



### 3 Overview of Types and Unit Designations

#### 3.1 Variants and options of R, F, K, S, W gear units

Below an overview of unit designations for R, F, K, S, and W gear units and their options.

##### *Helical gear units*

Designation	
RX..	Single-stage foot-mounted design
RXF..	Single-stage B5 flange-mounted design
R..	Foot-mounted design
R..F	Foot and B5-flange mounted design
RF..	B5 flange-mounted design
RZ..	B14 flange-mounted design
RM..	B5 flange-mounted design with extended bearing hub

##### *Parallel shaft helical gear units*

Designation	
F..	Foot-mounted design
FA..B	Foot-mounted, hollow shaft
FH..B	Foot-mounted, hollow shaft with shrink disk
FV..B	Foot-mounted, hollow shaft with splined hollow shaft to DIN 5480
FF..	B5 flange-mounted design
FAF..	B5 flange-mounted design and hollow shaft
FHF..	B5 flange-mounted and hollow shaft with shrink disk
FVF..	B5 flange-mounted design and hollow shaft with splined hollow shaft to DIN 5480
FA..	Hollow shaft
FH..	Hollow shaft with shrink disk
FT..	Hollow shaft with TorqLOC® hollow shaft mounting system
FV..	Hollow shaft with splining to DIN 5480
FAZ..	B14 flange-mounted design and hollow shaft
FHZ..	B14 flange-mounted design and hollow shaft with shrink disk
FVZ..	B14 flange-mounted design and hollow shaft with splined hollow shaft to DIN 5480



### Helical-bevel gear units

Designation	
K..	Foot-mounted design
KA..B	Foot-mounted, hollow shaft
KH..B	Foot-mounted, hollow shaft with shrink disk
KV..B	Foot-mounted, hollow shaft with splined hollow shaft to DIN 5480
KF..	B5 flange-mounted design
KAF..	B5 flange-mounted design and hollow shaft
KHF..	B5 flange-mounted design and hollow shaft with shrink disk
KVF..	B5 flange-mounted design and hollow shaft with splined hollow shaft to DIN 5480
KA..	Hollow shaft
KH..	Hollow shaft with shrink disk
KT..	Hollow shaft with TorqLOC® hollow shaft mounting system
KV..	Hollow shaft with splining to DIN 5480
KAZ..	B14 flange-mounted design and hollow shaft
KHZ..	B14 flange-mounted design and hollow shaft with shrink disk
KVZ..	B14 flange-mounted design and hollow shaft with splined hollow shaft to DIN 5480

### Helical-worm gear units

Designation	
S..	Foot-mounted design
SF..	B5 flange-mounted design
SAF..	B5 flange-mounted design and hollow shaft
SHF..	B5 flange-mounted design and hollow shaft with shrink disk
SA..	Hollow shaft
SH..	Hollow shaft with shrink disk
ST..	Hollow shaft with TorqLOC® hollow shaft mounting system
SAZ..	B14 flange-mounted design and hollow shaft
SHZ..	B14 flange-mounted design and hollow shaft with shrink disk



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### Variants and options of R, F, K, S, W gear units

#### **SPIROPLAN® gear units**

Designation	
W..	Foot-mounted design
WF..	Flange-mounted design
WAF..	Flange-mounted design and hollow shaft
WA..	Hollow shaft
WA..B	Foot-mounted, hollow shaft
WH..B	Foot-mounted, hollow shaft with shrink disk
WHF..	Flange-mounted, hollow shaft with shrink disk
WH..	Hollow shaft with shrink disk
WT..	Hollow shaft with TorqLOC® hollow shaft mounting system

#### **Options**

R, F and K gear units:

Designation	
/R	Reduced backlash

K, S and W gear units:

Designation	
/T	With torque arm

F gear units:

Designation	
/G	With rubber buffer

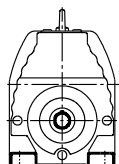
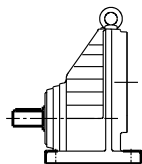
#### **Condition monitoring**

Designation	Option
/DUO	Diagnostic Unit Oil = Oil aging sensor
/DUV	Diagnostic Unit Vibration = Vibration sensor

