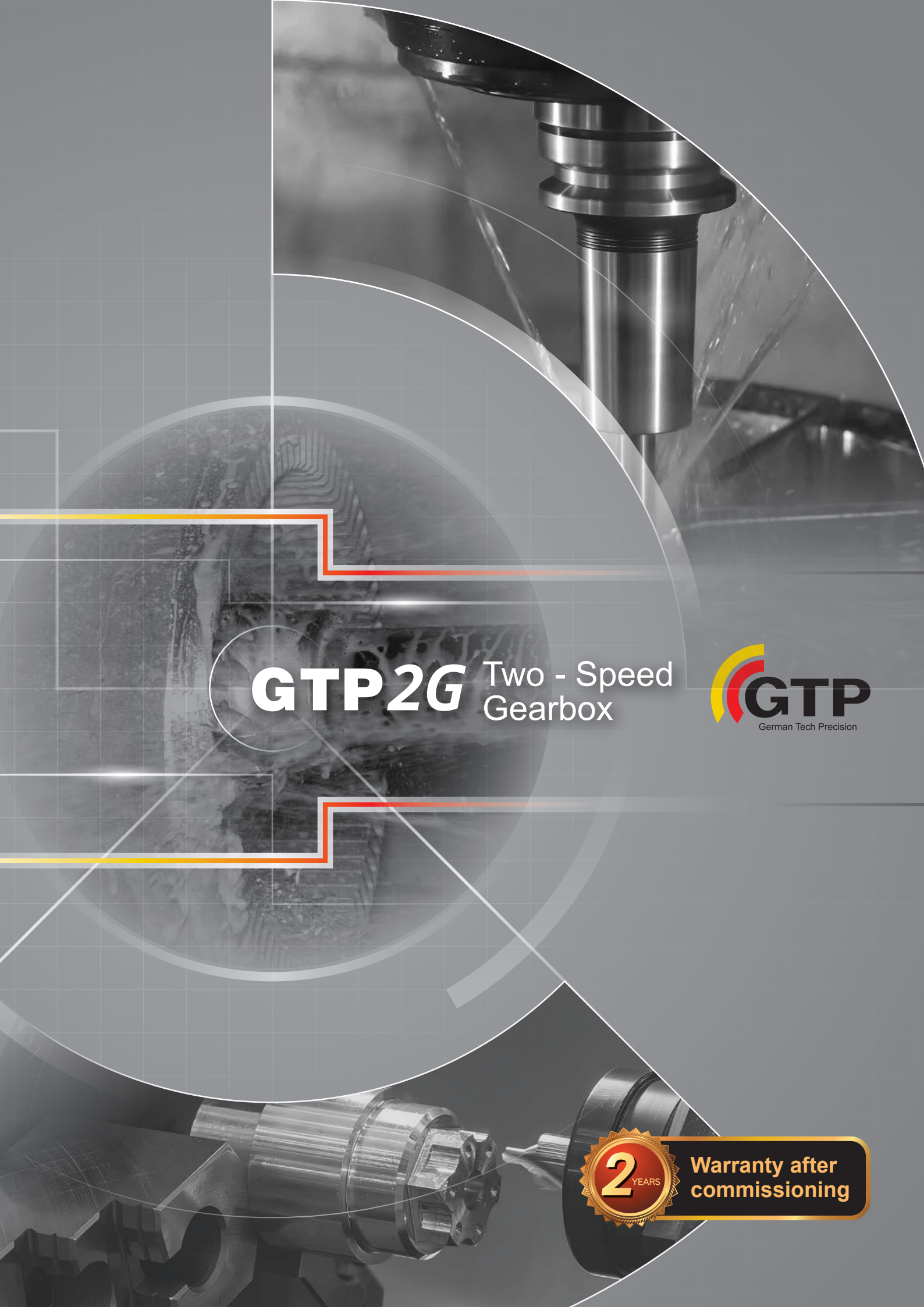


GTP2G Two - Speed Gearbox

GTP
German Tech Precision

2 YEARS Warranty after commissioning

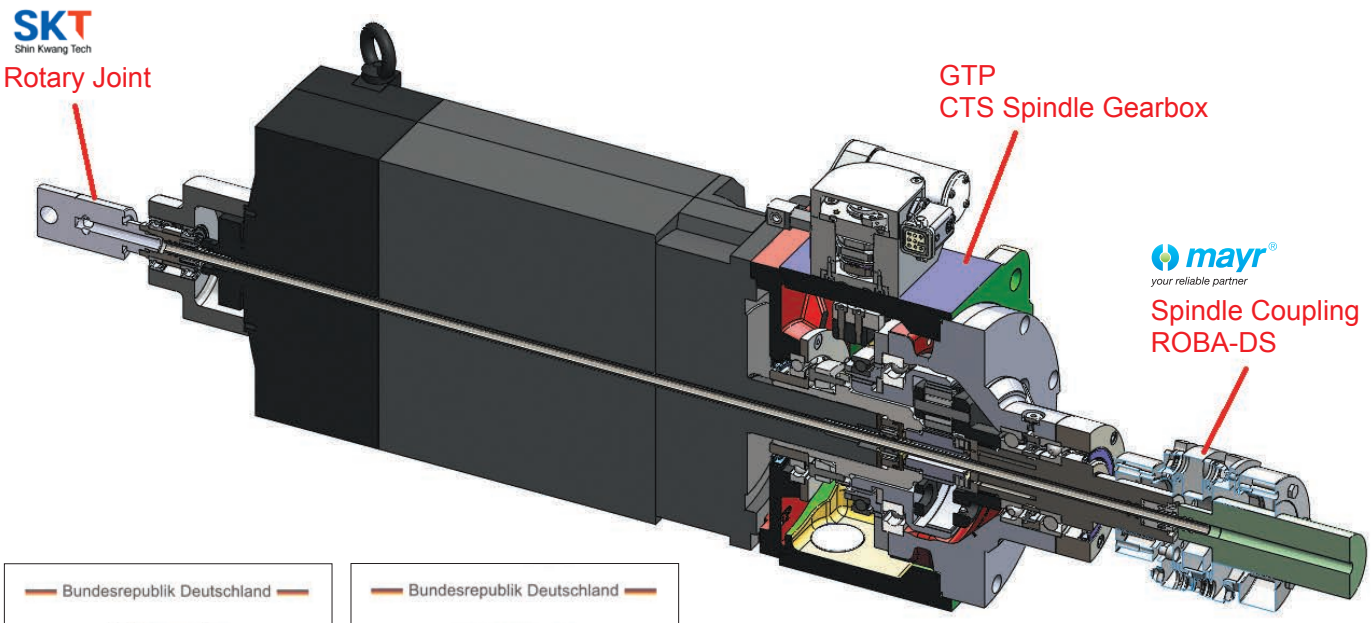
Standard Flange Output

Long-type Flange Output

Inline Output

Gear Output

CTS (Coolant Through Spindle)




Bundesrepublik Deutschland

Urkunde

über die Erteilung des Patents Nr. 10 2015 100 169

Low thermo increase


Bundesrepublik Deutschland

Urkunde

über die Erteilung des Patents Nr. 10 2015 100 188

Low vibration

German Patent

Innovative Technology, Great Value

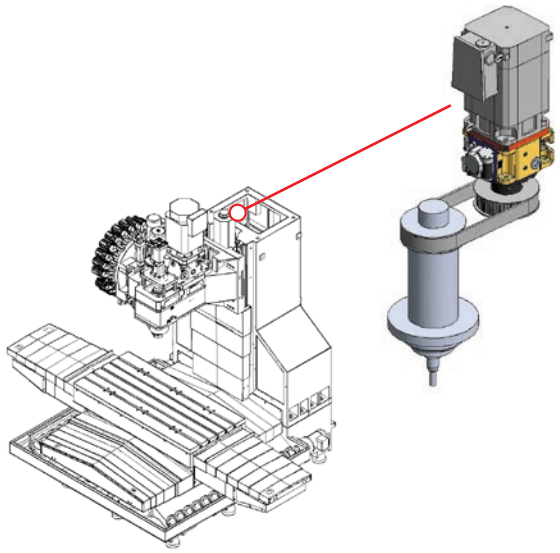
Our development and production are focused on high precision and high productivity.

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

Application

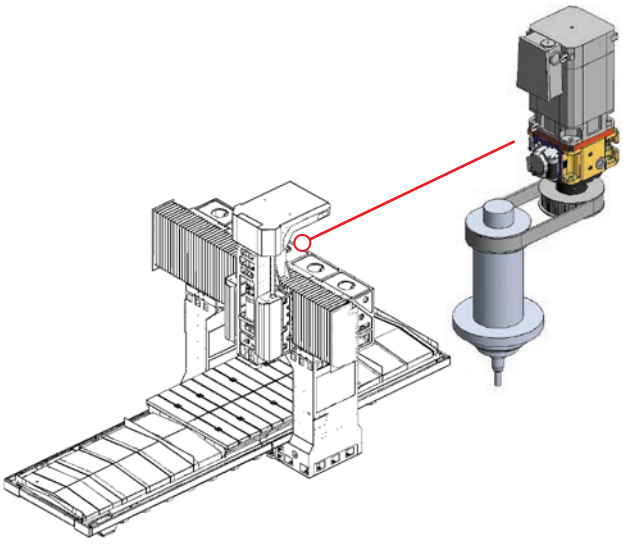
GTP-2G Two-speed gearboxes are mainly used in machine tool main-spindle drives, test benches, and applications which high torque is needed.
The gearbox can be used in turning machines and machining centers thanks to its variable installation position. The gearbox is also suitable for many systems where torque increases and/or speed reduction is needed.

Installation options:



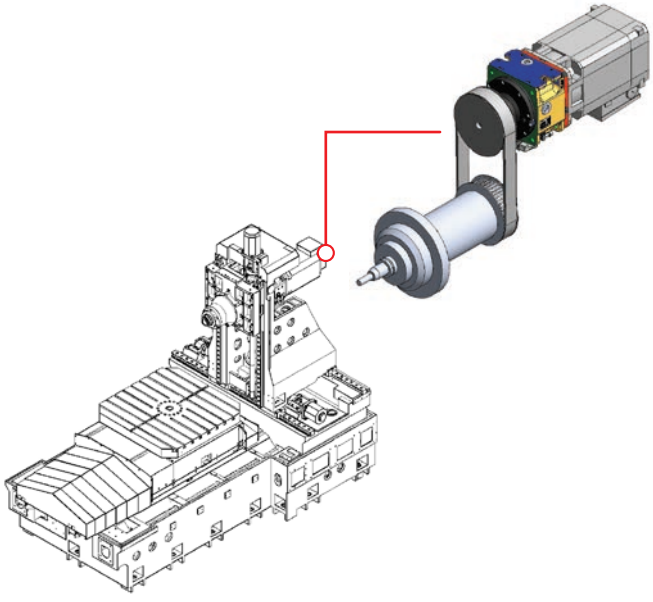
Vertical Machining Center

Installation options:



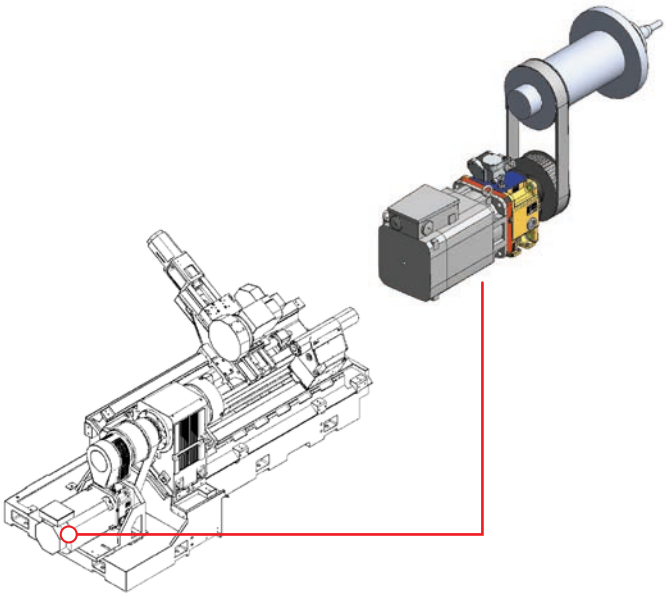
Gantry Milling Machine

Installation options:



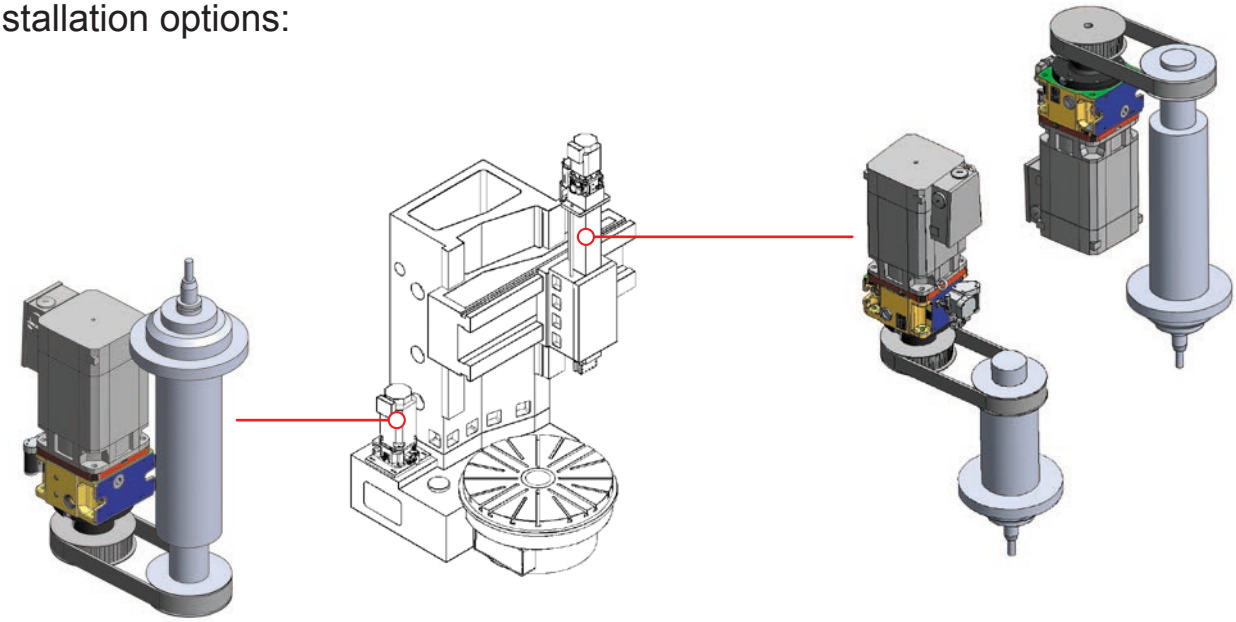
Horizontal Machining Center

Installation options:



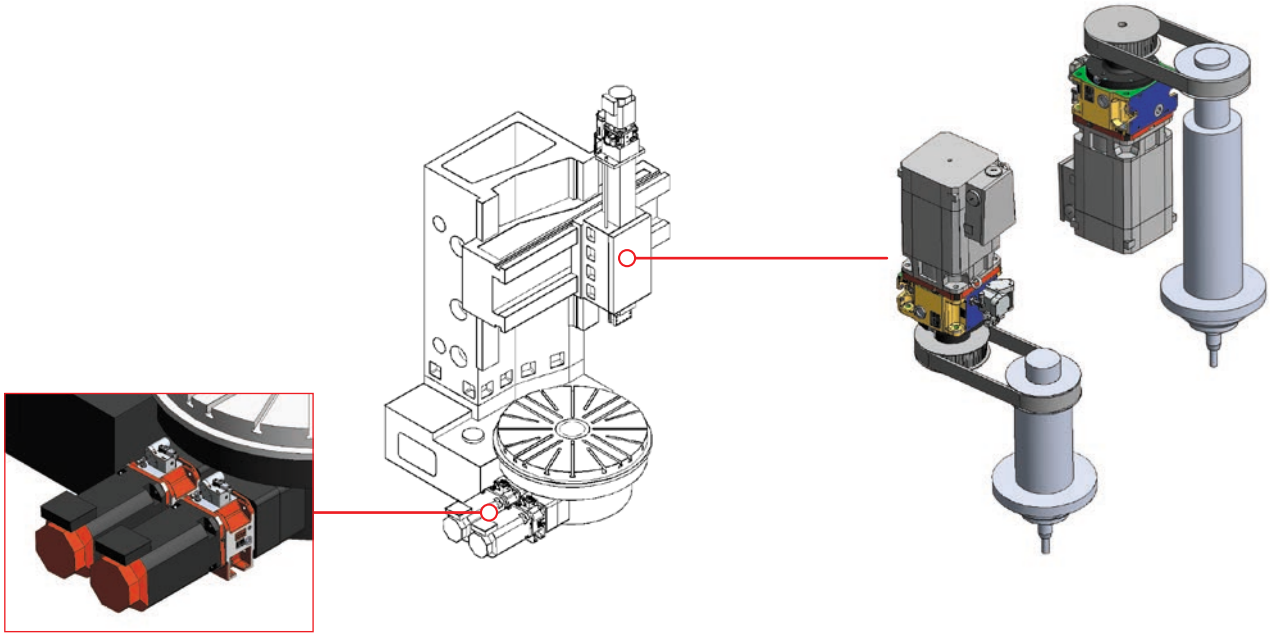
Horizontal Lathe

Installation options:



Vertical Lathe

Installation options:



Vertical Lathe - Horizontal Installation

Benefits

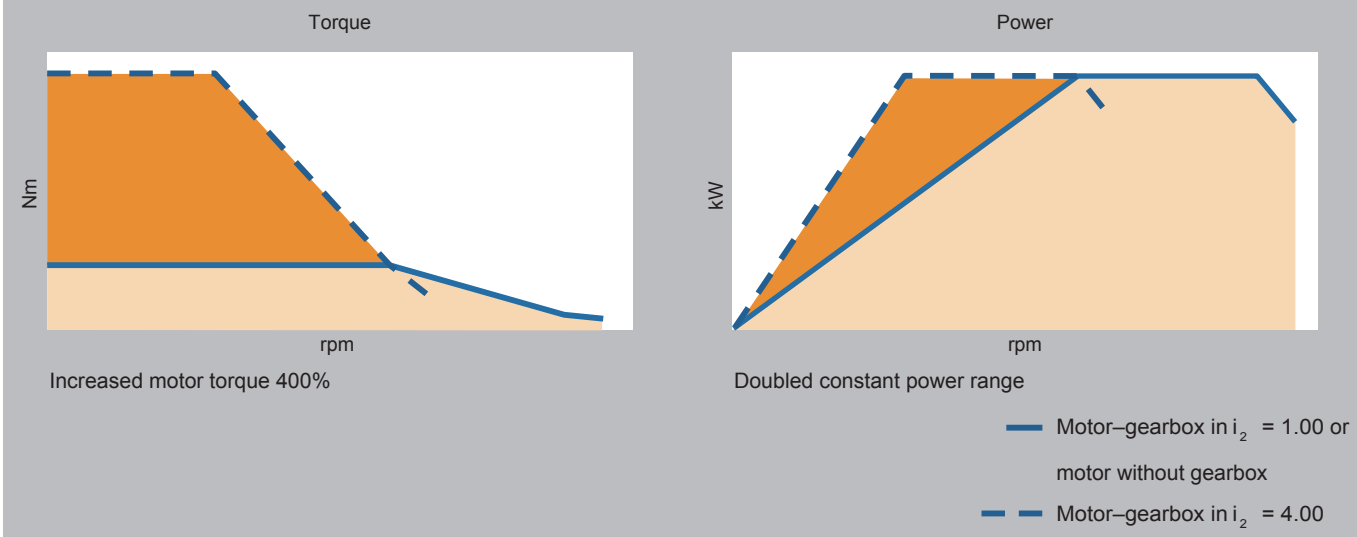
- Energy saving : with a precise reduction mechanism and high efficiency, decreasing or extending the input speed of the motor to achieve machining requirements and save energy.
- Wide machining range : a wide output speed, increasing the flexibilities of machine tools with no influence on machining 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 Gearbox
Wide bearing base for 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



Increased motor torque 400%

Doubled constant power range

Machining Center

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.

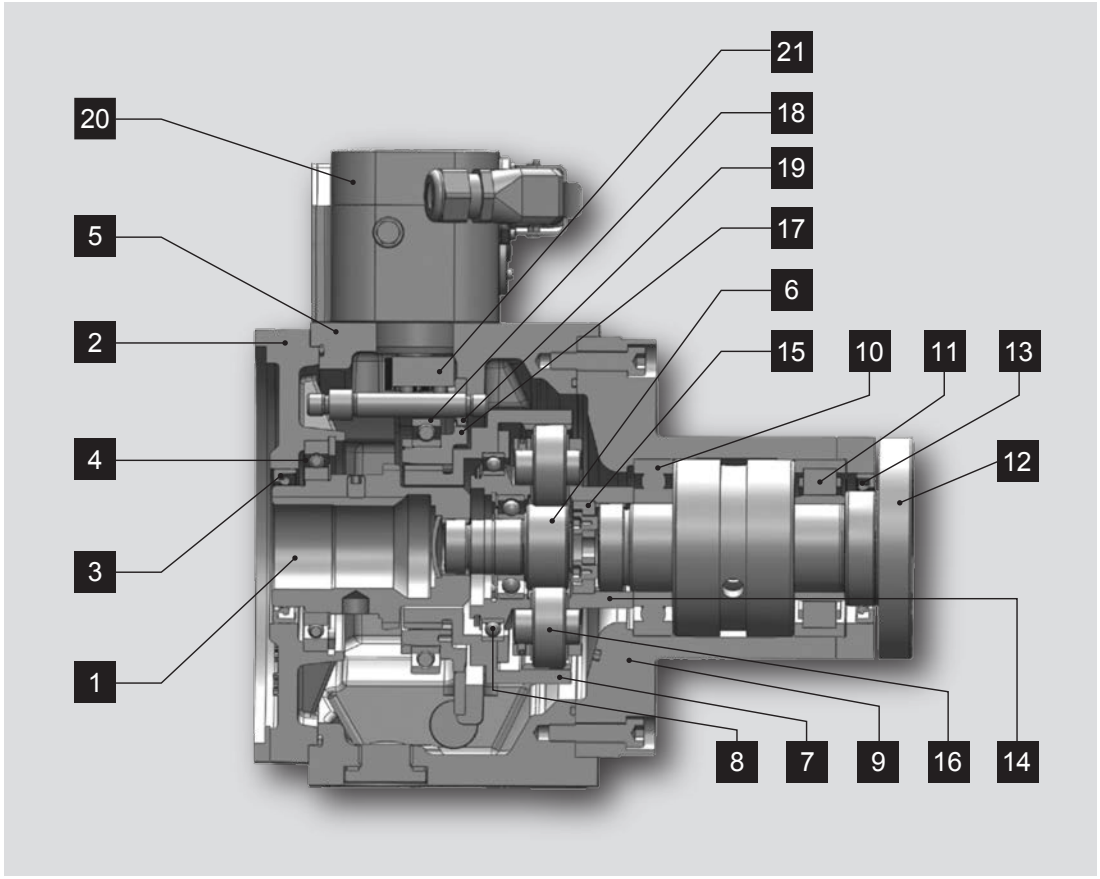
The motor-gearbox unit is commonly fixed to the machine frame or bed by using the gearbox foot mounting (Available for 2G120, 2G250, 2G300, 2G600 only).

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.

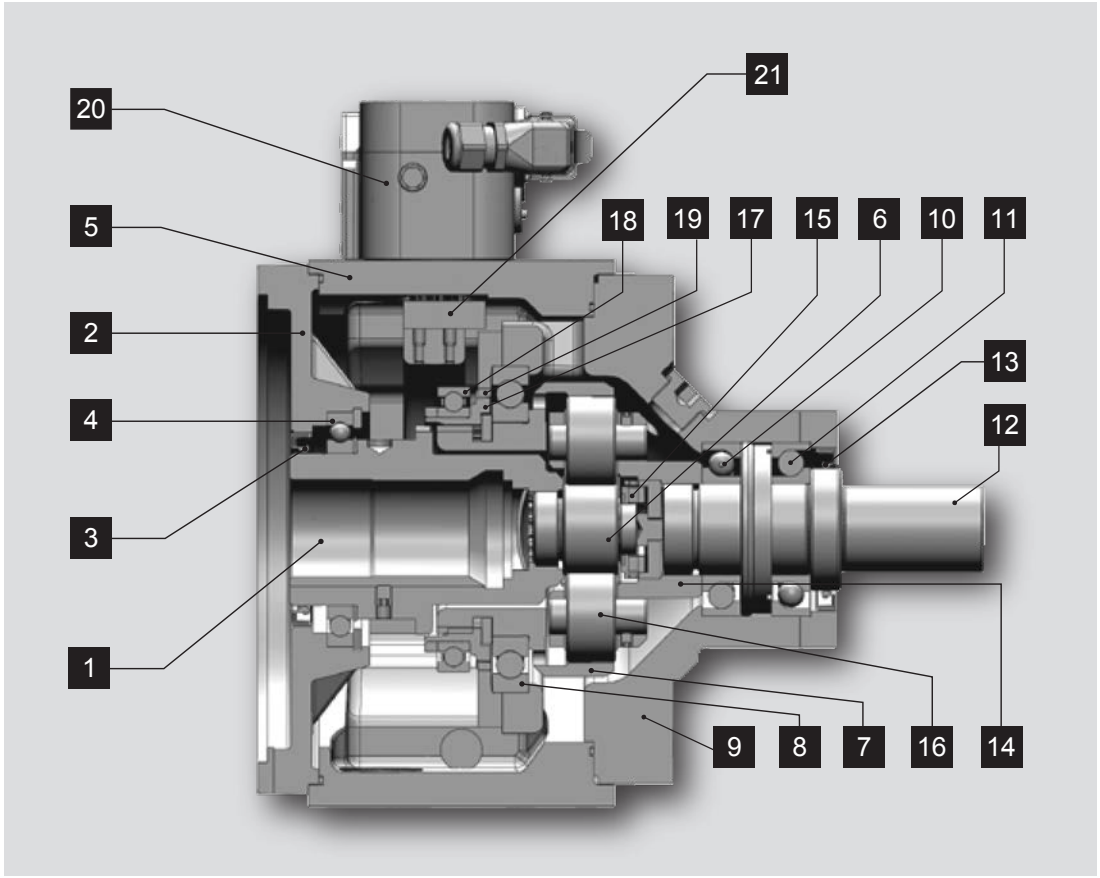
Variable output housings suitable for different main spindle design : e.g. **GTP-*2G*** STANDARD with a wide bearing base for belt drives, allowing high radial load; **GTP-*2G*** INLINE with a short output housing and angular contact bearings for direct drive.

