



SDEC POWER

D

SERIES

POWER
GENERATION ENGINES



G-DRIVE POWERPACK

Power Generation Specification

TECHNICAL DATA SHEET

Power Output Range

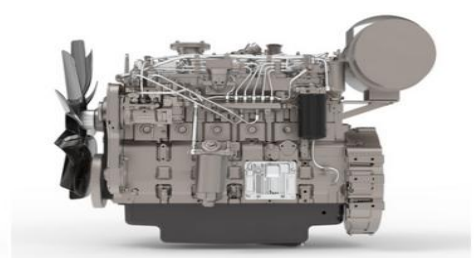
185kW – 226kW

STAGE II EMISSION COMPLIANT
FOR USE IN NON-REGULATED TERRITORIES, ASIA, MIDDLE EAST AND AFRICA.

D SERIES DIESEL ENGINE

| MODELS | MAX ENGINE OUTPUT | | RATED GENERATOR OUTPUT | |
|-------------------------|-------------------|------------|------------------------|-------------|
| | Prime kW | Standby kW | Prime kVA | Standby kVA |
| 6DTAA8.9-G21 (1500 rpm) | 185 | 204 | 200 | 220 |
| 6DTAA8.9-G21 (1800 rpm) | 205 | 226 | 220 | 250 |

Generator outputs calculated using nett engine power at 0.8 power factor, at an altitude below 1000 m.a.s.l. and 40-degrees Celsius ambient temperature.
Refer to the outputs and ratings tables for exact site conditions.



Build specification for export markets

Manufactured in the People's Republic of China

| SPECIFICATIONS | | 6DTAA8.9-G21 | |
|--|--|---------------|--|
| Fuel Type | Diesel | | |
| Method Of Cooling | Water Cooled – Set Mounted Radiator | | |
| Number Of Cylinders | 6 | | |
| Engine Type | Inline 4 Stroke | | |
| Bore x Stroke mm x mm | 114 x 144 | | |
| Cylinder Liner Type | Wet Liner | | |
| Total Displacement cc / L | 8820 / 8.82 | | |
| Combustion Type | Direct Injection | | |
| Aspiration - Naturally or Turbo | Turbo Charged | | |
| Make of Turbo Charger | SDEC | | |
| Valves Per Cylinder | 4 per cylinder | | |
| Compression Ratio | 18:1 | | |
| Firing Order | 1:5:3:6:2:4 | | |
| Swept Volume in cm ³ | 8819 @ 1500rpm | | |
| Mean Piston Speed in m/min | 432 @ 1500rpm | 518 @ 1800rpm | |
| Cyclic Irregularity | 0.030-0.038 δs | | |
| Fuel System | Longkou Inline “P” type | | |
| Steady State Speed Stability at Constant Load | G2 Class ≤ ± 1.5 | | |
| Flywheel & Bellhousing SAE | SAE 2-11.5 | | |
| Number of Teeth on Flywheel | 125 | | |
| Direction of Rotation (Viewed from Flywheel) | Counterclockwise | | |
| Moment of Inertia (Engine and Alternator) kgm ² | 12.0-15.0 kgm ² depending on the alternator | | |
| Moment of Inertia (Engine) kgm ² | 4.5-6.0 kgm ² | | |
| PROTECTIONS & SENSORS | | | |
| Method of Protection Against High Engine Temperature | KE00105(3/8-18NPT) | | |
| Method of Protection Against Low Oil Pressure | KE21103(NPT1/8;0-10) | | |
| Method of Protection Against Low Water Level | JKE00120 1/2"-G | | |
| Method of Protection Against High Water Temperature | KE00105(3/8-18NPT) | | |
| WEIGHTS & DIMENSIONS | | | |
| Weight (Dry) / Weight (Wet) (kg) | 740 / 771 | | |
| Length x Width x Height (Engine Only) mm | 1422 × 762 × 1186 | | |
| Length x Width x Height (Engine Only + Radiator) mm | 1600 × 945 × 1202 | | |

