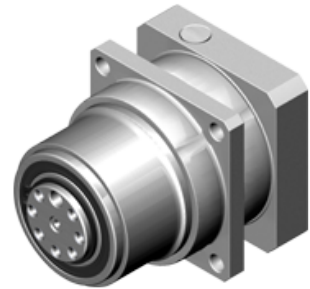


# PL serie

## Overview

- Black coated steel housing, aluminum output and motor adapter flange
- Steel output shaft, special for belt pulley
- Spur gear design
- Nominal torques:
  - $T_{2N}$  : 27 Nm – 143 Nm
- Ratios
  - 1-stage : 3 / 4 / 5 / 7 / 10
  - 2-stage : 12 / 15 / 16 / 20 / 25 / 30 / 35 / 40 / 50 / 70 / 100
- Low backlash
  - 1-stage :  $\leq 6 \sim 7$  arcmin
  - 2-stage :  $\leq 8 \sim 9$  arcmin
- High efficiency
  - 1-stage :  $\geq 97\%$
  - 2-stage :  $\geq 94\%$
- Easy mount
- Compact structure
- Sizes available: PL 070 / PL 090 / PL 120



# Specifications

PL		Stage	Ratio <sup>(1)</sup>	Type	PL 070	PL 090	PL 120
Nominal output torque $T_{2N}$	Nm	1	3	All	30	67	107
			4		39	86	137
			5		40	89	140
			7		37	80	128
			10		27	59	93
			12		31	69	109
			15		31	70	110
			16		39	86	137
		2	20		39	88	141
			25		40	89	140
			30		32	72	111
			35		36	80	130
			40		41	92	143
			50		42	90	143
			70	37	81	131	
			100	27	59	93	
Emergency stop torque $T_{2NOT}$	Nm	1,2	3~100	All	3 times nominal output torque $T_{2N}$		
Max. Acceleration torque $T_{2B}$	Nm	1,2	3~100	All	$T_{2B} = 60\%$ of $T_{2NOT}$		
No load running torque <sup>(4)</sup>	Nm	1	3~10	All	0,1	0,4	0,8
		2	12~100	All	0,1	0,3	0,4
Backlash <sup>(2)</sup>	arcminutes	1	3~10	All	≤7	≤6	≤6
		2	12~100	All	≤9	≤8	≤8
Torsional rigidity <sup>(4)</sup>	Nm/arcmin	1,2	3~100	All	2,2	8	12
Nominal input speed $n_{1N}$	rpm	1,2	3~100	All	4.000	3.600	3.600
Max. input speed $n_{1B}$	rpm	1,2	3~100	All	6.000	6.000	4.800
Max. radial load $F_{2rB}$ <sup>(3)</sup>	N	1,2	3~100	All	2.600	3.100	6.550
Max. axial load $F_{2aB}$ <sup>(3)</sup>	N	1,2	3~100	All	1.300	1.550	3.275
Service Life <sup>(5)</sup>	hr	1,2	3~100	All	20.000		
Operating temperature	°C	1,2	3~100	All	0° C ~ +90°C		
Degree of Protection		1,2	3~100	All	IP65		
Lubrication		1,2	3~100	All	Synthetisch lubrication grease		
Mounting position		1,2	3~100	All	All directions		
Running noise <sup>(4)</sup>	dB (A)	1,2	3~100	All	≤ 62	≤ 64	≤ 66
Efficiency $\eta$	%	1	3~10	All	≥97%		
		2	12~100		≥94%		

(1) Ratio (  $i = N_{in} / N_{out}$  )

(2) Backlash is measured at 2% of Nominal output torque  $T_{2N}$ .

(3) Applied to the output shaft center @ 100 rpm .

(4) These values are measured by gearbox with ratio = 10 (1-stage) or ratio = 100 (2-stage) at 3.000 rpm without load.

(5) For continuous operation, the service life is less than 10.000 hrs.

