



# TITAN

## WHEEL SET

SERIES KG 130

driven and non driven

### CORNER BEARING INSTALLATION

RAE/RNE 160/200

RAE/RNE 250/315

RAE RNE 400/500

RAE/RNE 630

### BOX GIRDER INSTALLATION

RAEK/RNEK 160/200

RAEK/RNEK 250/315

RAEK/RNEK 400/500

RAEK/RNEK 630

RAEKOF/RNEKOF 500

RAEKOF/RNEKOF 630





# TITAN

## KARL GEORG WHEEL SETS MOVE THE WORLD

Crane system; roof construction or stadium turf; Ice cold or highly explosive; Fast or slow; Cleanroom or extremely harsh environment! Optimally graduated sizes in a modular system, compact dimensions, crane wheels from Ø160mm to Ø630mm, fast and economical, ready to install, with a load range of up to 60t. All components and interfaces are perfectly coordinated.

### AT A GLANCE



-30 °C TO  
+200 °C



UP TO 40T



HIGH  
AVAILABILITY



SIMPLE  
INSTALLATION



FLEXIBLE DRIVE  
SELECTION

### ALL INDUSTRIES — LOTS OF APPLICATIONS



#### AUTOMOTIVE

Automotive engineering, autonomous driving and subcontracting



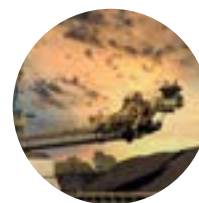
#### ENERGY SECTOR

Wind power, solar power, hydropower, geothermal power and biomass



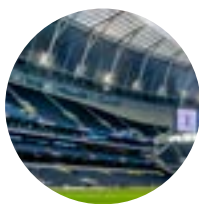
#### PLANT ENGINEERING

Process engineering, power engineering, supply engineering and production engineering, etc.



#### MINING

Exploration, extraction and movement of mineral resources



#### ENTERTAINMENT

Commercial roofs, stage technology, stadium turf etc.



#### CONVEYOR SYSTEMS

Upstream/downstream, onshore/offshore production, LNG/H<sup>2</sup> transport



#### SMELTING WORKS

Steel production, metal production and processing



#### CRANE ENGINEERING

Industrial cranes, process cranes, container handling

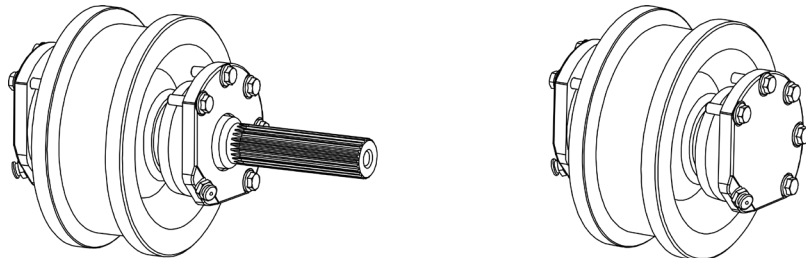
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## Perspektive Views

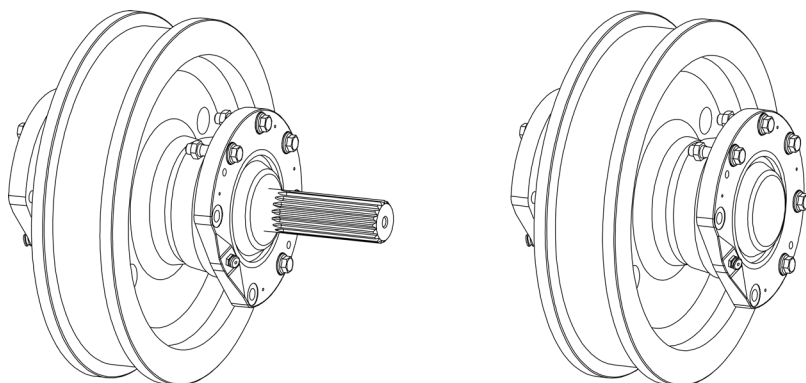
RAE/RNE 160/200  
RAE/RNE 250/315

Flange bearing closed

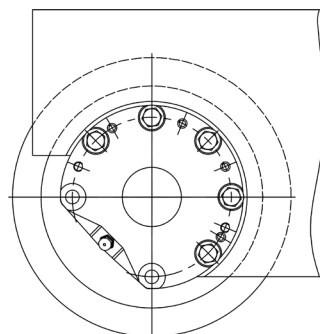


RAE/RNE 400/500  
RAE/RNE 630

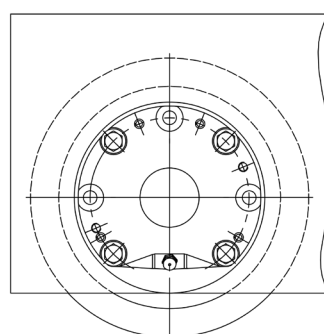
Flange bearing with sheet plate cover



Corner bearing installation  
RAE/RNE 160-630



Box girder installation  
RAEK/RNEK 160-630



# Design code

**RAE 400 x 80 / 125 - 1 - ADK70 - W75 - KG 130**

**RNE 400 x 80 / 125 - 1**

**KARL GEORG**  
factory standard

Design or diameter  
of end of shaft  
**W**...spline  
**Ø...PF** feather key DIN 6885/1  
**Ø...SS** shrink disc

gear box size / gear box code

Mounting version

- 1** corner bearing system, steel work machined
- 2** corner bearing system, steel work flame cut
- 3** box girder installation, steel work machined
- 4** box girder installation, steel work flame cut
- 5** box girder installation, w./o. flange housing

total wheel breadth **b2**

wheel tread **b1** (b1=b2 if flangeless)

wheel size **160, 200, 250, 315, 400, 500, 630**

**RAE** driven wheel set (corner bearing)  
**RAEK** driven wheel set (box girder)  
**RAEKOF** driven wheel set (box girder) w./o. flange housing

**RNE** non driven wheel set (corner bearing)  
**RNEK** non driven wheel set (box girder)  
**RNEKOF** non driven wheel set (box girder) w./o. flange housing

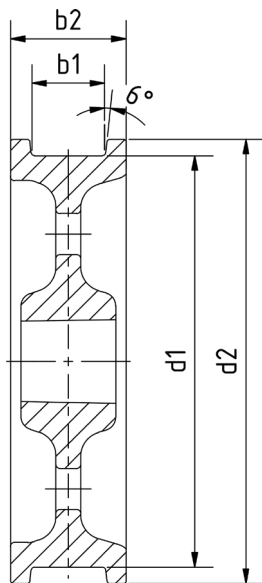
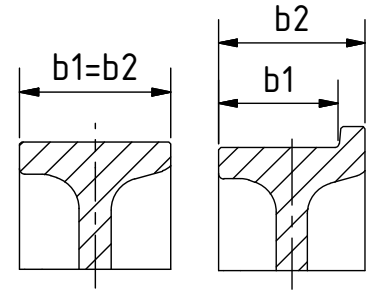
## Wheel set - *driven and non driven*

The wheel sets are used in the crane and material handling sector as well for related mechanical engineering solutions. The use as corner bearing offers a high level in service during assembly and disassembly. And thus a high availability of the handling system.

### Special features and technical details

- **Wheels**

- Wheel diameter  
160, 200, 250, 315, 400, 500, 630 mm
- 2 guide flange, single guide flange  
without guide flange, special design
- various wheel width



Wheel-Ø d1	width b2	wheel tread b1 (for 2 flange)	d2	max. load kg
160	100	max. 75	190	8.800
200	100	max. 75	230	11.200
250	110	max. 80	282	16.000
315	125	max. 90	350	22.000
400	125 140	60-90 85-105	440	28.000
500	140 170	60-100 95-130	540	40.000
630	170 210	75-130 100-160	680	60.000

- **Wheel material (standard)**

- spheroidal cast iron EN-GJS-700-2 (GGG-70)
- optional: hardened to HRc 46-52  
hardening depth appr. 3 mm

- **Wheel material (special)**

- 42CrMo4+QT (die forged or forged)  
optional: hardened to HRc 48-5  
hardening depth appr. 8-10 mm

- **Bearings and lubrication**

- Self-aligning special roller bearings,
- greased with Multifak EP2 (Texaco), for operating temperatures -30 up to +90°
- regreaseable via flat lubrication nipples in flanged housing

- **Drive shafts**

- shaft fits for all manufactures offset geared motors (customer choice)
- with splins in acc. with DIN 5480
- with feather keyway in acc. with DIN 6885-1
- for shrink disc
- extended with coupling and Intermediate shaft for central drive
- with Oil pressure interference fit (wheel set 400/500/630)
- shaft material 42CrMo4+QT

- **Track gauge adjustment**

The track gauge may be adjusted by means of distance washers which are located between the bearing and the locking ring resp. flange housing.

Wheel-Ø d1	No. and Thickness of distance washers	max. adjusting range
160/200	6 x 1,5 mm	± 4,5 mm
250/315	2 x 3,5 mm, 2 x 1 mm	± 4,5 mm
400	4 x 4 mm, 6 x 1 mm	± 10 mm
500	4 x 4 mm, 4 x 1 mm	± 10 mm
630	5 x 4 mm, 4 x 1 mm	± 12 mm

- **Flange housing**

- screwed with locking screws and locking nuts
- additionally fixed by split sleeves (at unmachined flange seat)
- compensation to 2° slope of the superstructure
- Material: spheroidal cast iron

- **Mounting version**

#### **Variant 1**

Corner bearing installation  
Flange centring machined  
(Wheel set delivered complete assembled)

#### **Variant 2**

Corner bearing installation  
Flange centring flame cut (unmachined)  
(Wheel set delivered complete assembled, with additional split sleeves for centring)

#### **Variant 3**

Closed box girder installation (hollow profile section)  
Flange centring machined  
(Wheel set delivered disassembled)

#### **Variant 4**

Closed box girder installation (hollow profile section)  
Flange centring flame cut (unmachined)  
(Wheel set delivered disassembled, with additional split sleeves for centring)

#### **Variant 5**

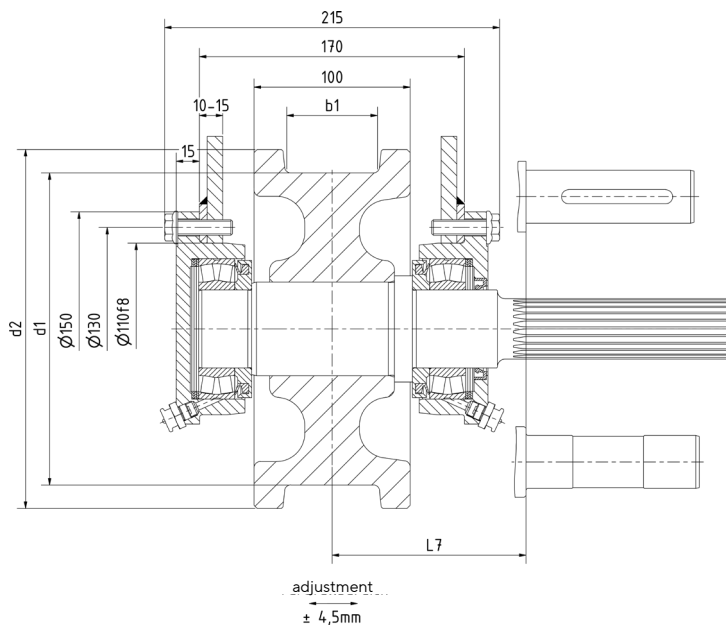
Closed box girder installation (hollow profile section)  
without flange housing  
(Wheel set delivered disassembled)

# Wheel set RAE/RNE 160, 200

for use as corner bearing  
complete assembled

VARIANT 1 & 2

**RAE**  
driven



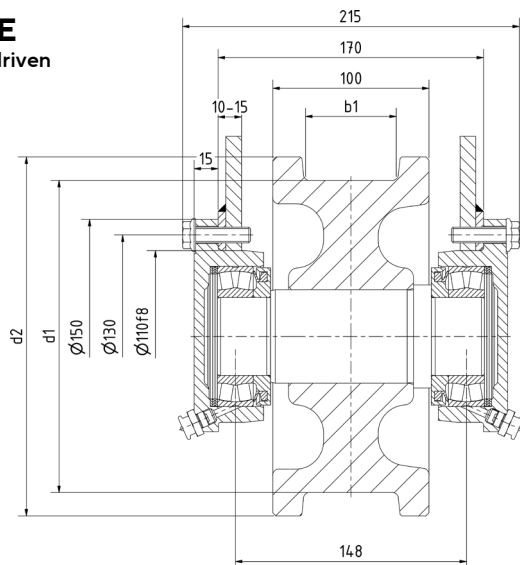
**Type and size of gear box  
specify when ordering!**

with fitting key in acc. w. DIN 6885/1  
(designation: Ø ... PF)

splined shaft in acc. w. DIN 5480  
(designation: W ...)

fitted for shrink disc  
(designation: Ø ... SS)

**RNE**  
non driven

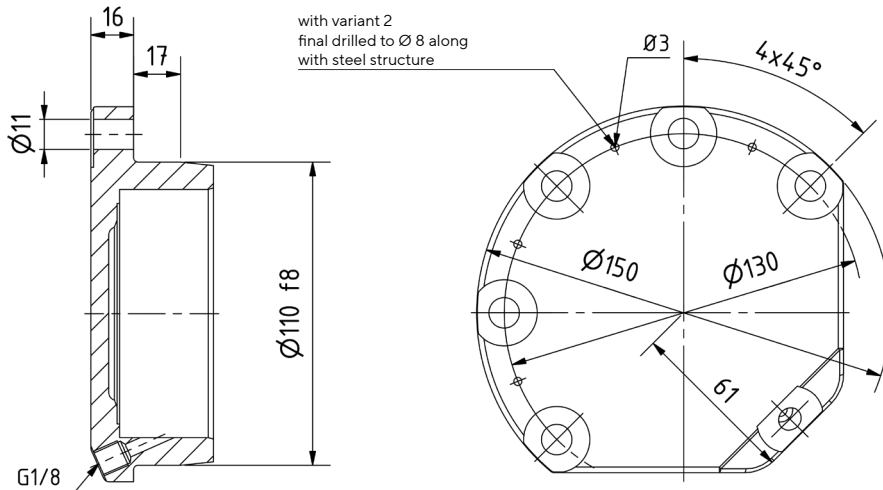


wheel set d1	b1	d2	bearing type	shaft max. Ø	weight kg <sup>2)</sup>		L7 <sup>1)</sup> standard
					RAE	RNE	
160	max. 75	190	222 10	50	21	19	130
200	max. 75	230			26	24	

