APEX DYNAMICS, INC.

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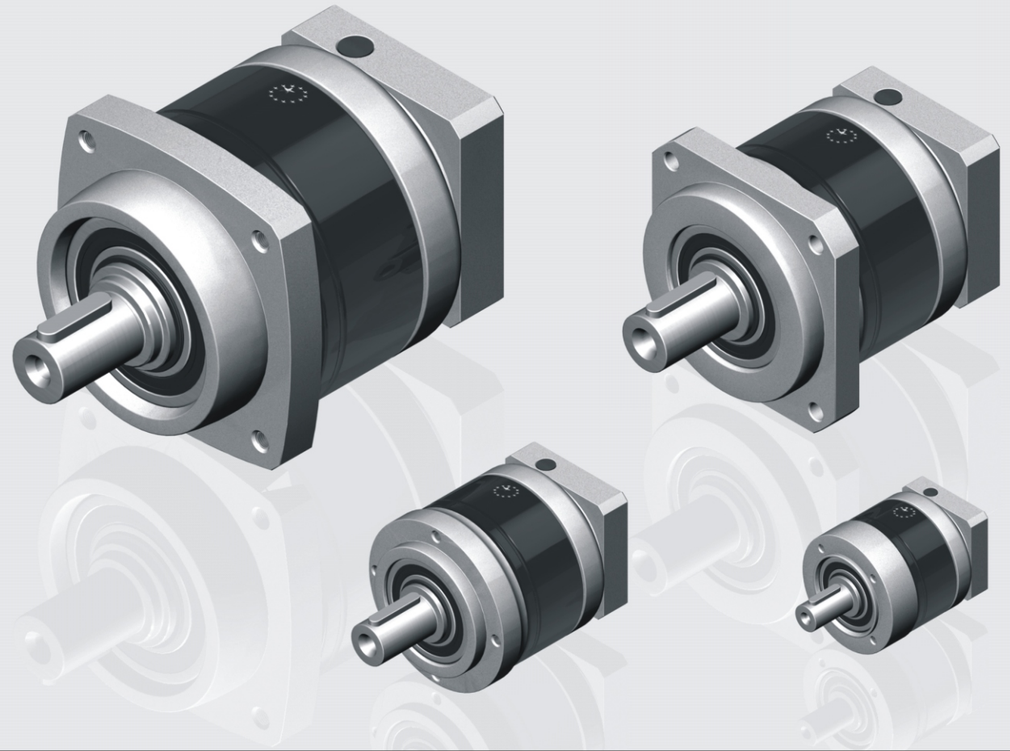
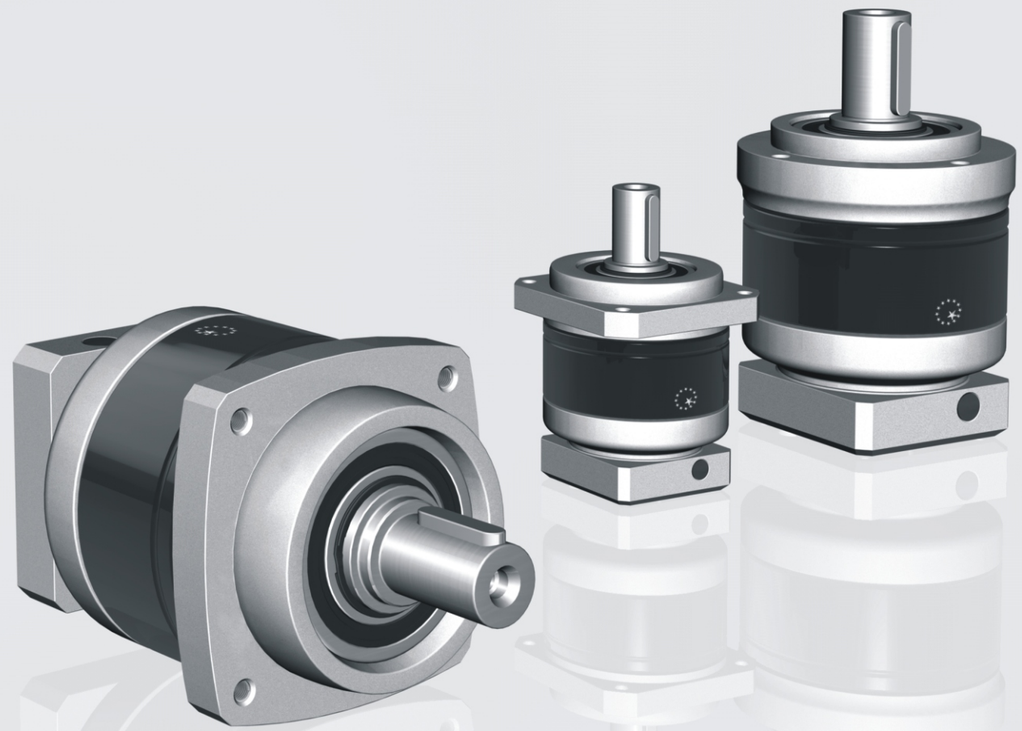
APEX DYNAMICS, INC.

PLANETARY GEARBOX
NEW GENERATION P-SERIES
PSII / PEII / PAII / PGII

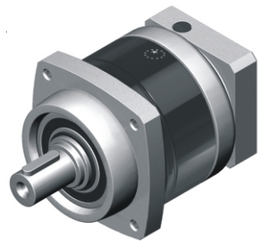




Planetary Gearbox Series

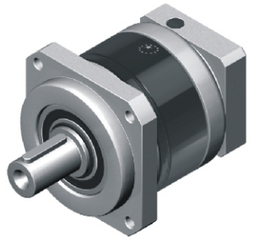
Features:

Economic
High efficiency
Low noise
Reduced backlash
Optimized Inertia moment
Limited temperature rise
Long service life
Applicable for continuous operation
Flexible mounting diameters
Minimized size and weight

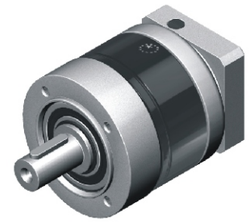


PSII
Page 3~18

PEII
Page 19~34



PAII
Page 35~50



PGII
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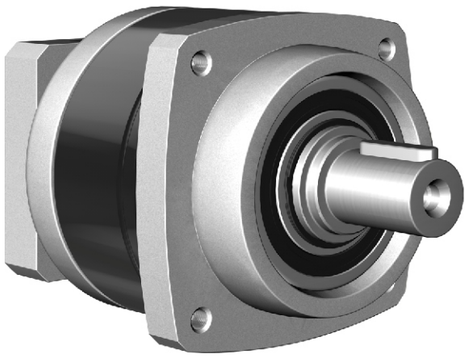
Your motor's perfect match!!
The brand new APEX PII series. The PII series is an economic high precision planetary gearbox with excellent performance and quality. Our innovative PII series design features minimal size, light weight and high efficiency.



PSII

Ordering Code

PEII 090	–	010	–	(2)	/	MOTOR

Motor Designation:
Manufacture Type And Model

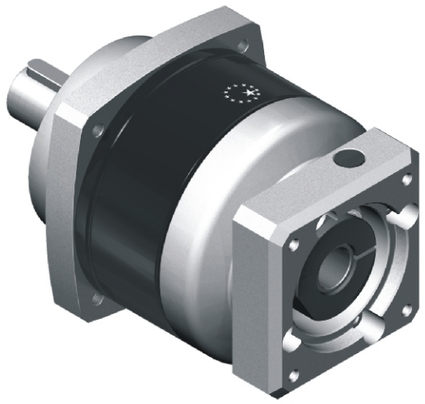
Ratio(1):
1 stage: 3, 4, 5, 7, 10
2 stage: 15, 16, 20, 25, 30, 35, 40, 50, 70, 100

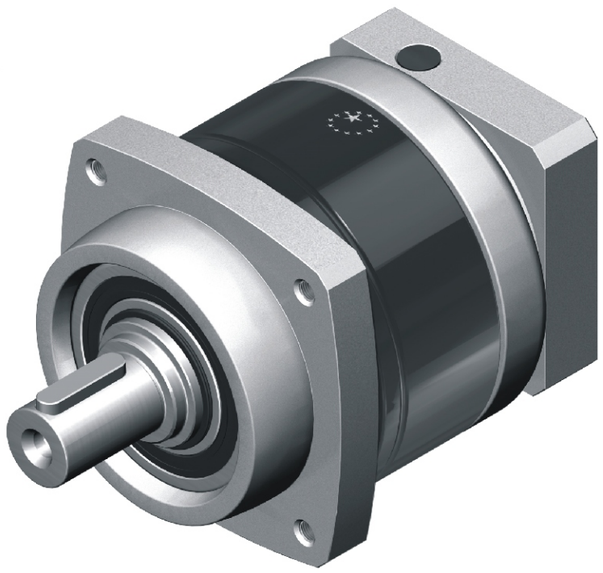
Gear Size:
PSII: PSII A, PSII B, PSII C, PSII D, PSII E
PEII: PEII 050, PEII 070, PEII 090, PEII 120, PEII 155
PAII: PAII 042, PAII 060, PAII 090, PAII 115, PAII 142
PGII: PGII 040, PGII 060, PGII 080, PGII 120, PGII 160

Ordering Example : PEII 090-010 / SIEMENS 1FT6 041-4AF71
PAII 090-010-S1 / SIEMENS 1FT6 041-4AF71

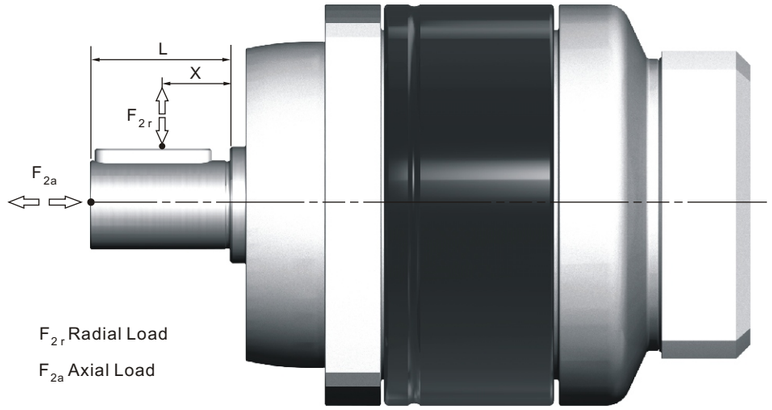
(1) Other ratios are available, please contact APEX.
(2) For PSII, PEII and PGII series, the output shaft with key (S2) is standard.
For PAII series, the S1 and S2 are both available.

PSII Series

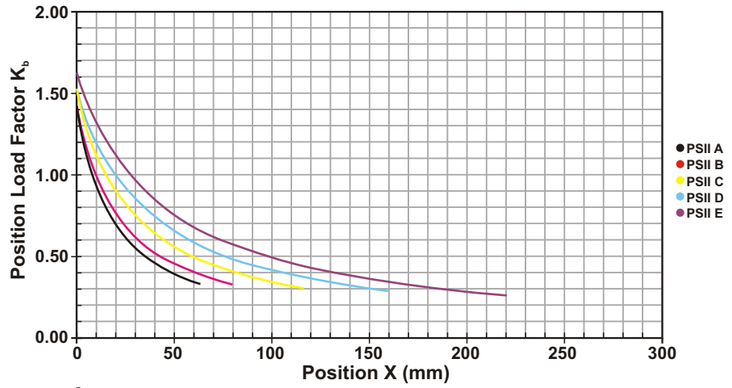




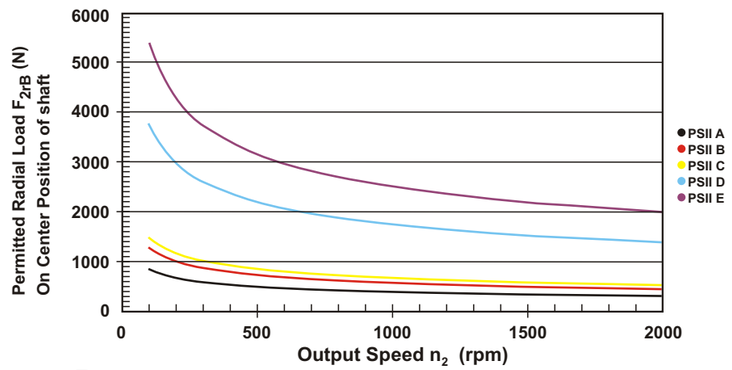
Permitted Radial And Axial Loads On Output Shaft



The permitted radial and axial loads on output shaft of the gearbox depend on the design of the gearbox supporting bearings.



If radial force F_{2r} is not exerted on the center of the output shaft X<1/2xL or X>1/2xL, the permitted radial and axial loads can be calculated by the position load factor Kb on the above diagram.



Permitted radial load F_{2r} on center of output shaft X=1/2 x L for various output speeds. Values provided are for 20,000 hours(*) life.

(*) By Continuous Operation(S1), the service life reduced to 50%.

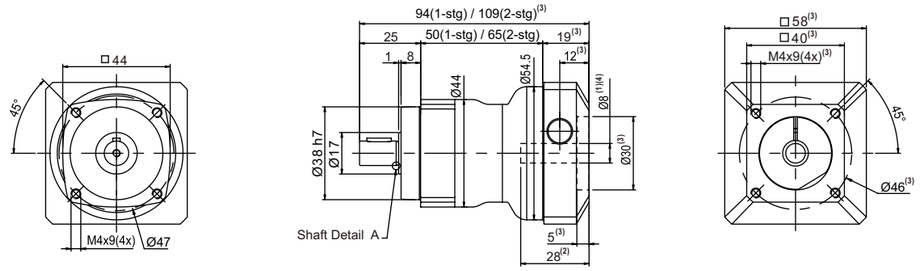
PSII Series Specifications

PSII A			1-stage						2-stage										
			Ratio (1) (2)						Ratio (1) (2)										
			3	4	5	7	9	10	15	16	20	25	30	35	40	50	70	81	100
Nominal Output Torque T_{2N}	Nm		4.4	6.1	5.9	5.4	4.7	5.3	4.3	5.9	5.9	6.2	4.3	5.8	5.8	6.1	5.8	5	5.7
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}																
Max. Acceleration Torque T_{2B}	Nm		7.9	11	10.6	9.7	8.5	9.5	7.7	10.6	10.6	11.2	7.7	10.4	10.4	11	10.4	9	10.3
No Load Running Torque (8)	Nm		0.05						0.05										
Backlash (3)	arcmin		≦ 7						≦ 9										
Torsional Rigidity (8)	Nm/arcmin		0.6						0.6										
Nominal Input Speed n_{1N}	rpm		4,500																
Max. Input Speed n_{1B}	rpm		8,000																
Max. Radial Load F_{2rB} (4)	N		840																
Max. Axial Load F_{2aB} (4)	N		420																
Service Life (7)	hr		20,000																
Operating Temperature	° C		0° C~ +90° C																
Lubrication			Synthetic lubrication grease																
Mounting Position			All directions																
Running Noise (6) (8)	dB(A)		≦ 60						≦ 60										
Efficiency η	%		≧ 97%						≧ 94%										
Weight	kg		0.7						0.8										
Moment of Inertia J_1	$kg.cm^2$	Ø(5)≦8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
		Ø(5)≦11	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02
		Ø(5)≦14	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

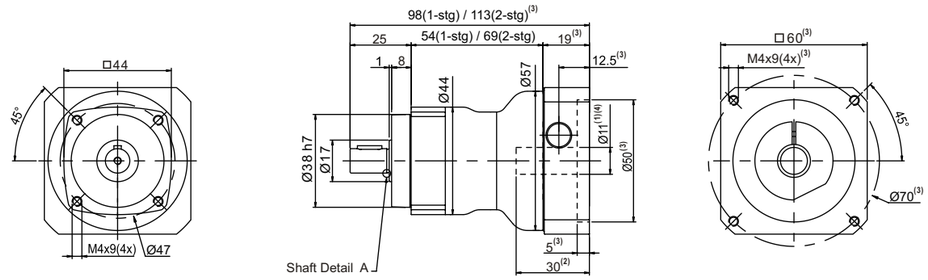
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PSII Series Dimension

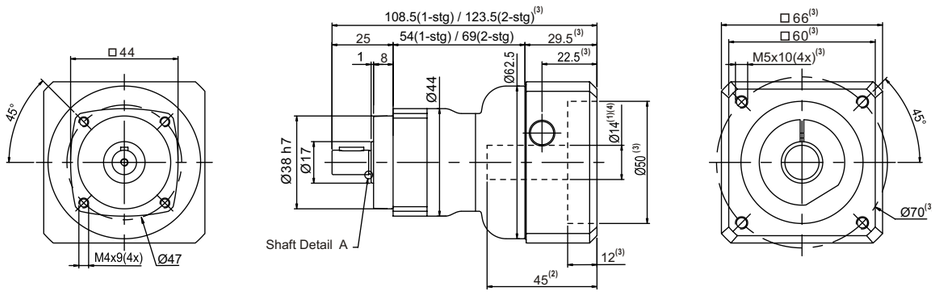
Ø(5)≦8



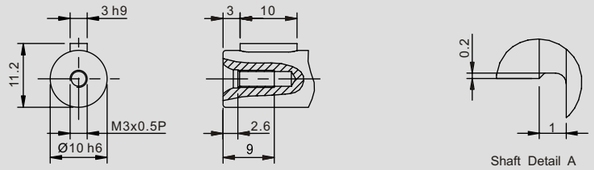
Ø(5)≦11



Ø(5)≦14



Shaft Detail



(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

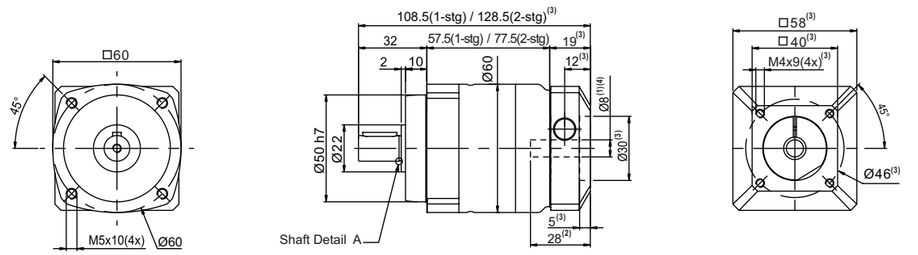
PSII Series Specifications

PSII B			1-stage						2-stage										
			Ratio (1) (2)						Ratio (1) (2)										
			3	4	5	7	9	10	15	16	20	25	30	35	40	50	70	81	100
Nominal Output Torque T_{2N}	Nm		15	21	19.5	18	15.3	17.7	14.5	20	20	21	14	19.3	19.2	20	19.6	16.4	18.8
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}																
Max. Acceleration Torque T_{2B}	Nm		27	38	35.1	32	27.5	31.9	26.1	36	36	38	25	34.7	34.6	36	35.3	29.5	33.8
No Load Running Torque (8)	Nm		0.1						0.1										
Backlash (3)	arcmin		≦ 6						≦ 8										
Torsional Rigidity (8)	Nm/arcmin		1.5						1.5										
Nominal Input Speed n_{1N}	rpm		4,000																
Max. Input Speed n_{1B}	rpm		6,000																
Max. Radial Load F_{2rB} (4)	N		1,290																
Max. Axial Load F_{2aB} (4)	N		645																
Service Life (7)	hr		20,000																
Operating Temperature	° C		0° C~ +90° C																
Lubrication			Synthetic lubrication grease																
Mounting Position			All directions																
Running Noise (6) (8)	dB(A)		≦ 62						≦ 62										
Efficiency η	%		≧ 97%						≧ 94%										
Weight	kg		1.9						2.2										
Moment of Inertia J_1	$kg.cm^2$	Ø (5) ≦8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01
		Ø (5) ≦11	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02
		Ø (5) ≦14	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Ø (5) ≦19	0.02	0.02	0.02	0.02	0.14	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

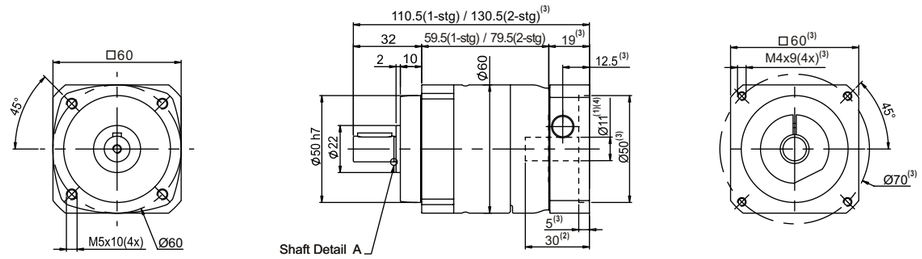
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PSII Series Dimension

