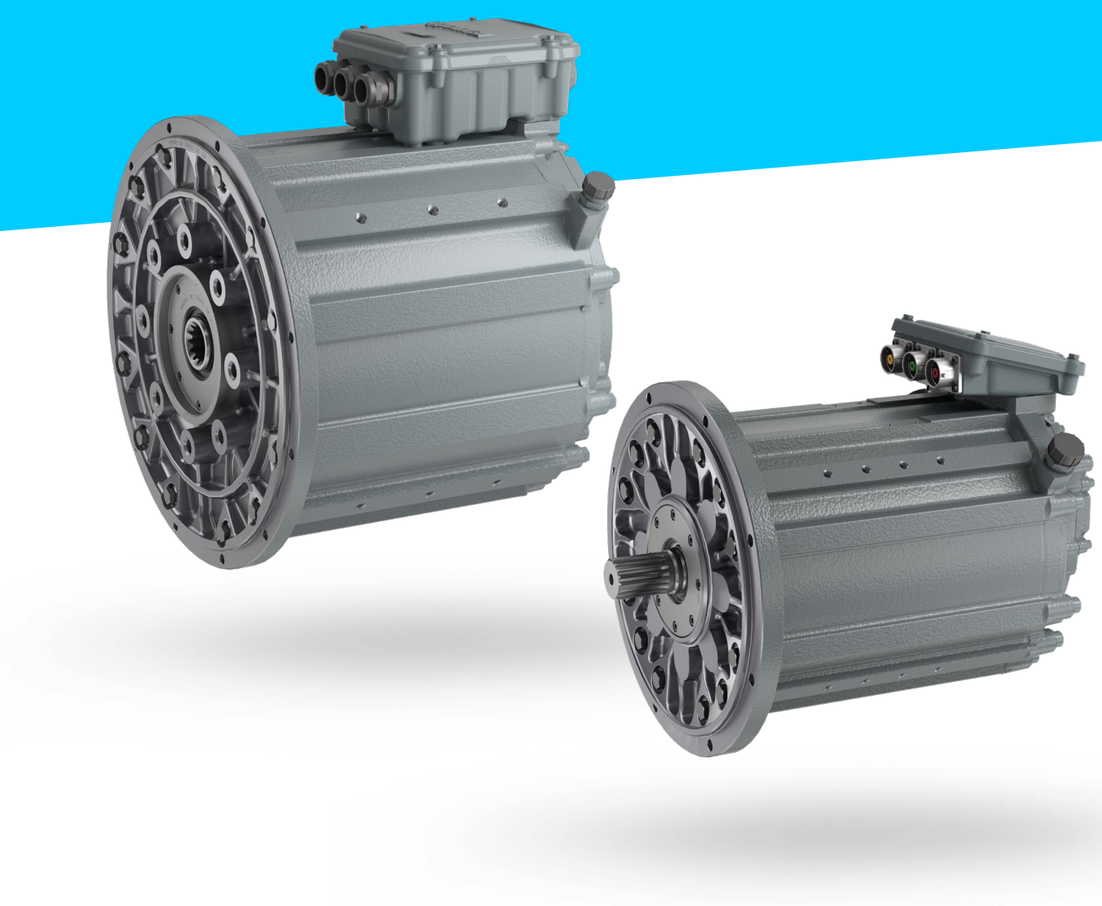
eLION Motor EMS1

Heavy duty design for Off-Highway applications

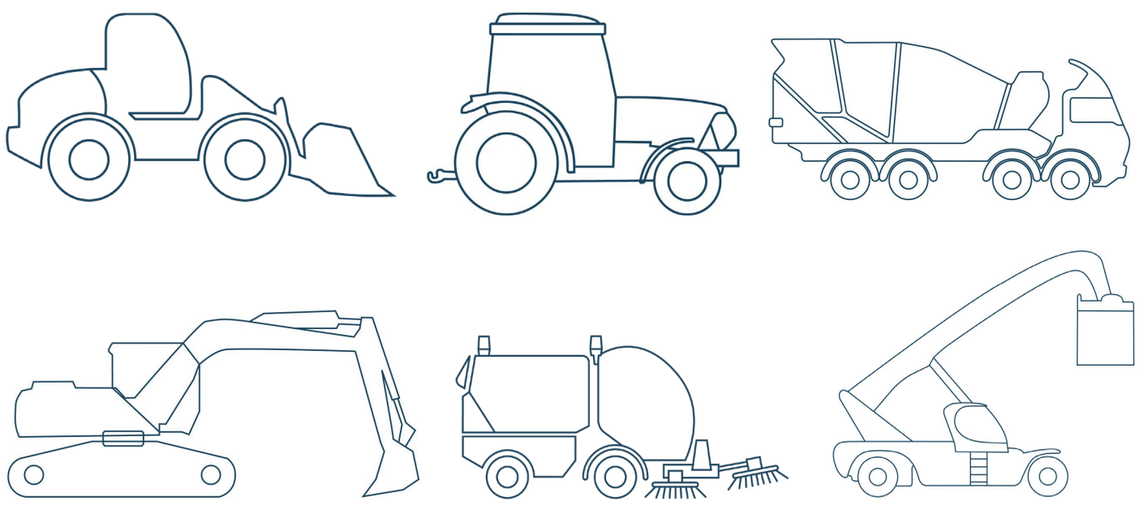


With environmental sustainability constantly in focus, Bosch Rexroth has designed its eLION high voltage solution portfolio specifically for the off-highway vehicle market. As a result, the demands for increased machine productivity and performance, as well as improved efficiency and minimized or even local zero emissions are met. With this leap into electrification, Bosch Rexroth strengthens its position as the engineering partner for off-highway vehicle manufacturers by relying on its existing application and technology know-how. The Rexroth eLION portfolio is perfect for providing electrified solutions for various functions in off-highway vehicles, whether they be diesel-electric, hybrid, or fully-electric.

