



## 2 Product Description and Overview of Types

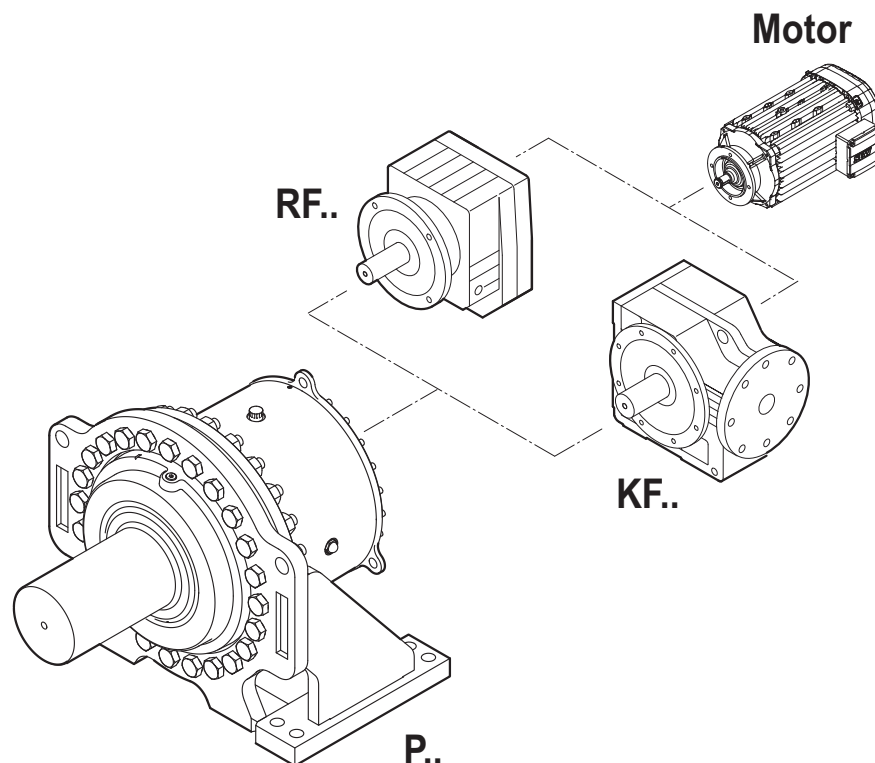
Planetary gearmotors are a combination of

- Planetary gear unit P.. final stage
- Primary gear unit RF.. or KF..
- Mount-on components: Motor, coupling, adapter and backstop

There are 9 sizes of planetary gear units with rated torques from 24,830 Nm to 359,400 Nm.

The load distribution to several planet wheels results in a significantly higher power density and consequently in smaller dimensions compared to helical and bevel-helical gear units.

The following figure shows a sample combination of a planetary gear unit, a primary gear unit and a motor.



64404ADE

- P..** Planetary gear unit  
**RF..** Helical gear unit (flange-mounted)  
**KF..** Bevel gear unit (flange-mounted)



## 2.1 Design features

Planetary gear unit

- Can transmit a high torque
- Are very compact
- Offer high torsional rigidity

Primary gearmotors ...

- Offer a large variance on the input side
- Are variable in their reduction gear ratio
- Can be combined with the planetary gear unit in helical or bevel designs

2

### 2.1.1 Overview of the advantages

- Perfectly matching units (gear unit and motor)
- Large range of options thanks to the SEW-EURODRIVE modular concept
- Short, compact design because there is no need for couplings and adapter flanges
- Standardized units, which means excellent price/performance ratio and short delivery times

### 2.1.2 Application area

Planetary gearmotors are mainly used in applications where low output speeds and high torques are required.

For example:



- For drying processes in the construction materials industry
- For filling processes in the cement industry
- For slow-running material processing systems, e.g. mixers, rotary filters
- For all branches of industry with similar requirements
- In the food industry



## 2.2 General notes


### 2.2.1 Structure of the safety notes

The safety notes in this catalog are designed as follows:

Pictogram	Signal word	Meaning
	<b>STOP</b>	Possible damage to property
	<b>TIP</b>	Useful information or tip. Simplifies the handling of the drive system.

