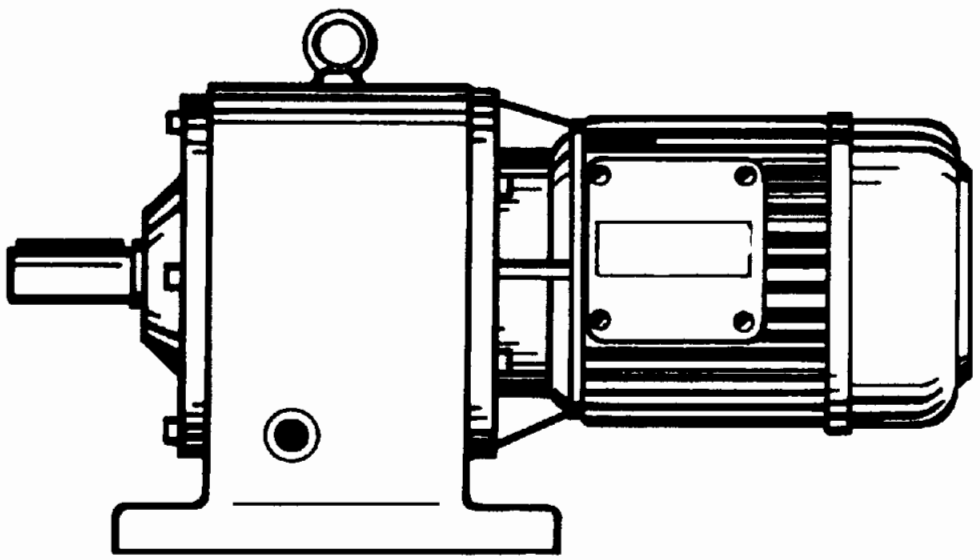
GEAR REDUCERS

JRP



TECHINCAL DESCRIPTION

The line of gear motors is based on a modular assembly system of common parts, subassemblies and assemblies which enable the widest range of mounting arrangements, different executions, different ratings and performances. These gear motors are distinguished by their simple mounting possibilities (floor mounting, flange mounting, special flange for mixers or any combined mounting arrangement) which can practically satisfy all mounting requirements.

The helical gear units are in most cases supplied by a three- phase induction motor with or without a brake.

GEAR MOTOR SIZE SELECTION

The selection of gear motor size is based on these essential parameters:

- required power - P_R (kW)
- required output speed - n_2 (1/min)
- service factor - f_B

The necessary service factor value is determined from the diagram depending on operation time, type of loading and number of start per hour of the gear motor.

The type of loading is defined by the operating machine type and by the mass which must be accelerated.

For example, the below given illustration of a characteristic operation can be used for defining the type of loading.

TYPE OF LOADING I

Even loading and smaller torques of operating machines (fans, centrifugal pumps, mixers for low density fluids, drilling machines, light conveyor belts, small weight cranes, bottle filling machines, moving screens, small worm conveyor belts, elevators, etc.)

TYPE OF LOADING II

Uneven loading, slight strokes and medium torques of operating machines (fans used in mines, helical gear pumps, high density fluid mixers, mashers, winches, sliding doors, unevenly loaded conveyor belts, heavy duty elevators, rotating furnaces, tanning tubs, brick presses, turning devices, roller mills, etc.)

TYPE OF LOADING III

Uneven loading, heavy strokes and larger torques of the operating machines (piston pumps, centrufuges, presses, cleaning drums, high density fluid mixers, aerators, cement mills, rolling mill equipment, etc.)

DETERMINATION OF THE SERVICE FACTOR, f_B

T_{max} - Torque (see selection tables)

P - Power (see selection tables)

f_B - Service factor

T_2 - Output torque /lb-in/ $\quad T_2 = 63025\frac{P}{n_2}$

n_2 - Output speed /r.p.m/ $\quad T_{max} \geq f_B \cdot T_2$

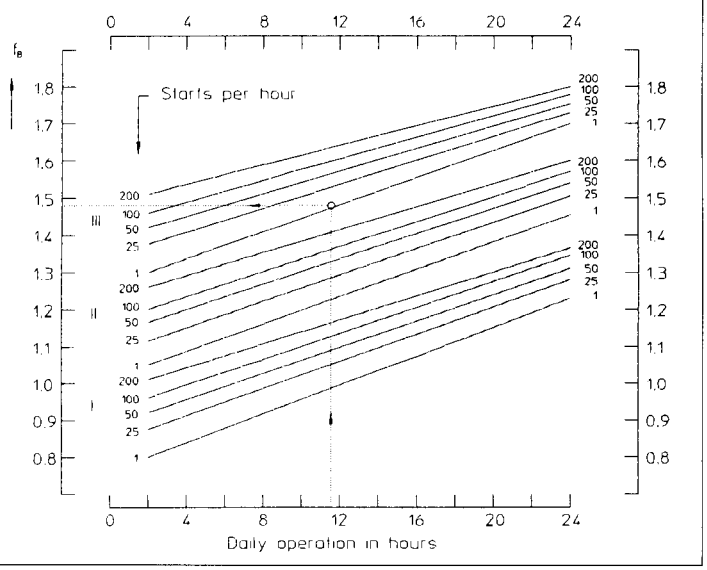
Example:

Daily operation / h = 12 hours

Type of Loading = III

Starts / hour = 1 start/hour

Required service factor $f_B = 1.48 \geq \frac{T_{max}}{T_2}$



APPLICATION OF AGMA CRITERIA FOR SERVICE CLASS FACTORS

Service and Load Classes

To provide comparable service life under differenf service conditions, three classes of gear motors are defined in

RECOMMENDED SERVICE FACTORS

PRIME MOVER	Duration of Service (Hours per Day)	DRIVEN MACHINE LOAD CLASSIFICATION			
		Uniform Load	Moderate Shock	Heavy Shock	Extreme Shock
ELEC-TRIC MOTOR	Occasio-nal 5 hour	1.00	1.00	1.00	1.25
	Less than 3 hours	1.00	1.00	1.25	1.50
	3-10 hours	1.00	1.25	1.50	1.75
	Over 10 hours	1.25	1.50	1.75	2.00

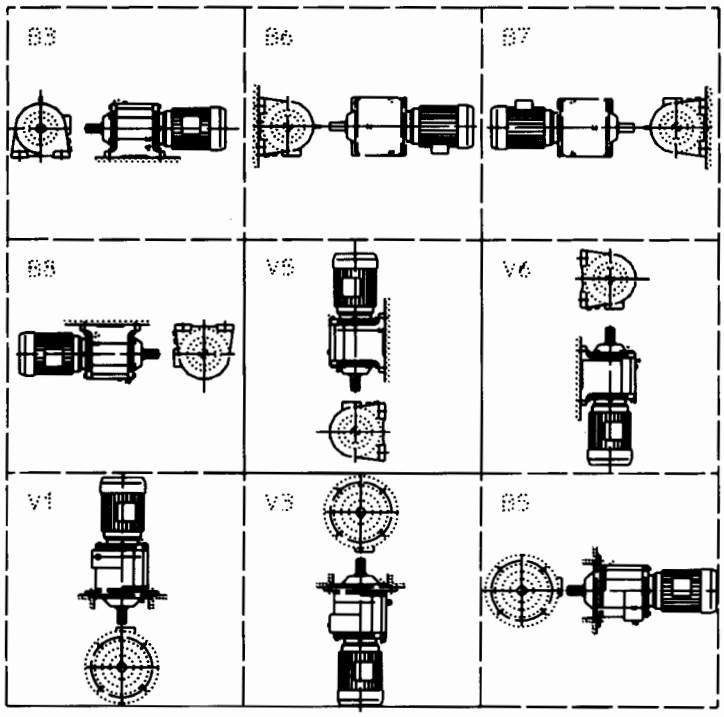
SERVICE FACTOR TABLE

AGMA CLASS OF SERVICE	SERVICE FACTOR	OPERATING CONDITIONS
I	1.00	Moderate Shock-not more than 15 minutes in 2 hours. Uniform Load-not more than 10 hours per day.
II	1.25	Moderate Shock-not more than 10 hours per day. Uniform Load-not more than 10 hours per day.
	1.50	Heavy Shock-not more than 15 minutes in 2 hours. Moderate Shock-more than 10 hours per day.
III	1.75	Heavy Shock-not more than 10 hours per day.
	2.00	Heavy Shock-more than 10 hours per day.

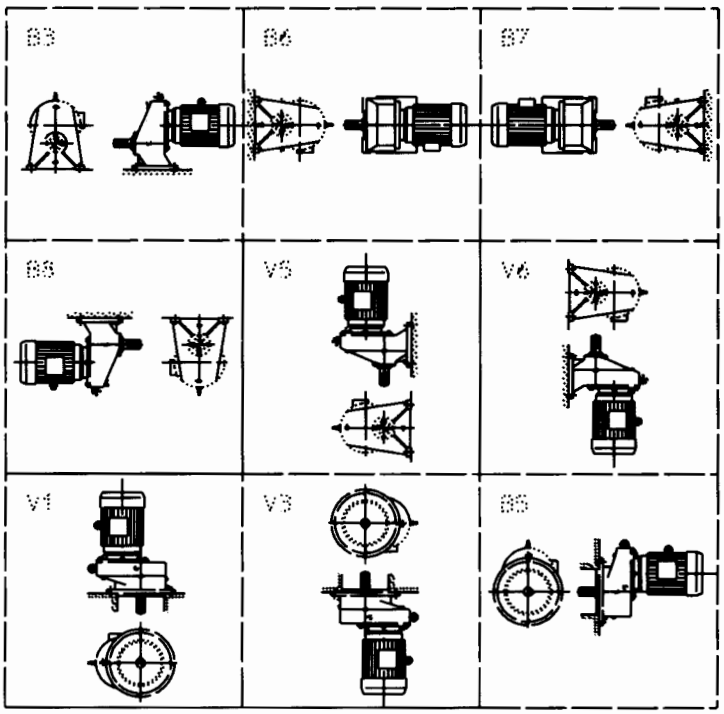
MOUNTING POSTION IM

The helical gear boxes and the gear motors are adapted for horizontal or vertical operating positions according to DIN 42950 but they can be accomodated to any other mounting positions.
Besides, there is a possibity to turn the motor away from the gear box housing and to turn away the motor terminal box so that the cord connectors of the electric connections remain in the most convenient positions.
The most frequent mounting positions are illustrated in the following tables.

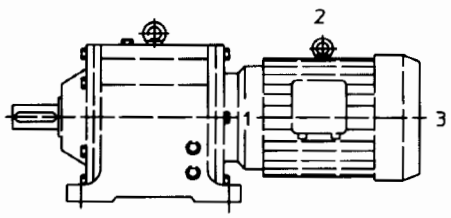
THREE - STAGE GEARMOTOR WITH FEET AND FLANGE



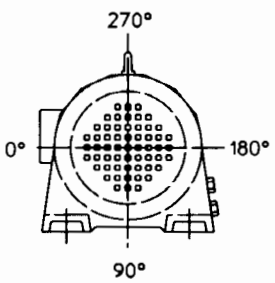
SINGLE - STAGE GEARMOTOR WITH FEET AND FLANGE



TERMINAL BOX POSITION VIEWED FROM MOTOR SIDE



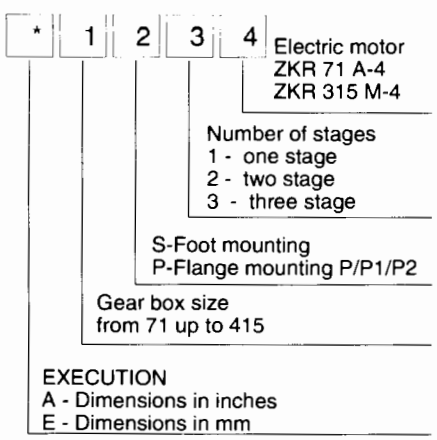
CORD CONNECTOR POSITIONS ON TERMINAL BOX



All gear boxes leave the factory ready to be put into operation

- ○- The air vent location is blue.
- ●- The oil plug location is red.
- ●- The oil drain plug location not painted.

