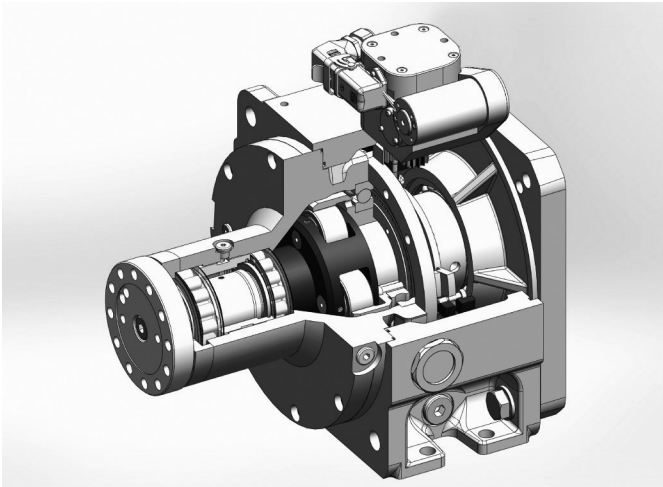


GTP2G Two - Speed Gearbox

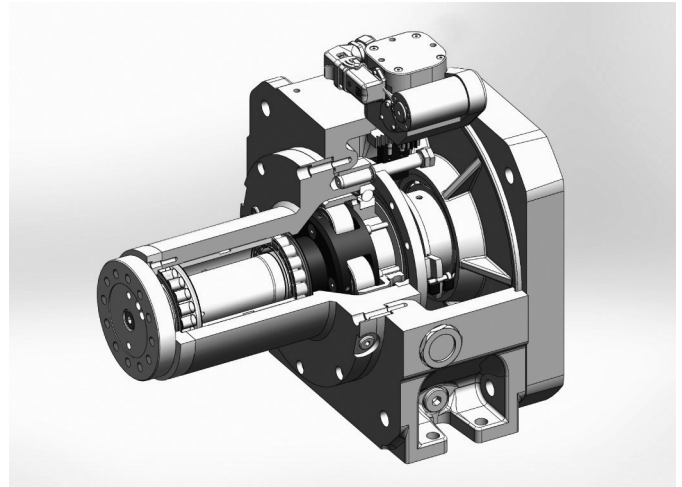


**Warranty after
commissioning**

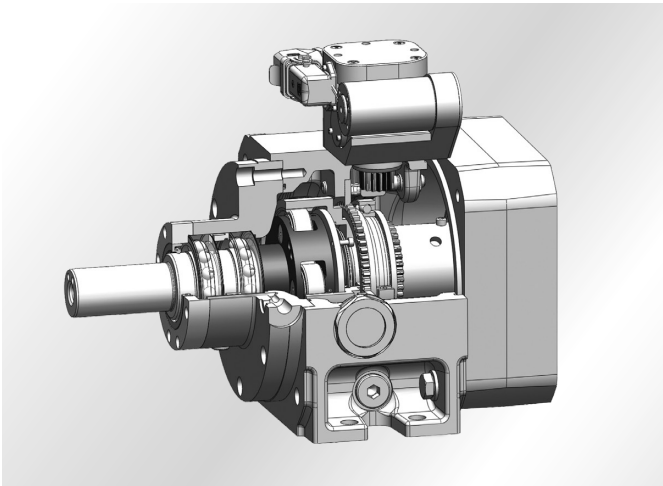
GTP-2G



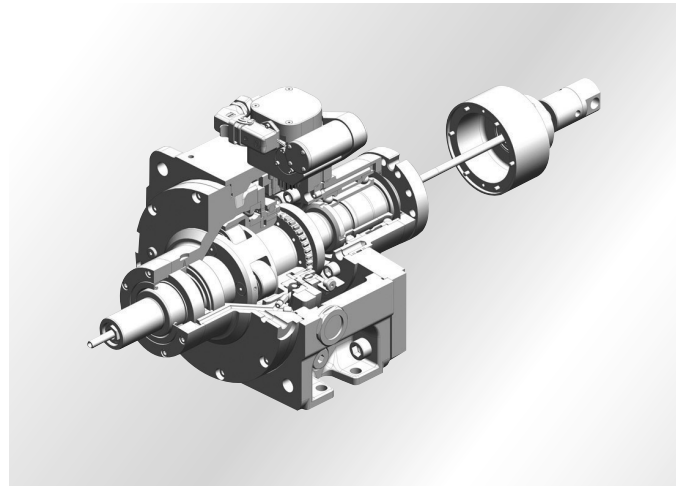
Standard Flange Output



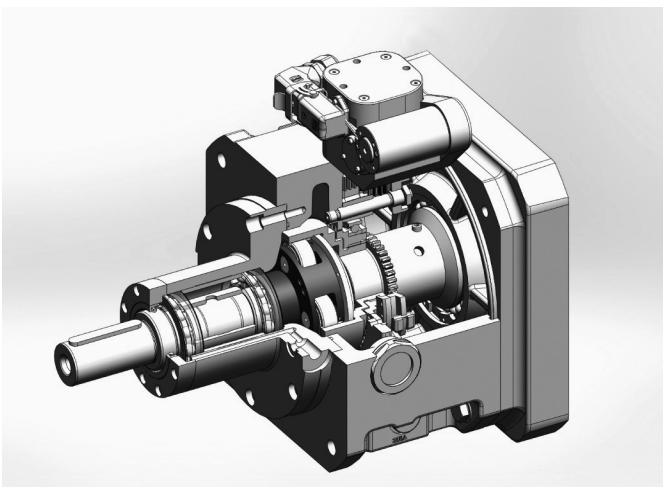
Long-type Standard Flange Output



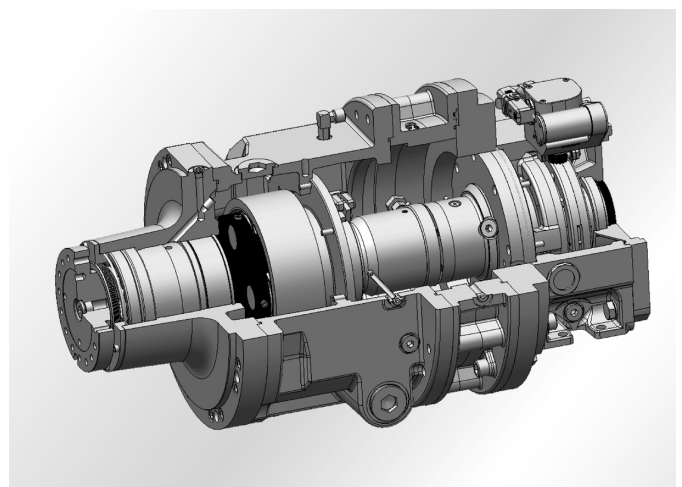
Inline Output



Flange Input with CTS



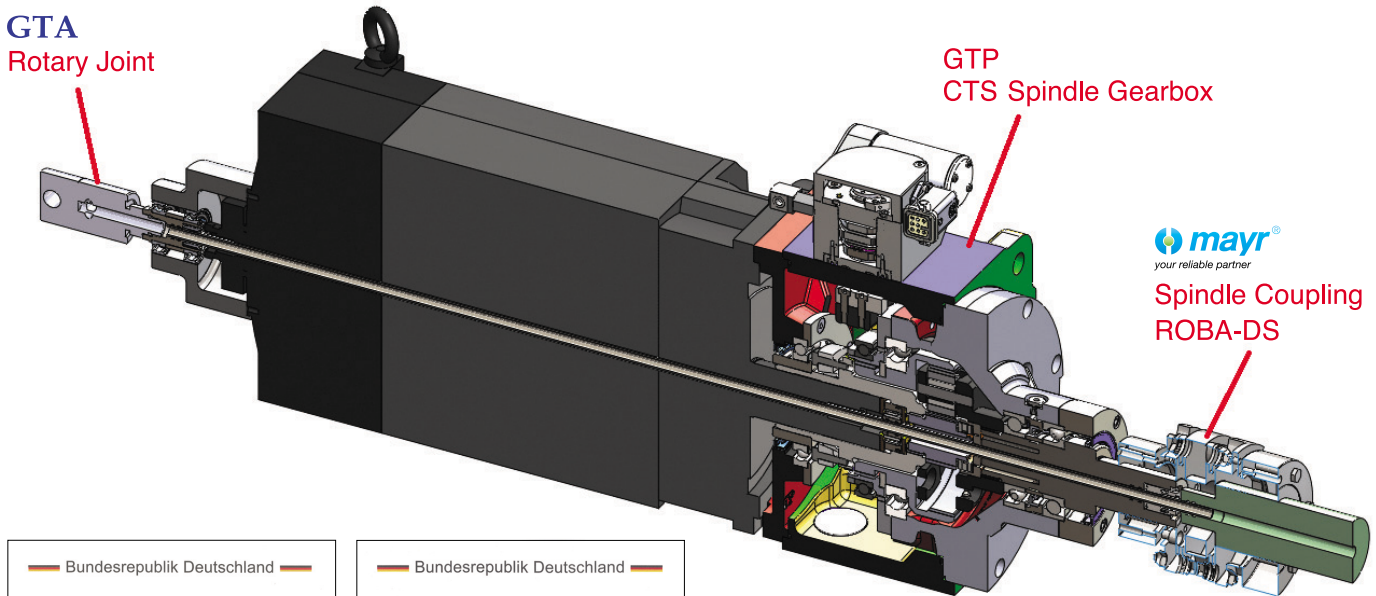
Gear Output



Special Combination Design

GTP-2G

CTS (Coolant Through Spindle)



Low thermo increase



Low vibration

German Patent

Application, Benefits, Design	3–4
Modular design	5–6
Technical data	7–8
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Motor output shaft	10–11
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Innovative Technology, Great Value

Our development and production are focused on high precision and high productivity.

Our innovative product is a high precision two-speed gearbox (GTP-2G) for machine tools as well as customer specific applications.

GTP-2G Design

Application

GTP-2G Two-speed gearboxes are mainly used in machine tool main-spindle drives, test benches, and applications which high torque is needed.

The gearbox can be used in turning machines and machining centers thanks to its variable installation position. The gearbox is also suitable for many systems where torque increases and/or speed reduction is needed.

Benefits

- Energy saving : with a precise reduction mechanism and high efficiency, decreasing or extending the input speed of the motor to achieve machining requirements and save energy.
- Wide machining range : a wide output speed, increasing the flexibilities of machine tools with no influence on machining precision.
- Increase machining torque : effectively extends the output power and increases the output torque of the motor.
- Wide range of machining materials : low output speed and high output torque for hard materials, and high output speed for soft materials.
- High efficiency : a compact design of helical gearing provides better efficiency than spur gearing with the lowest noise and optimized space.
- Modular design : with different adapter designs suitable for different brands of motors.

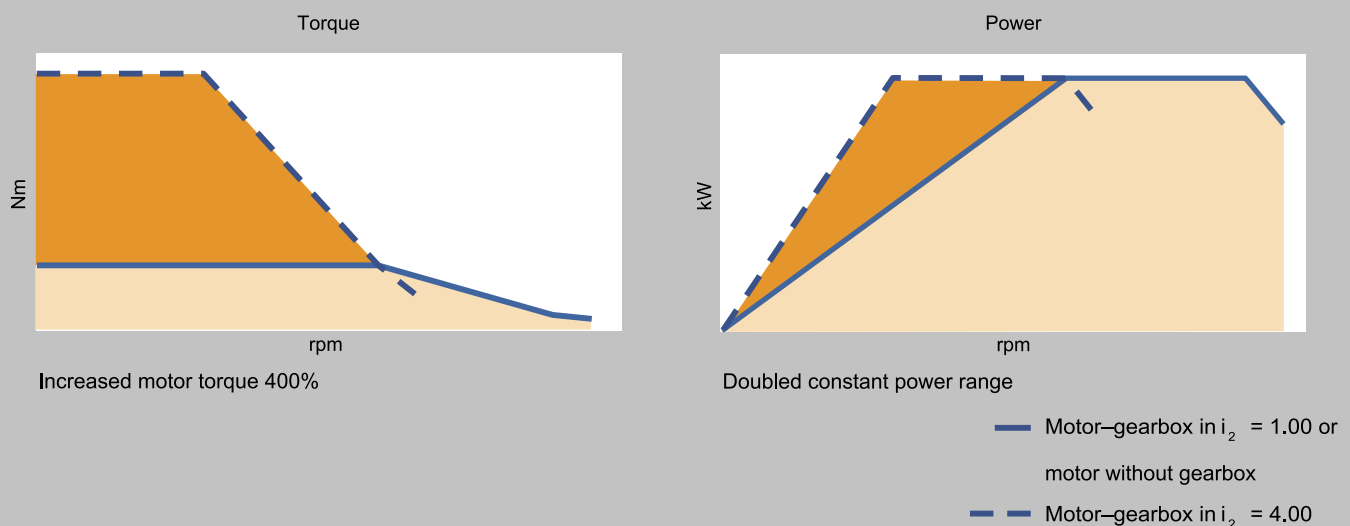
GTP-2G Standard

Wide bearing base for good high radial force

Torque–Power curve

Speed ranges 1:4/1:5.5 are available, constant power to the main spindle can be achieved from the gearbox, depending on the controllable range of the motor. This provides high torque at low speed and high power at high speed allowing the cutting power of modern tools to be fully utilized.

Torque–Power Curve– e. g. **GTP-2G-250**



GTP-2G Design



Design

GTP-2G is an innovative two-speed gearbox for machine tools, characterized by extremely low noise and vibration, as well as an excellent shifting mechanism. The German Engineered GTP-2G is designed and developed by GTP's R&D center located in Germany, based on state-of-the-art technology and abundant experience in the machine tool industry.

GTP-2G adopts a single stage planetary gear concept with a two-speed shifting mechanism in order to meet various demands from worldwide machine tool industries.

In contrast to conventional spur gearboxes, this planetary gearbox is captivating by benefit of the division of power to four planetary gears, thus achieving an extremely compact and space-saving design.

In addition, the four simultaneously meshing helical planetary gears assure low-noise operation at high speed.

Misalignments and concentricity issues are ideally concentrated by the floating design of the sun gear. Such a planetary gearbox is much less sensitive to tolerance.

The motor-gearbox unit is commonly fixed to the machine frame or bed by using the gearbox foot mounting (Available for 2G120, 2G250, 2G300, 2G600 only).

Each gearbox has an output side pilot for flange mounts available.

For each application there is an ideal choice of output bearing with a wide bearing base.

