Wheel Hub Transmissions

Keep on ***rolling***

ASG
Allweier Systeme GmbH

Allweier -
For the highest levels of precision and propulsion

Since 1970 the name Allweier has been synonymous with high quality system components as well as precision engineered turned and milled parts and innovative transmission technologies.

In 2002, Allweier Systeme GmbH (ASG) was founded so its core competence could be focused towards gearing and drive technologies.

Very rapidly the company built up a market reputation for itself as a key supplier of innovative first-class products. Wheel hub gearboxes from ASG are used everywhere where high power density, stamina, best quality and professional support is wanted and appreciated.

Together with our specialist partners, ASG has developed highly efficient and innovative drive trains which are not only modular in their construction but incorporate compact customized electric drives which meet the exacting demands of our customers.

Keep on rolling –
To be on the move and be pro-active is our mission to our customers ensuring we remain a competent and innovative partner of choice.

EMAS
VERIFIED ENVIRONMENTAL MANAGEMENT
DE-165-00065

ISO 9001:2008
ISO/TS 16949:2009

Solutions -
PGR wheel drives and their application

PGR 500 -
700 kg wheel load

PGR 1500 -
2100 kg wheel load

Drive Train -
Motor / Gear combination

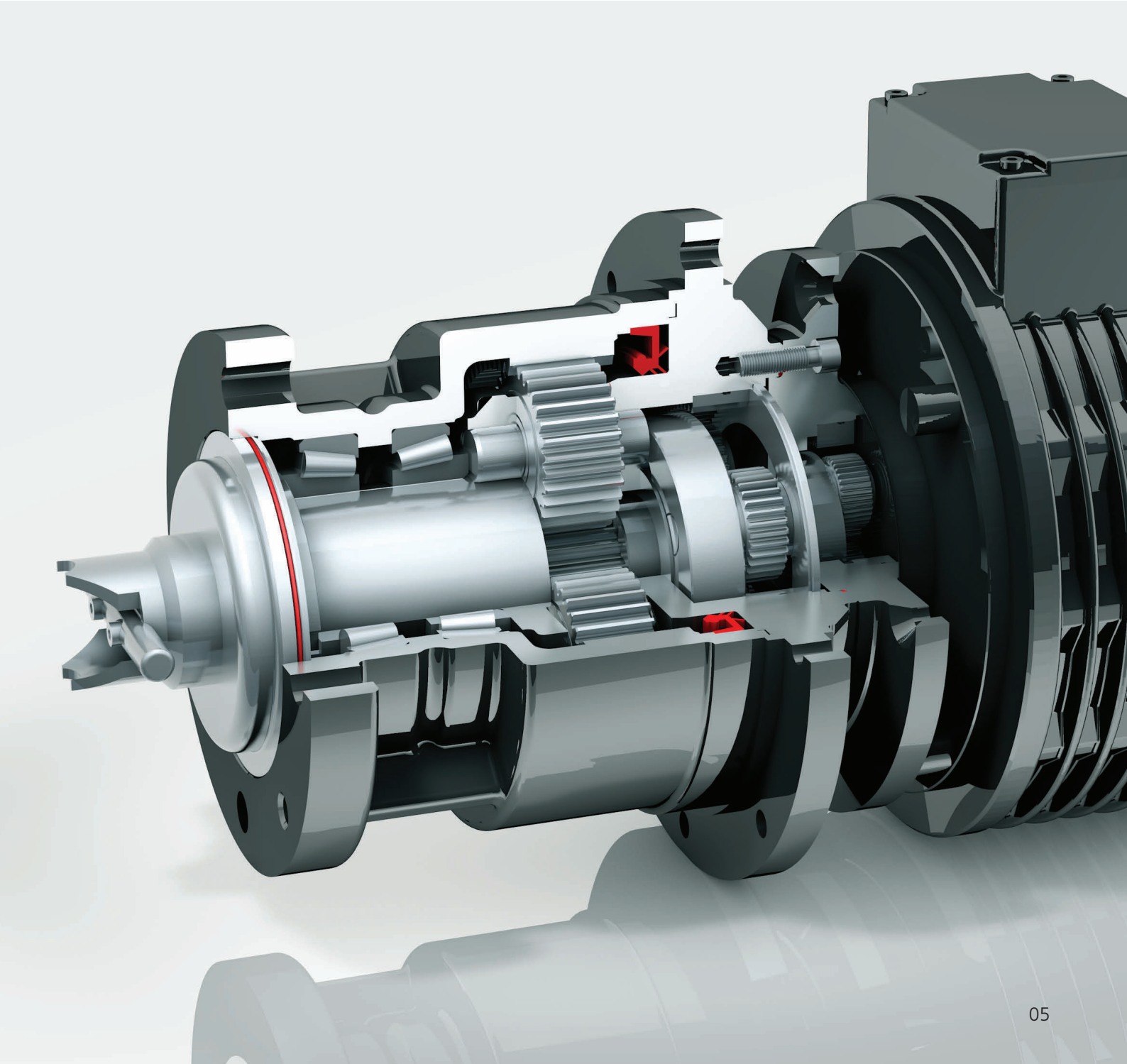
Solutions -

PGR wheel drives and their application

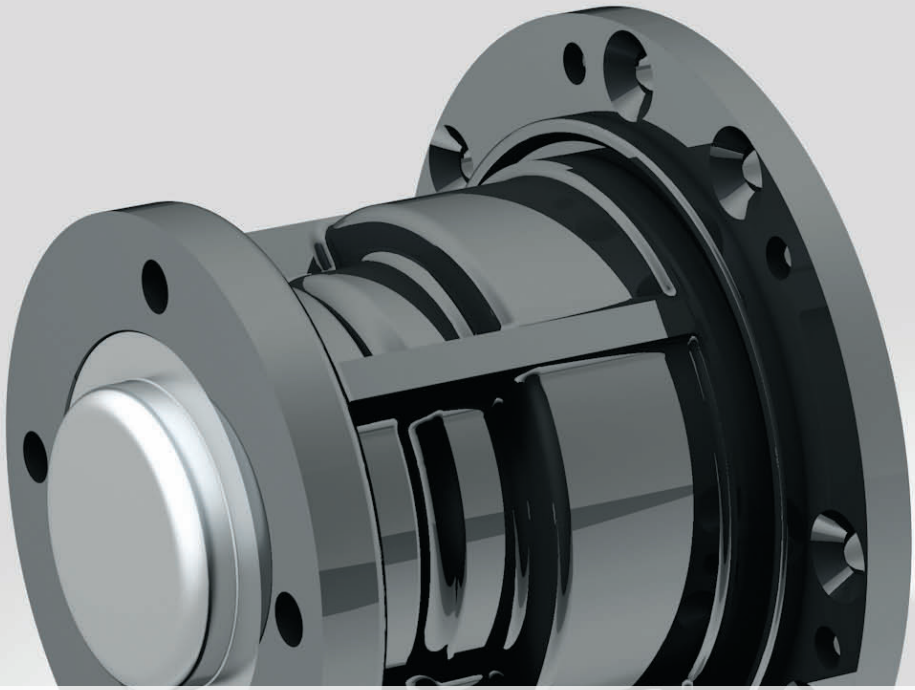
- Agriculture and forestry
- Intracompany transportation
- Robotics
- Urban and utility vehicles
- Municipal vehicles
- Healthcare sector
- Windlass technology
- And numerous other possibilities

