

## Engine Specification Sheet



| Model      | Ratings HP (kW) @ Rated speed rpm |  |
|------------|-----------------------------------|--|
|            | 2950                              |  |
| CH4 -90-EB | 61 (45)                           |  |

| ENGINE SPECIFICATIONS                      |  |               |
|--|--|---------------|
| Type                                       | 4 Cycle; In-line; water cooled; 4 Cylinder |               |
| Aspiration                                 | Turbocharged                               |               |
| Bore and Stroke                            | mm×mm                                      | 90x100        |
| Displacement                               | L  | 2.54          |
| Compression Ratio                          | 17.5:1                                     |               |
| Combustion System                          | Direct Injection                           |               |
| Rotation Viewed from flywheel              | Counter Clockwise                          |               |
| Dry Weight Approx.                         | kg   | 400           |
| Dimension Approx. (L*W*H)                  | mm   | 1205*790*1025 |
| Crankshaft Centerline Height               | mm   | 330           |
| Oil Capacity                               | L  | 7             |
| Coolant Capacity - Engine + Heat Exchanger | L  | 11            |

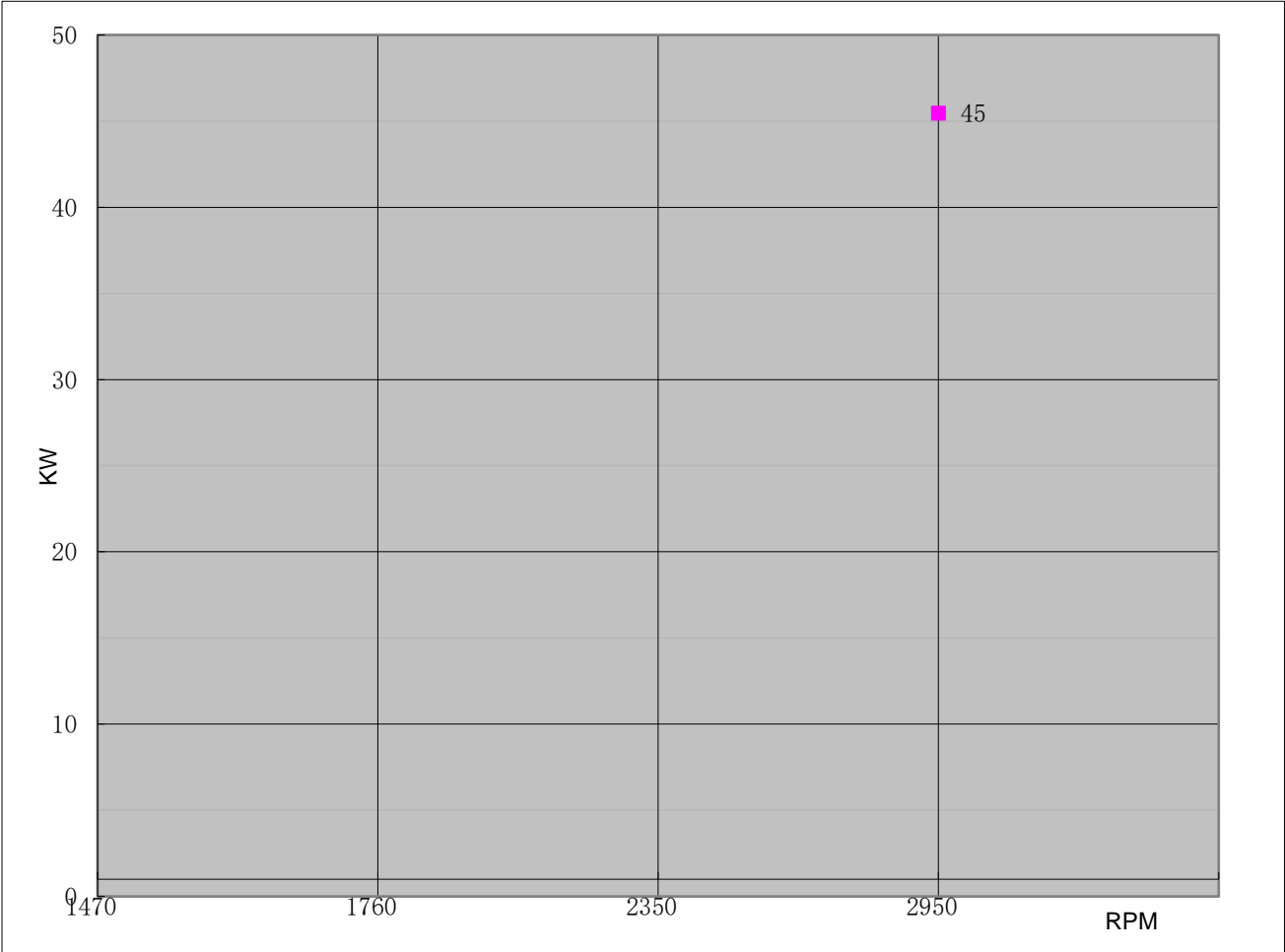
**MODEL**  
**CH4-90-EB**

| Engine Equipment  | Standard   | Optional              |
|---|--|-----------------------|
| Air Cleaner   | Drip proof   | N/A                   |
| Alternator  | 24V-DC, 25 Amps with BeltGuard   | N/A                   |
| Coupling  | Bare Flywheel  | N/A                   |
| Engine Heater   | 220V-AC  | 110V-AC               |
| Exhaust Flex Connection   | DN50   | N/A                   |
| Exhaust Protection  | Metal Guard  | N/A                   |
| Flywheel Housing  | SAE 4  | N/A                   |
| Flywheel Power Take Off   | SAE 10   | N/A                   |
| Fuel Connections  | Flexible hoses according ISO 15540   | N/A                   |
| Fuel Filter   | Full flow, cartridge type  | N/A                   |
