

# Industrial gearbox Redulus<sup>4F</sup>



# Power Packs For The Future

The flexible modular system of the Redulus<sup>4F</sup> series offers the possibility to create over 2000 gearbox combinations. Various market requirements were taken into account during the development of the Redulus<sup>4F</sup> kit, so that it offers a solution for multiple customers in different industries.



## Features

- 2-stage planetary gearbox as basic modul
- Variable output designs hollow shaft, solid shaft with parallel key, male and female spline
- Flexible drive adaptations, optionally with coaxial, angular or spur gear pre-stages
- Maximum robustness and reliability under the toughest operating conditions
- Optimised sealing systems
- Balanced bearing concepts
- Optimised ease of maintenance
- Operating temperatures between -25° C and +40° C

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## Description

ZF industrial gearboxes are reliable drive components that have proven their worth over many years and under a wide range of operating conditions. The next generation of ZF industrial transmissions, Redulus<sup>4F</sup>, is also convincing in terms of robustness and efficiency.

Based on a newly developed modular system, they offer a significant increase in torque density of up to 40% as well as extended flexibility for the adaptation to required customer specifications.

In addition, the new ZF series offers numerous innovative solutions and a wide range of attachments to suit the customer-specific application.

The series is equipped with the ZF Condition Monitoring System ProVID, with the target of increased availability and service lifetime of the transmissions.

Our quality management according to DIN EN ISO 9001 2000 is the basis and guarantor for a consistently high level of quality. A team of development engineers, product managers and sales engineers ensures that customer requirements are quickly implemented in optimal technically and economically solutions. They are supported by the latest calculation programs for gear design and component optimisation.

The information in this catalogue will help you to carefully select the suitable planetary gear. In addition, our technical sales department will be happy to advise you at the project stage.

## General information

Redulus<sup>4F</sup> planetary gearboxes are characterized by a compact design and a particularly high mechanical efficiency.

### Versions

The type code on page 5 gives an overview of the possible design variants.

### Housing

The housings are made of cast iron as standard. The ring gears as housing components are made of heat-treatable steel. Other material qualities are available on request.

### Variable output shaft

The version with shrink disc is included in the scope of delivery. The hollow shaft is mounted in the gearbox in such a way that it can absorb the weight of the gearbox and the reaction forces of a torque arm.

### Drive side

For direct motor mounting, the drive shaft is designed as a sleeve with a corresponding inner profile to DIN 5480 to accommodate the motor shaft.

## Seals

The input and output shafts are sealed by radial shaft seals as standard. They run on replaceable wear bushes. In case of increased dust accumulation, taconite seals are used which bind the dirt particles in a grease-lubricated labyrinth.

## Mounting position

As a rule, the gearboxes can be used in all mounting positions. In order to guarantee sufficient lubrication, it is essential to specify the mounting position.

## Bearing

The gears, planetary webs and shafts are supported exclusively by roller bearings.

## Delivery

ZF Redulus<sup>4F</sup> planetary gearboxes are delivered ready for installation, but without oil filling. As standard, the gearboxes are painted on the outside in RAL 5003 (sapphire blue). The internal preservation protects against corrosion for 24 months in dry storage. External flanges, shaft ends and connecting surfaces are surface-preserved.

## Weights, oil quantities, dimensions

The weights and oil quantities stated are average values. The oil level control device is decisive for the oil quantity. Illustrations and dimensions are not strictly binding. We reserve the right to make changes in the course of further technical development.

## Noise

The noise-optimised gear units can be assessed accordingly according to VDI 2159.

## Toothing

Spur gears and planetary gears are straight-toothed, hardened in the set and correction-ground. Ring gears are highly hardened and nitrided. Bevel gears are case-hardened and ground or HPG-toothed. The gear teeth are designed to be fatigue-proof for the specified continuous torques with the required safety.

## Lubrication

The gearboxes have splash lubrication. Suitable additional lubrication measures are taken for inclined or vertical installation.

## Cooling

Cooling is provided by the gearbox surface. Beyond that by additional air or water coolers. For vertical installation, please consult our technical sales department.

## Other notes

All rotating parts must be provided with protection against accidental contact in accordance with the statutory regulations.

The valid safety regulations of the place of use must be observed.

The gearboxes must be commissioned and maintained in accordance with our operating instructions. In the case of shaft-mounted gear units with torque arm, the connection of the torque arm to the foundation must allow the gearbox to be moved at any time in accordance with the displacement of the machine shaft without constraining forces acting on the gearbox. This should also be the case for any coupling provided between the gearbox and the drive motor.

The gearboxes comply with the general requirements of the Machinery Directive. Accordingly, they are classified as „partly completed machinery“ in the sense of Article 2G.

## Hydromotors

For the correct operation of the hydraulic motors, please observe the corresponding manufacturer's instructions.

## Electric motor (direct attachment)

Please note that with this mounting variant the motor must be oil-tight and the fixed bearing of the motor bearing must be on the side facing the gearbox.

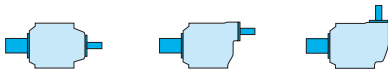
# Type code

A	B	C	D	E	F	G	H	I	J	K	L	M
GP												

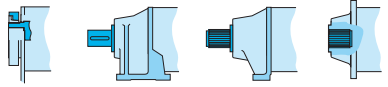
**Type** ————— ↑  
Gearbox, planetary

**Size** ————— ↑

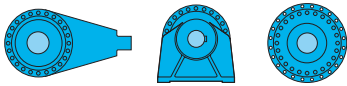
**Position input shaft** ————— ↑  
C: Coaxial  
H: Helical  
B: Bevel



**Output (drive)** ————— ↑  
H: Hollow shaft  
S: Solid shaft with parallel key  
O: Outer spline  
I: Inner spline  
A: Application specific



**Housing** ————— ↑  
T: Torque arm  
B: Base frame  
F: Flange  
A: Application specific



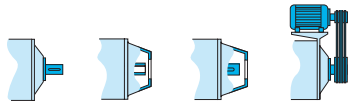
**Gear stages** ————— ↑

**Input motor** ————— ↑  
E: Electric  
H: Hydraulic  
A: Application specific



**Ratio** ————— ↑

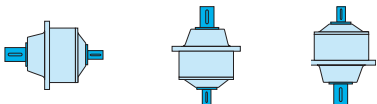
**Input adaption** ————— ↑  
S: Solid shaft with parallel key  
F: Flange mounted motor or bracket for motor attachment\*  
P: Piggy pack  
A: Application specific



**Brake** ————— ↑  
W: Without brake  
B: With brake

**Cooling** ————— ↑  
W: Without  
E: External cooling  
H: Heating elements  
K: Internal cooling chamber

**Mounting position** ————— ↑  
HO: Horizontal  
VT: Vertical upwards  
VB: Vertical downwards



**Others** ————— ↑  
Project specific devices

\*for motor attachment with coupling or direct assembling via parallel key

# Gearbox selection

## Gearbox sizes

Size	Constant output torque $T_{2 \text{ CONST}}$ kNm
GP 200	99
GP 300	155
GP 425	221
GP 550	295
GP 615	321
GP 870	451
GP 910	597
GP 1100	661
GP 1400	846
GP 1500	975

Size	Constant output torque $T_{2 \text{ CONST}}$ kNm
GP 2300	1,232
GP 2800	1,572
GP 3100	1,815
GP 3400	2,117
GP 4000	2,480
GP 5400	3,046
GP 5500	3,447
GP 6700	4,101
GP 8000	4,804
GP 10000	5,800

Table 01

Due to the robust design of the ZF planetary gearboxes, torque peaks of up to 2 times of the rated torque are admissible. This allows for an optimized cost effectiveness of the plant.

The gearboxes are designed and tested for the following conditions as standard.

