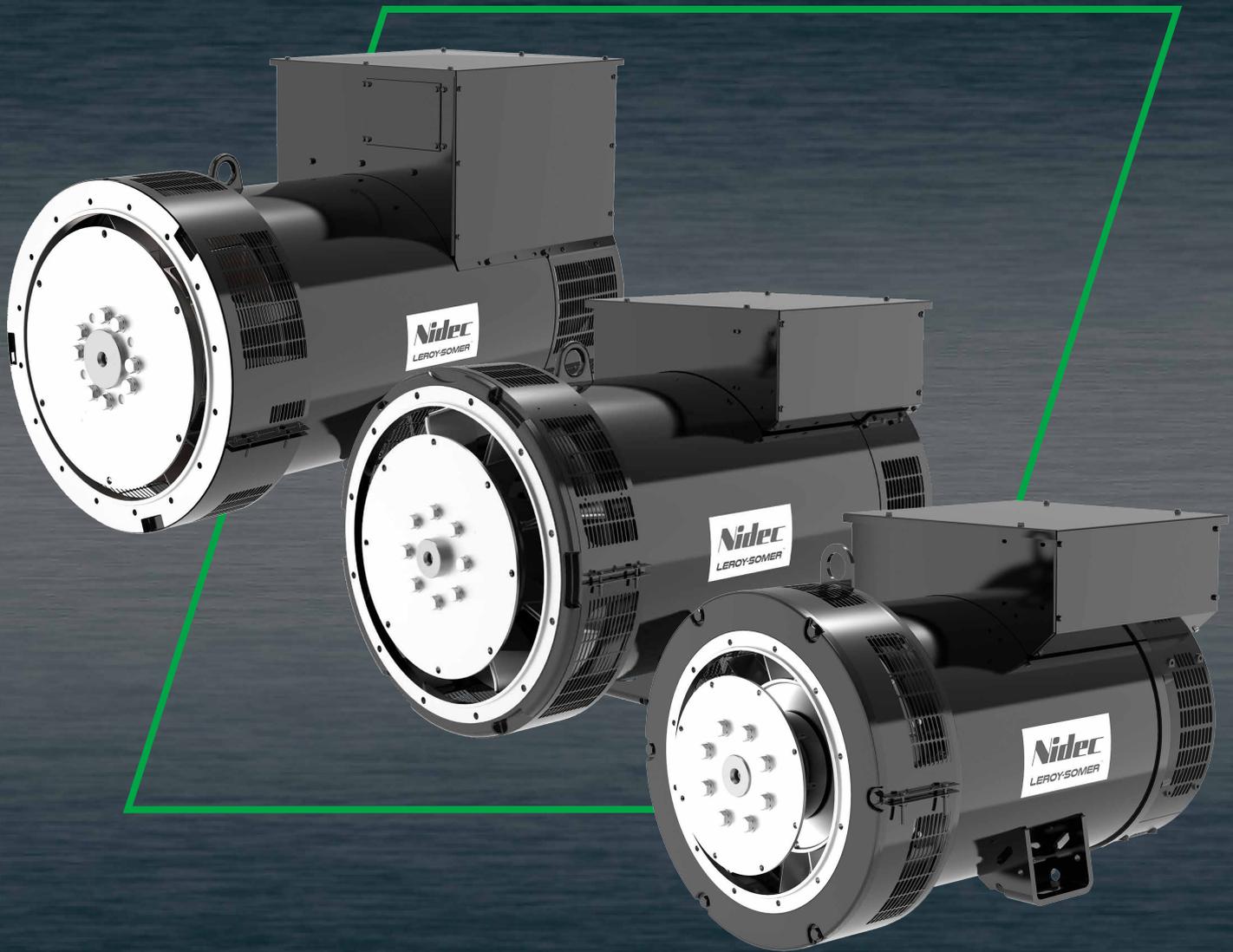


Nidec

Power



Low Voltage Alternators - 4 pole

TAL-A46 TAL-A473 TAL-A49

180 to 1000 kVA - 50 Hz / 225 to 1250 kVA - 60 Hz

Electrical and Mechanical data

LEROY-SOMER[™]

Low Voltage Alternators - 4 pole

TAL-A46 TAL-A473 TAL-A49

Adapted to needs

The TAL alternator range is designed to meet the specific needs of telecommunications, commercial & industrial markets, as well as prime and stand-by power applications.

Compliance with internationally recognized standards

4 Pole Alternators are in compliance to the main international standards and regulations: -IEC 60034, NEMA MG 1.32-33, BS 5000 Part 99, VDE 0530, ISO 8528/3 on request and depending on voltages, marin regulations, etc. It can be integrated into a CE marked generator.

Alternators are designed, manufactured and marketed in an ISO 9001 and ISO14001 environments.

Electrical design

- Class H insulation
- Low voltage winding
- 6-terminal plate (adapted plate for 6 & 12 wires machine)
- Possibility of star and delta connection
- Optimized performance

Robust design

- Compact and rugged assembly to withstand engine vibrations
- Steel frame
- Cast iron flanges and shields
- Single bearing design to be suitable with most diesel engines
- Sealed for life bearing
- Direction of rotation clockwise

Excitation and regulation system suited to the application

	Excitation system				Remote voltage potentiometer	C.T. for paralleling
	AVR	SHUNT	AREP+ (option)	PMG (option)		
Three-phase 6-wire	R150	Standard			√	
	R180		Standard	Standard	√	√
	D350	Option	Option	Option	√	√
Three-phase 12-wire*	R150	Standard			√	
	R250	Option			√	
	R180		Standard	Standard	√	√
	D350	Option	Option	Option	√	√

√: Possible option *with larger terminal box

Compact terminal box

- Easy access to AVR and terminals
- Standard terminal box with possibility of mounting Measuring/ protection CT (Please consult Leroy Somer for CT type)
- Possibility of current transformer for parallel operation

Environment and protection

- The alternators are IP 23
- Standard winding protection for non-harsh environments with relative humidity ≤ 95%

Available options

- AREP+ & PMG
- 12-lead
- Customized painting
- Two-bearing version
- Space heater
- Droop kit for alternator paralleling
- CE mark
- Stator sensors
- Measuring/Protection CT (Please consult Leroy Somer for CT type)
- Voltage trimmer
- Winding protection for harsh environments and relative humidity greater than 95% (system 2 - 4): TAL-A46:1 except 0.97 for TAL-A46H. TAL-A473:1 expect 0.95 for TAL-A473-D&F. TAL A49:1. (system 2 and above protection system will be proposed for rental application, prevented from potential hash environment)



TAL-A46 - 180 to 410 kVA - 50 Hz / 225 to 512 kVA - 60 Hz

Low Voltage Alternators - 4 pole

General characteristics - 6 & 12-wire

Insulation class	H	Excitation system 6 wire	SHUNT	AREP+ / PMG
Winding pitch	2/3 (Winding 6 or 6S)	AVR type	R150	R180
Number of wires	6 or 12	Excitation system 12 wire	SHUNT	AREP+ / PMG
Protection	IP 23	AVR type	R150	R180
Altitude	≤ 1000 m	Voltage regulation (*)	± 0.8 %	± 0.5 %
Overspeed	2250 R.P.M.	Total Harmonic distortion THD (**) in no-load	< 3.5 %	
Air flow (m³/s)	0.48	Total Harmonic distortion THD (**) in linear load	< 5 %	
Air flow (m³/s)	0.58	Waveform: NEMA = TIF (**)	< 50	
AREP+ Short-circuit current = 2.7 In: 5 seconds (*)		Waveform: I.E.C. = THF (**)	< 2%	

*D350: 2.7In 10 seconds

(*) Steady state (**) Total harmonic distortion between phases, no-load or on-load (non-distorting)

Ratings 50 Hz - 1500 R.P.M. - 6 & 12-wire

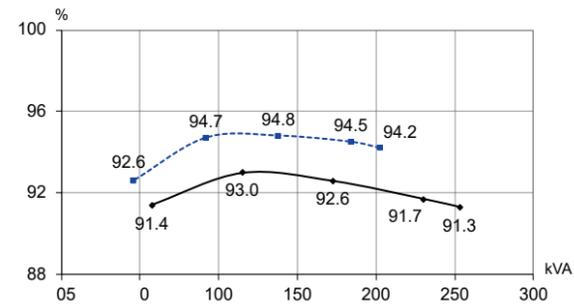
kVA / kW - P.F. = 0.8		Continuous / 40 °C				Stand-by / 40 °C				Stand-by / 27 °C											
Duty / T° C	Class / T° K	H / 125° K		F / 105° K		H / 150° K		H / 163° K		H / 150° K		H / 163° K									
Phase		3 ph.		1 ph.		3 ph.		1 ph.		3 ph.		1 ph.									
Y		380V	400V	415V	440V	380V	400V	415V	440V	380V	400V	415V	440V								
Δ		220V	230V	240V		220V	230V	240V		220V	230V	240V									
YY				220V				220V				220V									
ΔΔ					230V				230V				230V								
TAL-A46-C	kVA	230	230	230	219	138	209	209	209	199	126	244	244	244	232	146	253	253	253	241	152
	kW	184.0	184.0	184.0	175.2	110.4	167.2	167.2	167.2	159.2	100.8	195.2	195.2	195.2	185.6	116.8	202.4	202.4	202.4	192.8	121.6
TAL-A46-D	kVA	240	250	250	238	150	218	228	228	217	137	254	265	265	252	159	264	275	275	262	165
	kW	192.0	200.0	200.0	190.4	120.0	174.4	182.4	182.4	173.6	109.6	203.2	212.0	212.0	201.6	127.2	211.2	220.0	220.0	209.6	132.0
TAL-A46-E	kVA	275	275	275	261	165	250	250	250	238	150	292	292	292	277	175	303	303	303	287	182
	kW	220.0	220.0	220.0	208.8	132.0	200.0	200.0	200.0	190.4	120.0	233.6	233.6	233.6	221.6	140.0	242.4	242.4	242.4	229.6	145.6
TAL-A46-F	kVA	290	300	300	285	180	264	273	273	259	164	307	318	318	302	191	319	330	330	314	198
	kW	232.0	240.0	240.0	228.0	144.0	211.2	218.4	218.4	207.2	131.2	245.6	254.4	254.4	241.6	152.8	255.2	264.0	264.0	251.2	158.4
TAL-A46-G	kVA	325	325	325	309	195	296	296	296	281	177	345	345	345	328	207	360	360	360	340	215
	kW	260.0	260.0	260.0	247.2	156.0	236.8	236.8	236.8	224.8	141.6	276.0	276.0	276.0	262.4	165.6	288.0	288.0	288.0	272.0	172.0
TAL-A46-H	kVA	350	365	365	347	210	318	332	332	316	191	371	387	387	368	223	385	400	400	382	231
	kW	280.0	292.0	292.0	277.6	168.0	254.4	265.6	265.6	252.8	152.8	296.8	309.6	309.6	294.4	178.4	308.0	320.0	320.0	305.6	184.8

Ratings 60 Hz - 1800 R.P.M. - 6 & 12-wire

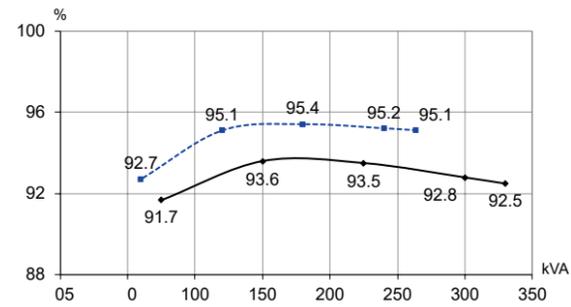
kVA / kW - P.F. = 0.8		Continuous / 40 °C				Stand-by / 40 °C				Stand-by / 27 °C											
Duty / T° C	Class / T° K	H / 125° K		F / 105° K		H / 150° K		H / 163° K		H / 150° K		H / 163° K									
Phase		3 ph.		1 ph.		3 ph.		1 ph.		3 ph.		1 ph.									
Y		380V	416V	440V	480V	380V	416V	440V	480V	380V	416V	440V	480V								
Δ		220V	240V			220V	240V			220V	240V										
YY			208V	220V	240V			208V	220V	240V			208V	220V	240V						
ΔΔ					240V				240V				240V								
TAL-A46-C	kVA	226	250	262	288	152	206	228	238	262	138	240	265	278	305	161	250	275	288	316	167
	kW	180.8	200.0	209.6	230.4	121.6	164.8	182.4	190.4	209.6	110.4	192.0	212.0	222.4	244.0	128.8	200.0	220.0	230.4	252.8	133.6
TAL-A46-D	kVA	245	265	280	313	165	223	241	255	285	150	260	281	297	332	175	270	292	308	344	182
	kW	196.0	212.0	224.0	250.4	132.0	178.4	192.8	204.0	228.0	120.0	208.0	224.8	237.6	265.6	140.0	216.0	233.6	246.4	275.2	145.6
TAL-A46-E	kVA	275	300	315	344	182	250	273	287	313	166	292	318	334	365	193	303	330	347	378	200
	kW	220.0	240.0	252.0	275.2	145.6	200.0	218.4	229.6	250.4	132.8	233.6	254.4	267.2	292.0	154.4	242.4	264.0	277.6	302.4	160.0
TAL-A46-F	kVA	290	315	340	360	200	264	287	309	328	182	307	334	360	382	212	320	347	374	400	220
	kW	232.0	252.0	272.0	288.0	160.0	211.2	229.6	247.2	262.4	145.6	245.6	267.2	288.0	305.6	169.6	256.0	277.6	299.2	320.0	176.0
TAL-A46-G	kVA	315	345	365	406	215	287	314	332	369	196	334	366	387	430	228	347	380	402	447	237
	kW	252.0	276.0	292.0	324.8	172.0	229.6	251.2	265.6	295.2	156.8	267.2	292.8	309.6	344.0	182.4	277.6	304.0	321.6	357.6	189.6
TAL-A46-H	kVA	345	375	400	438	231	314	341	364	399	210	366	398	424	464	245	380	413	440	480	254
	kW	276.0	300.0	320.0	350.4	184.8	251.2	272.8	291.2	319.2	168.0	292.8	318.4	339.2	371.2	196.0	304.0	330.4	352.0	384.0	203.2

Low Voltage Alternators - 4 pole

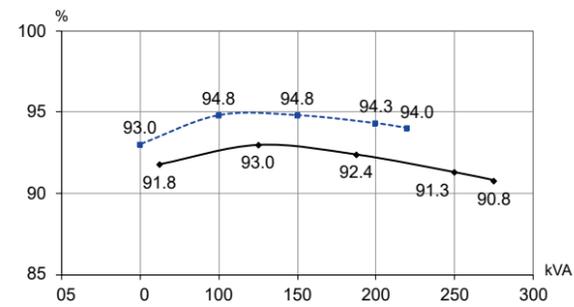
Efficiencies 400 V - 50 Hz (— P.F.: 0.8) (----- P.F.: 1) - 6 & 12-wire