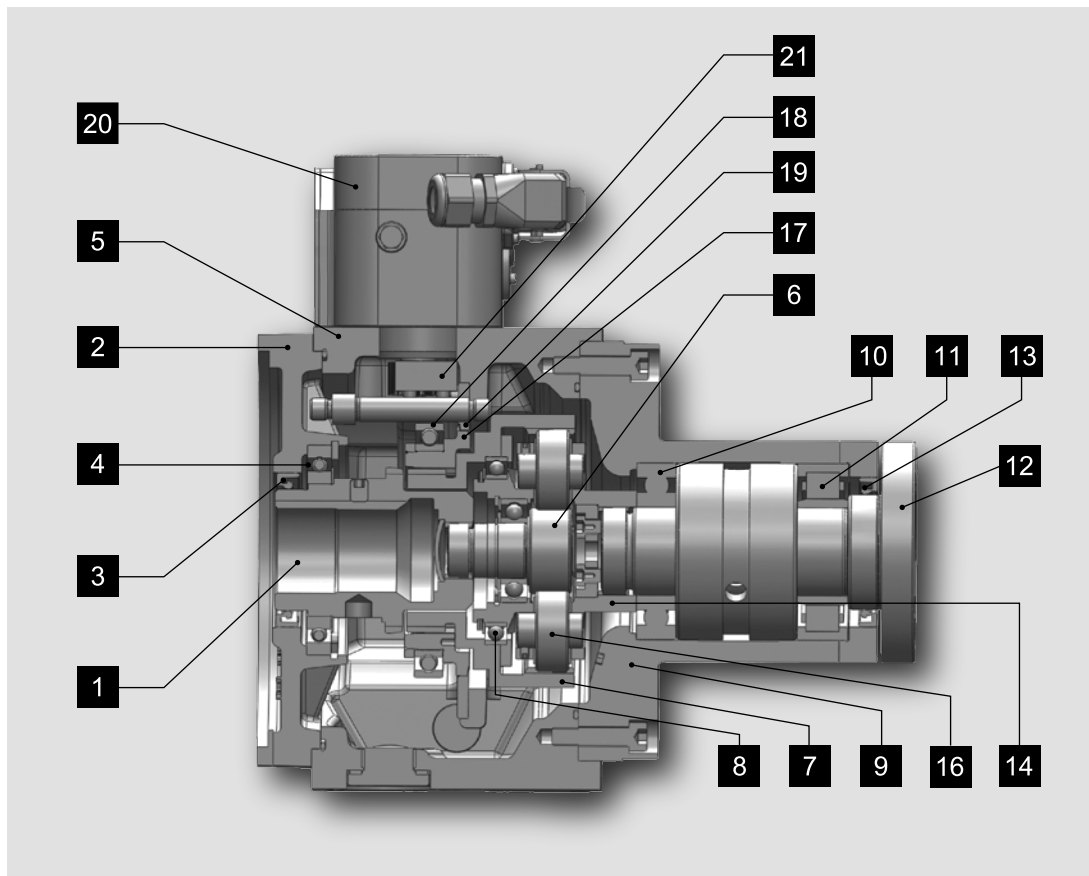
Variable output housings suitable for different main spindle design :
e.g. GTP-2G STANDARD with a wide bearing base for belt drives,
allowing high radial load; GTP-2G INLINE with a short output housing
and angular contact bearings for direct drive.

Machining Center

GTP-2G INLINE

Short output housing for direct mounting to spindle.

GTP-2G120/121 Standard



Main components of gearbox :

Adapter parts :

- 1: Drive hub
- 2: Adapter plate
- 3: Shaft seal
- 4: Hub bearing

Housing :

- 5: Gearbox housing

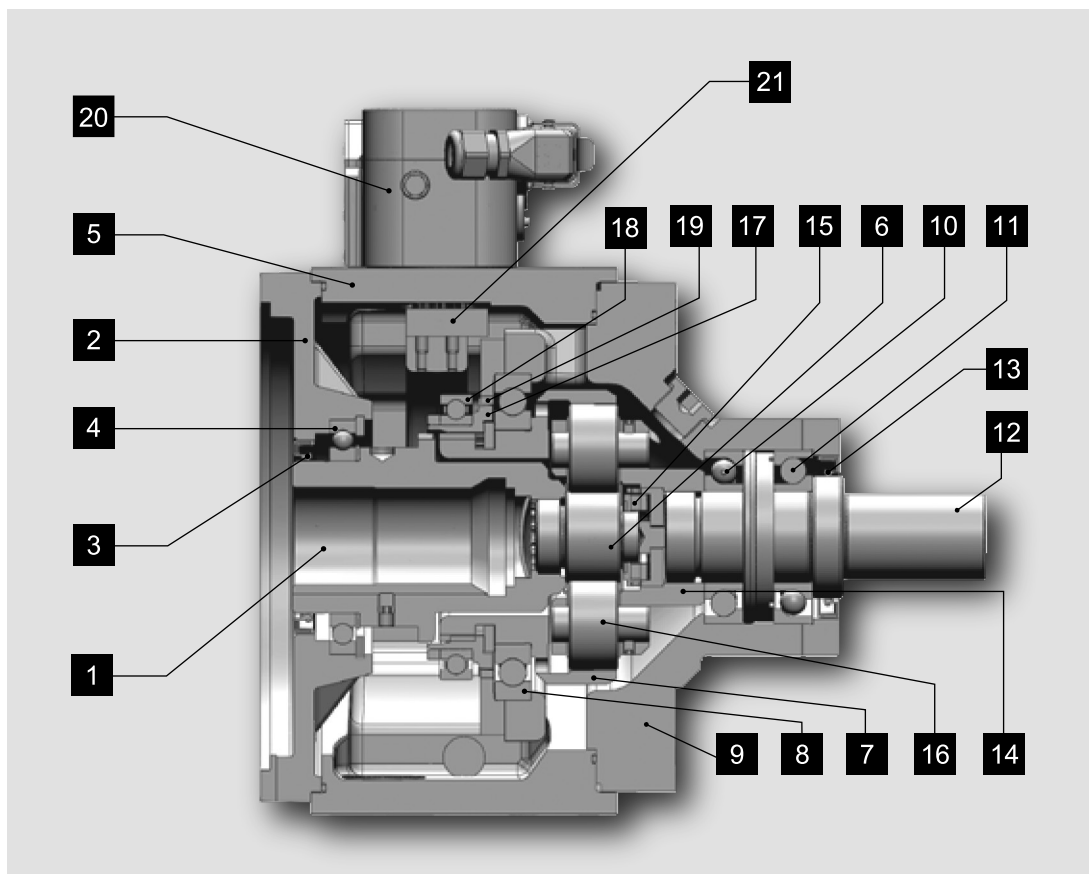
Input :

- 6: Sun gear
- 7: Ring gear
- 8: Ring gear bearing

Output :

- 9: Output housing
- 10: Output bearing
- 11: Output bearing
- 12: Output shaft
- 13: Shaft seal
- 14: Planetary carrier
- 15: Axial bearing with cup spring
- 16: Planetary gear

GTP-2G250/300 INLINE



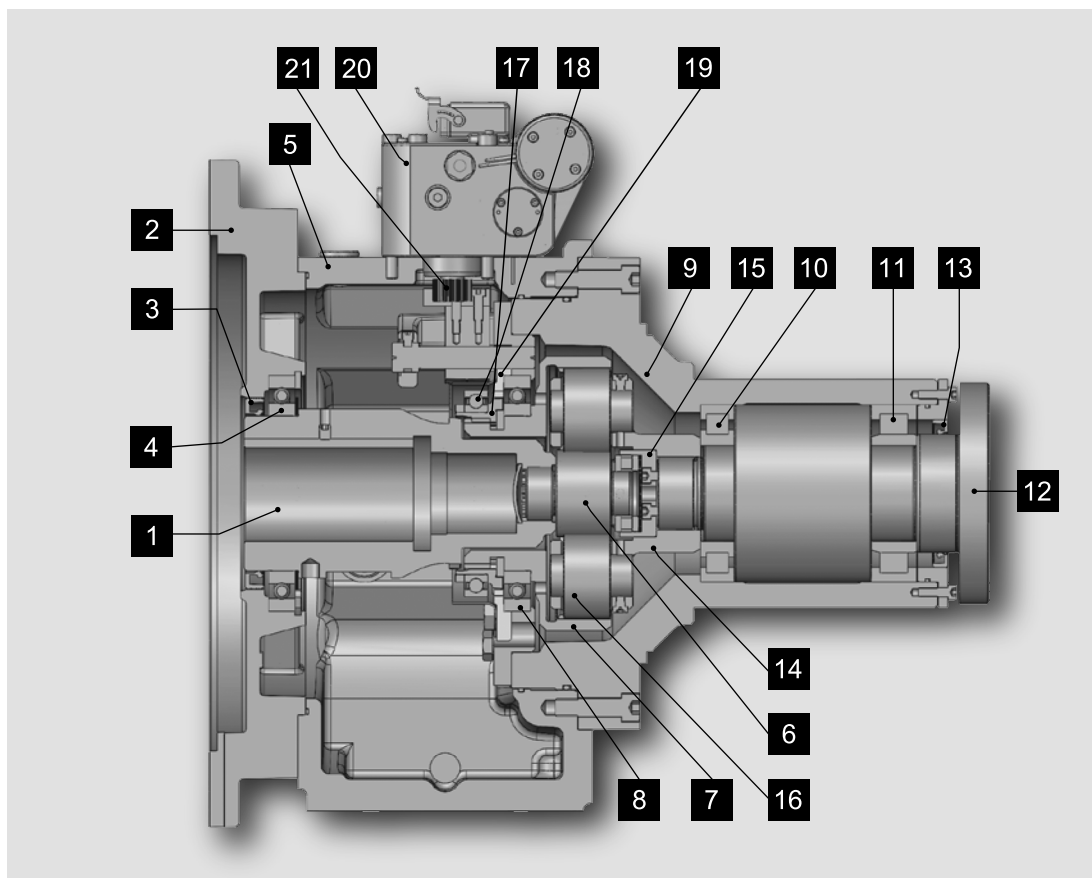
Gear shifting unit :

- 17: Sliding sleeve
- 18: Sliding sleeve bearing
- 19: Brake disc

Gear shifting unit :

- 20: Shifting unit
- 21: Rack/pinion

GTP-2G600 Standard



Main components of gearbox :

Adapter parts :

- 1: Drive hub
- 2: Adapter plate
- 3: Shaft seal
- 4: Hub bearing

Housing :

- 5: Gearbox housing

Input :

- 6: Sun gear
- 7: Ring gear
- 8: Ring gear bearing

Output :

- 9: Output housing
- 10: Output bearing
- 11: Output bearing
- 12: Output shaft
- 13: Shaft seal
- 14: Planetary carrier
- 15: Axial bearing with cup spring
- 16: Planetary gear

Gear shifting unit :

- 17: Sliding sleeve
- 18: Sliding sleeve bearing
- 19: Brake disc

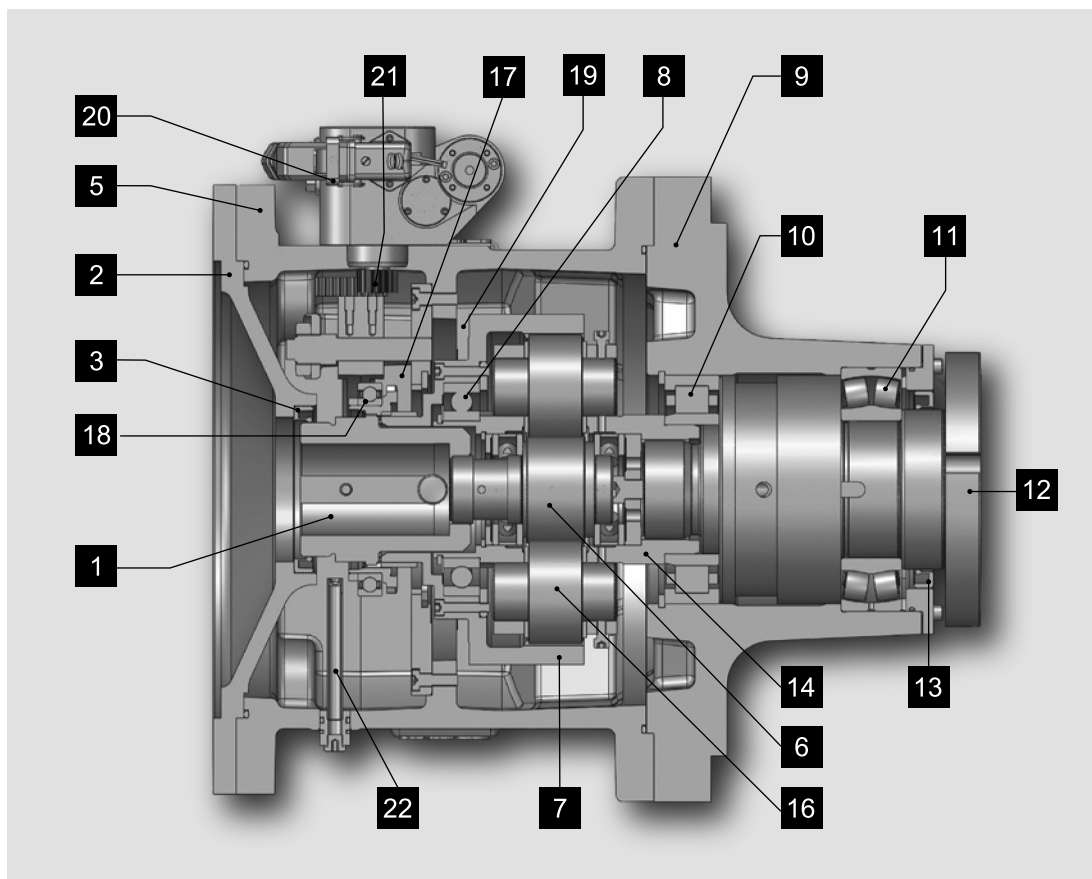
Gear shifting unit :

- 20: Shifting unit
- 21: Rack/pinion

Lubrication :

- 22: Oil inlet pipe

GTP-2G800 Standard



Technical Data

		Ratio	2G120 2G121	2G250	2G300	2G600
Nominal data :						
Motor frame size	(mm)		100/112	132	160	180
Nominal power	(KW)		19	39	47	63
Nominal speed	(min ⁻¹)		1500	1500	1500	1000
Nominal input torque (continuous operation S1)	(Nm)		120	250	300/250*	600
Output torque	(Nm)	1.00	120	250	300	600
	(Nm)	4.00	480	1000	1200	2400
	(Nm)	4.91	589			
	(Nm)	5.00				3000
	(Nm)	5.50		1375	1375	
Maximum data :						
Max. Torque in Nm (intermittent loading S6 cycle duration 10 min, ED, max. 60%)						
Input	(Nm)		140	400	400	840
Output (max. accelerating torque)	(Nm)	1.00	140	400	400	840
	(Nm)	4.00	560	1600	1600	3360
	(Nm)	4.91	687			
	(Nm)	5.00				4200
	(Nm)	5.50		2200	2200	
Max. permitted input speed	(min ⁻¹)					
In reduction ratio i≠1	(min ⁻¹)	≠1 ¹⁾	8000	6300	6300	5000
Direct drive i = 1	(min ⁻¹)	1 ¹⁾	12000 ³⁾	10000 ^{3) 2)}	10000 ^{3) 2)}	5000
Max. vibration value	(mm/s)	≤	1.0	1.0	1.0	1.5
At reference speed	(min ⁻¹)		6000	5000	5000	4000
Max. axial force in reduction ratio	(N)	4.00		3964	4756	7253
In counter clockwise (ccw) operation	(N)	4.91				
running and max. input torque	(N)	5.00				9519
see permissible axial force for motor shaft	(N)	5.50		5288	5288	
Mass moment of inertia ¹⁾	(J in kgcm ²)	1.00	110	270	270	
Output		4.00	144	570	570	
Input			9	36	36	
Operating data :						
Oil fill volume in dm ³	Horizontal (B5)		1.0/1.4	1.5	2.7	5.0
Approx oil fill in dm ³ oil level in middle of oil sight glass is most accurate reading	Vertical (V1/V3)		Recirculating lubrication HLP 68 as per ISO VG 68 HLP 46 as per ISO VG 46 HLP 32 as per ISO VG 32 HLP 22 as per ISO VG 22 for V1 and V3 installation position oil recirculating system is necessary Every six months or 2000 working hours Max.120°C, depending on application, installation position, lubrication and cooling condition			
Oil level						
Splash lubrication						
Recirculating lubrication						
Recirculating lubrication with heat exchanger						
Recirculating lubrication with CLS						
Oil change interval						
Oil temperature						
Weight :						
Standard	(approx.kg)					
Electrical Connection :						
For shifting unit						
Power consumption	W		120	120	120	120
Supply voltage (at shift unit)	V		24 ± 10%	24 ± 10%	24 ± 10%	24 ± 10%
Current supply at 24V	A		5	5	5	5

Customer can define bearing load and lifetime. See installation drawings or page 13 for bearing data.