### 2.2.2 Important information

Note the following points:

	<b>STOP</b>
	<ul style="list-style-type: none"> <li>The illustrations in the catalog are examples and are not binding.</li> <li>The specified fill quantities are non-binding guidelines. Use the marks on the oil dipstick or oil sight glass to determine the oil level.</li> <li>Read and follow the operating instructions carefully before startup.</li> <li>The planetary gear units are ready for operation when delivered, but are not filled with oil.</li> <li>Oil viscosity and grade must comply with those specified on the nameplate.</li> <li>The weights shown are non-binding average values.</li> <li>The buyer must provide protection against unintentional contact with moving parts. The applicable safety regulations of the country in which the unit will be used are to be followed.</li> </ul>

### 2.2.3 Power and torque

The power and torque values listed in the catalogs apply to standard design and standard lubrication of the gearmotors under normal environmental conditions.

Please note that the motor power shown in the selection tables for gearmotors is subject to selection. However, the output torque and the desired output speed are essential for the application and need to be checked.

### 2.2.4 Speeds

The quoted output speeds of the gearmotors are recommended values. You can calculate the rated output speed based on the rated motor speed and the gear unit ratio. Please note that the actual output speed depends on the motor load and the supply system conditions.



### 2.2.5 Noise

The noise levels of all gearmotors and motors (brakemotors) are well within the maximum permitted noise levels set forth in ISO 8579-1 for gear units and EN 60034 for motors.

### 2.2.6 Coating

Gearmotors and motors (brakemotors) are painted in "blue gray"/RAL 7031 as per DIN 1843 as standard. Special paint coatings are available on request.

### 2.2.7 Weight



#### TIP

Please note that all weights shown in the catalog exclude the oil fill because the lubricant fill quantity depends on the mounting position.

### 2.2.8 Air admission and accessibility

The gearmotors/brakemotors must be mounted on the driven machine in such a way that both axially and radially there is enough space left for unimpeded air admission and for the purposes of maintenance of the brake. Please also refer to the notes in the motor dimension sheets.

### 2.2.9 Primary gearmotor

All the possibilities and restrictions specified in the SEW "Gearmotors" catalog apply.

### 2.2.10 Brakemotors

On request, motors and gearmotors can be supplied with an integrated mechanical brake. The SEW-EURODRIVE brake is an electromagnetic disk brake with a DC coil that releases electrically and brakes using spring force. Due to its operating principle, the brake is applied if the power fails. It meets the basic safety requirements. The brake can also be released mechanically if equipped with manual brake release. You will either receive a manual lever with automatic reset or an adjustable setscrew for this purpose. The brake is controlled by a control element that is either installed in the motor wiring space or the control cabinet.

A characteristic feature of the brakes is their very short design. The brake bearing end shield is a part of both the motor and the brake. The integrated construction of the SEW-EURODRIVE brakemotor permits particularly compact and sturdy solutions.

### 2.2.11 International markets

Upon request, we deliver motors with connection requirements according to CSA and NEMA guidelines (UL listed).

For the Japanese market, we offer motors conforming to JIS standard. Contact your sales representative to assist you in such cases.



### 2.3 Overview of technical data

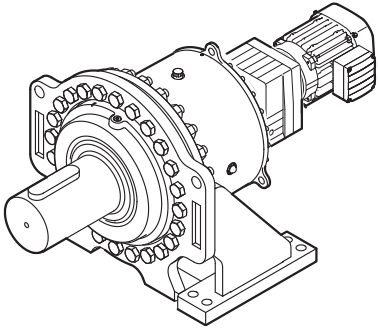
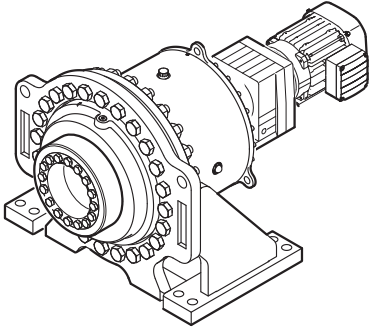
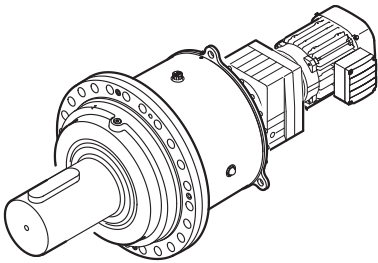
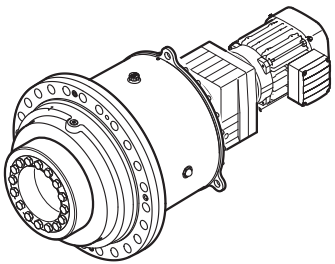
Size	M <sub>N2</sub> [Nm]
P002	24830
P012	36810
P022	51190
P032	69620
P042	100170
P052	124060
P062	185660
P072	245660
P082	359400



## 2.4 Basic design variants of the planetary gearmotors

### 2.4.1 Helical planetary gearmotors

Helical planetary gearmotors are available in the following design:

