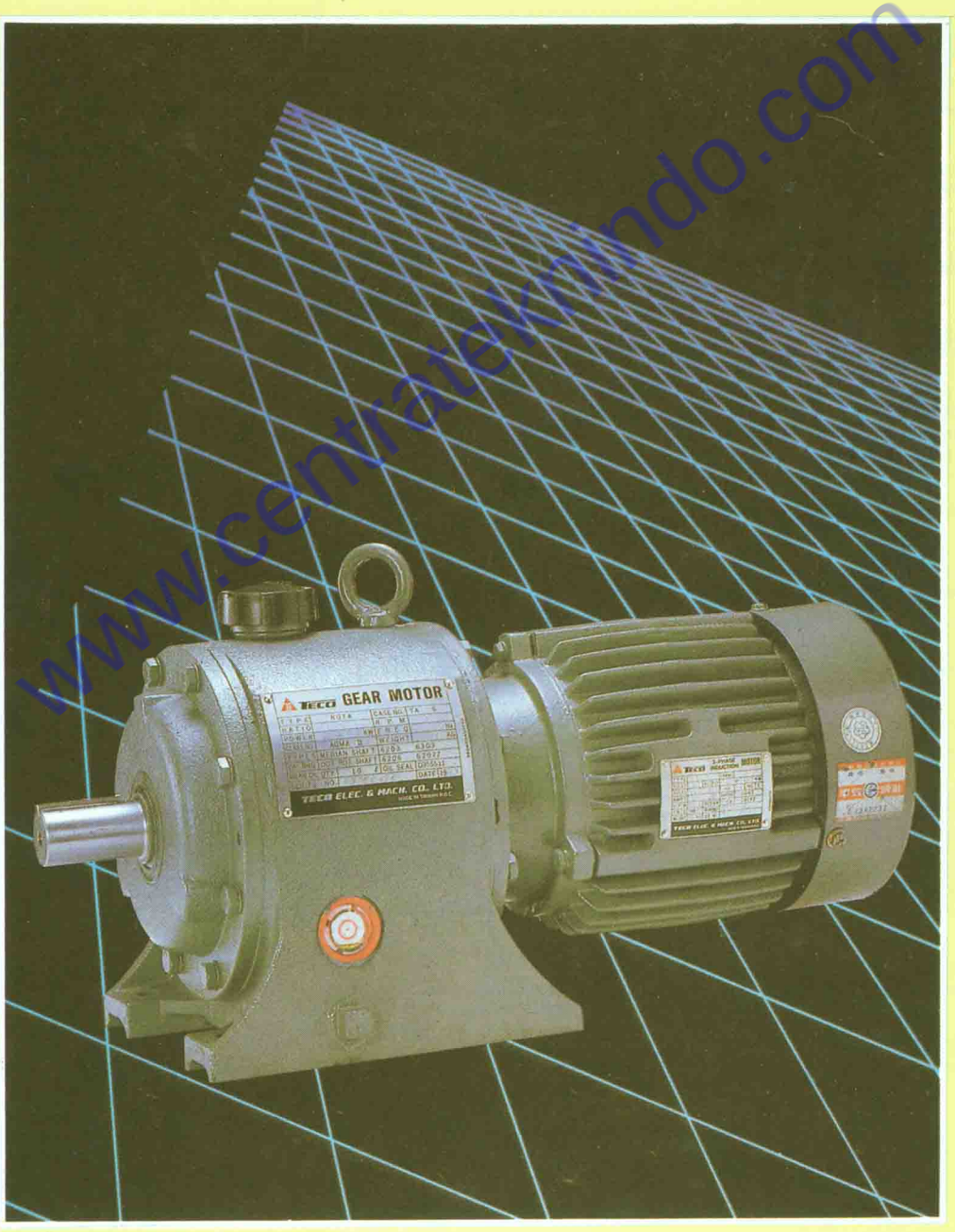
TECO®

GEARED MOTORS



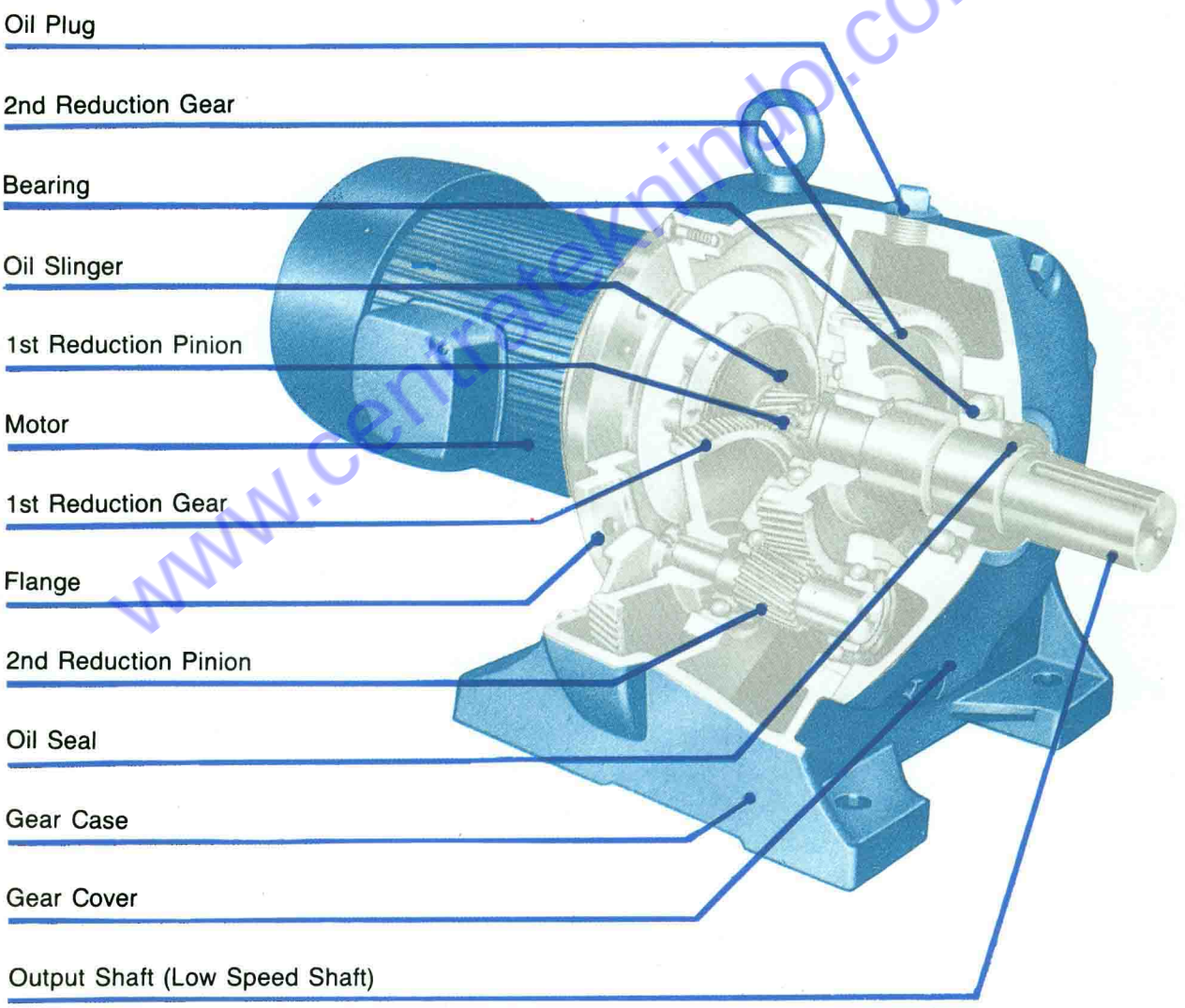
GEARED MOTORS

Features:

1. High Power & Compact: Gear strengh of AGMA-II level ensures economical operation.
2. Top Performance: High precision gears guarantee low vibration, quiet operation and high efficiency (higher than 98%).
3. Durability: Heat-treated alloy steel gears offers long life and extra toughness.

