

## 6. MDD 065

### 6.1. Technical Data

Designation	Symbol	Unit	Motor type MDD ...			
			065 A-N-040	065 B-N-040	065 C-N-040	065 D-N-040
Nominal motor speed <sup>1)</sup>	$n$	min <sup>-1</sup>	4000	4000	4000	4000
Continuous torque at standstill <sup>2)</sup>	$M_{dN}$	Nm	0.8	1.5 (1.7) <sup>5)</sup>	2.1 (2.7) <sup>5)</sup>	2.7 (3.5) <sup>5)</sup>
Continuous current at standstill	$I_{dN}$	A	1.8	3,5 (4.0) <sup>5)</sup>	5.5 (7.1) <sup>5)</sup>	6.3 (8.1) <sup>5)</sup>
Theor. maximum torque <sup>3)</sup>	$M_{max}$	Nm	2.3	4,4	6.1	7.8
Peak current	$I_{max}$	A	8.1	15.9	24.6	28.5
Rotor moment of inertia <sup>4)</sup>	$J_M$	kgm <sup>2</sup>	$1.4 \times 10^{-4}$	$2.2 \times 10^{-4}$	$3.0 \times 10^{-4}$	$3.8 \times 10^{-4}$
Torque constant at 20 °C	$K_m$	Nm/A	0.44	0.43	0.38	0.43
Windings resistance at 20 °C	$R_A$	Ohm	16	5.22	2.25	2.0
Windings inductance	$L_A$	mH	20.3	7.4	3.6	2.6
Thermal time constant	$T_{th}$	min	30	30 (15) <sup>5)</sup>	30 (15) <sup>5)</sup>	30 (15) <sup>5)</sup>
Mass <sup>4)</sup>	$m_M$	kg	3.2	3.9	4.6	5.3
			065 A-N-060	065 B-N-060	065 C-N-060	065 D-N-060
Nominal motor speed <sup>1)</sup>	$n$	min <sup>-1</sup>	6000	6000	6000	6000
Continuous torque at standstill <sup>2)</sup>	$M_{dN}$	Nm	0.8	1.5 (1.7) <sup>5)</sup>	2.1 (2.7) <sup>5)</sup>	2.7 (3.5) <sup>5)</sup>
Continuous current at standstill	$I_{dN}$	A	2.6	5.9 (6.7) <sup>5)</sup>	7.9 (10.2) <sup>5)</sup>	10.3 (13.3) <sup>5)</sup>
Theor. maximum torque <sup>3)</sup>	$M_{max}$	Nm	2.3	4.4	6.1	7.8
Peak current	$I_{max}$	A	11.6	26.3	35.4	46.2
Rotor moment of inertia <sup>4)</sup>	$J_M$	kgm <sup>2</sup>	$1.4 \times 10^{-4}$	$2.2 \times 10^{-4}$	$3.0 \times 10^{-4}$	$3.8 \times 10^{-4}$
Torque constant at 20 °C	$K_m$	Nm/A	0.31	0.26	0.27	0.26
Windings resistance at 20 °C	$R_A$	Ohm	7.75	2.0	1.16	0.74
Windings inductance	$L_A$	mH	6.4	2.2	1.3	0.9
Thermal time constant	$T_{th}$	min	30	30 (15) <sup>5)</sup>	30 (15) <sup>5)</sup>	30 (15) <sup>5)</sup>
Mass <sup>4)</sup>	$m_M$	kg	3.2	3.9	4.6	5.3

<sup>1)</sup> Usable motor speed is determined by the torque requirements of the application. The usable speed  $n_{max}$  found in the selection lists of the motor-drive combinations are binding for **standard applications**. The usable speed for other applications can be found using the required torque in the torque-speed characteristics curves.  
<sup>2)</sup> With 60 K overtemperature at the motor housing.  
<sup>3)</sup> Achievable maximum torque is dependent upon the drive used. **Only** those maximum torques  $M_{max}$  found in the selection list of the motor-drive combinations are binding.  
<sup>4)</sup> without blocking brake  
<sup>5)</sup> Parenthetical values apply to motors with surface cooling

Fig 6.1: Type dependent motor data

Designation	Symbol	Unit	Data
Permissible ambient temperature	$T_{um}$	°C	0 ... + 45
Permissible storage and transport temperatures	$T_L$	°C	-20 ... + 80
Maximum installation elevation		m	1000 meters above sea level
Protection category			IP 65
Insulation classification			F
Housing coat			Black prime coat (RAL 9005)

