

# ES SERIES REDUCTOR

## I、Characteristics:

1. Our reducers are based on the building block design, so it's convenient for them to fit all types of motors or to connect with other power input. The same type of reducers can fit motors with different power, so that it's possible for different types of machines to combine or connect.
2. Helical-worm reductor of MN series is the combination of helical gears and worm gears. A single machine can reach a transmission efficiency as much as 96%.
3. Precise division of transmission ratio with a wide range. The combination of machines can produce a larger transmission ratio at a low output rotational speed.
4. Various ways of installation: Foot-mounted , B5 flange-mounted or B14 flange-mounted. Foot-mounted reductor has two machine foot-mounted planes, hollow shaft-mounted style except 37 serve two parameter for customer select.

## II、Working Environment:

1. Working temperature:  $-40^{\circ}\text{C}\sim 50^{\circ}\text{C}$  (The lubrication should be heated until above  $0^{\circ}\text{C}$  if the machine works Below  $0^{\circ}\text{C}$ .)
2. The working place should be lower than 1,000 meters above sea level.
3. The input rotational speed should not exceed 1,800r/m. The circumferential speed of the gear should not exceed 20m/s.
4. Suitable for normal-reverse rotation.
5. Without industry limitation.
6. Please consult our technical supporting department for other circumstances.

## III、Instructions for Selection:

The total factor  $f_A$  of helical-worm reductor should meet the following formula:

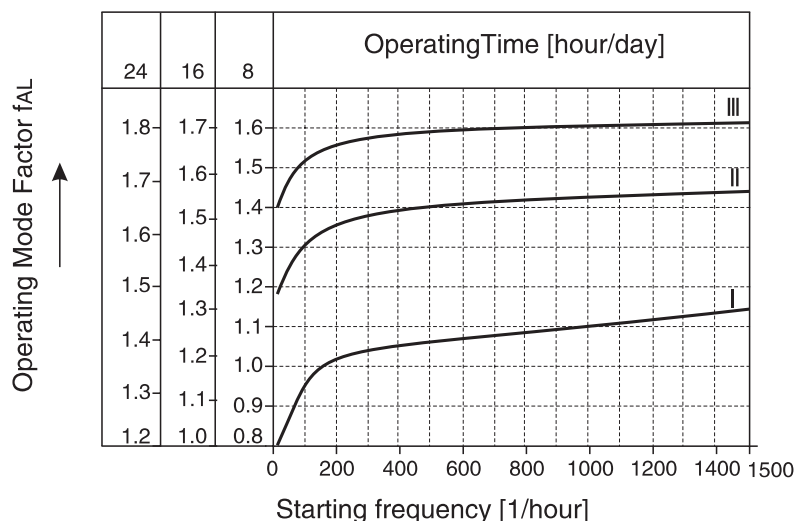
$$f_A = f_{AL} \times f_{A1} \times f_{A2}$$

$f_{AL}$ —Load characteristic and daily operating time factor

$f_{A1}$ —Service factor from the ambient temperature

$f_{A2}$ —service factor from the cyclic duration factor

The daily operating time, the starting frequency and the load classifications be determined before deciding the service factor. The load classifications is calculated with the following formula:



# ES SERIES REDUCTOR

## Load classification

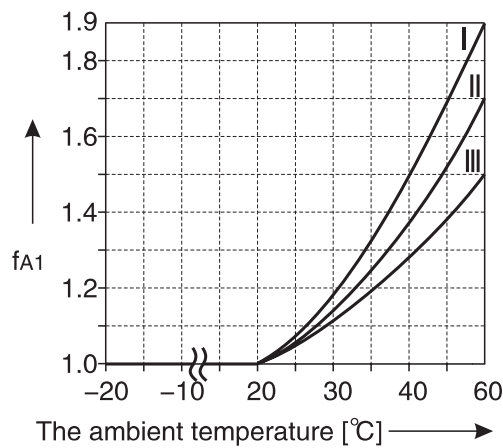
Uniform load, mass acceleration factor  $\leq 0.2$

Medium Impact Load, mass acceleration factor  $\leq 3$

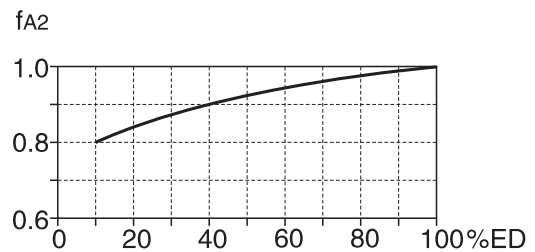
Heavy shock Load, mass acceleration factor  $\leq 10$

Please contact our technical supporting department in case the mass acceleration factor  $> 10$ .

$$\text{Mass acceleration factor} = \frac{\text{All external mass moments of Inertia}}{\text{Mass moment of inertia on the motor end}}$$



fA1—Service factor from the ambient temperature



$$ED(\%) = \frac{\text{Time under load in min/h}}{60} \times 100$$

fA2—service factor from the cyclic duration factor

The total operating mode factor (fA) should meet the following formula:

$$\text{Service factor } f_B \geq \text{operating mode factor } f_A$$

The service factor fB is listed in the parameter selection list.

The permitted overhung loads and the axial forces.

Please contact our technical supporting department for the information on the permitted overhung loads and the axial forces at the output end of the shaft.

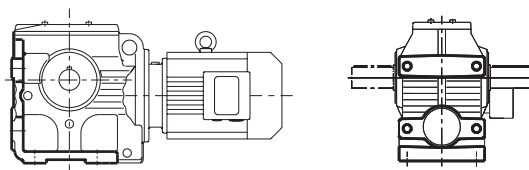
Regarding the use and maintenance of the reductor, please refer to the attached Instruction Manual of the Reductor and the Variable Speed Motor.

# ES SERIES REDUCTOR

## IV. Mounting type :

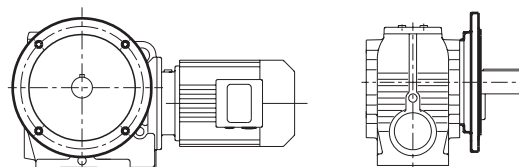
### 1. Model **ES**

Foot-mounted helical-worm gear reductor



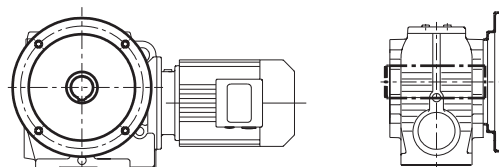
### 2. Model **ESF**

B5 flange-mounted helical-worm gear reductor



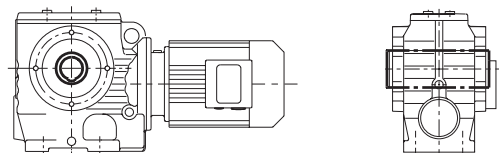
### 3. Model **ESAF**

B5 flange-mounted helical-worm gear reductor with hollow shaft



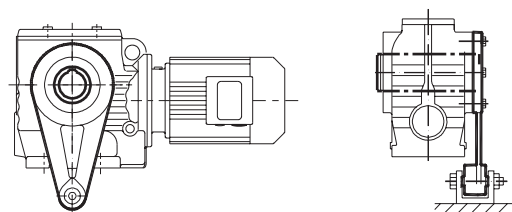
### 4. Model **ESA**

Helical-worm gear reductor with hollow shaft



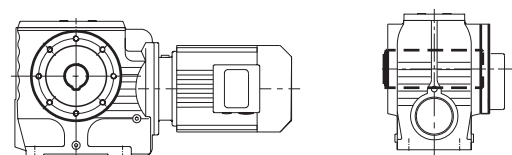
### 5. Model **ESAT**

Helical-worm gear reductor in torque-arm version with hollow shaft



### 6. Model **ESAZ**

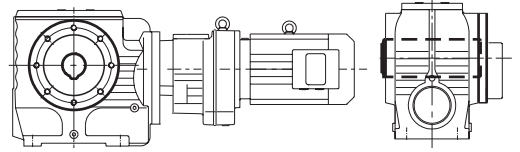
B14 flange-mounted helical-worm gear reductor with hollow shaft



# ES SERIES REDUCTOR

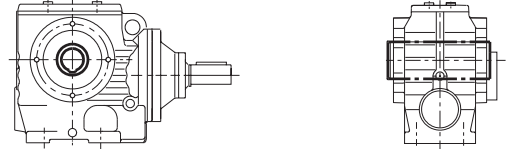
## 7. Model ES · ER

Combination of MN model and ER ..7 model

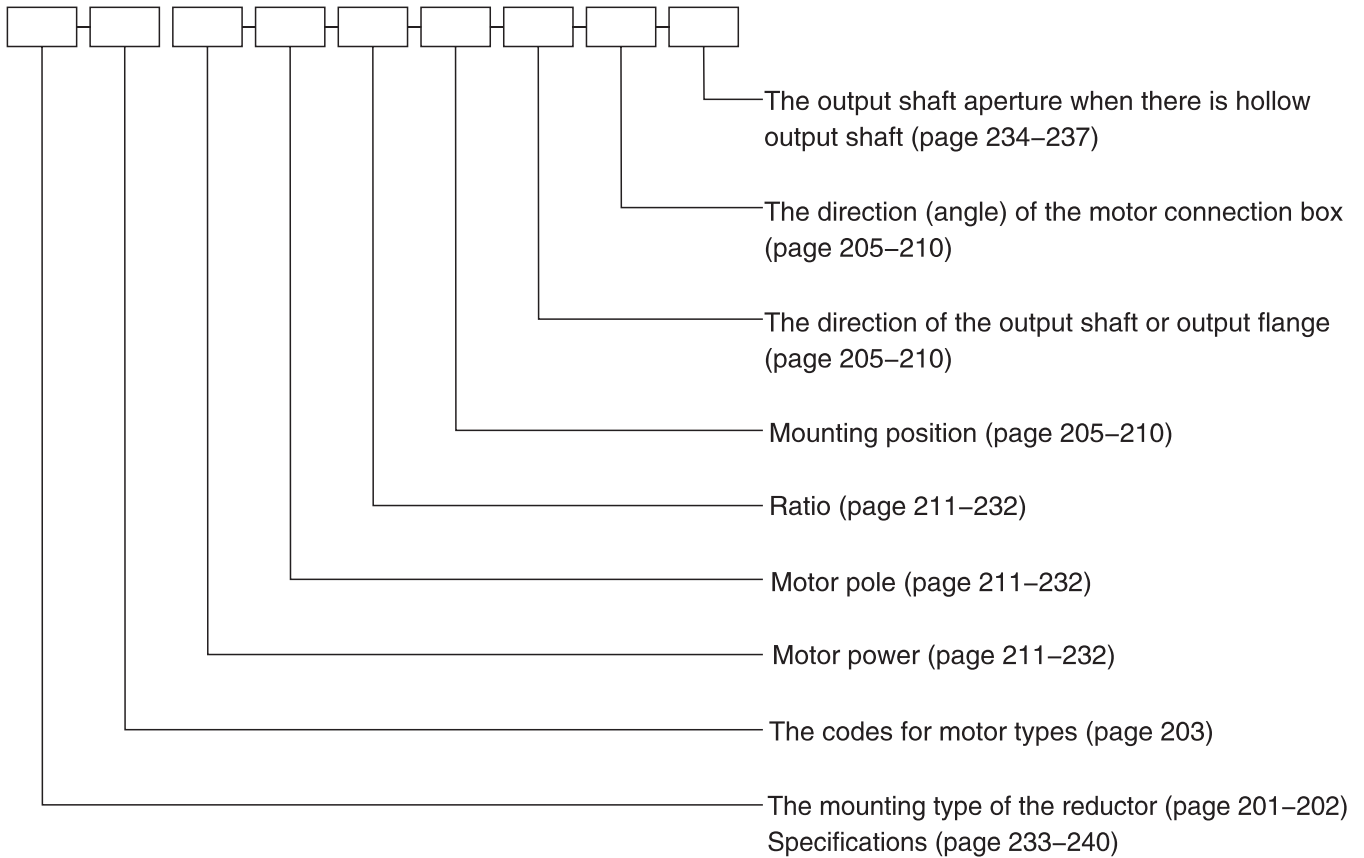


## 8. Model ES · S

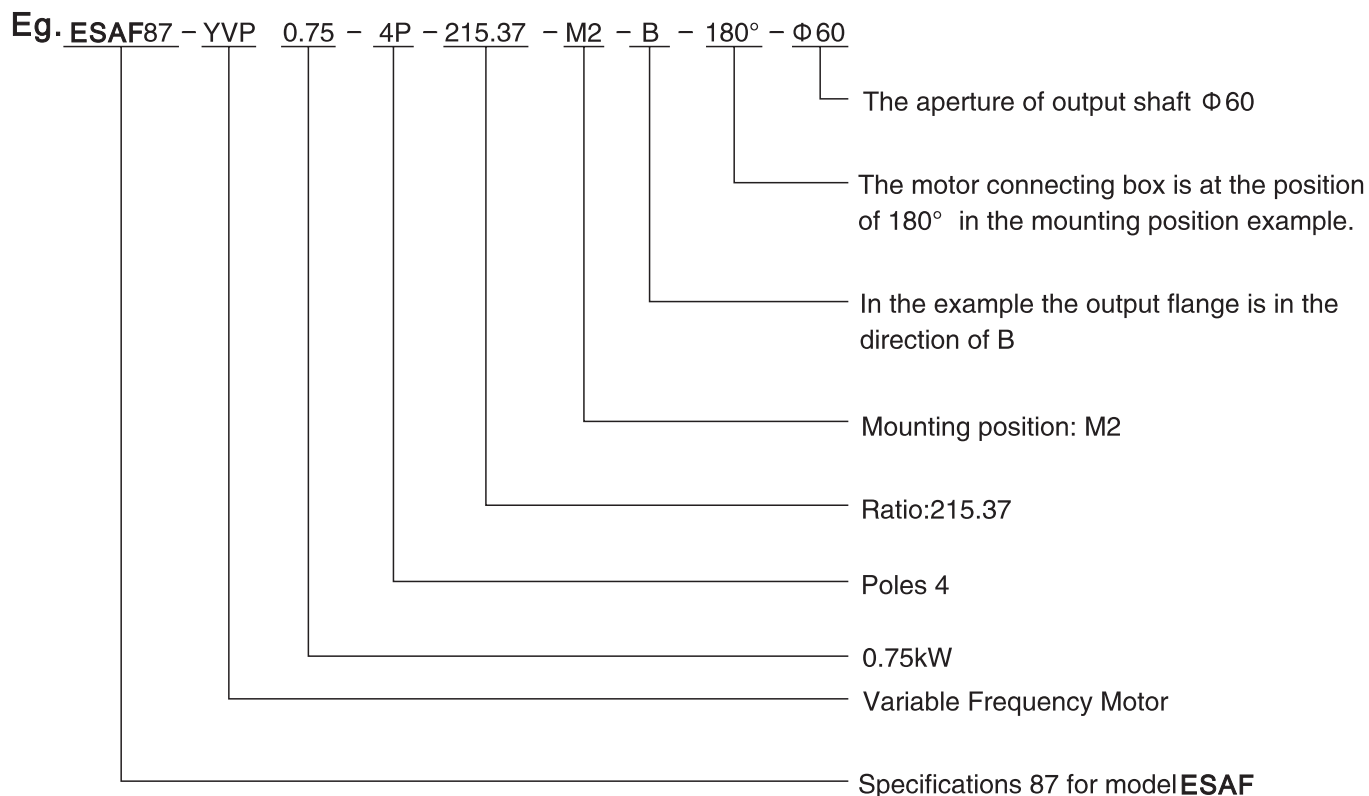
Input-shaft style in another word helical-worm gear reductor equipped with input shaft but without the motor



## V. Instructions for Models:



# ES SERIES REDUCTOR



- Note:
1. The input-shaft style is not equipped with any motor
  2. Motors of Y series are supplied with protection grade of IP54 unless otherwise specified.
  3. The mounting position of M1 as shown in the mounting position example (Page 205–210) is the default way when supplying unless otherwise specified.
  4. 0° as shown in the mounting position example (Page 205–210) is the default connection box angle when supplying unless otherwise specified.
  5. The mounting position of A as shown in the mounting position example (Page 205–210) is the default way when supplying reducers such as **ES**、**ESF**、**ESAF**、**ESAZ** model unless otherwise specified.
  6. Please contact our technical supporting department in case there's any special requirements on the output and input rotatory directions.

## VI. Codes for Motor Types:

Y series	Y	Flame-proof Motor	YB	Direct Current Motor	Z
Brake Motor	YEJ	Roll Motor	YG	Variable Frequency Motor	YVP

# ES SERIES REDUCTOR

## VII、Length of Connect Flange L2

The form on length of the connect flange L2 of the helical–worm gear reductor of ES.. Series

Reductor type \ Motor frame size	63	71	80	90	100	112	132	160	180
<b>ES..37</b>	56	56	56	56	—	—	—	—	—
<b>ES..47</b>	56	57	72	72	68	68	90	—	—
<b>ES..57</b>	56	57	72	72	68	68	90	—	—
<b>ES..67</b>	56	57	72	72	68	68	90	—	—
<b>ES..77</b>	56	57	68	68	68	68	90	—	—
<b>ES..87</b>	—	—	62	62	74	74	83	119	—
<b>ES..97</b>	—	—	—	50	50	50	70	113	113

## VIII、Explanation of mounting position example



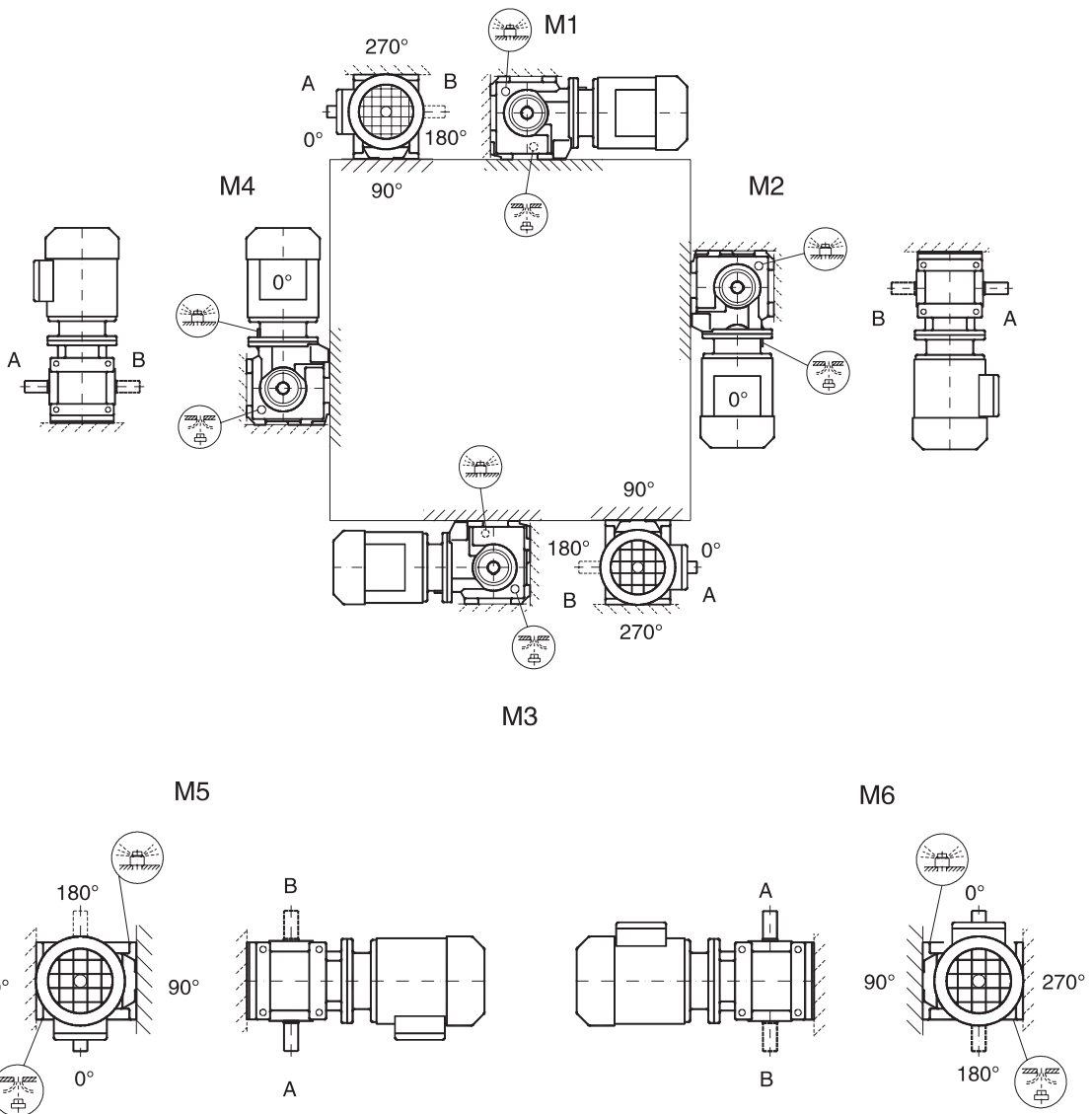
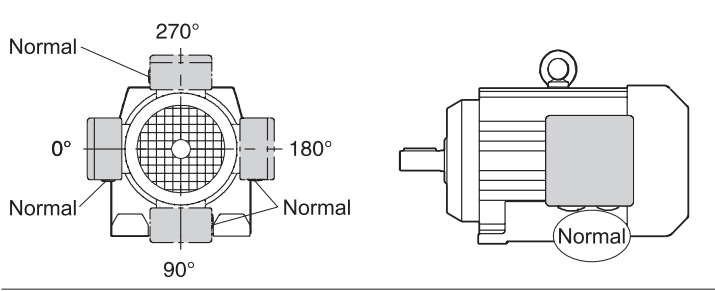
## IX、Explanation of Parameter Selection List

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)
<b>0.75</b>	4.8	972	292.00	2.2	<b>ES 87</b>	4P	121
	5.3	886	264.00	2.4	<b>ESA 87</b>	4P	119
	5.7	830	245.88 ★	2.6	<b>ESF 87</b>	4P	141
	6.0	780	229.78	2.8	<b>ESAF87</b>	4P	136
	6.5	736	215.37	2.9			
	6.9	696	202.40	3.1			

- ★ indicates that the reductor with this transmission ratio cannot connect the motor directly, in another word, the length of the connect flange L2 is necessary.
- The machine types in the parameter selection list can match any transmission ratio in the column.
- The parameters in this list also fits model ESAZ、ESAT .

