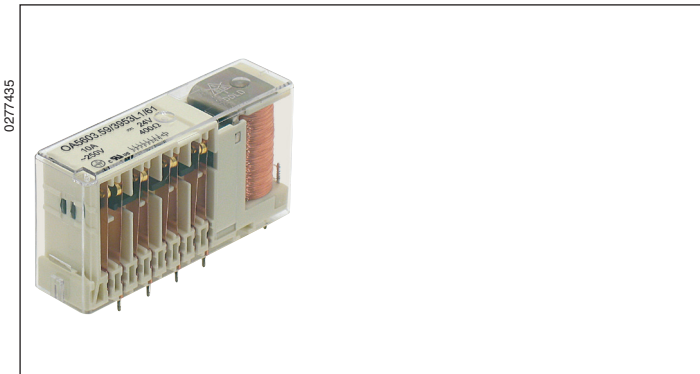


PCB relays

Safety relay according to DIN EN 50 578
(signal relay for railway applications)
OA 5603.59/39 __ L1, OA 5603.46/39 __ L1

Translation
of the original instructions



- Acc. to DIN EN 61810-1, DIN EN 61810-3 (Type A), DIN EN 50578 (UIC 736)
- With forcibly guided contacts
- High switching reliability due to crown contacts
- Clearance and creepage distances:
Contact - coil ≥ 8 mm
Contact - contact $\geq 5,5$ mm
- **Double and reinforced insulation with pollution degree 2**
Overvoltage category: III
- High voltage resistance ≥ 4 kV
- High mechanical service life
- High temperature range: $-40 \dots +75$ °C
- High continuous thermal current $I_{th} = 10$ A

Applications

- To be used in electrical circuits for safety applications.
- For railway signalling circuits according to DIN EN 50578 (UIC 736 R: 2004 Typ C)

Approvals and Markings



Technical Data

Relay type	OA 5603	
1.0 Relay coil		
1.1 Nominal voltage	DC 6; 12; 24; 48; 60; 110 V (others on request)	
1.2 Nominal consumption	1.45 W (.59)	1.8 W (.46)
1.11 Voltage range	0.75 ... 1.4 U_N	
1.13 Holding power (at 0.5 U_N)	0.36 W (.59)	0.45 W (.46)
1.14 Airgap in magnetic circuit	> 0.1 mm	
2.0 Contacts		
2.1 Contact arrangement (Type A)	6 NO / 2 NC 2 NO / 6 NC	
2.2 Contact material	AgSnO ₂ + 0.2 μ m Au; AgNi + 0.2 μ m Au, AgNi + 5 μ m Au	
2.3 Rated insulation voltage	AC 250 V	
Switching voltage min./max.	AC/DC 10 V / DC 250 V, AC 400 V (AC/DC 2 V / 60 V) ¹⁾	
2.4 Limiting continuous current I_{th}	6 x 10 A (see operating voltage limit curve)	
Switching current min./max.	> 10 mA ³⁾ / 10 A (2 mA / 0.3 A) ¹⁾	
2.5 Switching power min./max.	0.1 VA / 2500 VA (10 mVA / 12 VA) ¹⁾	
Switching power min./max	0.1 W ³⁾ / 240 W (10 mW / 12 W) ¹⁾ (see limit curve for arc-free operation)	
2.6 Switching capacity to IEC/EN 60947-5-1		
AC 15 ⁴⁾	NO: AC 250 V / 3 A	NC: AC 250 V / 2 A
AC 15 ⁵⁾	NO: AC 250 V / 5 A	NC: AC 250 V / 2 A
DC 13 ⁴⁾	NO: DC 24 V / 2 A	NC: DC 24 V / 2 A
DC 13 ⁴⁾ at 0.1 Hz	NO: DC 24 V / 6 A	NC: DC 24 V / 6 A
to UL 508	B300	
2.7 Electrical life	At 1 s On, 1 s Off (see contacts service life)	
at AC 230 V, 6 A, $\cos\phi = 1$	$> 7 \times 10^5$ switching cycles AgSnO ₂	$> 5 \times 10^5$ switching cycles AgNi
at AC 230 V, 8 A, $\cos\phi = 1$	$> 5 \times 10^5$ switching cycles AgSnO ₂	$> 4 \times 10^5$ switching cycles AgNi
2.8 Switching frequency max	10 switching cycles/s	
2.9 Response time / Release time	Typically 27 ms / Typically 5 ms	
2.10 Contact force	≥ 17 cN	
2.14 Contact gap	> 1.2 mm ²⁾	
3.0 Other		
3.1 Mechanical life	$\geq 30 \times 10^6$ switching cycles	
3.2 Temperature range	$-40 \dots +75$ °C	
3.3 Degree of protection, housing	Solder line proof RT II, as option wash proof RT III	
3.4 Test procedure	A (group mounting)	
3.5 Vibration resistance	5 ... 50 Hz; amplitude; 2 g max. UIC736E / EN 50578	
3.6 Climate resistance	40 / 075 / 04; A / B / D IEC/EN 60068-1	
3.7 Short circuit strength 1 kA / AC 250 V	AgSnO ₂ NO: 10 A gG/gL / NC: 10 A gG/gL IEC/EN 60947-5-1	AgNi NO: 10 A gG/gL / NC: 6 A gG/gL IEC/EN 60947-5-1