P..RF.. DRS	
 <p>64110AXX</p>	Foot-mounted helical planetary gearmotor
PH..RF.. DRS	
 <p>64111AXX</p>	Foot-mounted helical planetary gearmotor with hollow shaft and shrink disk
PF..RF.. DRS	
 <p>64112AXX</p>	Flange-mounted helical planetary gearmotor
PHF..RF.. DRS	
 <p>64113AXX</p>	Flange-mounted helical planetary gearmotor with hollow shaft and shrink disk



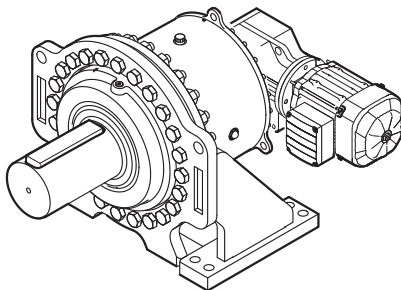
## Product Description and Overview of Types

### Basic design variants of the planetary gearmotors

#### 2.4.2 Bevel planetary gearmotors

Bevel planetary gearmotors are available in the following design:

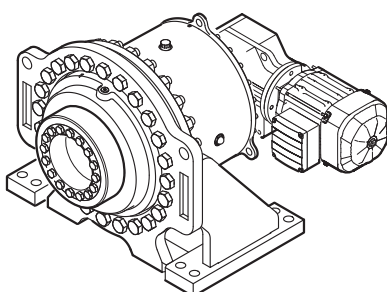
##### P..KF.. DRS



64114AXX

Foot-mounted bevel planetary gearmotor

