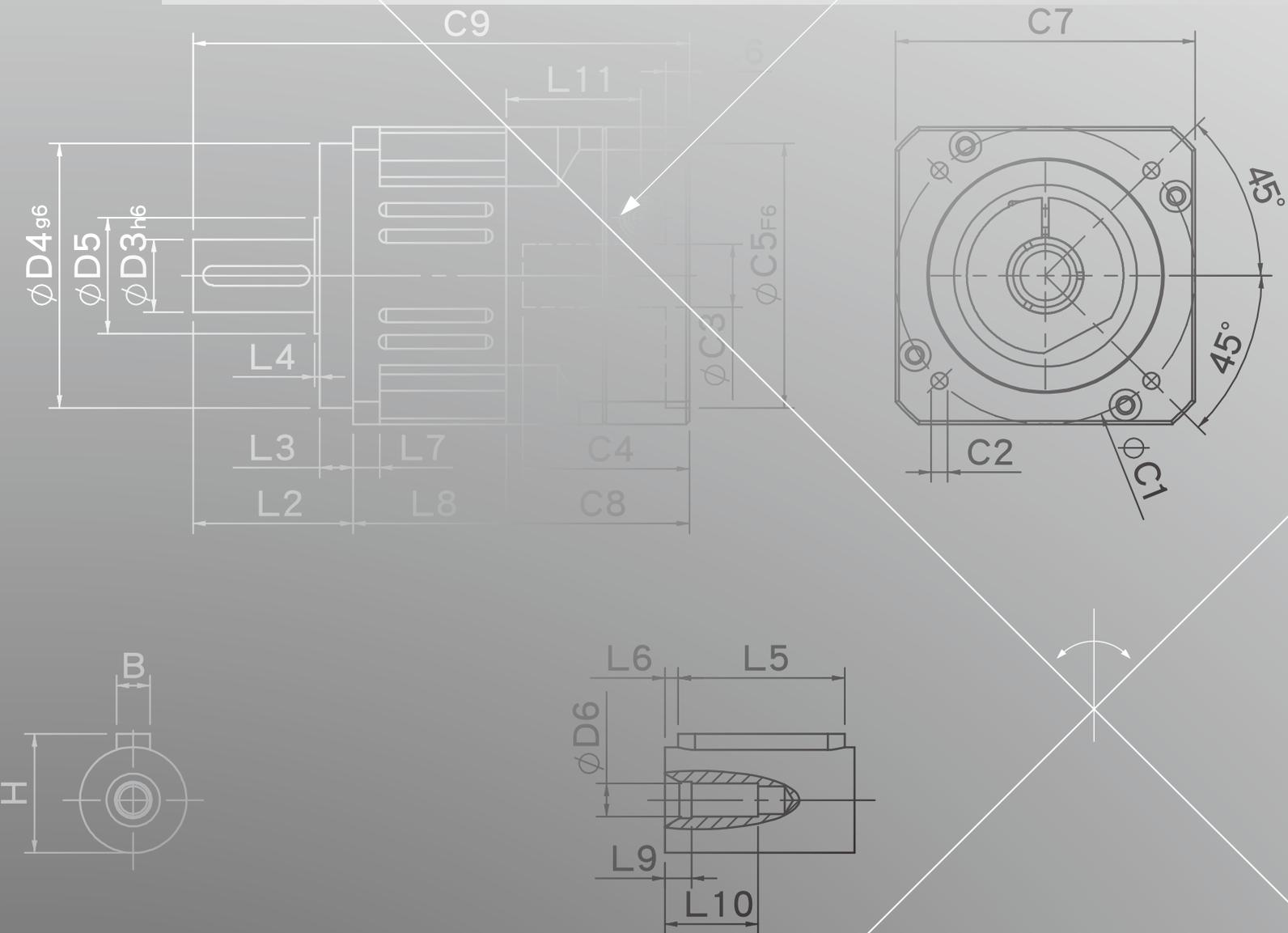
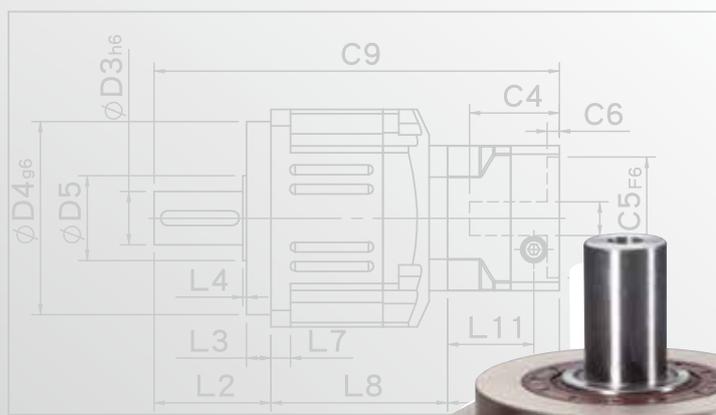
