



Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044

Electrical and mechanical data

Three phase

10 to 165 kVA - 50 Hz / 12.5 to 206 kVA - 60 Hz

Single phase

10.5 to 82 kVA - 50 Hz / 11.5 to 125 kVA - 60 Hz

LEROY-SOMER™

Nidec
All for dreams

Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044

Adapted to needs

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

Compliant with international standards

The TAL range complies with international standards and regulations: IEC 60034 and derivative. The range is designed, manufactured and marketed in an ISO 9001 and 14001 environment.

Electrical design

- Class H insulation
- Low voltage winding
- 4 - terminal plates
- Optimized performance

Robust design

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

Compact terminal box

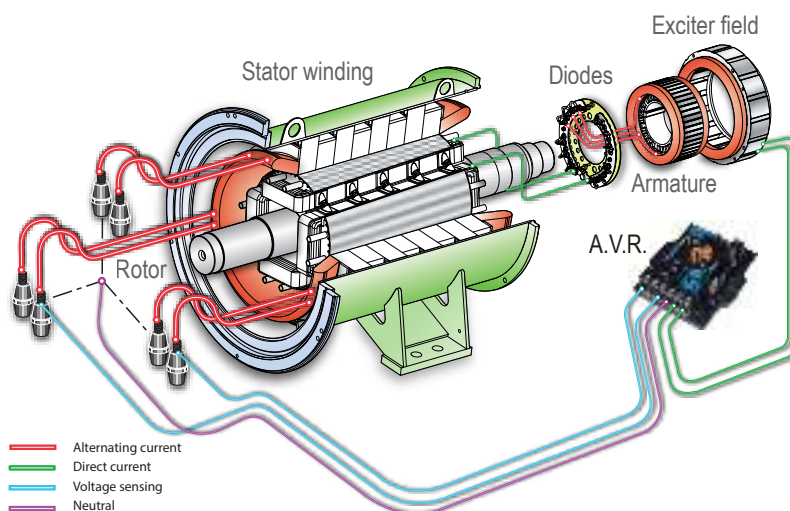
- Easy access to AVR and terminals

Environment and protection

- The alternator is IP 23
- Standard winding protection for non-harsh environment with relative humidity $\leq 95\%$

Available options

- AREP & PMG (AREP only for TAL040)
- UL / CSA
- Customized painting
- Space heaters
- Flying leads
- Droop kit for alternator paralleling (TAL044 only with R150 if 6-wire Shunt)
- Dedicated single phase
- Stator sensors (TAL044 only)
- Winding 8 for 380V / 416V - 60Hz
- Winding protection for harsh environments and relative humidity greater than 95% (system 2 - 4): possible derating ratio according to the following table



Type	50 Hz			60 Hz
	380 V	400 V	415 V	All voltages
TAL040	1	1	1	1
TAL042	0.97	1 except 0.97 for TAL042 G & H	1 except 0.97 for TAL042 G & H	1 except 0.97 for TAL042 G & H
TAL044	1 except 0.97 for TAL044 K	1 except 0.97 for TAL044 K	1 except 0.97 for TAL044 K	1 except 0.97 for TAL044 K

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TAL040 - Three phase 10 to 20 kVA - 50 Hz / 12.5 to 25 kVA - 60 Hz

General characteristics - 6 & 12 wires

Insulation class	H	Excitation system 6 wires	SHUNT	AREP
Winding pitch	2/3 (Winding 6 or 6S)	AVR type	R120	R180
Number of wires	6 or 12	Excitation system 12 wires	SHUNT	AREP
Protection	IP 23	AVR type	R220	R180
Altitude	≤ 1000 m	Voltage regulation (*)	± 1 %	
Overspeed	2250 R.P.M.	Total Harmonic distortion THD (**) in no-load	< 3.5 %	
Air flow 50 Hz (m³/s)	0.06	Total Harmonic distortion THD (**) in linear load	< 5 %	
Air flow 60 Hz (m³/s)	0.07	Waveform: NEMA = TIF (**)	< 50	
		Waveform : I.E.C. : FHT (**)	< 2%	

(*) Steady state (**) between phases

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

kVA / kW - P.F. = 1																						
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.			1 ph.	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		380V	400V	415V	440V		
Δ		220V	230V	240V			220V	230V	240V			220V	230V	240V			220V	230V	240V			
YY		220V					220V					220V					220V					
ΔΔ						230V					230V					230V					230V	
TAL040 B		kVA	10	10	10	9	7	9	9	9	8	6.5	10.5	10.5	10.5	9	7.5	11	11	11	10	8
		kW	8	8	8	7.2	5.6	7.2	7.2	7.2	6.4	5.2	8.4	8.4	8.4	7.2	6	8.8	8.8	8.8	8	6.4
TAL040 C		kVA	12.5	12.5	12.5	11	9	11.5	11.5	11.5	10	8	13.5	13.5	13.5	12	9.5	14	14	14	12.5	10
		kW	10	10	10	8.8	7.2	9.2	9.2	9.2	8	6.4	10.8	10.8	10.8	9.6	7.6	11.2	11.2	11.2	10	8
TAL040 D		kVA	15	15	15	13	10.5	14	14	14	12	10	16	16	16	14	11.5	16.5	16.5	16.5	15	12
		kW	12	12	12	10.4	8.4	11.2	11.2	11.2	9.6	8	12.8	12.8	12.8	11.2	9.2	13.2	13.2	13.2	12	9.6
TAL040 E		kVA	17.5	17.5	17.5	16	12.5	16	16	16	14	11.5	19	19	19	16.5	13.5	19.5	19.5	19.5	17	14
		kW	14	14	14	12.8	10	12.8	12.8	12.8	11.2	9.2	15.2	15.2	15.2	13.2	10.8	15.6	15.6	15.6	13.6	11.2
TAL040 F		kVA	20	20	20	18	14	18.5	18.5	18.5	16	13	21.5	21.5	21.5	19	15	22	22	22	20	15.5
		kW	16	16	16	14.4	11.2	14.8	14.8	14.8	12.8	10.4	17.2	17.2	17.2	15.2	12	17.6	17.6	17.6	16	12.4

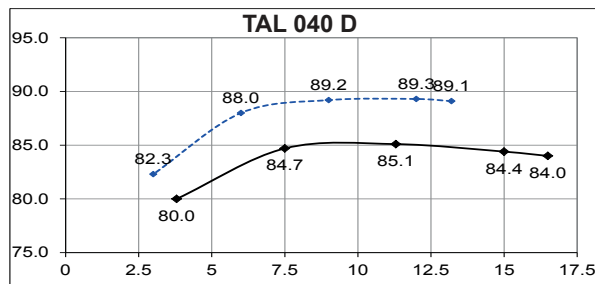
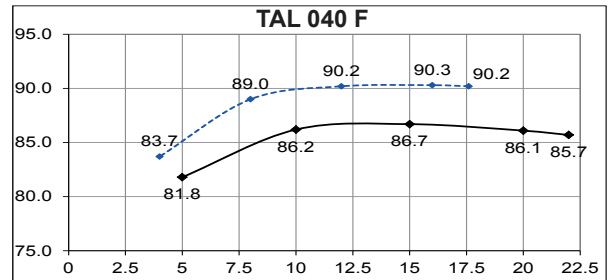
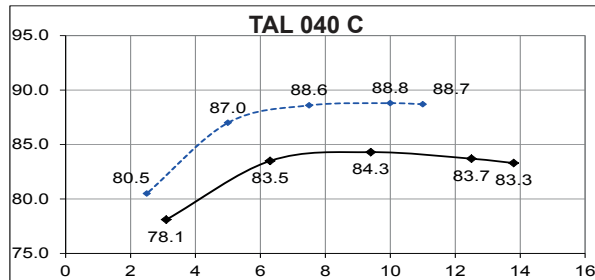
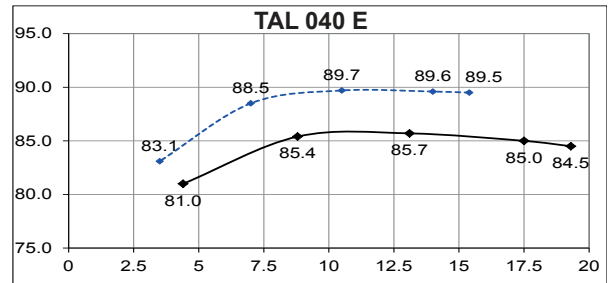
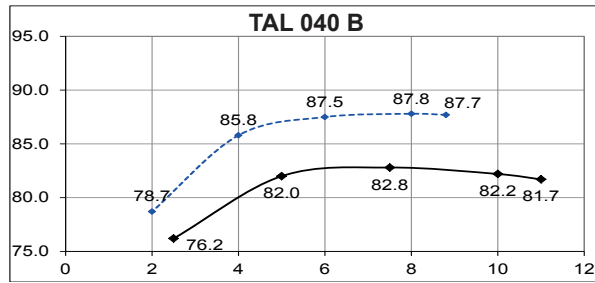
Ratings 60 Hz - 1800 R.P.M. - 6 & 12 wires

kVA / kW - P.F. = 1																						
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.			1 ph.	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		380V	416V	440V	480V		
Δ		220V	240V				220V	240V				220V	240V				220V	240V				
YY		208V	220V	240V			208V	220V	240V			208V	220V	240V			208V	220V	240V			
ΔΔ					230V					230V					230V					230V		
TAL040 B		kVA	10	11	11.5	12.5	9	9.5	10.5	10.5	11.5	8.5	11	11.5	12.5	13.5	9.5	11.5	12	13	14	10
		kW	8.0	8.8	9.2	10.0	7.2	7.6	8.4	8.4	9.2	6.8	8.8	9.2	10	10.8	7.6	9.2	9.6	10.4	11.2	8
TAL040 C		kVA	12.5	13.5	14.5	15.5	11.5	11.5	12.5	13.5	14.5	10.5	13.5	14.5	15.5	16.5	12	14	15	16	17	12.5
		kW	10.0	10.8	11.6	12.4	9.2	9.2	10	10.8	11.6	8.4	10.8	11.6	12.4	13.2	9.6	11.2	12	12.8	13.6	10
TAL040 D		kVA	15	16.5	17.5	19	13	14	15.5	16.5	17.5	12	16	18	19	20	13.5	17	18.5	19.5	21	14
		kW	12	13.2	14.0	15.2	10.4	11.2	12.4	13.2	14	9.6	12.8	14.4	15.2	16	10.8	13.6	14.8	15.6	16.8	11.2
TAL040 E		kVA	17.5	19	20	22	14.5	16.5	18	19	20.5	13	19	20.5	21.5	23.5	15	19.5	21	22	24.5	15.5
		kW	14.0	15.2	16.0	17.6	11.6	13.2	14.4	15.2	16.4	10.4	15.2	16.4	17.2	18.8	12	15.6	16.8	17.6	19.6	12.4
TAL040 F		kVA	20	22	23	25	16	18.5	20.5	21.5	23	15	21.5	23.5	25	27	17	22	24.5	26	27.5	17.5
		kW	16	17.6	18.4	20	12.8	14.8	16.4	17.2	18.4	12.0	17.2	18.8	20	21.6	13.6	17.6	19.6	20.8	22	14

Low Voltage Alternators - 4 pole

TAL040 - Three phase 10 to 20 kVA - 50 Hz / 12.5 to 25 kVA - 60 Hz

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



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

	B	C	D	E	F
Kcc Short-circuit ratio	0.7	0.56	0.6	0.6	0.61
Xd Direct-axis synchro. reactance unsaturated	167	209	191	195	194
Xq Quadrature-axis synchro. reactance unsaturated	100	125	114	117	116
T'do No-load transient time constant	719	719	837	878	926
X'd Direct-axis transient reactance saturated	17.2	21.5	16.9	16.4	15.5
T'd Short-circuit transient time constant	74	74	74	74	74
X''d Direct-axis subtransient reactance saturated	8.6	10.7	8.4	8.2	7.7
T''d Subtransient time constant	7	7	7.4	7	7
X''q Quadrature-axis subtransient reactance saturated	16.1	20.1	16.9	16.9	16.3
Xo Zero sequence reactance	0.71	0.89	0.7	0.68	0.64
X2 Negative sequence reactance saturated	12.4	15.5	12.7	12.6	12
Ta Armature time constant	11	11	11	11	11

Other class H / 400 V data

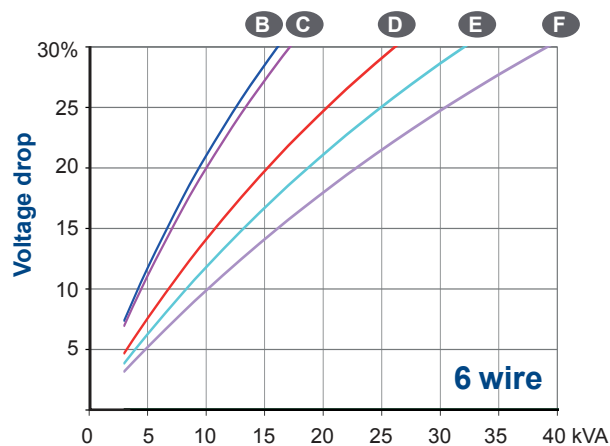
io (A) No-load excitation current SHUNT/AREP	0.77	0.77	0.76	0.75	0.72
ic (A) On-load excitation current SHUNT/AREP	1.93	2.28	2.04	2.04	1.94
uc (V) On-load excitation voltage SHUNT/AREP	23.5	27.7	24.7	24.8	23.4
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT	15 (25)	15 (25)	23 (36)	28 (44)	35 (52)
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP	15 (25)	15 (25)	23 (36)	28 (44)	35 (52)
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{LAG}	21 (16)	24 (20)	20 (15)	19 (14)	18 (14)
% Transient ΔU (on-load 4/4) AREP - P.F.: 0.8 _{LAG}	21 (16)	24 (20)	20 (15)	19 (14)	18 (14)
W No-load losses	461	461	540	590	645
W Heat dissipation	1588	2149	2055	2245	2342

() : 12-wire

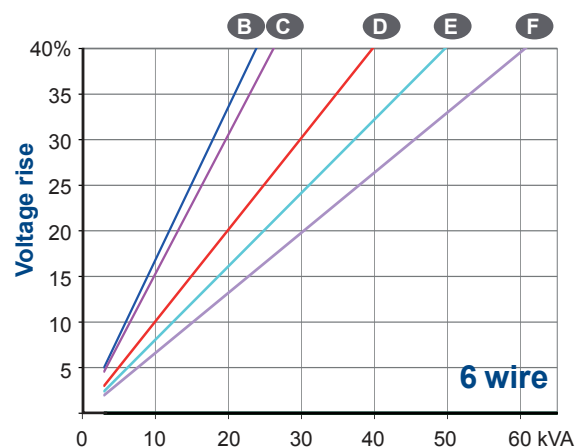
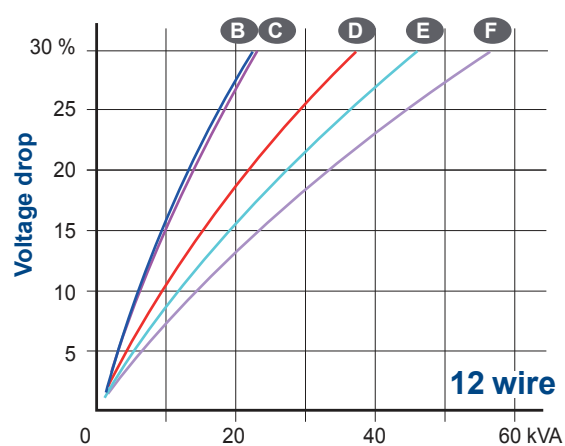
Low Voltage Alternators - 4 pole

TAL040 - Three phase 10 to 20 kVA - 50 Hz / 12.5 to 25 kVA - 60 Hz

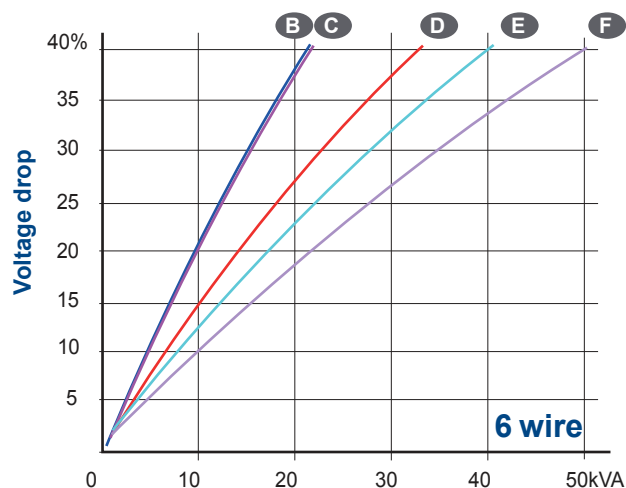
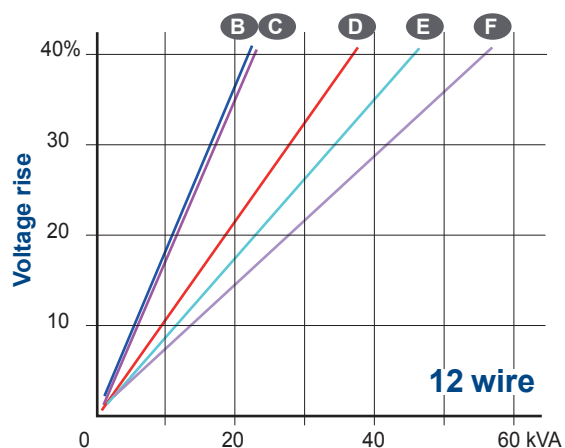
Transient voltage variation 400V - 50 Hz - 6-wire



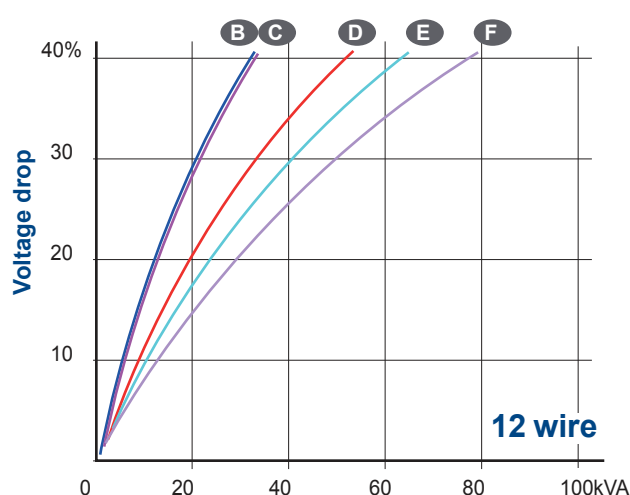
Phase loading (SHUNT/AREP) - kVA at P.F. = 0.8



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



Motor starting (SHUNT/AREP) - locked rotor kVA at P.F. = 0.6



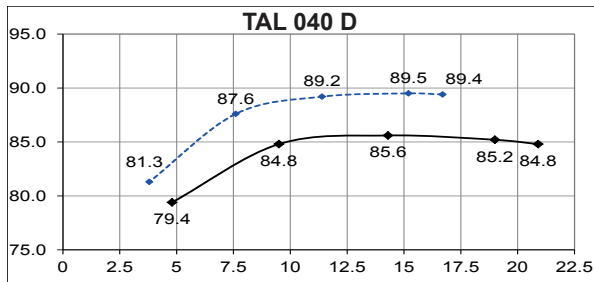
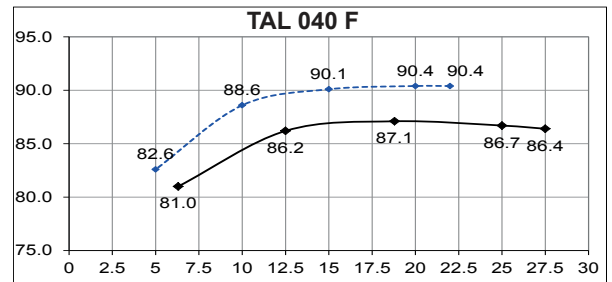
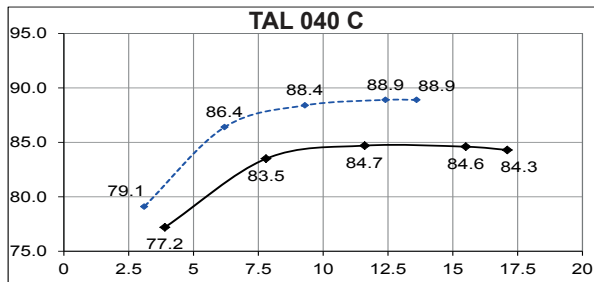
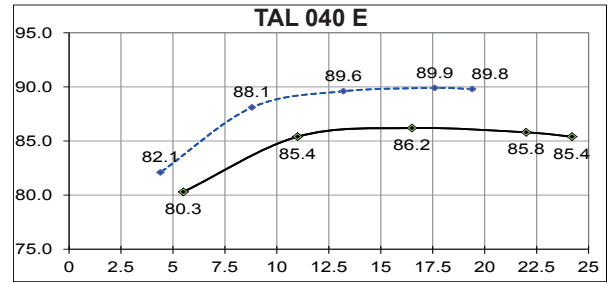
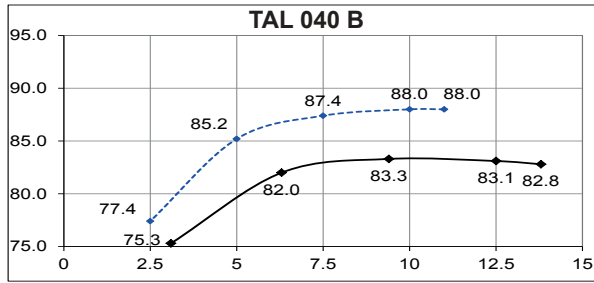
1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.8$

2) For voltages other than 400V (Y), 230V (Δ) at 50 Hz, then kVA must be multiplied by $(400/U)^2$ or $(230/U)^2$.

