



ELECTRIC POWERTRAIN SOLUTIONS

SMAC SERIE

TECHNICAL DATA SHEET
3-PHASE SYNCHRONOUS MOTOR

Code	51J13207516CT080400		
Rev.	00		
Date	23/03/2021		
Page	1	di	2

Motor Rated Power			3000W	
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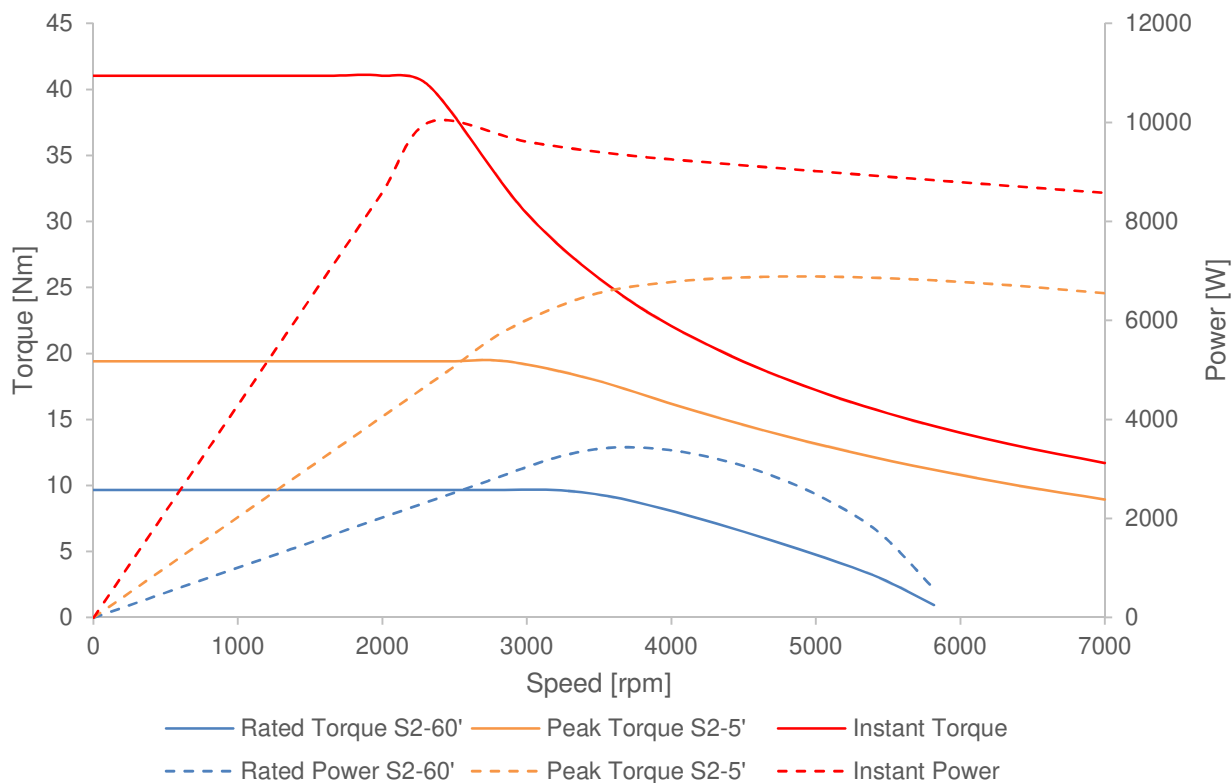
Inverter Power Supply			24Vdc	
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Description	Symbol	Unit		
Duty	-	-	S2-60min	
Nominal Speed	n_n	rpm	3000	
Frequency (N° poles)	$f (2p)$	Hz	200.0 (8)	
Costant Voltage	K_e	Vrms/Krpm	4.5	
Costant Torque	K_t	Nm/Arms	0.07	
Instant Torque	T_i	Nm	41.0	
Instant Current	I_i	Arms	660.0	
Peak Torque	T_p	Nm	19.5	
Peak Current	I_p	Arms	260.0	
Rated Torque	T_r	Nm	9.5	
Rated Current	I_r	Arms	130.0	
Rotor Inertia	J_r	kg x m ²	0.004	
Ambient Temperature	θ_a	°C	-15 ÷ +40	
Protection Degree	IP		IP 54	up to IP67
Insulation Class	-	-	F	
Thermal protection	-	-	KTY 84-130	
Cooling system			Air	

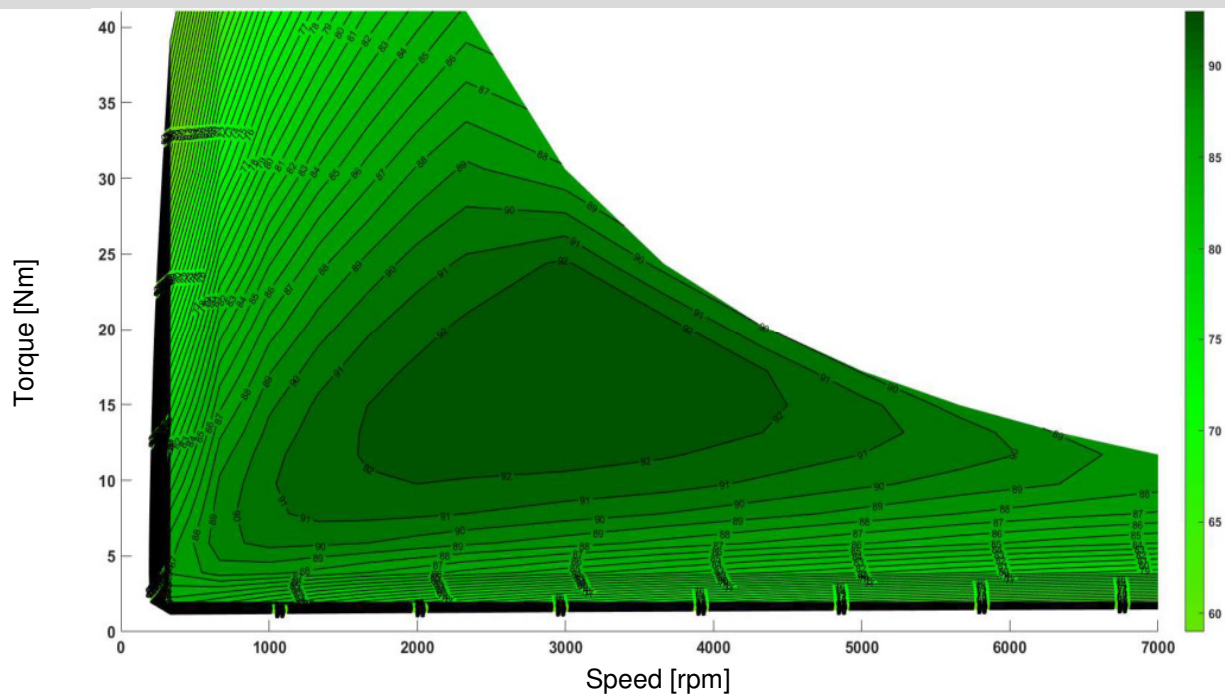
PRELIMINARY

Speed-Torque & Speed Power Motor Curves (*)

