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Sumitomo Drive Technologies

CYCLO[®] 6000 Series

Gearmotor & Speed Reducer

Sumitomo Drive Technologies
Always on the Move

CYCLO[®] 6000 Series
Gearmotor & Speed Reducer



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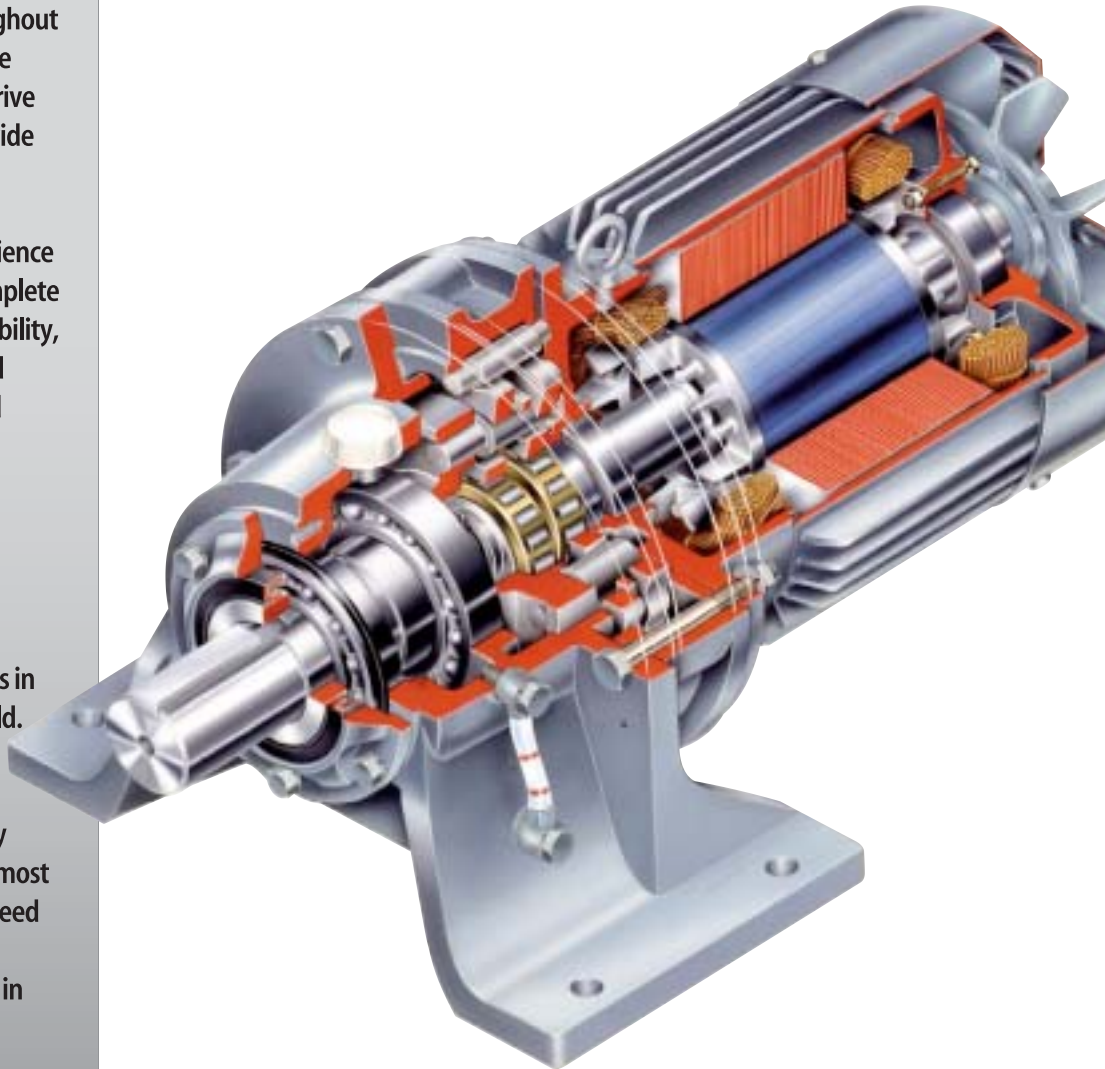
Over 10 Million in the Making

Sumitomo Drive Technologies is a world-class leader in power transmission and control devices. Our top lined product, the Cyclo[®] Drive is actively serving industries throughout the world through its popular and unique epitrochoidal mechanism. The Cyclo[®] Drive has served over ten million units worldwide in a wide range of model offerings.