Low Voltage Alternators - 4 pole

TAL040 - Three phase 10 to 20 kVA - 50 Hz / 12.5 to 25 kVA - 60 Hz

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



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

	B	C	D	E	F
Kcc Short-circuit ratio	0.67	0.54	0.57	0.57	0.58
Xd Direct-axis synchro. reactance unsaturated	174	216	201	205	202
Xq Quadrature-axis synchro. reactance unsaturated	104	129	121	123	121
T'do No-load transient time constant	719	719	837	878	926
X'd Direct-axis transient reactance saturated	17.9	22.2	17.8	17.2	16.1
T'd Short-circuit transient time constant	74	74	74	74	74
X''d Direct-axis subtransient reactance saturated	8.9	11.1	8.9	8.6	8
T''d Subtransient time constant	7	7	7.4	7	7
X''q Quadrature-axis subtransient reactance saturated	16.7	20.7	17.8	17.7	17
Xo Zero sequence reactance	0.74	0.92	0.74	0.72	0.67
X2 Negative sequence reactance saturated	12.9	16	13.4	13.2	12.6
Ta Armature time constant	11	11	11	11	11

Other class H / 480 V data

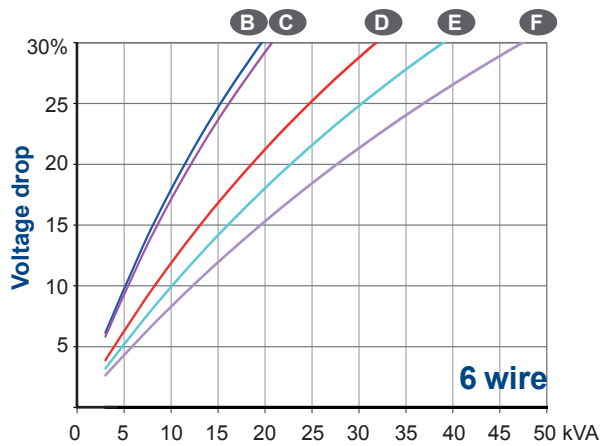
io (A) No-load excitation current SHUNT/AREP	0.77	0.77	0.76	0.75	0.72
ic (A) On-load excitation current SHUNT/AREP	1.96	2.3	2.09	2.08	1.96
uc (V) On-load excitation voltage SHUNT/AREP	23.9	28	25.4	25.3	23.8
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT	18 (30)	18 (30)	28 (43)	34 (53)	42 (62)
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP	18 (30)	18 (30)	28 (43)	34 (53)	42 (62)
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{LAG}	22 (17)	24 (20)	20 (15)	20 (15)	19 (14)
% Transient ΔU (on-load 4/4) AREP - P.F.: 0.8 _{LAG}	22 (17)	24 (20)	20 (15)	20 (15)	19 (14)
W No-load losses	643	643	755	825	904
W Heat dissipation	1855	2440	2438	2643	2752

() : 12-wire

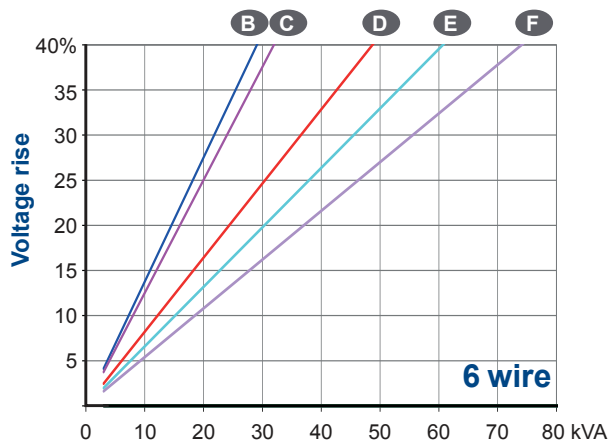
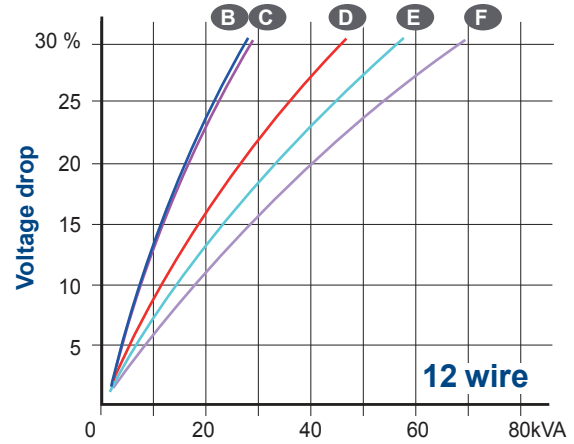
Low Voltage Alternators - 4 pole

TAL040 - Three phase 10 to 20 kVA - 50 Hz / 12.5 to 25 kVA - 60 Hz

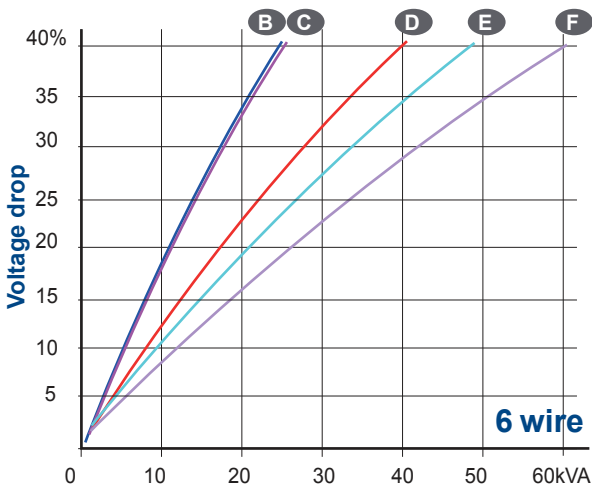
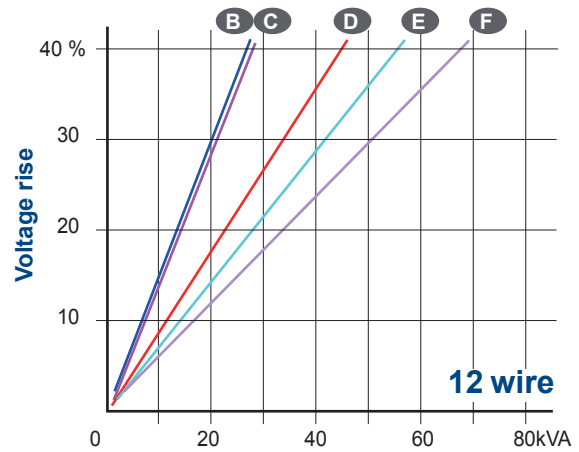
Transient voltage variation 480V - 60 Hz - 6-wire



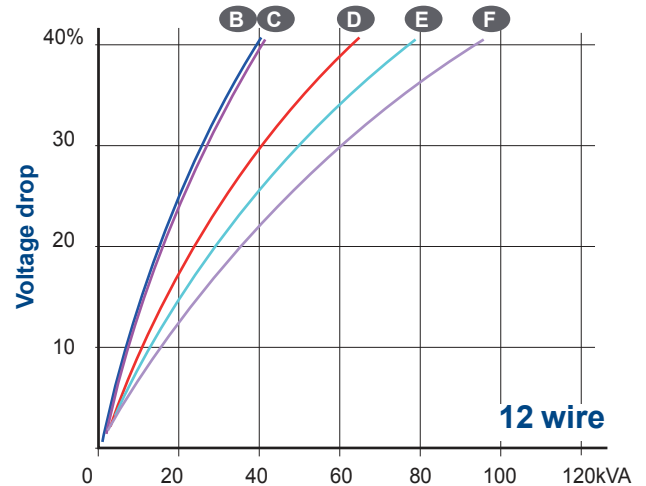
Phase loading (SHUNT/AREP) - kVA at P.F. = 0.8



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



Motor starting (SHUNT/AREP) - locked rotor kVA at P.F. = 0.6



1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.8$

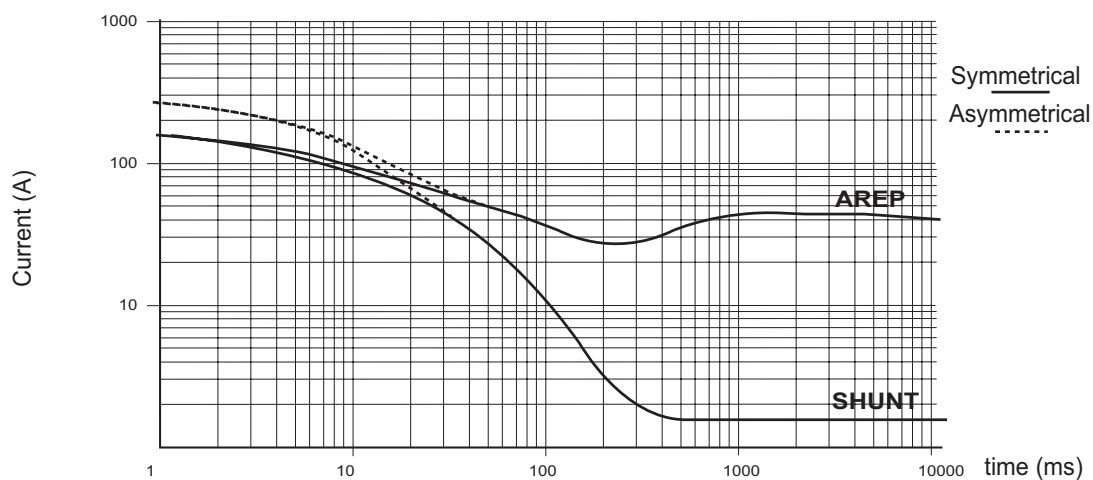
2) For voltages other than 480V (Y), 277V (Δ), 240V (YY) at 60 Hz, then kVA must be multiplied by $(480/U)^2$ or $(277/U)^2$ or $(240/U)^2$.

Low Voltage Alternators - 4 pole

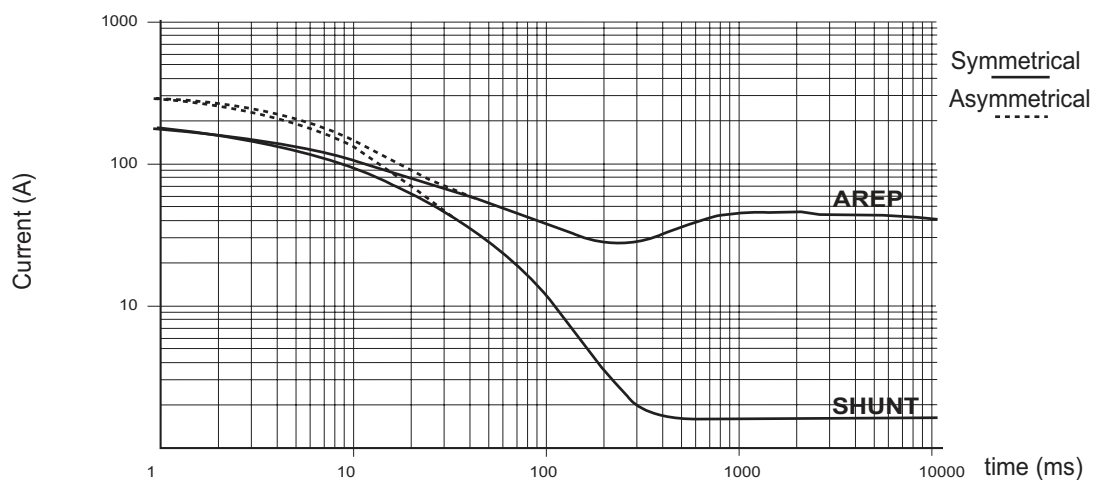
TAL040 - Three phase 10 to 20 kVA - 50 Hz / 12.5 to 25 kVA - 60 Hz

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

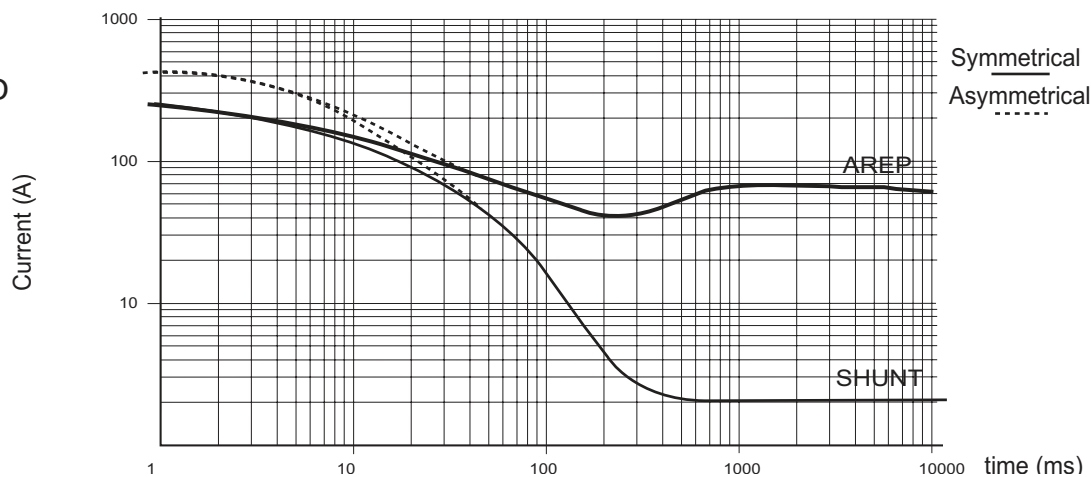
TAL040 B



TAL040 C



TAL040 D



Influence due to connection

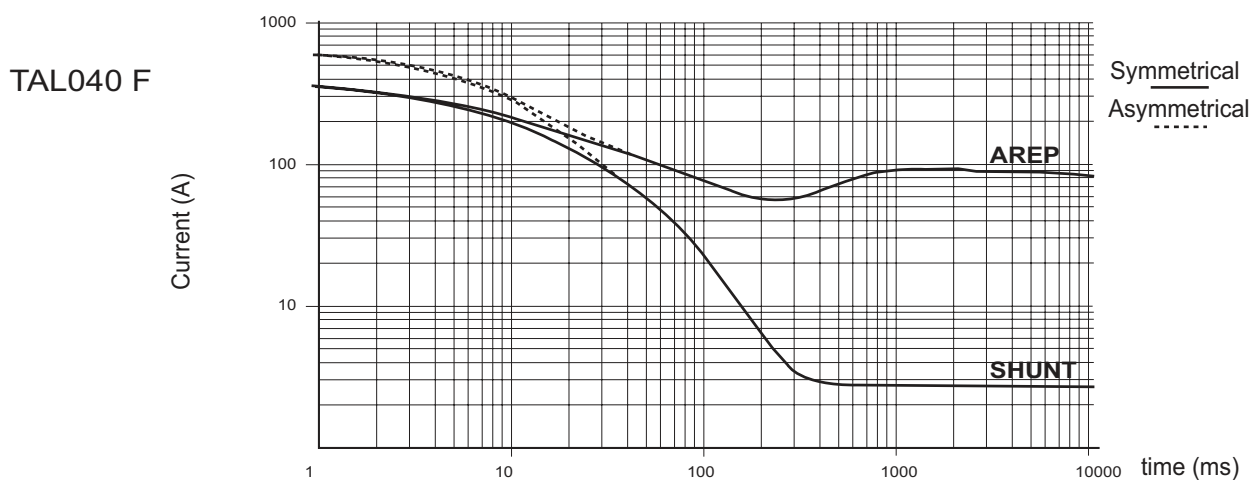
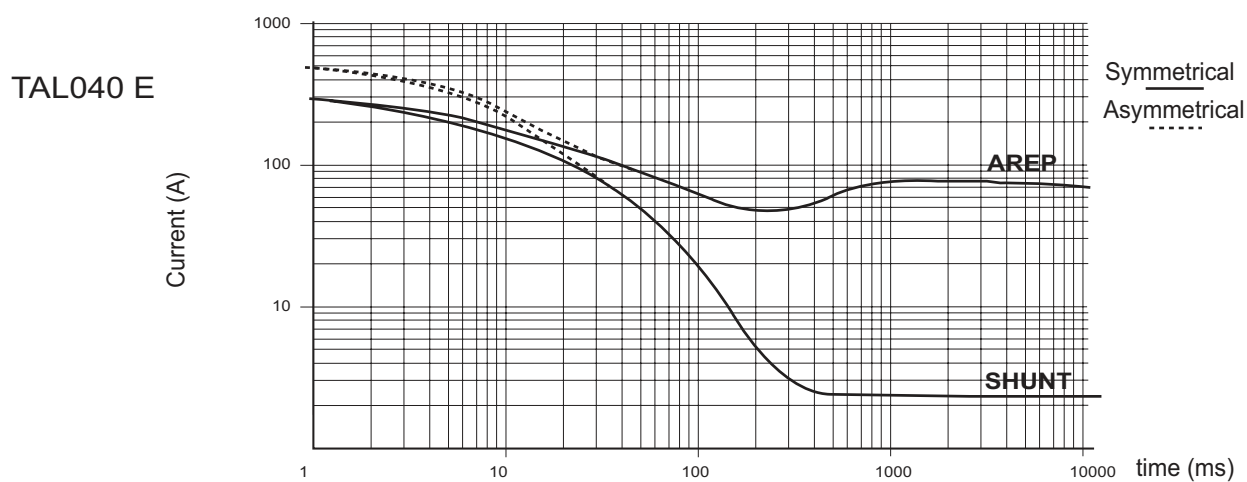
For (Δ) connection, use the following multiplication factor:

- Current value x 1.732.

Low Voltage Alternators - 4 pole

TAL040 - Three phase 10 to 20 kVA - 50 Hz / 12.5 to 25 kVA - 60 Hz

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



Influence due to short-circuit

Curves are based on a three-phase short-circuit.
For other types of short-circuit,
use the following multiplication factors.

	3 - phase	2 - phase L / L	1 - phase L / N
Instantaneous (max.)	1	0.87	1.3
Continuous	1	1.5	2.2
Maximum duration (AREP/PMG)		1.5	

Low Voltage Alternators - 4 pole

TAL040 - Single phase 10.5 to 16 kVA - 50 Hz / 11.5 to 17.6 kVA - 60 Hz

General characteristics - 4-wire

Insulation class	H	Excitation system	SHUNT
Winding pitch	2/3 (Winding M)	AVR type	R120
Number of wires	4	Voltage regulation (*)	± 1 %
Protection	IP 23	Total Harmonic distortion THD (**) in no-load	< 3.5 %
Altitude	≤ 1000 m	Total Harmonic distortion THD (**) in linear load:	< 5 %
Overspeed	2250 R.P.M.	Waveform: NEMA = TIF (**)	< 100
Air flow 50 Hz(m³/s)	0.06	Waveform : I.E.C. : FHT (**)	< 2 %
Air flow 60 Hz(m³/s)	0.07	(*) Steady state (**) between phases	

Ratings / Efficiencies - 4 wire - 50Hz

kVA / kW - P.F. = 1							
Duty / T° C	Continuous / 40 °C			Continuous / 40 °C		Stand-by / 40 °C	
Class / T° K	H / 125° K			F / 105° K		H / 150° K	
1 Phase serie	230 V	η %		230 V		230 V	230V η %
							
TAL040 C	kVA	10.5	80.2	9.5	11.1	11.4	78.9
	kW	8.4	-	7.6	8.9	9.1	-
TAL040 C1	kVA	12	82.4	10.9	12.7	13.2	81.5
	kW	9.6	-	8.7	10.1	10.4	-
TAL040 D	kVA	13.2	83.4	12	14	14.5	82.6
	kW	10.5	-	9.6	11.2	11.6	-
TAL040 E	kVA	14.5	84.2	13.1	15.3	16	83.5
	kW	11.6	-	10.5	12.3	12.8	-
TAL040 F	kVA	16	85.2	14.5	16.9	17.6	84.7
	kW	12.8	-	11.6	13.5	14	-

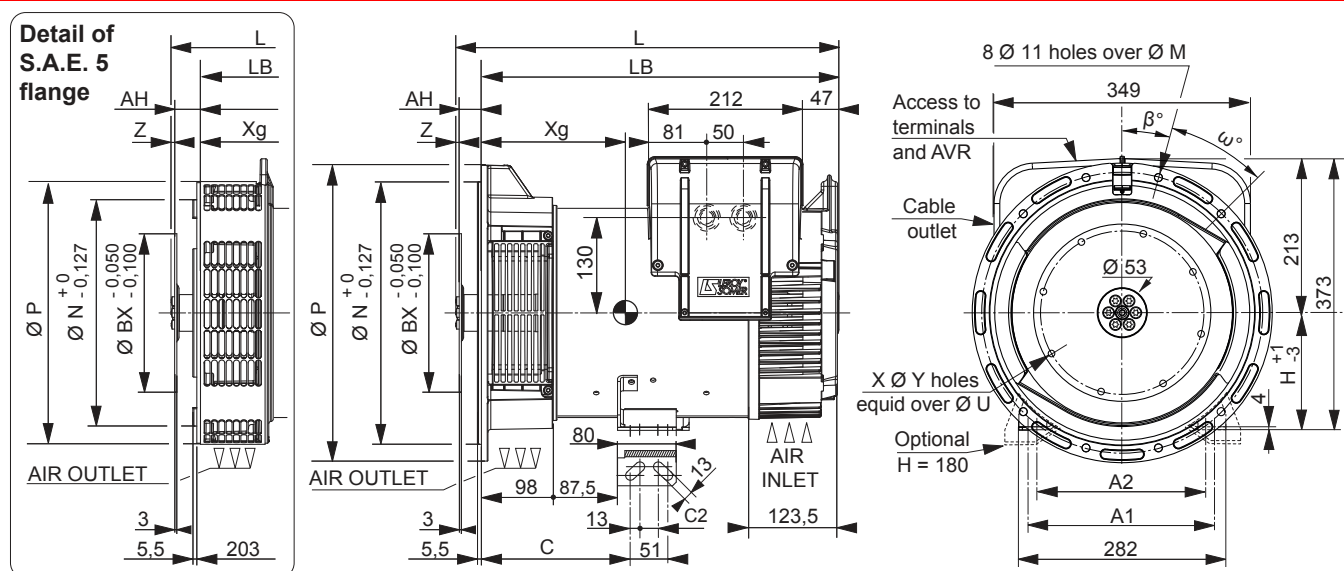
Ratings / Efficiencies - 4 wire - 60Hz

kVA / kW - P.F. = 1							
Duty / T° C	Continuous / 40 °C			Continuous / 40 °C		Stand-by / 40 °C	
Class / T° K	H / 125° K			F / 105° K		H / 150° K	
1 Phase serie	240 V	η %		240 V		240 V	240V η %
							
TAL040 C	kVA	11.5	80	10.4	12.1	12.5	79
	kW	9.2	-	8.3	9.6	10	-
TAL040 C1	kVA	13.5	81.7	12.2	14.3	15	80.8
	kW	10.8	-	9.7	11.4	12	-
TAL040 D	kVA	14.5	82.6	13.1	15.3	16	81.8
	kW	11.6	-	10.4	12.2	12.8	-
TAL040 E	kVA	15.8	83.5	14.3	16.7	17.4	82.8
	kW	12.6	-	11.4	13.3	13.9	-
TAL040 F	kVA	17.6	84.5	16	18.6	19.4	83.8
	kW	14	-	12.8	14.8	15.5	-

Low Voltage Alternators - 4 pole

TAL040

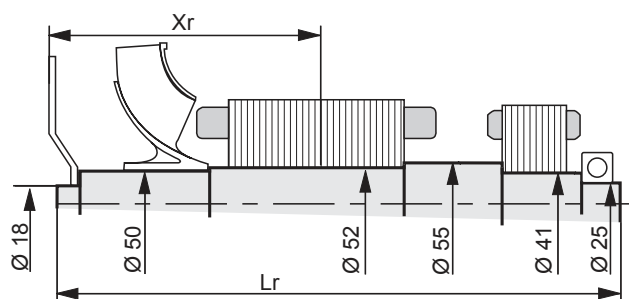
Single bearing general arrangement - 4, 6 & 12-wire



Dimensions (mm) and weight					Shaft height (mm)			Coupling		
Type	L maxi	LB	Xg	Weight (kg)		Standard	Option	Flange	4	5
TAL040 B	469	407	186	73	H	160	180	Flex plate		
TAL040 C	469	407	186	73		Feet length		10	x	-
TAL040 C1	469	407	196	80	C	203	238	8	x	-
TAL040 D	499	437	204	87	C2	25	22	7 1/2	x	x
TAL040 E	499	437	221	92	A1	254	279	6 1/2	x	x
TAL040 F	519	457	221	102	A2	230	-	-	-	-

Flange (mm)						Flex plate (mm)						
S.A.E.	P	N	M	β°	ω°	S.A.E.	BX	U	X	Y	AH	Z
5	358	314.32	333.38	22°30'	45°	10	314.32	295.28	8	11	53.8	0
4	408	361.95	381	15°	30°	8	263.52	244.48	6	11	62	0
-	-	-	-	-	-	7 1/2	241.3	222.25	8	9	30.2	4.5
-	-	-	-	-	-	6 1/2	215.9	200.02	6	9	30.2	4.5

Torsional analysis data



Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm ²): (4J = MD ²)																
	Flex plate S.A.E. 6 1/2				Flex plate S.A.E. 7 1/2				Flex plate S.A.E. 8				Flex plate S.A.E. 10			
Type	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J
TAL040 B	211.7	428	25.54	0.0779	211.7	428	25.7	0.0802	243.5	428	26	0.0847	238.3	428	26.5	0.0964
TAL040 C	211.7	428	25.54	0.0779	211.7	428	25.7	0.0802	243.5	428	26	0.0847	238.3	428	26.5	0.0964
TAL040 C1	221.7	428	27.95	0.0867	221.7	428	28.11	0.0890	253.5	428	28.41	0.0935	248.3	428	28.91	0.1052
TAL040 D	229.2	458	30.32	0.0936	229.2	458	30.48	0.0959	261	458	30.78	0.1004	255.8	458	31.28	0.1121
TAL040 E	236.7	458	32.23	0.1004	236.7	458	32.39	0.1027	268.5	458	32.69	0.1072	263.3	458	33.19	0.1189
TAL040 F	246.7	478	35.26	0.1102	246.7	478	35.42	0.1125	278.5	478	35.72	0.1170	273.3	478	36.22	0.1287

NOTE : Dimensions are for information only and may be subject to modifications. Contractual 2D/3D drawings can be downloaded from the Leroy-Somer site. The torsional analysis of the transmission is imperative. All values are available upon request.

