

# Motor components

Unlimited possibilities



★★★★★  
**SERVAX**  
DRIVES

# SERVAX

## Always in motion

**Swiss Family business with proven international success.** Our industrial products are in use all over the world. The formula for success is the unique combination of Swiss innovative capacity together with an international value chain. We are fond of our highly skilled employees that work at innovation and research projects at our Zurich development facilities. Production sites in Switzerland and other Europe allow us to react flexibly to requirements of our customers. We deliver solutions for a broad market segment and highly demanding applications.

**Challenges inspire us.** One can always improve. This is why we are constantly on the lookout for new ways to optimise our performance. One example of this is that we are continuously making our well-designed platform even more efficient for individual customer solutions in the drive segment. Our most recent projects strengthen us in our strategy to offer our customers unique, high-quality solutions within the shortest time possible. True to our guiding principles: **together, clear, focussed.**



**Intelligent**



**Individual**



**Environmentally friendly**



**Dependable**

**Esteem and trust.** Pleasure in finding the right solution is what drives us forward. When we collaborate with our employees, partners and customers, we use the power of working constructively with each other. **Openness, trust, partnership, customer orientation** and **effectiveness** are values we believe in. This is how we learn from each other, grow together and continue to develop our strengths. This inspires customers, partners and employees while establishing the foundation for creating the perfect point of departure for drive solutions with added value.

**Our contribution to the environment.** Your decision to work with us is also a decision for responsible environmental management. Thanks to the high quality and effectiveness of our drives and components, our products are characterised by a very high level of efficiency (up to 98 %). This is an important contribution to the sustainable use of resources. Because we use modern materials, our products have a long life cycle – this means we are able to keep spare parts deliveries to an absolute minimum. Further, our module system guarantees that individual components can be targeted for replacement. We properly dispose of worn-out parts in an environmentally friendly manner. We also apply the principles of sustainability to transport; for example, we keep CO<sub>2</sub> emissions to a minimum by grouping deliveries to our end customers. And finally, **SERVAX** products are up to 98 % recyclable.

# Innovative solutions

## Asynchronous and synchronous versions

### The most economical type of direct drive

Motor components in the form of installation kits are becoming increasingly widespread, especially in the machine tools industry. The high motor power combined with a reduced size and low weight allow the motor to be fully integrated in the spindle as a direct drive. This innovative approach results in high levels of resilience and good vibration characteristics.

### Also suitable for small batch sizes

Thanks to the modular design, **SERVAX** is also able to provide attractive, customised solutions for small batch sizes. The motor components are available with both synchronous and asynchronous technology. We tailor the mechanical characteristics specifically to the applications and demands of our customers. The high degree of integration allows the machine manufacturer to clearly set their products apart from their competitors. Based on a wide variety of basic modules, we create an optimum solution in terms of power and design

