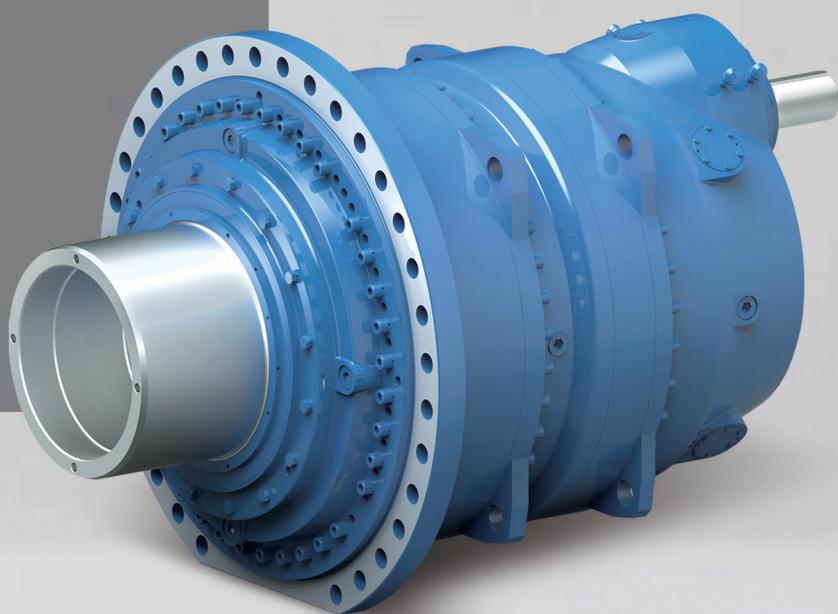




# NGC

## MPG Series Planetary Gearboxes for Roller Press

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# 1 Overview

Executive standards / overview / key reminders

## 1.1 Executive standards

- Gear accuracy is based on the cylindrical gear accuracy system from ISO1328
- Gear strength ratings are based on the calculation methods from ISO6336 - calculation of load capacity of spur and helical gears
- Shaft strength ratings are based on the calculation methods from DIN743 - calculation load capacity of shafts and axles
- Bearing life ratings are based on the calculation methods from ISO 281-dynamic load ratings and rating life of rolling bearings
- Quality control of materials and their heat treatments are based on the calculation methods from ISO6336-5 - calculation of load capacity of spur and helical gears - Part 5: Strength and quality of materials

## 1.2 Overview

As key transmission equipments, gearboxes for roller press are mainly used in the main drive train of roller presses. The gearboxes, which are driven by motors through universal spindles, are arranged symmetrically in pairs. The roller solid shafts of roller presses are connected with the hollow shaft of gearboxes via shrink disks. MPG series planetary gearboxes for roller press are designed and manufactured for high reliability and stable operation. All of the main technical specifications have reached the advanced levels of similar products worldwide.

Performance features:

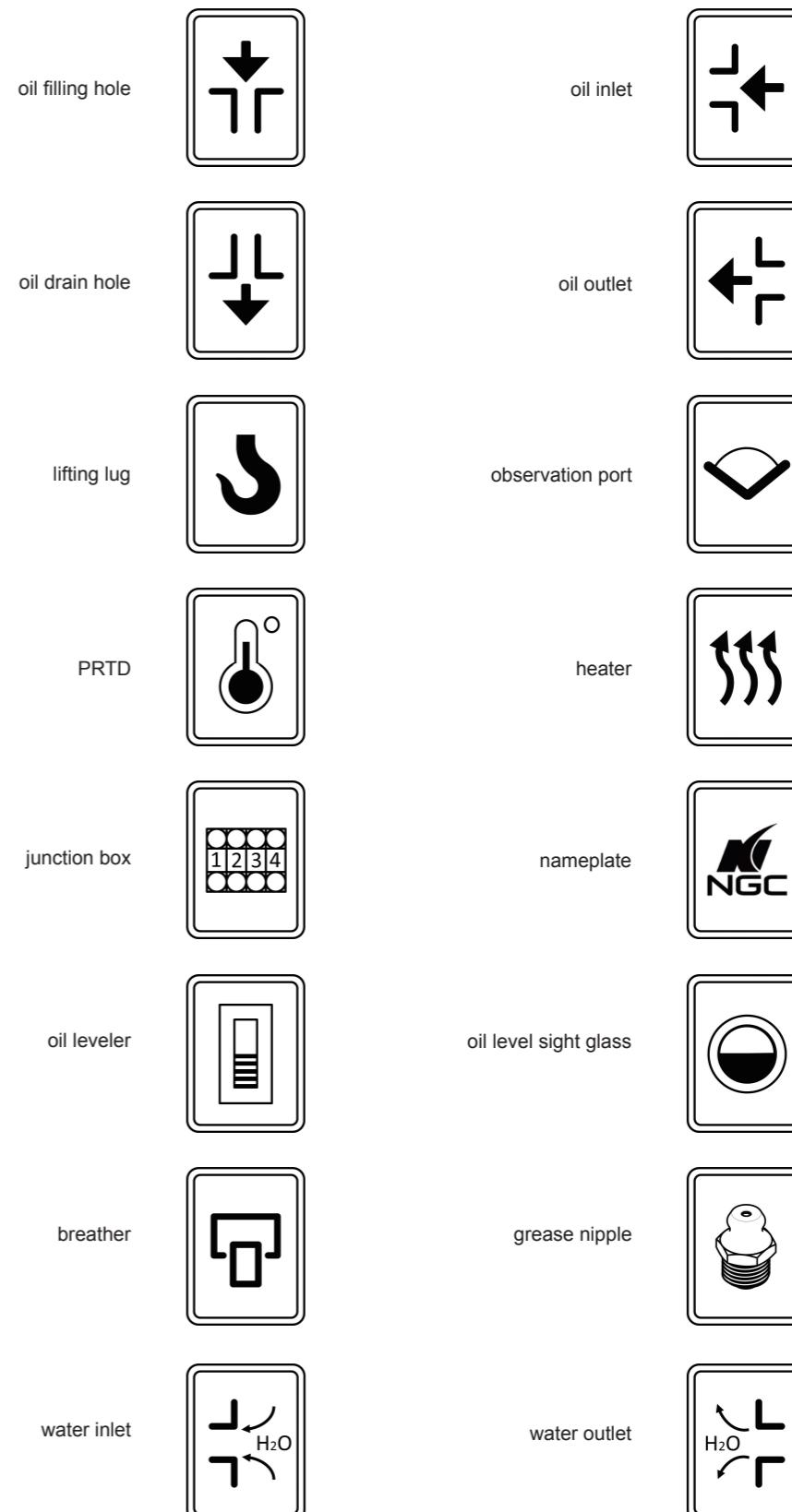
- Based on a standard platform for industrial gearboxes, jointly designed and developed with a European team
- Advanced modular design technology, high universality and interchangeability of main components, less component varieties
- Optimized interior gear design improves transmission efficiency
- Unique exterior design
- Compact structure ensure a higher power density
- Vibration and noise are reduced to improve gearboxes' service life
- High-quality processing technology ensures a longer service life of components and reduces the maintenance cost

## 1.3 Key reminders

- The illustrations in the catalog are only examples without effect binding
- Standard gearboxes are ready for operation when they are delivered and they need to be half filled with lubricant oil before going into operation
- The viscosity and the type of lubricants must comply with the nameplate of gearboxes
- The data and descriptions about oil volume are for reference only, actual volume is subject to oil leveler or reached the middle of the oil level sight glasses
- Rotating parts should be protected from accidental contacts. Please obey the local existing safety regulation
- Sealing, lubrication, ventilation, surface protection and other features of gearboxes may need be adjusted according to different working conditions
- Please contact NGC when the application environment is ultralow or high temperature, high humidity and corrosive or explosive environment

## 1.4 Icon description

The descriptions of icons in the illustrations are as follows:



## 2 Performance features

### Feature descriptions

Two types of gearboxes for roller presses are offered: one helical stage + two planetary gear stages (MPGH2 type) and two planetary gear stages (MPGC2 type).