Low Voltage Alternators - 4 pole

TAL042 - Three phase 25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

General characteristics - 6 & 12 wire

Insulation class	H	Excitation system 6 wires	SHUNT	AREP
Winding pitch	2/3 (Winding 6 or 6S)	AVR type	R120	R180
Number of wires	6 or 12	Excitation system 12 wires	SHUNT	AREP
Protection	IP 23	AVR type	R220	R180
Altitude	≤ 1000 m	Voltage regulation (*)	± 1 %	
Overspeed	2250 R.P.M.	Total Harmonic distortion THD (**) in no-load	< 3.5 %	
Air flow 50 Hz (m³/s)	0.10	Total Harmonic distortion THD (**) in linear load	< 5 %	
Air flow 60 Hz (m³/s)	0.13	Waveform: NEMA = TIF (**)	< 50	
		Waveform : I.E.C. : FHT (**)	< 2%	
(*) Steady state (**) between phases				

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

kVA / kW - P.F. = 1																					
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.			1 ph.		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		380V	400V	415V	440V	
Δ		220V	230V	240V			220V	230V	240V			220V	230V	240V			220V	230V	240V		
YY				220V					220V					220V					220V		
ΔΔ					230V					230V					230V					230V	
TAL042 A	kVA	25	25	25	24.5	15	22.8	22.8	22.8	22.3	13.7	26.5	26.5	26.5	26	15.9	27.5	27.5	27.5	27	16.5
	kW	20	20	20	19.6	12	18.2	18.2	18.2	17.9	10.9	21.2	21.2	21.2	20.8	12.7	22	22	22	21.6	13.2
TAL042 B	kVA	27	27	27	26	16.2	24.6	24.6	24.6	23.6	14.7	28.9	28.9	28.9	27.6	17.3	30	30	30	28	18
	kW	21.6	21.6	21.6	20.8	13	19.7	19.7	19.7	18.9	11.8	23.1	23.1	23.1	22.1	13.9	24	24	24	22.9	14.4
TAL042 C	kVA	31	32	32	30	19.2	28	29.1	29.1	27.3	17.5	33	34	34	31.8	20.4	34	35.2	35.2	33.0	21.1
	kW	24.8	25.6	25.6	24	15.4	22.4	23.3	23.3	21.8	14	26.4	27.1	27.1	25.4	16.3	27.2	28.2	28.2	26.4	16.9
TAL042 D	kVA	35	35	35	30.6	22	32	32	32	27.9	20	37.1	37.1	37.1	32.5	23.3	38.5	38.5	38.5	33.7	24.2
	kW	28	28	28	24.5	17.6	25.5	25.5	25.5	22.3	16	29.7	29.7	29.7	26	18.7	30.8	30.8	30.8	27.0	19.4
TAL042 E	kVA	39.5	40	40	35	25	36	36.4	36.4	31.9	22.8	42	42.4	42.4	37.1	26.5	43.5	45	45	38.5	28.1
	kW	31.6	32	32	28	20	28.8	29.1	29.1	25.5	18.2	33.6	33.9	33.9	29.7	21.2	34.8	36	36	30.8	22.5
TAL042 F	kVA	43	45	45	39	27	39	41	41	35.5	24.6	45.5	48.2	48.2	41.3	28.9	47.5	50	50	42.9	30
	kW	34.4	36	36	31.2	21.6	31.2	32.8	32.8	28.4	19.7	36.4	38.5	38.5	33.1	23.1	38	40	40	34.3	24
TAL042 G	kVA	47.5	50	50	43	30	43	45.5	45.5	39.1	27.3	50.5	53	53	45.6	31.8	52.5	55	55	47.3	33
	kW	38	40	40	34.4	24	34.4	36.4	36.4	31.3	21.8	40.4	42.4	42.4	36.5	25.4	42	44	44	37.8	26.4
TAL042 H	kVA	58	60	60	51.6	36	53	54.6	54.6	47.0	32.8	61.5	63.6	63.6	54.7	38.2	64	66	66	56.8	40
	kW	46.4	48	48	41.3	28.8	42.4	43.7	43.7	37.6	26.2	49.2	50.9	50.9	43.8	30.5	51.2	52.8	52.8	45.4	32

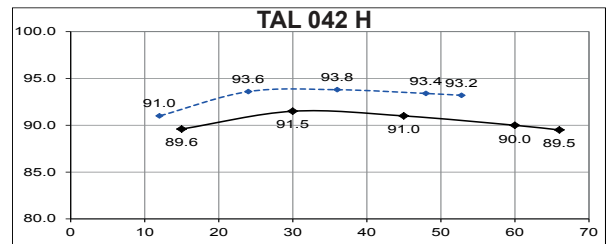
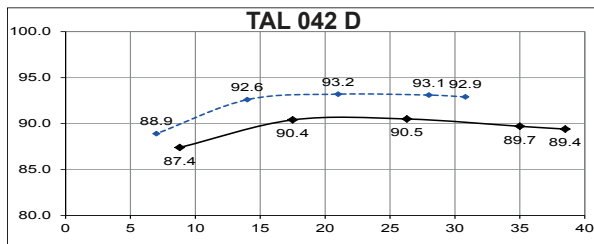
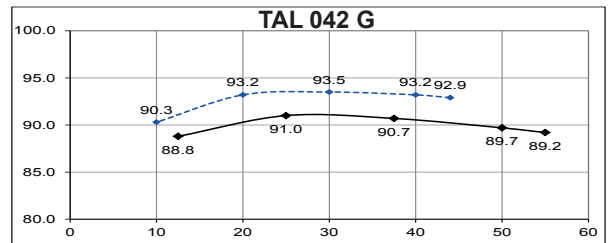
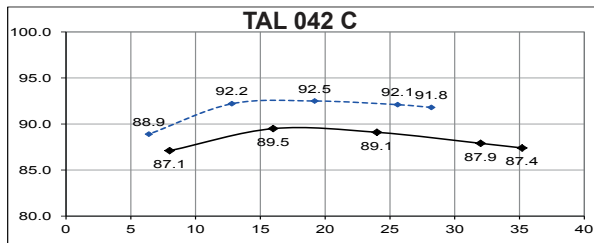
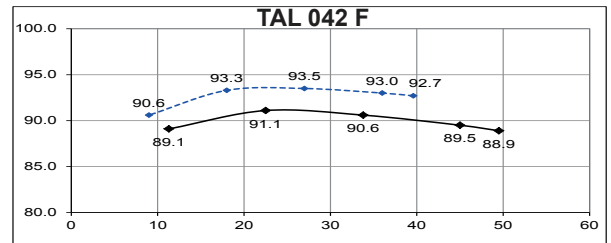
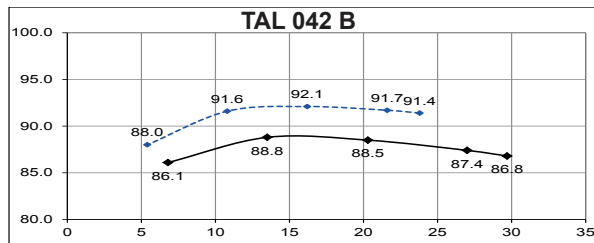
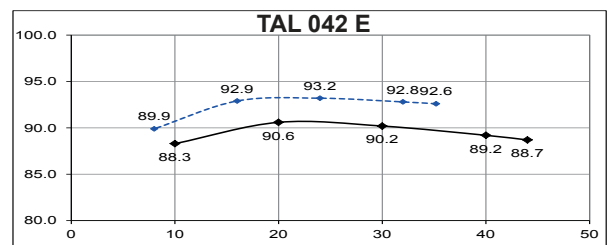
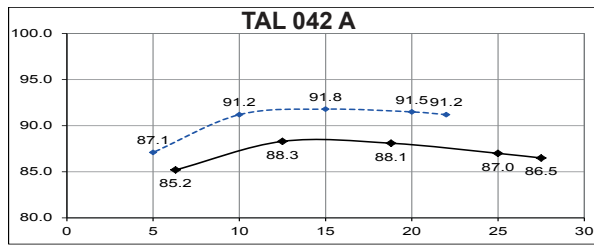
Ratings 60 Hz - 1800 R.P.M. - 6 & 12 wire

kVA / kW - P.F. = 1																						
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.			1 ph.	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		380V	416V	440V	480V		
Δ		220V	240V				220V	240V				220V	240V				220V	240V				
YY			208V	220V	240V			208V	220V	240V				208V	220V		240V			208V		220V
ΔΔ					240V				240V					240V						240V		
TAL042 A		kVA	29.1	31.3	31.5	31.5	18.9	26.5	28.4	28.7	28.7	17,2	30.8	33.1	33.4	33.4	19,8	32	34.4	34.7	34.7	20,8
		kW	23.3	25	25.2	25.2	15.1	21.2	22.8	22.9	22.9	13,7	24.7	26.5	26.7	26.7	15,9	25.6	27.5	27.7	27.7	16,6
TAL042 B		kVA	29.9	31.9	33.8	33.8	19.2	26.9	29	30.7	30.7	17,5	31.4	33.8	35.8	35.8	20,2	32.5	35.1	37.5	37.5	21,1
		kW	23.7	25.5	27	27	15.4	21.5	23.2	24.6	24.6	14,0	25.1	27.1	28.6	28.6	16,2	26	28.1	30	30	16,9
TAL042 C		kVA	34.5	38	40	40	22.8	31.4	34.6	36.4	36.4	20,7	36.6	40.3	42.4	42.4	23,9	38	41.8	44	44	25,1
		kW	27.6	30.4	32	32	18.2	25.1	27.7	29.1	29.1	16,6	29.3	32.2	33.9	33.9	19,1	30.4	33.4	35.2	35.2	20,0
TAL042 D		kVA	37.5	40.3	42.9	43.8	24.2	33.4	36.6	39.0	39.8	22,0	39	42.7	45.4	46.4	25,4	40.4	44.3	47.2	48.1	26,6
		kW	30	32.2	34.3	35	19.3	26.8	29.3	31.2	31.9	17,6	31.2	34.1	36.4	37.1	20,3	32.3	35.4	37.7	38.5	21,2
TAL042 E		kVA	42	46	49	50	27.6	38.2	41.9	44.6	45.5	25,1	44.5	50	51.9	53	29,0	46.2	50.6	53.9	55	30,4
		Kw	33.6	36.8	39.2	40	22.1	30.6	33.5	35.7	36.4	20,1	35.6	40	41.6	42.4	23,2	37	40.5	43.1	44	24,3
TAL042 F		kVA	46	50	53.5	56.5	30	41.9	45.5	48.7	51.4	27,3	48.8	53	56.7	59.9	31,5	50.6	55	58.9	62.5	33,0
		kW	36.8	40	42.8	45.2	24	33.5	36.4	38.9	41.1	21,8	39	42.4	45.4	47.9	25,2	40.5	44	47.1	50	26,4
TAL042 G		kVA	51.5	56.5	59.5	62.5	33.9	46.9	51.4	54.1	57	30,8	54.6	60	63.1	66.3	35,6	56.7	62.5	65.5	68.8	37,3
		kW	41.2	45.2	47.6	50	27.1	37.5	41.1	43.3	45.5	24,7	43.7	48	50.5	53	28,5	45.3	50	52.4	55	29,8
TAL042 H		kVA	59	65	69	75	39	53.7	59.2	62.8	68.3	35,5	62.5	68.9	73.1	79.5	41,0	64.9	71.5	75.9	82.5	42,9
		kW	47.2	52.0	55.2	60	31.2	43.0	47.3	50.2	54.6	28,4	50.0	55.1	58.5	63.6	32,8	51.9	57.2	60.7	66.0	34,3

Low Voltage Alternators - 4 pole

TAL042 - Three phase 25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

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



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

	A	B	C	D	E	F	G	H
Kcc Short-circuit ratio	0.49	0.46	0.44	0.49	0.42	0.40	0.43	0.40
Xd Direct-axis synchro. reactance unsaturated	257	267	279	246	281	294	283	303
Xq Quadrature-axis synchro. reactance unsaturated	154	160	167	147	168	176	170	182
T'do No-load transient time constant	786	813	861	944	944	980	998	1031
X'd Direct-axis transient reactance saturated	16.3	16.4	16.2	13.0	14.8	15.0	14.1	14.7
T'd Short-circuit transient time constant	50	50	50	50	50	50	50	50
X''d Direct-axis subtransient reactance saturated	8.1	8.2	8.1	6.5	7.4	7.5	7.0	7.3
T''d Subtransient time constant	5	5	5	5	5	5	5	5
X''q Quadrature-axis subtransient reactance saturated	11.5	11.6	11.5	9.2	10.6	10.7	10.1	10.5
Xo Zero sequence reactance	0.86	0.68	0.67	0.54	0.62	0.62	0.59	0.61
X2 Negative sequence reactance saturated	9.9	9.9	9.8	7.9	9	9.1	8.6	8.9
Ta Armature time constant	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0

Other class H / 400 V data

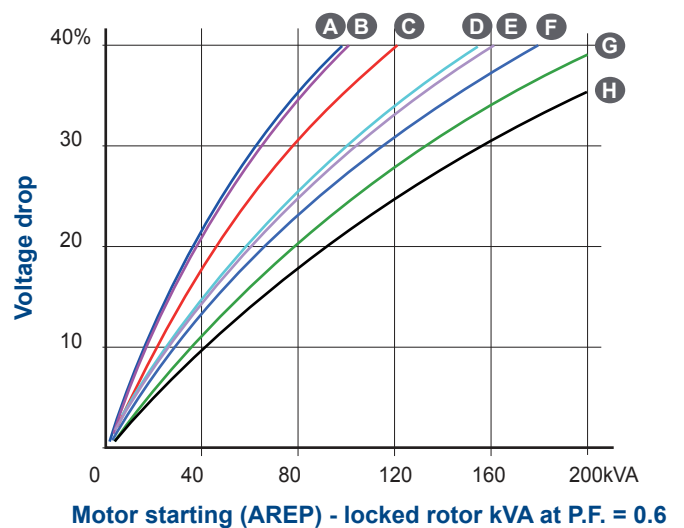
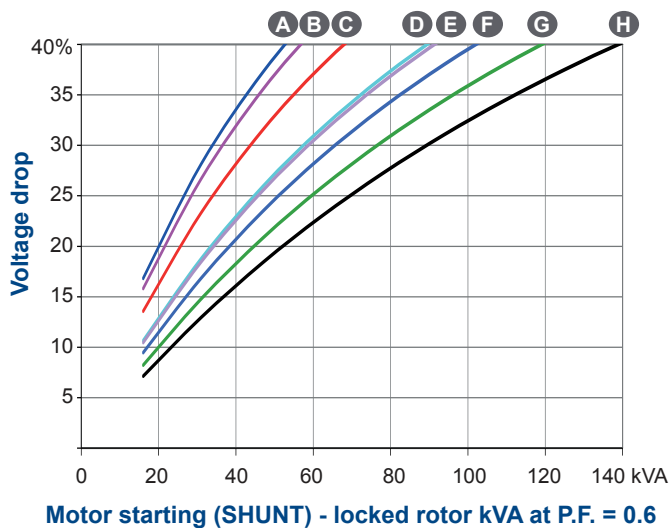
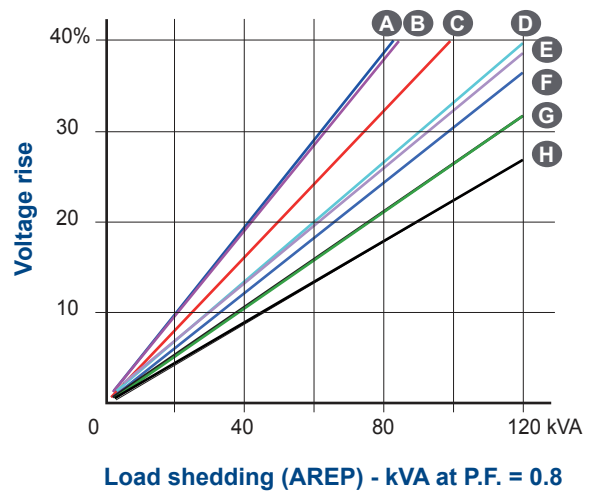
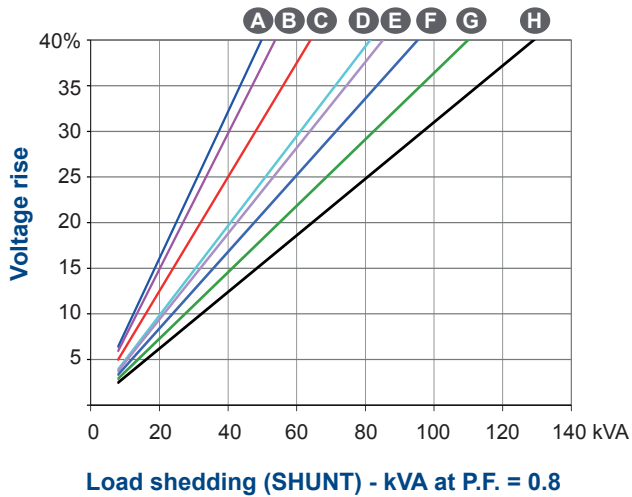
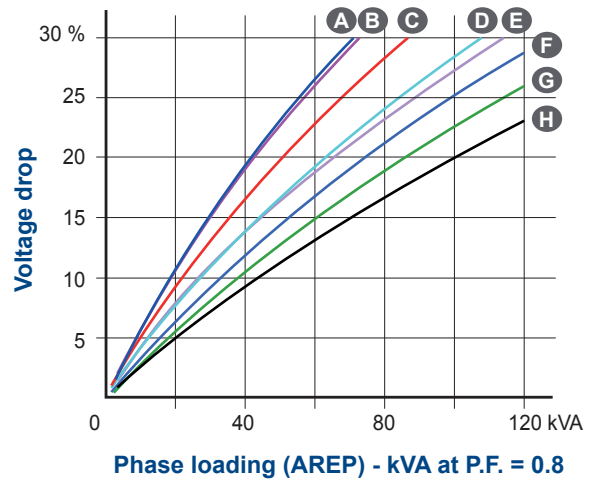
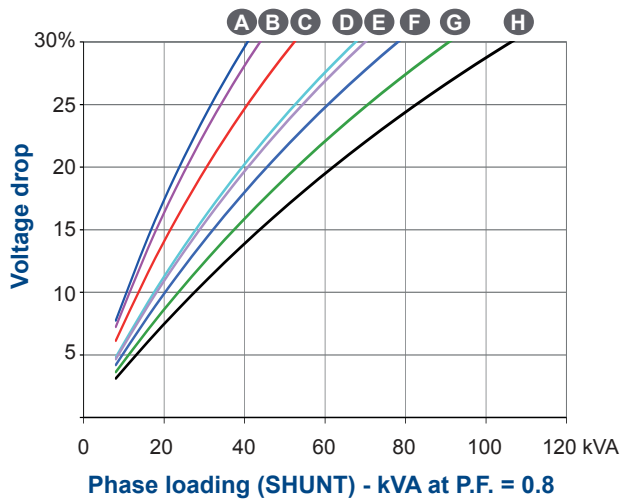
io (A) No-load excitation current SHUNT/AREP	0.53	0.50	0.49	0.47	0.47	0.45	0.48	0.48
ic (A) On-load excitation current SHUNT/AREP	1.73	1.72	1.78	1.55	1.76	1.78	1.88	2.07
uc (V) On-load excitation voltage SHUNT/AREP	29.5	29.3	30.1	26.3	29.4	29.6	30.9	33.2
ms Response time (ΔU = 20% transient)	500	500	500	500	500	500	500	500
kVA Start (ΔU = 20% cont. or ΔU = 30% trans.) SHUNT	38 (52)	38 (52)	45 (62)	62 (83)	62 (83)	69 (92)	77 (107)	90 (125)
kVA Start (ΔU = 20% cont. or ΔU = 30% trans.) AREP	60 (60)	65 (65)	80 (80)	100 (100)	105 (105)	115 (115)	135 (135)	160 (160)
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 LAG	20 (15)	21 (16)	21 (16)	18 (14)	20 (16)	20 (16)	19 (15)	20 (15)
% Transient ΔU (on-load 4/4) AREP - P.F.: 0.8 LAG	13 (13)	14 (14)	14 (14)	12 (12)	13 (13)	13 (13)	13 (13)	13 (13)
W No-load losses	731	726	778	882	882	903	1057	1152
W Heat dissipation	2967	3112	3491	3183	3865	4217	4588	5330

