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LUFKIN GEARS

SPIRAL BEVEL GEAR REDUCERS

TYPE VB



for COOLING TOWER FAN DRIVES

BULLETIN G-3

MEMBER OF AGMA

LUFKIN FOUNDRY & MACHINE COMPANY LUFKIN, TEXAS

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Cooling Tower Fan Drives

Horsepower ratings listed in the following tables are mechanical ratings calculated in accordance with the American Gear Manufacturers Association formula using a Service Factor of 1. To make proper selection of size, multiply the actual horsepower load to be transmitted by the applicable Service Factor to obtain Equivalent Horsepower. The smallest unit showing a Catalog Horsepower Rating equal to or greater than this Equivalent Horsepower at the desired speed and ratio is the proper selection.

Conversely, the actual Service Rating for any particular ratio and speed may be obtained by dividing the Catalog Horsepower Rating listed here by the applicable Service Factor.

For a Cooling Tower Fan driven by electric motor or turbine the Service Factor is 1.5. For multi-cylinder engine drive the Service Factor is 1.75.

The ratings shown in red cover standard stock sizes which are generally available for immediate delivery.

The ratings shown in bold face type are for standard ratios which are readily available but not necessarily in stock. The other ratios shown are for rating purposes only. Any ratio desired, or a very close approximation, may be obtained. Approximate ratings for intermediate ratios and speeds may be found by direct interpolation.

EXAMPLE: Reducer desired to deliver 40 horsepower with 1750 RPM motor; fan speed 242 RPM.

$$\text{Gear Ratio} = \frac{\text{Motor RPM}}{\text{Fan RPM}} = \frac{1750}{242} = 7.23$$

Equivalent HP = HP load $\times$ Service Factor = $40 \times 1.5 = 60$ HP. By inspection of the Rating Tables it is found that at 1750 RPM input speed the smallest reducer having a rating of at least 60 HP at the desired ratio is the 90VB which rates 65 HP at 7.22 ratio.

The actual Service Rating of the 90VB under these conditions =

$$\frac{\text{Catalog Rating}}{\text{Service Factor}} = \frac{65}{1.5} = 43.3 \text{ HP}$$

HORSEPOWER RATING TABLES

SIZE	Motor R.P.M.	RATIO														Thermal H.P.: 7.5
		1.94	2.53	2.64	3	3.5	4	4.5								
	1750	11.2	7.8	7.4	6.3	5.1	4.3	3.7								
	1150	7.9	5.5	5.0	4.4	3.5	2.9	2.5								
20VB	870	6.2	4.4	4.1	3.4	2.8	2.4	2.0								
	720	5.2	3.7	3.4	2.9	2.4	2.0	1.7								
	580	4.5	3.1	2.9	2.4	2.0	1.6	1.4								

SIZE	Motor R.P.M.	RATIO														Thermal H.P.: 11
		2	2.5	2.94	3.5	4.0	4.5	5								
	1750	20	14.9	12.0	9.5	8.0	6.8	5.9								
	1150	13.8	10.3	8.3	6.6	5.5	4.7	4.1								
25VB	870	11.0	8.2	6.6	5.2	4.3	3.7	3.2								
	720	9.2	7.0	5.6	4.4	3.6	3.2	2.7								
	580	8.0	5.8	4.7	3.7	3.1	2.6	2.2								

SIZE	Motor R.P.M.	RATIO														Thermal H.P.: 15
		2	2.5	2.92	3.5	3.81	4.5	5	5.5							
	1750	30	22.8	18.4	14.6	13.0	10.3	9.0	8.0							
	1150	21	16	12.6	10	9.2	7.2	6.3	5.6							
30VB	870	16	12.6	10.2	8	7.3	5.7	4.9	4.4							
	720	14	10.7	8.7	6.8	6.1	4.9	4.2	3.7							
	580	12	9	7.2	5.7	5.0	4.1	3.5	3.1							