ASG Wheel Drive Advantages

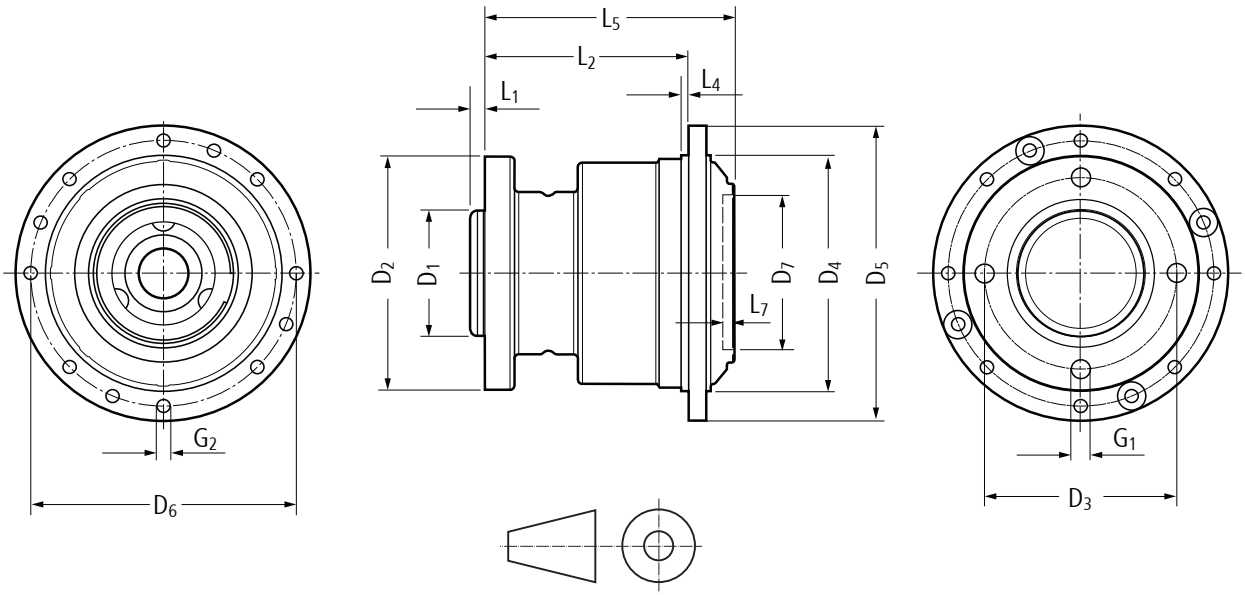
	ASG wheel drive with disc motor	Conventional electric drive	Hydrostatic drive
Efficiency	up to 96 %	up to 85 %	up to 65 %
Dynamic	+++	++	+
Revolution range	+++	+	o
Overall size	+++	o	+
Installation expenditure	+++	++	o
Maintenance costs	+++	++	o
Flexibility	+++	+	+



PGR 500 -
500 Nm peak torque



- Wheel load up to 700 kg per wheel
- Mass approx. 7 kg
- 160 Nm nominal torque –
  500 Nm peak torque
- Suitable for all types of drive
- Up to 96 % efficiency
- Operational lifetime up to 20000 hours
- Maintenance free
- Option: mechanical decoupling of many ratios



