

## **ALTERNATORS**

### **LSA 46.2 - 4 Pole**

**Electrical and mechanical data**

#### ELECTRICAL DATA

Insulation class	<b>H</b>	Excitation system	<b>A R E P ou PMG</b>
Winding pitch - Code	<b>2/3 - (N° 6)</b>	A.V.R. model	<b>R 448</b>
Leads	<b>12</b>	Voltage regulation (steady state)	<b>± 0,5 %</b>
Drip proof	<b>IP 21</b>	Sustained short-circuit current	<b>300% (3 IN) : 10s</b>
Altitude	<b>≤ 1000 m</b>	Total harmonic (*) TGH / THC	<b>&lt; 4 %</b>
Overspeed	<b>2250 min<sup>-1</sup></b>	Waveform : NEMA = TIF - (*)	<b>&lt; 50</b>
Air flow	<b>0,51 m<sup>3</sup>/s</b>	Waveform : I.E.C. = THF - (*)	<b>&lt; 2 %</b>

(\*) 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				
	Class/T° rise 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
Y		208V	220V	240V		208V	220V	240V		208V	220V	240V		208V	220V	240V		208V	220V	240V
<b>46.2 M3</b>	kVA	192	205	213	<b>228 128</b>	177	189	198	210	119	203	219	228	244	136	211	225	237	<b>255 141</b>	
	kW	154	164	170	<b>182 102</b>	142	151	158	168	95	162	175	182	195	109	169	180	190	<b>204 113</b>	
<b>46.2 M5</b>	kVA	205	219	230	<b>250 136</b>	190	203	211	225	126	219	235	245	262	145	227	242	252	<b>273 151</b>	
	kW	164	175	184	<b>200 109</b>	152	162	169	180	101	175	188	196	210	116	182	194	202	<b>218 121</b>	
<b>46.2 L6</b>	kVA	257	276	289	<b>300 173</b>	239	255	265	278	160	276	295	308	324	184	285	304	317	<b>337 192</b>	
	kW	206	221	231	<b>240 138</b>	191	204	212	222	128	221	236	246	259	147	228	243	254	<b>270 154</b>	
<b>46.2 L9</b>	kVA	296	316	328	<b>343 197</b>	273	291	302	302	182	313	338	351	357	209	326	348	366	<b>375 220</b>	
	kW	237	253	262	<b>275 158</b>	218	233	242	242	146	250	270	281	286	167	261	278	293	<b>300 175</b>	
<b>46.2 VL12</b>	kVA	333	357	372	<b>381 220</b>	309	329	341	347	200	359	383	397	412	235	370	399	415	<b>429 243</b>	
	kW	266	286	298	<b>305 175</b>	247	263	273	278	160	287	306	318	330	188	296	319	332	<b>343 194</b>	

#### 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
<b>46.2 M3</b>	90	92,6	92,7	92,1	91,8	91	94,1	94,7	94,7	94,5	85,4	87	85,4	83,1	82,2	87	89,8	89,4	88,3	87,7
<b>46.2 M5</b>	90,2	92,9	93,2	92,7	92,5	91,1	94,3	95	95	94,9	85,7	87,6	86,4	84,4	83,5	87,2	90,2	90	89	88,5
<b>46.2 L6</b>	90,2	93	93,2	92,8	92,5	91,1	94,3	95	95	94,9	85,7	87,3	85,9	83,7	82,7	87,2	90	89,6	88,5	87,9
<b>46.2 L9</b>	90	93,1	93,6	93,3	93,1	90,8	94,3	95,1	95,3	95,3	86,1	87,9	86,7	84,7	83,9	87,5	90,4	90,2	89,2	88,7
<b>46.2 VL12</b>	90,5	93,5	94,1	93,9	93,8	91,2	94,6	95,5	95,6	95,6	86,5	88,6	87,6	85,9	85,2	87,8	90,9	90,8	90	89,5

