ottomotores

CUMMINS SERIE QSK

Energía que Mueve al Mundo

Definiciónes

Potencia Prime
Estos valores son aplicables para el suministro de energía eléctrica continua (a carga variable) en lugar de la red comercial + 10% sobrecarga

Potencia Stand by
Estos valores son aplicables para el suministro de energía eléctrica continua (con carga variable) en caso de falla de la red comercial. No se permite sobre-carga sobre estos valores.

Tabla de Potencias

Modelo	Voltaje	Prime kVA	Prime kWe	Stand-by kVA	Stand-by kWe
CNY1750*	220-440V	1989	1591	2188	1750
CNY2000*	220-440V	2273	1818	2500	2000

* solo en 440V.

0.8 Factor de potencia

Información Técnica

Datos Técnicos	CNY1750	CNY2000
Frecuencia:	60 Hz	60 Hz
Marca / Modelo	QSK60G5	QSK60G6
Generador Modelo:	Stamford PI734E	Stamford PI734F
Número de Cilindros:	16 in Vee	16 in Vee
Diametro por Carrera :in (mm)	6.25 x 7.48 (159 x 190)	6.25 x 7.48 (159 x 190)
Relación de Compresión:	14.5:1	
Aspiración:	turbocargado y postenfriado	
Velocidad:	1800 RPM	
Potencia: BHP(kWm)	2547 (1900)	2922 (2180)
Presion Efectiva: psi (kPA)	305 (2103)	351 (2420)
Velocidad dePiston: ft/min (m/s)	2243 (11.4)	2243 (11.4)
Consumo a plena carga: lt / hr - 100%	447,00	521,00
Calor Expulsado en el Sistema de Escape: BTU/min (kWm)	71360 (12550)	90340 (1590)
Calor Expulsado en el Sistema de Enfriamiento: BTU/min (kWm)	35100 (620)	35150 (620)
Temperatura de Escape: °F (°C)	880 (470)	890 (475)
Flujo de Enfriamiento en el Radiador m³/seg - FPM	llame a fabrica	llame a fabrica
Flujo de Escape: cfm (liter/s)	13400 (6320)	15500 (7320)

Nota: Imagen de carácter ilustrativa ya que los equipos en foto pudieran incluir accesorios opcionales

Como leer nuestro codigo: Ejem: **CNY1250**

C=Motor Cummins
N=Generador Newage Stamford
Y=60Hz-1800 RPM
1250= Potencia del Equipo.

Ottomotores, S.A de C.V.
Calz. San Lorenzo No.1150
Col. Cerro de la estrella, C.P. 09860
Delg. Iztapalapa México, D.F.
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Fax: 52-55-5426-5521 / 52-55-5426-5581
email: **ventas@ottomotores.com.mx**
sitio web: **www.ottomotores.com.mx**

Dimensiones

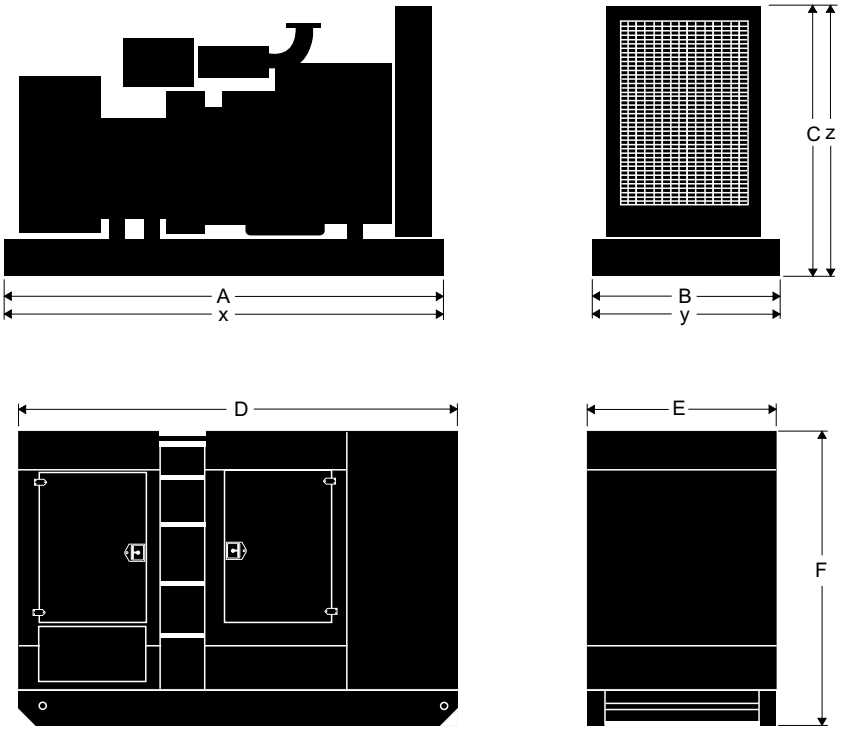

Tabla de Dimensiones

CNY1750	Equipo con Base Estructural			Equipo con Base Tanque			Equipo con Caseta Acústica*		
	A	B	C	x	y	z	D	E	F
G-drive	600,00	228,00	276,00	llame a Fabrica			llame a Fabrica		
	Peso: 13059,00 kgs								
C.pack	600,00	253,00	315,00						
	Peso: 12969,00 kgs								

CNY2000	Equipo con Base Estructural			Equipo con Base Tanque			Equipo con Caseta Acústica*		
	A	B	C	x	y	z	D	E	F
G-drive	600,00	228,00	276,00	llame a Fabrica			llame a Fabrica		
	Peso: 13544,00 kgs								
C.pack	600,00	253,00	315,00						
	Peso: 13454,00 kgs								

[*] Equipo opcional

Información Técnica

Nota: las condiciones de referencia estándar son de 25 ºC (77 º F) temperatura de entrada de aire. Todos los datos de desempeño de motores son basados en la potencia mencionada arriba.

Datos de consumo de combustible a plena carga con combustible diesel tienen una gravedad específica de 0,85

Comercializado por:

Módulos de Control

Ottomotores tiene una posición única en la fabricación de grupos electrógenos utilizando en ellos módulos de control que cumplen con todos los niveles de requerimiento del mercado nacional y de exportación.

Las diferentes soluciones de controles que se tienen para nuestra gama de plantas generadoras, permite una operación simple en modo manual y automático, asi mismo permiten desarrollar proyectos de sincronía entre plantas generadoras o con la red de energía eléctrica.

La familia de módulos de control en transición abierta (DALE 3200) permite tener control en forma automática de la unidad de transferencia, asi como elmonitoreo del grupo generador.

Nuestro modulos de control cuentan con puerto de comunicación RS485 para la comunicación remota con el grupo generador.

Los módulos pueden ser monitoreados através de un exelente software para observar parámetros del equipo de manera facíl y rapida.

La familia de módulos de control para la sincronía (6100, 6050 y 6300),incorporan un amplio sistema de monitoreos ademas de conexion a Internet (LAN) o mensaje SMS via celular, o usando los puertos de comunicación RS485 a través de ModBus

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Energía que Mueve al Mundo

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CUMMINS ENGINE COMPANY, INC Columbus, Indiana 47201 ENGINE PERFORMANCE CURVE	Basic Engine Model: **QSK60-G5**	Curve Number: **FR-6346**	*G-DRIVE* **QSK** **1**
	Engine Critical Parts List: **CPL: 2920**	Date: **6Dec99**	

Displacement : **60.2** liter (**3673** in^3)	Bore : **159** mm (**6.25** in.) Stroke : **190** mm (**7.48** in.)
No. of Cylinders : **16**	Aspiration : **Turbocharged and Low Temperature Aftercooled (2 pump / 2 loop)**

•• DRAFT ••

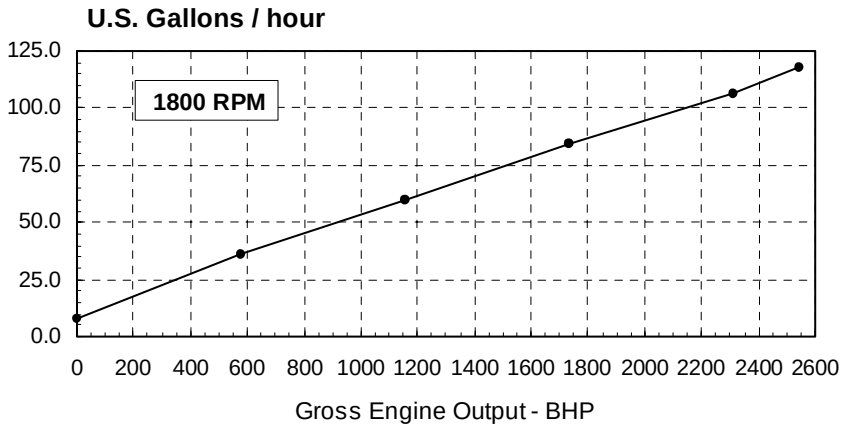
Engine Speed	Standby Power		Prime Power		Continuous Power	
RPM	kWm	BHP	kWm	BHP	kWm	BHP
1800	1900	2547	1725	2312	1570	2105

Emissions Certification

This engine will be certified to certain emissions requirements established by US EPA/CARB.

