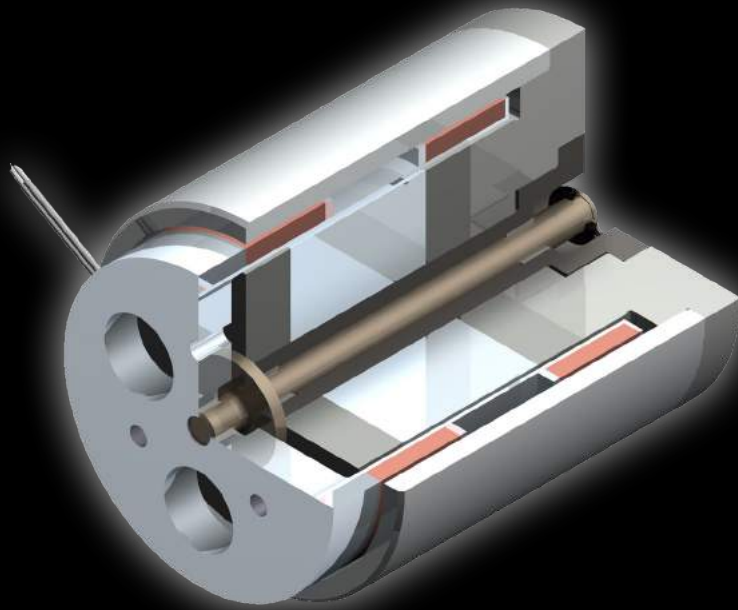


Mönninghoff

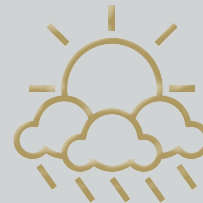
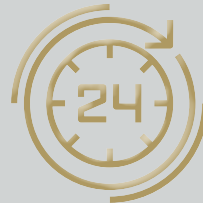
Voice coil actuator Type 820



Voice coil actuator - Type 820

Characteristics and features

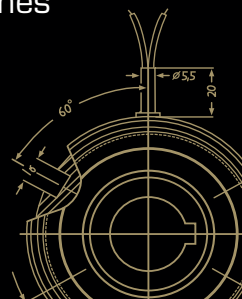
- optimized magnetic flux
- precisely adjustable operating force over the entire stroke range
- precise and highly dynamic positioning drive in conjunction with encoder and controller
- oscillating drive with adjustable force and frequency
- integrated bearing of coil assembly
- nearly hysteresis-free
- minimum emission
- plug-and-play design
- wide range of forces, strokes and dimensions available
- we can provide advice about the electric control at any time
- additional electric control and sensors for a complete solution if required



Mönninghoff power transmission represents an infinite variant diversity that is applied by all areas of modern mechanical engineering.

Our technologies are designed to operate under extreme conditions. We offer high precision products for medical robotics, fail-proof security for aerospace technology or synchronization solutions for the packaging or printing industry.

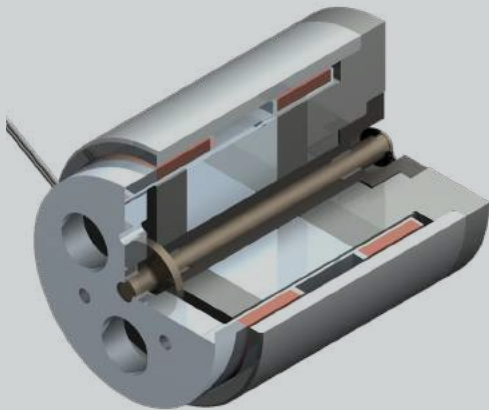
We thus address customers who have the highest standards for their own machines or systems. To them, we can offer highly complex, application-specific solutions.



Voice coil actuator - Type 820

Match code

Mönninghoff voice coil actuators are indicated by the following match code:



820 . A . B . C

- A** size of actuator
- B** design of coil
- C** design of magnet holder

Choosing the suitable voice coil actuator is highly dependent on the movement and force demands of the application.

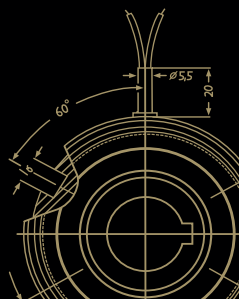
Our engineers can assist in finding an application-specific solution at any time. Together, we can develop individual and innovative solutions for extreme operating conditions.

