

## 4. MAC 071

### 4.1. Technical Data

Designation	Symbol	Unit	Motor type MAC ...		
			071 A - - - HS	071 B - - - FS	071 C - - - US
Nominal motor speed <sup>1)</sup>	n	min <sup>-1</sup>	2000	2000	2000
Continuous torque at standstill <sup>2)</sup>	M <sub>dN</sub>	Nm	2.2 (3.3) <sup>5)</sup>	4.4 (6.6) <sup>5)</sup>	6.6 (9.9) <sup>5)</sup>
Continuous current at standstill	I <sub>dN</sub>	A	2.6 (4.1) <sup>5)</sup>	5.0 (7.9) <sup>5)</sup>	7.3 (11.8) <sup>5)</sup>
Rotor moment of inertia <sup>3)</sup>	J <sub>M</sub>	kgm <sup>2</sup>	5.4 x 10 <sup>-4</sup>	9.9 x 10 <sup>-4</sup>	12.9 x 10 <sup>-4</sup>
Torque constant at 20 °C	K <sub>m</sub>	Nm/A	0.860	0.880	0.900
Windings resistance at 20 °C	R <sub>A</sub>	Ohm	7.6	2.7	1.6
Windings inductance	L <sub>A</sub>	mH	42	22	15
Maximum peak of pulse current	I <sub>peak</sub>	A	13	25	37
Thermal time constant	T <sub>th</sub>	min	45 (20) <sup>5)</sup>	45 (20) <sup>5)</sup>	45 (20) <sup>5)</sup>
Mass <sup>4)</sup>	m <sub>M</sub>	kg	6.5	8.8	11
			071 A - - - OS	071 B - - - TS	071 C - - - NS
Nominal motor speed <sup>1)</sup>	n	min <sup>-1</sup>	3000	3000	3000
Continuous torque at standstill <sup>2)</sup>	M <sub>dN</sub>	Nm	2.2 (3.3) <sup>5)</sup>	4.4 (6.6) <sup>5)</sup>	6.6 (9.9) <sup>5)</sup>
Continuous current at standstill	I <sub>dN</sub>	A	3.8 (6.0) <sup>5)</sup>	7.3 (11.7) <sup>5)</sup>	11.0 (17.7) <sup>5)</sup>
Rotor moment of inertia <sup>3)</sup>	J <sub>M</sub>	kgm <sup>2</sup>	5.4 x 10 <sup>-4</sup>	9.9 x 10 <sup>-4</sup>	12.9 x 10 <sup>-4</sup>
Torque constant at 20 °C	K <sub>m</sub>	Nm/A	0.580	0.600	0.600
Windings resistance at 20 °C	R <sub>A</sub>	Ohm	3.5	1.24	0.69
Windings inductance	L <sub>A</sub>	mH	20	10	7
Maximum peak of pulse current	I <sub>peak</sub>	A	19	37	55
Thermal time constant	T <sub>th</sub>	min	45 (20) <sup>5)</sup>	45 (20) <sup>5)</sup>	45 (20) <sup>5)</sup>
Mass <sup>4)</sup>	m <sub>M</sub>	kg	6.5	8.8	11
			071 A - - - ES	071 B - - - PS	071 C - - - JS
Nominal motor speed <sup>1)</sup>	n	min <sup>-1</sup>	4000	4000	4000
Continuous torque at standstill <sup>2)</sup>	M <sub>dN</sub>	Nm	2.2 (3.3) <sup>5)</sup>	4.4 (6.6) <sup>5)</sup>	6.6 (9.9) <sup>5)</sup>
Continuous current at standstill	I <sub>dN</sub>	A	5.0 (7.9) <sup>5)</sup>	9.6 (15.3) <sup>5)</sup>	15.3 (24.8) <sup>5)</sup>
Rotor moment of inertia <sup>3)</sup>	J <sub>M</sub>	kgm <sup>2</sup>	5.4 x 10 <sup>-4</sup>	9.9 x 10 <sup>-4</sup>	12.9 x 10 <sup>-4</sup>
Torque constant at 20 °C	K <sub>m</sub>	Nm/A	0.440	0.460	0.430
Windings resistance at 20 °C	R <sub>A</sub>	Ohm	2.0	0.72	0.35
Windings inductance	L <sub>A</sub>	mH	11	5.9	3.5
Maximum peak of pulse current	I <sub>peak</sub>	A	25	48	77
Thermal time constant	T <sub>th</sub>	min	45 (20) <sup>5)</sup>	45 (20) <sup>5)</sup>	45 (20) <sup>5)</sup>
Mass <sup>4)</sup>	m <sub>M</sub>	kg	6.5	8.8	11
			071 A - - - VS	071 B - - - KS	071 C - - - GS
Nominal motor speed <sup>1)</sup>	n	min <sup>-1</sup>	6000	6000	6000
Continuous torque at standstill <sup>2)</sup>	M <sub>dN</sub>	Nm	2.2 (3.3) <sup>5)</sup>	4.4 (6.6) <sup>5)</sup>	6.6 (9.9) <sup>5)</sup>
Continuous current at standstill	I <sub>dN</sub>	A	7.3 (11.7) <sup>5)</sup>	14.2 (22.3) <sup>5)</sup>	22.0 (35.4) <sup>5)</sup>
Rotor moment of inertia <sup>3)</sup>	J <sub>M</sub>	kgm <sup>2</sup>	5.4 x 10 <sup>-4</sup>	9.9 x 10 <sup>-4</sup>	12.9 x 10 <sup>-4</sup>
Torque constant at 20 °C	K <sub>m</sub>	Nm/A	0.300	0.310	0.300
Windings resistance at 20 °C	R <sub>A</sub>	Ohm	0.92	0.34	0.17
Windings inductance	L <sub>A</sub>	mH	5.1	2.8	1.7
Maximum peak of pulse current	I <sub>peak</sub>	A	37	71	110
Thermal time constant	T <sub>th</sub>	min	45 (20) <sup>5)</sup>	45 (20) <sup>5)</sup>	45 (20) <sup>5)</sup>
Mass <sup>4)</sup>	m <sub>M</sub>	kg	6.5	8.8	11

