

## TAL 040 - TAL 042 - TAL 044

### **Low Voltage Alternators - 4 pole**

Three-phase 10 to 165 kVA - 50 Hz / 12.5 to 206 kVA - 60 Hz  
Dedicated single-phase 10.5 to 82 kVA - 50 Hz / 11.5 to 125 kVA - 60 Hz  
Electrical and mechanical data

**LEROY-SOMER**<sup>™</sup>

***Nidec***  
All for dreams

## Adapted to needs

The TAL alternator range is designed to meet the needs of general applications such as prime power and stand-by.

## 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:
  - Three phase 50 Hz: 380V - 400V - 415V - 440V / 220V - 230V - 240V
  - 60 Hz: 380V - 416V - 440V - 480V / 220V - 208V - 240V
- Single phase 50 Hz: 115V - 230V
- 60 Hz: 120V - 240V
- 4-terminal plates in base version (12 wire option)
- Optimized performance

## Robust design

- Compact and rugged assembly to withstand engine vibrations
- Steel frame
- Aluminum flanges and shields
- Single bearing design compatible 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 alternators are IP 23
- Standard winding protection for non-harsh environment with relative humidity  $\leq 95\%$

## Available options

- 12 wires connection
- AREP & PMG (PMG not available in TAL 040)
- ULc/us
- Customized painting (machine not painted as standard)
- Space heaters
- Flying leads
- Droop kit for alternator paralleling (TAL 044 only)
- Dedicated single-phase
- Stator sensors (TAL 044 only)
- Winding 8 for 380V / 416V - 60Hz
- Winding protection for harsh environments and relative humidity greater than 95% (system 2 - 4): derating according to the following table



Type	50 Hz			60 Hz
	380 V	400 V	415 V	All voltages
TAL 040	1	1	1	1
TAL 042	0.97	1 except 0.97 for TAL 042 G & H	1 except 0.97 for TAL 042 G & H	1 except 0.97 for TAL 042 G & H
TAL 044	1 except 0.97 for TAL 044 K	1 except 0.97 for TAL 044 K	1 except 0.97 for TAL 044 K	1 except 0.97 for TAL 044 K

# TAL 040 - Three-phase 10 to 20 kVA - 50 Hz / 12.5 to 25 kVA - 60 Hz

## General characteristics

Insulation class	H	Excitation system 6 wires	SHUNT	AREP
Winding pitch	2/3	AVR type	R120	R180
Number of wires	6 (12 option)	Excitation system 12 wires (option)	SHUNT	AREP
Protection	IP 23	AVR type	R120 (*)	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 (m <sup>3</sup> /s)	0.06	Total Harmonic Distortion THD (***) in linear load	< 5 %	
Air flow 60 Hz (m <sup>3</sup> /s)	0.07	Waveform: NEMA = TIF (***)	< 50	
AREP Short-circuit current = 2.7 In: 5 second		Waveform: I.E.C. = FHT (***)	< 2%	

(\*) SHUNT: R220 - AREP: R438, R450 if ULc/us (\*\*) Steady state (\*\*\*) Total harmonic distortion between phases, no-load or on-load (non-distorting)

## Ratings 50 Hz - 1500 R.P.M.

kVA / kW - P.F. = 0.8																					
Duty / T° C	Continuous / 40 °C					Continuous / 40 °C					Stand-by / 40 °C					Stand-by / 27 °C					
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.		
<b>Y</b>	380V	400V	415V	440V		380V	400V	415V	440V		380V	400V	415V	440V		380V	400V	415V	440V		
<b>Δ</b>	220V	230V	240V		230V	220V	230V	240V		230V	220V	230V	240V		230V	220V	230V	240V		230V	
<b>YY (*)</b>	220V					220V					220V					220V					
<b>ΔΔ (*)</b>					230V					230V					230V					230V	
<b>TAL 040 B</b>	kVA	10	<b>10</b>	10	9	7	9	<b>9</b>	9	8	6.5	10.5	<b>10.5</b>	10.5	9.5	7.5	11	<b>11</b>	11	10	7.5
	kW	8	8	8	7	5.5	7	7	7	6.5	5	8.5	8.5	8.5	7.5	6	9	9	9	8	6
<b>TAL 040 C</b>	kVA	12.5	<b>12.5</b>	12.5	11	9	11.5	<b>11.5</b>	11.5	10	8	13.5	<b>13.5</b>	13.5	11.5	9.5	14	<b>14</b>	14	12	10
	kW	10	10	10	9	7	9	9	9	8	6.5	11	11	11	9	7.5	11	11	11	9.5	8
<b>TAL 040 D</b>	kVA	15	<b>15</b>	15	13	10.5	14	<b>14</b>	14	12	9.5	16	<b>16</b>	16	14	11	16.5	<b>16.5</b>	16.5	14.5	11.5
	kW	12	12	12	10.5	8.5	11	11	11	9.5	7.5	13	13	13	11	9	13	13	13	11.5	9
<b>TAL 040 E</b>	kVA	17.5	<b>17.5</b>	17.5	16	12.5	16	<b>16</b>	16	14.5	11.5	18.5	<b>18.5</b>	18.5	17	13.5	19.5	<b>19.5</b>	19.5	17.5	14
	kW	14	14	14	13	10	13	13	13	11.5	9	15	15	15	13.5	11	15.5	15.5	15.5	14	11
<b>TAL 040 F</b>	kVA	20	<b>20</b>	20	18	14	18	<b>18</b>	18	16.5	13	21	<b>21</b>	21	19	15	22	<b>22</b>	22	20	15.5
	kW	16	16	16	14.5	11	14.5	14.5	14.5	13	10.5	17	17	17	15	12	17.5	17.5	17.5	16	12.5

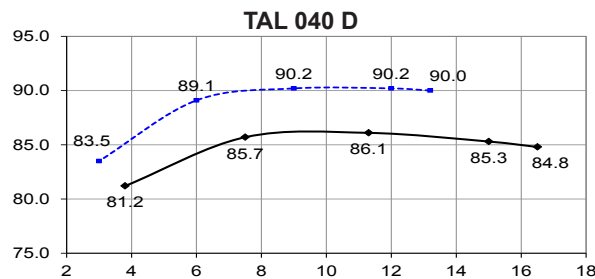
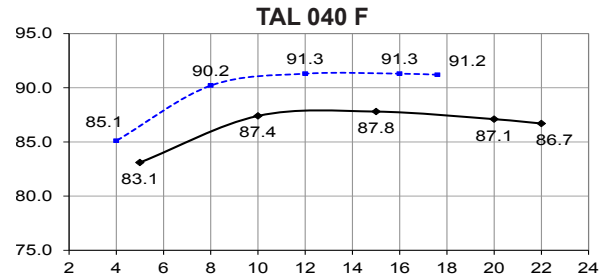
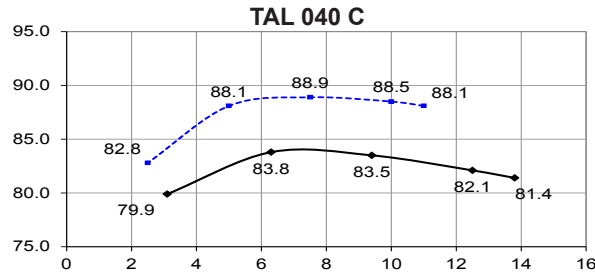
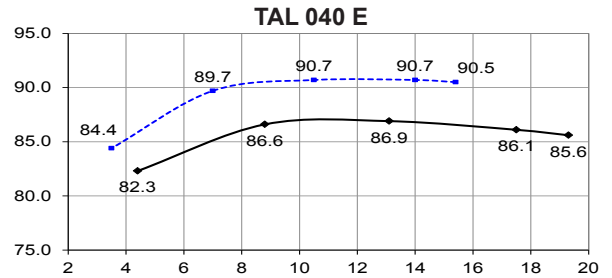
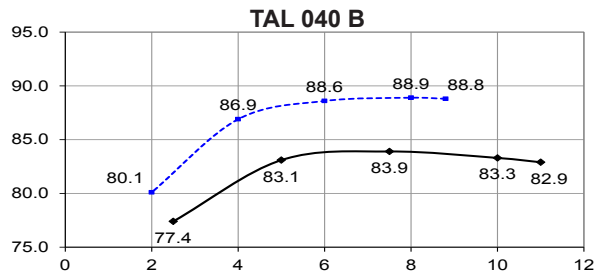
(\*) 12 wires option

## Ratings 60 Hz - 1800 R.P.M.

kVA / kW - P.F. = 0.8																									
Duty / T° C	Continuous / 40 °C					Continuous / 40 °C					Stand-by / 40 °C					Stand-by / 27 °C									
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.						
<b>Y</b>	380V	416V	440V	480V		380V	416V	440V	480V		380V	416V	440V	480V		380V	416V	440V	480V						
<b>Δ</b>	220V	240V			240V	220V	240V			240V	220V	240V			240V	220V	240V			240V					
<b>YY (*)</b>	208V				220V	240V	208V				220V	240V	208V				220V	240V	208V				220V	240V	
<b>ΔΔ (*)</b>					240V					240V					240V					240V					240V
<b>TAL 040 B</b>	kVA	10	11	11.5	<b>12.5</b>	9	9	10	10.5	<b>11.5</b>	8	10.5	11.5	12	<b>13.5</b>	9.5	11	12	12.5	<b>14</b>	10				
	kW	8	9	9	10	7	7	8	8.5	9	6.5	8.5	9	9.5	11	7.5	9	9.5	10	11	8				
<b>TAL 040 C</b>	kVA	12.5	13.5	14.5	<b>15.5</b>	11.5	11.5	12.5	13	<b>14</b>	10.5	13.5	14.5	15.5	<b>16.5</b>	12	14	15	16	<b>17</b>	12.5				
	kW	10	11	11.5	12.5	9	9	10	10.5	11	8.5	11	11.5	12.5	13	9.5	11	12	13	13.5	10				
<b>TAL 040 D</b>	kVA	15	16.5	17.5	<b>19</b>	13	13.5	15	16	<b>17.5</b>	12	16	17.5	18.5	<b>20</b>	14	16.5	18	19.5	<b>21</b>	14.5				
	kW	12	13	14	15	10.5	11	12	13	14	9.5	13	14	15	16	11	13	14.5	15.5	17	11.5				
<b>TAL 040 E</b>	kVA	17.5	19	20	<b>22</b>	14.5	16	17.5	18	<b>20</b>	13	18.5	20	21	<b>23.5</b>	15.5	19.5	21	22	<b>24</b>	16				
	kW	14	15	16	17.5	11.5	13	14	14.5	16	10.5	15	16	17	19	12.5	15.5	17	17.5	19	13				
<b>TAL 040 F</b>	kVA	20	22	23	<b>25</b>	16	18	20	21	<b>23</b>	14.5	21	23.5	24.5	<b>26.5</b>	17	22	24	25.5	<b>27.5</b>	17.5				
	kW	16	17.5	18.5	20	13	14.5	16	17	18.5	11.5	17	19	19.5	21	13.5	17.5	19	20.5	22	14				

(\*) 12 wires option

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



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

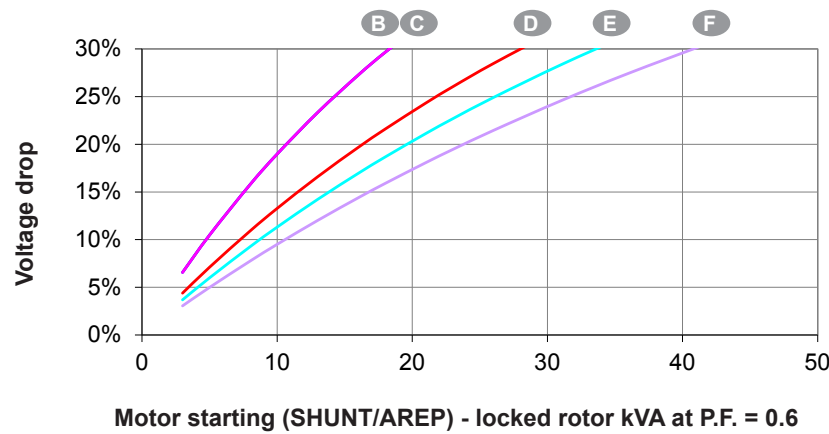
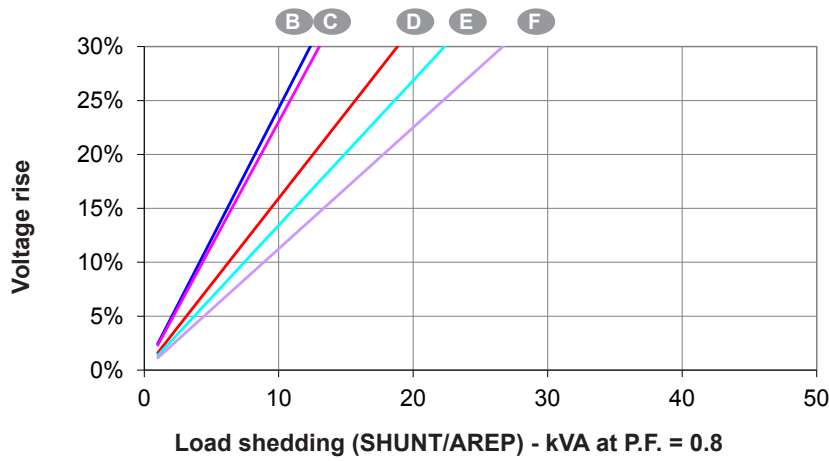
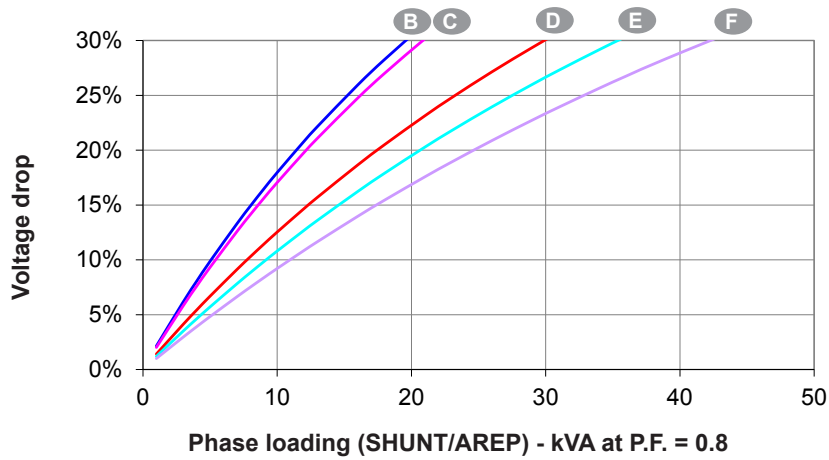
	B	C	D	E	F
<b>Kcc</b> Short-circuit ratio	0.7	0.56	0.6	0.6	0.61
<b>Xd</b> Direct-axis synchro. reactance unsaturated	167	209	190	195	193
<b>Xq</b> Quadrature-axis synchro. reactance unsaturated	85	106	97	99	98
<b>T'do</b> No-load transient time constant	719	719	837	878	926
<b>X'd</b> Direct-axis transient reactance saturated	17.2	21.5	16.8	16.4	15.4
<b>T'd</b> Short-circuit transient time constant	74	74	74	74	74
<b>X''d</b> Direct-axis subtransient reactance saturated	8.6	10.7	8.4	8.2	7.7
<b>T''d</b> Subtransient time constant	7	7	7.4	7	7
<b>X''q</b> Quadrature-axis subtransient reactance saturated	16.1	20.1	16.8	16.8	16.2
<b>Xo</b> Zero sequence reactance	0.71	0.89	0.7	0.68	0.64
<b>X2</b> Negative sequence reactance saturated	12.36	15.45	12.66	12.55	12.01
<b>Ta</b> Armature time constant	11	11	11	11	11

## Other class H / 400 V data

	B	C	D	E	F
<b>io (A)</b> No-load excitation current SHUNT/AREP	0.77 / 1.06	0.77 / 1.06	0.76 / 1.03	0.75 / 1.03	0.72 / 0.98
<b>ic (A)</b> On-load excitation current SHUNT/AREP	1.94 / 2.65	2.3 / 3.14	2.05 / 2.79	2.06 / 2.8	1.95 / 2.66
<b>uc (V)</b> On-load excitation voltage SHUNT/AREP	23.7 / 17.1	28 / 20.2	24.9 / 17.9	24.9 / 18	23.6 / 17
<b>ms</b> Response time ( $\Delta U = 20\%$ transient)	500	500	500	500	500
<b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT*	18.3	18.3	28	33.6	40.8
<b>%</b> Transient $\Delta U$ (on-load 4/4) SHUNT - P.F.: 0.8 <sub>LAG</sub>	18	20.5	17.8	17.5	16.9
<b>W</b> No-load losses	461	461	540	590	645
<b>W</b> Heat dissipation	1597	2172	2063	2255	2352