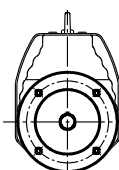
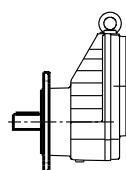


## Helical gear units

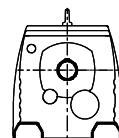
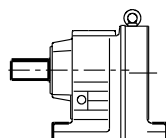
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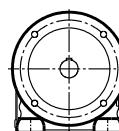
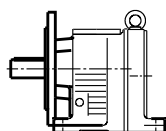
**RX..**  
Foot-mounted single stage helical gear unit



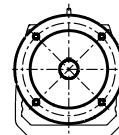
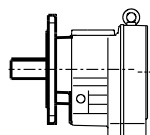
**RXF..**  
B5 flange-mounted single-stage helical gear unit



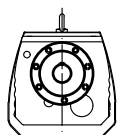
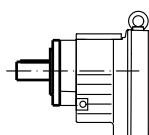
**R..**  
Foot-mounted helical gear unit



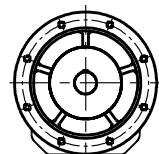
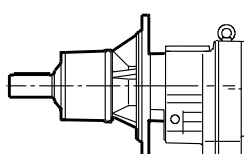
**R..F**  
Foot and B5-flange mounted helical gear unit



**RF..**  
B5 flange-mounted helical gear unit



**RZ..**  
B14 flange-mounted helical gear unit



**RM..**  
B5 flange-mounted design with extended bearing hub

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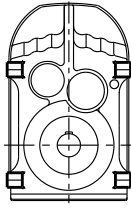
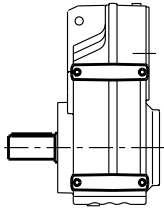


## Overview of Types and Unit Designations

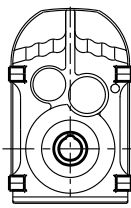
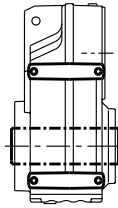
### Variants and options of R, F, K, S, W gear units

#### Parallel shaft helical gear units

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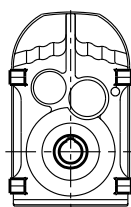
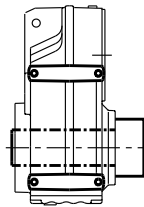


**F..**  
Foot-mounted parallel shaft helical gear unit

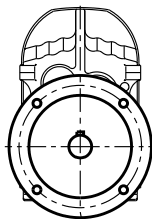
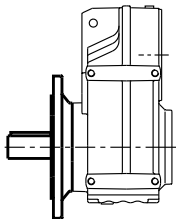


**FA..B**  
Foot-mounted parallel shaft helical gear unit with hollow shaft

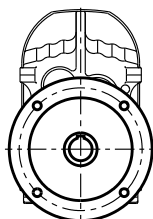
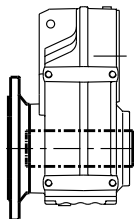
**FV..B**  
Foot-mounted parallel shaft gear unit with hollow shaft and splining according to DIN 5480



**FH..B**  
Foot-mounted parallel shaft helical gear unit with hollow shaft and shrink disk



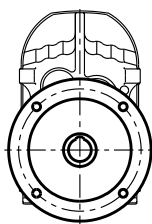
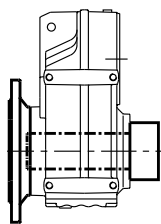
**FF..**  
B5 flange-mounted parallel shaft helical gear unit



**FAF..**  
B5 flange-mounted parallel shaft helical gear unit with hollow shaft

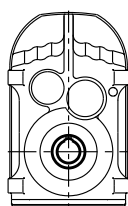
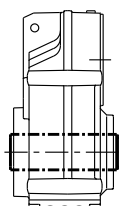
**FVF..**  
B5 flange-mounted parallel shaft gear unit with hollow shaft and splining according to DIN 5480

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### FHF..