With the technical know-how and experience cultivated over 70 years, we provide complete satisfaction with unrivalled product reliability, durability and economy. This is achieved through our continual product R & D and state-of-the-art production facilities. Sumitomo Drive Technologies is Quality System Certified to ISO 9001, EN29001, BS5750 Part 1: 1987, JIS Z9901: 1991 standard for design and manufacture of mechanical speed reducers, mechanical variators, electric motors and gearmotors in over 30 facilities located around the world.

The Sumitomo Drive Technologies' brand guarantees innovative, top quality products and services developed by the most advanced technologies. We strive to exceed the expectations of our customers, and continue to be your dependable partner in business.

High Shock Load, High Reliability Cycloidal Speed Reducers and Gearmotors



Exceptional Performance, Unmatched Reliability

The Sumitomo Cyclo[®] Drive is unsurpassed by any other inline drive available in the market today. Cyclo[®]'s unique cycloid design has advantages superior to speed reducers using common involute tooth gears. Compared to gear teeth with limited contact points of involute gears, the Cyclo[®] has two to three time more of its reduction components in contact at all times. Cyclo[®] speed reducers and gearmotors are designed to withstand shock loads exceeding ratings of 500%, provide exceptional performance, reliability, and long life in the most severe applications.



Features & Benefits

❖ Outstanding Reliability - 2 Year Warranty

Cyclo® Drive speed reducers and gearmotors provide customers with a typical operating life of 20 years. We back this assurance with a two year warranty on all Cyclo® products.

❖ Smooth Operation and Low Noise

In comparison to the sliding tooth contact of the conventional gearing, the rolling contact of the Cyclo® system provides a reduced noise level.

❖ Durable, Robust Construction

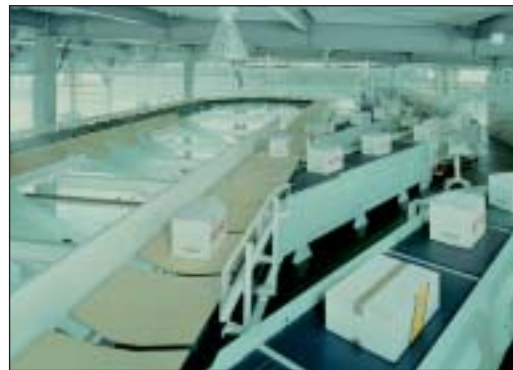
On top of the unique mechanism and design, Cyclo® housings are made of cast iron with the exception of our three smallest size models. All rotating elements are made from Chromium Molybdenum bearing steel, which have been hardened and ground.

❖ Selection and Variety

Reduction Ratios from 1/3 to 1/119 are available for the single stage; for triple stages we offer ratios up to 1,000,000:1.

Applications

Applications Include: Conveyors, Automotive Plants, Recycling Machines, Waterwaste Treatment, Steel Mills, Construction Equipment, Paper Mills, Food Machinery, Poultry Plants, Sawmills and Wood Mills, Processing Plants, etc.



Clockwise from Top-Left: Chemical and Food Industry (agitator, mixer), Logistics and Handling Machines (sorting machines, conveyors), Iron and Steel Manufacturing (conveyors) and Water Treatment Machines (agitators).

❖ Superior Design, Powerful Performance ❖



CYCLO® SPEED REDUCER

All torque transmitting parts roll, not grind. The gear tooth profile of the Cyclo® reducer enables the sharing of the load by a number of teeth, thus not susceptible to tooth breakage.



CONVENTIONAL HELICAL REDUCER

Involute gears allow for small tooth engagement rate. Torque transmitting parts grind, wear, and can break off with the sliding contact.