GTP-*2G* INLINE
Short output housing for direct mounting to spindle

GTP-2G120/121 Standard



GTP-2G250/300 INLINE



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

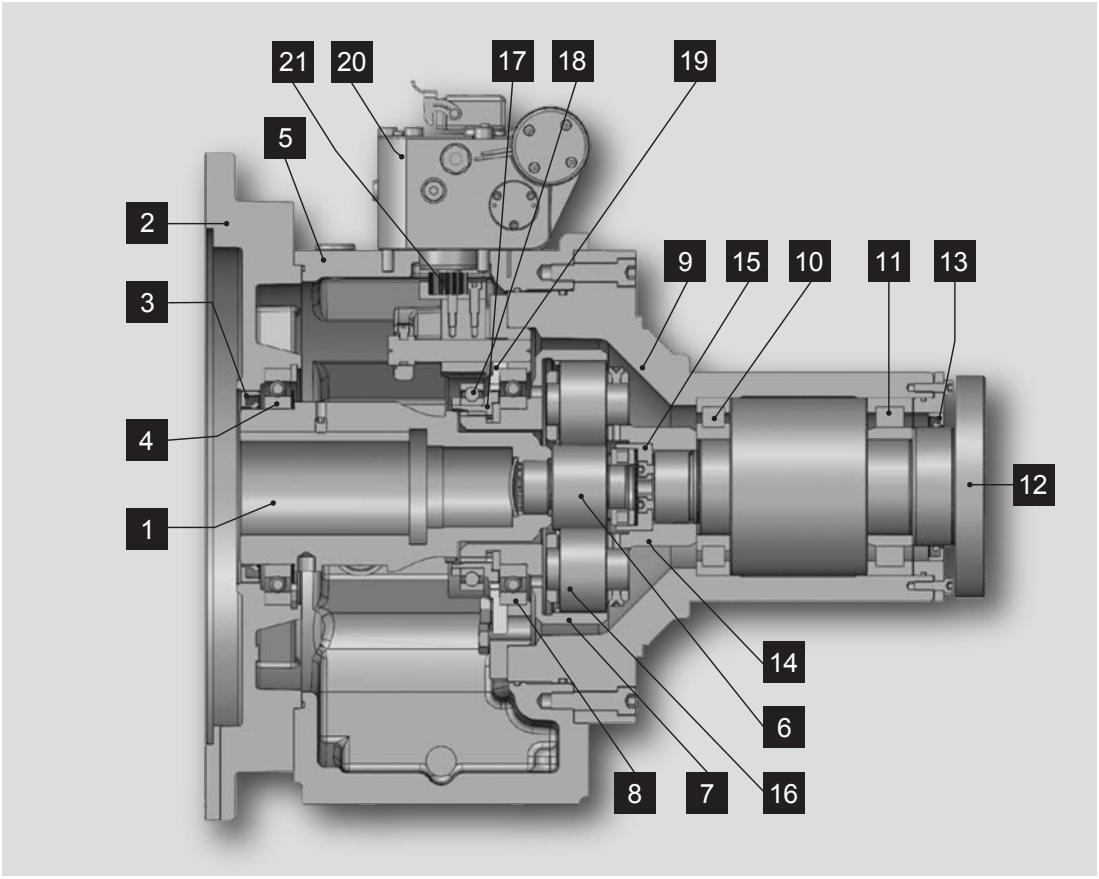
Gear shifting unit :

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

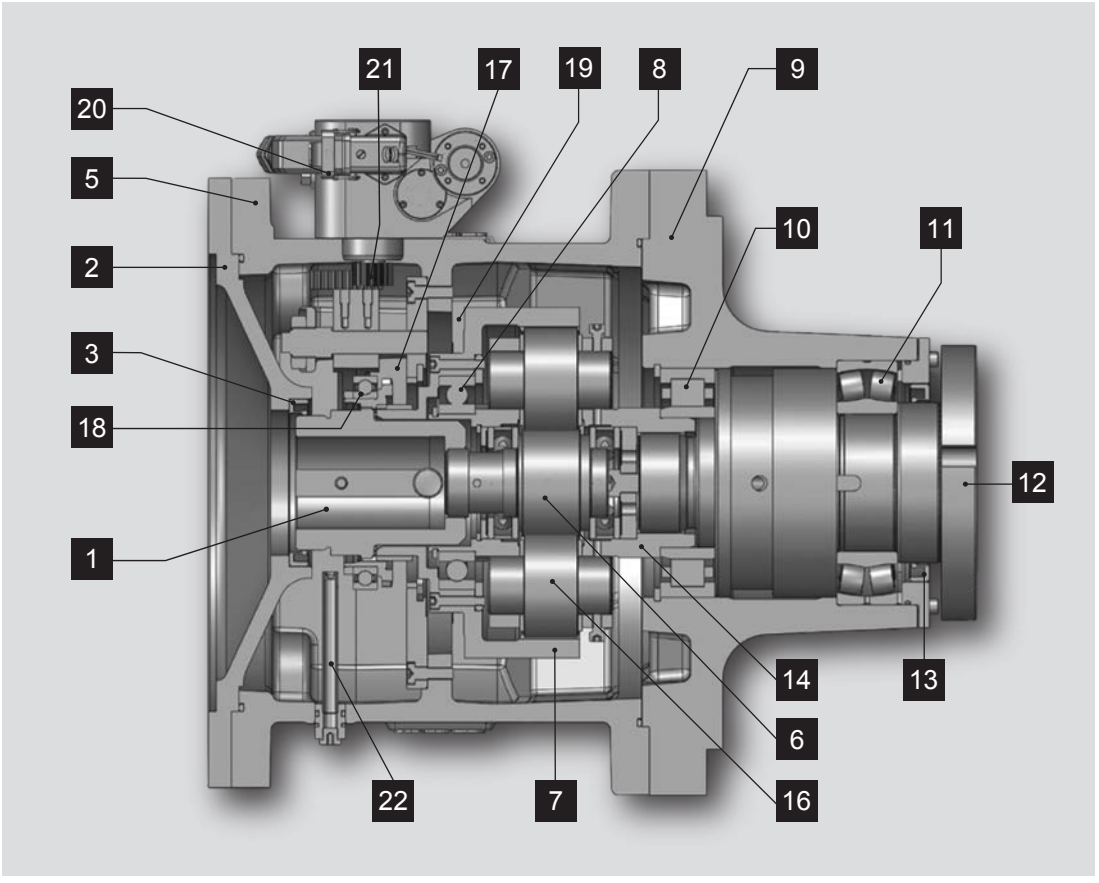
Gear shifting unit :

20: Shifting unit
21: Rack/pinion

GTP-2G600 Standard



GTP-2G800 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

Technical Data

Nominal data			Ratio		2G120 2G121		2G250		2G300		2G600
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		1.0		120		250		300		600
	Nm		4.0		480		1000		1200		2400
	Nm		4.91		589						
	Nm		5.0								3000
	Nm		5.5				1375		1375		
Maximum data Max. Torque in Nm (intermitted loading S6 cycle duration 10 min, ED. max. 60%)											
Input	Nm				140		400		400		840
Output (max. accelarating torque)	Nm		1.0		140		400		400		840
	Nm		4.0		560		1600		1600		3360
	Nm		4.91		687						
	Nm		5.0								4200
	Nm		5.5				2200		2200		
Max. permitted input speed											
In reduction ratio i≠1	min^{-1}		≠1		8000		6300		6300		5000
Direct drive i = 1	min^{-1}		1.0		12000 [3])		10000 [3]) [2])		10000 [3]) [2])		5000
Max. vibration value	mm/sec		≦		1.0		1.0		1.0		1.5
At reference speed	min^{-1}				6000		5000		5000		4000
Max. axial force in reduction ratio in counter clockwise (ccw) operation running and max. input torque see persmissible axial force for motor shaft	N		4.0				3964		4756		7253
	N		4.91								
	N		5.0								9519
	N		5.5				5288		5288		
Mass moment of inertia[1])	$kg\text{-}cm^2$		1		110		270		270		736
Input	$kg\text{-}cm^2$				9		36		36		197
Operating data											
Oil fill volume in dm^3	Splash lubrication		B5		1.0/1.4		1.5		2.7		5.4
			V1		1.3/1.9		1.9		3.1		4.3
	Oil grade				HLP 68 as per ISO VG 68 HLP 46 as per ISO VG 46						
	Recirculating lubrication		B5		Approx oil fill in dm^3 oil level in middle of oil sight glass is most accurate reading						
			V1								
	Oil grade				HLP 32 as per ISO VG 32 HLP 22 as per ISO VG 22						
Oil change interval					Every six months or 2000 working hours						
Oil temperature					Max.120° C, depending on application, installation position, lubrication and cooling condition						
Weight											
Standard	(approx.kg)				43/53		69		93		177
Electrical Connection											
For shifting unit											
Power consumption	W				120						
Supply voltage (at shifting unit)	V				24±10%						
Current supply at 24V	A				5						

Customer can define bearing load and lifetime. See installation drawings or page 15-16 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 operating instruction.

* i=5.5: reduced input torque.

Technical Data

Nominal data			Ratio		2G800 2G801/2G802
Motor frame size	mm				180/200/225
Nominal power	KW				84
Nominal speed	min^{-1}				1000
Nominal input torque (continuous operation S1)	Nm				800/750*
Output torque	Nm		1.0		800/750*
	Nm		4.0		3200
	Nm		5.20		3900
	Nm				
Maximum data Max. Torque in Nm (intermitted loading S6 cycle duration 10 min, ED. max. 60%)					
Input	Nm		1.0		900/800*
Output (max. accelerating torque)	Nm		4.0		3600
	Nm		5.20		4160
	Nm				
	Nm				
Max. permitted input speed					
In reduction ratio i≠1	min^{-1}		≠1		5000
For direct drive i＝1[1)]	min^{-1}		1 [1)]		5000/6000 [2)]
Max. vibration value	mm/sec		≦		2.0
At reference speed	min^{-1}				4000
Max. axial force in reduction ratio in counter clockwise (ccw) operation running and max. input torque see persmissible axial force for motor shaft	N		4.00		
Mass moment of inertia	$kg\text{-}cm^2$		1		1956
Input	$kg\text{-}cm^2$				110
Operating data					
Oil fill volume in dm^3	Recirculating lubrication		B5		Approx oil fill in dm^3 oil level in middle of oil sight glass is most accurate reading
			V1		
	Oil grade		HLP32 as per ISO VG32		
Oil change interval			Every six months or 2000 working hours		
Oil temperature			Max.120°C, depending on application, installation position, lubrication and cooling		
Weight					
Standard	(approx.kg)				180
Electrical connection					
for shifting unit:					
Power consumption	W				120
Supply voltage (at shifting unit)	V				24±10%
Current supply at 24V	A				5

Customer can define bearing load and lifetime. See installation drawings or page 15-16.

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

2) Flange Output: 5000 rpm / 6000 rpm - Gear output and Inline output.

* i=5.2: reduced input torque.

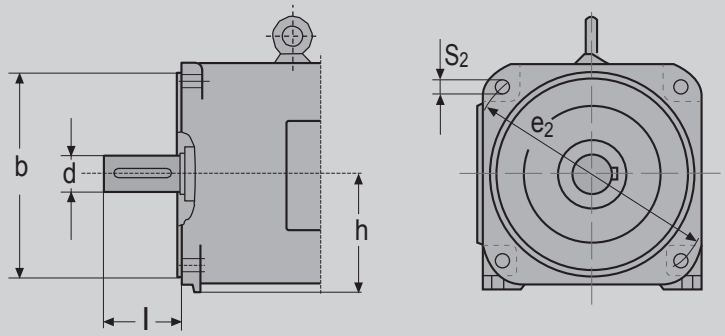
Standard Motor connection Dimensions

Gearbox sizes :

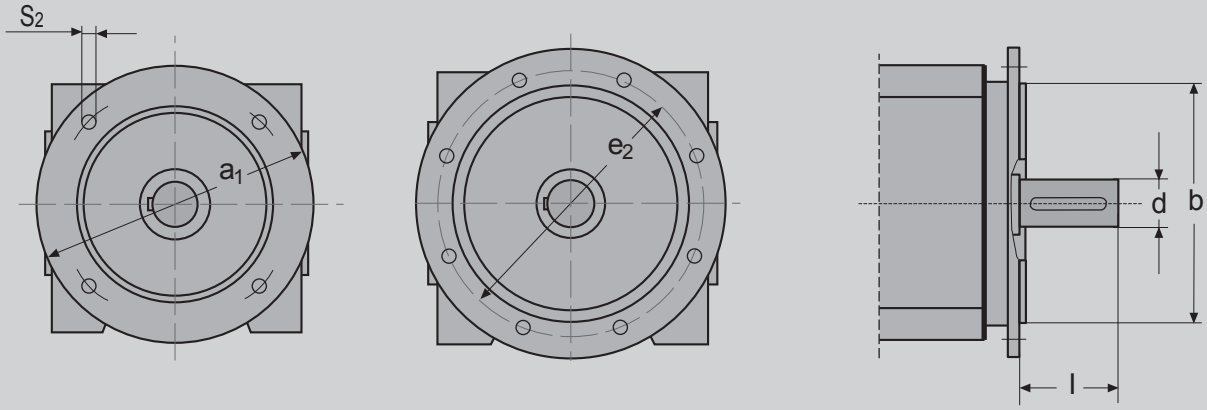
	2G120	2G121	2G250	2G300	2G600	2G801	2G802	
Motor frame size	100	112	132	160/180	160/180/200	200	225	
Standard motor connection dimensions	EN 50347: 2001							
h	100	112	132	160/180	160/180/200	200	225	
d	32/38/48	42/48	42/48/55/60	55/60	60/65/75/80	65/75/80	75/80	
l	80	110	110 140	110 140	140 170	140 170	140	
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