B5 flange-mounted parallel shaft helical gear unit with hollow shaft and shrink disk

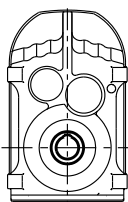
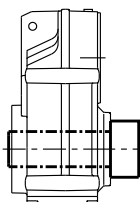


### FA..

Parallel shaft helical gear unit with hollow shaft

### FV..

Parallel shaft helical gear unit with hollow shaft and splining according to DIN 5480

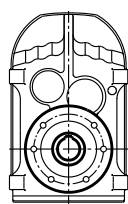
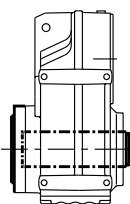


### FH..

Parallel shaft helical gear unit with hollow shaft and shrink disk

### FT..

Parallel shaft helical gear unit with hollow shaft and TorqLOC® hollow shaft mounting system

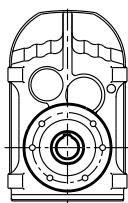
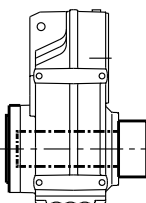


### FAZ..

B14 flange-mounted parallel shaft helical gear unit with hollow shaft

### FVZ..

B14 flange-mounted parallel shaft gear unit with hollow shaft and splining according to DIN 5480



### FHZ..

B14 flange-mounted parallel shaft helical gear unit with hollow shaft and shrink disk

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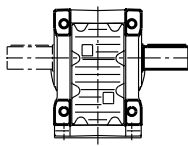
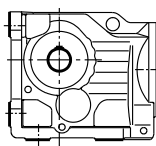


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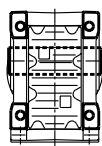
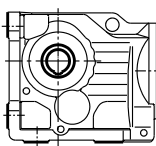
### Variants and options of R, F, K, S, W gear units

#### Helical-bevel gear units

The following types of helical-bevel gear units are available:

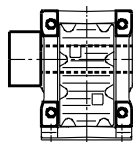
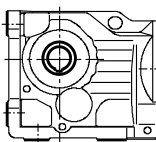


**K..**  
Foot-mounted helical-bevel gear unit

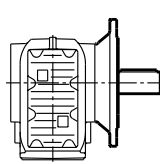
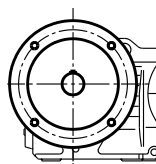


**KA..B**  
Foot-mounted helical-bevel gear unit with hollow shaft

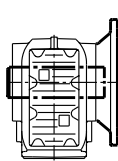
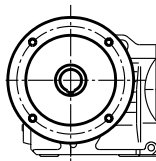
**KV..B**  
Foot-mounted helical-bevel gear unit with hollow shaft  
and splining according to DIN 5480



**KH..B**  
Foot-mounted helical-bevel gear unit with hollow shaft  
and shrink disk



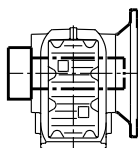
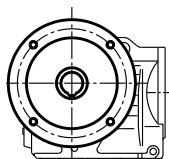
**KF..**  
Helical-bevel gear unit in B5 flange-mounted version



**KAF..**  
B5 flange-mounted helical-bevel gear unit with hollow  
shaft

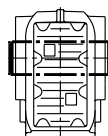
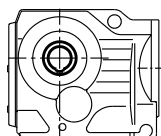
**KVF..**  
B5 flange-mounted helical-bevel gear unit with hollow  
shaft and splining according to DIN 5480

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### **KHF..**

B5 flange-mounted helical-bevel gear unit with hollow shaft and shrink disk

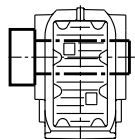
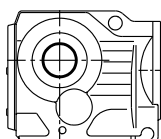


### **KA..**

Helical-bevel gear unit with hollow shaft

### **KV..**

Helical-bevel gear unit with hollow shaft and splining according to DIN 5480

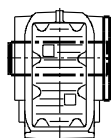
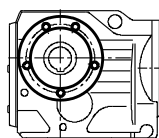


### **KH..**

Helical-bevel gear unit with hollow shaft and shrink disk

### **KT..**

Helical-bevel gearmotor with hollow shaft and TorqLOC® hollow shaft mounting system

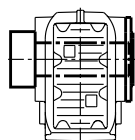
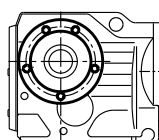


### **KAZ..**

B14 flange-mounted helical-bevel gear unit with hollow shaft

### **KVZ..**

B14 flange-mounted helical-bevel gear unit with hollow shaft and splining according to DIN 5480



