

## 6 MHD041

### 6.1 Technical Data

Description	Symbol	Unit	MHD041A-144			
			Natural 60 K	Natural 100 K	Surface 60 K/100 K	Liquid 60 K/100 K
Type of cooling			Natural 60 K	Natural 100 K	Surface 60 K/100 K	Liquid 60 K/100 K
Motor overtemperature						
<b>Electric parameters</b>						
Characteristic motor speed	$n_K$	$\text{min}^{-1}$	7000			
Continuous torque at standstill	$M_{dN}$	Nm	1.3	in	not	not
Continuous current at standstill	$I_{dN}$	A	3.5	preparation	available	available
Peak current	$I_{max}$	A	15.8			
Torque constant at 20 °C <sup>1)</sup>	$K_m$	Nm/A	0.42			
Voltage constant at 20 °C	$K_{E(eff)}$	V/1000min <sup>-1</sup>	38.2			
Winding resistance at 20 °C	$R_{12}$	$\Omega$	7.0			
Winding inductance	$L_{12}$	mH	13.5			
Number of pole pairs	$p$		3			
<b>Rated data <sup>2)</sup></b>						
Rated speed	$n_N$	$\text{min}^{-1}$	4000			
Rated torque	$M_N$	Nm	0.68			
Rated current	$I_N$	A	1.29	in	not	not
Rated power	$P_N$	kW	0.36	preparation	available	available
Rated voltage	$U_N$	V	163			
Rated frequency	$f_N$	Hz	200			
<b>Mechanical parameters</b>						
Rotor inertia	$J_M$	$\text{kgm}^2$	$0.88 \times 10^{-4}$			
Theoretical maximum torque	$M_{max}$	Nm	5.6			
Minimum strand cross-section <sup>4)</sup>	$S$	$\text{mm}^2$	1.0	in	not	not
Thermal time constant	$T_{th}$	min	20	preparation	available	available
Maximum speed	$n_{max}$	$\text{min}^{-1}$	7500			
Motor mass <sup>3) 5)</sup>	$m$	kg	2.9			
Perm. stor. a. transport temperature	$T_L$	°C	-20 to +80			
Permissible ambient temperature <sup>6)</sup>	$T_{um}$	°C	0 to 40			
Maximum setup height <sup>6)</sup>	$h$	m	1000 above MSL			
Protection category <sup>7)</sup>			IP65			
Insulation class (according to DIN VDE 0530 Part 1)			F			
Housing coat			Prime coat black in a/w RAL 9005			
<sup>1)</sup> $K_m$ is to be used for calculations with crest values ( $I_{dN}$ , $I_{max}$ ). For calculations with root-mean-square values (rated data), the torque constant $K_m$ must be multiplied by a factor of $\sqrt{2}$ . <sup>2)</sup> Values determined according to EN 60034-1. Current and voltage specified as root-mean-square values. <sup>3)</sup> Without holding brake. <sup>4)</sup> Applicable to REXROTH INDRAMAT cables. Rated according to VDE0298-4 (1992) and installation type B2 according to EN 60204-1 (1993) at an ambient temperature of 40 °C. <sup>5)</sup> Without blower unit. <sup>6)</sup> If the limits specified are exceeded, the performance data must be reduced if necessary. For reduction factors, refer to the chapter entitled "Environmental Conditions". <sup>7)</sup> Provided the power and encoder cables are mounted properly.						

