ENGINE COOLING SYSTEMS

PRODUCTS AND SERVICES FOR
Military/Aerospace Applications
Engine Cooling Systems

Description

The Airtechnology Group’s high-performance, mixed-flow engine cooling fans, coupled with rugged and efficient aluminium heat exchanger packages, service military vehicle engines from 150 kW to 1,125 kW (200 hp to 1500 hp) along with all the additional heat loads typically included within the remit of the engine cooling system. Those may include transmission, transfer case and hydraulic oil, fuel cooling and pneumatic air cooling.

Extensive testing and development have shown the advantage of an engineered systems approach to engine cooling. That approach incorporates techniques to maximize the advantages available. For example, it is possible to arrange bulky components on the discharge side of the cooling fans, without obstructing the airflow, a capability that is not generally achievable with other fan types. Considerable advantage may be gained, especially in the more extreme conditions of high heat load and limited space, by carefully engineered and optimised systems as opposed to the individual and sometimes irrelevant selection of components.

Moreover, the use of air movers that offer additional flexibility with regards to air intake and discharge orientations has proved valuable in designing effective engine cooling packages, in which conventional approaches would result in inadequate solutions. This holds true not only for new vehicle types, but also for vehicle re-engining and upgrade projects, in which flexibility and the optimization of interrelated key component are crucial, within what is often an inflexible design envelope.

Technical Data

PART NUMBER 100-106007/1
- Engine Output: 750 kW
- Cooler 1: Water/Glycol
- Cooler 2: Charge Air
- Cooler 3: Transmission Oil
- Cooler 4: Hydraulic Oil
- Max. Ambient Temp.: 40°C
- Min. Ambient Temp.: -40°C
- Dimensions: 1982 mm x 1007 mm x 730 mm
- Dry Weight: circa 500 kg

PART NUMBER 100-113776
- Engine Output: 450 kW
- Cooler 1: A/C Refrigerant
- Cooler 2: Charge Air
- Cooler 3: Water/Glycol
- Cooler 4: Hydraulic Oil
- Cooler 5: Water/Glycol
- Max. Ambient Temp.: 50°C
- Min. Ambient Temp.: -40°C
- Dimensions: 1350 mm x 940 mm x 660 mm
- Dry Weight: circa 245 kg

PART NUMBER DAC-119A2
- Engine Output: 400 kW
- Cooler 1: Water/Glycol
- Cooler 2: Hydraulic Oil
- Max. Ambient Temp.: 40°C
- Min. Ambient Temp.: -40°C
- Dimensions: 2015 mm x 1400 mm x 871 mm
- Dry Weight: circa 568 kg
**PART NUMBER 100-114044**
- **Engine Output:** 338 kW
- **Cooler 1:** A/C Refrigerant
- **Cooler 2:** Charge Air
- **Cooler 3:** Hydraulic Oil
- **Cooler 4:** Water/Glycol
- **Max. Ambient Temp.:** 50°C
- **Min. Ambient Temp.:** -40°C
- **Dimensions:** 1290 mm x 1170 x 785 mm
- **Dry Weight:** circa 202 kg

**PART NUMBER 100-109172**
- **Engine Output:** 165 kW
- **Cooler 1:** A/C Refrigerant
- **Cooler 2:** Charge Air
- **Cooler 3:** Hydraulic Oil
- **Cooler 4:** Water/Glycol
- **Max. Ambient Temp.:** 50°C
- **Min. Ambient Temp.:** -40°C
- **Dimensions:** 950 mm x 950 mm x 750 mm
- **Dry Weight:** circa 137 kg

**PART NUMBER 100-113558**
- **Engine Output:** 540 kW
- **Cooler 1:** LT Water Glycol
- **Cooler 2:** HT Water Glycol
- **Cooler 3:** Hydraulic Oil
- **Max. Ambient Temp.:** 52°C
- **Min. Ambient Temp.:** -40°C
- **Dimensions:** 2183 mm x 660 mm x 593 mm
- **Dry Weight:** circa 275 kg

**Complete System Capability**
The AMETEK Airtechnology Group designs and manufactures engine cooling systems for both wheeled (typically 4x4, 6x6 and 8x8) and tracked armoured vehicles that operating worldwide under the most extreme conditions. With the experience gained through its involvement in many, varied cooling system projects, the Airtechnology Group holds a unique position with its design of vehicle power packs. That experience has resulted in incremental improvements in airside and heat exchange performance over time.

By having internal fan and heat exchanger design capabilities affords Airtechnology the opportunity to offer its customers solutions that maximise cooling pack performance for a given volume or minimize volume for a given performance. In addition, the airflow characteristics of its mixed flow fans offer a level of versatility not always available from other fan types.
Engine Cooling Systems

AMETEK Airtechnology Group has been involved actively in defence applications for more than 70 years. Over that time, it has developed a core air movement capability that includes complete engine cooling systems for armoured military vehicles. Those systems are designed around a range of open-discharge, mixed-flow fan units, that were developed in-house specifically for engine-cooling applications and are suitable for the congested environment within the typical military vehicle engine compartment.

Airtechnology Group typically combines its fans with rugged, custom-designed brazed aluminium heat exchangers, along with necessary support structures, sensors, interconnection ancillaries and/or supplementary brazed-plate heat exchangers. All are combined into a single line-replaceable unit for ease of integration with the vehicle power pack. Airtechnology Group also supplies separate heat exchanger and fan packages for when those options best suit an application. Also available are hydraulic and electric drives and options for fan drive direct via a power take-off or belt/pulley drives.

AMETEK Aerospace & Defense

AMETEK Aerospace & Defense has served the global aerospace industry for more than half a century. During that time, it has earned a reputation for innovation and reliability. AMETEK serves all segments of the aerospace industry from commercial jetliners, business aircraft and helicopters to military aircraft and ground vehicles to spacecraft and rockets. Its customers include the world’s leading airframe and aircraft engine manufacturers.

AMETEK Thermal Management Systems

AMETEK Thermal Management Systems is a business unit of AMETEK Aerospace & Defense. It offers advanced blowers for electronics cooling, motion technology products, heat exchangers, environmental integrity systems and thermal management subsystems, including advanced air handling systems used on commercial and military aircraft, military vehicles and naval vessels. Recognized brands: Rotron, Hughes-Treitler, AMETEK Airtechnology Group, Aircontrol Technologies, Muirhead Aerospace and Traxsys.

AMETEK, Inc.

AMETEK is a global leader in electronic instruments and electromechanical devices with colleagues at numerous manufacturing, sales and service locations in the United States and in many other countries around the world.