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ISO 9001

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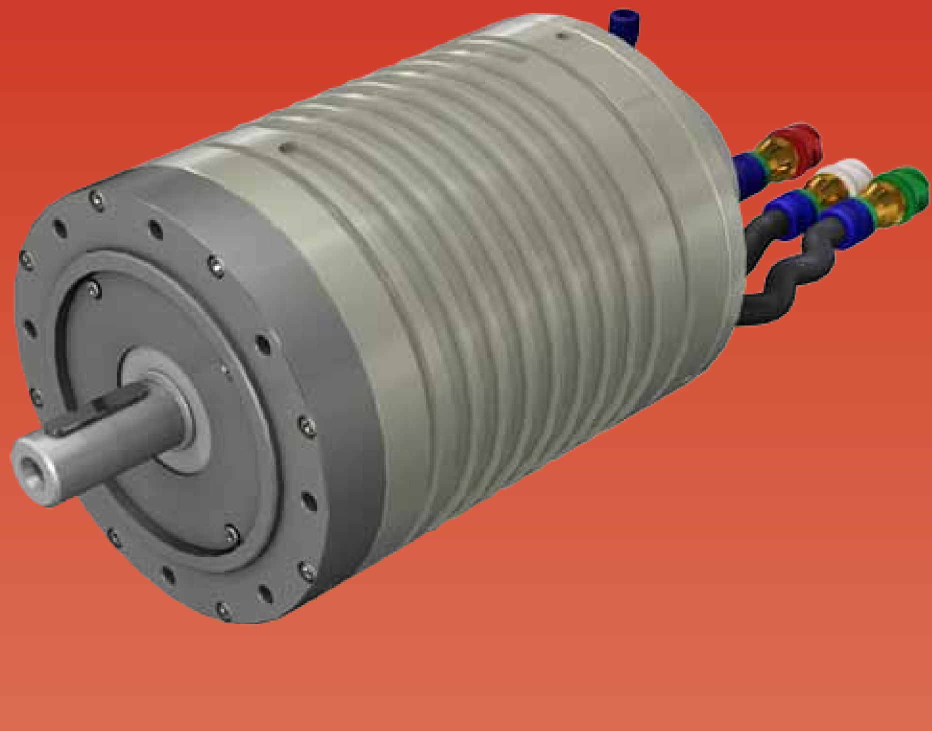
trasmissioni industriali

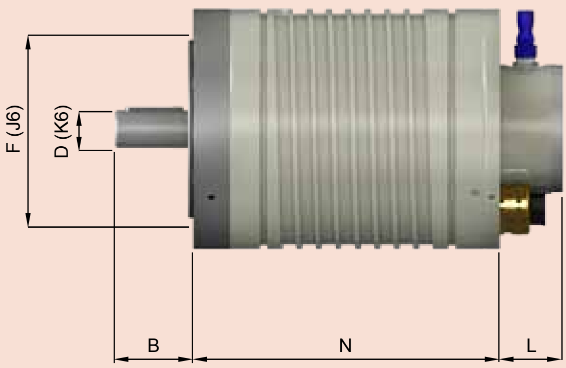


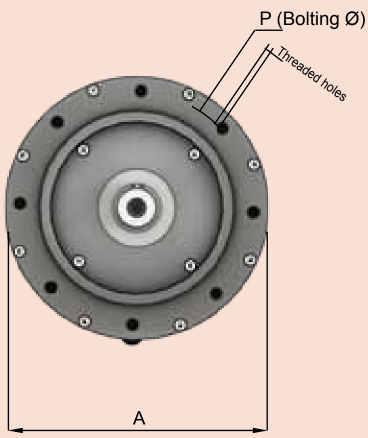
ELECTRIC MACHINES
PERMANENT MAGNETS

drive with us

1. DESCRIPTION

TRANSFLUID manufactures for its hybrid modules three-phase, permanent magnet, synchronous electric machines (PMSM Permanent Magnet Synchronous Machine) with natural convection air cooling. This solution ensures high efficiency and simplicity with a limited weight and size. The electric machine PMSM is controlled by a Motor Controller (Frequency Drive) that allows to work both as a motor and as a generator. The perfect integration of the range of electric machines with the controllers allows for a compact installation of the system, as well as makes management easy and effective during any operation stage.





