

Planetary Gearbox



UL: 03-01-02



AC R - Product-manual

UL: 03-05-03



AC M2n - Product-manual

UL: 03-05-04



AC MHx - Product-manual

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Made in Germany, 2004

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Thanks for your confidence choosing our product.

These operating instructions present themselves as an overview of the technical data and features.

Please read the operating instructions before operating the product.

If you have any questions, please contact your nearest SSD Drives representative. Improper application of the product in combination with dangerous voltage can lead to injuries.

In addition, damage can also occur to motors or other products. Therefore please observe our safety precautions strictly.

Safety precautions

We assume that, as an expert, you are familiar with the relevant safety regulations, especially in accordance with VDE 0100, VDE 0113, VDE 0160, EN 50178, the accident prevention regulations of the employers liability insurance company and the DIN regulations and that you are able to use and apply them.

As well, relevant European Directives must be observed.

Depending on the kind of application, additional regulations e.g. UL, DIN are subject to be observed.

If our products are operated in connection with components from other manufacturers, their operating instructions are also subject to be observed strictly.

The planetary gearbox PG AP is used with **dynamic** and **precise** Servo requirements in **cycle operation S5**.

The output end has a **B5 mounting option** as a standard feature.

The output shaft comes with the feather key way and the feather key as a standard feature.

Important notice !

All standard gearbox types are listed in the documentation.

Choice of the gearbox:



PLEASE NOTE ABSOLUTELY WITH THE SELECTION OF THE GEARBOX:

a) Motor

That only permissible motor/gear combinations according to assignment table chapter 5 to be used. Only motors are to be used, with which it is guaranteed, that by the nominal and max. torques as well as nominal and max. speeds of the motor, the gearbox cannot be destroyed.

b) Controller

The nominal and max. currents provided from the controller must be so dimensioned that no damage at the gearbox can occur by too high motor torques!

Option possibilities:

- plain output shaft
- reduced backlash (R)
- further options on demand !

1.1 Comparison gearbox type PG A to gearbox type PG AP !

The output sided connection dimensions of the gearboxes remain naturally unchanged, i.e. the gearboxes of the PG A series can be replaced problem-free by the new PG AP series!

In the case of conversion please consider the slightly changed external dimensions (total overall length, diameter of the gear case) and with very dynamic axes riding along if necessary the slight increase in weight.

Short listing of the substantial improvements of the version PG AP series:

- Improved quiet running (up to -6 dB(A) down)
- Higher torque rating (up to +20%)
- Higher positioning accuracy / smaller backlash
- Higher rigidity
- Higher bearing lifetime
- Simpler motor mounting
- Arbitrary mounting position
- Lubricated for life
- Mounting of larger motor shaft diameters possible
- New design
- Degree of protection IP65
- Modified motor mounting, see chapter 7

1.2 Type code

	standard								options
marking	a	b	c	d	e	f	g	h	i
type:	PG	AP	XX	XXX	.X	-X	-XX	-XXX	-XX

marking	description	
a	PG = planetary gearbox	
b	AP = version AP	
c	sizes: 06 = 62mm □ Flansch 07 = 76mm □ Flansch 10 = 101mm □ Flansch 14 = 141mm □ Flansch 18 = 182mm □ Flansch	
d	ratios: 003...100	
e	reduction stages: .1 = 1-stage .2 = 2-stage	
f	backlash: S = standard R = reduced	
g	mounting position BE = arbitrary = standard	
h	motor adapter code -XXX = explanation 1.3	
i	.. = options (only with use one registers)	

1.2.1 Typical example

A typical example of an order corresponding to the type code key would be:

Type: PGAP06004.1-S-BE-000

PG	= Planetary gearbox
AP	= Version AP
06	= Gearbox size 06 (62mm Flansch)
004	= Ratio
.1	= Reduction stages (1 stage)
-S	= Backlash (standard)
-BE	= Mounting position (arbitrary)
-000	= Motor adapter code (size 0))

1.3 Motor adapter code h

-Xxx	drive side (motor) motor shaft (d*I)	SSD Drives motor – size (BG)
	0 = (9*24)mm	0
	1 = (14*30)mm	1
	2 = (19*40)mm	2
	3 = (24*50)mm	3
	4 = (32*58)mm	4
	5 = (11*23)mm	01
-xXx	pitch circle diameter	
	0 = 63mm	0
	1 = 100mm	1
	2 = 115mm	2
	3 = 165mm	3
	4 = 215mm	4
	5 = 75mm	01
-xxX	centering diameter	
	0 = 40mm	0
	1 = 80mm	1
	2 = 95mm	2
	3 = 130mm	3
	4 = 180mm	4
	5 = 60mm	01

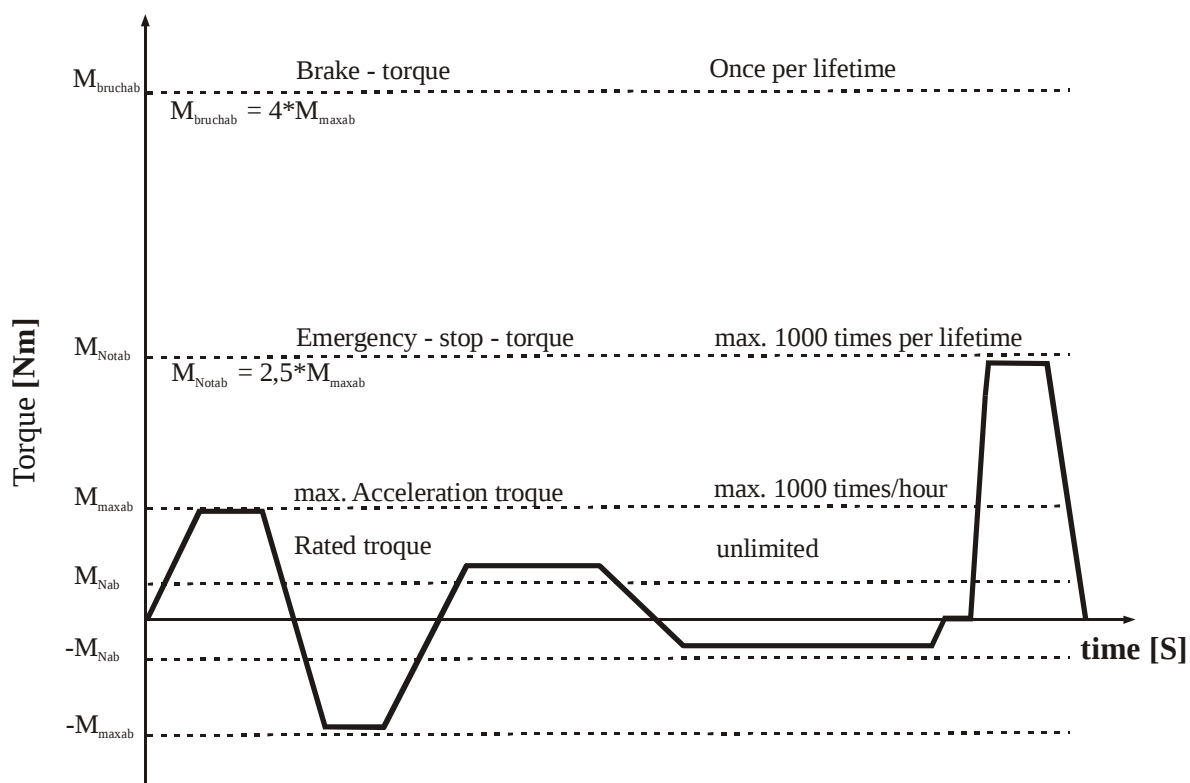
2.1 General technical data

➤ Cycle operation	S5	
• Cyclic duration factor	< 60% and < 20min.	
➤ Rated output torque	17 Nm...800 Nm	
➤ Backlash (1- / 2-stage):	PG AP 06 .. 07	PG AP 10 .. 18
• standard	4' / 6'	3' / 5'
• reduced	2' / 4'	1' / 3'
➤ Mounting on SSD Drives motors	Size 0...4	
➤ Input speed		
• rated speed	1500...5500 min ⁻¹	
• maximum speed at reduced service life and torque up to a maximum	2200...6000 min ⁻¹	
➤ Ratios	003...100	
➤ Efficiency	at full load	
1- stage	97%	
2- stage	94%	
Operating life at rated input speed and rated output torque in the S5 operation with maximum of 1000 cycles per hour	approx. 20.000 h	
➤ Standard shaft		
• Input end (motor shaft):	plain, without featherkey	
• Output end	with keyway and featherkey according to DIN6885, sheet 1 form A	
➤ Temperature		
• Ambient temperature	0°...+40° C	
• Operating temperature	-10°...+90° C	
• max. permissible case temperature	+90° C	
➤ Degree of protection	IP 65	
➤ Mounting position		
• standard	arbitrary	
➤ Noise level		
at input speed 3000 min ⁻¹ PG AP 06;07 / 10;14 / 18	≤ 64 / 66 / 68 dB(A)	

2.2 Backlash indication

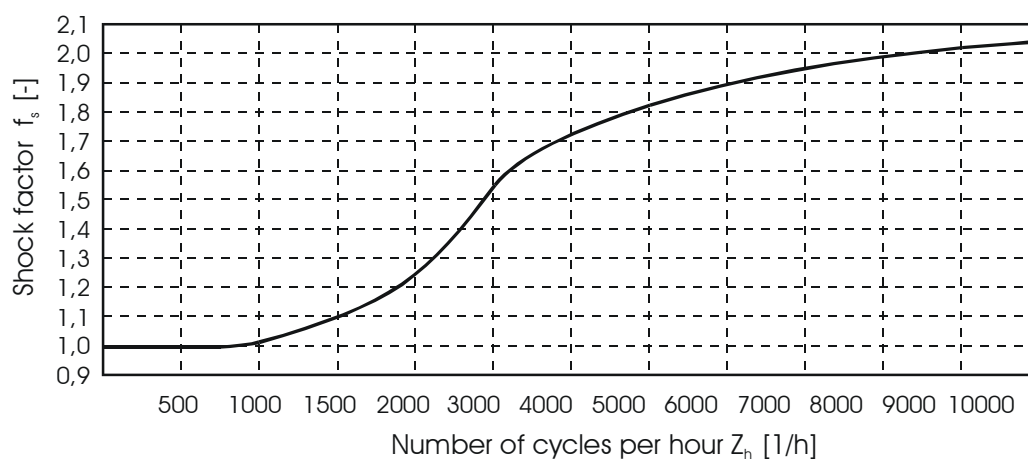
- Definition:
They are measured at a new gearbox,
with 2% (of the rated torque) load and blocked gearbox input shaft.

2.3 Definition of the torques for gearbox types PG AP and PG AL



2.4 Shock factor

Rapid reversals in combination with short acceleration times many cause vibration within assembly. The resulting overloads should be calculated using the shock factor f_s .





With the indication of the technical data, in particular the speeds and torques, it concerns **limit values**, which may not be exceeded by the fitment of the motor. Thus, not those speeds resp. torques are indicated on the motor resp. output side, which arise as a result of the fitted motor.