<sup>1)</sup> other dimensions on request, <sup>2)</sup> depends on wheel body design



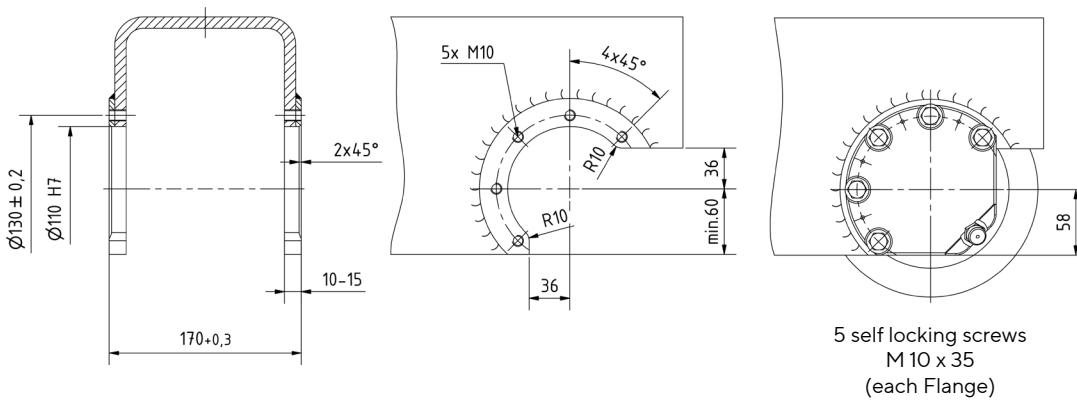
## Design of wheel set flange



## Dimensions and drilling plan for the steel stucture

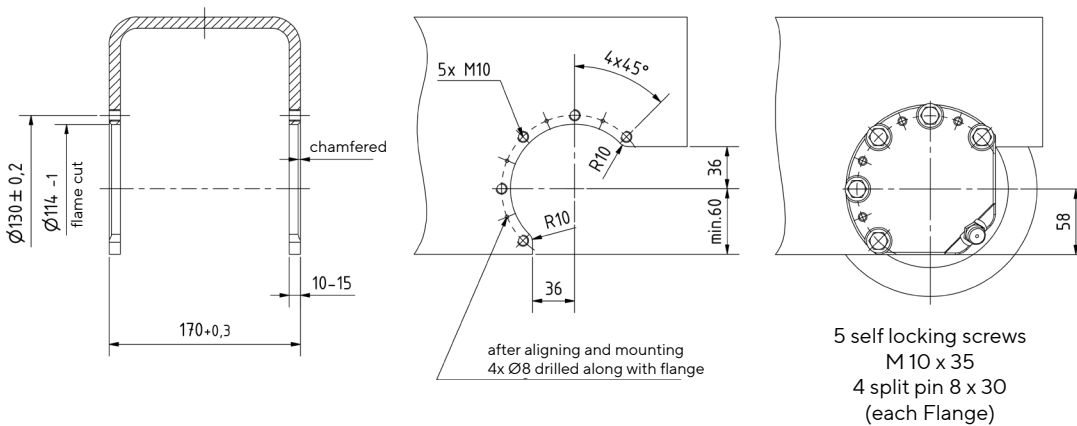
### a) Variant 1

Corner bearing instalation  
 Flange centring machined  
 Wheel set delivered complete assembled



### b) Variant 2

Corner bearing instalation  
 Flange centring flame cut  
 Wheel set delivered complete assembled

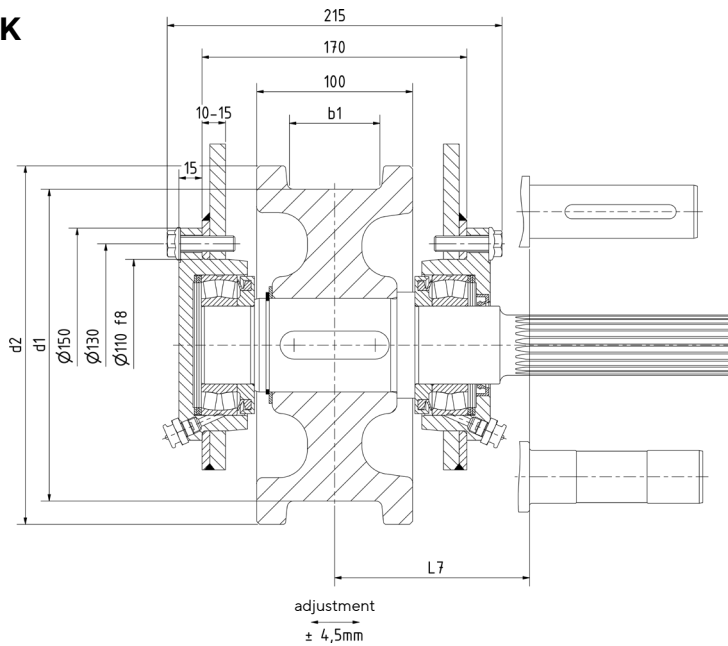


# Wheel set RAEK/RNEK 160, 200

for closed box girder installation (hollow profile section)  
delivered disassembled

**VARIANT 3**

**RAEK**  
driven



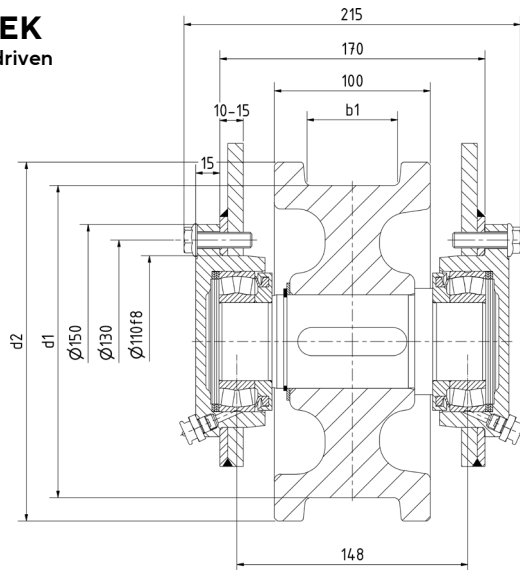
**Type and size of gear box**  
specify when ordering!

with fitting key in acc. w. DIN 6885/1  
(designation: Ø ... PF)

splined shaft in acc. w. DIN 5480  
(designation: W ...)

fitted for shrink disc  
(designation: Ø ... SS)

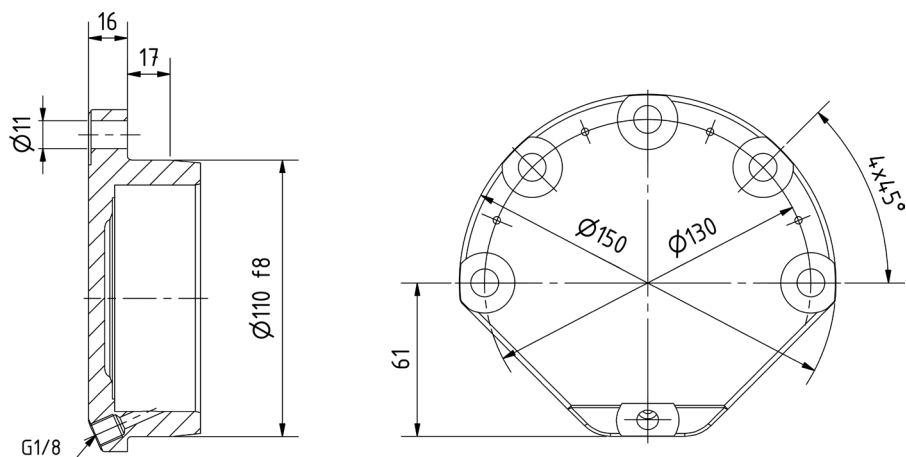
**RNEK**  
non driven



wheel set d1	b1	d2	L7 <sup>1)</sup> standard	bearing type	shaft max. Ø	weight kg <sup>2)</sup>	
						RAEK	RNEK
h9							
160	max. 75	190	130	222 10	50	21	19
200	max. 75	230				26	24

<sup>1)</sup> other dimensions on request, <sup>2)</sup> depends on wheel body design

## Design of wheel set flange

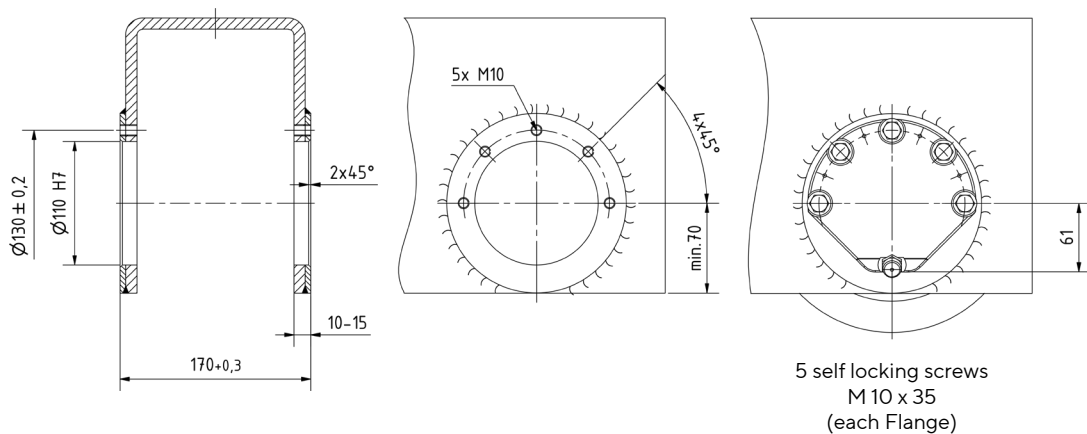


## Dimensions and drilling plan for the steel structure Variant 3

Closed box girder installation (hollow profile section)

Flange centring machined

wheel set delivered disassembled

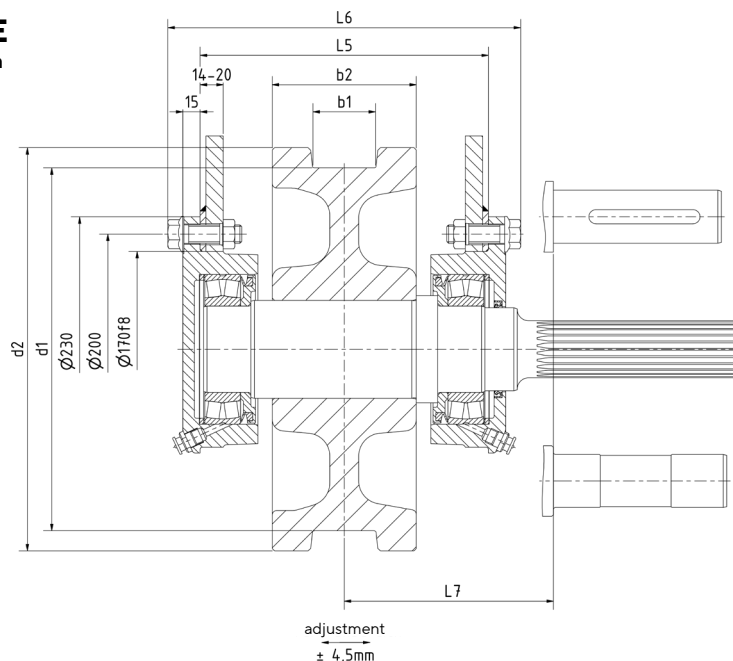


# Wheel set RAE/RNE 250, 315

for use as corner bearing  
complete assembled

**VARIANT 1 & 2**

**RAE**  
driven



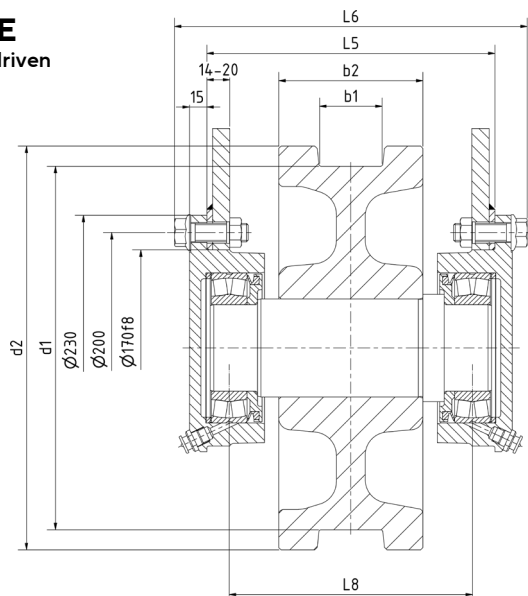
**Type and size of gear box  
specify when ordering!**

with fitting key in acc. w. DIN 6885/1  
(designation: Ø ... PF)

splined shaft in acc. w. DIN 5480  
(designation: W ...)

fitted for shrink disc  
(designation: Ø ... SS)

**RNE**  
non driven

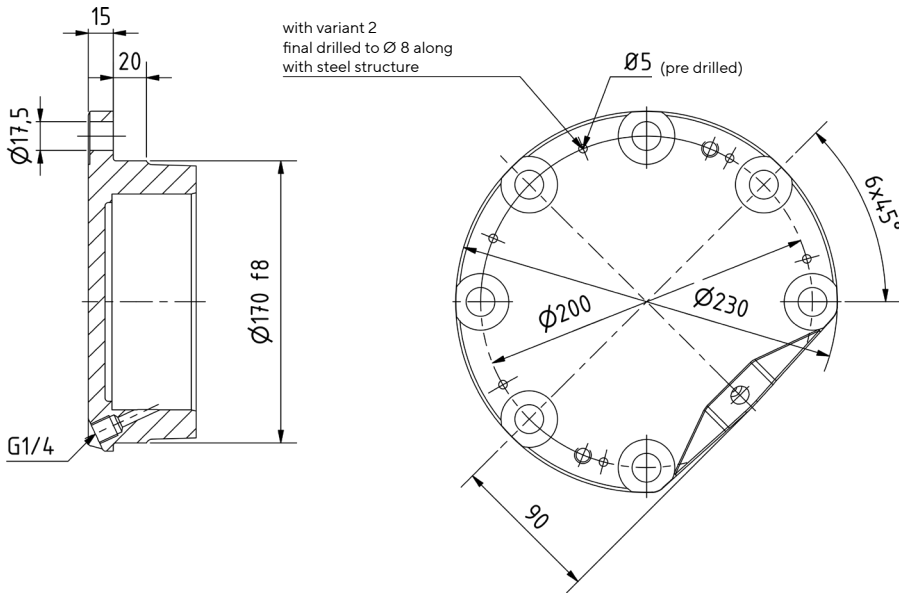


d1	L7 <sup>1)</sup> standard	L7 (special) suitable for Demag gearboxes torque bracket type D2			
		A30	A40	A50	A60
250	160	142	142	159	172
315	180	157	157	174	187

d1	b1	b2	d2	L5	L6	L7 <sup>1)</sup> stan- dard	L8	bearing type	shaft max. Ø	weight kg <sup>2)</sup>	
										RAE	RNE
250	max. 80	110	282	220	275	160	181	222 15	70	54	52
315	max. 90	125	350	250	306	180	211			74	70