Ordering example

Mönninghoff voice coil actuator
Type 820.13.1.1

design of coil
design of magnet holder

guided
with two coil windings



Voice coil actuator - Type 820

Size of actuator

When dimensioning a Mönninghoff voice coil actuator, several technical preconditions should be considered:

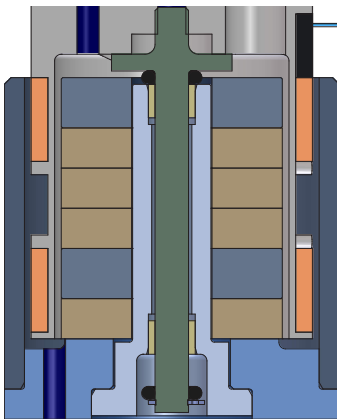
- The sum of the application specific forces, for example the acceleration force or the weight force, must be smaller than the nominal force of the actuator

$$\text{Requirement } F_N > F_G + F_A$$

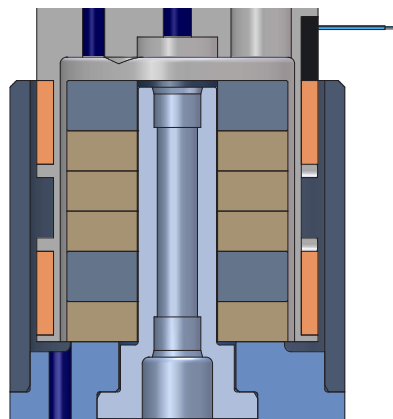
- Calculations are based on 20 °C environmental temperature and 150 °C coil temperature while the steady magnet is attached to a massive metal plate. In case of different mounting conditions, it is important to monitor the coil temperature, which is not allowed to exceed 150 °C

$$\text{Requirement } T_{\text{MaxSP}} \leq 150^\circ\text{C}$$

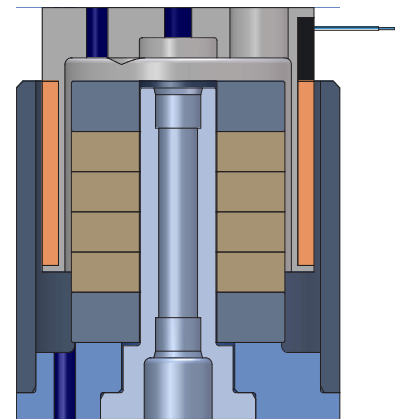
Design of the actuator



Type 1.1,
coil guided
with two coil windings
high axial force

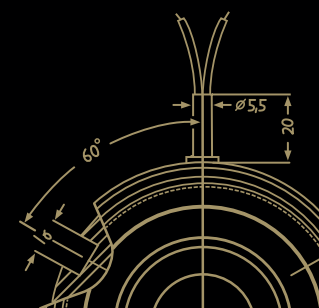


Type 2.1,
coil not guided
with two coil windings
high axial force



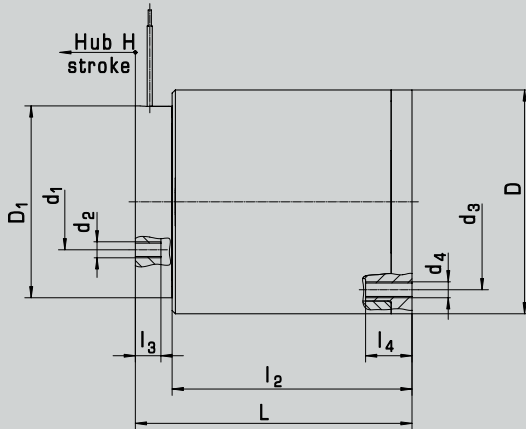
Type 3.2,
coil not guided
with single coil winding
large stroke

F_N	= nominal force of actuator [N]
F_G	= weight force [N]
F_A	= acceleration force [N]
T_{MAXSP}	= maximum coil temperature [°C]