2.5 Technical data specific

2.5.1 Gearbox size 06 to 07

Gearbox type	Size	Stages	Backlash		Ratios	Mass	Input		Output		
			stan- dard	redu- ced			nominal speed	max. speed	nominal torque	max. accele- ration torque	E-stop torque
	(-)	(-)	φ_s (°)	$\varphi_R^{3)}$ (°)	i (-)	mG (kg)	$n_N^{4)}$ (min ⁻¹)	n_{max} (min ⁻¹)	M_{Nab} (Nm)	$M_{maxab}^{1)}$ (Nm)	$M_{Notab}^{3)}$ (Nm)
PGAP06003.1	06	1	4'	2'	3	1,9	3300	6000	17	30	80
PGAP06004.1					4		3300	6000	26	40	100
PGAP06005.1					5		3300	6000	26	40	100
PGAP06007.1					7		4000	6000	26	40	100
PGAP06010.1					10		4000	6000	17	32	80
PGAP06016.2		2	6'	4'	16	2,0	4400	6000	26	40	100
PGAP06020.2					20		4400	6000	26	40	100
PGAP06025.2					25		4400	6000	26	40	100
PGAP06028.2					28		4400	6000	26	40	100
PGAP06035.2					35		4400	6000	26	40	100
PGAP06040.2					40		4400	6000	26	40	100
PGAP06050.2					50		4800	6000	26	40	100
PGAP06070.2					70		5500	6000	26	40	100
PGAP06100.2					100		5500	6000	17	32	80
PGAP07003.1	07	1	4'	2'	3	3,9	2900	6000	47	85	200
PGAP07004.1					4		2900	6000	75	110	250
PGAP07005.1					5		2900	6000	75	110	250
PGAP07007.1					7		3100	6000	75	110	250
PGAP07010.1					10		3100	6000	52	90	200
PGAP07016.2		2	6'	4'	16	3,3	3500	6000	75	110	250
PGAP07020.2					20		3500	6000	75	110	250
PGAP07025.2					25		3500	6000	75	110	250
PGAP07028.2					28		3500	6000	75	110	250
PGAP07035.2					35		3500	6000	75	110	250
PGAP07040.2					40		3500	6000	75	110	250
PGAP07050.2					50		3800	6000	75	110	250
PGAP07070.2					70		4500	6000	75	110	250
PGAP07100.2					100		4500	6000	52	90	200

¹⁾ M_{maxab} with max. 1000 cycles per hour

²⁾ M_{Notab} 1000 times admissible during gearbox lifetime

³⁾ φ_R reduced backlash (optional)

⁴⁾ n_N permissible mean driving speed with 20°C ambient temperature

Typenspezifische technische Daten

2.5.2 Gearbox size 10 to 18

Gearbox type	Size	Stages	Backlash		Ratios	Mass	Input		Output		E-stop torque
			stan- dard	redu- ced			nominal speed	max. speed	nominal torque	max. accele- ration torque	
	(-)	(-)	φ_s (')	$\varphi_R^{3)}$ (')	i	mG (kg)	$n_N^{4)}$ (min ⁻¹)	n_{max} (min ⁻¹)	M _{Nab} (Nm)	M _{maxab} ¹⁾ (Nm)	M _{Notab} ³⁾ (Nm)
PGAP10003.1	10	1	3'	1'	3	7,7	2500	4500	120	225	500
PGAP10004.1					4		2500	4500	180	300	625
PGAP10005.1					5		2500	4500	175	300	625
PGAP10007.1					7		2800	4500	170	300	625
PGAP10010.1					10		2800	4500	120	225	500
PGAP10016.2		2	5'	3'	16	7,9	3100	4500	180	300	625
PGAP10020.2					20		3100	4500	180	300	625
PGAP10025.2					25		3100	4500	175	300	625
PGAP10028.2					28		3100	4500	180	300	625
PGAP10035.2					35		3100	4500	175	300	625
PGAP10040.2					40		3100	4500	180	300	625
PGAP10050.2					50		3500	4500	175	300	625
PGAP10070.2					70		4200	4500	170	300	625
PGAP10100.2					100		4200	4500	120	225	500
PGAP14003.1	14	1	3'	1'	3	17,2	2100	4000	200	390	1000
PGAP14004.1					4		2100	4000	360	600	1250
PGAP14005.1					5		2100	4000	360	600	1250
PGAP14007.1					7		2600	4000	360	600	1250
PGAP14010.1					10		2600	4000	220	480	1000
PGAP14016.2		2	5'	3'	16	17	2900	4000	360	600	1250
PGAP14020.2					20		2900	4000	360	600	1250
PGAP14025.2					25		2900	4000	360	600	1250
PGAP14028.2					28		2900	4000	360	600	1250
PGAP14035.2					35		2900	4000	360	600	1250
PGAP14040.2					40		2900	4000	360	600	1250
PGAP14050.2					50		3200	4000	360	600	1250
PGAP14070.2					70		3200	4000	360	600	1250
PGAP14100.2					100		3900	4000	220	480	1000
PGAP18003.1	18	1	3'	1'	3	34	1500	3500	530	880	1050
PGAP18004.1					4		1500	3500	750	1100	2750
PGAP18005.1					5		1500	3500	750	1100	2750
PGAP18007.1					7		2300	3500	750	1100	2750
PGAP18010.1					10		2300	3500	750	880	2200
PGAP18016.2		2	5'	3'	16	36,4	2700	4000	750	1100	2750
PGAP18020.2					20		2700	4000	750	1100	2750
PGAP18025.2					25		2700	4000	750	1100	2750
PGAP18028.2					28		2700	4000	750	1100	2750
PGAP18035.2					35		2700	4000	750	1100	2750
PGAP18040.2					40		2700	4000	750	1100	2750
PGAP18050.2					50		2900	4000	750	1100	2750
PGAP18070.2					70		3200	4000	750	1100	2750
PGAP18100.2					100		3400	4000	750	880	2200

¹⁾ **M_{maxab}** with max. 1000 cycles per hour

²⁾ **M_{Notab}** 1000 times admissible during gearbox lifetime

³⁾ φ_R reduced backlash (optional)

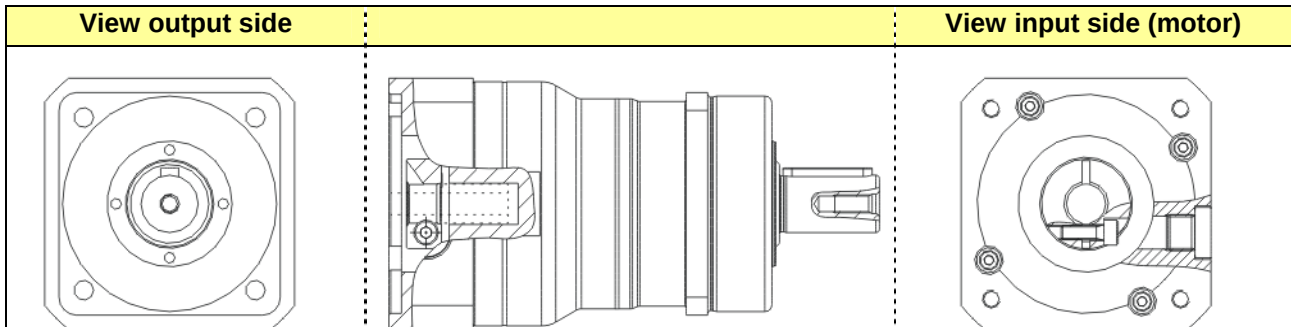
⁴⁾ n_N permissible mean driving speed with 20°C ambient temperature

2.6 Mass moment of inertia dependent on gear ratio and motor shaft

Gear Type:	Motor Ø Shaft	Ratio													
		1-stage					2-stage								
		3	4	5	7	10	16	20	25	28	35	40	50	70	100
	(mm)	$J_{\text{gear}} (10^{-4} \text{kgm}^2)$													
PGAP06	≤11	0,23	0,16	0,13	0,11	0,10	0,08	0,07	0,07	0,06	0,06	0,06	0,06	0,06	0,06
	14	0,31	0,24	0,22	0,19	0,18	0,18	0,17	0,17	0,16	0,16	0,16	0,16	0,16	0,16
PGAP07	≤11	-	-	-	-	-	0,17	0,14	0,14	0,11	0,11	0,10	0,10	0,10	0,10
	14	0,94	0,69	0,58	0,48	0,42	0,25	0,22	0,22	0,19	0,19	0,18	0,18	0,18	0,18
	19	1,19	0,94	0,83	0,73	0,67	0,68	0,65	0,64	0,62	0,62	0,61	0,61	0,60	0,60
	24	2,81	2,56	2,45	2,35	2,30	-	-	-	-	-	-	-	-	-
PGAP10	14	-	-	-	-	-	0,72	0,60	0,58	0,49	0,48	0,43	0,43	0,42	0,42
	19	3,65	2,62	2,14	1,78	1,55	0,96	0,84	0,82	0,73	0,72	0,67	0,66	0,66	0,66
	24	4,68	3,65	2,99	2,81	2,58	2,60	2,48	2,46	2,36	2,35	2,31	2,30	2,30	2,29
PGAP14	19	-	-	-	-	-	3,61	3,08	3,03	2,66	2,63	2,39	2,38	2,37	2,37
	24	12,30	8,66	7,46	6,38	5,80	3,61	3,08	3,03	2,66	2,63	2,39	2,38	2,37	2,37
	32	17,89	14,26	13,06	11,97	11,39	-	-	-	-	-	-	-	-	-
PGAP18	24	-	-	-	-	-	10,24	8,48	8,20	6,90	6,75	6,06	5,98	5,92	5,88
	32	67,09	45,08	36,37	28,57	24,40	15,83	14,08	13,79	12,49	12,35	11,65	11,58	11,51	11,47

(referring to the input side)

