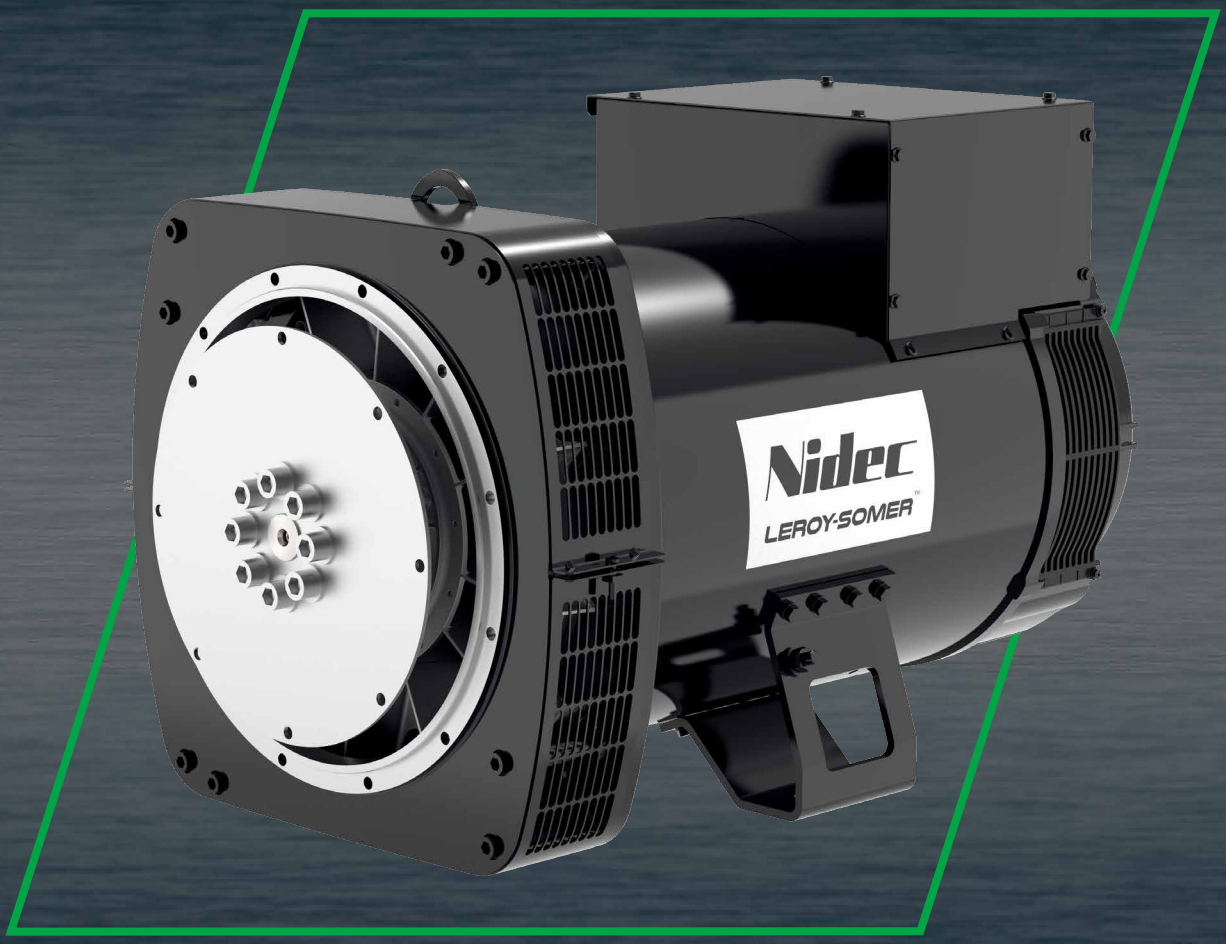
Nidec Power



Low Voltage Alternators - 4 pole

TAL-A44

Electrical and mechanical data

85 to 200 kVA - 50 Hz / 102 to 250 kVA - 60 Hz

LEROY-SOMER™

Product Feature

Features and Benefits

Compact Machine

Less footprint Cost-effective Reliability
- One of the shortest products
- Low vibration level

Global Service

Quick & efficient service
- Global manufacturing facilities for local delivery – short lead time
- Unequalled service organization

Leroy-Somer

TAL A Series



Optimized Electrical Performance

Optimized genset power outputs, matching available engines
- Adapted power outputs to reach power nodes with existing engines
- Optimized performance vs Application

Easy Installation & Maintenance

Easy genset maintenance
- Easy access to cables and diode bridges
- ControlReg option

Optimal Mechanical Design

Easy genset installation
- Optimized coupling with engines
- Interchangeable with LSA
- Flying leads option

Compact Terminal Box

Easy access to regulator
- Simplified design

TAL-A44

Adapted to needs

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



Compliance with internationally recognized standards

4 Pole Altemators are in compliance to the main international standards and regulations: -IEC 60034, NEMA MG 1.32-33, BS 5000 Part 99, VDE 0530, ISO 8528/3 on request and depending on voltages, marin regulations, etc.
It can be integrated into a CE marked generator.
Alternators are designed, manufactured and marketed in an ISO 9001 and ISO14001 environments.

Electrical design

- Class H insulation
- Low voltage winding
- 4-terminal plate
- 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 bearing
- Direction of rotation: clockwise

Excitation and regulation system suited to the application

	Excitation system					
	AVR	SHUNT	AREP+ (option)	PMG (Option Except TAL A40)	Remote voltage potentiometer	C.T. for paralleling
Three-phase 6-wire	R120	Standard				
	R150	Option			√	
	R180		Standard	Standard	√	√
	D350	Option	Option	Option	√	√
Three-phase 12-wire*	R120	Standard				
	R250	Option			√	
	R180		Standard	Standard	√	√
	D350	Option	Option	Option	√	√
Single-phase	R121	Standard			√	
	R221	Option			√	

