHANGE



**... IT'S TIME  
FOR A CLEAN  
SOLUTION!**

**NEW**



Highly resilient components make machines more compact, fast, hygienic, efficient and precise.

Safety guards for sensitive components are increasingly becoming a thing of the past. With their new designs, Bauer gear motors, stainless steel and aseptic solutions guarantee that these components can be cleaned with water and even aggressive cleaning agents.

With its new range, Bauer has succeeded in meeting the needs of the food and beverage industry. Bauer™ gear motors meet requirements for cleanliness and also withstand regular cleaning using steam, high-pressure cleaners and corrosive chemicals.

# BAUER DRIVE SOLUTIONS

## IN COMPLIANCE WITH IFS, HACCP AND CIP REQUIREMENTS

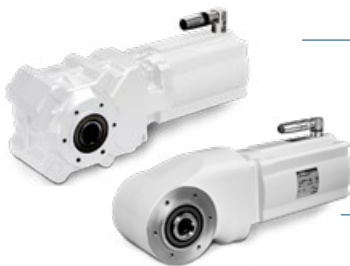
For all areas, such as raw material handling, processing, packing and storage, where, based on a risk analysis and analysis of the associated risks, product contamination may occur, Bauer supplies geared motors in accordance with the IFS food provisions and the checklist for unannounced works tours (IFS food checks). Accordingly, we provide you with solutions which apply to the provisions for the implementation of **HACCP (Hazard Analysis Critical Control Point)**, i.e. the risk analysis of critical control points, and to guarantee general hygiene and damage prevention. The unique design of our products helps you to reduce the risk factor in your HACCP concept and guarantee traceability in the food process.

Bauer's **hygienic design** drives are intended as a well-thought-out range, i.e. various gear/motor types and gear/motor sizes can be combined with each other based on a **modular principle** and can be adapted to your individual needs using **brake and encoder solutions**. **Stainless steel hollow shafts** are available as standard in various diameters for many gear types and sizes.



### CleanDRIVE

All CleanDRIVE geared motor combinations have protection ratings **IP66 or IP67**, depending on the selected connection type.



### AsepticDRIVE

All gear motor combinations in the **aseptic design** have protection rating **IP67/IP69K** and a smooth surface with a special aseptic coating which complies with **FDA Guidelines Title 21 CFR 175.300** regarding contact with food and is resistant to cleaning agents with **pH values 2-12**. The specially coated surface sheds liquids reliably and completely. The aseptic coating also complies with the **EHEDG**-recommended surface roughness ( $R_a = 0.8 \mu m$ ), and the series offers a variety of connection options.



### HiflexDRIVE

Aseptic design

The HiflexDRIVE gear motors in stainless steel design are completely produced in **washdown design** and are designed especially for **extreme environmental conditions**. **Stainless steel hollow shafts** are available as standard in various diameters for each gear size. As standard, these gear motor combinations have protection rating **IP67/IP69K** designed for very high cleaning intervals. In connection with the **permanent magnet synchronous motor technology (PMSM)**, this ensures an improved and energy-conscious conversion of electrical energy into mechanical output.



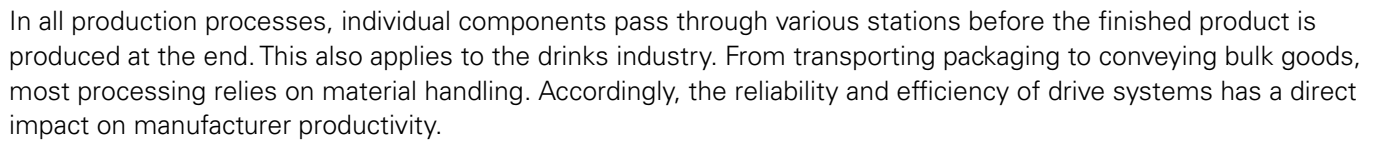
### HiflexDRIVE

Standard design

The HiflexDRIVE range consists of three gear sizes **BK04, BK08, BK17** and is the perfect fit in all areas of material handling where durability, maintainability and efficiency are crucial.



