

SINGLE-PHASE INDUCTION ELECTRIC MOTORS

Series ES - single-phase motors with starting capacitor sizes 80 and 90.

Series ER - single-phase motors with running capacitor sizes 56, 63, 71, 80 and 90.

Series ESR - single-phase motors with starting and running capacitors sizes 80, 90 and 100.

Series ERR - single-phase motors with running capacitor and high starting torque sizes 80 and 90.

The single-phase induction electric motors with squirrel cage rotor series *ES*, *ER*, *ERR* and *ESR* have external self-ventilation by own fan and are designed for universal application.

DESIGN

The longitudinally ribbed frames of the motors are made of : aluminium alloy for electric motors sizes 56, 63, 71 and 80; aluminium alloy or cast iron for electric motors size 80, 90 and 100.

The bearing shields are made of: aluminium alloy for electric motors sizes 56, 63 and 71; aluminium alloy or cast iron for electric motors sizes 80, 90 and 100.

The rotor axial clearance is compensated by a spacing ring fixed in the rear bearing seat.

The fan cover is made of sheet steel.

The fan is made of plastics.

The stator winding is made of enamelled copper wire.

The terminal box of the foot-mounted motors (execution IM B3) is located on top.

SUPPLY VOLTAGE AND FREQUENCY

The supply voltage of the electric motors is 230V at frequency of 50Hz.

The electric motors can also be designed for other rated voltages at frequency of 50 or 60Hz on request.

Supply voltages deviation should not exceed its rated value by more than $\pm 5\%$. Frequency deviation should not exceed its rated value by more than $\pm 2\%$ (zone A) as per EN 60034-1.

PROTECTION

The degree of protection of the motors is IP 54 or IP 55 as per EN 60034-5.

INSULATION CLASS

Insulation class - F as per EN 60034-1.

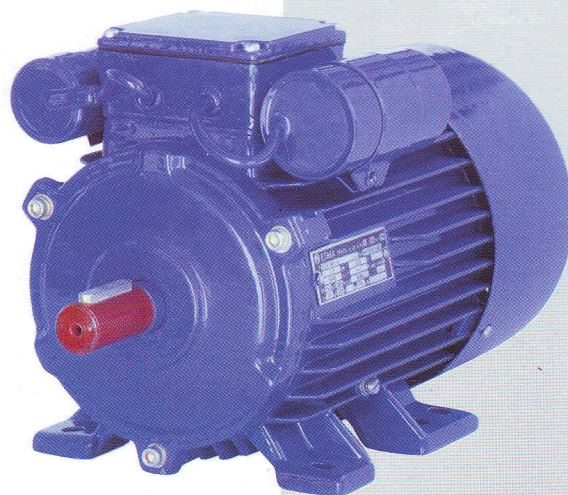
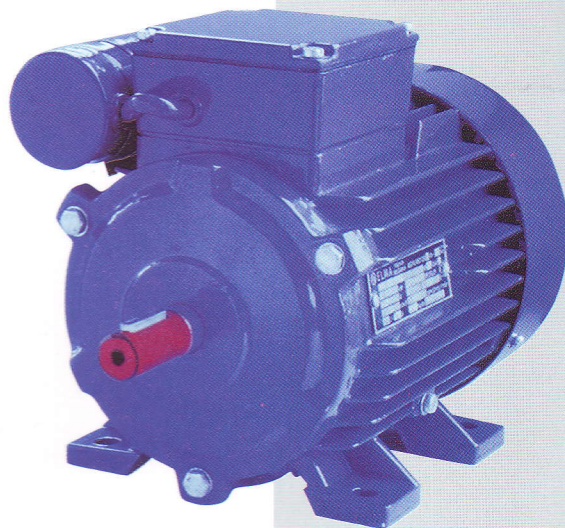
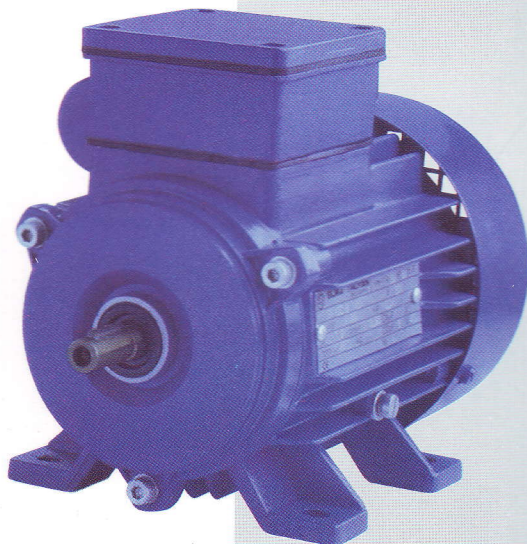
OPERATING CONDITIONS

