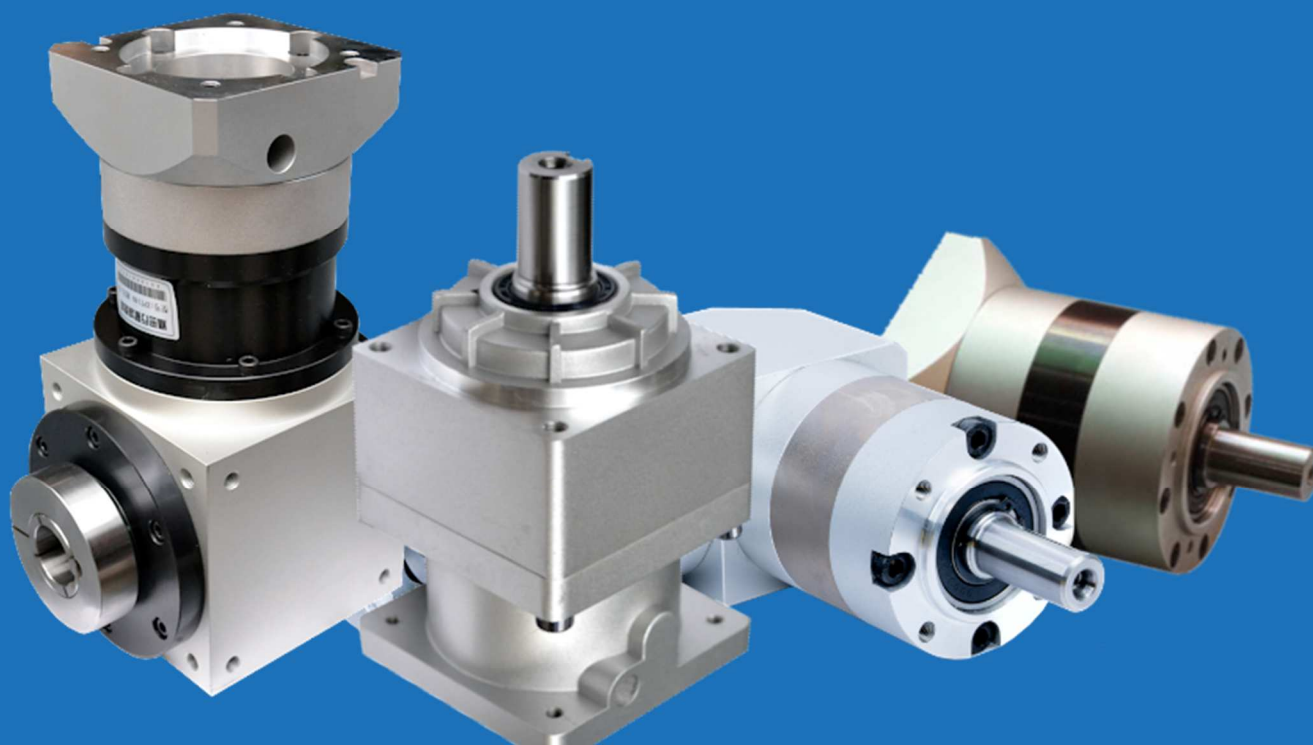


Straight tooth planetary gearboxes



Dynamic and precise motion at low price!

- ❖ Available sizes 60 – 242 mm
- ❖ Ratio up to 1000:1
- ❖ Efficiency 96%
- ❖ IP65 Standard
- ❖ Output torque 8,5-680 Nm

Product series

- **PLE gearboxes (PLE060, PLE080, PLE090, PLE120, PLE160) (p. 5-9)**

Size [mm]		60, 80, 90, 120, 160
Rated output torque [Nm]		8,5 ÷ 680
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70
	3-stage	64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
Backlash [arcmin]		12 ÷ 18



- **ZPLE gearboxes (ZPLE060, ZPLE090, ZPLE120, ZPLE160) (p. 10-12)**

Size [mm]		60, 90, 120, 160
Rated output torque [Nm]		8,5 ÷ 680
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70
	3-stage	64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
Backlash [arcmin]		12 ÷ 18



- **PLF gearboxes (PLF060, PLF080, PLF090, PLF120, PLF160) (p. 13-17)**

Size [mm]		60, 80, 90, 120, 160
Rated output torque [Nm]		8,5 ÷ 680
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70
	3-stage	64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
Backlash [arcmin]		12 ÷ 18



- **ZPLF gearboxes (ZPLF060, ZPLF090, ZPLF120, ZPLF160) (p. 18-20)**

Size [mm]		60, 90, 120, 160
Rated output torque [Nm]		8,5 ÷ 680
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70
	3-stage	64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
Backlash [arcmin]		12 ÷ 18



- **PLS gearboxes (PLS060, PLS090, PLS120, PLS160) (p. 21-24)**

Size [mm]		60, 90, 120, 160
Rated output torque [Nm]		8,5 ÷ 680
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70
	3-stage	64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
Backlash [arcmin]		12 ÷ 18



- **PLH gearboxes (PLH060, PLH090, PLH120, PLH160) (p. 25-28)**

Size [mm]		60, 90, 120, 160
Rated output torque [Nm]		8,5 ÷ 680
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70
	3-stage	64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
Backlash [arcmin]		12 ÷ 18



- **PLX/ZPLX gearboxes (PLX142, ZPLX142, PLX190, PLX242) (p. 29-34)**

Size [mm]		142, 190, 242
Rated output torque [Nm]		8,5 ÷ 680
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70
	3-stage	64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
Backlash [arcmin]		12 ÷ 18



- **ZPT gearboxes (ZPT075, ZPT090, ZPT110, ZPT140) (p. 35-39)**

Size [mm]		75, 90, 110, 140
Rated output torque [Nm]		8,5 ÷ 680
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70
	3-stage	64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
Backlash [arcmin]		12 ÷ 18

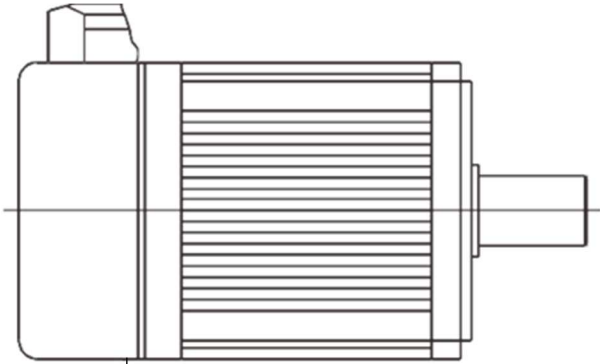


- **VLF gearboxes (p. 40-41)**

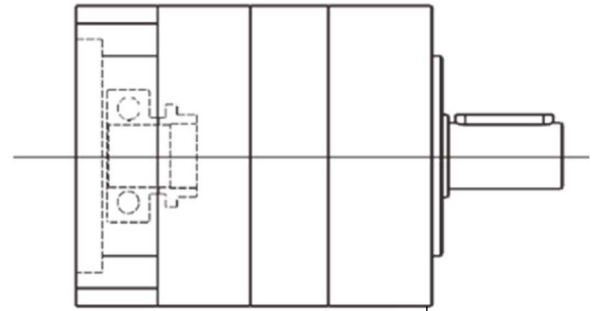
Size [mm]		78
Rated output torque [Nm]		41 ÷ 184
Ratio	1-stage	3, 4, 5, 7, 10
Backlash [arcmin]		12 ÷ 18



Model specification

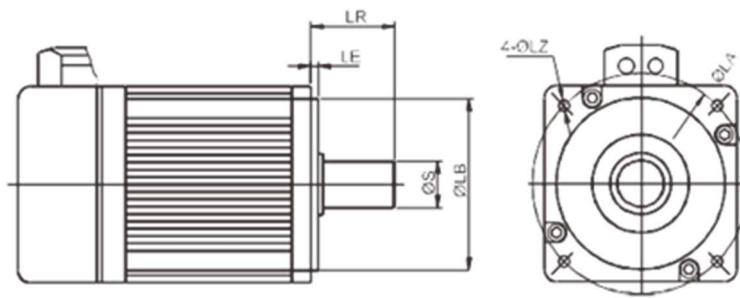


Motor data



Reducer data

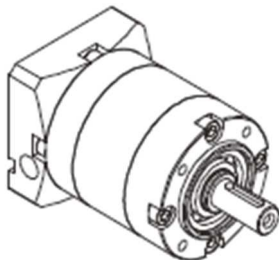
With the speed reducer, the need to provide the motor mounting dimension $\varnothing S \cdot LR / \varnothing LB \cdot LE / 4 - \varnothing S \cdot LZ \varnothing LA$. To check the rationality of the motor and reducer with performance, the need to provide more detailed parameters.



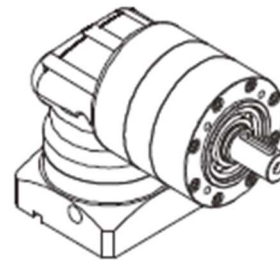
PLE060	— L1	— 5	— S2	— P2	— T	/ wym. silnik
Reducer specification	Stage	Ratio	Output shaft	Accuracy class	Special	The motor size
According to the selection of products introduction	L1: 1-stage L2: 2-stage L3: 3-stage	According to the choice of various models reducer technical parameters table	S2: single shaft S1: axis K: hollow single shaft	P2: standard P1: precision P0: high precision		

Examples

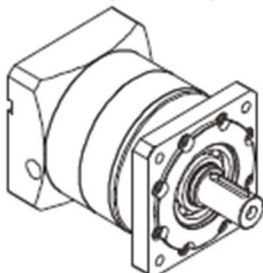
PLE060-L1-5-S2-P2 / $\varnothing 14 \cdot 30 / \varnothing 50 \cdot 3 / 4 - \varnothing 4,5 - \varnothing 70$



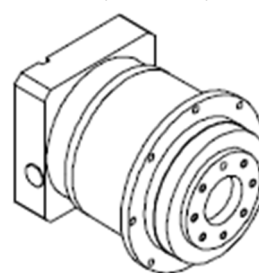
ZPLE090-L1-5-S2-P2 / $\varnothing 19 \cdot 40 / \varnothing 70 \cdot 3 / 4 - \varnothing 6,5 - \varnothing 90$



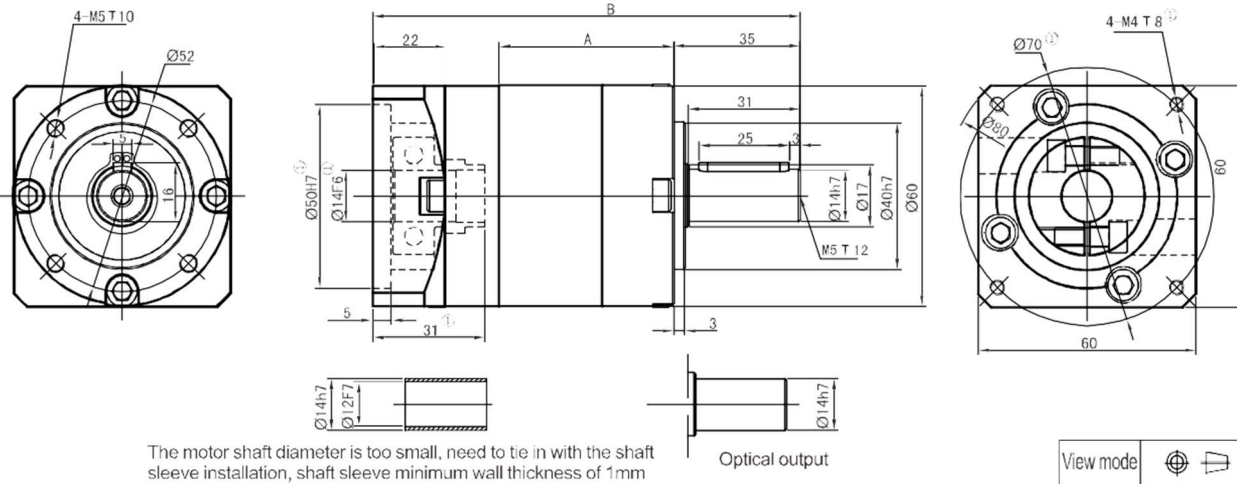
PLF090-L2-50-S1-P1 / $\varnothing 19 \cdot 40 / \varnothing 70 \cdot 3 / 4 - \varnothing 6,5 - \varnothing 90$



PLH120-L2-50-S2-P1 / $\varnothing 22 \cdot 55 / 110 \cdot 3 / 4 - \varnothing 9 - \varnothing 145$



PLE060



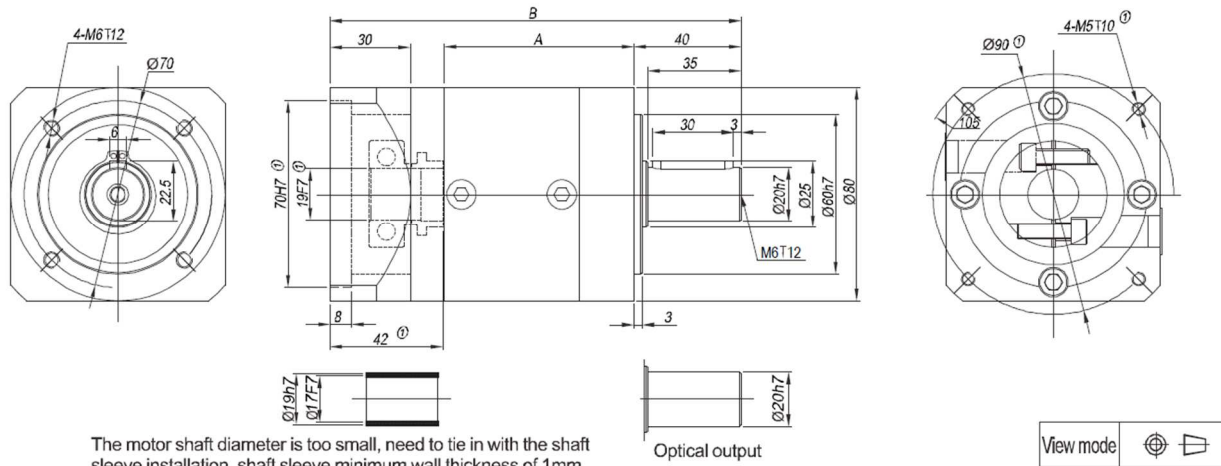
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Length [mm]	46,5	118,5	63,0	135,0	79,5	151,5
Rated input speed [rpm]	4000		4000		4000	
Maximum input speed [rpm]	8000		8000		8000	
Maximum radial force [N] ²	485		605		670	
Maximum axial force [N] ²	380		490		550	
No load torque	Okolo 0,6		About 0,3		About 0,3	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤58		≤58		≤58	
Weight [kg]	1		1,3		1,6	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	2,3					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	16,5	27,0	29,5	19,5	8,5	30,0	30,0	30,0	33,0	30,0	33,0	30,0	33,0	21,5
Maximum output torque [Nm]	33,0	54,0	59,0	39,0	17,0	60,0	60,0	60,0	66,0	60,0	66,0	60,0	66,0	43,0
Inertia [kgcm ²]	0,107	0,094	0,092	0,091	0,107	0,094	0,092	0,092	0,092	0,091	0,091	0,091	0,091	0,091

Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	37,5	37,5	37,5	41,0	37,5	41,0	37,5	41,0	37,5	41,0	37,5	41,0	27,0	11,5
Maximum output torque [Nm]	75,0	75,0	75,0	82,0	75,0	82,0	75,0	82,0	75,0	82,0	75,0	82,0	54,0	23,0
Inertia [kgcm ²]	0,092	0,092	0,092	0,092	0,091	0,091	0,091	0,091	0,091	0,091	0,091	0,091	0,091	0,091

- Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
- Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLE080



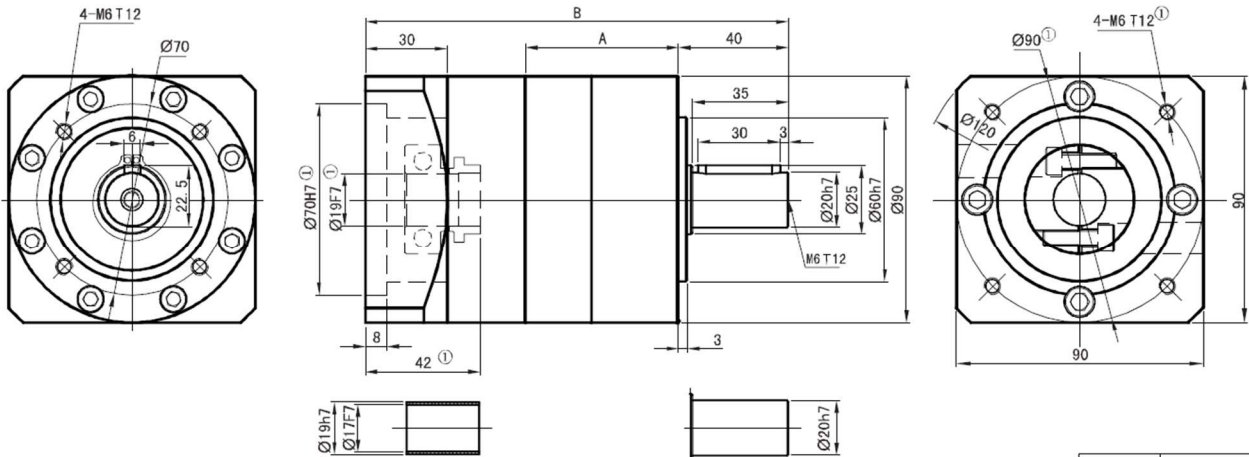
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Length [mm]	71,0	153,5	94,5	177,5	117,5	201,5
Rated input speed [rpm]	3500		3500		3500	
Maximum input speed [rpm]	6000		6000		6000	
Maximum radial force [N] ²	1020		1270		1420	
Maximum axial force [N] ²	850		1100		1250	
No load torque	About 0,8		About 0,4		About 0,4	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤62		≤62		≤62	
Weight [kg]	2,5		3,1		3,7	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	7,5					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	60,0	86,0	94,5	64,0	39,5	96,0	96,0	96,0	105,5	96,0	105,5	96,0	105,5	71,5
Maximum output torque [Nm]	120,0	172,0	189,0	128,0	79,0	192,0	192,0	192,0	211,0	192,0	211,0	192,0	211,0	143,0
Inertia [kgcm ²]	0,4	0,309	0,291	0,285	0,283	0,4	0,309	0,291	0,291	0,285	0,285	0,283	0,283	0,283

Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	120,0	120,0	120,0	132,0	120,0	132,0	120,0	132,0	120,0	132,0	120,0	132,0	89,5	55,0
Maximum output torque [Nm]	240,0	240,0	240,0	264,0	240,0	264,0	240,0	264,0	240,0	264,0	240,0	264,0	179,0	110,0
Inertia [kgcm ²]	0,291	0,291	0,291	0,291	0,285	0,285	0,283	0,283	0,283	0,283	0,283	0,283	0,283	0,283

- Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
- Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLE090



The motor shaft diameter is too small, need to tie in with the shaft sleeve installation, shaft sleeve minimum wall thickness of 1mm

Optical output



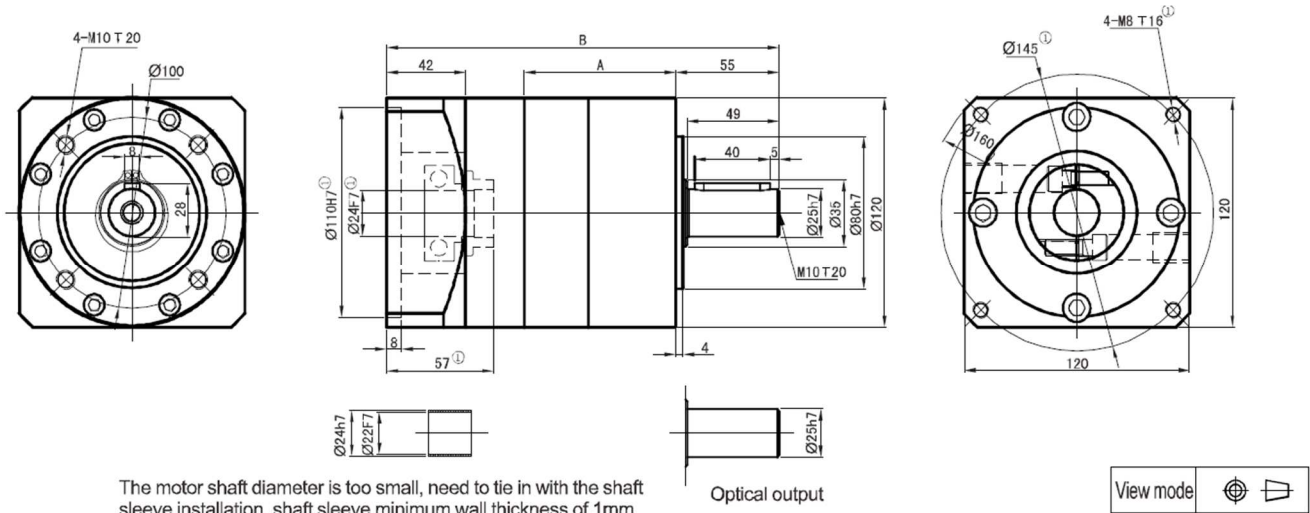
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Length [mm]	56,0	154,5	80,0	178,5	104,0	202,5
Rated input speed [rpm]	3500		3500		3500	
Maximum input speed [rpm]	6000		6000		6000	
Maximum radial force [N] ²	1020		1270		1420	
Maximum axial force [N] ²	850		1100		1250	
No load torque	About 0,8		About 0,4		About 0,4	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤62		≤62		≤62	
Weight [kg]	2,8		3,4		4,0	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	7,5					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	60,0	86,0	94,5	64,0	39,5	96,0	96,0	96,0	105,5	96,0	105,5	96,0	105,5	71,5
Maximum output torque [Nm]	120,0	172,0	189,0	128,0	79,0	192,0	192,0	192,0	211,0	192,0	211,0	192,0	211,0	143,0
Inertia [kgcm ²]	0,4	0,309	0,291	0,285	0,283	0,4	0,309	0,291	0,291	0,285	0,285	0,283	0,283	0,283

Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	120,0	120,0	120,0	132,0	120,0	132,0	120,0	132,0	120,0	132,0	120,0	132,0	89,5	55,0
Maximum output torque [Nm]	240,0	240,0	240,0	264,0	240,0	264,0	240,0	264,0	240,0	264,0	240,0	264,0	179,0	110,0
Inertia [kgcm ²]	0,291	0,291	0,291	0,291	0,285	0,285	0,283	0,283	0,283	0,283	0,283	0,283	0,283	0,283

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fit with any motor.
2. Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLE120



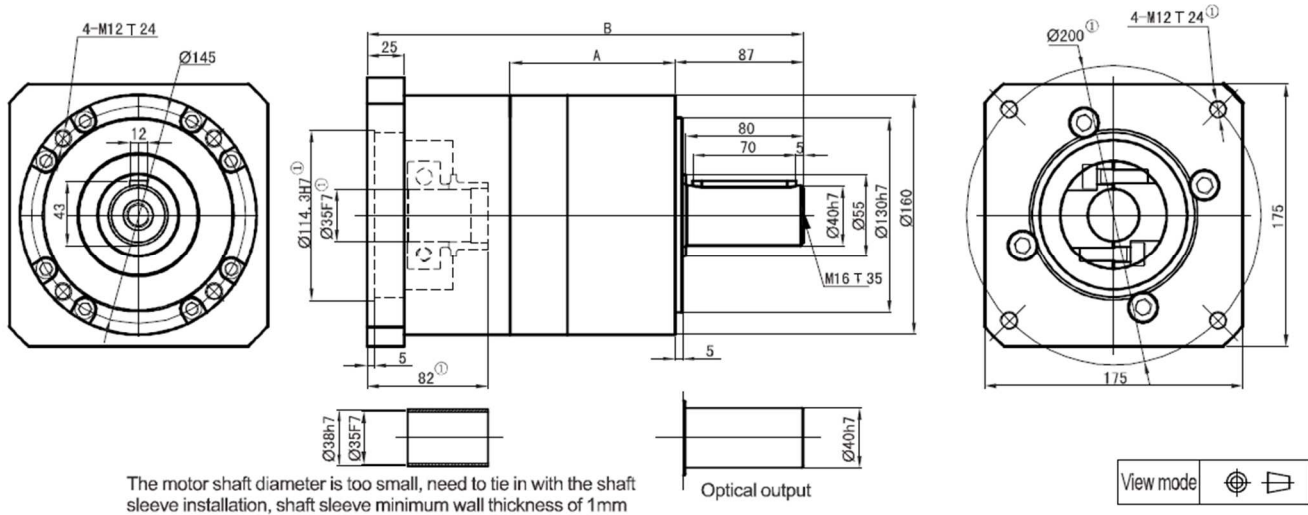
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Length [mm]	80,5	209,0	112,0	240,5	143,5	272,0
Rated input speed [rpm]	3000		3000		3000	
Maximum input speed [rpm]	4800		4800		4800	
Maximum radial force [N]2	2230		2840		3020	
Maximum axial force [N]2	1550		2100		2600	
No load torque	About 1,3		About 0,6		About 0,6	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤65		≤65		≤65	
Weight [kg]	6,8		8,8		11,0	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	15,0					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	148,0	222,0	235,0	158,0	93,0	250,0	250,0	250,0	264,0	250,0	264,0	250,0	264,0	177,0
Maximum output torque [Nm]	296,0	444,0	470,0	316,0	186,0	500,0	500,0	500,0	528,0	500,0	528,0	500,0	528,0	354,0
Inertia [kgcm ²]	1,65	1,22	1,15	1,13	1,11	1,65	1,22	1,15	1,15	1,13	1,13	1,11	1,11	1,11

Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	310,0	310,0	310,0	329,0	310,0	329,0	310,0	329,0	310,0	329,0	310,0	329,0	220,0	130,0
Maximum output torque [Nm]	620,0	620,0	620,0	658,0	620,0	658,0	620,0	658,0	620,0	658,0	620,0	658,0	440,0	260,0
Inertia [kgcm ²]	1,15	1,15	1,15	1,15	1,13	1,13	1,11	1,11	1,11	1,11	1,11	1,11	1,11	1,11

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fit with any motor.
2. Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLE160



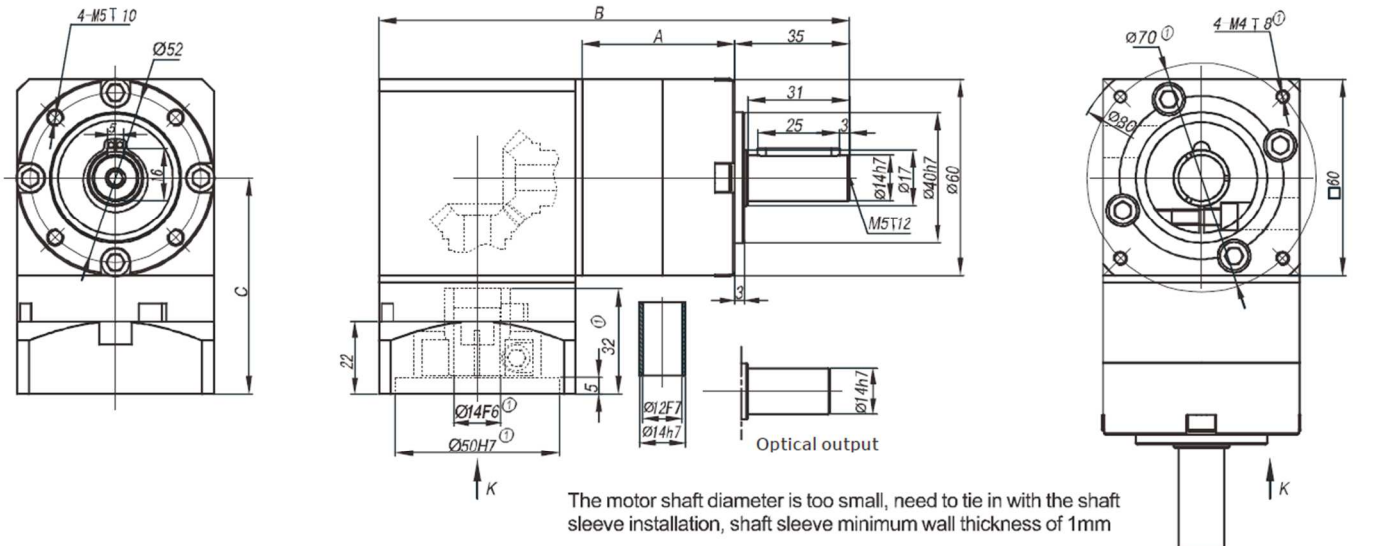
Stage	Stage 1 (i: 3, 4, 5, 8)		Stage 2 (i: 12, 16, 20, 25, 32, 40, 64)		Stage 3 (i: 60, 64, 80, 100, 120, 160, 200, 256, 320, 512)	
	A	B	A	B	A	B
Lenght [mm]	112,0	296,0	151,0	335,0	190,0	374,0
Rated input speed [rpm]	3000		3000		3000	
Maximum input speed [rpm]	4500		4500		4500	
Maximum radial force [N]2	2200		2700		4650	
Maximum axial force [N]2	2300		3000		6200	
No load torque	About 3,2		About 2,1		About 2,1	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤65		≤65		≤65	
Weight [kg]	19,0		25,0		31,0	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	27,0					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	8	12	16	20	25	32	40	60	64	64	80
Rated output torque [Nm]	310,0	605,0	420,0	270,0	680,0	680,0	680,0	460,0	680,0	460,0	900,0	310,0	900,0	900,0
Maximum output torque [Nm]	520,0	1210	840,0	540,0	1360	1360	1360	920,0	1360	920,0	1800	620,0	1800	1800
Inertia [kgcm ²]	6,31	5,15	4,93	4,84	6,31	5,15	4,93	4,93	4,84	4,84	9,31	4,84	4,93	4,93

Stage	100	120	160	200	256	320	512							
Rated output torque [Nm]	900,0	580,0	900,0	580,0	900,0	580,0	400,0							
Maximum output torque [Nm]	1800	1160	1800	1160	1800	1160	800							
Inertia [kgcm ²]	4,93	4,84	4,84	4,84	4,84	4,84	4,84							

- Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
- Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

ZPLE60

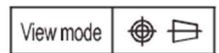
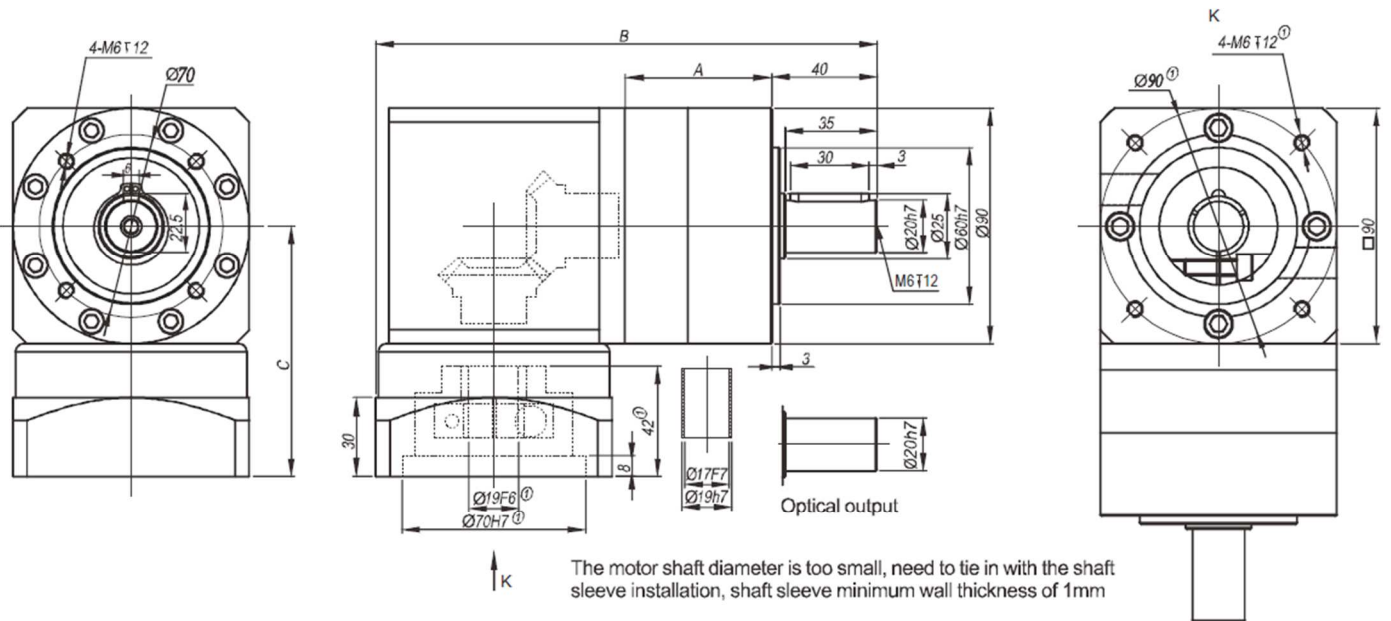


View mode

Stage	Stage 1 (i: 3, 4, 5, 7, 10)			Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)			Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)		
	A	B	C	A	B	C	A	B	C
Length [mm]	46,5	143,5	66,0	63,0	160,0	66,0	79,5	176,5	66,0
No load torque	About 0,6			About 0,3			About 0,3		
Efficiency with full load [%]	95			93			90		
Backlash [arcmin]	<12			<15			<18		
Noise [dB]	≤58			≤58			≤58		
Weight [kg]	2,2			2,5			2,8		
Direction of rotation	Input and output in different directions								
Not listed parameters refer to PLE060 (including the maximum radial force rated input speed, the maximum input speed \ maximum axial force, the average life expectancy, torsional rigidity, lubricating oil, protection grade, installation, reduction ratio, rated output torque, moment of inertia)									

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.

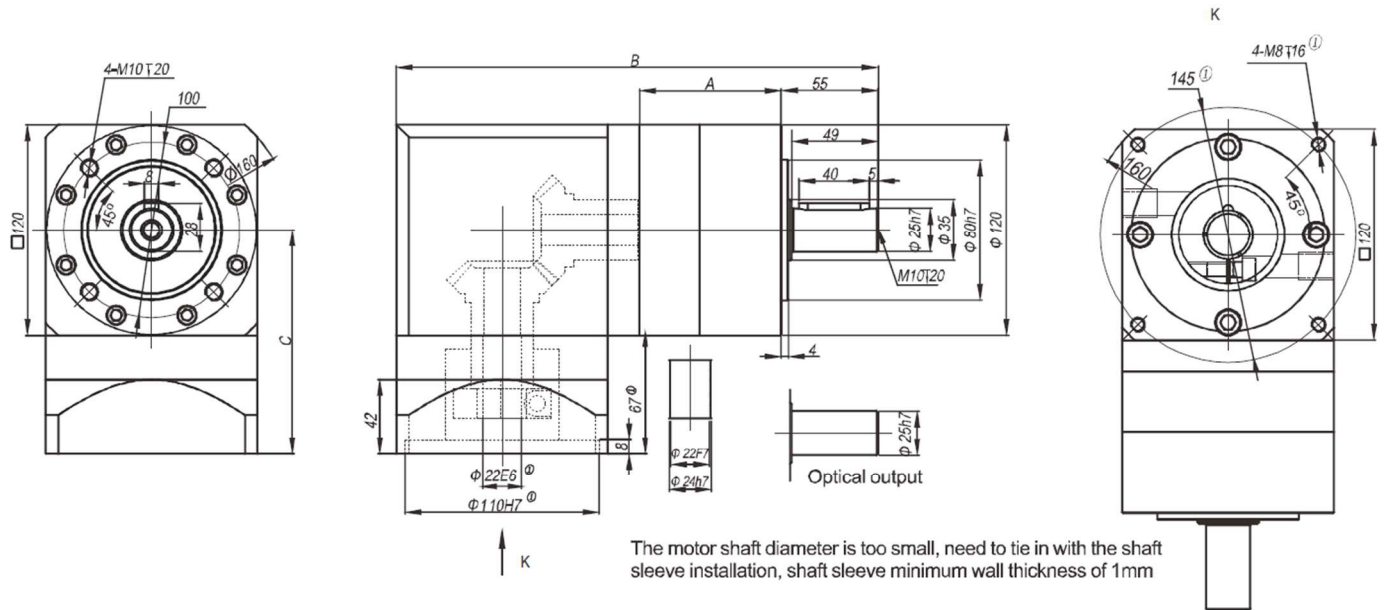
ZPLE90



Stage	Stage 1 (i: 3, 4, 5, 7, 10)			Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)			Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)		
	A	B	C	A	B	C	A	B	C
Lenght [mm]	56,0	191,0	95,5	80,0	215,0	95,5	104,0	239,0	95,5
No load torque	About 0,8			About 0,4			About 0,4		
Efficiency with full load [%]	95			93			90		
Backlash [arcmin]	<12			<15			<18		
Noise [dB]	≤62			≤62			≤62		
Weight [kg]	4,7			5,3			5,9		
Direction of rotation	Input and output in different directions								
Not listed parameters refer to PLE060 (including the maximum radial force rated input speed, the maximum input speed \ maximum axial force, the average life expectancy, torsional rigidity, lubricating oil, protection grade, installation, reduction ratio, rated output torque, moment of inertia)									

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.