DESIGNATION OF THE GEAR UNITS



HOW TO ORDER

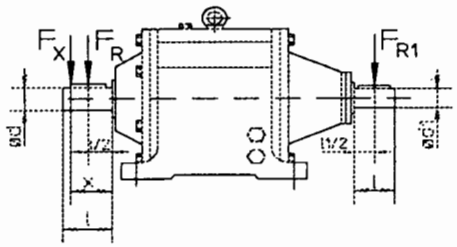
- Information required when ordering standard gear motors
- Designation of the gear units or gear motors
- Output Power
- Output rpm "n" expressed in rpm or gear ratio "i" for motorless gear boxes
- Types of mounting positions
- Voltage, freqency, level of mechanical protection (in case a protection is required which is different from the conventional IP54 - IP55 for terminal box)
- Position of terminal box (if a position different from the conventional is required)
- Position of cord connector (if a position different from the conventional is required)
- Special requirements

$$- n_{2e} = \frac{n_m}{i_e} \quad /r.p.m./$$

n_m - output speed of the driving motor /r.p.m/
i_e - actual ratio of the gear units
n_{2e} - actual output speed of the gear units /r.p.m/

We reserve the right to change ratings, date, dimensions and weights without prior notice due to furner developments

For helical gear units and helical geared motors



The following table lists the overhung loads which are calculated for loads applied to the midpoint of the output shaft.
The smaller value of the two calculation results is the permisible overhung load. If the load is not applied at the midpoint on the shaft extension the value can be calculated for any point on the shaft (x) by using the following equations:

F_R- Permissible overhung load at the midpoint of the output shaft extension [lb]

X- distance from the schoulder on the shaft to the application point of load [in]

F_{xper}-permisible overhung load at the point x [lb]
a.b.y.z-gear unit constants

1.) Calculation for lifetime of bearings

$$F_{xperL} = F_R \frac{y}{c + x}[lb]$$

2.) Calculation on shaft strength

$$F_{xperW} \equiv \frac{a \cdot 10^3}{b + x}[lb]$$

Frame size	Max torque Tmax	Output shaft		F_{ri}	F_a in [lb] for output speeds n, in r.p.m									Gear unit constants			
	[lb-in]	d [in]	l [in]	[lb]	<10	10-16	16-25	25-40	40-63	63-100	100-160	160-250	>250	a [lb-in]	b [in]	y [in]	c [in]
A 71 □-1	220	0.625	1.38	90								224	224	1.32	0.63	2.91	2.22
A 80 □-1	440	0.75	1.57	110								336	336	1.54	0.65	4.15	3.36
A 90 □-1	750	1.25	2.36	125								448	448	3.50	0.71	5.29	4.11
A100□-1	970	1.375	2.76	310								672	672	6.40	0.79	5.98	4.41
A132□-1	2600	1.875	3.54	450								1120	1120	13.16	0.98	6.81	5.04
A 90 □-2 A 90 □-3	800 1100	1.0	1.97	90	1008	896	896	672	672	448	224	224	224	1.59	0.67	4.64	3.66
A115□-2 A115□-3	1760 3000	1.25	2.36	110	1120	1120	1120	896	896	672	672	672	448	2.69	0.75	5.63	4.45
A140□-2 A140□-3	3100 5300	1.625	3.15	225	1792	1792	1792	1792	1792	1225	1325	1120	896	5.47	0.79	6.83	5.25
A180□-2 A180□-3	7500 9730	2.125	3.94	310	2912	2912	2688	2464	2464	2240	1792	1568	1325	9.25	1.0	8.95	6.63
A225□-2 A225□-3	14200 18580	2.375	4.72	450	4032	4032	4032	4032	3584	2912	2240	2016	1792	15.48	1.0	10.41	7.85
A250□-2 A250□-3	25000 35400	1.875	5.59	900	5846	5846	5846	4704	3808	3360	2912	2688	2240	33.62	1.22	12.50	9.74
A315□-2 A315□-3	44500 70800	3.625	6.69	1500	15075	15075	15075	15075	14851	12364	9228	8310	7862	61.94	1.37	14.74	11.59
A375□-2 A375□-3	71000 141000	4.75	8.27	2000	20473	20473	20473	20473	15747	15747	15523	14627		118.13	1.38	18.99	15.06
A415□-2 A415□-3	106000 221000	5.5	9.84	2700	24752	23856	23856	22512	22512	20921	19577			223.43	1.57	23.19	18.27

Permisible axial force F_A [lb] is approximately 40% of the permisible F_R.
The listen values basen on servis factor f_B=1
The effective overhung load at the gearbox shaft will be determined as folows

$$F_{Rexact} = \frac{2 \cdot T_2}{d_o} \cdot f_z \leq F_R$$

F_{Rexact}- Existing overhung load at the gearbox shaft [lb]
T_2 - Output torque of the gearbox [lb-in]
d_o - Diameter of overhung laad member [in]
f_z - Transmission element factor

Transmission elements	fz	Remarks
-Gears	1.0	z >17 teeth
-Gears	1.1	z ∫ 17 teeth
-Chain sprockets	1.0	z >20 teeth
-Chain sprockets	1.2	z ∫ 20 teeth
-Chain sprockets	1.4	z ∫ 13 teeth
-V-belt pulleys	1.75	
-Flat belt pulleys	2.5	

Notes:
□ - S foot mounted
□ - P flange mounted (only single stage gear units)
□ - P1 flange mounted
□ - P2 flange mount
□ - SP2 foot/flange mounted

PARALLEL HELICAL GEAR UNITS AND RATIOS

SINGLE STAGE GEAR UNITS - Actual ratios i_e

TIP SIZE	Nominal Ratios i_n																			
	1.12	1.25	1.4	1.6	1.8	2.0	2.24	2.5	2.8	3.15	3.55	4.0	4.5	5.0	5.6	6.3	7.1	8.0	9.0	10.0
A 71 □-1		1.22		1.50	1.86		2.28				3.36			4.92						
A 80 □-1		1.21		1.52			2.32				3.37			4.93		6.30				
A 90 □-1		1.22		1.51			2.26				3.40			4.93						
A 100 □-1				1.50			2.23				3.42			5.07		6.40	7.44			
A 132 □-1				1.52			2.25				3.39			5.08		6.07	7.67			
(A 160 □-1)				1.52			2.25				3.39			5.20		6.25				
(A180 □-1)				1.50			2.27					3.95		4.94		6.12				
(A 200 □-1)						2.04		2.46		3.18		3.95		4.86			6.30			
(A 225 □-1)				1.54		1.90		2.50		3.15				5.19						
n_{2n} (50Hz)	1250	1120	1000	900	800	710	630	560	500	450	400	355	315	280	250	224	200	180	160	140
(60Hz)	1500	1360	1200	1060	960	850	760	680	600	540	480	425	380	340	300	270	240	210	190	170

TWO STAGE GEAR UNITS - Actual ratios i_e

TIP SIZE	Nominal Ratios i_n																			
	4.0	4.5	5.0	5.6	6.3	7.1	8.0	9.0	10.0	11.2	12.5	14.0	16.0	18.0	20.0	22.4	25.0	28.0	31.5	35.5
A 90 □-2	3.83	4.70	5.07	5.82	6.25	7.14	7.74	8.62	9.49	10.52	11.46	13.99	15.42		20.51					
A 115 □-2		4.89	5.18		6.20	7.50		9.49		11.34		14.21	15.93		20.17		26.01			
A 140 □-2		4.43		5.42	6.19	6.62	8.09	9.24	9.96	11.39	12.18	13.91		17.67	20.18					
A 180 □-2		4.61		5.72	6.27	6.85	9.33	10.51		11.6	13.00	14.31	15.57		19.06	22.84	26.76		31.10	
A 225 □-2		4.66			6.34	6.91		9.41	10.41			14.17	15.95	18.64	21.23		25.39			
A 250 □-2		4.78				7.10	8.06	9.20	10.69		12.14	13.86	16.40	18.63	21.27		25.57		30.68	
A315 □-2		4.70		5.65	6.25	7.11	8.55	9.45	10.49		12.62	13.95	15.48	19.17	20.59	23.72	25.49		31.55	
A 375 □-2							8.66		10.45			13.52	16.80		20.64		26.78			
A 415 □-2								9.05		11.62		14.41		18.00		23.29				
n_{2n} (50Hz)	355	315	280	250	224	200	180	160	140	125	112	100	90	80	71	63	56	50	45	40
(60Hz)	425	380	340	300	270	240	210	190	170	150	136	120	105	96	85	76	68	60	54	48

THREE STAGE GEAR UNITS - Actual ratios i_e

TIP SIZE	Nominal Ratios i_n																					
	14	16	18	20	22.4	25	28	31.5	35.5	40	45	50	56	63	71	80	90	100	112	125	140
A 90 □-3	14.07		17.41	19.49	21.36	23.93	25.79	29.62	36.33	39.40	43.86	48.33	53.54	58.34	71.22	78.52		104.4			
A115 □-3	14.02		17.21	20.27	21.36	24.88	26.13	31.50	37.78	39.00	45.61	47.84	55.68	57.25	70.49	81.65		103.4			
A140 □-3			18.21		22.78		27.86	31.81	34.88	42.67		50.64	58.23	61.94	70.73		90.65	103.5	116.9	133.5	
A180 □-3				19.68	23.58	25.95	29.36	32.10	35.18		44.15	52.95		64.11	72.10	76.82		104.6			
A225 □-3					22.61			30.79	33.63		45.80	51.57			71.80	76.45	96.48	104.1	112.1	131.4	152.7
A250 □-3			17.04			24.71	28.07	32.05	36.67	41.68	47.56		55.23	62.74	71.64	82.74		98.9	107.3	128.3	
A315 □-3						24.11	29.01	32.07	35.79	43.05	47.60	53.91		64.85	71.70	82.71		99.4	110.0	132.2	
A375 □-3				19.20	23.17		30.00		37.77		45.77	47.00	59.37	59.37	73.41		91.19		112.1		145.4
A415 □-3					24.40		31.32		38.83		48.52	54.91	62.78	70.50			87.30		109.2		145.3
n_{2n} (50Hz)	100	90	80	71	63	56	50	45	40	35.5	31.5	28	25	22.4	20	18	16	14	12.5	11.2	10
(60Hz)	120	108	96	85	76	68	60	54	48	42.5	38	34	30	27	24	21	19	17	15	13.6	12

The above tables list the actual ratios i_e. nominal ratios i_n and n_2 nominal output speeds /r.p.m/ for frequency of 50 Hz and 60 Hz.

- 50 Hz——— $n_{2n} = \frac{1400}{i_n}$ /r.p.m/

- 60 Hz——— $n_{2n} = \frac{1700}{i_n}$ /r.p.m/

Exact output speed can be calculated by using the following equation:

$$n_{2e} = \frac{n_m}{i_e} \quad \text{/r.p.m/}$$

n_m - exact motor speed /r.p.m/

n_{2e} - actual output speed of the gear units /r.p.m/

Notes:

Only standardized rpms are given in the Tables. The actual rpm somewhat differ from these. max. 5%. In case it is needed the actual rpms can be calculated on the basis of appropriate el. motor ratio and rpm.

We reserve the right to change ratings. date. dimensions and weights without prior notice due to further development.

