ottomotores

Energía que Mueve al Mundo

CUMMINS SERIE QSX

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	kVA Prime	kWe Prime	kVAStand-by	kWe Stand-by
CNY450	220-440V	511	409	563	450
CNY500	220-440V	568	455	625	500

0.8 Factor de potencia

Información Técnica

Datos Técnicos	CNY450	CNY500
Frecuencia:	60 Hz	60 Hz
Marca / Modelo	QSX15G7	QSX15G9
Generador Modelo:	Stamford HCI534C	Stamford HCI534D
Número de Cilindros:	6 en linea	6 en linea
Diametro por Carrera :in (mm)	5.39X6.65 (137X169)	5.39X6.65 (137X169)
Relación de Compresión:	17.0 : 1	17.0 : 1
Aspiración:	turbo y postenfriado	turbo y postenfriado
Velocidad:	1800 RPM	1800 RPM
Potencia: BHP(kWm)	685 (511)	750 (560)
Presion Efectiva: psi (kPA)	330 (2275)	360 (2508)
Velocidad dePiston: ft/min (m/s)	1995 (10.1)	1995 (10.1)
Consumo a plena carga: lt / hr - 100%	120.00	135.90
Calor Expulsado en el Sistema de Escape: BTU/min (kWm)	21600(380)	24400 (429)
Calor Expulsado en el Sistema de Enfriamiento: BTU/min (kWm)	7830 (137)	9070 (159)
Temperatura de Escape: ºF (ºC)	909 (487)	909 (488)
Flujo de Enfriamiento en el Radiador m³/seg - FPM	llame a fabrica	llame a fabrica
Flujo de Escape: cfm (liter/s)	3235 (1527)	3845 (1815)

Cummins STAMFORD AC GENERATORS

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

Como leer nuestro codigo: Ejem: **CNY300**

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

LAPEM

Ottomotores, S.A de C.V.
Calz. San Lorenzo No.1150
Col. Cerro de la estrella, C.P. 09860
Delg. Iztapalapa México, D.F.
Tels:52-55-5624-5600
Fax: 52-55-5426-5521 / 52-55-5426-5581
email: **ventas@ottomotores.com.mx**
sitio web: **www.ottomotores.com.mx**

Dimensiones

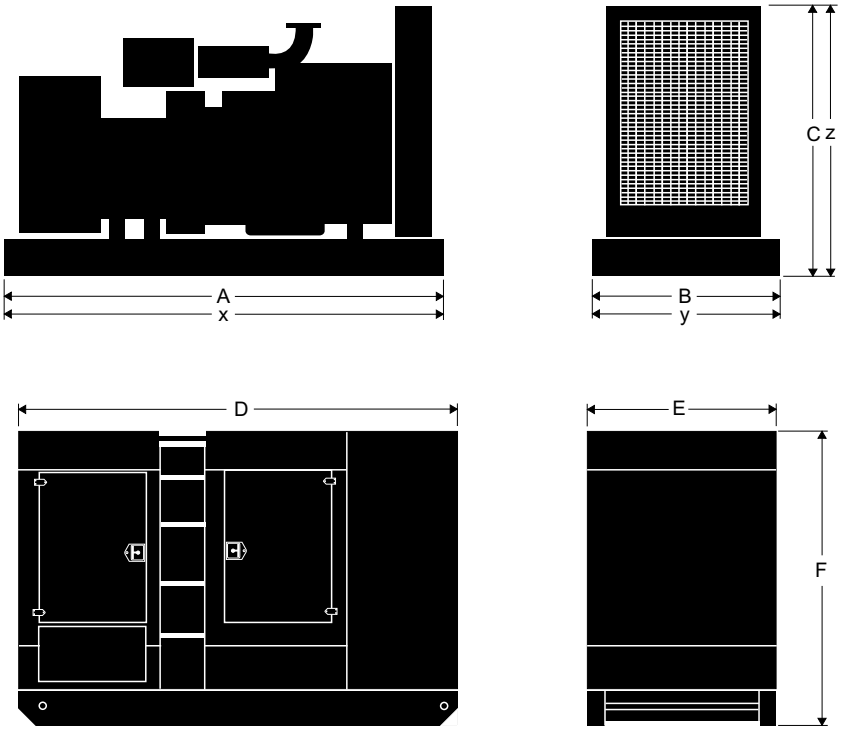

Tabla de Dimensiones

CNY450 CNY500	Equipo con Base Estructural			Equipo con Base Tanque			Equipo con Caseta Acústica*		
	A	B	C	x	y	z	D	E	F
G-drive	345,00	155,00	230,00	381,00	175,00	231,00	500,00	175,00	250,00
	Peso: 3295,00 kgs			Peso: 3780,00 kgs			Peso: 5379,00 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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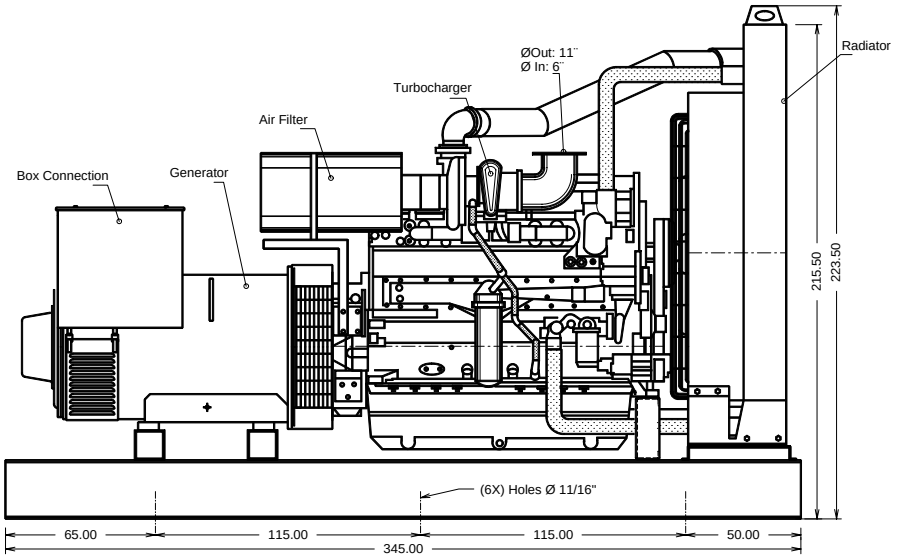
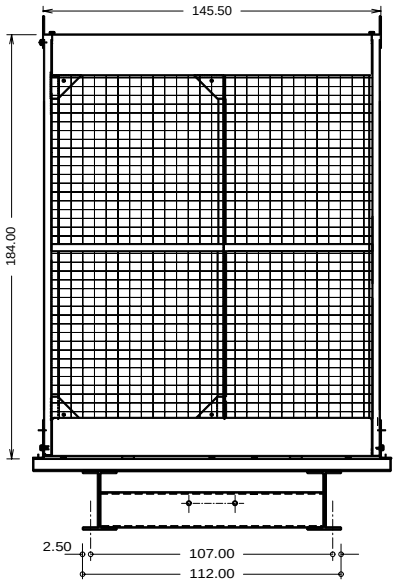
MODELS
CNE405
CNE455
CNE495
CNE530
CNE570
CNY450
CNY500
CNY446
CNY450
CNY500

