

NOT LISTED SPRINKLER SOLUTIONS

N45MNAF40 HE OPERATION DATASHEET

ENGINE GENERAL DATA

THERMODYNAMIC CYCLE	DIESEL - 4 STROKE
ENGINE ARCHITECTURE	4 CYLINDERS, IN LINE
FIRING ORDER	1 - 3 - 4 - 2
AIR INTAKE	NA
COOLING	WATER
CHARGE AIR COOLING SYSTEM	N/A
COMPRESSION RATIO	17,5:1
INJECTION SYSTEM	MECHANICAL ROTARY PUMP
COMBUSTION	DIRECT INJECTION
ENGINE DISPLACEMENT	4.5 l
VALVES PER CYLINDER	2
INTAKE	1
EXHAUST	1
ROTATION (VIEWED FROM ENGINE FLYWHEEL)	CCW
ENGINE CRANKCASE VENTILATION SYSTEM	OPEN
ENGINE WEIGHT	430 kg

ENGINE PERFORMANCE

ENGINE SPEED [rpm]	NET POWER RATING [kW (cv) (1) (2) (3)]	FUEL CONSUMPTION RATE [l/h]
1760 rpm	60 (82)	15
2100 rpm	68 (92)	21
2200 rpm	69 (94)	21
2350 rpm	72 (98)	22
2600 rpm	74 (101)	23
2800 rpm	73 (100)	24
2940 rpm	73 (100)	24

- (1) Power at flywheel according to 97/68 EC (without fan), after 50 hours running, 3% tolerance, fuel Diesel EN 590
- (2) Power derating conditions: a deduction of 3 percent from engine horsepower rating at standard SAE conditions shall be made for diesel engines for each 1000 ft. (305 m) altitude above 300 ft. (91.4 m), a deduction of 1 percent from engine horsepower rating as corrected to standard SAE conditions shall be made for diesel engines for every 10°F (5.6°C) above 77°F (25°C) ambient temperature.
- (3) Performance evaluated with intake restrictions and exhaust backpressures values as shown.

EXHAUST SYSTEM

ENGINE SPEED [rpm]	EXHAUST MAX TEMPERATURE [°C]	MAX ALLOWABLE BACK PRESSURE [kPa]	EXHAUST GASES FLOW [kg/h]
1760 rpm	660	5	230
2100 rpm	670	5	305
2200 rpm	680	5	325
2350 rpm	690	5	335
2600 rpm	710	5	350
2800 rpm	725	5	355
2940 rpm	740	5	390

LUBRICATION SYSTEM

LUBRICATION OIL MINIMUM PRESSURE @ IDLE SPEED	0,7 bar
LUBRICATION OIL MAXIMUM PRESSURE @ RATED SPEED	3,5 bar
LUBRICATION OIL MAXIMUM TEMPERATURE	120°C
LUBRICATION CIRCUIT FULL CAPACITY	12,8 l

ELECTRIC SYSTEM

VOLTAGE	12V	24V	(Optional config)
ALTERNATOR	90A	90A	(Optional config)
STARTER MOTOR	3 kW	3 kW	(Optional config)
BATTERIES PER BANK	1	2	(Optional config)
BATTERY CABLES MAX RESISTANCE	0,0013 ohm		
BATTERY CABLES MIN ALLOWED SIZE (4)			
1 M TO 3 M	AWG 0		
3 M TO 4 M	AWG 00		
4 M TO 5 M	AWG 000		
BATTERY CCA @ -18° C (5)	1000 A		
RESERVE CAPACITY (5)	430 min - 180 Ah		

(4) Length combination of positive and negative cables.

(5) Parameters evaluated according to SAE Standard J537.

