



# MBK

## BRUSHLESS MOTORS

### SERIES 10

#### DESCRIPTION

- A - Flange
- B - Permanent magnets
- C - Stator
- D - Feedback sensor
- E - Brake (on request)

The MBK brushless motors are high-performance servo-motors suitable for any automation application where accurate axis motion control is needed.

Mechanical design and efficiency make motors suitable for robust, high dynamics and long life applications. Any MBK motor can be equipped with brake.

Wide power and flange size range are available. Supply voltage can be in direct current or alternate current. With natural cooling MBK motor are easy to install.

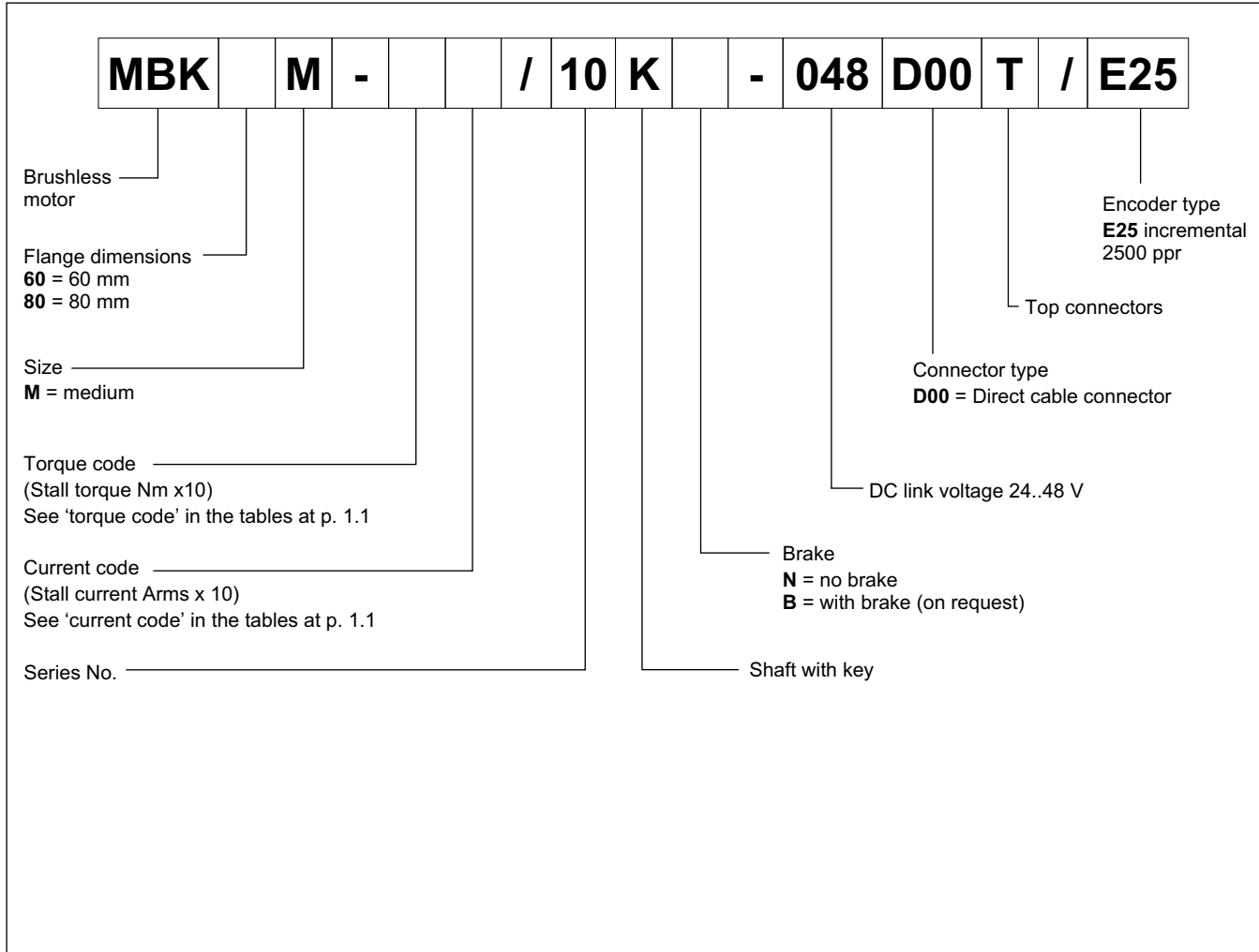
Insulation class makes the MBK motors effective, stable and reliable even in high temperature environment.

#### CHARACTERISTICS

Flange dimension	mm	<b>60 - 80 - 110 - 130 - 150 - 180</b>
Supply voltage	V DC	24 ÷ 48 or 300 ÷ 560
Torque values	Nm	0,8 ÷ 24
Power	W	50 ÷ 7500
Speed range	rpm	up to 6500
Poles pair number		3 ÷ 5 see specific tables
Cooling method		natural convection
Relative humidity	%	< 90 (Non-condensing)
Ambient environment		away from active gas, combustible gas, oil drops and dust
Maximum altitude		rated working altitude at 1000 m or below above 1000 m: decreasing 1.5% per 100 m rise, maximum altitude 4000 m
Protection class		body IP65, shaft sealing IP54
Ambient operating temperature	°C	-20 / +40



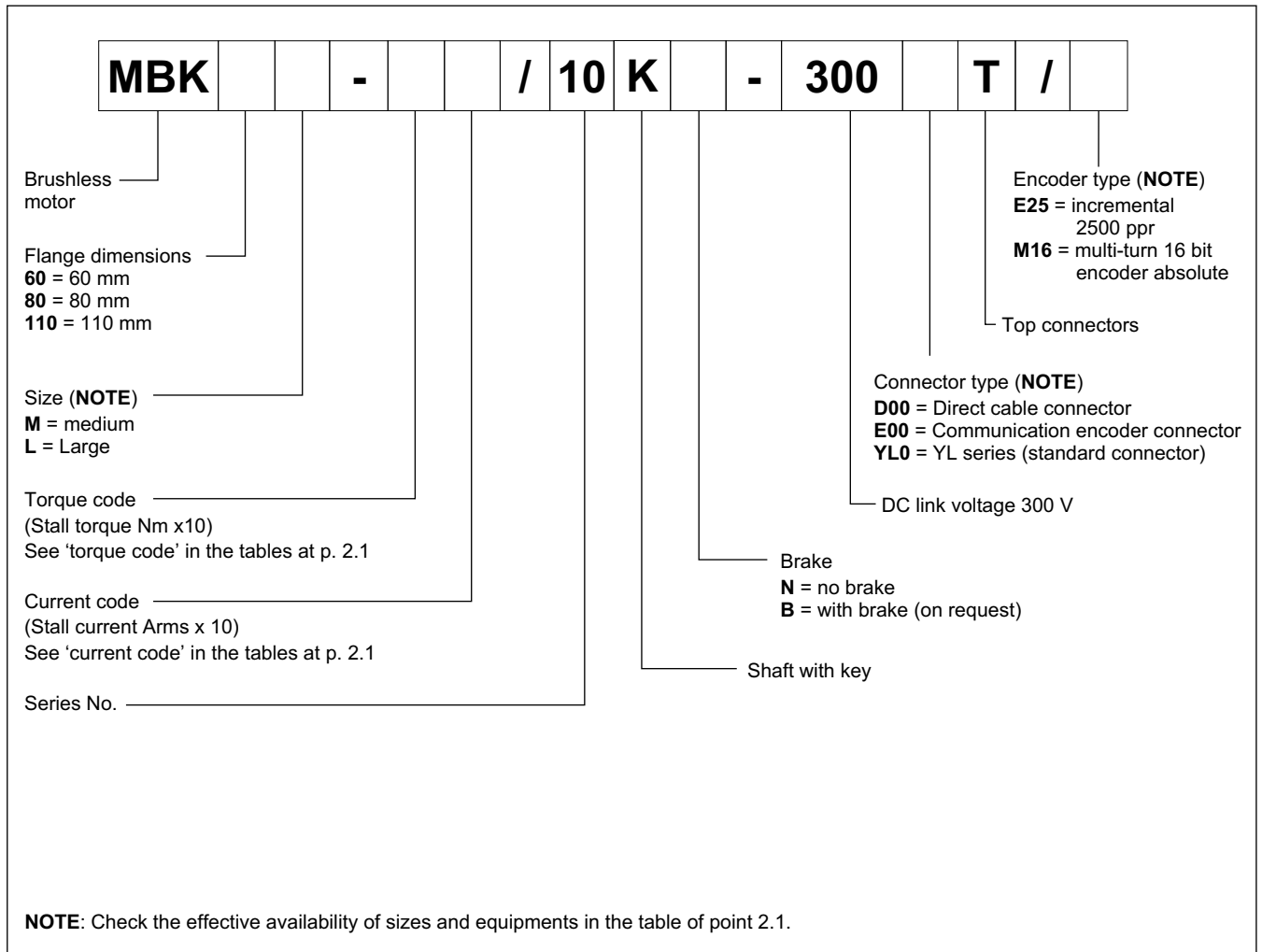
## 1 - IDENTIFICATION CODE FOR SUPPLY VOLTAGE UP TO 48 VDC



### 1.1 - Stall torque and stall current

MOTOR	SIZE	POWER [W]	RATED SPEED [rpm]	TORQUE CODE	CONTINUOUS STALL TORQUE [Nm]	CURRENT CODE	CONTINUOUS STALL CURRENT [Arms]	ENCODER TYPE	CONNECTOR TYPE
<b>MBK60</b>	M	400	3000	T14	1,4	A111	11,1	E25	D00
<b>MBK80</b>	M	750	3000	T26	2,6	A209	20,9	E25	D00

