

11.5 ... 30 kVA - 2 Pole
12 ... 135 kVA - 4 Pole

Alternators
LSA 42.2 / 43.2 / 44.2 - 2 & 4 P
Single phase dedicated
Electrical and mechanical data

PARTNER[®] LSA 42.2 / 43.2 / 44.2 - 2 & 4 P

Single phase dedicated ALTERNATOR

SPECIALLY ADAPTED FOR SINGLE PHASE

Dedicated single phase alternators have been designed for producing single phase current more competitively (from 10 to 40%) than reconnected three phase alternators.

COMPLIANT WITH INTERNATIONAL STANDARDS

LSA 42.2 / 43.2 / 44.2 alternators conform to the main international standards and regulations:

IEC 60034, NEMA MG 1.22, ISO 8528/3, CSA, UL 1446. UL 1004B on request, etc.

It can be integrated into a CE marked generator.

LSA 42.2 / 43.2 / 44.2 are designed, manufactured and marketed in an ISO 9001 and ISO 14001 environment.

TOP OF THE RANGE ELECTRICAL PERFORMANCE

- Class H insulation.
- Standard 4-wire re-connectable.
- Dedicated single phase windings, type M or M1, optimised for frequency 60Hz, voltage 240V and PF = 1 (15% derating for use at PF = 0,8) (PF = 1 corresponds to general use for single phase voltage).
- 4 lead stator allowing the reconnections below :
 - 50 Hz : 230 V in series, 115 V in parallel
 - 60 Hz : 240 V in series, 120 V in parallel (excepted for LSA 44.2 : only series)
- Total harmonic content < 4%.
- R 791 interference suppression conforming to standard EN 55011 group 1 class B standard for European zone (CE marking).

EXCITATION AND REGULATION SYSTEM SUITED TO THE APPLICATION

Voltage regulator accuracy +/- 0,5%.

Alternator type	Voltage regulator	Excitation system			Regulation options				
		SHUNT	AREP	PMG	Current transformer for paralleling	Mains paralleling R 726	3-phase sensing R 731	R 734 mains paralleling unbalanced	Remote voltage potentiometer
LSA 42.2	R 250	Std	-	-	-	-	-	-	÷
LSA 43.2/44.2	R 251	Std	-	-	-	-	-	-	÷

PROTECTION SYSTEM SUITED TO THE ENVIRONMENT

- LSA 42.2 / 43.2 / 44.2 are IP 23.
- Standard winding protection for clean environments with relative humidity <= 95 %, including indoor marine environments.
- Options:
 - Filters on air inlet and air outlet (IP 44).
 - Winding protections for harsh environments and relative humidity greater than 95%.
 - Space heaters.
 - Thermal protection for winding.

REINFORCED MECHANICAL STRUCTURE USING FINITE ELEMENT MODELLING

- Compact and rigid assembly to better withstand generator vibrations.
- Steel frame.
- Aluminium (LSA 42.2) or cast iron (LSA 43.2/44.2) flanges and shields.
- Twin-bearing and single-bearing versions designed to be suitable for engines on the market.
- Half-key balancing.
- Greased for life bearings (regreasable bearings optional)

ACCESSIBLE TERMINAL BOX PROPORTIONED FOR OPTIONAL EQUIPMENT

- Easy access to the voltage regulator and to the connections.
- 8 way terminal block for reconnecting voltage reconnection.

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Common data

Insulation class	H	Excitation system	SHUNT
Winding pitch - Code	2/3 pitch - winding M	A.V.R. model	R 250
Leads	4	Voltage regulation (*)	± 0,5 %
Drip proof	IP 23	Sustained short-circuit current	-
Altitude	<=1000 m	Total harmonic TGH / THC (**)	< 4 %
Overspeed	4500 min⁻¹	Waveform : NEMA = TIF - (**)	< 50
Air flow	0,22 / 0,26 m³/s	Wave form : I.E.C. = THF - (**)	< 2 %

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

Ratings 50 Hz - 3000 r.p.m.

Ratings 60 Hz - 3600 r.p.m.

