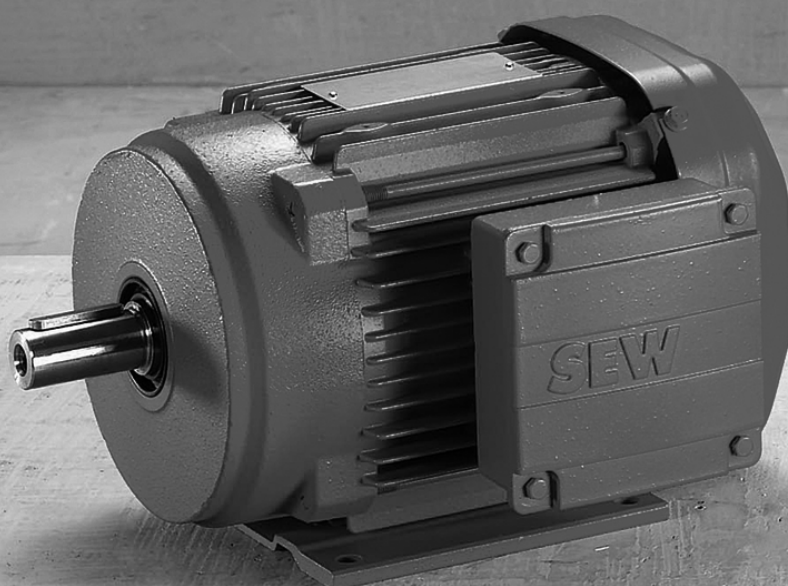




Addendum to the Operating Instructions



AC Motors

BE5D and BE11D Brakes Without High-Speed Excitation



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1 Addendum to the operating instructions

INFORMATION



This addendum to the operating instructions contains additional information about the special design "BE5D and BE11D brakes without high-speed excitation".

Observe the data specified in this publication. This document does not replace the detailed operating instructions "DR..71 – 315, DRN80 – 315 AC Motors" and "DR.. 56 – 315, DRN.., DR2S, DR2L, DR2M AC motors".

The standard design of BE5 and BE11 brakes for DR.. and DRN.. AC motors is designed for operation with the two-coil circuit by SEW-EURODRIVE and with high-speed excitation.

Operation with DC voltage without brake control is not possible for this standard design (see chapter 5 "Electrical installation" in the operating instructions). Operation with a brake control by SEW-EURODRIVE is not possible without high-speed excitation (BG.. and BMS.. series).

The special design "BE5D and BE11D" described in this addendum is specifically designed for such application cases and allows for the operating modes described above.

2 Overviews of combinations

2.1 Brakemotor combinations



⚠ WARNING

Insufficient or too high braking torque due to impermissible spring pack.

Severe or fatal injuries.

- Maintenance work may only be performed by a trained specialist.
- In case of a conversion, make sure the selected spring set generates nominal braking torques that are permitted for your drive combination and suitable for the application.
- Observe the specifications on project planning in the "AC motors" catalog. In case of any uncertainties, contact SEW-EURODRIVE.

The following tables list the possible braking torque combinations for the special design "BE5D and BE11D".

Observe that the following braking torque stages are not available in contrast to BE5 and BE11:

- 55 Nm for BE5D
- 110 Nm and 80 Nm for BE11D

Brake	Motor	Size		
	DR..	90, 100	112, 132	160
	DRN.., DR2..	90, 100	112, 132S	132M, 132L
BE5D		X	X	
BE11D			X	X

Braking torque in Nm	Brake size	
	BE5D	BE11D
14	X ¹⁾	
20	X ¹⁾	X
28	X ¹⁾	X
40	X ²⁾	X
55		X
80		
110		