RATINGS / OUTPUTS

| kW (Gross kWm) | 1500 | 1800 |
|--|-------------|-------------|
| Max kw | 204 | 226 |
| kW (Nett kWm) Rated | 1500 | 1800 |
| Continuous kW | 148 | 164 |
| Prime kW | 185 | 205 |
| Standby kW | 204 | 226 |
| kWe (Nett kWe) | 1500 | 1800 |
| Continuous kWe | 141 | 156 |
| Prime kWe | 176 | 195 |
| Standby kWe | 194 | 215 |
| Based on an alternator efficiency of 95% | | |
| kVA | 1500 | 1800 |
| Continuous kVA @ 0,8pf | 160 | 176 |
| Prime kVA @ 0,8pf | 200 | 220 |
| Standby kVA @ 0,8pf | 220 | 250 |

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations.

STANDBY POWER RATING

Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Standby Power rating. This rating should be applied where reliable utility power is available. A Standby rated engine should be sized for a maximum of an 80% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating. Standby ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency.

PRIME POWER RATING

Applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:

UNLIMITED TIME RUNNING PRIME POWER

Prime Power is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours. The total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

LIMITED TIME RUNNING PRIME POWER

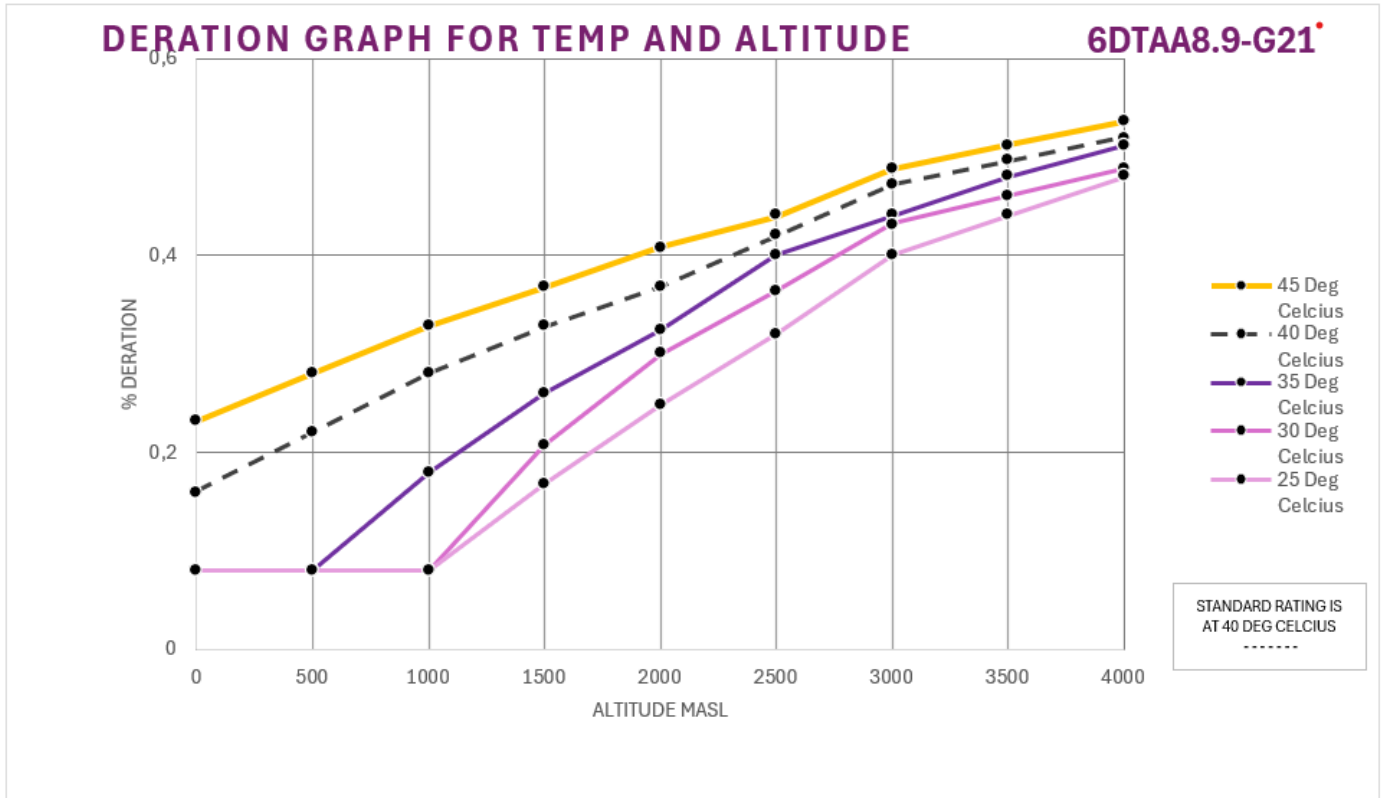
Limited Time Prime Power is available for a limited number of hours in a non-variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Prime Power rating should use the Continuous Power rating.