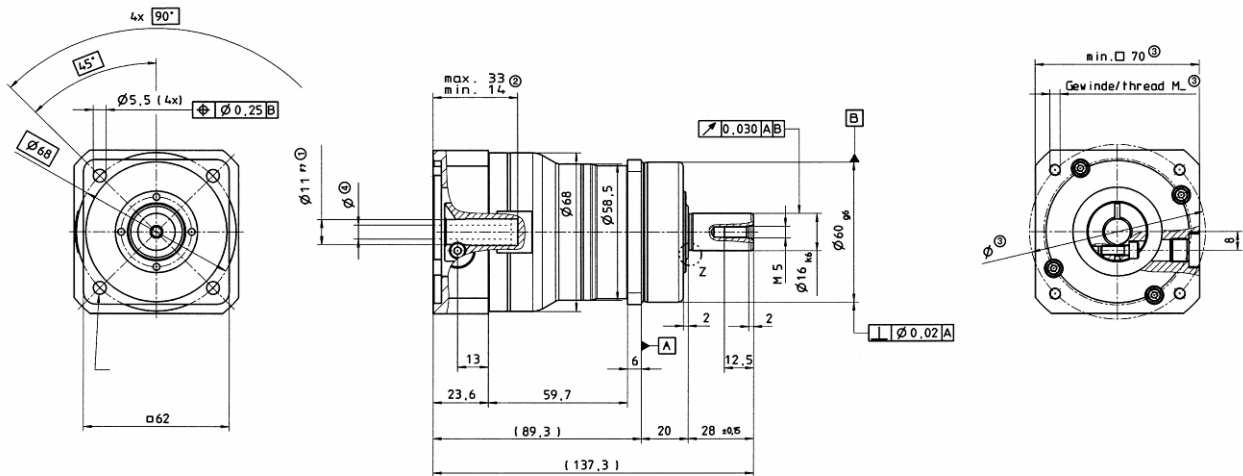
3.1 View definition



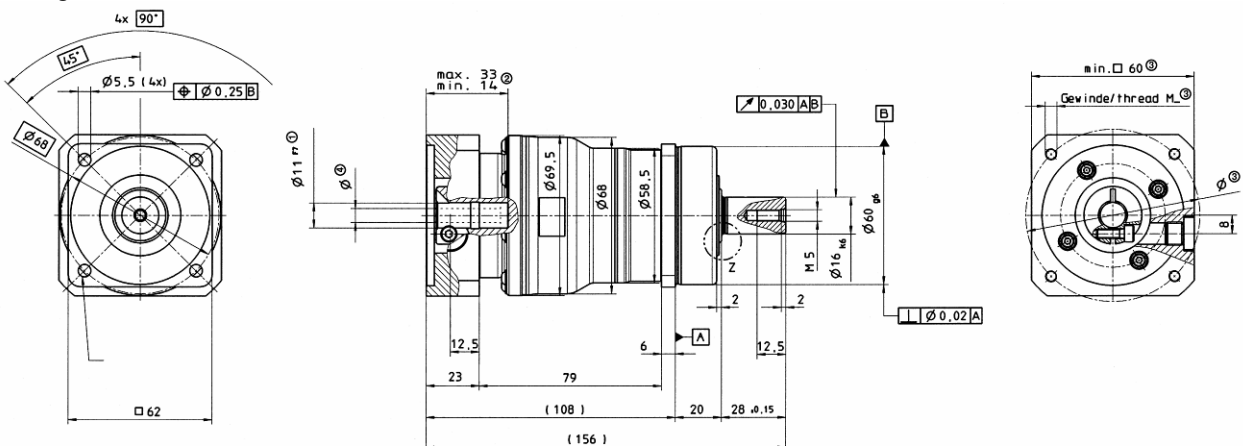
3.2 Dimensional drawing PG AP06

Motor shaft diameter at 11 mm

1-stage



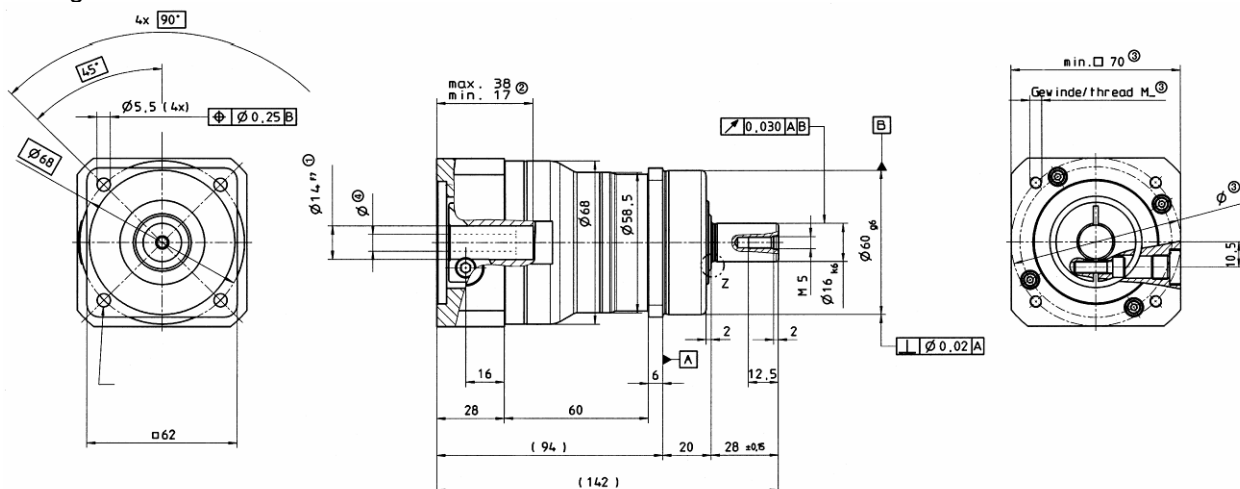
2-stage



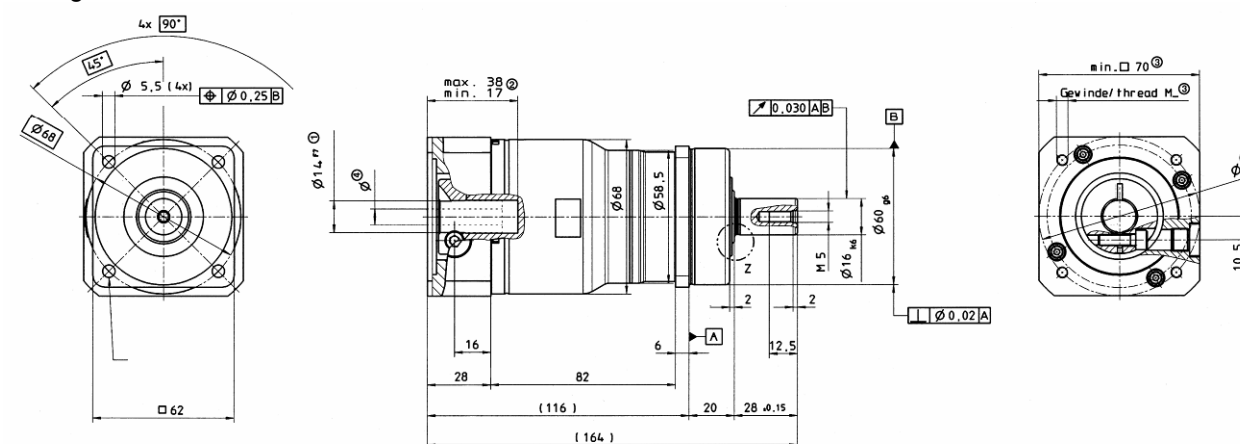
Dimensional drawing PG AP06

Motor shaft diameter at 14 mm

1- stage

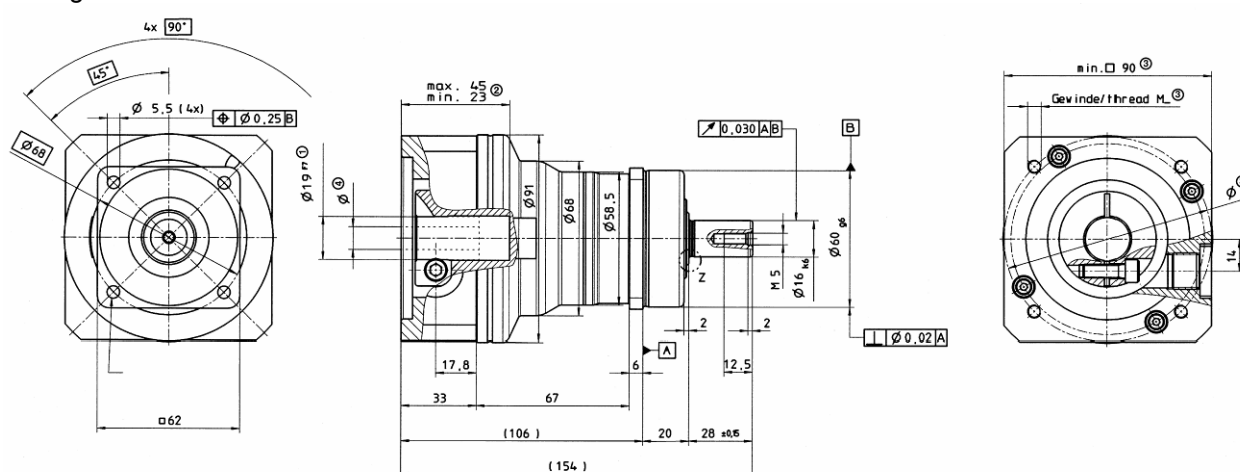


2- stage



Motor shaft diameter at 19 mm

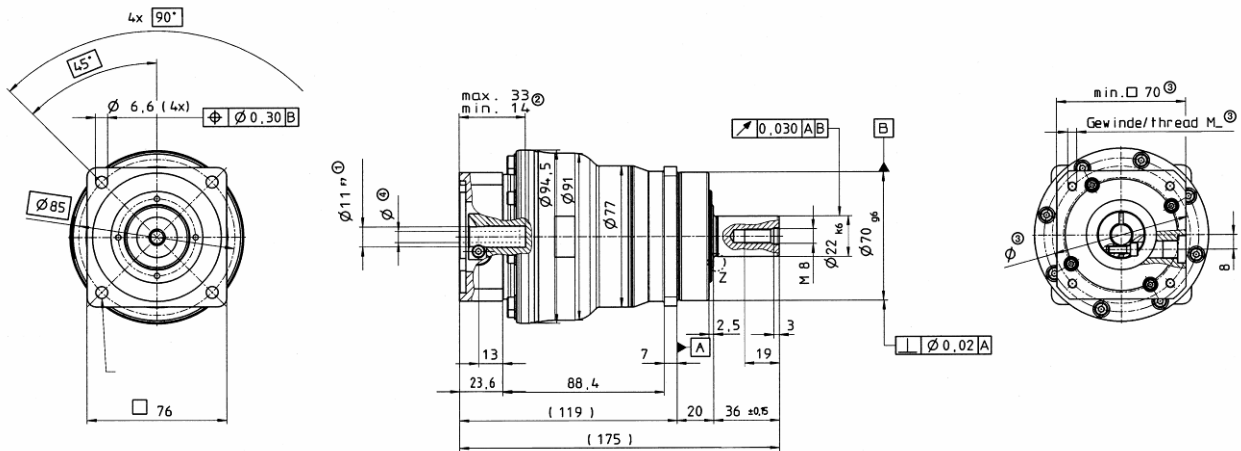
1- stage



3.3 Dimensional drawing PG AP07

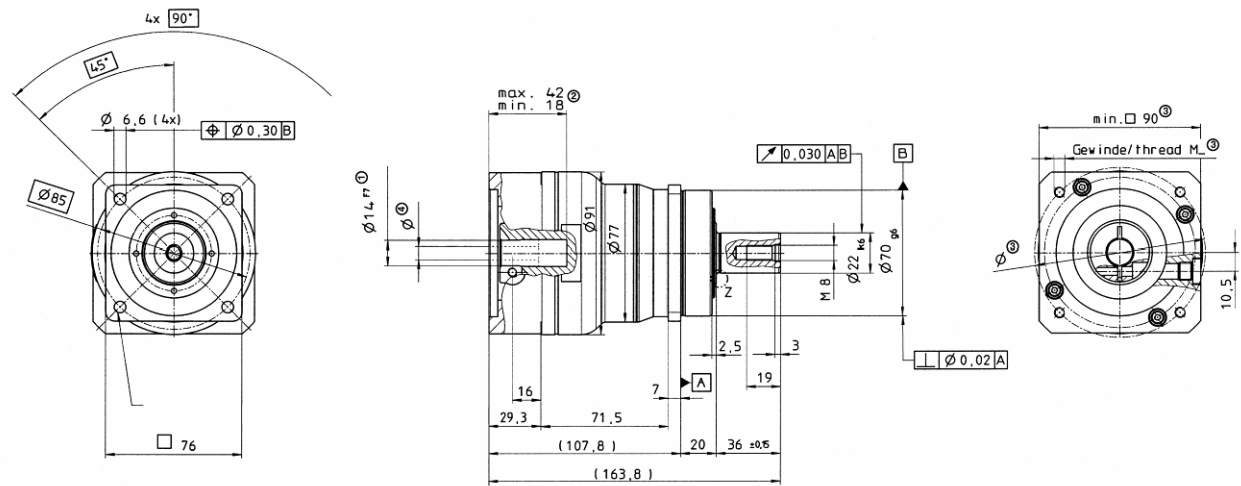
Motor shaft diameter at 11 mm

2- stage

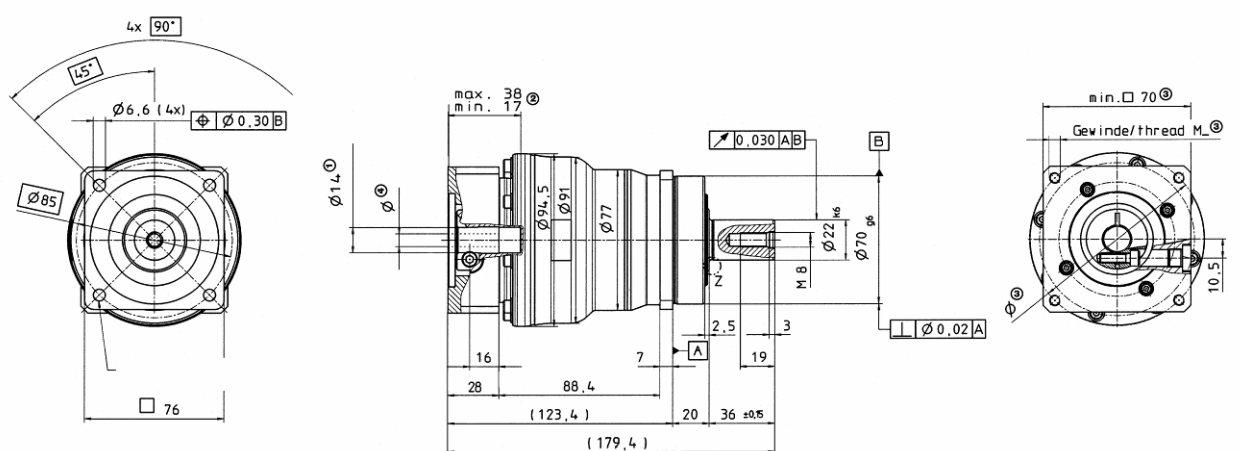


Motor shaft diameter at 14 mm

1- stage



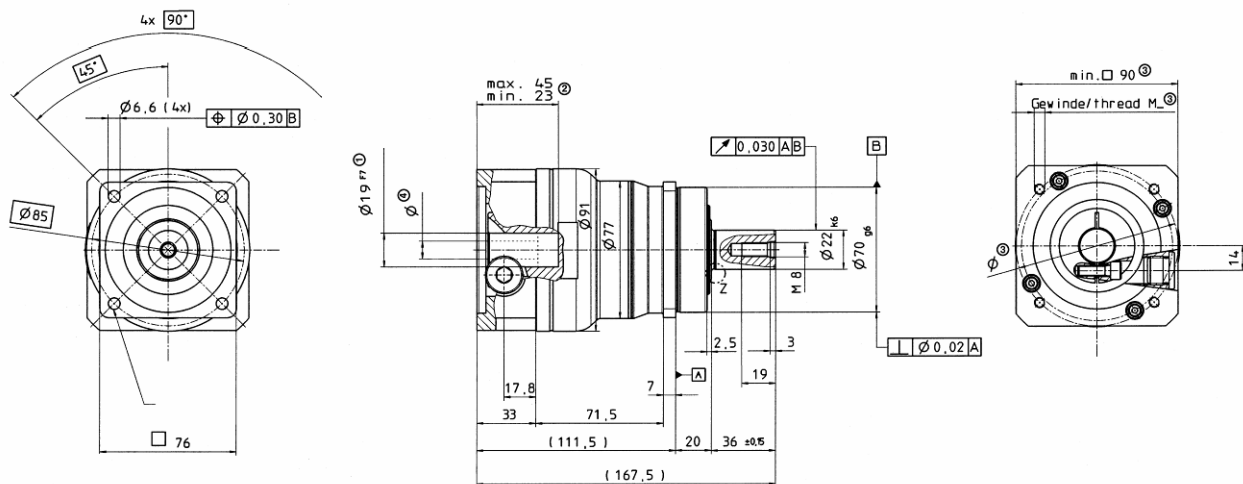
2- stage



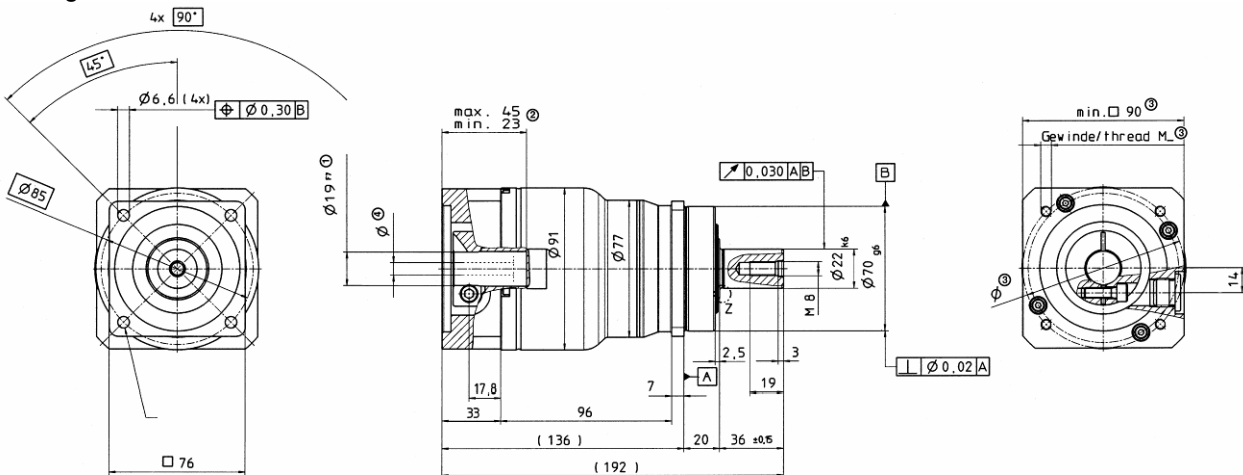
Dimensional drawing PG AP07

Motor shaft diameter at 19 mm

1- stage

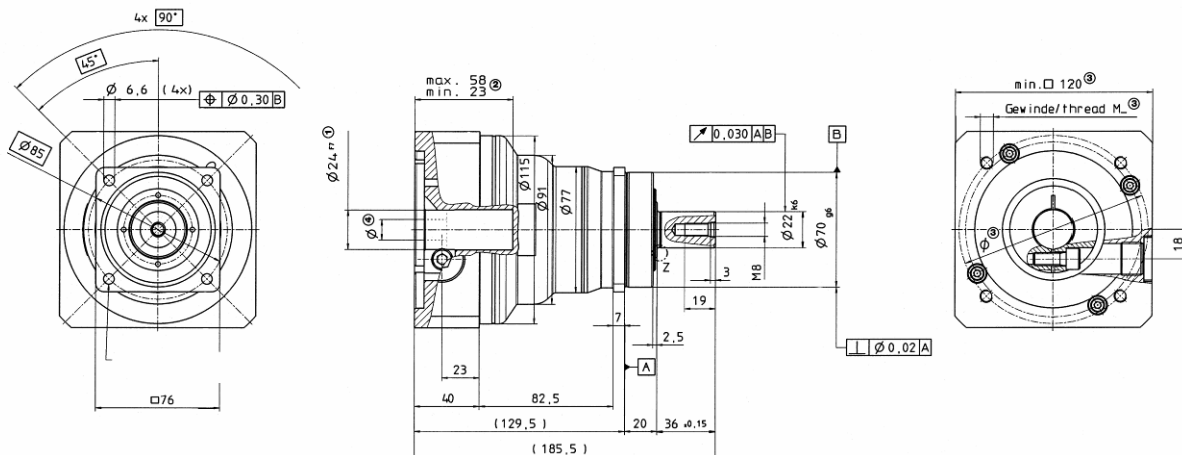


2- stage



Motor shaft diameter at 24 mm

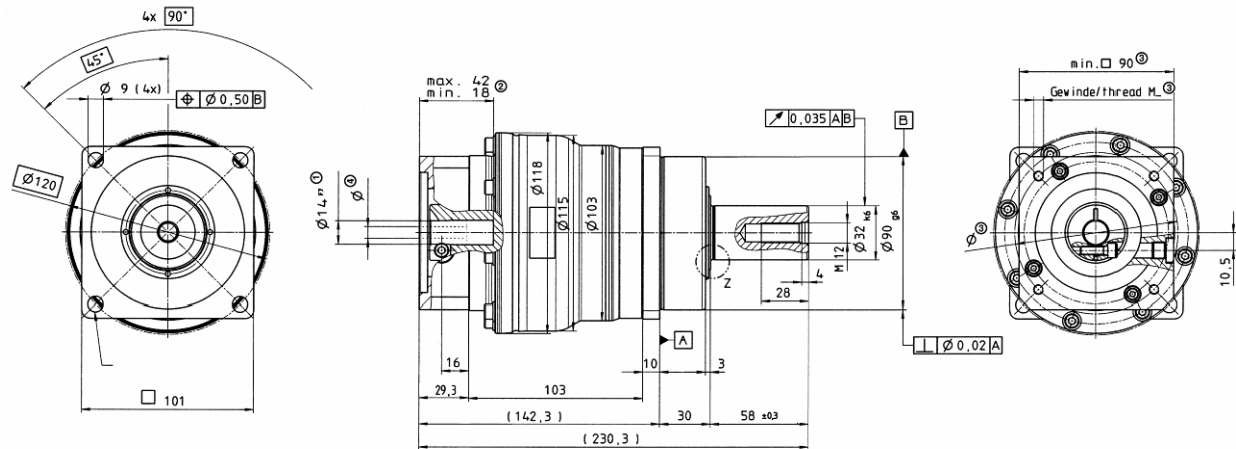
1- stage



3.4 Dimensional drawing PG AP10

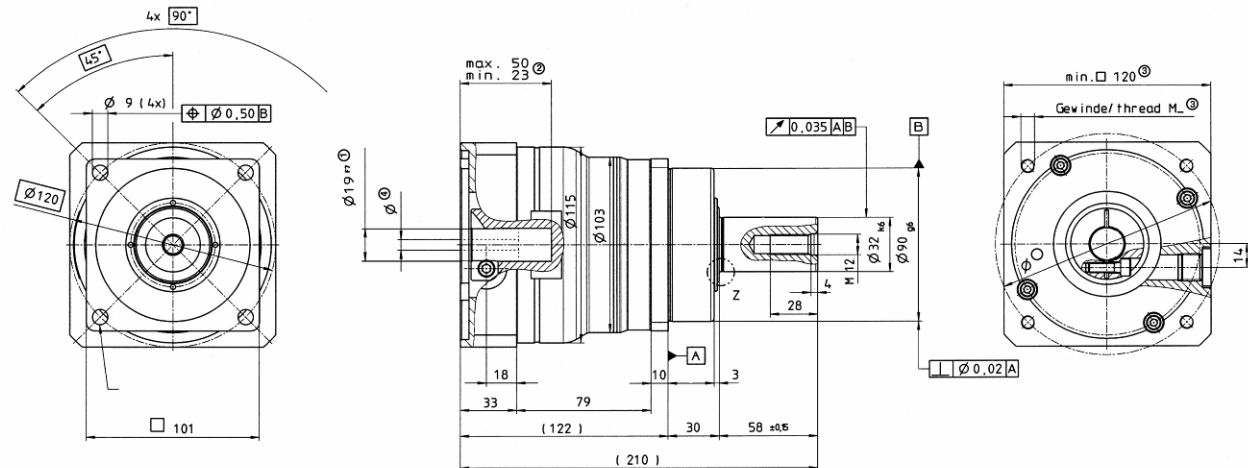
Motor shaft diameter at 14 mm

2- stage

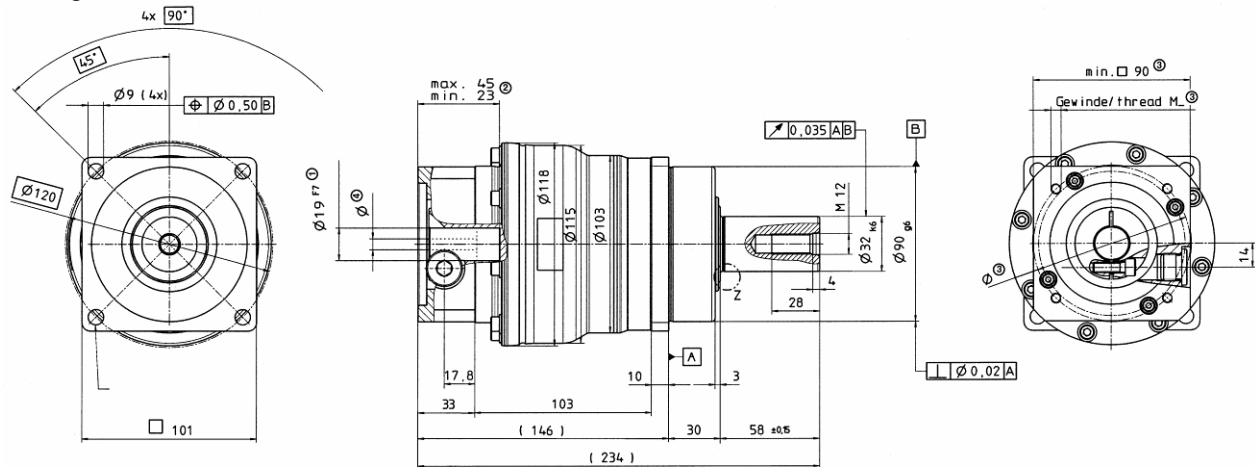


Motor shaft diameter at 19 mm

1- stage



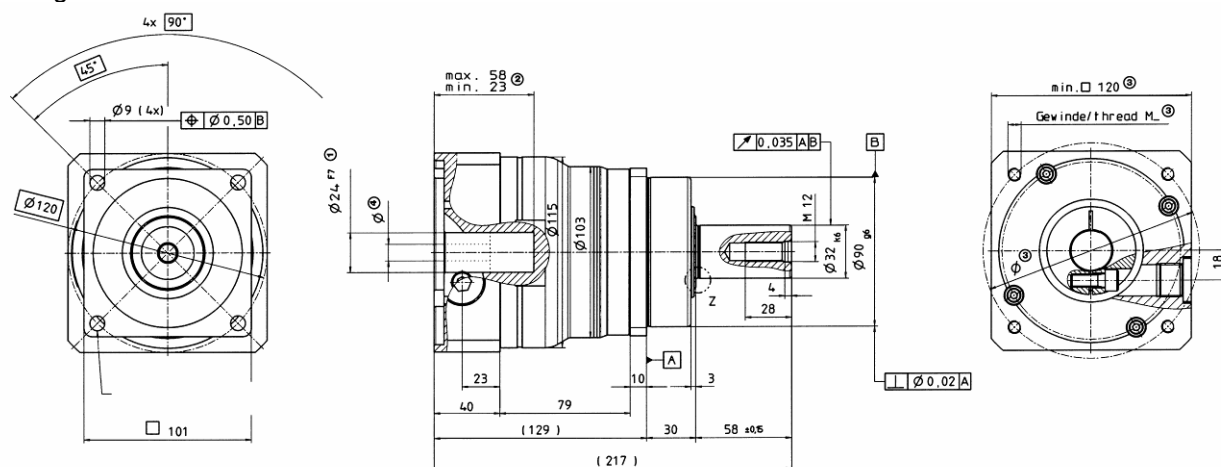
2- stage

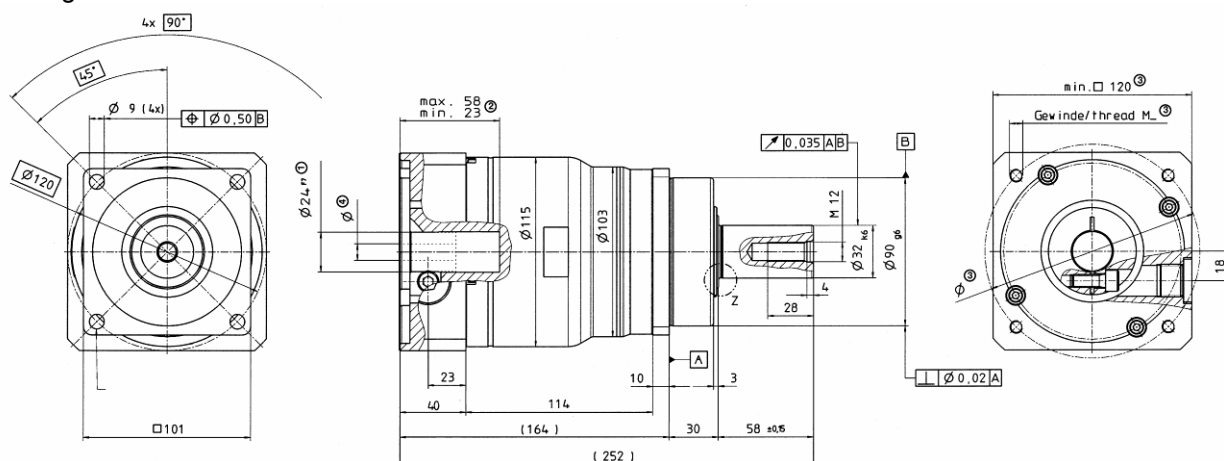


Dimensional drawing PG AP10

Motor shaft diameter at 24 mm

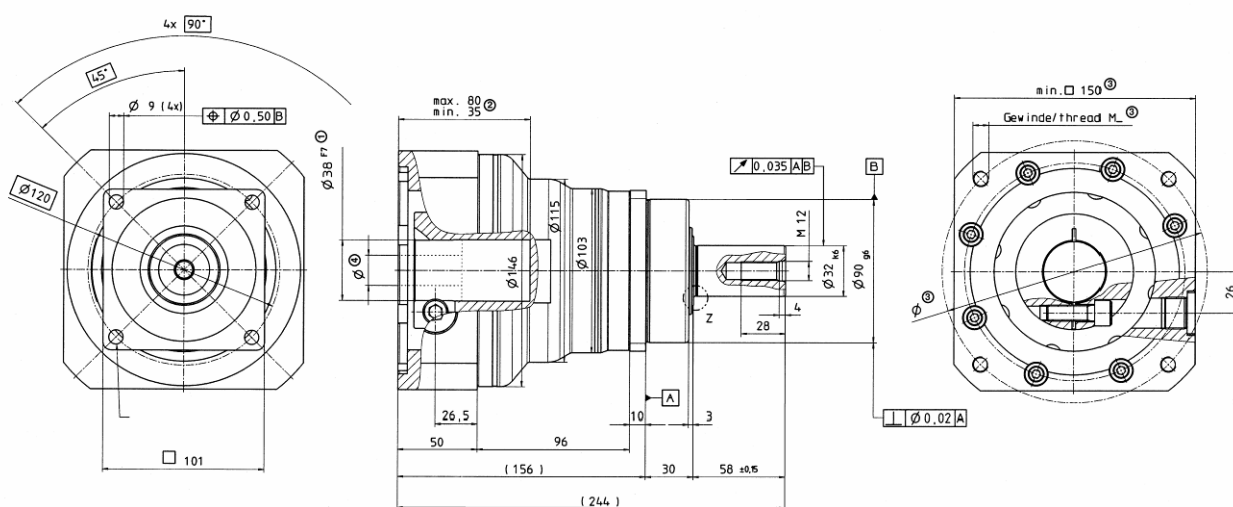
1- stage



2- stage

