

# N45 MNS F40

FOR FIRE FIGHTING PUMPS

4 CYLINDERS IN LINE - DIESEL CYCLE

Max 109 kW (148 HP) @ 2940 rpm



## SPRINKLER APPLICATIONS

## N45 MNS F40 FOR FIRE FIGHTING PUMPS

|  |                  |                        |
|--|------------------|------------------------|
| Thermodynamic cycle                                |                  | Diesel 4 stroke - D.I. |
| Air intake   |                  | TC                     |
| Arrangement  |                  | 4L                     |
| Bore x Stroke                                      | mm               | 104 X 132              |
| Total displacement                                 | l                | 4.5                    |
| Valves per cylinder                                |                  | 2                      |
| Cooling  |                  | liquid                 |
| Direction of rotation (viewed facing flywheel)     |                  | CCW                    |
| Compression ratio                                  |                  | 17.5 : 1               |
| Rotation mass moment of inertia (without flywheel) | kgm <sup>2</sup> | 0.19                   |
| Standard flywheel inertia                          | kgm <sup>2</sup> | 0.69                   |

### Air induction

|   |                                    |             |
|---|------------------------------------|-------------|
| Max suggested intake restriction with clean air filter  | kPa (bar)                          | 3.5 (0.035) |
| Max allowable restriction with dirty air filter         | kPa (bar)                          | 6.5 (0.065) |
| Air requirement for combustion at 100% load/rated speed | kg/h (m <sup>3</sup> /h) 785 (675) |             |
| Turbocharging pressure at full load/rated speed         | kPa (bar)                          | 150 (1.5)   |
| Turbocharging air max temperature (engine inlet)        | °C                                 | –           |
| Heat rejected to intercooler at maximum power           | kJ/s (kcal/h)                      | –           |
| Intercooler system max pressure drop                    | kPa (bar)                          | –           |

### Exhaust system

|  |           |          |
|--|-----------|----------|
| Max allowable backpressure                                     | kPa (bar) | 7 (0.07) |
| Max exhaust temperature at full load/rated speed (after turbo) | °C        | 490      |
| Exhaust flow at max output                                     | kg/h      | 810      |

### Lubrication system

|  |           |          |
|--|-----------|----------|
| Minimum oil pressure at idle   | kPa (bar) | 70 (0.7) |
| Max oil temperature at full load/rated speed                               | °C        | 120      |
| Engine angularity limits continuous operation: max front up and front down | 0/360     | 0        |
| max left hand and right hand   | 0/360     | 20       |
| Total system capacity including pipes, filters etc.                        | liters    | 9.5      |

### Cooling system

|   |                       |                |
|---|-----------------------|----------------|
| Coolant capacity (engine only)                | liters                | 8.5            |
| Water pump flow at rated speed                | m <sup>3</sup> /h 9.5 |                |
| Heat to reject by heat exchanger at max power | kJ/s (kcal/h)         | 63 (54,200)    |
| Thermostat (modulating range)                 | °C                    | 83 ÷ 95        |
| Cooling liquid max temperature                | °C                    | 103            |
| Min/max inner pressure in the cooling circuit | kPa (bar)             | 30/100 (0.3/1) |
| External cooling system max pressure drop     | kPa (bar)             | 35 (0.35)      |

### Fuel system

|                                      |           |                   |
|--------------------------------------|-----------|-------------------|
| Injection system                     |           | Rotary pump       |
| Gas oil max intake restriction       | kPa (bar) | 0 (positive head) |
| Gas oil intake reference temperature | °C        | 30                |

