

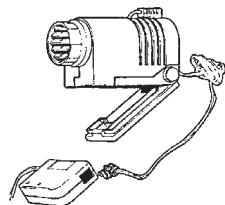
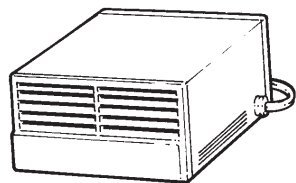
Car comfort

When the weather turns cold, Manitoba car owners depend on block heaters to ensure that their vehicles will start. However, block heaters are not the only heating products that are available on the market. Interior car warmers and electric battery blankets may also be accessories worth considering.

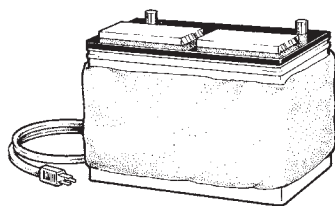
Car devices

Block heaters are electric devices which help to keep the coolant in your engine warm in very cold weather. They allow the engine to turn over and start easily.

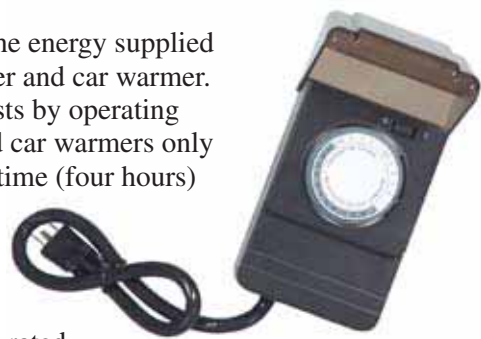
Car warmers are installed inside the car to keep the interior warm. They also help keep windows from icing up. Several styles and sizes are available. They can be installed on the passenger kick panel or under the dashboard.



Battery blankets keep the battery warm so it remains at full strength in cold weather. They also help to extend the life of the battery. Battery blankets can be installed by the do-it-yourselfer.



Timers control the energy supplied to the block heater and car warmer. They help cut costs by operating block heaters and car warmers only for the optimum time (four hours) they need to do the job efficiently and successfully. Timers should be rated for outdoor use.



Controls

Block heaters warm the engine coolant up to a suitable starting temperature. A range of timer controls are available to help block heaters operate for the optimum amount of time.

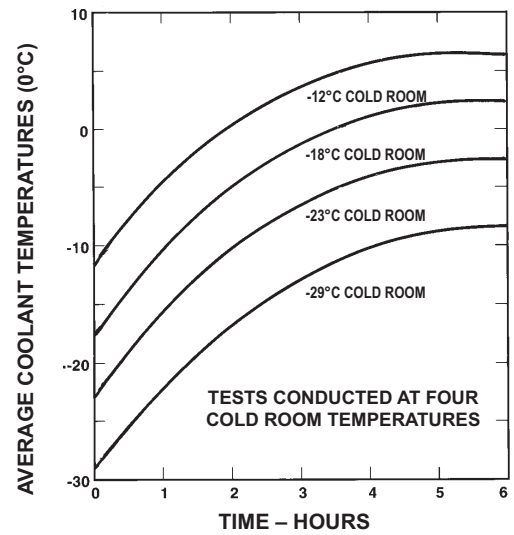
Why four hours?

Tests conducted by the Agricultural Engineering Department, University of Saskatchewan, have shown that there is no advantage in connecting block heaters more than four hours before the engine is to be started.



The graph shows the engine block test results. Regardless of initial temperature, the temperature of the coolant rises by a fairly constant amount – about 18°C after four hours. The graph also shows that in each case the greatest temperature rise occurs in the first hour. Rate of increase is about 9°C in the first hour, 6°C in the second, 3°C in the third, and only 1.7°C in the fourth. About 95 percent of the maximum possible temperature is obtained by the end of the fourth hour. After about five hours there is a levelling-off effect, and equilibrium is reached. The tests also showed that in four hours or more, crankcase oil temperature increased only about 5°C.

These results indicate that it is a waste of electrical energy to switch on an engine block heater more than four hours before engine startup.



