



M&S Armaturen GmbH

PARTNER INSTEAD OF SUPPLIER.

Operating instructions

-Translation of the original-

Control unit TOP

M&S Article No. 57920

Accessories for pneumatic actuators



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Rev.2 / 2018-08-01
BA57920GB.docx

1 Table of Contents

1	Table of Contents	2
2	Safety instructions	3
2.1	Marking of safety instructions in operating instructions	3
2.2	Intended use.....	3
2.3	Personnel	3
2.4	General instructions.....	3
3	Use and operating principle	4
4	Transport and storage	4
4.1	Transport	4
5	Sectional drawings.....	5
5.1.1	Ex appro Ex approval	6
5.1.2	val.....	6
6	Assembly/disassembly	7
6.1	Assembly	7
6.2	Disassembly	8
6.3	Electric connection.....	8
6.3.1	Standard version	8
6.3.2	Version with Ex-components	9
6.4	Pneumatic connection	10
6.5	Replacing the proximity switches	10
6.6	Replacing the 3/2-way solenoid valves	10
7	LED signaling	11
8	Repairs/Maintenance.....	11
9	Technical data	11
9.1	Operating pressures	11
9.2	Requirements control air.....	12
9.3	Operating temperatures.....	12
9.4	Data of magnetic sensors	12
9.4.1	3-conductor standard version	12
9.4.2	2-wire special version	13
9.5	Technical data of solenoid valves	13
9.5.1	Standard version	13
9.5.2	Special version with Ex components.....	13
9.6	Data LED.....	14
	LED signaling is omitted in the variant with Ex components.	14
10	Cleaning	14



2 Safety instructions

2.1 Marking of safety instructions in operating instructions



Danger warnings

Danger warnings are denoted by the danger symbol which appears on the left and are framed.



Information

Descriptions to which particular attention must be paid are denoted by this symbol which appears on the left and are also framed.

2.2 Intended use

The control unit TOP is only intended for the described purpose. Any use beyond that is considered to be improper use. M&S is not liable for any resulting damage, the risk is solely with the operator. Requirement for perfect safe operation of the control unit are proper transport and storage as well as professional set-up and assembly. Proper use also includes adherence to the requirements for operation, maintenance and repair. Unauthorised changes and modifications that impair the safety of the control unit are not permitted. Only use original spare parts and accessories approved by the manufacturer.

2.3 Personnel

Operating and maintenance personnel must be qualified for the respective tasks. They must have had special instructions about any occurring hazards and must know and observe the safety advices mentioned in the operating instructions.

2.4 General instructions

The used is obliged to operate the control unit TOP in perfect condition only. Apart from the operating instructions, the following apply

- pertinent regulations on the prevention of accidents
- generally accepted safety-related rules
- internal work and safety regulations



3 Use and operating principle

The control unit TOP is an extension module for the pneumatic actuator PAMS. It is set onto the valve actuator and screwed tight. The valve position detection is done by magnetic proximity switches. The actuator control can be done via integrated or external pilot valves. External pilot valves are located in the switching system of the higher-level control unit. The internal pilot valves can be initiated via a manual emergency actuation.

The design of control head and pneumatic actuator allows for an internal control air flow without external hoses. Apart from the electric position feedback, the valve position can be seen at the control head itself by coloured high-power LEDs even under tricky ambient conditions.

The control unit can be adapted to any M&S standard element.

4 Transport and storage



When you receive the control unit, check the information on order and delivery papers to make sure they correspond.

Check that the delivery is complete, and check its condition.

If there are visible signs of transit damage and/or packing units are missing, notify the forwarding agent immediately in the consignment note. You (the recipient) should take recourse against the forwarding agent immediately in writing, and M&S Armaturen GmbH must be informed of this action.

Complaints regarding transit damage that is not immediately evident must be made to the forwarding agent within 6 days.

The recipient must bear the costs for claims made after this period.

