



SEW
EURODRIVE

Addendum to the Operating Instructions



AH0E and AK0J Encoders
CM3C63 – 100



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1 General information



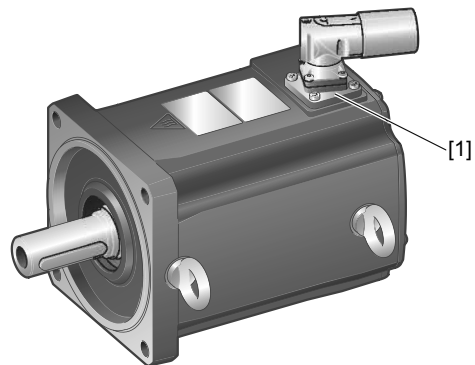
INFORMATION

This document describes CM3C.. servomotors with AH0E and AK0J encoders.

The document at hand is an addendum to the "CM3C63 – 100 Synchronous Servomotors (Medium Inertia)" operating instructions.

2 Basic structure

The following figure shows an example of a CM3C.. servomotor with encoder:



30675795851

[1] Hybrid plug connector

3 Motor nameplates

The following figures show examples of nameplates of a CM3C.. servomotor with AH0E encoder:

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Jahr 2019

[1] CM3C80S-60A-K/PK/BK/AH0E/SE1 [2]

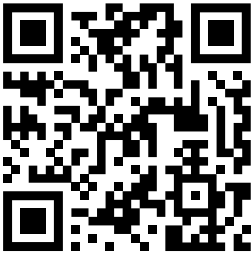
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Mo	10,1 Nm	VT nC	6000r/min	IM	B5
Mpk	30,3 Nm	n max	7200 r/min	IP	65
Io	15,0 A	Up	271 V	kg	13,570
Imax	50,7 A	Ta	-20..40°C	Th.Kl.	155(F)
Usys	400V	Mbr	18 Nm	TENV	
		Ubr	21,6-26,4 DC V		

3~IEC60034 22935908 Made in Germany

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- [1] Type designation
- [2] Information about encoder and plug connector

SEW-EURODRIVE 76646 Bruchsal / Germany	
CM3C80S-60A-K/PK/BK/AH0E/SE1	
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nur Umrichterbetrieb	22936149

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4 Type designation example

The following table shows the example of a type designation:

Example: CM3C80S-60A-K/PK/BK/AH0E/SE1		
Synchronous servomotor	CM3C80	Flange-mounted motor size 80
Length	S	Short
Rated speed and system voltage	60A	6000 min ⁻¹ , 400 V
Shaft design	K	Shaft with key
Standard equipment temperature sensor	/PK	PK temperature sensor
Mechanical attachments	/BK	BK.. permanent magnet brake
Encoder motor option	/AH0E	Absolute encoder, EnDat 2.2 interface (multi-turn)
Motor connection option	/SE1	M23 motor plug connector, only motor-side female connector, hybrid plug connector for motor, brake, and AH0E encoder

5 Designs and options

5.1 Mechanical attachments

Designation	Option
/BK	Permanent magnet brake
/BZ ¹⁾ , /BZ.D ¹⁾²⁾	Spring-loaded brake with increased working capacity
/HR ³⁾	Manual brake release, re-engaging

1) Also available in design for functional safety.

2) BZ.D for direct DC voltage.

3) Available for /BZ and /BZ.D only.

5.2 Encoders

Designation	Option
/AH0E	Absolute encoder, EnDat 2.2 interface (multi-turn)
/AK0J	Absolute encoder, HIPERFACE DSL [®] interface (multi-turn)

5.3 Connection options

Designation	Description
/SE1	M23 motor plug connector, only motor-side female connector, hybrid plug connector for motor, brake, and AH0E encoder
/SE2	M23 motor and brake plug connector, only motor-side female connector, encoder plug connector AH0E M12
/SE3	M40 motor and brake plug connector, only motor-side female connector, encoder plug connector AH0E M12
/SJ1	M23 motor plug connector, only motor-side female connector, hybrid plug connector for motor, brake, and AK0J encoder
/SJB	M40 motor plug connector, only motor-side female connector, hybrid plug connector for motor, brake, and AK0J encoder

6 Electrical installation

6.1 Information on connector connection

The cable is entered via an adjustable right-angle connector. SEW-EURODRIVE recommends to adjust the adjustable right-angle connector while the mating connector is plugged in.

NOTICE

Damage to the right-angle connector in case of rotation without mating connector.

Damage to the plug connector and the sealing surface.

- Adjust the right-angle connector only while the mating connector of the motor cable is plugged in.
- If you do not have a mating connector at hand, do NOT use pliers to adjust the right-angle connector.

INFORMATION

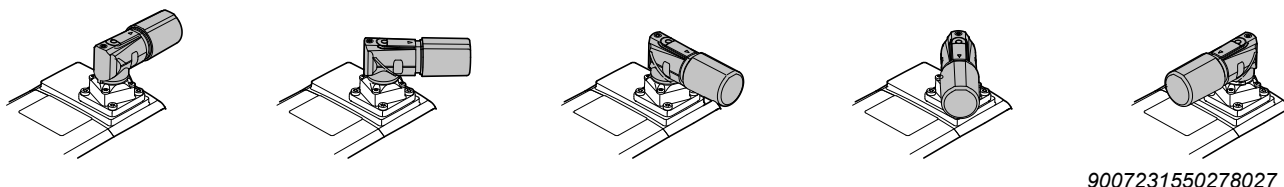


The connector should only be rotated to install and connect the motor. Do not turn the plug connector regularly once it has been installed.

Comply with the permitted bending radii of the cable.

6.1.1 Connector positions SE1, SJ1, and SJB

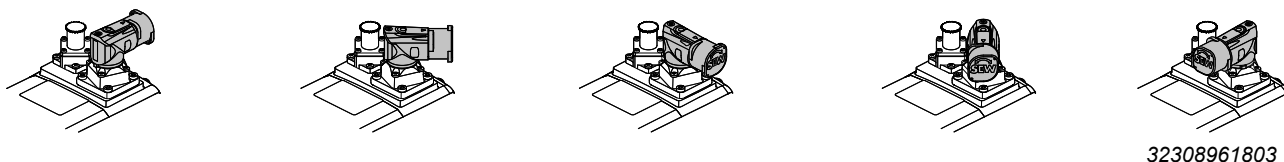
Right-angle plug connectors SE1, SJ1, and SJB can be aligned horizontally in any desired position. The following figure illustrates an example of various plug connector alignments:



9007231550278027

6.1.2 Connector positions SE2 and SE3

Right-angle plug connectors SE2 and SE3 can be aligned horizontally in any desired position. The following figure illustrates an example of various plug connector alignments:



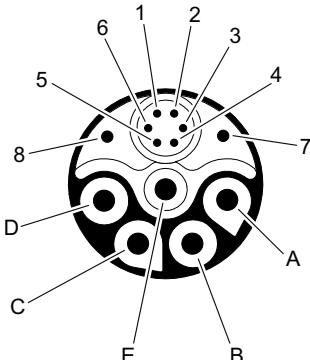
32308961803

6.2 Connection with plug connectors

The cable entry of the power and signal cables is installed using plug connectors. Comply with the permitted bending radii of the cables.