√ : Possible option

Compact terminal box

- Easy access to AVR and terminals

Environment and protection

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

Available options

- AREP+ & PMG
- 12-lead
- Customized painting
- Space heater
- Droop kit for alternator paralleling (AVR upgrade to R150)
- CE mark
- Two-bearing version
- Voltage trimmer (AVR upgrade to R150)
- Winding protection for harsh environments and relative humidity greater than 95% (system 2 - 4): de-rating ratio according to 3% (system 2 and above protection system will be proposed for rental application, prevented from potential hash environment)

TAL-A44 - Three-phase 85 to 200 kVA - 50 Hz / 102 to 250 kVA - 60 Hz

General characteristics - 6 & 12-wire

Insulation class	H	Excitation system 6 wires	SHUNT / AREP+/PMG
Winding pitch	2/3 (wind.6S - 6-wire / wind.6 -12-wire)	AVR type	R120 / R180
Number of wires	6 or 12	Excitation system 12 wires	SHUNT / AREP+/PMG
Protection	IP 23	AVR type	R120 / R180
Altitude	≤ 1000 m	Voltage regulation (*)	± 1 % / ± 0.5 %
Overspeed	2250 R.P.M.	Total Harmonic distortion THD (**) in no-load	< 3.5 %
Air flow 50 Hz (m³/s)	0.25*	Total Harmonic distortion THD (**) in linear load	< 5 %
Air flow 60 Hz (m³/s)	0.30**	Waveform: NEMA = TIF (**)	< 50
AREP+ Short-circuit current = 2.7 In: 5 seconds (***)		Waveform : I.E.C. : THF (**)	< 2%

(*) 0.29 for L&M (**) 0.34 for L&M ***D350: 2.7In 10 seconds

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

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

kVA / kW - P.F. = 0.8

Duty/T°C		Continuous/ 40°C					Continuous/ 40°C					Stand-by/ 40°C					Stand-by/ 27°C				
Class/T°K		H:125K					F:105K					H:150K					H:163K				
Phase		3ph.				1ph.	3ph.				1ph.	3ph.				1ph.	3ph.				1ph.
Y		380V	400V	415V	440V*		380V	400V	415V	440V*		380V	400V	415V	440V*		380V	400V	415V	440V*	
Δ		220V	230V	240V		230V	220V	230V	240V		230V	220V	230V	240V		230V	220V	230V	240V		230V
YY		190V	200V	208V	220V*		190V	200V	208V	220V*		190V	200V	208V	220V*		190V	200V	208V	220V*	
ΔΔ						**230V**					**230V**					**230V**					**230V**
TAL-A44-C	kVA	81	**85**	85		42	73	**76.5**	76.5		38	85	**89**	89		44	88	**93.5**	93.5		46
	kW	64.8	***68.0***	68.0		*33.6*	58.4	***61.2***	61.2		*30.4*	68.0	***71.2***	71.2		*35.2*	70.4	***74.8***	74.8		*36.8*
TAL-A44-D	kVA	100	**100**	95		48	90	**90**	86		43	105	**105**	100		50.5	110	**110**	105		53
	kW	80.0	***80.0***	76.0		*38.4*	72.0	***72.0***	68.8		*34.4*	84.0	***84.0***	80.0		*40.4*	88.0	***88.0***	84.0		*42.4*
TAL-A44-E	kVA	119	**125**	119		60	107	**112.5**	107		54	124	**131**	124		63	130	**137.5**	130		66
	kW	95.2	***100.0***	95.2		*48.0*	85.6	***90.0***	85.6		*43.2*	99.2	***104.8***	99.2		*50.4*	104.0	***110.0***	104.0		*52.8*
TAL-A44-H	kVA	137.5	**137.5**	128		67	124	**125**	115		60	142	**142**	135		70.5	151.5	**151.5**	141		74
	kW	110.0	***110.0***	102.4		*53.6*	99.2	***100.0***	92.0		*48.0*	113.6	***113.6***	108.0		*56.4*	121.2	***121.2***	112.8		*59.2*
TAL-A44-J	kVA	143	**150**	143		73	129	**135**	129		66	150	**158**	150		77	157	**165**	157		80
	kW	114.4	***120.0***	114.4		*58.4*	103.2	***108.0***	103.2		*52.8*	120.0	***126.4***	120.0		*61.6*	125.6	***132.0***	125.6		*64.0*
TAL-A44-K	kVA	161.5	**170**	161.5		80	145	**153**	145		72	170	**179**	170		84	178	**187.5**	178		88
	kW	129.2	***136.0***	129.2		*64.0*	116.0	***122.4***	116.0		*57.6*	136.0	***143.2***	136.0		*67.2*	142.4	***150.0***	142.4		*70.4*
TAL-A44-L	kVA	180	**180**	180	171	90	164	**164**	164	156	82	191	**191**	191	181	95	200	**200**	200	188	99
	kW	144.0	***144.0***	144	136.8	*72.0*	131.2	***131.2***	131.2	124.8	*65.6*	152.8	***152.8***	152.8	144.8	*76.0*	160.0	***160.0***	160.0	150.4	*79.2*
TAL-A44-M	kVA	192	**200**	200	192	100	175	**182**	182	175	91	204	**212**	212	204	106	211	**220**	220	211	110
	kW	153.6	***160.0***	160.0	153.6	*80.0*	140.0	***145.6***	145.6	140.0	*72.8*	163.2	***169.6***	169.6	163.2	*84.8*	168.8	***176.0***	176.0	168.8	*88.0*

* L,M Only

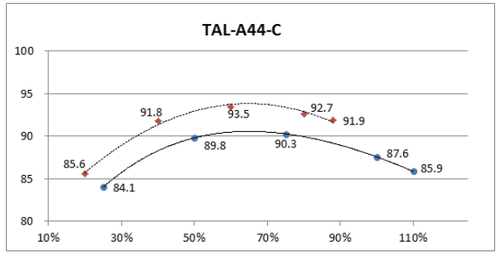
Ratings 60 Hz - 1800 R.P.M. - 6 & 12-wire