Voice coil actuator - Type 820

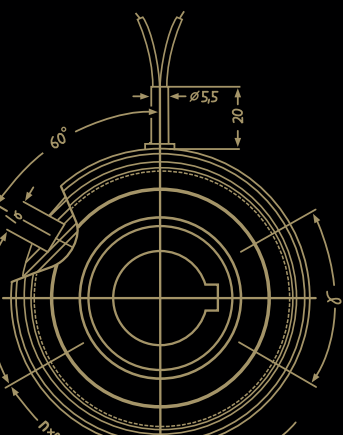
Size of actuator



Types 1.1, 2.1 and 3.2 identical in outer dimensions and mounting dimensions

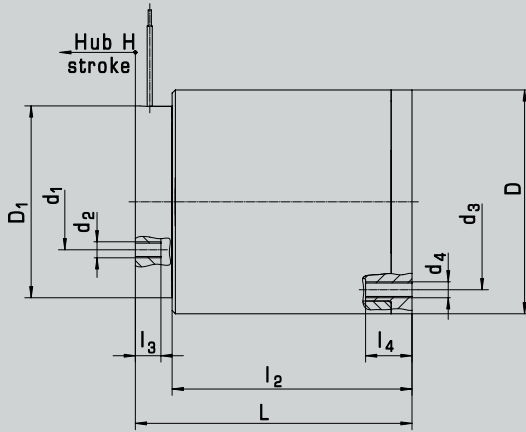
Technical data

Size	05			13			
	1.1	2.1	3.2	1.1	2.1	3.2	
guidance	internal	-	-	internal	-	-	
stroke	H	H	H	H	H	H	
nominal force	F_N [N]	8,0	8,0	3,9	33	12,5	
current at nominal force	I_N [A]	2,2	2,2	1,9	3,1	2,2	
max. input power at nominal force	P_{nmax} [W]	19,6	19,6	15,2	39,0	21,6	
DC resistance at 20°C	R_{20} [Ω]	2,68	2,68	2,79	2,69	2,96	
DC resistance at 150°C	R_{150} [Ω]	4,04	4,04	4,21	4,06	4,47	
thermal resistance	R_{th} [$^{\circ}\text{C}/\text{W}$]	6,6	6,6	8,6	3,3	6,0	
inductance	L [mH]	0,34	0,34	0,56	0,58	0,90	
force constant	K_{F1} [N/A]	3,64	3,64	2,05	10,65	4,03	
Back EMF constant	K_{nd} [V/(m/s)]	8,45	8,45	4,03	17,25	10,38	
electrical time constant	T_{el} [μs]	127	127	201	216	304	
mechanical time constant	T_{ms} [ms]	2,18	2,01	7,42	1,27	5,26	
coil mass	m_{sp} [g]	25	23	22	87	78	
total mass	m_{ges} [g]	133	131	128	600	585	
dimensions	D [mm]	30	30	30	50	50	
	D_1	24,6	24,6	24,6	42	42	
	d_1	14 2 x 180°	14 2 x 180°	14 2 x 180°	25 3 x 120°	25 3 x 120°	25 3 x 120°
	d_2	M3	M3	M3	M4	M4	M4
	d_3	22 2 x 180°	22 2 x 180°	22 2 x 180°	35 3 x 120°	35 3 x 120°	35 3 x 120°
	d_4	M3	M3	M3	M4	M4	M4
	L	42,5	42,5	42,5	62	62	62
	l_2	34,3	34,3	34,3	51	51	51
	l_3	6	6	6	7,5	7,5	7,5
	l_4	5	5	5	8	8	8



