Power at Work!

High Power Drives
Liquid Cooled Motors

SERVAX
DRIVES

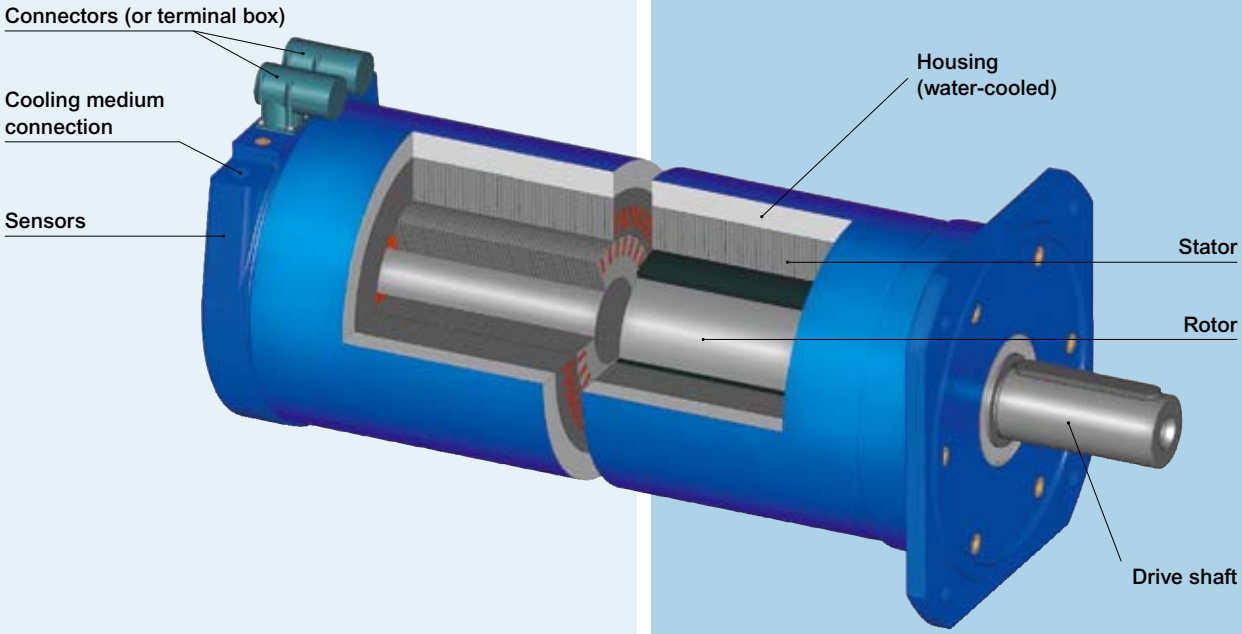
Great Advantages

The use of liquid cooled motors provides mechanical engineers with much greater freedom when looking for practical and innovative solutions in the field of electrical drive engineering. Liquid-cooled drives offer the following advantages over air-cooled versions:

Compact volume	Liquid cooling ensures optimum heat dissipation. Therefore, SERVAX High Power drives are used to full capacity and are thus more compact than air-cooled drives at the same level of power.
High dynamic response	The compact design and the high torque available over the entire speed range, even at zero speed, result in an excellent dynamic response.
Wide speed setting range	Intensive surface cooling is ensured in SERVAX High Power drives with liquid cooling, in both the high and low speed range. Therefore, the drive can be operated optimally over a wide speed range.
No heat radiation	SERVAX High Power drives do not radiate any heat and therefore do not adversely affect the environment. There is no undesirable heating of your machine or additional heat in an air-conditioned environment.
Low noise emissions	SERVAX High Power drives do not have a fan unit which means, firstly, that noise emissions are considerably reduced, and secondly, that the environment is not polluted by circulating dust.

Asynchronous Design

Synchronous Design



	Asynchronous	Synchronous
Power density	medium	high
Field weakening range	large	small – medium
Speed range	large	medium
Rotor heating	medium	small
Cogging torque	none	small

Successfully Implemented

Construction Industry

SERVAX High Power drives are used in mobile concrete milling and cutting devices due to their high power density and low weight. The demands placed on the robustness of the drive are also very high.

