



SOLERO
TECHNOLOGIES

Engine-Cooling Systems

for the Latest Engine Generation

Electromagnetic fan clutches

The advantages at a glance

- | Compact design
- | High efficiency
- | No “morning sickness”
- | Precise fan control
- | Demand-oriented cooling reduces fuel consumption and CO₂ output
- | The RPM characteristic of the eddy-current stage can be specified according to customer requirements
- | Low noise level in comparison to rigid drives: The specified noise limit values are clearly fallen below
- | Simple installation and removal
- | Maintenance-free drive means low downtime
- | Long service life
- | High efficiency



Additional advantages of the 3-speed version

- | Especially in countries with low temperatures, the 3-speed solution prevents overcooling of the engine.
- | Rapid engine warm-up

Fan clutches for installation with open radiator-fan bearing frame (2-speed / 3-speed)

	2-speed	3-speed
Torque	Up to 1,200 Nm	135 – 400 Nm
Fan diameter	Up to approx. 1,800 mm	Up to approx. 1,200 mm
Voltage	12 V and 24 V	12 V and 24 V

Fan clutches for installation at the water pump (2-speed / 3-speed)

	2-speed	3-speed
Torque	Up to 220 Nm	135 – 180 Nm
Fan diameter	Up to approx. 800 mm	Up to approx. 800 mm
Voltage	12 V and 24 V	12 V and 24 V
New	2-speed Light Weight Fan Clutch max 2.2 kg	

Fan clutches for engine-mounted installation (2-speed / 3-speed)

	2-speed	3-speed
Torque	Up to 1,200 Nm	135 – 400 Nm
Fan diameter	Up to approx. 1,800 mm	Up to approx. 1,200 mm
Voltage	12 V and 24 V	12 V and 24 V

Angle gearboxes and electromagnetic fan clutches

The advantages at a glance

- | Easy to service
- | Long service life through integrated gearbox ventilation
- | Optimized ball bearings
- | Long oil-change intervals
- | Noise reduction
- | Efficiency 97%



Combination fan clutches (2-speed / 3-speed) downstream of the angle gearbox LLW100

	2-speed	3-speed
Advantages	<ul style="list-style-type: none"> Tried-and-tested over 100,000 times Very compact design of complete system 	<ul style="list-style-type: none"> Tried-and-tested over 100,000 times Very compact design of complete system
Torque	Up to 220 Nm	Up to 135 Nm
Fan diameter	Up to approx. 800 mm	Up to approx. 800 mm
Voltage	12 V and 24 V	12 V and 24 V

Angle gearboxes for fan clutches LLW200

	2-speed
Advantages	<ul style="list-style-type: none"> Low weight: 12 kg Noise-reduced: Significantly below the required industrial limit values New integrated ventilation increases the service life of the shaft seals 100% recyclable
Torque	Up to 220 Nm
Application	Visco and electromagnetic fan clutches
Fan diameter	Up to approx. 800 mm



We also provide other individual solutions. Please contact us.

All fan clutches are also available with erase diode.





Solero engine-cooling systems

Demand-meeting engine cooling at high efficiency

Reliability, efficiency and environmental protection are the main demands placed on the commercial vehicle manufacturers. Solero Technologies offers intelligent solutions for all leading vehicle manufacturers, particularly in the area of engine cooling.

Efficient engine cooling means saving fuel

The primary units of Solero engine-cooling systems are electronically controlled electromagnetic fan clutches, available in 2- and 3-speed versions. These clutch systems enable demand-meeting engine cooling to be realized by reducing to the required fan speed. That directly leads to cutting fuel costs at optimum efficiency.

Accurate heat removal depending on individual output curve

Depending on the application, the design of the fan clutch adapts to the customer's output curve and can thus ensure accurate, very swift heat removal: Within 0.5 seconds the fan is fully engaged, and thus draws off heat immediately. The maximum engine power is always available.

The Solero electromagnetic fan clutch

Operating method

Various installation possibilities

Depending on vehicle type and installation situation, these possibilities are given:

- I Installation with open radiator-fan bearing frame
- I Installation at the water pump
- I Engine-mounted installation
- I Installation with angle gearbox

2-speed fan clutch with two speed ranges

Reduced speed (2): When the electromagnetic clutch is deactivated (disengaged), the fan blade can reach speeds of up to 1,200 RPM by means of a contact- and wear-free operating eddy current system.