CYCLO® 6000 Serie

Product Line-up

6W

Commercial

Industrial

In-Line

ASTERO®

Practical and Convenient



ASTERO®

Modular system of motors and gearheads. Maximum flexibility and interchangeability.
Power: 6W~90W Ratio: 1/3~1/2000

Offset-Parallel

CYCLO®

Unmatched Reliability,
Exceptional Performance Cycloidal Drives



6000 Series

Unique Cycloidal gear teeth and mechanism is unsurpassed by any other inline drive. Simple and compact design.
Power: 0.1kW~132kW Ratio: 1/6~1/1,000,00

Right-Angle

HYPONIC DRIVE®

Quiet, Compact & Maintenance Free



HYPONIC

Highly efficient, grease lubricated, compact design hypoid gearing.
Power: 15W~90W Ratio: 1/5~1/1440



HYPONIC

Patented all-steel hypoid gear technology is extremely high-performance and more efficient than worm gearing.
Power: 90W~5.5kW Ratio: 1/5~1/1440



HBB Series

Integrated parallel shaft mount design, single stage, helical gearbox for durability.
Power: 0.1kW~132kW Ratio: 1/6~1/1,000,00



BBB Series

Incorporates the strength and flexibility of the Cyclo® Drive with adaptability of a shaft-mounted design in a right angle spiral bevel gearbox for exceptional reliability.
Power: 0.1kW~30kW Ratio: 1/11~1/10658

Motion Control Drives (MCD)

High Precision, Very Low Backlash



F Series CYCLO®
Rolling contact of cycloid discs, optimum load distribution, and low vibration yields highest efficiencies.

Torque: 111N·m ~5140N·m Ratio: 1/29~1/119
Backlash: No Backlash Lost Motion: 0.5~1.0arc min



IB Series P Type
Precision planetary gearheads for Servomotor applications in the most compact design.

Torque: 8.3N·m ~127N·m Ratio: 1/5~1/45
Backlash: 3~10min

Engineering

552kN•m

PARAMAX®

High Quality & Maximum Efficiency,
Computer-Aided Design



9000 Series

The offset-parallel 9000 Series allow direct motor mounting and has universal housing for unique mounting positions.
Power: 2.6~552kN•m Ratio: 1/6.3~1/500



9000 Series

The new 9000 Series design combines helical gears and bevel gears in a right-angle gearbox for compact drive assembly.
Power: 2.6~552kN•m Ratio: 1/6.3~1/500



LB Series CYCLO®

The reputation of the Cyclo® Drive's strength to the Servomotor gives us a direct coupling gearhead possibility for a maintenance free operation.

Torque: 30N•m~630Nm Ratio: 1/11~1/29
Backlash: 6min

Sumitomo Drives

Speed Variators



BEIER Variator
BEIER CYCLO® Variator

Constant power torque converters with extremely accurate speed/ratio holding and repeatability to control speeds on industrial machinery.
Capacity: 0.2kW~150kW



Inverters
SF320α, HF320α, HF430

Multiple functions, easy to use highly efficient Inverter.
Output Power: 0.1kW~55kW

Shaft-Mounted Speed Reducer



HSM

Maximum loading and the highest efficiency torque output in the most compact design.
Power: 0.2kW~224kW

Worm Gears



HEDCON®

Unique double contact theory, high efficiency, and high strength work reduction mechanism.
Power: 589~82,400N•m
Ratio: 1/5~1/100

Planetary Gears



COMPOWER®

Unique load sharing mechanism, high precision carburized ground gears.
Power: 1.47~736kN•m
Ratio: 1/5~1/1768