<sup>1)</sup> other dimensions on request, <sup>2)</sup> depends on wheel body design

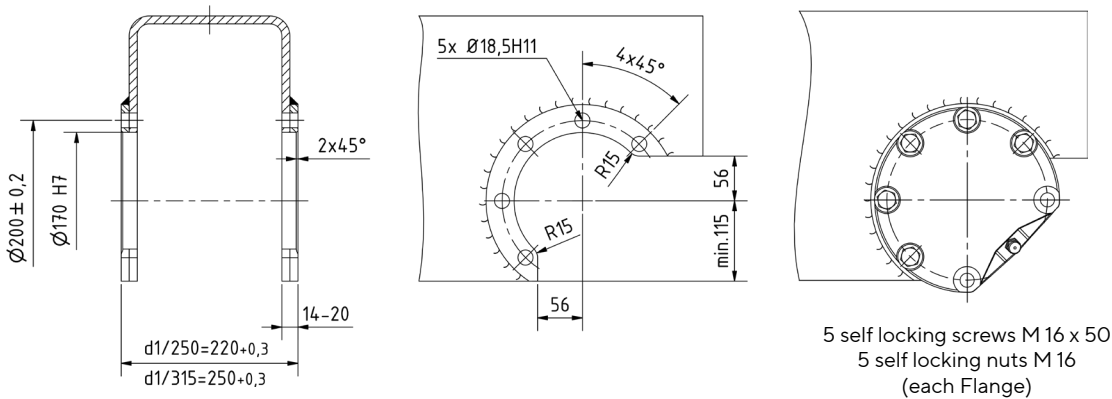
## Design of wheel set flange



## Dimensions and drilling plan for the steel structure

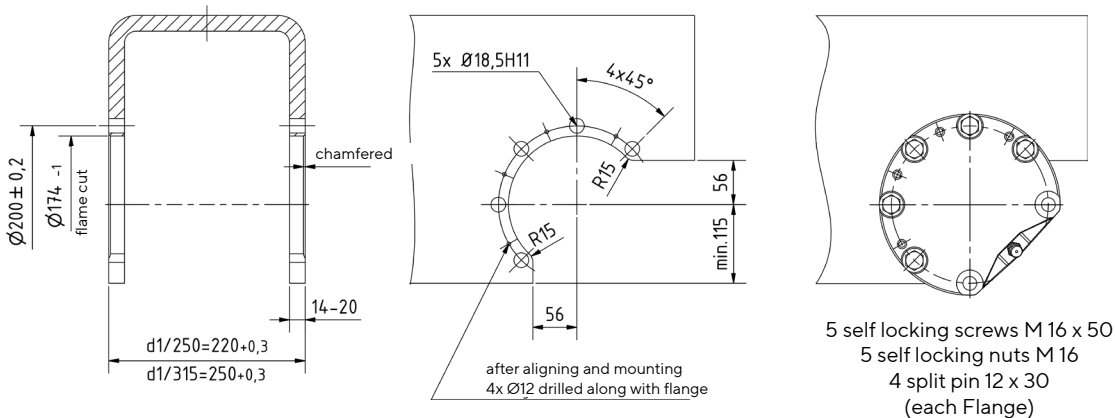
### a) Variant 1

Corner bearing installation  
 Flange centring machined  
 Wheel set delivered complete assembled



### b) Variant 2

Corner bearing installation  
 Flange centring flame cut  
 Wheel set delivered complete assembled

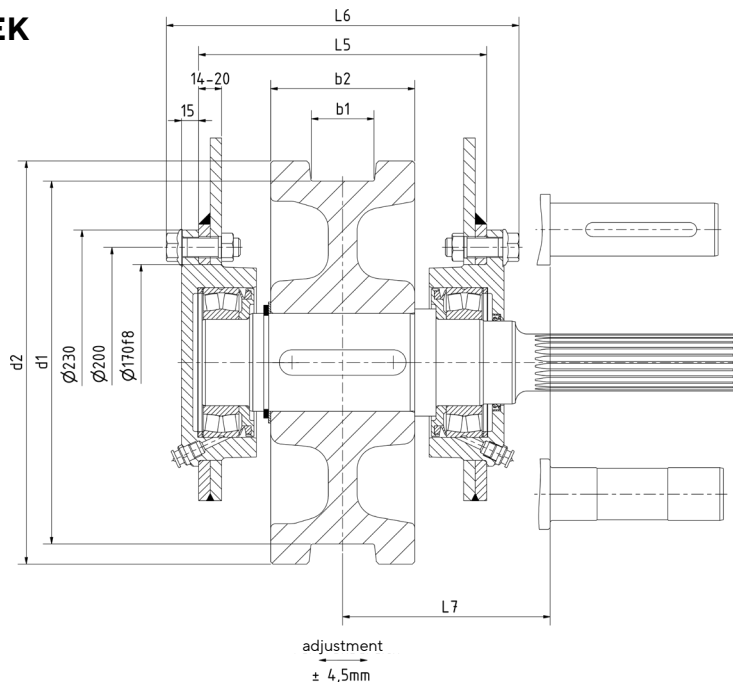


# Wheel set RAEK/RNEK 250, 315

for closed box girder installation (hollow profile section)  
delivered disassembled

**VARIANT 3 & 4**

**RAEK**  
driven



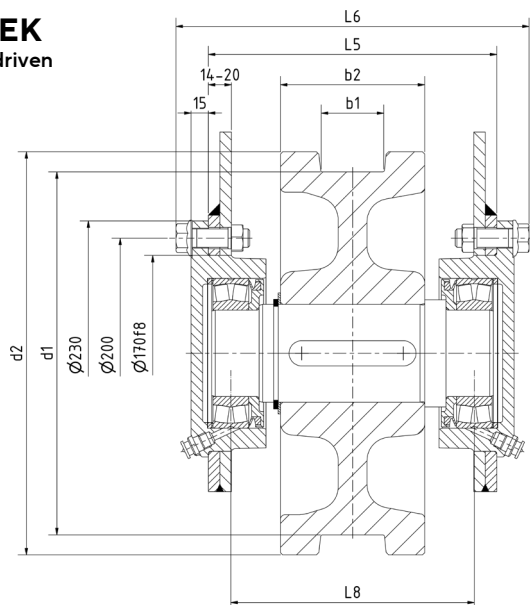
**Type and size of gear box  
specify when ordering!**

with fitting key in acc. w. DIN 6885/1  
(designation: Ø ... PF)

splined shaft in acc. w. DIN 5480  
(designation: W ...)

fitted for shrink disc  
(designation: Ø ... SS)

**RNEK**  
non driven

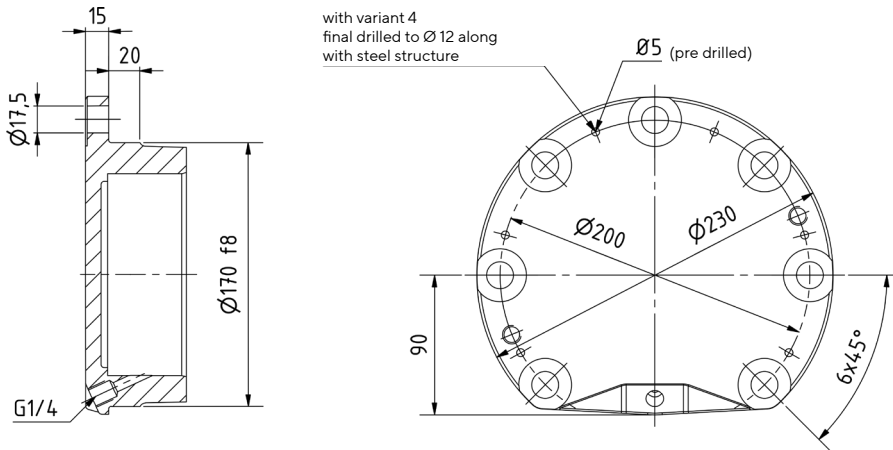


d1	L7 <sup>1)</sup> standard	L7 (special) suitable for Demag gearboxes torque bracket type D2			
		A30	A40	A50	A60
250	160	142	142	159	172
315	180	157	157	174	187

d1	b1	b2	d2	L5	L6	L7 <sup>1)</sup> standard	L8	bearing type	shaft max. Ø	weight kg <sup>2)</sup>	
										RAEK	RNEK
250	max. 80	110	282	220	275	160	181	222 15	70	54	52
315	max. 90	125	350	250	306	180	211			74	70

<sup>1)</sup> other dimensions on request, <sup>2)</sup> depends on wheel body design

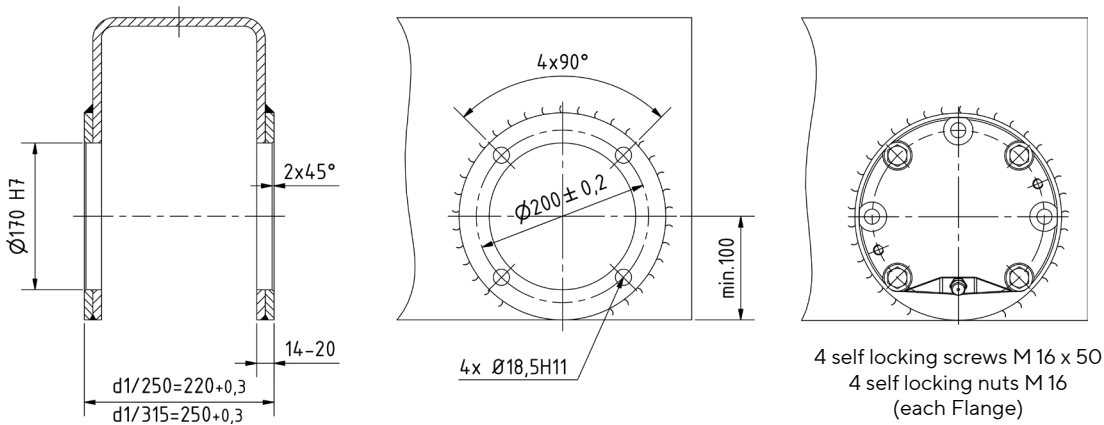
## Design of wheel set flange



## Dimensions and drilling plan for the steel structure

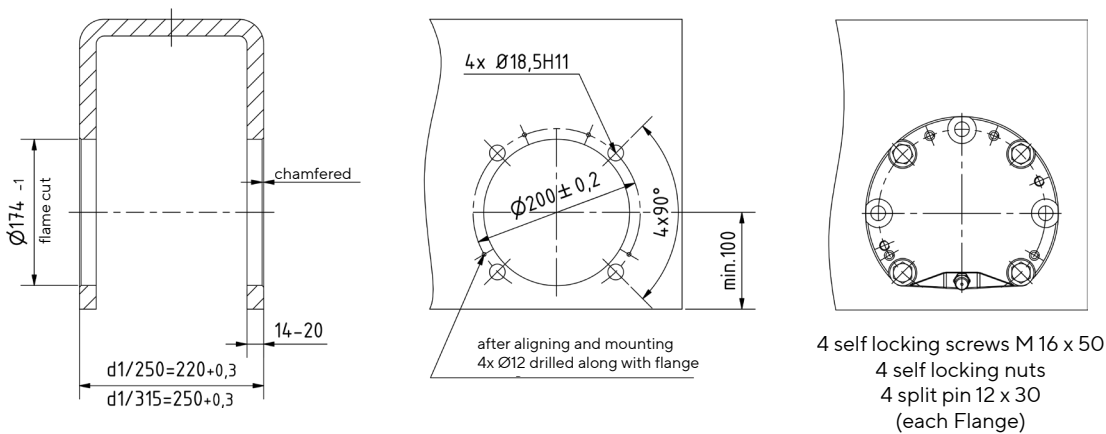
### a) Variant 3

Closed box girder installation (hollow profile section)  
 Flange centring machined  
 wheel set delivered disassembled



### b) Variant 4

Closed box girder installation (hollow profile section)  
 Flange centring flame cut  
 wheel set delivered disassembled

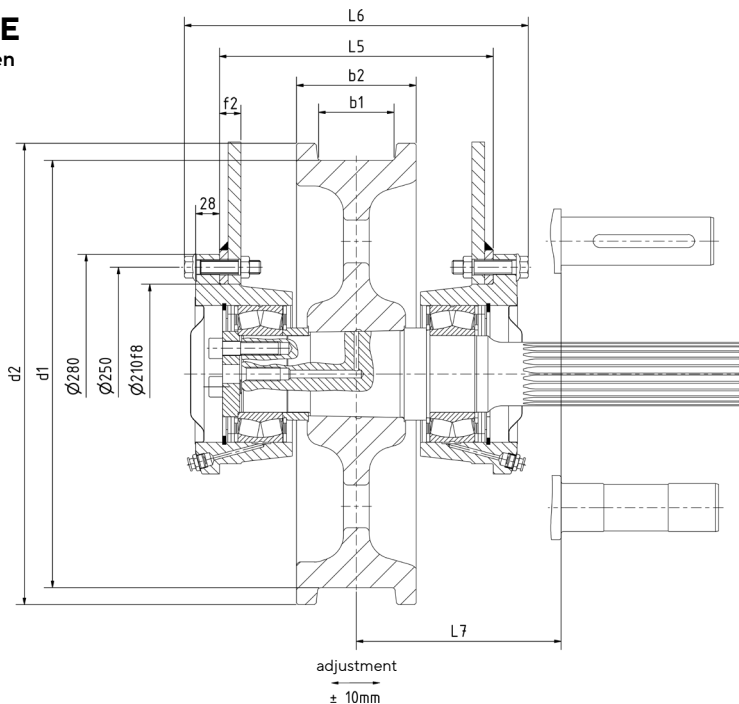


# Wheel set RAE/RNE 400, 500

for use as corner bearing complete assembled

**VARIANT 1 & 2**

**RAE**  
driven



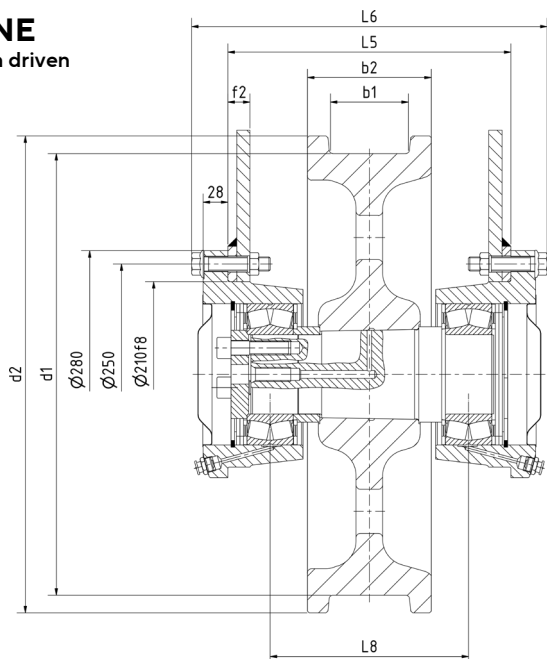
**Type and size of gear box  
specify when ordering!**

with fitting key in acc. w. DIN 6885/1  
(designation: Ø ... PF)

splined shaft in acc. w. DIN 5480  
(designation: W ...)

