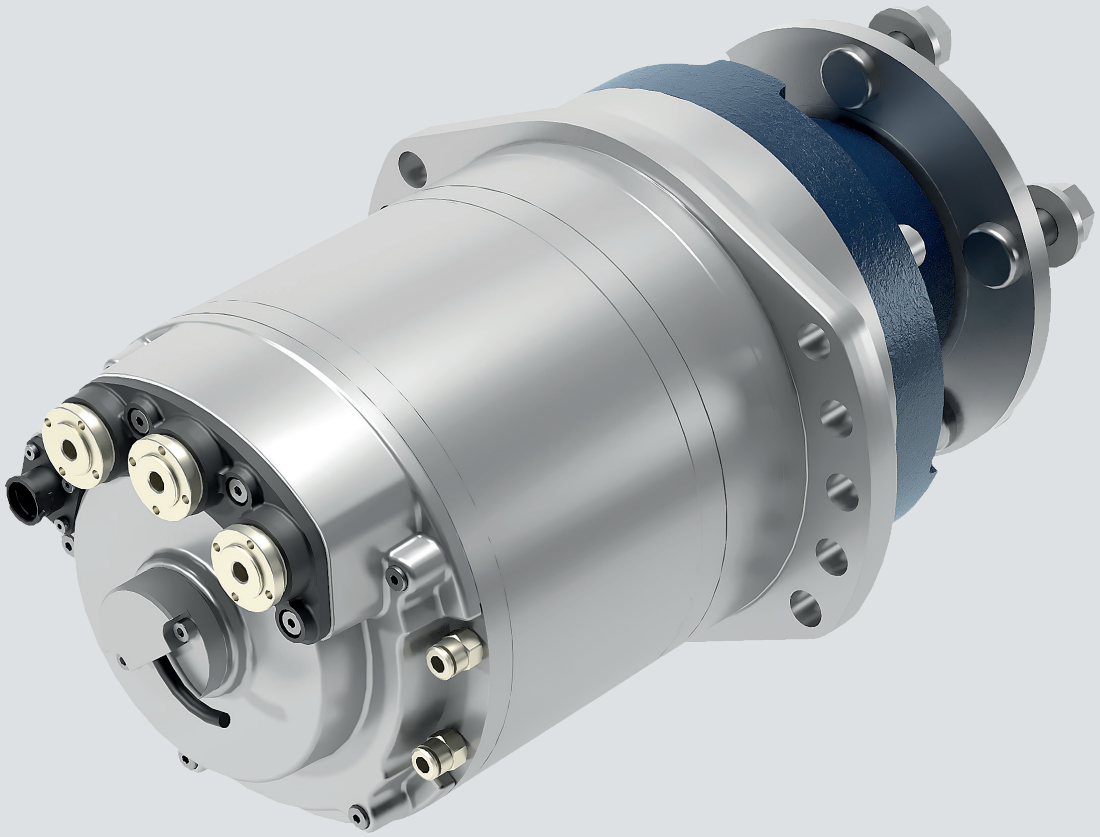
MSM Series

Electric motorwheels



SIBONI
A BONDIOLI & PAVESI COMPANY

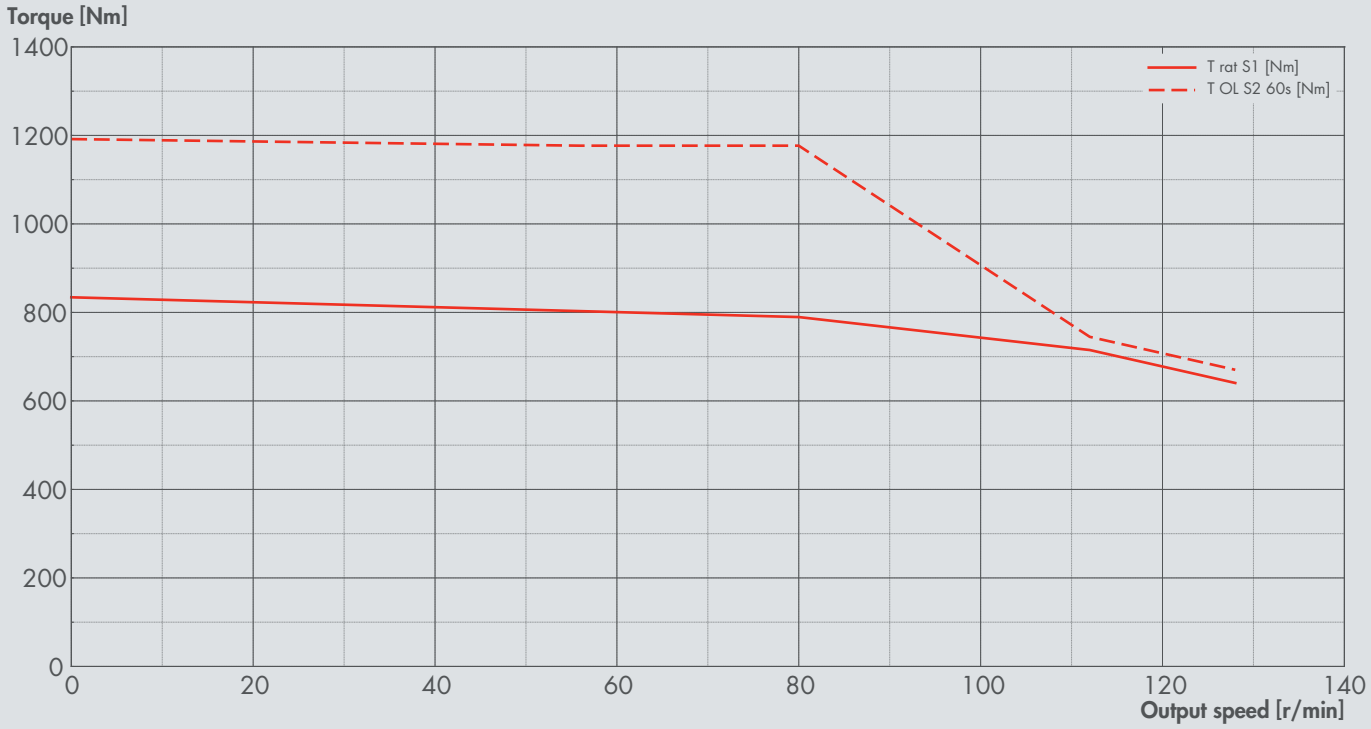
398SEM004EN03 - 01-07-2026

Electric Wheel Hub Motor for Off-Highway Applications

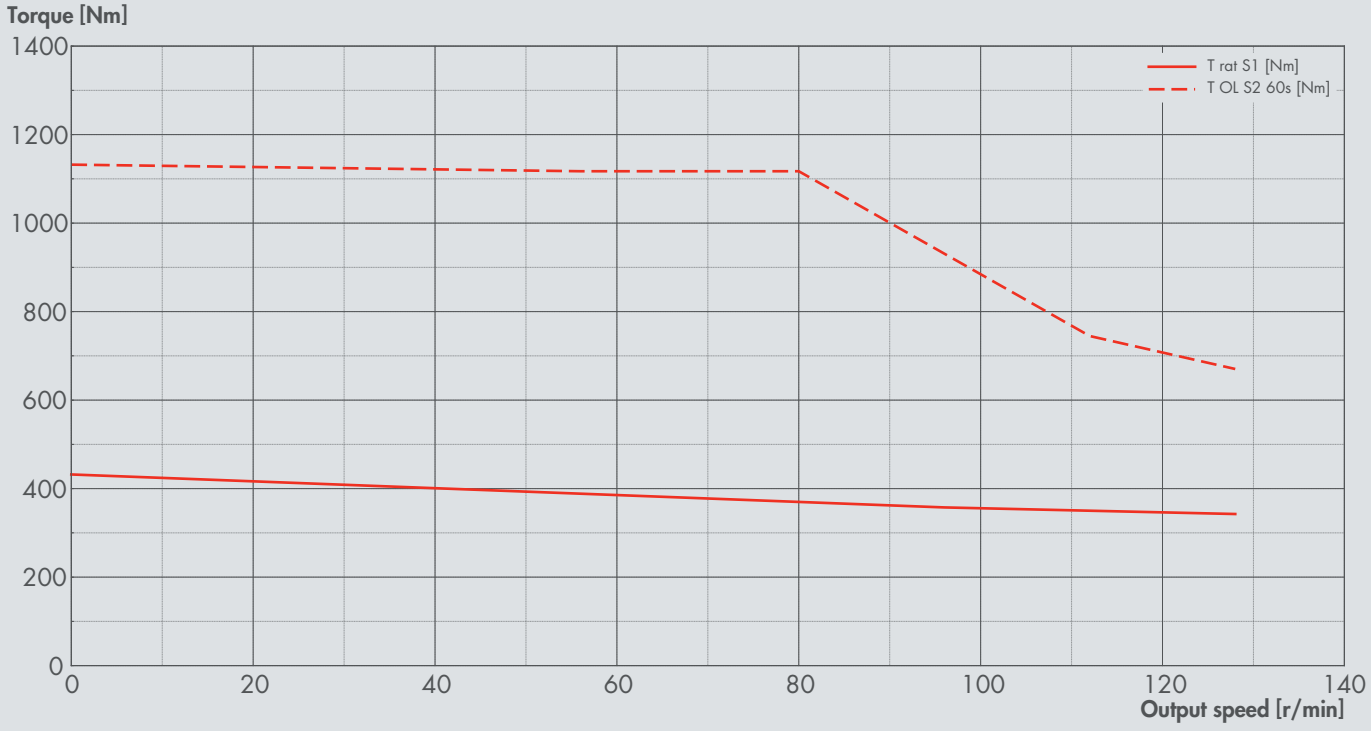
Our **wheel hub motor** combines a high-performance brushless electric motor with an integrated gearbox, specifically designed to accelerate the electrification of the **off-highway sector**.
This innovative solution addresses the growing demand for sustainable mobility across agriculture, municipal vehicles, and construction machinery.
The motor has been **engineered to fit seamlessly inside the wheel**, ensuring maximum space efficiency while delivering **optimal power density**.
Its compact architecture minimizes overall dimensions, offering manufacturers greater freedom in vehicle design without compromising on performance.
To enhance safety and reliability, the unit comes with a **built-in parking brake**, complete with a **mechanical release system** for emergency operation in the event of vehicle failure.
This feature ensures uninterrupted functionality even in the toughest working conditions.
Designed for durability, the motor offers **robust construction and a high protection rating**, making it suitable for challenging environments where resistance to dust, water, and extreme conditions is essential.
Operating within a **48V power supply range**, the wheel hub motor is perfectly aligned with the needs of battery-powered equipment, combining efficiency, safety, and versatility.
This product sets a new standard in **electric traction solutions**, helping industries move toward a cleaner, smarter, and more efficient future.

