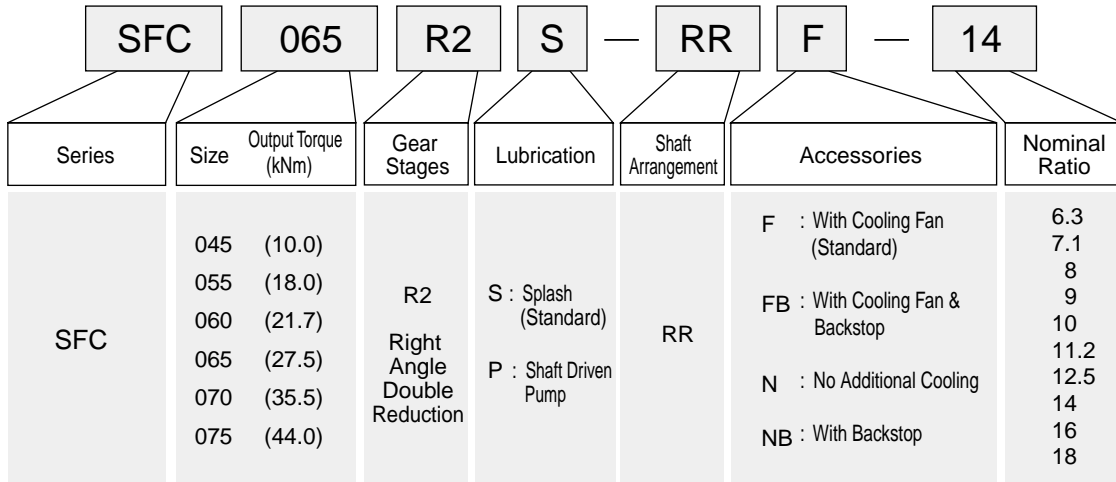


Nomenclature



Standard Specifications

SFC Series is designed to CTI standard specifications.

Item		Standard Specification
Gearbox	Gear	Material Spec : Alloy Steel Heat Treatment : Case Hardening Processing : Precision Finish
	Bearing	Type : Roller Bearing Rated Life (L10) : Low Speed Shaft Bearing 100,000 Hours or Longer High Speed Shaft / Intermediate Shaft Bearings 50,000 Hours or Longer
	Shaft	Material Spec : Alloy Steel
	Housing	Material Spec : Cast Iron
	Seal	Housing and Cover Mating surfaces : Liquid Sealant Low Speed Shaft : Dust-lip Oil Seal and Seal Hood High Speed Shaft : Dust-lip Oil Seal
	Lubrication	Oil Splash Lubrication An oil splasher attached to the high speed shaft propels oil from the lower oil reservoir to the upper bearing oil reservoir.
	Paint	P4 Reference
	Rotation Speed	High Speed Shaft input speed : 450~1800r/min
External Conditions	Outside Temperature	0°C~40°C Temperatures outside the -15°C~40°C range requires the use of synthetic oil. Consideration of the ambient temperature and temperature near the gearbox must be taken.
	Environment	Not designed for corrosive or explosive gas environments.
	Altitude	Designed for altitudes of 1000m or less.

Lubricant Specifications

• Mineral Oil

Brand	ARAL	BP	CASTROL	CHEVRON	EXXONMOBIL		GULF	OPTIMOL	SHELL	TEXACO	TOTAL FINA ELF	TRIBOL
ISO VG320 AGMA 6EP	DEGOL BG320	ENERGOL GR-XP-320	ALPHA SP320	GEAR COMPOUNDS EP320	SPARTAN EP320	MOBIL- GEAR 632	EP LUBRI- CANT HD320	OPTIGEAR BM 320	OMALA 320	MEROPA WM 320	CARTER EP320	TRIBOL 1100/320

• Synthetic Oil

Brand	EXXONMOBIL	
ISO VG320 AGMA 6S	MOBIL GEAR SHC XMP 320	MOBIL GEAR SHC 320

Painting Specifications

Valuation basis : ◎...Excellent, ○...Good

Painting area	Classification	Kind of painting			Paint Specification		Water Resistance	Acid Resistance	Alkali Resistance	Heat Resistance	Weatherability of finished coat
		Classification	Paint of finish coat	Type	Thickness μm	Quality					
Outside Paint*	Standard Paint	Corrosion Resistance	Denatured epoxy	Under Coating	20~40	Vinyl denatured epoxy paint	○	○	○	○	○
				Finish Coating	30~60	Vinyl denatured epoxy paint					
	Heavy Duty Corrosion Resistant Paint 1 (Option)	Humidity Resistance	Thick film epoxy	Under Coating	40~80	High build, modified aluminum epoxy paint	◎	◎	◎	○	○
				Finish Coating	120~240	Polymide epoxy resin					
	Heavy Duty Corrosion Resistant Paint 2 (Option)	Humidity Resistance & Weatherability	Polyurethane	Under Coating	40~80	High build, modified aluminum epoxy paint	◎	◎	◎	○	◎
				Second Coating	120~240	Polymide epoxy resin					
			Finish Coating	20~40	Polyisocyanate type urethane resin paint						
Inside Paint	Standard Paint	Oil Resistance	—	—	20~40	Denatured alkyde resin	—	—	—	—	—

