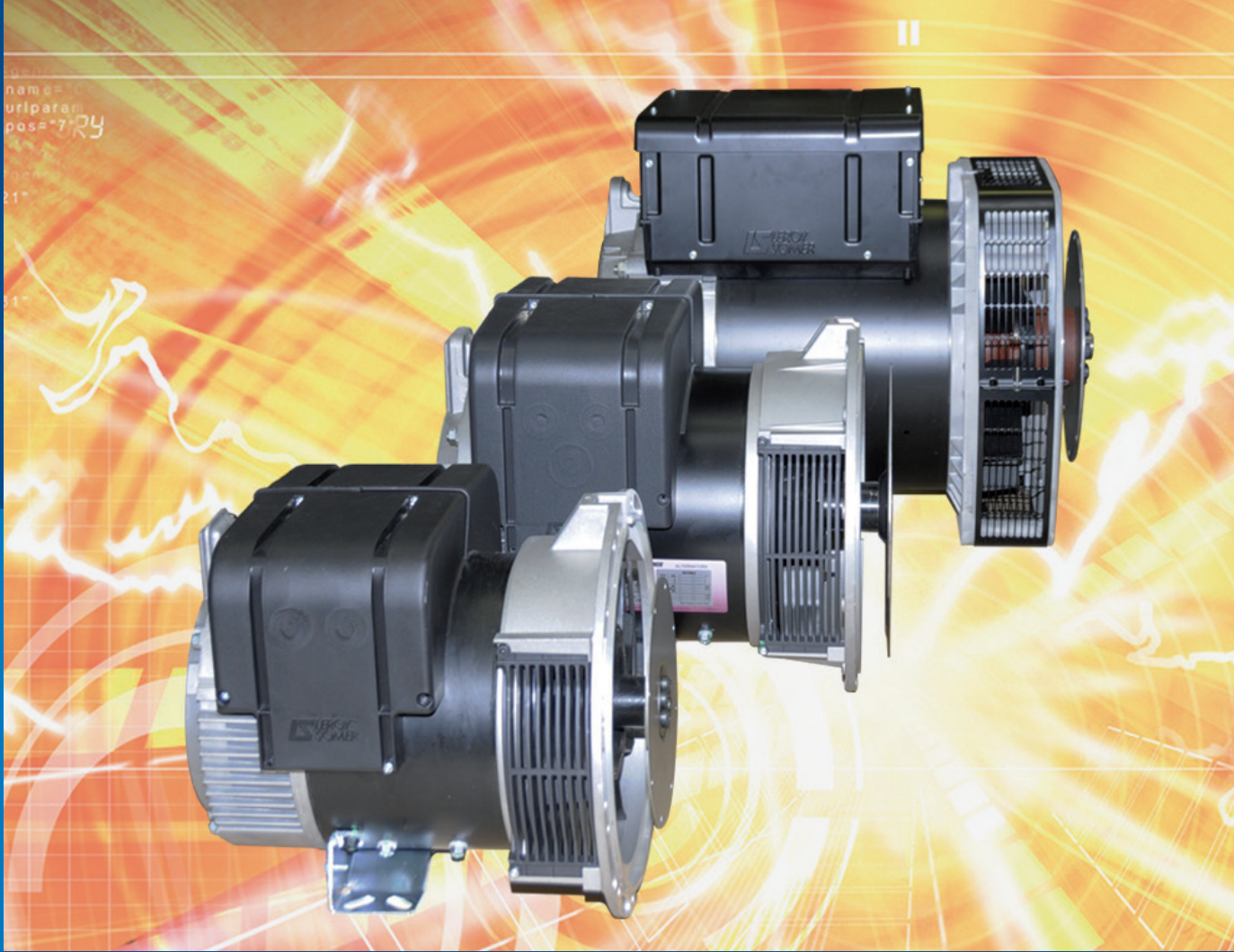




Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044

10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz
Electrical and mechanical data

Leroy-Somer™


EMERSON™

Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

Adapted to needs

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

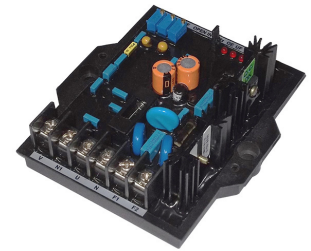
Compliant with international standards

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

Excitation and regulation

- The TAL range is shunt excited
- Specially developed R 120 voltage regulator integrated into the terminal box

Compact terminal box

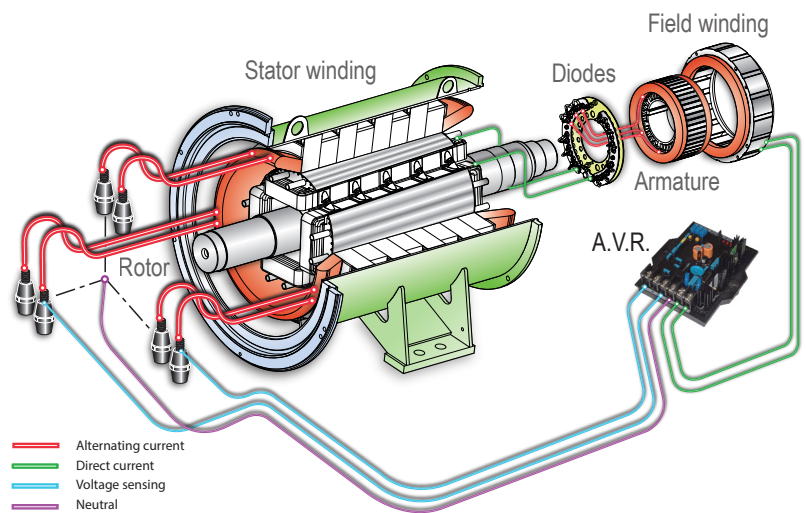
- Easy access to AVR and terminals
- A standard terminal box without possibility of mounting T.I.

Environment and protection

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

Available options

- Customized painting
- Space heater
- A terminal box with T1 mounting possibility



Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

General characteristics - 3 phase

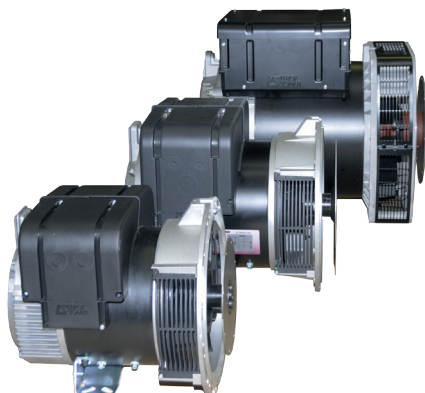
Insulation class	H	Excitation system	SHUNT
Winding pitch	2/3 (Winding 6S)	AVR type	R 120
Number of wires	6	Voltage regulation (*)	± 1 %
Protection	IP 23	Totale Harmonic distortion THD (**) in no-load:	< 3.5 % according to C.E.I.
Altitude	≤ 1000 m	Totale Harmonic distortion THD (**) in linear load:	< 5 % according to C.E.I.
Overspeed	2250 R.P.M.	Waveform: NEMA = TIF (**)	< 50
Air flow (m³/s)	50Hz : TAL040 : 0.06 - TAL042 : 0.10 - TAL044 : 0.25 60Hz : TAL040 : 0.07 - TAL042 : 0.13 - TAL044 : 0.30		

(*) Steady state. (**) between phases

Ratings / Efficiencies - 3 phase

kVA / kW - P.F. = 0.8																								
Type		50 Hz - 1500 R.P.M.									60 Hz - 1800 R.P.M.													
Duty/T°C	Continuous / 40°C				Stand-by / 27°C						Continuous / 40°C				Stand-by / 27°C									
Class/T°K	H / 125°K				H / 163°K						H / 125°K				H / 163°K									
	Rating kVA					Rating kVA						Rating kVA					Rating kVA							
Phase	3 ph.			1 ph.	η	3 ph.			1 ph.	η		3 ph.			1 ph.	η		3 ph.			1 ph.	η		
Y	380V	400V	415V		%	380V	400V	415V		%		380V	416V	440V	480V		%		380V	416V	440V	480V		%
Δ	220V	230V	240V	230V		220V	230V	240V	230V			220V	240V	254V	277V	240V			220V	240V	254V	277V	240V	
TAL040 B	10	10.0	10.0	7.0	81.2	11.0	11.0	11.0	8.0	80.7	10	11	11.5	12.5	9.0	82.1	11.5	12	13	14	10.0	81.8		
TAL040 C	12.5	12.5	12.5	7.0	82.7	14.0	14.0	14.0	8.0	82.3	12.5	13.5	14.5	15.5	9.0	83.6	14	15	16	17	10.0	83.3		
TAL040 D	15	15.0	15.0	10.5	83.4	16.5	16.5	16.5	12.0	83	15	16.5	17.5	19	13.0	84.2	17	18.5	19.5	21	14.0	83.8		
TAL040 E	17.5	17.5	17.5	12.5	84	19.5	19.5	19.5	14.0	83.5	17.5	19	20	22	14.5	84.8	19.5	21	22	24.5	15.5	84.4		
TAL040 F	20	20.0	20.0	14.0	85.1	22.0	22.0	22.0	15.5	84.7	20	22	23	25	16.0	85.7	22	24.5	26	27.5	17.5	84.4		
TAL042 A	25	25.0	25.0	15.0	85.3	27.5	27.5	27.5	16.5	84.8	29.1	31.3	31.5	31.5	18.9	86.1	32.0	34.4	34.7	34.7	20.8	85.7		
TAL042 B	27	27.0	27.0	16.2	85.7	30.0	30.0	30.0	18.0	85.2	29.9	31.9	33.8	33.8	19.2	86.5	32.5	35.1	37.5	37.5	21.1	86		
TAL042 C	31	32.0	32.0	19.2	86.3	34.1	35.2	35.2	21.1	85.8	33.4	36.8	38.8	40.0	22.8	87.1	36.7	40.5	42.7	44.0	25.1	86.6		
TAL042 D	35	35.0	35.0	22.0	88.1	38.5	38.5	38.5	24.2	87.7	37.5	40.3	42.9	43.8	24.2	88.6	41.3	44.3	47.2	48.1	26.6	88.4		
TAL042 E	39.5	40.0	40.0	25.0	87.6	43.5	45.0	45.0	28.1	87.1	41.5	45.4	48.4	50.0	27.6	88.2	45.7	49.9	53.2	55.0	30.4	87.8		
TAL042 F	43	45.0	45.0	27.0	87.9	47.3	50.0	50.0	30.0	87.4	44.0	47.8	51.1	56.5	30.0	88.5	48.4	52.6	56.2	62.5	33.0	88.1		
TAL042 G	47.5	50.0	50.0	30.0	88	52.3	55.0	55.0	33.0	87.6	48.9	53.7	56.5	62.5	33.9	88	53.8	59.1	62.2	68.8	37.3	87.6		
TAL042 H	58	60.0	60.0	36.0	88.4	63.8	66.0	66.0	40.0	87.9	57.0	62.8	66.7	75.0	39.0	89	62.7	69.1	73.4	82.5	42.9	88.6		
TAL044 A*	70	70	70	42.0	89.8	77	77	77	46.0	89.7	69	76	80	88	46.0	89.9	76	83	88	96	50.0	89.9		
TAL044 B*	80	80	80	48.0	89.6	88	88	88	53.0	89.4	79	87	92	100	52.0	89.9	87	95	101	110	57.0	89.7		
TAL044 C	90	90	90	48.0	90.3	100	100	100	53.0	90.1	89	98	103	113	52.0	90.5	98	107	113	124	57.0	90.4		
TAL044 D*	100	100	100	60.0	90.1	110	110	110	66.0	89.9	99	108	115	125	65.0	90.4	109	119	126	138	72.0	90.2		
TAL044 E	125	125	125	67.0	90.4	138	138	138	74.0	90.1	124	135	143	156	76.0	90.7	136	149	158	172	83.0	90.5		
TAL044 H*	135	135	135	73.0	90.9	149	149	149	80.0	90.6	134	146	155	169	81.0	91.1	147	161	170	186	89.0	90.9		
TAL044 J*	150	150	150	80.0	91.1	165	165	165	88.0	90.8	148	163	172	188	95.0	91.3	163	179	189	206	105.0	91.1		

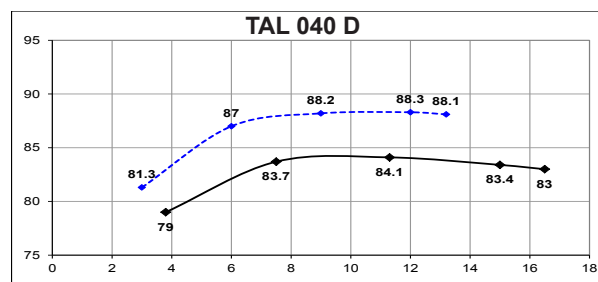
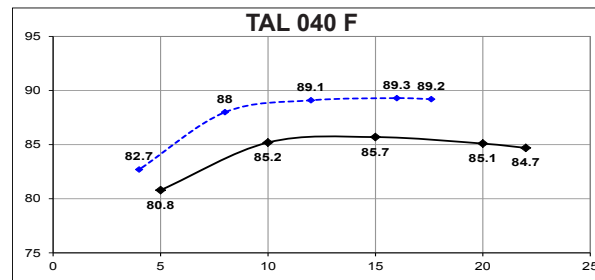
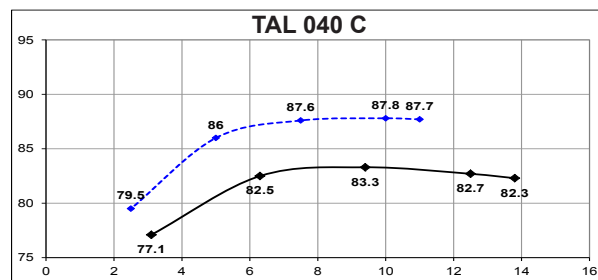
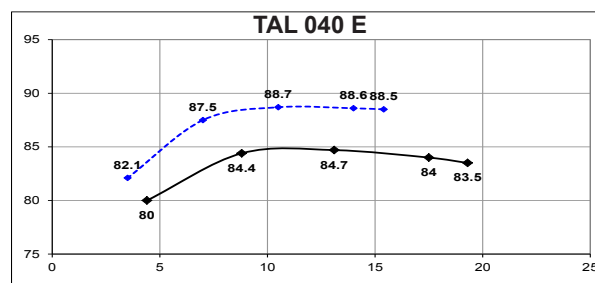
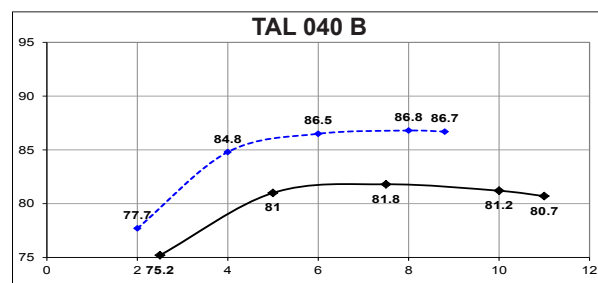
(*) Subject to change in January 2016.



Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

Efficiencies TAL040 : 400 V - 50 Hz (— P.F.: 0.8) (----- P.F.: 1)



Reactances (%). Time constants (ms) - Class H / 400 V

	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 unsaturated	0.17	0.86	0.48	0.44	0.1
X2 Negative sequence reactance saturated	12.36	15.45	12.69	12.58	12.03
Ta Armature time constant	11	11	11	11	11

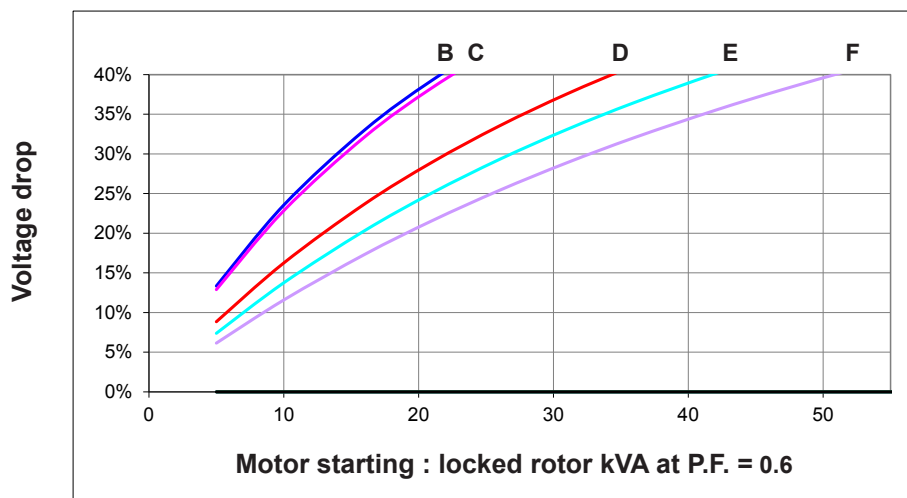
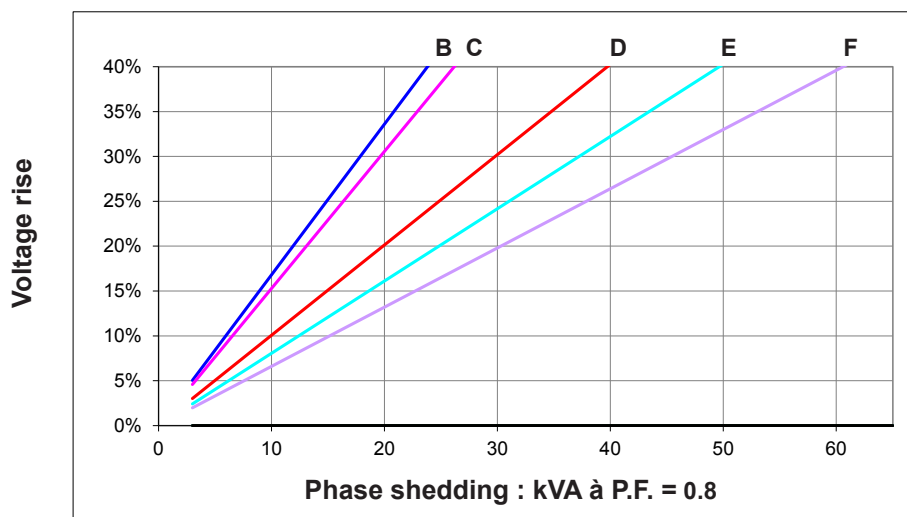
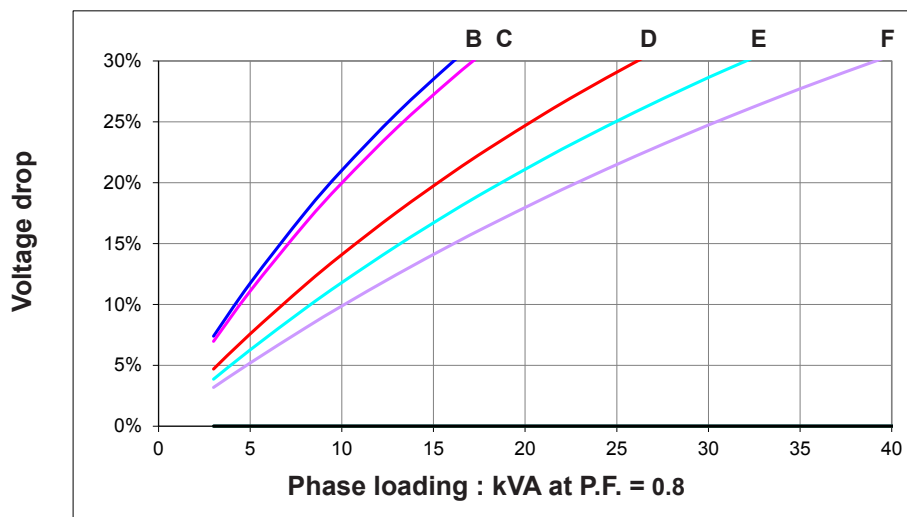
Other class H / 400 V data

io (A) No-load excitation current	0.77	0.77	0.76	0.75	0.72
ic (A) On-load excitation current	1.93	2.28	2.04	2.04	1.94
uc (V) On-load excitation voltage	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.)	14.7	14.7	23.3	28.2	34.8
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 LAG	21	23.8	19.8	19	18
W No-load losses	461	461	540	590	645
W Heat dissipation	1588	2149	2055	2245	2342

Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

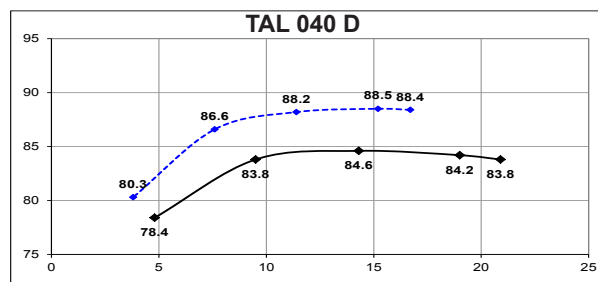
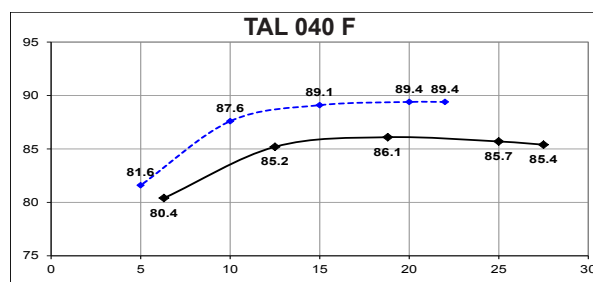
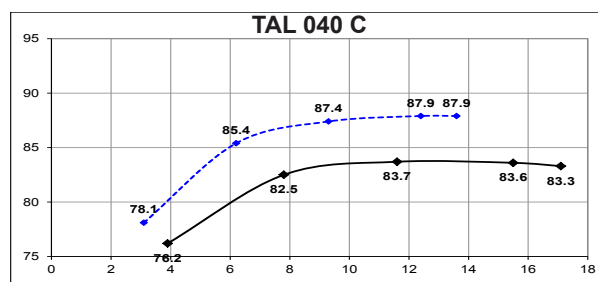
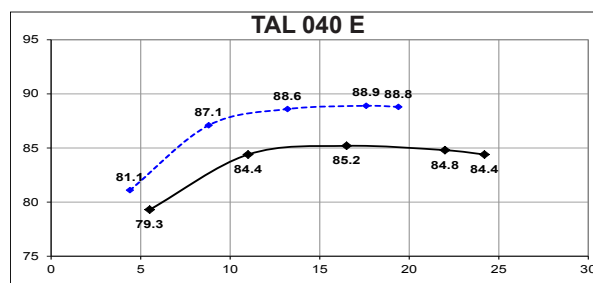
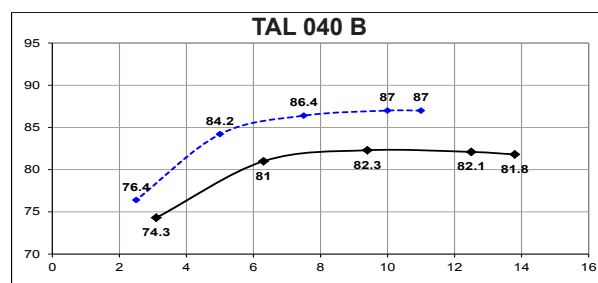
Transient voltage variation TAL040 : 400V - 50 Hz



Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

Efficiencies TAL040 : 480 V - 60 Hz (— P.F.: 0.8) (----- P.F.: 1)



Reactances (%). Time constants (ms) - Class H / 480 V

		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 unsaturated	0.98	0.73	0.21	0.09	0.74
X2	Negative sequence reactance saturated	12.87	15.96	13.39	13.18	12.54
Ta	Armature time constant	11	11	11	11	11

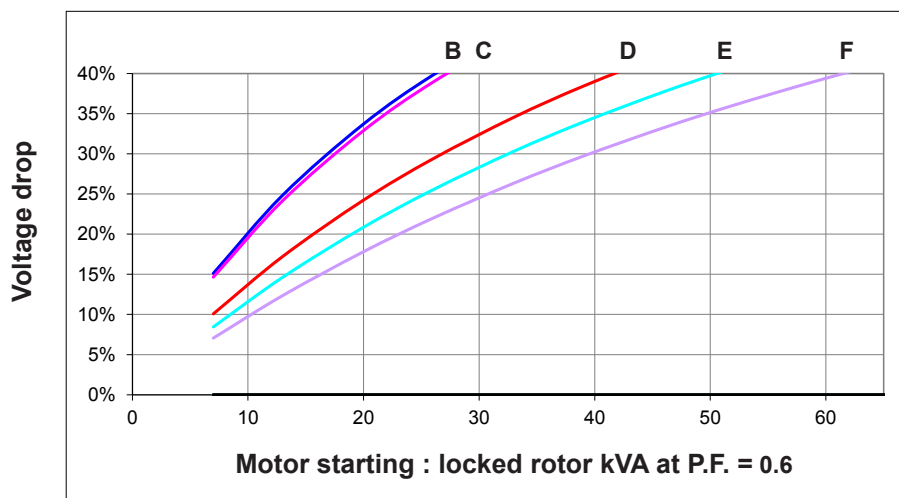
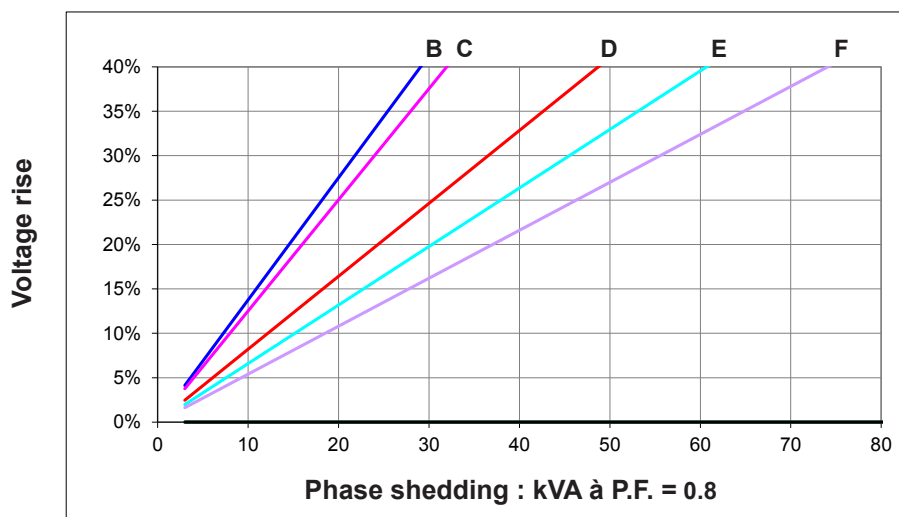
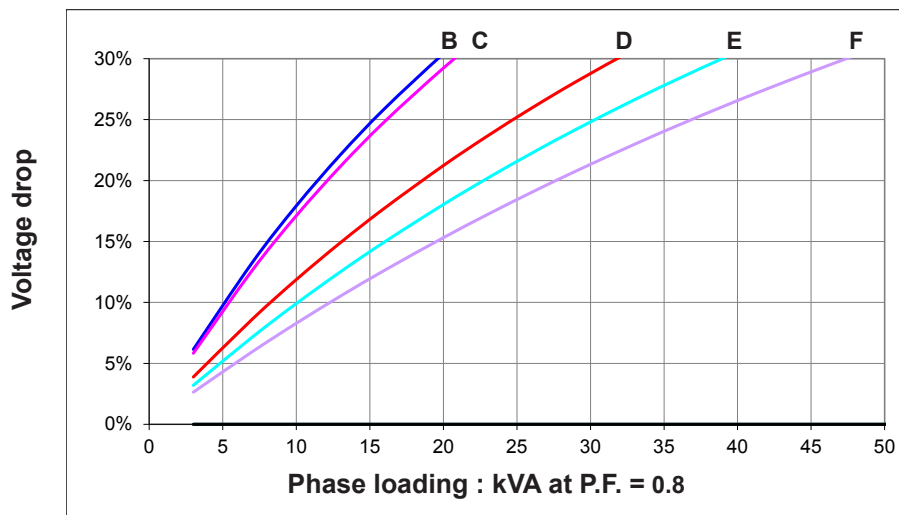
Other class H / 480 V data

io (A)	No-load excitation current	0.77	0.77	0.76	0.75	0.72
ic (A)	On-load excitation current	1.96	2.3	2.09	2.08	1.96
uc (V)	On-load excitation voltage	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.)	17.7	17.7	28	34.1	41.7
%	Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{Lag}	21.5	24.3	20.4	19.5	18.5
W	No-load losses	643	643	755	825	904
W	Heat dissipation	1855	2440	2438	2643	2752

Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

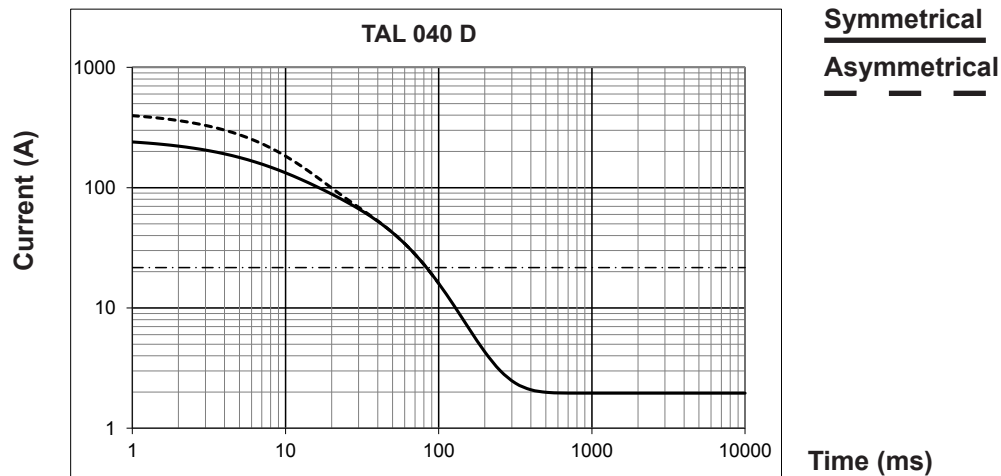
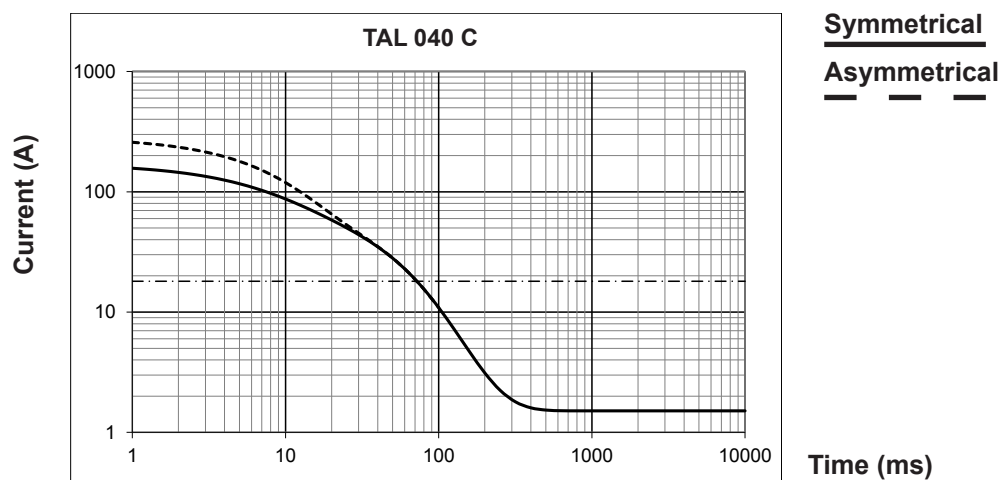
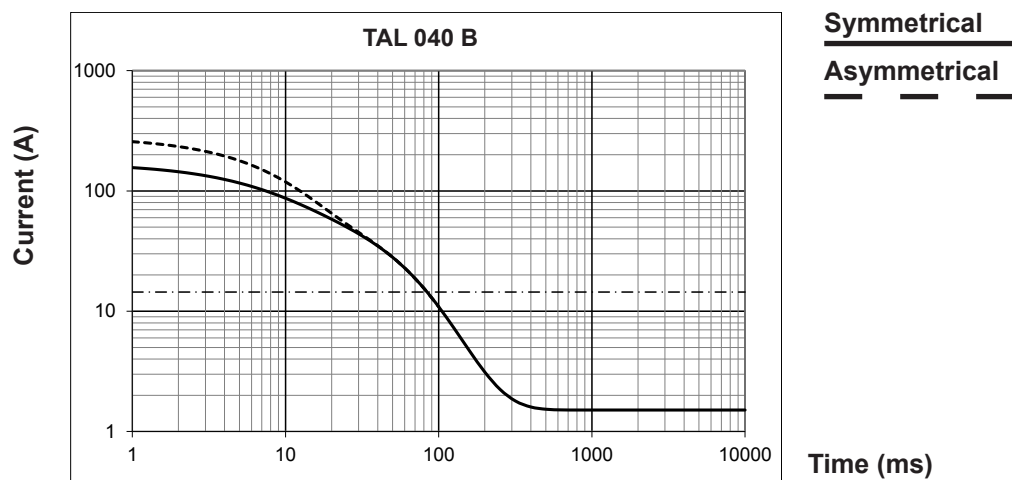
Transient voltage variation TAL040 : 480V - 60 Hz



Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

3-phase short-circuit curves at no load and rated speed TAL040 (star connection Y)



Influence due to connection

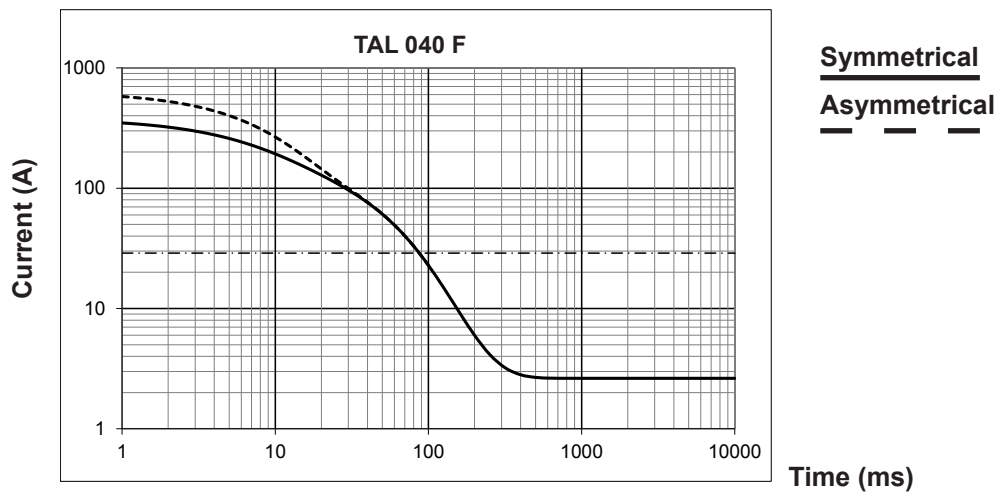
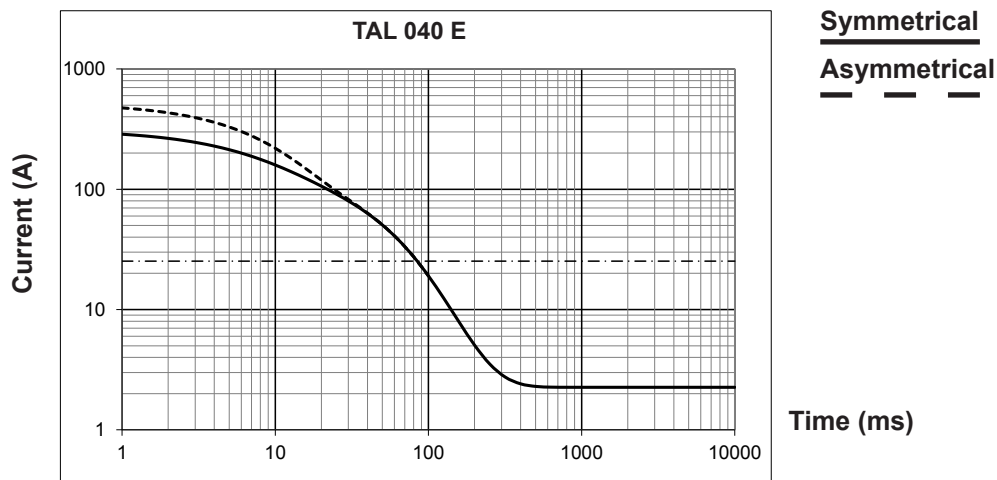
For (Δ) connection, use the following multiplication factor:

- Current value x 1.732.

Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

3-phase short-circuit curves at no load and rated speed TAL040 (star connection Y)



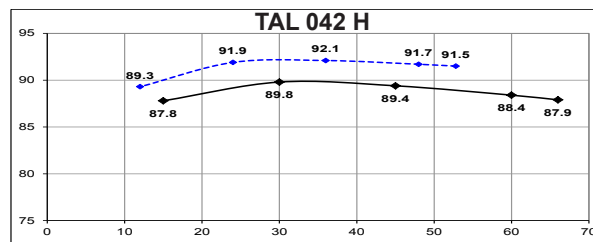
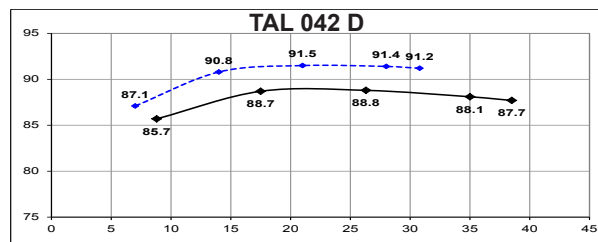
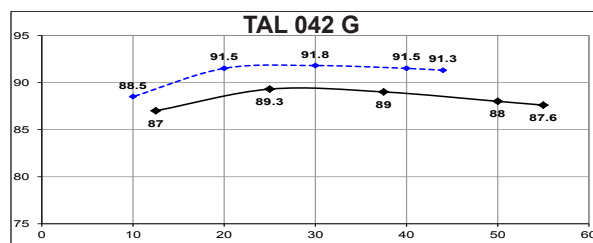
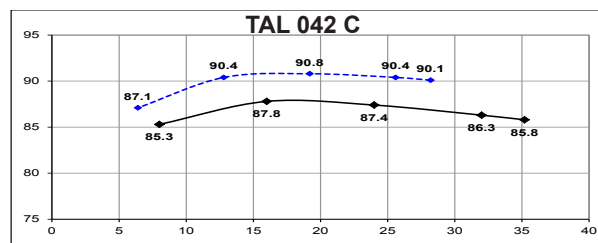
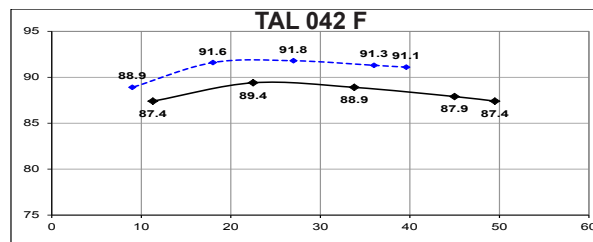
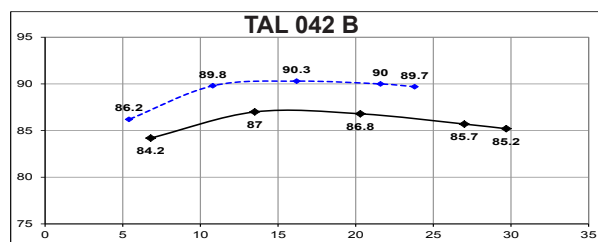
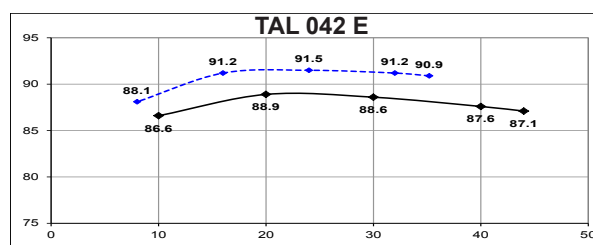
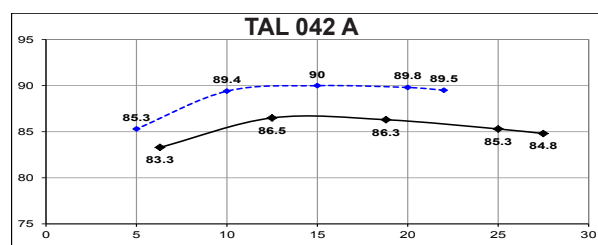
Influence due to short-circuit
Curves are based on a three-phase short-circuit.
For other types of short-circuit,
use the following multiplication factors.

