

Stamford : ژنراتور

Cummins : موټور ډيزل

Standby		Prime		ډيزل ژنراتور
KVA	KW	KVA	KW	
2475	1980	2250	1800	



موتور دیزل		
Manufacturer	Cummins	تولید کننده
Type	QSK60-G13	تیپ
Speed rpm	1500	سرعت
Number of cylinders	16	تعداد سیلندر ها
Compression ratio	14.5:1	ضریب تراکم
Displacement , Liters	60.2 liters	جا به جایی
Bore × Stroke , mm	159mm×190mm	قطر سیلندر × کورس پیستون
Fuel System	Direct injection Cummins MCRS	سیستم سوخت
Aspiration	Turbocharged and Low Temp Aftercooled	سیستم تنفس
Starting Voltage	24 ولت	استارت شروع
Air temperature	25 ° C	دمای هوا
Battery Charging System	55 آمپر	جریان شارژ باتری

ژنراتور

Manufacturer	Stamford	تولید کننده
Type	PI734G	تیپ
Efficiency, %	96.1%	راندمان
Standby power at rated voltage ,KVA	1985	توان standby در ولتاژ نامی
Power factor	0.8	ضریب قدرت
Phase	3	فاز
Frequency, Hz	50	فرکانس
Voltage, V	380~440	ولتاژ
Stator windings	DOUBLE LAYER LAP	سیم پیچ استاتور
Voltage Regulation, %	$-1.0 < x < +1.0$	تنظیم ولتاژ
Maximum Over Speed (rev/min)	2250	مداکثر سرعت مجاز
Short circuit ratio	1/Xd	نسبت اتصال کوتاه
Insulation class	H	کلاس عایق
Protection class	IP23	کلاس حفاظتی

Cummins Inc.**Engine Data Sheet****ENGINE MODEL: QSK60-G13 4g TAL****CONFIGURATION NUMBER : D593008GX03****DATA SHEET : DS-6670****DATE : 16Jan08****PERFORMANCE CURVE : FR-6670****INSTALLATION DIAGRAM**

• Fan to Flywheel: 3170634

CPL NUMBER

• Engine Critical Parts List: 43178

GENERAL ENGINE DATA

Type	4-Cycle; 60 deg.Vee; 16-Cylinder Diesel
Aspiration	Turbocharged and Low Temp Aftercooled
Bore x Stroke	6.25 x 7.48 (159 x 190)
Displacement	3673 (60.2)
Compression Ratio	14.5: 1

Dry Weight (Approximate), Fan to Flywheel Engine	— lb (kg)	17460	(7920)
Wet Weight (Approximate), Fan to Flywheel Engine	— lb (kg)	18893	(8570)

Moment of Inertia of Rotating Components • with FW 6043 Flywheel	— lb _m • ft ² (kg • m ²)	375.5	(15.77)
Center of Gravity from Rear Face of Block	— in (mm)	39.4	(1001)
Center of Gravity Above Crankshaft Centerline	— in (mm)	8.6	(219)
Maximum Static Loading at Rear Main Bearing	— lb (kg)	2500	(1134)

ENGINE MOUNTING

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

Maximum Back Pressure	— in Hg (kPa)	2	(6.8)
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AIR INDUCTION SYSTEM

Maximum Intake Air Restriction • with Dirty Filter Element	— in H ₂ O (kPa)	25	(6.2)
• with Clean Filter Element	— in H ₂ O (kPa)	15	(3.7)

COOLING SYSTEM

Coolant Capacity — Engine	— US gal (litre)	42	(159)
Minimum Pressure Cap (for Cooling Systems with less than 2m [6 ft.] Static Head)	— psi (kPa)	11	(76)
Maximum Static Head of Coolant Above Engine Crank Centerline	— ft (m)	60	(18.3)

Jacket Water Circuit Requirements:

Maximum Coolant Friction Head External to Engine — 1500 rpm	— psi (kPa)	7	(48)
Maximum Top Tank Temperature for Standby / Prime Power	— °F (°C)	220/212	(104/100)
Thermostat (Modulating) Range	— °F (°C)	180-200	(82-93)

Aftercooler Circuit Requirements:

Coolant Capacity — Aftercoolers	— US gal (litre)	9	(34)
Maximum Coolant Friction Head External to Engine — 1500 rpm	— psi (kPa)	5	(35)
Maximum Inlet Water Temperature to Aftercoolers @ 25 °C (77 °F)	— °F (°C)	120	(49)
Maximum Inlet Water Temperature to Aftercoolers for Standby / Prime Power	— °F (°C)	160/150	(71/65)
Thermostat (Modulating) Range	— °F (°C)	115-135	(46-57)

