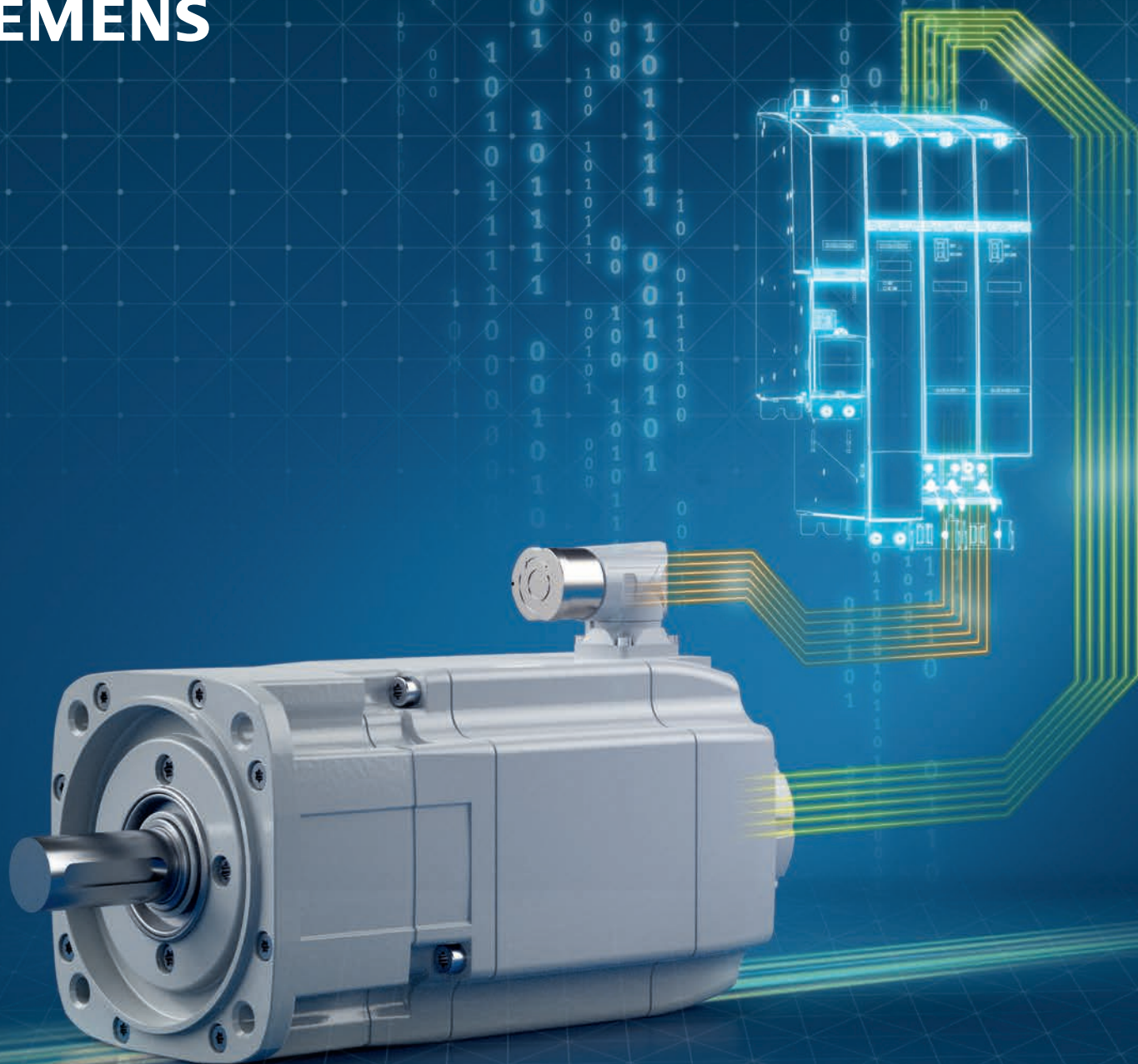


**SIEMENS**



**SIMOTICS**

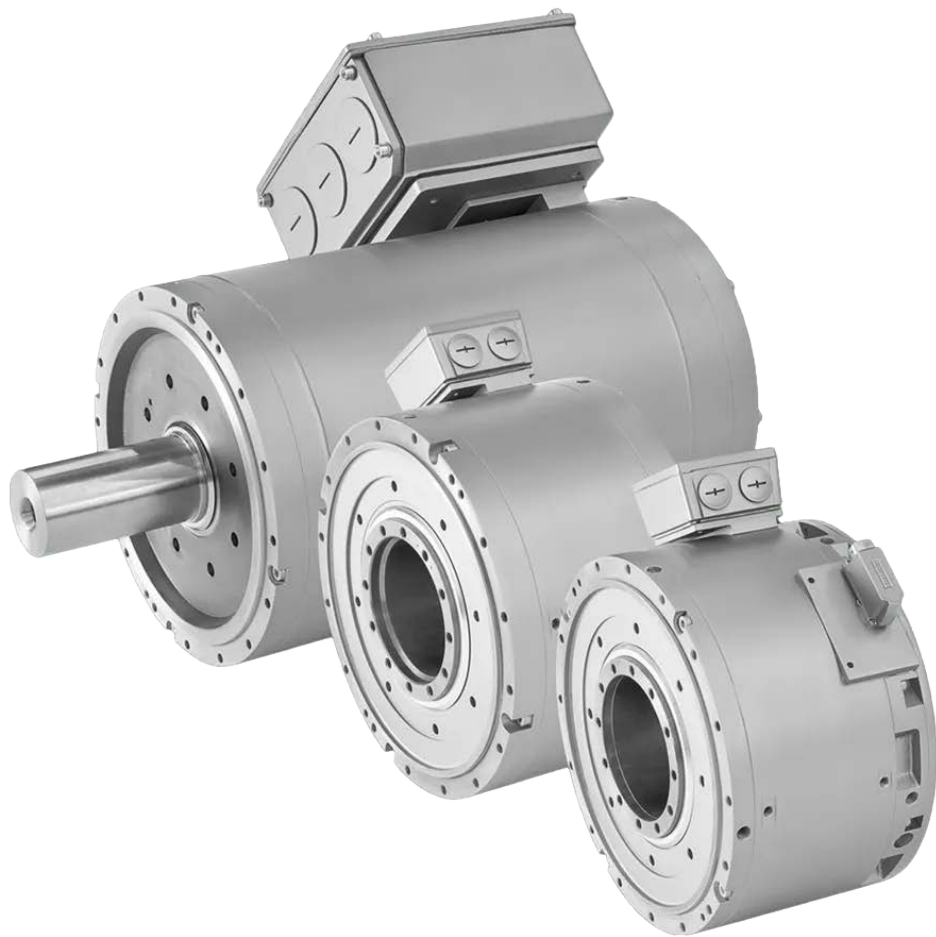
compact, dynamic and rugged

Experience a higher level of precision

**SIMOTICS T Torque Motors**

# **SIMOTICS motors** for every motion control application





# | Move it!

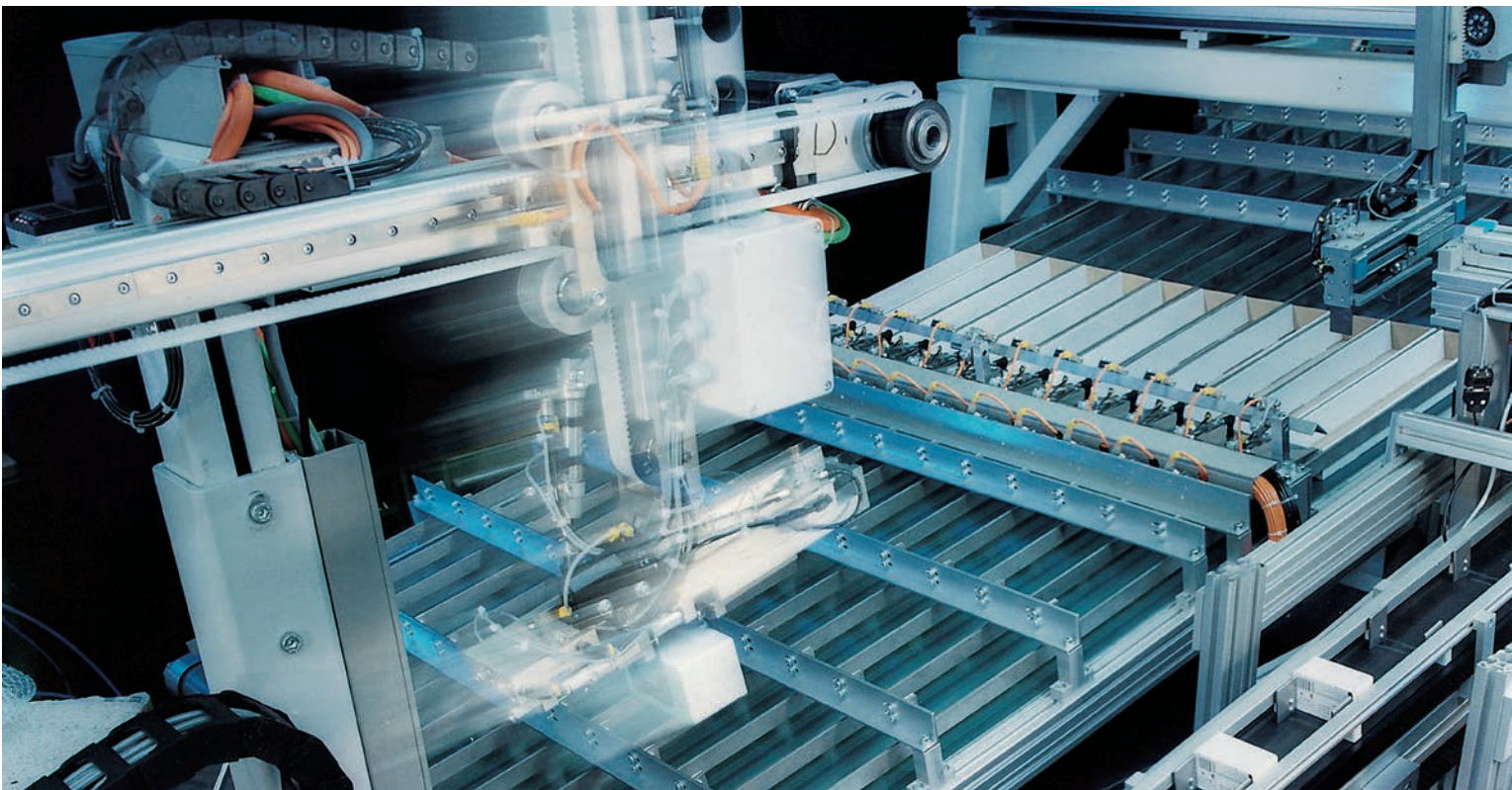