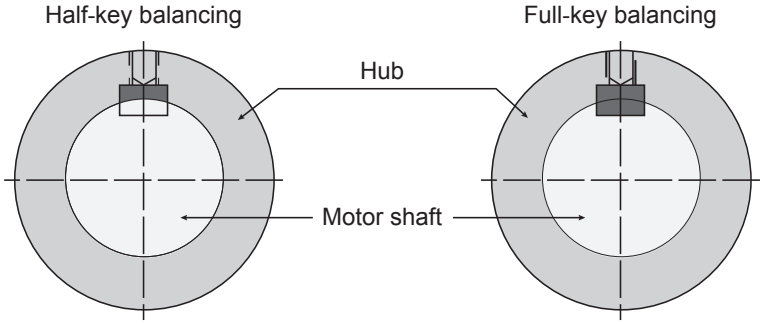
2G800/2G801/2G802



Motor output shaft with standard key

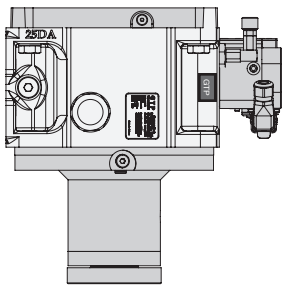
Gearbox sizes **GTP-2G**	Shaft diameter [mm]	Key	Key length
2G120/121	38	10x8	70
	32	10x8	70
	42	12x8	90
	48	14x9	90
2G250	42	12x8	90
	48	14x9	90
	55	16x10	90
	60	18x11	110
2G300	55	16x10	90
	48	14x9	90
	42	12x8	90
	60	18x11	110
2G600	55	16x10	90
	60	18x11	125
	65	18x11	125
	70	18x11	125
	75	20x12	125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

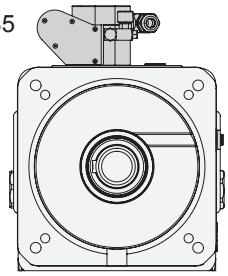


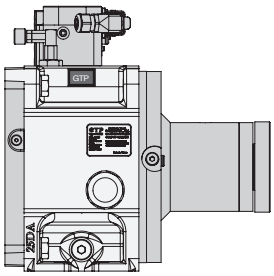
Installation positions

Vertical V1

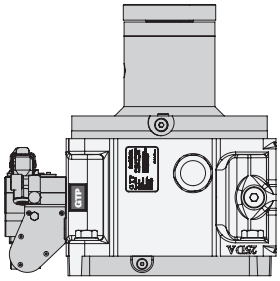


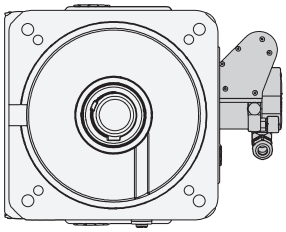
Horizontal B5





Vertical V3





Horizontal B5

Shifting unit on right side
(view from input)

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

Output / Motor interface

Gearbox size :

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					+				
Ø 38	0	0							
Ø 42			0	0					
Ø 55			0	0					
Ø 60					0				
Ø 65					0	0	0	0	
Ø 180						+	+	+	
Ø without output						0	0	0	
Ø 38 INLINE	0	0							
Ø 42 INLINE			0	0					

+ = Standard
0 = Option

There are TWO choices of different output variants, The standard long bearing base output flange version Is used for belf 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 housing, such as **GTP-2G** INLINE, for space saving direct drives. This version is supplied as a standard with angular Contact bearing.

Motor Connection

The hub typically features a fixed keyway for power transmission. It is import to ensure that the hub is dynamically balanced together with motor.

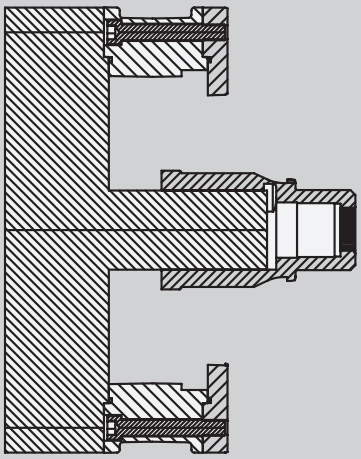
There are two types of balancing: half-key and full-key. In the case of full-key balancing, the motor shaft is balanced with a fitted key, the hub without. The length of the fitted key is unimportant in this instance. In the case of half-key balance, however, the keyway is partially filled with a balance 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.

For direct motor shafts, if the hub does not have a key, a hub clamping kit is required. According to DIN 332-2, the motor shaft must have a center hole with a thread. If the motor's connection dimensions are not directly compatible with the GTP-2G gearbox, a connection flange or adapter ring is required. These connecting components can be supplied to match different motor manufacturers.

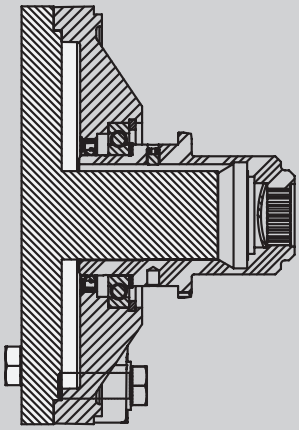
Note

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.

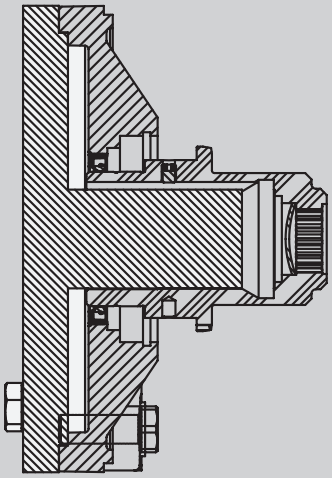
Connection options



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.

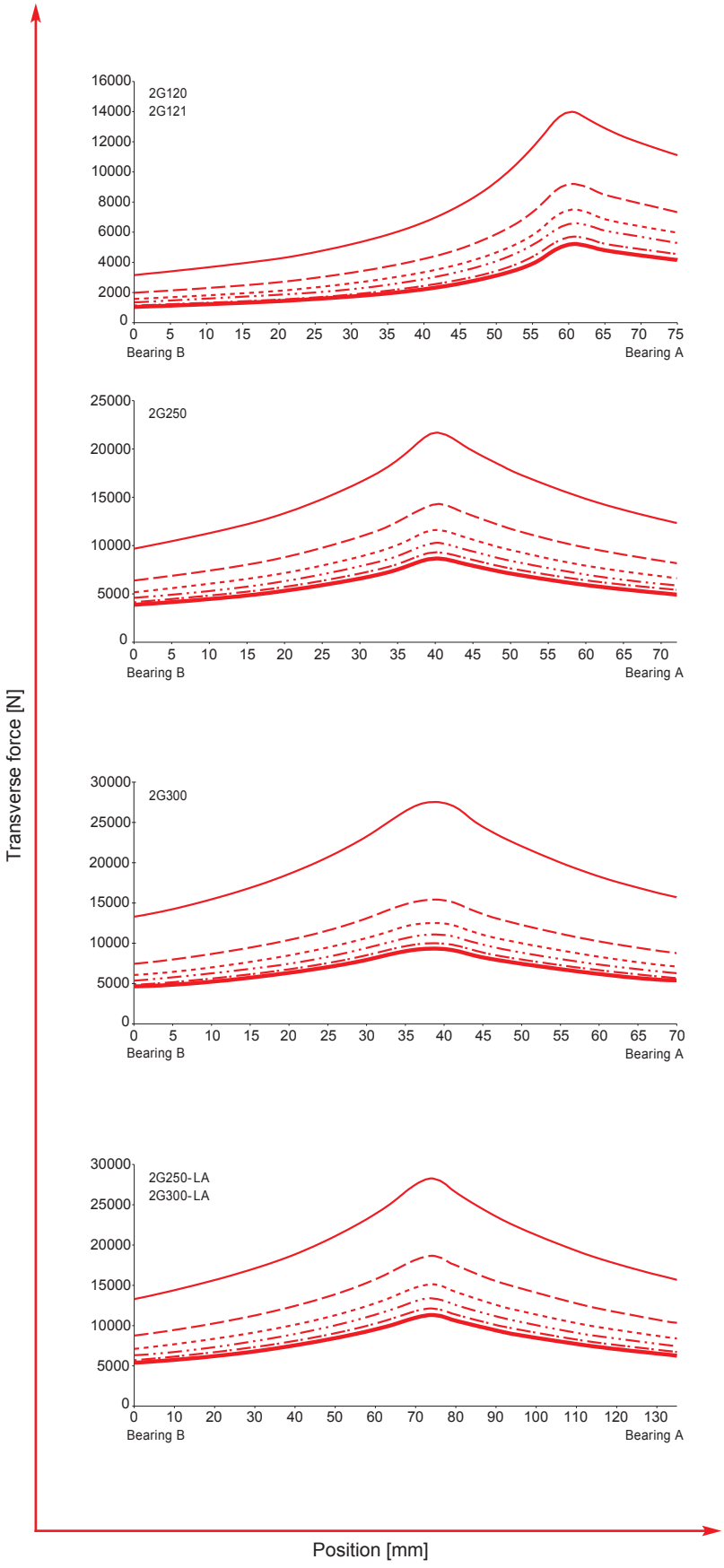
Closed version (with shaft seal)
This version incorporates an adapter plate with a shaft seal, which means that the gearbox forms as a compact, closed unit.

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



2G120 / 2G121

- nab/out = 375 min-1
- nab/out = 1500 min-1
- nab/out = 3000 min-1
- nab/out = 4500 min-1
- nab/out = 7500 min-1
- nab/out = 10000 min-1

2G250 / 2G250 long
2G300 / 2G300 long

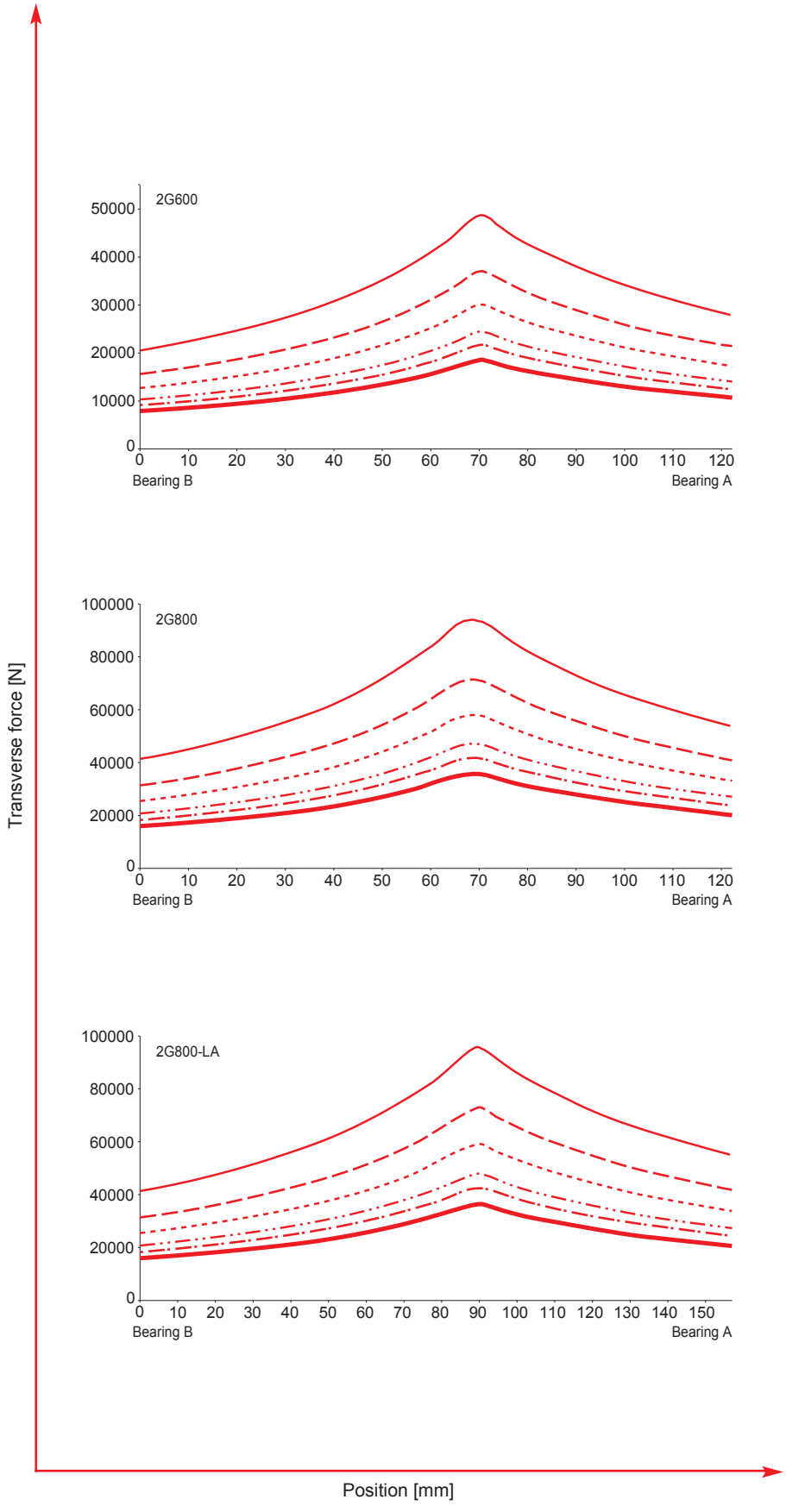
- nab/out = 375 min-1
- nab/out = 1500 min-1
- nab/out = 3000 min-1
- nab/out = 4500 min-1
- nab/out = 6300 min-1
- nab/out = 8000 min-1

Permitted Cantilever Forces

For standard bearing
service life = 36,000hours

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

Versions and Lifetime Calculation based on XY-method
Belt must be between output bearings



2G600 / 2G800 / 2G800 long

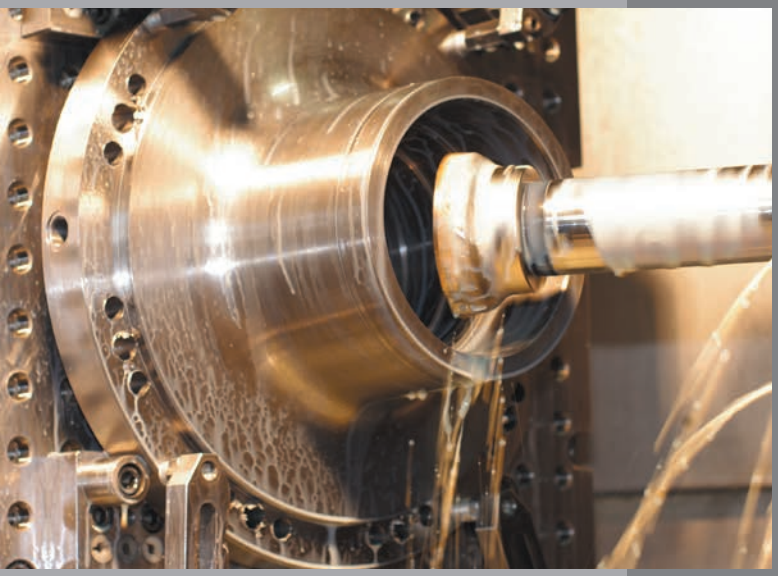
nab/out =	200 min-1
nab/out =	500 min-1
nab/out =	1000 min-1
nab/out =	2000 min-1
nab/out =	3000 min-1
nab/out =	5000 min-1

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

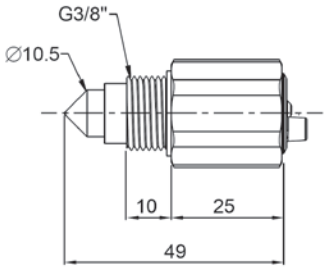
Class 2 :

Normal torsional backlash <20 arcmin

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.