<sup>1)</sup> The usable motor speed is determined by the drive used.  
Only those usable speeds n<sub>max</sub> found in the selection lists of the motor-drive combinations are binding.

<sup>2)</sup> With 60K overtemperature at the motor housing.  
Continuous torque can be limited by the drive. See selection data.

<sup>3)</sup> With tacho-generator, without holding brake

<sup>4)</sup> With tacho-generator, without holding brake, without blower.

<sup>5)</sup> Parenthetical values apply to versions with surface cooling.

Fig 4.1: Type-dependent motor data

Designation	Symbol	Unit	Data		
Permissible ambient temperature	$T_{um}$	°C	0 ... + 45		
Permissible storage and transport temperature	$T_L$	°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)		
Voltage constant of the tachogenerator <sup>1)</sup>	$C_w$	Vs/rad V/min <sup>-1</sup>	0,0143 1.5/1000		0.0286 3/1000

<sup>1)</sup> Tacho voltage can be selected application-related.

Fig 4.2: General data MAC 071

Designation	Symbol	Unit	Data holding brake	
			Standard	heavy-duty
Principle of action				electrically-actuated release
Holding torque	$M_H$	Nm	3.0	6.5
Nominal voltage	$U_N$	V	DC 24 ± 10%	
Nominal current	$I_N$	A	0.6	0.7
Moment of inertia	$J_B$	kgm <sup>2</sup>	0.38 x 10 <sup>-4</sup>	1.06 x 10 <sup>-4</sup>
Release delay	$t_L$	ms	30	60
Clamping delay	$t_k$	ms	15	20
Mass	$m_B$	kg	0.3	0.5

Fig 4.3: Technical data - holding brake

Designation	Symbol	Unit	Axial cooling	Radial cooling
Power consumption	$S_N$	VA	22/22	22/22
Nominal voltage	$U_N$	V	AC 230 or 115 <sup>1)</sup>	AC 230 or 115 <sup>1)</sup>
Frequency	f	Hz	50/60	50/60
Mass	$m_L$	kg	approx. 0.8 <sup>2)</sup>	approx. 0.7 <sup>2)</sup>
Protection category blower unit			IP 24	IP 24
Protection category blower motor			IP 44	IP 44

<sup>1)</sup> 115 V special design  
<sup>2)</sup> Blower shroud for motor with tacho feedback

