

PERKINS GENERATOR

(24/26 KVA - 19/21 KW)

(UK)



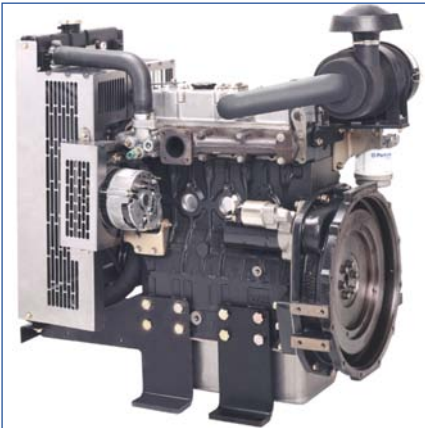


400 Series

404D-22G

Diesel Engine - ElectropaK

20.3 kWm @ 1500 rev/min
 23.9 kWm @1800 rev/min
 33.4 kWm @ 3000 rev/min



The 400 Series engine family continues to set new standards in the compact engine market. Developed alongside customers to fulfill their needs in the Genset, Compressor, Agricultural and general Industrial markets.

These new ElectropaKs provide compact power, from a robust family of 3 and 4 cylinder diesel engines designed to provide economic and durable operation at Prime and Standby duties, hitting the key power nodes required by the power generation industry.

Powered by your needs

- The 404D-22G ElectropaK is a powerful but quiet 2.2 litre naturally aspirated 4-cylinder compact package

Compact, Clean, Efficient Power

- Design features on the 400D range of ElectropaKs ensures clean rapid starting in all conditions whilst delivering impressive performance with low operating costs in a small, efficient package size

Lower Operating Costs

- The compact package Size makes Installation and transportation easier and more cost effective
- Operating and maintenance costs are reduced through excellent fuel and oil economy
- Service intervals are set at 500 hours as standard and Perkins provides comprehensive warranty cover for two years, with three years on major engine components. A low usage warranty package is also available

Long-term Power Solution

- The 400D range of ElectropaKs has been designed to fully comply with stringent EU and EPA emissions regulations, providing an emissions compliant power solution for the future

World-class Product Support

- At Perkins we are constantly researching, developing and investing in our products and services. Total worldwide support is provided through a network of distributors and service outlets, providing access to over 50,000 parts and exchange units 24 hours a day, 365 days a year. This support is enhanced by TIPSS (The Integrated Parts and Service System). TIPSS enables customers to electronically specify and order parts as well as service 400 Series engines with online guides and service tools

Emissions statement

- Certified against the requirements of EU2007 (EU 97/68/EC Stage II) and EPA Interim Tier 4 (EPA 40 CFR Part 1039 Interim Tier 4) legislation for non-road mobile machinery, powered by constant speed engines

Engine Speed	Type of Operation	Typical Generator Output (Net)		Engine Power			
				Gross		Net	
		kVA	kWe	kWm	bhp	kWm	bhp
1500	Prime Power	20.0	16.0	18.7	25.1	18.4	24.6
	Standby Power	22.1	17.7	20.6	27.6	20.3	27.2
1800	Prime Power	24.0	19.2	22.0	29.5	21.6	29.0
	Standby Power	26.6	21.3	24.3	32.6	23.9	32.1
3000	Prime Power	33.6	26.9	31.2	41.8	30.2	40.8
	Standby Power	37.2	29.7	34.4	46.1	33.4	44.8

The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/1, ISO 3046/1:1986, BS 5514/1.

Derating may be required for conditions outside these; consult Perkins Engines Company Limited.

Generator powers are typical and are based on typical alternator efficiencies and a power factor (cos θ) of 0.8.

Fuel specification: BS 2869: Part 2 1998 Class A2 or ASTM D975 D2.

Rating Definitions

Prime Power: Power available at variable load in lieu of a main power network. Overload of 10% is permitted for 1 hour in every 12 hours operation.

Standby (maximum): Power available at variable load in the event of a main power network failure. No overload is permitted.

Photographs are for illustrative purposes only and may not reflect final specification.

All information in this document is substantially correct at time of printing and may be altered subsequently

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400 Series

404D-22G

Standard ElectropaK Specification

Air Inlet

- Mounted air filter

Fuel System

- Mechanically governed cassette type fuel injection pump
- Split element fuel filter

Lubrication System

- Wet steel sump with filler and dipstick
- Spin-on full-flow lub oil filter

Cooling System

- Thermostatically-controlled system with belt driven coolant pump and pusher fan
- Mounted radiator, piping and guards

Electrical Equipment

- 12 volt starter motor and 12 volt 65 amp alternator with DC output
- Oil pressure and coolant temperature switches
- 12 volt shut off solenoid energised to run
- Glow plug cold start aid and heater/starter switch

Flywheel and Housing

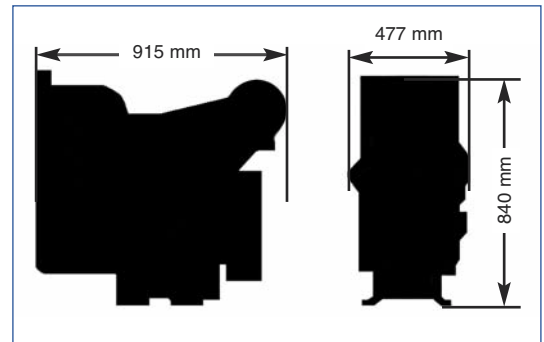
- 1500/1800 rev/min
- High inertia flywheel to SAE J620 Size 7½ Heavy
- Flywheel housing SAE 4 Long
- 3000 rev/min
- High inertia flywheel to SAE J620 Size 7½ Light
- Flywheel housing SAE 4 Short

Mountings

- Front and rear engine mounting bracket

Optional Equipment

- Workshop manual
- Parts book



Engine Speed	Fuel Consumption			
	1800 rev/min		1500 rev/min	
	g/kWh	l/hr	g/kWh	l/hr
Standby	235	4.7	244	4.1
Prime power	233	4.3	237	3.7
75% of prime power	240	3.3	238	2.7
50% of prime power	262	2.4	258	2.0

General Data

Number of cylinders	4
Cylinder arrangement	Vertical in-line
Cycle	4 stroke
Aspiration	Naturally aspirated
Combustion system	Indirect injection
Compression ratio	23.3:1
Bore and Stroke	84 x 100 mm
Displacement	2.216 litres
Direction of rotation	Anti-clockwise viewed on flywheel
Cooling system	Water cooled
Total coolant capacity	7.0 litres
Total Lubrication system capacity	10.6 litres
Length	915 mm
Width	477 mm
Height	840 mm
Total weight (dry)	242 kg

