

ALTERNATORS

LSA 37 - 4 Pole - Three phase

Electrical and mechanical data

TYPICAL DATA

Insulation class	H	Excitation system	Shunt
Winding pitch - Code	1 - (N° 1)	A.V.R. model	R 230
Wires	12	Voltage regulation (steady state)	± 0,5 %
Drip proof	IP 23	Sustained short-circuit current	-
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 3 %
Overspeed	2250 min⁻¹	Wave form : NEMA = TIF - (*)	< 50
Air flow	0,04 m³/s	Wave form : I.E.C. = THF - (*)	< 2 %

(*) Total harmonic content line to line, at no load or full rated linear and balanced load

RATINGS : kVA / kW - Power factor = 0,8

Duty/Ambiant T°	Continuous / 40°C								Stand-by / 40°C				Stand-by / 27°C			
	H / 125° K				F / 105° K				H / 150° K				H / 163° K			
Class/T° rise	3 ph.		1 ph.		3 ph.		1 ph.		3 ph.		1 ph.		3 ph.		1 ph.	
Y	380V	400V	415V	Δ Δ	380V	400V	415V	Δ Δ	380V	400V	415V	Δ Δ	380V	400V	415V	Δ Δ
Δ	220V	230V	240V	230V	220V	230V	240V	230V	220V	230V	240V	230V	220V	230V	240V	230V
37 M5	kVA	7,5	4,5		7	4			8	5			8,5	5,5		
	kW	6	3,6		5,6	3,2			6,4	4			6,8	4,4		
37 M6	kVA	9	5,5		8	5			9,5	6			10	6		
	kW	7,2	4,4		6,4	4			7,6	4,8			8	4,8		
37 M7	kVA	13	8		12	7,5			14	8,5			14,5	9		
	kW	10,4	6,4		9,6	6			11,2	6,8			11,6	7,2		
37 VL8	kVA	17	10		15,5	9,5			18	11			19	11,5		
	kW	13,6	8		12,4	7,6			14,4	8,8			15,2	9,2		

EFFICIENCIES (%) : Class H . 40° C

	Three phase : 400 V										Single phase : 230 V									
	P.F. = 0,8					P.F. = 1					P.F. = 0,8					P.F. = 1				
	1/4	2/4	3/4	4/4	St.by	1/4	2/4	3/4	4/4	St.by	1/4	2/4	3/4	4/4	St.by	1/4	2/4	3/4	4/4	St.by
37 M5	75,5	82	83,3	83,2	82,8	78,1	85,9	88,2	89	88,9	65,1	74,6	77,1	77,7	77,2	67,2	78,3	82	83,7	83,7
37 M6	77,2	82,7	83,3	82,7	82	80	86,8	88,6	89	88,8	68,8	76,3	77,5	76,9	76,1	75	82,3	83,7	83,6	83,1
37 M7	81,8	86	86,3	85,5	85	84,2	89,5	90,6	90,7	90,5	74,7	80,7	81,3	80,5	79,9	80	85,6	86,4	85,8	85,3
37 VL8	85,1	88,6	88,7	87,9	87,5	87	91,3	92,1	92	91,8	78,7	84	84,4	83,6	83,1	83,2	87,9	88,4	87,8	87,3

REACTANCES (%) - TIME CONSTANTS (ms) : CLASS : H / 400 V

		37 M5	37 M6	37 M7	37 VL8
Kcc	Short-circuit ratio	1	0,87	0,71	0,58
Xd	Direct axis synchronous reactance unsaturated	140	160	183	198
Xq	Quadrature axis synchronous reactance unsaturated	70	80	90	100
T'do	Open circuit time constant	522	522	565	602
X'd	Direct axis transient reactance saturated	9,9	11,3	12	12,2
T'd	Short circuit transient time constant	40	40	40	40
X''d	Direct axis subtransient reactance saturated	4,9	5,7	6	6,1
T''d	Subtransient time constant	3,7	3,7	3,7	3,7
X''q	Quadrature axis subtransient reactance saturated	8,5	9,8	10,6	10,9
Xo	Zero sequence reactance unsaturated	9,9	11,3	12	12,2
X2	Negative sequence reactance saturated	6,7	7,7	8,3	8,5
Ta	Armature time constant	6	6	6	6