Fig 4.4: Technical data - surface cooling

### 4.4. Dimensional Data - Natural Convection

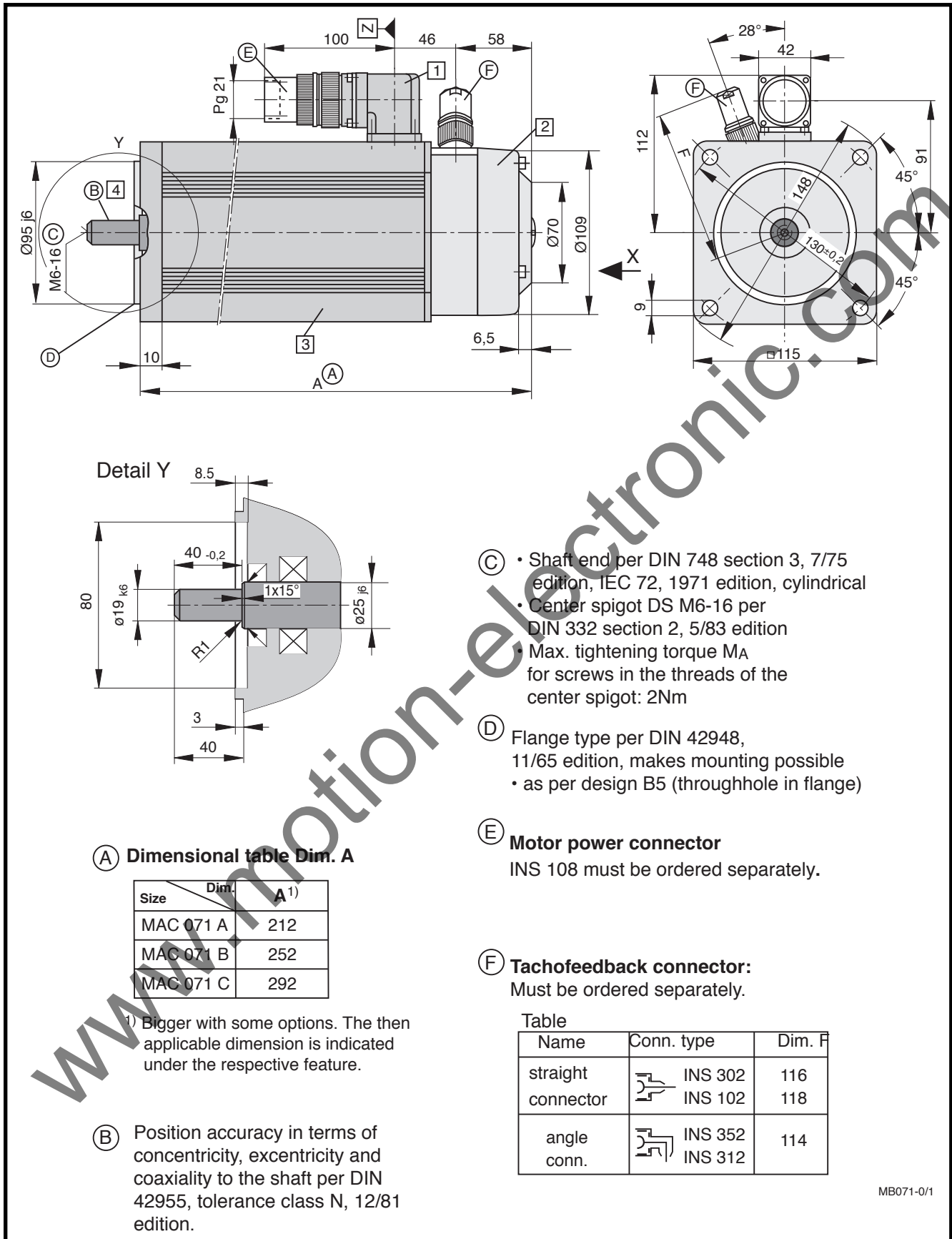


Fig 4.13: Dimensional data - MAC 071 (natural convection)

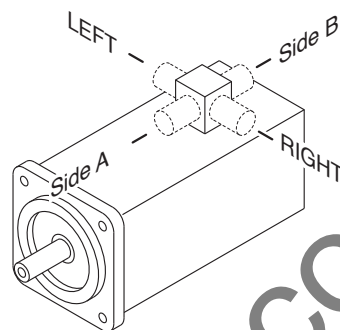
### Available options

#### 1 Power connection

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

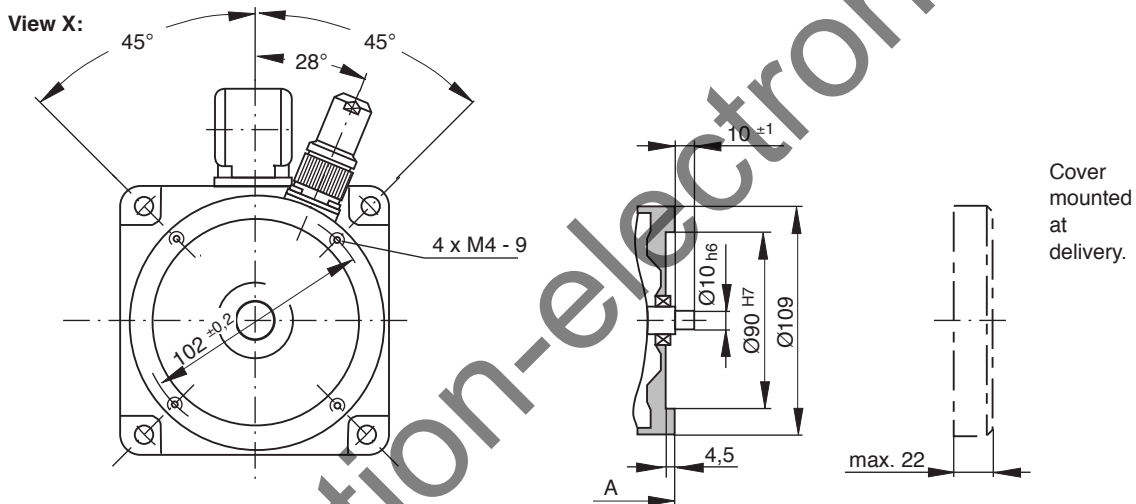
- to side A
- to side B
- to the right
- to the left

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

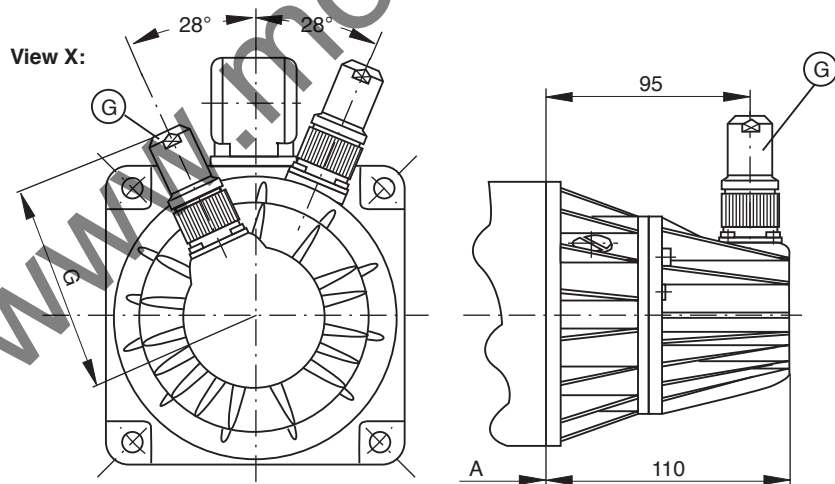


#### 2 Motor version

- Tachofeedback and second shaft end



- Tachofeedback and mounted incremental encoder



#### Incremental encoder connector

Must be ordered separately.