## 2 - IDENTIFICATION CODE FOR SUPPLY VOLTAGE UP TO 300 VDC

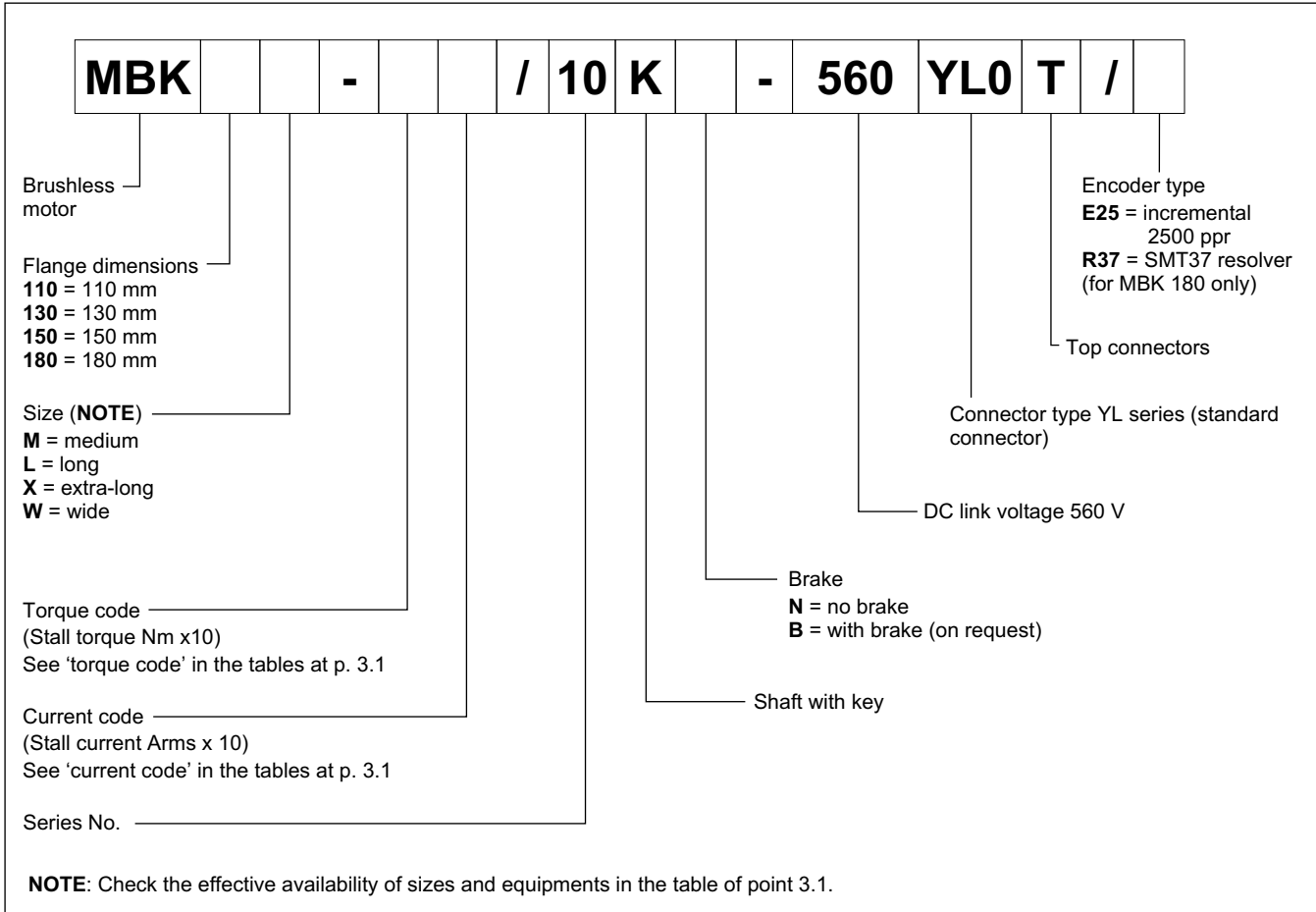


### 2.1 - Stall torque and stall current

MOTOR	SIZE	POWER [W]	RATED SPEED [rpm]	TORQUE CODE	CONTINUOUS STALL TORQUE [Nm]	CURRENT CODE	CONTINUOUS STALL CURRENT [Arms]	ENCODER TYPE	CONNECTOR TYPE
<b>MBK60</b>	M	400	3000	T14	1,4	A26	2,6	M16	E00
<b>MBK80</b>	M	750	3000	T26	2,6	A42	4,2	M16	E00
	L	1000	3000	T33	3,3	A69	6,9	E25	D00
<b>MBK110</b>	M	1250	3000	T44	4,4	A68	6,8	E25	YLO



**3 - IDENTIFICATION CODE FOR SUPPLY VOLTAGE UP TO 560 VDC**



**3.1 - Stall torque and stall current**

MOTOR	SIZE	POWER [W]	RATED SPEED [rpm]	TORQUE CODE	CONTINUOUS STALL TORQUE [Nm]	CURRENT CODE	CONTINUOUS STALL CURRENT [Arms]	ENCODER TYPE	CONNECTOR TYPE
<b>MBK110</b>	M	1260	3000	T44	4,4	A47	4,7	E25	YL0
	X	1880	3000	T66	6,6	A68	6,8	E25	YL0
<b>MBK130</b>	L	2100	2000	T110	11	A84	8,4	E25	YL0
	W	3000	2000	T157	15,7	A87	8,7	E25	YL0
<b>MBK150</b>	X	3800	2000	T198	19,8	A102	10,2	E25	YL0
<b>MBK180</b>	M	4400	1500	T308	30,8	A131	13,1	E25	YL0
	X	7500	1500	T528	52,8	A211	21,1	R37	YL0



**4 - ASSOCIATED CONTROLLERS SCK AND SCD**

Here below a matching table of MBK motors with SCK and SCD controllers.

Drive supply voltage	Motor	Controller		
		CANopen	EtherCAT	Pulse/MODBUS 486
24..70 V DC	MBK60M-*048	SCK070-040-C150/10-C2	SCK070-040-C150/10-E2	SCK070-010-C150/10-N4
	MBK80M-*048	SCK070-075-C250/10-C2	SCK070-075-C250/10-E2	SCK070-075-C250/10-N4
230 V AC	MBK60M-*300	SCK230-075-C40/10-C2	SCK230-075-C40/10-E2	SCK230-075-C40/10-N4
	MBK80M-*300			
	MBK80L-*300	SCK230-150-C110/10-C2	SCK230-150-C110/10-E2	SCK230-150-C110/10-N4
	MBK110M-*300			
400 V AC	MBK110M-*560	SCK400-300-C70/10-C2	SCK400-300-C70/10-E2	SCK400-300-C70/10-N4
	MBK110X-*560			
	MBK130L-*560			
	MBK130W-*560	SCD400-440-C100/10-C4	-	SCD400-440-C100/10-N4
	MBK150X-*560			SCD400-550-C130/10-N4
	MBK180M-*560			SCD400-550-C130/10-N4
	MBK180X-*560			SCD400-750-C180/10-R4



