

Series	Model	Size (mm)	Stages	Ratio Range	Length Range (mm)	Rated Min (kgf·cm)	Rated Max (kgf·cm)	Rated Min (Nm)	Rated Max (Nm)	Instant Min (kgf·cm)	Instant Max (kgf·cm)	Instant Min (Nm)	Instant Max (Nm)	Efficiency	Radial Load (kgf)	Axial Load (kgf)	Backlash (")	Max Input (rpm)	Temperature (°C)
Micro	PGR-08	8	1-4	3.8-731.16	10.15-18.1	0.2	0.4	0.02	0.04	0.4	0.8	0.04	0.08	90%-66%	0.4	0.1	≤ 1.5	≤ 8000	-40 to 120
Micro	PGR-10	10	1-4	3.5-509.1	10.25-18.5	1.3	2	0.13	0.20	2.6	4	0.25	0.39	90%-66%	0.6	0.15	≤ 1.5	≤ 8000	-40 to 120
Micro	PGR-12	12	1-4	3.5-509.1	11.35-19.6	2	4.2	0.20	0.41	4	8.4	0.39	0.82	90%-66%	0.8	0.25	≤ 1.5	≤ 8000	-40 to 120
Micro	PGR-14	14	1-4	3.75-471.6	15.2-26.6	3.5	6	0.34	0.59	7	12	0.69	1.18	90%-66%	0.8	0.25	≤ 1.5	≤ 8000	-40 to 120
Micro	PGR-16	16	1-4	3.85-459.5	17.55-30.45	4	9	0.39	0.88	8	26	0.78	2.55	90%-66%	1.6	0.5	≤ 1.5	≤ 8000	-40 to 120
Compact	PGR-20	20	1-4	4-1296	20.9-35.5	6	13	0.59	1.27	12	26	1.18	2.55	90%-66%	1.6	0.5	≤ 1.5	≤ 8000	-40 to 120
Compact	PGR-22	22	1-4	3.5-509.1	22.6-38.5	8	25	0.78	2.45	16	50	1.57	4.90	90%-66%	1.6	0.5	≤ 1.5	≤ 8000	-40 to 120
Compact	PGR-24	24	1-4	3.83-759.7	24.6-42	10	30	0.98	2.94	20	60	1.96	5.88	90%-66%	3	1	≤ 1.2	≤ 8000	-40 to 120
Compact	PGR-28	28	1-4	3.83-759.7	25.6-44.5	20	50	1.96	4.90	40	100	3.92	9.81	90%-66%	6	3	≤ 1.2	≤ 8000	-40 to 120
High-Torque	PGR-32	32	1-4	3.5-509.1	28.05-52.95	35	80	3.43	7.85	70	160	6.86	15.69	90%-66%	8	3.5	≤ 1.2	≤ 8000	-40 to 120
High-Torque	PGR-36	36	1-4	3.66-625	30.6-61.5	40	100	3.92	9.81	80	200	7.85	19.61	90%-66%	10	6	≤ 1.2	≤ 8000	-40 to 120
High-Torque	PGR-42	42	1-4	3.8-660.7	35.6-69.5	80	150	7.85	14.71	160	300	15.69	29.42	90%-66%	16	8	≤ 1.2	≤ 8000	-40 to 120