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed	— psi (kPa)	20	(138)
@ Governed Speed	— psi (kPa)	60-70	(345-483)
Maximum Oil Temperature	— °F (°C)	250	(121)
Oil Capacity with OP 9457 Oil Pan : Low - High	— US gal (litre)	61-69	(231-261)
Total System Capacity (Including Filter)	— US gal (litre)	74	(280)

FUEL SYSTEM

Type Injection System	Cummins MCRS
Maximum Restriction at Lift Pump (clean/dirty filter)	5.0/9.0 (17/30)
Typical Clean Fuel Filter Restriction	2.0 (6.7)
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head)	10 (34)
Maximum Fuel Flow to Injector Pump	2.0 (51)
Maximum Return Fuel Flow	130 (492)
Maximum Fuel Inlet Temperature	160 (70)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement)	— volt	24
Battery Charging System, Negative Ground	— ampere	55
Maximum Allowable Resistance of Cranking Circuit	— ohm	0.002
Minimum Recommended Battery Capacity		
• Cold Soak @ 0 °F to 32 °F (-18 °C to 0 °C)	— 0°F CCA	2200

COLD START CAPABILITY

Minimum Ambient Temperature for NFPA 110 Cold Start (90 degree F Coolant Temperature)	— °F (°C)	50 (10)
Minimum Ambient Temperature for Unaided Cold Start	— °F (°C)	10 (-12)

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); @1500 rpm	— dBA		TBD
Exhaust Noise at 1 m Horizontal from Centerline of Exhaust Pipe Outlet Upwards at 45 °	— dBA		TBD

Governed Engine Speed	rpm
Engine Idle Speed	rpm
Gross Engine Power Output	hp (kW)
Brake Mean Effective Pressure	psi (kPa)
Piston Speed	ft/min (m/s)
Friction Horsepower	hp (kW)
Engine Jacket Water Flow at Stated Friction Head External to Engine:	
• 4 psi Friction Head	US gpm (litre/s)
• Maximum Friction Head	US gpm (litre/s)

Engine Data

Intake Air Flow	cfm (litre/s)
Exhaust Gas Temperature	°F (°C)
Exhaust Gas Flow	cfm (litre/s)
Air to Fuel Ratio	air : fuel
Radiated Heat to Ambient	BTU/min (kW)
Heat Rejection to Engine Jacket Radiator	BTU/min (kW)
Heat Rejection to Exhaust	BTU/min (kW)
Heat Rejection to Fuel*	BTU/min (kW)

Engine Aftercooler Data

Heat Rejection to Coolant	BTU/min (kW)
Aftercooler Water Flow at Stated Friction Head External to Engine:	
• 2.5 psi Friction Head	US gpm (litre/s)
• Maximum Friction Head	US gpm (litre/s)

STANDBY POWER		PRIME POWER	
60 hz	50 hz	60 hz	50 hz
1800	1500	1800	1500
	700 - 900		700 - 900
	2901 (2164)		2315 (1727)
	416 (2868)		332 (2289)
	1869 (9.5)		1869 (9.5)
	196 (146)		196 (146)
Not Available For 1800 RPM Operation	442 (27.9)	Not Available For 1800 RPM Operation	442 (27.9)
	420 (26.5)		420 (26.5)
	5450 (2573)		4578 (2161)
	944 (507)		841 (450)
	13883 (6553)		11005 (5194)
	23.8 : 1		26.2 : 1
	11969 (211)		9132 (161)
	46957 (825)		37512 (660)
	83718 (1471)		60633 (1066)
	110 (2)		82 (2)
	33332 (586)		22739 (400)
	139 (8.8)		139 (8.8)
	133 (8.4)		133 (8.4)

* This is the maximum heat rejection to fuel.

N.A. - Not Available

N/A - Not Applicable to this Engine

TBD - To Be Determined

ENGINE MODEL : QSK60-G13

DATA SHEET : DS-6670

DATE : 16Jan08

CURVE NO. : FR-6670

PI734G

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	0.0008 Ohms PER PHASE AT 22°C STAR CONNECTED
MAIN ROTOR RESISTANCE	2.42 Ohms at 22°C
EXCITER STATOR RESISTANCE	16 Ohms at 22°C
EXCITER ROTOR RESISTANCE	0.043 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. 6232 C3
BEARING NON-DRIVE END	BALL. 6319 C3