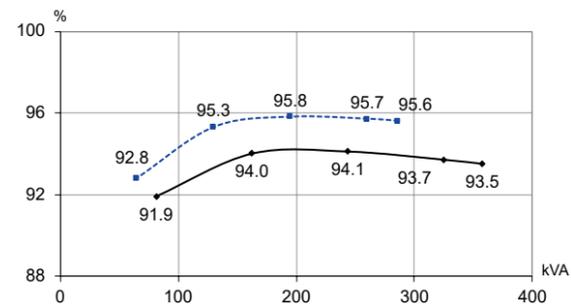
TAL-A46-C - 400V 50Hz



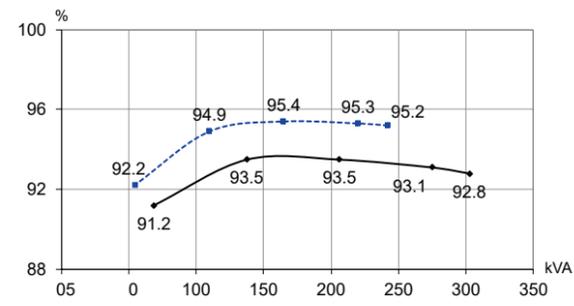
TAL-A46-F - 400V 50Hz



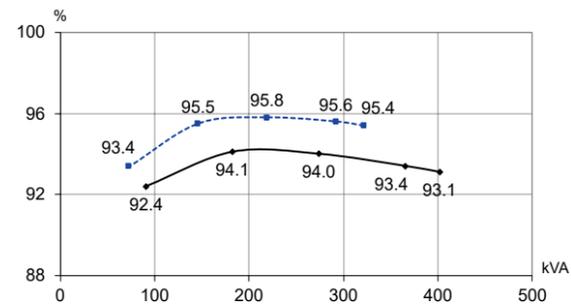
TAL-A46-D - 400V 50Hz



TAL-A46-G - 400V 50Hz



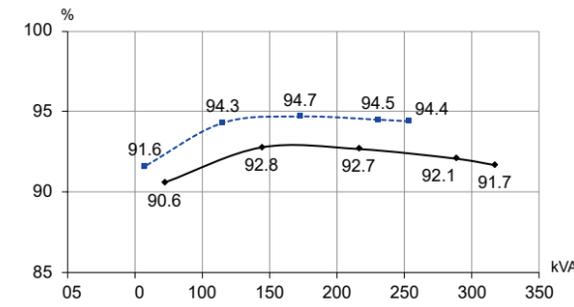
TAL-A46-E - 400V 50Hz



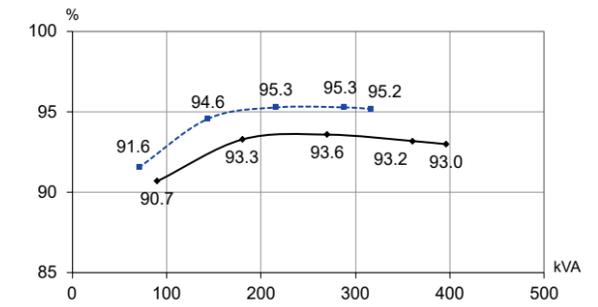
TAL-A46-H - 400V 50Hz

Low Voltage Alternators - 4 pole

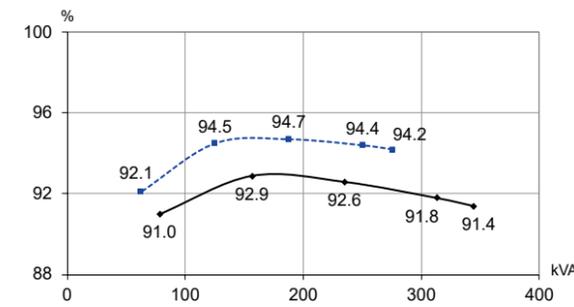
Efficiencies 480 V - 60 Hz (— P.F.: 0.8) (----- P.F.: 1) - 6 & 12-wire



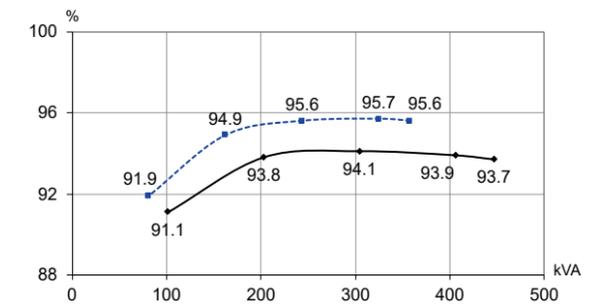
TAL-A46-C - 480V 60Hz



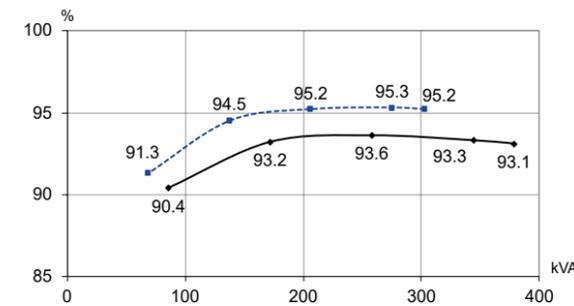
TAL-A46-F - 480V 60Hz



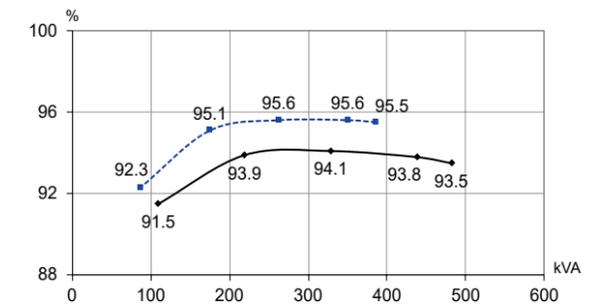
TAL-A46-D - 480V 60Hz



TAL-A46-G - 480V 60Hz



TAL-A46-E - 480V 60Hz



TAL-A46-H - 480V 60Hz

Low Voltage Alternators - 4 pole

Reactances (%). Time constants (ms) - Class H / 400 V - 6 & 12-wire

	C	D	E	F	G	H
Kcc Short-circuit ratio	0.37	0.34	0.49	0.45	0.48	0.43
Xd Direct-axis synchro. reactance unsaturated	340	370	278	303	270	303
Xq Quadrature-axis synchro. reactance unsaturated	173	188	142	154	137	154
T'do No-load transient time constant	1983	1983	2049	2049	2093	2093
X'd Direct-axis transient reactance saturated	17.1	18.6	13.5	14.8	12.9	14.5
T'd Short-circuit transient time constant	100	100	100	100	100	100
X''d Direct-axis subtransient reactance saturated	13.7	14.9	10.8	11.8	10.3	11.6
T''d Subtransient time constant	10	10	10	10	10	10
X''q Quadrature-axis subtransient reactance saturated	17.4	18.9	13.5	14.7	12.6	14.2
Xo Zero sequence reactance	0.71	0.77	0.56	0.61	0.53	0.6
X2 Negative sequence reactance saturated	15.58	16.94	12.19	13.3	11.49	12.9
Ta Armature time constant	15	15	15	15	15	15

Other class H / 400 V data

io (A) No-load excitation current SHUNT/AREP+	1.01	1.01	1.14	1.14	1.06	1.06
ic (A) On-load excitation current SHUNT/AREP+	3.84	4.14	3.5	3.76	3.3	3.63
uc (V) On-load excitation voltage SHUNT/AREP+	37.4	40.2	40.6	43.5	38.2	41.9
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT*	372	371	496	495	742	741
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP+*	524	525	687	688	856	854
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{LAG}	18	19.1	16.7	17.7	14.2	15.4
% Transient ΔU (on-load 4/4) AREP+ - P.F.: 0.8 _{LAG}	14.2	15	13.3	14.1	12.8	13.9
W No-load losses	3299	3299	4328	4328	4750	4750
W Heat dissipation	16579	18888	16242	18374	17367	20482

* P.F. = 0.6

Reactances (%). Time constants (ms) - Class H / 480 V - 6 & 12-wire

	C	D	E	F	G	H
Kcc Short-circuit ratio	0.36	0.33	0.47	0.45	0.46	0.43
Xd Direct-axis synchro. reactance unsaturated	355	386	290	303	281	303
Xq Quadrature-axis synchro. reactance unsaturated	181	197	148	154	143	154
T'do No-load transient time constant	1983	1983	2049	2049	2093	2093
X'd Direct-axis transient reactance saturated	17.9	19.4	14.1	14.8	13.4	14.5
T'd Short-circuit transient time constant	100	100	100	100	100	100
X''d Direct-axis subtransient reactance saturated	14.3	15.5	11.3	11.8	10.7	11.6
T''d Subtransient time constant	10	10	10	10	10	10
X''q Quadrature-axis subtransient reactance saturated	18.1	19.7	14	14.7	13.1	14.2
Xo Zero sequence reactance	0.74	0.81	0.59	0.61	0.56	0.6
X2 Negative sequence reactance saturated	16.26	17.67	12.71	13.3	11.96	12.9
Ta Armature time constant	15	15	15	15	15	15

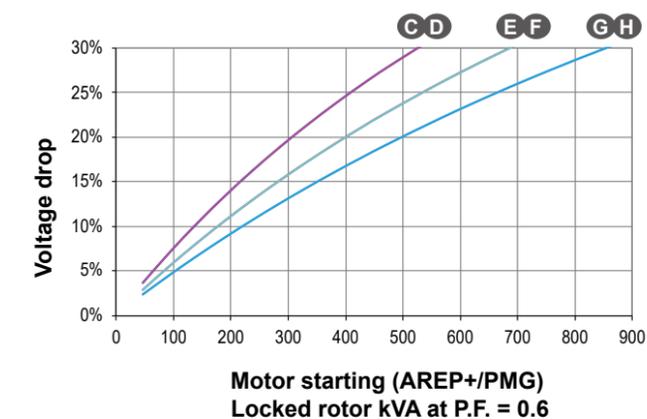
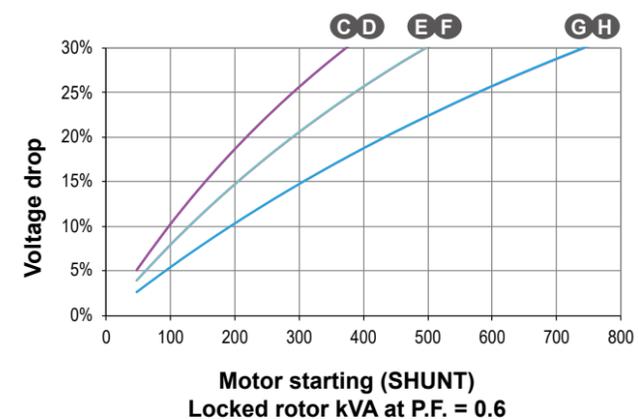
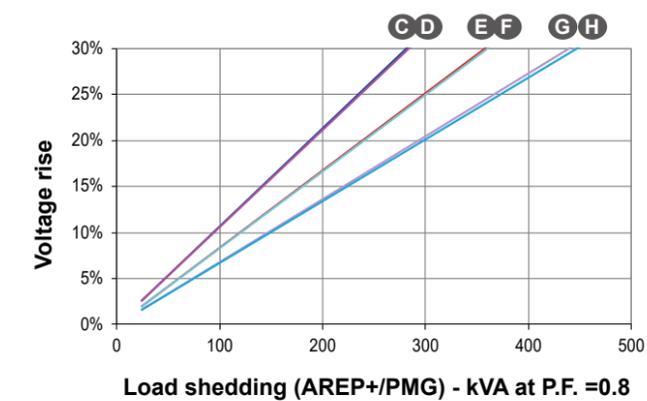
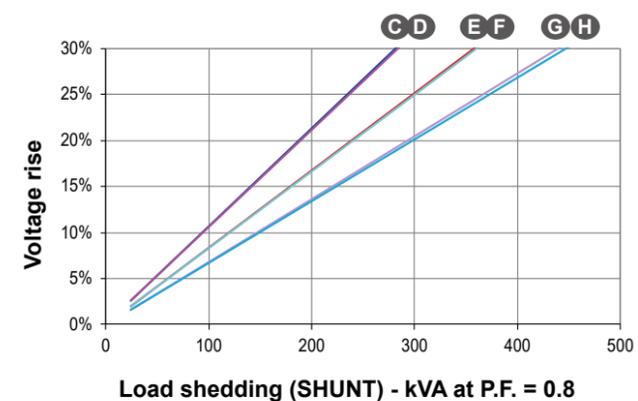
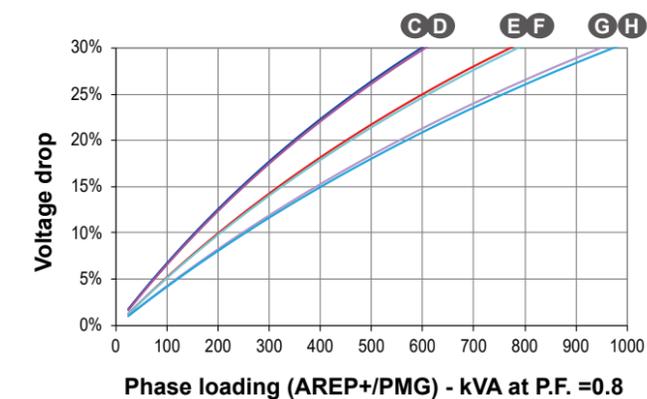
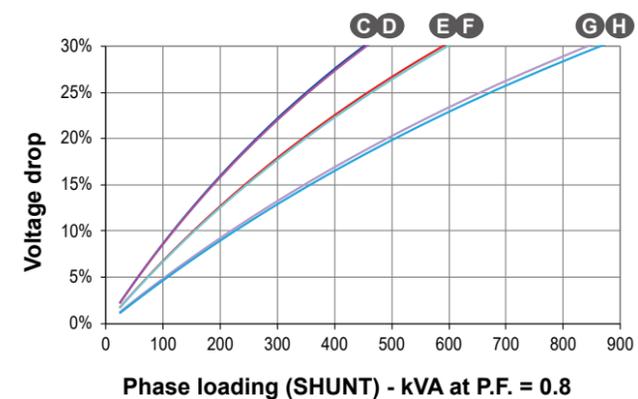
Other class H / 480 V data

io (A) No-load excitation current SHUNT/AREP+	1.01	1.01	1.14	1.14	1.06	1.06
ic (A) On-load excitation current SHUNT/AREP+	3.91	4.21	3.56	3.69	3.35	3.56
uc (V) On-load excitation voltage SHUNT/AREP+	38.3	41.1	41.5	43	38.9	41.3
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT*	446	448	594	593	888	889
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP+*	627	629	828	826	1024	1025
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{LAG}	18.5	19.6	17.2	17.7	14.6	15.4
% Transient ΔU (on-load 4/4) AREP+ - P.F.: 0.8 _{LAG}	14.6	15.5	13.7	14.1	13.2	13.9
W No-load losses	4960	4960	6365	6365	6978	6978
W Heat dissipation	19692	22264	19530	20731	20941	23137

