

NEF

N40 ENT C

FOR AUTOMOTIVE APPLICATIONS

4 CYLINDERS IN LINE - DIESEL CYCLE

125 kW (170 CV) @ 2700 rpm

560 Nm @ 1200 rpm



T E C H N O L O G I C A L E X C E L L E N C E



N40 ENT C FOR AUTOMOTIVE APPLICATIONS

Technical code		F4AE0481A*C
Thermodynamic cycle		Diesel 4 stroke - C.R.
Air intake		TAA
Arrangement		4L
Bore x Stroke	mm	102 X 120
Total displacement	l	3.9
Valves per cylinder		4
Cooling		liquid
Direction of rotation (viewed facing flywheel)		CCW
Compression ratio		17.5 : 1
Rotation mass moment of inertia (without flywheel)	kgm ²	0.19
Standard flywheel inertia	kgm ²	0.64

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 ³ /h)	650 (556)
Turbocharging pressure at full load/rated speed	kPa(bar)	163 (1.63)
Turbocharging air max temperature (engine inlet)	°C	50 (at 25°C amb.)
Heat rejected to intercooler at maximum power	kJ/s(kcal/h)	26 (22,360)
Intercooler system max pressure drop	kPa(bar)	12 (0.12)

Exhaust system

Max allowable backpressure	kPa(bar)	10 (0.1)
Max exhaust temperature at full load/rated speed	°C	560
Exhaust flow at max output	kg/h	677

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	20
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 ³ /h	13.2
Heat to reject by heat exchanger at max power	kJ/s(kcal/h)	59 (50,740)
Thermostat (modulating range)	°C	83 to 95
Cooling liquid max temperature	°C	107
Max inner pressure in the cooling circuit	kPa (bar)	275 (2.75)
External cooling system max pressure drop	kPa (bar)	35 (0.35)

Fuel system

Injection system		Common Rail
Gas oil max intake restriction	kPa(bar)	35 (0.35)
Gas oil max intake temperature	°C	70

Electrical system

Voltage	V	24
---------	---	----

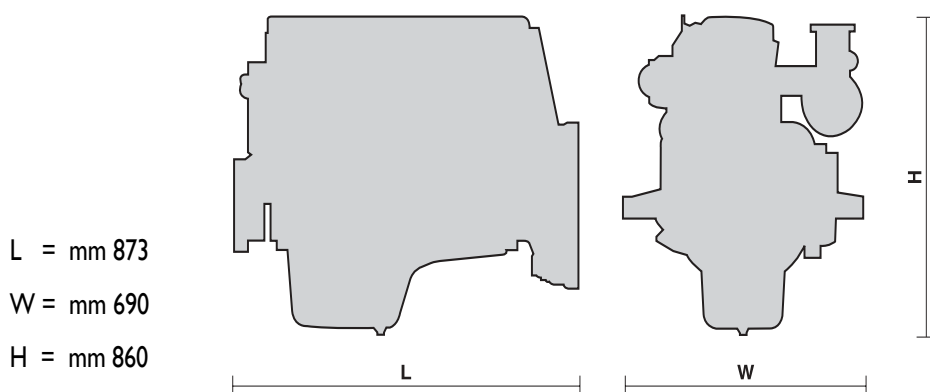
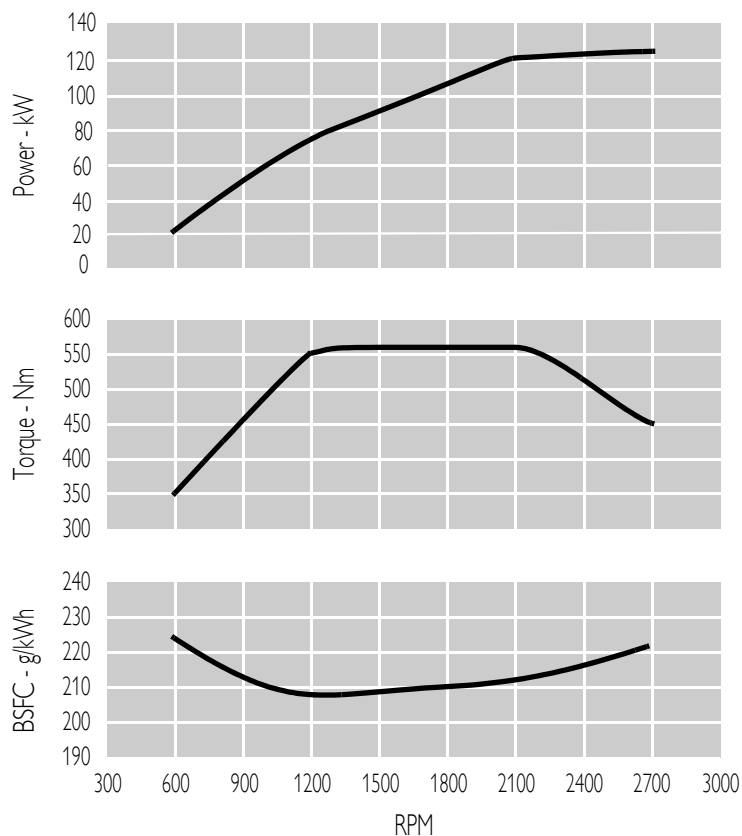
N40 ENT C FOR AUTOMOTIVE APPLICATIONS