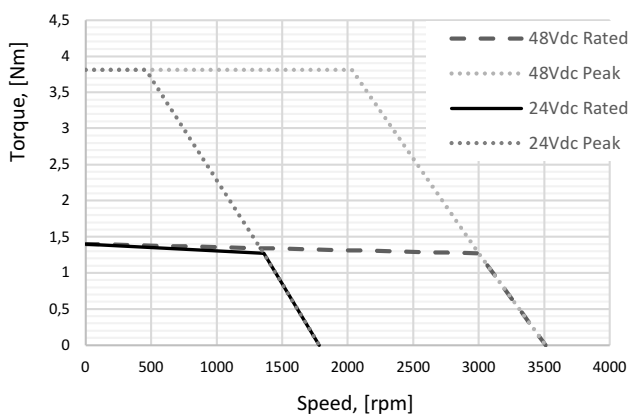
**5 - MBK60 FOR VOLTAGE 24/48 VDC**

**5.1 - Technical data**

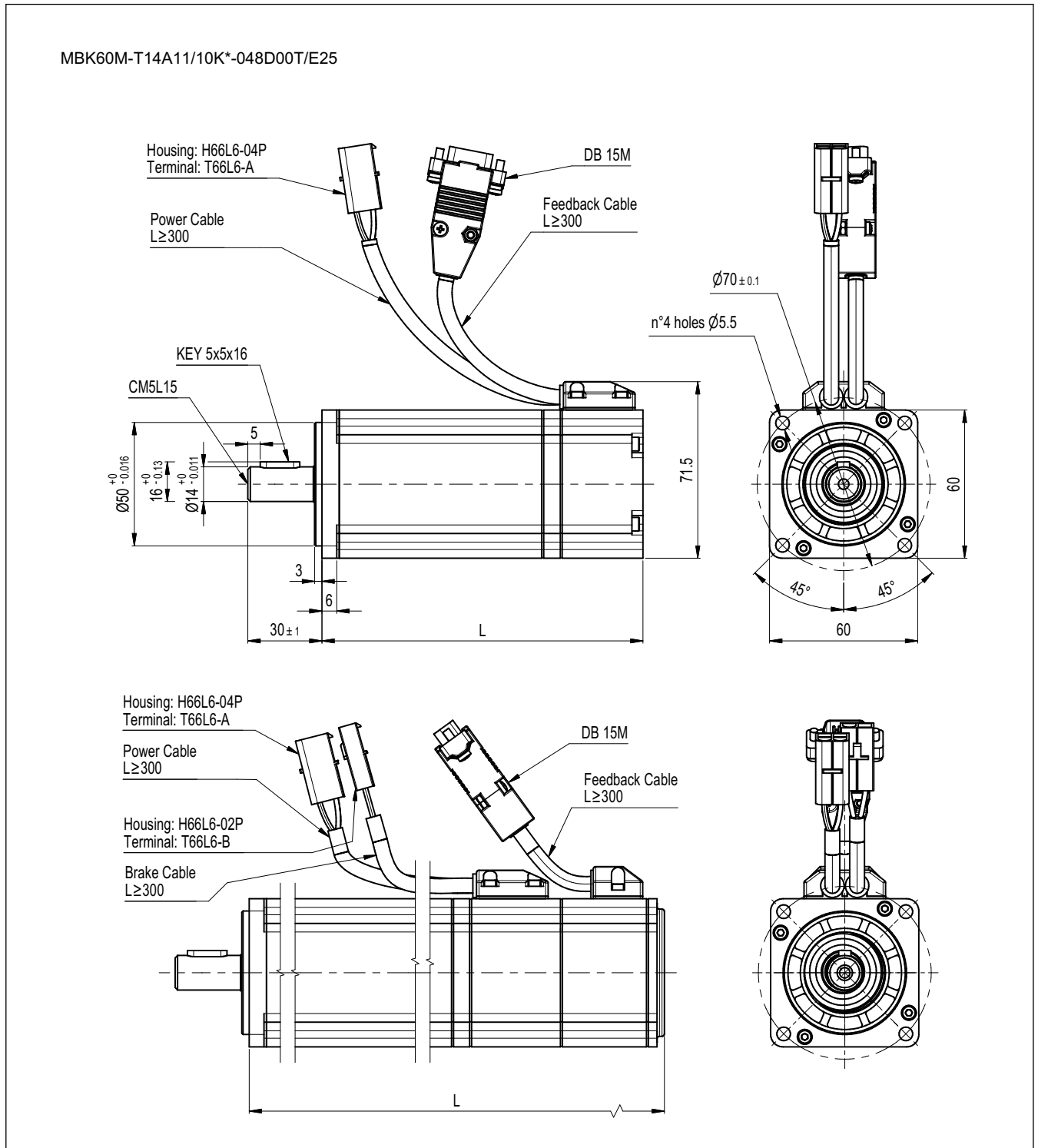
		<b>MBK60M</b>	
DC link voltage	V DC	24	48
Rated power	W	200	400
Rated speed	rpm	1350	3000
Rated torque	Nm	1.27	
Rated current	A	10.1	
Maximum torque	Nm	3.81	
Maximum current	A	30.3	
Standstill torque	Nm	1.4	
Standstill current	A	11.1	
Resistance line-line	Ohm	0.33	
Inductance line-line	mH	0.68	
Electrical time constant	ms	2.07	
Mechanical time constant:	ms	1.32	
Reverse voltage constant	V/krpm	8	
Torque constant	Nm/A	0.13	
Motor moment of inertia	kg·cm <sup>2</sup>	0.4	
Brake holding torque	Nm	1.3	
Pole pair number		3	
Maximum voltage rising du/dt	KV/μs	8	
Insulation class		F	
Maximum radial force	N	180	
Maximum axial force	N	90	

**5.2 - Torque characteristic curves**

**MBK60M**



### 5.3 - Overall dimensions MBK60M



			MBK60M
Encoder type			E25
Mass	without brake	kg	1.6
	with brake		2.1
Motor length L ( $\pm 1.5$ mm)	without brake	mm	130
	with brake		176



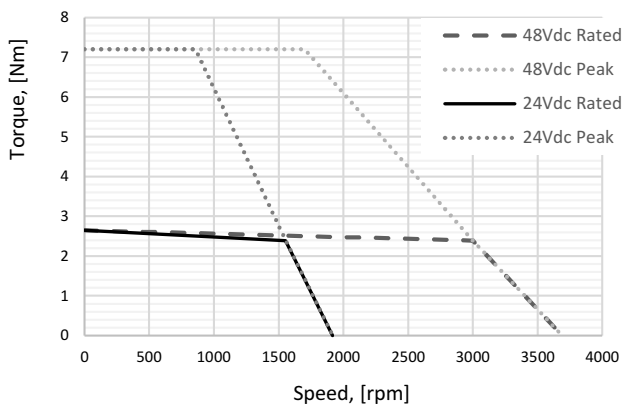
## 6 - MBK80 FOR VOLTAGE 48 VDC

### 6.1 - Technical data

		MBK80M	
		24	48
DC link voltage	V DC	24	48
Rated power	W	387	750
Rated speed	rpm	1550	3000
Rated torque	Nm	2.39	
Rated current	A	19	
Maximum torque	Nm	7.17	
Maximum current	A	57	
Standstill torque	Nm	2.63	
Standstill current	A	20.9	
Resistance line-line	Ohm	0.11	
Inductance line-line	mH	0.41	
Electrical time constant	ms	3.82	
Mechanical time constant:	ms	1.38	
Reverse voltage constant	V/krpm	8	
Torque constant	Nm/A	0.13	
Motor moment of inertia	kg·cm <sup>2</sup>	1.26	
Brake holding torque	Nm	3.2	
Pole pair number		3	
Maximum voltage rising du/dt	KV/μs	8	
Insulation class		F	
Maximum radial force	N	335	
Maximum axial force	N	167.5	

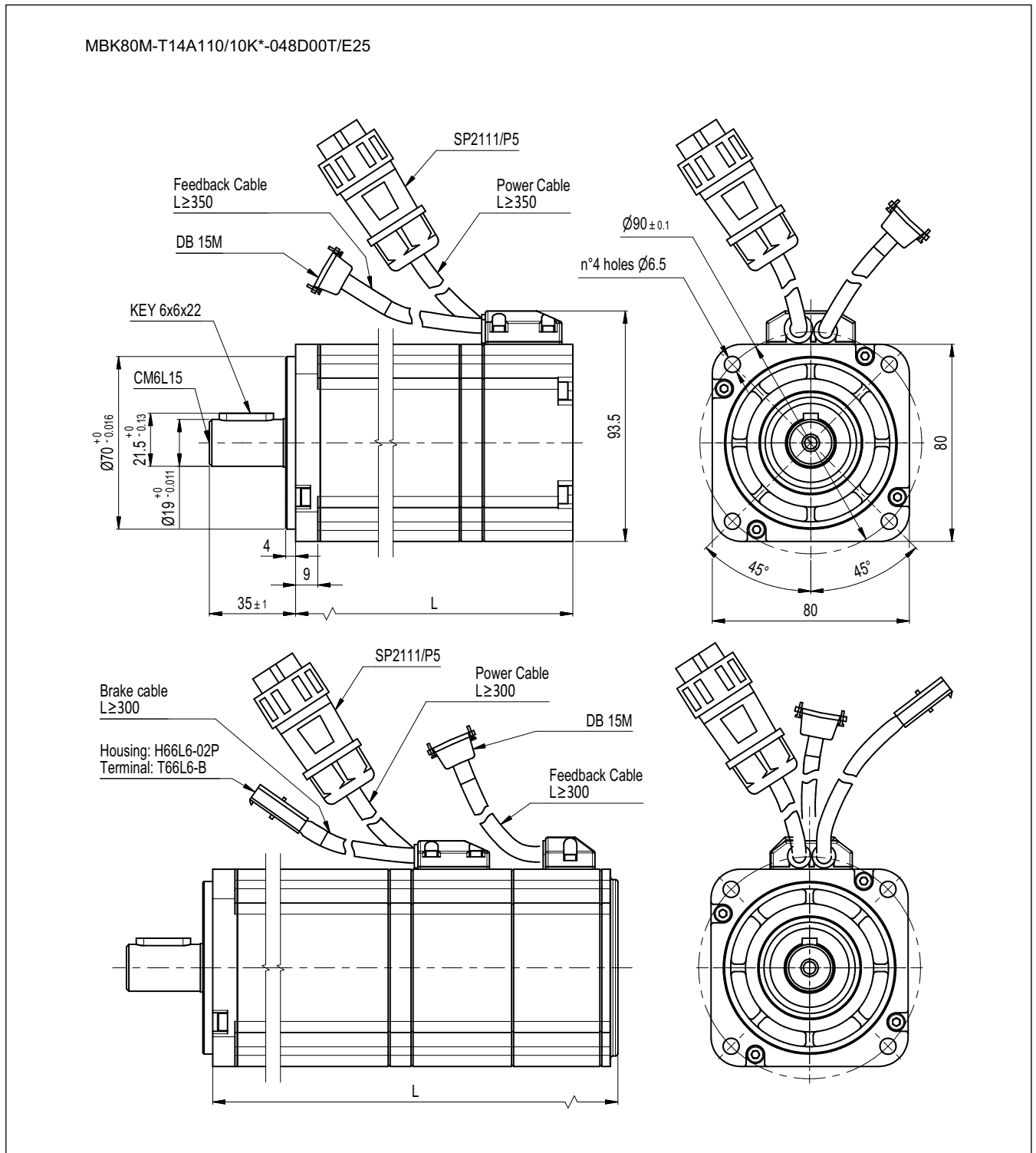
### 6.2 - Torque characteristic curves

MBK80M





### 6.3 - Overall dimensions MBK80M



			MBK80M
Encoder type			E25
Mass	without brake	kg	2.9
	with brake		3.5
Motor length L ( $\pm 1.5$ mm)	without brake	mm	140
	with brake		187