CONTINUOUS POWER RATING

Applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

NB: DC VARIABLE SPEED POWER RATING

Please consult with engineering for applications where variable speed engines are required for D.C. generator set applications.



| Alt. | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
|------------------|-----|------|------|------|------|------|------|------|
| Temp 50 Deg C | - | - | - | - | - | - | - | - |
| 45 | 23% | 33% | 37% | 41% | 44% | 49% | 51% | 54% |
| 40 | 16% | 28% | 33% | 37% | 42% | 47% | 50% | 52% |
| 35 | 8% | 18% | 26% | 32% | 40% | 44% | 48% | 51% |
| 30 | 8% | 8% | 21% | 30% | 36% | 43% | 46% | 49% |
| 25 | 8% | 8% | 17% | 25% | 32% | 40% | 44% | 48% |

TEST CONDITIONS

Air temperature..... 27 °C
 Barometric pressure..... 100 kPa
 Relative humidity 30%
 Air inlet restriction at maximum power (nominal) 2,5 kPa
 Intercooler Pressure at maximum power (nominal) 2,5 kPa
 Exhaust back pressure at maximum pressure (nominal) ... 3,0 kPa
 Fuel temperature (inlet pump) 55 °C maximum

Notes:

All data is based on the engine operating without, alternator, optional equipment and driven components. Data shown above represents gross engine performance capabilities obtained and corrected in accordance with GB/T1147.1-2017 and Equivalent ISO 3046-1:2002
 Standards for ratings (continuous, prime, standby) in accordance with GB/T2820 and Equivalent ISO 8528-1:2018

LOAD ACCEPTANCE AND GOVERNING CLASS

| Initial load acceptance | | | | | |
|---|----------------------|---------------------------|--------------------------------|---------------------------------|---------------------|
| When engine reaches rated speed | | | | | |
| (Withing 15 seconds after engine starts to crank) | | | | | |
| Step Load | Prime Power Load kWm | Load kW _e nett | Expected frequency deviation % | Frequency recovery time seconds | Frequency stability |
| 25% - 75% | 46 – 139 | 58 – 173 | 3-5% dip | ≤ 5-8 | ± 0.5% |
| 0% - 100% | 0 – 185 | 0 – 204 | 5-7% dip | ≤ 8-12 | ± 0.5% |
| 100 – 0% load drop | 185 – 0 | 204 – 0 | 5-6% overshoot | ≤ 3-6 | ± 0.5% |

VALVES AND MECHANICS

VALVE MECHANISM

| | | |
|------------------------|-------------------------------------|--|
| Type | Overhead Valves | |
| Number of Valves | 2 Intake & 2 Exhaust / per Cylinder | |
| Valve Lashes when Cold | Intake 0.30mm | |
| | Exhaust 0.50mm | |

VALVE TIMING

| | OPENING | CLOSE |
|---------------|-------------|-------------|
| Intake Valve | 22.5 ° BTDC | 34.5 ° ABDC |
| Exhaust Valve | 67.5 ° BBDC | 25.5 ° ATDC |