Name	Conn. type	Dim. G
straight conn.	INS 301	88
	INS 101	90
angle conn.	INS 351	86
	INS 311	

- Tachofeedback and mounted absolute encoder (see following page)

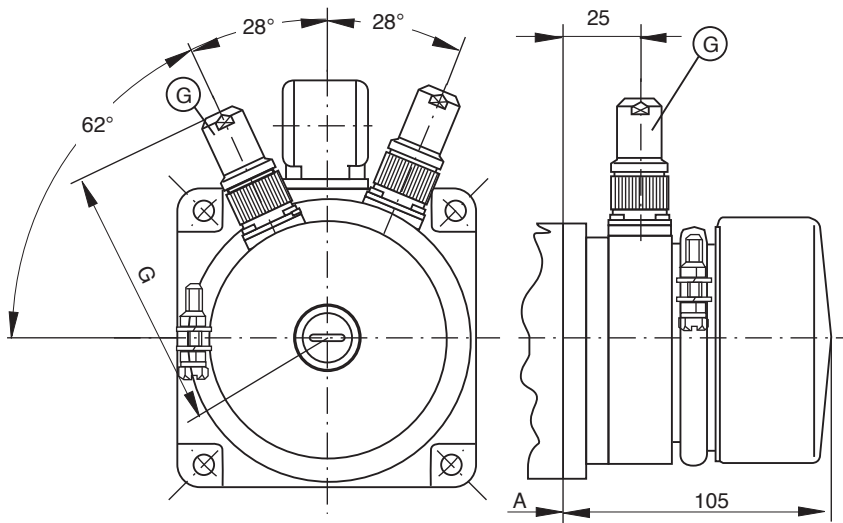
MB071-0/2

Fig 4.14: Dimensional data - MAC 071 - available options - (natural convection)

### Available options

- Tachofeedback and mounted absolute encoder

View X:



**G Absolute encoder conn.**  
Must be ordered separately.

Name	Conn. type	Dim. G
straight conn.	INS 326	104
	INS 92	
angle conn.	INS 322	102

#### 3 Blocking brake

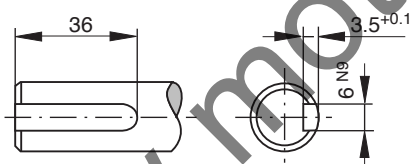
- without blocking brake  
Dim. A retained
- Standard blocking brake: 3 Nm  
Dim. A retained
- heavy-duty blocking brake: 6.5 Nm

Table for blocking brake with 6.5Nm holding torque

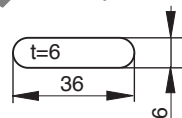
Size	Dim.	A
MAC 071 A		240
MAC 071 B		280
MAC 071 C		320

#### 4 Output shaft

- plain shaft (recommended type)
- with keyway per DIN 6885 sh. 1, 8/68 edition  
(Note! balanced with entire key.)



Matching key: DIN 6885-A 6 x 6 x 36  
Must be ordered separately.



MB071-0/3

Fig 4.15: Dimensional data - MAC 071 - available options - (natural convection)

