

Standard scope of delivery:

- „wet“ cylinder lines
- 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 dm³)
- 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 motormanagement³⁾
- ECU sensors
- engine cables³⁾
- OMNITEK gas pressure regulator (CNG 60)³⁾
- K 36 4064 MNA/35.21 S turbocharger with cooled bearing housing and insulated (THERMAMAX) turbine housing²⁾
- TEDOM mixer (7793 008)
- ECOCAT three-way catalyst (KTT 6775-1)³⁾
- 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)³⁾

Options:

- KARSIT three-way catalyst (111-8400-033)³⁾
- O.M.V.L. gas pressure regulator (R 89/E)³⁾
- 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-off 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 cm³
- KNORR air compressor type LK 4952 - 628 cm³
- 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 dm³)
- 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



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HOMOLOGATION EURO 5, STANDARD EEV
CITY 180 - CITY 210 - CITY 250

Basic information:

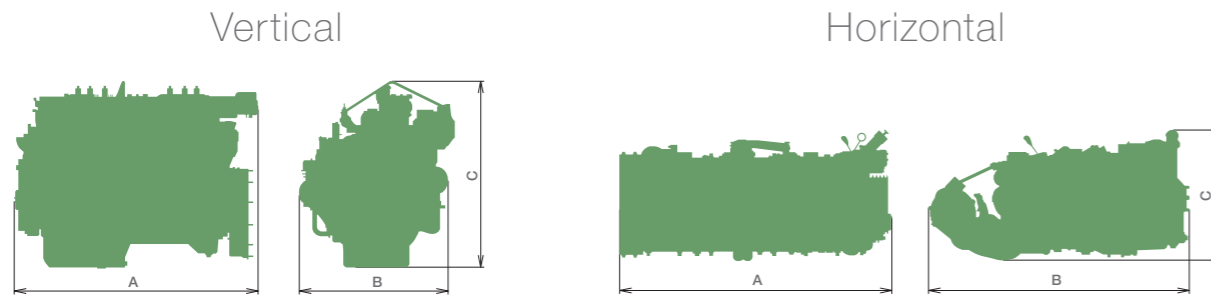
TEDOM stoichiometric natural gas combustion (CNG) engines are based on standardized series of 12-litre 6-cylinder in-line 4-stroke naturally aspirated or turbocharged water-cooled engines electronically controlled with the OBD II implementation. Engines are produced in horizontal or vertical layout with 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 ³ | mm | | kW (PS) | min ⁻¹ | Nm | min ⁻¹ |
| 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 |

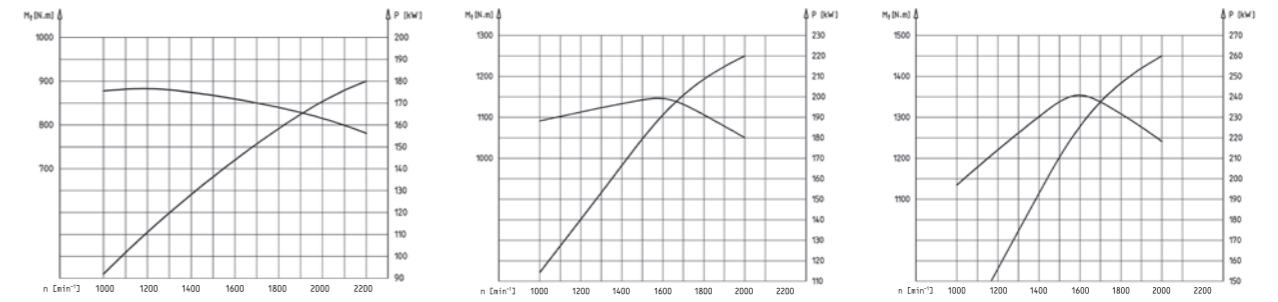
The configuration is valid for the outdoor temperatures between 5 to 35 °C, elevation 1000 m above the sea level and relative humidity 30-80 %.

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:

| | | | | | | | | | | |
|-------------------------------|--|---------------------------------|---------------|---------------------------------|---------------------------|---------------|---------------------------------|---------------------|--------------|--------------------------------|
| Engine working cycle: | 4-stroke, spark ignition, turbocharged ²⁾ , operating with „stoichiometric” mixture, with three-way catalyst, with intercooler ^{1) 2)} | | | | | | | | | |
| Fuel: | compressed natural gas - CNG | | | | | | | | | |
| Cylinder arrangement: | vertical / horizontal, 6 in line | | | | | | | | | |
| Bore / Stroke: | 130 / 150 mm | | | | | | | | | |
| Engine capacity: | 11.946 dm ³ | | | | | | | | | |
| Compression ratio: | 11.1 : 1 (CITY 180 - 13:1) | | | | | | | | | |
| Firing order: | 1 – 5 – 3 – 6 – 2 – 4 | | | | | | | | | |
| Direction of rotation: | clockwise (in front view) | | | | | | | | | |
| Intake system: | air cleaner ¹⁾ , turbocharger ²⁾ , boost control ²⁾ , „air to air” type intercooler ^{1) 2)} , mixer, throttle valve, engine intake manifold | | | | | | | | | |
| Exhaust system: | engine exhaust manifold, integral insulation inc. TBD, turbocharger ²⁾ , vehicle exhaust outlet pipe ¹⁾ catalyst ¹⁾ silencer ¹⁾ | | | | | | | | | |
| Fuel delivery system: | gas pressure regulator, metering fuel valve („λ=1” control system richness of the mixture), mixer, throttle valve, engine intake manifold | | | | | | | | | |
| Cooling system: | liquid cooling, centrifugal circulating pump, fitted on engine, coolant radiator (water to air type) ¹⁾ , thermostat housing, expansion tank with pressure and filling cap ¹⁾ | | | | | | | | | |
| Lubrication system: | 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 | | | | | | | | | |
| Coolant volume: | 22 dm ³ | | | | | | | | | |
| Engine oil volume: | <table> <tbody> <tr> <td>Engine total:</td> <td>24 (vertical)</td> <td>32 (horizontal) dm³</td> </tr> <tr> <td>Oil sump - top guideline:</td> <td>19 (vertical)</td> <td>27 (horizontal) dm³</td> </tr> <tr> <td>Between guidelines:</td> <td>5 (vertical)</td> <td>5 (horizontal) dm³</td> </tr> </tbody> </table> | Engine total: | 24 (vertical) | 32 (horizontal) dm ³ | Oil sump - top guideline: | 19 (vertical) | 27 (horizontal) dm ³ | Between guidelines: | 5 (vertical) | 5 (horizontal) dm ³ |
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| Between guidelines: | 5 (vertical) | 5 (horizontal) dm ³ | | | | | | | | |

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