4.1 Transport



The packing units must only be transported using suitable lifting equipment and slinging gear.

Pay attention to the graphic symbols on the packaging.

Transport the control unit TOP carefully to prevent damage from sudden impacts; exercise due care when loading/unloading.



5 Sectional drawings

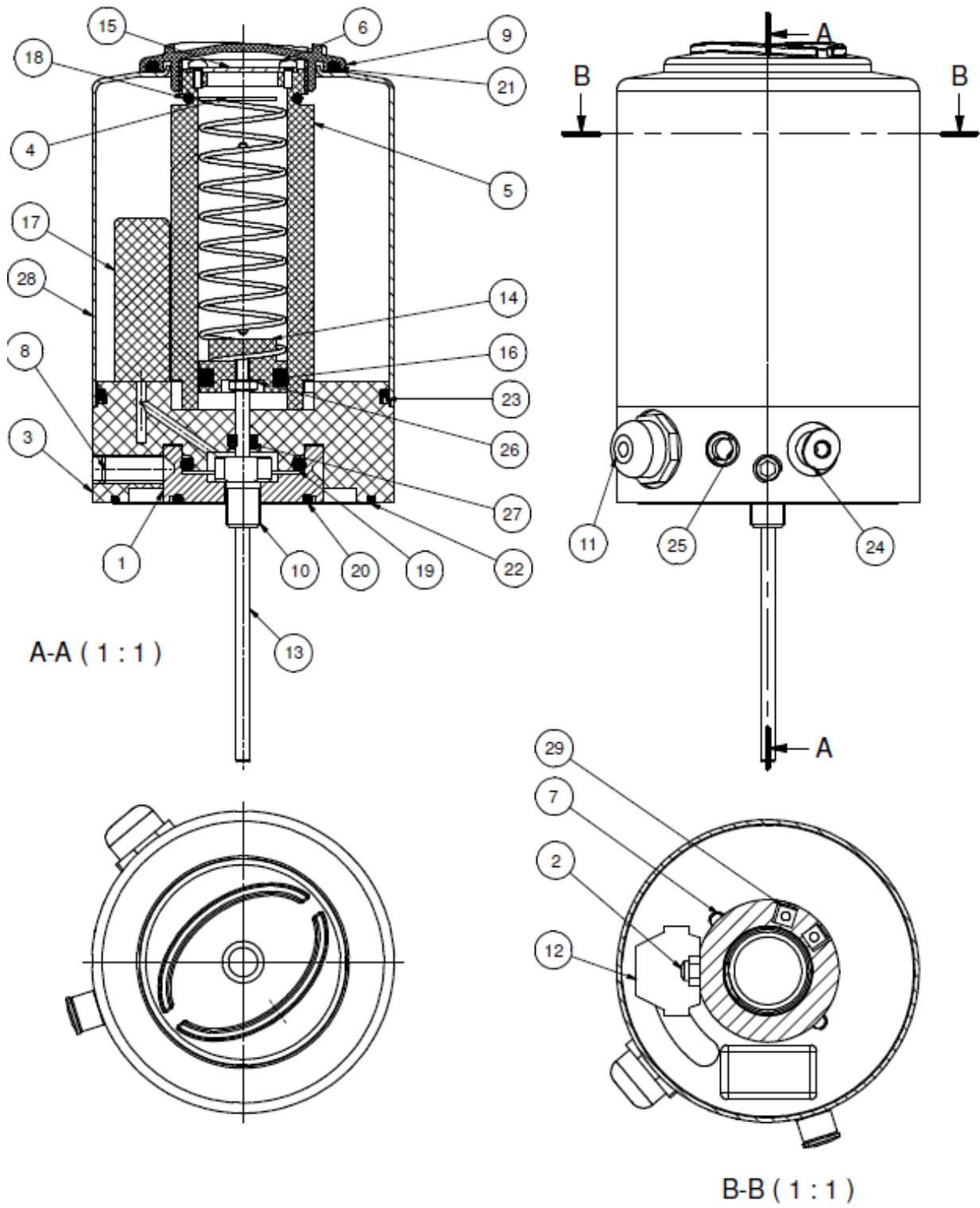


Figure 1 Sectional drawing control unit TOP



Control unit TOP

Table 1: Bill of material control unit TOP

Pos.	Qty.	Designation	Article No. [Standard]	Article No. [Ex-components]	Ex-approval
1	1	Adapter	091579205202	091579205202	
2	2	Tapping screw	010000309992	010000309992	
3	1	Base plate NC	091579205780000	091579205780000	
4	1	Pressure spring	030578105010	030578105010	
5	1	Spring shaft	091579205220	091579205220	
6	2	Flathead screw	010002506201	Not available	
7	2	Set screw	010005010512	010005010512	
8	3	Set screw	010008020522	010008020522	
9	1	Lid	091579205250	091579205250	
10	1	Banjo screw	091578105252	091578105252	
11	1	Cable gland	031578105060	031578105060	
12	1	Terminal unit	090579116300	090579116300	
13	1	Contact rod	091579205232	091579205232	
14	1	Plastic piston	091579205210	091579205210	
15	1	Circuit board	031577105300	Not available	