Voice coil actuator - Type 820

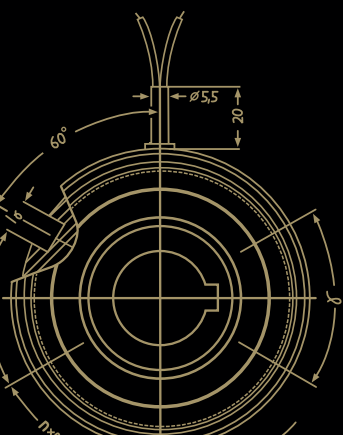
Size of actuator



Types 1.1, 2.1 and 3.2 identical in outer dimensions and mounting dimensions

Technical data

Size	15			21		
	1.1	2.1	3.2	1.1	2.1	3.2
guidance	internal	-	-	internal	-	-
stroke	H	H	35	10	10	50
nominal force	F_N	[N]	82	163	163	56
current at nominal force	I_N	[A]	4,2	4,2	2,6	4,1
max. input power at nominal force	P_{rimax}	[W]	66,3	66,3	28,7	88,8
DC resistance at 20°C	R_{20}	[Ω]	2,49	2,49	2,81	3,5
DC resistance at 150°C	R_{150}	[Ω]	3,76	3,76	4,25	5,28
thermal resistance	R_{th}	[°C/W]	2,0	2,0	4,5	1,5
inductance	L	[mH]	0,89	0,89	1,34	1,91
force constant	K_F	[N/A]	19,52	19,52	10,77	39,76
Back EMF constant	K_{ind}	[V/(m/s)]	25,6	25,6	18,1	29,2
electrical time constant	T_{el}	[μs]	357,4	357,4	476,9	546
mechanical time constant	T_{me}	[ms]	1,03	0,99	2,88	1,27
coil mass	m_{sp}	[g]	207	198	200	420
total mass	m_{ges}	[g]	1780	1771	1773	3980
dimensions	D	[mm]	70	70	70	90
	D_1		60	60	60	78
	d_1		30 3 x 120°	30 3 x 120°	30 3 x 120°	40 3 x 120°
	d_2		M5	M5	M5	M6
	d_3		55 3 x 120°	55 3 x 120°	55 3 x 120°	70 3 x 120°
	d_4		M5	M5	M5	M6
	L		86,5	86,5	86,5	112
	l_2		75	75	75	98,3
	l_3		8	8	8	9,7
	l_4		17	17	17	12



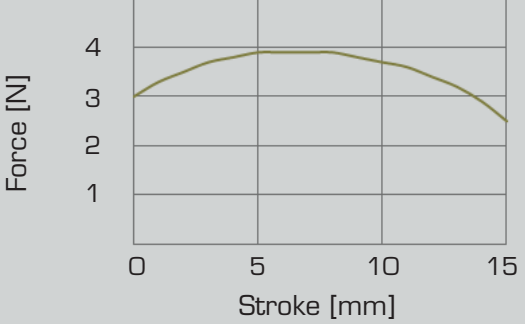
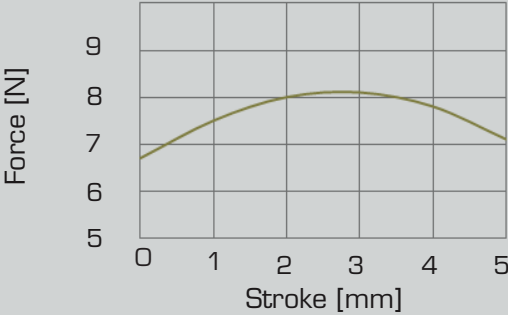
Voice coil actuator - Type 820

Force / stroke characteristics

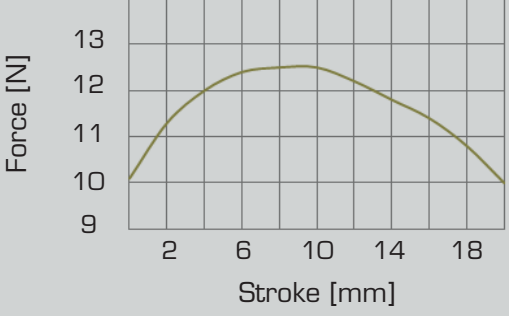
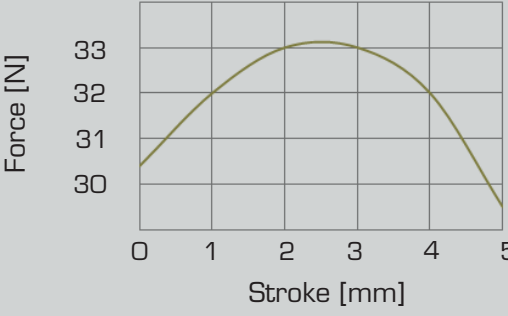
Types 1.1 and 2.1