### **KHZ..**

B14 flange-mounted helical-bevel gear unit with hollow shaft and shrink disk

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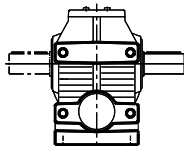
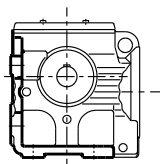


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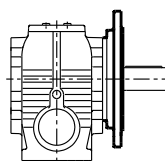
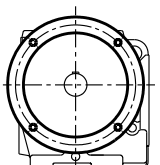
### Variants and options of R, F, K, S, W gear units

#### Helical-worm gear units

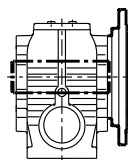
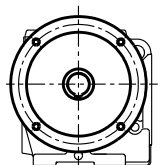
The following types of helical-worm gear units are available:



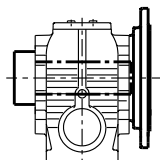
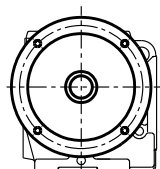
**S..**  
Foot-mounted helical-worm gear unit



**SF..**  
B5 flange-mounted helical-worm gear unit

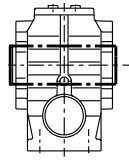
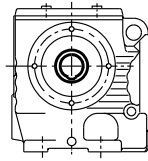


**SAF..**  
B5 flange-mounted helical-worm gear unit with hollow shaft



**SHF..**  
B5 flange-mounted helical-worm gear unit with hollow shaft and shrink disk

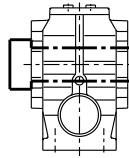
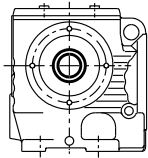
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### SA..

Helical-worm gear unit with hollow shaft

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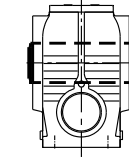
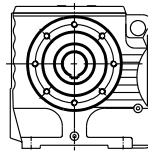


### SH..

Helical-worm gear unit with hollow shaft and shrink disk

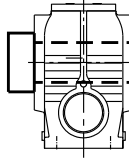
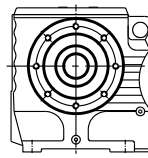
### ST..

Helical-worm gear unit with hollow shaft and TorqLOC® hollow shaft mounting system



### SAZ..

B14 flange-mounted helical-worm gear unit with hollow shaft



### SHZ..

B14 flange-mounted helical-worm gear unit with hollow shaft and shrink disk

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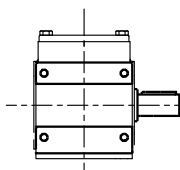
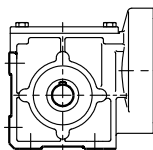


## Overview of Types and Unit Designations

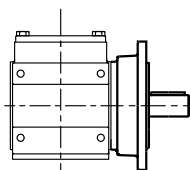
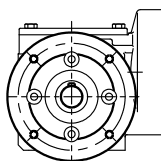
### Variants and options of R, F, K, S, W gear units

#### **SPIROPLAN® gear units**

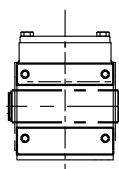
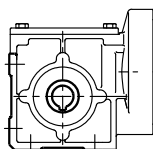
The following types of SPIROPLAN® gear units are available:



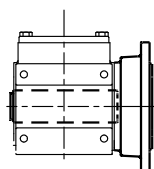
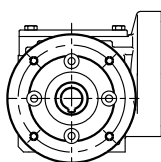
**W..**  
Foot-mounted SPIROPLAN® gear units



**WF..**  
Flange-mounted SPIROPLAN® gear units

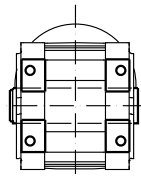
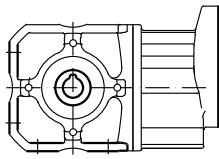


**WA..**  
SPIROPLAN® gear units with hollow shaft



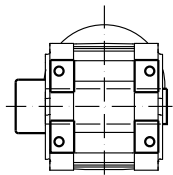
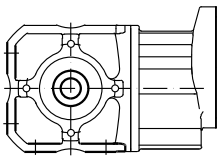
**WAF..**  
Flange-mounted SPIROPLAN® gear unit with hollow shaft