$T_{2 \text{ CONST}}$ torque based on	
Bearing lifetime Lh10	Min. 10.000 h $T_{2 \text{ CONST}}$
Output speed	10 rpm
Toothing designed to be durable	

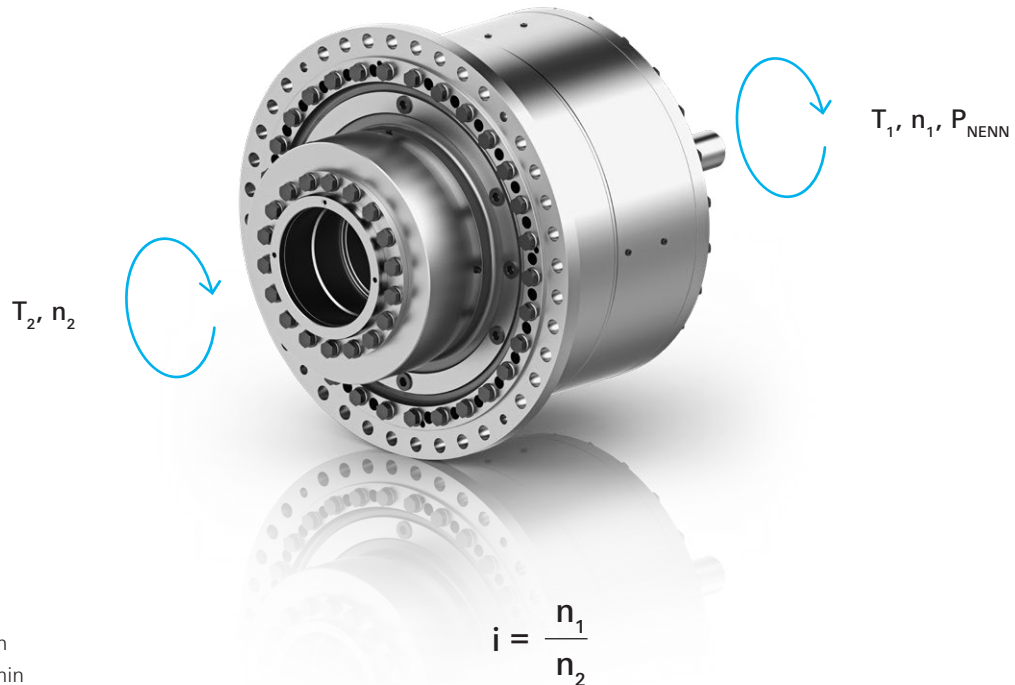
Table 02

Environmental conditions	
Temperature	-20° C ... +40° C
Installation height	< 1.000 m
Operation time year / day / hours	365 / 7 / 24
Starts / hour	5

Table 03

For other requirements please contact us.

# Gearbox design



## Ratio

$i$  Nominal ratio

$n_1$  Input speed 1/min

$n_2$  Output speed 1/min

Possible Ratio at Redulus<sup>4F</sup> see pages 8–9

$$i = \frac{n_1}{n_2}$$

## Required output torque $T_{2\text{ NENN}}$

$T_{2\text{ NENN}}$  nominal output torque Nm

$P_{\text{NENN}}$  nominal motor power kW

$$T_{2\text{ NENN}} = \frac{P_{\text{NENN}} \times 9550}{n_2}$$

## Constant output torque $T_{2\text{ CONST}}$

$T_{2\text{ ERF}}$  required output torque Nm

$K_A$  Service factor depending on application. On request.

$$T_{2\text{ ERF}} = T_{2\text{ NENN}} \times K_A$$

## Gearbox selection

Selection  $T_{2\text{ CONST}}$  see table 01, page 6

$$T_{2\text{ ERF}} < T_{2\text{ CONST}}$$

## Additional forces

In case of additional loads on the input and/or output shaft in the form of radial forces and/or axial forces, a check of the shaft and bearing dimensioning is required.

# Gearbox ratio



Size	Constant output torque	Basis module 2 planetary stages (PP)					Ratio with planetary pre-stage (PPP)	
	$T_{2 \text{ CONST}}$	i					i	
	kNm							
<b>GP 200</b>	99	28	33	37	47	56*	151	179
<b>GP 300</b>	156	28	33	37	47	56*	151	179
<b>GP 425</b>	221	28	33	37	47	56*	151	179
<b>GP 550</b>	296	29	34	37	47	55	154	182
<b>GP 615</b>	322	29	34	37	47	55	154	182
<b>GP 870</b>	451	29	34	37	47	55*	154	182
<b>GP 910</b>	598	29	34	37	47	55	154	182
<b>GP 1100</b>	661	29	34	37	47	55*	154	182
<b>GP 1400</b>	846	29	34	37	47	55*	154	182
<b>GP 1500</b>	975	29	34	37	47	55*	158	185
<b>GP 2300</b>	1,232	29	34	37	47	55*	158	185
<b>GP 2800</b>	1,572	29	34	37	47	55	158	185
<b>GP 3100</b>	1,816	29	34	37	47	55*	158	185
<b>GP 3400</b>	2,118	29	34	37	47	55*	158	185
<b>GP 4000</b>	2,470	25	29	32	41	46*	135	159
<b>GP 5400</b>	3,047	25	29	32	41	46*	135	159
<b>GP 5500</b>	3,447	25	29	32	41	46*	135	159
<b>GP 6700</b>	4,101	25	29	32	41	46*	135	159
<b>GP 8000</b>	4,805	25	29	32	41	46*	135	159
<b>GP 10000</b>	5,800	25	29	32	41	46*	135	159

Table 04 / Ratio values rounded

\* Reduced output torque. Please contact us.



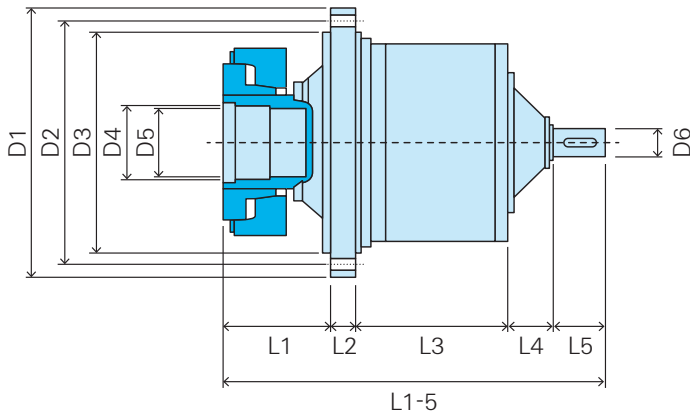


Ratio with planetary pre-stage (PPP)							Ratio with helical pre-stage (PPH ... PPPH)		Ratio with bevel pre-stage (PPB ... PPPB)	
i							min.	max.	min.	max.
198	211	233	258	300	332	426	48	1,279	54	1,876
198	211	233	258	300	332	426	48	1,279	54	1,876
198	211	233	258	300	332	426	48	1,279	54	1,876
202	214	237	261	305	335	426	49	1,279	55	1,876
202	214	237	261	305	335	426	49	1,279	55	1,876
202	214	237	261	305	335	426	49	1,279	55	1,876
202	214	237	261	305	335	426	49	1,279	55	1,876
202	214	237	261	305	335	426	49	1,279	55	1,876
202	214	237	261	305	335	426	49	1,279	55	1,876
202	214	237	261	305	335	426	49	1,279	55	1,876
204	218	240	264	305	335	426	49	1,279	55	1,876
204	218	240	264	305	335	426	49	1,279	55	1,876
204	218	240	264	305	335	426	49	1,279	55	1,876
204	218	240	264	305	335	426	49	1,279	55	1,876
204	218	240	264	305	335	426	49	1,279	55	1,876
204	218	240	264	305	335	426	49	1,279	55	1,876
175	187	206	227	262	288	366	42	1,099	47	1,612
175	187	206	227	262	288	366	42	1,099	47	1,612
175	187	206	227	262	288	366	42	1,099	47	1,612
175	187	206	227	262	288	366	42	1,099	47	1,612
175	187	206	227	262	288	366	42	1,099	47	1,612
175	187	206	227	262	288	366	42	1,099	47	1,612

