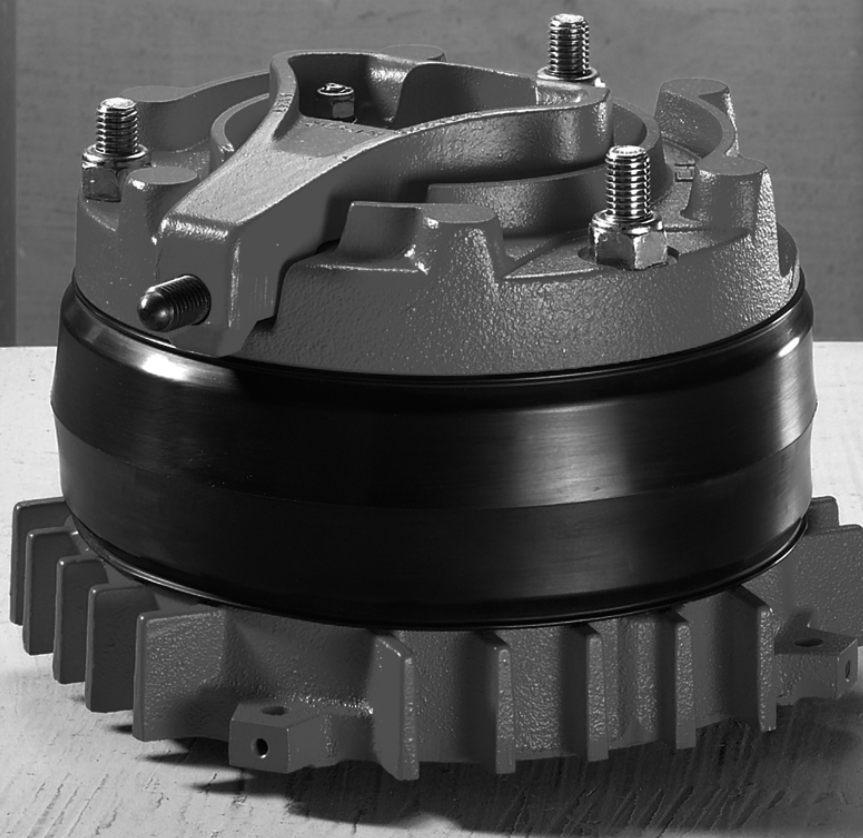




SEW
EURODRIVE

Operating Instructions



Double Disk Brake
BMG..T
For Stage Applications



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21357390/EN – 03/2016

1 General information

1.1 How to use the operating instructions

Operating instructions are an integral part of the product and contain important information for operation and service. The operating instructions are written for all employees who assemble, install, start up, and service the product.

The operating instructions must be legible and accessible at all times. Ensure that persons responsible for the machinery and its operation as well as persons who work on the device independently have read through the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.

1.2 Underlying standards

The safety assessment of the BMG..T double disk brake is based on the following standards and safety classes:

Underlying standards	
Safety class/underlying standard	<ul style="list-style-type: none"> • Safety Integrity Level (SIL) according to IEC 61508 • Performance Level (PL) according to EN ISO 13849-1

1.3 Structure of the safety notes

1.3.1 Meaning of signal words

The following table shows the grading and meaning of the signal words for safety notes.

Signal word	Meaning	Consequences if disregarded
▲ DANGER	Imminent hazard	Severe or fatal injuries.
▲ WARNING	Possible dangerous situation	Severe or fatal injuries.
▲ CAUTION	Possible dangerous situation	Minor injuries
NOTICE	Possible damage to property	Damage to the drive system or its environment.
INFORMATION	Useful information or tip: Simplifies handling of the drive system.	

1.3.2 Structure of section-related safety notes

Section-related safety notes do not apply to a specific action but to several actions pertaining to one subject. The hazard symbols used either indicate a general hazard or a specific hazard.

This is the formal structure of a safety note for a specific section:



SIGNAL WORD







Type and source of hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the hazard.

Meaning of the hazard symbols

The hazard symbols in the safety notes have the following meaning:

Hazard symbol	Meaning
	General hazard
	Warning of dangerous electrical voltage
	Warning of hot surfaces
	Warning of risk of crushing
	Warning of suspended load
	Warning of automatic restart

1.3.3 Structure of embedded safety notes

Embedded safety notes are directly integrated into the instructions just before the description of the dangerous action.

This is the formal structure of an embedded safety note:

▲ SIGNAL WORD Type and source of hazard. Possible consequence(s) if disregarded. Measure(s) to prevent the hazard.

1.4 Rights to claim under limited warranty

Read the information in this documentation. This is essential for fault-free operation and fulfillment of any rights to claim under limited warranty. Read the documentation before you start working with the product.

1.5 Exclusion of liability

You must comply with the information contained in these operating instructions to ensure safe operation of the electric motors and to achieve the specified product characteristics and performance features. SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, any liability for defects is excluded.

1.6 Product names and trademarks

The brands and product names in this documentation are trademarks or registered trademarks of their respective titleholders.

1.7 Copyright notice

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2 Safety notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The user must ensure that the basic safety notes are read and observed. Ensure that persons responsible for the system and its operation, as well as persons who work independently on the unit, have read through the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.

2.1 Preliminary information

The following safety notes are concerned with the use of BMG..T double disk brakes for stage applications. If using gear units and motors, also refer to the safety notes for gear units and motors in the corresponding operating instructions.

Also observe the supplementary safety notes in the individual sections of these operating instructions.

2.2 General information



! DANGER

During operation, the motors, gearmotors and brakes can have live, bare and movable or rotating parts as well as hot surfaces, depending on their enclosure.

Severe or fatal injuries.

- All work related to transportation, storage, setup/mounting, connection, startup, maintenance and repair may only be carried out by qualified personnel, in strict observance of:
 - The relevant detailed operating instructions
 - The warning and safety signs on the motor/gearmotor
 - All other project planning documents, operating instructions and wiring diagrams related to the drive
 - The specific regulations and requirements for the system
 - National/regional regulations governing safety and the prevention of accidents
- Never install damaged products.
- Report any damage to the shipping company immediately.

If work is carried out on the electrical section of the system, the supply voltage must be disconnected.

Removing required covers without authorization, improper use or incorrect installation and operation may result in severe injury to persons, or damage to machinery.

Refer to the documentation for additional information.

2.3 Target group

Any mechanical work may only be performed by adequately qualified personnel. Qualified personnel in this context are persons who are familiar with the setup, mechanical installation, troubleshooting and maintenance for this product. Further, they are qualified as follows:

- Training in mechanical engineering, e.g. as a machinist or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

Any electronic work may only be performed by adequately skilled persons (electrically). Qualified electricians in this context are persons who are familiar with the electronic installation, startup, troubleshooting and maintenance for this product. Further, they are qualified as follows:

- Training in electrical engineering, e.g. as an electrician or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

All work in the areas of transportation, storage, operation and waste disposal must be carried out by persons who are trained appropriately.

2.4 Designated use

The BMG..T double disk brakes are certified as safe components of mobile flying equipment or rigging systems for stage applications to DIN 56950, EN 954-1, EN ISO 13849-1 and BGV C1. Drives equipped with the BMG..T brake must fulfill the requirements specified above. The "Driving mechanisms" chapter in particular must be observed.

Structural elements made of steel must be dimensioned according to DIN EN 1993-1 (all lower parts) and DIN EN 1994-1-1, and designed according to DIN 18800-7 and DIN EN 1090-2. DIN EN 1999-1-1 and DIN EN 1090-3 apply to structural elements made of aluminum.

Technical data and information on permitted conditions are provided on the nameplate and in the documentation.

BMG..T double disk brakes cannot be retrofitted.

The requirements for the safety relay and the permitted circuit variants are specified in detail in the following sections and must be strictly observed.

The system/machine manufacturer must perform a system/machine-specific risk analysis. The use of the BMG..T double disk brake for stage applications must be taken into account in this analysis.

The switching equipment of the external voltage supply for the brake must comply at least with category 3 to EN 954-1, Performance Level d according to EN ISO 13849-1 or with a comparable national standard.

In normal operation, the manual release lever must not be attached to prevent the brake from being released unintentionally. It is not permitted to convert the brake to enable lockable manual brake release.

You must observe all the specifications.

2.5 Electrical connection

Observe the applicable national accident prevention guidelines when working on live components.

Electrical installation must be carried out in compliance with pertinent regulations (e.g. cable cross sections, fusing, protective conductor connection). For any additional information, refer to the applicable documentation.

You find notes on EMC-compliant installation, such as shielding, grounding, arrangement of filters and routing of lines, in the documentation of the respective component. Always observe these notes even with inverters bearing the CE marking. The manufacturer of the system or machine is responsible for maintaining the limits established by EMC legislation.

Protective measures and protection devices must comply with the regulations in force (e.g. EN 60204 or EN 61800-5-1).