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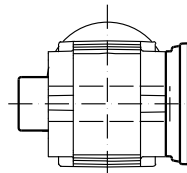
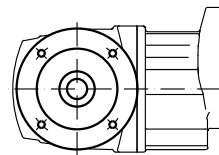


**WA..B**  
Foot-mounted SPIROPLAN® gear unit with hollow shaft

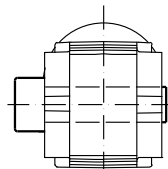
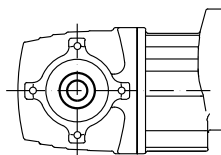
3



**WH..B**  
Foot-mounted SPIROPLAN® gear unit with hollow shaft and shrink disk



**WHF..**  
Flange-mounted SPIROPLAN® gear unit with hollow shaft and shrink disk



**WH..**  
SPIROPLAN® gear unit with hollow shaft and shrink disk

**WT..**  
SPIROPLAN® gear unit with hollow shaft and TorqLOC® hollow shaft mounting system

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## Overview of Types and Unit Designations

Variants and options of BS.F, PS.F and PS.C gear units

### 3.2 Variants and options of BS.F, PS.F and PS.C gear units

#### Helical-bevel gear units BS.F

Designation	
BSF..	Solid shaft without key
BSKF..	Solid shaft with key
BSBF..	Solid shaft with flange block shaft
BSHF..	Hollow shaft with shrink disk
BSAF..	Hollow shaft with keyway
BSKF..B	Solid shaft with key and foot/front-end mounting
BSBF..B	Solid shaft with flange block shaft and foot/front-end mounting
BSHF..B	Hollow shaft with shrink disk and foot/front-end mounting
BSAF..B	Hollow shaft with key and foot/front-end mounting

#### PS..F planetary gear units

Designation	
PSF..	Solid shaft without key
PSKF..	Solid shaft with key
PSBF..	Solid shaft with flange block shaft

#### PS.C planetary gear units

Designation	
PSC..	Solid shaft without key
PSKC..	B5 output flange, solid shaft with key
PSCZ..	B14 output flange, solid shaft
PSKCZ..	B14 output flange, solid shaft with key

#### Options

##### BS.F gear units

Designation	
../R	Reduced backlash
../T	Torque arm
../I	Hollow shaft and shrink disk at the output end

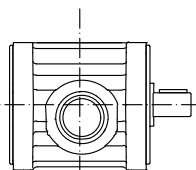
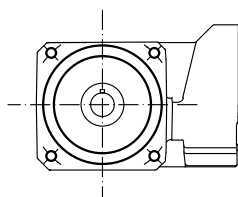
##### PS.F gear units

Designation	
../R	Reduced backlash
../M	Minimized backlash



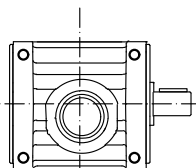
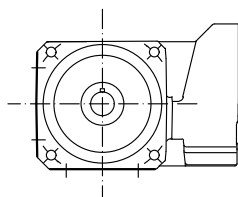
### BS.F helical-bevel gear units

The following types of BS.F helical-bevel gear units are available:



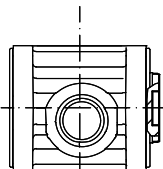
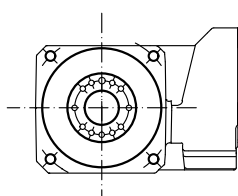
**BSF..**  
Gear unit with solid shaft, B5 output flange

**BSKF..**  
Gear unit with solid shaft and key, B5 output flange

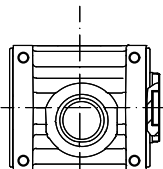
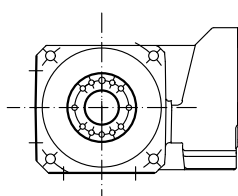


**BSF..B**  
Gear unit with solid shaft, foot/front-end mounting

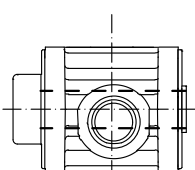
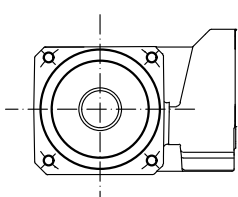
**BSKF..B**  
Gear unit with solid shaft and key, foot/front-end mounting