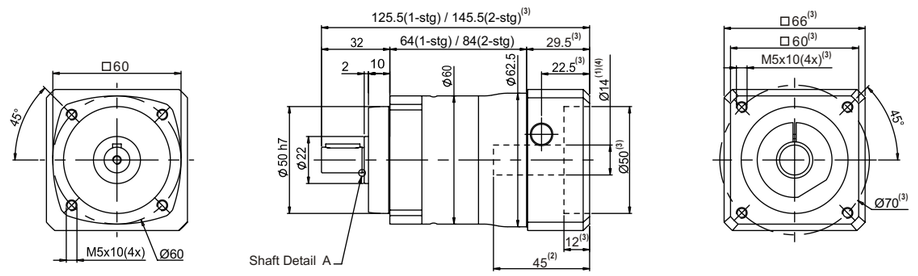
Ø(5)≦8



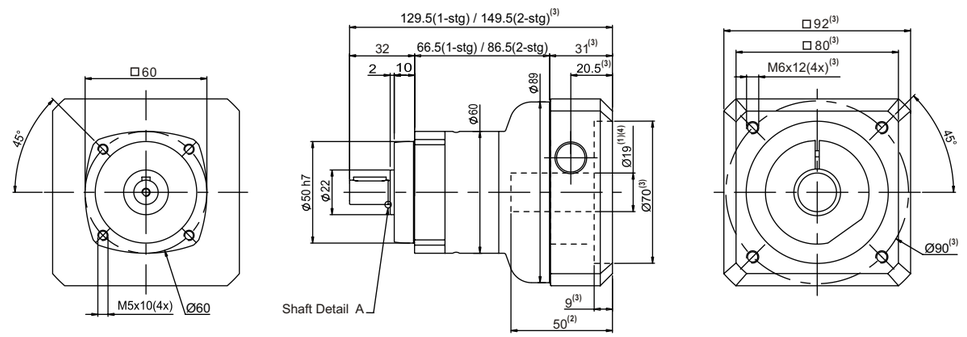
Ø(5)≦11



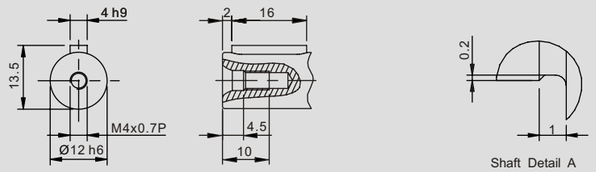
Ø(5)≦14



Ø(5)≦19



Shaft Detail



(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

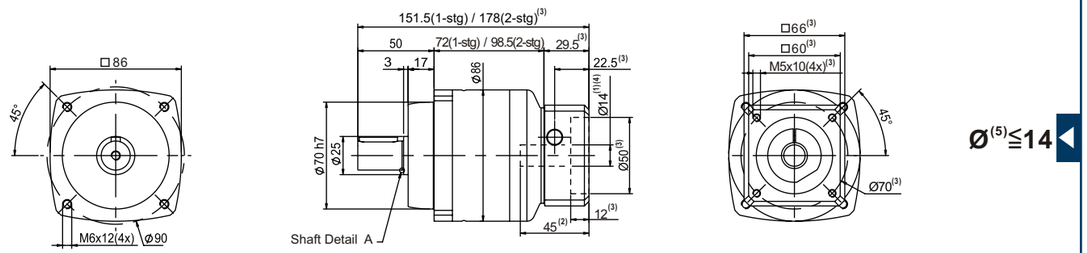
PSII Series Specifications

PSII C			1-stage						2-stage										
			Ratio (1) (2)						Ratio (1) (2)										
			3	4	5	7	9	10	15	16	20	25	30	35	40	50	70	81	100
Nominal Output Torque T_{2N}	Nm		33	46	48	49	41	46	32	44	44	46	32	54	43	45	54	41	48
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}																
Max. Acceleration Torque T_{2B}	Nm		59.4	82.8	86.4	88.2	73.8	82.8	57.6	79.2	79.2	82.8	57.6	97.2	77.4	81	97.2	73.8	86.4
No Load Running Torque (8)	Nm		0.4						0.3										
Backlash (3)	arcmin		≦ 5						≦ 7										
Torsional Rigidity (8)	Nm/arcmin		6						6										
Nominal Input Speed n_{1N}	rpm		3,600																
Max. Input Speed n_{1B}	rpm		6,000																
Max. Radial Load F_{2rB} (4)	N		1,510																
Max. Axial Load F_{2aB} (4)	N		755																
Service Life (7)	hr		20,000																
Operating Temperature	° C		0° C~ +90° C																
Lubrication			Synthetic lubrication grease																
Mounting Position			All directions																
Running Noise (6) (8)	dB(A)		≦ 64						≦ 64										
Efficiency η	%		≧ 97%						≧ 94%										
Weight	kg		3.4						4.3										
Moment of Inertia J_1	$kg.cm^2$	Ø(5)≦14	0.04	0.03	0.03	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02
		Ø(5)≦19	0.18	0.17	0.16	0.16	0.16	0.16	0.16	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
		Ø(5)≦24	0.23	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
		Ø(5)≦28	0.29	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27

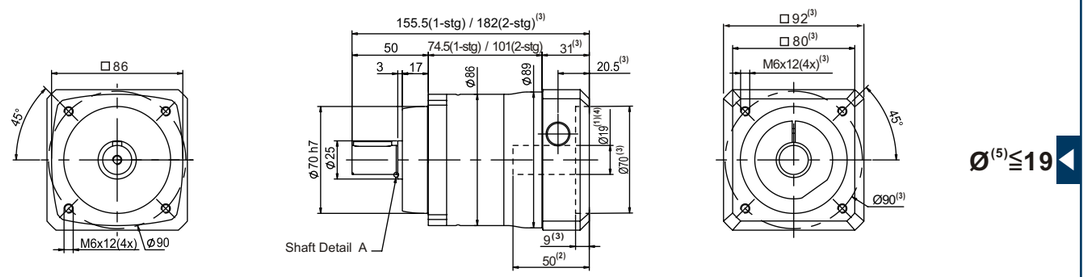
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PSII Series Dimension

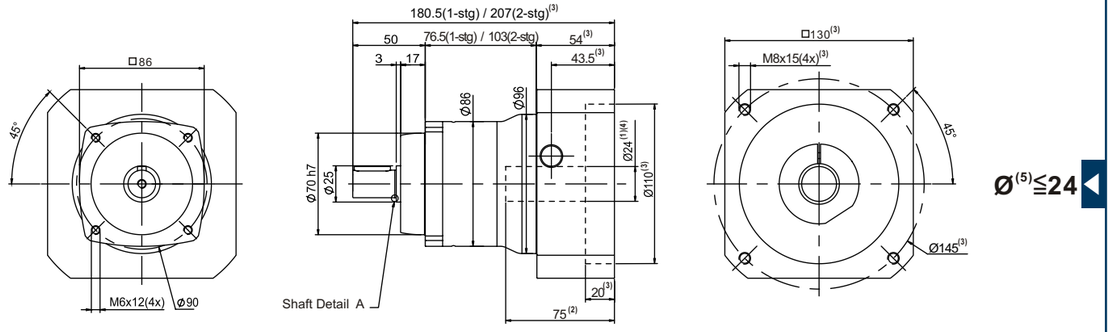
Ø(5)≦14



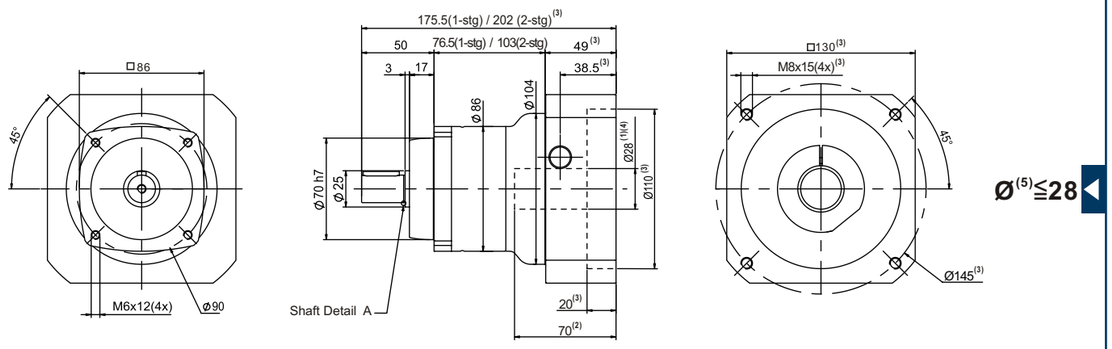
Ø(5)≦19



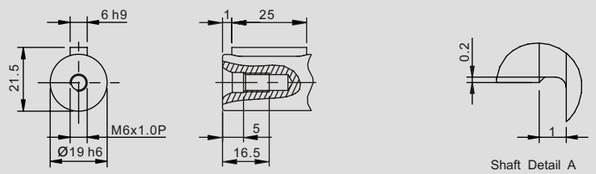
Ø(5)≦24



Ø(5)≦28



Shaft Detail



(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

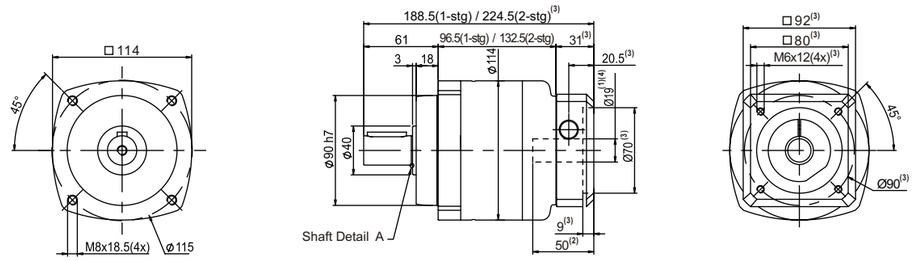
PSII Series Specifications

PSII D			1-stage						2-stage										
			Ratio (1) (2)						Ratio (1) (2)										
			3	4	5	7	9	10	15	16	20	25	30	35	40	50	70	81	100
Nominal Output Torque T_{2N}	Nm		51	72	76	91	66	74	50	70	70	73	50	88	68	71	86	67.5	77
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}																
Max. Acceleration Torque T_{2B}	Nm		91.8	130	137	164	119	133	90	126	126	131	90	158	122	128	155	122	139
No Load Running Torque (8)	Nm		0.8						0.4										
Backlash (3)	arcmin		≦ 5						≦ 7										
Torsional Rigidity (8)	Nm/arcmin		10.5						10.5										
Nominal Input Speed n_{1N}	rpm		3,600																
Max. Input Speed n_{1B}	rpm		4,800																
Max. Radial Load F_{2rB} (4)	N		3,780																
Max. Axial Load F_{2aB} (4)	N		1,890																
Service Life (7)	hr		20,000																
Operating Temperature	° C		0° C~ +90° C																
Lubrication			Synthetic lubrication grease																
Mounting Position			All directions																
Running Noise (6) (8)	dB(A)		≦ 66						≦ 66										
Efficiency η	%		≧ 97%						≧ 94%										
Weight	kg		11.7						13.7										
Moment of Inertia J_1	$kg.cm^2$	Ø (5)≦19	0.24	0.2	0.19	0.18	0.18	0.18	0.19	0.2	0.19	0.19	0.18	0.19	0.18	0.18	0.18	0.18	0.18
		Ø (5)≦24	0.31	0.27	0.26	0.25	0.25	0.25	0.26	0.27	0.26	0.26	0.25	0.26	0.25	0.25	0.25	0.25	0.25
		Ø (5)≦28	0.34	0.29	0.29	0.28	0.28	0.28	0.29	0.29	0.29	0.29	0.28	0.29	0.28	0.28	0.28	0.28	0.28
		Ø (5)≦32	0.8	0.75	0.74	0.74	0.74	0.74	0.74	0.75	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
		Ø (5)≦35	1.09	1.05	1.04	1.04	1.04	1.04	1.04	1.05	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
		Ø (5)≦38	1.42	1.37	1.37	1.36	1.36	1.36	1.37	1.37	1.37	1.37	1.36	1.37	1.36	1.36	1.36	1.36	1.36

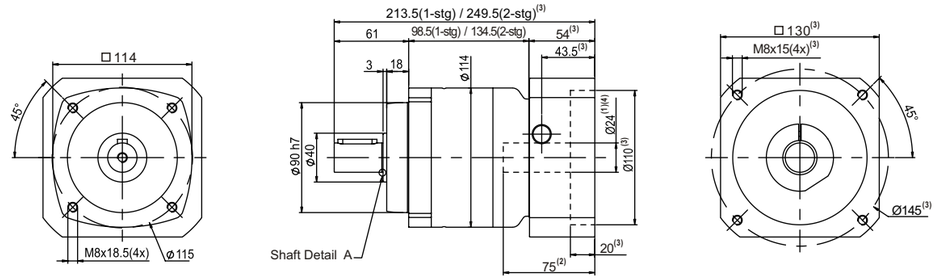
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PSII Series Dimension

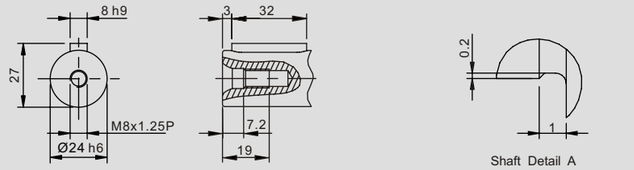
Ø(5)≦19



Ø(5)≦24



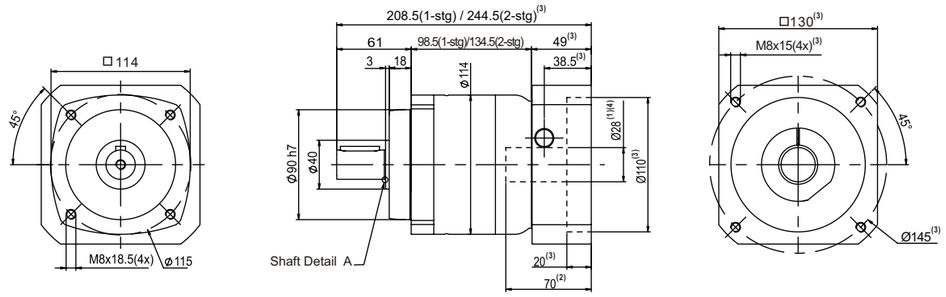
Shaft Detail



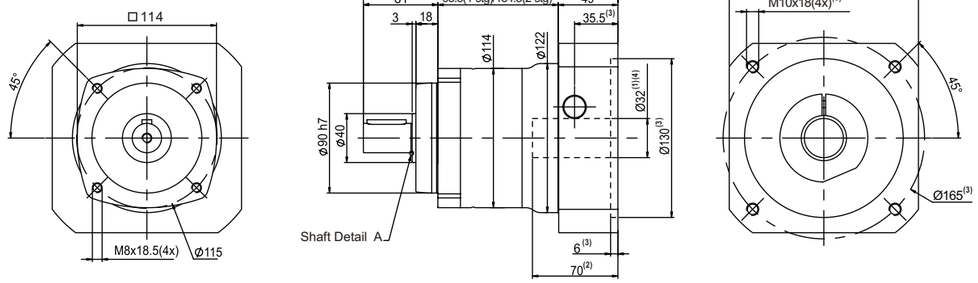
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PSII Series Dimension

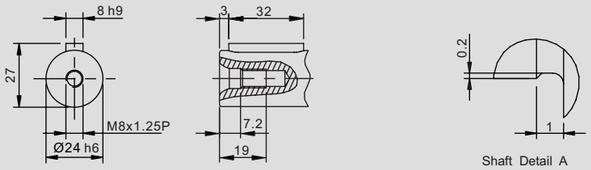
Ø(5)≦28



Ø(5)≦32



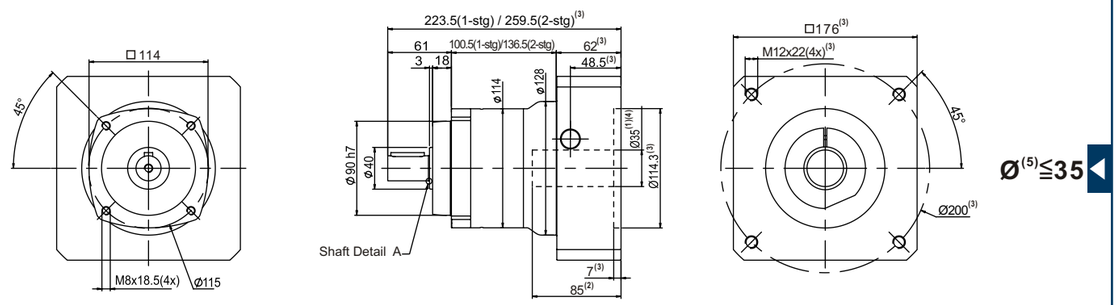
Shaft Detail



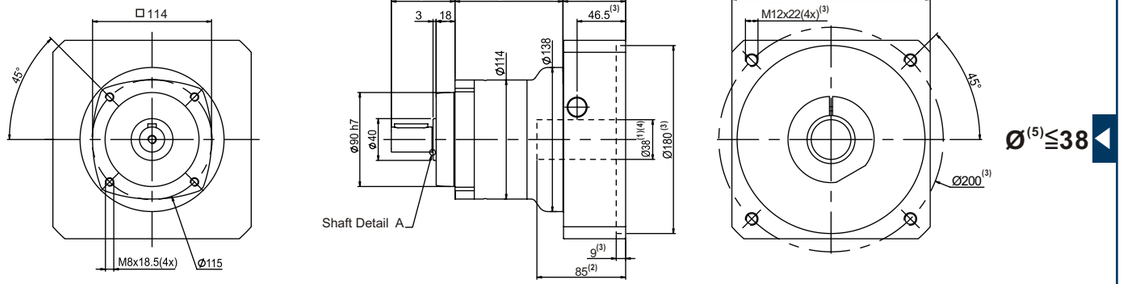
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PSII Series Dimension

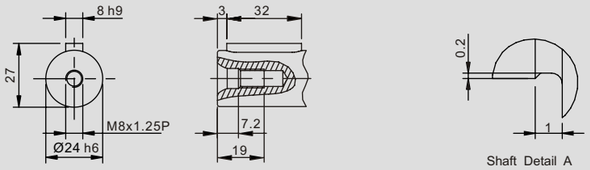
Ø(5)≦35



Ø(5)≦38



Shaft Detail



(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

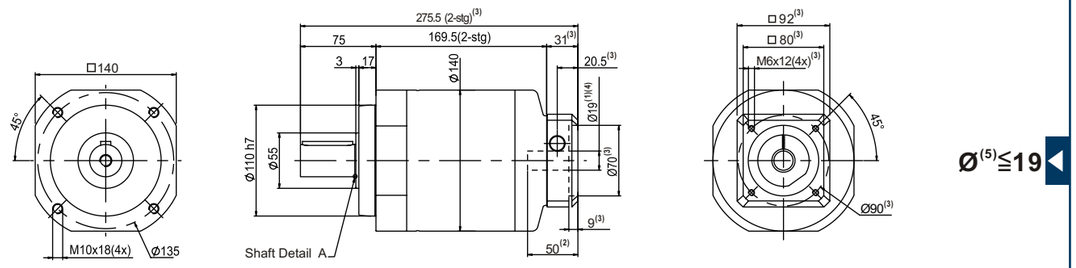
PSII Series Specifications

PSII E		1-stage						2-stage										
		Ratio (1) (2)						Ratio (1) (2)										
		3	4	5	7	9	10	15	16	20	25	30	35	40	50	70	81	100
Nominal Output Torque T_{2N}	Nm	102	143	150	178	126	123	101	140	140	145	99	174	136	140	171	131	128
Emergency Stop Torque T_{2NOT}	Nm	3 times T_{2N}																
Max. Acceleration Torque T_{2B}	Nm	184	257	270	320	227	221	182	252	252	261	178	313	245	252	308	235	230
No Load Running Torque (8)	Nm	2.5						0.8										
Backlash (3)	arcmin	≦ 5						≦ 7										
Torsional Rigidity (8)	Nm/arcmin	18						18										
Nominal Input Speed n_{1N}	rpm	2,500																
Max. Input Speed n_{1B}	rpm	3,600																
Max. Radial Load F_{2rB} (4)	N	5,420																
Max. Axial Load F_{2aB} (4)	N	2,710																
Service Life (7)	hr	20,000																
Operating Temperature	° C	0° C~ +90° C																
Lubrication		Synthetic lubrication grease																
Mounting Position		All directions																
Running Noise (6) (8)	dB(A)	≦ 68						≦ 68										
Efficiency η	%	≧ 97%						≧ 94%										
Weight	kg	16.16						20.03										
Moment of Inertia J_1	kg.cm² Ø (5)≦19	-	-	-	-	-	-	0.22	0.25	0.22	0.22	0.2	0.22	0.2	0.2	0.2	0.19	0.2
	Ø (5)≦24	0.48	0.31	0.27	0.26	0.26	0.26	0.27	0.31	0.27	0.27	0.26	0.27	0.26	0.26	0.26	0.26	0.26
	Ø (5)≦28	0.52	0.35	0.32	0.3	0.3	0.3	0.32	0.35	0.32	0.32	0.3	0.32	0.3	0.3	0.3	0.3	0.3
	Ø (5)≦32	1.07	0.9	0.87	0.85	0.85	0.85	0.87	0.9	0.87	0.87	0.85	0.87	0.85	0.85	0.85	0.85	0.85
	Ø (5)≦35	1.41	1.24	1.19	1.19	1.19	1.19	1.19	1.24	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
	Ø (7)≦38	1.72	1.55	1.52	1.5	1.5	1.5	1.52	1.55	1.52	1.52	1.5	1.52	1.5	1.5	1.5	1.5	1.5
	Ø (7)≦42	2.58	2.41	2.37	2.36	2.36	2.36	-	-	-	-	-	-	-	-	-	-	-

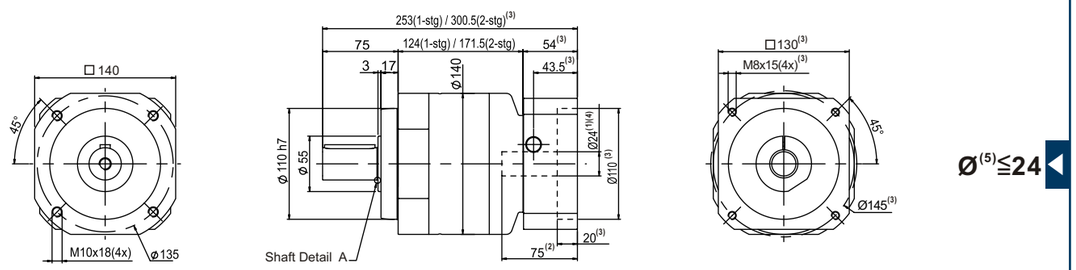
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PSII Series Dimension

