



# ADJUSTABLE ELECTRIC OIL PUMPS

MODULARLY DESIGNED SYSTEMS  
FOR THE DRIVETRAIN



SMART TECHNOLOGY FOR SMARTER CARS

VERSATILE AND FUEL-EFFICIENT

# VALEO'S OIL PUMP FAMILY

## MOUNTING POSITION AND TASKS

Valeo's electric oil pumps for the drivetrain are applied in the area of the transmission and the clutch where they perform various tasks. Depending on the model, they can

- lubricate gear sets and bearings in transmissions,
- cool wet clutches and auxiliary units,
- support start-stop systems,
- actuate clutches and assist gear shifting.

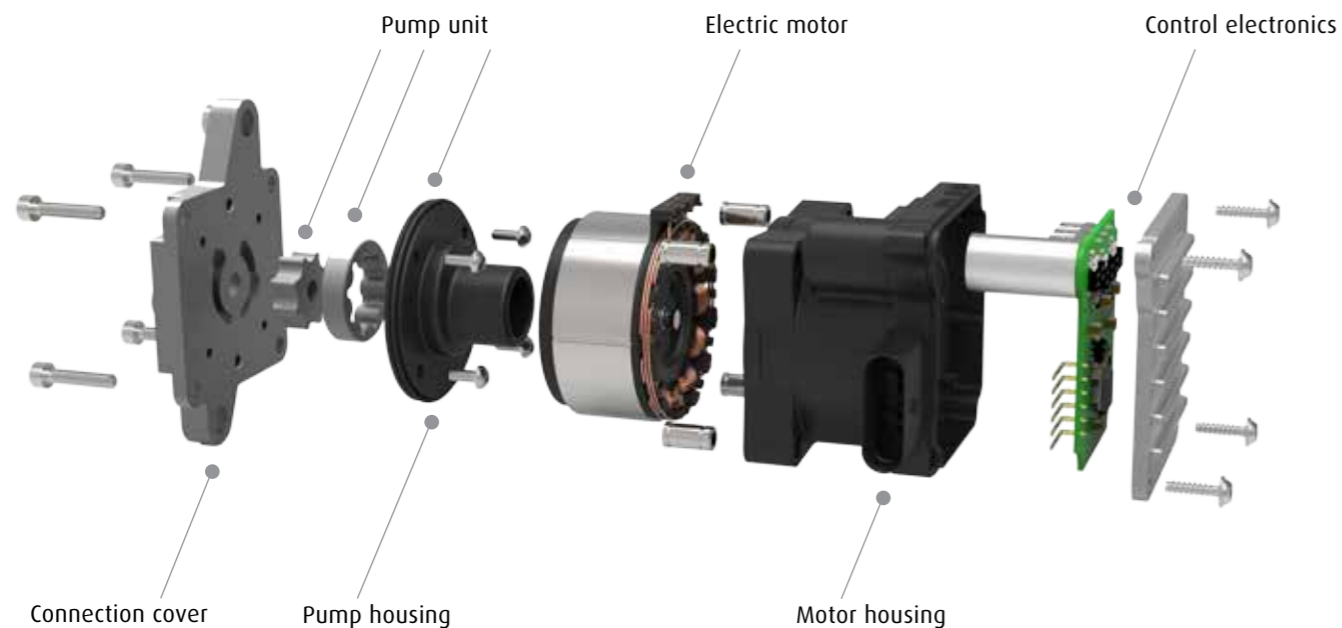
## MODULAR DESIGN

The pumps feature a modular design: motors of various types and performance classes can be freely combined with different pump units. Moreover, the pumps can be designed for delivering not only transmission oil, but also other media (e. g. coolants). Each pump consists of a pump housing, a motor housing, a pump unit, an electric motor and a printed circuit board which carries the control electronics with integrated power electronics.

## PUMP UNIT

According to customer requirements or the specific application, the pump can be designed as a centrifugal pump, an annular gear pump or a radial piston pump, the type being determined by the choice of the flow and pressure generating component. Depending on the setup of the pump, the motor rotor itself can be designed as a flow generating component. In the case of an annular gear pump, it is possible to directly influence the necessary volume flow rate by varying the height of the pump body and the number of teeth. In the case of a radial piston pump, the same can be done by varying the piston diameters, the number of the pistons and their stroke travel.

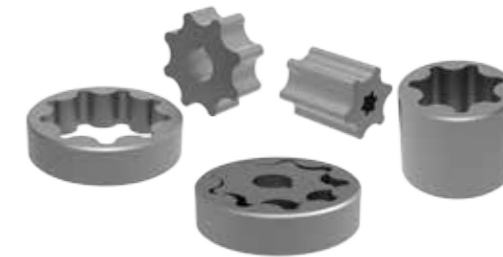
Modular design, shown on the example of the EP200



Rotor of a centrifugal pump, in this case also the rotor of the electric motor



Wheel sets of annular gear pumps



Rotor of a radial piston pump



Various flow and pressure generating components

## MOTOR

The pumps are driven by EC motors (electronically commutated motors, also known as brushless direct current motors) whose speed is adjustable according to demand. Normally, this is a design featuring permanent magnets in the rotor. The motors are preferably carried out as internal rotor designs, whereby the interior space of the motor can be either flooded or dry.