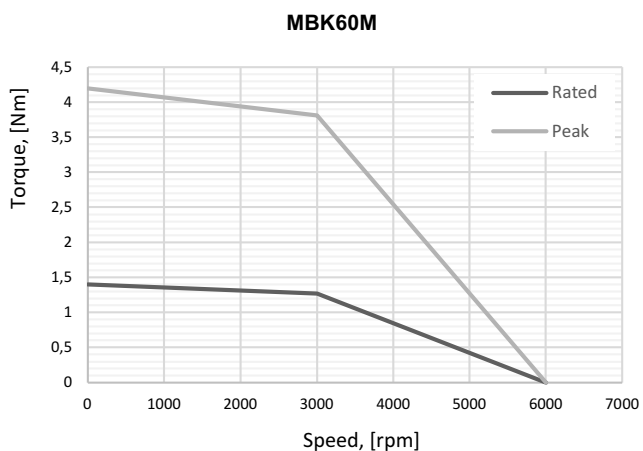


## 7 - MBK60 FOR VOLTAGE 300 VDC

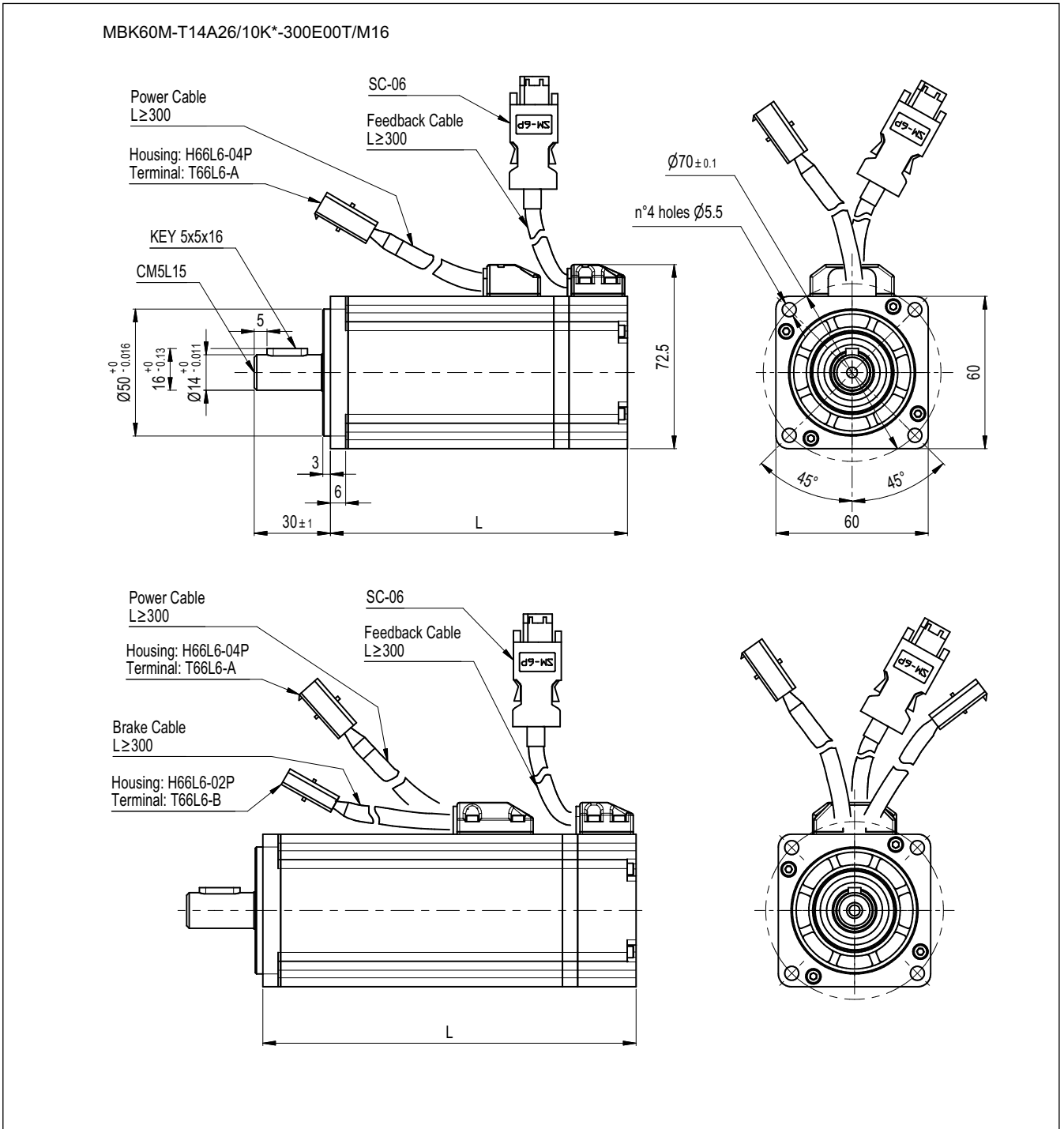
### 7.1 - Technical data

		<b>MBK60M</b>
DC link voltage	V DC	300
Rated power	W	400
Rated speed	rpm	3000
Rated torque	Nm	1.27
Rated current	A	2.4
Maximum torque	Nm	3.81
Maximum current	A	7.2
Standstill torque	Nm	1.4
Standstill current	A	2.6
Resistance line-line	Ohm	5.8
Inductance line-line	mH	11.5
Electrical time constant	ms	1.98
Mechanical time constant:	ms	1.3
Reverse voltage constant	V/krpm	34
Torque constant	Nm/A	0.56
Motor moment of inertia	kg•cm <sup>2</sup>	0.41
Brake holding torque	Nm	1.5
Pole pair number		3
Maximum voltage rising du/dt	KV/μs	8
Insulation class		F
Maximum radial force	N	180
Maximum axial force	N	90

### 6.2 - Torque characteristic curves



### 7.3 - Overall dimensions MBK60M



MBK60M			
encoder type			M16
Mass	without brake	kg	1.6
	with brake		2.1
Motor length L ( $\pm 1.5$ mm)	without brake	mm	117
	with brake		147



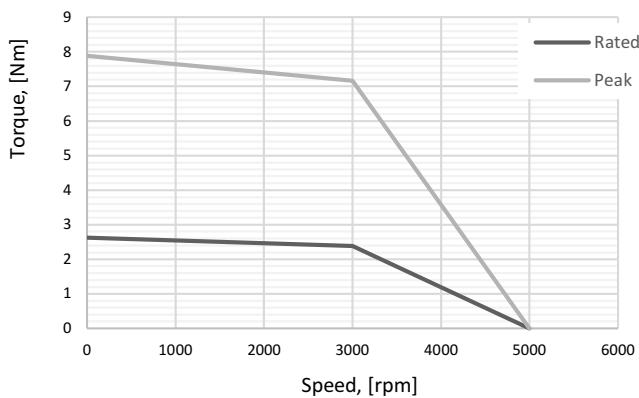
## 8 - MBK80 FOR VOLTAGE 300 VDC

### 8.1 - Technical data

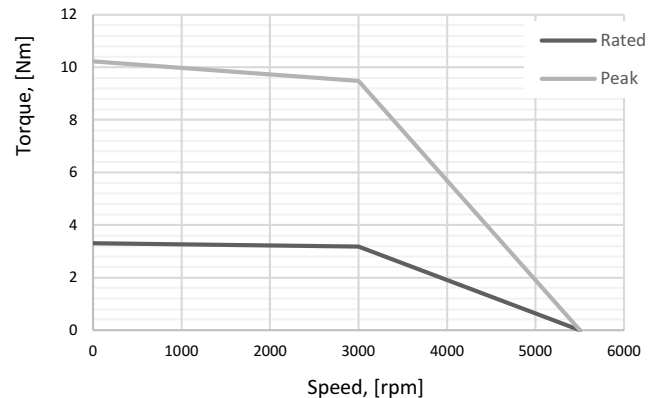
		MBK80M	MBK80L
DC link voltage	V DC	300	300
Rated power	W	750	1000
Rated speed	rpm	3000	3000
Rated torque	Nm	2.39	3.18
Rated current	A	3.8	6.3
Maximum torque	Nm	7.17	9.48
Maximum current	A	11.4	18.9
Standstill torque	Nm	2.6	3.3
Standstill current	A	4.2	6.93
Resistance line-line	Ohm	2.1	0.86
Inductance line-line	mH	10.5	4.5
Electrical time constant	ms	5	5.23
Mechanical time constant:	ms	0.9	0.89
Reverse voltage constant	V/krpm	40	34
Torque constant	Nm/A	0.66	0.56
Motor moment of inertia	kg·cm <sup>2</sup>	1.1	1.9
Brake holding torque	Nm	3.2	-
Pole pair number		3	3
Maximum voltage rising du/dt	KV/μs	8	8
Insulation class		F	F
Maximum radial force	N	335	335
Maximum axial force	N	167.5	167.5