**FOR PRODUCTION AND LOGISTICS**



# DRIVE SOLUTIONS

FOR PRODUCTION AND LOGISTICS



**HiflexDRIVE**  
STANDARD DESIGN

## HIGHLY FLEXIBLE AND ADAPTABLE IN NON-HYGIENIC APPLICATIONS

The innovative bevel gear motors in standard design are remarkably compact, flexible and efficient. As the shape and radius of the HiflexDRIVE are adapted to the requirements of material handling, **its low overhead height allow it to fit seamlessly into all areas of material handling.**



**HiflexDRIVE**  
ASEPTIC DESIGN

## HIGHEST HYGIENIC SAFETY IN EXTREME APPLICATIONS

The aseptic design of the HiflexDRIVE similarly combines the benefits of the AsepticDRIVE with Bauer's permanent-magnet synchronous motor technology. These geared motors are perfectly suited for use **in areas which require high levels of hygiene**, where a consistent torque and low overhead height are required.



**HiflexDRIVE**  
STAINLESS STEEL DESIGN

## HIGHEST MECHANICAL RESILIENCE IN THE HARDEST APPLICATIONS

Stainless steel allows the use of cleaning materials containing acids and alkalis, which, when combined with disinfectants, help to kill germs and bacteria. The stainless steel design eliminates hygiene risks caused by damage as a result of impact or long-term use **in intensive cleaning areas** and is particularly resistant to mechanical influences.



**CleanDRIVE**

## HIGHEST HYGIENIC SAFETY IN MODERATE APPLICATIONS

The CleanDRIVE motors boast impressive alkali- and acid-resistant coating as standard and are used **in wet areas with low hygienic requirements.**



**AsepticDRIVE**

## HIGHEST HYGIENIC SAFETY IN EXTREME APPLICATIONS

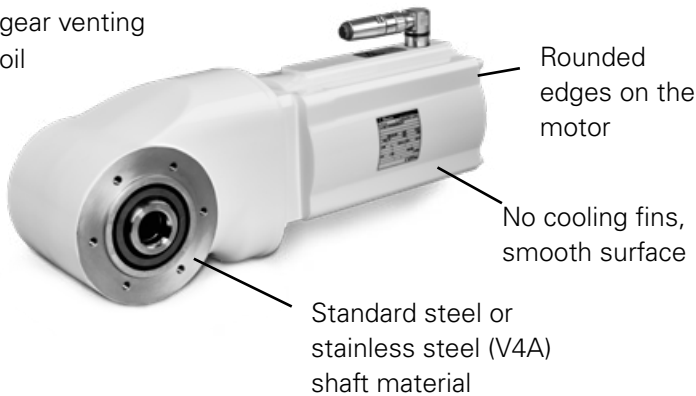
**In open production processes**, the aseptic gear motors guarantee excellent hygiene with their smooth, water-resistant, easy-clean surfaces. The motor design which takes into account the high hygienic requirements, with no cooling fins or fans, prevents air turbulence and subsequent re-infection of the production facility.



# MODULAR SYSTEM SOLUTIONS

## MAIN FEATURES

- Special paints protect against aggressive acids, alkalis and salts, as well as aggressive environmental conditions
- Efficient motor technology and dimensioning
- High protection ratings IP66, IP67 and IP69K
- No self-ventilation
- No gear venting
- H1 oil





## YOUR BENEFITS

- No hidden dirt pockets in the motor
- Proven, rapid connection technology
- Coating suitable for cleaning and resistant to cleaning agents between pH2 and pH12
- Water runs off easily, hydrophobic behaviour
- No air intake and distribution of germs through air flows; reduced re-infection risk
- Energy efficiency IE2 - IE5
- Hygienic overall system design