* One layer of modified alkyd resin paint as the first primer

Quick Selection Table

● Input Shaft Speed 1750r/min

Motor (kW)	Fan Speed r/min	280	245	220	195	175	155	140	125	110	97
	Reduction Ratio	6.3	7.1	8	9	10	11.2	12.5	14	16	18
55	*	*	*	*	*	045	045	*	*	*	*
75	*	045	045	045	045	045	045	055	055	055	055
90	*	045	045	045	045	055	055	055	055	055	055
110	*	045	045	055	055	055	055	055	055	065	065
132	*	*	055	055	055	055	055	060	065	065	065
160	*	*	055	055	055	060	060	065	070	070	070
200	*	*	*	060	060	065	065	070	075	075	075
250	*	*	*	*	065	070	070	075	075	*	*
280	*	*	*	*	*	070	075	075	*	*	*

● Input Shaft Speed 1450r/min

Motor (kW)	Fan Speed r/min	230	205	180	160	145	130	115	105	91	81
	Reduction Ratio	6.3	7.1	8	9	10	11.2	12.5	14	16	18
55	*	*	*	*	045	045	045	045	*	*	*
75	*	045	045	045	045	055	055	055	055	055	055
90	*	045	045	045	055	055	055	055	055	065	065
110	*	*	055	055	055	055	055	060	065	065	065
132	*	*	055	055	055	060	060	065	065	070	070
160	*	*	060	060	060	065	065	065	065	075	075
200	*	*	060	065	065	065	070	070	075	075	075
250	*	*	065	065	070	075	075	075	075	*	*
280	*	*	*	070	070	075	075	075	*	*	*

● Input Shaft Speed 1160r/min

Motor (kW)	Fan Speed r/min	185	165	145	130	115	105	93	83	73	64
	Reduction Ratio	6.3	7.1	8	9	10	11.2	12.5	14	16	18
55	*	045	045	045	045	055	055	055	055	055	055
75	*	045	045	055	055	055	055	055	055	060	060
90	*	*	055	055	055	055	060	060	065	070	070
110	*	*	055	055	055	060	065	065	070	070	070
132	060	060	060	060	060	065	065	070	075	075	075
160	060	060	060	065	065	070	070	075	*	*	*
200	065	065	065	065	070	075	075	*	*	*	*
250	065	070	070	075	075	075	*	*	*	*	*
280	*	*	*	*	075	*	*	*	*	*	*

● Input Shaft Speed 970r/min

Motor (kW)	Fan Speed r/min	155	135	120	110	97	87	78	69	61	54
	Reduction Ratio	6.3	7.1	8	9	10	11.2	12.5	14	16	18
55	*	045	045	045	045	055	055	055	055	055	055
75	*	*	055	055	055	055	055	060	065	065	065
90	*	*	055	055	055	060	060	065	070	070	070
110	060	060	060	060	060	065	065	070	075	075	075
132	060	060	060	065	065	065	070	075	075	*	*
160	065	065	065	065	070	070	070	075	*	*	*
200	065	065	070	075	075	075	075	*	*	*	*
250	*	*	*	*	*	*	*	*	*	*	*
280	*	*	*	*	*	*	*	*	*	*	*

Attention

- * symbol indicates a non-standard application. Inquire with Sumitomo for details
- For more specific details please use the following selection method.

Selection Procedure

● Selection Order

Item	Selection Method	Reference Page
Determine Reduction Ratio	$\text{Reduction Ratio} = \frac{\text{Motor Speed}}{\text{Fan Speed}}$	—————
Determine the Service Factor (SF)	SF = 2.0	—————
Determine the Reducer Size	$\text{Motor Power} \leq \text{Mechanical Rating (Service Factor 2.0)}$	P.6 Rating Table
Thrust Load	$\text{Actual Thrust Load} \leq \text{Allowable Thrust Load on Slow Speed Shaft}$ Conservatively calculated, Actual Thrust Load = Fan Thrust Load + Fan Weight	P.6 Allowable Thrust Load on Slow Speed Shaft
Ambient Temperature	Standard ambient temperature operating range 0~40°C	—————
Input Shaft Rotating Speed	Standard Input Shaft operating range 450~1800r/min	—————

Attention

- Thrust load is the downward thrust load due to the weight and rotation of the cooling fan in the clockwise direction.
- Allowable thrust load is based on a bearing life of 100,000 hours. Please inquire about cases above the 100,000 hour limit.
- Please inquire about operating ambient temperature that exceeded the 0~40°C range.
- Please inquire about input shaft operating speeds lower the 450 r/min or higher than 1800 r/min.