The electric motors are designed for continuous operation at duty cycles (S1) in the conditions of *Moderate climatic area* as per DIN IEC 721-2-1, at temperatures from -10°C up to $+40^{\circ}\text{C}$ for series *ES* and *ESR*, from -25°C up to $+40^{\circ}\text{C}$ for series *ER* and *ERR*. Altitude up to 1000 m, and humidity up to 85%.

The electric motor output is reduced when operating under conditions different than the specified above.

The electric motors can operate at duties (different from S1) on request.

The electric motors can be executed for operation in a *Worldwide tropical climatic area*.



SERIES ES
TECHNICAL DATA 230V, 50Hz

Rated Output		Type	Parameters at Rated Output				Starting characteristics			Capacitors - Capacitance at Voltage	Torque of Inertia	Weight	
			Rotation speed	Current	Efficiency	Power Factor				Starting		Cast Iron	Al alloy
							Current	Torque					
P ₂		Indication	n	I _R	η	cosφ	I _s /I _R	M _s /M _R	M _{MAX} /M _R	AB1,7%ED	J	m	
kW	HP	-	rpm	A	%	-	-	-	-	μF / V	kg.m ²	kg	

3000 rpm

0,37 0,50	ES80A-2	2880	4,0	55	0,73	4,5	1,6	2,2	55/280	0,00096	-	8,4
0,55 0,75	ES80B-2	2890	5,2	60	0,77	4,3	1,7	1,9	70/280	0,00100	-	9,6
0,75 1,00	ES90S-2	2900	6,3	67	0,77	5,0	2,1	2,0	90/280	0,00154	17,4	12,8
1,10 1,50	ES90L-2	2910	8,9	70	0,77	5,5	2,0	2,0	140/280	0,00202	21,0	17,3

1500 rpm

0,25 0,34	ES80A-4	1420	3,0	53	0,69	3,5	2,0	1,6	55/280	0,00128	-	8,5
0,37 0,50	ES80B-4	1420	4,3	55	0,68	3,6	1,7	1,7	70/280	0,00153	-	9,6
0,55 0,75	ES90S-4	1430	5,5	61	0,72	4,2	2,0	1,7	100/280	0,00222	17,0	11,8
0,75 1,10	ES90L-4	1420	7,4	63	0,70	4,6	2,2	1,8	140/280	0,00290	21,0	17,3

SERIES ESR
TECHNICAL DATA 230V, 50Hz

Rated Output		Type	Parameters at Rated Output				Starting characteristics			Capacitors - Capacitance at Voltage		Torque of Inertia	Weight	
			Rotation speed	Current	Efficiency	Power Factor				Starting	Running		Cast Iron	Al alloy
							Current	Moment						
P ₂		Indication	n	I _R	η	cosφ	I _s /I _R	M _s /M _R	M _{MAX} /M _R	AB1,7%ED	DB	J	m	
kW	HP	-	rpm	A	%	-	-	-	-	μF / V		kg.m ²	kg	