## MATERIALS

Valeo has been known for many years for the production of parts made from plastics (for example clutch master cylinder, clutch slave cylinder, gear shift actuator module and line components). Based on this expertise, the pumps are equally made mostly from high-quality and lightweight thermoplastics and thermosets.

## ELECTRONICS

For the operation of the pumps, all current standards like LIN, CAN or PWM can be realized. Of course, the discrete on/off operation at a defined speed is possible as well. Based on the control concept realized within the transmission design, the electric motors can be made available in block commutation or in sine commutation. Software functions relating to overload protection, self-protection of the component and diagnosis can also be offered according to customer specifications. Optionally, sensors (temperature, pressure) can be integrated into the control electronics.

## ADVANTAGES

- Due to the modular design: coverage of a broad application range
- Due to the modular design: fast and cost-efficient adaptability to requirements and specifications set by applications and customers
- Due to the lightweight design: reduction of consumption and emission levels
- Due to the on-demand power output: equally reduction of consumption and emission levels
- Due to the very compact design: highly flexible installation
- Due to the great flexibility in the choice of the materials to be used: very high freedom in the choice of the mounting position
- Due to the brushless design of the motor: low maintenance and high longevity

Pump housing and connection covers made from thermosetting plastics



## LUBRICATING GEAR SETS AND BEARINGS IN TRANSMISSIONS

# LUBRICATING OIL PUMP EP20

### OPERATING PRINCIPLE AND MOTOR

The EP20 is a low pressure centrifugal pump. It is driven by a single phase claw pole motor that operates according to demand, and it is controlled by integrated power electronics.

### FIELDS OF APPLICATION

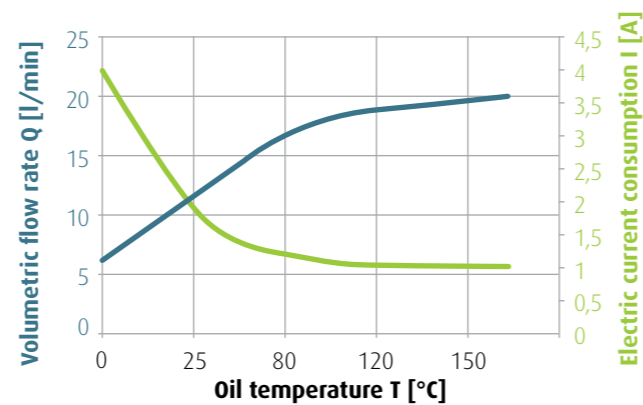
The pump is intended to lubricate gear sets and bearings in transmissions. Preferably, it transports the medium onto a higher level and delivers it into a container inside the transmission housing. From there, the medium flows through outlet openings and gets into the gear meshes and onto the bearing points which are thus lubricated and cooled. At that, a special filtering of the medium is not required. Due to this dry-sump principle, drag losses are avoided which usually arise in conventional splash lubrications, and this finally leads to a reduced fuel consumption.

Lubricating oil pump EP20



### TECHNICAL DATA EP20

Motor:	single phase EC motor
Operating medium:	ATF/MTF
Operating pressure:	0.05 to 0.1 bar
Volumetric flow rate:	7 to 20 l/min
Dimensions:	122 x 83 x 59 mm
Communication interface:	LIN
Operating voltage:	9 to 16 V
Operating temperature:	0 to +140 °C
Performance class:	20 W
Weight:	344 g
Protection class:	IP6K9K



Characteristic curve volumetric flow rate/electric current consumption over temperature, motor pump EP20, run with MTF oil at 12 V

## COOLING TRANSMISSIONS, WET CLUTCHES AND AUXILIARY UNITS

# COOLING OIL PUMP EP100

### OPERATING PRINCIPLE AND MOTOR

The EP100 is an annular gear pump. It is driven by a three phase EC motor that operates according to demand, and it is controlled by integrated power electronics.

### FIELDS OF APPLICATION

The pump is intended to lubricate and cool gear meshes, bearing points and wet clutches in transmissions. Mounted inside or outside the transmission, it can also cool auxiliary units which sit inside or outside the transmission and which may serve the most diverse purposes.

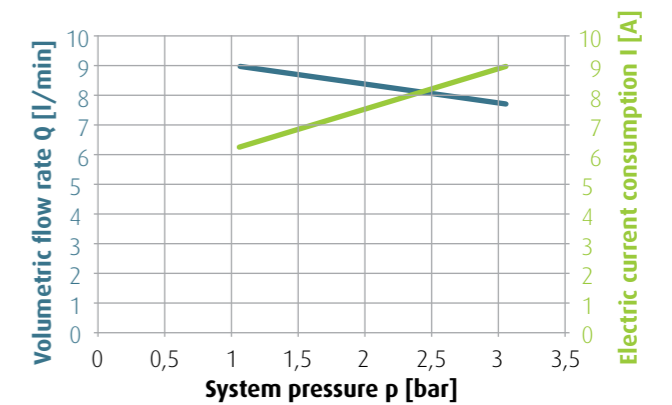
Cooling oil pump EP100



### TECHNICAL DATA EP100

Motor:	three phase EC motor
Operating medium:	ATF/MTF
Operating temperature at volumetric flow rate*:	1 bar @ 13 l/min to 3 bar @ 8 l/min
Dimensions:	130 x 90 x 85 mm
Communication interface:	LIN, PWM, CAN
Operating voltage:	9 to 16 V
Operating temperature:	-30 to +140 °C
Performance class:	100 W
Weight:	750 g
Protection class:	IP6K9K
Protection class:	IP6K9K