PGR-08 | Ø8 mm | Reduction ratio 3.8-731.16

Parameter	Unit	1 Stage	2 Stage	3 Stage	4 Stage
Reduction Ratio	:1	3.8 / 4.5 / 5.2	14.4 / 17.1 / 19.8 / 20.3 / 23.4 / 27	54.9 / 65 / 75.1 / 76.95 / 88.9 / 91.1 / 102.75 / 105.3 / 121.7 / 140.6	208.5 / 246.9 / 285.3 / 292.4 / 337.9 / 346.3 / 390.46 / 400.14 / 410.1 / 462.4 / 473.85 / 534.3 / 547.56 / 632.74 / 731.16
Gearbox Length L	mm	10.15	12.8	15.45	18.1
Rated Permissible Torque	kgf·cm	0.2	0.25	0.3	0.4
Instantaneous Permissible Torque	kgf·cm	0.4	0.5	0.6	0.8
Efficiency	%	90%	80%	73%	66%
Housing Material	-	Steel	Steel	Steel	Steel
Gear Material	-	Steel	Steel	Steel	Steel
Output Shaft Bearing	-	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Radial Load	kgf	≤ 0.4	≤ 0.4	≤ 0.4	≤ 0.4
Axial Load	kgf	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1
Radial Clearance	mm	≤ 0.04	≤ 0.04	≤ 0.04	≤ 0.04
Axial Clearance	mm	≤ 0.15	≤ 0.15	≤ 0.15	≤ 0.15
Backlash - No Load	°	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Max. Continuous Input Speed	rpm	≤ 8000	≤ 8000	≤ 8000	≤ 8000
Operating Temperature	°C	-40 to 120	-40 to 120	-40 to 120	-40 to 120

PGR-10 | Ø10 mm | Reduction ratio 3.5-509.1

Parameter	Unit	1 Stage	2 Stage	3 Stage	4 Stage
Reduction Ratio	:1	3.5 / 4 / 4.75	12.25 / 14 / 16 / 16.6 / 19 / 22.6	42.9 / 49 / 56 / 58.2 / 64 / 66.5 / 76 / 79 / 90.25 / 107.2	150.1 / 171.5 / 196 / 203.7 / 224 / 232.7 / 256 / 266 / 276.4 / 304 / 315.9 / 361 / 375.1 / 428.7 / 509.1
Gearbox Length L	mm	10.25	13	15.75	18.5
Rated Permissible Torque	kgf·cm	1.3	1.5	1.8	2
Instantaneous Permissible Torque	kgf·cm	2.6	3	3.6	4
Efficiency	%	90%	80%	73%	66%
Housing Material	-	Steel	Steel	Steel	Steel
Gear Material	-	Steel	Steel	Steel	Steel
Output Shaft Bearing	-	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Radial Load	kgf	≤ 0.6	≤ 0.6	≤ 0.6	≤ 0.6
Axial Load	kgf	≤ 0.15	≤ 0.15	≤ 0.15	≤ 0.15
Radial Clearance	mm	≤ 0.04	≤ 0.04	≤ 0.04	≤ 0.04
Axial Clearance	mm	≤ 0.15	≤ 0.15	≤ 0.15	≤ 0.15
Backlash - No Load	°	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Max. Continuous Input Speed	rpm	≤ 8000	≤ 8000	≤ 8000	≤ 8000
Operating Temperature	°C	-40 to 120	-40 to 120	-40 to 120	-40 to 120

PGR-12 | Ø12 mm | Reduction ratio 3.5-509.1

Parameter	Unit	1 Stage	2 Stage	3 Stage	4 Stage
Reduction Ratio	:1	3.5 / 4 / 4.75	12.25 / 14 / 16 / 16.6 / 19 / 22.6	42.9 / 49 / 56 / 58.2 / 64 / 66.5 / 76 / 79 / 90.25 / 107.2	150.1 / 171.5 / 196 / 203.7 / 224 / 232.7 / 256 / 266 / 276.4 / 304 / 315.9 / 361 / 375.1 / 428.7 / 509.1
Gearbox Length L	mm	11.35	14.1	16.85	19.6
Rated Permissible Torque	kgf·cm	2	3	3.6	4.2
Instantaneous Permissible Torque	kgf·cm	4	6	7.2	8.4
Efficiency	%	90%	80%	73%	66%
Housing Material	-	Steel	Steel	Steel	Steel
Gear Material	-	Steel	Steel	Steel	Steel
Output Shaft Bearing	-	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Radial Load	kgf	≤ 0.8	≤ 0.8	≤ 0.8	≤ 0.8
Axial Load	kgf	≤ 0.25	≤ 0.25	≤ 0.25	≤ 0.25
Radial Clearance	mm	≤ 0.04	≤ 0.04	≤ 0.04	≤ 0.04
Axial Clearance	mm	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2
Backlash - No Load	°	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Max. Continuous Input Speed	rpm	≤ 8000	≤ 8000	≤ 8000	≤ 8000
Operating Temperature	°C	-40 to 120	-40 to 120	-40 to 120	-40 to 120