#### 2.1 Feature descriptions

Gearboxes:

- Products: the nominal torque range of MPG gearboxes is from 100kNm to 5800kNm
- Lubrication type: oil bath lubrication is the standard lubrication type. In this case, the gearbox housings are used as lubricant tanks
- Mounting positions: MPGH2 gearbox has four mounting positions, which can be interchanged easily acc. to the arrangement of roller presses
- Condition monitoring: to ensure reliable operation of gearboxes, bearings and oil temperatures are monitored by RTD

Housings:

- Housings, which are made of high-quality spheroidal graphite cast iron, have smooth surface, high reliability and strong vibration-absorbing ability
- FEM helps to improve and optimize the housing structure stiffness and static strength as well as fatigue lifetime. The design is based on the analysis results and experience
- Housing manufacturing process is rigorous and reliable. CNC machines with high accuracy ensure high quality of the housings

Gears:

- Gears are all made of high-quality alloy steel. Both tooth flanks of gears are grinded
- Static and fatigue strength of gears, transmission efficiency, rate of wear, noise and vibration level are analyzed in gear design
- A whole flexible model of gearbox with consideration of all component stiffness is adopted to calculate and determine the parameters for tooth modification

Bearings:

- Gears and shafts are exclusively supported by roller bearings, which are all produced by top-level brands
- The basic service life of bearings is rated acc. to the standard ISO281/16281. Load distribution and contact stress of race are also considered
- NGC has established long-term strategic partnerships with top bearing manufacturers to ensure the high quality and sufficient supply of bearings

## 2 Performance features

### Feature descriptions

Planetary carriers:

- Planetary carriers are made of high-quality and high-strength spheroidal graphite cast iron. They can be assembled and disassembled easily with solid shafts of roller presses
- FEM, is used to analyze stiffness and strength of planetary carriers and helps to determine the final design
- CNC machines with high accuracy and 3-D measuring machines are used to ensure the high quality of planetary carriers

Shafts:

- Shafts are all made of high-quality alloy steel
- Shafts are designed acc. to international standards
- Modal of components and excitation of gear meshing are checked in order to decrease internal dynamic loads in gearboxes and optimize gearbox design

System dynamic characteristics analysis:

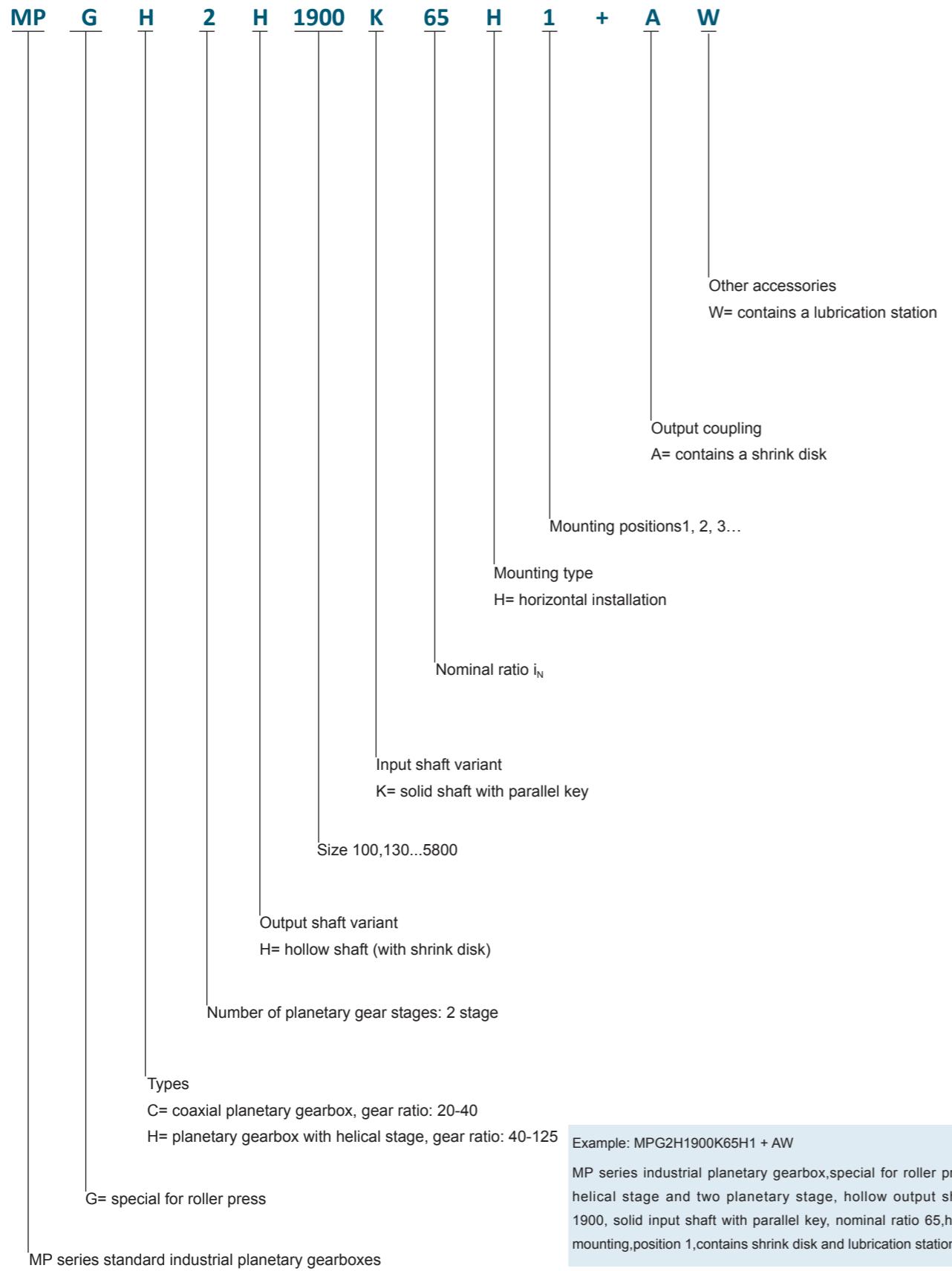
- Simulation model of roller shafts and gearboxes system is built by coupling dynamic characteristic parameter of prime movers and roller shafts
- Excited frequency diverges from the natural frequency of gearboxes in order to avoid resonance by simulating analysis
- Combine with the operating parameters, the dynamic response characteristics of gearbox are checked by using internal exciter

We can help you to verify the actual working conditions, confirm whether your choice is right and calculate accurate service life and service factor.