Ratio values rounded

# Redulus<sup>4F</sup> gearbox dimension

## Gearbox dimension for a 2-stage planetary gearbox (PP)

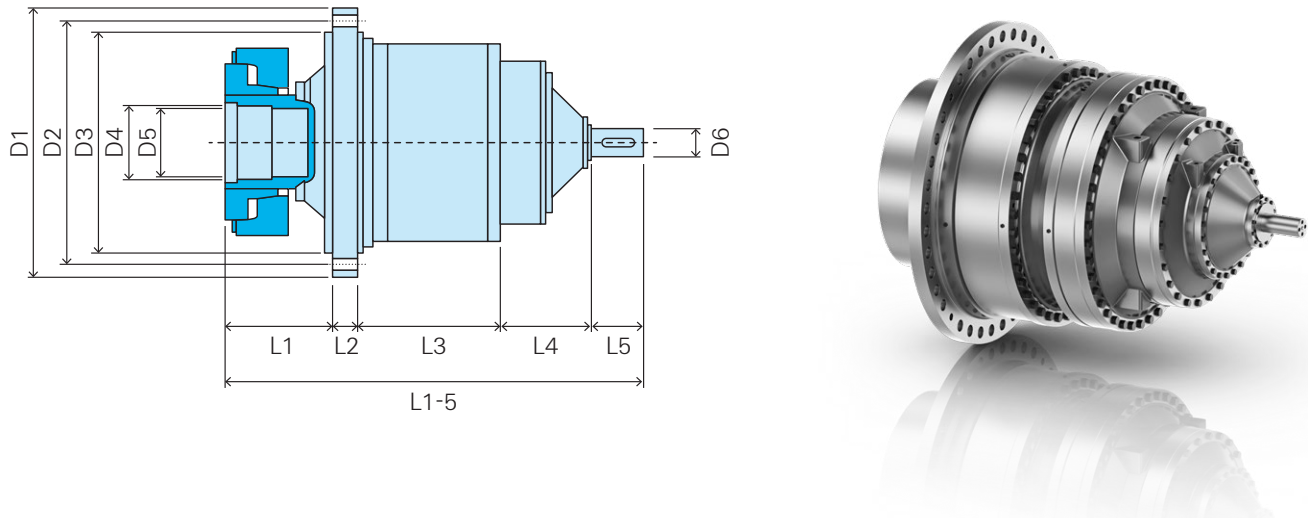


Size	Constant output torque $T_{2 \text{ CONST}}$	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L1-L5	Weight
	kNm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
<b>GP 200</b>	99	715	665	610	205	200	70	235	35	384	270	150	1,074	770
<b>GP 300</b>	156	835	785	715	225	220	70	250	40	437	258	150	1,135	1,170
<b>GP 425</b>	221	920	860	800	265	260	85	285	42	483	314	185	1,309	1,600
<b>GP 550</b>	296	990	925	850	280	270	85	290	45	536	305	185	1,361	2,010
<b>GP 615</b>	322	1,055	990	900	290	280	100	295	47	547	341	210	1,440	2,350
<b>GP 870</b>	451	1,160	1,085	990	320	310	100	310	50	591	361	210	1,522	3,070
<b>GP 910</b>	598	1,235	1,150	1,040	360	350	110	345	55	643	365	240	1,648	4,050
<b>GP 1100</b>	661	1,300	1,215	1,100	380	370	110	350	58	668	359	240	1,675	4,350
<b>GP 1400</b>	846	1,385	1,285	1,180	400	390	130	375	60	720	421	290	1,866	4,620
<b>GP 1500</b>	975	1,430	1,325	1,205	420	410	130	370	65	737	422	290	1,884	4,930
<b>GP 2300</b>	1,232	1,570	1,470	1,350	470	460	150	400	70	792	490	320	2,072	6,200
<b>GP 2800</b>	1,572	1,690	1,580	1,460	490	480	150	420	75	861	495	320	2,171	7,910
<b>GP 3100</b>	1,816	1,790	1,675	1,550	530	520	160	465	80	873	503	340	2,261	9,140
<b>GP 3400</b>	2,118	1,840	1,725	1,600	560	550	160	475	85	923	500	340	2,323	10,660
<b>GP 4000</b>	2,470	1,905	1,780	1,630	570	580	170	471	90	984	482	360	2,387	12,630
<b>GP 5400</b>	3,047	2,045	1,905	1,760	630	620	170	500	93	1,054	477	360	2,484	15,600
<b>GP 5500</b>	3,447	2,105	1,960	1,800	670	660	190	575	95	1,101	544	410	2,725	17,620
<b>GP 6700</b>	4,101	2,255	2,110	1,940	710	700	190	590	100	1,170	539	410	2,809	21,700
<b>GP 8000</b>	4,805	2,395	2,240	2,080	790	780	210	640	110	1,229	637	450	3,066	25,420
<b>GP 10000</b>	5,800	2,515	2,365	2,195	840	830	210	680	125	1,317	631	450	3,203	30,610

Table 05

# Redulus<sup>4F</sup> gearbox dimension

## Gearbox dimension for a 3-stage planetary gearbox (PPP)

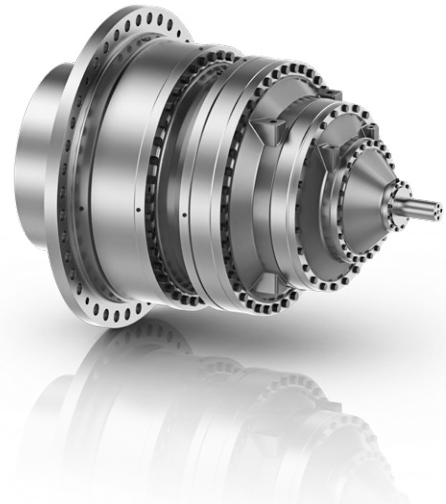
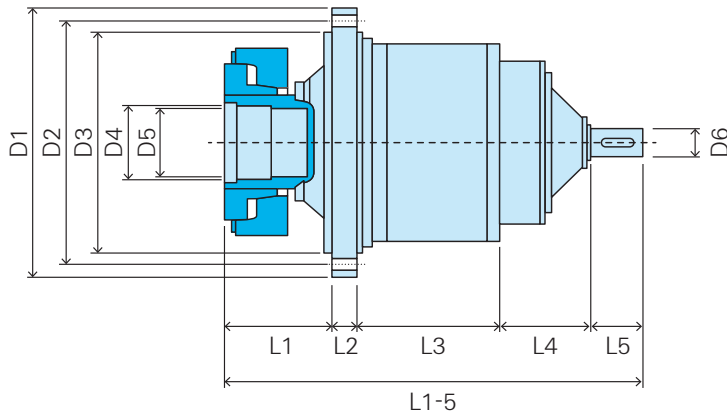


Size	Constant output torque $T_{2 \text{ CONST}}$	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L1-L5	Weight
	kNm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
<b>GP 200</b>	99	715	665	610	205	200	65	235	35	384	409	100	1,163	790
<b>GP 300</b>	156	835	785	715	225	220	65	250	40	437	396	100	1,223	1,200
<b>GP 425</b>	221	920	860	800	265	260	65	285	42	483	425	100	1,335	1,650
<b>GP 550</b>	296	990	925	850	280	270	65	290	45	536	416	100	1,387	2,070
<b>GP 615</b>	322	1,055	990	900	290	280	70	295	47	547	469	150	1,508	2,420
<b>GP 870</b>	451	1,160	1,085	990	320	310	70	310	50	591	489	150	1,590	3,160
<b>GP 910</b>	598	1,235	1,150	1,040	360	350	70	345	55	643	502	150	1,695	4,160
<b>GP 1100</b>	661	1,300	1,215	1,100	380	370	70	350	58	668	495	150	1,721	4,480
<b>GP 1400</b>	846	1,385	1,285	1,180	400	390	85	375	60	720	598	185	1,938	4,750
<b>GP 1500</b>	975	1,430	1,325	1,205	420	410	85	370	65	737	598	185	1,955	5,070
<b>GP 2300</b>	1,232	1,570	1,470	1,350	470	460	110	400	70	792	695	210	2,167	6,380
<b>GP 2800</b>	1,572	1,690	1,580	1,460	490	480	100	420	75	861	701	210	2,267	8,140
<b>GP 3100</b>	1,816	1,790	1,675	1,550	530	520	110	465	80	873	705	240	2,363	9,400
<b>GP 3400</b>	2,118	1,840	1,725	1,600	560	550	110	475	85	923	702	240	2,425	10,960
<b>GP 4000</b>	2,470	1,905	1,780	1,630	570	580	130	471	90	984	745	290	2,580	12,990
<b>GP 5400</b>	3,047	2,045	1,905	1,760	630	620	130	500	93	1,054	739	290	2,676	16,040
<b>GP 5500</b>	3,447	2,105	1,960	1,800	670	660	150	575	95	1,101	882	320	2,973	18,120
<b>GP 6700</b>	4,101	2,255	2,110	1,940	710	700	150	590	100	1,170	877	320	3,057	22,320
<b>GP 8000</b>	4,805	2,395	2,240	2,080	790	780	150	640	110	1,229	935	320	3,234	26,140
<b>GP 10000</b>	5,800	2,515	2,365	2,195	840	830	150	680	125	1,317	929	320	3,371	31,480