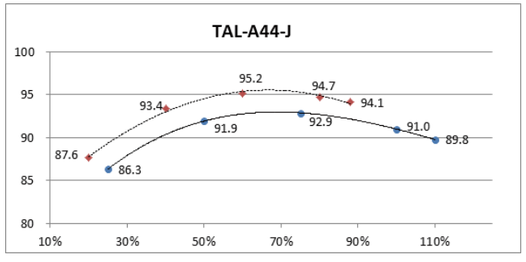
kVA / kW - P.F. = 0.8

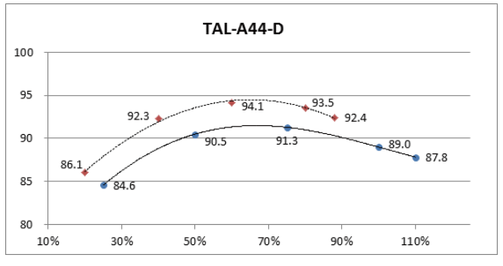
Duty / T° C		Continuous/ 40°C					Continuous/ 40°C					Stand-by/ 40°C					Stand-by/ 27°C				
Class / T° K		H:125K					F:105K					H:150K					H:163K				
Phase		3ph.				1ph.	3ph.				1ph.	3ph.				1ph.	3ph.				1ph.
Y		380V	416V	440V	480V		380V	416V	440V	480V		380V	416V	440V	480V		380V	416V	440V	480V	
Δ		220V	240V	254V	277V		220V	240V	254V	277V		220V	240V	254V	277V		220V	240V	254V	277V	
YY		190V	208V	220V	240V		190V	208V	220V	240V		190V	208V	220V	240V		190V	208V	220V	240V	
ΔΔ						240V					240V					240V					240V
TAL-A44-C	kVA	81	88	93	**102**	52	72.5	79.5	83.5	**92**	47	85	93	97	**107**	54.6	89	97	102	**112**	57
	kW	*64.8*	*70.4*	*74.4*	*81.6*	*41.6*	*58.0*	*63.6*	*66.8*	*73.6*	*37.6*	*68.0*	*74.4*	*77.6*	*85.6*	*43.7*	*71.2*	*77.6*	*81.6*	*89.6*	*45.6*
TAL-A44-D	kVA	95	104	109	**120**	65	85	93.5	98	**108**	58.5	100	109	115	**126**	68	104	114	120	**132**	72
	kW	*76.0*	*83.2*	*87.2*	*96.0*	*52.0*	*68.0*	*74.8*	*78.4*	*86.4*	*46.8*	*80.0*	*87.2*	*92.0*	*100.8*	*54.4*	*83.2*	*91.2*	*96.0*	*105.6*	*57.6*
TAL-A44-E	kVA	119	130	137	**150**	76	107	117	123	**135**	68.4	124	136	143	**158**	80	130	143	150	**165**	83
	kW	*95.2*	*104.0*	*109.6*	*120.0*	*60.8*	*85.6*	*93.6*	*98.4*	*108.0*	*54.7*	*99.2*	*108.8*	*114.4*	*126.4*	*64.0*	*104.0*	*114.4*	*120.0*	*132.0*	*66.4*
TAL-A44-H	kVA	130	143	150	**165**	81	117	129	135	**150**	73	137	150	158	**173**	85	143	157	165	**182**	89
	kW	*104.0*	*114.4*	*120.0*	*132.0*	*64.8*	*93.6*	*103.2*	*108.0*	*120.0*	*58.4*	*109.6*	*120.0*	*126.4*	*138.4*	*68.0*	*114.4*	*125.6*	*132.0*	*145.6*	*71.2*
TAL-A44-J	kVA	142	156	164	**180**	95	128	140	147	**162**	85.5	149	164	172	**189**	100	156	171	180	**198**	105
	kW	*113.6*	*124.8*	*131.2*	*144.0*	*76.0*	*102.4*	*112.0*	*117.6*	*129.6*	*68.4*	*119.2*	*131.2*	*137.6*	*151.2*	*80.0*	*124.8*	*136.8*	*144.0*	*158.4*	*84.0*
TAL-A44-K	kVA	161	177	186	**204**	105	145	159	167	**184**	94.5	169	185	195	**214**	110	177	194	204	**224**	115
	kW	*128.8*	*141.6*	*148.8*	*163.2*	*84.0*	*116.0*	*127.2*	*133.6*	*147.2*	*75.6*	*135.2*	*148.0*	*156.0*	*171.2*	*88.0*	*141.6*	*155.2*	*163.2*	*179.2*	*92.0*
TAL-A44-L	kVA	180	195	210	**225**	113	164	177	191	**205**	102	191	207	223	**239**	119	200	215	231	**250**	124
	kW	*144.0*	*156.0*	*168.0*	*180.0*	*90.4*	*131.2*	*141.6*	*152.8*	*164.0*	*81.6*	*152.8*	*165.6*	*178.4*	*191.2*	*95.2*	*160.0*	*172.0*	*184.8*	*200.0*	*99.2*
TAL-A44-M	kVA	200	215	230	**250**	125	182	196	209	**228**	114	212	228	244	**265**	133	220	237	253	**275**	136
	kW	*160.0*	*172.0*	*184.0*	*200.0*	*100.0*	*145.6*	*156.8*	*167.2*	*182.4*	*91.2*	*169.6*	*182.4*	*195.2*	*212.0*	*106.4*	*176.0*	*189.6*	*202.4*	*220.0*	*108.8*

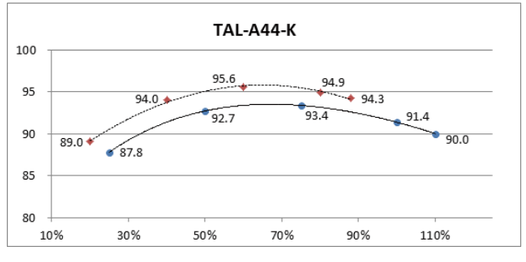
TAL-A44 - Three-phase 85 to 200 kVA - 50 Hz / 102 to 250 kVA - 60 Hz

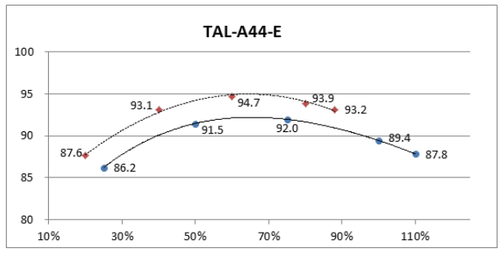
Efficiencies 400 V - 50 Hz (— P.F.: 0.8) (..... P.F.: 1) - 6 & 12-wire