1) Maximum connection voltages AC 460 V or DC 200 V

2) Maximum connection voltages AC 400 V or DC 180 V

	Available
X	Available without high-speed excitation as special design

3 Technical data

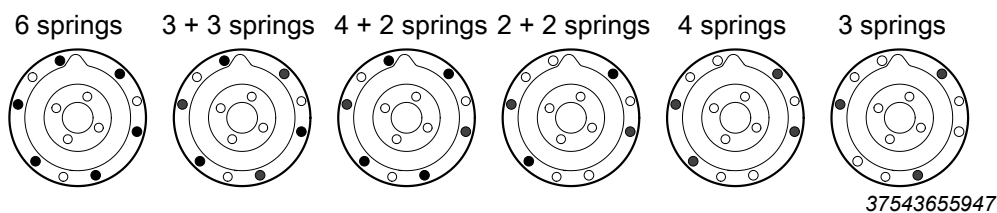
3.1 Braking torques

3.1.1 Overview of combinations

Brake	Braking torque M_B	Assigned components				
		Number of brake springs			Number of shim plates	
		Nm	Standard [50]	Blue [276]	White [1312]	Pole sheet [63]
BE5D	40	2	4	–	–	–
	28	2	2	–	–	1
	20	–	–	6	–	1
	14	–	–	4	–	1
BE11D	55	2	2	–	–	1
	40	–	4	–	–	1
	28	–	3	–	1	1
	20	–	–	4	1	1

3.1.2 Brake spring layout

The following diagram shows the arrangement of the brake springs:



3.1.3 Overview of order numbers

Brake type	Component	Item no.	Design	Part number
BE5D	Brake spring	[50]	Standard/SR	13740709
	Brake spring	[276]	Blue/BU	13740717
	Brake spring	[1312]	White/WH	13747738
	Damping plate	[718]	Standard	13740695
	Damping plate	[718]	DUE	13749889
BE11D	Brake spring	[50]	Standard/SR	13741837
	Brake spring	[276]	Blue/BU	13741845
	Brake spring	[1312]	White/WH	13747789
	Damping plate	[718]	Standard	13741713
	Damping plate	[718]	DUE	13749854
	Pole sheet	[63]	–	13746995

3.2 Braking work

Brake	Braking work of BE.. brake until inspection (W_{insp}) in 10^6 J	
FS code	–	FS04, FS07
Brake		
BE5D	270	270
BE11D	210	210

3.3 Working air gap

Brake	Working air gap in mm		Brake lining carrier in mm
	min. ¹⁾	max.	min.
BE5D	0.3	0.7	11
BE11D	0.3	0.6	12.5

1) When checking the working air gap, note: After a test run, parallelism tolerances on the brake lining carrier may give rise to deviations of ± 0.15 mm.

3.4 Pulse frequencies

INFORMATION



Observe that the permitted no-load starting frequency Z_0 of the brakemotor is limited to 500 h^{-1} in contrast to BE5 and BE11 in standard design.

The pulse times of the brake generally depend on many factors, e.g. on the operating temperature of the brakes, the wear condition and the tolerances of the components used. A particular factor determining the pulse times is the braking torque set.

The following table gives us guide values for the following pulse times:

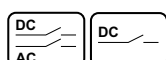


- Response time $t_{1,I}$ for standard excitation
When operating with the BG., BMS., BS24 brake controls or direct supply with DC voltage without brake control

- Response time $t_{1,II}$ for high-speed excitation
When operating with the BGE., BME., BMP., BMK./BMKB., BMH., BSG, or BMV brake controls



- Application time $t_{2,I}$ with pure cut-off in the AC circuit (AC)



- Application time $t_{2,II}$ with cut-off in the AC and DC circuit (AC/DC) or separation only in the DC circuit (DC)

Brake	$t_1 / 10^{-3} \text{ s}$		$t_2 / 10^{-3} \text{ s}$	
	$t_{1,I}$	$t_{1,II}$	$t_{2,I}$	$t_{2,II}$
BE5D	95	30	225	25
BE11D	350	41	82	15

$t_{1,I}$ = Response time for standard excitation

$t_{1,II}$ = Response time for high-speed excitation

$t_{2,I}$ = Brake application time for cut-off in the AC circuit

$t_{2,II}$ = Brake application time for cut-off in the DC and AC circuit

INFORMATION



The times stated are guide values which were determined with the brakes at operating temperature. These may vary under real application conditions.