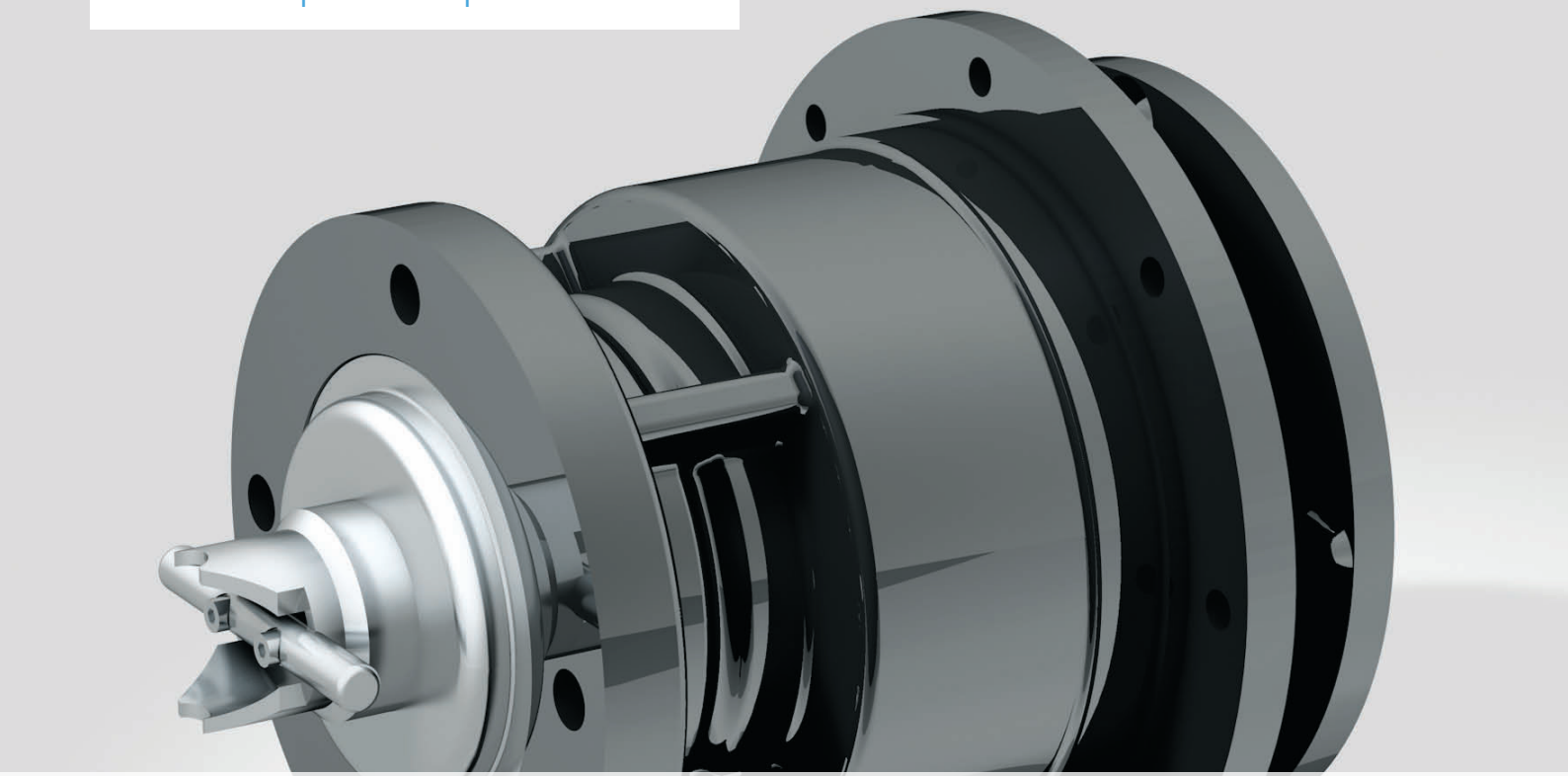
PGR 500 Technical Details

Wheel load			700			[kg]
Stages			1	2	3	
Transmission ratio [7]	optional decoupling	i		16	96	
			4	24	144	
	No decoupling	i	7	42	252, 504	
Efficiency		η	96	94	93	[%]
Approx. mass		m	6.9	7.3	8.4	[kg]
Rated output torque		T_{2N}	160			[Nm]
Output acceleration torque		T_{2A}	450			[Nm]
Peak output torque [1]		T_{2S}	500			[Nm]
Permissible average drive speed [2]		n_{1N}	3000			[rpm]
Maximum speed [3]		$n_{1\ max}$	6000			[rpm]
Axial force [4]		$F_{2A\ max}$	2500			[N]
Radial force [4]		$F_{2R\ max}$	7000			[N]
Operational lifetime [5, 6]		Lh	20000			[h]
Oper. noise emission at n_1 = 3000 rpm		Lp	< 65			[dB(A)]
Direction of rotation – input/output			counter-rotating			
Lubrication			permanent			
Mounting position			horizontal			
Ambient temperature		T	-20 to +50			[°C]
Max. permissible case temperature		T	90			[°C]
Protection class			up to IP67 [8]			
Surface finish			EDP-coated			
Casing colour [7]			similar to RAL 9005			