1) Admissible with oil cooler, otherwise n_{max} for reduction ratio.

2) Max. speed only permitted with oil connection at port K or port L.

3) Max. speed only permitted with integrated oil channel versions.

Please make sure the pressure and volume of oil according operating instruction.

* i=5.5: reduced input torque.

Technical Data

		Ratio	2G800 2G801/2G802
Nominal data :			Standard
Motor frame size	(mm)		180/200/225
Nominal power	(KW)		84
Nominal speed	(min ⁻¹)		1000
Nominal input speed (continuous operation S1)	(Nm)		800
Output torque	(Nm)	1.00	800
	(Nm)	4.00	3200
	(Nm)	5.20	4160
Maximum data :			
Max. Torque in Nm (intermittent loading S6 cycle duration 10 min, ED. max. 60%)			
Input	(Nm)		900
Output (max. accelerating torque)	(Nm)	1.00	900
	(Nm)	4.00	3600
	(Nm)	5.20	4680
Max. permitted input speed	(min ⁻¹)		
In reduction ratio i≠1	(min ⁻¹)	≠1	5000
For direct drive i= 1 ¹⁾	(min ⁻¹)	1 ¹⁾	5000
Max. vibration value	(mm/s)		2.0
At reference speed	(min ⁻¹)		4000
Max. axial force in reduction ratio	(N)		
Max. axial force in reduction ratio in counter clockwise (ccw) operation running and max. input torque see permissible axial force for motor shaft	(N)	4.00	
Mass moment of inertia	(J in kgcm ²)	1.00	1956
Output		4.00	1766
		5.20	
Input			110
Operating data :			
Oil fill volume in dm ³	Horizontal (B5)		
Approx oil fill in dm ³ oil level in middle of oil sight glass is most accurate reading	Vertical (V1/V3)		
Oil level			
Splash lubrication			
Recirculating lubrication			
Recirculating lubrication with heat exchanger			
Recirculating lubrication with CLS			
Oil change interval			
Oil temperature			
Weight :	(approx.kg)		180
Standard			
Electrical connection for shifting unit:			
Power consumption	W		120
Supply voltage (at shift unit)	V		24 ± 10%
Current supply at 24V	A		5

Recirculating lubrication

HLP 68 as per ISO VG 68
HLP 46 as per ISO VG 46
HLP 32 as per ISO VG 32
HLP 22 as per ISO VG 22

for V1 and V3 installation position oil recirculating system is necessary

Every six months or 2000 working hours

Max.120°C, depending on application, installation position, lubrication and cooling

Customer can define bearing load and lifetime. See installation drawings or page 13 for bearing data.

1) Admissible with oil cooler, otherwise n_{max.} for reduction ratio.

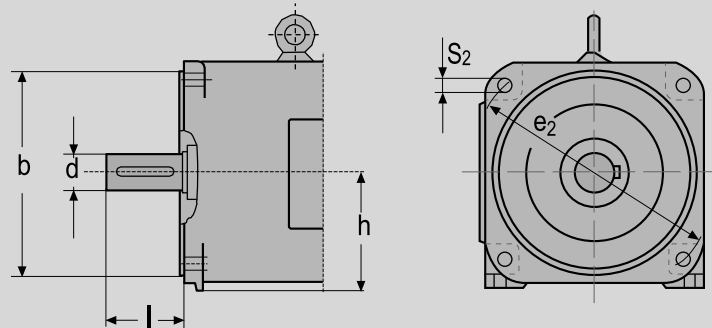
Standard Motor connection Dimensions

Gearbox sizes :

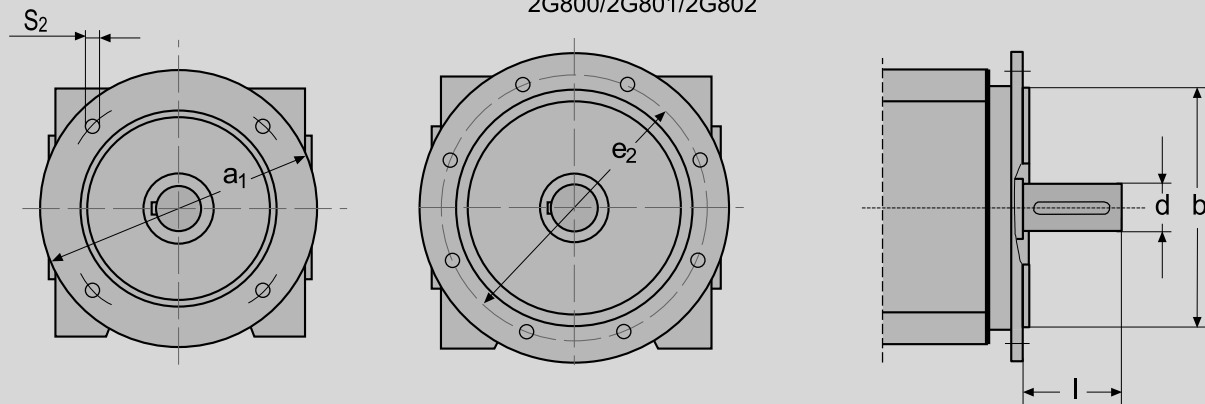
	2G120	2G121	2G250	2G300	2G600	2G801	2G802
Motor frame size	100	112	132	160/180	160/180/200	200	225
Standard motor connection dimensions	EN 50347: 2001						
h	100	112	132	160/180	160/180/200	200	225
d	32/38/48	42/48	42/48/55/60	55/60	60/65/75/80	65/75/80	75/80
l	80 ± 0.1	110 ± 0.1	110 - 0.2 140 - 0.2	110 - 0.2 140 - 0.2	140 - 0.2 170 ± 0.2	140 - 0.2 170 ± 0.2	140 ± 0.2
b	180	230/250	230/250/300	300	300/350	350	450
e ₂	215	265	300/350	350/400	400	400	500
a ₁	-	-	-	-	450	450	550
S ₂	14	15	18	18	18	19	19

All the dimensions are in mm.

2G120/2G121/2G250/2G300/2G600



2G800/2G801/2G802



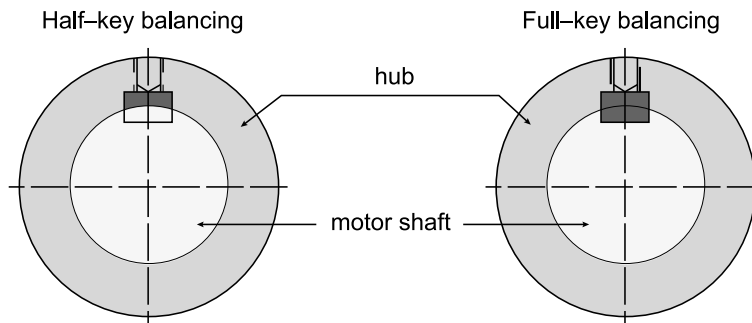
Motor output shaft with standard key

Gearbox sizes GTP-2G	Shaft diameter [mm]	Key	Key length
2G120/121	38	10x8	70
	32	10x8	70
	42	12x8	90
	48	14x9	90
2G250	42	12x8	90
	48	14x9	90
	55	16x10	90
2G300	60	18x11	110
	55	16x10	90
	48	14x9	90
	42	12x8	90
2G600	60	18x11	110
	55	16x10	90
	60	18x11	125
	65	18x11	125
	70	18x11	125
2G800	75	20x12	125
	80	22x14	150
	60/65	18x11	125
2G801	75	20x12	125
2G802	80	22x14	150

See DIN ISO 8821

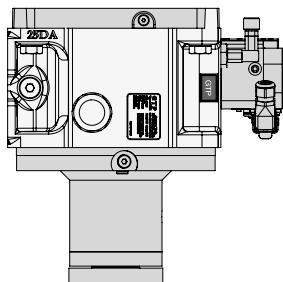
For Siemens motors, only full-key balanced motorshaft can be used.

Smooth motor shaft application on request.

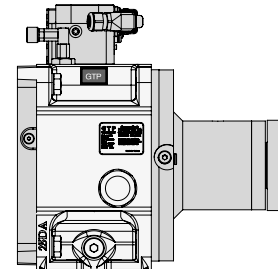
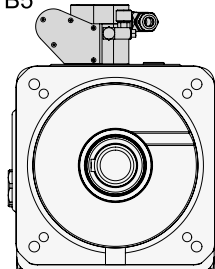


Installation positions

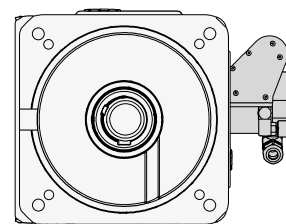
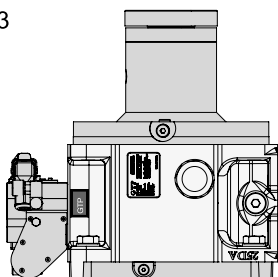
Vertical V1



Horizontal B5



Vertical V3



Horizontal B5
Shift unit on right side
(view from input)

Gearbox rotated along
longitudinal axis
(for 2G120/2G121
2G250/2G300/2G600)

Output / Motor interface

Gearbox sizes :

GTP-2G	2G120	2G121	2G250	2G300	2G600	2G800	2G801	2G802
Gearbox output								
Ø 100	+	+						
Ø 118			+	0				
Ø 130			0	+				
Ø 140					0			
Ø 150					0			
Ø 38	0	0						
Ø 42			0	0				
Ø 55			0	0				
Ø 60					0			
Ø 65					0	0	0	0
Ø 90								
Ø 180						+	+	+
Ø without output						0	0	0
Ø 38 INLINE	0	0						
Ø 42 INLINE			0	0				

+ = Standard

0 = Option

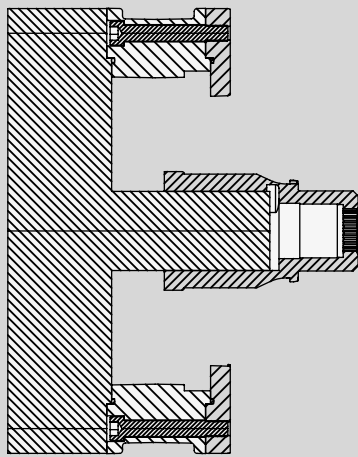
There are three choices of different output variants. The standard long bearing base output flange version is used for belt drives, allowing high cantilever forces. For 2G250/2G300/2G800, an extended output version is optional for even higher belt forces. Further options include short output housings, such as **GTP-2G** INLINE, for space saving direct drives. This version is supplied as a standard with angular contact bearings.

There are two types of balancing : half-key and full-key. In the case of full-key balancing, the motor shaft is balanced with a fitted key, the hub without. The length of the fitted key is unimportant in this instance. In the case of half-key balance, however, the keyway is partially filled with a balance compensator. The shape, length, and position of the keyway must be adapted. For this reason, it is necessary to provide us with details of the motor, including the relevant dimensions and balancing type, when ordering.

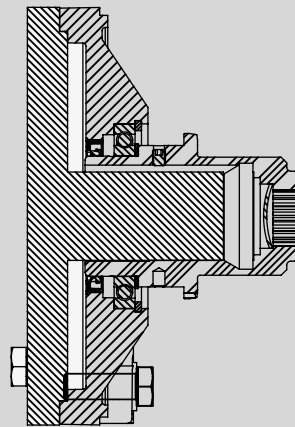
Note

For motor gearbox units that are fixed in the machine with the gearbox output housing/flange only, no preload support on the motor B-side is permitted.

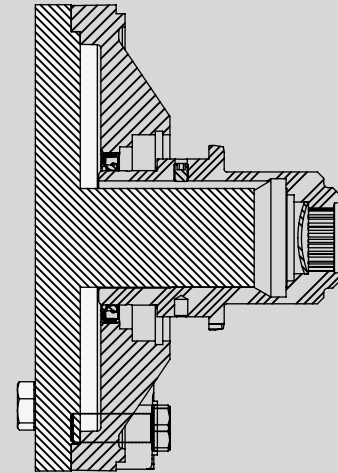
Connection options



Open Design
(with / without adapter plate)



Closed Design
(with hub bearing and shaft seal)



Closed Design
(with shaft seal)

Input interface :

Closed design (with hub bearing and shaft seal)

There is a version with a ball bearing available for certain motors. The hub in this version is also fixed by the bearing to prevent axial hub movement, and to prevent axial forces from the helical gearing on the motor shaft (see technical data on page 8). Assembly onto a spindle motor is made easier due to a fixed hub position as supplied by the factory.

Closed version (with shaft seal)

This version incorporates an adapter plate with a shaft seal, which means that the gearbox forms as a compact, closed unit.

Open design

The open version gearbox is with or without an adapter plate. Sealing is achieved with a motor shaft seal.