PGR-14 | Ø14 mm | Reduction ratio 3.75-471.6

Parameter	Unit	1 Stage	2 Stage	3 Stage	4 Stage
Reduction Ratio	:1	3.75 / 4.38 / 4.66	14 / 16.4 / 17.5 / 19.2 / 20.4 / 21.7	52.7 / 61.6 / 65.5 / 71.9 / 76.5 / 81.4 / 84 / 89.4 / 95.1 / 101.2	197.75 / 231 / 245.75 / 269.8 / 287 / 305.4 / 315.1 / 335.25 / 356.7 / 368 / 379.5 / 391.6 / 416.6 / 443.2 / 471.6

Gearbox Length L	mm	15.2	19	22.8	26.6
Rated Permissible Torque	kgf·cm	3.5	4	5	6
Instantaneous Permissible Torque	kgf·cm	7	8	10	12
Efficiency	%	90%	80%	73%	66%
Housing Material	-	Steel	Steel	Steel	Steel
Gear Material	-	Steel	Steel	Steel	Steel
Output Shaft Bearing	-	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Radial Load	kgf	≤ 0.8	≤ 0.8	≤ 0.8	≤ 0.8
Axial Load	kgf	≤ 0.25	≤ 0.25	≤ 0.25	≤ 0.25
Radial Clearance	mm	≤ 0.04	≤ 0.04	≤ 0.04	≤ 0.04
Axial Clearance	mm	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2
Backlash - No Load	°	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Max. Continuous Input Speed	rpm	≤ 8000	≤ 8000	≤ 8000	≤ 8000
Operating Temperature	°C	-40 to 120	-40 to 120	-40 to 120	-40 to 120

PGR-16 Ø16 mm Reduction ratio 3.85-459.5					
Parameter	Unit	1 Stage	2 Stage	3 Stage	4 Stage
Reduction Ratio	:1	3.85 / 4.33 / 4.63	14.8 / 16.7 / 17.8 / 18.7 / 20 / 21.4	57.1 / 64.2 / 68.6 / 72.2 / 77.2 / 81.2 / 82.5 / 86.8 / 92.8 / 99.25	219.7 / 247 / 264.2 / 277.9 / 297.2 / 312.55 / 317.75 / 334.2 / 351.5 / 357.4 / 375.9 / 382.1 / 401.9 / 429.8 / 459.5
Gearbox Length L	mm	17.55	21.85	26.15	30.45
Rated Permissible Torque	kgf·cm	4	5	7	9
Instantaneous Permissible Torque	kgf·cm	8	10	20	26
Efficiency	%	90%	80%	73%	66%
Housing Material	-	Steel	Steel	Steel	Steel
Gear Material	-	Steel	Steel	Steel	Steel
Output Shaft Bearing	-	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Radial Load	kgf	≤ 1.6	≤ 1.6	≤ 1.6	≤ 1.6
Axial Load	kgf	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Radial Clearance	mm	≤ 0.04	≤ 0.04	≤ 0.04	≤ 0.04
Axial Clearance	mm	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2
Backlash - No Load	°	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Max. Continuous Input Speed	rpm	≤ 8000	≤ 8000	≤ 8000	≤ 8000
Operating Temperature	°C	-40 to 120	-40 to 120	-40 to 120	-40 to 120