Construction:

Heat-treated gears and rugged gear case are capable of withstanding large overhung load.



STANDARD MODEL

Type / Applicable Motor (KW)	Geared Motor	Gear Reducer
4p 0.4 - 3.7 6p 0.4 - 2.2	TFA($^1/_{10}$,$^1/_{20}$,$^1/_{30}$)	TZA($^1/_{10}$,$^1/_{20}$,$^1/_{30}$)
4p • 5.5 - 15 6p • 3.7 - 11	TFB($^1/_{10}$,$^1/_{20}$,$^1/_{30}$)	TZB($^1/_{10}$,$^1/_{20}$,$^1/_{30}$)

GEARED MOTORS

DIMENSIONS

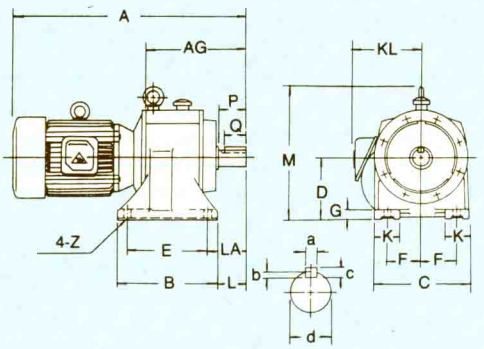


Fig 1. TFA Type (4P-3.7kw • 6P-2.2kw and below)

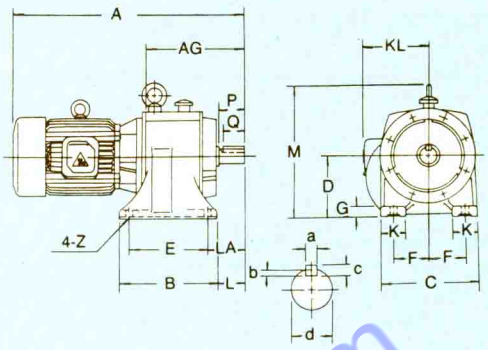


Fig 2. TFB Type (4P-5.5kw • 6P-3.7kw and above)