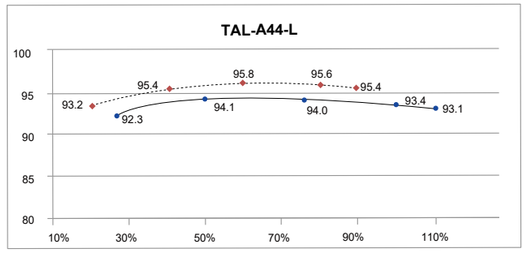


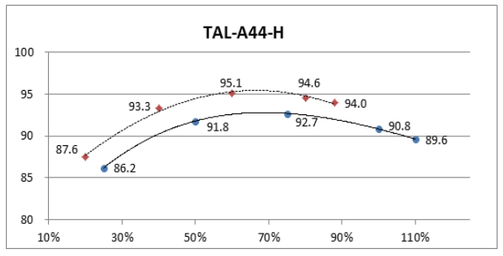


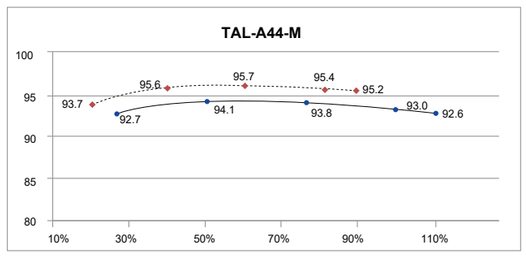






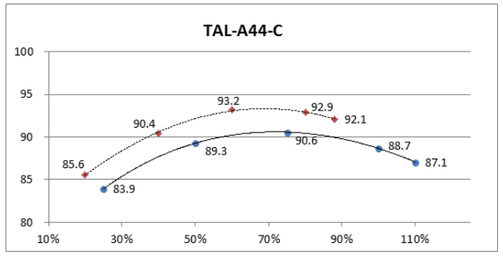


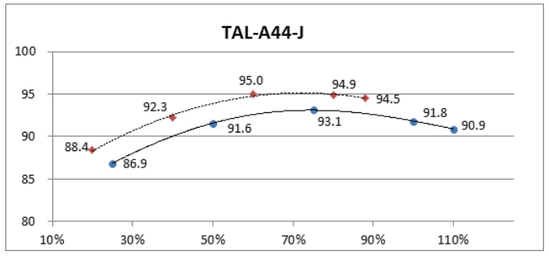


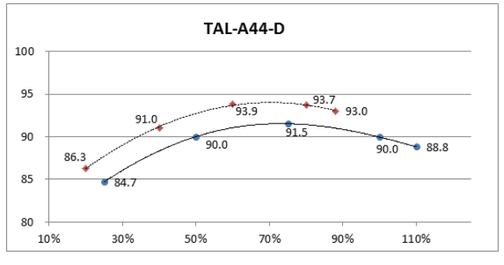


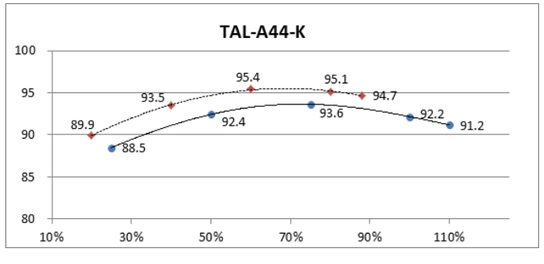
TAL-A44 - Three-phase 85 to 200 kVA - 50 Hz / 102 to 250 kVA - 60 Hz

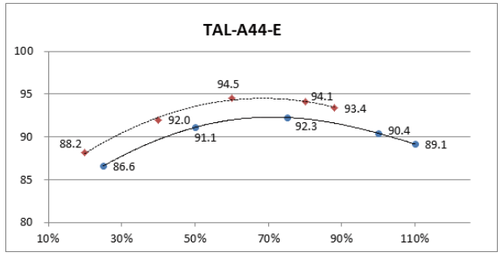
Efficiencies 480 V - 60 Hz (— P.F.: 0.8) (..... P.F.: 1) - 6 & 12-wire