fitted for shrink disc  
(designation: Ø ... SS)

**RNE**  
non driven



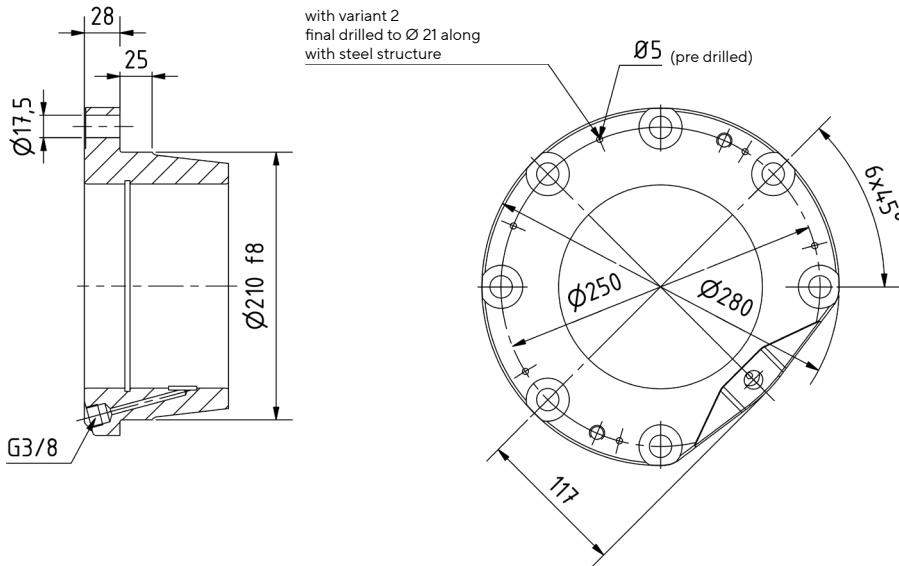
d1	L7 <sup>1)</sup> standard	L7 (special) suitable for Demag gearboxes torque bracket type D2						
		A50	A60	A70	A80	W70	W80	W90
400	210	188	203	193	-	229	238	-
500	230	208	223	213	213	-	285	257

d1	b1	b2	d2	f2	L5	L6	L7 <sup>1)</sup> stand- dard	L8	bear- ing type	shaft max. Ø	weight kg <sup>2)</sup>	
											RAE	RNE
400	60-90	125	440	15-32	280	362	210	179	223 15	75	115	110
	85-105	140									120	115
500	60-100	140	540	20-32	320	402	230	224,4	232 18	90	165	160
	95-130	170									175	170

<sup>1)</sup> other dimensions on request, <sup>2)</sup> depends on wheel body design



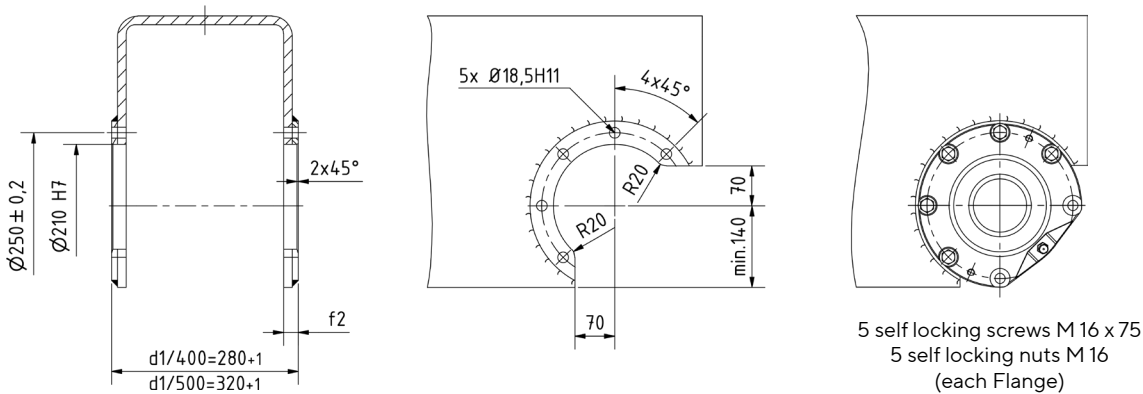
## Design of wheel set flange



### Dimensions and drilling plan for the steel structure

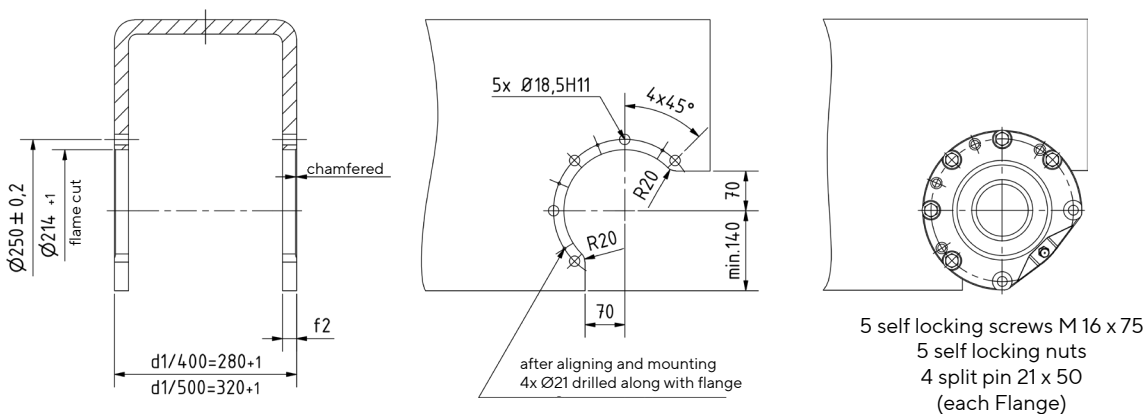
#### a) Variant 1

Corner bearing installation  
 Flange centring machined  
 Wheel set delivered complete assembled



#### b) Variant 2

Corner bearing installation  
 Flange centring flame cut  
 Wheel set delivered complete assembled

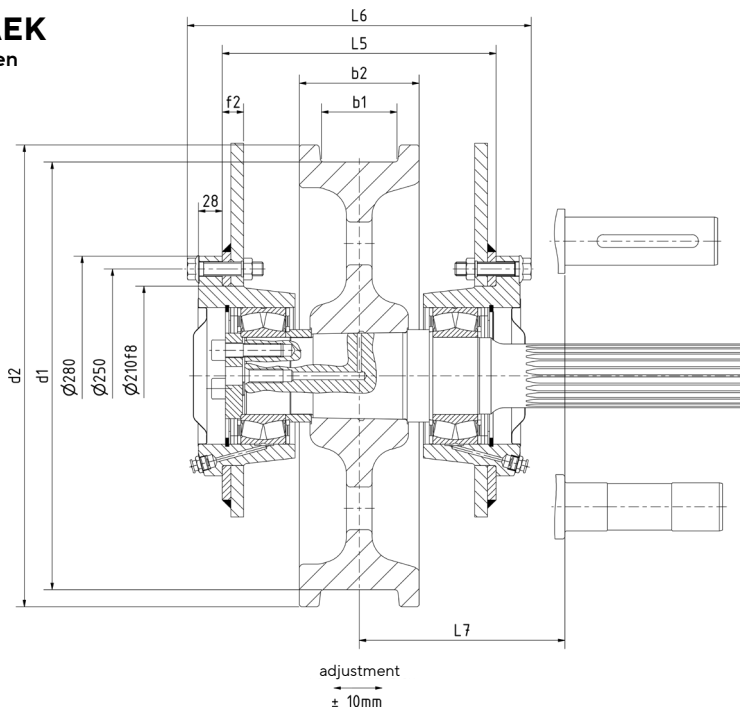


# Wheel set RAEK/RNEK 400, 500

for closed box girder installation (hollow profile section)  
delivered disassembled

**VARIANT 3 & 4**

**RAEK**  
driven



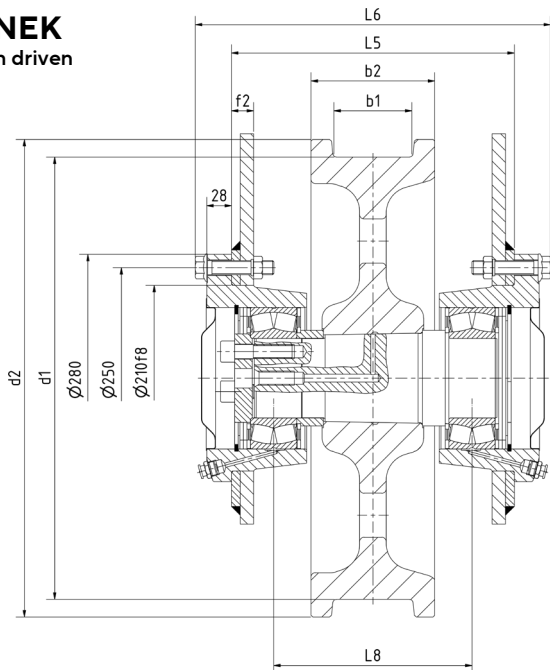
**Type and size of gear box**  
specify when ordering!

with fitting key in acc. w. DIN 6885/1  
(designation: Ø ... PF)

splined shaft in acc. w. DIN 5480  
(designation: W ...)

fitted for shrink disc  
(designation: Ø ... SS)

**RNEK**  
non driven

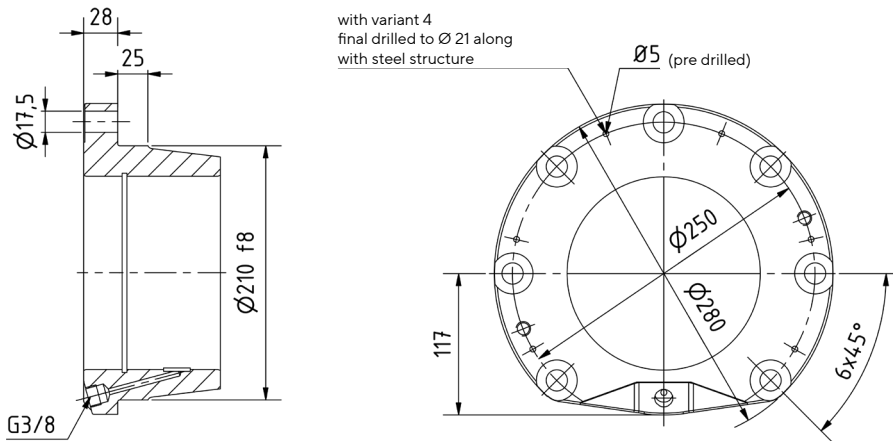


d1	L7 <sup>1)</sup> standard	L7 (special) suitable for Demag gearboxes torque bracket type D2						
		A50	A60	A70	A80	W70	W80	W90
400	210	188	203	193	-	229	238	-
500	230	208	223	213	213	-	285	257

d1	b1	b2	d2	f2	L5	L6	L7 <sup>1)</sup> standard	L8	bearing type	shaft max. Ø	weight kg <sup>2)</sup>	
											RAEK	RNEK
400	60-90	125	440	15-32	280	362	210	179	223 15	75	115	110
	85-105	140									120	115
500	60-100	140	540	20-32	320	402	230	224,4	232 18	90	165	160
	95-130	170									175	170

<sup>1)</sup> other dimensions on request, <sup>2)</sup> depends on wheel body design

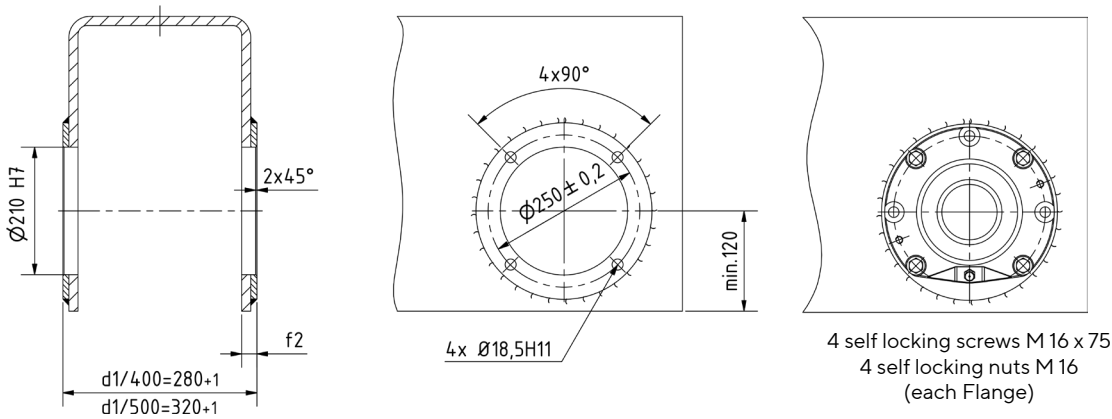
## Design of wheel set flange



## Dimensions and drilling plan for the steel structure

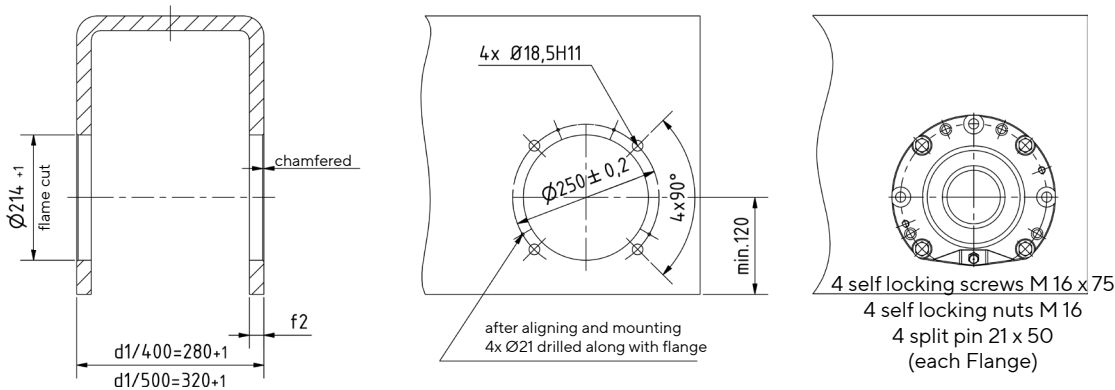
### a) Variant 3

Closed box girder installation (hollow profile section)  
Flange centring machined  
wheel set delivered disassembled