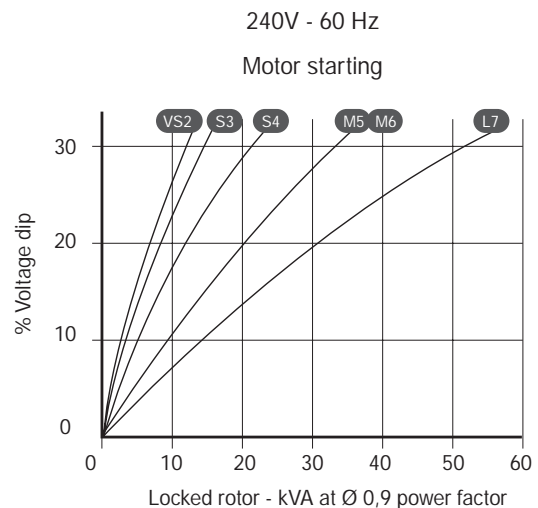
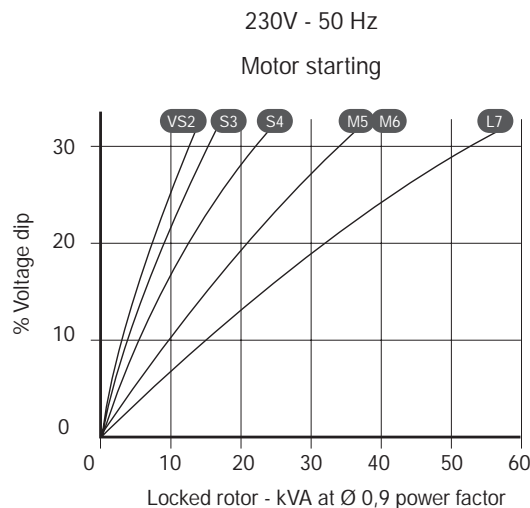
kVA / kW - Power factor = 1					kVA / kW - Power factor = 1			
Duty/Ambiant T°	Continuous / 40°C		St. By. 40°C	St. By. 27°C	Continuous / 40°C	St. By. 40°C	St. By. 27°C	
Class / T° rise	H / 125° K	F / 105° K	H / 150° K	H / 163° K	H / 125° K	F / 105° K	H / 150° K	H / 163° K
1 Phase series	230 V	230 V	230 V	230 V	240 V	240 V	240 V	240 V
1 Phase parallel	115 V	115 V	115 V	115 V	120 V	120 V	120 V	120 V
LSA 42.2 VS2	11,5	10,5	12	12,5	11,5	10,5	12	12,5
LSA 42.2 S3	12,5	11,5	13	13,5	12,5	11,5	13	13,5
LSA 42.2 S4	16,5	15	17,5	18	16,5	15	17,5	18
LSA 42.2 M5	20	18	21	22	20	18	21	22
LSA 42.2 M6	23,5	21	24,5	26	23,5	21	24,5	26
LSA 42.2 L7	30	27	31,5	32	30	27	31,5	32

Rating kVA at P.F. 0,8 = rating kVA/kW at P.F. 1 x 0,85 - Derating (kVA) cl B = rating (kVA) class H x 0,77

Efficiencies (%)

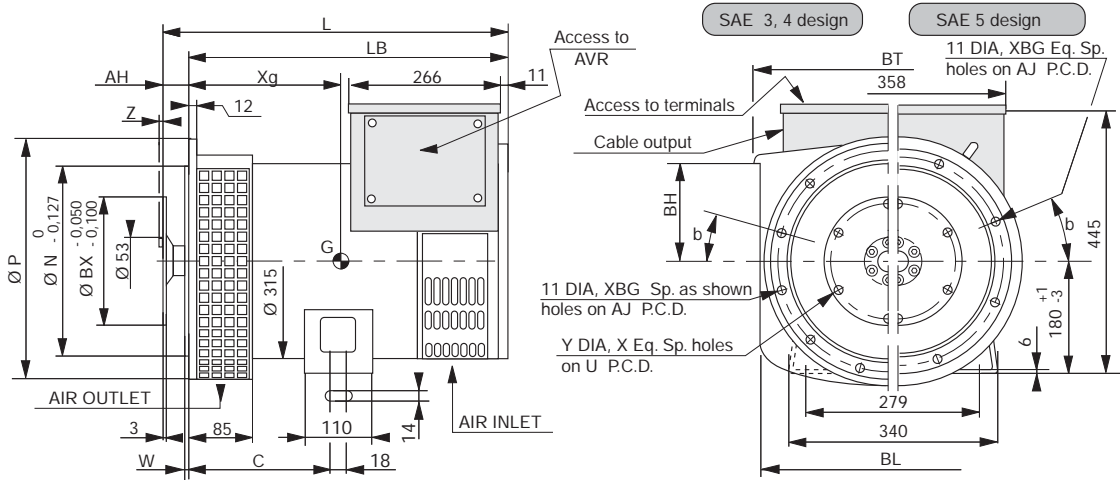
Class H / 40°C	Single phase : 230 V - 50 Hz					Single phase : 240 V - 60 Hz				
	P.F. = 1					P.F. = 1				
	1/4	2/4	3/4	4/4	St.by	1/4	2/4	3/4	4/4	St.by
LSA 42.2 VS2	75,3	80,9	80,9	79,3	78,5	68,7	77,3	78,9	78,4	77,9
LSA 42.2 S3	76,7	82,5	82,7	81,4	80,7	70,3	78,9	80,6	80,3	79,9
LSA 42.2 S4	79,7	84,7	84,7	83,5	82,9	74,5	82	83,3	82,8	82,4
LSA 42.2 M5	81,4	86,8	87,6	87	86,6	77	84,5	86,2	86,3	86,1
LSA 42.2 M6	83,1	87,3	87,4	86,3	85,7	79,3	85,4	86,4	85,9	85,5
LSA 42.2 L7	85,4	88,9	88,7	87,5	87,2	82,1	87,3	87,8	87,2	86,9