\* P.F. = 0.6

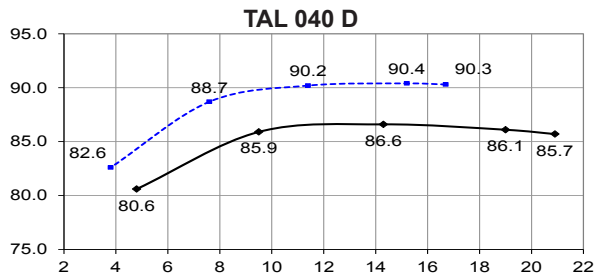
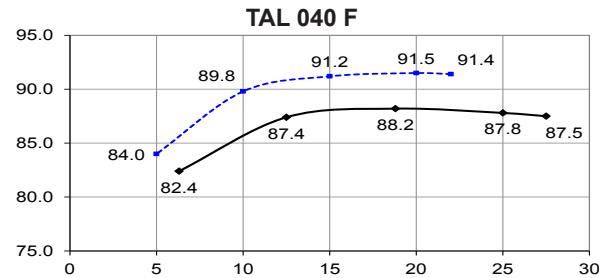
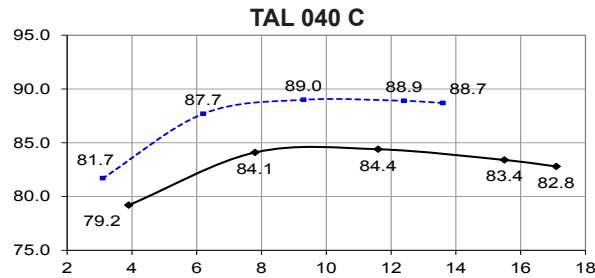
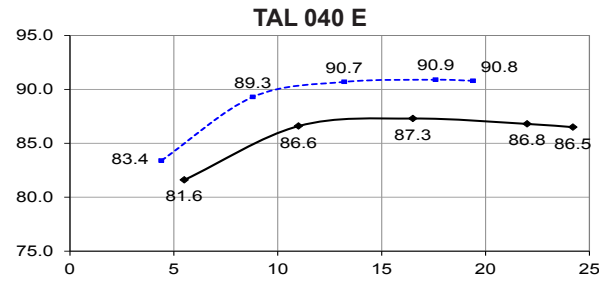
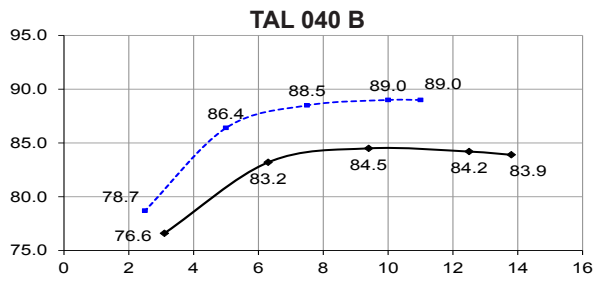
Transient voltage variation 400V - 50 Hz



- 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 ( $\Delta$ ) at 50 Hz, then kVA must be multiplied by  $(400/U)^2$  or  $(230/U)^2$ .

# TAL 040 - 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)



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

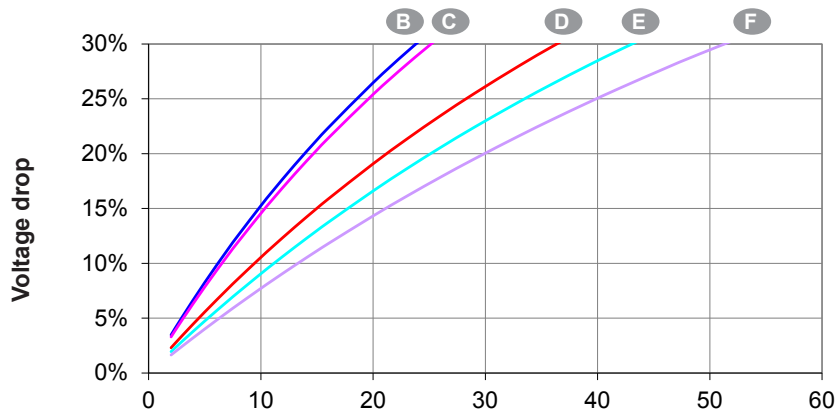
		B	C	D	E	F
<b>Kcc</b>	Short-circuit ratio	0.67	0.54	0.57	0.57	0.58
<b>Xd</b>	Direct-axis synchro. reactance unsaturated	174	216	201	204	201
<b>Xq</b>	Quadrature-axis synchro. reactance unsaturated	88	110	102	104	102
<b>T'do</b>	No-load transient time constant	719	719	837	878	926
<b>X'd</b>	Direct-axis transient reactance saturated	17.9	22.2	17.8	17.2	16.1
<b>T'd</b>	Short-circuit transient time constant	74	74	74	74	74
<b>X''d</b>	Direct-axis subtransient reactance saturated	8.9	11.1	8.9	8.6	8
<b>T''d</b>	Subtransient time constant	7	7	7.4	7	7
<b>X''q</b>	Quadrature-axis subtransient reactance saturated	16.7	20.7	17.8	17.6	16.9
<b>Xo</b>	Zero sequence reactance	0.74	0.92	0.74	0.71	0.67
<b>X2</b>	Negative sequence reactance saturated	12.87	15.96	13.36	13.15	12.51
<b>Ta</b>	Armature time constant	11	11	11	11	11

### Other class H / 480 V data

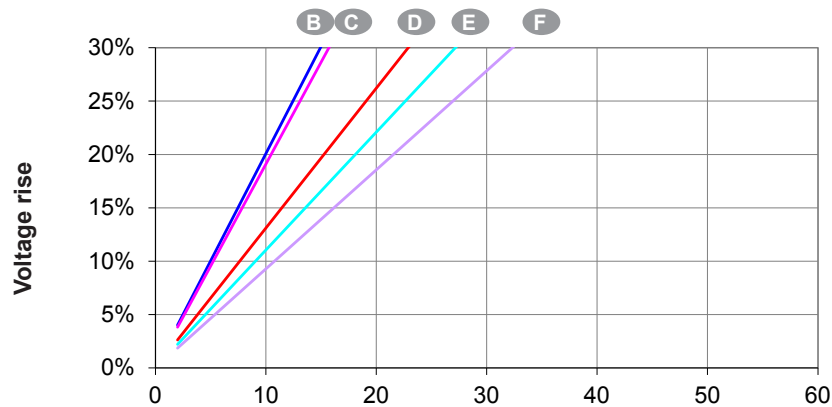
		B	C	D	E	F
<b>io (A)</b>	No-load excitation current SHUNT/AREP	0.77 / 1.06	0.77 / 1.06	0.76 / 1.03	0.75 / 1.02	0.72 / 0.98
<b>ic (A)</b>	On-load excitation current SHUNT/AREP	1.97 / 2.69	2.33 / 3.17	2.1 / 2.86	2.1 / 2.86	1.97 / 2.69
<b>uc (V)</b>	On-load excitation voltage SHUNT/AREP	24.1 / 17.4	28.4 / 20.5	25.6 / 18.5	25.5 / 18.4	24 / 17.3
<b>ms</b>	Response time ( $\Delta U = 20\%$ transient)	500	500	500	500	500
<b>kVA</b>	Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT*	21.9	22	33.6	40.3	48.9
<b>%</b>	Transient $\Delta U$ (on-load 4/4) SHUNT - P.F.: 0.8 <sub>LAG</sub>	18.4	20.9	18.3	18	17.3
<b>W</b>	No-load losses	643	643	755	825	904
<b>W</b>	Heat dissipation	1866	2464	2447	2654	2763

\* P.F. = 0.6

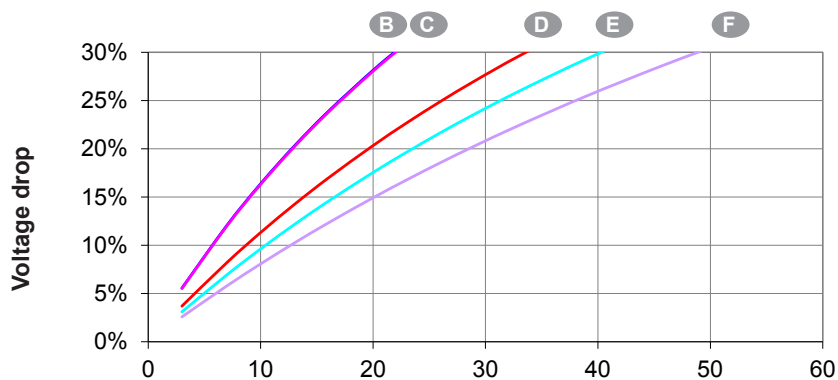
Transient voltage variation 480V - 60 Hz



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



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



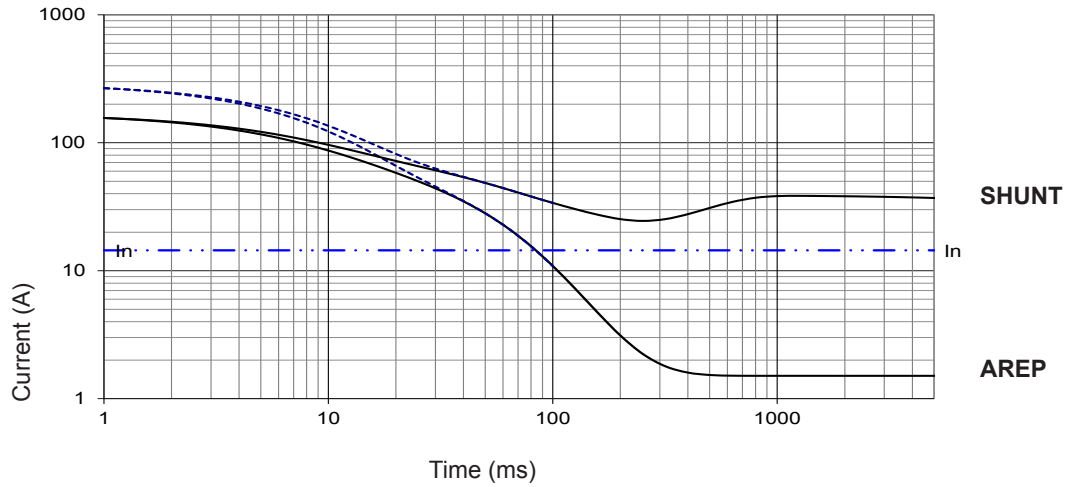
Motor starting (SHUNT/AREP) - locked rotor kVA at P.F. = 0.6

- 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 ( $\Delta$ ), 240V (YY) at 60 Hz, then kVA must be multiplied by  $(480/U)^2$  or  $(277/U)^2$  or  $(240/U)^2$ .

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

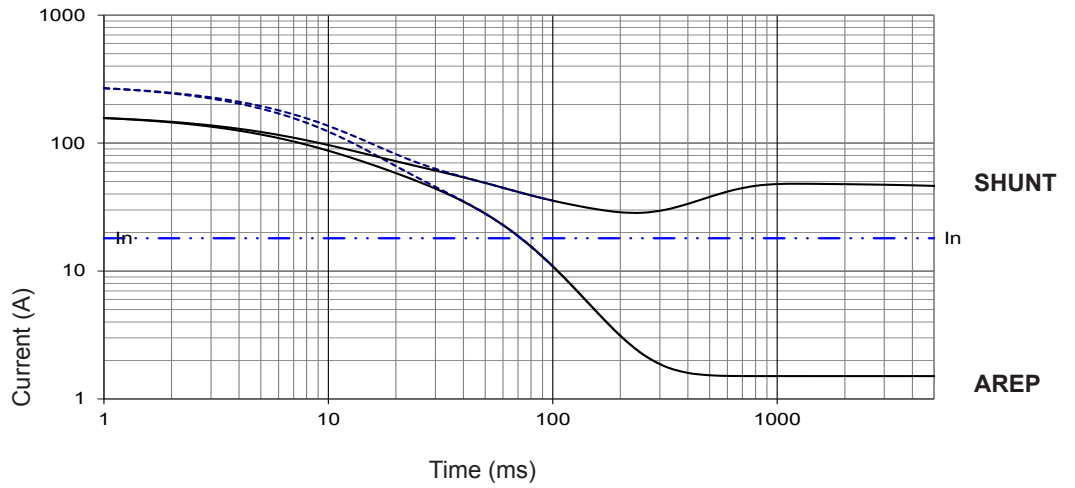
**TAL 040 B**

Symmetrical —  
Asymmetrical - - -



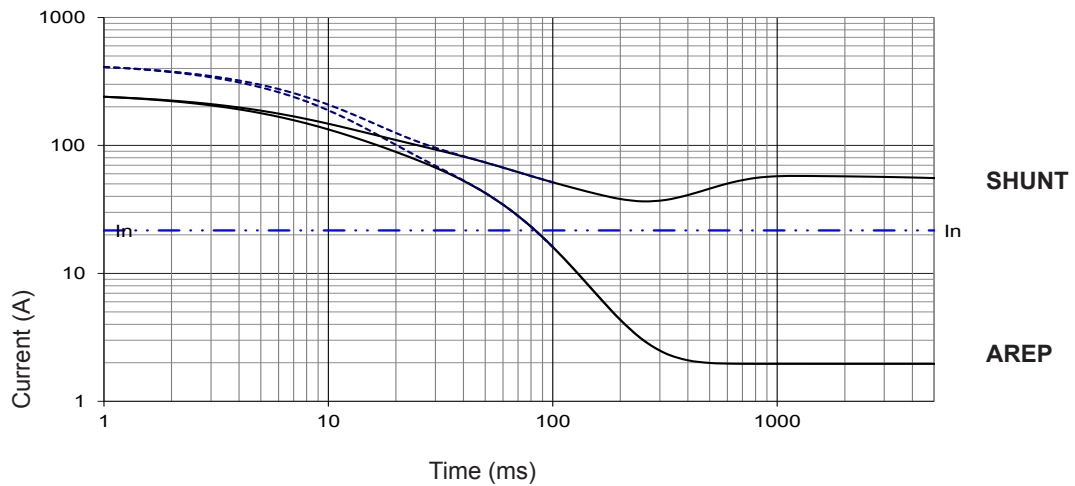
**TAL 040 C**

Symmetrical —  
Asymmetrical - - -



**TAL 040 D**

Symmetrical —  
Asymmetrical - - -



**Influence due to connection**

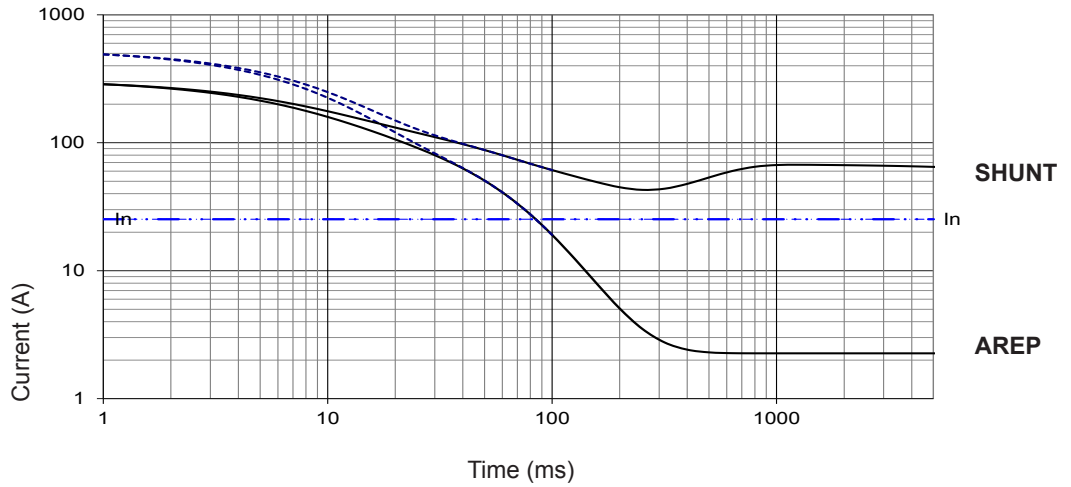
For (Δ) connection, use the following multiplication factor:  
- Current value x 1.732.