() : 12 wire

Low Voltage Alternators - 4 pole

TAL042 - Three phase 25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

Transient voltage variation 400V - 50 Hz - 6 wire



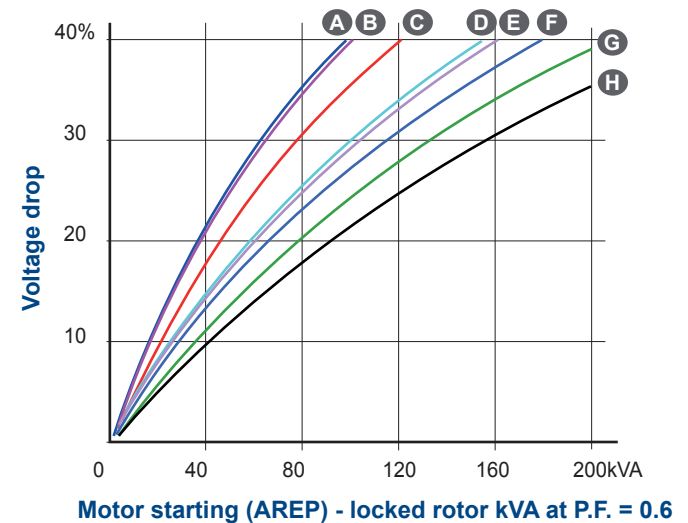
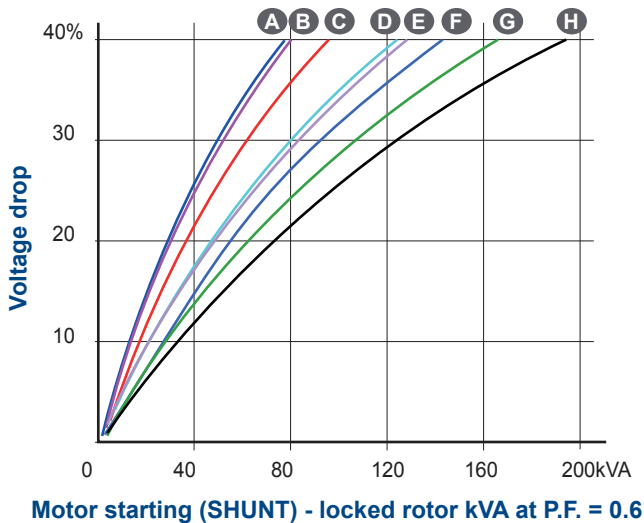
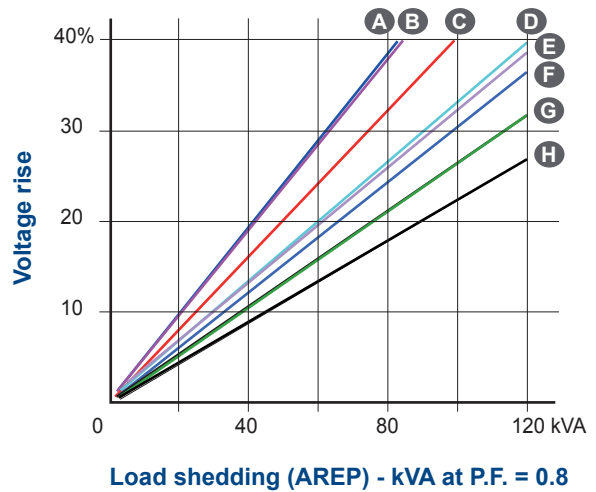
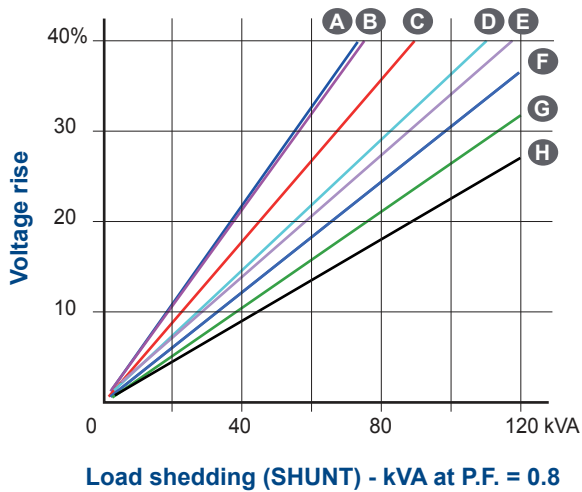
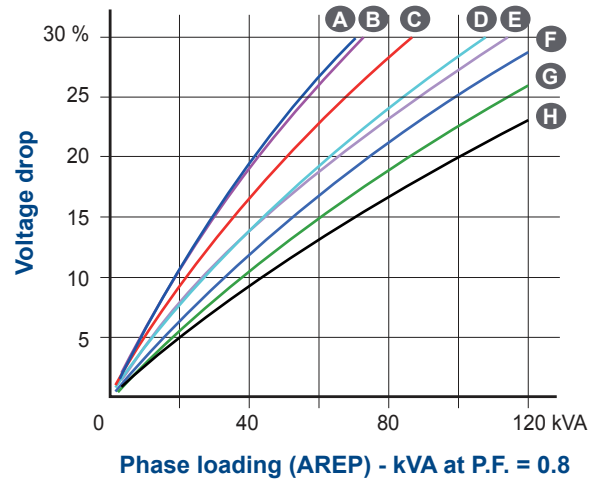
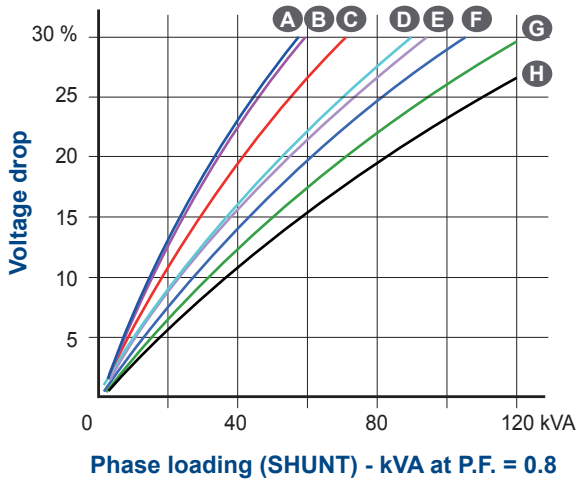
1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.8$

2) For voltages other than 400V (Y), 230V (Δ) at 50 Hz, then kVA must be multiplied by $(400/U)^2$ or $(230/U)^2$.

Low Voltage Alternators - 4 pole

TAL042 - Three phase 25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

Transient voltage variation 400V - 50 Hz - 12 wire



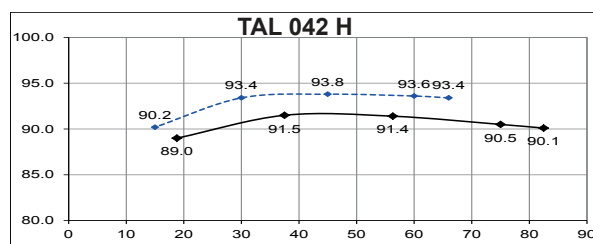
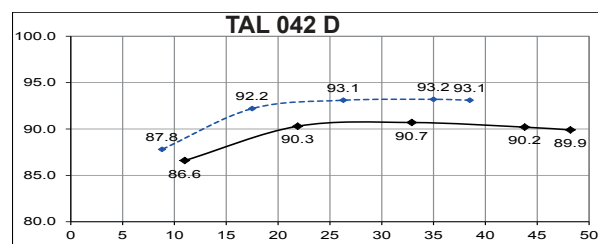
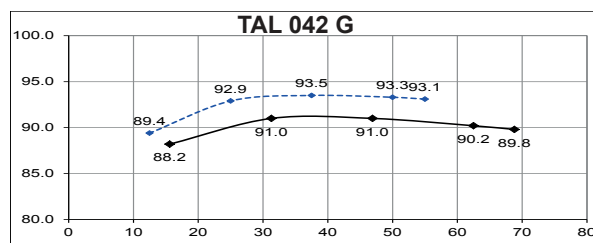
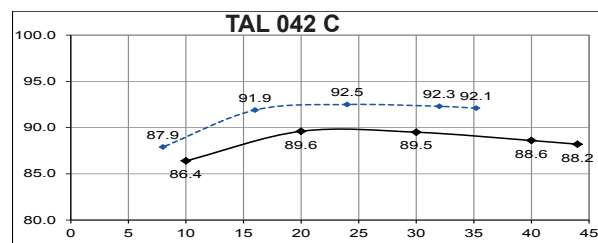
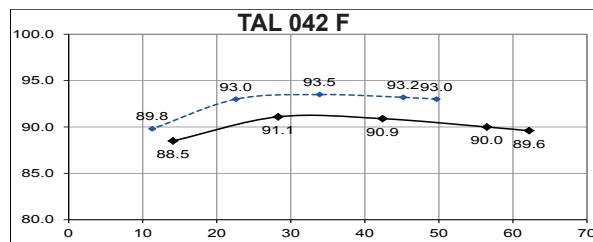
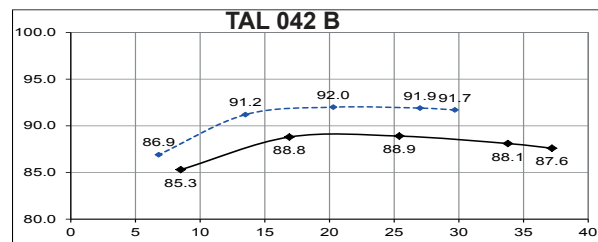
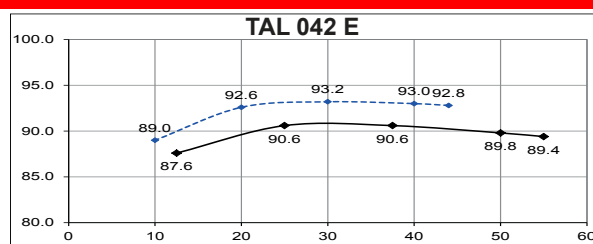
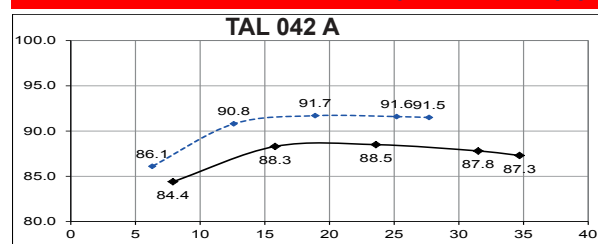
1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.6$

2) For voltages other than 400V (Y), 230V (Δ) at 50 Hz, then kVA must be multiplied by $(400/U)^2$ or $(230/U)^2$.

Low Voltage Alternators - 4 pole

TAL042 - Three phase 25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

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



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

	A	B	C	D	E	F	G	H
Kcc Short-circuit ratio	0.47	0.44	0.42	0.47	0.41	0.38	0.41	0.38
Xd Direct-axis synchro. reactance unsaturated	270	279	292	256	292	308	295	316
Xq Quadrature-axis synchro. reactance unsaturated	162	167	175	153	175	185	177	189
T'do No-load transient time constant	786	813	861	944	944	980	998	1031
X'd Direct-axis transient reactance saturated	17.2	17.1	16.9	13.5	15.5	15.7	14.7	15.3
T'd Short-circuit transient time constant	50	50	50	50	50	50	50	50
X''d Direct-axis subtransient reactance saturated	8.6	8.5	8.4	6.7	7.7	7.8	7.3	7.6
T''d Subtransient time constant	5	5	5	5	5	5	5	5
X''q Quadrature-axis subtransient reactance saturated	12.1	12.1	12.0	9.6	11.0	11.2	10.5	10.5
Xo Zero sequence reactance	0.71	0.71	0.7	0.55	0.64	0.65	0.61	0.63
X2 Negative sequence reactance saturated	10.4	10.4	10.2	8.2	9.4	9.5	9	9.3
Ta Armature time constant	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0

Other class H / 480 V data

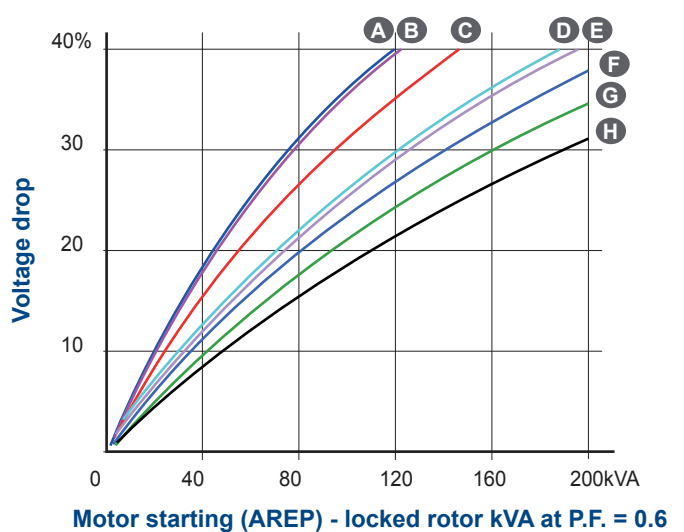
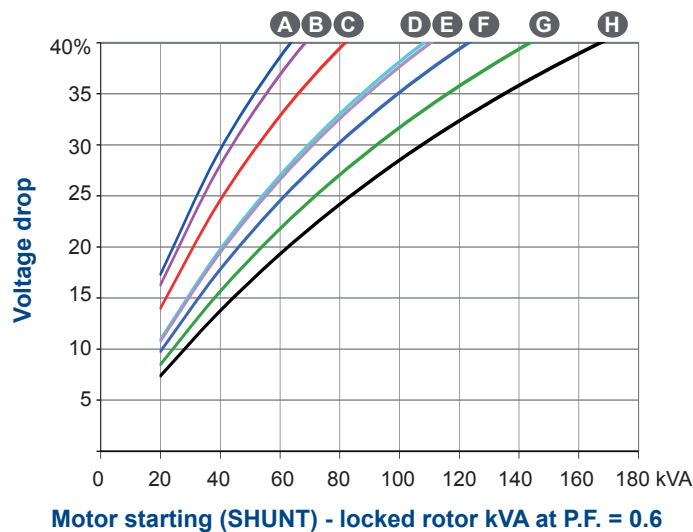
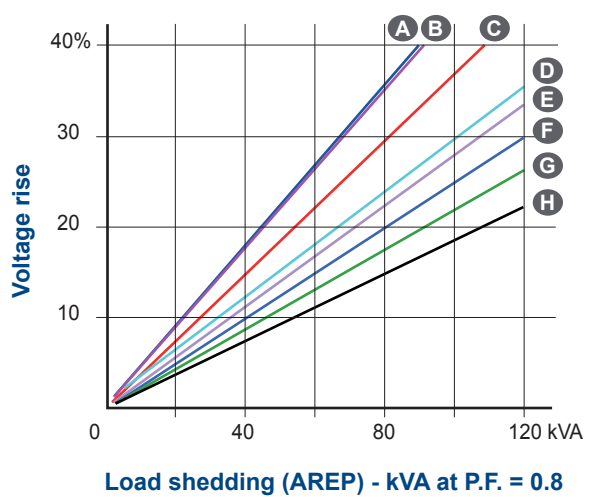
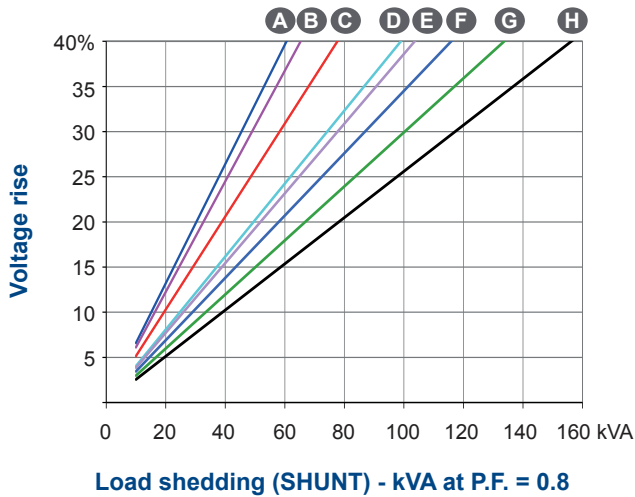
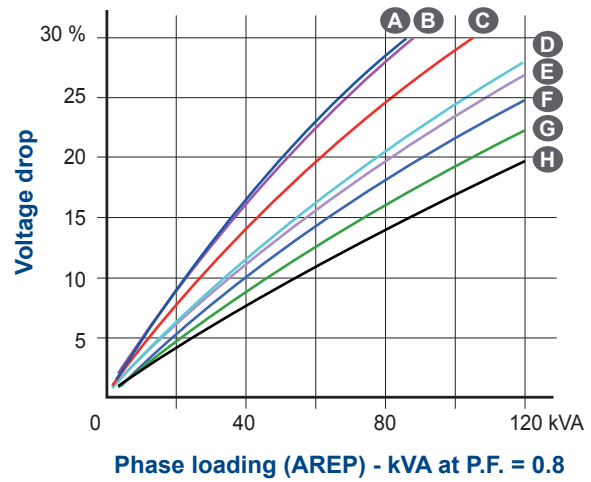
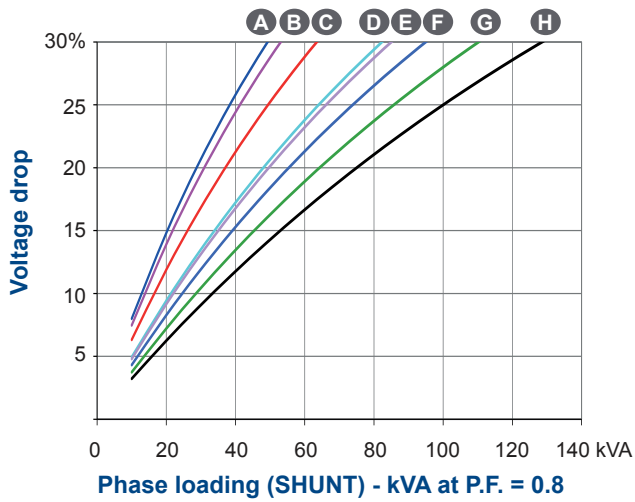
io (A) No-load excitation current SHUNT/AREP	0.53	0.50	0.49	0.47	0.47	0.45	0.48	0.48
ic (A) On-load excitation current SHUNT/AREP	1.75	1.74	1.79	1.56	1.76	1.78	1.86	2.02
uc (V) On-load excitation voltage SHUNT/AREP	30.2	29.8	30.6	26.7	29.8	30.1	31.2	33.3
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT	45 (62)	45 (62)	54 (75)	74 (100)	74 (100)	82 (110)	98 (130)	113 (150)
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP	80 (80)	80 (80)	95 (95)	127 (127)	127 (127)	140 (140)	165 (165)	190 (190)
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{Lag}	20 (16)	21 (17)	21 (17)	19 (15)	20 (16)	20 (16)	20 (16)	20 (16)
% Transient ΔU (on-load 4/4) AREP - P.F.: 0.8 _{Lag}	13 (13)	14 (14)	14 (14)	12 (12)	13 (13)	13 (13)	13 (13)	13 (13)
W No-load losses	1043	1040	1114	1264	1264	1295	1507	1642
W Heat dissipation	3500	3640	4082	3771	4529	4970	5383	6243

() : 12 wire

Low Voltage Alternators - 4 pole

TAL042 - Three phase 25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

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



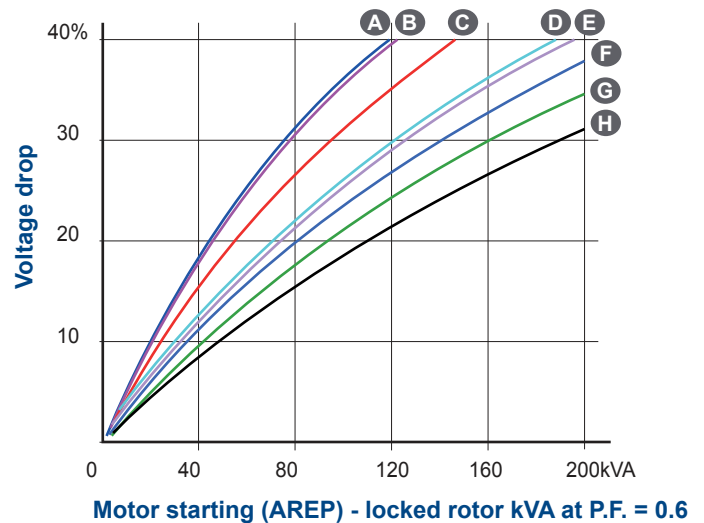
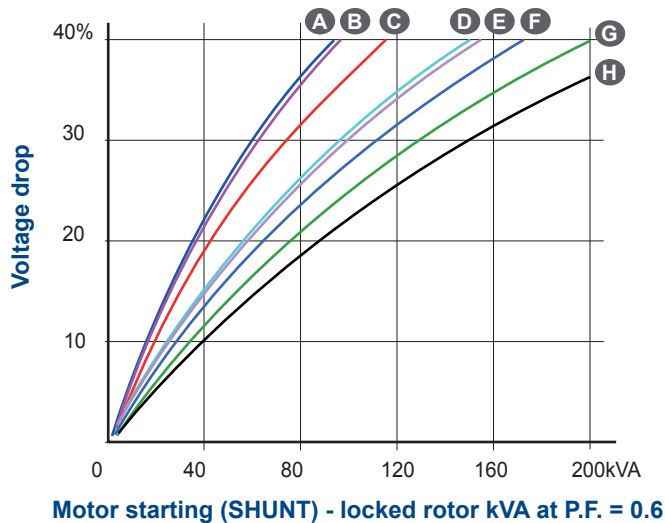
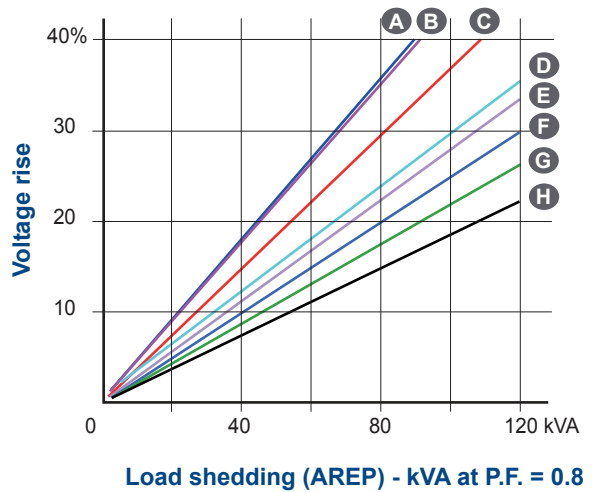
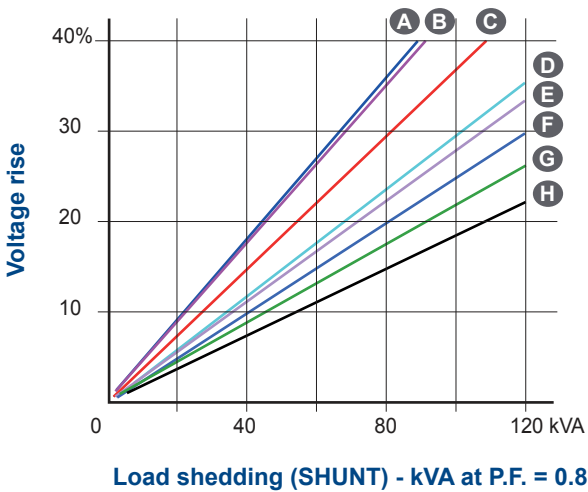
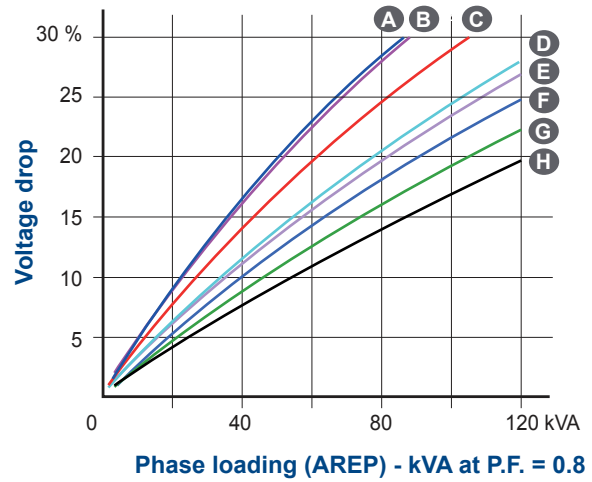
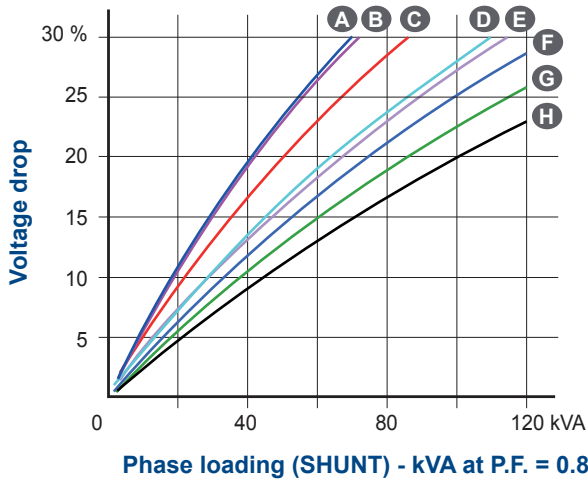
1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.8$

2) 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 $(240/U)^2$.