Table 06

# Redulus<sup>4F</sup> gearbox dimension

## Gearbox dimension for a 4-stage planetary gearbox (PPPP)

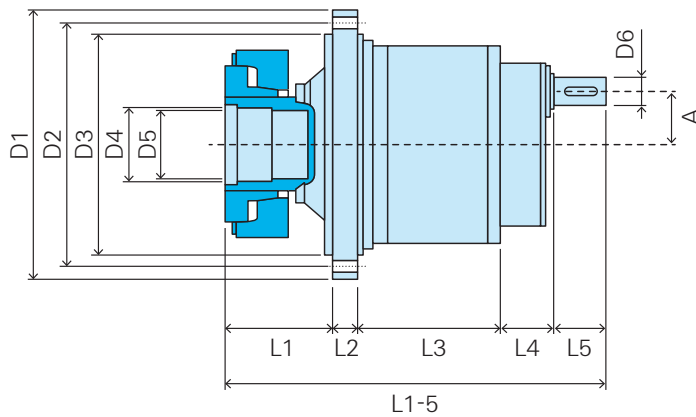


Size	Constant output torque $T_{2 \text{ CONST}}$	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L1-L5	Weight
	kNm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
<b>GP 200</b>	99	715	665	610	205	200	65	235	35	384	–	–	–	810
<b>GP 300</b>	156	835	785	715	225	220	65	250	40	437	–	–	–	1,230
<b>GP 425</b>	221	920	860	800	265	260	65	285	42	483	–	–	–	1,700
<b>GP 550</b>	296	990	925	850	280	270	65	290	45	536	–	–	–	2,130
<b>GP 615</b>	322	1,055	990	900	290	280	70	295	47	547	607	100	2,177	2,490
<b>GP 870</b>	451	1,160	1,085	990	320	310	70	310	50	591	627	100	2,347	3,250
<b>GP 910</b>	598	1,235	1,150	1,040	360	350	70	345	55	643	640	100	2,490	4,270
<b>GP 1100</b>	661	1,300	1,215	1,100	380	370	70	350	58	668	634	100	2,584	4,610
<b>GP 1400</b>	846	1,385	1,285	1,180	400	390	85	375	60	720	709	100	2,779	4,880
<b>GP 1500</b>	975	1,430	1,325	1,205	420	410	85	370	65	737	709	100	2,844	5,210
<b>GP 2300</b>	1,232	1,570	1,470	1,350	470	460	110	400	70	792	823	150	3,253	6,560
<b>GP 2800</b>	1,572	1,690	1,580	1,460	490	480	100	420	75	861	829	150	3,409	8,370
<b>GP 3100</b>	1,816	1,790	1,675	1,550	530	520	110	465	80	873	842	150	3,592	9,660
<b>GP 3400</b>	2,118	1,840	1,725	1,600	560	550	110	475	85	923	839	150	3,699	11,260
<b>GP 4000</b>	2,470	1,905	1,780	1,630	570	580	130	471	90	984	921	185	3,886	13,350
<b>GP 5400</b>	3,047	2,045	1,905	1,760	630	620	130	500	93	1,054	916	185	4,111	16,480
<b>GP 5500</b>	3,447	2,105	1,960	1,800	670	660	150	575	95	1,101	1,087	210	4,427	18,620
<b>GP 6700</b>	4,101	2,255	2,110	1,940	710	700	150	590	100	1,170	1,082	210	4,642	22,940
<b>GP 8000</b>	4,805	2,395	2,240	2,080	790	780	150	640	110	1,229	1,141	210	5,001	26,860
<b>GP 10000</b>	5,800	2,515	2,365	2,195	840	830	150	680	125	1,317	1,135	210	5,210	32,350

Table 07

# Redulus<sup>4F</sup> gearbox dimension

## Gearbox dimension for a 2-stage planetary gearbox with helical pre-stage (PPH)

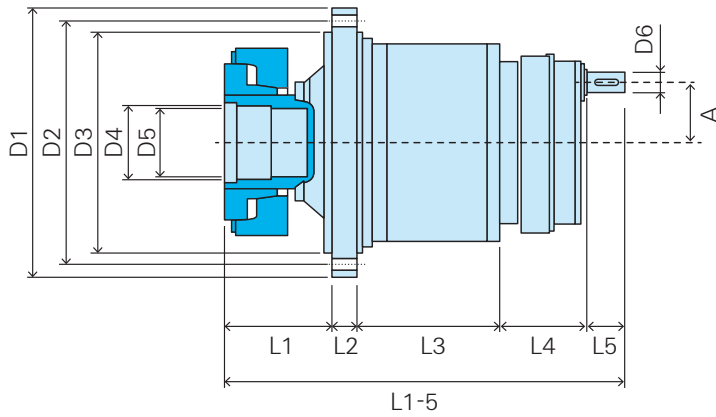


Size	Constant output torque $T_{2 \text{ CONST}}$ kNm	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L1-L5	A	Weight
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
<b>GP 200</b>	99	715	665	610	205	200	65	235	35	384	347	120	1,121	180	810
<b>GP 300</b>	156	835	785	715	225	220	65	250	40	437	304	120	1,151	180	1,210
<b>GP 425</b>	221	920	860	800	265	260	65	285	42	483	304	130	1,244	220	1,700
<b>GP 550</b>	296	990	925	850	280	270	65	290	45	536	304	130	1,305	220	2,080
<b>GP 615</b>	322	1,055	990	900	290	280	70	295	47	547	361	160	1,410	260	2,500
<b>GP 870</b>	451	1,160	1,085	990	320	310	70	310	50	591	361	160	1,472	260	3,180
<b>GP 910</b>	598	1,235	1,150	1,040	360	350	70	345	55	643	385	180	1,608	290	4,290
<b>GP 1100</b>	661	1,300	1,215	1,100	380	370	70	350	58	668	380	180	1,636	290	4,510
<b>GP 1400</b>	846	1,385	1,285	1,180	400	390	85	375	60	720	441	190	1,786	320	4,900
<b>GP 1500</b>	975	1,430	1,325	1,205	420	410	85	370	65	737	445	190	1,807	320	5,220
<b>GP 2300</b>	1,232	1,570	1,470	1,350	470	460	110	400	70	792	521	220	2,003	380	6,690
<b>GP 2800</b>	1,572	1,690	1,580	1,460	490	480	100	420	75	861	521	220	2,097	380	8,540
<b>GP 3100</b>	1,816	1,790	1,675	1,550	530	520	110	465	80	873	571	240	2,229	420	9,860
<b>GP 3400</b>	2,118	1,840	1,725	1,600	560	550	110	475	85	923	575	240	2,298	420	11,500
<b>GP 4000</b>	2,470	1,905	1,780	1,630	570	580	130	471	90	984	705	280	2,530	450	14,040
<b>GP 5400</b>	3,047	2,045	1,905	1,760	630	620	130	500	93	1054	709	280	2,636	450	16,800
<b>GP 5500</b>	3,447	2,105	1,960	1,800	670	660	150	575	95	1101	744	320	2,835	500	19,160
<b>GP 6700</b>	4,101	2,255	2,110	1,940	710	700	150	590	100	1170	748	320	2,928	500	23,600
<b>GP 8000</b>	4,805	2,395	2,240	2,080	790	780	150	640	110	1229	843	340	3,162	580	27,900
<b>GP 10000</b>	5,800	2,515	2,365	2,195	840	830	150	680	125	1317	838	340	3,300	580	32,730

