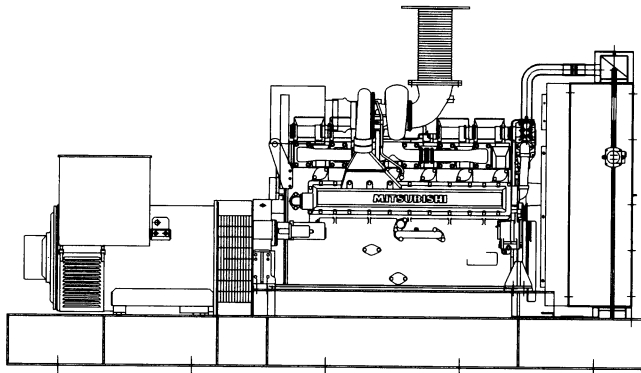


# TAYLOR<sup>®</sup> POWER SYSTEMS

**Model: DS600M**

**Ratings Range:**



## 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.**
- **Electronic Isochronous Governor**

		<b>50Hz</b>	<b>60Hz</b>
<b>Standby:</b>	<b>kw</b>	<b>480</b>	<b>538 - 600</b>
	<b>kva</b>	<b>600</b>	<b>738 - 750</b>
<b>Prime:</b>	<b>kw</b>	<b>432</b>	<b>500 - 540</b>
	<b>kva</b>	<b>540</b>	<b>625 - 675</b>

Generator	Voltage	PH	Hz	125°C Rise		105°C Rise	
				Standby	Rating	Prime	Rating
				kW/kVA	Amps	kW/kVA	Amps
<b>HCI534F</b>	277/480	3	60	600/750	902	540/675	677
	139/240	3	60	600/750	1804	540/675	1624
	254/440	3	60	600/750	984	540/675	886
	127/220	3	60	600/750	1768	540/675	1771
	240/416	3	60	590/738	1024	540/675	937
	120/208	3	60	590/738	2049	540/675	1874
	120/240	3	60	590/738	1775	540/675	1624
	219/380	3	60	538/673	1023	500/625	950
	120/240	1	60	295/295	1229	275/275	1146
	254/440	3	50	480/600	787	432/540	709
	127/220	3	50	480/600	1575	432/540	1417
	120/208	3	50	480/600	1665	432/540	1499
	240/415	3	50	480/600	835	432/540	751
	219/380	3	50	480/600	912	432/540	820
	110/190	3	50	480/600	1823	432/540	1641
	110/220	1	50	265/265	1205	245/245	1114

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 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 & ENGINEERING DATA

## GENERAL ENGINE DATA MITSUBISHI S6R-YIPTA-4

TYPE	4 CYCLE, WATER COOLED
ASPIRATION	TURBOCHARGED, AFTER COOLER
CYLINDER ARRANGEMENT	INLINE 6
No. OF CYLINDERS	6
BORE mm(in.)	170 (6.69)
STROKE mm(in.)	180 (7.09)
DISPLACEMENT liter(cubic in.)	24.51 (1496)
COMPRESSION RATIO	15.0:1
STEADY STATE SPEED STABILITY BAND AT ANY CONSTANT LOAD	
ELECTRIC GOVERNOR	±0.25% OR BETTER
MAXIMUM OVERSPEED CAPACITY	2100 RPM
MOMENT OF INERTIA OF ROTATING COMPONENTS INCLUDES STD. FLYWHEEL— kgf·m (lbf·ft)	38.26 (908.1)
CYCLIC SPEED VARIATION WITH FLYWHEEL AT 1800 rpm	1/164

## AIR INLET SYSTEM

MAXIMUM INTAKE AIR RESTRICTION(INCLUDES PIPING) WITH CLEAN FILTER ELEMENT—mm H <sub>2</sub> O (in.H <sub>2</sub> O)	400 (15.7)
WITH DIRTY FILTER ELEMENT—mm H <sub>2</sub> O (in.H <sub>2</sub> O)	635 (25.0)