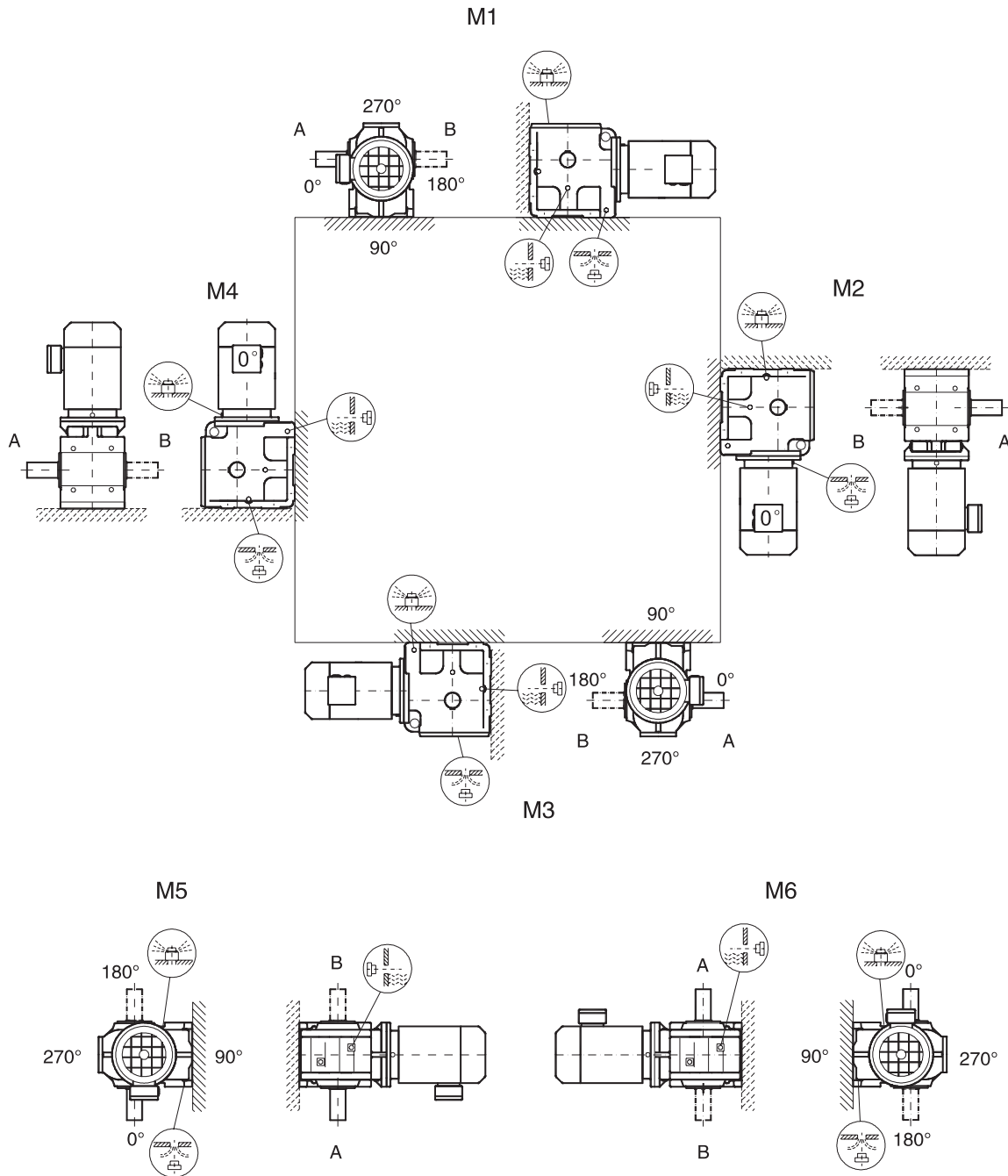
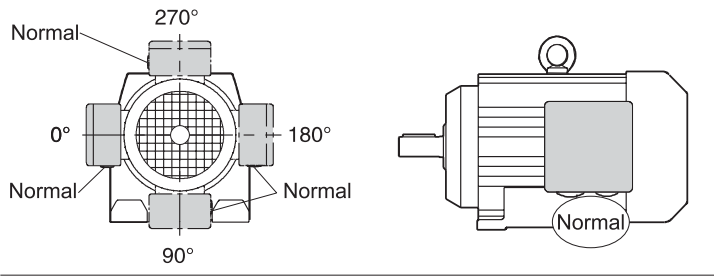
# ES SERIES REDUCTOR

## ES37 Mounting position example



# ES SERIES REDUCTOR

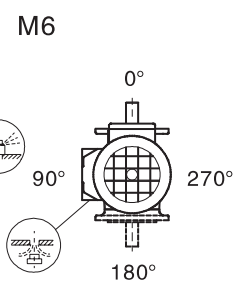
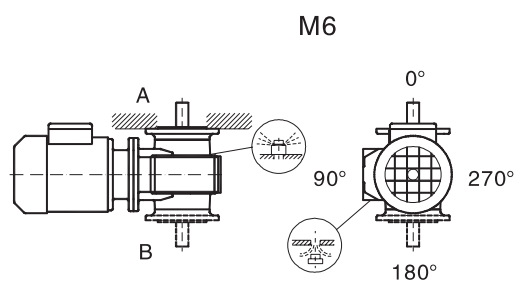
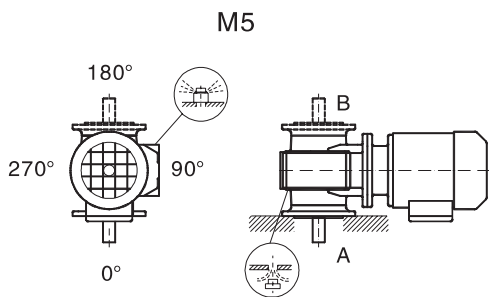
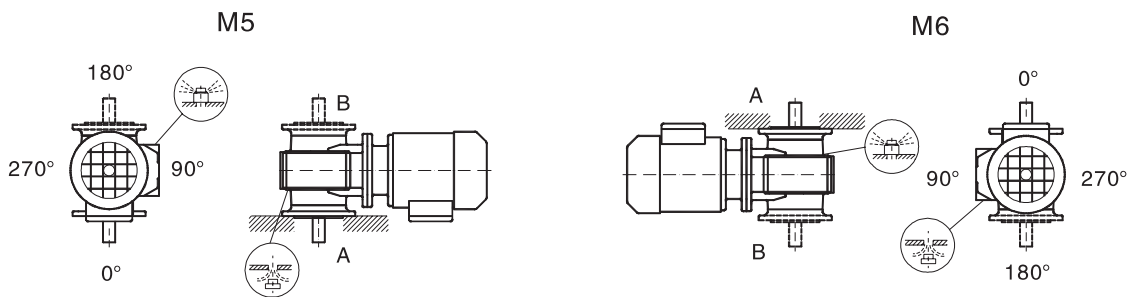
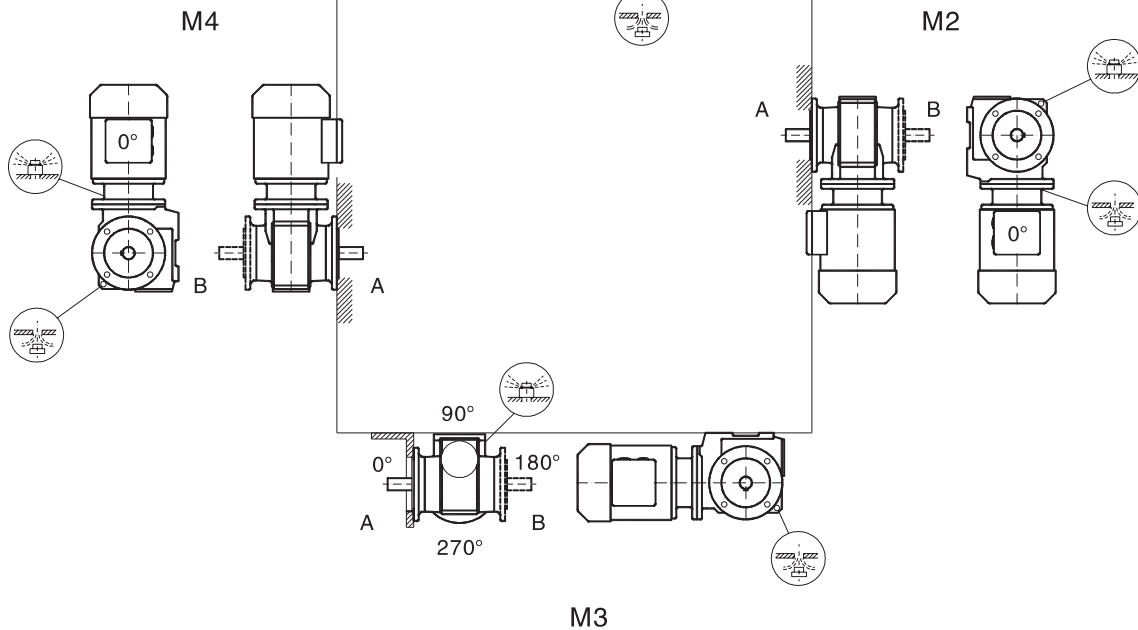
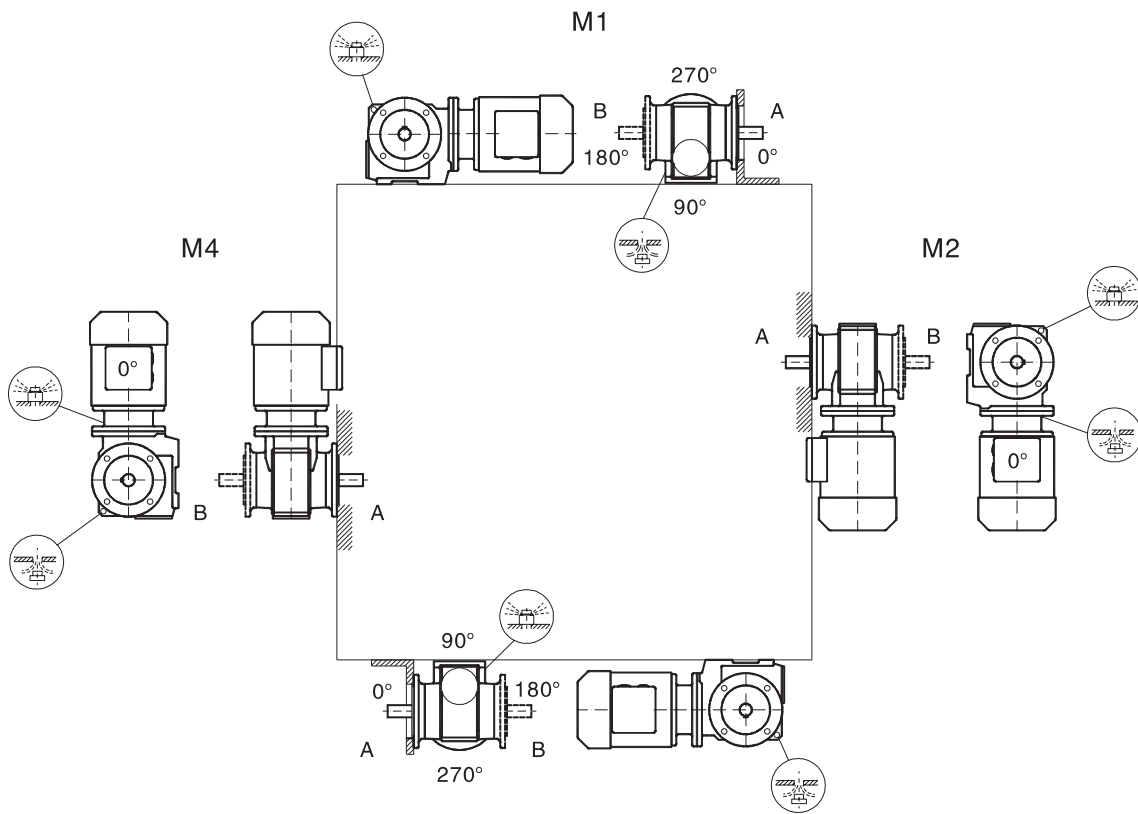
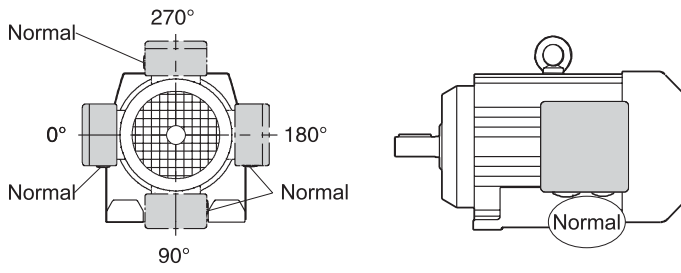
## ES 47-97 Mounting position example





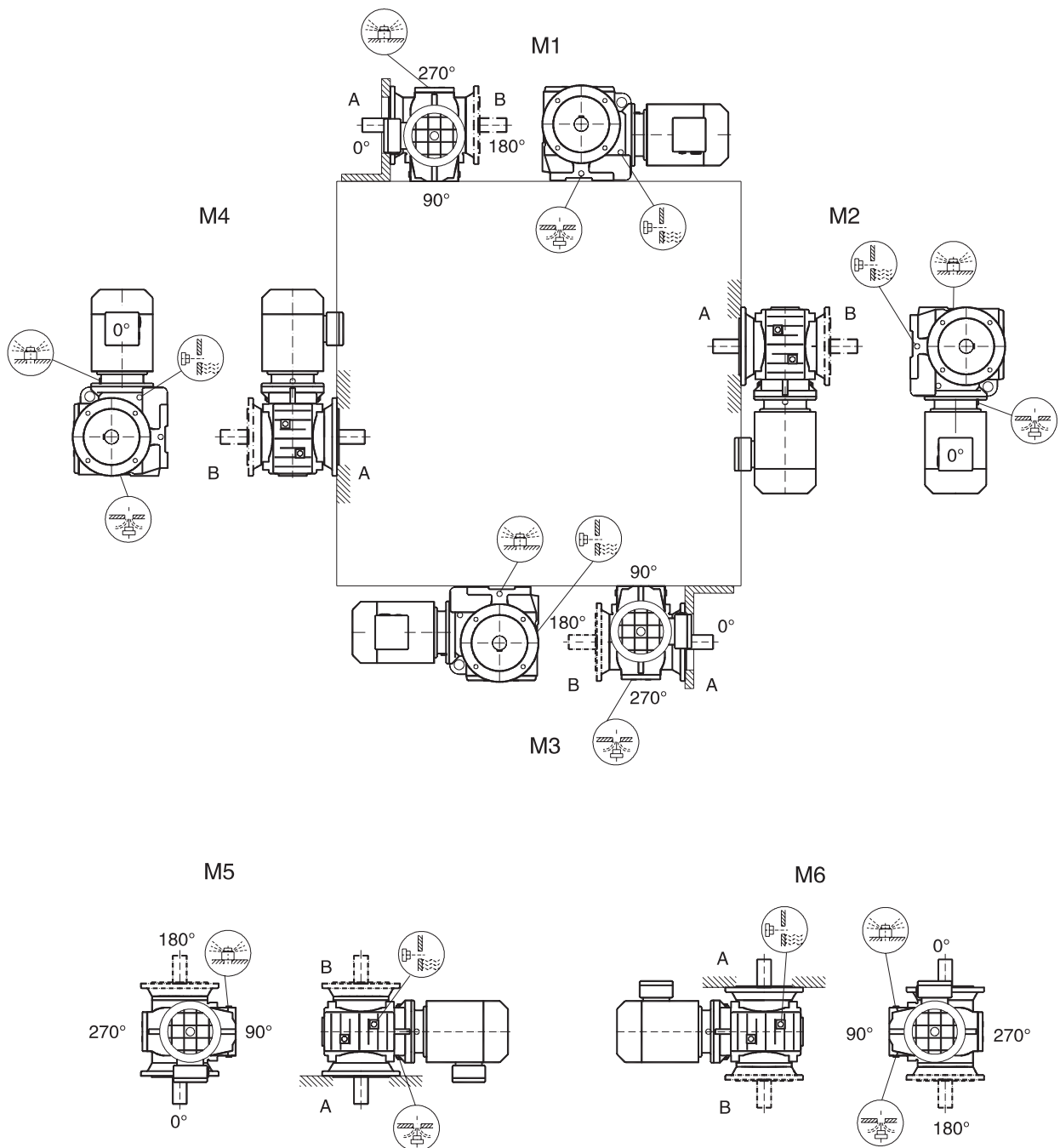
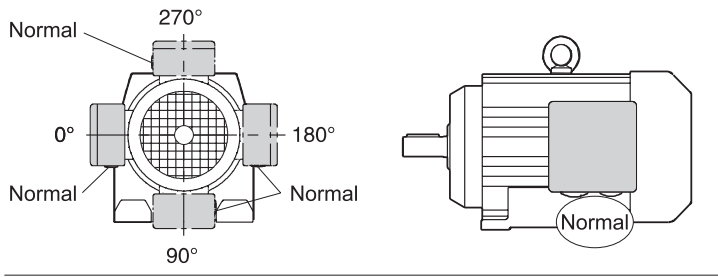
# ES SERIES REDUCTOR