● Selection Example

Required Specifications	
Use	: Cooling Tower
Motor Power	: 132kW × 1500r/min
Cooling Fan Speed	: 107 r/min
Actual Thrust Load	: 14.7kN
Rotation Direction	: Clockwise rotation
Ambient Temperature	: 0~40°C
Backstop	: Yes

Selection

- Determine Reduction Ratio
Motor Speed/Fan Speed = 14
- Determine the Service Factor SF=2.0
- Determine the Size
Transfer Capacity (Motor Rating) ≤ Mechanical Rating@SF2.0
From Rating Table SFC065R2S-14 Ratio 14
132<160kW (Mechanical Rating@SF2.0) O K
- Check Thrust Load
Low Speed Shaft Allowable Thrust Load
14.7kN<28kN O K
- Check Ambient Temperature
Operating Ambient Temperature 0~40°C O K
- Check Input Shaft Operating Range
1500r/min Fixed Speed is within the 450~1800r/min operating limits ... O K
- With Backstop

Based on the selection criteria above, SFC065R2S-RRFB-14 is selected

Mechanical Rating Table (Service Factor 2.0)

kW

Unit : kW

Nominal Ratio	Input Speed r/min	Output Speed r/min	Size					
			045	055	060	065	070	075
6.3	Exact Ratio				6.188	6.426	6.188	–
	1750	280						–
	1450	230						–
	1160	185			191	241	260	–
	970	155			155	201	225	–
7.1	Exact Ratio		7.320		7.210	6.927	6.933	–
	1750	245	115					–
	1450	205	99					–
	1160	165	77		189	241	260	–
	970	135	64		154	201	225	–
8	Exact Ratio		8.338	7.955	7.875	8.118	8.082	–
	1750	220	115	167				–
	1450	180	99	136	227	264		–
	1160	145	77	112	188	213	286	–
	970	120	64	91	152	178	231	–
9	Exact Ratio		8.889	8.938	9.176	8.750	9.056	8.597
	1750	195	105	167	223			
	1450	160	91	136	180	251	287	324
	1160	130	70	112	150	203	230	264
	970	110	59	91	122	164	193	221
10	Exact Ratio		10.125	10.125	9.995	10.028	10.125	10.007
	1750	175	95	171	211	257		
	1450	145	79	144	176	223	285	
	1160	115	64	115	140	179	229	280
	970	97	55	96	117	145	186	234
11.2	Exact Ratio		11.624	11.375	11.647	10.809	11.345	11.229
	1750	155	78	142	171	235	284	
	1450	130	65	119	143	204	230	304
	1160	105	52	96	115	164	192	252
	970	87	43	80	96	133	160	205
12.5	Exact Ratio		13.240	12.462	12.469	12.756	12.797	12.536
	1750	140	75	138	161	202	257	340
	1450	115	61	115	135	163	208	291
	1160	93	49	94	105	135	167	234
	970	78	41	77	90	113	139	201
14	Exact Ratio			14.000	14.529	13.750	14.338	14.067
	1750	125		116	138	193	233	301
	1450	105		97	115	161	201	252
	1160	83		78	95	125	162	202
	970	69		66	77	105	131	164
16	Exact Ratio			15.188	15.392	15.889	15.750	15.844
	1750	110		113	131	151	188	257
	1450	91		94	106	122	151	208
	1160	73		75	85	97	122	167
	970	61		61	71	82	101	139
18	Exact Ratio			17.062	17.936	17.500	17.647	17.779
	1750	97		96	112	133	185	232
	1450	81		80	94	111	150	201
	1160	64		65	75	89	120	156
	970	54		55	63	77	101	131

Attention

- When the desired input speed is not shown, use interpolation to determine the appropriate values.
- When input speed (N) is below 970 r/min, use the following formula to determine the mechanical power rating (PN) $PN = P_{970} \times \frac{N}{970}$
- Please inquire with us when input shaft speed exceeds 1800r/min.
- Please inquire with us about these categories.
- No information available.

Allowable Thrust Load on Slow Speed Shaft

Unit : kN

Output Shaft Speed (r/min)	Size					
	045	055	060	065	070	075
≤ 300	16	25	22	28	29	50
≤ 150	18	27	27	28	31	50
≤ 100	21	29	30	34	39	50

Quick Selection Table

Input Shaft Speed 1750r/min

Motor (HP)	Fan Speed r/min	280	245	220	195	175	155	140	125	110	97
	Reduction Ratio	6.3	7.1	8	9	10	11.2	12.5	14	16	18
75	*	*	*	*	*	*	045	045	*	*	*
100	*	045	045	045	045	045	045	055	055	055	
125	*	045	045	045	045	055	055	055	055	055	
150	*	045	045	055	055	055	055	055	055	060	
175	*	*	055	055	055	055	055	060	060	065	
200	*	*	055	055	055	060	060	065	065	070	
250	*	*	*	060	060	065	065	065	070	075	
300	*	*	*	*	065	065	070	070	075	075	
350	*	*	*	*	*	070	075	075	*	*	