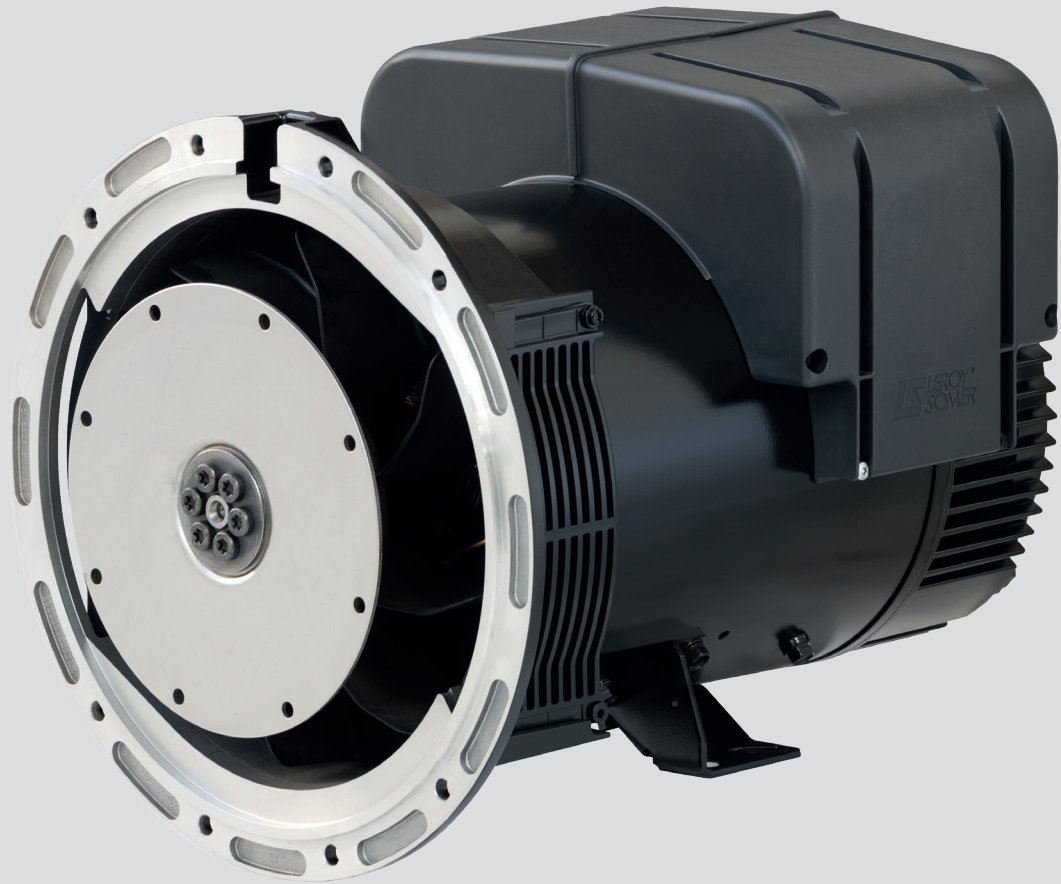
Final weight and dimensions will depend on completed specification.



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Distributed by



TAL 040

Low Voltage Alternator - 4 pole

Three-phase 10 to 20 kVA - 50 Hz / 12.5 to 25 kVA - 60 Hz
Dedicated single-phase 10.5 to 16 kVA - 50 Hz / 11.5 to 17.5 kVA - 60 Hz
Electrical and mechanical data

LEROY-SOMER™

Nidec
All for dreams

TAL 040 - Three-phase & Single-phase

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
- Shunt excitation
- 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 6-wire version
- 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 and counterclockwise without derating



Excitation and regulation system suited to the application

	Excitation system			Regulation options	
	AVR	Shunt	AREP	ULc/us	Remote voltage potentiometer
Three-phase 6-wire	R120	Standard			
	R150	Option			√
	R180		Standard		√
	R438		Option	√	√
Three-phase 12-wire	R120	Standard			
	R220	Option		√	√
	R180		Standard		√
	R438		Option	√	√
Single-phase	R121	Standard			√
	R221	Option		√	√

√ : Possible option

Compact terminal box

- Easy access to AVR and terminals

Environment and protection

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

Available options

- Three-phase 12-wire with 8-terminal plates
- AREP excitation
- ULc/us
- Customized painting (machine not painted as standard)
- Space heaters
- Flying leads
- Dedicated single-phase
- Winding 8 optimized for three-phase 380V / 416V - 60Hz
- Winding protection for harsh environments and relative humidity greater than 95% (system 2 - 4 without derating)

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

(*) 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.		
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 (*)	220V					220V					220V					220V					
ΔΔ (*)					230V					230V					230V					230V	
TAL 040 B	kVA	10	10	10	9	7	9	9	9	8	6.5	10.5	10.5	10.5	9.5	7.5	11	11	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
TAL 040 C	kVA	12.5	12.5	12.5	11	9	11.5	11.5	11.5	10	8	13.5	13.5	13.5	11.5	9.5	14	14	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
TAL 040 D	kVA	15	15	15	13	10.5	14	14	14	12	9.5	16	16	16	14	11	16.5	16.5	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
TAL 040 E	kVA	17.5	17.5	17.5	16	12.5	16	16	16	14.5	11.5	18.5	18.5	18.5	17	13.5	19.5	19.5	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
TAL 040 F	kVA	20	20	20	18	14	18	18	18	16.5	13	21	21	21	19	15	22	22	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