Motor shaft diameter at 38 mm

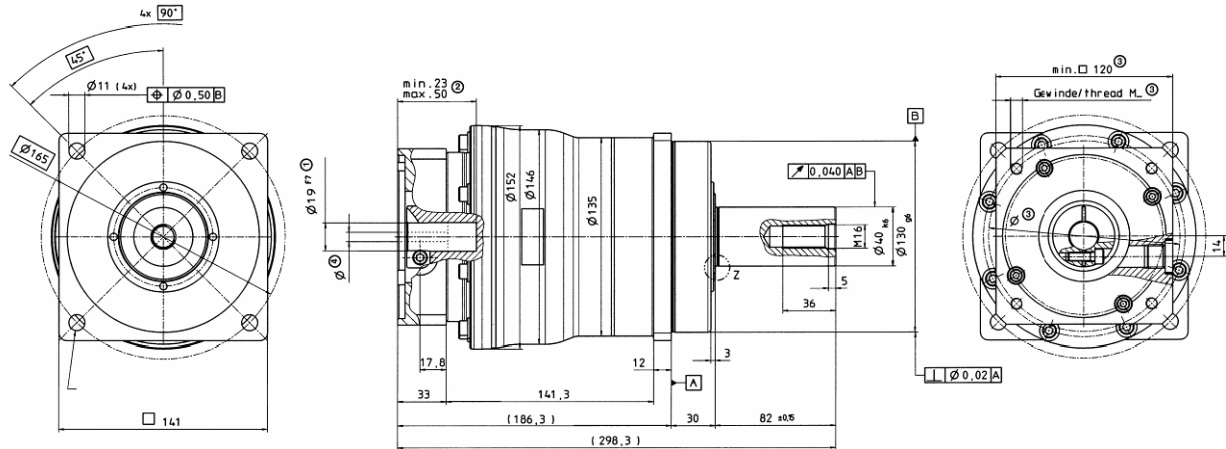
1- stage



3.5 Dimensional drawing PG AP14

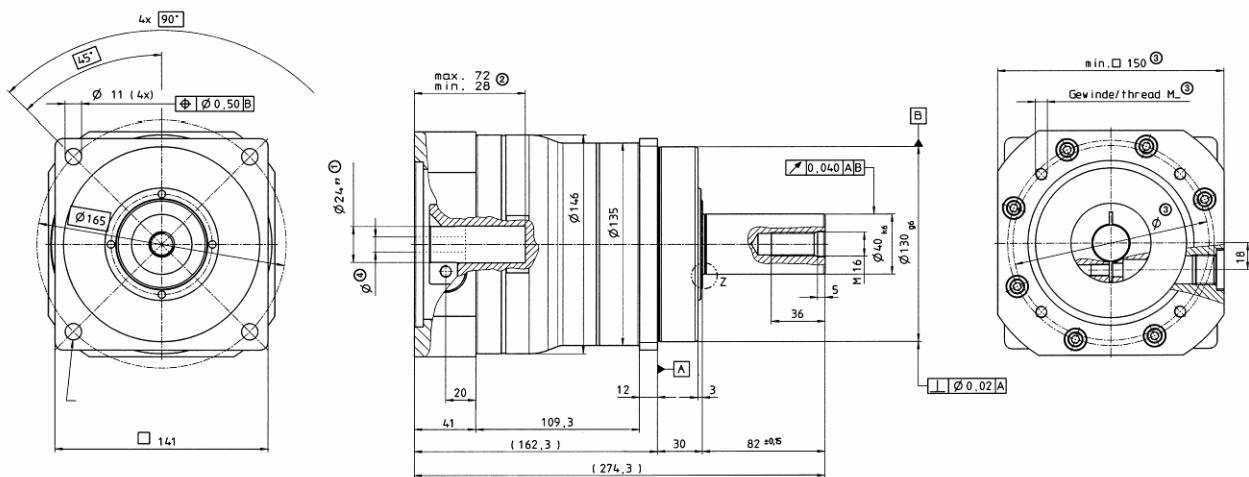
Motor shaft diameter at 19 mm

2- stage

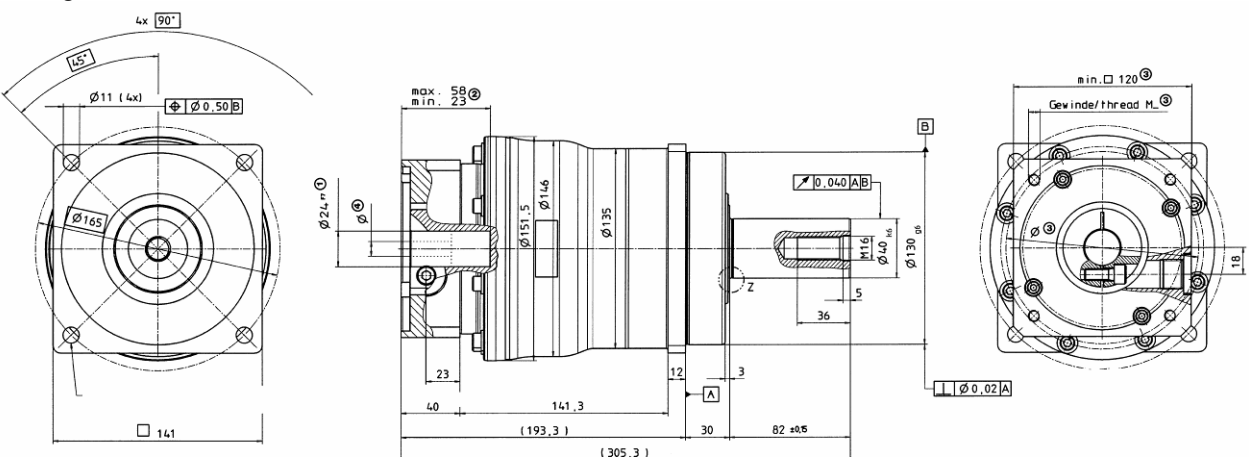


Motor shaft diameter at 24 mm

1- stage



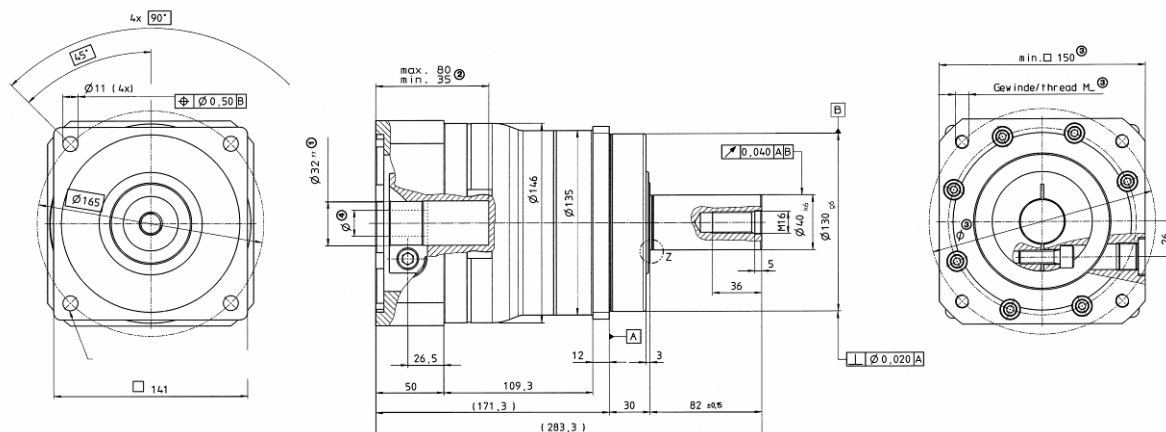
2- stage



Dimensional drawing PG AP14

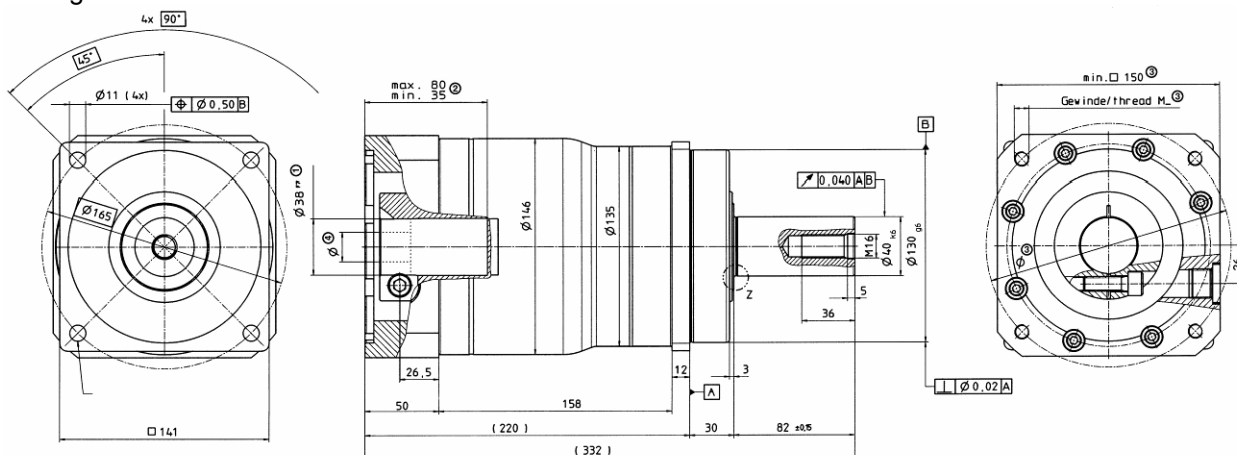
Motor shaft diameter at 32 mm

1- stage



Motor shaft diameter at 38 mm

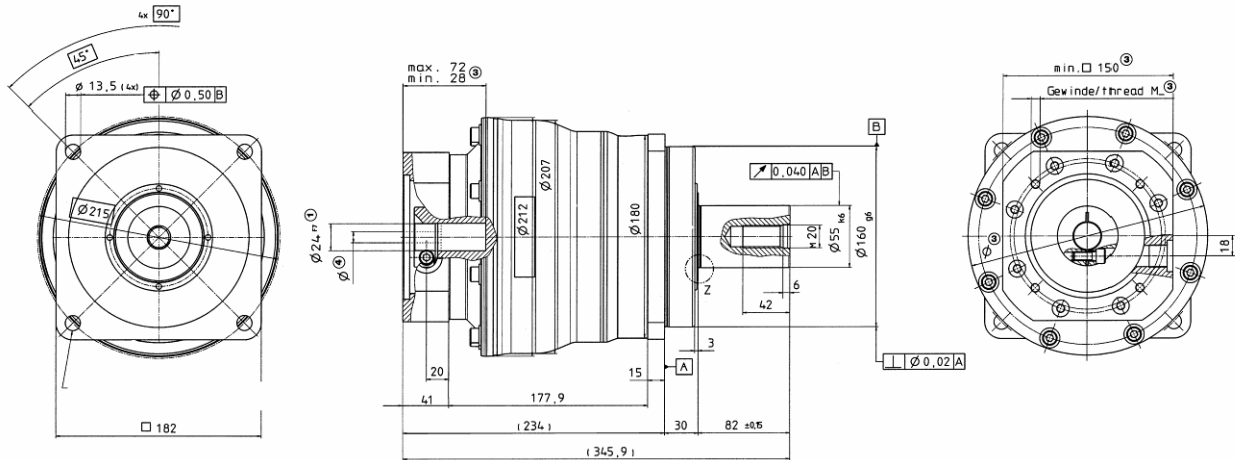
2- stage



3.6 Dimensional drawing PG AP18

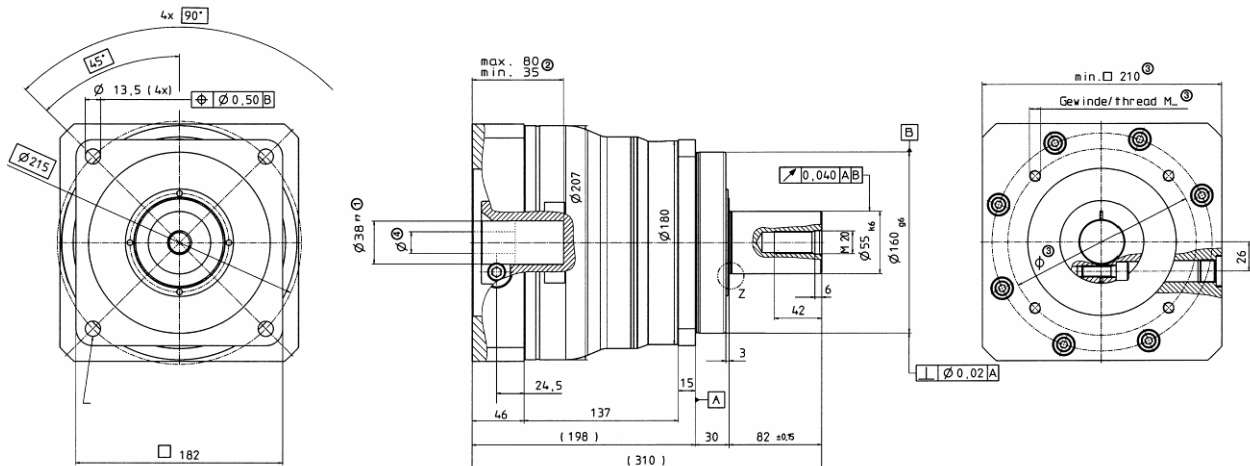
Motor shaft diameter at 24 mm

2- stage

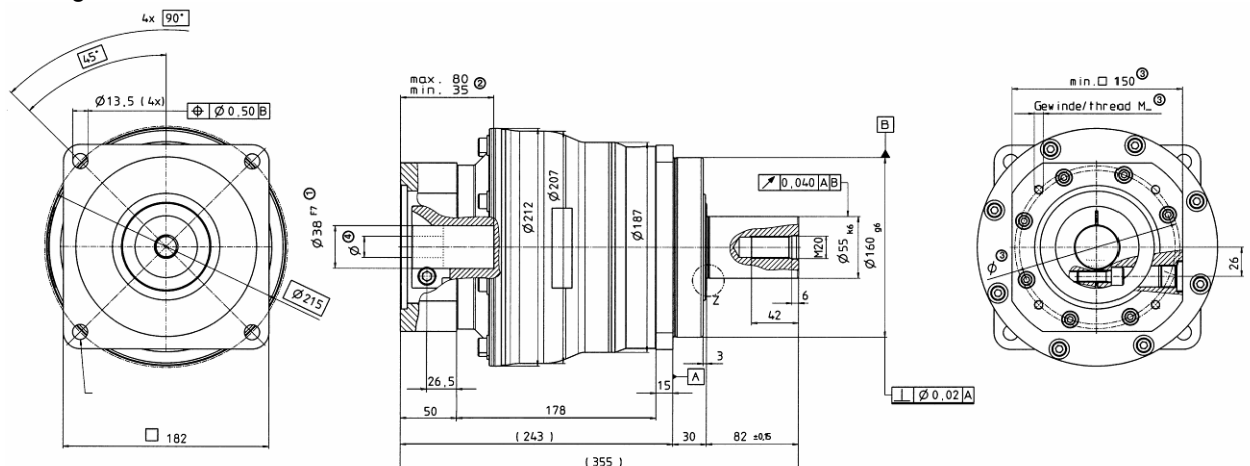


Motor shaft diameter at 38 mm

1- stage

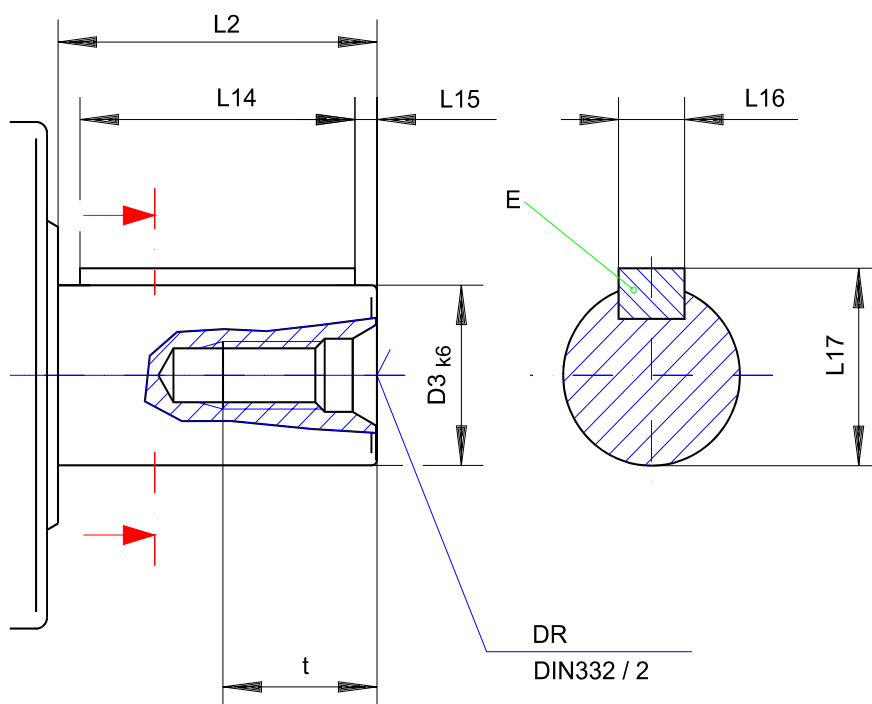


2- stage



3.7 Dimensional drawing output shaft

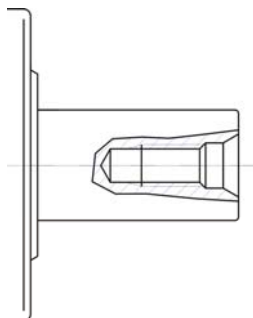
3.7.1 With feather key = standard



Type		PGAP06	PGAP07	PGAP10	PGAP14	PGAP18
Size		6	7	10	14	18
D3	k6	16	22	32	40	55
DR		M5	M8	M12	M16	M20
E		Feather key according to DIN 6885				
L2		28	36	58	82	82
L14		25	32	50	70	70
L15		2	2	4	5	6
L16	h9	5	6	10	12	16
L17		18	24,5	35	43	59
t		12,5	19	28	36	42

All dimension in "mm"

3.7.2 With plain shaft = optional

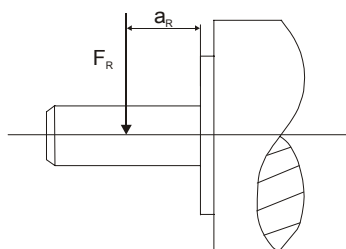


Maximum permissible load of the gear shaft

4

4.1 Radial shaft load

4.1.1 Definition shown

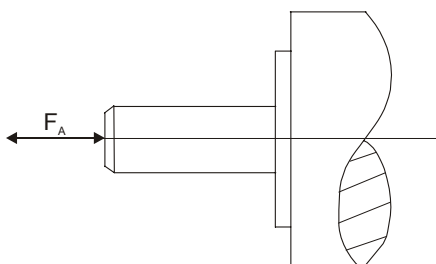