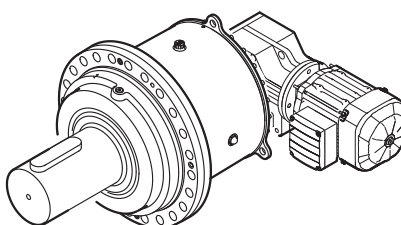
##### PH..KF.. DRS



64107AXX

Foot-mounted bevel planetary gearmotor  
with hollow shaft and shrink disk

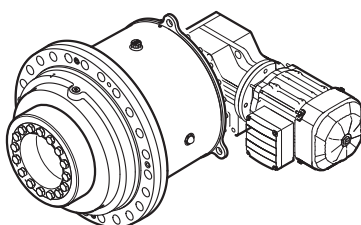
##### PF..KF.. DRS



64108AXX

Flange-mounted bevel planetary gearmotor

##### PHF..KF.. DRS



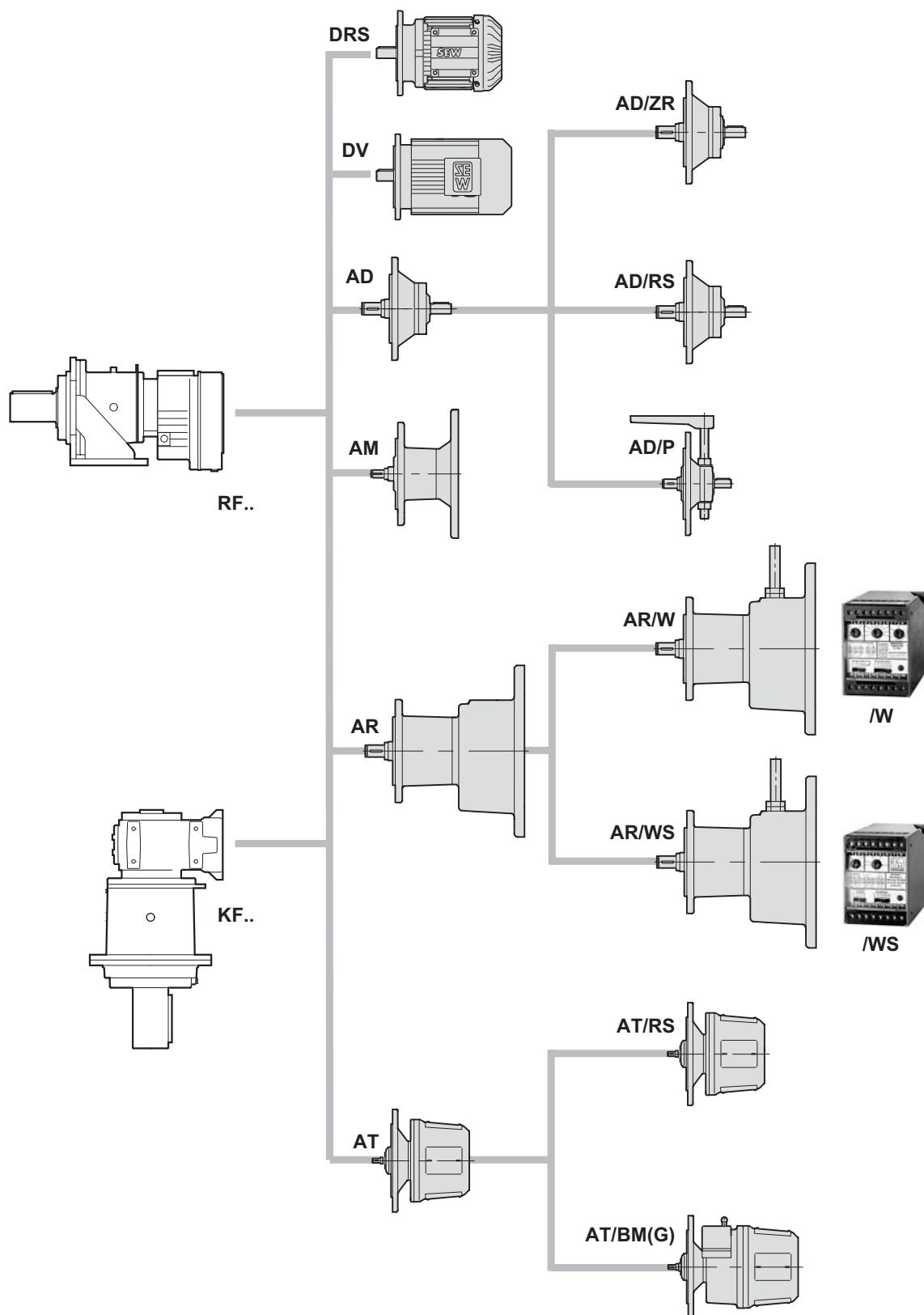
64109AXX

Flange-mounted bevel planetary gearmotor  
with hollow shaft and shrink disk



### 2.4.3 Components on the input side

The following figure shows the components on the input end.



63991AXX

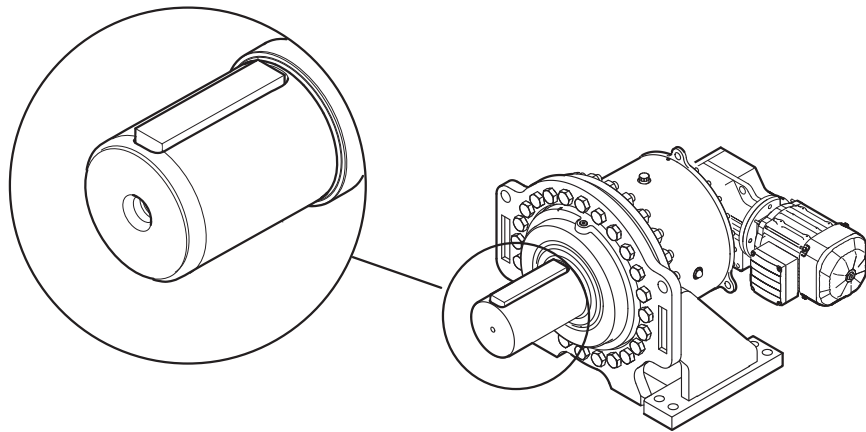




### 2.4.4 Output shaft variants

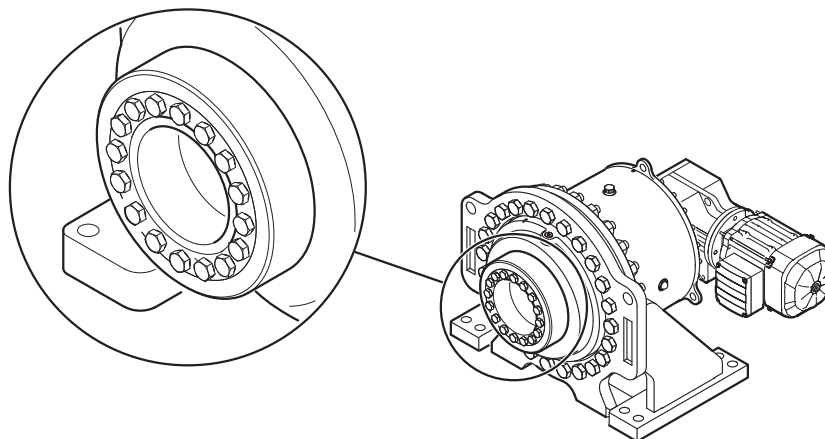
The output shaft [LSS] of the planetary gearmotor can have the following design as standard:

