



## Ionizing units for potentially explosive atmospheres of zone 1

*Keep for future use!*



Types:

EI Ex H, EI Ex T, EI Ex T TPE, EI PHS Ex, RI Ex, LS Ex,  
KL Ex, KM Ex, LM Ex, AK Ex, REF Ex, SC Ex

Ex Line



Ident numbers of the ionizing units for the relevant ex power packs:

<b>Type</b>	<b>Ex power pack</b>	<b>Ident number</b>
Ionizing units:		
EI Ex H	(Multistat Ex)	03.8130.xxx
EI Ex H	(EN 92 Ex)	03.8140.xxx
EI Ex T	(Multistat Ex)	03.8051.xxx
EI Ex T	(EN 92 Ex)	03.8251.xxx
EI Ex T TPE	(Multistat Ex)	03.9152.xxx
EI Ex T TPE	(EN 92 Ex)	03.9252.xxx
EI PHS Ex	(Multistat Ex)	03.8900.xxx
EI PHS Ex	(EN 92 Ex)	03.8910.xxx
REF Ex / Ø 180 mm	(Multistat Ex)	04.7533.006
Air-assisted ionizing units:		
RI Ex O	(Multistat Ex)	04.7190.xxx
RI Ex O TPE	(Multistat Ex)	04.7400.xxx
RI Ex O	(EN 92 Ex)	04.7290.xxx
RI Ex M	(Multistat Ex)	04.7191.xxx
RI Ex M TPE	(Multistat Ex)	04.7401.xxx
RI Ex M	(EN 92 Ex)	04.7291.xxx
RI Ex V	(Multistat Ex)	04.7192.xxx
RI Ex V TPE	(Multistat Ex)	04.7402.xxx
RI Ex V	(EN 92 Ex)	04.7292.xxx
AK Ex	(Multistat Ex)	04.0010.00x
AK Ex	(EN 92 Ex)	04.0080.00x
LS Ex / KL Ex / KM Ex / LM Ex	(Multistat Ex)	On request
LS Ex / KL Ex / KM Ex / LM Ex	(EN 92 Ex)	On request
SC Ex (Surface Cleaner)	(Multistat Ex)	On request

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# 1 Operator instructions

These operating instructions must be read in full before the ionizing unit is installed or commissioned in a potentially explosive atmosphere. They form part of the ionizing unit and must be retained for later use or a subsequent owner. Safety instructions must be observed and followed at all times.

**The ionizing unit is approved for installation and use in zone 1 areas with potentially explosive atmospheres.**

The ionizing unit is safe to operate if used as intended.

**The following signal words and symbols are used:**



## **WARNING!**

If ignored

- severe personal injury.
- or death may result.



## **CAUTION!**

If ignored

- light personal injury may result.

## **ATTENTION!**

If ignored

- light material damage may occur as a consequence which might lead to damage to the ionizing unit.

**NOTE:** *Important notes and additional information.*

## 2 Safety

All activities must be performed only by persons authorized by the owner. Such persons must

- be trained in explosion protection.
- have basic knowledge in the field of electrical engineering.
- have basic knowledge in the field of mechanical engineering.
- have been instructed in the installation and handling of compressed air devices and the resulting dangers.
- have read and understood the operator instructions.

Switch off the power supply before commencing work on the ionizing unit, and secure against inadvertent switching on.

The ionizing unit does not contain any parts which can be repaired by the operator. For reasons of safety, unauthorized conversions and modifications are not permitted.

In the event of damage to the ionizing unit, the risk of electric shocks arises. In the event of any visible damage or suspected electrical defects, take it out of operation immediately and secure against reuse.



### WARNING!

The ionizing unit may influence heart pacemakers.

The electric high voltage in the ionizing unit results in an electric alternating field of 50 Hz which may influence the function of the heart pacemaker.

Malfunction of the heart pacemaker may result in ventricular fibrillation or cardiac arrest.

- Persons wearing heart pacemakers must maintain a safety distance of more than 50 cm from the ionizing unit.
- The operator must mark the danger zone around the ionizing unit by means of a warning sign.
- The accident prevention regulations according to BGV A8 must be observed.
- An expert study on the influence of ionization systems on implanted heart pacemakers is available from HAUG GmbH & Co. KG.