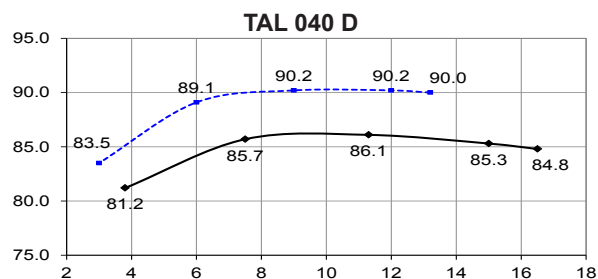
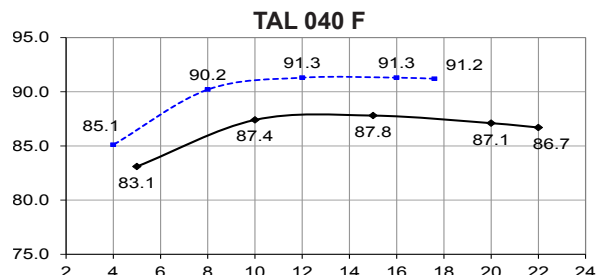
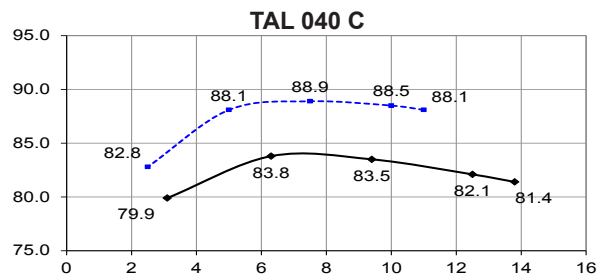
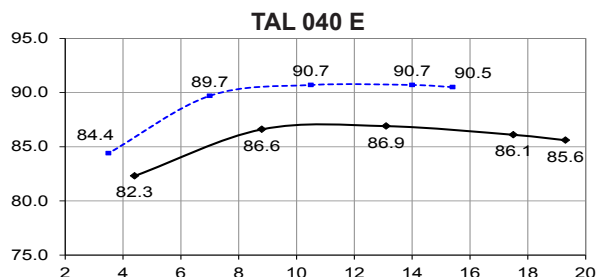
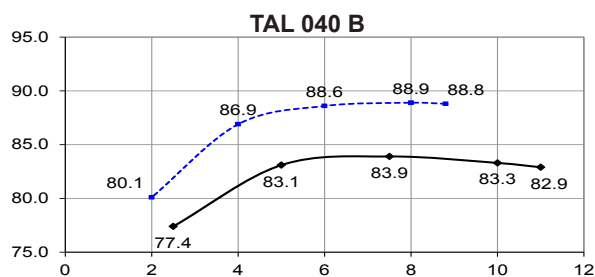
(*) 12-wire option

Ratings 60 Hz - 1800 R.P.M.

kVA / kW - P.F. = 0.8																								
Duty / T° C	Continuous / 40 °C					Continuous / 40 °C					Stand-by / 40 °C					Stand-by / 27 °C								
Class / T° K	H / 125° K					F / 105° K					H / 150° K					H / 163° K								
Phase	3 ph.			1 ph.		3 ph.			1 ph.		3 ph.			1 ph.		3 ph.			1 ph.					
Y	380V	416V	440V	480V		380V	416V	440V	480V		380V	416V	440V	480V		380V	416V	440V	480V					
Δ	220V	240V			240V	220V	240V			240V	220V	240V			240V	220V	240V			240V				
YY (*)	208V				220V	240V	208V				220V	240V	208V				220V	240V	208V				220V	240V
ΔΔ (*)					240V						240V						240V						240V	
TAL 040 B	kVA	10	11	11.5	12.5	9	9	10	10.5	11.5	8	10.5	11.5	12	13.5	9.5	11	12	12.5	14	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			
TAL 040 C	kVA	12.5	13.5	14.5	15.5	11.5	11.5	12.5	13	14	10.5	13.5	14.5	15.5	16.5	12	14	15	16	17	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			
TAL 040 D	kVA	15	16.5	17.5	19	13	13.5	15	16	17.5	12	16	17.5	18.5	20	14	16.5	18	19.5	21	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			
TAL 040 E	kVA	17.5	19	20	22	14.5	16	17.5	18	20	13	18.5	20	21	23.5	15.5	19.5	21	22	24	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			
TAL 040 F	kVA	20	22	23	25	16	18	20	21	23	14.5	21	23.5	24.5	26.5	17	22	24	25.5	27.5	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-wire option

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



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

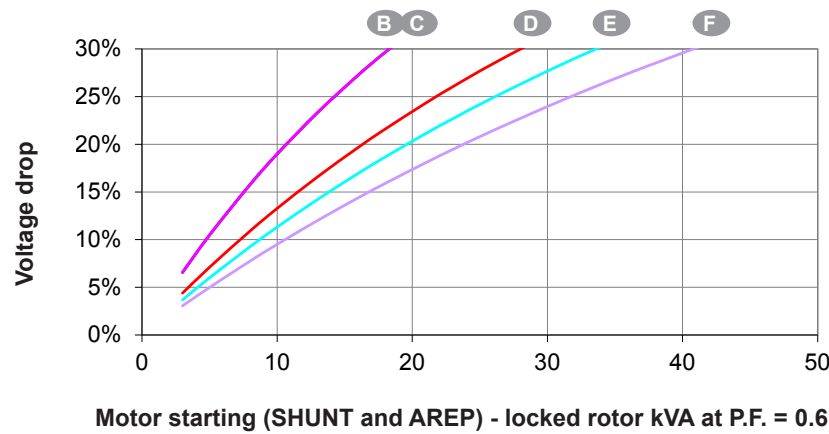
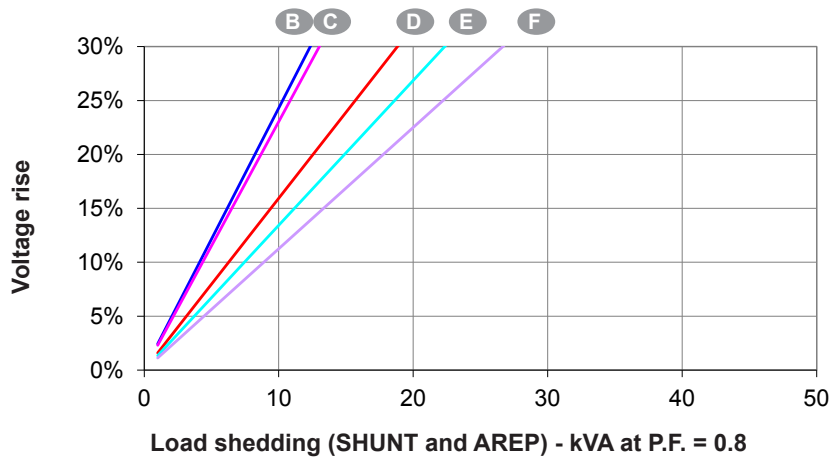
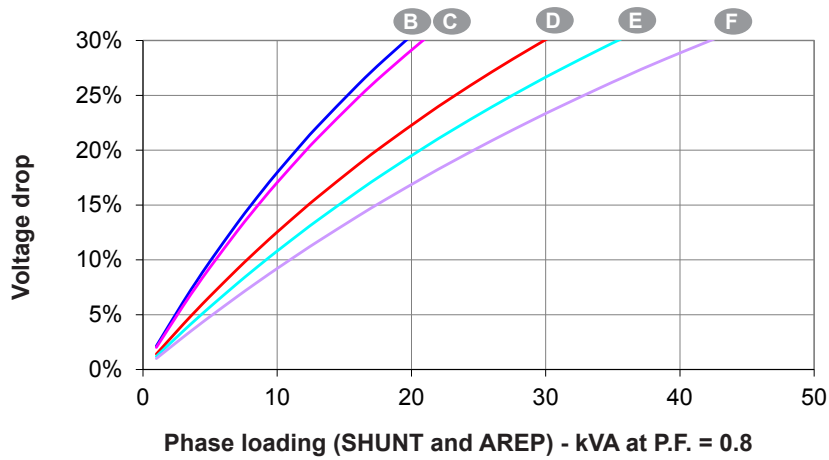
	B	C	D	E	F
Kcc Short-circuit ratio	0.7	0.56	0.6	0.6	0.61
Xd Direct-axis synchro. reactance unsaturated	167	209	190	195	193
Xq Quadrature-axis synchro. reactance unsaturated	85	106	97	99	98
T'do No-load transient time constant	719	719	837	878	926
X'd Direct-axis transient reactance saturated	17.2	21.5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