1:1 ratio (3): When the electromagnetic clutch is activated via a temperature sensor, the fan blade runs synchronous with the drive pulley.

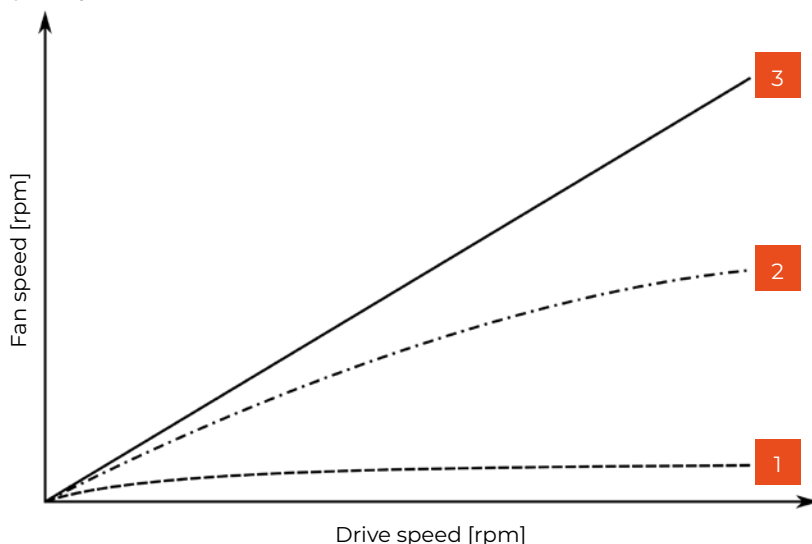
3-speed fan clutch with three speed ranges

In the 3-speed version, the eddy current system can be activated and deactivated. This enables very low fan speed and thus swift warming-up of the engine.

Very low speed (1): When both electromagnetic clutches are deactivated, the fan blade runs at a speed below 100 RPM, owing to the interior friction conditions.

Medium speed (2): When the inner electromagnetic clutch is activated via the first temperature sensor, the fan blade can reach speeds of up to 1,200 RPM by means of a contact- and wear-free operating eddy current system.

1:1 ratio (3): When the outer electromagnetic clutch is activated via the second temperature sensor, the fan blade runs synchronous with the drive pulley.



Accessories

Idler without damping

This Solero idler is used without damping, especially in combination with the LLW 200-series.



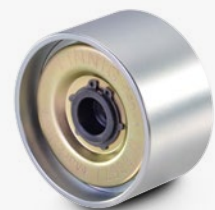
Idler with damping

The Solero idler with integrated damper eliminates vibrations from the pulley drive, thus preventing noise and giving the drive longer service life.



Deflection roller

Tried-and-tested more than 100,000 times, Solero's deflection roller contributes to efficient belt management, particularly with frequently occurring, high belt loads.



Universal shaft

The universal shaft supplements the portfolio of Solero's engine-cooling systems.



ABOUT SOLERO

We are a global supplier for OEMs and Tier 1 in the automotive industry, specializing in Vehicle Dynamics, Fluid Management, and Transmission/E-Drive.



Contact us

We'll find the right product for your application!

Our qualified employees, the precisely defined manufacturing processes and globally-uniform, strict quality guidelines ensure top quality at the end of every production process – worldwide.

Our customers trust us because we have successfully been on the market for over 100 years, and always with the optimum for them in our focus. The cooperation with leading automotive manufacturers continually improves our know-how and processes. In this, we rely on production and logistics processes that enable both modular and individual production – regardless if large or small-lot orders are placed.



Feel free to contact us!
**We'll find the right product
for your application!**

Solero Technologies Markdorf GmbH
Riedheimer Strasse 5
88677 Markdorf
Germany

 [solerotechnologies.com](https://www.solerotechnologies.com)

 [/solerotechnologies](https://www.linkedin.com/company/solerotechnologies)

 [/solerotechnologies](https://www.facebook.com/solerotechnologies)