Torque/Speed Characteristics

Liquid Cooling



Air Cooling

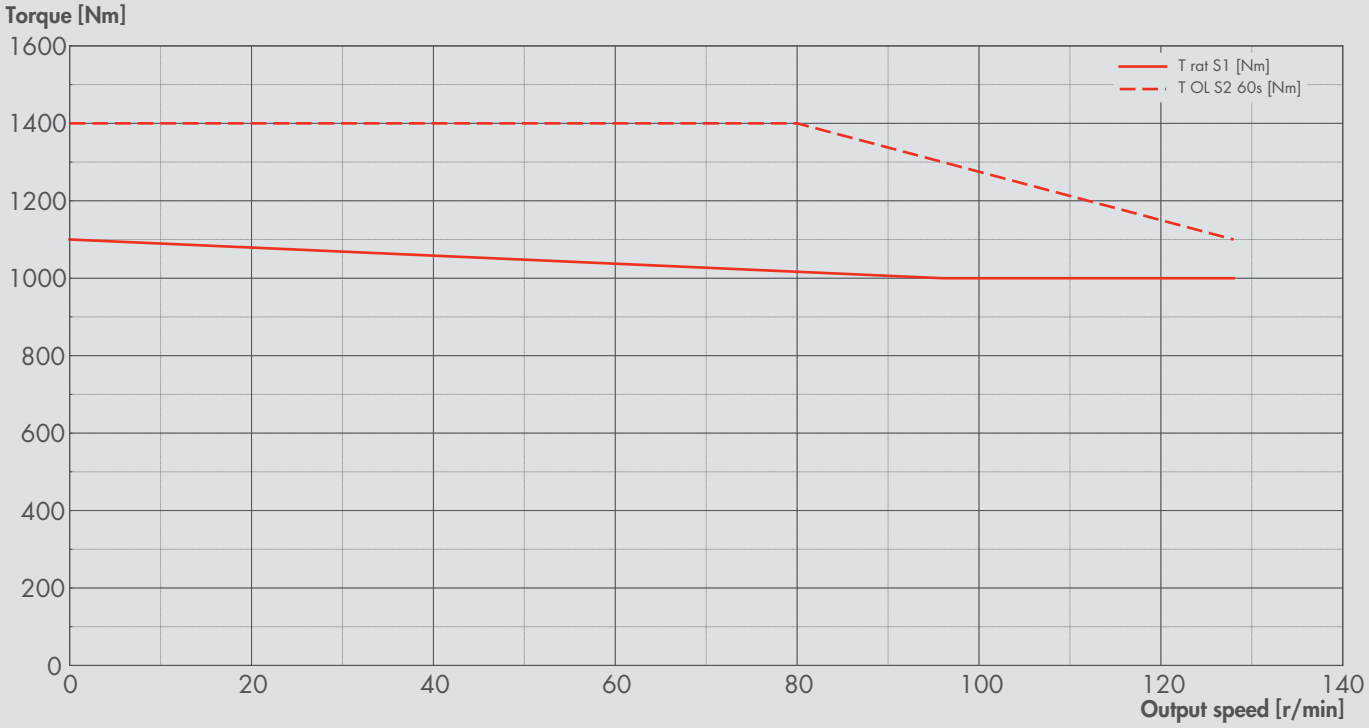


Performance and specifications

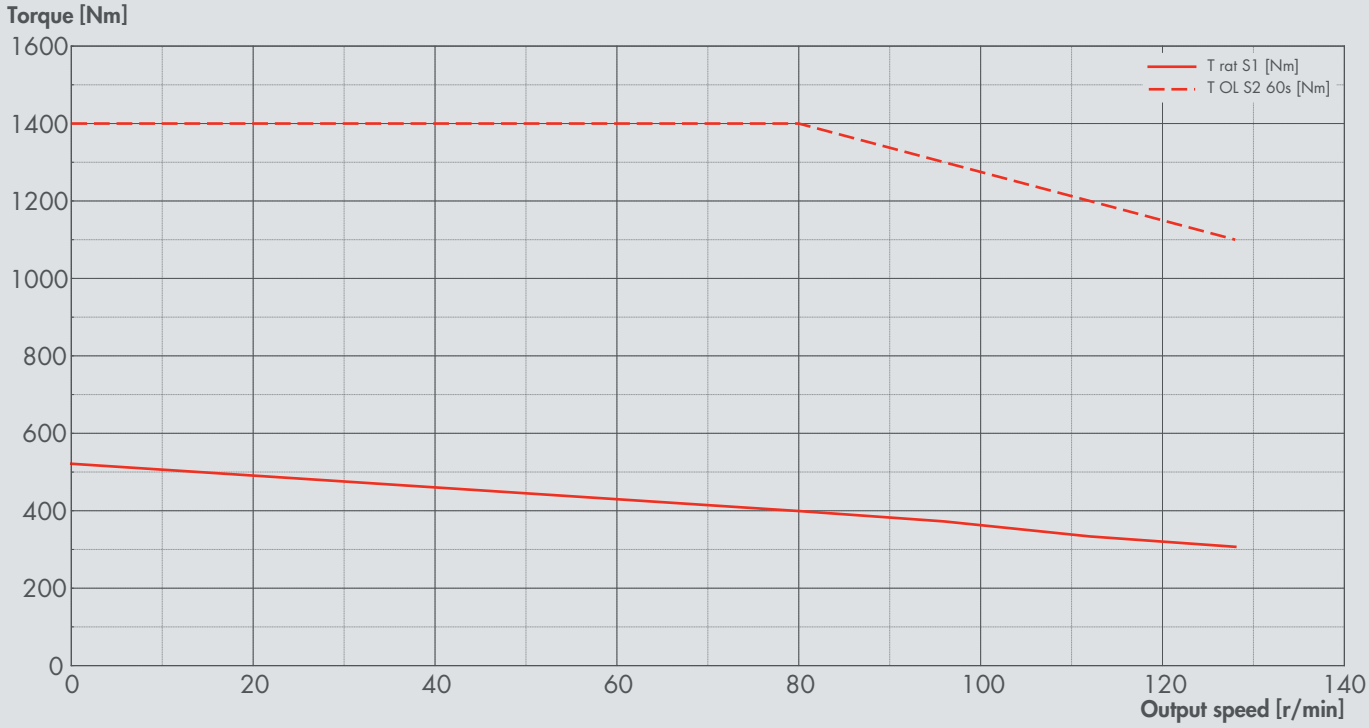
MOTOR MODEL		MSM 050	
Reduction ratio		31.36	
Winding code		MSM187A	MSM182A
GENERAL DATA			
Cooling		Liquid	Air
Voltage Supply	V_{dc}	48	
Stall torque	Nm	835	430
Stall current	A_{rms}	209	116
Rated power	kW	8	3,5
Rated speed	r/min	95	
Rated torque	Nm	750	350
Rated current	A_{rms}	204	102
Peak torque	Nm	1170	1115
Peak current	A_{rms}	316	296
Torque costant ±5% (at 25°C)	Nm/A_{rms}	3,7	
Voltage constant ±5%	V_{rms}/[k(r/min)]	8	
Winding Resistance Phase Phase ±5% (at 25°C)	ohm	8,6	
Winding Inductance Phase Phase ±5%	mH	0,1	
Pole number		10	
ΔT_{MAX} Winding	°C	105	
MECHANICAL DATA			
Mineral gearbox oil type		ISO VG 150/220 EP	
Mineral gearbox oil quantity	ml	400	
Weight	kg	35,5	
PARKING BRAKE (option)			
Rated voltage +6 / -10%	V_{dc}	24	
Rated current at 20°C	A	1,1	
Weight	Kg	1,6	
Holding torque	Nm	1100	
ROTOR POSITION SENSOR SIN-COS (single ended)			
Supply	V	5V +/- 5%	
Max current consumption	mA	30	
Internal serial impedence	Ohm	100	
Amplitude	V	2.2 +/- 0.2 Vpp	
Signal offset	V	2.5 +/- 1%	
THERMAL SENSOR PT1000			
Type		PT1000-R8/2-2F	
Resistence at 20° / Resistance at 100°	Ohm	1078 / 1385	
Precision	°C	+/- (0.3-0.005t)	