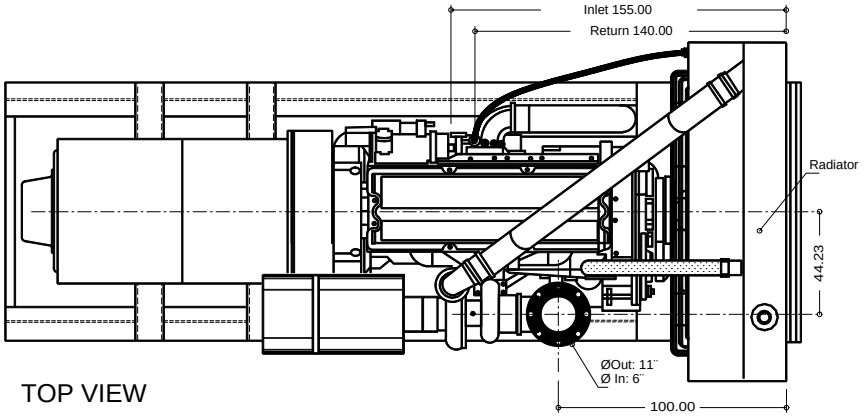


SIDE VIEW



FRONT VIEW

DESCRIPTION	
RADIATOR:	OT10/500
ENGINE:	QSX15G4/G6/G7/G8/G9
AIR: FILTER	AH1135
BASE FRAME:	BP-QSXG7-STF
# SPRING AVMS:	6 PZS



TOP VIEW

-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 QSX15G4/G6/G7/G8/G9 - STAMFORD ALTERNATOR***

Draw: R.G.C.	Revised: F.H.M.	Certificated: F.H.M.	Code: **CNE/Y-11**
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

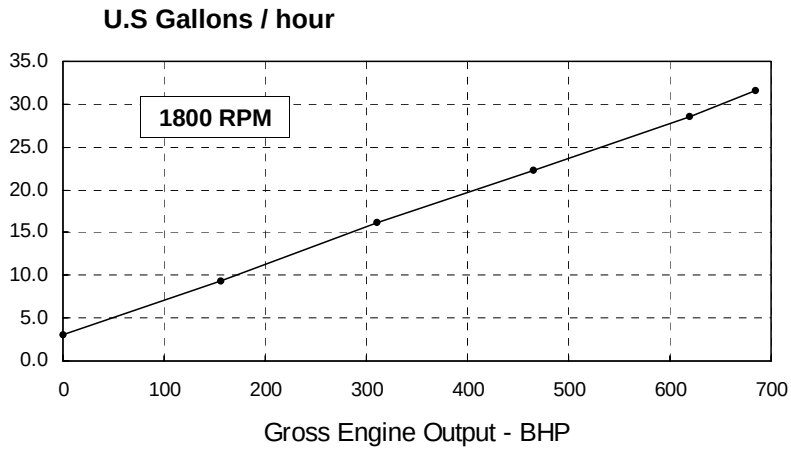
Cummins Inc.	Basic Engine Model: QSX15-G7 Nonroad 2	Curve Number: FR-10440	G-DRIVE QSX 1
Columbus, Indiana 47201	Engine Critical Parts List: CPL: 8142	Date: 4Mar02	
Engine Data Sheet			

Displacement : **15** liter (**912** in^3)	Bore : **137** mm (**5.39** in.) Stroke : **169** mm (**6.65** in.)
No. of Cylinders : **6**	Aspiration : **Turbocharged and Charge Air Cooled**

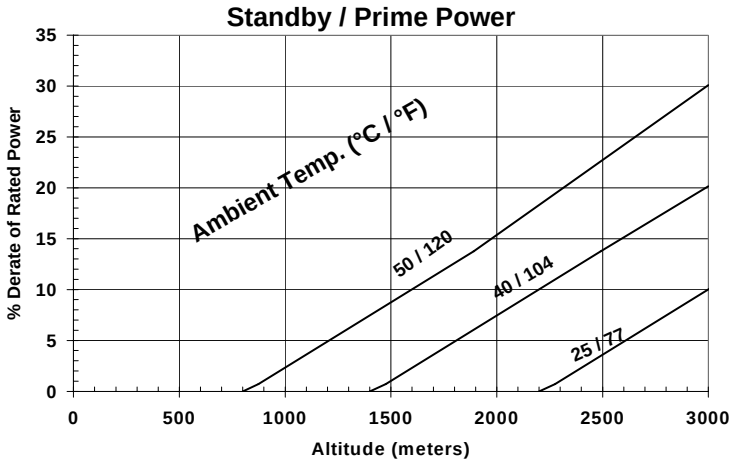
Engine Speed	Standby Power		Prime Power		Continuous Power	
RPM	kWm	BHP	kWm	BHP	kWm	BHP
1800	511	685	463	620	325	435

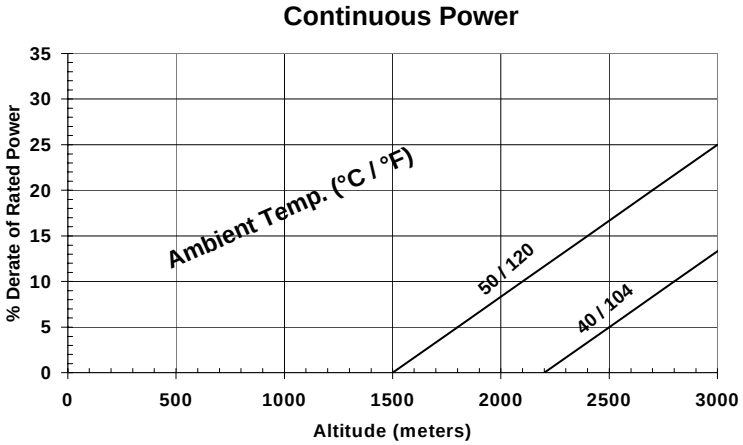
Engine Performance Data @ 1800 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm·h	lb/ BHP·h	liter/ hour	U.S. Gal/ hour
STANDBY POWER						
100	511	685	0.199	0.328	120	31.6
PRIME POWER						
100	463	620	0.198	0.326	108	28.5
75	347	465	0.207	0.341	84.5	22.3
50	231	310	0.224	0.368	60.8	16.1
25	116	156	0.260	0.427	35.5	9.4
CONTINUOUS POWER						
100	325	435	0.207	0.341	79.1	20.9



Power Derate Curves:





Operation At Elevated Temperature And Altitude:

For sustained operation above these conditions, derate by an additional 1.8% per 300 m (1000 ft), and 10% per 10^o C (18^o F).