ELECTRICAL SYSTEM

CHARGING ALTERNATOR

| | |
|----------------------------------|-----------------------|
| Charging Alternator Manufacturer | SDEC- D11-102-13 |
| Charging Alternator | 55 A x 28V |
| Voltage Regulator | Built-In IC Regulator |

STARTER MOTOR

| | |
|----------------------------|---------------|
| Starter Motor Manufacturer | SDEC-00022618 |
| Number of Starter Motors | 1 |
| Starter Motor Power | 7.5 kW |
| Starter Motor Voltage | 24 V |

BATTERIES (NOT SUPPLIED / RECOMMENDED)

| | |
|--------------------------|-------------------|
| Battery Capacity | 180 Amp-Hour |
| Number of Battery & Type | 2 x 12V Lead Acid |

| MODEL \ LOAD | 25% | 50% | 75% | 100% | 110% |
|----------------|-----|-----|-----|------|------|
| 1500 rpm g/kWh | 61 | 104 | 149 | 200 | 225 |
| 1500 rpm l/h | 13 | 23 | 33 | 44 | 50 |
| 1800 rpm g/kWh | 64 | 107 | 153 | 209 | 234 |
| 1800 rpm l/h | 16 | 26 | 37 | 51 | 57 |

FUEL SYSTEM

Injection System

| | |
|------------------|--------------------------|
| Type | Electronic |
| Injection Pump | Longkou in-line "P" type |
| Injection Nozzle | Multi-Hole Type |
| Opening Pressure | 250 kg/cm ² |
| Injection Timing | 7.5 °BTDC |
| Feed Pump | Mechanical |
| Governor | Electronic regulator |
| Governing Class | G2 |
| Speed Controller | Fortrust C2004 |

Fuel Filtration

| | |
|-------------------|---------------------|
| Fuel Filter | Spin On Type |
| Fuel Filters Type | Full Flow Cartridge |
| Fuel Filters | 1 Primary |
| Water Separator | Optional |

Fuel

| | |
|-------------------------|---|
| Fuel Type | Diesel |
| Suggested Grade / Class | 50 ppm or better |
| Bio Diesel Compatible | Confirm the ratio with the factory before use |

LUBRICATION SYSTEM

Oil Lubrication System

| | |
|--------------------|---------------------------------|
| Lubrication Method | Fully forced pressure feed type |
| Oil Pump Type | Gear type driven by crankshaft |

Oil Pan Capacity

| | |
|---------------------------------|---------|
| High Level / Low Level (Litres) | 19 / 15 |
|---------------------------------|---------|

Angularity limit

| | |
|--------------|------|
| Front Down | 25 ° |
| Front Up | 35 ° |
| Side to Side | 35 ° |

Oil Filtration

| | |
|------------------|---------------------|
| Oil Filter | Spin On Type |
| Oil Filters Type | Full Flow Cartridge |
| Oil Filters | 1 Primary |

