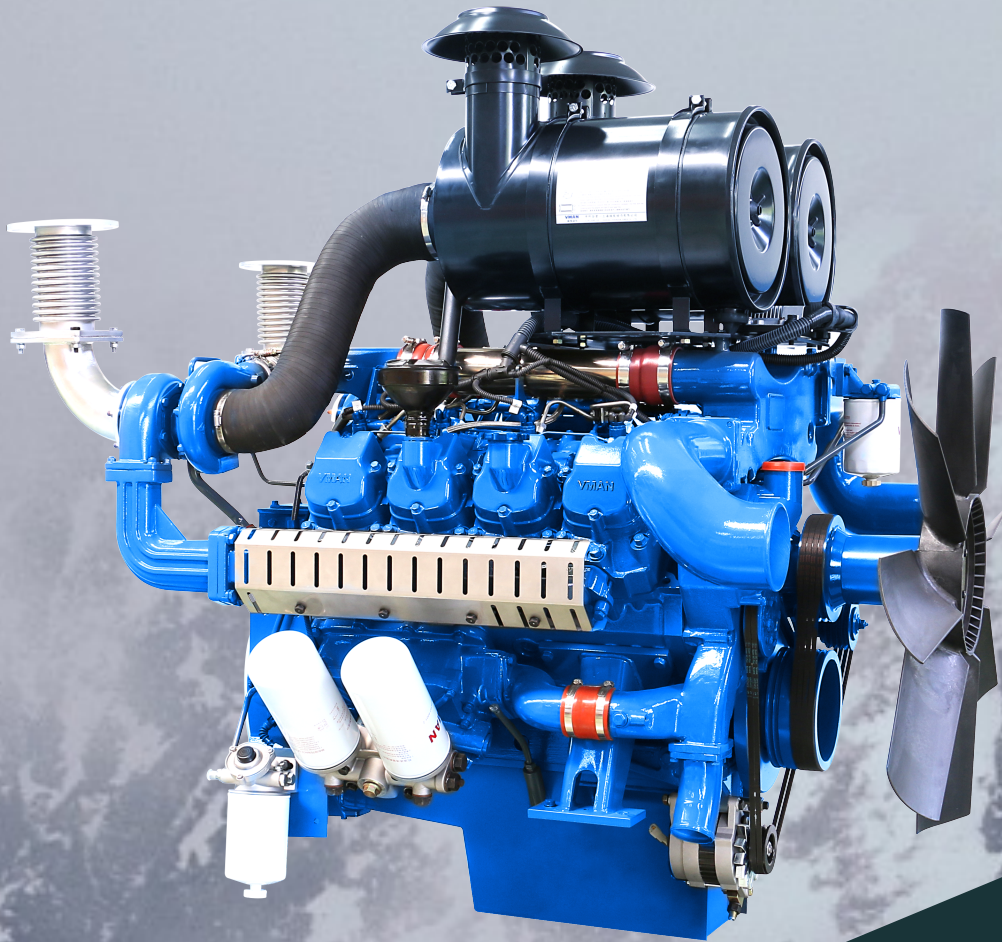


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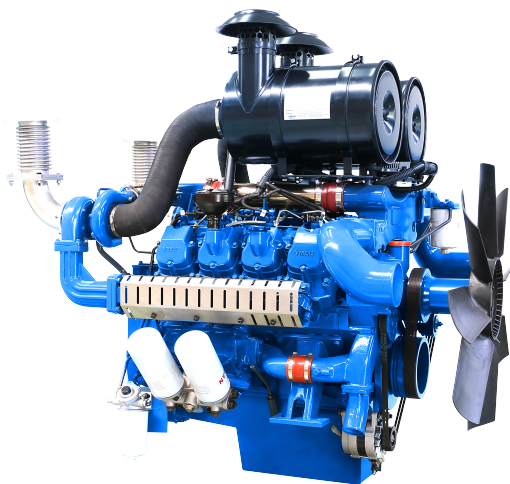
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2021

# D15 SERIES ENGINE

TECHNICAL DATA SHEET

## D15 (V8) SERIES DIESEL ENGINE



### RATINGS DEFINITION

The power ratings of Emergency Standby and Prime are in accordance with the standard of ISO8528. Fuel Stop power in accordance with the standard of ISO3046. Electric power (kW) should be estimated by considering generator efficiency, cooling fan power loss and power derating due to altitude and temperature.

**STANDBY POWER RATING** is applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. A standby rated engine should be sized for a maximum of a 70% average load factor and 200 hours of operation per year, this includes less than 25 hours per year at the Standby Power rating.

**PRIME POWER RATING** is available for an unlimited of hours per year in variable load application. Variable load should not exceed a 70% average the Prime Power rating during any operating period hours., The Total operating time at 100% Prime Power shall not exceed 500 hours per year.