## ESF/ESAF 37 Mounting position example



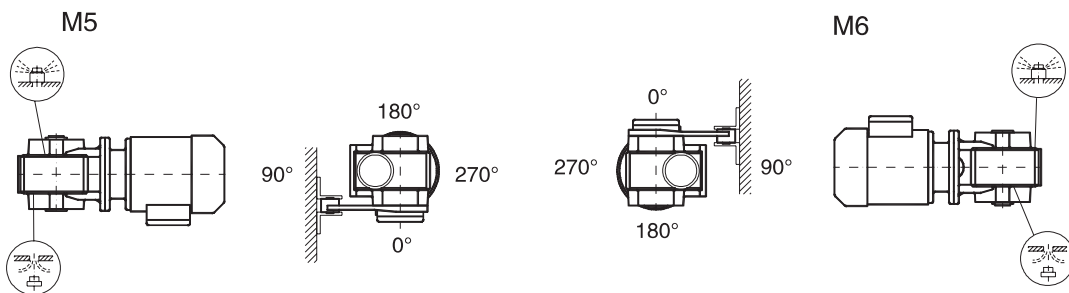
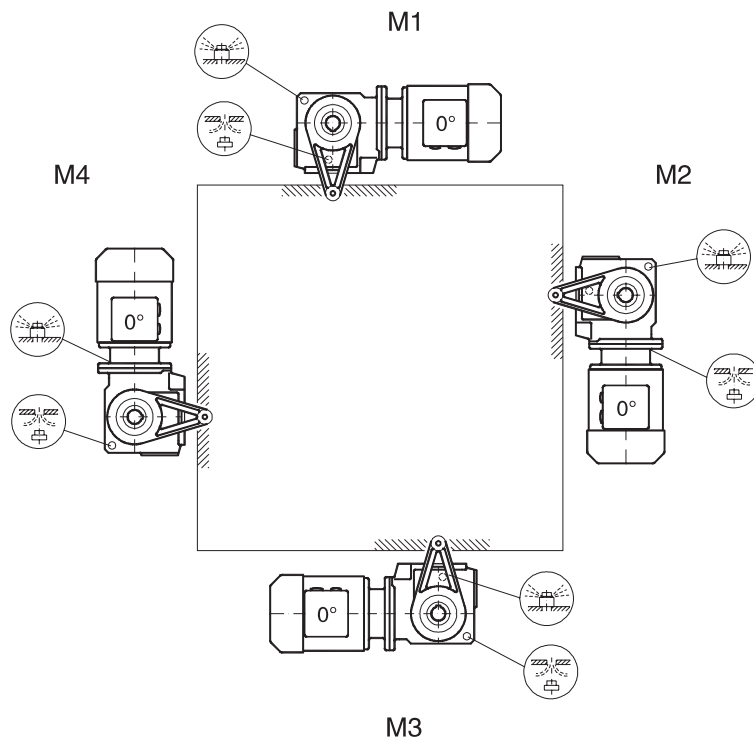
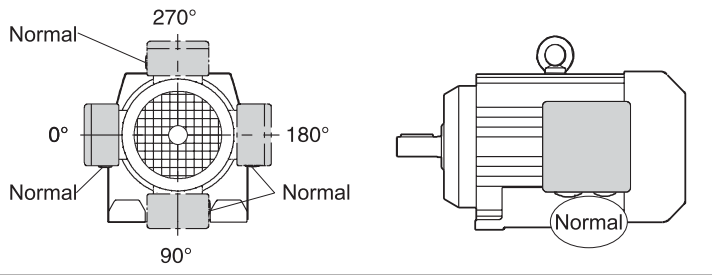
# ES SERIES REDUCTOR

## ESF/ESAF/ESAZ 47-97 Mounting position example



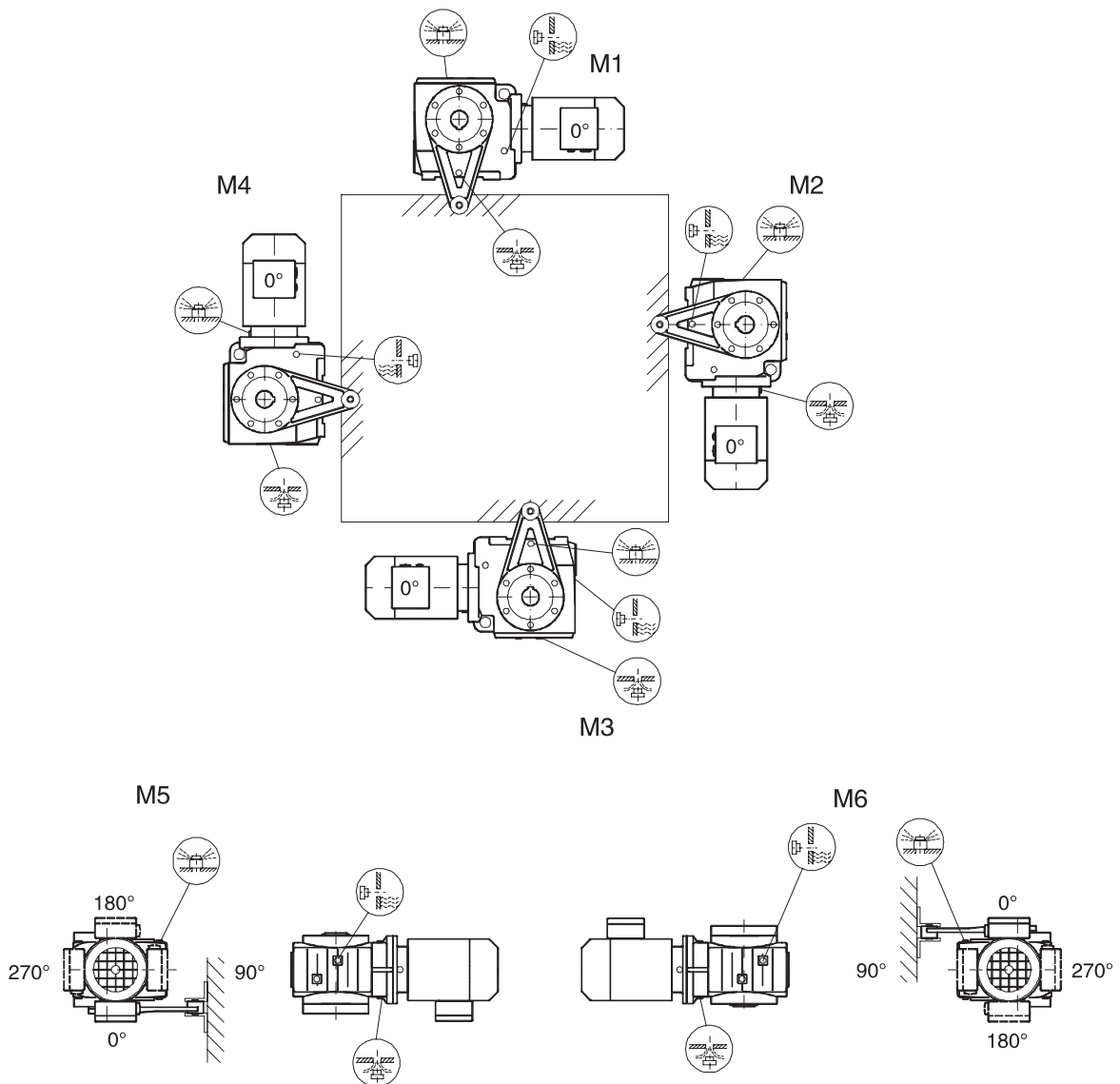
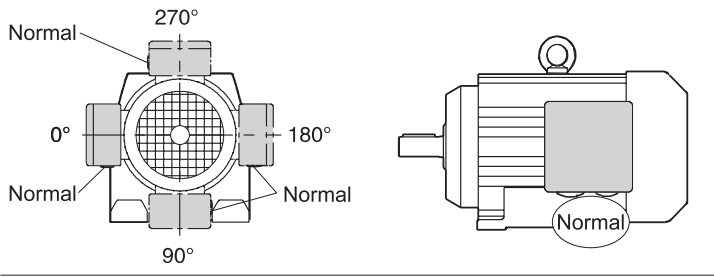
# ES SERIES REDUCTOR

## ESA37/ESAT37 Mounting position example



# ES SERIES REDUCTOR

## ESA/ESAT 47-97 Mounting position example



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Power (kW)	Output speed (r/min)	Output torque (N·m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)	
<b>0.18</b>	0.30	2856	4607	0.83	<b>ES 87ER57</b>	4P	139	
	0.36	2411	3817	0.98	<b>ESA 87ER57</b>	4P	137	
	0.39	2258	3544	1.05	<b>ESF 87ER57</b>	4P	159	
	0.46	1951	3013	1.22	<b>ESAF 87ER57</b>	4P	154	
	0.52	1728	2648					
	0.59	1541	2341					
	0.69	1340	2010					
	0.77	1215	1804					
	0.85	1117	1643					
	1.0	1195	1440	★	1.01	<b>ES 77ER37</b>	4P	86
	1.1	1034	1232	★	1.17	<b>ESA 77ER37</b>	4P	86
	1.3	902	1068		1.34	<b>ESF 77ER37</b>	4P	96
	1.5	798	939		1.51	<b>ESAF 77ER37</b>	4P	92
	1.7	707	826		1.71			
	2.0	612	708		1.97			
	2.1	569	654		2.1			
	2.5	493	564		2.4			
	1.7	704	835		0.80	<b>ES 67ER37</b>	4P	56
	1.9	623	734		0.87	<b>ESA 67ER37</b>	4P	57
	2.3	518	605		1.04	<b>ESF 67ER37</b>	4P	63
	2.5	472	547		1.15	<b>ESAF 67ER37</b>	4P	62
	3.0	410	470		1.32			
	3.2	376	430		1.44			
	3.7	330	375		1.64			
	3.2	378	440		0.83	<b>ES 57ER17</b>	4P	36
	3.6	338	390		0.93	<b>ESA 57ER17</b>	4P	36
	4.0	300	344		1.04	<b>ESF 57ER17</b>	4P	39
	4.8	253	288		1.24	<b>ESAF 57ER17</b>	4P	38
	5.1	239	271		1.31			
	6.0	206	232		1.52			
	6.8	185	206		1.70			
	7.4	169	187		1.85			
	4.8	254	292		0.80	<b>ES 47ER17</b>	4P	31
	5.4	226	258		0.82	<b>ESA 47ER17</b>	4P	32
	6.2	199	226		0.88	<b>ESF 47ER17</b>	4P	34
	6.9	178	200		0.99	<b>ESAF 47ER17</b>	4P	33
	7.4	168	188		1.05			
	8.4	150	166		1.18			
	9.4	135	148		1.31			
	10	122	133		1.44			
	3.8	266	224.65	★	1.86	<b>ES 67</b>	6P	45
	4.4	234	195.00	★	2.1	<b>ESA 67</b>	6P	46
4.7	220	182.40	★	2.2	<b>ESF 67</b>	6P	52	
					<b>ESAF 67</b>	6P	51	
4.2	235	201.00	★	1.19	<b>ES 57</b>	6P	32	
4.6	217	184.80	★	1.29	<b>ESA 57</b>	6P	32	
5.0	202	170.63	★	1.39	<b>ESF 57</b>	6P	35	
5.4	188	158.12	★	1.49	<b>ESAF 57</b>	6P	34	
6.2	165	137.05		1.70				
6.9	150	201.00	★	1.87	<b>ES 57</b>	4P	28	
7.5	139	184.80	★	2.01	<b>ESA 57</b>	4P	28	
8.1	130	170.63	★	2.2	<b>ESF 57</b>	4P	31	
8.8	121	158.12	★	2.3	<b>ESAF 57</b>	4P	30	
10	106	137.05		2.6				
4.0	239	210.57	★	0.80	<b>ES 47</b>	6P	27	
4.4	222	193.60	★	0.81	<b>ESA 47</b>	6P	28	
4.8	207	178.75	★	0.84	<b>ESF 47</b>	6P	30	
5.1	194	165.65	★	0.86	<b>ESAF 47</b>	6P	29	
5.9	170	143.58		0.94				
6.3	159	134.20		1.00				

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)							
<b>0.18</b>	6.6	154	210.57 ★	1.05	<b>ES 47</b>	4P	23							
	7.2	142	193.60 ★	1.13										
	7.8	133	178.75 ★	1.22				<b>ESA 47</b>	4P	24				
	8.4	124	165.65 ★	1.30										
	9.7	109	143.58	1.46				<b>ESF 47</b>	4P	26				
	10	103	134.20	1.55										
	11	97	125.71	1.65				<b>ESAF 47</b>	4P	25				
	12	91	118.00	1.75										
	13	86	110.96	1.85										
	13	82	104.50	1.95										
	14	78	98.56	2.1										
	15	74	93.08	2.2										
	16	70	88.00	2.3										
	17	67	83.29	2.4										
	19	61	74.80	2.6										
	20	57	69.14	2.8										
		9.0	110	154.00 ★				0.80	<b>ES 37</b>	4P	17			
		9.8	102	142.35 ★				0.85						
		11	96	132.00 ★				0.90				<b>ESA 37</b>	4P	16
		11	90	122.74				0.95						
	12	84	114.40	1.00	<b>ESF 37</b>	4P	18							
	13	79	106.86	1.06										
	14	75	100.00	1.12										
	15	70	93.74	1.16										
	17	63	82.72	1.28										
	18	60	77.85	1.34										
	19	57	73.33	1.39										
	20	54	69.14	1.46										
	21	51	65.24	1.52										
	23	49	61.60	1.60										
	25	52	55.00 ★	1.47										
	27	48	51.00 ★	1.56										
	29	45	47.42	1.68										
	31	42	44.20	1.77										
	34	39	41.29	1.89										
	36	37	38.64	2.0										
	38	35	36.22	2.1										
	41	33	34.00	2.2										
	43	31	31.96	2.3										
	46	29	30.08	2.4										
	49	28	28.33	2.6										
	52	26	26.71	2.7										
	55	25	25.21	2.8										
	58	24	23.80	2.8										
	63	23	22.10	2.1										
	67	22	20.64	2.2										
	72	21	19.32	2.3										
	77	19	18.11	2.4										
	82	18	17.00	2.6										
	87	17	15.98	2.7										
	92	16	15.04	2.8										
	98	15	14.17	2.9										
	104	14	13.36	3.0										
	110	14	12.60	3.1										
	117	13	11.90	3.1										
	127	12	10.93	3.2										
<b>0.25</b>	0.46	2709	3013	0.88	<b>ES 87ER57</b>	4P	143							
	0.52	2400	2648	0.99										
	0.59	2141	2341	1.11				<b>ESA 87ER57</b>	4P	141				
	0.69	1861	2010	1.28										
	0.77	1687	1804	1.41				<b>ESF 87ER57</b>	4P	163				
	0.85	1551	1643	1.53										
	1.0	1288	1346	1.84				<b>ESAF 87ER57</b>	4P	158				
	1.2	1156	1198	2.1										
	1.4	1004	1026	2.4										
	1.5	915	926	2.6										

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Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)	
<b>0.25</b>	1.5	1108	939	1.09	ES 77ER37	4P	90	
	1.7	982	826	1.23	ESA 77ER37	4P	90	
	2.0	849	708	1.42	ESF 77ER37	4P	100	
	2.1	790	654	1.53	ESAF 77ER37	4P	96	
	2.5	685	564	1.76				
	2.8	604	495	2.0				
	2.5	656	547	547	0.83	ES 67ER37	4P	60
	3.0	569	470	470	0.95	ESA 67ER37	4P	61
	3.2	522	430	430	1.04	ESF 67ER37	4P	67
	3.7	459	375	375	1.18	ESAF 67ER37	4P	66
4.0	426	347	347	1.27				
5.0	348	281	281	1.55				
4.8	351	288	288	0.89	ES 57ER17	4P	40	
5.1	332	271	271	0.94	ESA 57ER17	4P	40	
6.0	286	232	232	1.09	ESF 57ER17	4P	43	
6.8	256	206	206	1.22	ESAF 57ER17	4P	42	
7.4	235	187	187	1.34				
8.4	209	165	165	1.50				
11	168	131	131	1.86				
2.9	476	224.65	224.65 ★	1.04	ES 67	8P	53	
3.3	418	195.00	195.00 ★	1.18	ESA 67	8P	54	
3.5	393	182.40	182.40 ★	1.26	ESF 67	8P	60	
3.8	371	171.00	171.00	1.33	ESAF 67	8P	59	
4.2	335	153.00	153.00	1.47				
3.8	370	224.65	224.65 ★	1.34	ES 67	6P	47	
4.4	325	195.00	195.00 ★	1.52	ESA 67	6P	48	
4.7	306	182.40	182.40 ★	1.61	ESF 67	6P	54	
5.0	289	171.00	171.00	1.7	ESAF 67	6P	53	
5.6	262	153.00	153.00	1.9				
6.2	238	224.65	224.65 ★	2.1	ES 67	4P	45	
7.1	209	195.00	195.00 ★	2.4	ESA 67	4P	46	
7.6	197	182.40	182.40 ★	2.5	ESF 67	4P	52	
8.1	186	171.00	171.00	2.7	ESAF 67	4P	51	
9.1	168	153.00	153.00	2.9				
11	143	129.00	129.00	3.4				
12	130	115.42	115.42	3.8				
13	122	107.50	107.50	4.0				
4.2	326	201.00	201.00 ★	0.86	ES 57	6P	34	
4.6	301	184.80	184.80 ★	0.93	ESA 57	6P	34	
5.0	280	170.63	170.63 ★	1.00	ESF 57	6P	37	
5.4	261	158.12	158.12 ★	1.07	ESAF 57	6P	36	
6.2	230	137.05	137.05	1.22				
6.6	216	128.10	128.10	1.30				
6.9	208	201.00	201.00 ★	1.35	ES 57	4P	32	
7.5	194	184.80	184.80 ★	1.45	ESA 57	4P	32	
8.1	181	170.63	170.63 ★	1.55	ESF 57	4P	35	
8.8	168	158.12	158.12 ★	1.67	ESAF 57	4P	34	
10	148	137.05	137.05	1.90				
11	139	128.10	128.10	2.0				
12	131	120.00	120.00	2.1				
12	124	112.64	112.64	2.3				
13	117	105.91	105.91	2.4				
14	111	99.75	99.75	2.5				
15	106	94.08	94.08	2.7				
16	101	88.85	88.85	2.8				
17	96	84.00	84.00	2.9				
6.6	213	210.57	210.57 ★	0.80	ES 47	4P	27	
7.2	198	193.60	193.60 ★	0.82	ESA 47	4P	28	
7.8	184	178.75	178.75 ★	0.88	ESF 47	4P	30	
8.4	172	165.65	165.65 ★	0.94	ESAF 47	4P	29	
9.7	152	143.58	143.58	1.05				