Since the development of the dynamo-electric principle by Werner von Siemens in 1866, innovative motor technology represents a core business of our company. In addition to low-voltage, DC and high-voltage motors, **SIMOTICS motors** have firmly established themselves in many industries when it comes to addressing demanding motion control applications.

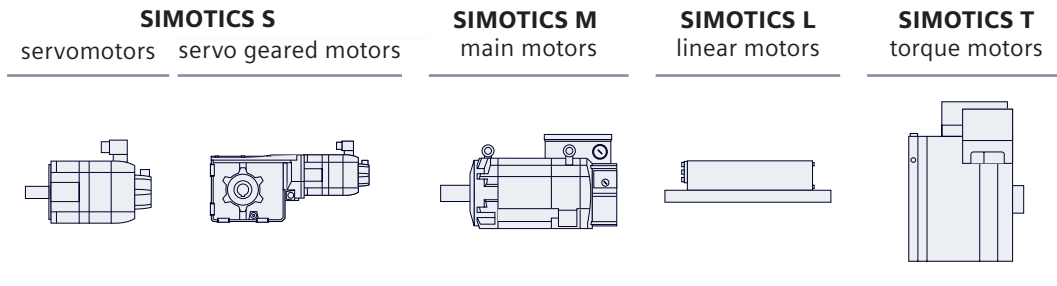
## **The correct solution**

Whether for precise and repeatable positioning, constant speed and high dynamic motion, long traversing paths or fast velocity changes—the **Siemens SIMOTICS portfolio of servo, main, linear and torque motors** has the optimum solution for every motion control application.

