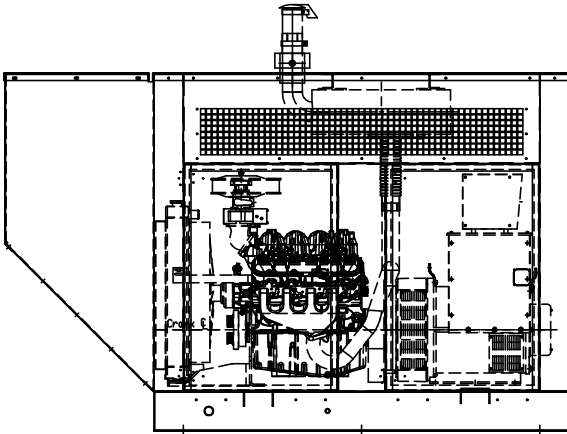


TAYLOR[®]

POWER SYSTEMS

Model: **GS80**

Ratings Range:



DRAWING DEPICTS UNIT WITH OPTIONAL EQUIPMENT

	50Hz	60Hz
Standby: kw	66	80 - 81
kva	83	100 - 101
Prime: kw	61	74 - 75
kva	76	93 - 94

Features

- **Single source responsibility for the generator set and accessories.**
- **Prototype and production tested to insure one step load acceptance per NFPA 110.**
- **Two year limited warranty on generator sets and accessories.**
- **Unit conforms to CSA, NEMA, EGSA, ANSI and other standards.**
- **Microprocessor based control system providing digital metering and monitoring.**
- **Heavy duty 4 cycle industrial engine for reliability and fuel efficiency.**
- **Brushless rotating field generator with class H insulation.**
- **Heavy duty steel base with integral vibration isolators.**

Generator	Voltage	PH	Hz	LP / NAT. GAS 125°C Rise Standby Rating		LP / NAT. GAS 105°C Rise Prime Rating	
				kW/kVA	Amps	kW/kVA	Amps
UCI274C311	277/480	3	60	81/101	121	75/94	113
	139/240	3	60	81/101	243	75/94	226
	254/440	3	60	80/100	131	74/93	122
	127/220	3	60	80/100	262	74/93	244
	240/416	3	60	80/100	139	74/93	129
	120/208	3	60	80/100	278	74/93	258
	120/240	3	60	80/100	241	74/93	224
	219/380	3	60	80/100	152	74/93	141
	120/240	1	60	67.5/67.5	281	58.5/58.5	244
	254/440	3	50	66/83	109	61/76	100
	127/220	3	50	66/83	218	61/76	199
	120/208	3	50	66/83	230	61/76	211
	240/415	3	50	66/83	115	61/76	106
	219/380	3	50	66/83	126	61/76	115
110/190	3	50	66/83	252	61/76	231	
110/220	1	50	60/60	273	50/50	227	
UCI274C06	120/240	1	60	80/80	333	75/75	313

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor.

STANDBY RATINGS: Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271.

PRIME POWER RATINGS: Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528/1, overload power in accordance with ISO-3046/1, BS5514, AS2789, and DIN 6271. For limited running time and base load ratings consult the factory. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

GENERAL GUIDELINES FOR DERATION: Altitude: Derate 0.5% per 100m (328 ft.) elevation above 1000m (3279 ft.)
Temperature: Derate 1.0% per 10°C (18°F) temperature above 40°C (104°F).

APPLICATION DATA

Engine	60 Hz	50 Hz
Engine Specifications		
Manufacturer	General Motors	
Engine: model, type	Industrial Powertrain Vortec 8.1 L, 4-Cycle Natural Aspiration V-8	
Cylinder arrangement	8.1 (496)	
Displacement, L (Cu. in.)	108 x 111 (4.25 x 4.37)	
Bore and stroke, mm (in.)	9.1:1	
Compression ratio	399 (1311)	332 (1092)
Piston speed, rn/mm. (ft./min.)	5, Alum. Lead Silicon Alloy	
Main bearing: qty., type	1800	1500
Rated rpm	112 (150)	92 (123)
Max. power at rated rpm, kW (HP)	Cast Iron Strutless Flat Top, Hypereutectic Cast Alum.	
Cylinder head material	Cast Nodular Undercut Rolled Fillet	
Piston type and material	Int. - A193 Exh. Inconel Electronic Isochronous ±0.5%	
Crankshaft material	Field-Convertible Dry	
Valve (exhaust) material		
Governor type		
Frequency regulation, no-load to full-load		
Frequency regulation, steady state		
Frequency		
Air cleaner type, all models		

Exhaust	60 Hz	50 Hz
Exhaust System		
Exhaust manifold type	Dry	
Exhaust flow at rated kW, m ³ /min. (cfm)	17.5 (620)	13.8 (490)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	677 (1250)	
Maximum allowable back pressure, kPa (in. Hg)	10.2 (3.0)	
Exhaust outlet size at engine hookup, mm (in.)	89 (3.5) OD	