CUSTOMER BENEFITS

- Durable and robust design to endure off-highway conditions
- Optimized electrical machines for various functions
- Modular and scalable portfolio
- Easy integration with standardized mechanical interfaces
- High Efficiency
- Sustainable designs and solutions for mobile machines

APPLICATIONS



FUNCTION AND BENEFITS

Durable and robust design to endure off-highway conditions
The off-highway conditions demand high component protection against the rugged and harsh environment. The new Rexroth eLION solution portfolio is fully equipped with top-of-the-line protection. The components are rated up to IP6K9K, include 50g shock and 10g vibration resistance, and enables safety functionalities compliant with ISO 13849 and 25119 up to PL d.

Optimized electrical machines for various functions
To serve the off-highway market for applications such as construction, excavator, agriculture, material handling, among others, the eLION motor portfolio is available in various performance capacities. By taking advantage of the broad portfolio, various machine systems can be realized – such as travel drive, implements, or swing drive.

Modular and scalable portfolio
To serve the many vehicle sizes, applications, and electrification topologies in the off-highway market, Bosch Rexroth has developed a scalable eLION solution portfolio to serve the different machine types, functions and sizes. The portfolio includes various diameters, lengths, and winding designs to achieve 8 – 229 kW and 75 – 1305 Nm, continuous power and torque range, respectively.

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TECHNICAL DATA

eLION Motor EMS1

Variants:	EMS1-10	EMS1-13	EMS1-16	EMS1-20
Axial Radius (mm):	100	130	160	200
Nom. Power (kW):	8 - 72	16 - 123	40 - 127	73 - 229
Max. Power (kW):	12 - 170	28 - 367	54 - 283	114 - 553
Nom. Torque (Nm):	75 - 155	155 - 320	385 - 705	700 – 1,305
Max. Torque (Nm):	165 - 330	335 - 665	650 – 1,295	1,265 – 2,520
Max. Speed (rpm):	12,000	10,500	5,500	4,000
Data sheet:	96710	96711	96712	96713

Easy integration with standardized mechanical interfaces
A benefit of the Rexroth eLION portfolio solutions is the simplicity of connecting the motors with axles, pumps and gearboxes using application selected flanges according to SAE J617 and SAE J744 as well as hub and spline shafts according to ANSI B92.1 and DIN 5480. In doing so, adaption flanges or reduction connection stages are avoided. Therefore, savings on weight, costs, and maintenance are achieved (see table: Mechanical Interfaces for Motors).

High Efficiency
Throughout the operating range, the eLION motor reaches peak efficiencies over 97 % over a wide range of speeds and torques. This is due to the selected materials and advanced magnetic design of the motor.

Sustainable designs and solutions for mobile machines
The eLION portfolio enables sustainable machine solutions, which offer a reduced or demanded local zero emissions. Through precise control and electrification of functions such as traction or implements, both efficiency and machine performance are enhanced. And of course, the substantial reduction, or complete elimination, of local emissions and overall machine noise emitted assists Bosch Rexroth in contribution.

Mechanical Interfaces for Motors

Connection:		EMS1-10	EMS1-13	EMS1-16	EMS1-20
Engine	Flange *(acc. SAE J617)*	Compact Motor Flange*	SAE 5	SAE 4	SAE 2
	Shaft *(acc. DIN 5480)*	W28x2x12x9H	W40x2x18x9d	W50x2x24x9H	W55x2x26x8f
Pump	Flange *(acc. SAE_744)*	SAE B2	SAE C4 SAE C4/C2	SAE C4/C2 SAE D4	SAE D4
	Shaft *(acc. ANSI B92.1)*	N 7/8 13T 16/32 DP	N1 1/4 14T 12/24 DP	N1 1/4 14T 12/24 DP N1 3/4 13T 8/16 DP	N1 3/4 13T 8/16 DP
Gearbox	Flange *(acc. SAE J617)*	Compact Motor Flange*	SAE 5	SAE 4	SAE 2
	Shaft *(acc. DIN 5480)*[1] *(acc. ANSI B92.1)*[2]	W28x2x12x9H[1] N 7/8 13T 16/32 DP[2]	W40x2x18x9d[1] N1 1/4 14T 12/24 DP[2]	W50x2x24x9H[1] N1 1/4 14T 12/24 DP[2] N1 3/4 13T 8/16 DP[2]	W55x2x26x8f[1] N1 3/4 13T 8/16 DP[2]

* Customized and/or reduced size

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