Optional oil level sensor is available upon request, depending on application requirements



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 2.5 dm^3/min. (only for2G120/2G121/2G250/2G300) ; 3.0 dm^3/min. (only for 2G600) ; 3.0 dm^3/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			2G250/2G300/2G600		
Installation Position	Oil inlet*	Max. pressure	Oil outlet*	Oil inlet*	Max. pressure	Oil outlet*
V1	M and K/R, L/S, or T	2.5-3.0 bar	D/E	M and K/R, L/S, or T	2.5-3.0 bar	D/E
V3	K/R, L/S, or T	2.5-3.0 bar	H	L and K or T	2.5-3.0 bar	H
B5	M and G/F or T	2.5-3.0 bar	D/E	M and K/R or T	2.5-3.0 bar	D/E
B5 turned	G/F or T	2.5-3.0 bar	H	M and K/R or T	2.5-3.0 bar	H

***View toward gearbox output :**

D = Mainly counter clockwise rotation

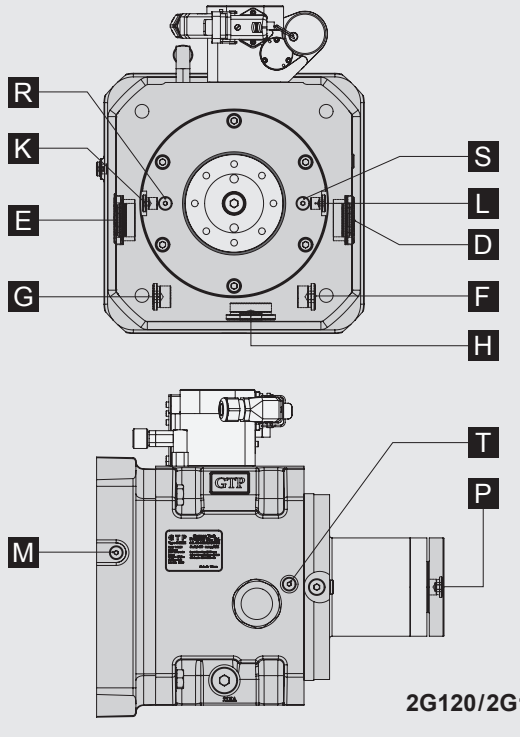
E = Mainly clockwise rotation

Note : For 2G120/121/250/300 type.

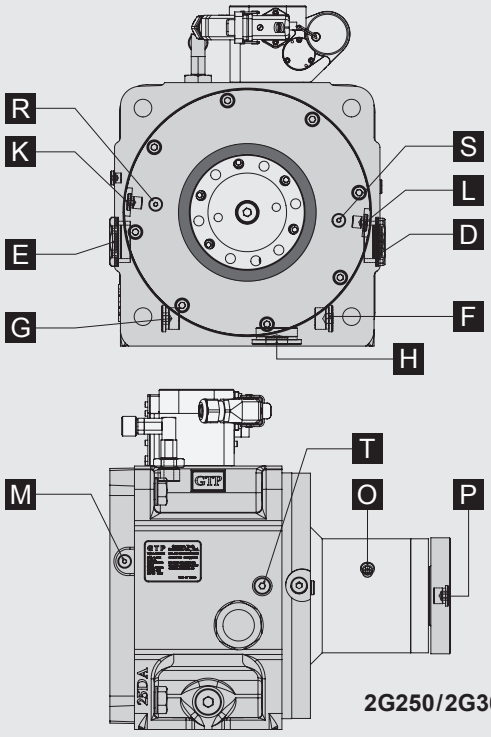
Gear-Box operating at permitted highest speed: 2G120/121-12,000rpm, 2G250/300-10,000rpm

- -Please make sure the minimum flow-rate is 3.0 dm^3/min.
  and the minimum oil pressure is 3 bar when you use only one channel (K port / L port or T port) for channel lubrication system.

***T port is option.**



2G120/2G121



2G250/2G300

Connections for recirculating lubrication

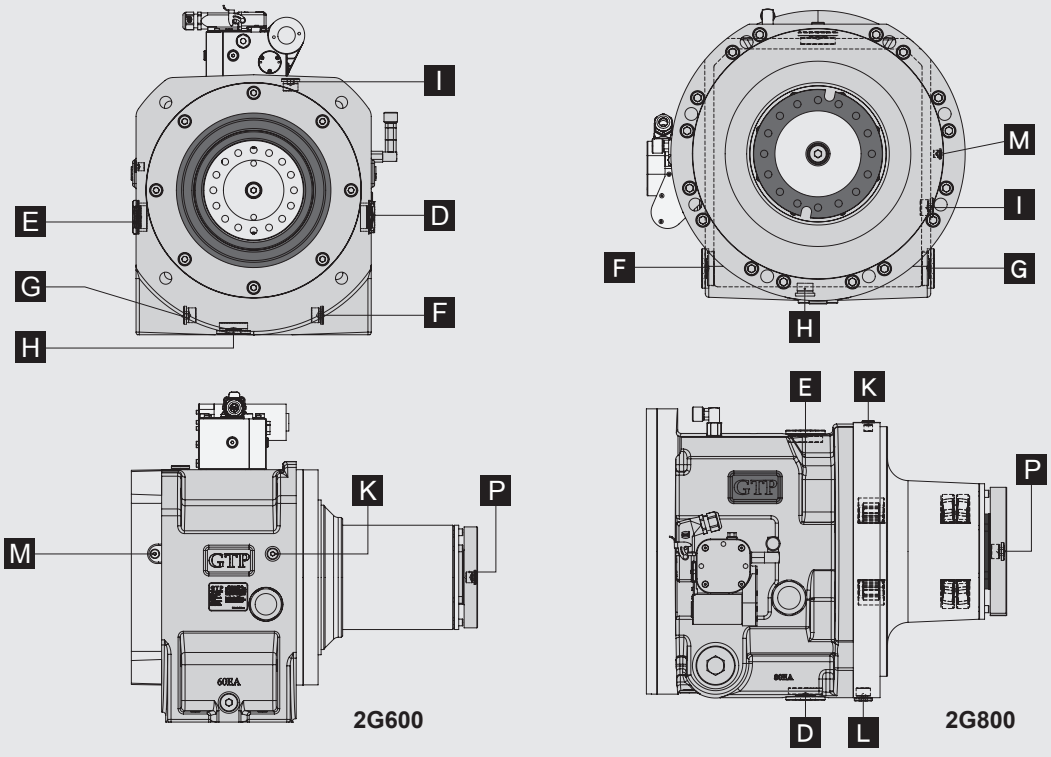
	2G800			
Installation Position	Oil inlet*	Max. pressure	Oil outlet*	
V1, V3	M and K	3-5 bar	D/E or G/F	
B5	M and K	3-5 bar	G/F or D	