CONVERSIONS:(Liters = U.S. Gal x 3.785) (U.S.Gal = Liters x 0.2642)

Data Subject to Change Without Notice

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. **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.

Reference AEB 10.47 for determining Electrical Output.

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

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.

Data Status: Limited Production

Data Tolerance: ± 5%

Chief Engineer: D K. Trueblood

Cummins Inc.
Engine Data Sheet

ENGINE MODEL :QSX15-G7 Nonroad 2 **CONFIGURATION NUMBER :** D103003GX03

DATA SHEET : DS-10440
DATE : 4Mar02
PERFORMANCE CURVE : FR-10440

INSTALLATION DIAGRAM
• Fan to Flywheel : 3170370

CPL NUMBER
• Engine Critical Parts List :8142

GENERAL ENGINE DATA

Type		4 Cycle; In-line; 6-Cylinder Diesel	
Aspiration		Turbocharged and Charge Air Cooled	
Bore x Stroke	— in x in (mm x mm)	5.39 x 6.65 (137 x 169)	
Displacement	— in^3 (liter)	912 (15)	
Compression Ratio		17 : 1	
Dry Weight	— lb (kg)	3020	(1370)
Wet Weight	— lb (kg)	3250	(1475)
Moment of Inertia of Rotating Components			
• with FW 1022 Flywheel	— $lb_m \cdot ft^2$ ($kg \cdot m^2$)	106.7	(4.5)
• with FW 1025 Flywheel	— $lb_m \cdot ft^2$ ($kg \cdot m^2$)	192.0	(8.1)
Center of Gravity from Front Face of Block	— in (mm)	19	(483)
Center of Gravity above Crankshaft Centerline	— in (mm)	10	(255)
Maximum Static Loading at Rear Main Bearing	— lb (kg)	5400	(2450)

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block	— lb • ft (N • m)	1500	(2034)

EXHAUST SYSTEM

Maximum Back Pressure at Standby Power Rating	— in Hg (mm Hg)	3	(76)
Maximum Bending Moment to the Turbo Flange	— lb • ft (N • m)	11	(15)

AIR INDUCTION SYSTEM

MaximumTemperature Rise Between Engine Air Inlet and Intake Manifold	— °F (°C)	43	(24)
Maximum Intake Air Restriction Including Air Filter Plumbing			
• with Dirty Filter Element	— in H_2O (mm H_2O)	25	(635)
• with Clean Filter Element	— in H_2O (mm H_2O)	15	(381)
Maximum Allowable Pressure Drop from Turbo Outlet to Intake Manifold	— in Hg (mm Hg)	4	(102)

COOLING SYSTEM

Coolant Capacity — Engine Only	— US qt (liter)	25	(24)
Maximum Coolant Friction Head External to Engine — 1800 rpm	— psi (kPa)	10	(69)
— 1500 rpm	— psi (kPa)	8	(55)
Maximum Static Head of Coolant Above Engine Crank Centerline	— ft (m)	46	(14)
Standard Thermostat (Modulating) Range	— °F (°C)	180 - 200	(82 - 93)
Minimum Pressure Cap	— psi (kPa)	10	(70)
Maximum Top Tank Temperature for Standby / Prime Power	— °F (°C)	230 / 220	(110 / 104)

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed (Minimum)	— psi (kPa)	20	(138)
@ Pressure Range — Cold	— psi (kPa)	Up to 130	(Up to 900)
— Warm	— psi (kPa)	35 - 40	(242 - 276)
Maximum Oil Temperature	— °F (°C)	250	(121)
Oil Capacity with OP 1493 Oil Pan : High - Low	— US gal (liter)	22 - 19	(83 - 72)
Total System Capacity (Including Filter)	— US gal (liter)	24	(91)
Angularity of OP 1493 Oil Pan — Front Down		5°	
— Front Up		15°	
— Side to Side		15°	

• Limited Production •

FUEL SYSTEM

Type Injection System	Cummins HPI-TP	
Maximum Restriction at OEM Inlet Connection — in Hg (mm Hg)	5.0	(127)
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head) — in Hg (mm Hg)	6.5	(165)
Maximum Fuel Flow to Injection Pump — US gph (liter / hr)	112	(424)
Maximum Fuel Inlet Temperature — °F (°C)	160	(71)
Maximum Return Fuel Flow — US gph (liter / hr)	102	(386)
Maximum Return Fuel Temperature @ 160°F (71°C) Fuel Inlet Temperature — °F (°C)	210	(99)
Minimum Fuel Tank Vent Capability — cfm (liter / s)	1.2	(.55)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement) — volt	24	
Maximum Allowable Resistance of Cranking Circuit — ohm	0.002	
Minimum Recommended Battery Capacity		
• Cold Soak @ 50 °F (10 °C) and Above — 0°F CCA	600	
• Cold Soak @ 32 °F to 50 °F (0 °C to 10 °C) — 0°F CCA	640	
• Cold Soak @ 0 °F to 32 °F (-18 °C to 0 °C) — 0°F CCA	900	

COLD START CAPABILITY

Minimum Ambient Temperature for Cold Start with Coolant Heater to Rated Speed — °F (°C)	7	(-14)
Minimum Ambient Temperature for Unaided Cold Start to Low Idle Speed — °F (°C)	25	(-4)
Minimum Ambient Temperature for NFPA 110 Cold Start (90°F minimum coolant temperature) — °F (°C)	32	(0)

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 (25 ft); 1800 rpm / 1500 rpm — dBA	89.0 ./ 89.5
Exhaust Noise at 1 m Horizontally from Centerline of Exhaust Pipe Outlet Upwards at 45°; 1800 rpm / 1500 rpm — dBA	125 / 123

	STANDBY 60 hz	STANDBY 50 hz	PRIME POWER 60 hz	PRIME POWER 50 hz
Governed Engine Speed — rpm	1800	**Not Available at 1500 RPM (50 hz)**	1800	**Not Available at 1500 RPM (50 hz)**
Engine Idle Speed — rpm	675 - 775		675 - 775	
Gross Engine Power Output — BHP (kW_m)	685 (511)		620 (463)	
Brake Mean Effective Pressure — psi (kPa)	330 (2275)		298 (2045)	
Piston Speed — ft / min (m / s)	1995 (10.1)		1995 (10.1)	
Friction Horsepower — HP (kW_m)	70 (52)		70 (52)	
Engine Water Flow at Stated Friction Head External to Engine:				
• 3 psi Friction Head — US gpm (liter / s)	105 (6.6)		105 (6.6)	
• Maximum Friction Head — US gpm (liter / s)	87 (5.5)		87 (5.5)	
Turbo Compressor Outlet Pressure — psi (kPa)	37.8 (260)		33.4 (230)	
Turbo Compressor Outlet Temperature — °F (°C)	403 (206)		370 (188)	
Intake Air Flow — cfm (liter / s)	1390 (656)		1325 (625)	
Exhaust Gas Temperature — °F (°C)	909 (487)		830 (443)	
Exhaust Gas Flow — cfm (liter / s)	3235 (1527)		2930 (1403)	
Air-to-Fuel Ratio — air : fuel	27.8 : 1		28.2 : 1	
Radiated Heat to Ambient — BTU / min (kW_m)	2410 (42)		2850 (50)	
Heat Rejection to Coolant — BTU / min (kW_m)	7830 (137)		6760 (119)	
Heat Rejection to Exhaust — BTU / min (kW_m)	21600 (380)		19200 (338)	
Heat Rejection to Fuel * — BTU / min (kW_m)	450 (8)		450 (8)	
Heat Rejection to Aftercooler — BTU / min (kW_m)	7300 (128)		5970 (105)	

* Maximum heat rejection which occurs at rated speed, no load.