3000 rpm

0,75 1,0	ESR80B-2	2890	4,4	78	0,95	5,3	1,9	2,1	70/280	20/400	0,00100	-	11,1
1,10 1,5	ESR80C-2	2860	6,9	72	0,97	4,6	1,7	1,9	90/280	30/400	0,00110	-	12,0
1,50 2,0	ESR90S-2	2880	9,3	76	0,91	5,3	1,9	2,1	140/280	35/400	0,00163	24,0	15,7
2,20 3,0	ESR90L-2	2870	13,8	76	0,91	5,0	1,7	2,0	140/280	45/400	0,00255	26,0	17,7

1500 rpm

0,55 0,75	ESR80B-4	1420	4,0	66	0,90	3,8	1,6	1,7	45/280	16/400	0,00153	-	9,8
0,75 1,00	ESR80C-4	1410	5,5	66	0,91	3,8	1,6	1,6	55/280	20/400	0,00167	-	10,7
1,10 1,50	ESR90S-4	1420	7,6	71	0,89	4,8	1,9	1,7	140/280	25/400	0,00290	24,2	15,5
1,50 2,00	ESR90L-4	1410	9,5	74	0,93	4,7	1,7	1,7	140/280	30/400	0,00358	26,2	17,4
2,20 3,00	ESR100LB-4	1440	14,3	73	0,92	4,5	1,4	1,8	140/280	45/450	0,00655	30,0	22,0

SERIES ER, ERR
TECHNICAL DATA 230V, 50Hz

Rated Output	Type	Parameters at Rated Output				Starting characteristics			Capacitors - Capacitance at Voltage	Torque of Inertia	Weight	
		Rotation speed	Current	Efficiency	Power Factor				Running		Cast Iron	Al alloy
						Current	Torque					
P ₂	Indication	n	I _R	η	cosφ	I _s /I _R	M _s /M _R	M _{MAX} /M _R	DB	J	m	
kW HP	-	rpm	A	%	-	-	-	-	μF / V	kg.m ²	kg	

3000 min⁻¹

0,09 0,12	ER56B-2	2870	0,76	55	0,93	4,0	0,56	2,3	4/400	0,000095	-	2,8
0,12 0,16	ER56C-2	2870	0,94	62	0,90	4,2	0,48	2,4	4/400	0,000111	-	3,1
0,18 0,25	ER63B-2	2780	1,43	60	0,91	2,9	0,46	1,7	6/400	0,000188	-	3,7
0,25 0,34	ER63C-2	2800	1,90	60	0,95	2,9	0,40	1,7	8/400	0,000244	-	4,1
0,37 0,50	ER71B-2	2840	2,70	67	0,90	3,4	0,40	2,0	10/450	0,000352	-	5,7
0,55 0,75	ER71C-2	2820	3,92	68	0,90	3,4	0,32	1,9	12/450	0,000404	-	6,2
0,75 1,00	ER80B-2	2890	4,40	78	0,95	4,5	0,35	2,1	20/400	0,000960	-	9,3
1,10 1,50	ER80C-2	2860	6,90	72	0,97	4,3	0,34	1,9	30/400	0,001000	-	10,6
1,50 2,00	ER90S-2	2880	9,30	76	0,92	5,0	0,30	2,1	35/400	0,001820	20,5	15,2
2,20 3,00	ER90L-2	2870	13,80	76	0,91	4,8	0,30	2,0	45/400	0,002220	22,6	17,3