6.2.1 Motor connection SE1 (M23) for motors with AH0E encoder without/with BK.. and BZ..D brake

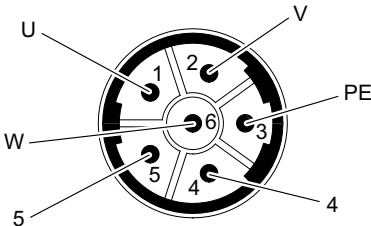
The wiring diagram of the plug connector depicts the contact end of the connections.

Function		
Motor connection for motors with AH0E encoder		
Connection type		
M23, male, external thread, TE Connectivity – Intercontec products, 723 htec series, SpeedTec equipment, coded		
Connection diagram		
 32294218379		
Assignment without brake		
Contact	Signal	Description
A	U	Motor connection phase U
B	V	Motor connection phase V
C	W	Motor connection phase W
D	Reserved	Do not connect
E	PE	PE connection
1	Up	Voltage supply
2	0 V	Voltage supply
3	D +	Data + (serial transfer)
4	D -	Data - (serial transfer)
5	CLK+	Clock + (serial transfer)
6	CLK -	Clock - (serial transfer)
7	Reserved	Do not connect
8	Reserved	Do not connect

Assignment with BK .. and BZ..(D) brake		
Contact	Signal	Description
A	U	Motor connection phase U
B	V	Motor connection phase V
C	W	Motor connection phase W
D	Reserved	Do not connect
E	PE	PE connection
1	Up	Voltage supply
2	0 V	Voltage supply
3	D +	Data + (serial transfer)
4	D -	Data - (serial transfer)
5	CLK+	Clock + (serial transfer)
6	CLK -	Clock - (serial transfer)
7	Brake -	BK.. brake - / BZ..D brake -
8	Brake +	BK.. brake + / BZ..D brake +

6.2.2 Motor connection SE2 (M23) for motors without/with BK.. and BZ..D brake

The wiring diagram of the plug connector depicts the contact end of the connections.

Function
Motor connection for motors
Connection type
M23, male, external thread, TE Connectivity – Intercontec products, 923 series, SpeedTec equipment
Connection diagram


Assignment without brake		
Contact	Signal	Description
1	U	Motor connection phase U
2	V	Motor connection phase V
3	PE	PE connection
4	Reserved	Do not connect
5	Reserved	Do not connect
6	W	Motor connection phase W

Assignment with BK.. or BZ...(D) brake		
Contact	Signal	Description
1	U	Motor connection phase U
2	V	Motor connection phase V
3	PE	PE connection
4	Brake +	BK.. brake + / BZ...D brake +
5	Brake -	BK.. brake - / BZ...D brake -
6	W	Motor connection phase W

6.2.3 Motor connection SE3 (M40) for motors with/without BK.. and BZ..D brake

The wiring diagram of the plug connector depicts the contact end of the connections.

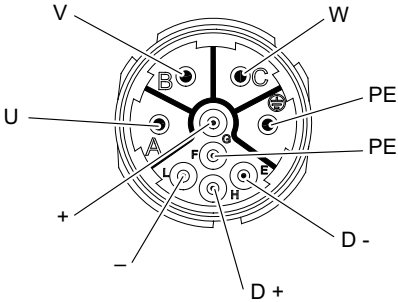
Function
Motor connection for motors
Connection type
M40, male, external thread, TE Connectivity – Intercontec products, 940 series, SpeedTec equipment
Connection diagram

Assignment without brake		
Contact	Signal	Description
+	Reserved	Do not connect
-	Reserved	Do not connect
1	Reserved	Do not connect
2	Reserved	Do not connect
PE	PE	PE connection
U	U	Motor connection phase U
V	V	Motor connection phase V
W	W	Motor connection phase W

Assignment with BK.. and BZ..(D) brake		
Contact	Signal	Description
+	Brake +	BK.. brake + / BZ..D brake +
-	Brake -	BK.. brake - / BZ..D brake -
1	Reserved	Do not connect
2	Reserved	Do not connect
PE	PE	PE connection
U	U	Motor connection phase U
V	V	Motor connection phase V
W	W	Motor connection phase W

6.2.4 Motor connection SJ1 (M23) for motors with AK0J encoder without/with BK.. and BZ..D brake

The wiring diagram of the plug connector depicts the contact end of the connections.

Function		
Motor connection for motors with AK0J encoder		
Connection type		
M23, male, external thread, TE Connectivity – Intercontec products, 923 series, SpeedTec equipment		
Connection diagram		
		
Assignment without brake		
Contact	Signal	Description
A	U	Motor connection phase U
B	V	Motor connection phase V
C	W	Motor connection phase W
D	PE	PE connection
E	D -	Data - (serial data transfer)
F	PE	PE connection (encoder)
G	Reserved	Do not connect
H	D +	Data + (serial data transfer)
L	Reserved	Do not connect
Assignment with BK.. and BZ..(D) brake		
Contact	Signal	Description
A	U	Motor connection phase U
B	V	Motor connection phase V
C	W	Motor connection phase W
D	PE	PE connection
E	D -	Data - (serial data transfer)
F	PE	PE connection (encoder)
G	Brake +	BK.. brake + / BZ..D +
H	D +	Data + (serial data transfer)

Assignment with BK.. and BZ..(D) brake		
Contact	Signal	Description
L	Brake -	BK.. brake - / BZ..D -

6.2.5 Motor connection SJB (M40) for motors with AK0J encoder without/with BK.. and BZ..D brake

The wiring diagram of the plug connector depicts the contact end of the connections.

Function
Motor connection for motors with AK0J encoder
Connection type
M40, male, external thread, TE Connectivity – Intercontec products, 940 series, SpeedTec equipment
Connection diagram

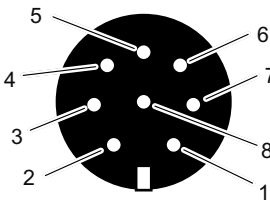
Assignment without brake		
Contact	Signal	Description
+	Reserved	Do not connect
-	Reserved	Do not connect
1	Reserved	Do not connect
2	Reserved	Do not connect
PE	PE	PE connection
U	U	Motor connection phase U
V	V	Motor connection phase V
W	W	Motor connection phase W
N	Reserved	Do not connect
D +	D +	Data + (serial data transfer)
D -	D -	Data - (serial data transfer)

Assignment with BK.. and BZ..(D) brake		
Contact	Signal	Description
+	Brake +	BK.. brake + / BZ..D +
-	Brake -	BK.. brake - / BZ..D -
1	Reserved	Do not connect
2	Reserved	Do not connect
PE	PE	PE connection
U	U	Motor connection phase U

Assignment with BK.. and BZ..(D) brake		
Contact	Signal	Description
V	V	Motor connection phase V
W	W	Motor connection phase W
N	Reserved	Do not connect
D +	D +	Data + (serial data transfer)
D -	D -	Data - (serial data transfer)

6.2.6 Signal connection SE2/SE3 (M12) for motors with AH0E encoder

The wiring diagram of the plug connector depicts the contact end of the connections.