Low Voltage Alternators - 4 pole

TAL042 - Three phase 25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

Transient voltage variation 480V - 60 Hz - 12 wire



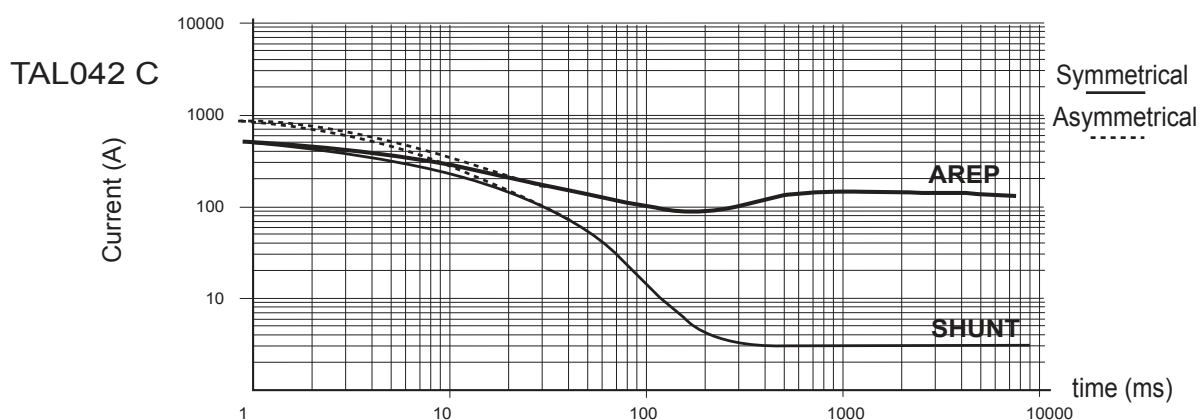
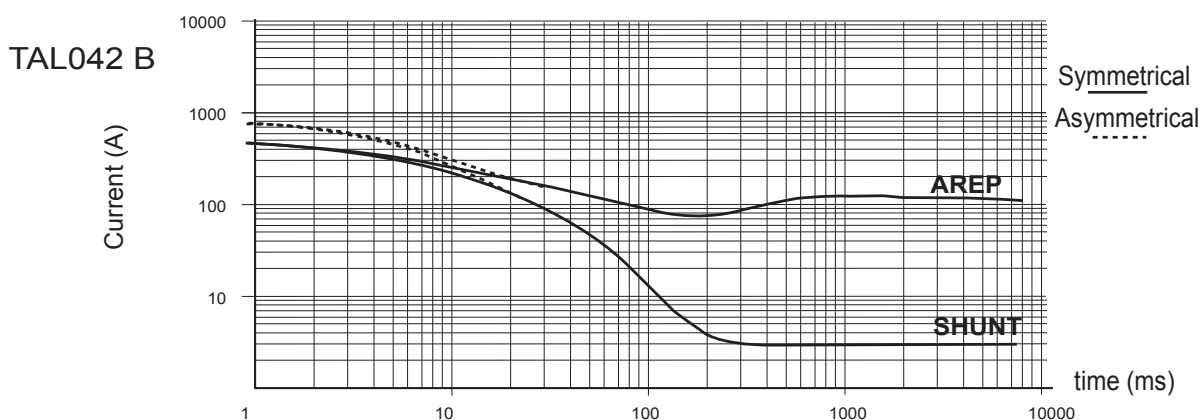
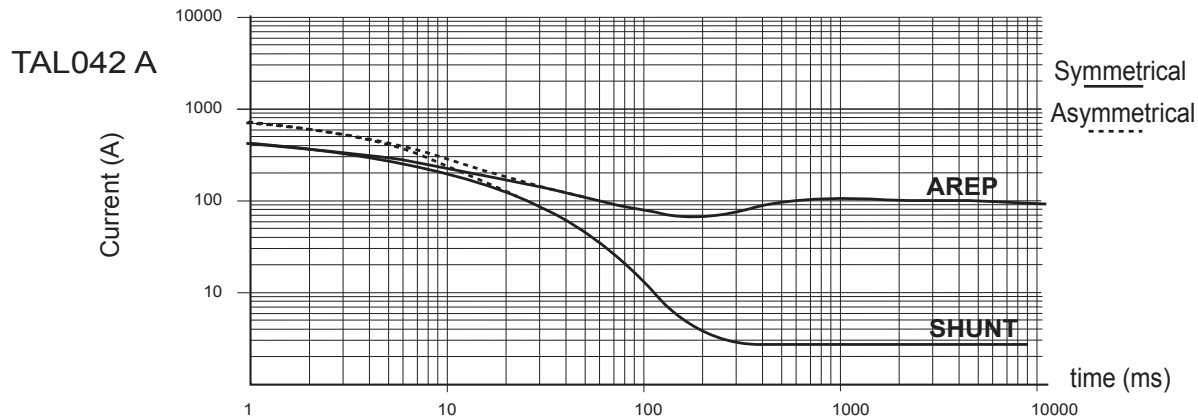
1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.8$

2) 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 $(240/U)^2$.

Low Voltage Alternators - 4 pole

TAL042 - Three phase 25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

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



Influence due to connection

For (Δ) connection, use the following multiplication factor:

- Current value x 1.732.

Influence due to short-circuit

Curves are based on a three-phase short-circuit.

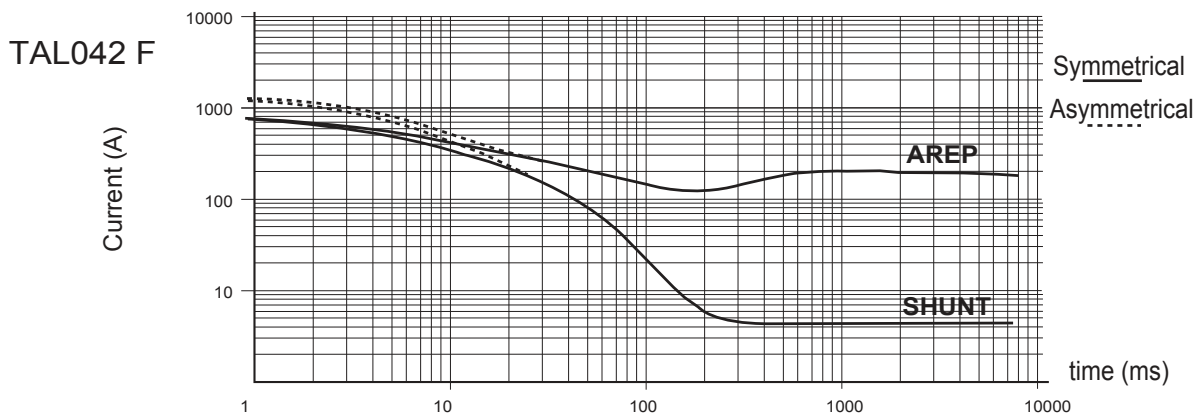
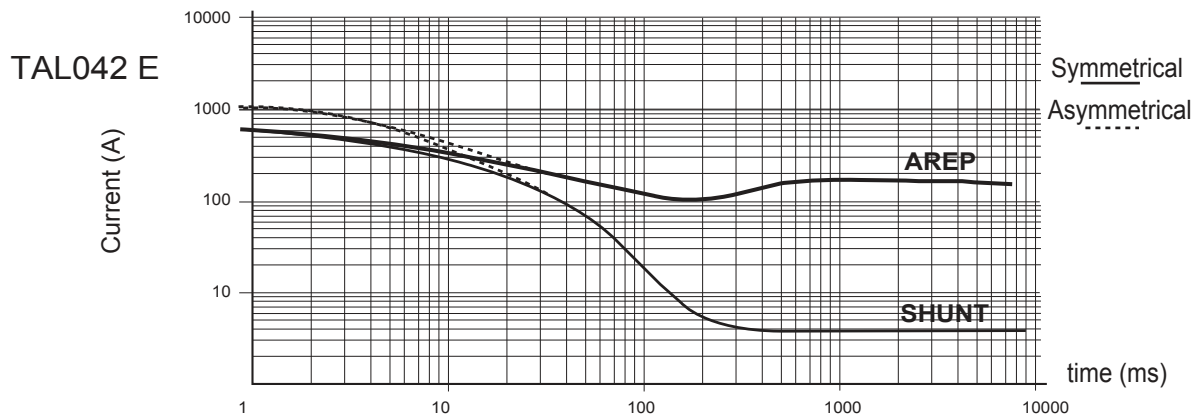
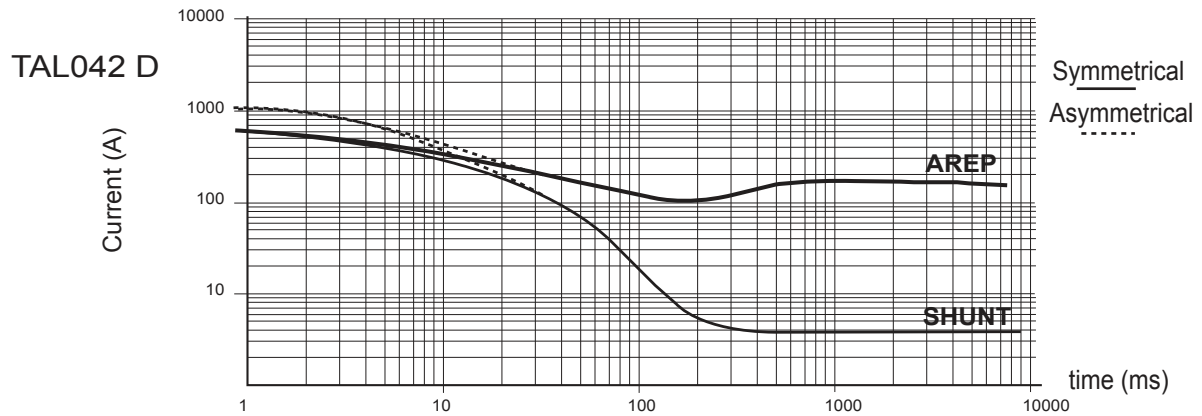
For other types of short-circuit, use the following multiplication factors.

	3 - phase	2 - phase L / L	1 - phase L / N
Instantaneous (max.)	1	0.87	1.3
Continuous	1	1.5	2.2
Maximum duration (AREP/PMG)		1.5	

Low Voltage Alternators - 4 pole

TAL042 - Three phase 25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

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



Influence due to connection

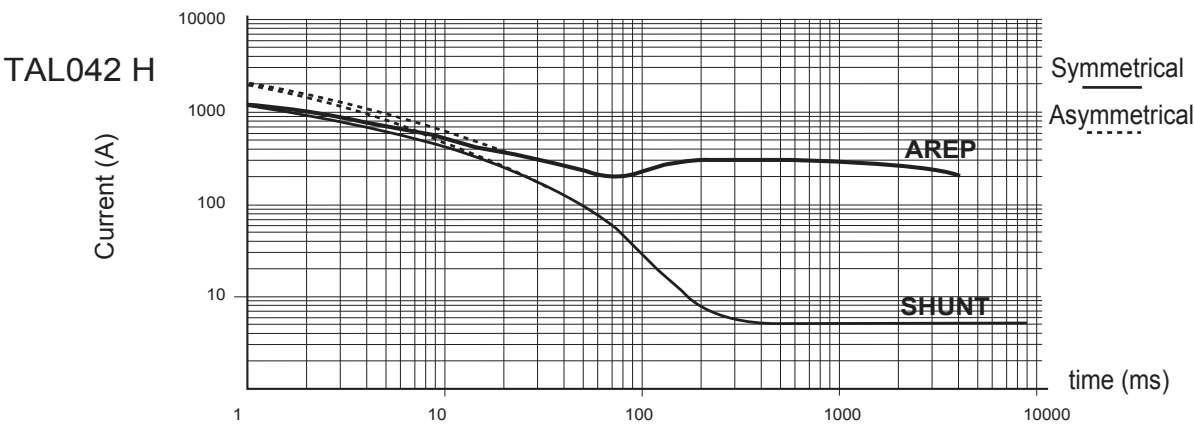
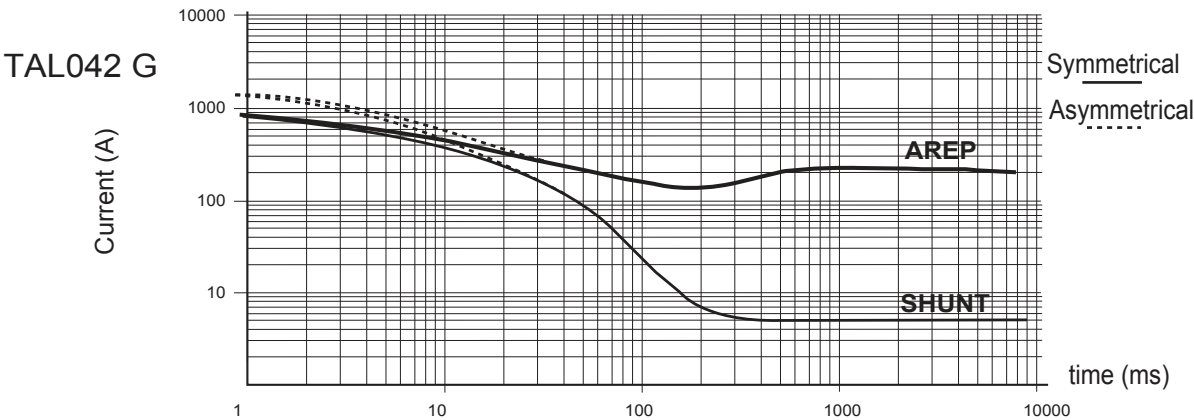
For (Δ) connection, use the following multiplication factor:

- Current value x 1.732.

Low Voltage Alternators - 4 pole

TAL042 - Three phase 25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

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



Influence due to short-circuit
Curves are based on a three-phase short-circuit.
For other types of short-circuit,
use the following multiplication factors.

	3 - phase	2 - phase L / L	1 - phase L / N
Instantaneous (max.)	1	0.87	1.3
Continuous	1	1.5	2.2
Maximum duration (AREP/PMG)		1.5	

Low Voltage Alternators - 4 pole

TAL042 - Single phase 18.2 to 42 kVA - 50 Hz / 23 to 53 kVA - 60 Hz

General characteristics - 4-wire

Insulation class	H	Excitation system	SHUNT
Winding pitch	2/3 (Winding M 50Hz / M1 60Hz)	AVR type	R120
Number of wires	4	Voltage regulation (*)	± 1 %
Protection	IP 23	Total Harmonic distortion THD (**) in no-load:	< 3.5 %
Altitude	≤ 1000 m	Total Harmonic distortion THD (**) in linear load:	< 5 %
Overspeed	2250 R.P.M.	Waveform: NEMA = TIF (**)	< 100
Air flow (m³/s)	50Hz: 0.10 - 60Hz: 0.13	Waveform : I.E.C. : FHT (**)	< 2 %
			(*) Steady state (**) between phases

Ratings / Efficiencies - 4 wire - 50 Hz

kVA / kW - P.F. = 1						
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
1 Phase série	230 V	η %	230 V	230 V	230V	η %
TAL042 A	kVA 18.2	85.7	16.6	19.3	20	84.7
	kW 14.6	-	13.2	15.4	-	-
TAL042 B	kVA 20.3	86.1	18.5	21.5	22.3	85.3
	kW 16.2	-	14.8	17.2	-	-
TAL042 C	kVA 22.4	87	20.4	23.7	24.6	86.4
	kW 17.9	-	16.3	19.0	-	-
TAL042 D	kVA 25	88.6	22.8	26.5	27.5	88.2
	kW 20.0	-	18.2	21.2	-	-
TAL042 E	kVA 28	88.1	25.5	29.7	30.8	87.6
	kW 22.4	-	20.4	23.7	-	-
TAL042 F	kVA 31.5	88.3	28.7	33.4	34.7	87.7
	kW 25.2	-	22.9	26.7	-	-
TAL042 G	kVA 35	88.5	31.9	37.1	38.5	88
	kW 28.0	-	25.5	29.7	-	-
TAL042 H	kVA 42	88.7	38.2	44.5	46.2	88.2
	kW 33.6	-	30.6	35.6	-	-

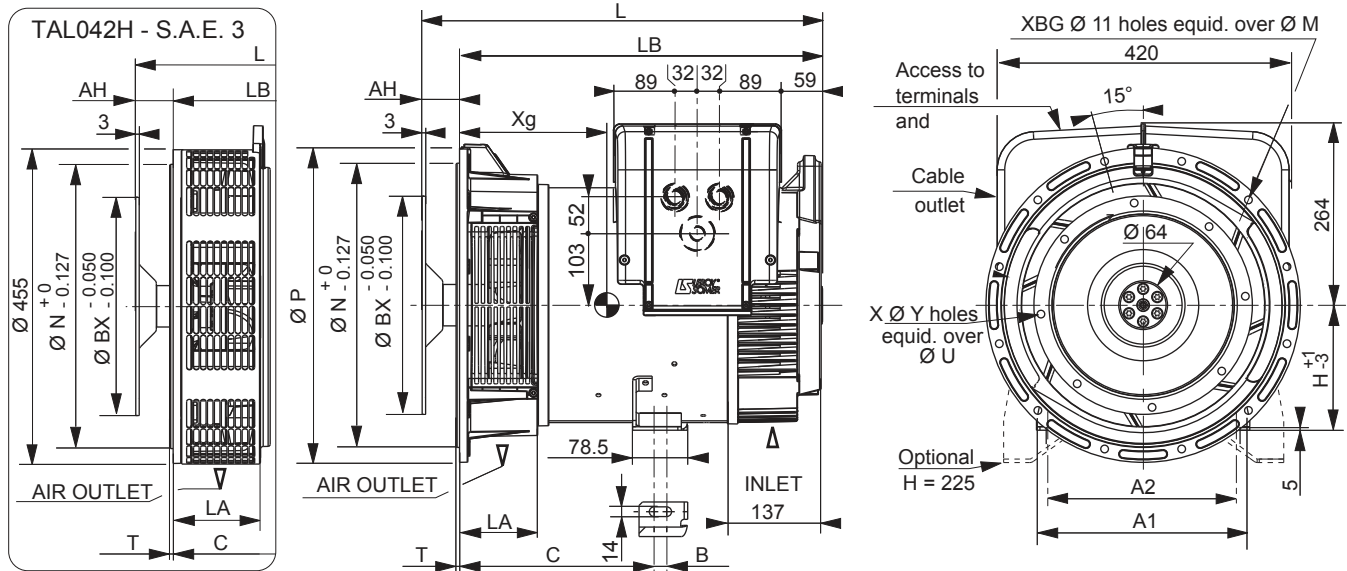
Ratings / Efficiencies - 4 wire - 60 Hz

kVA / kW - P.F. = 1						
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
1 Phase série	240 V	η %	240 V	240 V	240V	η %
TAL042 A	kVA 23	86.3	20.9	24.4	25.3	85.7
	kW 18.4	-	16.7	19.5	20.2	-
TAL042 B	kVA 26	86.3	23.7	27.6	28.6	85.7
	kW 20.8	-	18.9	22.0	22.9	-
TAL042 C	kVA 28.8	87.2	26.2	30.5	31.7	86.6
	kW 23.0	-	21.0	24.4	25.3	-
TAL042 D	kVA 31.5	88.4	28.7	33.4	34.7	88.1
	kW 25.2	-	22.9	26.7	27.7	-
TAL042 E	kVA 36	87.9	32.8	38.2	39.6	87.4
	kW 28.8	-	26.2	30.5	31.7	-
TAL042 F	kVA 40	88.2	36.4	42.4	44.0	87.6
	kW 32.0	-	29.1	33.9	35.2	-
TAL042 G	kVA 47.2	88.1	43.0	50.0	51.9	87.9
	kW 37.8	-	34.4	40.0	41.5	-
TAL042 H	kVA 53	88.6	48.2	56.2	58.3	88.2
	kW 42.4	-	38.6	44.9	46.6	-

Low Voltage Alternators - 4 pole

TAL042

Single bearing general arrangement - 4, 6 & 12 wire



Dimensions (mm) and weight (kg)				
Type	L	LB	Xg	Weight (kg)
TAL042 A	565	503	237	117
TAL042 B	565	503	242	122
TAL042 C	565	503	252	133
TAL042 D	610	548	275	165
TAL042 E	610	548	275	165
TAL042 F	650	588	287	181
TAL042 G	650	588	295	186
TAL042 H	680	618	310	187

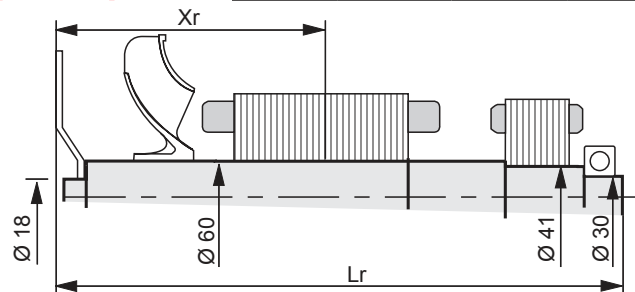
Shaft height (mm)	
	Standard
H	180
Feet length	
	Option
C	260
B	18
A1	307
A2	279

Coupling		
Flange	3	4
11 1/2	x	-
10	x	x
8	-	x
7 1/2	-	x

Flange (mm)						
S.A.E.	P	N	M	XBG	T	LA
4	406	361.95	381	12	6	122
3	452	409.58	428.62	12	5	112.5
-	-	-	-	-	-	-

Flex plate (mm)					
S.A.E.	BX	U	X	Y	AH
11 1/2	352.42	333.38	8	11	39.6
10	314.32	295.28	8	11	53.8
8	263.52	244.48	6	11	62
7 1/2	241.3	222.25	8	9	30.2

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. 7 1/2				Flex plate S.A.E. 8				Flex plate S.A.E. 10			
	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J
TAL042 A	279	526.2	45.36	0.2209	277	558	45.68	0.2246	274	549.8	46.13	0.2363
TAL042 B	282	526.2	47.36	0.2337	280	558	47.68	0.2374	277	549.8	48.13	0.2491
TAL042 C	287	526.2	51.41	0.2592	286	558	51.73	0.2629	283	549.8	52.18	0.2746
TAL042 D	310	571.2	61.49	0.317	308	603	61.81	0.3207	306	594.8	62.26	0.3324
TAL042 E	310	571.2	61.49	0.317	308	603	61.81	0.3207	306	594.8	62.26	0.3324
TAL042 F	325	611.2	67.41	0.3491	323	643	67.73	0.3528	321	634.8	68.18	0.3645
TAL042 G	330	611.2	70.42	0.3683	328	643	70.74	0.372	326	634.8	71.18	0.3837
TAL042 H	344	641.2	77.49	0.4141	342	673	77.81	0.4178	340	664.8	78.25	0.4295

NOTE : Dimensions are for information only and may be subject to modifications. Contractual 2D/3D drawings can be downloaded from the Leroy-Somer site. The torsional analysis of the transmission is imperative. All values are available upon request.