- □ - S foot mounted
- □ - P flange mounted (only single stage gear units)
- □ - P1 flange mounted
- □ - P2 flange mounted
- □ - SP2 foot/flange mounted

Power P [HP]	Output speed (60 Hz) n_{2n} [r.p.m]	Torque Tmax [lbin]	Frame - size GEAR	MOTOR	Weight [lbs]
0.18	1060 760 600 480 340	220	A71 □ -1	ZKR 63 A-4	23.40
	425 380 340 300 270 240 190 170 150 120 105 85	800	A90 □ -2	ZKR 63 A-4	26.70
	96 85 76 68 60 54 48 42.5 38 34 30 27 24 21 15	1100	A90 □ -3	ZKR 63 A-4	28.90
0.25	1060 760 600 480 340	220	A71 □ -1	ZKR 63 B-4	24.50
	425 380 340 300 270 240 190 170 150 120 105 85	800	A90 □ -2	ZKR 63 B-4	27.80
	96 85 76 68 60 54 48 42.5 38 34 30 27 24 21 15	1100	A90 □ -3	ZKR 63 B-4	30.00
0.33	1060 760 600 480 340	220	A71 □ -1	ZKR 71 B-4	26.0
	340 300 270 240 190 170 150 120 105 85	800	A90 □ -2	ZKR 71 B-4	28.6
	76 68 60 54 48 42.5 38 34 30 27 24 21	1100	A90 □ -3	ZKR 71 B-4	30.8
	38 30 27 21	3000	A115 □ -3	ZKR 71 B-4	44.1
	34 24 17	2200	A115 □ -3	ZKR 71 B-4	44.1
	21 19 17 15 12	5300	A140 □ -3	ZKR 71 B-4	73.4
0.50	1060 760 600 480 340	220	A71 □ -1	ZKR 71 B-4	28.2
	340 300 270 240 190 170 150 120 105 85	800	A90 □ -2	ZKR 71 B-4	30.8
	76 68 60 54 48 42.5 38 34	1100	A90 □ -3	ZKR 71 B-4	33.1
	38 30 27 21	3000	A115 □ -3	ZKR 71 B-4	46.3
	34 24 17	2200	A115 □ -3	ZKR 71 B-4	46.3
	21 19 17 15 12	5300	A140 □ -3	ZKR 71 B-4	74.9
0.75	1060 960 760 600	220	A71 □ -1	ZKR 80 A-4	36.3
	1060 760 600 480 340 270	440	A80 □ -1	ZKR 80 A-4	48.5
	340 300 270 240 210 190 170 150	800	A90 □ -2	ZKR 80 A-4	35.3
	120 96 85 76 68 60 54	1100	A90 □ -3	ZKR 80 A-4	37.4
	85 76 68 60 48 42.5 38 34	3000	A115 □ -3	ZKR 80 A-4	50.7
	54 48 42.5 34 30 27 24	5300	A140 □ -3	ZKR 80 A-4	79.3
	38 30 27 24 21 17	9730	A180 □ -3	ZKR 80 A-4	138.9
1.0	1060 760 600 480	440	A80 □ -1	ZKR 80 B-4	36.3
	760 600 480 340	750	A90 □ -1	ZKR 80 B-4	48.5
	425 380 340 300 270 240 210 190 170 150	900	A90 □ -2	ZKR 80 B-4	37.4
	120 96 85 76 68 60 54	1100	A90 □ -3	ZKR 80 B-4	39.6
	120 105 85 60	1760	A115 □ -2	ZKR 80 B-4	48.5
	85 76 68 60 48 42.5 38	3000	A115 □ -3	ZKR 80 B-4	52.9
	54 48 42.5 34 30 27 24	5300	A140 □ -3	ZKR 80 B-4	81.5
	38 30 27 24 21 17	9730	A180 □ -3	ZKR 80 B-4	141.1
1.5	1060 760 600 480	440	A80 □ -1	ZKR 90 S-4	43.0
	760 600 480 340	750	A90 □ -1	ZKR 90 S-4	55.1
	425 380 340 300 270 240 210 190 170 150	900	A90 □ -2	ZKR 90 S-4	44.1
	270 210 170 150	1760	A115 □ -2	ZKR 90 S-4	57.3
	120 96 85 76 68 60 48 42.5 38	3000	A115 □ -3	ZKR 90 S-4	61.7
	54 48 42.5 34 30 27 24	5300	A140 □ -3	ZKR 90 S-4	88.2
	38 30 27 24 21 17	9730	A180 □ -3	ZKR 90 S-4	149.9
	24 21 19 17 15 12 11	18580	A225 □ -3	ZKR 90 S-4	233.7
2.0	1060 760 600 480 340	750	A90 □ -1	ZKR 90 L-4	61.7
	480 340 270 210	970	A100 □ -1	ZKR 90 L-4	86.0
	380 340 300 270 240 210 190 170	900	A90 □ -2	ZKR 90 L-4	48.51
	340 300 270 210 170 150	1760	A115 □ -2	ZKR 90 L-4	61.7
	120 96 85 76 68 60	3000	A115 □ -3	ZKR 90 L-4	66.1
	54 48 42.5 34 30 27	5300	A140 □ -3	ZKR 90 L-4	92.6
	38 30 27 24 21 17	9730	A180 □ -3	ZKR 90 L-4	154.3
	24 21 19 17 15 12 11	18580	A225 □ -3	ZKR 90 L-4	238.1

Notes:
- □ - S foot mounted
- □ - P flange mounted (only single stage gear units)
- □ - P1 flange mounted
- □ - P2 flange mounted
- □ - SP2 foot/flange mounted

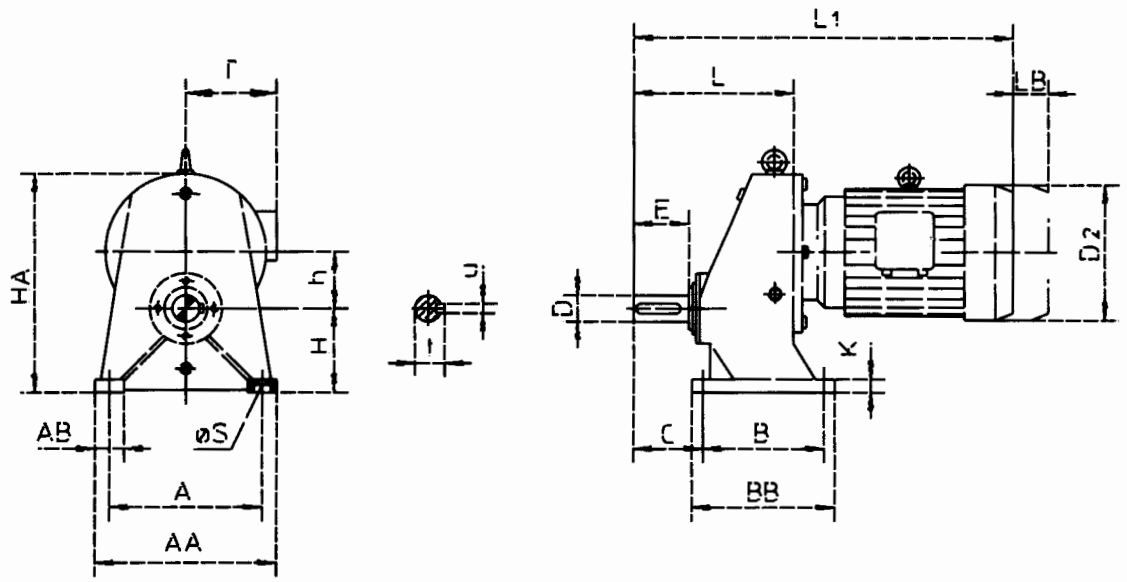
Power P [HP]	Output speed (60 Hz) n_{2n} [r.p.m]	Torque Tmax [lbin]	Frame - size GEAR	MOTOR	Weight [lbs]
3.0	1060 760 600 480 340	970	A100 □-1	ZKR 100 L-4	94.8
	480 340 270 210	2600	A132 □-1	ZKR 100 L-4	152
	340 300 270 210 170 150	1760	A115 □-2	ZKR 100 L-4	70.5
	120 96 85	3000	A115 □-3	ZKR 100 L-4	74.9
	270 240 210 190 170 150 136 120	3100	A140 □-2	ZKR 100 L-4	99.2
	96 76 60 54 48 42.5	5300	A140 □-3	ZKR 100 L-4	104
	68 60 54 48 38 30 24	9730	A180 □-3	ZKR 100 L-4	163
	34 24 21 17	18580	A225 □-3	ZKR 100 L-4	246
	30 27 24 21 17 15 13.6	35400	A250 □-3	ZKR 100 L-4	319
4.0	1060 760 600 480 340	2600	A132 □-1	ZKR 100 Ld-4	158
	340 300 270 210 170 150	1760	A115 □-2	ZKR 100 Ld-4	77.1
	120 96	3000	A115 □-3	ZKR 100 Ld-4	81.5
	270 240 210 190 170 150 136 120	3100	A140 □-2	ZKR 100 Ld-4	105
	96 76 60	5300	A140 □-3	ZKR 100 Ld-4	110
	85 76 68 60 54 48 38	9730	A180 □-3	ZKR 100 Ld-4	169
	54 48 38 34 24 21	15580	A225 □-3	ZKR 100 Ld-4	253
	42.5 38 30 27 24 21 17 15 13.6	35400	A250 □-3	ZKR 100 Ld-4	326
5.0	1060 760 480 340 270	2600	A132 □-1	ZKR 112 M-4	200
	380 300 270 240 210 190 170 150 136 120	3100	A140 □-2	ZKR 112 M-4	119
	190 170 136 120 105	7500	A180 □-2	ZKR 112 M-4	176
	96 76	5300	A140 □-3	ZKR 112 M-4	123
	85 76 68 60 54 48	9730	A180 □-3	ZKR 112 M-4	183
	54 48 38 34 24 21	15580	A225 □-3	ZKR 112 M-4	266
	42.5 38 30 27 24 21 17 15 13.6	35400	A250 □-3	ZKR 112 M-4	339
7.5	1060 760 480	2600	A132 □-1	ZKR 132 S-4	229
	380 300 270 240 210 190	3100	A140 □-2	ZKR 132 S-4	176
	190 170 150 120 105 85	7500	A180 □-2	ZKR 132 S-4	233
	85 76 68 60 54	9730	A180 □-3	ZKR 132 S-4	238
	96 76 54 48 38	15580	A225 □-3	ZKR 132 S-4	295
	68 60 54 48 42.5 38 30 27 24 21 17	35400	A250 □-3	ZKR 132 S-4	396
	30 27 24 21 17 15 12	70800	A315 □-3	ZKR 132 S-4	793
10.0	1060 760 480	2600	A132 □-1	ZKR 132 M-4	251
	380 300 270 240 210	3100	A140 □-2	ZKR 132 M-4	198
	270 240 190 170 150 120 105 85	7500	A180 □-2	ZKR 132 M-4	255
	85 76	9730	A180 □-3	ZKR 132 M-4	262
	240 190 170 120	14200	A225 □-2	ZKR 132 M-4	332
	76 54 48	18580	A225 □-3	ZKR 132 M-4	341
	68 60 54 42.5 38 30 27 24 21	35400	A250 □-3	ZKR 132 M-4	418
	30 27 24 21 17 15 12	70800	A315 □-3	ZKR 132 M-4	815
15.0	1060 760 480	2600	A132 □-1	ZKR 160 M-4	308
	380 300 270 240 190	7500	A180 □-2	ZKR 160 M-4	313
	240 190 170 120	14200	A225 □-2	ZKR 160 M-4	388
	170 136 120 96 85 76	25000	A250 □-2	ZKR 160 M-4	454
	96 68 60 54 48 42.5 38	35400	A250 □-3	ZKR 160 M-4	476
	48 42.5 38 30 27 24 21	70800	A315 □-3	ZKR 160 M-4	873
	27 24 19 15 12	141000	A375 □-3	ZKR 160 M-4	1598
20.0	1060 760	2600	A132 □-1	ZKR 160 L-4	370
	380 300 270	7500	A180 □-2	ZKR 160 L-4	374
	380 270 240 190 170 120	14200	A225 □-2	ZKR 160 L-4	452
	210 190 170 136 120 96 85 76	25000	A250 □-2	ZKR 160 L-4	518
	96 68 60 54 48 42.5	35400	A250 □-3	ZKR 160 L-4	538
	48 42.5 38 30 27 24 21	70800	A315 □-3	ZKR 160 L-4	934
	27 24 19 15 12	141000	A375 □-3	ZKR 160 L-4	1659