Tab. PERFORMANCES

EM	MOTOR kW (hp) 3000 rpm	GENERATOR kW (hp) 3000 rpm	B.E.M.F V rms +/- 10%	NOMINAL TORQUE Nm (lb-ft)	NOMINAL CURRENT A ~	BATTERY Vdc	MOTOR A ⎓	GENERATOR A ⎓
180 - 8	8 (11)	6 (8)	65	25 (18)	80	96	95	64
180 - 12	12 (16)	9 (12)	65	38 (28)	120	96	140	96
220 - 15	15 (20)	11 (15)	65	47 (35)	150	96	175	120
220 - 20	20 (27)	15 (20)	65	63 (47)	210	96	235	160
220 - 35	35 (48)	27 (36)	220	110 (81)	110	300	134	95
300 - 50	50 (68)	38 (51)	220	160 (118)	150	300	190	130
300 - 75	75 (100)	57 (76)	220	238 (176)	220	300	287	195

Tab. DIMENSIONS

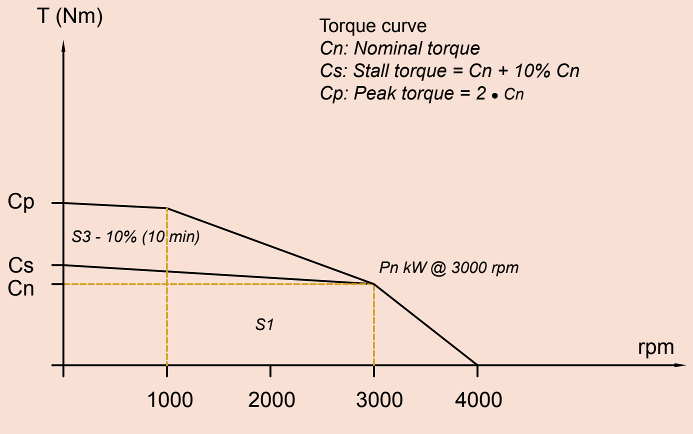
EM	WEIGHT kg (lb)	A mm (inch)	B mm (inch)	D mm (inch)	F mm (inch)	L mm (inch)	N mm (inch)	O mm (inch)	P mm (inch)	Threaded Holes
180 - 8	22 (48)	200 (7.87)	60 (2.36)	28 (1.10)	180 (7.09)	65 (2.56)	220 (8.66)	40 (1.57)	215 (8.46)	n°4 M12
180 - 12	25 (55)	200 (7.87)	60 (2.36)	28 (1.10)	180 (7.09)	65 (2.56)	260 (10.24)	40 (1.57)	215 (8.46)	n°4 M12
220 - 15	42 (92)	243 (9.57)	80 (3.15)	38 (1.50)	180 (7.09)	65 (2.56)	267(10.51)	40 (1.57)	215 (8.46)	n°8 M12
220 - 20	46 (101)	243 (9.57)	80 (3.15)	38 (1.50)	180 (7.09)	65 (2.56)	310(12.20)	40 (1.57)	215 (8.46)	n°8 M12
220 - 35	54 (119)	243 (9.57)	80 (3.15)	38 (1.50)	180 (7.09)	65 (2.56)	396(15.59)	40 (1.57)	215 (8.46)	n°8 M12
300 - 50	70 (154)	332(13.07)	80 (3.15)	42 (1.65)	230 (9.05)	65 (2.56)	315(12.40)	40 (1.57)	265(10.43)	n°8 M14
300 - 75	110 (242)	332(13.07)	80 (3.15)	42 (1.65)	230 (9.05)	65 (2.56)	395(15.55)	40 (1.57)	265(10.43)	n°8 M14