### 8.2 - Torque characteristic curves

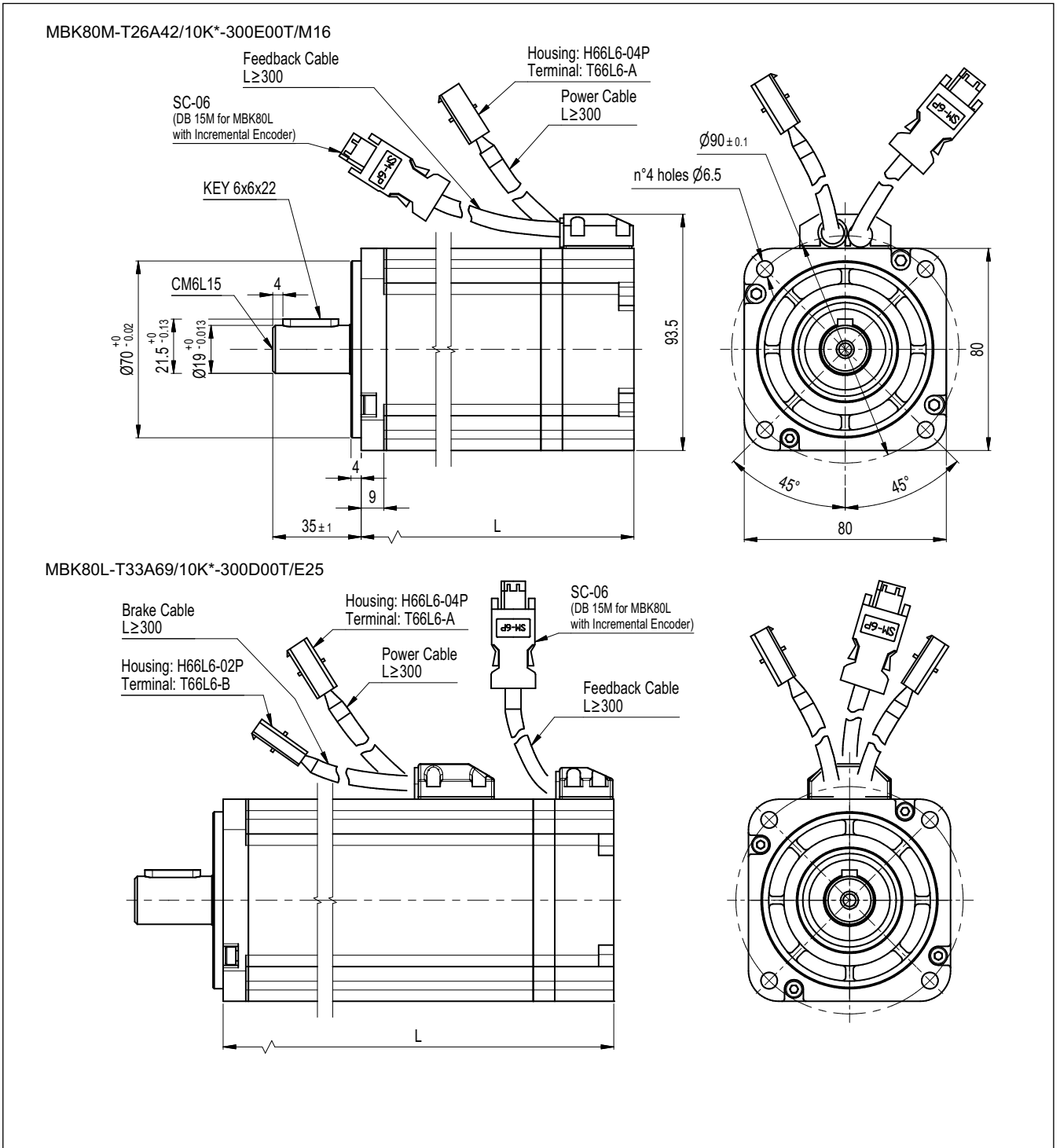
MBK80M



MBK80L



### 8.3 - Overall dimensions for MBK80M and MBK80L



			MBK80M	MBK80L
Encoder type			M16	D00
Mass	without brake	kg	2.8	3.9
	with brake		3.4	4.6
Motor length L ( $\pm 1.5$ mm)	without brake	mm	128.5	167
	with brake		158	217



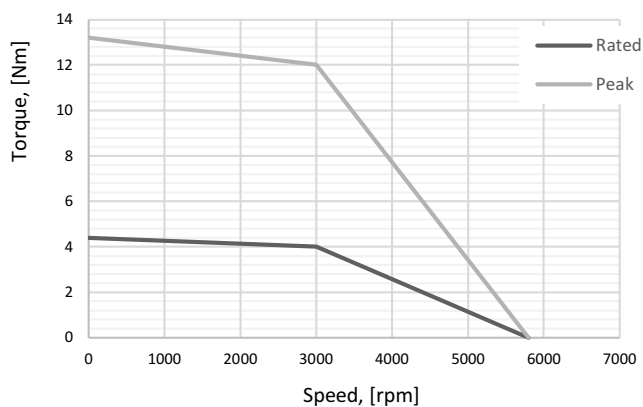
## 9 - MBK110 FOR VOLTAGE 300 VDC

### 9.1 - Technical data

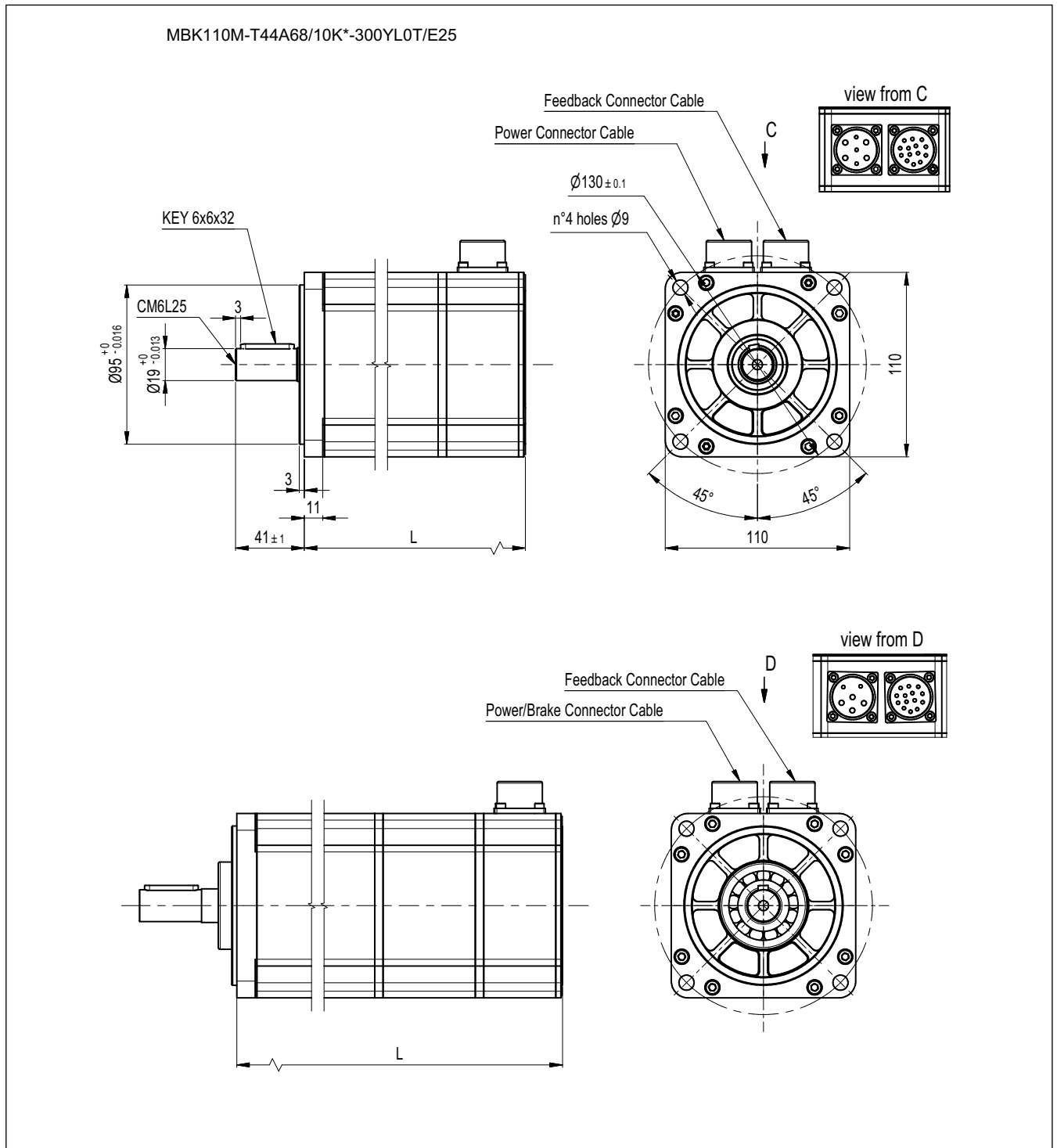
		<b>MBK110M</b>
DC link voltage	V DC	300
Rated power	W	1250
Rated speed	rpm	3000
Rated torque	Nm	4
Rated current	A	6.5
Maximum torque	Nm	12
Maximum current	A	19.5
Standstill torque	Nm	4.4
Standstill current	A	6.8
Resistance line-line	Ohm	0.8
Inductance line-line	mH	6.4
Electrical time constant	ms	7.9
Mechanical time constant	ms	1.4
Reverse voltage constant	V/krpm	45
Torque constant	Nm/A	0.7
Motor moment of inertia	kg•cm <sup>2</sup>	5.8
Pole pair number		4
Maximum voltage rising du/dt	KV/μs	8
Insulation class		F
Maximum radial force	N	630
Maximum axial force	N	315