Notes:
- □ - S foot mounted
- □ - P flange mounted (only single stage gear units)
- □ - P1 flange mounted
- □ - P2 flange mounte
- □ - SP2 foot/flange mounted

Power P [HP]	Output speed (60 Hz) n_{2n} [r.p.m]	Torque Tmax [lbin]	Frame - size GEAR	MOTOR	Weight [lbs]
25.0	380 270 240 190	14200	A225 □ - 2	ZKR 180 M-4	500
	340 240 210 190 170 136 120 96	25000	A250 □ - 2	ZKR 180 M-4	566
	150 136 120 105 85	44500	A315 □ - 2	ZKR 180 M-4	890
	96 68 60 54	35400	A250 □ - 3	ZKR 180 M-4	586
	54 48 42.5 38 30 27	70800	A315 □ - 3	ZKR 180 M-4	983
	30 27 24 19 15	141000	A375 □ - 3	ZKR 180 M-4	1708
	19 15 12	221000	A415 □ - 3	ZKR 180 M-4	2160
30.0	380 270 240 190	12200	A225 □ - 2	ZKR 180 L-4	533
	340 240 210 190 170 136 120	25000	A250 □ - 2	ZKR 180 L-4	589
	150 136 120 105 85	44500	A315 □ - 2	ZKR 180 L-4	972
	96 68	35400	A250 □ - 3	ZKR 180 L-4	586
	68 60 54 48 42.5 38	70800	A315 □ - 3	ZKR 180 L-4	1016
	38 30 27 24 19	141000	A375 □ - 3	ZKR 180 L-4	1741
	19 15 12	221000	A415 □ - 3	ZKR 180 L-4	2194
40.0	340 240 190 170 120	25000	A250 □ - 2	ZKR 200 L-4	544
	150 136 120	44500	A315 □ - 2	ZKR 200 L-4	1136
	120 105 85	71000	A375 □ - 2	ZKR 200 L-4	1830
	68 60 54 48	70800	A315 □ - 3	ZKR 200 L-4	1181
	48 38 34 30 24	141000	A375 □ - 3	ZKR 200 L-4	1907
	30 27 24 19 15	221000	A415 □ - 3	ZKR 200 L-4	2359
50.0	380 300 270 240 190 170 150 136 120	44500	A315 □ - 2	ZKR 225 S-4	1248
	120 105 85 68	71000	A375 □ - 2	ZKR 225 S-4	1940
	68 60 54	70800	A315 □ - 3	ZKR 225 S-4	1292
	60 48 38 34 30	141000	A375 □ - 3	ZKR 225 S-4	2017
	38 30 27 24 19	221000	A415 □ - 3	ZKR 225 S-4	2469
60.0	380 300 270 240 190 170 150 136 120	44500	A315 □ - 2	ZKR 225 M-4	1336
	170 120 105 85	71000	A375 □ - 2	ZKR 225 M-4	1940
	68	70800	A315 □ - 3	ZKR 225 M-4	1380
	76 60 48 38 34	141000	A375 □ - 3	ZKR 225 M-4	2105
	42.5 38 30 27 24	221000	A415 □ - 3	ZKR 225 M-4	2557
75.0	380 300 270 240 190 170	44500	A315 □ - 2	ZKR 250 M-4	1479
	210 170 120	71000	A375 □ - 2	ZKR 250 M-4	2171
	150 120 96	106000	A415 □ - 2	ZKR 250 M-4	2568
	85 76 60 48	141000	A375 □ - 3	ZKR 250 M-4	2249
	54 42.5 38 30	221000	A415 □ - 3	ZKR 250 M-4	2701
100.0	210 170 120	71000	A375 □ - 2	ZKR 280 S-4	2480
	150 105 96	106000	A415 □ - 2	ZKR 280 S-4	2877
	85 76 60	141000	A375 □ - 3	ZKR 280 S-4	2557
	54 42.5 38	221000	A415 □ - 3	ZKR 280 S-4	3009
120.0	210 170	71000	A375 □ - 2	ZKR 280 M-4	2652
	190 150 120 96	106000	A415 □ - 2	ZKR 280 M-4	3049
	85 76	141000	A375 □ - 3	ZKR 280 M-4	2729
	76 54 42.5	221000	A415 □ - 3	ZKR 280 M-4	3181
150.0	190 150	106000	A415 □ - 2	ZKR 315 S-4	3483
	76 54	221000	A415 □ - 3	ZKR 315 S-4	3616
180.0	190 150	106000	A415 □ - 2	ZKR 315 M-4	3704
	76	221000	A415 □ - 3	ZKR 315 M-4	3836

Notes:
- □ - S foot mounted
- □ - P flange mounted (only single stage gear units)
- □ - P1 flange mounted
- □ - P2 flange mounted
- □ - SP2 foot/flange mounted

PARALLEL HELICAL GEARMOTORS
FOOT MOUNTED



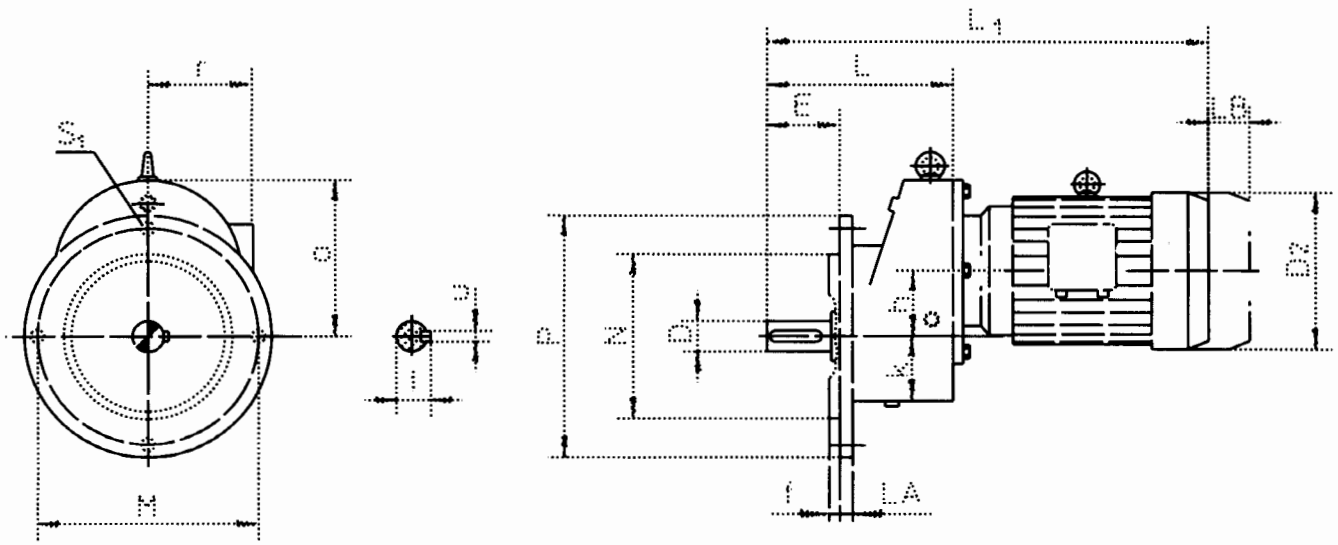
GEARCASE **OUTPUT SHAFT**

Model	A	B	AA	BB	AB	h	C	H	HA	K	S	L	D	E	u	t
A 71 S-1	4.53	4.53	5.51	5.51	1.18	1.61	2.07	2.79	6.77	0.71	0.41	4.13	0.625	1.38	3/16	0.70
A 80 S-1	5.98	5.98	7.00	7.00	1.30	2.20	2.32	3.15	8.50	0.71	0.41	5.67	0.750	1.57	3/16	0.83
A 90 S-1	6.77	6.30	8.74	7.95	1.97	2.79	3.35	3.54	10.27	0.98	0.55	7.16	1.25	2.36	1/4	1.36
A100 S-1	7.48	7.01	10.00	8.98	2.56	3.54	4.02	3.94	12.40	1.38	0.75	8.78	1.375	2.76	5/16	1.51
A132 S-1	11.02	8.98	14.17	11.26	3.23	4.13	4.92	5.20	15.24	1.73	0.87	9.45	1.875	3.54	1/2	2.37

MOTOR

Model		63	71	80	90S	90L	100L	100Ld	112M	132S	132M	160M	160L	180M	180L
A 71 S-1	L_1	12.58	12.68	13.76	15.29	16.28	/	/	/	/	/	/	/	/	/
A 80 S-1	L_1	/	/	/	/	17.56	18.74	18.74	/	/	/	/	/	/	/
A 90 S-1	L_1	/	/	/	/	/	19.92	19.92	20.20	21.81	23.31	/	/	/	/
A100 S-1	L_1	/	/	/	/	/	/	21.38	21.65	23.19	24.68	28.15	29.89	/	/
A132 S-1	L_1	/	/	/	/	/	/	/	/	/	/	/	30.31	32.52	34.01
	D_2	4.84	5.51	6.06	6.69	6.69	7.58	7.58	8.50	9.72	9.72	11.22	11.22	12.79	12.79
	r	3.74	4.02	4.33	4.45	4.45	5.22	5.22	5.71	7.20	7.20	9.68	9.68	10.24	10.24
	LB	1.77	2.24	2.48	3.58	3.46	3.50	3.50	3.23	3.82	3.82	4.61	4.61	5.67	5.67

PARALLEL HELICAL GEARMOTORS FLANGE MOUNTED



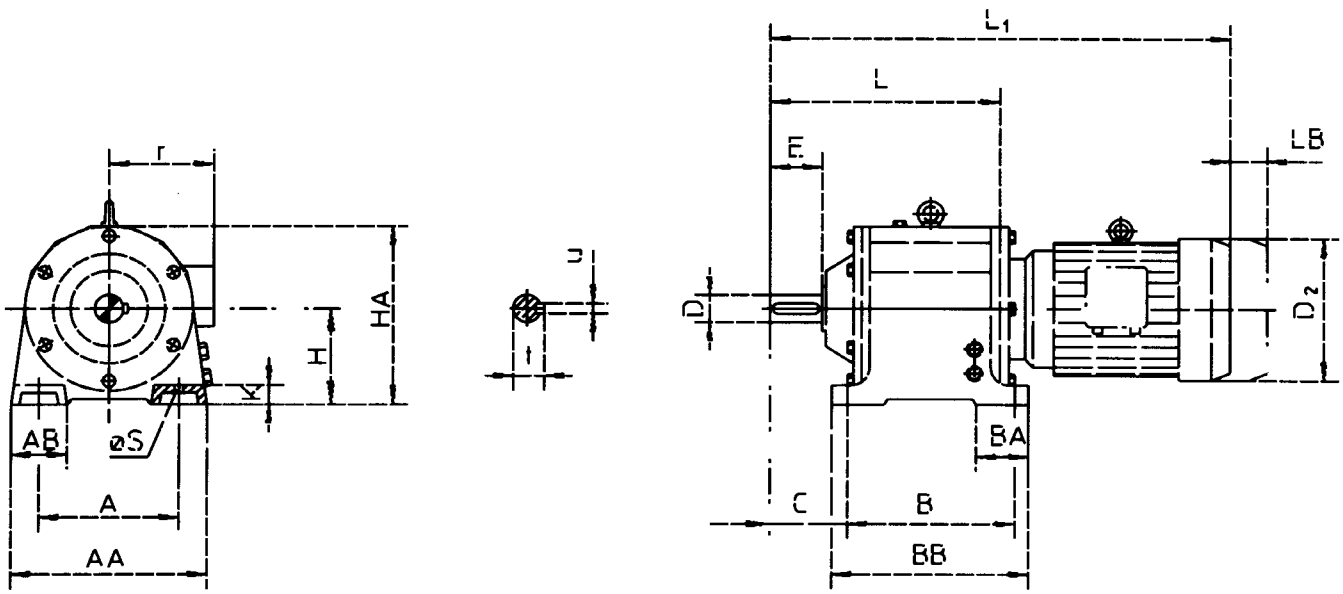
GEARCASE **OUTPUT SHAFT**

Model	M	N	P	S1	LA	f	h	L	o	k	D	E	u	t
A 71 P-1	5.12	4.33	6.30	0.35	0.31	0.12	1.61	4.09	3.98	2.36	0.625	1.38	3/16	0.70
A 80 P-1	6.50	5.12	7.87	0.43	0.39	0.16	2.20	5.71	5.35	2.76	0.750	1.57	3/16	0.83
A 90 P-1	8.46	7.09	9.84	0.55	0.47	0.16	2.79	7.20	6.73	3.74	1.25	2.36	1/4	1.36
A100 P-1	11.81	9.84	13.78	0.71	0.59	0.20	3.54	8.31	8.46	4.33	1.375	2.76	5/16	1.51
A132 P-1	15.75	13.78	17.72	0.71	0.71	0.20	4.13	9.45	10.04	5.31	1.875	3.54	1/2	2.37

