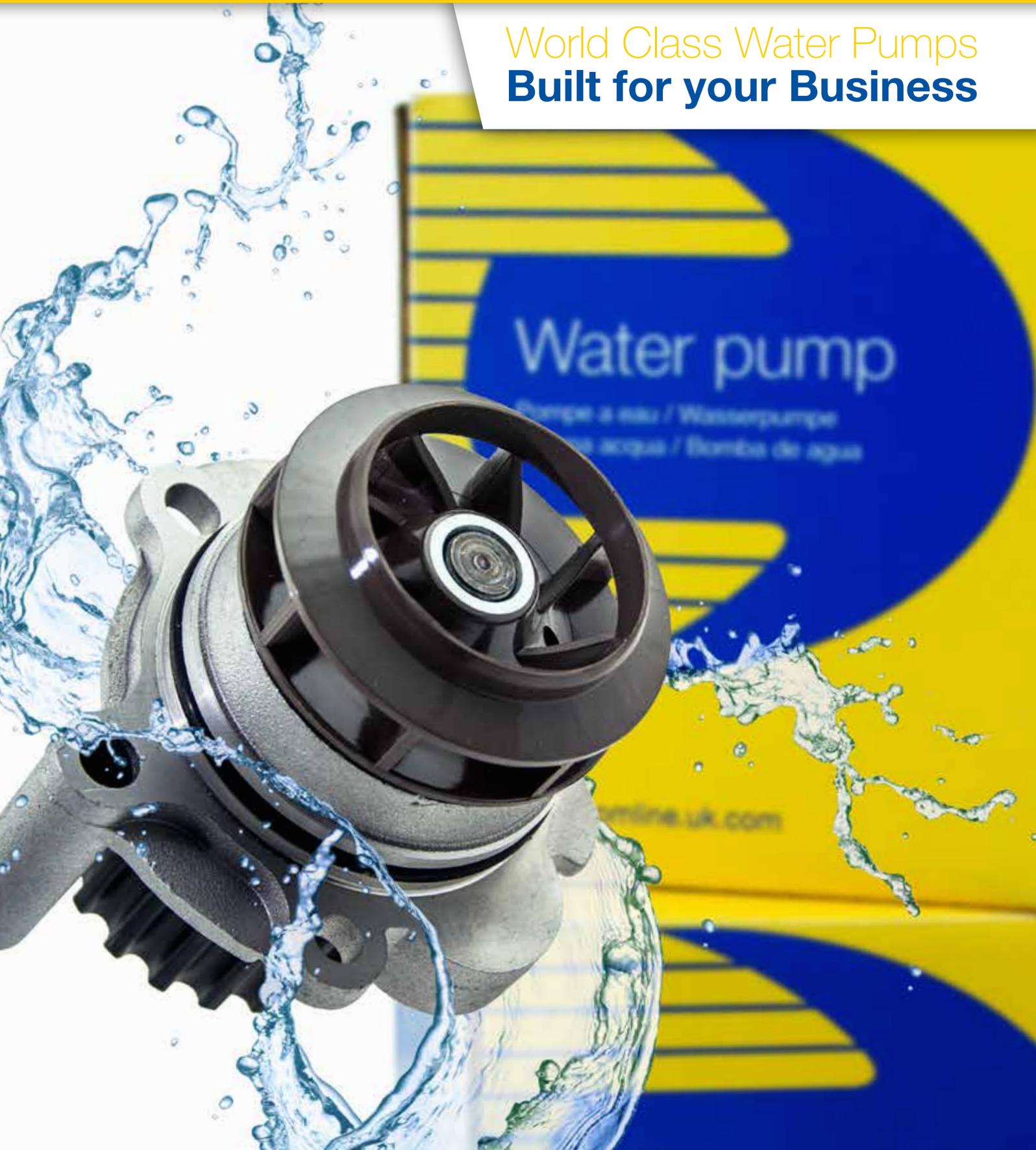




PUMP UP YOUR PROFITS

World Class Water Pumps
Built for your Business



Water pump

Pompe à eau / Wasserpumpe
Bombas de agua / Bomba de agua

comline.uk.com

ONE OF THE
FASTEST GROWING
AUTOMOTIVE
 BRANDS IN EUROPE

Welcome to **Comline**

First established in 1991, Comline is an independent British brand that is currently one of the fastest growing in the European automotive industry. Our proven recipe for delivering consistent, reliable product quality with genuine value-for-money has established us as a leading aftermarket brand and seen Comline presented with a variety of awards and accolades, most notably The Queen's Award for Enterprise: International Trade and a listing in the Financial Times' FT1000 listing of Europe's fastest growing companies.

Offering 95% availability across our all makes, multi-category product range, Comline offers quick and efficient logistics from all four European distribution hubs located in Greece, Ireland, Spain and the United Kingdom.

Comline has a diverse product range encompassing of filters, braking, steering & suspension, water pumps, lubricants, wipers, batteries and much more. Comline parts are trusted to perform by distributors, workshops and technicians in over 40 countries worldwide.



Comline Ireland

Comline Global Headquarters

Comline Ibérica

Comline Hellas

AN INTRODUCTION TO

COMLINE
 WATER PUMPS

Water pumps are at the heart of the engine cooling system and a crucial component for all water-cooled internal combustion engines. Simply put, the circulation of coolant driven by the water pump allows the engine to operate at the optimum temperature, prevents overheating and potentially catastrophic engine failure.

Water pumps are always in demand and this makes this product category an important revenue stream for many aftermarket businesses.

To support this demand, Comline provides an extensive range of over 400 high-quality and value-for-money water pump references covering all European, Japanese and Korean applications.



Every Comline water pump is designed in-line with OE specifications for its required application and it is therefore essential to select the correct part number.