Machine Tools

SERVAX High Power drives are ideal for use in machine tools due to their compact design, high dynamic response, low heat radiation and wide speed setting range.

Plastics Industry

The manufacture of medicinal components in clean-rooms requires the injection moulding systems to have a high level of cleanliness and reliability – SERVAX High Power drives fit for this application optimally.

Rail Industry

Drives with a high power density and a very robust design are required in grinding trains used to machine rails for high-speed trains. This is an ideal task for SERVAX High Power drives.

Chemical Engineering

SERVAX High Power drives are used in bio-reactors due to their high speed setting range. The torque is available at all times from zero speed through to maximum speed, even at high ambient temperatures.

Other fields of application:

Printing Machine Industry

Textile Machine Industry

Medical Technology

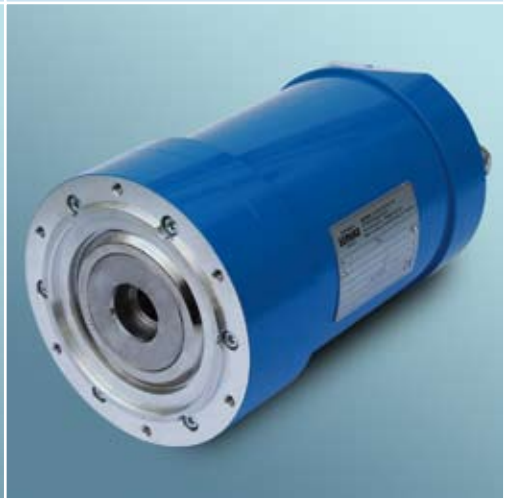
Automotive Industry

Your Challenge

Our Expertise

SERVAX High Power drives have a modular structure. They can be configured as follows:

	Basic Version	Customized Version
Size	71 to 160 mm shaft centre	to shaft centre 250 mm
Field weakening	value depending on technology	customized
Number of poles	see “performance range”	customized
Drive fixings	flange	flange / foot, weight according to customer req.
Degree of protection	IP54	customized
Insulation class	F	F – H
Housing	aluminium	customized
Shaft end	see “dimensions”	customized
Connections	terminal box (connector for frame size 71)	connector / terminal box / cable
Bearings	deep-groove ball bearing	cylindrical roller bearing, spindle bearing, 2-row deep-groove ball bearing
Cooling medium	water	customized
Brake	none	customized
Shaft encoder	resolver (encoder on request)	customized
Coating	black	customized

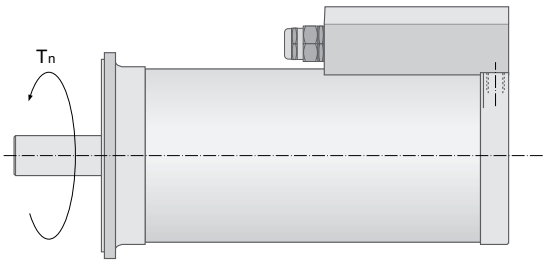


The broad manufacturing range of our means of production, which is a core competence of SERVAX Drives, increases our flexibility to meet customer requirements. In addition, we can even produce smaller batch sizes according to customer specifications.

We reserve the right – in the interests of constant improvements to our products – to alter specifications at any time and without prior notification, and without any obligation to re-equip products, which have already been supplied.

Performance Range (Basic Version)

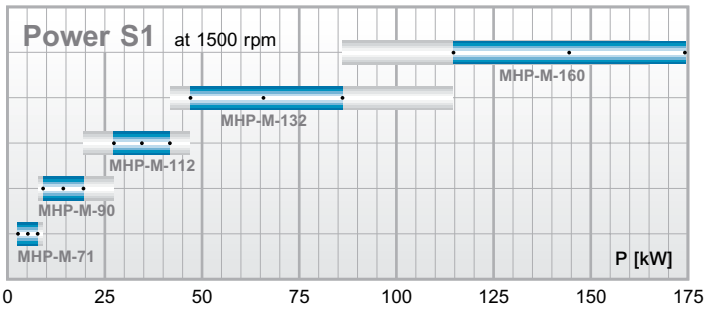
Voltage = 3 × 400 V
Water inlet temperature = 25 °C