Function		
Signal connection with AH0E encoder		
Connection type		
M12, male, external thread, Heidenhain, Speedcon		
Connection diagram		
		
Assignment		
Contact	Signal	Description
1	0 V	Voltage supply
2	Up sensor	Voltage supply
3	D +	Data + (serial transfer)
4	D -	Data - (serial transfer)
5	0 V	Voltage supply
6	CLK -	Clock - (serial transfer)
7	CLK+	Clock + (serial transfer)
8	Up	Voltage supply

6.3 Connection cables

SEW-EURODRIVE does not offer any connection cables. Adapter cables for the Drive-CliQ® interface are available from Heidenhain (EIB3392S, part number 1164806-11).

7 Technical data of encoders

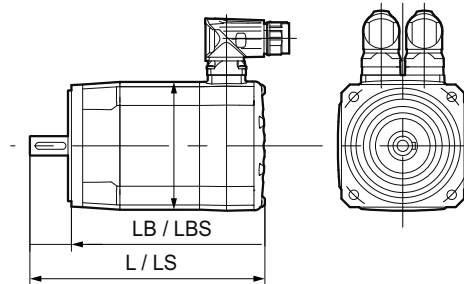
En-coder	Manufactur-er	Manufac-turer's designa-tion	Multi-turn resolution (maximum count value for the complete motor revolution)		Interface connection	Plug con-ector con-nection	Brake type
/AH0E	Heidenhain	EQI 1131	19 bit	4096 inc.	EnDat 2.2®	SE1	BK.., BZ..D
					Drive-CliQ® ¹⁾	SE2, SE3	BK.., BZ..D.
					EnDat 2.2® ²⁾	SE4	BZ..
/AK0J	SICK	EKM36	20 bit	4096 inc.	HIPERFACE DSL®	SJ1, SJB	BK.., BZ..D

1) Adapter cable to be provided by customer. Available from Heidenhain EIB3392S, part number 1164806-11.

2) A special power cable is required.

8 Dimension sheets for CM3C.. motors with AH0E/AK0J encoder

8.1 Key to the dimension sheets



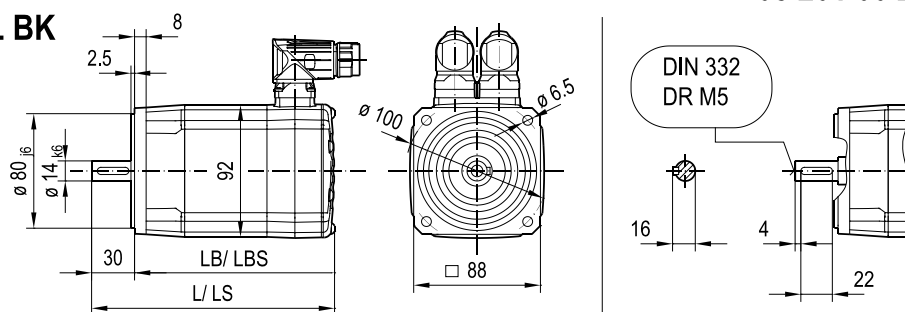
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- L Total length of the motor without brake
- LB Length of the motor without brake
- LS Total length of the motor with BK.. or BZ..D brake
- LBS Length of the motor with BK.. or BZ..D brake