3.5 Operating currents

3.5.1 BE5D, BE11D brake

The current values I_H (holding current) specified in the tables are effective values. Only use devices for the measurement of effective values. No increased inrush current occurs when using the brake rectifiers BG..., BMS... or with direct DC voltage supply.

		BE5D		BE11D	
Rated brake coil power in W		56		77	
Inrush current ratio ESV		1		1	

Nominal voltage U_N		BE5D		BE11D	
AC V	DC V	I_H	I_G	I_H	I_G
		AC A	DC A	AC A	DC A
60 (57 – 63)	24	1.49	2.10	2.05	2.67
120 (111 – 123)	48	0.75	1.05	1.04	1.46
147 (139 – 154)	60	0.60	0.84	0.83	1.16
184 (174 – 193)	80	0.475	0.66	0.66	0.92
208 (194 – 217)	90	0.420	0.59	0.59	0.83
230 (218 – 243)	96	0.375	0.53	0.52	0.72
254 (244 – 273)	110	0.335	0.470	0.47	0.66
290 (274 – 306)	125	0.295	0.415	0.42	0.59
330 (307 – 343)	140	0.265	0.375	0.37	0.52
360 (344 – 379)	160	0.240	0.335	0.33	0.46
400 (380 – 431)	180	0.210	0.295	0.30	0.42
460 (432 – 484)	200	0.163	0.212	0.27	0.38
500 (485 – 542)	220	–	–	0.24	0.34

Nominal voltage U_N		BE5D		BE11D	
AC V	DC V	I_H	I_G	I_H	I_G
		AC A	DC A	AC A	DC A
575 (543 – 600)	250	–	–	0.22	0.31

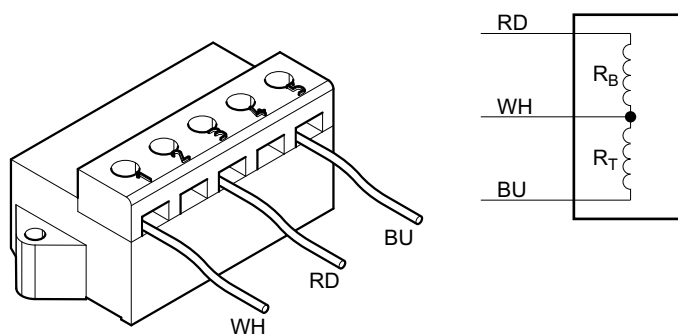
3.6 Brake coil resistance

3.6.1 Resistance measurement

The following figures show an example for connecting the brake coil cores to the brake control in the motor terminal box.

Cut-off in the AC circuit

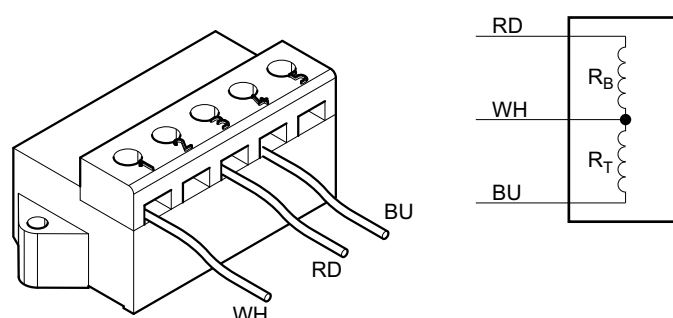
The following illustration shows how to measure resistance with cut-off in the AC circuit:



9007199497350795

Cut-off in the DC and AC circuits

The following illustration shows how to measure resistance with cut-off in the DC and AC circuits:



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BS	Accelerator coil
TS	Coil section
R _B	Accelerator coil resistance at 20 °C in Ω
R _T	Coil section resistance at 20 °C in Ω
U _N	Nominal voltage (rated voltage range)

RD	Red
WH	White
BU	Blue

INFORMATION



When measuring the resistance of the coil section R_T or the accelerator coil R_B, remove the white core from the brake rectifier; if it remains connected, the internal resistance of the brake rectifier will cause erroneous results.