To select the right water pump visit our online catalogue at www.comline.uk.com or find us on both TecAlliance and MAM Autocat+.

THE IMPELLER:

Geared to produce a continuous coolant flow and pressure, the Impeller size, design and material within every Comline water pump matches the original part for optimum performance.



THE GASKET:

Comline selects gaskets made from premium quality rubber compounds to ensure a secure and water-tight connection between the pump and the engine.



EVAPORATION CHAMBER:

The evaporation chamber is an important additional feature which detects the onset of any minor leaks. This key function is crucial to ensuring the longevity of the pump throughout its service life.



THE BEARING:

Comline water pumps feature two types of bearing - double row (ball-on-ball) and ball-and-roller.



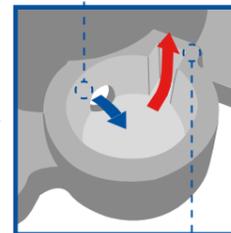
CHARACTERISTICS	DOUBLE ROW (BALL-ON-BALL)	BALL-AND-ROLLER (TO MAXIMISE HEAVY LOAD CARRY AND EXTEND PUMP PERFORMANCE)
TRANSVERSAL LOADS	REGULAR	HIGH
SPEED WORK	HIGH	REGULAR
ENGINE	LOW TORQUE ENGINE (PETROL)	HIGH TORQUE ENGINE (DIESEL)
AXIAL LOADS	HIGH / MEDIUM	LOW
CONTACT TYPE	SYMMETRIC OR ASYMMETRIC CONTACT ANGULAR OR RADIAL CONTACT	ROLLER-BALL WITH 2 OR 4 CONTACT POINTS

DYNAMIC SEAL:



Prevents the cooling liquid leaking towards the bearing and out of the water pump. Comline pumps contain seals that are 100% tension tested to ensure correct pressure for maximum sealing and service life performance.

WATER ENTRANCE



EVAPORATION EXIT

THE GREASE:



All Comline bearings are pre-lubricated with high performance, Super 'N' high grade sealed bearing grease which enables effective operation from from -40°C to 200°C whilst offering low noise properties.

THE HOUSING:



The housing is the outer shell that encases the water pump and its main function is to connect the water pump to the engine and support all other components. Comline uses housing casts that are made exclusively with aluminium or cast iron to ensure maximum strength and durability in every Comline pump.

THE PULLEY:



Drives the turn of the impeller which drives the coolant out of the water pump.



The fully assembled water pump - **EWP405**

MANUFACTURING TESTING & QUALITY

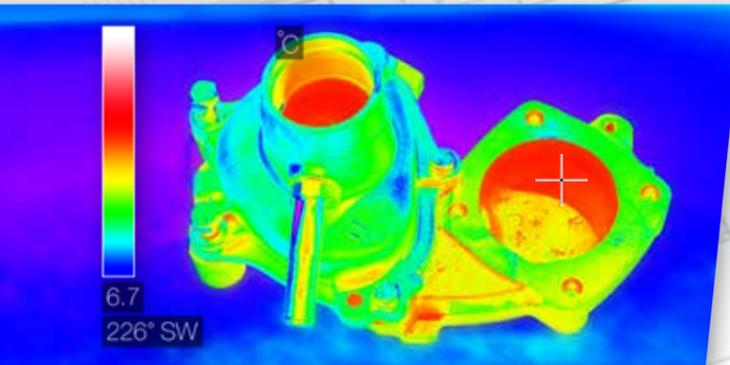
Like all Comline products our water pumps undergo a series of manufacturing and validation tests to ensure performance and reliability. Testing occurs in three main stages of the manufacturing process:

PROTOTYPE DESIGN STAGE



At this stage, our water pumps undergo two key types of testing; performance testing and the endurance bench test. The main purpose of this testing is:

- **To ensure optimum pump motor operation by testing at maximum RPM and torque**
- **To check performance of heating & cooling elements based on specified power**
- **To check pressure control operation valve based on the proper flow coefficient**
- **To set vacuum controls for internal suction pressure of the water pump**



The endurance test bench is a standard 1000 hr endurance test where the spindle bearing is assembled into a specific Comline water pump reference, then attached to a test rig simulating the action of a real engine. Within this test rig coolant set at a constant 90°C is circulated by the prototype water pump. Each new-to-range Comline water pump reference undergoes this endurance test for a duration of 6 weeks.

PRODUCT & PROCESS VALIDATION STAGE

In the product & process validation stage, Comline pumps are subjected to further tests, including:

- **Co-ordinate measuring: Ensure the new Comline water pump reference meets exacting brand standards and that vital measurements comply to OE specifications**
- **Microscope & durometer test: Tests the material durability of the pump in various conditions, temperatures and pressures.**



PRODUCTION STAGE

At the final stage, Comline water pumps are subjected to the 100% leak test to ensure a water-tight seal and consistent, reliable performance. This automated test runs to a defined protocol that allows Comline to measure and analyse the following information:

- **Pressure vs. flow at various RPM ranges**
- **Coolant delivery measurements based on suction head control**

Finally, each new water pump is put through a cavitation detection test based on suction head control, essentially detecting air bubbles created in the coolant flow by the rotation of the impeller.

“ Cavitation is defined as the formation of bubbles or cavities in fluids, which are known to develop around the impeller where there is relatively low pressure. The collapsing of bubbles trigger intense shock-waves inside the water pump, causing serious damage to the pump housing and/or the impeller. ”

- Comline Product Manager, Povilas Borisas

WATER PUMP WARRANTY



All Comline Water Pumps are warranted to be free from manufacturing and material defects for a period of 36 months or 36,000 miles (60,000 km) from fitment (whichever comes first).

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