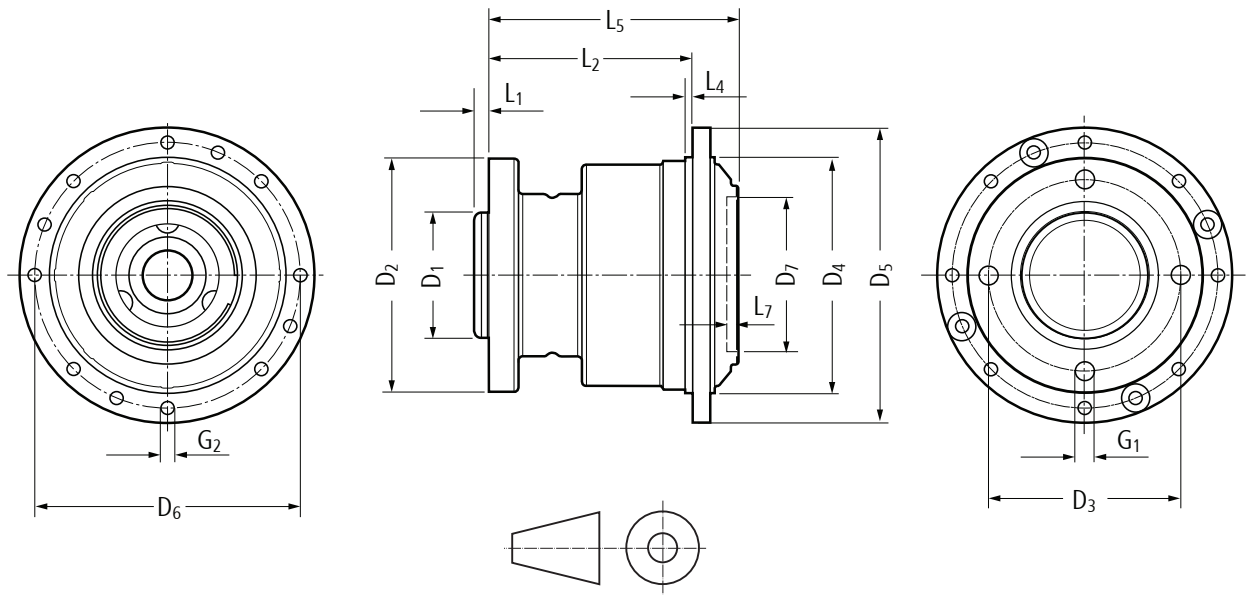
1 Permitted fewer than 1000 times
2 At 20°C ambient temperature
3 Briefly
4 Referenced to the rim flange area at n_2 = 100 rpm
5 Referenced to n_2 = 100 rpm, KA = 1
6 Application dependent
7 Others on request
8 Motor dependent

Stages		1	2	3	
Dimensions					
Overall length – without motor	L5	128		155	[mm]
Housing length	L2	105			[mm]
Transmission output shaft dimensions					
Rim centring diameter	D1	60 / 63			[mm]
Rim centring length	L1	10			[mm]
Output flange – outer diameter	D2	128			[mm]
Rim pitch circle diameter	D3	100			[mm]
Rim screw thread	G1	M12x1.5 (4x)			
Transmission input shaft dimensions [8]					
Transmission centring diameter	D4	130			[mm]
Transmission centring length	L4	5			[mm]
Outer diameter	D5	170			[mm]
Pitch circle diameter	D6	150		60	[mm]
Screw thread	G2	M10 (6x)		M6 (4x)	
Motor centring diameter	D7	70		50	[mm]
Motor centring length	L7	5.5		4.5	[mm]
Motor flange precision		DIN 42955-N			