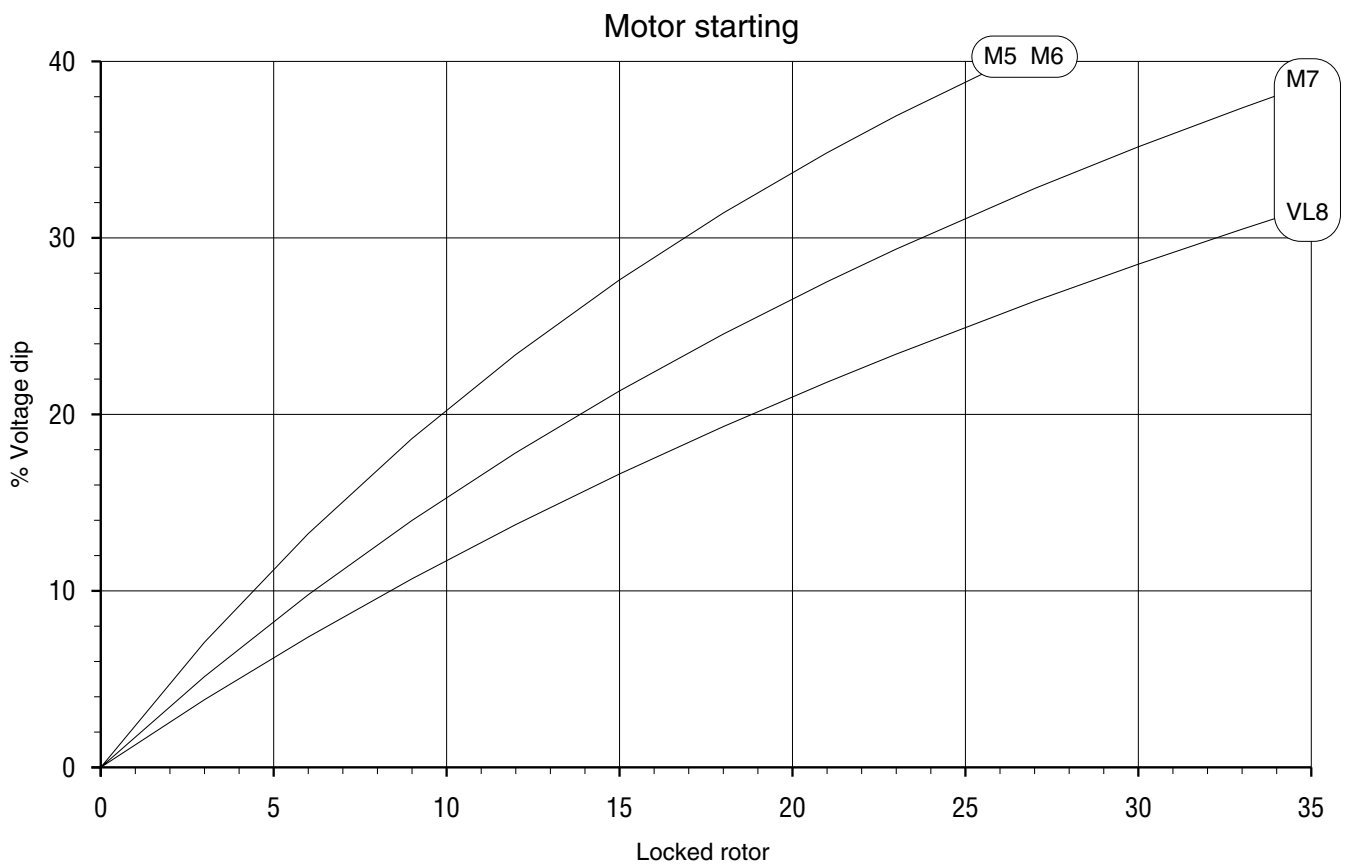
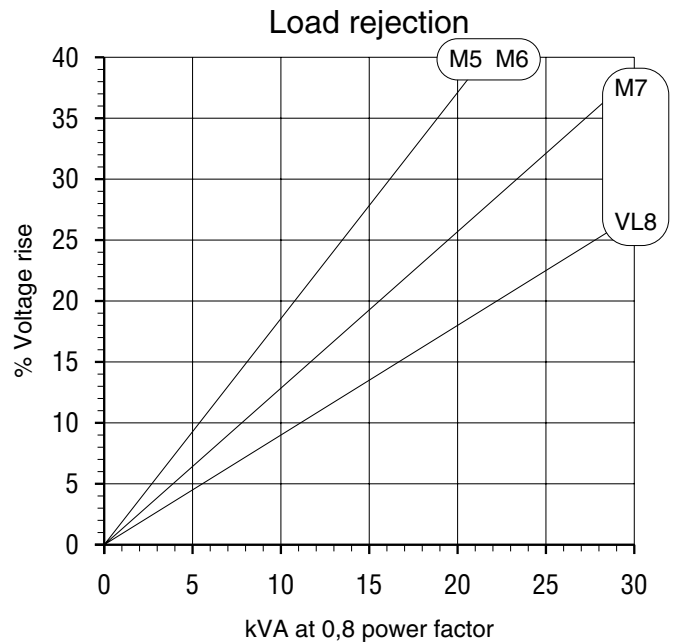
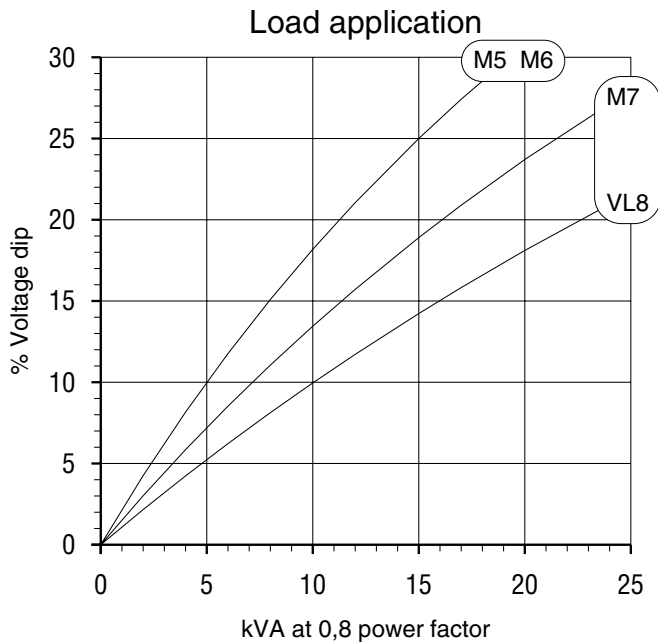
OTHER DATA - CLASS : H / 400 V -