mm

Reduction Ratio	Output KW		Unit Size	Fig	A	Motor frame	AG	B	C	D	E	F	G	K	L	LA	M	KL	Z	Output Shaft					Weight (kg)
	4p	6p																		d	a	b	p	q	
1/10	0.4	-	TA6		450	71	203	194	180	112	160	65	18	45	67	50	240	105	12	28	7	4	50	45.5	24
	0.75	0.4	TA6		470	80	203	194	180	112	160	65	18	45	67	50	240	105	12	28	7	4	50	45.5	29
	1.5	0.75	TA6	Fig	505	90L	203	194	180	112	160	65	18	45	67	50	240	105	12	28	7	4	50	45.5	38
	2.2	1.5	TA7	1	563	100L	221	210	200	125	170	75	20	50	75	55	265	118	15	31.5	10	4.5	56	50	50
	3.7	2.2	TA8		614	112M	257	230	230	140	190	85	22	55	91	71	295	138	15	31.5	10	4.5	71	65	73
	5.5	3.7	TB11		744	132S	328	310	300	200	250	110	30	75	120	90	405	185	19	50	12	4.5	90	81	126
	7.5	5.5	TB11	Fig	782	132M	328	310	300	200	250	110	30	75	120	90	405	185	19	50	12	4.5	90	81	137
	11	7.5	TB14	2	891	160M	397	370	395	250	310	150	40	90	140	110	500	245	24	63	18	6	112	104	226
	15	11	TB14		935	160L	397	370	395	250	310	150	40	90	140	110	500	245	24	63	18	6	112	104	241
1/20	0.4	-	TA6		450	71	203	194	180	112	160	65	18	45	67	50	240	105	12	28	7	4	50	45.5	24
	0.75	0.4	TA6		470	80	203	194	180	112	160	65	18	45	67	50	240	105	12	28	7	4	50	45.5	29
	1.5	0.75	TA7	Fig	522	90L	221	210	200	125	170	75	20	50	75	55	265	118	15	31.5	10	4.5	56	50	42
	2.2	1.5	TA8	1	599	100L	257	230	230	140	190	85	22	55	91	71	295	138	15	40	10	4.5	71	65	59
	3.7	2.2	TA9		637	112M	282	255	250	160	205	90	25	65	105	80	330	155	19	45	12	4.5	80	73	82
	5.5	3.7	TB11		744	132S	328	310	300	200	250	110	30	75	120	90	405	185	19	50	12	4.5	90	81	126
	7.5	5.5	TB12	Fig	813	132M	359	340	350	212	280	130	35	85	130	100	440	210	24	56	15	5	100	92.5	166
	11	7.5	TB14	2	891	160M	397	370	395	250	310	150	40	90	140	110	500	245	24	63	18	6	112	104	226
	15	11	TB15		973	160L	435	415	420	280	345	160	40	95	150	115	555	270	24	71	20	7	112	105	288
1/30	0.4	-	TA6		450	71	203	194	180	112	160	65	18	45	67	50	240	105	12	28	7	4	50	45.5	25
	0.75	0.4	TA7		487	80	221	210	200	125	170	75	20	50	75	55	265	118	15	31.5	10	4.5	56	50	34
	1.5	0.75	TA8	Fig	558	90L	257	230	230	140	190	85	22	55	91	71	295	138	15	40	10	4.5	71	65	51
	2.2	1.5	TA9	1	622	100L	282	255	250	160	205	90	25	65	105	80	330	155	19	45	12	4.5	80	73	68
	3.7	2.2	TA10		663	112M	310	275	290	180	215	110	28	65	120	90	370	176	19	50	12	4.5	90	81	95
	5.5	3.7	TB12		775	132S	359	340	350	212	280	130	35	85	130	100	440	210	24	56	15	5	100	92.5	155
	7.5	5.5	TB14	Fig	845	132M	397	370	395	250	310	150	40	90	140	110	500	245	24	63	18	6	112	104	189
	11	7.5	TB15	2	929	160M	435	415	420	280	345	160	40	95	150	115	555	270	24	71	20	7	112	105	273
	15	11	TB17		1039	160L	501	490	455	300	410	175	45	105	170	130	590	295	28	80	20	7	125	118	339

Selection of Unit Size: Select a Unit Size from Table 1 according to the KW of your motor and required r.p.m. of the Low Speed Shaft. If the KW of your motor is unknown, consult Table 2.

TABLE 1: Unit Size Selection Table

Output (r.p.m.)		Motor Pole	Reduction Ratio	Output (KW)								
50HZ	60HZ			0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15
33	40	6	1/30	TA7	TA8	TA9	TA10	TB12	TB14	TB15	TB17	-
50	60	4	1/30	TA6	TA7	TA8	TA9	TA10	TB12	TB14	TB15	TB17
75	90	4	1/20	TA6	TA6	TA7	TA8	TA9	TB11	TB12	TB14	TB15
150	180	4	1/10	TA6	TA6	TA6	TA7	TA8	TB11	TB11	TB14	TB14