¹⁾ Values for AgNi-contacts + 5 μ m Au

⁴⁾ Values for AgNi-Contacts

²⁾ Over entire service life

⁵⁾ Values for AgSnO₂-contacts

³⁾ Typical values

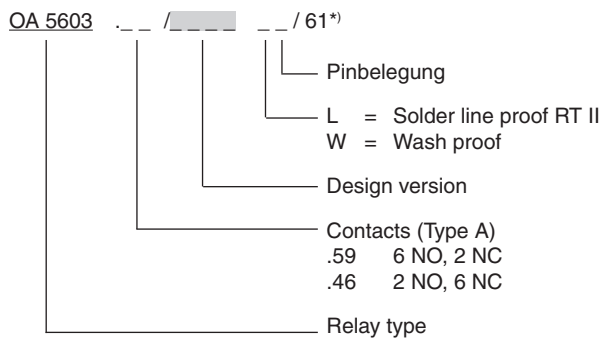
Technical Data

3.8	Insulation acc. to IEC 60664-1, EN 50178	
	Rated insulation voltage	AC 250 V
	Pollution degree	3 / 2 (double and reinforced insulation)
	Oversvoltage category	III
	Test voltage	
	Contact-coil (1 min)	≥ AC 4 kV eff.
	Contact-contact (1 min)	≥ AC 4 kV eff.
	Open contact acc. to DIN EN 61810-1	AC 1,5 kV eff.
	Transient voltage	
	Contact-coil (1,2 - 50 μs)	≥ 6 kV
	Clearance and creepage distances	
	Contact- Coil	≥ 8 mm
	Contact- Contact	≥ 5,5 mm
3.9	Weight	95 g
4.0 Packing		
4.1	On cardboard	15 pieces
4.2	In case package	75 pieces
5.0 Solder method		
5.1	Solder method /-temperature /-duration	Wave soldering / 260 °C / 5 s

Design versions

OA 5603					
U _N (DC V)	Voltage range (DC V)	R _{Coil} Ω ± 10%	.59	R _{Coil} Ω ± 10%	.46
			6NO, 2NC		2NO, 6NC
AgNi-Kontakte + 5 μm Au					
6	4.5 ... 8.4	25	3951	20	3961
12	9.0 ... 16.8	100	3952	80	3962
24	18.0 ... 33.6	400	3953	320	3963
48	36.0 ... 67.2	1 590	3954	1 280	3964
60	45.0 ... 84.0	2 480	3955	2 000	3965
110	82.5 ... 154.0	8 350	3956	6 720	3966