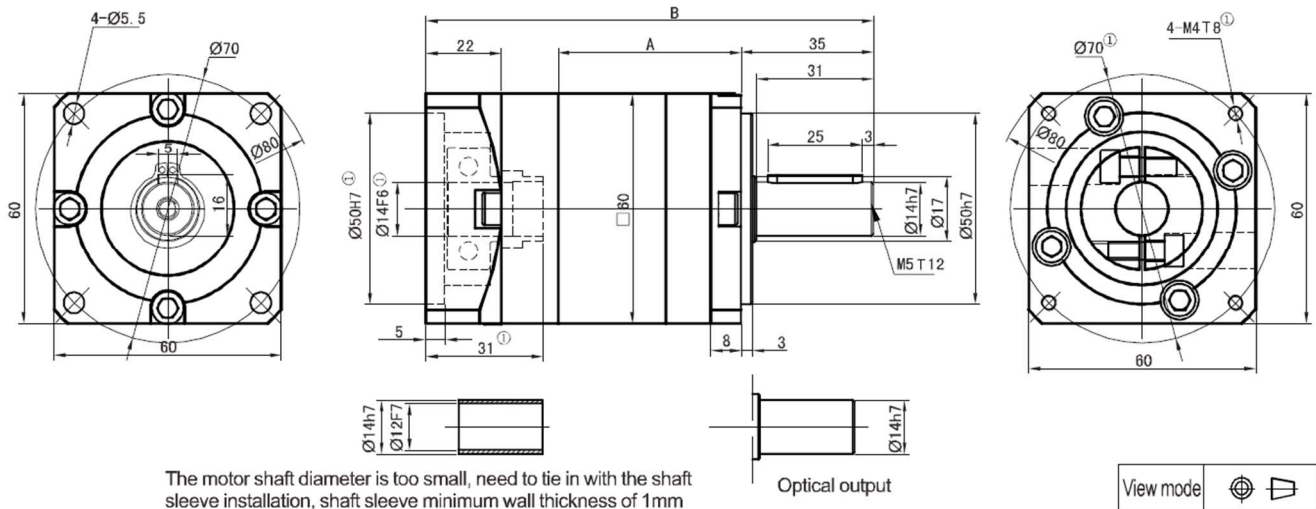
ZPLE120



Stage	Stage 1 (i: 3, 4, 5, 7, 10)			Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)			Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)		
	A	B	C	A	B	C	A	B	C
Length [mm]	80,5	273,5	127,0	112,0	305,0	127,0	143,5	336,5	127,0
No load torque	About 1,3			About 0,6			About 0,6		
Efficiency with full load [%]	95			93			90		
Backlash [arcmin]	<12			<15			<18		
Noise [dB]	≤65			≤65			≤65		
Weight [kg]	11,5			13,5			15,7		
Direction of rotation	Input and output in different directions								
Not listed parameters refer to PLE060 (including the maximum radial force rated input speed, the maximum input speed \ maximum axial force, the average life expectancy, torsional rigidity, lubricating oil, protection grade, installation, reduction ratio, rated output torque, moment of inertia)									

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.

PLF060



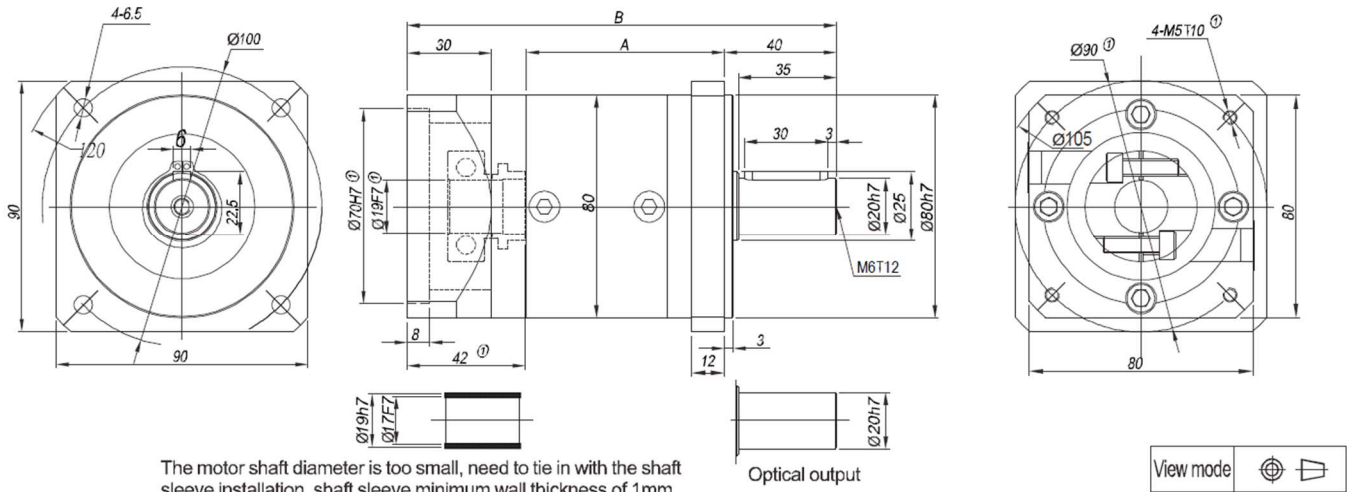
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Length [mm]	46,5	118,5	63,0	135,0	79,5	151,5
Rated input speed [rpm]	4000		4000		4000	
Maximum input speed [rpm]	8000		8000		8000	
Maximum radial force [N] ²	485		605		670	
Maximum axial force [N] ²	380		490		550	
No load torque	About 0,6		About 0,3		About 0,3	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤58		≤58		≤58	
Weight [kg]	1		1,3		1,6	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	2,3					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	16,5	27,0	29,5	19,5	8,5	30,0	30,0	30,0	33,0	30,0	33,0	30,0	33,0	21,5
Maximum output torque [Nm]	33,0	54,0	59,0	39,0	17,0	60,0	60,0	60,0	66,0	60,0	66,0	60,0	66,0	43,0
Inertia [kgcm ²]	0,107	0,094	0,092	0,091	0,107	0,094	0,092	0,092	0,092	0,091	0,091	0,091	0,091	0,091

Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	37,5	37,5	37,5	41,0	37,5	41,0	37,5	41,0	37,5	41,0	37,5	41,0	27,0	11,5
Maximum output torque [Nm]	75,0	75,0	75,0	82,0	75,0	82,0	75,0	82,0	75,0	82,0	75,0	82,0	54,0	23,0
Inertia [kgcm ²]	0,092	0,092	0,092	0,092	0,091	0,091	0,091	0,091	0,091	0,091	0,091	0,091	0,091	0,091

- Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
- Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLF080



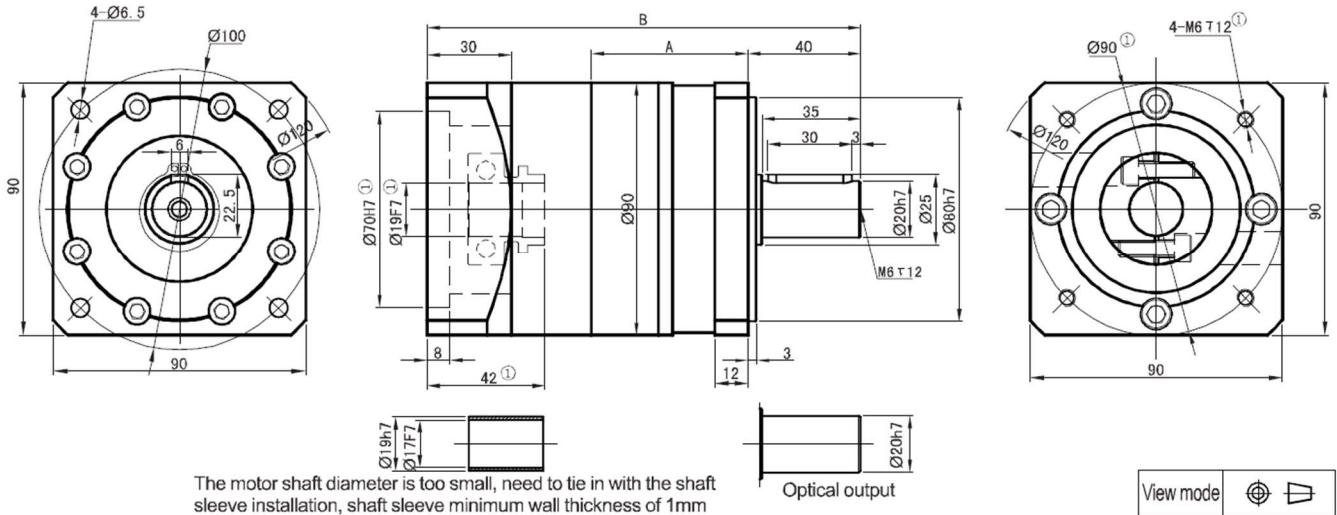
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Length [mm]	71,0	153,5	94,5	177,5	117,5	201,5
Rated input speed [rpm]	3500		3500		3500	
Maximum input speed [rpm]	6000		6000		6000	
Maximum radial force [N] ²	1020		1270		1420	
Maximum axial force [N] ²	850		1100		1250	
No load torque	About 0,8		About 0,4		About 0,4	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤62		≤62		≤62	
Weight [kg]	2,5		3,1		3,7	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	7,5					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	60,0	86,0	94,5	64,0	39,5	96,0	96,0	96,0	105,5	96,0	105,5	96,0	105,5	71,5
Maximum output torque [Nm]	120,0	172,0	189,0	128,0	79,0	192,0	192,0	192,0	211,0	192,0	211,0	192,0	211,0	143,0
Inertia [kgcm ²]	0,4	0,309	0,291	0,285	0,283	0,4	0,309	0,291	0,291	0,285	0,285	0,283	0,283	0,283

Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	120,0	120,0	120,0	132,0	120,0	132,0	120,0	132,0	120,0	132,0	120,0	132,0	89,5	55,0
Maximum output torque [Nm]	240,0	240,0	240,0	264,0	240,0	264,0	240,0	264,0	240,0	264,0	240,0	264,0	179,0	110,0
Inertia [kgcm ²]	0,291	0,291	0,291	0,291	0,285	0,285	0,283	0,283	0,283	0,283	0,283	0,283	0,283	0,283

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
2. Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLF090



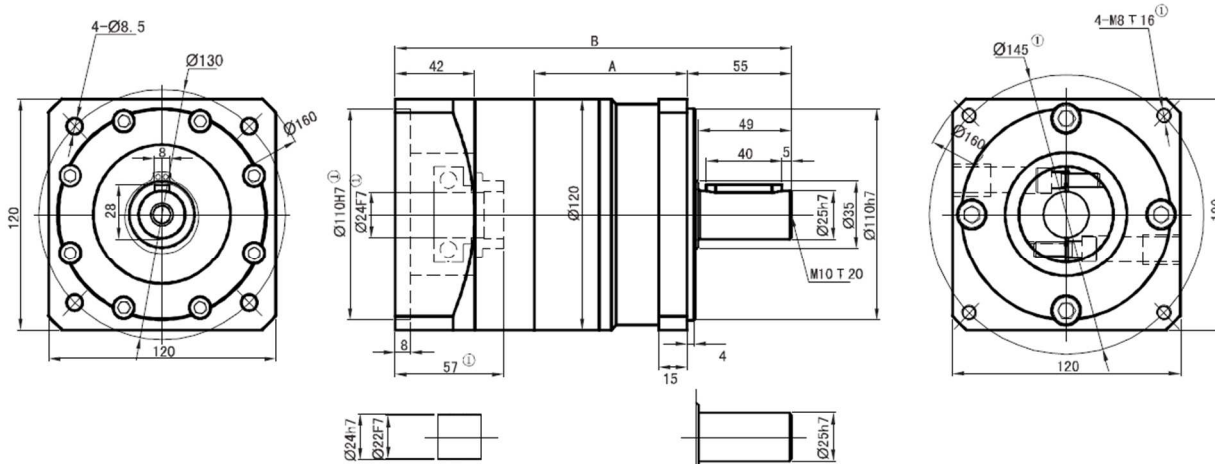
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Length [mm]	56,0	154,5	80,0	178,5	104,0	202,5
Rated input speed [rpm]	3500		3500		3500	
Maximum input speed [rpm]	6000		6000		6000	
Maximum radial force [N] ²	1020		1270		1420	
Maximum axial force [N] ²	850		1100		1250	
No load torque	About 0,8		About 0,4		About 0,4	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤62		≤62		≤62	
Weight [kg]	2,8		3,4		4,0	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	7,5					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	60,0	86,0	94,5	64,0	39,5	96,0	96,0	96,0	105,5	96,0	105,5	96,0	105,5	71,5
Maximum output torque [Nm]	120,0	172,0	189,0	128,0	79,0	192,0	192,0	192,0	211,0	192,0	211,0	192,0	211,0	143,0
Inertia [kgcm ²]	0,4	0,309	0,291	0,285	0,283	0,4	0,309	0,291	0,291	0,285	0,285	0,283	0,283	0,283

Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	120,0	120,0	120,0	132,0	120,0	132,0	120,0	132,0	120,0	132,0	120,0	132,0	89,5	55,0
Maximum output torque [Nm]	240,0	240,0	240,0	264,0	240,0	264,0	240,0	264,0	240,0	264,0	240,0	264,0	179,0	110,0
Inertia [kgcm ²]	0,291	0,291	0,291	0,291	0,285	0,285	0,283	0,283	0,283	0,283	0,283	0,283	0,283	0,283

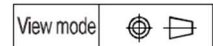
- Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
- Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLF120



The motor shaft diameter is too small, need to tie in with the shaft sleeve installation, shaft sleeve minimum wall thickness of 1mm

Optical output



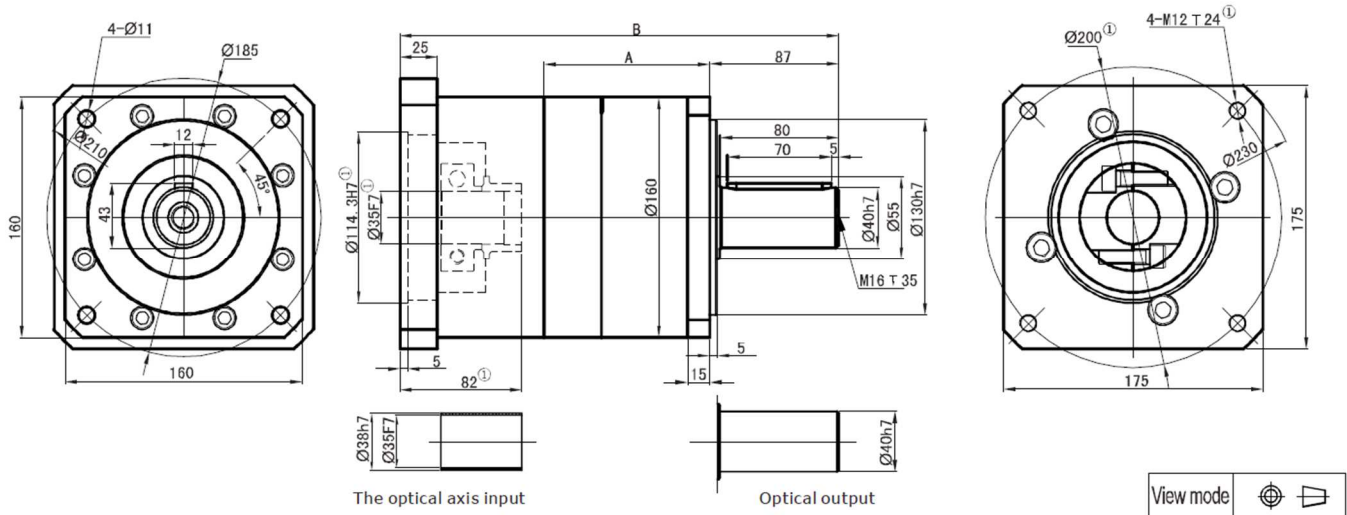
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Length [mm]	80,5	209,0	112,0	240,5	143,5	272,0
Rated input speed [rpm]	3000		3000		3000	
Maximum input speed [rpm]	4800		4800		4800	
Maximum radial force [N] ²	2230		2840		3020	
Maximum axial force [N] ²	1550		2100		2600	
No load torque	About 1,3		About 0,6		About 0,6	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤65		≤65		≤65	
Weight [kg]	6,8		8,8		11,0	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	15,0					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	148,0	222,0	235,0	158,0	93,0	250,0	250,0	250,0	264,0	250,0	264,0	250,0	264,0	177,0
Maximum output torque [Nm]	296,0	444,0	470,0	316,0	186,0	500,0	500,0	500,0	528,0	500,0	528,0	500,0	528,0	354,0
Inertia [kgcm ²]	1,65	1,22	1,15	1,13	1,11	1,65	1,22	1,15	1,15	1,13	1,13	1,11	1,11	1,11

Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	310,0	310,0	310,0	329,0	310,0	329,0	310,0	329,0	310,0	329,0	310,0	329,0	220,0	130,0
Maximum output torque [Nm]	620,0	620,0	620,0	658,0	620,0	658,0	620,0	658,0	620,0	658,0	620,0	658,0	440,0	260,0
Inertia [kgcm ²]	1,15	1,15	1,15	1,15	1,13	1,13	1,11	1,11	1,11	1,11	1,11	1,11	1,11	1,11

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- Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLF160