16	2	Magnetic rubber	091579205260	091579205260	
17	1	Solenoid valve	032578105850	032578105860	II 2 G / 3 D
18	1	O-ring	020002802010	Not available	
19	1	O-ring	101170250300	101170250300	
20	1	O-ring	020003402040	020003402040	
21	1	O-ring	020004802020	020004802020	
22	1	O-ring	020007002010	020007002010	
23	1	Profile seal	029579205220	029579205220	
24	1	Push-on connection	032578105110	032578105110	
25	2	Silencer Non return valve	032578105080 Not available	032578105092 031578105760	
26	1	Hexagon nut	011004000602	011004000602	
27	1	Rod gasket	029578105310	029578105310	
28	1	VA hood	091579205242	091579205242	
29	2	Sensor	031578105770	031578105780	II 1 G / D



6 Assembly/disassembly

6.1 Assembly



Observe the relevant national guidelines and regulations.

Loosen the three set screws (8) and remove adapter (1) from the base plate (3).

Screw in the adapter (1) with the banjo screw (10) into the G1/8" compressed air connection of the pneumatic cylinder. Make sure that the O-ring (20) is mounted.

Set the control unit onto the adapter (1) and turn the base plate (3) to the desired position.

Tighten the three set screws (8) to firmly connect the TOP with the actuator.