# CleanDRIVE

## HIGHEST HYGIENIC SAFETY IN MODERATE APPLICATIONS

- Non-ventilated, preventing re-infection in the surrounding area
- Motor connection through a stainless steel screwed cable gland
- Surface with alkali- and acid-resistant coating (pH2 to pH12)
- Standard steel or stainless steel (V4A) shafts
- Protection rating IP66 in terminal box design
- Protection rating IP67 in cable design
- H1 oil optional
- High energy efficiency IE2 - IE5
- Integrated brake and/or encoder (optional)
- Thermistors as standard
- Iso class F as standard
- All RAL colours available

	Motor power <sup>[2]</sup>	IE5 0.55 kW – 3.0 kW none, IE2, IE3 0.06 kW – 1.5 kW
	Gear torque <sup>[1]</sup>	45 Nm - 1,050 Nm
	Gear type	BG, BF, BK
	Hygienically enclosed brakes and/or encoder unit	
	Connection optionally via terminal box (IP66)	
	Motor power <sup>[2]</sup>	IE5 0.55 kW – 1.5 kW none, IE2, IE3 0.06 kW – 0.55kW
	Gear torque <sup>[1]</sup>	BK06 80 Nm BF06 90 Nm
	Gear type	BK, BF

<sup>[1]</sup>Torque is dependent on ratio <sup>[2]</sup>Ratio and power is dependent on the motor size

## YOUR BENEFITS

- Cable can be assembled in any desired length for screwed cable gland
- Terminal box version equipped with WAGO terminal block reduces connection times
- Suitable for moderate conditions with regard to cleaning methods and agents
- **Clean In Place (CIP)** – fully automatic cleaning without dismantling the system
- Reduced cleaning time
- Cost savings due to smooth and highly efficient drive



# MODULAR SYSTEM SOLUTIONS

## AsepticDRIVE

### HIGHEST HYGIENIC SAFETY IN EXTREME APPLICATIONS

- Motor connection through round stainless steel plug (CleanConnect), rotation-locked
- Short connection times
- Plug cable can be freely assembled
- High protection rating IP67/IP69K
- H1 oil optional
- Stainless steel hollow shafts (V4A) as standard in various diameters
- High energy efficiency IE2 - IE5
- Integrated brake and/or encoder (optional)
- All RAL colours available
- Thermistors as standard
- Iso class F as standard
- Non-ventilated, preventing re-infection in the surrounding area

Hiflex	Motor power <sup>[2]</sup>	IE5 IE2, IE3	0.55 kW – 3.0 kW 0.25 kW – 1.1 kW
	Gear torque <sup>[1]</sup>	80, 200 and 330 Nm	
	Gear type	BK 04 <sup>[3]</sup> , 08, 17	
	Surface with alkali- and acid-resistant coating (pH2 to pH12)		
Standard	Motor power <sup>[2]</sup>	IE5 IE2, IE3	0.55 kW – 3.0 kW 0.25 kW – 2.2 kW
	Gear torque <sup>[1]</sup>	45 Nm - 1,050 Nm	
	Gear types	BG, BF, BK	
	Surface with alkali- and acid-resistant coating (pH2 to pH12)		
	Hygienically enclosed brakes and/or encoder		

<sup>[1]</sup>Torque is dependent on ratio    <sup>[2]</sup> Ratio and power is dependent on the motor size    <sup>[3]</sup> On request

<sup>[1]</sup>Torque is dependent on ratio <sup>[2]</sup> Ratio and power is dependent on the motor size <sup>[3]</sup> On request



### YOUR BENEFITS

- Short connection times
- Standard cleaning agents safe to use on the coated surface
- Standard cleaning procedures can be performed without additional measures (covering the drive etc.)
- Strong resistance to rust
- CIP-ready design
- Reduced cleaning time
- Cost savings due to smooth and highly efficient drive