2.6 Other applicable documentation

Note also the following documentation:

- "DR/DV/DT/DTE/DVE AC Motors, CT/CV Asynchronous Servomotors" operating instructions

2.7 Transport

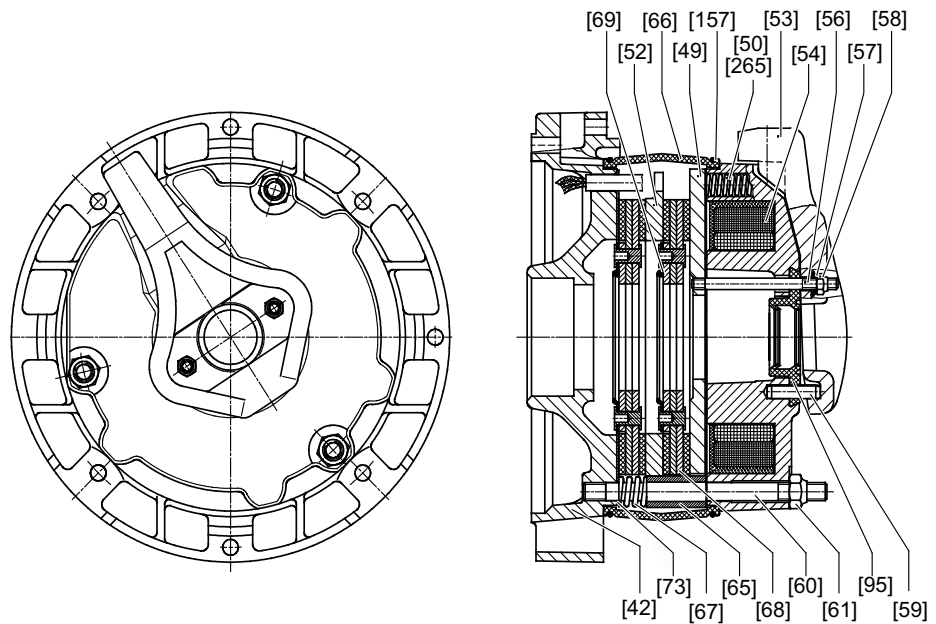
Inspect the shipment for damage as soon as you receive the delivery. Inform the shipping company immediately about any damage. It may be necessary to suspend start-up.

3 Basic unit

3.1 Basic design

The following figure shows an exemplary sectional drawing and makes it easier to assign components to the spare parts lists. Deviations are possible depending on the size and design of the brake.

The following figure shows the basic design of BMG..T:



1221413643

- [42] Brake endshield
- [49] Pressure plate
- [50] Brake spring
- [52] Brake plate
- [53] Manual release lever
- [54] Complete coil body
- [56] Stud
- [57] Conical spring
- [58] Hex nut with gripping part
- [59] Dowel pin
- [60] Stud

- [61] Hex nut with gripping part
- [65] Pressure ring
- [66] Sealing strip
- [67] Counter spring
- [68] Complete brake disk
- [69] Circular spring
- [73] Brake disk
- [95] Sealing ring
- [157] Clamping strap
- [265] Brake spring, red

3.2 Operating principle

The SEW brake is an electromagnetic disk brake with a DC coil that releases electrically and brakes using spring force.

The pressure plate is forced against the brake disk by the brake springs when the electromagnet is de-energized. The brake is applied to the motor. The number and type of brake springs determine the braking torque. If the brake coil is connected to the corresponding DC voltage, the force of the brake springs is overcome by magnetic force thereby bringing the pressure plate into contact with the magnet body. The brake disk moves clear and the rotor can turn.

The pressure plate can be released manually (release of the brake) e.g. for testing purposes. The force applied to the pressure plate by the compression springs is equalized, reducing or neutralizing the braking effects.

The BMG.T brake is designed as a double disk brake with dual-circuit brake function. If one brake fails, the other brake can stop the load.

The system meets all fundamental safety requirements: The brake is applied automatically if the power fails. In case of faults in the electric control (cable breakage, short circuit etc.), the brake also remains applied.

In case of too much brake lining wear, the brake can no longer be electrically released as the air gap of the pressure plate/coil system is too large. This way, failure due to insufficient maintenance can be ruled out.

The safety function of the brake is that the brake is applied as soon as the brake coil is de-energized and the energy stored in the brake coil is reduced.

The **safe state** is achieved, if the brake is applied meaning the pressure plate is pushed against the brake disk by the brake springs in de-energized state and the motor is stopped.

A **dangerous state** is present, if the brake is not applied meaning the pressure plate is not pushed against the brake disk by the brake springs in de-energized state of the electromagnet and the motor keeps moving.

3.3 Malfunction/malfunction load

A malfunction load may occur due to e.g. a component failure, power failure or triggered safety function.

The malfunction load may exceed twice the nominal load.

During project planning of the brake, it must be ensured that the drive train is dimensioned for this malfunction load.

3.4 Unit designation

The following motor/brake combinations are permitted for stage applications:

Brake type	for motor size	Nominal braking torque Nm
BMG4T	DT(E)90	32 (2 × 16)
		20 (2 × 10)
	DV(E)100	40 (2 × 20)
		32 (2 × 16)
		20 (2 × 10)
BMG8T	DV(E)112	60 (2 × 30)
		37 (2 × 18.5)
	DV(E)132S	75 (2 × 37.5)
		60 (2 × 30)
		37 (2 × 18.5)
BMG15T	DV(E)132M	100 (2 × 50)
	DV(E)132ML	150 (2 × 75)
	DV(E)160M	100 (2 × 50)
BMG32T	DV(E)160L	300 (2×150)
		200 (2 × 100)
	DV(E)180	400 (2 × 200)
		300 (2 × 150)
		200 (2 × 100)
BMG62T	DV(E)200	400 (2 × 200)
	DV(E)225	300 (2 × 150)
		200 (2 × 100)

3.5 Microswitch option for monitoring functionality and wear

A recoiling microswitch is installed either as NO contact for function monitoring or as NC contact for wear monitoring of the brake. It sends a voltage-dependent signal to a higher-level controller.

Installing 2 microswitches allows for monitoring of both function and brake disk wear.

4 Installation

4.1 Mechanical installation

INFORMATION



In normal operation, the manual release lever of the brake must not be screwed in to prevent releasing the brake unintentionally.

Make sure that the following requirements are met before you start installing the unit:

- The specifications on the nameplate of the gearmotor match the voltage supply system.
- The drive has not been damaged during transportation or storage.
- Ambient temperature between -20 °C and +40 °C or according to project planning
- You have ensured that there are no oils, acids, gases, vapors, radiation, etc. present
- Installation altitude max. 1000 m above sea level or according to project planning

4.2 Electrical installation

Observe the following points for electrical installation:

As regards the safety of the switching equipment, it must comply at least with category 3 to EN 954-1, Performance Level d according to EN ISO 13849-1 or with a comparable national standard.

The utilization category of the contactors of the brake control must be at least AC-3 according to EN 60947-4-1 or meet the requirements of a comparable national standard.

The brake is released electrically. The brake is applied mechanically when the voltage is switched off.

- Connect the brake according to the provided wiring diagram.
- The supply voltage must lie within the rated voltage range of the brake coil (see chapter "Technical data").

The brake can only be run with the SEW brake control it is intended for (see chapter "Technical data").

Check the cable cross sections – operating currents (see chapter "Technical data").

- Apply brake voltage according to the nameplate.
- Connect the brake control according to the provided wiring diagram.
- For motors in thermal class 180 (H), install the brake rectifier in the control cabinet.
- Use only copper cables with the following temperature range as the connection cable: Temperature range: 60/75 °C

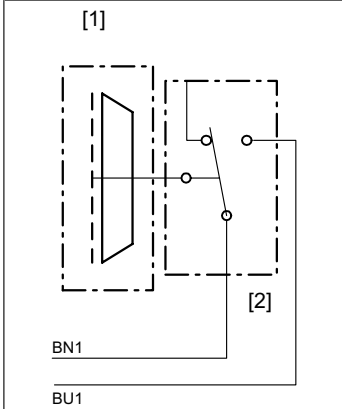
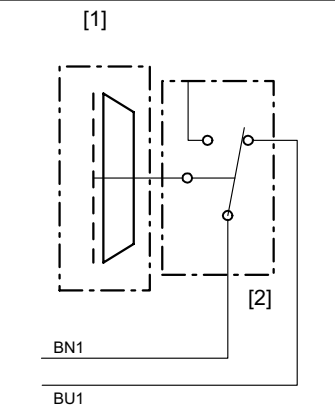
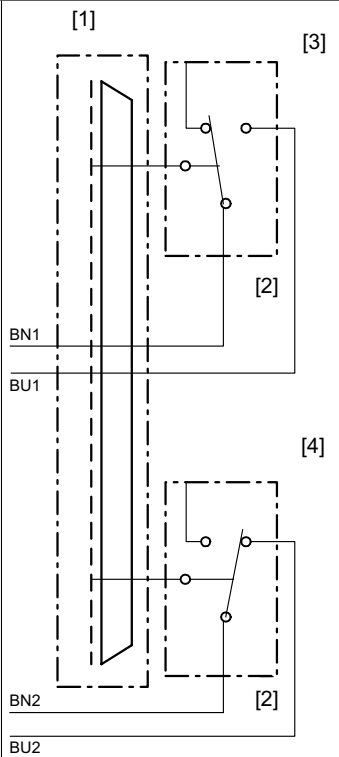
Comply with the applicable regulations issued by the relevant employer's liability insurance association regarding phase failure protection and the associated circuit/circuit modification.

4.2.1 Connecting the microswitch option

Connect the diagnostic unit as shown in the wiring connection diagrams provided with the motor. Observe the following permitted limit currents:

Permitted limit values		Permitted limit values	
Maximum connection voltage	AC 250 V	Maximum extra-low voltage	AC 24 V or DC 24 V
Maximum current	3 A	Maximum current	0.1 A

A subsequent change to extra-low voltage is not permitted.