### b) Variant 4

Closed box girder installation (hollow profile section)  
Flange centring flame cut  
wheel set delivered disassembled

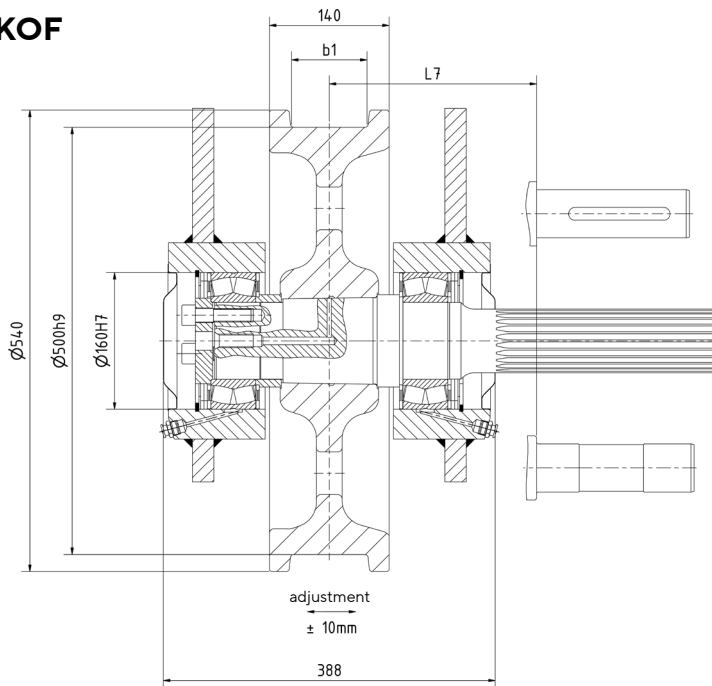


# Wheel set RAEKOF/RNEKOF 500

**VARIANT 5**

without flange housing  
for direct installation in machined superstructures  
delivered disassembled

## RAEKOF driven



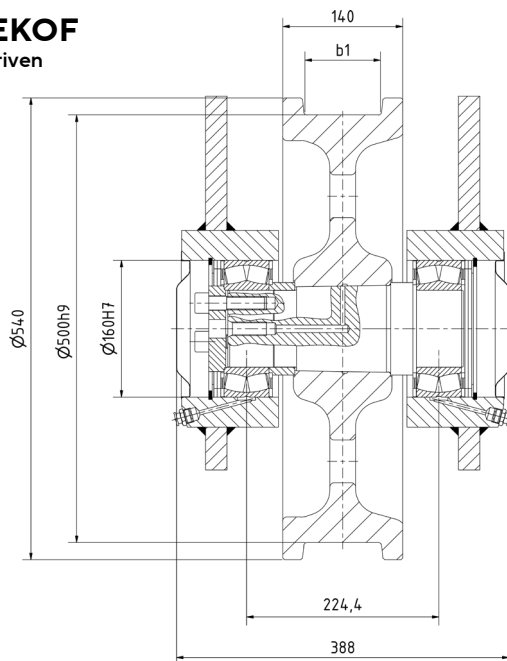
**Type and size of gear box  
specify when ordering!**

with fitting key in acc. w. DIN 6885/1  
(designation: Ø ... PF)

splined shaft in acc. w. DIN 5480  
(designation: W ...)

fitted for shrink disc  
(designation: Ø ... SS)

## RNEKOF non driven



d1	L7 <sup>1)</sup> standard	L7 (special) suitable for Demag gearboxes torque bracket type D2					
		A50	A60	A70	A80	W80	W90
500	230	208	223	213	213	285	257

d1 h9	b1	L7 <sup>1)</sup> standard	bearing type	shaft max. Ø	weight kg <sup>2)</sup>	
					RAEKOF	RNEKOF
500	60-100	230	232 18	90	135	130

<sup>1)</sup> other dimensions on request, <sup>2)</sup> depends on wheel body design

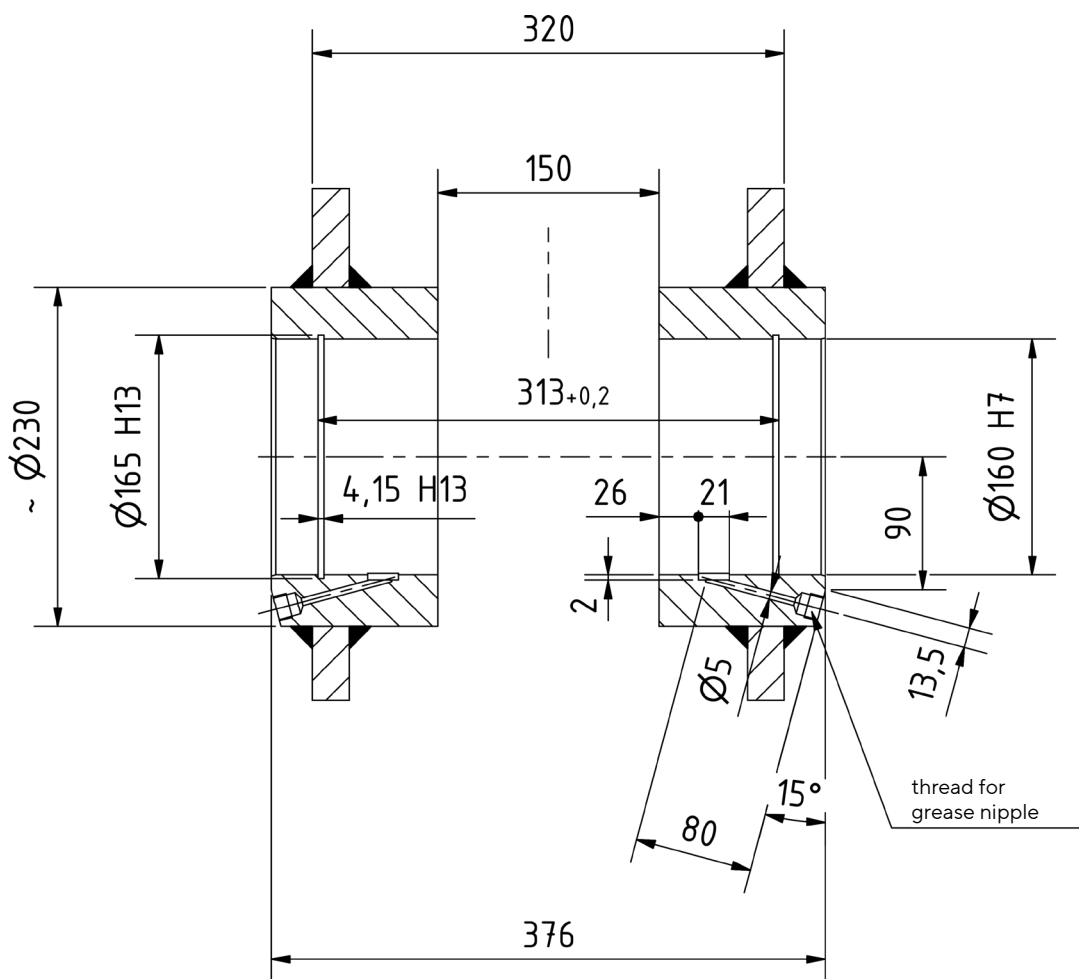
# Dimensions for the steel structure

Closed box girder installation (hollow profile section)

Bearing bushes welded and machined

Wheel set delivered disassembled

(incl. 2 circlips J160 DIN 472)

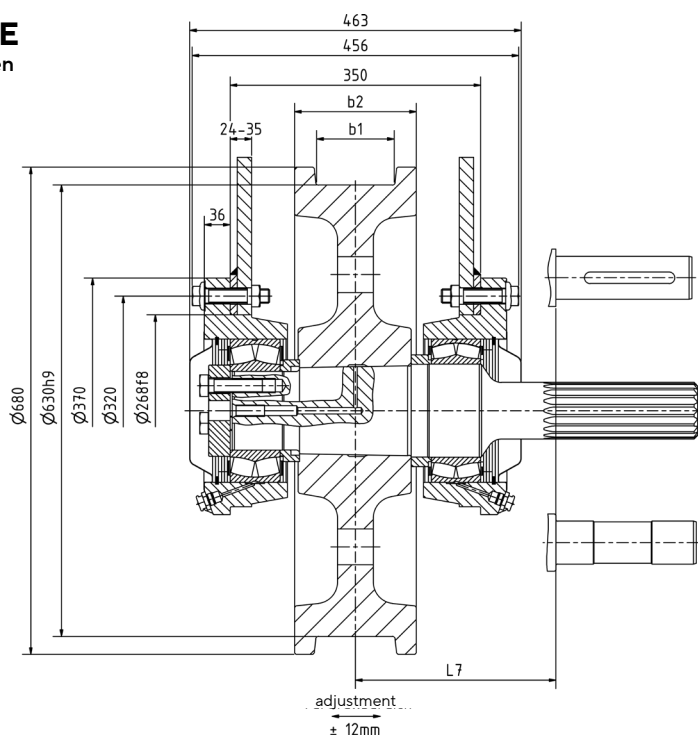


# Wheel set RAE/RNE 630

for use as corner bearing  
complete assembled

VARIANT 1 & 2

**RAE**  
driven



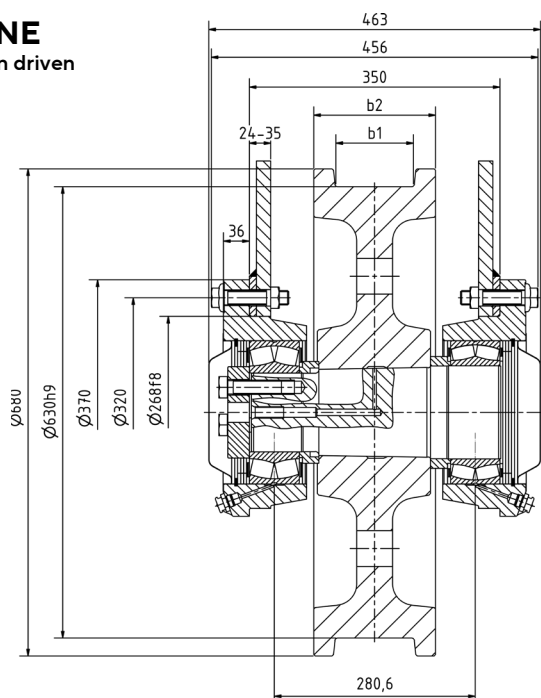
**Type and size of gear box  
specify when ordering!**

with fitting key in acc. w. DIN 6885/1  
(designation: Ø ... PF)

splined shaft in acc. w. DIN 5480  
(designation: W ...)

fitted for shrink disc  
(designation: Ø ... SS)

**RNE**  
non driven

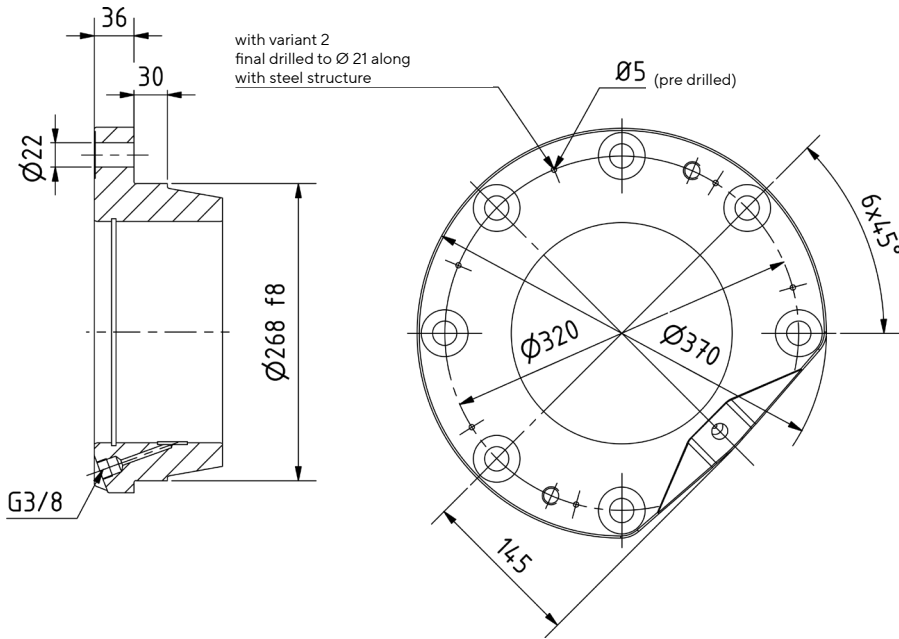


d1	L7 <sup>1)</sup> standard	L7 (special) suitable for Demag gearboxes torque bracket type D2			
		A80	A90	W90	W100
630	250	228	246	285	300

d1 h9	b1	b2	L7 <sup>1)</sup> standard	bearing type	shaft max. Ø	weight kg <sup>2)</sup>	
						RAE	RNE
630	75-130	170	250	1 x 232 22	130	350	340
	100-160	210		1 x 240 26		375	365

<sup>1)</sup> other dimensions on request, <sup>2)</sup> depends on wheel body design