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

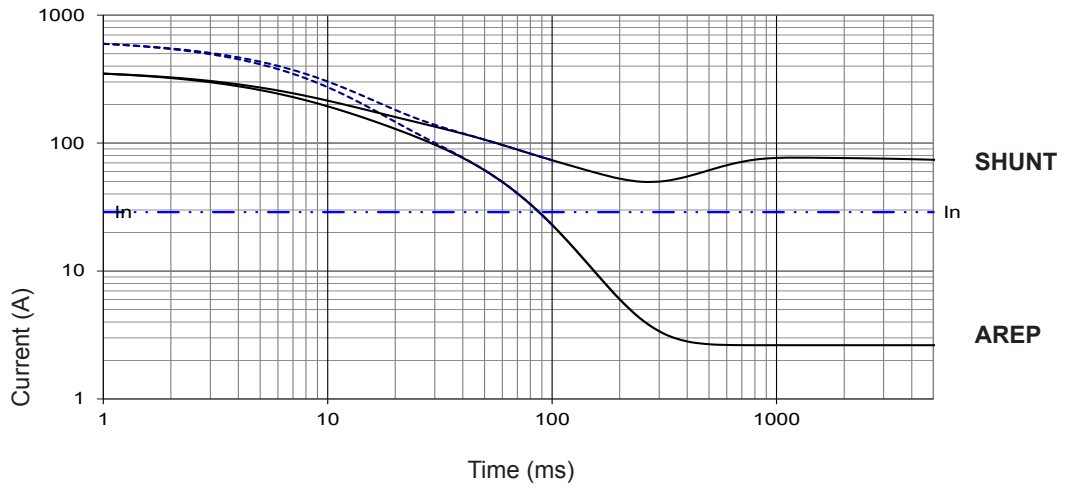
TAL 040 E

Symmetrical —  
Asymmetrical - - -



TAL 040 F

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 (AREP/PMG)	1	1.5	



# TAL 040 - Dedicated single-phase 10.5 to 16 kVA - 50 Hz / 11.5 to 17.5 kVA - 60 Hz

## General characteristics

Insulation class	H	Excitation system	SHUNT
Winding pitch	2/3	AVR type	R121
Number of wires	4	Voltage regulation (*)	± 2 %
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)	<b>50 Hz:</b> 0.06 - <b>60 Hz:</b> 0.07	Waveform: I.E.C. = FHT (**)	< 2 %



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

## Ratings / Efficiencies 50 Hz - 1500 R.P.M.

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		
Serie (SE) 	230 V	η %	230 V	230 V	230V	η %
Parallel (PA) 	115 V	η %	115 V	115 V	115 V	η %
<b>TAL 040 C</b>	10.5	82.4	9.5	11	11.5	81.2
<b>TAL 040 C1</b>	12	84.5	11	12.7	13.2	83.7
<b>TAL 040 D</b>	13.2	85.4	12	14	14.5	84.7
<b>TAL 040 E</b>	14.5	86.3	13.2	15.5	16	85.6
<b>TAL 040 F</b>	16	87.3	14.5	17	17.5	86.7

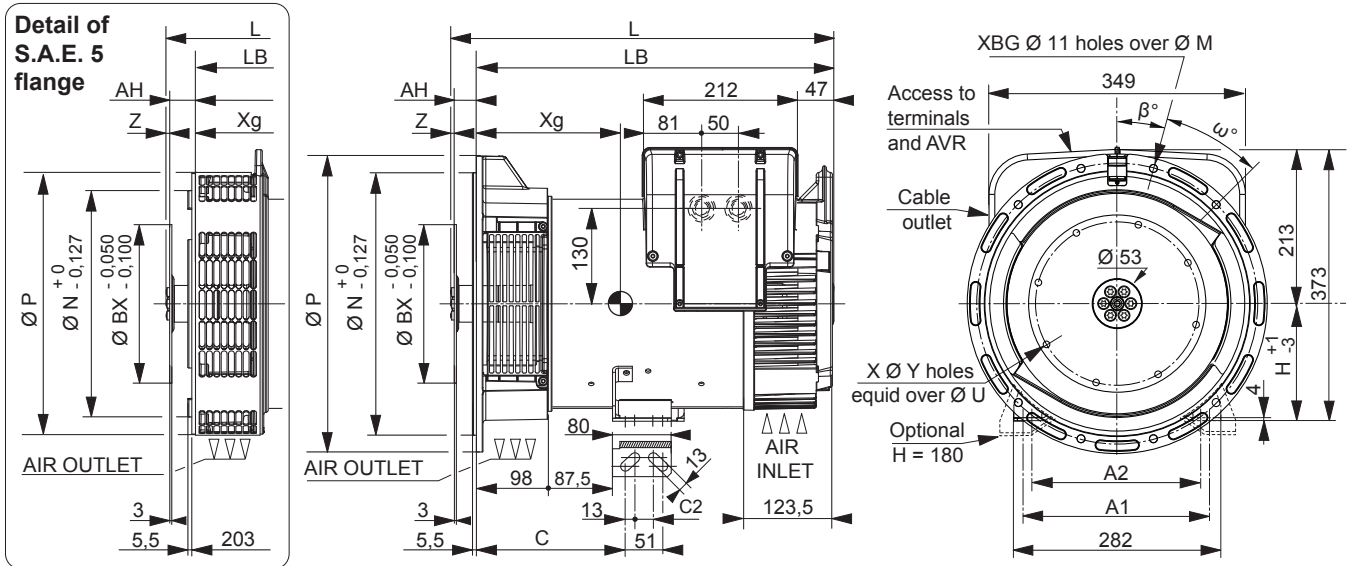
(\*) For P.F. 0.8: derating 15%

## Ratings / Efficiencies 60 Hz - 1800 R.P.M.

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		
Serie (SE) 	240 V	η %	240 V	240 V	240V	η %
Parallel (PA) 	120 V	η %	120 V	120 V	120 V	η %
<b>TAL 040 C</b>	11.5	82.6	10.5	12.7	12.5	81.7
<b>TAL 040 C1</b>	13.5	84.2	12.3	14.3	15	83.4
<b>TAL 040 D</b>	14.5	85	13.2	15.5	16	84.3
<b>TAL 040 E</b>	15.8	85.9	14.5	16.7	17.5	85.3
<b>TAL 040 F</b>	17.5	86.9	16	18.7	19.3	86.3

(\*) For P.F. 0.8: derating 15%

Single bearing general arrangement



Dimensions (mm) and weight				
Type	L maxi	LB	Xg	Weight (kg)
TAL 040 B	469	407	186	73
TAL 040 C	469	407	186	73
TAL 040 C1	469	407	196	80
TAL 040 D	499	437	204	87
TAL 040 E	499	437	221	92
TAL 040 F	519	457	221	102

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

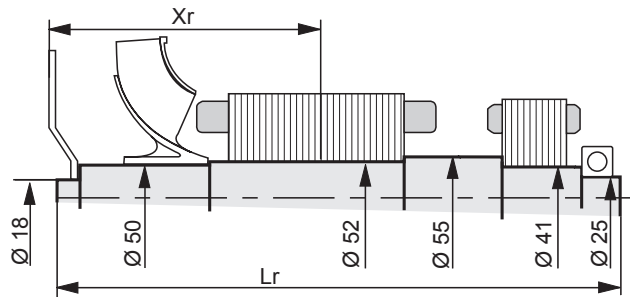
Coupling			
Flange	4	5	
Flex plate			
10	x	-	
8	x	-	
7 1/2	x	x	
6 1/2	x	x	
-	-	-	

Flange (mm)						
S.A.E.	P	N	M	XBG	$\beta^\circ$	$\omega^\circ$
5	358	314.32	333.38	8	22°30'	45°
4	408	361.95	381	12	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

Lmaxi = LB + AH

Torsional data



Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm <sup>2</sup> ): (4J = MD <sup>2</sup> )																
Type	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			
	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J
TAL 040 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
TAL 040 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
TAL 040 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
TAL 040 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
TAL 040 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
TAL 040 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. The torsional analysis of the transmission is imperative. All values are available upon request.



# TAL 042 - Three-phase 25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

## General characteristics

Insulation class	H	Excitation system 6 wires	SHUNT	AREP
Winding pitch	2/3	AVR type	R120	R180
Number of wires	6 (12 option)	Excitation system 12 wires (option)	SHUNT	AREP
Protection	IP 23	AVR type	R120 (*)	R180 (*)
Altitude	≤ 1000 m	Voltage regulation (**)		± 1 %
Overspeed	2250 R.P.M.	Total Harmonic Distortion THD (***) in no-load		< 2 %
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
AREP Short-circuit current = 2.7 In: 5 second		Waveform: I.E.C. = FHT (***)		< 2%

(\*) SHUNT: R220 - AREP: R438, R450 if ULc/us (\*\*) Steady state (\*\*\*) Total harmonic distortion between phases, no-load or on-load (non-distorting)

## Ratings 50 Hz - 1500 R.P.M.

kVA / kW - P.F. = 0.8																					
Duty / T° C		Continuous / 40 °C					Continuous / 40 °C					Stand-by / 40 °C				Stand-by / 27 °C					
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.		
<b>Y</b>		380V	400V	415V	440V		380V	400V	415V	440V		380V	400V	415V	440V		380V	400V	415V	440V	
<b>Δ</b>		220V	230V	240V		230V	220V	230V	240V		230V	220V	230V	240V		230V	220V	230V	240V		230V
<b>YY (*)</b>		220V					220V					220V					220V				
<b>ΔΔ (*)</b>						230V					230V					230V					230V
<b>TAL 042 A</b>	kVA	25	<b>25</b>	25	24.5	15	23	<b>23</b>	23	22.5	13.5	26.5	<b>26.5</b>	26.5	26	16	27.5	<b>27.5</b>	27.5	27	16.5
	kW	20	20	20	19.5	12	18.5	18.5	18.5	18	11	21	21	21	21	13	22	22	22	21.5	13
<b>TAL 042 B</b>	kVA	27	<b>27</b>	27	26	16	24.5	<b>24.5</b>	24.5	23.5	14.5	28.5	<b>28.5</b>	28.5	27.5	17	30	<b>30</b>	30	28.5	17.5
	kW	21.5	21.5	21.5	21	13	19.5	19.5	19.5	19	11.5	23	23	23	22	13.5	24	24	24	23	14
<b>TAL 042 C</b>	kVA	31	<b>32</b>	32	30	19	28	<b>29</b>	29	27.5	17.5	33	<b>34</b>	34	32	20	34	<b>35</b>	35	33	21
	kW	25	25.5	25.5	24	15	22.5	23	23	22	14	26.5	27	27	25.5	16	27	28	28	26.5	17
<b>TAL 042 D</b>	kVA	35	<b>35</b>	35	30.5	22	32	<b>32</b>	32	28	20	37	<b>37</b>	37	32.5	23.5	38.5	<b>38.5</b>	38.5	33.5	24
	kW	28	28	28	24.5	17.5	25.5	25.5	25.5	22.5	16	29.5	29.5	29.5	26	19	31	31	31	27	19
<b>TAL 042 E</b>	kVA	39.5	<b>40</b>	40	35	25	36	<b>36.5</b>	36.5	32	23	42	<b>42.5</b>	42.5	37	26.5	43.5	<b>45</b>	45	38.5	27.5
	kW	31.5	32	32	28	20	29	29	29	25.5	18.5	33.5	34	34	29.5	21	35	36	36	31	22
<b>TAL 042 F</b>	kVA	43	<b>45</b>	45	39	27	39	<b>41</b>	41	35.5	24.5	45.5	<b>47.5</b>	47.5	41.5	28.5	47.5	<b>50</b>	50	43	29.5
	kW	34.5	36	36	31	21.5	31	31	33	28.5	19.5	36.5	38	38	33	23	38	40	40	34.5	23.5
<b>TAL 042 G</b>	kVA	47.5	<b>50</b>	50	43	30	43	<b>45.5</b>	45.5	39	27.5	50	<b>53</b>	53	45.5	32	52	<b>55</b>	55	47.5	33
	kW	38	40	40	34.5	24	34.5	36.5	36.5	31	22	40	42	42	36.5	25.5	42	44	44	38	26.5
<b>TAL 042 H</b>	kVA	58	<b>60</b>	60	52	36	53	<b>55</b>	55	47	33	61	<b>64</b>	64	55	38	64	<b>66</b>	66	57	39.5
	kW	46	48	48	42	29	42	44	44	37.5	26.5	49	51	51	44	30.5	51	53	53	46	31.5

(\*) 12 wires option

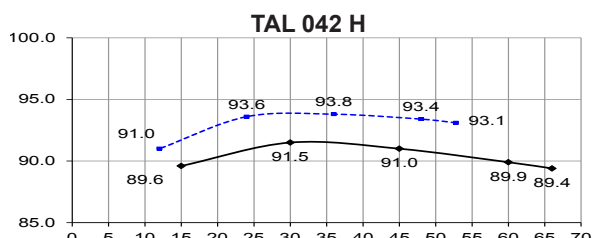
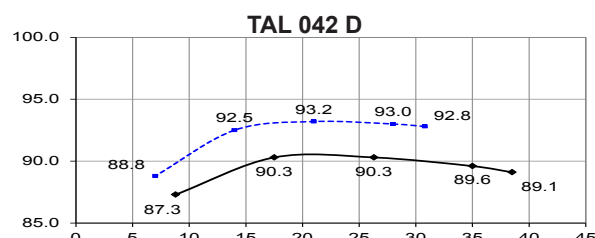
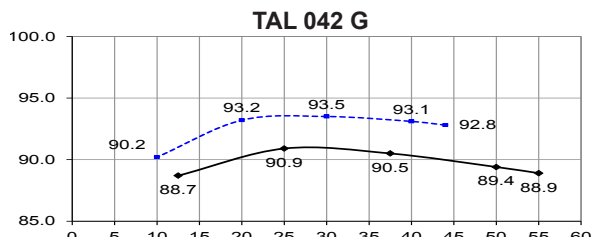
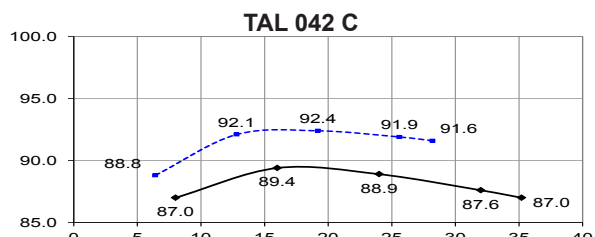
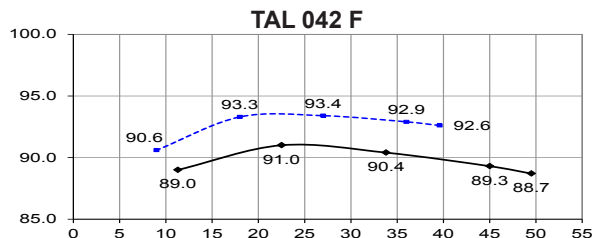
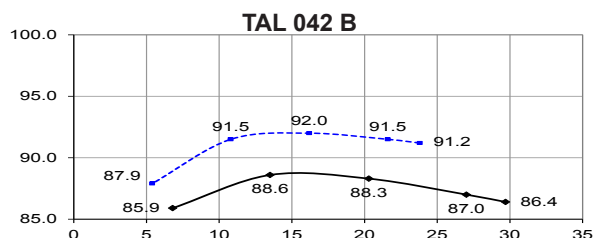
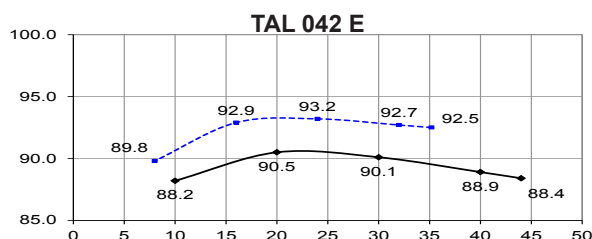
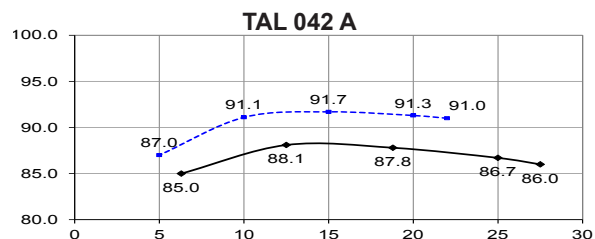
## Ratings 60 Hz - 1800 R.P.M.

kVA / kW - P.F. = 0.8																					
Duty / T° C		Continuous / 40 °C					Continuous / 40 °C					Stand-by / 40 °C				Stand-by / 27 °C					
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.		
<b>Y</b>		380V	416V	440V	480V		380V	416V	440V	480V		380V	416V	440V	480V		380V	416V	440V	480V	
<b>Δ</b>		220V	240V		240V	240V	220V	240V		240V	240V	220V	240V		240V	240V	220V	240V		240V	
<b>YY (*)</b>		208V				240V	208V				240V	208V				240V	208V				240V
<b>ΔΔ (*)</b>						240V					240V					240V					240V
<b>TAL 042 A</b>	kVA	29	31.5	31.5	<b>31.5</b>	18.9	26.5	28.5	28.5	<b>28.5</b>	17	30.5	33.5	33.5	<b>33.5</b>	20	32	34.5	34.5	<b>34.5</b>	20.8
	kW	23	25	25	25	15	21	23	23	23	13.5	24.5	27	27	27	16	25.5	27.5	27.5	27.5	16.5
<b>TAL 042 B</b>	kVA	30	32	34	<b>34</b>	19.2	27.5	29	31	<b>31</b>	17.5	32	34	36	<b>36</b>	20.5	33	35	37.5	<b>37.5</b>	21.1
	kW	24	25.5	27	27	15.5	22	23	25	25	14	25.5	27	29	29	16.5	26.5	28	30	30	17
<b>TAL 042 C</b>	kVA	33.5	37	39	<b>40</b>	23	30.5	33.5	35.5	<b>36.5</b>	21	35.5	39	41.5	<b>42.5</b>	24.5	37	40.5	43	<b>44</b>	25.5
	kW	27	29.5	31	32	18.5	24.5	27	28.5	29	17	28.5	31	33	34	19.5	29.5	32.5	34.5	35	20.5
<b>TAL 042 D</b>	kVA	37.5	40.5	43	<b>44</b>	24	34	37	39	<b>40</b>	22	40	43	45.5	<b>46.5</b>	25.5	41.5	44.3	47.5	<b>48.5</b>	26.5
	kW	30	32.5	34.5	35	19	27	29.5	31	32	17.5	32	34.5	36.5	37	20.5	33	35.5	38	39	21
<b>TAL 042 E</b>	kVA	41.5	45.5	48.5	<b>50</b>	27.5	38	41.5	44	<b>45.5</b>	25	44	48	51	<b>53</b>	29	45.5	50	53.5	<b>55</b>	30.5
	kW	33	36.5	39	40	22	30.5	33	35	36.5	20	35	38.5	41	42	23	36.5	40	43	44	24.5
<b>TAL 042 F</b>	kVA	44	48	51	<b>56.5</b>	30	40	43.5	46.5	<b>51</b>	27.5	46.5	51	54	<b>60</b>	32	48.5	53	56	<b>62</b>	33
	kW	35	38.5	41	45	24	32	35	37	41	22	37	41	43	48	25.5	39	42	45	50	26.5
<b>TAL 042 G</b>	kVA	49	53.5	56.5	<b>62.5</b>	34	44.5	48.5	51	<b>57</b>	31	52	57	60	<b>66.5</b>	36	54	59	62	<b>69</b>	37.5
	kW	39	43	45	50	27	35.5	39	41	46	25	42	46	48	53	29	43	47	50	55	30
<b>TAL 042 H</b>	kVA	57	63	66.5	<b>75</b>	39	52	57	61	<b>68</b>	35.5	60	67	70	<b>80</b>	41.5	62.5	69	73	<b>82.5</b>	43
	kW	46	50	53	60	31	42	46	49	54	28.5	48	54	56	64	33	50	55	58	66	34.5