Engine Performance Data @ 1800 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm·h	lb/ BHP·h	liter/ hour	U.S. Gal/ hour
STANDBY POWER						
100	1900	2547	0.200	0.329	447	118.0
PRIME POWER						
100	1725	2312	0.198	0.326	402	106.2
75	1294	1734	0.210	0.345	319	84.3
50	863	1156	0.224	0.368	227	59.9
25	431	578	0.269	0.442	136	36.0
CONTNUOUS POWER						
100	1570	2105	0.201	0.330	371	97.8



These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. Generator drive engines are not designed for and shall not be used in variable speed D.C. generator set applications.

STANDBY POWER RATING
Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Standby Power rating. This rating should be applied where reliable utility power is available. A Standby rated engine should be sized for a maximum of an 80% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating. Standby ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency.

PRIME POWER RATING
Applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:

UNLIMITED TIME RUNNING PRIME POWER

Prime Power is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours. The total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

LIMITED TIME RUNNING PRIME POWER

Limited Time Prime Power is available for a limited number of hours in a non-variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Prime Power rating should use the Continuous Power rating.

CONTINUOUS POWER RATING
Applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

CONVERSIONS: (liters = U.S. Gal x 3.785) (kWm = BHP x 0.746) (U.S. Gal = liters x 0.2642) (BHP = kWm x 1.34)

Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100 kPa (29.53 in Hg) barometric pressure [110 m (361 ft) altitude], 25 °C (77 °F) air inlet temperature, and relative humidity of 30% with No. 2 diesel or a fuel corresponding to ASTM D2.

See reverse side for application rating guidelines.

The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/liter (7.1 lbs/U.S. gal).

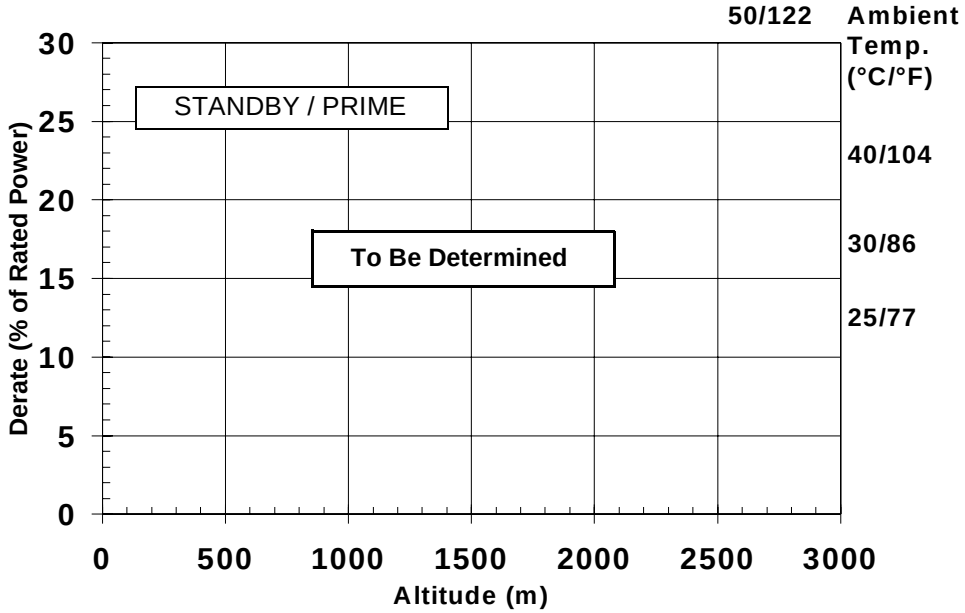
Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan, optional equipment and driven components.

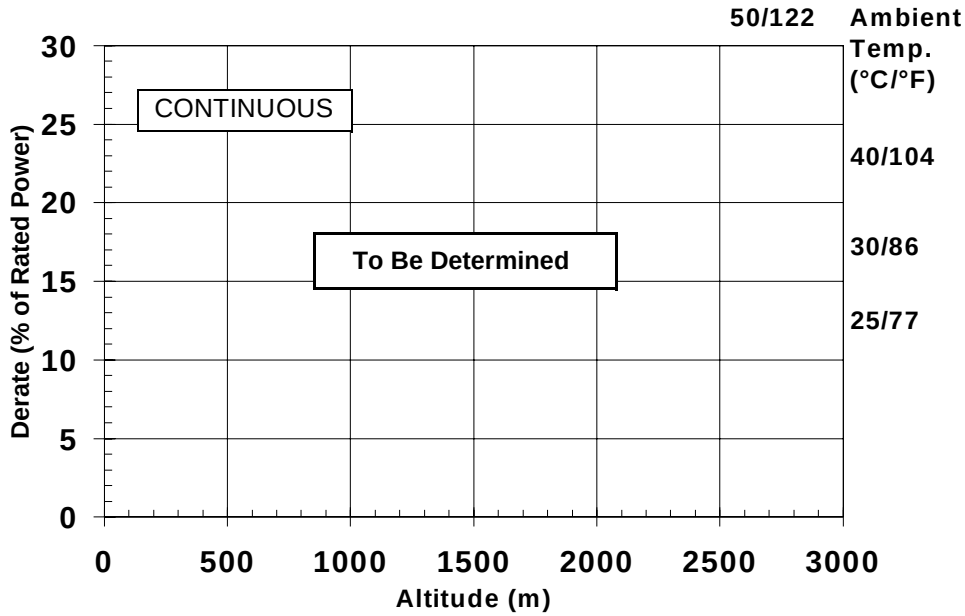
TECHNICAL DATA DEPT. **NON-CERTIFIED**

QSK60-G5 Derate Curves @ 1800 RPM

CURVE NO: FR-6346
DATE: 6Dec99

DRAFT





Note: Derates shown are based on 15 in H_20 air intake restriction and 2 in Hg exhaust back pressure.

Reference Standards:

BS-5514 and DIN-6271 standards are based on ISO-3046.