* P.F. = 0.6

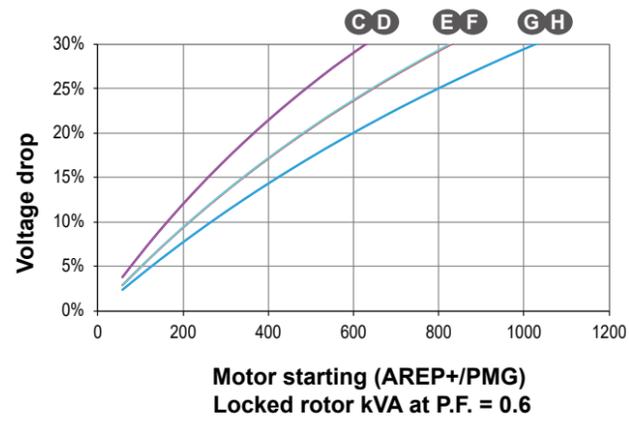
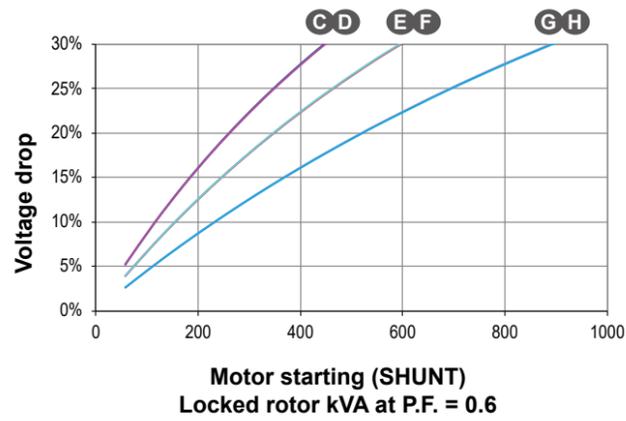
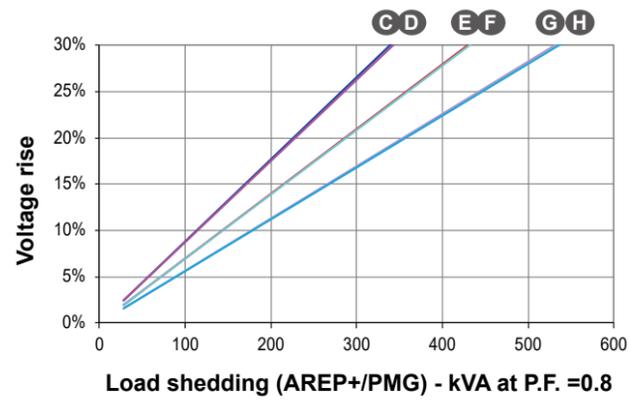
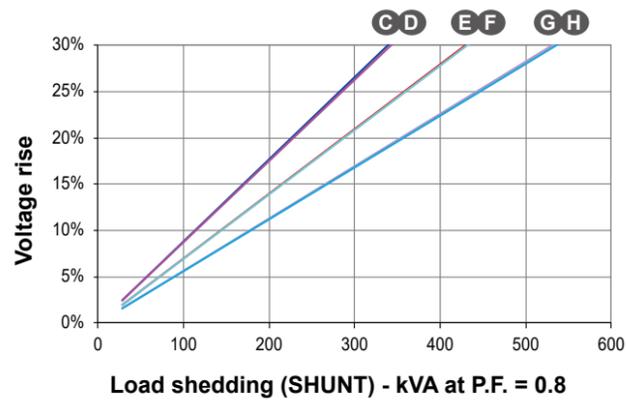
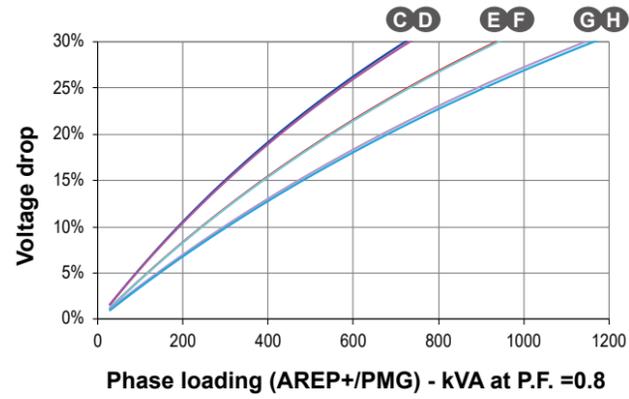
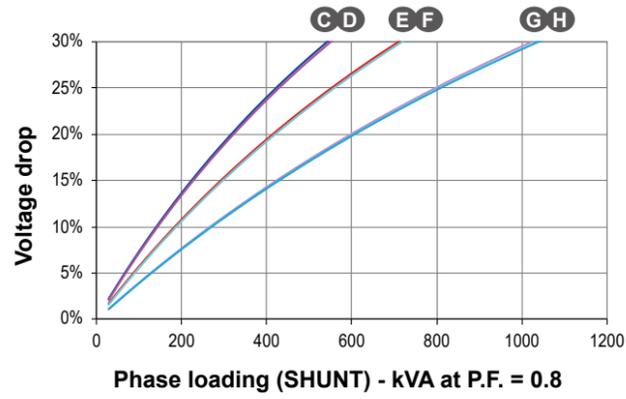
Low Voltage Alternators - 4 pole

Transient voltage variation 400 V - 50 Hz - 6 & 12-wire



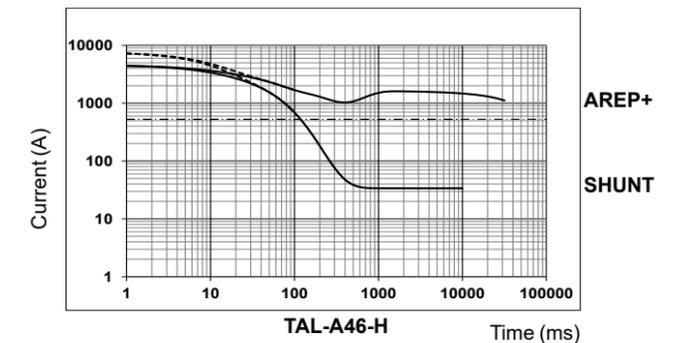
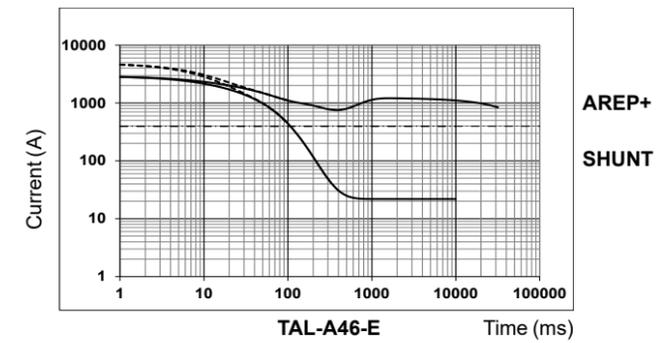
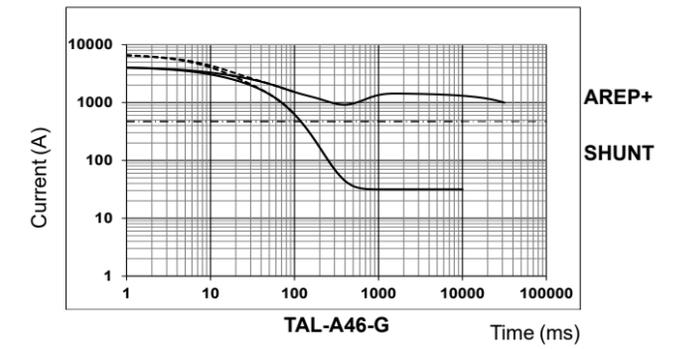
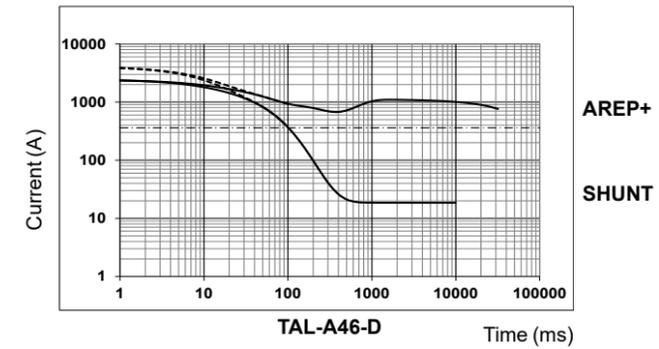
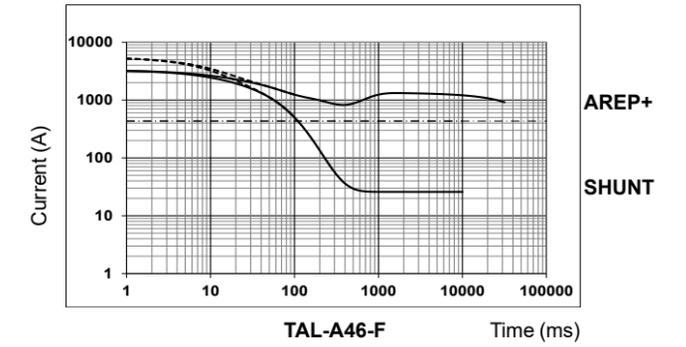
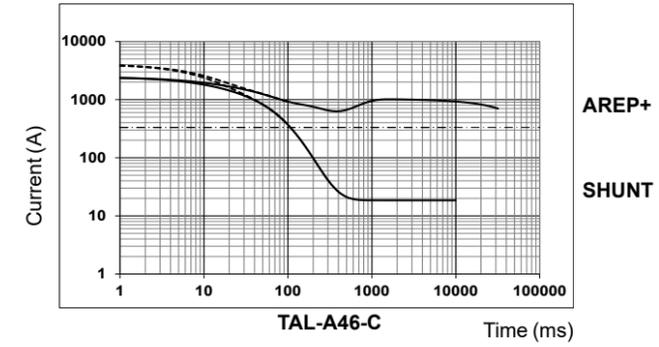
Low Voltage Alternators - 4 pole

Transient voltage variation 480 V - 60 Hz - 6 & 12-wire



Low Voltage Alternators - 4 pole

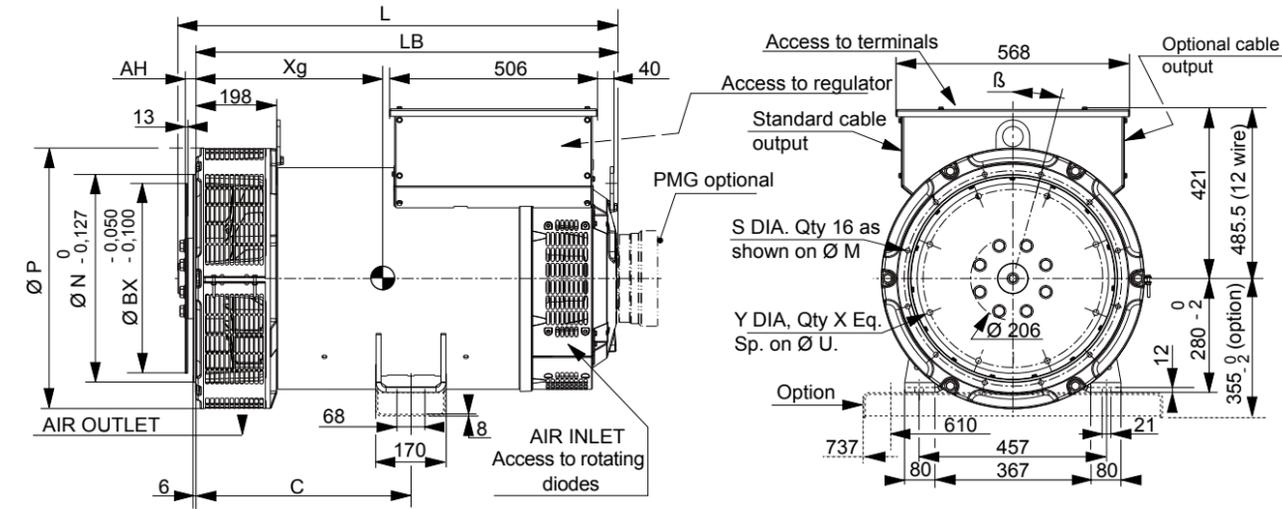
3-phase short-circuit curves at no load and rated speed (star connection Y) - 6 & 12-wire



Symmetrical _____
Asymmetrical - - - - -

Low Voltage Alternators - 4 pole

Single bearing general arrangement - 6 & 12-wire



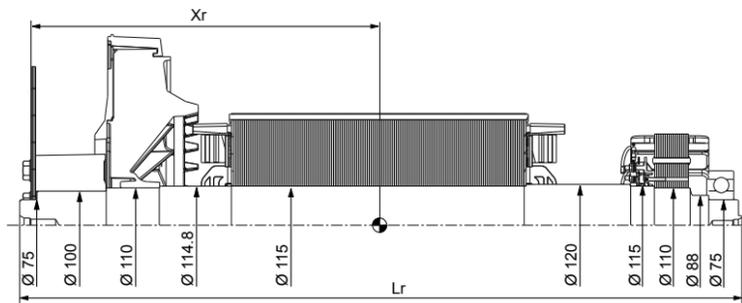
Dimensions (mm) and weight						Coupling			
Type	L without PMG	LB	Xg	C	Weight (kg)	Flex plate	11 1/2	14	18
TAL-A46-C	944**/935	892	423	429	599	Flange S.A.E 3	X		
TAL-A46-D	944**/935	892	423	429	607	Flange S.A.E 2	X		
TAL-A46-E	989**/980	937	445	429	754	Flange S.A.E 1	X	X	
TAL-A46-F	989**/980	937	445	429	754	Flange S.A.E 1/2		X	
TAL-A46-G*	1084**/1075	1032	493	525	888	Flange S.A.E 0		X	X
TAL-A46-H*	1084**/1075	1032	493	525	888				

* Shaft height = 355 mm optional
** Dimensions with SAE 11 1/2

Flange (mm)						Flex plate (mm)					
S.A.E.	P	N	M	S	β °	S.A.E.	BX	U	X	Y	AH
3	600**/641	409.575	428.625	11	15°	11 1/2	352.42	333.38	8	11	39.6
2	600**/641	447.675	466.725	11	15°	14	466.72	438.15	8	14	25.4
1	600**/641	511.175	530.225	12	15°	18****	571.5	542.92	6	17	15.7
1/2	648	584.2	619.125	14	15°						
0	710	647.7	679.45	14	11° 15'						

*** Specific dimension TAL A46C
**** Optional

Torsional analysis data



Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm²): (4J = MD²)								
Type	Flex plate S.A.E. 11 1/2				Flex plate S.A.E. 14			
	Xr	Lr	M	J	Xr	Lr	M	J
TAL-A46-C	420	923	255	2.64	408	923	256	2.8
TAL-A46-D	420	923	255	2.64	408	923	256	2.8
TAL-A46-E	460	968	304	3.28	448	968	305	3.44
TAL-A46-F	460	968	304	3.28	448	968	305	3.44
TAL-A46-G	508	1063	358	3.97	497	1063	359	4.13
TAL-A46-H	508	1063	358	3.97	497	1063	359	4.13