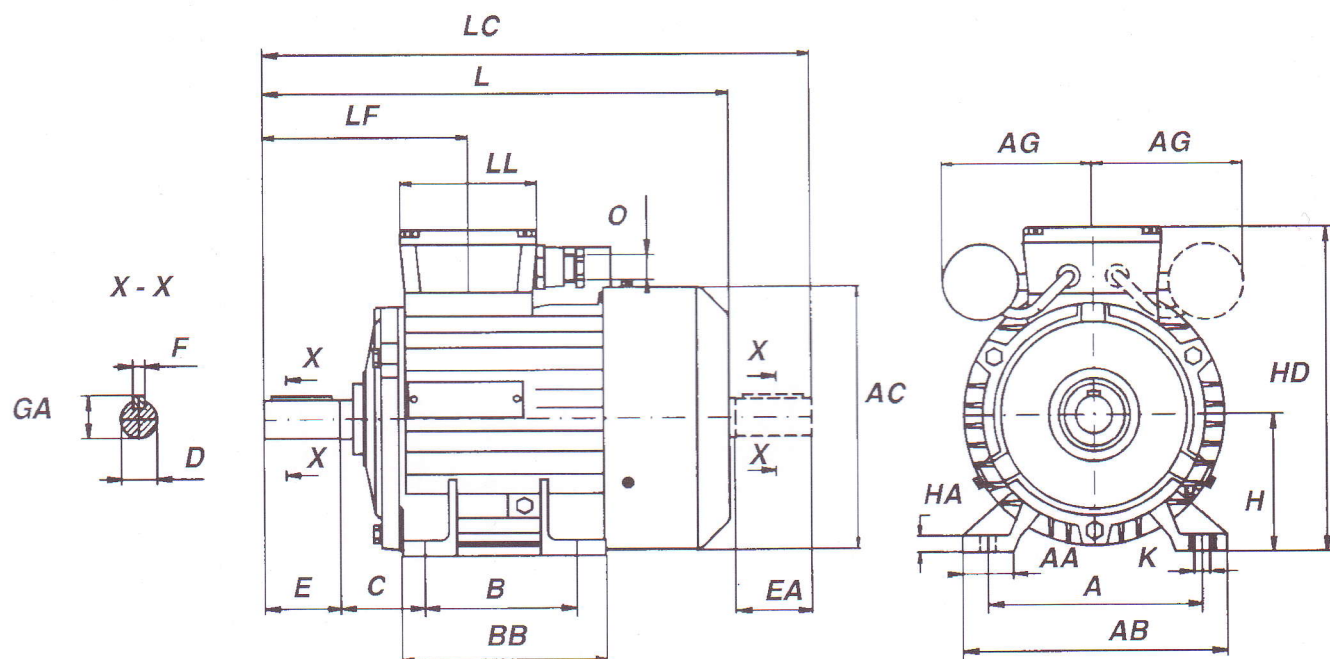
0,75 1,0	ERR80B-2	2850	5,1	73	0,95	4,3	0,60	2,4	30/400	0,001000	-	9,8
1,10 1,5	ERR80C-2	2830	7,0	74	0,94	4,0	0,60	2,1	40/400	0,001010	-	10,6
1,50 2,0	ERR90S-2	2810	9,7	72	0,94	4,2	0,65	2,3	50/400	0,001720	-	16,5
2,20 3,0	ERR90L-2	2800	13,9	73	0,94	3,9	0,60	2,1	60/400	0,002750	-	19,5

1500 rpm

0,06 0,08	ER56B-4	1430	0,63	47	0,89	2,9	0,75	2,1	3/400	0,000199	-	3,0
0,09 0,12	ER56C-4	1410	0,83	52	0,90	2,9	0,60	1,9	4/400	0,000237	-	3,2
0,12 0,16	ER63B-4	1380	1,20	52	0,86	2,3	0,65	1,7	6/400	0,000155	-	4,0
0,18 0,25	ER63C-4	1350	1,48	57	0,93	2,1	0,60	1,4	8/400	0,000221	-	4,3
0,25 0,34	ER71B-4	1400	1,90	63	0,90	3,0	0,55	1,7	10/450	0,000720	-	6,2
0,37 0,50	ER71C-4	1410	3,00	64	0,84	3,1	0,50	1,8	12/450	0,000930	-	7,1
0,55 0,75	ER80B-4	1420	4,00	66	0,90	3,5	0,37	1,7	16/400	0,001530	-	9,3
0,75 1,00	ER80C-4	1410	5,50	66	0,91	3,5	0,33	1,6	20/400	0,001670	-	9,9
1,10 1,50	ER90S-4	1420	7,60	71	0,89	3,8	0,32	1,7	25/400	0,002780	20,0	14,7
1,50 2,00	ER90L-4	1410	9,50	74	0,93	3,8	0,30	1,7	30/400	0,003430	21,8	16,5