Operation At Elevated Temperature And Altitude:

The engine may be operated at:

1800 RPM up to 1000 m (3280 ft) and 40 ^{O}C (104 ^{O}F) without power deration.

Cummins Engine Company, Inc.
Base Engine Data Sheet

•• DRAFT ••

ENGINE MODEL : QSK60-G5 **CONFIGURATION NUMBER : D593002GX03**

DATA SHEET : DS-6346
DATE : 6Dec99
PERFORMANCE CURVE : FR-6346

INSTALLATION DIAGRAM
• Fan to Flywheel : 3170292

CPL NUMBER
• Engine Critical Parts List : 2920

GENERAL ENGINE DATA

Type	4-Cycle; 60° Vee; 16-Cylinder Diesel	
Aspiration	Turbocharged and Low Temp. Aftercooled (2 Pump / 2 Loop)	
Bore x Stroke — mm x mm (in x in)	159 x 190 (6.25 x 7.48)	
Displacement — liter (in^3)	60.2 (3673)	
Compression Ratio	14.5 : 1	
Dry Weight		
Fan to Flywheel Engine (with SAE 0 Flywheel and Flywheel Housing) — kg (lb)	7185	(15835)
Wet Weight		
Fan to Flywheel Engine — kg (lb)	7540	(16620)
Moment of Inertia of Rotating Components		
• with FW 6043 Flywheel (SAE 0) — kg • m^2 (lb_m • ft^2)	15.77	(375.5)
• with FW 6034 Flywheel (SAE 00) — kg • m^2 (lb_m • ft^2)	26.23	(622.4)
Center of Gravity from Front Face of Block — mm (in)	1001	(39.4)
Center of Gravity Above Crankshaft Centerline — mm (in)	219	(8.6)
Maximum Static Loading at Rear Main Bearing — kg (lb)	TBD	TBD

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block — N • m (lb • ft)	10350	(7634)

EXHAUST SYSTEM

Maximum Back Pressure at 1800 RPM (Standby Power) — mm Hg (in Hg)	51	(2)

AIR INDUCTION SYSTEM

Maximum Intake Air Restriction		
• with Dirty Filter Element — kPa (in H_2O)	6.2	(25)
• with Normal Duty Air Cleaner and Clean Filter Element — kPa (in H_2O)	3.7	(15)

COOLING SYSTEM (Separate Circuit Aftercooling Required)

Coolant Capacity — Engine Only — liter (US gal)	157	(42)
— Aftercoolers — liter (US gal)	34	(9)
Maximum Coolant Friction Head External to Engine — 1800 rpm — kPa (psi)	69	(10)
Maximum Static Head of Coolant Above Engine Crank Centerline — m (ft)	18.3	(60)
Thermostat Modulating Range — High Flow °C (°F)	85 -96	(185 -205)
— Low Flow °C (°F)	46 - 57	(115 - 135)
Minimum Pressure Cap (For Cooling Systems with less than 2 m [6 ft.] Static Head) — kPa (psi)	70	(10)
Maximum Top Tank Temperature for Standby / Prime Power — °C (°F)	104 / 100	(220 / 212)
Aftercooler Circuit Requirements:		
Maximum Coolant Friction Head External to Engine — 1800 rpm — kPa (psi)	48	(7)
Maximum Inlet Water Temperature to Aftercooler @ 77 °F Ambient — °C (°F)	49	(120)
Maximum Inlet Water Temperature to Aftercooler — °C (°F)	65	(150)

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed — kPa (psi)	138	(20)
@ Governed Speed — kPa (psi)	345-483	(50-70)
Maximum Oil Temperature — °C (°F)	121	(250)
Oil Capacity with OP ----- Oil Pan : High - Low — liter (US gal)	231-261	(61-69)
Total System Capacity (with Combo Filter) — liter (US gal)	280	(74)

FUEL SYSTEM

Type Injection System		Cummins HPI-PT	
Maximum Restriction at PT Fuel Injection Pump	— with Clean Fuel Filter — mm Hg (in Hg)	120	(4.0)
	— with Dirty Fuel Filter — mm Hg (in Hg)	203	(8.0)
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head)	— mm Hg (in Hg)	229	(9.0)
Maximum Fuel Inlet Temperature	—°C (°F)	70	(160)
Maximum Fuel Flow to Injection Pump	— liter / hr (US gph)	2309	(610)
Maximum Drain Flow	— liter / hr (US gph)	2270	(600)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement)	— volt	24	
Maximum Allowable Resistance of Cranking Circuit	— ohm	.002	
Minimum Recommended Battery Capacity			
• Cold Soak @ 10 °C (50 °F) and Above	— 0°F CCA	1800	
• Cold Soak @ 0 °C to 10 °C (32 °F to 50 °F)	— 0°F CCA	1800	
• Cold Soak @ -18 °C to 0 °C (0 °F to 32 °F)	— 0°F CCA	1800	

COLD START CAPABILITY

Minimum Ambient Temperature for Cold Start with_____watt Coolant Heater to Rated Speed	— °C (°F)	TBD	(TBD)
Minimum Ambient Temperature for Unaided Cold Start to Idle Speed	— °C (°F)	TBD	(TBD)
Minimum Ambient Temperature for NFPA 110 Cold Start (90° F Minimum Coolant Temperature)	— °C (°F)	10	(50)

PERFORMANCE DATA

All data is based on:

- Engine operating with fuel system, water pump, lubricating oil pump, air cleaner and exhaust silencer; not included are battery charging alternator, fan, and optional driven components.
- Engine operating with fuel corresponding to grade No. 2-D per ASTM D975.
- ISO 3046, Part 1, Standard Reference Conditions of:

Barometric Pressure	: 100 kPa (29.53 in Hg)	Air Temperature	: 25 °C (77 °F)
Altitude	: 110 m (361 ft)	Relative Humidity	: 30%

Steady State Stability Band at any Constant Load	— %	+/- 0.25
Estimated Free Field Sound Pressure Level of a Typical Generator Set; Excludes Exhaust Noise; at Rated Load and 7.5 m (24.6 ft); 1800 rpm	— dBA	96.5 (est.)
Exhaust Noise at 1 m Horizontally from Centerline of Exhaust Pipe Outlet Upwards at 45°	— dBA	110 (est.)

		STANDBY POWER 60 hz	STANDBY POWER 50 hz	PRIME POWER 60 hz	PRIME POWER 50 hz
Governed Engine Speed	— rpm	1800		1800	
Engine Idle Speed	— rpm	650 - 750		650 - 750	
Gross Engine Power Output	— kW_m (BHP)	1900 (2547)		1725 (2312)	
Brake Mean Effective Pressure	— kPa (psi)	2103 (305)		1910 (277)	
Piston Speed	— m / s (ft / min)	11.4 (2243)		11.4 (2243)	
Friction Horsepower	— kW_m (HP)	207 (277)		207 (277)	
Engine Jacket Water Flow at Stated Friction Head External to Engine:					
• 4 psi Friction Head	— liter / s (US gpm)	32.2 (510)		32.2 (510)	
• Maximum Friction Head	— liter / s (US gpm)	30.3 (480)	**Not Applicable for 1500 RPM Operation**	30.3 (480)	**Not Applicable for 1500 RPM Operation**
Engine Data					
Intake Air Flow	— liter / s (cfm)	2480 (5250)		2330 (4940)	
Exhaust Gas Temperature	— °C (°F)	470 (880)		460 (860)	
Exhaust Gas Flow	— liter / s (cfm)	6320 (13400)		5865 (12425)	
Air to Fuel Ratio	— air : fuel	27.2:1		28.1:1	
Radiated Heat to Ambient	— kW_m (BTU / min)	180 (10270)		165 (9430)	
Heat Rejection to Engine Jacket Radiator	— kW_m (BTU / min)	620 (35100)		585 (33150)	
Heat Rejection to Exhaust	— kW_m (BTU / min)	1255 (71360)		1185 (67220)	
Heat Rejection to Fuel*	kW_m (BTU / min)	55 (3000)		55 (3000)	
Engine Aftercooler Data					
Heat Rejection to Coolant	— kW_m (BTU / min)	510 (28800)		440 (24800)	
Aftercooler Water Flow at Stated Friction Head External to Engine:					
• 2 psi Friction Head	— liter / s (US gpm)	8.5 (135)		8.5 (135)	
• Maximum Friction Head	— liter / s (US gpm)	8.4 (132.5)		8.4 (132.5)	