Curves of temperature versus heating time for engine block heater

Car warmers and engine block heaters – energy costs

900 WATT IN CAR WARMER & 600 WATT BLOCK HEATER				
DAILY HOURS OF USE	ENERGY USE PER DAY	COST PER DAY @ 0.06¢/kW	ENERGY USE PER MONTH (30 DAYS)	APPROXIMATE COST PER MONTH @ 0.06¢/kW
1 hour	1.5 kW.h	\$0.09	45.0 kW.h	\$ 2.70
2 hours	3.0 kW.h	0.18	90.0 kW.h	5.40
4 hours	6.0 kW.h	0.36	180.0 kW.h	10.80
6 hours	9.0 kW.h	0.54	270.0 kW.h	16.20
8 hours	12.0 kW.h	0.72	360.0 kW.h	21.60
10 hours	15.0 kW.h	0.90	450.0 kW.h	27.00
12 hours	18.0 kW.h	1.08	540.0 kW.h	32.40
14 hours	21.0 kW.h	1.26	630.0 kW.h	37.80

900 WATT IN CAR WARMER & 400 WATT BLOCK HEATER				
DAILY HOURS OF USE	ENERGY USE PER DAY	COST PER DAY @ 0.06¢/kW	ENERGY USE PER MONTH (30 DAYS)	APPROXIMATE COST PER MONTH @ 0.06¢/kW
1 hour	1.3 kW.h	\$0.08	39.0 kW.h	\$ 2.34
2 hours	2.6 kW.h	0.16	78.0 kW.h	4.68
4 hours	5.2 kW.h	0.31	156.0 kW.h	9.36
6 hours	7.8 kW.h	0.47	234.0 kW.h	14.04
8 hours	10.4 kW.h	0.62	312.0 kW.h	18.72
10 hours	13.0 kW.h	0.78	390.0 kW.h	23.40
12 hours	15.6 kW.h	0.94	468.0 kW.h	28.08
14 hours	18.2 kW.h	1.09	546.0 kW.h	32.76

600 WATT BLOCK HEATER				
DAILY HOURS OF USE	ENERGY USE PER DAY	COST PER DAY @ 0.06¢/kW	ENERGY USE PER MONTH (30 DAYS)	APPROXIMATE COST PER MONTH @ 0.06¢/kW
1 hour	0.6 kW.h	\$0.04	18.0 kW.h	\$ 1.08
2 hours	1.2 kW.h	0.07	36.0 kW.h	2.16
4 hours	2.4 kW.h	0.14	72.0 kW.h	4.32
6 hours	3.6 kW.h	0.22	108.0 kW.h	6.48
8 hours	4.8 kW.h	0.29	144.0 kW.h	8.64
10 hours	6.0 kW.h	0.36	180.0 kW.h	10.80
12 hours	7.2 kW.h	0.43	216.0 kW.h	12.96
14 hours	8.4 kW.h	0.50	252.0 kW.h	15.12

400 WATT BLOCK HEATER				
DAILY HOURS OF USE	ENERGY USE PER DAY	COST PER DAY @ 0.06¢/kW	ENERGY USE PER MONTH (30 DAYS)	APPROXIMATE COST PER MONTH @ 0.06¢/kW
1 hour	0.4 kW.h	\$0.02	12.0 kW.h	\$ 0.72
2 hours	0.8 kW.h	0.05	24.0 kW.h	1.44
4 hours	1.6 kW.h	0.10	48.0 kW.h	2.88
6 hours	2.4 kW.h	0.14	72.0 kW.h	4.32
8 hours	3.2 kW.h	0.19	96.0 kW.h	5.76
10 hours	4.0 kW.h	0.24	120.0 kW.h	7.20
12 hours	4.8 kW.h	0.29	144.0 kW.h	8.64
14 hours	5.6 kW.h	0.34	168.0 kW.h	10.08

For information on Manitoba Hydro's Power Smart Residential Programs:

Telephone: (204) 480-5900 in Winnipeg
Toll-free: 1 888 MB HYDRO (1-888-624-9376)
www.hydro.mb.ca/saving_with_ps/psmart_home.shtml

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