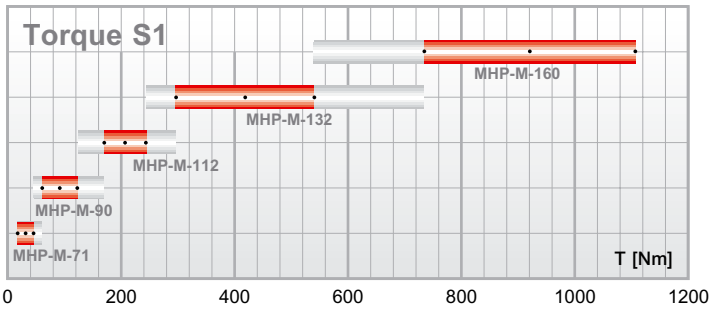


All data values apply to continuous operation S1. The values are approximately 30 % higher for S3 60 % operation.

Synchronous High Power Drives

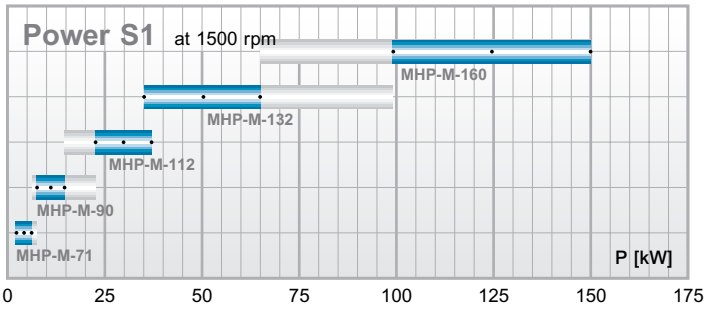
Drive type	P_n [kW] at 1500 rpm	T_n [Nm] at 1500 rpm	Inertia J [10^{-3} kgm^2]
MHP-M-71-06AA	2.4	15.3	1.5
MHP-M-71-06AC	5.2	33	2.1
MHP-M-71-06AE	7.9	50	2.7
MHP-M-90-06AA	9.3	59	7.9
MHP-M-90-06AC	14.3	91	10.9
MHP-M-90-06AE	19.2	122	13.9
MHP-M-112-06AA	27	169	31
MHP-M-112-06AC	34	219	38.5
MHP-M-112-06AE	42	269	46.1
MHP-M-132-08AA	47	298	116
MHP-M-132-08AC	66	422	153
MHP-M-132-08AE	86	546	191
MHP-M-160-08AA	115	733	330
MHP-M-160-08AC	145	921	402
MHP-M-160-08AE	174	1109	474