NOTE : Dimensions are for information only and may be subject to modifications. Contractual 2D drawings can be downloaded from the Leroy-Somer site, 3D drawing files are available upon request.
*Please contact us for the double bearing dimension

Low Voltage Alternators - 4 pole

General characteristics

Insulation class	H	Excitation system 6 wire	SHUNT	AREP+ / PMG
Winding pitch	2/3 (wind.6S - 6-wire / wind.6 - 12-wire)	AVR type	R150	R180
Number of wires	6 (12 option)	Excitation system 12-wire (option)	SHUNT	AREP+ / PMG
Protection	IP 23	AVR type	R150	R180
Altitude	≤ 1000 m	Voltage regulation (*)	± 0.8 %	± 0.5 %
Overspeed	2250 R.P.M.	Total Harmonic Distortion THD (**) in no-load	< 2.5 %	
Air flow 50 Hz	0.9 m³/s	Total Harmonic Distortion THD (**) in linear load	< 5 %	
Air flow 60 Hz	1.1 m³/s	Waveform: NEMA = TIF (**)	< 50	
AREP+/PMG Short-circuit current = 2.7 In : 5 seconds (*)		Waveform: I.E.C. = THF (**)	< 2%	

*D350: 2.7In 10 seconds
(*) Steady state (**) Total harmonic distortion between phases, no-load or on-load (non-distorting)

Ratings 50 Hz - 1500 R.P.M.

kVA / kW - P.F. = 0.8	Duty / T° C	Continuous / 40 °C				Continuous / 40 °C				Stand-by / 40 °C				Stand-by / 27 °C			
		H / 125° K				F / 105° K				H / 150° K				H / 163° K			
		3 ph.								3 ph.							
TAL-A473-A	kVA	390	410	410	400	355	375	375	364	413	435	435	424	429	450	450	440
	kW	312.0	328.0	328.0	320.0	284.0	300.0	300.0	291.2	330.4	348.0	348.0	339.2	343.2	360.0	360.0	352.0
TAL-A473-B	kVA	455	455	455	445	415	415	415	405	480	480	480	472	500	500	500	490
	kW	364.0	364.0	364.0	356.0	332.0	332.0	332.0	324.0	384.0	384.0	384.0	377.6	400.0	400.0	400.0	392.0
TAL-A473-C	kVA	500	500	500	455	455	455	455	414	530	530	530	482	550	550	550	500
	kW	400.0	400.0	400.0	364.0	364.0	364.0	364.0	331.0	424.0	424.0	424.0	386.0	440.0	440.0	440.0	400.0
TAL-A473-D	kVA	525	550	550	540	478	500	500	491	557	585	585	572	578	600	600	594
	kW	420.0	440.0	440.0	432.0	382.4	400.0	400.0	392.8	445.6	468.0	468.0	457.6	462.4	480.0	480.0	475.2
TAL-A473-E	kVA	600	600	600	500	545	545	545	455	635	635	635	530	660	660	660	550
	kW	480.0	480.0	480.0	400.0	436.0	436.0	436.0	364.0	508.0	508.0	508.0	424.0	528.0	528.0	528.0	440.0
TAL-A473-F	kVA	645	660	660	630	587	600	600	573	684	700	700	668	710	730	730	693
	kW	516.0	528.0	528.0	504.0	469.6	480.0	480.0	458.4	547.2	560.0	560.0	534.4	568.0	584.0	584.0	554.4

(*) 12-wire option

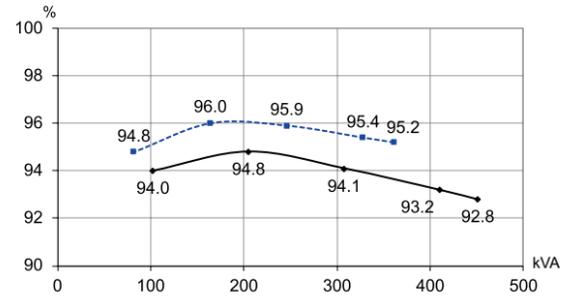
Ratings 60 Hz - 1800 R.P.M.

kVA / kW - P.F. = 0.8	Duty / T° C	Continuous / 40 °C				Continuous / 40 °C				Stand-by / 40 °C				Stand-by / 27 °C			
		H / 125° K				F / 105° K				H / 150° K				H / 163° K			
		3 ph.								3 ph.							
TAL-A473-A	kVA	450	480	500	510	410	435	455	465	475	510	530	540	495	530	550	560
	kW	360.0	384.0	400.0	408.0	328.0	348.0	364.0	372.0	380.0	408.0	424.0	432.0	396.0	424.0	440.0	448.0
TAL-A473-B	kVA	475	510	530	570	430	465	480	520	505	540	560	605	525	560	585	625
	kW	380.0	408.0	424.0	456.0	344.0	372.0	384.0	416.0	404.0	432.0	448.0	484.0	420.0	448.0	468.0	500.0
TAL-A473-C	kVA	520	555	590	625	475	505	535	570	550	590	625	665	570	610	650	690
	kW	416.0	444.0	472.0	500.0	380.0	404.0	428.0	456.0	440.0	472.0	500.0	532.0	456.0	488.0	520.0	552.0
TAL-A473-D	kVA	560	610	630	690	510	555	575	630	595	645	670	730	615	670	695	750
	kW	448.0	488.0	504.0	552.0	408.0	444.0	460.0	504.0	476.0	516.0	536.0	584.0	492.0	536.0	556.0	600.0
TAL-A473-E	kVA	600	660	685	750	545	600	625	685	635	700	725	795	660	725	755	825
	kW	480.0	528.0	548.0	600.0	436.0	480.0	500.0	548.0	508.0	560.0	580.0	636.0	528.0	580.0	604.0	660.0
TAL-A473-F	kVA	650	715	755	825	590	650	685	750	690	760	800	875	720	785	830	910
	kW	520.0	572.0	604.0	660.0	472.0	520.0	548.0	600.0	552.0	608.0	640.0	700.0	576.0	628.0	664.0	728.0

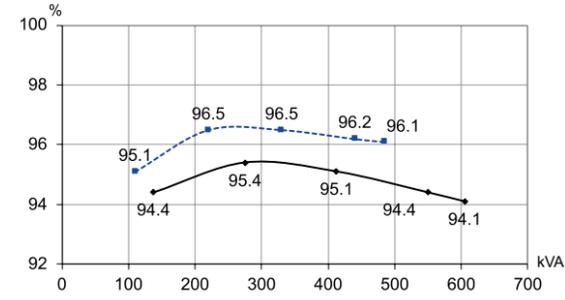
(*) 12-wire option

Low Voltage Alternators - 4 pole

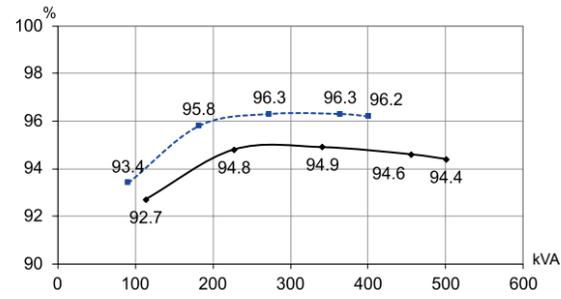
Efficiencies 400 V 50 Hz (— P.F.: 0.8)



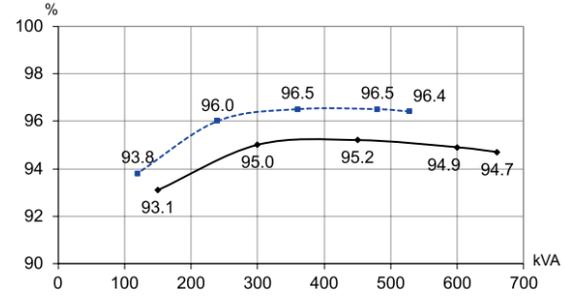
TAL-A473-A - 400V 50 Hz



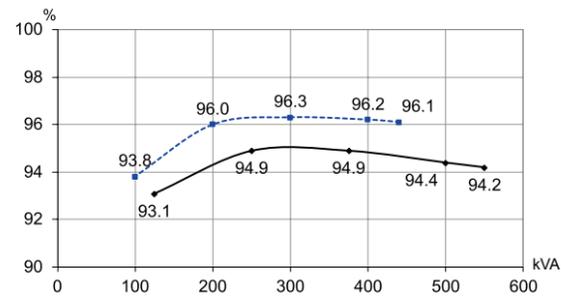
TAL-A473-D - 400V 50 Hz



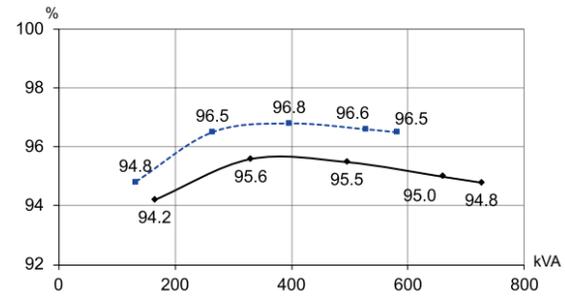
TAL-A473-B - 400V 50 Hz



TAL-A473-E - 400V 50 Hz



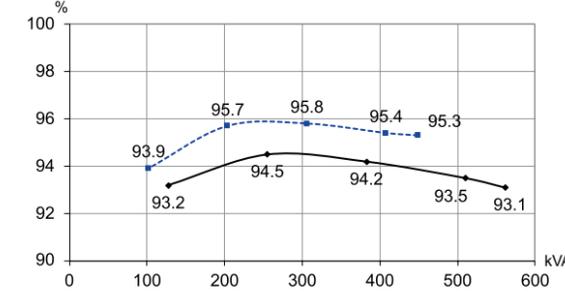
TAL-A473-C - 400V 50 Hz



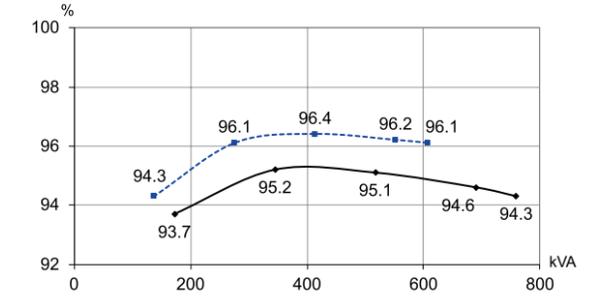
TAL-A473-F - 400V 50 Hz

Low Voltage Alternators - 4 pole

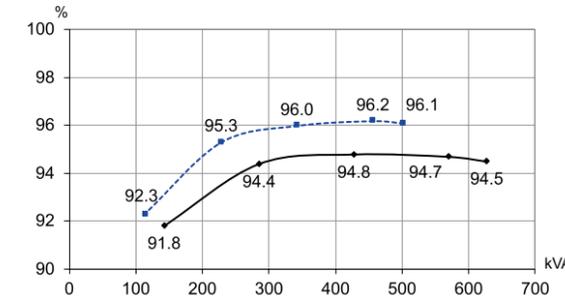
Efficiencies 480 V - 60 Hz (— P.F.: 0.8) (..... P.F.: 1) - 6 & 12-wire



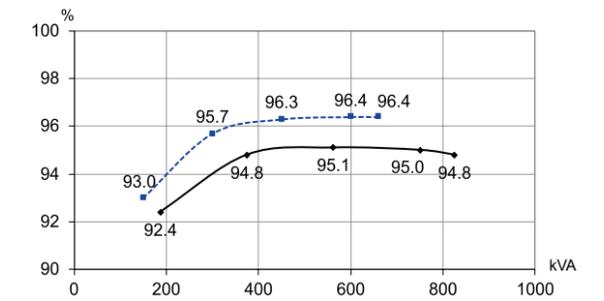
TAL-A473-A - 480V 60 Hz



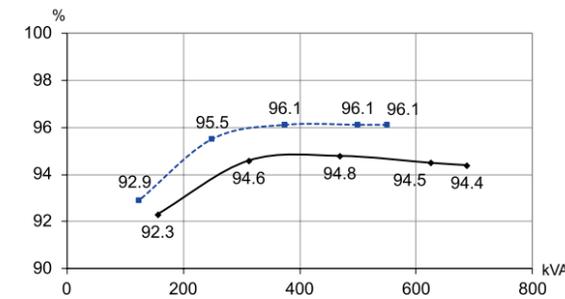
TAL-A473-D - 480V 60 Hz



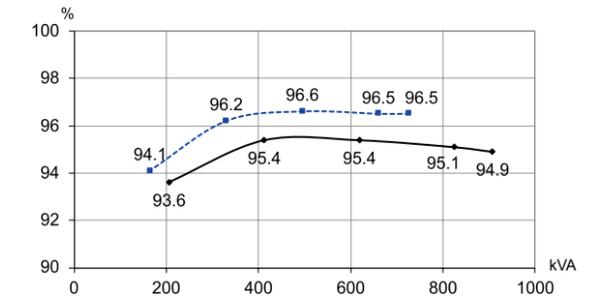
TAL-A473-B - 480V 60 Hz



TAL-A473-E - 480V 60 Hz



TAL-A473-C - 480V 60 Hz



TAL-A473-F - 480V 60 Hz

Low Voltage Alternators - 4 pole

Reactances (%). Time constants (ms) - Class H / 400 V - 6 & 12-wire

	A	B	C	D	E	F
Kcc Short-circuit ratio	0.25	0.52	0.47	0.32	0.55	0.41
Xd Direct-axis synchro. reactance unsaturated	483	302	332	403	294	343
Xq Quadrature-axis synchro. reactance unsaturated	246	154	169	205	150	175
T'do No-load transient time constant	1968	1982	1982	1987	1994	1996
X'd Direct-axis transient reactance saturated	24.5	15.2	16.7	20.3	14.7	17.2
T'd Short-circuit transient time constant	100	100	100	100	100	100
X''d Direct-axis subtransient reactance saturated	17.2	10.6	11.7	14.2	10.3	12
T''d Subtransient time constant	10	10	10	10	10	10
X''q Quadrature-axis subtransient reactance saturated	19.2	13.6	14.8	18.9	14.7	17.4
Xo Zero sequence reactance unsaturated	1.02	0.63	0.69	0.84	0.61	0.71
X2 Negative sequence reactance saturated	18.23	12.15	13.35	16.6	12.52	14.74
Ta Armature time constant	15	15	15	15	15	15

Other class H / 400 V data

io (A) No-load excitation current SHUNT/AREP+	0.68	1.07	1.07	0.8	1.13	0.93
ic (A) On-load excitation current SHUNT/AREP+	3.63	3.35	3.62	3.5	3.47	3.44
uc (V) On-load excitation voltage SHUNT/AREP+	37.9	34.9	37.7	36.4	36	35.6
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT/AREP+*	697/836	1026/1309	1029/1314	1125/1352	1284/1682	1398/1679
% Transient ΔU (on-load 4/4) SHUNT/AREP+ - P.F.: 0.8 _{LAG}	16.5/14.4	16.3/14.9	17.1/15.6	14.4 /12.5	18/16.8	17.6/16.1
W No-load losses	3935	6288	6288	5194	7696	6770
W Heat dissipation	23728	20427	23283	25761	25676	27502