Maximum rating *	kW(CV)	125 (170)
At speed	rpm	2700
Maximum torque	Nm (kgm)	560 (57)
At speed	rpm	1200
Maximum no load governed speed at max rating	rpm	3025
Minimum idling speed	rpm	650
Mean piston speed at rated speed	m/s	10.8
BMEP at max torque	kg/cm ²	18.4
Available certifications		2001 / 27 / EC - EURO 3
Specific fuel consumption at full load (best value)	g/kWh @ rpm	208 @ 1200/1400
Oil consumption at max rating	(% of fuel consumption)	0.07
Noise at max rating (ISO 3744)	dBA	92
Minimum starting temperature without auxiliaries	°C	-15
Oil and oil filter maintenance interval for replacement	hours	600
Dry weight (standard configuration)	kg	390

FOR INFORMATION ON THE AVAILABLE RATINGS NOT LISTED IN THIS DOCUMENT PLEASE CONTACT THE IVECO MOTORS SALES NETWORK.

* **Power** at flywheel according to 97/168 EC (without fan), after 50 hours running, 3% tolerance, fuel Diesel EN 590

Test conditions : ISO 3046/1, 25 °C air temperature, 100 kPa atmospheric pressure, 30 % relative humidity - Applicable also to DIN 6271, BS 5514, SAE J1349 Standards.



N40 ENT C FOR AUTOMOTIVE APPLICATIONS

Standard configuration

Flywheel housing	SAE	2
Flywheel size	inch	13
Intake manifold location		left side
Exhaust manifold / turbocharger location		right side
Turbocharger		waste gate controlled
Turbocharger location		right side
Fan transmission ratio		1 : 1 on crankshaft
Distance between fan - crankshaft centers	mm	0
Fuel filter	n°	1 - left side
Fuel prefilter		included
Fuel pump		included
Oil filter	n°	1 - right side
Oil sump		sheet steel / front well
Oil vapours blow-by circuit		on flywheel housing
Oil heat exchanger		built in the crankcase
Oil filler		onto the valve cover
Exhaust counter flange		included
Starting motor		24 V - 4 kW
Alternator		24 V - 70 or 90 A
Engine stop device		function incorporated into E.C.U.
Wiring harness		interface wiring loom with accessories
Power take off (PTO)		in front of crankshaft by pulley
PTO transmission ratio		1 : 1
PTO maximum available torque		150 Nm
Painting	colour	grey

Not included in the standard configuration

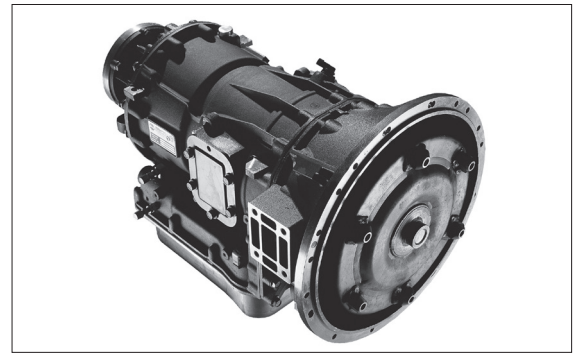
Battery - minimum capacity recommended	2 x 12 V	130 Ah
Battery - minimum cold cranking capacity recommended		800 A

IVECO MOTORS 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 IVECO MOTORS SALES NETWORK.

HEAD OFFICE AND BRANCHES

<p>IVECO S.p.A. Iveco Motors Lungo Stura Lazio, 49 - 10156 Torino Tel. +39 (011) 0076245 - Fax +39 (011) 0076275 www.ivecomotors.com</p>	Italy	<p>IVECO S.p.A. Iveco Motors Viale dell'Industria, 15/17 - 20010 Pregnana Milanese - Milano Tel. +39 (02) 935101 - Fax +39 (02) 93590029</p>	Italy
<p>IVECO FRANCE S.A. Iveco Motors 50 Rue Ampère - B.P. 103 - 69685 Chassieu Cedex Tel. +33 (04) 72472222 - Fax +33 (04) 78905990</p>	France	<p>IVECO N.V. Iveco Motors - Liaison office-India 52 Okhla - Industrial Estate Phase III 110020 New Delhi Tel. +91 98 10403881/82 - Fax +91 11 51613573</p>	India
<p>IVECO MAGIRUS A.G. Iveco Motors Heiner Fleischmann-Strasse, 9 - 74172 Neckarsulm Tel. +49 (07132) 97690 - Fax +49 (07132) 976935</p>	Germany	<p>IVECO FIAT Representative Office in P.R. China 10/F Jinling Hotel World Trade Center 2 Hanzhong Road - 210005 Nanjing Tel. +86 25 4710981 - Fax +86 25 4701105</p>	China
<p>IVECO U.K. Ltd Iveco Motors Road One - Industrial Estate CW7 3QP Winsford Tel. +44 (01606) 541027 - Fax +44 (01606) 541124</p>	Great Britain	<p>IVECO L.A. Iveco Motors Rua Alameda da Serra, 222 Vale do Sereno - Brazil 34000 - 000 Nova Lima (MG) Tel. +55 31 3286 3732/33/34 - Fax +55 31 3286 3735</p>	Brazil
<p>IVECO SWEDEN A.B. Iveco Motors Lergöskgatan, 12 - 42150 Västra Frölunda Tel. +46 (31) 492450 - Fax +46 (31) 492457</p>	Sweden	<p>IVECO Motors of N.A. 245 E. North Avenue Carol Stream, IL 60188 - 2021 USA Tel. +1 630 260 4226 - Fax +1 630 260 4267</p>	North America