Table 08

# Redulus<sup>4F</sup> gearbox dimension

## Gearbox dimension for a 3-stage planetary gearbox with helical pre-stage (PPPH)

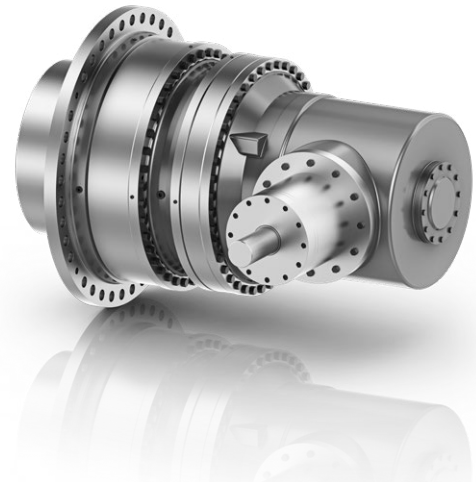
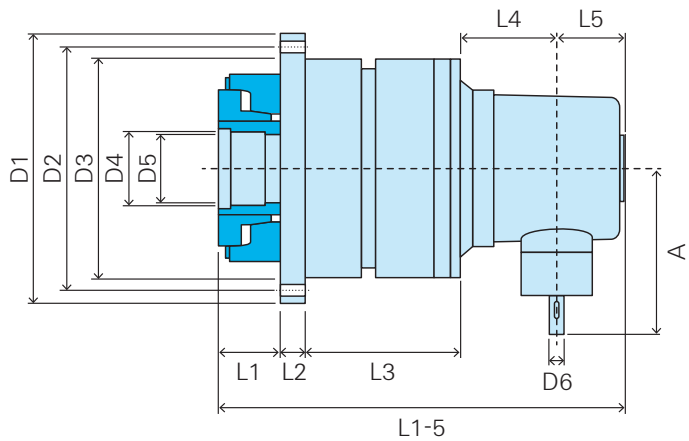


Size	Constant output torque $T_{2 \text{ CONST}}$ kNm	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L1-L5	A	Weight
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
GP 200	99	715	665	610	205	200	65	235	35	384	–	–	–		on request
GP 300	156	835	785	715	225	220	65	250	40	437	–	–	–		on request
GP 425	221	920	860	800	265	260	65	285	42	483	–	–	–		on request
GP 550	296	990	925	850	280	270	65	290	45	536	–	–	–		on request
GP 615	322	1,055	990	900	290	280	70	295	47	547	545	120	665	180	on request
GP 870	451	1,160	1,085	990	320	310	70	310	50	591	565	120	685	180	on request
GP 910	598	1,235	1,150	1,040	360	350	70	345	55	643	548	120	668	180	on request
GP 1100	661	1,300	1,215	1,100	380	370	70	350	58	668	541	120	661	180	on request
GP 1400	846	1,385	1,285	1,180	400	390	85	375	60	720	597	130	727	220	on request
GP 1500	975	1,430	1,325	1,205	420	410	85	370	65	737	598	130	728	220	on request
GP 2300	1,232	1,570	1,470	1,350	470	460	110	400	70	792	695	160	855	260	on request
GP 2800	1,572	1,690	1,580	1,460	490	480	100	420	75	861	701	160	861	260	on request
GP 3100	1,816	1,790	1,675	1,550	530	520	110	465	80	873	721	180	901	290	on request
GP 3400	2,118	1,840	1,725	1,600	560	550	110	475	85	923	722	180	902	290	on request
GP 4000	2,470	1,905	1,780	1,630	570	580	130	471	90	984	765	190	955	320	on request
GP 5400	3,047	2,045	1,905	1,760	630	620	130	500	93	1,054	759	190	949	320	on request
GP 5500	3,447	2,105	1,960	1,800	670	660	150	575	95	1,101	913	220	1,133	380	on request
GP 6700	4,101	2,255	2,110	1,940	710	700	150	590	100	1,170	908	220	1,128	380	on request
GP 8000	4,805	2,395	2,240	2,080	790	780	150	640	110	1,229	991	220	1,211	380	on request
GP 10000	5,800	2,515	2,365	2,195	840	830	150	680	125	1,317	955	220	1,175	380	on request

Table 09

# Redulus<sup>4F</sup> gearbox dimension

## Gearbox dimension for a 2-stage planetary gearbox with bevel pre-stage (PPB)

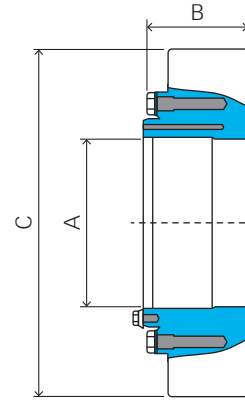


Size	Constant output torque $T_{2 \text{ CONST}}$ kNm	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L1-L5	A	Weight
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
<b>GP 200</b>	99	715	665	610	205	200	65	235	35	384				on request	
<b>GP 300</b>	156	835	785	715	225	220	65	250	40	437				on request	
<b>GP 425</b>	221	920	860	800	265	260	65	285	42	483				on request	
<b>GP 550</b>	296	990	925	850	280	270	65	290	45	536				on request	
<b>GP 615</b>	322	1,055	990	900	290	280	70	295	47	547				on request	
<b>GP 870</b>	451	1,160	1,085	990	320	310	70	310	50	591				on request	
<b>GP 910</b>	598	1,235	1,150	1,040	360	350	70	345	55	643				on request	
<b>GP 1100</b>	661	1,300	1,215	1,100	380	370	70	350	58	668				on request	
<b>GP 1400</b>	846	1,385	1,285	1,180	400	390	85	375	60	720				on request	
<b>GP 1500</b>	975	1,430	1,325	1,205	420	410	85	370	65	737				on request	
<b>GP 2300</b>	1,232	1,570	1,470	1,350	470	460	110	400	70	792				on request	
<b>GP 2800</b>	1,572	1,690	1,580	1,460	490	480	100	420	75	861				on request	
<b>GP 3100</b>	1,816	1,790	1,675	1,550	530	520	110	465	80	873				on request	
<b>GP 3400</b>	2,118	1,840	1,725	1,600	560	550	110	475	85	923				on request	
<b>GP 4000</b>	2,470	1,905	1,780	1,630	570	580	130	471	90	984				on request	
<b>GP 5400</b>	3,047	2,045	1,905	1,760	630	620	130	500	93	1,054				on request	
<b>GP 5500</b>	3,447	2,105	1,960	1,800	670	660	150	575	95	1,101				on request	
<b>GP 6700</b>	4,101	2,255	2,110	1,940	710	700	150	590	100	1,170				on request	
<b>GP 8000</b>	4,805	2,395	2,240	2,080	790	780	150	640	110	1,229				on request	
<b>GP 10000</b>	5,800	2,515	2,365	2,195	840	830	150	680	125	1,317				on request	

Table 10

## Redulus<sup>4F</sup> customer interface

### Output side shrink disk



Size	Constant output torque $T_{2 \text{ CONST}}$ kNm	A mm	B mm	C mm	Weight kg
GP 200	99	200	137	430	80
GP 300	156	220	149	460	95
GP 425	221	260	171	570	175
GP 550	296	270	179	580	185
GP 615	322	280	179	590	195
GP 870	451	310	190	650	250
GP 910	598	350	222	725	365
GP 1100	661	360	225	745	380
GP 1400	846	390	243	790	480
GP 1500	975	410	244	835	540
GP 2300	1,232	460	268	920	710
GP 2800	1,572	480	288	960	830
GP 3100	1,816	520	314	970	900
GP 3400	2,118	550	326	1,060	1,130
GP 4000	2,470	580	321	1,140	1,330
GP 5400	3,047	620	345	1,200	1,550
GP 5500	3,447	660	377	1,270	1,840
GP 6700	4,101	700	392	1,340	2,160
GP 8000	4,805	780	444	1,450	2,760
GP 10000	5,800	830	467	1,510	3,000