Ordering Example

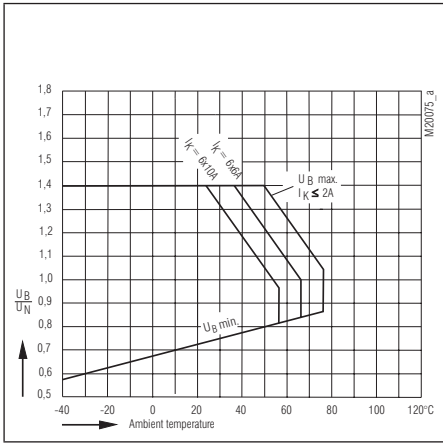


*) / 61 cURus approval

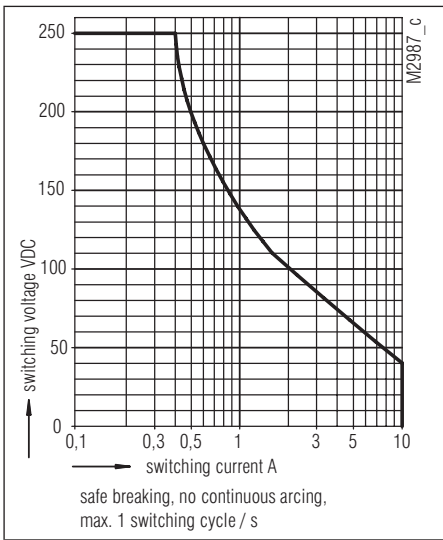
Notes

For the use and processing of our PCB relays, please refer to the **application and processing instructions** at www.dold.com