10% overload capability is available for a period of 1 hour within a 12 hours period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year,

**CONTINUOUS POWER RATING** is the power that the engine can continue to use under the prescribed speed and the specific environment condition in the normal maintenance period stipulated in the manufacturing plant. And continuous power applicable for supplying utility power at a constant 100% for an unlimited number of hours per year. No overload capability is available for this rating.

Ratings (kW/PS)	1500rpm / 50Hz				1800rpm / 60Hz		
	D15	D15A	D15A1	D15A2	D15B	D15B1	D15B2
Prime	450/612	405/551	365/496	330/450	440/599	405/551	370/503
Standby	500/680	445/605	415/565	363/494	500/680	460/626	405/551
Continuous	346/470	308/418	277/376	251/341	334/454	308/418	281/382

### GENERAL ENGINE DATA

Engine Model	D15	D15A	D15A1	D15A2	D15B	D15B1	D15B2
Engine Type	4-Cycle, V-type, 8-Cylinder, Turbo charged & inter-cooled (air to air)						
Speed	1500 rpm			1800rpm			
Bore x stroke	128 * 142 mm						
Displacement	14.618 L						
Compression ratio	14.6 : 1	15.5 : 1			14.6 : 1	15.5 : 1	
Rotation {Looking at flywheel}	Counter clockwise {CCW}						
Firing order	1-5-7-2-6-3-4-8						
Injection timing	18°±1° BTDC @ 1500 rpm				20°±1° BTDC @ 1800		
Dry weight {W/O cooling system}	1050 kg						
Dimension {L x W x H}	1481*1389*1288 mm						
Flywheel housing	SAE 1						
Flywheel	14{PCD:438.15mm/17.25inch}						
Number or teeth on flywheel	160						
Piston speed	7.1 m/s				8.52 m/s		

### ENGINE MOUNTING

Max.Bending Moment at Rear Face to Block	1325 N.m
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### INTAKE & EXHAUST SYSTEM

Engine Model	D15	D15A	D15A1	D15A2	D15B	D15B1	D15B2
Max.Intake Restriction (kPa)	5						
Max.Exhaust Back Pressure (kPa)	<10						
Combustion Air Consumption (m³/h)	3047	2699	2418	2137	3077	2749	2396
Max.Exhaust Temp.(After Turbo°C)	520	510	493	440	530	500	465
Exhaust Gas Flow (m³/h)	7447	6512	5709	4695	7615	6548	5449
Cooling fan air flow (m³/h/min)	713	713	675	675	810	810	810

**AIR INDUCTION SYSTEM**

Engine Model	D15	D15A	D15A1	D15A2	D15B	D15B1	D15B2
Maximum Intake Air Restriction							
- With Clean Filter Element (m <sup>3</sup> /h)	3047	2697	2418	2137	3077	2749	2396
- With Dirty Filter Element (m <sup>3</sup> /h)	8775	7767	6964	6155	8862	7917	6900
Max.static pressure after radiator (Pa)	1126 Pa @1500rpm				955 Pa @1800rpm		

**COOLING SYSTEM****Water circulation by centrifugal pump on engine**

Cooling method	Fresh water forced circulation
Coolant capacity	Engine only : Approx.23 lit, With Radiator (*Air On 43°C : Approx 114 lit )
Coolant flow rate	660 liters/min @1800rpm; 590 liters/min @1500 rpm
Pressure Cap	49 kPa
Coolant Capacity for Engine	20 L
Max.Permissible Temperature	90 °C
Max.Coolant warning Temperature	95 °C
Max.Coolant Shutdown Temperature	105 °C
Thermostat Open Temperature	71 °C
Max.external coolant system restriction	Not available

Two radiator options are provided, based on allowable maximum Air temperature On radiator inlet ( Air On 40 °C) Air On 50 °C

- ATB (Ambient Temperature before Boiling ) of generator set varies depending on the engine room ventilation design, even if the same radiator applied. Adequate selection of radiator options by means of the cooling test is highly recommended, and generator set makers are responsible for the selection.

**LUBRICATION SYSTEM****Force-feed lubrication by gear pump, lubricating oil cooling water circuit of engine**

Lub.Method	Fully forced pressure feed type
Oil filter	Full flow, cartridge type
Lube oil specification	CF-4
Lube oil pressure	Idle Speed : Min 160 kPa Governed Speed: Min 200 kPa
Maximum oil temperature	110 °C
Max.Permissible Oil Temperature	90 °C
Oil Consumption (as % of fuel consumption)	≤0.5
Oil capacity	27 L