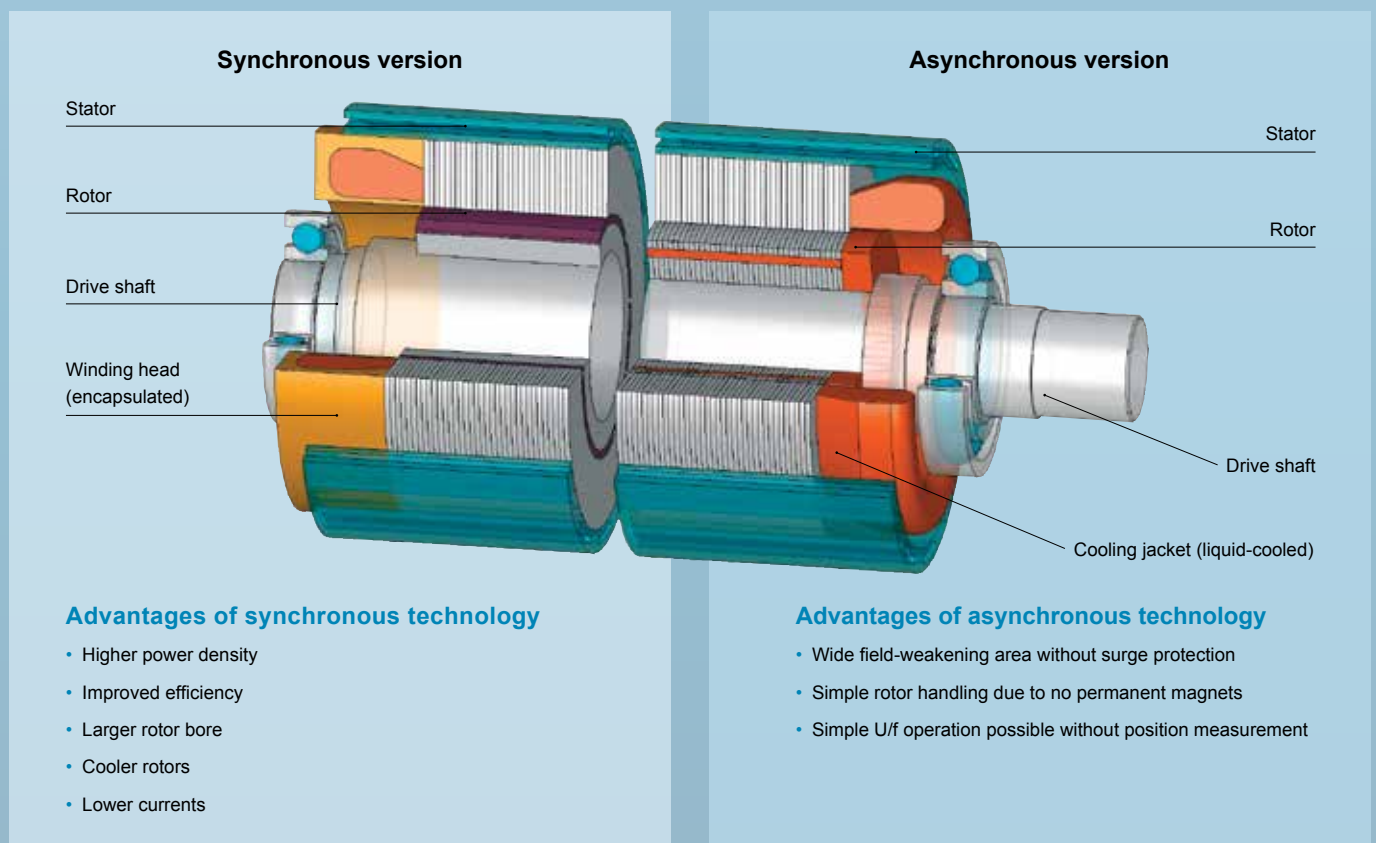
together with our customers. When required, the magnets are assembled directly onto the supplied customer shaft. This further reduces both costs and the space required.

### MHS-I – asynchronous motors

**The robust, cost-effective «workhorse».** **SERVAX** primarily recommends using asynchronous machines when durable motors are required. They are ideally suited where constant speeds are required, where a wide range of constant power is needed and also at high operating temperatures.

### MHS-M – permanent-magnet synchronous motors

**High power with efficiency.** **SERVAX** recommends using permanent-magnet synchronous motors wherever there are increased demands on capacity, dynamics, overloading, speed setting range and efficiency.



# Power range 105 mm and 140 mm

## Basic versions

### Synchronous version Stator $\varnothing D = 105$ mm, jacket $\varnothing D_M = 121$ mm

TYPE	Torque S1 at 1500 rpm <sup>-1</sup> [Nm]	Power S1 at 1500 rpm <sup>-1</sup> [kW]	Maximum torque [Nm]	Speed n <sub>max</sub> [rpm <sup>-1</sup> ]	Max. power S1 at n <sub>max</sub> [kW]	Stator length L [mm]	Rotor bore B <sub>max</sub> [mm]
MHS-M-105-4-70	9.1	1.4	15.2	36 000	17.2	138.0	42.0
MHS-M-105-4-230	30.0	4.7	50.0	36 000	57.0	298.0	42.0
MHS-M-105-6-70	15.3	2.4	31.0	30 500	16.2	136.0	46.0
MHS-M-105-6-230	50.0	7.9	101.0	30 500	53.0	296.0	46.0