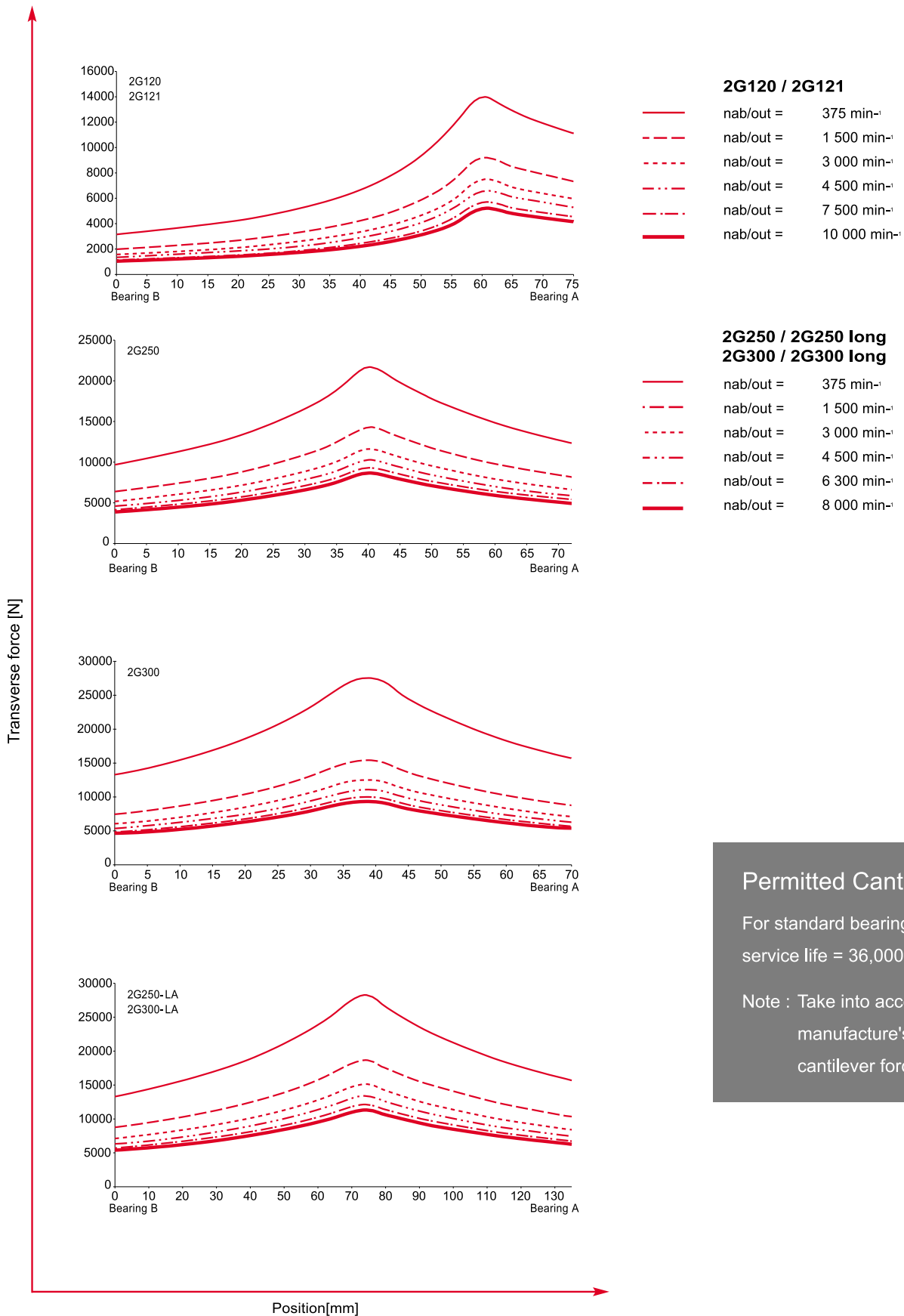
Input flange

Besides the classic motor - gearbox adaptation (motor shaft, key way, hub) we offer, on request, a gearbox with an input flange to mount a pulley.

The output bearings vary depending on the type and level of load on the output shaft. Cylindrical roller bearings are used to cope with high radial forces, e.g. in belt pulley drives. By contrast, the angular - contact ball bearings are suitable for coaxial drives, low radial backlash, or axial forces. The flexible design of the output housing and shafts allows a range of selections.

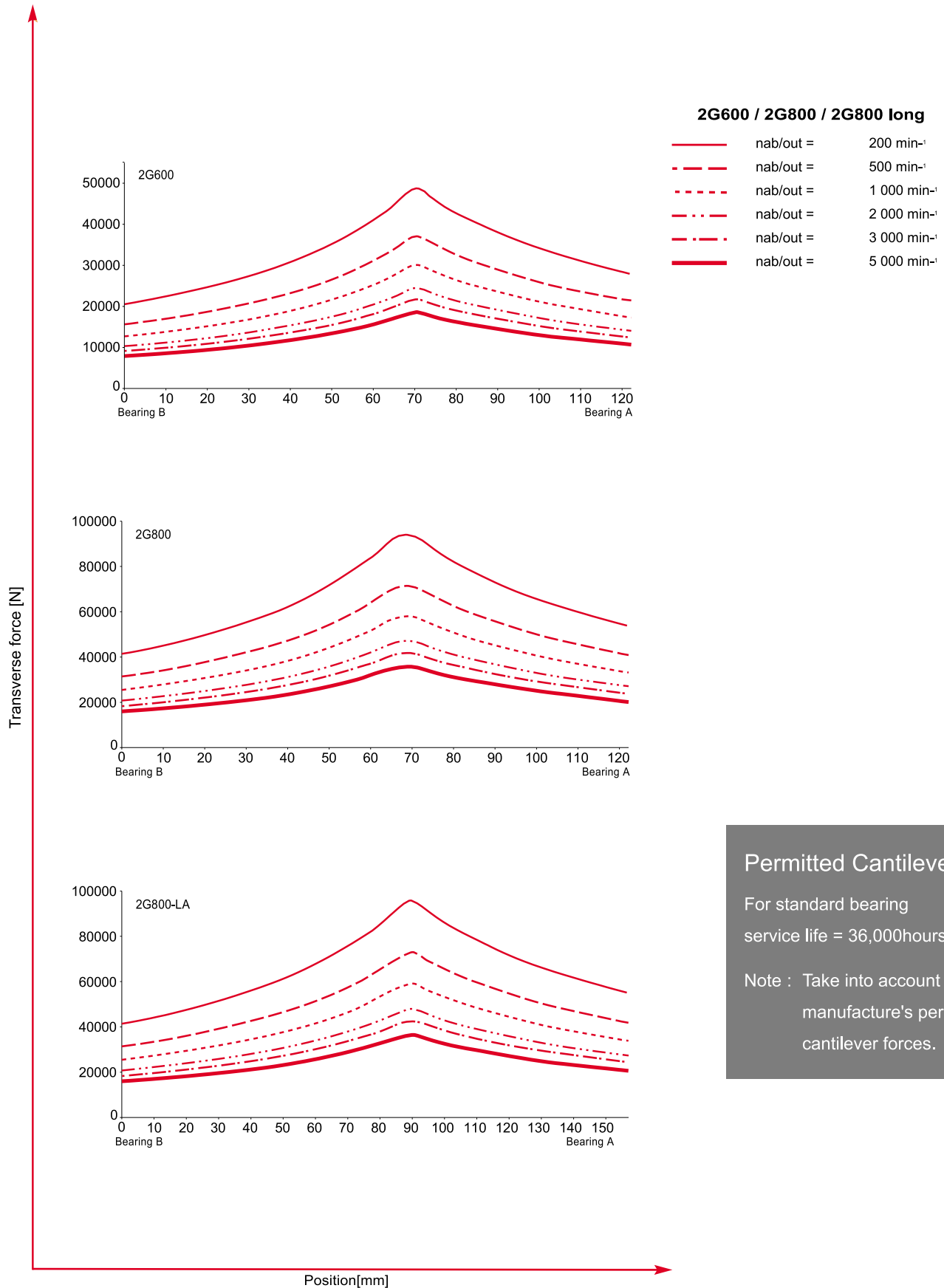
Versions and Lifetime Calculation based on XY-method

Belt must be between output bearings



Versions and Lifetime Calculation based on XY-method

Belt must be between output bearings

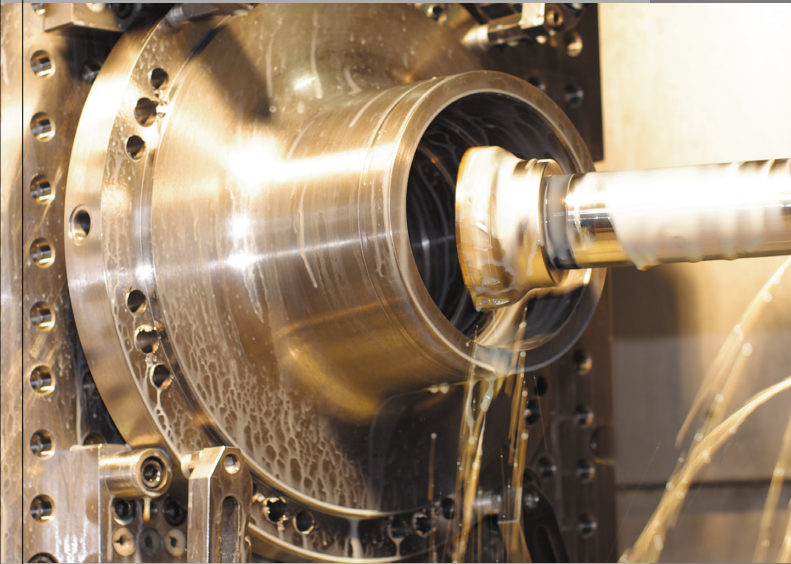


Permitted Cantilever Forces

For standard bearing
service life = 36,000hours

Note : Take into account the motor
manufacture's permitted
cantilever forces.

Application and Examples



Extreme Milling Work

Class 2 : Normal torsional backlash <20 arcmin for lathes, milling machines, and machining centers used to execute extreme milling work, e.g. tool side milling cutters with very coarse index/division (interrupted cutting), workpieces made from tough materials, milling of ribbed workpieces.

Highly-dynamic Machine Tools

Class 1 have reduced torsional backlash <15 arcmin, in addition to be used in lightweight highly-dynamic machine tools incorporating components with high internal elasticity; this is also designed to prevent resonance vibration.

Torsional backlash

Two backlash classes in reduction mode are available :

Class 1 :

Reduced torsional backlash <15 arcmin

Class 2 :

Normal torsional backlash <20 arcmin

Lubrication

Splash type lubrication

The standard gearbox version V1/B5 has a splash type lubrication. Splash type lubrication is suitable for intermittent operation. In this instance, frequent gear changes, varying speeds, and idle time (e.g. due to retooling) are prerequisites.

Oil level sensor is on request.

Recirculating lubrication

The 2G120/2G121/2G250/2G300/2G600 gearboxes (vertical V1 and V3 installation positions) require recirculating lubrication. In this instance, the type of recirculating lubrication depends on the operating temperature levels required.

The 2G800/2G801/2G802 gearboxes must always be operated with recirculating lubrication (refer to installation drawings).

Forced recirculating lubrication

Some applications require a very low operating temperature level. Forced recirculating lubrication is recommended in such instances. Figures on page 17/18 show the possible oil inlet and outlet positions on the gearbox. Please refer to the relevant installation drawings for detailed dimensions.

Standard recirculating lubrication in V1/B5 with oil tank installation

The oil inlet is attached in place of the oil drain plug.

The oil flow rate is 2.5dm³ /min. (only for 2G120/2G121/2G250/2G300) ; 3.0dm³ /min. (only for 2G600) ; 3.0dm³ /min. (only for 2G800). In the case of the V3 vertical installation position, the lubrication oil can be supplied in either a radial or central direction.

The tank of the pump unit must be ventilated. Oil back pressure in the return pipe to the gearbox must be avoided (Ømin. 20mm). The tank capacity should be at least ten times of the recirculating oil quantity. A 60µm filter and pressure limitation valve should also be used as a safeguard.

A heat exchanger is installed in the recirculating lubrication system to assure additional temperature reduction. For best cooling results, without any influence on lubrication, various connection parts for different installation positions and operating modes are provided.

Note

For continuous operation in direct drive, one gear change per hour with a short turn in reduction ratio is mandatory. If this is impossible, please request a special solution.

Connections for recirculating lubrication

	2G120/2G121		
Installation position	Oil inlet*	Max. pressure	Oil outlet*
V1 (closed version)	M K/R and/or L/S	2.5-3.0 bar	D/E
V3	K/R and/or L/S P	2.5-3.0 bar	H
B5	G or F	2.5-3.0 bar	D/E
B5 turned*	G or F	2.5-3.0 bar	H

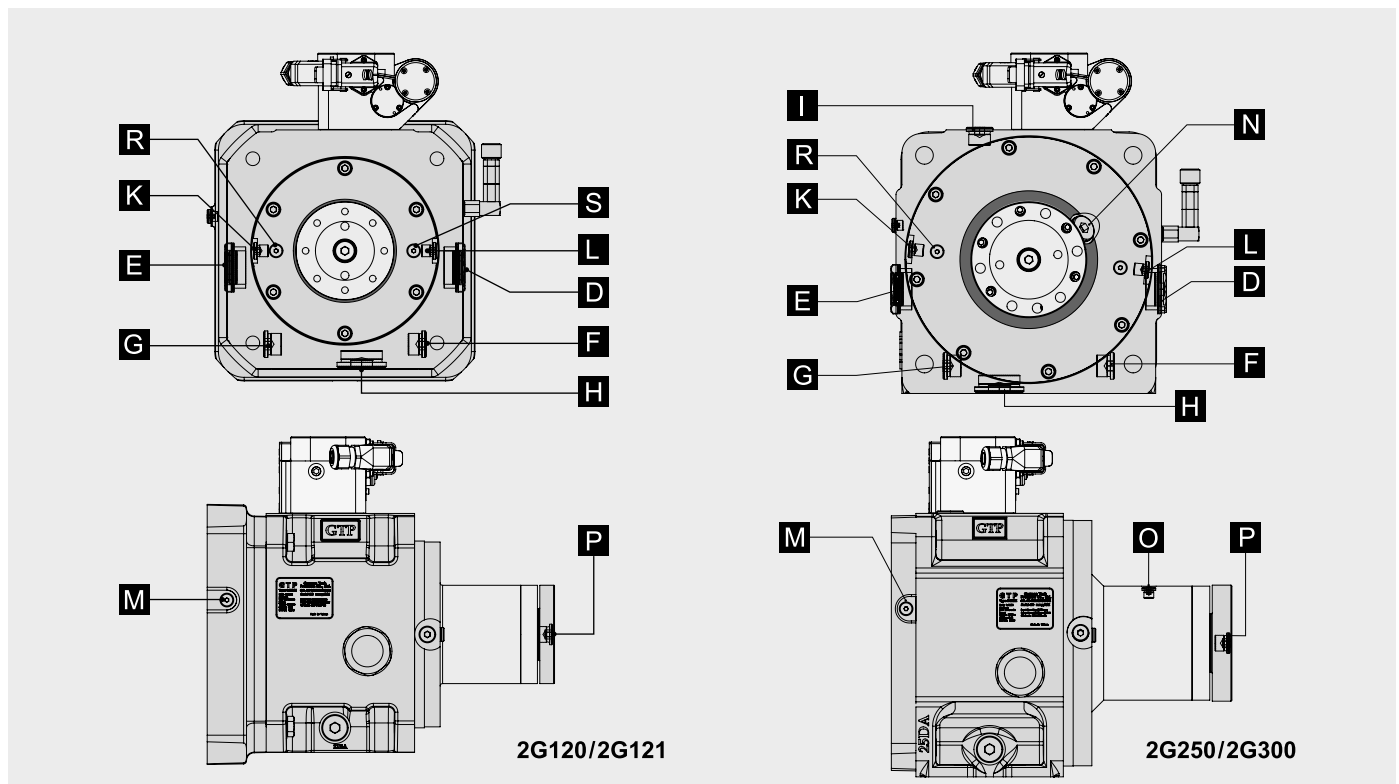
*View toward gearbox output :