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

ENGINE MODEL : **QSX15-G7 Nonroad 2**
DATA SHEET : DS-10440
DATE : 4Mar02
CURVE NO. : FR-10440

FRAME HC534C/544C HCK534C/544C

WINDING 311

RATINGS	REFER TO RATINGS BOOK
OVERLOAD	REFER TO RATINGS BOOK
ALTITUDE	REFER TO RATINGS BOOK
AMBIENT TEMP.	REFER TO RATINGS BOOK

CONTROL SYSTEM SER. 3	SEPARATELY EXCITED BY P.M.G. FRAME DESIGNATION HC534		
A.V.R.	MX341	MX321	
VOLTAGE REGULATION	± 1.0%	± 0.5%	WITH 4% ENGINE GOVERNING
SUSTAINED SHORT CIRCUIT	REFER TO SHORT CIRCUIT DECREMENT CURVES OF THIS SECTION		

CONTROL SYSTEM SER. 4	SELF EXCITED FRAME DESIGNATION HC544		
A.V.R.	SX440	SX421	
VOLTAGE REGULATION	± 1.0%	± 0.5%	WITH 4% ENGINE GOVERNING
SUSTAINED SHORT CIRCUIT	SERIES 4 CONTROL DOES NOT SUSTAIN A SHORT CIRCUIT CURRENT		

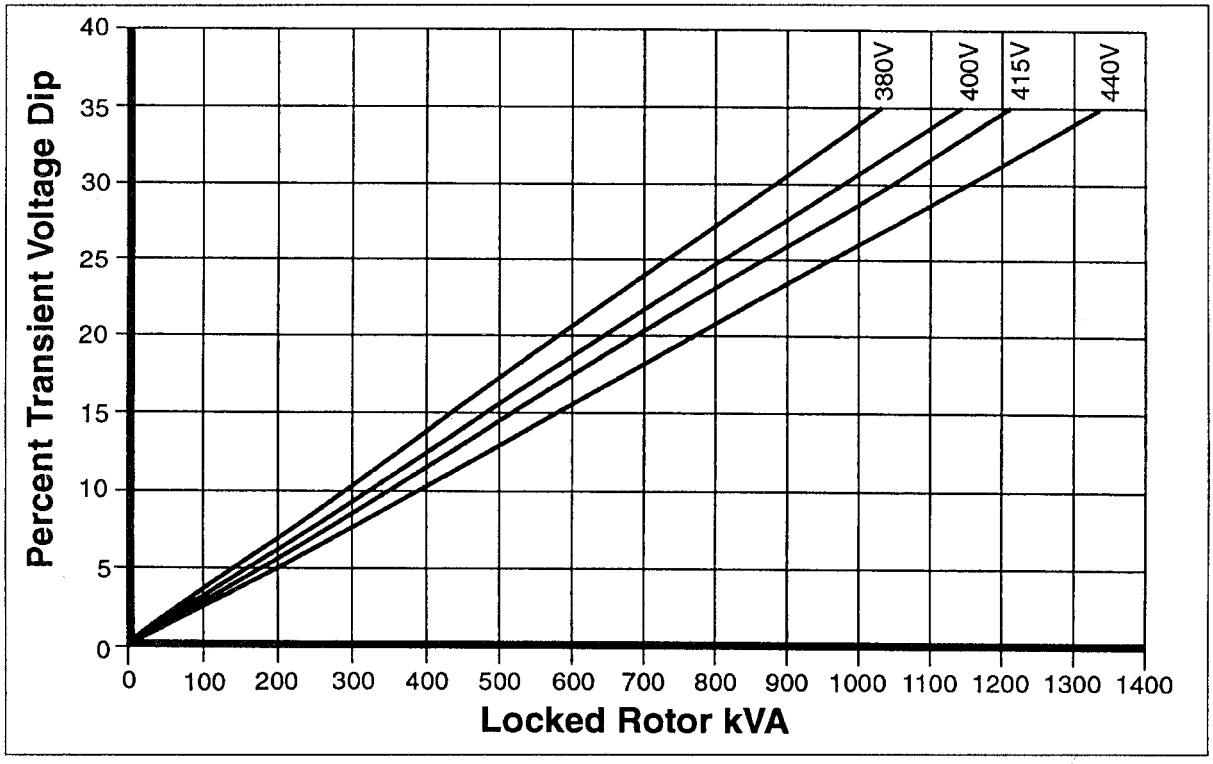
INSULATION SYSTEM	CLASS H	
PROTECTION	IP22 STANDARD - IP23 OPTIONAL (5% DERATE)	
RATED POWER FACTOR	0.8	
STATOR WINDING	DOUBLE LAYER LAP	
WINDING PITCH	TWO THIRDS	
WINDING LEADS	12	
STATOR WDG. RESISTANCE	0.0068 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED	
ROTOR WDG. RESISTANCE	1.55 Ohms at 22°C	
R.F.I. SUPPRESSION	BS EN 50081/2-1/2 VDE 0875G VDE 0875N For other standards apply to the factory	
WAVEFORM DISTORTION	NO LOAD < 1.5 % NON-DISTORTING BALANCED LINEAR LOAD < 5.0 %	
MAXIMUM OVERSPEED	2250 Rev/Min	
BEARING DRIVE END **HC ONLY**	BALL. 6220 (ISO)	
BEARING NON-DRIVE END	BALL. 6314 (ISO)	
EFFICIENCY	REFER TO EFFICIENCY CURVES OF THIS SECTION	
	1 BEARING	2 BEARING **HC ONLY**
WEIGHT COMP. GENERATOR	1265 kg	1275 kg
WEIGHT WOUND STATOR	584 kg	584 kg
WEIGHT WOUND ROTOR	504 kg	473 kg
WR^2 INERTIA	6.91 kgm^2	6.61 kgm^2