### Asynchronous version Stator $\varnothing D = 105$ mm, jacket $\varnothing D_M = 121$ mm

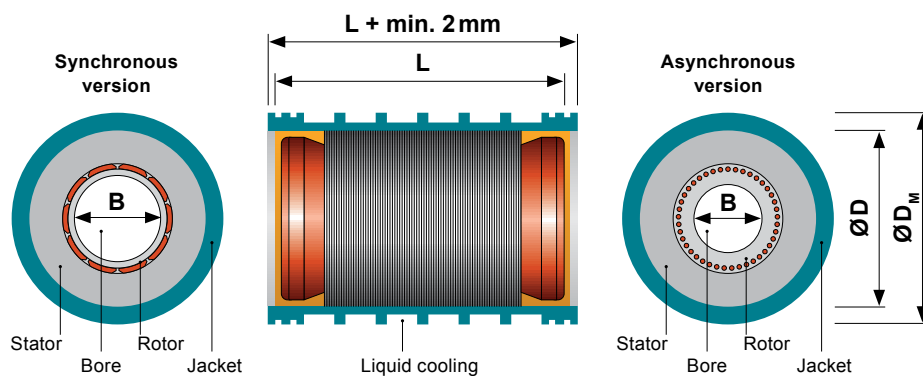
TYPE	Torque S1 at 1500 rpm <sup>-1</sup> [Nm]	Power S1 at 1500 rpm <sup>-1</sup> [kW]	Maximum torque [Nm]	Speed n <sub>max</sub> [rpm <sup>-1</sup> ]	Max. power S1 at n <sub>max</sub> [kW]	Stator length L [mm]	Rotor bore B <sub>max</sub> [mm]
MHS-I-105-2-70	4.7	0.7	7.5	39 500	15.0	145.0	35.0
MHS-I-105-2-230	17.0	2.7	28.0	39 500	45.0	305.0	35.0
MHS-I-105-4-70	6.7	1.0	10.7	39 500	12.0	138.0	38.0
MHS-I-105-4-230	24.0	3.8	38.0	39 500	43.0	298.0	38.0

### Synchronous version Stator $\varnothing D = 140$ mm, jacket $\varnothing D_M = 158$ mm

TYPE	Torque S1 at 1500 rpm <sup>-1</sup> [Nm]	Power S1 at 1500 rpm <sup>-1</sup> [kW]	Maximum torque [Nm]	Speed n <sub>max</sub> [rpm <sup>-1</sup> ]	Max. power S1 at n <sub>max</sub> [kW]	Stator length L [mm]	Rotor bore B <sub>max</sub> [mm]
MHS-M-140-4-110	36.0	5.7	52.0	20 000	34.0	194.0	60.0
MHS-M-140-4-230	75.0	11.8	108.0	20 000	71.0	314.0	60.0
MHS-M-140-4-350	114.0	17.9	165.0	20 000	109.0	434.0	60.0
MHS-M-140-6-110	44.0	6.9	93.0	18 500	30.0	186.0	64.0
MHS-M-140-6-230	91.0	14.3	195.0	18 500	63.0	306.0	64.0
MHS-M-140-6-350	138.0	22.0	297.0	18 500	95.0	426.0	64.0