### 4.5. Dimensional Data - Radial Cooling

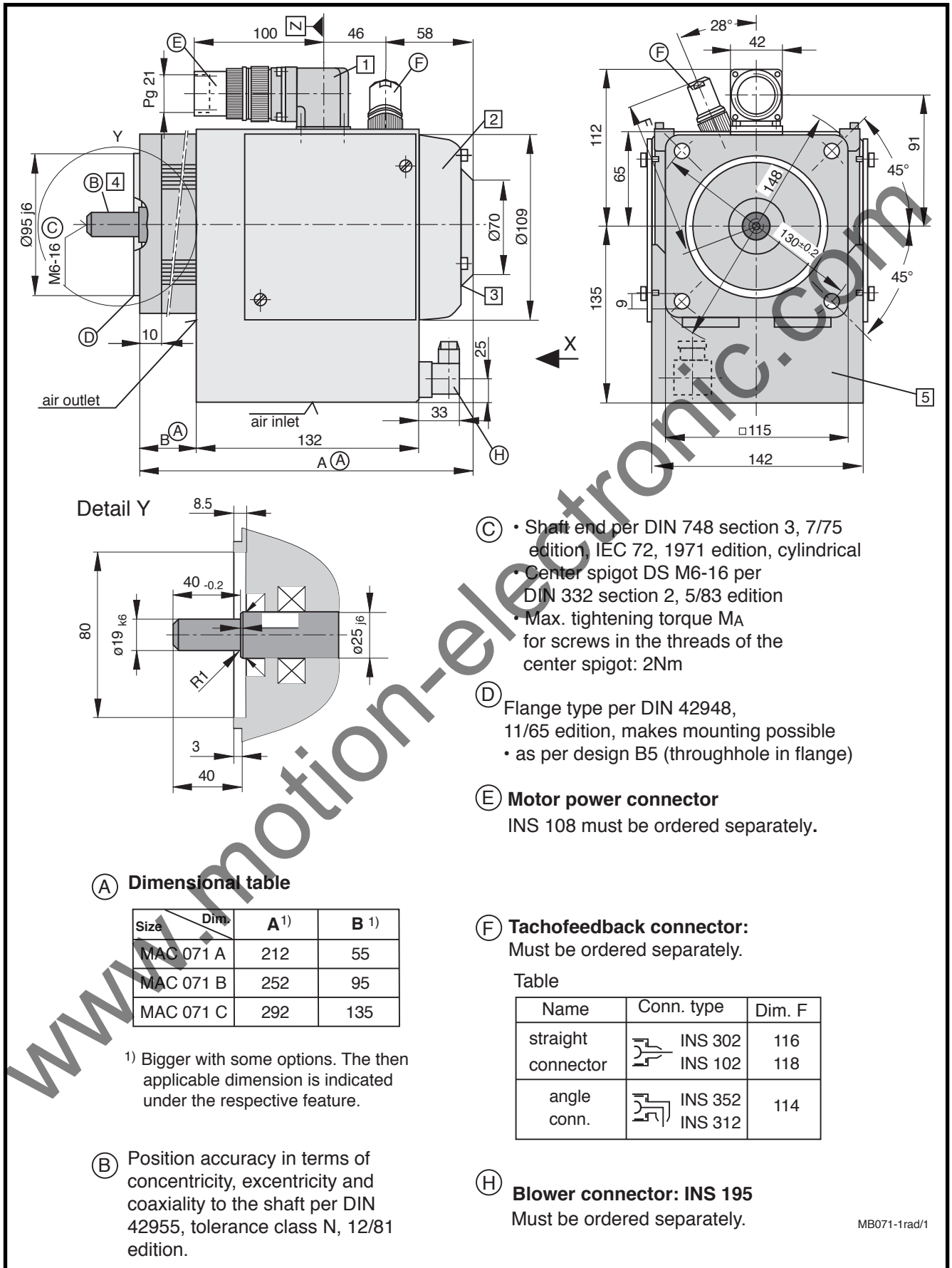


Fig 4.16: Dimensional data - MAC 071 (radial cooling)

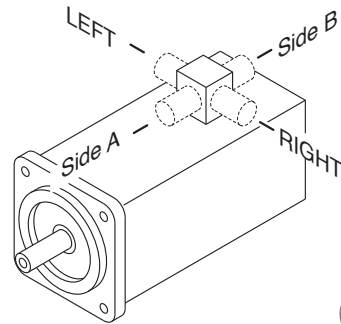
### Available options

#### 1 Power connection

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

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

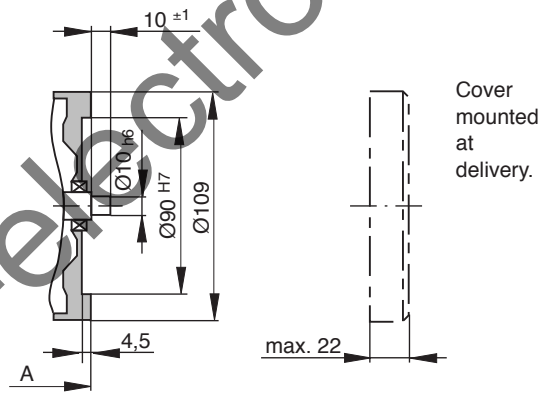
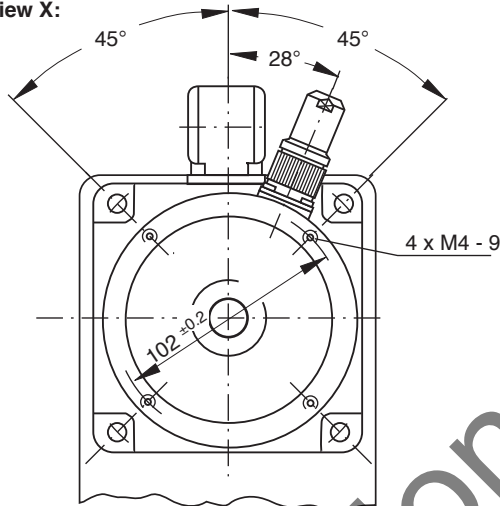
The drawing depicts side A as output direction. The dimensions of any other direction are obtained by a virtual turning of the connector housing around the Z axis.



#### 2 Motor version

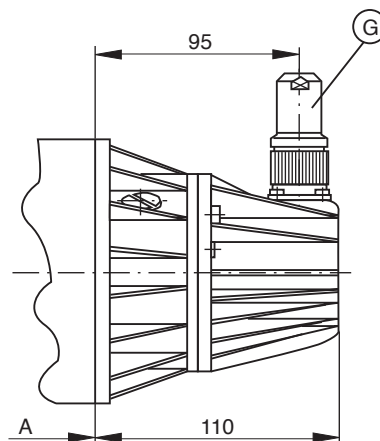
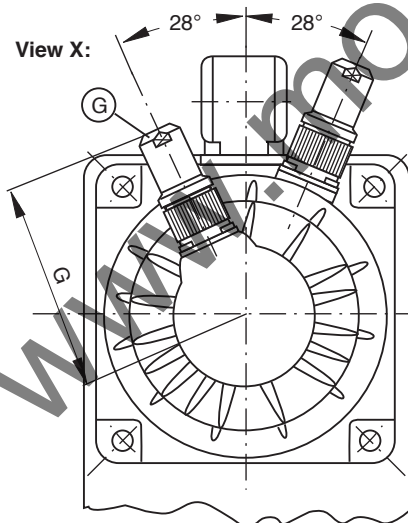
- Tachofeedback and second shaft end

View X:



- Tachofedback and mounted incremental encoder

View X:



#### G Incremental encoder connector

Must be ordered separately.