# MODULAR SYSTEM SOLUTIONS

## StainlessSERIES

### HIGHEST MECHANICAL RESILIENCE IN THE HARDEST APPLICATIONS

- Highly robust housing withstands cleaning agents and methods and mechanical influences
- Connection using stainless steel plug connection (CleanConnect) or cable
- Stainless steel shafts (V4A) in various diameters as standard
- Protection rating IP67/IP69K
- CIP-ready design
- High energy efficiency IE2-IE5

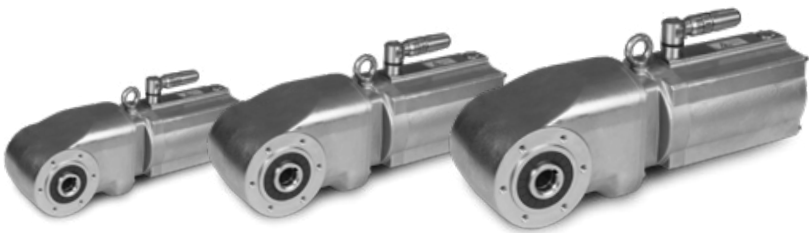
#### YOUR BENEFITS

- Suitable for the toughest conditions (fish, milk, meat industry)
- Standard cleaning agents safe to use on the stainless steel surface
- Standard cleaning methods and brush cleaning can be performed without additional measures (covering the drive etc.)
- CIP-ready design
- Cost savings due to smooth and highly efficient drive
- Reduced cleaning time
- Short connection times
- Permanent magnet synchronous motor technology (PMSM) makes higher motor powers possible in stainless steel design
- Low surface temperature due to modern motor technology

Asynchronous technology	Motor power <sup>[2]</sup>	IE2, IE3    0.18 kW – 0.55 kW	
	Motor sizes	DA08, DA09	
	Gear torque <sup>[1]</sup>	BK04	80 Nm
		BK08	200 Nm
		BK17	330 Nm
	Gear type	BK	
	Hollow shafts in various diameters		
Various fittings available (C-Flange, torque restraining arm)			
No gear venting			
PMSM technology	Motor power <sup>[2]</sup>	IE5	0.25 kW – 1.1 kW
	Motor sizes	SA08, SA09	
	Gear torque <sup>[1]</sup>	BK04	80 Nm
		BK08	200 Nm
		BK17	330 Nm
	Gear type	BK	
	Hollow shafts in various diameters		
	Various fittings available (C-Flange, torque restraining arm)		
No gear venting			

<sup>[1]</sup> Torque is dependent on ratio

<sup>[2]</sup> Ratio and power is dependent on the motor size



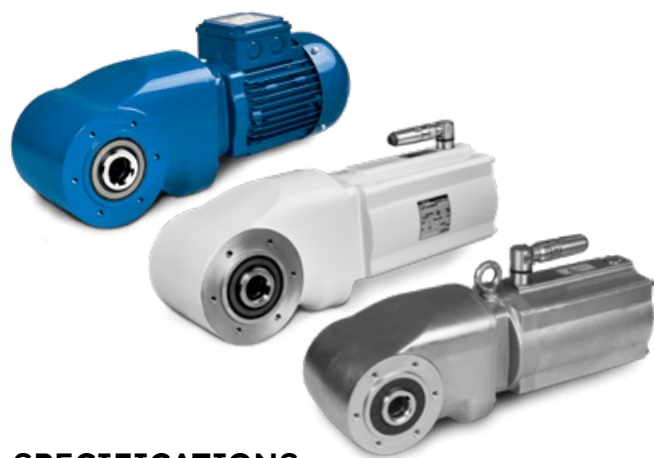


# MODULAR SYSTEM SOLUTIONS

## HiflexDRIVE

### HIGHLY FLEXIBLE AND ADAPTABLE

- Special design for bevel gear BK04, BK08, BK17
- Available as standard, AsepticDRIVE, CleanDRIVE and in stainless steel
- Asynchronous and PMSM motors can be fitted
- Encoder and brakes optionally available, in stainless steel on request
- Hollow shafts in various standard diameters
- Housing in aluminium and stainless steel
- Standard design with C-Flange
- Optional A-Flange available
- Flexible shaft diameter
- All standard shaft types
- No interference contours
- Shape and radius adapted to material handling
- Special aseptic coating (not for stainless steel)
- Modular design