0,55 0,75	ERR80B-4	1400	4,5	60	0,91	3,0	0,65	1,7	25/400	0,001530	-	9,3
0,75 1,00	ERR80C-4	1410	5,4	66	0,92	3,4	0,60	1,7	30/400	0,001670	-	10,7
1,10 1,50	ERR90S-4	1400	7,5	69	0,94	3,8	0,65	2,0	40/400	0,002600	-	15,0
1,50 2,00	ERR90L-4	1390	9,4	72	0,96	3,8	0,60	2,0	50/400	0,003470	-	17,6

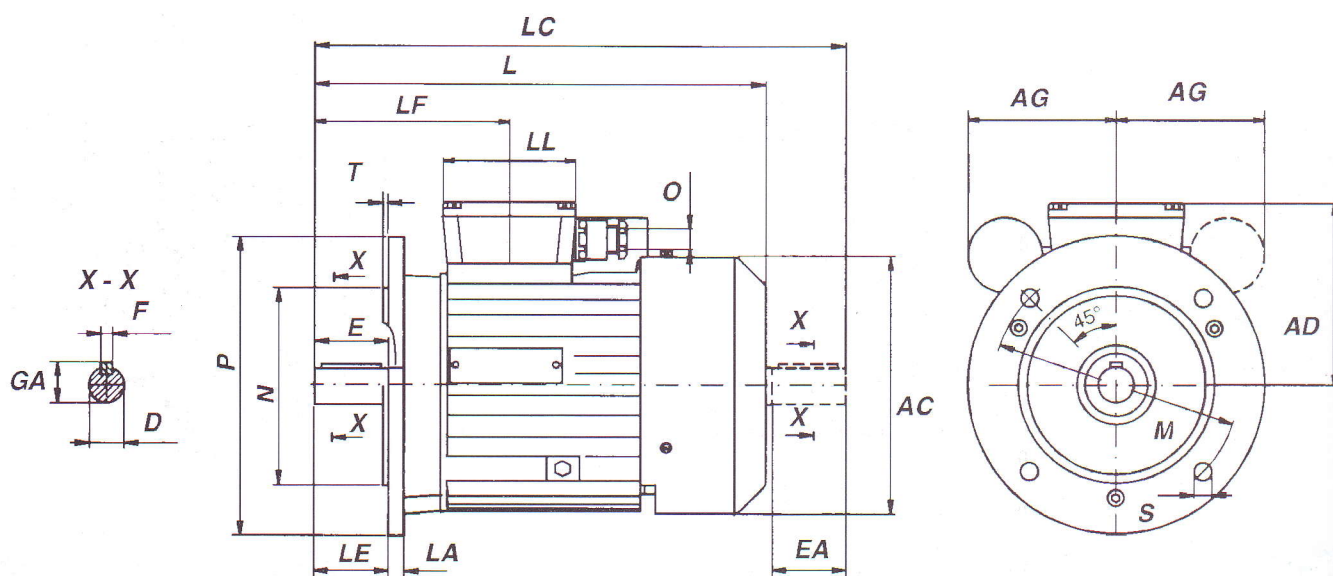
OVERALL AND ASSEMBLY DIMENSIONS



TYPE OF EXECUTION IM B3

Type		Dimensions, mm																	Shaft			
	IEC	B	A	HA	BB	AB	AC	H	L	LC	AA	HD	AG	LF	K	O	C	LL	D	E,EA	GA	F
	DIN	a	b	c	e	f	g	h	k	k ₁	n	p	r	q	s	s ₂	w	x ₁	d	l,l ₁	t	u
ER56		71	90	6	87	106	110	56	191	217	22	145	82	82	5.8	Pg11	36	75	9	20	10.2	3
ER63		80	100	7	98	120	122	63	216	244	24	151	84	86	7	Pg11	40	75	11	23	12.5	4
ER71		90	112	7	110	135	140	71	244	278	30	167	84	97	7	Pg11	45	75	14	30	16	5
ER,ERR80		100	125	10	140	160	157	80	282	332	35	204	115	121	10	Pg16	50	90	19	40	21.5	6
ES,ESR80		100	125	10	140	160	157	80	315	364	35	204	115	121	10	Pg16	50	90	19	40	21.5	6
ES90S		100	140	11	134	176	174	90	332	390	34	222	115	132	10	Pg16	56	90	24	50	27	8
ER,ERR90S-2,4		100	140	11	174	176	174	90	342	407	34	222	115	132	10	Pg16	56	90	24	50	27	8
ER90L-2, ERR90L-4		125	140	11	174	176	174	90	342	407	34	222	115	132	10	Pg16	56	90	24	50	27	8
ERR,ESR90S		100	140	11	174	176	174	90	372	430	34	222	115	132	10	Pg16	56	90	24	50	27	8
ES90L, ESR, ERR - 90L		125	140	11	174	174	174	90	372	430	34	222	115	132	10	Pg16	56	90	24	50	27	8
ESR100		140	160	12	187	200	192	100	395	-	40	240	115	142	12	Pg16	63	90	28	60	31	8