## 2 Performance features

### Naming of gearboxes

#### 2.2 Naming of gearboxes

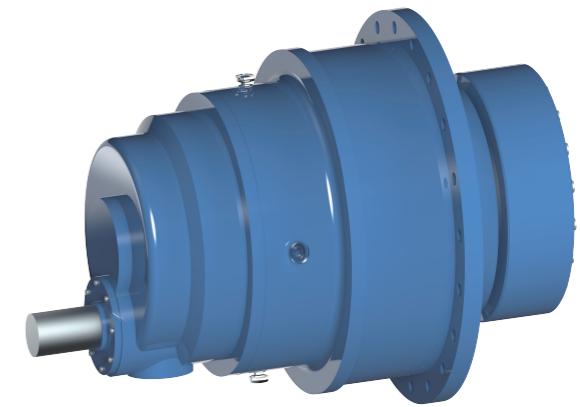


## 2 Performance features

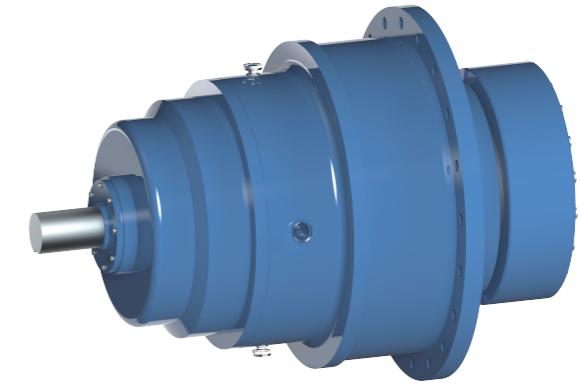
### Sizes and torque ratings

#### 2.3 Sizes and torque ratings

Size	Rated output torque $T_{2N}$
100	100 kNm
130	130 kNm
190	190 kNm
250	250 kNm
310	310 kNm
370	370 kNm
430	430 kNm
500	500 kNm
600	600 kNm
730	730 kNm
900	900 kNm
1100	1100 kNm
1350	1350 kNm
1600	1600 kNm
1900	1900 kNm
2450	2450 kNm
3200	3200 kNm
4200	4200 kNm
5200	5200 kNm
5800	5800 kNm



MPGH2H ... K ... Ratio: 40-125

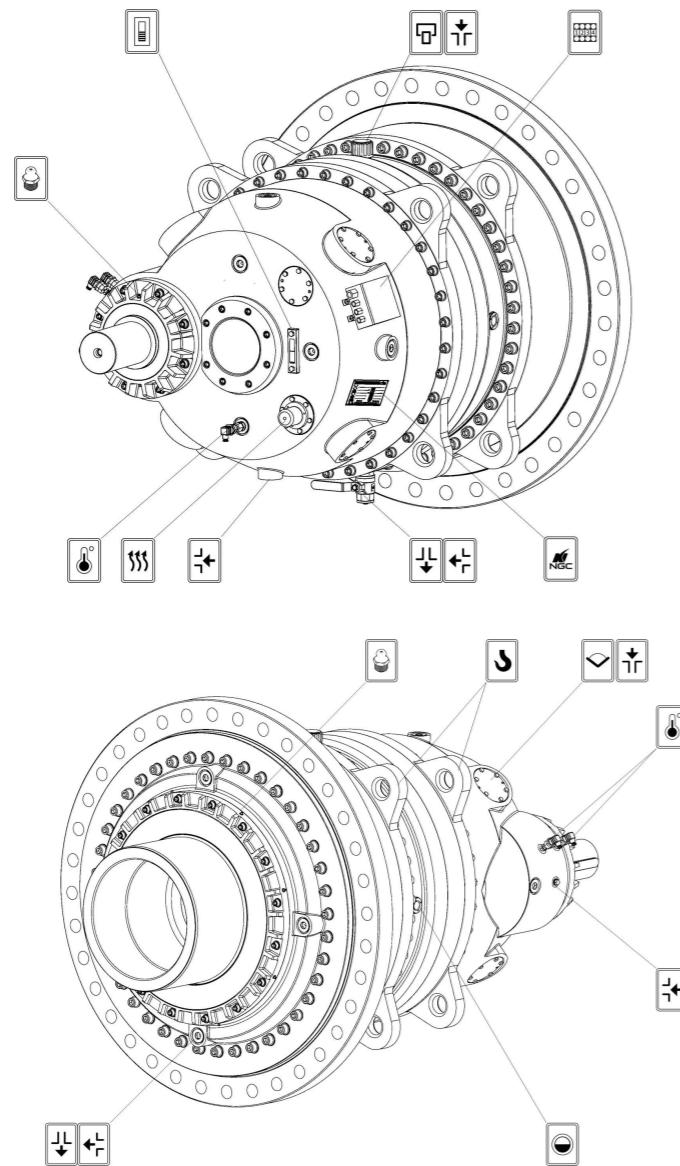


MPGC2H ... K ... Ratio: 20-40

## 2 Performance features

MPGH2 gearbox

### 2.4 MPGH2 gearbox



The above illustrations are for reference only, please refer to technical agreements for detailed technical parameters and configurations.

- The gearbox input and output direction of rotation are opposite
- Gearbox lubrication: oil bath lubrication
- Lubricant: ISO VG320 industrial enclosed gearing oil



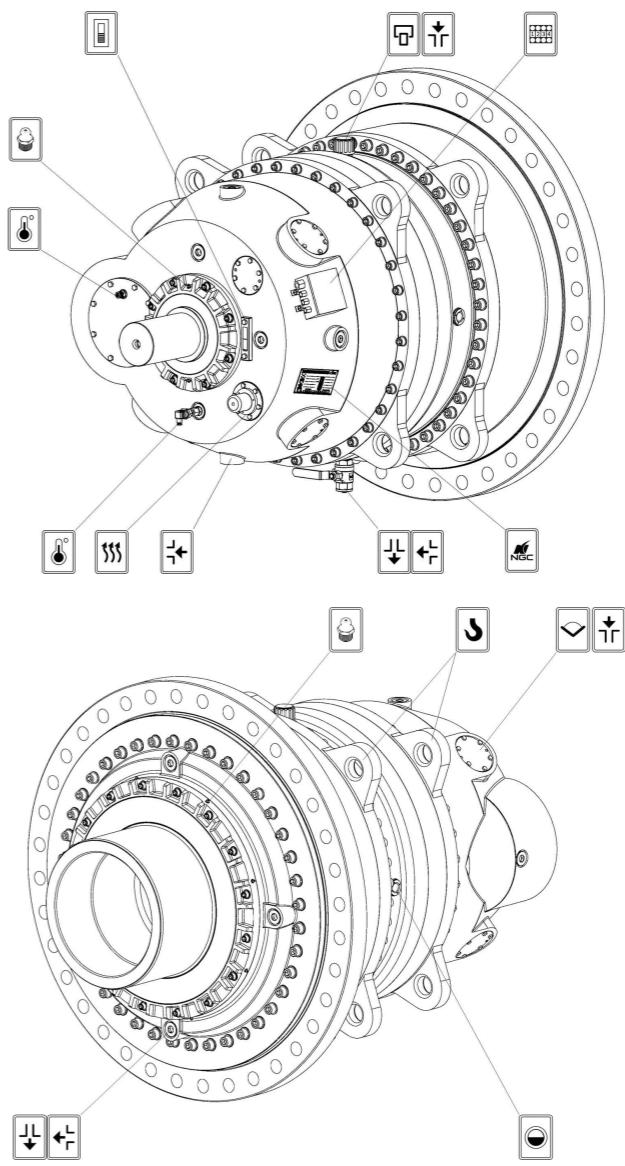
Before running, the lubricant oil level needs to be located at half of oil level sight glasses.