Other class H / 400 V data

	B	C	D	E	F
io (A) 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
ic (A) 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
uc (V) On-load excitation voltage SHUNT/AREP	23.7 / 17.1	28 / 20.2	24.9 / 17.9	24.9 / 18	23.6 / 17
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) *	18.3	18.3	28	33.6	40.8
% Transient ΔU (on-load 4/4) - P.F.: 0.8 _{LAG}	18	20.5	17.8	17.5	16.9
W No-load losses	461	461	540	590	645
W Heat dissipation	1597	2172	2063	2255	2352

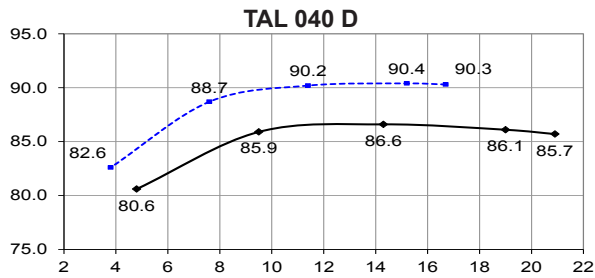
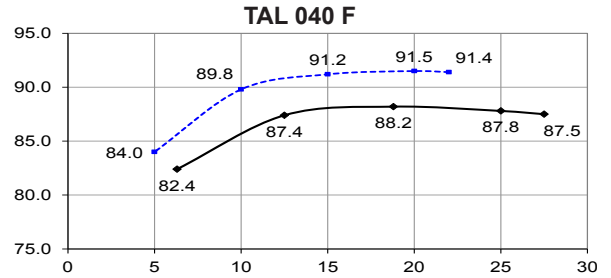
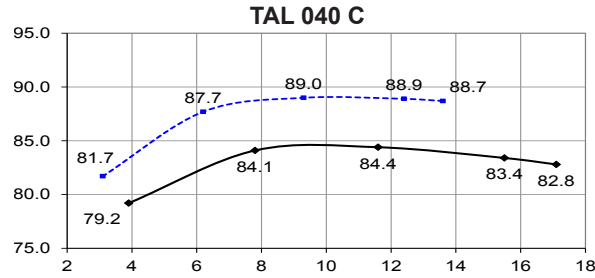
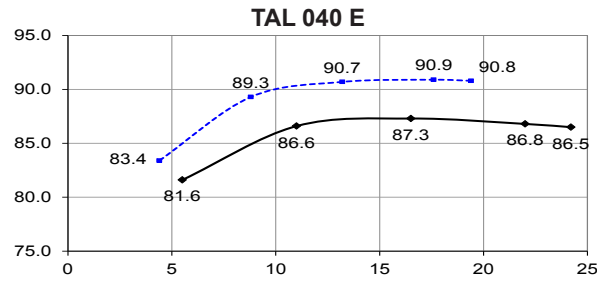
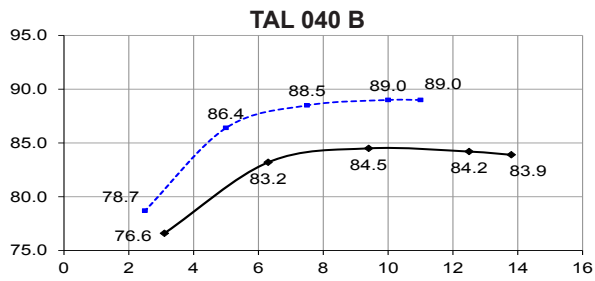
* P.F. = 0.6

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 (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

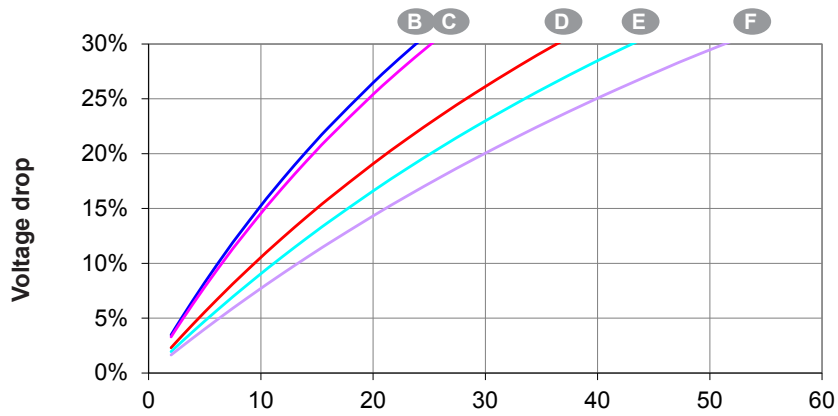
		B	C	D	E	F
Kcc	Short-circuit ratio	0.67	0.54	0.57	0.57	0.58
Xd	Direct-axis synchro. reactance unsaturated	174	216	201	204	201
Xq	Quadrature-axis synchro. reactance unsaturated	88	110	102	104	102
T'do	No-load transient time constant	719	719	837	878	926
X'd	Direct-axis transient reactance saturated	17.9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

Other class H / 480 V data

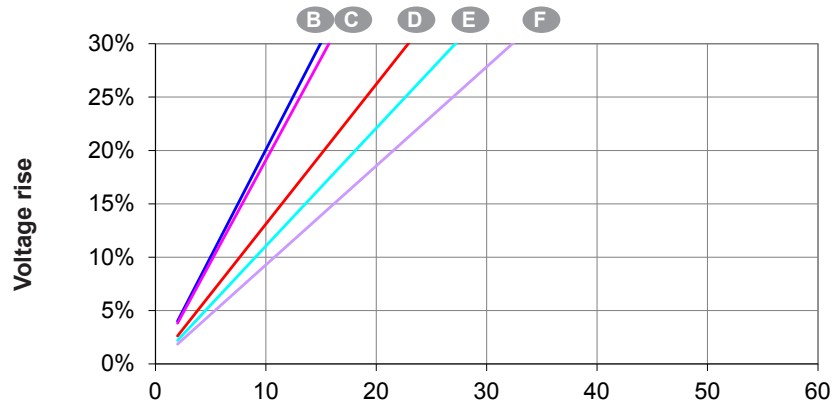
io (A)	No-load excitation current SHUNT/AREP	0.77 / 1.06	0.77 / 1.06	0.76 / 1.03	0.75 / 1.02	0.72 / 0.98
ic (A)	On-load excitation current SHUNT/AREP	1.97 / 2.69	2.33 / 3.17	2.1 / 2.86	2.1 / 2.86	1.97 / 2.69
uc (V)	On-load excitation voltage SHUNT/AREP	24.1 / 17.4	28.4 / 20.5	25.6 / 18.5	25.5 / 18.4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