Oil

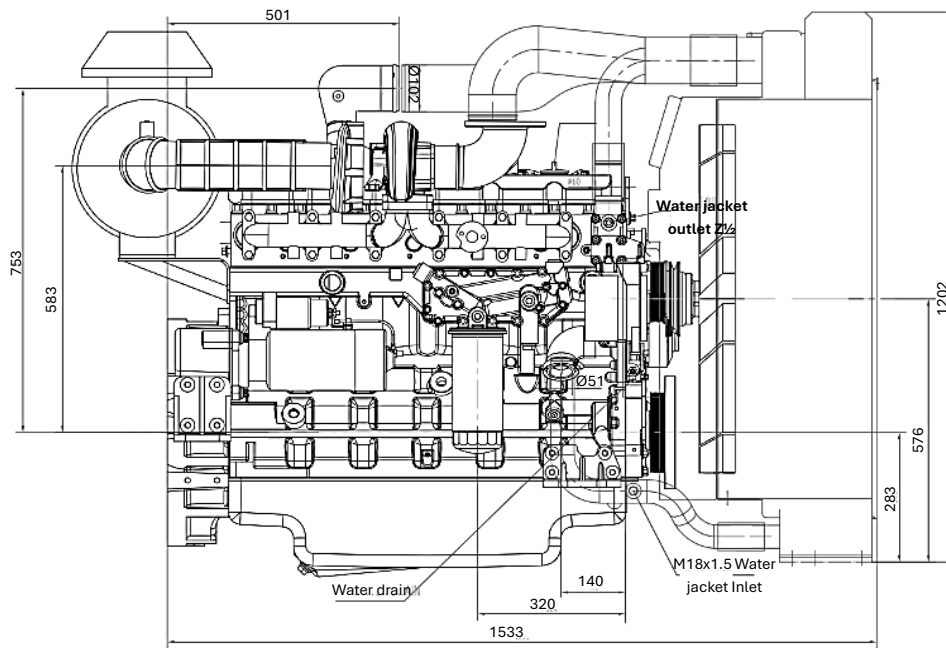
| | |
|-------------------------|----------------|
| Oil Type | Multigrade Oil |
| Suggested Grade / Class | CH 15W/40 |

ENGINE COOLING DATA AND THERMODYNAMICS

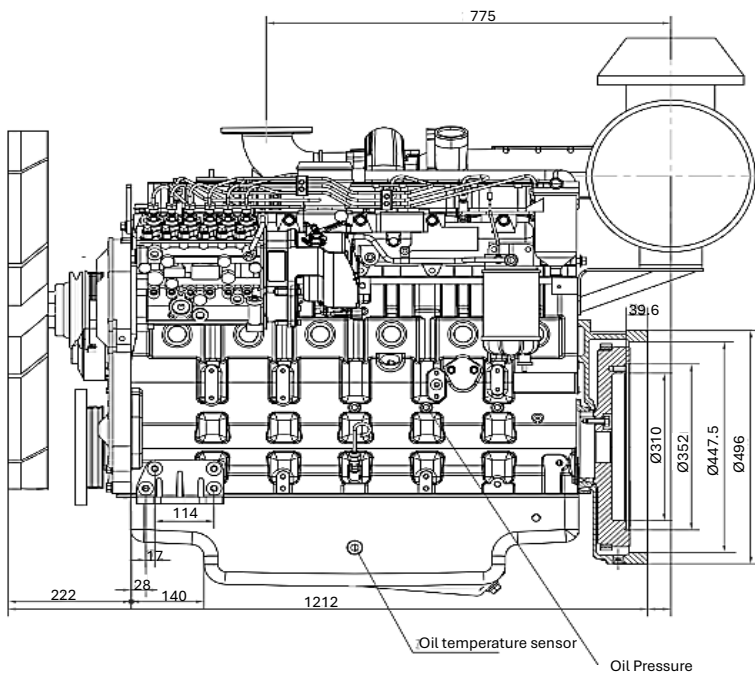
| Cooling System | |
|-------------------------------|--|
| Cooling Method | Fresh Water Forced Circulation |
| Water Capacity (Engine Only) | 12 litres |
| Water Lid Min. Pressure | 70 kPa |
| Water Pump | Centrifugal Type |
| | Belt Driven |
| Water Pump Capacity 1500 rpm | 200 L/min |
| Water Pump Capacity 1800 rpm | 240 L/min |
| Thermostat | Wax-Pellet Type |
| | Opening Temp. 82°C |
| | Full Open Temp. 95°C |
| Cooling Fan Type | Blower Type-Plastic |
| Drive Type | Mechanically Driven |
| Cooling Fan Construction | 10 x Plastic Blades |
| Cooling Fan Size | 762 mm Diameter |
| Cooling Fan Power Consumption | 6kW |
| Cooling Air Flow | 6.2 m ³ /s |
| | |
| Radiator | |
| Type | Set Mounted |
| Manufacturer | LK |
| Construction | Copper Core |
| Treatment | Tropicalised |
| Temperature | 50 Degree |
| Intercooled | Yes |
| Antifreeze | |
| Fuel Type | Premix (50/50) |
| Compliant Grade / Class | ASTM D-3306 ASTM D-6210 SAE J814 |
| Main Ingredient | 50% Glycol or More |