| Governor, Speed   | Constant speed, mechanical   | N/A                   |
| Heat Exchanger  | Shell and Tube Type  | N/A                   |
| Instrument Panel  | Build on Engine  | N/A                   |
| Junction Box  | Integrated in control panel  | N/A                   |
| Lube Oil Cooler   | Jacket Water Cooled  | N/A                   |
| Lube Oil Filter   | Full flow, cartridge type  | N/A                   |
| Lube Oil Pump   | Gear Driven, Gear Type   | N/A                   |
| Manual Start Control  | Dual Manual Start Contactors   | N/A                   |
| Overspeed Control   | Electronic instrument panel, test on instrument panel  | N/A                   |
| Raw Water Cooling Loop w/ Alarms  | Galvanized   | Seawater (All 316 SS) |
| Raw Water Solenoid Operation  | Automatic from Fire Pump Controller and from Engine Instrument Panel (for Horizontal Fire Pump Applications) | N/A                   |
| Run - Stop Control  | On Instrument Panel with Control Position Warning Light  | N/A                   |
| Starters  | 24V-DC, 4.5KW  | N/A                   |
| Throttle Control  | Adjustable speed control   | N/A                   |
| Water Pump  | Centrifugal Type, Gear Driven  | N/A                   |
| All data is based on the engine operating with fuel system, lubricating oil pump, air cleaner, and alternator; not included are compressor, fan, optional equipment, and driven components.;Data is based on operation at SAE standard J1394 conditions of 300ft (91,4m) altitude, 29.61 in.(752mm) Hg dry barometer, and 77°F (25°C) intake air temperature, using 0# diesel fuel follow the standard GB 252-2011. |  |                       |
| Altitude above which output should be Limited   | m (ft.)  | 91 (300)              |
| Correction Factor per 305m.(1,000ft.) above Altitude Limit  |  | 3%                    |
| Temperature above which output should be Limited  | °C (°F)  | 25 (77)               |
| Correction Factor per 5.6°C (10°F) above Temperature Limit  |  | 1%                    |
| Remark:   |  |                       |
| 1.All data certified within 5%;<br>2.TBD - To Be Determined;<br>3.N/A - Not Applicable;   |  |                       |