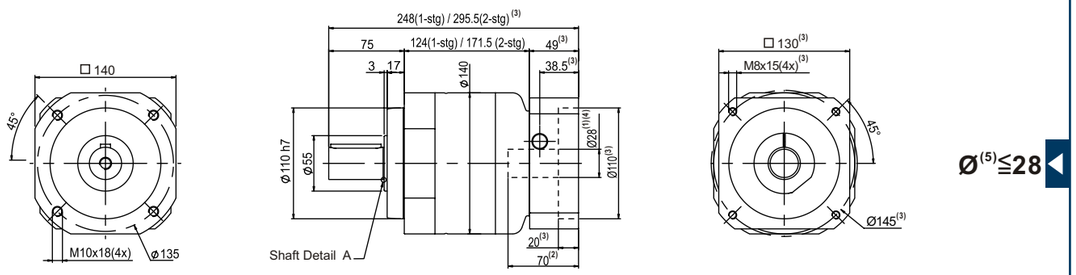
Ø(5)≦19



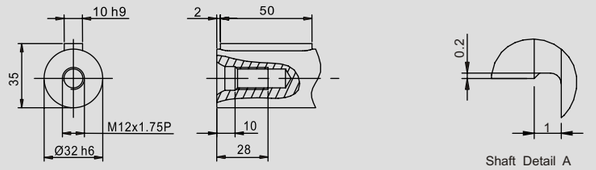
Ø(5)≦24



Ø(5)≦28



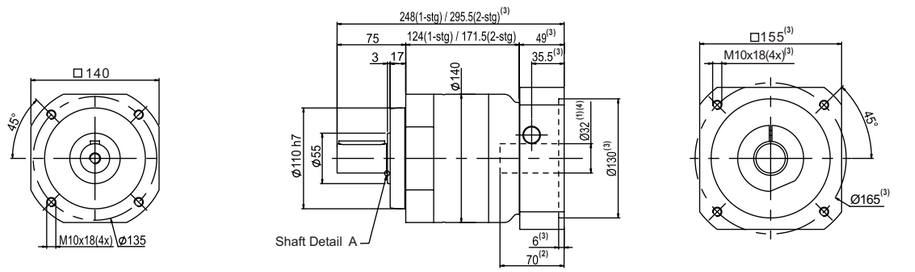
Shaft Detail



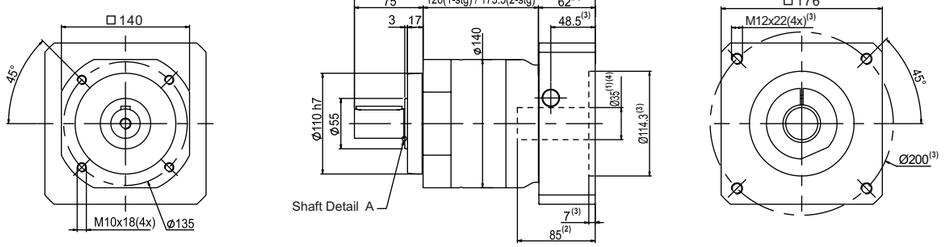
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PSII Series Dimension

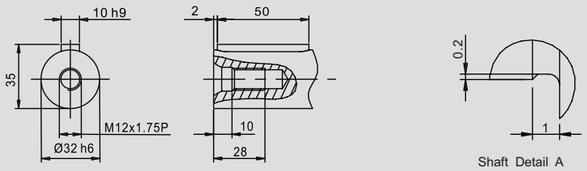
Ø(5)≦32



Ø(5)≦35



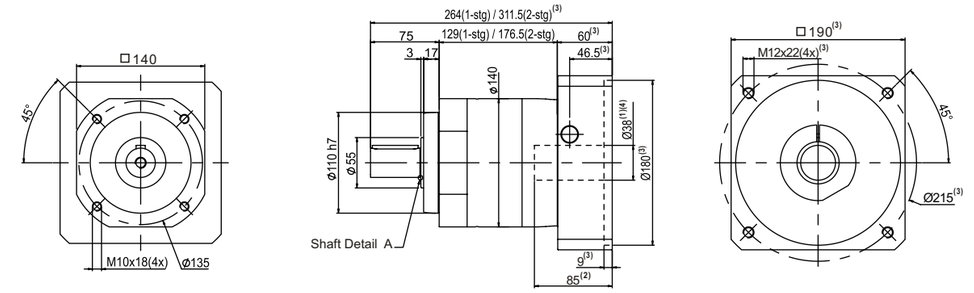
Shaft Detail



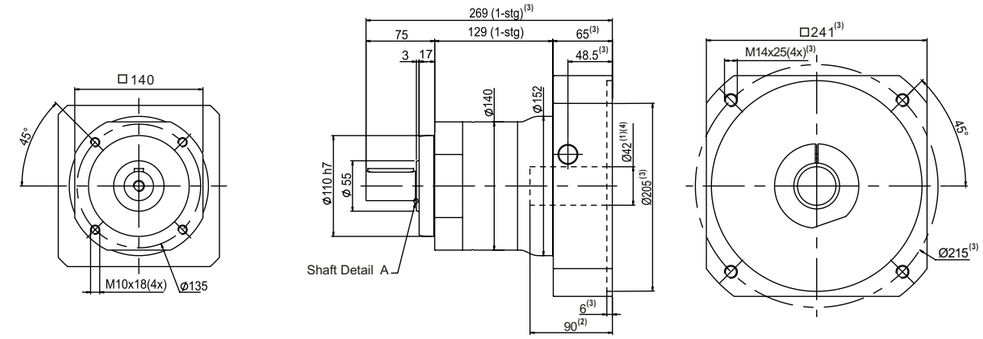
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PSII Series Dimension

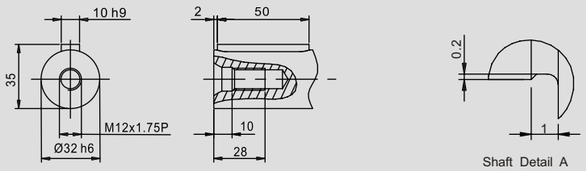
Ø(5)≦38



Ø(5)≦42

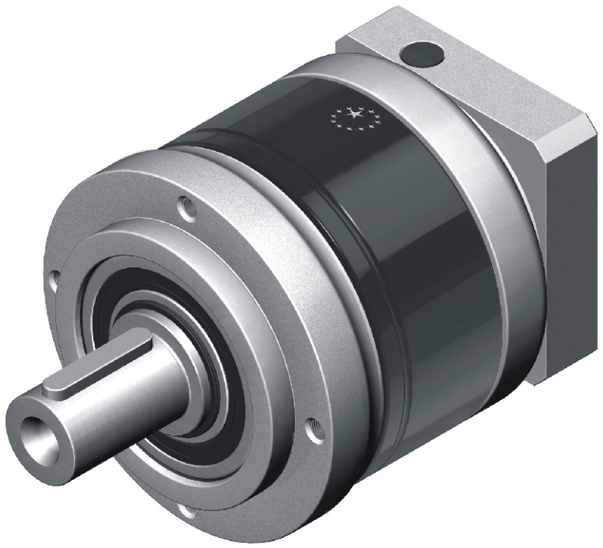


Shaft Detail

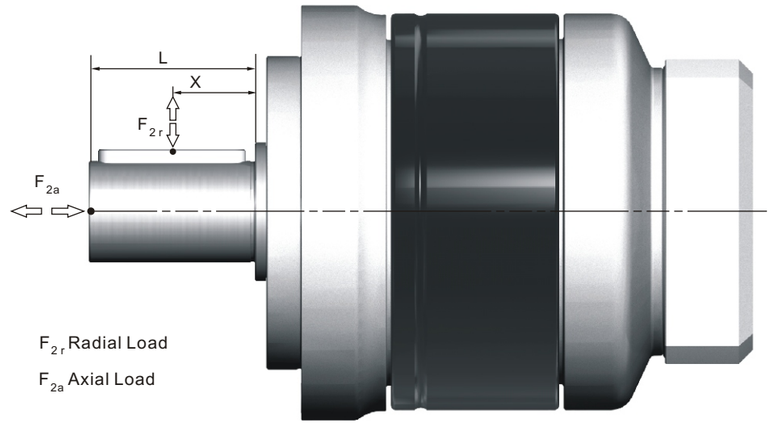


(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

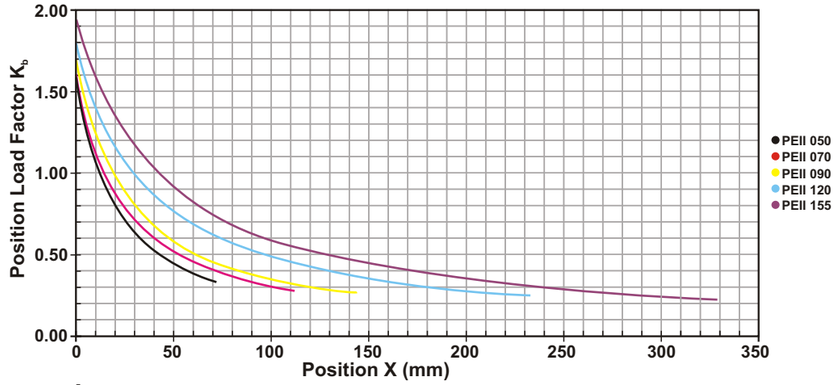
PEII Series



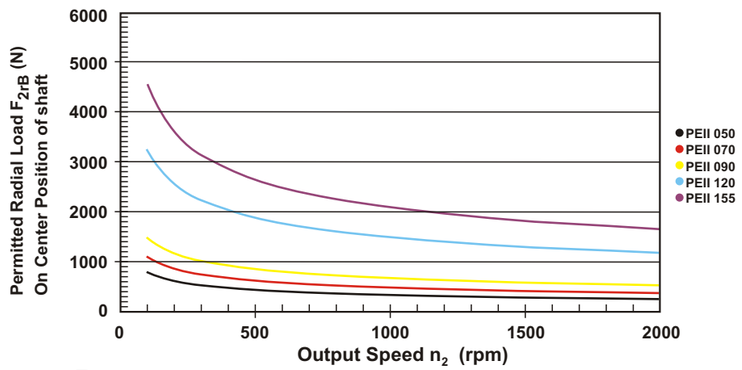
Permitted Radial And Axial Loads On Output Shaft



The permitted radial and axial loads on output shaft of the gearbox depend on the design of the gearbox supporting bearings.



If radial force F_{2r} is not exerted on the center of the output shaft X<1/2xL or X>1/2xL, the permitted radial and axial loads can be calculated by the position load factor Kb on the above diagram.



Permitted radial load F_{2r} on center of output shaft X=1/2 x L for various output speeds. Values provided are for 20,000 hours(*) life.

(*) By Continuous Operation(S1), the service life reduced to 50%.

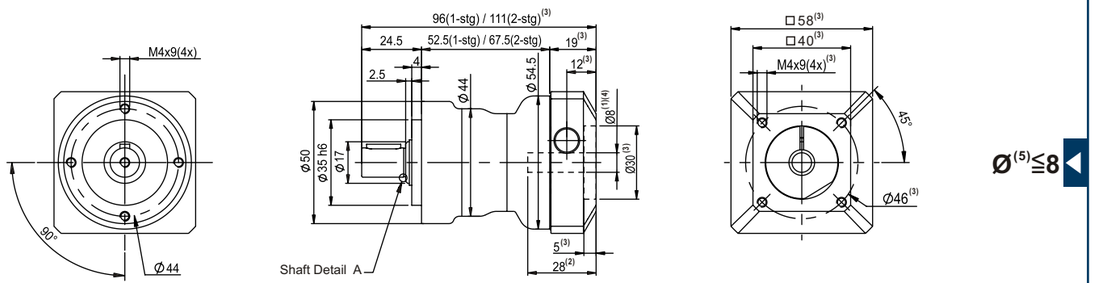
PEII Series Specifications

PEII 050			1-stage					2-stage									
			Ratio (1) (2)					Ratio (1) (2)									
			3	4	5	7	10	15	16	20	25	30	35	40	50	70	100
Nominal Output Torque T_{2N}	Nm		4.4	6.1	5.9	5.4	5.3	4.3	5.9	5.9	6.2	4.3	5.8	5.8	6.1	5.8	5.7
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}														
Max. Acceleration Torque T_{2B}	Nm		7.9	11	10.6	9.7	9.5	7.7	10.6	10.6	11.2	7.7	10.4	10.4	11	10.4	10.3
No Load Running Torque (8)	Nm		0.05					0.05									
Backlash (3)	arcmin		≦ 7					≦ 9									
Torsional Rigidity (8)	Nm/arcmin		0.9					0.9									
Nominal Input Speed n_{1N}	rpm		4,500														
Max. Input Speed n_{1B}	rpm		8,000														
Max. Radial Load F_{2rB} (4)	N		840														
Max. Axial Load F_{2aB} (4)	N		420														
Service Life (7)	hr		20,000 (5)														
Operating Temperature	° C		0° C~ +90° C														
Lubrication			Synthetic lubrication grease														
Mounting Position			All directions														
Running Noise (6) (8)	dB(A)		≦ 60					≦ 60									
Efficiency η	%		≧ 97%					≧ 94%									
Weight	kg		0.7					0.9									
Moment of Inertia J_1	$kg.cm^2$	Ø(5)≦8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
		Ø(5)≦11	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Ø(5)≦14	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

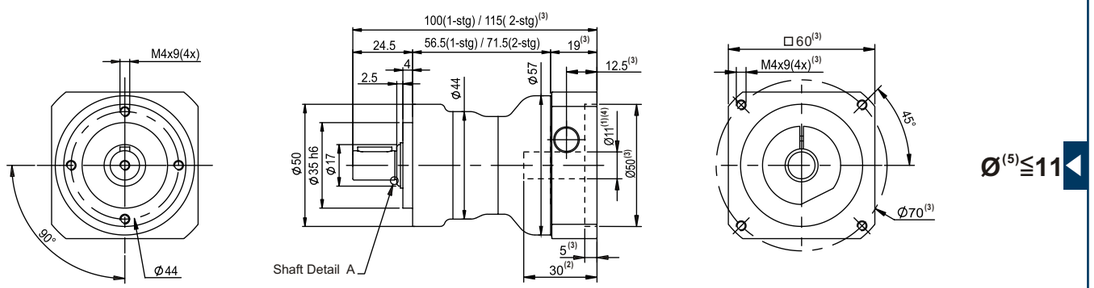
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PEII Series Dimension

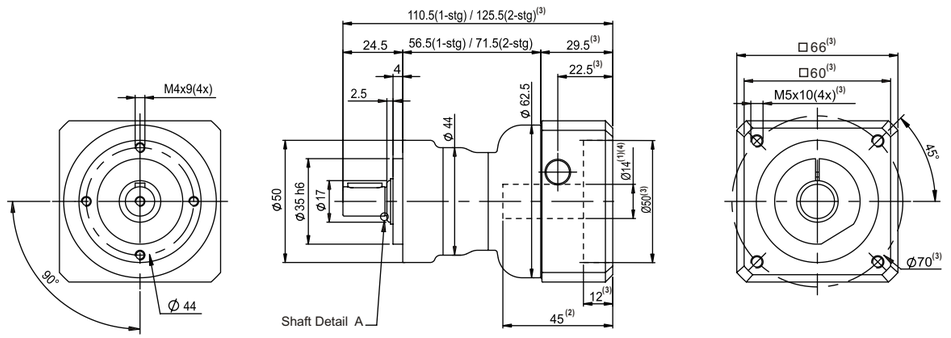
Ø(5)≦8



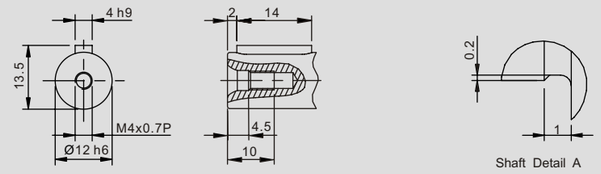
Ø(5)≦11



Ø(5)≦14



Shaft Detail



(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

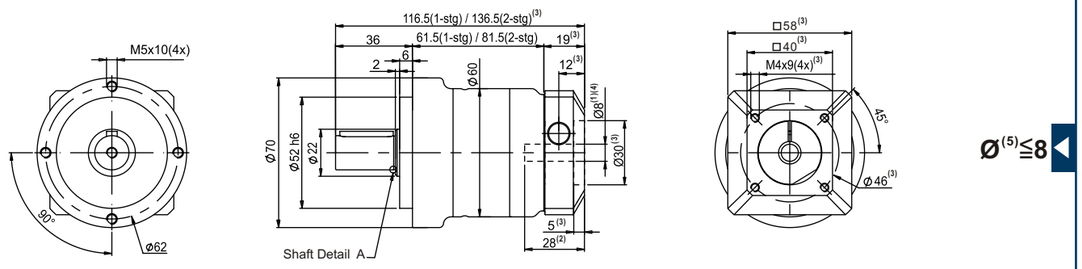
PEII Series Specifications

PEII 070			1-stage					2-stage									
			Ratio (1) (2)					Ratio (1) (2)									
			3	4	5	7	10	15	16	20	25	30	35	40	50	70	100
Nominal Output Torque T_{2N}	Nm		15	21	19.5	18	17.7	14.5	20	20	21	14	19.3	19.2	20	19.6	18.8
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}														
Max. Acceleration Torque T_{2B}	Nm		27	37.8	35.1	32.4	31.9	26.1	36	36	37.8	25.2	34.7	34.6	36	35.3	33.8
No Load Running Torque (8)	Nm		0.1					0.1									
Backlash (3)	arcmin		≦ 6					≦ 8									
Torsional Rigidity (8)	Nm/arcmin		2.2					2.2									
Nominal Input Speed n_{1N}	rpm		4,000														
Max. Input Speed n_{1B}	rpm		6,000														
Max. Radial Load F_{2rB} (4)	N		1,290														
Max. Axial Load F_{2aB} (4)	N		645														
Service Life (7)	hr		20,000														
Operating Temperature	° C		0° C~ +90° C														
Lubrication			Synthetic lubrication grease														
Mounting Position			All directions														
Running Noise (6) (8)	dB(A)		≦ 62					≦ 62									
Efficiency η	%		≧ 97%					≧ 94%									
Weight	kg		1.9					2.3									
Moment of Inertia J_1	$kg.cm^2$	Ø(5)≦8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
		Ø(5)≦11	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Ø(5)≦14	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Ø(5)≦19	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

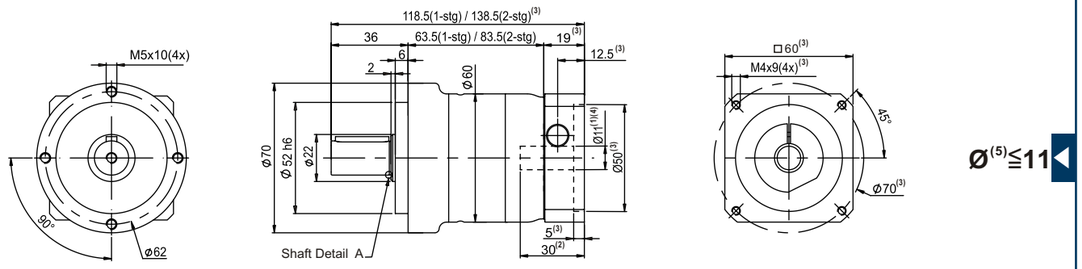
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PEII Series Dimension

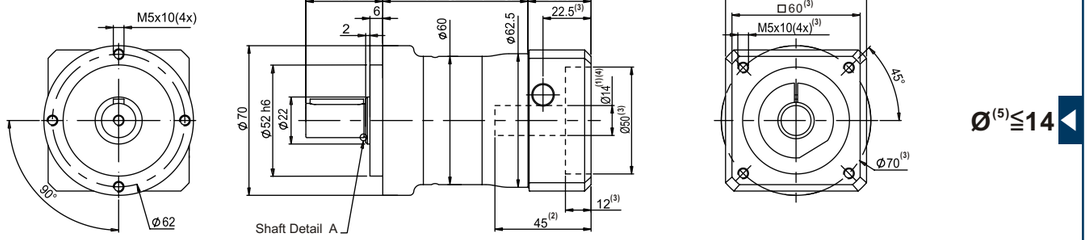
Ø(5)≦8



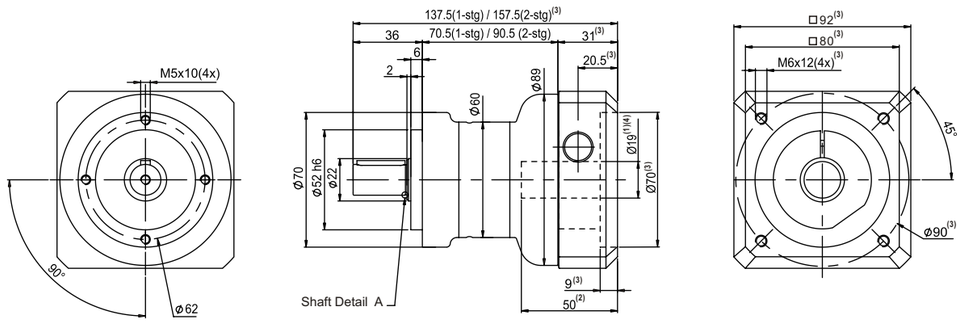
Ø(5)≦11



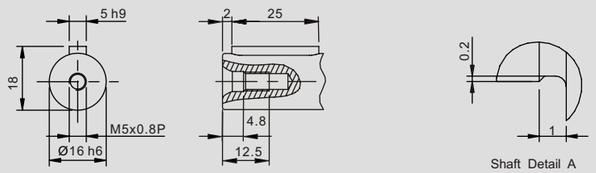
Ø(5)≦14



Ø(5)≦19



Shaft Detail



(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

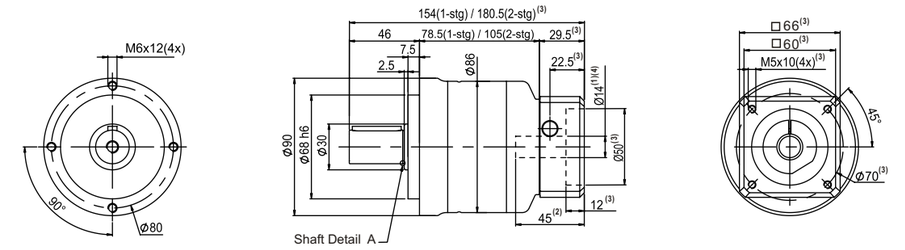
PEII Series Specifications

PEII 090			1-stage					2-stage									
			Ratio (1) (2)					Ratio (1) (2)									
			3	4	5	7	10	15	16	20	25	30	35	40	50	70	100
Nominal Output Torque T_{2N}	Nm		33	46	48	49	46	32	44	44	46	32	54	43	45	54	48
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}														
Max. Acceleration Torque T_{2B}	Nm		59.4	82.8	86.4	88.2	82.8	57.6	79.2	79.2	82.8	57.6	97.2	77.4	81	97.2	86.4
No Load Running Torque (8)	Nm		0.4					0.3									
Backlash (3)	arcmin		≦ 5					≦ 7									
Torsional Rigidity (8)	Nm/arcmin		8					8									
Nominal Input Speed n_{1N}	rpm		3,600														
Max. Input Speed n_{1B}	rpm		6,000														
Max. Radial Load F_{2rB} (4)	N		1,510														
Max. Axial Load F_{2aB} (4)	N		755														
Service Life (7)	hr		20,000														
Operating Temperature	° C		0° C~ +90° C														
Lubrication			Synthetic lubrication grease														
Mounting Position			All directions														
Running Noise (6) (8)	dB(A)		≦ 64					≦ 64									
Efficiency η	%		≧ 97%					≧ 94%									
Weight	kg		3.4					4.3									
Moment of Inertia J_1	kg.cm²	Ø (5) ≦14	0.04	0.03	0.03	0.02	0.02	0.03	0.03	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02
		Ø (5) ≦19	0.18	0.17	0.16	0.16	0.16	0.16	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
		Ø (5) ≦24	0.23	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
		Ø (5) ≦28	0.29	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27