GEARED MOTORS

DIMENSIONS

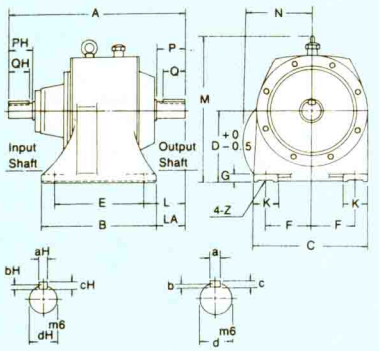


Fig 3 TZA Type

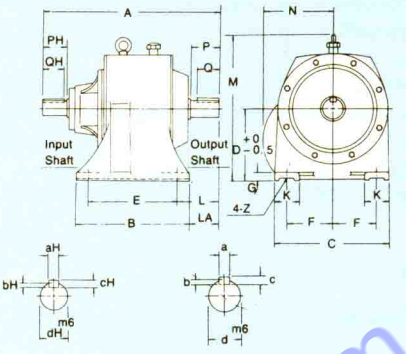
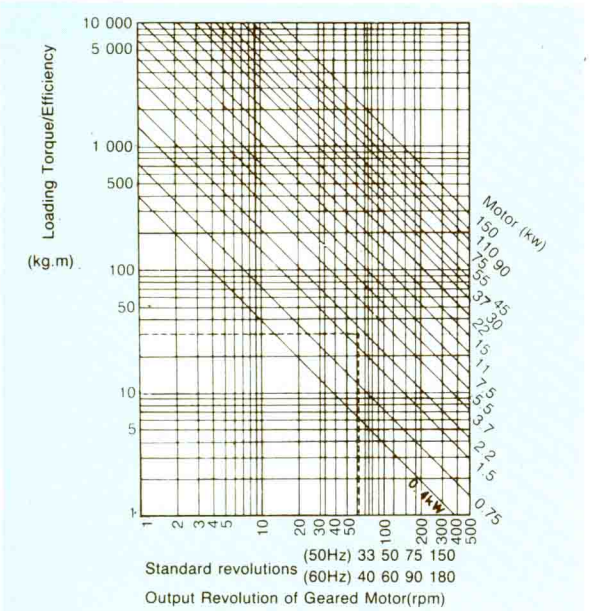