Input Shaft Speed 1450r/min

Motor (HP)	Fan Speed r/min	230	205	180	160	145	130	115	105	91	81
	Reduction Ratio	6.3	7.1	8	9	10	11.2	12.5	14	16	18
75	*	*	*	*	045	045	045	045	*	*	*
100	*	045	045	045	045	055	055	055	055	055	
125	*	045	045	055	055	055	055	055	055	060	
150	*	*	055	055	055	055	055	060	060	065	
175	*	*	055	055	055	060	060	065	065	070	
200	*	*	060	060	060	065	065	070	070	075	
250	*	*	060	065	065	065	065	070	070	075	
300	*	*	060	065	070	070	075	075	*	*	
350	*	*	065	070	070	075	075	*	*	*	

Input Shaft Speed 1160r/min

Motor (HP)	Fan Speed r/min	185	165	145	130	115	105	93	83	73	64
	Reduction Ratio	6.3	7.1	8	9	10	11.2	12.5	14	16	18
75	*	045	045	045	045	055	055	055	055	055	055
100	*	045	045	055	055	055	055	055	055	055	060
125	*	*	055	055	055	055	055	060	065	070	
150	*	*	055	055	055	060	065	065	070	070	
175	060	060	060	060	060	065	065	070	075	075	
200	060	060	060	060	065	065	070	070	075	075	
250	060	060	065	065	070	070	075	075	*	*	
300	065	070	070	070	070	075	075	*	*	*	
350	*	*	070	075	075	*	*	*	*	*	

Input Shaft Speed 970r/min

Motor (HP)	Fan Speed r/min	155	135	120	110	97	87	78	69	61	54
	Reduction Ratio	6.3	7.1	8	9	10	11.2	12.5	14	16	18
75	*	045	045	045	045	055	055	055	055	055	060
100	*	*	055	055	055	055	055	055	060	065	065
125	*	*	060	060	055	060	065	065	070	075	
150	060	060	060	060	060	065	065	070	070	075	
175	060	060	060	065	065	065	070	070	075	075	
200	060	060	060	065	070	070	075	075	*	*	
250	065	065	070	070	075	075	075	*	*	*	
300	070	070	070	*	075	*	*	*	*	*	
350	*	*	*	*	*	*	*	*	*	*	

Attention

- * symbol indicates a non-standard application. Inquire with Sumitomo for details
- For more specific details please use the following selection method.

Selection Procedure

Selection Order

Item	Selection Method	Reference Page
Determine Reduction Ratio	$\text{Reduction Ratio} = \frac{\text{Motor Speed}}{\text{Fan Speed}}$	————
Determine the Service Factor (SF)	SF = 2.0	————
Determine the Reducer Size	$\text{Motor Power} \leq \text{Mechanical Rating (Service Factor 2.0)}$	P.8 Rating Table
Thrust Load	$\text{Actual Thrust Load} \leq \text{Allowable Thrust Load on Slow Speed Shaft}$ Conservatively calculated, Actual Thrust Load = Fan Thrust Load + Fan Weight	P.8 Allowable Thrust Load on Slow Speed Shaft
Ambient Temperature	Standard ambient temperature operating range 0~40°C	————
Input Shaft Rotating Speed	Standard Input Shaft operating range 450~1800r/min	————

Attention

- Thrust load is the downward thrust load due to the weight and rotation of the cooling fan in the clockwise direction.
- Allowable thrust load is based on a bearing life of 100,000 hours. Please inquire about cases above the 100,000 hour limit.
- Please inquire about operating ambient temperature that exceeded the 0~40°C range.
- Please inquire about input shaft operating speeds lower the 450 r/min or higher than 1800 r/min.

Selection Example

Required Specifications	
Use	: Cooling Tower
Motor Power	: 200HP x 1750r/min
Cooling Fan Speed	: 107 r/min
Actual Thrust Load	: 14.7kN
Rotation Direction	: Clockwise rotation
Ambient Temperature	: 0~40°C
Backstop	: Yes

Selection	
1. Determine Reduction Ratio	Motor Speed/Fan Speed = 16
2. Determine the Service Factor SF=2.0
3. Determine the Size	Transfer Capacity (Motor Rating) ≤ Mechanical Rating@SF2.0
	From Rating Table SFC065R2S-16 Ratio 16
	200<202HP (Mechanical Rating@SF2.0) OK
4. Check Thrust Load	Low Speed Shaft Allowable Thrust Load
	14.7kN < 28kN OK
5. Check Ambient Temperature	Operating Ambient Temperature 0~40°C OK
6. Check Input Shaft Operating Range	1750r/min Fixed Speed is within the 450~1800r/min operating limits OK
7. With Backstop	
	Based on the selection criteria above, SFC065R2S-RRFB-16 is selected

Mechanical Rating Table (Service Factor 2.0)