Fig 6.2: General data - MDD 065

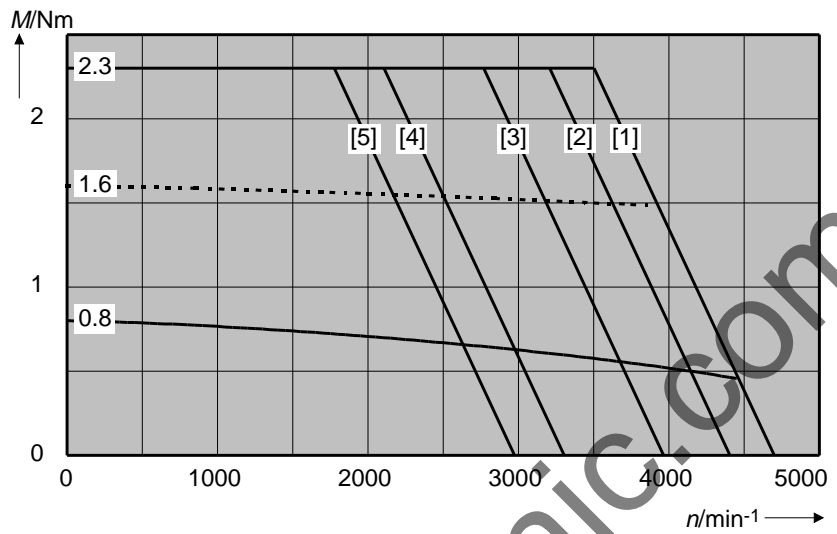
Designation	Symbol	Unit	Blocking Brake Data
Principle of action			electrically actuated release
Holding torque	$M_H$	Nm	3.0
Nominal voltage	$U_N$	V	DC 24 ± 10%
Nominal current	$I_N$	A	0.6
Moment of inertia	$J_B$	kgm <sup>2</sup>	0.38 x 10 <sup>-4</sup>
Release delay	$t_L$	ms	30
Clamping delay	$t_K$	ms	15
Mass	$m_B$	kg	0.55

Fig 6.3: Technical data - blocking brake

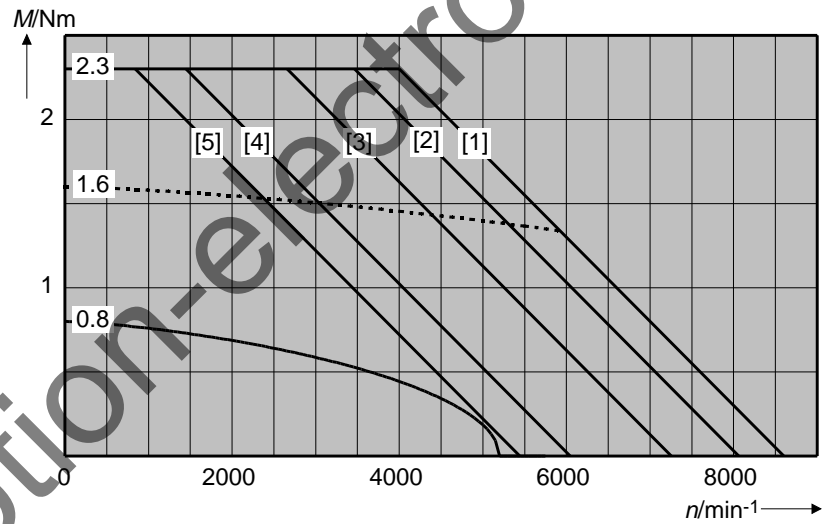
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### 6.2. Torque-Speed Characteristics

