4. SELECTION

The selection assumes the following conditions, for other conditions refer to page 73

- life rating: 20000 hours
- prime mover: electric motor
- duty factor: uniform ·load
- rotation: right and left-hand
- service time: 8 hours a day
- duty factor: 1 start/hour
- ambient conditions: temperature 68°F – altitude < 3000 ft above sea level

UNIT SIZE	input rpm	RATIO 1:1 Power input kW	RATIO 1:1 Torque output Nm	RATIO 1:1.5 Power input kW	RATIO 1:1.5 Torque output Nm	RATIO 1:2 Power input kW	RATIO 1:2 Torque output Nm	RATIO 1:3 Power input kW	RATIO 1:3 Torque output Nm	RATIO 1:4 Power input kW	RATIO 1:4 Torque output Nm	RATIO 1:5 Power input kW	RATIO 1:5 Torque output Nm
BG12	2800	3.08	10.1	--	--	1.61	10.6	0.59	5.8	--	--	--	--
	2000	2.30	10.6	--	--	1.19	10.9	0.46	6.3	--	--	--	--
	1500	1.88	11.5	--	--	0.94	11.5	0.38	6.9	--	--	--	--
	1000	1.36	12.5	--	--	0.68	12.5	0.27	7.5	--	--	--	--
	800	1.17	13.4	--	--	0.59	13.4	0.23	8.1	--	--	--	--
	600	0.94	14.4	--	--	0.47	14.4	0.19	8.6	--	--	--	--
	400	0.67	15.4	--	--	0.34	15.4	0.13	8.9	--	--	--	--
	100	0.18	16.8	--	--	0.09	16.7	0.03	9.4	--	--	--	--
	50	0.10	18.2	--	--	0.05	18.2	0.02	9.8	--	--	--	--
	10	0.02	19.2	--	--	0.01	19.2	0.01	10.1	--	--	--	--
BG19	2800	16.27	53.3	7.36	36.1	6.51	42.6	2.4	23.6	2.07	27.1	1.32	21.6
	2000	11.94	54.7	5.38	37	4.73	43.4	1.75	24	1.5	27.5	0.96	21.9
	1500	9.17	56.1	4.12	37.7	3.6	44	1.34	24.5	1.13	27.6	0.72	22.1
	1000	6.26	57.4	2.81	38.6	2.46	45.1	0.91	24.9	0.77	28.3	0.49	22.5
	800	5.07	58.1	2.27	39	1.99	45.7	0.73	25.1	0.62	28.5	0.39	22.6
	600	3.85	58.8	1.73	39.6	1.51	46.1	0.55	25.4	0.47	28.8	0.3	22.8
	400	2.62	60	1.16	40	1.02	46.7	0.37	25.8	0.32	29	0.2	22.9
	100	0.69	62.9	0.3	41.5	0.27	48.8	0.10	26.4	0.08	29.7	0.05	23.4
	50	0.35	63.7	0.15	42	0.13	49.3	0.05	26.6	0.04	29.9	0.03	23.6
	10	0.07	64.6	0.03	42.5	0.03	49.7	0.01	26.8	0.01	30.2	0.01	23.8
BG24	2800	17.88	58.6	12.17	59.8	8.15	53.4	3.52	34.6	3.9	51.1	2.67	43.7
	2000	13.38	61.3	8.88	61.1	5.99	54.9	2.58	35.4	2.84	52	2.01	46.1
	1500	10.37	63.4	6.79	62.2	4.55	55.7	1.96	36	2.16	52.8	1.53	46.8
	1000	7.19	66	4.65	63.9	3.09	56.6	1.33	36.6	1.47	53.8	1.04	47.5
	800	5.86	67.2	3.75	64.5	2.5	57.2	1.08	37.2	1.18	54.1	0.84	48
	600	4.51	68.9	2.86	65.7	1.89	57.8	0.82	37.4	0.9	54.7	0.65	49.4
	400	3.08	70.6	1.94	66.7	1.28	58.6	0.55	38	0.6	55.3	0.44	49.9
	100	0.82	75.3	0.5	69.1	0.32	58.9	0.14	38.9	0.15	56.1	0.11	51.4
	50	0.42	77	0.25	70	0.16	59.1	0.07	39	0.08	57	0.06	51.8
	10	0.09	79.5	0.05	71.1	0.03	59.5	0.01	39.2	0.02	57.6	0.01	52.8
BG32	2800	40.8	133.4	23.5	115.2	15.5	101.8	7.33	72	5.42	71	3.52	57.6
	2000	30.4	139.2	17.6	121	11.5	105.6	5.76	79.2	4.14	75.8	2.64	60.5
	1500	23.6	144	13.7	125.3	8.8	107.5	4.4	80.6	3.14	76.8	2.01	61.4
	1000	16.3	149.8	9.4	129.6	6	109.4	2.98	82.1	2.12	77.8	1.36	62.4
	800	13.3	152.6	7.8	133.9	4.9	111.4	2.43	83.5	1.72	78.7	1.11	63.4
	600	10.2	156.5	6	136.8	3.7	113.3	1.85	85	1.3	79.7	0.85	64.8
	400	7	160.3	4.1	141.1	2.5	115.2	1.26	86.4	0.88	80.6	0.57	65.8
	100	1.9	170.9	1	144	0.6	119	0.32	89.3	0.23	84.5	0.15	67.2
	50	0.9	174.7	0.5	146.9	0.3	122.9	0.16	90.7	0.12	86.4	0.07	68.2
	10	0.2	180.5	0.1	149.8	0.1	124.8	0.03	92.2	0.02	88.3	0.02	69.1
BG38	2800	87.2	285.6	57.7	273.5	29.9	196	15.1	148	12.3	161	9.9	162
	2000	64.1	294	41	282	22	201	11	152	9	164	7.2	165.5
	1500	49.4	302	31.4	288	16.9	206	8.4	154	6.8	167	5.5	168.5
	1000	33.8	310	21.4	293.8	11.6	212	5.76	158	4.6	170	3.7	171
	800	27.6	316.5	17.4	300	9.4	215	4.66	160	3.7	171	3	173
	600	21.1	323	13.3	305	7.1	218	3.55	162.5	2.8	173.5	2.3	175
	400	14.5	331	9	311	4.8	222	2.4	165	1.9	176.5	1.5	176.5
	100	3.8	349	2.4	325.5	1.3	231	0.62	170.5	0.5	182	0.4	182
	50	1.9	355.5	1.2	332.5	0.6	234	0.31	172	0.25	183.5	0.2	184
	10	0.4	367	0.2	340	0.13	239	0.06	175	0.05	186	0.04	186