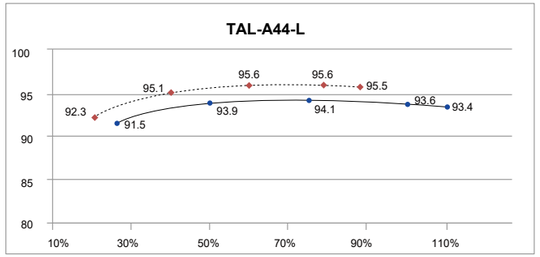


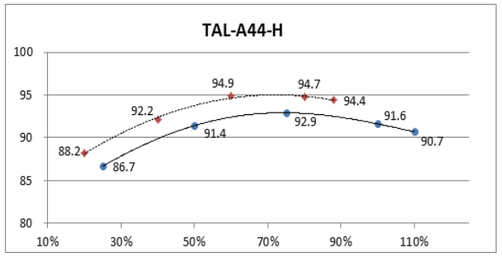


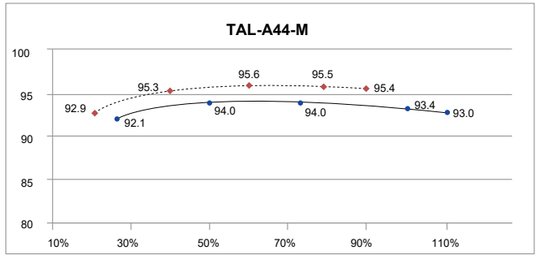












TAL-A44 - Three-phase 85 to 200 kVA - 50 Hz / 102 to 250 kVA - 60 Hz

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

		TAL-A44-C	TAL-A44-D	TAL-A44-E	TAL-A44-H	TAL-A44-J	TAL-A44-K	TAL-A44-L	TAL-A44-M
Kcc	Short-circuit ratio	0.50	0.59	0.4	0.56	0.61	0.37	0.37	0.33
Xd	Direct-axis synchro.reactance unsaturated	321	303	365	307	290	373	373	381
Xq	Quadrature-axis synchro. rectance unsaturated	193	182	219	184	174	224	175	194
T'do	No-load transient time constant	1747	1796	2211	1952	2013	2077	2025	2025
X'd	Direct-axis transient reactance saturated	17.7	17.2	16.4	16.1	15.0	16.6	16.9	18.8
T'd	Short-circuit transient time constant	100	100	100	100	100	100	100	100
X"d	Direct-axis subtransient reactance saturated	10.6	10.3	9.8	9.6	9.0	9.9	10.1	11.3
T"d	Subtransient time constant	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
X"q	Quadrature-axis subtransient reactance saturated	21.0	20.4	19.4	19.1	17.8	19.7	19.7	21.9
Xo	Zero sequence reactance saturated	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.78
X2	Negative sequence reactance saturated	15.8	15.4	14.6	14.4	13.4	14.8	14.95	16.62
Ta	Armature time constant	15	15	15	15	15	15	15	15

Other class H/400V data		TAL-A44-C	TAL-A44-D	TAL-A44-E	TAL-A44-H	TAL-A44-J	TAL-A44-K	TAL-A44-L	TAL-A44-M
ms	Response time (△U=20%)	500	500	500	500	500	500	500	500
W	No-load losses	1890	2213	2503	2436	2533	2954	2665	2665
W	Heat dissipation	9625	9888	11256	11145	11868	12796	10134	11895

Low Voltage Alternators - 4 pole

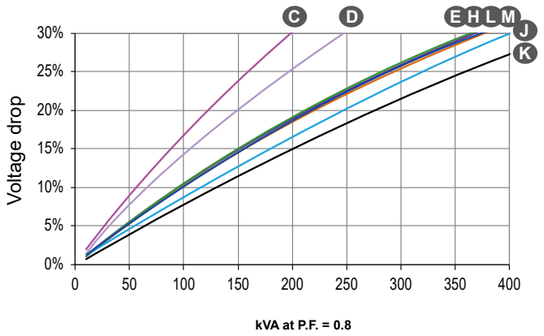
TAL-A44 - Three-phase 85 to 200 kVA - 50 Hz / 102 to 250 kVA - 60 Hz

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

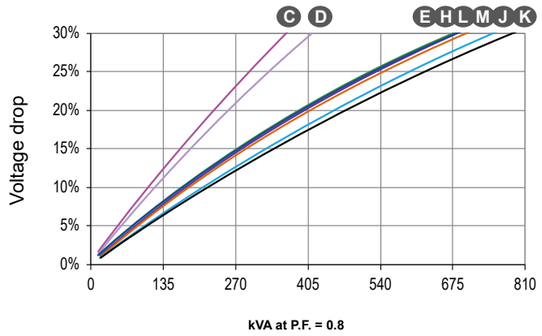
		TAL-A44-C	TAL-A44-D	TAL-A44-E	TAL-A44-H	TAL-A44-J	TAL-A44-K	TAL-A44-L	TAL-A44-M
Kcc	Short-circuit ratio	0.50	0.59	0.4	0.56	0.61	0.37	0.36	0.32
Xd	Direct-axis synchro.reactance unsaturated	321	303	365	307	290	373	358	397
Xq	Quadrature-axis synchro. rectance unsaturated	193	182	219	184	174	224	182	202
T'do	No-load transient time constant	1747	1796	2211	1952	2013	2077	2025	2025
X'd	Direct-axis transient reactance saturated	17.7	17.2	16.4	16.1	15.0	16.6	17.6	19.6
T'd	Short-circuit transient time constant	100	100	100	100	100	100	100	100
X"d	Direct-axis subtransient reactance saturated	10.6	10.3	9.8	9.6	9.0	9.9	10.6	11.7
T"d	Subtransient time constant	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
X"q	Quadrature-axis subtransient reactance saturated	21.0	20.4	19.4	19.1	17.8	19.7	20.5	22.8
Xo	Zero sequence reactance saturated	0.6	0.6	0.6	0.6	0.6	0.7	0.73	0.81
X2	Negative sequence reactance saturated	15.8	15.4	14.6	14.4	13.4	14.8	15.59	17.32
Ta	Armature time constant	15	15	15	15	15	15	15	15

Other class H/480V data		TAL-A44-C	TAL-A44-D	TAL-A44-E	TAL-A44-H	TAL-A44-J	TAL-A44-K	TAL-A44-L	TAL-A44-M
ms	Response time (△U=20%)	500	500	500	500	500	500	500	500
W	No-load losses	2722	3187	3604	3508	3647	4253	3923	3923
W	Heat dissipation	10395	10667	12217	12105	12863	13807	12145	14130

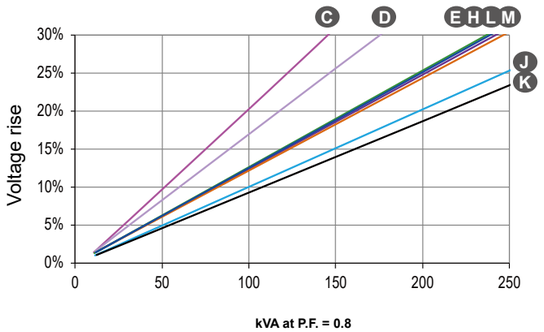
Transient voltage variation 400V - 50 Hz - 12-wire



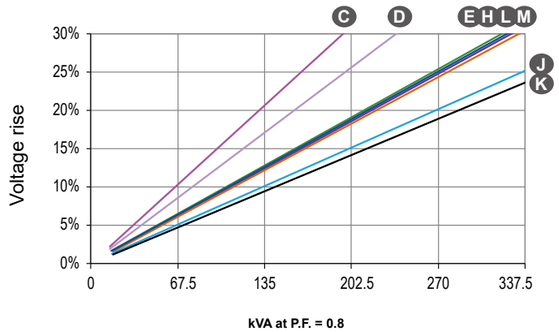
Phase loading (SHUNT) - kVA at P.F. = 0.8