* P.F. = 0.6

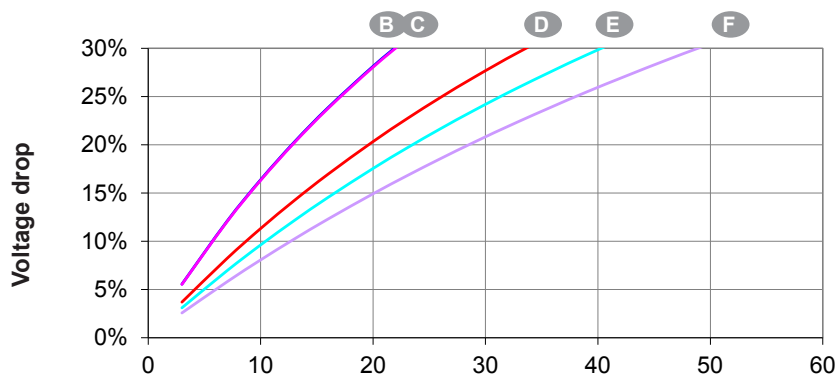
Transient voltage variation 480V - 60 Hz



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



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



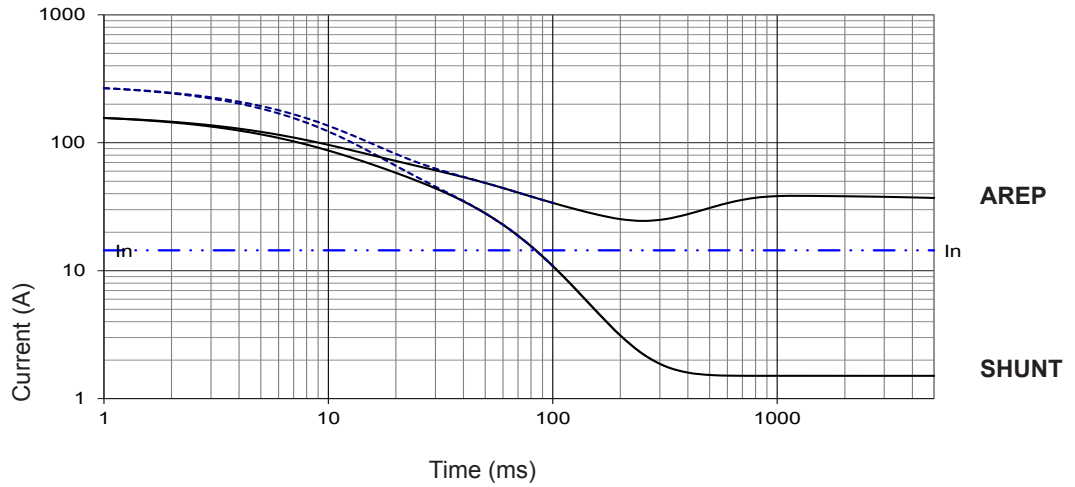
Motor starting (SHUNT and AREP) - locked rotor kVA at P.F. = 0.6

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

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

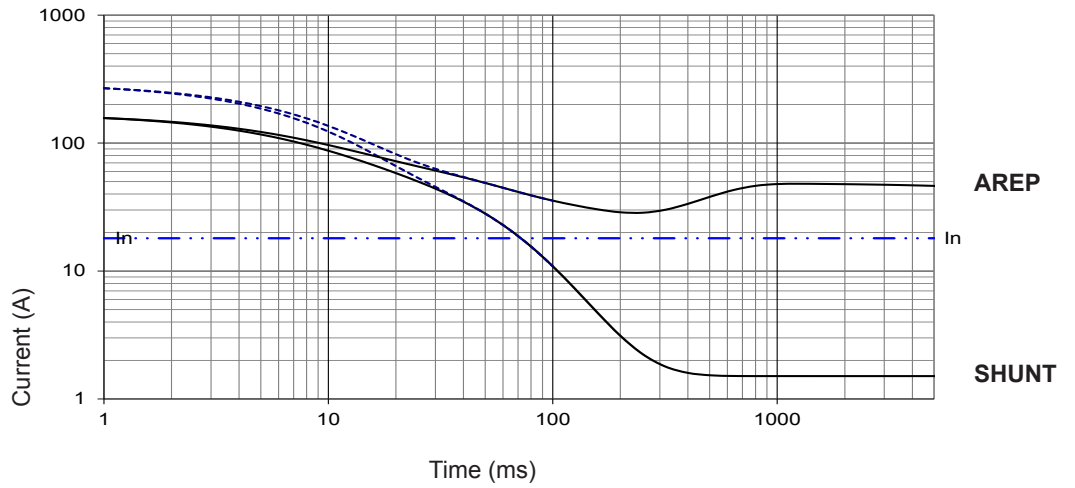
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Symmetrical —
Asymmetrical - - -