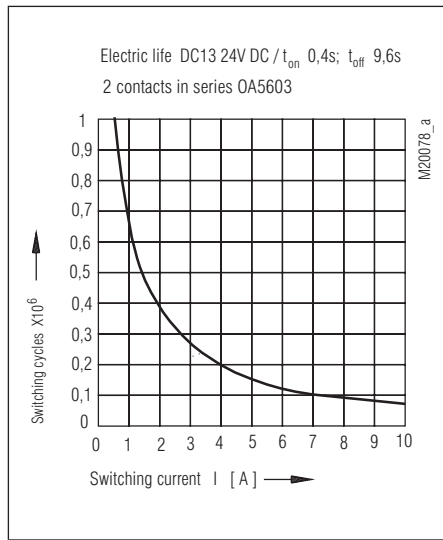
Characteristics



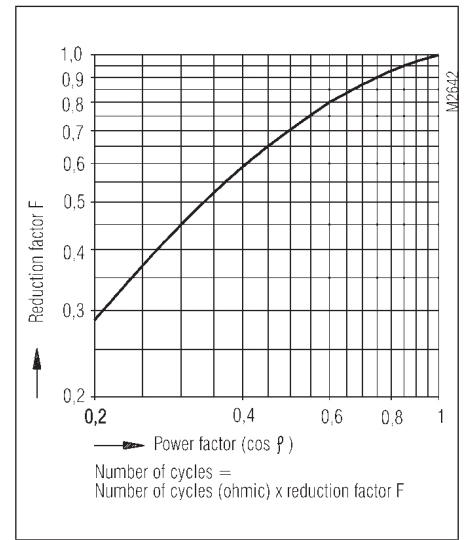
Operating voltage limit curve



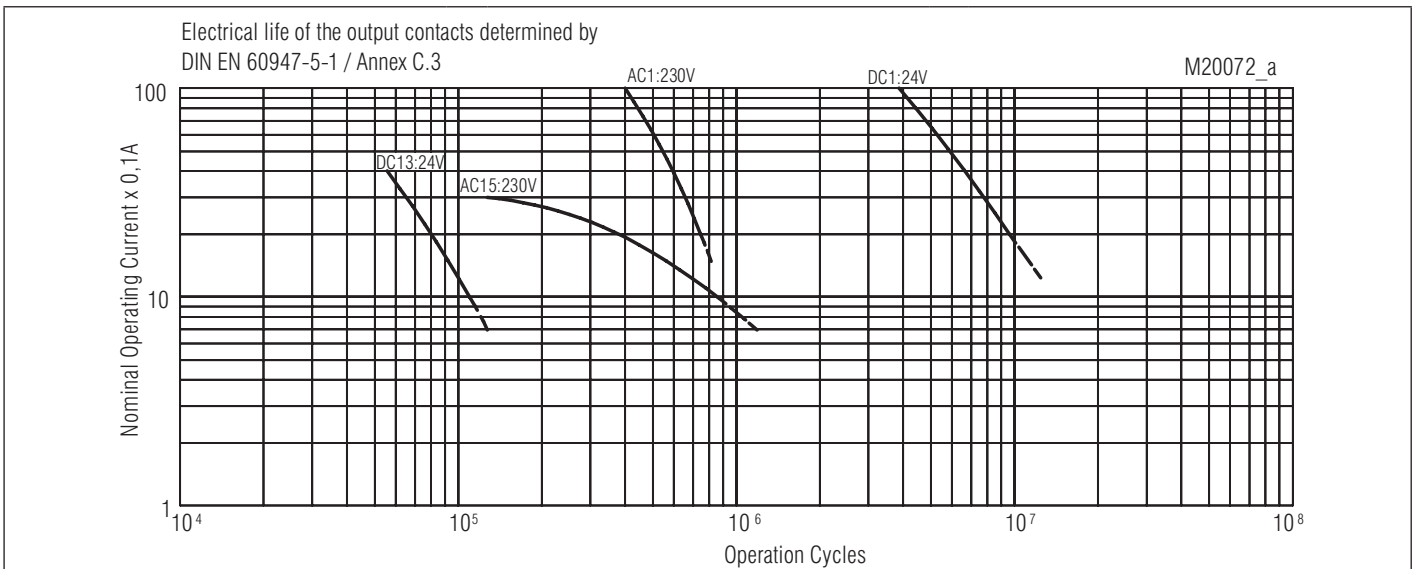
Arc limit curve (load limit curve)