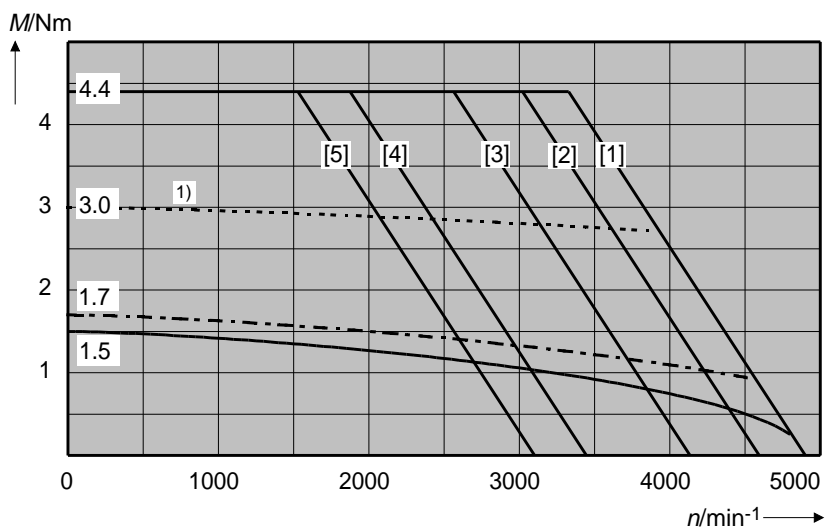
MDD 065 A at  
4000 min<sup>-1</sup>



MDD 065 A at  
6000 min<sup>-1</sup>



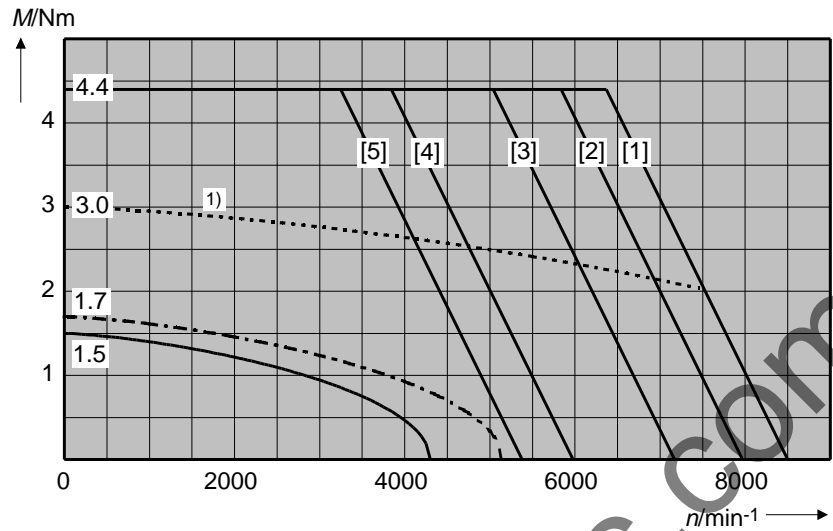
MDD 065 B at  
4000 min<sup>-1</sup>



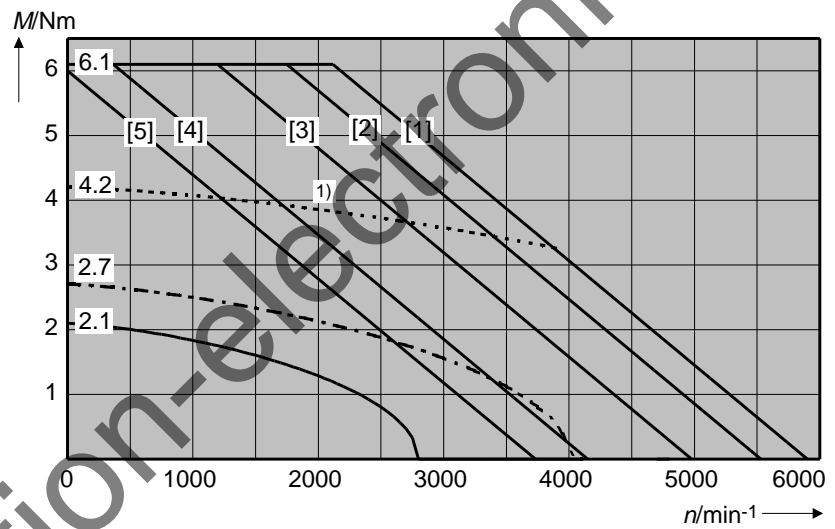
<sup>1)</sup> Shown: ON time of surface-cooled motor equals 40%.