# Inertia

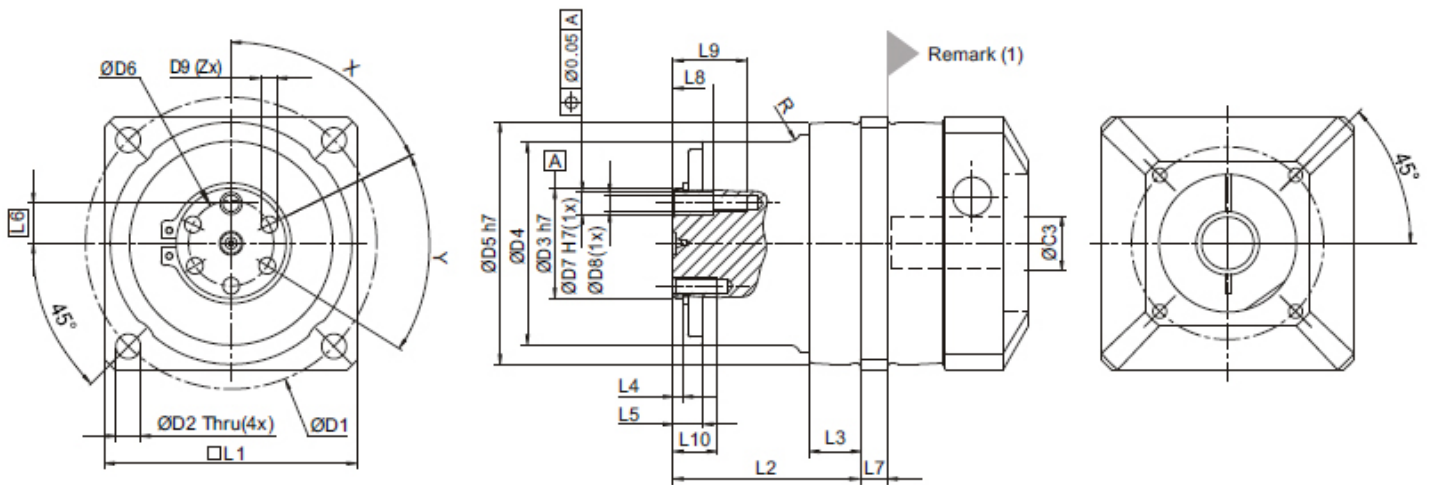
Model No. Ø <sup>(A)</sup> (C3)	PL 070		PL 090		PL 120	
	1-stage	2-stage	1-stage	2-stage	1-stage	2-stage
8	0,12	0,10	-	-	-	-
11	0,19	0,16	-	-	-	-
14	0,22	0,20	0,36	0,24	-	-
19	1,53	1,54	1,70	1,58	2,20	1,73
24	-	-	2,24	2,12	2,74	2,27
28	-	-	2,68	2,55	3,17	2,70
32	-	-	-	-	7,77	7,30
35	-	-	-	-	10,80	10,30
38	-	-	-	-	14,00	13,50
42	-	-	-	-	-	-

kg•cm<sup>2</sup>

(A) Ø Input shaft diameter

# Sizes

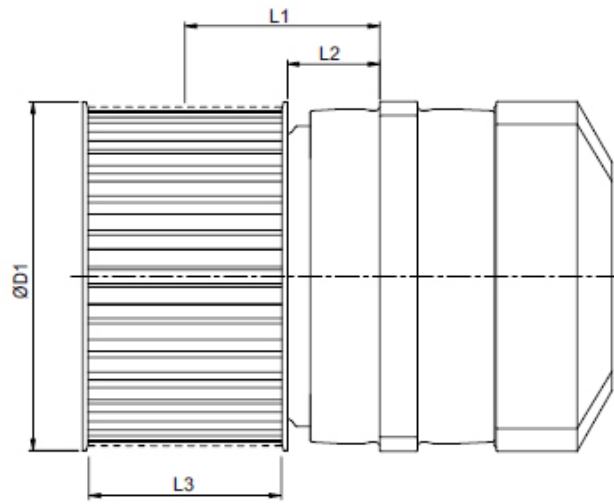
PL series:



Dimensions	PL 070		PL 090		PL 120	
	1-stage	2-stage	1-stage	2-stage	1-stage	2-stage
D1		82		106		144
D2		6,6		9		13
D3 h7		25		40		50
D4		58		74		100
D5 h7		68		88		118
D6		18		31		37
D7 h7		6		8		147
D8		M5 x 0,8P		M6 x 1P		M6 x 1P
D9		M5 x 0,8P		M6 x 1P		M8 x 1,25P
R		-		4		2
L1		70		92		122
L2		60,2		68,3		82,2
L3		12,7		18,3		15,7
L4		3,8		3,7		4,5
L5		10		10,5		12,5
L6		8,8		14,5		18,5
L7		8		10		12
L8		10		15		16
L9		18,5		27		28
L10		12		16		16
X in graden		64°		45°		45°
Y in graden		58°		45°		45°
Z		5		7		7

(1) Input dimensions vary according to motor flange. Please contact Apex Dynamics for details.

## Pulley dimensions



Gearbox	Belt Pulley	D1	L1	L2	L3	Pitch	number of teeth	Circumference	Inertia J	Mass m
						P		Z*P		
						mm	Z	mm/rotation	kg/cm <sup>2</sup>	kg
PL 070	AT05-W50-T43	71	41,8	14,8	51	5	43	215	4,68	0,57
	HTD 5M-W50-T44	72,9	41,8	14,8	51	5	44	220	5,58	0,65
	5GT-W50-T44	72,9	41,8	14,8	51	5	44	220	5,58	0,65
PL 090	AT10-W50-T28	91,7	51,3	24,3	51	10	28	280	14,07	1,00
	HTD 8M-W50-T36	98,4	51,3	24,3	51	8	36	288	17,78	1,18
	8YU-W50-T36	98,4	51,3	24,3	51	8	36	288	17,78	1,18
PL110	AT20-W75-T19	124,6	57,7	17,7	76	20	19	380	69,55	2,71
	HTD 14M-W75-T28	137	57,7	17,7	76	14	28	392	87,83	3,20

(1) Pulley size.

(2) Pulley specification

(3) Pulley appearance: B = Manganese phosphate blackening (standard), N = Nickel plating