Local Distributor



1000 Series

International Series 1000

RATINGS

Model ⁽¹⁾		Gross Input Torque ⁽²⁾ N•m	Gross Input Power ⁽²⁾ kW (hp)	Gross Input Torque ⁽²⁾⁽³⁾ N•m	Gross Input Power ⁽²⁾⁽³⁾ kW (hp)	GVW kg	GCW kg
1000	General	780	224 (300)	895	254 (340)	9000	11,800
	Refuse, On-Highway	746	224 (300)	766	224 (300)	7500	7500
	Transit Bus, Shuttle Bus, Coach, Non-North America School Bus	705	149 (200)	750	164 (220)	7500	7500
1000 MH	Motorhome	746	224 (300)	895	254 (340)	10,000	11,800
1000 SP	Specialty Vehicles	CONTACT YOUR ALLISON REPRESENTATIVE FOR DETAILS					

(1). Models including vocational designations (ie: ORS, OFS, SP, MH) are for global markets. All other models within this document are targeted for outside North American markets only.
 (2). Gross ratings as defined by ISO 1585 or SAE J1995. (3). Shift Energy Management (SEM) engine controls and torque limiting are required to obtain this rating.

DRIVETRAIN INTERFACES

Acceptable full-load engine governed speed	2200 – 3800* rpm
Acceptable engine idle speed range (with transmission in Drive)	500 – 820 rpm
Maximum output shaft speed at 105 km/hr	5000 rpm

* Engines with full load governed speed greater than 3800 rpm require Application Engineering review

MOUNTING

To Engine SAE No.3, SAE No.2

TORQUE CONVERTER

Type One stage, three element, polyphase.
Includes standard integral damper which is operational in lockup.

Model	Stall Torque Ratio
TC-210	2.05
TC-211	1.91
TC-221	1.73
TC-222	1.58

MECHANICAL RATIOS (Gear ratios do not include torque converter multiplication)

Range

First	3.10 : 1
Second	1.81 : 1
Third	1.41 : 1
Fourth	1.00 : 1
Fifth	0.71 : 1
Sixth	0.61 : 1
Reverse	-4.49 : 1

CONTROL SYSTEM

Description Allison 5th Generation Electronic Controls with closed loop adaptive shifts

Shift Sequences [C = Converter mode (lockup clutch disengaged); L = Lockup mode (lockup clutch engaged)]

Option 1: 1C-[1L]-2C-2L-3L-4L-5L

Option 2: 1C-[1L]-2C-2L-3L-4L-5L-6L

Driver-to-Transmission Interface Cab-mounted shift selector

Communication Protocol - Engine/Vehicle Systems Interface SAE J1939, IESCAN, PT-CAN

PHYSICAL DESCRIPTION

	Installation Length*	Dry Weight	Depth below transmission centerline	
			With Shallow Oil Sump	With Deep Oil Sump
SAE No.3	729 mm	150 kg	272 mm	285 mm
SAE No.2	739 mm	150 kg	272 mm	285 mm

*Approximate length from engine housing to output flange (depending on output flange type)

TURBINE-DRIVEN POWER TAKE-OFF PROVISION

PTO drive	Torque converter turbine-driven spur gear
PTO mounting pads	Six-bolt, 3 o'clock and 9 o'clock positions (as viewed from rear)
PTO drive gear rating (continuous operation)	Using one PTO: 339 N•m Total using two PTO's: 271 N•m
PTO drive gear ratio	1.00 x turbine speed
PTO drive gear	64 tooth

PARK PAWL*

*Excluding refuse vocation

OIL SYSTEM

Allison approved fluids: TES 295 and TES 389

Capacity, excluding external circuits

With Deep Oil Pan	14 litres
With Shallow Oil Pan	12 litres
Spin on canister filter	Standard

SPEEDOMETER PROVISION

Description	Non-zero-crossing square wave
	8, 16 or 40 pulses per revolution of transmission output shaft
Location	Electronic output from TCM

TACHOGRAPH PROVISION

Tone wheel	6-tooth
Mounting	M18 x 1.5 metric thread
Location	Transmission rear cover

1000 Series