	1 BEARING	2 BEARING
WEIGHT COMP. GENERATOR	4054 kg	4022 kg
WEIGHT WOUND STATOR	2015 kg	2015 kg
WEIGHT WOUND ROTOR	1697 kg	1654 kg
WR ² INERTIA	52.2511 kgm ²	51.3341 kgm ²
SHIPPING WEIGHTS in a crate	4127kg	4091kg
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	2135	2200	2200	2160	2475	2640	2695	2750
Xd DIR. AXIS SYNCHRONOUS	3.71	3.45	3.20	2.80	4.48	4.27	3.99	3.74
X'd DIR. AXIS TRANSIENT	0.21	0.19	0.18	0.15	0.25	0.24	0.22	0.21
X" d DIR. AXIS SUBTRANSIENT	0.15	0.14	0.13	0.11	0.18	0.17	0.16	0.15
Xq QUAD. AXIS REACTANCE	2.38	2.22	2.06	1.80	2.88	2.75	2.57	2.41
X" q QUAD. AXIS SUBTRANSIENT	0.28	0.26	0.24	0.21	0.34	0.32	0.30	0.28
Xl LEAKAGE REACTANCE	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04
X ₂ NEGATIVE SEQUENCE	0.20	0.19	0.18	0.15	0.25	0.23	0.22	0.21
X ₀ ZERO SEQUENCE	0.04	0.04	0.03	0.03	0.05	0.04	0.04	0.04

REACTANCES ARE SATURATED		VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED	
T'd TRANSIENT TIME CONST.		0.16s	
T" d SUB-TRANSTIME CONST.		0.01s	
T'do O.C. FIELD TIME CONST.		2.89s	
Ta ARMATURE TIME CONST.		0.02s	
SHORT CIRCUIT RATIO		1/Xd	

PI734G

Winding 312 / 0.8 Power Factor

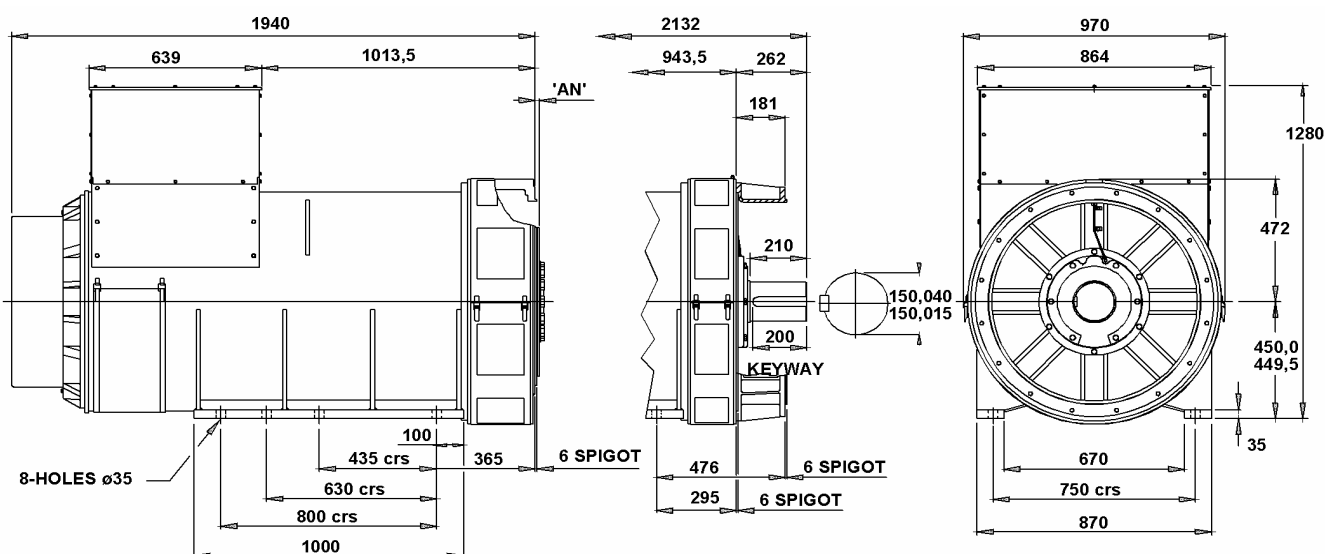


RATINGS

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	1985	2050	2050	2005	2135	2200	2200	2160	2225	2295	2295	2250	2290	2360	2360	2310
	kW	1588	1640	1640	1604	1708	1760	1760	1728	1780	1836	1836	1800	1832	1888	1888	1848
	Efficiency (%)	96.1	96.2	96.3	96.4	96.0	96.0	96.1	96.3	95.9	95.9	96.0	96.2	95.8	95.9	96.0	96.1
	kW Input	1652	1705	1703	1664	1779	1833	1831	1794	1856	1914	1913	1871	1912	1969	1967	1923

60Hz	Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	kVA	2305	2455	2510	2560	2475	2640	2695	2750	2575	2750	2805	2860	2650	2825	2885	2945
	kW	1844	1964	2008	2048	1980	2112	2156	2200	2060	2200	2244	2288	2120	2260	2308	2356
	Efficiency (%)	96.0	96.1	96.1	96.2	95.9	95.9	96.0	96.1	95.8	95.8	95.9	96.0	95.7	95.7	95.8	95.9
	kW Input	1921	2044	2089	2129	2065	2202	2246	2289	2150	2296	2340	2383	2215	2362	2409	2457

DIMENSIONS



COUPLING DISC	'AN'
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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