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)			
<b>0.25</b>	10	143	134.20	1.12	<b>ES 47</b>	4P	27			
	11	134	125.71	1.19						
	12	127	118.00	1.26						
	13	120	110.96	1.33						
	13	114	104.50	1.41						
	14	108	98.56	1.48						
	15	102	93.08	1.56						
	16	97	88.00	1.63						
	19	85	74.80	1.88						
	20	79	69.14	2.0						
	22	73	64.00	2.2	<b>ESA 47</b>	4P	28			
	23	69	59.30	2.3						
	25	74	55.47	2.0						
	27	70	51.85	2.1						
	29	66	48.57	2.2						
	14	104	100.00	0.80				<b>ESF 47</b>	4P	30
	15	98	93.74	0.84						
	17	87	82.72	0.92						
	18	83	77.85	0.96						
	19	79	73.33	1.00						
	20	75	69.14	1.05						
	21	71	65.24	1.09						
	23	68	61.60	1.14						
	25	72	55.00	★ 1.06						
	27	67	51.00	★ 1.13						
	29	62	47.42	1.21	<b>ESAF 47</b>	4P	29			
	31	58	44.20	1.27						
	34	55	41.29	1.36						
	36	51	38.64	1.43						
38	48	36.22	1.51							
41	46	34.00	1.59							
43	43	31.96	1.67							
46	41	30.08	1.75							
49	39	28.33	1.85							
52	36	26.71	1.93							
55	34	25.21	2.0							
58	33	23.80	2.1							
63	33	22.10	1.52							
67	30	20.64	1.59							
72	29	19.32	1.66							
77	27	18.11	1.73							
82	25	17.00	1.84							
87	24	15.98	1.93							
92	23	15.04	2.0							
98	21	14.17	2.1							
104	20	13.36	2.2							
110	19	12.60	2.2							
117	18	11.90	2.2							
127	17	10.93	2.3							
138	15	10.05	2.3							
150	14	9.24	2.2							
<b>0.37</b>	0.69	2754	2010	0.86	<b>ES 87ER57</b>	4P	144			
	0.77	2497	1804	0.95						
	0.85	2296	1643	1.03						
	1.0	1907	1346	1.25						
	1.2	1711	1198	1.39						
	1.4	1486	1026	1.60						
	1.5	1354	926	1.75						
	1.6	1246	844	1.91						
	2.0	1257	708	0.96				<b>ESA 87ER57</b>	4P	142
	2.1	1169	654	1.03						
	2.5	1013	564	1.19						
	2.8	895	495	1.35						
	3.1	806	443	1.50						
	3.6	713	389	1.69						
	0.69	2754	2010	0.86	<b>ESF 87ER57</b>	4P	164			
	0.77	2497	1804	0.95						
	0.85	2296	1643	1.03						
	1.0	1907	1346	1.25						
	1.2	1711	1198	1.39						
	1.4	1486	1026	1.60						
1.5	1354	926	1.75							
1.6	1246	844	1.91							
2.0	1257	708	0.96	<b>ESAF 87ER57</b>				4P	159	
2.1	1169	654	1.03							
2.5	1013	564	1.19							
2.8	895	495	1.35							
3.1	806	443	1.50							
3.6	713	389	1.69							
2.0	1257	708	0.96		<b>ES 77ER37</b>	4P	91			
2.1	1169	654	1.03							
2.5	1013	564	1.19							
2.8	895	495	1.35							
3.1	806	443	1.50							
3.6	713	389	1.69							
2.0	1257	708	0.96	<b>ESA 77ER37</b>	4P	91				
2.1	1169	654	1.03							
2.5	1013	564	1.19							
2.8	895	495	1.35							
3.1	806	443	1.50							
3.6	713	389	1.69							
2.0	1257	708	0.96	<b>ESF 77ER37</b>	4P	101				
2.1	1169	654	1.03							
2.5	1013	564	1.19							
2.8	895	495	1.35							
3.1	806	443	1.50							
3.6	713	389	1.69							
2.0	1257	708	0.96	<b>ESAF 77ER37</b>	4P	97				
2.1	1169	654	1.03							
2.5	1013	564	1.19							
2.8	895	495	1.35							
3.1	806	443	1.50							
3.6	713	389	1.69							



# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)
<b>0.37</b>	3.7	679	375	0.80	<b>ES</b> 67ER 37	4P	61
	4.0	630	347	0.86	<b>ESA</b> 67ER 37	4P	62
	5.0	516	281	1.05	<b>ESF</b> 67ER 37	4P	68
	5.7	455	245	1.19	<b>ESAF</b> 67ER 37	4P	67
	2.3	931	292.00 ★	2.3	<b>ES</b> 87	8P	126
	2.5	847	264.00 ★	2.6	<b>ESA</b> 87	8P	124
	2.7	794	245.88 ★	2.7	<b>ESF</b> 87	8P	146
	2.9	746	229.78 ★	2.9	<b>ESAF</b> 87	8P	141
	3.0	721	225.26 ★	1.67	<b>ES</b> 77	8P	86
	3.2	681	212.00 ★	1.77	<b>ESA</b> 77	8P	86
	3.5	613	189.09 ★	2.0	<b>ESF</b> 77	8P	96
	4.3	520	157.65 ★	2.3	<b>ESAF</b> 77	8P	92
	3.5	628	256.47 ★	1.92	<b>ES</b> 77	6P	80
	3.9	558	225.26 ★	2.2	<b>ESA</b> 77	6P	80
	4.2	529	212.00 ★	2.3	<b>ESF</b> 77	6P	90
					<b>ESAF</b> 77	6P	86
	3.9	527	224.65 ★	0.94	<b>ES</b> 67	6P	50
	4.5	464	195.00 ★	1.06	<b>ESA</b> 67	6P	51
	4.9	437	182.40 ★	1.13	<b>ESF</b> 67	6P	57
	5.2	413	171.00	1.20	<b>ESAF</b> 67	6P	56
	5.8	375	153.00	1.32			
	6.2	353	224.65 ★	1.40	<b>ES</b> 67	4P	46
	7.1	310	195.00 ★	1.60	<b>ESA</b> 67	4P	47
	7.6	291	182.40 ★	1.70	<b>ESF</b> 67	4P	53
	8.1	275	171.00	1.80	<b>ESAF</b> 67	4P	52
	9.1	249	153.00	1.99			
	11	212	129.00	2.3			
	12	193	115.42	2.6			
	13	181	107.50	2.7			
	5.6	373	158.12 ★	0.80	<b>ES</b> 57	6P	37
	6.5	328	137.05 ★	0.86	<b>ESA</b> 57	6P	37
	6.9	309	128.10 ★	0.91	<b>ESF</b> 57	6P	40
	7.4	291	120.00 ★	0.96	<b>ESAF</b> 57	6P	39
	7.9	276	112.64	1.02			
	8.4	261	105.91	1.07			
	8.9	247	99.75	1.13			
	9.4	234	94.08	1.20			
	10	222	88.85	1.26			
	11	211	84.00	1.33			
	6.9	308	201.00 ★	0.91	<b>ES</b> 57	4P	33
	7.5	286	184.80 ★	0.98	<b>ESA</b> 57	4P	33
	8.1	267	170.63 ★	1.05	<b>ESF</b> 57	4P	36
	8.8	249	158.12 ★	1.13	<b>ESAF</b> 57	4P	35
	10	218	137.05	1.28			
	11	205	128.10	1.36			
	12	194	120.00	1.45			
	12	183	112.64	1.53			
	13	173	105.91	1.62			
	14	164	99.75	1.70			
	15	156	94.08	1.79			
	16	149	88.85	1.88			
	17	142	84.00	2.0			
	19	122	71.40	2.3			
	21	114	66.00	2.5			
	9.7	225	143.58	0.80	<b>ES</b> 47	4P	28
	10	211	134.20	0.83	<b>ESA</b> 47	4P	29
	11	199	125.71	0.86	<b>ESF</b> 47	4P	31
	12	188	118.00	0.88	<b>ESAF</b> 47	4P	30
	13	177	110.96	0.90			
	13	168	104.50	0.95			
	14	159	98.56	1.00			
	15	152	93.08	1.05			
	16	144	88.00	1.10			

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)				
<b>0.37</b>	17	137	83.29	1.15	<b>ES 47</b>	4P	28				
	19	125	74.80	1.27							
	20	117	69.14	1.36							
	22	109	64.00	1.46							
	23	101	59.30	1.54							
	25	110	55.47	1.34							
	27	103	51.85	1.43							
	29	97	48.57	1.52							
	30	91	45.59	1.61							
	32	86	42.87	1.71							
	34	82	40.38	1.81							
	37	77	38.08	1.91							
	39	73	35.96	2.0							
	41	69	34.00	2.1							
	43	66	32.18	2.2							
	48	60	28.90	2.5							
	52	55	26.71	2.7							
	56	51	24.73	2.8							
	61	48	22.91	2.9							
	65	48	21.43	2.2							
	69	45	20.19	2.3							
	73	42	19.04	2.5							
	77	40	17.98	2.6							
	82	38	17.00	2.7							
	86	36	16.09	2.9							
		23	100	61.60				0.80	<b>ES 37</b>	4P	22
		25	106	55.00				★ 0.81			
		27	99	51.00				★ 0.83			
		29	92	47.42				0.85			
		31	86	44.20				0.86			
		34	81	41.29				0.92			
		36	76	38.64				0.96			
		38	71	36.22				1.02			
		41	67	34.00				1.07			
		43	64	31.96				1.13			
		46	60	30.08				1.18			
	49	57	28.33	1.25							
	52	54	26.71	1.30							
	55	51	25.21	1.38							
	58	48	23.80	1.39							
	63	48	22.10	1.03							
	67	45	20.64	1.07							
	72	42	19.32	1.12							
	77	40	18.11	1.17							
	82	37	17.00	1.24							
	87	35	15.98	1.30							
	92	33	15.04	1.37							
	98	32	14.17	1.42							
	104	30	13.36	1.47							
	110	28	12.60	1.52							
	117	27	11.90	1.50							
	127	25	10.93	1.55							
	138	23	10.05	1.55							
	150	21	9.24	1.50							
<b>0.55</b>	1.0	2834	1346	0.84	<b>ES 87ER57</b>	4P	148				
	1.2	2544	1198	0.93							
	1.4	2208	1026	1.08							
	1.5	2013	926	1.18							
	1.6	1852	844	1.28							
	1.9	1618	723	1.47							
	2.2	1413	620	1.68							
	2.4	1312	572	1.81							
	2.8	1135	489	2.1							
	3.2	1014	432	2.3							
									<b>ESA 87ER57</b>	4P	146
					<b>ESF 87ER57</b>	4P	168				
					<b>ESAF 87ER57</b>	4P	163				

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)	
<b>0.55</b>	2.8	1330	495	0.91	<b>ES 77ER37</b>	4P	95	
	3.1	1198	443	1.01	<b>ESA 77ER37</b>	4P	95	
	3.6	1060	389	1.14	<b>ESF 77ER37</b>	4P	105	
	4.1	923	335	1.31	<b>ESAF 77ER37</b>	4P	101	
	4.8	805	289	1.50				
	5.6	698	247	1.73				
	5.7	676	245	0.80	<b>ES 67ER37</b>	4P	65	
	6.2	623	224	0.87	<b>ESA 67ER37</b>	4P	66	
	7.1	552	196	0.98	<b>ESF 67ER37</b>	4P	72	
	8.2	478	169	1.13	<b>ESAF 67ER37</b>	4P	71	
	2.3	1384	292.00	★	1.57	<b>ES 87</b>	8P	129
	2.5	1260	264.00	★	1.72	<b>ESA 87</b>	8P	127
	2.7	1180	245.88	★	1.84	<b>ESF 87</b>	8P	149
	2.9	1109	229.78	★	2.0	<b>ESAF 87</b>	8P	144
	3.0	1070	292.00		2.0	<b>ES 87</b>	6P	122
	3.4	977	264.00		2.2	<b>ESA 87</b>	6P	120
	3.6	916	245.88	★	2.4	<b>ESF 87</b>	6P	142
	3.9	863	229.78		2.5	<b>ESAF 87</b>	6P	137
	4.1	815	215.37		2.7			
	4.4	771	202.40		2.8			
	3.0	1072	225.26	★	1.13	<b>ES 77</b>	8P	89
	3.2	1013	212.00	★	1.19	<b>ESA 77</b>	8P	89
	3.5	912	189.09	★	1.32	<b>ESF 77</b>	8P	99
	4.3	773	157.65	★	1.55	<b>ESAF 77</b>	8P	95
	3.5	934	256.47	★	1.29	<b>ES 77</b>	6P	82
	3.9	830	225.26	★	1.45	<b>ESA 77</b>	6P	82
4.2	786	212.00	★	1.54	<b>ESF 77</b>	6P	92	
4.7	710	189.09		1.70	<b>ESAF 77</b>	6P	88	
5.6	603	157.65	★	1.99				
5.4	623	256.47	★	1.94	<b>ES 77</b>	4P	80	
6.2	552	225.26	★	2.2	<b>ESA 77</b>	4P	80	
6.6	522	212.00	★	2.3	<b>ESF 77</b>	4P	90	
7.4	471	189.09		2.6	<b>ESAF 77</b>	4P	86	
6.2	524	224.65	★	0.94	<b>ES 67</b>	4P	50	
7.1	460	195.00	★	1.07	<b>ESA 67</b>	4P	51	
7.6	433	182.40	★	1.14	<b>ESF 67</b>	4P	57	
8.1	408	171.00		1.21	<b>ESAF 67</b>	4P	56	
9.1	370	153.00		1.34				
11	316	129.00		1.56				
12	287	115.42		1.72				
13	269	107.50		1.83				
14	253	100.33		1.95				
15	238	93.82		2.1				
16	224	87.87		2.2				
17	211	82.42		2.3				
18	200	77.40		2.5				
19	189	72.77		2.6				
22	170	64.50		2.9				
9.4	348	94.08		0.81	<b>ES 57</b>	6P	39	
10	330	88.85		0.85	<b>ESA 57</b>	6P	39	
11	314	84.00		0.89	<b>ESF 57</b>	6P	42	
12	271	71.40		1.03	<b>ESAF 57</b>	6P	41	
13	253	66.00		1.11				
14	236	61.09		1.15				
16	221	56.61		1.14				
17	239	52.21	★	0.98				
18	224	48.80	★	1.04				
19	211	45.71	★	1.10				
21	198	42.91		1.17				
22	187	40.35		1.24				
23	177	38.00		1.32				

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)		Service factor (fB)	Type	Motor pole	Weight (kg)				
<b>0.55</b>	8.8	370	158.12	★	0.80	<b>ES 57</b> <b>ESA 57</b> <b>ESF 57</b> <b>ESAF 57</b>	4P	37				
	10	325	137.05	★	0.86							
	11	305	128.10	★	0.92							
	12	288	120.00	★	0.97							
	12	272	112.64		1.03							
	13	258	105.91		1.09							
	14	245	99.75		1.15							
	15	232	94.08		1.21							
	16	221	88.85		1.27							
	17	211	84.00		1.33							
	19	181	71.40		1.54							
	21	169	66.00		1.66							
	23	158	61.09		1.72							
	25	147	56.61		1.71							
	27	156	52.21	★	1.49							
	28	146	48.80	★	1.59							
	30	138	45.71	★	1.69							
	32	130	42.91		1.79							
	34	123	40.35		1.90							
	37	116	38.00		2.0							
	39	110	35.84		2.1							
	41	104	33.85		2.2							
	43	99	32.00		2.4							
	51	85	27.20		2.8							
	55	78	25.14		3.0							
	60	73	23.27		3.2							
	64	68	21.57		3.0							
	69	61	20.17		2.6							
	73	58	19.00		2.8							
		17	204	83.29					0.80	<b>ES 47</b> <b>ESA 47</b> <b>ESF 47</b> <b>ESAF 47</b>	4P	32
		19	186	74.80					0.85			
		20	174	69.14					0.91			
		22	162	64.00					0.98			
		23	151	59.30					1.04			
		25	164	55.47	★				0.90			
	27	153	51.85	★	0.96							
	29	144	48.57	★	1.02							
	30	136	45.59		1.08							
	32	128	42.87		1.15							
	34	121	40.38		1.22							
	37	115	38.08		0.91							
	39	109	35.96		1.35							
	41	103	34.00		1.43							
	43	98	32.18		1.50							
	48	89	28.90		1.66							
	52	82	26.71		1.79							
	56	76	24.73		1.89							
	61	71	22.91		1.92							
	65	71	21.43		1.48							
	69	67	20.19		1.57							
	73	63	19.04		1.66							
	77	60	17.98		1.75							
	82	57	17.00		1.84							
	86	54	16.09		1.95							
	96	48	14.45		2.1							
	104	45	13.36		2.3							
	112	42	12.36		2.5							
	121	39	11.46		2.5							
	141	33	9.86		2.8							
	152	31	9.15		2.8							
	46	90	30.08		0.80	<b>ES 37</b> <b>ESA 37</b> <b>ESF 37</b> <b>ESAF 37</b>	4P	26				
	49	85	28.33		0.84							
	52	80	26.71		0.88							
	55	76	25.21		0.93							
	58	72	23.80	★	0.93							
	63	72	22.10	★	0.80							
	67	67	20.64		0.82							
	72	63	19.32		0.84							
	77	59	18.11		0.85							
	82	56	17.00		0.86							
	87	53	15.98		0.88							

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)		Service factor (fB)	Type	Motor pole	Weight (kg)
<b>0.55</b>	92	50	15.04		0.92	ES 37	4P	26
	98	47	14.17		0.95	ESA 37	4P	25
	104	44	13.36		0.99	ESF 37	4P	27
	110	42	12.60		1.02	ESAF 37	4P	27
	117	40	11.90		1.01			
	127	36	10.93		1.04			
	138	34	10.05		1.05			
	150	31	9.24		1.01			
<b>0.75</b>	1.1	4577	1216	★	0.87	ES 97ER57	4P	249
	1.3	4001	1055	★	1.00	ESA 97ER57	4P	244
	1.5	3534	925		1.13	ESF 97ER57	4P	284
	1.7	3133	815		1.27	ESAF 97ER57	4P	274
	2.0	2747	711		1.45			
	2.2	2428	625		1.64			
	2.6	2107	539		1.89			
	2.8	1924	489		2.1			
	1.4	3011	1026		0.80	ES 87ER57	4P	149
	1.5	2745	926		0.87	ESA 87ER57	4P	147
	1.6	2525	844		0.94	ESF 87ER57	4P	169
	1.9	2207	723		1.08	ESAF 87ER57	4P	164
	2.2	1927	620		1.23			
	2.4	1789	572		1.33			
	2.8	1547	489		1.53			
	3.2	1383	432		1.72			
	3.7	1231	380		1.93			
	4.4	1243	319		1.51			
	4.1	1259	335		0.96	ES 77ER37	4P	96
	4.8	1098	289		1.10	ESA 77ER37	4P	96
	5.6	951	247		1.27	ESF 77ER37	4P	106
6.4	839	217		1.44	ESAF 77ER37	4P	102	
2.4	1836	280.00	★	2.1	ES 97	8P	236	
2.6	1730	262.11	★	2.2	ESA 97	8P	231	
2.8	1635	246.00		2.3	ESF 97	8P	271	
2.9	1549	231.43		2.5	ESAF 97	8P	261	
3.1	1423	292.00	★	1.52	ES 87	6P	126	
3.4	1299	264.00	★	1.67	ESA 87	6P	124	
3.7	1219	245.88	★	1.78	ESF 87	6P	146	
4.0	1148	229.78	★	1.89	ESAF 87	6P	141	
4.2	1085	215.37	★	2.0				
4.5	1025	202.40		2.1				
4.8	972	292.00		2.2	ES 87	4P	121	
5.3	886	264.00		2.4	ESA 87	4P	119	
5.7	830	245.88	★	2.6	ESF 87	4P	141	
6.0	780	229.78		2.8	ESAF 87	4P	136	
6.5	736	215.37		2.9				
6.9	696	202.40		3.1				
4.0	1104	225.26	★	1.09	ES 77	6P	86	
4.3	1045	212.00	★	1.15	ESA 77	6P	86	
4.8	944	189.09	★	1.28	ESF 77	6P	96	
5.8	801	157.65	★	1.49	ESAF 77	6P	92	
5.4	849	256.47	★	1.42	ES 77	4P	81	
6.2	753	225.26	★	1.60	ESA 77	4P	81	
6.6	712	212.00	★	1.69	ESF 77	4P	91	
7.4	642	189.09		1.88	ESAF 77	4P	87	
8.8	545	157.65	★	2.2				
9.5	512	146.67		2.3				
10	482	136.84		2.4				
11	454	128.00		2.5				
12	427	120.00		2.7				
12	404	112.73		2.8				
13	382	106.09		2.9				