4.1.2 Technical data of the max. radial shaft load (100 min⁻¹)

Type	Size	Backlash		Permissible output shaft load	
		1 stage	2 stage	a_R	F_R
(-)	(-)	(φ)		(mm)	(N)
PGAP06	06	4' / 2'	6' / 4'	14	2700
PGAP07	07	4' / 2'	6' / 4'	18	4000
PGAP10	10	3' / 1'	5' / 3'	29	6300
PGAP14	14	3' / 1'	5' / 3'	41	9450
PGAP18	18	3' / 1'	5' / 3'	41	14700

4.2 Axiale shaft load

4.2.1 Definition shown



4.2.2 Technical data of the max. axial shaft load

Type	Size	Backlash		Permissible output shaft load
		1 stage	2 stages	F_A
(-)	(-)	(φ)		(N)
PGAP06	06	4' / 2'	6' / 4'	2400
PGAP07	07	4' / 2'	6' / 4'	3350
PGAP10	10	3' / 1'	5' / 3'	5650
PGAP14	14	3' / 1'	5' / 3'	9870
PGAP18	18	3' / 1'	5' / 3'	14150

5.1 SSD Drives motors / Planetary gearboxes PG AP

5.1.1 SSD Drives motors AC M... / Planetary gearboxes PG AP

Motor type:	size	Type: PGAP..													
		Ratios - 1 stage					Ratios - 2 stage								
		3	4	5	7	10	16	20	25	28	35	40	50	70	100
AC M... 0012	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AC M... 0010	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AC M... 0030	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AC M... 0045	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AC M... 0070	0	-	-	-	-	06 07	06	06	06	-	-	-	-	07	07
AC M... 0130	0	-	-	-	06	06	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	07	07	07	07	07	07	-	-
AC M... 0055	1	-	-	-	-	-	-	-	-	-	07	07	07	70	-
