

A better way to start all day

1

DEFA
Engine heater



Car model:

Price

2

DEFA
Engine- and interior heater



Price

3

DEFA
WarmUp



Price

DEFA
WarmUp
www.defa.com

A better start all day.
Less pollution,
less engine attrition,
less fuel consumption.
Housewarm car and
defrosted windshields.



Dealer:

490374/UB-2004-06-08

*Less pollution, less engine attrition,
less fuel consumption.
Housewarm car and defrosted windshields*

DEFA
WarmUp
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A better start all day.



Safety

It is dangerous to drive with frost smoke in the interior and snow and ice on the windshields. With DEFA WarmUp you drive with defrosted windshields and good visibility.



Environment

If you start a pre-heated engine you also reduces noxious emission with 60-80% the first 4 km.



Economy

Start with a pre-heated engine gives a considerable reduction in fuel consumption and less engine attrition compared to starting with a cold engine.



Comfort

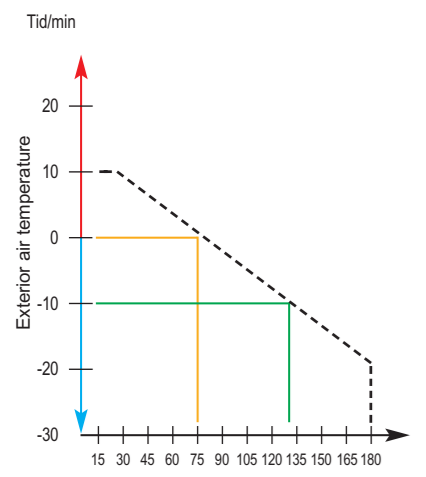
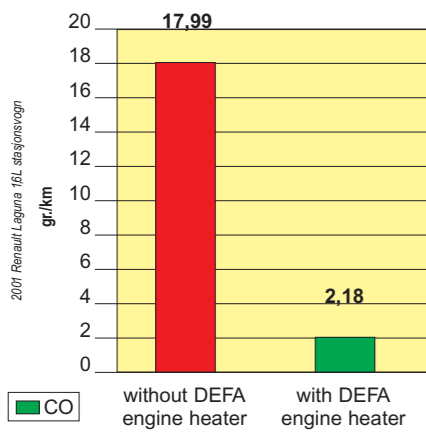
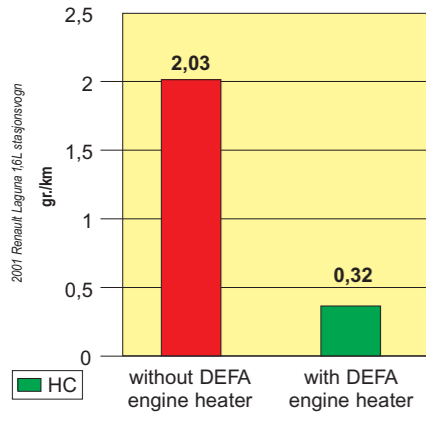
You can start your ride in a housewarm car. You don't have to remove ice from the windshields, and the engine is easy to start.



DEFA
WarmUp
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Here is the proof



Tests that have recently been performed by the independent Finnish technical institute, Tiiliä Oy, show that if 250,000 city cars started on a cold winter morning with a pre-heated engine using DEFA WarmUp, exhaust emissions would be reduced by 15 tonnes of CO, 3.2 tonnes of HC, 25 tonnes of CO₂, 70 kilogrammes of NO_x and 11 kilogrammes of particles. At the same time, the cars would use 22,000 litres less petrol and 2,000 litres less diesel. And all of this is just with one single warm start instead of cold for these 250,000 cars.