PGR 1500 -
2000 Nm peak torque



- Wheel load up to 2100 kg per wheel
- Mass approx. 15 kg
- 800 Nm nominal torque –
  2000 Nm peak torque
- Suitable for all types of drive
- Up to 96 % efficiency
- Operational lifetime up to 20000 hours
- Maintenance free
- Option: mechanical decoupling of many ratios



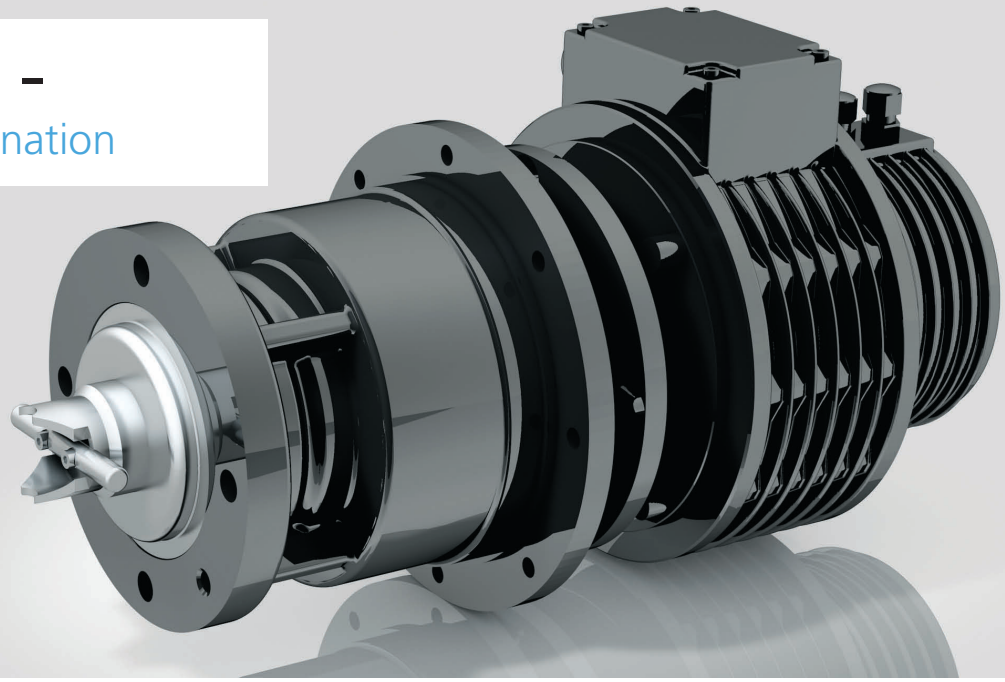
PGR 1500 Technical Details

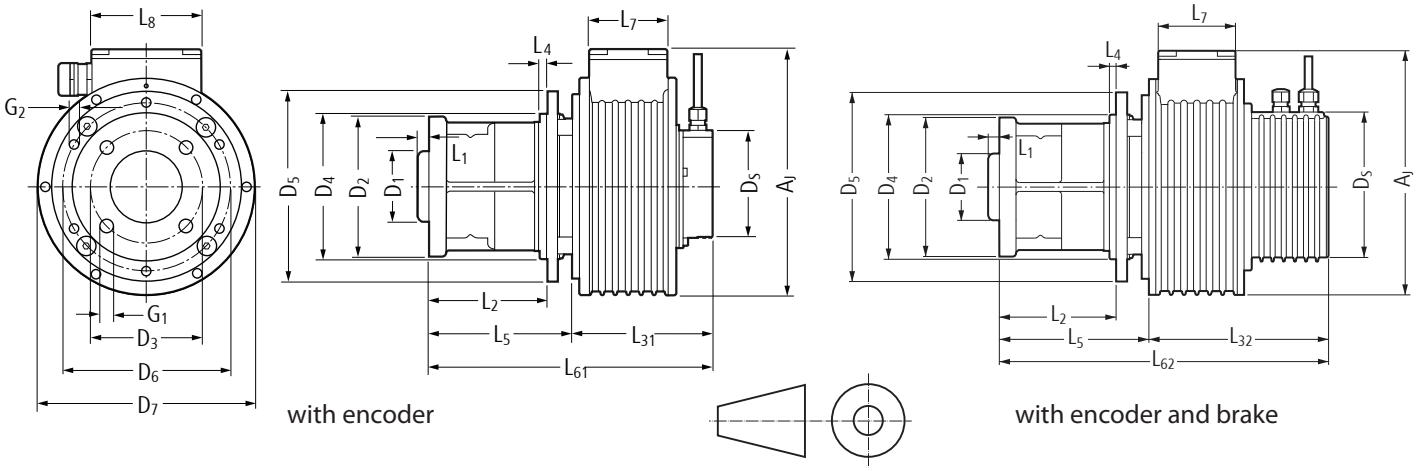
Wheel load			2100			[kg]
Stages			1	2	3	
Transmission ratio [7]	optional decoupling	i	5	25 40	100 150 240	
	No decoupling	i	8	64	384	
Efficiency		η	96	94	93	[%]
Approx. mass		m	14	15.5	17.5	[kg]
Rated output torque		T_{2N}	800			[Nm]
Output acceleration torque		T_{2A}	1600			[Nm]
Peak output torque [1]		T_{2S}	2000			[Nm]
Permissible average drive speed [2]		n_{1N}	3000			[rpm]
Maximum speed [3]		$n_{1\ max}$	6000			[rpm]
Axial force [4]		$F_{2A\ max}$	5000			[N]
Radial force [4]		$F_{2R\ max}$	21000			[N]
Operational lifetime [5, 6]		Lh	20000			[h]
Oper. noise emission at n_1 = 3000 rpm		Lp	< 68			[dB(A)]
Direction of rotation – input/output			counter-rotating			
Lubrication			permanent			