8.2 Dimension sheets

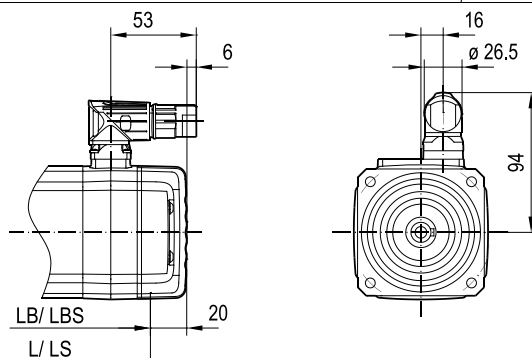
CM3C63S/M/L
CM3C63S/M/L BK

08 201 00 20



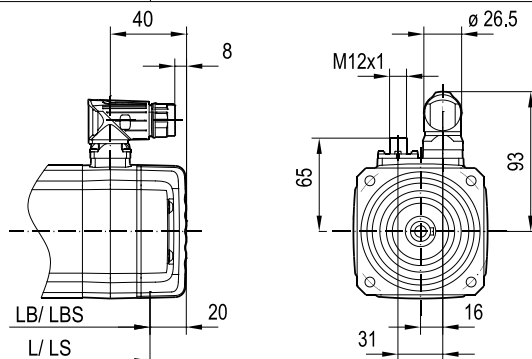
/SE1

/AH0E



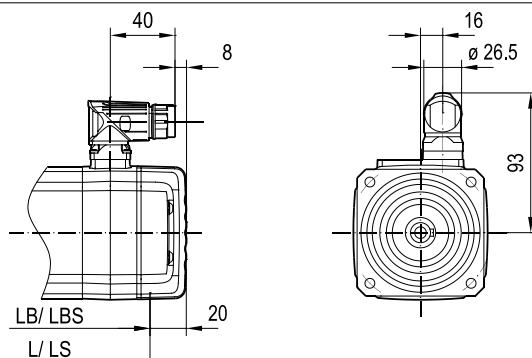
/SE2

/AH0E



/SJ1

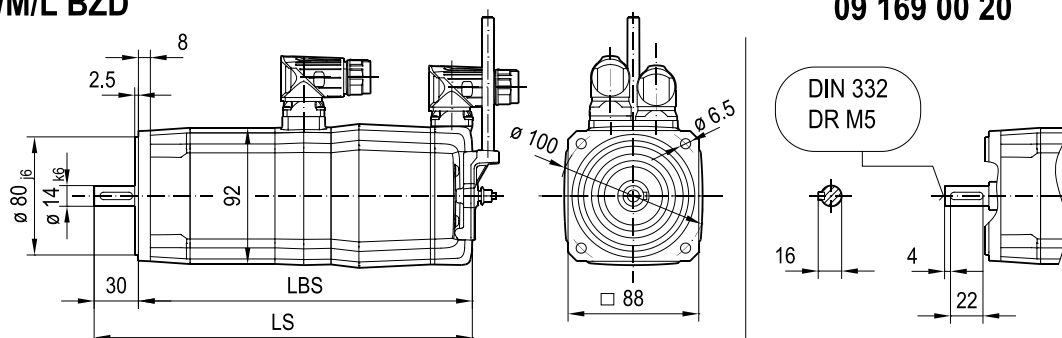
/AK0J



	CM3C63							
	S	M	L					
LB	140	178	216					
L	170	208	246					
LBS	180	218	256					
LS	210	248	286					

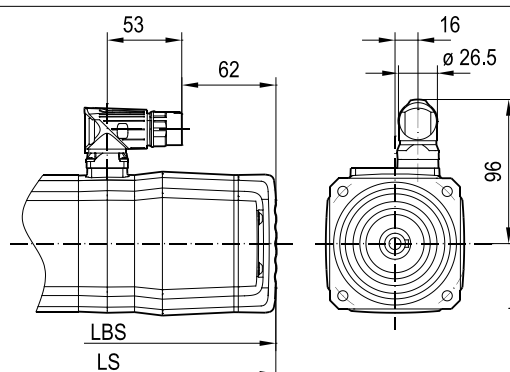
CM3C63S/M/L BZD

09 169 00 20

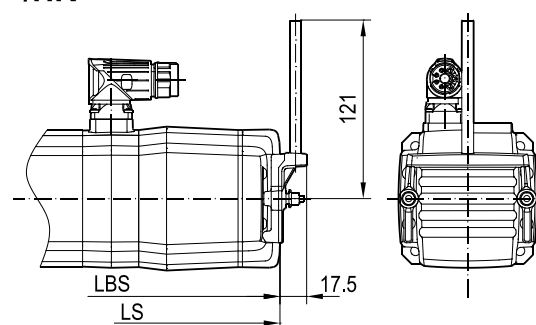


/SE1

/AH0E

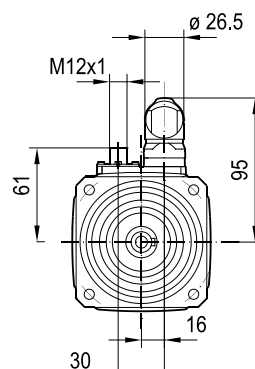
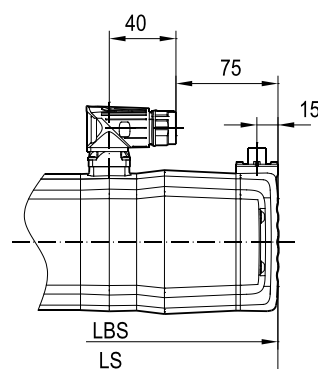


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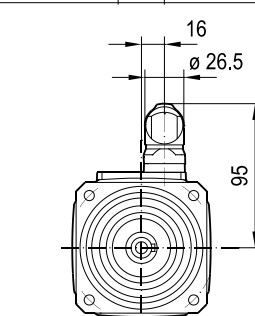
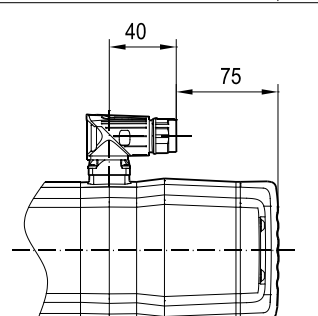
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/AH0E



/SJ1

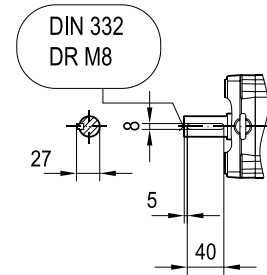
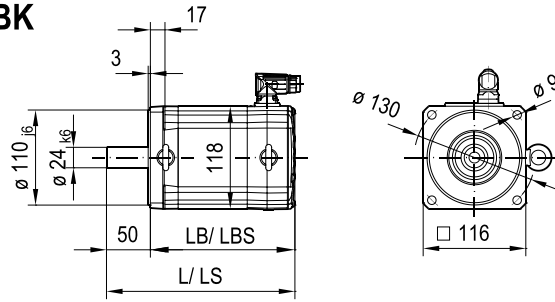
/AK0J



	CM3C63							
	S	M	L					
LBS	223	261	299					
LS	253	291	329					

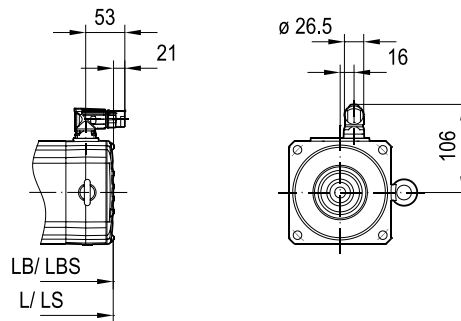
CM3C71S/M/L
CM3C71S/M/L BK

08 202 00 20



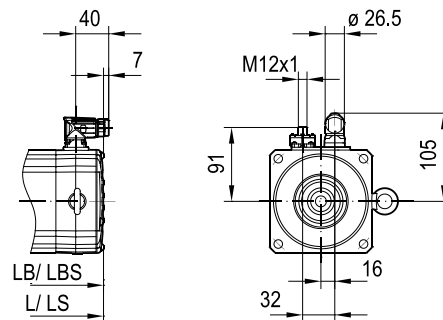
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/AH0E