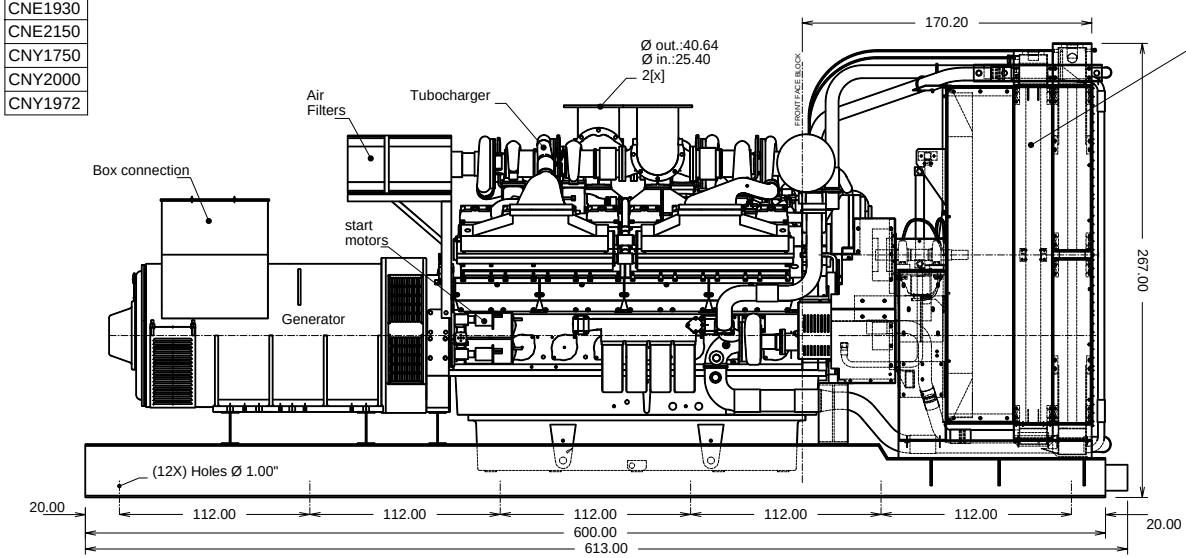
* This is the maximum heat rejection to fuel, which is at low load.

N.A. - Data is Not Available
N/A - Not Applicable to this Engine
TBD - To Be Determined

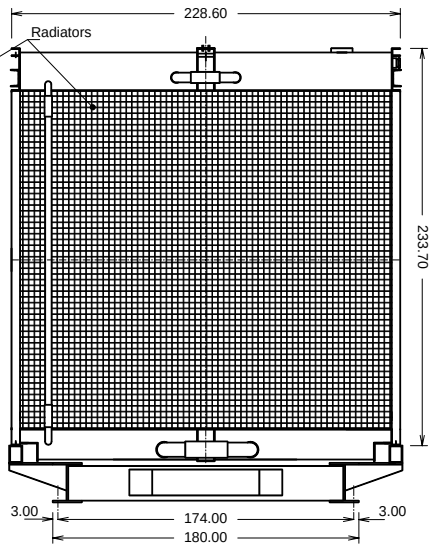
•• DRAFT ••

ENGINE MODEL : **QSK60-G5**
DATA SHEET : DS-6346
DATE : 6Dec99
CURVE NO. : FR-6346

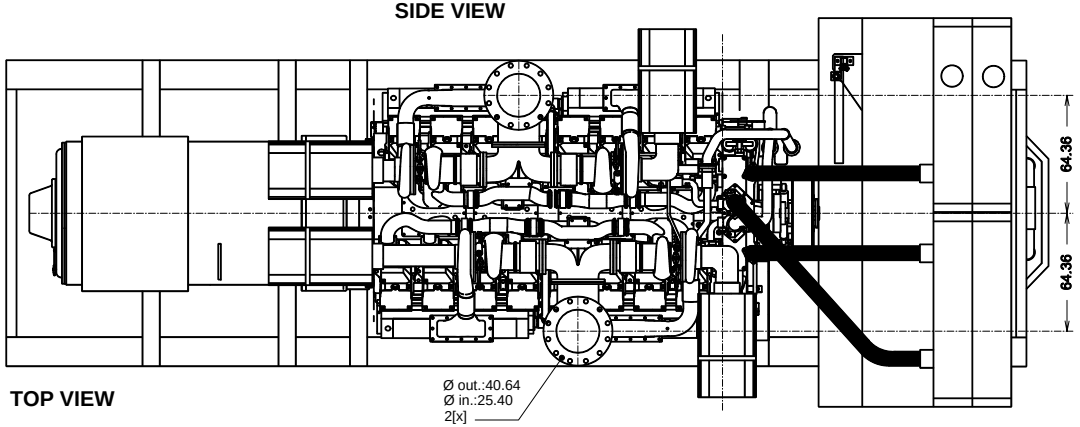
MODELS
CNE1930
CNE2150
CNY1750
CNY2000
CNY1972



SIDE VIEW



FRONT VIEW



TOP VIEW

DESCRIPTION	
RADIATOR:	BEARWARD ENG LTD 56064/05
ENGINE:	QSK60G3/G4/G5/G6
AIR: FILTER	AH1135 (4X)
BASE FRAME:	BP-QSK-STF
# SPRING AVMS:	12 PZS

-THE GENSET DIMENSIONS ARE THE SAME BY FAMILY MODEL, THERE COULD BE ONLY DIFFERENCES ON THE ALTERNATOR LENGHT SEE SPECIFIC GENERAL ARRAGEMENT DRAWING OF CERTEIN MODEL

-TOTAL WEIGHT COULD VARY CHECK RATING CHART FOR EACH MODEL

Customer: S/O:

Rev.	Description	Date	Certificated

Reviews

Title: ***CUMMINS ENGINE QSK60G3/G4/G5/G6 - STAMFORD ALTERNATOR***

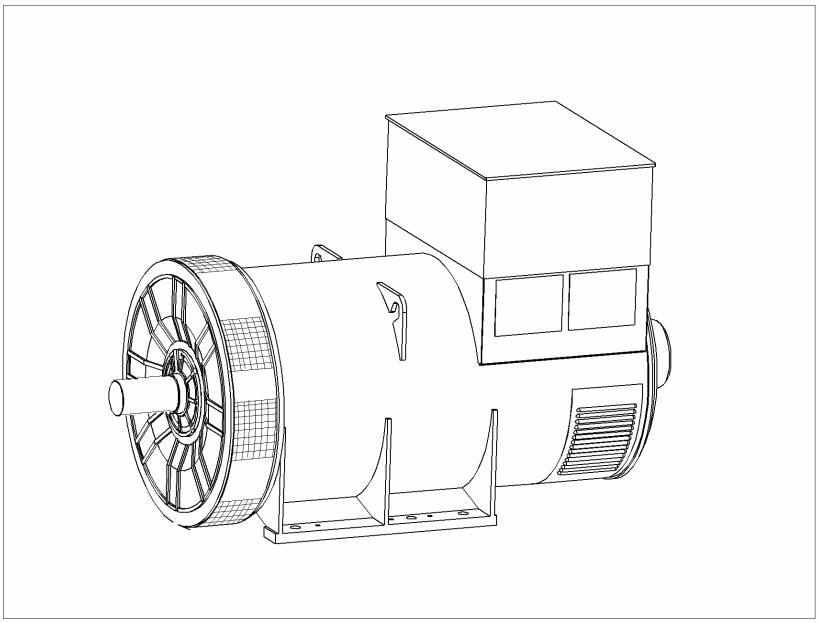
Draw: R.G.C.	Revised: F.H.M.	Certificated: F.H.M.	Code: **CNE/Y-18**
Date: JAN 05th 2005	Date: JAN 05th 2005	Date: JAN 05th 2005	Dept.: Engineering

Marks: cms | Scale: s/e | Draw: | Of:

Ottomotores keeps the right to change the information with out prior notice

FO 023-0

PI734E - Technical Data Sheet



PI734E

SPECIFICATIONS & OPTIONS

STAMFORD
power generation

STANDARDS

Newage Stamford industrial generators meet the requirements of BS EN 60034 and the relevant sections of other national and international standards such as BS5000, VDE 0530, NEMA MG1-32, IEC60034, CSA C22.2-100, AS1359.
Other standards and certifications can be considered on request.

DESCRIPTION

The STAMFORD PI range of synchronous ac generators are brushless with a rotating field. They are separately excited by the STAMFORD Permanent Magnet Generator (PMG). This is a shaft mounted, high frequency, pilot exciter which provides a constant supply of clean power via the Automatic Voltage Regulator (AVR) to the main exciter. The main exciter output is fed to the main rotor, through a full wave bridge rectifier, protected by surge suppression.