### YOUR BENEFITS

- Variation in housing materials (aluminium, V2A)
- Range of fittings (various flanges, shaft diameters)
- Shape and radius adapted to material handling
- Efficiency classes IE1-IE5; operating modes S1-S9
- Protection ratings IP65, IP66, IP67 and IP69K
- Cost reduction due to lower mains connection output
- Scalable motor technologies for global use
- PSM technology enables energy savings of more than 30% in comparison with IE3 under partial-load conditions
- Fast and secure connection
- FDA-compliant coating
- High process safety due to prevention of germ and dirt build-up
- Low weight
- Easy to use and compact assembly
- Cost reduction in system dimensioning
- High efficiency due to 2-stage gear design
- Low overhead height
- Smooth, water-resistant surfaces make it easy to clean and reduce cleaning times
- Stainless steel solutions offer mechanical resilience
- Aseptic coating - withstands almost all standard industrial cleaning agents
- Food-grade gear oil and shaft seals

### SPECIFICATIONS

Gears	BK04	BK08	BK17
Torque <sup>[1]</sup>	80 Nm	200 Nm	330 Nm
Gear reductions <sup>[2]</sup>	7.25 – 63.33	4.44 - 102.5	4.54 - 108.6
Motor sizes	Aseptic <sup>[3]</sup> /Clean Drive <sup>[3]</sup> : DA08, SA08 Stainless steel: DA08, SA08	Standard: D08, S08 Aseptic/Clean Drive: DA08, SA08 Stainless steel: DA08, DA09, SA08, SA09	Standard: D08, D09, S08, S09 Aseptic/Clean Drive: DA08, DA09, SA08, SA09 Stainless steel: DA09, SA09
Motors			
Power <sup>[2]</sup>	0.18 kW ... 6.3 kW		
Efficiency classes	w/o rating and IE1 up to IE5		
Protection ratings	IP65, IP66, IP67/IP69K		
<sup>[1]</sup> Torque is dependent on ratio <sup>[2]</sup> Ratio and power is dependent on the motor size <sup>[3]</sup> In preparation			

# TECHNICAL FEATURES

## GEARS

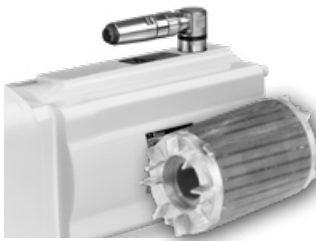
### Lubricants



- The gears can be filled with **food-grade H1 lubricant**, depending on the specific application. In that case the design is chosen to avoid the need for a gear vent valve.
- The ball bearings of the motor are also lubricated with a suitable **food-grade H1 bearing grease**.

## MOTORS

### Non-ventilated asynchronous motors



- **Smooth housing surface without cooling fins** prevents formation of dirt pockets and spread of germs.
- The smooth motor housing prevents the accumulation of dirt deposits.
- In addition, the **fanless motor does not cause any air turbulence**, thereby avoiding food recontamination and the spread of germs.
- The motor dimensioning is selected to ensure that losses are very low and to enable high efficiency accordingly.
- **Brakes and encoders** are completely **integrated into the motor housing**, i.e. the high protection rating **IP67/IP69K** and the aseptic design are completely retained.