Performance Curve

|              |      |           |               |              |  |                |           |           |
|--------------|------|-----------|---------------|--------------|--|----------------|-----------|-----------|
| Engine Model |      | CH4-90-EB |               | Curve No.    |  | C0490BF        | Date      | 2021/8/13 |
| Displacement | 2.54 | L         | Aspiration    | Turbocharged |  | Power Standard |           | UL/FM     |
| Bore         | 90   | mm        | Cylinder Qty. | 4, In-Line;  |  | 45             | KW @ 2950 | r/min     |
| Stroke       | 100  | mm        | Fuel System   | Mechanical   |  | 61             | HP @ 2950 | r/min     |



| Torque |        |        |
|--------|--------|--------|
| Speed  | Torque |        |
| RPM    | N-m    | lb-ft. |
| 1470   |        |        |
| 1760   |        |        |
| 2350   |        |        |
| 2950   | 147    | 109    |

| Output Power |              |    |
|--------------|--------------|----|
| Speed        | Output Power |    |
| RPM          | KW           | HP |
| 1470         |              |    |
| 1760         |              |    |
| 2350         |              |    |
| 2950         | 45           | 61 |

| Fuel Consumption |             |           |
|------------------|-------------|-----------|
| Speed            | Consumption |           |
| RPM              | g/KW-HR     | lb/BHP-HR |
| 1470             |             |           |
| 1760             |             |           |
| 2350             |             |           |
| 2950             | 254         | 0.418     |

REV: A



## Engine Data Sheet

|                     |                  |                              |           |
|---------------------|------------------|------------------------------|-----------|
| <b>Engine Model</b> | CH4-90-EB        | <b>Date</b>                  | 2021/8/13 |
| <b>Drawing No.</b>  | CH4-90-EB.00     | <b>Performance Curve No.</b> | C0490BF   |
| <b>Rated Power</b>  | 61 HP @ 2950 RPM | <b>Reference No.</b>         | 14DS001E  |
|                     | 45 KW @ 2950 RPM | <b>Version</b>               | A         |

| GENERAL ENGINE DATA                  |  |               |     |
|--------------------------------------|--|---------------|-----|
| Type                                 | 4 Cycle; In-line; water cooled; 4 Cylinder                           |               |     |
| Aspiration                           | Turbocharged   |               |     |
| Bore and Stroke                      | mm×mm  | 90x100        |     |
| Cylinder Liner Type                  | <input checked="" type="checkbox"/> Wet <input type="checkbox"/> Dry |               |     |
| Displacement                         | L  | 2.54          |     |
| Compression Ratio                    | 17.5:1   |               |     |
| Firing Order                         | 1-3-4-2  |               |     |
| Combustion System                    | Direct Injection   |               |     |
| Rotation Viewed from front of engine | CW   |               |     |
| Valves Per Cylinder                  | Intake :1 Exhaust :1   |               |     |
| Valves lashes at cold                | Intake   | mm            | 0.3 |
|                                      | Exhaust  | mm            | 0.3 |
| Ignition Type                        | Compression(Diesel)  |               |     |
| Charge Air Cooling Type              | Raw Water  |               |     |
| Weight Approx.                       | kg   | 400           |     |
| Dimension Approx. (L*W*H)            | mm   | 1205*790*1025 |     |
| Flywheel/ Flywheel House Dimension   | 10"/ SAE 4   |               |     |

| EXHAUST SYSTEM                         |      |      |  |
|--|------|------|--|
| Exhaust Gas Temp. at max. rating/power | °C   | 550  |  |
| Exhaust Gas Flow at Max. Rating output | m³/h | 1165 |  |
| Max. Allowable Back Pressure           | kpa  | 10   |  |
| Minimum Exhaust Pipe Diameter          | DN   | 65   |  |