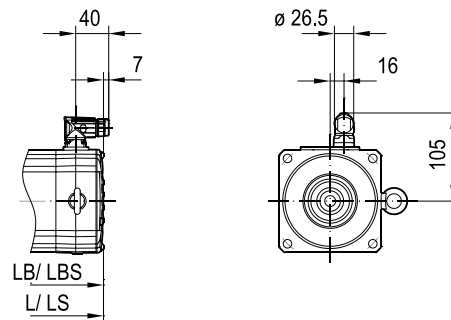
/SE2

/AH0E



/SJ1

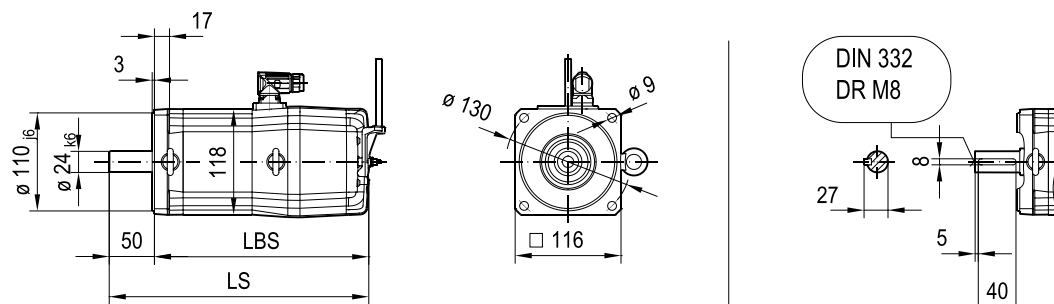
/AK0J



	CM3C71							
	S	M	L					
LB	170	192	237					
L	220	242	287					
LBS	236	258	303					
LS	286	308	353					

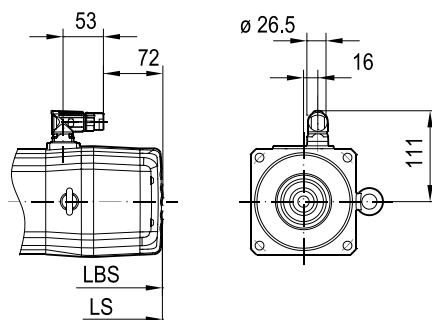
CM3C71S/M/L BZD

09 170 00 20

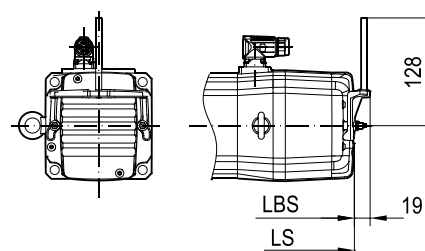


/SE1

/AH0E

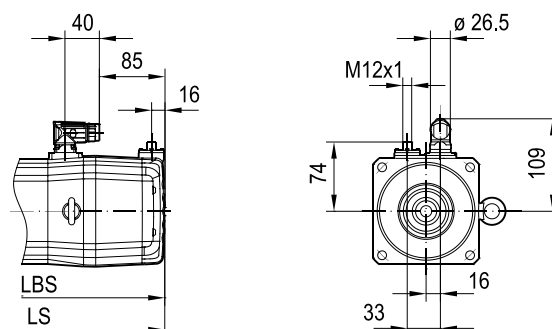


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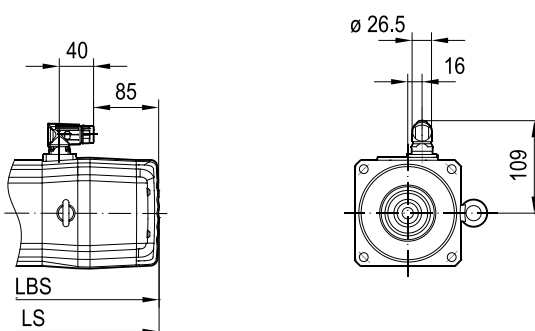
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/AH0E



/SJ1

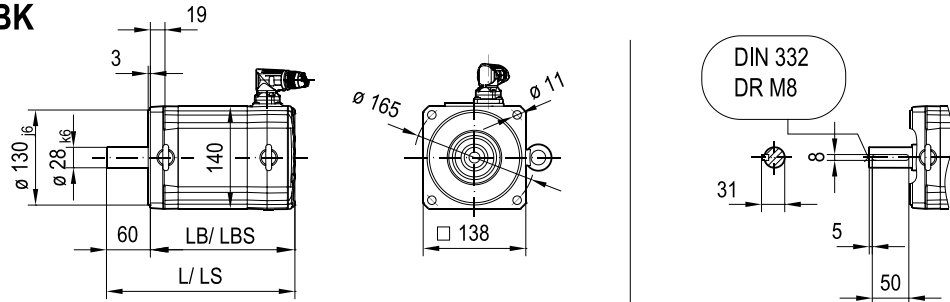
/AK0J



	CM3C71							
	S	M	L					
LBS	258	280	325					
LS	308	330	375					

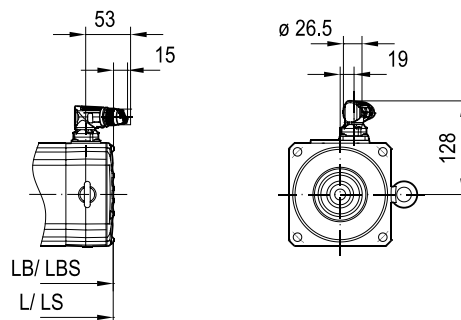
CM3C80S/M/L
CM3C80S/M/L BK

08 203 00 20



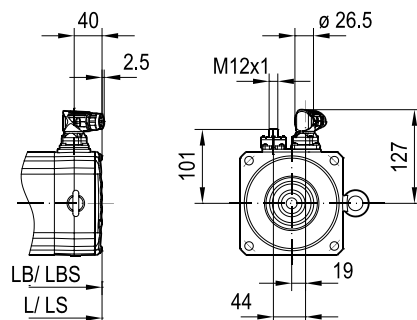
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/AH0E



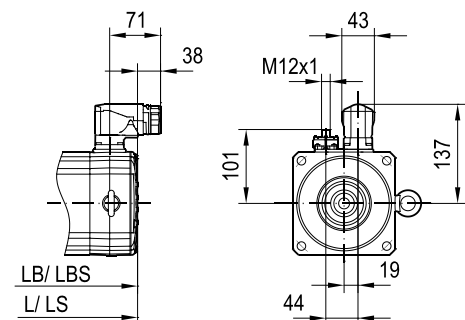
/SE2

/AH0E



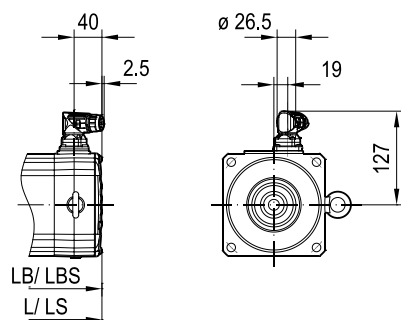
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/AH0E