### Non-ventilated Permanent Magnet Synchronous Motors (PMSM)



- **Smooth housing surface without cooling fins** prevents formation of dirt pockets and spread of germs.
- The smooth motor housing prevents the accumulation of dirt deposits.
- In addition, the **fanless motor does not cause any air turbulence**, thereby avoiding food recontamination, as no air intake of dirt or germs are spread through air flow.
- The motor dimensioning is selected to ensure that losses are very low and to enable **high efficiency** accordingly.
- **Brakes and encoders** are completely **integrated into the motor housing**, i.e. the high protection rating **IP67/IP69K** and the aseptic design are completely retained.
- PMSM motors can achieve additional **energy savings of up to 30%** compared to asynchronous motors, especially in partial-load operation. Permanent magnet synchronous motors always require a frequency inverter. Most standard frequency inverters are suitable for this purpose.

## CONNECTIONS

### 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.

### Stainless steel cable gland



- Direct cable connection with a **stainless steel cable gland in IP67** combines extremely high corrosion protection with compact installation. The installed power cable can be assembled in any desired length and withstands cleaning agents from **pH2 to pH12**. **Low start-up costs** and **minimal interfering contours** are standout features of this type of connection technology.

### Terminal boxes



- Terminal box connection with proven **Wago terminal block technology** ensures **shake-proof and reliable cable connection**. Not having cable ferrules **reduces installation time, eliminating time-consuming screw clamping** of conductors on a terminal board. The terminal box option has **IP66** protection rating.

# HYGIENE AND PROCESS SAFETY

## THE ASEPTIC DRIVE PAINTING SYSTEM

- The special paint coating on the aseptic drive produces an unstructured surface which has an extremely low level of roughness, preventing mechanical adhesion.
- The paint for the topcoat is nonpolar (uncharged molecules), i.e. liquids of the opposite polarity cannot be attracted as it behaves in a hydrophobic manner.
- The topcoat is **FDA-compliant** in accordance with **Title 21 CFR 175.300** and is therefore authorised for use in the food processing industry.
- The surface coating of the aseptic drive is resistant to cleaning agents from **pH 2 to pH 12**.
- The active surface for specific adhesion is reduced dramatically.

Despite being carefully selected for use in F&B processes, **housing surfaces** still have surface imprecisions (rippling, roughness).

**Primer** reduces roughness and provides an elastic base for additional coats.



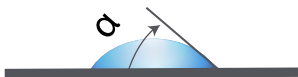
The **topcoat** minimises roughness as much as possible and produces a smooth, unstructured surface with macroscopic ripples.

The **base coat** reduces roughness even further.

### DRIVE SURFACE DESIGN

#### complete wetting

- hydrophilic behaviour, e.g. stainless steel
- running off only possible at a steep angle, residues remain



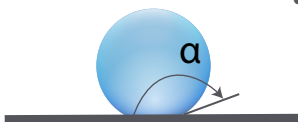
#### partial wetting

- liquid barely spreads
- running off possible at a moderate angle, little or no residues remain



#### no wetting

- hydrophobic behaviour, e.g. coatings, plastics
- running off possible at a slight angle, no residues remain



➔ **Ideal: no wetting → drip-off effect**

## YOUR BENEFITS

- Reduced bacterial growth allows production times to be extended by reducing cleaning intervals. Furthermore, the consumption of cleaning agents is lowered, reducing costs and helping protect the environment.
- Separate estimation of various stages of production not required as chemical resistance towards
  - **product-specific substances**
    - such as butanoic and lactic acids
    - ammonia and soap solution
  - **process-specific substances**
    - standard cleaning agents and disinfectants
    - alkalis and acids, chlorine dioxide, peracetic acidis guaranteed.
- Increased safety in the entire production area



# CLEAN IN PLACE (CIP)

CIP cleaning methods allow cleaning of technical processing machinery on surfaces which come into contact with the product without major dismantlement. The high **IP67/IP69K** protection rating and the smooth design of Bauer™ geared motors without potential dirt pockets (such as cooling fins on the motor housing) allow the geared motor to be cleaned together with the machinery.