(\*) 12 wires option

# TAL 042 - 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)



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

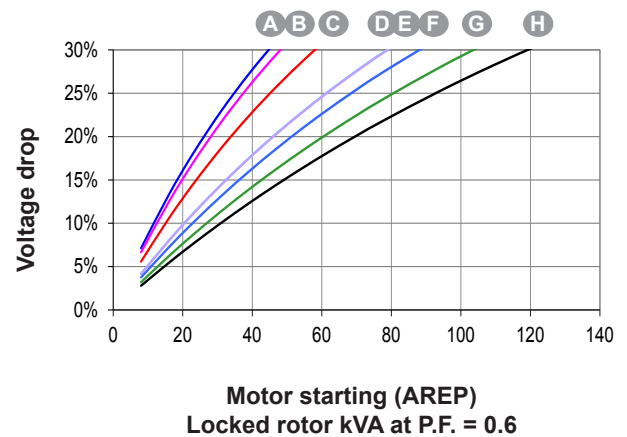
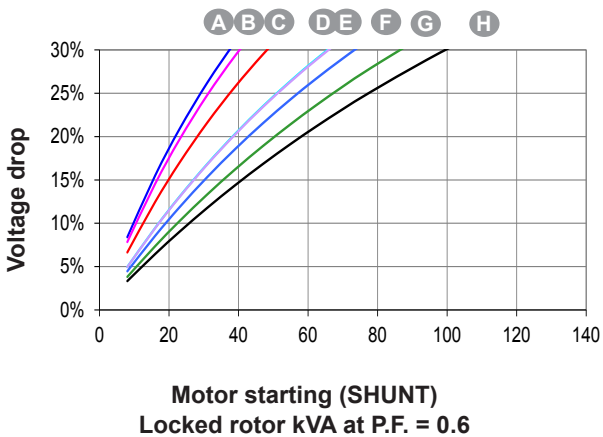
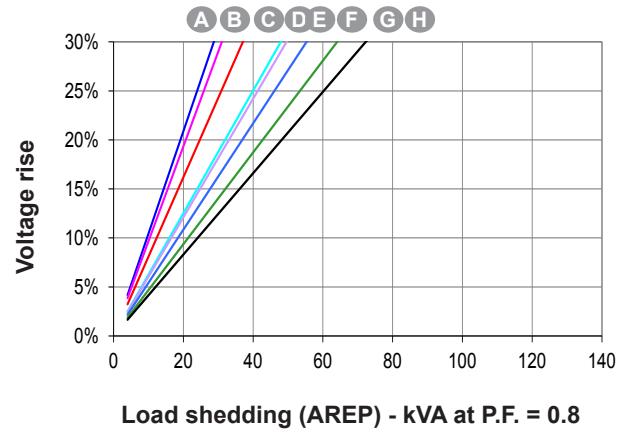
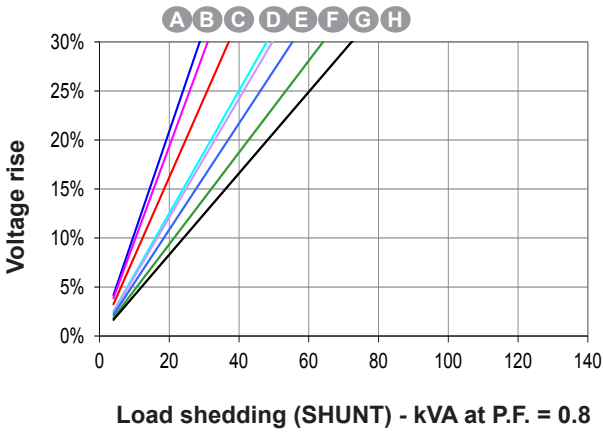
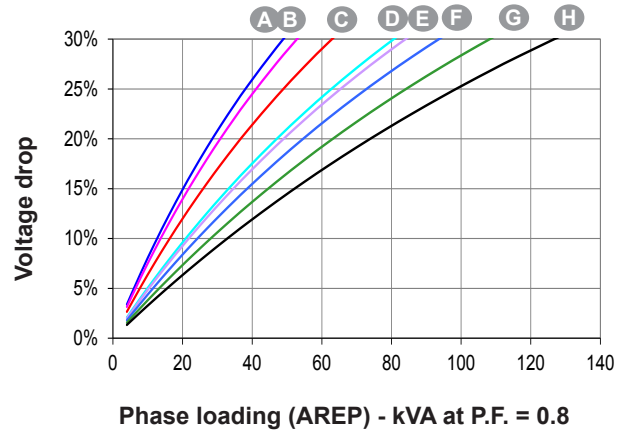
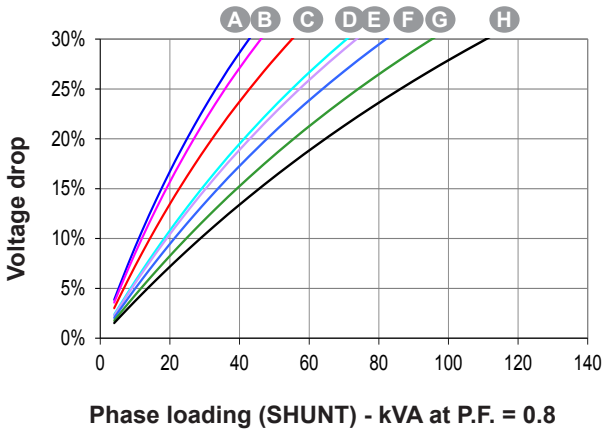
	A	B	C	D	E	F	G	H
<b>Kcc</b> Short-circuit ratio	0.49	0.46	0.44	0.49	0.42	0.4	0.43	0.4
<b>Xd</b> Direct-axis synchro. reactance unsaturated	257	267	279	246	281	294	283	303
<b>Xq</b> Quadrature-axis synchro. reactance unsaturated	131	136	142	125	143	150	144	154
<b>T'do</b> No-load transient time constant	786	813	861	944	944	980	998	1031
<b>X'd</b> Direct-axis transient reactance saturated	16.3	16.4	16.2	13	14.8	15	14.1	14.7
<b>T'd</b> Short-circuit transient time constant	50	50	50	50	50	50	50	50
<b>X''d</b> Direct-axis subtransient reactance saturated	8.1	8.2	8.1	6.5	7.4	7.5	7	7.3
<b>T''d</b> Subtransient time constant	5	5	5	5	5	5	5	5
<b>X''q</b> Quadrature-axis subtransient reactance saturated	11.5	11.6	11.5	9.2	10.6	10.7	10.1	10.5
<b>Xo</b> Zero sequence reactance	0.68	0.68	0.67	0.54	0.62	0.62	0.59	0.61
<b>X2</b> Negative sequence reactance saturated	9.88	9.91	9.82	7.89	9.02	9.12	8.61	8.93
<b>Ta</b> Armature time constant	8	8	8	8	8	8	8	8

## Other class H / 400 V data

<b>io (A)</b> No-load excitation current SHUNT/AREP	0.63	0.6	0.59	0.56	0.56	0.54	0.58	0.48
<b>ic (A)</b> On-load excitation current SHUNT/AREP	2.14	2.13	2.21	1.92	2.19	2.23	2.38	2.09
<b>uc (V)</b> On-load excitation voltage SHUNT/AREP	32.2	32	32.8	28.5	32.1	32.3	33.9	33.5
<b>ms</b> Response time ( $\Delta U = 20\%$ transient)	500	500	500	500	500	500	500	500
<b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT*	37.4	40.3	48.2	65.6	65.9	73.4	86.4	99.5
<b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP*	44.7	48.1	58	78.8	78.9	88	103.6	119.2
<b>%</b> Transient $\Delta U$ (on-load 4/4) SHUNT - P.F.: 0.8 <sub>LAG</sub>	20.1	20.1	20	17.5	19	19.1	18.4	18.9
<b>%</b> Transient $\Delta U$ (on-load 4/4) AREP - P.F.: 0.8 <sub>LAG</sub>	18	18	17.9	15.7	17	17.1	16.5	16.9
<b>W</b> No-load losses	739	733	785	888	888	908	1063	1152
<b>W</b> Heat dissipation	3067	3209	3593	3248	3955	4307	4694	5364

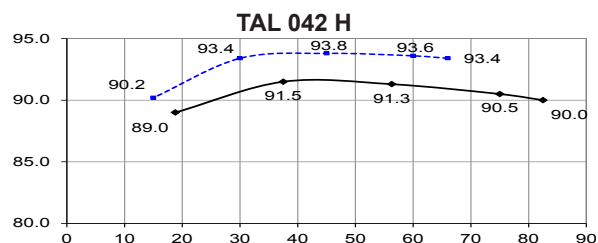
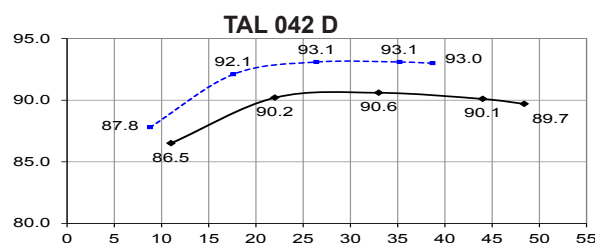
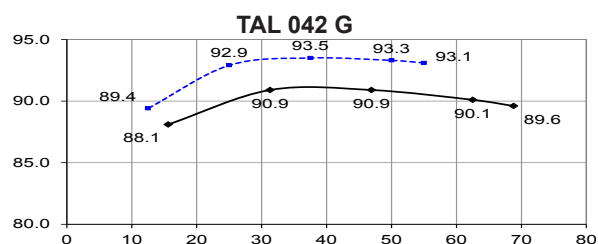
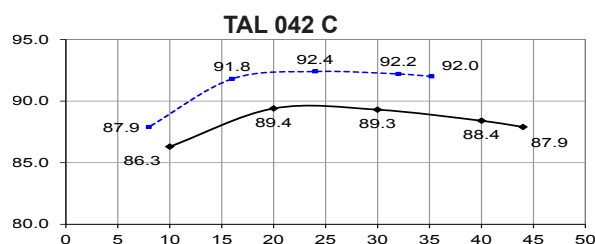
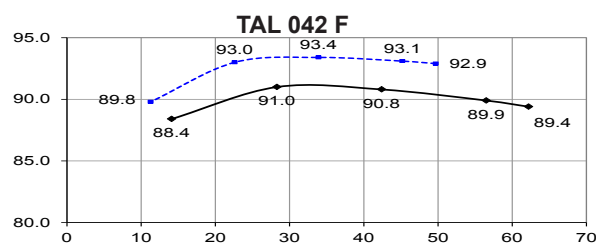
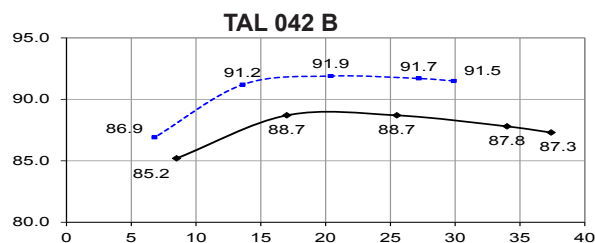
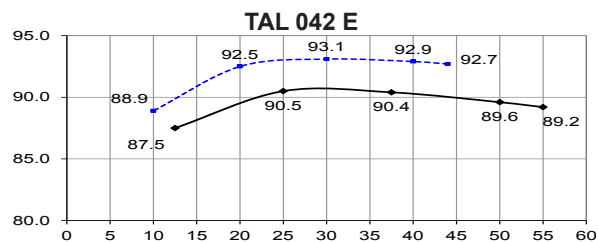
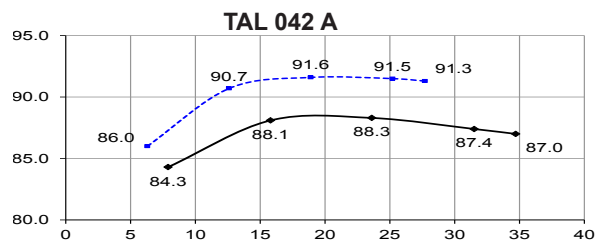
\* P.F. = 0.6

Transient voltage variation 400V - 50 Hz



- 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  $(230/U)^2$ .

## Efficiencies 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
<b>Kcc</b> Short-circuit ratio	0.47	0.44	0.42	0.46	0.41	0.38	0.41	0.38
<b>Xd</b> Direct-axis synchro. reactance unsaturated	270	280	292	257	292	308	295	316
<b>Xq</b> Quadrature-axis synchro. reactance unsaturated	138	143	148	131	149	157	150	161
<b>T'do</b> No-load transient time constant	786	813	861	944	944	980	998	1031
<b>X'd</b> Direct-axis transient reactance saturated	17.2	17.2	16.9	13.6	15.5	15.7	14.7	15.3
<b>T'd</b> Short-circuit transient time constant	50	50	50	50	50	50	50	50
<b>X''d</b> Direct-axis subtransient reactance saturated	8.6	8.6	8.4	6.8	7.7	7.8	7.3	7.6
<b>T''d</b> Subtransient time constant	5	5	5	5	5	5	5	5
<b>X''q</b> Quadrature-axis subtransient reactance saturated	12.1	12.1	12	9.7	11	11.2	10.5	10.9
<b>Xo</b> Zero sequence reactance	0.71	0.71	0.7	0.56	0.64	0.65	0.61	0.63
<b>X2</b> Negative sequence reactance saturated	10.37	10.4	10.24	8.27	9.39	9.55	8.97	9.3
<b>Ta</b> Armature time constant	8	8	8	8	8	8	8	8

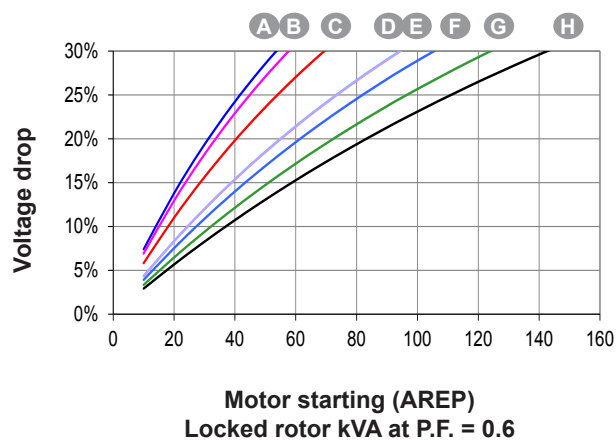
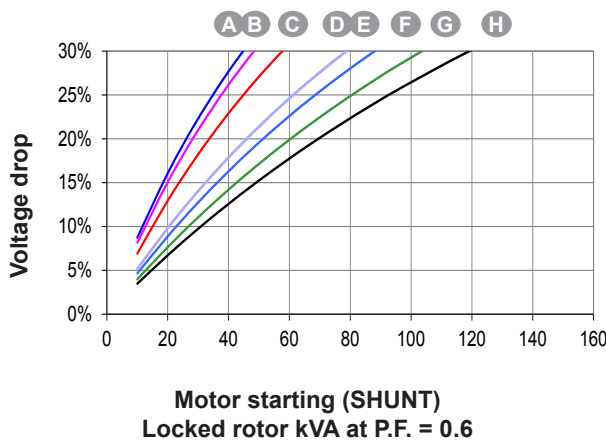
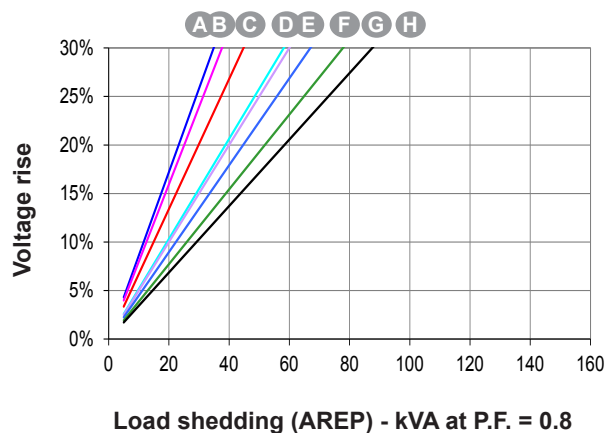
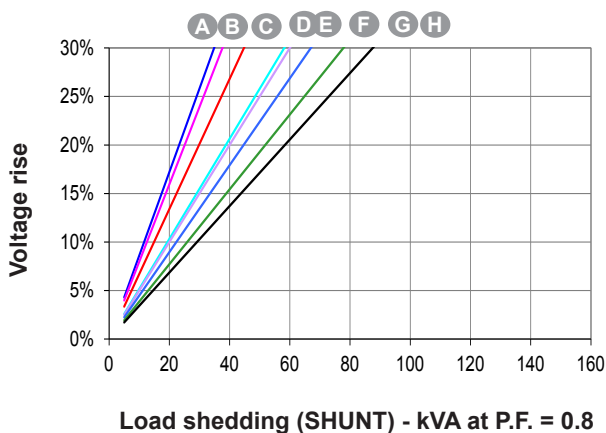
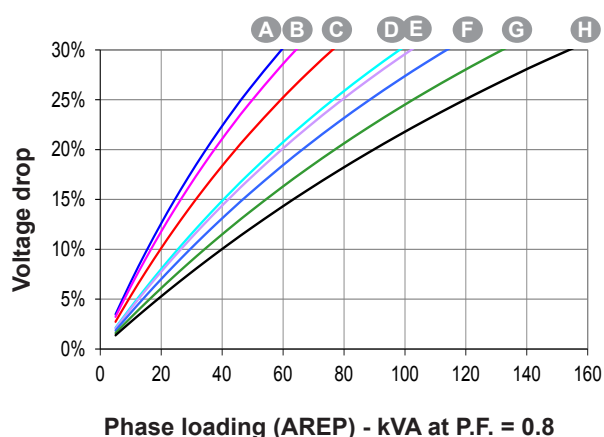
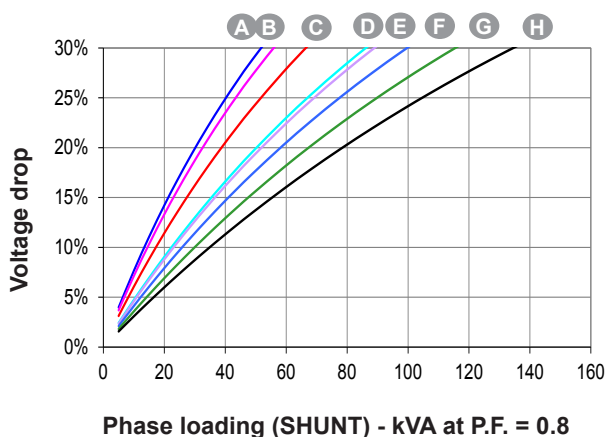
## Other class H / 480 V data