	50 Hz				60 Hz			
TELEPHONE INTERFERENCE	THF< 2%				TIF< 50			
COOLING AIR **FOR HC**	1.035 m^3/sec 2202 cfm				1.312 m^3/sec 2780 cfm			
COOLING AIR **FOR HCK**	1.23 m^3/sec 2615 cfm				1.59 m^3/sec 3366 cfm			
VOLTAGE SERIES STAR (Y)	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
VOLTAGE PARALLEL STAR (Y)	190/110	200/115	208/120	220/127	208/120	220/127	230/133	240/138
VOLTAGE EDISON DELTA (Δ)	220/110	230/115	240/120	250/125	240/120	254/127	266/133	277/138
kVA BASE RATING FOR REACTANCE VALUES	450	450	450	450	525	550	581	594
Xd DIR. AXIS SYNCHRONOUS	3.26	2.95	2.74	2.43	3.94	3.69	3.57	3.35
X'd DIR. AXIS TRANSIENT	0.17	0.16	0.15	0.14	0.18	0.17	0.17	0.16
X"d DIR. AXIS SUBTRANSIENT	0.12	0.11	0.11	0.10	0.13	0.12	0.12	0.11
Xq QUAD. AXIS REACTANCE	2.66	2.40	2.23	1.98	3.12	2.96	2.81	2.65
X"q QUAD. AXIS SUBTRANSIENT	0.27	0.24	0.23	0.19	0.34	0.32	0.31	0.29
X_L LEAKAGE REACTANCE	0.07	0.06	0.06	0.05	0.08	0.07	0.07	0.07
X_2 NEGATIVE SEQUENCE	0.19	0.17	0.16	0.15	0.23	0.22	0.21	0.20
X_0 ZERO SEQUENCE	0.11	0.10	0.09	0.08	0.11	0.10	0.10	0.09
REACTANCES ARE SATURATED	VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED							

T'd TRANSIENT TIME CONST.	0.08 sec
T''d SUB-TRANSTIME CONST.	0.012 sec
T'do O.C. FIELD TIME CONST.	2.0 sec
Ta ARMATURE TIME CONST.	0.017 sec
SHORT CIRCUIT RATIO	1/Xd