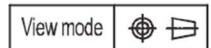
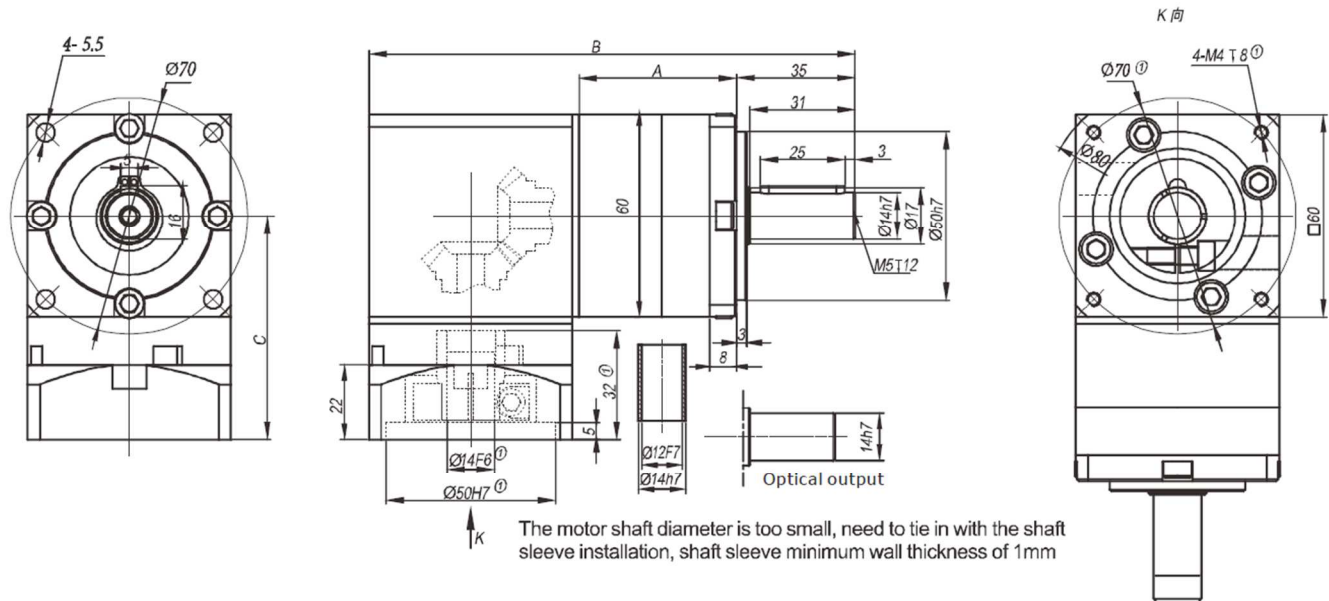
Stage	Stage 1 (i: 3, 4, 5, 8)		Stage 2 (i: 12, 16, 20, 25, 32, 40, 64)		Stage 3 (i: 60, 64, 80, 100, 120, 160, 200, 256, 320, 512)	
	A	B	A	B	A	B
Length [mm]	112,0	296,0	151,0	335,0	190,0	374,0
Rated input speed [rpm]	3000		3000		3000	
Maximum input speed [rpm]	4500		4500		4500	
Maximum radial force [N] ²	2200		2700		4650	
Maximum axial force [N] ²	2300		3000		6200	
No load torque	About 3,2		About 2,1		About 2,1	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤65		≤65		≤65	
Weight [kg]	19,0		25,0		31,0	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	27,0					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	8	12	16	20	25	32	40	60	64	64	80
Rated output torque [Nm]	310,0	605,0	420,0	270,0	680,0	680,0	680,0	460,0	680,0	460,0	900,0	310,0	900,0	900,0
Maximum output torque [Nm]	520,0	1210	840,0	540,0	1360	1360	1360	920,0	1360	920,0	1800	620,0	1800	1800
Inertia [kgcm ²]	6,31	5,15	4,93	4,84	6,31	5,15	4,93	4,93	4,84	4,84	9,31	4,84	4,93	4,93

Stage	100	120	160	200	256	320	512							
Rated output torque [Nm]	900,0	580,0	900,0	580,0	900,0	580,0	400,0							
Maximum output torque [Nm]	1800	1160	1800	1160	1800	1160	800							
Inertia [kgcm ²]	4,93	4,84	4,84	4,84	4,84	4,84	4,84							

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
2. Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

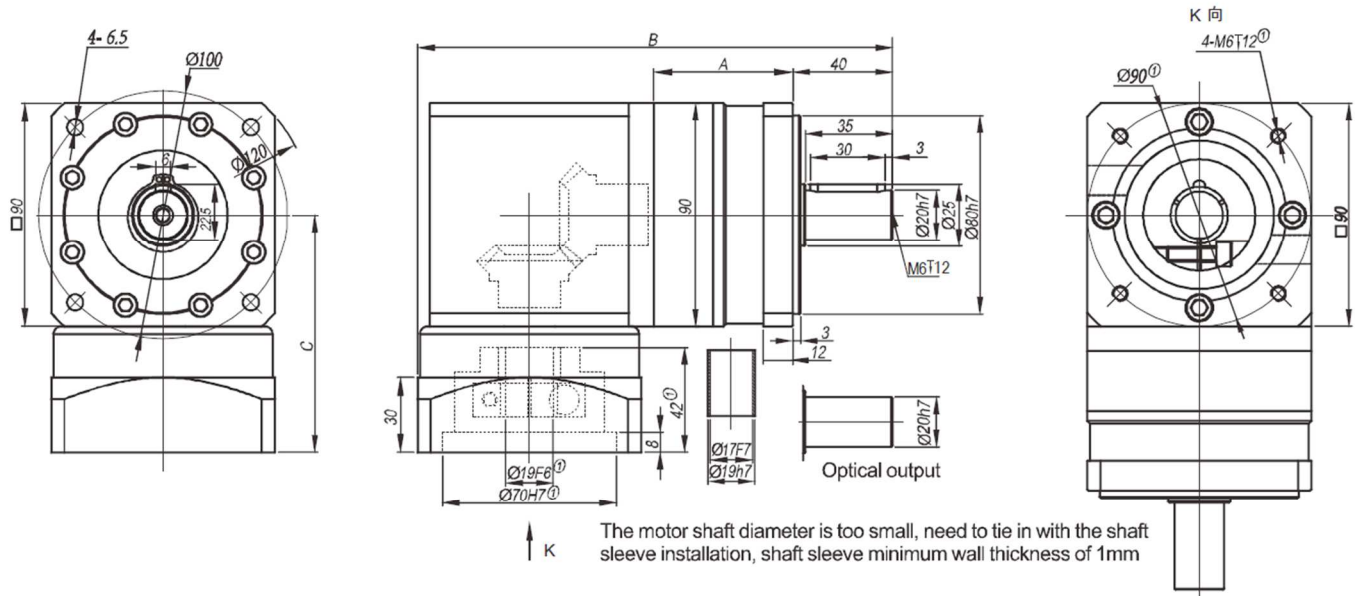
ZPLF60



Stage	Stage 1 (i: 3, 4, 5, 7, 10)			Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)			Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)		
	A	B	C	A	B	C	A	B	C
Length [mm]	46,5	143,5	66,0	63,0	160,0	66,0	79,5	176,5	66,0
No load torque	About 0,6			About 0,3			About 0,3		
Efficiency with full load [%]	95			93			90		
Backlash [arcmin]	<12			<15			<18		
Noise [dB]	≤58			≤58			≤58		
Weight [kg]	2,2			2,5			2,8		
Direction of rotation	Input and output in different directions								
Not listed parameters refer to PLE060 (including the maximum radial force rated input speed, the maximum input speed \ maximum axial force, the average life expectancy, torsional rigidity, lubricating oil, protection grade, installation, reduction ratio, rated output torque, moment of inertia)									

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.

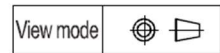
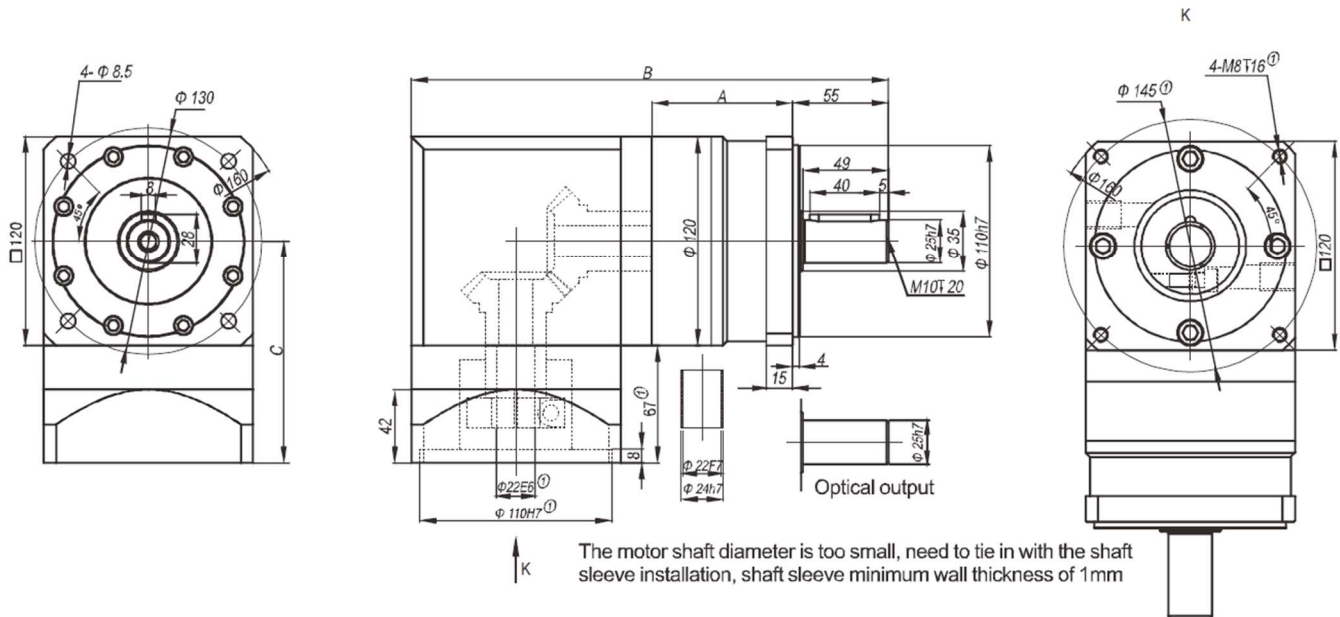
ZPLF90



Stage	Stage 1 (i: 3, 4, 5, 7, 10)			Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)			Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)		
	A	B	C	A	B	C	A	B	C
Length [mm]	56,0	191,0	95,5	80,0	215,0	95,5	104,0	239,0	95,5
No load torque	About 0,8			About 0,4			About 0,4		
Efficiency with full load [%]	95			93			90		
Backlash [arcmin]	<12			<15			<18		
Noise [dB]	≤62			≤62			≤62		
Weight [kg]	4,7			5,3			5,9		
Direction of rotation	Input and output in different directions								
Not listed parameters refer to PLE060 (including the maximum radial force rated input speed, the maximum input speed \ maximum axial force, the average life expectancy, torsional rigidity, lubricating oil, protection grade, installation, reduction ratio, rated output torque, moment of inertia)									

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.

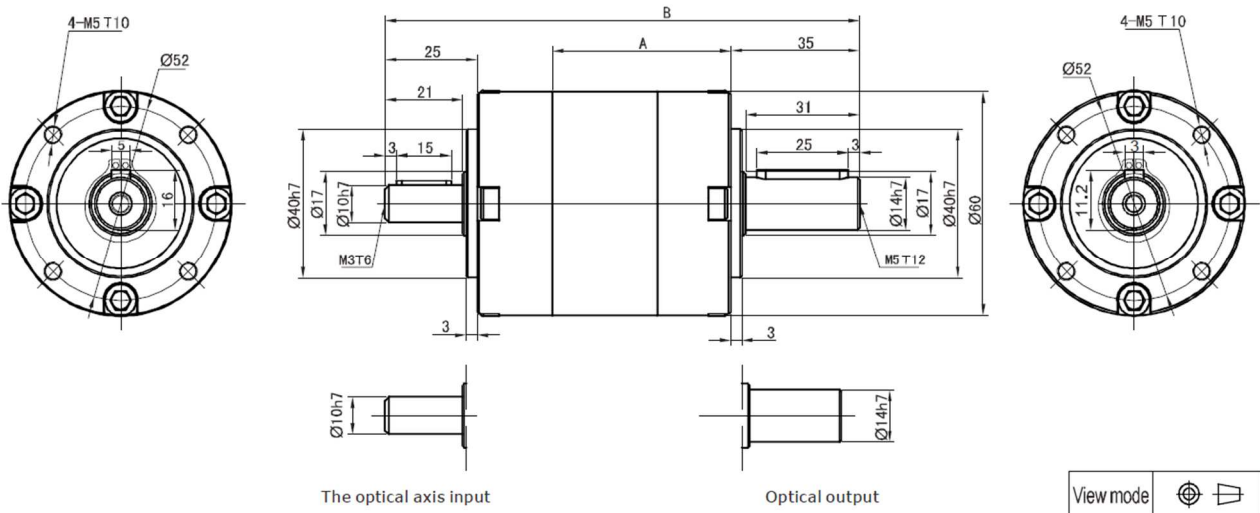
ZPLF120



Stage	Stage 1 (i: 3, 4, 5, 7, 10)			Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)			Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)		
	A	B	C	A	B	C	A	B	C
Length [mm]	80,5	273,5	127,0	112,0	305,0	127,0	143,5	336,5	127,0
No load torque	About 1,3			About 0,6			About 0,6		
Efficiency with full load [%]	95			93			90		
Backlash [arcmin]	<12			<15			<18		
Noise [dB]	≤65			≤65			≤65		
Weight [kg]	11,5			13,5			15,7		
Direction of rotation	Input and output in different directions								
Not listed parameters refer to PLE060 (including the maximum radial force rated input speed, the maximum input speed \ maximum axial force, the average life expectancy, torsional rigidity, lubricating oil, protection grade, installation, reduction ratio, rated output torque, moment of inertia)									

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.

PLS060



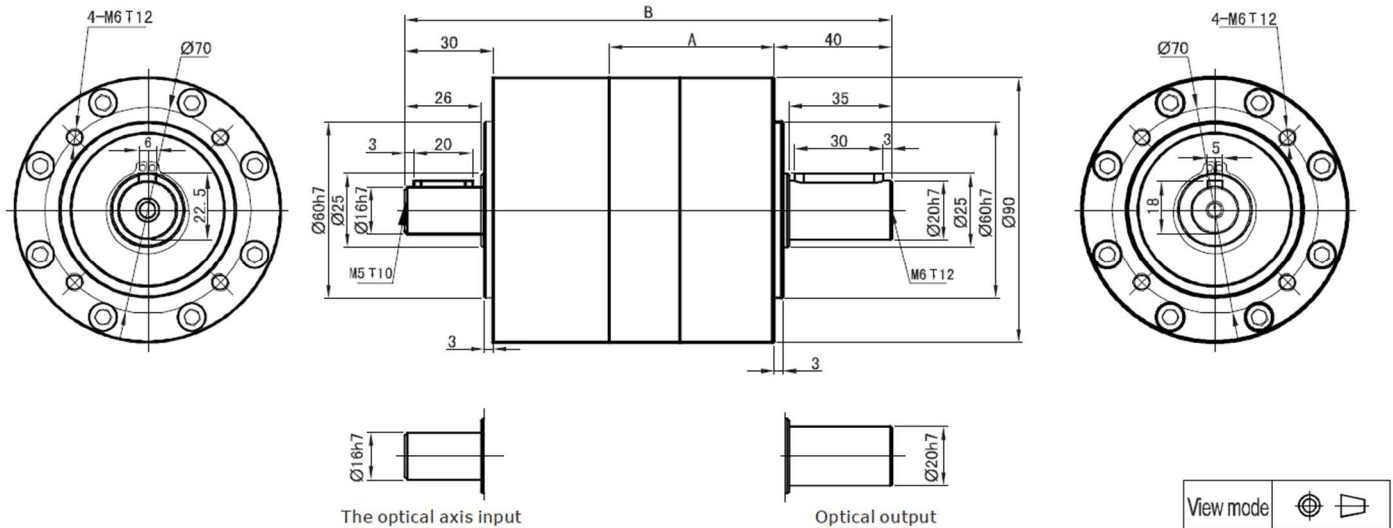
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Length [mm]	46,5	127,0	63,0	143,5	79,5	160,0
Rated input speed [rpm]	4000		4000		4000	
Maximum input speed [rpm]	8000		8000		8000	
Maximum radial force [N] ¹	170		170		170	
Maximum axial force [N] ¹	100		100		100	
No load torque	About 0,6		About 0,3		About 0,3	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤58		≤58		≤58	
Weight [kg]	1		1,3		1,6	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	2,3					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	16,5	27,0	29,5	19,5	8,5	30,0	30,0	30,0	33,0	30,0	33,0	30,0	33,0	21,5
Maximum output torque [Nm]	33,0	54,0	59,0	39,0	17,0	60,0	60,0	60,0	66,0	60,0	66,0	60,0	66,0	43,0
Inertia [kgcm ²]	0,037	0,025	0,023	0,021	0,02	0,037	0,025	0,023	0,023	0,021	0,021	0,02	0,02	0,02

Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	37,5	37,5	37,5	41,0	37,5	41,0	37,5	41,0	37,5	41,0	37,5	41,0	27,0	11,5
Maximum output torque [Nm]	75,0	75,0	75,0	82,0	75,0	82,0	75,0	82,0	75,0	82,0	75,0	82,0	54,0	23,0
Inertia [kgcm ²]	0,023	0,023	0,023	0,023	0,021	0,021	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02

1. In the input speed is 2000 rpm, is applied to the input shaft center (1/2 axis strengths) the measured radial force and axial force (allowable stress at the same time). Output force with PLS060.

PLS090



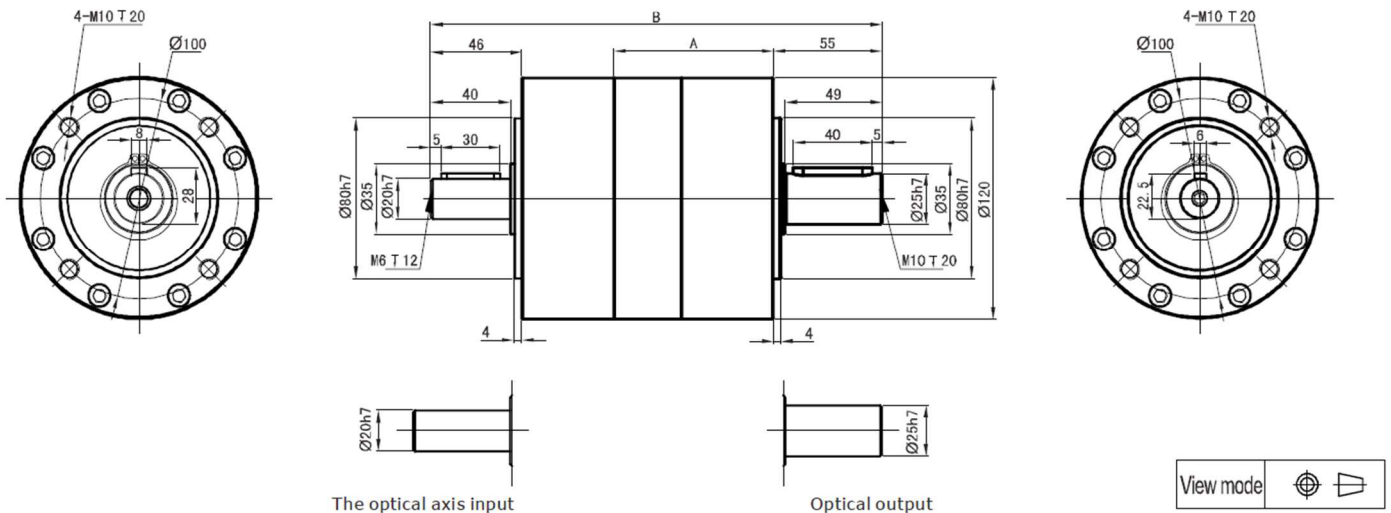
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Length [mm]	56,0	165,5	80,0	189,5	104,0	213,5
Rated input speed [rpm]	3500		3500		3500	
Maximum input speed [rpm]	6000		6000		6000	
Maximum radial force [N]1	415		415		415	
Maximum axial force [N]1	260		260		260	
No load torque	About 0,8		About 0,4		About 0,4	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤62		≤62		≤62	
Weight [kg]	2,8		3,4		4,0	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	7,5					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	60,0	86,0	94,5	64,0	39,5	96,0	96,0	96,0	105,5	96,0	105,5	96,0	105,5	71,5
Maximum output torque [Nm]	120,0	172,0	189,0	128,0	79,0	192,0	192,0	192,0	211,0	192,0	211,0	192,0	211,0	143,0
Inertia [kgcm ²]	0,281	0,189	0,173	0,167	0,163	0,281	0,189	0,173	0,173	0,167	0,167	0,163	0,163	0,163

Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	120,0	120,0	120,0	132,0	120,0	132,0	120,0	132,0	120,0	132,0	120,0	132,0	89,5	55,0
Maximum output torque [Nm]	240,0	240,0	240,0	264,0	240,0	264,0	240,0	264,0	240,0	264,0	240,0	264,0	179,0	110,0
Inertia [kgcm ²]	0,173	0,173	0,173	0,173	0,167	0,167	0,163	0,163	0,163	0,163	0,163	0,163	0,163	0,163

1. In the input speed is 2000 rpm, is applied to the input shaft center (1/2 axis strengths) the measured radial force and axial force (allowable stress at the same time). Output force with PLE090.