Product Line-up

Product Range of CYCLO® DRIVE

CYCLO® Frame Size

Table A-1 CYCLO Frame Size

6000SK Series Frame Size	6000 Series							
	Single Reduction		Double Reduction					
	Frame Size	Frame Size (Output side + Input side)	Frame Size	Frame Size (Output side + Input side)	Frame Size	Frame Size (Output side + Input side)	Frame Size	Frame Size (Output side + Input side)
6070SK	6060	6140	6060DA (6060+6060)	6140DC (6140+6105)	6190DA (6190+6125)			
6075SK	6065	6145	6065DA (6065+6060)	6145DA (6145+6075)	6190DB (6190+6135)			
6080SK	6070	614H	6070DA (6070+6065)	6145DB (6145+6095)	6195DA (6195+6125)			
6085SK	6075	6160	6075DA (6075+6065)	6145DC (6145+6105)	6195DB (6195+6135)			
6090SK	6080	6165	6090DA (6090+6075)	6160DA (6160+6095)	6205DA (6205+6125)			
6095SK	6085	616H	6095DA (6095+6075)	6160DB (6160+6105)	6205DB (6205+6135)			
6100SK	6090	6170	6100DA (6100+6075)	6160DC (6160+6125)	6215DA (6215+6135)			
6105SK	6095	6175	6105DA (6105+6075)	6165DA (6165+6095)	6215DB (6215+6165)			
6110SK	6100	6180	6120DA (6120+6075)	6165DB (6165+6105)	6225DA (6225+6135)			
6115SK	6105	6185	6120DB (6120+6095)	6165DC (6165+6125)	6225DB (6225+6175)			
	610H	6190	6125DA (6125+6075)	6170DA (6170+6095)	6235DA (6235+6165)			
	6110	6195	6125DB (6125+6095)	6170DB (6170+6105)	6235DB (6235+6185)			
	6115	6205	6130DA (6130+6075)	6170DC (6170+6125)	6245DA (6245+6165)			
	6120	6215	6130DB (6130+6095)	6175DA (6175+6095)	6245DB (6245+6185)			
	6125	6225	6130DC (6130+6105)	6175DB (6175+6105)	6255DA (6255+6175)			
	612H	6235	6135DA (6135+6075)	6175DC (6175+6125)	6255DB (6255+6195)			
	6130	6245	6135DB (6135+6095)	6180DA (6180+6105)	6265DA (6265+6195)			
	6135	6255	6135DC (6135+6105)	6180DB (6180+6135)	6275DA (6275+6195)			
		6265	6140DA (6140+6075)	6185DA (6185+6105)				
		6275	6140DB (6140+6095)	6185DB (6185+6135)				

Reduction Ratio

Table A-2 6000 Series

Single Reduction										
6	8	11	13	15	17	21	25	29		
35	43	51	59	71	87	119				
Double Reduction indicated in catalog (Upper row: reduction ratio, lower row: output side reduction ratio x input side reduction ratio)										
104 (13 × 8)	121 (11 × 11)	143 (13 × 11)	165 (15 × 11)	195 (15 × 13)	231 (21 × 11)	273 (21 × 13)	319 (29 × 11)	377 (29 × 13)	473 (43 × 11)	559 (43 × 13)
649 (59 × 11)	731 (43 × 17)	841 (29 × 29)	1003 (59 × 17)	1247 (43 × 29)	1479 (87 × 17)	1849 (43 × 43)	2065 (59 × 35)	2537 (59 × 43)	3045 (87 × 35)	3481 (59 × 59)
4437 (87 × 51)	5133 ^{Note: 1} (87 × 59)	6177 (87 × 71)	7569 (87 × 87)							

Note: 1. Frame size 6205# ~ 6265# are (59 × 87).

Other Reduction Ratios (Under certain conditions, the following reduction ratios may also be available, please consult us.)