## EXHAUST SYSTEM

MAX. ALLOWABLE BACK PRESSURE—mm H <sub>2</sub> O (in.H <sub>2</sub> O)	600 (23.6)
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## LUBRICATION SYSTEM

OIL PRESSURE AT IDLE—kgf/cm <sup>2</sup> (psi)	2~3 (29~43)
OIL PRESSURE AT RATE SPEED—kgf/cm <sup>2</sup> (psi)	5~6.5 (71~93)
MAX. OIL TEMPERATURE— °C(°F)	110 (230)
OIL CAP. OF STANDARD PAN HIGH—liter (U.S. gal.)	80 (21.1)
OIL CAP. OF STANDARD PAN LOW—liter (U.S. gal.)	50 (13.2)
TOTAL SYS. CAP. (INCLUDES FILTER)—liter (U.S. gal.)	100 (26.4)
MAX. ANGLE OF INSTALLATION (STD. PAN) FRONT DOWN (ENGINE ONLY)	11.5°
	10°
	22.5°

## FUEL SYSTEM

FUEL INJECTOR	MITSUBISHI PS6 TYPE X 1
MAX. SUCTION HEAD OF FEED PUMP—mm Hg (in. Hg)	75 (3.0)
MAX. STATIC HEAD OF LEAK PIPE—mm Hg (in. Hg)	150 (5.9)

## STARTING SYSTEM

BATTERY CHARGING ALTERNATOR— V—Ah	24—30
STARTING MOTOR CAPACITY— V—kW	24—7.5
MAX. ALLOWABLE RESISTANCE OF CRANKING CIRCUIT— m Ω	2.5
RECOMMENDED MINIMUM BATTERY CAPACITY AT 5 °C(41 °F) AND ABOVE—Ah	200
BELOW 5 °C(41 °F) THROUGH— 5 °C(23 °F)	500

## ENGINE MOUNTING

MAXIMUM BENDING MOMENT AT REAR FACE OF FLYWHEEL HOUSING kgf·m (lbf·ft)	200 (1447)
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## COOLING SYSTEM

COOLANT CAPACITY (ENTIRE SYSTEM)	35.2 GALLONS
MAX. EXTERNAL FRICTION HEAD AT ENGINE OUTLET	5 psi
MAX. STATIC HEAD OF COOLANT ABOVE CRANKSHAFT CENTER	32.8 ft.
MAX. OUTLET PRESSURE OF ENGINE WATER PUMP	37.1 psi
STANDARD THERMOSTAT (MODULATING) RANGE	160~185 °F
MAX. COOLANT TEMP. AT ENGINE OUTLET	208 °F
MIN. COOLANT EXPANSION SPACE—% OF SYS. CAPACITY	10
MAX. AIR REST. ON DISCHARGE SIDE OF RAD. AND FAN	.4 in. H <sub>2</sub> O

ITEM	STANDBY	PRIME
	60Hz	60Hz
	1800	1800
BRAKE HORSE POWER WITHOUT FAN	898 HP 670 KW	816 HP 609 KW
BRAKE MEAN EFFECTIVE PRESSURE WITHOUT FAN	264 psi	240 psi
MEAN PISTON SPEED	10.8 m/s 2126 ft/min.	10.8 m/s 2126 ft/min.
MAX. REGENERATIVE POWER ABSORPTION CAPACITY WITHOUT FAN	97 HP 72 KW	97 HP 72 KW
INTAKE AIR FLOW	2119 CFM	1907 CFM
EXHAUST GAS FLOW	5579 CFM	5049 CFM
COOLANT FLOW	211 GPM	211 GPM
COOLING AIR FLOW (STD. FAN)	25423 CFM	25423 CFM
FAN LOSS HORSE POWER (STD. FAN)	27 HP 20 KW	27 HP 20 KW
RADIATED HEAT TO AMBIENT	2981 BTU/min.	2698 BTU/min.
HEAT REJECTION TO COOLANT	24838 BTU/min.	22483 BTU/min.
HEAT REJECTION TO EXHAUST	33437 BTU/min.	30119 BTU/min.