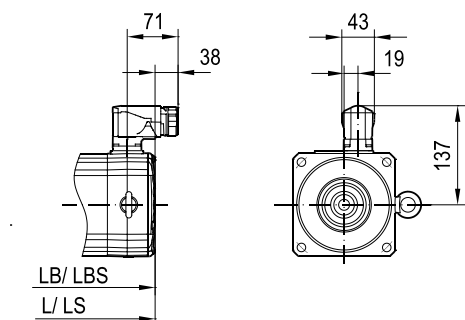
/SJ1

/AK0J



/SJB

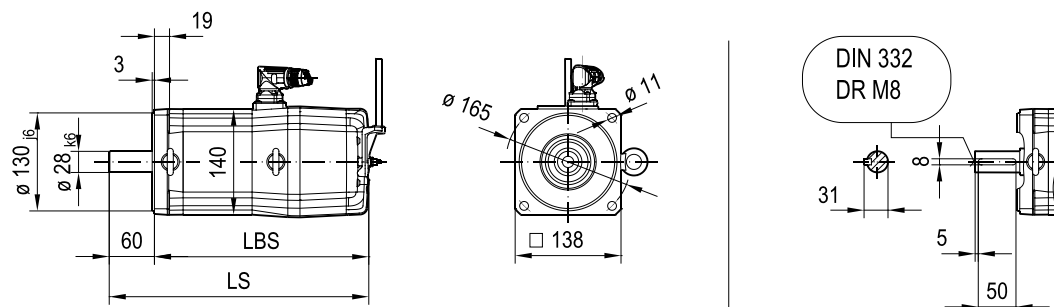
/AK0J



	CM3C80						
	S	M	L				
LB	198	224	277				
L	258	284	337				
LBS	266	292	345				
LS	326	352	405				

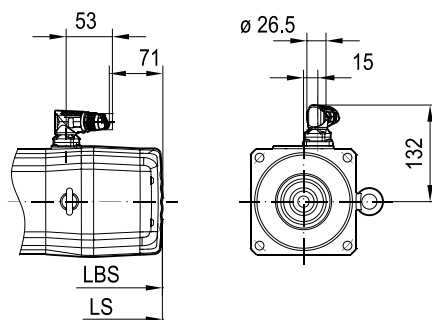
CM3C80S/M/L BZD

09 171 00 20

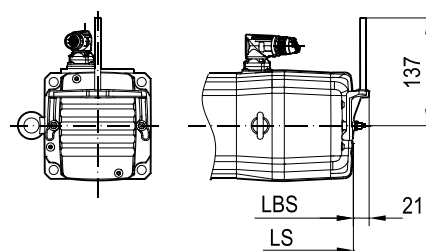


/SE1

/AH0E

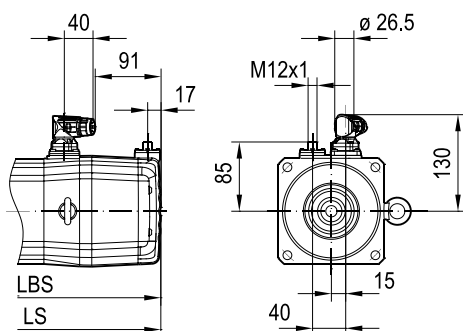


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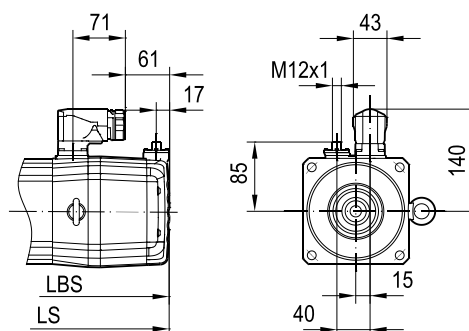
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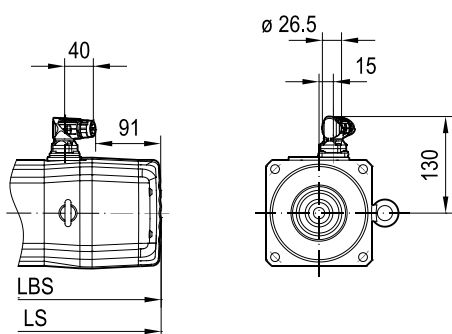
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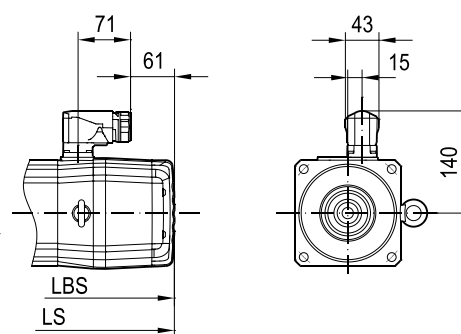
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/AK0J



/SJB

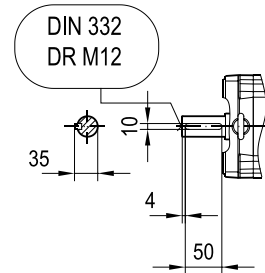
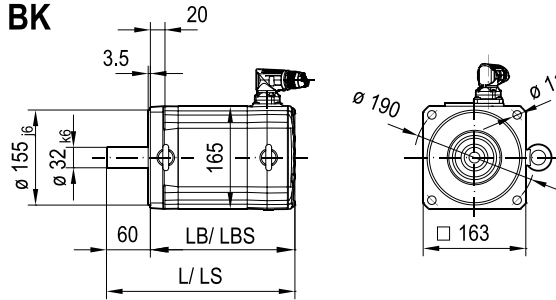
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	CM3C80							
	S	M	L					
LBS	288	314	367					
LS	348	374	427					

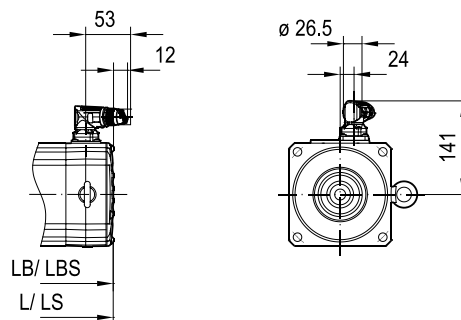
CM3C100S/M/L
CM3C100S/M/L BK

08 204 00 20



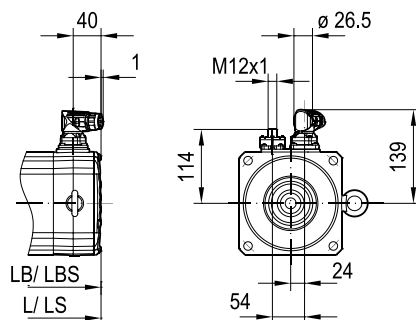
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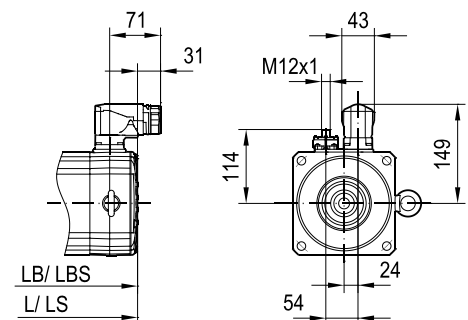
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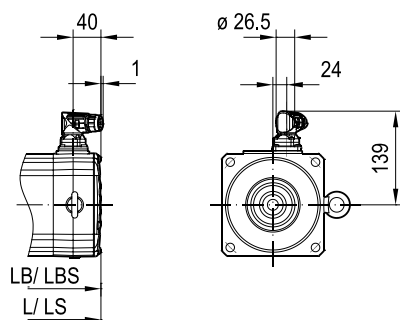
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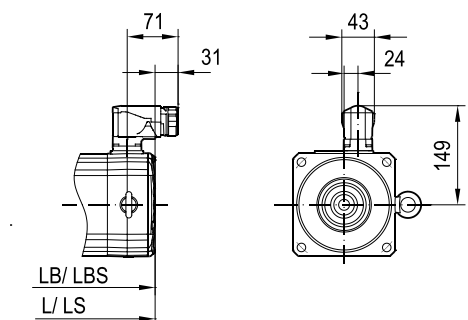
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/SJB

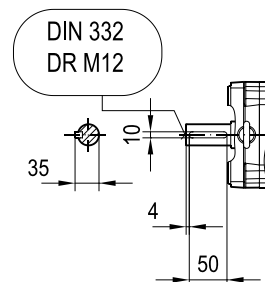
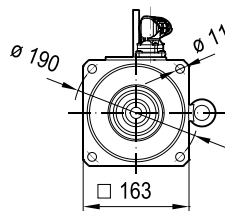
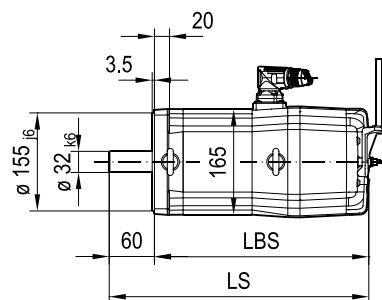
/AK0J