* *Standard protection degree IP54*
** *IP65 available on request*

Technical features, dimensions and any other data are not binding. Transfluid S.p.A. reserves the right to change then without notice

2. CHARACTERISTIC

The structural characteristics of electric machines are optimized for specific use in hybrid systems up to 3000 rpm. The system is cooled by natural convention, air cooling making an easy on-board installation, permitting you to harness the power in a progressive manner for its whole range of revolution. The torque curve, which characterizes these types of motors at low speed can be three times the nominal rating which could be very useful for vehicle start up. In the range of medium speed, up to about 1500 rpm, the torque delivered could be as twice as much as the nominal rating for a limited time. In marine applications, this is very useful for low vessel speed maneuvering.
All electric machines are equipped with thermal sensor KTY 84-130 and can be equipped with sin/cos magnetic encoder, resolver 2 poles 7V 10kHz and incremental encoders from 500 to 4096 ppr.



(Indicative diagram, for reference only)

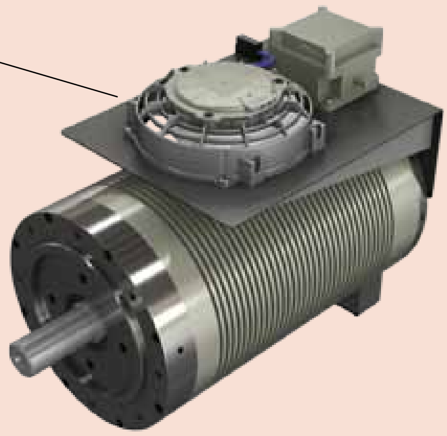
3. DEFINITION OF POWER RATINGS FOR NATURAL CONVECTION AIR-COOLED MACHINES

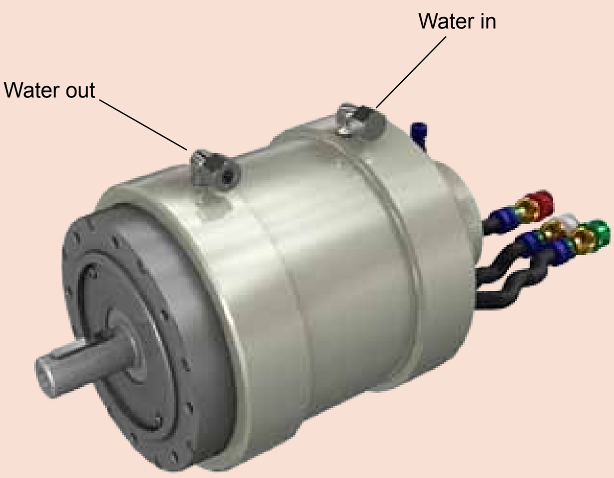
Rating power and torque listed in the performance table, are refered to continuous duty **S1** at rated speed and ambient temperature of 40°C at 1000m a.s.l.

If motors work at ambient temperature more than 40°C or at altitude above 1000 m a.s.l., then derating coefficients $\mathbf{K_1}$ and $\mathbf{K_2}$ should be applied (see table below).

Ambient temperature	40°C	45°C	50°C	55°C	60°C
Correction factor K_1	1	1.06	1.13	1.22	1.34
Altitude a.m.s.l. up to	1000m	2000m	3000m	4000m	5000m
Correction factor K_2	1	1.07	1.16	1.27	1.55

In case of high ambient temperature and in order to avoid electric machine derating, air-cooling kit is also available.





Depending on the installation condition a liquid cooled (fresh water - sea water) heat exchanger is also available to avoid electric machine derating.

ELECTRIC PROPULSION SYSTEM

From 20 to 75 kW
with single, two and three speed transmission.
Industrial and marine applications

HYBRID MODULE

Combustion engine
Up to 1100 kW
and up to 150 kW electric
Industrial and marine applications

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