PGR-20 Ø20 mm Reduction ratio 4-1296					
Parameter	Unit	1 Stage	2 Stage	3 Stage	4 Stage
Reduction Ratio	:1	4 / 4.75 / 6	16 / 19 / 22.6 / 24 / 28.5 / 36	64 / 76 / 90.2 / 96 / 107.2 / 114 / 135.4 / 144 / 171 / 216	256 / 304 / 361 / 384 / 428.7 / 456 / 509.1 / 541.5 / 576 / 643 / 684 / 812.2 / 864 / 1026 / 1296
Gearbox Length L	mm	20.9	24.9	29.7	35.5
Rated Permissible Torque	kgf·cm	6	7	10	13
Instantaneous Permissible Torque	kgf·cm	12	14	20	26
Efficiency	%	90%	80%	73%	66%
Housing Material	-	Steel	Steel	Steel	Steel
Gear Material	-	Steel	Steel	Steel	Steel
Output Shaft Bearing	-	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Radial Load	kgf	≤ 1.6	≤ 1.6	≤ 1.6	≤ 1.6
Axial Load	kgf	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Radial Clearance	mm	≤ 0.04	≤ 0.04	≤ 0.04	≤ 0.04
Axial Clearance	mm	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2
Backlash - No Load	°	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Max. Continuous Input Speed	rpm	≤ 8000	≤ 8000	≤ 8000	≤ 8000
Operating Temperature	°C	-40 to 120	-40 to 120	-40 to 120	-40 to 120

PGR-22 Ø22 mm Reduction ratio 3.5-509.1					
Parameter	Unit	1 Stage	2 Stage	3 Stage	4 Stage
Reduction Ratio	:1	3.5 / 4 / 4.75	12.25 / 14 / 16 / 16.6 / 19 / 22.6	42.9 / 49 / 56 / 58.2 / 64 / 66.5 / 76 / 79 / 90.25 / 107.2	150.1 / 171.5 / 196 / 203.7 / 224 / 232.7 / 256 / 266 / 276.4 / 304 / 315.9 / 361 / 375.1 / 428.7 / 509.1
Gearbox Length L	mm	22.6	27.9	33.2	38.5
Rated Permissible Torque	kgf·cm	8	10	15	25
Instantaneous Permissible Torque	kgf·cm	16	20	30	50
Efficiency	%	90%	80%	73%	66%
Housing Material	-	Steel	Steel	Steel	Steel
Gear Material	-	Steel	Steel	Steel	Steel
Output Shaft Bearing	-	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Radial Load	kgf	≤ 1.6	≤ 1.6	≤ 1.6	≤ 1.6
Axial Load	kgf	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Radial Clearance	mm	≤ 0.04	≤ 0.04	≤ 0.04	≤ 0.04
Axial Clearance	mm	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2
Backlash - No Load	°	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Max. Continuous Input Speed	rpm	≤ 8000	≤ 8000	≤ 8000	≤ 8000
Operating Temperature	°C	-40 to 120	-40 to 120	-40 to 120	-40 to 120

PGR-24 Ø24 mm Reduction ratio 3.83-759.7					
Parameter	Unit	1 Stage	2 Stage	3 Stage	4 Stage
Reduction Ratio	:1	3.83 / 4.4 / 5.25	14.7 / 16.8 / 19.4 / 20.1 / 23 / 27.7	56.2 / 64.5 / 74.1 / 77 / 85.2 / 88.5 / 101.6 / 105.6 / 121.3 / 144.7	215.2 / 247.2 / 284 / 294.9 / 326.2 / 338.8 / 374.8 / 389.3 / 404.3 / 447.2 / 464.5 / 533.6 / 554.2 / 636.7 / 759.7
Gearbox Length L	mm	24.6	30.4	36.2	42
Rated Permissible Torque	kgf·cm	10	15	20	30
Instantaneous Permissible Torque	kgf·cm	20	30	40	60
Efficiency	%	90%	80%	73%	66%
Housing Material	-	Steel	Steel	Steel	Steel
Gear Material	-	Steel	Steel	Steel	Steel
Output Shaft Bearing	-	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Radial Load	kgf	≤ 3	≤ 3	≤ 3	≤ 3
Axial Load	kgf	≤ 1	≤ 1	≤ 1	≤ 1
Radial Clearance	mm	≤ 0.04	≤ 0.04	≤ 0.04	≤ 0.04
Axial Clearance	mm	≤ 0.3	≤ 0.3	≤ 0.3	≤ 0.3
Backlash - No Load	°	≤ 1.2	≤ 1.2	≤ 1.2	≤ 1.2
Max. Continuous Input Speed	rpm	≤ 8000	≤ 8000	≤ 8000	≤ 8000
Operating Temperature	°C	-40 to 120	-40 to 120	-40 to 120	-40 to 120