		37 M5	37 M6	37 M7	37 VL8
io	No load excitation current (A)	0,87	0,88	0,79	0,64
ic	Full load excitation current (A)	2,03	2,3	2,3	2,05
uc	Full load excitation voltage (V)	40	45	45	40
ms	Recovery time(ΔU =20 % trans.)	< 300	< 300	< 300	< 300
kVA	Motor start. (ΔU = 20% sust.) or (ΔU = 50% Transient)	20	22	30	38
%	Transient dip (rated step load) - PF : 0,8 LAG	15,5	16,7	16,8	15,8
W	No load losses	380	384	426	438
W	Heat rejection	1128	1336	1624	1704

According to : I.E.C. 34.1/34.2 - U.T.E. : NF C 51.111 - V.D.E. 0530 - B.S. 4999 & 5000 - NEMA : MG 1.22 - ISO 8528 . 3 - CSA (C22.2+UL 2200)

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TRANSIENT VOLTAGE VARIATION - 400V



- 1) For a starting P.F. differing from 0,6 the starting kVA have to be multiplied by $(\text{Sine } \varnothing / 0,8)$
- 2) If voltage is not 400V(Y) , 230V(Δ) at 50 Hz then kVA must be multiplied by $(400/U)^2$ or $(230/U)^2$.