### **SIMOTICS motion control motors are based upon:**

- More than 150 years of experience and innovation in electric motor technology
- The widest range of motors worldwide with optimum solutions for motion control applications in every manufacturing industry and power class
- Can be fully integrated into the drive-train to create overall systems, perfectly addressing the control concept
- Rugged and compact design for reliable, low-maintenance operation with the highest dynamic performance and precision
- A global network of skill sets and worldwide service around the clock



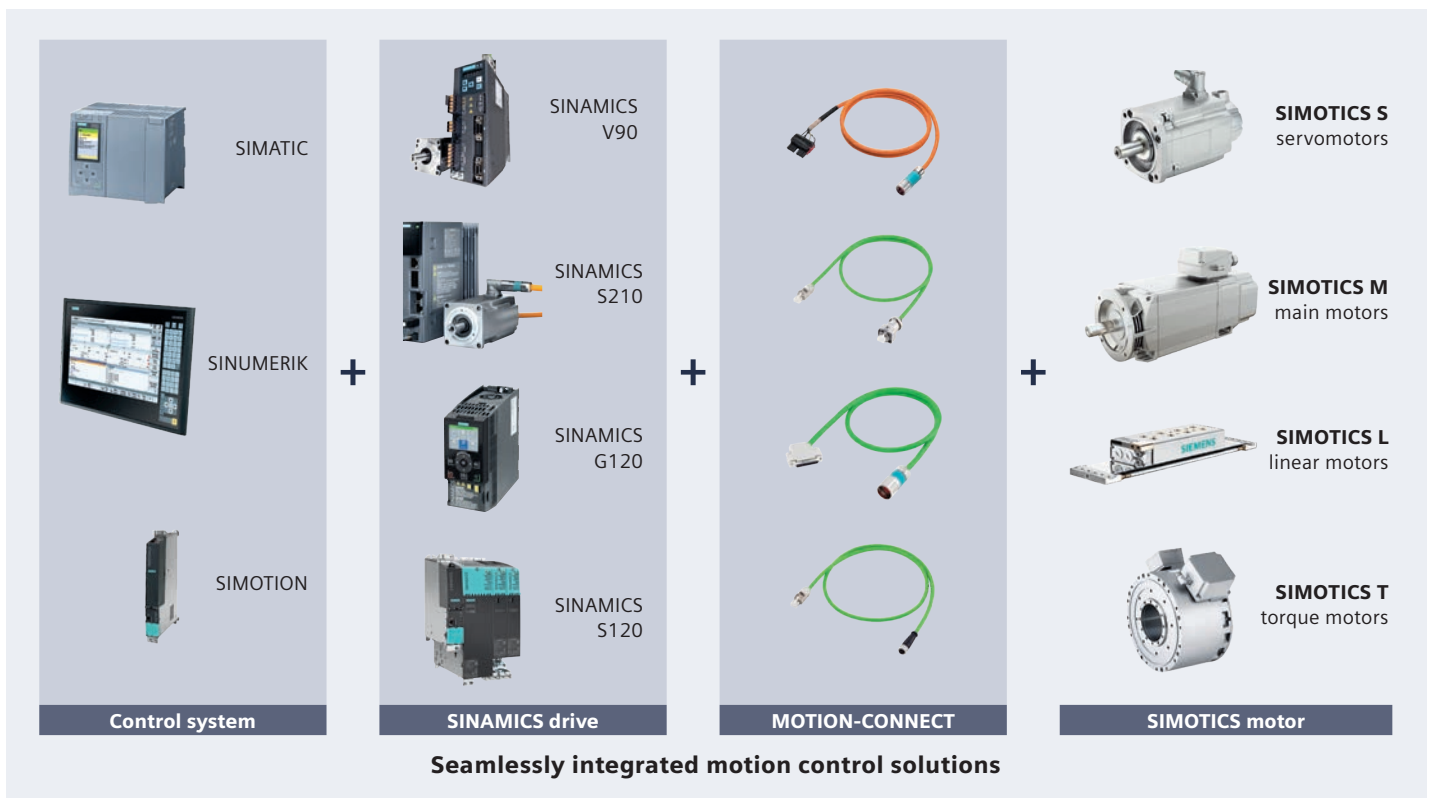


**SIMOTICS motion control motors** are perfectly harmonized and coordinated for operation with our SINAMICS family of drives. This simplifies the engineering and commissioning needed for high-performance applications in machine building and plant construction.