D = Mainly counter clockwise rotation

E = Mainly clockwise rotation

Note : Gear-Box operating at permitted highest speed:

- Please make sure the minimum flow-rate is 3dm³/min. and the minimum oil pressure is 3bar when you use only one channel (K port or L port) for channel lubrication system.
- If you use two channel (K port and L port) for channel lubrication system, the minimum flow-rate is 2.5dm³/min. and oil pressure is 2.5bar



Connections for recirculating lubrication

Installation Position	2G250/2G300/2G600			2G800		
	Oli inlet*	Max. pressure	Oil outlet*	Oil inlet*	Max. pressure	Oil outlet*
V1, V3 (closed version)	M K or R L additional possible	2.5-3.0 bar	D/E	M K	3-5 bar	D/E or G/F
V1, V3 (open version)	X	X	X	X	X	X
B5	K or R or M	2.5-3.0 bar	D/E	M K	3-5 bar	G/F or D
B5 turned*	K or R or M	2.5-3.0 bar	H	X	X	X

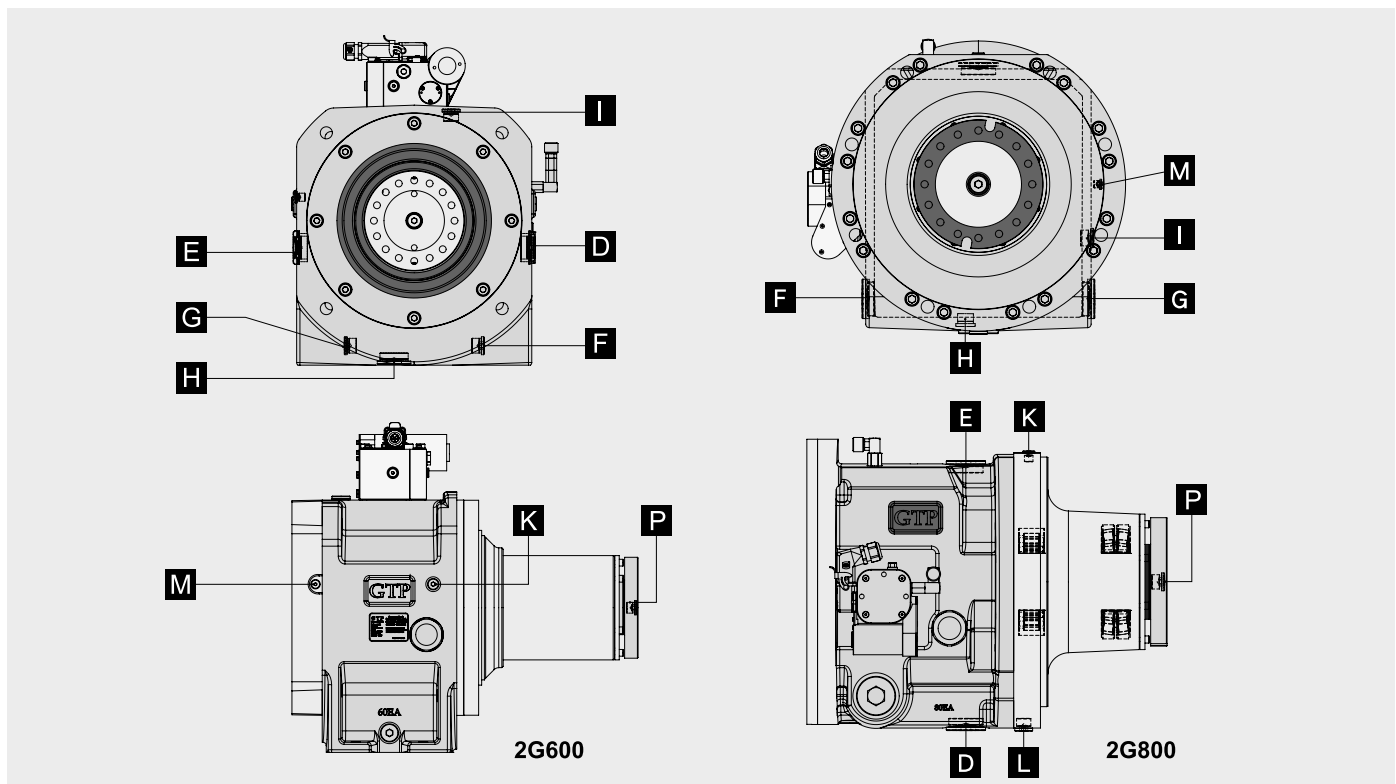
***View toward gearbox output :**

D/G = Mainly counter clockwise rotation
E/F = Mainly clockwise rotation

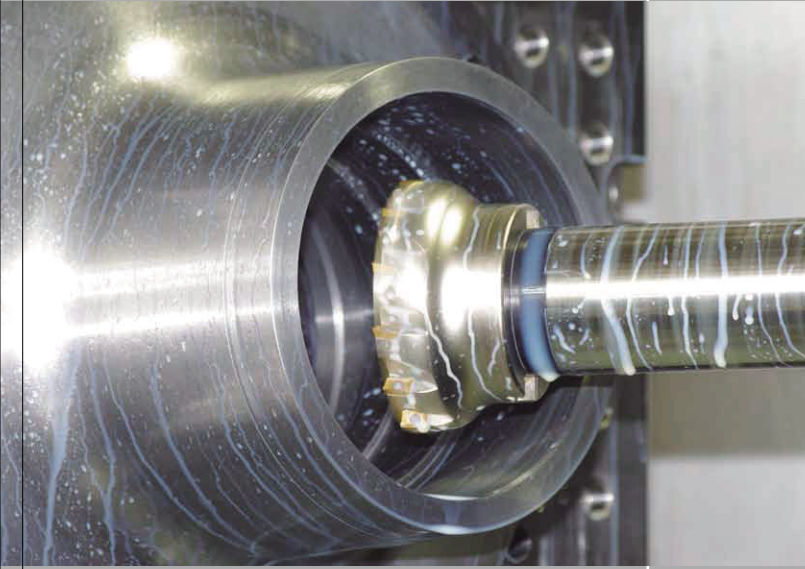
In V1/V3 recirculating lubrication is necessary for 2G250/300/600.

Note : Gear-Box operating at permitted highest speed:

- Please make sure the minimum flow-rate is 3dm³/min. and the minimum oil pressure is 3bar when you use only one channel (K port or L port) for channel lubrication system
- If you use two channel (K port and L port) for channel lubrication system, the minimum flow-rate is 2.5dm³/min. and oil pressure is 2.5bar



Installation Drawings



2G120 page 20

2G121 page 21

2G250 page 22

2G300 page 23

2G600 page 24

2G800 page 25

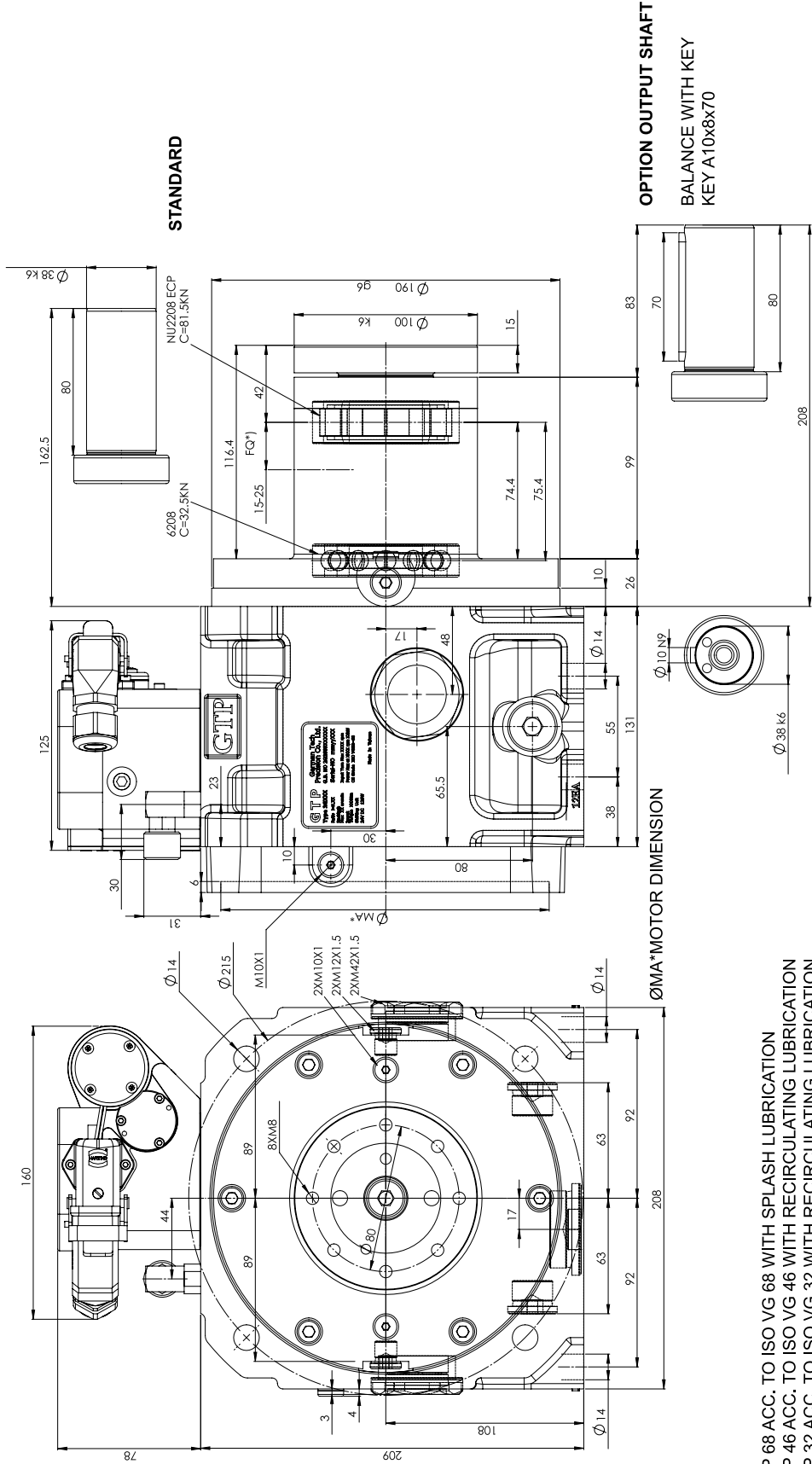
2G801 page 26

2G802 page 27

Installation Drawing : 2G120

STANDARD
SHIFTING UNIT WITHOUT NEUTRAL POSITION
SHIFTING UNIT WATTS 120W AT 24 VDC

2G120 INLINE



GRADE:HLP 68 ACC. TO ISO VG 68 WITH SPLASH LUBRICATION
HLP 46 ACC. TO ISO VG 46 WITH RECIRCULATING LUBRICATION
HLP 32 ACC. TO ISO VG 32 WITH RECIRCULATING LUBRICATION

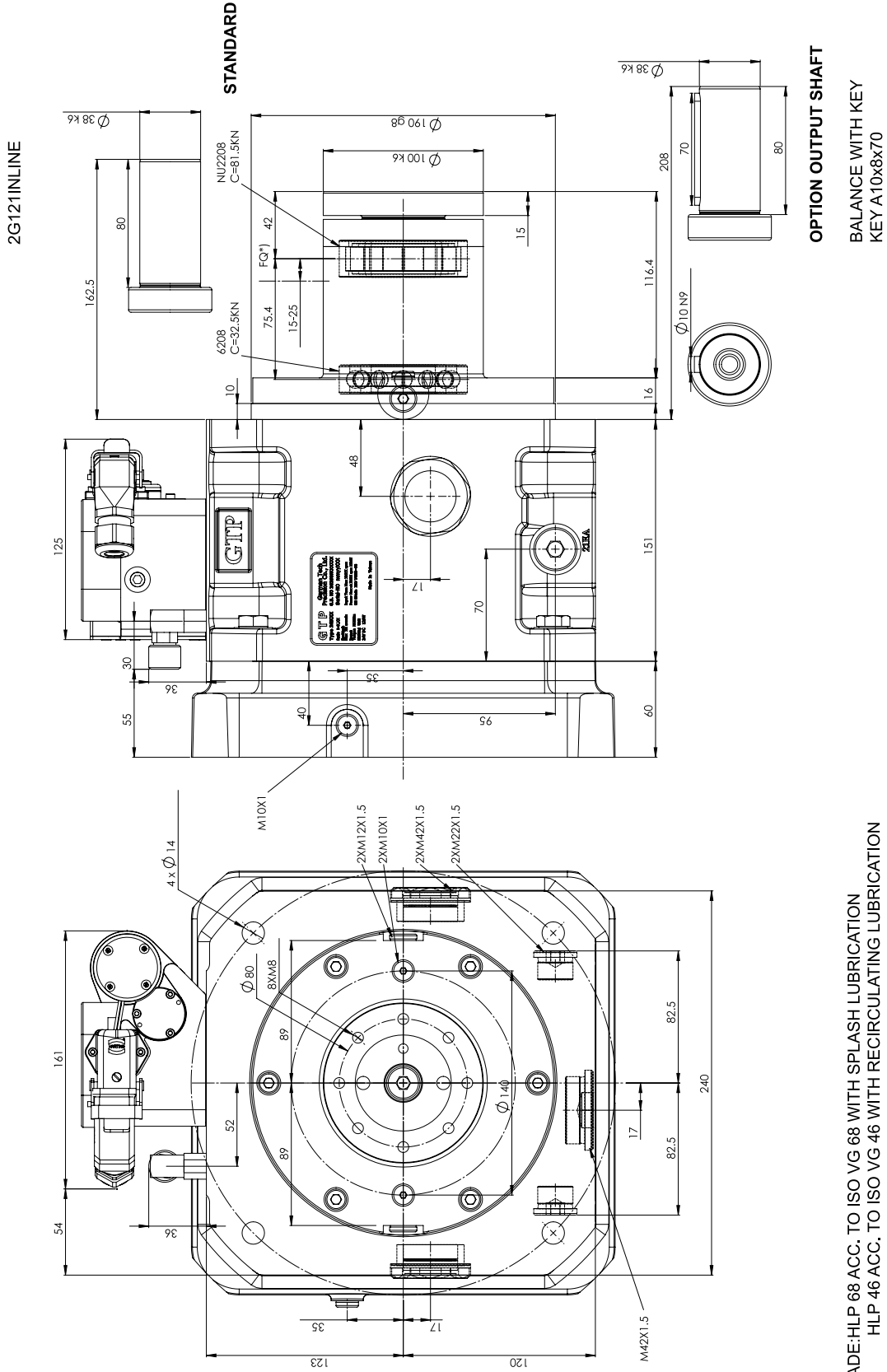
STANDARD OPTION *) ASSUMED OF RESULTING PULLEY FORCE FOR BEARING CALCULATION
TRANSMISSION RATIO : $i_1=4.0$ $i_1=4.91$
 $i_2=1.0$ $i_2=1.0$