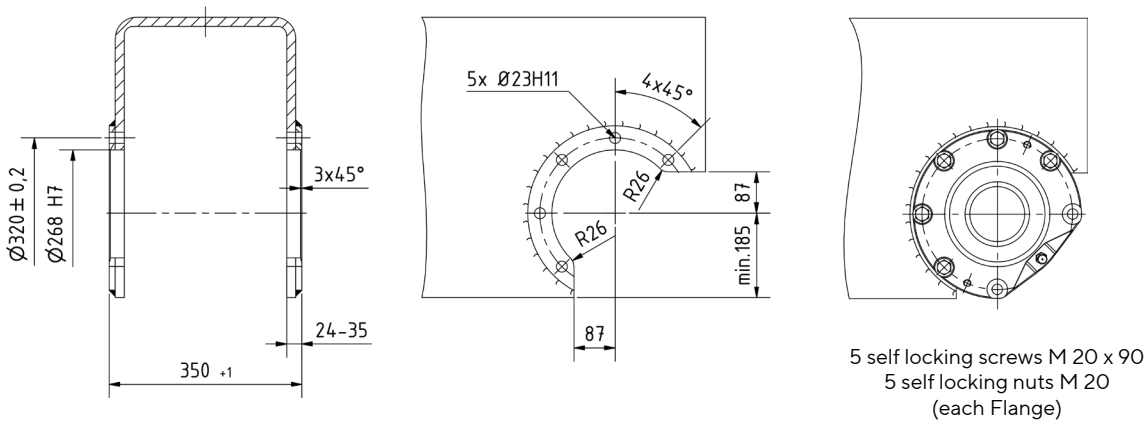
## Design of wheel set flange



### Dimensions and drilling plan for the steel structure

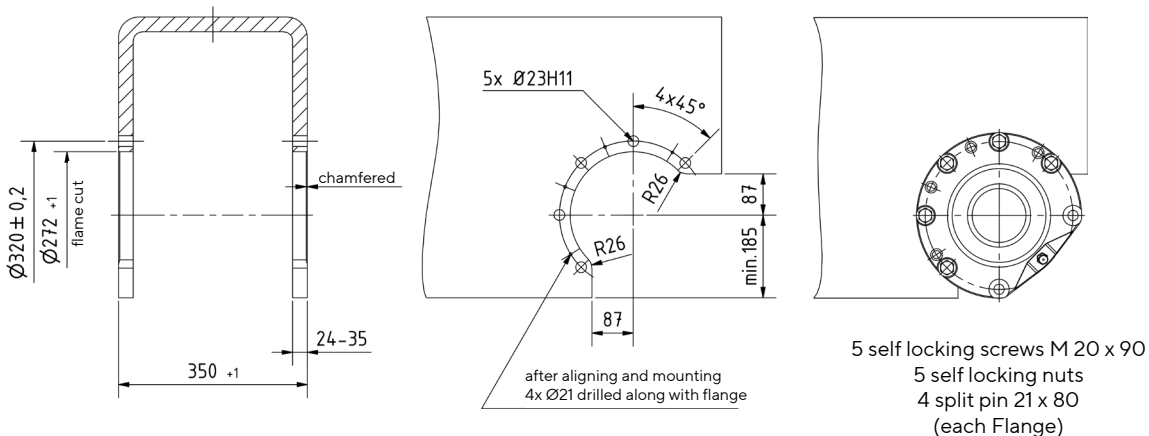
#### a) Variant 1

Corner bearing installation  
 Flange centring machined  
 Wheel set delivered complete assembled



#### b) Variant 2

Corner bearing installation  
 Flange centring flame cut  
 Wheel set delivered complete assembled

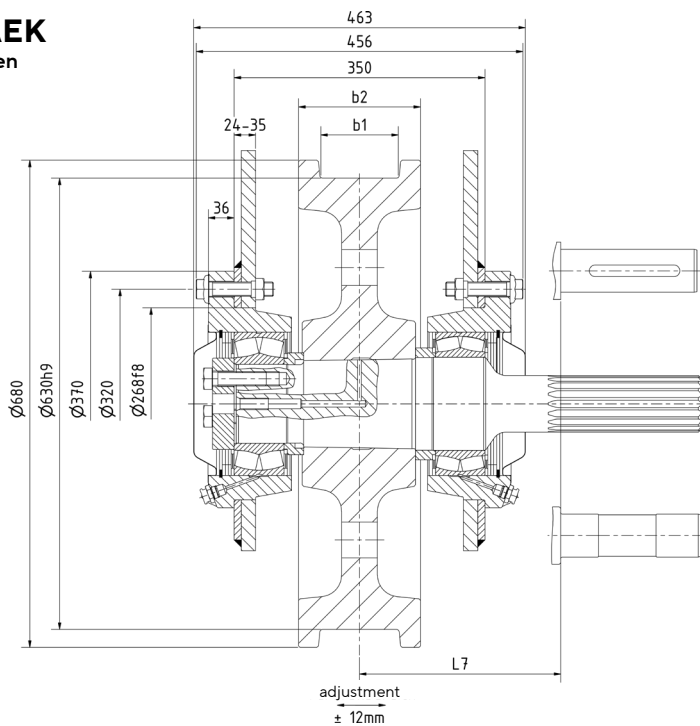


# Wheel set RAEK/RNEK 630

**VARIANT 3 & 4**

for closed box girder installation (hollow profile section)  
delivered disassembled

**RAEK**  
driven



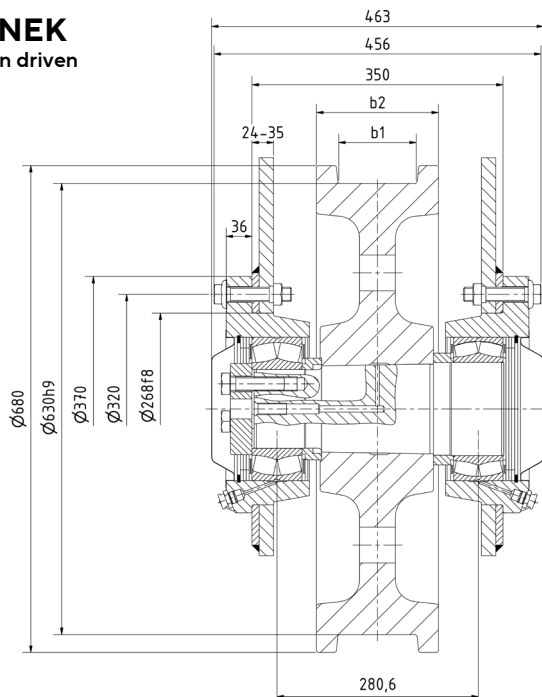
**Type and size of gear box  
specify when ordering!**

with fitting key in acc. w. DIN 6885/1  
(designation: Ø ... PF)

splined shaft in acc. w. DIN 5480  
(designation: W ...)

fitted for shrink disc  
(designation: Ø ... SS)

**RNEK**  
non driven



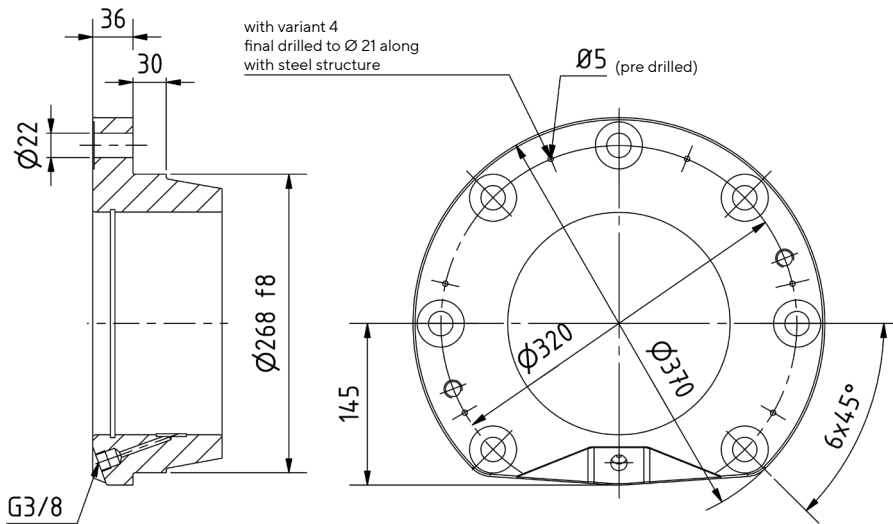
d1	L7 <sup>1)</sup> standard	L7 (special) suitable for Demag gearboxes torque bracket type D2			
		A80	A90	W90	W100
630	250	228	246	285	300

d1 h9	b1	b2	L7 <sup>1)</sup> standard	bearing type	shaft max. Ø	weight kg <sup>2)</sup>	
						RAEK	RNEK
630	75-130	170	250	1 x 232 22	130	350	340
	100-160	210		1 x 240 26		375	365

<sup>1)</sup> other dimensions on request, <sup>2)</sup> depends on wheel body design



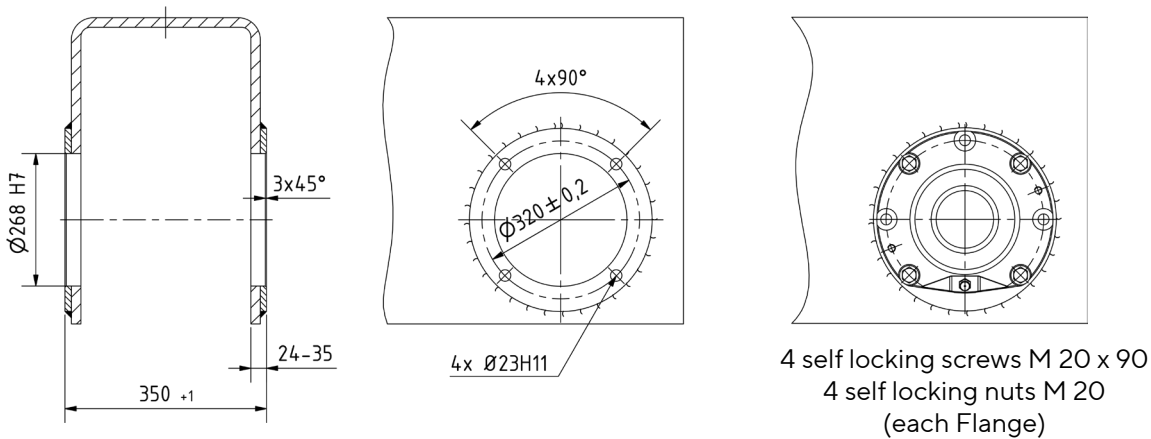
## Design of wheel set flange



## Dimensions and drilling plan for the steel structure

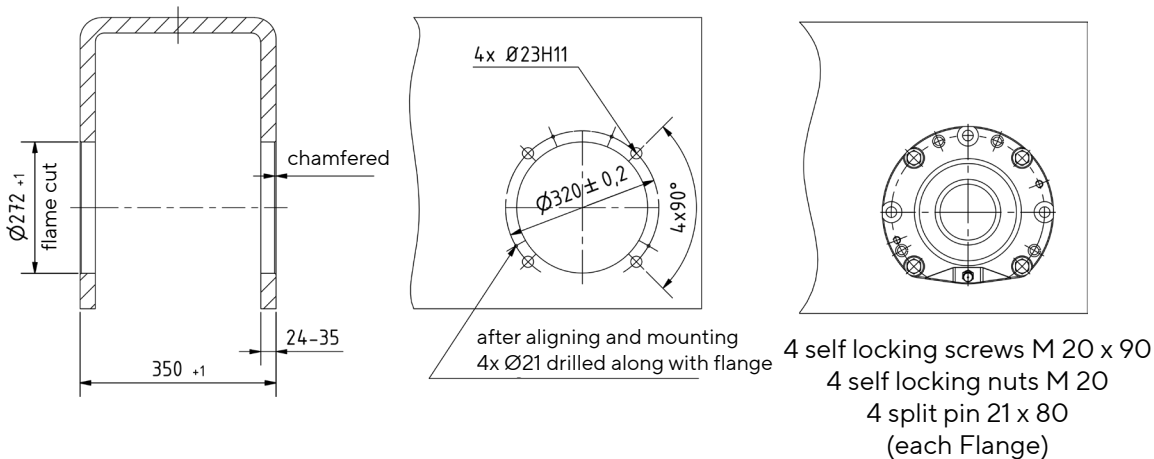
### a) Variant 3

Closed box girder installation (hollow profile section)  
 Flange centring machined  
 wheel set delivered disassembled



### b) Variant 4

Closed box girder installation (hollow profile section)  
 Flange centring flame cut  
 wheel set delivered disassembled

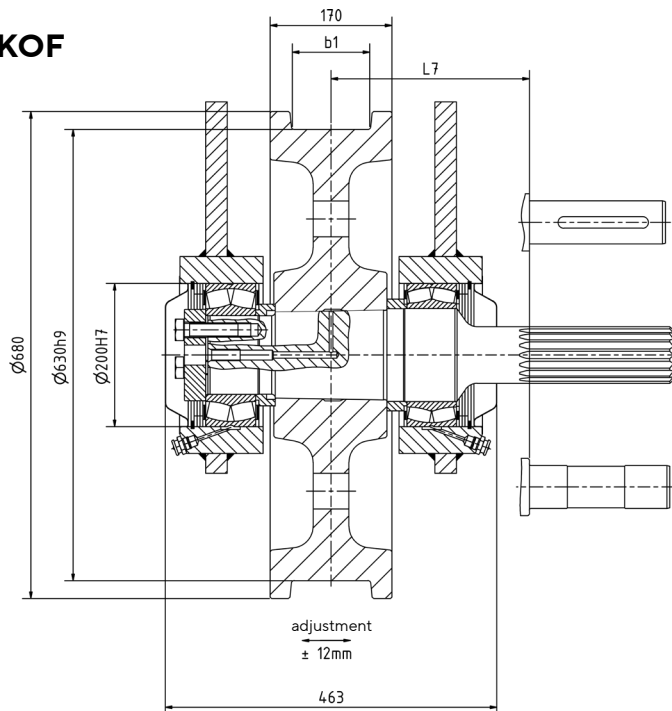


# Wheel set RAEKOF/RNEKOF 630

**VARIANT 5**

without flange housing  
for direct installation in machined superstructures  
delivered disassembled