<b>io (A)</b> No-load excitation current SHUNT/AREP	0.63	0.6	0.59	0.56	0.56	0.54	0.58	0.48
<b>ic (A)</b> On-load excitation current SHUNT/AREP	2.16	2.15	2.21	1.92	2.17	2.21	2.32	2.04
<b>uc (V)</b> On-load excitation voltage SHUNT/AREP	32.8	32.6	33.3	29	32.4	32.7	34.1	33.6
<b>ms</b> Response time ( $\Delta U = 20\%$ transient)	500	500	500	500	500	500	500	500
<b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT*	44.8	48.4	57.7	78.7	78.9	88.1	103.6	119.2
<b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP*	53.6	57.7	69.4	94.3	94.5	105.4	124.1	142.7
<b>%</b> Transient $\Delta U$ (on-load 4/4) SHUNT - P.F.: 0.8 <sub>LAG</sub>	20.7	20.7	20.5	18	19.4	19.6	18.9	19.3
<b>%</b> Transient $\Delta U$ (on-load 4/4) AREP - P.F.: 0.8 <sub>LAG</sub>	18.5	18.6	18.4	16.2	17.4	17.6	16.9	17.3
<b>W</b> No-load losses	1051	1047	1121	1270	1270	1300	1513	1642
<b>W</b> Heat dissipation	3603	3764	4184	3867	4620	5061	5489	6277

\* P.F. = 0.6



Transient voltage variation 480V - 60 Hz

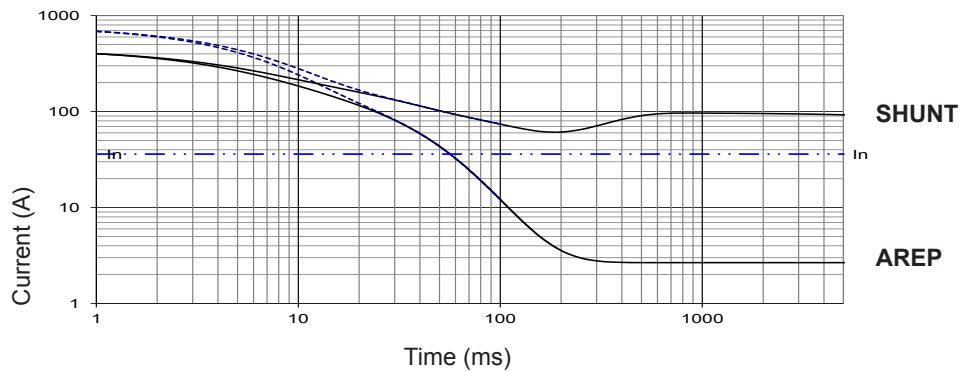


- 1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by  $K = \text{Sine P.F.} / 0.8$
- 2) For voltages other than 480V (Y), 277V ( $\Delta$ ), 240V (YY) at 60 Hz, then kVA must be multiplied by  $(480/U)^2$  or  $(277/U)^2$  or  $(240/U)^2$ .

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

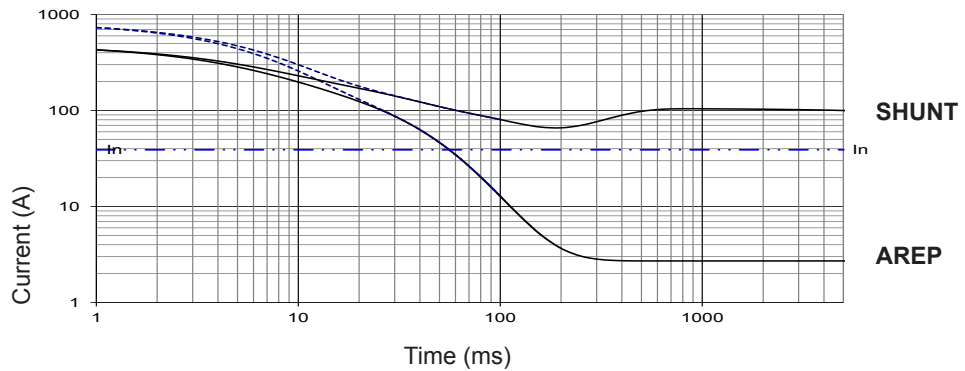
TAL 042 A

Symmetrical —  
Asymmetrical - - -



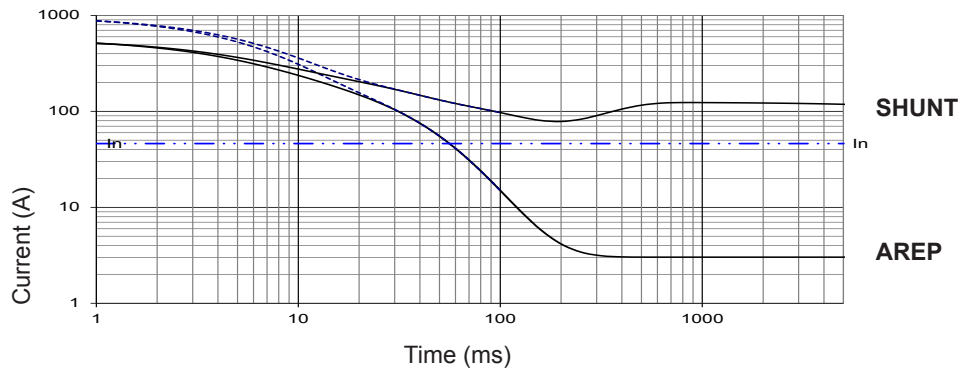
TAL 042 B

Symmetrical —  
Asymmetrical - - -



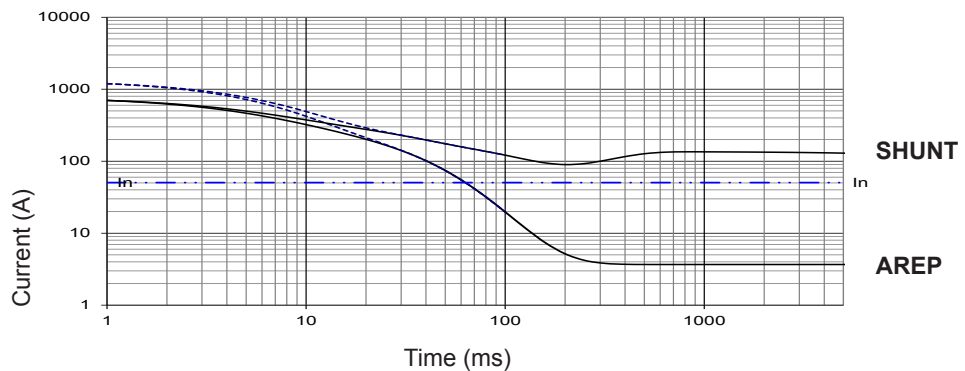
TAL 042 C

Symmetrical —  
Asymmetrical - - -



TAL 042 D

Symmetrical —  
Asymmetrical - - -



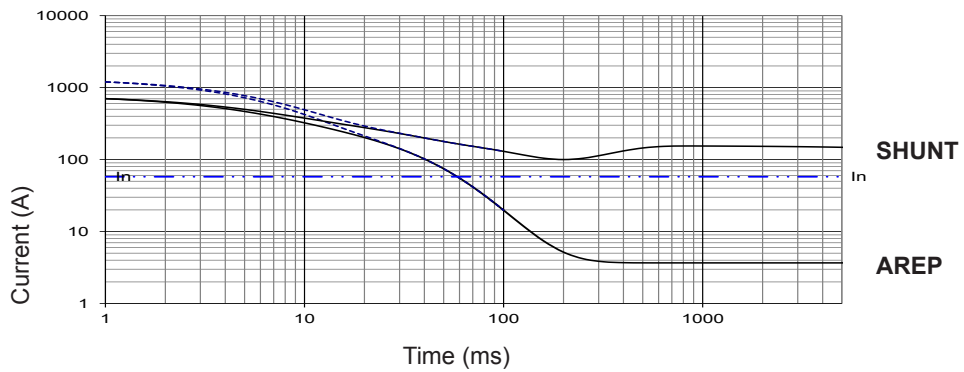
Influence due to connection

For ( $\Delta$ ) connection, use the following multiplication factor:  
- Current value x 1.732.

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

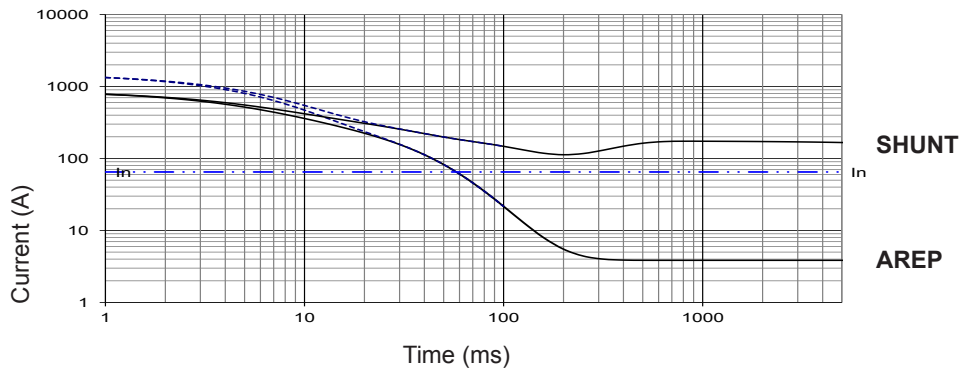
**TAL 042 E**

Symmetrical —  
Asymmetrical - - -



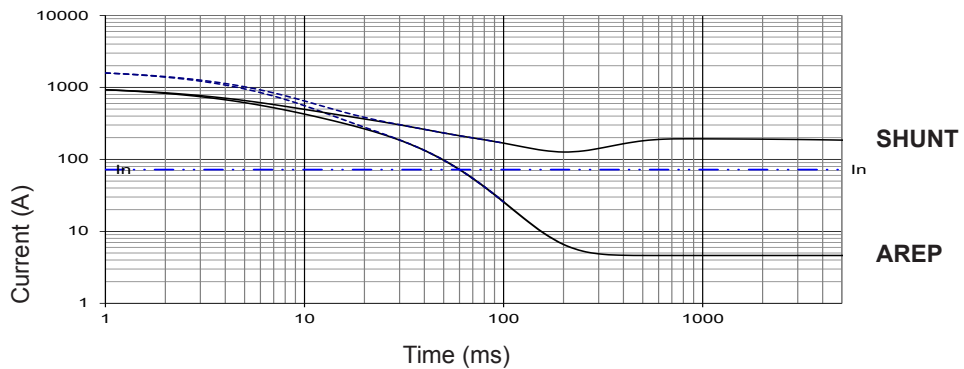
**TAL 042 F**

Symmetrical —  
Asymmetrical - - -



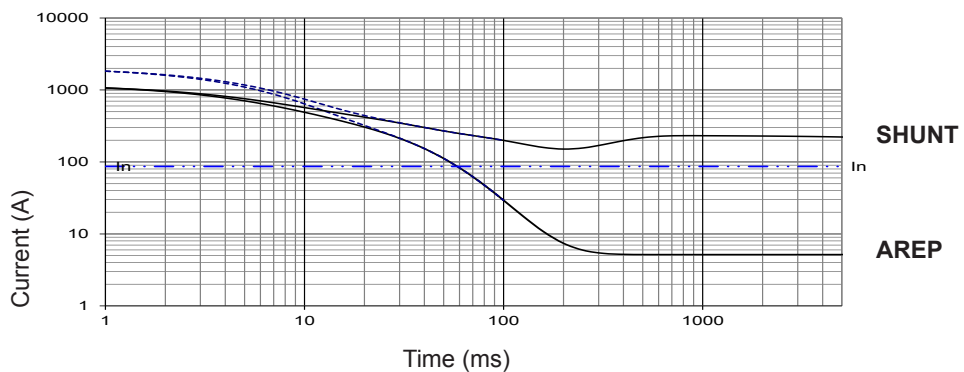
**TAL 042 G**

Symmetrical —  
Asymmetrical - - -



**TAL 042 H**

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 (AREP/PMG)	1	1.5	



# TAL 042 - Dedicated single-phase 18 to 42 kVA - 50 Hz / 23 to 53 kVA - 60 Hz

## General characteristics

Insulation class	H	Excitation system	SHUNT
Winding pitch	2/3	AVR type	R121
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 (m <sup>3</sup> /s)	50 Hz: 0.10 - 60 Hz: 0.13	Waveform: I.E.C. = FHT (**)	< 2 %



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

## Ratings / Efficiencies 50 Hz - 1500 R.P.M. - Winding M

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		
Serie (SE) 	230 V	η %	230 V	230 V	230V	η %
Parallel (PA) 	115 V	η %	115 V	115 V	115 V	η %
<b>TAL 042 A</b>	18	88.1	16.5	19	20	87.4
<b>TAL 042 B</b>	20.5	88.1	18.5	21.5	22.5	87.4
<b>TAL 042 C</b>	22.5	89	20.5	24	25	88.4
<b>TAL 042 D</b>	25	90.6	23	26.5	27.5	90.2
<b>TAL 042 E</b>	28	90.1	25.5	29.5	31	89.6
<b>TAL 042 F</b>	31.5	90.3	28.5	33.5	34.5	89.8
<b>TAL 042 G</b>	35	90.4	32	37	38.5	89.9
<b>TAL 042 H</b>	42	90.5	38	44.5	46	90