WEIGHT: Ca.42Kg

*) OIL LEVEL SIGHT GLASS
(LEFT AND RIGHT)

Installation Drawing : 2G121

STANDARD
SHIFTING UNIT WITHOUT NEUTRAL POSITION
SHIFTING UNIT WATTS 120W AT 24 VDC



*) JOIL LEVEL SIGHT GLASS
(LEFT AND RIGHT)

*) ASSUMED OF RESULTING
PULLEY FORCE FOR BEARING CALCULATION

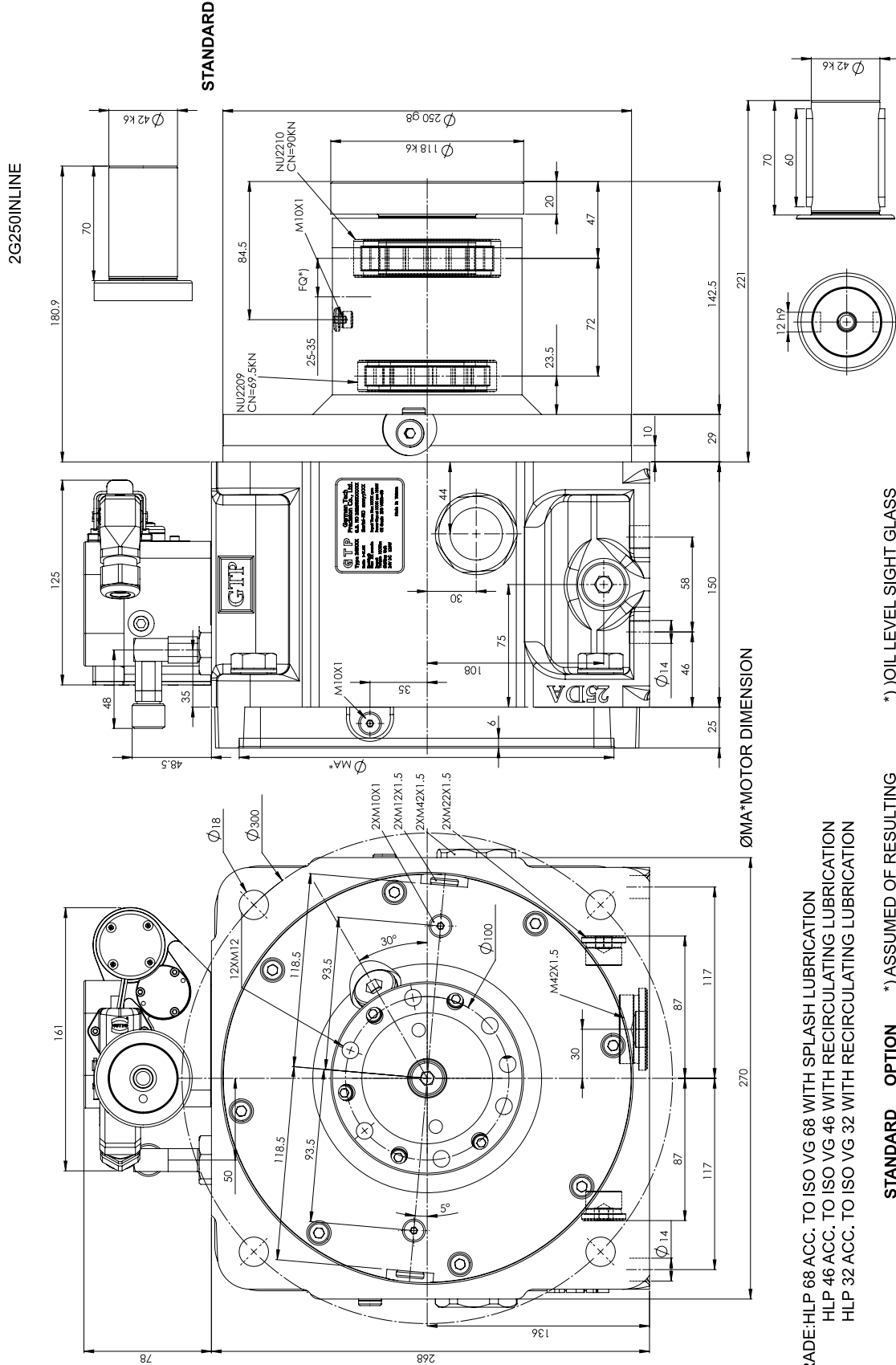
STANDARD **OPTION**
TRANSMISSION RATIO : $i_1=4.0$ $i_1=4.91$
 $i_2=1.0$ $i_2=1.0$

WEIGHT: Ca.52Kg

OIL GRADE:HLP 68 ACC. TO ISO VG 68 WITH SPLASH LUBRICATION
HLP 46 ACC. TO ISO VG 46 WITH RECIRCULATING LUBRICATION
HLP 32 ACC. TO ISO VG 32 WITH RECIRCULATING LUBRICATION

Installation Drawing : 2G250

STANDARD
SHIFTING UNIT WITHOUT NEUTRAL POSITION
SHIFTING UNIT WATTS 120W AT 24 VDC



OIL GRADE:HLP 68 ACC. TO ISO VG 68 WITH SPLASH LUBRICATION
HLP 46 ACC. TO ISO VG 46 WITH RECIRCULATING LUBRICATION
HLP 32 ACC. TO ISO VG 32 WITH RECIRCULATING LUBRICATION

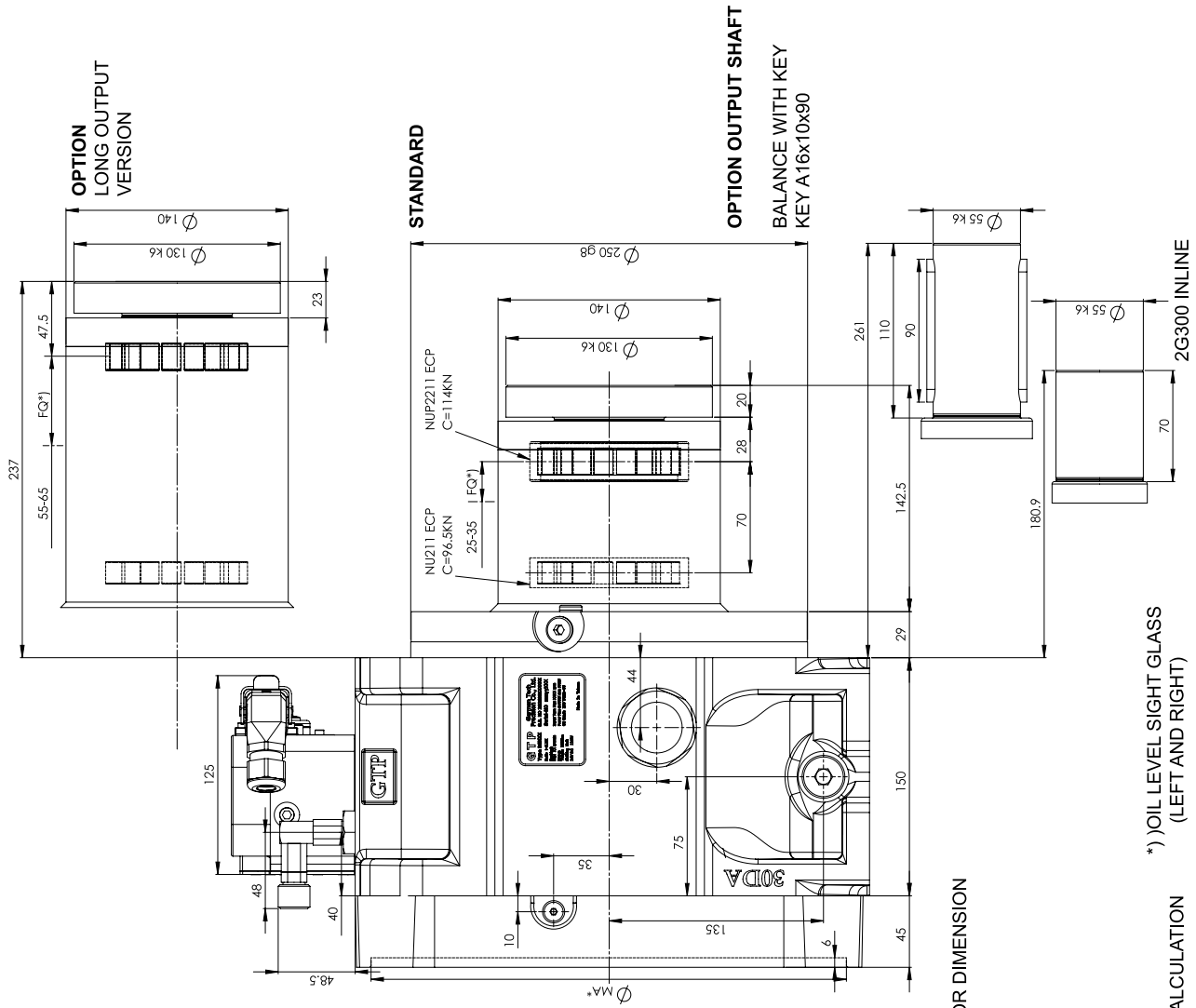
STANDARD OPTION *) ASSUMED OF RESULTING PULLEY FORCE FOR BEARING CALCULATION
TRANSMISSION RATIO : $i_1=4.0$ $i_1=5.5$
 $i_2=1.0$ $i_2=1.0$

WEIGHT: Ca.68Kg

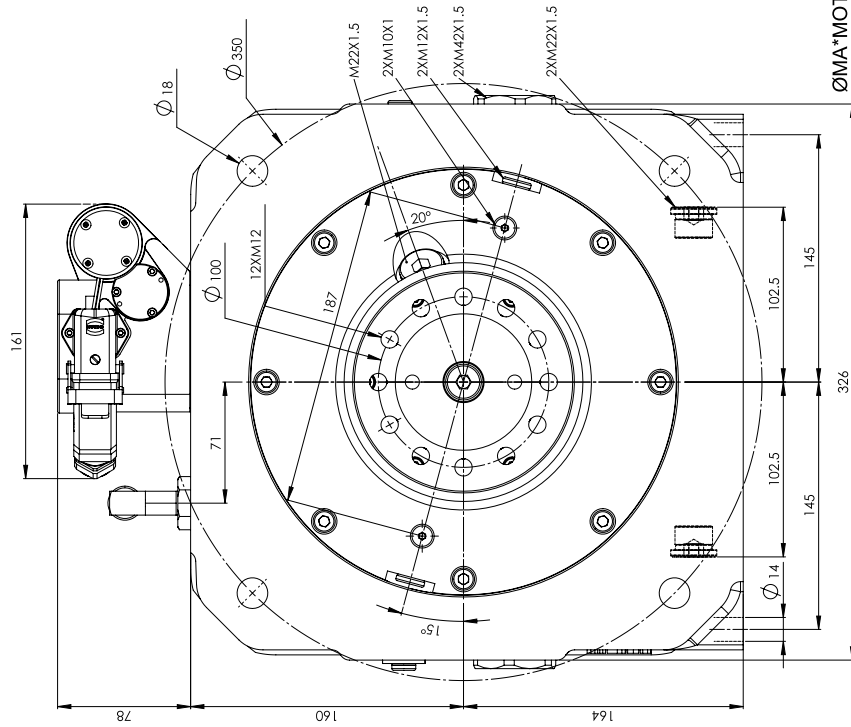
*) OIL LEVEL SIGHT GLASS
(LEFT AND RIGHT)

\varnothing MA*MOTOR DIMENSION

Installation Drawing : 2G300



STANDARD
SHIFTING UNIT WITHOUT NEUTRAL POSITION
SHIFTING UNIT WATTS 120W AT 24 VDC



ØMA* MOTOR DIMENSION

OIL GRADE: HLP 68 ACC. TO ISO VG 68 WITH SPLASH LUBRICATION
HLP 46 ACC. TO ISO VG 46 WITH RECIRCULATING LUBRICATION
HLP 32 ACC. TO ISO VG 32 WITH RECIRCULATING LUBRICATION

STANDARD **OPTION**
TRANSMISSION RATIO: $i_1=4.0$ $i_1=5.5$
 $i_2=1.0$ $i_2=1.0$

WEIGHT: Ca. 86Kg

*) OIL LEVEL SIGHT GLASS
(LEFT AND RIGHT)