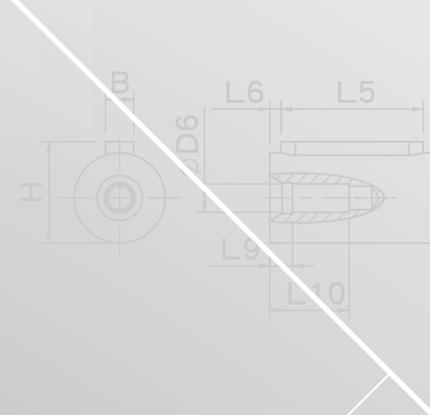
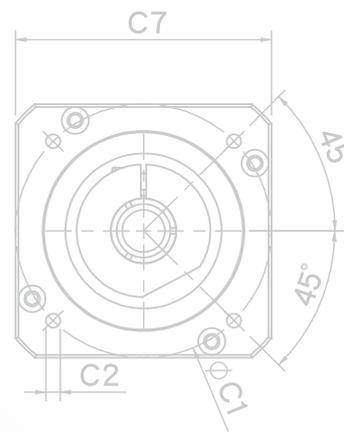
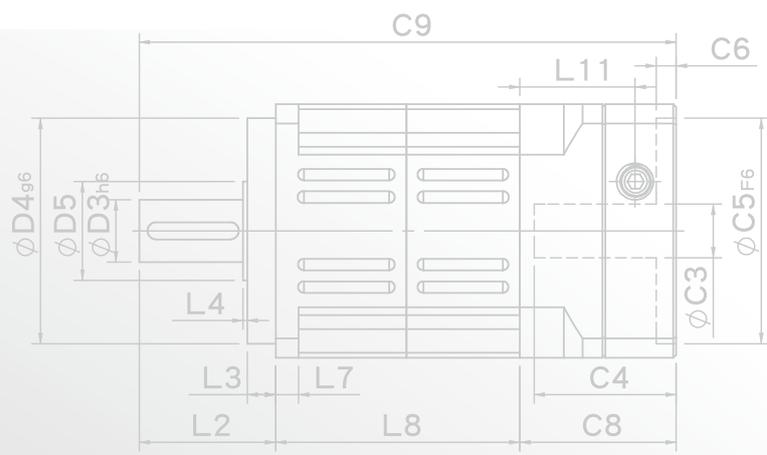