Fig 4 TZB Type

mm

Ratio	Output (KW) High Speed (r.p.m) 1800	1500	1200	1000	900	750	Unit Size	Fig	A	B	C	D	E	F	G	K	L	LA	M	N	Z	Shaft end Low Speed Shaft d	a	b	p	q	High Speed Shaft dH	aH	PH	bH	QH	Weight (kg)
	0.45	0.4	0.34	0.3	0.28	0.25	TA6		324	194	180	112	160	65	18	45	67	50	240	105	12	28	7	4	50	45.5	16	5	3	40	34.5	20
	0.85	0.75	0.65	0.57	0.53	0.46	TA6		350	194	180	112	160	65	18	45	67	50	240	105	12	28	7	4	50	45.5	22	7	4	45	39.5	24
	1.7	1.5	1.3	1.1	1.0	0.9	TA6	Fig	350	194	180	112	160	65	18	45	67	50	240	105	12	28	7	4	50	45.5	22	7	4	45	39.5	28
	2.5	2.2	1.9	1.7	1.5	1.3	TA7	3	386	210	200	125	170	75	20	50	75	55	260	118	15	31.5	10	4.5	56	50	28	7	4	50	45.5	39
1/10	4.2	3.7	3.1	2.7	2.4	2.1	TA8		432	230	230	140	190	85	22	55	91	71	295	138	15	40	10	4.5	71	65	28	7	4	50	45.5	56
	6.2	5.5	4.6	4.0	3.7	3.1	TB11		498	310	300	200	250	110	30	75	120	90	405	185	19	50	12	4.5	90	81	35	10	4.5	63	58	77
	8.3	7.5	6.4	5.7	5.2	4.6	TB11	Fig	498	310	300	200	250	110	30	75	120	90	405	185	19	50	12	4.5	90	81	35	10	4.5	63	58	77
	11.8	11	9.5	8.3	7.7	6.7	TB14	4	617	370	395	250	310	150	40	90	140	110	505	245	24	63	18	6	112	104	45	12	4.5	80	73	143
	16	15	13.5	12	11	9.5	TB14		617	370	395	250	310	150	40	90	140	110	505	245	24	63	18	6	112	104	45	12	4.5	80	73	143
	0.45	0.4	0.34	0.3	0.28	0.25	TA6		324	194	180	112	160	65	18	45	67	50	240	105	12	28	7	4	50	45.5	16	5	3	40	34.5	20
	0.85	0.75	0.65	0.57	0.53	0.46	TA6		350	194	180	112	160	65	18	45	67	50	240	105	12	28	7	4	50	45.5	22	7	4	45	39.5	25
	1.7	1.5	1.3	1.1	1.0	0.9	TA7	Fig	367	210	200	125	170	75	20	50	75	55	260	118	15	31.5	10	4.5	56	50	22	7	4	45	39.5	33
	2.5	2.2	1.9	1.7	1.5	1.3	TA8	3	422	230	230	140	190	85	22	55	91	71	295	138	15	40	10	4.5	71	65	28	7	4	50	45.5	48
1/20	4.2	3.7	3.1	2.7	2.4	2.1	TA9		455	255	250	160	205	90	25	65	105	80	330	135	19	45	12	4.5	80	73	28	7	4	50	45.5	65
	6.2	5.5	4.3	3.7	3.3	2.7	TB11		498	310	300	200	250	110	30	75	120	90	405	185	19	50	12	4.5	90	81	35	10	4.5	63	58	77
	8.3	7.5	6.3	5.3	4.8	4.0	TB12	Fig	529	340	350	212	280	130	35	85	130	100	445	210	24	56	15	5	100	92.5	35	10	4.5	63	58	106
	11.8	11	9.5	8.3	7.7	6.7	TB14	4	617	370	390	250	310	150	40	90	140	110	505	245	24	63	18	6	112	104	45	12	4.5	80	73	143
	16	15	13.5	11.8	10.7	9.0	TB15		655	415	420	280	345	160	40	95	150	115	555	270	24	71	20	7	112	105	45	12	4.5	80	73	190
	0.45	0.4	0.34	0.3	0.28	0.25	TA6		324	194	180	112	160	65	18	45	67	50	240	105	12	28	7	4	50	45.5	16	5	3	40	34.5	21
	0.85	0.75	0.65	0.57	0.53	0.46	TA7		367	210	200	125	170	75	20	50	75	55	260	118	15	31.5	10	4.5	56	50	22	7	4	45	39.5	30
	1.7	1.5	1.3	1.1	1.0	0.9	TA8	Fig	403	230	230	140	190	85	22	55	91	71	295	138	15	40	10	4.5	71	65	22	7	4	45	39.5	43
1/30	2.5	2.2	1.9	1.7	1.5	1.3	TA9	3	445	255	250	160	205	90	25	65	105	80	330	135	19	45	12	4.5	80	73	28	7	4	50	45.5	59
	4.2	3.7	3.1	2.7	2.4	2.1	TA 10		481	275	290	180	215	110	28	65	120	90	370	176	19	50	12	4.5	90	81	28	7	4	50	45.5	78
	62	5.5	4.4	3.7	3.4	2.8	TB12	Fig	527	340	350	212	280	130	35	85	130	100	445	210	24	56	15	5	100	92.5	35	10	4.5	63	58	106
	8.3	7.5	6.4	5.7	5.1	4.3	TB14	4	561	370	395	250	310	150	40	90	140	110	505	245	24	63	18	6	112	104	35	10	4.5	63	58	129
	11.8	11	9.3	79	7.1	6.0	TB15		655	415	420	280	345	160	40	95	150	115	555	270	24	71	20	7	112	105	45	12	4.5	80	73	190

TABLE 2: Motor KW Selection Table



NOTE:

1) This selection table refers to standard motors (low voltage, squirrel-cage, E-class insulation) exclusively. If the motor is to be used for frequent starting, fluctuating load, or shock load, please contact us.
2) The KW of a motor is obtained by:

$$\left(\frac{\text{the necessary load torque}}{\text{efficiency of the reduction unit}}\right)$$

* If the necessary load torque fluctuates, use an equivalent torque. If the load cycle is unknown, use the maximum torque.
* It is not necessary to take starting torque into consideration.
* The efficiency of a reduction unit is about 95% for two-step reduction.