Torque/Speed Characteristics

Liquid Cooling



Air Cooling

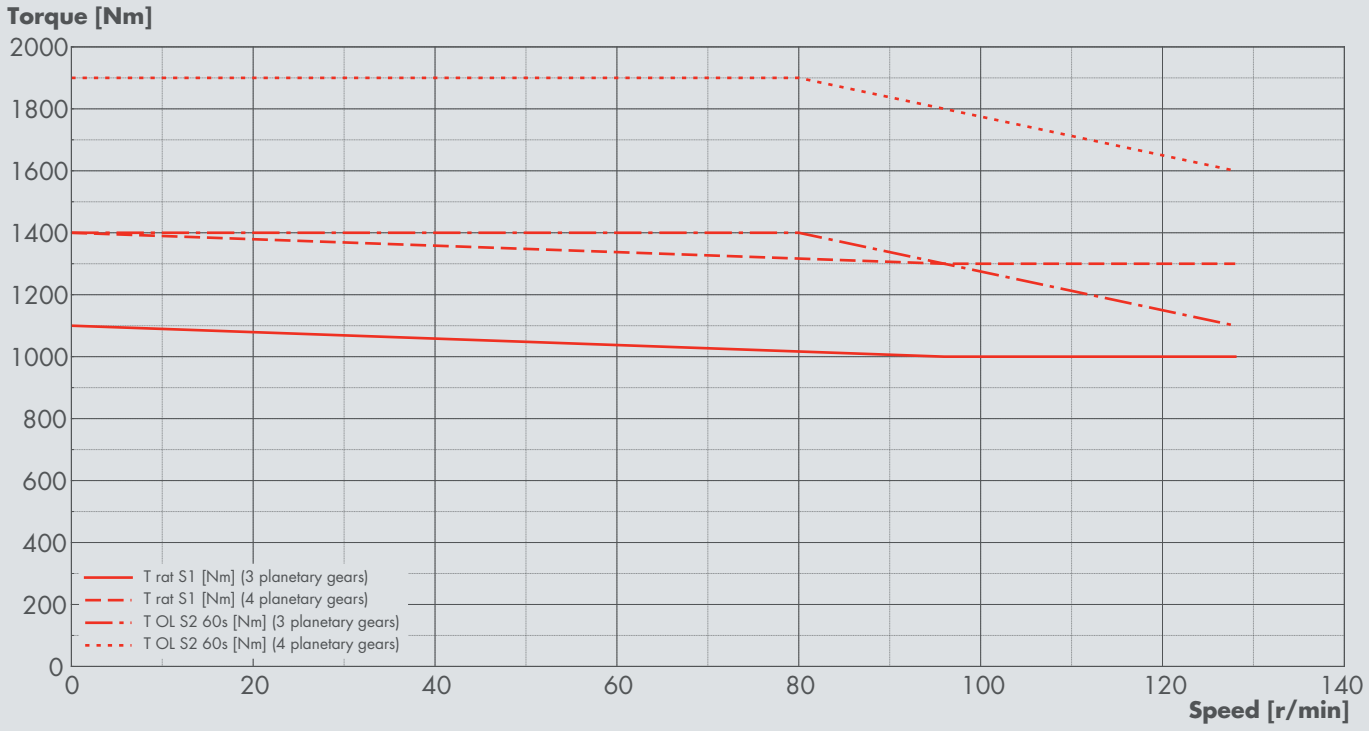


Performance and specifications

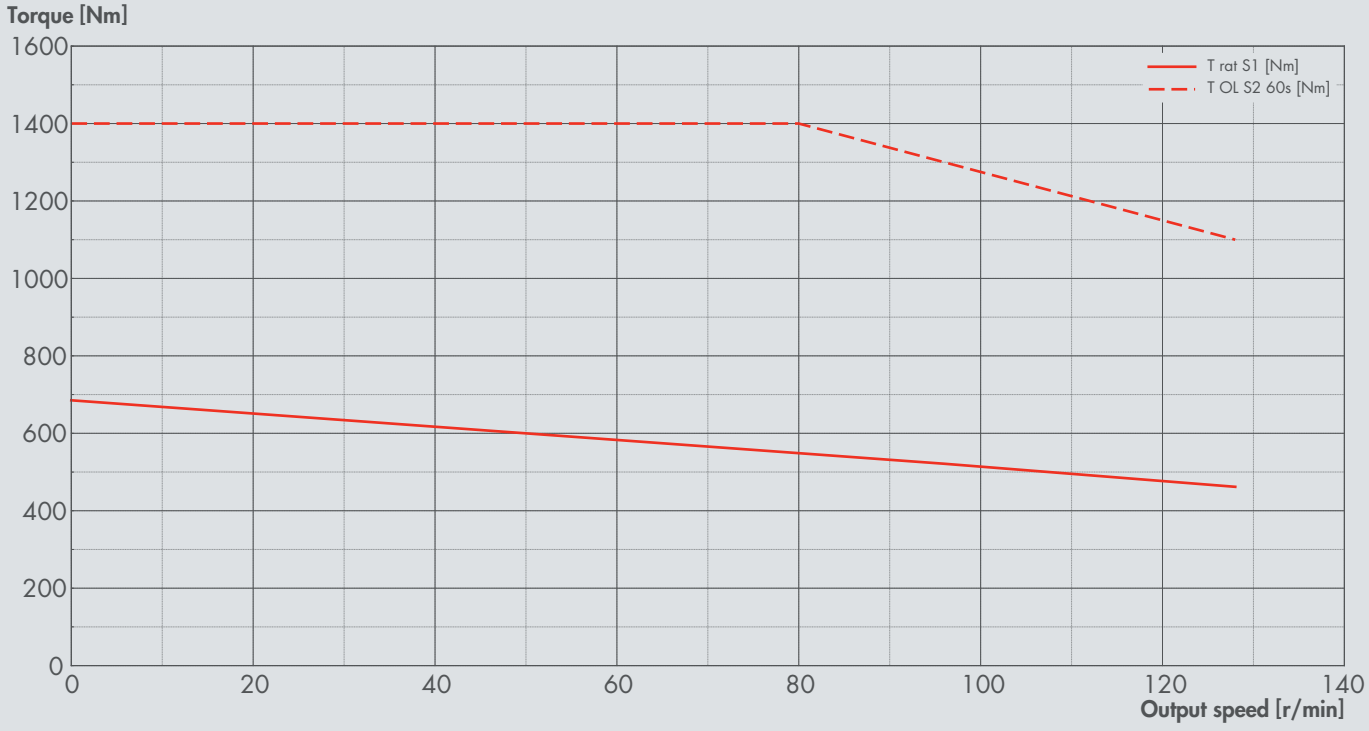
MOTOR MODEL		MSM 075	
Reduction ratio		31.36	
Winding code		MSM188A	MSM183A
GENERAL DATA			
Cooling		Liquid	Air
Voltage Supply	**V_{dc}**	48	
Stall torque	**Nm**	1100	520
Stall current	**A_{rms}**	295	150
Rated power	**kW**	11	4
Rated speed	**r/min**	96	
Rated torque	**Nm**	1000	370
Rated current	**A_{rms}**	314	111
Peak torque	**Nm**	1400	
Peak current	**A_{rms}**	390	
Torque costant ±5% (at 25°C)	**Nm/A_{rms}**	3,7	
Voltage constant ±5%	**V_{rms}/[k(r/min)]**	7,75	
Winding Resistance Phase Phase ±5% (at 25°C)	**ohm**	4,9	
Winding Inductance Phase Phase ±5%	**mH**	0,06	
Pole number		10	
ΔT_{MAX} Winding	**°C**	105	
MECHANICAL DATA			
Mineral gearbox oil type		ISO VG 150/220 EP	
Mineral gearbox oil quantity	**ml**	400	
Weight	**kg**	38,5	
PARKING BRAKE (option)			
Rated voltage +6 / -10%	**V_{dc}**	24	
Rated current at 20°C	**A**	1,1	
Weight	**Kg**	1,6	
Holding torque	**Nm**	1100	
ROTOR POSITION SENSOR SIN-COS (single ended)			
Supply	**V**	5V +/- 5%	
Max current consumption	**mA**	30	
Internal serial impedence	**Ohm**	100	
Amplitude	**V**	2.2 +/- 0.2 Vpp	
Signal offset	**V**	2.5 +/- 1%	
THERMAL SENSOR PT1000			
Type		PT1000-R8/2-2F	
Resistence at 20° / Resistance at 100°	**Ohm**	1078 / 1385	
Precision	**°C**	+/- (0.3-0.005t)	