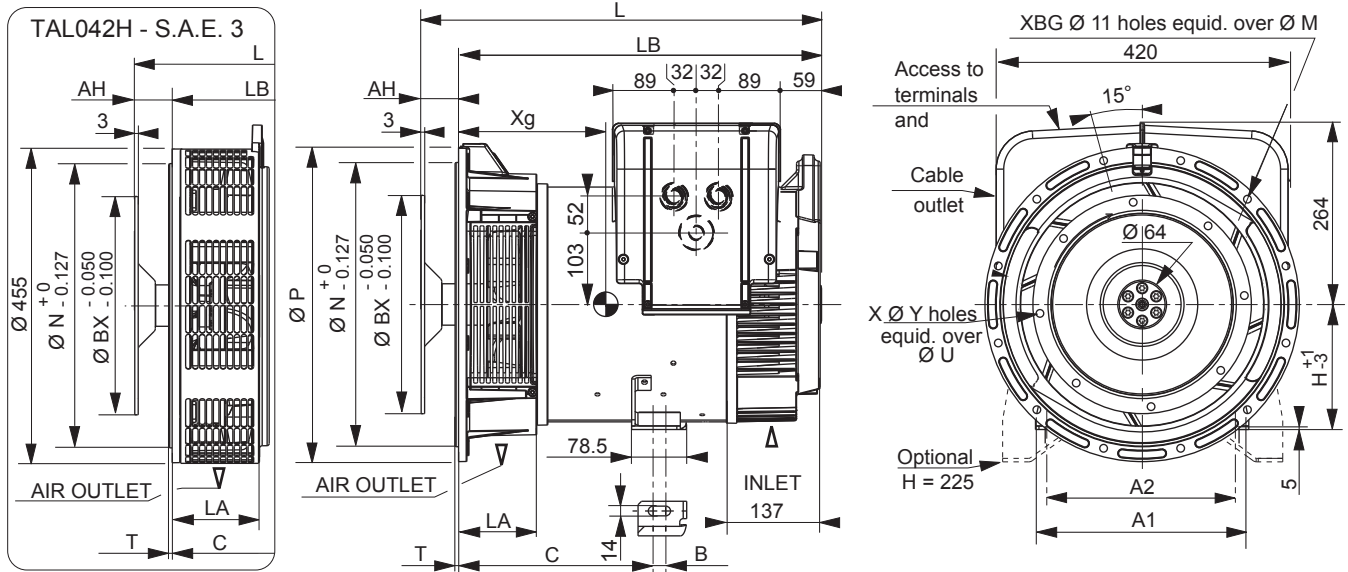
(\*) For P.F. 0.8 : derating 15%

## Ratings / Efficiencies 60 Hz - 1800 R.P.M. - Winding M1

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		
Serie (SE) 	240 V	η %	240 V	240 V	240V	η %
Parallel (PA) 	120 V	η %	120 V	120 V	120 V	η %
<b>TAL 042 A</b>	23	88.3	21	24.5	25.5	87.7
<b>TAL 042 B</b>	26	88.3	23.5	27.5	28.5	87.6
<b>TAL 042 C</b>	29	89	26	30.5	32	88.5
<b>TAL 042 D</b>	31.5	90.4	28.5	33.5	34.5	90
<b>TAL 042 E</b>	36	89.8	33	38	39.5	89.2
<b>TAL 042 F</b>	40	90	36.5	42.5	44	89.5
<b>TAL 042 G</b>	47	90	43	50	51	89.5
<b>TAL 042 H</b>	53	90.5	48	56	58	90

(\*) For P.F. 0.8 : derating 15%

Single bearing general arrangement



Dimensions (mm) and weight (kg)				
Type	L maxi	LB	Xg	Weight (kg)
TAL 042 A	565	503	237	117
TAL 042 B	565	503	242	122
TAL 042 C	565	503	252	133
TAL 042 D	610	548	275	165
TAL 042 E	610	548	275	165
TAL 042 F	650	588	287	181
TAL 042 G	650	588	295	186
TAL 042 H	662	622	310	187

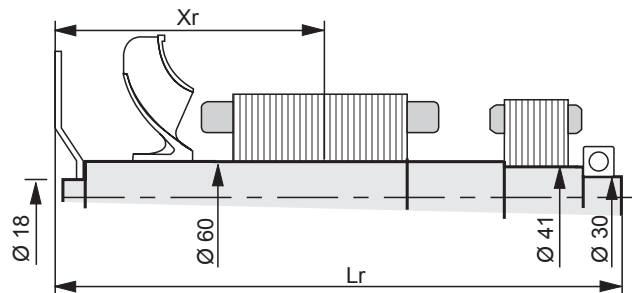
Shaft height (mm)	
	Option
<b>H</b>	225
Feet length	
<b>C</b>	299 (A, B, C) / 321.5
<b>B</b>	23
<b>A1</b>	400
<b>A2</b>	356

Coupling		
Flange	3	4
Flex plate	x	-
<b>11 1/2</b>	x	x
<b>10</b>	-	x
<b>8</b>	-	x
<b>7 1/2</b>	-	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 data



Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm <sup>2</sup> ): (4J = MD <sup>2</sup> )																
Type	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			
	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J
TAL 042 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
TAL 042 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
TAL 042 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
TAL 042 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
TAL 042 E	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
TAL 042 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
TAL 042 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
TAL 042 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

NOTE : Dimensions are for information only and may be subject to modifications. The torsional analysis of the transmission is imperative. All values are available upon request.



# TAL 044 - Three-phase 70 to 165 kVA - 50 Hz / 88 to 206 kVA - 60 Hz

## General characteristics

Insulation class	H	Excitation system 6 wires	SHUNT	AREP
Winding pitch	2/3	AVR type	R120	R180
Number of wires	6 (12 option)	Excitation system 12 wires (option)	SHUNT	AREP
Protection	IP 23	AVR type	R120 (*)	R180 (*)
Altitude	≤ 1000 m	Voltage regulation (**)	± 1 %	
Overspeed	2250 R.P.M.	Total Harmonic Distortion THD (***) in no-load	< 2 %	
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 second		Waveform: I.E.C. = FHT (***)	< 2%	

(\*) SHUNT: R220 - AREP: R438, R450 if ULc/us (\*\*) Steady state (\*\*\*) Total harmonic distortion between phases, no-load or on-load (non-distorting)

## Ratings 50 Hz - 1500 R.P.M.

kVA / kW - P.F. = 0.8																					
Duty / T° C	Continuous / 40 °C					Continuous / 40 °C				Stand-by / 40 °C				Stand-by / 27 °C							
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.				
<b>Y</b>	380V	400V	415V	440V		380V	400V	415V	440V		380V	400V	415V	440V		380V	400V	415V	440V		
<b>Δ</b>	220V	230V	240V		230V	220V	230V	240V	230V		220V	230V	240V	230V		220V	230V	240V	230V		
<b>YY (*)</b>					220V					220V					220V					220V	
<b>ΔΔ (*)</b>					230V					230V					230V					230V	
<b>TAL 044 A</b>	kVA	70	<b>70</b>	70	63	42	64	<b>64</b>	64	57	38	74	<b>74</b>	74	66	45	77	<b>77</b>	77	69	46
	kW	56	56	56	50	33.5	51	51	51	46	30.5	59	59	59	53	36	62	62	62	55	37
<b>TAL 044 B</b>	kVA	80	<b>80</b>	80	72	48	73	<b>73</b>	73	66	44	85	<b>85</b>	85	76	51	88	<b>88</b>	88	79	53
	kW	64	64	64	58	38.5	58	58	58	53	35	68	68	68	61	41	70	70	70	63	42
<b>TAL 044 C</b>	kVA	90	<b>90</b>	90	81	54	82	<b>82</b>	82	74	49	95	<b>95</b>	95	85	57	100	<b>100</b>	100	89	59
	kW	72	72	72	65	43	66	66	66	59	39	76	76	76	68	46	80	80	80	71	47
<b>TAL 044 D</b>	kVA	100	<b>100</b>	100	90	60	91	<b>91</b>	91	82	55	106	<b>106</b>	106	95	64	110	<b>110</b>	110	99	66
	kW	80	80	80	72	48	73	73	73	66	44	85	85	85	76	51	88	88	88	79	53
<b>TAL 044 E</b>	kVA	125	<b>125</b>	125	113	67	114	<b>114</b>	114	102	61	133	<b>133</b>	133	118	71	138	<b>138</b>	138	124	74
	kW	100	100	100	90	54	91	91	91	82	49	106	106	106	94	57	110	110	110	99	59
<b>TAL 044 H</b>	kVA	135	<b>135</b>	135	122	73	123	<b>123</b>	123	111	66	143	<b>143</b>	143	128	77	149	<b>149</b>	149	134	80
	kW	108	108	108	98	58	98	98	98	89	53	114	114	114	102	62	119	119	119	107	64
<b>TAL 044 J</b>	kVA	150	<b>150</b>	150	135	80	137	<b>137</b>	137	123	73	159	<b>159</b>	159	142	85	165	<b>165</b>	165	149	88
	kW	120	120	120	108	64	110	110	110	98	58	127	127	127	114	68	132	132	132	119	70
<b>TAL 044 K</b>	kVA	165	<b>165</b>	165	138	88	150	<b>150</b>	150	125	80	175	<b>175</b>	175	150	93	181	<b>181</b>	181	157	97
	kW	132	132	132	110	70	120	120	120	100	64	140	140	140	120	74	145	145	145	126	78

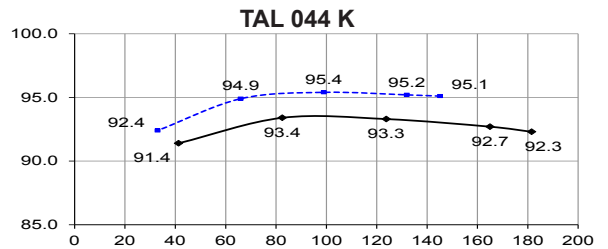
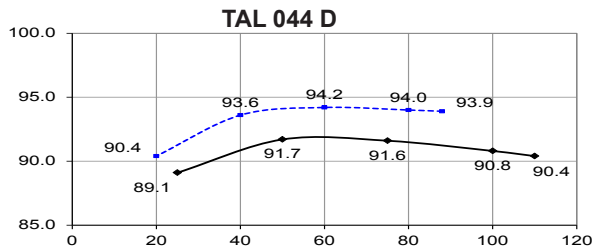
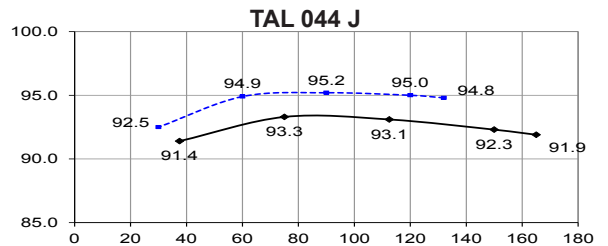
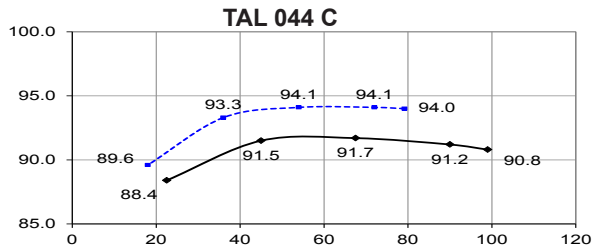
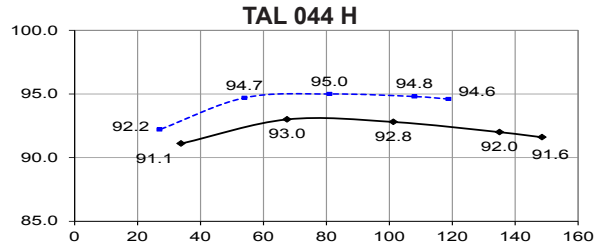
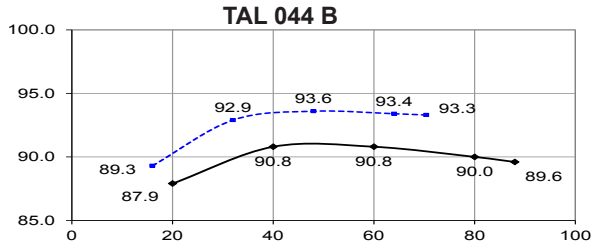
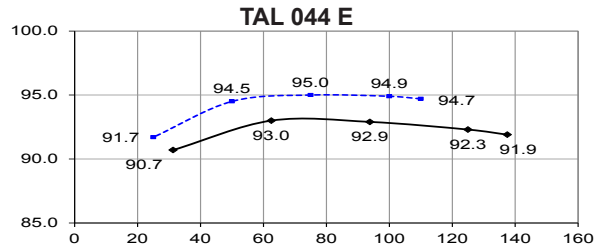
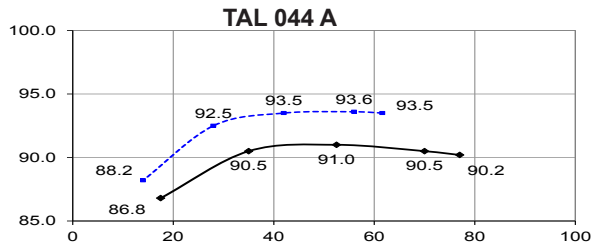
(\*) 12 wires option

## Ratings 60 Hz - 1800 R.P.M.

kVA / kW - P.F. = 0.8																					
Duty / T° C	Continuous / 40 °C					Continuous / 40 °C				Stand-by / 40 °C				Stand-by / 27 °C							
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.				
<b>Y</b>	380V	416V	440V	480V		380V	416V	440V	480V		380V	416V	440V	480V		380V	416V	440V	480V		
<b>Δ</b>	220V	240V		240V	220V	240V		240V		220V	240V		240V		220V	240V		240V			
<b>YY (*)</b>					208V	220V	240V					208V	220V	240V					208V	220V	240V
<b>ΔΔ (*)</b>					240V					240V					240V					240V	
<b>TAL 044 A</b>	kVA	69	76	80	<b>88</b>	46	63	69	73	<b>80</b>	42	73	81	85	<b>93</b>	49	76	84	88	<b>97</b>	51
	kW	55	61	64	70	37	50	55	58	64	33.6	58	65	68	74	39.2	61	67	70	78	41
<b>TAL 044 B</b>	kVA	79	87	92	<b>100</b>	52	72	79	84	<b>91</b>	47	84	92	98	<b>106</b>	55	87	96	101	<b>110</b>	57
	kW	63	70	74	80	42	58	63	67	73	37.6	67	74	78	85	44	70	77	81	88	46
<b>TAL 044 C</b>	kVA	89	98	103	<b>113</b>	59	81	89	94	<b>103</b>	54	94	104	109	<b>120</b>	63	98	108	113	<b>124</b>	65
	kW	71	78	82	90	47	65	71	75	82	43	75	83	87	96	50	78	86	90	99	52
<b>TAL 044 D</b>	kVA	99	108	115	<b>125</b>	65	90	98	105	<b>114</b>	59	105	114	122	<b>133</b>	69	109	119	127	<b>138</b>	72
	kW	79	86	92	100	52	72	78	84	91	47	84	91	98	106	55	87	95	102	110	58
<b>TAL 044 E</b>	kVA	124	135	143	<b>156</b>	76	113	123	130	<b>142</b>	69	131	143	152	<b>165</b>	81	136	149	157	<b>172</b>	84
	kW	99	108	114	125	61	90	98	104	114	55	105	114	122	132	65	109	119	126	138	67
<b>TAL 044 H</b>	kVA	134	146	155	<b>169</b>	81	122	133	141	<b>154</b>	74	142	155	164	<b>179</b>	86	147	161	171	<b>186</b>	89
	kW	107	117	124	135	65	98	106	113	123	59	114	124	131	143	69	118	129	137	149	71
<b>TAL 044 J</b>	kVA	148	163	172	<b>188</b>	95	135	148	157	<b>171</b>	86	157	173	182	<b>199</b>	101	163	179	189	<b>207</b>	105
	kW	118	130	138	150	76	108	118	126	137	69	126	138	146	159	81	130	143	151	166	84
<b>TAL 044 K</b>	kVA	165	179	189	<b>206</b>	105	148	163	172	<b>187</b>	96	173	190	200	<b>218</b>	111	179	197	208	<b>227</b>	116
	kW	132	143	151	165	84	118	130	138	150	77	138	152	160	174	89	143	158	166	182	93

(\*) 12 wires option

Efficiencies 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	K
<b>Kcc</b> Short-circuit ratio	0.57	0.5	0.53	0.48	0.43	0.4	0.4	0.42
<b>Xd</b> Direct-axis synchro. reactance unsaturated	294	336	307	341	334	361	359	343
<b>Xq</b> Quadrature-axis synchro. reactance unsaturated	150	171	156	174	170	184	183	175
<b>T'do</b> No-load transient time constant	2475	2475	2308	2308	2154	2154	2112	2077
<b>X'd</b> Direct-axis transient reactance saturated	11.9	13.6	13.3	14.7	15.5	16.7	17	16.5
<b>T'd</b> Short-circuit transient time constant	100	100	100	100	100	100	100	100
<b>X''d</b> Direct-axis subtransient reactance saturated	7.1	8.1	7.9	8.8	9.3	10	10.2	9.9
<b>T''d</b> Subtransient time constant	10	10	10	10	10	10	10	10
<b>X''q</b> Quadrature-axis subtransient reactance saturated	16.1	18.3	17	18.9	18.9	20.4	20.4	19.5
<b>Xo</b> Zero sequence reactance	0.49	0.56	0.55	0.61	0.64	0.69	0.7	0.68
<b>X2</b> Negative sequence reactance saturated	11.62	13.28	12.53	13.92	14.12	15.25	15.31	14.74
<b>Ta</b> Armature time constant	15	15	15	15	15	15	15	15