| Heat Rejection | |
|---|--------------------------------------|
| Heat Rejection to Coolant | 19kcal/sec (1500 rpm) |
| | 21kcal/sec (1800 rpm) |
| Heat Rejection to Intercooler | 12kcal/sec (1500 rpm) |
| | 13kcal/sec (1800 rpm) |
| Max. Permissible Restrictions | 3kPa |
| Permissible Restrictions: Intercooler | 8kPa |
| Intake System kPa | 6kPa |
| Max. Permissible Altitude m.a.s.l. | 2000m |
| Exhaust System | |
| Exhaust Gas flow | 28m ³ /min (1500 rpm) |
| | 40m ³ /min (1800 rpm) |
| Exhaust Gas Temperature Max °C | 600°C |
| Exhaust Outlet Size (Internal) mm | Ø95.5 |
| Exhaust Outlet Flange Size mm | Ø150 |
| Exhaust Flange & Bellow Supplied | No |
| Back Pressure for Total System at Standby Power | 6 kPa |
| Exhaust Smoke (FSN) | ≤1.5 |
| Turbo Charger | |
| Manufacturer | SDEC |
| Boost Pressure Ratio | 18:1 |
| Water Jacket Cooling Data (Optional) | |
| Coolant Flow - litres/min | 5l/min |
| Coolant Exit Temperature (max) °C | 70-85 °C |
| Coolant Inlet Temperature (min) °C | -40 °C |
| Coolant Inlet Temperature (max) °C | +60 °C to +70 °C |
| Suggested Pump Rating kW | 1 kW |
| | |
| Colour of the engine | |
| RAL(Colour) | RAL 9006 (White/Silver Aluminium) |
| | |
| | |