Torque/Speed Characteristics

Liquid Cooling



Air Cooling

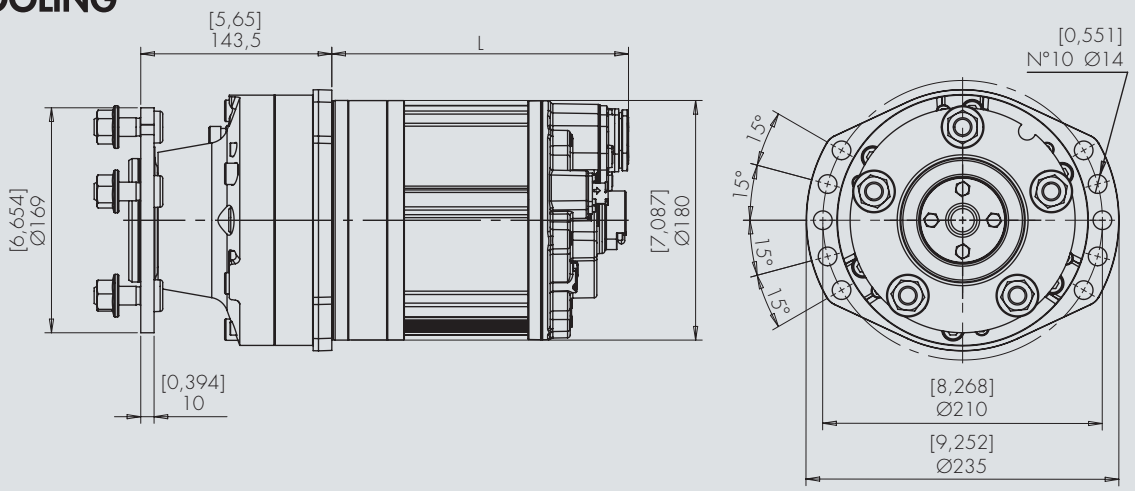


Performance and specifications

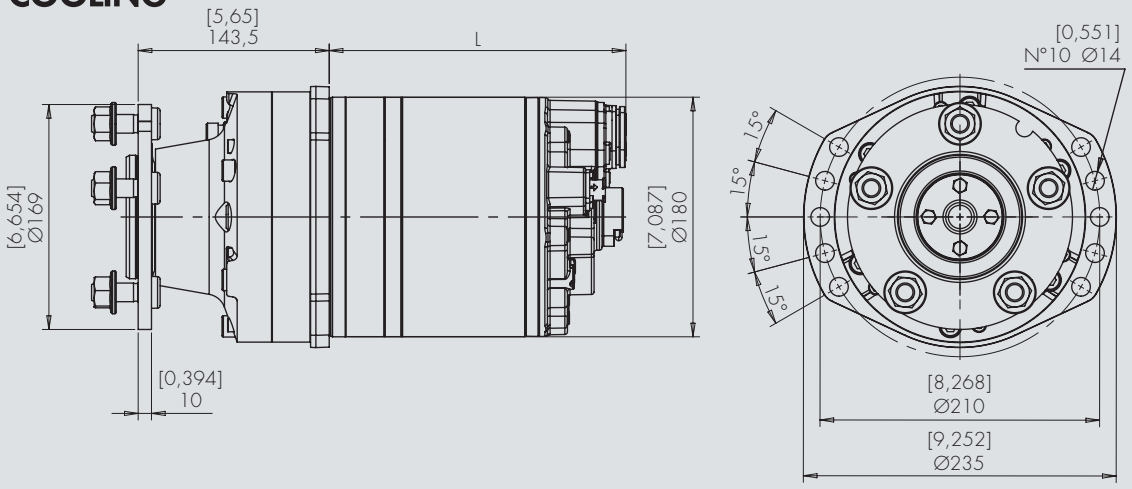
MOTOR MODEL		MSM 100	
Reduction ratio		31.36	
Winding code		MSM189A	MSM184A
GENERAL DATA			
Cooling		Liquid	Air
Voltage Supply	**V_{dc}**	48	
Stall torque	**Nm**	1100 (1400*)	680
Stall current	**A_{rms}**	275	183
Rated power	**kW**	16	5,5
Rated speed	**r/min**	96	
Rated torque	**Nm**	1000 (1400*)	520
Rated current	**A_{rms}**	305	147
Peak torque	**Nm**	1400 (1900*)	
Peak current	**A_{rms}**	360	
Torque costant ±5% (at 25°C)	**Nm/A_{rms}**	3,7	
Voltage constant ±5%	**V_{rms}/[k(r/min)]**	8,25	
Winding Resistance Phase Phase ±5% (at 25°C)	**ohm**	3,8	
Winding Inductance Phase Phase ±5%	**mH**	0,05	
Pole number		10	
ΔT_{MAX} Winding	**°C**	105	
MECHANICAL DATA			
Mineral gearbox oil type		ISO VG 150/220 EP	
Mineral gearbox oil quantity	**ml**	400	
Weight	**kg**	42,5 (43,5*)	
PARKING BRAKE (option)			
Rated voltage +6 / -10%	**V_{dc}**	24	
Rated current at 20°C	**A**	1,1	
Weight	**Kg**	1,6	
Holding torque	**Nm**	1100	
ROTOR POSITION SENSOR SIN-COS (single ended)			
Supply	**V**	5V +/- 5%	
Max current consumption	**mA**	30	
Internal serial impedence	**Ohm**	100	
Amplitude	**V**	2.2 +/- 0.2 Vpp	
Signal offset	**V**	2.5 +/- 1%	
THERMAL SENSOR PT1000			
Type		PT1000-R8/2-2F	
Resistence at 20° / Resistance at 100°	**Ohm**	1078 / 1385	
Precision	**°C**	+/- (0.3-0.005t)	