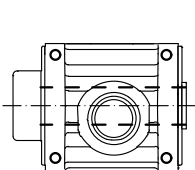
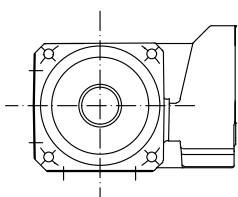
**BSBF..**  
Gear unit with flange block shaft, B5 output flange



**BSBF..B**  
Gear unit with flange block shaft, foot/front-end mounting



**BSHF..**  
Gear unit with hollow shaft and shrink disk, B5 output flange



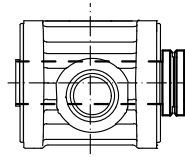
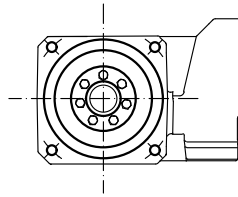
**BSHF..B**  
Gear unit with solid shaft and shrink disk, foot/front-end mounting

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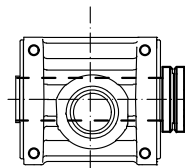
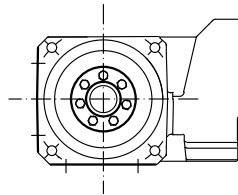
## Overview of Types and Unit Designations

Variants and options of BS.F, PS.F and PS.C gear units



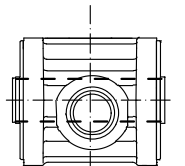
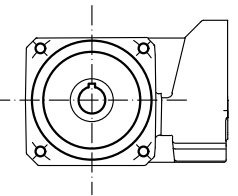
### **BSHF../I**

Gear unit with hollow shaft and shrink disk at the output end



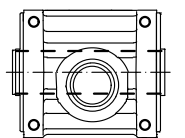
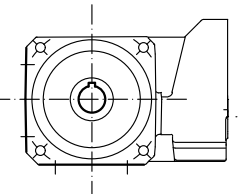
### **BSHF..B /I**

Gear unit with solid shaft and shrink disk at the output end, foot/front-end mounting



### **BSAF..**

Gear unit with hollow shaft and keyway, B5 output flange



### **BSAF..B**

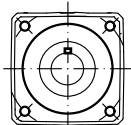
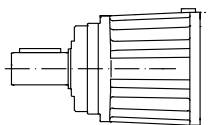
Gear unit with solid shaft and key, B5 output flange and foot/front-end mounting

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### PS..F planetary gear units

The following variants of PS.F.. planetary gear units are available:

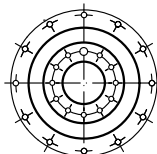
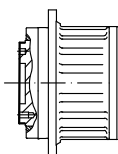


#### PSF

Gear unit with solid shaft, B5 output flange

#### PSKF

Gear unit with solid shaft and key, B5 output flange



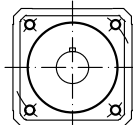
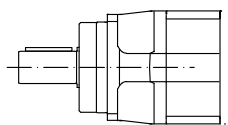
#### PSBF

Gear unit with flange block shaft, B5 output flange

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### PS.C planetary gear units

The following types of PS.C.. planetary gear units are available:

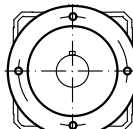
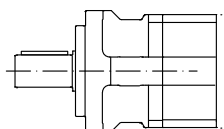