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N·m)	Ratio (i)		Service factor (fB)	Type	Motor pole	Weight (kg)				
<b>0.75</b>	7.1	627	195.00	★	0.80	<b>ES 67</b> <b>ESA 67</b> <b>ESF 67</b> <b>ESAF 67</b>	4P	51				
	7.6	590	182.40	★	0.84							
	8.1	557	171.00		0.89							
	9.1	504	153.00		0.98							
	11	430	129.00		1.15							
	12	391	115.42		1.26							
	13	367	107.50		1.35							
	14	345	100.33		1.43							
	15	324	93.82		1.52							
	16	305	87.87		1.62							
	17	288	82.42		1.71							
	18	273	77.40		1.81							
	19	258	72.77		1.91							
	22	232	64.50		2.1							
	28	206	49.50		2.2							
	31	185	44.29		2.5							
	34	173	41.25		2.6							
		13	361	71.40					0.80	<b>ES 57</b> <b>ESA 57</b> <b>ESF 57</b> <b>ESAF 57</b>	6P	43
		14	337	66.00					0.83			
		15	315	61.09					0.86			
		16	295	56.61					0.85			
		17	317	52.21	★				0.80			
		19	298	48.80	★				0.82			
		20	280	45.71	★				0.83			
		12	371	112.64					0.80	<b>ES 57</b> <b>ESA 57</b> <b>ESF 57</b> <b>ESAF 57</b>	4P	38
		13	351	105.91					0.80			
		14	333	99.75					0.84			
		15	317	94.08					0.88			
		16	302	88.85					0.93			
		17	287	84.00					0.98			
		19	247	71.40					1.13			
		21	230	66.00					1.22			
		23	215	61.09					1.26			
		25	201	56.61					1.25			
	27	212	52.21	★	1.10							
	28	199	48.80	★	1.17							
	30	188	45.71	★	1.24							
	32	177	42.91		1.32							
	34	167	40.35		1.39							
	37	158	38.00		1.47							
	39	150	35.84		1.55							
	41	142	33.85		1.64							
	43	134	32.00		1.73							
	51	115	27.20		2.0							
	55	107	25.14		2.2							
	60	100	23.27		2.3							
	64	93	21.57		2.2							
	69	92	20.17		1.74							
	73	87	19.00		1.84							
	78	82	17.92		2.0							
	82	77	16.92		2.1							
	87	73	16.00		2.2							
	102	63	13.60		2.5							
	29	197	48.57	★	0.80	<b>ES 47</b> <b>ESA 47</b> <b>ESF 47</b> <b>ESAF 47</b>	4P	33				
	30	185	45.59		0.82							
	32	175	42.87		0.84							
	34	165	40.38		0.89							
	37	156	38.08		0.94							
	39	148	35.96		0.99							
	41	141	34.00		1.05							
	43	134	32.18		1.10							
	48	121	28.90		1.22							
	52	112	26.71		1.31							
	56	104	24.73		1.38							
	61	97	22.91		1.41							
	65	96	21.43		1.08							
	69	91	20.19		1.15							

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)			
<b>0.75</b>	73	86	19.04	1.21	<b>ES 47</b> <b>ESA 47</b> <b>ESF 47</b> <b>ESAF 47</b>	4P	33			
	77	81	17.98	1.28						
	82	77	17.00	1.35						
	86	73	16.09	1.43						
	96	66	14.45	1.57						
	104	61	13.36	1.69						
	112	57	12.36	1.82						
	121	53	11.46	1.86						
	141	46	9.86	2.0						
	152	43	9.15	2.1						
	110	57	12.60	0.80				<b>ES 37</b>	4P	27
	117	54	11.90	0.83				<b>ESA 37</b>	4P	26
	127	50	10.93	0.86				<b>ESF 37</b>	4P	28
	138	46	10.05	0.92				<b>ESAF 37</b>	4P	28
	150	42	9.24	0.95						
<b>1.1</b>	1.7	4563	815	0.87	<b>ES 97ER 57</b> <b>ESA 97ER 57</b> <b>ESF 97ER 57</b> <b>ESAF 97ER 57</b>	4P	254			
	2.0	4001	711	1.00						
	2.2	3537	625	1.13						
	2.6	3069	539	1.30						
	2.9	2802	489	1.42						
	3.4	2409	416	1.66						
	2.3	2807	620	0.85	<b>ES 87ER 57</b> <b>ESA 87ER 57</b> <b>ESF 87ER 57</b> <b>ESAF 87ER 57</b>	4P	154			
	2.4	2606	572	0.91						
	2.9	2255	489	1.05						
	3.2	2015	432	1.18						
	3.7	1794	380	1.32						
	4.4	1811	319	1.04						
	5.0	1621	281	1.16						
	5.6	1462	252	1.29						
	6.3	1290	221	1.46						
	6.7	1217	208	1.55						
	6.5	1223	217	0.99	<b>ES 77ER 37</b> <b>ESA 77ER 37</b> <b>ESF 77ER 37</b> <b>ESAF 77ER 37</b>	4P	101			
	2.4	2693	280.00 ★	1.41	<b>ES 97</b> <b>ESA 97</b> <b>ESF 97</b> <b>ESAF 97</b>	8P	239			
	2.6	2538	262.11 ★	1.50						
	2.8	2398	246.00	1.58						
	2.9	2272	231.43	1.67						
	3.5	1953	196.58 ★	1.95						
	3.3	2077	280.00	1.83	<b>ES 97</b> <b>ESA 97</b> <b>ESF 97</b> <b>ESAF 97</b>	6P	230			
	3.5	1954	262.11	1.95						
	3.7	1842	246.00	2.1						
	3.9	1742	231.43	2.2						
	3.1	2087	292.00 ★	1.04	<b>ES 87</b> <b>ESA 87</b> <b>ESF 87</b> <b>ESAF 87</b>	6P	130			
	3.4	1905	264.00 ★	1.14						
	3.7	1788	245.88 ★	1.21						
	4.0	1684	229.78 ★	1.29						
4.2	1591	215.37 ★	1.36							
4.5	1503	202.40	1.44							
4.8	1416	292.00 ★	1.53	<b>ES 87</b> <b>ESA 87</b> <b>ESF 87</b> <b>ESAF 87</b>	4P	126				
5.3	1290	264.00 ★	1.68							
5.7	1209	245.88 ★	1.79							
6.1	1137	229.78 ★	1.91							
6.5	1072	215.37 ★	2.0							
6.9	1014	202.40	2.1							
7.3	962	190.67	2.2							
7.8	915	180.00	2.3							
8.2	871	170.26	2.4							
9.5	768	148.00	2.7							

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)		Service factor (fB)	Type	Motor pole	Weight (kg)				
<b>1.1</b>	6.2	1097	225.26	★	1.10	<b>ES 77</b>	4P	86				
	6.6	1038	212.00	★	1.16							
	7.4	935	189.09	★	1.29							
	8.9	794	157.65	★	1.51							
	9.5	746	146.67	★	1.58							
	10	702	136.84	★	1.66							
	11	661	128.00		1.74							
	12	623	120.00		1.83							
	12	588	112.73		1.91							
	13	556	106.09		2.0							
	14	514	97.14		2.1							
	15	484	90.91		2.2							
	16	457	85.22		2.3							
		12	570	115.42	★				0.87	<b>ES 67</b>	4P	56
		13	535	107.50					0.92			
		14	502	100.33					0.98			
	15	472	93.82		1.05							
	16	445	87.87		1.11							
	17	420	82.42		1.18							
	18	397	77.40		1.24							
	19	376	72.77		1.31							
	22	339	64.50		1.46							
	23	322	60.79		1.53							
	25	302	56.23		1.58							
	28	300	49.50	★	1.52							
	32	270	44.29	★	1.69							
	34	253	41.25		1.81							
	36	237	38.50		1.93							
	39	222	36.00		2.1							
	42	209	33.72		2.2							
	44	197	31.63		2.3							
	47	186	29.70		2.5							
	50	175	27.92		2.6							
	20	361	71.40		0.80	<b>ES 57</b>	4P	43				
	21	336	66.00		0.83							
	23	313	61.09		0.86							
	25	293	56.61		0.86							
	29	291	48.80	★	0.80							
	31	273	45.71	★	0.85							
	33	258	42.91	★	0.90							
	35	244	40.35	★	0.96							
	37	230	38.00	★	1.01							
	39	218	35.84		1.07							
	41	206	33.85		1.13							
	44	196	32.00		1.19							
	51	168	27.20		1.39							
	56	156	25.14		1.49							
	60	145	23.27		1.60							
	65	135	21.57		1.51							
	74	126	19.00	★	1.27							
	78	119	17.92		1.34							
	83	113	16.92		1.42							
	88	107	16.00		1.50							
	103	91	13.60		1.75							
	111	85	12.57		1.89							
	120	79	11.64		1.77							
	130	73	10.78		1.79							
	151	63	9.28		1.98							
	48	176	28.90		0.84	<b>ES 47</b>	4P	38				
	52	163	26.71		0.90							
	57	152	24.73		0.95							
	61	141	22.91		0.97							
	74	125	19.04		0.83							
	78	119	17.98		0.88							
	82	113	17.00		0.93							
	87	107	16.09		0.98							
	97	96	14.45		1.08							
	105	89	13.36		1.16							
									<b>ESA 47</b>	4P	39	
						<b>ESF 47</b>	4P	41				
						<b>ESAF 47</b>	4P	40				



# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N·m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)	
<b>1.1</b>	113	83	12.36	1.25	<b>ES</b> 47	4P	38	
	122	77	11.46	1.27	<b>ESA</b> 47	4P	39	
	142	67	9.86	1.40	<b>ESF</b> 47	4P	41	
	153	62	9.15	1.43	<b>ESAF</b> 47	4P	40	
<b>1.5</b>	2.0	5457	711	0.80	<b>ES</b> 97ER57	4P	258	
	2.2	4823	625	0.83	<b>ESA</b> 97ER57	4P	253	
	2.6	4186	539	0.95	<b>ESF</b> 97ER57	4P	293	
	2.9	3822	489	1.04	<b>ESAF</b> 97ER57	4P	283	
	3.4	3286	416	1.21				
	3.8	2965	373	1.35				
	4.3	2639	329	1.51				
	2.9	3074	489	0.80	<b>ES</b> 87ER57	4P	158	
	3.2	2748	432	0.86	<b>ESA</b> 87ER57	4P	156	
	3.7	2447	380	0.97	<b>ESF</b> 87ER57	4P	178	
	4.4	2470	319	0.80	<b>ESAF</b> 87ER57	4P	173	
	5.0	2211	281	0.85				
	5.6	1994	252	0.94				
	6.3	1759	221	1.07				
	6.7	1660	208	1.13				
	2.5	3624	280.00	★	1.05	<b>ES</b> 97	8P	247
	2.6	3416	262.11	★	1.11	<b>ESA</b> 97	8P	242
	2.8	3228	246.00		1.18	<b>ESF</b> 97	8P	282
	3.0	3059	231.43		1.24	<b>ESAF</b> 97	8P	272
	3.5	2627	196.58	★	1.45			
	3.3	2804	280.00	★	1.36	<b>ES</b> 97	6P	236
	3.5	2637	262.11	★	1.44	<b>ESA</b> 97	6P	231
	3.7	2487	246.00		1.53	<b>ESF</b> 97	6P	271
	4.0	2351	231.43		1.62	<b>ESAF</b> 97	6P	261
	4.7	2016	196.58	★	1.88			
	5.0	1911	280.00		1.99	<b>ES</b> 97	4P	230
	5.3	1802	262.11		2.1	<b>ESA</b> 97	4P	225
	5.7	1704	246.00		2.2	<b>ESF</b> 97	4P	265
6.0	1616	231.43		2.4	<b>ESAF</b> 97	4P	255	
7.1	1387	196.58		2.7				
3.5	2572	264.00	★	0.84	<b>ES</b> 87	6P	136	
3.7	2414	245.88	★	0.90	<b>ESA</b> 87	6P	134	
4.0	2274	229.78	★	0.95	<b>ESF</b> 87	6P	156	
4.3	2148	215.37	★	1.01	<b>ESAF</b> 87	6P	151	
4.5	2029	202.40	★	1.07				
4.8	1920	190.67	★	1.10				
5.1	1820	180.00		1.15				
4.8	1931	292.00	★	1.12	<b>ES</b> 87	4P	130	
5.3	1759	264.00	★	1.23	<b>ESA</b> 87	4P	128	
5.7	1649	245.88	★	1.31	<b>ESF</b> 87	4P	150	
6.1	1550	229.78	★	1.40	<b>ESAF</b> 87	4P	145	
6.5	1462	215.37	★	1.48				
6.9	1383	202.40		1.57				
7.3	1312	190.67		1.61				
7.8	1247	180.00		1.68				
8.2	1188	170.26		1.74				
9.5	1047	148.00		1.95				
10	992	139.65		2.0				
11	942	132.00		2.1				
11	896	124.96		2.2				
12	854	118.46		2.3				
12	815	112.44		2.3				
13	759	103.84		2.5				
14	722	98.15		2.6				
7.4	1275	189.09	★	0.95	<b>ES</b> 77	4P	90	
8.9	1083	157.65	★	1.10	<b>ESA</b> 77	4P	90	
9.5	1017	146.67	★	1.16	<b>ESF</b> 77	4P	100	
10	957	136.84	★	1.22	<b>ESAF</b> 77	4P	96	

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N·m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)			
<b>1.5</b>	11	901	128.00	1.28	<b>ES 77</b>	4P	90			
	12	849	120.00	1.34				<b>ESA 77</b>	90	
	12	802	112.73	1.40				<b>ESF 77</b>	100	
	13	759	106.09	1.47				<b>ESAF 77</b>	96	
	14	700	97.14	1.55						
	15	660	90.91	1.61						
	16	623	85.22	1.68						
	18	589	80.00	1.76						
	19	554	74.55	1.84						
	20	522	69.57	1.89						
	22	492	65.00	1.98						
	23	466	60.80	2.1						
	25	441	56.92	2.1						
	27	439	52.50	2.4						
	28	414	49.32	2.5						
	30	391	46.41	2.7						
	33	360	42.50	2.9						
		17	573	82.42	0.86	<b>ES 67</b>	4P	60		
		18	542	77.40	0.91				<b>ESA 67</b>	61
		19	513	72.77	0.96				<b>ESF 67</b>	67
		22	462	64.50	1.07				<b>ESAF 67</b>	66
		23	439	60.79	1.12					
		25	411	56.23	1.16					
		28	410	49.50	★ 1.11					
		32	368	44.29	★ 1.24					
		34	344	41.25	1.32					
		36	323	38.50	1.41					
		39	303	36.00	1.51					
		42	285	33.72	1.60					
		44	268	31.63	1.70					
		47	253	29.70	1.80					
		50	239	27.92	1.91					
		57	214	24.75	2.1					
	60	203	23.33	2.2						
	65	189	21.58	2.2						
	68	188	20.63	1.7						
	73	176	19.25	1.8						
	78	165	18.00	2.0						
	83	154	16.86	2.1						
	89	145	15.81	2.2						
	94	137	14.85	2.4						
	100	129	13.96	2.5						
	44	267	32.00	0.87	<b>ES 57</b>	4P	47			
	51	229	27.20	1.02				<b>ESA 57</b>	47	
	56	213	25.14	1.09				<b>ESF 57</b>	50	
	60	198	23.27	1.18				<b>ESAF 57</b>	49	
	65	184	21.57	1.11						
	74	172	19.00	★ 0.93						
	78	162	17.92	0.98						
	83	154	16.92	1.04						
	88	145	16.00	1.10						
	103	124	13.60	1.28						
	111	115	12.57	1.38						
	120	107	11.64	1.29						
	130	100	10.78	1.32						
	151	86	9.28	1.45						
	97	131	14.45	0.80				<b>ES 47</b>	4P	42
	105	121	13.36	0.85	<b>ESA 47</b>	43				
	113	113	12.36	0.92	<b>ESF 47</b>	45				
	122	105	11.46	0.93	<b>ESAF 47</b>	44				
	142	91	9.86	1.03						
	153	85	9.15	1.05						
<b>2.2</b>	3.4	4756	416	0.84	<b>ES 97ER 57</b>	4P	266			
	3.8	4292	373	0.93				<b>ESA 97ER 57</b>	261	
	4.3	3818	329	1.05				<b>ESF 97ER 57</b>	301	
	4.9	3384	290	1.18				<b>ESAF 97ER 57</b>	291	
	5.6	2955	252	1.35						

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N·m)	Ratio (i)		Service factor (fB)	Type	Motor pole	Weight (kg)	
<b>2.2</b>	3.4	4031	280.00	★	0.94	<b>ES 97</b>	6P	246	
	3.6	3792	262.11	★	1.00		<b>ESA 97</b>	6P	241
	3.8	3576	246.00		1.06		<b>ESF 97</b>	6P	281
	4.1	3381	231.43		1.12		<b>ESAF 97</b>	6P	271
	4.8	2900	196.58	★	1.31				
	5.1	2767	280.00	★	1.37	<b>ES 97</b>	4P	238	
	5.4	2610	262.11	★	1.46		<b>ESA 97</b>	4P	233
	5.8	2468	246.00		1.54		<b>ESF 97</b>	4P	273
	6.1	2341	231.43		1.62		<b>ESAF 97</b>	4P	263
	7.2	2008	196.58	★	1.89				
	7.7	1894	184.50		2.0				
	8.2	1791	173.57		2.1				
	8.7	1697	163.64		2.1				
	9.2	1612	154.57		2.2				
	9.7	1534	146.25		2.3				
	10	1462	138.60		2.4				
	11	1396	131.54		2.5				
	11	1335	125.00		2.6				
	12	1251	116.05		2.7				
	14	1109	100.71		2.9				
	15	1047	94.09		3.0				
	16	992	88.04		3.0				
	5.4	2547	264.00	★	0.85	<b>ES 87</b>	4P	138	
	5.8	2387	245.88	★	0.91		<b>ESA 87</b>	4P	136
	6.2	2245	229.78	★	0.96		<b>ESF 87</b>	4P	158
	6.6	2118	215.37	★	1.02		<b>ESAF 87</b>	4P	153
	7.0	2003	202.40	★	1.08				
	7.4	1900	190.67	★	1.11				
	7.9	1807	180.00		1.16				
	8.3	1721	170.26		1.20				
	9.6	1515	148.00		1.35				
	10	1436	139.65		1.39				
	11	1364	132.00		1.45				
11	1298	124.96		1.51					
12	1237	118.46		1.56					
13	1180	112.44		1.61					
14	1100	103.84		1.71					
14	1046	98.15		1.78					
15	997	92.89		1.85					
16	952	88.00		1.88					
17	909	83.45		1.93					
18	870	79.20		1.99					
19	816	73.33		2.0					
20	850	69.55		1.8					
22	806	65.78		1.9					
25	705	57.18		2.2					
11	1305	128.00	★	0.88	<b>ES 77</b>	4P	98		
12	1229	120.00	★	0.93		<b>ESA 77</b>	4P	98	
13	1161	112.73		0.97		<b>ESF 77</b>	4P	108	
13	1098	106.09		1.01		<b>ESAF 77</b>	4P	104	
15	1014	97.14		1.07					
16	955	90.91		1.11					
17	902	85.22		1.16					
18	853	80.00		1.21					
19	802	74.55		1.27					
20	756	69.57		1.31					
22	714	65.00		1.36					
23	675	60.80		1.42					
25	639	56.92		1.47					
27	636	52.50	★	1.64					
29	599	49.32		1.74					
31	566	46.41		1.85					
33	521	42.50		2.0					
36	490	39.77		2.1					
38	462	37.28		2.3					

