208

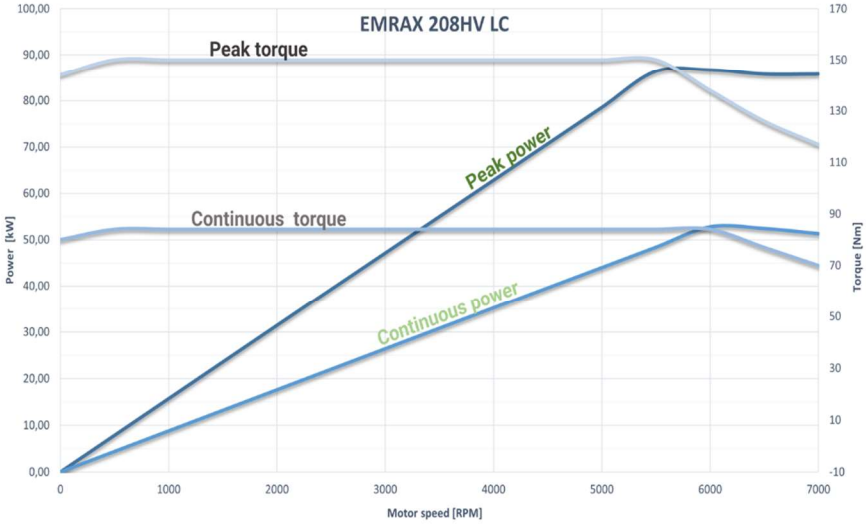
EMRAX 208 is a compact axial flux permanent magnet synchronous electric motor with high power/torque density.

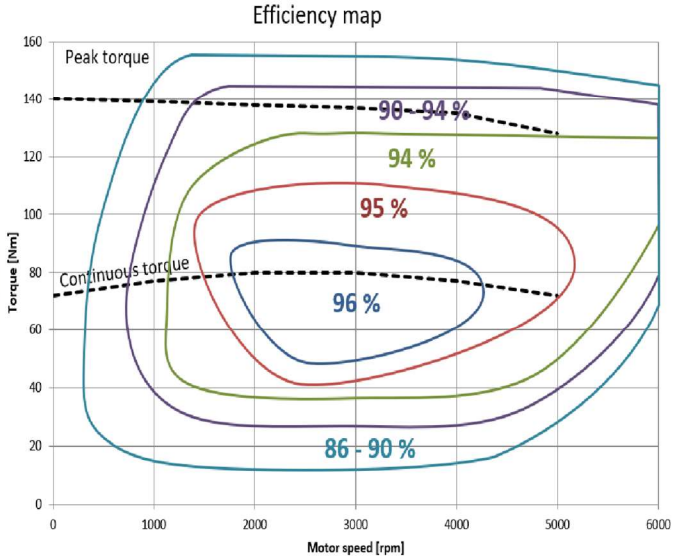
The 208 was the first motor developed by EMRAX. Its development began back in 2005 and was originally used in company's founder glider aircraft. Nowadays the development on the motor continuous and it has found many different uses outside of aviation. Contact us for more!