Function monitoring	Wear monitoring	Function and wear monitoring
 <p>[1] Brake [2] Microswitch MP321-1MS</p>	 <p>[1] Brake [2] Microswitch MP321-1MS</p>	 <p>[1] Brake [2] Microswitch MP321-1MS [3] Function monitoring [4] Wear monitoring</p>

5 Startup

During startup, observe the safety notes in the operating instructions at hand as well as the safety notes in the operating instructions of the motor and the relevant legal and professional association stipulations.

6 Inspection and maintenance

6.1 Inspection/maintenance of BMG..T

Observe the following points for inspection and maintenance:

- Use only genuine spare parts in accordance with the valid spare parts list.
- Always install a new brake control at the same time as replacing the brake coil and vice versa.
- Isolate the motor and brake from the power supply before starting work, safeguarding them against unintentional power-up.
- Observe the notes for BM/BMG in the "DR/DV/DT/DTE/DVE AC Motors, CT/CV Asynchronous Servomotors" operating instructions.

▲ DANGER



Risk of crushing if the load falls.

Severe or fatal injuries.

- Secure the mobile flying equipment or rigging system.
- Lower the mobile flying equipment or rigging system.

▲ CAUTION



The surfaces of the drive can be very hot during operation.

Risk of burns.

- Let the motor cool down before you start your work.

INFORMATION



The valid spare parts lists can be ordered from SEW-EURODRIVE if required.

6.1.1 Auxiliary tools table

The following table lists the part numbers of the distance blocks that are required for performing the dynamic check. Three distance blocks each are required for the check.

Brake	Part number distance block
BMG4T	5948657
BMG8T	5948665
BMG15-62T	5948649

The distance blocks are not included in the delivery for the brake.

6.2 Inspection and maintenance intervals

The necessary inspection and maintenance intervals must be calculated by the system manufacturer according to the specific project planning documents for individual applications, in accordance with the directives of the employer's liability insurance association. According to the "BGV C1" regulation of the employer's liability insurance association, brakes for stage applications must be checked once a year.

BMG..T brakes must only be disassembled by qualified specialists.

! DANGER



Risk of crushing if the load falls.

Severe or fatal injuries.

- Take off all loads from mobile flying equipment or rigging systems before performing any maintenance work.

6.3 Checking the functionality of the dual-circuit brake

BMG..T brakes can be tested statically and dynamically. There are applications in which static tests are unsuitable (e.g. due to high test torques). The system operator determines the procedure that is to be used and how often a check is to be performed (see chapter "Inspection and maintenance intervals").

The following table lists the applicable test torques. Both static and dynamic checks must only be performed by qualified specialists.

Brake	Nominal braking torque Nm	Permitted load torque Nm	Dynamic test torque Nm	Static test torque Nm
BMG4T	40 (2 × 20)	13	16	32
	32 (2 × 16)	10.5	13	26
	20 (2 × 10)	6.5	8	16
BMG8T	75 (2 × 37.5)	25	31	62
	60 (2 × 30)	20	25	50
	37 (2 × 18.5)	12	15	30
BMG15T	150 (2 × 75)	50	62	125
	100 (2 × 50)	35	44	88
BMG32T	400 (2 × 200)	70	87.5	175
	300 (2 × 150)	100	125	250
	200 (2 × 100)	135	169	338
BMG62T	400 (2 × 200)	70	87.5	175
	300 (2 × 150)	100	125	250
	200 (2 × 100)	135	169	338

6.3.1 Dynamic check in accordance with DIN 56950

The BMG..T brakes have a dual-circuit braking function. If one brake circuit fails, the other is able to hold the load. The following section describes how to check the effectiveness of this redundant brake system. The effectiveness is checked in accordance with the periods specified by the system operator (see chapter "Inspection and maintenance intervals"). To check the effectiveness, one of the two brake disks is removed from the power flow by inserting distance blocks.

1. Secure or lower the mobile flying equipment and rigging system.

⚠ DANGER



Risk of crushing if the load falls.

Severe or fatal injuries.

- Any work on the point host or the rigging system may be performed by adequately skilled personnel only.
- Secure the mobile flying equipment or rigging system.
- Lower the mobile flying equipment or rigging system.

2. Remove safety cover and encoder.
3. Remove sealing strip.
4. Release the brake electrically or using the manual brake release.
5. Remove one brake disk from the power flow by inserting 3 distance blocks above the studs (see the figure on the following page). To do so, turn the adjusting screws [3] of the distance blocks [1] in counterclockwise direction until the brake disk [4] is inoperative.
6. Apply brake.
7. Set the working air gap for the brake disk in the power flow to 0.25 mm (see chapter "Inspection/maintenance" in the "AC Motors" operating instructions).
8. The brake system in the power flow - that is, the one that has not been disabled using distance blocks – must be able to apply the dynamic reference torque ratings listed in the following table (125% of the permitted load torque).

Brake	Nominal braking torque Nm	Permitted load torque Nm	Dynamic test torque Nm
BMG4T	40 (2 × 20)	13	16
	32 (2 × 16)	10.5	13
	20 (2 × 10)	6.5	8
BMG8T	75 (2 × 37.5)	25	31
	60 (2 × 30)	20	25
	37 (2 × 18.5)	12	15
BMG15T	150 (2 × 75)	50	62
	100 (2 × 50)	35	44
BMG32T	400 (2 × 200)	135	169
	300 (2 × 150)	100	125
	200 (2 × 100)	70	87.5
BMG62T	400 (2 × 200)	135	169
	300 (2 × 150)	100	125
	200 (2 × 100)	70	87.5

9. Remove distance blocks.



⚠ DANGER

Risk of crushing if the load falls.

Severe or fatal injuries.

- Any work on the point host or the rigging system may be performed by adequately skilled personnel only.
- Secure the mobile flying equipment or rigging system.
- Lower the mobile flying equipment or rigging system.

10. Repeat points 4 to 9 for the second brake disk.

11. Reset working air gap.

12. Apply sealing strip.

13. Install encoder and safety cover.

If one of the brake systems cannot deliver the specified dynamic test torque, the function of the dual-circuit brake is not guaranteed.



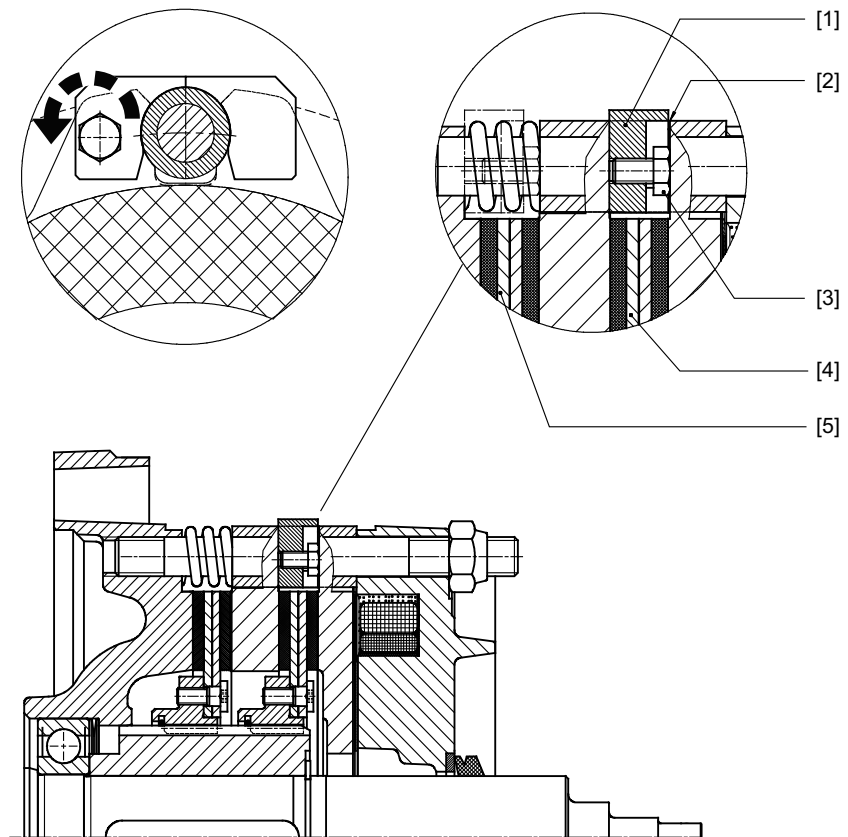
⚠ DANGER

Risk of crushing if the load falls.

Severe or fatal injuries.

- Abort check immediately.
- Shut down mobile flying equipment or rigging systems.
- Disassemble the brake and check it.

The following figure shows the test of the dual-circuit brake function with distance blocks:



1221411211

- | | | | |
|-----|---------------------|-----|----------------------------------|
| [1] | Distance block (3x) | [4] | Brake disk not in the power flow |
| [2] | Air gap | [5] | Brake disk in the power flow |
| [3] | Adjusting screw | | |

6.3.2 Static check

The BMG..T brakes have a dual-circuit braking function. The load torque permitted during operation is much lower than the nominal braking torque.

The described static check requires a high strength of all transmission components. The strength must be proved.