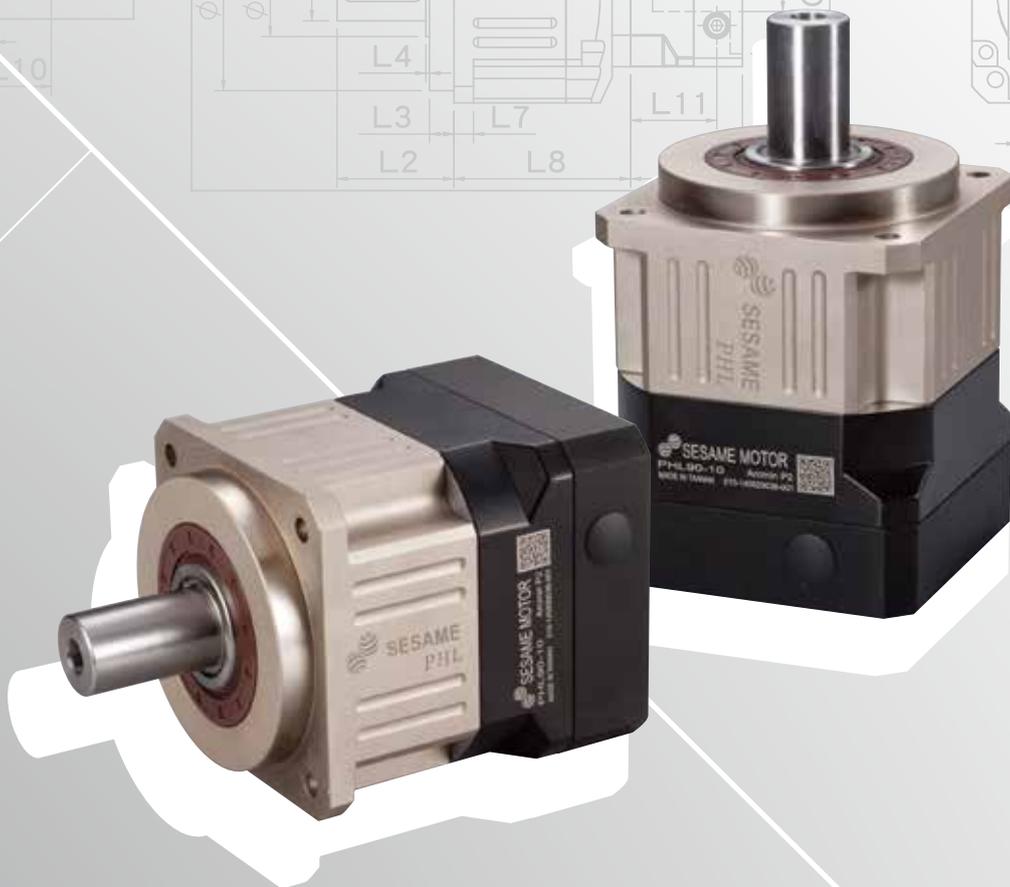
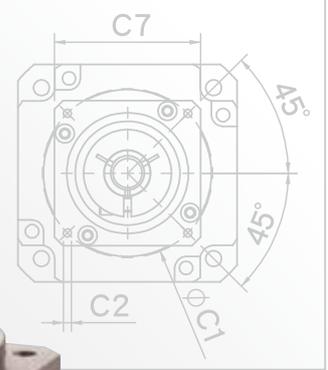