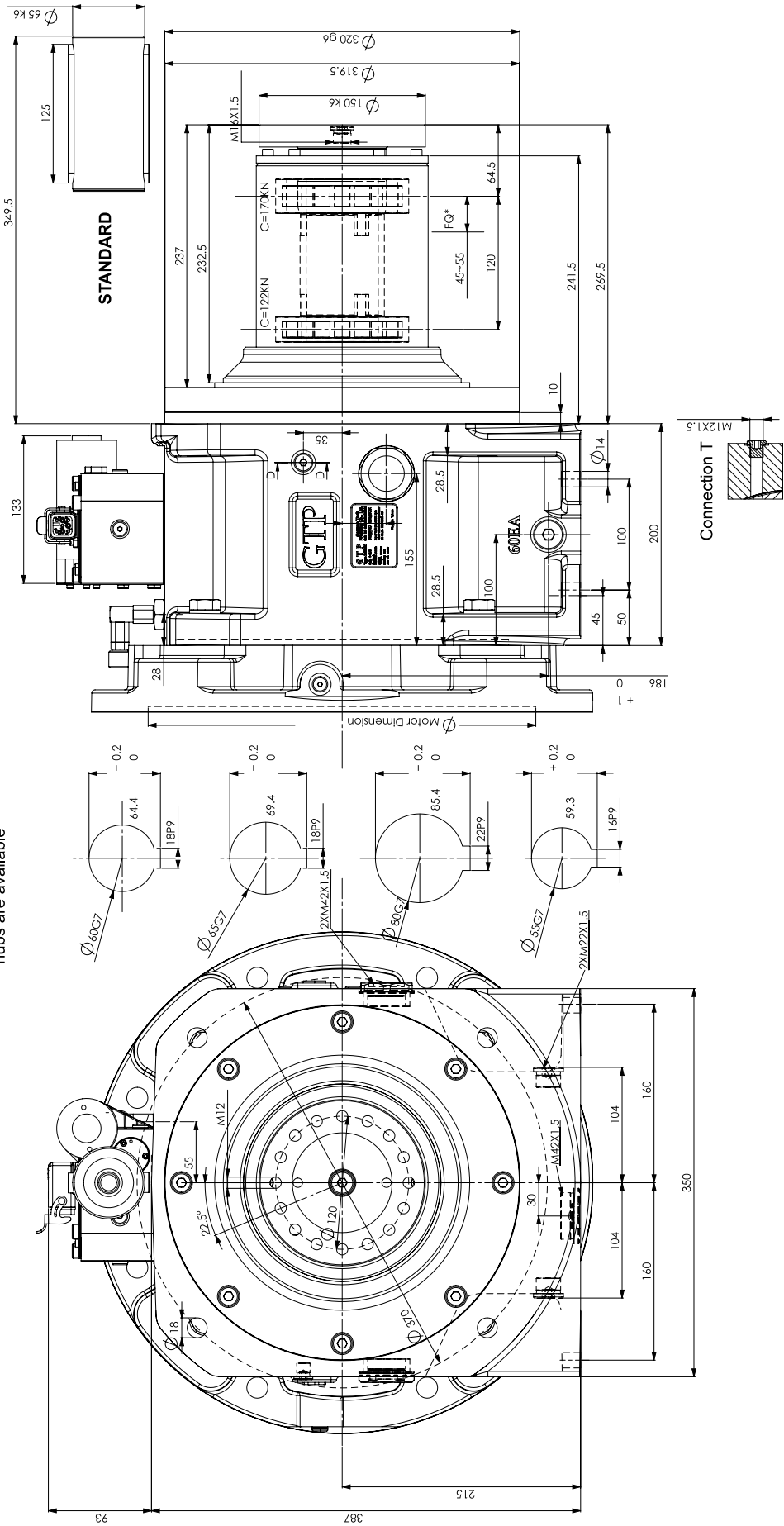
*) ASSUMED OF RESULTING
PULLEY FORCE FOR BEARING CALCULATION

Installation Drawing : 2G600

STANDARD
SHIFTING UNIT WITHOUT NEUTRAL POSITION
SHIFTING UNIT WATTS 120W AT 24 VDC

STANDARD
SHIFTING UNIT WITHOUT NEUTRAL POSITION
SHIFTING UNIT WATTS 120W AT 24 VDC

Motorshaft: Following
hubs are available



OIL GRADE:HLP 68 ACC. TO ISO VG 68 WITH SPLASH LUBRICATION
HLP 46 ACC. TO ISO VG 46 WITH RECIRCULATING LUBRICATION
HLP 32 ACC. TO ISO VG 32 WITH RECIRCULATING LUBRICATION

*) JOIL LEVEL SIGHT GLASS
(LEFT AND RIGHT)

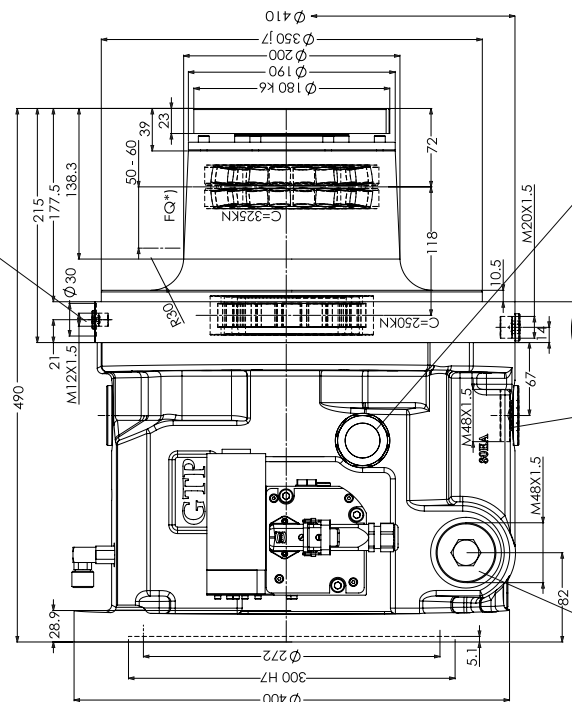
STANDARD
TRANSMISSION RATIO : $i_1=4.0$
 $i_2=1.0$
WEIGHT: Ca.165Kg

Installation Drawing : 2G800 Standard

STANDARD
SHIFTING UNIT WITHOUT NEUTRAL POSITION
SHIFTING UNIT WATTS 120W AT 24 VDC

OPTION
SHIFTING UNIT WITH NEUTRAL POSITION
SHIFTING UNIT WATTS 120W AT 24 VDC

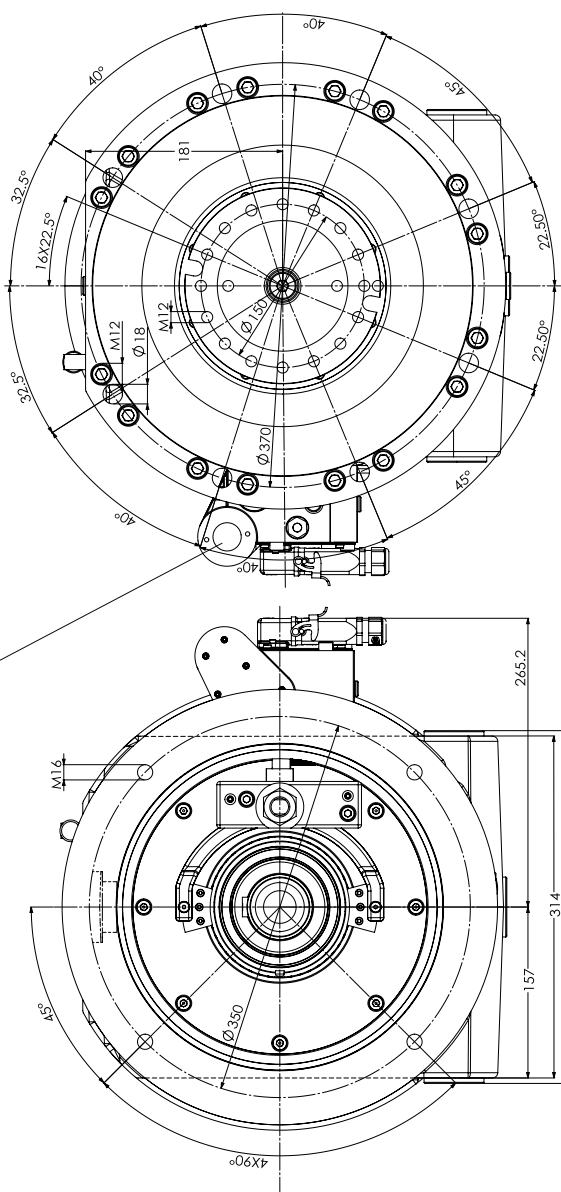
LUBE OIL SUPPLY B5/M1
Ca. 2.5dm³/min
AND 5 bar PRESSURE



OIL OUTLET
IN VERTICAL INSTALLATION
EITHER LEFT OR RIGHT

TRANSMISSION
MOUNTING AT
MACHINE

OIL LEVEL SIGHT GLASS



2G800

OIL GRADE: HLP 46 ACC. TO ISO VG 46 WITH
RECIRCULATING LUBRICATION
HLP 32 ACC. TO ISO VG 32 WITH
RECIRCULATING LUBRICATION

*) ASSUMED OF RESULTING
PULLEY FORCE FOR BEARING CALCULATION

STANDARD

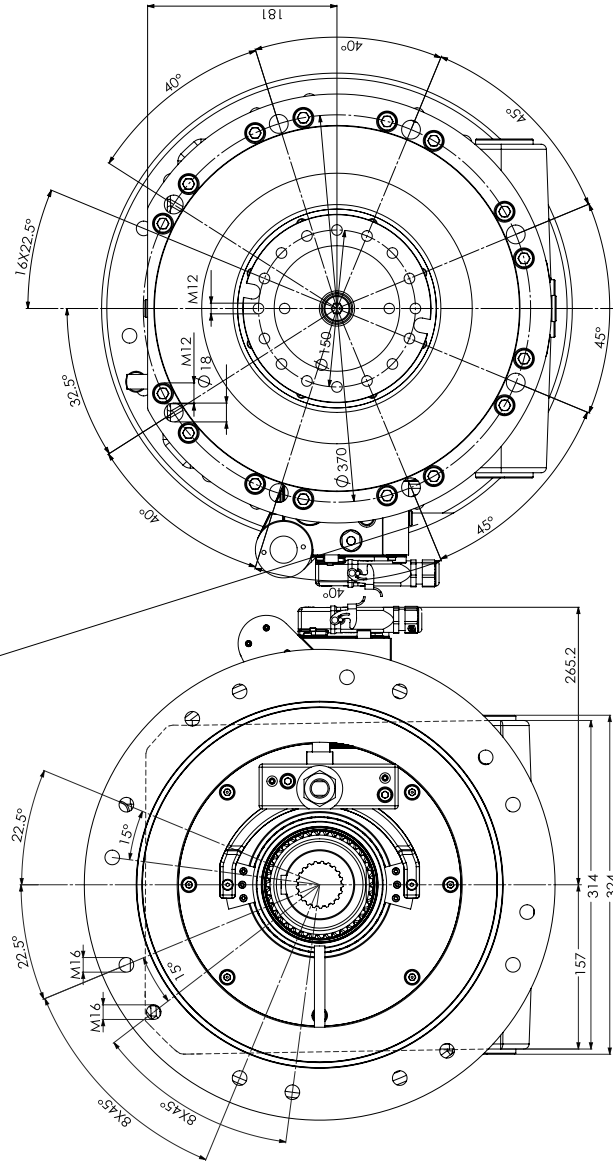
$i_1=4.0$
 $i_2=1.0$

WEIGHT: Ca.175Kg

Installation Drawing : 2G801 Standard

STANDARD
 SHIFTING UNIT WITHOUT NEUTRAL POSITION
 SHIFTING UNIT WATTS 120W AT 24 VDC
OPTION
 SHIFTING UNIT WITH NEUTRAL POSITION
 SHIFTING UNIT WATTS 120W AT 24 VDC

LUBE OIL SUPPLY B5M/1
 Ca. 2.5dm³/min
 AND 5 bar PRESSURE



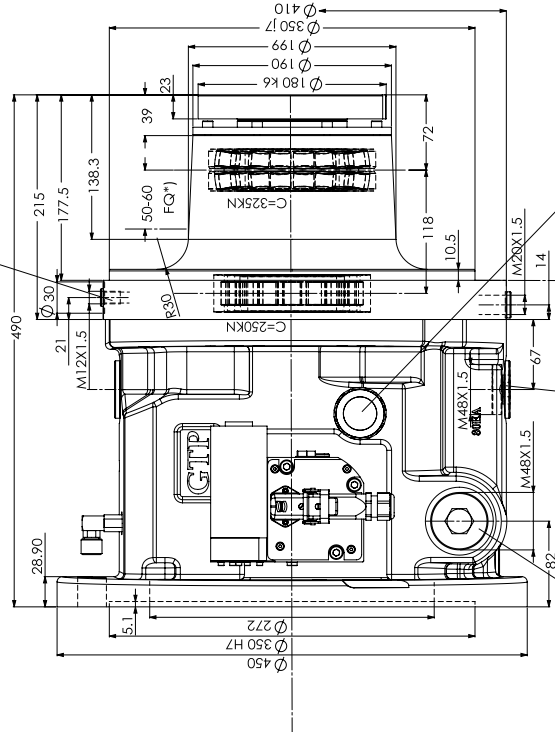
2G801

OIL GRADE: HLP 46 ACC. TO ISO VG 46 WITH RECIRCULATING LUBRICATION
 HLP 32 ACC. TO ISO VG 32 WITH RECIRCULATING LUBRICATION

STANDARD
 TRANSMISSION RATIO : $i_1=4.0$
 $i_2=1.0$

WEIGHT: Ca.175Kg

*) ASSUMED OF RESULTING PULLEY FORCE FOR BEARING CALCULATION



OIL LEVEL SIGHT GLASS

OIL OUTLET IN VERTICAL INSTALLATION EITHER LEFT OR RIGHT

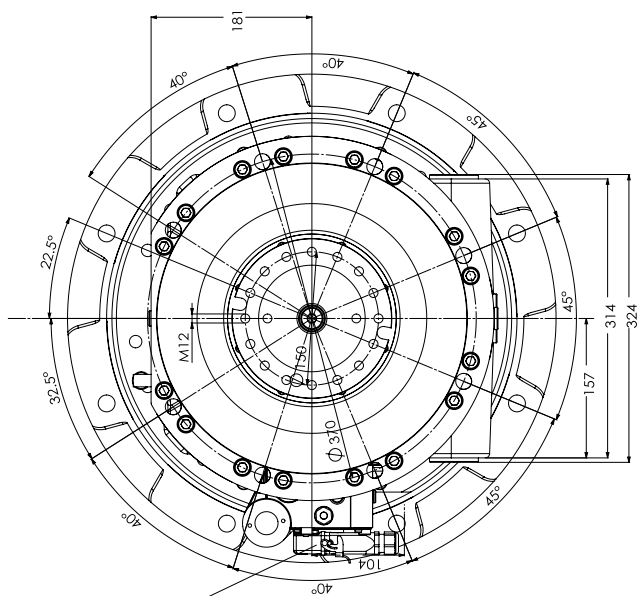
TRANSMISSION MOUNTING AT MACHINE

OIL OUTLET IN VERTICAL INSTALLATION V1

Installation Drawing : **2G802** Standard

STANDARD
 SHIFTING UNIT WITHOUT NEUTRAL POSITION
 SHIFTING UNIT WATTS 120W AT 24 VDC
OPTION
 SHIFTING UNIT WITH NEUTRAL POSITION
 SHIFTING UNIT WATTS 120W AT 24 VDC

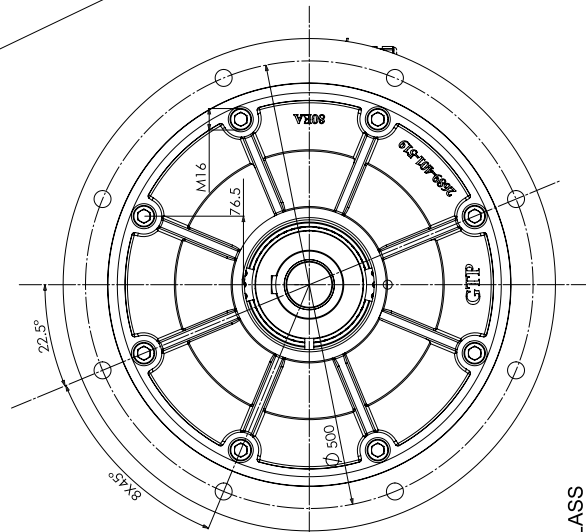
LUBE OIL SUPPLY B5/V1
 Ca. 2.5dm³/min
 AND 5 bar PRESSURE