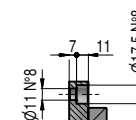
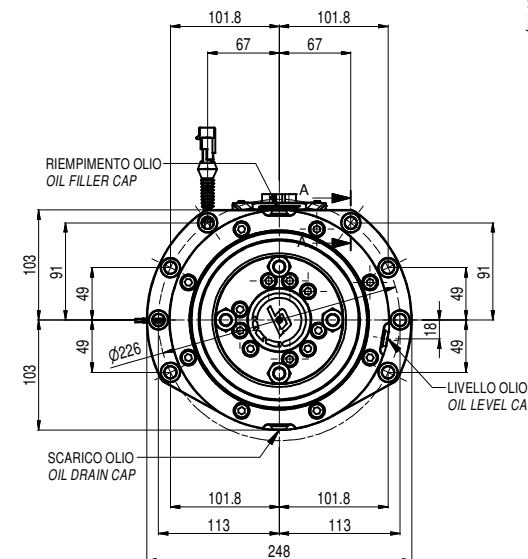
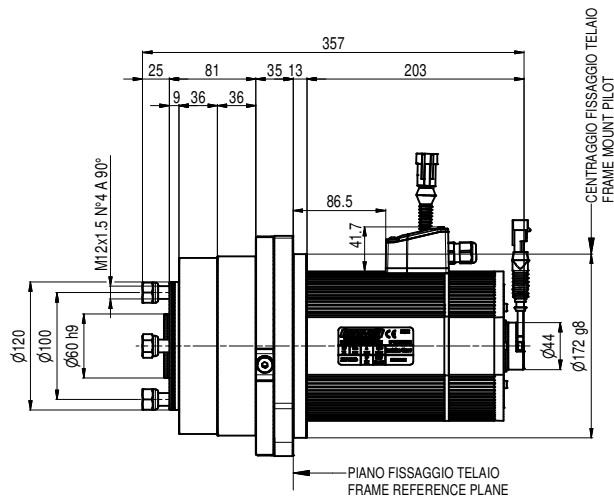
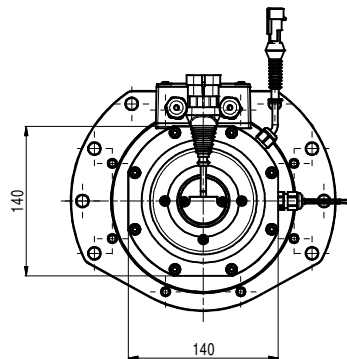
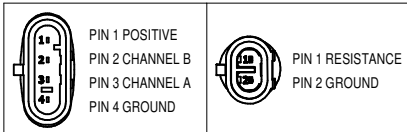
SMAC 132-075



Efficiency Map % (*)

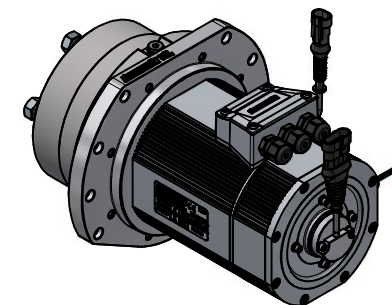
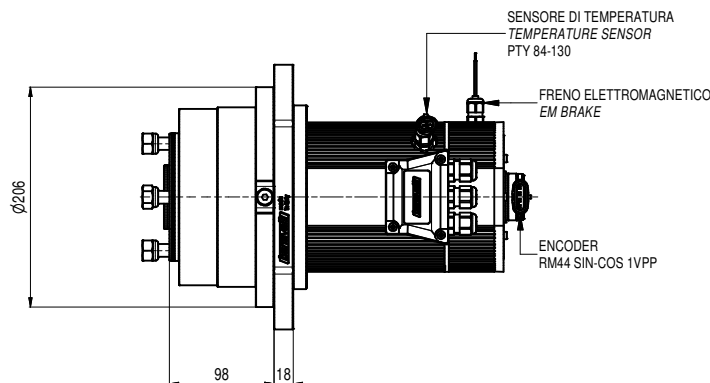


* MTPA Field Weakening strategy control & Optimized Advance Angle



SEZ. A-A

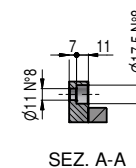
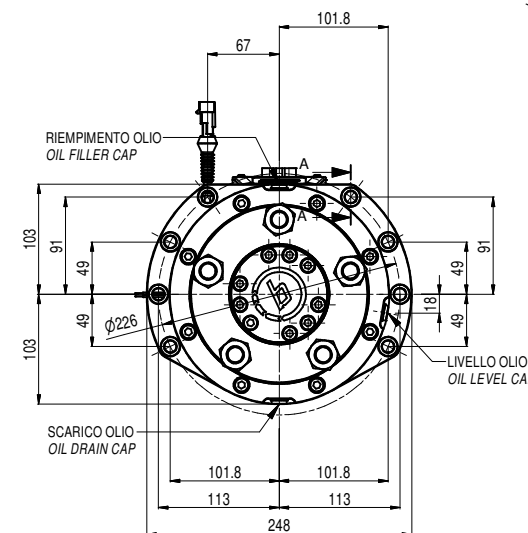
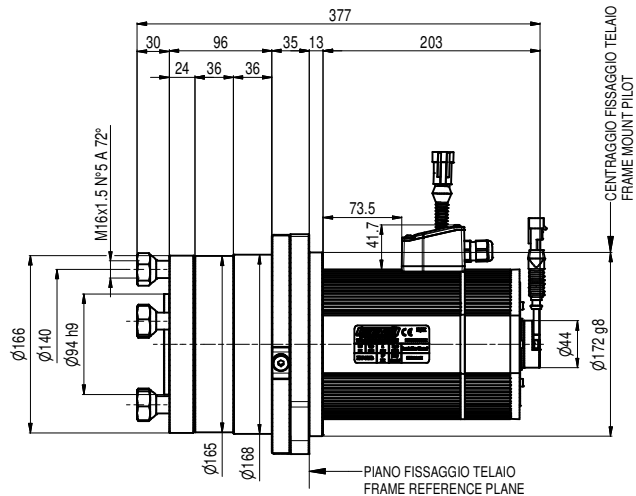
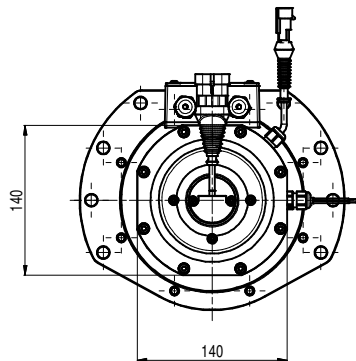
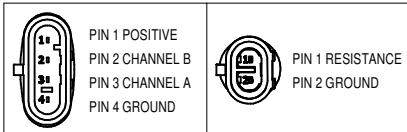
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MOTORE	MOTOR		SMAC
POTENZA	POWER	W	3000
TENSIONE BATTERIA	BATTERY VOLTAGE	Vdc	24
TENSIONE FASE	VOLTAGE ON PHASE	Vac	-
GIRI NOMINALI	RATED SPEED	rpm	3000
GIRI MASSIMI	MAX SPEED	rpm	-
COPPIA MAX	MAX TORQUE	Nm	41
CORRENTE NOMINALE	RATED CURRENT	A	130
FREQUENZA NOMINALE	RATED FREQUENCY	Hz	200 (8)
SERVIZIO	DUTY	S2	60'
PROTEZIONE	PROTECTION	IP	67
CLASSE ISOLAMENTO	INSULATION CLASS	INS	F
IMPULSI ENCODER	PULSES REVOLUTION	N°	-
FRENO EM	EM BRAKE	Nm - V	12 - 24
FRENO SERVIZIO IDRA.	IDRA. SERVICE BRAKE	Nm	-
FRENO STAZIONAMENTO	PARKING BRAKE	Nm	-
RAPPORTO	RATIO	R	1:40.61
GIRI NOMINALI IN USCITA	NOM. OUTPUT SPEED	rpm	74
GIRI MASSIMI IN USCITA	MAX OUTPUT SPEED	rpm	-
COPPIA MAX IN USCITA	MAX OUTPUT TORQUE	Nm	1000
QUANTITA' OLIO	OIL CAPACITY	cc	180
INSERIRE OLIO	OIL INSIDE		Si/Yes
TIPO OLIO	OIL TYPE		SHC 75W90
PESO	WEIGHT	kg	