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)		
<b>2.2</b>	41	436	35.00	2.4	<b>ES 77</b>	4P	98		
	44	408	32.61	2.5		<b>ESA 77</b>	4P	98	
	47	384	30.43	2.6		<b>ESF 77</b>	4P	108	
	50	361	28.44	2.8		<b>ESAF 77</b>	4P	104	
	53	340	26.60	2.9					
	57	319	24.90	3.0					
	61	307	23.21	2.2					
	67	282	21.25	2.4					
		32	533	44.29	★ 0.86	<b>ES 67</b>	4P	68	
		34	498	41.25	★ 0.92		<b>ESA 67</b>	4P	69
		37	467	38.50	★ 0.98		<b>ESF 67</b>	4P	75
		39	438	36.00	1.04		<b>ESAF 67</b>	4P	74
		42	412	33.72	1.11				
		45	388	31.63	1.17				
		48	366	29.70	1.25				
		51	346	27.92	1.32				
		57	310	24.75	1.47				
		61	294	23.33	1.49				
		66	274	21.58	1.53				
		69	271	20.63	★ 1.19				
		74	254	19.25	★ 1.27				
		79	238	18.00	1.36				
		84	224	16.86	1.44				
		90	210	15.81	1.54				
		96	198	14.85	1.63				
		102	187	13.96	1.73				
		115	167	12.38	1.94				
		122	158	11.66	2.0				
		132	147	10.79	1.9				
		141	137	10.08	2.0				
		151	129	9.43	2.0				
		104	180	13.60	★ 0.89	<b>ES 57</b>	4P	55	
	113	167	12.57	★ 0.96	<b>ESA 57</b>		4P	55	
	122	155	11.64	0.89	<b>ESF 57</b>		4P	58	
	132	144	10.78	0.91	<b>ESAF 57</b>		4P	57	
	153	125	9.28	1.00					
	165	117	8.62	1.02					
<b>3</b>	4.9	4615	290.13	0.86	<b>ES 97ER 57</b>	4P	270		
	5.6	4030	251.79	0.99		<b>ESA 97ER 57</b>	4P	265	
	6.5	3547	220.11	1.12		<b>ESF 97ER 57</b>	4P	305	
	6.9	3338	206.37	1.20		<b>ESAF 97ER 57</b>	4P	295	
		5.1	3773	280.00	★ 1.01	<b>ES 97</b>	4P	242	
		5.4	3559	262.11	★ 1.07		<b>ESA 97</b>	4P	237
		5.8	3366	246.00	1.13		<b>ESF 97</b>	4P	277
		6.1	3192	231.43	1.19		<b>ESAF 97</b>	4P	267
		7.2	2738	196.58	★ 1.39				
		7.7	2582	184.50	1.47				
		8.2	2442	173.57	1.53				
		8.7	2314	163.64	1.58				
		9.2	2198	154.57	1.64				
		9.7	2091	146.25	1.69				
		10	1994	138.60	1.76				
		11	1903	131.54	1.82				
		11	1820	125.00	1.88				
		12	1706	116.05	1.95				
		14	1512	100.71	2.2				
		15	1428	94.09	2.2				
		16	1352	88.04	2.2				
		18	1207	77.40	2.3				
		7.9	2463	180.00	0.85	<b>ES 87</b>	4P	142	
		8.3	2347	170.26	0.88		<b>ESA 87</b>	4P	140
		9.6	2066	148.00	0.99		<b>ESF 87</b>	4P	162
		10	1959	139.65	1.02		<b>ESAF 87</b>	4P	157

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)			
<b>3</b>	11	1860	132.00	1.06	<b>ES 87</b> <b>ESA 87</b> <b>ESF 87</b> <b>ESAF 87</b>	4P	142			
	11	1770	124.96	1.11						
	12	1687	118.46	1.14						
	13	1610	112.44	1.18						
	14	1500	103.84	1.25						
	14	1427	98.15	1.30						
	15	1360	92.89	1.36						
	16	1298	88.00	1.38						
	17	1240	83.45	1.42						
	18	1186	79.20	1.46						
	19	1112	73.33	1.45						
	20	1159	69.55	1.31						
	22	1099	65.78	1.38						
	25	962	57.18	1.58						
	26	910	53.96	1.67						
	28	863	51.00	1.76						
	29	820	48.28	1.85						
	31	780	45.77	1.95						
	33	743	43.44	2.0						
	35	690	40.12	2.2						
	37	655	37.92	2.3						
	40	622	35.89	2.4						
	42	592	34.00	2.6						
	17	1230	85.22	0.85				<b>ES 77</b> <b>ESA 77</b> <b>ESF 77</b> <b>ESAF 77</b>	4P	102
	18	1164	80.00	0.89						
	19	1094	74.55	0.93						
	20	1031	69.57	0.96						
	22	973	65.00	1.00						
	23	920	60.80	1.04						
	25	871	56.92	1.08						
	27	867	52.50	★ 1.21						
	29	817	49.32	1.28						
	31	772	46.41	1.35						
	33	711	42.50	1.47						
	36	668	39.77	1.56						
	38	630	37.28	1.66						
	41	594	35.00	1.76						
	44	557	32.61	1.86						
	47	523	30.43	1.94						
	50	492	28.44	2.0						
	53	464	26.60	2.1						
	57	436	24.90	2.2						
61	419	23.21	1.60							
67	385	21.25	1.74							
71	361	19.89	1.87							
76	340	18.64	2.0							
81	320	17.50	2.1							
87	300	16.31	2.3							
93	281	15.22	2.4							
100	263	14.22	2.6							
107	247	13.30	2.8							
114	232	12.45	2.8							
130	204	10.94	3.1							
42	562	33.72	0.81	<b>ES 67</b> <b>ESA 67</b> <b>ESF 67</b> <b>ESAF 67</b>	4P	72				
45	529	31.63	0.86							
48	499	29.70	0.91							
51	472	27.92	0.97							
57	422	24.75	1.08							
61	400	23.33	1.09							
66	373	21.58	1.12							
69	370	20.63	★ 0.87							
74	346	19.25	★ 0.93							
79	325	18.00	1.00							
84	305	16.86	1.06							
90	287	15.81	1.13							
96	270	14.85	1.20							

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)
<b>3</b>	102	255	13.96	1.27	<b>ES 67</b> <b>ESA 67</b> <b>ESF 67</b> <b>ESAF 67</b>	4P	72
	115	227	12.38	1.42			73
	122	215	11.66	1.48			79
	132	200	10.79	1.40			78
	141	187	10.08	1.45			
	151	175	9.43	1.49			
	161	164	8.82	1.53			
<b>4</b>	6.5	4668	220	0.85	<b>ES 97ER 57</b> <b>ESA 97ER 57</b> <b>ESF 97ER 57</b> <b>ESAF 97ER 57</b>	4P	278
	7.0	4393	206	0.91			273
	6.2	4204	231.43	0.90	<b>ES 97</b> <b>ESA 97</b> <b>ESF 97</b> <b>ESAF 97</b>	4P	250
	7.3	3604	196.58	1.05			245
	7.8	3399	184.50	1.12			285
	8.3	3215	173.57	1.16			275
	8.8	3047	163.64	1.20			
	9.3	2894	154.57	1.25			
	9.8	2754	146.25	1.29			
	10	2625	138.60	1.34			
	11	2507	131.54	1.38			
	12	2397	125.00	1.43			
	12	2247	116.05	1.48			
	14	1992	100.71	1.64			
	15	1882	94.09	1.67			
	16	1783	88.04	1.64			
	19	1588	77.40	1.73			
	20	1656	73.80	1.85			
	21	1562	69.43	2.0			
	22	1477	65.45	2.1			
	23	1399	61.83	2.2			
	25	1327	58.50	2.4			
	26	1262	55.44	2.5			
	12	2330	124.96	0.84	<b>ES 87</b> <b>ESA 87</b> <b>ESF 87</b> <b>ESAF 87</b>	4P	150
	12	2221	118.46	0.87			148
	13	2119	112.44	0.90			170
	14	1975	103.84	0.95			165
	15	1879	98.15	0.99			
	16	1791	92.89	1.03			
	16	1710	88.00	1.04			
	17	1634	83.45	1.08			
	18	1563	79.20	1.11			
	20	1466	73.33	1.10			
	21	1525	69.55	1.00			
	22	1446	65.78	1.05			
	25	1266	57.18	1.20			
	27	1198	53.96	1.27			
	28	1136	51.00	1.34			
	30	1079	48.28	1.41			
	31	1026	45.77	1.48			
	33	977	43.44	1.56			
	36	908	40.12	1.67			
	38	862	37.92	1.76			
	40	819	35.89	1.86			
	42	780	34.00	1.95			
	45	743	32.24	2.0			
	47	709	30.60	2.1			
	51	660	28.33	2.3			
	55	614	26.27	2.5			
	56	611	25.50	1.93			
	25	1149	56.92	0.82	<b>ES 77</b> <b>ESA 77</b> <b>ESF 77</b> <b>ESAF 77</b>	4P	110
	27	1140	52.50	0.92			110
	29	1075	49.32	0.97			120
	31	1016	46.41	1.03			116
	34	935	42.50	1.12			

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)				
<b>4</b>	36	880	39.77	1.19	<b>ES 77</b>	4P	110				
	39	829	37.28	1.26							
	41	782	35.00	1.34				<b>ESA 77</b>			
	44	733	32.61	1.41				<b>ESF 77</b>			
	47	689	30.43	1.48				<b>ESAF 77</b>			
	51	648	28.44	1.54							
	54	610	26.60	1.61							
	58	573	24.90	1.69							
	62	551	23.21	1.22							
	68	507	21.25	1.32							
	72	476	19.89	1.42							
	77	447	18.64	1.51							
	82	421	17.50	1.60							
	88	394	16.31	1.71							
	95	369	15.22	1.83							
	101	347	14.22	1.95							
	108	325	13.30	2.1							
	116	305	12.45	2.1							
	132	269	10.94	2.4							
	140	253	10.26	2.4							
159	224	9.03	2.7								
	80	427	18.00	0.80	<b>ES 67</b>	4P	80				
	85	401	16.86	0.81							
	91	377	15.81	0.86				<b>ESA 67</b>			
	97	355	14.85	0.91				<b>ESF 67</b>			
	103	335	13.96	0.96				<b>ESAF 67</b>			
	116	299	12.38	1.08							
	123	283	11.66	1.13							
	133	263	10.79	1.07							
	143	246	10.08	1.10							
	153	231	9.43	1.13							
	163	216	8.82	1.16							
	<b>5.5</b>	8.8	4189	163.64				0.87	<b>ES 97</b>	4P	269
		9.3	3979	154.57				0.91			
		9.8	3787	146.25				0.94			
10		3610	138.60	0.97	<b>ESF 97</b>						
11		3447	131.54	1.01	<b>ESAF 97</b>						
12		3296	125.00	1.04							
12		3090	116.05	1.08							
14		2739	100.71	1.19							
15		2588	94.09	1.21							
16		2451	88.04	1.19							
19		2184	77.40	1.26							
20		2277	73.80	1.35							
21		2148	69.43	1.46							
22		2030	65.45	1.54							
23		1923	61.83	1.63							
25		1825	58.50	1.72							
26		1735	55.44	1.81							
27		1652	52.62	1.90							
29		1575	50.00	2.0							
31		1469	46.42	2.1							
36	1289	40.29	2.4								
	18	2149	79.20	0.80	<b>ES 87</b>	4P	169				
	20	2016	73.33	0.80							
	21	2097	69.55	★				0.80	<b>ESA 87</b>		
	22	1989	65.78	★				0.82	<b>ESF 87</b>		
	25	1740	57.18					0.87	<b>ESAF 87</b>		
	27	1647	53.96					0.92			
	28	1562	51.00					0.97			
	30	1483	48.28					1.02			
	31	1411	45.77					1.08			
	33	1344	43.44					1.13			
	36	1248	40.12					1.22			
	38	1185	37.92					1.28			

# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)				
<b>5.5</b>	40	1126	35.89	1.35	<b>ES 87</b> <b>ESA 87</b> <b>ESF 87</b> <b>ESAF 87</b>	4P	169				
	42	1072	34.00	1.42							
	45	1021	32.24	1.49							
	47	974	30.60	1.56							
	51	907	28.33	1.68							
	55	844	26.27	1.80							
	56	840	25.50	1.40							
	60	797	24.14	1.48							
	63	757	22.88	1.56							
	66	720	21.72	1.64							
	72	668	20.06	1.76							
	76	633	18.96	1.86							
	85	571	17.00	2.1							
	89	543	16.12	2.2							
	94	517	15.30	2.3							
	102	479	14.17	2.5							
	110	445	13.14	2.4							
	118	414	12.20	2.3							
	127	386	11.33	2.4							
		36	1209	39.77				0.86	<b>ES 77</b> <b>ESA 77</b> <b>ESF 77</b> <b>ESAF 77</b>	4P	129
		39	1139	37.28				0.92			
		41	1075	35.00				0.97			
		44	1008	32.61				1.03			
		47	947	30.43				1.07			
		51	891	28.44				1.12			
		54	839	26.60				1.17			
58		788	24.90	1.23							
62		758	23.21	★ 0.88							
68		697	21.25	0.96							
72		654	19.89	1.03							
77		615	18.64	1.10							
82		579	17.50	1.16							
88		542	16.31	1.24							
95		508	15.22	1.33							
101		477	14.22	1.42							
108		447	13.30	1.54							
116		419	12.45	1.54							
132		370	10.94	1.72							
140		348	10.26	1.78							
159		308	9.03	1.95							
<b>7.5</b>		14	3692	100.71	0.89	<b>ES 97</b> <b>ESA 97</b> <b>ESF 97</b> <b>ESAF 97</b>	4P	282			
		16	3490	94.09	0.90						
		17	3306	88.04	0.89						
		19	2941	77.40	0.94						
		20	3064	73.80	1.00						
	21	2890	69.43	1.08							
	22	2733	65.45	1.15							
	24	2589	61.83	1.21							
	25	2457	58.50	1.28							
	26	2336	55.44	1.34							
	28	2224	52.62	1.41							
	29	2120	50.00	1.48							
	31	1978	46.42	1.58							
	36	1736	40.29	1.81							
	39	1631	37.64	1.92							
	41	1534	35.22	1.98							
	47	1356	30.96	2.1							
	53	1204	27.33	2.3							
	55	1182	26.31	2.1							
	58	1126	25.00	2.2							
	63	1049	23.21	2.4							
	72	917	20.14	2.7							
	78	859	18.82	2.7							



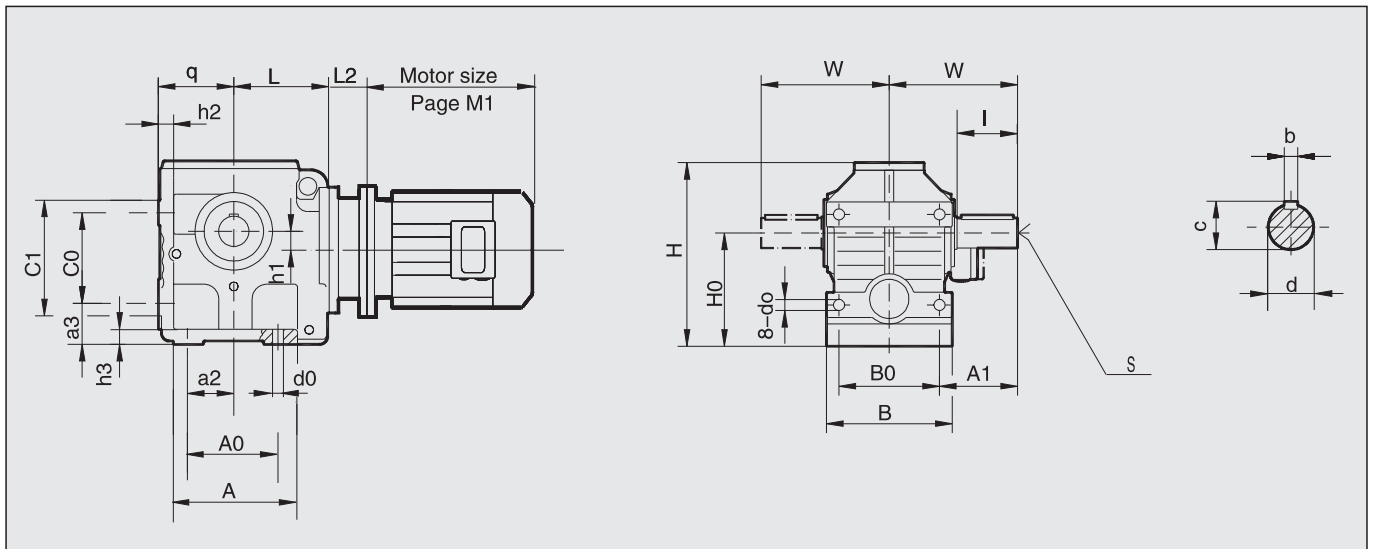
# ES SERIES REDUCTOR

Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)				
<b>7.5</b>	34	1809	43.44	0.84	<b>ES 87</b>	4P	182				
	36	1680	40.12	0.90							
	38	1595	37.92	0.95							
	41	1516	35.89	1.00				<b>ESA 87</b>	4P	180	
	43	1443	34.00	1.05							
	45	1376	32.24	1.11				<b>ESF 87</b>	4P	202	
	48	1312	30.60	1.16							
	52	1221	28.33	1.25				<b>ESAF 87</b>	4P	197	
	56	1136	26.27	1.34							
	57	1130	25.50	1.04							
	60	1072	24.14	1.10							
	64	1019	22.88	1.16							
	67	969	21.72	1.22							
	73	898	20.06	1.31							
	77	852	18.96	1.38							
	86	768	17.00	1.53							
	91	731	16.12	1.61							
	95	695	15.30	1.70							
	103	645	14.17	1.83							
	111	599	13.14	1.81							
	120	558	12.20	1.72							
	129	520	11.33	1.79							
	139	485	10.54	1.86							
	160	421	9.13	2.1							
		51	1200	28.44				0.83	<b>ES 77</b>	4P	142
		55	1129	26.60				0.87			
		59	1061	24.90				0.91			
		63	1020	23.21				0.80			
		69	937	21.25				0.82			
		73	880	19.89				0.84			
		78	828	18.64				0.86			
		83	780	17.50				0.87			
	90	729	16.31	0.92							
	96	684	15.22	0.99							
	103	641	14.22	1.05							
	110	601	13.30	1.15							
	117	564	12.45	1.15							
	133	497	10.94	1.28							
	142	468	10.26	1.32							
	162	414	9.03	1.45							
<b>11</b>	26	3425	55.44	0.92	<b>ES 97</b>	4P	320				
	28	3261	52.62	0.96							
	29	3109	50.00	1.01							
	31	2902	46.42	1.08							
	36	2546	40.29	1.23							
	39	2392	37.64	1.31							
	41	2250	35.22	1.35							
	47	1989	30.96	1.44							
	53	1766	27.33	1.54							
	55	1733	26.31	1.43							
	58	1651	25.00	1.50							
	63	1538	23.21	1.61							
	72	1345	20.14	1.82							
	78	1260	18.82	1.86							
	83	1181	17.61	1.87							
	94	1042	15.48	2.0							
	107	924	13.67	2.1							
	114	871	12.86	1.93							
	123	806	11.86	1.83							
		56	1666	26.27				0.91	<b>ESA 87</b>	4P	220
		57	1657	25.50				0.80			
		60	1572	24.14				0.82			
	64	1494	22.88	0.84							
	67	1421	21.72	0.86							
	73	1318	20.06	0.89							
	77	1249	18.96	0.94							
	86	1127	17.00	1.05							
					<b>ESF 87</b>	4P	240				
								<b>ESAF 87</b>	4P	235	