AC M... 0090	1	-	-	-	06	06	06	06	-	-	-	-	-	-	-
		-	-	-	-	07	07	07	07	07	07	07	07	-	-
AC M... 0150	1	-	06	06	06	06	-	-	-	-	-	-	-	-	-
		-	-	-	-	07	07	07	07	07	07	-	-	-	-
		-	-	-	-	-	-	-	-	-	10	10	10	10	-
AC M... 0220	1	06	06	06	06	-	-	-	-	-	-	-	-	-	-
		-	-	07	07	07	07	07	07	-	-	-	-	-	-
		-	-	-	-	-	-	10-	10-	10	10	10	10	-	-
AC M... 0290	1	06	06	06	-	-	-	-	-	-	-	-	-	-	-
		-	07	07	07	07	07	-	-	-	-	-	-	-	-
		-	-	-	-	-	10	10	10	10	10	10	10	-	-
AC M... 0320	2	06	06	06	-	-	-	-	-	-	-	-	-	-	-
		07	07	07	07	07	07	-	-	-	-	-	-	-	-
		-	-	-	-	-	10	10	10	10	10	10	-	-	-
AC M... 0480	2	06	06	-	-	-	-	-	-	-	-	-	-	-	-
		07	07	07	07	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	10	10	10	10	10	-	-	-	-	-
AC M... 0650	2	07	07	07	07	-	-	-	-	-	-	-	-	-	-
		-	-	-	10	10	10	10	-	-	-	-	-	-	-
AC M... 0830	2	07	07	07	-	-	-	-	-	-	-	-	-	-	-
		-	-	10	10	10	10	-	-	-	-	-	-	-	-
AC M... 0960	3	-	10	10	10	10	-	-	-	-	-	-	-	-	-
AC M... 1200	3	10	10	10	10	-	-	-	-	-	-	-	-	-	-
AC M... 2000	3	10	10	10	10	-	-	-	-	-	-	-	-	-	-

- Combination not possible !

5.1.2 SSD Drives motors AC R... / Planetary gearboxes PG AP

Motortype:	size	Type: PGAP..													
		Ratios - 1 stage						Ratios - 2 stage							
		3	4	5	7	10	16	20	25	28	35	40	50	70	100
AC R 1750	4	-	-	18	18	18	18	18	18	18	-	-	-	-	-
AC R 1500	4	-	-	18	18	18	18	18	18	18	18	-	-	-	-
AC R 1250	4	-	-	-	18	18	18	18	18	18	18	18	-	-	-
AC R 2800	4	18	18	18	18	18	18	-	-	-	-	-	-	-	-