### 9.2 - Torque characteristic curves

**MBK110M**



### 9.3 - Overall dimensions MBK110M



			MBK110M
Encoder type			E25
Mass	without brake	kg	6.2
	with brake		8.2
Motor length L ( $\pm 1.5$ mm)	without brake	mm	168
	with brake		228



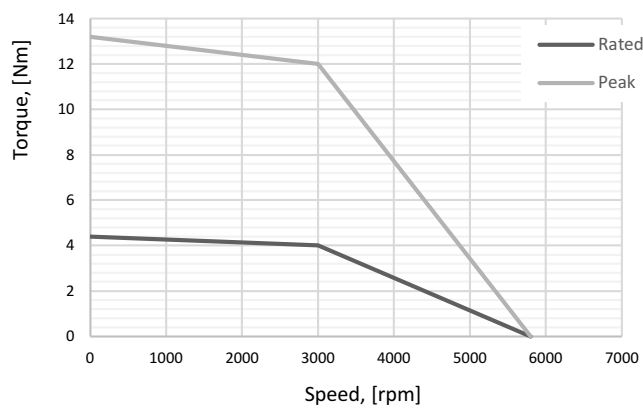
## 10 - MBK110 FOR VOLTAGE 560 VDC

### 10.1 - Technical data

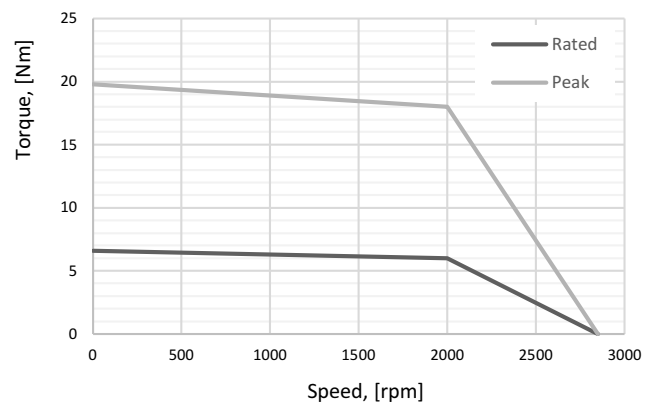
		MBK110M	MBK110X
DC link voltage	V DC	560	560
Rated power	W	1260	1880
Rated speed	rpm	3000	3000
Rated torque	Nm	4	6
Rated current	A	4.3	6.2
Maximum torque	Nm	12	18
Maximum current	A	12.9	18.6
Standstill torque	Nm	4.4	6.6
Standstill current	A	4.73	6.76
Resistance line-line	Ohm	1.83	1.25
Inductance line-line	mH	13.5	9.6
Electrical time constant	ms	7.37	7.64
Mechanical time constant	ms	1.63	1.65
Reverse voltage constant	V/krpm	64	64
Torque constant	Nm/A	0.75	1.06
Motor moment of inertia	kg·cm <sup>2</sup>	5.8	8.5
Pole pair number		4	4
Maximum voltage rising du/dt	KV/μs	8	8
Insulation class		F	F
Maximum radial force	N	630	630
Maximum axial force	N	315	315

### 10.2 - Torque characteristic curves

MBK110M

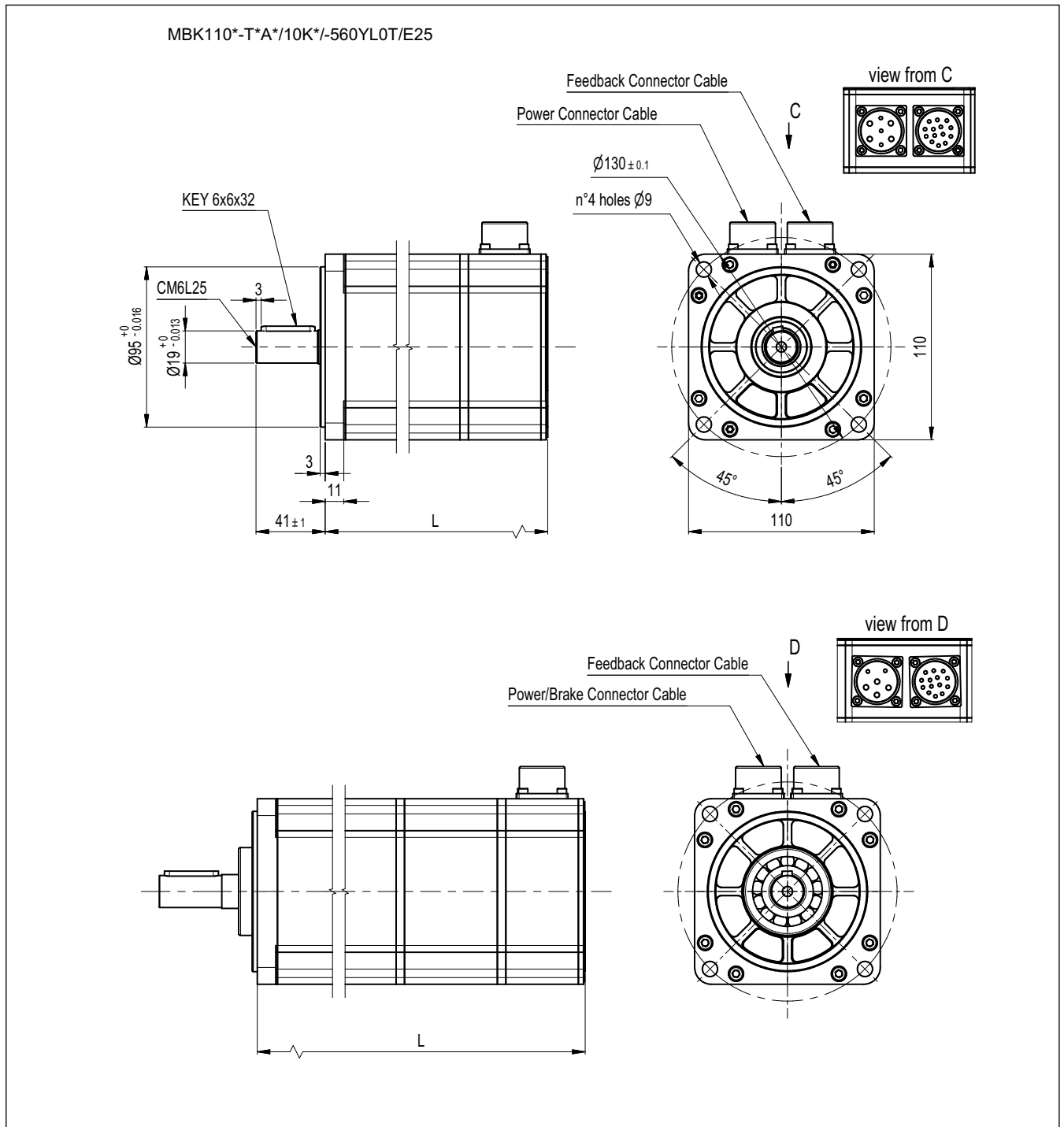


MBK110X





### 10.3 - Overall dimensions for MBK110M and MBK110X



			<b>MBK110M</b>	<b>MBK110X</b>
Encoder type			M16	D00
Mass	without brake	kg	6.2	8.2
	with brake		8.2	10.2
Motor length L ( $\pm 1.5$ mm)	without brake	mm	168	202
	with brake		228	262

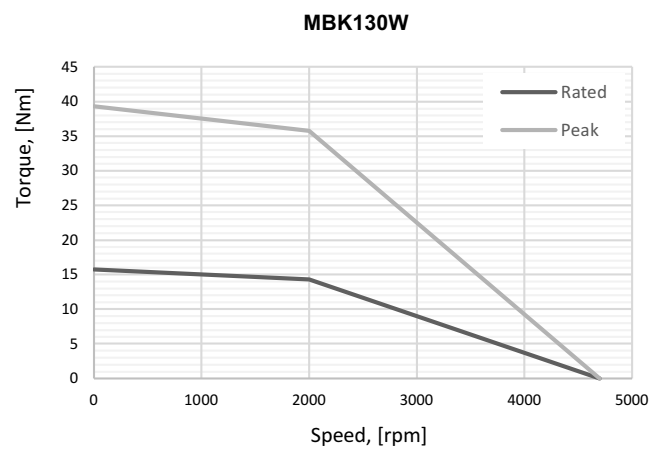
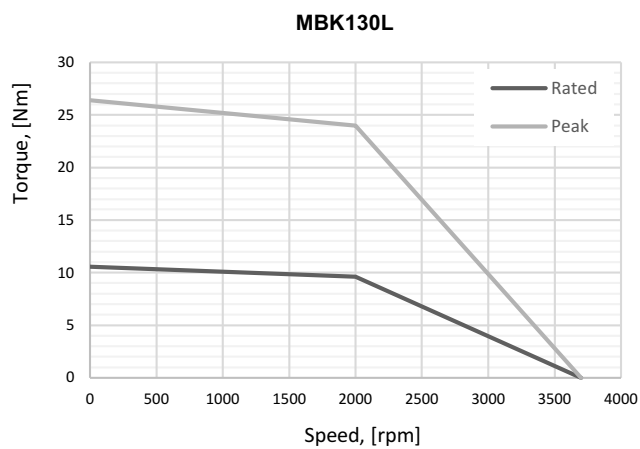