# ES SERIES REDUCTOR

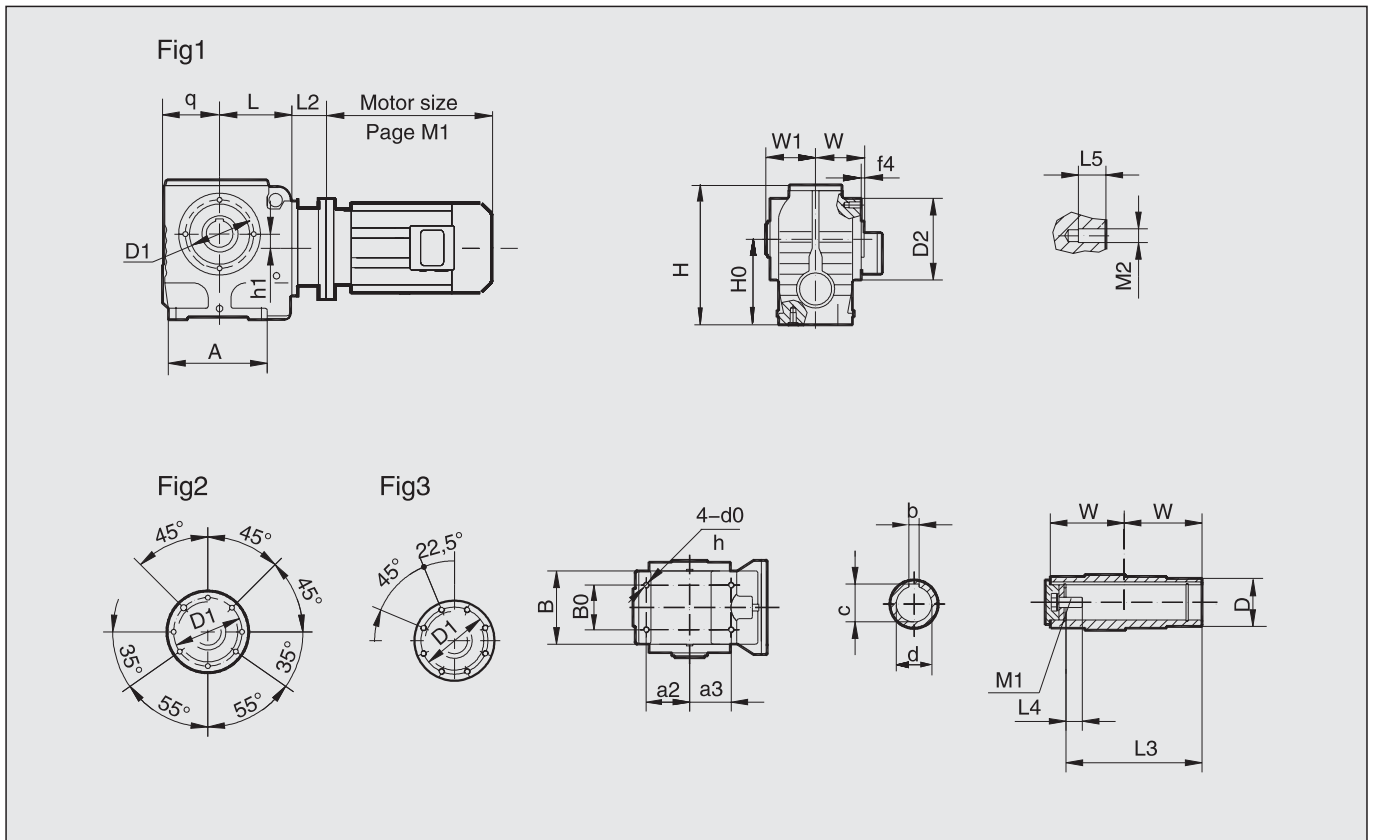
Power (kW)	Output speed (r/min)	Output torque (N · m)	Ratio (i)	Service factor (fB)	Type	Motor pole	Weight (kg)				
<b>11</b>	91	1072	16.12	1.10	<b>ES 87</b>	4P	220				
	95	1019	15.30	1.16							
	103	946	14.17	1.25							
	111	879	13.14	1.23							
	120	818	12.20	1.17							
	129	762	11.33	1.22							
	139	711	10.54	1.27							
	160	618	9.13	1.41							
<b>15</b>	31	3957	46.42	0.80	<b>ES 97</b>	4P	339				
	36	3471	40.29	0.90							
	39	3262	37.64	0.96							
	41	3069	35.22	0.99							
	47	2712	30.96	1.05							
	53	2408	27.33	1.13							
	55	2363	26.31	1.05							
	58	2251	25.00	1.10							
	63	2097	23.21	1.18							
	72	1834	20.14	1.33							
	78	1718	18.82	1.37							
	83	1610	17.61	1.37							
	94	1421	15.48	1.48							
	107	1259	13.67	1.54							
	114	1187	12.86	1.42							
	123	1098	11.86	1.34							
	156	871	9.36	1.42							
	<b>15</b>	95	1390	15.30				0.85	<b>ES 87</b>	4P	239
		103	1290	14.17				0.91			
		111	1199	13.14				0.90			
120		1115	12.20	0.86							
129		1039	11.33	0.90							
139		969	10.54	0.93							
160		843	9.13	1.04							
<b>18.5</b>		39	3998	37.64	0.80	<b>ES 97</b>	4P	384			
	41	3785	35.22	0.80							
	47	3345	30.96	0.85							
	53	2970	27.33	0.92							
	55	2915	26.31	0.85							
	58	2776	25.00	0.89							
	63	2587	23.21	0.95							
	72	2262	20.14	1.08							
	78	2119	18.82	1.11							
	83	1986	17.61	1.11							
	94	1752	15.48	1.20							
	107	1553	13.67	1.25							
	114	1464	12.86	1.15							
	123	1355	11.86	1.09							
	156	1074	9.36	1.15							
<b>22</b>	54	3509	27.33	0.80	<b>ES 97</b>	4P	395				
	56	2896	26.31	0.85							
	59	2758	25.00	0.90							
	63	2570	23.21	0.96							
	73	2247	20.14	1.09							
	78	2105	18.82	1.11							
	83	1973	17.61	1.12							
	95	1741	15.48	1.21							
	108	1543	13.67	1.26							
	114	1455	12.86	1.16							
	124	1346	11.86	1.09							
	157	1067	9.36	1.16							

# ES SERIES REDUCTOR



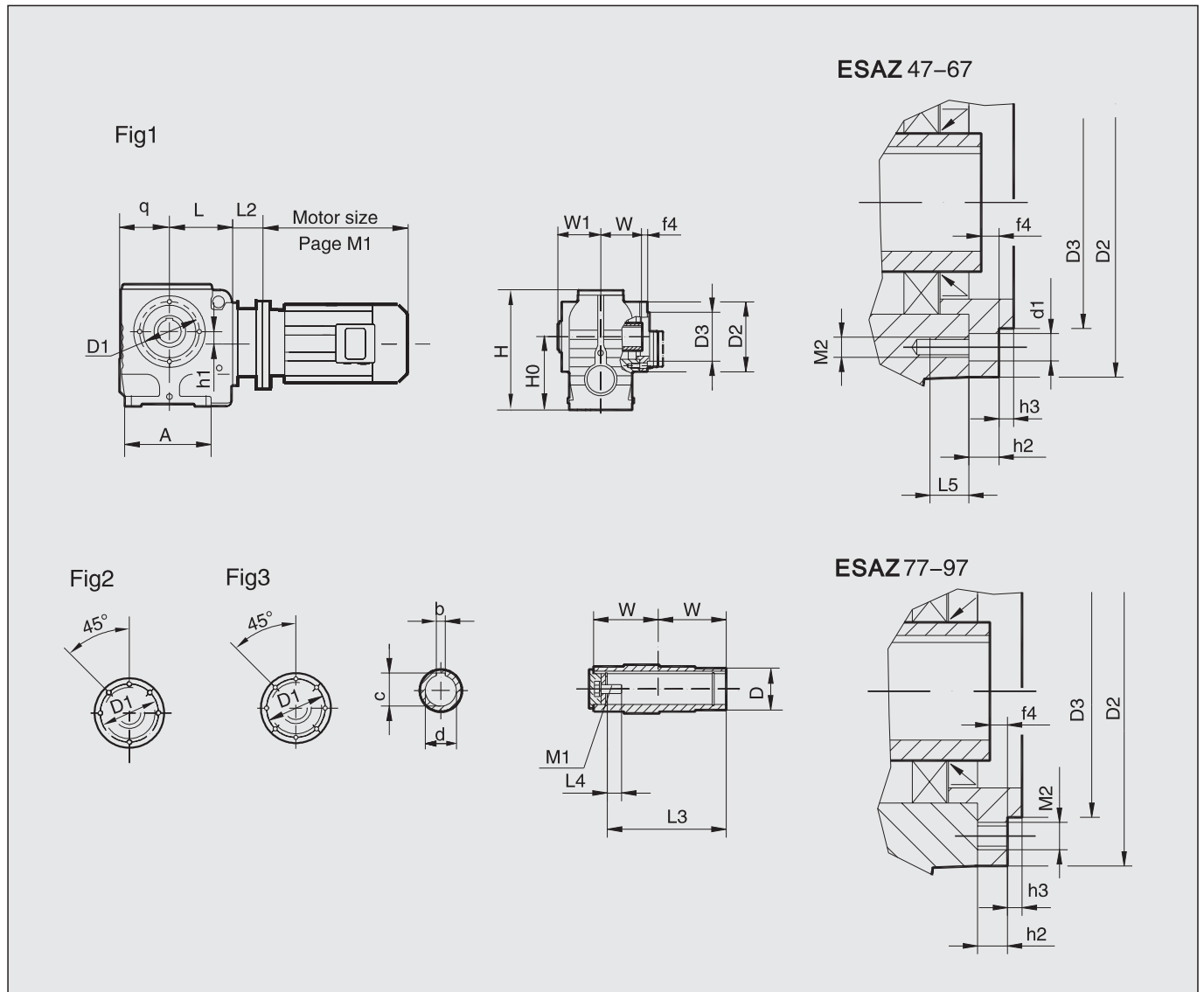
Type	Installation dimensions						Shaft dimensions				Overall dimensions					
	H0	B0 A0	C0 A1	a2 a3	q do	d	l	b	c	S	h1 h2	h3 L	B H	W A	C1	L2
<b>ES37</b>	80	90 63	80 55	35 40	63 9	20k6	40	6	22.5	M6	4.1 10	10 80	108 143	100 89	98	page 204
<b>ES47</b>	100	100 80	80 65	35 35	75 11	25k6	50	8	28	M10	9.0 12	15 96	120 165	115 112	105	
<b>ES57</b>	112	110 100	100 79	45 35	80 11	30k6	60	8	33	M10	21.0 12	15 107	136 189	134 130	130	
<b>ES67</b>	140	130 130	130 95	60 40	106 13.5	35k6	70	10	38	M12	26.3 15	20 143	160 238	160 175	170	
<b>ES77</b>	180	150 135	135 120	75 70	125 17.5	45k6	90	14	48.5	M16	40.4 25	25 162	185 301	195 204	177	
<b>ES87</b>	225	200 180	180 155	92 82	150 22	60m6	120	18	64	M20	39.6 30	30 190	250 368	255 247	230	
<b>ES97</b>	280	250 235	235 170	115 90	180 26	70m6	140	20	74.5	M20	59.1 35	35 240	300 455	295 320	295	

# ES SERIES REDUCTOR



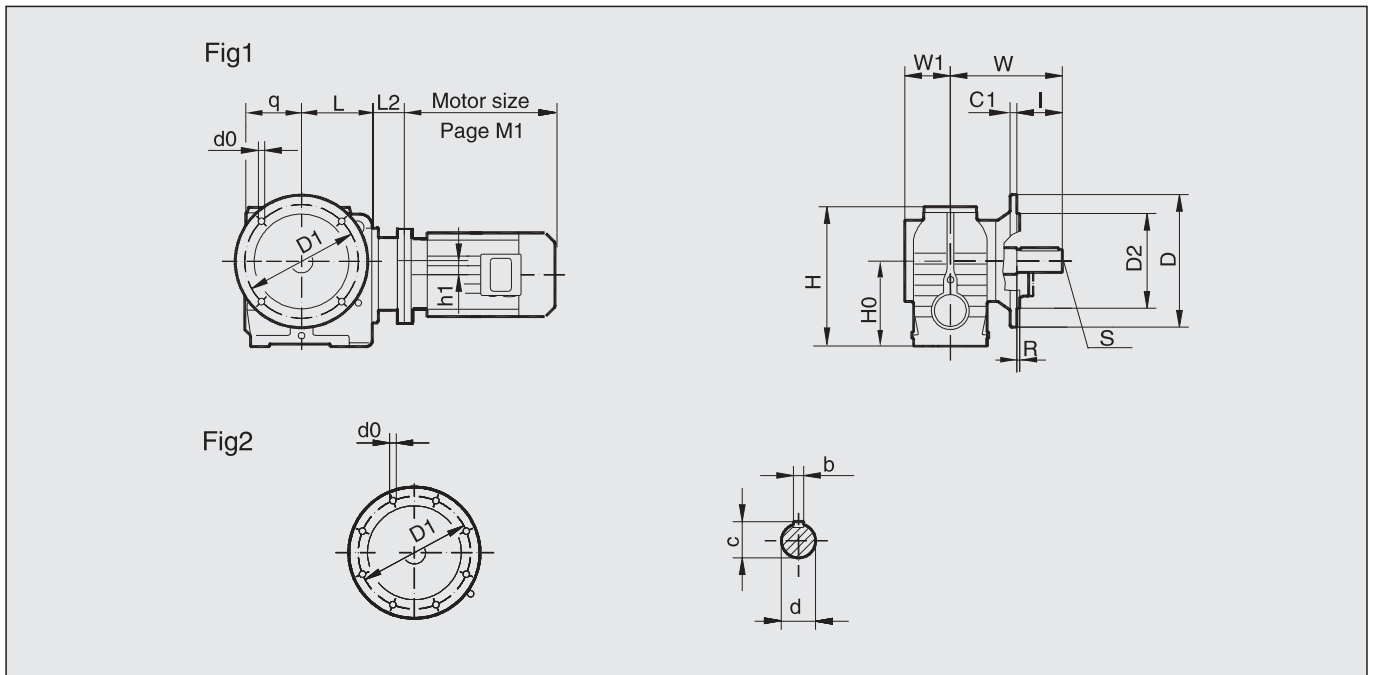
Type	Installation dimensions							Shaft dimensions					Overall dimensions							
	H0	D1	Fig	B0	a2 a3	do h	M2 L5	d	b	c	L3	L4	M1	h1 H	W1 W	q L	D2 D	A B	f4	L2
ESA37	82	75	1	—	—	—	M6 8	20H7	6	22.8	104	8	M6x16-8.8	4.1 131	62.5 60	63 80	90 35	112 84	3	page 204
ESA47	100	115	1	60	35	M10	M8	25H7	8	28.3	105	17	M10x25-8.8	9.0	63	75	130	127	2.5	
					52	20	12	30H7	8	33.3	105	17	M10x25-8.8	179	60	96	45	94		
ESA57	112	102	2	60	58.5	M10	M8	30H7	8	33.3	132	17	M10x25-8.8	21.0	78	80	120	146	3	
					58.5	20	12	35H7	10	38.3	132	22	M12x30-8.8	189	75	107	50	100		
ESA67	140	130	1	88	71.5	M12	M12	40H7	12	43.3	144	29	M16x40-8.8	26.3	87	107	155	182	3.5	
					80.5	25	20	45H7	14	48.8	144	29	M16x40-8.8	238	84	143	65	128		
ESA77	180	155	3	102	85	M16	M12	50H7	14	53.8	183	32	M16x45-8.8	40.4	108	125	178	204	4	
					85	32	20	60H7	18	64.4	180	37	M20x50-8.8	301	105	162	80	154		
ESA87	225	180	3	118	115	M16	M16	60H7	18	64.4	220	36	M20x50-8.8	39.6	128	150	215	260	5	
					110	32	26	70H7	20	74.9	220	34	M20x50-8.8	368	125	190	95	194		
ESA97	280	220	3	160	135	M20	M16	70H7	20	74.9	260	34	M20x50-8.8	59.1	149	180	260	301	5	
					113	36	26	90H7	25	95.4	255	41	M24x60-8.8	455	145	240	120	236		

# ES SERIES REDUCTOR



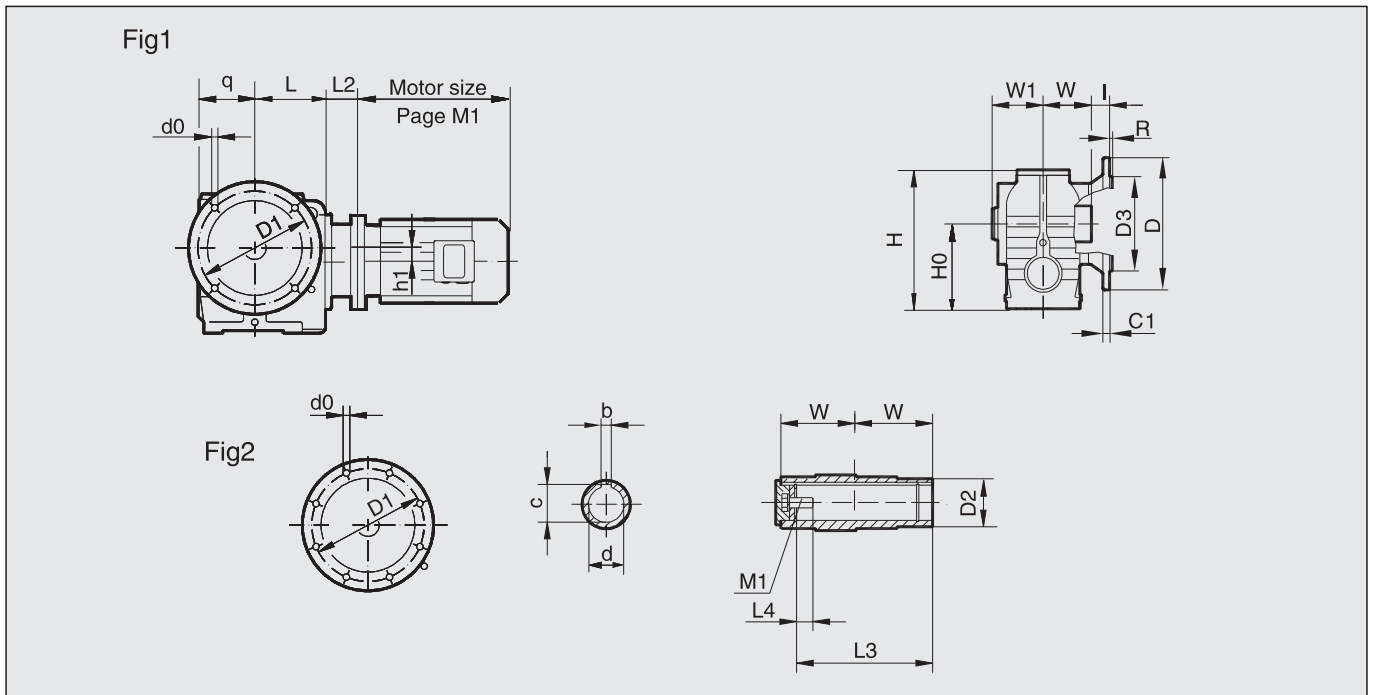
Type	Installation dimensions						Shaft dimensions						Overall dimensions					
	H0	D1	Fig	f4 L5	h2 h3	M2 d1	d	b	c	L3	L4	M1	h1 H	W1 W	q L	D2 D3	D A	L2
ESAZ47	100	115	1	8.5	11	M8	25H7	8	28.3	105	17	M10x25-8.8	9.0	63	75	130	45	page 204
				12	3	9	30H7	8	33.3	105	17	M10x25-8.8	179	60	96	95j6	127	
ESAZ57	112	102	2	8	11	M8	30H7	8	33.3	132	17	M10x25-8.8	21.0	78	80	120	50	
				12	3	9	35H7	10	38.3	132	22	M12x30-8.8	189	75	107	80j6	146	
ESAZ67	140	130	1	9.5	13	M12	40H7	12	43.3	144	29	M16x40-8.8	26.3	87	107	155	65	
				20	3.5	13.5	45H7	14	48.8	144	29	M16x40-8.8	238	84	143	105j6	182	
ESAZ77	180	155	3	14.5	18.5	M12	50H7	14	53.8	183	32	M16x45-8.8	40.4	108	125	180	80	
				—	4	—	60H7	18	64.4	180	37	M20x50-8.8	301	105	162	125j6	204	
ESAZ87	225	180	3	18.5	23.5	M16	60H7	18	64.4	220	36	M20x50-8.8	39.6	128	150	215	95	
				—	5	—	70H7	20	74.9	220	34	M20x50-8.8	368	125	190	150j6	260	
ESAZ97	280	220	3	18.5	23.5	M16	70H7	20	74.9	260	34	M20x50-8.8	59.1	149	180	260	120	
				—	5	—	90H7	25	95.4	255	41	M24x60-8.8	455	145	240	180j6	301	