In a static check, the sum of the braking torques of the individual brake disks is checked. For this purpose, both braking circuits are loaded at the same time. Choose the static reference torque according to the following table and apply the torque once you have secured or lowered the mobile flying equipment and rigging system.

Brake	Nominal braking torque Nm	Permitted load torque Nm	Dynamic test torque Nm
BMG4T	40 (2 × 20)	13	32
	32 (2 × 16)	10.5	26
	20 (2 × 10)	6.5	16
BMG8T	75 (2 × 37.5)	25	62
	60 (2 × 30)	20	50
	37 (2 × 18.5)	12	30
BMG15T	150 (2 × 75)	50	125
	100 (2 × 50)	35	88
BMG32T	400 (2 × 200)	70	175
	300 (2 × 150)	100	250
	200 (2 × 100)	135	338
BMG62T	400 (2 × 200)	70	175
	300 (2 × 150)	100	250
	200 (2 × 100)	135	338

To check the redundancy and safety factors in a single test, 250% of the permitted load torque is applied as a static reference torque.

If the overall system cannot deliver the specified static test torque during the check, the function of the dual-circuit brake is not guaranteed.

DANGER

Risk of crushing if the load falls.

Severe or fatal injuries.

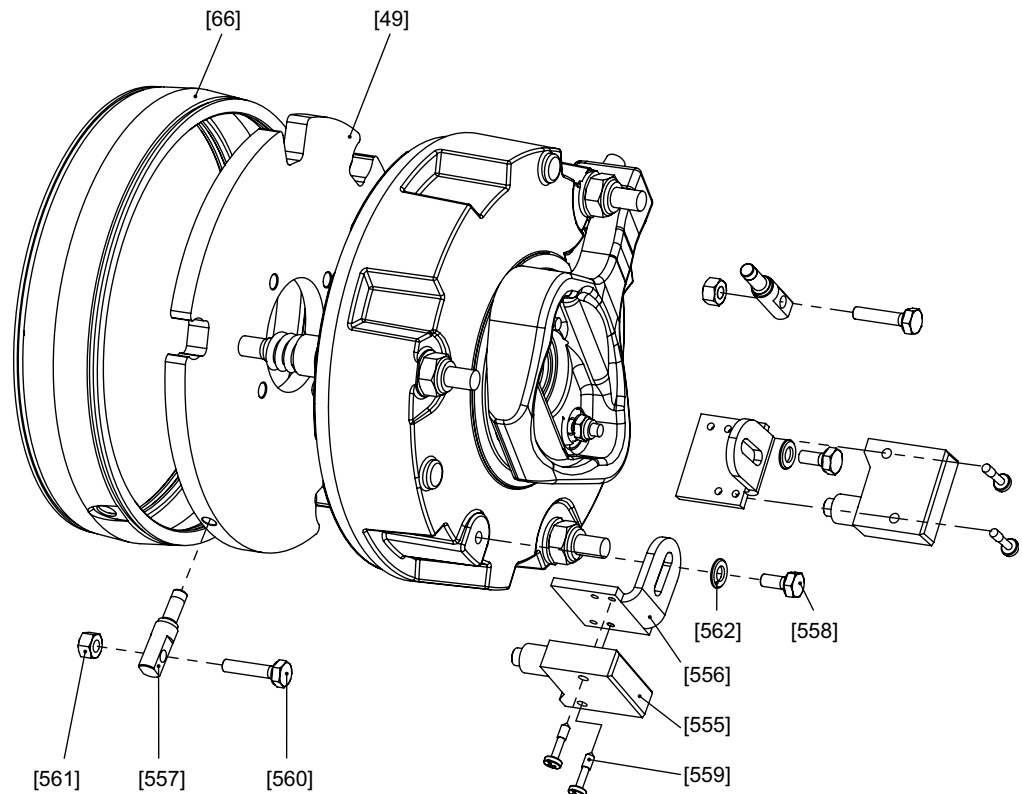
- Abort check immediately.
- Shut down mobile flying equipment or rigging systems.
- Disassemble the brake and check it.



As an alternative static check, use a torque wrench on the B-side.

6.4 Inspection/maintenance of the microswitch

6.4.1 Basic design



1529021963

[49]	Pressure plate for microswitch	[557]	Pin
[66]	Sealing strip for microswitch	[558]	Hex head screw
[555]	Microswitch	[560]	Hex head screw
[556]	Angle bracket	[561]	Stud
[559]	Pan head screw	[562]	Washer

6.4.2 Inspection/maintenance of microswitch for function monitoring

**⚠ DANGER**

Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Disconnect the motor from the power supply before starting work and safeguard it against accidental startup.
- Carefully observe the steps described below.

1. Control and check the working air gap according to chapter "Inspection/maintenance work BMG05-8, BMG15-62 brake" in the "DR/DV/DT/DTE/DVE AC Motors, CT/CV Asynchronous Servomotors" operating instructions.
2. Screw hex head screw [560] against the actuator of microswitch [555] until it switches over (brown-blue contacts closed).
While screwing, apply the hex nut [561] to eliminate the floating clearance from the thread.
3. Turn hex head screw [560] back until microswitch [555] switches back (contacts brown-blue open).
4. To ensure operational reliability, turn hex head screw [560] further back by one-sixth of a revolution (0.1 mm).
5. Tighten hex nut [561], while doing so, hold hex head screw [560] to keep it in the correct position.
6. Switch the brake on and off several times. Check whether the microswitch opens and closes reliably in any motor shaft position. Therefore, turn the motor shaft manually several times.

6.4.3 Inspection/maintenance of microswitch for wear monitoring



⚠ DANGER

Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Disconnect the motor from the power supply before starting work and safeguard it against accidental startup.
- Carefully observe the steps described below.

1. Control and check the working air gap according to chapter "Inspection/maintenance work BMG05-8, BMG15-62 brake" in the "DR/DV/DT/DTE/DVE AC Motors, CT/CV Asynchronous Servomotors" operating instructions.
2. Screw hex head screw [560] against the actuator of microswitch [555] until it switches over (brown-blue contacts closed).

While screwing, apply the hex nut [561] to eliminate the floating clearance from the thread.

3. Loosen hex head screw [560] towards the microswitch [555] by half a turn.
4. To prevent changes to the settings, tighten the hex nut [561] while holding the hex head screw [560] in place.
5. If the brake lining reaches the wear limit, the microswitch automatically switches back (brown-blue contacts open) and activates a relay or a signal.

6.4.4 Inspection/maintenance of the microswitch for function and wear monitoring

If two microswitches are mounted to one brake, both monitoring statuses can be realized. In this case, set the microswitch for wear monitoring before you set the microswitch for function monitoring.

6.5 Customer service

Please have the following information available if you require customer service assistance:

- Nameplate data (complete)
- Type and extent of the malfunction
- Time the failure occurred and any accompanying circumstances
- Assumed cause

6.6 Disposal

This product consists of:

- Iron
- Copper
- Aluminum
- Plastic

Dispose of all components in accordance with applicable regulations.

7 Technical data

7.1 Working air gap, braking torques, minimum brake disk thickness

Brake	Motor	Working air gap		Braking torque settings					Brake disk Min. mm			
		Min.	max.	Nominal braking torque Nm	Type/number of brake springs		Purchase order number brake springs					
		mm	mm		Normal	Red	Normal	Red				
BMG4T	DT(E)90	0.2	0.4	32 (2×16)	2	2	1351508	1351516	10			
				20 (2×10)		6						
	DV(E)100			40 (2×20)	3							
				32 (2×16)	2	2						
				20 (2×10)		6						
BMG8T	DV(E)112	0.2	0.6	60 (2×30)	2	2	1848453	1355708	12			
				37 (2×18.5)		6						
	DV(E)132S			75 (2×37.5)	3							
				60 (2×30)	2	2						
				37 (2×18.5)		6						
BMG15T	DV(E)132M	0.2	0.6	100 (2×50)		6	1844865	1844873	12			
				DV(E)132ML DV(E)160M	150 (2×75)	3						
	100 (2×50)					6						
BMG32T	DV(E)160L				300 (2×150)	4					1874551	1874578
				200 (2×100)		8						
	DV(E)180	400 (2×200)	4	4								
		300 (2×150)	4									
		200 (2×100)		8								
BMG62T	DV(E)200 DV(E)225	400 (2×200)	4	4	1874551	1874578	12					
		300 (2×150)	4									
		200 (2×100)		8								

Upon checking of the working air gap setting after a test run of the motor, deviations of as much as 0.05 mm can result from possible parallelism faults in the brake disk.

7.2 Response and application times, braking work until maintenance

Brake	Motor	Nominal braking torque	W_{insp}	t_1	t_2	
					t_{2l}	t_{2l}
		Nm	10^6 J	10^{-3} s	10^{-3} s	
BMG4T	DT(E)90 DV(E)100	40 (2 × 20)	45	130	15	80
BMG8T	DV(E)112	37 (2 × 18.5)	100	30	12	60
	DV(E)132S	75 (2 × 37.5)		35	10	50
BMG15T	DV(E)132M	100 (2 × 50)	166	40	14	70
	DV(E)132M DV(E)160M	150 (2 × 75)		50	12	50
BMG32T	DV(E)160L	300 (2 × 150)	250	56	28	120
	DV(E)180	400 (2 × 200)				
BMG62T	DV(E)200	400 (2 × 200)	250			
	DV(E)225					

W_{insp} Braking work until maintenance

t_1 Response time

t_{2l} Brake application time for cut-off in the AC circuit

t_{2l} Brake application time for cut-off in the DC and AC circuit

INFORMATION



The response and application times are guide values based on the maximum braking torque (and maximum number of springs) and the air gap of a new brake.