Fig. 6-1: Technical data of MHD041A-144

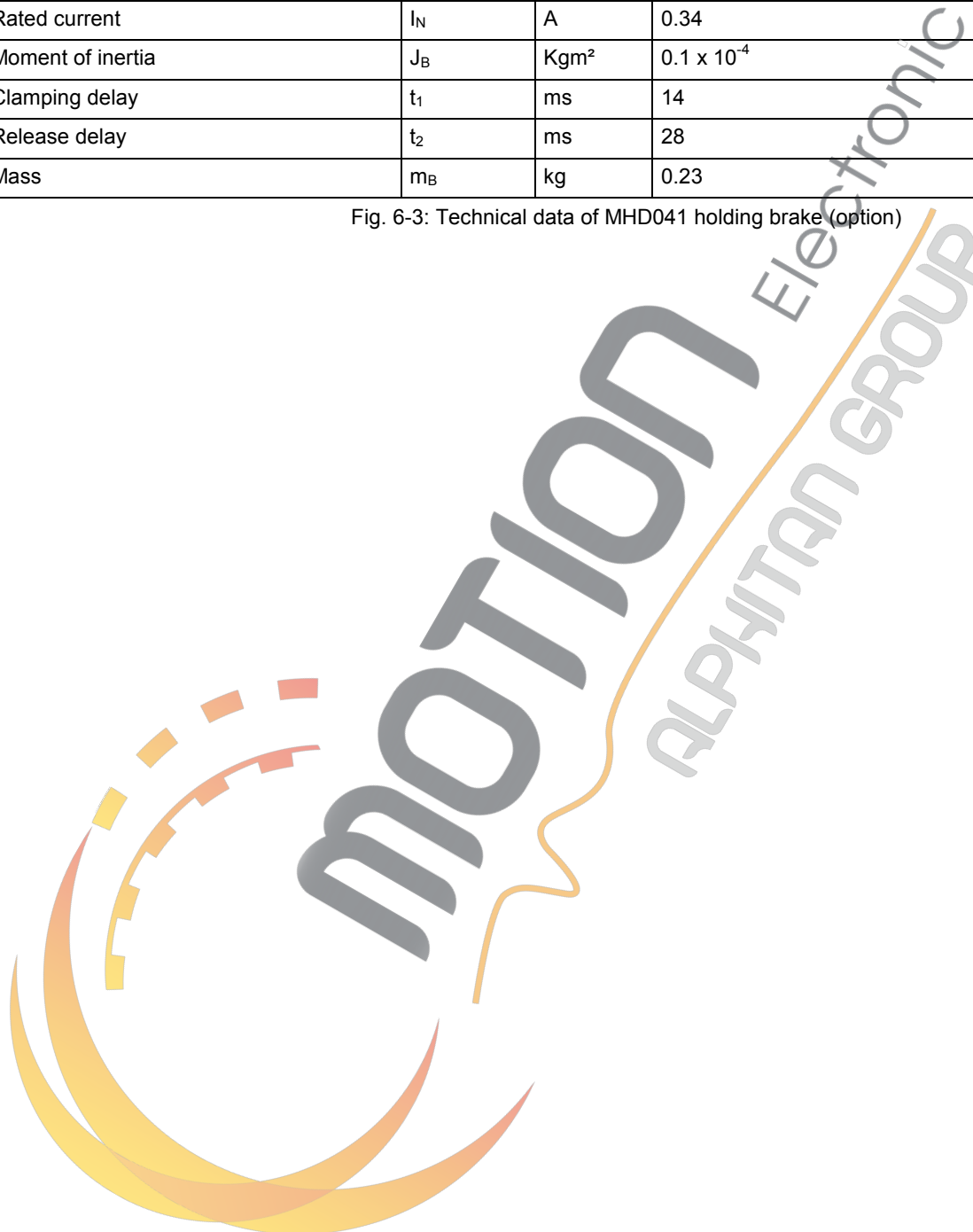
Description	Symbol	Unit	MHD041B-144			
Type of cooling			Natural	Natural	Surface	Liquid
Motor overtemperature			60 K	100 K	60 K/100 K	60 K/100 K
<b>Electric parameters</b>						
Characteristic motor speed	$n_K$	$\text{min}^{-1}$	6000			
Continuous torque at standstill	$M_{dN}$	Nm	2.7	2.9	not	not
Continuous current at standstill	$I_{dN}$	A	7.5	8.2	available	available
Peak current	$I_{max}$	A	34.0			
Torque constant at 20 °C <sup>1)</sup>	$K_m$	Nm/A	0.4			
Voltage constant at 20 °C	$K_{E(\text{eff})}$	V/1000 $\text{min}^{-1}$	36.3			
Winding resistance at 20 °C	R12	$\Omega$	1.8			
Winding inductance	L12	mH	4.9			
Number of pole pairs	p		3			
<b>Rated data <sup>2)</sup></b>						
Rated speed	$n_N$	$\text{min}^{-1}$	3000	4500		
Rated torque	$M_N$	Nm	1.4	1.5		
Rated current	$I_N$	A	2.8	3.0	not	not
Rated power	$P_N$	kW	0.52	0.88	available	available
Rated voltage	$U_N$	V	115	170		
Rated frequency	$f_N$	Hz	150	225		
<b>Mechanical parameters</b>						
Rotor inertia	$J_M$	$\text{kgm}^2$	$1.7 \times 10^{-4}$			
Theoretical maximum torque	$M_{max}$	Nm	11.3			
Minimum strand cross-section <sup>4)</sup>	S	$\text{mm}^2$	1.0	1.0	not	not
Thermal time constant	$T_{th}$	min	30	30	available	available
Maximum speed	$n_{max}$	$\text{min}^{-1}$	7500			
Motor mass <sup>3) 5)</sup>	m	kg	4.5			
Perm. stor. a. transport temperature	$T_L$	°C	-20 to +80			
Permissible ambient temperature <sup>6)</sup>	$T_{um}$	°C	0 to 40			
Maximum setup height <sup>6)</sup>	h	m	1000 above MSL			
Protection category <sup>7)</sup>			IP65			
Insulation class (according to DIN VDE 0530 Part 1)			F			
Housing coat			Prime coat black in a/w RAL 9005			
<sup>1)</sup> $K_m$ is to be used for calculations with crest values ( $I_{dN}$ , $I_{max}$ ). For calculations with root-mean-square values (rated data), the torque constant $K_m$ must be multiplied by a factor of $\sqrt{2}$ . <sup>2)</sup> Values determined according to EN 60034-1. Current and voltage specified as root-mean-square values. <sup>3)</sup> Without holding brake. <sup>4)</sup> Applicable to REXROTH INDRAMAT cables. Rated according to VDE0298-4 (1992) and installation type B2 according to EN 60204-1 (1993) at an ambient temperature of 40 °C. <sup>5)</sup> Without blower unit. <sup>6)</sup> If the limits specified are exceeded, the performance data must be reduced if necessary. For reduction factors, refer to the chapter entitled "Environmental Conditions". <sup>7)</sup> Provided the power and encoder cables are mounted properly.						

