

## Standard scope of delivery:

- „wet” cylinder liners
- double cylinder heads
- insert valve seat made from „STELIT 12” cast iron
- NIMONIC 20° exhaust valve with welded coat from P 37 S
- intake valve with welded coat
- CHAMPION spark plug (RC 78 PYP 15 - M 14 x 1,25)
- „3 rings” aluminium piston with packing of 1. piston ring, with shaker cooling
- centrifugal oil filter in bypass circuit
- spin-on full flow filter with relief valve
- oil cooler (plate type) with insurance through the bypass valve and integrated control valve operating pressure
- closed crankcase with MANN-HUMMEL (ProVent 200) oil separator, connected to engine intake
- SAE 1 flywheel housing
- flywheel (according to clutch type)
- AVF IM 6102 (24 V, 6,6 kW) electric starter
- tripartite uncooled, insulated (THERMAMAX) exhaust manifold
- engine bottom cover with oil sump (19 dm<sup>3</sup>)
- gear - driven oil pump, with transfer segment and safety valve
- centrifugal coolant pump V-belt driven from crankshaft pulley, including tension
- thermoregulator housing (including thermoregulators)
- welded intake manifold with input neck
- WOODWARD electronically controlled throttle valve (F-Series 68/M10) - control section, power regulation mode of operation connected to intake manifold elbow
- ECU with OMNITEK motormanagement<sup>3)</sup>
- ECU sensors
- engine cables<sup>3)</sup>
- OMNITEK gas pressure regulator (CNG 60) <sup>3)</sup>
- K 36 4064 MNA/35.21 S turbocharger with cooled bearing housing and insulated (THERMAMAX) turbine housing<sup>2)</sup>
- TEDOM mixer (7793 008)
- ECOCAT three-way catalyst (KTT 6775-1)<sup>3)</sup>
- standard running up and setting on test-bench with natural gas fuel
- finish (base - GALVINOL 3202, principal - RELAFIX DS 347, shade RAL 7021)
- type label „TEDOM”
- ECE „approval” label
- standard documentation (certificate of quality and completeness, warranty, service workbook, operation and maintenance manual, spare parts catalogue)
- standard protocol of final inspection and brake test (technological) <sup>3)</sup>

## Options:

- KARSIT three-way catalyst (111-8400-033) <sup>3)</sup>
- O.M.V.L. gas pressure regulator (R 89/E) <sup>3)</sup>
- dry single plate clutch of SACHS MFZ 430, MFZ 420, GFM 420, GFMN 420
- „switch-on” viscoventilator on front end of crankshaft Ø 680, Ø 710, MANNESMANN-SACHS Ø 750
- switch-on respectively. switch-of fan out of the axis of the crankshaft (a choice of fan speed, range fans see above, be applied „pushed” the implementation of the fans)
- alternator of type 45, 60, 75, 100, 120, 140, 180 A / 28 V
- BOSCH alternator 110 A / 28 V / PRESTOLITE
- JIHOSTROJ hydro generator of UD series with flow and pressure control (steering)
- JIHOSTROJ hydro generator of UD series (hydrostatic fan drive)
- ADACO air compressor type 4133 - 318 cm<sup>3</sup>
- KNORR air compressor type LK 4952 - 628 cm<sup>3</sup>
- exhaust brake (butterfly valve) with pneumatic control
- electronic gas pedal (the link to an electronic throttle valve)
- engine bottom cover with oil sump (29,5 dm<sup>3</sup>)
- coolant temperature sensor
- lubricating oil pressure sensor
- lubricating oil temperature sensor
- coolant temperature warning switch
- oil pressure warning switch
- inductive pulse sensor (for speed meter)
- front bracket, for engine flexible mounting and air compressor
- front bracket, for engine flexible mounting and alternator
- bracket, for engine flexible mounting and air compressor
- short period engine preservation
- oil filling of engine
- metal transport skid (returnable)
- wooden shipping pallets

1) in installation

2) valid for CITY 210 and CITY 250

3) no-mounted part

# TEDOM

technology  
... in harmony  
with nature

## CNG ENGINES



TEDOM a.s., Divize Motory, Belgická 4685/15, 466 05 Jablonec nad Nisou, CZ

HOMOLOGATION EURO 5, STANDARD EEV

**CITY 180 - CITY 210 - CITY 250**

## Basic information:

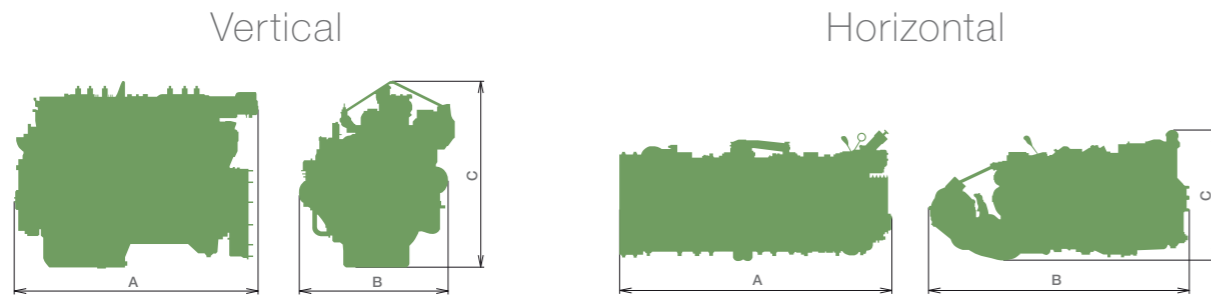
TEDOM stoichiometric natural gas combustion (CNG) engines are based on standardized series of 12-litre 6-cylinder in-line 4-stroke naturally aspirated or turbocharged water-cooled engines electronically controlled with the OBD II implementation. Engines are produced in horizontal or vertical layout with the power range from 180 to 260 kW.