Low Voltage Alternators - 4 pole

TAL044 - Three phase 70 to 165 kVA - 50 Hz / 88 to 206 kVA - 60 Hz

General characteristics - 6 & 12 wire

Insulation class	H	Excitation system 6 wires	SHUNT	AREP
Winding pitch	2/3 (Winding 6 or 6S)	AVR type	R120	R180
Number of wires	6 or 12	Excitation system 12 wires	SHUNT	AREP
Protection	IP 23	AVR type	R220	R180
Altitude	≤ 1000 m	Voltage regulation (*)	± 1 %	
Overspeed	2250 R.P.M.	Total Harmonic distortion THD (**) in no-load	< 3.5 %	
Air flow 50 Hz (m³/s)	0.30	Total Harmonic distortion THD (**) in linear load	< 5 %	
Air flow 60 Hz (m³/s)	0.35	Waveform: NEMA = TIF (**)	< 50	
		Waveform : I.E.C. : FHT (**)	< 2%	

(*) Steady state (**) between phases

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

kVA / kW - P.F. = 1																					
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.				1 ph.	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		380V	400V	415V	440V	
Δ		220V	230V	240V			220V	230V	240V			220V	230V	240V			220V	230V	240V		
YY				220V					220V					220V					220V		
ΔΔ					230V				230V					230V					230V		
TAL044 A	kVA	-	70	-	63	42	-	64	-	57	38	-	74	-	66	44	-	77	-	69	46
	kW	-	56	-	50	34	-	51	-	46	30	-	59	-	53	35	-	62	-	55	37
TAL044 B	kVA	-	80	-	72	48	-	73	-	66	44	-	84	-	76	50	-	88	-	79	53
	kW	-	64	-	58	38	-	58	-	53	35	-	67	-	61	40	-	70	-	63	42
TAL044 C	kVA	-	90	-	81	54	-	82	-	74	49	-	95	-	85	57	-	100	-	89	59
	kW	-	72	-	65	43	-	66	-	59	39	-	76	-	68	46	-	80	-	71	47
TAL044 D	kVA	-	100	-	90	60	-	91	-	82	55	-	105	-	95	63	-	110	-	99	66
	kW	-	80	-	72	48	-	73	-	66	44	-	84	-	76	50	-	88	-	79	53
TAL044 E	kVA	-	125	-	113	67	-	114	-	102	61	-	131	-	118	71	-	138	-	124	74
	kW	-	100	-	90	54	-	91	-	82	49	-	105	-	94	57	-	110	-	99	59
TAL044 H	kVA	-	135	-	122	73	-	123	-	111	66	-	142	-	128	77	-	149	-	134	80
	kW	-	108	-	98	58	-	98	-	89	53	-	114	-	102	62	-	119	-	107	64
TAL044 J	kVA	-	150	-	135	80	-	137	-	123	73	-	158	-	142	84	-	165	-	149	88
	kW	-	120	-	108	64	-	110	-	98	58	-	126	-	114	67	-	132	-	119	70
TAL044 K	kVA	-	165	-	138	88	-	150	-	125	80	-	174	-	150	92	-	181	-	157	96
	kW	-	132	-	110	70	-	120	-	100	64	-	139	-	120	74	-	145	-	126	77

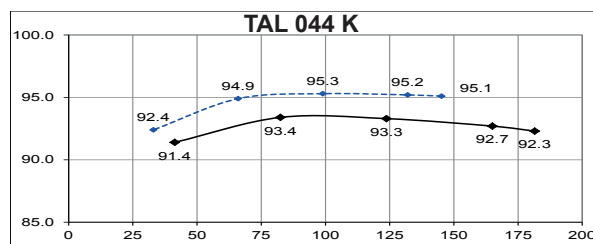
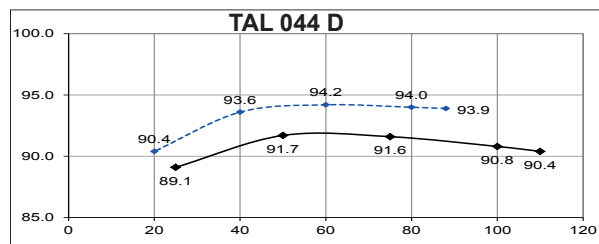
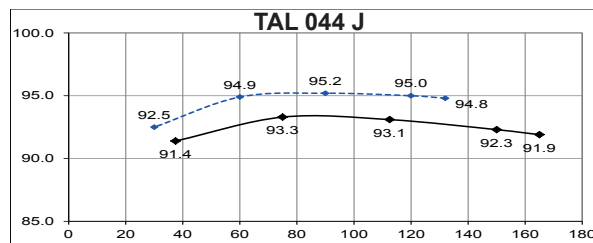
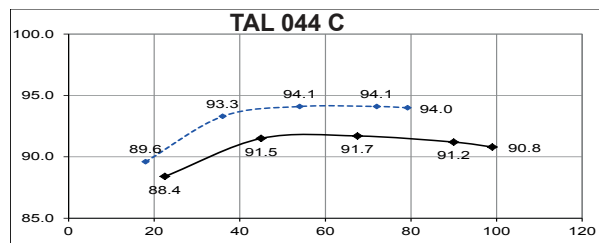
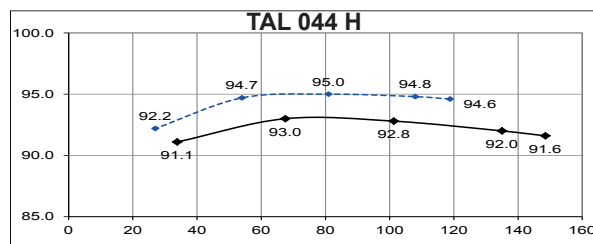
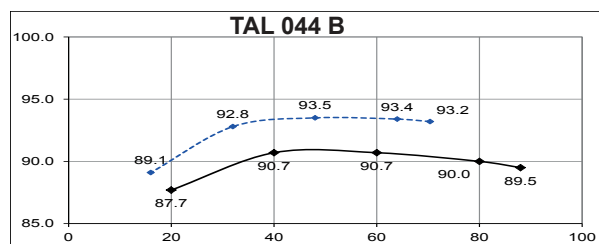
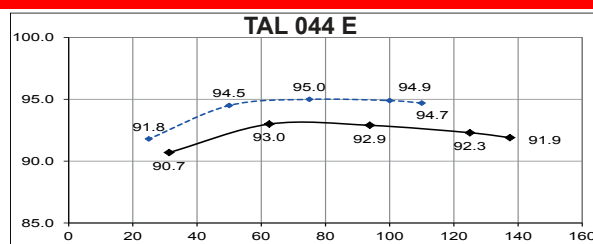
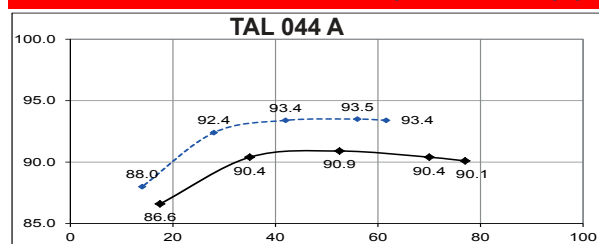
Ratings 60 Hz - 1800 R.P.M. - 6 & 12 wire

kVA / kW - P.F. = 1																					
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.			1 ph.	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		380V	416V	440V	480V	
Δ		220V	240V				220V	240V				220V	240V				220V	240V			
YY			208V	220V	240V			208V	220V	240V			208V	220V	240V			208V	220V	240V	
ΔΔ					240V					240V					240V					240V	
TAL044 A	kVA	69	76	80	88	46	63	69	73	80	41	73	80	84	92	48	76	83	88	96	50
	kW	55	61	64	70	37	50	55	58	64	33	58	64	67	74	38	61	66	70	77	40
TAL044 B	kVA	79	87	92	100	52	72	79	83	91	47	83	91	96	105	55	87	95	101	110	57
	kW	63	70	74	80	42	58	63	66	73	38	66	73	77	84	44	70	76	81	88	46
TAL044 C	kVA	89	98	103	113	59	81	89	94	102	53	94	102	108	118	61	98	107	113	124	64
	kW	71	78	82	90	47	65	71	75	82	42	75	82	86	94	49	78	86	90	99	51
TAL044 D	kVA	99	108	115	125	65	90	99	104	114	59	104	114	120	131	68	109	119	126	138	72
	kW	79	86	92	100	52	72	79	83	91	47	83	91	96	105	54	87	95	101	110	58
TAL044 E	kVA	124	135	143	156	76	113	123	130	142	69	130	142	150	164	80	136	149	158	172	83
	kW	99	108	114	125	61	90	98	104	114	55	104	114	120	131	64	109	119	126	138	66
TAL044 H	kVA	134	146	155	169	81	122	133	141	154	73	140	154	162	177	85	147	161	170	186	89
	kW	107	117	124	135	65	98	106	113	123	58	112	123	130	142	68	118	129	136	149	71
TAL044 J	kVA	148	163	172	188	95	135	148	156	171	86	156	171	181	197	100	163	179	189	206	105
	kW	118	130	138	150	76	108	118	125	137	69	125	137	145	158	80	130	143	151	165	84
TAL044 K	kVA	165	179	189	206	105	150	163	172	187	94	173	188	198	215	109	180	195	208	225	115
	kW	132	143	151	165	84	120	130	138	150	75	138	150	158	172	87	144	156	166	180	92

Low Voltage Alternators - 4 pole

TAL044 - Three phase 70 to 165 kVA - 50 Hz / 88 to 206 kVA - 60 Hz

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



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

	A	B	C	D	E	H	J	K
Kcc Short-circuit ratio	0.59	0.52	0.53	0.48	0.43	0.4	0.4	0.42
Xd Direct-axis synchro. reactance unsaturated	291	333	307	341	335	362	359	342
Xq Quadrature-axis synchro. reactance unsaturated	148	170	156	174	171	185	183	174
T'do No-load transient time constant	2475	2475	2308	2308	2154	2154	2112	2077
X'd Direct-axis transient reactance saturated	11.7	13.4	13.3	14.7	15.5	16.8	17	16.4
T'd Short-circuit transient time constant	100	100	100	100	100	100	100	100
X''d Direct-axis subtransient reactance saturated	7	8	7.9	8.8	9.3	10.1	10.2	9.8
T''d Subtransient time constant	10	10	10	10	10	10	10	10
X''q Quadrature-axis subtransient reactance saturated	15.9	18.2	17	18.9	18.9	20.5	20.4	19.5
Xo Zero sequence reactance	0.49	0.56	0.55	0.61	0.64	0.7	0.7	0.68
X2 Negative sequence reactance saturated	11.5	13.1	12.5	13.9	14.2	15.3	15.3	14.7
Ta Armature time constant	15	15	15	15	15	15	15	15

Other class H / 400 V data

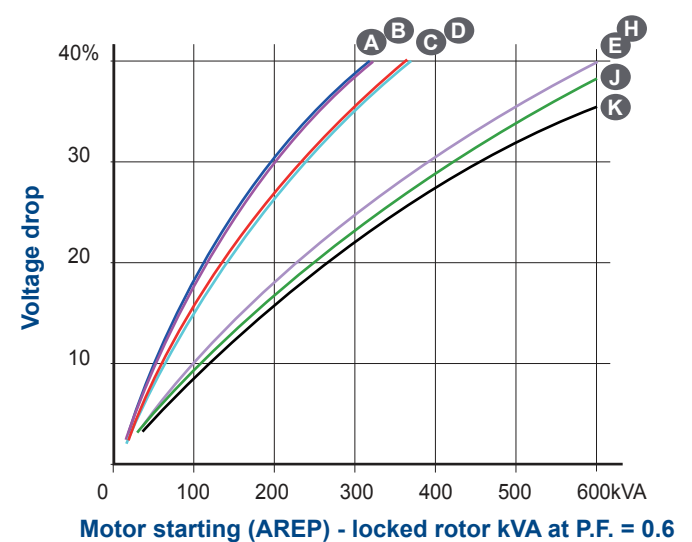
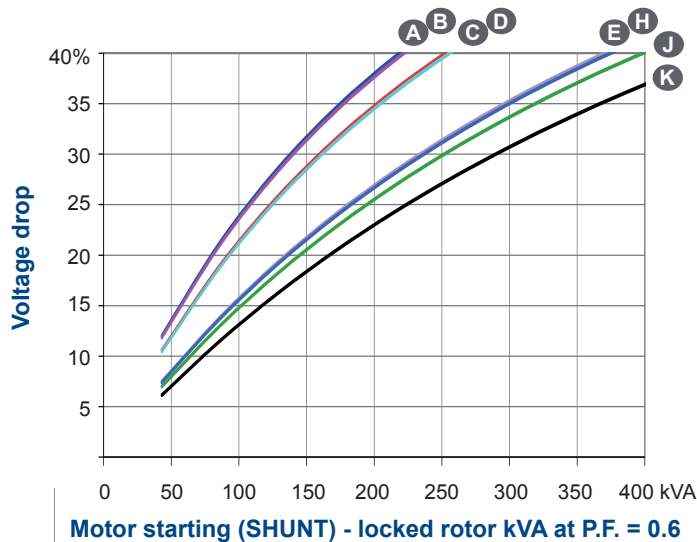
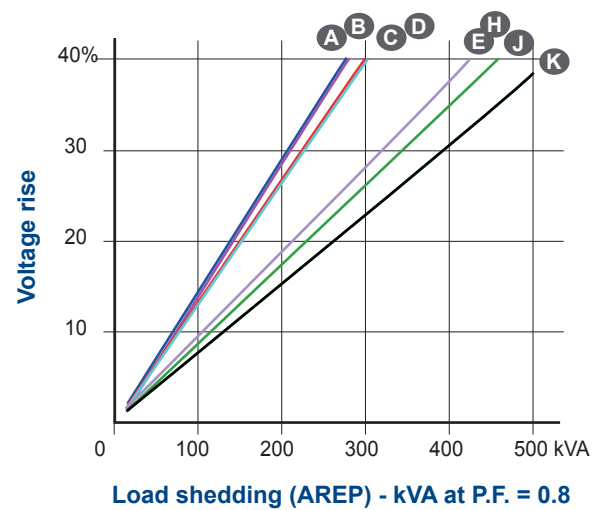
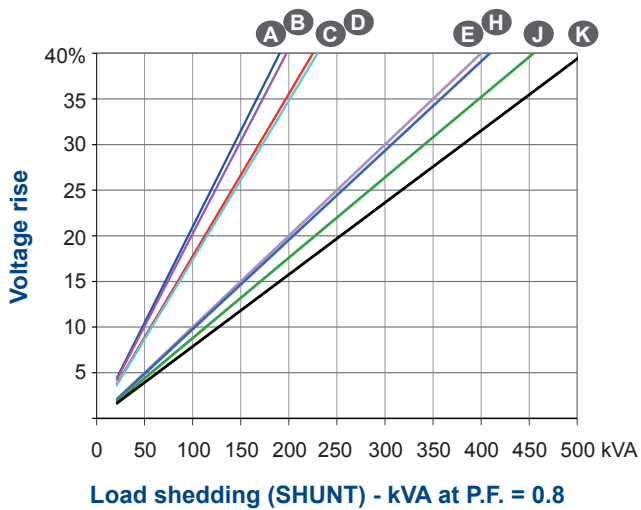
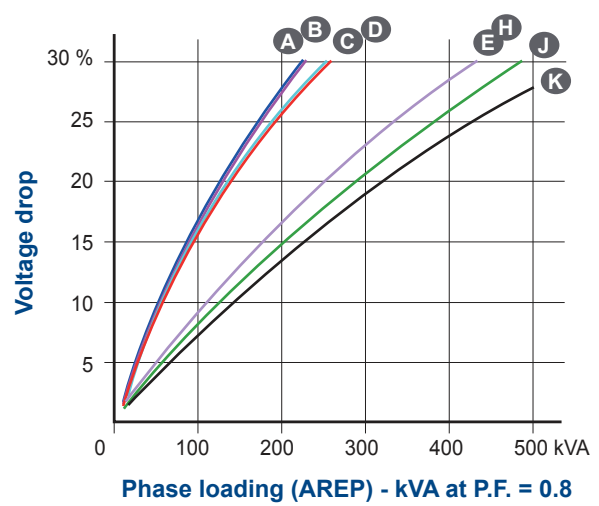
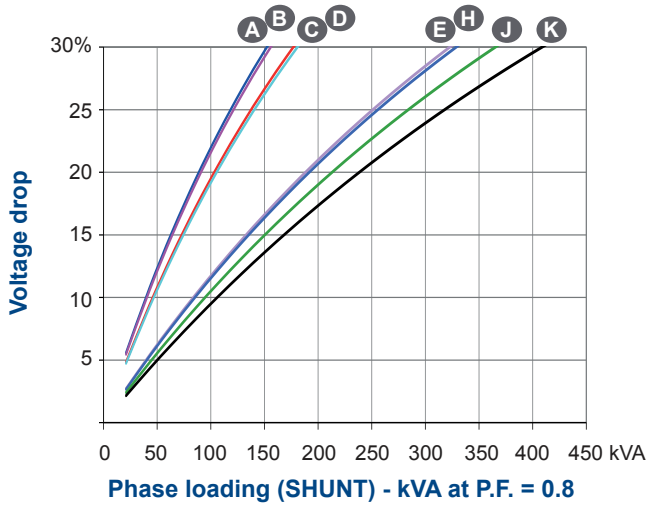
io (A) No-load excitation current SHUNT/AREP	0.86	0.86	0.8	0.8	0.67	0.67	0.66	0.68
ic (A) On-load excitation current SHUNT/AREP	2.62	2.98	2.75	3.08	2.57	2.78	2.79	2.83
uc (V) On-load excitation voltage SHUNT/AREP	29.2	32.8	30.1	33.2	31.9	34.3	34.1	34.2
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT	135 (160)	135 (160)	160 (185)	160 (185)	235 (310)	235 (310)	250 (335)	285 (390)
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP	195 (195)	195 (195)	220 (220)	220 (220)	370 (370)	370 (370)	405 (405)	470 (470)
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{Lag}	16 (13)	18 (14)	18 (12)	19 (12)	14 (14)	15 (14)	15 (14)	15 (14)
% Transient ΔU (on-load 4/4) AREP - P.F.: 0.8 _{Lag}	10 (10)	10 (10)	10 (10)	11 (11)	10 (10)	11 (11)	11 (11)	11 (11)
W No-load losses	1980	1980	2142	2142	2281	2281	2449	2763
W Heat dissipation	5900	7094	6923	8055	8315	9335	9910	10391

