

# Product information

## EHS, Electro Hydraulic Steering unit

### New generation electric motor-pump unit with brushless motor including integrated drive electronics and patented gear profile low noise pump

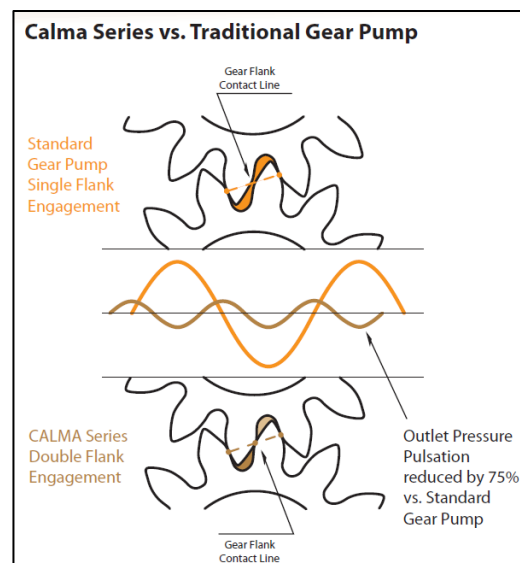


The Concentric EHS unit is specifically designed for steering applications for on highway heavy vehicles. Typically it can replace the conventional engine driven power steering pump in a bus or a truck. Its robust construction is designed for long life time, even in very tough conditions.

- Compact design; 370 x 150 x 170mm
- System weight: <20kg (depending on pump housing material choice)
- Simple installation
  - Electric: +, - and signal connector
  - Hydraulic: Suction and pressure
- Ingress protection class: IP6K9K
- Concentric EHS unit is designed to allow unprotected chassis mounting
- Environmentally fulfilling the following standards:  
ISO 16750-1:2006, -3:2012, -5:2010, ISO7637-2:2011

#### Gear pump features

- Concentric Calma low noise design gear pump design, patented gear profile
- 8,3cc displacement as standard, other displacements from 5,5cc to 31cc available upon request.
- Cast iron housing available as option to improve functionality in cold climate
- M26 suction port and M18 pressure port as standard, other port sizes available upon request
- Possibility to integrate pressure relief valve, Check valve or other valve functions inside the gear pump



# Product information

## EHS, Electro Hydraulic Steering unit

### Motor features

- BLPM DC-motor (BrushLess Permanent Magnet)
- 4,9kW peak output (smaller motors available upon request)
- 28VDC design (other voltages available upon request)
- Digital power electronics integrated
- Sinusoidal current wave form for maximum efficiency and ripple free rotation
- Built in magnetic high resolution magnetic encoder

### Integrated drive electronics features

- Connection via + and – studs and a separate signal connector
- Isolated CAN bus with J1939 protocol (CAN Open available upon request)
- Speed control down to 200rpm with full torque, to 50rpm with reduced torque (requires optional low speed pump design)
- Opto isolated input for enable signal, hardware start and output for fault (also via CAN bus)
- Self-protected against over temperature, overload, over- and under voltage
- Protection and fault messages via CAN or hard wire
- Integrated reverse polarity protection available upon request
- Designed to allow customized diagnostics
- Customized speed / torque performance and control algorithms to reduce system energy consumption and optimize solution to exact system requirement