| AIR INTAKE SYSTEM             |                      |     |  |
|-------------------------------|----------------------|-----|--|
| Air Cleaner Type              | Dry Type, Disposable |     |  |
| Air Flow at Max. Rating speed | m³/h                 | 500 |  |
| Air Inlet Restriction Dirty   | kpa                  | 6   |  |
| Air Inlet Restriction Clean   | kpa                  | 3   |  |

| LUBRICATION SYSTEM                  |      |         |  |
|-------------------------------------|------|---------|--|
| Oil Capacity                        | L    | 7       |  |
| Max. Sump Oil Temp.                 | °C   | 125     |  |
| Normal Operating Oil Pressure Range | bars | 3.5~5.0 |  |
| Oil Pressure at Idle                | bar  | >1      |  |

| COOLING SYSTEM                             |            |     |    |
|--|------------|-----|----|
| Coolant Capacity - Engine + Heat Exchanger | L          | 11  |    |
| Thermostat Range                           | Start Open | °C  | 75 |
|  | Full Open  | °C  | 85 |
| Coolant Pressure Cap                       | bar        | 0.9 |    |
| Max. Engine Coolant Temp.                  | °C         | 98  |    |
| Engine Coolant Flow at Full Load           | m³/h       | 9.5 |    |
| Raw Water Cooling Capacity                 | m³/h       | 6   |    |
| Raw Water Pressure                         | bar        | 2   |    |



## Engine Data Sheet

|   |                  |            |          |
|---|------------------|------------|----------|
| Min. Raw Water Temp.  |                  | °C         | 15.6     |
| Raw Water Pipe Size   | Raw Water Inlet  | G3/4"      |          |
|   | Raw Water Outlet | G1"        |          |
| HEATER SYSTEM   |                  |            |          |
| Wattage   |                  | W          | 2000     |
| Voltage AC  |                  | V          | 220      |
| ELECTRICAL SYSTEM-DC  |                  |            |          |
| System Voltage(Nominal)   |                  | V          | 24       |
| Starter motor   |                  | Kw         | 4.5      |
| Recommended Battery Capacity  |                  | AH         | 150      |
| Cold Cranking Amperes @ -18°C (0°F)   |                  | CCA        | 900      |
| Reserve Capacity (RC)   |                  | Min        | 290      |
| Charging Alternator Output  |                  | Amps       | 25       |
| Max. Starter Cranking Amps @4.5°C (0°F)   |                  | Amps       | 240      |
| Min. Cranking Speed Required for Unaided Cold Start   |                  | rpm        | 300      |
| FUEL SYSTEM   |                  |            |          |
| Injection Pump  |                  |            |          |
| Injection Advance Angle   |                  | °          | 14±1     |
| Minimum Supply line Size  |                  | mm         | 8        |
| Minimum Return line Size  |                  | mm         | 8        |
| Fuel Management Control   |                  | Mechanical |          |
| Max. Fuel Consumption   |                  | g/kw,h     | 255      |
| Idle Speed  |                  | rpm        | 840±20   |
| Max. Governed Speed   |                  | rpm        | 3245     |
| Maximum allowable fuel height above fuel pump   |                  | m          | 3        |
| Governed Speed Rate   |                  | %          | <10      |
| Engine Performance Data   |                  |            |          |
| Estimated free field sound pressure level at 1 meter with full-load governed speed(Includes Noise from: exhaust; Cooling System and Driven Components)  |                  | dBa        | 108      |
| All data is based on the engine operating with fuel system, lubricating oil pump, air cleaner, and alternator; not included are compressor, fan, optional equipment, and driven components.;Data is based on operation at SAE standard J1394 conditions of 300ft (91.4m) altitude, 29.61 in.(752mm) Hg dry barometer, and 77°F (25°C) intake air temperature, using 0# diesel fuel follow the standard GB 252-2011. |                  |            |          |
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| Remark:   |                  |            |          |
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| 2.TBD - To Be Determined;   |                  |            |          |
| 3.N/A - Not Applicable;   |                  |            |          |