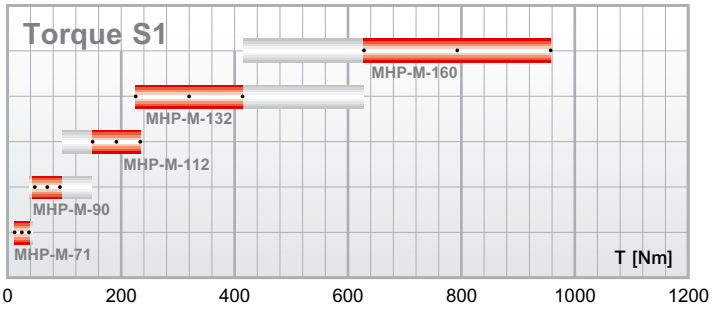




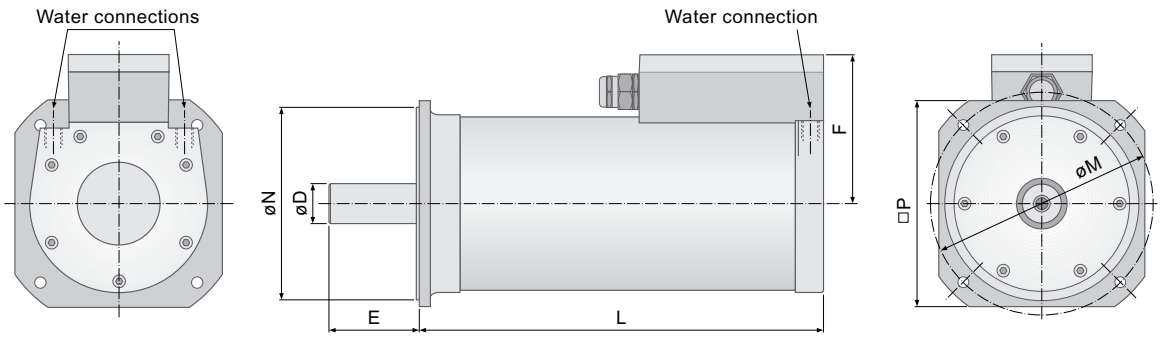
Synchronous High Power Drives – low inertia

Drive type	P_n [kW] at 1500 rpm	T_n [Nm] at 1500 rpm	Inertia J [10^{-3} kgm^2]
MHP-M-71-08AA	1.8	11.7	1.1
MHP-M-71-08AC	4.0	25	1.8
MHP-M-71-08AE	6.1	39	2.5
MHP-M-90-08AA	7.2	46	5.1
MHP-M-90-08AC	11.1	70	6.7
MHP-M-90-08AE	14.9	95	8.3
MHP-M-112-12AA	23	149	20.1
MHP-M-112-12AC	30	193	24.7
MHP-M-112-12AE	37	237	29.3
MHP-M-132-12AA	35	225	53
MHP-M-132-12AC	50	319	67
MHP-M-132-12AE	65	413	81
MHP-M-160-12AA	99	633	187
MHP-M-160-12AC	125	795	224
MHP-M-160-12AE	150	957	261





Dimensions (Basic Version)



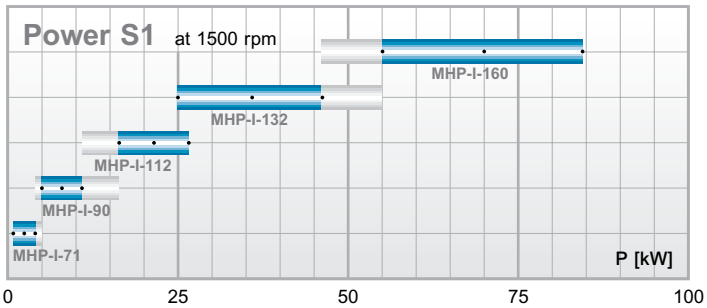
Synchronous and Asynchronous High Power Drives MHP

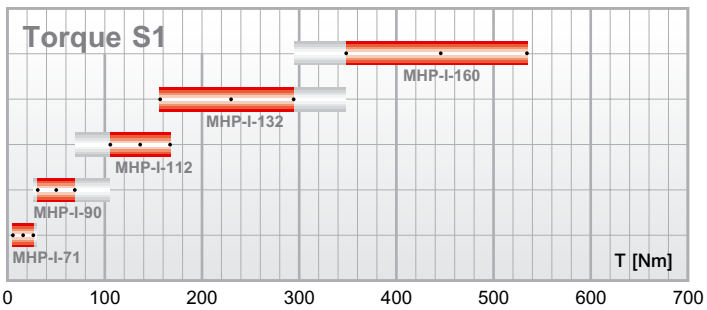
Height	Length	L [mm]	E [mm]	D [mm]	P [mm]	N [mm]	M [mm]	F [mm]	Weight [kg]
71	AA	203	50	24	148	130	165	*	16
	AC	283	50	24	148	130	165	*	22
	AE	363	50	24	148	130	165	*	28
90	AA	317	80	38	194	180	215	166	39
	AC	397	80	38	194	180	215	166	49
	AE	477	80	38	194	180	215	166	59
112	AA	467	110	48	246	230	265	186	86
	AC	547	110	48	246	230	265	186	102
	AE	627	110	48	246	230	265	186	118
132	AA	472	140	65	272	250	300	220	144
	AC	572	140	65	272	250	300	220	180
	AE	672	140	65	272	250	300	220	215
160	AA	666	140	75	340	300	350	261	297
	AC	766	140	75	340	300	350	261	347
	AE	866	140	75	340	300	350	261	397