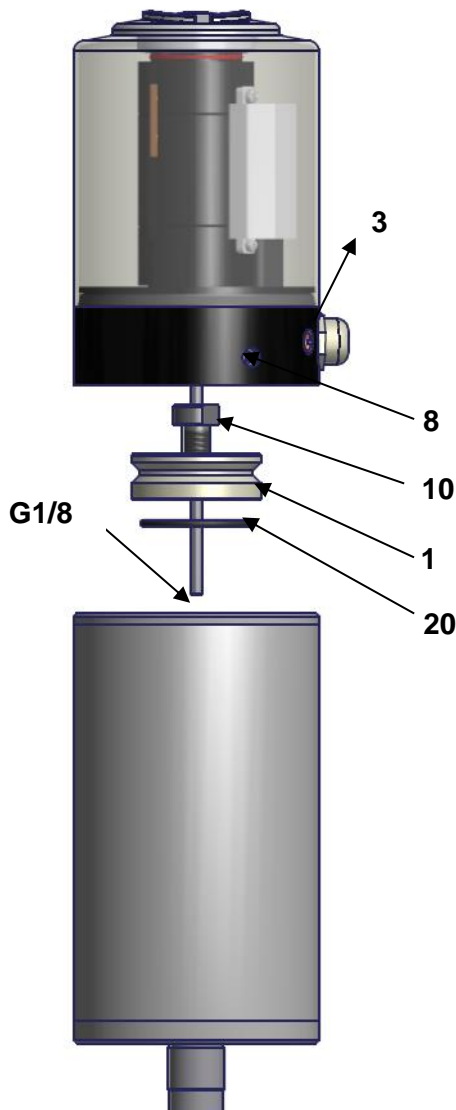


Figure 2 Assembly of control unit TOP



6.2 Disassembly



Control units TOP may only be disassembled by specialist personnel who have received the necessary technical training, and are equipped with the experience and knowledge to carry out the tasks involved.

Disassemble the control unit TOP in reverse order to assembly (see 6.1).

6.3 Electric connection



Observe the relevant national guidelines and regulations.

6.3.1 Standard version

1. After assembling the actuator with assembled control unit TOP onto the valve to be switched, unscrew the lid (9).
2. Pull the VA hood (28) from the base plate (3) off upwards.
3. Pull the 7-wire cable, which is required for supply and control, through the cable union (11).

Connect the wires to the terminal bar according to the attached or inserted wiring diagram.

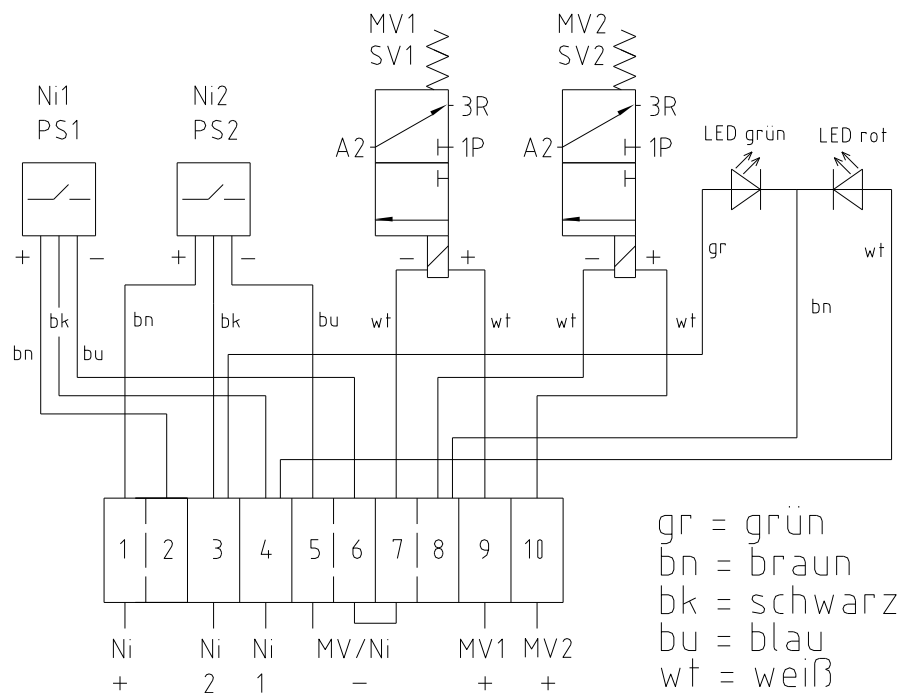


Figure 3 Electric connection



1. (+) supply voltage for the proximity switch (Ni1, Ni2) acc. to type plate
3. Signal output of the lower proximity switch (Ni2)
4. Signal output of the upper proximity switch (Ni1)
5. (-) supply voltage for the proximity switches (Ni1, Ni2) and solenoid valves (MV1, MV2) acc. to type plate
9. (+) supply voltage for the solenoid valve "upper air supply" (MV1)

Only with double-acting PAMS-LL:

10. (+) supply voltage for the solenoid valve "lower air supply" (MV2)

After connecting the cables, mount the hood in reverse order.