Transient voltage variation



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.

Single bearing dimensions



Frame dimensions (mm)

TYPE	L maxi	LB	C	Xg	Weight M (kg)
LSA 42.2 VS2	440	378	185	185	95
LSA 42.2 S3	470	408	185	190	100
LSA 42.2 S4	470	408	185	200	110
LSA 42.2 M5	510	448	260	220	125
LSA 42.2 M6	510	448	260	220	125
LSA 42.2 L7	555	493	260	245	145

Flange (mm)

S.A.E.	P	BL	BH	BT	Coupling possibility				
					6 1/2	7 1/2	8	10	11 1/2
5	355	-	-	-	X	X			
4	408	410	129	432	X	X	X	X	
3	450	452	155	474			X	X	X

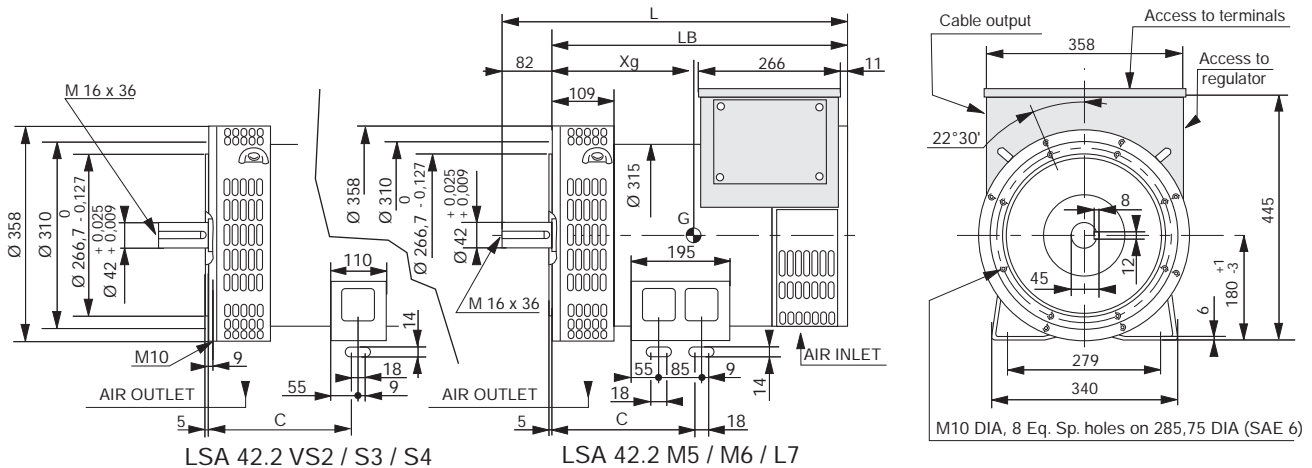
Flange dimensions (mm)

S.A.E.	N	M	XBG	W	B°
5	314,325	333,375	8	5	22°30'
4	361,95	381	10	5	15°
3	409,575	428,625	10	6	15°

Flex plate dimensions (mm)