PLS120



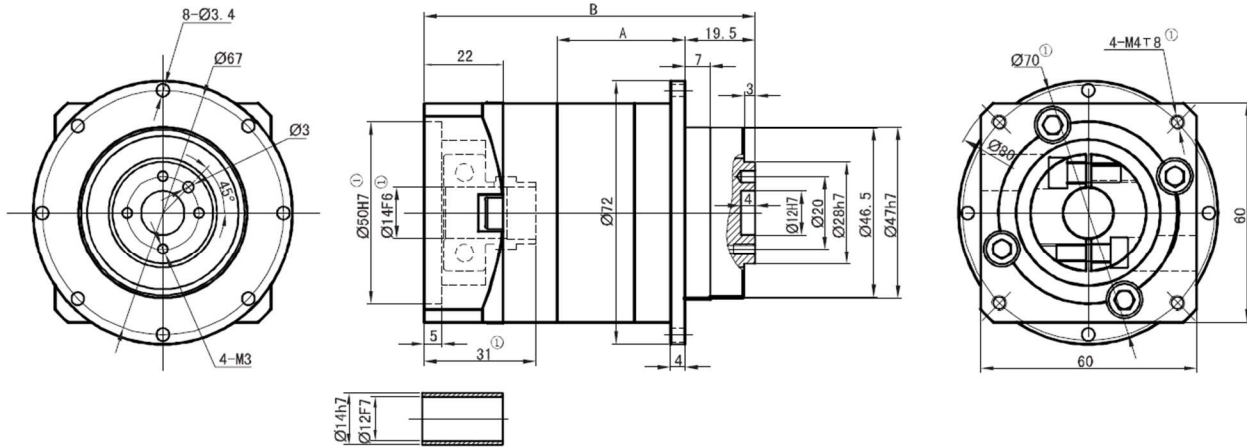
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Lenght [mm]	80,5	228	112,0	259,5	143,5	291,0
Rated input speed [rpm]	3000		3000		3000	
Maximum input speed [rpm]	4800		4800		4800	
Maximum radial force [N]1	690		690		690	
Maximum axial force [N]1	420		420		420	
No load torque	About 1,3		About 0,6		About 0,6	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤65		≤65		≤65	
Weight [kg]	7,0		9,0		11,3	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	15,0					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	148,0	222,0	235,0	158,0	93,0	250,0	250,0	250,0	264,0	250,0	264,0	250,0	264,0	177,0
Maximum output torque [Nm]	296,0	444,0	470,0	316,0	186,0	500,0	500,0	500,0	528,0	500,0	528,0	500,0	528,0	354,0
Inertia [kgcm ²]	1,19	0,80	0,71	0,68	0,67	1,19	0,80	0,71	0,71	0,68	0,68	0,67	0,67	0,67

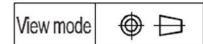
Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	310,0	310,0	310,0	329,0	310,0	329,0	310,0	329,0	310,0	329,0	310,0	329,0	220,0	130,0
Maximum output torque [Nm]	620,0	620,0	620,0	658,0	620,0	658,0	620,0	658,0	620,0	658,0	620,0	658,0	440,0	260,0
Inertia [kgcm ²]	0,71	0,71	0,71	0,71	0,68	0,68	0,67	0,67	0,67	0,67	0,67	0,67	0,67	0,67

1. In the input speed is 2000 rpm, is applied to the input shaft center (1/2 axis strengths) the measured radial force and axial force (allowable stress at the same time). Output force with PLE120.

PLH060



The motor shaft diameter is too small, need to tie in with the shaft sleeve installation, shaft sleeve minimum wall thickness of 1mm



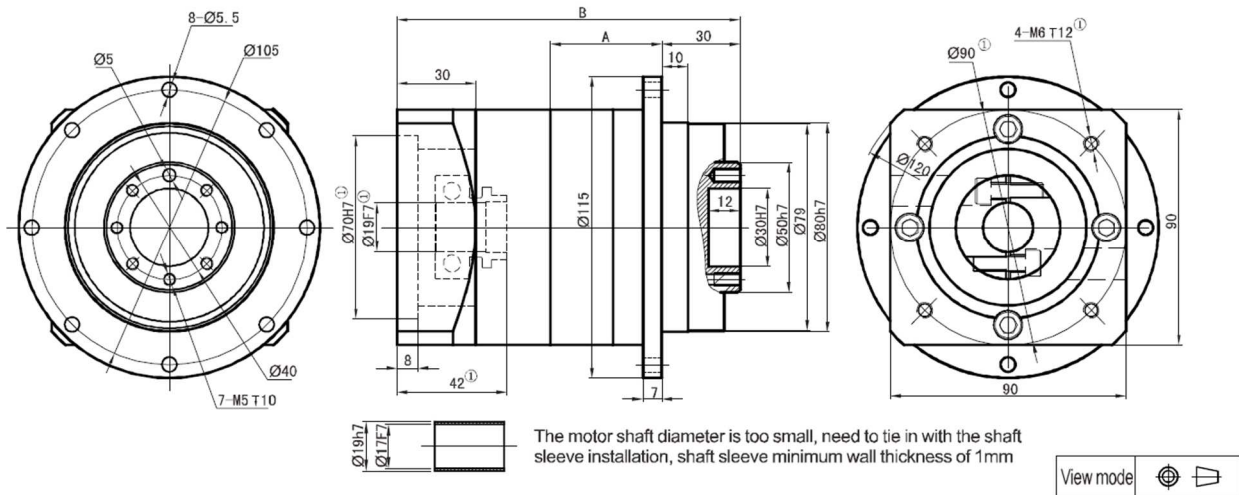
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Length [mm]	35,5	92,0	52,0	108,5	68,5	125,0
Rated input speed [rpm]	4000		4000		4000	
Maximum input speed [rpm]	8000		8000		8000	
Maximum radial force [N] ²	300		400		760	
Maximum axial force [N] ²	280		380		600	
No load torque	About 0,6		About 0,3		About 0,3	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤58		≤58		≤58	
Weight [kg]	1,1		1,4		1,7	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	1,6					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	16,5	27,0	29,5	19,5	8,5	30,0	30,0	30,0	33,0	30,0	33,0	30,0	33,0	21,5
Maximum output torque [Nm]	33,0	54,0	59,0	39,0	17,0	60,0	60,0	60,0	66,0	60,0	66,0	60,0	66,0	43,0
Inertia [kgcm ²]	0,107	0,094	0,092	0,091	0,107	0,094	0,092	0,092	0,092	0,091	0,091	0,091	0,091	0,091

Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	37,5	37,5	37,5	41,0	37,5	41,0	37,5	41,0	37,5	41,0	37,5	41,0	27,0	11,5
Maximum output torque [Nm]	75,0	75,0	75,0	82,0	75,0	82,0	75,0	82,0	75,0	82,0	75,0	82,0	54,0	23,0
Inertia [kgcm ²]	0,092	0,092	0,092	0,092	0,091	0,091	0,091	0,091	0,091	0,091	0,091	0,091	0,091	0,091

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
2. Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLH090



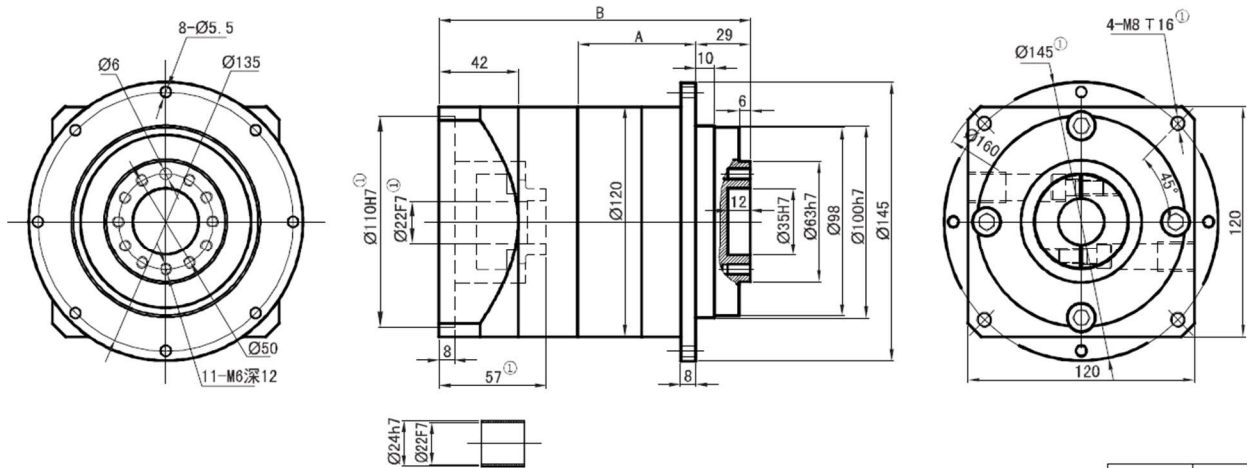
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Length [mm]	42,5	131,0	66,5	155,0	90,5	179,0
Rated input speed [rpm]	3500		3500		3500	
Maximum input speed [rpm]	6000		6000		6000	
Maximum radial force [N] ²	1050		1450		2600	
Maximum axial force [N] ²	800		1000		1900	
No load torque	About 0,8		About 0,4		About 0,4	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤62		≤62		≤62	
Weight [kg]	3,5		4,1		4,7	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	4,5					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	60,0	86,0	94,5	64,0	39,5	96,0	96,0	96,0	105,5	96,0	105,5	96,0	105,5	71,5
Maximum output torque [Nm]	120,0	172,0	189,0	128,0	79,0	192,0	192,0	192,0	211,0	192,0	211,0	192,0	211,0	143,0
Inertia [kgcm ²]	0,4	0,309	0,291	0,285	0,283	0,4	0,309	0,291	0,291	0,285	0,285	0,283	0,283	0,283

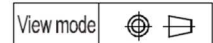
Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	120,0	120,0	120,0	132,0	120,0	132,0	120,0	132,0	120,0	132,0	120,0	132,0	89,5	55,0
Maximum output torque [Nm]	240,0	240,0	240,0	264,0	240,0	264,0	240,0	264,0	240,0	264,0	240,0	264,0	179,0	110,0
Inertia [kgcm ²]	0,291	0,291	0,291	0,291	0,285	0,285	0,283	0,283	0,283	0,283	0,283	0,283	0,283	0,283

- Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
- Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLH120



The motor shaft diameter is too small, need to tie in with the shaft sleeve installation, shaft sleeve minimum wall thickness of 1mm



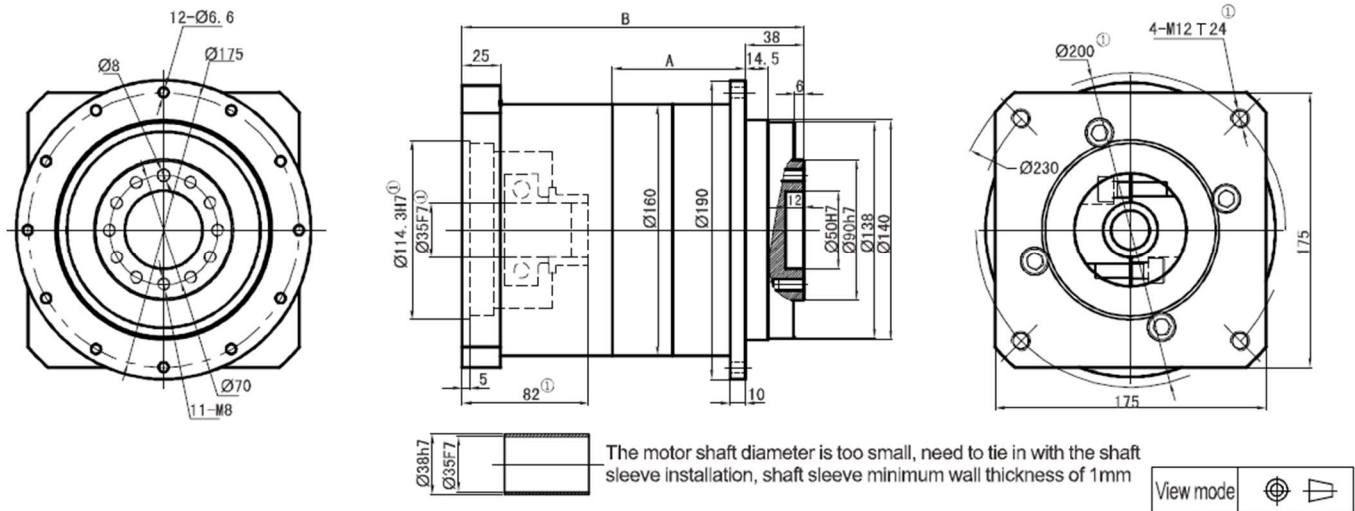
Stage	Stage 1 (i: 3, 4, 5, 7, 10)		Stage 2 (i: 12, 16, 20, 25, 28, 35, 40, 50, 70)		Stage 3 (i: 64, 80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000)	
	A	B	A	B	A	B
Length [mm]	62,5	165,0	94,0	196,5	128,5	231,0
Rated input speed [rpm]	3000		3000		3000	
Maximum input speed [rpm]	4800		4800		4800	
Maximum radial force [N] ²	1300		1800		3300	
Maximum axial force [N] ²	900		1200		2000	
No load torque	About 1,3		About 0,6		About 0,6	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤65		≤65		≤65	
Weight [kg]	8,1		10,3		12,5	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	8,9					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	7	10	12	16	20	25	28	35	40	50	70
Rated output torque [Nm]	148,0	222,0	235,0	158,0	93,0	250,0	250,0	250,0	264,0	250,0	264,0	250,0	264,0	177,0
Maximum output torque [Nm]	296,0	444,0	470,0	316,0	186,0	500,0	500,0	500,0	528,0	500,0	528,0	500,0	528,0	354,0
Inertia [kgcm ²]	1,65	1,22	1,15	1,13	1,11	1,65	1,22	1,15	1,15	1,13	1,13	1,11	1,11	1,11

Stage	64	80	100	125	140	175	200	250	280	350	400	500	700	1000
Rated output torque [Nm]	310,0	310,0	310,0	329,0	310,0	329,0	310,0	329,0	310,0	329,0	310,0	329,0	220,0	130,0
Maximum output torque [Nm]	620,0	620,0	620,0	658,0	620,0	658,0	620,0	658,0	620,0	658,0	620,0	658,0	440,0	260,0
Inertia [kgcm ²]	1,15	1,15	1,15	1,15	1,13	1,13	1,11	1,11	1,11	1,11	1,11	1,11	1,11	1,11

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
2. Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLH160



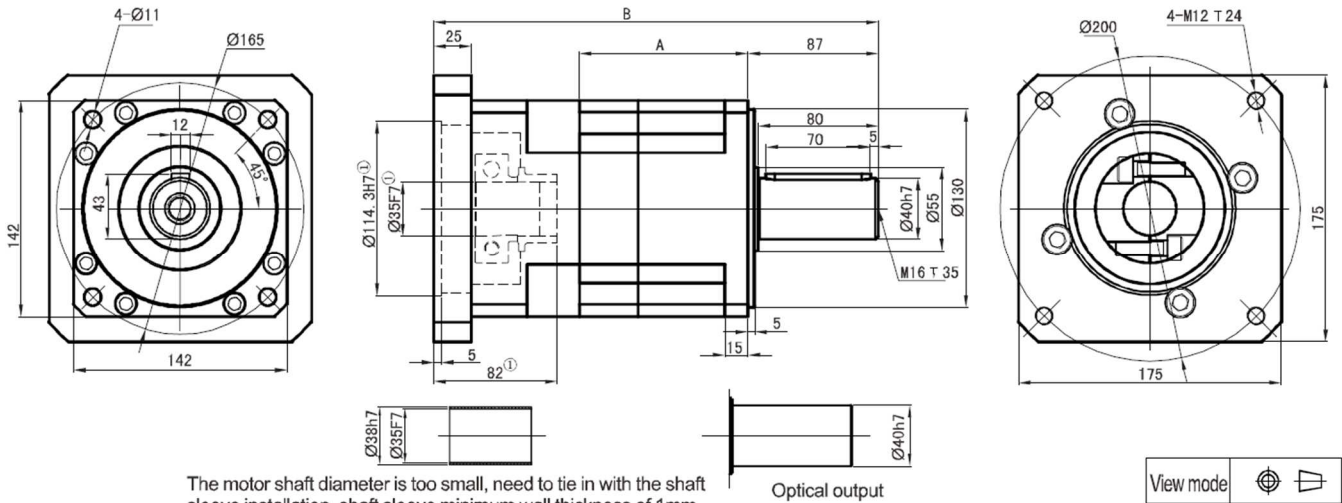
Stage	Stage 1 (i: 3, 4, 5, 8)		Stage 2 (i: 12, 16, 20, 25, 32, 40, 64)		Stage 3 (i: 60, 64, 80, 100, 120, 160, 200, 256, 320, 512)	
	A	B	A	B	A	B
Length [mm]	86,0	221,0	125,0	260,0	169,0	229,0
Rated input speed [rpm]	3000		3000		3000	
Maximum input speed [rpm]	4500		4500		4500	
Maximum radial force [N] ²	2600		3400		6300	
Maximum axial force [N] ²	1800		2300		4000	
No load torque	About 3,2		About 2,1		About 2,1	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤65		≤65		≤65	
Weight [kg]	22,5		28,5		34,5	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	25,0					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	8	12	16	20	25	32	40	60	64	64	80
Rated output torque [Nm]	310,0	605,0	420,0	270,0	680,0	680,0	680,0	460,0	680,0	460,0	900,0	310,0	900,0	900,0
Maximum output torque [Nm]	520,0	1210	840,0	540,0	1360	1360	1360	920,0	1360	920,0	1800	620,0	1800	1800
Inertia [kgcm ²]	6,31	5,15	4,93	4,84	6,31	5,15	4,93	4,93	4,84	4,84	9,31	4,84	4,93	4,93