Fig. 6-2: Technical data of MHD041B-144

## Holding Brake

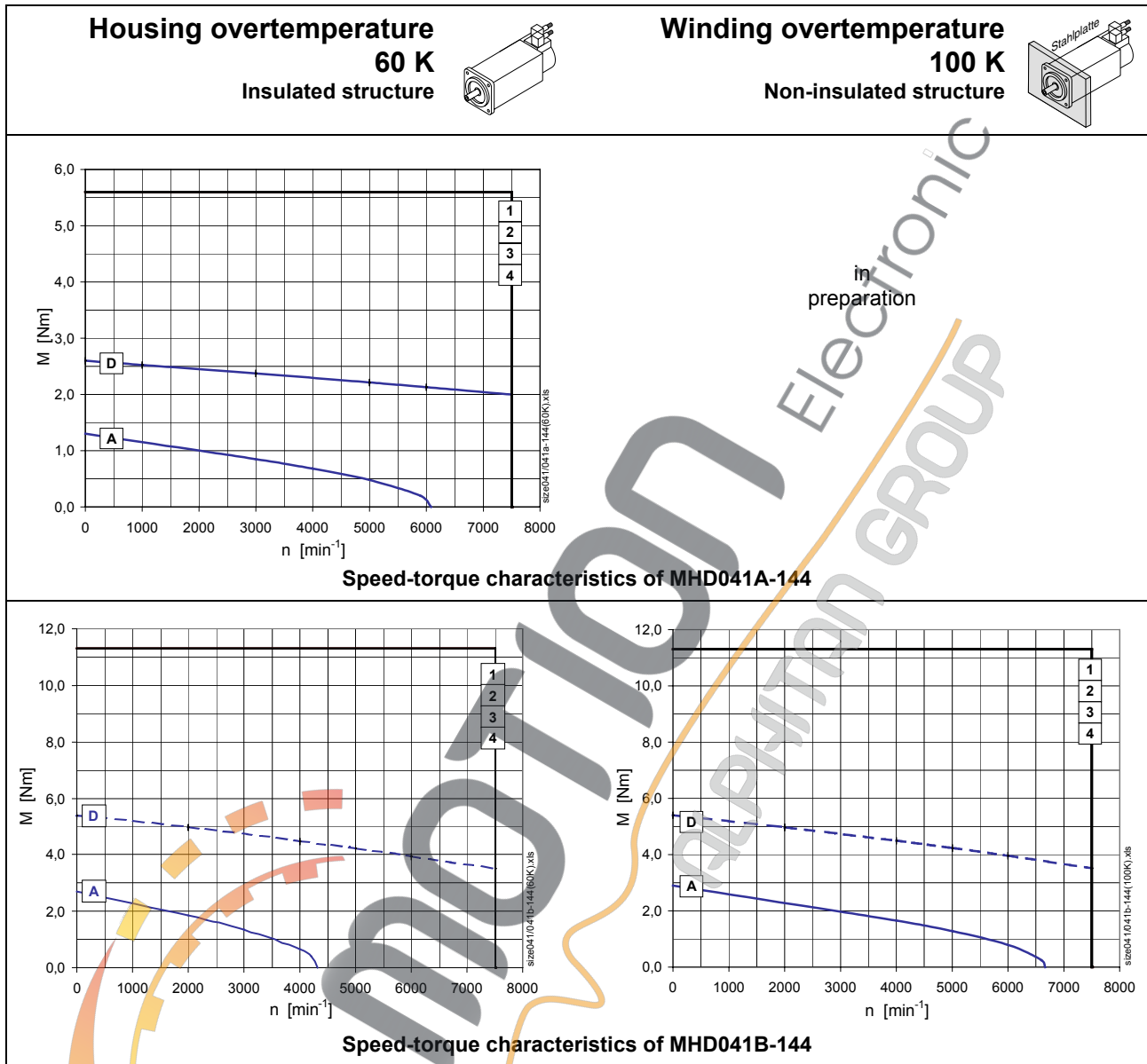
Description	Symbol	Unit	Holding brake data
Motor type			MHD041
Holding torque	$M_4$	Nm	2.2
Rated voltage	$U_N$	V	DC 24 $\pm$ 10%
Rated current	$I_N$	A	0.34
Moment of inertia	$J_B$	Kgm <sup>2</sup>	$0.1 \times 10^{-4}$
Clamping delay	$t_1$	ms	14
Release delay	$t_2$	ms	28
Mass	$m_B$	kg	0.23