() : 12 wire

Low Voltage Alternators - 4 pole

TAL044 - Three phase 70 to 165 kVA - 50 Hz / 88 to 206 kVA - 60 Hz

Transient voltage variation 400V - 50 Hz - 6 wire



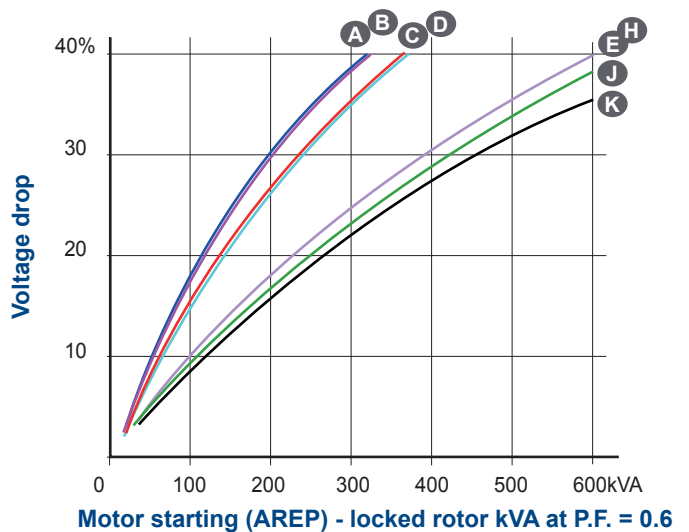
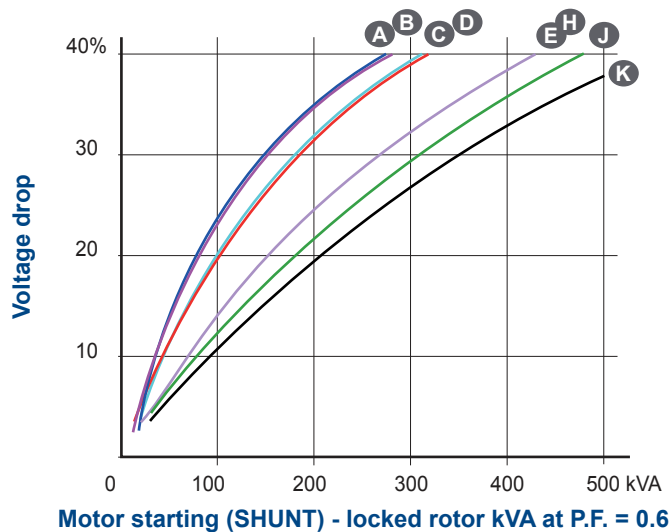
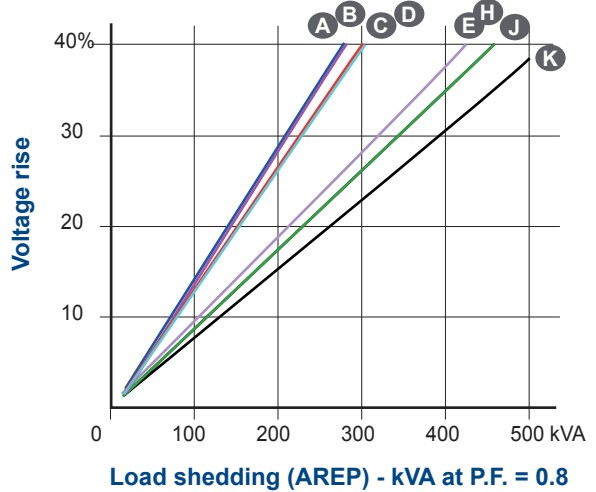
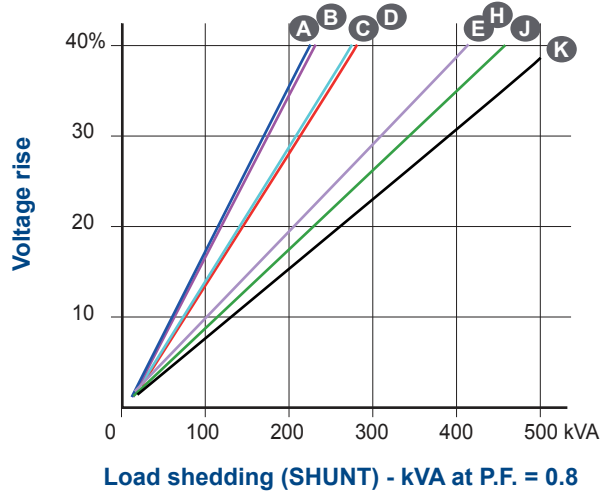
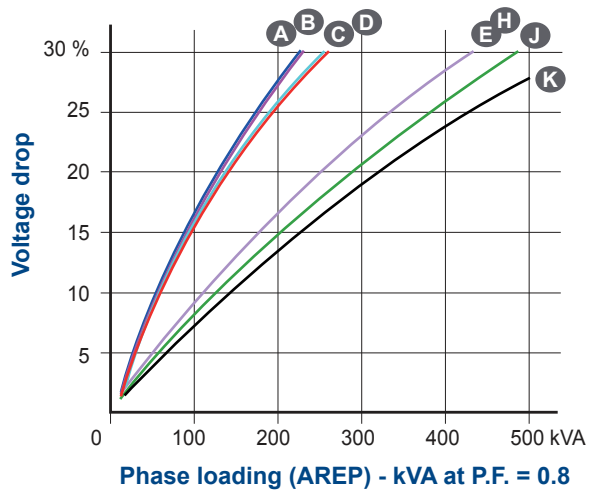
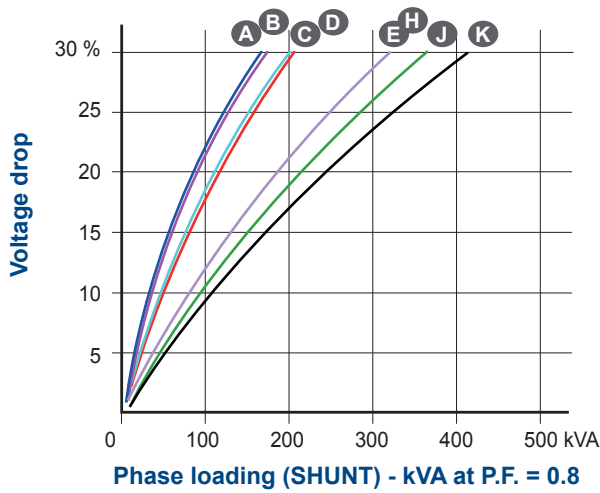
1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.6$

2) For voltages other than 400V (Y), 230V (Δ) at 50 Hz, then kVA must be multiplied by $(400/U)^2$ or $(230/U)^2$.

Low Voltage Alternators - 4 pole

TAL044 - Three phase 70 to 165 kVA - 50 Hz / 88 to 206 kVA - 60 Hz

Transient voltage variation 400V - 50 Hz - 12 wire



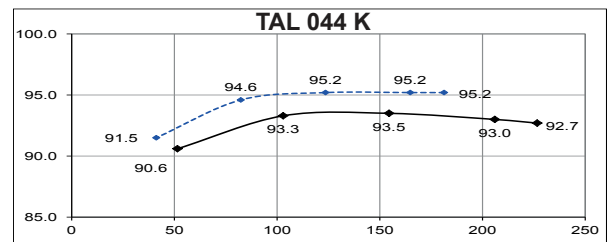
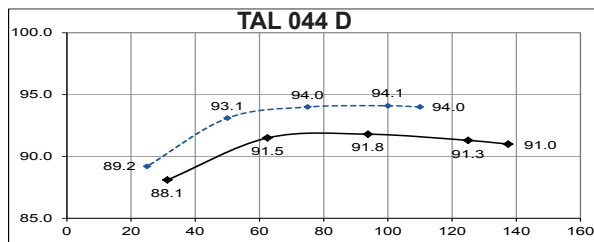
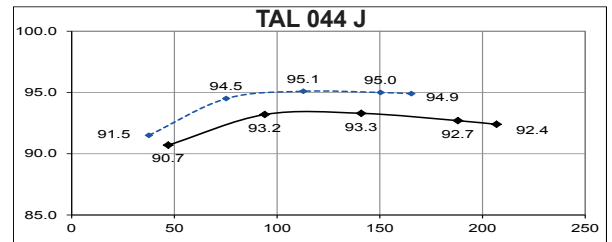
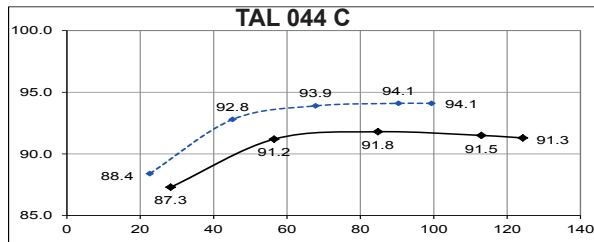
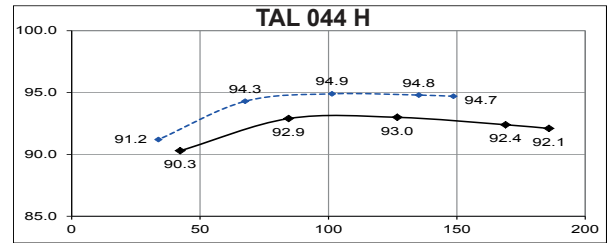
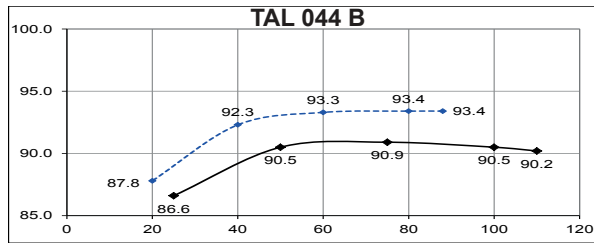
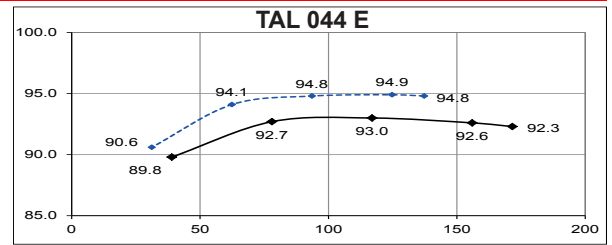
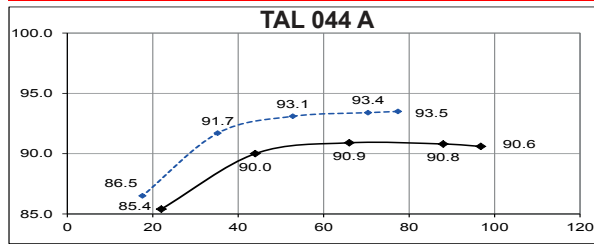
1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.6$

2) For voltages other than 400V (Y), 230V (Δ) at 50 Hz, then kVA must be multiplied by $(400/U)^2$ or $(230/U)^2$.

Low Voltage Alternators - 4 pole

TAL044 - Three phase 70 to 165 kVA - 50 Hz / 88 to 206 kVA - 60 Hz

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



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

	A	B	C	D	E	H	J	K
Kcc Short-circuit ratio	0.56	0.49	0.5	0.46	0.41	0.38	0.38	0.4
Xd Direct-axis synchro. reactance unsaturated	305	347	321	355	348	377	375	358
Xq Quadrature-axis synchro. reactance unsaturated	155	177	164	181	177	192	191	182
T'do No-load transient time constant	2475	2475	2308	2308	2154	2154	2112	2077
X'd Direct-axis transient reactance saturated	12.3	14	13.9	15.4	16.1	17.5	17.7	17.2
T'd Short-circuit transient time constant	100	100	100	100	100	100	100	100
X''d Direct-axis subtransient reactance saturated	7.4	8.4	8.3	9.2	9.6	10.5	10.6	10.3
T''d Subtransient time constant	10	10	10	10	10	10	10	10
X''q Quadrature-axis subtransient reactance saturated	16.6	18.9	17.8	19.7	19.6	21.3	21.3	20.4
Xo Zero sequence reactance	0.51	0.58	0.58	0.64	0.67	0.72	0.74	0.71
X2 Negative sequence reactance saturated	12.1	13.7	13.1	14.5	14.7	15.9	16	15.4
Ta Armature time constant	15	15	15	15	15	15	15	15

Other class H / 480 V data

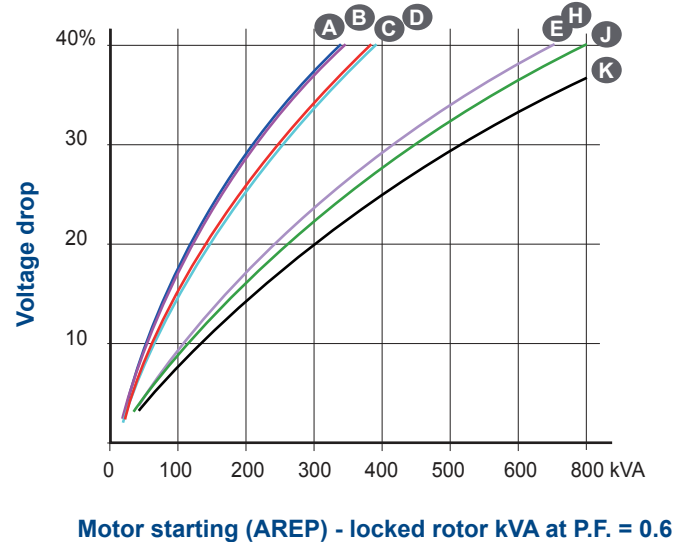
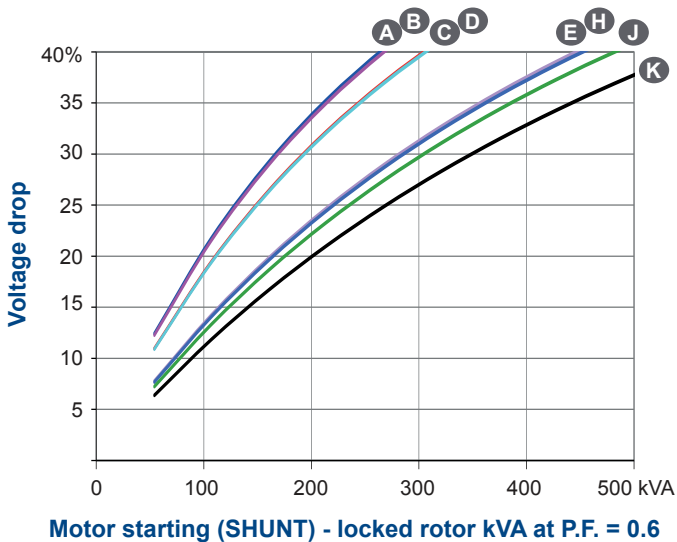
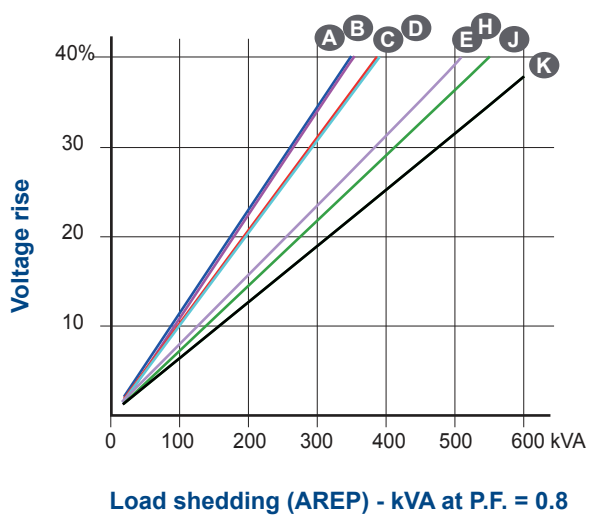
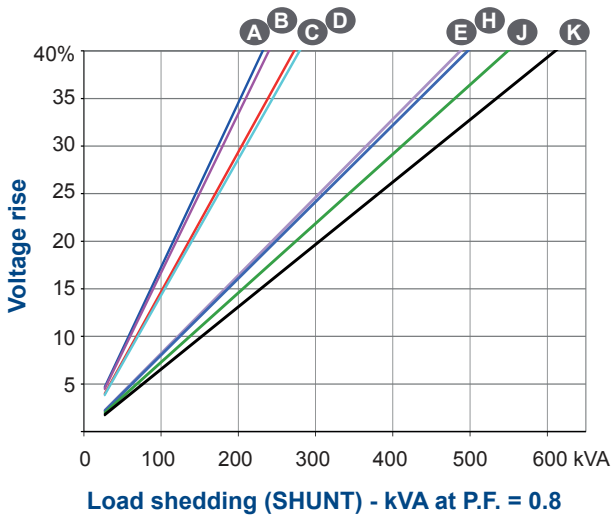
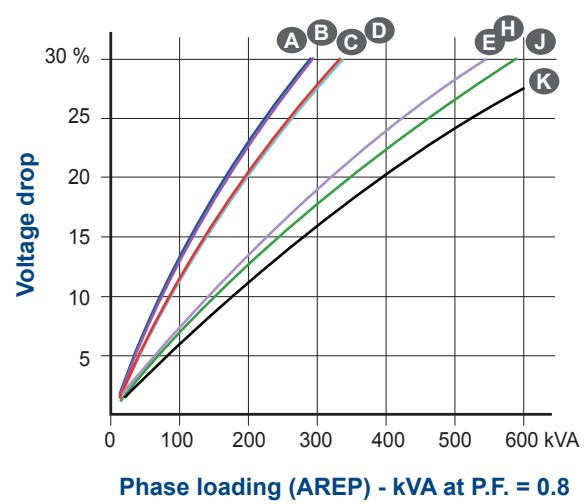
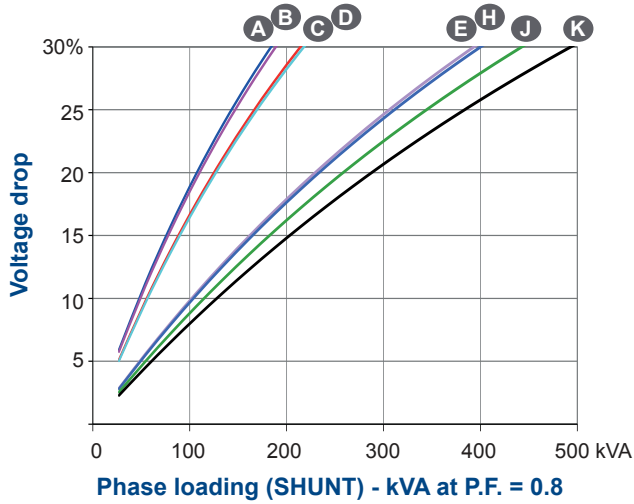
io (A) No-load excitation current SHUNT/AREP	0.86	0.86	0.79	0.79	0.67	0.67	0.66	0.67
ic (A) On-load excitation current SHUNT/AREP	2.62	2.94	2.72	3.01	2.58	2.79	2.79	2.79
uc (V) On-load excitation voltage SHUNT/AREP	29.5	32.9	30.3	33.3	32.4	34.9	34.7	34.4
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT	165 (190)	165 (190)	190 (220)	190 (220)	280 (370)	280 (370)	300 (405)	345 (470)
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP	230 (230)	230 (230)	265 (265)	265 (265)	445 (445)	445 (445)	485 (485)	560 (560)
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{Lag}	17 (14)	19 (15)	18 (12)	20 (13)	15 (14)	15 (14)	15 (14)	15 (15)
% Transient ΔU (on-load 4/4) AREP - P.F.: 0.8 _{Lag}	10 (10)	11 (11)	11 (11)	12 (12)	10 (10)	11 (11)	11 (11)	11 (11)
W No-load losses	2918	2918	3156	3156	3388	3388	3610	4018
W Heat dissipation	7112	8359	8300	9486	9884	11051	11746	12263

() : 12 wire

Low Voltage Alternators - 4 pole

TAL044 - Three phase 70 to 165 kVA - 50 Hz / 88 to 206 kVA - 60 Hz

Transient voltage variation 480V - 60 Hz - 6 wire



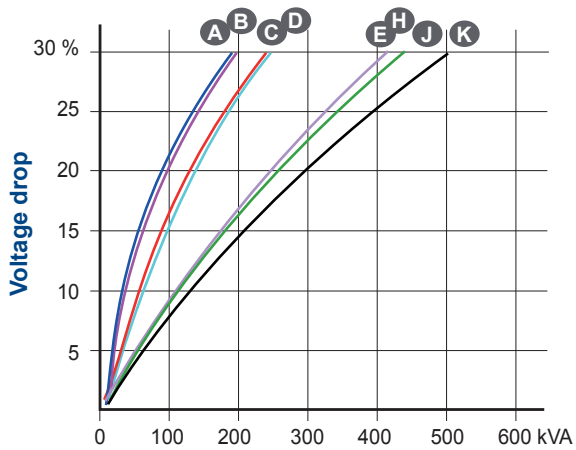
1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.8$

2) 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 $(240/U)^2$.

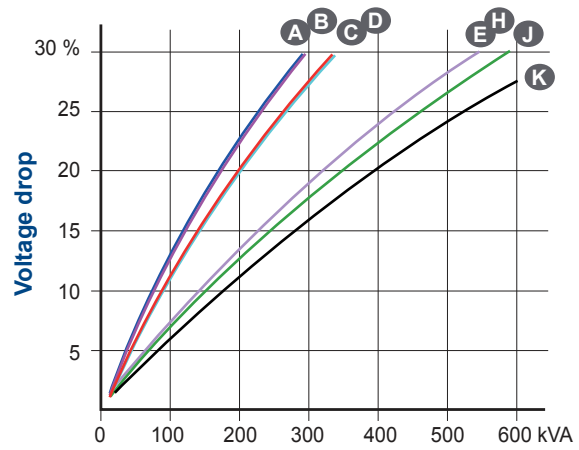
Low Voltage Alternators - 4 pole

TAL044 - Three phase 70 to 165 kVA - 50 Hz / 88 to 206 kVA - 60 Hz

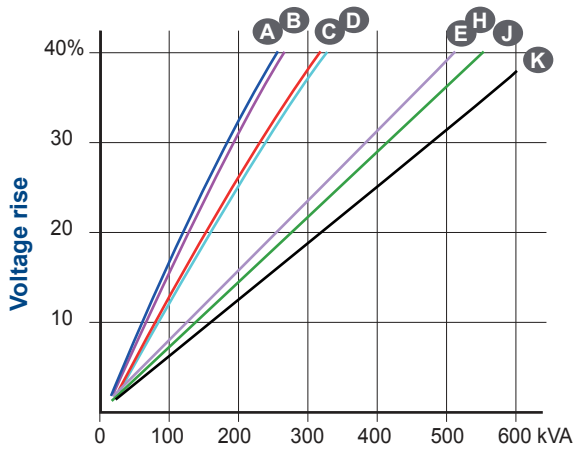
Transient voltage variation 480V - 60 Hz - 12-wire



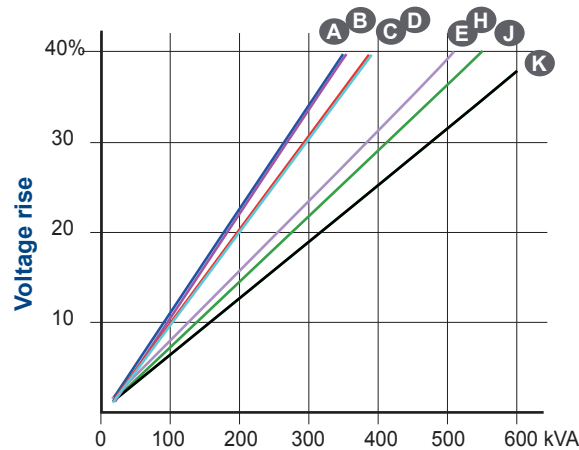
Phase loading (SHUNT) - kVA at P.F. = 0.8



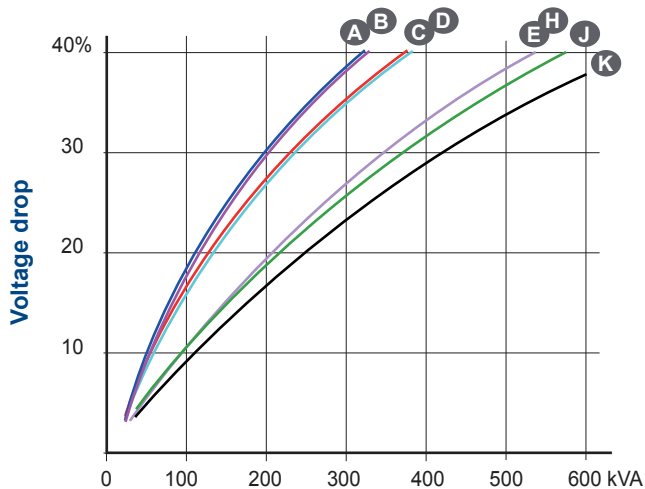
Phase loading (AREP) - kVA at P.F. = 0.8