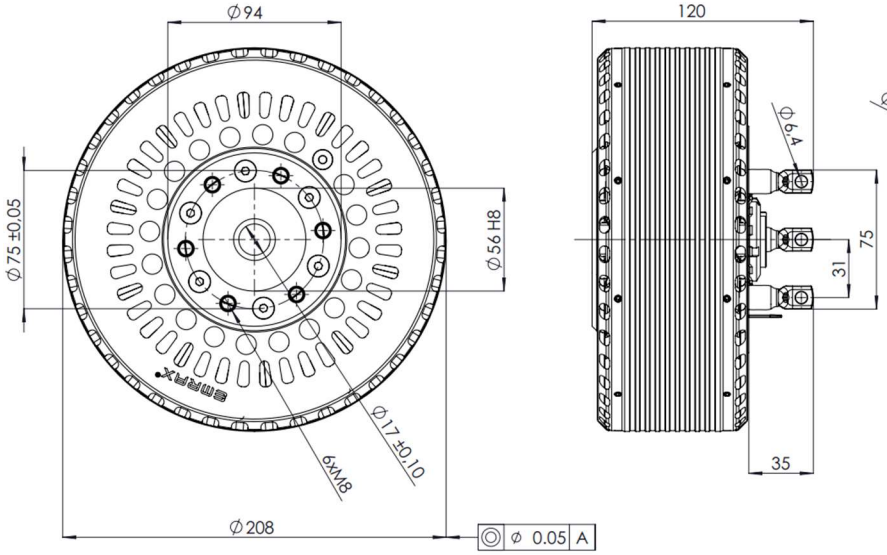
EMRAX 208

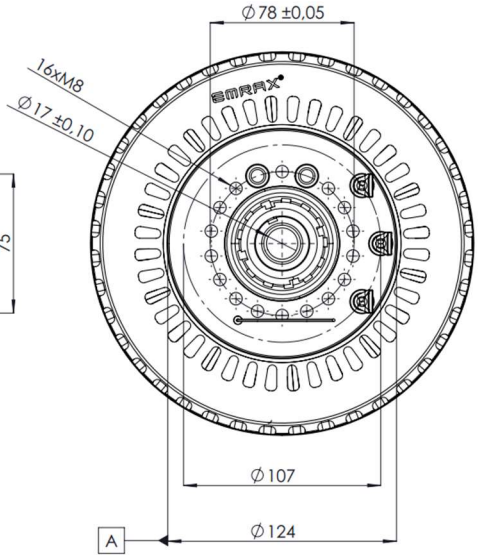
DIAMETER | LENGTH	208 mm | 85 mm
WEIGHT	9,4-10,3 kg
COOLING	air / water / combined
PEAK | CONTINUOUS POWER	86 kW | 56 kW*
PEAK | CONTINUOUS TORQUE	150 Nm | 90 Nm*
MAXIMUM SPEED	7000 RPM
OPERATING VOLTAGE	50 - 690 V
EFFICIENY	up to 96%*
POSITION SENSOR	resolver / encoder

*Subject to motor configuration, drive cycle, thermal conditions, and controller capability.









	EMRAX 208 High Voltage			EMRAX 208 Medium Voltage			EMRAX 208 Low Voltage		
AC = Air cooled LC = Liquid cooled CC = Combined cooled (Air + liquid)	AC	LC	CC	AC	LC	CC	AC	LC	CC
Ingress protection	IP21	IP66	IP21	IP21	IP66	IP21	IP21	IP66	IP21
Cooling specifications	ambient air 20ºC 20 m/s	min. 6 l/min, max. 50°C T_{amb}≤ 30°C	AC+LC*	ambient air 20ºC 20 m/s	min. 6 l/min, max. 50°C T_{amb}≤ 30°C	AC+LC*	ambient air 20ºC 20 m/s	min. 6 l/min, max. 50°C T_{amb}≤ 30°C	AC+LC*
Maximum motor temperature [°C]	integrated temperature sensor / rotor surface / integrated parts absolute limit 100/100/120								
Motor connection type	UVW or 2x UVW			UVW or 2x UVW			UVW or 2x UVW		
Voltage required for peak power [V_{DC}]**	690			420			170		
Motor peak efficiency [%]	96%								
Peak power S2 2min [kW]	86 kW at 6000 RPM								
Continuous power S1 (kW)	33	52	56	33	52	56	33	52	56
Peak torque [Nm]	150								
Continuous torque [Nm]	54	84	90	54	84	90	54	84	90
Limiting speed [RPM]	7000								
K_V constant at no load [rpm/V_{DC}]	15,53			25,02			64,01		
K_V constant at nominal load [rpm/V_{DC}]	11,67			18,94			48,19		
K_V constant at peak load [rpm/V_{DC}]	8,64			14,16			35,76		
K_T constant [Nm/A_{RMS}]	0,62			0,38			0,15		
Peak motor current [A_{RMS}]	240			400			1000		
Continuous motor current [A_{RMS}]	140			220			560		
Internal phase resistance at 25 °C [mΩ]***	12,27			5,51			0,90		
L_D inductance of 1 phase [µH]	175,5			73,5			7,5		
Induced voltage [V_{RMS}/RPM]	0,0482			0,0300			0,0117		
Magnetic flux – axial [V_S]	0,03758			0,02338			0,00912		
Temperature sensor on the stator windings	KTY 81/210								
Number of pole pairs	10								
Winding configuration	star								
Rotor Inertia [kg*m²]	0,01569								
Bearing configuration	6206 | 3206								
Weight [kg]	9,4	10,3	10,0	9,4	10,3	10,0	9,4	10,3	10,0