VOLTAGE REGULATORS

The PI range generators, complete with a PMG, are available with one of two AVRs. Each AVR has soft start voltage build up and built in protection against sustained over-excitation, which will de-excite the generator after a minimum of 8 seconds.
Underspeed protection (UFRO) is also provided on both AVRs. The UFRO will reduce the generator output voltage proportional to the speed of the generator below a pre-settable level.

The **MX341 AVR** is two phase sensed with a voltage regulation of ± 1 %. (see the note on regulation).

The **MX321 AVR** is 3 phase rms sensed with a voltage regulation of 0.5% rms (see the note on regulation). The UFRO circuit has adjustable slope and dwell for controlled recovery from step loads. An over voltage protection circuit will shutdown the output device of the AVR, it can also trip an optional excitation circuit breaker if required. As an option, short circuit current limiting is available with the addition of current transformers.

Both the MX341 and the MX321 need a generator mounted current transformer to provide quadrature droop characteristics for load sharing during parallel operation. Provision is also made for the connection of the STAMFORD power factor controller, for embedded applications, and a remote voltage trimmer.

WINDINGS & ELECTRICAL PERFORMANCE

All generator stators are wound to 2/3 pitch. This eliminates triplen (3rd, 9th, 15th …) harmonics on the voltage waveform and is found to be the optimum design for trouble-free supply of non-linear loads. The 2/3 pitch design avoids excessive neutral currents sometimes seen with higher winding pitches. A fully connected damper winding reduces oscillations during paralleling. This winding, with the 2/3 pitch and carefully selected pole and tooth designs, ensures very low levels of voltage waveform distortion.

TERMINALS & TERMINAL BOX

Standard generators feature a main stator with 6 ends brought out to the terminals, which are mounted on the frame at the non-drive end of the generator. A sheet steel terminal box contains the AVR and provides ample space for the customers' wiring and gland arrangements. It has removable panels for easy access.

SHAFT & KEYS

All generator rotors are dynamically balanced to better than BS6861:Part 1 Grade 2.5 for minimum vibration in operation. Two bearing generators are balanced with a half key.

INSULATION/IMPREGNATION

The insulation system is class 'H', and meets the requirements of UL1446.
All wound components are impregnated with materials and processes designed specifically to provide the high build required for static windings and the high mechanical strength required for rotating components.

QUALITY ASSURANCE

Generators are manufactured using production procedures having a quality assurance level to
BS EN ISO 9001.

NOTE ON REGULATION

The stated voltage regulation may not be maintained in the presence of certain radio transmitted signals. Any change in performance will fall within the limits of Criteria 'B' of EN 61000-6-2:2001. At no time will the steady-state voltage regulation exceed 2%.

Note: Continuous development of our products entitles us to change specification details without notice, therefore they must not be regarded as binding.

Front cover drawing is typical of the product range.

STAMFORD
power generation

PI734E

WINDING 312

CONTROL SYSTEM	SEPARATELY EXCITED BY P.M.G.		
A.V.R.	MX341	MX321	
VOLTAGE REGULATION	± 1 %	± 0.5 %	With 4% ENGINE GOVERNING
SUSTAINED SHORT CIRCUIT	REFER TO SHORT CIRCUIT DECREMENT CURVES (page 7)		

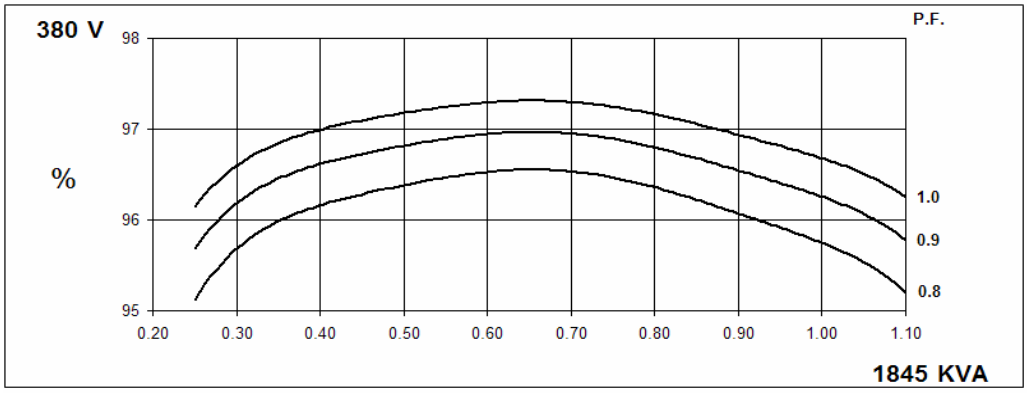
INSULATION SYSTEM	CLASS H							
PROTECTION	IP23							
RATED POWER FACTOR	0.8							
STATOR WINDING	DOUBLE LAYER LAP							
WINDING PITCH	TWO THIRDS							
WINDING LEADS	6							
MAIN STATOR RESISTANCE	0.00093 Ohms PER PHASE AT 22°C STAR CONNECTED							
MAIN ROTOR RESISTANCE	2.17 Ohms at 22°C							
EXCITER STATOR RESISTANCE	17.5 Ohms at 22°C							
EXCITER ROTOR RESISTANCE	0.048 Ohms PER PHASE AT 22°C							
R.F.I. SUPPRESSION	BS EN 61000-6-2 & BS EN 61000-6-4,VDE 0875G, VDE 0875N. refer to factory for others							
WAVEFORM DISTORTION	NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%							
MAXIMUM OVERSPEED	2250 Rev/Min							
BEARING DRIVE END	BALL. 6228 C3							
BEARING NON-DRIVE END	BALL. 6319 C3							
	1 BEARING				2 BEARING			
WEIGHT COMP. GENERATOR	3556 kg				3506 kg			
WEIGHT WOUND STATOR	1747 kg				1747 kg			
WEIGHT WOUND ROTOR	1494 kg				1432 kg			
WR² INERTIA	45.49 kgm^2				44.4891 kgm^2			
SHIPPING WEIGHTS in a crate	3629kg				3575kg			
PACKING CRATE SIZE	216 x 105 x 154(cm)				216 x 105 x 154(cm)			
	50 Hz				60 Hz			
TELEPHONE INTERFERENCE	THF<2%				TIF<50			
COOLING AIR	2.69 m³/sec 5700 cfm				3.45 m³/sec 7300 cfm			
VOLTAGE STAR	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
kVA BASE RATING FOR REACTANCE VALUES	1845	1900	1900	1865	2070	2210	2255	2300
Xd DIR. AXIS SYNCHRONOUS	3.18	2.96	2.75	2.40	3.84	3.67	3.42	3.21
X'd DIR. AXIS TRANSIENT	0.19	0.18	0.17	0.15	0.23	0.22	0.21	0.19
X"d DIR. AXIS SUBTRANSIENT	0.14	0.13	0.12	0.11	0.17	0.16	0.15	0.14
Xq QUAD. AXIS REACTANCE	2.04	1.90	1.76	1.54	2.47	2.36	2.20	2.06
X"q QUAD. AXIS SUBTRANSIENT	0.29	0.27	0.25	0.22	0.35	0.33	0.31	0.29
X_L LEAKAGE REACTANCE	0.04	0.03	0.03	0.03	0.04	0.04	0.04	0.04
X_2 NEGATIVE SEQUENCE	0.20	0.19	0.17	0.15	0.24	0.23	0.22	0.20
X_0 ZERO SEQUENCE	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03
REACTANCES ARE SATURATED	VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED							
T'd TRANSIENT TIME CONST.	0.149s							
T"d SUB-TRANSTIME CONST.	0.02s							
T'do O.C. FIELD TIME CONST.	2.46s							
Ta ARMATURE TIME CONST.	0.02s							
SHORT CIRCUIT RATIO	1/Xd							