#### PSC

Gear unit with solid shaft, B5 output flange

#### PSKC

Gear unit with solid shaft and key, B5 output flange



#### PSCZ

Gear unit with solid shaft, B14 output flange

#### PSKCZ

Gear unit with solid shaft and key, B14 output flange

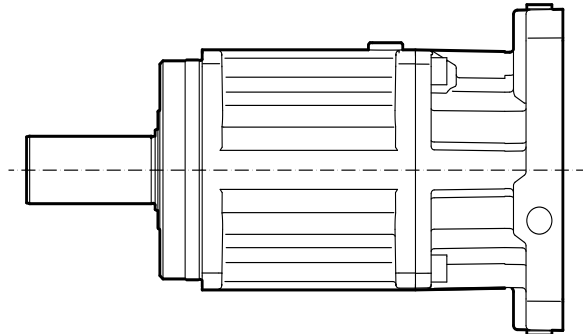
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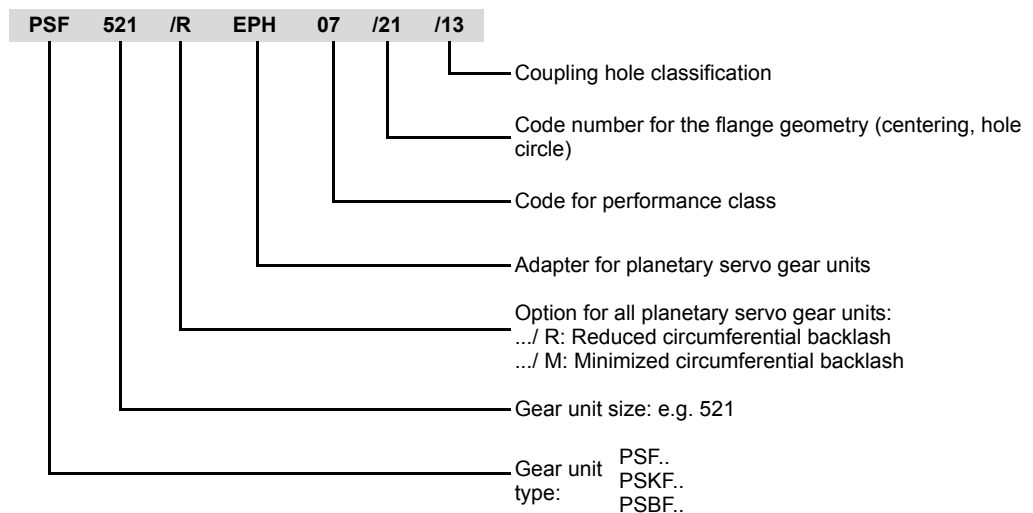
### 3.3 Unit designation

Examples:

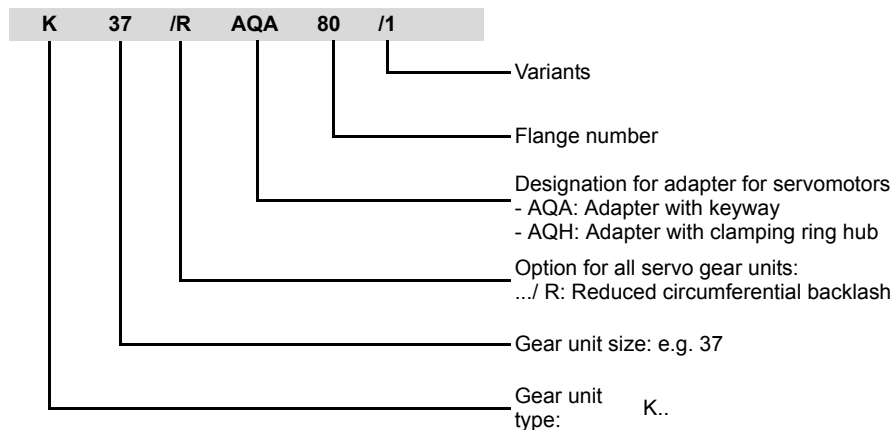


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A planetary gear unit with adapter has, for example, the following unit designation:



A helical-bevel gear unit with adapter has, for example, the following unit designation:

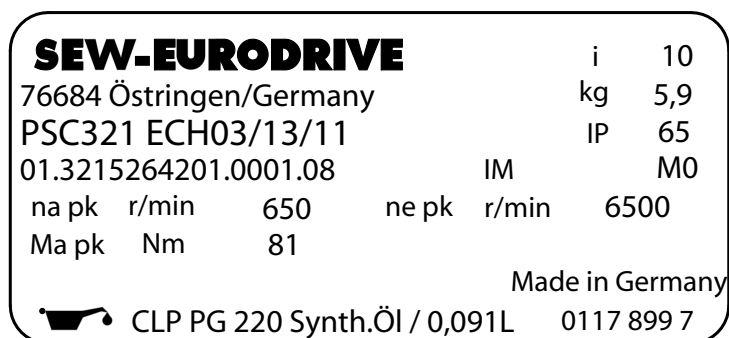




### 3.4 Nameplate for servo gear units

Example 1: Nameplate for a PS.C.. planetary gear unit with adapter

The following figure shows an example of a nameplate for a PS.C.. planetary gear unit with ECH adapter:

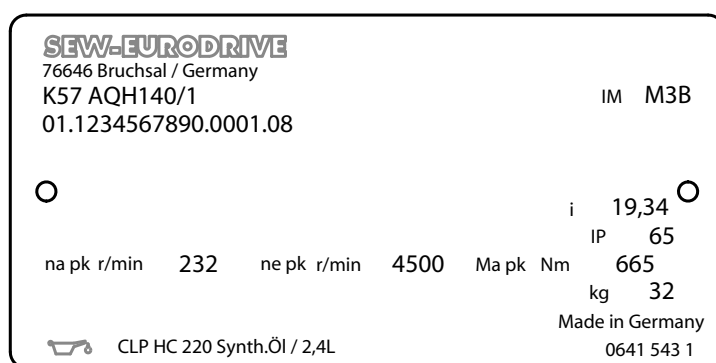


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i		Gear unit reduction ratio
IM		Mounting position
IP		Degree of protection
$n_{epk}$	[rpm]	Maximum permitted input speed
$n_{apk}$	[rpm]	Maximum permitted output speed
$M_{apk}$	[Nm]	Maximum permitted output torque

Example 2: Nameplate for a helical-bevel gear unit with adapter

The following figure shows an example of a nameplate for a helical-bevel gear unit with AQ adapter:








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i		Gear unit reduction ratio
IM		Mounting position
IP		Degree of protection
$n_{epk}$	[rpm]	Maximum permitted input speed
$n_{apk}$	[rpm]	Maximum permitted output speed
$M_{apk}$	[Nm]	Maximum permitted output torque




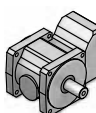


### 3.5 Overview of servo gear units

#### Axially parallel gear units

Gear unit type For details, refer to		RX.. page 145	R.. page 168	F.. page 228	PS.C.. page 538	PS.F.. page 477
						
<b>Technical data</b>						
Peak torque	$M_{apk}$ [Nm]	54-1150	46-4360	130-8860	37-427	26-4200
Max. continuous torque	$M_{amax}$ [Nm]	36-830	31-4300	87-7840	29-347	20-3000
Max. input speed	$n_{epk}$ [rpm]	Up to 4500	Up to 4500	Up to 4500	Up to 7000	Up to 8000
Peak overhung load	$F_{rapk}$ [N]	3970-30000	1220-32100	4500-65000	2000-11000	1900-83000
Gear ratio range	$i$	1.3-8.23	3.21-216.28	3.77-276.77	3-100	3-100
Option with reduced backlash	/R	x	x	x	-	x
Option with minimized backlash	/M	-	-	-	-	x
<b>Mechanical data</b>						
Hollow shaft		-	-	x	-	-
Flange-mounting		x	x	x	x	x
Foot-mounting		x	x	-	-	-
Flange block		-	-	-	-	x
B5 flange		x	x	x	x	x
B14 flange		-	x	x	x	-

#### Right-angle gear units

Gear unit type For details, refer to		K.. page 308	S.. page 378	W.7 page 408	BS.F.. page 426	
						
<b>Technical data</b>						
Peak torque	$M_{apk}$ [Nm]	187-9090	60-655	91-270	51-1910	
Max. continuous torque	$M_{amax}$ [Nm]	125-8000	43-480	70-180	40-1500	
Max. input speed	$n_{epk}$ [rpm]	4500	4500	4500	4500	
Peak overhung load	$F_{rapk}$ [N]	5140-65000	300-12000	2950-7600	2380-36000	
Gear ratio range	$i$	3.98-176.05	6.8-75.06	3.2- 74.98	3-40	
Option with reduced backlash	/R	x	x	-	x	
Option with minimized backlash	/M	-	-	-	-	
<b>Mechanical data</b>						
Hollow shaft		x	x	x	x	
Flange-mounting		x	x	x	x	
Foot-mounting		x	x	x	x	
Flange block		-	-	-	x	
B5 flange		x	x	x	x	
B14 flange		x	x	-	-	

For information on all available options and variants, see page 22 and subsequent.