* P.F. = 0.6

Reactances (%). Time constants (ms) - Class H / 480 V - 6 & 12-wire

	A	B	C	D	E	F
Kcc Short-circuit ratio	0.24	0.5	0.45	0.31	0.52	0.39
Xd Direct-axis synchro. reactance unsaturated	501	315	345	422	309	361
Xq Quadrature-axis synchro. reactance unsaturated	255	160	176	215	157	184
T'do No-load transient time constant	1968	1982	1982	1987	1994	1996
X'd Direct-axis transient reactance saturated	254	15.9	17.4	21.2	15.5	18
T'd Short-circuit transient time constant	100	100	100	100	100	100
X''d Direct-axis subtransient reactance saturated	17.8	11.1	12.2	14.8	10.8	12.6
T''d Subtransient time constant	10	10	10	10	10	10
X''q Quadrature-axis subtransient reactance saturated	19.9	14.2	15.6	19.8	15.4	18.3
Xo Zero sequence reactance unsaturated	1.06	0.66	0.72	0.88	0.64	0.75
X2 Negative sequence reactance saturated	18.89	12.68	13.91	17.35	13.15	15.48
Ta Armature time constant	15	15	15	15	15	15

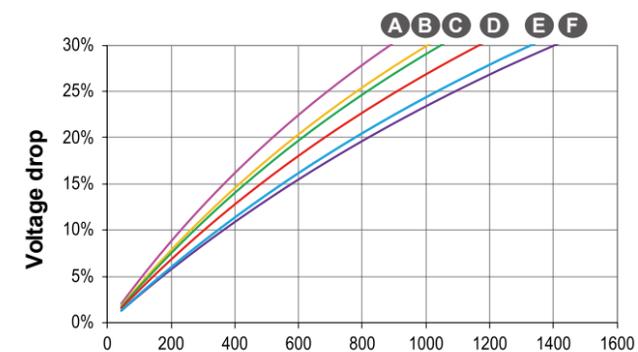
Other class H / 480 V data

io (A) No-load excitation current SHUNT/AREP+	0.68	1.07	1.07	0.8	1.11	0.92
ic (A) On-load excitation current SHUNT/AREP+	3.7	3.41	3.68	3.58	3.5	3.49
uc (V) On-load excitation voltage SHUNT/AREP+	38.8	35.7	38.5	37.4	36.5	36.3
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT/AREP+*	834/1000	1270/1579	1267/1572	1348/1619	1598/1995	1660/1992
% Transient ΔU (on-load 4/4) SHUNT/AREP+ - P.F.: 0.8 _{LAG}	17/14.8	16.6/15.2	17.4/15.9	14.9/12.9	18.5/17.2	18.1/16.5
W No-load losses	6155	9429	9429	7916	11204	10008
W Heat dissipation	28350	25384	28574	31485	31564	33709

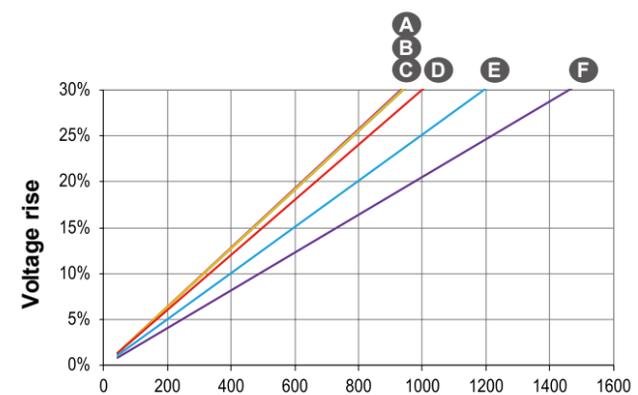
* P.F. = 0.6

Low Voltage Alternators - 4 pole

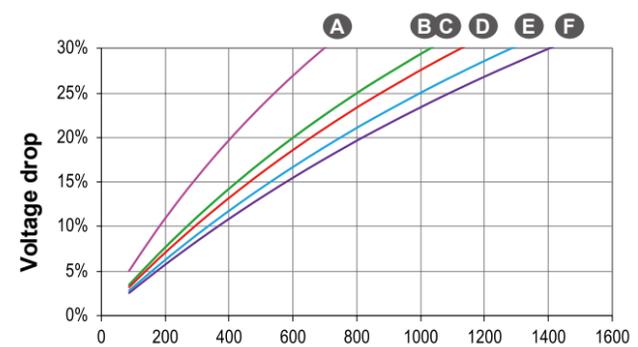
Transient voltage variation 400 V - 50 Hz - 6 & 12-wire



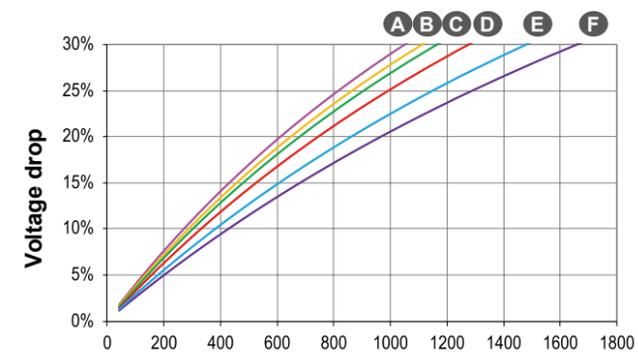
Phase loading (SHUNT) - kVA at 0.8 P.F.



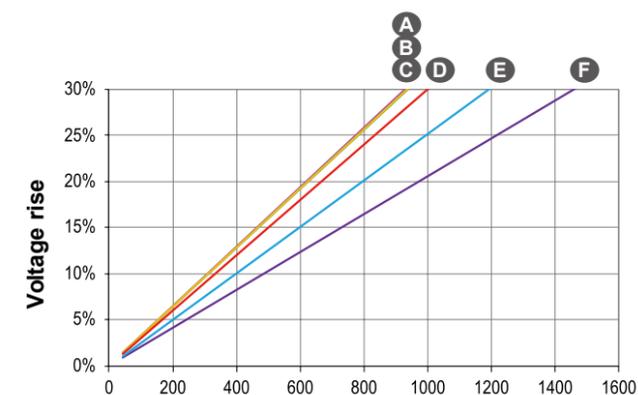
Load shedding (SHUNT) - kVA at 0.8 P.F.



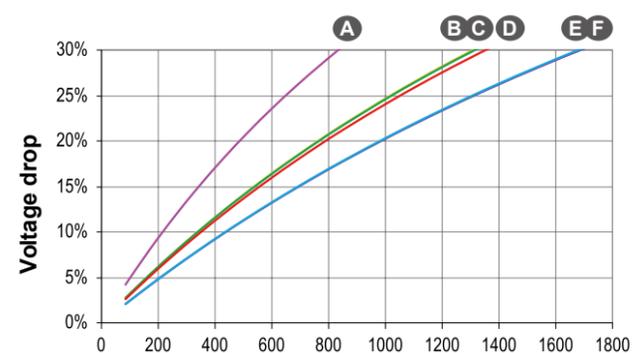
Motor starting (SHUNT) - Locked rotor kVA at 0.6 P.F.



Phase loading (AREP+/PMG) - kVA at 0.8 P.F.



Load shedding (AREP+/PMG) - kVA at 0.8 P.F.

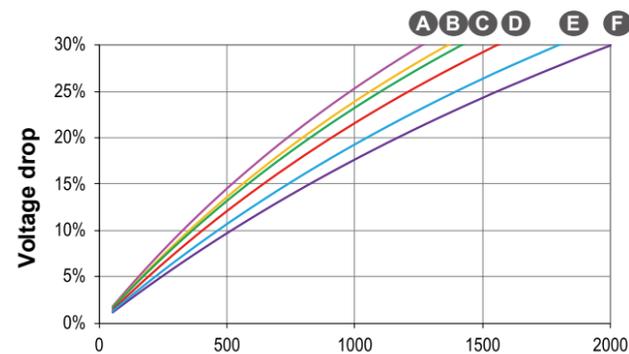
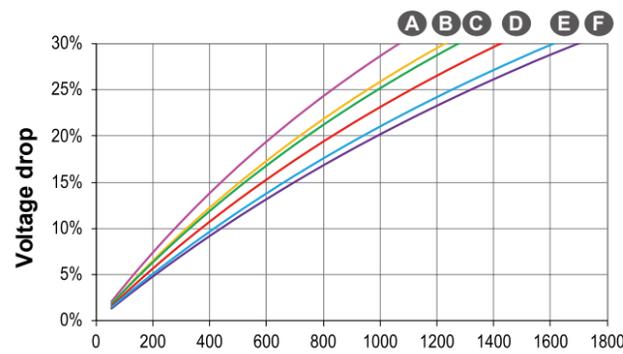


Motor starting (AREP+/PMG) - Locked rotor kVA at 0.6 P.F.

- For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.8$
- For voltages other than 400V (Y), 230V (Δ) at 50 Hz, then kVA must be multiplied by $(400/U)^2$ or $(230/U)^2$.
- Transient performance of the PMG option, consult us.

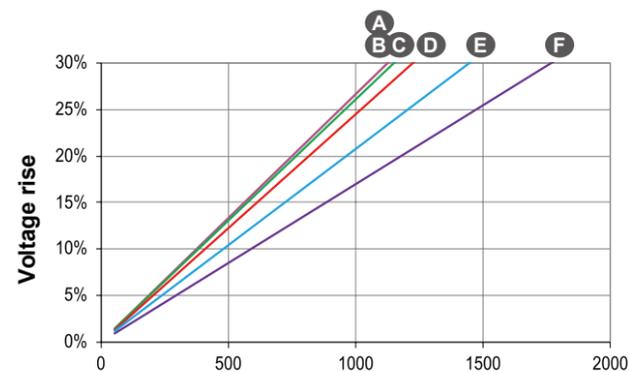
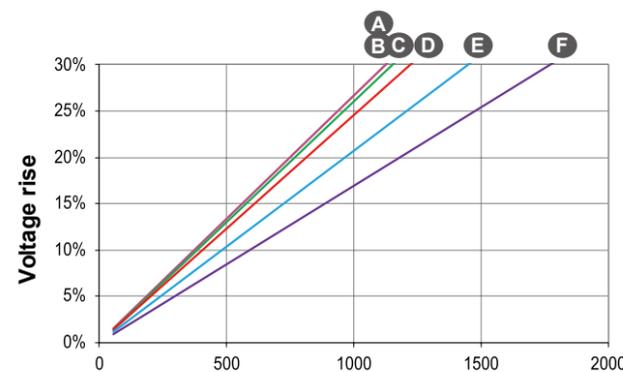
Low Voltage Alternators - 4 pole

Transient voltage variation 480 V - 60 Hz - 6 & 12-wire



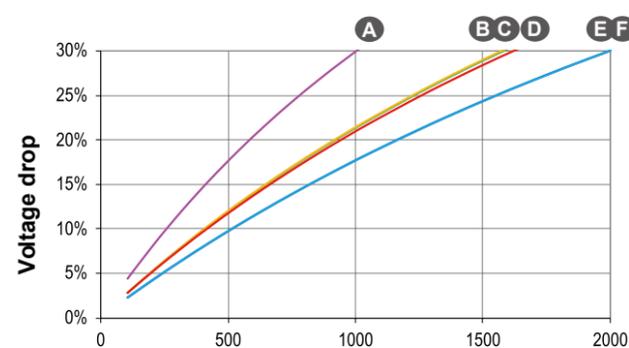
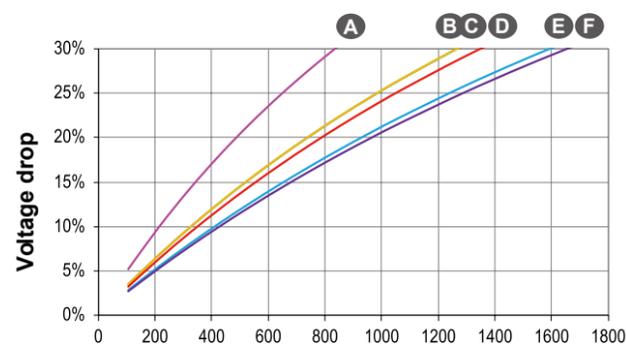
Phase loading (SHUNT) - kVA at 0.8 P.F.

Phase loading (AREP+/PMG) - kVA at 0.8 P.F.



Load shedding (SHUNT) - kVA at 0.8 P.F.

Load shedding (AREP+/PMG) - kVA at 0.8 P.F.