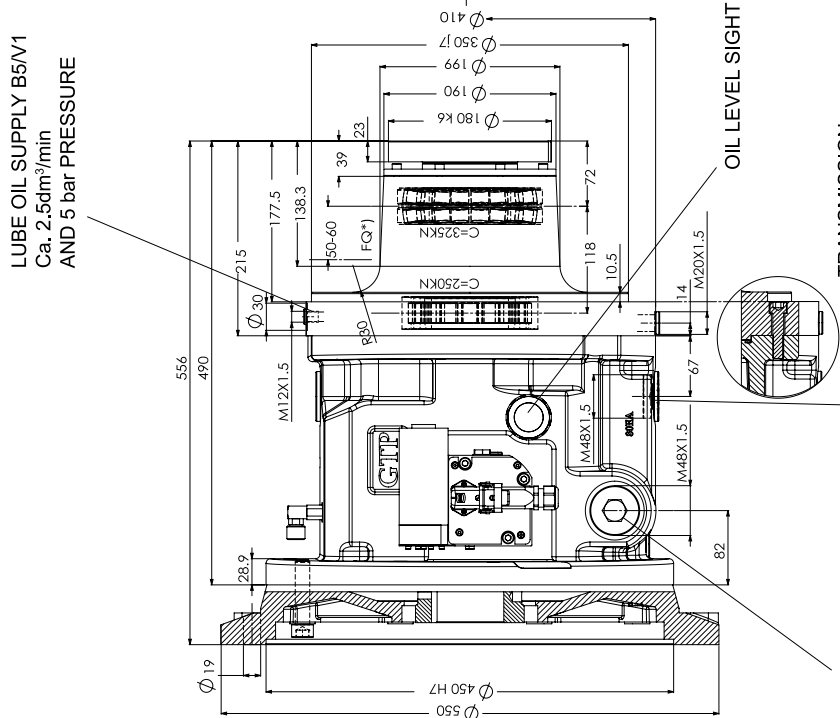
OIL GRADE: HLP 46 ACC. TO ISO VG 46 WITH
 RECIRCULATING LUBRICATION
 HLP 32 ACC. TO ISO VG 32 WITH
 RECIRCULATING LUBRICATION

STANDARD
 TRANSMISSION RATIO: $i_1=4.0$
 $i_2=1.0$

WEIGHT: Ca.175Kg



*1) ASSUMED OF RESULTING
 PULLEY FORCE FOR
 BEARING CALCULATION



TRANSMISSION
 MOUNTING AT
 MACHINE

OIL OUTLET
 IN VERTICAL INSTALLATION
 EITHER LEFT OR RIGHT

OIL OUTLET
 IN VERTICAL INSTALLATION V1

GTP- 2G Standard, Inline

Ordering numbers for gearbox types : 2G120/2G121

Note:

1) RWDR = Radial shaft seal

* Motor-specific, on request



1 2 3 4 5 6 7 8 9 10 11 12 13 14

Two-speed gearbox														
Motor balancing :														
Without key way	1													
Without key way -250mm	2													
Full-key-230 for 2G121	3													
Full-key	4													
Half-key	5													
Half-key-250 for 2G121	6													
Input interface :														
Closed with hub, hub bearing, RWDR ¹⁾	3													
Closed with hub, RWDR ¹⁾ without bearing	4													
Flange input (Ø=100k6)	9													
*Gearbox type :														
for motor frame size/ratio														
100/i1=4.00	12													
100/i1=4.91	09													
112/i1=4.00	11													
112/i1=4.91	08													
Output bearing :														
Roller bearing/ball bearing	3													
Angular contact bearing	4													
Gearbox output :														
a1=38mm	B													
a1=100mm	C													
a1=38mm smooth shaft, without key	L													
a1=38mm INLINE	P													
a1=38mm smooth shaft without key, INLINE	G													
Installation position :														
V1/V3/B5/B5 turned(shift unit on right side(view from input))	E													
V3 Central oil supply in Output shaft central/ Radial supply in bearing housing	B													
Motor shaft dimension "d"														
Flange input	0													
32mm	2													
38mm	3													
42mm	4													
48mm	9													
Gearbox output torsional backlash														
Standard torsional backlash max. 20 arcmin	3													
Reduced torsioanl backlash max. 15 arcmin	4													
Oil Level sensor														
V1	S													
B5	H													
Non-shifter	Z													
Special application	A													

GTP- 2G Standard, Inline

Ordering numbers for gearbox types : 2G250/2G300

Note :

1) RWDR = Radial shaft seal

* Motor-specific, on request

		2	G					-						-				
		1	2	3	4	5	6		7	8	9	10	11		12	13	14	15
Two-speed gearbox																		
Motor balancing :																		
Without key way	1																	
Withot keyway-250mm	2																	
Full-key-230	3																	
Full-key	4																	
Half-key	5																	
Half-key-250	6																	
Input interface :																		
Closed with hub, hub bearing, RWDR ¹⁾	3																	
Closed with hub, RWDR ¹⁾ without bearing	4																	
Flange input (Ø=118k6)	9																	
Gearbox type :																		
for motor frame size/ratio																		
132/i1=4	15																	
132/i1=5.5	17																	
160/i1=4 2G250	19																	
160/i1=4 2G300	20																	
160/i1=5.5 2G250	21																	
160/i1=5.5 2G300	22																	
others	23																	
Output bearing :																		
Roller bearing	3																	
Angular contact bearing	4																	
Gearbox output :																		
a1=118mm (2G250)	F																	
a1=130mm (2G300)	J																	
a1=42mm (2G250)	K																	
a1=42mm smooth shaft without key	L																	
a1=55mm smooth shaft without key	N																	
a1=55mm smooth shaft without key, INLINE	H																	
a1=55mm (2G300)	M																	
a1=130mm wide bearing base	R																	
a1=42mm shaft with key, INLINE	P																	
a1=42mm smooth shaft without key, INLINE	G																	
Installation position :																		
V1/V3/B5/B5 turned(shift unit on right side(view from input))	E																	
Motor shaft dimension "d"																		
2G250 2G300																		
Flange input	0																	
42mm 55mm	1																	
48mm 48mm	2																	
55mm 42mm	3																	
60mm 60mm	4																	
Gearbox output torsional backlash :																		
Standard torsional backlash max. 20 arcmin	3																	
Reduced torsional backlash max. 15 arcmin	4																	
Channel Lubrication System C.L.S.	M																	
Oil Level sensor																		
V1	S																	
B5	H																	
Neutral position	N																	
Non-shifter	Z																	
Special application	A																	

GTP- 2G Standard, Inline

Ordering numbers for gearbox types : 2G600

Note :

1) RWDR = Radial shaft seal

* Motor-specific, on request



1 2 3 4 5 6 7 8 9 10 11 12 13

Two-speed gearbox														
Motor balancing :														
Full-key	4													
Half-key*	5													
Input interface :														
Closed with hub, hub bearing, RWDR ¹⁾	3													
Flange input (Ø=150k6)	9													
Gearbox type :														
for motor frame size/ratio														
i1=4.00 spigot Ø300 mm	40													
i1=5.00 spigot Ø300 mm	41													
i1=4.00 spigot Ø350 mm	42													
i1=5.00 spigot Ø350 mm	43													
others	23													
Output bearing :														
Roller bearing	3													
Angular contact bearing	4													
Gearbox output :														
a1=65mm long output shaft with key	N													
a1=65mm long output shaft without key	I													
a1=140mm	F													
a1=150mm	J													
a1=60mm	K													
a1=60mm smooth shaft without key	P													
a1=65mm	M													
a1=65mm smooth shaft without key	H													
Installation position :														
B5/V1/V3	E													
Motor shaft dimension "d"														
Flange input	0													
60x140mm	1													
65x140mm	2													
70x140mm	3													
75x140mm	4													
80x170mm	5													
55x110mm	6													
Gearbox output torsioanl backlash :														
Standard backlash max. 20 arcmin	1													
Neutral position	N													
Special application	A													

GTP- 2G Standard, Inline

Ordering number for 2G800/801/802

Note :

1) RWDR = Radial shaft seal

* Motor-specific, on request

			2	G													
			1	2	4	5	6	7	—	8	9	10	11	12	—	13	14
Two-speed gearbox																	
Motor balancing :																	
Full-key	4																
Half-key*	5																
Input interface																	
Open without hub	0																
Open with hub	2																
Closed with hub and RWDR ¹⁾ *	4																
Open with hub and adapter plate*	5																
Input flange (Ø=180k6)	9																
Gearbox type :																	
motor frame size/ratio																	
180/i1=4.00 spigot Ø300mm	50																
200/i1=4.00 spigot Ø350mm	60																
225/i1=4.00 spigot Ø450mm	70																
Brake :																	
Without brake	1																
Gearbox output :																	
Without output	N																
a1=65mm	H																
a1=65mm without key	L																
a1=180mm	J																
a1=180mm wide bearing base	R																
Installation position :																	
V1/B5	C																
V3	B																
Motor shaft diameter "d"																	
Flange input	0																
60mm	1																
65mm	2																
75mm	3																
80mm	4																
Backlash on gearbox output :																	
Normal backlash max. 20 arcmin	1																
Neutral position	N																
Special application	A																

Check list

For quick response to your inquiry please provide us the following data by :

Fax : +886-4-25152413

E-Mail : marcolin@zfgta.com.tw info@zfgta.com.tw

1. Motor (with motor data sheet)

Motor brand : _____

Type : _____

Size : _____

Nominal power (kW) : _____

Max. torque (Nm) : _____

Motor operating speed $n_1 - n_2$ (rpm) at constant power : _____

Max. speed (rpm) : _____

Motor shaft diameter d (mm) : _____

Motor shaft length l (mm) : _____

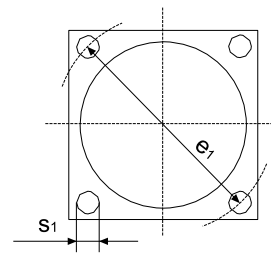
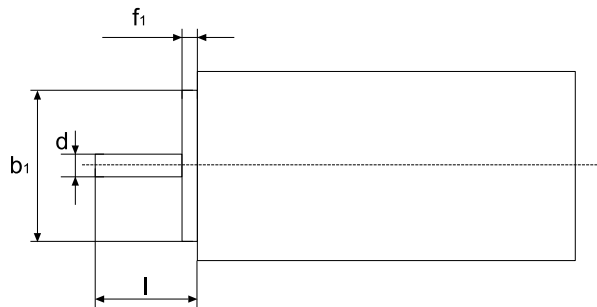
Pilot diameter b_1 (mm) : _____

Pilot width f_1 (mm) : _____

PCD e_1 (mm) : _____

Hole diameter s_1 (mm) : _____

Fitting key $L \times W \times H$ (mm) : _____



Motor shaft without keyway

Motor shaft without shaft seal

Motor shaft with shaft seal

Half-key balanced motor shaft

Full-key balanced motor shaft

2. **GTP-2G** type:

2G120

2G121

2G250

2G300

2G600

2G800

2G801

2G802

Check list

	Standard	Option
Gearbox interface	<input type="checkbox"/> Open	<input type="checkbox"/> With adapter plate and shaft seal <input type="checkbox"/> With input flange <input type="checkbox"/> 118mm (2G300) <input type="checkbox"/> 150mm (2G600) <input type="checkbox"/> 180mm (2G800)
Ratio i	<input type="checkbox"/> 4.00 (2G120/121/250/300/800) <input type="checkbox"/> 5.2 (2G800)	<input type="checkbox"/> 5.0 (2G600) <input type="checkbox"/> 5.5 (2G250/300) <input type="checkbox"/> 4.91 (2G120/121)
Installation position	<input type="checkbox"/> B5 <input type="checkbox"/> B5 shifting unit on the right	<input type="checkbox"/> V1 <input type="checkbox"/> V3
Output bearings	<input type="checkbox"/> Cylindrical Roller bearing	<input type="checkbox"/> Angular-contact ball bearing <input type="checkbox"/> Self aligning and roller bearing (2G800/801/802)
Lubrication system	<input type="checkbox"/> Splash type lubrication	<input type="checkbox"/> Recirculating lubrication with oil cooler <input type="checkbox"/> Recirculating lubrication with heat exchanger
Gearbox output	Gearbox with output flange <input type="checkbox"/> 100mm (2G120/121) <input type="checkbox"/> 118mm (2G250) <input type="checkbox"/> 130mm (2G300) <input type="checkbox"/> 130mm wide bearing base <input type="checkbox"/> 140mm (2G600) <input type="checkbox"/> 150mm (2G600) <input type="checkbox"/> 180mm (2G800/801/802)	Gearbox with output shaft <input type="checkbox"/> 38mm (2G121/121) INLINE <input type="checkbox"/> 42mm (2G250/300) INLINE <input type="checkbox"/> 42mm (2G250/300) <input type="checkbox"/> 55mm (2G300) <input type="checkbox"/> 60mm (2G600) <input type="checkbox"/> 65mm (2G600/800/801/802)
Oil Level sensor		<input type="checkbox"/> V1 <input type="checkbox"/> B5
Shifting	<input type="checkbox"/> Shifter <input type="checkbox"/> Neutral-position	<input type="checkbox"/> Non-shifter
Torsional backlash at gearbox output	<input type="checkbox"/> ≤ 20 arcmin <input type="checkbox"/> ≤ 15 arcmin	
Annual quantity :		
Ordering no. :		
Application :		

Subject to technical change without notice.
 Please request installation drawings, only the data contained therein is binding.

GTP- 2G

Two Speed Spindle gearbox Warranty Clause

1. Warranty period : two-year warranty from the date of installation of customer's machine.
2. German Tech Precision Co., Ltd. provides training for installation, installation instructions, and first installation check, ensuring the correctness of installation and operation.
3. Customer must ensure that the following dimensions and data should comply with the installation instructions :
 - All the dimensions of the motor
 - Installation dimension of the hub
 - Stability of the shifting unit power supply
 - Correctness of the PLC program
 - Correctness of the lubrication oil circuit and stability of the flow rate, using correct oil type and replacing the oil regularly
 - * For specifications and data, please refer to each chapter of installation instruction.
 - * Application warranty is only valid after installation, power supply for shifting, PLC program, layout of lubrication, and flow rate have been confirmed by a GTP technical engineer.
 - * After confirming installation, power supply for shifting, PLC program, layout of lubrication, and flow rate. Any modification needs to be reconfirmed by a GTP technical engineer.
4. There will be no warranty if customer cannot reach above regulations; accordingly, GTP will charge customer for the service cost.
5. Damages due to natural and human error, installation, and operation error are not covered by warranty.

 **GTP German Tech Precision Manufacturing Co., Ltd.**

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Email : marcolin@zfgta.com.tw
Website : www.german-tech-precision.com
Chief representative in Taiwan :
German Tech Auto Co., Ltd.