Fig 6.4: Torque-speed characteristics curves - MDD 065

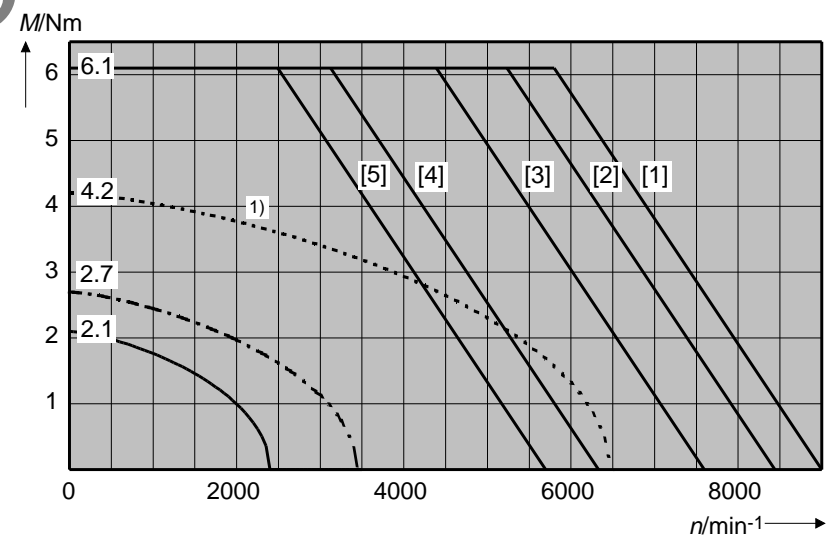
MDD 065 B at  
6000 min<sup>-1</sup>



MDD 065 C at  
4000 min<sup>-1</sup>



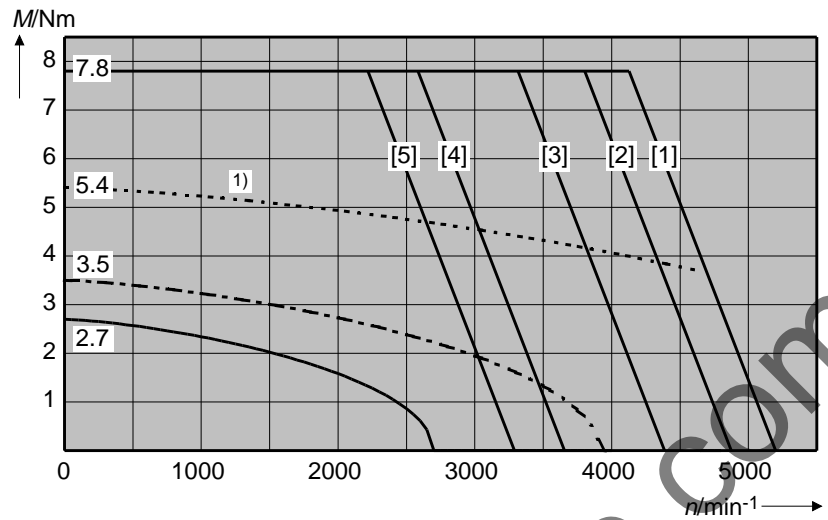
MDD 065 C at  
6000 min<sup>-1</sup>



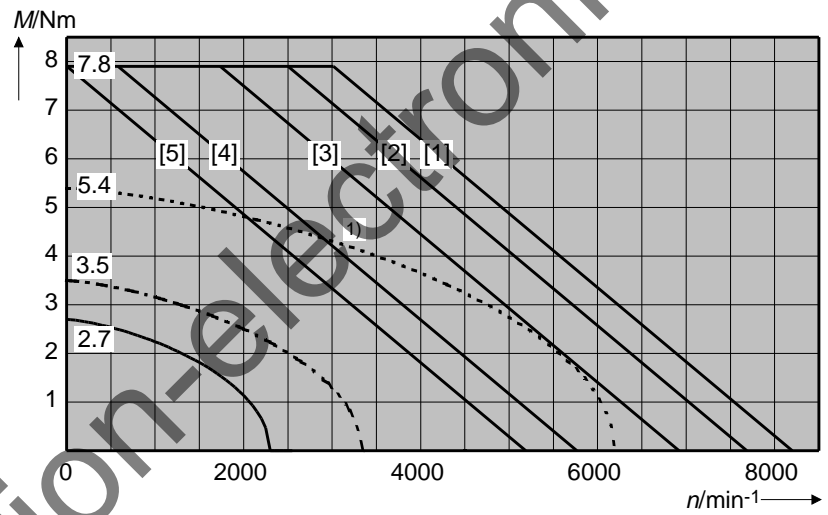
1) Shown: ON time of surface-cooled motor equals 40%.