- Solid shaft with key



64115AXX

- Hollow shaft with shrink disk



64116AXX



## 2.5 Unit designations for gear units and options

### 2.5.1 Helical planetary gear unit

Designation	
P..RF..	Foot-mounted, solid shaft
PH..RF..	Foot-mounted, hollow shaft with shrink disk
PF..RF..	Flange-mounted, solid shaft
PHF..RF..	Flange-mounted, hollow shaft with shrink disk

2

### 2.5.2 Bevel planetary gear unit

Designation	
P..KF..	Foot-mounted, solid shaft
PH..KF..	Foot-mounted, hollow shaft with shrink disk
PF..KF..	Flange-mounted, solid shaft
PHF..KF..	Flange-mounted, hollow shaft with shrink disk

### 2.5.3 Additional features of gear units

Designation	
/T	With torque arm

### 2.5.4 Input shaft assembly

Designation	
AD	Input shaft assembly
.../P	With motor mounting platform
.../RS	With backstop
.../ZR	With centering shoulder

### 2.5.5 Adapter

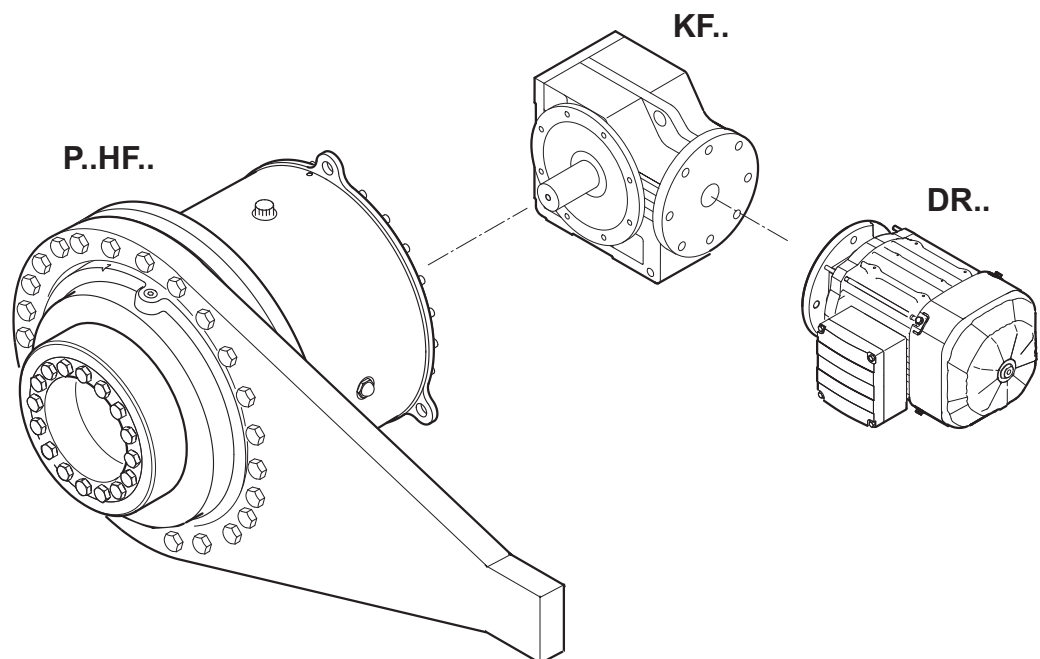
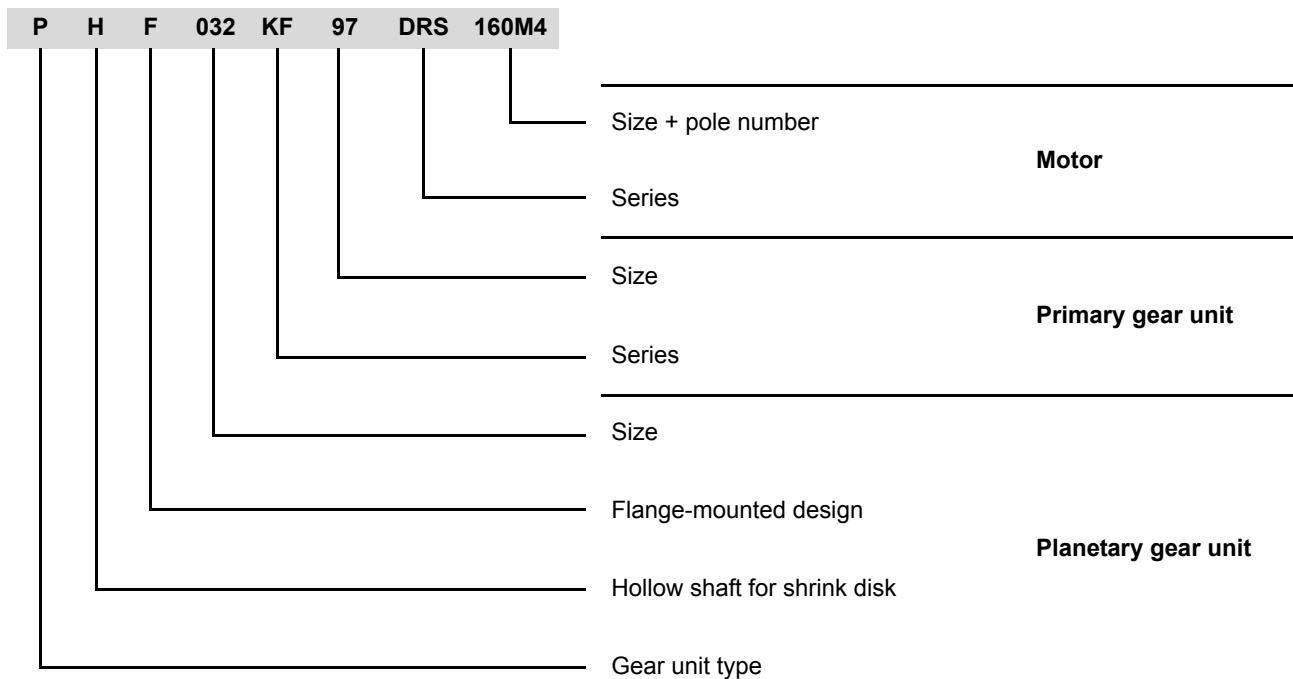
Designation	
AM	Adapter for mounting IEC/NEMA motors
AQ	Adapter for mounting servomotors
AT	Adapter with hydraulic centrifugal coupling
.../RS	and backstop
.../BM(G)	and disk brake
.../HF	With manual brake release, lockable
.../HR	Manual brake release with automatic re-engaging function