Reduction Ratio	88 (11 × 8)	90 (15 × 6)	102 (17 × 6)	120 (15 × 8)	126 (21 × 6)	136 (17 × 8)	150 (25 × 6)	168 (21 × 8)	169 (13 × 13)	174 (29 × 6)	187 (17 × 11)	200 (25 × 8)	210 (35 × 6)	221 (17 × 13)	225 (15 × 15)	232 (29 × 8)	255 (17 × 15)	258 (43 × 6)	275 (25 × 11)	
Output speed 50Hz r/min 60Hz	16.5 19.9	16.1 19.4	14.2 17.2	12.1 14.6	11.5 13.9	10.7 12.9	9.67 11.7	8.63 10.4	8.58 10.4	8.33 10.1	7.75 9.36	7.25 8.75	6.90 8.33	6.56 7.92	6.44 7.78	6.25 7.54	5.69 6.86	5.62 6.87	5.27 6.36	
Reduction Ratio	280 (35 × 8)	289 (17 × 17)	306 (51 × 6)	315 (21 × 15)	325 (25 × 13)	344 (43 × 8)	354 (59 × 6)	357 (21 × 17)	375 (25 × 15)	385 (35 × 11)	408 (51 × 8)	425 (25 × 17)	426 (71 × 6)	435 (29 × 15)	441 (21 × 21)	455 (35 × 13)	472 (59 × 8)	493 (29 × 17)	522 (87 × 6)	
Output speed 50Hz r/min 60Hz	5.18 6.25	5.02 6.06	4.74 5.72	4.60 5.56	4.46 5.38	4.22 5.09	4.10 4.94	4.06 4.90	3.87 4.67	3.77 4.55	3.55 4.29	3.41 4.12	3.40 4.11	3.33 4.02	3.29 3.97	3.19 3.85	3.07 3.71	2.94 3.55	2.78 3.35	
Reduction Ratio	525 (35 × 15)	561 (51 × 11)	568 (71 × 8)	595 (35 × 17)	609 (29 × 21)	625 (25 × 25)	645 (43 × 15)	663 (51 × 13)	696 (87 × 8)	725 (29 × 25)	735 (35 × 21)	765 (51 × 15)	767 (59 × 13)	781 (71 × 11)	867 (51 × 17)	875 (35 × 25)	885 (59 × 15)	903 (43 × 21)	923 (71 × 13)	
Output speed 50Hz r/min 60Hz	2.76 3.33	2.58 3.12	2.55 3.08	2.44 2.94	2.38 2.87	2.32 2.80	2.25 2.71	2.19 2.64	2.08 2.51	2.00 2.41	1.97 2.38	1.90 2.29	1.89 2.28	1.86 2.24	1.67 2.02	1.66 2.00	1.64 1.98	1.61 1.94	1.57 1.90	
Reduction Ratio	957 (87 × 11)	1015 (35 × 29)	1065 (71 × 15)	1071 (51 × 21)	1075 (43 × 25)	1131 (87 × 13)	1207 (71 × 17)	1225 (35 × 35)	1239 (59 × 21)	1275 (51 × 25)	1305 (87 × 15)	1475 (59 × 25)	1491 (71 × 21)	1505 (43 × 35)	1711 (59 × 29)	1775 (71 × 25)	1785 (51 × 35)	1827 (87 × 21)	2059 (71 × 29)	
Output speed 50Hz r/min 60Hz	1.52 1.83	1.43 1.72	1.36 1.64	1.35 1.63	1.35 1.63	1.28 1.55	1.20 1.45	1.18 1.43	1.17 1.41	1.14 1.37	1.11 1.34	0.98 1.19	0.97 1.17	0.96 1.16	0.85 1.02	0.82 0.99	0.81 0.98	0.79 0.96	0.70 0.85	
Reduction Ratio	2175 (87 × 25)	2193 (51 × 43)	2485 (71 × 35)	2523 (87 × 29)	2601 (51 × 51)	3009 (59 × 51)	3053 (71 × 43)	3621 (71 × 51)	3741 (87 × 43)	4189 (71 × 59)	5041 (71 × 71)	Calculation of output speed is based on the following input speed. 50Hz: 1450r/min 60Hz: 1750r/min								
Output speed 50Hz r/min 60Hz	0.67 0.80	0.66 0.80	0.58 0.70	0.57 0.69	0.56 0.67	0.48 0.58	0.47 0.57	0.47 0.57	0.40 0.48	0.39 0.47	0.45 0.42	0.29								

Table A-3 6000SK Series (Actual Reduction Ratio)

Frame Size	Nominal Reduction Ratio						
	2.5	3	4	5	6	8	10
6070SK, 6075SK	2.514	2.911	3.985	5.109	5.915	8.097	9.848
6080SK, 6085SK	2.475	2.931	3.878	5.114	6.164	7.660	9.474
6090SK, 6095SK	2.492	2.878	4.100	5.017	5.623	8.169	9.996
6100SK, 6105SK	2.492	2.878	4.100	5.017	5.623	8.169	9.996
6110SK, 6115SK	2.483	3.063	3.859	4.707	5.980	7.738	10.07

*Note that reduction ratio differs for each frame size for 6000SK Series.

