BRL K777
Validated on 16 June 2026

Evaluation Guideline BRL-K777

Kiwa (technical approval with) product certificate for repair clamps and couplings in contact with drinking water

kiwa

Preface

This Evaluation Guideline (BRL) was developed by the Technical Advisory Committee (CWK), in which all relevant parties in the field of repair clamps and couplings are represented. The Board of Experts Water Chain (CWK) also supervises the certification activities and updates this BRL if required. All references to Board of Experts in this evaluation guideline pertain to the Board of Experts Water Chain (CWK).

This BRL will be used by Kiwa in conjunction with the Kiwa Regulations for Certification and BRL K14100 'General requirements for products in contact with drinking water', which sets out Kiwa's general rules for certification.

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Validation
This assessment directive has been validated by Kiwa on 06-16-2026.

Contents

1 Introduction

1.1 General

In addition to §1.1 of BRL K14100.

References to the 'applicable' BRL in BRL K14100 mean that this BRL K777 applies.

This BRL replaces BRL-K777 dated 2016-12-23.
Quality declarations issued on the basis of the previous BRL shall remain valid after the binding declaration of this BRL. The transition period for renewal of the certificates shall be two years after the date of binding declaration of this BRL.

1.2 Scope

In addition to §1.2 of BRL K14100.

The products are intended for use in piping systems with a maximum water pressure of 1.6 MPa, a maximum water temperature of 25°C, and a nominal diameter greater than or equal to 15 mm and less than or equal to 400 mm.
Clamps are intended for the repair of small cracks, holes, and breaks, while couplings are intended for creating permanent connections in the above-mentioned piping systems.
Couplings are intended for connecting two pipe sections with the same specifications (material, wall thickness, pressure class, etc.).

1.3 Acceptance of test reports provided by the supplier

No additions and/or deviations from §1.3 of BRL K14100.

1.4 Quality declaration

In addition to §1.4 of BRL K14100.

Quality declarations issued on the basis of this BRL shall be designated as a Kiwa product certificate.

2 Terminology

2.1 Definitions

In addition to BRL K14100 §2.1 the following terms and definitions are applicable:

- **Certification mark**: a protected mark, the use of which is permitted by Kiwa to the supplier whose products, at the time of delivery, may be deemed to comply with the applicable requirements. Where applicable, quality information regarding the application of the product may be added by means of a specially designed label, based on the results as stated in the inspection report of the prototype issued by Kiwa;
- **Surveillance audit:** the examination carried out after certification has been granted, in order to establish that the certified products and/or approved quality-related processes continue to comply with the requirements laid down in the BRL;
- **Drinking water installation**: an installation that is directly or indirectly connected to the distribution network of a drinking water company (source: Drinking Water Act);
- **Distribution network**: assembly of piping and associated fittings, valves and other technical facilities for transportation and supply of drinking water, other than a collective distribution (Source: Drinking Water Act).
- **DN**: in accordance with NEN-EN-ISO 6708.
- **PFA:** allowable operating pressure: in accordance with NEN-EN 805.
- **PMA**: maximum allowable operating pressure, in accordance with NEN-EN 805.
- **PEA**: allowable test pressure in accordance with NEN-EN 805.
- **PN**: alphanumeric designation used for reference purposes, relating to a combination of mechanical and dimensional characteristics of a component of a piping system, in accordance with NEN-EN 1333;
- **Raw water**: ground water, surface water or sea water which is used for the purpose of the production of drinking water;
- **Repair clamp**: a clamp intended for the repair of cracks in piping systems;
- **Repair coupling**: a coupling intended for the repair of pipeline sections that have been completely separated due to a fracture, or for establishing permanent connections in piping systems;
- **Repair area:** the size of damage that can be repaired using a repair clamp or repair coupling.

3 Procedure for obtaining a quality declaration

No additions and/or deviations apply to Chapter 3 of BRL K14100.

4 Product requirements

4.1 General

This chapter specifies the requirements with which the products shall comply. The test methods used to establish compliance with these requirements are described in chapter §5.
The certificate holder shall ensure a clear and unambiguous description of all relevant design data, including:

- the production process / realization process;
- constituent raw materials, materials, and products;
- the formulation, if applicable.

Any intended change to the above-mentioned parameters shall be reported to the certification body. The certification body shall assess whether the change may affect the attested performance(s) and the certified products, which may require a reassessment of the relevant performance(s).