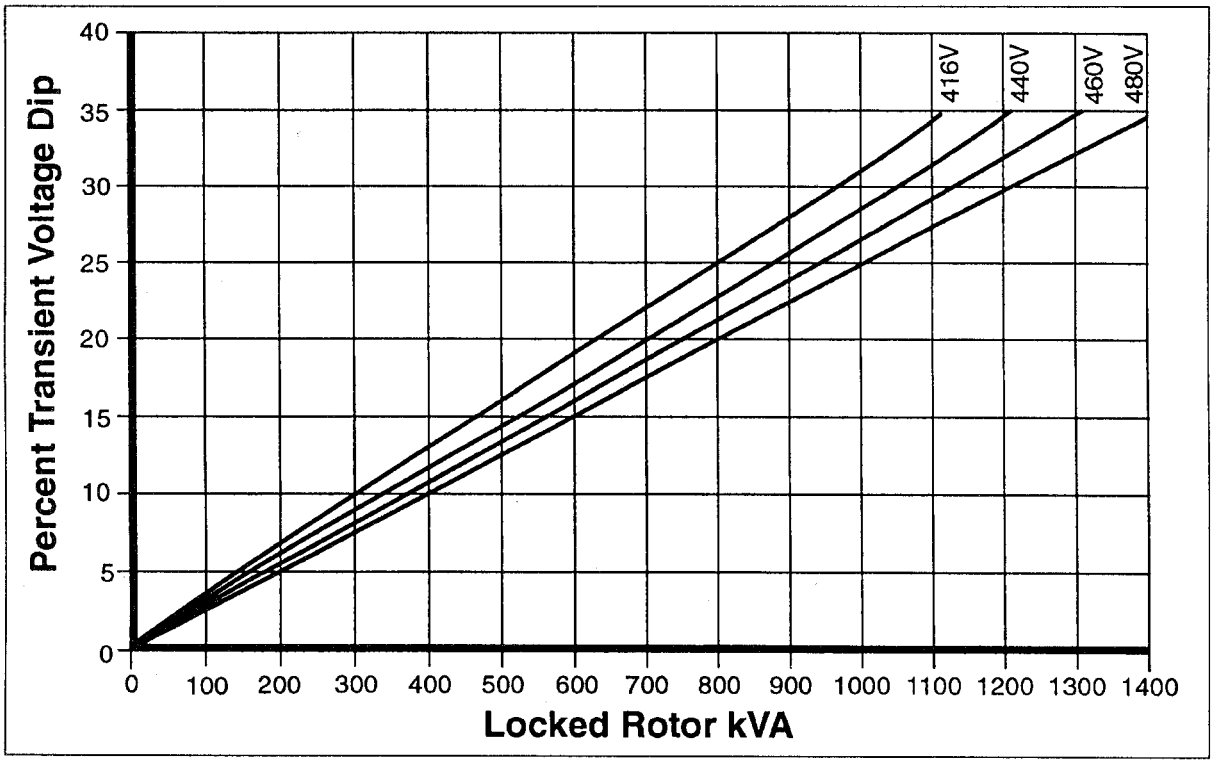
FRAME HC534C HCK534C 50 Hz

SERIES 3 WINDING 311
LOCKED ROTOR MOTOR STARTING CURVE



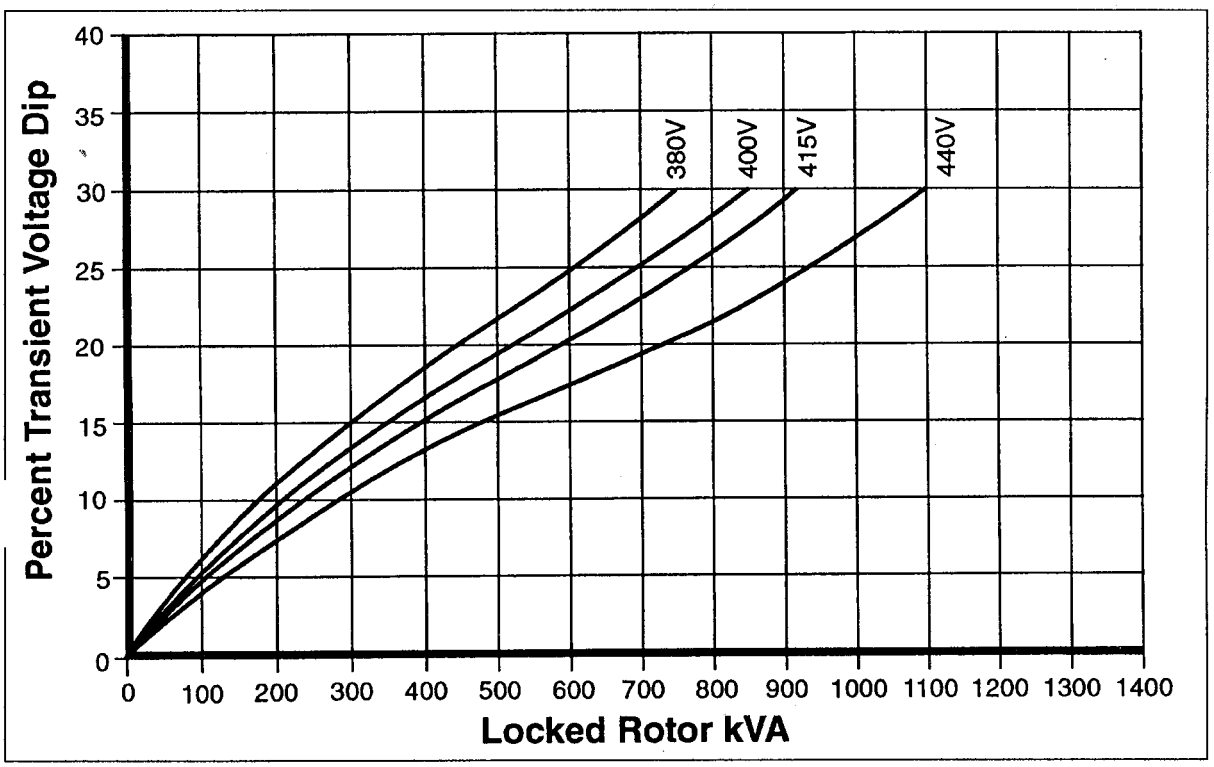
FRAME HC534C HCK534C 60 Hz

SERIES 3 WINDING 311
LOCKED ROTOR MOTOR STARTING CURVE



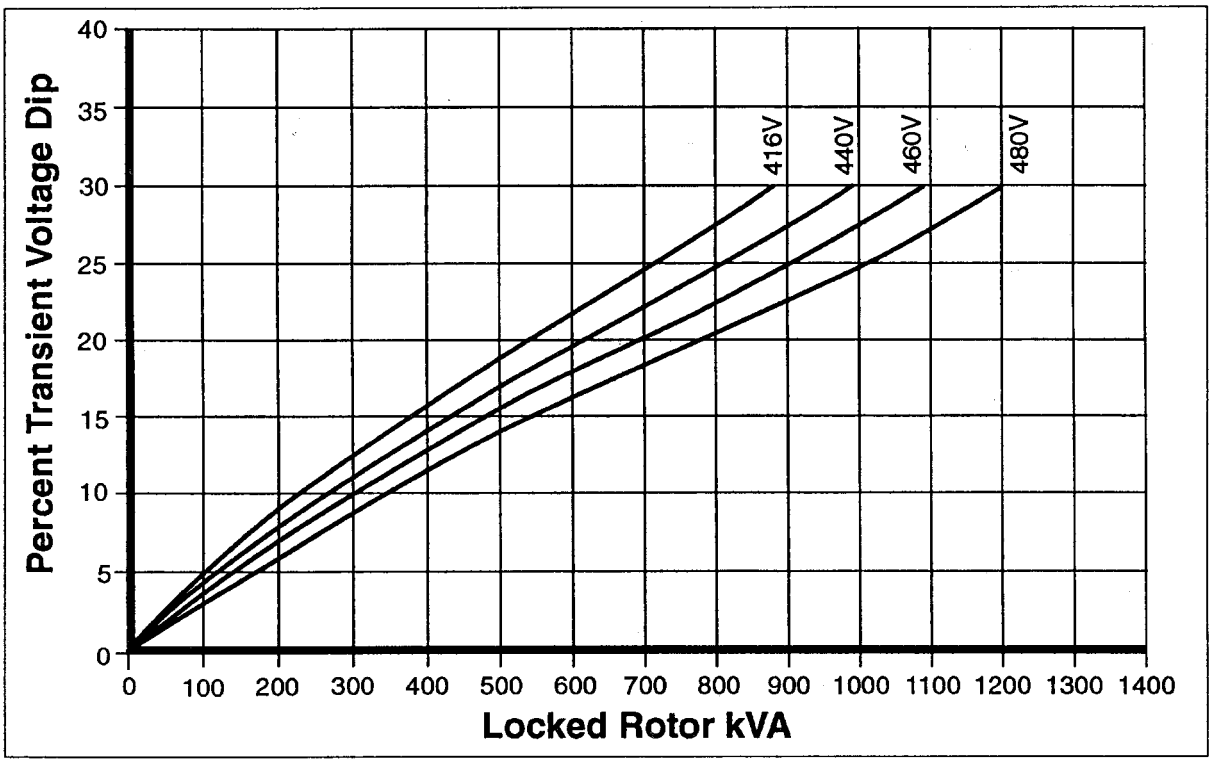
FRAME HC544C HCK544C 50 Hz

SERIES 4 WINDING 311
LOCKED ROTOR MOTOR STARTING CURVE

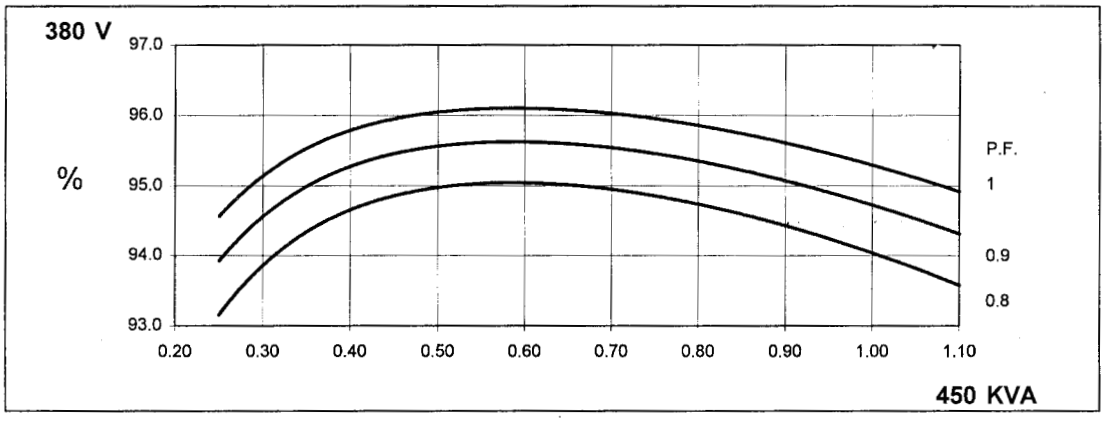


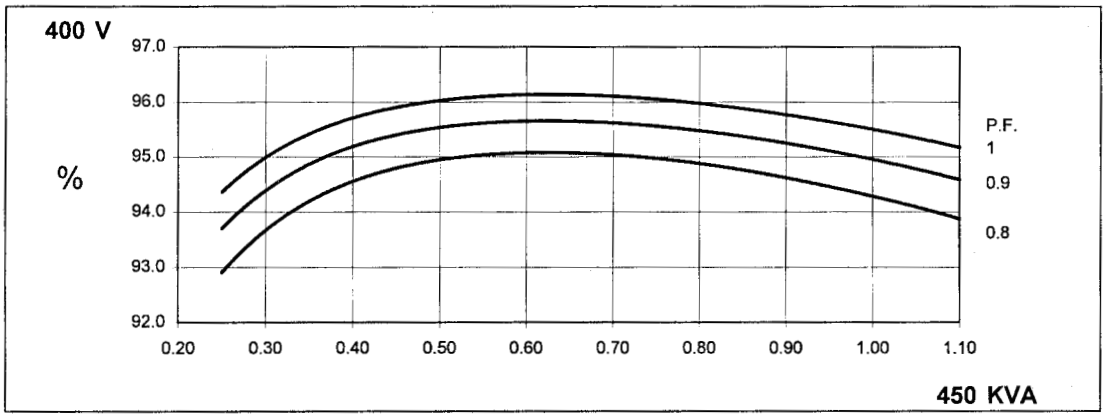
FRAME HC544C HCK544C 60 Hz

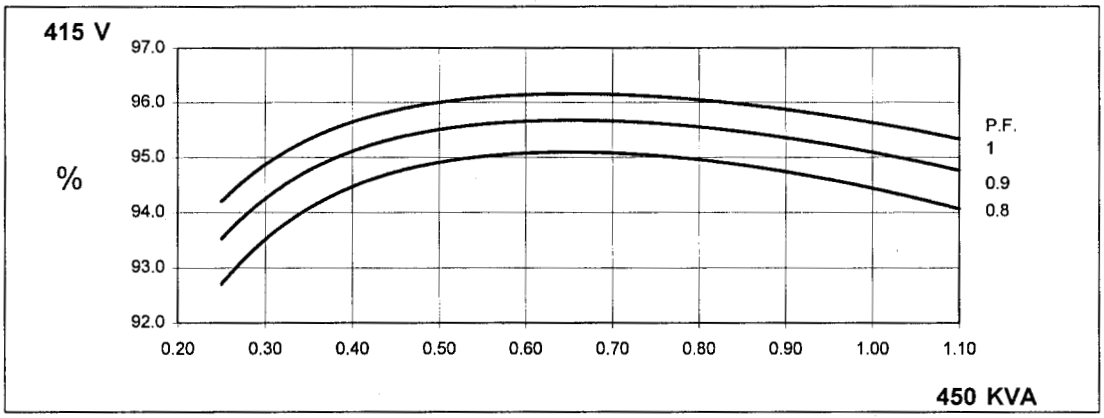
SERIES 4 WINDING 311
LOCKED ROTOR MOTOR STARTING CURVE

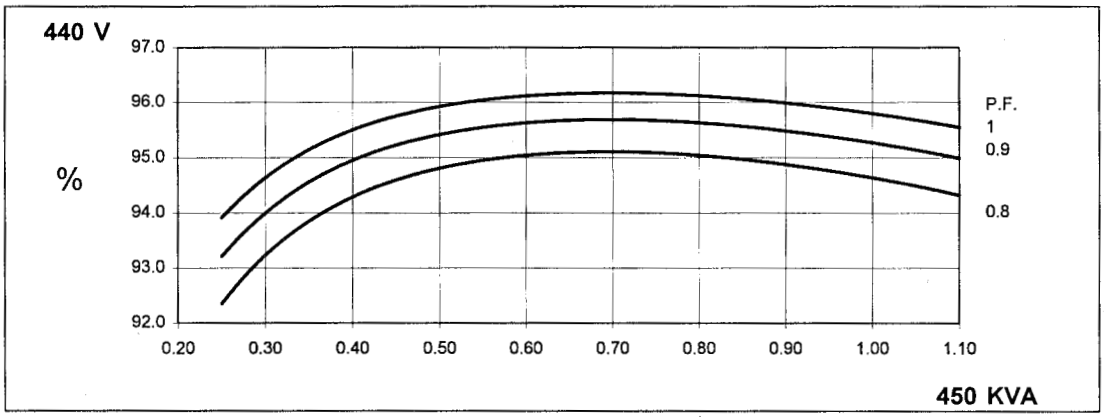


THREE PHASE EFFICIENCY CURVES

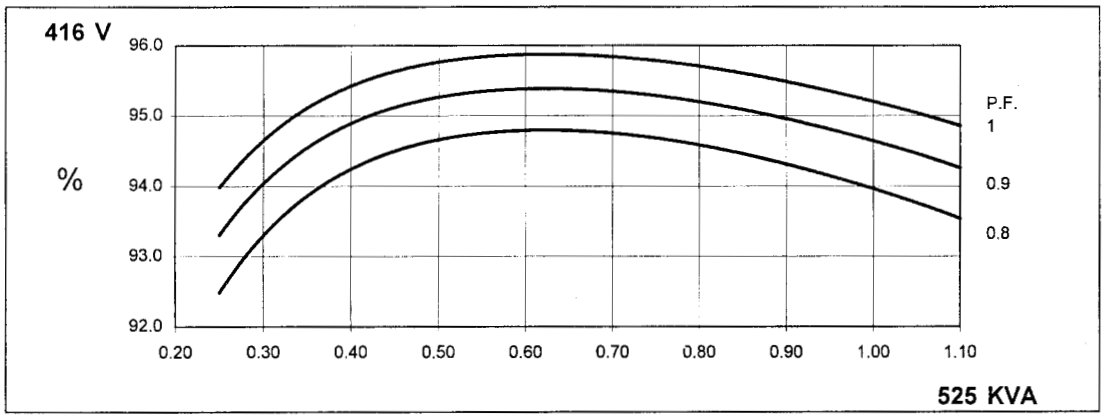


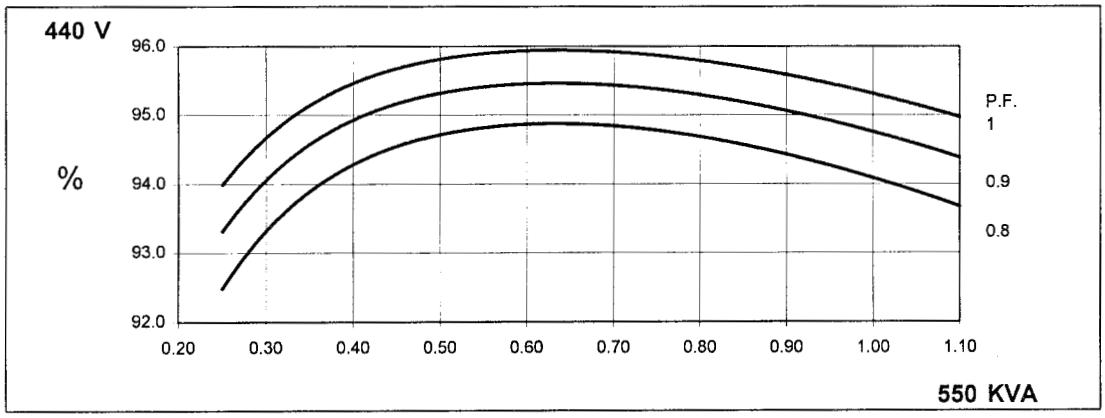


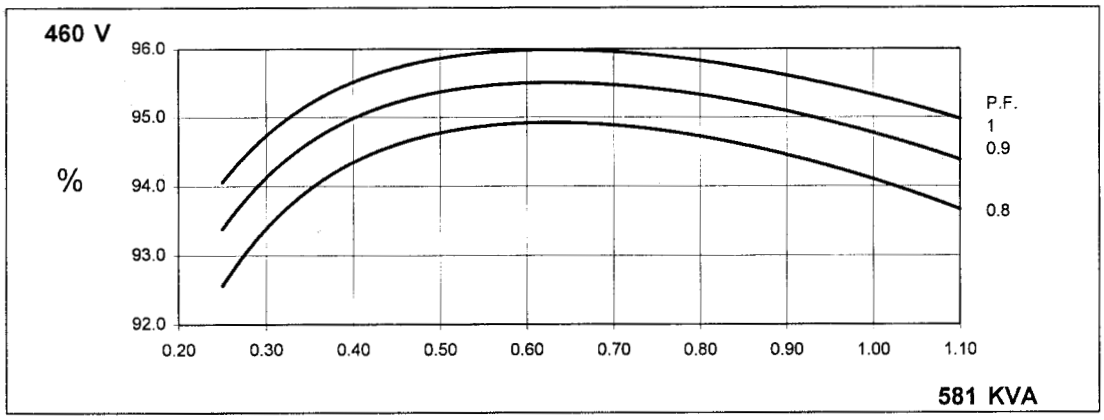