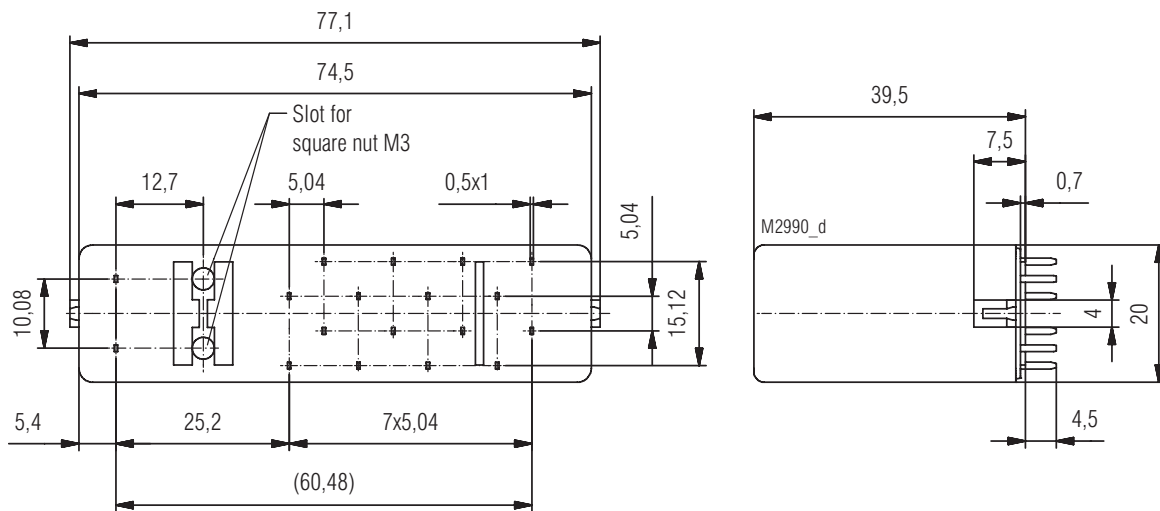
Reduction factor for inductive loads



Reduction factor for inductive loads

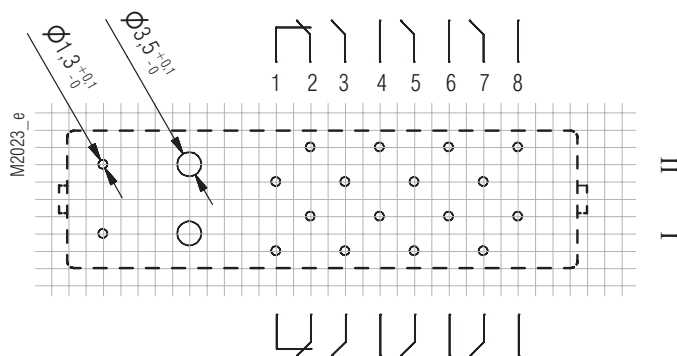


Electrical life for contact material AgNi

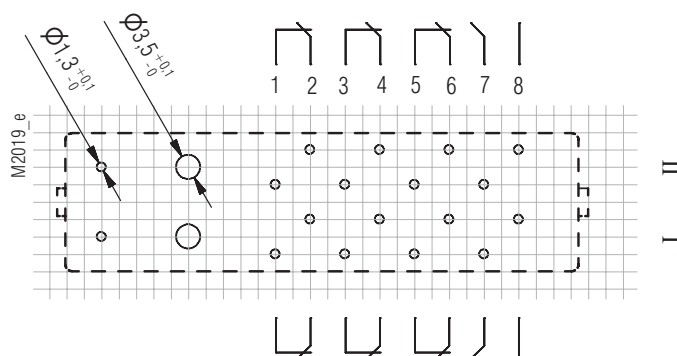


Drilling plan (solder side)

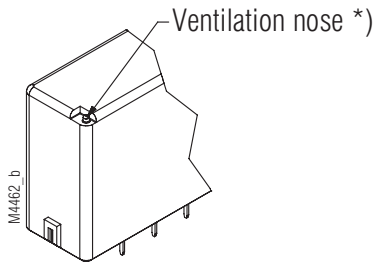
Pin arrangement OA5603.59 6S/2Ö



Pin arrangement OA5603.46 2S/6Ö



Connection for basic grid dimensions 2.5 mm as well as 2.54 mm according to IEC/EN 60097 and IEC 60326 average



*) When using the maximum switching capacity it is recommended to open the wash proof relay at the indicated position.

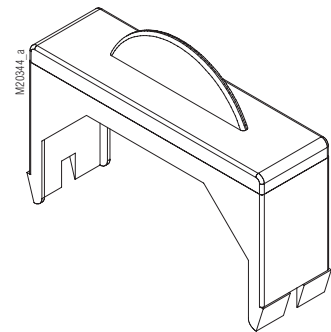
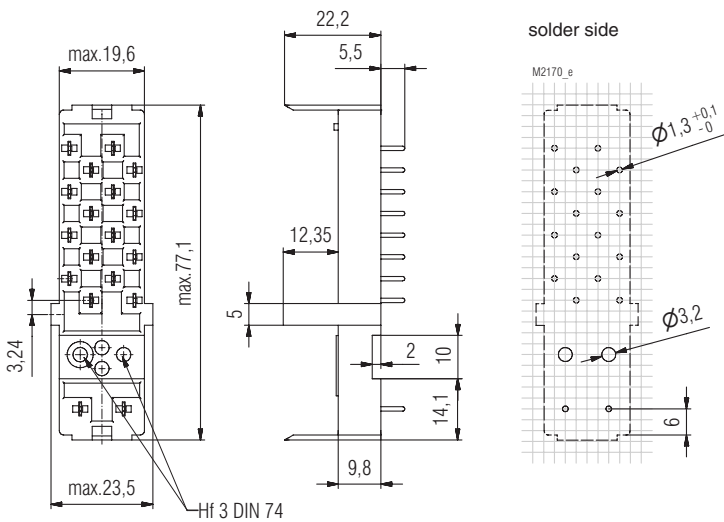
Accessories