7.3 Weights without manual brake release /HR

Brake	Weight kg
BMG4T	9.8
BMG8T	13.1
BMG15T	24.4
BMG32T	40.6
BMG62T	45.6

7.4 Possible brake control systems

SEW-EURODRIVE stipulates the following brake controllers as standard in combination with brakes from the BMG..T series for installation in terminal boxes:

	BMG4T	BMG8T	BMG15T	BMG32T/ BMG62T
AC supply	BG/BGE	BGE	BGE	BGE
DC 24 V supply	BS/BSG	BSG	BSG	BSG

If you want to install the brake control in a control cabinet, SEW-EURODRIVE stipulates the following brake controllers in combination with brakes in the BMG..T series:

	BMG4T	BMG8T	BMG15T	BMG32T/ BMG62T
AC supply	BMS/BME/ BMP	BME/BMP	BME/BMP	BME/BMP
DC 24 V supply	BS/BSG	BSG	BSG	BSG

For controlled drive systems with frequency inverters, SEW-EURODRIVE recommends the safe BST brake module.

If you want to install a different brake controller, please contact SEW-EURODRIVE to discuss the possibilities.

7.5 Operating currents of BMG..T

The following table shows operating currents of BMG..T:

	BMG4T	BMG8T	BMG15T	BMG32T	BMG62T
Max. braking torque Nm	40	75	150	400	400
Braking power W	35	40	60	78	78
Inrush current ratio I_B/I_H	–	6.3	7.5	8.5	8.5

Nominal voltage U_N	BMG4T	BMG8T	BMG15T	BMG32T	BMG62T
	I_H AC A	I_H AC A	I_H AC A	I_H AC A	I_H AC A
DC 24	1.30 ¹⁾	1.75 ²⁾	2.65 ²⁾	–	–
AC 230 (208-233)	0.25	0.28	0.42	0.53	0.53
AC 240 (234-261)	0.22	0.25	0.38	0.48	0.48
AC 290 (262-293)	0.20	0.22	0.34	0.42	0.42
AC 400 (370-414)	0.14	0.16	0.24	0.30	0.30
AC 440 (415-464)	0.12	0.14	0.21	0.27	0.27

1) Direct current with DC supply

2) Direct current in BSG operation

I_B Acceleration current – brief inrush current

I_H Holding current rms value in the supply cable to the SEW brake rectifier

V_N Nominal voltage (nominal voltage range)

Permitted tolerances for nominal voltage: Nominal voltage range $\pm 10\%$

Example: Nominal voltage AC 230 V

Lower limit AC 208 V $-10\% = 198$ V

Upper limit AC 233 V $+10\% = 256$ V

7.6 Characteristic safety values for the BMG..T brake

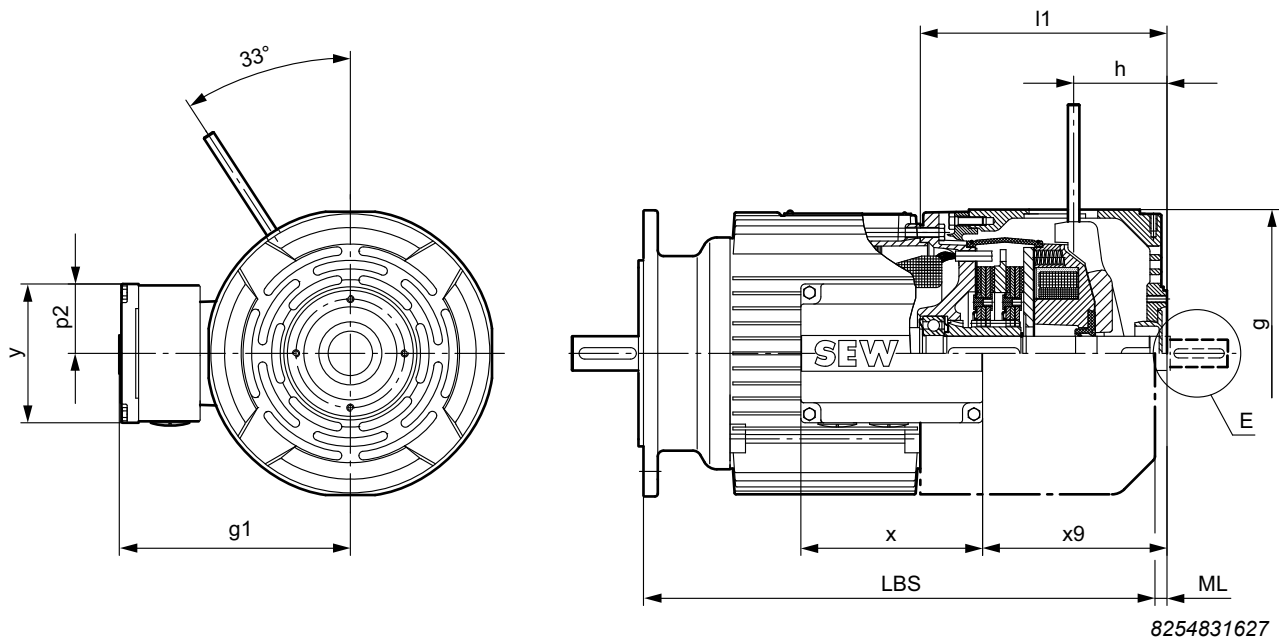
The following table shows the characteristic safety values of the safety-rated BMG..T double disk brake:

Characteristic safety values for BMG..T	
Safety class/underlying standard	<ul style="list-style-type: none"> PL d / cat. 3 according to EN ISO 13849-1 Cat. 3 according to EN 954-1
Probability of a dangerous failure (PFH_d) ¹⁾	3×10^{-9} 1/h

1) The specified value refers to a diagnostic coverage of 90%, that must be achieved in an external check.

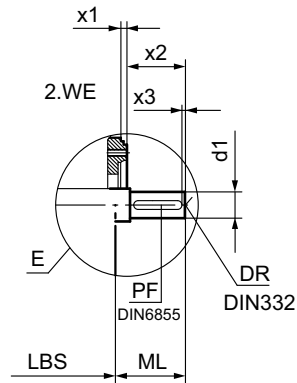
7.7 Dimension sheets

7.7.1 Non-ventilated (+ 2nd shaft end) with and without encoder mounting EV.. / AV...



Non-ventilated BMG.T	ML Additional length to LBS	g	g1	x	y	p2	h	x9	l1
DFT90/BMG2T/U	8.5	201	161	127	97	50	65	129.5	172.5
DFV100/BMG4T/U	8.5	201	166	139	109	56	65	133.5	172.5
DFV112-132S/BMG8T/U	8.5	226	182	139	109	56	79	139.5	184.5
DFV132M-160M/ BMG15T/U	9	285	230	182	152	76	86	180	222
DFV160L-180/BMG32T/U	6	342	258	182	152	76	142.5	245	286
DFV200-225/BMG62T/U	7	394	285	182	152	76	151.5	397	319

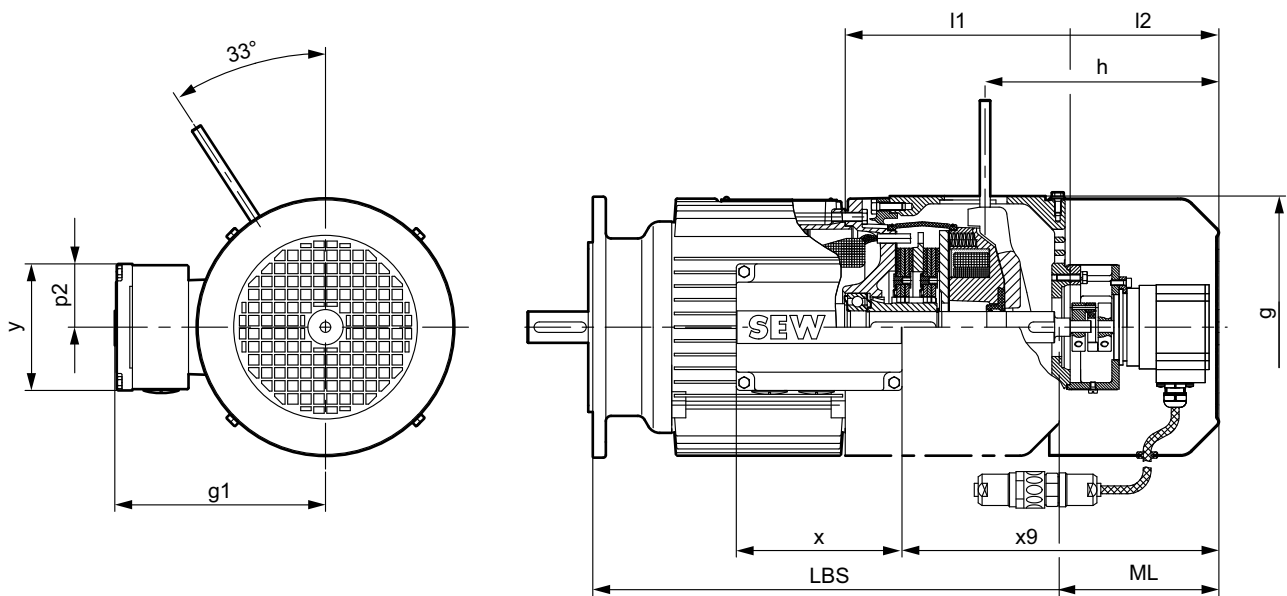
Second shaft end



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Non-ventilated BMG.T 2nd shaft end	ML Additional length to LBS	x1	d1	x2	x3	PF	DR
DFT90/BMG2T/U DFV100/BMG4T/U	48.5	0	19 k6	40	4	A6×6×32	M6
DFV112/BMG8T/U	63.5	5	24 k6	50	5	A8×7×50	M8
DFV132S/BMG8T/U	73.5	5	28 k6	60	5	A8×7×50	M10
DFV132M-160M/BMG15T/U	94	5	38 k6	80	5	A10×8×70	M12
DFV160L/BMG32T/U	121	5	42 k6	110	10	A12×8×70	M16
DFV180/BMG32T/U	121	5	48 k6	110	10	A14×9×80	M16
DFV200-225/BMG62T/U	122	5	55 m6	110	10	A16×10×90	M20

Encoder mounting EV.. / AV..