AC R 2400	4	18	18	18	18	18	18	18	-	-	-	-	-	-	-
AC R 2000	4	18	18	18	18	18	18	18	18	-	-	-	-	-	-
AC R 4400	4	18	18	18	18	-	-	-	-	-	-	-	-	-	-
AC R 3800	4	18	18	18	18	18	-	-	-	-	-	-	-	-	-
AC R 3150	4	18	18	18	18	18	18	-	-	-	-	-	-	-	-
AC RL 2500	4	-	18	18	18	18	18	18	-	-	-	-	-	-	-
AC RL 2100	4	-	18	18	18	18	18	18	18	-	-	-	-	-	-
AC RL 1750	4	18	18	18	18	18	18	18	18	18	-	-	-	-	-
AC RL 3900	4	18	18	18	18	18	-	-	-	-	-	-	-	-	-
AC RL 3400	4	18	18	18	18	18	18	-	-	-	-	-	-	-	-
AC RL 2800	4	18	18	18	18	18	18	-	-	-	-	-	-	-	-
AC RL 6200	4	18	18	18	18	-	-	-	-	-	-	-	-	-	-
AC RL 5300	4	18	18	18	18	-	-	-	-	-	-	-	-	-	-
AC RL 4400	4	18	18	18	18	18	-	-	-	-	-	-	-	-	-

- Combination not possible !

5.2 Assignment table fundamental principles

Conditions:

$$\begin{aligned}
 M_{\text{nab gear}} &\geq M_N \text{ motor} * i \text{ gear} \\
 M_{\text{max gear}} &\geq 2 * M_N \text{ motor} * i \text{ gear} \\
 M_n \text{ motor} &\geq 2 * M_{\text{no-load gear}} \\
 n_{N\text{max gear}} &> n_N \text{ motor} \\
 J_M \text{ motor} &\geq 2 * J_G \text{ gear}
 \end{aligned}$$



No lubricant change with this design!

Never open the relief screw, which is under the adapter plate.

CAUTION !

All gearboxes are filled by the factory with synthetic transmission oil (Polyglykol) of the viscosity class ISO VG 220.

With use of this lubricant the ambient temperature may be not under 0° C and not over +40° C.