	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 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

Efficiencies TAL042 : 400 V - 50 Hz (— P.F.: 0.8) (----- P.F.: 1)



Reactances (%). Time constants (ms) - Class H / 400 V

	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 unsaturated	0.78	0.46	0.88	0.73	0.23	0.25	0.84	0.43
X2 Negative sequence reactance saturated	9.88	9.91	9.82	7.89	9.02	9.12	8.61	8.93
Ta Armature time constant	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0

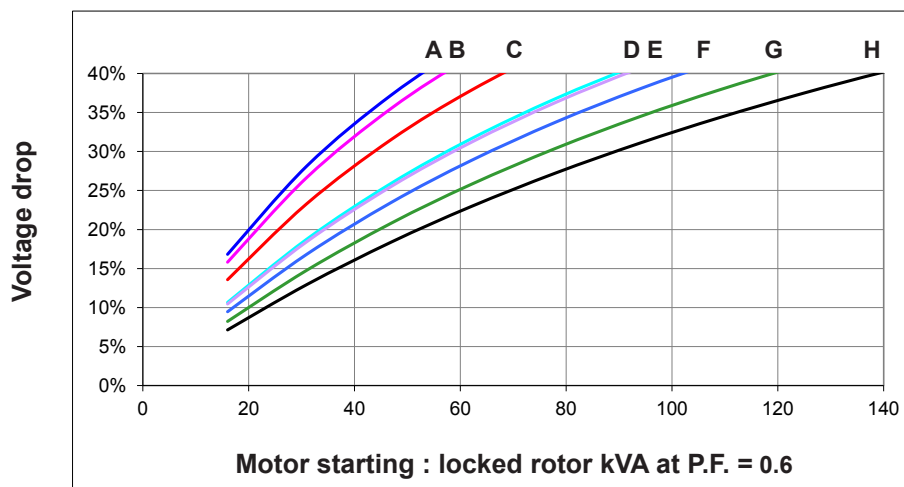
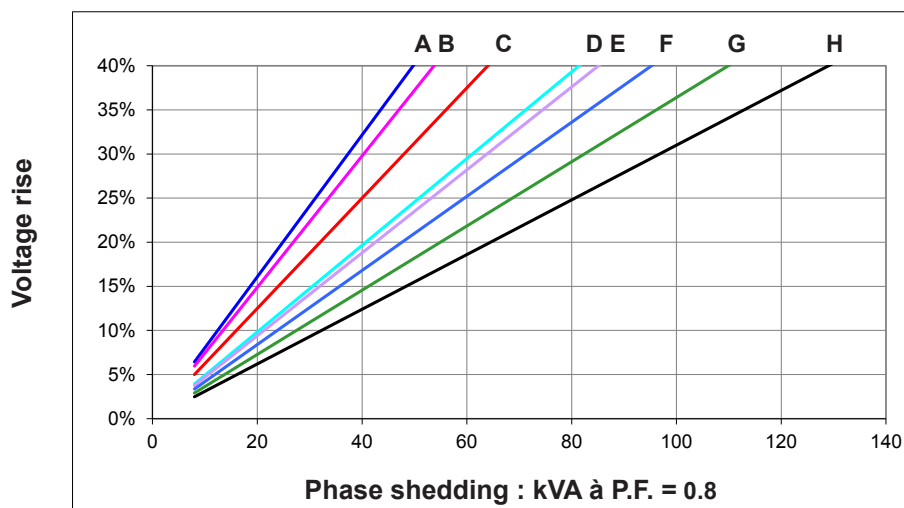
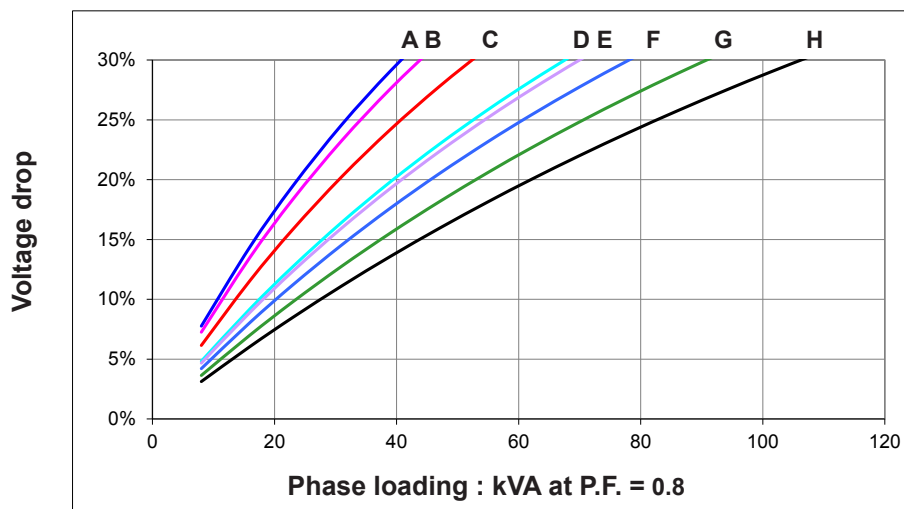
Other class H / 400 V data

io (A) No-load excitation current	0.53	0.50	0.49	0.47	0.47	0.45	0.48	0.48
ic (A) On-load excitation current	1.73	1.72	1.78	1.55	1.76	1.78	1.88	2.07
uc (V) On-load excitation voltage	29.5	29.3	30.1	26.3	29.4	29.6	30.9	33.2
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.)	35.2	37.6	45.4	61.7	62.0	68.6	81.3	94.0
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{LAG}	20.9	20.9	20.8	18.2	19.7	19.8	19.1	19.5
W No-load losses	731	726	778	882	882	903	1057	1152
W Heat dissipation	2967	3112	3491	3183	3865	4217	4588	5330

Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

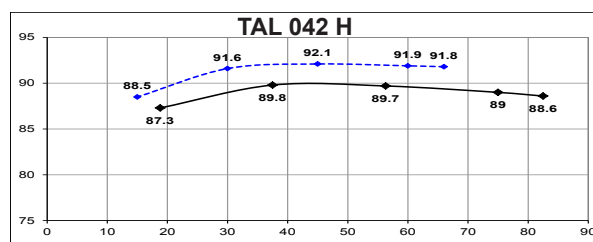
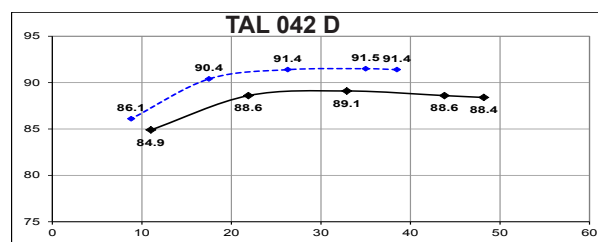
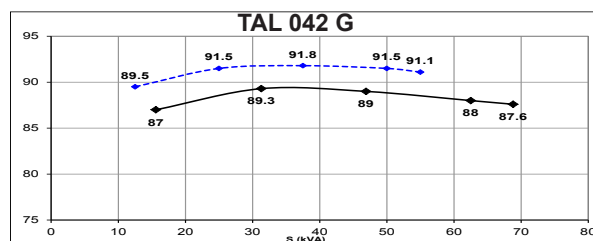
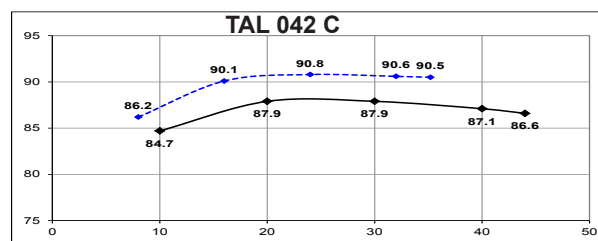
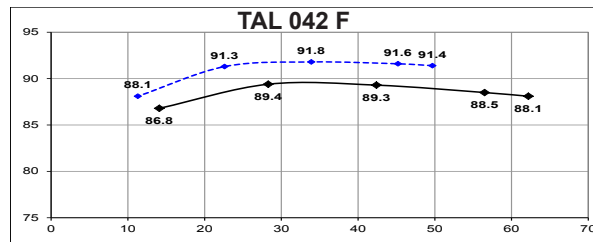
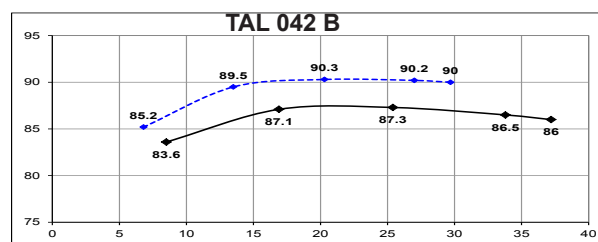
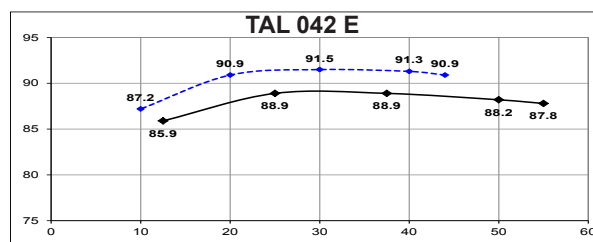
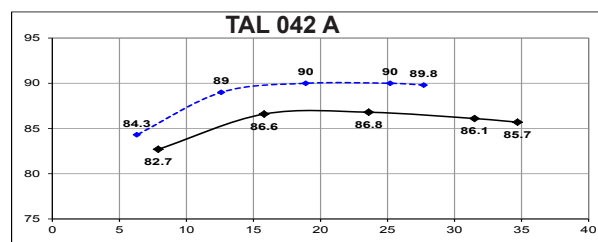
Transient voltage variation TAL042 : 400V - 50 Hz



Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

Efficiencies TAL042 : 480 V - 60 Hz (— P.F.: 0.8) (----- P.F.: 1)



Reactances (%). Time constants (ms) - Class H / 480 V

	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 unsaturated	0.46	0.83	0.31	0.26	0.69	0.05	0.97	0.86
X2 Negative sequence reactance saturated	10.37	10.35	10.24	8.22	9.39	9.55	8.97	9.30
Ta Armature time constant	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0

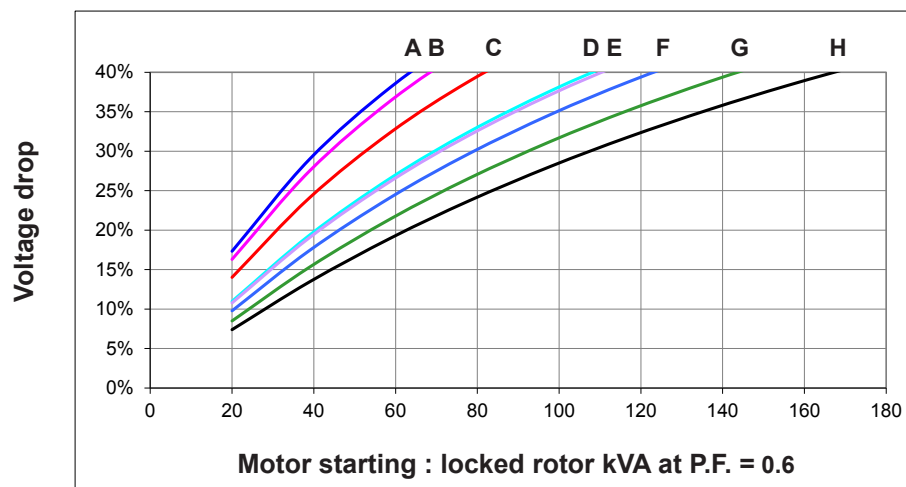
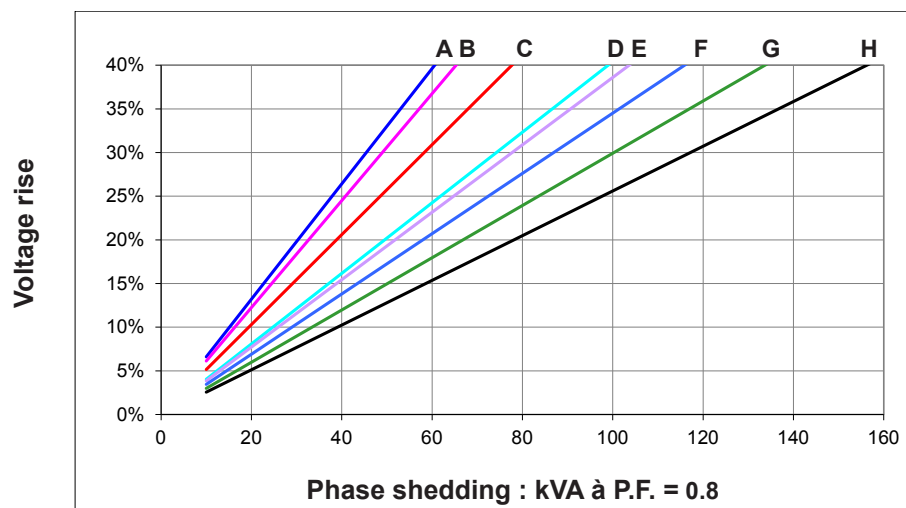
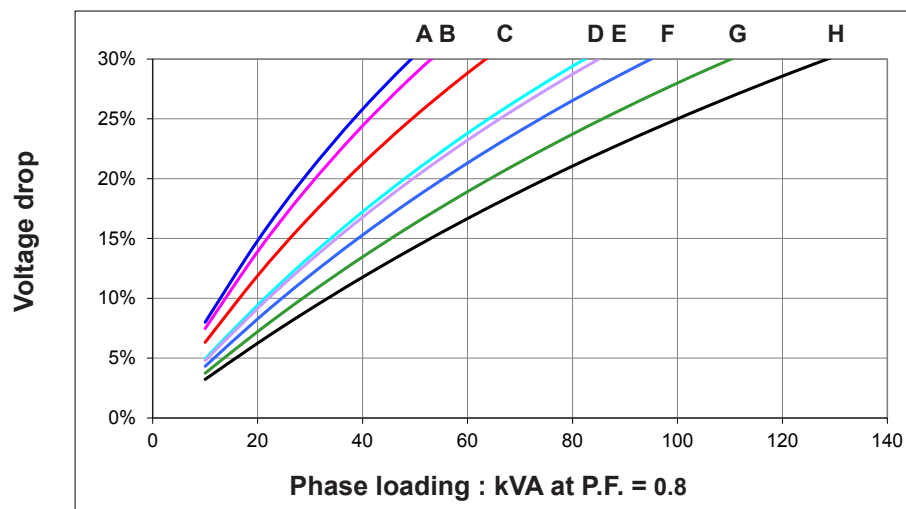
Other class H / 480 V data

io (A) No-load excitation current	0.53	0.50	0.49	0.47	0.47	0.45	0.48	0.48
ic (A) On-load excitation current	1.75	1.74	1.79	1.56	1.76	1.78	1.86	2.02
uc (V) On-load excitation voltage	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.)	42.0	45.2	54.4	74.0	74.3	82.3	97.5	112.7
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{LAG}	21.5	21.5	21.3	18.6	20.2	20.4	19.6	20.0
W No-load losses	1043	1040	1114	1264	1264	1295	1507	1642
W Heat dissipation	3500	3640	4082	3771	4529	4970	5383	6243

Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

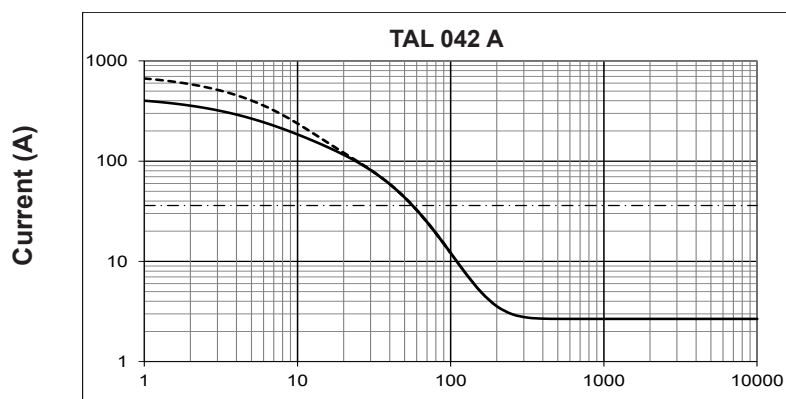
Transient voltage variation TAL042 : 480V - 60 Hz



Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

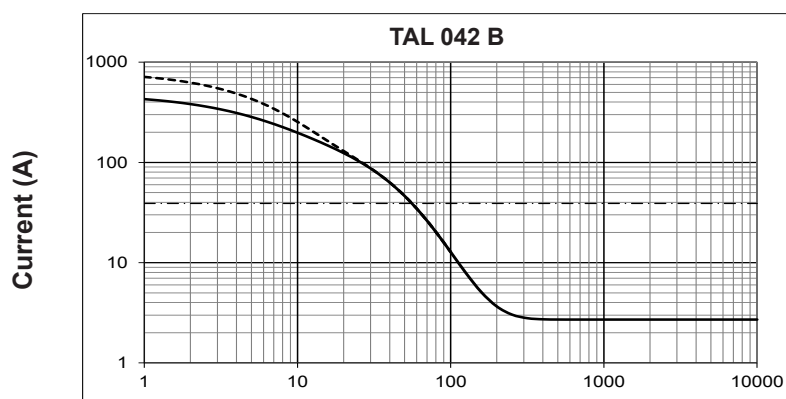
3-phase short-circuit curves at no load and rated speed TAL042 (star connection Y)



Symmetrical

Asymmetrical

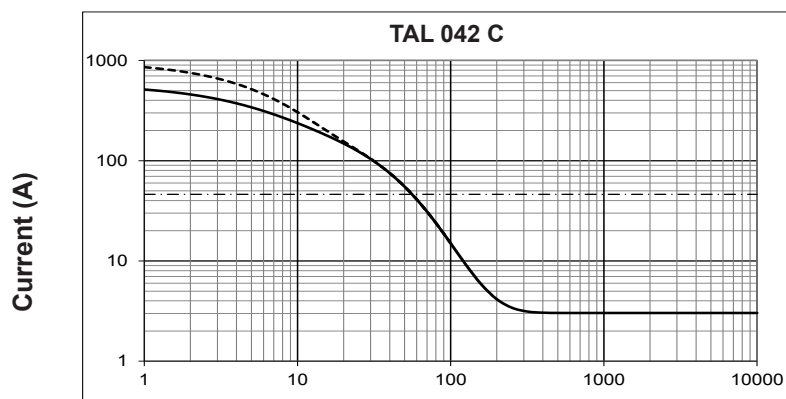
Time (ms)



Symmetrical

Asymmetrical

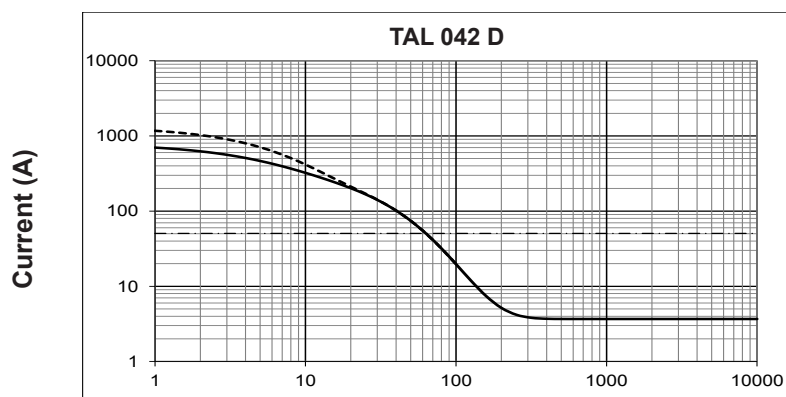
Time (ms)



Symmetrical

Asymmetrical

Time (ms)



Symmetrical

Asymmetrical

Time (ms)

Influence due to connection

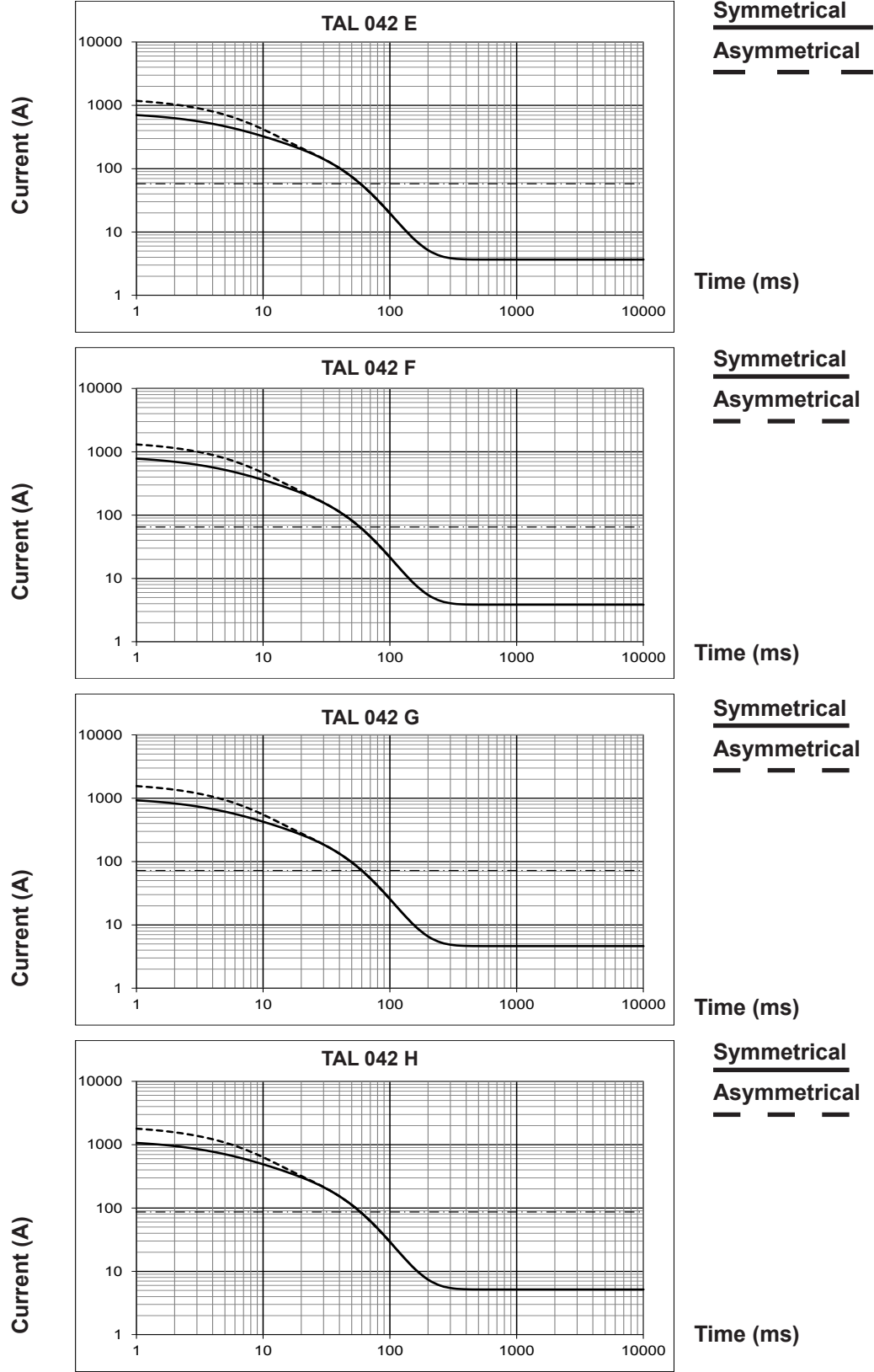
For (Δ) connection, use the following multiplication factor:

- Current value x 1.732.

Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

3-phase short-circuit curves at no load and rated speed TAL042 (star connection Y)



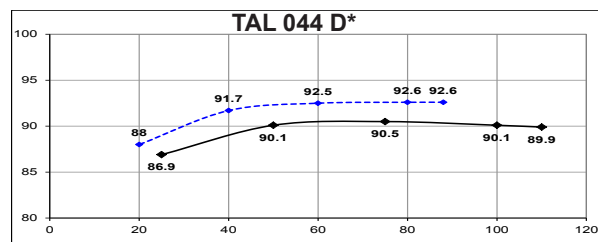
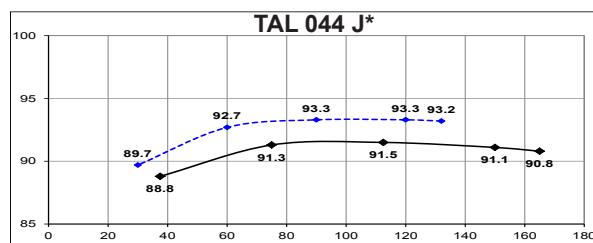
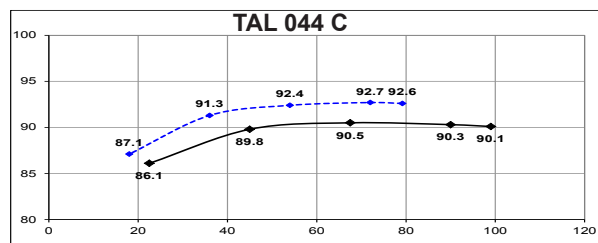
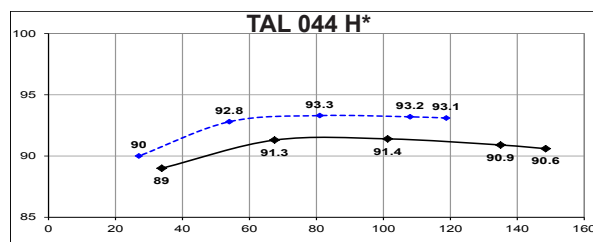
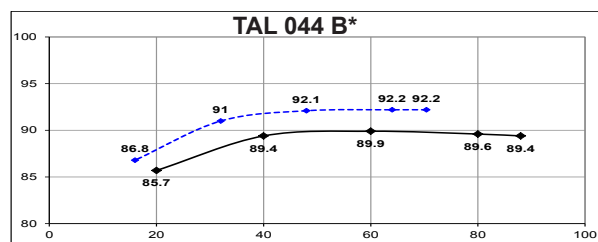
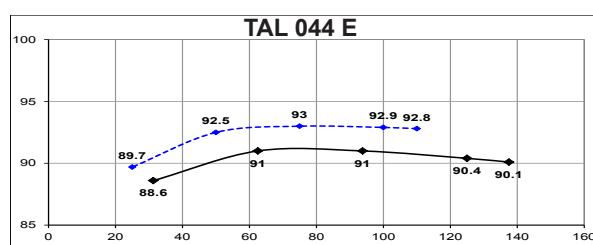
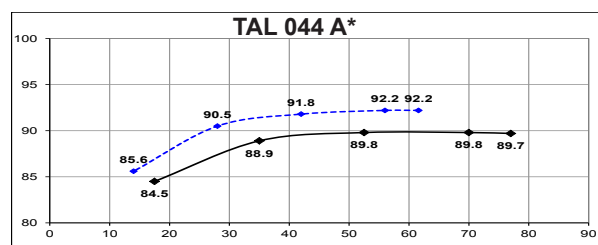
Influence due to short-circuit
Curves are based on a three-phase short-circuit.
For other types of short-circuit,
use the following multiplication factors.