Product Range of CYCLO® DRIVE

Available Combination

Table A-4 6000SK Series

Nominal Reduction Ratio		2.5	3	4	5	6	8	10
Output Speed	50Hz	580	483	363	290	242	181	145
	[r/min] 60Hz	700	583	438	350	292	219	175
0.4 × 4P	kW	●	●	●	●	●	●	●
0.55 × 4P	kW	●	●	●	●	●	●	●
0.75 × 4P	kW	●	●	●	●	●	●	●
1.1 × 4P	kW	●	●	●	●	●	●	●
1.5 × 4P	kW	●	●	●	●	●	●	●
2.2 × 4P	kW	●	●	●	●	●	●	●
3.0 × 4P	kW	●	●	●	●	●	●	●
3.7 × 4P	kW	●	●	●	●	●	●	●
5.5 × 4P	kW	●	●	●	●	●	●	●

Table A-5 6000 Series Single Reduction

Reduction Ratio	6	8	11	13	15	17	21	25	29	35	43	51	59	71	87	119	
Output Speed	50Hz	242	181	132	112	96.7	85.3	69	58	50	41.4	33.7	28.4	24.6	20.4	16.7	12.2
	[r/min] 60Hz	292	219	159	135	117	103	83.3	70	60.3	50	40.7	34.3	29.7	24.6	20.1	14.7
0.1 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.2 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.25 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.4 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.55 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.75 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.1 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.5 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2.2 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3.0 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3.7 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
5.5 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
7.5 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
11 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
15 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
18.5 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
22 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
30 × 4P	kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
37 × 4P	kW			●	●	●	●	●	●	●	●	●	●	●	●	●	●
45 × 4P	kW			●	●	●	●	●	●	●	●	●	●	●	●	●	●
55 × 4P	kW			●	●	●	●	●	●	●	●	●	●	●	●	●	●
75 × 4P	kW			●	●	●	●	●	●	●	●	●	●	●	●	●	●

Reduction Ratio	11	15	21	29	43	59	87	
Output Speed	50Hz	89.1	65.3	46.7	33.8	22.8	16.6	11.3
	[r/min] 60Hz	106	77.7	55.5	40.2	27.1	19.7	13.4
15 × 6P	kW					●	●	
18.5 × 6P	kW					●	●	
22 × 6P	kW					●	●	
30 × 6P	kW			●	●	●	●	
37 × 6P	kW		●	●	●	●	●	
45 × 6P	kW		●	●	●	●	●	
55 × 6P	kW	●	●	●	●	●	●	
75 × 6P	kW	●	●	●	●	●	●	
90 × 6P	kW	●	●	●	●	●	●	
110 × 6P	kW	●	●	●	●	●	●	
132 × 6P	kW	●	●	●	●	●	●	

Note: 1. Calculation of output speed is based on the following input speed.

- 4P Motor
 - 50Hz: 1450 r/min
 - 60Hz: 1750 r/min
- 6P Motor
 - 50Hz: 980 r/min
 - 60Hz: 1165 r/min

2. Combination in the table is based on service factor 1.0. Refer to Gearmotor Selection Table for combinations with other service factors.
3. Reduction ratios in 6000SK Series table are nominal ratios. Output speeds are based on these ratios. Refer to "Reduction Ratio" tables in the previous page for actual reduction ratio.
4. The rated current of 6P motor is different from the one of 4P motor even if the power is same.