PGR-28 Ø28 mm Reduction ratio 3.83-759.7					
Parameter	Unit	1 Stage	2 Stage	3 Stage	4 Stage
Reduction Ratio	:1	3.83 / 4.4 / 5.25	14.7 / 16.8 / 19.4 / 20.1 / 23 / 27.7	56.2 / 64.5 / 74.1 / 77 / 85.2 / 88.5 / 101.6 / 105.6 / 121.3 / 144.7	215.2 / 247.2 / 284 / 294.9 / 326.2 / 338.8 / 374.8 / 389.3 / 404.3 / 447.2 / 464.5 / 533.6 / 554.2 / 636.7 / 759.7
Gearbox Length L	mm	25.6	31.9	38.2	44.5
Rated Permissible Torque	kgf·cm	20	25	35	50
Instantaneous Permissible Torque	kgf·cm	40	50	70	100
Efficiency	%	90%	80%	73%	66%
Housing Material	-	Steel	Steel	Steel	Steel
Gear Material	-	Steel	Steel	Steel	Steel
Output Shaft Bearing	-	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Radial Load	kgf	≤ 6	≤ 6	≤ 6	≤ 6
Axial Load	kgf	≤ 3	≤ 3	≤ 3	≤ 3
Radial Clearance	mm	≤ 0.04	≤ 0.04	≤ 0.04	≤ 0.04
Axial Clearance	mm	≤ 0.3	≤ 0.3	≤ 0.3	≤ 0.3
Backlash - No Load	°	≤ 1.2	≤ 1.2	≤ 1.2	≤ 1.2
Max. Continuous Input Speed	rpm	≤ 8000	≤ 8000	≤ 8000	≤ 8000
Operating Temperature	°C	-40 to 120	-40 to 120	-40 to 120	-40 to 120

PGR-32 Ø32 mm Reduction ratio 3.5-509.1					
Parameter	Unit	1 Stage	2 Stage	3 Stage	4 Stage
Reduction Ratio	:1	3.5 / 4 / 4.75	12.2 / 14 / 16 / 16.6 / 19 / 22.6	42.9 / 49 / 56 / 58.2 / 64 / 66.5 / 76 / 79 / 90.2 / 107.2	150.1 / 171.5 / 196 / 203.7 / 224 / 232.7 / 256 / 266 / 276.4 / 304 / 315.9 / 361 / 375.1 / 428.7 / 509.1
Gearbox Length L	mm	28.05	36.35	44.65	52.95
Rated Permissible Torque	kgf·cm	35	50	65	80
Instantaneous Permissible Torque	kgf·cm	70	100	130	160
Efficiency	%	90%	80%	73%	66%
Housing Material	-	Steel	Steel	Steel	Steel
Gear Material	-	Steel	Steel	Steel	Steel
Output Shaft Bearing	-	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Radial Load	kgf	≤ 8	≤ 8	≤ 8	≤ 8
Axial Load	kgf	≤ 3.5	≤ 3.5	≤ 3.5	≤ 3.5
Radial Clearance	mm	≤ 0.04	≤ 0.04	≤ 0.04	≤ 0.04
Axial Clearance	mm	≤ 0.3	≤ 0.3	≤ 0.3	≤ 0.3
Backlash - No Load	°	≤ 1.2	≤ 1.2	≤ 1.2	≤ 1.2
Max. Continuous Input Speed	rpm	≤ 8000	≤ 8000	≤ 8000	≤ 8000
Operating Temperature	°C	-40 to 120	-40 to 120	-40 to 120	-40 to 120