### 2.6 Unit designation

The unit designation of the gearmotor starts from the component on the output end.

**Example: Unit designation for a PHF.. planetary gear unit with KF.. primary gear unit**



64117AXX



## 2.7 Nameplate

Example: Planetary gear unit nameplate

○ SEW-EURODRIVE
Bruchsal / Germany
○

Type PF042 KF97 DRS132 ML4 / TF

Nr. 1 01.1101687801.0001.06 / 12345678

	norm.	min.	max.	i	1 :	
PK1 [kW]	<span style="border: 1px solid black; padding: 2px;">6.6</span>	<span style="border: 1px solid black; padding: 2px;">1.3</span>	<span style="border: 1px solid black; padding: 2px;">6.6</span>	FS		<span style="border: 1px solid black; padding: 2px;">1880</span>
MK2 [Nm]	<span style="border: 1px solid black; padding: 2px;">77000</span>	<span style="border: 1px solid black; padding: 2px;">77000</span>	<span style="border: 1px solid black; padding: 2px;">77000</span>	FR1 [N]		<span style="border: 1px solid black; padding: 2px;">0</span>
n1 [1/min]	<span style="border: 1px solid black; padding: 2px;">1430</span>	<span style="border: 1px solid black; padding: 2px;">285</span>	<span style="border: 1px solid black; padding: 2px;">1430</span>	FR2 [N]		<span style="border: 1px solid black; padding: 2px;">0</span>
n2 [1/min]	<span style="border: 1px solid black; padding: 2px;">0.77</span>	<span style="border: 1px solid black; padding: 2px;">0.15</span>	<span style="border: 1px solid black; padding: 2px;">0.77</span>	FA1 [N]		<span style="border: 1px solid black; padding: 2px;">0</span>
				FA2 [N]		<span style="border: 1px solid black; padding: 2px;">50000</span>

Operation instruction have to be observed!