HP

Unit : HP

Nominal Ratio	Input Speed r/min	Output Speed r/min	Size					
			045	055	060	065	070	075
6.3	Exact Ratio				6.188	6.426	6.188	–
	1750	280						–
	1450	230						–
	1160	185			256	323	349	–
	970	155			208	270	302	–
7.1	Exact Ratio		7.320		7.210	6.927	6.933	–
	1750	245	154					–
	1450	205	133					–
	1160	165	103		253	323	349	–
	970	135	86		207	270	302	–
8	Exact Ratio		8.338	7.955	7.875	8.118	8.082	–
	1750	220	154	224				–
	1450	180	133	182	304	354		–
	1160	145	103	150	252	286	384	–
	970	120	86	122	204	239	310	–
9	Exact Ratio		8.889	8.938	9.176	8.750	9.056	8.597
	1750	195	141	224	299			
	1450	160	122	182	241	337	385	434
	1160	130	94	150	201	272	308	354
	970	110	79	122	164	220	259	296
10	Exact Ratio		10.125	10.125	9.995	10.028	10.125	10.007
	1750	175	127	229	283	345		
	1450	145	106	193	236	299	382	
	1160	115	86	154	188	240	307	375
	970	97	74	129	157	194	249	314
11.2	Exact Ratio		11.624	11.375	11.647	10.809	11.345	11.229
	1750	155	105	190	229	315	381	
	1450	130	87	160	192	274	308	408
	1160	105	70	129	154	220	257	338
	970	87	58	107	129	178	215	275
12.5	Exact Ratio		13.240	12.462	12.469	12.756	12.797	12.536
	1750	140	101	185	216	271	345	456
	1450	115	82	154	181	219	279	390
	1160	93	66	126	141	181	224	314
	970	78	55	103	121	152	186	270
14	Exact Ratio			14.000	14.529	13.750	14.338	14.067
	1750	125		156	185	259	312	404
	1450	105		130	154	216	270	338
	1160	83		105	127	168	217	271
	970	69		89	103	141	176	220
16	Exact Ratio			15.188	15.392	15.889	15.750	15.844
	1750	110		152	176	202	252	345
	1450	91		126	142	164	202	279
	1160	73		101	114	130	164	224
	970	61		82	95	110	135	186
18	Exact Ratio			17.062	17.936	17.500	17.647	17.779
	1750	97		129	150	178	248	311
	1450	81		107	126	149	201	270
	1160	64		87	101	119	161	209
	970	54		74	84	103	135	176

Attention

- 1) When the desired input speed is not shown, use interpolation to determine the appropriate values.
- 2) When input speed (N) is below 970 r/min, use the following formula to determine the mechanical power rating (PN) $PN = P_{970} \times \frac{N}{970}$
- 3) Please inquire with us when input shaft speed exceeds 1800r/min.
- 4) Please inquire with us about these categories.
- 5) – No information available.

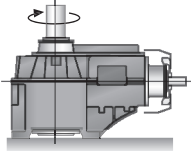
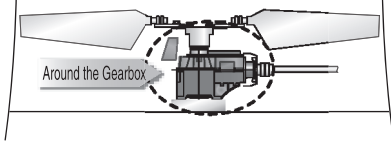
Allowable Thrust Load on Slow Speed Shaft

Unit : kN

Output Shaft Speed (r/min)	Size					
	045	055	060	065	070	075
≦ 300	16	25	22	28	29	50
≦ 150	18	27	27	28	31	50
≦ 100	21	29	30	34	39	50