Table 11



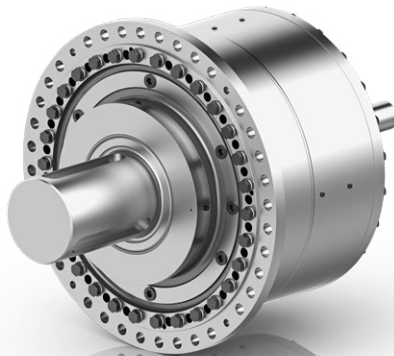
### Inner spline according to DIN 5480



### Outer spline according to DIN 5480



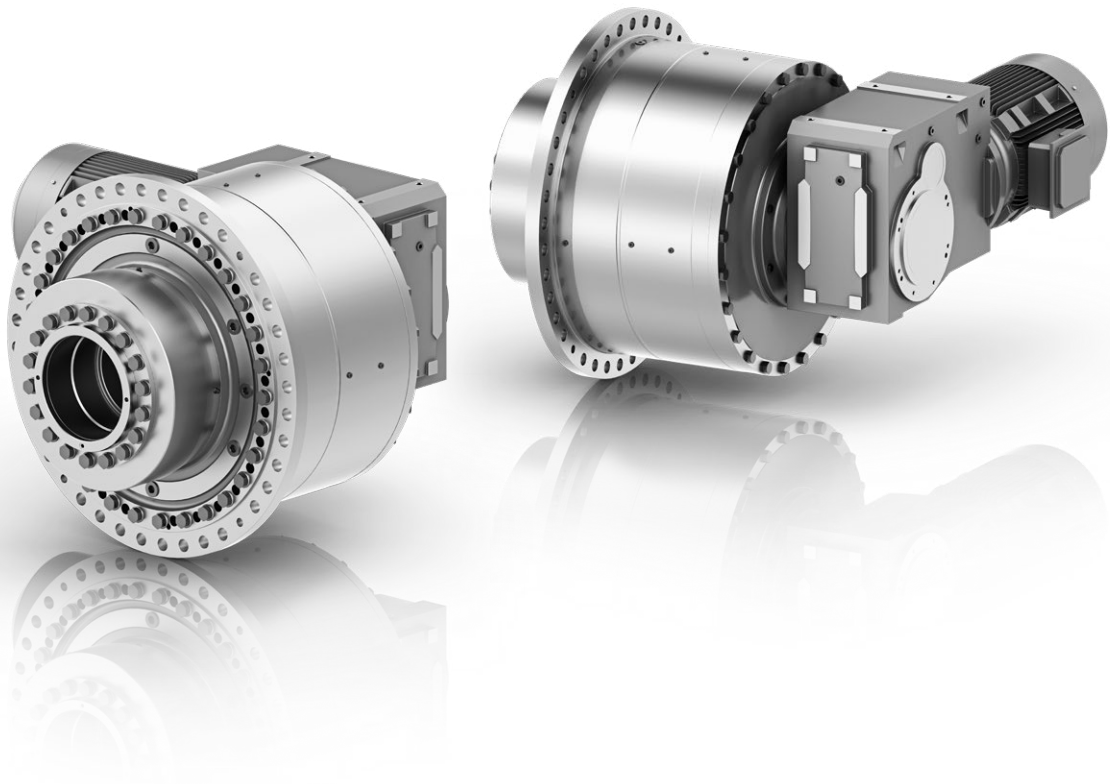
### Solid shaft with parallel key



Dimension on request.  
Special designs  
according to customer  
requirements are possible.

# Accessories for Redulus<sup>4F</sup>

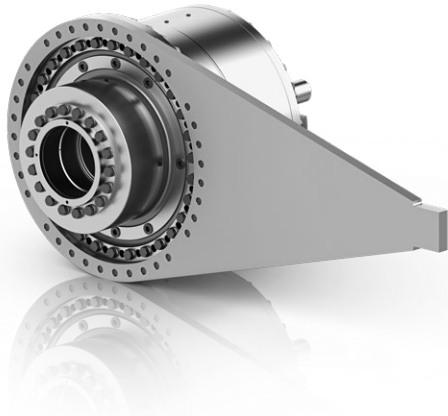
Version with gear motor



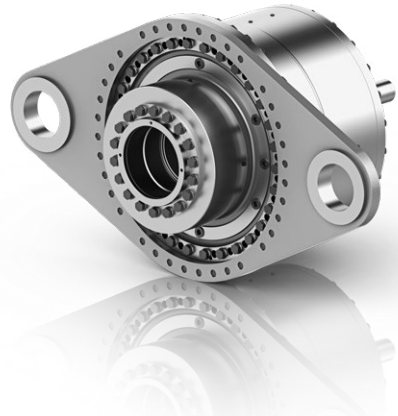
Size	Constant output torque $T_{2 \text{ CONST}}$ kNm	Ratio $i$	
		min.	max
<b>GP 200</b>	99	100	4,000
<b>GP 300</b>	156	100	4,000
<b>GP 425</b>	221	100	4,000
<b>GP 550</b>	296	100	4,000
<b>GP 615</b>	322	100	4,000
<b>GP 870</b>	451	100	4,000
<b>GP 910</b>	598	100	4,000

Table 12

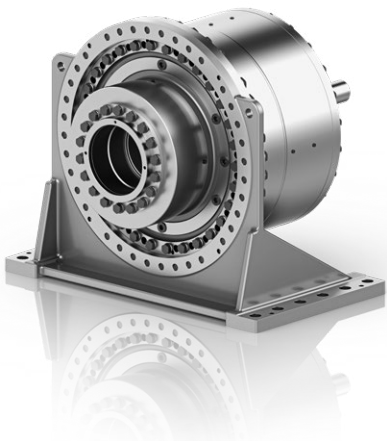
### Torque support one-sided



### Torque support double-sided

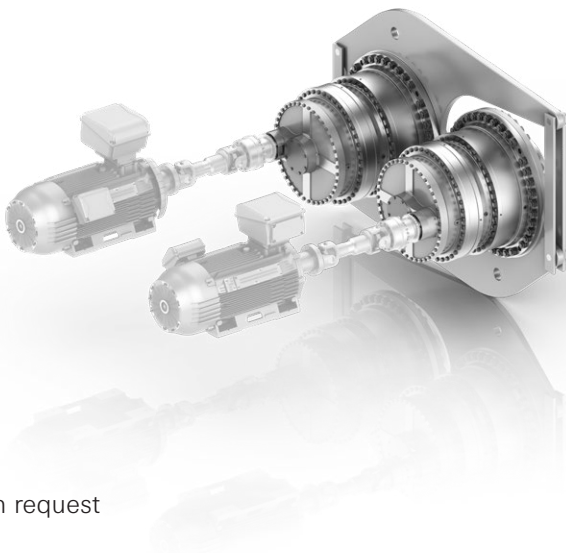


### Foot frame



Dimension of torque supports and other versions on request.

### Application specific design



on request

Special designs according to customer requirements are possible.

Further accessories (couplings, cardan shafts, motor lantern, motor) on request.

# Customer specification stationary gears

In order to work out a quotation for your application, we kindly ask you to fill out this spec sheet.