	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 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

Efficiencies TAL044 : 400 V - 50 Hz (— P.F.: 0.8) (----- P.F.: 1)



Reactances (%). Time constants (ms) - Class H / 400 V

	A*	B*	C	D*	E	H*	J*
Kcc Short-circuit ratio	0.68	0.59	0.53	0.55	0.45	0.44	0.49
Xd Direct-axis synchro. reactance unsaturated	239	273	307	287	329	323	305
Xq Quadrature-axis synchro. reactance unsaturated	143	163	184	172	197	194	183
T'do No-load transient time constant	2308	2308	2308	2211	2154	2112	2077
X'd Direct-axis transient reactance saturated	10.3	11.8	13.3	12.9	15.2	15.3	14.6
T'd Short-circuit transient time constant	100	100	100	100	100	100	100
X''d Direct-axis subtransient reactance saturated	6.2	7.1	7.9	7.7	9.1	9.1	8.8
T''d Subtransient time constant	10	10	10	10	10	10	10
X''q Quadrature-axis subtransient reactance saturated	13.2	15.1	17	16.1	18.6	18.3	17.4
Xo Zero sequence reactance unsaturated	0.76	0.09	0.64	0.73	0.36	0.75	0.61
X2 Negative sequence reactance saturated	9.74	11.13	12.53	11.95	13.89	13.78	13.11
Ta Armature time constant	15	15	15	15	15	15	15

Other class H / 400 V data

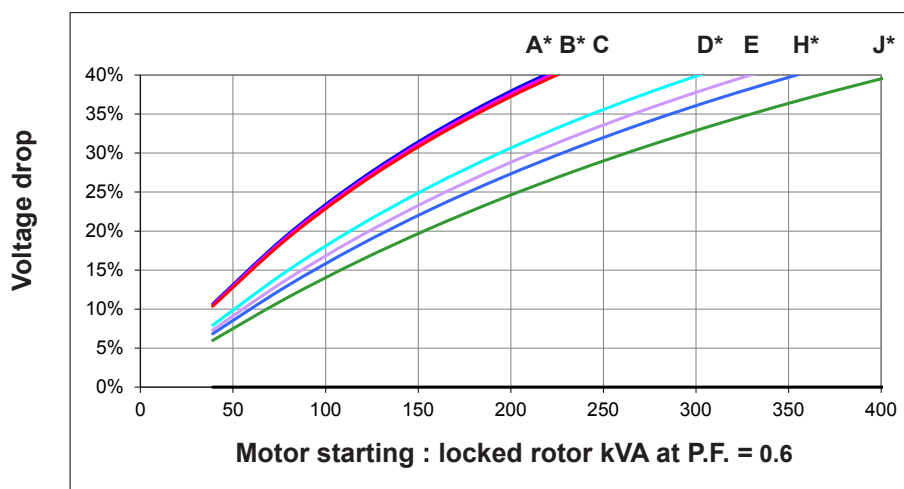
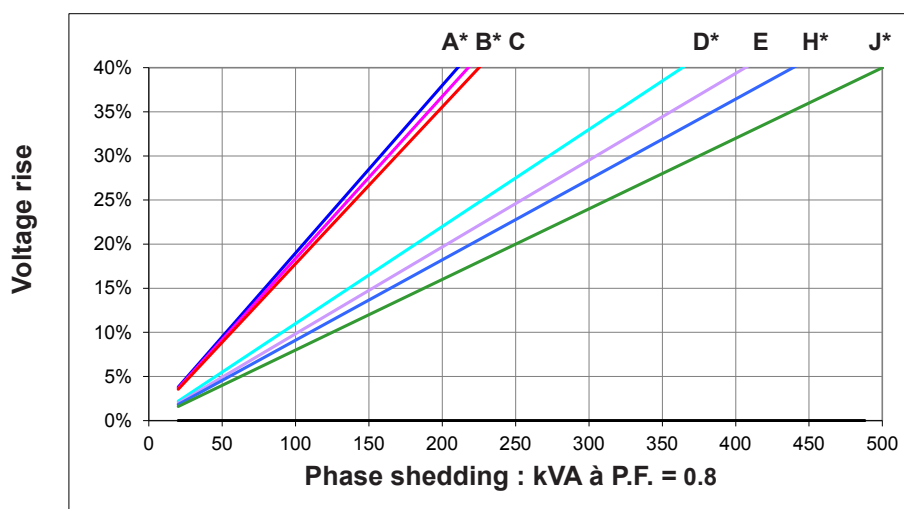
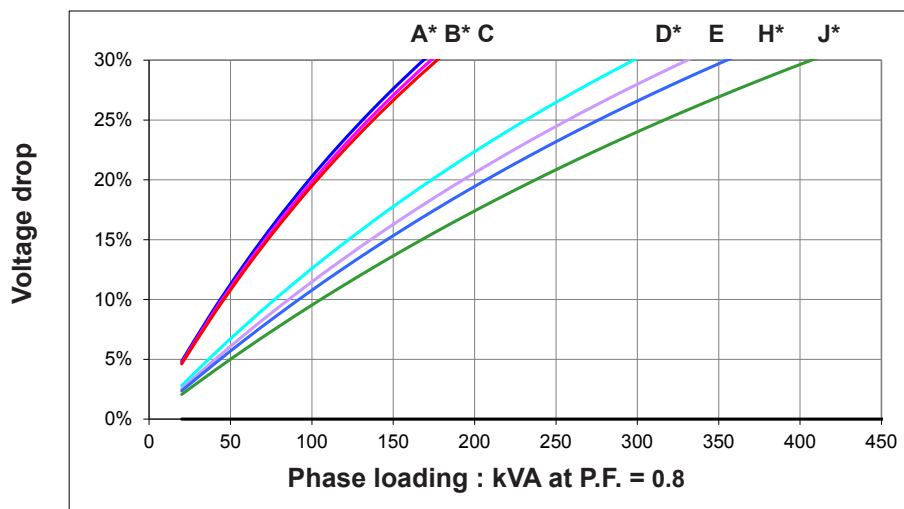
io (A) No-load excitation current	0.75	0.75	0.75	0.73	0.66	0.62	0.67
ic (A) On-load excitation current	2.05	2.3	2.56	2.28	2.43	2.34	2.42
uc (V) On-load excitation voltage	23	25.5	28.1	28.6	30.1	28.9	29.5
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.)	140.2	142.3	144.5	193.9	211.7	227.8	262.4
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{LAG}	15.1	16.6	17.9	12.6	14	14	13.7
W No-load losses	2141	2141	2141	2357	2355	2449	2861
W Heat dissipation	5007	5874	6856	7045	8340	8408	9099

(*) Subject to change in January 2016.

Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

Transient voltage variation TAL044 : 400V - 50 Hz

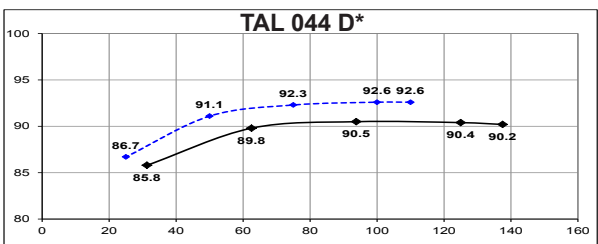
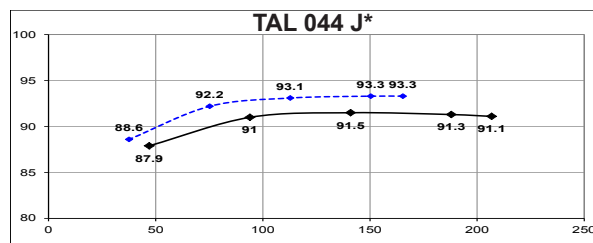
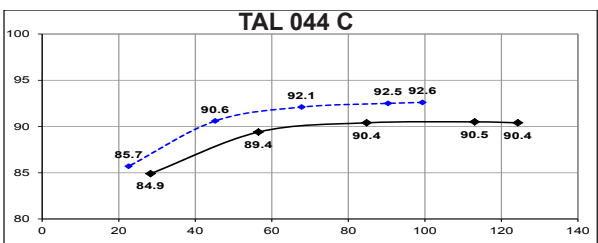
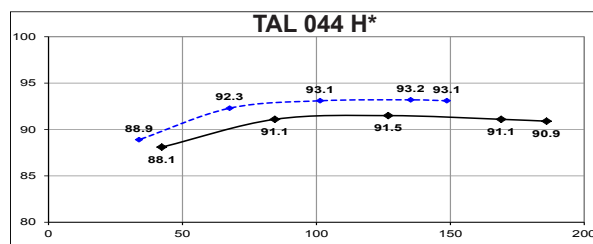
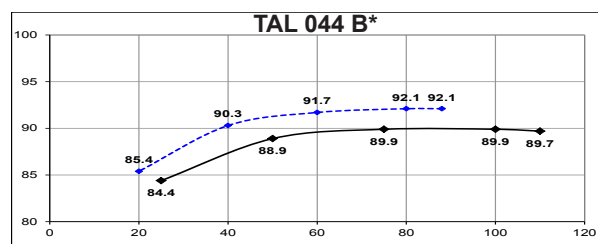
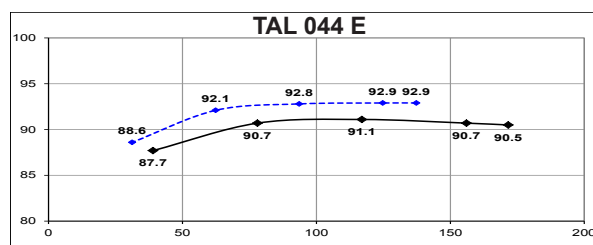
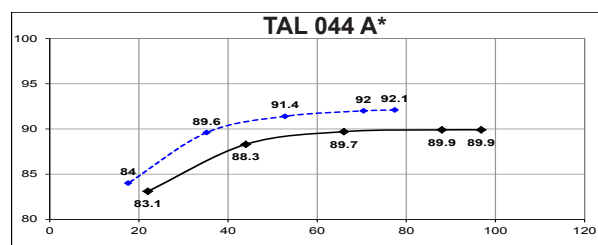


(*) Subject to change in January 2016.

Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

Efficiencies TAL044 : 480 V - 60 Hz (— P.F.: 0.8) (----- P.F.: 1)



Reactances (%). Time constants (ms) - Class H / 480 V

	A*	B*	C	D*	E	H*	J*
Kcc Short-circuit ratio	0.65	0.57	0.5	0.53	0.43	0.42	0.47
Xd Direct-axis synchro. reactance unsaturated	250	284	321	299	342	337	318
Xq Quadrature-axis synchro. reactance unsaturated	150	170	192	179	205	202	191
T'do No-load transient time constant	2308	2308	2308	2211	2154	2112	2077
X'd Direct-axis transient reactance saturated	10.8	12.3	13.9	13.5	15.8	15.9	15.3
T'd Short-circuit transient time constant	100	100	100	100	100	100	100
X''d Direct-axis subtransient reactance saturated	6.5	7.3	8.3	8.1	9.5	9.5	9.2
T''d Subtransient time constant	10	10	10	10	10	10	10
X''q Quadrature-axis subtransient reactance saturated	13.9	15.8	17.8	16.7	19.3	19.1	18.1
Xo Zero sequence reactance unsaturated	0.26	0.62	0.63	0.9	0.95	0.81	0.71
X2 Negative sequence reactance saturated	10.21	11.6	13.1	12.45	14.44	14.38	13.7
Ta Armature time constant	15	15	15	15	15	15	15

Other class H / 480 V data

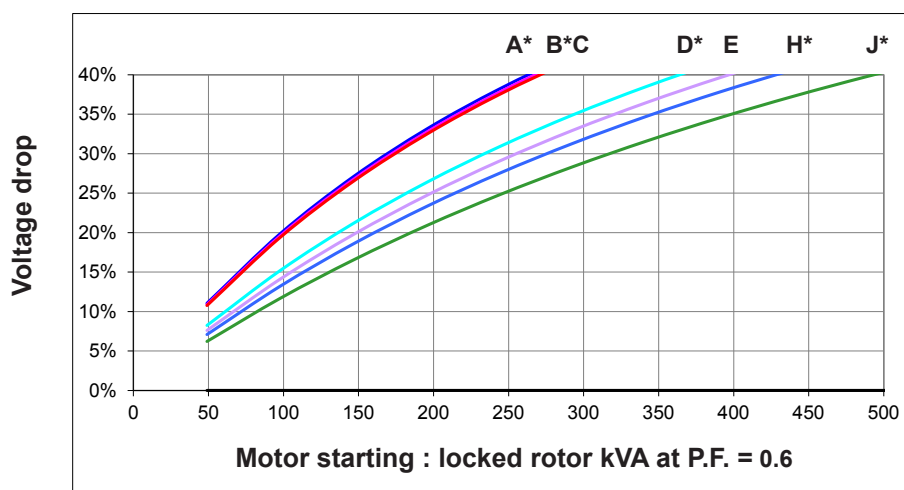
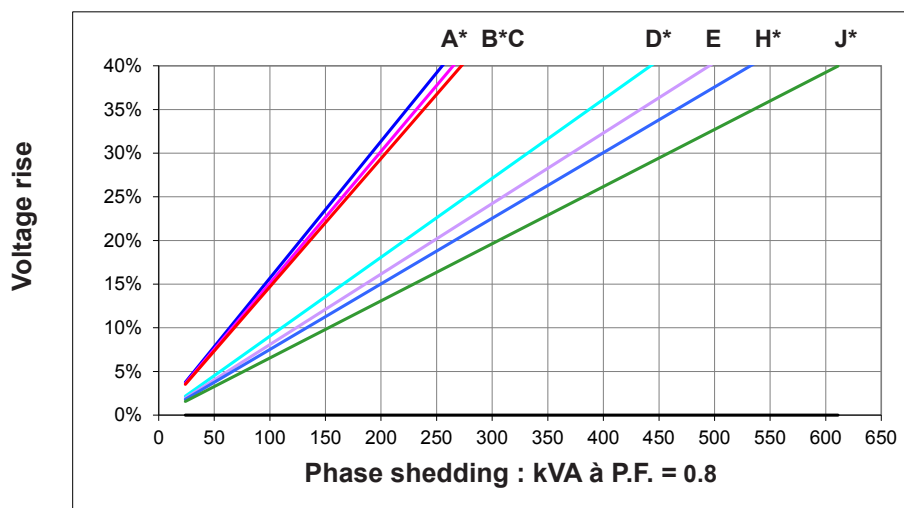
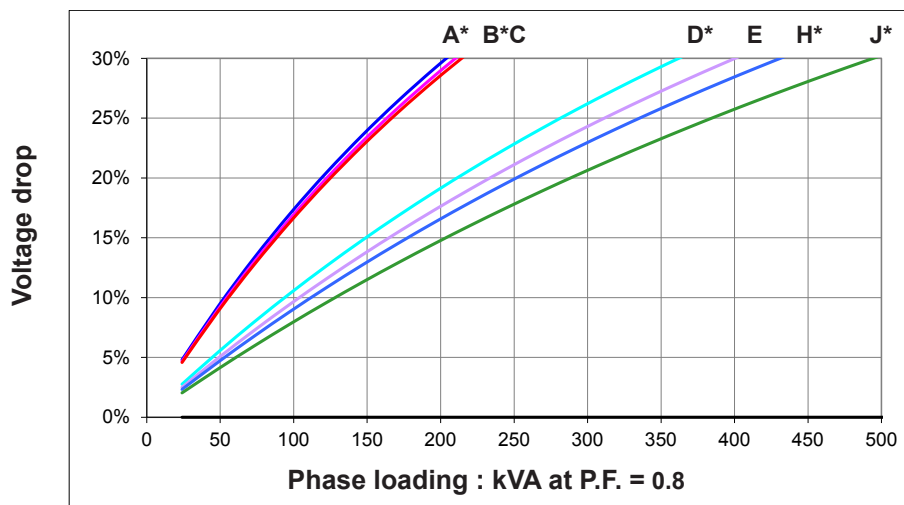
io (A) No-load excitation current	0.75	0.75	0.75	0.73	0.66	0.62	0.67
ic (A) On-load excitation current	2.06	2.29	2.55	2.29	2.44	2.35	2.41
uc (V) On-load excitation voltage	23.3	25.7	28.4	29	30.6	29.4	30
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.)	169.1	172.1	174.2	233.9	255.2	275.4	317.2
% Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 _{LAG}	15.6	17	18.5	12.9	14.4	14.4	14
W No-load losses	3155	3155	3155	3462	3474	3610	4184
W Heat dissipation	6198	7112	8234	8468	9912	10069	10948

(*) Subject to change in January 2016.

Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

Transient voltage variation TAL044 : 480V - 60 Hz

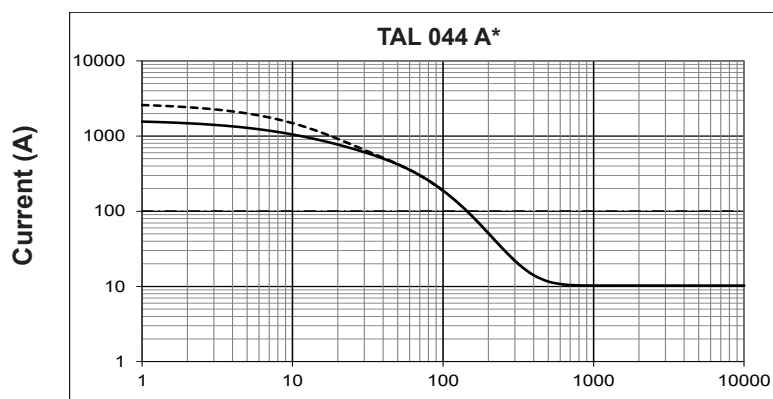


(*) Subject to change in January 2016.

Low Voltage Alternators - 4 pole

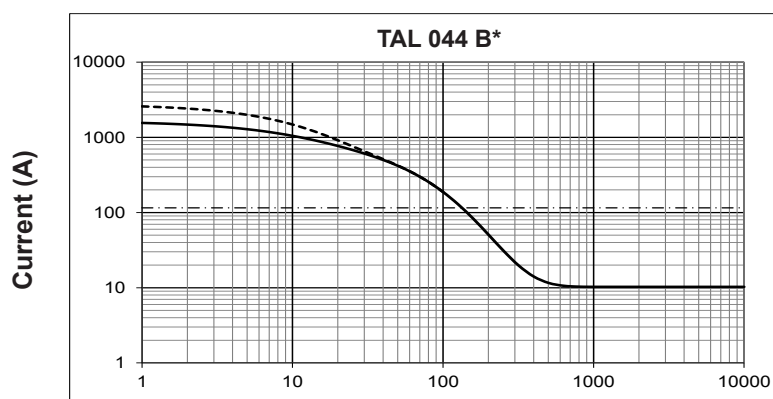
TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

3-phase short-circuit curves at no load and rated speed TAL044 (star connection Y)



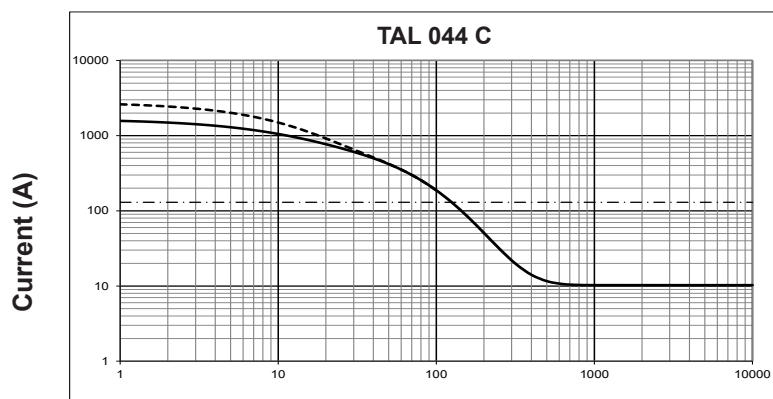
Symmetrical

Asymmetrical



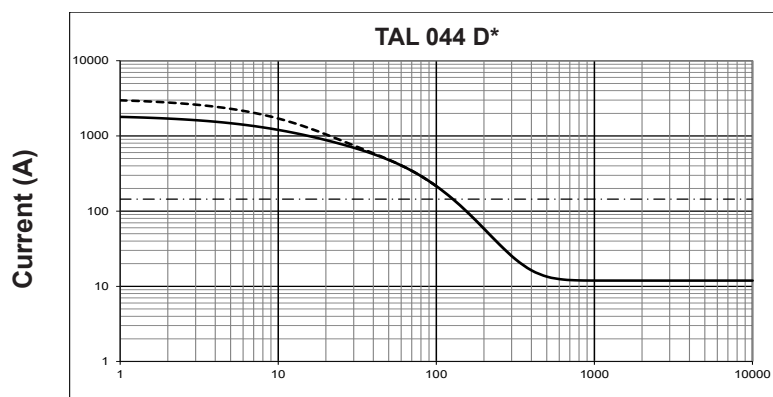
Symmetrical

Asymmetrical



Symmetrical

Asymmetrical



Symmetrical

Asymmetrical

Influence due to connection

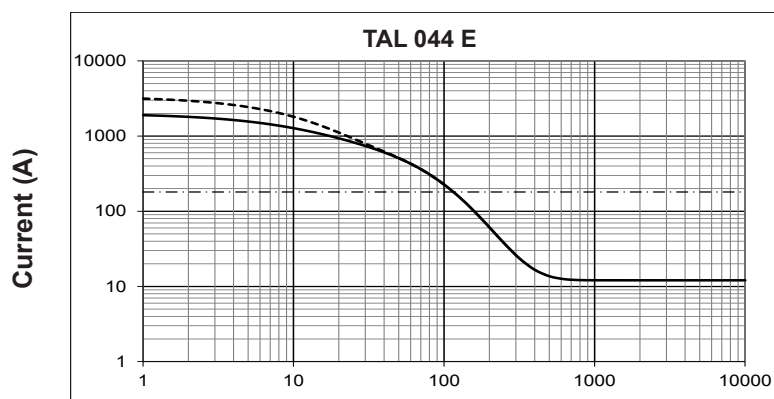
For (Δ) connection, use the following multiplication factor:

- Current value x 1.732.

Low Voltage Alternators - 4 pole

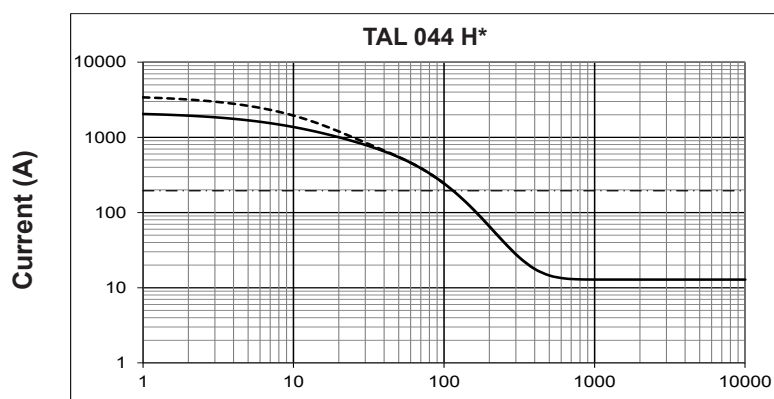
TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

3-phase short-circuit curves at no load and rated speed TAL044 (star connection Y)



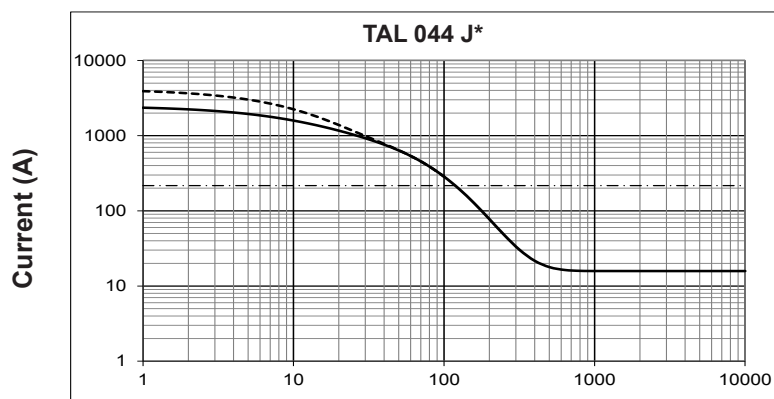
Symmetrical
Asymmetrical

Time (ms)



Symmetrical
Asymmetrical

Time (ms)



Symmetrical
Asymmetrical

Time (ms)

(*) Subject to change in January 2016.

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 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

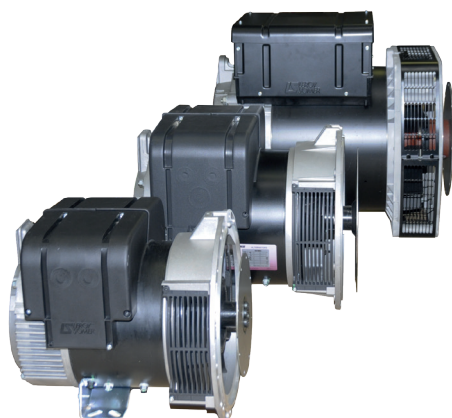
General characteristics - Single phase

Insulation class	H	Excitation system	SHUNT
Winding pitch	2/3 (Winding M/M1)	AVR type	R 120
Number of wires	4	Voltage regulation (*)	± 1 %
Protection	IP 23	Totale Harmonic distortion THD (**) in no-load:	< 3.5 % according to C.E.I.
Altitude	≤ 1000 m	Totale Harmonic distortion THD (**) in linear load:	< 5 % according to C.E.I.
Overspeed	2250 R.P.M.	Waveform: NEMA = TIF (**)	< 100
Air flow (m³/s)	50Hz : TAL040 : 0.06 - TAL042 : 0.10 - TAL044 : 0.25 60Hz : TAL040 : 0.07 - TAL042 : 0.13 - TAL044 : 0.30		

(*) Steady state. (**) between phases

Ratings / Efficiencies - Single phase

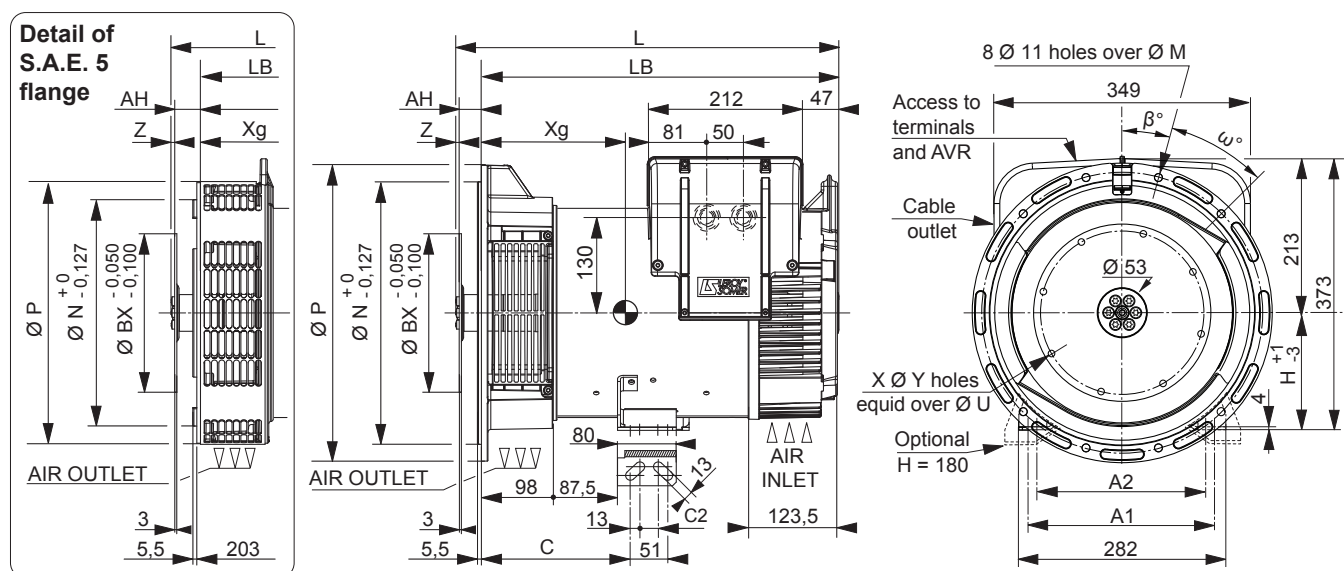
kVA / kW - P.F. = 1								
Type	50 Hz - 1500 R.P.M.				60 Hz - 1800 R.P.M.			
Duty/T°C	Continuous / 40°C		Stand-by / 27°C		Continuous / 40°C		Stand-by / 27°C	
Class/T°C	H / 125°K		H / 163°K		H / 125°K		H / 163°K	
1 Phase serie	230V	η %	230V	η %	240V	η %	240V	η %
TAL040 C	10.5	80.2	11.4	78.9	11.5	80	12.5	79
TAL040 C1	12	82.4	13.2	81.5	13.5	81.7	15	80.8
TAL040 D	13.2	83.4	14.5	82.6	14.5	82.6	16	81.8
TAL040 E	14.5	84.2	16	83.5	15.8	83.5	17.4	82.8
TAL040 F	16	85.2	17.6	84.7	17.6	84.5	19.4	83.8
TAL042 A	18.2	85.7	20	84.7	23	86.3	25.3	85.7
TAL042 B	20.3	86.1	22.3	85.3	26	86.3	28.6	85.7
TAL042 C	22.4	87	24.6	86.4	28.8	87.2	31.6	86.6
TAL042 D	25	88.6	27.5	88.2	31.5	88.4	34.7	88.1
TAL042 E	28	88.1	30.8	87.6	36	87.9	39.6	87.4
TAL042 F	31.5	88.3	34.7	87.7	40	88.2	44	87.6
TAL042 G	35	88.5	38.5	88	47.2	88.1	51.9	87.9
TAL042 H	42	88.7	46.2	88.2	53	88.6	58.3	88.2
TAL044 B	57	89	63	88.7	80	88	88	87.7
TAL044 D	69	89.5	76	89.1	100	88	110	87.7
TAL044 E	-	-	-	-	115	88.7	127	88.2
TAL044 H	82	90.3	90	90	-	-	-	-
TAL044 J	-	-	-	-	125	89.7	138	89.4



Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

TAL040 single bearing general arrangement



Dimensions (mm) and weight				
Type	L maxi	LB	Xg	Weight (kg)
TAL040 B	467	405	186	73
TAL040 C	467	405	186	73
TAL040 C1	467	407	196	80
TAL040 D	497	435	204	87
TAL040 E	497	435	221	92
TAL040 F	517	455	221	102

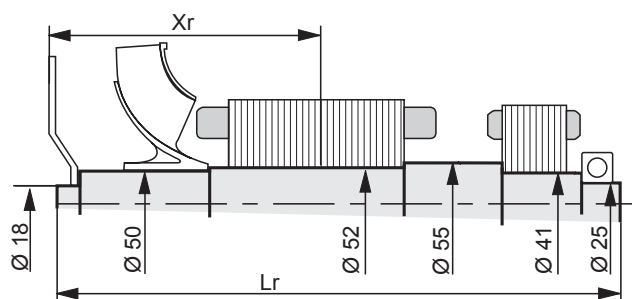
Shaft height (mm)		
H	Standard	Option
	160	180
	Feet length	
C	203	238
C2	25	22
A1	254	279
A2	230	-

Coupling		
Flange	4	5
Flex plate	10	x
	8	x
	7 1/2	x
	6 1/2	x
	-	-

Flange (mm)					
S.A.E.	P	N	M	β°	ω°
5	358	314.32	333.38	22°30'	45°
4	408	361.95	381	15°	30°
-	-	-	-	-	-
-	-	-	-	-	-

Flex plate (mm)						
S.A.E.	BX	U	X	Y	AH	Z
10	314.32	295.28	8	11	53.8	0
8	263.52	244.48	6	11	62	0
7 1/2	241.3	222.25	8	9	30.2	4.5
6 1/2	215.9	200.02	6	9	30.2	4.5

Torsional analysis data

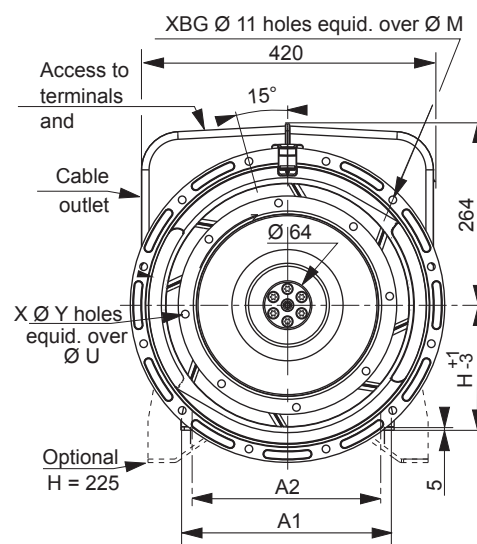
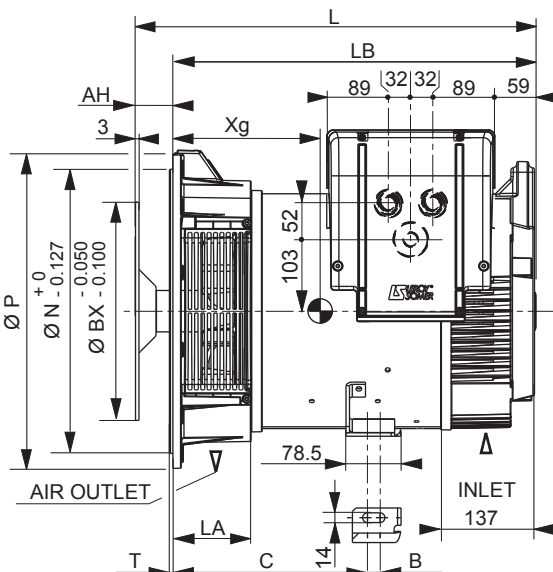


Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm²): (4J = MD²)																
	Flex plate S.A.E. 6 1/2				Flex plate S.A.E. 7 1/2				Flex plate S.A.E. 8				Flex plate S.A.E. 10			
Type	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J
TAL040 B	211.7	428	25.54	0.0779	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. Contractuel 2D drawings can be downloaded from the Leroy-Somer site, 3D drawing files are available upon request.

The torsional analysis of the transmission is imperative. All values are available upon request.

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz



Dimensions (mm) and weight (kg)					Shaft height (mm)			Coupling		
Type	L	LB	Xg	Weight (kg)	Standard		Option	Flange	3	4
TAL042 A	565	503	237	117	H	180	225	Flex plate		
TAL042 B	565	503	242	122	Feet length			11 1/2	x	-
TAL042 C	565	503	252	133	C	260	299 (A, B, C) / 321.5	10	x	x
TAL042 D	610	548	275	165	B	18	23	8	-	x
TAL042 E	610	548	275	165	A1	307	400	7 1/2	-	x
TAL042 F	650	588	287	181	A2	279	356			
TAL042 G	650	588	295	186						
TAL042 H	662	622	310	187						

Flange (mm)							Flex plate (mm)					
S.A.E.	P	N	M	XBG	T	LA	S.A.E.	BX	U	X	Y	AH
4	406	361.95	381	12	6	122	11 1/2	352.42	333.38	8	11	39.6
3	452	409.58	428.62	12	5	112.5	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

Technical drawing of a shaft assembly. The shaft has a total length L_r and a diameter $\varnothing 18$ at the left end. It features a central section with a diameter $\varnothing 60$ and a length X_r . To the right of this section is a smaller section with a diameter $\varnothing 41$, followed by a final section with a diameter $\varnothing 30$. A component, possibly a bearing or pulley, is mounted on the $\varnothing 60$ section. A dashed line indicates the shaft's axis.

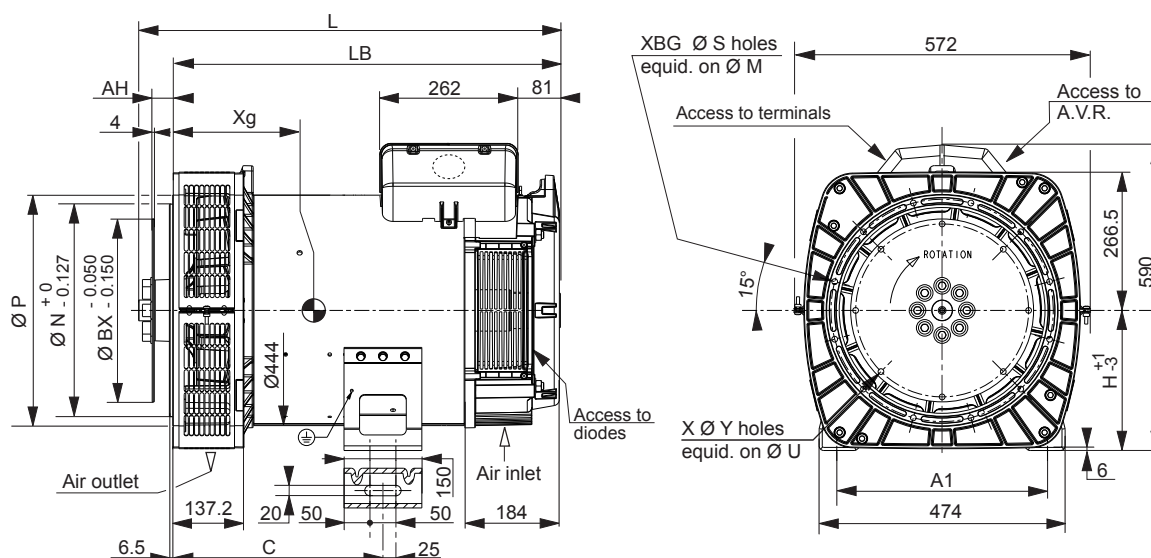
Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm²): (4J = MD²)																
	Flex plate S.A.E. 7 1/2				Flex plate S.A.E. 8				Flex plate S.A.E. 10				Flex plate S.A.E. 11 1/2			
Type	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J
TAL042 A	279	526.2	45.36	0.2209	277	558	45.68	0.2246	274	549.8	46.13	0.2363	272	535.6	46.62	0.2843
TAL042 B	282	526.2	47.36	0.2337	280	558	47.68	0.2374	277	549.8	48.13	0.2491	274	535.6	48.62	0.2611
TAL042 C	287	526.2	51.41	0.2592	286	558	51.73	0.2629	283	549.8	52.18	0.2746	281	535.6	52.67	0.2866
TAL042 D	310	571.2	61.49	0.317	308	603	61.81	0.3207	306	594.8	62.26	0.3324	304	580.6	62.75	0.3444
TAL042 E	310	571.2	61.49	0.317	308	603	61.81	0.3207	306	594.8	68.18	0.3645	304	580.6	62.75	0.3444
TAL042 F	325	611.2	67.41	0.3491	323	643	67.73	0.3528	321	634.8	68.18	0.3645	319	620.6	68.67	0.3765
TAL042 G	330	611.2	70.42	0.3683	328	643	70.74	0.372	326	634.8	71.18	0.3837	324	620.6	71.68	0.3957
TAL042 H	344	641.2	77.49	0.4141	342	673	77.81	0.4178	340	664.8	78.25	0.4295	338	650.6	78.75	0.4415

The torsional analysis of the transmission is imperative. All values are available upon request.

Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

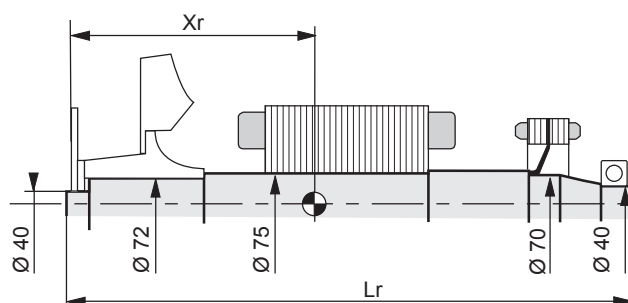
TAL044 single bearing general arrangement



Dimensions (mm) and weight					Shaft height (mm)			Coupling	
Type	L	LB	Xg	Weight/kg	Standard		Option	Flange	3
TAL044 A	743	677	313	295	H	270	225	Flex plate	
TAL044 B	743	677	313	295	Feet length			11 1/2	x
TAL044 C	743	677	313	295	C	405	332.5	10	x
TAL044 D	743	677	329	332	A1	406	356		
TAL044 E	813	747	353	368					
TAL044 H	813	747	365	398					
TAL044 J	854	787	383	433					

Flange (mm)						Flex plate (mm)					
S.A.E.	P	N	M	S	XBG	S.A.E.	BX	U	X	Y	AH
3	530	409.575	428.62	11	12	11 1/2	352.42	333.38	8	11	39.6
						10	314.32	295.28	8	11	53.8

Torsional analysis data



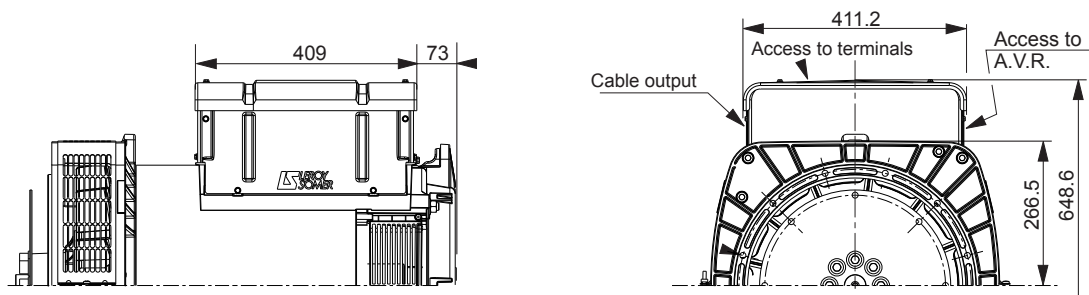
Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm²): (4J = MD²)									
Flex plate		Flex plate S.A.E. 10				Flex plate S.A.E. 11 1/2			
Type	Xr	Lr	M	J	Xr	Lr	M	J	
TAL044 A	348	729	118	0.854	334	729	117	0.869	
TAL044 B	348	729	118	0.854	334	729	117	0.869	
TAL044 C	348	729	118	0.854	334	729	117	0.869	
TAL044 D	363	729	134	1.005	349	729	133	1.020	
TAL044 E	385	799	149	1.121	372	799	148	1.136	
TAL044 H	403	799	161	1.228	390	799	160	1.243	
TAL044 J	423	839	176	1.363	410	839	175	1.378	

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

Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

TAL044 option terminal box



Low Voltage Alternators - 4 pole

TAL040 - TAL042 - TAL044 - 10 to 150 kVA - 50 Hz / 12.5 to 188 kVA - 60 Hz

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