Example of Selection:

Requirements : Frequency: 60Hz, Revolution of low-speed Shaft: 60 rpm, maximum load torque: 30.5kg-M

$$\text{Load torque/Efficiency} = \frac{30.5}{0.95} = 32.1 \text{ Kg-M}$$

The intersection of load torque horizontal line 32.1 Kg-M and output 60rpm vertical line, indicates a motor of 2.2KW.

$$\text{Calculation: KW of motor} = \frac{T \times N}{974} = \frac{32.1 \times 60}{974} = 1.98\text{KW}$$

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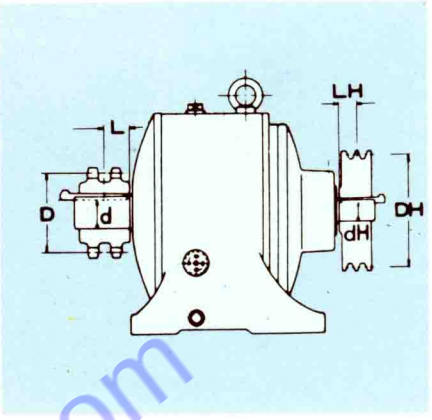
OVERHUNG LOAD ON SHAFT END

When the low speed shaft or high speed shaft is to be coupled with sprocket wheel, external gear or V-pulley, please refer to Tables 3 and 4 for the pitch diameter and mounting position.
If a matching machine requires the use of an attachment smaller than listed in these Tables or if an overhung load is to be exerted on the shaft end by any other means, please check with the formula below and by reference to Table 7 for bearing safety factor (life factor).
In case an overhung load exceeds the allowable value in table 7, please consult us.



FORMULA

$$\text{Overhung load (kg)} = \frac{97400 \times KW}{\text{Pitch radius of sprocket wheel or V-pulley (cm)} \times rpm} \times Fc \times Lf$$

TABLE 3 Dimensions of Sprocket Wheel and External Gear for Low Speed Shaft

mm

Unit Size	TA6	TA7	TA8	TA9	TA10	TB 11	TB12	TB14	TB15	TB17
Shaft End Dia. D	28	31.5	40	45	50	50	56	63	71	80
Min. Picth Dia. D	80	90	120	150	180	180	180	200	240	270
Position L	25	28	35	40	45	45	50	56	56	63

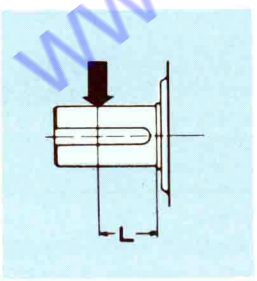
TABLE 4 Dimensions of V-pulley for High Speed Shaft

mm

H.S. Shaft Dia.	16	25	31.5	35.5	45
Min. Pitch Dia. DH	63	80	100	150	180
Position LH	31	31	31	40	63

NOTE:
1. If a V-pulley is used at the low speed shaft, the minimum pitch diameter should be two times the value in Table 3.
2. If a flat belt pulley is used at the end of high speed shaft, the minimum pitch diameter should be more than twice the value in Table 4, but it can be 1/1.5 if a sprocket is used.
3. Position L in Tables 3 and 4 represents the maximum length permissible for use of a sprocket or a V-pulley having the tabulated minimum diameter.

TABLE 5 Fc Value



Kind	Fc
Sprocket Whell	1 - 1.2*
V-pulley	1.5 - 2*
Precision Gear	1 - 1.1
Ordinary Gear	1.1 - 1.3

Note: Large Fc Value* is required for lower speed and smaller center distance.

TABLE 6 Lf Value

mm

Unit Size	L 10	20	30	40	50	60	70	80	90	100	120	140
TA6	1.53	1.67	1.81	1.96	2.10							
TA7	1.51	1.65	1.78	1.91	2.05	2.18						
TA8	1.48	1.60	1.71	1.83	1.94	2.06	2.17					
TA9		1.55	1.66	1.76	1.87	1.97	2.07	2.18				
TA10		1.49	1.58	1.67	1.76	1.85	1.94	2.03	2.12			
TB11		1.54	1.64	1.74	1.83	1.93	2.02	2.12	2.22			
TB12		1.50	1.58	1.67	1.75	1.84	1.92	2.01	2.09	2.18		
TB14			1.56	1.64	1.72	1.80	1.88	1.95	2.03	2.11		
TB15			1.47	1.54	1.60	1.66	1.73	1.79	1.85	1.92	2.04	
TB17			1.39	1.44	1.50	1.55	1.60	1.65	1.70	1.75	1.86	