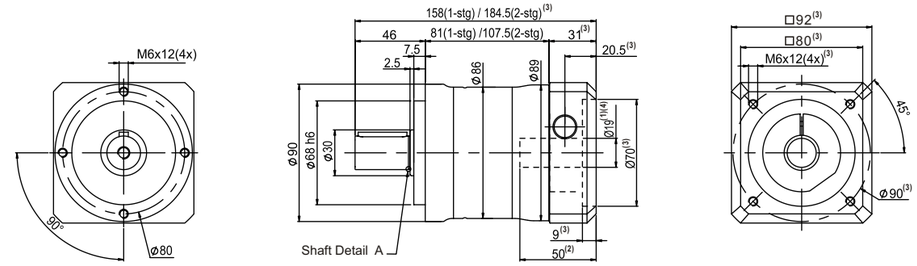
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PEII Series Dimension

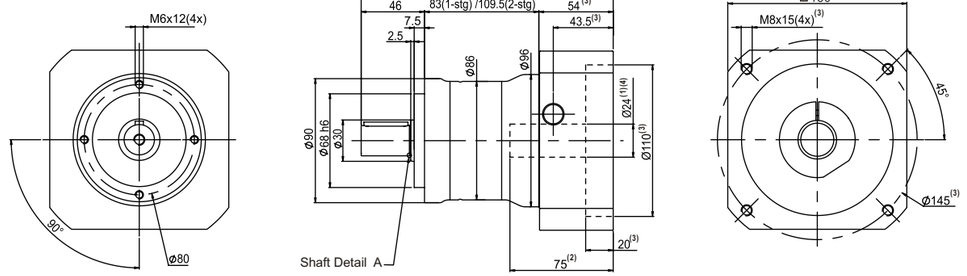
Ø (5) ≦14



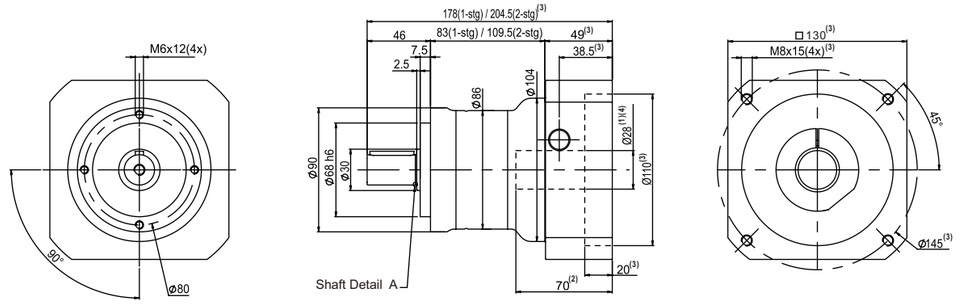
Ø (5) ≦19



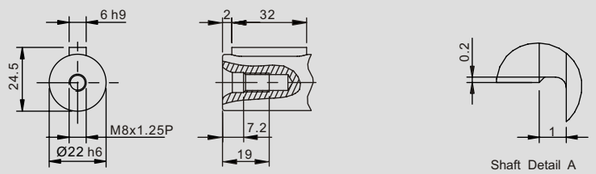
Ø (5) ≦24



Ø (5) ≦28



Shaft Detail



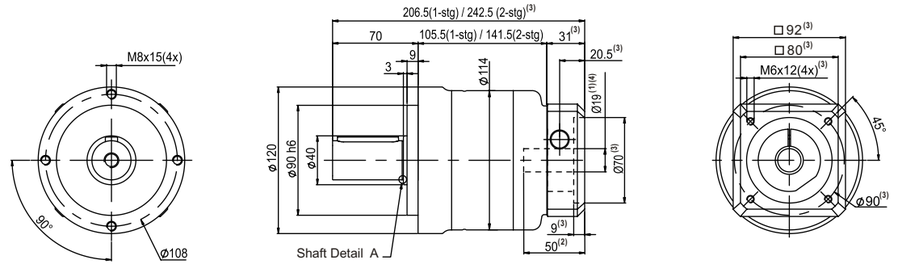
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PEII Series Specifications

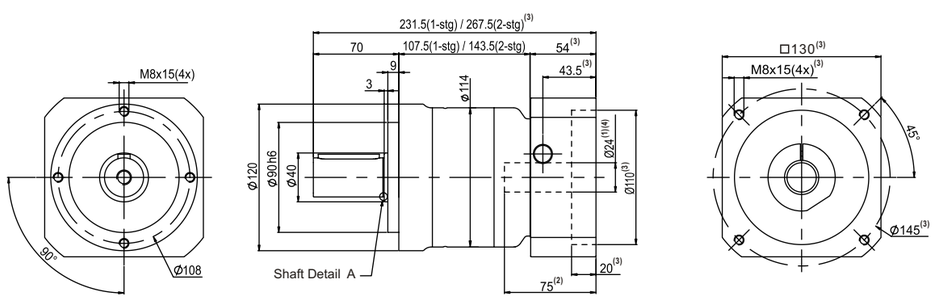
PEII 120		1-stage					2-stage									
		Ratio (1) (2)					Ratio (1) (2)									
		3	4	5	7	10	15	16	20	25	30	35	40	50	70	100
Nominal Output Torque T_{2N}	Nm	51	72	76	91	74	50	70	70	73	50	88	68	71	86	77
Emergency Stop Torque T_{2NOT}	Nm	3 times T_{2N}														
Max. Acceleration Torque T_{2B}	Nm	91.8	130	137	164	133	90	126	126	131	90	158	122	128	155	139
No Load Running Torque (8)	Nm	0.8					0.4									
Backlash (3)	arcmin	≦ 5					≦ 7									
Torsional Rigidity (8)	Nm/arcmin	12					12									
Nominal Input Speed n_{1N}	rpm	3,600														
Max. Input Speed n_{1B}	rpm	4,800														
Max. Radial Load F_{2rB} (4)	N	3,780														
Max. Axial Load F_{2aB} (4)	N	1,890														
Service Life (7)	hr	20,000														
Operating Temperature	° C	0° C~ +90° C														
Lubrication		Synthetic lubrication grease														
Mounting Position		All directions														
Running Noise (6) (8)	dB(A)	≦ 66					≦ 66									
Efficiency η	%	≧ 97%					≧ 94%									
Weight	kg	11.8					13.8									
Moment of Inertia J_1	$kg.cm^2$ Ø(5)≦19	0.24	0.2	0.19	0.18	0.18	0.19	0.2	0.19	0.19	0.18	0.19	0.18	0.18	0.18	0.18
	Ø(5)≦24	0.31	0.27	0.26	0.25	0.25	0.26	0.27	0.26	0.26	0.25	0.26	0.25	0.25	0.25	0.25
	Ø(5)≦28	0.34	0.29	0.29	0.28	0.28	0.29	0.29	0.29	0.29	0.28	0.29	0.28	0.28	0.28	0.28
	Ø(5)≦32	0.8	0.75	0.74	0.74	0.74	0.74	0.75	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
	Ø(5)≦35	1.09	1.05	1.04	1.04	1.04	1.04	1.05	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
	Ø(5)≦38	1.42	1.37	1.37	1.36	1.36	1.37	1.37	1.37	1.37	1.36	1.37	1.36	1.36	1.36	1.36

(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

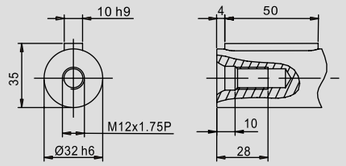
PEII Series Dimension



Ø(5)≦19



Ø(5)≦24

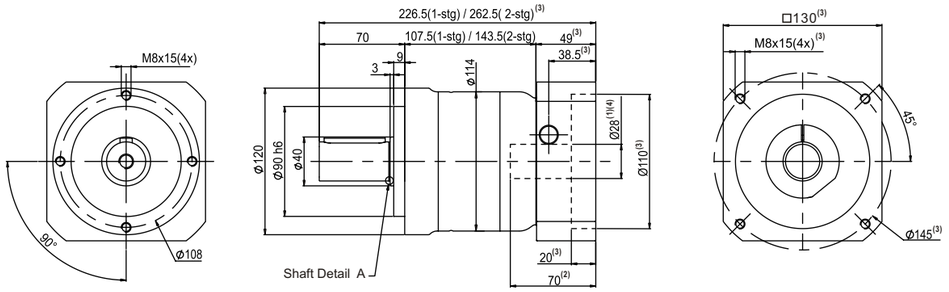


Shaft Detail

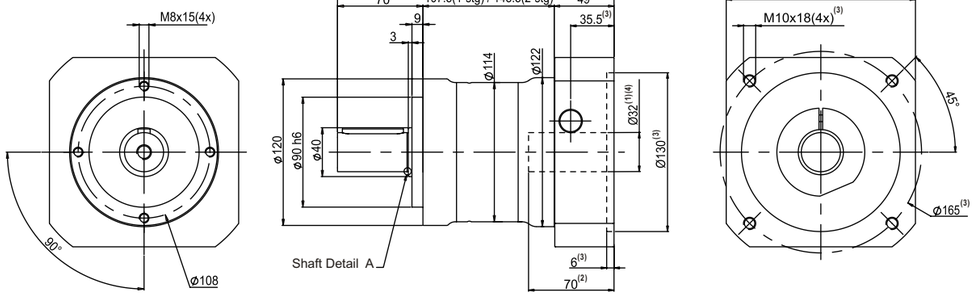
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PEII Series Dimension

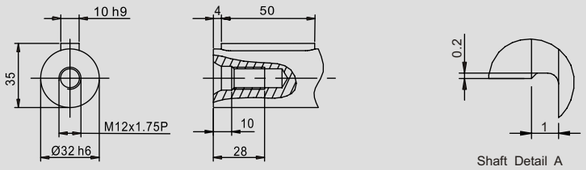
Ø(5)≦28



Ø(5)≦32



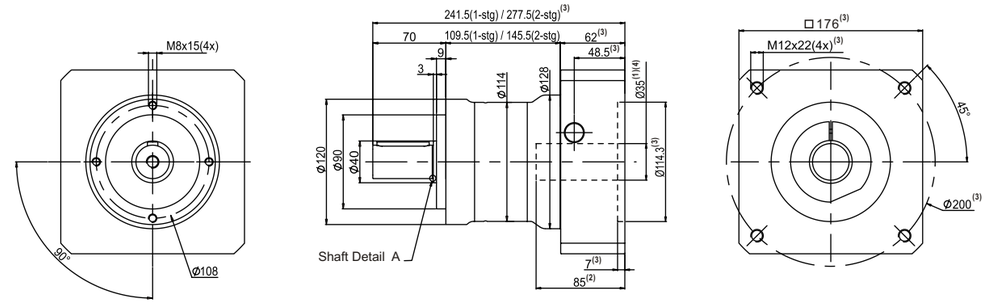
Shaft Detail



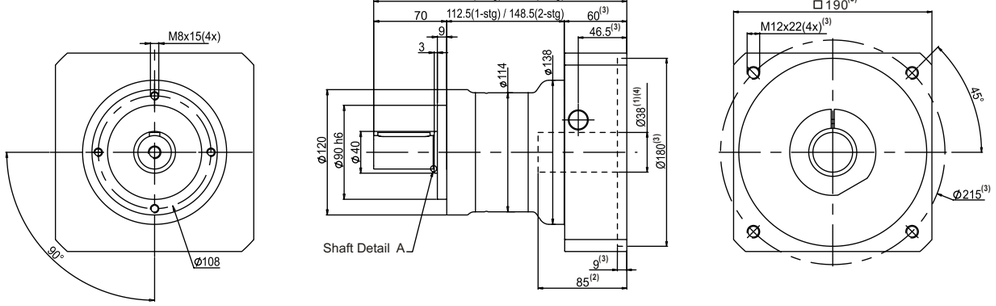
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PEII Series Dimension

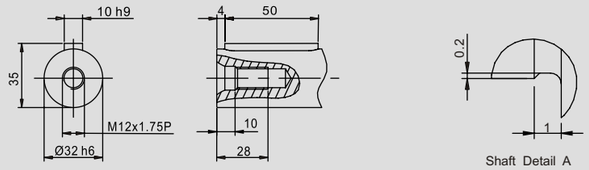
Ø(5)≦35



Ø(5)≦38



Shaft Detail



(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

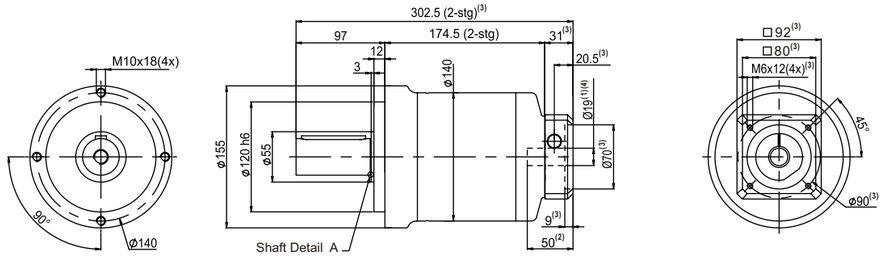
PEII Series Specifications

PEII 155			1-stage					2-stage									
			Ratio (1) (2)					Ratio (1) (2)									
			3	4	5	7	10	15	16	20	25	30	35	40	50	70	100
Nominal Output Torque T_{2N}	Nm		102	143	150	178	123	101	140	140	145	99	174	136	140	171	128
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}														
Max. Acceleration Torque T_{2B}	Nm		184	257	270	320	221	182	252	252	261	178	313	245	252	308	230
No Load Running Torque (8)	Nm		2.5					0.8									
Backlash (3)	arcmin		≦ 5					≦ 7									
Torsional Rigidity (8)	Nm/arcmin		16					16									
Nominal Input Speed n_{1N}	rpm		2,500														
Max. Input Speed n_{1B}	rpm		3,600														
Max. Radial Load F_{2rB} (4)	N		5,420														
Max. Axial Load F_{2aB} (4)	N		2,710														
Service Life (7)	hr		20,000 (5)														
Operating Temperature	° C		0° C~ +90° C														
Lubrication			Synthetic lubrication grease														
Mounting Position			All directions														
Running Noise (6) (8)	dB(A)		≦ 68					≦ 68									
Efficiency η	%		≧ 97%					≧ 94%									
Weight	kg		16.5					20.1									
Moment of Inertia J_1	$kg.cm^2$	Ø(5)≦19	-	-	-	-	-	0.22	0.25	0.22	0.22	0.2	0.22	0.2	0.2	0.2	0.2
		Ø(5)≦24	0.48	0.31	0.27	0.26	0.26	0.27	0.31	0.27	0.27	0.26	0.27	0.26	0.26	0.26	0.26
		Ø(5)≦28	0.52	0.35	0.32	0.3	0.3	0.32	0.35	0.32	0.32	0.3	0.32	0.3	0.3	0.3	0.3
		Ø(5)≦32	1.07	0.9	0.87	0.85	0.85	0.87	0.9	0.87	0.87	0.85	0.87	0.85	0.85	0.85	0.85
		Ø(5)≦35	1.41	1.24	1.19	1.19	1.19	1.19	1.24	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
		Ø(7)≦38	1.72	1.55	1.52	1.5	1.5	1.52	1.55	1.52	1.52	1.5	1.52	1.5	1.5	1.5	1.5
		Ø(7)≦42	2.58	2.41	2.37	2.36	2.36	-	-	-	-	-	-	-	-	-	-

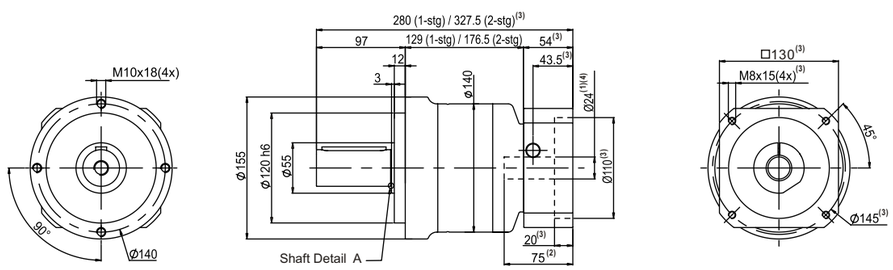
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PEII Series Dimension

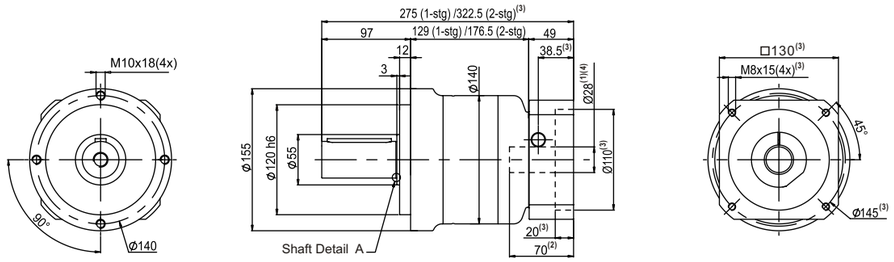
Ø(5)≦19



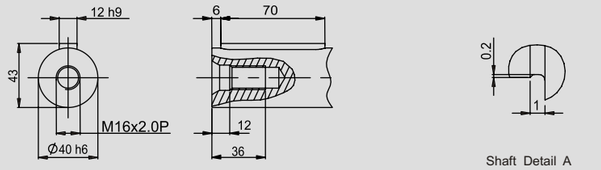
Ø(5)≦24



Ø(5)≦28



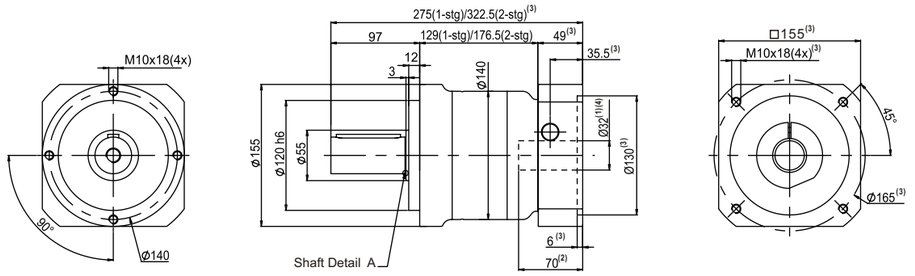
Shaft Detail



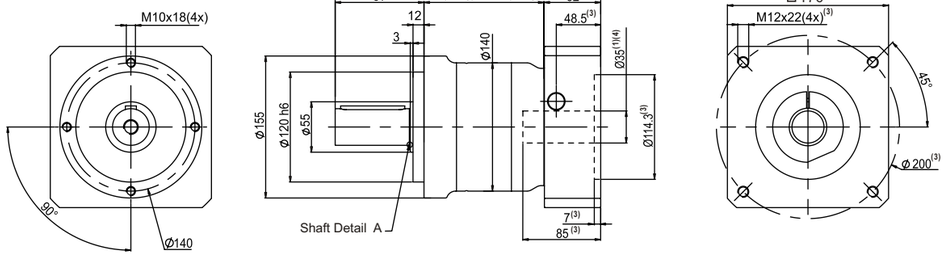
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PEII Series Dimension

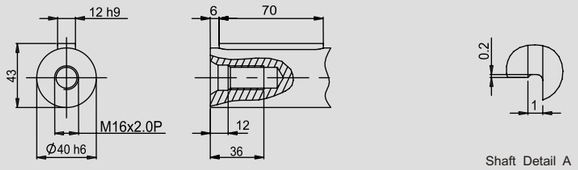
Ø(5)≦32



Ø(5)≦35



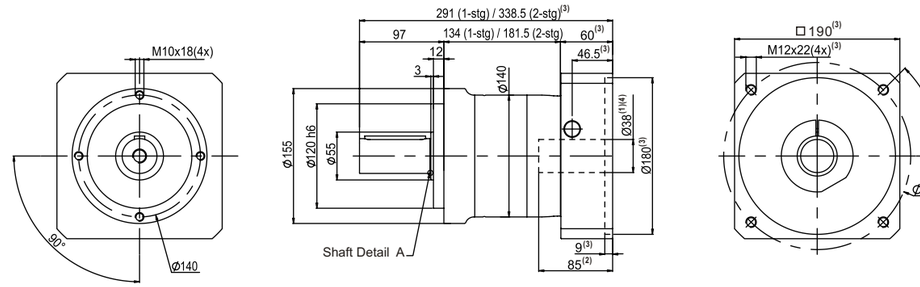
Shaft Detail



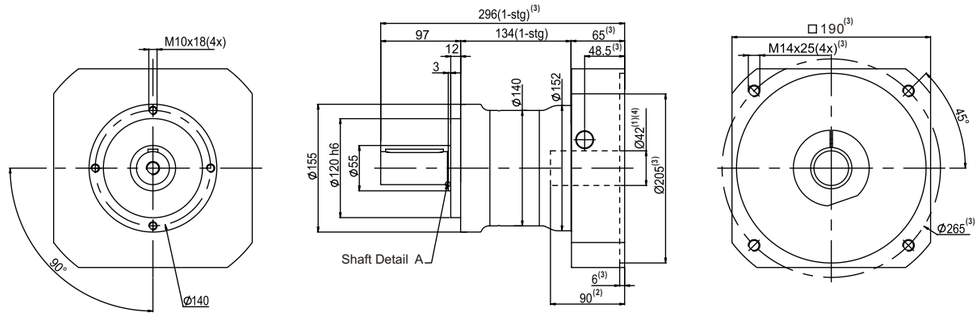
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PEII Series Dimension