### **WARNING!**

Risk of spark-overs which can cause ignition!

Wetness and moisture may result in spark-overs and leakage paths.

Damage to the ionizing unit and short-circuits are a likely consequence.

- Protect the ionizing unit from wetness and moisture.
- Never use high-pressure cleaners to clean the units.

Risk of arcs which can cause ignition!

If the high-voltage cable is pulled, gaps may form at the contact points in the high-voltage connector and at the high-voltage cable socket. Arcing may occur at the gaps due to the high voltage. Resulting in damage to the unit.

- Do not pull the high-voltage cable.

Risk of discharge sparks which can cause ignition!

When the material carries a very high charge, sparks may form towards the ionizing unit which might cause ignition. In such cases, the charge must be reduced by means of a passive ionizer.

- If necessary, install a passive ionizer CI SL (12.0002.007) in front of the ionizing unit.

Risk of short circuits due to electrically conductive material.

Electrically conductive material may result in the ionizing pins short-circuiting. If a short circuit reaches across three ionizing pins or more, a spark may form which can cause ignition.

- The operator must ensure that no electrically conductive material touches the ionizing pins.

**CAUTION!**

The ionizing pins pose an injury risk. When touched, the ionizing pins may lead to stab or tear injuries to the hands.

- Protective gloves must be worn when working on the ionizing unit (EN 388 3122).

During operation, small amounts of ozone are generated by the ionizing units.

A very high ozone concentration and prolonged continuous exposure times may result in headache, irritation to the eyes, circulatory problems etc.

- To ensure that the maximum permissible ozone concentration at the workplace is not exceeded, adequate ventilation must be provided during operation of the ionizing units.
- An expert study on ozone emissions of ionization systems is available from HAUG GmbH & Co. KG.

**ATTENTION!**

The ex power pack must be switched off before inserting or removing the high-voltage plug into/from the socket; otherwise contact or separation spark-overs may occur.

These may damage the ex power pack and cause defects.

- Only insert/remove the high-voltage plug when the ex power pack is switched off.

### 3 Intended use

The ionizing unit is intended for the elimination of electrostatic charges on paper, film, textiles, glass, plastics etc in areas with potentially explosive atmospheres of zone 1.

In the case of air-assisted ionizing units, the air stream is additionally used to clean off dirt or similar substances.

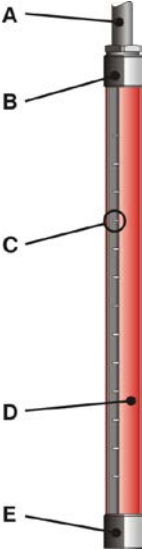
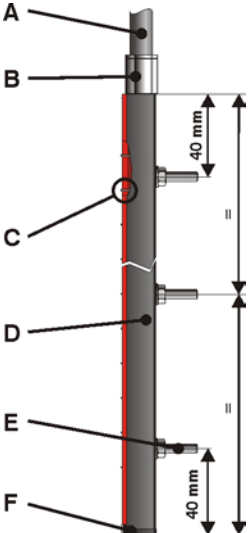
This ionizing unit is only approved for alternating high voltage.

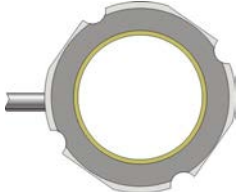
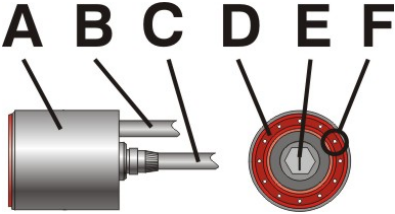
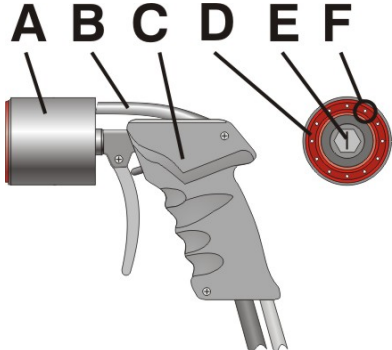
The ionizing unit must only be connected to a HAUG ex power pack. Any warranty only extends to the units and accessories of HAUG GmbH & Co. KG.