Fig. 6-3: Technical data of MHD041 holding brake (option)





### 6.3 Speed-Torque Characteristics



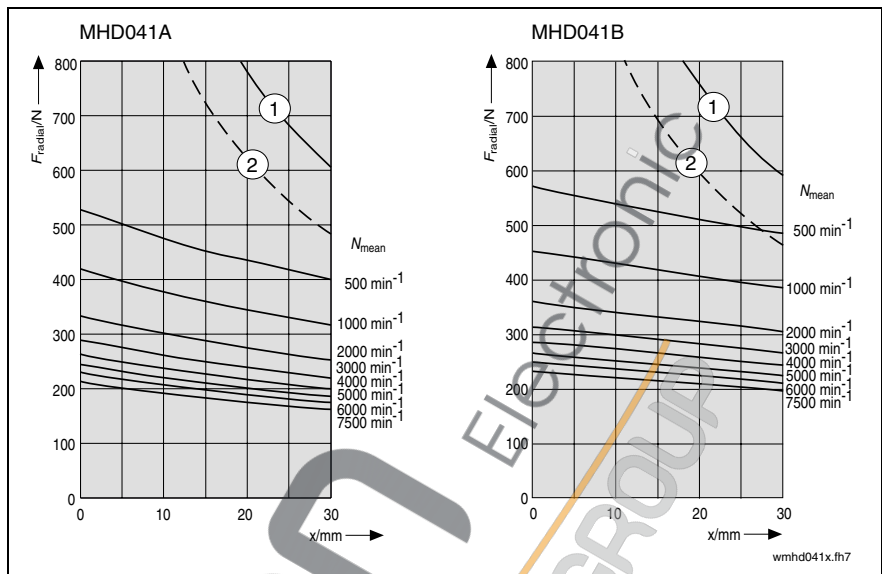
- [A]:  $M_{dN}$  Natural conv. (S1 continuous operation)
- [B]:  $M_{dN}$  Surface cooling (S1 continuous operation)
- [C]:  $M_{dN}$  Liquid cooling (S1 continuous operation)
- [D]:  $M_{KB}$  (S6 intermittent operation)
- [1]: HDS to HVR
- [2]: HDS to HVE or DKCxx.3 with a power connection of 3 x AC 480 V
- [3]: HDS to HVE or DKCxx.3 with a power connection of 3 x AC 440 V
- [4]: HDS to HVE or DKCxx.3 with a power connection of 3 x AC 400 V

Fig. 6-5: Speed-torque characteristics

### 6.4 Shaft Load

Permissible maximum radial force  $F_{radial\_max}$  and permissible radial force  $F_{radial}$

For explanations refer to Chapter 16.