3.6.2 BE5D, BE11D brake

Voltage U _N		BE5D		BE11D	
AC V	DC V	R _B	R _T	R _B	R _T
60 (57 – 63)	24	2.8	8.1	1.22	7.0
120 (111 – 123)	48	11.2	32.5	4.90	28.0
147 (139 – 154)	60	17.7	51	7.7	44.0
184 (174 – 193)	80	28.0	81	12.3	70
208 (194 – 217)	90	35.5	102	15.5	88
230 (218 – 243)	96	44.5	129	19.5	111
254 (244 – 273)	110	56	162	24.5	139
290 (274 – 306)	125	71	205	31.0	175
330 (307 – 343)	140	89	255	39.0	220
360 (344 – 379)	160	112	325	49	280
400 (380 – 431)	180	141	410	62	350
460 (432 – 484)	200	138	660	78	440
500 (485 – 542)	220	–	–	98	550
575 (543 – 600)	250	–	–	123	700

3.7 Compatibility with brake controls

The depicted combinations apply to drives in insulation class B or F, and to the standard temperature range of -20 °C to +40 °C.

For the brake control assigned to your drive, refer to the specifications on the motor nameplate.

INFORMATION



The depicted combinations may be limited depending on the present drive configuration (e.g. insulation class H, deviating temperature ranges, etc.). In case of a conversion, check if brake control is permitted for your drive combination. Contact SEW-EURODRIVE if necessary.

Series	Type	BE5D	BE11D
Without brake control (DC)		X	X
BG..	BG 1.4	X ³	X ³
	BG 1.5	X ¹	X ¹
	BG 3	X ²	X ²
BS..	BS 24	•	•
BMS..	BMS 1.4	o	o
	BMS 1.5	•	•
	BMS 3	•	•

- X Standard design
X¹ Standard design with nominal brake voltage of 150 – 500 V_{AC}
X² Standard design with nominal brake voltage of 24/42 – 150 V_{AC}
X³ Standard design with nominal brake voltage of 575 V_{AC}
• Optional
o Optional with 575 V_{AC} nominal brake voltage
– Not permitted

INFORMATION



For the technical data and part numbers of the brake control systems, refer to the applicable operating instructions.

3.8 Setting values for diagnostic unit /DUE

In addition to the specifications for inspection and maintenance of the diagnostic unit / DUE, deviating settings are specified for DIP switches of the evaluation unit in case of "BE5D and BE11D".

When changing the settings of the DIP switch array, observe the specifications in the operating instructions "DR..71 – 315, DRN80 – 315 AC Motors".