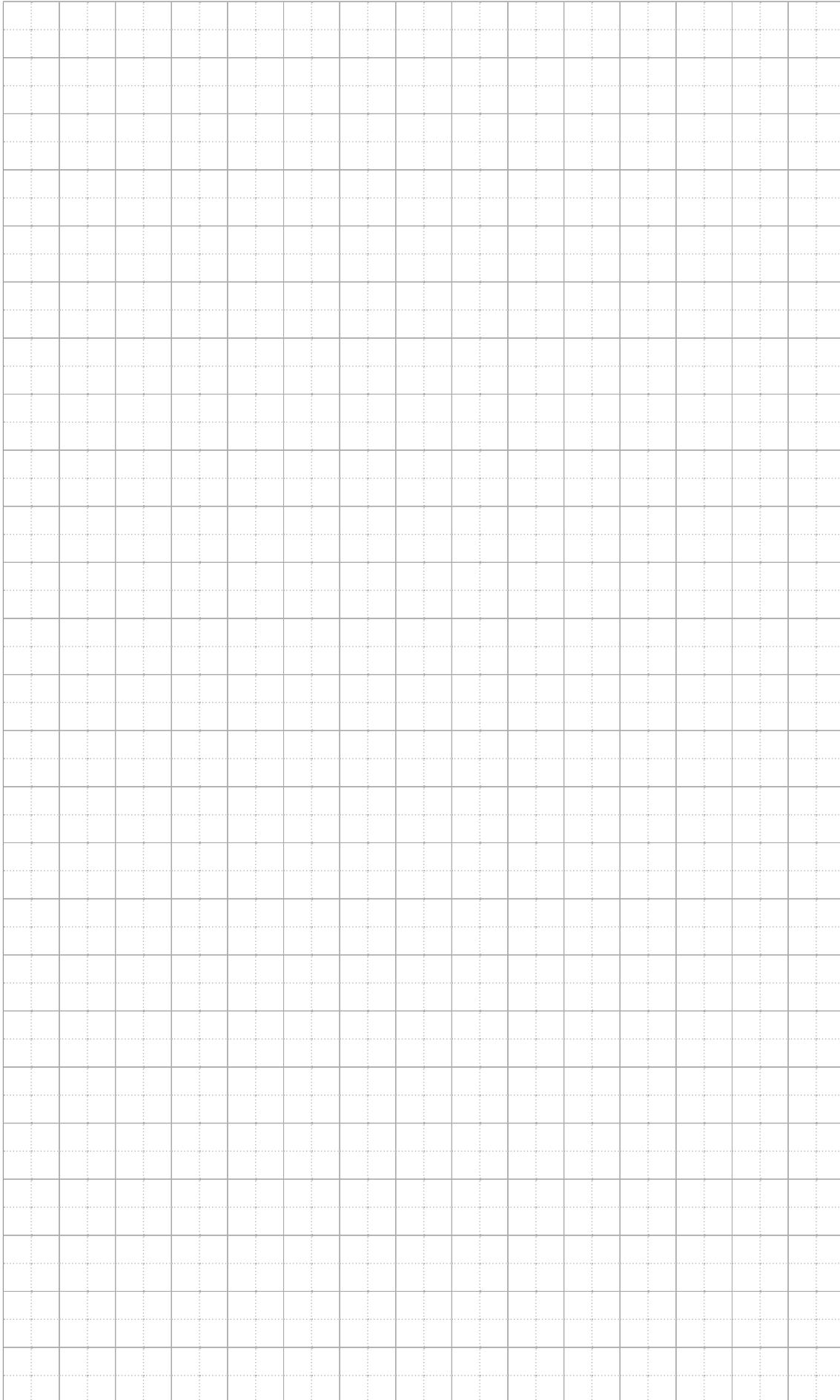
Relay socket ET 1415.013/61 for OA 5603

Article number: 0041070

Removal tool ET 1415.943 for relay OA 5603

Article number: 0063096



A vertical column of 30 horizontal lines, one for each row of the grid. These lines are intended for writing notes or labels corresponding to the rows of the grid.