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TYPICAL DATA

Insulation class	H	Excitation system	Shunt
Winding pitch - Code	1 - (N° 1)	A.V.R. model	R 230
Wires	12	Voltage regulation (steady state)	± 0,5 %
Drip proof	IP 23	Sustained short-circuit current	-
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 3 %
Overspeed	2250 min⁻¹	Wave form : NEMA = TIF - (*)	< 50
Air flow	0,06 m³/s	Wave form : I.E.C. = THF - (*)	< 2 %

(*) Total harmonic content line to line, at no load or full rated linear and balanced load

RATINGS : kVA / kW - Power factor = 0,8

Duty/Ambiant T°	Continuous / 40°C										Stand-by / 40°C					Stand-by / 27°C					
	H / 125° K					F / 105° K					H / 150° K					H / 163° K					
	Phase	3 ph.			1 ph.	3 ph.			1 ph.	3 ph.			1 ph.	3 ph.			1 ph.				
Y	380V	416V	440V	480V	Δ Δ	380V	416V	440V	480V	Δ Δ	380V	416V	440V	480V	Δ Δ	380V	416V	440V	480V	Δ Δ	
Δ		240V			240V		240V			240V		240V			240V		240V			240V	
YY		208V	220V	240V			208V	220V	240V			208V	220V	240V			208V	220V	240V		
37 M5	kVA	8	9	9,5	10	5	7	8	8,5	9	4,5	9	9,5	10	11	5,5	9,5	10	11	12	6
	kW	6,5	7,2	7,6	8	4	5,5	6,4	6,8	7,2	3,6	7	7,6	8	8,8	4,4	7,5	8	8,8	9,6	4,8
37 M6	kVA	10	11	11,5	12,5	6	9	10	10,5	11	5,5	10,5	11,5	12	13	6,5	11	12	12,5	13,5	7
	kW	8	8,8	9,2	10	4,8	7	8	8,4	8,8	4,4	8,5	9,2	9,6	10,4	5,2	9	9,6	10	10,8	5,6
37 M7	kVA	14	15	16	17,5	9	12,5	14	14,5	15,5	8	15	16	17	18,5	9	15	16,5	17,5	19	9,5
	kW	11	12	12,8	14	7,2	10	11,2	11,6	12,4	6,4	12	12,8	13,6	14,8	7,2	12	13,2	14	15,2	7,6
37 VL8	kVA	16	18	19	21	11	15	16,5	17,5	19	10	18	19	20,5	22,5	11,5	18,5	20	21	23	12
	kW	13	14,4	15,2	16,8	8,8	12	13,2	14	15,2	8	14,5	15,2	16,4	18	9,2	15	16	16,8	18,4	9,6

EFFICIENCIES (%) : Class H . 40° C

	Three phase : 480 V										Single phase : 240 V									
	P.F. = 0,8					P.F. = 1					P.F. = 0,8					P.F. = 1				
	1/4	2/4	3/4	4/4	St.by	1/4	2/4	3/4	4/4	St.by	1/4	2/4	3/4	4/4	St.by	1/4	2/4	3/4	4/4	St.by
37 M5	75,7	82,8	84,3	84,5	84,1	77,9	86,1	88,6	89,5	89,5	70,3	79	81,1	81,3	81,1	71,9	81,8	84,9	85,9	86
37 M6	78,3	83,8	84,5	83,9	83,3	80,8	87,5	89,2	89,6	89,5	73,4	80,3	81,3	80,7	80,2	78,6	85	86	85,6	85,2
37 M7	82	86,6	87,2	86,6	86,2	84	89,6	91	91,1	91	77	82,8	83,4	82,6	82,1	81,7	86,9	87,5	86,8	86,4
37 VL8	84,5	88,8	89,3	88,9	88,6	86,1	91,1	92,2	92,4	92,3	78,7	84,4	85	84,3	83,8	83	88	88,6	88	81,6