SIZE	Motor R.P.M.	RATIO														Thermal H.P.: 21
		2	2.5	3	3.42	4.0	4.5	4.86	5.5	6						
	1750	53	39	31	27	22	18	17.0	14.2	13.0						
	1150	37	28	22	18.5	15.1	13	11.8	10.1	8.8						
40VB	870	30	22	17	15	12	10	9.2	7.8	7.0						
	720	26	19	15	12.5	10.1	8.7	7.9	6.7	5.9						
	580	22	16	12.6	10.6	8.6	7.2	6.6	5.6	4.9						

SIZE	Motor R.P.M.	RATIO														Thermal H.P.: 28
		2	2.47	3	3.5	4.11	4.62	5	5.5	6.14						
	1750	62	49	38	32	26	22	20	17.5	15						
	1150	46	34	27	22	18.5	16	14	12.2	11.3						
50VB	870	37	28	22	18	14.5	12.5	11	10	8.5						
	720	32	24	19	15	12.2	10.5	9.3	8.2	7.1						
	580	27	20	16	13	10.2	8.7	7.7	6.8	6.0						

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SIZE	Motor R.P.M.	RATIO												Thermal H.P.: 39		
		2.0	2.5	2.93	3.5	4	4.42	4.86	5.22	5.5	5.62	5.86	6.0			
	1750	100	80	64	51	43	38	34	31	29	28	26	25			
	1150	74	57	47	36	31	27	24	22	20.4	20	19	18			
60VB	870	60	45	37	29	24	22	19	17	16.3	16	15.5	15			
	720	51	39	31	25	21	18	16	15	13.2	13	12.5	12			
	580	43	33	27	21	18	15	13	12	11.2	11	10.4	10			

SIZE	Motor R.P.M.	RATIO											Thermal H.P.: 60			
		2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7				
	1750	165	134	110	91	77	65	57	50	45	40	37				
	1150	129	98	78	64	54	46	40	35	32	29	26				
70VB	870	105	79	63	51	44	37	32	28	25	23	21				
	720	91	68	54	44	37	32	27	24	22	20	18				
	580	77	58	46	39	32	27	23	20	18	16	15				

SIZE	Motor R.P.M.	RATIO												Thermal H.P.: 65		
		2	2.5	3	3.5	4.1	4.5	5	5.5	6	6.57	6.86	7.5			
	1750	202	191	150	125	104	92	79	70	63	56	52	48			
	1150	179	134	107	88	73	65	55	48	43	38	36	33			
80VB	870	145	110	86	71	58	52	44	38	35	31	29	26			
	720	125	95	74	60	50	44	38	34	30	26	24	22			
	580	105	79	63	52	43	38	32	28	25	22	20	19			

SIZE	Motor R.P.M.	RATIO												Thermal H.P.: 80		
		2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7.22	7.86	8.29		
	1750	250	230	192	158	142	116	101	90	81	74	65	60	54		
	1150	230	178	140	116	98	85	74	65	58	53	46	42	39		
90VB	870	190	144	115	94	79	68	59	53	47	42	37	33	30		
	720	165	125	99	81	69	58	51	45	40	36	31	28	26		
	580	140	110	85	69	58	49	43	38	33	30	26	24	22		