*for 4 planet gears version

AIR COOLING

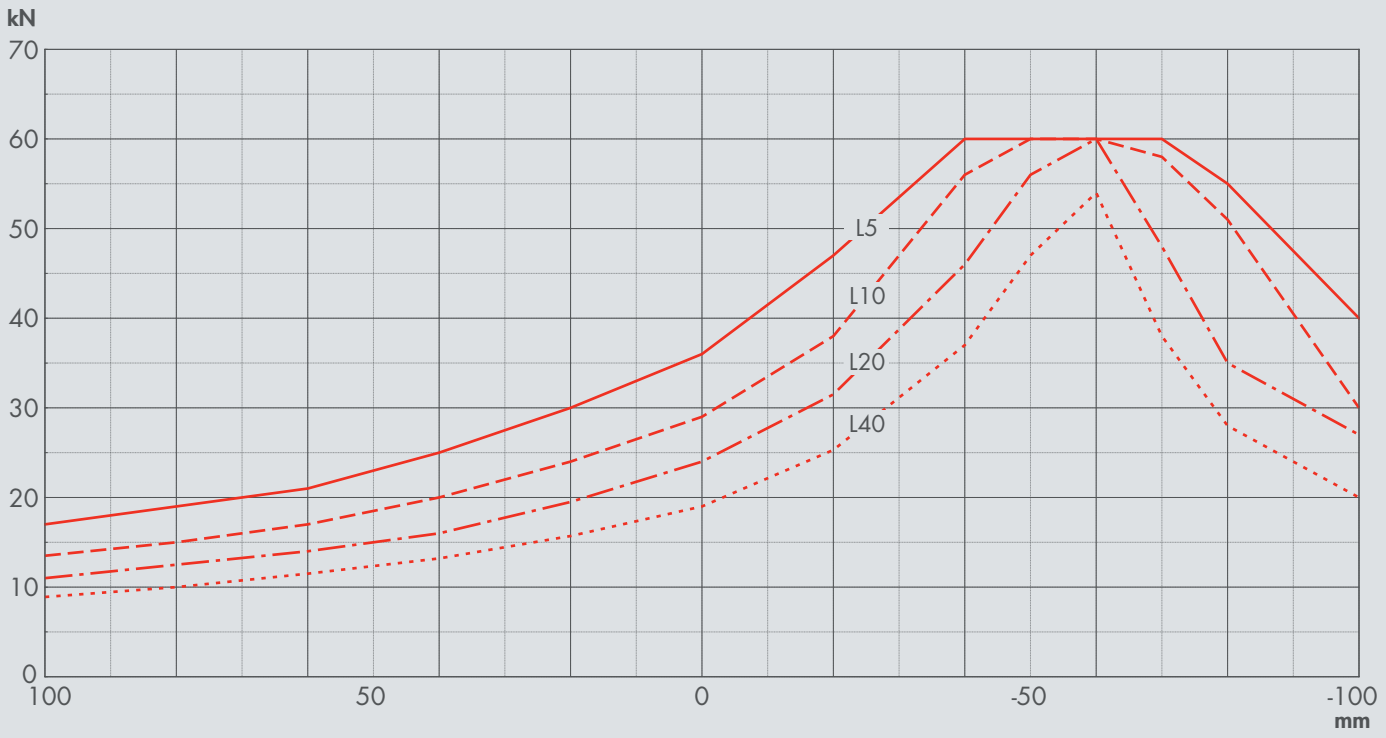


LIQUID COOLING

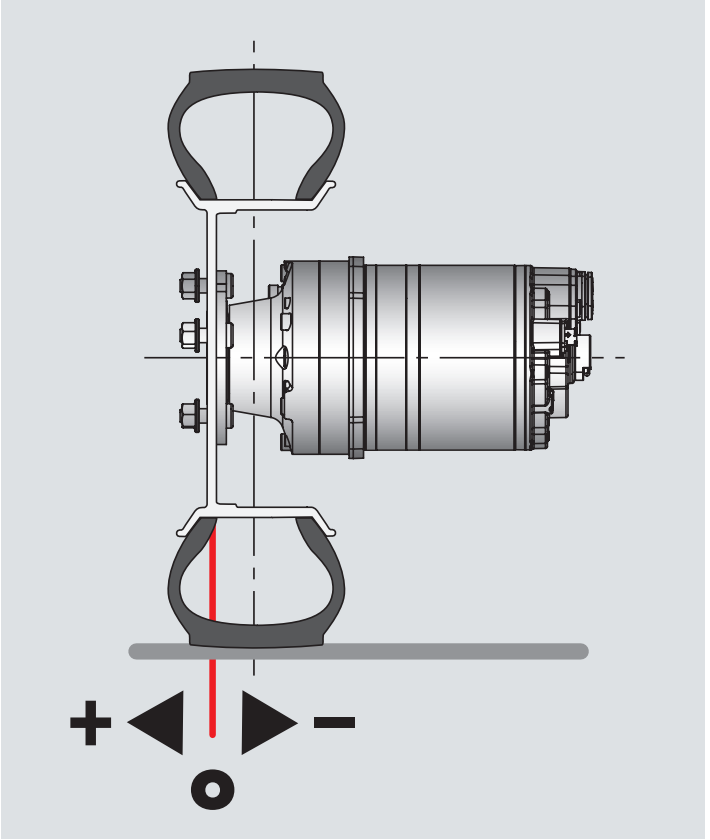


SIZE	L	
	mm	inch
MSB 050	223	8,8
MSB 075	248	9,8
MSB 100	273	10,7

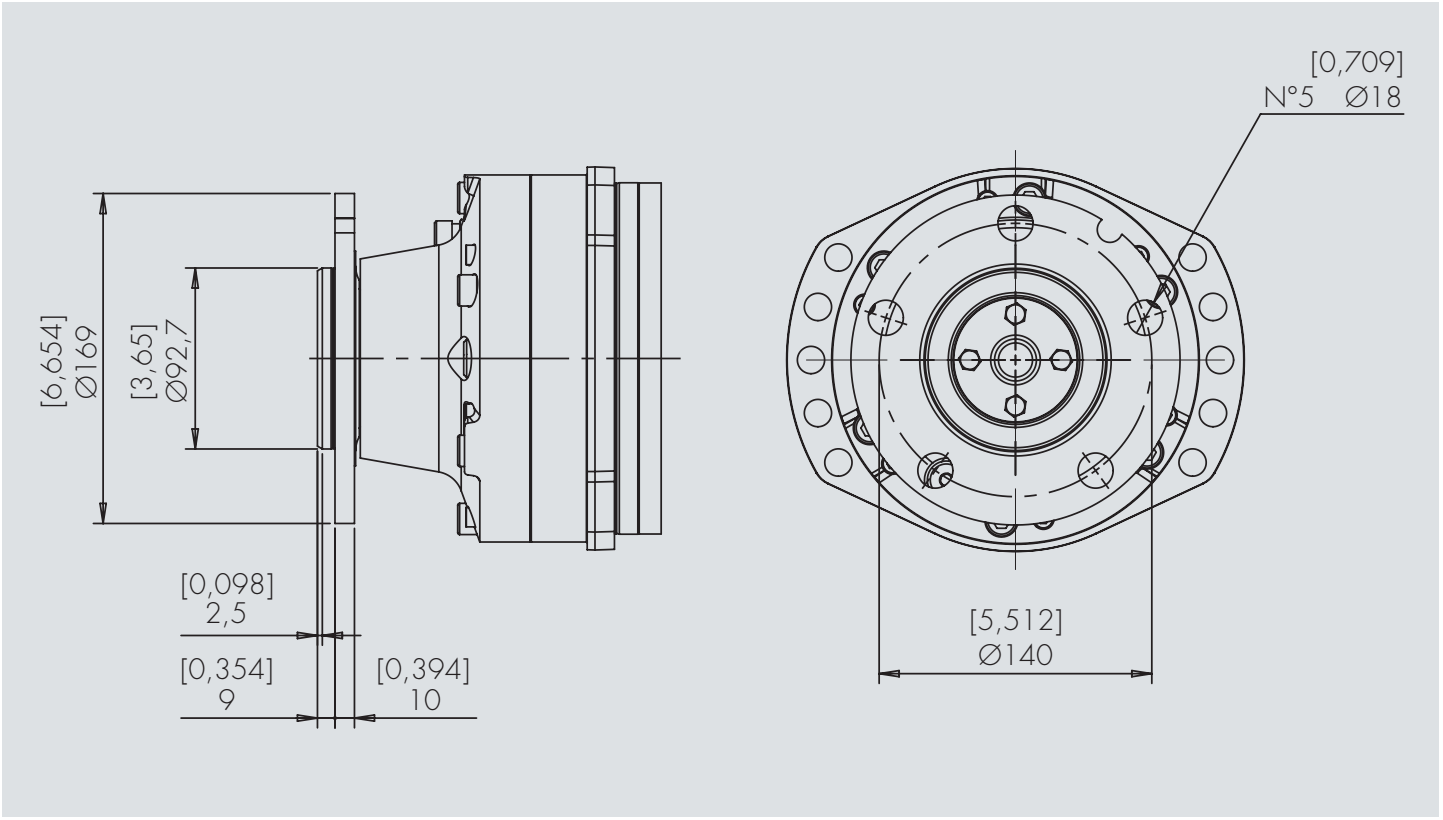
Radial load and service life of bearings