Please be sure that the lubricant is of high-quality and clearness and be sure to replace it regularly.

## Performance features

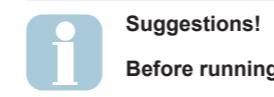
MPGH2 gearbox

### 2.5 MPGC2 gearbox



The above illustrations are for reference only, please refer to technical agreements for detailed technical parameters and configurations.

- The gearbox input and output direction of rotation are the same
- Gearbox lubrication: oil bath lubrication
- Lubricant: ISO VG320 industrial enclosed gearing oil



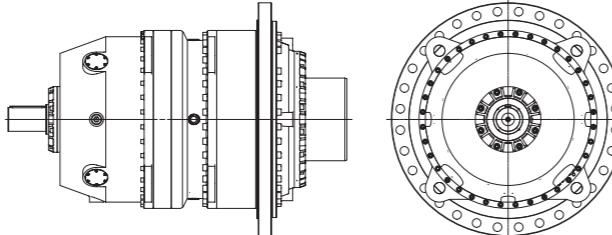
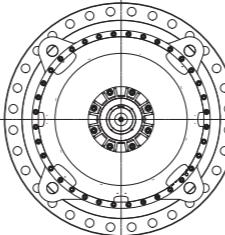
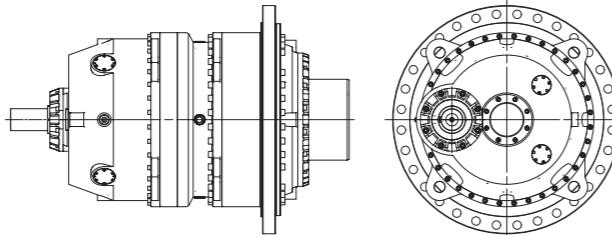
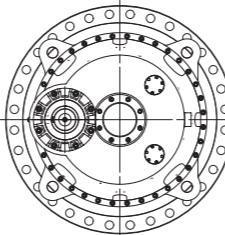
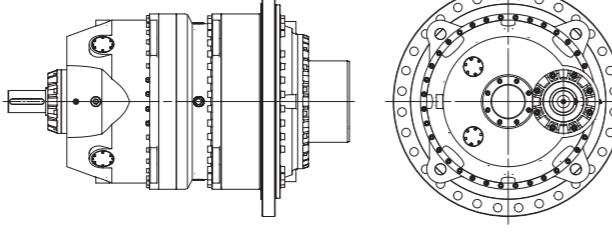
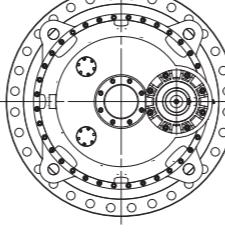
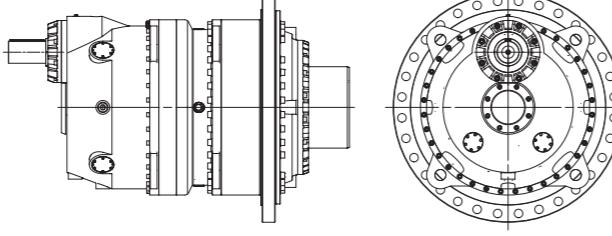
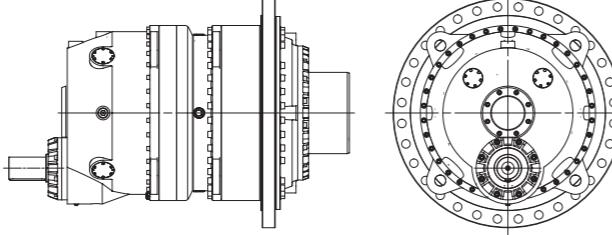
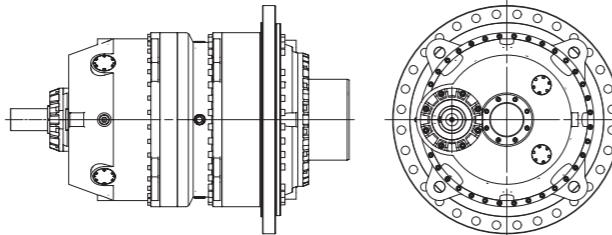
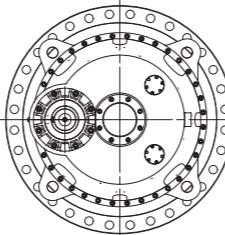
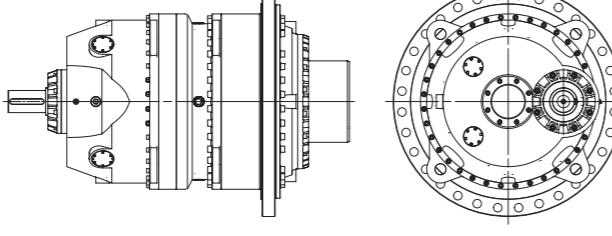
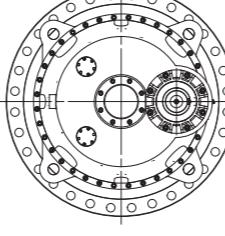
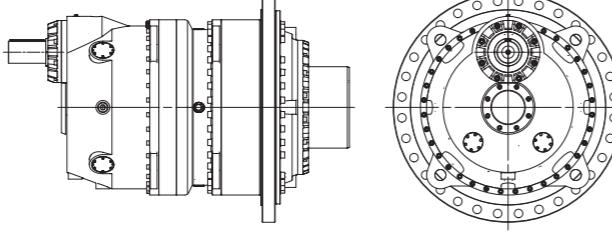
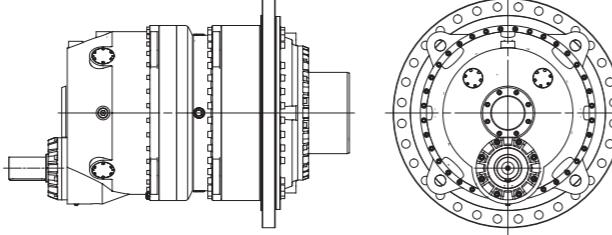
Before running, the lubricant oil level needs to be located at half of oil level sight glasses.

Please be sure that the lubricant is of high-quality and clearness and be sure to replace it regularly.