MOTOR

Model		63	71	80	90S	90L	100L	100Ld	112M	132S	132M	160M	160L	180M	180L
A 71 P-1	L_1	12.54	12.64	13.72	15.25	16.24	/	/	/	/	/	/	/	/	/
A 80 P-1	L_1	/	/	/	/	17.60	18.77	18.77	/	/	/	/	/	/	/
A 90 P-1	L_1	/	/	/	/	/	19.96	19.96	20.24	21.85	23.35	/	/	/	/
A100 P-1	L_1	/	/	/	/	/	/	20.90	21.18	22.72	24.21	27.68	29.41	/	/
A132 P-1	L_1	/	/	/	/	/	/	/	/	/	/	/	30.31	32.52	32.52
	D_2	4.84	5.51	6.06	6.69	6.69	7.58	7.58	8.50	9.72	9.72	11.22	11.22	12.79	12.79
	r	3.74	4.02	4.33	4.45	4.45	5.22	5.22	5.71	7.20	7.20	9.68	9.68	10.24	10.24
	LB	1.77	2.24	2.48	3.58	3.46	3.50	3.50	3.23	3.82	3.82	4.61	4.61	5.67	5.67

PARALLEL HELICAL GEARMOTORS
FOOT MOUNTED



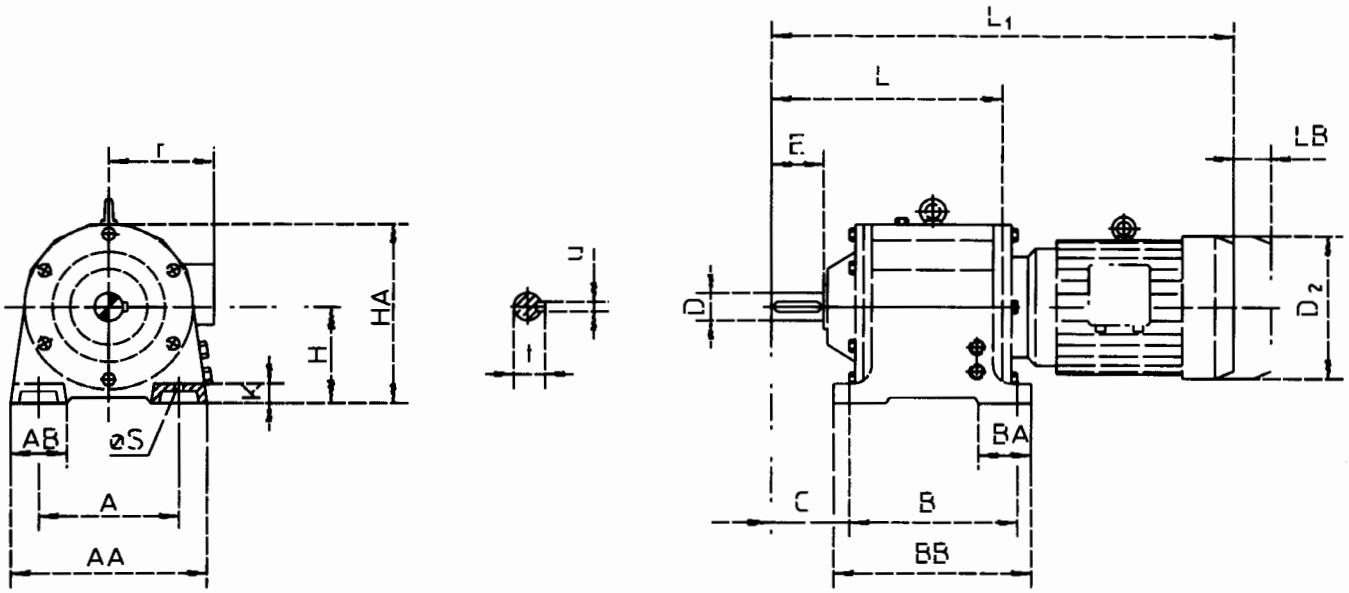
GEARCASE **OUTPUT SHAFT**

Model	A	B	AA	BB	AB	BA	C	H	HA	K	S	L	D	E	u	t
A 90 S	4.33	5.12	5.90	6.10	1.50	1.69	2.95	3.54	6.30	0.79	0.35	7.87	1	1.97	1/4	1.11
A 115 S	5.31	6.50	7.09	7.87	1.77	2.36	3.54	4.53	7.76	0.87	0.55	9.68	1.25	2.36	1/4	1.36
A 140 S	6.69	8.07	9.45	9.65	2.36	2.76	4.53	5.51	9.68	1.10	0.71	12.01	1.625	3.15	3/8	1.79

MOTOR

Model		63	71	80	90S	90L	100L	100Ld	112M	132S	132M
A 90 S-2	L_1	16.32	16.42	17.50	19.03	20.02	/	/	/	/	/
A 90 S-3	L_1	16.32	16.42	17.50	19.03	20.02	/	/	/	/	/
A 115 S-2	L_1	/	/	19.05	20.59	21.57	22.76	22.76	/	/	/
A 115 S-3	L_1	17.89	17.99	19.05	20.59	21.57	22.76	22.76	/	/	/
A 140 S-2	L_1	/	/	/	22.60	23.58	24.76	24.76	25.04	26.65	28.15
A 140 S-3	L_1	/	20.10	21.06	22.60	23.58	24.76	24.76	25.04	26.65	/
	D_2	4.84	5.51	6.06	6.69	6.69	7.58	7.58	8.50	9.72	9.72
	r	3.74	4.02	4.33	4.45	4.45	5.22	5.22	5.71	7.20	7.20
	LB	1.77	2.24	2.48	3.58	3.46	3.50	3.50	3.23	3.82	3.82

PARALLEL HELICAL GEARMOTORS
FOOT MOUNTED



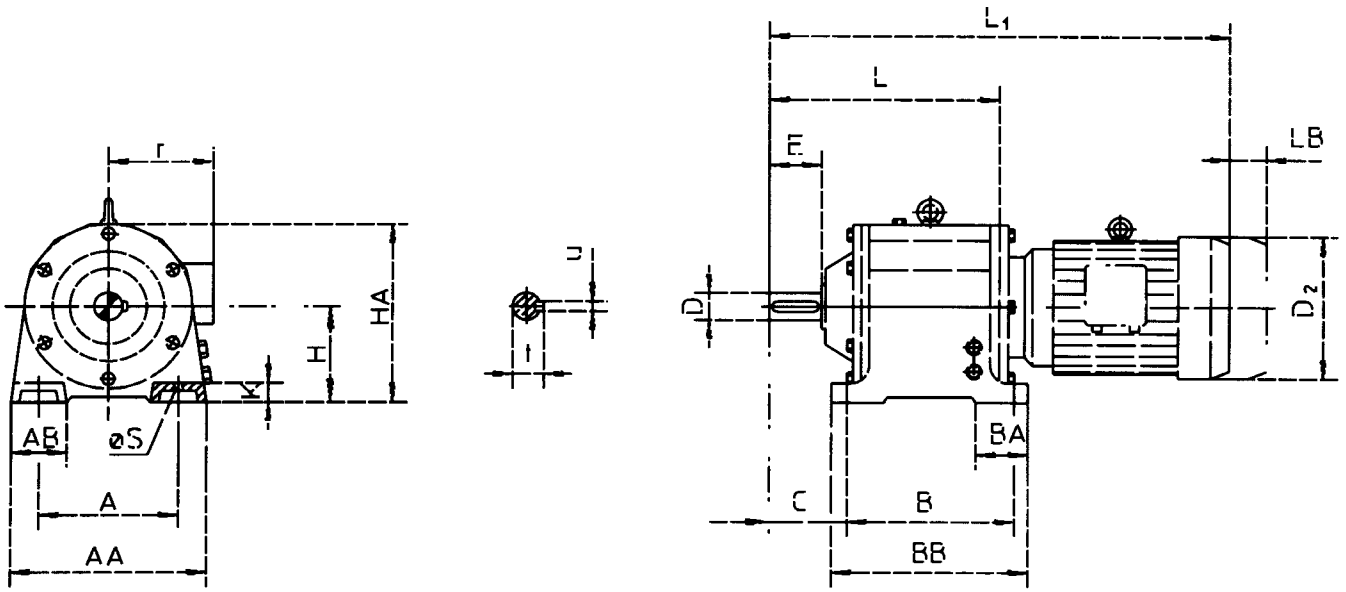
GEARCASE **OUTPUT SHAFT**

Model	A	B	AA	BB	AB	BA	C	H	HA	K	S	L	D	E	u	t
A 180 S	8.46	10.24	11.81	12.40	2.95	3.54	5.51	7.09	12.20	1.57	0.71	15.00	2.125	3.94	1/2	2.35
A 225 S	9.84	12.20	13.78	14.76	3.54	3.94	6.30	8.86	14.96	1.97	0.87	17.79	2.375	4.72	5/8	2.65
A 250 S	11.42	14.57	15.94	17.32	4.33	4.92	7.28	9.84	16.97	2.56	1.02	21.18	2.875	5.51	3/4	3.2

MOTOR

Model		80	90S	90L	100L	100Ld	112M	132S	132M	160M	160L	180M	180L	200L
A 180 S-2	L_1	/	/	26.42	27.60	27.60	27.87	29.41	30.90	34.37	36.10	/	/	
A 180 S-3	L_1	23.94	25.43	26.42	27.60	27.60	27.87	29.41	30.90	34.37	36.10	/	/	
A 225 S-2	L_1	/	/	28.98	30.39	30.39	30.43	31.97	33.50	36.93	38.66	39.37	40.87	
A 225 S-3	L_1	/	27.99	28.98	30.39	30.39	30.43	31.97	33.50	36.93	38.66	/	/	
A 250 S-2	L_1	/	/	/	/	/	/	35.14	36.63	40.06	41.79	42.56	44.05	46.97
A 250 S-3	L_1	/	/	/	33.31	33.31	33.58	35.14	36.63	40.06	41.79	42.56	44.05	/
	D_2	6.06	6.69	6.69	7.58	7.58	8.50	9.72	9.72	11.22	11.22	12.79	12.79	14.53
	r	4.33	4.45	4.45	5.22	5.22	5.71	7.20	7.20	9.68	9.68	10.24	10.24	11.77
	LB	2.48	3.58	3.46	3.50	3.50	3.23	3.82	3.82	4.61	4.61	5.67	5.67	5.43