### Asynchronous version Stator $\varnothing D = 140$ mm, jacket $\varnothing D_M = 158$ mm

TYPE	Torque S1 at 1500 rpm <sup>-1</sup> [Nm]	Power S1 at 1500 rpm <sup>-1</sup> [kW]	Maximum torque [Nm]	Speed n <sub>max</sub> [rpm <sup>-1</sup> ]	Max. power S1 at n <sub>max</sub> [kW]	Stator length L [mm]	Rotor bore B <sub>max</sub> [mm]
MHS-I-140-2-110	14.6	2.3	26.0	29 800	28.0	200.0	45.0
MHS-I-140-2-230	36.0	5.6	68.0	29 800	68.0	320.0	45.0
MHS-I-140-2-350	55.0	8.6	110.0	29 800	101.0	440.0	45.0
MHS-I-140-4-110	21.0	3.3	39.0	27 200	26.0	190.0	52.0
MHS-I-140-4-230	51.0	8.0	100.0	27 200	60.0	310.0	52.0
MHS-I-140-4-350	77.0	12.1	153.0	27 200	90.0	430.0	52.0



# Power range 170 mm und 225 mm

## Basic versions

Synchronous version		Stator $\varnothing D = 170$ mm, jacket $\varnothing D_M = 190$ mm					
TYPE	Torque S1 at 1500 rpm <sup>-1</sup> [Nm]	Power S1 at 1500 rpm <sup>-1</sup> [kW]	Maximum torque [Nm]	Speed n <sub>max.</sub> [rpm <sup>-1</sup> ]	Max. power S1 at n <sub>max.</sub> [kW]	Stator length L [mm]	Rotor bore B <sub>max.</sub> [mm]
MHS-M-170-4-110	51.0	8.0	85.0	14 500	45.0	206.0	74.0
MHS-M-170-4-290	134.0	21.0	223.0	14 500	119.0	386.0	74.0
MHS-M-170-4-470	217.0	34.0	362.0	14 500	192.0	566.0	74.0
MHS-M-170-6-110	69.0	10.8	129.0	14 500	42.0	194.0	82.0
MHS-M-170-6-290	181.0	28.0	341.0	14 500	109.0	374.0	82.0
MHS-M-170-6-470	294.0	46.0	553.0	14 500	177.0	554.0	82.0
MHS-M-170-8-110	80.0	12.6	191.0	13 000	38.0	191.0	88.0
MHS-M-170-8-290	211.0	33.0	503.0	13 000	101.0	371.0	88.0
MHS-M-170-8-470	341.0	54.0	815.0	13 000	163.0	551.0	88.0

Asynchronous version		Stator $\varnothing D = 170$ mm, jacket $\varnothing D_M = 190$ mm					
TYPE	Torque S1 at 1500 rpm <sup>-1</sup> [Nm]	Power S1 at 1500 rpm <sup>-1</sup> [kW]	Maximum torque [Nm]	Speed n <sub>max.</sub> [rpm <sup>-1</sup> ]	Max. power S1 at n <sub>max.</sub> [kW]	Stator length L [mm]	Rotor bore B <sub>max.</sub> [mm]
MHS-I-170-4-110	40.0	6.3	90.0	21 700	37.0	200.0	70.0
MHS-I-170-4-290	110.0	17.3	276.0	21 700	98.0	380.0	70.0
MHS-I-170-4-470	184.0	29.0	463.0	21 700	155.0	560.0	70.0
MHS-I-170-6-110	37.0	5.8	75.0	21 700	31.0	190.0	75.0
MHS-I-170-6-290	102.0	16.0	230.0	21 700	91.0	370.0	75.0
MHS-I-170-6-470	159.0	25.0	370.0	21 700	144.0	550.0	75.0