Fig 6.5: Torque-speed characteristics curves - MDD 065

MDD 065 D at  
4000 min<sup>-1</sup>



MDD 065 D at  
6000 min<sup>-1</sup>



1) Shown: ON time of surface-cooled motor equals 40%.

Fig 6.6: Torque-speed characteristics curves - MDD 065

### 6.3. Shaft Load Capacity

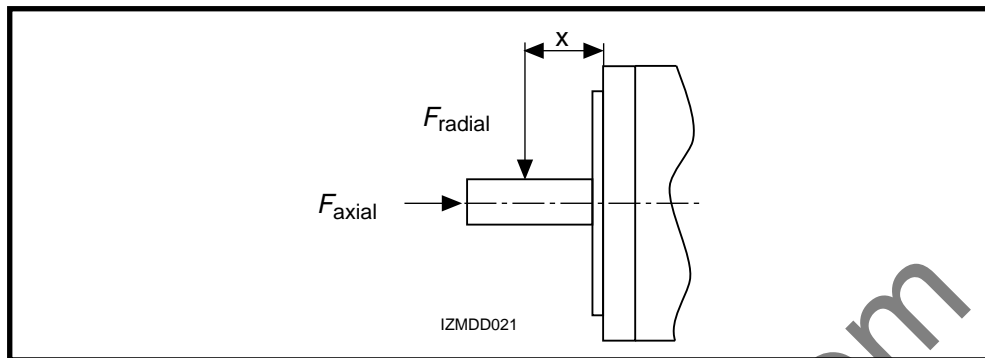


Fig 6.7: Shaft load

Permissible radial force

$F_{radial}$

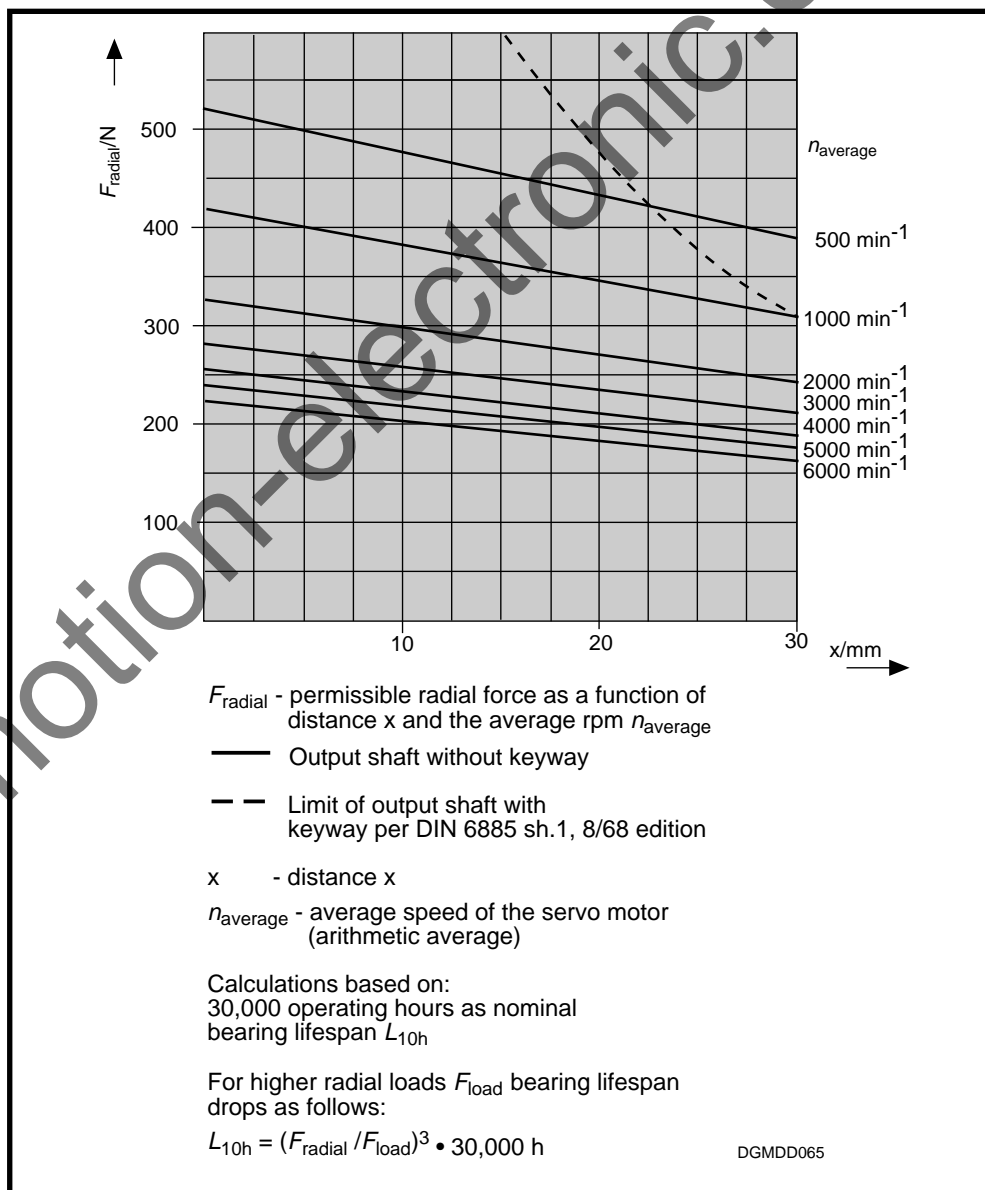


Fig 6.8: Permissible radial force

Permissible axial force