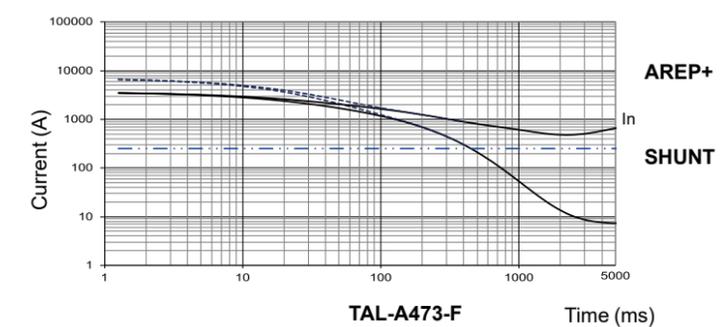
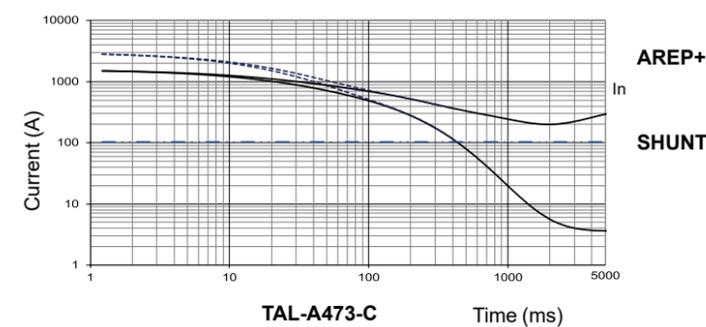
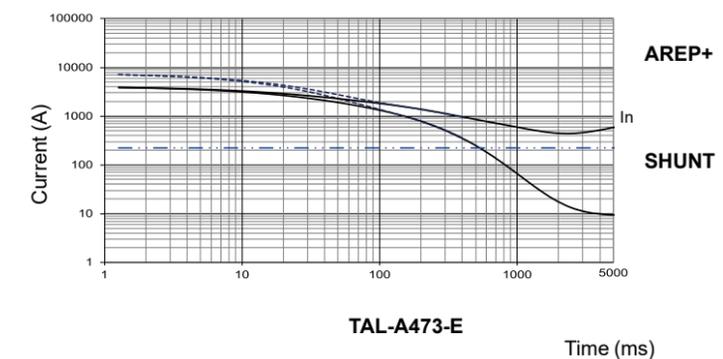
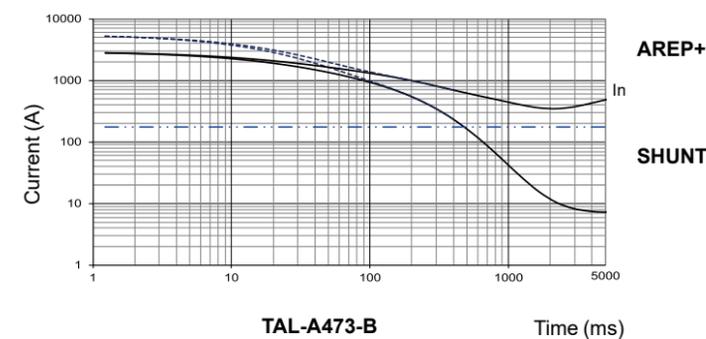
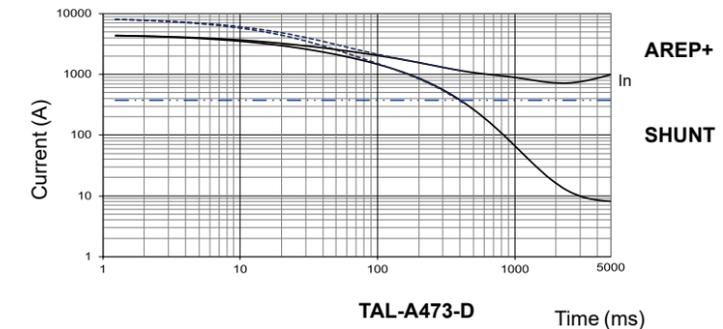
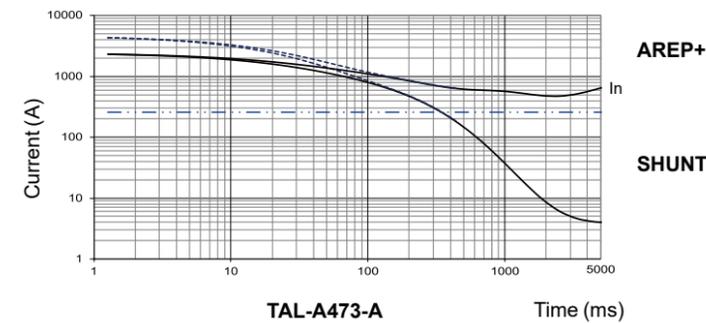
Motor starting (SHUNT) - Locked rotor kVA at 0.6 P.F.

Motor starting (AREP+/PMG) - Locked rotor kVA at 0.6 P.F.

- For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.8$
- For voltages other than 480V (Y), 277V (Δ), 240V (YY) at 60 Hz, then kVA must be multiplied by $(480/U)^2$ or $(277/U)^2$ or $(240/U)^2$.
- Transient performance of the PMG option, consult us.

Low Voltage Alternators - 4 pole

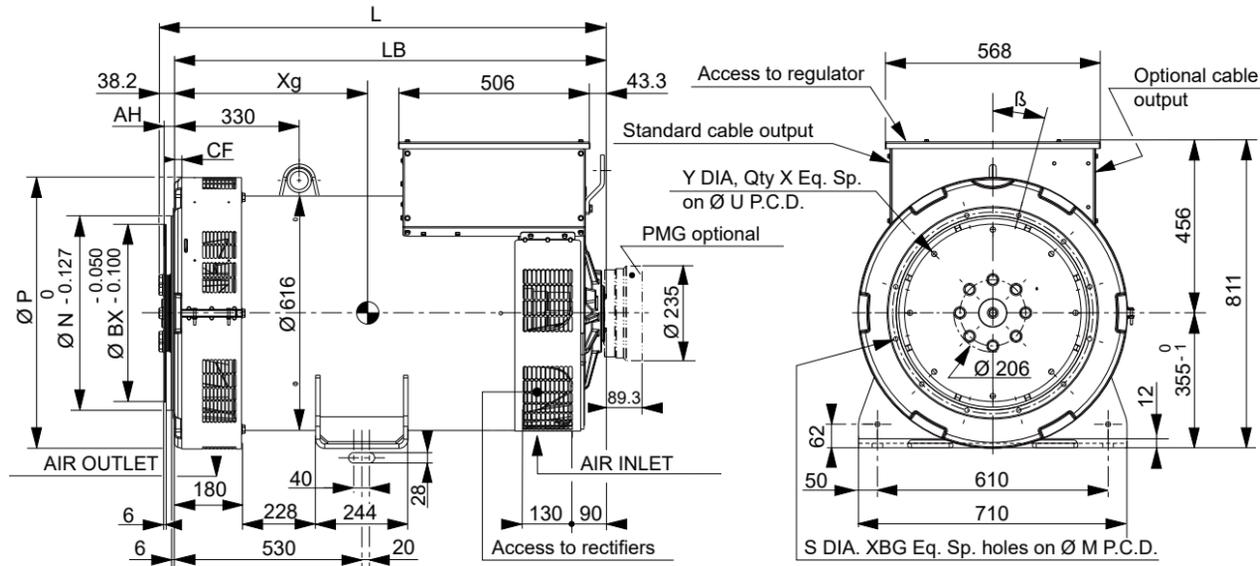
3-phase short-circuit curves at no load and rated speed (star connection Y) - 6 & 12-wire



Symmetrical _____
Asymmetrical -----

Low Voltage Alternators - 4 pole

Single bearing general arrangement - 6 & 12-wire

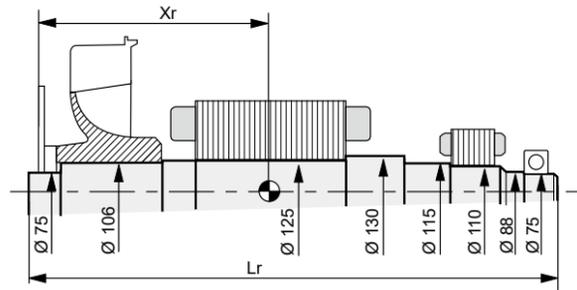


Dimensions (mm) and weight				Coupling				
Type	L without PMG maxi*	LB	Xg	Weight (kg)	Flex plate	11 1/2	14	18
TAL-A473-A	1048	996	450	1013	Flange S.A.E 1	X	X	
TAL-A473-B-C	1108	1056	484	1142	Flange S.A.E 1/2		X	
TAL-A473-D	1208	1156	515	1230	Flange S.A.E 0		X	X
TAL-A473-E	1228	1176	543	1366				
TAL-A473-F	1228	1176	553	1414				

* L maxi = LB + AH maxi + 13

Flange (mm)								Flex plate (mm)					
S.A.E.	P	N	M	XBG	S	β°	CF	S.A.E.	BX	U	X	Y	AH
1	713	511.175	530.225	12	12	15°	15	11 1/2	352.42	333.38	8	11	39.6
1/2	713	584.2	619.125	12	14	15°	22	14	466.72	438.15	8	14	25.4
0	713	647.7	679.45	16	14	11° 15'	42	18	571.5	542.92	6	17	15.7

Torsional analysis data



Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm²): (4J = MD²)													
Flex plate	S.A.E. 11 1/2				S.A.E. 14				S.A.E. 18				
	Type	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J
TAL-A473-A		437	1036	413	6.7	421	1023	414	6.77	411	1015	414	7.03
TAL-A473-B-C		473	1096	456	7.3	457	1083	456	7.41	447	1075	457	7.67
TAL-A473-D		503	1196	491	7.8	487	1183	492	7.88	477	1175	492	8.14
TAL-A473-E		534	1216	545	8.7	518	1203	546	8.83	508	1195	546	9.09
TAL-A473-F		544	1216	563	9.1	529	1203	564	9.18	519	1195	564	9.44

NOTE : Dimensions are for information only and may be subject to modifications. Contractual 2D drawings can be downloaded from the Leroy-Somer site. 3D drawing files are available upon request.

*Please contact us for the double bearing dimension

Low Voltage Alternators - 4 pole

General characteristics - 6 & 12-wire

Insulation class	H	Excitation system 6 wire	SHUNT	AREP+ / PMG
Winding pitch	2/3 (Winding 6S or 6)	AVR type	R150	R180
Number of wires	6 or 12	Excitation system 12 wire	SHUNT	AREP+ / PMG
Protection	IP 23	AVR type	R150	R180
Altitude	≤ 1000 m	Voltage regulation (*)	± 0.8 %	± 0.5 %
Overspeed	2250 R.P.M.	Total Harmonic distortion THD (**) in no-load	< 3.5 %	
Air flow (m³/s)	1	Total Harmonic distortion THD (**) in linear load	< 5 %	
Air flow (m³/s)	1.2	Waveform: NEMA = TIF (**)	< 50	
AREP+ Short-circuit current = 2.7 In: 5 seconds (*)		Waveform: I.E.C. = THF (**)	< 2%	

*D350: 2.7In 10 seconds

(*) Steady state (**) Total harmonic distortion between phases, no-load or on-load (non-distorting)

Ratings 50 Hz - 1500 R.P.M. - 6 & 12-wire

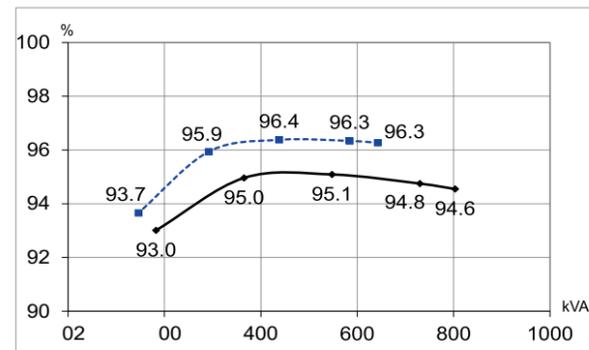
kVA / kW - P.F. = 0.8																
Duty / T° C	Continuous / 40 °C				Continuous / 40 °C				Stand-by / 40 °C				Stand-by / 27 °C			
Class / T° K	H / 125° K				F / 105° K				H / 150° K				H / 163° K			
Phase	3 ph.				3 ph.				3 ph.				3 ph.			
Y	380V	400V	415V	440V	380V	400V	415V	440V	380V	400V	415V	440V	380V	400V	415V	440V
Δ	220V	230V	240V		220V	230V	240V		220V	230V	240V		220V	230V	240V	
YY				220V				220V				220V				220V
TAL-A49-B	kVA	750	750	680	680	680	620	800	800	800	750	825	825	825	785	
	kW	600.0	600.0	544.0	544.0	544.0	496.0	640.0	640.0	640.0	600.0	660.0	660.0	660.0	628.0	
TAL-A49-C	kVA	820	820	810	745	745	735	870	870	870	860	910	910	910	890	
	kW	656.0	656.0	648.0	596.0	596.0	588.0	696.0	696.0	696.0	688.0	728.0	728.0	728.0	712.0	
TAL-A49-D	kVA	910	910	820	830	830	745	965	965	965	870	1010	1010	1010	900	
	kW	728.0	728.0	656.0	664.0	664.0	596.0	772.0	772.0	772.0	696.0	808.0	808.0	808.0	720.0	
TAL-A49-E	kVA	1000	1000	950	910	910	865	1060	1060	1060	1005	1100	1100	1100	1045	
	kW	800.0	800.0	760.0	728.0	728.0	692.0	848.0	848.0	848.0	804.0	880.0	880.0	880.0	836.0	

Ratings 60 Hz - 1800 R.P.M. - 6 & 12-wire

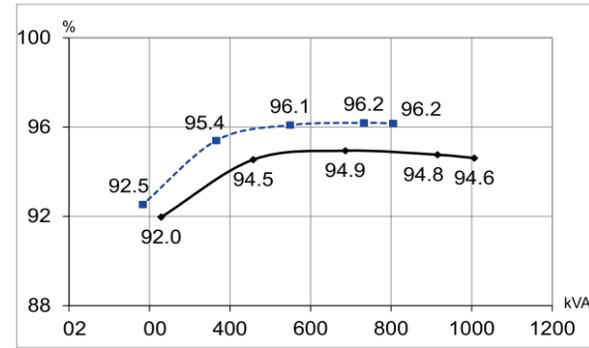
kVA / kW - P.F. = 0.8																	
Duty / T° C	Continuous / 40 °C				Continuous / 40 °C				Stand-by / 40 °C				Stand-by / 27 °C				
Class / T° K	H / 125° K				F / 105° K				H / 150° K				H / 163° K				
Phase	3 ph.				3 ph.				3 ph.				3 ph.				
Y	380V	416V	440V	480V	380V	416V	440V	480V	380V	416V	440V	480V	380V	416V	440V	480V	
Δ	220V	240V			220V	240V			220V	240V			220V	240V			
YY			208V	240V			208V	240V			208V	240V			208V	240V	
TAL-A49-B	kVA	745	815	860	940	670	730	775	845	790	865	910	995	820	895	945	1030
	kW	596.0	652.0	688.0	752.0	536.0	584.0	620.0	676.0	632.0	692.0	728.0	796.0	656.0	716.0	756.0	824.0
TAL-A49-C	kVA	815	890	940	1025	740	810	855	935	865	945	995	1085	895	980	1040	1130
	kW	652.0	712.0	752.0	820.0	592.0	648.0	684.0	748.0	692.0	756.0	796.0	868.0	716.0	784.0	832.0	904.0
TAL-A49-D	kVA	905	990	1045	1140	825	900	950	1035	960	1050	1110	1210	1000	1090	1155	1255
	kW	724.0	792.0	836.0	912.0	660.0	720.0	760.0	828.0	768.0	840.0	888.0	968.0	800.0	872.0	924.0	1004.0
TAL-A49-E	kVA	990	1083	1146	1250	900	985	1045	1140	1050	1150	1215	1325	1089	1192	1260	1375
	kW	792.0	866.4	916.8	1000.0	720.0	788.0	836.0	912.0	840.0	920.0	972.0	1060.0	871.2	953.6	1008.0	1100.0

Low Voltage Alternators - 4 pole

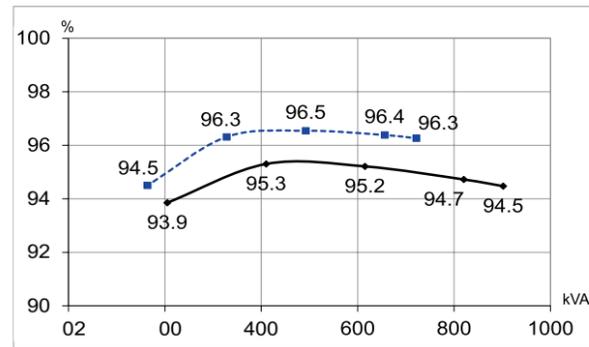
Efficiencies 400 V 50 Hz & 480 V - 60 Hz (— P.F.: 0.8) (----- P.F.: 1) - 6 & 12-wire