AIR INDUCTION SYSTEM

ENGINE SPEED [rpm]	COMBUSTION AIR FLOW [kg/h]	MAX INLET TEMPERATURE [°C]	MAX ALLOWED RESTRICTION (CLEAN FILTER) [kPa]	MAX ALLOWED RESTRICTION (DIRTY FILTER) [kPa]
1760 rpm	215	55	3,5	6,5
2100 rpm	285	55	3,5	6,5
2200 rpm	305	55	3,5	6,5
2350 rpm	314	55	3,5	6,5
2600 rpm	328	55	3,5	6,5
2800 rpm	333	55	3,5	6,5
2940 rpm	366	55	3,5	6,5

COOLING SYSTEM

ENGINE SPEED [rpm]	REJECTED HEAT [kW]	REQUIRED RAW WATER FLOW @ 15°C [l/min]	REQUIRED RAW WATER FLOW @ 38°C [l/min]	ENGINE RADIATED HEAT [kW]
1760 rpm	43	38	42,5	11
2100 rpm	45	41	45	12
2200 rpm	47	41	45	14
2350 rpm	47	45	50	16
2600 rpm	48	45	50	18
2800 rpm	48	45	50	20
2940 rpm	49	45	50	20

THERMOSTAT	START OPENING	83°C
	FULL OPENING	95°C
PRIMARY COOLANT TEMPERATURE RANGE		83-95°C
PRIMARY COOLANT MAXIMUM TEMPERATURE		99°C
PRIMARY COOLANT LOW TEMPERATURE ALARM		35°C
PRIMARY COOLANT CAPACITY		11 l
PRIMARY COOLANT PRESSURE (CAP)		0,7 bar
SECONDARY CIRCUIT MAXIMUM PRESSURE		3,8 bar
RAW WATER TEMPERATURE ALARM		40°C

LIQUID HEATERS (OPTIONAL)

COOLANT EXTERNAL HEATER (39-49°C HYSTERESIS CYCLE)	1000W – 230V	1000W – 120V
COOLANT EXTERNAL HEATER (49-59°C HYSTERESIS CYCLE)	1500W – 230V	1500W – 120V
COOLANT INTERNAL HEATER (39-49°C HYSTERESIS CYCLE)	1500W – 230V	1500W – 120V
LUBRICATION OIL HEATER	350W – 230V	

FUEL SYSTEM

FUEL PUMP MAX INTAKE RESTRICTION	0 bar
MAX ALLOWABLE FUEL HEAD ABOVE FUEL PUMP	1 m
MINIMUM FUEL LINE INTERNAL DIAMETER	10 mm

ENGINE SELECTION CRITERIA

THIS ENGINE MUST BE SELECTED BY DETERMINING THE MAXIMUM POWER ABSORBED BY THE FIRE PUMP AT THE TOP OF THE APPROPRIATE IMPELLER CURVE AND ADD A 10% MARGIN TO THIS POWER REQUIREMENT. THIS VALUE NOW DETERMINES THE MINIMUM POWER REQUIREMENT FOR A FIRE PUMP DUTY.

STANDARD CONFIGURATION

SAE#3 FLYWHEEL HOUSING
 11.5" FLYWHEEL
 DRY AIR FILTER
 FUEL FILTER
 LUBE OIL FILTER
 ENGINE RIGID SUPPORTS
 FUEL METAL CONNECTIONS
 HIGH WATER TEMPERATURE SWITCH
 LOW OIL PRESSURE SWITCH
 12V STARTER
 12V ALTERNATOR
 12V ENERGIZE TO STOP FUEL SOLENOID

OPTIONS

SECONDARY COOLANT COOLING LOOP	EXHAUST COMPENSATOR
ENGINE CONTROL PANEL	COOLANT INTERNAL HEATER
LUBE OIL 220V HEATER	COOLANT EXTERNAL HEATER
EXHAUST MUFFLER	LUBE OIL HEATER
24V ELECTRIC SYSTEM	ENGINE BASEFRAME
ETR STOP SOLENOID	ENGINE WIRING
WATER TEMPERATURE SENSOR	CRANK MANUAL CONTACTORS
OIL PRESSURE SENSOR	EXHAUST MUFFLERS
OIL DRAIN PUMP	COOLANT RECOVERY BOTTLE

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