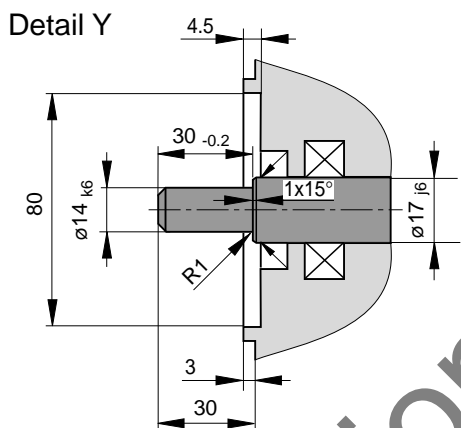
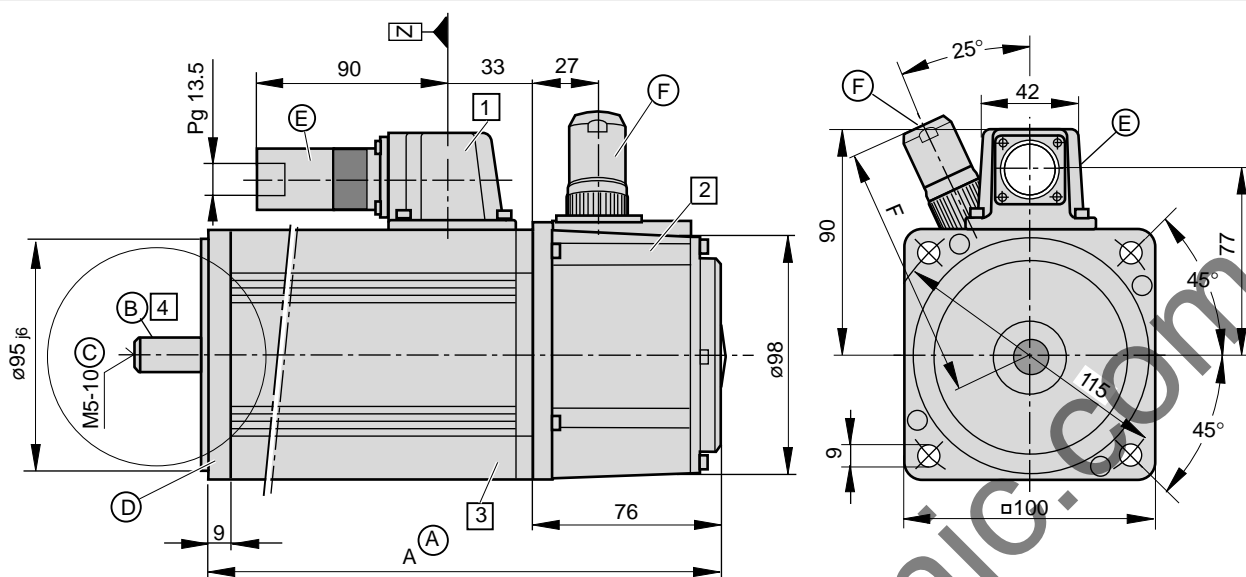
$F_{axial}$

$$F_{axial} = 0.57 \cdot F_{radial}$$

$F_{axial}$  - permissible axial force

$F_{radial}$  - permissible radial force

### 6.4. Dimensional Data



(A) Dimensional table Dim. A

Size	Dim. A <sup>1)</sup>
MDD 065 A	163
MDD 065 B	178
MDD 065 C	193
MDD 065 D	208

<sup>1)</sup> Bigger with some options.  
The then applicable dimension is indicated with the respective feature.