## 11 - MBK130 FOR VOLTAGE 560 VDC

### 11.1 - Technical data

		MBK130L	MBK130W
DC link voltage	V DC	560	560
Rated power	W	2100	3000
Rated speed	rpm	2000	2000
Rated torque	Nm	10	14.3
Rated current	A	7.6	7.9
Maximum torque	Nm	25	35.75
Maximum current	A	19	19.75
Standstill torque	Nm	11	15.73
Standstill current	A	8.36	8.7
Resistance line-line	Ohm	0.98	0.84
Inductance line-line	mH	14.3	12.7
Electrical time constant	ms	14.6	14.94
Mechanical time constant:	ms	2268	1.53
Reverse voltage constant	V/krpm	80	110
Torque constant	Nm/A	1.32	1.82
Motor moment of inertia	kg•cm <sup>2</sup>	23.4	34.8
Pole pair number		4	4
Maximum voltage rising du/dt	KV/μs	8	8
Insulation class		F	F
Maximum radial force	N	900	900
Maximum axial force	N	450	450

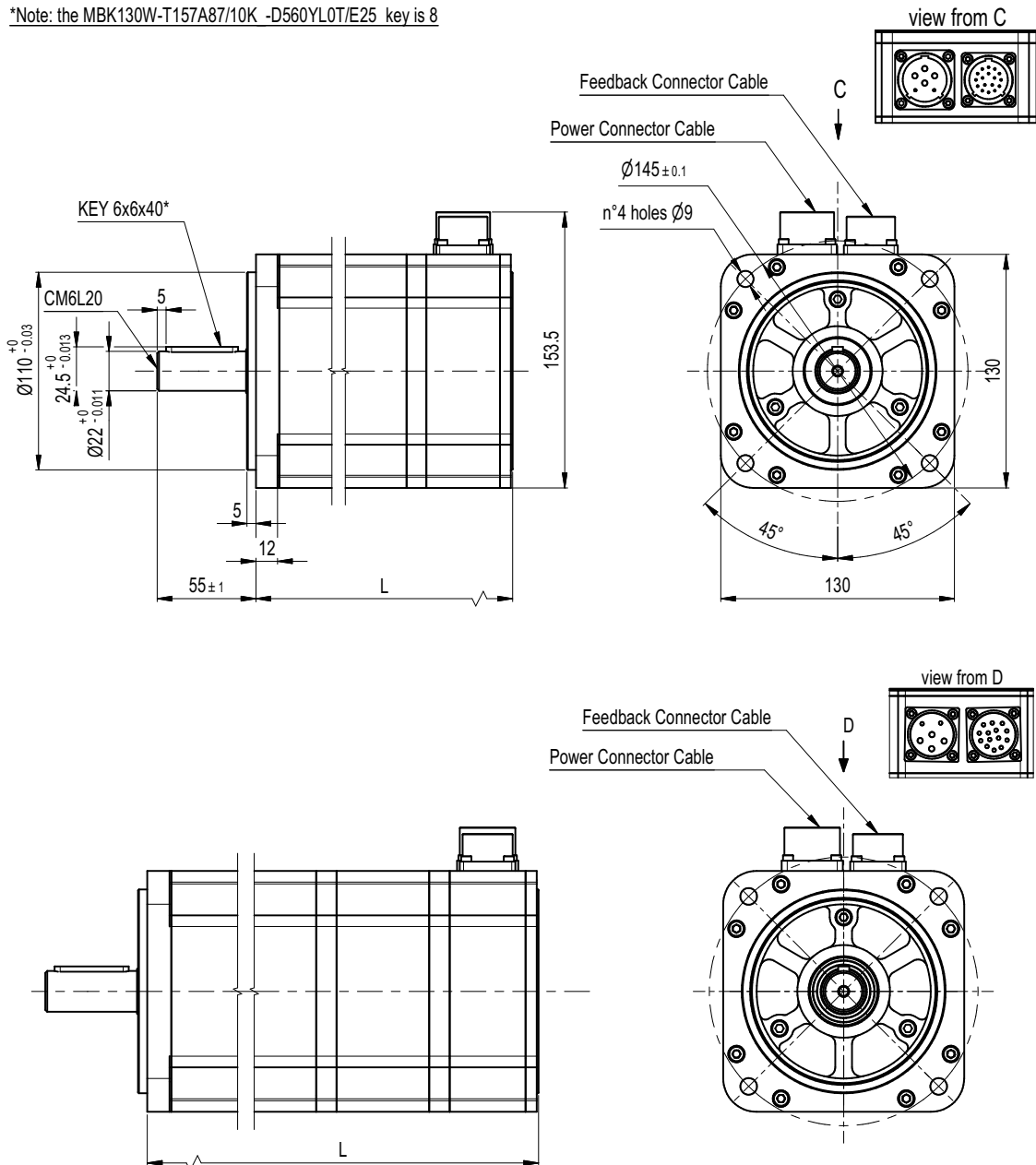
### 11.2 - Torque characteristic curves



### 11.3 - Overall dimensions for MBK130L and MBK130W

MBK130\*-T\*A\*/10K\*-560YLOT/E25

\*Note: the MBK130W-T157A87/10K -D560YLOT/E25 key is 8



			MBK130L	MBK130W
Encoder type			M16	D00
Mass	without brake with brake	kg	10.7 12.9	13.9 14.9
Motor length L (±1.5 mm)	without brake with brake	mm	199 260	239 280



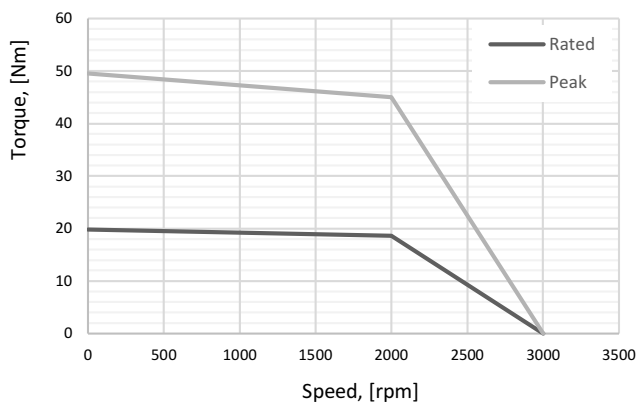
## 12 - MBK150 FOR VOLTAGE 560 VDC

### 12.1 - Technical data

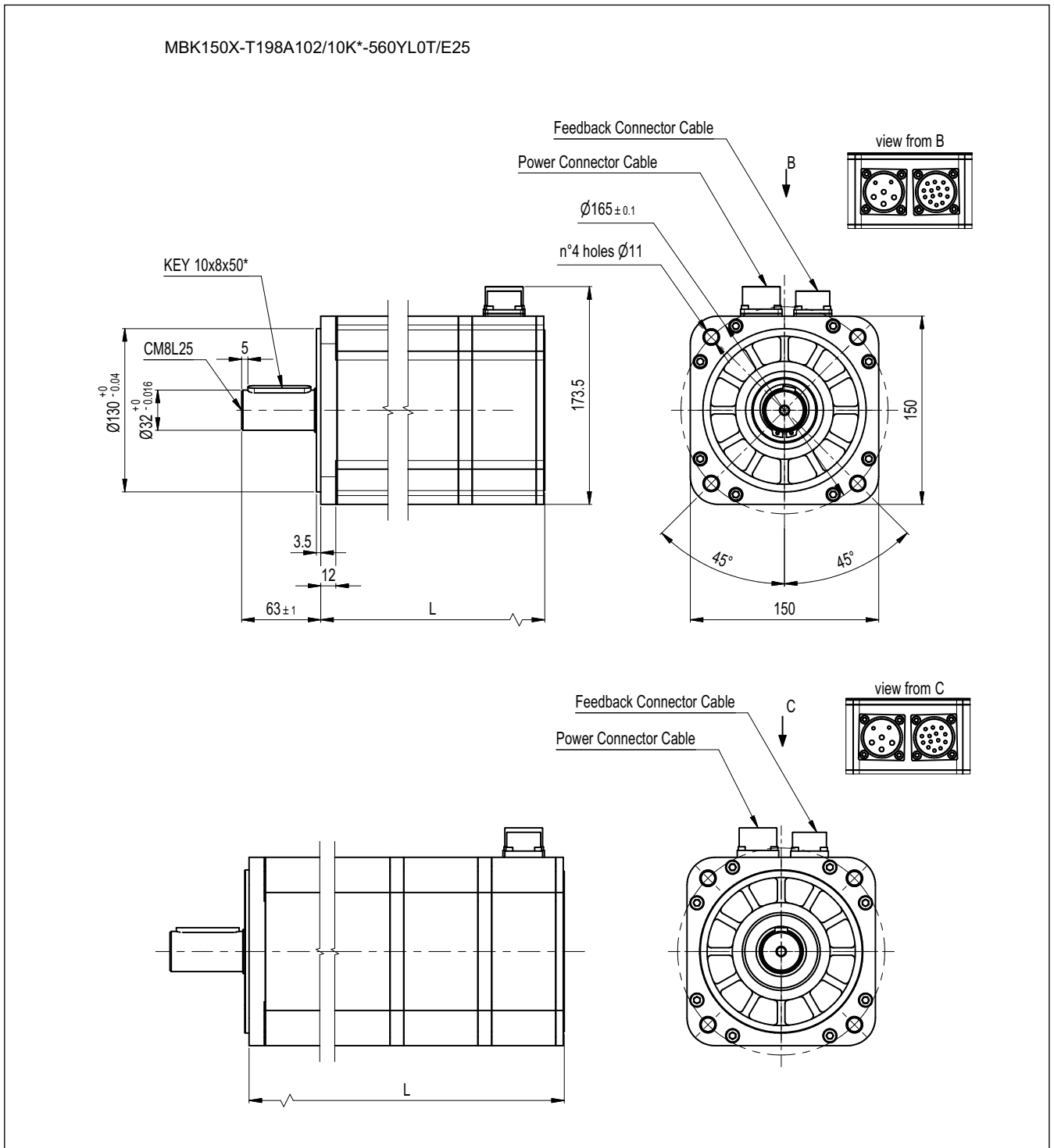
		<b>MBK150X</b>
DC link voltage	V DC	560
Rated power	W	3800
Rated speed	rpm	2000
Rated torque	Nm	18.6
Rated current	A	9.3
Maximum torque	Nm	45
Maximum current	A	23.25
Standstill torque	Nm	19.8
Standstill current	A	10.23
Resistance line-line	Ohm	1.3
Inductance line-line	mH	10.5
Electrical time constant	ms	8.08
Mechanical time constant:	ms	3.32
Reverse voltage constant	V/krpm	125
Torque constant	Nm/A	2.07
Motor moment of inertia	kg•cm <sup>2</sup>	63.1
Pole pair number		4
Maximum voltage rising du/dt	KV/μs	8
Insulation class		F
Maximum radial force	N	1200
Maximum axial force	N	600