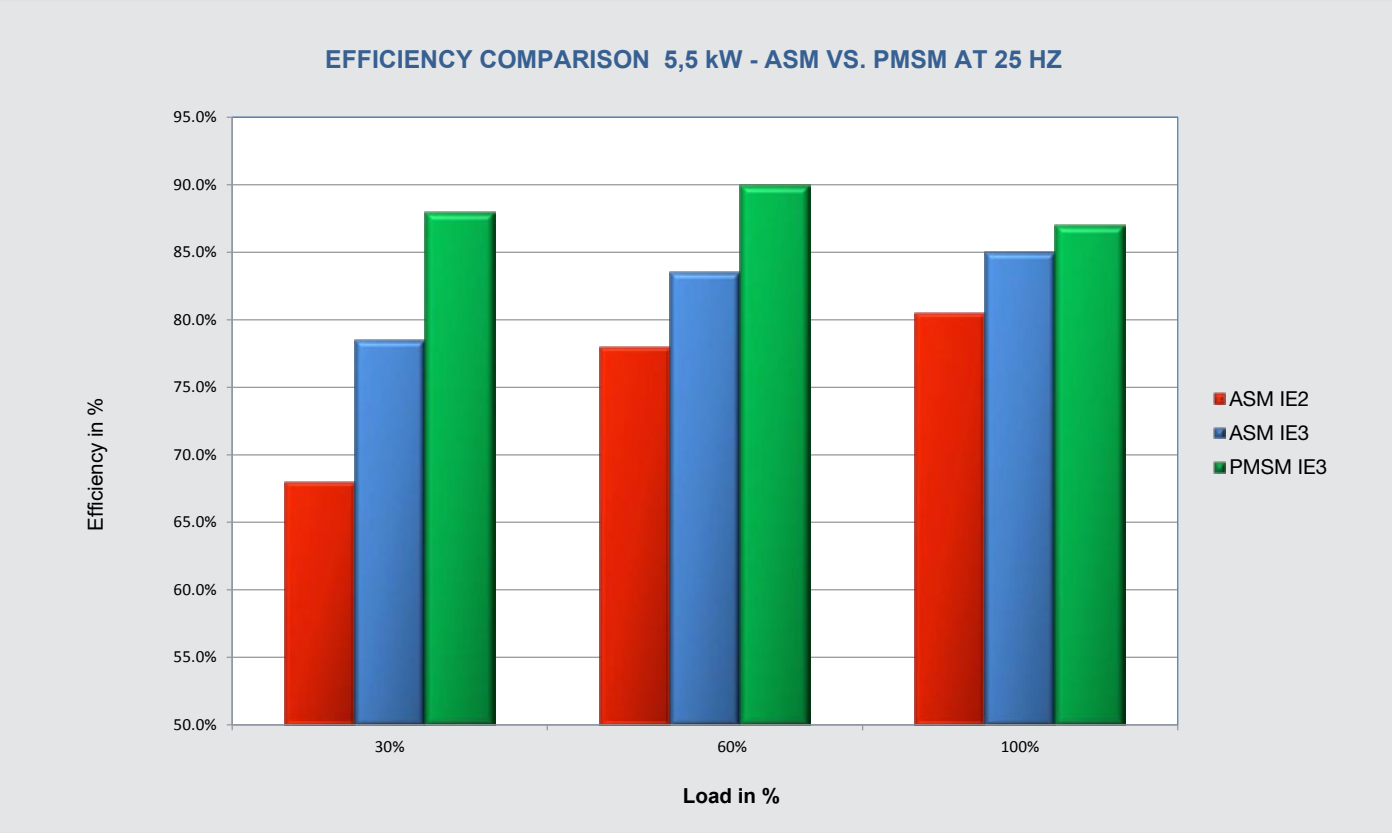
## Degrees of protection provided by enclosures (IP xx)