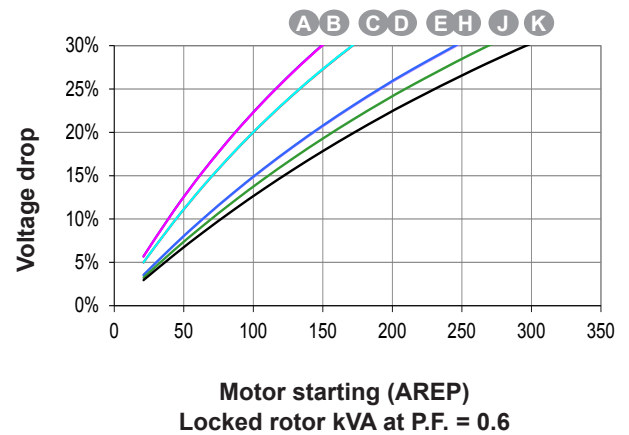
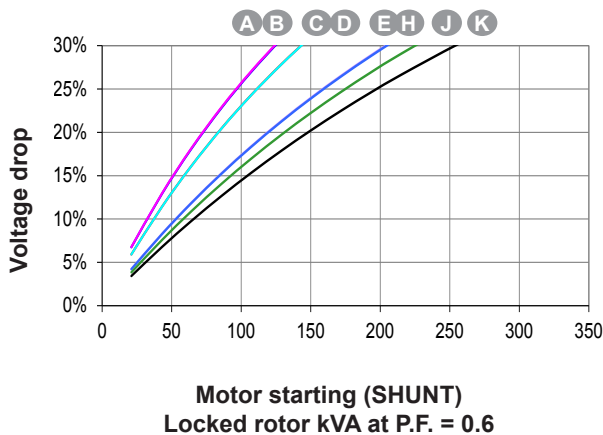
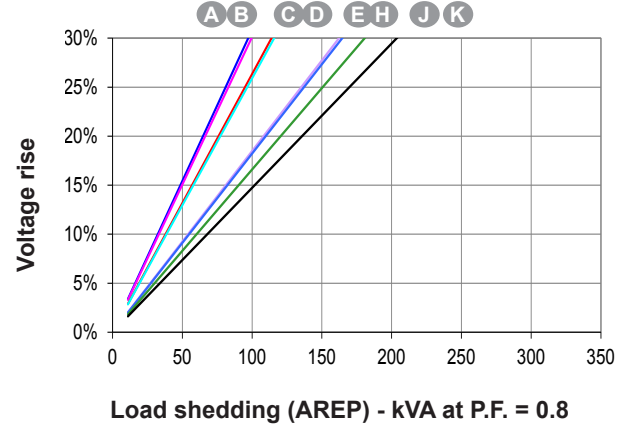
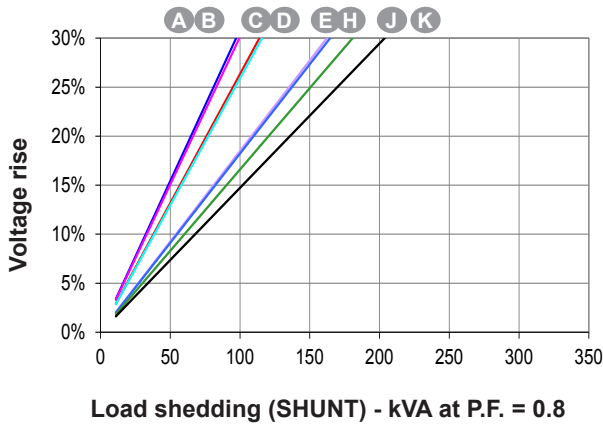
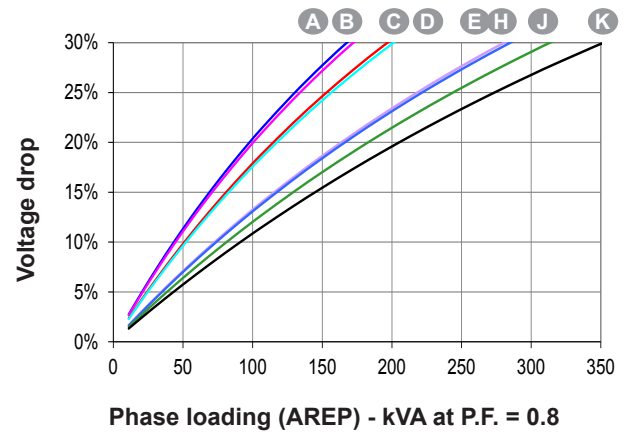
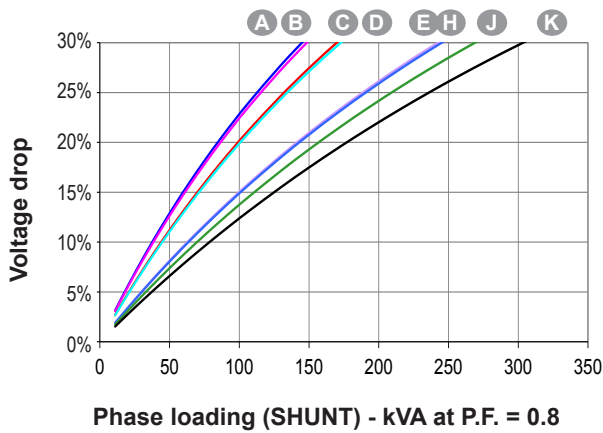
Other class H / 400 V data

<b>io (A)</b> No-load excitation current SHUNT/AREP	1.08	1.08	1.03	1.03	0.87	0.87	0.85	0.88
<b>ic (A)</b> On-load excitation current SHUNT/AREP	3.35	3.8	3.54	3.96	3.31	3.59	3.6	3.63
<b>uc (V)</b> On-load excitation voltage SHUNT/AREP	23.2	26.1	24.1	26.7	25.6	27.5	27.4	27.4
<b>ms</b> Response time ( $\Delta U = 20\%$ transient)	500	500	500	500	500	500	500	500
<b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT*	124.4	123.9	143.1	143.2	204	204.8	224.9	253.8
<b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP*	149.2	149.4	171.4	171.2	246.2	245.1	269.1	296.2
<b>%</b> Transient $\Delta U$ (on-load 4/4) SHUNT - P.F.: 0.8 <sub>LAG</sub>	17.2	18.8	18.5	19.9	18.2	19.1	19.3	18.9
<b>%</b> Transient $\Delta U$ (on-load 4/4) AREP - P.F.: 0.8 <sub>LAG</sub>	15.2	16.6	16.4	17.6	16.1	16.9	17.1	16.7
<b>W</b> No-load losses	1943	1943	2142	2142	2292	2292	2450	2755
<b>W</b> Heat dissipation	5845	7033	6927	8059	8323	9340	9913	10366

\* P.F. = 0.6

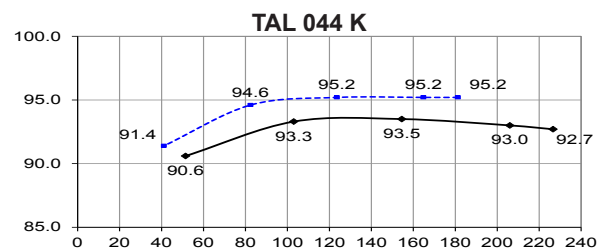
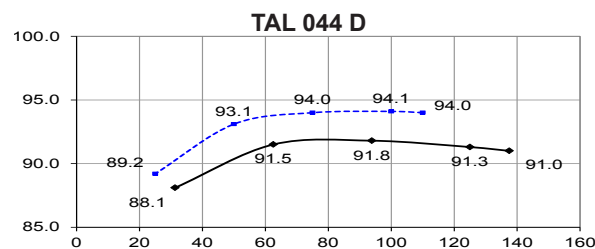
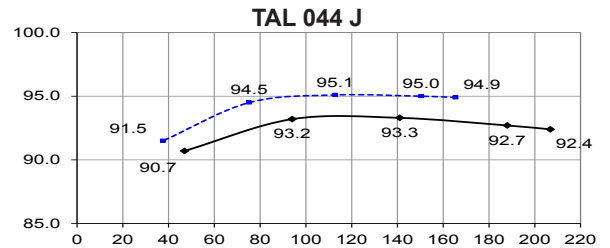
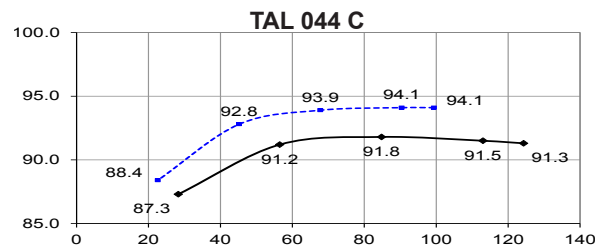
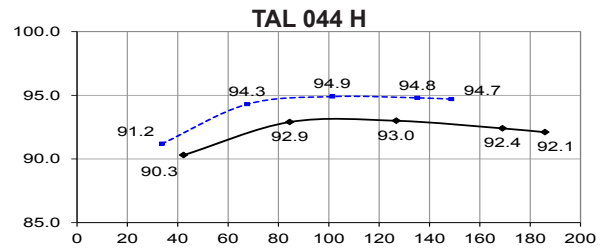
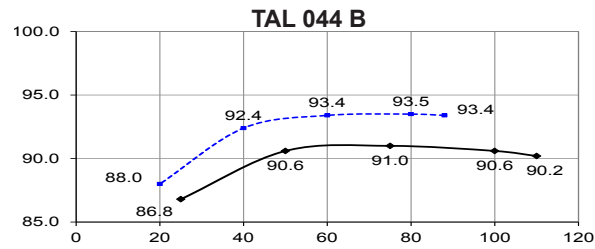
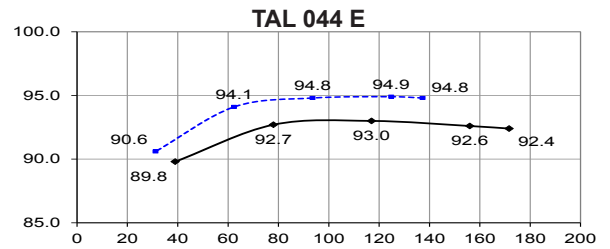
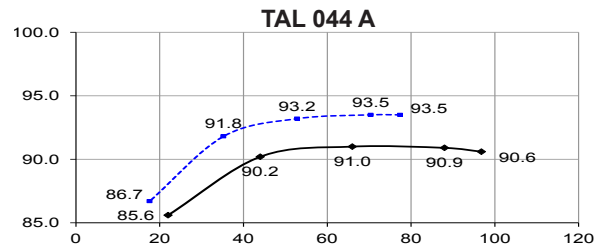


Transient voltage variation 400V - 50 Hz



- 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 ( $\Delta$ ) at 50 Hz, then kVA must be multiplied by  $(400/U)^2$  or  $(230/U)^2$ .

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



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

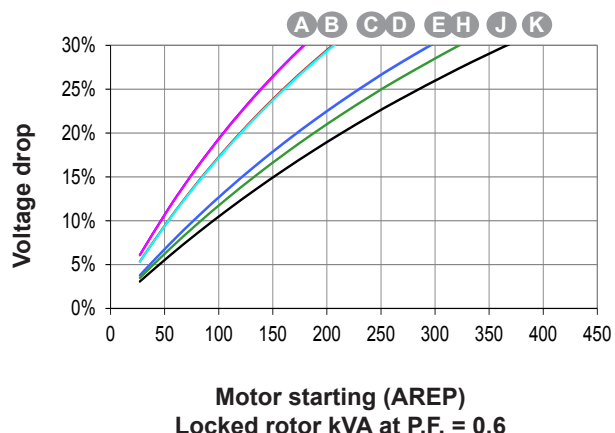
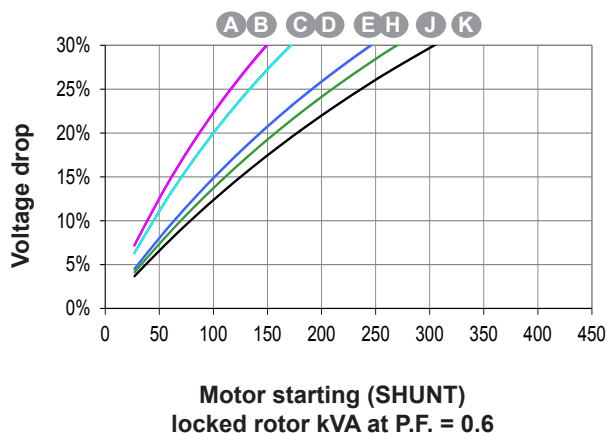
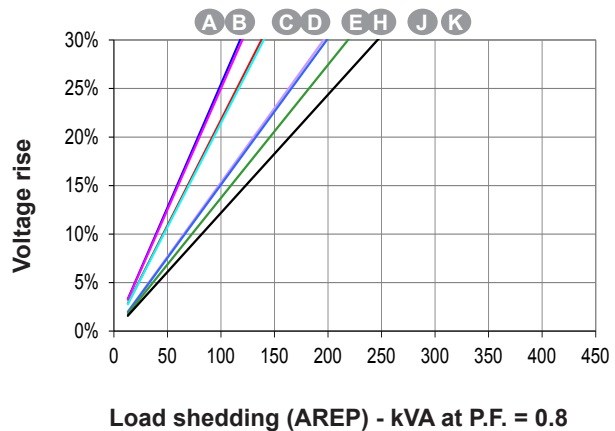
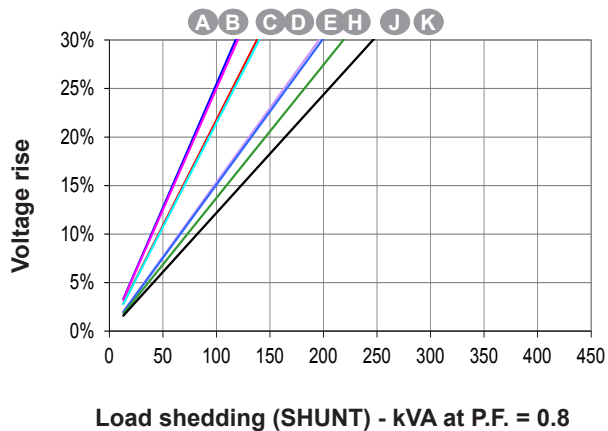
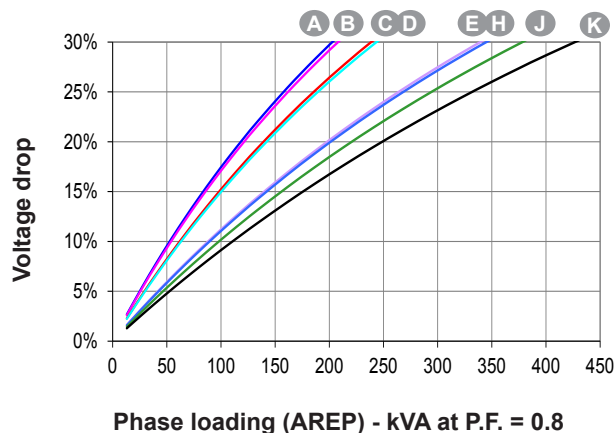
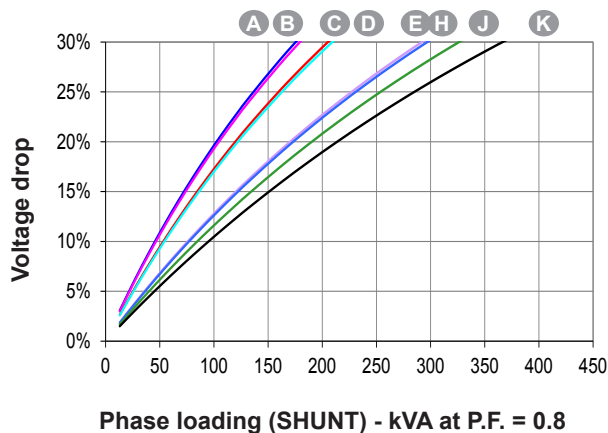
	A	B	C	D	E	H	J	K
<b>Kcc</b> Short-circuit ratio	0.55	0.48	0.5	0.46	0.41	0.38	0.38	0.41
<b>Xd</b> Direct-axis synchro. reactance unsaturated	308	350	321	355	348	377	375	356
<b>Xq</b> Quadrature-axis synchro. reactance unsaturated	157	178	164	181	177	192	191	182
<b>T'do</b> No-load transient time constant	2475	2475	2308	2308	2154	2154	2112	2077
<b>X'd</b> Direct-axis transient reactance saturated	12.4	14.1	13.9	15.4	16.1	17.5	17.7	17.1
<b>T'd</b> Short-circuit transient time constant	100	100	100	100	100	100	100	100
<b>X''d</b> Direct-axis subtransient reactance saturated	7.4	8.5	8.3	9.2	9.7	10.5	10.6	10.3
<b>T''d</b> Subtransient time constant	10	10	10	10	10	10	10	10
<b>X''q</b> Quadrature-axis subtransient reactance saturated	16.8	19.1	17.8	19.7	19.6	21.3	21.3	20.3
<b>Xo</b> Zero sequence reactance	0.51	0.59	0.58	0.64	0.67	0.72	0.74	0.71
<b>X2</b> Negative sequence reactance saturated	12.17	13.83	13.1	14.49	14.69	15.91	15.99	15.34
<b>Ta</b> Armature time constant	15	15	15	15	15	15	15	15

Other class H / 480 V data

<b>io (A)</b> No-load excitation current SHUNT/AREP	1.08	1.08	1.02	1.02	0.87	0.87	0.85	0.87
<b>ic (A)</b> On-load excitation current SHUNT/AREP	3.34	3.76	3.51	3.88	3.32	3.59	3.6	3.59
<b>uc (V)</b> On-load excitation voltage SHUNT/AREP	23.5	26.2	24.4	26.7	26	28	27.8	27.6
<b>ms</b> Response time ( $\Delta U = 20\%$ transient)	500	500	500	500	500	500	500	500
<b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT*	149.1	149.5	171.6	171.8	246.2	245.6	269.7	304.1
<b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP*	178.7	179	205.3	206.5	294.8	295.6	322.4	366.4
<b>%</b> Transient $\Delta U$ (on-load 4/4) SHUNT - P.F.: 0.8 <sub>LAG</sub>	17.7	19.3	19.1	20.4	18.6	19.7	19.9	19.4
<b>%</b> Transient $\Delta U$ (on-load 4/4) AREP - P.F.: 0.8 <sub>LAG</sub>	15.7	17.1	16.9	18.1	16.5	17.4	17.6	17.2
<b>W</b> No-load losses	2868	2868	3156	3156	3387	3387	3611	4040
<b>W</b> Heat dissipation	7047	8289	8303	9490	9876	11039	11750	12269

\* P.F. = 0.6

Transient voltage variation 480V - 60 Hz

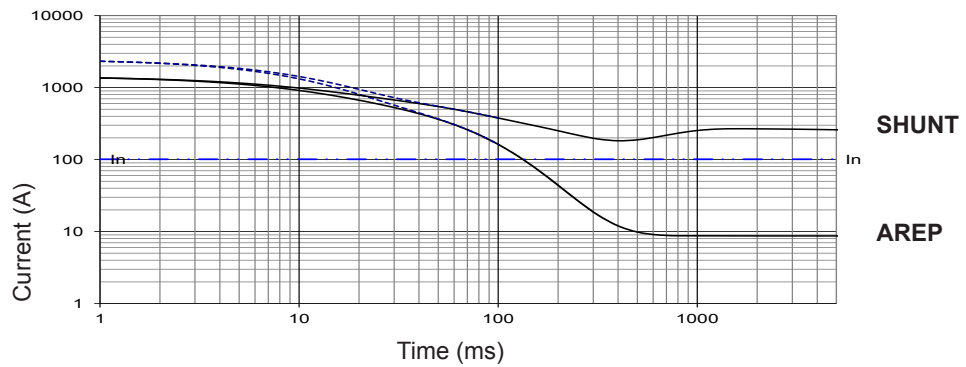


- 1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by  $K = \text{Sine P.F.} / 0.8$
- 2) For voltages other than 480V (Y), 277V ( $\Delta$ ), 240V (YY) at 60 Hz, then kVA must be multiplied by  $(480/U)^2$  or  $(277/U)^2$  or  $(240/U)^2$ .