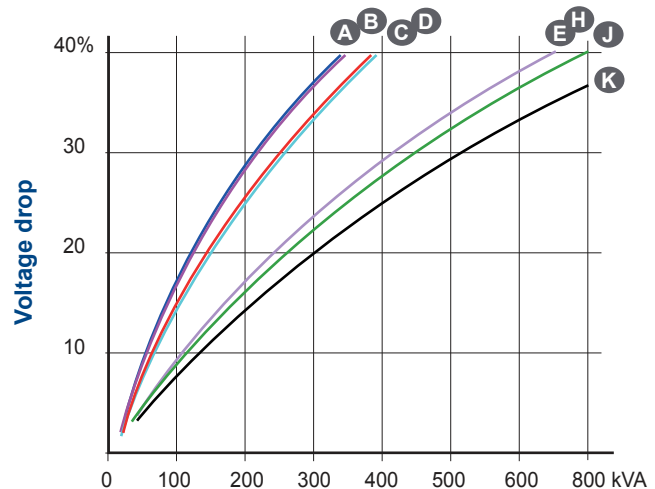
Load shedding (SHUNT) - kVA at P.F. = 0.8



Load shedding (AREP) - kVA at P.F. = 0.8



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



Motor starting (AREP) - locked rotor kVA at P.F. = 0.6

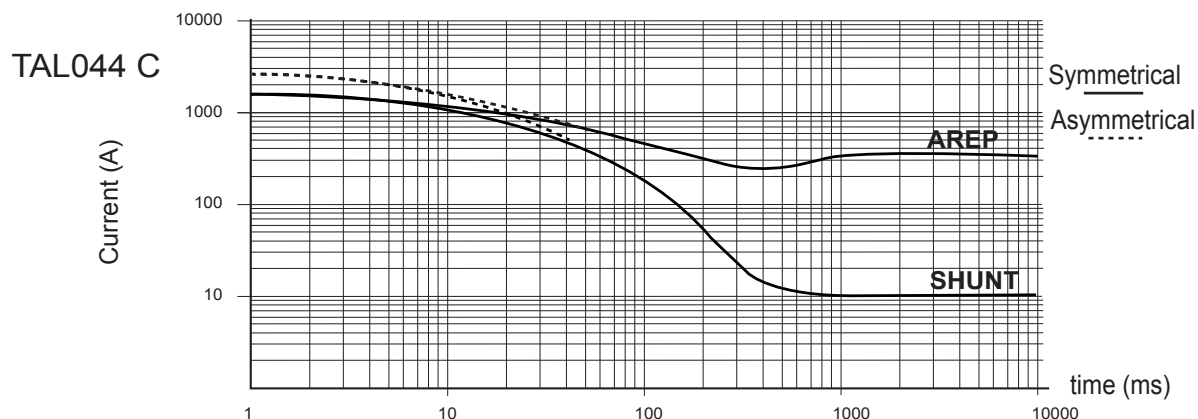
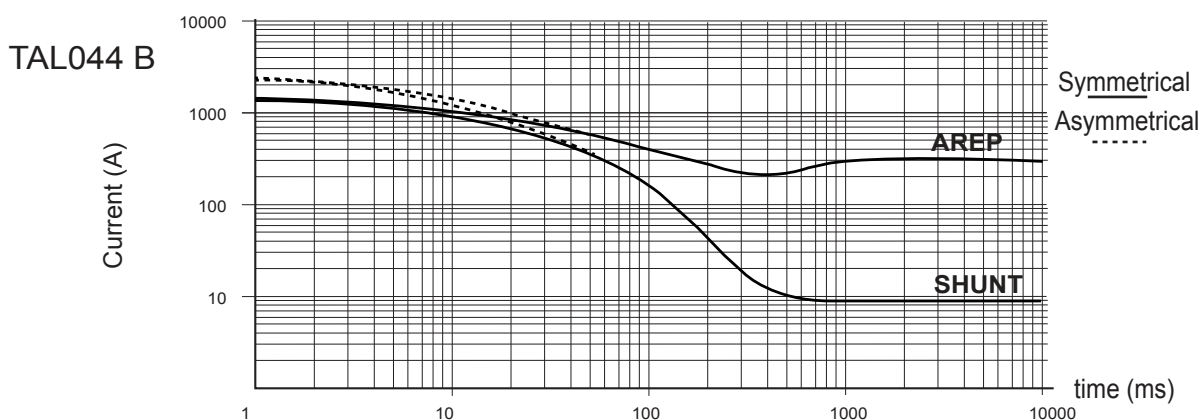
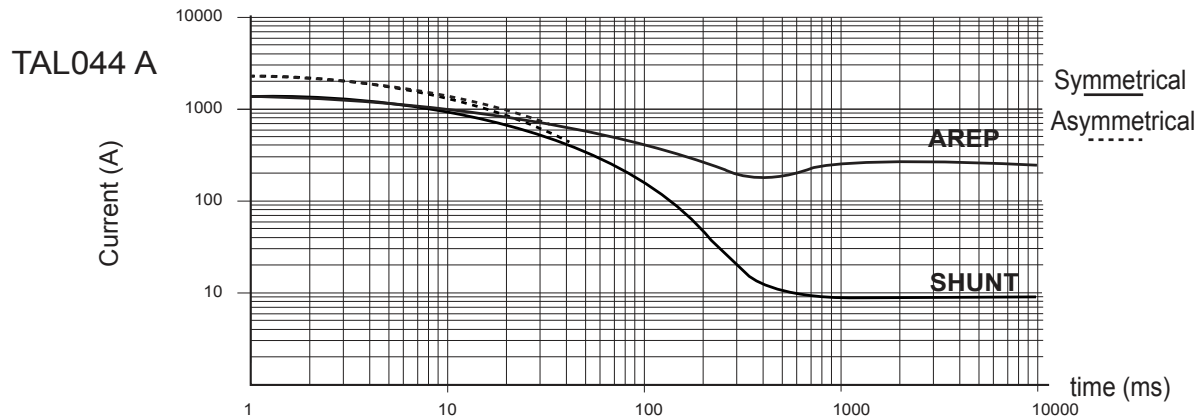
1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.6$

2) 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 $(240/U)^2$.

Low Voltage Alternators - 4 pole

TAL044 - Three phase 70 to 165 kVA - 50 Hz / 88 to 206 kVA - 60 Hz

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



Influence due to connection

For (Δ) connection, use the following multiplication factor:

- Current value x 1.732.

Influence due to short-circuit

Curves are based on a three-phase short-circuit.

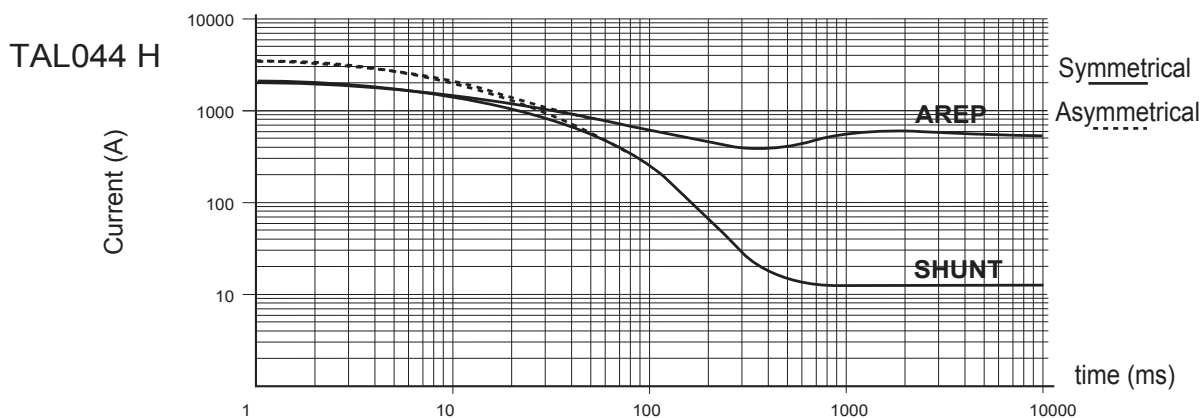
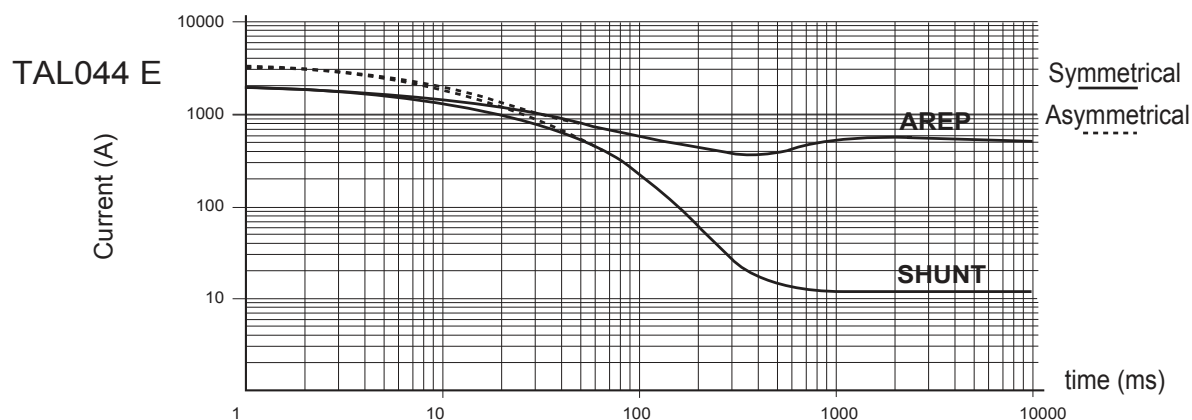
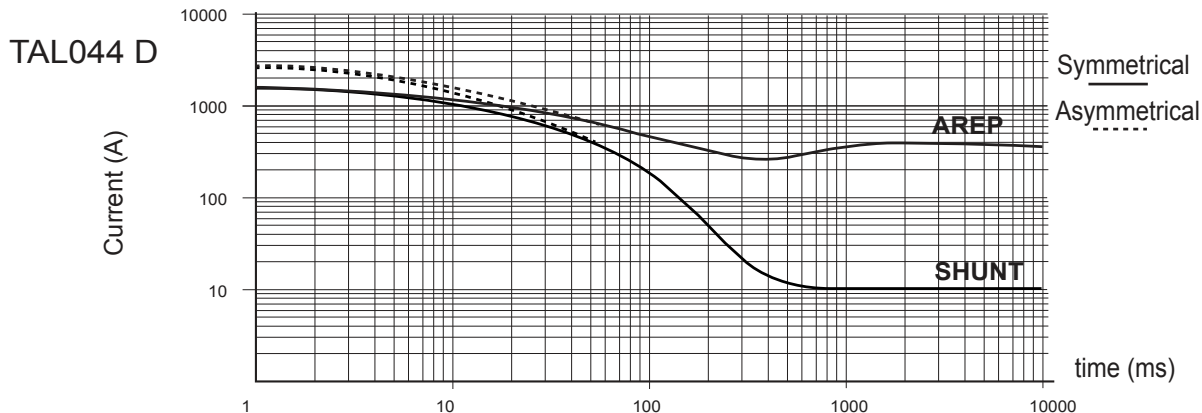
For other types of short-circuit, use the following multiplication factors.

	3 - phase	2 - phase L / L	1 - phase L / N
Instantaneous (max.)	1	0.87	1.3
Continuous	1	1.5	2.2
Maximum duration (AREP/PMG)		1.5	

Low Voltage Alternators - 4 pole

TAL044 - Three phase 70 to 165 kVA - 50 Hz / 88 to 206 kVA - 60 Hz

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



Influence due to connection

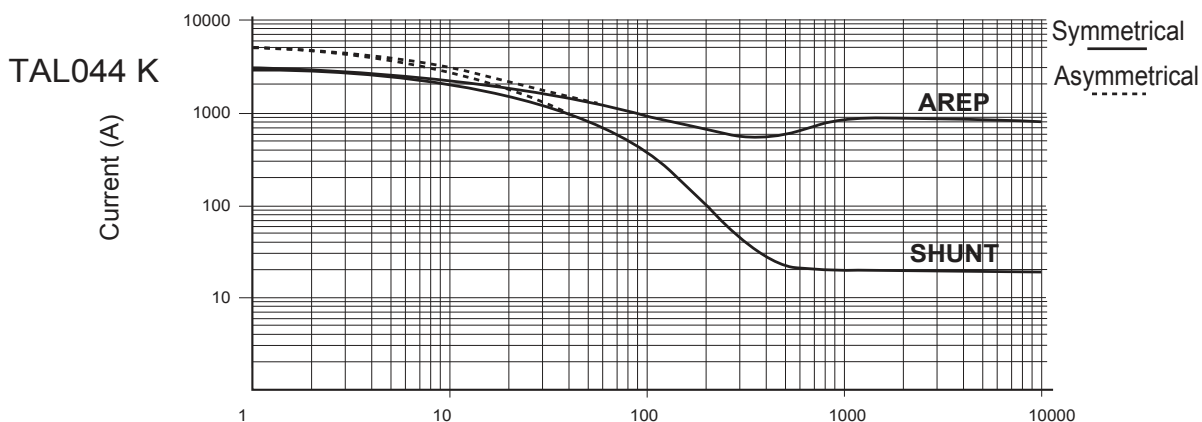
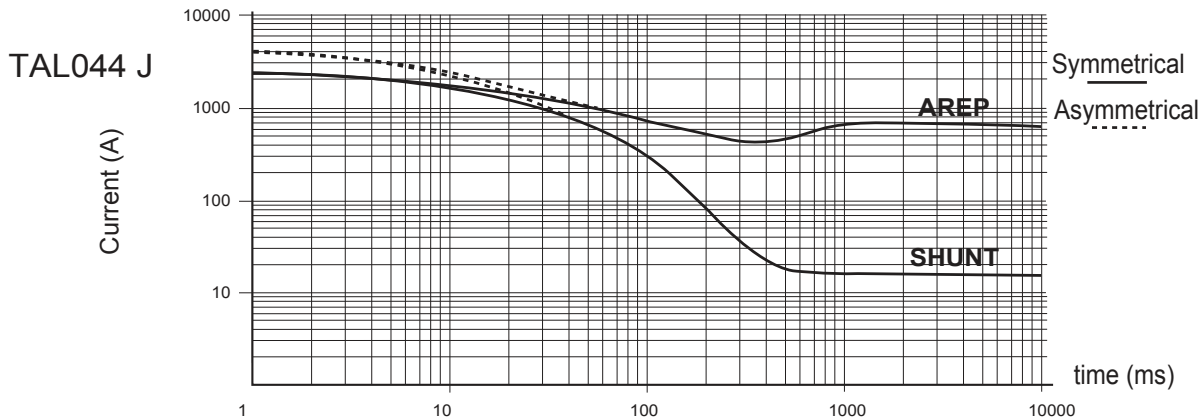
For (Δ) connection, use the following multiplication factor:

- Current value x 1.732.

Low Voltage Alternators - 4 pole

TAL044 - Three phase 70 to 165 kVA - 50 Hz / 88 to 206 kVA - 60 Hz

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



Influence due to short-circuit

Curves are based on a three-phase short-circuit.
For other types of short-circuit,
use the following multiplication factors.

	3 - phase	2 - phase L / L	1 - phase L / N
Instantaneous (max.)	1	0.87	1.3
Continuous	1	1.5	2.2
Maximum duration (AREP/PMG)		1.5	

Low Voltage Alternators - 4 pole

TAL044 - Single phase 57 to 82 kVA - 50 Hz / 80 to 125 kVA - 60 Hz

General characteristics - 4 wire

Insulation class	H	Excitation system	SHUNT
Winding pitch	2/3 (Winding M 50Hz / M1 60Hz)	AVR type	R120
Number of wires	4	Voltage regulation (*)	± 1 %
Protection	IP 23	Total Harmonic distortion THD (**) in no-load:	< 3.5 %
Altitude	≤ 1000 m	Total Harmonic distortion THD (**) in linear load:	< 5 %
Overspeed	2250 R.P.M.	Waveform: NEMA = TIF (**)	< 100
Air flow (m³/s)	50Hz: 0.30 - 60Hz: 0.35	Waveform : I.E.C. : FHT (**)	< 2 %
(*) Steady state (**) between phases			

Ratings / Efficiencies - 50 Hz - 4 wire

kVA / kW - P.F. = 1							
Duty / T° C	Continuous / 40 °C			Continuous / 40 °C		Stand-by / 40 °C	
Class / T° K	H / 125° K			F / 105° K		H / 150° K	
1 Phase série	230 V	η %		230 V		230 V	230V η %
TAL044 C	kVA	57	89	51.9		60.4	63 88.7
	kW	45.6	-	41.5		48.3	50.4 -
TAL044 D1	kVA	69	89.5	62.8		73.1	76 89.1
	kW	55.2	-	50.2		58.5	60.8 -
TAL044 E	kVA	-	-	-		-	- -
	kW	-	-	-		-	- -
TAL044 J	kVA	82	90.3	74.6		86.9	90 90
	kW	65.6	-	59.7		69.5	72 -
TAL044 K	kVA	-	-	-		-	- -
	kW	-	-	-		-	- -

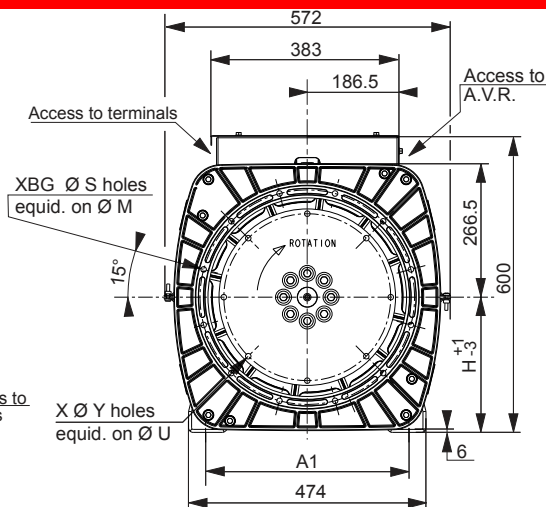
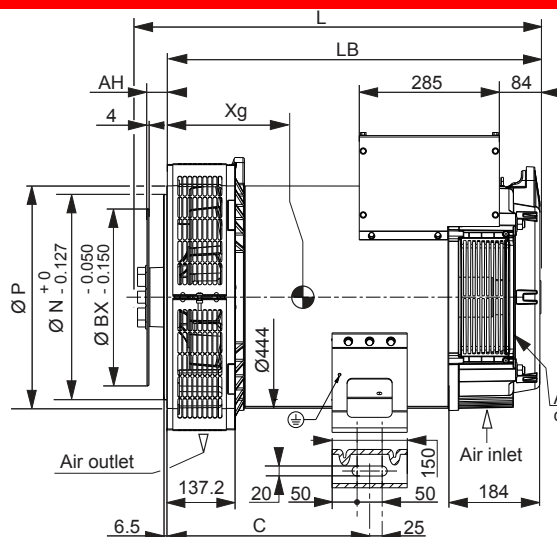
Ratings / Efficiencies - 60 Hz - 4 wire

kVA / kW - P.F. = 1							
Duty / T° C	Continuous / 40 °C			Continuous / 40 °C		Stand-by / 40 °C	
Class / T° K	H / 125° K			F / 105° K		H / 150° K	
1 Phase série	240 V	η %		240 V		240 V	240V η %
TAL044 C	kVA	80	88	72.8		84.8	88 87.7
	kW	64	-	58.2		67.8	70.4 -
TAL044 D1	kVA	100	88	91.0		106.0	110 87.7
	kW	80	-	72.8		84.8	88 -
TAL044 E	kVA	115	88.7	104.7		121.9	127 88.2
	kW	92	-	83.72		97.52	101.6 -
TAL044 J	kVA	-	-	-		-	- -
	kW	-	-	-		-	- -
TAL044 K	kVA	125	89.7	113.8		132.5	138 89.4
	kW	100	-	91		106	110.4 -

Low Voltage Alternators - 4 pole

TAL044

Single bearing general arrangement - 4, 6 & 12 wire



Dimensions (mm) and weight

Type	L	LB	Xg	Weight/kg
TAL044 A	750	677	293	262
TAL044 B	750	677	293	262
TAL044 C	750	677	313	295
TAL044 D	750	677	313	295
TAL044 D1	750	677	313	295
TAL044 E	820	747	353	368
TAL044 H	820	747	353	368
TAL044 J	820	747	365	398
TAL044 K	860	787	383	433

Shaft height (mm)

	Standard	Option
H	270	225
Feet length		
C	405	332.5
A1	406	356

Coupling

Flange	3
11 1/2	x
10	x

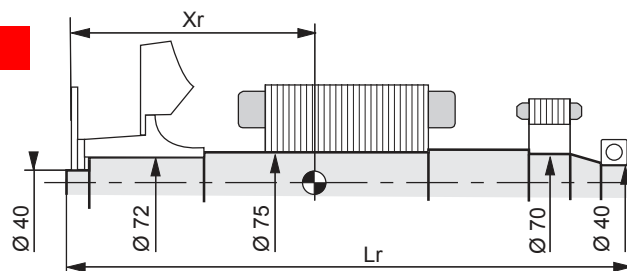
Flange (mm)

S.A.E.	P	N	M	S	XBG
3	445	409.58	428.62	11	12

Flex plate (mm)

S.A.E.	BX	U	X	Y	AH
11 1/2	352.42	333.38	8	11	39.6
10	314.32	295.28	8	11	53.8

Torsional analysis data



Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm²): (4J = MD²)

Flex plate	Flex plate S.A.E. 10				Flex plate S.A.E. 11 1/2			
Type	Xr	Lr	M	J	Xr	Lr	M	J
TAL044 A	329.6	729	107.7	0.754	314.6	729	107.1	0.770
TAL044 B	329.6	729	107.7	0.754	314.6	729	107.1	0.770
TAL044 C	363	729	121.6	0.878	348.8	729	121	0.894
TAL044 D	363	729	121.6	0.878	348.8	729	121	0.894
TAL044 D1	363	729	138.5	0.878	348.8	729	138	1.041
TAL044 E	397.7	799	154.3	1.151	383.5	799	153.7	1.167
TAL044 H	397.7	799	154.3	1.151	383.5	799	153.7	1.167
TAL044 J	396.7	799	166.1	1.258	382.5	799	165.5	1.214
TAL044 K	416.9	839	181.5	1.393	402.7	839	180.9	1.409

NOTE : Dimensions are for information only and may be subject to modifications. Contractual 2D/3D drawings can be downloaded from the Leroy-Somer site. The torsional analysis of the transmission is imperative. All values are available upon request.

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