Type 3.2

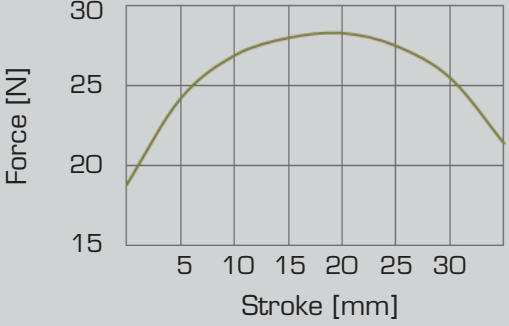
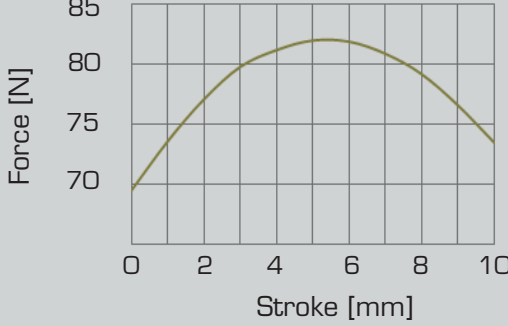
Type 820.05



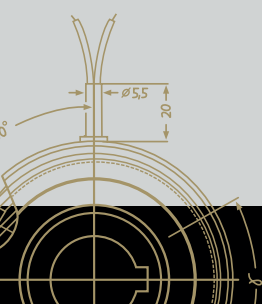
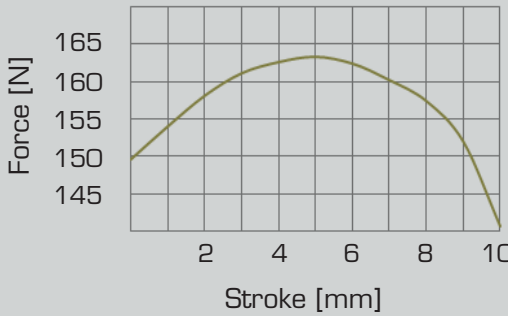
Type 820.13