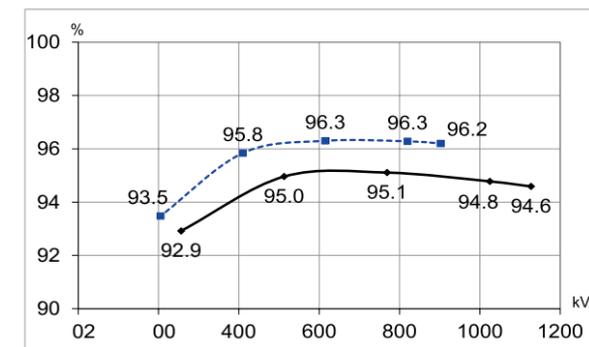
TAL-A49-B - 400V 50 Hz



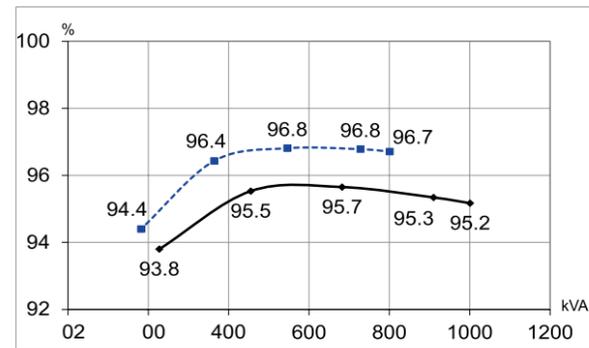
TAL-A49-B - 480V 60 Hz



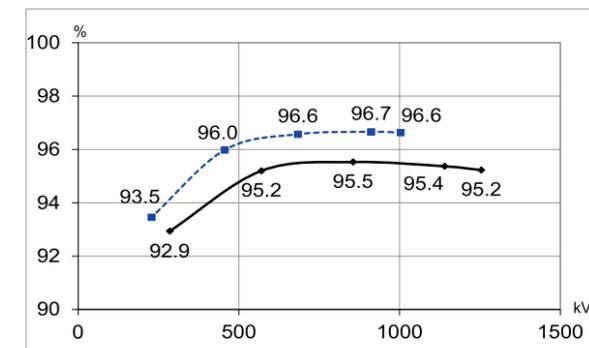
TAL-A49-C - 400V 50 Hz



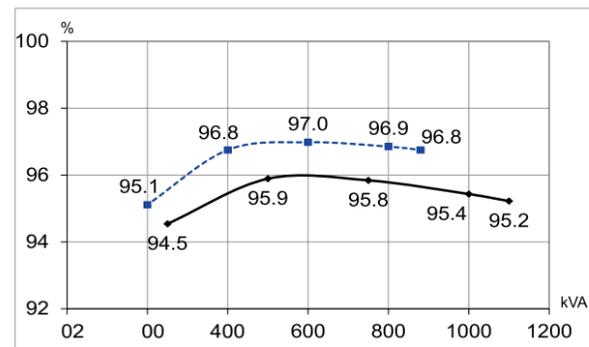
TAL-A49-C - 480V 60 Hz



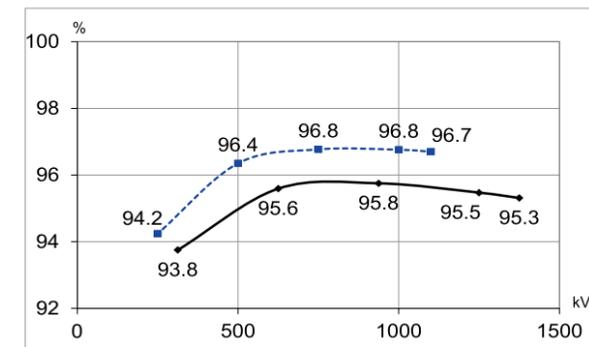
TAL-A49-D - 400V 50 Hz



TAL-A49-D - 480V 60 Hz



TAL-A49-E - 400V 50 Hz



TAL-A49-E - 480V 60 Hz

Low Voltage Alternators - 4 pole

Reactances (%). Time constants (ms) - Class H / 400 V - 6 & 12-wire

	B	C	D	E
Kcc Short-circuit ratio	0.42	0.34	0.41	0.34
Xd Direct-axis synchro. reactance unsaturated	294	348	303	348
Xq Quadrature-axis synchro. reactance unsaturated	150	177	154	177
T'do No-load transient time constant	2074	2094	2138	2153
X'd Direct-axis transient reactance saturated	14.2	16.6	14.1	16.1
T'd Short-circuit transient time constant	100	100	100	100
X''d Direct-axis subtransient reactance saturated	11.3	13.3	11.3	12.9
T''d Subtransient time constant	10	10	10	10
X''q Quadrature-axis subtransient reactance saturated	12.8	14.9	12.4	14.1
Xo Zero sequence reactance	0.59	0.69	0.59	0.67
X2 Negative sequence reactance saturated	12.1	14.11	11.92	13.53
Ta Armature time constant	15	15	15	15

Other class H / 400 V data

io (A) No-load excitation current SHUNT/AREP+	1.07	0.96	1.1	0.89
ic (A) On-load excitation current SHUNT/AREP+	3.73	3.97	3.91	3.69
uc (V) On-load excitation voltage SHUNT/AREP+	41.9	44.4	43.6	40.9
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT*	1325	1389	1560	1753
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP+*	1849	1920	2156	2402
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{LAG}	17.5	16.5	14.6	16.2
% Transient ΔU (on-load 4/4) AREP+ - P.F.: 0.8 _{LAG}	11.5	13	11.5	12.7
W No-load losses	9931	8807	10176	9543
W Heat dissipation	32326	36543	35534	38279

* P.F. = 0.6

Reactances (%). Time constants (ms) - Class H / 480 V - 6 & 12-wire

	B	C	D	E
Kcc Short-circuit ratio	0.4	0.32	0.4	0.33
Xd Direct-axis synchro. reactance unsaturated	307	362	317	363
Xq Quadrature-axis synchro. reactance unsaturated	156	185	161	185
T'do No-load transient time constant	2074	2094	2138	2153
X'd Direct-axis transient reactance saturated	14.8	17.3	14.8	16.8
T'd Short-circuit transient time constant	100	100	100	100
X''d Direct-axis subtransient reactance saturated	11.8	13.8	11.8	13.4
T''d Subtransient time constant	10	10	10	10
X''q Quadrature-axis subtransient reactance saturated	13.4	15.5	13	14.7
Xo Zero sequence reactance	0.61	0.72	0.61	0.7
X2 Negative sequence reactance saturated	12.64	14.7	12.44	14.1
Ta Armature time constant	15	15	15	15

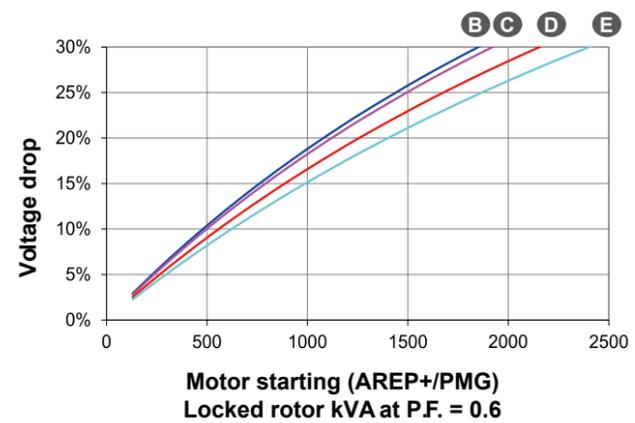
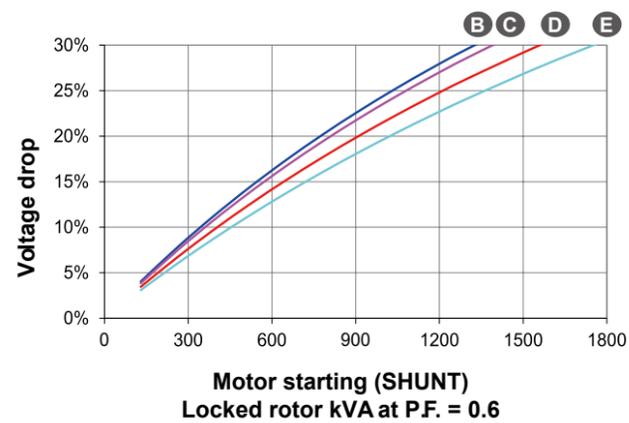
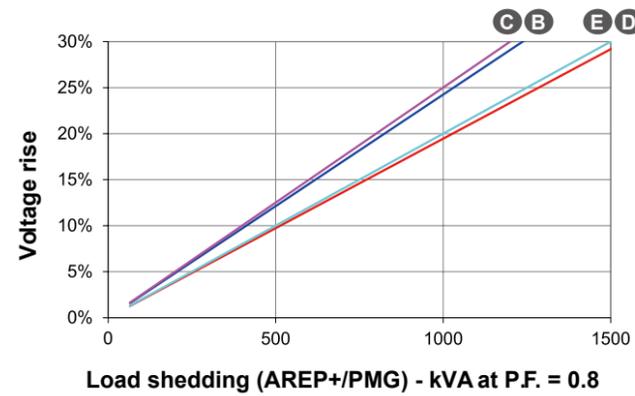
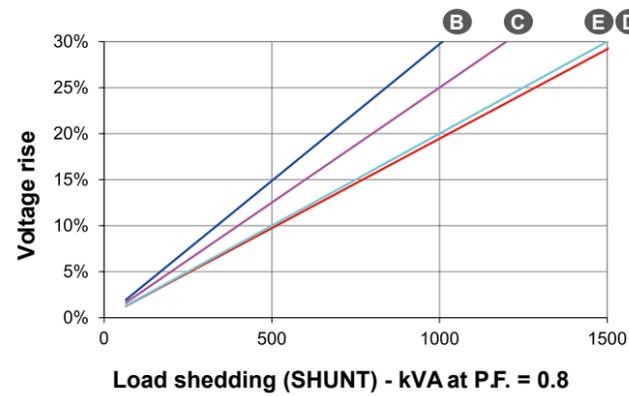
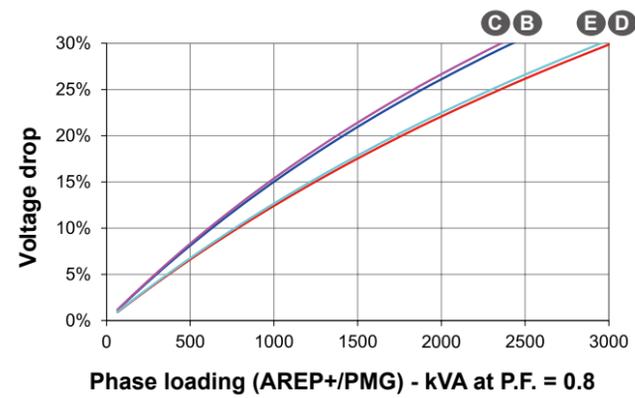
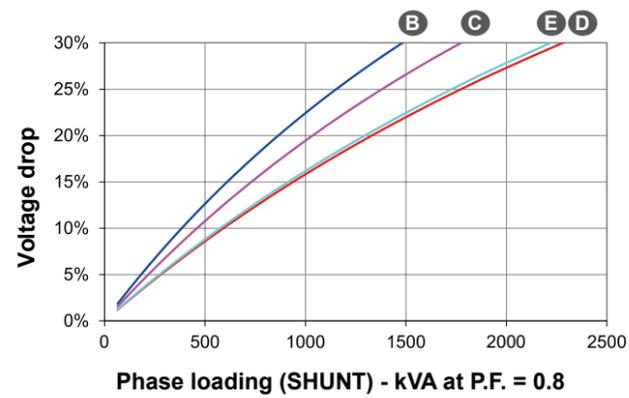
Other class H / 480 V data

io (A) No-load excitation current SHUNT/AREP+	1.07	0.96	1.09	0.89
ic (A) On-load excitation current SHUNT/AREP+	3.8	4.04	3.97	3.74
uc (V) On-load excitation voltage SHUNT/AREP+	43	45.5	44.6	41.9
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT*	1625	1681	1954	2114
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP+*	2345	2297	2743	2893
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{LAG}	17.9	17.1	15.1	16.7
% Transient ΔU (on-load 4/4) AREP+ - P.F.: 0.8 _{LAG}	11.9	13.4	11.9	13.1
W No-load losses	14344	13640	15456	14627
W Heat dissipation	40438	45078	44272	47348

* P.F. = 0.6

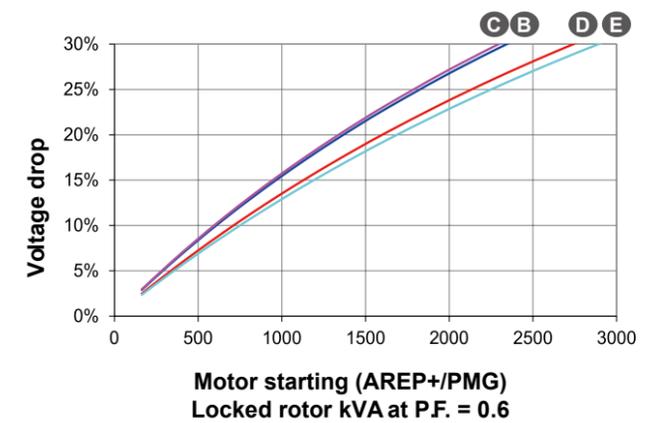
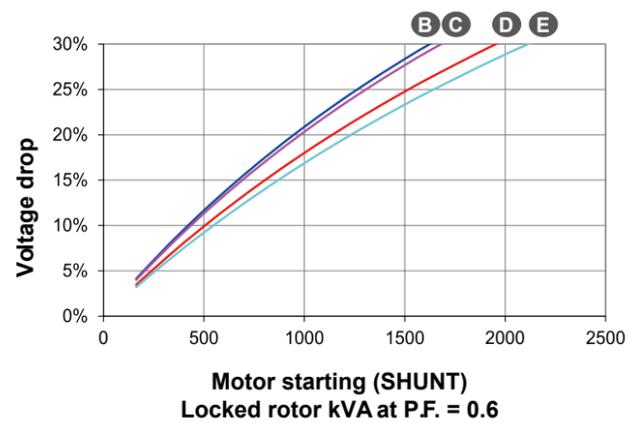
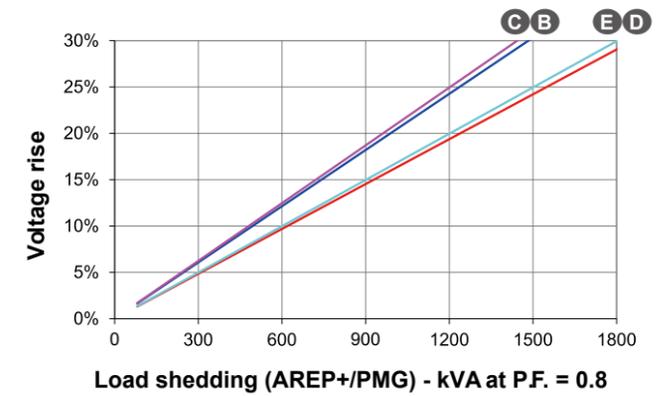
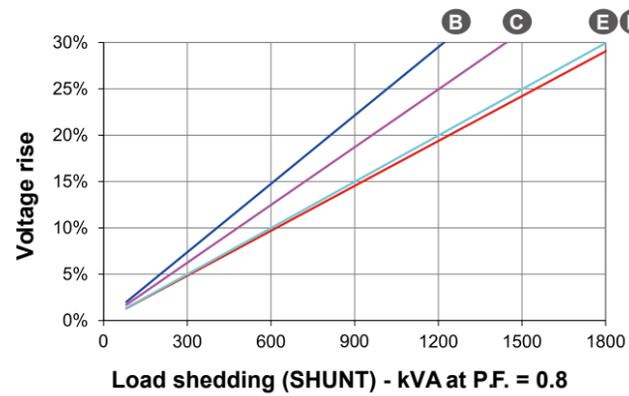
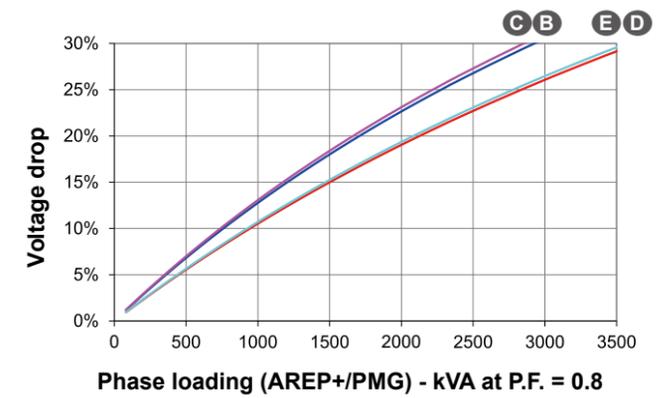
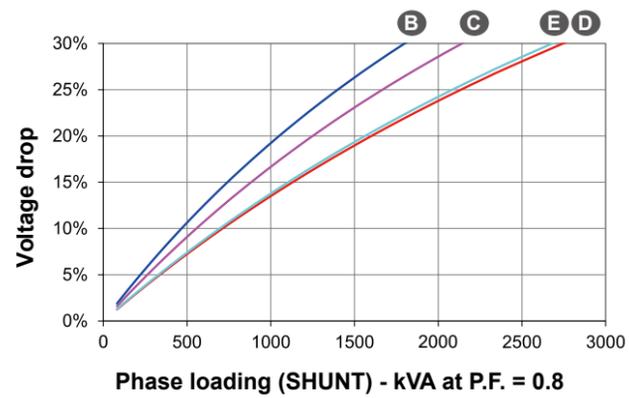
Low Voltage Alternators - 4 pole