S.A.E.	BX	U	X	Y	AH	Z
11 1/2	352,42	333,38	8	11	39,6	0
10	314,32	295,28	8	11	53,8	0
8	263,52	244,48	6	11	62	0
7 1/2	241,3	222,25	8	9	30,2	5
6 1/2	215,9	200,02	6	9	30,2	5

Two bearings dimensions



Frame dimensions (mm)

TYPE	L maxi	LB	C	Xg	Weight M (kg)
LSA 42.2 VS2	478	396	203	205	90
LSA 42.2 S3	508	426	203	210	95
LSA 42.2 S4	508	426	203	220	100
LSA 42.2 M5	548	466	278	240	120
LSA 42.2 M6	548	466	278	240	120
LSA 42.2 L7	593	511	278	265	140

Common data

Insulation class	H	Excitation system	SHUNT
Winding pitch - Code	2/3 pitch - winding M (M1 for M7/L9 at 60 Hz)	A.V.R. model	R 250
Leads	4	Voltage regulation (*)	± 0,5 %
Drip proof	IP 23	Sustained short-circuit current	-
Altitude	<= 1000 m	Total harmonic TGH / THC (**)	< 4 %
Overspeed	2250 min⁻¹	Waveform : NEMA = TIF - (**)	< 50
Air flow	0,15 / 0,18 m³/s	Wave form : I.E.C. = THF - (**)	< 2 %

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

Ratings 50 Hz - 1500 r.p.m.

Ratings 60 Hz - 1800 r.p.m.

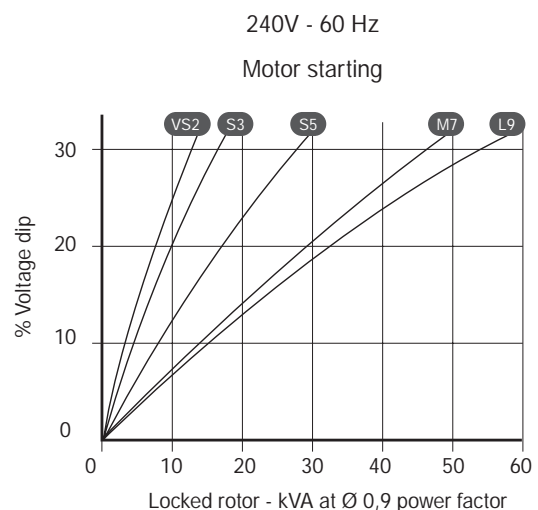
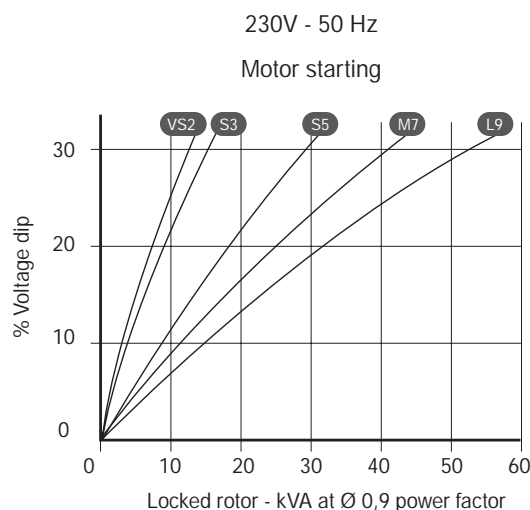
kVA / kW - Power factor = 1					kVA / kW - Power factor = 1			
Duty/Ambiant T°	Continuous / 40°C		St. By. 40°C	St. By. 27°C	Continuous / 40°C	St. By. 40°C	St. By. 27°C	
Class / T° rise	H / 125° K	F / 105° K	H / 150° K	H / 163° K	H / 125° K	F / 105° K	H / 150° K	H / 163° K
1 Phase series	230 V	230 V	230 V	230 V	240 V	240 V	240 V	240 V
1 Phase parallel	115 V	115 V	115 V	115 V	120 V	120 V	120 V	120 V
LSA 42.2 VS2	12	11	13	14	13	12	14	14,5
LSA 42.2 S3	14	12,5	15	16	16	14,5	17	17,5
LSA 42.2 S5	18	16,5	19	20	20	18	21,5	22
LSA 42.2 M7	22	20	24	25	25	22,5	27	27,5
LSA 42.2 L9	25	22,5	26	27	30	27	32	33

Rating kVA at P.F. 0,8 = rating kVA/kW at P.F. 1 x 0,85 - Derating (kVA) cl B = rating (kVA) class H x 0,77