Synchronous version		Stator $\varnothing D = 225$ mm, jacket $\varnothing D_M = 253$ mm					
TYPE	Torque S1 at 1500 rpm <sup>-1</sup> [Nm]	Power S1 at 1500 rpm <sup>-1</sup> [kW]	Maximum torque [Nm]	Speed n <sub>max.</sub> [rpm <sup>-1</sup> ]	Max. power S1 at n <sub>max.</sub> [kW]	Stator length L [mm]	Rotor bore B <sub>max.</sub> [mm]
MHS-M-225-4-140	137.0	22.0	196.0	10 500	75.0	248.0	106.0
MHS-M-225-4-290	284.0	45.0	406.0	10 500	155.0	398.0	106.0
MHS-M-225-4-490	480.0	75.0	686.0	10 500	261.0	598.0	106.0
MHS-M-225-6-140	144.0	23.0	232.0	10 500	68.0	240.0	111.0
MHS-M-225-6-290	297.0	47.0	480.0	10 500	141.0	390.0	111.0
MHS-M-225-6-490	502.0	79.0	812.0	10 500	238.0	590.0	111.0
MHS-M-225-8-140	174.0	27.0	263.0	10 500	63.0	238.0	122.0
MHS-M-225-8-290	360.0	57.0	545.0	10 500	131.0	388.0	122.0
MHS-M-225-8-490	608.0	96.0	920.0	10 500	221.0	588.0	122.0

Asynchronous version		Stator $\varnothing D = 225$ mm, jacket $\varnothing D_M = 253$ mm					
TYPE	Torque S1 at 1500 rpm <sup>-1</sup> [Nm]	Power S1 at 1500 rpm <sup>-1</sup> [kW]	Maximum torque [Nm]	Speed n <sub>max.</sub> [rpm <sup>-1</sup> ]	Max. power S1 at n <sub>max.</sub> [kW]	Stator length L [mm]	Rotor bore B <sub>max.</sub> [mm]
MHS-I-225-4-140	95.0	14.9	238.0	16 900	67.0	240.0	105.0
MHS-I-225-4-290	197.0	31.0	522.0	16 900	140.0	390.0	105.0
MHS-I-225-4-490	331.0	52.0	882.0	16 900	235.0	590.0	105.0
MHS-I-225-6-140	89.0	14.0	202.0	16 900	63.0	230.0	105.0
MHS-I-225-6-290	180.0	28.0	429.0	16 900	130.0	380.0	105.0
MHS-I-225-6-490	306.0	48.0	734.0	16 900	220.0	580.0	105.0

# Customised power ranges

## Innovative modules for any application

### Customised solutions

We can offer you customised motors with special dimensions and pole numbers. We construct the ideal installation kit according to the drive characteristics.

### Design variations:

- Rotor and stator as sleeves which can be installed on your system.
- Stator element already integrated in the cooling jacket, with encapsulated winding heads for optimal heat dissipation.
- Synchronous rotor integrated in your spindle for optimal motor compactness.

	Special versions	Basic modules
EXTERNAL STATOR DIAMETER	Ø 50 – 400 mm	Ø 105/124/130/140/150/165/170/190/195/200/225/240/250/265/280/310 mm
INTERNAL ROTOR DIAMETER (ON ASYNCHRONOUS VERSIONS)	Ø 15 – 200 mm	Ø 25/30/32,5/35/38/42/45/50/55/60/65/70/75/82,6/90/100/112,6/124/130 mm



# Flexible application possibilities

## Proven many times over

### The key benefits at a glance:

- Direct drive
- Compact design and low weight
- High power and strength
- Small batch sizes
- Selection of technology according to application

### Typical areas of application:

- Grinding machines
- Automatic lathes
- Transfer machines
- Auxiliary spindles
- Milling machines
- Lathes
- Machining centres
- High-speed generators



Truing spindle



Headstock spindle



Grinding spindle

## Quality

### Our commitment

**We are committed to quality.** Since 1994, we have maintained a quality management system that is ISO 9001 certified and defines our everyday work.

**Motors at their very best.** In our in-house laboratory, we test the practicality of the theoretical calculations on fully equipped test stands. Our customers then benefit from permanent product improvements.

**Service tailored to your needs.** Spare parts and servicing are in the safe hands of the machine manufacturer. It goes without saying that we guarantee the fast delivery of spare parts and are there to help if you have any questions.



### SERVAX – customised electric drives

- Air-cooled electric drives
- Liquid-cooled electric drives
- Asynchronous motors
- Permanent-magnet synchronous motors
- Motors with hybrid technology
- **JANUS** machine door actuator