Lubrication

Lubricating System

Type	Full Pressure	
Oil pan capacity, L (qt.)	7.6 (8.0)	
Oil pan capacity with filter, L (qt.)	8.0 (8.5)	
Oil filter: quantity, type	1, Cartridge	

Cooling

Radiator System	60 Hz	50 Hz
Ambient temperature, °C (°F)	50(122)	
Engine jacket water capacity, L (gal.)	10.0 (2.6)	
Radiator system capacity, including engine, L (gal.)	25.7 (6.8)	
Engine jacket water flow, Lpm (gpm)	125 (33)	102 (27)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	62 (3540)	54 (3080)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	599 (23.6)	
Fan, kWm (HP)	6.7 (9.0)	3.7 (5.0)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H ₂ O)	0.125 (0.5)	

CONTROL PANEL

The DGC-2020 Digital Genset Controller provides integrated engine-genset control, protection, and metering in a single package. Microprocessor based technology allows for exact measurement, setpoint adjustment, and timing functions. Front panel controls and indicators enable quick and simple DGC-2020 operation. A wide temperature-range liquid crystal display (LCD) with backlighting can be viewed under a wide range of ambient light and temperature conditions.

Features

- Generator Metering
- Engine Metering
- Genset Control
- Engine Protection
- Generator Protection (27, 59, 810, 81U)
- SAE J1939 Engine ECU communications
- Multilingual capability
- Remote RS-485 communications for Optional RDP-110 Remote Annunciator
- Extremely rugged, fully encapsulated design
- 16 programmable contact inputs
- 7 contact outputs: (3) 30 Adc contacts (4) programmable 2 Adc rated contacts
- Wide Ambient Temperature Range
- Modbus Communications with RS-485
- Battery Backup for Real Time Clock
- LCD Heater allows for use of DGC-2020 in temp. down to -40°C
- UL recognized, CSA certified, CE approved
- HALT (Highly Accelerated Life Tests) tested
- IP 54 Front Panel rating with integrated gasket
- NFPA 110 Level Compatible

Options

- Additional (8) Programmable 2 Adc contacts
- Remote Dial-out and Dial-in capability with Internal Modem
- Enhanced Generator Protection 51 and 47

Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Ignition system	Individual Coil Near Plug Ignition	
Battery charging alternator:		
Ground (negative/positive)	Negative	
Volts (DC)	12	
Ampere rating	70	
Starter motor rated (DC)	12	
Battery, recommended cold cranking amps (CCA):		
Qty., rating for -18°C (0°F)	1,	630
Battery voltage (DC)	12	

Fuel

Fuel System	60 Hz	50 Hz
Fuel type	LPG or Natural Gas Fuel	
Fuel supply line inlet	1 1/4" NPTF	
Natural gas/LPG fuel supply pressure, measured at the generator set fuel inlet after any fuel system equipment accessories, kPa (in. H ₂ O)	1.74-2.74 (7.0-11.0)	
Fuel Composition Limits *	Nat. Gas	LP Gas
Methane, % by volume	90min.	—
Ethane, % by volume	4.0max.	—
Propane, % by volume	1.0 max.	85min.
Propene, % by volume	0.1 max.	5.0 max.
C ₄ and higher, % by volume	0.3 max.	2.5 max.
Sulfur, ppm mass	25 max.	
Lower heating value, kJ/m ³ (Btu/ft ³), min.	26.6 (890)	67.5 (2260)

* Fuels with other compositions may be acceptable. If your fuel is outside the listed specifications, contact your local distributor for further analysis and advice.

Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m ³ /min. (scfm) *	198 (7000)	153 (5400)
Combustion air, m ³ /min. (cfm)	5.7 (200)	4.3 (150)
Heat rejected to ambient air:		
Engine, kW (Btu/min.)	40 (2300)	32 (1820)
Alternator, kW (Btu/min.)	11.8 (670)	13.3 (755)

*Air density = 1.20 kg/m³ (0.075 lbm/ft³).

Fuel Consumption

Natural Gas, m ³ /hr. (cfh) at % load	Standby Rating 60Hz	Rating 50Hz	Prime Rating 60Hz	Rating 50Hz
100%	28.7 (1012)	24.7 (873)	26.8 (946)	22.7 (803)
75%	23.5 (831)	19.3 (680)	22.3 (786)	17.9 (631)
50%	18.9 (667)	14.1 (498)	17.7 (625)	13.3 (469)
25%	12.4 (437)	9.5 (337)	11.9 (420)	9.2 (324)
LP Gas, m ³ /hr. (cfh) at % load	Standby Rating 60Hz	Rating 50Hz	Prime Rating 60Hz	Rating 50Hz
100%	12.0 (425)	9.1 (321)	11.2 (396)	8.4 (298)
75%	9.8 (345)	7.3 (257)	9.1 (322)	6.8 (241)
50%	7.4 (261)	5.6 (200)	7.0 (246)	5.4 (189)
25%	5.0 (177)	4.0 (142)	4.8 (170)	3.9 (137)

GENERATOR SPECIFICATIONS

STANDARDS

UC224 and UC274 industrial generators meet the requirements of BS5000, VDE0530, UTE5100, NEMA MG1-22, CEMA, IEC34-1, CSA22.2 AND AS1359.