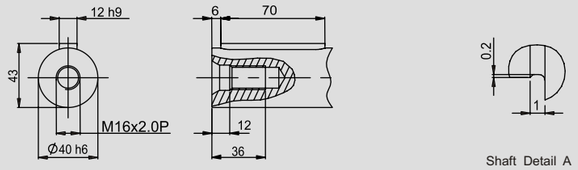
Ø(5)≦38



Ø(5)≦42

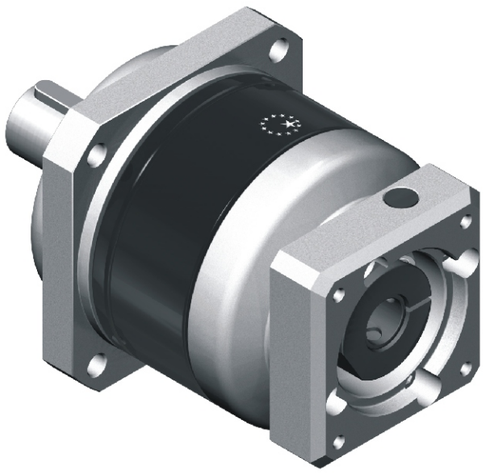


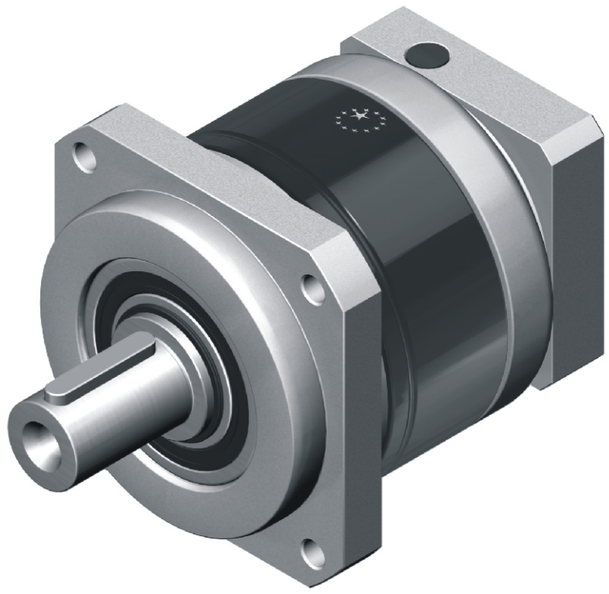
Shaft Detail



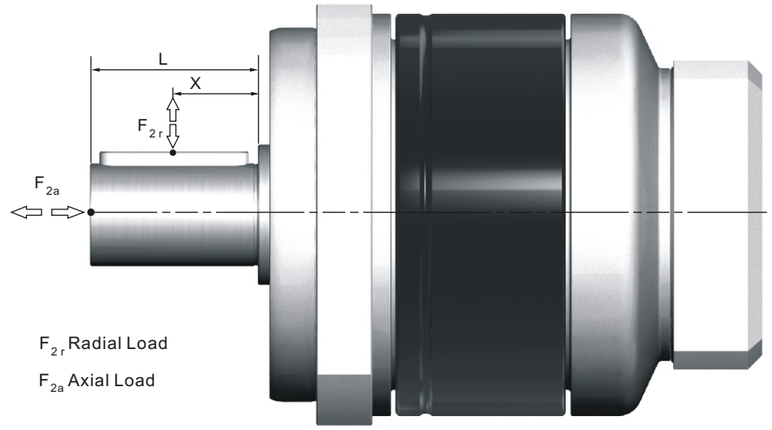
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PAII Series

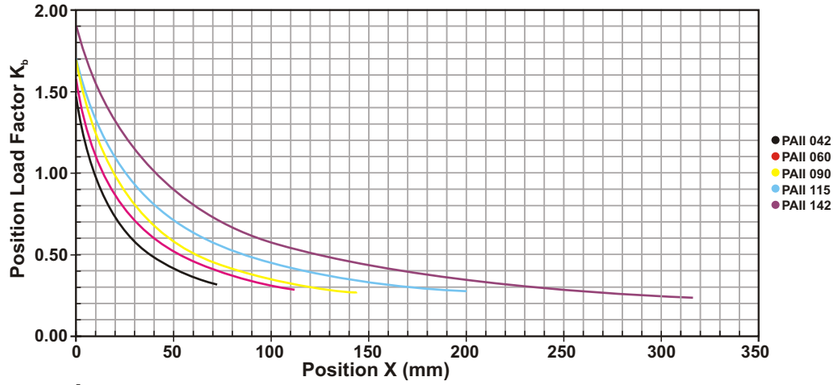




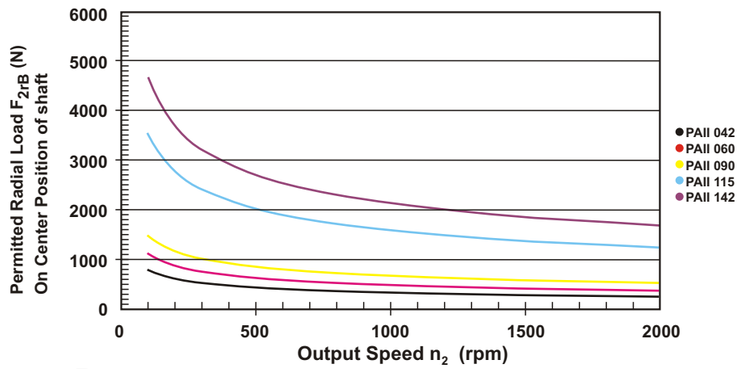
Permitted Radial And Axial Loads On Output Shaft



The permitted radial and axial loads on output shaft of the gearbox depend on the design of the gearbox supporting bearings.



If radial force F_{2r} is not exerted on the center of the output shaft X<1/2xL or X>1/2xL, the permitted radial and axial loads can be calculated by the position load factor Kb on the above diagram.



Permitted radial load F_{2r} on center of output shaft X=1/2 x L for various output speeds. Values provided are for 20,000 hours(*) life.

(*) By Continuous Operation(S1), the service life reduced to 50%.

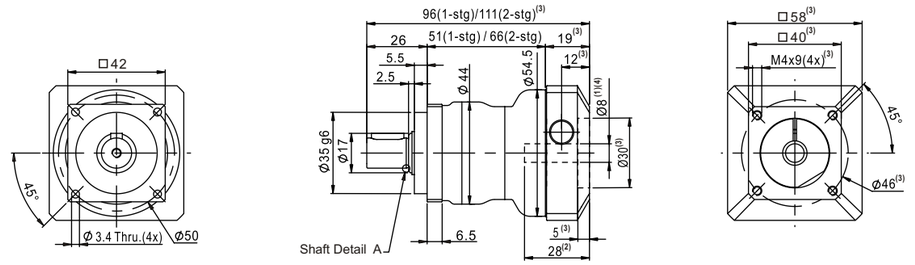
PAII Series Specifications

PAII 042			1-stage						2-stage										
			Ratio (1) (2)						Ratio (1) (2)										
			3	4	5	7	9	10	15	16	20	25	30	35	40	50	70	81	100
Nominal Output Torque T_{2N}	Nm		4.4	6.1	5.9	5.4	4.7	5.3	4.3	5.9	5.9	6.2	4.3	5.8	5.8	6.1	5.8	5	5.7
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}																
Max. Acceleration Torque T_{2B}	Nm		7.9	11	10.6	9.7	8.5	9.5	7.7	10.6	10.6	11.2	7.7	10.4	10.4	11	10.4	9	10.3
No Load Running Torque (8)	Nm		0.05						0.05										
Backlash (3)	arcmin		≦ 7						≦ 9										
Torsional Rigidity (8)	Nm/arcmin		0.9						0.9										
Nominal Input Speed n_{1N}	rpm		4,500																
Max. Input Speed n_{1B}	rpm		8,000																
Max. Radial Load F_{2rB} (4)	N		840																
Max. Axial Load F_{2aB} (4)	N		420																
Service Life (7)	hr		20,000																
Operating Temperature	° C		0° C~ +90° C																
Lubrication			Synthetic lubrication grease																
Mounting Position			All directions																
Running Noise (6) (8)	dB(A)		≦ 60						≦ 60										
Efficiency η	%		≧ 97%						≧ 94%										
Weight	kg		0.6						0.8										
Moment of Inertia J_1	$kg.cm^2$	Ø (5)≦8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
		Ø (5)≦11	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02
		Ø (5)≦14	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

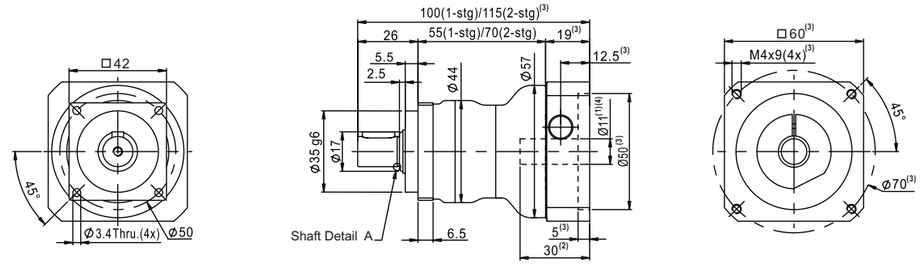
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PAII Series Dimension

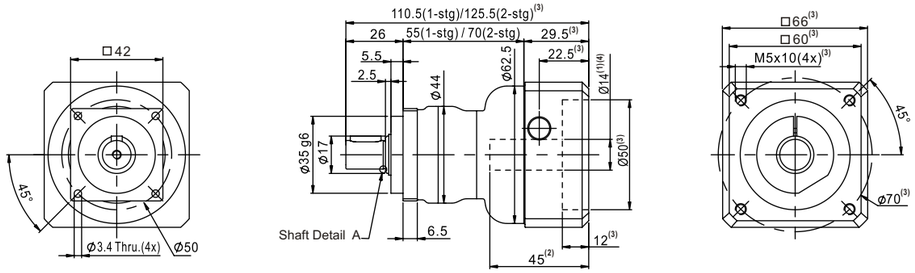
Ø(5)≦8



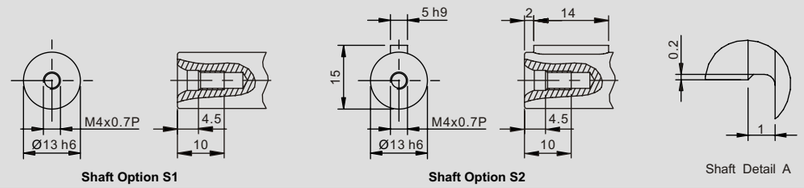
Ø(5)≦11



Ø(5)≦14



Shaft Detail



(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

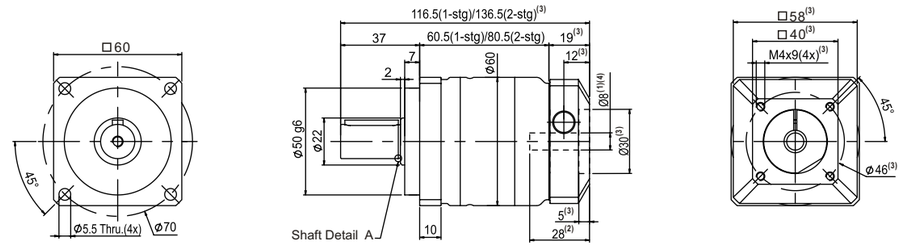
PAII Series Specifications

PAII 060			1-stage						2-stage										
			Ratio (1) (2)						Ratio (1) (2)										
			3	4	5	7	9	10	15	16	20	25	30	35	40	50	70	81	100
Nominal Output Torque T_{2N}	Nm		15	21	19.5	18	15.3	17.7	14.5	20	20	21	14	19.3	19.2	20	19.6	16.4	18.8
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}																
Max. Acceleration Torque T_{2B}	Nm		27	37.8	35.1	32.4	27.5	31.9	26.1	36	36	37.8	25	34.7	34.6	36	35.3	29.5	33.8
No Load Running Torque (8)	Nm		0.1						0.1										
Backlash (3)	arcmin		≦ 6						≦ 8										
Torsional Rigidity (8)	Nm/arcmin		2.2						2.2										
Nominal Input Speed n_{1N}	rpm		4,000																
Max. Input Speed n_{1B}	rpm		6,000																
Max. Radial Load F_{2rB} (4)	N		1,290																
Max. Axial Load F_{2aB} (4)	N		645																
Service Life (7)	hr		20,000																
Operating Temperature	° C		0° C~ +90° C																
Lubrication			Synthetic lubrication grease																
Mounting Position			All directions																
Running Noise (6) (8)	dB(A)		≦ 62						≦ 62										
Efficiency η	%		≧ 97%						≧ 94%										
Weight	kg		1.4						1.8										
Moment of Inertia J_1	$kg.cm^2$	Ø (5)≦8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01
		Ø (5)≦11	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02
		Ø (5)≦14	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Ø (5)≦19	0.02	0.02	0.02	0.02	0.14	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

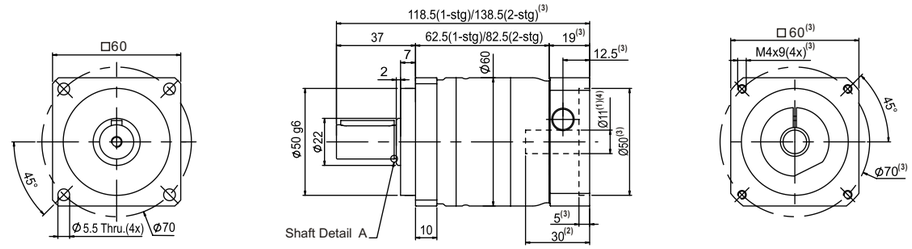
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PAII Series Dimension

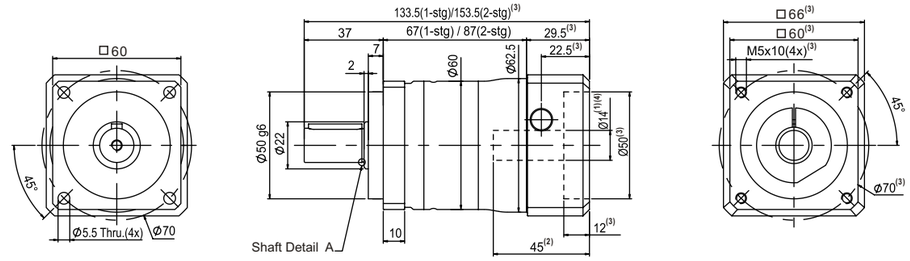
Ø (5)≦8



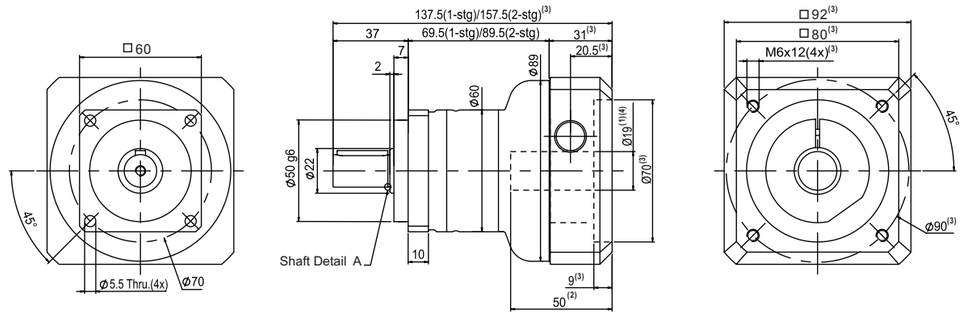
Ø (5)≦11



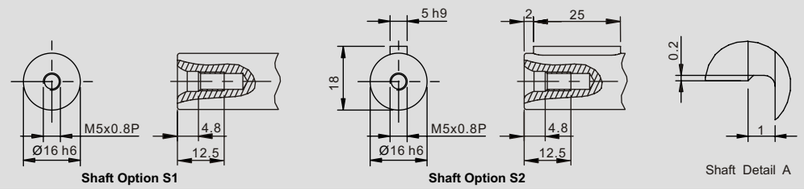
Ø (5)≦14



Ø (5)≦19



Shaft Detail



(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

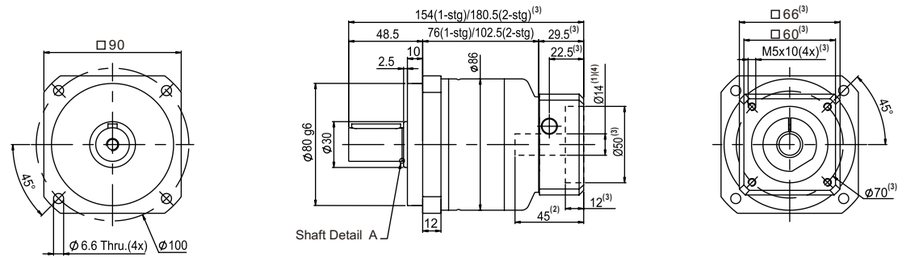
PAII Series Specifications

PAII 090			1-stage						2-stage										
			Ratio (1) (2)						Ratio (1) (2)										
			3	4	5	7	9	10	15	16	20	25	30	35	40	50	70	81	100
Nominal Output Torque T_{2N}	Nm		33	46	48	49	41	46	32	44	44	46	32	54	43	45	54	41	48
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}																
Max. Acceleration Torque T_{2B}	Nm		59.4	82.8	86.4	88.2	73.8	82.8	57.6	79.2	79.2	82.8	57.6	97.2	77.4	81	97.2	73.8	86.4
No Load Running Torque (8)	Nm		0.4						0.3										
Backlash (3)	arcmin		≦ 5						≦ 7										
Torsional Rigidity (8)	Nm/arcmin		8						8										
Nominal Input Speed n_{1N}	rpm		3,600																
Max. Input Speed n_{1B}	rpm		6,000																
Max. Radial Load F_{2rB} (4)	N		1,510																
Max. Axial Load F_{2aB} (4)	N		755																
Service Life (7)	hr		20,000																
Operating Temperature	° C		0° C~ +90° C																
Lubrication			Synthetic lubrication grease																
Mounting Position			All directions																
Running Noise (6) (8)	dB(A)		≦ 64						≦ 64										
Efficiency η	%		≧ 97%						≧ 94%										
Weight	kg		3.3						4.2										
Moment of Inertia J_1	$kg.cm^2$	Ø (5)≦14	0.04	0.03	0.03	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02
		Ø (5)≦19	0.18	0.17	0.16	0.16	0.16	0.16	0.16	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
		Ø (5)≦24	0.23	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
		Ø (5)≦28	0.29	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27

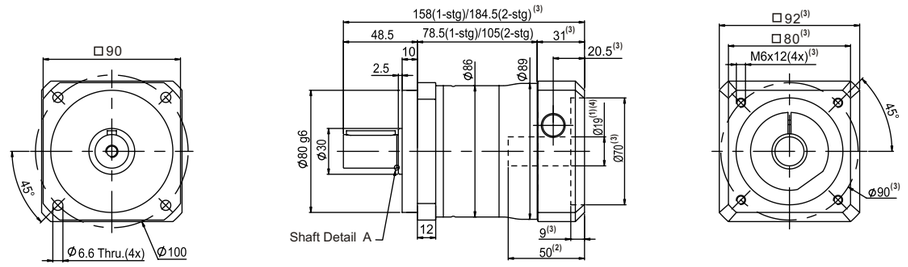
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PAII Series Dimension

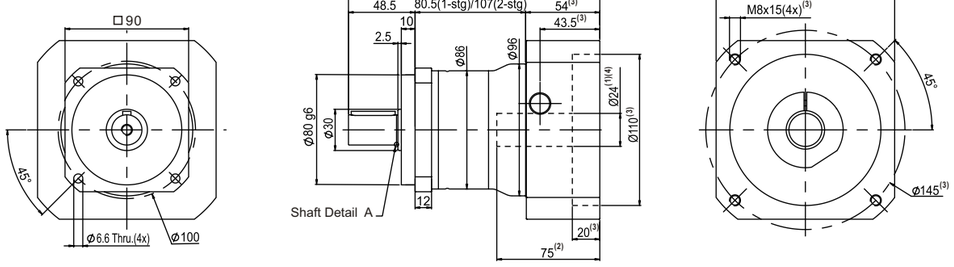
Ø(5)≦14



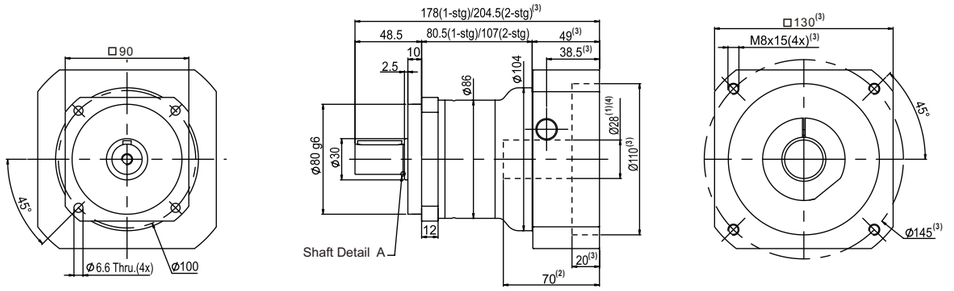
Ø(5)≦19



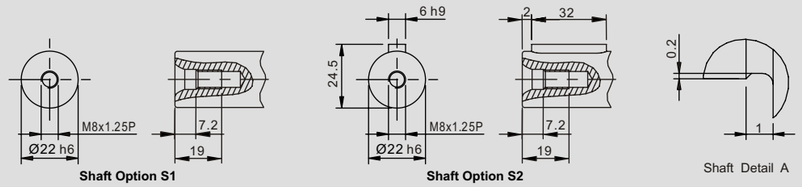
Ø(5)≦24



Ø(5)≦28



Shaft Detail



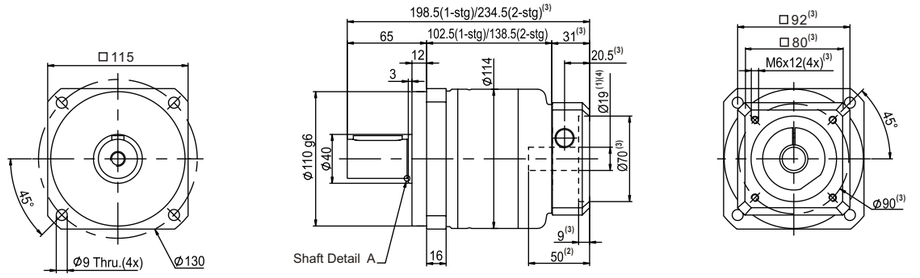
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PAII Series Specifications

