



**TONTEK POWER**  
www.tontekpower.com

Basic Engine Model:

**KTA19-M4**

Advertised Power:

kW [HP] @ RPM

**522 [700] @ 2100**

Displacement: **19 litre** [1150 in.<sup>3</sup>]

Bore: **159 mm** [6.25 in.]

Stroke: **159 mm** [6.25 in.]

Fuel System: **PT**

Cylinders: **6**

Aspiration:

**Turbocharged/Aftercooled**

Rating Type:

**Heavy Duty**

CERTIFIED: This marine diesel engine conforms with the NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13 as applicable.

**RATED POWER OUTPUT CURVE**

| RPM  | kW  | BHP   |
|------|-----|-------|
| 2100 | 522 | (700) |
| 1900 | 515 | (690) |
| 1700 | 455 | (610) |
| 1500 | 393 | (526) |
| 1300 | 302 | (405) |
| 1100 | 168 | (225) |
| 900  | 112 | (150) |

**FULL LOAD TORQUE CURVE**

| RPM  | N·m  | lb.-ft. |
|------|------|---------|
| 2100 | 2374 | (1751)  |
| 1900 | 2586 | (1907)  |
| 1700 | 2553 | (1883)  |
| 1500 | 2498 | (1842)  |
| 1300 | 2217 | (1635)  |
| 1100 | 1455 | (1073)  |
| 900  | 1191 | (878)   |

**FUEL CONSUMPTION - PROP CURVE**

| RPM  | Litres/hr | Gal/hr |
|------|-----------|--------|
| 2100 | 140.6     | (37.1) |
| 1900 | 96.8      | (25.6) |
| 1700 | 70.8      | (18.7) |
| 1500 | 48.1      | (12.7) |
| 1300 | 31.9      | (8.4)  |
| 1100 | 20.5      | (5.4)  |
| 900  | 11.9      | (3.1)  |

Rating Conditions: Ratings are based upon ISO 8665 and SAE J1228 reference conditions; air pressure of 100 kPa [29.612 in. Hg], air temperature 25°C [77°F], and 30% relative humidity. Power is rated in accordance with IMCI procedures. Member NMMA.

Rated Curves (upper) represent rated power at the crankshaft. Propeller Curve (lower) is based on a typical fixed propeller demand curve using a 3.0 exponent. Propeller Shaft Power is approximately 3% less than rated crankshaft power after typical reverse/reduction gear losses and may vary depending on the type of gear or propulsion system used.

Fuel Consumption is based on fuel of 35° API gravity at 16°C [60°F] having LHV of 42,780 kJ/kg [18390 Btu/lb] and weighing 838.9 g/liter [7.001 lb/U.S. gal].

**Heavy Duty Rating:** This power rating is intended for continuous use in variable load applications where full power is limited to six (6) hours out of every twelve (12) hours of operation. Also, reduced power operations must be at or below 200 RPM of the maximum rated RPM. This is an ISO 3046 Full Stop Power Rating and is for applications that operate 3,000 hours per year or less.

# Marine Engine Performance Data

## General Engine Data

|                                                                            |             |
|----------------------------------------------------------------------------|-------------|
| Engine Model.....                                                          | KTA19-M4    |
| Rating Type .....                                                          | Heavy Duty  |
| Rated Engine Power..... kW [HP]                                            | 522 [700]   |
| Rated Engine Speed .....                                                   | 2100        |
| Rated HP Production Tolerance..... %                                       | ±3          |
| Rated Engine Torque..... N•m [ft/lb]                                       | 2374 [1751] |
| Peak Engine Torque..... N•m [ft/lb]                                        | 2586 [1907] |
| Brake Mean Effective Pressure..... kPa [PSI]                               | 1586 [230]  |
| Minimum Idle Speed Setting..... RPM                                        | 650         |
| Normal Idle Speed Variation..... RPM                                       | ±25         |
| High Idle Speed Range - Minimum .....                                      | 2115        |
| High Idle Speed Range - Maximum..... RPM                                   | 2205        |
| Maximum Allowable Engine Speed .....                                       | N.A.        |
| Maximum Torque Capacity from Front of Crank <sup>2</sup> ..... N•m [ft/lb] | 2542 [1875] |
| Compression Ratio .....                                                    | 13.8:1      |
| Piston Speed..... m/sec [ft/min.]                                          | 11 [2188]   |
| Firing Order .....                                                         | 1-5-3-6-2-4 |
| Weight (Dry) Engine Only - Average .....                                   | 2073 [4570] |
| Weight (Dry) Engine With Heat Exchanger System - Average..... kg [lb]      | 2251 [4962] |
| Weight Tolerance (Dry) Engine Only .....                                   | ±10%        |

Noise and Vibration ..... N.A.