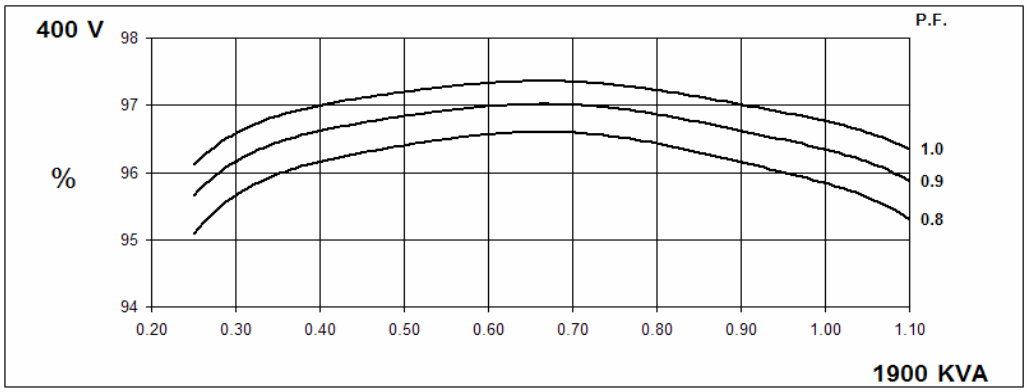
50 Hz

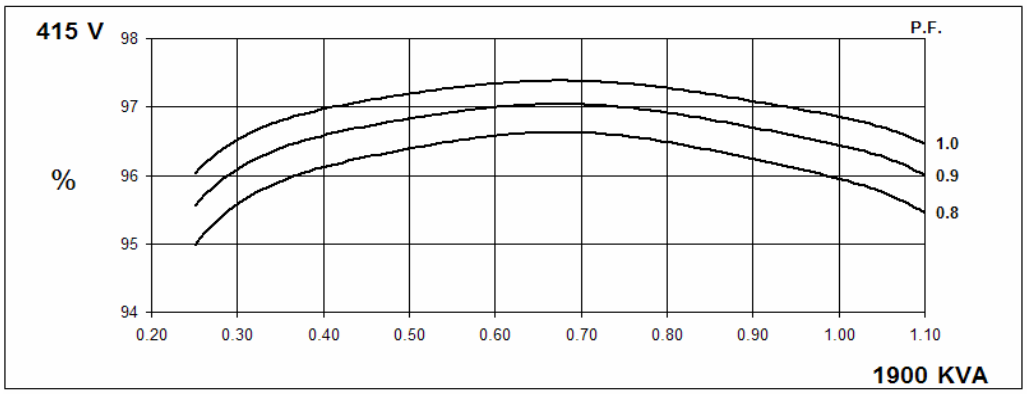
PI734E

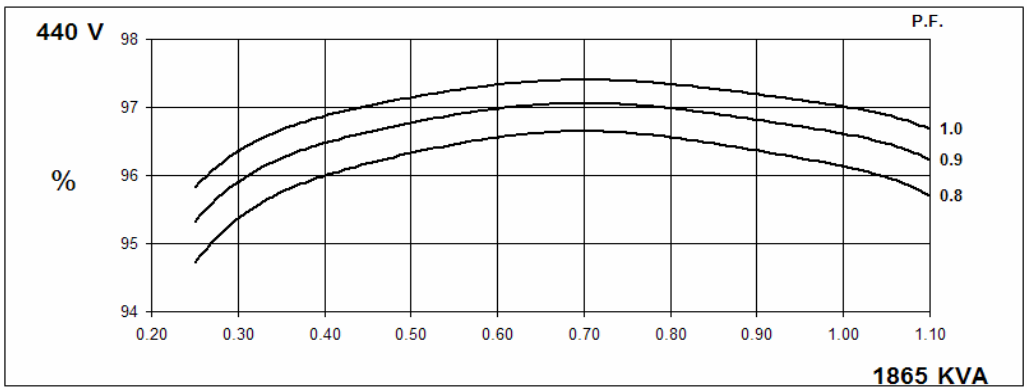
Winding 312

THREE PHASE EFFICIENCY CURVES









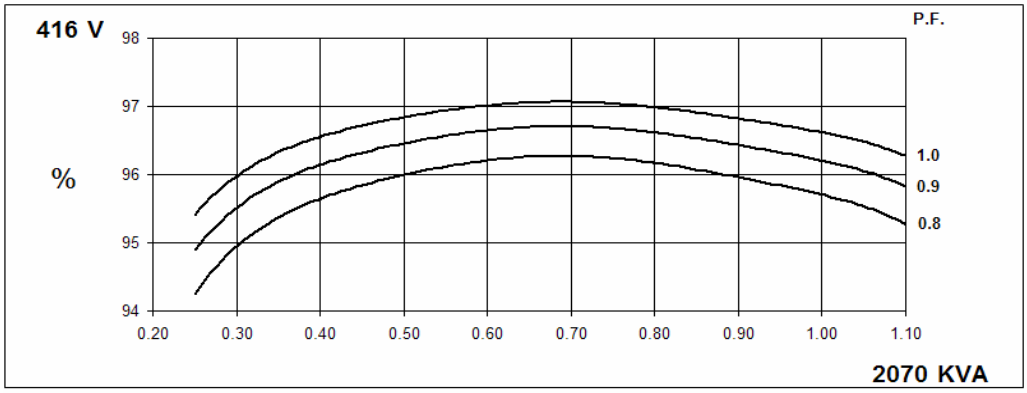
STAMFORD
power generation

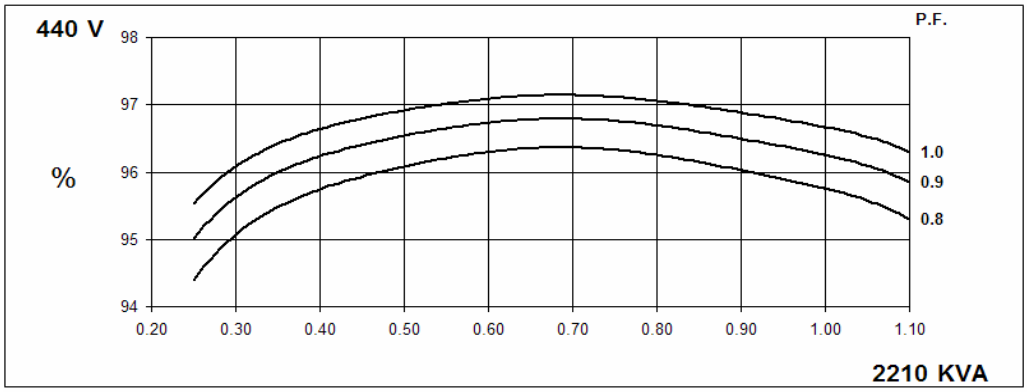
PI734E

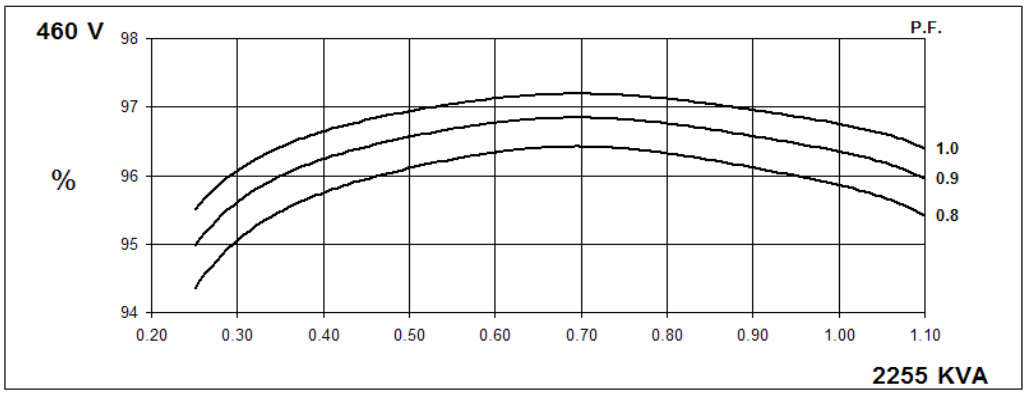
Winding 312

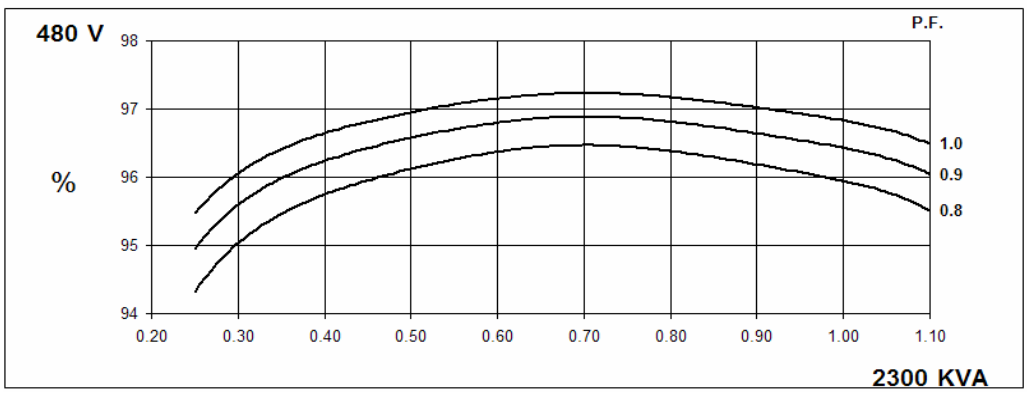
60 Hz

THREE PHASE EFFICIENCY CURVES





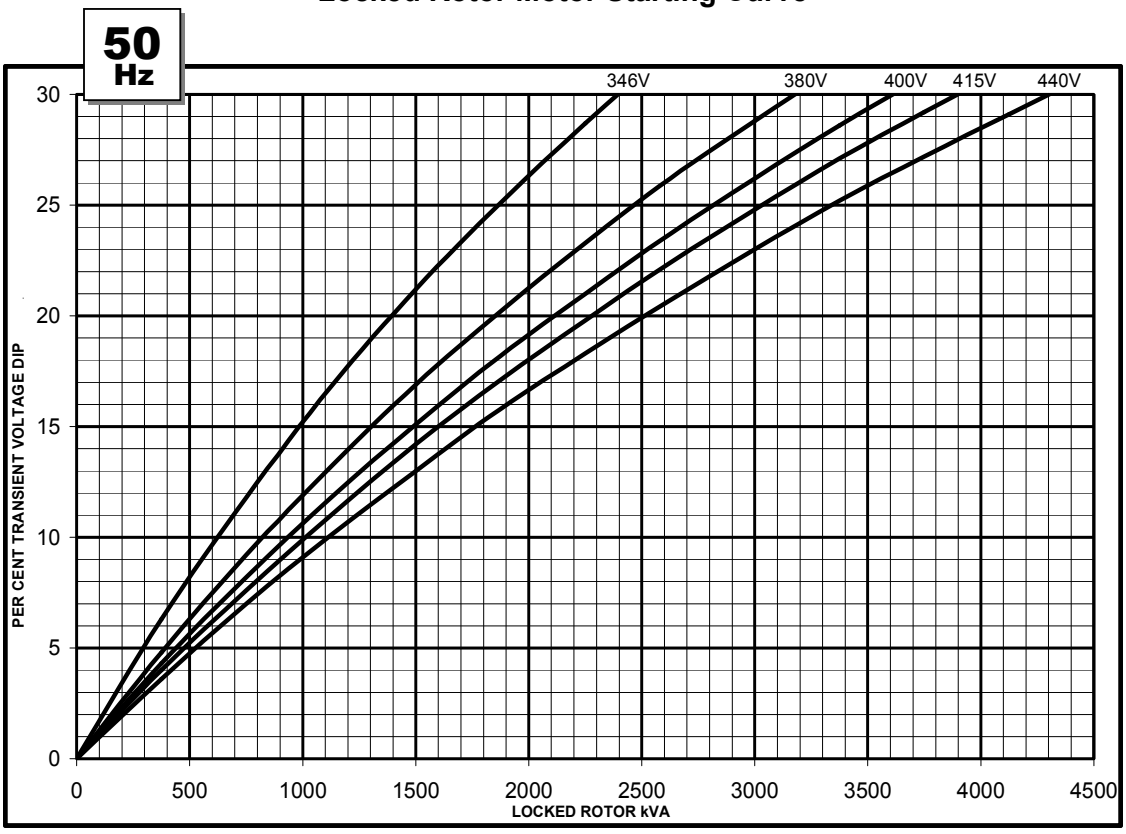


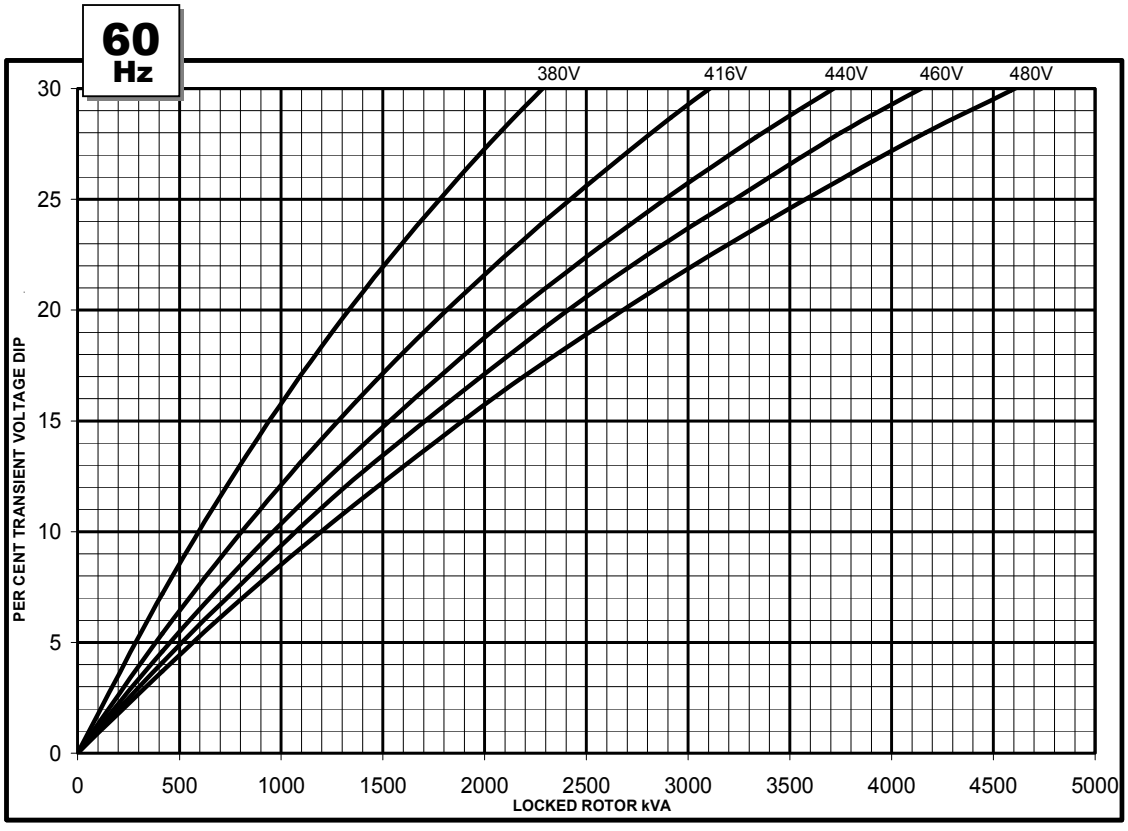


PI734E

Winding 312

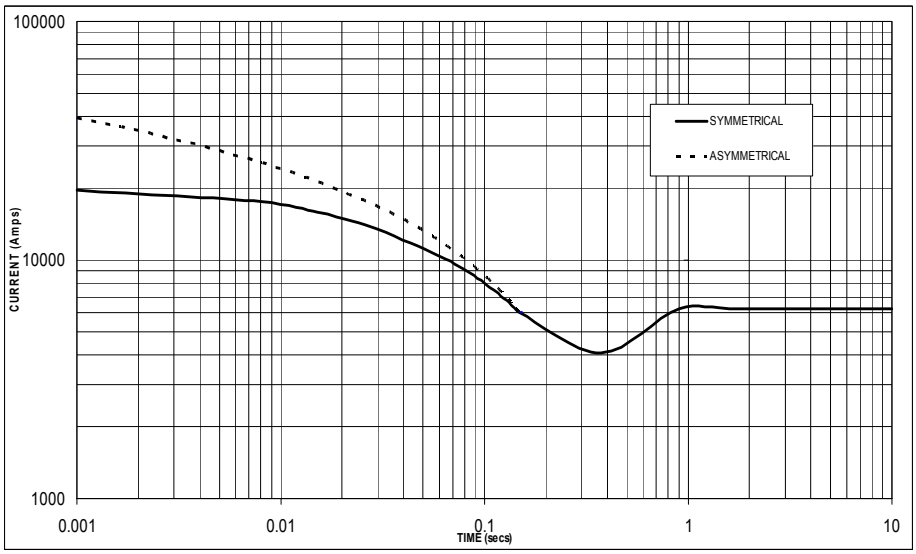
Locked Rotor Motor Starting Curve





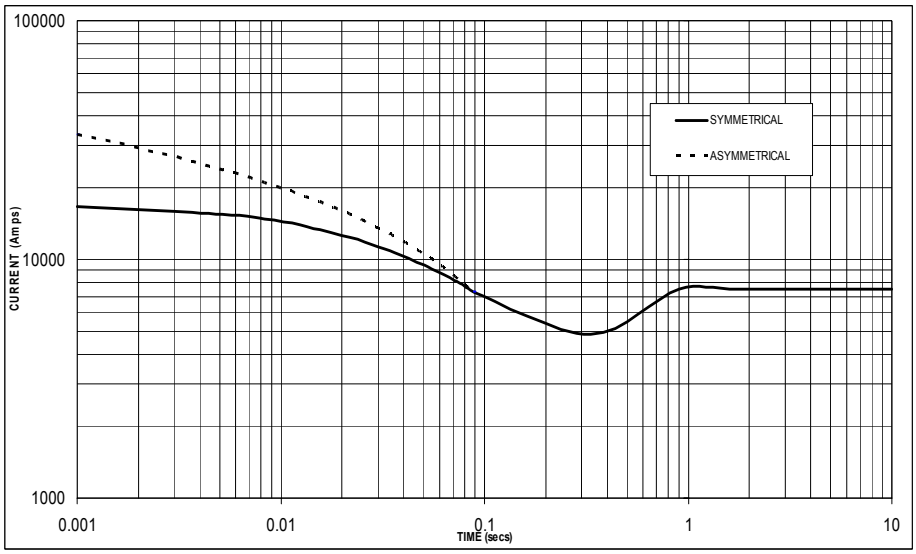
Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed
Based on star (wye) connection.

50 Hz



Sustained Short Circuit = 6,250 Amps

60 Hz



Sustained Short Circuit = 7,500 Amps

Note 1

The following multiplication factors should be used to adjust the values from curve between time 0.001 seconds and the minimum current point in respect of nominal operating voltage :