The certification body determines what constitutes a significant change. Once it has been established that the products incorporating the proposed change comply with the requirements in accordance with Chapter 4, the change may be implemented in the certificate holder's production process.

4.2 Materials

The following requirements apply to the raw materials, semi-finished products and/or materials that are processed or used in production:

4.2.1 Hygienic aspects

The products shall demonstrably comply with the requirements as stated in BRL K14101 "Hygienic aspects for products in contact with drinking water", with the exception of Section 4.4 of BRL K14101.

4.3 Product requirements

The requirements applicable to the product are laid down in Clauses 4.3.1 to 4.3.4.

4.3.1 Technical product information

In supplied technical product information, the supplier shall state, in the Dutch language:

1. The minimum and maximum pipe diameter for which the repair clamp or repair coupling can be applied;
2. The maximum repair area, resulting from cracks and holes, that can be covered by a specific type of repair clamp or repair coupling;
3. The maximum joint that can be realised using a repair coupling, assuming that the fracture involves the entire circumference of the pipe. The product information shall specify the maximum axial separation allowed between the pipe sections in order to realise a fracture repair;
4. The torque to be applied to the fastening elements in order to achieve a watertight joint;
5. The pipe materials for which the repair clamp or repair coupling is suitable.

4.3.2 General product requirements

4.3.2.1 Hygienic treatment of products in contact with drinking water

The supplier shall have a procedure in place for protecting the products in such a manner that hygiene during storage and transport is ensured.
In addition, the supplier shall inform customers about the handling of products supplied under certificate that come into contact with drinking water and hot tap water, covering the period from arrival at the construction site up to and including installation and commissioning. The primary objective of this information is to contribute to awareness of the importance of hygienic working practices as a preventive measure.

4.3.2.2 Pressures

Repair clamps and repair couplings intended for use in piping systems shall be designated by a PN value and shall be designed to withstand the pressures PFA, PMA, and PEA as specified in table 1.

Table 1 Pressure

PN	PFA (bar)	PMA (bar)	PEA (bar)[1]
6	6	8	12
10	10	12	17
16	16	20	25

4.3.2.3 Fastening products

Fastening products used to achieve the clamping function of the repair clamp or repair coupling shall be suitable for being tightened to a torque as specified in Clause 4.3.1, fourth bullet point.

4.3.2.4 Sealing Material

Rubber sealing material made of rubber shall comply with BRL-K17504, Clause 1.2, Class I.

4.3.3 Protection against corrosion

Repair clamps, repair couplings and fastening products which by their nature are not considered corrosion-resistant shall be provided with a corrosion-protective coating in accordance with Clauses 4.3.3.1 and 4.3.3.2.

4.3.3.1 Coating system in contact with drinking water

The coating system shall comply with the requirements laid down in BRL-K759. In addition, the application of the coating shall be carried out in accordance with the relevant provisions of BRL-K746.

Remarks:

- *Where a coating included in a Kiwa product certificate in accordance with BRL-K759 is applied, this requirement shall be deemed to have been fulfilled.*

[1] PEA shall not be less than 1.5 × PMA or PMA + 5, whichever value is the lower.

- *Where the coating process is included in a Kiwa process certificate in accordance with BRL-K746, this requirement shall be deemed to have been fulfilled.*

4.3.3.2 External coating

If the external surface of the repair clamps and repair couplings is provided with a protective coating, this coating shall be applied in accordance with the instructions of the coating supplier.

4.3.4 Functional product requirements

4.3.4.1 Mechanical strength

When tested in accordance with Clause 5.2, repair clamps and couplings shall withstand an internal pressure equal to the higher of the following two values: PEA or 1.5 × PFA.

4.3.4.2 Watertightness under internal pressure

When tested in accordance with Clause 5.3, repair clamps and couplings shall withstand an internal water pressure of 1.5 × PFA bar for a period of 2 hours. During the test, no leakage or permanent deformation shall occur.

4.3.4.3 Watertightness under negative (external) pressure

When tested in accordance with Clause 5.4, repair clamps and couplings shall withstand an absolute pressure of 0.1 ± 0.02 bar for a period of 2 hours. During the test in accordance with Clause 5.4, the pressure increase shall not exceed 0.09 bar. If a repair clamp or coupling has successfully withstood the test as described, it shall be deemed watertight also at low operating pressures.

4.3.4.4 Watertightness under fluctuating internal pressure

When tested in accordance with Clause 5.3, repair clamps and couplings shall, after 24 000 pressure cycles with a fluctuating pressure between PMA and (PMA – 5), comply with the requirements of Clause 4.3.4.2.