PGR-36 Ø36 mm Reduction ratio 3.66-625					
Parameter	Unit	1 Stage	2 Stage	3 Stage	4 Stage
Reduction Ratio	:1	3.66 / 4.2 / 5.0	13.4 / 15.4 / 17.6 / 18.3 / 21 / 25	49 / 56.3 / 64.6 / 67 / 74.1 / 76.9 / 88.2 / 91.5 / 105 / 125	179.4 / 205.9 / 236.3 / 245.1 / 271.2 / 281.3 / 311.2 / 322.8 / 334.9 / 370.5 / 384.3 / 441 / 457.5 / 525 / 625
Gearbox Length L	mm	30.6	40.9	51.2	61.5
Rated Permissible Torque	kgf·cm	40	60	80	100
Instantaneous Permissible Torque	kgf·cm	80	120	160	200
Efficiency	%	90%	80%	73%	66%
Housing Material	-	Steel	Steel	Steel	Steel
Gear Material	-	Steel	Steel	Steel	Steel
Output Shaft Bearing	-	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Radial Load	kgf	≤ 10	≤ 10	≤ 10	≤ 10
Axial Load	kgf	≤ 6	≤ 6	≤ 6	≤ 6
Radial Clearance	mm	≤ 0.04	≤ 0.04	≤ 0.04	≤ 0.04
Axial Clearance	mm	≤ 0.3	≤ 0.3	≤ 0.3	≤ 0.3
Backlash - No Load	°	≤ 1.2	≤ 1.2	≤ 1.2	≤ 1.2
Max. Continuous Input Speed	rpm	≤ 8000	≤ 8000	≤ 8000	≤ 8000
Operating Temperature	°C	-40 to 120	-40 to 120	-40 to 120	-40 to 120

PGR-42 Ø42 mm Reduction ratio 3.8-660.7					
Parameter	Unit	1 Stage	2 Stage	3 Stage	4 Stage
Reduction Ratio	:1	3.8 / 4.3 / 5.1	14.4 / 16.3 / 18.6 / 19.2 / 21.8 / 25.7	54.4 / 61.9 / 70.4 / 72.8 / 80.1 / 82.8 / 94.2 / 97.4 / 110.8 / 130.3	206.4 / 234.6 / 266.8 / 276 / 303.5 / 313.9 / 345 / 357 / 369.2 / 406 / 419.9 / 477.5 / 493.93 / 561.70 / 660.7
Gearbox Length L	mm	35.6	46.9	58.2	69.5
Rated Permissible Torque	kgf·cm	80	100	120	150
Instantaneous Permissible Torque	kgf·cm	160	200	240	300
Efficiency	%	90%	80%	73%	66%
Housing Material	-	Steel	Steel	Steel	Steel
Gear Material	-	Steel	Steel	Steel	Steel
Output Shaft Bearing	-	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Radial Load	kgf	≤ 16	≤ 16	≤ 16	≤ 16
Axial Load	kgf	≤ 8	≤ 8	≤ 8	≤ 8
Radial Clearance	mm	≤ 0.04	≤ 0.04	≤ 0.04	≤ 0.04
Axial Clearance	mm	≤ 0.3	≤ 0.3	≤ 0.3	≤ 0.3
Backlash - No Load	°	≤ 1.2	≤ 1.2	≤ 1.2	≤ 1.2
Max. Continuous Input Speed	rpm	≤ 8000	≤ 8000	≤ 8000	≤ 8000
Operating Temperature	°C	-40 to 120	-40 to 120	-40 to 120	-40 to 120