Mounting position			horizontal			
Ambient temperature		T	-20 to +50			[°C]
Max. permissible case temperature		T	90			[°C]
Protection class			up to IP67 [8]			
Surface finish			EDP-coated			
Casing colour [7]			similar to RAL 9005			

1 Permitted fewer than 1000 times
2 At 20°C ambient temperature
3 Briefly
4 Referenced to the rim flange area at n_2 = 100 rpm
5 Referenced to n_2 = 100 rpm, KA = 1
6 Application dependent
7 Others on request
8 Motor dependent

Stages		1	2	3	
Dimensions					
Overall length – without motor	L5	169		200	[mm]
Housing length	L2	138			[mm]
Transmission output shaft dimensions					
Rim centring diameter	D1	80 / 85			[mm]
Rim centring length	L1	10			[mm]
Output flange – outer diameter	D2	158			[mm]
Rim pitch circle diameter	D3	130			[mm]
Rim screw thread	G1	M14x1.5 (4x)			
Transmission input shaft dimensions [8]					
Transmission centring diameter	D4	160			[mm]
Transmission centring length	L4	5			[mm]
Outer diameter	D5	200			[mm]
Pitch circle diameter	D6	180		150	[mm]
Screw thread	G2	M10 (8x)			
Motor centring diameter	D7	100		70	[mm]
Motor centring length	L7	5.5			[mm]
Motor flange precision		DIN 42955-N			