6.3.2 Version with Ex-components

1. After assembling the actuator with assembled control unit TOP onto the valve to be switched, unscrew the lid (9).
2. Pull the VA hood (28) from the base plate (3) off upwards.
3. Pull the 7-wire cable, which is required for supply and control, through the cable union (11).

Connect the wires to the terminal bar according to the attached or inserted wiring diagram.

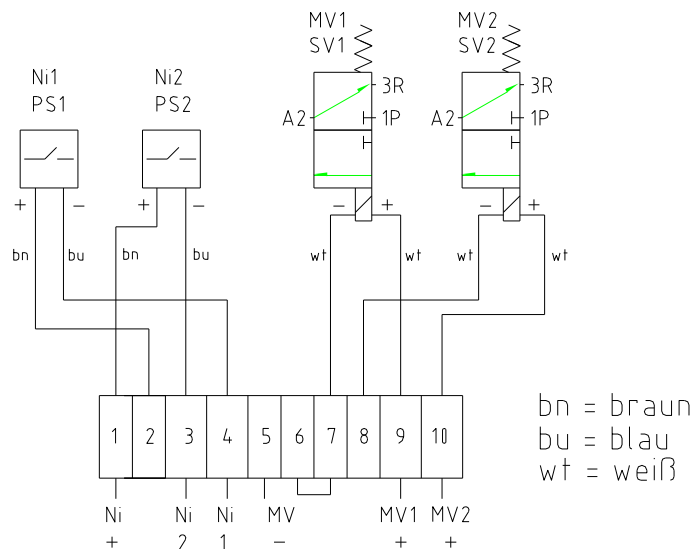


Figure 4 Electric connection



2. (+) supply voltage for the proximity switch (Ni1, Ni2) acc. to type plate
3. Signal output of the lower proximity switch (Ni2)
4. Signal output of the upper proximity switch (Ni1)
5. (-) supply voltage for the proximity switches (Ni1, Ni2) and solenoid valves (MV1, MV2) acc. to type plate
9. (+) supply voltage for the solenoid valve "upper air supply" (MV1)

Only with double-acting PAMS-LL:

10. (+) supply voltage for the solenoid valve "lower air supply" (MV2)

After connecting the cables, mount the hood in reverse order.

6.4 Pneumatic connection

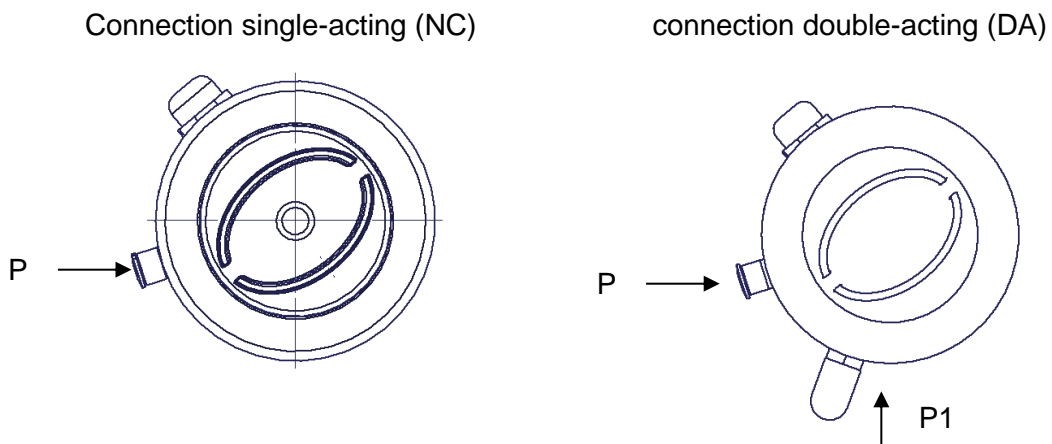


Figure 5 Pneumatic connection

6.5 Replacing the proximity switches

1. Unscrew lid (9).
2. Pull the VA hood (28) off upwards.
3. Loosen the slotted screws at the proximity switches (29).
 - Then you can replace the proximity switches (29).
4. Mount in reverse order.