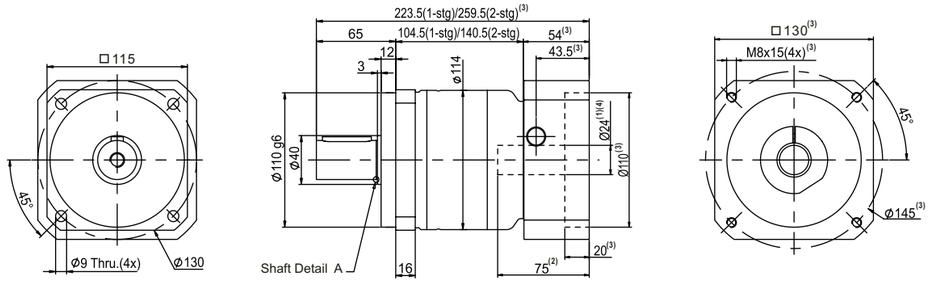
PAII 115			1-stage						2-stage										
			Ratio (1) (2)						Ratio (1) (2)										
			3	4	5	7	9	10	15	16	20	25	30	35	40	50	70	81	100
Nominal Output Torque T_{2N}	Nm		51	72	76	91	66	74	50	70	70	73	50	88	68	71	86	67.5	77
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}																
Max. Acceleration Torque T_{2B}	Nm		91.8	130	137	164	119	133	90	126	126	131	90	158	122	128	155	122	139
No Load Running Torque (8)	Nm		0.8						0.4										
Backlash (3)	arcmin		≦ 5						≦ 7										
Torsional Rigidity (8)	Nm/arcmin		12						12										
Nominal Input Speed n_{1N}	rpm		3,600																
Max. Input Speed n_{1B}	rpm		4,800																
Max. Radial Load F_{2rB} (4)	N		3,780																
Max. Axial Load F_{2aB} (4)	N		1,890																
Service Life (7)	hr		20,000																
Operating Temperature	° C		0° C~ +90° C																
Lubrication			Synthetic lubrication grease																
Mounting Position			All directions																
Running Noise (6) (8)	dB(A)		≦ 66						≦ 66										
Efficiency η	%		≧ 97%						≧ 94%										
Weight	kg		7.4						9.4										
Moment of Inertia J_1	$kg.cm^2$	Ø (5)≦19	0.24	0.2	0.19	0.18	0.18	0.18	0.19	0.2	0.19	0.19	0.18	0.19	0.18	0.18	0.18	0.18	0.18
		Ø (5)≦24	0.31	0.27	0.26	0.25	0.25	0.25	0.26	0.27	0.26	0.26	0.25	0.26	0.25	0.25	0.25	0.25	0.25
		Ø (5)≦28	0.34	0.29	0.29	0.28	0.28	0.28	0.29	0.29	0.29	0.29	0.28	0.29	0.28	0.28	0.28	0.28	0.28
		Ø (5)≦32	0.8	0.75	0.74	0.74	0.74	0.74	0.74	0.75	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
		Ø (5)≦35	1.09	1.05	1.04	1.04	1.04	1.04	1.04	1.05	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
		Ø (5)≦38	1.42	1.37	1.37	1.36	1.36	1.36	1.37	1.37	1.37	1.37	1.36	1.37	1.36	1.36	1.36	1.36	1.36

(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

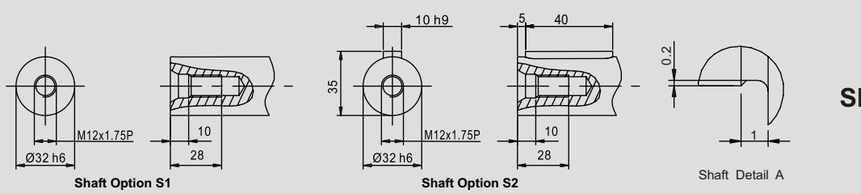
PAII Series Dimension



Ø(5)≦19



Ø(5)≦24

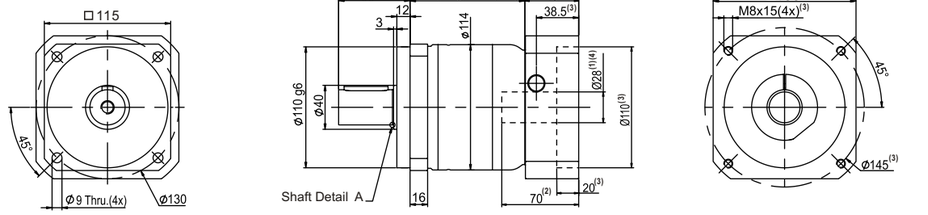


Shaft Detail

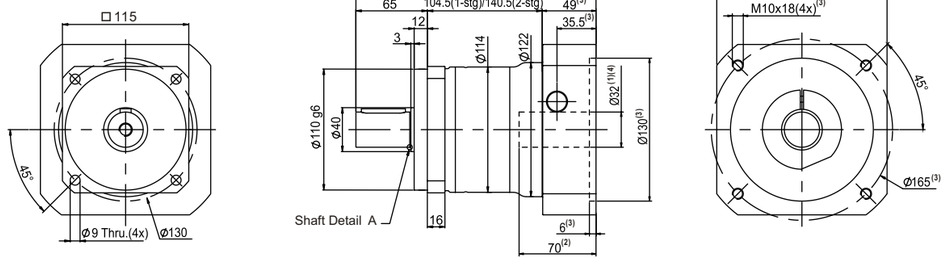
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PAII Series Dimension

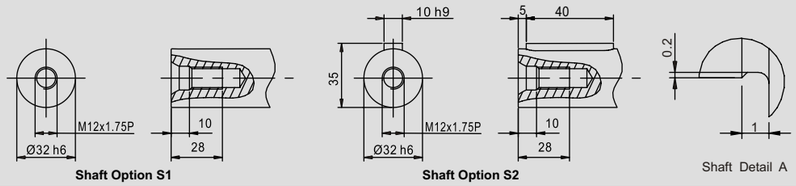
Ø(5)≦28



Ø(5)≦32



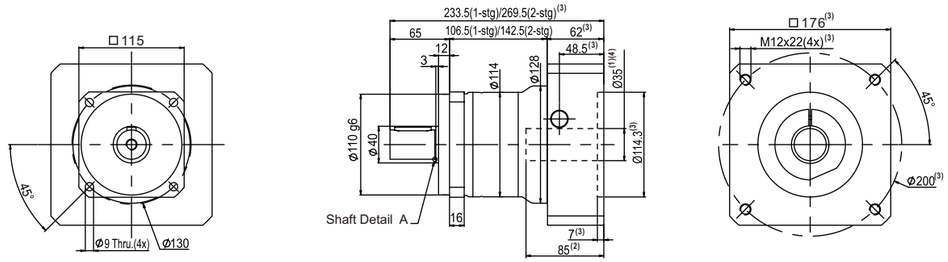
Shaft Detail



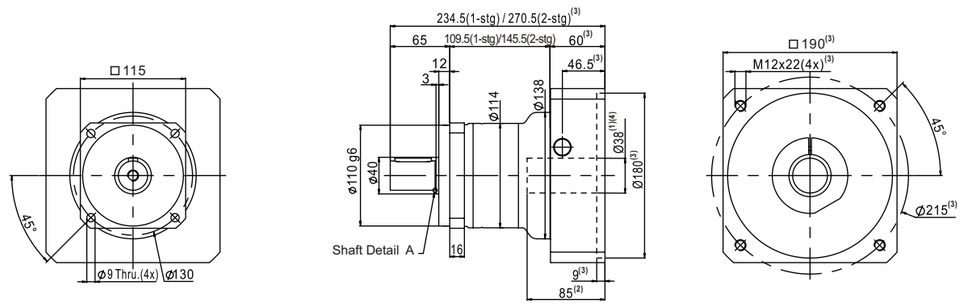
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PAII Series Dimension

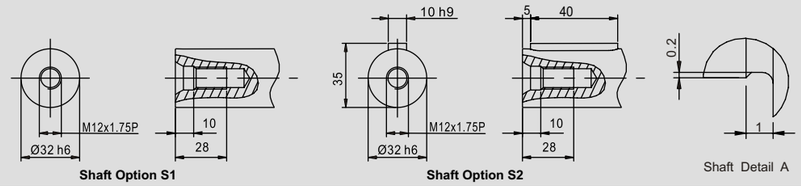
Ø(5)≦35



Ø(5)≦38



Shaft Detail



(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

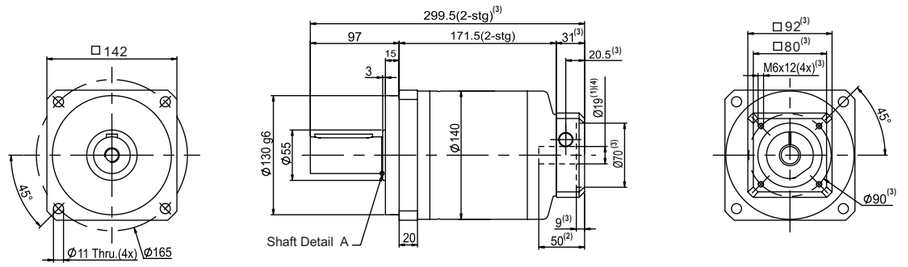
PAII Series Specifications

PAII 142		1-stage						2-stage										
		Ratio (1) (2)						Ratio (1) (2)										
		3	4	5	7	9	10	15	16	20	25	30	35	40	50	70	81	100
Nominal Output Torque T_{2N}	Nm	102	143	150	178	126	123	101	140	140	145	99	174	136	140	171	131	128
Emergency Stop Torque T_{2NOT}	Nm	3 times T_{2N}																
Max. Acceleration Torque T_{2B}	Nm	184	257	270	320	227	221	182	252	252	261	178	313	245	252	308	235	230
No Load Running Torque (8)	Nm	2.5						0.8										
Backlash (3)	arcmin	≦ 5						≦ 7										
Torsional Rigidity (8)	Nm/arcmin	16						16										
Nominal Input Speed n_{1N}	rpm	2,500																
Max. Input Speed n_{1B}	rpm	3,600																
Max. Radial Load F_{2rB} (4)	N	5,420																
Max. Axial Load F_{2aB} (4)	N	2,710																
Service Life (7)	hr	20,000																
Operating Temperature	° C	0° C~ +90° C																
Lubrication		Synthetic lubrication grease																
Mounting Position		All directions																
Running Noise (6) (8)	dB(A)	≦ 68						≦ 68										
Efficiency η	%	≧ 97%						≧ 94%										
Weight	kg	12.7						15.9										
Moment of Inertia J_1	kg.cm² Ø (5)≦19	-	-	-	-	-	-	0.22	0.25	0.22	0.22	0.2	0.22	0.2	0.2	0.2	0.19	0.2
	Ø (5)≦24	0.48	0.31	0.27	0.26	0.26	0.26	0.27	0.31	0.27	0.27	0.26	0.27	0.26	0.26	0.26	0.26	0.26
	Ø (5)≦28	0.52	0.35	0.32	0.3	0.3	0.3	0.32	0.35	0.32	0.32	0.3	0.32	0.3	0.3	0.3	0.3	0.3
	Ø (5)≦32	1.07	0.9	0.87	0.85	0.85	0.85	0.87	0.9	0.87	0.87	0.85	0.87	0.85	0.85	0.85	0.85	0.85
	Ø (5)≦35	1.41	1.24	1.19	1.19	1.19	1.19	1.19	1.24	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
	Ø (7)≦38	1.72	1.55	1.52	1.5	1.5	1.5	1.52	1.55	1.52	1.52	1.5	1.52	1.5	1.5	1.5	1.5	1.5
	Ø (7)≦42	2.58	2.41	2.37	2.36	2.36	2.36	-	-	-	-	-	-	-	-	-	-	-

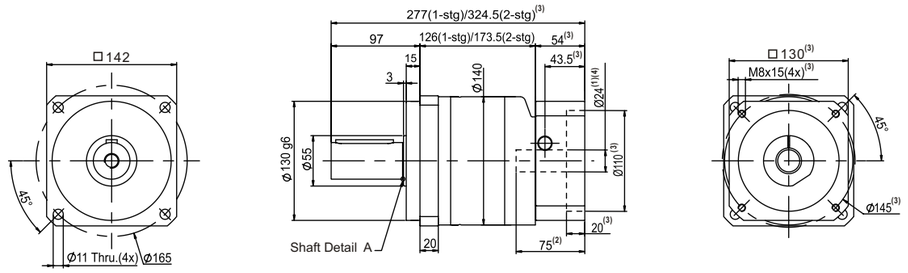
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PAII Series Dimension

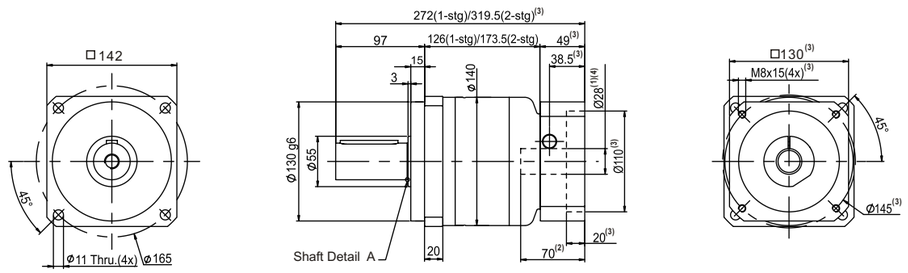
Ø(5)≦19



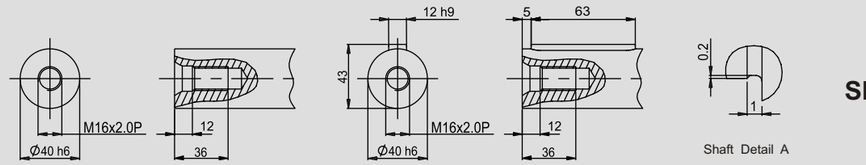
Ø(5)≦24



Ø(5)≦28



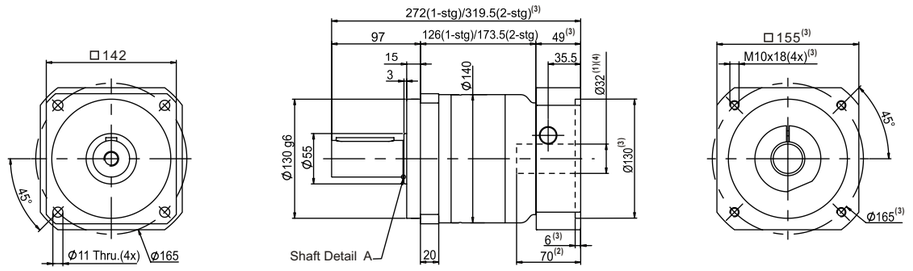
Shaft Detail



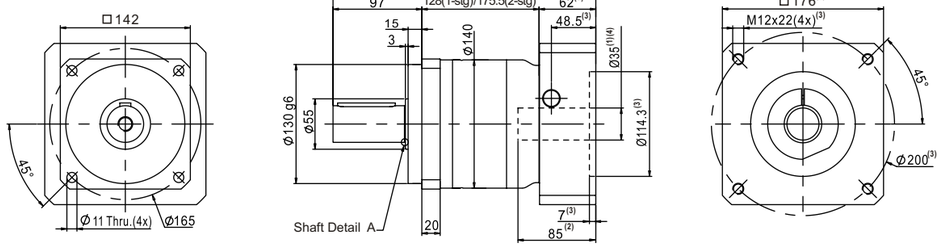
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PAII Series Dimension

Ø(5)≦32

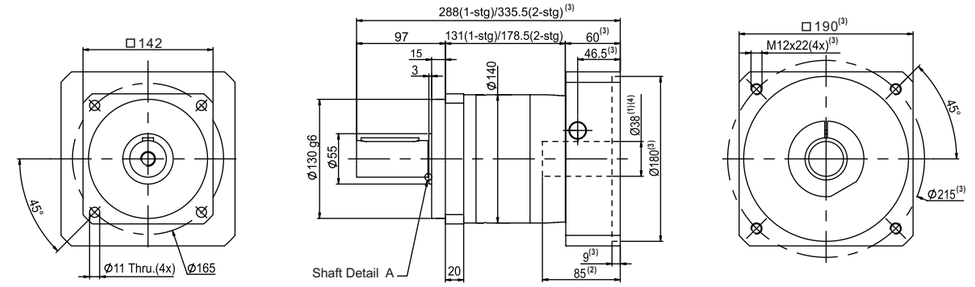


Ø(5)≦35

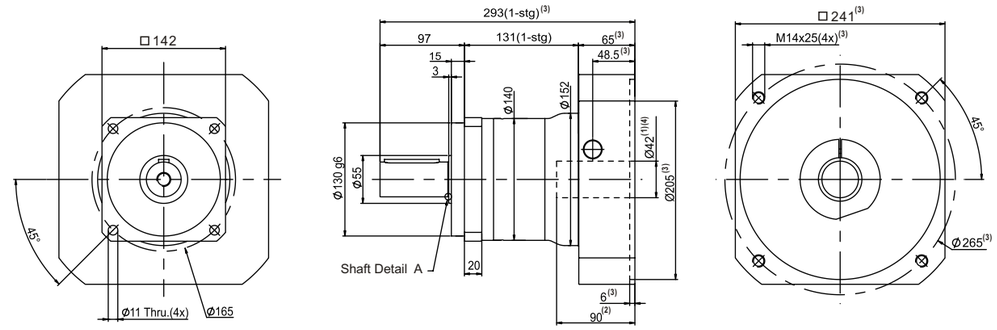


PAII Series Dimension

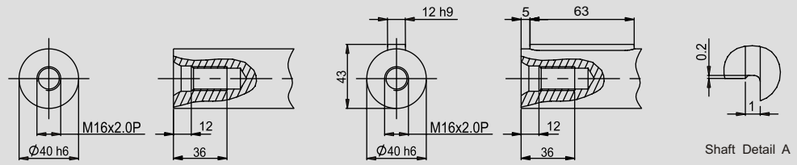
Ø(5)≦38

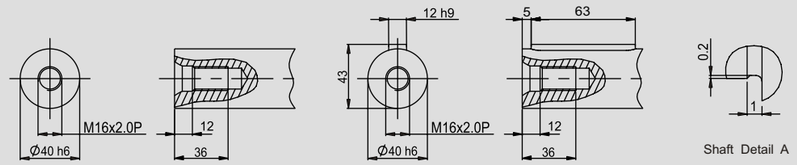


Ø(5)≦42



Shaft Detail

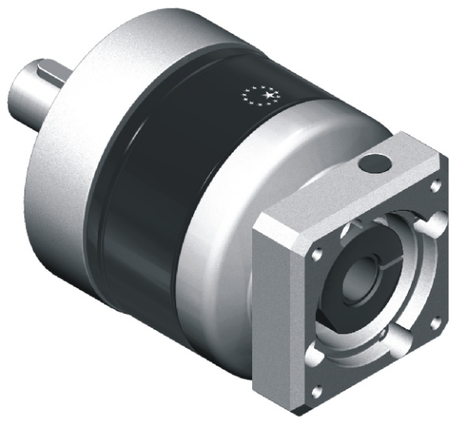


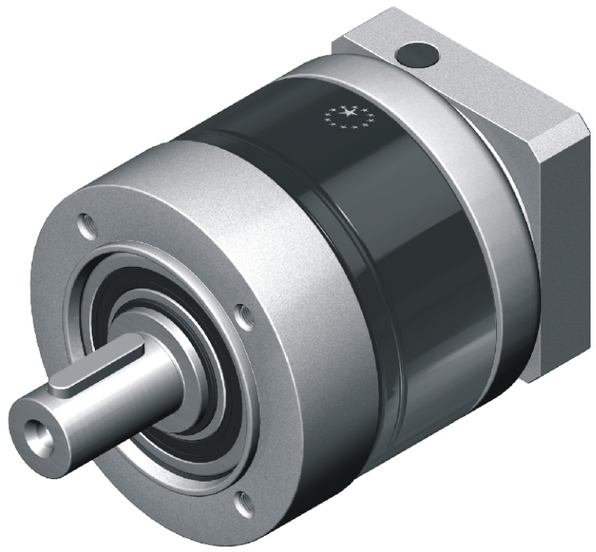


(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

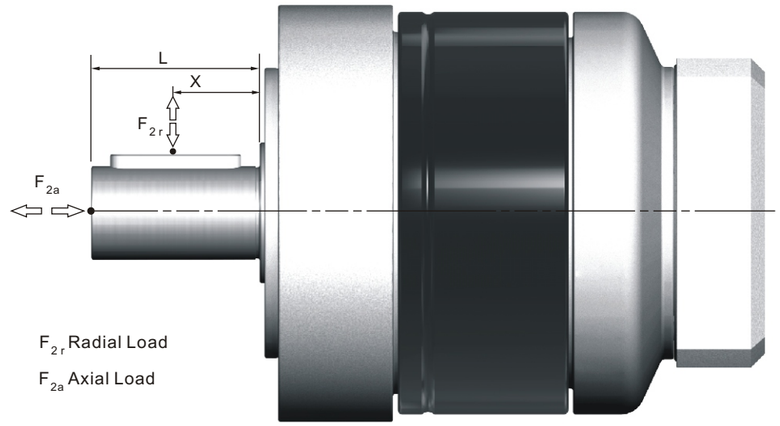
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PGII Series

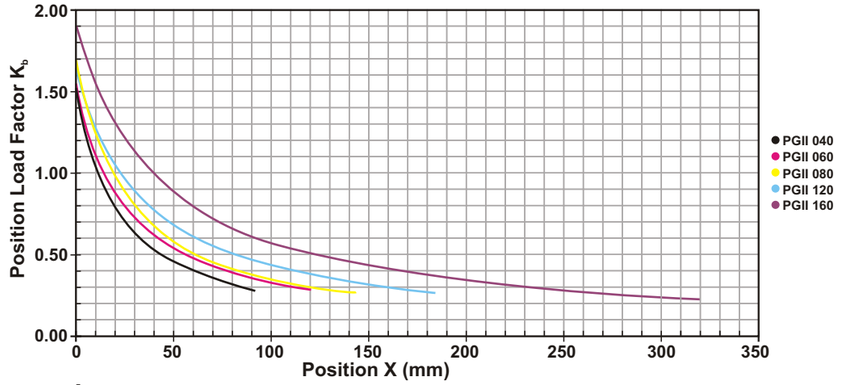




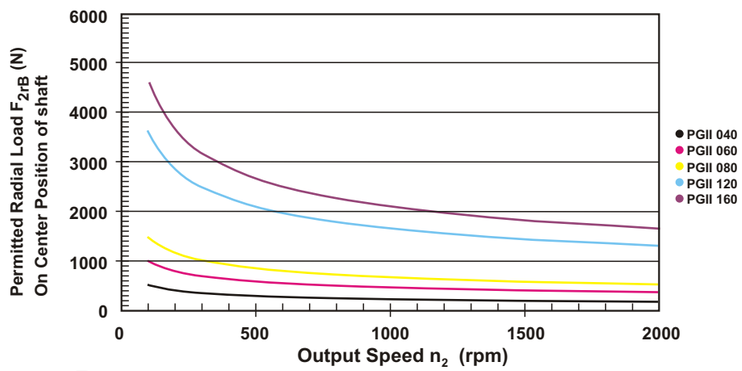
Permitted Radial And Axial Loads On Output Shaft



The permitted radial and axial loads on output shaft of the gearbox depend on the design of the gearbox supporting bearings.