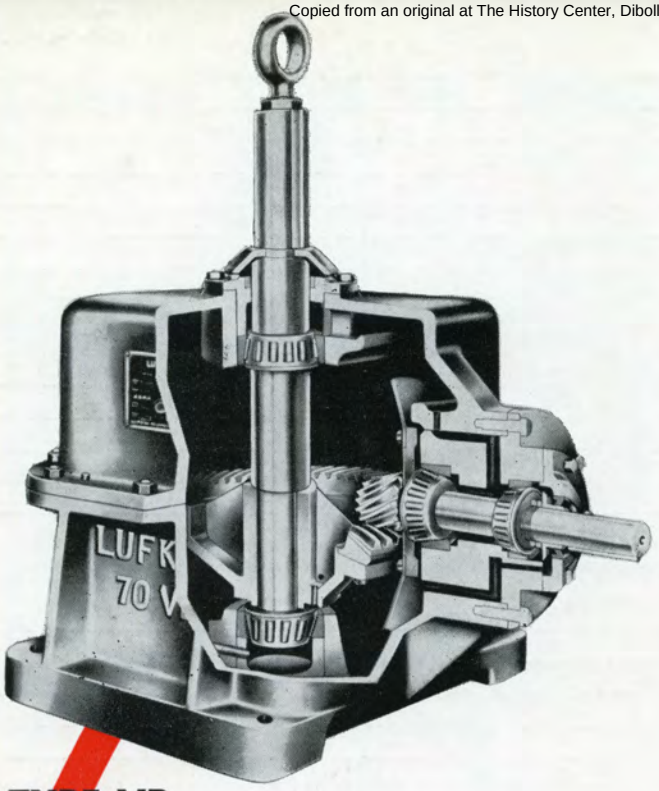
SIZE	Motor R.P.M.	RATIO													Thermal H.P.: 95	
		2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7.13	7.71	7.86	8.29	8.71
	1750		330	264	218	184	160	138	125	112	100	89	80	78	72	68
	1150	330	237	188	156	130	113	100	89	79	70	62	56	54	51	47
100VB	870	256	192	152	125	105	91	79	70	62	55	49	45	43	40	38
	720	219	167	131	108	91	78	70	60	55	48	42	38	37	34	32
	580	186	139	111	91	76	66	57	51	46	40	36	32	31	29	27

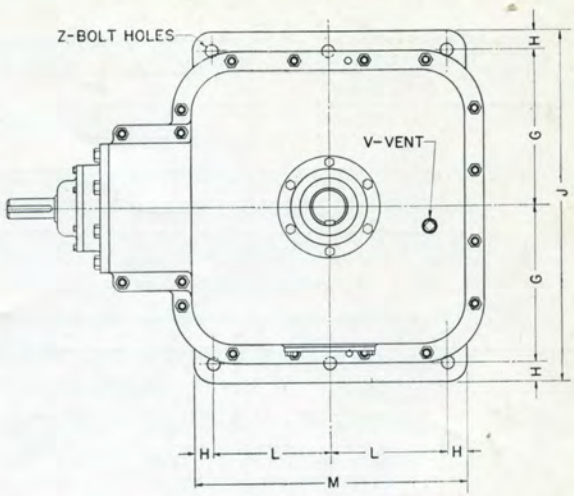
SIZE	Motor R.P.M.	RATIO														Thermal H.P.: 120
		2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9.17
	1750		388	312	256	218	187	164	146	132	118	108	98	90	83	75
	1150	374	280	224	184	155	133	115	104	93	83	75	69	63	59	53
110VB	870	302	228	178	147	124	106	93	83	75	67	60	55	50	46	41
	720	260	195	154	126	106	92	80	72	64	58	52	47	43	40	35
	580	218	164	130	107	91	78	68	61	54	48	43	40	36	33	30

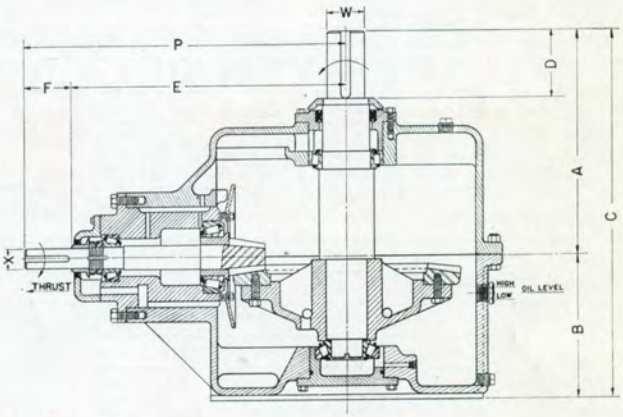
SIZE	Motor R.P.M.	RATIO														Thermal H.P.: 135
		2	2.5	3	3.5	4	4.5	5	5.5	6.11	6.5	7	7.5	8	8.5	9.17
	1750			339	285	240	207	180	161	141	130	119	111	101	95	87
	1150	410	315	252	204	176	151	131	117	102	95	87	80	73	67	61
115VB	870	339	258	204	168	143	123	109	95	82	75	69	63	58	54	48
	720	294	224	177	148	123	106	93	82	71	65	60	55	50	46	42
	580	252	190	150	124	105	90	79	69	60	55	50	45	41	38	35