Efficiencies (%)

Class H / 40°C	Single phase : 230 V - 50 Hz					Single phase : 240 V - 60 Hz				
	P.F. = 1					P.F. = 1				
	1/4	2/4	3/4	4/4	St.by	1/4	2/4	3/4	4/4	St.by
LSA 42.2 VS2	85,9	86,9	85	82,5	81,4	86,4	87,2	85,3	82,8	81,8
LSA 42.2 S3	86,6	87,7	86	83,7	82,7	87,2	87,8	85,8	83,2	82,2
LSA 42.2 S5	87,7	89	87,6	85,5	84,7	88,7	89,4	87,8	85,6	84,7
LSA 42.2 M7	87,3	89,8	89,3	88	87,4	84,6	89,1	89,6	89,1	88,7
LSA 42.2 L9	87,4	90,4	90,2	89,2	88,7	86,4	90,1	90,2	89,4	89

Transient voltage variation





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.

Common data

Insulation class	H	Excitation system	SHUNT
Winding pitch - Code	2/3 pitch - winding M1	A.V.R. model	R 251
Leads	4	Voltage regulation (*)	± 0,5 %
Drip proof	IP 23	Sustained short-circuit current	-
Altitude	<= 1000 m	Total harmonic TGH / THC (**)	< 4 %
Overspeed	2250 min⁻¹	Waveform : NEMA = TIF - (**)	< 50
Air flow	0,32 m³/s	Wave form : I.E.C. = THF - (**)	< 2 %

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

Ratings 60 Hz - 1800 r.p.m.

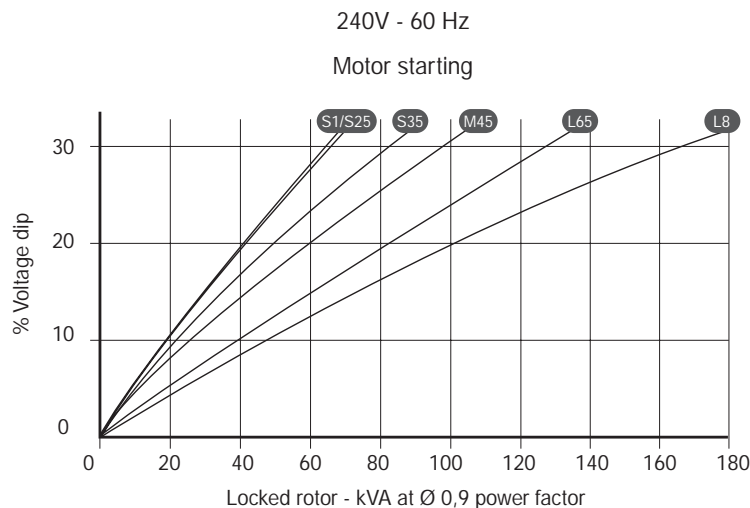
kVA / kW - Power factor = 1					
Duty/Ambiant T°		Continuous / 40°C		St. By. 40°C	St. By. 27°C
Class / T° rise		H / 125° K	F / 105° K	H / 150° K	H / 163° K
1 Phase series		240 V	240 V	240 V	240 V
1 Phase parallel		120 V	120 V	120 V	120 V
LSA 43.2 S1		40	36	42	44
LSA 43.2 S25		48	43	51	53
LSA 43.2 S35		52	47	55	57
LSA 43.2 M45		55	50	58	60
LSA 43.2 L65		65	59	68	72
LSA 43.2 L8		75	68	80	82

Rating kVA at P.F. 0,8 = rating kVA/kW at P.F. 1 x 0,85 - Derating (kVA) cl B = rating (kVA) class H x 0,77

Efficiencies (%)