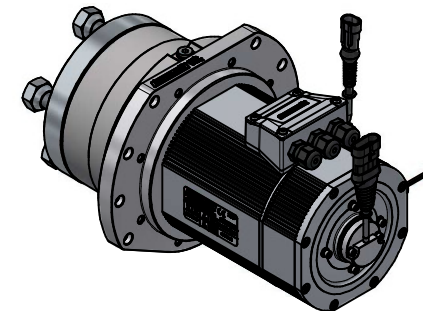
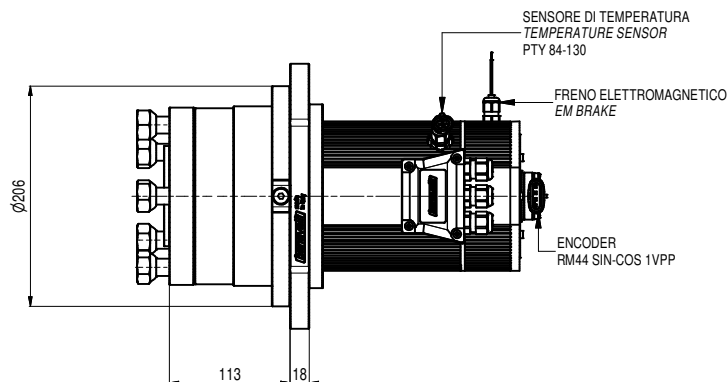
IN CASO DI DUBBIO CHIEDERE / IF IN DOUBT ASK

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3				

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controllato / checked	data / date			
scala / scale 1:8	formato foglio / sheet size A3	descrizione / name Motoruota WD 220 / Wheel drive WD 220	gruppo/group 99	sottogruppo/subgroup
revisione / reference 00	n° foglio / sheet no 1 / 3		n° disegno/drawing no 99.220.041.A.3.29	



MDS		51J13207516CT080400	
MOTORE	MOTOR		SMAC
POTENZA	POWER	W	3000
TENSIONE BATTERIA	BATTERY VOLTAGE	Vdc	24
TENSIONE FASE	VOLTAGE ON PHASE	Vac	-
GIRI NOMINALI	RATED SPEED	rpm	3000
GIRI MASSIMI	MAX SPEED	rpm	-
COPPIA MAX	MAX TORQUE	Nm	41
CORRENTE NOMINALE	RATED CURRENT	A	130
FREQUENZA NOMINALE	RATED FREQUENCY	Hz	200 (8)
SERVIZIO	DUTY	S2	60'
PROTEZIONE	PROTECTION	IP	67
CLASSE ISOLAMENTO	INSULATION CLASS	INS	F
IMPULSI ENCODER	PULSES REVOLUTION	N°	-
FRENO EM	EM BRAKE	Nm - V	12 - 24
FRENO SERVIZIO IDRA.	IDRA. SERVICE BRAKE	Nm	-
FRENO STAZIONAMENTO	PARKING BRAKE	Nm	-
RAPPORTO	RATIO	R	1:40.61
GIRI NOMINALI IN USCITA	NOM. OUTPUT SPEED	rpm	74
GIRI MASSIMI IN USCITA	MAX OUTPUT SPEED	rpm	-
COPPIA MAX IN USCITA	MAX OUTPUT TORQUE	Nm	1000
QUANTITA' OLIO	OIL CAPACITY	cc	180
INSERIRE OLIO	OIL INSIDE		Si/Yes
TIPO OLIO	OIL TYPE		SHC 75W90
PESO	WEIGHT	kg	



IN CASO DI DUBBIO CHIEDERE / IF IN DOUBT ASK

N°	Descrizione modifica	Data	Dis.	Pos.
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mc	02/09/2022			
controllato / checked	data / date			sottogruppo/subgroup
scala / scale	formato foglio / sheet size	descrizione / name		99
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revisione / reference	n° foglio / sheet no			99.220.041.A.3.46
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ELECTRIC POWERTRAIN SOLUTIONS

SMAC SERIE

TECHNICAL DATA SHEET
3-PHASE SYNCHRONOUS MOTOR

Code	51J13207532ET080400		
Rev.	00		
Date	19/03/2021		
Page	1	di	2

Motor Rated Power			3000W	
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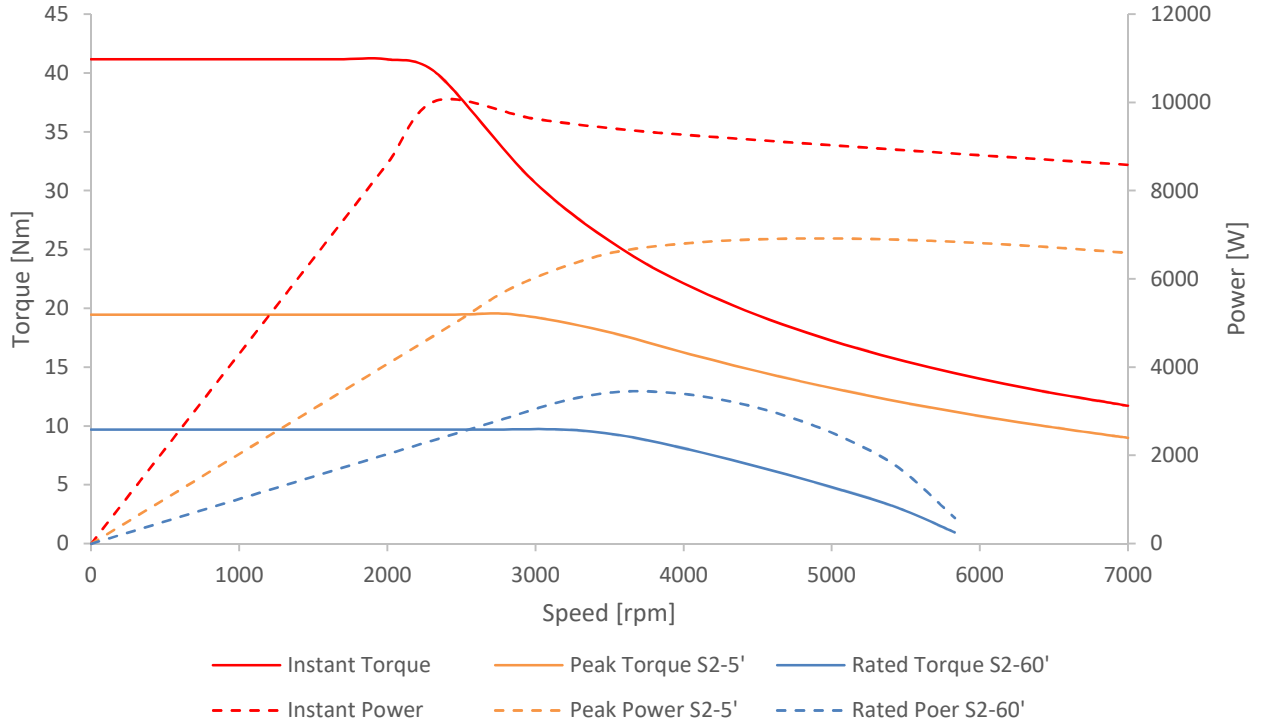
Inverter Power Supply			48Vdc	
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Description	Symbol	Unit		
Duty	-	-	S2-60min	
Nominal Speed	n_n	rpm	3000	
Frequency (N° poles)	$f (2p)$	Hz	200.0 (8)	
Costant Voltage	K_e	Vrms/Krpm	9.5	
Costant Torque	K_t	Nm/Arms	0.15	
Instant Torque	T_i	Nm	41.0	
Instant Current	I_i	Arms	330.0	
Peak Torque S2-5min.	T_p	Nm	19.5	
Peak Current S2-5min.	I_p	Arms	130.0	
Rated Torque S2-60min.	T_r	Nm	9.5	
Rated Current S2-60min.	I_r	Arms	65	
Rotor Inertia	J_r	kg x m ²	0.004	
Ambient Temperature	θ_a	°C	-15 ÷ +40	
Protection Degree	IP		IP 54	up to IP67
Insulation Class	-	-	F	
Thermal protection	-	-	KTY 84-130	
Cooling system			Air	