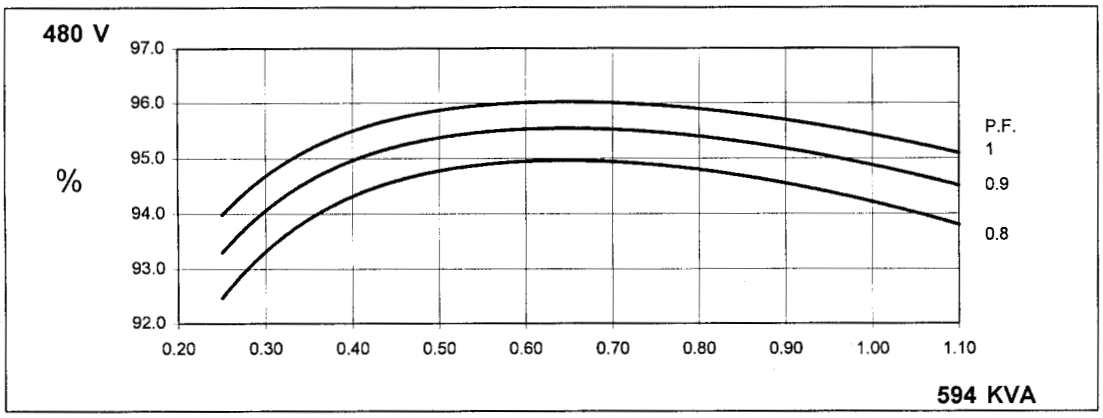


THREE PHASE EFFICIENCY CURVES





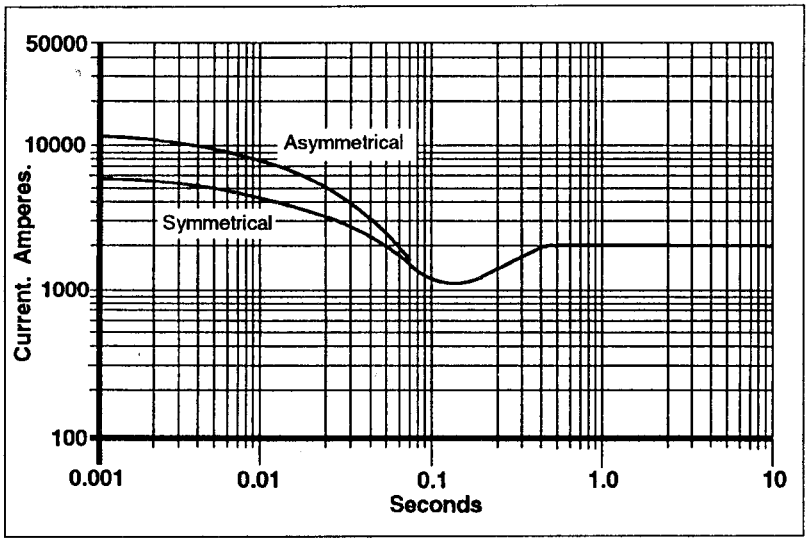




FRAME HC534C HCK534C 50 Hz

SERIES THREE
Three Phase Short Circuit Decrement Curve
No-load Excitation at Rated Speed

Based on series star (wye) connection



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 :

VOLTAGE	FACTOR
380 V	X 1.0
400 V	X 1.03
415 V	X 1.05
440 V	X 1.07

The sustained current value is constant irrespective of voltage level.

Note 2

The following multiplication factors 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 Series Star (Wye) connected machines. For other connections the following multipliers should be applied to current values shown :

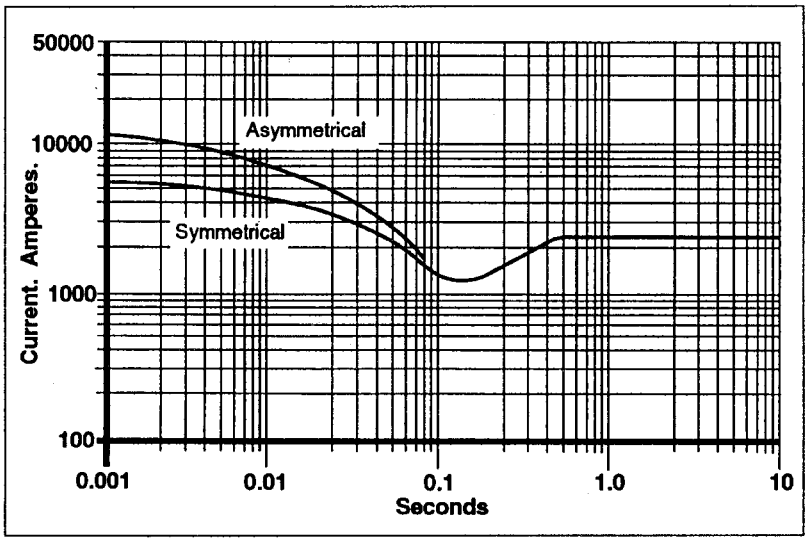
Parallel Star (Wye) Curve current value X 2
Series Delta (Δ) Curve current value X 1.732

Times are unchanged.

FRAME HC534C HCK534C 60 Hz

SERIES THREE
Three Phase Short Circuit Decrement Curve
No-load Excitation at Rated Speed

Based on series star (wye) connection



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 :

VOLTAGE	FACTOR
416 V	X 1.0
440 V	X 1.06
460 V	X 1.12
480 V	X 1.20

The sustained current value is constant irrespective of voltage level.

Note 2

The following multiplication factors 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 Series Star (Wye) connected machines. For other connections the following multipliers should be applied to current values shown :

Parallel Star (Wye) Curve current value X 2
Series Delta (Δ) Curve current value X 1.732

Times are unchanged.

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