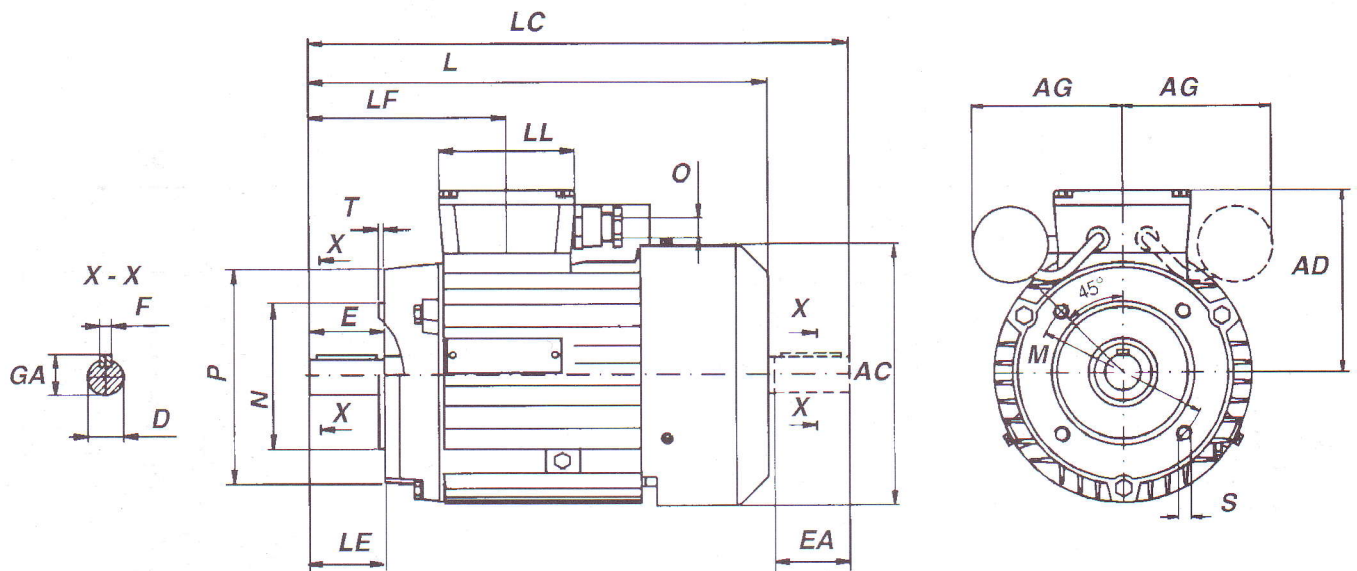
OVERALL AND ASSEMBLY DIMENSIONS



TYPE OF EXECUTION IM B5

Type		Dimensions, mm														Shaft			
	IEC	P	N	LA	M	T	AC	AD	L	LC	AG	LF	S	O	LL	D	E,EA	GA	F
	DIN	a ₁	b ₁	c ₁	e ₁	f ₁	g ₁	g ₂	k	k ₁	r	q	s ₂	s ₃	x ₁	d	l, l ₁	t	u
ER56		120	80	8	100	3	110	89	191	217	82	82	7	Pg11	75	9	20	10.2	3
ER63		140	95	10	115	3	122	88	216	244	84	86	10	Pg11	75	11	23	12.5	4
ER71		160	110	8	130	3.5	140	96	244	278	84	97	10	Pg11	75	14	30	16	5
ER,ERR80		200	130	10	165	3.5	157	124	282	332	115	121	12	Pg16	90	19	40	21.5	6
ES,ESR80		200	130	10	165	3.5	157	124	315	364	115	121	12	Pg16	90	19	40	21.5	6
ES90S		200	130	10	165	3.5	176	132	332	390	115	132	12	Pg16	90	24	50	27	8
ERR,ESR90S		200	130	10	165	3.5	176	132	372	430	115	132	12	Pg16	90	24	50	27	8
ES,ERR,ESR90L		200	130	10	165	3.5	176	132	372	430	115	132	12	Pg16	90	24	50	27	8
ESR100		250	180	12	215	4	192	140	395	-	115	142	15	Pg16	90	28	60	31	8

OVERALL AND ASSEMBLY DIMENSIONS



TYPE OF EXECUTION IM B14

Type		Dimensions, mm														Shaft			
	IEC		P	N	M	T	AC	AD	L	LC	AG	LF	S	O	LL	D	E,EA	GA	F
	DIN		a ₁	b ₁	e ₁	f ₁	g ₁	g ₂	k	k ₁	r	q	s ₂	s ₃	x ₁	d	I,I ₁	t	u
ER56		F65	79	50	65	2.5	110	89	191	217	82	82	M5	Pg11	75	9	20	10.2	3