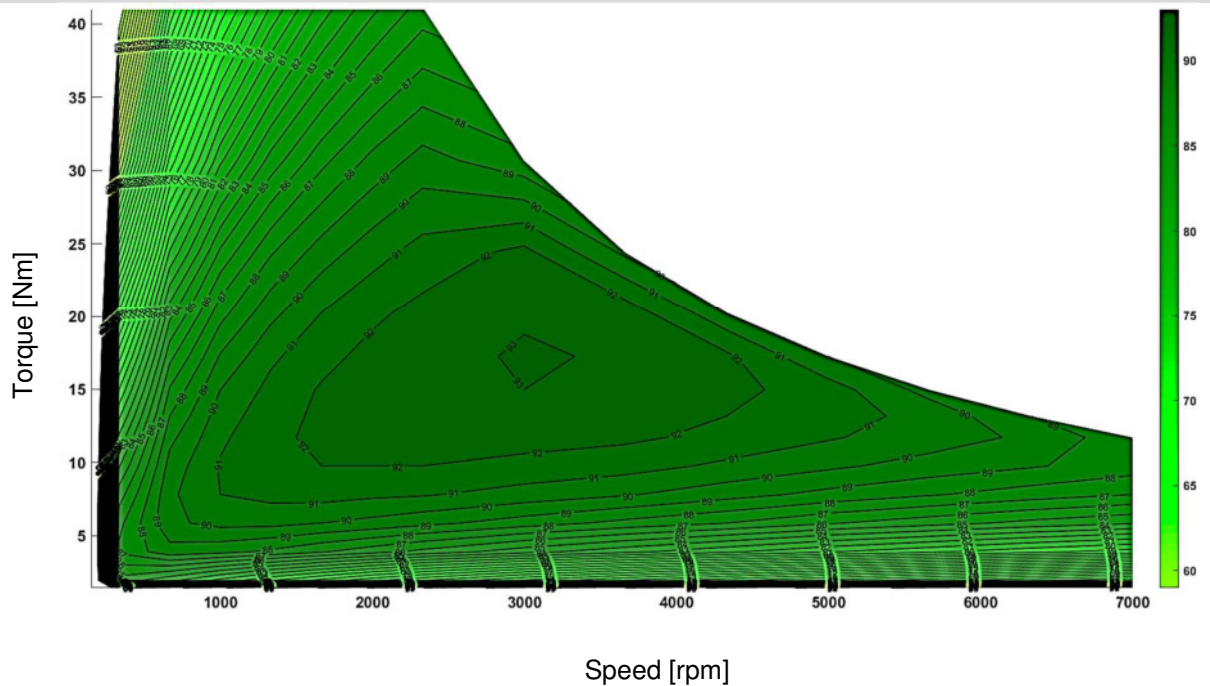
PRELIMINARY

Speed-Torque & Speed Power Motor Curves (*)

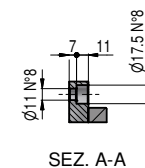
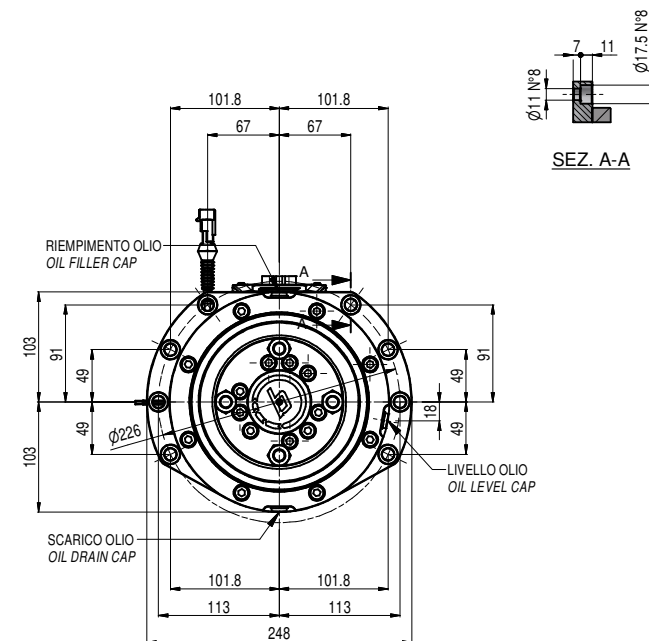
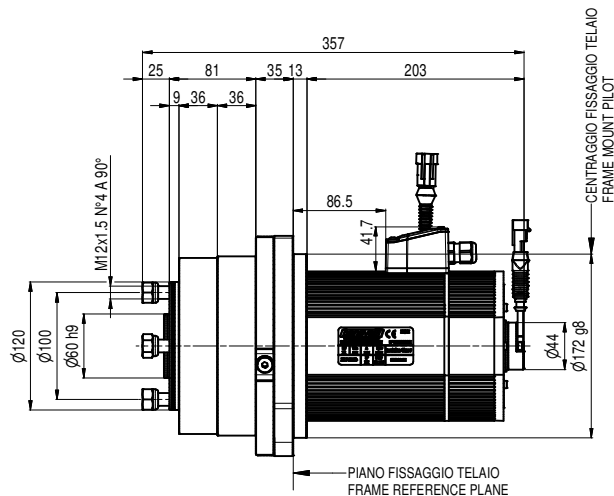
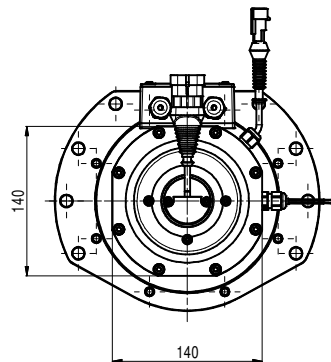
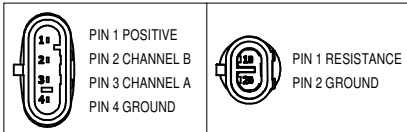
SMAC 132-075