	CM3C100						
	S	M	L				
LB	216	244	301				
L	276	304	361				
LBS	290	318	375				
LS	350	378	435				

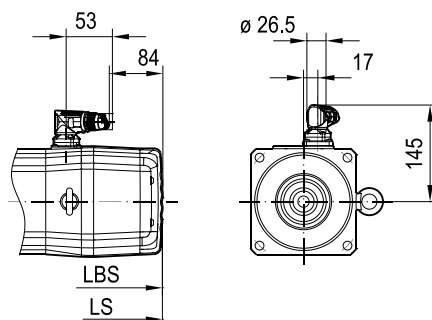
CM3C100S/M/L BZD

09 172 00 20

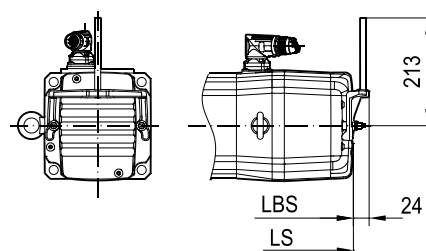


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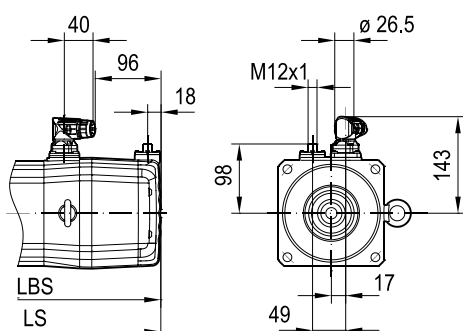


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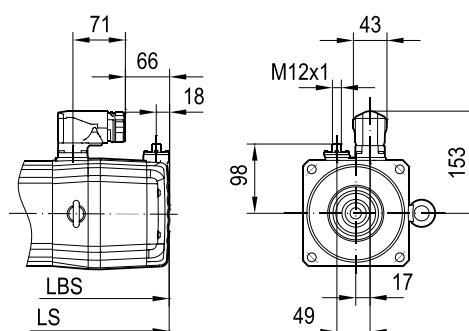
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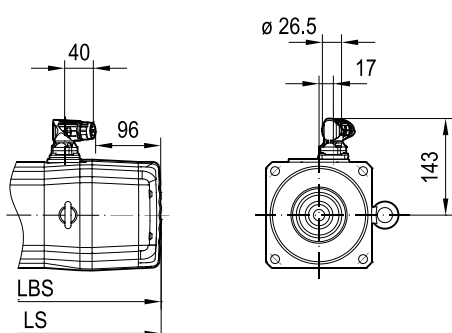
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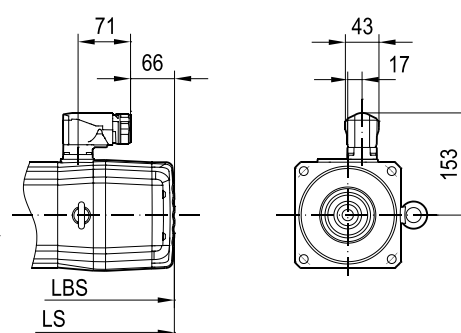
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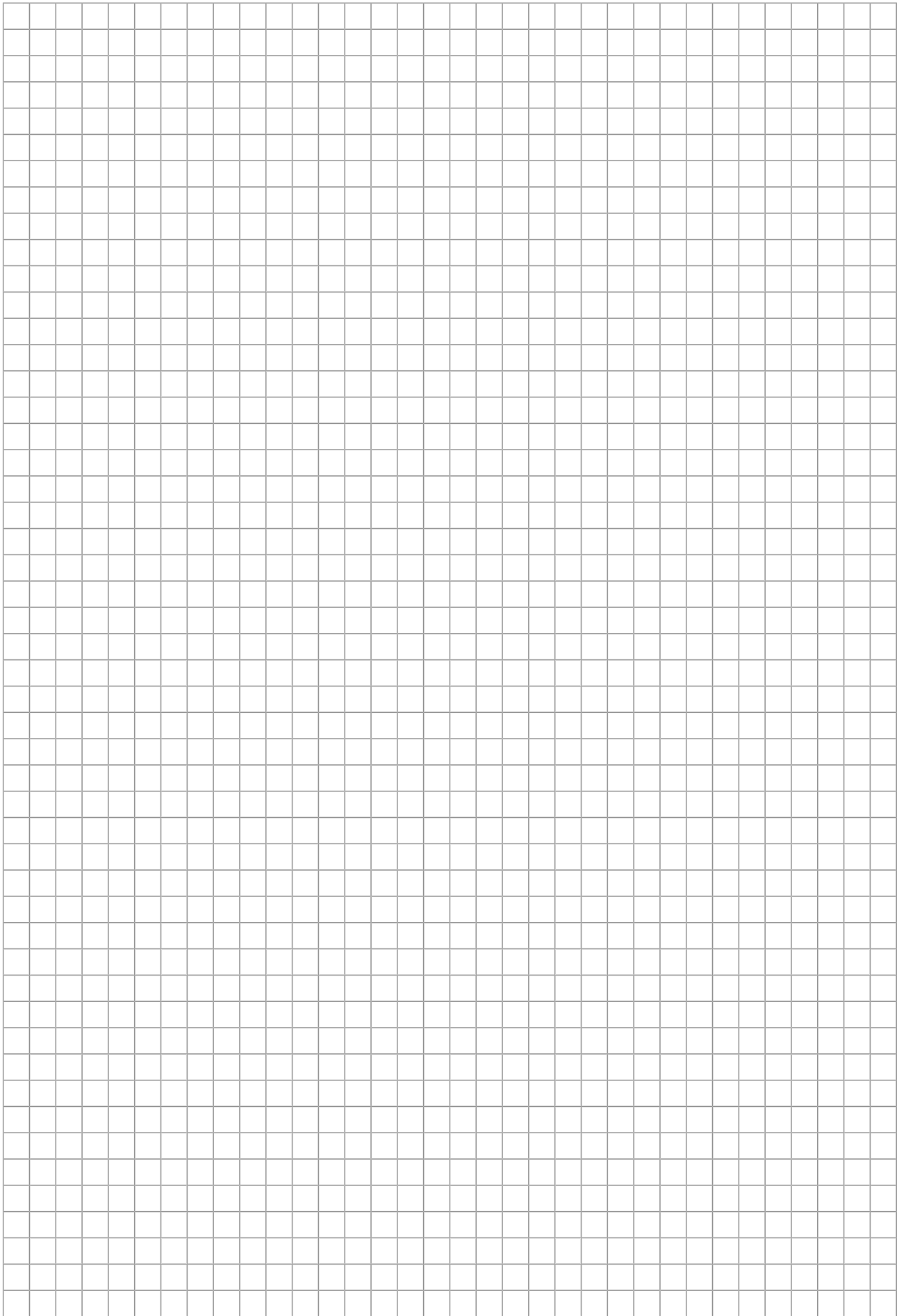