50Hz		60Hz	
Voltage	Factor	Voltage	Factor
380v	x 1.00	416v	x 1.00
400v	x 1.05	440v	x 1.06
415v	x 1.09	460v	x 1.10
440v	x 1.16	480v	x 1.15

The sustained current value is constant irrespective of voltage level

Note 2

The following multiplication factor should be used to convert the values calculated in accordance with NOTE 1 to those applicable to the various types of short circuit :

	3-phase	2-phase L-L	1-phase L-N
Instantaneous	x 1.00	x 0.87	x 1.30
Minimum	x 1.00	x 1.80	x 3.20
Sustained	x 1.00	x 1.50	x 2.50
Max. sustained duration	10 sec.	5 sec.	2 sec.

All other times are unchanged

Note 3

Curves are drawn for Star (Wye) connected machines.

PI734E

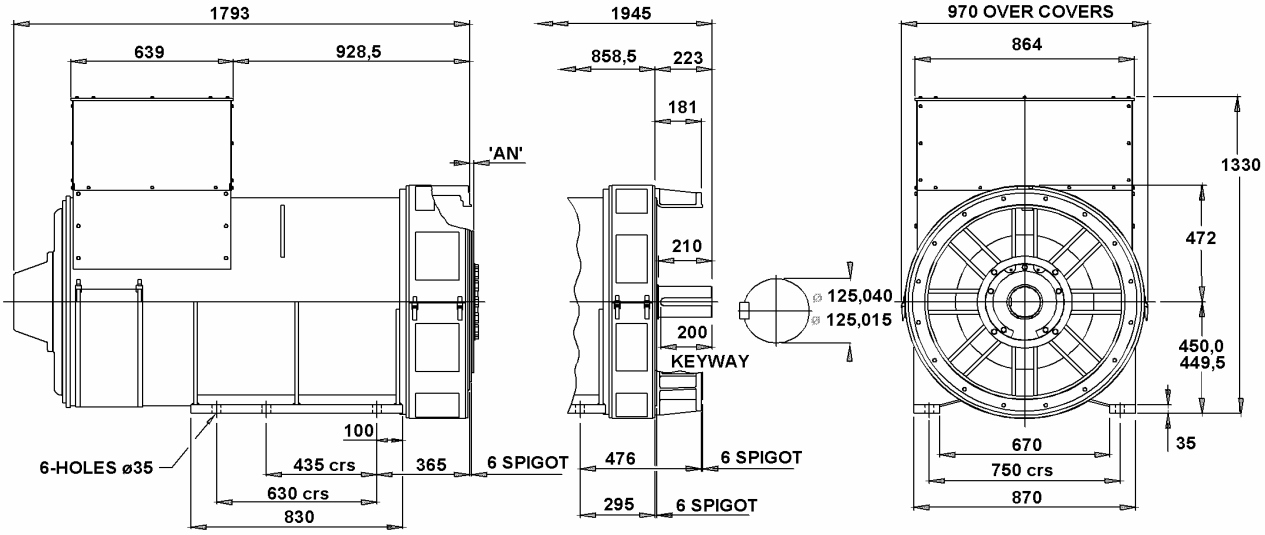
Winding 312 / 0.8 Power Factor

RATINGS

Class - Temp Rise		Cont. F - 105/40°C				Cont. H - 125/40°C				Standby - 150/40°C				Standby - 163/27°C			