REACTANCES (%) - TIME CONSTANTS (ms) : CLASS : H / 480 V

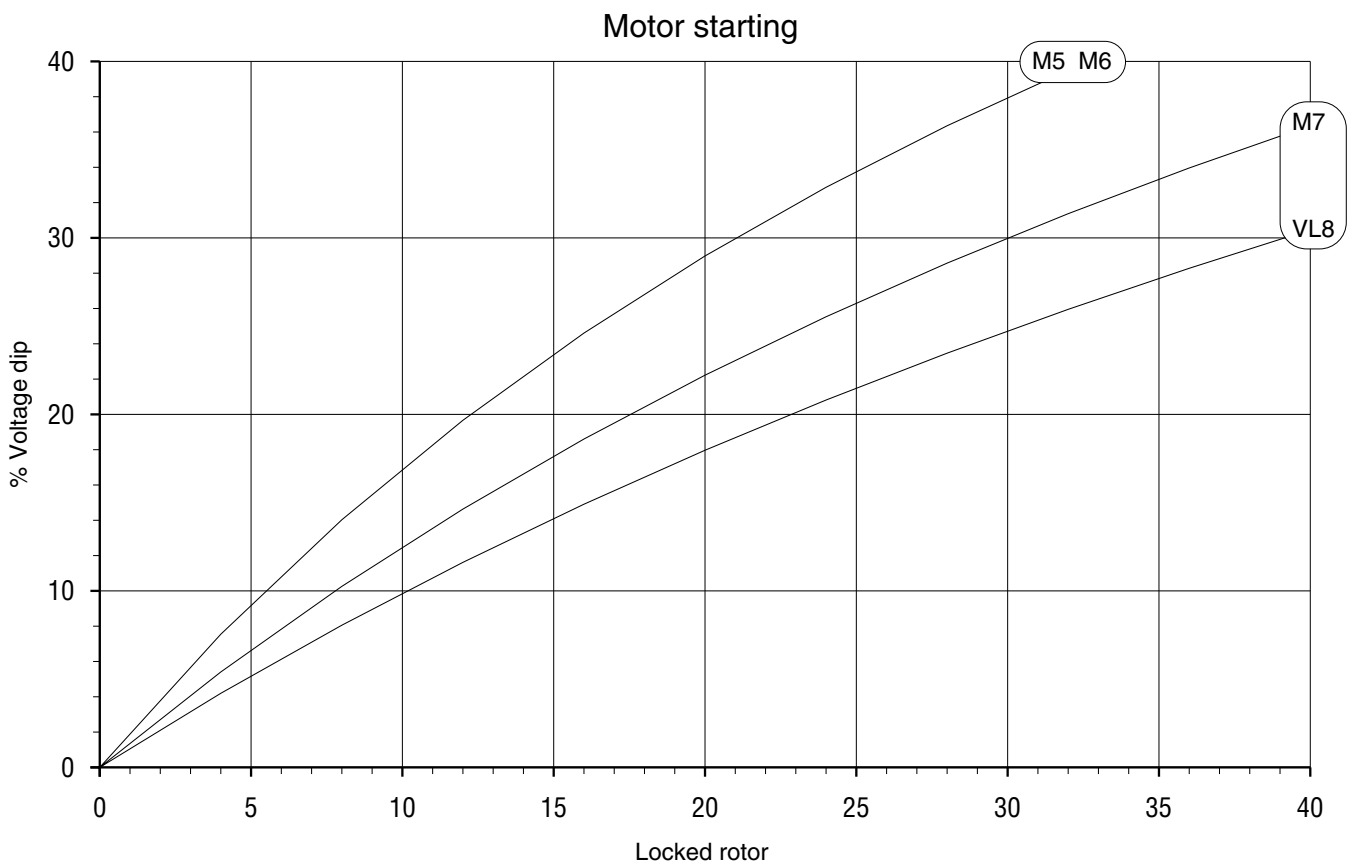
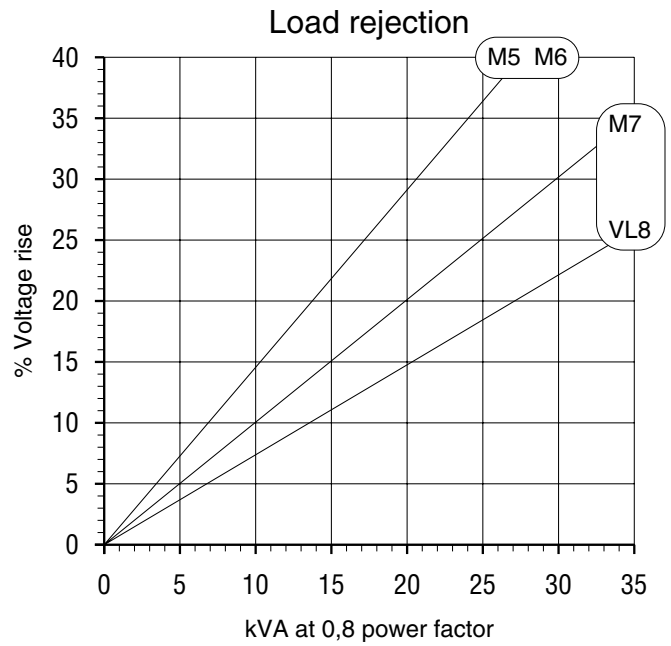
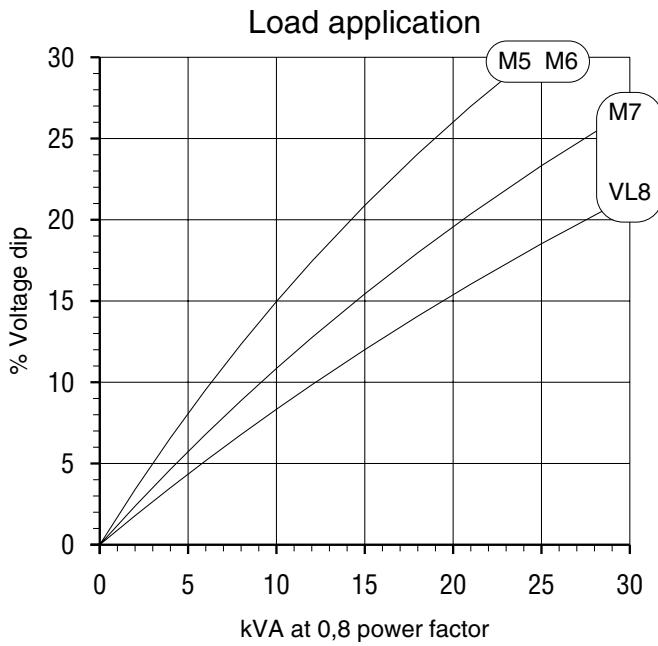
		37 M5	37 M6	37 M7	37 VL8
Kcc	Short-circuit ratio	0,93	0,76	0,66	0,57
Xd	Direct axis synchronous reactance unsaturated	150	183	197	202
Xq	Quadrature axis synchronous reactance unsaturated	75	90	100	100
T'do	Open circuit time constant	522	522	565	602
X'd	Direct axis transient reactance saturated	10,6	13	12,9	12,4
T'd	Short circuit transient time constant	40	40	40	40
X''d	Direct axis subtransient reactance saturated	5,3	6,5	6,5	6,2
T''d	Subtransient time constant	3,7	3,7	3,7	3,7
X''q	Quadrature axis subtransient reactance saturated	9,1	11,2	11,4	11,2
Xo	Zero sequence reactance unsaturated	10,6	13	12,9	12,4
X2	Negative sequence reactance saturated	7,2	8,8	8,9	8,7
Ta	Armature time constant	6	6	6	6