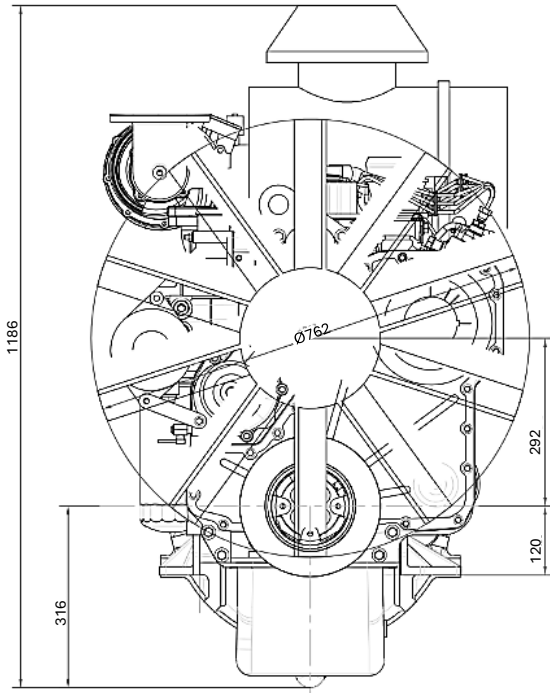
SIDE VIEW - RHS



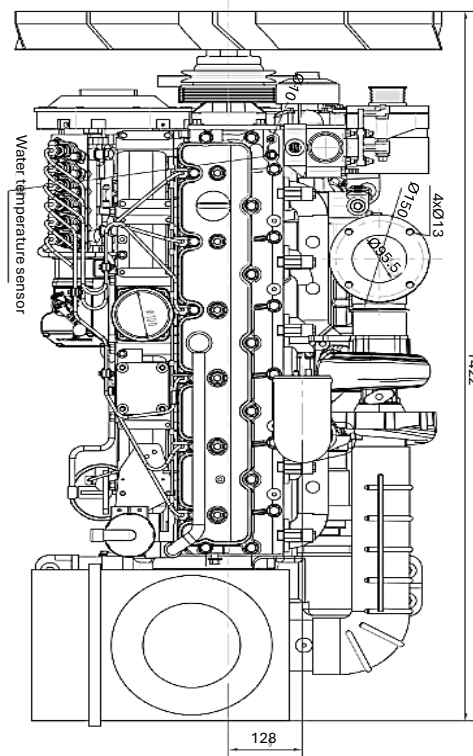
SIDE VIEW - LHS



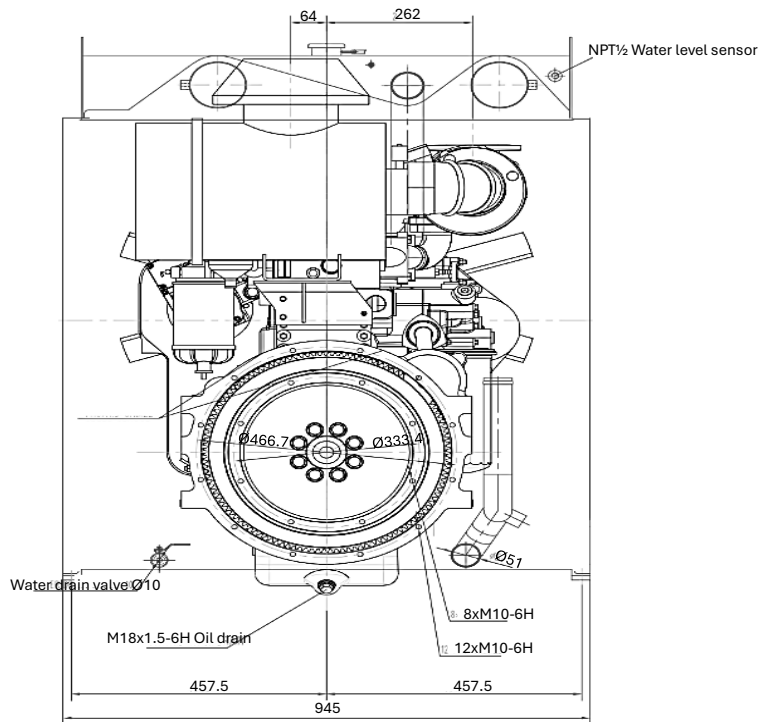
FRONT VIEW- FAN



TOP VIEW - AERIAL



REAR VIEW - FLYWHEEL



SERVICE AND CRITICAL PARTS

| SERVICE HOURS | | 50 | 100 | 250 Monthly | 1000 Annually |
|------------------------|-------------------------|--------------------------|--------------------------|--------------------------|------------------|
| SERVICE PART | PART NO. | | | | |
| Air Filter (Inner) | 4050130 | - | - | Yes | Yes |
| Air Filter (Outer) | - | - | - | - | - |
| Fuel Filter (Outer) | 2040102 | - | - | Yes | Yes |
| Fuel / Water Separator | - | - | - | - | - |
| Oil Filter | 2040111 | - | - | Yes | Yes |
| Fan Belt | S00017994 | Check for wear or damage | Check for wear or damage | Check for wear or damage | Yes |
| Timing Belt | - | - | - | - | - |
| Oil | CH 15W/40 | Check Level | Check Level | Yes | Yes |
| Anti-Freeze | 50/50 (Premix) | Check Level | Check Level | Check Level | Check Level |
| CRITICAL PARTS | | | | | |
| SERVICE PART | PART NO. | | | | |
| Charging Alternator | D11-102-23 | | | | |
| Starter Motor | S00022618 | | | | |
| Valve Cover Gasket | D04-337-901 | | | | |
| Exhaust Gasket | S00001858 | | | | |
| Radiator | S00028060 | | | | |
| Speed Controller / ECU | ESG2002A800C-W | | | | |
| Turbocharger | S0007181 | | | | |
| Lift Pump | Provide engine build no | | | | |
| Fuel Pump | S00004227 | | | | |
| Oil Pump | D15-000-41 | | | | |
| | | | | | |