Product Range of CYCLO® DRIVE

Table A-6 6000 Series Double Reduction

Reduction Ratio	104	121	143	165	195	231	273	319	377	473	559	649	731	841	1003	1247	1479	1849	2065	
Output Speed 50Hz	13.9	12.0	10.1	8.79	7.44	6.28	5.31	4.55	3.85	3.07	2.59	2.23	1.98	1.72	1.45	1.16	0.980	0.784	0.702	
[r/min] 60Hz	16.8	14.5	12.2	10.6	8.97	7.58	6.41	5.49	4.64	3.70	3.13	2.70	2.39	2.08	1.74	1.40	1.18	0.946	0.847	
0.1 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.2 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.25 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.4 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.55 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.75 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.1 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.5 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2.2 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3.0 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3.7 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
5.5 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
7.5 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
11 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
15 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
18.5 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
22 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
30 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
37 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
45 × 4P kW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Reduction Ratio	2537	3045	3481	4437	5133	6177	7569
Output Speed 50Hz	0.572	0.476	0.417	0.327	0.282	0.235	0.192
[r/min] 60Hz	0.690	0.575	0.503	0.394	0.341	0.283	0.231
0.1 × 4P kW	●	●	●	●	●	●	●
0.2 × 4P kW	●	●	●	●	●	●	●
0.25 × 4P kW	●	●	●	●	●	●	●
0.4 × 4P kW	●	●	●	●	●	●	●
0.75 × 4P kW	●	●	●	●	●	●	●
1.5 × 4P kW	●	●	●	●	●	●	●
2.2 × 4P kW	●	●	●	●	●	●	●
3.7 × 4P kW	●	●	●	●	●	●	●
5.5 × 4P kW	●	●	●	●	●	●	●

Note: 1. Calculation of output speed is based on the following input speed.

- 4P Motor
 - 50Hz: 1450 r/min
 - 60Hz: 1750 r/min
- 6P Motor
 - 50Hz: 980 r/min
 - 60Hz: 1165 r/min

2. Combination in the table is based on service factor 1.0. Refer to Gearmotor Selection Table for combinations with other service factors.

3. Reduction ratios in 6000SK Series table are nominal ratios. Output speeds are based on these ratios. Refer to "Reduction Ratio" tables in the previous page for actual reduction ratio.

4. The rated current of 6P motor is different from the one of 4P motor even if the power is same.

Product Range of Motor

Table A-7 3-Phase Induction Motors

⊙: Standard Thermal Class ○: Manufactured Models

Specification		Indoor or Outdoor (IP55)				Corrosion Proof Class 2		Thermal Class								Inverter Motors (Constant Torque)								
Capacity [kW]	P	4		6		4		E		B		F		H		Indoor Type		Outdoor Type						
		4	6	4	6	4	6	4	4	6	4	6	4	6	4	6	4	6						
0.1		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
0.2		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
0.25		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
0.4		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
0.55		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
0.75		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
1.1		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
1.5		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
2.2		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
3.0		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
3.7		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
5.5		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
7.5		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
11		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
15		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
18.5		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
22		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
30		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
37		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
45		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
55		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
Remarks	Continuous Rating		Applicable Voltage:		4P: 3.7kW and below		220 - 240V 50Hz		220V 60Hz		380 - 420V 50Hz		380 - 420V 50Hz		5.5kW and above		380 - 420V 50Hz		440 - 480V 60Hz		400V 50/60Hz		440V 60Hz	

COMMON

Table A-8 3-Phase Induction Motors with Built-in Brakes ⊙: Standard Thermal Class ○: Manufactured Models

Specification		Indoor or Outdoor (IP55)				Corrosion Proof Class 2		Insulation Class								Inverter Motors (Constant Torque)								
Capacity [kW]	P	4		6		4		E		B		F		H		Indoor Type		Outdoor Type						
		4	6	4	6	4	4	6	4	6	4	6	4	6	4	6	4	6						
0.1		○	○	○	○	○	○	⊙	○	○	○	○	○	○	○	○	○	○						
0.2		○	○	○	○	○	○	⊙	○	○	○	○	○	○	○	○	○	○						
0.25		○	○	○	○	○	○	⊙	○	○	○	○	○	○	○	○	○	○						
0.4		○	○	○	○	○	○	⊙	○	○	○	○	○	○	○	○	○	○						
0.55		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
0.75		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
1.1		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
1.5		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
2.2		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
3.0		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
3.7		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
5.5		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
7.5		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
11		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
15		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
18.5		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
22		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
30		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
37		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
Remarks	Continuous Rating		Applicable Voltage:		4P: 3.7kW and below		220 - 240V 50Hz		220V 60Hz		380 - 420V 50Hz		380 - 420V 50Hz		5.5kW and above		380 - 420V 50Hz		400V 60Hz		400V 50/60Hz		440V 60Hz	
			Brake Thermal Class: F																					