OTHER DATA - CLASS : H / 480 V -

		37 M5	37 M6	37 M7	37 VL8
io	No load excitation current (A)	0,86	0,86	0,78	0,63
ic	Full load excitation current (A)	2,05	2,42	2,28	1,95
uc	Full load excitation voltage (V)	40	47	45	38
ms	Recovery time(ΔU =20 % trans.)	< 300	< 300	< 300	< 300
kVA	Motor start. (ΔU = 20% sust.) or (ΔU = 50% Transient)	25	30	40	50
%	Transient dip (rated step load) - PF : 0,8 LAG	16,1	18	17,6	16
W	No load losses	505	505	569	597
W	Heat rejection	1321	1693	1912	1897

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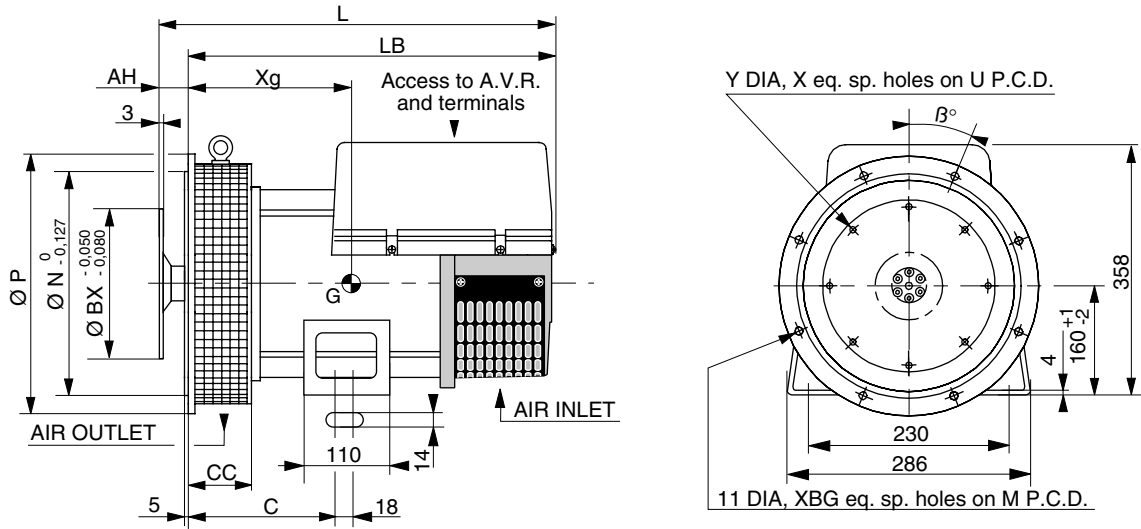
TRANSIENT VOLTAGE VARIATION - 480 V



1) For a starting P.F. differing from 0,6 the starting kVA have to be multiplied by $(\text{Sine } \varnothing / 0,8)$
 If voltage is not 480V(Y), 277V(Δ), 240V(Ψ) at 60 Hz then kVA must be multiplied by $(480/U)^2$ or $(277/U)^2$ or $(240/U)^2$.