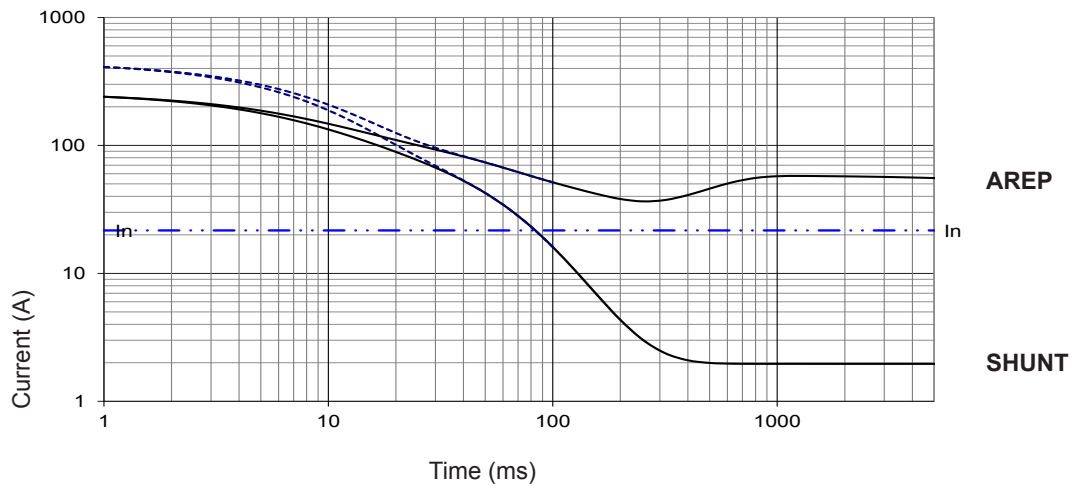
TAL 040 C

Symmetrical —
Asymmetrical - - -



TAL 040 D

Symmetrical —
Asymmetrical - - -



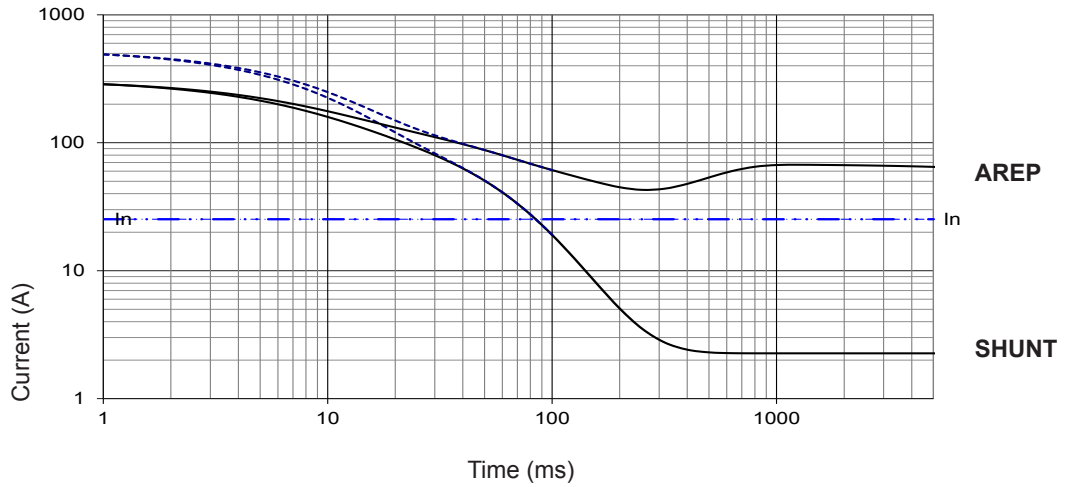
Influence due to connection

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)

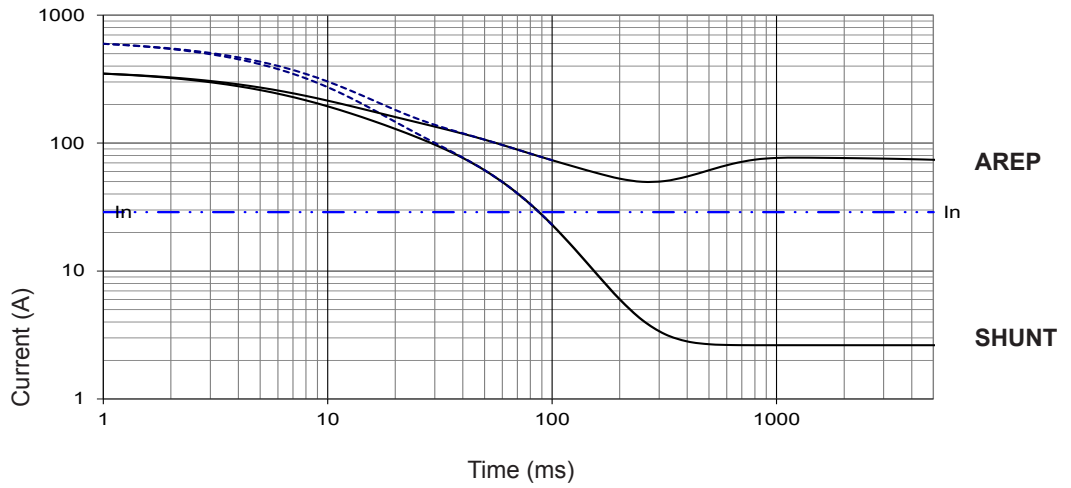
TAL 040 E

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	1	1.5	

General characteristics

Insulation class	H	Excitation system	SHUNT
Winding pitch	2/3 (wind. M 50Hz, M1 60Hz)	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)	50 Hz: 0.06 - 60 Hz: 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 %
TAL 040 C	10.5	82.4	9.5	11	11.5	81.2
TAL 040 C1	12	84.5	11	12.5	13	83.7
TAL 040 D	13	85.4	12	14	14.5	84.7
TAL 040 E	14.5	86.3	13	15.5	16	85.6
TAL 040 F	16	87.3	14.5	17	17.5	86.7