- Note: 1. Motors with capacities and specifications other than as listed in Tables A-7 ~ A-10 are also manufactured. Consult factory.
 Examples: Special voltage, dust-proof, humidity proof, tropical treatment, high temperature, ship use, dual shaft (round & square shaft), CSA Standard, NEMA Standard, etc. For other corresponding Standards, refer to Comparison of Sumitomo Standards with International Standards on Page F52 ~ 56 of Technical Information.
2. Indicate outdoor type when placing 6P motor outdoor. Structure differs for indoor and outdoor type although protection type is IP44.
3. For inverter drive use, consult us with ambient temperature, input speed, mounting method, load characteristics, and other operation conditions. Startup properties, lubrication, thermal rating, and such must be reviewed for selection of proper CYCLO DRIVE frame size for combination.
4. For standard electric motor use with inverter, consult us if input voltage is high (400V or more), carrier frequency is high (typical in IGBT), or wiring distance is large. Review of withstand voltage of the motor may be necessary.

Product Range of Motor

COMMON

Table A-9 Increased Safety (eG3) 3-Phase Induction Motor

⊙: Standard Insulation ○: Manufactured Models

Specification		Indoor Type (IP44)		Outdoor Type (IP44)		Corrosion Proof Class 2		Thermal Class			
Capacity [kW]	P	4	6	4	6	4	6	B		F	
								4	6	4	6
0.1		○		○		○		⊙		○	
0.2		○		○		○		⊙		○	
0.4		○		○		○		⊙		○	
0.75		○		○		○		⊙		○	
1.5		○		○		○		⊙		○	
2.2		○		○		○		⊙		○	
3.7		○		○		○		⊙		○	
5.5		○		○		○		⊙		○	
7.5		○	○	○	○	○	○	⊙	⊙	○	
11		○	○	○	○	○	○	⊙	⊙	○	
15		○	○	○	○	○	○	⊙	⊙		
18.5		○	○	○	○	○	○	⊙			⊙
22		○	○	○	○	○	○	⊙			⊙
30		○	○	○	○	○	○	⊙		○	⊙
37		○	○	○	○	○	○			⊙	⊙
45		○	○	○	○	○	○			⊙	⊙
55		○	○	○	○	○	○			⊙	⊙
Remarks	Continuous Rating Applicable Voltage: 200V, 220V, 350V, 380V, 400V, 440V, 50/60Hz										

Table A-10 Flame-Proof (d2G4) 3-Phase Motor

⊙: Standard Insulation ○: Manufactured Models

Specification		Indoor Type (IP44)		Outdoor Type (IP44)		Corrosion Proof Class 1, 2		Thermal Class				Inverter Motors (Constant Torque)	
Capacity [kW]	P	4	6	4	6	4	6	B		F		Indoor Type	Outdoor Type
								4	6	4	6	4	6
0.1		○		○		○		⊙		○			
0.2		○		○		○		⊙		○		○	
0.4		○		○		○		⊙		○		○	
0.75		○		○		○		⊙		○		○	
1.5		○		○		○		⊙		○		○	
2.2		○		○		○		⊙		○		○	
3.7		○		○		○		⊙		○		○	
5.5		○		○		○		⊙		○		○	
7.5		○		○		○		⊙		○		○	
11		○		○		○		⊙		○		○	
15		○	○	○	○	○	○	⊙	○	○	○	○	○
18.5		○	○	○	○	○	○	⊙	⊙	○	○	○	○
22		○	○	○	○	○	○	⊙	⊙	○	○	○	○
30		○	○	○	○	○	○	⊙	⊙	○	○	○	○
37		○	○	○	○	○	○		⊙	⊙	○	○	○
Remarks	Continuous Rating Applicable Voltage: 200V, 220V, 350V, 380V, 400V, 440V, 50/60Hz (For inverter drive) Applicable inverter: 200V 60Hz 220V 60Hz 400V 60Hz 440V 60Hz Applicable only to Sumitomo inverters. (Refer to Inverter catalogue.)												

⚠ Safety Precautions

1. Authorized combination in Japan for motor and inverter is 1:1 when explosion protection motor is driven with inverter.
Always operate with the specific indicated inverter. Always locate inverter unit in the area without explosive gas; it does not have explosion protection structure.
2. Consult us when the unit is exposed to the elements or to frequent water splashing.