***View toward gearbox output :**

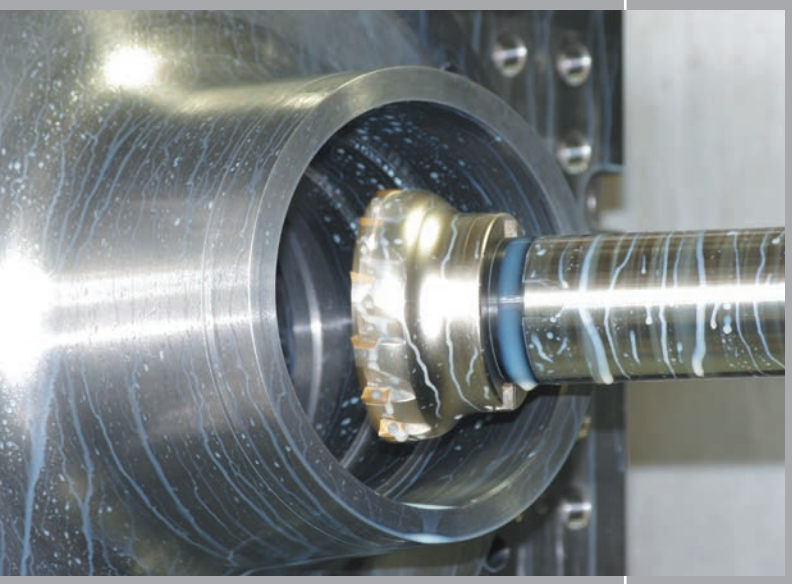
D/G = Mainly counter clockwise rotation

E/F = Mainly clockwise rotation

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

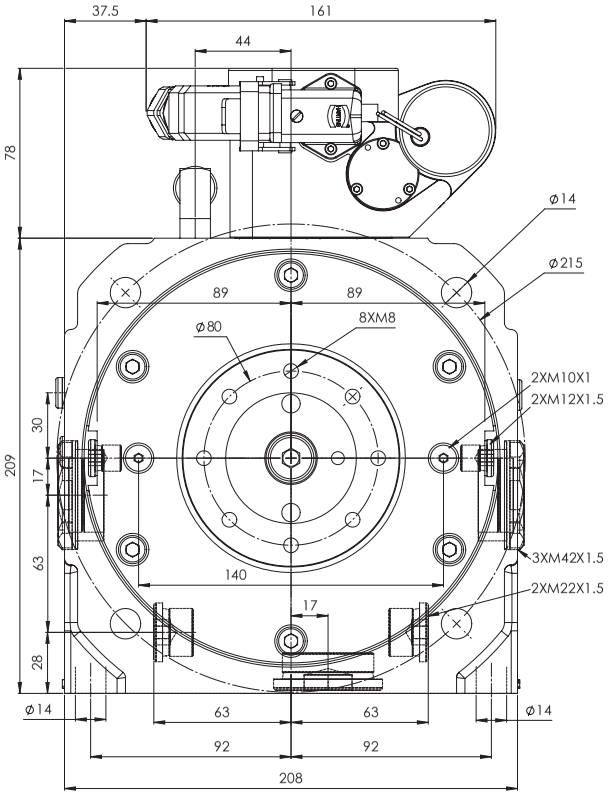


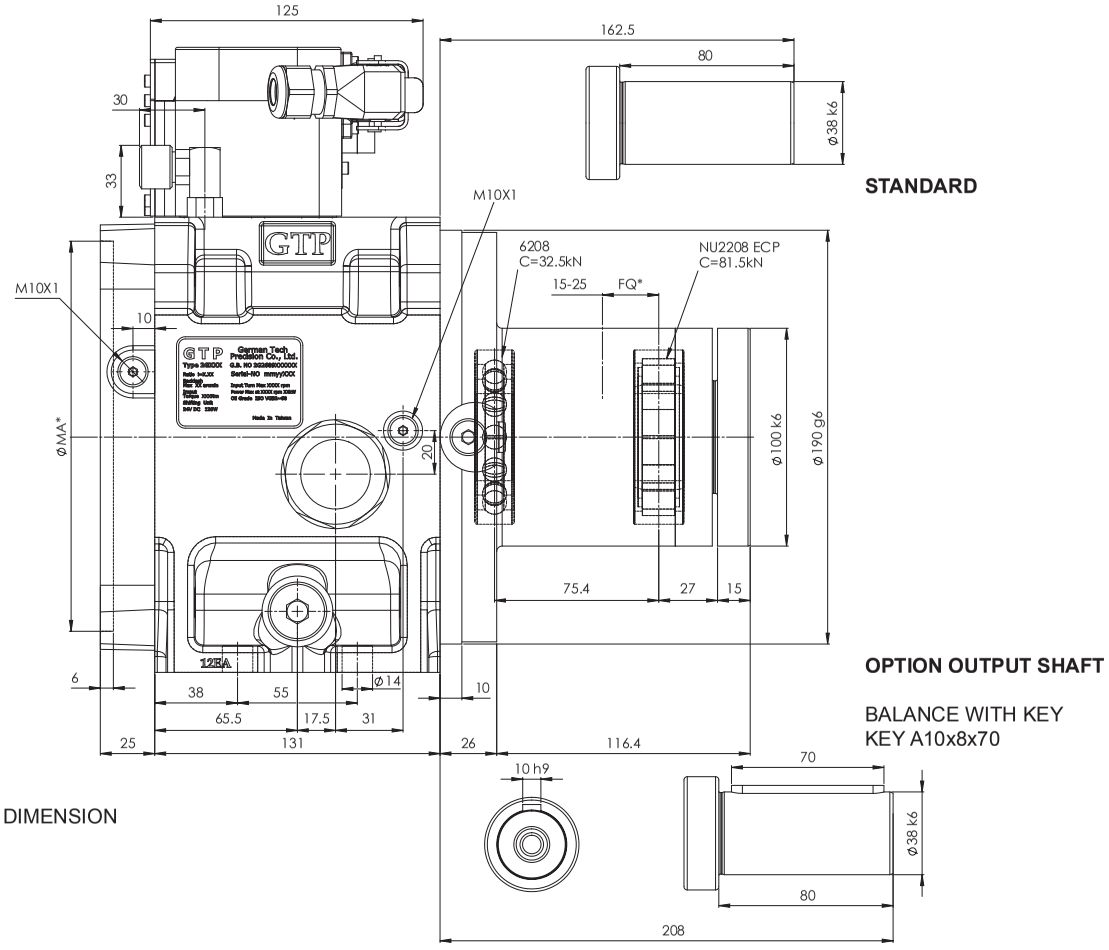
Installation Drawings



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

2G120 INLINE





STANDARD

OPTION OUTPUT SHAFT

BALANCE WITH KEY
KEY A10x8x70

ØMA*MOTOR DIMENSION

OIL GRADE:HLP 46-68ACC/ISO VG 46-68 WITH SPLASH LUBRICATION
HLP 22-32ACC/ISO VG 22-32 WITH RECIRCULATING LUBRICATION

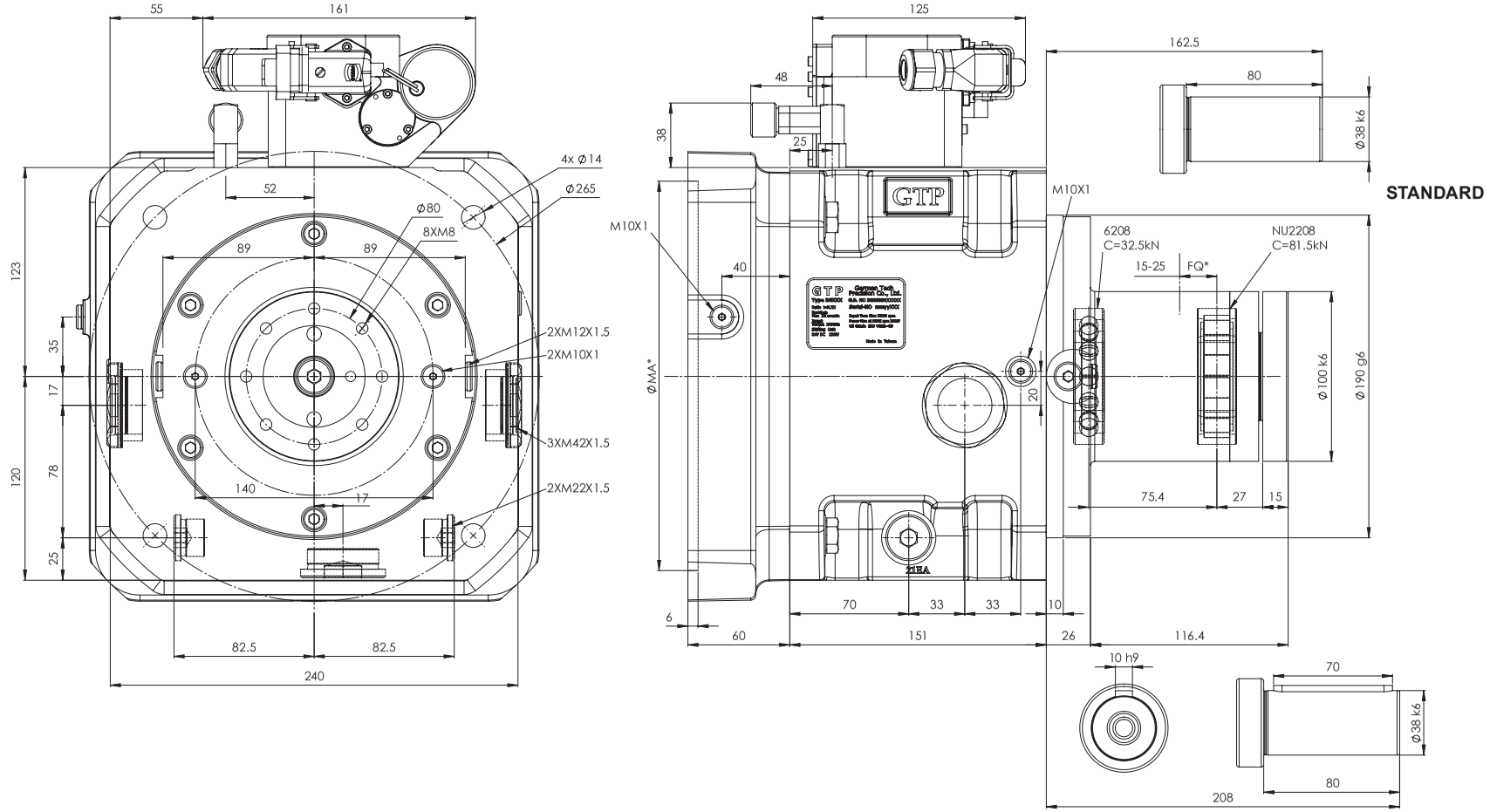
	STANDARD	**OPTION**
TRANSMISSION RATIO:	i_1=4.0	i_1=4.91
	i_2=1.0	i_2=1.0
WEIGHT: Ca.42Kg		

*) ASSUMED OF RESULTING
PULLEY FORCE FOR BEARING CALCULATION

OIL LEVEL SIGHT GLASS
(LEFT AND RIGHT)

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

2G121INLINE



OIL GRADE:HLP 46-68ACC/ISO VG 46-68 WITH SPLASH LUBRICATION
HLP 22-32ACC/ISO VG 22-32 WITH RECIRCULATING LUBRICATION

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

WEIGHT: Ca.52Kg

*) ASSUMED OF RESULTING
PULLEY FORCE FOR BEARING CALCULATION

OIL LEVEL SIGHT GLASS
(LEFT AND RIGHT)

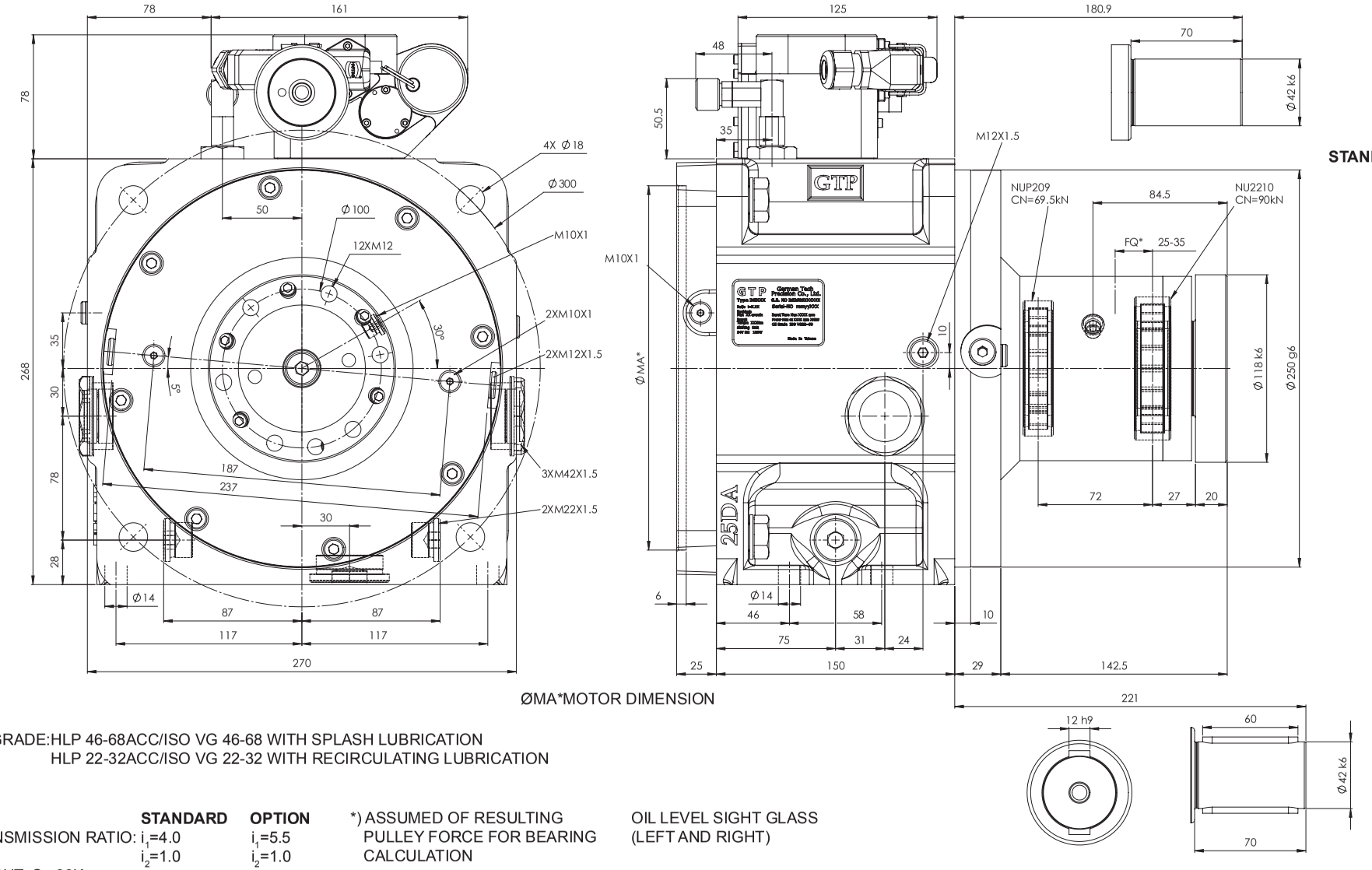
OPTION OUTPUT SHAFT

BALANCE WITH KEY
KEY A10x8x70

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

2G250INLINE

STANDARD



ØMA*MOTOR DIMENSION

OIL GRADE:HLP 46-68ACC/ISO VG 46-68 WITH SPLASH LUBRICATION
HLP 22-32ACC/ISO VG 22-32 WITH RECIRCULATING LUBRICATION

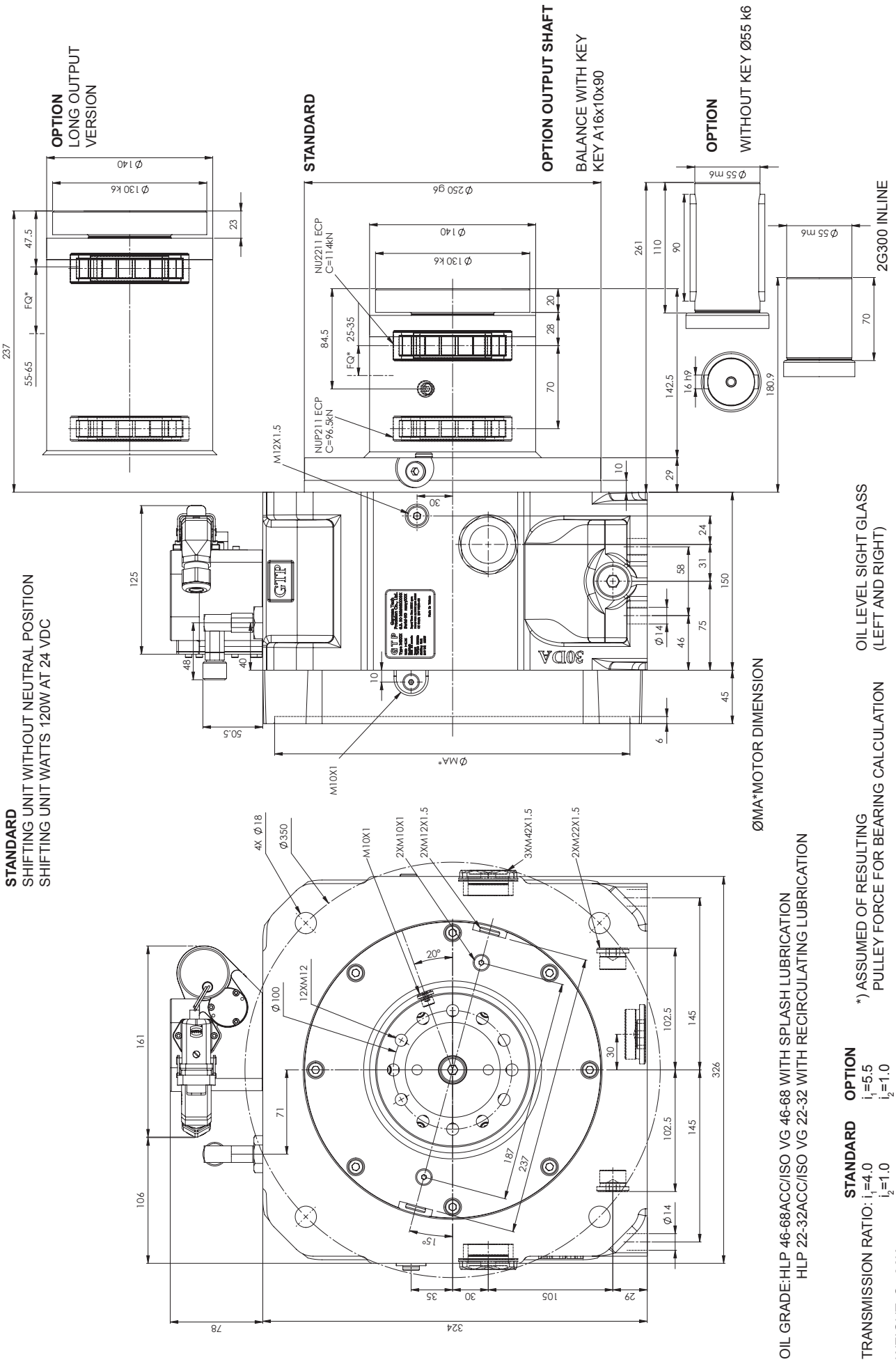
	STANDARD	**OPTION**
TRANSMISSION RATIO:	i_1=4.0	i_1=5.5
	i_2=1.0	i_2=1.0