## Fuel System<sup>1</sup>

|                                                        |                |            |
|--------------------------------------------------------|----------------|------------|
| Fuel Consumption @ <b>rated speed</b> .....            | litre/hr [GPH] | 135 [35.7] |
| Approximate Fuel Flow to Pump .....                    | litre/hr [GPH] | 235 [62]   |
| Maximum Allowable Fuel Supply to Pump Temperature..... | °C [°F]        | 49 [120]   |
| Approximate Fuel Flow Return to Tank .....             | litre/hr [GPH] | 100 [26]   |
| Approximate Fuel Return to Tank Temperature .....      | °C [°F]        | 59 [138]   |
| Maximum Heat Rejection to Drain Fuel .....             | kW [BTU/min]   | N.A.       |
| Fuel Rail Pressure - Gauge.....                        | kPaG [PSIG]    | 1269 [184] |
| Fuel Rail Pressure - INSITE .....                      | kPaA [PSIA]    | N/A        |

## Air System<sup>1</sup>

|                                |                 |            |
|--------------------------------|-----------------|------------|
| Intake Manifold Pressure ..... | mm Hg [in. Hg]  | 1499 [59]  |
| Intake Air Flow.....           | litre/sec [CFM] | 748 [1584] |
| Heat Rejection to Ambient..... | kW [BTU/min.]   | 26 [1480]  |

## Exhaust System<sup>1</sup>

|                                            |                 |             |
|--------------------------------------------|-----------------|-------------|
| Exhaust Gas Flow .....                     | litre/sec [CFM] | 1860 [3940] |
| Exhaust Gas Temperature (Turbine Out)..... | °C [°F]         | 433 [810]   |
| Exhaust Gas Temperature (Manifold).....    | °C [°F]         | 638 [1180]  |

## Emissions (in accordance with ISO8178 Cycle E3)

|                               |                    |             |
|-------------------------------|--------------------|-------------|
| NOx (Oxides of Nitrogen)..... | g/kw-hr [g/bhp-hr] | 8.81 [6.57] |
| HC (Hydrocarbons).....        | g/kw-hr [g/bhp-hr] | 0.76 [0.57] |
| CO (Carbon Monoxide) .....    | g/kw-hr [g/bhp-hr] | 1.64 [1.22] |
| PM (Particulate Matter).....  | g/kw-hr [g/bhp-hr] | N.A.        |

TBD = To Be Decided

N/A = Not Applicable

N.A. = Not Available

<sup>1</sup>All Data at Rated Conditions

<sup>2</sup>Consult Installation Direction Booklet for Limitations

<sup>3</sup>Heat rejection to coolant values are based on 50% water/ 50% ethylene glycol mix and do NOT include fouling factors. If sourcing your own cooler, a service fouling factor should be applied according to the cooler manufacturer's recommendation.

<sup>4</sup>Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.

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## Marine Engine Performance Data

### Cooling System<sup>1</sup>

**ea Water Pump Specifications**..... Refer to MAB 0.08.17-07/16/2001

Pressure Cap Rating (With Heat Exchanger Option)..... kPa [PSI] 103 [15]

**Engines with Standard Aftercooling (if applicable)**

Coolant Flow to Engine Heat Exchanger/Keel Cooler ..... litre/min. [GPM] N/A

Standard Thermostat Operating Range (Start to Open)..... °C [°F] N/A

Standard Thermostat Operating Range (Full Open)..... °C [°F] N/A

Heat Rejection to Engine Coolant<sup>3</sup> ..... kW [BTU/min.] N/A

**Engines with Low Temperature Aftercooling (if applicable)**

**Main Cooler**

Coolant Flow to Engine Heat Exchanger/Keel Cooler ..... litre/min. [GPM] 644 [170]

Standard Thermostat Operating Range (Start to Open) ..... °C [°F] 82 [180]

Standard Thermostat Operating Range (Full Open) ..... °C [°F] 94 [202]

Heat Rejection to Engine Coolant<sup>3</sup> ..... kW [BTU/min.] 267 [15,200]

**LTA Cooler**

Coolant Flow to LTA Heat Exchanger/Keel Cooler ..... litre/min. [GPM] 114 [30]

LTA Thermostat Operating Range (Start to Open) ..... °C [°F] 66 [150]

LTA Thermostat Operating Range (Full Open) ..... °C [°F] 77 [170]

Heat Rejection to LTA Coolant<sup>3</sup> ..... kW [BTU/min.] 148 [8400]

### INSTALLATION DRAWINGS

With Subsystems ..... 3170333

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