6.6 Replacing the 3/2-way solenoid valves

1. Unscrew lid (9).
2. Pull the VA hood (28) off upwards.
3. Loosen and remove the screws at the solenoid valve.
4. Then you can replace the 3/2-way solenoid valve(s) (17).
5. Mount in reverse order.



7 LED signaling

Signaling of the actuator position by the LED on the board.
LED signaling is omitted in the variant with Ex components.

Table 2 LED signaling

Valve closed	LED red
Valve open	LED green

8 Repairs/Maintenance



In order to ensure highest operational safety, replace all wear parts on a regular basis.

The maintenance intervals differ from case to case, the operator should define them by himself basing on sporadic checks.



M&S Armaturen GmbH cannot accept liability for claims made as a result of nonobservance of these Operating Instructions or constructional changes.

Any other use or use outside the defined scope is considered to be improper use. M&S Armaturen GmbH will not accept liability for losses incurred as a result of improper use.

9 Technical data

9.1 Operating pressures

Table 3 Operating pressures

Variant	Operating pressure [MPa]	Operating pressure [bar]
NC/NO size 0	0.48-0,80	4.8-8,0
NC/NO size 1	0.48-0,80	4.8-8,0
NC/NO size 2	0.48-0,80	4.8-8,0
DA size 0	0.30-0,80	3.0-8,0
DA size 1	0.30-0,80	3.0-8,0
DA size 2	0.30-0,80	3.0-8,0



Control unit TOP

9.2 Requirements control air

Table 4 Requirements control air

Requirement	Quality class	Standard
Solids content	6	acc. to ISO 8573-1
Water content	4	acc. to ISO 8573-1
Oil content	3	acc. to ISO 8573-1

9.3 Operating temperatures

Permitted operating temperatures from +1C° to max. +60C°.



The operating temperature depends on the fitting to be actuated.

9.4 Data of magnetic sensors

9.4.1 3-conductor standard version

Table 5 technical data of proximity switches

Electric version	DC PNP
Output function	Normally open
Operating voltage	10...30 DC
Current carrying capacity	100mA
Current consumption	<10mA (24V)
Ambient temperature	-25...60°C
Type / class of protection	IP67, III
EMC	EN 55011 class B
LED for indicating the switching state	Yellow



9.4.2 2-wire special version

Table 6 technical data of proximity switches

Electric version	Connection to certified intrinsically safe circuits with the max. values U=15V/ I=50mA / P=120 mW
Output function	Normally open
Operating voltage	8,2 DC
Current carrying capacity	100mA
Current consumption	≤ 1 / ≥ 2.2 Target not detected / Target detected
Ambient temperature	-25...70°C
Type / class of protection	IP65/IP67
EMC	EN 61000-4-2 ESD: -kV CD / 8 kV AD EN 61000-4-3 HF radiated:10 V/m

9.5 Technical data of solenoid valves

9.5.1 Standard version

Table 7 Technical data of solenoid valves

Operating voltage	24V DC
Rated power	2W
Protection type	IP65
Principle	3/2-way

9.5.2 Special version with Ex components

Table 8 Technical data of solenoid valves

Max. permissible input voltage	35V
Max. permissible input current	0,9A
Protection type	IP65
Principle	3/2-way



9.6 Data LED

Table 9 Technical data LED

Operating voltage	24V DC
Rated power	0.5W

LED signaling is omitted in the variant with Ex components.

10 Cleaning



Observe the safety data sheets by the cleaning agent manufacturers! Only use cleaning agents that do not attack stainless steel, elastomer nor plastic.

- Clean individual parts thoroughly



Armaturen GmbH

Armaturen, Rohre, Sonderteile aus Edelstahl

fittings, pipes, special parts made of stainless steel

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