TABLE 7 Permissible Overhung Load on Shaft end

Kg

Low Speed (rpm)	TA6	TA7	TA8	TA9	TA10	TB11	TB12	TB14	TB15	TB17
180	420	530	540	-	-	880	-	1210	-	2070
150	430	550	540	-	-	900	-	1300	-	2200
120	510	630	800	800	-	1000	1200	1440	1710	2560
100	530	660	800	800	-	1040	1260	1500	1800	2600
90	540	670	800	800	-	1080	1360	1600	1900	2600
75	570	700	800	800	-	1100 1	400	1700	2000	2600
60	650	820	1100	1280	1400	-	1680	1980	2160	3240
50	680	860	1100	1280	1400	-	1720	2040	2400	3300
40		970	1500	1600	1800	-	2020	2240	2850	3760
33		1020	1500	1600	1800	-	2100	2340	2980	3900

GEARED MOTORS

LUBRICATING OIL

1. **Oil Capacity:** Fill lubricating oil until the oil level reaches the mark line of the oil gauge during operation.

Unit Size	TA6	TA7	TA8	TA9	TA10	TA11	TA12	TA14	TA15	TA17
Oil Quantity (l)	1.0	1.3	1.8	2.5	3.3	4.6	6.5	9	12	17

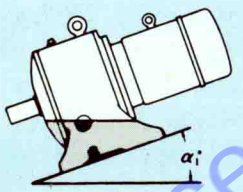
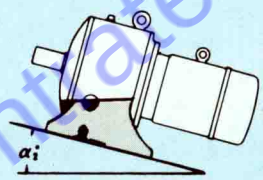
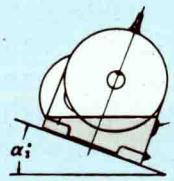
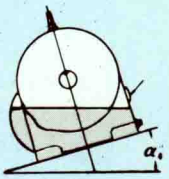
2. **Oil Change:** 1. Replace the old oil with new one after the initial 500 hours.
   2. Then replace it after a total operation of 2,500 hours or every six operational months, whichever is earlier.

3. **Specifications of Lubricating Oil:**

Ambient Temp. (°C)	–10~10	11~35	36~55
ESSO	Pen-O-led EP2	Pen-O-led EP2	Pen-O-led EP3
Mobil	Mobil Compound BB	Mobil Compound BB	Mobil Compound DD
Shell	Macoma Oil R150	Macoma Oil R150	Macoma Oil R220

PERMISSIBLE TILTING ANGLE

NOTE: Excessive tilt angles will cause.
A. Condition (1) Oil leaks out through loading shaft side.
B. Conditions (2) (3) (4) oil leaks into the motor

Tilting Condition	(1) Down at Shaft End	(2) Up at Shaft End	(3) Down at Oil Gauge Side	(4) Up at Oil Gauge Side
				
Oil Level	For tilted installation, care should be taken to bring the oil level to the oil gauge.		When the motor is stopped, hold the gear case horizontally and fill oil up to the oil gauge mark line.	

Ratio		1/10	1/15	1/20	1/30	1/10	1/15	1/20	1/30	1/10	1/15	1/20	1/30	1/10	1/15	1/20	1/30
Permissible tilting angle	TA6	15°				4°	6°		8°	11°	8°	5°	3°	20°			
	TA7	16°				5°	8°		10°	11°	7°	5°	3°	20°			
	TA8	16°				8°	9°		12°	10°	8°	3°	3°	20°			
	TA9	15°				-	10°		11°	-	12°	20°	20°	20°			
	TA10	20°				-	-		15°	-	-	-	20°	20°			
	TB11	23°			23°	0°	0°		6°	8°	8°	8°	25°	20°			20°
	TB12	26°			26°	5°	5°		5°	25°	25°	25°	25°	20°			20°
	TB14	25°			25°	0°	6°		6°	10°	25°	25°	25°	20°			20°
	TB15	20°			20°	3°	3°		10°	20°	20°	0°	30°	20°			20°
	TB17	20°			20°	2°	5°		5°	15°	25°	25°	25°	20°			20°