Application Data Sheet

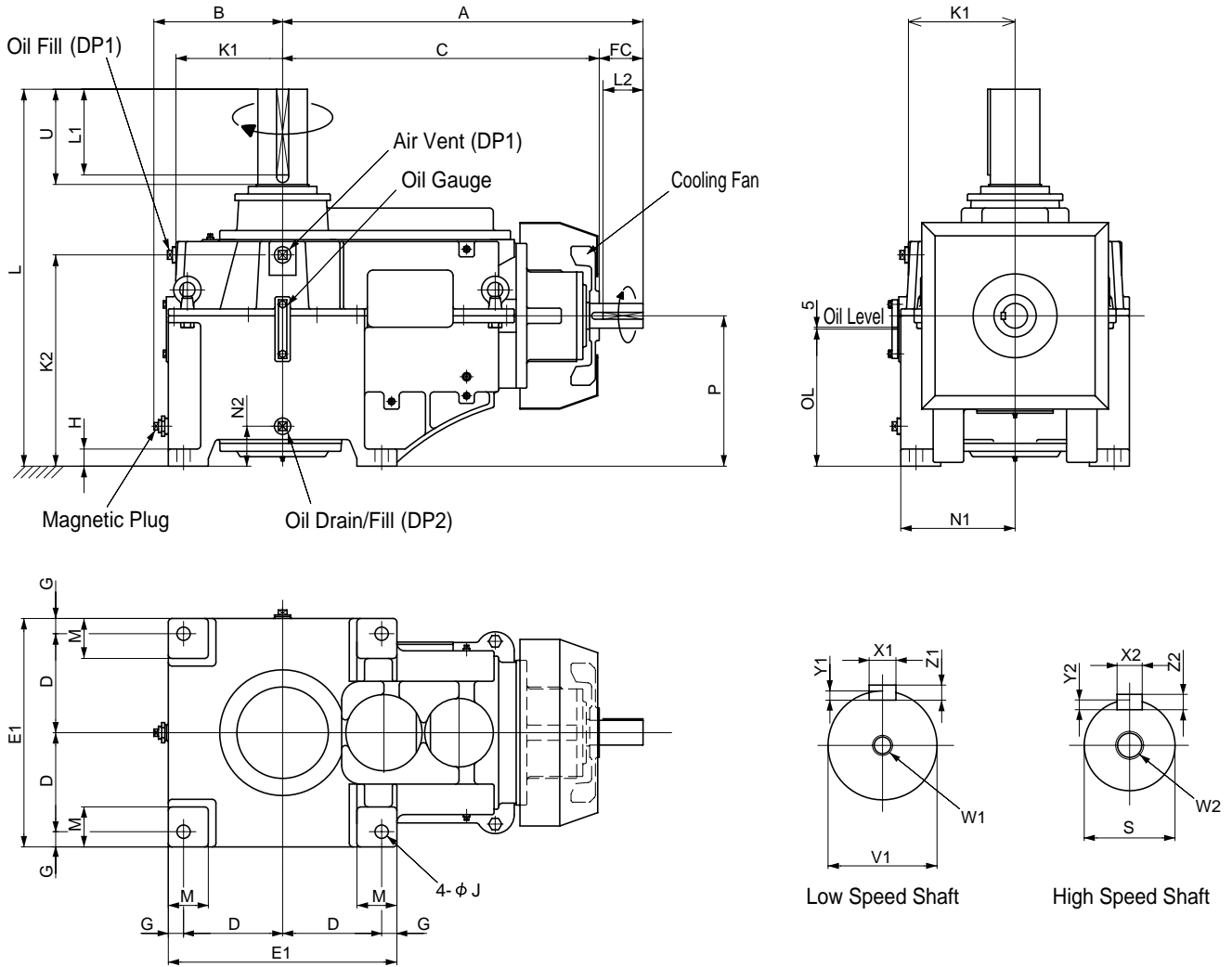
Enter the required specifications below when inquiring about SFC series reducers.

1. Load Conditions												
Motor Type	AC · Pole Change * · Inverter											
Motor Power	kW · HP	r/min										
Maximum Start-up Power	kW											
Actual Power	kW											
Input Shaft Speed (Min · Max)	Min	r/min, Max	r/min									
Output Shaft Speed (Min · Max)	Min	r/min, Max	r/min									
Thrust Load (Fan Thrust + Fan Weight)	N											
Output Shaft Rotation Direction (As seen from the shaft end)	Clockwise ↓ As seen from this direction 											
Maximum Torque (Motor Rating Ratio)	%, Frequency		Times/Day									
2. Installation Environment												
Ambient Temperature Around the Gearbox	 <table border="1" style="float: right;"> <thead> <tr> <th></th> <th>Minimum</th> <th>Maximum</th> </tr> </thead> <tbody> <tr> <td>Starting</td> <td>°C</td> <td rowspan="2" style="text-align: center;">/</td> </tr> <tr> <td>Operating</td> <td></td> <td>°C</td> </tr> </tbody> </table>				Minimum	Maximum	Starting	°C	/	Operating		°C
	Minimum	Maximum										
Starting	°C	/										
Operating			°C									
Corrosive Gas (ex. Hydrogen Sulfide etc.)	None · Yes (Type of Gas)											
3. Backstop **												
Backstop	Yes · No											
4. Special Requests												
Noise Level Specification	None · Yes (SPL ^{***} 1m from the gearbox surface dB(A) PWL ^{***} dB(A))											
Paint	· Standard · Heavy Corrosion Protection 1 · Heavy Corrosion Protection 2 (· Other)											
Non-Permissible Materials (Aluminum · Copper)	None · Yes (Material)											

Attention

- * When using pole change motors to change from high speed to low speed, control the fan rotation speed so that regeneration braking torque does not act on the gearbox.
- ** When running cooling towers in close proximity to each other, exhaust air flow from an operational tower can cause the reverse rotation of fans that are not operating. Using a backstop to prevent this motion has the following advantages:
 1. Maintenance on the non-operational units is possible.
 2. Reduces the motor starting torque when the non-operating units are brought online.
 3. Prevents gearbox damage from excessive starting torque.
- *** SPL : sound pressure level
PWL : sound power level

Dimensions



Units : mm

Size	A	B	C	D	E1	G	H	J (Installation Bolt)	L	P	M	Weight (kg)	Oil Qty (Liters)	OL
045	725	262	645	200	470	35	38	28 (M24)	725	290	95	365	24	260
055	794	301	714	225	530	40	40	35 (M30)	795	320	105	435	34	290
060	865	318	750	240	560	40	45	35 (M30)	900	370	105	660	52	335
065	946	338	831	260	600	40	45	35 (M30)	990	395	105	830	55	360
070	965	363	850	275	650	50	52	42 (M36)	1010	415	135	960	75	375
075	1018	383	903	295	690	50	52	42 (M36)	1045	450	135	1250	95	410