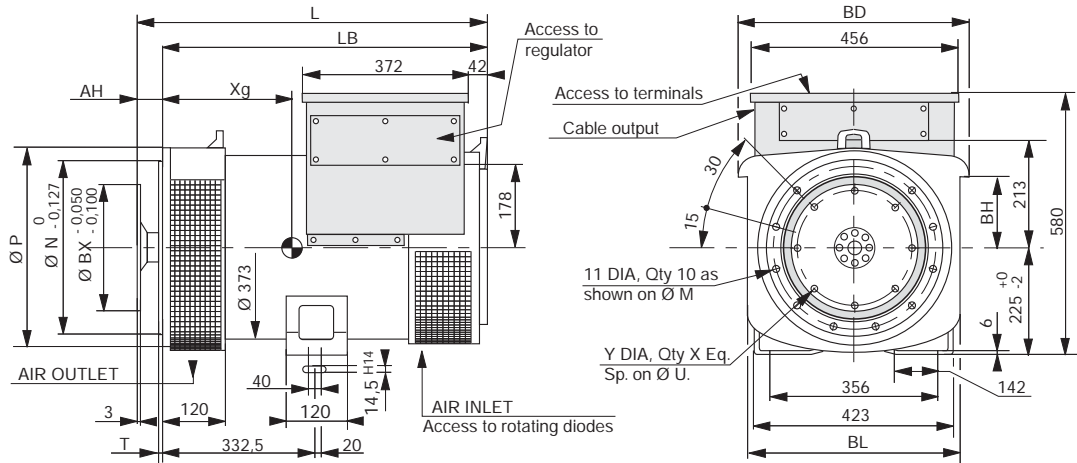
Class H / 40°C					
Single phase : 240 V - 60 Hz					
P.F. = 1					
	1/4	2/4	3/4	4/4	St.by
LSA 43.2 S1	85,7	88,4	87,6	86,1	85,4
LSA 43.2 S25	86,9	88,3	86,8	84,6	83,7
LSA 43.2 S35	86,6	88,6	87,5	85,7	84,9
LSA 43.2 M45	87,1	89,5	88,9	87,4	86,8
LSA 43.2 L65	87,5	90,1	89,6	88,3	87,7
LSA 43.2 L8	86,5	90	90,1	89,3	88,9

Transient voltage variation



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.

Single bearing dimensions



Frame dimensions (mm)

TYPE	L maxi	LB	Xg	Weight M (kg)
LSA 43.2 S1	627	565	210	210
LSA 43.2 S25	627	565	270	210
LSA 43.2 S35	627	565	278	230
LSA 43.2 M45	662	600	295	260
LSA 43.2 L65	747	685	315	280
LSA 43.2 L8	766	685	340	320

Coupling

Flex plate	8	10	11 1/2
Flange S.A.E 4	X	X	
Flange S.A.E 3	X	X	X
Flange S.A.E 2		X	X

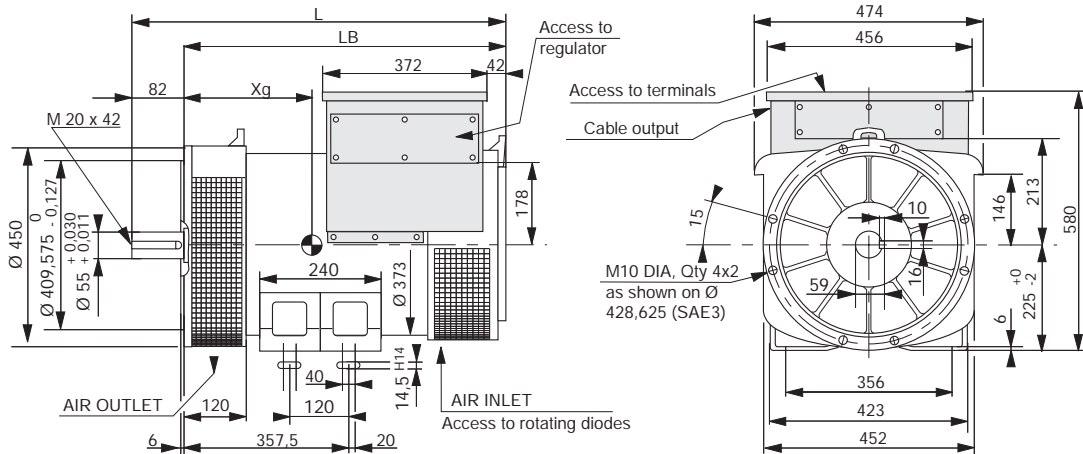
Flange dimensions (mm)

S.A.E.	BD	BL	BH	P	N	M	T
4	474	452	146	413	361,95	381	5
3	474	452	146	450	409,575	428,625	6
2	514	492	165	490	447,675	466,725	6

Flex plate dimensions (mm)

S.A.E.	BX	U	X	Y	AH
11 1/2	352,42	333,38	8	1	39,6
10	314,32	295,28	8	1	53,8
8	263,52	244,48	6	1	62

Two bearings dimensions



Frame dimensions (mm)