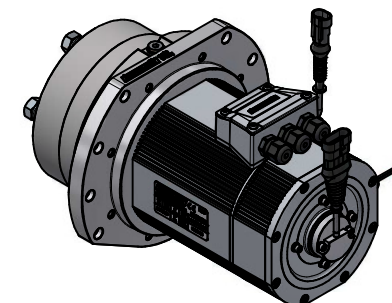
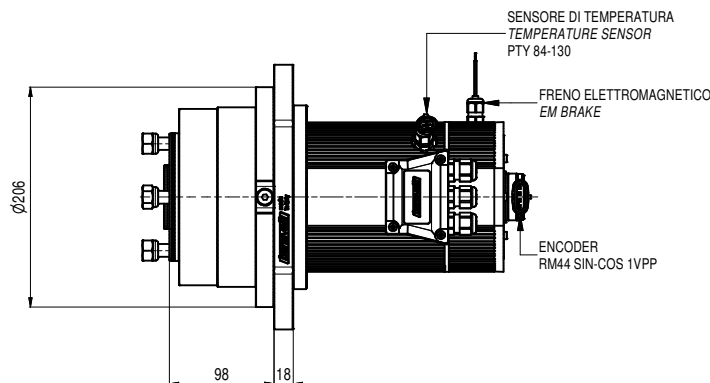
Efficiency Map % (*)



* MTPA Field Weakening strategy control & Optimized Advance Angle



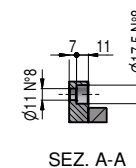
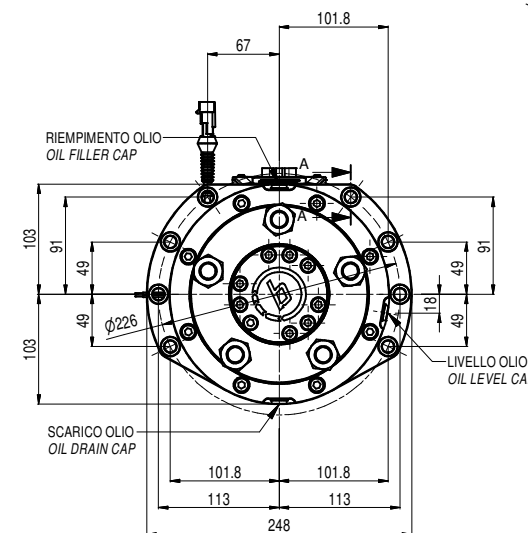
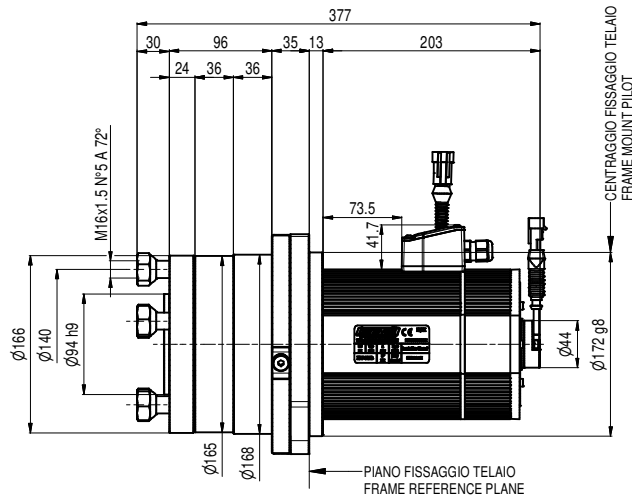
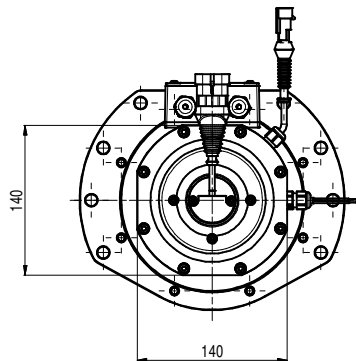
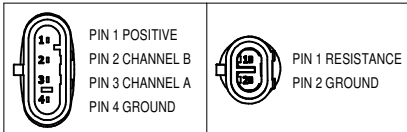
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MOTORE	MOTOR		SMAC
POTENZA	POWER	W	3000
TENSIONE BATTERIA	BATTERY VOLTAGE	Vdc	48
TENSIONE FASE	VOLTAGE ON PHASE	Vac	-
GIRI NOMINALI	RATED SPEED	rpm	3000
GIRI MASSIMI	MAX SPEED	rpm	-
COPPIA MAX	MAX TORQUE	Nm	41
CORRENTE NOMINALE	RATED CURRENT	A	65
FREQUENZA NOMINALE	RATED FREQUENCY	Hz	200 (8)
SERVIZIO	DUTY	S2	60'
PROTEZIONE	PROTECTION	IP	67
CLASSE ISOLAMENTO	INSULATION CLASS	INS	F
IMPULSI ENCODER	PULSES REVOLUTION	N°	-
FRENO EM	EM BRAKE	Nm - V	12 - 48
FRENO SERVIZIO IDRA.	IDRA. SERVICE BRAKE	Nm	-
FRENO STAZIONAMENTO	PARKING BRAKE	Nm	-
RAPPORTO	RATIO	R	1:40.61
GIRI NOMINALI IN USCITA	NOM. OUTPUT SPEED	rpm	74
GIRI MASSIMI IN USCITA	MAX OUTPUT SPEED	rpm	-
COPPIA MAX IN USCITA	MAX OUTPUT TORQUE	Nm	1000
QUANTITA' OLIO	OIL CAPACITY	cc	180
INSERIRE OLIO	OIL INSIDE		Si/Yes
TIPO OLIO	OIL TYPE		SHC 75W90
PESO	WEIGHT	kg	29.70



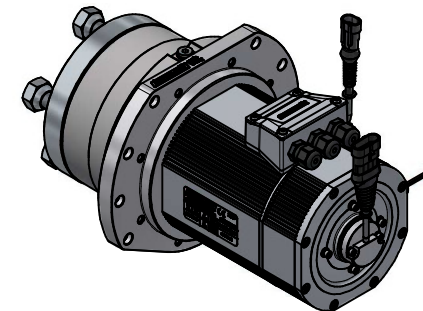
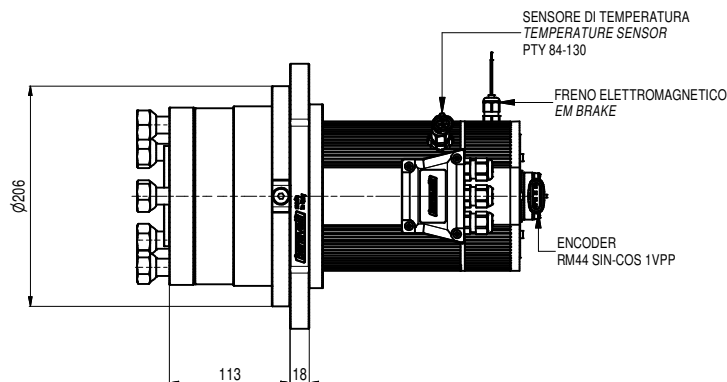
IN CASO DI DUBBIO CHIEDERE / IF IN DOUBT ASK

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3				

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controllato / checked	data / date			gruppo/group	sottogruppo/subgroup
scala / scale	formato foglio / sheet size	descrizione / name	99		
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revisione / reference	n° foglio / sheet no			99.220.041.A.3.19	
00	1 / 3				