Drive Train -
Motor / Gear combination





	PGM 33				PGM 39				PGM 88				
Unit	500 1-2	500 3	1500 1-2	1500 3	500 1-2	500 3	1500 1-2	1500 3	500 1-2	500 3	1500 1-2	1500 3	
D1	63		80		63		80		63		80		[mm]
D2	128		158		128		158		128		158		[mm]
L1	10				10				10				[mm]
D3	100		130		100		130		100		130		[mm]
G1	M12 x 1.5		M14 x 1.5		M12 x 1.5		M14 x 1.5		M12 x 1.5		M14 x 1.5		
D4	130		160		130		160		130		160		[mm]
L4	5				5				5				[mm]
D5	170		200		170		200		170		200		[mm]
D6	150	60	180	150	150	60	180	150	150	60	180	150	[mm]
G2	M10 (6x)	M10 (4x)	M10 (8x)		M10 (6x)	M10 (4x)	M10 (8x)		M10 (6x)	M10 (4x)	M10 (8x)		
D7	194				216				245				[mm]
L2	105		138		105		138		105		138		[mm]
L31	123.7				126				144.5				[mm]
L32	167				168.5				185				[mm]
L5	128	155	169	200	128	155	169	200	128	155	169	200	[mm]
L61	251.7	278.7	292.7	323.7	254	281	295	326	272.5	299.5	313.5	344.5	[mm]
L62	295	322	336	367	296.5	323.5	337.5	368.5	313	340	354	385	[mm]
L7	69.5				69.5				84				[mm]
L8	98				98				120				[mm]
DS	125				125				125				[mm]
AJ	220				241				274				[mm]

Technical Details

- Permanently excited AC synchronous motor
- Compact high-efficiency drive train
- All-wheel drive or single-wheel drive
- No differential gearing necessary
- Direct rim mounting possibility
- Maintenance free operation

PGM 33 - 500 / 1500

Voltage	from 24 to 72						[V DC]
Maximum power	up to 3.3						[kW]
Nominal power	up to 2.8						[kW]
Rated motor speed	3000 - 6000						[rpm]
Nominal motor torque	4.4						[Nm]
Peak motor torque	16.2						[Nm]
Transmission type (example)	PGR 500			PGR 1500			
Ratio i =	16	24	42	100	150	240	
Output speed	187 - 375	125 - 250	71 - 142	30 - 60	20 - 40	12.5 - 25	[rpm]
Nominal output torque	71	107	160	446	669	800	[Nm]
Peak output torque	260	389	500	1620	2000	2000	[Nm]

PGM 39 - 500 / 1500

Voltage	from 36 to 72						[V DC]
Maximum power	up to 3.9						[kW]
Nominal power	up to 3.4						[kW]
Rated motor speed	3000 - 6000						[rpm]
Nominal motor torque	6						[Nm]
Peak motor torque	20.2						[Nm]
Transmission type (example)	PGR 500			PGR 1500			
Ratio i =	16	24	42	64	100	150	
Output speed	187 - 375	125 - 250	71 - 142	46 - 94	30 - 60	20 - 40	[rpm]
Nominal output torque	96	144	160	384	600	800	[Nm]
Peak output torque	323	485	500	1293	2000	2000	[Nm]

PGM 88 - 500 / 1500

Voltage	from 48 to 96						[V DC]
Maximum power	up to 8.8						[kW]
Nominal power	up to 8.0						[kW]
Rated motor speed	3000 - 6000						[rpm]
Nominal motor torque	15.8						[Nm]
Peak motor torque	54						[Nm]
Transmission type (example)	PGR 500			PGR 1500			
Ratio i =	4	7	16	5	25	40	
Output speed	750 - 1500	428 - 850	187 - 375	600 - 1200	120 - 240	75 - 150	[rpm]
Nominal output torque	63	111	160	79	397	636	[Nm]
Peak output torque	216	378	500	270	1350	2000	[Nm]

ASG Allweier Systeme GmbH
Zum Degenhardt 3
88662 Überlingen

Fon.: +49 7551 9207-0
Fax: +49 7551 9207-55

info@allweier.com
www.allweier.com