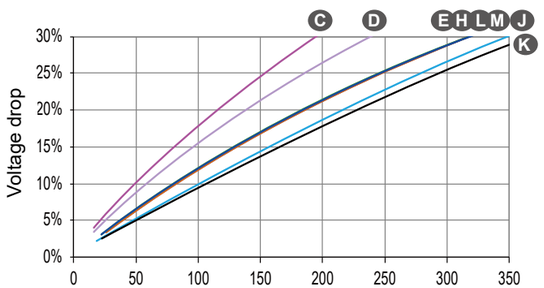
Phase loading (AREP+/PMG) - kVA at P.F. = 0.8



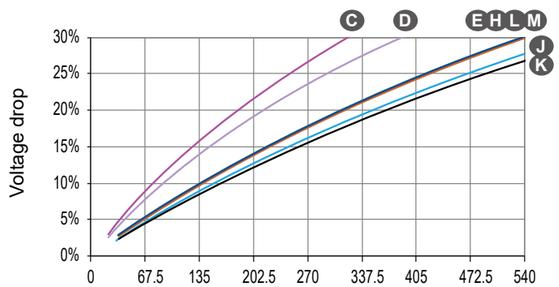
Load shedding (SHUNT) - kVA at P.F. = 0.8



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



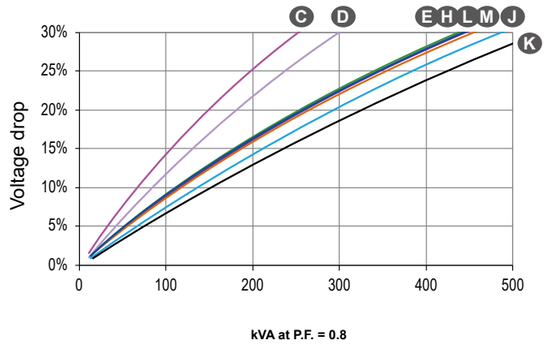
Motor starting (SHUNT)
- locked rotor kVA at P.F. = 0.6



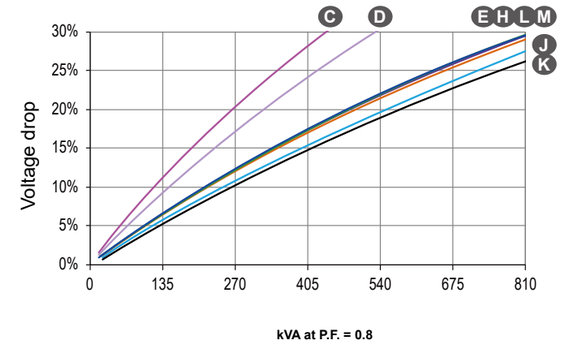
Motor starting (AREP+/PMG)
- locked rotor kVA at P.F. = 0.6

1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by K = 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 $(230/U)^2$.

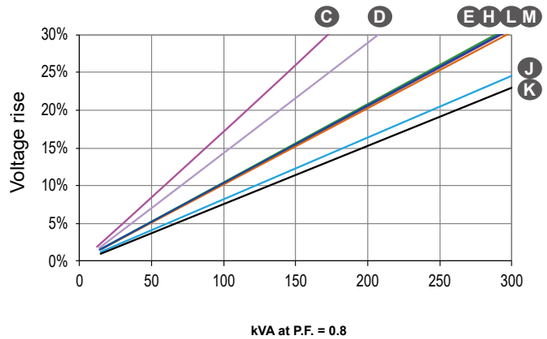
Transient voltage variation 480V - 60 Hz - 6-wire



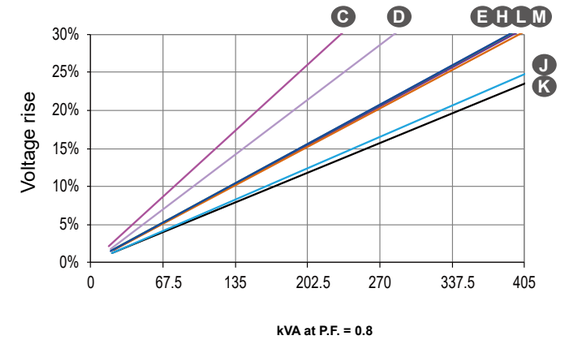
Phase loading (SHUNT) - kVA at P.F. = 0.8



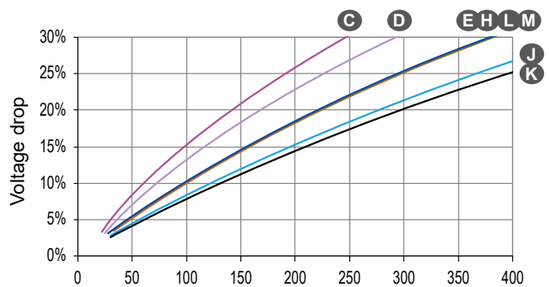
Phase loading (AREP+/PMG) - kVA at P.F. = 0.8



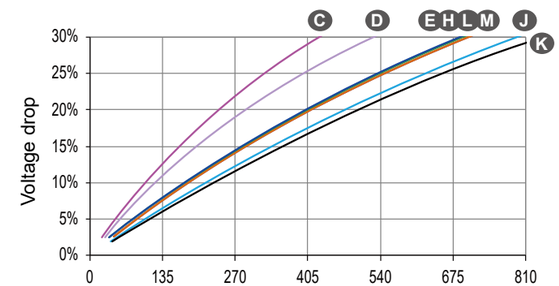
Load shedding (SHUNT) - kVA at P.F. = 0.8



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



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

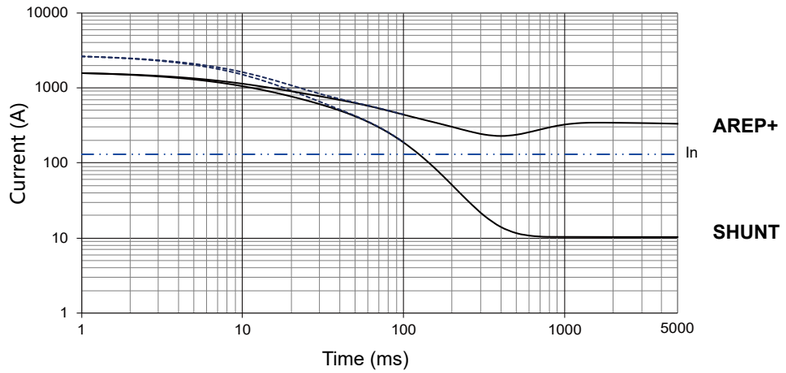


Motor starting (AREP+/PMG)
- locked rotor kVA at P.F. = 0.6

1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by K = 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 $(240/U)^2$.