Stage	100	120	160	200	256	320	512							
Rated output torque [Nm]	900,0	580,0	900,0	580,0	900,0	580,0	400,0							
Maximum output torque [Nm]	1800	1160	1800	1160	1800	1160	800							
Inertia [kgcm ²]	4,93	4,84	4,84	4,84	4,84	4,84	4,84							

- Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
- Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLX142



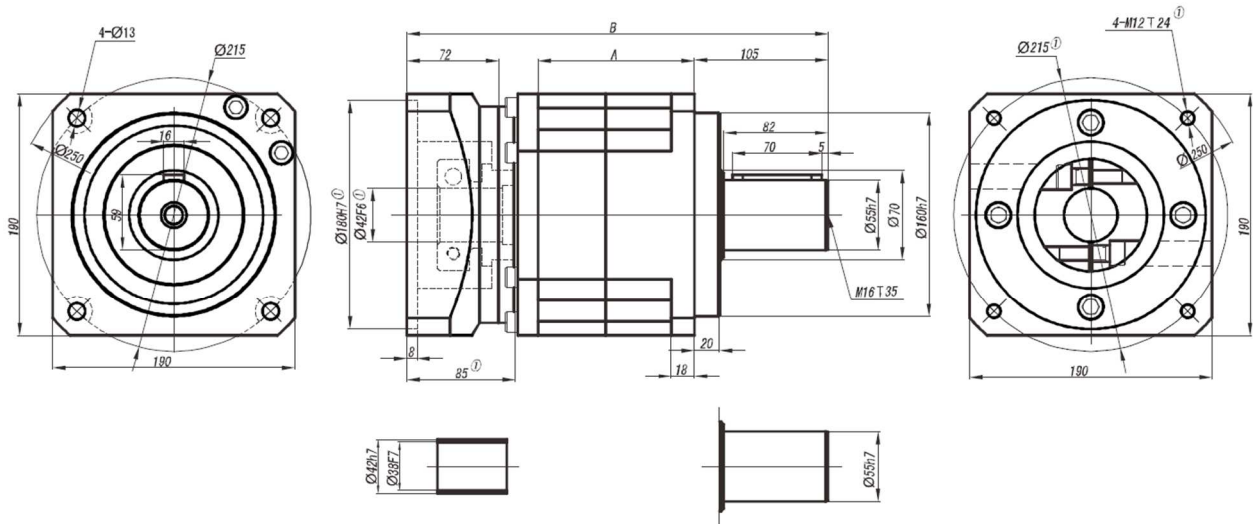
Stage	Stage 1 (i: 3, 4, 5, 8)		Stage 2 (i: 12, 16, 20, 25, 32, 40, 64)		Stage 3 (i: 60, 64, 80, 100, 120, 160, 200, 256, 320, 512)	
	A	B	A	B	A	B
Length [mm]	112,0	296,0	151,0	335,0	190,0	374,0
Rated input speed [rpm]	3000		3000		3000	
Maximum input speed [rpm]	4500		4500		4500	
Maximum radial force [N]2	2200		2700		4650	
Maximum axial force [N]2	2300		3000		6200	
No load torque	About 3,2		About 2,1		About 2,1	
Efficiency with full load [%]	96		94		90	
Backlash [arcmin]	<12		<15		<18	
Noise [dB]	≤65		≤65		≤65	
Weight [kg]	17,0		23,0		29,0	
Average lifetime [h]	>20000					
Torsional rigidity [Nm/arcmin]	27,0					
Lubricant	Effective lubricant					
Direction of rotation	Input and output to the same					
Protection level	IP65					
Installation	arbitrarily					

Stage	3	4	5	8	12	16	20	25	32	40	60	64	64	80
Rated output torque [Nm]	310,0	605,0	420,0	270,0	680,0	680,0	680,0	460,0	680,0	460,0	900,0	310,0	900,0	900,0
Maximum output torque [Nm]	520,0	1210	840,0	540,0	1360	1360	1360	920,0	1360	920,0	1800	620,0	1800	1800
Inertia [kgcm ²]	6,31	5,15	4,93	4,84	6,31	5,15	4,93	4,93	4,84	4,84	9,31	4,84	4,93	4,93

Stage	100	120	160	200	256	320	512							
Rated output torque [Nm]	900,0	580,0	900,0	580,0	900,0	580,0	400,0							
Maximum output torque [Nm]	1800	1160	1800	1160	1800	1160	800							
Inertia [kgcm ²]	4,93	4,84	4,84	4,84	4,84	4,84	4,84							

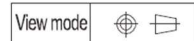
- Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fit with any motor.
- Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLX190



The motor shaft diameter is too small, need to tie in with the shaft sleeve installation, shaft sleeve minimum wall thickness of 1mm

Optical output

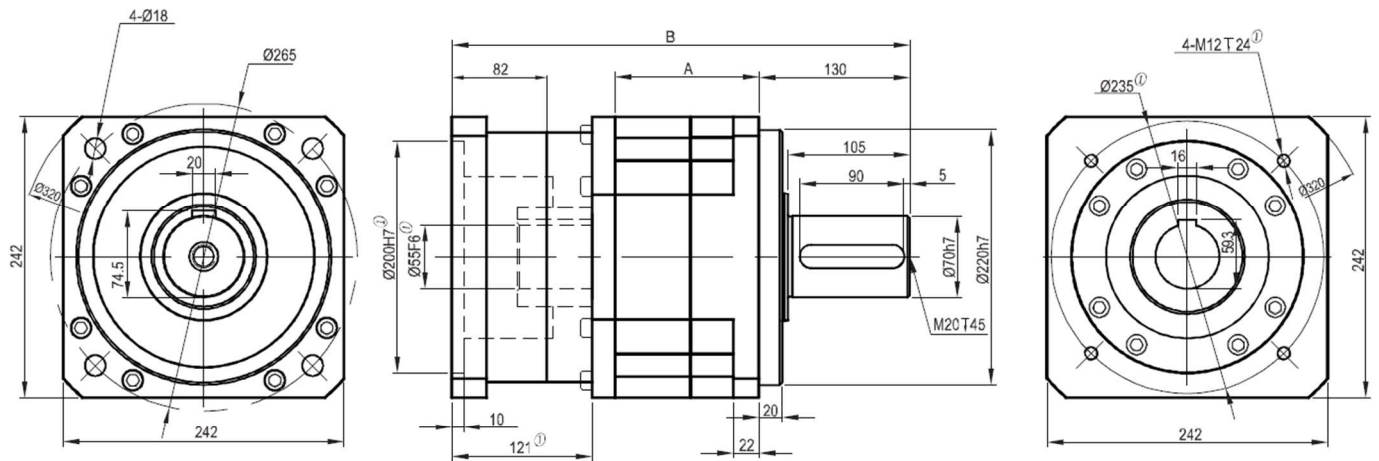


Stage	Stage 1 (i: 4, 5, 8)		Stage 2 (i: 16, 20, 25, 32, 40, 64)	
	A	B	A	B
Length [mm]	112,5	300,5	175,5	383,5
Rated input speed [rpm]	2000		2000	
Maximum input speed [rpm]	4500		4500	
Maximum radial force [N]2	13000		16000	
Maximum axial force [N]2	20000		30000	
No load torque	About 6,0		About 4,1	
Efficiency with full load [%]	96		94	
Backlash [arcmin]	<10		<18	
Noise [dB]	≤68		≤68	
Weight [kg]	42,0		50,0	
Average lifetime [h]	>20000			
Torsional rigidity [Nm/arcmin]	68,0			
Lubricant	Effective lubricant			
Direction of rotation	Input and output to the same			
Protection level	IP65			
Installation	arbitrarily			

Stage	4	5	8	16	20	25	32	40	64				
Rated output torque [Nm]	1780	1345	745	2035	2035	1485	2035	1485	840				
Maximum output torque [Nm]	3560	2690	1490	4070	4070	2970	4070	2970	1680				
Inertia [kgcm ²]	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6				

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
2. Acting on the output shaft center (1/2 axis strengths), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLX242

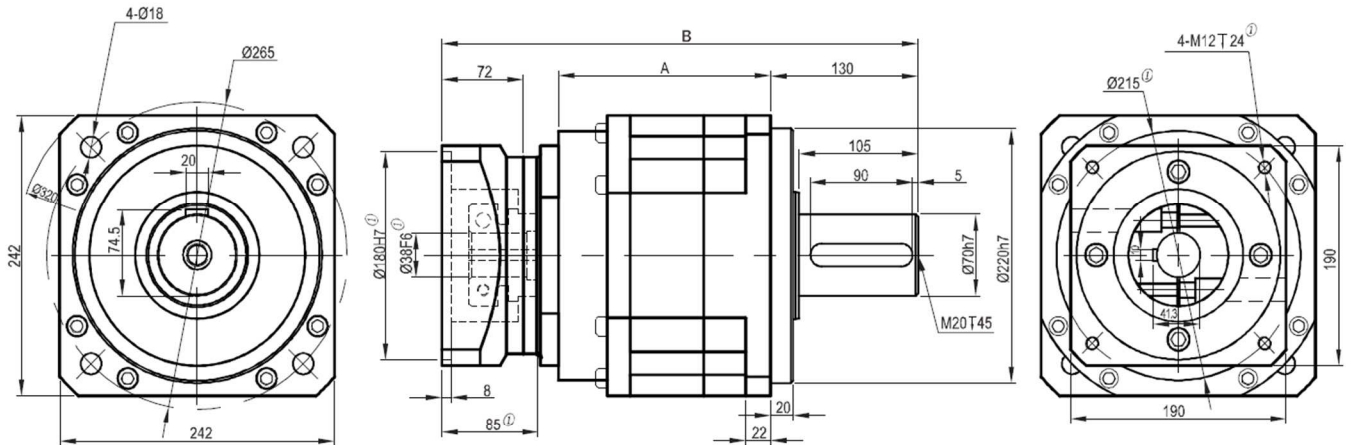


Stage	Stage 1 (i: 4, 5, 8)		Stage 2 (i: 16, 20, 25, 32, 40, 64)	
	A	B	Lenght [mm]	A
Lenght [mm]	124,0	395,0	211,0	482,0
Rated input speed [rpm]	2000		2000	
Maximum input speed [rpm]	4000		4000	
Maximum radial force [N]2	12000		15000	
Maximum axial force [N]2	6400		8600	
No load torque	About 7,0		About 6,0	
Efficiency with full load [%]	96		94	
Backlash [arcmin]	<12		<20	
Noise [dB]	≤70		≤70	
Weight [kg]	71,0		88,0	
Average lifetime [h]	>20000			
Torsional rigidity [Nm/arcmin]	125			
Lubricant	Effective lubricant			
Direction of rotation	Input and output to the same			
Protection level	IP65			
Installation	arbitrarily			

Stage	4	5	8	16	20	25	32	40	64					
Rated output torque [Nm]	3200	2500	1360	3390	3390	2650	3390	2650	1450					
Maximum output torque [Nm]	6400	5000	2720	6780	6780	5300	6780	5300	2900					
Inertia [kgcm ²]	34,6	34,6	34,6	34,6	34,6	34,6	34,6	34,6	34,6					

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
2. Acting on the output shaft center (1/2 axis strenghts), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

PLX242

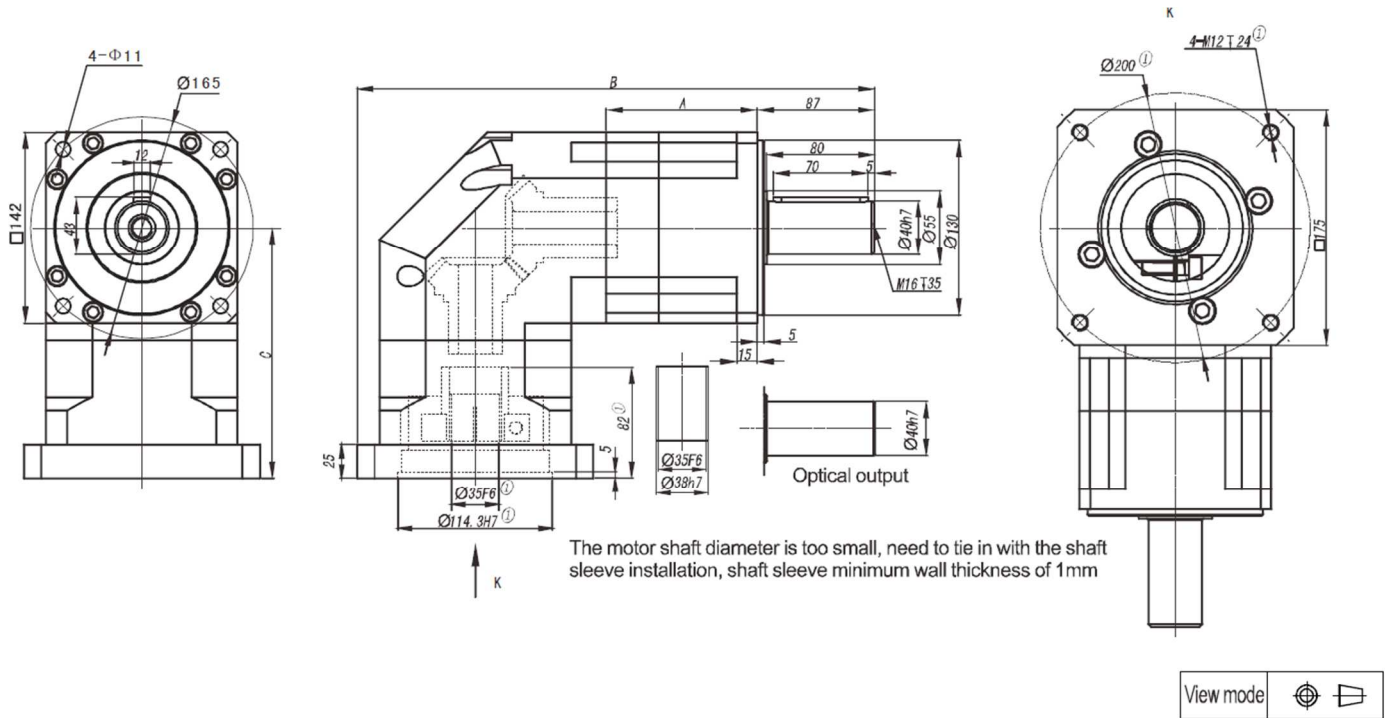


Stage	Stage 2 (i: 16, 20, 25, 32, 40, 64)		Stage 3 (i: 64, 80, 100, 125, 160, 200, 256, 320, 512)	
	A	B	A	B
Lenght [mm]	187,0	420,0	240,0	473,0
Rated input speed [rpm]	2000		2000	
Maximum input speed [rpm]	4500		4500	
Maximum radial force [N]2	15000		25000	
Maximum axial force [N]2	8600		12500	
No load torque	About 5,0		About 5,0	
Efficiency with full load [%]	94		90	
Backlash [arcmin]	<20		<26	
Noise [dB]	≤70		≤70	
Weight [kg]	75,0		92,0	
Average lifetime [h]	>20000			
Torsional rigidity [Nm/arcmin]	125			
Lubricant	Effective lubricant			
Direction of rotation	Input and output to the same			
Protection level	IP65			
Installation	arbitrarily			

Stage	16	20	25	32	40	64	64	80	100	125	160	200	256	320	512
Rated output torque [Nm]	3390	3420	2650	3390	2650	1450	3390	4420	3420	3420	4420	3420	4420	3420	1840
Maximum output torque [Nm]	6780	6840	5300	6780	5300	2900	6780	8840	6840	6840	8840	6840	8840	6840	3680
Inertia [kgcm ²]	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.
2. Acting on the output shaft center (1/2 axis strenghts), permitted radial force and axial force (be forced at the same time), when the output speed of 1-stage reducer is 100 rpm, or 2-stage's output is 50 rpm, or 3-stage's output speed is 10 rpm.

ZPLX142



Stage	Stage 1 (i: 3, 4, 5, 8)			Stage 2 (i: 12, 16, 20, 25, 35, 40, 64)			Stage 3 (i: 60, 64, 80, 100, 120, 160, 200, 256, 320, 512)		
	A	B	C	A	B	C	A	B	C
Length [mm]	112,0	383,5	185,5	151,0	422,5	185,5	190,0	461,5	185,5
No load torque	About 3,2			About 2,1			About 2,1		
Efficiency with full load [%]	95			93			90		
Backlash [arcmin]	<12			<15			<18		
Noise [dB]	≤68			≤68			≤68		
Weight [kg]	26,5			31,5			37,5		
Direction of rotation	Input and output in different directions								
Not listed parameters refer to PLE060 (including the maximum radial force rated input speed, the maximum input speed \ maximum axial force, the average life expectancy, torsional rigidity, lubricating oil, protection grade, installation, reduction ratio, rated output torque, moment of inertia)									

1. Motor is different, matching size will vary, the adapter will be different. Our reducer can be matched to fix with any motor.