SIZE	Motor R.P.M.	RATIO														Thermal H.P.: 155
		2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9.17
	1750			460	378	322	280	245	216	193	175	159	147	136	124	113
	1150	542	409	330	270	227	196	172	151	135	123	112	101	95	86	79
120VB	870	450	340	268	218	185	158	140	124	110	100	90	82	76	70	63
	720	385	290	231	190	160	136	120	106	95	86	78	72	66	60	54
	580	326	245	194	158	135	115	101	90	80	73	65	60	55	50	45

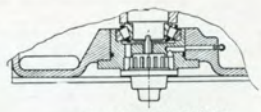
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TYPE VB
SPIRAL BEVEL GEAR REDUCERS
. . for Cooling Tower Fan Drives . .
LUFKIN



OIL PUMP OPTIONAL

GENERAL DIMENSIONS

Dimensions Are Not to Be Used for Installation. Use Certified Installation Print.

UNIT	A	B	C	D	E	F	G	H	J	L	M	N*	P	V-Vent Pipe Size	W	W Keyway	X	X Keyway	Z**	Net Weight, Lbs.
20VB.....	8¼	4½	12¾	3½	6⅞	2⅛	3⅞	⅝	9	2½	6¼	1	9	¼	1¼	¼ x ⅛	11/16	3/16 x 3/32	3/16-4	75
25VB.....	8¼	4½	12¾	3½	7¾	2¼	4⅜	⅝	10	3	7¼	1	10	¼	1¼	¼ x ⅛	⅞	3/16 x 3/32	3/16-4	85
30VB.....	12 17/32	6	18 17/32	5	9⅜	2⅞	4⅞	¾	11¼	3¼	8	1⅛	12¼	1	1¾	⅜ x 3/16	⅞	3/16 x 3/32	3/16-4	140
40VB.....	13¼	7	20¼	5	9 13/16	3 1/16	5½	¾	12½	3⅝	9¼	1⅛	13	1	1¾	⅜ x 3/16	1	¼ x ⅛	3/16-4	210
50VB.....	16⅞	8½	25⅜	7	11 1/16	3 13/16	6¾	1¼	16	4½	11½	1½	15	1	2	½ x ¼	1⅛	¼ x ⅛	13/16-4	305
60VB.....	16⅞	8½	25⅜	7	13 11/16	3 13/16	8	1¼	18½	5¾	14	1½	17⅝	1	2	½ x ¼	1¼	¼ x ⅛	13/16-4	450
70VB.....	18	10	28	6½	15 13/16	3¼	9	1½	21	6½	16	2	19 3/16	1	2¼	½ x ¼	1⅜	3/8 x 3/16	13/16-4	590
80VB.....	18	10	28	6½	18	3½	9¾	1½	22½	7¼	17½	2	21½	1	2¼	½ x ¼	1⅝	½ x ¼	13/16-4	865
90VB.....	20¾	12	32¾	7	20⅞	3 3/16	11⅞	1¾	27¼	8⅜	20¼	2½	24 3/16	1	2¾	⅝ x 5/16	1⅞	½ x ¼	1 1/16-6	1,125
100VB.....	20¾	12	32¾	7	22¼	3¼	12½	1¾	28½	9	21½	2½	25½	1	2¾	⅝ x 5/16	1⅞	½ x ¼	1 1/16-6	1,340
110VB.....	22¾	14	36¾	7	24⅛	4⅜	14¼	1¾	32	10¾	25	2½	28½	1	3¼	¾ x ⅜	2⅛	½ x ¼	1 1/16-6	1,650
115VB.....	22¾	14	36¾	7	25⅞	5	15	1¾	33½	11½	26½	2½	30⅞	1	3¼	¾ x ⅜	2⅛	½ x ¼	1 1/16-6	1,850
120VB.....	23½	15	38½	7	28⅝	4⅞	16¼	2	36½	12¼	28½	2¾	33½	1	4½	1 x ½	2⅜	⅝ x 5/16	1 1/16-6	2,150

*N—Thickness of Base Flange. **Z—Bolt Hole Size and Quantity Bolts Required. Shaft Tolerances ± .0005

LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

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