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DIMENSIONS



FRAME DIMENSIONS : S.A.E. 5 (without hand space)							4 POLE
TYPE	L	LB	C	CC	Xg	Weight	J (kg.m ²)
LSA 37 M5	492	430	216	80	220	90	0,0873
LSA 37 M6	492	430	216	80	220	90	0,0873
LSA 37 M7	532	470	216	80	240	105	0,1075
LSA 37 VL8	592	530	216	80	275	125	0,1478
S.A.E. 3 - 4 - 5 (with hand space)							4 POLE
TYPE	L	LB	C	CC	Xg	Weight	J (kg.m ²)
LSA 37 M5	517	455	241	116	255	95	0,0933
LSA 37 M6	517	455	241	116	255	95	0,0933
LSA 37 M7	557	495	241	116	275	110	0,1149
LSA 37 VL8	617	555	241	116	310	130	0,1582

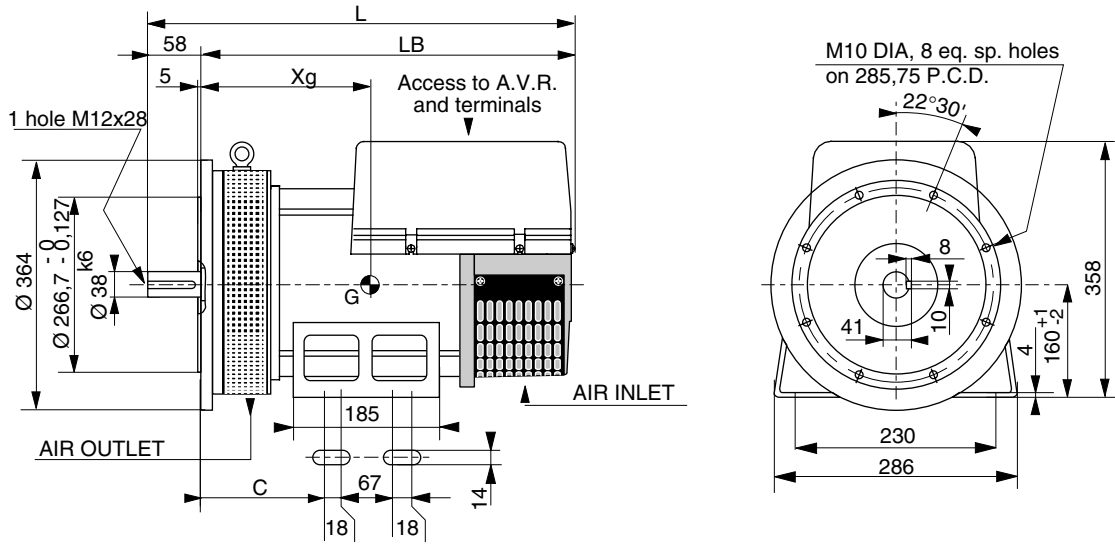
With no specific mention the LSA 37 single bearing SAE 5 is supplied with flange without hand space.

FLANGE DIMENSIONS (without hand space)						
S.A.E.	P	N	M	XBG	β°	
5	364	314,325	333,375	8	22° 30'	
S.A.E. 3 - 4 - 5 (with hand space)						
3	465	409,575	428,625	12	15°	
4	406	361,95	381	12	15°	
5	406	314,325	333,375	8	22° 30'	

FLEX PLATE DIMENSIONS						Coupling			
S.A.E.	BX	U	X	Y	AH	S.A.E.	3	4	5
11 1/2	352,42	333,38	8	11	39,6	11 1/2	•		
10	314,32	295,28	8	11	53,8	10	•	•	
8	263,52	244,48	6	11	62	8		•	
7 1/2	241,3	222,25	8	9	30,2	7 1/2		•	•
6 1/2	215,9	200,02	6	9	30,2	6 1/2		•	•

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DIMENSIONS



FRAME DIMENSIONS (mm)						4 POLE
TYPE	L	LB	C	Xg	Weight	J (kg.m ²)
LSA 37 M5	513	455	171	240	95	0,0933
LSA 37 M6	513	455	171	240	95	0,0933
LSA 37 M7	553	495	171	260	110	0,1149
LSA37 VL8	613	555	171	305	130	0,1582



MOTEURS LEROY-SOMER 16015 ANGOULÊME CEDEX - FRANCE

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