8254829707

Non-ventilated BMG.T Encoder mounting EV.. / AV..	ML Additional length to LBS	g	g1	x	p2	y	h	x9	l1	l2
DFT90/BMG2T/U/EV../AV..	122.5	201	161	127	50	97	179	243.5	172.5	114
DFV100/BMG4T/U/EV../AV..	122.5	201	166	139	56	109	179	247.5	172.5	114
DFV112-132S/BMG8T/U/ EV../AV..	126	226	182	139	50	109	196.5	257.5	184.5	117.5
DFV132M-160M/BMG15T/U/ EV../AV..	126.5	285	230	182	76	152	203.5	297.5	222	117.5
DFV160L-180/BMG32T/U/ EV../AV..	124	342	258	182	76	152	260.5	363	286	118
DFV200-225/BMG62T/U/EV../ AV..	136	394	285	182	76	152	280.5	528	319	129

8 Certificate

The following certification is available for the BMG..T double disk brake for stage applications:

- Product certificate of the TÜV NORD Systems GmbH & Co. KG

Copies of the TÜV certificate are available from SEW-EURODRIVE.

Observe the certification reports for the respective certificate. The requirements are specified in this documentation. The chapters "Safety notes", "Installation" and "Startup" must be observed in particular.

9 Address list

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Greece			
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Iceland			
Sales	Reykjavik	Varma & Vélaverk ehf. Knarrarvogi 4 104 Reykjavik	Tel. +354 585 1070 Fax +354 585)1071 http://www.varmaverk.is vov@vov.is
India			
Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 3045200 Fax +91 265 3045300 http://www.seweurodriveindia.com salesvadodara@seweurodriveindia.com
Assembly Sales Service	Chennai	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 saleschennai@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Plant: Plot No. D236/1, Chakan Industrial Area Phase- II, Warale, Tal- Khed, Pune-410501, Maharashtra	Tel. +91 21 35 628700 Fax +91 21 35 628715 salespune@seweurodriveindia.com
Indonesia			
Sales	Medan	PT. Serumpun Indah Lestari Jl.Pulau Solor no. 8, Kawasan Industri Medan II Medan 20252	Tel. +62 61 687 1221 Fax +62 61 6871429 / +62 61 6871458 / +62 61 30008041 sil@serumpunindah.com serumpunindah@yahoo.com http://www.serumpunindah.com
	Jakarta	PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id
	Jakarta	PT. Agrindo Putra Lestari JL.Pantai Indah Selatan, Komplek Sentra In- dustri Terpadu, Pantai indah Kapuk Tahap III, Blok E No. 27 Jakarta 14470	Tel. +62 21 2921-8899 Fax +62 21 2921-8988 aplindo@indosat.net.id http://www.aplindo.com

Indonesia			
	Surabaya	PT. TRIAGRI JAYA ABADI Jl. Sukosemolo No. 63, Galaxi Bumi Permai G6 No. 11 Surabaya 60111	Tel. +62 31 5990128 Fax +62 31 5962666 sales@triagri.co.id http://www.triagri.co.id
	Surabaya	CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 Fax +62 31 5317220 sianhwa@sby.centrin.net.id http://www.cvmultimas.com
Ireland			
Sales Service	Dublin	Alperon Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 http://www.alperon.ie info@alperon.ie
Israel			
Sales	Tel Aviv	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il
Italy			
Assembly Sales Service	Milan	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 20020 Solaro (Milano)	Tel. +39 02 96 980229 Fax +39 02 96 980 999 http://www.sew-eurodrive.it milano@sew-eurodrive.it
Ivory Coast			
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Japan			
Assembly Sales Service	Iwata	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp hamamatsu@sew-eurodrive.co.jp
Kazakhstan			
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	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
	Ulaanbaatar	IM Trading LLC Narny zam street 62 Sukhbaatar district, Ulaanbaatar 14230	Tel. +976-77109997 Fax +976-77109997 imt@imt.mn
Kenya			
Sales	Nairobi	SEW-EURODRIVE Pty Ltd Transnational Plaza, 5th Floor Mama Ngina Street P.O. Box 8998-00100 Nairobi	Tel. +254 791 398840 http://www.sew-eurodrive.co.tz info@sew.co.tz
Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C 1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.lv info@alas-kuul.com

Lebanon

Sales (Lebanon)	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb
Sales (Jordan, Kuwait , Beirut Saudi Arabia, Syria)		Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 http://www.medrives.com info@medrives.com

Lithuania

Sales	Alytus	UAB Irseva Statybininku 106C 63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 http://www.irseva.lt irmantas@irseva.lt
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Luxembourg

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Macedonia

Sales	Skopje	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk
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Malaysia

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Morocco

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Namibia

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New Zealand			
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	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 30 Lodestar Avenue, Wigram Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Nigeria			
Sales	Lagos	Greenpeg Nig. Ltd Plot 296A, Adeyemo Akapo Str. Omole GRA Ikeja Lagos-Nigeria	Tel. +234-701-821-9200-1 http://www.greenpeg ltd.com bolaji.adekunle@greenpeg ltd.com
Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Solgaard skog 71 1599 Moss	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no
Pakistan			
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Paraguay			
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Peru			
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Philippines			
Sales	Makati	P.T. Cerna Corporation 4137 Ponte St., Brgy. Sta. Cruz Makati City 1205	Tel. +63 2 519 6214 Fax +63 2 890 2802 mech_drive_sys@ptcerna.com http://www.ptcerna.com
Poland			
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	Service	Tel. +48 42 293 0030 Fax +48 42 293 0043	24 Hour Service Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl
Portugal			
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Russia			
Assembly Sales Service	St. Petersburg	ЗАО «СЕВ-ЕВРОДРАЙФ» а. я. 36 195220 Санкт-Петербург	Tel. +7 812 3332522 / +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru

Sambia

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Senegal

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Serbia

Sales	Belgrade	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor 11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.rs
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Singapore

Assembly Sales Service	Singapore	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com
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Slovakia

Sales	Bratislava	SEW-Eurodrive SK s.r.o. Rybničná 40 831 06 Bratislava	Tel.+421 2 33595 202, 217, 201 Fax +421 2 33595 200 http://www.sew-eurodrive.sk sew@sew-eurodrive.sk
	Košice	SEW-Eurodrive SK s.r.o. Slovenská ulica 26 040 01 Košice	Tel. +421 55 671 2245 Fax +421 55 671 2254 Mobile +421 907 671 976 sew@sew-eurodrive.sk

Slovenia

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South Africa

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	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 bgriffiths@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 48 Prospecton Road Isipingo Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 902 3815 Fax +27 31 902 3826 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PROPRIETARY) LIMITED 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za

South Korea

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South Korea			
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Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 Fax +34 94 43184-71 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es
Sri Lanka			
Sales	Colombo	SM International (Pte) Ltd 254, Galle Raod Colombo 4, Sri Lanka	Tel. +94 1 2584887 Fax +94 1 2582981
Swaziland			
Sales	Manzini	C G Trading Co. (Pty) Ltd PO Box 2960 Manzini M200	Tel. +268 2 518 6343 Fax +268 2 518 5033 engineering@cgtrading.co.sz
Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 553 03 Jönköping Box 3100 S-550 03 Jönköping	Tel. +46 36 34 42 00 Fax +46 36 34 42 80 http://www.sew-eurodrive.se jonkoping@sew.se
Switzerland			
Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch
Taiwan			
Sales	Taipei	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Huw S. Road Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
	Nan Tou	Ting Shou Trading Co., Ltd. No. 55 Kung Yeh N. Road Industrial District Nan Tou 540	Tel. +886 49 255353 Fax +886 49 257878 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
Tanzania			
Sales	Daressalam	SEW-EURODRIVE PTY LIMITED TANZANIA Plot 52, Regent Estate PO Box 106274 Dar Es Salaam	Tel. +255 0 22 277 5780 Fax +255 0 22 277 5788 http://www.sew-eurodrive.co.tz info@sew.co.tz
Thailand			
Assembly Sales Service	Chonburi	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn
Turkey			
Assembly Sales Service	Kocaeli-Gebze	SEW-EURODRIVE Hareket Sistemleri San. Ve TIC. Ltd. Sti Gebze Organize Sanayi Böl. 400 Sok No. 401 41480 Gebze Kocaeli	Tel. +90 262 9991000 04 Fax +90 262 9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr

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Assembly Sales Service	Dnipropetrovsk	ООО «СЕВ-Евродрайв» ул. Рабочая, 23-В, офис 409 49008 Днепропетровск	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua
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Uruguay

Assembly Sales	Montevideo	SEW-EURODRIVE Uruguay, S. A. Jose Serrato 3569 Esquina Corumbe CP 12000 Montevideo	Tel. +598 2 21181-89 Fax +598 2 21181-90 sewuy@sew-eurodrive.com.uy
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USA

Production Assembly Sales Service	Southeast Region	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Production +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly Sales Service	Northeast Region	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 332-0038 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Wellford	SEW-EURODRIVE INC. 148/150 Finch Rd. Wellford, S.C. 29385	IGLogistics@seweurodrive.com

Additional addresses for service provided on request!