## RAEKOF driven



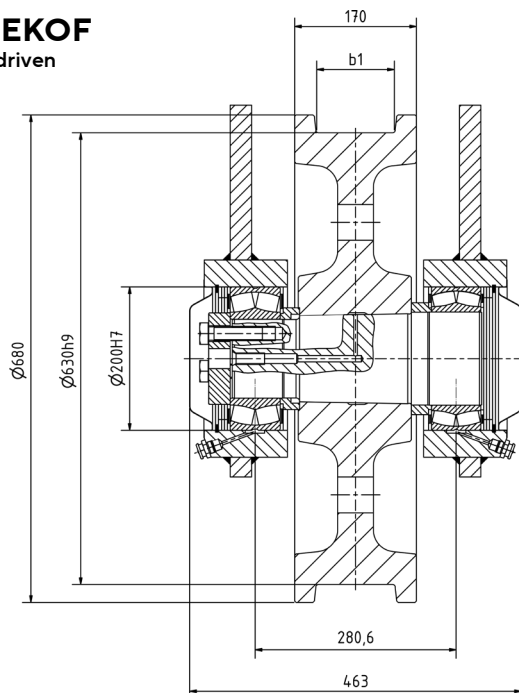
**Type and size of gear box  
specify when ordering!**

with fitting key in acc. w. DIN 6885/1  
(designation: Ø ... PF)

splined shaft in acc. w. DIN 5480  
(designation: W ...)

fitted for shrink disc  
(designation: Ø ... SS)

## RNEKOF non driven



d1	L7 <sup>1)</sup> standard	L7 (special) suitable for Demag gearboxes torque bracket type D2			
		A80	A90	W90	W100
630	250	228	246	285	300

d1 h9	b1	L7 <sup>1)</sup> standard	bearing type	shaft max. Ø	weight kg <sup>2)</sup>	
					RAEKOF	RNEKOF
630	75-130	250	1 x 232 22 1 x 240 26	130	295	285

<sup>1)</sup> other dimensions on request, <sup>2)</sup> depends on wheel body design

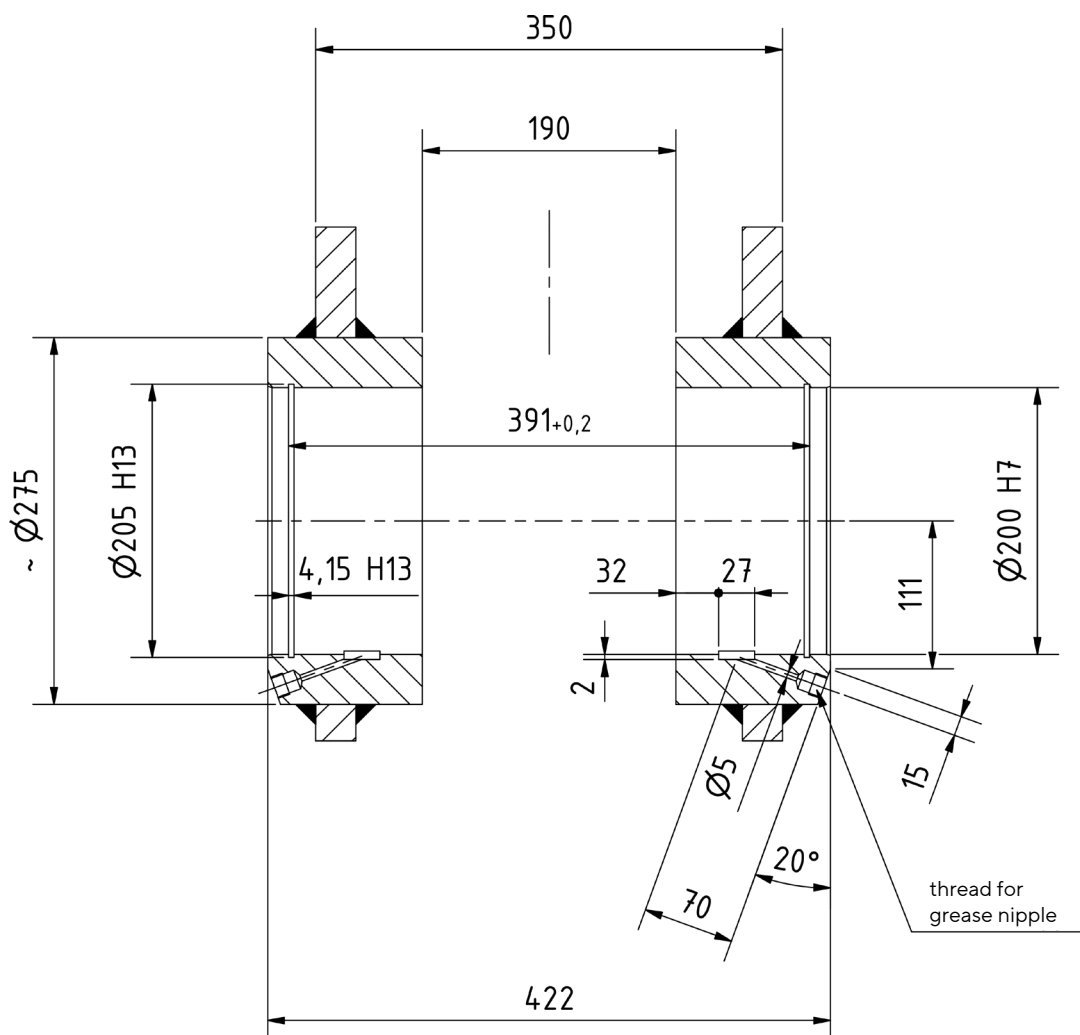
# Dimensions for the steel structure

Closed box girder installation (hollow profile section)

Bearing bushes welded and machined

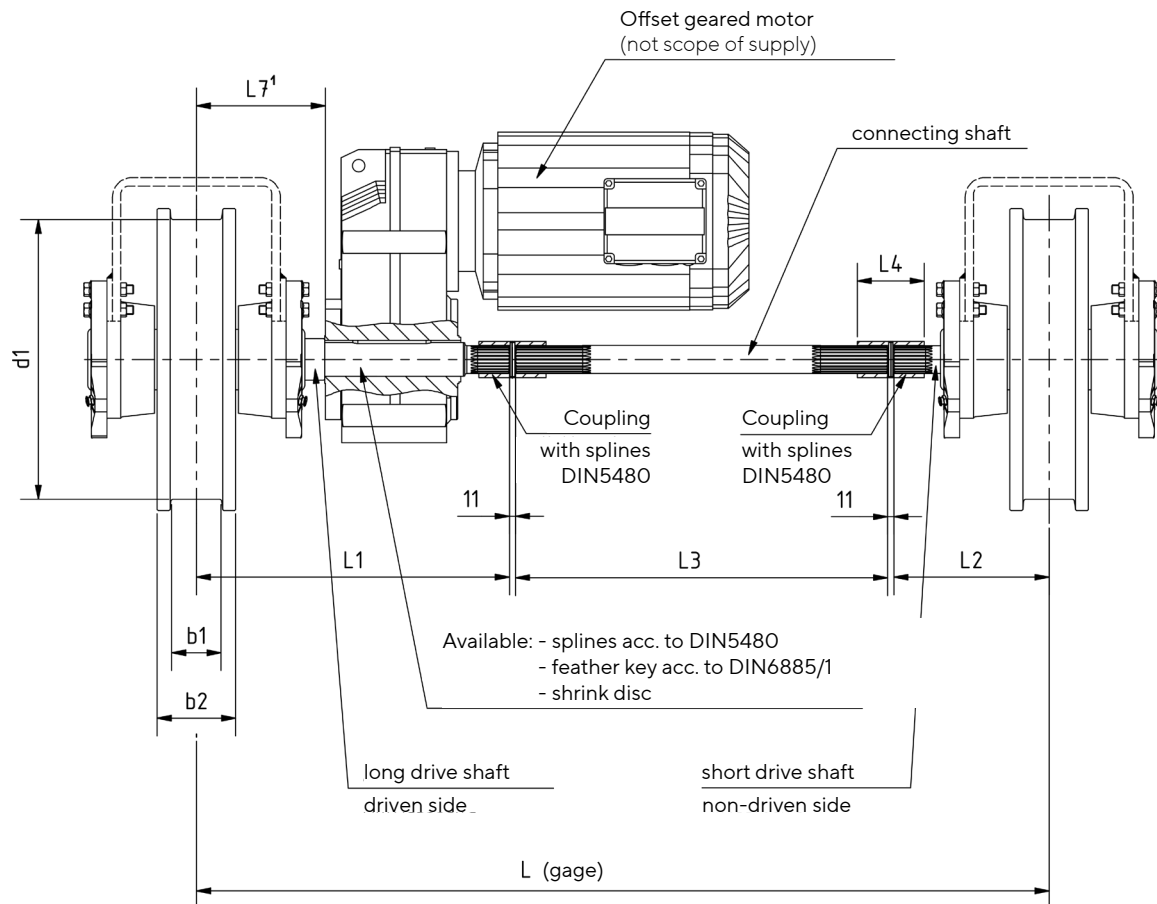
Wheel set delivered disassembled

(incl. 2 circlips J200 DIN 472)



# Central drive

for Wheel set RAE 160, 200, 250, 315, 400, 500



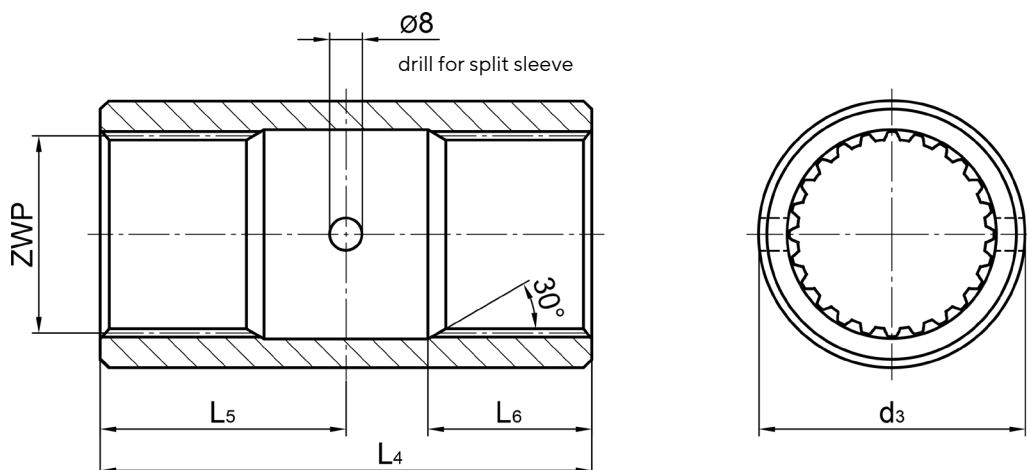
## Following data are required:

- Wheel diameter **d1**
- widths **b1/b2**
- gage **L**
- **manufacture of gear box, size and type** (design of shaft end)  
The couplings and connecting shafts are always made with splines in accordance with DIN 5480

<sup>1)</sup> Dimension L7 see Data sheet of respective wheel sizes

# Couplings

Inner profile in accordance with DIN 5480



Splines DIN 5480 (9H)	d3	L4	L5	L6
<b>N 30 x 1,25 x 22</b>	40	80	40	27,5
<b>N 30 x 2 x 14</b>	40	80	40	27,5
<b>N 35 x 1,25 x 26</b>	50	100	50	44
<b>N 35 x 2 x 16</b>	50	100	50	35
<b>N 40 x 2 x 18</b>	55	100	50	32
<b>N 45 x 2 x 21</b>	60	120	60	50
<b>N 50 x 2 x 24</b>	65	120	60	40
<b>N 60 x 2 x 28</b>	75	125	62,5	47,5
<b>N 65 x 2 x 31</b>	80	125	62,5	50
<b>N 70 x 2 x 34</b>	90	135	67,5	50
<b>N 75 x 3 x 24*</b>	95	145	72,5	52,5
<b>N 80 x 3 x 25*</b>	100	150	75	55
<b>N 85 x 3 x 27*</b>	110	160	80	57,5
<b>N 90 x 3 x 28*</b>	115	170	85	60

\* available on demand

# Permissible wheel loads

The wheel loads are valid for following conditions:

- Rail material min. E335 (St60-2)
- Wheel material EN-GJS-700-2 (GGG-70)
- Temperature condition -30° up to 90°
- Total skewing angle ≤ 2‰
- Horizontal forces max. 10% of the existing load

## Wheel set 160

permissible wheel loads in kg

Group of mechanisms FEM/DIN 15020	effective rail head width in mm	Travel speed				
		12,5 m/min	20 m/min	40 m/min	63 m/min	80 m/min
1Bm	30	4090	3850	3450	3060	2860
	40	5460	5140	4610	4080	3810
	50	6820	6420	5760	5100	4770
	60	8190	7710	6910	6120	5720
	70	8800		8070	7140	6670
1Am	30	3660	3450	3090	2740	2560
	40	4890	4600	4130	3650	3420
	50	6110	5750	5160	4570	4270
	60	7330	6910	6190	5480	5120
	70	8560	8060	7230	6400	5980
2m	30	3270	3080	2760	2440	2290
	40	4360	4110	3680	3260	3050
	50	5460	5140	4610	4080	3810
	60	6550	6170	5530	4890	4580
	70	7640	7190	6450	5710	5340
3m	30	2940	2770	2490	2200	2060
	40	3930	3700	3320	2930	2740
	50	4910	4620	4150	3670	3430
	60	5890	5550	4980	4400	4120
	70	6870	6470	5810	5140	4800
4m	30	2620	2460	2210	1950	1830
	40	3490	3290	2950	2610	2440
	50	4360	4110	3680	3260	3050
	60	5240	4930	4420	3910	3660
	70	6110	5750	5160	4570	4270
5m	30	2620	2460	2210	1950	1830
	40	3490	3290	2950	2610	2440
	50	4360	4110	3680	3260	3050
	60	5240	4930	4420	3910	3660
	70	6110	5700	4630	4040	3760

Higher wheel loads and wheel loads at higher travel speeds on demand

# Wheel set 200

## permissible wheel loads in kg

The wheel loads are valid for following conditions:

- Rail material min. E335 (St60-2)
- Wheel material EN-GJS-700-2 (GGG-70)
- Temperature condition -30° up to 90°
- Total skewing angle  $\leq 2\text{‰}$
- Horizontal forces max. 10% of the existing load