## 2 Performance features

Mounting positions

### 2.6 Mounting positions

Gearbox types	Designated code	Mounting positions	
MPGC2 Coaxial planetary gearbox	1		
	1		
	2		
	3		
	4		
MPGH2 Planetary gearbox with helical stage	1		
	2		
	3		
	4		

## Selection guide 3

Symbol description / Selection of gearbox

### 3.1 Symbol description

Symbols	Descriptions
$f_1$	Factor for driven machine
$f_2$	Factor for driving machine
$f_3$	Peak load factor
$i_N$	Nominal ratio
$i_s$	Required ratio
$n_1$	Input speed (rpm)
$n_2$	Output speed (rpm)
$P_1$	Power of driving machine (kW)
$P_N$	Nominal power of gearbox (kW)
$P_{\text{erf.}}$	Required power of gearbox (kW)
$P_2$	Power of driven machine (kW)
$T_2$	Nominal output torque (kNm)

### 3.2 Selection of gearbox

#### 1. Calculation of transmission ratio

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

Select the gearbox type according to required transmission ratio:

The ratio range of MPGC2 gearbox is 20-40

The ratio range of MPGH2 gearbox is 40-125

We can meet customized requirements according to the required nominal ratio.

#### 2. Determination of gearbox nominal power rating

$$P_N \geq P_{\text{erf.}} = P_2 \times f_1 \times f_2 \times f_3$$

Select  $f_1$ ,  $f_2$  and  $f_3$  according to Table 1, Table 2 and Table 3 respectively.

#### 3. Determination of gearbox nominal torque

$$T_2 = 9.55 \times \frac{P_N}{n_2}$$

#### 4. Selection of gearbox size

Select the gearbox size by comparing nominal torque  $T_2$  with the torque  $T_{2N}$  in size and torque rating table (part 2.3).

#### 5. Checking gearbox outline dimensions:

Checking the gearbox outline dimensions according to the gearbox size (part 4).

The dimensions shown in the table is recommended by us. If you want other dimensions, please contact us for our customized service.

#### 6. Selection of gearbox accessories

Select of lubrication station and shrink disk acc.to the accessories table (part 5).

# 3 Type Selection Guide

## Selection factors

### 3.3 Selection factors

Table 1: Factor for driven machine  $f_1$

Driven machine	Factor for driven machine		
	daily operating period under load in hours		
	≤0.5	> 0.5-10	≥10
Concrete mixer	-	1.5	1.5
Crusher	-	1.2	1.4
Rotary kiln	-	-	2.0
Tube mill	-	-	2.0
Separator	-	1.6	1.6
Roller press	-	-	2.0

Table 2: Factor for driving machine  $f_2$

Electric motor, hydraulic motor, turbine	1.0
Multi-cylinder piston engine	1.25
Single-cylinder piston engine	1.5

Table 3: Peak load factor  $f_3$

Load peaks per hour	1-5	6-30	31-100	> 100
Peak load factor $f_3$	0.7	0.95	1.1	1.25

# Type Selection Guide 3

## Example of gearbox selection

### 3.4 Example of gearbox selection

Known criteria:

Driving machine: Electric Motor

Motor power:  $P_1 = 850 \text{ kW}$

Motor speed:  $n_1 = 990 \text{ rpm}$

Driven machine: Roller press

Power:  $P_2 = 800 \text{ kW}$

Speed:  $n_2 = 19.8 \text{ rpm}$

Operating period: 24 h/day

Requirements:

Selection of gearbox type, Size and accessories

Selection process:

1. Calculation of transmission ratio

$$i_s = \frac{n_1}{n_2} = \frac{990}{19.8} = 50 \quad i_N = 50$$

Select MPGH2 gearbox type according to required transmission ratio

2. Determination of gearbox nominal power rating

$$P_N \geq P_{\text{eff}} = P_2 \times f_1 \times f_2 \times f_3 = 800 \times 2 \times 1 \times 1.25 = 2,000 \text{ kW}$$

3. Determination of gearbox nominal torque

$$T_2 = 9.55 \times \frac{P_N}{n_2} = 9.55 \times \frac{2000}{19.8} = 965 \text{ kNm}$$

4. Selection of gearbox size

Select gearbox size 1100 according to the gearbox size and torque rating table in part 2.3

The gearbox size is MPGH2H1100K50H

5. Checking gearbox outline dimensions

Checking the recommended gearbox outline dimensions according to the gearbox size (part 4)

6. Selection of gearbox accessories

Use the oil bath lubrication as the lubrication method for gearboxes . Select the 125L/min lubrication station and the 560X940

Shrink disk according to the accessories table (part 5)