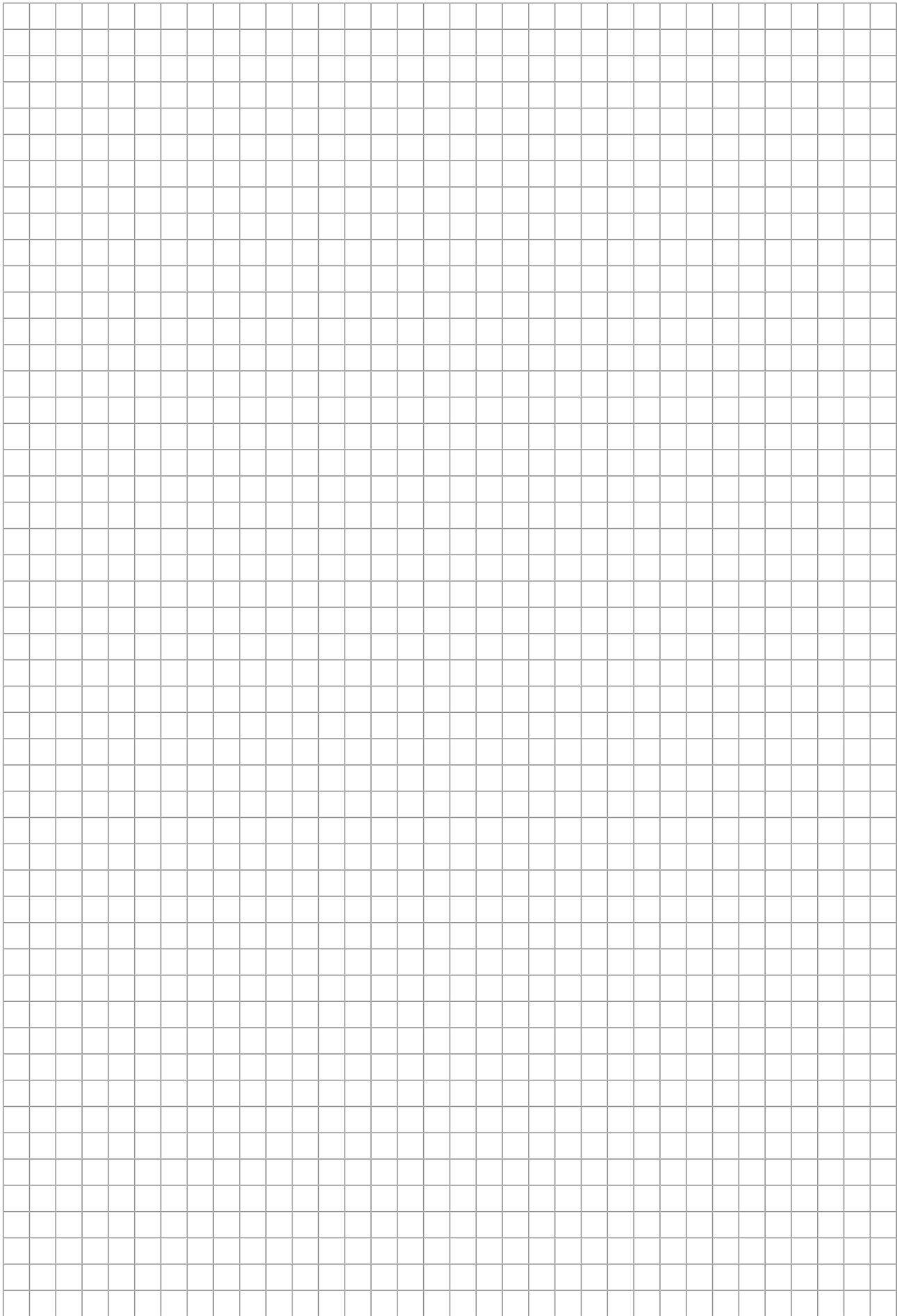
S1	S2	S3	S4	S5	Wear limit	BE5D
Sensor Ø 6 mm						
0	0	0	0	0	1.2 mm	
0	0	0	0	1	1.1 mm	
0	0	0	1	0	1.0 mm	
0	0	0	1	1	0.9 mm	
0	0	1	0	0	0.8 mm	
0	0	1	0	1	0.7 mm	X
0	0	1	1	0	0.6 mm	
0	0	1	1	1	0.5 mm	

