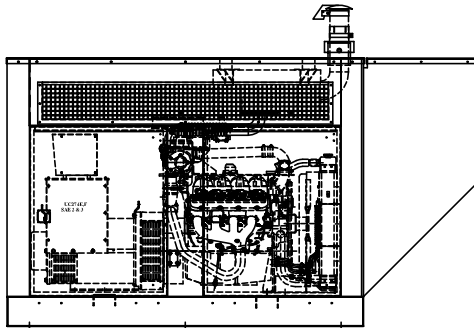


# TAYLOR<sup>®</sup>

## POWER SYSTEMS

Model: **GS125**

Ratings Range:



DRAWING DEPICTS UNIT WITH OPTIONAL EQUIPMENT

### 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.

	50Hz	60Hz
<b>Standby: kw</b>	<b>87 - 104</b>	<b>96 - 130</b>
<b>kva</b>	<b>109 - 130</b>	<b>120 - 163</b>
<b>Prime: kw</b>	<b>74 - 94</b>	<b>88 - 115</b>
<b>kva</b>	<b>93 - 118</b>	<b>110 - 144</b>

Generator	Voltage	PH	Hz	NAT. GAS 125°C Rise Standby Rating		NAT. GAS 105°C Rise Prime Rating		LP GAS 125°C Rise Standby Rating		LP GAS 105°C Rise Prime Rating	
				kw/kVA	Amps	kw/kVA	Amps	kw/kVA	Amps	kw/kVA	Amps
UCI274D311	277/480	3	60	117/146	176	105/131	158	110/138	166	100/125	150
	139/240	3	60	117/146	351	105/131	315	110/138	332	100/125	300
	254/440	3	60	110/138	181	100/125	164	110/138	181	100/125	164
	127/220	3	60	110/138	362	100/125	328	110/138	362	100/125	328
	240/416	3	60	105/131	182	96/120	167	105/131	182	96/120	167
	120/208	3	60	105/131	364	96/120	333	105/131	364	96/120	333
	120/240	3	60	105/131	315	96/120	289	105/131	315	96/120	289
	219/380	3	60	96/120	182	88/110	167	96/120	182	88/110	167
	120/240	1	60	79/79	329	72/72	300	79/79	329	72/72	300
	254/440	3	50	87/109	143	74/93	122	87/109	143	74/93	122
	127/220	3	50	87/109	286	74/93	244	87/109	286	74/93	244
	120/208	3	50	91/114	316	80/100	278	91/114	316	80/100	278
	240/415	3	50	91/114	159	80/100	139	91/114	159	80/100	139
	219/380	3	50	91/114	173	80/100	152	91/114	173	80/100	152
110/190	3	50	91/114	346	80/100	304	91/114	346	80/100	304	
110/220	1	50	68/68	309	60/60	273	68/68	309	60/60	273	
UCI274E311	277/480	3	60	130/163	196	115/144	173	110/138	166	100/125	150
	139/240	3	60	130/163	392	115/144	346	110/138	332	100/125	300
	254/440	3	60	130/163	214	115/144	189	110/138	181	100/125	164
	127/220	3	60	130/163	428	115/144	378	110/138	362	100/125	328
	240/416	3	60	130/163	226	115/144	200	110/138	192	100/125	173
	120/208	3	60	130/163	452	115/144	400	110/138	383	100/125	347
	120/240	3	60	130/163	392	115/144	346	110/138	332	100/125	301
	219/380	3	60	130/163	248	115/144	219	110/138	210	100/125	190
	120/240	1	60	96/96	400	84/84	350	96/96	400	84/84	350
	254/440	3	50	104/130	171	94/118	155	96/120	157	88/110	144
	127/220	3	50	104/130	341	94/118	310	96/120	315	88/110	219
	120/208	3	50	104/130	361	94/118	328	96/120	333	88/110	305
	240/415	3	50	104/130	181	94/118	164	96/120	167	88/110	153
	219/380	3	50	104/130	198	94/118	179	96/120	182	88/110	167
110/190	3	50	104/130	395	94/118	359	96/120	365	88/110	334	
110/220	1	50	85/85	386	75/75	341	85/85	386	75/75	341	
UCI274D06	120/240	1	60	100/100	417	88/88	367	100/100	417	88/88	367
UCI274E06	120/240	1	60	115/115	479	100/100	417	110/110	458	100/100	417
UCI274F06	120/240	1	60	130/130	542	115/115	479	110/110	458	100/100	417