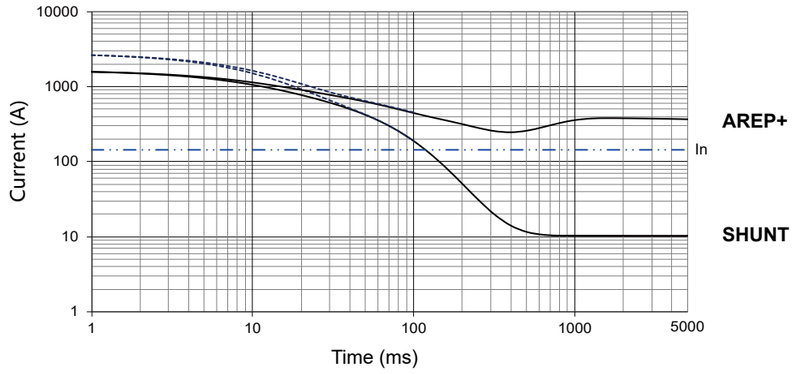
TAL-A44-C

Symmetrical --------
Asymmetrical - - -



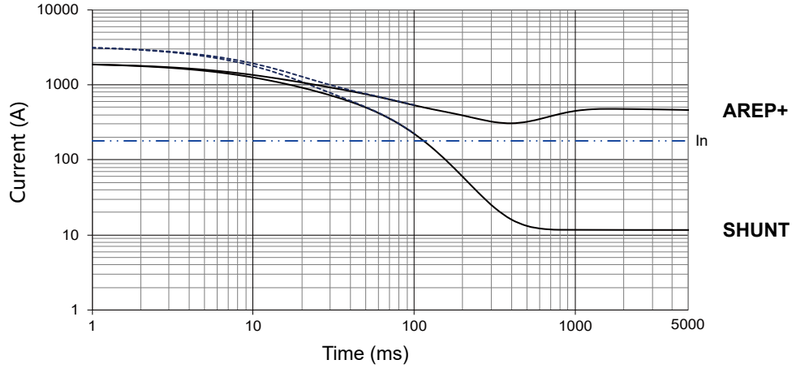
TAL-A44-D

Symmetrical --------
Asymmetrical - - -



TAL-A44-E

Symmetrical --------
Asymmetrical - - -

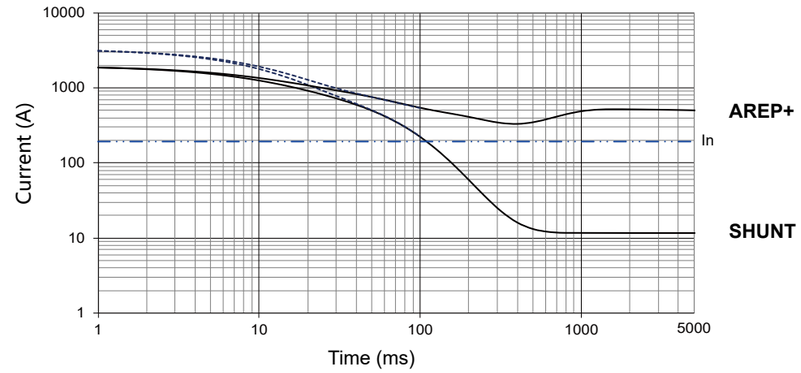


Influence due to connection
For (Δ) connection, use the following multiplication factor:
- Current value x 1.732.

Low Voltage Alternators - 4 pole
TAL-A44 - Three-phase 85 to 200 kVA - 50 Hz / 102 to 250 kVA - 60 Hz