Made in Germany
Mass [kg] 840

Qty of greasing points 0 Fans 0

CLP HC VG220 synth. Oil - 29 ltr.
Year 2008

○

○

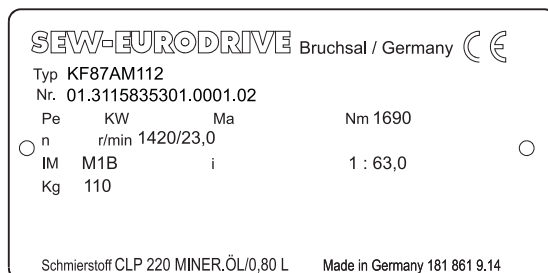
63654AXX

Type		Unit designation
No. 1		Serial number
P <sub>K1</sub>	[kW]	Operating power on the input shaft (HSS)
M <sub>K2</sub>	[Nm]	Gear unit output torque
n <sub>1</sub>	[min <sup>-1</sup> ]	Input speed (HSS)
n <sub>2</sub>	[min <sup>-1</sup> ]	Output speed (LSS)
norm.		Standard operating point
min.		Operating point at minimum speed
max.		Operating point at maximum speed
i		Exact gear unit reduction ratio
F <sub>S</sub>		Service factor
F <sub>R1</sub>	[N]	Actual overhung load acting on the input shaft
F <sub>R2</sub>	[N]	Actual overhung load acting on the output shaft
F <sub>A1</sub>	[N]	Actual axial load acting on the input shaft
F <sub>A2</sub>	[N]	Actual axial load acting on the output shaft
Mass	[kg]	Weight of the gear unit
Number of greasing points		Number of relubrication points
Fans		Number of installed fans
		Oil grade and viscosity class / oil volume
Year		Year of construction



## Product Description and Overview of Types Nameplate

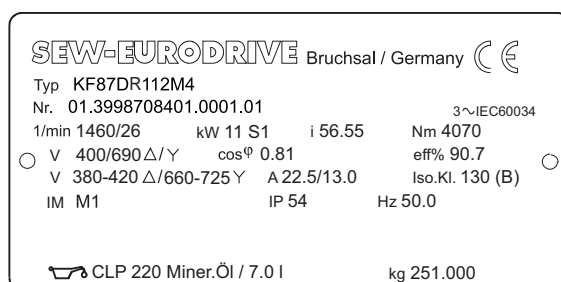
### Example: KF.. primary gear unit



05831AEN

Type		Unit designation
No.		Serial number of primary gear unit
Pe	[kW]	Input power of the gear unit
Ma	[Nm]	Output torque
n	[min <sup>-1</sup> ]	Input/output speed
IM		Mounting position
i		Transmission ratio
Kg	[Kg]	Weight

### Example: RF../KF.. primary gear unit as gearmotor



64244AXX

Type		Unit designation
No.		Serial number of primary gearmotor
i		Transmission ratio
1/min	[min <sup>-1</sup> ]	Input/output speed
Nm	[Nm]	Output torque
kW	[kW]	Input power of the gear unit
S1		Operating mode
cos φ		Power factor of the motor
V	[V]	Supply voltage in delta/star connection
A	[A]	Rated motor current in delta/star connection
Hz	[Hz]	Mains frequency
IM		Mounting position
kg	[kg]	Weight of the primary gearmotor
IP		Degree of protection of the motor
Brake V	[V]	Brake connection voltage
Nm	[Nm]	braking torque
		Oil grade and viscosity class / oil volume



## 2.8 Corrosion and surface protection

### 2.8.1 General information

SEW-EURODRIVE offers various optional protective measures for operation of motors and gearmotors under special ambient conditions.

The protective measures comprise two groups:

- Corrosion protection KS for motors
- Surface protection OS for motors and gear units

For motors, optimum protection is offered by a combination of corrosion protection KS and surface protection OS.

### 2.8.2 Corrosion protection KS

KS corrosion protection for motors comprises the following measures:

- All retaining screws are made of stainless steel for daily operation.
- The nameplates are made from stainless steel.
- A top coating is applied to various motor parts.
- The flange contact surfaces and shaft ends are treated with a temporary anti-corrosion agent.
- Additional measures for brakemotors.

A sticker labeled "KORROSIONSSCHUTZ" (corrosion protection) on the fan guard indicates special treatment has been applied.

	<b>TIP</b>
	Motors with a forced cooling fan and motors with a spread shaft encoder (ES..) cannot be supplied with corrosion protection KS.

### 2.8.3 OS Surface protection

Instead of standard surface protection, motors and gear units are optionally available with OS1, OS2 or OS3 surface protection.