- (1):  $F_{radial\_max}$  (plain shaft)
- (2):  $F_{radial\_max}$  (shaft with keyway)

Fig. 6-6: MHD041: Permissible maximum radial force  $F_{radial\_max}$  and permissible radial force  $F_{radial}$

Permissible axial force  $F_{axial}$

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

- x: 0.49 for MHD041A
- 0.45 for MHD041B

$F_{axial}$ : permissible axial force in N  
 $F_{radial}$ : permissible radial force in N

Fig. 6-7: MHD041: permissible axial force  $F_{axial}$

### 6.5 Dimensions

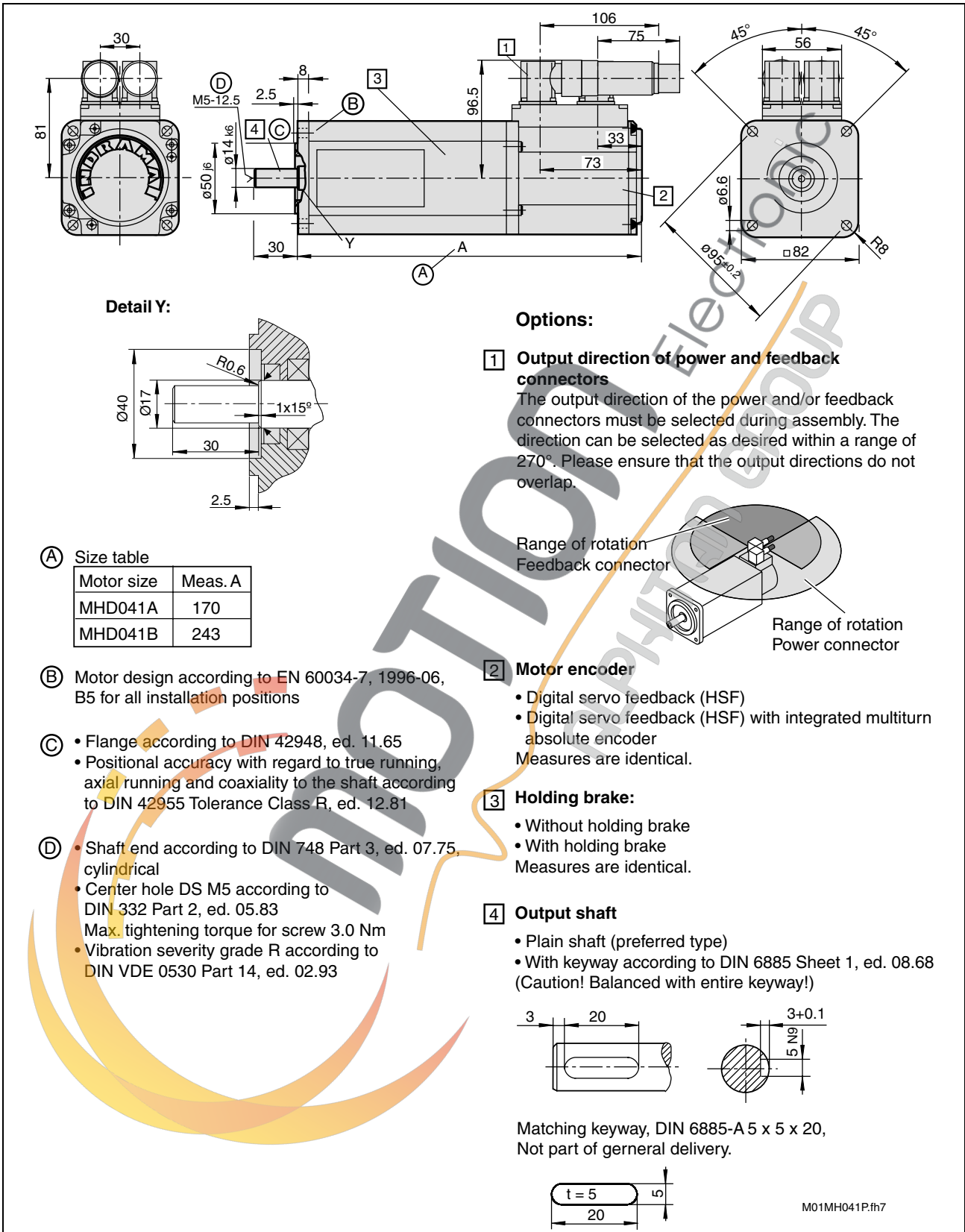


Fig. 6-8: Dimensional data MHD041