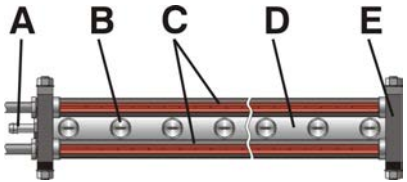
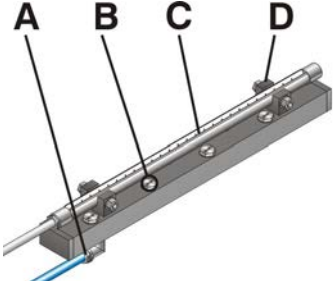
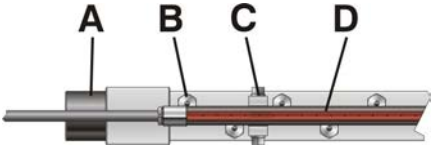
The installation and operating conditions indicated in these Operating Instructions must be adhered to.



## 4 Description of unit

<p><b>Ionizing bar:</b> EI Ex H, EI Ex T, EI Ex T TPE</p> <p>A: High-voltage cable B: Starter piece C: Ionizing pin D: Counter-electrode E: End piece</p>	
<p><b>Ionizing bar:</b> EI PHS Ex</p> <p>A: High-voltage cable B: Connection sleeve C: Ionizing pin D: Counter-electrode E: Fixing screws M4 F: End cover</p> <ul style="list-style-type: none"> <li>From a bar length of 500 mm, an additional fixing screw is provided in the centre</li> </ul>	

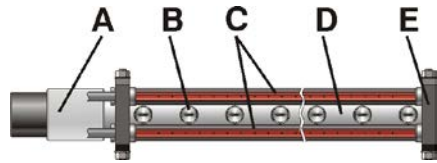
<p><b>REF Ex:</b></p> <p>Ionizing pins towards the centre. 4 mounting areas are located around the circumference.</p>	
<p><b>RI Ex O:</b></p> <p>A: Counter-electrode B: High-voltage cable C: Air connection D: Insulating section E: Nozzle F: Ionizing pin</p>	
<p><b>RI Ex M, RI Ex V :</b></p> <p>A: Counter-electrode B: High-voltage cable C: Compressed air gun D: Insulating section E: Nozzle F: Ionizing pin</p>	

<p><b>LS Ex:</b></p> <p>A: Air connection  B: Nozzle  C: Ionizing bars  D: Body  E: Bar holder</p>	
<p><b>KL Ex:</b></p> <p>A: Air connection  B: Nozzle  C: Ionizing bar  D: Bar holder</p>	
<p><b>KM Ex:</b></p> <p>A: Air connection  B: Nozzle  C: Bar holder  D: Ionizing bar</p>	

## 4 Description of unit

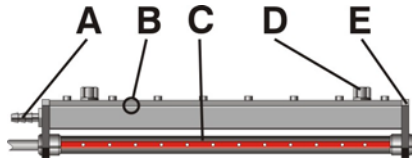
### LM Ex:

- A: Air connection
- B: Nozzle
- C: Ionizing bars
- D: Body
- E: Bar holder



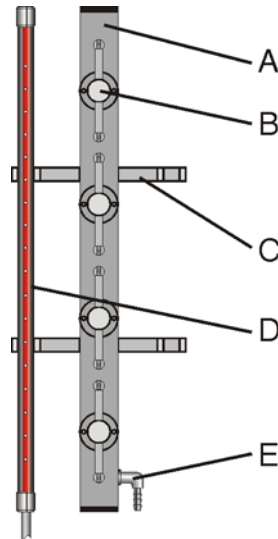
### AK Ex:

- A: Air connection
- B: Air outlet
- C: Ionizing bar
- D: Mounting thread (M 6)
- E: Bar holder


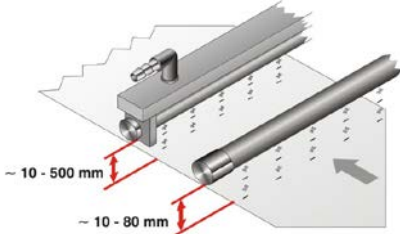
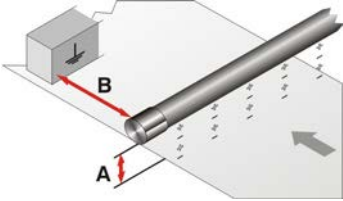