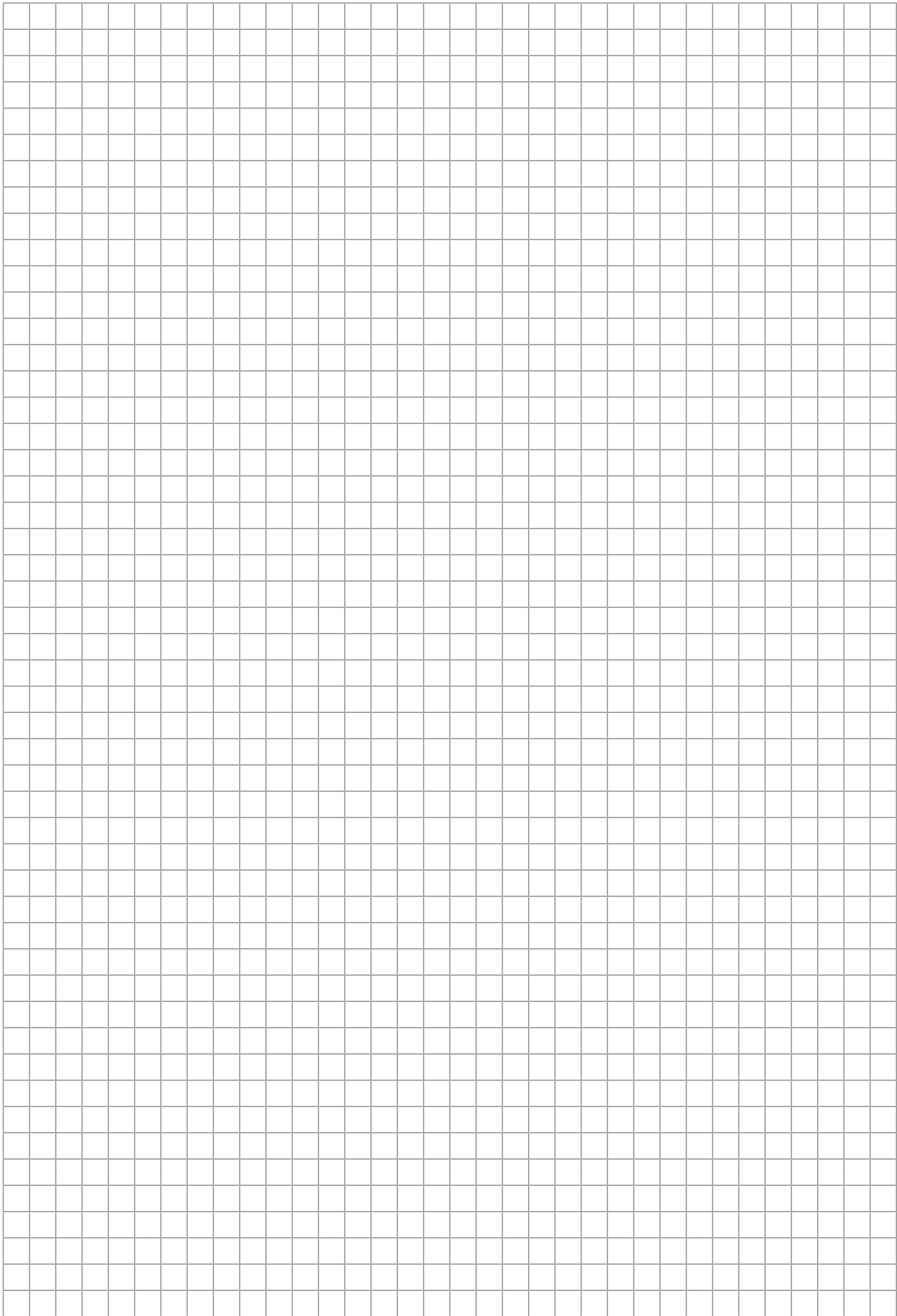
S1	S2	S3	S4	S5	Wear limit	BE11D
Sensor Ø 8 mm						
1	0	0	0	0	1.2 mm	