Name	Conn. type	Dim. G
straight conn.	INS 301	88
	INS 101	90
angle conn.	INS 351 INS 311	86

- Tachofedback and mounted absolute encoder (see following page)

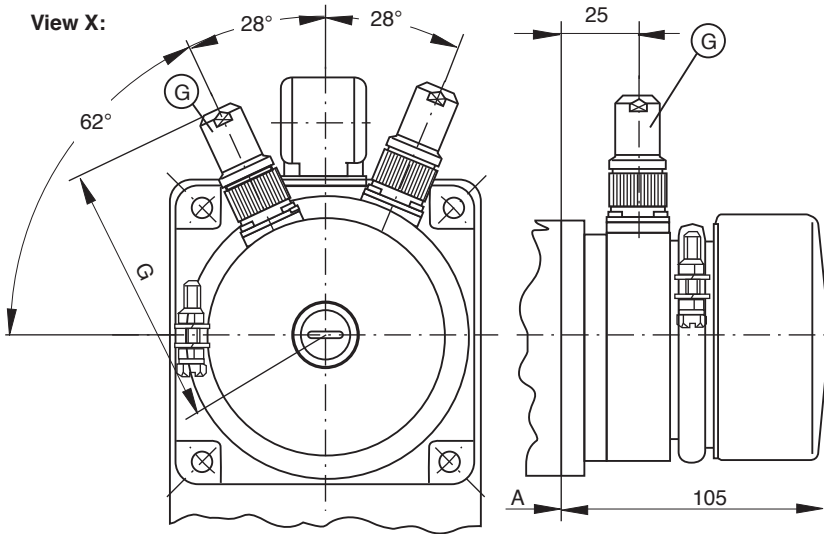
MB071-1rad/2

Fig 4.17: Dimensional data - MAC 071 - available options - (radial cooling)

### Available options

- Tachofeedback and mounted absolute encoder

View X:



**G Absolute encoder conn.**  
Must be ordered separately.

Name	Conn. type	Dim. G
straight conn.	INS 326	104
	INS 92	
angle conn.	INS 322	102

### 3 Blocking brake

- without blocking brake  
Dim. A and B retained
- Standard blocking brake: 3 Nm  
Dim. A and B retained
- heavy-duty blocking brake: 6.5 Nm

Table for blocking brake with 6.5 Nm holding torque

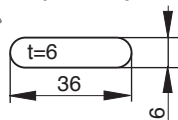
Size	Dim.	
	A	B
MAC 071 A	240	83
MAC 071 B	280	123
MAC 071 C	320	163

### 4 Output shaft

- plain shaft (recommended type)
- with keyway per DIN 6885 sh. 1, 8/68 edition  
(Note! balanced with entire key)

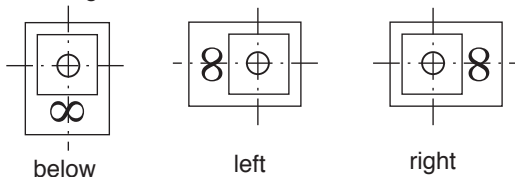


Matching key: DIN 6885-A 5 x 5 x 22  
Must be ordered separately.



### 5 Blower arrangement

Looking towards motor shaft.



MB071-1rad/3

Fig 4.18: Dimensional data - MAC 071 - available options - (radial cooling)