		F65	105	70	85	2.5	110	89	191	217	82	82	M6	Pg11	75	9	20	10.2	3
ER63		F75	90	60	75	2.5	122	88	216	244	84	86	M5	Pg11	75	11	23	12.5	4
		F100	120	80	100	3	122	88	216	244	84	86	M6	Pg11	75	11	23	12.5	4
ER71		F85	105	70	85	2.5	140	96	244	278	84	97	M6	Pg11	75	14	30	16	5
		F115	140	95	115	3	140	96	244	278	84	97	M8	Pg11	75	14	30	16	5
ER,ERR80		F100	120	80	100	3	157	124	282	332	115	121	M6	Pg16	90	19	40	21.5	6
		F130	160	110	130	3.5	157	124	282	332	115	121	M8	Pg16	90	19	40	21.5	6
ES,ESR80		F100	120	80	100	3	157	124	282	332	115	121	M6	Pg16	90	19	40	21.5	6
		F130	160	110	130	3.5	157	124	282	332	115	121	M8	Pg16	90	19	40	21.5	6
ES90S		F115	140	95	115	3	176	132	332	390	115	132	M8	Pg16	90	24	50	27	8
		F130	160	110	130	3.5	176	132	332	390	115	132	M8	Pg16	90	24	50	27	8
ERR,ESR90S		F115	140	95	115	3	176	132	372	430	115	132	M8	Pg16	90	24	50	27	8
		F130	160	110	130	3.5	176	132	372	430	115	132	M8	Pg16	90	24	50	27	8
ES,ERR,ESR90L		F115	140	95	115	3	174	132	372	430	115	132	M8	Pg16	90	24	50	27	8
		F130	160	110	130	3.5	174	132	372	430	115	132	M8	Pg16	90	24	50	27	8
ESR100		F130	160	110	130	3.5	192	140	395	-	115	142	M8	Pg16	90	28	60	31	8
		F165	200	130	165	3.5	192	140	395	-	115	142	M10	Pg16	90	28	60	31	8