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

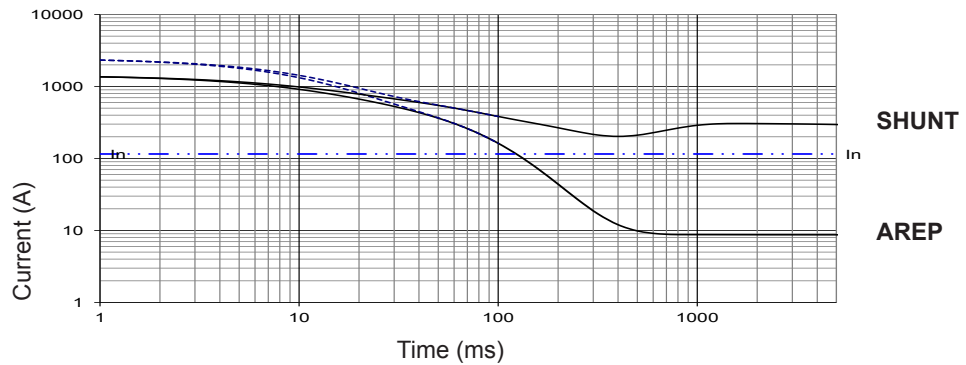
**TAL 044 A**

Symmetrical —  
Asymmetrical - - -



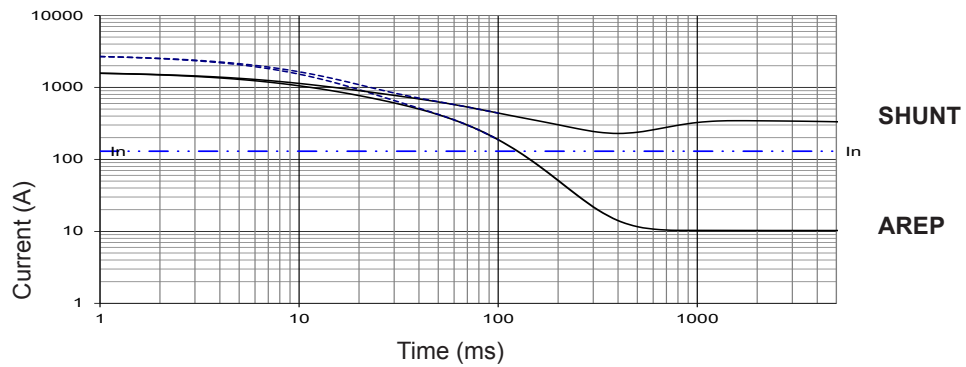
**TAL 044 B**

Symmetrical —  
Asymmetrical - - -



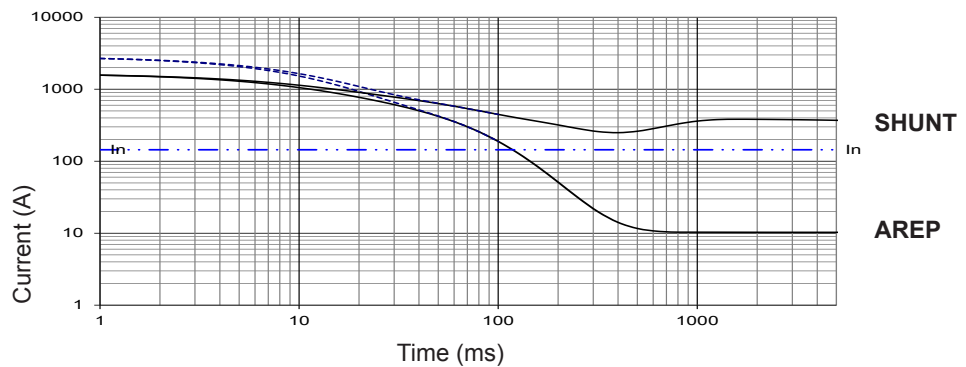
**TAL 044 C**

Symmetrical —  
Asymmetrical - - -



**TAL 044 D**

Symmetrical —  
Asymmetrical - - -



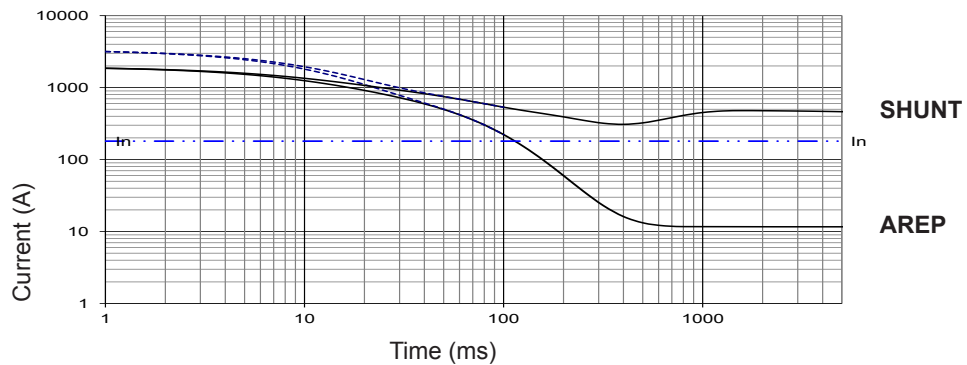
**Influence due to connection**

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

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

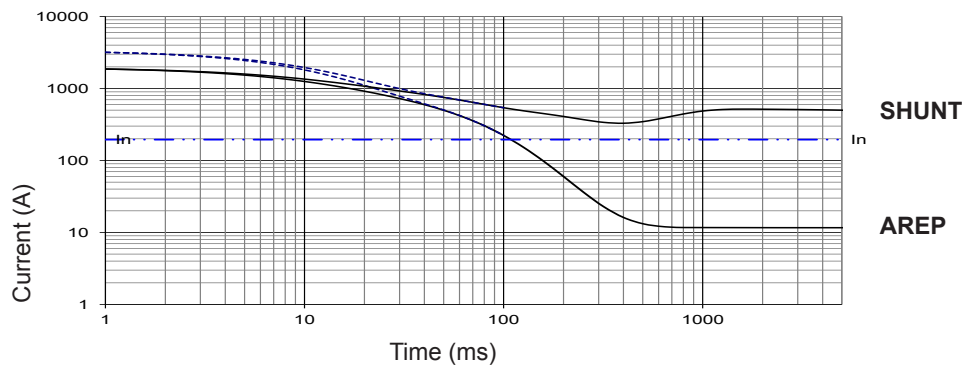
**TAL 044 E**

Symmetrical —  
Asymmetrical - - -



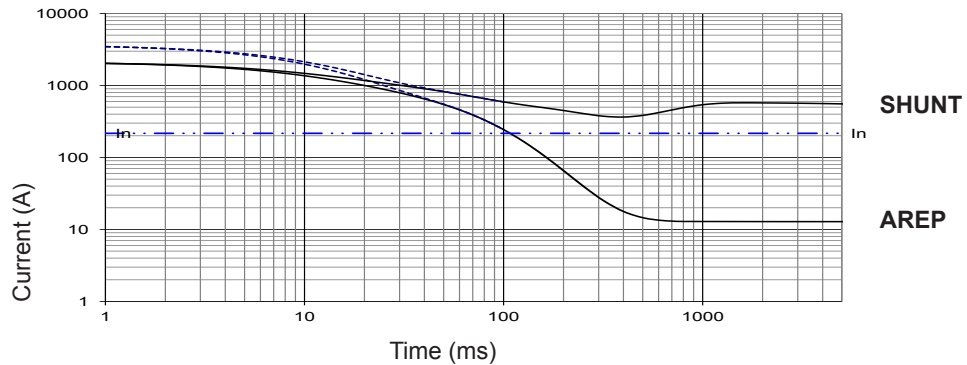
**TAL 044 H**

Symmetrical —  
Asymmetrical - - -



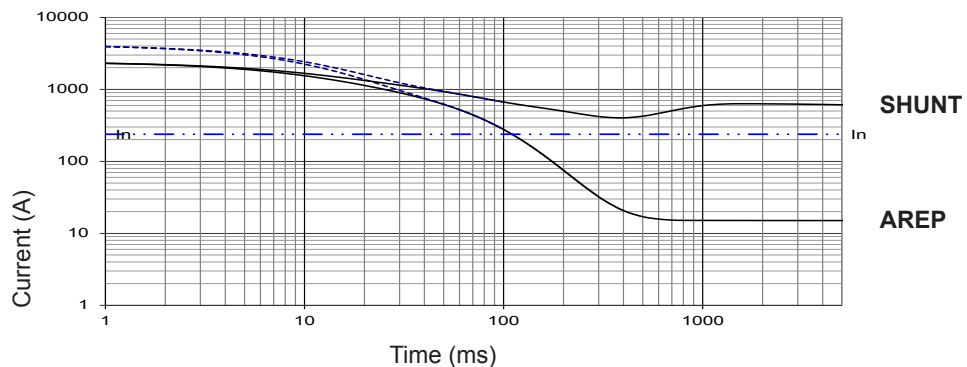
**TAL 044 J**

Symmetrical —  
Asymmetrical - - -



**TAL 044 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 (AREP/PMG)		1.5	


# TAL 044 - Dedicated single-phase 57 to 82 kVA - 50 Hz / 80 to 125 kVA - 60 Hz

## General characteristics

Insulation class	H	Excitation system	SHUNT
Winding pitch	2/3	AVR type	R121
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)	50 Hz: 0.25 - 60 Hz: 0.30	Waveform: I.E.C. = FHT (**)	< 2 %


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

## Ratings / Efficiencies 50 Hz - 1500 R.P.M. - Winding M

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	
Serie (SE) 	230 V	η %	230 V	230 V	230V	η %
<b>TAL 044 C</b>	57	92.1	52	60	63	91.9
<b>TAL 044 D1</b>	69	92.5	63	73	76	92.3
<b>TAL 044 E</b>	-	-	-	-	-	-
<b>TAL 044 J</b>	82	93.3	75	87	90	93.1
<b>TAL 044 K</b>	-	-	-	-	-	-

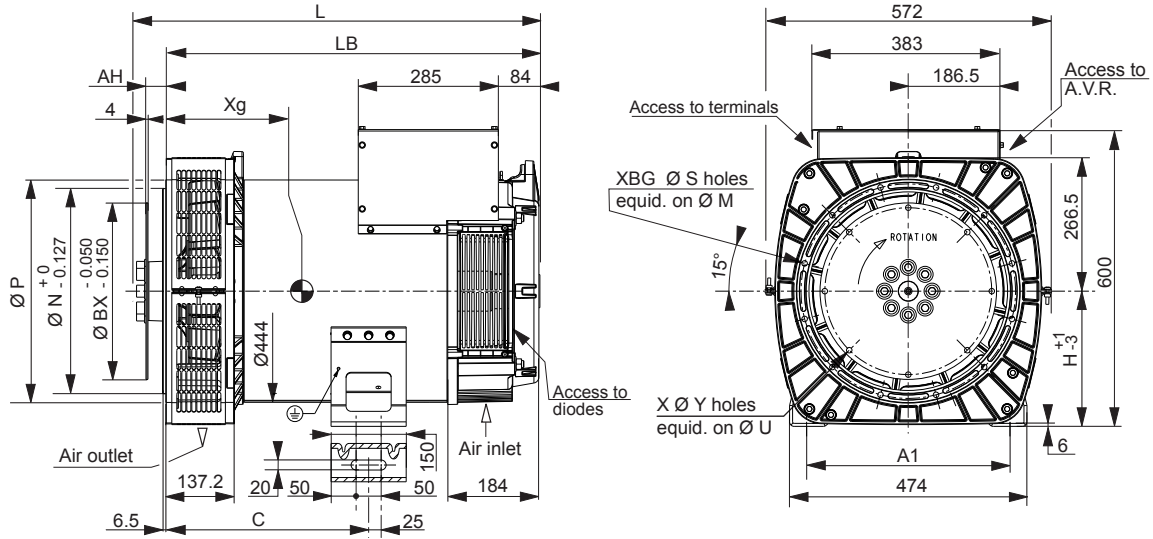
(\*) For P.F. 0.8: derating 15%

## Ratings / Efficiencies 60 Hz - 1800 R.P.M. - Winding M1

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	
Serie (SE) 	240 V	η %	240 V	240 V	240V	η %
<b>TAL 044 C</b>	80	91.3	73	85	88	91.1
<b>TAL 044 D1</b>	100	91.2	91	106	110	91
<b>TAL 044 E</b>	115	92.4	105	122	127	92
<b>TAL 044 J</b>	-	-	-	-	-	-
<b>TAL 044 K</b>	125	92.4	114	133	138	92

(\*) For P.F. 0.8: derating 15%

Single bearing general arrangement



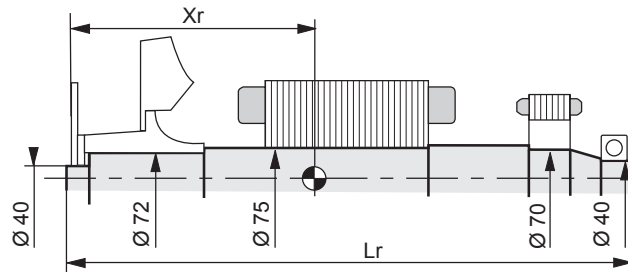
Dimensions (mm) and weight				
Type	L maxi	LB	Xg	Weight/kg
TAL 044 A	750	677	293	262
TAL 044 B	750	677	293	262
TAL 044 C	750	677	313	295
TAL 044 D	750	677	313	295
TAL 044 D1	750	677	313	295
TAL 044 E	820	747	353	368
TAL 044 H	820	747	353	368
TAL 044 J	820	747	365	398
TAL 044 K	860	787	383	433

	Shaft height (mm)		Coupling			
	Standard	Option	Flange	1	2	3
<b>H</b>	270	225	Flex plate			
	Feet length		11 1/2	x	x	x
<b>C</b>	405	332.5	10	x	x	x
<b>A1</b>	406	356				

Flange (mm)					
S.A.E.	P	N	M	S	XBG
3	445	409.58	428.62	11	12
2	485	447.68	466.72	11	12
1	560.5	511.18	530.23	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 data



Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm <sup>2</sup> ): (4J = MD <sup>2</sup> )									
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
TAL 044 A		344.7	704	107.2	0.770	332.1	704	106.8	0.769
TAL 044 B		344.7	704	107.2	0.770	332.1	704	106.8	0.769
TAL 044 C		355.2	704	121	0.894	342.4	704	120.6	0.893
TAL 044 D		355.2	704	121	0.894	342.4	704	120.6	0.893
TAL 044 D1		376.1	704	139.1	1.051	363.2	704	138.7	1.050
TAL 044 E		400.2	774	153.7	1.167	387.2	774	153.3	1.166
TAL 044 H		400.2	774	153.7	1.167	387.2	774	153.3	1.166
TAL 044 J		411.0	774	165.5	1.274	398.0	774	165.1	1.273
TAL 044 K		431.0	814	180.6	1.409	417.9	814	180.2	1.408

NOTE : Dimensions are for information only and may be subject to modifications. The torsional analysis of the transmission is imperative. All values are available upon request.

**LEROY-SOMER**<sup>™</sup>

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