### SC Ex:

- A: Body
- B: Nozzle
- C: Bar holder
- D: Ionizing bars
- E: Air connection



## 5 Installation

<p>1. Check whether the ionizing unit corresponds to the ordering data. In the event of any damage to the ionizing unit, contact HAUG GmbH &amp; Co. KG.</p>	
<p>2. During installation, please remember that the ionizing units have a restricted effective range (W). The effective range (W) extends in a way similar to the one shown in the illustration.</p> <ul style="list-style-type: none"> <li>• The optimum effective range is reached at 20 – 30 mm above the ionizing pins.</li> </ul>	
<p>3. Prepare the installation site with regard to the following installation parameters:</p>	
<p>The most favourable distance of the ionizing unit to the material to be ionized is approx. 20 – 30 mm. The limit values for the ionizing effect are at 10 mm min. and 80 mm max. The maximum distance for air-assisted ionizing units is 500 mm.</p>	
<p>The distance of the ionizing unit to an earthed machine part (B) must be greater than the distance to the material to be ionized (A).</p>	

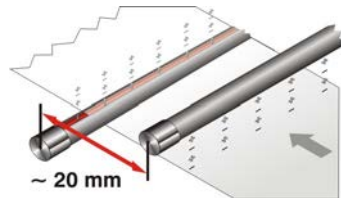
## 5 Installation

No earthed machine parts must lie behind the material to be ionized.



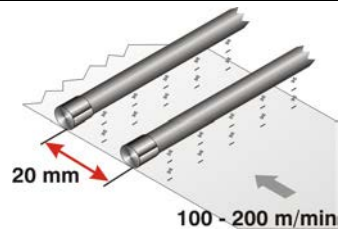
For discharging both sides

- one ionizing unit each must be installed above and below the material to be ionized.
- the ionizing units must not face each other.
- the units must be offset by approx. 20 mm.

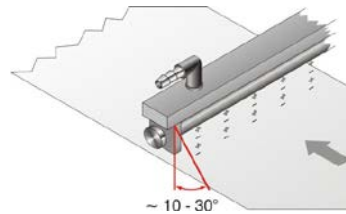


If two ionizing units are used with high conveying speeds,

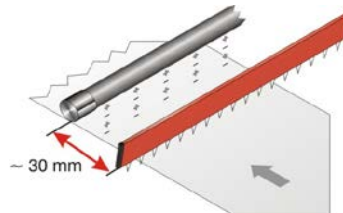
- the ionizing units must be installed next to each other.
- a distance of approx. 20 mm must be maintained.



To improve the surface cleaning result, tilt the air-assisted ionizing unit approx. 10 – 30° against the direction of flow.



In the event of very high charges, install a passive ionizer CI SL (12.0002.007) in front of the ionizing unit, if appropriate. The distance to the ionizing unit must be approx. 30 mm.



4. Fix the ionizing unit within the machine.

**WARNING!**

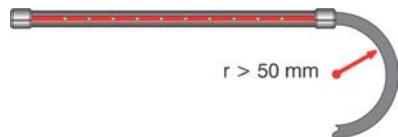
Risk of a spark which can cause ignition. If the ionizing pins are covered by mounting elements or machine parts, there will be ionization at the relevant spot. A spark which can cause ignition may form in the covered areas due to contamination or an electrically conductive material.

- Never attach mounting elements or machine parts over the ionizing pins.

**WARNING!**

Risk of a spark which can cause ignition. The shielding and insulation of the cable may be damaged if the cable is kinked or bent. This will result in a short-circuit.

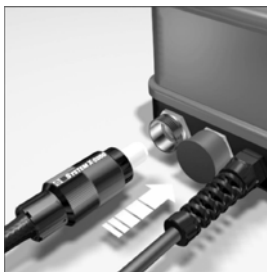
- The high-voltage cable must not be kinked.
- When routing around bends, the bending radius must not be smaller than 50 mm.



Only for Multistat Ex:

Connection outside the area with potentially explosive atmosphere.

5. Switch off power pack for potentially explosive atmospheres and secure against inadvertent operation.
6. Insert the high-voltage plug into the high-voltage socket of the ex power pack and push in up to the stop.
7. Screw the screw cap onto the high-voltage socket and tighten by hand.