Transient voltage variation 400 V - 50 Hz - 6 & 12-wire

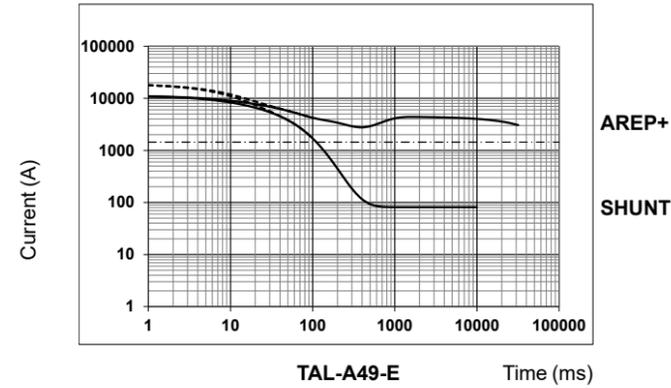
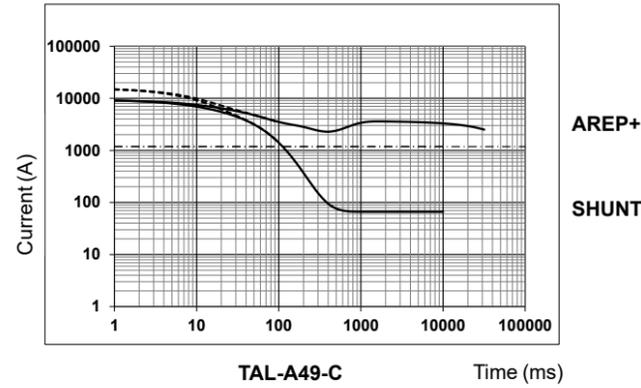
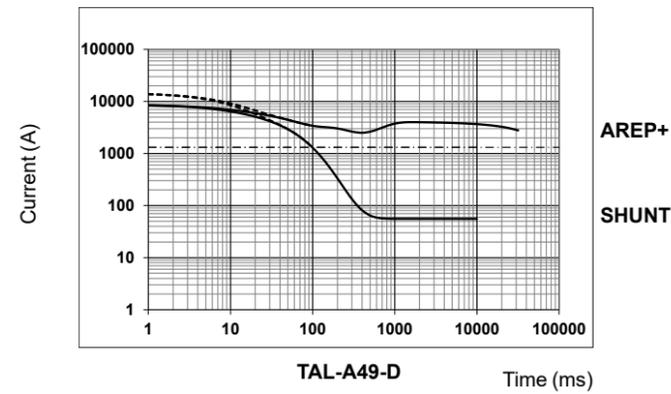
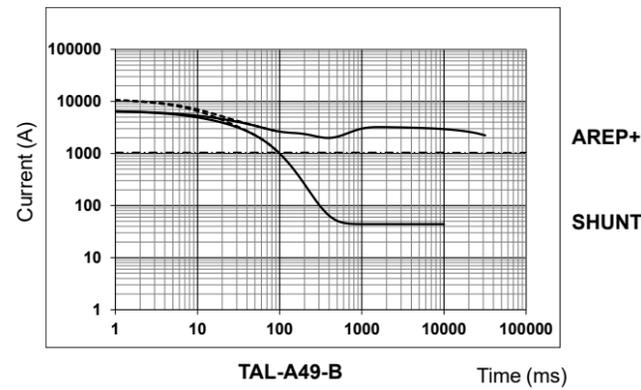


Low Voltage Alternators - 4 pole

Transient voltage variation 480 V - 60 Hz - 6 & 12-wire

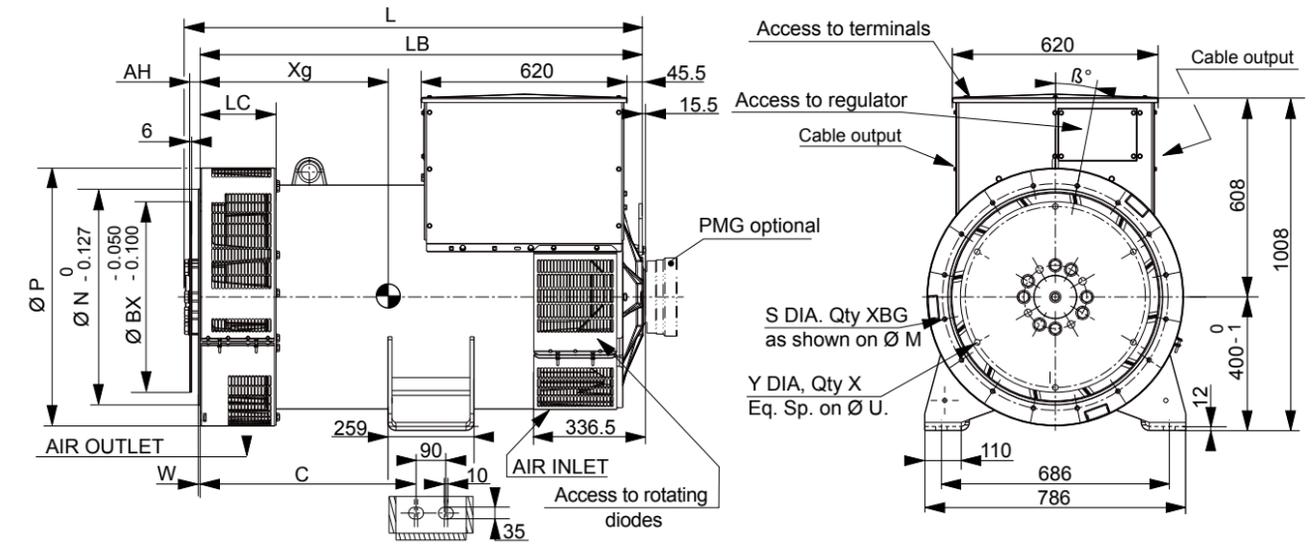


3-phase short-circuit curves at no load and rated speed (star connection Y) - 6 & 12-wire



Symmetrical —
Asymmetrical - - - - -

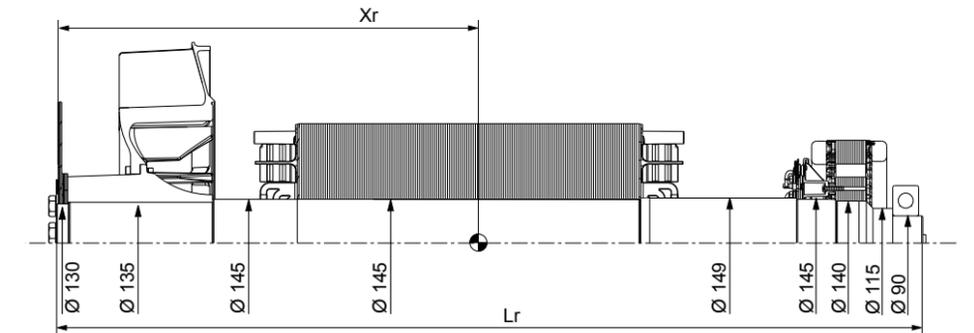
Single bearing general arrangement - 6 & 12-wire



Dimensions (mm) and weight						Coupling		
Type	L without PMG	LB	C	Xg	Weight (kg)	Flex plate	14	18
TAL-A49-B	1372	1331	650	629	1574	Flange S.A.E 1	X	
TAL-A49-C	1372	1331	650	636	1635	Flange S.A.E 1/2	X	
TAL-A49-D	1462	1421	650	673	1788	Flange S.A.E 0	X	X
TAL-A49-E	1462	1421	650	681	1837	Flange S.A.E 00		X

Flange (mm)								Flex plate (mm)					
S.A.E.	P	N	M	LC	XBG	W	β°	S.A.E.	BX	U	X	Y	AH
1	773	511.175	530.225	228.5	12	6	15°	14	466.7	438.15	8	14	25.4
1/2	773	584.2	619.125	228.5	12	6	15°	18	571.5	542.92	6	17	15.7
0	773	647.7	679.45	228.5	16	6	11° 15'						
00	883	787.4	850.9	245	16	7	11° 15'						

Torsional analysis data

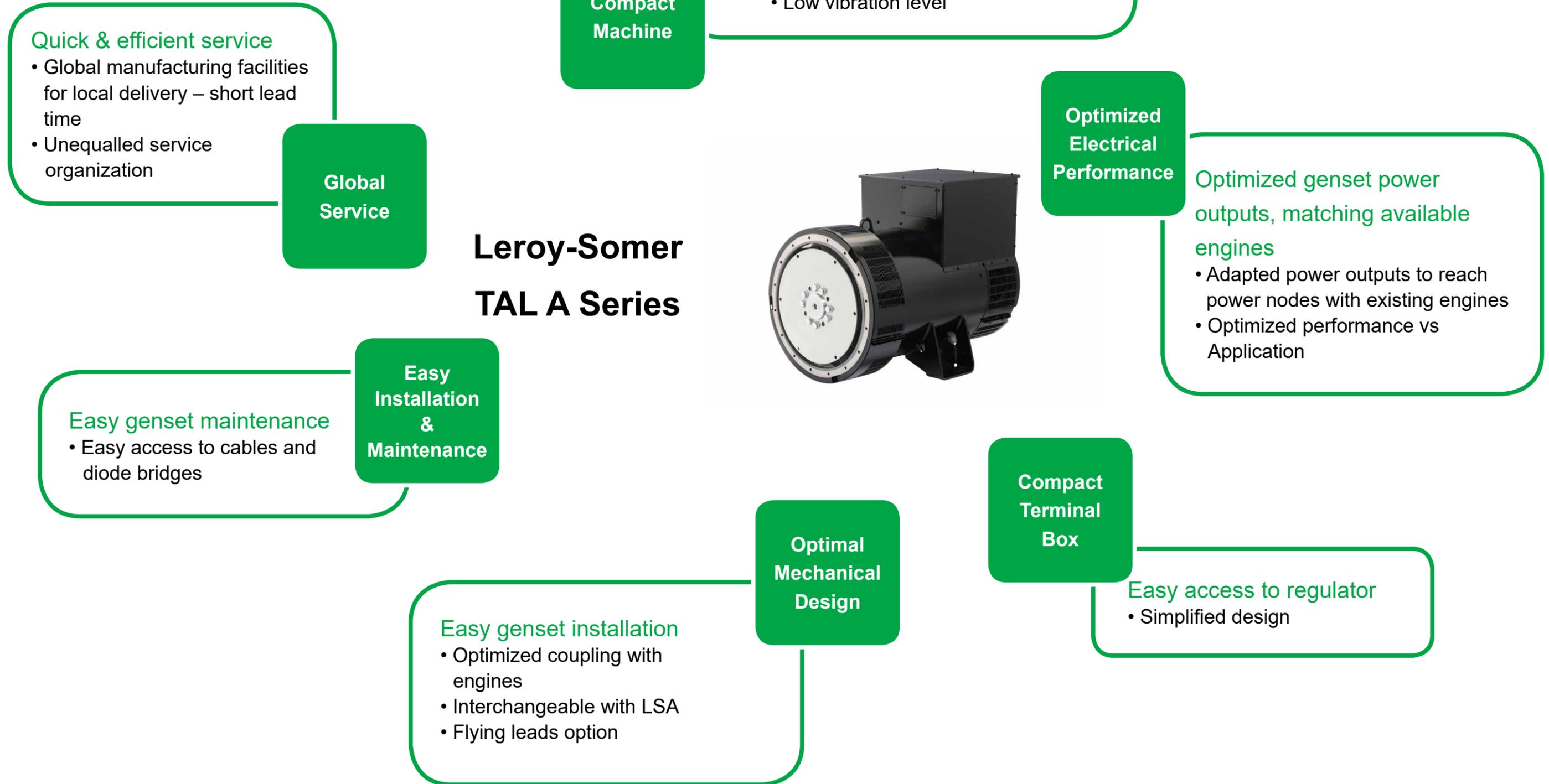


	Xr	Lr	M	J	Xr	Lr	M	J
TAL-A49-B	625	1351	623	9.99	614	1351	625	10.25
TAL-A49-C	633	1351	640	10.35	622	1351	642	10.61
TAL-A49-D	671	1441	697	11.34	659	1441	699	11.60
TAL-A49-E	679	1441	724	11.92	667	1441	726	12.18

NOTE : Dimensions are for information only and may be subject to modifications. Contractual 2D drawings can be downloaded from the Leroy-Somer site, 3D drawing files are available upon request.
*Please contact us for the double bearing dimension

Product Feature

Features and Benefits



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