# 3 Type Selection Guide

Power ratings

## 3.5 Power ratings

MPGH2H...K		100	130	190	250	310	370	430	500	600	730	900	1100	1350	1600	1900	2450	3200	4200	5200	5800	
i <sub>n</sub>	n <sub>1</sub> rpm	n <sub>2</sub> rpm		Rated power P <sub>n</sub> [kW]																		
42	1500	35.7	374	486	711	935	1159	1384	1608	1870	2244	2730	3366	4114	5049	5984	7105	9162	11967	15707	19447	21690
	1000	23.8	249	324	474	623	773	922	1072	1247	1496	1820	2244	2742	3366	3989	4737	6108	7978	10471	12964	14460
	750	17.9	187	243	355	467	580	692	804	935	1122	1365	1683	2057	2524	2992	3553	4581	5984	7853	9723	10845
45	1500	33.3	349	454	663	873	1082	1291	1501	1745	2094	2548	3141	3839	4712	5585	6632	8551	11169	14660	18150	20244
	1000	22.2	233	303	442	582	721	861	1001	1163	1396	1699	2094	2560	3141	3723	4421	5701	7446	9773	12100	13496
	750	16.7	175	227	332	436	541	646	750	873	1047	1274	1571	1920	2356	2792	3316	4276	5585	7330	9075	10122
50	1500	30.0	314	408	597	785	974	1162	1351	1571	1885	2293	2827	3455	4241	5026	5969	7696	10052	13194	16335	18220
	1000	20.0	209	272	398	524	649	775	901	1047	1257	1529	1885	2304	2827	3351	3979	5131	6702	8796	10890	12147
	750	15.0	157	204	298	393	487	581	675	785	942	1147	1414	1728	2120	2513	2984	3848	5026	6597	8168	9110
56	1500	26.8	280	365	533	701	869	1038	1206	1402	1683	2047	2524	3085	3786	4488	5329	6872	8975	11780	14585	16268
	1000	17.9	187	243	355	467	580	692	804	935	1122	1365	1683	2057	2524	2992	3553	4581	5984	7853	9723	10845
	750	13.4	140	182	266	351	435	519	603	701	841	1024	1262	1543	1893	2244	2665	3436	4488	5890	7292	8134
63	1500	23.8	249	324	474	623	773	922	1072	1247	1496	1820	2244	2742	3366	3989	4737	6108	7978	10471	12964	14460
	1000	15.9	166	216	316	416	515	615	715	831	997	1213	1496	1828	2244	2659	3158	4072	5319	6981	8643	9640
	750	11.9	125	162	237	312	386	461	536	623	748	910	1122	1371	1683	1995	2368	3054	3989	5236	6482	7230
71	1500	21.1	221	288	420	553	686	819	951	1106	1327	1615	1991	2433	2987	3540	4203	5420	7079	9291	11504	12831
	1000	14.1	147	192	280	369	457	546	634	737	885	1077	1327	1622	1991	2360	2802	3613	4719	6194	7669	8554
	750	10.6	111	144	210	277	343	409	476	553	664	807	996	1217	1493	1770	2102	2710	3540	4646	5752	6415
80	1500	18.8	196	255	373	491	609	726	844	982	1178	1433	1767	2160	2651	3141	3730	4810	6283	8246	10209	11387
	1000	12.5	131	170	249	327	406	484	563	654	785	955	1178	1440	1767	2094	2487	3207	4188	5497	6806	7592
	750	9.4	98	128	187	245	304	363	422	491	589	717	884	1080	1325	1571	1865	2405	3441	4123	5105	5694
90	1500	16.7	175	227	332	436	541	646	750	873	1047	1274	1571	1920	2356	2792	3316	4276	5585	7330	9075	10122
	1000	11.1	116	151	221	291	361	430	500	582	698	849	1047	1280	1571	1862	2211	2850	3723	4887	6050	6748
	750	8.3	87	113	166	218	271	323	375	436	524	637	785	960	1178	1396	1658	2138	2792	3665	4538	5061
100	1000	10.0	105	136	199	262	325	387	450	524	628	764	942	1152	1414	1675	1990	2565	3351	4398	5445	6073
	750	7.5	79	102	149	196	243	291	338	393	471	573	707	864	1060	1257	1492	1924	2513	3298	4084	4555
112	1500	13.4	140	182	266	351	435	519	603	701	841	1024	1262	1543	1893	2244	2665	3436	4488	5890	7292	8134
	1000	8.9	93	122	178	234	290	346	402	467	561	682	841	1028	1262	1496	1776	2291	2927	4862	5423	
	750	6.7	70	91	133	175	217	259	302	351	421	512	631	771	947	1122	1332	1718	2244	2945	3646	4067
125	1500	12.0	126	163	239	314	390	465	540	628	754	917	1131	1382	1696	2010	2387	3079	4021	5277	6534	7288
	1000	8.0	84	109	159	209	310	360	419	503	612	754	921	1131	1340	1592	2052	2681	3518	4356	4859	
	750	6.0	63	82	119	157	195	232	270	314	377	459	565	691	848	1005	1194	1539	2010	2639	3267	3644

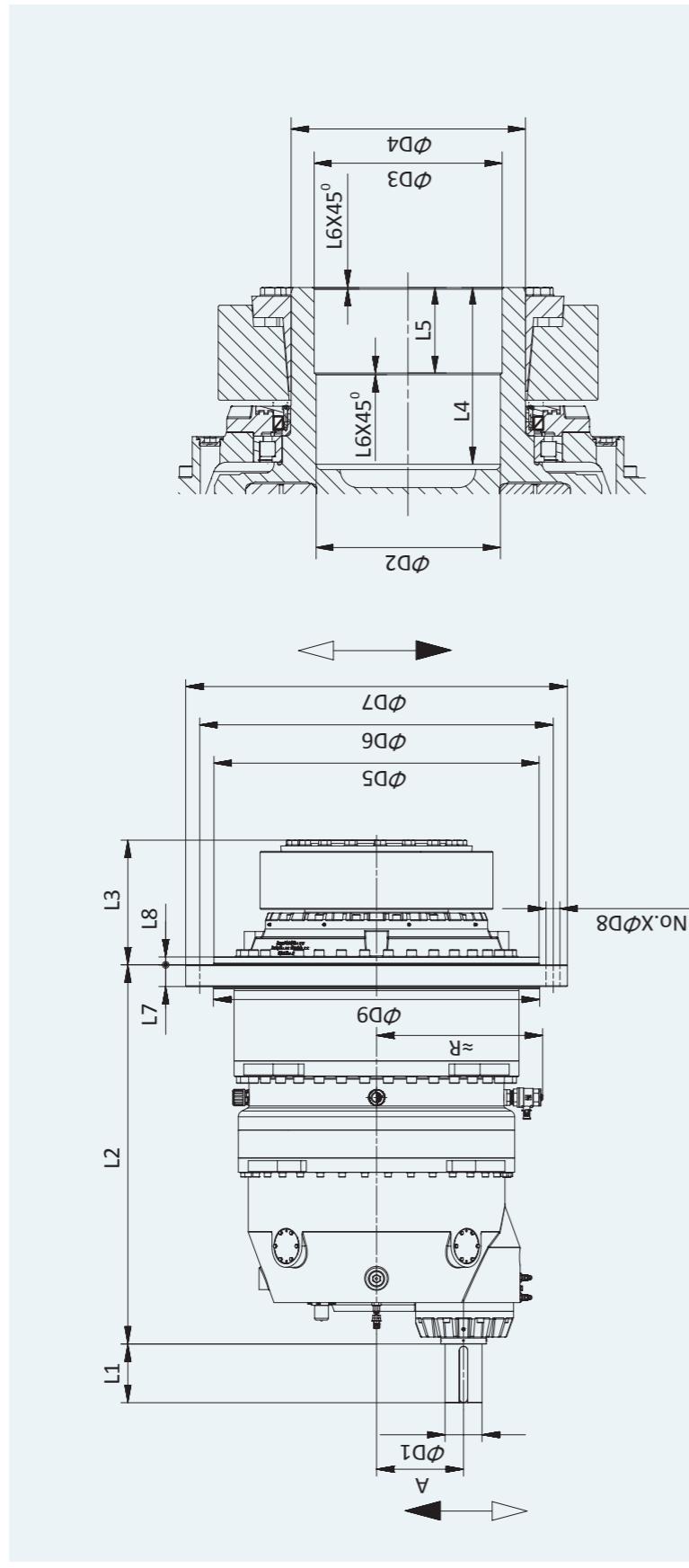
-Further sizes on request

i<sub>n</sub>	MPGC2H...K...H		Rated power P<sub>n</sub> [kW]																		
n<sub>1</sub> rpm	n<sub>2</sub> rpm	100	130	190	250	310	370	430	500	600	730	900	1100	1350	1600	1900	2450				


</tbl

## 4.1 MPGH2 Dimensions

MPGH2H...K...H



Descriptions:

- 1 ) Parallel key and keyway acc. to DIN6885/1    2 ) L5 dimension excludes the inner chamfer dimension  
with tolerance n6    4) The input and output direction of rotation are opposite