Please send your inquiry to [sales.ii@zf.com](mailto:sales.ii@zf.com)

Company:
Name/Dept.:
Location/City:
Phone:
E-mail:
Date:

## Operating data / conditions

## Remarks

Working machine type	_____	
Application/branch	_____	
Application factor	_____	
Location/country	_____	
Temperature [°C]	min. _____	max. _____
Height at location [m]	_____	

Sourrounding environment	small hall (vL <1.25 m/s)	<input type="checkbox"/>
	large hall (vL 2.35...3.82 m/s)	<input type="checkbox"/>
	outside (vL > 3.83 m/s)	<input type="checkbox"/>

Environmental conditions	normal	<input type="checkbox"/>	dusty	<input type="checkbox"/>	wet	<input type="checkbox"/>
	corrosion	<input type="checkbox"/>	very dusty	<input type="checkbox"/>		

ATEX required	yes	<input type="checkbox"/>	no	<input type="checkbox"/>	Kat.	_____
---------------	-----	--------------------------	----	--------------------------	------	-------

Humidity [%]	_____
--------------	-------

Operation [hrs/day; days/week]	_____
--------------------------------	-------

starts [per hour; per day]	_____
----------------------------	-------

Start temperature (...w/o load)	_____
---------------------------------	-------

Starting torque [kNm]	_____
-----------------------	-------

Peak loads per h	_____
------------------	-------

No. of gearboxes per machine	_____
------------------------------	-------

## Gearbox

## Remarks

Installed motor power / required power [kW] \_\_\_\_\_

Motor speed input  $n_1$  [1/min] min. \_\_\_\_\_ nom. \_\_\_\_\_ max. \_\_\_\_\_

Design input coaxial  helical  bevel (90°)

Customer ratio  $i$  \_\_\_\_\_

Construction kit Ratio  $i_{\text{construction kit}}$  \_\_\_\_\_

Output speed  $n_2$  [1/min] min. \_\_\_\_\_ nom. \_\_\_\_\_ max. \_\_\_\_\_

Output torque  $T_2$  [kNm] min. \_\_\_\_\_ nom. \_\_\_\_\_ max. \_\_\_\_\_

Static max. torque [kNm] \_\_\_\_\_

Min  $L_{n10}$  (Bearing lifetime) [h] based on necessary torque \_\_\_\_\_

Modified calculation allowed? yes, acc. to ISO / TS 16281  no

Toothing safety factor referring to: ISO 6336 at  $K_A$  1.0 ZF standard

Different safety factors  $S_H$  \_\_\_\_\_  $S_F$  \_\_\_\_\_

Toothing durable according to DIN 3990 yes  no  → gearbox lifetime [h] \_\_\_\_\_

Assembly or sensors yes  no  type \_\_\_\_\_

Installed position horizontal  output top  output bottom

Corrosion resistance requirements C2  C3 (standard)  other \_\_\_\_\_

Load spectrum			
Load case	Output speed $n_2$ [1/min]	Output torque $T_2$ [kNm]	Time slice [%]
1			
2			
3			
4			
5			
6			
7			

### Radial forces at output / input

Transverse forces (output) radial  $F_{R2}$  [N] \_\_\_\_\_

Transverse forces (output) axial  $F_{A2}$  [N] \_\_\_\_\_

Distance shaft collar → force application **output** [mm] \_\_\_\_\_

Transverse forces (input) radial  $F_{R1}$  [N] \_\_\_\_\_

Distance shaft collar → force application **input** [mm] \_\_\_\_\_

### Design output shaft

### Remarks

Hollow shaft incl. shrink disk    yes     no     hydr.     mech.

Protection cover fixed on gearbox    yes     no

Shaft with key    yes     no

Splined shaft DIN 5480 external    yes     no

Gear hub (internal) DIN 5480    yes     no

Customer specific \_\_\_\_\_

### Design input shaft

### Remarks

ZF-Standard: Shaft with key    yes     no

Motor lantern    yes     no

Motor bracket design    yes     no

Piggy back    yes     no

Customer specific \_\_\_\_\_

### Accessories / equipment

### Remarks

**Torque arm**    Scope of delivery ZF    yes     no

One-sided    \_\_\_\_\_

Double-sided    \_\_\_\_\_

Chun    \_\_\_\_\_

Torsion shaft    \_\_\_\_\_

FLS    \_\_\_\_\_

Foot design    \_\_\_\_\_

Customer specific    \_\_\_\_\_

**Electric motor**Scope of delivery ZF    yes     no 

No. of motors in drive train \_\_\_\_\_

Motor type    AC     DC     Servo     other 

Installed motor power [kW] \_\_\_\_\_

Required power [kW] \_\_\_\_\_

Input torque  $T_1$  [kNm] \_\_\_\_\_Moment of inertia [kgm<sup>2</sup>] \_\_\_\_\_

Voltage [V] \_\_\_\_\_

Frequency [Hz] \_\_\_\_\_

Power supply    3-phased     1-phased Frequency converter control    yes     no Characteristics    50 Hz     87 Hz     other \_\_\_\_\_Speed  $n_1$  [1/min]    min. \_\_\_\_\_    nom. \_\_\_\_\_    max. \_\_\_\_\_Motor execution  
(ZF standard IEC3)    IEC     NEMA Motor design    B3 (Foot)     B5 (Flange)     other \_\_\_\_\_Rotation direction (under load)    Clockwise     counter clockw.     both 

Protection class    IP: \_\_\_\_\_

Operating mode    Permanent (S1)     intermittent 

National laws (z.B. UL/CSA) \_\_\_\_\_

**Hydraulic motor**Scope of delivery ZF    yes     no 

Supplier/type code \_\_\_\_\_

 $V_{g \max}$  [cm<sup>3</sup>] \_\_\_\_\_ $V_{g \min}$  [cm<sup>3</sup>] \_\_\_\_\_

Dp [bar] \_\_\_\_\_

 $Q_{\max}$  [l/min] \_\_\_\_\_

### Accessories / equipment

### Remarks

**Cooling/Heating**      Scope of delivery ZF      yes       no

Execution      int. cooling       ext. cooling       heating element

Cooling-/heating power [kW] \_\_\_\_\_

Heating elements      if yes: amount \_\_\_\_\_ voltage \_\_\_\_\_

Vent      allowed       not allowed

External cooler      oil/air       oil/water

External oil/water cooler \_\_\_\_\_

Cooling water temperature [°C] \_\_\_\_\_

Additives in cooling water      ZF Standard: corrosion protection, other: \_\_\_\_\_

Filterfineness [µm]      ZF Standard: Single filter 25 µm, other: \_\_\_\_\_

Execution:  
(ZF Standard: w/o oilpan, roof, frame) \_\_\_\_\_

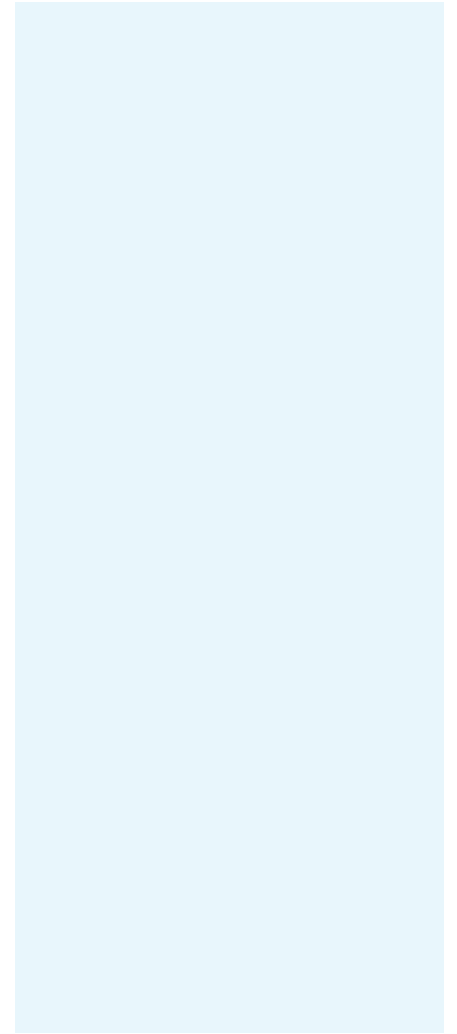
Output voltage sensors      ZF Standard: \_\_\_\_\_