50Hz	Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	kVA	1715	1770	1770	1735	1845	1900	1900	1865	1920	1980	1980	1940	1975	2035	2035	1995
	kW	1372	1416	1416	1388	1476	1520	1520	1492	1536	1584	1584	1552	1580	1628	1628	1596
	Efficiency (%)	95.9	96.0	96.1	96.3	95.7	95.8	96.0	96.1	95.6	95.7	95.8	96.1	95.5	95.6	95.8	96.0
	kW Input	1431	1475	1473	1441	1542	1587	1583	1553	1607	1655	1653	1615	1654	1703	1699	1663

60Hz	Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	kVA	1935	2055	2100	2140	2070	2210	2255	2300	2155	2300	2345	2395	2215	2365	2415	2465
	kW	1548	1644	1680	1712	1656	1768	1804	1840	1724	1840	1876	1916	1772	1892	1932	1972
	Efficiency (%)	95.8	95.9	96.0	96.1	95.7	95.8	95.9	95.9	95.6	95.7	95.8	95.9	95.5	95.6	95.7	95.8
	kW Input	1616	1714	1750	1781	1730	1846	1881	1919	1803	1923	1958	1998	1855	1979	2019	2058

DIMENSIONS



COUPLING DISC	'AN'
S.A.E No 18	15,7
S.A.E No 21	0
S.A.E No 24	0

1-BRG ADAPTORS
S.A.E No 0
S.A.E No 00

2-BRG ADAPTORS
S.A.E No 0
S.A.E No 00

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