**FUEL SYSTEM****In-line pump with integrated, electromagnetic actuator**

Engine Model	D15	D15A	D15A1	D15A2	D15B	D15B1	D15B2
Governor	Electric type (Original GAC from USA)						
Speed drop	G2 Class (ISO 8528)						
Feed pump	Mechanical type in pump						
Injection nozzle	Multi hole type						
Opening pressure	28 MPa						
Fuel filter	Full flow, Cartridge type with water drain valve						
Maximum fuel inlet restriction	30 kPa						
Maximum fuel return restriction	60 kPa						
Fuel feed pump Capacity	630 liters / hr						
Fuel	Diesel fuel						
Fuel Consumption of generator set							
Standby power- 100% load (l/h)	127	113	102	88	131	115	102
Prime Power - 100% load (l/h)	113	101	89	80	114	100	91
- 75% load (l/h)	84	75	65	59	83	74	68
- 50% load (l/h)	57	51	46	41	57	50	45
- 25% load (l/h)	31	27	25	23	33	29	27
Continous power - 100% load (l/h)	86	77	67	61	86	76	69
Lowest Fuel Consumption Ratio(g/kW.h)	205	204	196	198	207	201	199

**ELECTRICAL SYSTEM**

Charging Alternator Voltage	28V
Charging Alternator Capacity	45A
Voltage regulator	Built-in type IC regulator
Starting motor	7kW
Battery Voltage	24V
Battery Capacity	2 * 200 Ah ( recommended )
Starting aid (Option)	Block heater ( Min. Temperature for Unaided Cold Start -10°C )

**VALVE SYSTEM**

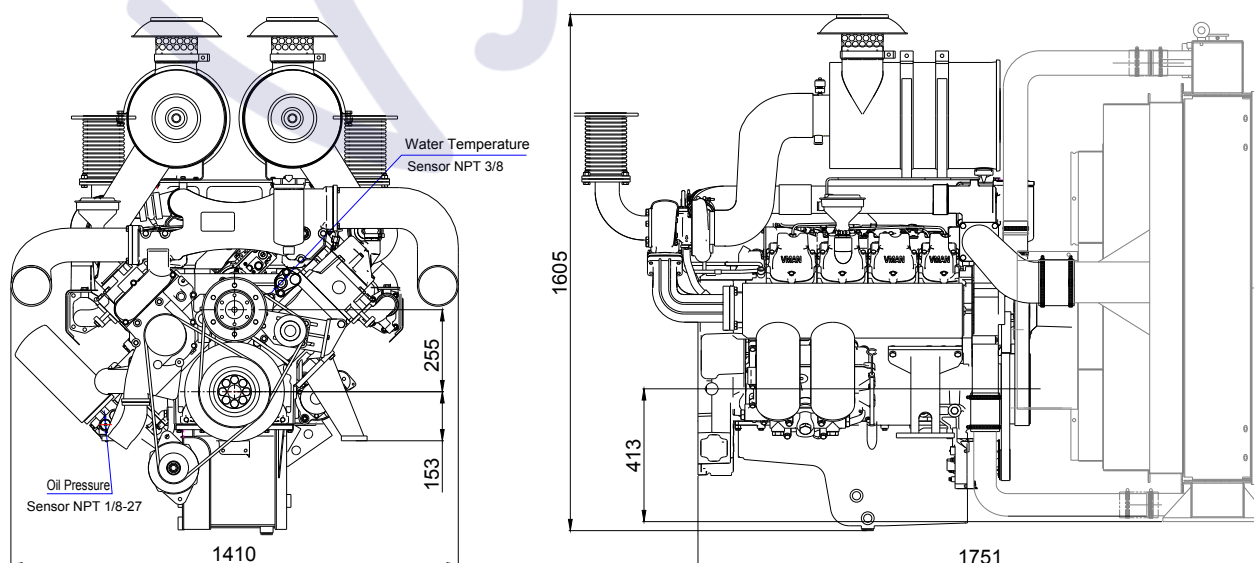
Type	Overhead valve type	
Number of valve	Intake 1, exhaust 1 per cylinder	
Valve lashes at cold	Intake 0.3 mm, Exhaust 0.4 mm	
Valve timing	Opening	Close
- Intake valve	24 deg.BTDC	36 deg.ABDC
- Exhaust valve	63 deg.BBDC	27 deg.ATDC

**Engine Data with Dry Exhaust Manifold (Standby Power)**

Engine Model	D15	D15A	D15A1	D15A2	D15B	D15B1	D15B2
Cooling Water Circulation	590 L/min (1500 rpm)				660L/min (1800 rpm)		
Heat Rejection to Exhaust (kW)	396	353	319	276	411	358	318
Heat Rejection to Coolant (kW)	173	154	139	120	179	156	138
Heat Rejection to Intercooler (kW)	115	102	93	80	119	104	92
Radiated Heat to Ambient (kW)	63	56	51	44	66	57	51

**Engine Data with Dry Exhaust Manifold (Prime Power)**

Engine Model	D15	D15A	D15A1	D15A2	D15B	D15B1	D15B2
Cooling Water Circulation	590 L/min (1500 rpm)				660L/min (1800 rpm)		
Heat Rejection to Exhaust (kW)	361	321	280	251	361	316	290
Heat Rejection to Coolant (kW)	157	140	122	109	157	138	126
Heat Rejection to Intercooler (kW)	105	93	81	73	105	92	84
Radiated Heat to Ambient (kW)	58	51	45	40	58	50	46

**D15 (V8) Series diesel engine drawing**



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