TYPE	L maxi	LB	Xg	Weight M (kg)
LSA 43.2 S1	672	590	295	220
LSA 43.2 S25	672	590	295	220
LSA 43.2 S35	672	590	303	240
LSA 43.2 M45	707	625	320	270
LSA 43.2 L65	792	710	340	290
LSA 43.2 L8	792	710	365	330

Common data

Insulation class	H	Excitation system	SHUNT
Winding pitch - Code	2/3 pitch - winding M1	A.V.R. model	R 251
Leads	4	Voltage regulation (*)	± 0,5 %
Drip proof	IP 23	Sustained short-circuit current	-
Altitude	≤ 1000 m	Total harmonic TGH / THC (**)	< 4 %
Overspeed	2250 min-1	Waveform : NEMA = TIF - (**)	< 50
Air flow	0,44 m3/s	Wave form : I.E.C. = THF - (**)	< 2 %

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

Ratings 60 Hz - 1800 r.p.m.

kVA / kW - Power factor = 1				
Duty/Ambiant T°	Continuous / 40°C		St. By. 40°C	St. By. 27°C
Class / T° rise	H / 125° K	F / 105° K	H / 150° K	H / 163° K
1 Phase series	240 V (*)	240 V (*)	240 V (*)	240 V (*)
LSA 44.2 VS3	80	72	85	88
LSA 44.2 VS45	85	76,5	90	93
LSA 44.2 S7	100	90	105	110
LSA 44.2 M95	135	121,5	140	148

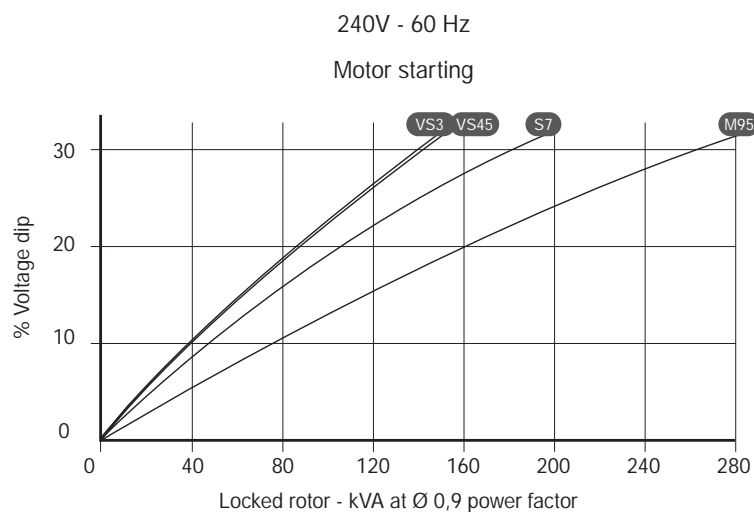
Rating kVA at P.F. 0,8 = rating kVA/kW at P.F. 1 x 0,85 - Derating (kVA) cl B = rating (kVA) class H x 0,77

(*) Voltage 120V not possible as a standard feature

Efficiencies (%)

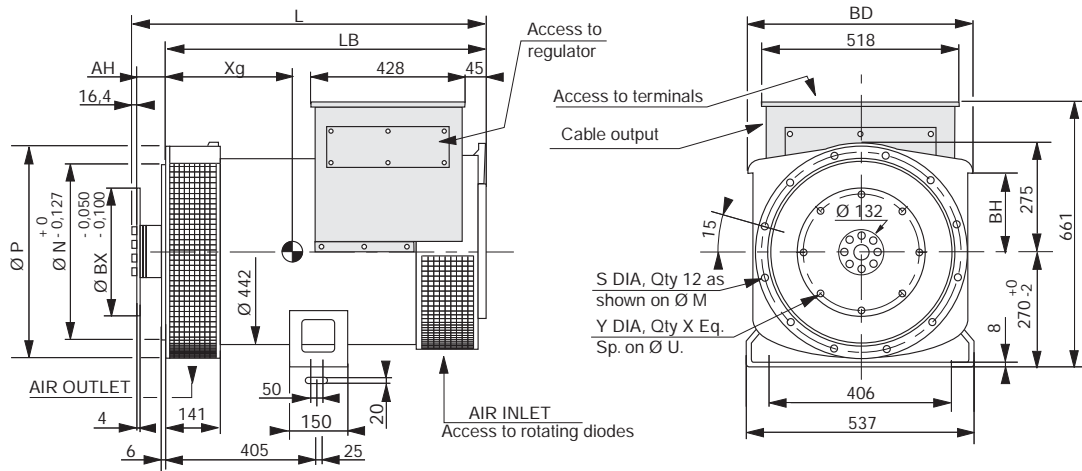
Class H / 40°C					
Single phase : 240 V - 60 Hz					
P.F. = 1					
	1/4	2/4	3/4	4/4	St.by
LSA 44.2 VS3	87,5	90,6	90,4	89,4	89
LSA 44.2 VS45	88	90,6	90,3	89,1	88,6
LSA 44.2 S7	88,6	91,5	91,4	90,5	90,1
LSA 44.2 M95	88,4	91,6	91,7	91,1	90,7