If radial force F_{2r} is not exerted on the center of the output shaft X<1/2xL or X>1/2xL, the permitted radial and axial loads can be calculated by the position load factor Kb on the above diagram.



Permitted radial load F_{2r} on center of output shaft X=1/2 x L for various output speeds. Values provided are for 20,000 hours(*) life.

(*) By Continuous Operation(S1), the service life reduced to 50%.

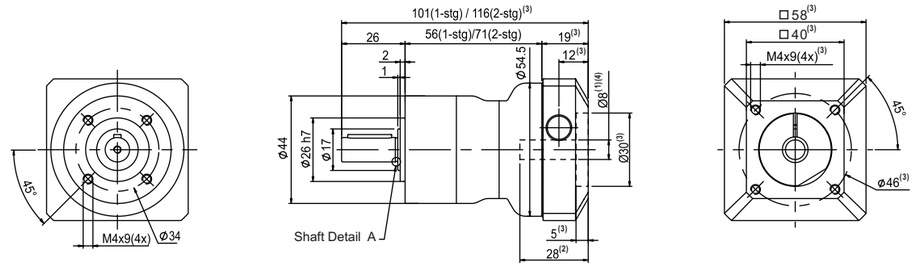
PGII Series Specifications

PGII 040			1-stage					2-stage									
			Ratio (1) (2)					Ratio (1) (2)									
			3	4	5	7	10	15	16	20	25	30	35	40	50	70	100
Nominal Output Torque T_{2N}	Nm		4.4	6.1	5.9	5.4	5.3	4.3	5.9	5.9	6.2	4.3	5.8	5.8	6.1	5.8	5.7
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}														
Max. Acceleration Torque T_{2B}	Nm		7.9	11	10.6	9.7	9.5	7.7	10.6	10.6	11.2	7.7	10.4	10.4	11	10.4	10.3
No Load Running Torque (8)	Nm		0.05					0.05									
Backlash (3)	arcmin		≦ 7					≦ 9									
Torsional Rigidity (8)	Nm/arcmin		0.5					0.5									
Nominal Input Speed n_{1N}	rpm		4,500														
Max. Input Speed n_{1B}	rpm		8,000														
Max. Radial Load F_{2rB} (4)	N		840														
Max. Axial Load F_{2aB} (4)	N		420														
Service Life (7)	hr		20,000														
Operating Temperature	° C		0° C~ +90° C														
Lubrication			Synthetic lubrication grease														
Mounting Position			All directions														
Running Noise (6) (8)	dB(A)		≦ 60					≦ 60									
Efficiency η	%		≧ 97%					≧ 94%									
Weight	kg		0.6					0.7									
Moment of Inertia J_1	$kg.cm^2$	Ø(5)≦8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
		Ø(5)≦11	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Ø(5)≦14	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

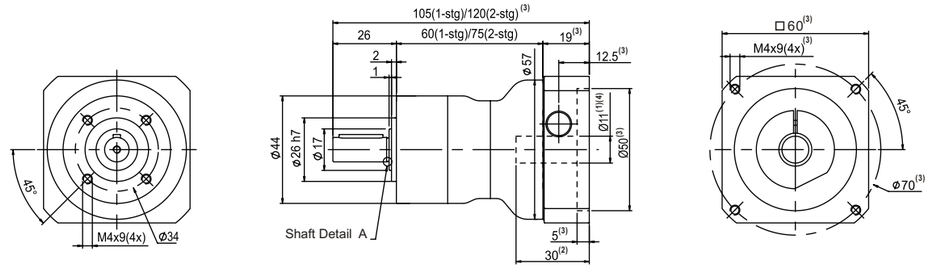
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PGII Series Dimension

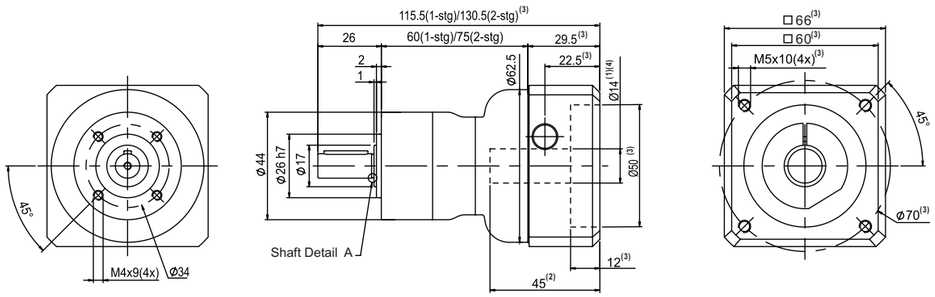
Ø(5)≦8



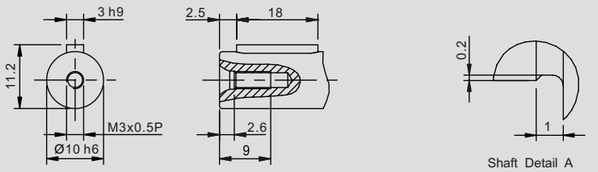
Ø(5)≦11



Ø(5)≦14



Shaft Detail



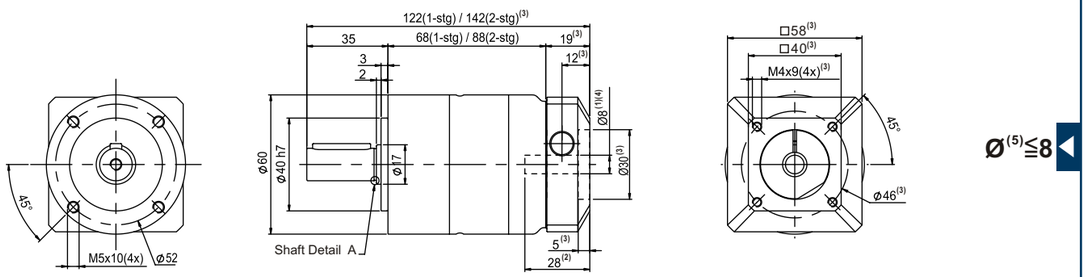
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

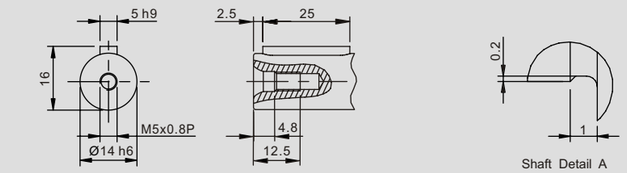
PGII Series Specifications

PGII 060			1-stage					2-stage									
			Ratio (1) (2)					Ratio (1) (2)									
			3	4	5	7	10	15	16	20	25	30	35	40	50	70	100
Nominal Output Torque T_{2N}	Nm		15	21	19.5	18	17.7	14.5	20	20	21	14	19.3	19.2	20	19.6	18.8
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}														
Max. Acceleration Torque T_{2B}	Nm		27	37.8	35.1	32.4	31.9	26.1	36	36	37.8	25.2	34.7	34.6	36	35.3	33.8
No Load Running Torque (8)	Nm		0.1					0.1									
Backlash (3)	arcmin		≦ 6					≦ 8									
Torsional Rigidity (8)	Nm/arcmin		2					2									
Nominal Input Speed n_{1N}	rpm		4,000														
Max. Input Speed n_{1B}	rpm		6,000														
Max. Radial Load F_{2rB} (4)	N		1,290														
Max. Axial Load F_{2aB} (4)	N		645														
Service Life (7)	hr		20,000 (5)														
Operating Temperature	° C		0° C~ +90° C														
Lubrication			Synthetic lubrication grease														
Mounting Position			All directions														
Running Noise (6) (8)	dB(A)		≦ 62					≦ 62									
Efficiency η	%		≧ 97%					≧ 94%									
Weight	kg		1.4					1.7									
Moment of Inertia J_1	$kg.cm^2$	Ø(5)≦8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
		Ø(5)≦11	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Ø(5)≦14	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Ø(5)≦19	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PGII Series Dimension





Shaft Detail

(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

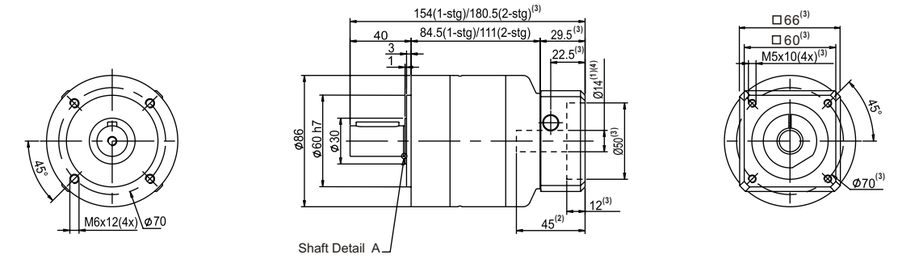
PGII Series Specifications

PGII 080			1-stage					2-stage									
			Ratio (1) (2)					Ratio (1) (2)									
			3	4	5	7	10	15	16	20	25	30	35	40	50	70	100
Nominal Output Torque T_{2N}	Nm		33	46	48	49	46	32	44	44	46	32	54	43	45	54	48
Emergency Stop Torque T_{2NOT}	Nm		3 times T_{2N}														
Max. Acceleration Torque T_{2B}	Nm		59.4	82.8	86.4	88.2	82.8	57.6	79.2	79.2	82.8	57.6	97.2	77.4	81	97.2	86.4
No Load Running Torque (8)	Nm		0.4					0.3									
Backlash (3)	arcmin		≦ 5					≦ 7									
Torsional Rigidity (8)	Nm/arcmin		8					8									
Nominal Input Speed n_{1N}	rpm		3,600														
Max. Input Speed n_{1B}	rpm		6,000														
Max. Radial Load F_{2rB} (4)	N		1,510														
Max. Axial Load F_{2aB} (4)	N		755														
Service Life (7)	hr		20,000														
Operating Temperature	° C		0° C~ +90° C														
Lubrication			Synthetic lubrication grease														
Mounting Position			All directions														
Running Noise (6) (8)	dB(A)		≦ 64					≦ 64									
Efficiency η	%		≧ 97%					≧ 94%									
Weight	kg		4.3					5.2									
Moment of Inertia J_1	$kg.cm^2$	Ø(5)≦14	0.04	0.03	0.03	0.02	0.02	0.03	0.03	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02
		Ø(5)≦19	0.18	0.17	0.16	0.16	0.16	0.16	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
		Ø(5)≦24	0.23	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
		Ø(5)≦28	0.29	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27

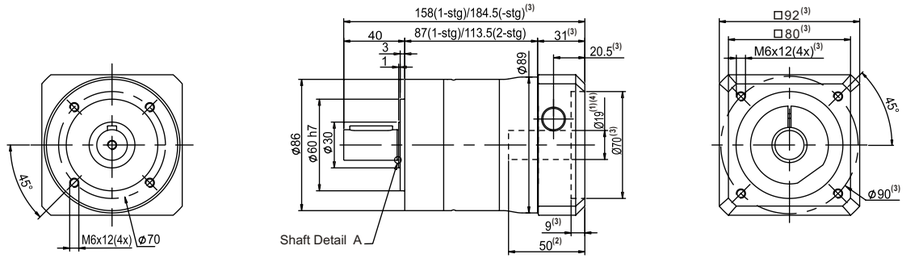
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PGII Series Dimension

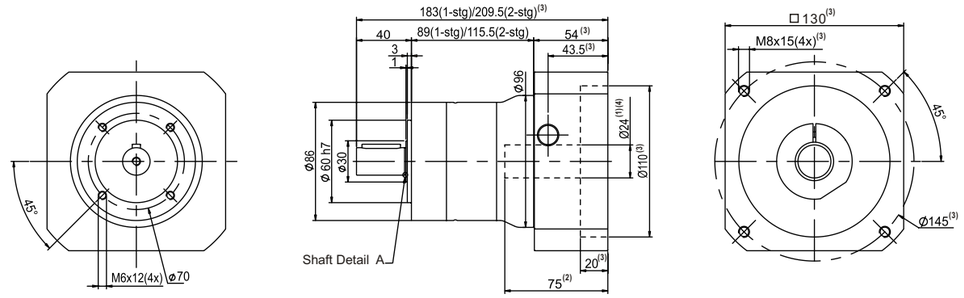
Ø(5)≦14



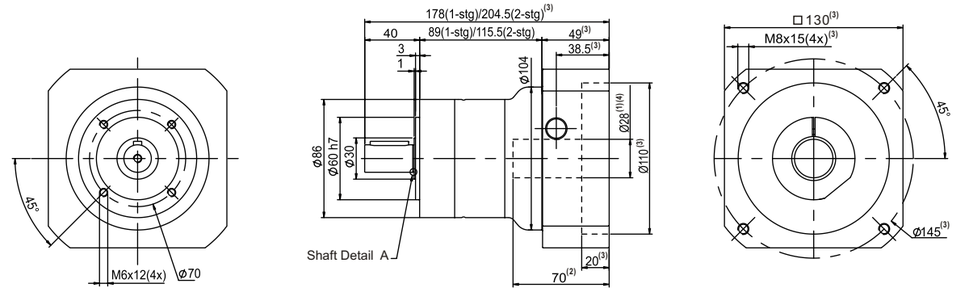
Ø(5)≦19



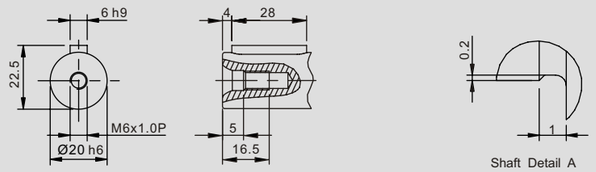
Ø(5)≦24



Ø(5)≦28



Shaft Detail



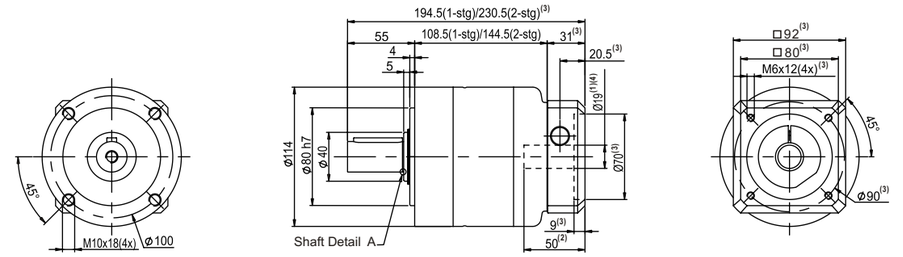
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PGII Series Specifications

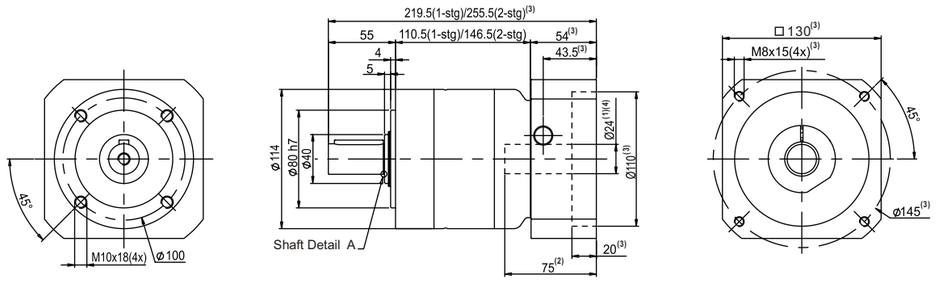
PGII 120		1-stage					2-stage									
		Ratio (1) (2)					Ratio (1) (2)									
		3	4	5	7	10	15	16	20	25	30	35	40	50	70	100
Nominal Output Torque T_{2N}	Nm	51	72	76	91	74	50	70	70	73	50	88	68	71	86	77
Emergency Stop Torque T_{2NOT}	Nm	3 times T_{2N}														
Max. Acceleration Torque T_{2B}	Nm	91.8	130	137	164	133	90	126	126	131	90	158	122	128	155	139
No Load Running Torque (8)	Nm	0.8					0.4									
Backlash (3)	arcmin	≦ 5					≦ 7									
Torsional Rigidity (8)	Nm/arcmin	12					12									
Nominal Input Speed n_{1N}	rpm	3,600														
Max. Input Speed n_{1B}	rpm	4,800														
Max. Radial Load F_{2rB} (4)	N	3,780														
Max. Axial Load F_{2aB} (4)	N	1,890														
Service Life (7)	hr	20,000														
Operating Temperature	° C	0° C~ +90° C														
Lubrication		Synthetic lubrication grease														
Mounting Position		All directions														
Running Noise (6) (8)	dB(A)	≦ 66					≦ 66									
Efficiency η	%	≧ 97%					≧ 94%									
Weight	kg	10.9					12.9									
Moment of Inertia J_1	$kg.cm^2$ Ø (5)≦19	0.24	0.2	0.19	0.18	0.18	0.19	0.2	0.19	0.19	0.18	0.19	0.18	0.18	0.18	0.18
	Ø (5)≦24	0.31	0.27	0.26	0.25	0.25	0.26	0.27	0.26	0.26	0.25	0.26	0.25	0.25	0.25	0.25
	Ø (5)≦28	0.34	0.29	0.29	0.28	0.28	0.29	0.29	0.29	0.29	0.28	0.29	0.28	0.28	0.28	0.28
	Ø (5)≦32	0.8	0.75	0.74	0.74	0.74	0.74	0.75	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
	Ø (5)≦35	1.09	1.05	1.04	1.04	1.04	1.04	1.05	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
	Ø (5)≦38	1.42	1.37	1.37	1.36	1.36	1.37	1.37	1.37	1.37	1.36	1.37	1.36	1.36	1.36	1.36

(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

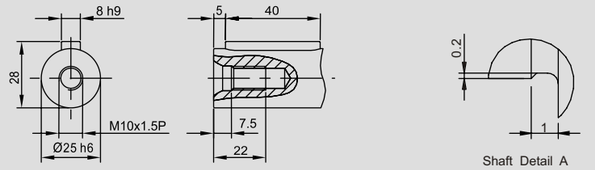
PGII Series Dimension



Ø(5)≦19



Ø(5)≦24

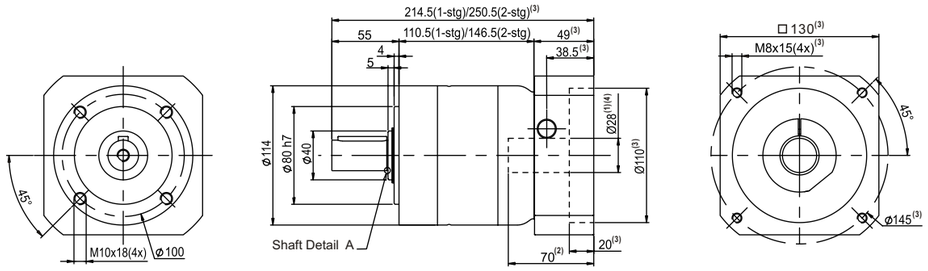


Shaft Detail

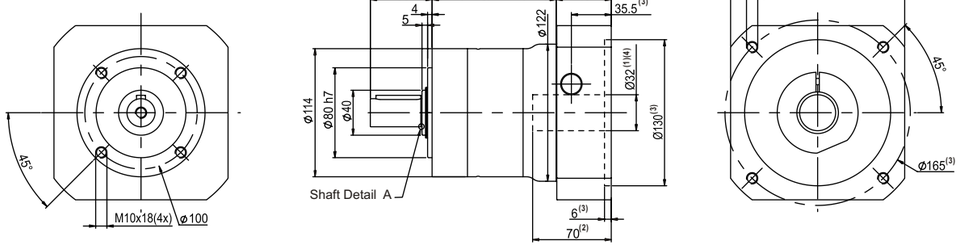
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PGII Series Dimension