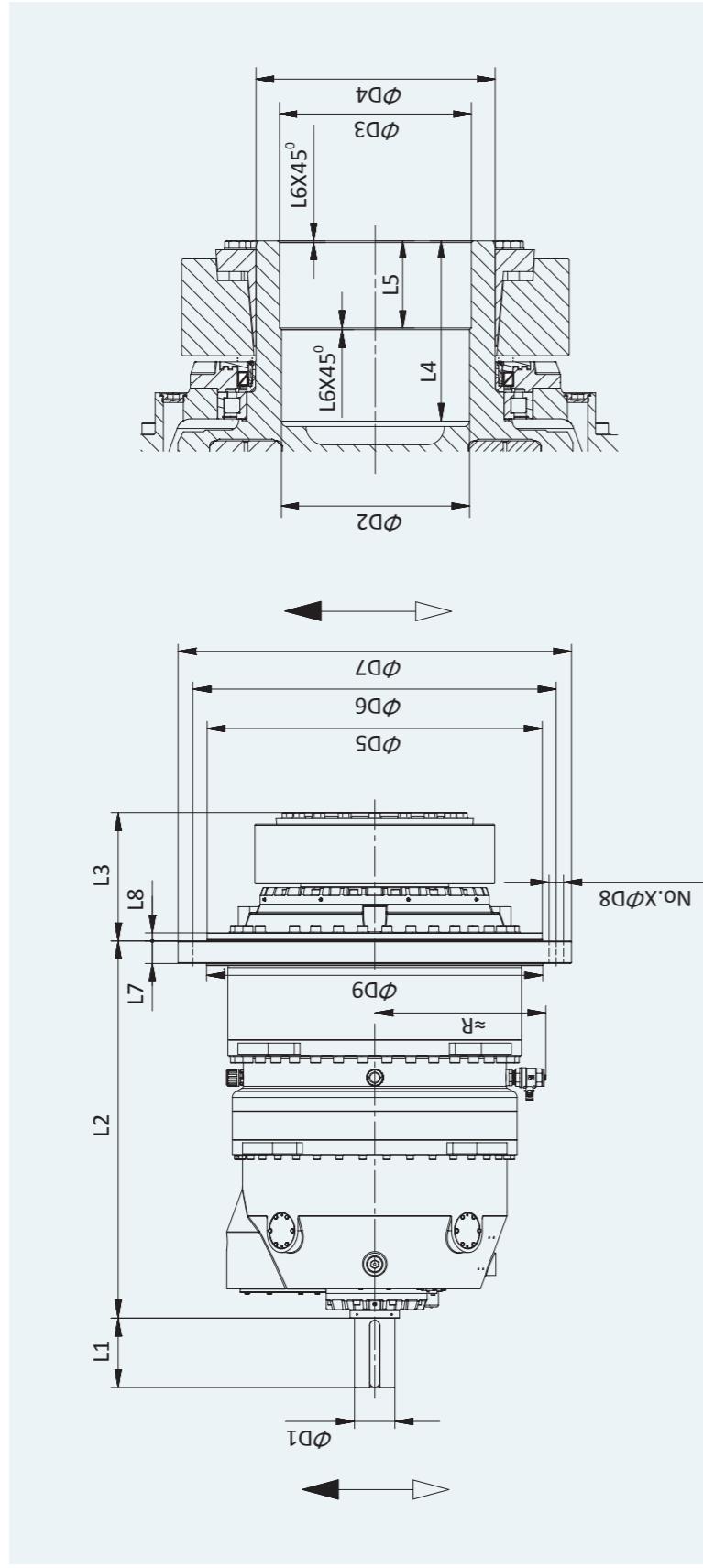
3) Shaft diameter D1≤100 with tolerance m6, Shaft diameter D1 &gt; 100

MPGH2H ...K...H	A mm	L <sub>1</sub> mm	L <sub>2</sub> mm	L <sub>3</sub> mm	L <sub>4</sub> mm	L <sub>5</sub> mm	L <sub>6</sub> mm	L <sub>7</sub> mm	L <sub>8</sub> mm	D <sub>1</sub> mm	D <sub>2</sub> H7 mm	D <sub>3</sub> H7 mm	D <sub>4</sub> f7 mm	D <sub>5</sub> h7 mm	D <sub>6</sub> mm	D <sub>7</sub> mm	D <sub>8</sub> mm	No.	R mm	Oil volume ≈ L	
100	100	140	120	714	241	200	95	2.5	39	9	70	175	180	240	535	595	645	26	368	26	
130	130	140	120	737	278	220	105	2.5	42	9	70	205	210	260	610	665	720	26	595	32	380
190	190	170	140	877	294	250	120	2.5	50	10	80	245	250	320	750	830	895	33	762	24	446
250	250	200	160	1006	303	250	120	2.5	50	10	90	255	260	340	785	865	930	33	797	32	452
310	310	200	160	1029.5	327.5	280	135	2.5	56	12	90	275	280	360	840	915	980	33	839	36	494
370	370	200	160	1029.5	327.5	280	135	2.5	56	12	90	295	300	390	840	915	980	33	839	36	512
430	430	230	180	1076	354	314	152	2.5	62	24	100	325	330	420	935	1025	1115	39	939	32	556
500	500	265	210	1175	380	338	164	2.5	68	28	120	345	350	440	1025	1120	1210	39	1034	36	578
600	600	265	210	1175	380	338	164	2.5	68	28	120	355	360	460	1025	1120	1210	39	1050	36	633
730	730	300	210	1291	407	370	180	2.5	74	29	130	395	400	500	1115	1220	1320	45	1120	36	645.5
900	900	320	240	1429	453	403	191	2.5	81	31	140	445	450	560	1215	1345	1460	52	1230	32	665
1100	1100	360	240	1507	483	435	197.5	5	87	34	150	450	460	560	1320	1450	1565	52	1330	36	700
1350	1350	360	240	1662	623	485	234	5	87	33	150	500	510	620	1475	1585	1705	62	1440	36	740
1600	1600	400	270	1662	538	474	240	5	87	33	160	500	510	620	1495	1635	1755	62	1500	36	765
1900	1900	400	270	1743	573	514	242	5	100	36	170	560	570	700	1495	1635	1755	62	1510	36	815
2450	2450	442	310	1960	656	564	272	5	112	40	180	590	600	750	1685	1825	1945	62	1680	40	888
3200	3200	475	310	2010	680	580	350	5	112	40	190	640	650	800	1835	1970	2090	62	1860	40	930
4200	4200	510	330	2300	800	670	335	5	150	45	200	770	780	1000	2060	2260	2400	82	2060	40	1010
5200	5200	580	350	2379	807	700	350	5	110	50	220	820	830	1100	2190	2355	2490	82	2190	40	1090
5800	5800	580	350	2420	832	710	355	5	120	50	220	840	850	1140	2335	2510	2645	82	2335	40	1200
																				1300	

Further sizes on request

## 4.2 MPGC2 Dimensions

MPGC2H...K...H



Descriptions:

- 1) Parallel key and keyway acc. to DIN6885/1  
2) L5 dimension excludes the inner chamfer dimension  
with tolerance n6  
3) Shaft diameter D1≤100 with tolerance m6,Shaft diameter D1 > 100  
4) The input and output direction of rotation are the same