**Optimum integration in the drive and control system**

To optimize interaction with the drive, Siemens motors have a DRIVE-CLiQ interface to quickly transfer data—and transparently monitor important motor information. In addition, SIMOTICS motion control motors operate perfectly with SIMATIC, SINUMERIK and SIMOTION control systems from Siemens.

For specific questions related to your application, simply e-mail us: [✉ mc.us@siemens.com](mailto:mc.us@siemens.com)



## SIMOTICS torque motors—always providing the right spin at precisely the right time

Whether for machine tools, extruder worms or paper rolls—SIMOTICS slow speed permanent-magnet torque motors represent an attractive solution for driving all rotary axis types. They can be completely integrated into machines without requiring mechanical transmission elements. This reduces the space required, provides maximum flexibility when integrating the motors, minimizes maintenance costs and maximizes availability.

The direct mechanical connection results in an increased dynamic performance and control quality in the overall system and ensures a high torque at the optimum speed with high precision. So depending upon your application, you have the choice between two motor types.

### SIMOTICS T-1FW3 and SIMOTICS T-1FW6

#### Highlights

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Highest precision, power and dynamic performance

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Various application-specific versions

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Direct controllability—no elasticities in the drive train

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Low space requirement and simplified maintenance as the motor can be directly integrated into the machine structure without having to use mechanical transmission element

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High number of poles for high torques at low speeds

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Short acceleration times, extremely high, smooth-running characteristics

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High degree of efficiency

---

High degree of availability

---

#### Typical application areas

##### SIMOTICS T-1FW3 motors

- Rolling mill drives
- Paper machines
- Plastic injection molding machines
- Handling and assembly systems
- Servo-presses
- Extruders and winders

##### SIMOTICS T-1FW6 motors

- Rotary indexing machines
- Rotary indexing tables and partial machines
- Rotary axes (A/B/C for 5-axis machining centers)
- Workpiece spindles
- Roll and cylinder drives
- Tool turrets

#### SIMOTICS torque motors—the highest precision for rotary axes

The extremely compact, water-cooled SIMOTICS T-1FW3 complete torque motors are flanged to the machine using torque arms specifically developed for the purpose. An optional clamping element makes it easier to couple the rotor to the machine shaft.

The pre-installed mounting set includes the torque arm, clamping element and centering sleeve (only for hollow shafts)—making it simple and safe to establish a connection to the motor. This creates a perfectly stiff drive train that can be optimally controlled.

SIMOTICS T-1FW6 built-in torque motors, stator and rotor are supplied as components and are directly integrated into the machine itself. They are available with jacket as well as with integrated cooling. Additionally, the motors operate without any mechanical transmission elements—e.g. coupling and gearbox—and require significantly less space than conventional drives. The compact design and low number of installed parts reduce the number of interfaces, maintenance costs and stock inventory costs—thus minimizing machine failures.

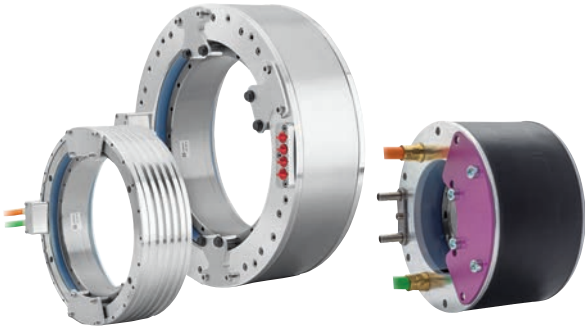
#### SIMOTICS T-1FW3 and T-1FW6 torque motors—overview

SIMOTICS T	T-1FW3 Complete torque motor	T-1FW6 Built-in torque motor
<b>Rated torque*</b>	up to 7,000 Nm	up to 5,600 Nm
<b>Rated speed*</b>	up to 1,200 rpm	up to 940 rpm
<b>Maximum speed*</b>	up to 1,800 rpm	up to 1,500 rpm
<b>Maximum torque</b>	11,000 Nm	10,900 Nm