Size	Low Speed Shaft							High Speed Shaft						Pipe Thread						
	V1	U1	L1	X1	Y1	Z1	W1/Depth	S	FC	L2	X2	Y2	Z2	W2/Depth	DP1	K1	K2	DP2	N1	N2
045	100m6	210	190	28	10	16	M24/50	45k6	80	80	14	5.5	9	M16/36	R 1	190	393	R 1 1/4	235	80
055	110m6	210	190	28	10	16	M24/50	50k6	80	80	14	5.5	9	M16/36	R 1	210	445	R 1 1/4	265	100
060	120m6	210	185	32	11	18	M24/50	60m6	115	105	18	7	11	M20/42	R 1 1/4	260	505	R 1 1/4	280	105
065	130m6	250	225	32	11	18	M24/50	65m6	115	105	18	7	11	M20/42	R 1 1/4	280	555	R 1 1/4	300	105
070	140m6	250	225	36	12	20	M30/60	65m6	115	105	18	7	11	M20/42	R 1 1/4	290	575	R 1 1/4	325	105
075	150m6	250	225	36	12	20	M30/60	65m6	115	105	18	7	11	M20/42	R 1 1/4	310	610	R 1 1/4	345	105

Attention

- (1) Keys and keyways for both high speed and low speed shafts conform to ISO/R773-1969 close key. (JIS B 1301-1996 Parallel Key in Fastening Type)
- (2) The oil quantity shown is approximate. Fill to the appropriate level using the oil level gauge.
- (3) Air breather and air breather pipe are assembled by the customer and installed on site. A pipe extending from the gearbox to outside the fan stack should be prepared. Piping parts are not included.
- (4) The installation bolts should be rated JIS Class 8.8 .
- (5) To maintain coupling alignment, stop plates or knock pins should be installed to prevent gearbox twisting on its base due to fan operation.

12. Construction drawing

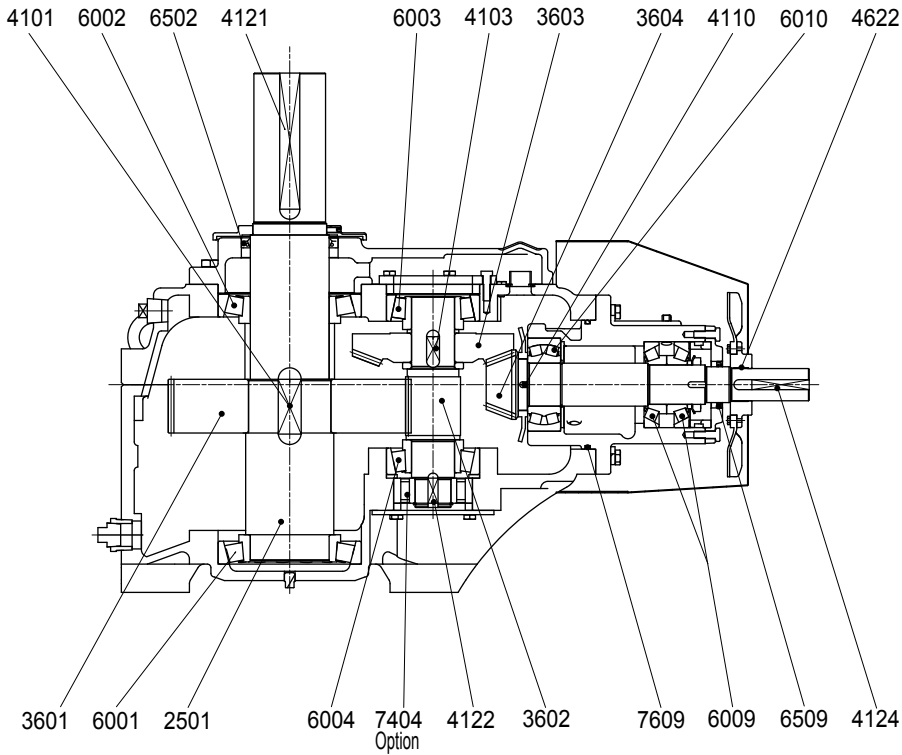


Fig.6 SFC045·SFC055

POS.NO	Part Name
2501	Slow speed shaft
3601	Helical gear
3602	Helical pinion shaft
3603	Bevel gear
3604	Bevel pinion shaft
4101	Key
4103	Key
4110	Key
4121	Key
4122	Key
4124	Key
4622	Tolerance ring
6001	Tapered roller bearing
6002	Tapered roller bearing
6003	Tapered roller bearing
6004	Tapered roller bearing
6009	Tapered roller bearing
6010	Spherical roller bearing
6502	Oil seal
6509	Oil seal
7404	Backstop
7609	O-ring