MDS		51J13207532ET080400	
MOTORE	MOTOR		SMAC
POTENZA	POWER	W	3000
TENSIONE BATTERIA	BATTERY VOLTAGE	Vdc	48
TENSIONE FASE	VOLTAGE ON PHASE	Vac	-
GIRI NOMINALI	RATED SPEED	rpm	3000
GIRI MASSIMI	MAX SPEED	rpm	-
COPPIA MAX	MAX TORQUE	Nm	41
CORRENTE NOMINALE	RATED CURRENT	A	65
FREQUENZA NOMINALE	RATED FREQUENCY	Hz	200 (8)
SERVIZIO	DUTY	S2	60'
PROTEZIONE	PROTECTION	IP	67
CLASSE ISOLAMENTO	INSULATION CLASS	INS	F
IMPULSI ENCODER	PULSES REVOLUTION	N°	-
FRENO EM	EM BRAKE	Nm - V	12 - 48
FRENO SERVIZIO IDRA.	IDRA. SERVICE BRAKE	Nm	-
FRENO STAZIONAMENTO	PARKING BRAKE	Nm	-
RAPPORTO	RATIO	R	1:40.61
GIRI NOMINALI IN USCITA	NOM. OUTPUT SPEED	rpm	74
GIRI MASSIMI IN USCITA	MAX OUTPUT SPEED	rpm	-
COPPIA MAX IN USCITA	MAX OUTPUT TORQUE	Nm	1000
QUANTITA' OLIO	OIL CAPACITY	cc	180
INSERIRE OLIO	OIL INSIDE		Si/Yes
TIPO OLIO	OIL TYPE		SHC 75W90
PESO	WEIGHT	kg	



IN CASO DI DUBBIO CHIEDERE / IF IN DOUBT ASK

N°	Descrizione modifica	Data	Dis.	Pos.
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2				
3				

disegnato / drawn mc	data / date 28/06/2022	INGOMBRO / DIMENSION		benevelli Rubiera-Reggio Emilia-Italy www.benevelli.it
controllato / checked	data / date			
scala / scale 1:5	formato foglio / sheet size A3	descrizione / name Motoruota WD 220 / Wheel drive WD 220	gruppo/group 99	sottogruppo/subgroup
revisione / reference 00	n° foglio / sheet no 1 / 3		n° disegno/drawing no 99.220.041.A.3.33	

 <small>ELECTRIC POWERTRAIN SOLUTIONS</small>	SMAC SERIE		Code	51J13207552GT080400	
	TECHNICAL DATA SHEET 3-PHASE SYNCHRONOUS MOTOR		Rev.	00	
			Date	23/03/2021	
			Page	1	di

Motor Rated Power			3000W	
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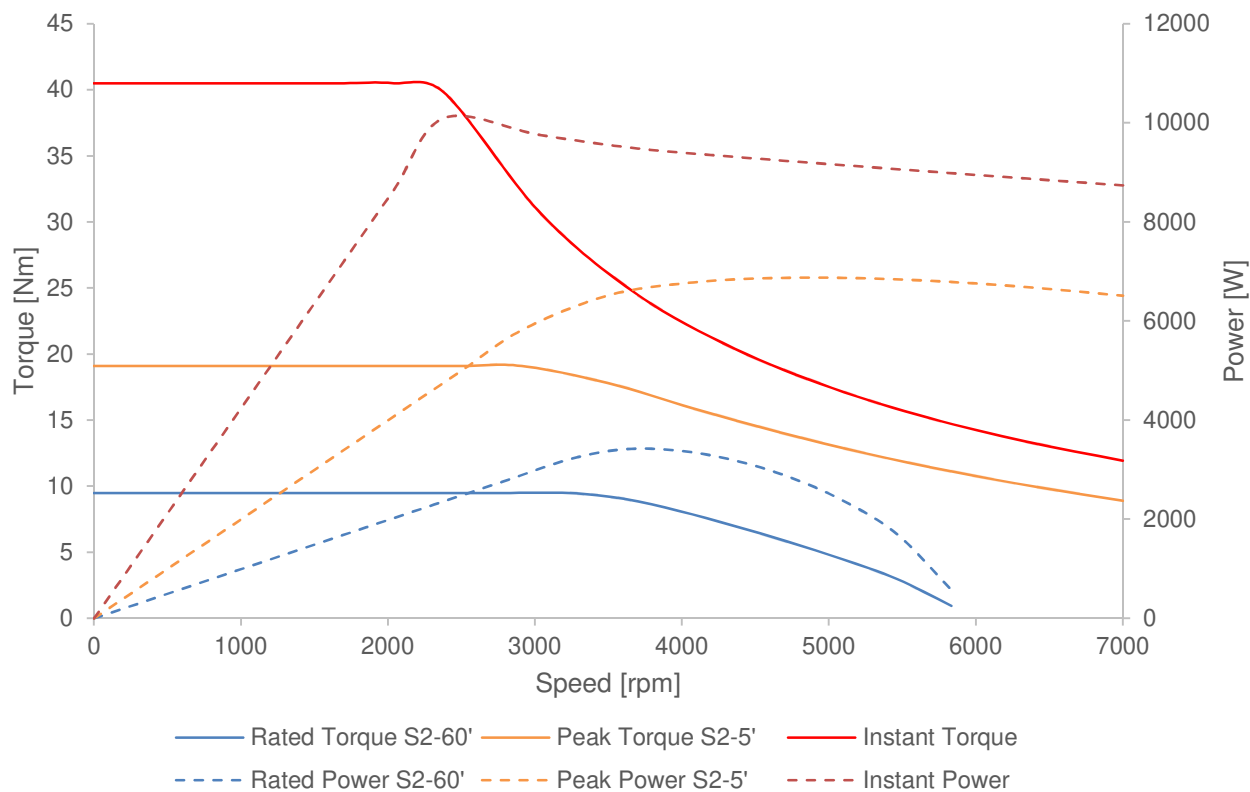
Inverter Power Supply			80Vdc	
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Description		Symbol	Unit		
<i>Duty</i>		-	-	S2-60min	
<i>Nominal Speed</i>		n_n	<i>rpm</i>	3000	
<i>Frequency (N° poles)</i>		$f (2p)$	<i>Hz</i>	200.0 (8)	
<i>Costant Voltage</i>		K_e	<i>Vrms/Krpm</i>	15.0	
<i>Costant Torque</i>		K_t	<i>Nm/Arms</i>	0.24	
<i>Instant Torque</i>		T_i	<i>Nm</i>	40.0	
<i>Instant Current</i>		I_i	<i>Arms</i>	200.0	
<i>Peak Torque</i> S2-5min.		T_p	<i>Nm</i>	19.0	
<i>Peak Current</i> S2-5min.		I_p	<i>Arms</i>	78.0	
<i>Rated Torque</i> S2-60min.		T_r	<i>Nm</i>	9.5	
<i>Rated Current</i> S2-60min.		I_r	<i>Arms</i>	39.0	
<i>Rotor Inertia</i>		J_r	<i>kg x m²</i>	0.004	
<i>Ambient Temperature</i>		θ_a	<i>°C</i>	-15 ÷ +40	
<i>Protection Degree</i>		IP		IP 54	up to IP67
<i>Insulation Class</i>		-	-	F	
<i>Thermal protection</i>		-	-	KTY 84-130	
<i>Cooling system</i>				Air	