MPGC2H ...K...H	$T_{2N}$ kNm	L <sub>1</sub> mm	L <sub>2</sub> mm	L <sub>3</sub> mm	L <sub>4</sub> mm	L <sub>5</sub> mm	L <sub>6</sub> mm	L <sub>7</sub> mm	L <sub>8</sub> mm	D <sub>1</sub> mm	D <sub>2</sub> H7 mm	D <sub>3</sub> H7 mm	D <sub>4</sub> f7 mm	D <sub>5</sub> h7 mm	D <sub>6</sub> mm	D <sub>7</sub> mm	D <sub>8</sub> mm	No.	R mm	oil vol- ume ≈ L	
100	100	140	714	241	200	95	2.5	39	9	80	175	180	240	535	595	645	26	540	24	368	24
130	130	140	737	278	220	105	2.5	42	9	80	205	210	260	610	665	720	26	595	32	380	28
190	190	160	877	294	250	120	2.5	50	10	95	245	250	320	750	830	895	33	762	24	446	47
250	250	180	1006	303	250	120	2.5	50	10	110	255	260	340	785	865	930	33	797	32	452	55
310	310	180	1029.5	327.5	280	135	2.5	56	12	110	275	280	360	840	915	980	33	839	36	494	80
370	370	180	1029.5	327.5	280	135	2.5	56	12	110	295	300	390	840	915	980	33	839	36	512	80
430	430	210	1046	354	314	152	2.5	62	24	120	325	330	420	935	1025	1115	39	939	32	556	104
500	500	210	1150	380	338	164	2.5	68	28	130	345	350	440	1025	1120	1210	39	1034	36	578	128
600	600	210	1150	380	338	164	2.5	68	28	130	355	360	460	1025	1120	1210	39	1050	36	633	170
730	730	240	1241	407	370	180	2.5	74	29	140	395	400	500	1115	1220	1320	45	1120	36	645.5	170
900	900	240	1379	453	403	191	2.5	81	31	150	445	450	560	1215	1345	1460	52	1230	32	665	250
1100	1100	270	1457	483	435	197.5	5	87	34	160	450	460	560	1320	1450	1565	52	1330	36	700	265
1350	1350	270	1607	538	479	232	5	94	36	170	500	510	620	1400	1545	1665	62	1416	32	740	360
1600	1600	310	1683	573	499	242	5	100	36	180	500	510	620	1495	1635	1755	62	1500	36	765	390
1900	1900	310	1683	573	514	242	5	100	36	180	560	570	700	1495	1635	1755	62	1510	36	815	450
2450	2450	310	1899	656	564	272	5	112	40	190	590	600	750	1685	1825	1945	62	1680	40	888	560

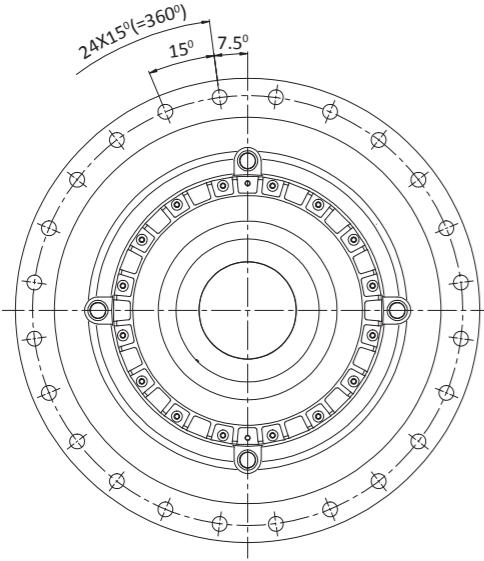
-Further sizes on request

# 4 Dimensions

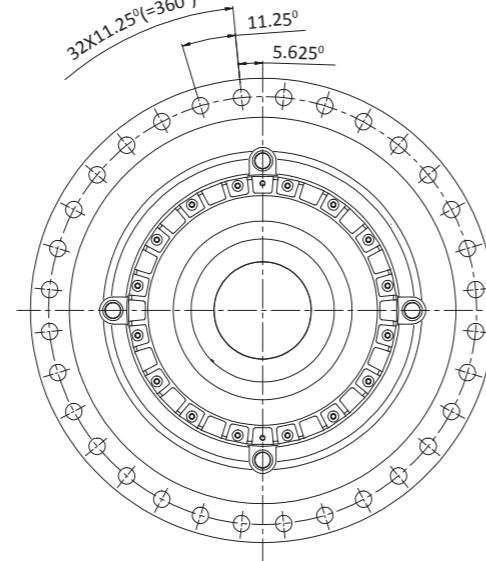
Bolt hole patterns of output flange

## 4.3 Bolt hole patterns of output flange

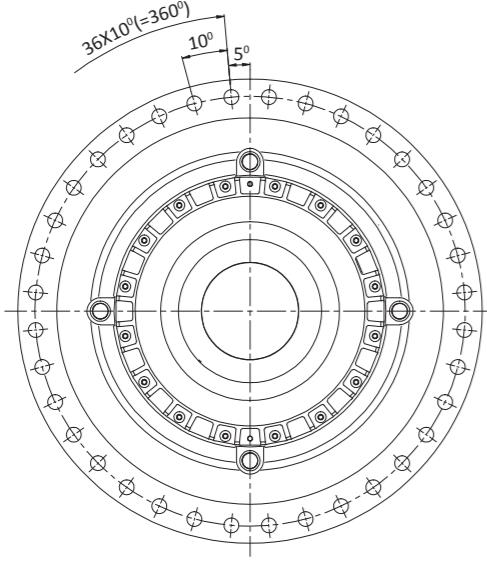
Viewing from output shaft side



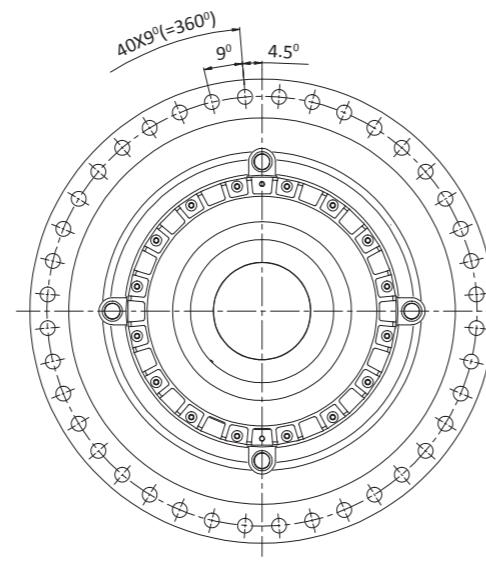
Size: 100,190



Size: 130,250,430,900,1350



Size: 310,370,500,600,  
730,1100,1600,1900



Size: 2450, 3200, 4200, 5200, 5800

# Accessories 5

Accessories

## 5.1. Accessories

MPGH2 / MPG2 Gearbox Size	Shrink disks Inner diameter X Outer diameter (mm)	Lubrication station Nominal flow rate (L/min)
100	240 X 405	25
130	280 X 460	25
190	320 X 520	25
250	340 X 570	40
310	360 X 590	40
370	380 X 640	63
430	420 X 670	63
500	440 X 720	63
600	460 X 770	100
730	500 X 850	100
900	560 X 940	125
1100	560 X 940	125
1350	620 X 980	160
1600	620 X 1020	160
1900	700 X 1140	200
2450	750 X 1150	250
3200	800 X 1370	350
4200	1000 X 1590	400
5200	1100 X 1730	500
5800	1140 X 1730	600