The operating temperature may not exceed +90° C.

General:

We recommend the mounting and removing of the gearboxes **by SSD Drives!**

Motor Mounting

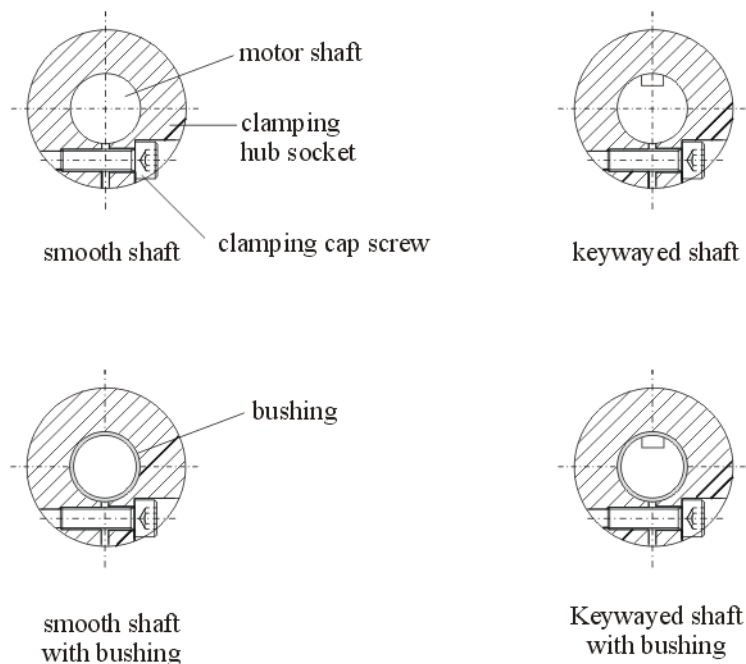
These gear reducers can be mounted on virtually any motor (type B5 as well as B14) with the aid of simple adapter parts.

The input shaft of the gear reducer is connected to the motor shaft via a bearing supported clamping hub. The **motor** is **centered** by these **clamping hub**. This makes it **unnecessary** to **center** the **motor** by means of the **flange**. The bore in the adapter plate is just a clearing hole. The clamping hubs have been directly adapted to the standard motor shaft diameters.

Distance sleeves (bushings) allows easy adaption to less current motor shafts. These bushings are slotted and the slot must be turned to coincide with one of the slots in the clamping hub.

The **key** is removed from motors in which such a key has been fitted. We recommend the use of **motors** with a smooth motor shaft and the concentric running accuracy "N" to DIN 42955.

Adaptions to the motor shafts



7.1 Mounting on motors of type B5 and B14

7.1.1 Design B5 = standard

B5: Turn the clamping hub such that the clamping screws are located coincident with the access holes in the adapter plate (K-version: only one clamping screw). Put the motor into the gear reducer until the adapter plate and the motor fit closely. There is to be no gap between the motor and the gear reducer.

7.1.2 Design B14 = special, only on request

B14: The adapter plate is bolted to the planetary gear reducer via stud bolts and nuts. Remove the adapter plate from the gear reducer and screw it onto the motor; secure with Loctite 221. Turn the clamping hub so that the locking screws coincide with the assembly holes in the adapter plate. Put the motor with the adapter plate onto the gear reducer until the adapter plate and the motor fit closely. There is to be no gap between the adapter plate and gear reducer. There needn't be any problem to put the motor easily into the gear reducer.

7.1.3 General

Attention: In case of motors with shaft collar respectively with a great transitional radius and in case of motors with shafts that are longer than the value allowed for the specific gear reducer: The shaft collar respectively the radius or the shaft end may already fit closely to the clamping hub before the adapter plate and the motor fit closely. If in this case the motor and the gear reducer are screwed together, it may cause the destruction or the damaging of the motor and/or of the gear reducer because of distortions. In cases like this, please check the edges with the help of measuring or checking the measures according to the information given in our chapter "Dimensions" and the information given by the manufacturer of the motor (other manufacturers – motor). In both cases the problems can be solved by using a broader adapter plate respectively an intermediate flange.

The clamping screws should initially be screwed in without torque.

B5 : Screw the motor and the adapter plate crosswise together.

B14: Screw the adapter plate crosswise onto the gear reducer (stud bolts and nuts).

Secure with Loctite 221.

Then alternately tightened the clamping screws to the specified torque in at least three stages.

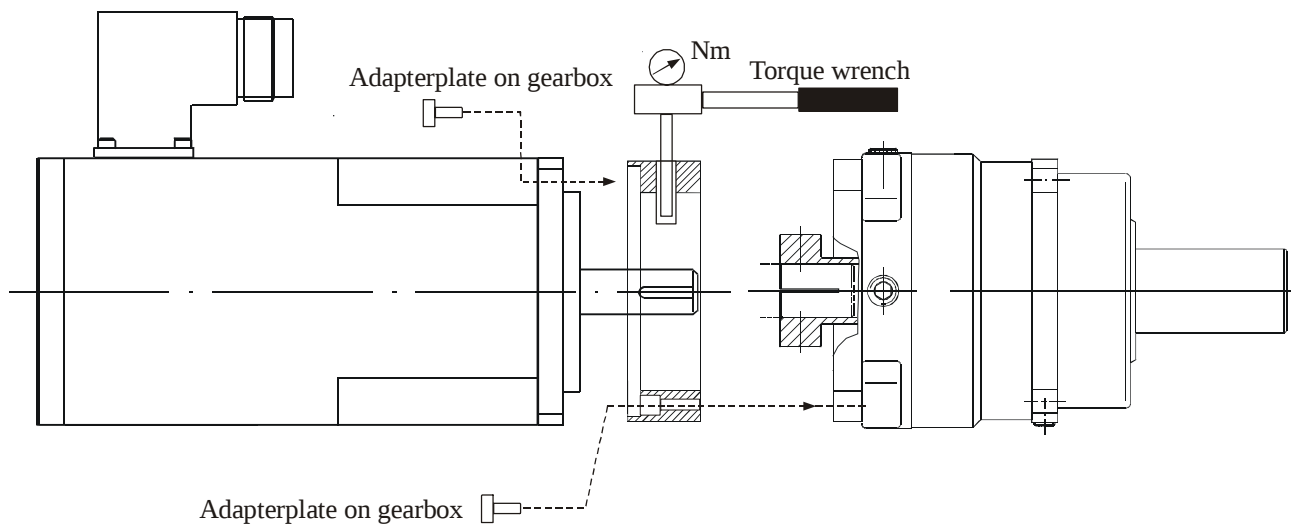
The applicable tools and tightening torques are listed in **table 7.2**. The enclosed plugs must be pressed into the assembly holes of the adapter plate until they are flush with the surface. The parts are disassembled in reverse order.

Mounting on motors of type B5 and B14

Mounting B5 motor

Adapterplate

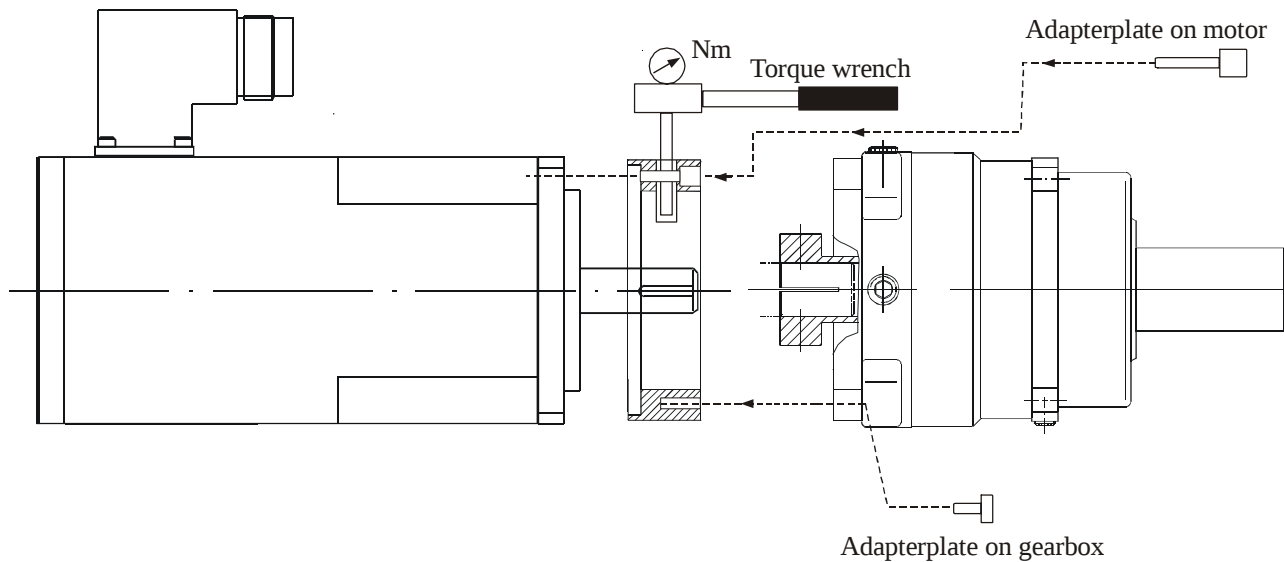
gearbox



Mounting B14 motor

Adapterplate

gearbox



7.2 Screws and wrench openings for clamping hubs

Gearbox size		Clamping hub bore Ø d	Clamping screw DIN 912 10.9	wrench opening	Tightening torque	max. axial load
		[mm]		[mm]	[Nm]	[N]
06	1-stage	d ≤ 11	M 4	3	4,95	80
		11 < d ≤ 14	M 5	4	9,70	
		14 < d ≤ 19	M 6	5	16,50	
	2-stage	d ≤ 11	M 4	3	4,95	80
		11 < d ≤ 14	M 5	4	9,70	
07	1-stage	d ≤ 14	M 5	4	9,70	100
		14 < d ≤ 19	M 6	5	16,50	
		19 < d ≤ 24	M 8	6	40,00	
	2-stage	d ≤ 11	M 4	3	4,95	100
		11 < d ≤ 14	M 5	4	9,70	
		14 < d ≤ 19	M 6	5	16,5	
10	1-stage	d ≤ 19	M 6	5	16,50	100
		19 < d ≤ 24	M 8	6	40,00	
		24 < d ≤ 32	M 10	8	81,00	
	2-stage	d ≤ 14	M 5	4	9,70	100
		14 < d ≤ 19	M 6	5	16,50	
		19 < d ≤ 24	M 8	6	40,00	
14	1-stage	d ≤ 24	M 8	6	40,00	150
		24 < d ≤ 32	M 10	8	81,00	
	2-stage	d ≤ 19	M 6	5	16,50	150
		19 < d ≤ 24	M 8	6	40,00	
		24 < d ≤ 32	M 10	8	81,00	
18	1-stage	d ≤ 32	M 10	8	81,00	190
	2-stage	d ≤ 24 24 < d ≤ 32	M 8 M 10	6 8	40,00 81,00	190

Safety of machines -

8

EEC Directives - CE Certification

Gears or also **gearmotors** are no machines in sense of the EC machine guideline (89/392/EWG i.d.F.91/368/EWG).

For this reason, the EC conformity declaration and CE marking is also dropped.

The VDMA, compartment community drive engineering, finds unambiguous in its publication dated January 1993 that no action requirement is given in the case of the products mentioned above for a declaration in sense of the EC guidelines.

[illegible]

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