PARALLEL HELICAL GEARMOTORS
FOOT MOUNTED



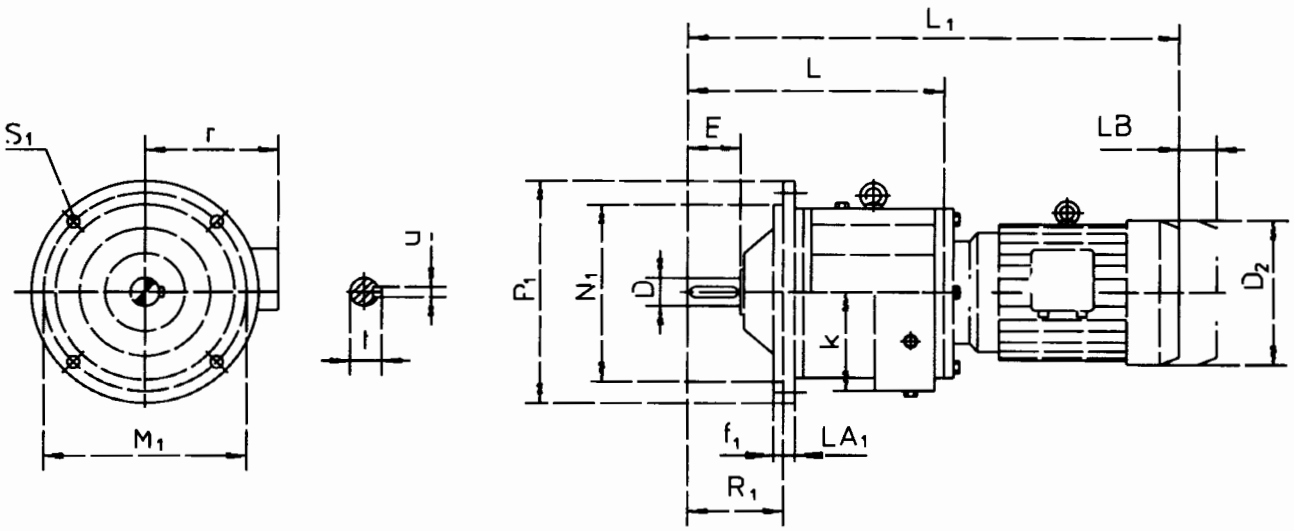
GEARCASE **OUTPUT SHAFT**

Model	A	B	AA	BB	AB	BA	C	H	HA	K	S	L	D	E	u	t
A 315 S	15.16	17.32	20.87	21.26	5.90	5.90	8.46	12.40	21.50	3.15	1.30	24.52	3.625	6.69	7/8	4.01
A 375 S	19.68	22.83	25.98	26.38	6.30	6.30	10.63	14.76	25.90	3.94	1.53	31.73	4.750	8.27	$1^{1/4}$	5.29
A 415 S	22.83	26.77	29.92	33.07	7.09	7.09	13.38	16.34	29.64	4.33	1.77	38.11	5.5	9.84	$1^{1/4}$	6.05

MOTOR

Model		132S	132M	160M	160L	180M	180L	200L	225S	225M	250M	280S	280M	315S	315M	315Md
A315 S-2	L_1	/	/	/	44.84	45.55	47.05	49.96	50.71	51.69	56.89	/	/	/	/	/
A315 S-3	L_1	38.13	39.62	43.11	44.84	45.55	47.05	49.96	50.71	51.69	/	/	/	/	/	/
A375 S-2	L_1	/	/	/	/	/	/	56.61	57.36	58.35	63.46	65.87	67.72	/	/	/
A375 S-3	L_1	/	/	49.76	51.50	52.20	53.70	56.61	57.36	58.35	63.46	65.87	67.72	/	/	/
A415 S-2	L_1	/	/	/	/	/	/	/	/	64.72	69.84	72.24	74.09	77.24	83.19	79.25
A415 S-3	L_1	/	/	/	/	/	60.08	62.99	63.74	64.72	69.84	72.24	74.09	77.24	83.19	79.25
	D_2	9,72	9,72	11,22	11,22	12,79	12,79	14,53	16,46	16,46	18,54	20,08	20,08	23,54	23,54	23,54
	r	7,20	7,20	9,68	9,68	10,24	10,24	11,77	13,27	13,27	14,17	14,92	14,92	17,60	17,60	17,60
	LB	3,82	3,82	4,61	4,61	5,67	5,67	5,43	5,55	5,55	/	/	/	/	/	/

PARALLEL HELICAL GEARMOTORS
FLANGE MOUNTED



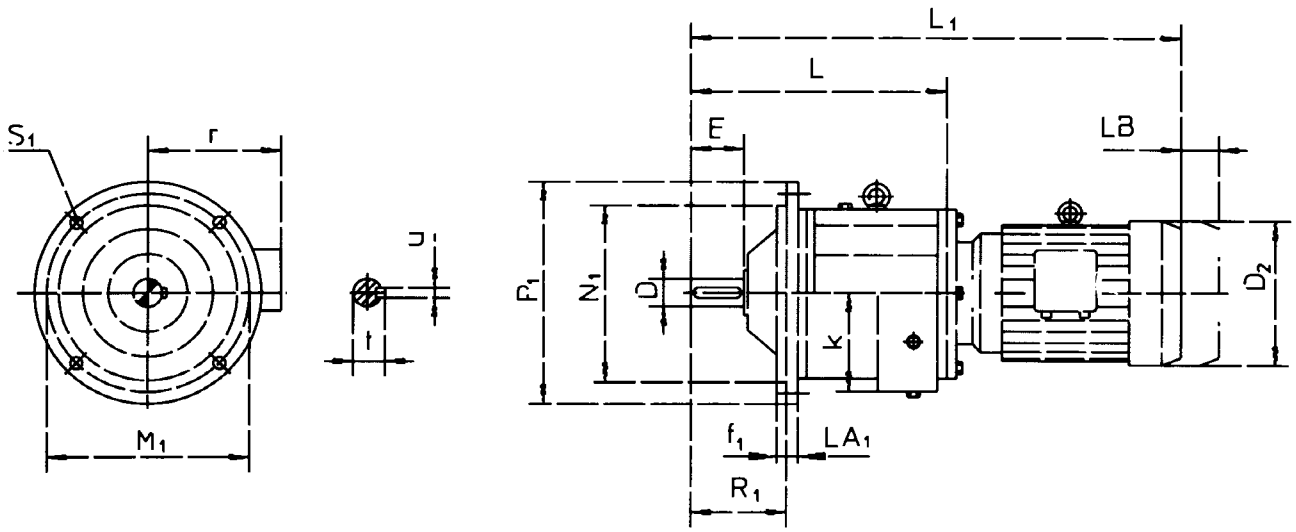
GEARCASE **OUTPUT SHAFT**

Model	M1	N1	P1	R1	S1	nS1	LA1	f1	L	k	D	E	u	t
A 90 P1	6.50	5.12	7.87	3.35	0.43	4	0.39	0.16	8.38	3.66	1	1.97	1/4	1.1
A 115 P1	8.46	7.09	9.84	3.15	0.55	4	0.47	0.16	9.53	4.53	1.25	2.36	1/4	1.36
A 140 P1	10.43	9.05	11.81	5.12	0.55	4	0.47	0.20	12.52	5.63	1.625	3.15	3/8	1.79

MOTOR

Model		63	71	80	90S	90L	100L	100Ld	112M	132S	132M
A 90 P1-2	L_1	16.83	16.93	18.01	19.55	20.53	/	/	/	/	/
A 90 P1-3	L_1	16.83	16.93	18.01	19.55	20.53	/	/	/	/	/
A 115 P1-2	L_1	/	/	18.90	20.43	21.42	22.60	22.60	/	/	/
A 115 P1-3	L_1	17.74	17.83	18.90	20.43	21.42	22.60	22.60	/	/	/
A 140 P1-2	L_1	/	/	/	23.11	24.09	25.27	25.27	25.55	27.16	28.66
A 140 P1-3	L_1	/	20.61	21.57	23.11	24.09	25.27	25.27	25.55	27.16	/
	D_2	4.84	5.51	6.06	6.69	6.69	7.58	7.58	8.50	9.72	9.72
	r	3.74	4.02	4.33	4.45	4.45	5.22	5.22	5.71	7.20	7.20
	LB	1.77	2.24	2.48	3.58	3.46	3.50	3.50	3.23	3.82	3.82

PARALLEL HELICAL GEARMOTORS
FLANGE MOUNTED



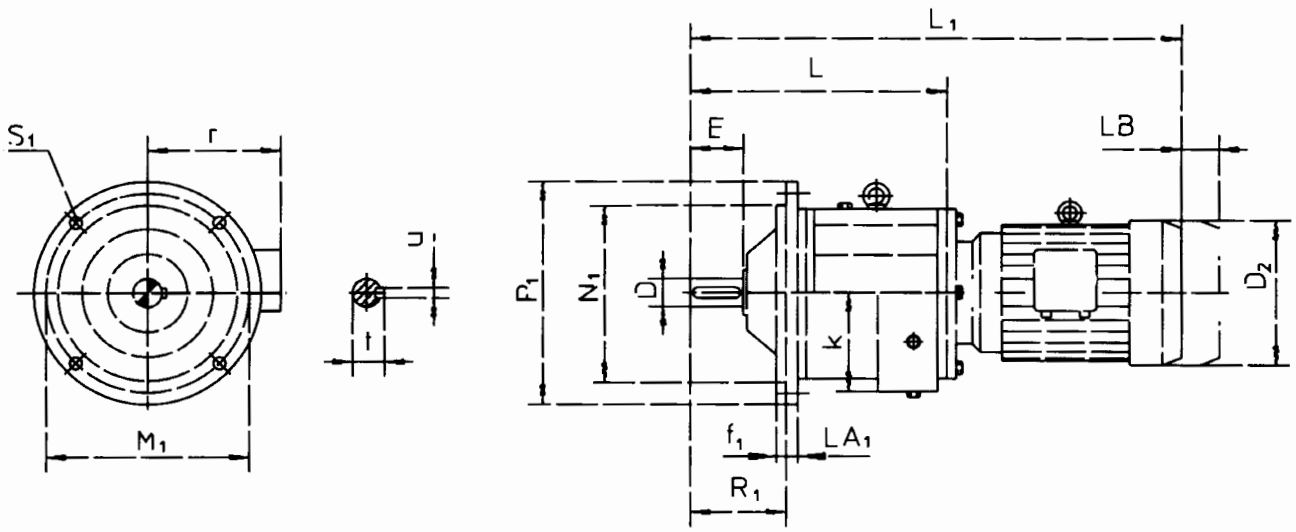
GEARCASE **OUTPUT SHAFT**

Model	M1	N1	P1	R1	S1	nS1	LA1	f1	L	k	D	E	u	t
A 180 P1	11.81	9.84	13.78	6.30	0.71	4	0.59	0.20	14.33	7.20	2.125	3.94	1/2	2.35
A 225 P1	15.75	13.78	17.72	7.48	0.71	4	0.71	0.20	18.94	8.94	2.375	4.72	5/8	2.65
A 250 P1	15.75	13.78	17.72	7.48	0.71	8	0.87	0.20	21.46	10.04	2.875	5.51	3/4	3.20