Surface protection	Build-up of coats	Coat thickness [µm]	Suitable for
<b>Standard</b>	1 x Dip primer 1 x Two-component top coat	About 60	<ul style="list-style-type: none"> <li>• Normal ambient conditions</li> <li>• Relative humidity below 90 %</li> <li>• Max. surface temperature 120 °C</li> <li>• Corrosivity category C1<sup>1)</sup></li> </ul>
<b>OS1</b>	1 x Dip primer 1 x Two-pack base coat 1 x Two-pack top coat	About 120-150	<ul style="list-style-type: none"> <li>• Low environmental impact</li> <li>• Relative humidity max. 95 %</li> <li>• Max. surface temperature 120 °C</li> <li>• Corrosivity category C2<sup>1)</sup></li> </ul>
<b>OS2</b>	1 x Dip primer 2 x Two-pack base coat 1 x Two-pack top coat	About 170-210	<ul style="list-style-type: none"> <li>• Medium environmental impact</li> <li>• Relative humidity up to 100 %</li> <li>• Max. surface temperature 120 °C</li> <li>• Corrosivity category C3<sup>1)</sup></li> </ul>
<b>OS3</b>	1 x Dip primer 2 x Two-pack base coat 2 x Two-pack top coat	About 220-270	<ul style="list-style-type: none"> <li>• High environmental impact</li> <li>• Relative humidity up to 100 %</li> <li>• Max. surface temperature 120 °C</li> <li>• Corrosivity category C4<sup>1)</sup></li> </ul>

1) In accordance with DIN EN ISO 12 944-2

Output shafts and machined metal surfaces are tectylized corresponding to the storage conditions.



## 2.9 Storage and transport conditions

The gear units can be provided with the following protection and packaging types depending on the storage and transportation conditions.

### 2.9.1 Internal corrosion protection

#### **Standard corrosion protection**

After the test run, the test oil fill is drained out of the gear unit. The remaining oil film protects the gear unit against corrosion for a limited period of time.


#### **Long-term corrosion protection**

After the test run, the test oil fill is drained out of the gear unit and the interior space is filled with a vapor phase inhibitor. The breather filter is replaced by a screw plug and enclosed with the gear unit.

### 2.9.2 Exterior corrosion protection

In general, the following measures are taken for exterior corrosion protection:

- Corrosion protection is applied to bare, non-painted functional surfaces of shafts, flanges, mounting and foot surfaces on the gear unit. Remove it only using an appropriate solvent which is not harmful to the oil seal.
- Small spare parts and loose pieces, such as bolts, nuts, etc., are packed in corrosion protection plastic bags (VCI corrosion protection bags).
- Threaded holes and blind holes are covered by plastic plugs.

	<p><b>STOP</b></p> <ul style="list-style-type: none"> <li>• If the gear unit is stored longer than 6 months, you must check the protective coating of unpainted areas as well as the paint regularly. Areas in which the protective coating and/or paint has been damaged may have to be repainted.</li> </ul>
---	--

### 2.9.3 Packaging

#### **Standard packaging**

The gear unit is delivered on a pallet without cover.

Application: Land transport

#### **Long-term packaging**

The gear unit is delivered in a wooden box that is also appropriate for sea transport.

Application: Sea transport and/or for long-term storage



#### 2.9.4 Storage conditions

	<b>STOP</b>
	<ul style="list-style-type: none"> <li>During storage up to startup, the gear unit must be stored in a shock-free manner in order to prevent damage to the anti-friction bearing races.</li> <li>The output shaft must be rotated at least one full rotation every six months so that the position of the roller elements in the bearings of the input and output shafts changes.</li> </ul>

	<b>TIP</b>
	The gear units are delivered without an oil fill; different protection systems are required depending on the storage period and storage conditions as shown in the table below.

Corrosion protection + packaging	Storage location	Storage duration
Standard corrosion protection + Standard packaging	Under roof, enclosed at constant temperature and atmospheric humidity (5 °C < 9 < 60 °C, < 50 % relative atmospheric humidity). No sudden temperature fluctuations. Controlled ventilation with filter (free from dust and dirt). Protected against aggressive vapors and shocks.	Max. 6 months with intact surface corrosion protection
Long-term corrosion protection: + Standard packaging	Under roof, enclosed at constant temperature and atmospheric humidity (5 °C < 9 < 60 °C, < 50 % relative atmospheric humidity). No sudden temperature fluctuations. Controlled ventilation with filter (free from dust and dirt). Protected against aggressive vapors and shocks.	Max. 3 years with regular inspection and checking for intactness.
Long-term corrosion protection: + Long-term packaging	Under roof, protected against rain, no shock loads.	Max. 3 years with regular inspection and checking for intactness.

	<b>STOP</b>
	If stored in tropical zones, provide for sufficient protection against insect damage. Contact SEW-EURODRIVE for differing specifications.