Only for EN 92 Ex:

Connection within the area with potentially explosive atmosphere.

8. Connect the ionizing unit as described in the relevant operating instructions EN 92 Ex.

**NOTE:** *The use of the HAUG tape roller allows the ionizing bar to be masked with adhesive tape such that the ionizing pins remain free. This protects the insulating section from heavy contamination.*



## 6 Maintenance

Clean the ionizing units at intervals of at least 14 days. The dirtier the environment, the shorter the cleaning interval. When a deterioration of the cleaning effect is noticed, cleaning can improve ionization.

### ATTENTION!

The ionizing unit may be damaged if inappropriate brushes or cleaning agents are used.

- We strongly recommend the exclusive use of **cleaning accessories** from HAUG GmbH & Co. KG. Refer to Section Accessories.

### Dry cleaning

1. Switch off power pack for potentially explosive atmospheres and secure against inadvertent operation.
2. Disconnect the ionizing unit from the power pack for potentially explosive atmospheres.
3. Brush the ionizing pins with the special cleaning brush **RB1**.
4. Blow off the ionizing unit with clean compressed air (max. 6 bar).
5. Check the high-voltage connections and high-voltage plugs for contamination. The connections must be clean and dry.
6. Reconnect the ionizing unit to the power pack for potentially explosive atmospheres.

**NOTE:** *If dry cleaning does not yield the desired result, continue by using a wet cleaning process.*

### Moist cleaning


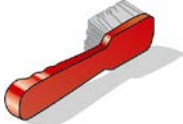



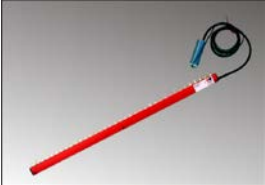
1. Switch off power pack for potentially explosive atmospheres and secure against inadvertent operation.
2. Disconnect the ionizing unit from the power pack for potentially explosive atmospheres.
3. Wet the special cleaning brush **RB1** with the special cleaning agent **SRM1**. The special cleaning system **RS2** may also be used for cleaning.
4. Brush the ionizing pins.
5. Blow off the ionizing unit with clean compressed air (max. 6 bar) and allow to dry.
6. Check the high-voltage connections and high-voltage plugs for contamination. The connections must be clean and dry.
7. Reconnect the ionizing unit to the power pack for potentially explosive atmospheres.




## 7 Troubleshooting

Error	Cause	Measure for elimination
No ionization.	The ionizing unit is dirty.	Clean the ionizing unit.
	No high voltage.	Check power pack for potentially explosive atmospheres.
		Check connections.
Fault in the ionizing unit.	Check ionizing unit using the Combicheck. Refer to Section Accessories.	
Sparks-over.	The ionizing unit is covered with an electrically conductive deposit.	Clean the ionizing unit.
	The ionizing pins are too close to an electrically conductive material.	Increase distance to the cause.
	The material charge is excessive.	Install a passive ionizer for preliminary discharging.
	The ionizing unit is damaged.	Shut down the ionizing unit immediately and secure against inadvertent switching on.

**NOTE:** *If the error cannot be removed in this way, return the power pack for potentially explosive atmospheres and ionizing unit for checking to HAUG GmbH & Co. KG (for address, see reverse).*

## 8 Accessories

Article	Illustrations	Order number
HAUG power pack for potentially explosive atmospheres		On request
Special cleaning fluid <b>SRM1</b>		10.7220.000
Special cleaning brush <b>RB1</b>		10.7218.000
Special cleaning system <b>RS2</b>		10.7218.004
Circular brush for special cleaning system		X - 5677
Combicheck		12.7231.000
Passive ionizer CI SL		12.0002.007

Article	Illustrations	Order number
HAUG Tape-Roller		10.0008.000
Adhesive tape "crepe"		X - 0167
Polyester insulating tape		X - 7793
Filter control valve		11.7224.004
Filter control valve with micro filter		11.7210.001

## 9 Technical data

### 9.1 Supply voltage

Electric connection to HAUG power pack for potentially explosive atmospheres	6,5 ±1 kV~
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### 9.2 Compressed air

The compressed air must be free of oil and aerosols.