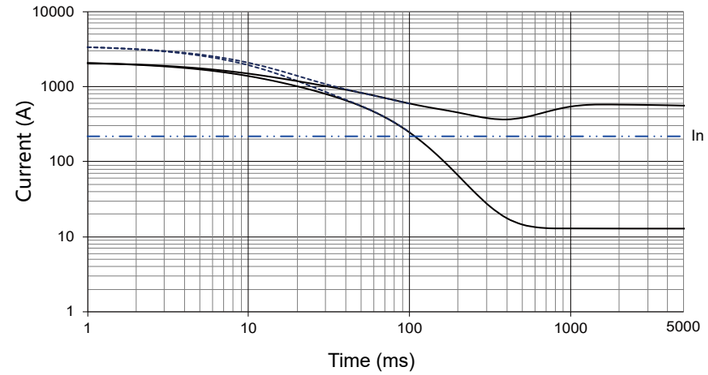
TAL-A44-H

Symmetrical --------
Asymmetrical - - -



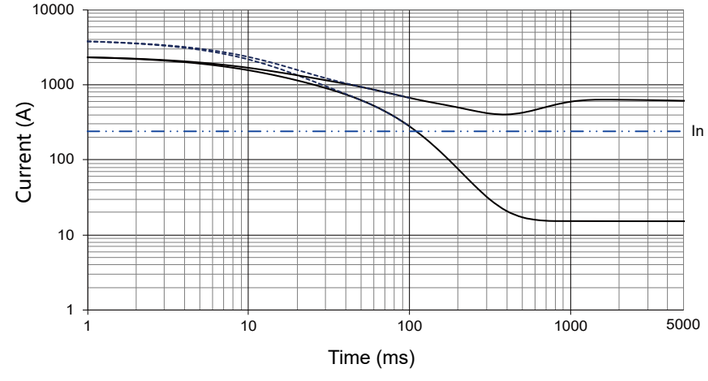
TAL-A44-J

Symmetrical --------
Asymmetrical - - -



TAL-A44-K

Symmetrical --------
Asymmetrical - - -



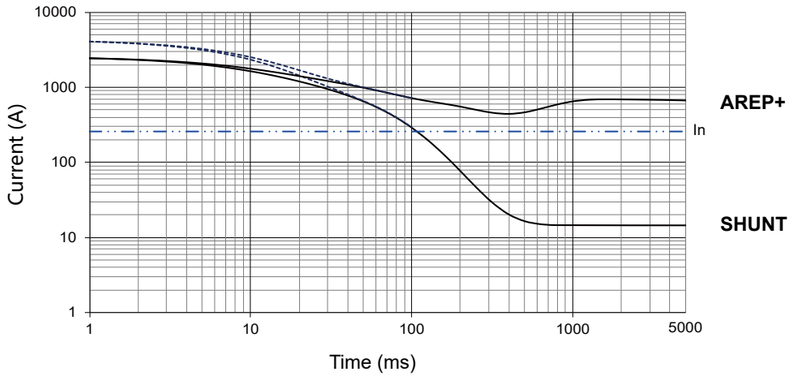
Influence due to short-circuit
Curves are based on a three-phase short-circuit.
For other types of short-circuit,
use the following multiplication factors.

	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		1.5	

TAL-A44 - Three-phase 85 to 200 kVA - 50 Hz / 102 to 250 kVA - 60 Hz

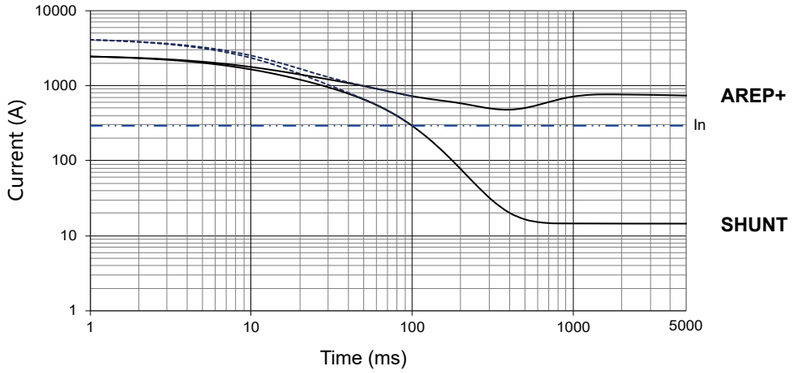
TAL-A44-L

Symmetrical --------
Asymmetrical - - -



TAL-A44-M

Symmetrical --------
Asymmetrical - - -



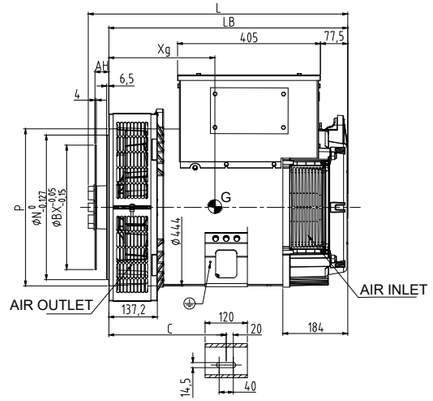
Influence due to connection
For (Δ) connection, use the following multiplication factor:
- Current value x 1.732.

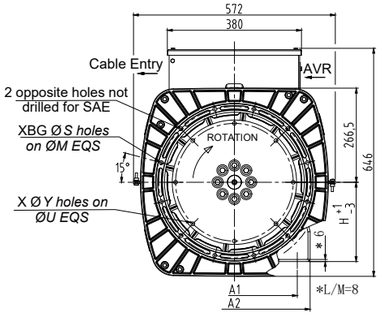
Influence due to short-circuit
Curves are based on a three-phase short-circuit.
For other types of short-circuit,
use the following multiplication factors.

	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		1.5	

TAL-A44 - Three-phase 85 to 200 kVA - 50 Hz / 102 to 250 kVA - 60 Hz

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





Dimensions (mm) and weight (kg)				
Type	L	LB	Xg	Weight/kg
TAL-A44-C	735	677	301	267
TAL-A44-D	735	677	313	295
TAL-A44-E	735	677	329	334
TAL-A44-H	805	747	353	368
TAL-A44-J	805	747	365	398
TAL-A44-K	847	787	383	433
TAL-A44-L	930	872	416	554
TAL-A44-M	930	872	416	554

Shaft Height(mm)			
	standard	option	
H	225(*)	270(**)	280(**)
Feet length			
C	332.5	405	429
A1	356	406	457
A2	474	474	541

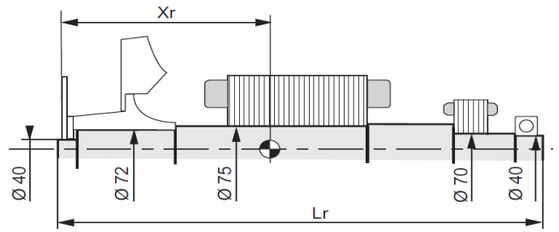
(*) not available for L and M
(**) only for L and M

Coupling			
Flange	**1**	**2**	**3**
Flex plate			
11 1/2	x	x	x
10	x	x	x
10	x	x	x
8	-	-	x

Flange (mm)					
S.A.E.	P	N	M	S	XBG
3	445	409.575	428.62	11	12
2	485	447.675	466.725	11	12
1	560.5(*)	511.18	530.22	12	10

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)

Type	Flex Plate SAE 10				Flex Plate SAE 11 1/2			
	Xr	Lr	M	J	Xr	Lr	M	J
TAL-A44-C	341	704	113	0.805	308	704	113	0.821
TAL-A44-D	354	704	120	0.867	325	704	120	0.883
TAL-A44-E	372	729	139	1.026	359	729	138	1.041
TAL-A44-H	399	774	153	1.141	389	774	153	1.157
TAL-A44-J	410	774	165	1.248	400	774	164	1.264
TAL-A44-K	429	814	180	1.383	420	814	180	1.399
TAL-A44-L	465	914	224.1	1.753	450.7	899	223.7	1.769
TAL-A44-M	465	914	224.1	1.753	450.7	899	223.7	1.769

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.
*Please contact us for the double bearing dimension

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