

Active and Passive Warm-Up Products



LONG[®]
Thermal Products



Thermal-Management Products

Dana helps deliver improved fuel economy (up to 4% savings) and reduced emissions with Long[®] active and passive warm-up units (AWUs).



Active and Passive Warm-Up Products

Thermal management is a critical area of engine design. A certain percentage of fuel has to be consumed in order to overcome friction in powertrain components such as the transmission, engine, and axle. To enhance vehicle efficiency, a reduction of this friction is necessary. Dana engineers found that maintaining hot oils in the powertrain increased both efficiency and overall fuel economy.

Two techniques that help maintain optimum hot oil temperatures, especially in cold climates where it takes longer for engines to meet optimum operating temperatures, are:

- Capturing the thermal energy generated inside each component
- Bringing in external, otherwise wasted, thermal energy from the vehicle cooling and exhaust systems to warm engine oils

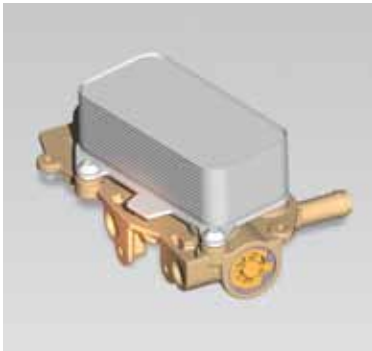
Thermal Bypass Valve (TBV)

This device prevents cold or partially warmed oils from leaving powertrain components such as the transmission. Internal circulation of vehicle oils keeps thermal energy from dissipating and consequently improves efficiency.

Active Warm-Up (AWU)

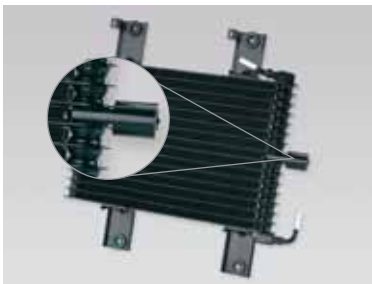
In most vehicle applications in the northern hemisphere, heat generated internally is not sufficient to bring oils to optimum temperature quickly enough to reduce friction or parasitic losses. AWU uses otherwise wasted thermal energies, such as heat lost through cooling systems or engine exhaust, to warm these oils – even above what can be achieved through TBVs alone.

The combination of these two technologies creates an integrated system that reduces complexity and increases the system's response time, bringing vehicle oils to optimum operating temperature quickly and maintaining it, resulting in a significant reduction of fuel consumption and emissions.



Stand Alone

Length (mm)	61	25	41	52	52	60	48
Width (mm)	20	23	23	23	23	33	45
Width (mm)	61	69	71	70	74	77	71



Integrated with Heat Exchanger

Designed to customer specifications

Thermal Bypass Valve Cartridges

Designed to customer specifications

Dana Power Technologies Group
Global Research and Development Locations

Lisle, Illinois, USA
Gravatá, Brazil

Paris, Tennessee, USA
Wuxi, China

Oakville, Ontario, Canada
Neu-Ulm, Germany

Pune, India



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For more information, please call 1-888-670-DANA (3262) or visit www.dana.com