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
<b>Engine Specifications</b>		
Manufacturer	General Motors	
Engine: model, type	Industrial Powertrain Vortec 8.1 L, 4-Cycle Turbocharged	
Cylinder arrangement	V-8	
Displacement, L (Cu. in.)	8.1 (496)	
Bore and stroke, mm (in.)	108 x 111 (4.25 x 4.37)	
Compression ratio	9.1:1	
Piston speed, rn/mm. (ft./min.)	399 (1311)	332 (1092)
Main bearing: qty., type	5, Alum. Lead Silicon Alloy	
Rated rpm	1800	1500
Max. power at rated rpm, kW (HP)	146 (195)	118 (158)
Cylinder head material	Cast Iron	
Piston type and material	Strutless Flat Top, Hypereutectic Cast Alum.	
Crankshaft material	Cast Nodular Undercut Rolled Fillet	
Valve (exhaust) material	Int. - A193 Exh. Inconel	
Governor type	Electronic	
Frequency regulation, no-load to full-load	Isochronous	
Frequency regulation, steady state	±0.5%	
Frequency	Field-Convertible	
Air cleaner type, all models	Dry	

Exhaust	60 Hz	50 Hz
<b>Exhaust System</b>		
Exhaust manifold type	Dry	
Exhaust flow at rated kW, m <sup>3</sup> /min. (cfm)	26.1 (920)	18.7 (660)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	649 (1200)	
Maximum allowable back pressure, kPa (in. Hg)	10.2 (3.0)	
Exhaust outlet size at engine hookup, mm (in.)	71 (2.8) OD	

## Lubrication

### Lubricating System

Type	Full Pressure	
Oil pan capacity, L (qt.)	8.0 (8.5)	
Oil pan capacity with filter, L (qt.)	8.5 (9.0)	
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.)	24.2 (6.4)	
Engine jacket water flow, Lpm (gpm)	125 (33)	102 (27)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	110 (6260)	72 (4100)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	599 (23.6)	
Fan, kWm (HP)	10.4 (14.0)	6.0 (8.1)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H <sub>2</sub> 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 <sub>2</sub> 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 <sub>4</sub> and higher, % by volume	0.3 max.	2.5 max.
Sulfur, ppm mass	25 max.	
Lower heating value, kJ/m <sup>3</sup> (Btu/ft <sup>3</sup> ), 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 <sup>3</sup> /min. (scfm) *	306 (10800)	232 (8200)
Combustion air, m <sup>3</sup> /min. (cfm)	8.8 (312)	6.2 (220)
Heat rejected to ambient air:		
Engine, kW (Btu/min.)	72.0 (4100)	44.1 (2510)
Alternator, kW (Btu/min.)	13.7 (780)	9.8 (560)

\*Air density = 1.20 kg/m<sup>3</sup> (0.075 lbm/ft<sup>3</sup>).

### Fuel Consumption

Natural Gas, m <sup>3</sup> /hr. (cfm) at % load	Standby Rating		Prime Rating	
	60Hz	50Hz	60Hz	50Hz
100%	46.8 (1651)	39.6 (1400)	43.9 (1549)	36.6 (1293)
75%	38.9 (1372)	31.3 (1105)	35.8 (1266)	29.0 (1023)
50%	27.9 (984)	22.8 (806)	26.1 (923)	21.4 (757)
25%	18.4 (650)	15.1 (535)	17.7 (624)	14.6 (515)
LP Gas, m <sup>3</sup> /hr. (cfm) at % load	Standby Rating		Prime Rating	
	60Hz	50Hz	60Hz	50Hz
100%	16.5 (582)	14.4 (509)	15.3 (541)	13.5 (475)
75%	13.3 (469)	11.8 (416)	12.4 (438)	10.9 (384)
50%	10.0 (354)	8.4 (298)	9.4 (331)	8.0 (281)
25%	6.4 (226)	5.8 (205)	6.1 (217)	5.6 (196)

# **GENERATOR SPECIFICATIONS**

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## **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 AVR's**

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 AVR's 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

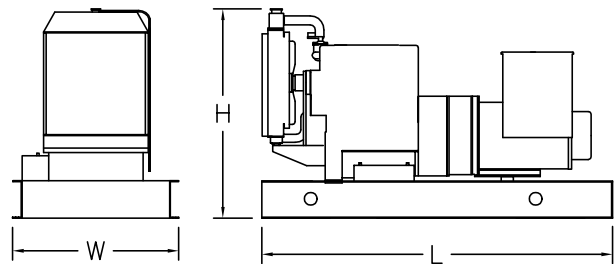
- Exhaust silencer
- Silencer mounting kit for enclosure
- Weather enclosure
- Sound attenuated enclosure
- Flexible fuel lines
- Oil pan heater
- Battery
- Battery heater
- Battery charger
- PMG exciter

### WEIGHTS AND DIMENSIONS

### GS125

Overall Size, L x W x H, in.: (96" x 46" x 60")

Weight (wet): 2500 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.

## TAYLOR POWER SYSTEMS

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