1. Code number	Protected against foreign objects	2. Code number	Protected against water
0	Not protected	0	Not protected
1	Protected against solid foreign bodies of 50 mm diameter and greater	1	Protected against dripping water from above
2	Protected against solid foreign bodies of 12.5 mm diameter and greater	2	Protected against dripping water from above - up to 15° slanted housing
3	Protected against solid foreign bodies of 2.5 mm diameter and greater	3	Protected against spray water from above - up to 60° slanted housing
4	Protected against solid foreign bodies of 1.0 mm diameter and greater	4	Protected against splash water - all directions
5	Dust-proof	5	Protected against jets of water - all directions
<b>6</b>	<b>Dust-tight</b>	<b>6</b>	<b>Protected against strong jets of water under higher pressure</b>
		<b>7</b>	<b>Protected against temporary immersion</b>
		8	Protected against prolonged submersion
		<b>9K</b>	<b>Protected against water during high pressure or steam jet cleaning</b>



# ENERGY EFFICIENT DRIVE TECHNOLOGY

## BAUER PERMANENT MAGNET MOTORS



## OUR MOTOR PORTFOLIO ACCORDING IEC 60034-30-X

IE- Class \ kW	0.12	0.18	0.25	0.37	0.55	0.75	1.1	1.5	2.2	3	4	5.5	7.5	9.5	11	15	18.5	22	30	37
IE1 Asynchronous	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
IE2 Asynchronous	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
IE3 Asynchronous	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
IE4 Asynchronous				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
IE3 PMSM					●	●				●	●		●							
IE4 PMSM	●		●	●		●	●	●	●	●	●	●	●		●					
IE5 PMSM		●	●	●	●	●		●	●		●	●	●	●	●	●				

● = in planning

# CUSTOMER SPECIFIC OPTIONS

## EXTERIOR DESIGN FEATURES

HiflexDRIVE  
Stainless Steel



HiflexDRIVE  
Aseptic




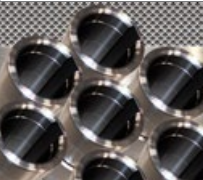




Series BG  
Stainless Steel



Series BG, BF, BK  
Aseptic



Graded Surfaces		✓	✓	✓	✓
Rounded Edges and Corners		✓	✓	✓	✓
Aseptic Coating		—	✓	—	✓
<b>Shaft Material</b>					
Stainless Steel		✓	optional	✓	optional
Standard Steel		—	✓	—	✓
Certification for FDA conform Coating		—	✓	—	✓
<b>Mounting Features</b>					
Stainless Steel		optional	optional	—	optional
Torque Arm		—	optional	optional	optional
Output Flange		—	optional	optional	optional





# CUSTOMER SPECIFIC OPTIONS

## SEALING FEATURES

HiflexDRIVE  
Stainless Steel



HiflexDRIVE  
Aseptic



Series BG  
Stainless Steel



Series BG, BF, BK  
Aseptic



Non-Vented Housing		✓	✓	✓	✓
Double-Lipped Shaft Seal		✓	✓	✓	✓
<b>Shaft Cover</b>					
Stainless Steel		optional	—	—	—
Plastic		optional	optional	—	optional
Cast Iron		—	optional	—	optional
Non-Ventilated Motor		✓	✓	✓	✓
<b>Motor Connection</b>					
Plug Connector		✓	✓	✓	✓
Cable		optional	optional	optional	optional
Terminal Box		on request	optional	optional	optional
<b>Protection Class</b>					
IP66		—	—	optional	—
IP67		✓	✓	✓	✓
IP69K		✓	✓	✓	optional
Integral Brake/Encoder		optional	optional	optional	optional

# BAUER GEAR MOTOR™

## Regal Rexnord

[regalrexnord.com](https://regalrexnord.com) [bauergears.com](https://bauergears.com)

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