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

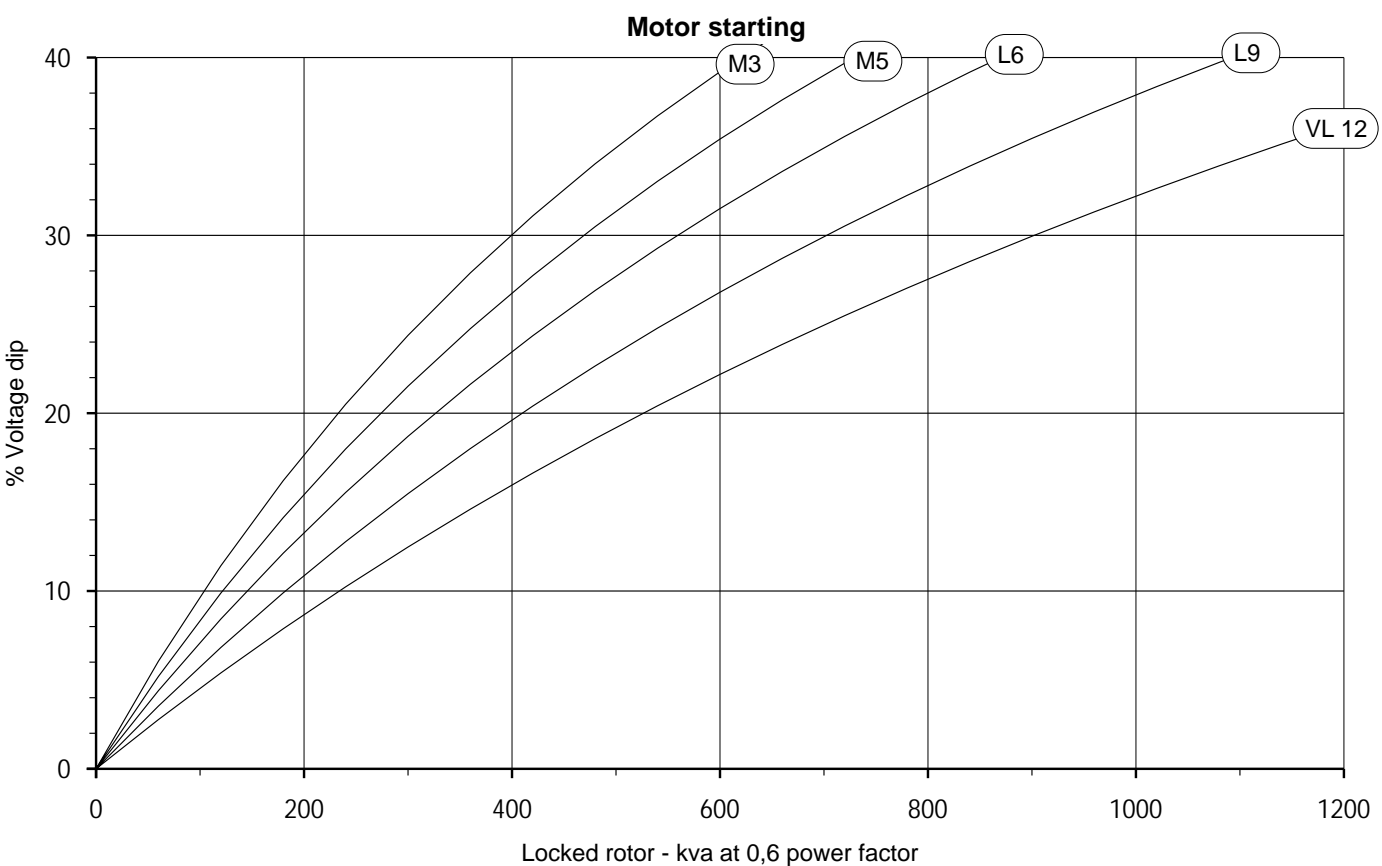
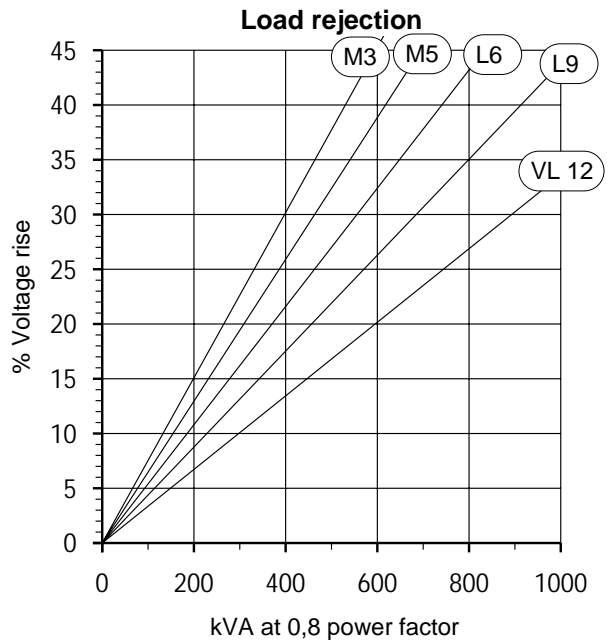
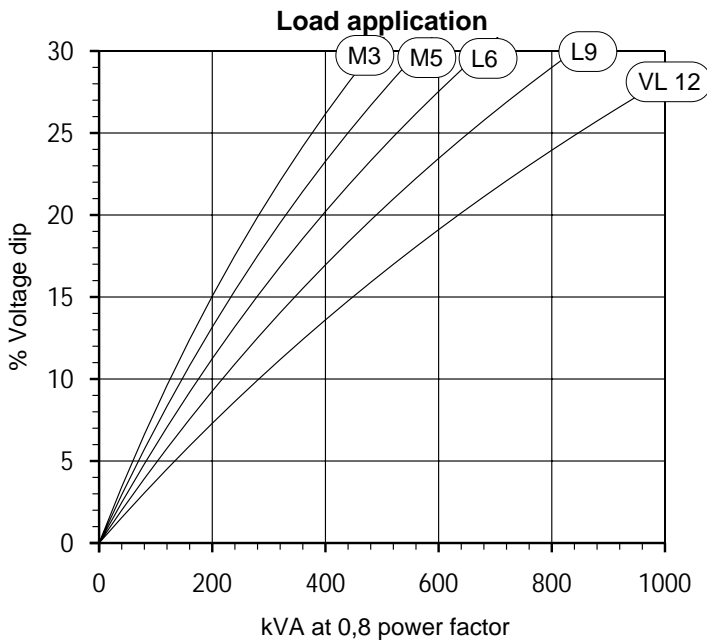
		<b>46.2 M3</b>	<b>46.2 M5</b>	<b>46.2 L6</b>	<b>46.2 L9</b>	<b>46.2 VL12</b>
<b>Kcc</b>	Short-circuit ratio	0,42	0,44	0,41	0,49	0,5
<b>Xd</b>	Direct axis synchronous reactance unsaturated	330	307	327	290	276
<b>Xq</b>	Quadrature axis synchronous reactance unsaturated	198	184	196	174	166
<b>T'do</b>	Open circuit time constant	1980	2050	2100	2180	2260
<b>X'd</b>	Direct axis transient reactance saturated	16,7	15,0	15,5	13,3	12,2
<b>T'd</b>	Short circuit transient time constant	105	105	105	105	105
<b>X''d</b>	Direct axis subtransient reactance saturated	10	9	9,3	8	7,3
<b>T''d</b>	Subtransient time constant	10	10	10	10	10
<b>X''q</b>	Quadrature axis subtransient reactance saturated	12,5	11,2	11,5	9,9	9,0
<b>Xo</b>	Zero sequence reactance unsaturated	0,5	0,5	0,5	0,4	0,3
<b>X2</b>	Negative sequence reactance saturated	11,2	10,1	10,4	8,9	8,2
<b>Ta</b>	Armature time constant	16	16	16	16	16