## FUEL CONSUMPTION

	STANDBY	PRIME
DIESEL, gal/hr AT % OF LOAD		
100%	44.5	40.3
75%	33.4	30.6
50%	23.4	21.8

## CONTROL PANEL

DGC-500 Digital Genset Controller utilizes microprocessor based technology to provide a versatile system for genset control, protection and monitoring. This microprocessor design allows customization of the controller's functions to fit virtually every application's needs. DGC-500 accepts conventional engine sender inputs. These can be customized via the BESTCOMS PC software to allow virtually any sender to be used.

## TOTAL MONITORED PARAMETERS

### ● GENERATOR

- Voltage (A & B phases and A & B phases to neutral)
- Current (A & B phases)
- kVA total and per phase
- Frequency

### ● ENGINE

- Oil pressure
- Coolant temperature
- Fuel Level
- Battery voltage
- Hours to next service
- Total run time
- Engine RPM

### ● TIMERS

- Eng. cooldown: 0 to 60 minutes
- Eng. maint.: 0 to 5000 hours
- Pre-Alarm time delays:
  - Weak batt. & low batt. volt: 1-10 seconds
- Alarm time delays:
  - Overspeed: 0-500ms
  - Sender failure: 0-10 seconds
- Arming delays after crank disconnect:
  - Low oil pressure: 5-15 seconds
  - High coolant temp.: 50-150 seconds
- Pre-crank delay: 0-30 seconds

### ● GENERATOR SET PROTECTION

#### ALARMS:

- Low oil pressure
- Overspeed
- Overcrank
- Emerg. Stop button input
- High coolant temp.
- Sender failure
- Low coolant level
- Low fuel level

#### PRE-ALARMS:

- Low oil pressure
- Low battery voltage
- Maintenance interval timer
- High coolant temp.
- Low coolant temp.
- High battery voltage
- Fuel leak
- Weak battery
- Low fuel level
- Battery charger failure

# GENERATOR SPECIFICATIONS

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## **STANDARDS**

HC4 and HC5 industrial generators meet the requirements of BS5000, VDE0530, UTE5100, NEMA MG1-22, CEMA, IEC34, CSA22.2 AND AS1359.

## **EXCITATION SYSTEMS**

### **SX440 AVR**

With this self-excited system 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.

### **SX440 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 BS6862: Part 1 Grade 2.5 for minimum vibration in operation.

## **QUALITY ASSURANCE**

Generators are manufactured using production procedures having a quality assurance level to BS5750 Part 2 (ISO9002).

# 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
- PMG exciter

## Accessories

- Generator strip heater
- Line circuit breaker
- DGC 500 Multifunction Protection
- DGC 1000 controls
- Standard Dial Out Modem
- Extended Temperature Modem
- Enhanced Communication
- Auxiliary Contacts
- Surface Mount Remote Annunciator
- Flush Mount Remote Annunciator

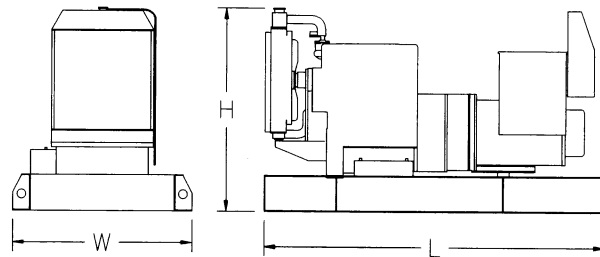
## Accessories

- Exhaust silencer
- Silencer mounting kit for enclosure
- Weather enclosure
- Sound attenuated enclosure
- Sub-base fuel tank
- Flexible fuel lines
- Day tank
- Oil pan heater
- Battery
- Battery heater
- Battery charger

## WEIGHTS AND DIMENSIONS DS600M

Overall Size, L x W x H, in.: (150" x 68" x 75")

Weight (wet): 12,000 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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