EXCITATION SYSTEMS

SX440 & SX460 AVRs

With these self-excited systems the main stator provides power via the automatic voltage regulator (AVR) to the exciter stator. The high efficiency semiconductors of the (AVR) ensure positive build up from initial low levels of residual voltage.

The exciter rotor output is fed to the main rotor through a three phase full wave bridge rectifier. The rectifier is protected by a surge suppressor against surges caused, for example, by short circuit or out of phase paralleling. The SX440 will support a range of electronic accessories, including a 'droop' Current Transformer (CT) to permit parallel operation with other ac generators.

MX341 AVR

This sophisticated AVR is incorporated into the permanent magnet generator (PMG) system, and is fitted as an option on industrial generators.

The PMG provides power via the AVR to the main exciter, giving a source of constant excitation power independent of generator output. The main exciter output is then fed to the main rotor, through a full wave bridge, protected by a surge suppressor. The AVR has built-in protection against sustained over-excitation, caused by internal or external faults. This de-excites the machine after a minimum of 5 seconds.

The two phase average voltage sensed MX341 provides voltage regulation of $\pm 1.0\%$. If three phase sensing is required with the PMG system the MX321 AVR must be used. We recommend three phase sensing for applications with greatly unbalanced or highly non-linear loads. An engine relief load acceptance feature can enable full load to be applied to the generator in a single step.

MX321 AVR

The most sophisticated of all our AVRs combines all the features of the MX341 with, additionally, three phase rms sensing, for improved regulation ($\pm 0.5\%$) and performance. Over voltage protection is built-in and short circuit current level adjustment is an optional facility.

INSULATION / IMPREGNATION

The insulation system is Class 'H'.

All wound components are impregnated with materials and processes designed specifically to provide protection against the harsh environments encountered in generator applications. Varnishes and resins are selected and developed to provide the high build required for static windings and the high mechanical strength required for rotating components.

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, when in parallel with the mains.

A fully connected damper winding reduces oscillations during paralleling. This winding, with 2/3 pitch and carefully selected pole and tooth designs, ensures very low waveform distortion.

TELEPHONE INTERFERENCE

THF (as defined by BS4999 Part 40) is better than 2%. TIF (as defined by ASA C50.12) is better than 50.

RADIO INTERFERENCE

The absence of brushgear and the high quality AVR ensure low levels of interference with radio transmissions.

Additional RFI suppression may be supplied if required.

ENCLOSURE

IP22 (NEMA 1) is standard for all industrial generators. Protection to IP23 (60 degrees from vertical) is available as an option at reduced ratings (5% derate).

Inlet air filters are available as an option on all generators, at reduced ratings (5% derate).

SHAFT

All generator rotors are dynamically balanced to better than BS6861: Part 1 Grade 2.5 for minimum vibration in operation.

QUALITY ASSURANCE

Generators are manufactured using production procedures having a quality assurance level to BS EN (ISO9001).

STANDARD FEATURES AND ACCESSORIES

Standard Features

- Heavy duty steel base
- Vibration isolators
- Oil drain valve with extension
- Flex exhaust connector
- Battery rack
- Battery cables
- Water jacket heater
- Owners manual
- Electronic Isochronous Governor

Accessories

- Generator strip heater
- Line circuit breaker
- DGC-2020 Enhanced generator protection
- DGC-2020 Internal Modem
- DGC-2020 Programmable Aux. Contacts qty. (8) 2Adc
- Surface Mount Remote Annunciator
- Flush Mount Remote Annunciator
- Analog Auto-Start Control Panel

Accessories

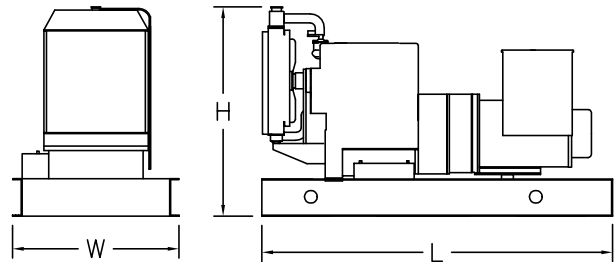
- Exhaust silencer
- Silencer mounting kit for enclosure
- Weather enclosure
- Sound attenuated enclosure
- Flexible fuel lines
- Oil pan heater
- Battery
- Battery heater
- Battery charger
- PMG exciter

WEIGHTS AND DIMENSIONS

GS80

Overall Size, L x W x H, in.: (84" x 46" x 53")

Weight (wet): 2200 Lbs.



Note: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

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