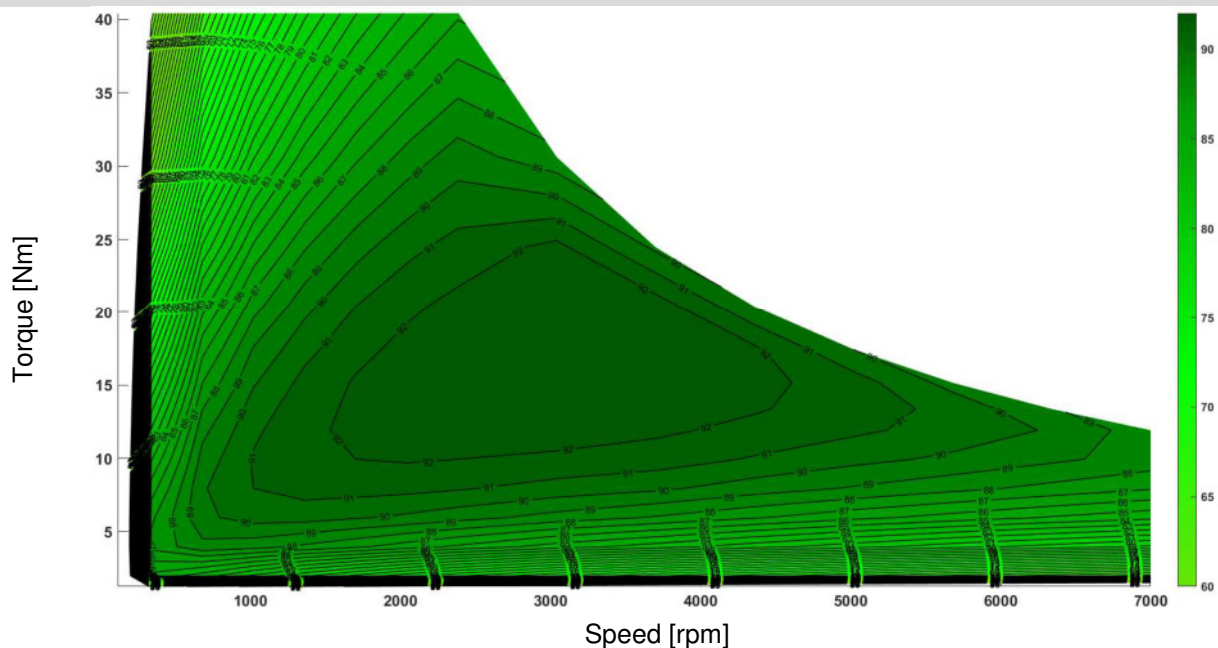
PRELIMINARY

Speed-Torque & Speed Power Motor Curves (*)

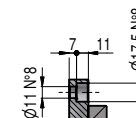
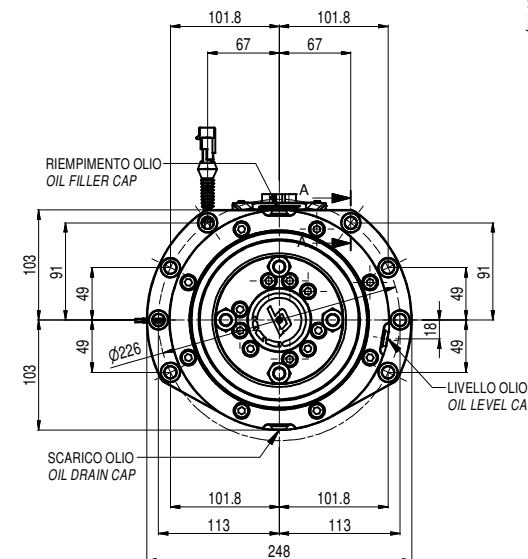
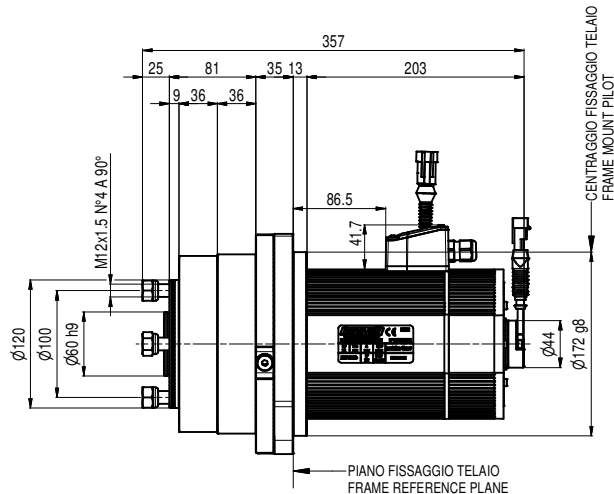
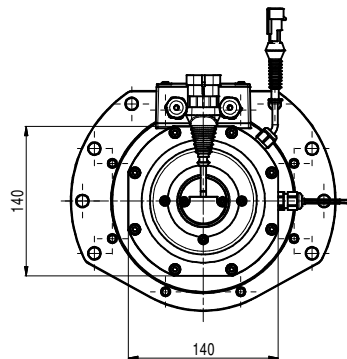
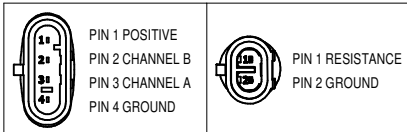
SMAC 132 075



Efficiency Map % (*)

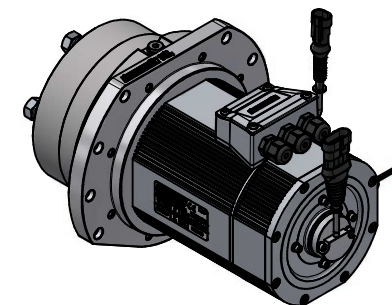
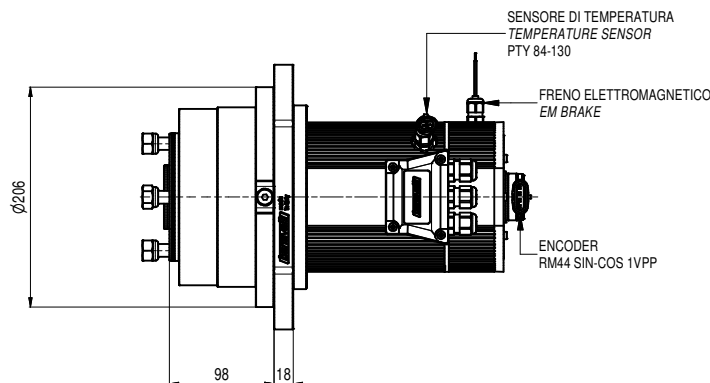