Transient voltage variation



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.

Single bearing dimensions



Frame dimensions (mm)

TYPE	L maxi	LB	Xg	Weight M (kg)
LSA 44.2 VS3	755	685	335	385
LSA 44.2 VS45	755	685	335	385
LSA 44.2 S7	815	745	365	440
LSA 44.2 M95	875	805	395	495

Coupling

Flex plate	10	11 ^{1/2}	14
Flange S.A.E 3	X	X	
Flange S.A.E 2	X	X	
Flange S.A.E 1		X	X

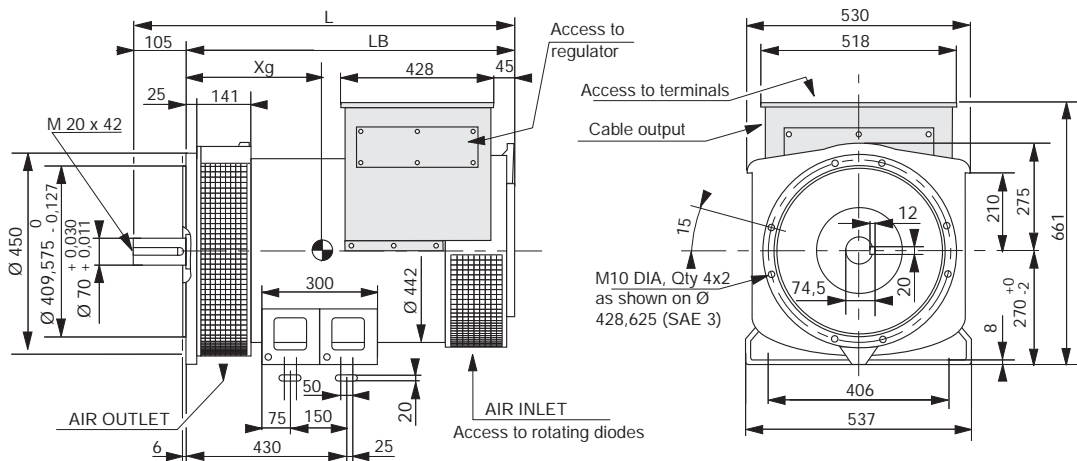
Flange dimensions (mm)

S.A.E.	BD	S	BH	P	N	M
3	530	11	210	450	409,575	428,625
2	530	11	210	488	447,675	466,675
1	590	12,5	240	554	511,175	530,225

Flex plate dimensions (mm)

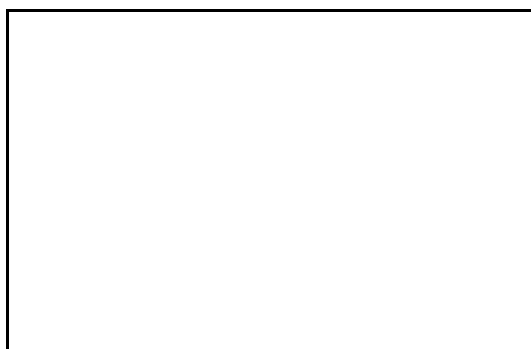
S.A.E.	BX	U	X	Y	AH
14	466,72	438,15	8	14	24,4
11 1/2	352,42	333,38	8	11	39,6
10	314,32	295,28	8	11	53,8

Two bearings dimensions



Frame dimensions (mm)

TYPE	L maxi	LB	Xg	Weight M (kg)
LSA 44.2 VS3	815	710	360	405
LSA 44.2 VS45	815	710	360	405
LSA 44.2 S7	875	770	390	460
LSA 44.2 M95	935	830	420	515



LEROY-SOMER 16015 ANGOULÊME CEDEX - FRANCE

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