WEIGHT: Ca.68Kg

*) ASSUMED OF RESULTING PULLEY FORCE FOR BEARING CALCULATION

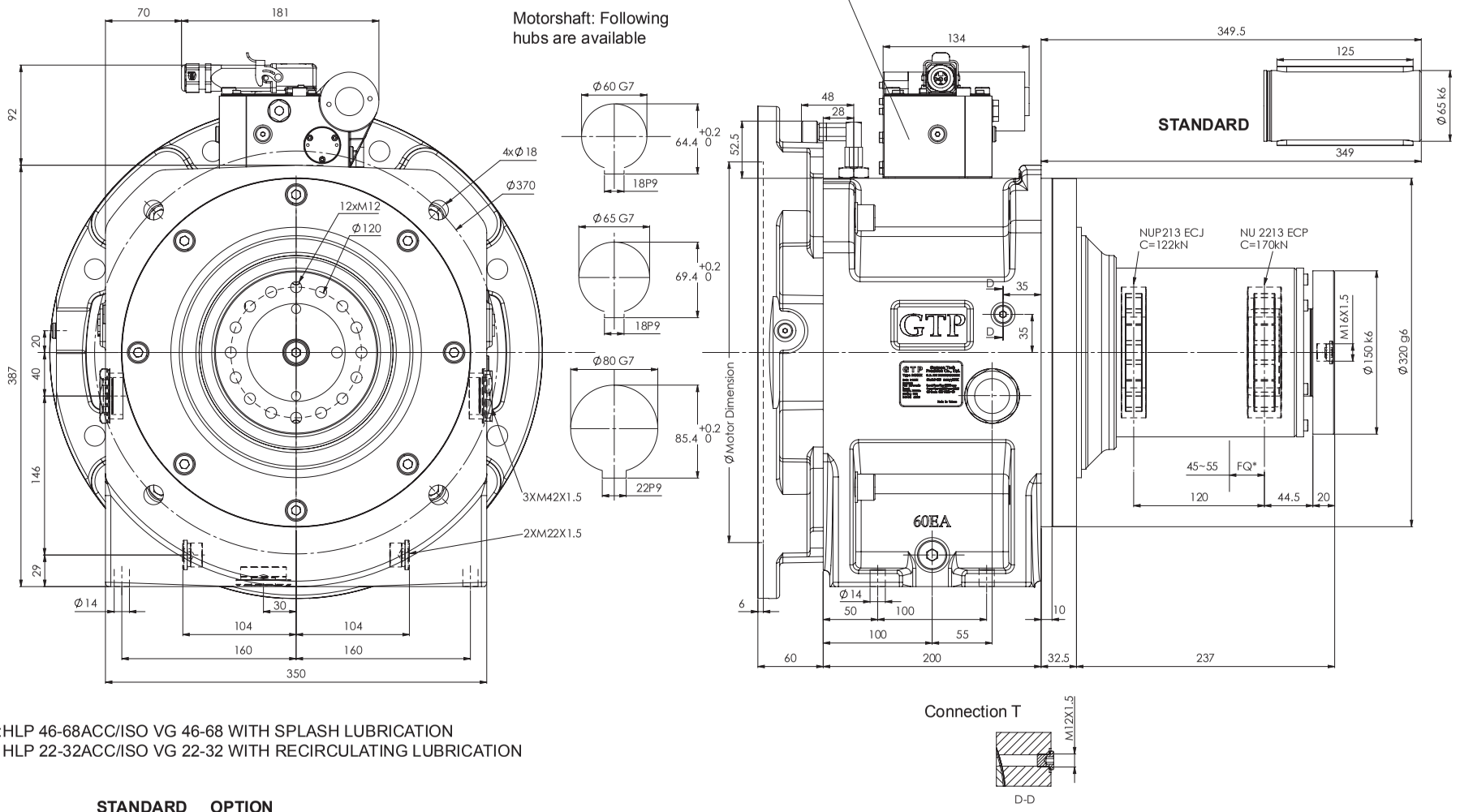
OIL LEVEL SIGHT GLASS (LEFT AND RIGHT)

Installation Drawing : *2G*300



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



OIL GRADE:HLP 46-68ACC/ISO VG 46-68 WITH SPLASH LUBRICATION
HLP 22-32ACC/ISO VG 22-32 WITH RECIRCULATING LUBRICATION

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

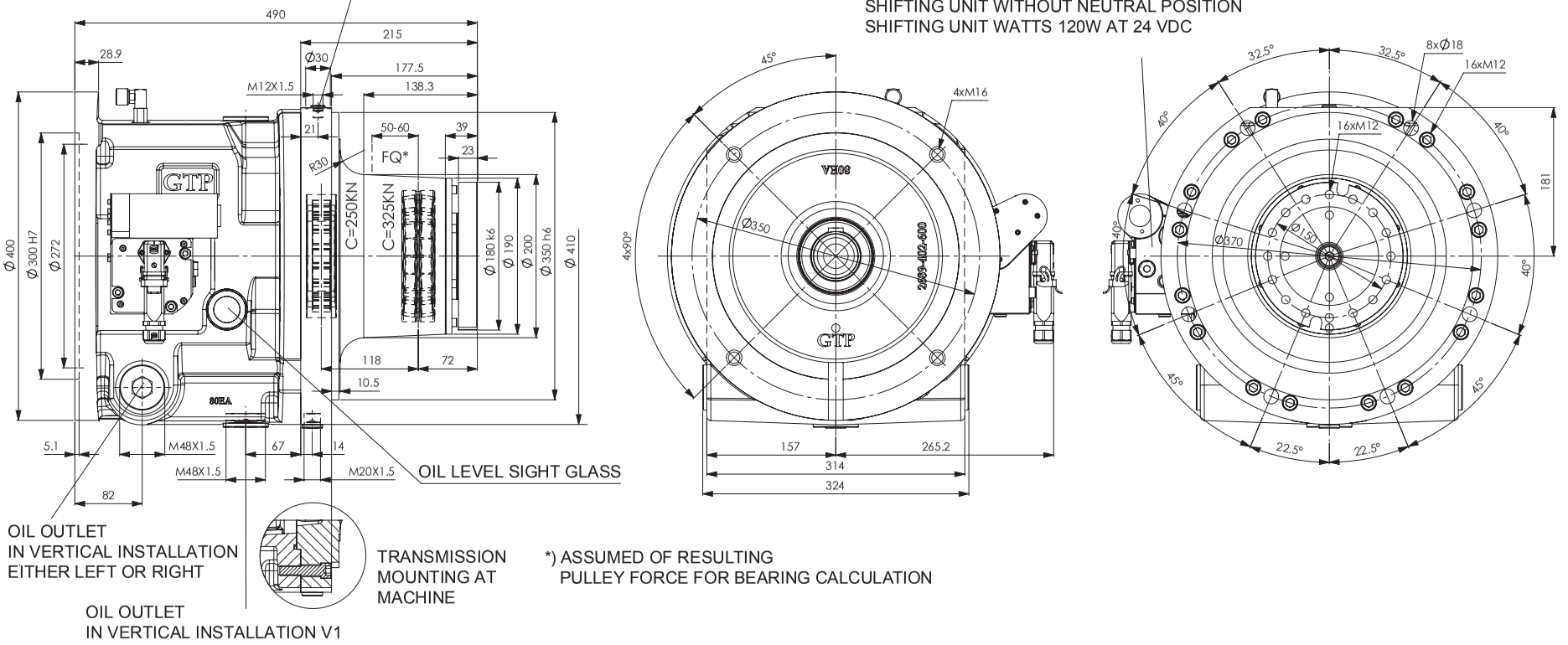
WEIGHT: Ca.165Kg

*) ASSUMED OF RESULTING
PULLEY FORCE FOR BEARING CALCULATION

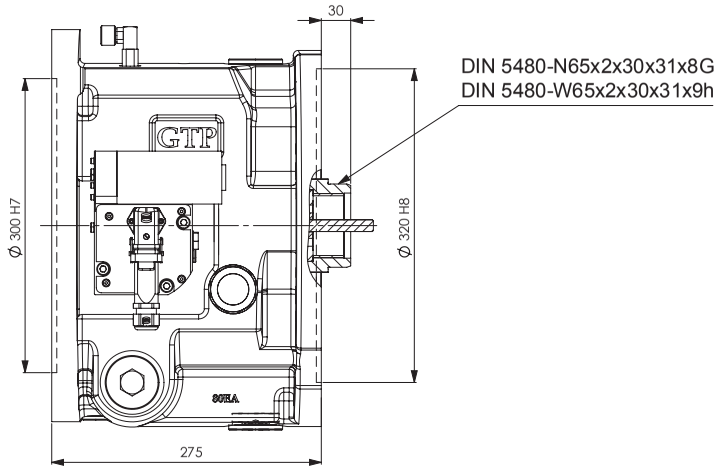
OIL LEVEL SIGHT GLASS
(LEFT AND RIGHT)

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

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



*) ASSUMED OF RESULTING
PULLEY FORCE FOR BEARING CALCULATION



DIN 5480-N65x2x30x31x8G
DIN 5480-W65x2x30x31x9h

Without output

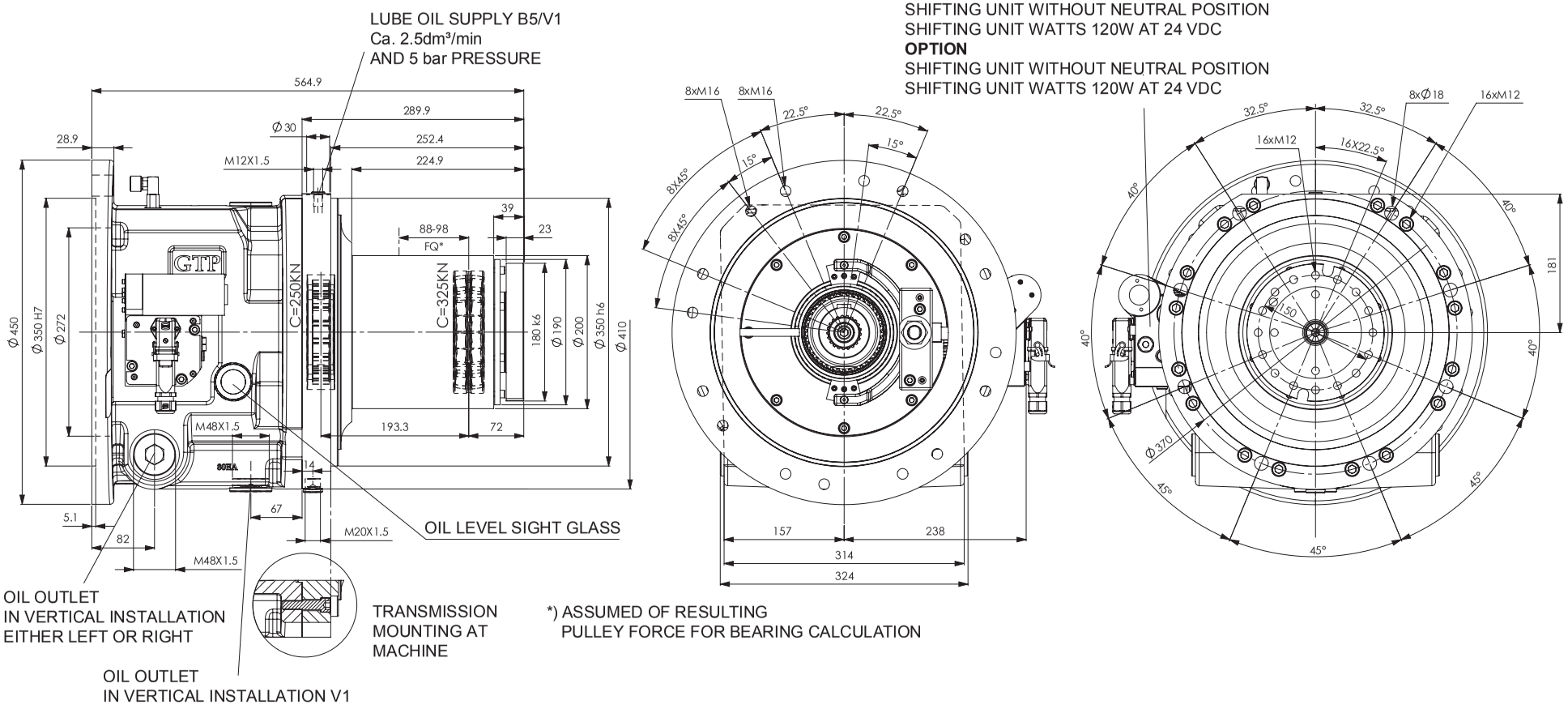
2G800

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

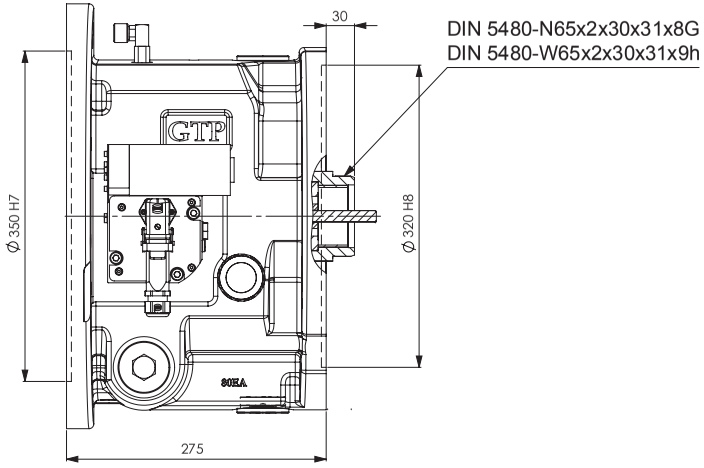
	STANDARD	OPTION
TRANSMISSION RATIO:	i_1=4.0	i_1=5.2
	i_2=1.0	i_2=1.0