Group of mechanisms FEM/DIN 15020	effective rail head width in mm	Travel speed				
		12,5 m/min	20 m/min	40 m/min	63 m/min	80 m/min
1Bm	30	5260	4960	4520	4070	3820
	40	7020	6620	6030	5430	5100
	50	8770	8280	7530	6790	6370
	60	10530	9930	9040	8150	7650
	70	11200		10550	9500	8920
1Am	30	4720	4450	4050	3650	3420
	40	6290	5930	5400	4860	4570
	50	7860	7420	6750	6080	5710
	60	9440	8900	8100	7300	6850
	70	10700	10380	9450	8510	7320
2m	30	4210	3970	3610	3260	3060
	40	5610	5300	4820	4340	4080
	50	7020	6620	6030	5430	5100
	60	8420	7950	7230	6520	6120
	70	9830	9270	8440	7600	7140
3m	30	3790	3570	3250	2930	2750
	40	5050	4770	4340	3910	3670
	50	6320	5960	5420	4890	4590
	60	7580	7150	6510	5860	5510
	70	8850	8340	7590	6510	6060
4m	30	3370	3180	2890	2600	2440
	40	4490	4240	3850	3470	3260
	50	5610	5300	4820	4340	4080
	60	6740	5360	5780	5210	4890
	70	7860	7420	6060	5290	4920
5m	30	3370	3180	2890	2600	2440
	40	4490	4240	3850	3470	3260
	50	5610	5300	4820	4290	4000
	60	6740	6060	4920		
	70	6980				

Higher wheel loads and wheel loads at higher travel speeds on demand

# Wheel set 250

## permissible wheel loads in kg

The wheel loads are valid for following conditions:

- Rail material min. E335 (St60-2)
- Wheel material EN-GJS-700-2 (GGG-70)
- Temperature condition -30° up to 90°
- Total skewing angle  $\leq 2\text{‰}$
- Horizontal forces max. 10% of the existing load

Group of mechanisms FEM/DIN 15020	effective rail head width in mm	Travel speed				
		16 m/min	25 m/min	40 m/min	63 m/min	100 m/min
1Bm	30	10120	9790	8500	7420	6460
	40	13490	13050	11340	9890	8610
	50	16000		14170	12370	10770
	60			14840	12920	
	70			16000	15070	
1Am	30	9090	7950	6910	6030	5250
	40	12120	10600	9210	8040	7000
	50	15150	13250	11510	10050	8750
	60	16000	15900	13810	12050	10490
	70		16000	14060	12240	
2m	30	7390	6460	5610	5080	4850
	40	9850	8610	7480	6780	6470
	50	12310	10770	9350	8470	8090
	60	14770	12920	11220	10160	9700
	70	16000	15070	13090	11850	10710
3m	30	6000	5250	4960	4740	4530
	40	8000	7000	6620	6320	6040
	50	10000	8750	8270	7900	7540
	60	12000	10490	9920	9480	8700
	70	14000	12240	11450	9990	
4m	30	5070	4850	4630	4430	4230
	40	6760	6470	6170	5900	5630
	50	8450	8090	7710	7370	7040
	60	10140	9700	9260	8150	7100
	70	11830	10760	9340		
5m	30	4750	4540	4330	4140	3950
	40	6330	6050	5770	5520	5270
	50	7910	7560	7220	6640	5780
	60	9490	8760	7610		
	70	10010				

Higher wheel loads and wheel loads at higher travel speeds on demand



# Wheel set 315

## permissible wheel loads in kg

The wheel loads are valid for following conditions:

- Rail material min. E335 (St60-2)
- Wheel material EN-GJS-700-2 (GGG-70)
- Temperature condition -30° up to 90°
- Total skewing angle  $\leq 2\text{‰}$
- Horizontal forces max. 10% of the existing load

Group of mechanisms FEM/DIN 15020	effective rail head width in mm	Travel speed				
		16 m/min	25 m/min	40 m/min	63 m/min	100 m/min
1Bm	30	12750		11480	10020	8730
	40	17000		15310	13360	11630
	50	21250		19140	16700	14540
	60	22000			19890	17320
	70	22000			19890	17320
1Am	30	12280	10740	9330	8140	7090
	40	16370	14320	12440	10850	9450
	50	20460	17900	15540	13570	11810
	60	22000			16160	14070
	70	22000			16160	14070
2m	30	9970	8730	7580	6610	6260
	40	13300	11630	10100	8820	8340
	50	16620	14540	12630	11020	10430
	60	19800			13130	11430
	70	19800			13130	11430
3m	30	8100	7090	6400	6110	5840
	40	10800	9450	8530	8150	7780
	50	13500	11810	10660	10190	9280
	60	16080			10660	9280
	70	16080			10660	9280
4m	30	6580	6260	5970	5700	5450
	40	8770	8340	7960	7610	7260
	50	10970	10430	9950		
	60	13130			8700	7580
	70	13130			8700	7580
5m	30	6120	5850	5580	5340	5100
	40	8160	7800	7440		
	50	10200			7090	6170
	60	10690		9350	8120	7090
	70	10690		9350	8120	7090

Higher wheel loads and wheel loads at higher travel speeds on demand

# Wheel set 400

## permissible wheel loads in kg

The wheel loads are valid for following conditions:

- Rail material min. E335 (St60-2)
- Wheel material EN-GJS-700-2 (GGG-70)
- Temperature condition -30° up to 90°
- Total skewing angle ≤ 2‰
- Horizontal forces max. 10% of the existing load

Group of mechanisms FEM/DIN 15020	effective rail head width in mm	Travel speed					
		16 m/min	25 m/min	40 m/min	63 m/min	100 m/min	160 m/min
1Bm	40	21590		20880	18220	15870	13780
	50	26980		26100	22780	19830	17220
	60	28000			27330	23800	20670
	70					27760	24110
	80				28000	27560	
1Am	40	21590	19530	16960	14800	12890	11190
	50	26980	24410	21200	18500	16110	13990
	60	28000		25440	22200	19330	16790
	70				25900	22550	19590
	80			28000	25770	22380	
2m	40	18140	15870	13780	12030	10850	10350
	50	22670	19830	17220	15030	13560	12930
	60	27210	23800	20670	18040	16270	15520
	70	28000	27760	24110	21040	18980	18110
	80		27560	24050	21690	20690	
3m	40	14730	12890	11190	10600	10120	9660w
	50	18420	16110	13990	13250	12650	12070
	60	22100	19330	16790	15900	15180	14480
	70	25780	22550	19590	18540	17710	16890
	80	28000	25770	22380	21190	20240	19310
4m	40	11970	10850	10350	9890	9440	9010
	50	14960	13560	12930	12360	11800	11260
	60	17950	16270	15520	14830	14160	13510
	70	20940	18980	18110	17300	16520	15760
5m	80	23930	21690	20690	19770	18880	21410
	40	10610	10140	9680	9250	8830	8430
	50	13260	12680	12100	11560	11040	10530
	60	15910	15210	14520	13870	13250	12640
	70	18560	17750	16930	16180	15450	14230
80	21210	20280	19350	18490	16380		

Higher wheel loads and wheel loads at higher travel speeds on demand

# Wheel set 500

## permissible wheel loads in kg

The wheel loads are valid for following conditions:

- Rail material min. E335 (St60-2)
- Wheel material EN-GJS-700-2 (GGG-70)
- Temperature condition -30° up to 90°
- Total skewing angle ≤ 2‰
- Horizontal forces max. 10% of the existing load

Group of mechanisms FEM/DIN 15020	effective rail head width in mm	Travel speed					
		16 m/min	25 m/min	40 m/min	63 m/min	100 m/min	160 m/min
1Bm	40	26980			24360	21200	18420
	50	33720			30440	26500	23020
	60	40000			36530	31800	27620
	70				37100	32230	
	80					35600	
	≥ 90						
1Am	40	26980	26100	22670	19780	17220	14960
	50	33720	32630	28340	24730	21530	18700
	60	40000	39160	34010	29670	25830	22440
	70		39670	34620	30140	26180	
	80			38240	33290	28910	
	≥ 90						
2m	40	24240	21200	18420	16070	13990	13230
	50	30300	26500	23020	20090	17490	16530
	60	36360	31800	27620	24100	20980	19840
	70	40000	37100	32230	28120	24480	23140
	80			35600	31060	27040	23490
	≥ 90						
3m	40	19690	17220	14960	13550	12930	12340
	50	24610	21530	18700	16930	16170	15430
	60	29530	25830	22440	20320	19400	18510
	70	34460	30140	26180	23700	21970	19080
	80	38060	33290	28910	25230		
	≥ 90						
4m	40	16000	13990	13230	12640	12070	11520
	50	19990	17490	16530	15800	15090	14390
	60	23990	20980	19840	18960	17930	15570
	70	27990	24480	23140	20590		
	80	31060	27170	23600			
	≥ 90						
5m	40	13560	12970	12370	11820	11290	10770
	50	16950	16210	15460	14780	14110	12680
	60	20330	19450	18550	16770	14600	
	70	23720	22120	19210			
	80	25290					
	≥ 90						

Higher wheel loads and wheel loads at higher travel speeds on demand

# Wheel set 630

## permissible wheel loads in kg

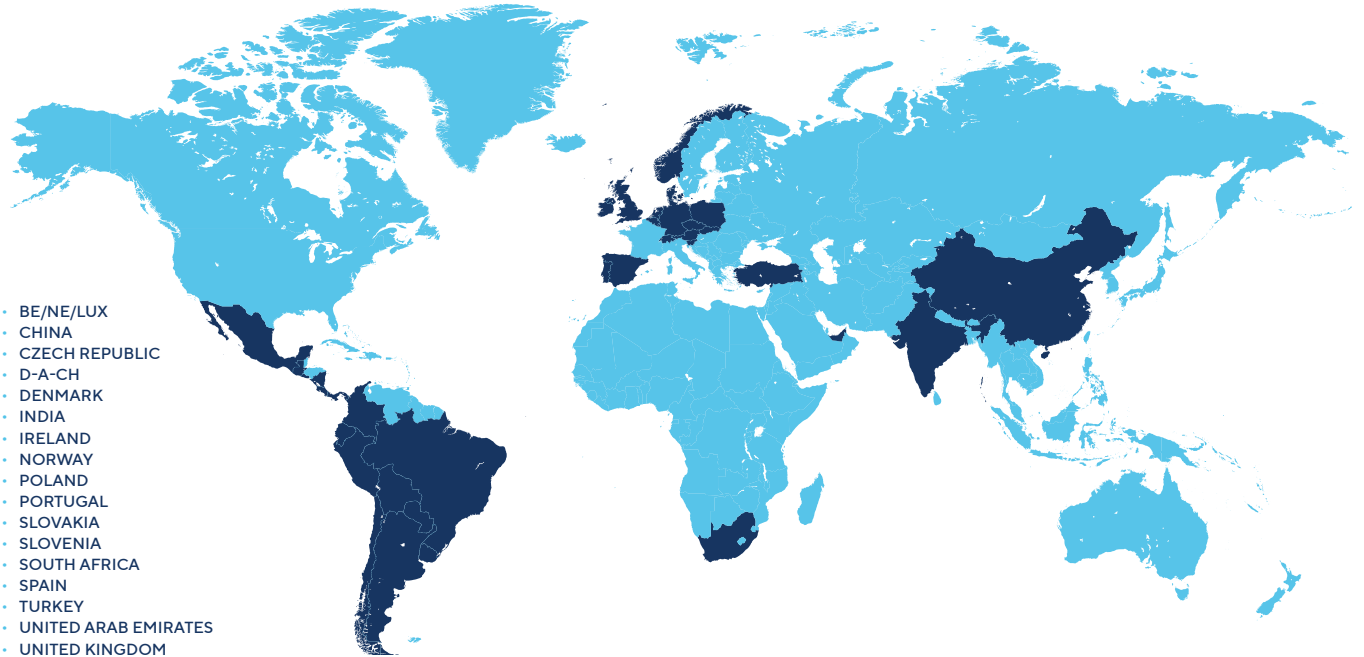
The wheel loads are valid for following conditions:

- Rail material min. E335 (St60-2)
- Wheel material EN-GJS-700-2 (GGG-70)
- Temperature condition -30° up to 90°
- Total skewing angle ≤ 2‰
- Horizontal forces max. 10% of the existing load

Group of mechanisms FEM/DIN 15020	effective rail head width in mm	Travel speed					
		16 m/min	25 m/min	40 m/min	63 m/min	100 m/min	160 m/min
1Bm	50	42490			41110	35790	31090
	60	50990			49330	42950	37300
	70	59490			57560	50110	43520
	80	60000				57260	49730
	90					55950	
	≥ 100					60000	
1Am	50	42490		38270	33390	29070	25250
	60	50990		45920	40070	34890	30300
	70	59490		53580	46750	40700	35350
	80	60000			53430	46510	40400
	90				52330	45450	
	≥ 100				57320	49780	
2m	50	40920	35790	31090	27130	23620	21320
	60	49100	42950	37300	32550	28340	25580
	70	57280	50110	43520	37970	33060	29840
	80	60000	57260	49730	43400	37780	34100
	90		55950	48820	42500	38370	
	≥ 100		60000	53480	46560	40430	
3m	50	33240	29070	25250	22030	20850	19890
	60	39880	34890	30300	26440	25010	23870
	70	46530	40700	35350	30850	29180	27840
	80	53180	46510	40400	35250	33350	31820
	90	59820	52330	45450	39660	37520	32840
	≥ 100	60000	57320	49780	43440	37820	
4m	50	27000	23620	21320	20370	19450	18560
	60	32400	28340	25580	24440	23340	22270
	70	37800	33060	29840	28520	27230	25980
	80	43190	37780	34100	32590	30860	26800
	90	48590	42500	38370	35450		
	≥ 100	53480	46780	40630	33080		
5m	50	22090	20900	19940	19050	18190	17360
	60	26500	25070	23920	22860	21830	20830
	70	30920	29250	27910	26670	25130	21830
	80	35340	33430	31900	28860		
	90	39750	37610	33080			
	≥ 100	43540	38090				

Higher wheel loads and wheel loads at higher travel speeds on demand





- BE/NE/LUX
- CHINA
- CZECH REPUBLIC
- D-A-CH
- DENMARK
- INDIA
- IRELAND
- NORWAY
- POLAND
- PORTUGAL
- SLOVAKIA
- SLOVENIA
- SOUTH AFRICA
- SPAIN
- TURKEY
- UNITED ARAB EMIRATES
- UNITED KINGDOM

## MORE INFORMATION



FOR MORE INFORMATION,  
PLEASE VISIT OUR WEBSITE  
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Subject to alterations by the manufacturer for the purposes of further technical development!

No claims can be derived from the information, figures and descriptions given in these operating instructions.

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