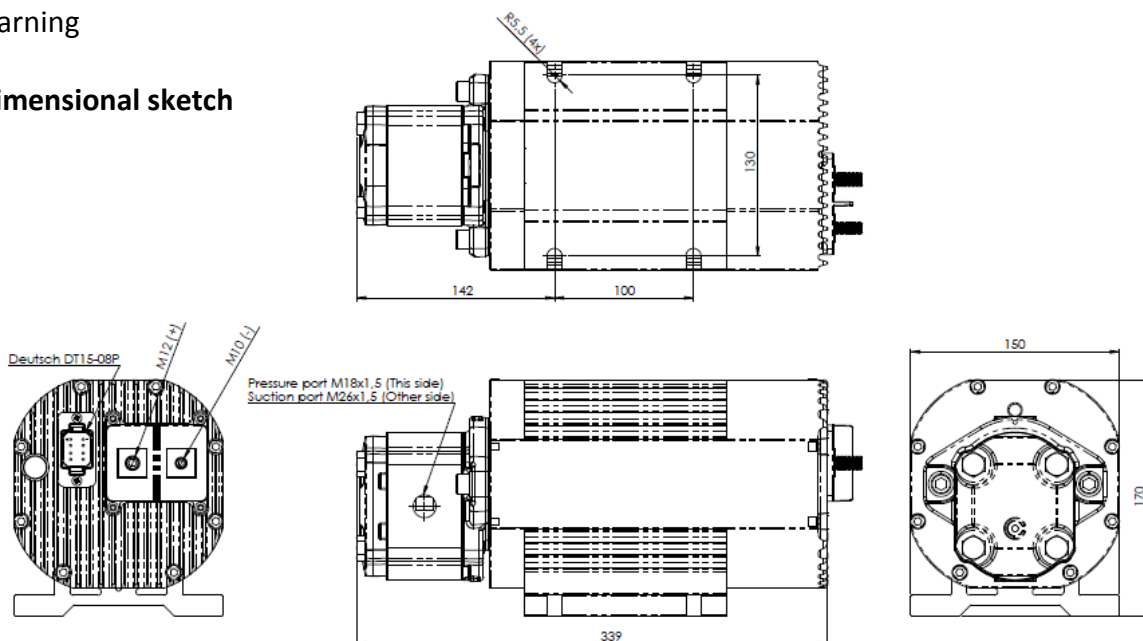
### Standard basic CAN bus capabilities

The Concentric EHS unit can be programmed to fit the demand of the application. The standard version has a simplified J1939 interface with the following signals:

Input: Speed signal

Outputs: Speed signal feedback, current consumption, fault indicator, over temperature warning

### Dimensional sketch



PRELIMINARY! MAY BE CHANGED WITHOUT NOTICE

# Product information

## EHS, Electro Hydraulic Steering unit



### Performance

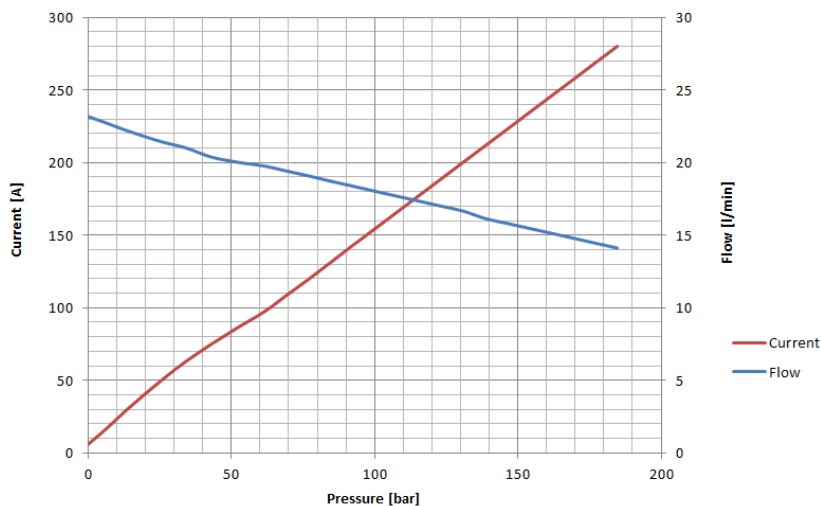
Nominal performance with 8,3cc pump and 28VDC constant voltage supply

S2 = 60min @ 35bar

S2 = 30s @ 185bar

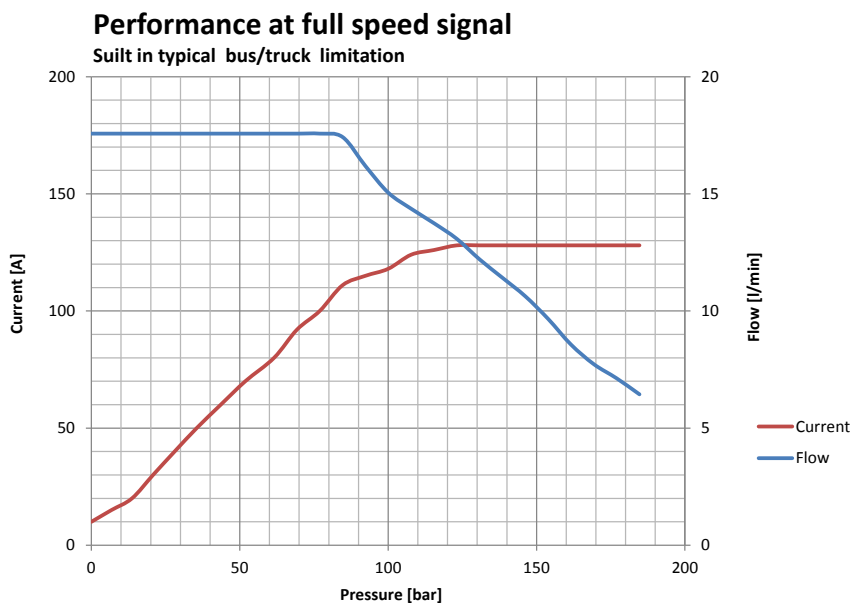
Graph showing maximum performance from Concentric standard EHS unit

Performance at full speed signal



The typical bus/truck limitations requires a flow of 16l/min. However there's normally no need for full flow at high pressure. Typically the maximum flow is programmed to be reduced at higher pressures to improve the system efficiency and keeping the peak current low.

Graph showing typical performance for bus/truck applications



PRELIMINARY! MAY BE CHANGED WITHOUT NOTICE