WEIGHT: Ca.175Kg

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



*) ASSUMED OF RESULTING
PULLEY FORCE FOR BEARING CALCULATION



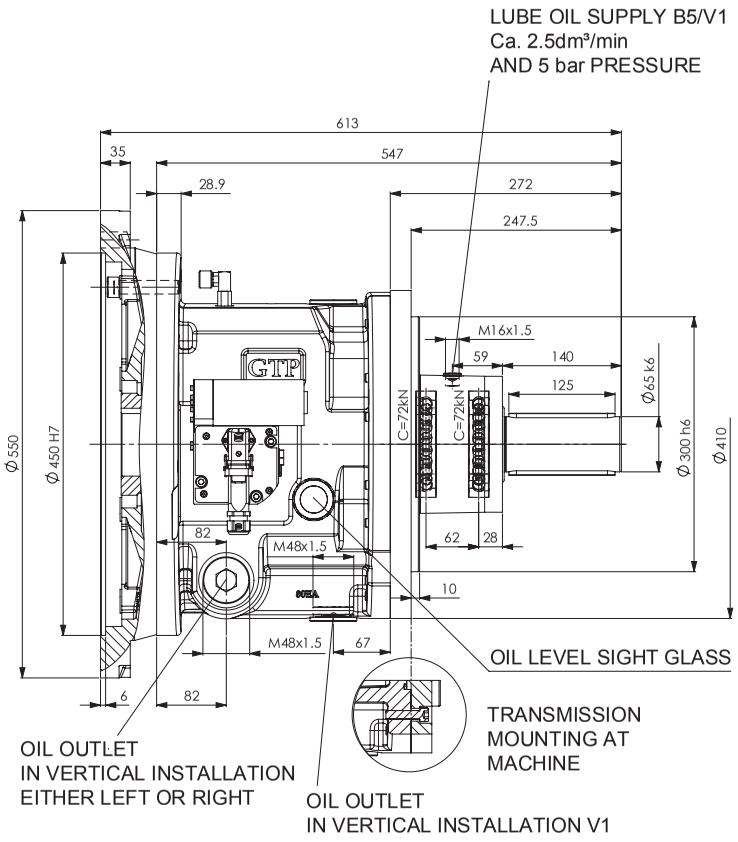
Without output

2G801

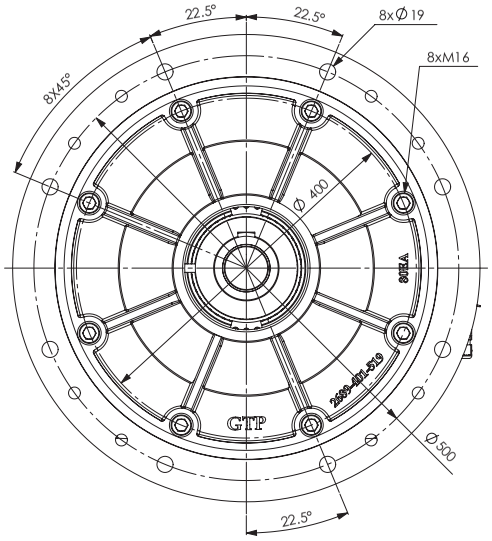
OIL GRADE: HLP 46 ACC. TO ISO VG 46 WITH RECIRCULATING LUBRICATION
HLP 32 ACC. TO ISO VG 32 WITH RECIRCULATING LUBRICATION

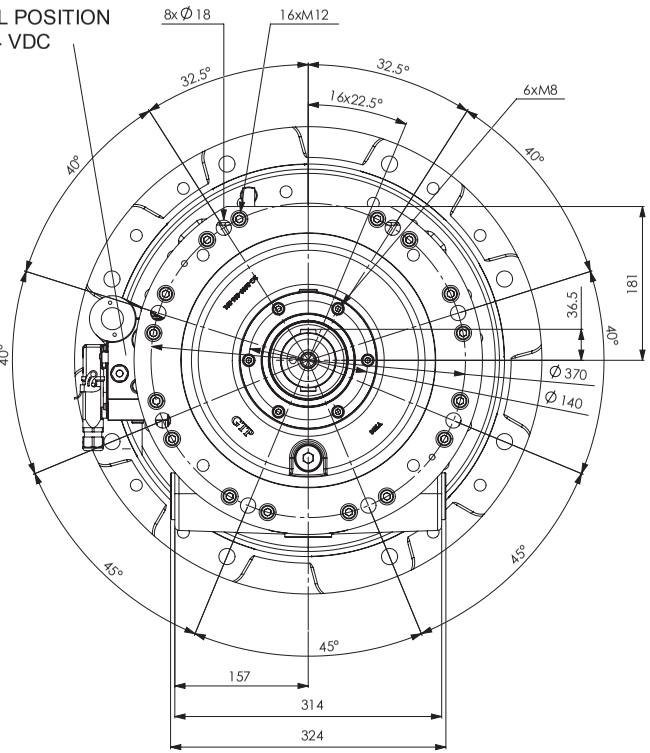
	STANDARD	OPTION
TRANSMISSION RATIO:	i_1=4.0	i_1=5.2
	i_2=1.0	i_2=1.0

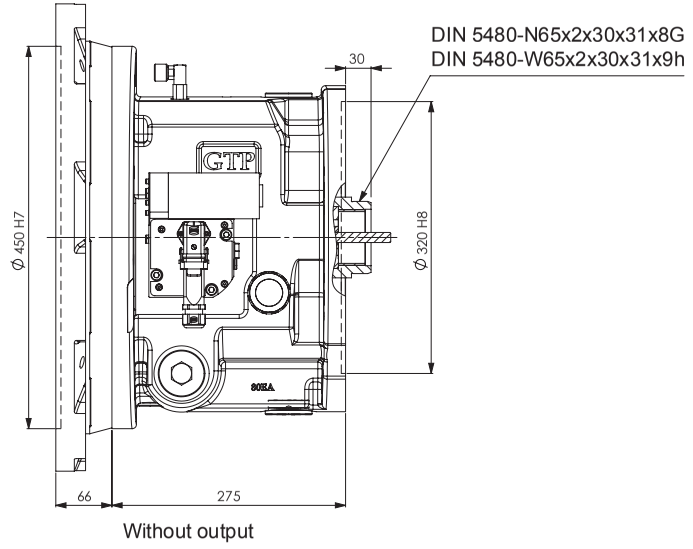
WEIGHT: Ca.175Kg



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







Without output

2G802

OIL GRADE: 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=5.2
	i_2=1.0	i_2=1.0

WEIGHT: Ca.175Kg

GTP- *2G* Standard, Inline
Ordering numbers for gearbox types : 2G120/2G121

Note:

1) RWDR = Radial shaft seal
* Motor-specific, on request
2) Motor shaft 55mm, keyless only.

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

Two-speed gearbox		
Motor balancing :		
Without keyway	1	
Withoutkeyway-motor flange 250mm (2G121)	2	
Full-key-motor flange 230mm (2G121)	3	
Full-key	4	
Half-key*	5	
Half-key-motor flange 250mm (2G121)	6	
Input interface :		
Closed with hub, hub bearing, RWDR1)*	3	
Closed with hub, RWDR1)* 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	
P4 Spindle Ang. ball bearing	5	
Gearbox output :		
a1=38mm shaft with single key	B	
a1=100mm	C	
a1=38mm smooth shaft, without key	L	
a1=38mm shaft with double key, INLINE	P	
a1=38mm smooth shaft without key, INLINE	G	
Installation position :		
B5/V1/V3	E	
Motor shaft dimension "d"		
Flange input	0	
55mm2)	1	
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 keyway-Ø230/300mm	1	
Without keyway-Ø250mm motor flange	2	
Full key balancing-Ø230mm motor flange (2G250)	3	
Full key balancing-2G250/2G300	4	
Half key balancing-2G250/2G300	5	
Half key balancing-Ø250mm flange (2G250) Ø300mm flange (2G300)	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=4.0	15	
132/i1=5.5	17	
160/i1=4.0-2G250 housing	19	
160/i1=4.0-2G300 housing	20	
160/i1=5.5-2G250 housing	21	
160/i1=5.5-2G300 housing	22	
Output bearing :		
Roller bearing	3	
Angular contact bearing	4	
P4 Spindle Ang.ball bearing	5	
Gearbox output :		
a1=118mm	F	
a1=130mm	J	
a1=42mm shaft with double key	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 shaft with double key	M	
a1=130mm wide bearing base	R	
a1=42mm shaft with double key, INLINE	P	
a1=42mm smooth shaft without key, INLINE	G	
a1=42mm smooth shaft without key (High rigidity)	Q	
Installation position :		
B5/V1/V3	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

2	G					—						—		
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	
Closed with hub, RWDR[1)*] without bearing	4	
Flange input (Ø=150k6)	9	
*Gearbox type :		
for motor frame size/ratio		
i1=4.0 spigot Ø300 mm	40	
i1=5.0 spigot Ø300 mm	41	
i1=4.0 spigot Ø350 mm	42	
i1=5.0 spigot Ø350 mm	43	
others	23	
Output bearing :		
Roller bearing	3	
Angular contact bearing	4	
Gearbox output :		
a1=65mm long output shaft with double key	N	
a1=65mm long output shaft without key	I	
a1=140mm flange	F	
a1=150mm flange	J	
a1=60mm shaft with double key	K	
a1=60mm smooth shaft without key	P	
a1=65mm shaft with double key	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	
Non shifter	Z	
Special application	A	

GTP- *2G* Standard, Inline
Ordering numbers for gearbox types : 2G800/2G801/2G802

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

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=4.0 spigot Ø300mm	50	
200/i1=4.0 spigot Ø350mm	60	
225/i1=4.0 spigot Ø450mm	70	
180/i1=5.2 spigot Ø300mm	51	
200/i1=5.2 spigot Ø350mm	61	
225/i1=5.2 spigot Ø450mm	71	
Brake :		
Without brake	1	
Gearbox output :		
Without output	N	
a1=65mm shaft with double key	H	
a1=65mm without key	L	
a1=180mm flange	J	
a1=180mm wide bearing base	R	
Installation position :		
B5/V1/V3	E	
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	
Non shifter	Z	
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 sales@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) :

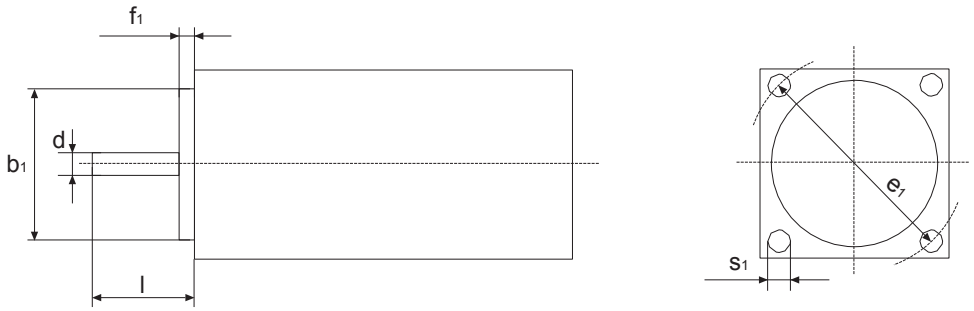
Pilot diameter b_1 (mm) :

Pilot width f_1 (mm) :

PCD e_1 (mm) :

Hole diameter s_1 (mm) :

Fitting key LxWxH (mm) :



☐ Motor shaft without keyway ☐ Motor sahft 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

Gearbox interface	☐ Closed	☐ With adpater plate and shaft seal ☐ With input flange
Ratio i	☐ 4.00 (2G120/121/250/300/600/800) ☐ 5.00 (2G600) ☐ 5.50 (2G250/300)	☐ 4.91 (2G120/121) ☐ 5.20 (2G800)
Installation position	☐ B5 ☐ B5 turned	☐ V1 ☐ V3
Output bearings	☐ Cylindrical Roller bearing	☐ Angular-contact ball bearing
Lubrication system	☐ Splash type lubrication	☐ Recirculating lubrication with oil cooler ☐ Recirculating lubrication with heat exchanger
Gearbox output	Gearbox with output flange ☐ 100mm (2G120/121) ☐ 118mm (2G250) ☐ 130mm (2G300) ☐ 130mm wide bearing base ☐ 140mm (2G600) ☐ 150mm (2G600) ☐ 180mm (2G800/801/802) ☐ 180mm wide bearing base	Gearbox with output shaft ☐ 38mm (2G120/121) ☐ 42mm (2G250) ☐ 55mm (2G300) ☐ 60mm (2G600) ☐ 65mm (2G600/800/801/802) ☐ inline ☐ gear output ☐ with key ☐ without key
Oil Level sensor		☐ V1 ☐ B5
Shifting unit	☐ Normal shifter ☐ with Neutral-position	☐ Non-shifter
Torsional backlash at gearbox output	☐ ≦20 arcmin ☐ ≦15arcmin	

Annual quantity :
Ordering no. :
Applictaion :

Subject to technical change without notice.
Please request instillation 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, maximun 30 months against GTP delivery.
2. German Tech Precision Manufacturing 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.
   ✻ The applicable warranty, 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.

Note

Note

GTP German Tech Precision Manufacturing Co., Ltd.

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