

NOT LISTED SPRINKLER SOLUTIONS

N45MNSF40 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	TC
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	450 KG

ENGINE PERFORMANCE

ENGINE SPEED [rpm]	NET POWER RATING [kW (cv) (1) (2) (3)]	FUEL CONSUMPTION RATE [l/h]
1760 rpm	82 (111)	22
2100 rpm	98 (133)	26
2200 rpm	100 (136)	27
2350 rpm	105 (143)	28
2600 rpm	108 (147)	30
2800 rpm	108 (147)	31
2940 rpm	109 (148)	31

- (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	700	5	400
2100 rpm	600	5	504
2200 rpm	600	5	580
2350 rpm	550	5	630
2600 rpm	530	5	680
2800 rpm	520	5	750
2940 rpm	520	5	810

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	380	55	3,5	6,5
2100 rpm	480	55	3,5	6,5
2200 rpm	556	55	3,5	6,5
2350 rpm	605	55	3,5	6,5
2600 rpm	654	55	3,5	6,5
2800 rpm	722	55	3,5	6,5
2940 rpm	783	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	75	53	59	13
2100 rpm	79	55	62	14
2200 rpm	79	55	62	16
2350 rpm	81	63	70	18
2600 rpm	85	63	70	20
2800 rpm	85	63	70	22
2940 rpm	85	63	70	22

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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