MOTOR

Model		80	90S	90L	100L	100Ld	112M	132S	132M	160M	160L	180M	180L	200L
A 180 P1-2	L_1	/	/	25.75	26.93	26.93	27.20	28.74	30.24	33.70	35.43	/	/	/
A 180 P1-3	L_1	23.27	24.76	25.75	26.93	26.93	27.20	28.74	30.24	/	/	/	/	/
A 225 P1-2	L_1	/	/	30.12	31.30	31.30	31.57	33.11	34.65	38.07	39.80	40.51	42.01	/
A 225 P1-3	L_1	/	29.13	30.12	31.30	31.30	31.57	33.11	34.65	38.07	39.80	/	/	/
A 250 P1-2	L_1	/	/	/	/	/	/	35.41	36.91	40.33	42.07	42.83	44.33	47.24
A 250 P1-3	L_1	/	/	/	33.58	33.58	33.86	35.41	36.91	40.33	42.07	42.83	44.33	/
	D_2	6.06	6.69	6.69	7.58	7.58	8.50	9.72	9.72	11.22	11.22	12.79	12.79	14.53
	r	4.33	4.45	4.45	5.22	5.22	5.71	7.20	7.20	9.68	9.68	10.24	10.24	11.77
	LB	2.48	3.58	3.46	3.50	3.50	3.23	3.82	3.82	4.61	4.61	5.67	5.67	5.43

PARALLEL HELICAL GEARMOTORS
FLANGE MOUNTED



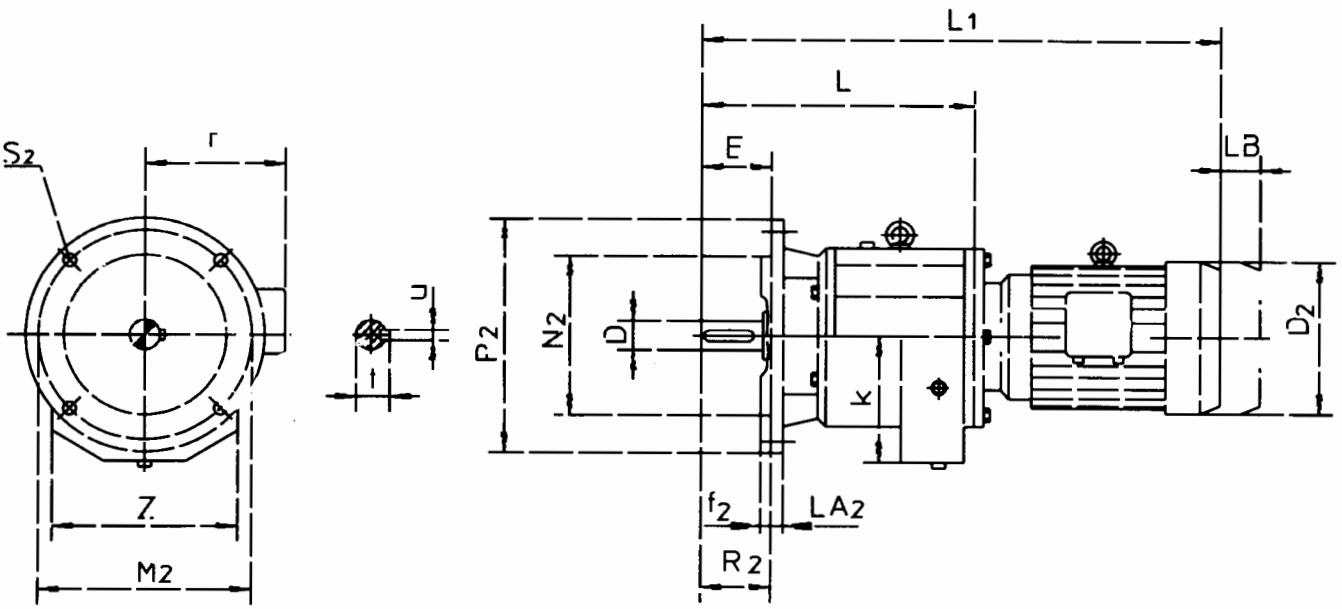
GEARCASE **OUTPUT SHAFT**

Model	M1	N1	P1	R1	S1	nS1	LA1	f1	L	k	D	E	u	t
A 315 P1	19.68	17.72	21.65	9.21	0.71	8	0.87	0.24	24.53	12.13	3.625	6.69	7/8	4.01
A 375 P1	23.62	21.65	25.98	10.83	0.87	8	1.10	0.24	31.73	14.57	4.750	8.27	$1^{1/4}$	5.29
A 415 P1	29.13	26.77	31.50	12.60	1.02	8	1.10	0.24	38.11	16.14	5.500	9.84	$1^{1/4}$	6.05

MOTOR

Model		132S	132M	160M	160L	180M	180L	200L	225S	225M	250M	280S	280M	315S	315M	315Md
A315 P1-2	L_1	/	/	/	44.84	45.55	47.05	49.96	50.71	51.69	56.89	/	/	/	/	/
A315P1-3	L_1	38.13	39.62	43.11	44.84	45.55	47.05	49.96	50.71	51.69	/	/	/	/	/	/
A375P1-2	L_1	/	/	/	/	/	/	56.61	57.36	58.35	63.46	65.87	67.72	/	/	/
A375P1-3	L_1	/	/	49.76	51.50	52.20	53.70	56.61	57.36	58.35	63.46	65.87	67.72	/	/	/
A415P1-2	L_1	/	/	/	/	/	/	/	/	64.72	69.84	72.24	74.09	77.24	79.25	79.25
A415P1-3	L_1	/	/	/	/	/	60.08	62.99	63.74	64.72	69.84	72.24	74.09	77.24	79.25	79.25
	D_2	9.72	9.72	11.22	11.22	12.79	12.79	14.53	16.46	16.46	18.54	20.08	20.08	23.54	23.54	23.54
	r	7.20	7.20	9.68	9.68	10.24	10.24	11.77	13.27	13.27	14.17	14.92	14.92	17.60	17.60	17.60
	LB	3.82	3.82	4.61	4.61	5.67	5.67	5.43	5.55	5.55	/	/	/	/	/	/

PARALLEL HELICAL GEARMOTORS
FLANGE MOUNTED



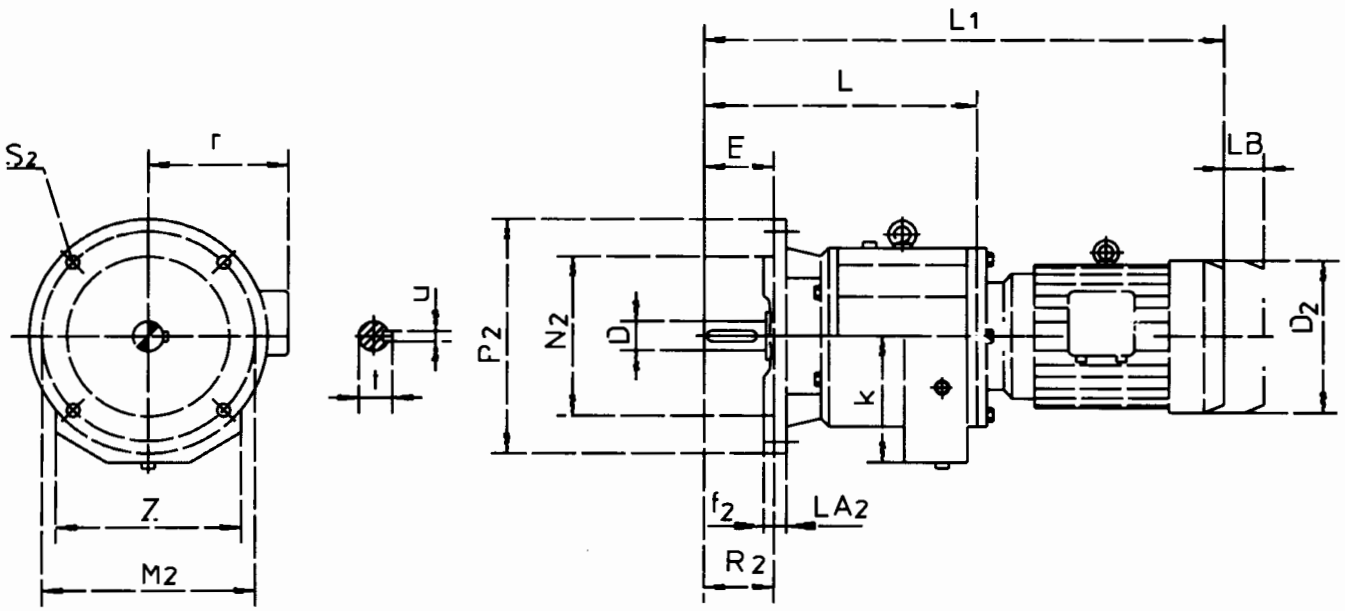
GEARCASE **OUTPUT SHAFT**

Model	M2	N2	P2	R2	S2	nS2	LA2	f2	L	k	Z	D	E	u	t
A 90 P2	5.12	4.33	6.30	2.16	0.35	4	0.39	0.16	8.38	3.66	5.71	1	1.97	1/4	1.11
A 115 P2	6.50	5.12	7.87	2.56	0.43	4	0.39	0.16	10.20	4.53	6.89	1.25	2.36	1/4	1.36
A 140 P2	8.46	7.09	9.84	3.38	0.55	4	0.39	0.20	12.40	5.63	8.46	1.625	3.15	3/8	1.79

MOTOR

Model		63	71	80	90S	90L	100L	100Ld	112M	132S	132M
A 90 P2-2	L_1	16.83	16.93	18.01	19.55	20.53	/	/	/	/	/
A 90 P2-3	L_1	16.83	16.93	18.01	19.55	20.53	/	/	/	/	/
A 115 P2-2	L_1	/	/	19.57	21.10	22.09	23.27	23.27	/	/	/
A 115 P2-3	L_1	18.40	18.50	19.57	21.10	22.09	23.27	23.27	/	/	/
A 140 P2-2	L_1	/	/	/	22.99	23.98	25.16	25.16	25.43	27.05	27.05
A 140 P2-3	L_1	/	20.49	21.46	22.99	23.98	25.16	25.16	25.43	27.05	/
	D_2	4.84	5.51	6.06	6.69	6.69	7.58	7.58	8.50	9.72	9.72
	r	3.74	4.02	4.33	4.45	4.45	5.22	5.22	5.71	7.20	7.20
	LB	1.77	2.24	2.48	3.58	3.46	3.50	3.50	3.23	3.82	3.82

PARALLEL HELICAL GEARMOTORS
FLANGE MOUNTED



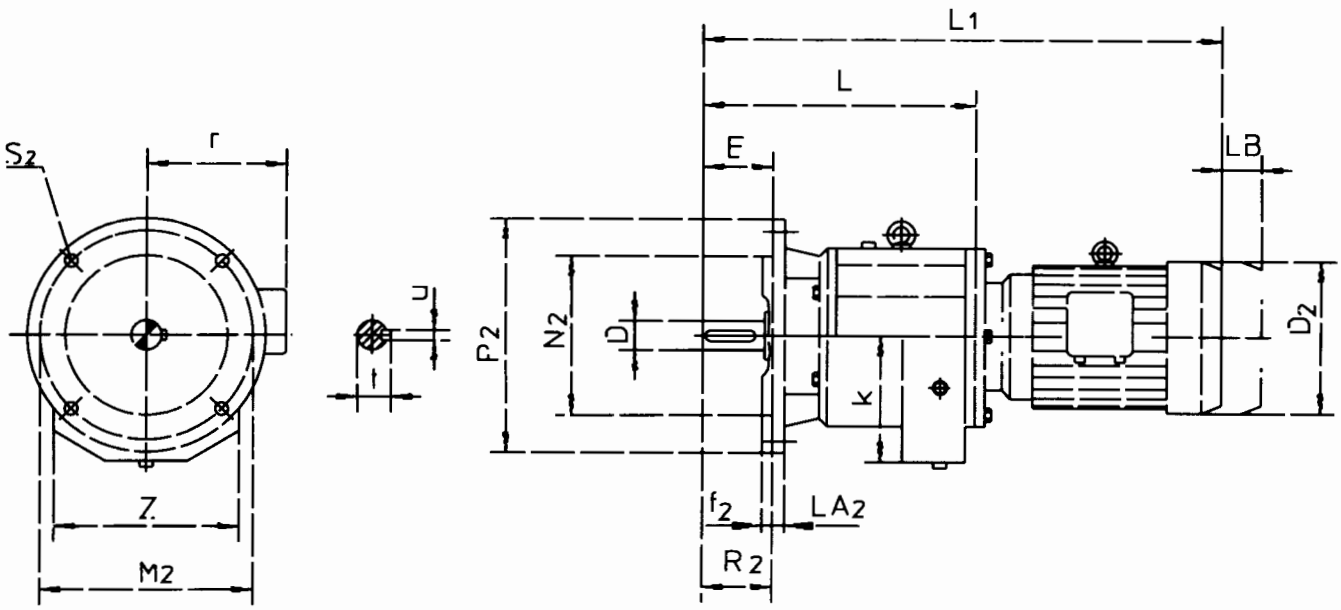
GEARCASE **OUTPUT SHAFT**

Model	M2	N2	P2	R2	S2	nS2	LA2	f2	L	k	Z	D	E	u	t
A180 P2	10.43	9.05	11.81	4.33	5.51	4	0.47	0.20	15.39	7.20	10.83	2.125	3.94	1/2	2.35
A225 P2	11.81	9.84	13.78	5.12	0.71	4	0.71	0.20	18.42	8.94	12.99	2.375	4.72	5/8	2.65
A250 P2	11.81	9.84	13.78	5.31	0.71	8	0.79	0.20	21.46	10.04	15.27	2.875	5.51	3/4	3.20