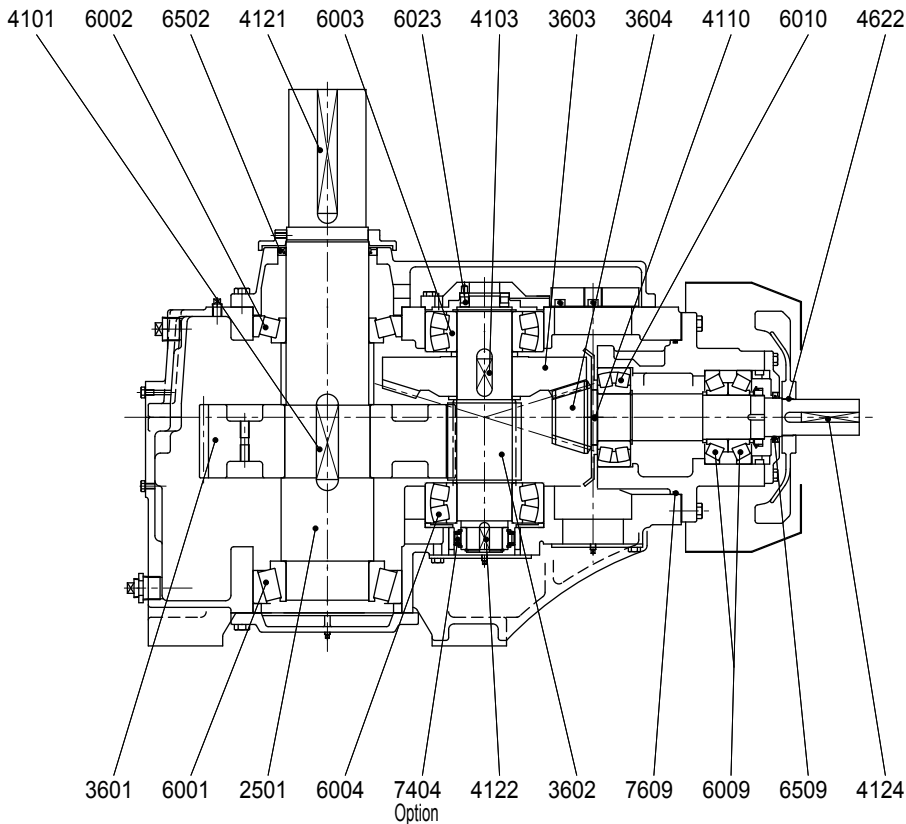


Fig.7 SFC060·SFC065·SFC070·SFC075

POS.NO	Part Name
2501	Slow speed shaft
3601	Helical gear
3602	Helical pinion shaft
3603	Bevel gear
3604	Bevel pinion shaft
4101	Key
4103	Key
4110	Key
4121	Key
4122	Key
4124	Key
4622	Tolerance ring
6001	Tapered roller bearing
6002	Tapered roller bearing
6003	Spherical roller bearing
6004	Spherical roller bearing
6009	Tapered roller bearing
6010	Spherical roller bearing
6023	Thrust cylindrical roller bearing
6502	Oil seal
6509	Oil seal
7404	Backstop
7609	O-ring

13. Locations of oil filler and drain plug

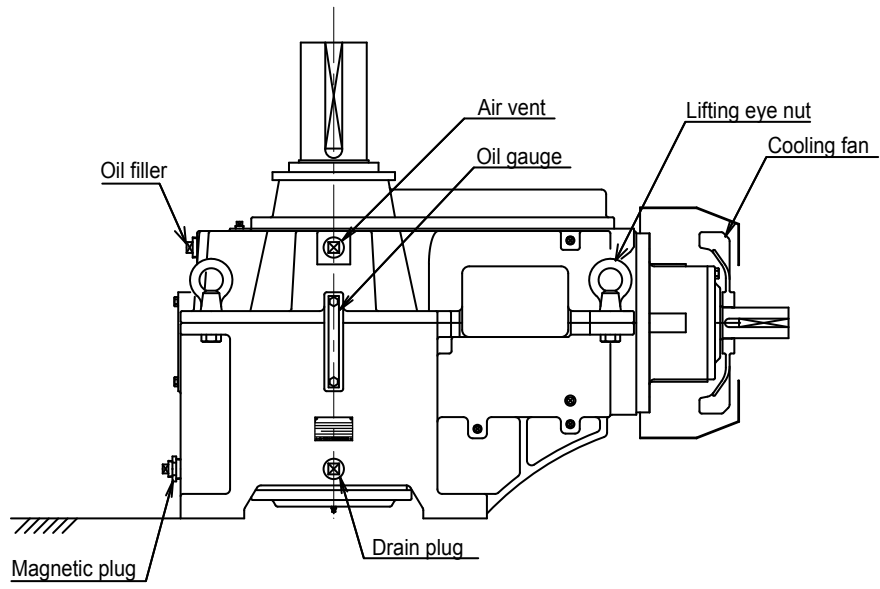


Fig9. Locations of oil filler and drain plug