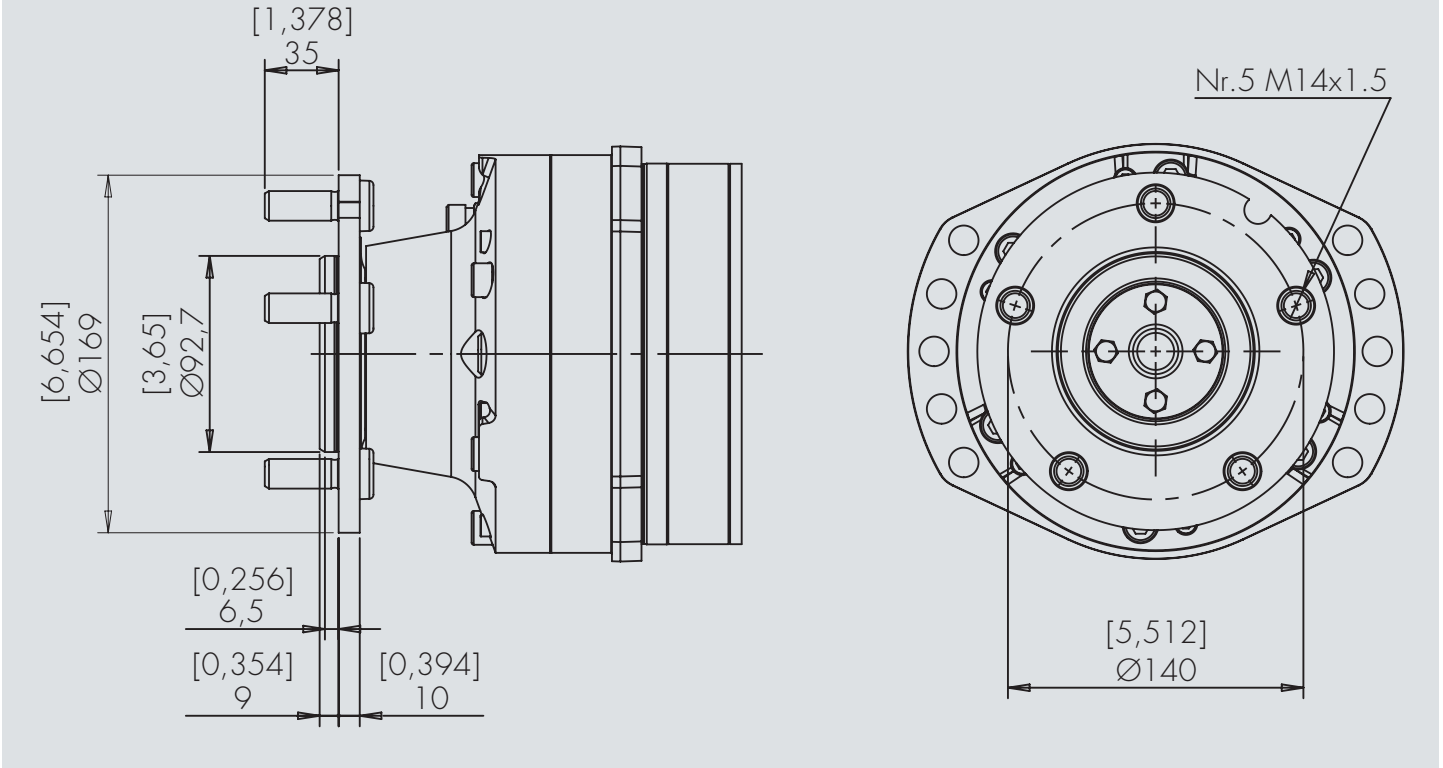
The curves of the permissible radial loads Fr, as a function of the abscissa x (distance from the wheel mounting surface), show the value corresponding to the service life L in millions of cycles of the bearings, calculated on the basis of ISO281.



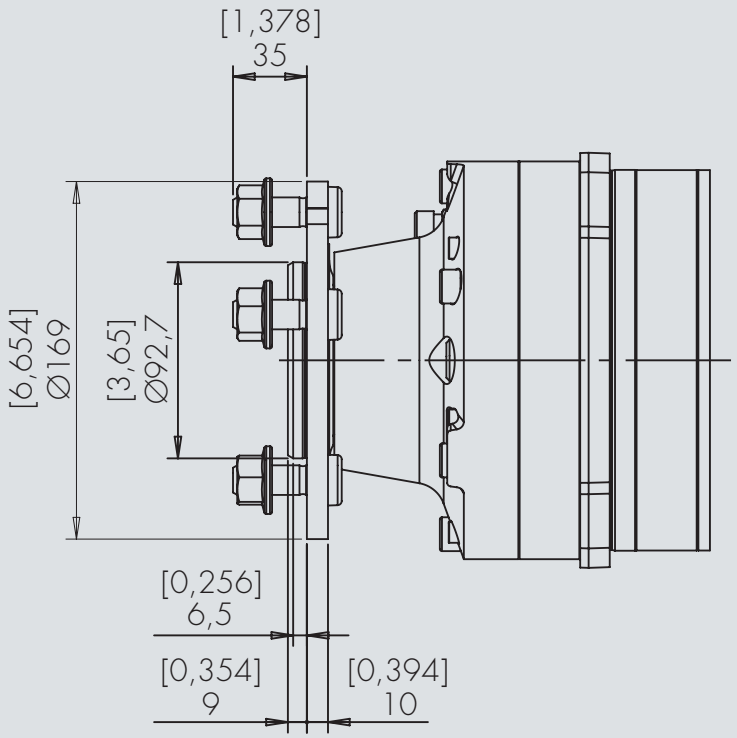
R Back (wheel)