### Electrical system

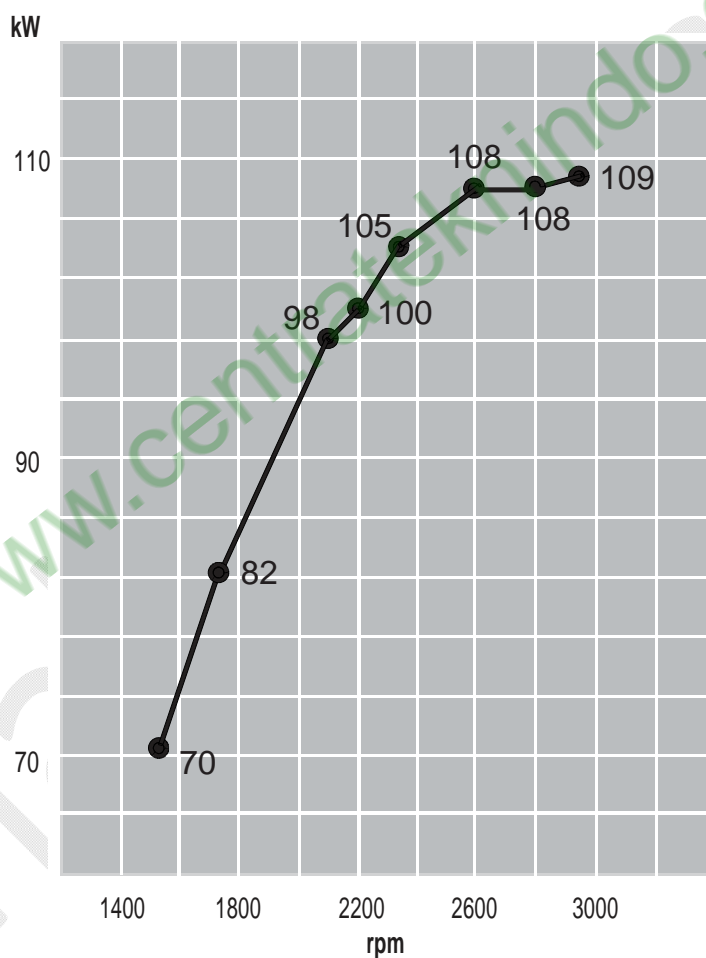
|           |  |    |
|-----------|--|----|
| Voltage V |  | 12 |
|-----------|--|----|

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|  |                         |            |      |      |      |      |      |      |      |
|--|-------------------------|------------|------|------|------|------|------|------|------|
| Engine gross power ratings *                     | rpm                     | 1470       | 1760 | 2100 | 2200 | 2350 | 2600 | 2800 | 2940 |
|  | kW                      | 70         | 82   | 98   | 100  | 105  | 108  | 108  | 109  |
|  | HP                      | 95         | 111  | 133  | 136  | 143  | 147  | 147  | 148  |
| Specific fuel consumption at maximum rating      | g/kWh @ rpm             | 228 @ 2940 |      |      |      |      |      |      |      |
| Oil consumption at max rating                    | (% of fuel consumption) | 0.1        |      |      |      |      |      |      |      |
| Minimum starting temperature without auxiliaries | °C                      | -15        |      |      |      |      |      |      |      |
| Dry weight (standard configuration)              | kg                      | 390        |      |      |      |      |      |      |      |

\* **Gross Power** at flywheel according to ISO POWER 3046. Applicable also to DIN 6271, B.S. 5514 and SAE J 1349.

**Test conditions:** ISO 3046/1, 25 °C air temperature, 100 kPa atmospheric pressure, 30% relative humidity.



### Dimensions

L = 807 mm

W = 655 mm

H = 957 mm

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|   |      |  |
|---|------|--|
| Flywheel housing prearranged for pick-up  | type | SAE 3                                  |
| Flywheel size                             | inch | 11" /2                                 |
| Intake manifold location                  |      | left side/front inlet                  |
| Exhaust manifold / turbocharger location  |      | right side/upward outlet               |
| Turbocharger                              |      | fixed geometry with waste gate         |
| Turbocharger location                     |      | right side/high position               |
| Fan transmission ratio                    |      | 1.12 to 1                              |
| Distance between fan - crankshaft centers | mm   | 296                                    |
| Fuel filter                               | n°   | 1 - left side                          |
| Fuel prefilter                            |      | -                                      |
| Fuel pump                                 |      | included                               |
| Oil filter                                | n°   | 1 - right side                         |
| Oil sump sheet                            |      | steel / front sump                     |
| Oil vapours blow-by circuit               |      | on timing cover                        |
| Oil heat exchanger                        |      | included                               |
| Oil filler                                |      | on timing cover <sup>s1</sup> cylinder |
| Exhaust counter flange                    |      | included                               |
| Starting motor                            |      | 12 V - 3 kW                            |
| Alternator                                |      | 12 V - 90 A with W contact             |
| Engine stop device                        |      | incorporated in the pump               |
| Wiring harness                            |      | -                                      |
| Painting colour                           |      | grey                                   |

### Not included in the standard configuration

|  |               |
|--|---------------|
| Battery - minimum capacity recommended               | 180 Ah (12 V) |
| Battery - minimum cold cranking capacity recommended | 950 A (12 V)  |

**FPT OFFERS THE WIDEST AVAILABILITY OF ENGINE BUILD OPTIONS TO CUSTOMER SPECIFIC REQUIREMENTS WITHIN THE ENGINE SUPPLY. TO FIND OUT MORE ABOUT THE CONFIGURATIONS AND ACCESSORIES WHICH ARE AVAILABLE, CONTACT THE FPT SALES NETWORK.**