Uzbekistan

Technical Office	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
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Vietnam

Sales	Ho Chi Minh City	Nam Trung Co., Ltd Huế - South Vietnam / Construction Materials 250 Binh Duong Avenue, Thu Dau Mot Town, Binh Duong Province HCM office: 91 Tran Minh Quyen Street District 10, Ho Chi Minh City	Tel. +84 8 8301026 Fax +84 8 8392223 khanh-nguyen@namtrung.com.vn http://www.namtrung.com.vn
	Hanoi	MICO LTD Quảng Trị - North Vietnam / All sectors except Construction Materials 8th Floor, Ocean Park Building, 01 Dao Duy Anh St, Ha Noi, Viet Nam	Tel. +84 4 39386666 Fax +84 4 3938 6888 nam_ph@micogroup.com.vn http://www.micogroup.com.vn

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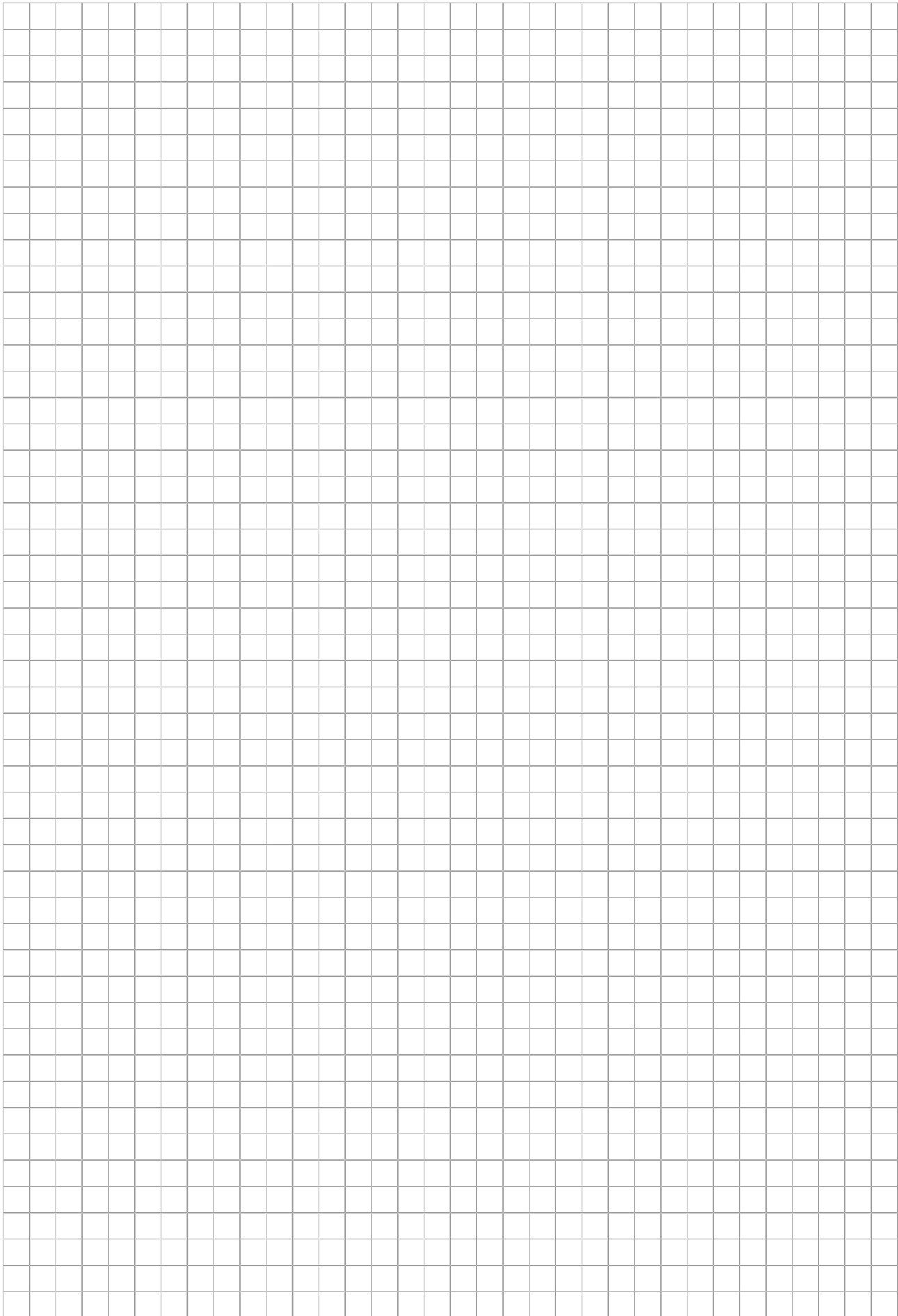
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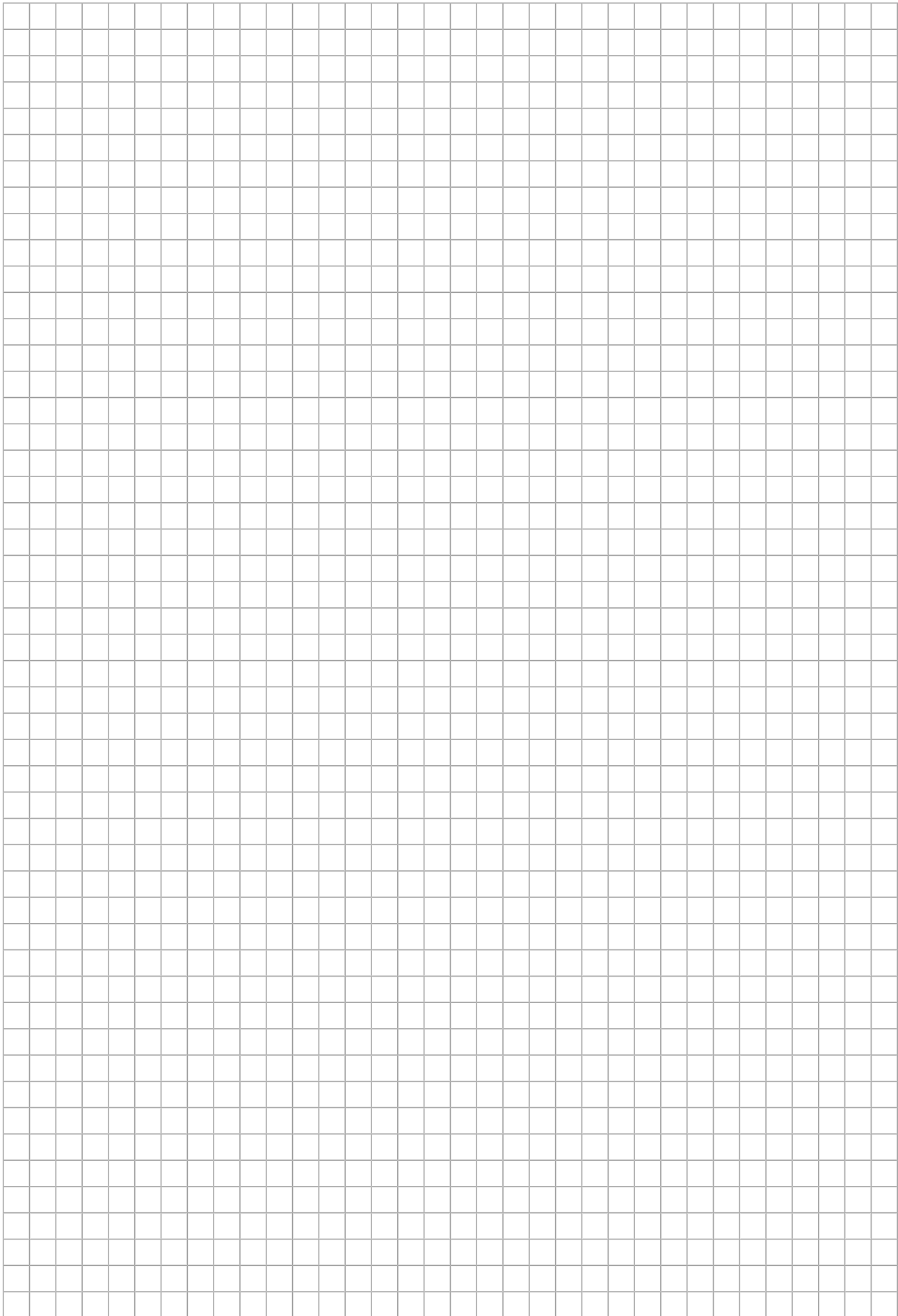
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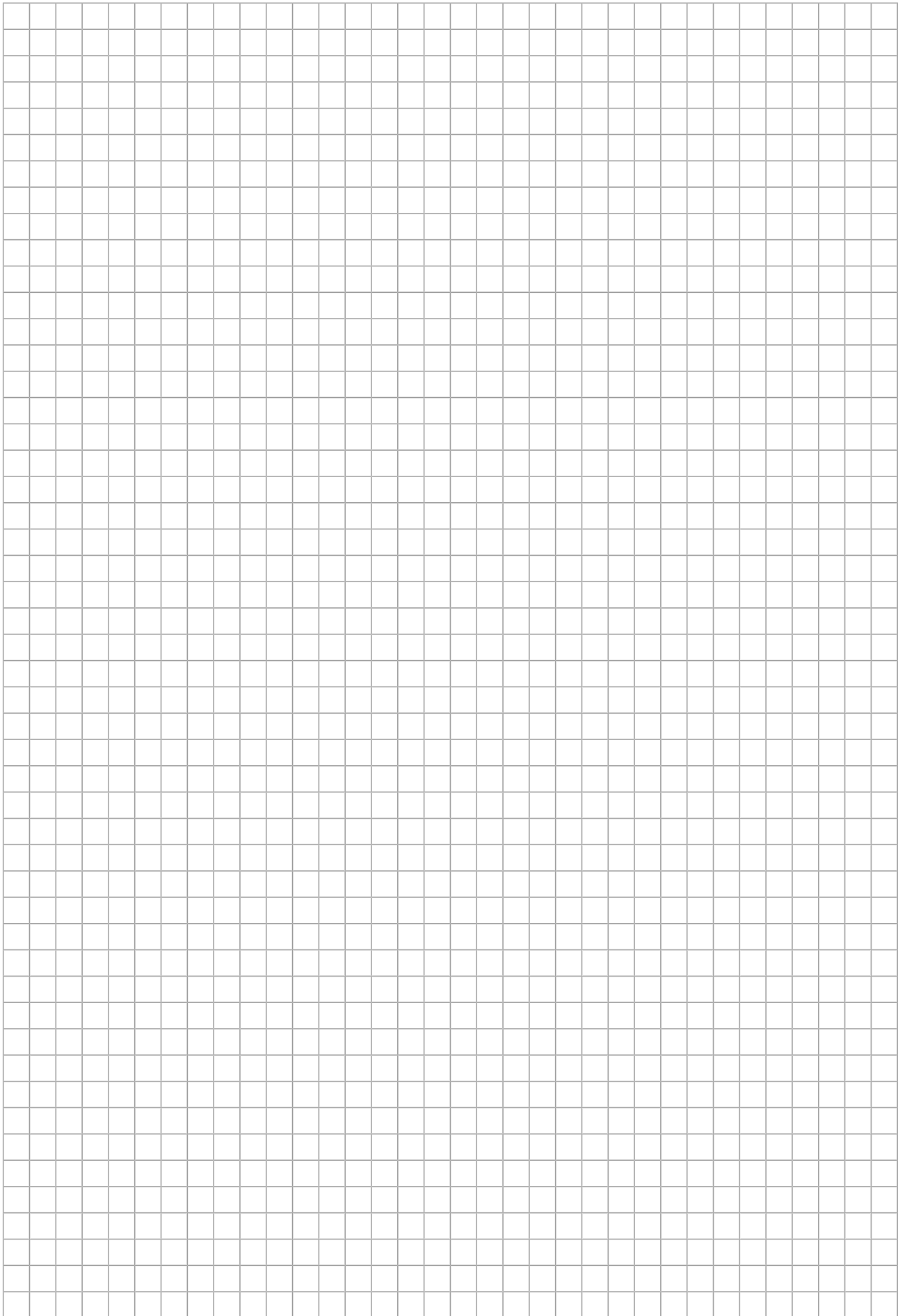
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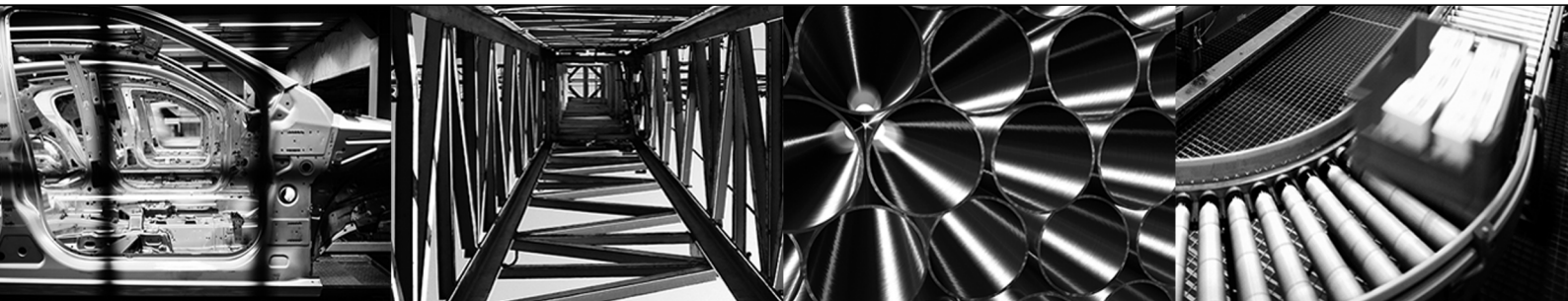
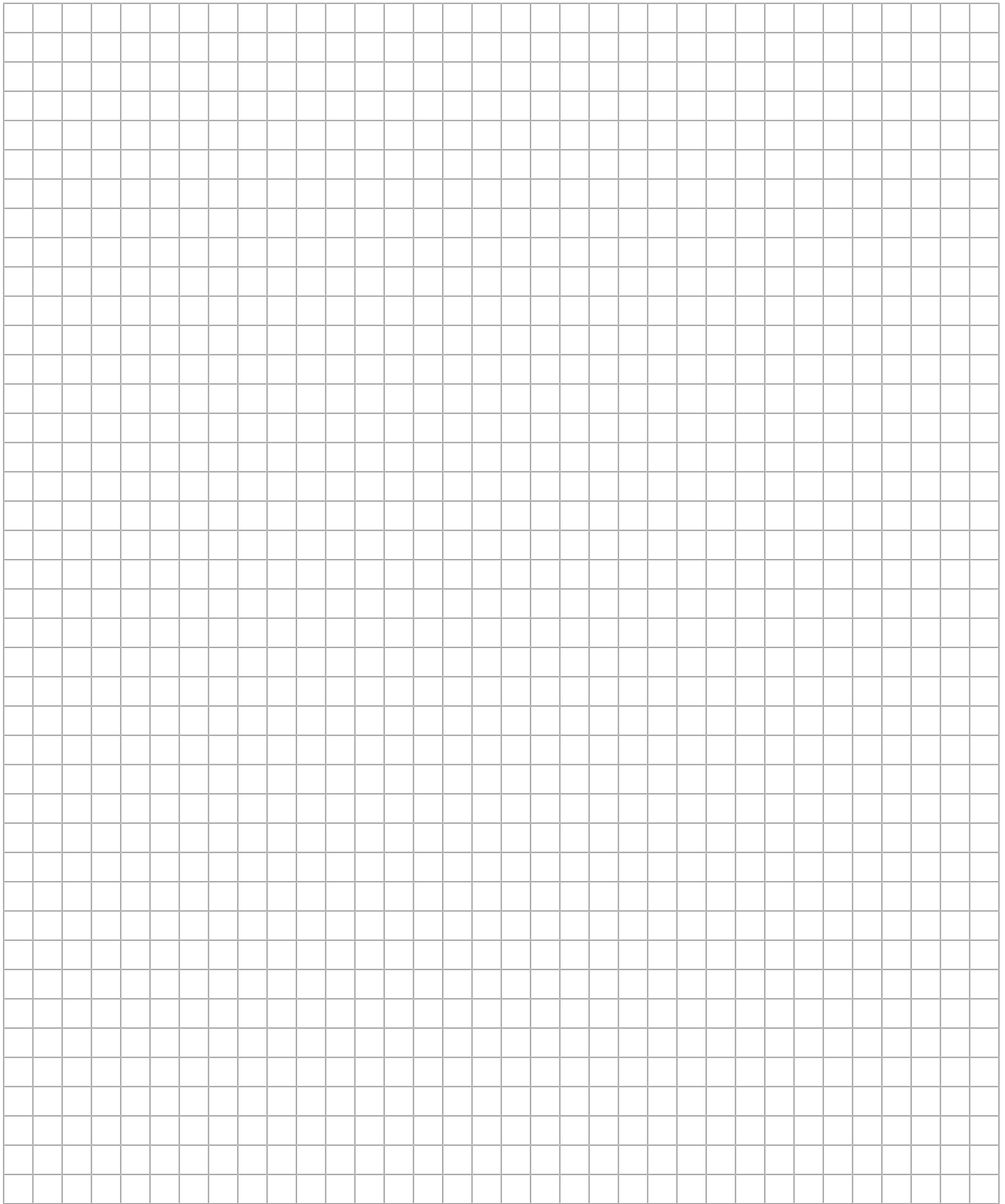
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