\* depending on the pump module



Exemplary characteristic curve volumetric flow rate/electric current consumption over pressure, motor pump EP100 with wheel set 1.7 cm<sup>3</sup>/r, run with MTF oil at 12 V and 80 °C

SUPPORTING START-STOP SYSTEMS

# AUXILIARY OIL PUMP EP200

## OPERATING PRINCIPLE AND MOTOR

The EP200 is an annular gear pump. It is driven by a three phase EC motor that operates according to demand, and it is controlled by integrated power electronics. Due to a corresponding choice of materials for certain parts, this model achieves a high power density.

## FIELDS OF APPLICATION

The pump is intended to support the start-stop driving cycle. It ensures that the transmission can be operated safely when the internal combustion engine is stationary.

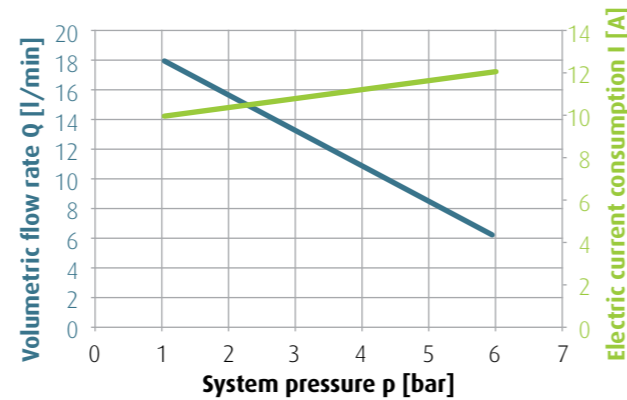
Auxiliary oil pump EP200



## TECHNICAL DATA EP200

Motor:	three phase EC motor
Operating medium:	ATF/MTF
Operating temperature at volumetric flow rate*:	2 bar @ 18 l/min to 6 bar @ 6 l/min
Dimensions:	130 x 90 x 95 mm
Communication interface:	LIN, PWM, CAN
Operating voltage:	9 to 16 V
Operating temperature:	-30 to +140 °C
Performance class:	200 W
Weight:	975 g
Protection class:	IP6K9K

\* depending on the pump module



Exemplary characteristic curve volumetric flow rate/electric current consumption over pressure, motor pump EP200 with wheel set 3.0 cm<sup>3</sup>/r, run with ATF oil at 12 V and 80 °C

ACTUATING CLUTCHES AND ASSISTING GEAR SHIFTING

# ACTUATOR PUMP EP300/500

## OPERATING PRINCIPLE AND MOTOR

The EP300/500 is an annular gear pump. It is driven by a three phase EC motor that operates according to demand, and it is controlled by integrated power electronics.

## FIELDS OF APPLICATION

The pressure level of this pump is higher than the one of the other models, and therefore this unit is intended as a drive for the functions clutch engagement and gear shifting inside the transmission.

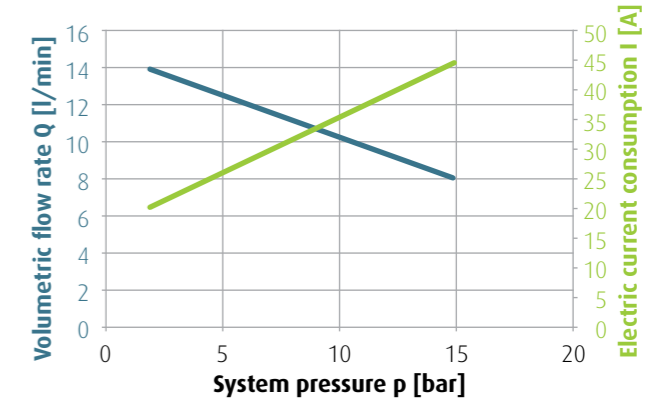
Actuator pump EP300/500



## TECHNICAL DATA EP300/500

Motor:	three phase EC motor
Operating medium:	ATF/MTF
Operating temperature at volumetric flow rate*:	3 bar @ 40 l/min to 15 bar @ 8 l/min
Dimensions:	135 x 99 x 110 mm
Communication interface:	LIN, PWM, CAN
Operating voltage:	9 to 16 V
Operating temperature:	-30 to +140 °C
Performance class:	300/500 W
Weight:	1200 g
Protection class:	IP6K9K

\* depending on the pump module



Exemplary characteristic curve volumetric flow rate/electric current consumption over pressure, motor pump EP300/500 with wheel set 1.6 cm<sup>3</sup>/r, run with ATF oil at 12 V and 80 °C



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