### 12.3 - Torque characteristic curves

**MBK150X**



### 12.3 - Overall dimensions MBK150X



			MBK150X
Encoder type			E25
Mass	without brake	kg	18
	with brake		22.5
Motor length L ( $\pm 1.5$ mm)	without brake	mm	282
	with brake		352

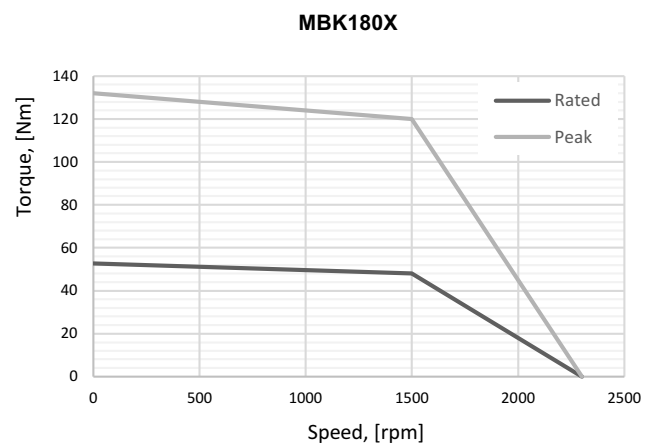
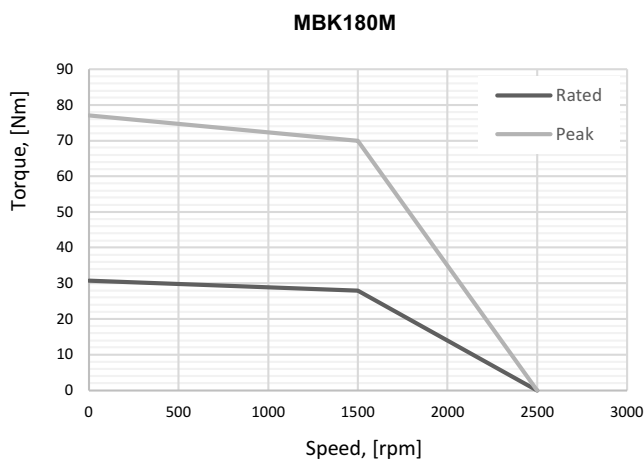


## 13 - MBK180 FOR VOLTAGE 560 VDC

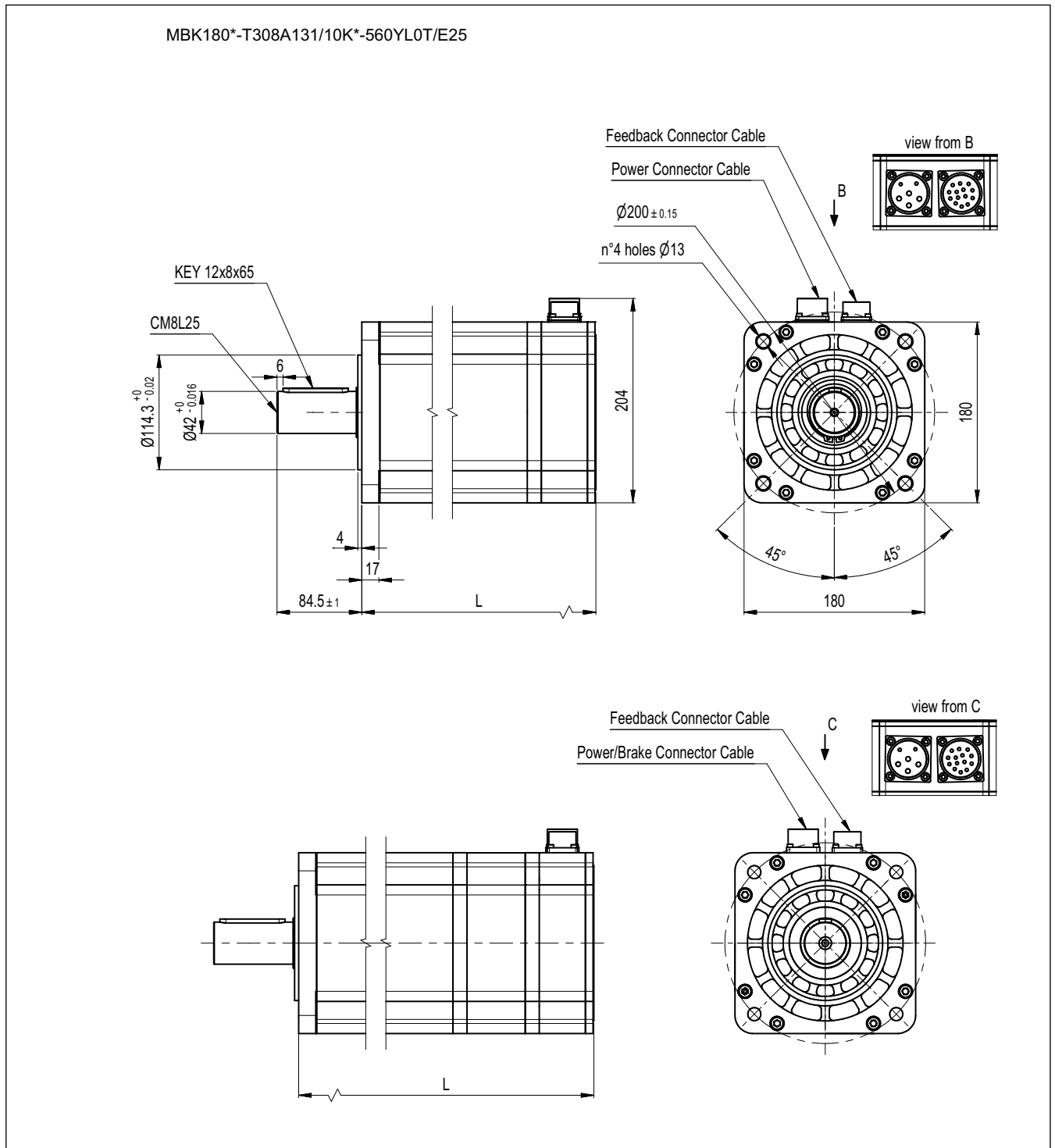
### 13.1 - Technical data

		MBK180M	MBK180X
DC link voltage	V DC	560	560
Rated power	W	4400	7500
Rated speed	rpm	1500	1500
Rated torque	Nm	28	48
Rated current	A	11.9	19.2
Maximum torque	Nm	70	120
Maximum current	A	29.75	47.9
Standstill torque	Nm	30.8	52.8
Standstill current	A	13.09	21.1
Resistance line-line	Ohm	0.65	0.38
Inductance line-line	mH	8.5	5.89
Electrical time constant	ms	13.08	15.5
Mechanical time constant:	ms	2.16	1.81
Reverse voltage constant	V/krpm	150	159
Torque constant	Nm/A	2.48	2.63
Motor moment of inertia	kg•cm <sup>2</sup>	118	190
Pole pair number		4	4
Maximum voltage rising du/dt	KV/μs	8	8
Insulation class		F	F
Maximum radial force	N	1600	1600
Maximum axial force	N	800	800

### 13.3 - Torque characteristic curves



### 13.3 - Overall dimensions for MBK180M and MBK180X



			MBK180M	MBK180X
Encoder type			M16	R37
Mass	without brake with brake	kg	22.7 27.9	40 47
Motor length L ( $\pm 1.5$ mm)	without brake with brake	mm	260 332	374 451