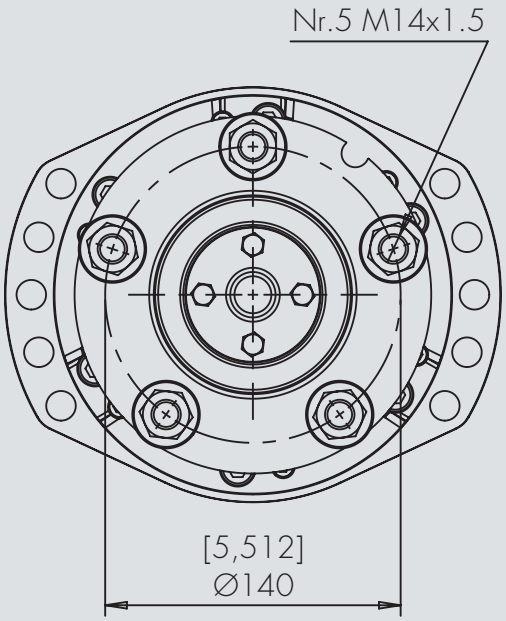


1 Back (wheel with studs)

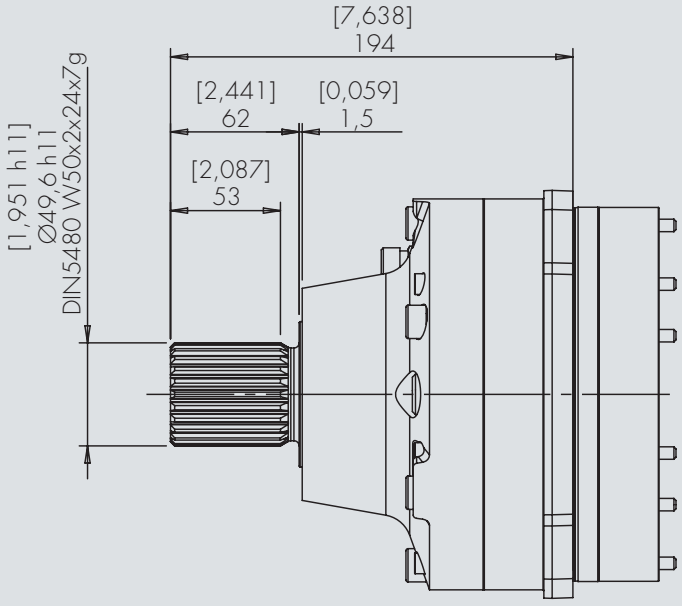


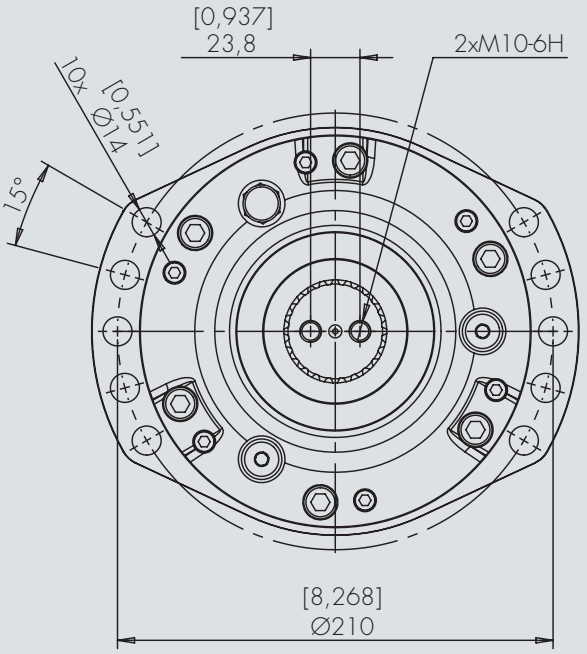
2 Back (wheel with studs+bolts)



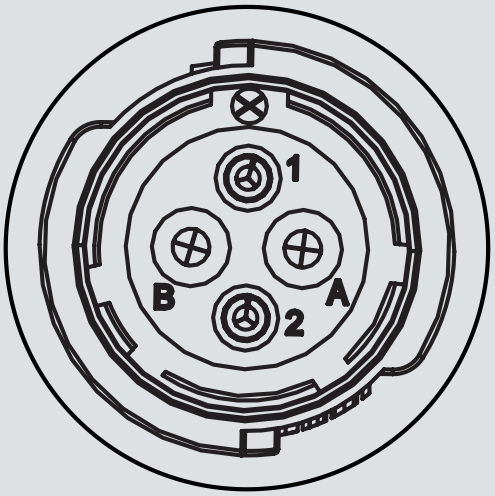


E Shaft DIN 5480 W50x2x24x7





0 Amphenol FLS010N2P03-PM

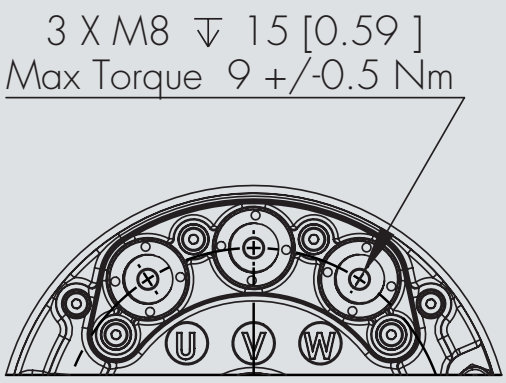


Pin	Signal
1	PT1000
3	
A	Brake V+
B	Brake V-

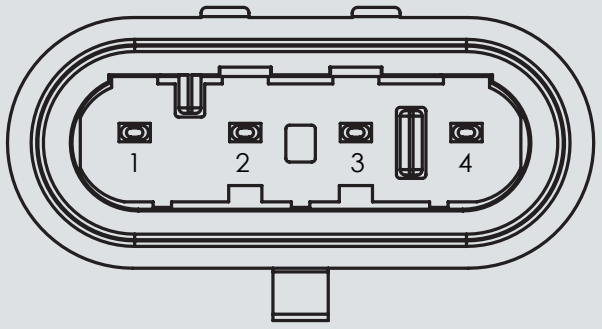
A

*Counterpart Mating Female Plug Housing Amphenol FLS610N2SHEC03

Power connection



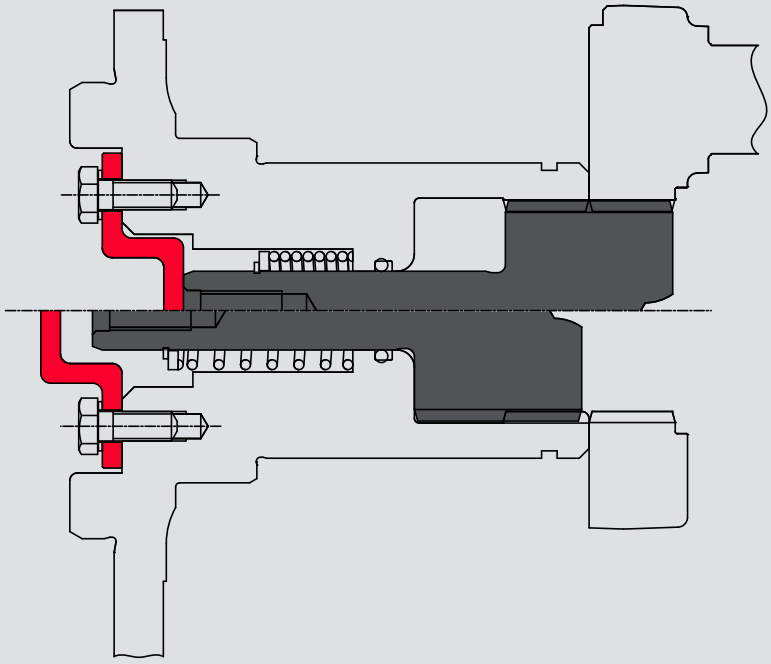
Superseal 4 poles sin/cos encoder AMP 282106-1*



Pin	Signal
1	Vin+
2	COS out
3	SIN out
4	GND

*Counterpart Mating Female Plug Housing AMP 282088-1

Y Towing disengagement



MSM	1 2	3	4	5	6	7	8	9	10	11	12	13 14 15

1 2

Motor dimension

18

3

Motor/Cooling type

2	MSM 050 - air cooled	**3**	MSM 075 - air cooled	**4**	MSM 100 - air cooled	**7**	MSM 050 - liquid cooled
8	MSM 075 - liquid cooled	**9**	MSM 100 - liquid cooled				

4

Power configuration

A 48V

5

Encoder

1 Sin/Cos

6

Cable outlet

A Rear

7

Reduction ratio

A	1:31 (3 planet gears)	**B**	1:31 (4 planet gears)

8

Output connection

X Rotary flange

9

Output Shaft

R	Back (wheel)	**1**	Back (wheel with studs)	**2**	Back (wheel with studs+bolts)	**E**	Shaft DIN 5480 W30x2x30x24

10

Parking brake

A	36Nm EM	**N**	No brake

11

Dynamic brake

N	No brake

12

Towing disengagement

Y	

13 14 15

Customization

001	No varnishing

SIBONI

A BONDIOLI & PAVESI COMPANY