ZPT

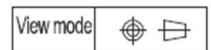
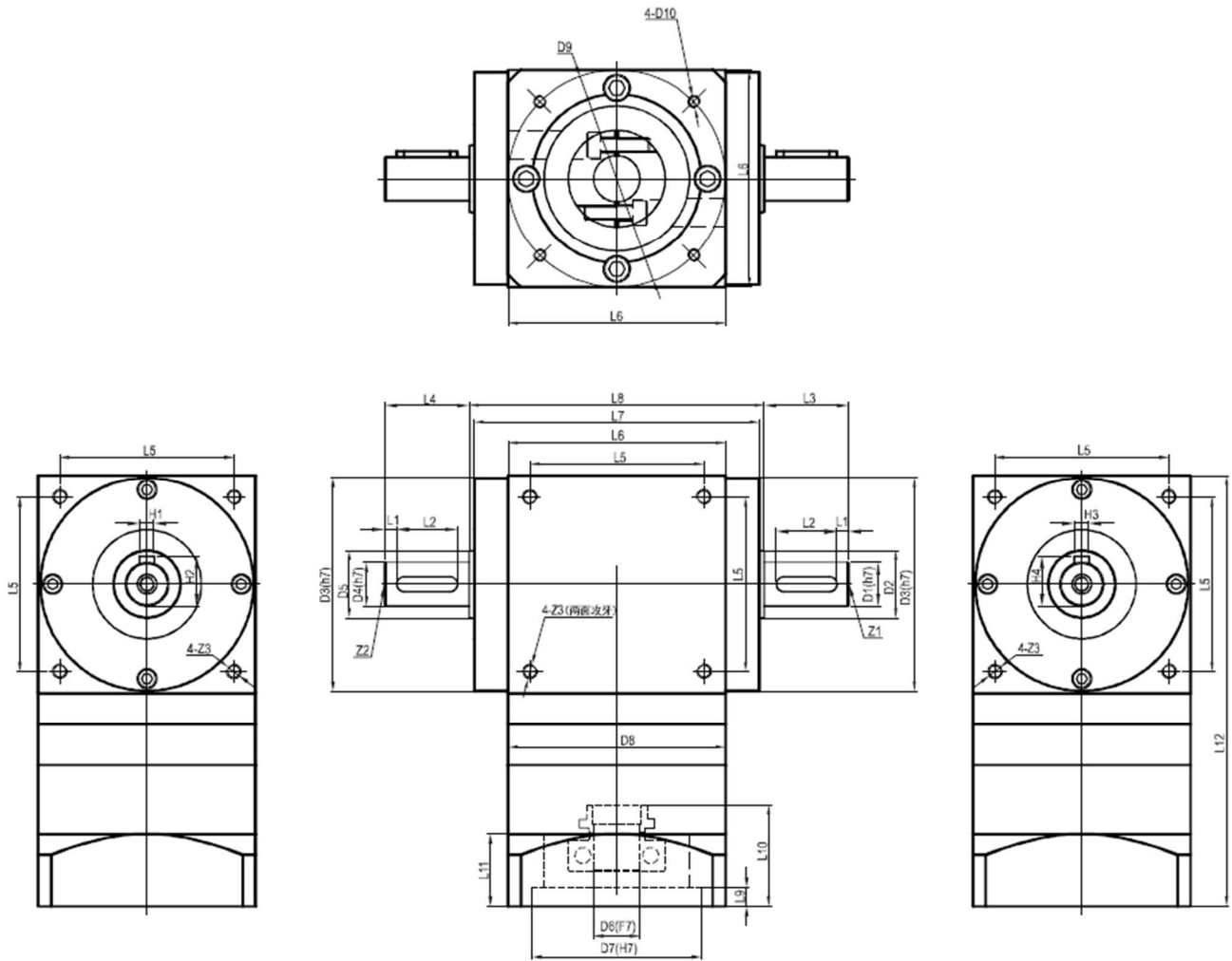
Product information

1. The box enclosure is hexagonal shape, five of which surface mounting holes.
2. 90 degrees, reversing design service life is long, large carrying capacity, smooth transmission, low noise, the reversing transmission efficiency is more than 95%.
3. Arc tooth taper gear set is made of high quality low carbon alloy steel, after carburizing, quenching, grinding the running-in, the realization of high precision hard tooth face closed transmission.
4. ZPT series have four kinds of specifications, a variety of speed ratio, large range of selection and output in variety of forms, can meet the needs of variety of occasions.
5. Slowing, growth in two types of transmission can be realized.

Model specification

ZPT090 — L1 — 5 — S2 — P2 — T / motor size						
Reducer specification	Stage	Ratio	Output shaft way	The degree of precision	Special	The motor size
According to the product series	L1: 1-stage L2: 2-stage L3: 3-stage	According to the product series	S2: With the ordinary flat key standard S1: Optical axis K: Single bond hole hollow	P2: Standard P1: Precision P0: Ultra precision		

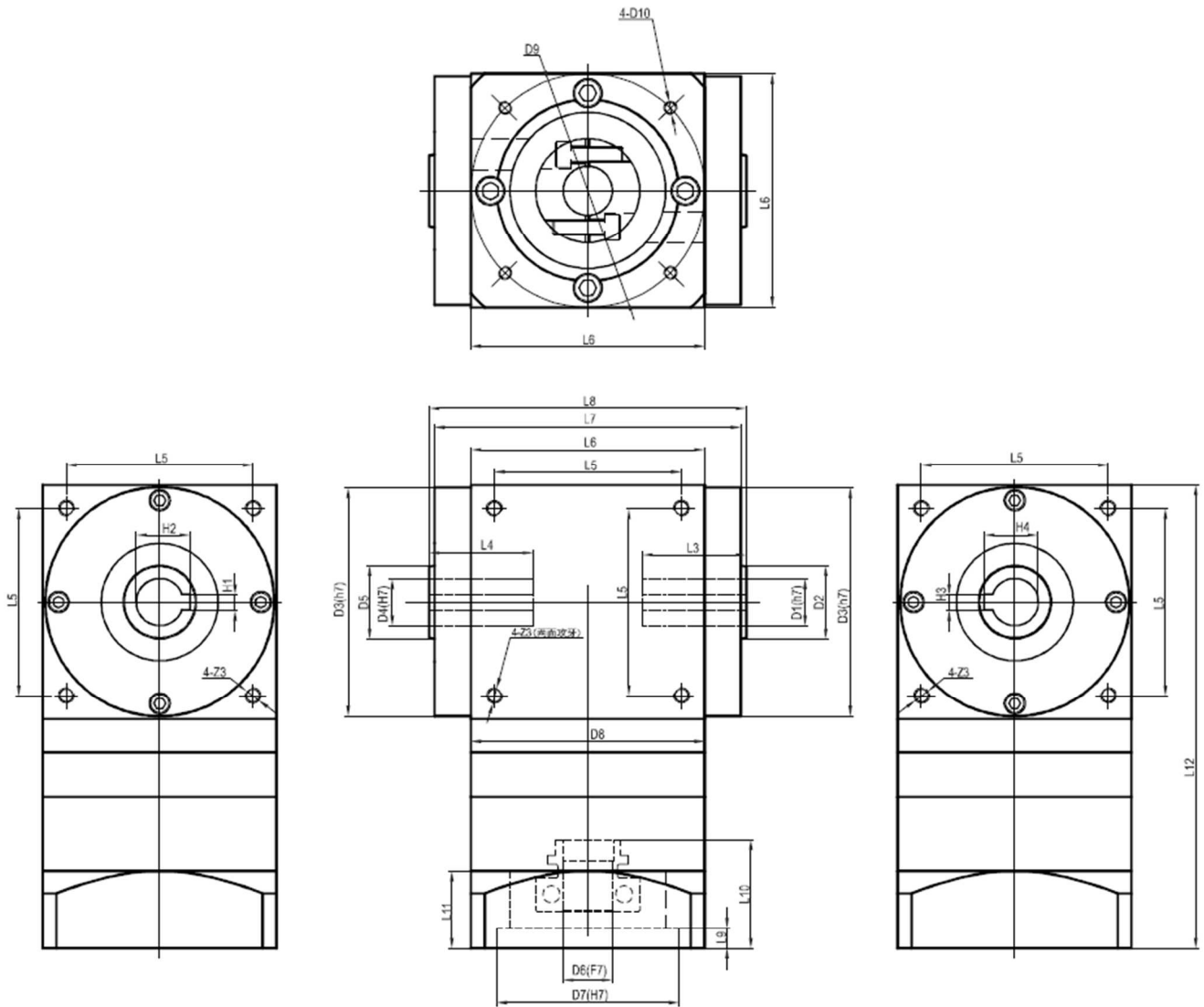
Type	Rated / maximum output torque	Ratio (when reversing)	1-stage ratio (L1)	2 – stage ratio (L2)	3 – stage ratio (L3)
ZPT075	35/70 Nm	2	6, 8, 10, 14, 20	32, 40, 50, 56, 70, 80, 100, 140	128, 160, 200, 224, 250, 280, 320, 350, 400, 500, 560, 700
ZSPT075					
ZPT090	45/90 Nm	1	3, 4, 5, 7, 10	12, 16, 20, 25, 28, 35, 40, 50	80, 100, 125, 140, 175, 200, 250
ZSPT090					
ZPT110	80/160 Nm	1	3, 4, 5, 7, 10	12, 16, 20, 25, 28, 35, 40, 50	80, 100, 125, 140, 175, 200, 250
ZSPT110					
ZPT140	170/340 Nm	1	3, 4, 5, 7, 10	12, 16, 20, 25, 28, 35, 40, 50	80, 100, 125, 140, 175, 200, 250
ZSPT140					
Efficiency		98%	94%	91%	88%



Units: mm

Type	Dimensions																	
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	L1	L2	L3	L4	L5	L6	L7	L8
ZPT075	14	22	73	14	22	14	50	70	70	M4	2	25	28,5	28,5	60	75	104	108
ZPT090	18	28	88	18	28	19	70	90	90	M5	5	25	35	35	72	90	118	122
ZPT110	22	35	108	22	35	19	70	90	90	M5	3	30	35	35	88	110	134	138
ZPT140	32	45	135	32	45	22	110	120	145	M8	5	40	50	50	110	140	170	174

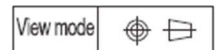
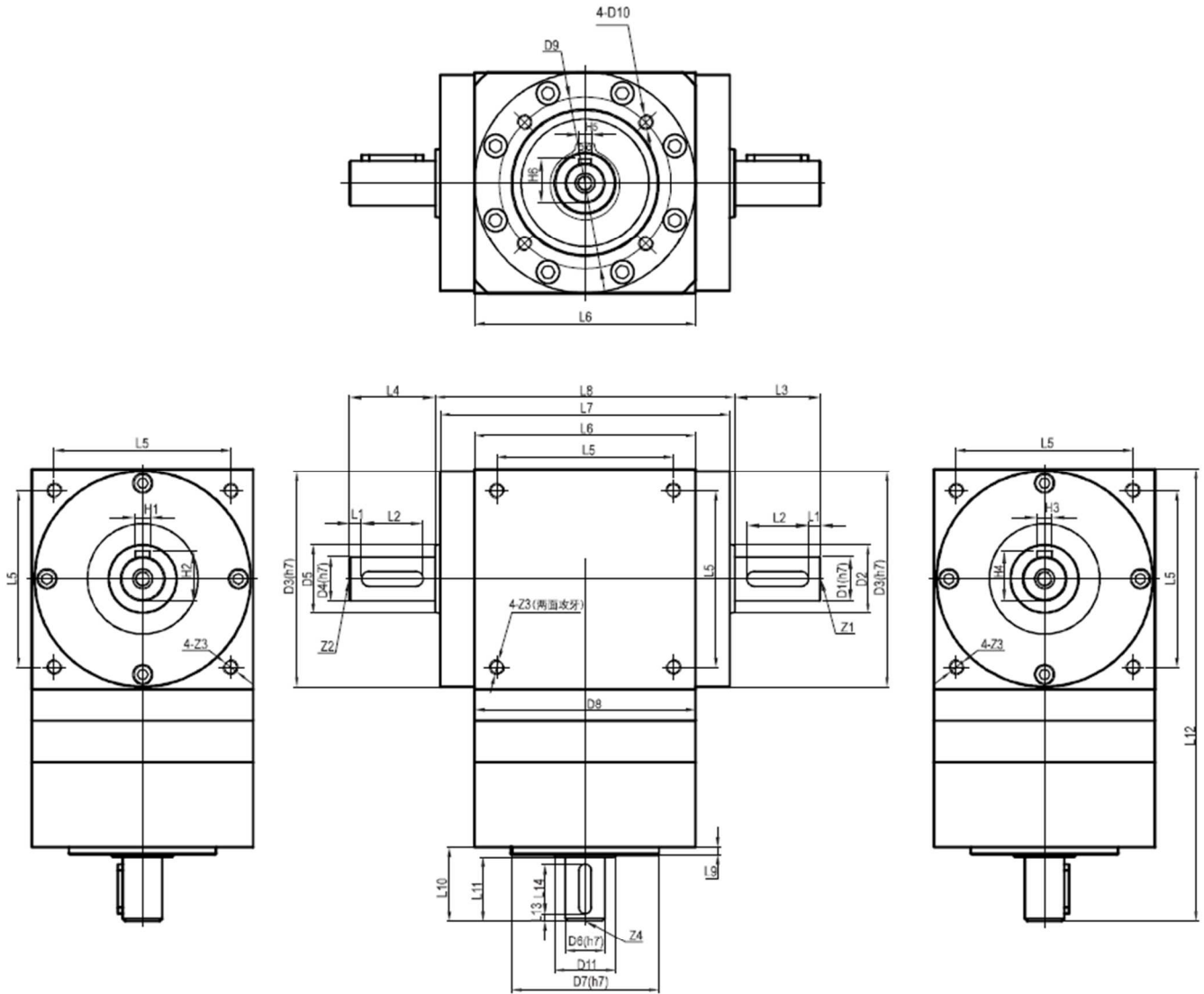
Type	Dimensions												
	L9	L10	L11	L12			H1	H2	H3	H4	Z1	Z2	Z3
				Reversing	1-stage	2-stage							
ZPT075	5	31	22	Indeterminate	144,5	161	5	16	5	16	M5	M5	M6
ZPT090	8	42	30		178,5	202,5	6	20,5	6	20,5	M6	M6	M6
ZPT110	8	42	30		200	224	6,0	24,5	6	24,5	M8	M8	M8
ZPT140	8	59	44		269,5	301	10	35	10	35	M10	M10	M10



Units: mm

Type	Dimensions																	
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	L1	L2	L3	L4	L5	L6	L7	L8
ZPT075	14	22	73	14	22	14	50	70	70	M4	\	\	30	30	60	75	104	108
ZPT090	18	28	88	18	28	19	70	90	90	M5			40	40	72	90	118	122
ZPT110	22	35	108	22	35	19	70	90	90	M5			45	45	88	110	134	138
ZPT140	32	45	135	32	45	22	110	120	145	M8			45	45	110	140	170	174

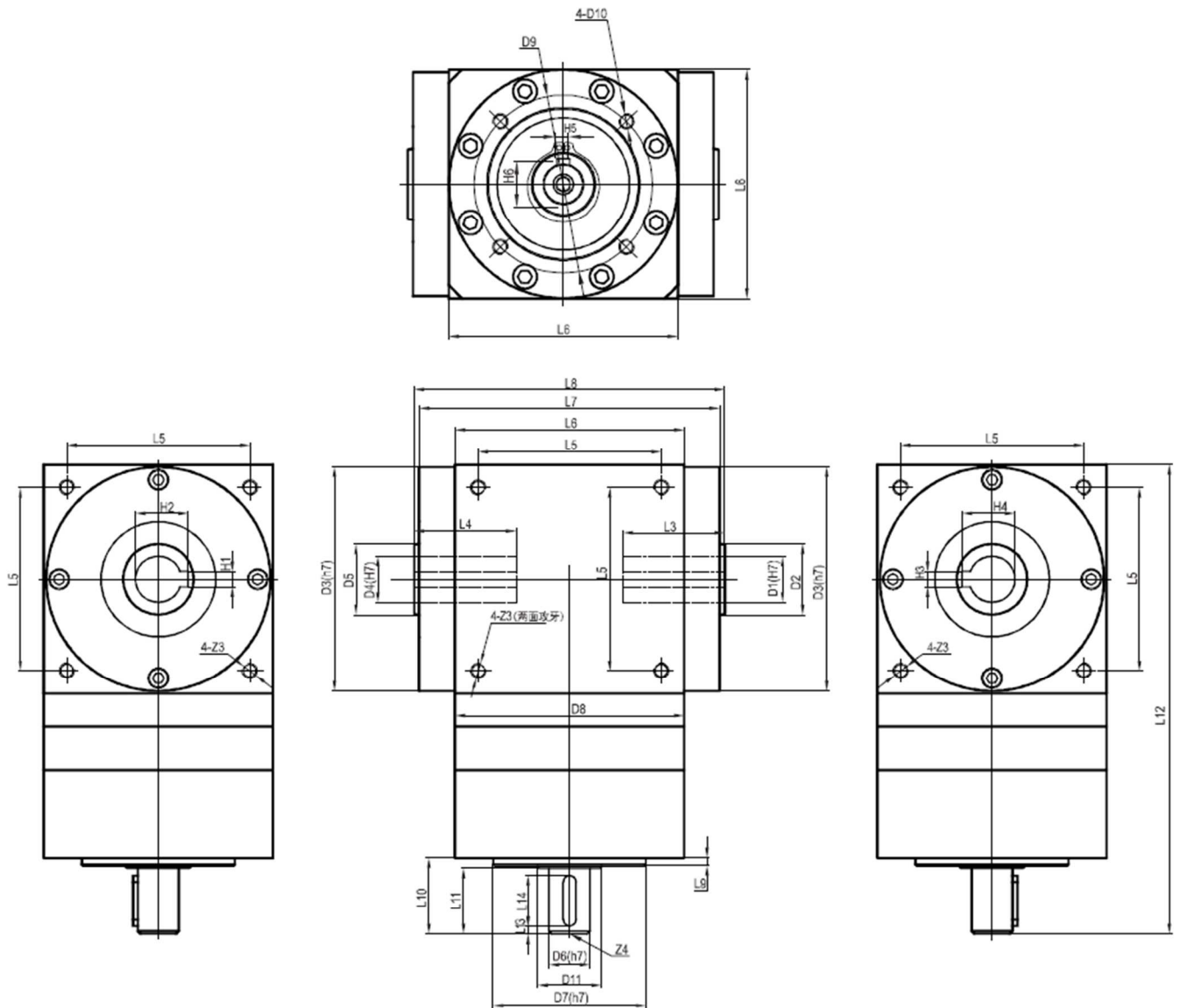
Type	Dimensions											Z1	Z2	Z3
	L9	L10	L11	L12			H1	H2	H3	H4				
				Reversing	1-stage	2-stage								
ZPT075	5	31	22	Indeter-	144,5	161	5	16,3	5	16,3	\	\	M6	
ZPT090	8	42	30	minate	178,5	202,5	6	20,8	6	20,8			M6	
ZPT110	8	42	30		200	224	6	24,8	6	24,8			M8	
ZPT140	8	59	44		269,5	301	8	31,3	8	31,3			M10	



Units: mm

Type	Dimensions																		
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	L1	L2	L3	L4	L5	L6	L7	L8
ZPT075	14	22	73	14	22	10	40	70	52	M5	17	2	25	28,5	28,5	60	75	104	108
ZPT090	18	28	88	18	28	16	60	90	70	M6	25	5	25	35	35	72	90	118	122
ZPT110	22	35	108	22	35	16	60	90	70	M6	25	3	30	35	35	88	110	134	138
ZPT140	32	45	135	32	45	20	80	120	100	M10	35	5	40	50	50	110	140	170	174