UNIT SIZE	input rpm	RATIO 1:1 Power input kW	RATIO 1:1 Torque output Nm	RATIO 1:1.5 Power input kW	RATIO 1:1.5 Torque output Nm	RATIO 1:2 Power input kW	RATIO 1:2 Torque output Nm	RATIO 1:3 Power input kW	RATIO 1:3 Torque output Nm	RATIO 1:4 Power input kW	RATIO 1:4 Torque output Nm	RATIO 1:5 Power input kW	RATIO 1:5 Torque output Nm
BG42	2800	102.6	336	62.5	307	35.2	230	17.8	175	13.7	180	9.9	162
	2000	75.4	346	46	317	25.8	237	13	178	10	183	7.2	166
	1500	58.1	355	35.3	324	19.8	243	9.9	181	7.6	187	5.5	168.5
	1000	39.8	365	24.3	334	13.6	249	6.8	186	5.2	191	3.7	171
	800	32.5	372	19.7	339	11	253	5.5	188	4.2	193	3	173
	600	24.9	380	15	344	8.4	257	4.2	191	3.2	195	2.3	175
	400	17	390	10.3	353	5.7	261	2.8	194	2.2	198	1.5	177
	100	4.5	411	2.7	370	1.5	272	0.7	201	0.6	204	0.4	182
	50	2.3	420	1.4	376	0.75	278	0.37	203	0.25	206	0.2	184
	10	0.5	432	0.3	383	0.15	281	0.07	206	0.05	209	0.04	186
BG55	1500	125	763	88.7	813	44.4	543	20.2	370	19.5	478	15	458
	1000	86	787	60.7	835	30.6	561	13.9	382	13.3	489	10.2	467
	800	70	800	49.4	850	24.8	568	11.3	386	10.8	495	8.2	472
	600	53	810	37.7	864	18.8	576	8.5	391	8.2	501	6.3	478
	400	36.6	840	26	893	12.9	591	5.8	398	5.6	509	4.2	484
	100	9.7	893	6.9	950	3.4	618	1.5	416	1.4	529	1.1	503
	50	5	912	3.5	972	1.7	632	0.8	421	0.7	534	0.6	508
	10	1	941	0.7	1000	0.35	643	0.16	428	0.15	543	0.1	515
BG75	1500	265	1622	147	1349	109	1325	74	1363	46	1128	32	983
	1000	185	1694	102	1398	75	1368	51	1402	32	1158	22	1007
	800	151	1728	83	1421	61	1391	41	1423	26	1173	18	1018
	600	116	1770	63	1452	46	1416	32	1447	19	1190	14	1032
	400	80	1824	43	1490	32	1449	21	1475	13	1212	9	1049
	100	21	1963	11	1585	8	1532	6	1550	3	1265	2	1091
	50	11	2009	6	1617	4	1560	3	1574	2	1282	1	1104
	10	2.3	2077	1.2	1662	0.9	1597	0.6	1606	0.4	1306	0.2	1121

If the bevel gear rotates left-hand or right-hand only, increase the performances up 30%.

5. SELECTION PROCEDURE

When working conditions are different from those in the selection table, service factors must be considered.
The service factors are as following:

Service time : **H**

hours/days	24	18	12	8	4	2	1
H	1.25	1.18	1.1	1	0.9	0.8	0.7

Life rating : **L**

theoretical time	60000	40000	20000	15000	10000	5000	3000
L	1.3	1.15	1	0.95	0.9	0.85	0.8

Duty factor : **C**

	No. of starts/hour					
	irregular	1	5	20	60	120
uniform	1	1	1.4	1.8	2.2	2.7
moderate shock	1	1.4	1.8	2.2	2.7	3.2
heavy shock	1.4	1.8	2.2	2.7	3.2	3.8

The required torque (M) will be multiplied for the above mentioned factors to obtain the value of torque (MU) to use to select a spiral bevel gearboxes of the correct size.

$$MU = M \times (H \times L \times C)$$