** with connector (without terminal box)*

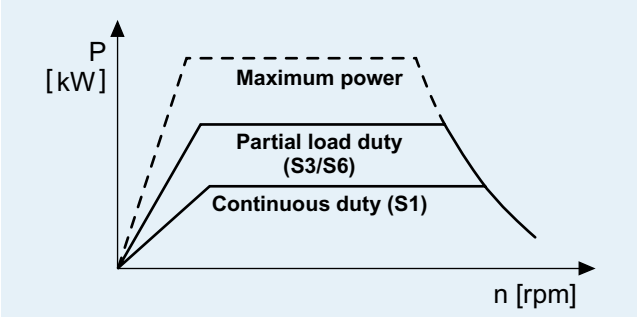
Asynchronous High Power Drives

Drive type	P_n [kW] at 1500 rpm	T_n [Nm] at 1500 rpm	Inertia J [10^{-3} kgm^2]
MHP-I-71-04-AA	1.1	6.7	1.0
MHP-I-71-04-AC	2.5	15.9	1.8
MHP-I-71-04-AE	3.8	24	2.6
MHP-I-90-04-AA	4.9	31	8.9
MHP-I-90-04-AC	8.0	51	12.4
MHP-I-90-04-AE	10.7	68	16.0
MHP-I-112-04-AA	16,7	106	35
MHP-I-112-04-AC	22	138	44
MHP-I-112-04-AE	27	169	52
MHP-I-132-04-AA	25	159	92
MHP-I-132-04-AC	36	230	122
MHP-I-132-04-AE	47	298	151
MHP-I-160-04-AA	55	350	291
MHP-I-160-04-AC	70	446	355
MHP-I-160-04-AE	84	537	418





Motor Characteristic Curve



Precise specification of the drive characteristic curve is required for an optimum design.

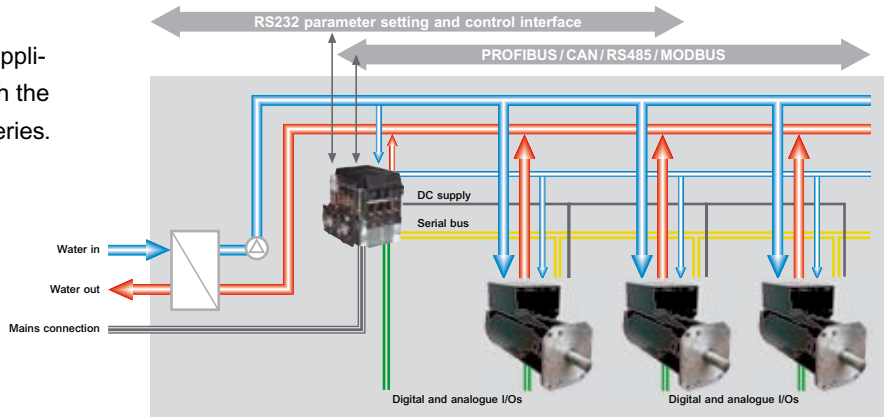
In the synchronous design the drives can be operated up to 1.5 times the nominal speed with constant power; a range of 1:4 is possible as an option.
In the asynchronous design a constant power range up to 4 times the nominal speed can usually be achieved.

Connections

SERVAX High Power drives can be equipped with connectors, terminal box or with cable outlets according to customer requirements.

Integral liquid cooled

Integral drives for multiple axle applications are feasible perfectly with the modular structure of the MHP-series.