#### OTHER DATA - CLASS H / 480 V

		<b>46.2 M3</b>	<b>46.2 M5</b>	<b>46.2 L6</b>	<b>46.2 L9</b>	<b>46.2 VL12</b>
<b>io (A)</b>	No load excitation current	1,1	1,1	1,1	1,1	1,1
<b>ic (A)</b>	Full load excitation current	4,1	3,8	4	3,8	3,5
<b>uc (V)</b>	Full load excitation voltage	36	33	35	34	35
<b>ms</b>	Recovery time(ΔU = 20 % transient)	500	500	500	500	500
<b>kVA</b>	Motor start. (ΔU = 20% sust.) or (ΔU = 50% Transient)	530	610	700	840	1000
<b>%</b>	Transient dip (rated step load) - PF : 0,8 LAG	16,8	15,6	16	14,5	13,1
<b>W</b>	No load losses	4250	4580	5630	6580	7250
<b>W</b>	Heat rejection	15600	15200	18500	18800	19500

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  
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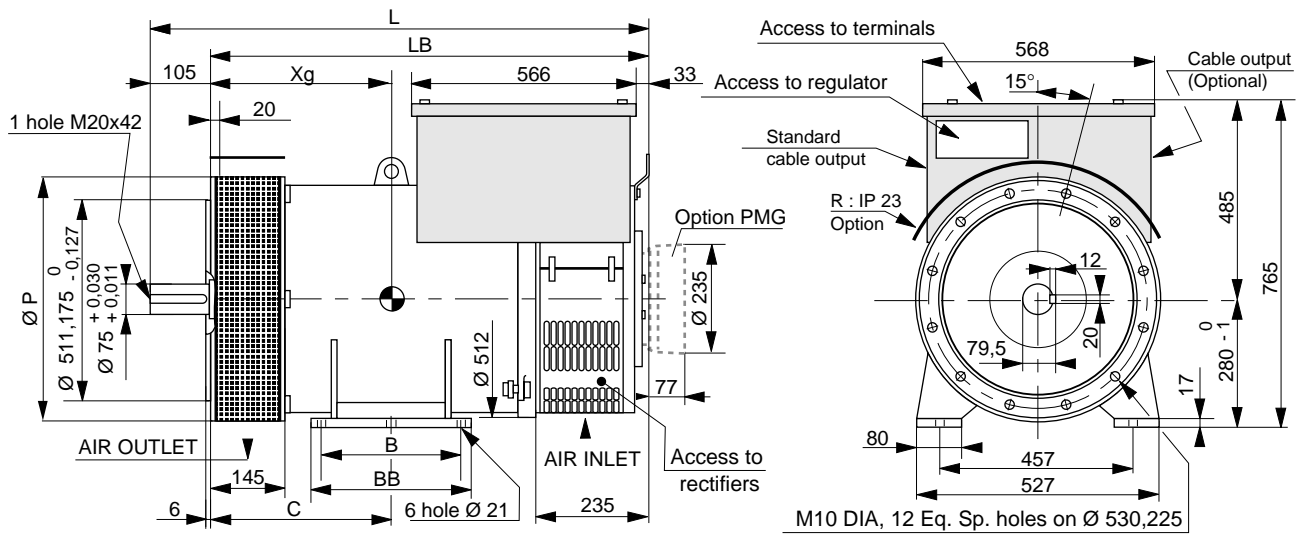
#### TRANSIENT VOLTAGE VARIATION - 480 V



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

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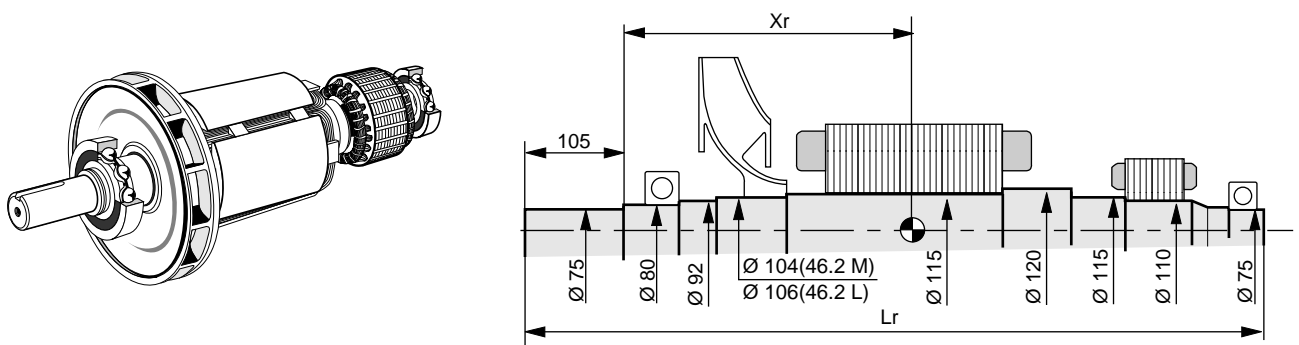
#### DIMENSIONS



#### FRAME DIMENSIONS (mm)

TYPE	L max without PMG	LB	P	C	BB	B	R	Xg	Mass (kg)
LSA 46.2 M3	985	880	575	389	418	368	345	400	570
LSA 46.2 M5	985	880	575	389	418	368	345	410	615
LSA 46.2 L6	1095	990	623	389	418	368	368	430	705
LSA 46.2 L9	1095	990	623	389	418	368	368	455	770
LSA 46.2 VL12	1195	1090	623	485	610	560	368	500	885

#### TORSIONAL ANALYSIS DATA



#### CENTRE OF GRAVITY : Xr (mm) - ROTOR LENGTH : Lr (mm) - MASS : M (kg) - MOMENTS OF INERTIA : J (kgm<sup>2</sup>) : (4J = MD<sup>2</sup>)

TYPE	Xr	Lr	M	J
LSA 46.2 M3	395	955	199,9	1,57
LSA 46.2 M5	404	955	215,8	1,738
LSA 46.2 L6	436	1065	247,6	2,109
LSA 46.2 L9	453	1065	273,7	2,385
LSA 46.2 VL12	502	1165	323,8	2,845

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