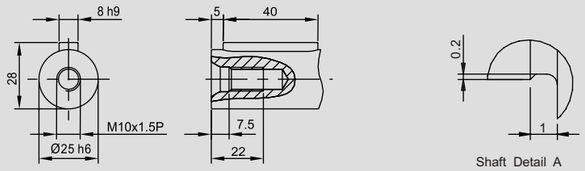
Ø(5)≦28



Ø(5)≦32



Shaft Detail



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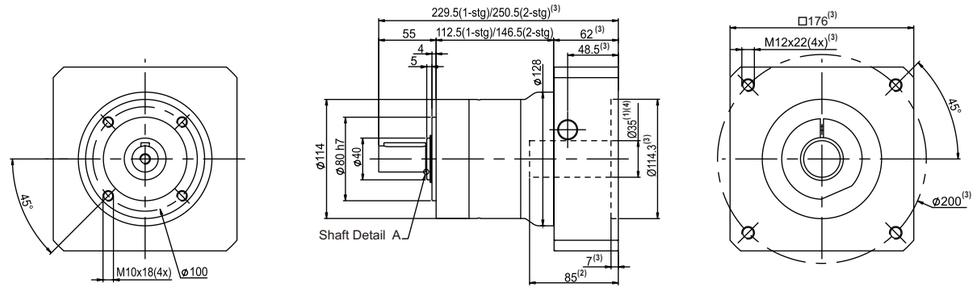
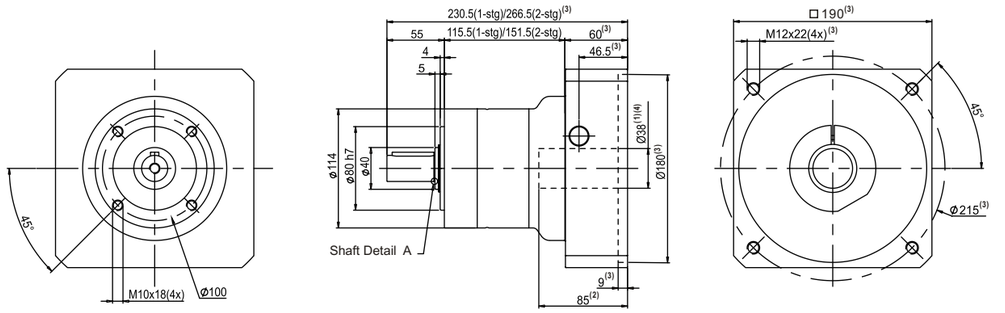
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PGII Series Dimension

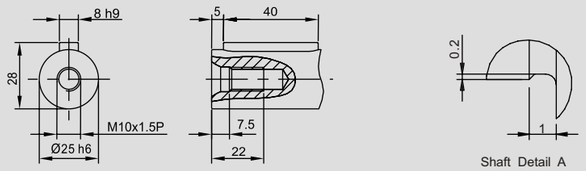
Ø(5)≦35



Ø(5)≦38



Shaft Detail



(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

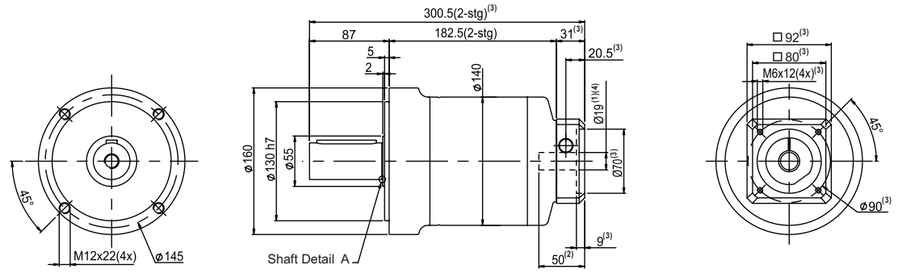
PGII Series Specifications

PGII 160		1-stage					2-stage									
		Ratio (1) (2)					Ratio (1) (2)									
		3	4	5	7	10	15	16	20	25	30	35	40	50	70	100
Nominal Output Torque T_{2N}	Nm	102	143	150	178	123	101	140	140	145	99	174	136	140	171	128
Emergency Stop Torque T_{2NOT}	Nm	3 times T_{2N}														
Max. Acceleration Torque T_{2B}	Nm	184	257	270	320	221	182	252	252	261	178	313	245	252	308	230
No Load Running Torque (8)	Nm	2.5					0.8									
Backlash (3)	arcmin	≦ 5					≦ 7									
Torsional Rigidity (8)	Nm/arcmin	16					16									
Nominal Input Speed n_{1N}	rpm	2,500														
Max. Input Speed n_{1B}	rpm	3,600														
Max. Radial Load F_{2rB} (4)	N	5,420														
Max. Axial Load F_{2aB} (4)	N	2,710														
Service Life (7)	hr	20,000														
Operating Temperature	° C	0° C~ +90° C														
Lubrication		Synthetic lubrication grease														
Mounting Position		All directions														
Running Noise (6) (8)	dB(A)	≦ 68					≦ 68									
Efficiency η	%	≧ 97%					≧ 94%									
Weight	kg	19.6					20.2									
Moment of Inertia J_1	kg.cm² Ø (5)≦19	-	-	-	-	-	0.22	0.25	0.22	0.22	0.2	0.22	0.2	0.2	0.2	0.2
	Ø (5)≦24	0.48	0.31	0.27	0.26	0.26	0.27	0.31	0.27	0.27	0.26	0.27	0.26	0.26	0.26	0.26
	Ø (5)≦28	0.52	0.35	0.32	0.3	0.3	0.32	0.35	0.32	0.32	0.3	0.32	0.3	0.3	0.3	0.3
	Ø (5)≦32	1.07	0.9	0.87	0.85	0.85	0.87	0.9	0.87	0.87	0.85	0.87	0.85	0.85	0.85	0.85
	Ø (5)≦35	1.41	1.24	1.19	1.19	1.19	1.19	1.24	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
	Ø (7)≦38	1.72	1.55	1.52	1.5	1.5	1.52	1.55	1.52	1.52	1.5	1.52	1.5	1.5	1.5	1.5
	Ø (7)≦42	2.58	2.41	2.37	2.36	2.36	-	-	-	-	-	-	-	-	-	-

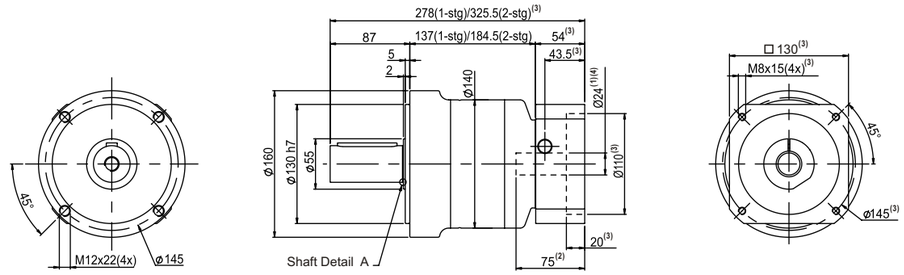
(1) Ratio (i= N_{in} / N_{out}).
(2) Other ratios are available, please contact APEX.
(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}.
(4) Applied to the output shaft center at 100 rpm.
(5) Ø = Input shaft diameter.
(6) These values are measured by 3000 rpm without load.
(7) For continuous operation, the service life is 10000 hrs.
(8) These values are measured by gearbox with ratio=10 (1-stage) and ratio=100 (2-stage) at 3000 rpm.

PGII Series Dimension

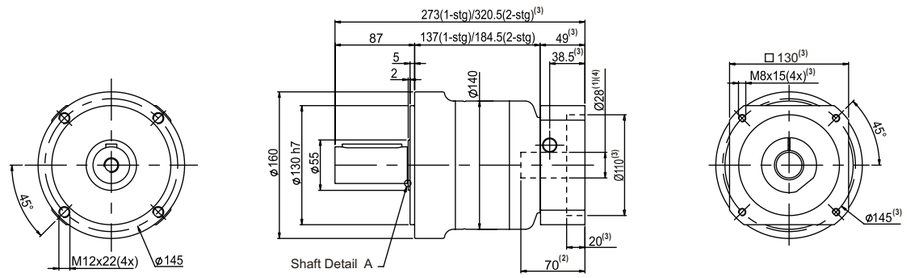
Ø(5)≦19



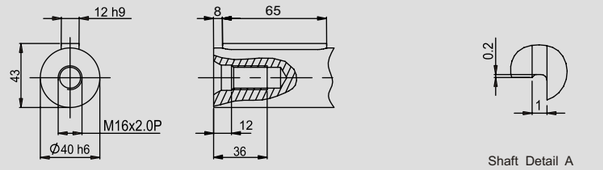
Ø(5)≦24



Ø(5)≦28



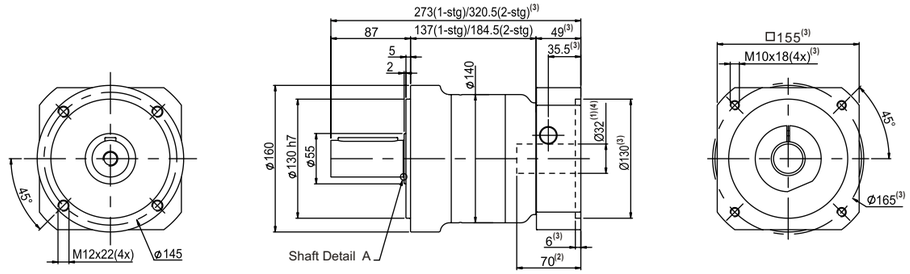
Shaft Detail



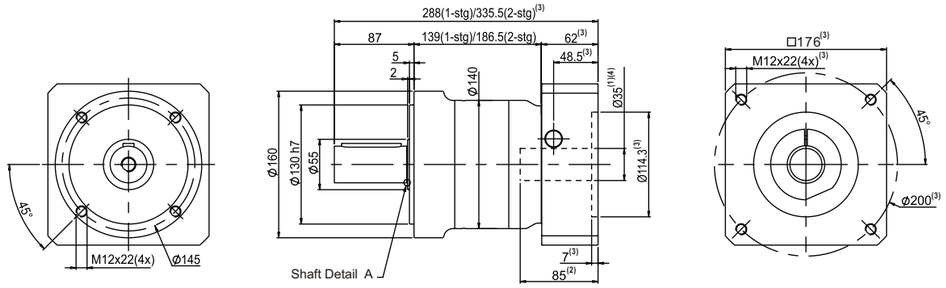
(1) This dimension refers to motor shaft diameter.
(2) The maximum motor shaft length. For other Motor specific dimensions, please contact APEX.
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PGII Series Dimension

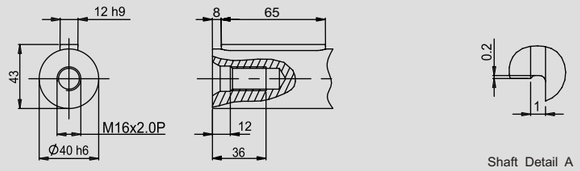
Ø(5)≦32



Ø(5)≦35



Shaft Detail



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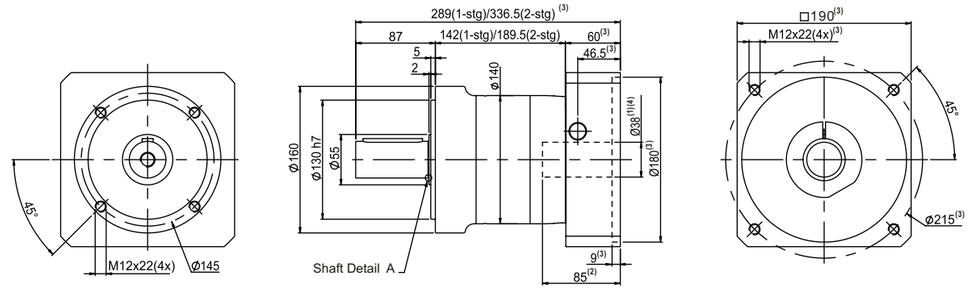
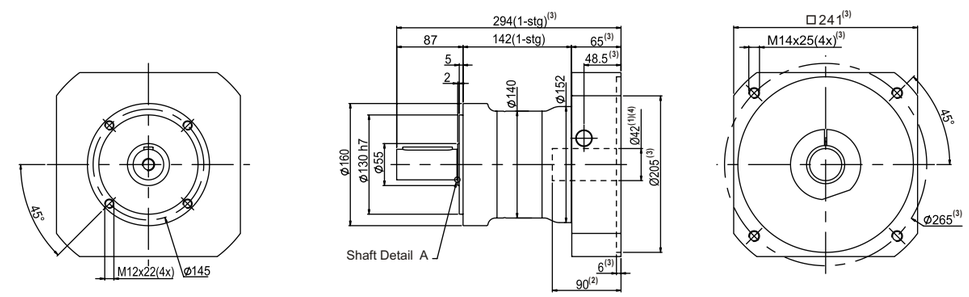
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

PGII Series Dimension

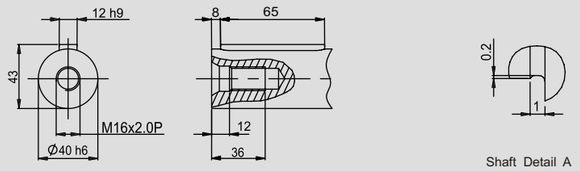
Ø(5)≦38



Ø(5)≦42



Shaft Detail



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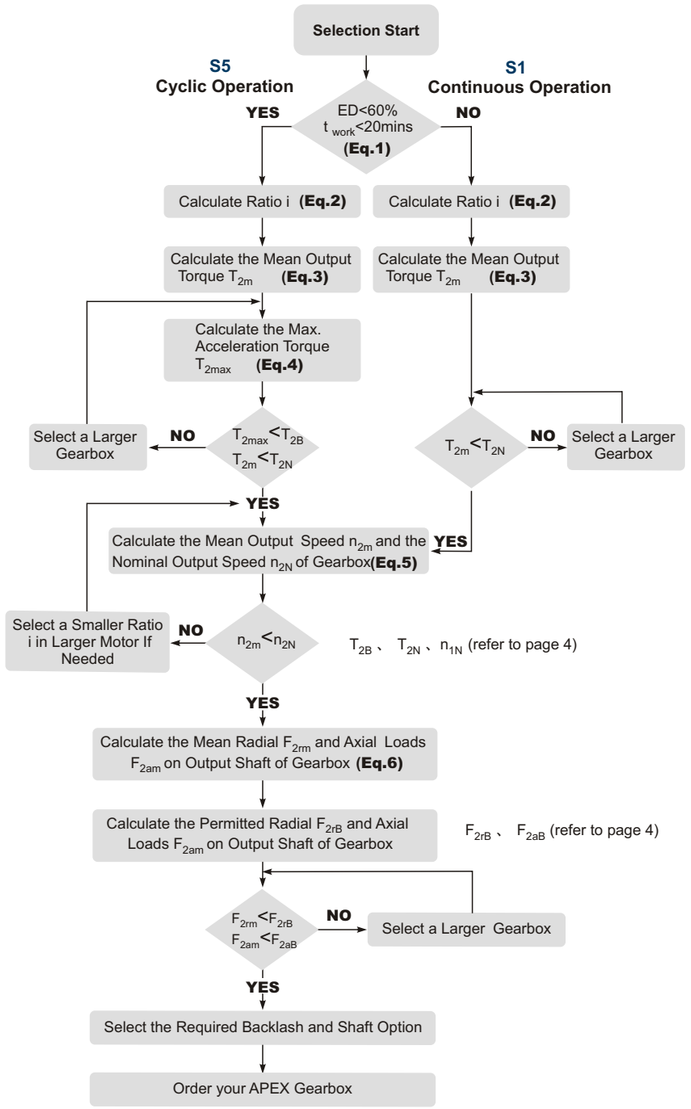
(3) Input dimensions vary according to motor flange.
(4) Please contact APEX, if there is no proper dimension.
(5) Ø= Input shaft diameter.

Selection of the optimun gearbox



Recommended (for S5 Cycle Operation)

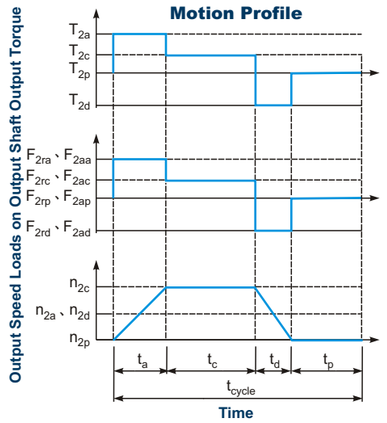
The general design is given for

$\frac{J_L}{i^2} \leq 4 \times J_m$

The optimal design is given for

J_L Load Inertia

J_m Motor Inertia



1. $ED = \frac{t_a + t_c + t_d}{t_{cycle}} \times 100\%$, $t_{work} = t_a + t_c + t_d$

Index : a. Acceleration, c. Constant,
d. Deceleration, p. Pause **(Eq.1)**

2. $i \cong \frac{n_m}{n_{work}}$

n_m Output Speed of the Motor

n_{work} Working Speed **(Eq.2)**

3. $$T_{2m} = \sqrt[3]{\frac{n_{2a} \times t_a \times T_{2a}^{\ 3} + n_{2c} \times t_c \times T_{2c}^{\ 3} + n_{2d} \times t_d \times T_{2d}^{\ 3}}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

(Eq.3)

4. $T_{2max} = T_{mB} \times i \times K_s \times \eta$

where K_s is

K_s	No. of Cycles / hr
1.0	0 ~ 1,000
1.1	1,000 ~ 1,500
1.3	1,500 ~ 2,000
1.6	2.000 ~ 3,000
1.8	3.000 ~ 5,000

T_{mB} Max. Output Torque of the Motor

η Efficency of the Gearbox **(Eq.4)**

5. $n_{2a} = n_{2d} = \frac{1}{2} \times n_{2c}$

$$n_{2m} = \frac{n_{2a} \times t_a \times n_{2c} \times t_c + n_{2d} \times t_d}{t_a + t_c + t_d}$$

$$n_{2N} = \frac{n_{1N}}{i}$$

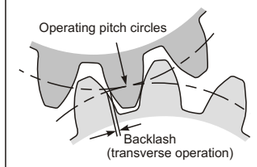
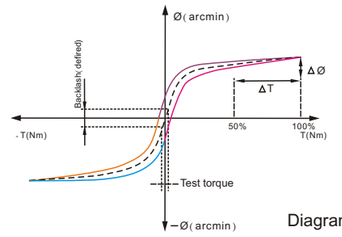
(Eq.5)

6. $$F_{2rm} = \sqrt[3]{\frac{n_{2a} \times t_a \times F_{2ra}^{\ 3} + n_{2c} \times t_c \times F_{2rc}^{\ 3} + n_{2d} \times t_d \times F_{2rd}^{\ 3}}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

$$F_{2am} = \sqrt[3]{\frac{n_{2a} \times t_a \times F_{2aa}^{\ 3} + n_{2c} \times t_c \times F_{2ac}^{\ 3} + n_{2d} \times t_d \times F_{2ad}^{\ 3}}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

(Eq.6)

Glossary

Emergency Stop Torque T_{2NOT}	Nm	The Emergency Stop Torque is the maximum permitted torque at the output of gearbox. This may happen only occasionally and may not exceed 1000 times during the whole service life.
Max. Acceleration Torque T_{2B}	Nm	Under the Cyclic Operation (S5), the Max. Acceleration Torque is the maximum torque which can be transmitted only briefly to the output of gearbox.
No Load Running Torque	Nm	The No Load Running Torque is the min. torque to overcome the internal friction of a gearbox without loading*.
Nominal Input Speed n_{1N}	rpm	The Nominal Input Speed is the permitted input speed of gearbox by the Continuous Operation (S1) while the housing temperature does not exceed 90°C. This value is measured at environment temperature 25°C.
Max. Input Speed n_{1B}	rpm	The Max. Input Speed is the max. permitted input speed of gearbox by the Cyclic operation (S5). This value is measured at environment temperature 25°C and serves as the absolute limit of the gearbox.
Backlash	arcmin	The Backlash is the maximum angular measurement between two teeth of gears when the transverse operation occurs (refer to Diagram 1). The arcmin is the measurement unit for the backlash. One arcmin equals 1/ 60 degree, symbolized as 1'.  Diagram 1
Torsional Rigidity	Nm/arcmin	Torsional Rigidity is the quotient (△T / △ Ø) between the applied torque and resulting torsion angle. This value indicates how many torque needed on gearbox to rotate the output shaft for 1 arcmin. The Torsional Rigidity can be determined by Hysteresis Curve. Hysteresis Curve When the input shaft is locked, increase torque at the output slowly up to T_{2B} in both directions and then release the torque gradually. According to the measured torque and torsion angle, a closed curve will be acquired as Diagram 2.  Diagram 2
Efficiency η	%	The transmission efficiency of the gears inside a gearbox (without friction).
Operating Temperature	° C	The Operating Temperature indicates the temperature of gearbox housing.
Lubrication		APEX uses synthetic lubrication grease. The food grade and low temperature lubrication are available, please contact APEX.
Degree of Protection		IP code stands for International Protection standard. The IP65 as example: the first IP number stands for protection degree against dust; the second IP number stands for protection against liquid.
Running Noise	dB(A)	The Running Noise is measured depends on gearbox size, the ratio and the speed*. Higher speed induces usually higher noise level, while higher ratio induces lower noise level.
Moment of Inertia J_1	$kg.cm^2$	The Moment of Inertia J1 is a measurement of the effort applied to an object to maintain its momentary condition at rest or rotating.
Breakaway Torque	Nm	The Breakaway Torque is the minimum torque to start the rotation from the input side of gearbox. A smaller size or a higher ratio gearbox requests less Breakaway Torque.
Back Driving Torque	Nm	The Back Driving Torque is the minimum torque to start the rotation from the output side of gearbox. A larger size or a higher ratio gearbox requests greater Back Driving Torque.

* This value is measured at environment temperature 25°C and the input speed 3000 rpm. If the Nominal Input Speed n_{1N} of gearbox is over 3000 rpm, this value is measured by that specific Nominal Input Speed.

Note

Contact Us

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