PHL SERIES

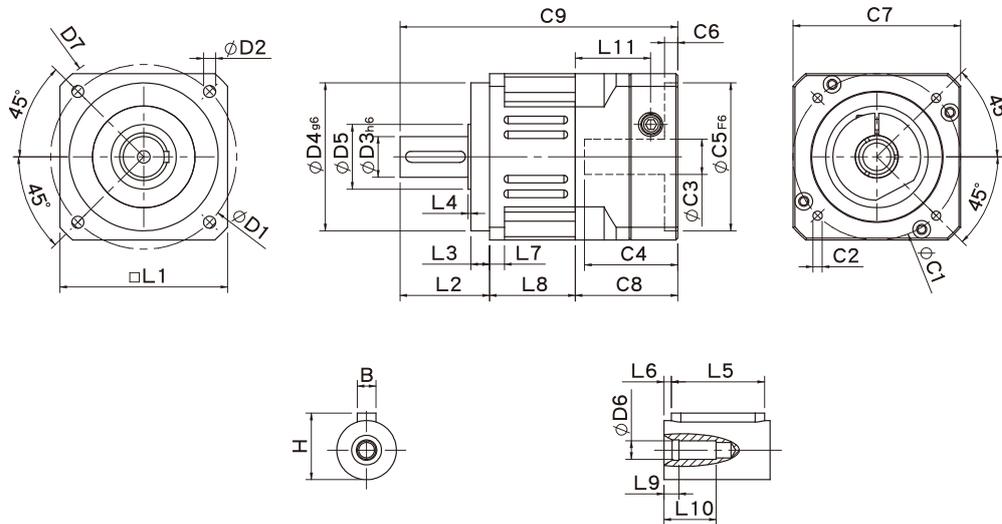




PHL60T/PHL90T/PHL115T



PHL Single Stage Dimensions



Specifications

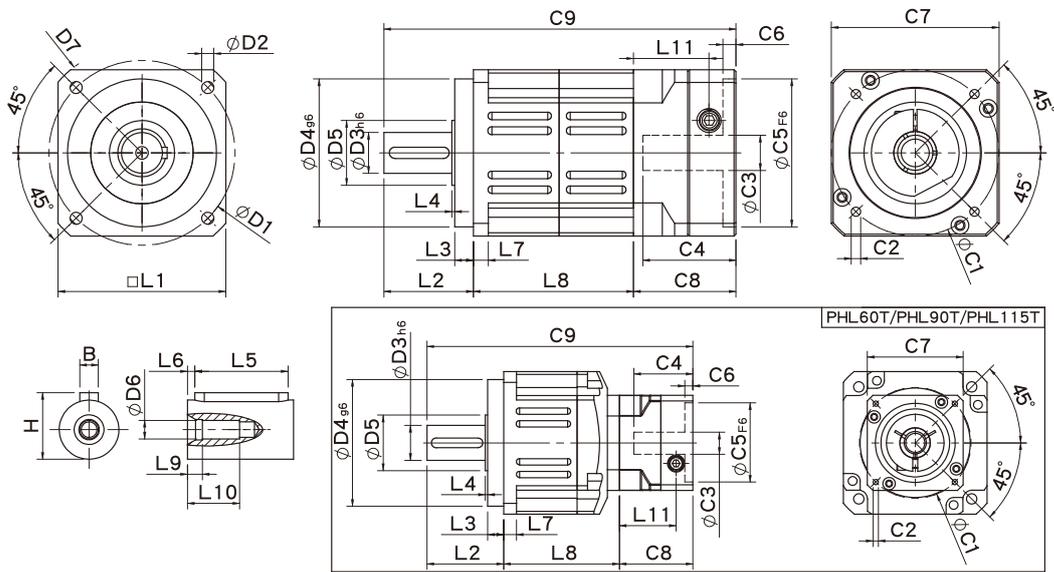
Unit:mm

Dimensions	PHL42	PHL60	PHL90
D1	50	70	100
D2	3.4	5.5	6.5
D3 _{h6}	13	16	22
D4 _{g6}	35	50	80
D5	15	25	35
D6	M4x0.7P	M5x0.8P	M8x1.25P
D7	56	80	118
L1	42.6	60	90
L2	26	37	48
L3	5.5	7	10
L4	1	1.5	1.5
L5	15	25	32
L6	2	2	3
L7	4	6	8
L8	28.3	37	46
L9	4	4	4.5
L10	14	16.5	20.5
L11	29	35.5	40.5
C1 ²	46	70	90
C2 ²	M4x0.7P	M5x0.8P	M6x1.0P
C3 ²	≤8/≤11	≤14	≤19/≤24
C4 ²	27	37	47
C5 ² _{F6}	30	50	70
C6 ²	4	4	6
C7 ²	42.6	60	90
C8 ²	38.5	46	55
C9 ²	92.8	120	149
B	5	5	6
H	15	18	24.5

★ C1~C9 are motor specific dimensions (metric std shown). Size may vary according to motor flange.

★ Specification subject to change without notice.

PHL Double Stage Dimensions



Specifications

Unit:mm

Dimensions	PHL42	PHL60	PHL60T	PHL90	PHL90T
D1	50		70		100
D2	3.4		5.5		6.5
D3 h6	13		16		22
D4 g6	35		50		80
D5	15		25		35
D6	M4x0.7P		M5x0.8P		M8x1.25P
D7	56		80		118
L1	42.6		60		90
L2	26		37		48
L3	5.5		7		10
L4	1.5		1.5		1.5
L5	15		25		32
L6	2		2		3
L7	4		6		8
L8	55.3	70	65.5	86	78.5
L9	4		4		4.5
L10	14		16.5		20.5
L11	29	35.5	29	40.5	35.5
C1 ²	46	70	46	90	70
C2 ²	M4x0.7P	M5x0.8P	M5x0.8P	M6x1.0P	M5x0.8P
C3 ²	≤8/≤11	≤14	≤8/≤11	≤19/≤24	≤14
C4 ²	27	37	27	47	37
C5 ² F6	30	50	30	70	50
C6 ²	4	4	4	6	4
C7 ²	42.6	60	42.6	90	60
C8 ²	38.5	46	38.5	55	46
C9 ²	119.8	153	141	189	172.5
B	5		5		6
H	15		18		24.5

★ C1~C9 are motor specific dimensions (metric std shown). Size may vary according to motor flange.