Corrosion protection / paint      C2       C3 (standard)       other: \_\_\_\_\_

National laws (f.e. UL/CSA) \_\_\_\_\_

Specific color  
(ZF Standard RAL 5003) \_\_\_\_\_

Terminal box      required       wiring done by ZF



**Safety clutch**      Scope of delivery ZF      yes       no

based on      engine power       required power

Safety factor for equipment \_\_\_\_\_

Type      mechanic       hydraulic       other: \_\_\_\_\_

Flange-/shaft connection (drive shaft) \_\_\_\_\_

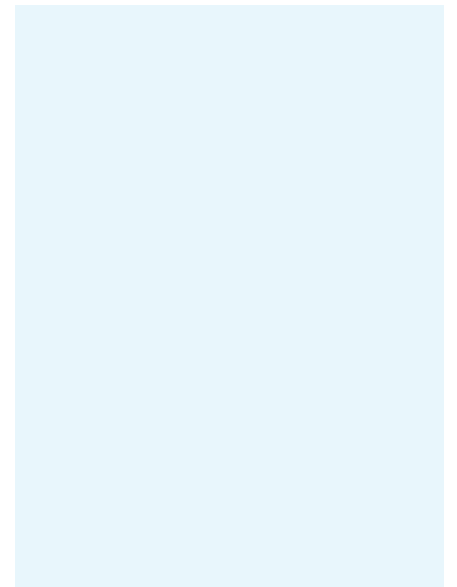
Flange-/shaft connection (engine side) \_\_\_\_\_

Axial offset D W<sub>a</sub> \_\_\_\_\_

Radial offset D W<sub>r</sub> \_\_\_\_\_

Angular offset D W<sub>w</sub> \_\_\_\_\_

Protective cover \_\_\_\_\_





**Cardan shaft**

Scope of delivery ZF    yes     no

Safety factor for equipment \_\_\_\_\_

Installation length mm ( $L_i$ ) \_\_\_\_\_

Cardan shaft extension ( $L_a$ ) \_\_\_\_\_

Bending angle (standard 3°) \_\_\_\_\_

Bearing lifetime  $L_{h_{10}}$  \_\_\_\_\_

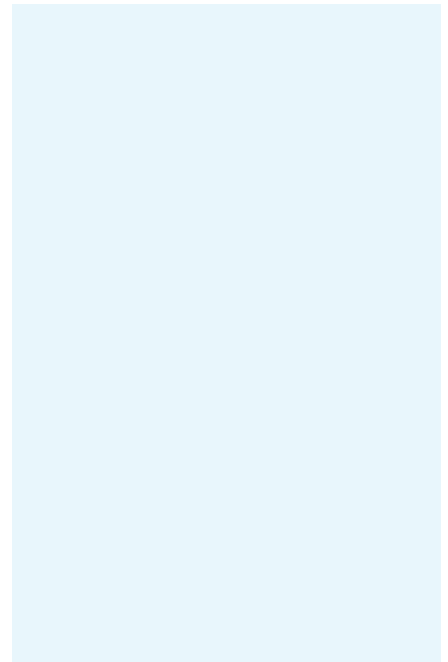
Flange diameter \_\_\_\_\_

Interface motorshaft (standard: DIN flange) \_\_\_\_\_

Interface inputshaft (standard: DIN flange) \_\_\_\_\_

Screw set (standard: not scope of delivery ZF) \_\_\_\_\_

Protective cover / painting \_\_\_\_\_



**Brake/backstops**

Scope of delivery ZF    yes     no

Design    disk     drum     multi-disk

Type    dynamic brake     parking brake

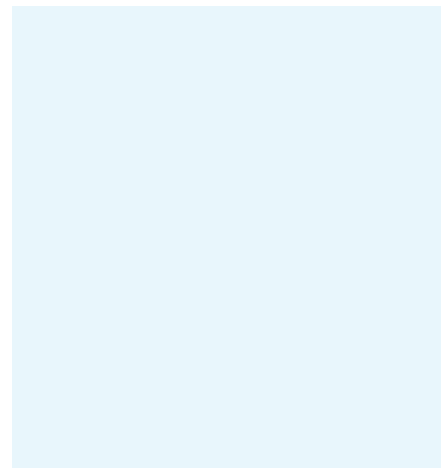
Medium    hydraulic     electric

Nom. brake torque [Nm] \_\_\_\_\_

Nom. brake voltage [V] \_\_\_\_\_

Holding pressure [bar] \_\_\_\_\_

Ventilate pressure [bar] \_\_\_\_\_



**Elastic coupling/clutch #1**

Scope of delivery ZF    yes     no

Safety factor for equipment \_\_\_\_\_

Type \_\_\_\_\_

Flange-/shaft interface diam. \_\_\_\_\_

Flange-/shaft interface diam. \_\_\_\_\_

Axial offset  $D W_a$  [mm] \_\_\_\_\_

Radial offset  $D W_r$  [mm] \_\_\_\_\_

Angular offset  $D W_w$  [°] \_\_\_\_\_

Moment of inertia [kgm<sup>2</sup>] \_\_\_\_\_

Flywheel effect [kgm<sup>2</sup>] \_\_\_\_\_

**#2**

Scope of delivery ZF    yes     no

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Dokumentation (technical manual is standard)

Languages (standard DE/EN) others: \_\_\_\_\_

Material specification 3.1  3.2  other \_\_\_\_\_

Special requirements/laws for application in installation country? \_\_\_\_\_

Assembly instructions\* \_\_\_\_\_

Installation declaration\* \_\_\_\_\_

Safety signage ISO  ANSI  other \_\_\_\_\_

Medium Paper  PDF  other \_\_\_\_\_

Number \_\_\_\_\_

\* only for product classification; Incomplete machinery within the meaning of Article 2G EU area only

## Transport / packaging

ZF standard: wood-frame other: \_\_\_\_\_

Packaging for type of transport (e.g. sea) \_\_\_\_\_

Incoterms (standard FCA) \_\_\_\_\_

Is installation position = transport position HO  VT  VB

## General information

Estimated number of gearboxes per year \_\_\_\_\_

Color (standard: RAL 5003 sapphire blue) \_\_\_\_\_

Delivery date: Prototype/Serial start \_\_\_\_\_

Are there any legal requirements and/or other standards to be considered?

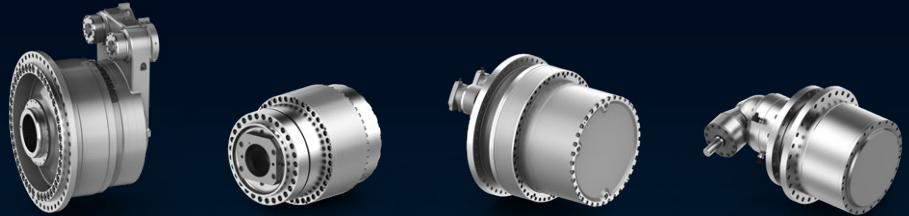
yes  no  if yes, please specify \_\_\_\_\_

**Further requirements** (e.g. application details, customer drawings, type plate, limiting dimensions, noise and vibration requirements ...): Please add on a separate sheet of paper.

# Additional product portfolio

## Travel drive gearboxes

- Planetary gearboxes  
GPT/GFA  
Technical documentation  
ZF 77110



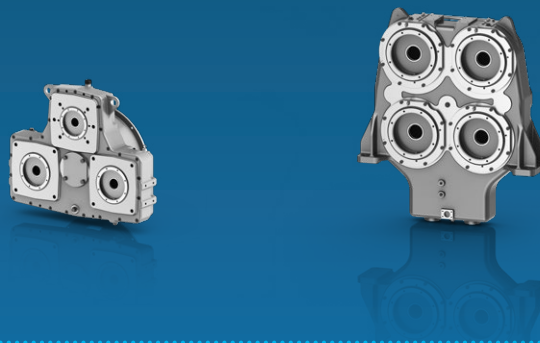
## Swing gearboxes

- Planetary gearboxes  
GFB  
Technical documentation  
ZF 77201



## Pump distribution gearboxes

- GFC  
Technical documentation  
ZF 77301



## Winch gearboxes

- Planetary gearboxes  
GPT-W  
Technical documentation  
ZF 77502



## ZF Group

Division Industrial Technology  
Product Line Industrial Drives  
Mannesmannstrasse 29  
58455 Witten  
Germany

Phone +49 2302 877-0  
sales.ii@zf.com  
www.zf.com/



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