MOTOR

Model		80	90S	90L	100L	100Ld	112M	132S	132M	160M	160L	180M	180L	200L
A 180 P2-2	L_1	/	/	26.81	27.99	27.99	28.27	29.80	31.30	34.76	/	/	/	/
A 180 P2-3	L_1	24.33	25.83	26.81	27.99	27.99	28.27	29.80	31.30	/	/	/	/	/
A 225 P2-2	L_1	/	/	29.61	30.79	30.79	31.06	32.60	34.13	37.56	39.29	40.00	41.50	/
A 225 P2-3	L_1	/	/	29.61	30.79	30.79	31.06	32.60	34.13	37.56	39.29	/	/	/
A 250 P2-2	L_1	/	/	/	/	/	/	35.41	36.91	40.33	42.07	42.83	44.33	47.24
A 250 P2-3	L_1	/	/	/	33.58	33.58	33.86	35.41	36.91	40.33	42.07	42.83	44.33	/
	D_2	6.06	6.69	6.69	7.58	7.58	8.50	9.72	9.72	11.22	11.22	12.79	12.79	14.53
	r	4.33	4.45	4.45	5.22	5.22	5.71	7.20	7.20	9.68	9.68	10.24	10.24	11.77
	LB	2.48	3.58	3.46	3.50	3.50	3.23	3.82	3.82	4.61	4.61	5.67	5.67	5.43

PARALLEL HELICAL GEARMOTORS
FLANGE MOUNTED



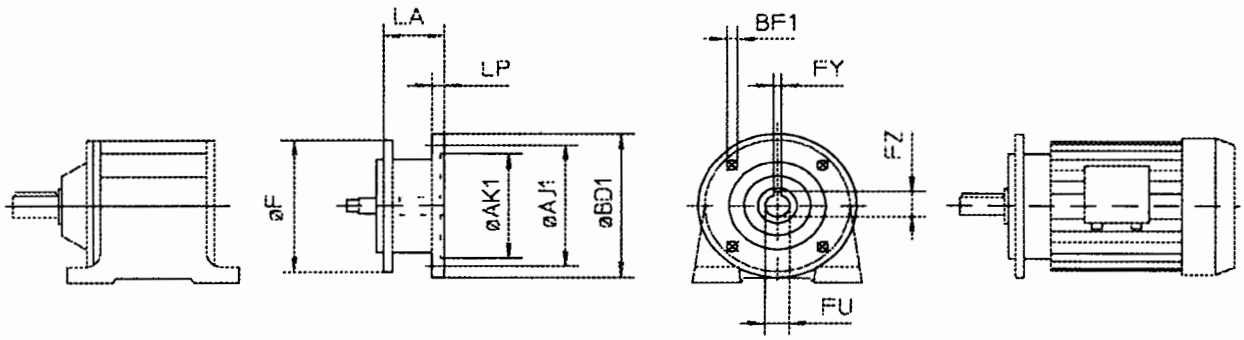
GEARCASE **OUTPUT SHAFT**

Model	M2	N2	P2	R2	S2	nS2	LA2	f2	L	k	Z	D	E	u	t
A 315 P2	15.75	13.78	17.72	6.69	0.71	8	0.79	0.24	24.53	12.13	19.49	3.625	6.69	7/8	4.01
A 375 P2	19.68	17.72	21.65	8.27	0.87	8	0.98	0.24	32.12	14.57	23.23	4.750	8.27	$1^{1/4}$	5.29
A 415 P2	23.62	21.65	25.98	9.84	1.02	8	1.10	0.24	38.11	16.14	27.95	5.500	9.84	$1^{1/4}$	6.05

MOTOR

Model		132S	132M	160M	160L	180M	180L	200L	225S	225M	250M	280S	280M	315S	315M	315Md
A315 P2-2	L_1	/	/	/	44.84	45.55	47.05	49.96	50.71	51.69	56.89	/	/	/	/	/
A315P2-3	L_1	38.13	39.62	43.11	44.84	45.55	47.05	49.96	50.71	51.69	/	/	/	/	/	/
A375P2-2	L_1	/	/	/	/	/	/	57.01	57.75	58.74	63.86	66.26	68.11	/	/	/
A375P2-3	L_1	/	/	50.16	51.89	52.60	54.09	57.01	57.75	58.74	63.86	66.26	68.11	/	/	/
A415P2-2	L_1	/	/	/	/	/	/	/	/	64.72	69.84	72.24	74.09	77.24	79.25	79.25
A415P2-3	L_1	/	/	/	/	/	60.08	62.99	63.74	64.72	69.84	72.24	74.09	77.24	79.25	79.25
	D_2	9.72	9.72	11.22	11.22	12.79	12.79	14.53	16.46	16.46	18.54	20.08	20.08	23.54	23.54	23.54
	r	7.20	7.20	9.68	9.68	10.24	10.24	11.77	13.27	13.27	14.17	14.92	14.92	17.60	17.60	17.60
	LB	3.82	3.82	4.61	4.61	5.67	5.67	5.43	5.55	5.55	/	/	/	/	/	/

NEMA C-FACE ADAPTER



NEMA ADAPTERS

Motor frame - size		Max.Power		Type of NEMA adapter	Dimension							Max. Motor Weight lbs
IEC ZKR	NEMA NC	kW	HP		BD1	AJ1	AK1	BF1	FU	FY	FZ	
63	48C	0.18	1/4	NC48	5.625	3.75	3.00	0.28	0.50	0.187	0.641	20
71	56C	0.37	1/2	NC56	6.69	5.88	4.50	0.41	0.525	0.187	0.71	30
80/90	143TC/145TC	1.1	2	NC140	6.69	5.88	4.50	0.41	0.875	0.187	0.98	65
100/112	182TC/184TC	4	5	NC180	8.98	7.25	8.50	0.59	1.125	0.25	1.24	100
132	213TC/215TC	7.5	10	NC210	8.98	7.25	8.50	0.59	1.375	0.312	1.52	200
160	254TC/256TC	15	20	NC250	8.98	7.25	8.50	0.59	1.625	0.375	1.80	350
180	284TC/286TC	22	30	NC280	11.26	9.00	10.5	0.59	1.875	0.50	2.10	450

MOTOR COMPATIBILITY

Gear units size		LA						
SINGLE STAGE	TWO AND THREE STAGE	48C	56C	143TC 145TC	182TC 184TC	213TC 215TC	254TC 256TC	284TC 286TC
A 71□-1	A 90□-2/3	4.40	4.70	5.00	-	-	-	-
A 80□-1	A115□-2/3	4.17	4.58	4.88	-	-	-	-
A 90□-1	A140□-2/3	4.36	4.66	4.96	6.14	7.08	-	-
A100□-1	A180□-2/3	-	-	5.11	9.29	7.24	7.83	-
A132□-1	A225□-2/3	-	-	-	6.58	7.48	8.07	9.09
	A250□-2/3	-	-	-	6.77	7.71	8.30	9.33
	A315□-2/3	-	-	-	-	-	8.58	9.60

Notes: □ - S foot mounted
□ - P flange mounted (only single stage)
□ - P1 flange mounted
□ - P2 flange mounted
□ - SP2 foot/flange mounted

All dimensions are in inches. Reference appropriate Gearmotor dimension sheets for L and (L+LA).
For the selected NC adapter size plase see the appropriate MOTOR COMPATIBILITY with (IEC - NEMA) ADAPTERS.

Example: A90S-1 ZKR71A-4 - with NEMA C - face

Adapters: A90S-1 / NC56

In order to enable proper running. gear units have to be continually lubricated by lubricants quoted in the table below.
Each gear unit leaves the factory ready to be put into operation and with the correct grade of lubrication for the specified mounting position.

RECOMMENDED LUBRICANT TABLE

Lubricant selection table							
Type of lubricant	Lubricant utilization	Ambient air temp. °F	ISO viscosity class	MANUFACTURER*			
				EXXON	TEXACO	MOBIL	SHELL
MINERAL OIL	Helical gear units	-15+125	VG220	SPARTAN EP220	MEROPA 220	MOBIL GEAR 630	OMALA 220
		-10+75	VG100	SPARTAN EP100	MEROPA 100	MOBIL GEAR 627	OMALA 100
SYNTETC OIL		-15+170	VG220	S220	SYNUBLE CLP220	GLYGOYLE 30	TIVELA WB
		-30+210	VG460	S460		GLYGOYLE 80	TIVELA SD
GREASE		-20+140	LITHIUM base 2-3	BEACON 3	MULTIFAK 30	MOBILUX 3	SHELL ALVANIA R3

* Or other reputable brand name equivalent

LUBRICANT CAPACITY TABLE **QUANTITY IN PINTS**

Gear units size	Mounting positions							
	B3	B5	B6/B7	B8	V1	V3	V5	V6
A 71 □-1	0.63	0.63	1.27	1.37	1.05	1.05	1.05	1.05
A 80 □-1	0.84	0.84	1.48	1.69	1.27	1.27	1.27	1.27
A 90 □-1	1.05	1.05	1.69	2.53	1.69	1.69	1.69	1.69
A100 □-1	1.58	1.58	2.54	3.17	2.54	2.54	2.54	2.54
A132 □-1	3.70	3.70	4.22	6.34	5.28	4.86	5.28	4.86
A 90 □-2/3	0.63	0.53	1.26	1.37	1.65	1.37	1.65	1.37
A115 □-2/3	1.27	1.06	1.90	2.75	3.59	3.17	3.80	3.17
A140 □-2/3	2.74	2.11	4.65	5.49	6.97	5.91	6.97	6.34
A180 □-2/3	5.91	5.07	11.62	12.68	15.85	13.73	16.90	15.85
A225 □-2/3	6.34	5.91	15.85	19.02	21.13	24.70	21.13	22.18
A250 □-2/3	12.67	11.62	19.02	29.58	42.26	46.49	42.26	46.49
A315 □-2/3	25.35	23.24	63.40	90.87	101.4	90.87	101.40	90.87
A375 □-2/3	44.37	38.0	101.4	143.7	156.4	143.7	156.40	143.7
A415 □-2/3	63.40	57.05	152.1	226.0	243.0	226.0	243.0	226.0

1 pint = 0.125 gallon = 0.4732 lit
Oil capacity is determined by oil level plug for appropriate mounting position.

Notes: □ - S foot mounted
□ - P flange mounted (only single stage gear units)
□ - P1 flange mounted
□ - P2 flange mounted
□ - SP2 foot/flange mounted