★ Specification subject to change without notice.

PHL Specifications Table

Specifications		Stage	Ratio	PHL-42	PHL-60	PHL-90
Nominal Output Torque T_{2N}	N • m	1	3	19	53	145
			4	20	55	150
			5	17	54	140
			6	15	46	135
			7	14	44	125
			8	12	41	110
			9	11	37	95.0
		10	11	37	95.0	
		Stage	Ratio	PHL-42	PHL-60(T)	PHL-90(T)
		2	15	19	53	145
			20	20	55	150
			25	17	54	140
			30	17	54	140
			35	17	54	140
			40	17	54	140
			45	17	54	140
			50	17	54	140
			60	15	46	135
70	14		44	125		
80	12		41	110		
90	11	37	95			
100	11	37	95			
Emergency Stop Torque T_{2NOT}	N • m	(3.0 times of Nominal Output Torque) (*Max. Output Torque T_{2B} =60% of Emergency Stop Torque)				
Nominal Input Speed n_{1N}	rpm	1,2	3-100	5000	5000	4000
Max. Input Speed n_{1max}	rpm	1,2	3-100	10000	10000	8000
Micro Backlash P0	arcmin	1	3-10	≤ 1	≤ 1	≤ 1
		2	15-100	≤ 3	≤ 3	≤ 3
Precision Backlash P1	arcmin	1	3-10	≤ 3	≤ 3	≤ 3
		2	15-100	≤ 5	≤ 5	≤ 5
Standard Backlash P2	arcmin	1	3-10	≤ 5	≤ 5	≤ 5
		2	15-100	≤ 7	≤ 7	≤ 7
Torsional Rigidity	N • m /arcmin	1,2	3-100	2.5	6	12
Max. Radial Load F_{2rB}^1	N	1,2	3-100	760	1570	2780
Max. Axial Load F_{2aB}^1	N	1,2	3-100	410	750	1870
Operating Temp.	°C	-10 °C ~ +90 °C				
Service Life	hr	20,000 (10,000 Continuous operation)				
Efficiency	%	1	3-10	≥ 97%		
		2	15-100	≥ 94%		
Weight	kg	1	3-10	0.6	1.3	3.5
		2	15-100	0.9	2.0/1.6	5.6/3.9
Mounting Position	-	1,2	3-100	Any direction		
Noise Level ²	dBA/1m	1,2	3-100	56	58	60
Protection Class	-	1,2	3-100	IP65		
Lubrication	-	1,2	3-100	Synthetic Lubricant		
Inertia (J1)						
Stage	Ratio	unit		PHL-42	PHL-60	PHL-90
1	3	Kg • cm ²		0.03	0.23	0.97
	4			0.02	0.18	0.67
	5			0.02	0.17	0.65
	6/7/8			0.02	0.14	0.60
	9/10			0.02	0.14	0.58
Stage	Ratio			PHL-42	PHL-60(T)	PHL-90(T)
2	15/20/25			0.02	0.17(0.02)	0.65(0.17)
	30/35/40			0.02	0.14(0.02)	0.60(0.14)
	45/50/60/70/80/90/100			0.02	0.14(0.02)	0.58(0.14)
* 1. Applied to the output shaft center at 100 rpm.						
* 2. Measured at 3000 rpm with no load. These values are measured by gearbox with ratio = 10 (1-stage) or ratio = 100 (2-stage) at nominal input speed or 3000 rpm (if nominal input speed is higher than 3000 rpm) with no load.						
※ The above figures/specifications are subject to change without prior notice.						

Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.