Performance Record

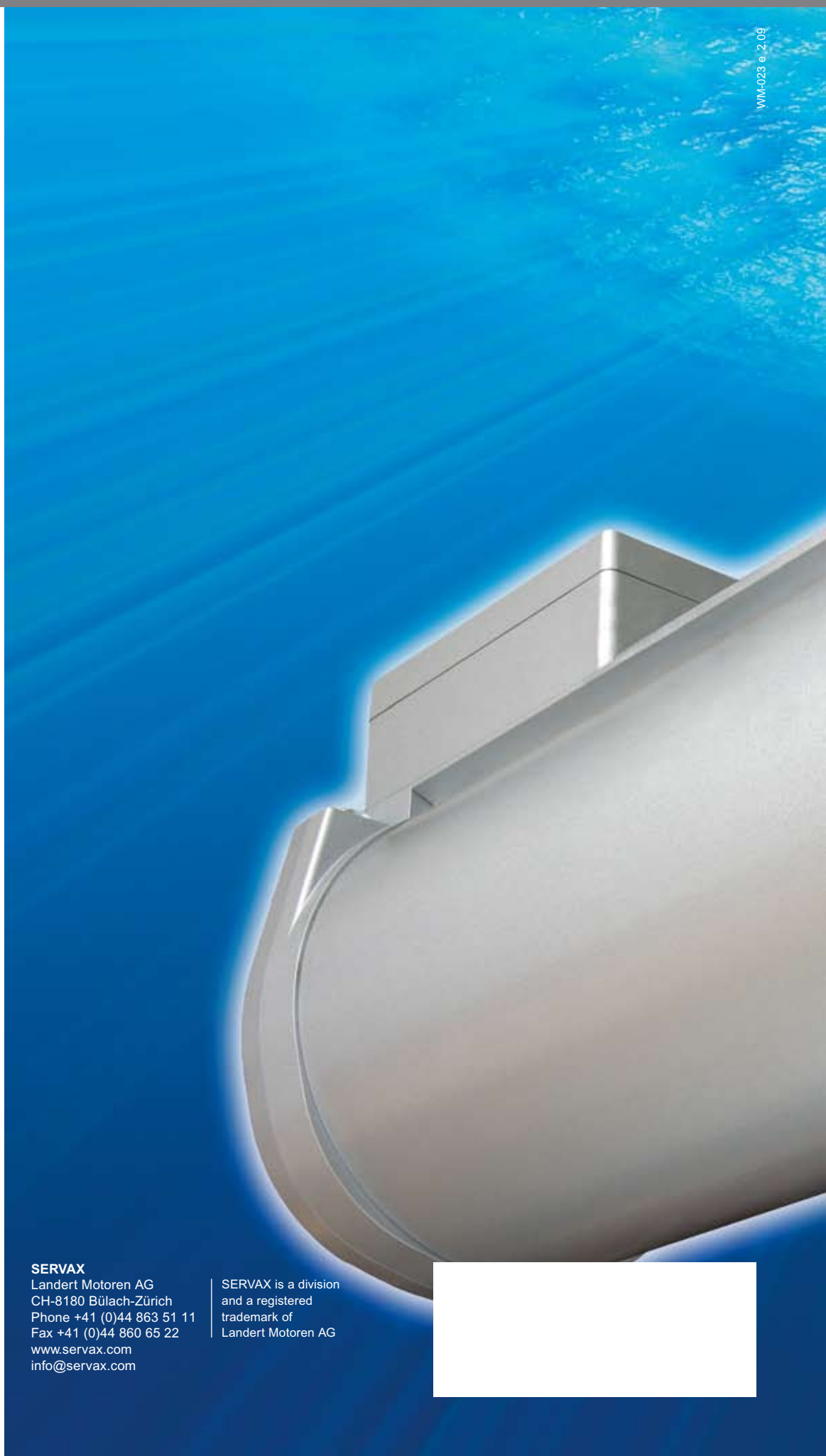
A modern test bench is available to our customers for the parameterisation of the frequency inverter. The performance data of the drives can also be verified here in the presence of our customers.

Drive Control

The asynchronous version of SERVAX High Power drives can be operated from the mains or on a frequency inverter. The synchronous versions are designed for operation on a controlled frequency inverter. In both versions, the winding is adjusted to the desired speed and voltage range according to customer requirements. The motor feedback system is designed to customer requirements.

Cooling

SERVAX High Power drives have a cooling system integrated in the housing and end shields. The rotors are low-loss in order to achieve the highest possible power densities.



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DRIVES

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