

Electrically Powered Hydraulic Steering (EPHS)

Advantages

- Multi-speed steering assist based on steering rate and vehicle speed
- Reduced steering effort at dry park and low speed
- Improved controllability at high speed
- Reduced vehicle fuel consumption (typically -0.2 litres / 100 km ECE-cycle)
- Reduced development time and cost
- Compact dimensions, easy to package and install



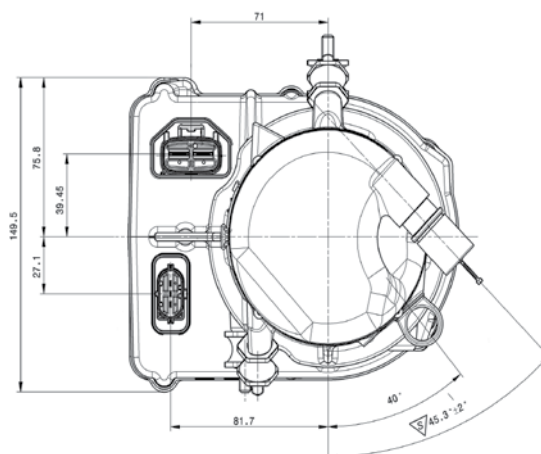
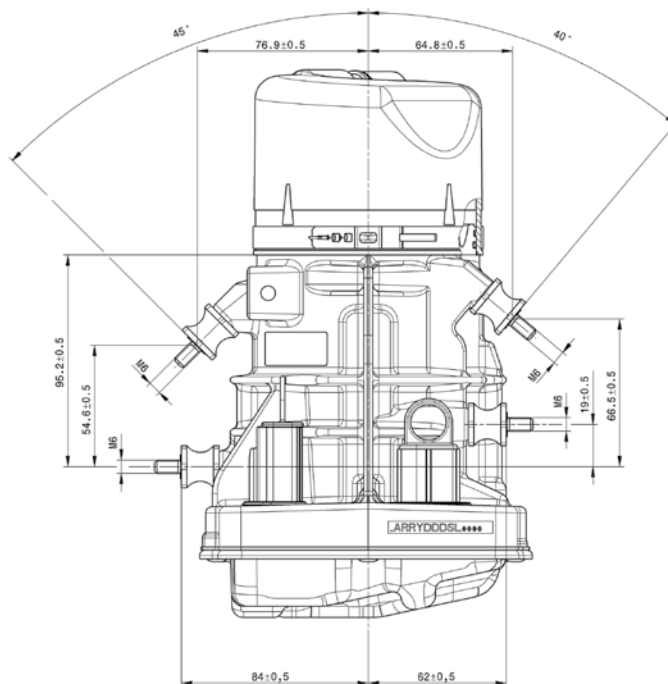
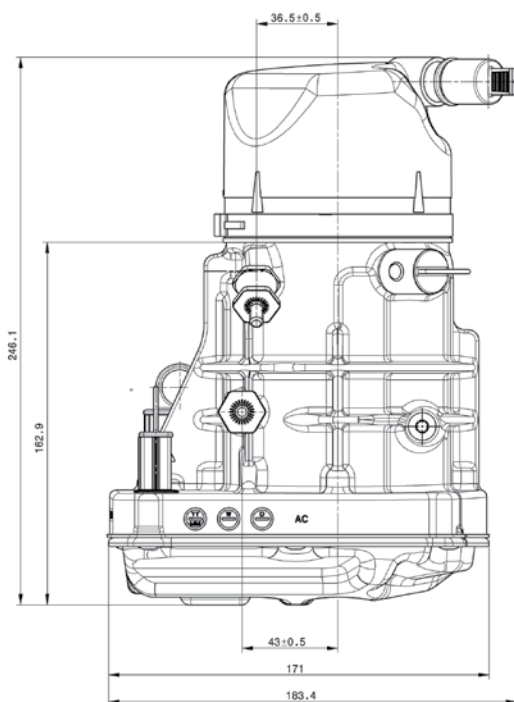
EPHS by ZF TRW is an innovative steering technology that allows a conventional hydraulic steering system to run without an engine driven pump. This can be used on conventional petrol and diesel vehicles as well as hybrid and electric vehicles.

The level of assist provided by EPHS can be varied depending on the vehicle speed and rate of steer, giving a tailored steering feel and substantial fuel savings over traditional hydraulic power steering.

Without the need for a direct connection to the engine, an EPHS pump can also ease packaging issues as it can be positioned virtually anywhere in the engine bay or in any other convenient location where it can be connected to the steering rack.

Technical Specification for 89-C EVO and 100-C Family

Motor Pump Unit	Integrated unit comprising an electric motor, a hydraulic pump, an electronic control unit (ECU), and reservoir
Electric Motor	Brushless PMAC rotor with inner rotor, sinusoidal commutation
Pump	Outer gear pump with constant displacement volume
Pump Flow	9.8 l/min (9.1 - 12.0 l/min)
Maximum System Pressure	113 - 124.5 bar
Speed Control	Fixed or multi-speed, steering rate and vehicle speed (with CAN input)
Hydraulic Power	890 - 1000 W
Maximum Current @ 13.5 V	98 - 115 A
Stand-by Current	2.5 A
Operating Temperature Range	-40°C to 105°C
Weight	4.5 - 5 kg



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