### 4.6. Dimensional Data - Axial Cooling

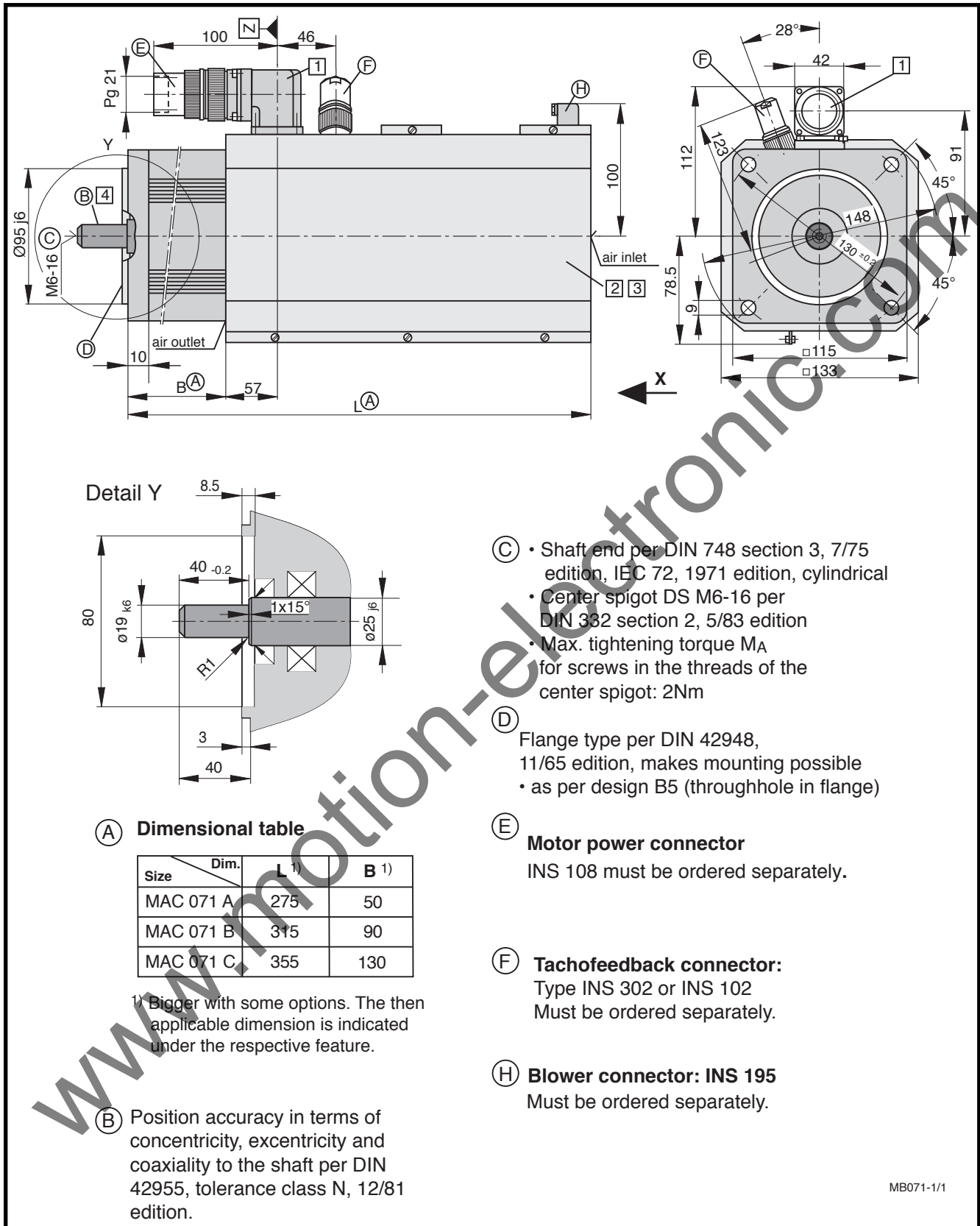


Fig 4.19: Dimensional data - MAC 071 (axial cooling)

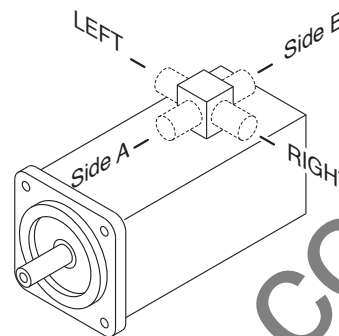
**Available options**

**1 Power connection**

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

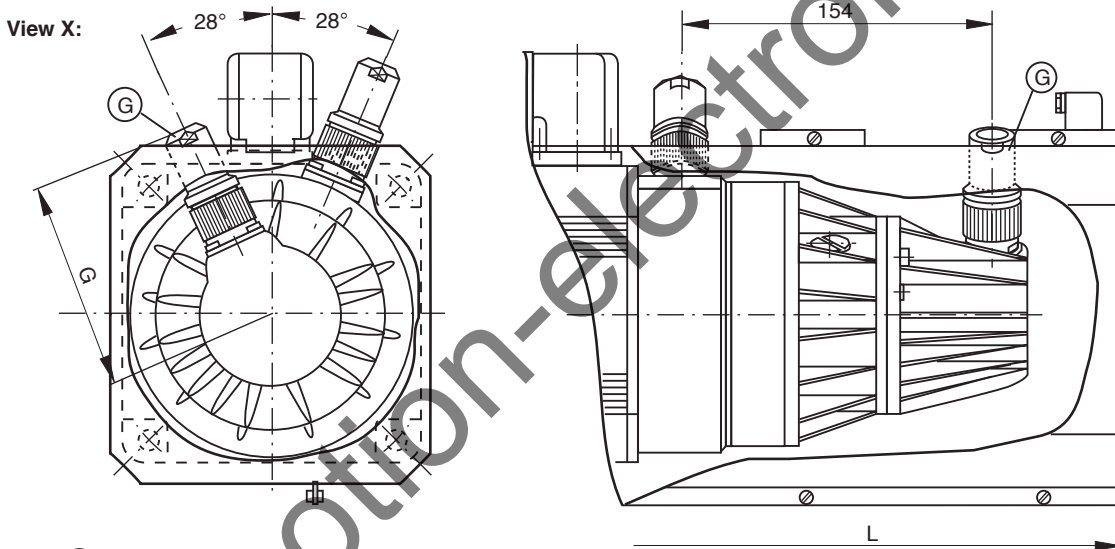
- to side A
- to side B
- to the right
- to the left

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



**2 Motor version**

- Tachofeedback and mounted incremental encoder



**G Incremental encoder connector**

Must be ordered separately.

Name	Conn. type	Dim. G
straight conn.	INS 302	88
	INS 102	90

**Table:**

Size	Dim.	L	B
MAC 071 A		395	78
MAC 071 B		435	118
MAC 071 C		475	158

- Tachofeedback and mounted absolute encoder (see following page)