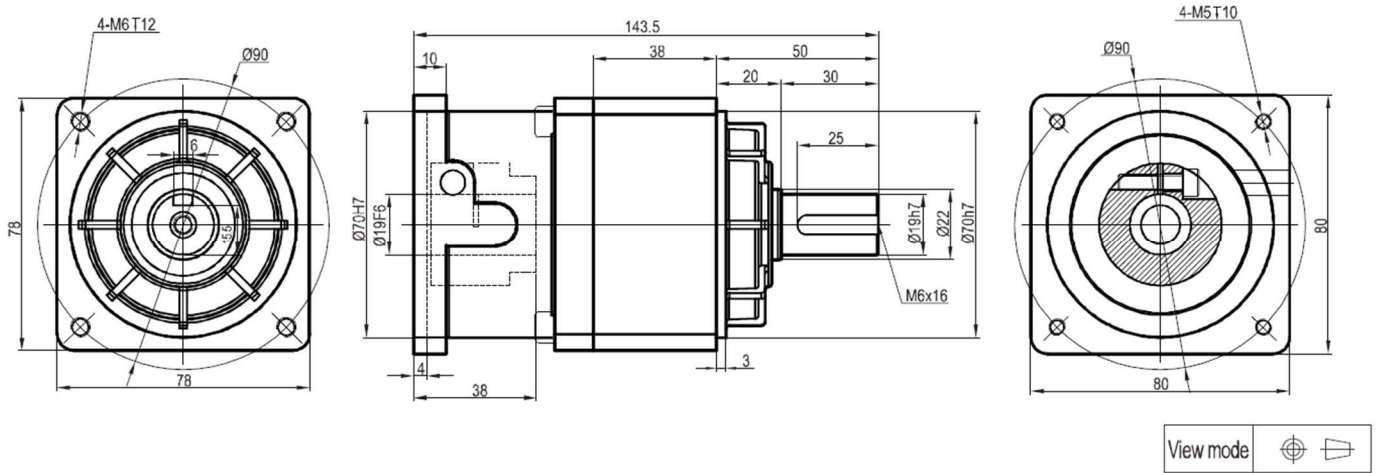
Type	Dimensions																	
	L9	L10	L11	L12			L13	L14	H1	H2	H3	H4	H5	H6	Z1	Z2	Z3	Z4
				Cof.	1-st	2-st												
ZPT075	3	25	21	Nie	153	169,5	3	15	5	16	5	16	3	11,2	M5	M5	M6	M3
ZPT090	3	30	26	okr	189,5	213,5	3	20	6	20,5	6	20,5	5	18	M6	M6	M6	M5
ZPT110	3	30	26	eślo	235	259	3	20	6	24,5	6	24,5	5	18	M8	M8	M8	M5
ZPT140	4	46	40	ny	286,5	318	5	30	10	35	10	35	6	22,5	M10	M10	M10	M6



Units: mm

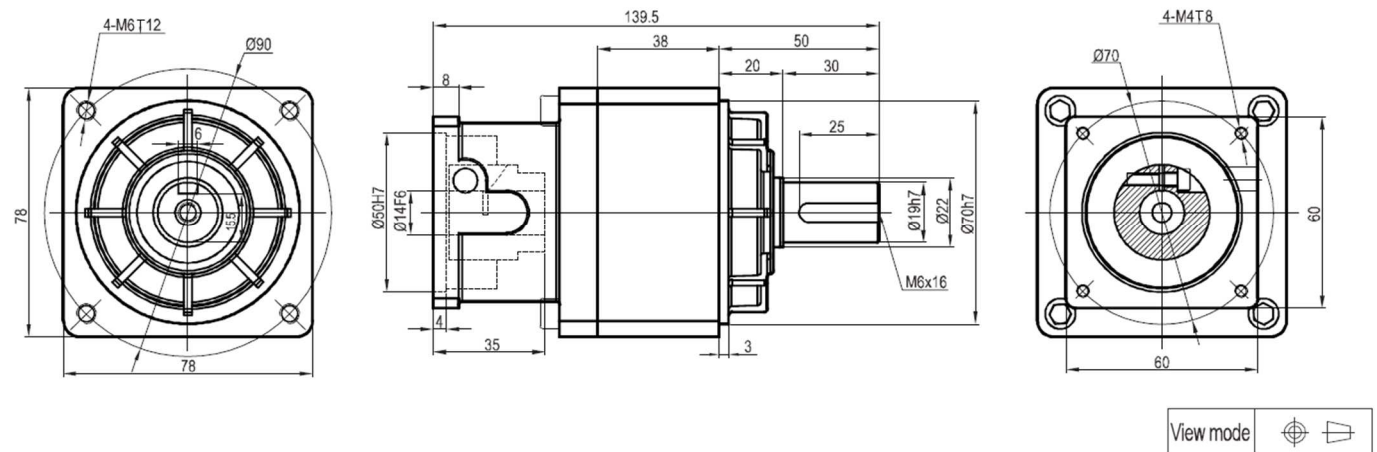
Type	Dimensions																		
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	L1	L2	L3	L4	L5	L6	L7	L8
ZPT075	14	22	73	14	22	10	40	70	52	M5	17	\	\	30	30	60	75	104	108
ZPT090	18	28	88	18	28	16	60	90	70	M6	25			40	40	72	90	118	122
ZPT110	22	35	108	22	35	16	60	90	70	M6	25			45	45	88	110	134	138
ZPT140	32	45	135	32	45	20	80	120	100	M10	35			45	45	110	140	170	174

Type	Dimensions																	
	L9	L10	L11	L12			L13	L14	H1	H2	H3	H4	H5	H6	Z1	Z2	Z3	Z4
				Reve rsing	1- stage	2- stage												
ZPT075	3	25	21	Ind	153	169,5	3	15	5	16	5	16	3	11,2	\	\	M6	M3
ZPT090	3	30	26	eter	189,5	213,5	3	20	6	20,5	6	20,5	5	18			M6	M5
ZPT110	3	30	26	min	235	259	3	20	6	24,5	6	24,5	5	18			M8	M5
ZPT140	4	46	40	ate	286,5	318	5	30	8	31,3	8	31,3	6	22,5			M10	M6



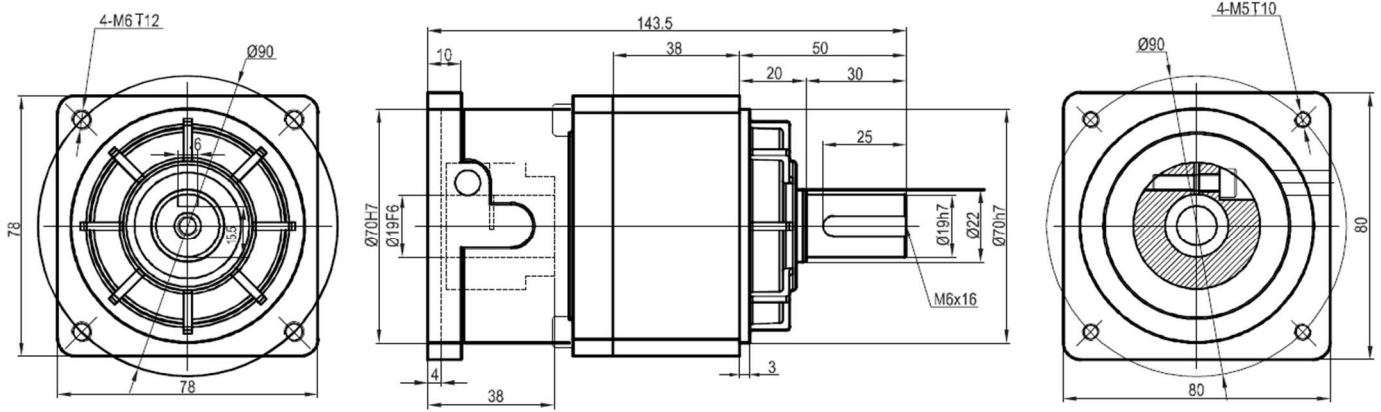
Type	Ratio	Power	Rated / maximum output torque	Rated / maximum input torque	Actual / maximum output torque	Inertia	Backlash
VLF078-L1-5-S2-P2	5:1	0,75 kW	92/184 Nm	3000 / 6000 obr/min	12/35,5 Nm	0,291 kgcm ²	<10 arcmin
VLF078-L1-5-S2-P1							<6 arcmin
VLF078-L1-5-S2-P0							<4 arcmin

Type	Efficiency with full load	Installation	Lubricant	Protection level	Average lifetime	Weight	Key	Flange
VLF078-L1-5-S2-P2	96%	dowolna	Efektywny smar	IP65	20000h	1,95 kg	GB1096-79	DIN 42955-R
VLF078-L1-5-S2-P1								
VLF078-L1-5-S2-P0								



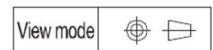
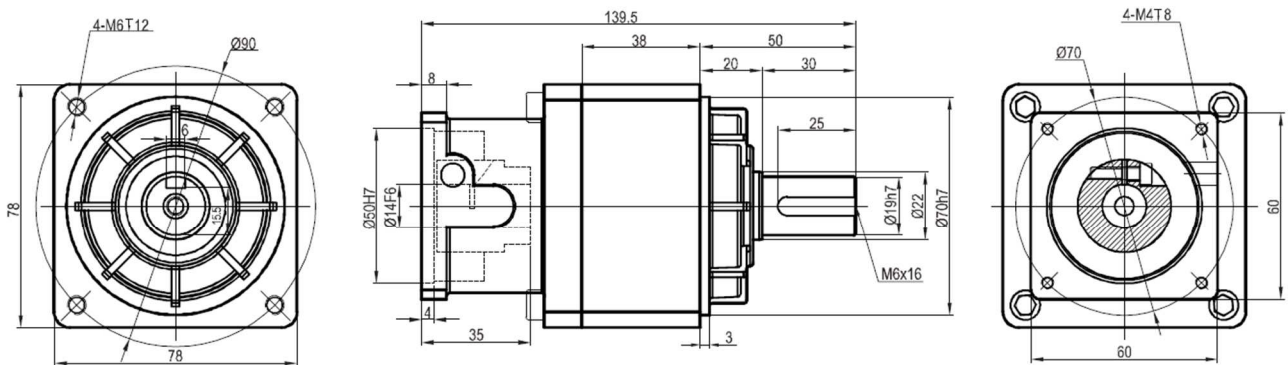
Type	Ratio	Power	Rated / maximum output torque	Rated / maximum input torque	Actual / maximum output torque	Inertia	Backlash
VLF078-L1-5-S2-P2	5:1	0,4 kW	92/184 Nm	3000 / 6000 obr/min	6,5/19,1 Nm	0,291 kgcm ²	<10 arcmin
VLF078-L1-5-S2-P1							<6 arcmin
VLF078-L1-5-S2-P0							<4 arcmin

Type	Efficiency with full load	Installation	Lubricant	Protection level	Average lifetime	Weight	Key	Flange
VLF078-L1-5-S2-P2	96%	dowolna	Efektywny smar	IP65	20000h	1,95 kg	GB1096-79	DIN 42955-R
VLF078-L1-5-S2-P1								
VLF078-L1-5-S2-P0								



Type	Ratio	Power	Rated / maximum output torque	Rated / maximum input torque	Actual / maximum output torque	Inertia	Backlash
VLF078-L1-9-S2-P2	9:1	0,75 kW	41/82 Nm	3000 / 6000 obr/min	21,6/63,9 Nm	0,291 kgcm ²	<10 arcmin
VLF078-L1-9-S2-P1							<6 arcmin
VLF078-L1-9-S2-P0							<4 arcmin

Type	Efficiency with full load	Installation	Lubricant	Protection level	Average lifetime	Weight	Key	Flange
VLF078-L1-5-S2-P2	96%	dowolna	Efektywny smar	IP65	20000h	1,75 kg	GB1096-79	DIN 42955-R
VLF078-L1-5-S2-P1								
VLF078-L1-5-S2-P0								



Type	Ratio	Power	Rated / maximum output torque	Rated / maximum input torque	Actual / maximum output torque	Inertia	Backlash
VLF078-L1-9-S2-P2	9:1	0,4 kW	41/82 Nm	3000 / 6000 obr/min	21,6/63,9 Nm	0,291 kgcm ²	<10 arcmin
VLF078-L1-9-S2-P1							<6 arcmin
VLF078-L1-9-S2-P0							<4 arcmin

Type	Efficiency with full load	Installation	Lubricant	Protection level	Average lifetime	Weight	Key	Flange
VLF078-L1-5-S2-P2	96%	dowolna	Efektywny smar	IP65	20000h	1,75 kg	GB1096-79	DIN 42955-R
VLF078-L1-5-S2-P1								
VLF078-L1-5-S2-P0								

Installation

The correct installation, use and maintenance of the reducer is an important link to ensure the normal operation of machinery and equipment. Therefore, before you install reducer, please strictly in accordance with the following installation related matters, serious assembly.

1. Connected with motion system

Step 1: Confirm the motor and reducer is intact before installation and strictly check the size of each part of motor and the speed reducer is connected is matched, mainly refers to the convex table size and speed reducer groove size motor and tolerances (Fig. 1).

Step 2: The dustproof reducer flange lateral process hole on the cover, adjust the input shaft of the speed reducer elastic clamping device so that the fastening bolt and the process holes, insert the inner six angle wrench (Fig. 2). The procedure is suitable for connecting the elastic clamping mechanism.

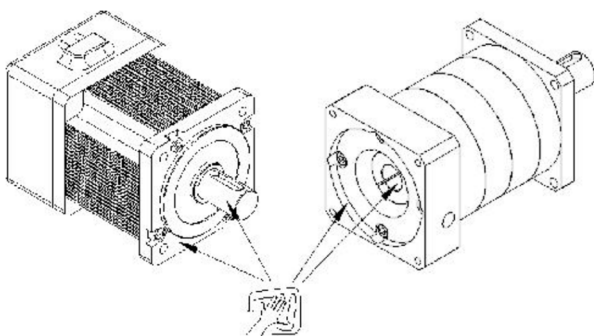


Fig. 1

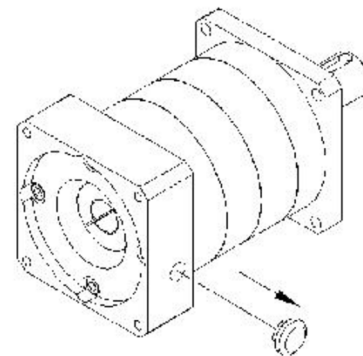


Fig. 2

Step 3: Take the motor shaft key (key connection slightly), connecting part of the output shaft of the motor, the positioning boss and reducer anti rust oil gasoline or zinc sodium water to wipe the net (Fig. 3), its purpose is to ensure that the close connections and the flexibility of the operation and prevent unnecessary wear and tear, the electric machine and reducer natural join. The connection must ensure that the output shaft the speed reducer and motor input shaft coaxial line and two outer flanges parallel, if the shaft is not consistent, will cause the motor shaft breakage or reducer gear wear. In addition when in installation, prohibited the use of the hammer strike, to prevent axial and radial force is too large damage to the bearing or gear (Fig. 4).

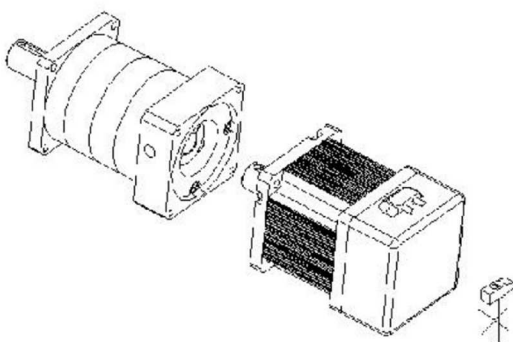


Fig. 3

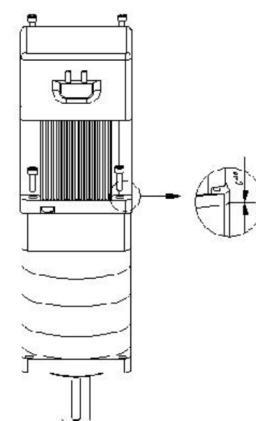
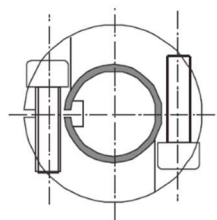


Fig. 4

Step 4: When connect the motor and reducer, please ensure the motor shaft keyway with the fastening bolt upright. In order to ensure the uniform stress, please make the installation bolt rotating arbitrary diagonal position, but don't tighten, then screw on the other two diagonal position of the mounting bolts finally by tightening the four mounting bolt (Fig. 5). Finally tighten the fastening bolt. High precision fastening bolts with torque wrench according to the fixed torque data indicated (see Table 1) were fixed and examined (Fig. 6).

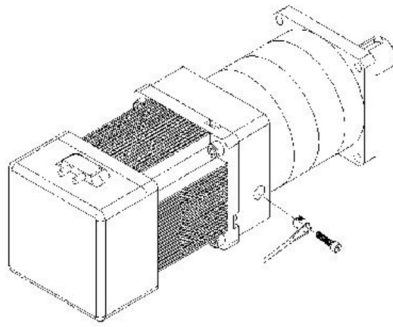


Fig. 5

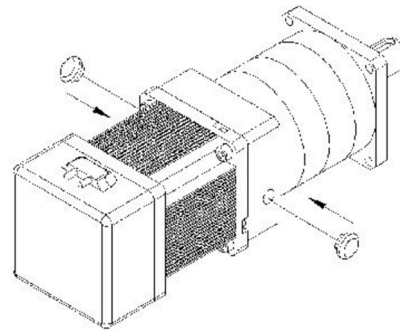


Fig. 6

Screw size	Six hexagon head size	Magnitude of 10,9 screw locking torque		Magnitude of 12,9 screw locking torque	
	mm	Nm	In-lbs	Nm	In-lbs
M3x0,5P	2,5	1,8	16	2,1	19
M4x0,7P	3,0	4,1	37	4,9	44
M5x0,8P	4,0	8,2	73	9,8	87
M6x1P	5,0	14	124	17	151
M8x1,25P	6,0	34	302	41	364
M10x1,5P	8,0	67	594	80	709
M12x1,75P	10,0	116	1028	139	1232
M14x2P	12,0	186	1648	223	1976
M16x2P	14,0	286	2534	343	3038

2. Connecting with the working machine

Installation and working machine, attention should be paid to the center axis of transmission, the error may not use the compensation amount is greater than all. On the good service life can be prolonged and transmission efficiency is obtained. Install the transmission on the output shaft are not allowed to use a hammer percussion, usually with inner screw assembly jig and shaft ends, blot driving piece pressing, damaged or is likely to cause of internal parts of reducer. Best not to use steel fixed coupling, because this kind of coupling installation is improper, will cause unnecessary loads, resulting in bearing early damage, even causing the output shaft fracture.

3. Speed reducer fixed

Reducer should be firmly installed in the steady reference or support and the circulation of cooling air flow. Reference or support is not reliable, operation will cause vibration and noise and urges the bearing and gear damage. When the drive coupling protrusion or a gear, sprocket drive, should be considered with the protection device. After installation, should be installed according to the comprehensive examination order position accuracy, reliability of the fasteners, pressed, after installation should be flexible rotation. Reducer loading is required when the load test run, time shall not be less than 2 hours. Operation should be smooth, no impact, vibration, noise and oil leakage phenomenon, found abnormal should be excluded. If the ambient temperature is too high or too low, the need to change the grease.