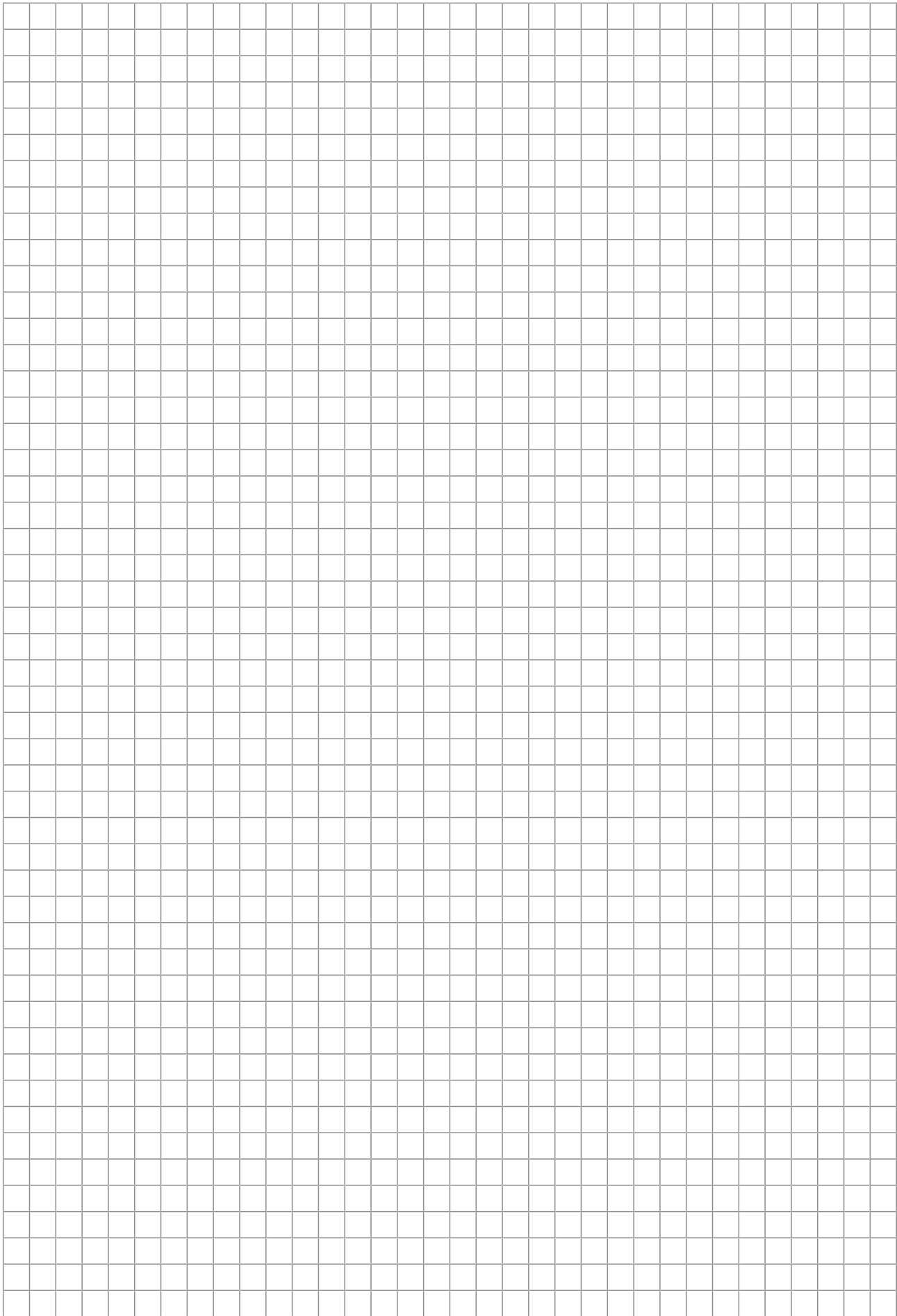
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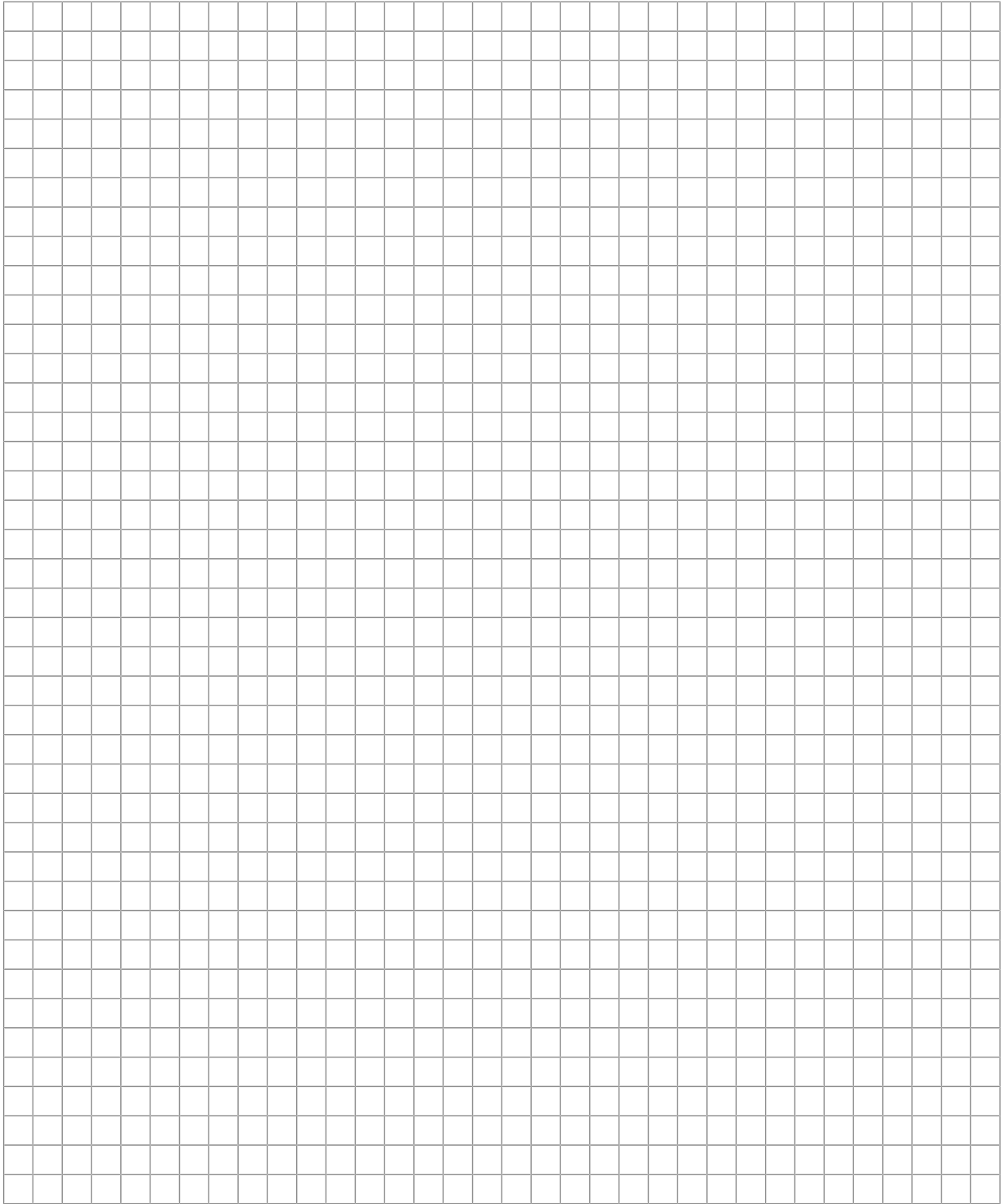
/AK0J



	CM3C100							
	S	M	L					
LBS	312	340	397					
LS	372	400	457					









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