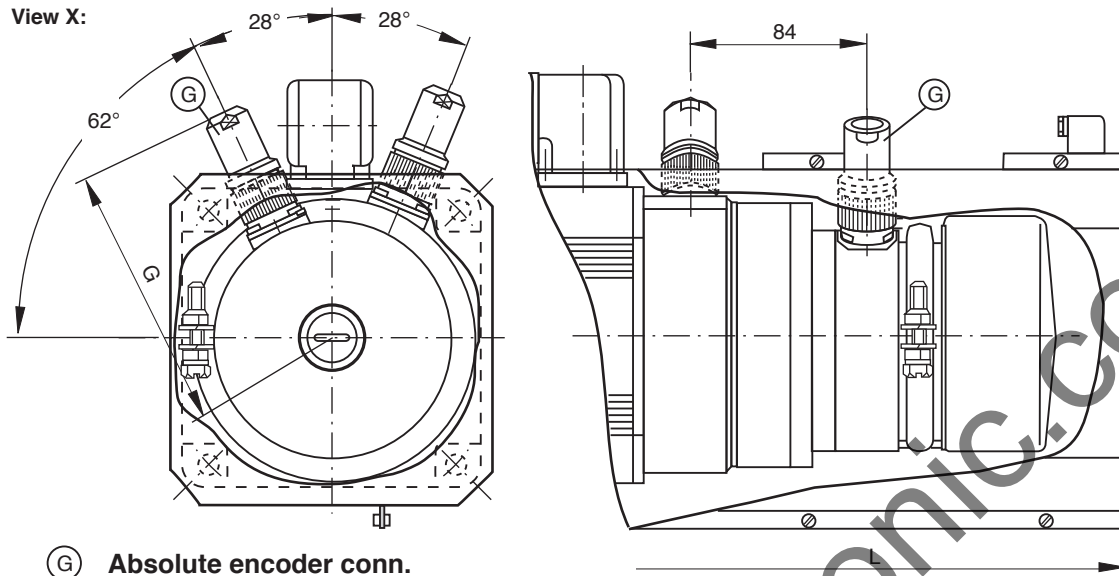
MB071-1/2

Fig 4.20: Dimensional data - MAC 071 -available options - (axial cooling)

### Available options

- Tachofeedback and mounted absolute encoder

View X:



**G** Absolute encoder conn.  
Must be ordered separately.

Name	Conn. type	Dim. G
straight conn.	INS 326 INS 92	104 106

Table

Size	Dim.	L	B
MAC 071 A	395	78	
MAC 071 B	435	118	
MAC 071 C	475	158	

### 3 Blocking brake

- without blocking brake  
Dim. L and B retained
- Standard blocking brake: 3 Nm  
Dim. L and B retained
- heavy-duty blocking brake: 6.5 Nm

Table for blocking brake  
with 6.5Nm holding torque

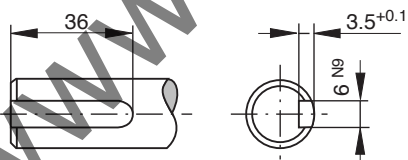
Size	Dim.	Vers. 2		Vers. 4	
		L	B	L	B
MAC 071 A	303	78	423	106	
MAC 071 B	343	118	463	146	
MAC 071 C	383	158	503	186	

Vers. 2 =  
Motor with tachofeedback

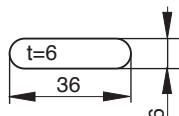
Vers. 4 =  
Motor with tachofeedback and  
mounted encoder

### 4 Output shaft

- plain shaft (recommended type)
- with keyway per DIN 6885 sh. 1, 8/68 edition  
(Note! balanced with entire key.)



Matching key: DIN 6885-A 5 x 5 x 22  
Must be ordered separately.



MB071-1/3

Fig 4.21: Dimensional data - MAC 071 - available options - (axial cooling)

### 4.7. Available Options

Type code fields Example: **MAC 071 A-0-ES-4 - C/095-A-0/WI 520LV/S000**

1. Motor for analogue drives		MAC	
2. Motor size		071	
3. Motor length		A, B, C	
4. Type of cooling:			
natural convection		surface cooling	
		axial	
		radial	
		blower right	
		blower below	
		blower left	
		AC 230 V	
		AC 115 V	
		AC 230 V	
		AC 115 V	
		AC 230 V	
		AC 115 V	
0		1 <sup>1)</sup> 2 <sup>1)</sup> 6 A 7 B 8 C	
5. Type of windings			
Nominal rpm		Motor length	
		A	
		B	
		C	
2000 min <sup>-1</sup>		HS FS US	
3000 min <sup>-1</sup>		OS TS NS	
4000 min <sup>-1</sup>		ES PS JS	
6000 min <sup>-1</sup>		VS KS GS	
6. Motor feedback			
Motor type			
with tachofeedback		2	
with tachofeedback and second shaft end		3	
with tachofeedback and mounted incremental or absolute encoder		4	
Tacho voltage			
set to nominal motor speed		-	
(nominal rpm > 3000 min <sup>-1</sup> : 1,5 V/1000 min <sup>-1</sup> )			
(nominal rpm ≤ 3000 min <sup>-1</sup> : 3 V/1000 min <sup>-1</sup> )			
1,5 V/1000 min <sup>-1</sup>		H	
Tacho type			
Standard		C	
increased smooth run quality		F	
7. Centering diameter			
for design B05 and B14		095	
8. Power connection			
connector to side A		A	
connector to side B		B	
connector to right (looking onto output shaft)		R	
connector to left (looking onto output shaft)		L	
9. Blocking brake			
without blocking brake		0	
with standard blocking brake (3 Nm)		1	
with heavy-duty blocking brake (6,5 Nm)		2	
10. Type <sup>2)</sup>			
Incremental encoder with standard mounting		WI	
Incremental encoder with shock-damped mounting		DI	
Absolute encoder		AM	
11. Encoder code <sup>2)</sup>			
For available types, see section 2.4 "Motor feedback"			
12. Special types			
Fixed and documented by INDRAMAT with special number (see Drawing no.: 106-0105-4301-XX)			
Does not apply to standard motors.			

1) For type 3 motors (with 2nd shaft end and tachofeedback).  
Not available with axial surface cooling.

2) Type code fields 10 and 11 do not apply to motor types 2 and 3.

TLMAC071

Fig 4.22: Type codes MAC 071

#### 4.8. Special Options

Specification of Option	S001
with keyway per DIN 6885, sheet 1	X

Fig 4.23: Special options with a MAC 071

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