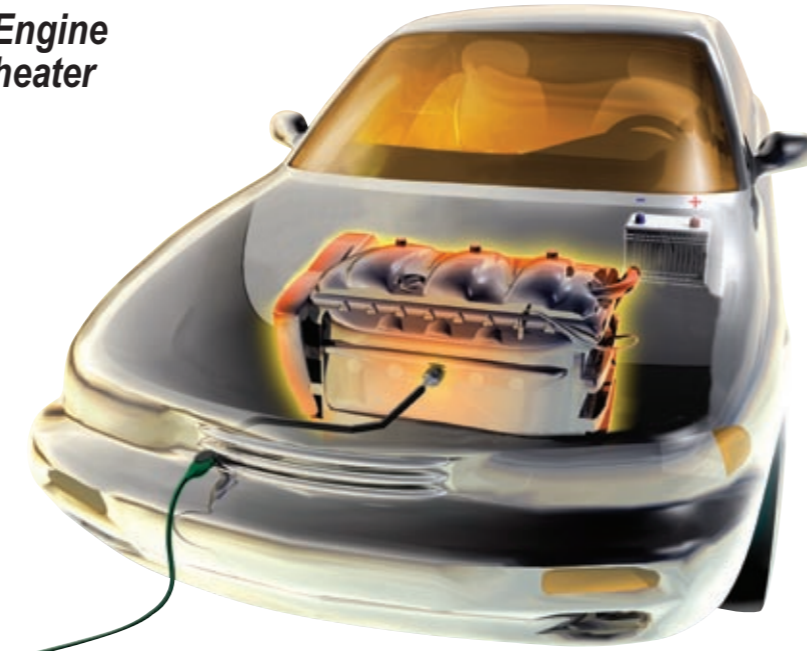
Tests have proved that after 3 hours the engine block temperature increased by about 30°C. After 4 hours, the temperature has increased to aproximate 31.5°C. This means that in the fourth hour the temperature increased by 1.5°C. Based on these measurements we retain the maximum automatic connection time at 3 hours.

Control unit.
 Ex. 1. Connection time at 0°C — orange line
 Ex. 2. Connection time at -10°C — green line

Pre-heated engine



1



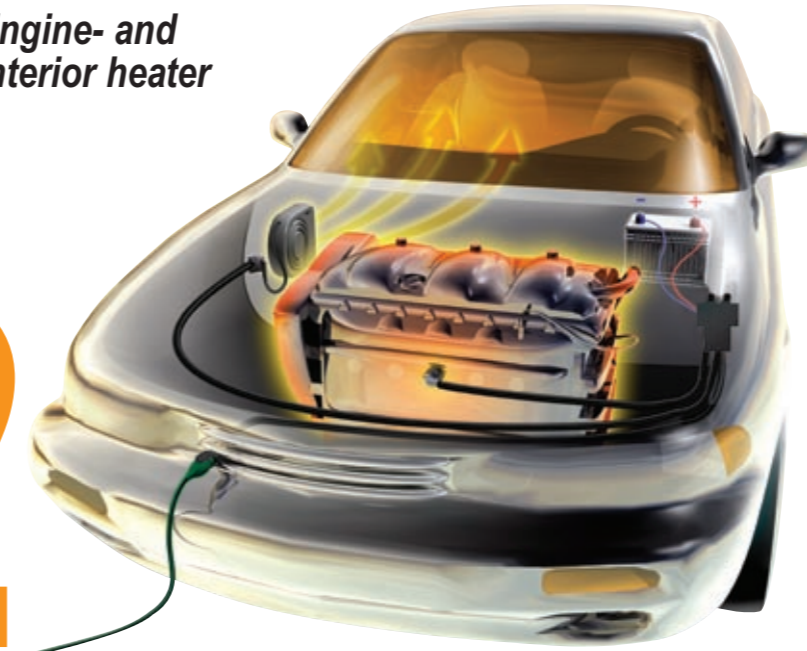
- Up to 50% reduced fuel consumption on shorter rides
- Reduces noxious emission
- Less engine attrition