\* depending upon the version and type





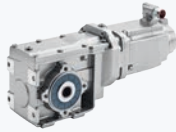

SIMOTICS T-1FW3



SIMOTICS T-1FW6



# SIMOTICS motion control motors—an overview

SIMOTICS				
	S-1FK7	S-1FT7	S-1FG1	S-1FL6
Servomotors			Servo-drive systems	
<b>Cooling method</b>				
Natural cooling	Yes	Yes	Yes	Yes
Forced-ventilated	Yes	Yes	—	—
Water-cooled	—	Yes	—	—
Open-circuit-cooled	—	—	—	—
<b>Shaft height</b>	20 ... 100	36 ... 132	29...109	20 ... 90
<b>Degree of protection</b>	IP64 to IP65	IP64 to IP67	IP65	IP65
<b>Rated speed / velocity</b>	2,000 ... 6,000 rpm	1,500 ... 6,000 rpm	13 ... 1,279 rpm	2,000 ... 5,000 rpm
<b>Rated power</b>	0.05 ... 8.17 kW	0.88 ... 45.5 kW	0.5 ... 1.8 kW	0.05 ... 7.0 kW
<b>Rated Nm torque / force</b>	0.08 ... 37 Nm	1.4 ... 250 Nm	up to 3,070 Nm <sup>1)</sup>	0.16 ... 33.4 Nm
<b>Encoder</b>				
Single-turn absolute	Yes	Yes	Yes	Yes
Multi-turn absolute	Yes	Yes	Yes	Yes
Incremental	Yes	Yes	—	Yes
Resolver	Yes	—	Yes	—
External required	—	—	—	—
<b>Holding brake as option</b>	Yes	Yes	Yes	Yes
<b>Drive systems</b>	SINAMICS S120	SINAMICS S120	SINAMICS S120	SINAMICS V90
<b>Catalogs</b>				
D21.4 SINAMICS S120 and SIMOTICS	Yes	Yes	—	—
D31.1 SINAMICS drives for single axis drives / built-in units	Yes	Yes	—	—
D32 SINAMICS S210 servo-drive systems	—	—	—	—
D33 SINAMICS V90 basis servo-drive system	—	—	—	Yes
D41 SIMOTICS S-1FG1 servo geared motor	—	—	Yes	—
NC62 SINUMERIK CNC systems for machine tools	Yes	Yes	—	—

<sup>1)</sup> Dependent upon the geared motor

 S-1FK2/1FT2/1FS2	 M-1PH8	 M-1FE1, M-1FE2	 L-1FN3	 T-1FW3	 T-1FW6
Main motors		Linear motor		Torque motors	
Yes	—	—	—	—	Yes
—	Yes	—	—	—	—
—	Yes	Yes	Yes	Yes	Yes
—	Yes	—	—	—	—
20 ... 100	80 ... 355	40 ... 180	—	150 ... 280	159 ... 730 <sup>4)</sup>
IP64 to IP67	IP23, IP55, IP65	IP00	IP65	IP54/IP55	IP23
3,000 rpm	400 ... 10,000 rpm	500 ... 25,000 rpm	up to 836 m/min <sup>2)</sup>	150 ... 1,200 rpm	38 ... 940 rpm
0.05 ... 7.5 kW	2.8 ... 1,340 kW	4.0 ... 159 kW	1.7 ... 81.9 kW	2.8 ... 380 kW	1.7 ... 54.1 kW
0.16 ... 34.5 Nm	2.9 ... 12,435 Nm	up to 1,530 Nm	150 ... 10,375 N <sup>3)</sup>	100 ... 7,000 Nm	10 ... 5,760 Nm
Yes	—	—	—	Yes	—
Yes	Yes	—	—	Yes	—
—	Yes	—	—	Yes	—
—	—	—	—	Yes	—
—	—	Yes	Yes	—	Yes
Yes	Yes	—	—	—	—
SINAMICS S210	SINAMICS S120, G120	SINAMICS S120	SINAMICS S120	SINAMICS S120	SINAMICS S120
—	Yes	—	Yes	Yes	Yes
—	Yes	—	—	—	—
Yes	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	Yes	Yes	Yes	—	Yes

<sup>2)</sup> Maximum velocity at rated force (feed force  $F_N$ )

<sup>3)</sup> Rated force (feed force  $F_N$ )

<sup>4)</sup> Outer stator diameter

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