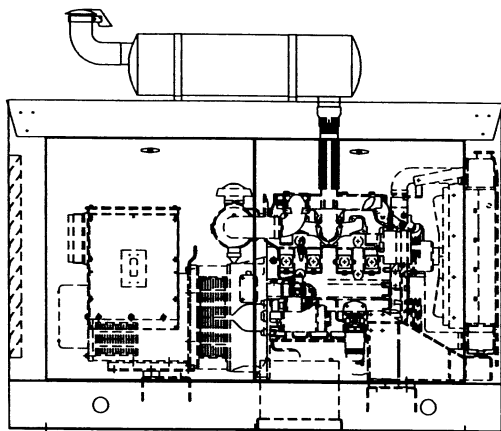


TAYLOR[®]

POWER SYSTEMS

Model: DS45

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
Standby:	kw	32 - 40	33.5 - 46.5
	kva	40 - 50	45 - 58
Prime:	kw	28.8 - 36	32.8 - 42
	kva	36 - 45	41 - 52.5

Generator	Voltage	PH	Hz	125°C Rise		105°C Rise	
				Standby	Rating	Prime	Rating
				kW/kVA	Amps	kW/kVA	Amps
UCI224C311	277/480	3	60	44/55	66	38.4/48	59
	139/240	3	60	44/55	132	38.4/48	115
	254/440	3	60	42/52.5	69	37/46	61
	127/220	3	60	42/52.5	138	37/46	121
	240/416	3	60	40/50	69	36/46	64
	120/208	3	60	40/50	139	36/46	128
	120/240	3	60	40/50	120	36/46	111
	219/380	3	60	36/45	69	32.8/41	62
	120/240	1	60	33.5/33.5	140	30/30	125
	254/440	3	50	32/40	52	28.8/36	47
	127/220	3	50	32/40	105	28.8/36	94
	120/208	3	50	34/42.5	118	30/37.5	104
	240/415	3	50	34/42.5	59	30/37.5	52
	219/380	3	50	34/42.5	65	30/37.5	57
	UCI224D311	110/190	3	50	34/42.5	129	30/37.5
110/220		1	50	28.5/28.5	130	25/25	104
277/480		3	60	46.5/58	70	42/52.5	63
139/240		3	60	46.5/58	140	42/52.5	126
254/440		3	60	46.5/58	76	42/52.5	69
127/220		3	60	46.5/58	152	42/52.5	138
240/416		3	60	46.5/58	81	42/52.5	73
120/208		3	60	46.5/58	161	42/52.5	145
120/240		3	60	46.5/58	140	42/52.5	126
219/380		3	60	44/55	83	38/48	73
120/240		1	60	40/40	167	35/35	146
254/440		3	50	38/47.5	62	34/43	56
127/220		3	50	38/47.5	125	34/43	113
120/208		3	50	40/50	139	36/45	125
240/415		3	50	40/50	70	36/45	63
219/380	3	50	40/50	76	36/45	68	
110/190	3	50	40/50	110	36/45	137	
110/220	1	50	33.5/33.5	152	30/30	136	
UCI224C06	120/240	1	60	37.5/37.5	156	33.8/33.8	141
UCI224D06	120/240	1	60	44/44	183	40/40	167
UCI224E06	120/240	1	60	46.5/46.5	194	42/42	175

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

ENGINE

Engine Specifications	60 Hz	50 Hz
Manufacturer	Perkins	
Engine, model, type	1004-4 4 Cycle	
Cylinder arrangement	4 vertical, in-line	
Displacement, cu. in. (L)	243 (3.99)	
Bore and stroke, in. (mm)	3.937 (100) x 5 (127)	
Compression ratio	18.5:1	
Piston speed, ft./sec. (m/sec)	25 (7.62)	20.8 (6.35)
Rated rpm	1800	1500
Max. power at rated rpm, hp (kw)	71 (53)	61.5 (46)
Cylinder head material	Cast iron	
Crankshaft material	Forged steel	
Governor type	Mechanical	
Frequency regulation, no load to full load	3-5%	
Frequency regulation, steady state	±0.8%	
Air cleaner type, all models	Dry paper element	
Combustion air, cfm (m ³ /min.)	111 (3.15)	92 (2.6)

EXHAUST

Exhaust System	60 Hz	50 Hz
Exhaust flow at rated kW, cfm (m ³ /min.)	343 (9.72)	283 (8.02)
Exhaust temperature at rated kW, dry exhaust, °F (°C)	1274 (690)	1256 (680)
Maximum allowable back pressure, in. Hg (kPa)	1.4" HG (5 KPA)	
Exhaust outlet size at hookup, in. (mm)	2.5" (63.9)	

ENGINE ELECTRICAL

Engine Electrical System	60 Hz	50 Hz
Battery charging alternator:		
Ground (negative/positive).....		Negative
Volts (DC).....		12
Ampere rating.....		45
Starter motor rated voltage (DC)		12
Recommended battery cold cranking amps (CCA) rating for 0°F (-18°C)		800
Quantity of batteries		1
Battery voltage (DC)		12

FUEL

Fuel System	60 Hz	50 Hz
Fuel supply line, min. ID, in. (mm)	5/16 (7.93)	
Fuel return line, min. ID, in. (mm)	1/4 (6.35)	
Max. lift, engine-driven fuel pump, ft. (m)	6' (1828)	
Max. fuel flow, gph (Lph)	23.5 (89.1)	25.9 (98.1)
Fuel prime pump	manual	
Fuel filter	spin on	
Recommended fuel	#2 diesel	

FUEL CONSUMPTION

Fuel Consumption	60 Hz	50 Hz
Diesel, gph (Lph) at % of load		
100%	3.4 (12.8)	2.8 (10.6)
75%	2.5 (9.5)	2.1 (8.1)
50%	1.8 (6.8)	1.5 (5.7)

COOLING

Cooling System	60 Hz	50 Hz
Ambient temperature °F (°C)	122 (50)	
Radiator system capacity, including engine, gal. (L)	5.5 (21)	
Engine jacket water flow, gpm (Lpm)	25.6 (97)	21.1 (80)
Heat rejected to cooling water at rated kW, dry exhaust Btu/min.	2559	2388
Water pump type	centrifugal	
Fan diameter, including blades, in. (mm)	20 (508)	
Fan hp (kW)	2.35 (1.75)	1.69 (1.26)
Max. restriction of cooling air, intake and discharge side of rad., in. LBF in ² (kPa)	5.0 (35)	
Radiator-cooled cooling air, cfm (m ³ /min.)	2654 (75)	1942 (55)

LUBRICATION

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity with filter, qts. (L)	8.6 (8.1)	
Oil filter, quantity, type	1 spin on	
Oil cooler	none	

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

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 (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).