* MTPA Field Weakening strategy control & Optimized Advance Angle



SEZ. A-A

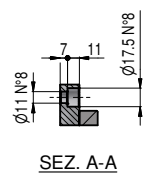
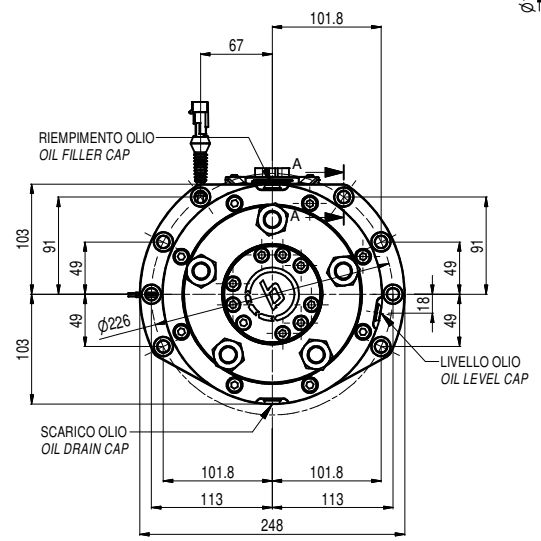
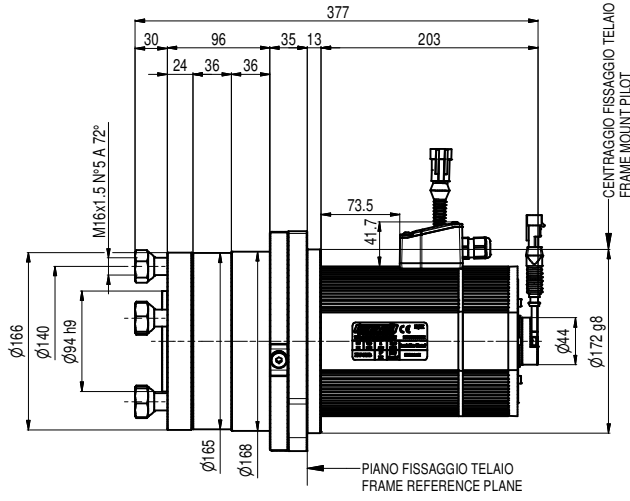
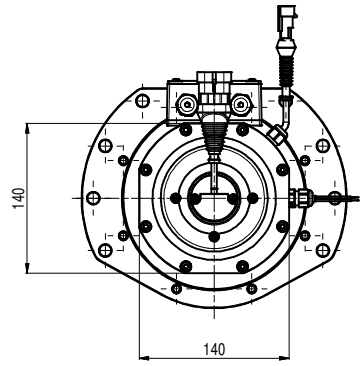
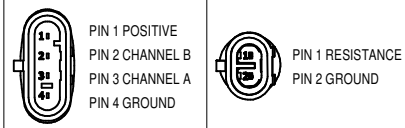
MDS		51J13207552GT080400	
MOTORE	MOTOR		SMAC
POTENZA	POWER	W	3000
TENSIONE BATTERIA	BATTERY VOLTAGE	Vdc	80
TENSIONE FASE	VOLTAGE ON PHASE	Vac	-
GIRI NOMINALI	RATED SPEED	rpm	3000
GIRI MASSIMI	MAX SPEED	rpm	-
COPPIA MAX	MAX TORQUE	Nm	40
CORRENTE NOMINALE	RATED CURRENT	A	39
FREQUENZA NOMINALE	RATED FREQUENCY	Hz	200 (8)
SERVIZIO	DUTY	S2	60'
PROTEZIONE	PROTECTION	IP	67
CLASSE ISOLAMENTO	INSULATION CLASS	INS	F
IMPULSI ENCODER	PULSES REVOLUTION	N°	-
FRENO EM	EM BRAKE	Nm - V	12 - 48
FRENO SERVIZIO IDRA.	IDRA. SERVICE BRAKE	Nm	-
FRENO STAZIONAMENTO	PARKING BRAKE	Nm	-
RAPPORTO	RATIO	R	1:40.61
GIRI NOMINALI IN USCITA	NOM. OUTPUT SPEED	rpm	74
GIRI MASSIMI IN USCITA	MAX OUTPUT SPEED	rpm	-
COPPIA MAX IN USCITA	MAX OUTPUT TORQUE	Nm	1000
QUANTITA' OLIO	OIL CAPACITY	cc	180
INSERIRE OLIO	OIL INSIDE		Si/Yes
TIPO OLIO	OIL TYPE		SHC 75W90
PESO	WEIGHT	kg	



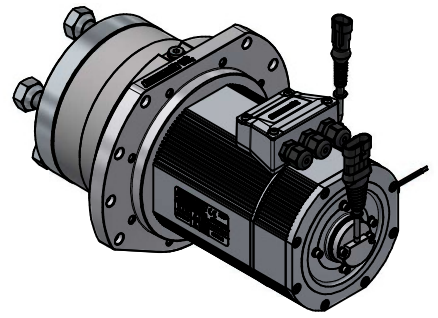
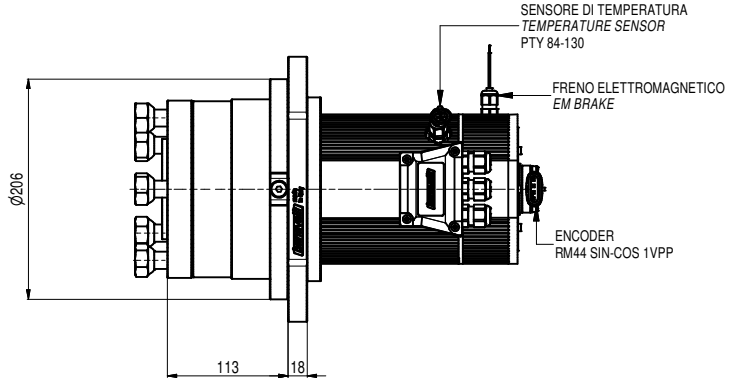
IN CASO DI DUBBIO CHIEDERE / IF IN DOUBT ASK

N°	Descrizione modifica	Data	Dis.	Pos.
1				
2				
3				

disegnato / drawn mc	data / date 06/09/2022	INGOMBRO / DIMENSION		benevalli Rubiera-Reggio Emilia-Italy www.benevalli.it
controllato / checked	data / date			
scala / scale 1:5	formato foglio / sheet size A3	descrizione / name Motoruota WD 220 / Wheel drive WD 220	gruppo/group 99	sottogruppo/subgroup
revisione / reference 00	n° foglio / sheet no 1 / 3		n° disegno/drawing no 99.220.041.A.3.49	



MDS		51J13207552GT080400	
MOTORE	MOTOR		SMAC
POTENZA	POWER	W	3000
TENSIONE BATTERIA	BATTERY VOLTAGE	Vdc	80
TENSIONE FASE	VOLTAGE ON PHASE	Vac	-
GIRI NOMINALI	RATED SPEED	rpm	3000
GIRI MASSIMI	MAX SPEED	rpm	-
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CORRENTE NOMINALE	RATED CURRENT	A	39
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SERVIZIO	DUTY	S2	60'
PROTEZIONE	PROTECTION	IP	67
CLASSE ISOLAMENTO	INSULATION CLASS	INS	F
IMPULSI ENCODER	PULSES REVOLUTION	N°	-
FRENO EM	EM BRAKE	Nm - V	12 - 48
FRENO SERVIZIO IDRA.	IDRA. SERVICE BRAKE	Nm	-
FRENO STAZIONAMENTO	PARKING BRAKE	Nm	-
RAPPORTO	RATIO	R	1:40.61
GIRI NOMINALI IN USCITA	NOM. OUTPUT SPEED	rpm	74
GIRI MASSIMI IN USCITA	MAX OUTPUT SPEED	rpm	-
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QUANTITA' OLIO	OIL CAPACITY	cc	180
INSERIRE OLIO	OIL INSIDE		Si/Yes
TIPO OLIO	OIL TYPE		SHC 75W90
PESO	WEIGHT	kg	



IN CASO DI DUBBIO CHIEDERE / IF IN DOUBT ASK

N°	Descrizione modifica	Data	Dis.	Pos.
1				
2				
3				
4				
5				
6				

disegnato / drawn	data / date	INGOMBRO / DIMENSION		
mc	06/09/2022			
controllato / checked	data / date			gruppo/group
				sottogruppo/subgroup
scala / scale	formato foglio / sheet size	descrizione / name	99	
1:5	A3	Motoruota WD 220 / Wheel drive WD 220	n° disegno/drawing no	
revisione / reference	n° foglio / sheet no			99.220.041.A.3.52
00	1 / 3			