*Combined cooled motor (CC) requires cooling specifications from air and liquid cooled motors, to reach its specifications. It cannot only be cooled as an air-cooled motor. Every EMRAX motor requires sufficient air circulation. The motors should not be completely enclosed in any condition. Please check EMRAX motor manual to learn more. Performance in your application will depend on your installation details and boundary conditions. Please contact us to learn more.
**All motors are tested for 833V maximum voltage.
***Measured Phase to Phase, then divided by 2.

Values given are for a standard 3 phase UVW version, please consult EMRAX on 2x UVW values. $R_{1UVW}=2*R_{2UVW}$

	EMRAX 208 LV + 43%			EMRAX 208 LV + 100%			EMRAX 208 HV + 42%		
AC = Air cooled LC = Liquid cooled CC = Combined cooled (Air + liquid)	AC	LC	CC	AC	LC	CC	AC	LC	CC
Ingress protection	IP21	IP66	IP21	IP21	IP66	IP21	IP21	IP66	IP21
Cooling specifications	ambient air 20ºC 20 m/s	min. 6 l/min, max. 50°C T_{amb}≤ 30°C	AC+LC*	ambient air 20ºC 20 m/s	min. 6 l/min, max. 50°C T_{amb}≤ 30°C	AC+LC*	ambient air 20ºC 20 m/s	min. 6 l/min, max. 50°C T_{amb}≤ 30°C	AC+LC*
Maximum motor temperature [°C]	integrated temperature sensor / rotor surface / integrated parts absolute limit 100/100/120								
Motor connection type	UVW or 2x UVW			UVW or 2x UVW			UVW or 2x UVW		
Voltage required for peak power [V_{DC}]**	240			340			830		
Motor peak efficiency [%]	96%								
Peak power S2 2min [kW]	86kW at 6000 RPM			86 kW at 6000 RPM			76 kW at 4900 RPM		
Continuous power S1 (kW)	33	52	56	33	52	56	33	52	56
Peak torque [Nm]	150								
Continuous torque [Nm]	54	84	90	54	84	90	54	84	90
Limiting speed [RPM]	7000								
K_V constant at no load [rpm/V_{DC}]	44,77			32,01			10,93		
K_V constant at nominal load [rpm/V_{DC}]	33,70			24,10			8,34		
K_V constant at peak load [rpm/V_{DC}]	25,00			17,88			6,02		
K_T constant [Nm/A_{RMS}]	0,21			0,30			0,88		
Peak current [A_{RMS}]	720			500			170		
Continuous current [A_{RMS}]	400			280			95		
Internal phase resistance at 25 °C [mΩ]***	1,84			3,65			25,79		
L_D inductance of 1 phase [µH]	15,5			30,0			350,5		
Induced voltage [V_{RMS}/RPM]	0,0167			0,0234			0,0684		
Magnetic flux – axial [V_S]	0,01304			0,01824			0,05333		
Temperature sensor on the stator windings	KTY 81/210								
Number of pole pairs	10								
Winding configuration	star								
Rotor Inertia [kg*m²]	0,02521								
Bearing configuration	6206 | 3206								
Weight [kg]	9,4	10,3	10,0	9,4	10,3	10,0	9,4	10,3	10,0

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HV+42% options is operating at speeds lower than its limiting, due to voltage limitations.