(B) Concentricity, excentricity and coaxiality to the shaft per DIN 42955, tolerance class R, 12/81 edition.

- (C) • Shaft end per DIN 748 section 3, 7/75 edition, IEC 72, 1971 edition, cylindrical
- Center hole DS M3-8 per DIN 332 section 2, 5/83 edition
- Max. tightening torque  $M_A$  for screws in the threads of the center hole: 1 Nm
- Balance class N per DIN VDE 0530 section 14, 2/93 edition

- (D) Flange type per DIN 42948, 11/65 edition, makes mounting possible
  - as per design B5 (throughholes in flange)
  - as per design B14 (threads in flange)

- (E) **Motor power connector**  
INS 252 must be ordered separately.

- (F) **Feedback connector:**  
INS 513 and INS 512 must be ordered separately as possible types.

Table of dimensions:

Name	Connector type	Dim. F
straight conn.	INS 513	110
	INS 512	112
angle conn.	INS 511	108
	INS 510	

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Fig 6.9: Dimensional data - MDD 065

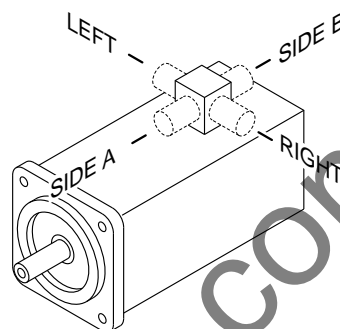
## Available Options

### 1 Power connection

The output direction of the electrical power connector is selected at the time the order is placed. Possible output direction is either:

- side A or
- side B
- to the right
- to the left

The drawing depicts side A as output direction. The dimensions of any other output direction are obtained by virtually turning the connector housing around the Z axis.



### 2 Motor feedback

- Digital servo feedback (DSF)
  - Digital servo feedback (DSF) with integrated multturn absolute encoder
- The dimensions are identical.

### 3 Blocking brake

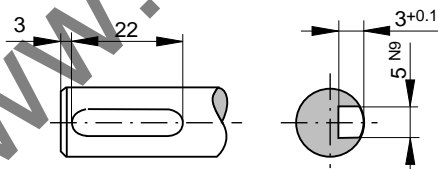
- without blocking brake
- with blocking brake: 3.0 Nm

#### Dimensional table for motors with blocking brake

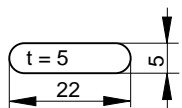
Size	Dim. A
MDD 065 A	187
MDD 065 B	202
MDD 065 C	217
MDD 065 D	232

### 4 Output shaft

- plain shaft (preferred type)
- with keyway per DIN 6885 sheet 1, 8/68 edition  
(Note: balanced with entire key!)



Matching key: DIN 6885-A 5 x 5 x 22



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Fig 6.10: Dimensional data - MDD 065 - available options



## 6.5. Available Versions

Type code field:	Example:	MDD	065	B-N	040	N	2	L-095	G	B	0
1. Name Motor for digital drive controllers	MDD										
2. Motor size	065										
3. Motor length	A, B, C, D										
4. Housing design: Standard (suited for natural convection and surface-cooling)	N										
5. Nominal speed 4000 min <sup>-1</sup> 6000 min <sup>-1</sup>	040 060										
6. Balance class Standard (R per DIN VDE 0530 section 14, 2/93 edition)	N										
7. Side B shaft end Standard (without side B shaft end)	2										
8. Motor feedback digital servo feedback digital servo feedback with integrated multiturn absolute encoder	L M										
9. Centering diameter ø095 mm	095										
10. Output shaft plain shaft shaft with keyway per DIN 6885 sh. 1, 8/68 edition	G P										
11. Power connection connector to side A connector to side B connector to the right (looking onto motor shaft, connecting housing at top) connector to the left (looking onto motor shaft, connecting housing at top)	A B R L										
12. Blocking brake without blocking brake with 3.0 Nm blocking brake	0 1										

Quelle: INN 41.60 TLMD065

Fig 6.11: Type codes - MDD 065