Type 820.15

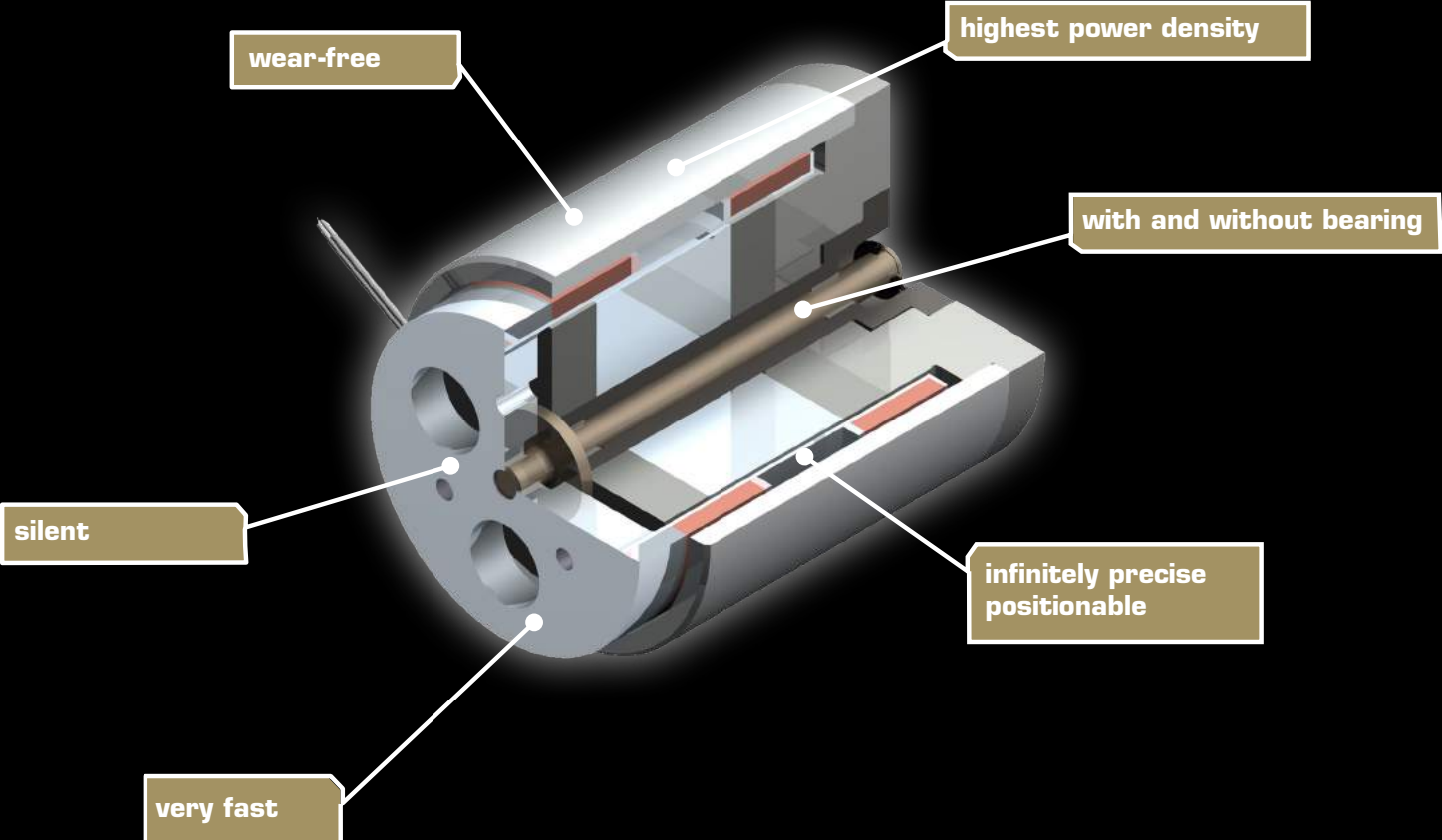


Type 820.21



Voice coil actuator - Type 820

At a glance



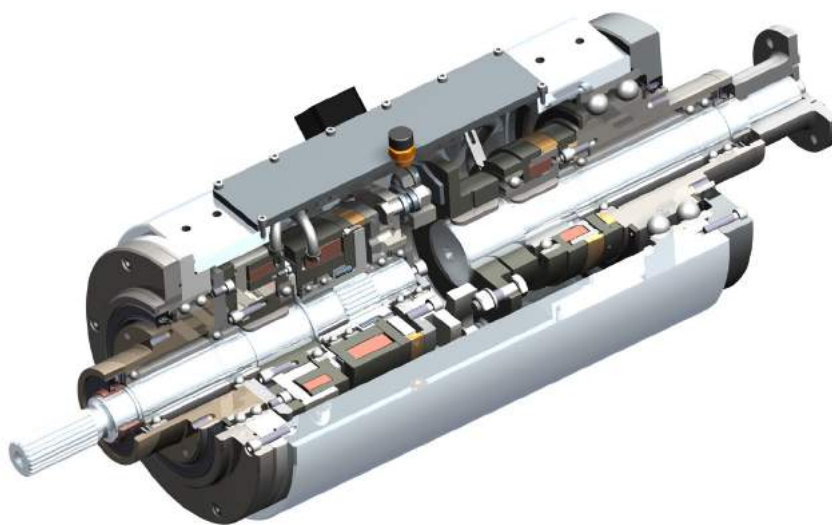
System solutions

You need more?

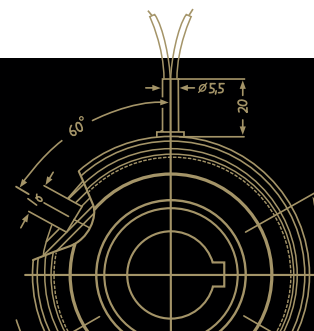
Mönninghoff clutches can be combined with a variety of many other power transmission elements. Such complex high-tech systems can solve any application-specific tasks and can fulfill any customer-specific wishes.



In many cases, a combination of different drive elements is needed to solve the applications particular problems and difficulties. Being not just supplier but technological partner to our customers, our extensive engineering is part of extraordinary and challenging power transmission projects.



**Our product is the know-how,
with hardware as an added bonus.**



Driven by excellence

Why Mönninghoff

- intensive dialog with our customers' engineers
- decades of experience and competence
- deep understanding for all areas of mechanical engineering
- highly modern and flexible machine park
- enthusiasm for quality
- flexibility, inventiveness and communication skills of our employees
- commitment to Germany and Bochum as industrial location

How to reach us

Sales

sales@moenninghoff.de
+49 2327 3033-250



Helps you find a customer-specific power transmission solution for extraordinary circumstances.

Order Management

confirmation@moenninghoff.de
+49 2327 3033-353



For the competent processing and smooth handling of your orders and delivery dates.

Service

service@moenninghoff.de
+49 2327 3033-333



Feels committed to protect and preserve the high value of your machine and to secure its availability.