Type	Max. Pressure	Air consumption at 3 bar
LS Ex	6 bar	35 NI/min per nozzle
KL Ex	6 bar	39 NI/min per nozzle
KM Ex / LM Ex	Side-channel compressor	
AK Ex	6 bar	21 NI/min per cm
RI Ex O/M/V	6 bar	130 NI/min
SC Ex	10 bar	On request

### 9.3 Ambient conditions



Only for inside use	
<b>Temperature:</b>	
Rated application range	+5 °C to +45 °C
Extreme range for storage and transport	-15 °C to +60 °C
<b>Humidity:</b>	
Rated application range	20 % to 65 % RF
Extreme range for storage and transport	0 % to 85 % RF

## 9.4 Dimensions

Type	Cross-section	Length
EI Ex H, EI Ex T, EI Ex T TPE	Ø25 mm	120 – 3000 mm
EI PHS Ex	19 x 20,5 mm	On request
RI Ex O/M/V	Ø72 mm	
REF Ex	Ø on request	
LS Ex	80 x 80 mm	200 – 3000 mm
KL Ex	50 x 110 mm	200 – 3000 mm
KM Ex	50 x 110 mm	200 – 3000 mm
LM Ex	80 x 80 mm	200 – 3000 mm
AK Ex	72 x 90 mm	120 – 3000 mm
SC Ex	110 x 230 mm	On request
High-voltage cable	Ø10 mm	Customer-specific
High-voltage cable TPE	Ø7.5 mm	Customer-specific

## 9.5 Marking

All units are marked as follows:

 II 2G IIA T4	EI Ex T, EI Ex T TPE, EI PHS Ex, RI Ex O/M/V, REF Ex
 II 2G IIB T4	EI Ex H

## 10 Decommissioning

1. Switch off the machine and secure against unintended switching on.
2. Switch off power pack for potentially explosive atmospheres and secure against inadvertent operation.
3. Disconnect the ionizing unit from the power pack for potentially explosive atmospheres.
4. Remove the ionizing unit from the machine.

### 10.1 Disposal

All national and regional waste disposal regulations must be complied with when disposing of the ionizing unit.





DIN EN ISO 9001



Ionisationssysteme

## EU-Konformitätserklärung

EU-Declaration of Conformity  
UE Déclaration de conformité

Die Fa. „The company, La société

**HAUG GmbH und Co. KG**  
Friedrich-List-Str. 18  
70771 Leinf.-Echterdingen

**erklärt in alleiniger Verantwortung, dass das elektrische Betriebsmittel**  
declares hereby in sole responsibility, that the electrical product  
déclare de sa seule responsabilité, que le produit électrique

**Multistat Ex, Multistat Ex SD, Multistat Ex SDN, EN 92 Ex, EN 15 Ex**

**in Verbindung mit den Serien der Ionisationsgeräte (Zone 1)**  
with the series of the ionizing devices (zone 1)  
avec les séries des appareils d'ionisation (zone 1)

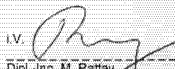
**EI Ex T, EI Ex T TPE, EI Ex H, RI Ex O/M/V, REF Ex, SC Ex,  
LS Ex, KL Ex, KM Ex, AK Ex, LM Ex, SC Ex**


**mit den folgenden Richtlinien übereinstimmt:**  
is in conformity with the following directives:  
est conforme aux directives suivants:

<b>Niederspannungsrichtlinie</b> Low voltage directive Directive sur les basses tensions	<b>2014/35/EU</b>	<b>EN 61010-1:2011</b>
<b>EMV Richtlinie</b> Electromagnetic compatibility Compatibilité électromagnétique	<b>2014/30/EU</b>	<b>EN 61000-6-2/-6-4</b>
<b>ATEX Richtlinie im Ex-Bereich</b> Norm ATEX explosive atmospheres Normes ATEX atmosphères explosibles	<b>2014/34/EU</b>	<b>zertifiziert durch*</b> certified by* certifié par* <b>DMT 02 ATEX E 212 X</b> <b>BVS 03 ATEX E 194 X</b> <b>BVS 07 ATEX E 028 X</b>

\* DEKRA EXAM GmbH, Dinnendahlstr. 9, D-44809 Bochum  
Kennnummer / ID-Number / numero d'identification: 0158

Leinfelden-Echterdingen, 9.8.2016

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