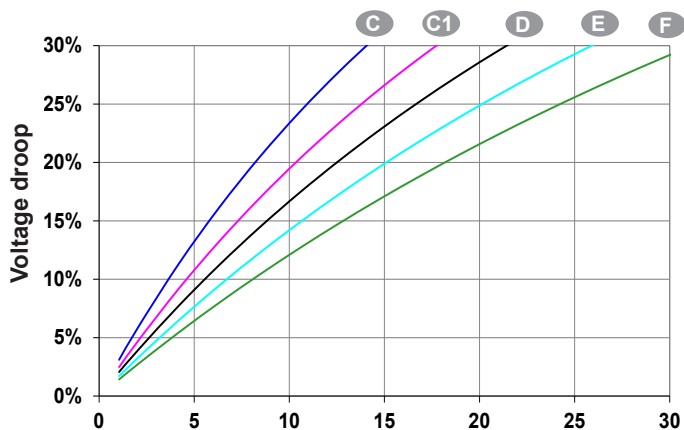
(*) For P.F. 0.8: derating 15%

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

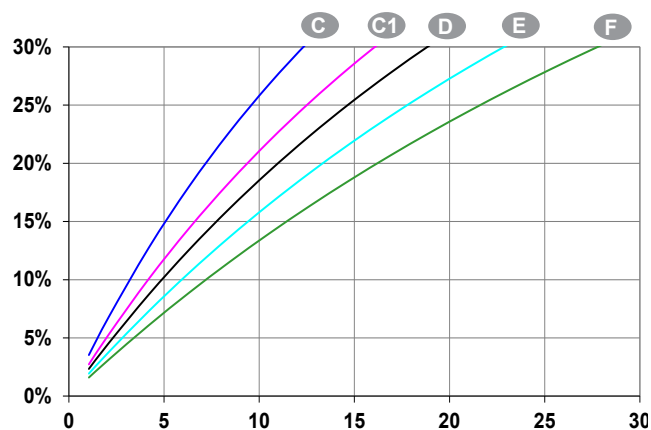
kVA / kW - P.F. = 1(*)						
Duty / T° C	Continuous / 40 °C	Continuous / 40 °C	Stand-by / 40 °C	Stand-by / 27 °C		
Class / T° K	H / 125° K	F / 105° K	H / 150° K	H / 163° K		
Serie (SE) 	240 V	η %	240 V	240 V	240V	η %
Parallel (PA) 	120 V	η %	120 V	120 V	120 V	η %
TAL 040 C	11.5	82.6	10.5	12	12.5	81.7
TAL 040 C1	13.5	84.2	12.5	14.5	15	83.4
TAL 040 D	14.5	85	13	15.5	16	84.3
TAL 040 E	16	85.9	14.5	17	17.5	85.3
TAL 040 F	17.5	86.9	16	18.5	19.5	86.3

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

Starting motor 230V - 50Hz

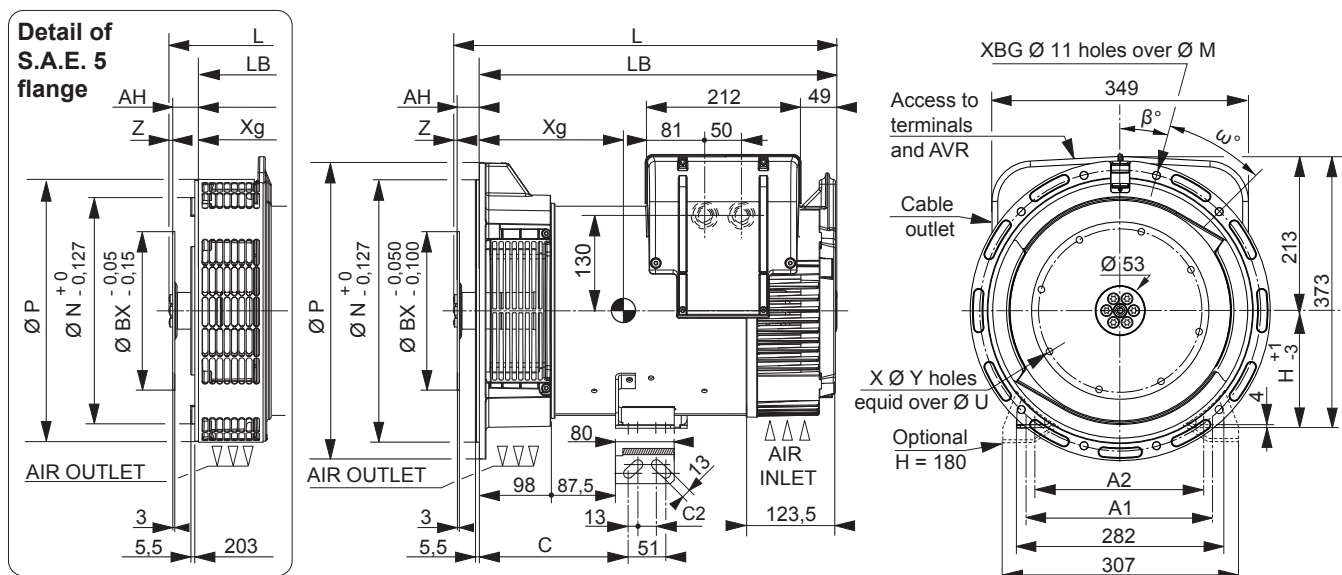


Starting motor 240V - 60Hz



Locked rotor kVA at PF : 0.9

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

Lmaxi = LB + AH

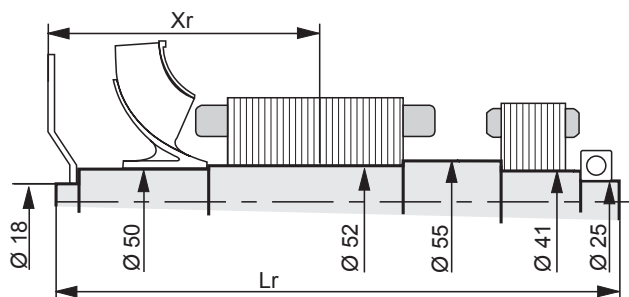
Flange (mm)						
S.A.E.	P	N	M	XBG	β°	ω°
5	358	314.32	333.38	8	22°30'	45°
4	408	361.95	381	8*	15°	30°
3	460	409.58	428.62	8*	15°	30°
-	-	-	-	-	-	-

*Four lateral holes removal on S.A.E. 3 and 4

Shaft height (mm)		Coupling		
H	Standard	Option	Flange	
	160	180	3	4
			5	
C	203	238	11 1/2	x
C2	25	22	10	x
A1	254	279	8	x
A2	230	-	7 1/2	-
			6 1/2	-

Flex plate (mm)						
S.A.E.	BX	U	X	Y	AH	Z
11 1/2	352.42	333.38	8	11	39.6	0
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	6
6 1/2	215.9	200.02	6	9	30.2	6

Torsional data



Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm ²): (4J = MD ²)																
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	25.5	0.078	211.7	428	25.7	0.080	243.5	428	26	0.085	238.3	428	26.5	0.096
TAL 040 C	211.7	428	25.5	0.078	211.7	428	25.7	0.080	243.5	428	26	0.085	238.3	428	26.5	0.096
TAL 040 C1	221.7	428	27.9	0.087	221.7	428	28.1	0.089	253.5	428	28.4	0.094	248.3	428	28.9	0.105
TAL 040 D	229.2	458	30.3	0.094	229.2	458	30.5	0.096	261	458	30.8	0.100	255.8	458	31.3	0.112
TAL 040 E	236.7	458	32.2	0.100	236.7	458	32.4	0.103	268.5	458	32.7	0.107	263.3	458	33.2	0.119
TAL 040 F	246.7	478	35.3	0.110	246.7	478	35.4	0.113	278.5	478	35.7	0.117	273.3	478	36.2	0.129

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.

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Nidec
All for dreams

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Capital social : 65 800 512 €, RCS Angoulême 338 567 258.

InteliLite^{NT} AMF 9



SINGLE SET GEN-SET CONTROLLER

Description

The InteliLite^{NT} AMF 9 is integrated controller for gen-sets operating in single standby mode.

The controller meets all requirements for Auto Mains Failure (AMF) applications including remote communication and internet control, user configuration and complete gen-set monitoring and protection.