## Technical features:

Engine	Turbo	Displ.	Bore / Stroke	Compression ratio	Rated output	Nominal speed	Torque Mt max.	Speed at Mt max.
		dm <sup>3</sup>	mm		kW (PS)	min <sup>-1</sup>	Nm	min <sup>-1</sup>
CITY 180	Not	11.946	130 / 150	13.0:1	180 (245)	2 200	883	1 200
CITY 210	Yes	11.946	130 / 150	11.1:1	220 (299)	2 000	1 146	1 600
CITY 250	Yes	11.946	130 / 150	11.1:1	260 (354)	2 000	1 354	1 600

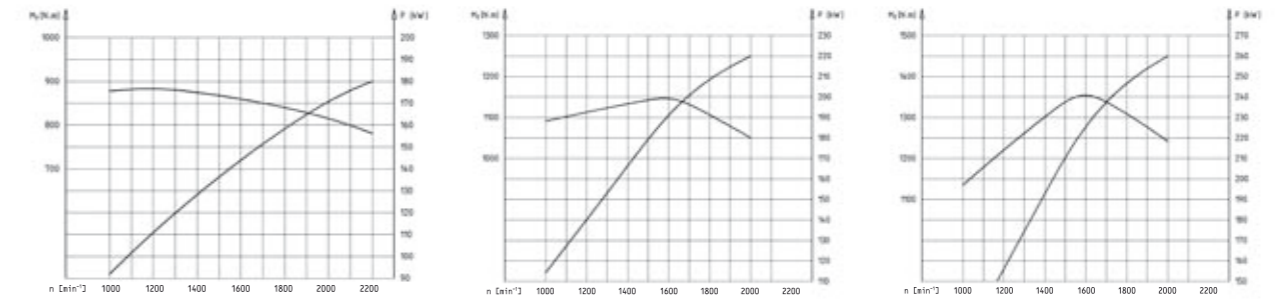
The configuration is valid for the outdoor temperatures between 5 to 35 °C, elevation 1000 m above the sea level and relative humidity 30-80 %.

## Dimensions:



Dimensions / engine type		CITY 180 horizontal	CITY 180 vertical	CITY 210 horizontal	CITY 210 vertical	CITY 250 horizontal	CITY 250 vertical
A	mm	1360	1360	1360	1360	1360	1360
B	mm	1270	740	1330	790	1330	790
C	mm	700	1250	700	1250	700	1250
Weight (dry)	kg	940	940	960	960	960	960

## Performance charts:



**CITY 180**

**CITY 210**

**CITY 250**

## Detailed information:

<b>Engine working cycle:</b>	4-stroke, spark ignition, turbocharged <sup>2)</sup> , operating with „stoichiometric” mixture, with three-way catalyst, with intercooler <sup>1) 2)</sup>
<b>Fuel:</b>	compressed natural gas - CNG
<b>Cylinder arrangement:</b>	vertical / horizontal, 6 in line
<b>Bore / Stroke:</b>	130 / 150 mm
<b>Engine capacity:</b>	11.946 dm <sup>3</sup>
<b>Compression ratio:</b>	11.1 : 1 (CITY 180 - 13:1)
<b>Firing order:</b>	1 – 5 – 3 – 6 – 2 – 4
<b>Direction of rotation:</b>	clockwise (in front view)
<b>Intake system:</b>	air cleaner <sup>1)</sup> , turbocharger <sup>2)</sup> , boost control <sup>2)</sup> , „air to air” type intercooler <sup>1) 2)</sup> , mixer, throttle valve, engine intake manifold
<b>Exhaust system:</b>	engine exhaust manifold, integral insulation inc. TBD, turbocharger <sup>2)</sup> , vehicle exhaust outlet pipe <sup>1)</sup> catalyst <sup>1)</sup> silencer <sup>1)</sup>
<b>Fuel delivery system:</b>	gas pressure regulator, metering fuel valve („λ=1” control system richness of the mixture), mixer, throttle valve, engine intake manifold
<b>Cooling system:</b>	liquid cooling, centrifugal circulating pump, fitted on engine, coolant radiator (water to air type) <sup>1)</sup> , thermostat housing, expansion tank with pressure and filling cap <sup>1)</sup>
<b>Lubrication system:</b>	pressure lubrication by gear-driven pump with both pressure and transfer segment (horizontal), multi-plate oil cooler with control and relief-valve, full flow oil filter of spin-on type with relief-valve, renewable centrifugal filter in bypass circuit, oil filler and wire-bound oil dipstick on engine oil pan
<b>Coolant volume:</b>	22 dm <sup>3</sup>
<b>Engine oil volume:</b>	Engine total: 24 (vertical) 32 (horizontal) dm <sup>3</sup> Oil sump - top guideline: 19 (vertical) 27 (horizontal) dm <sup>3</sup> Between guidelines: 5 (vertical) 5 (horizontal) dm <sup>3</sup>

1) in installation 2) valid for CITY 210 and CITY 250