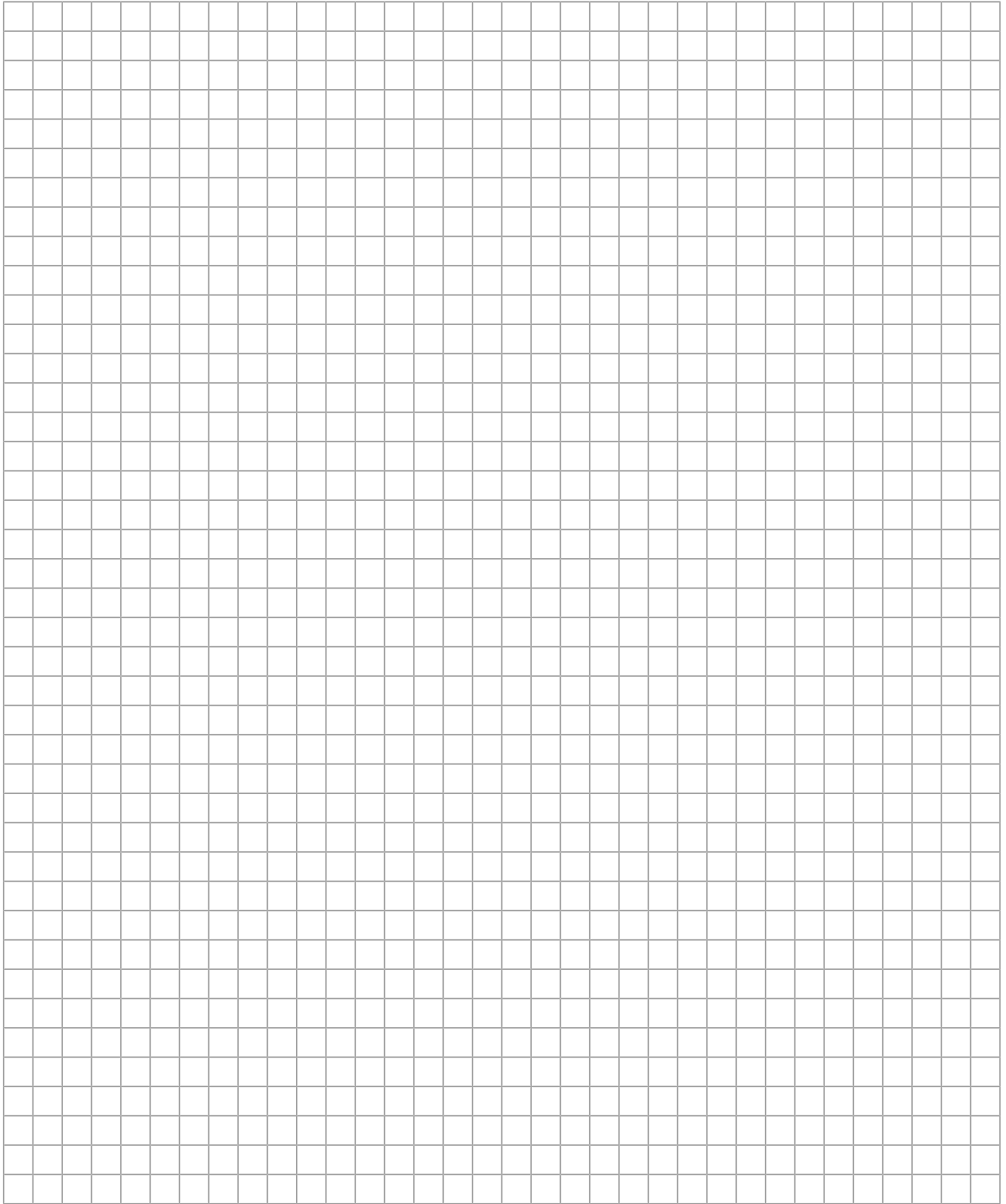
S1	S2	S3	S4	S5	Wear limit	BE11D
Sensor Ø 8 mm						
1	0	0	0	1	1.1 mm	
1	0	0	1	0	1.0 mm	
1	0	0	1	1	0.9 mm	
1	0	1	0	0	0.8 mm	
1	0	1	0	1	0.7 mm	
1	0	1	1	0	0.6 mm	X
1	0	1	1	1	0.5 mm	

X = Factory setting

 Setting possible in addition









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