InteliLite^{NT} AMF 9 is easy to use with a simple intuitive user interface and graphic display. Unit is designed for quick and cost saving commissioning and bring seamless integration with the latest breed of EFI diesel engines from all major manufacturers. This offers a higher level of functionality with users able to display a comprehensive range of values from the EFI engine on standard analog gauges and true RMS measurement of electric values.

Benefits

- ▶ Less wiring and components
- ▶ Less engineering and programming
- ▶ Cost saving commissioning
- ▶ Remote monitoring reduced call-out costs of service engineers
- ▶ History 100+ records based on running hours
- ▶ Hybrid binary inputs and outputs module – simple way of extension the unit performance
- ▶ SMS on alarm/event
- ▶ Direct communication with EFI engines
- ▶ Perfect price/performance ratio



InteliLite^{NT} AMF 9 supports J1939 for all major brands:

- | | | | |
|------------------|--------------|-----------|--------------------------|
| • Caterpillar | • GM | • MAN | • Sisu |
| • Cummins | • Isuzu | • MTU | • VM Motori |
| • Detroit Diesel | • Iveco | • Perkins | • Volvo Penta and others |
| • Deutz | • John Deere | • Scania | |



ComAp is a member of AMPS (The Association of Manufacturers of Power generating Systems).



ComAp products meet the highest standards, with every stage of production undertaken in accordance with the ISO certification obtained in 1998.

Features

3 phase AMF function

- Over/Under frequency
- Over/Under voltage

3 phase generator protections

- Over/Under frequency
- Over/Under voltage
- Over current

True RMS Voltage measurement

- 3 phase generator voltages:
 - Phase to neutral
L1 – N, L2 – N, L3 – N
 - Phase to phase
L1 – L2, L2 – L3, L3 – L1
- 3 phase mains voltages
- Voltage range 277 V p-n, 480 V p-p
- Maximal measured voltage 300 V p-n

True RMS current measurements

- 3 generator phase currents
- Current range 5 A
- Maximal measured current 10 A
- Ready for generators with 3 ph 4 wires / 3 ph 3 wires / Split ph / Mono ph

Event and performance log

- Gen-set text alarm log
- Engine hours history log
- ECU text alarm log
- Test Run scheduler

Power measurements

- Apparent power per phase
- Total apparent power

User interface

- Graphic 128 x 64 pixels display
- 2 languages, user changeable from PC
- Setpoints adjustable via controller buttons or PC
- Buttons with mechanical feedback

Inputs and outputs

- 3 fully configurable analog inputs
- 4 binary inputs; 6 binary outputs
- D+ preexcitation terminal
- Optional 8 hybrid binary inputs/outputs
- Optional 8 analog gauge drive outputs, compatible with VDO, Datcon gauges

EFI engine support

- Cummins Modbus
- Engine specific J1939 for all major manufacturers (see table on page 1)
- Diagnostic messages in plain text

Engine protections

- Oil pressure protection
- Coolant temperature
- Fuel level

Active calls

- 1 channel
- SMS alarm
- Event SMS

Miscellaneous features

- Operation mode – AMF/MRS application switch
- Maintenance – service time counter
- Engine hours counter

Communication interfaces

- Optional RS232, RS485 (including Modem support) or USB plug-in interface
- Optional GSM modem via IL-NT GPRS

Mechanical

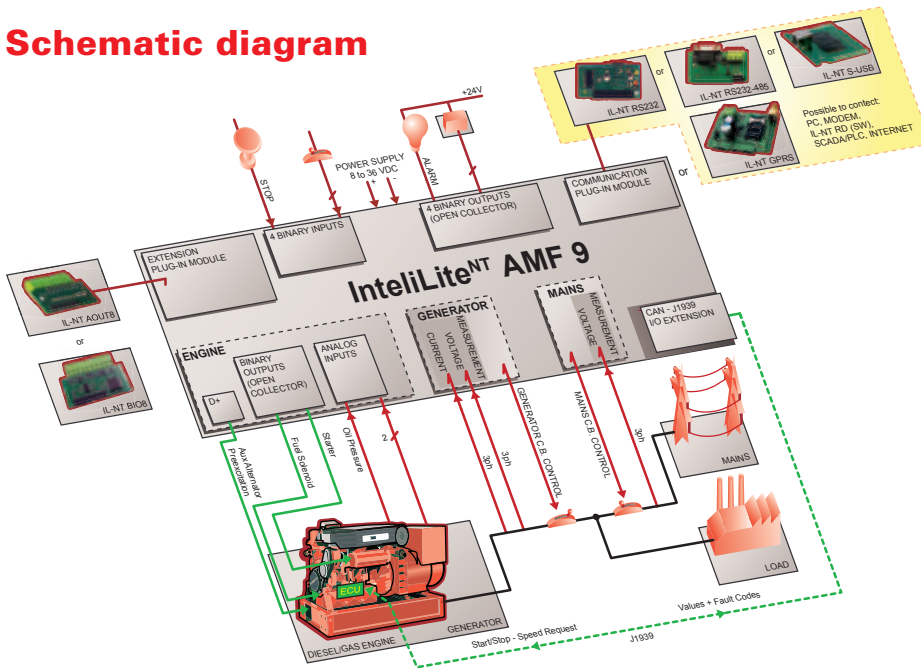
and operation parameters

- Unit dimension 120 x 180 mm
- Sealed front face rated for IP65
- Hard plexiglass LCD cover
- Operation temperature:
 - -20 °C to +70 °C standard version
 - -40 °C to +70 °C low temperature ver.
- Power supply voltage 8–36 V
- Voltage drops shorter than 50 ms do not affect operation

ANSI code	Protection
59	Overvoltage
27	Undervoltage
81H	Overfrequency
81L	Underfrequency
50+51	Overcurrent*
47	Phase rotation**
71	Gas (Fuel) level

* Shortcurrent only / ** Fixed setting

Schematic diagram



Accessories and PC tools

- ▷ **IL-NT AOUT8** – Analog Outputs for PWM Gauges Module
- ▷ **IL-NT BIO8** – Binary Input/Output (PWM) Module
- ▷ **IL-NT RD (SW)** – Remote Display Software for IntelLite^{NT} Controllers
- ▷ **IG-IB** – InternetBridge support
- ▷ **IL-NT GPRS** – GSM Modem/Wireless Internet Module
- ▷ **IL-NT RS232** – RS232 Extension Board
- ▷ **IL-NT RS232-485** – Dual Port Extension Board
- ▷ **IL-NT S-USB** – Service USB Module
- ▷ **InteliMonitor** – PC Monitoring Tool
- ▷ **WinScope** – Special Graphical Controllers' Monitoring Software
- ▷ **LiteEdit** – PC Configuration and Monitoring Tool



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