# ES SERIES REDUCTOR



Type	Installation dimensions						Shaft dimensions					Overall dimensions								
	H0	D1	Fig	do	D2	R	d	l	b	c	S	L	C1	D	q	W1	W	h1	H	L2
ESF37	82	100	1	6.6	80j6	3	20k6	40	6	22.5	M6	80	8	120	63	57	115	4.1	131	page 204
		130		9	110j6	3.5							10	160						
ESF47	100	130	1	9	110j6	3.5	25k6	50	8	28	M10	96	10	160	75	57.5	133.5	9.0	179	
ESF57	112	165	1	11	130j6	3.5	30k6	60	8	33	M10	107	12	200	80	72	160	21.0	189	
ESF67	140	165	1	11	130j6	3.5	35k6	70	10	38	M12	143	12	200	107	80.5	190	26.3	238	
ESF77	180	215	1	13.5	180j6	4	45k6	90	14	48.5	M16	162	15	250	125	121	232	40.4	301	
ESF87	225	300	1	17.5	250h6	5	60m6	120	18	64	M20	190	18	350	150	145	290	39.6	368	
ESF97	280	400	2	17.5	350h6	5	70m6	140	20	74.5	M20	240	22	450	180	165	340	59.1	455	

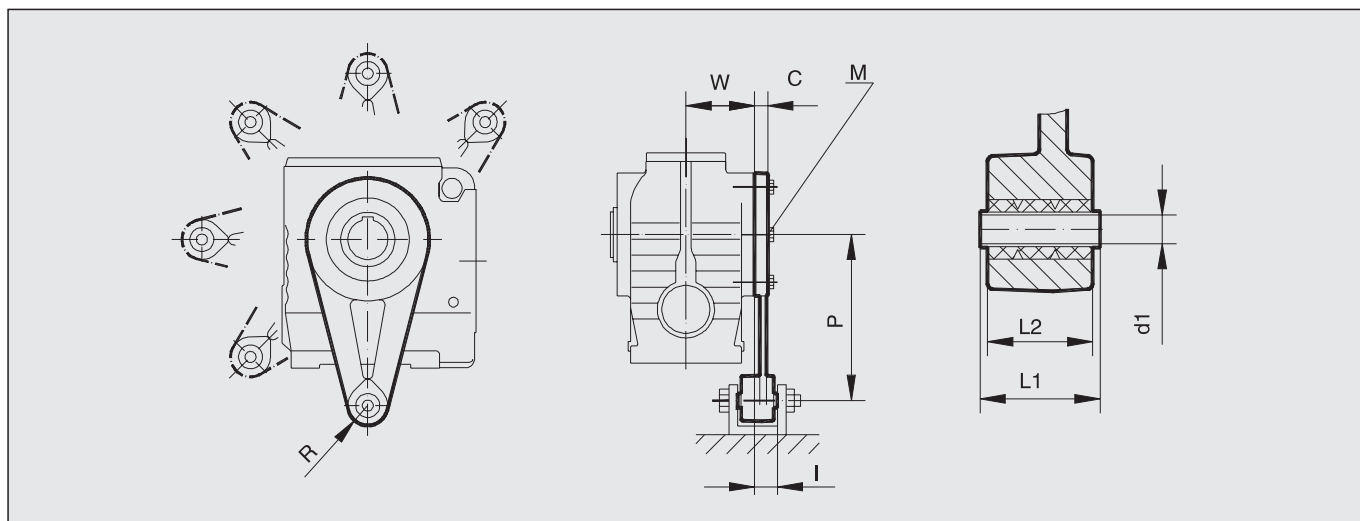
# ES SERIES REDUCTOR



Type	Installation dimensions						Shaft dimensions						Overall dimensions								
	H0	D1	D3	R	Fig	do	l	d	b	c	L3	L4	M1	h1 H	W1 W	q L	C1	D	D2	L2	
ESAF37	82	100	80j6	3	1	6.6	15	20H7	6	22.8	104	8	M6x16-8.8	4.1	62.5	63	8	120	35		
		130	110j6	3.5		9								131	60	80	10	160			
ESAF47	100	130	110j6	3.5	1	9	24	25H7	8	28.3	105	17	M10x25-8.8	9.0	63	75	10	160	45		
								30H7	8	33.3	105	17	M10x25-8.8	179	60	96					
ESAF57	112	165	130j6	3.5	1	11	25	30H7	8	33.3	132	17	M10x25-8.8	21.0	78	80	12	200	50		
								35H7	10	38.3	132	22	M12x30-8.8	189	75	107					
ESAF67	140	165	130j6	3.5	1	11	42.5	40H7	12	43.3	144	29	M16x40-8.8	26.3	87	107	12	200	65		
								45H7	14	48.8	144	29	M16x40-8.8	238	84	143					
ESAF77	180	215	180j6	4	1	13.5	45.5	50H7	14	53.8	183	32	M16x45-8.8	40.4	108	125	15	250	80		
								60H7	18	64.4	180	37	M20x50-8.8	301	105	162					
ESAF87	225	300	250h6	5	1	17.5	52.5	60H7	18	64.4	220	36	M20x50-8.8	39.6	128	150	18	350	95		
								70H7	20	74.9	220	34	M20x50-8.8	368	125	190					
ESAF97	280	400	350h6	5	2	17.5	60	70H7	20	74.9	260	34	M20x50-8.8	59.1	149	180	22	450	120		
								90H7	25	95.4	255	41	M24x60-8.8	455	145	240					

page 204

# ES SERIES REDUCTOR



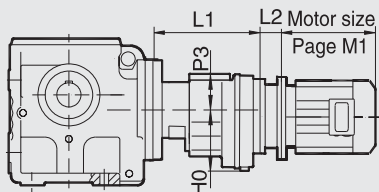
Type	C	d1	I	L1	L2	M	P	R	W
<b>ESAT37</b>	10	10.4 ± 0.1	26	36	31	M6x16-8.8	110	21	57
<b>ESAT47</b>	15	10.4 ± 0.1	20.5	36	31	M8x25-8.8	130	21	57.5
<b>ESAT57</b>	15	10.4 ± 0.1	18.5	36	31	M8x25-8.8	160	21	72
<b>ESAT67</b>	18	10.4 ± 0.1	19.5	36	31	M12x35-8.8	200	21	80.5
<b>ESAT77</b>	18	16.4 ± 0.08	32.5	60	54	M12x35-8.8	250	30	101
<b>ESAT87</b>	24	16.4 ± 0.08	25.5	60	54	M16x45-8.8	310	30	120
<b>ESAT97</b>	26	25 ± 0.08	33	80	72	M16x60-8.8	380	40	140

Note: The other size refers to page 234

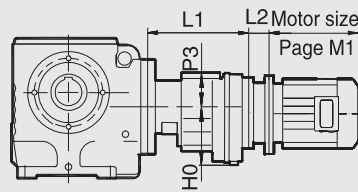


# ES SERIES REDUCTOR

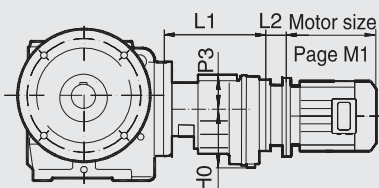
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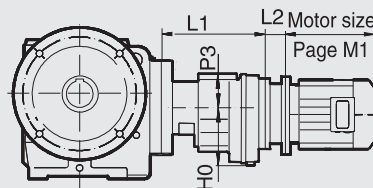
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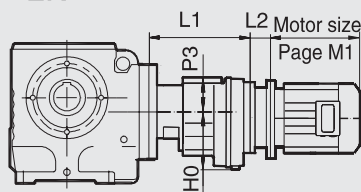
Model ESF..ER..



Model ESAF..ER..



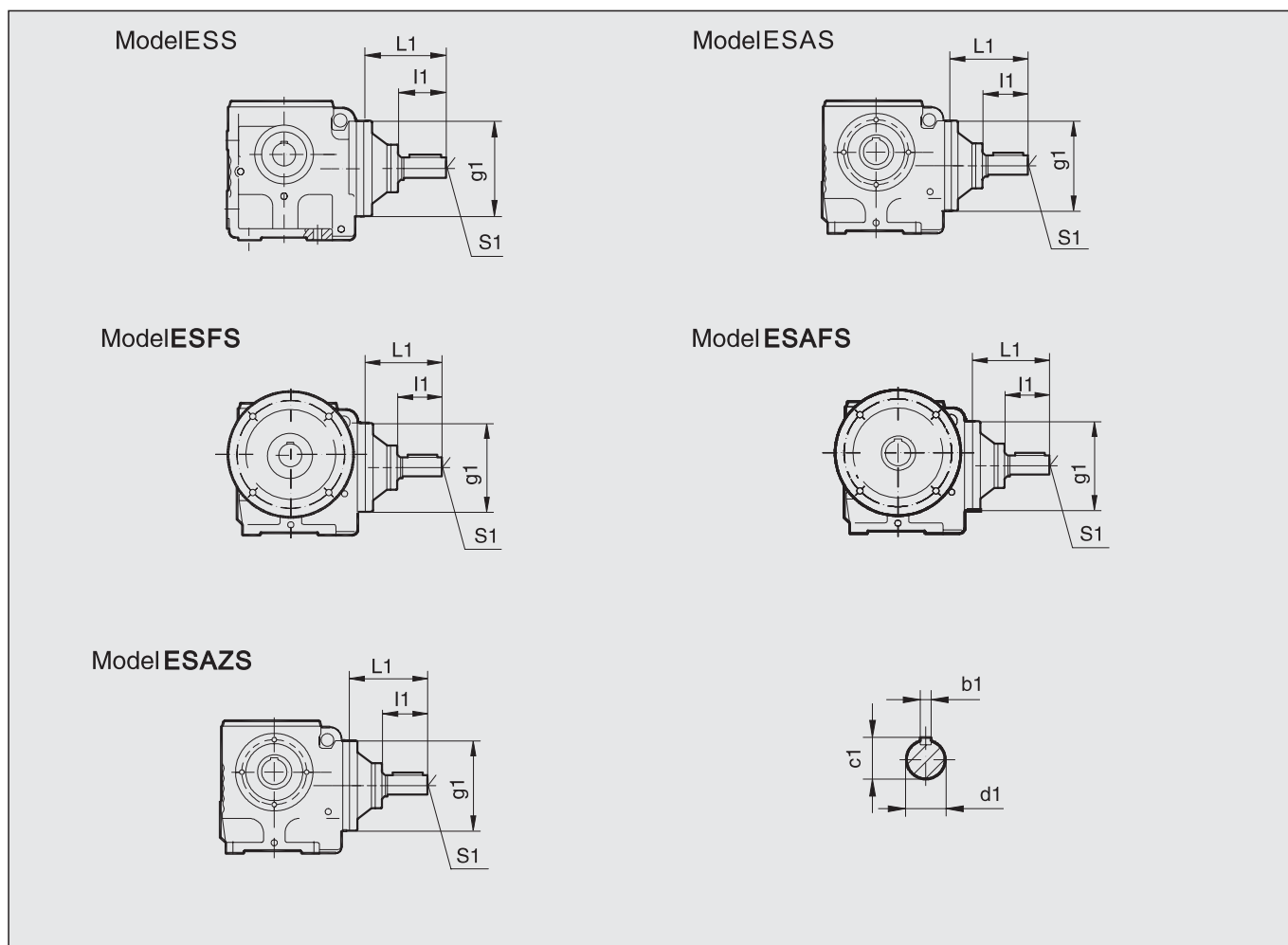
Model ESAZ..ER..



Type	L1	P3	H0	L2
ES..37ER17	145.5	59	76	page 5
ES..47ER17	145.5	59	76	
ES..57ER17	145.5	59	76	
ES..67ER37	150.5	61	94	
ES..77ER37	150.5	61	94	
ES..87ER57	189	72	121	
ES..97ER57	190	72	121	

Note: The other size refers to page 233–238

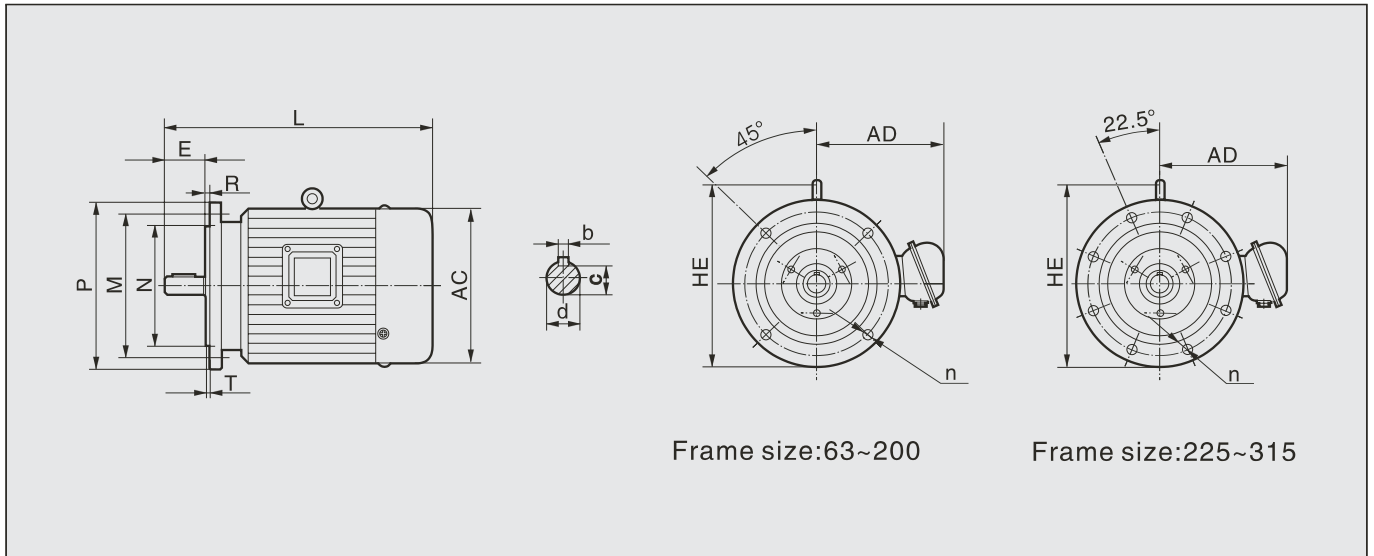
# ES SERIES REDUCTOR



Type	d1	L1	l1	S1	b1	c1	g1
ES..S37	16k6	115	40	M5	18	5	120
ES..S47	19k6	120	40	M6	21.5	6	160
ES..S57	19k6	120	40	M6	21.5	6	160
ES..S67	19k6	120	40	M6	21.5	6	160
ES..S77	24k6	140	50	M8	27	8	200
ES..S87	28k6	180	60	M10	31	8	250
..S97	38k6	220	80	M12	41	10	300

Note: The other size refers to page 233–238

# MOTORS



Frame size:63~200

Frame size:225~315

Dimension sheets for Y series three-phase induction motors

Frame size	dimensions (mm)														4P motors							
	M	N	P	R	n	T	d		E		b		c		AC	AD	L		HE	power kw	weight kg	Mass moments of inertia kgm <sup>2</sup>
							2P	4P 6P 8P	2P	4P 6P 8P	2P	4P 6P 8P	2P	4P 6P 8P			2P	4P 6P 8P				
63	115	95j6	140	0	4 × Ø10	3	11j6		23		4		8.5		130	70	230	130	0.18	7.7	0.00048	
71	130	110j6	160	0	4 × Ø10	3.5	14j6		30		5		11		145	80	255		145	0.25	11	0.00053
																				0.37	11	0.00066
80	165	130j6	200	0	4 × Ø12	3.5	19j6		40		6		15.5		175	145	295		185	0.55	16	0.00145
																				0.75	17	0.00174
90S	165	130j6	200	0	4 × Ø12	3.5	24j6		50		8		20		195	155	320	195	1.1	21	0.00254	
90L	165	130j6	200	0	4 × Ø12	3.5	24j6		50		8		20		195	155	345	195	1.5	25	0.00317	
100L	215	180j6	250	0	4 × Ø15	4	28j6		60		8		24		215	180	385		245	2.2	32	0.00679
																				3	36	0.00862
112M	215	180j6	250	0	4 × Ø15	4	28j6		60		8		24		240	190	400	265	4	45	0.01306	
132S	265	230j6	300	0	4 × Ø15	4	38k6		80		10		33		275	210	470	315	5.5	60	0.02673	
132M	265	230j6	300	0	4 × Ø15	4	38k6		80		10		33		275	210	510	315	7.5	73	0.03432	
160M	300	250j6	350	0	4 × Ø19	5	42k6		110		12		37		330	255	615	385	11	116	0.06543	
160L	300	250j6	350	0	4 × Ø19	5	42k6		110		12		37		330	255	670	385	15	137	0.09349	
180M	300	250j6	350	0	4 × Ø19	5	48k6		110		14		42.5		380	280	700	430	18.5	170	0.16049	
180L	300	250j6	350	0	4 × Ø19	5	48k6		110		14		42.5		380	280	740	430	22	186	0.18046	
200L	350	300j6	400	0	4 × Ø19	5	55m6		110		16		49		420	305	770	480	30	254	0.2819	
225S	400	350j6	450	0	8 × Ø19	5	-	60m6	-	140	-	18	-	53	470	335	-	815	535	37	308	0.37
225M	400	350j6	450	0	8 × Ø19	5	55m6	60m6	110	140	18	18	49	53	470	335	820	845	535	45	335	0.42
250M ★	500	450j6	550	0	8 × Ø19	5	60m6	65m6	140	140	18	18	53	58	510	370	910	595	55	450	0.78	
280S ★	500	450j6	550	0	8 × Ø19	5	65m6	75m6	140	140	18	20	58	67.5	580	410	985	650	75	534	1.10	
280M ★	500	450j6	550	0	8 × Ø19	5	65m6	75m6	140	140	18	20	58	67.5	580	410	1035	650	90	592	1.35	
315S ★	600	550j6	660	0	8 × Ø24	6	65m6	80m6	140	170	18	22	58	71	645	530	1160	1270	845	110	930	2.8596
315M ★	600	550j6	660	0	8 × Ø24	6	65m6	80m6	140	170	18	22	58	71	645	530	1190	1300	845	132	1030	3.1848
315L ★	600	550j6	660	0	8 × Ø24	6	65m6	80m6	140	170	18	22	58	71	645	530	1190	1300	845	160	1050	3.6765