Pre-heated engine and defrosted windshields



2



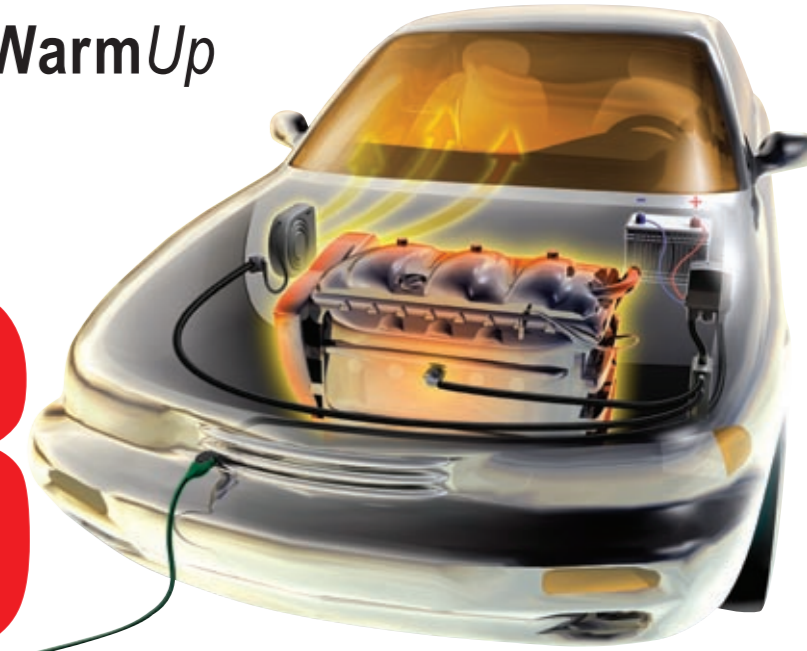
- Up to 50% reduced fuel consumption on shorter rides
- Less engine attrition
- Housewarm car
- Defrosted windshields
- Reduces noxious emission



20% saving buying DEFA WarmUp



3



- Up to 50% reduced fuel consumption on shorter rides
- Less engine attrition
- Housewarm car
- Defrosted windshields
- Reduces noxious emission
- Always fully charged battery
- The battery last longer
- The car is ready to start at any time

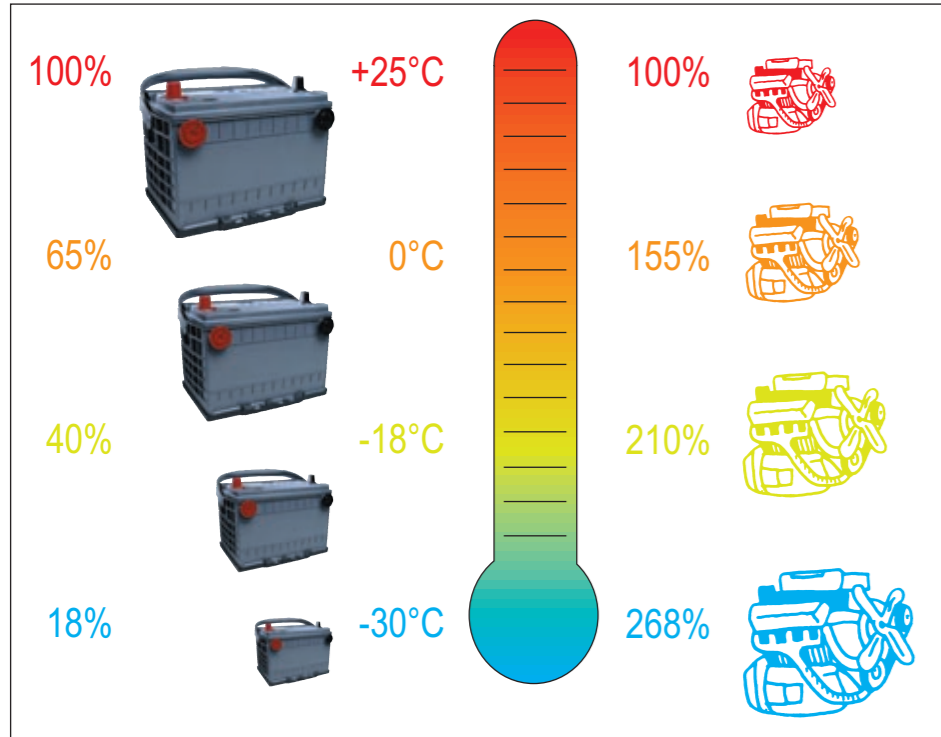


Engine heater must be purchased separately dependent upon the car model and engine type.

Temperature impact on battery and engine

Impact on the battery
- less and less effect

Impact on the engine
- increased energy demand to start



The columns shows that you by using engine heater reduces CO-emission with 60-80% after start.