4.3.4.5 Bending

When tested in accordance with Clause 5.5, repair couplings shall comply with the requirements of Clauses 4.3.4.2 and 4.3.4.4.

5 Test methods

5.1 General

5.1.1 Pressures and temperatures

For carrying out the tests described below, during which the required pressures are applied with the addition of water, the following shall apply:

- pressures shall be measured using a precision pressure gauge in accordance with NEN 927;
- the ambient pressure shall be atmospheric;
- the test pressure shall not exceed the required pressure and shall not be lower than 95 % of the required pressure;
- the water temperature shall be below 30 °C;
- the ambient temperature shall be 20 ± 10 °C.

5.1.2 Models to be tested

For each DN group, Table 2 indicates, which DN shall be tested.

Table 2 Models to be tested

DN group	15 <DN ≤140	150 < DN ≤ 300	> 300
Model to be tested	DN 100	DN 200	DN 400
	PN 10[1]	PN 10	PN 10
Length L*)	1,0 m	1,0 m	1,0 m

*) as per figure 2

5.1.3 Assembly of repair clamps / couplings

The assembly of the repair coupling shall be carried out using two separate pipe sections with identical specifications. The repair clamp shall be installed in accordance with the supplier's installation instructions.
The tests in accordance with Clauses 5.3, 5.4 and 5.5 shall be carried out on all pipe materials as specified in the Technical Product Information (see Clause 4.3.1).

5.2 Determination of mechanical strength under internal pressure

5.2.1 Test set-up and equipment

For the determination of watertightness under internal pressure, the repair clamp shall be installed in the test set-up in accordance with Figure 1, and the repair coupling in accordance with Figure 2. The test arrangement shall be assembled using metallic pipes.

5.2.2 Procedure

a. Fill the test assembly with water, vent it and close the vent opening, provided that force F is not applied;
b. Increase the pressure steadily within 30 s to the pressure specified in Clause 4.3.4.1 and maintain this pressure for a period of 2 hours;

[1] PN 10 includes PN 6;

c. During the test, no leakage or permanent deformation shall occur.

5.3 Determination of watertightness under internal pressure

5.3.1 Test set-up and equipment

For the determination of watertightness under internal pressure, the repair clamp or repair coupling shall be installed in the test set-up in accordance with Figure 1 or Figure 2, respectively.

5.3.2 Procedure

a. Fill the test assembly with water, vent it and close the vent opening;
b. Increase the pressure steadily within 30 s to the pressure specified in Clause 4.3.4.2 and maintain this pressure for a period of 2 hours;
c. During the test, no leakage or permanent deformation shall occur.

5.4 Determination of watertightness under negative pressure and cyclic internal pressure

5.4.1 Test set-up and equipment

For the determination of watertightness under external pressure, the repair clamp shall be mounted in the test assembly as shown in Figure 1, and the repair coupling as shown in Figure 2.

5.4.2 Procedure

a. Drain the test assembly and connect a vacuum line to the vent opening;
b. Increase the load on the test assembly steadily within 30 s to the absolute pressure specified in Clause 4.3.4.3 and maintain this pressure for a period of 2 hours;
c. During the test, this pressure shall not increase by more than 0.09 bar.

5.4.3 Test installation and equipment

The repair clamp and the repair coupling shall be mounted in the test assembly as shown in Figure 1 and Figure 2, respectively.

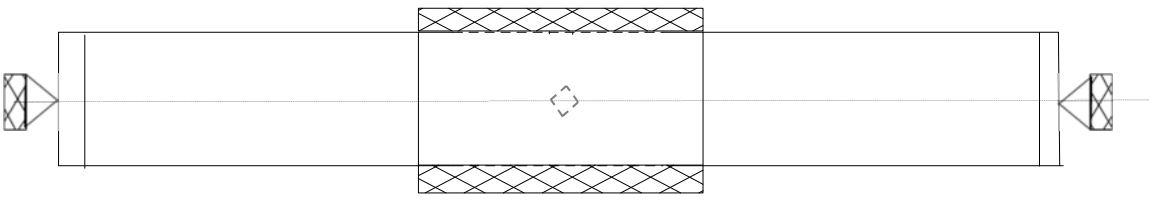


Figure 1 Test setup for repair coupling

5.4.4 *Procedure*

a. Fill the test assembly with water, vent it and close the vent opening;
b. Increase the pressure steadily within 5 s to PMA;
c. Reduce the pressure steadily within 5 s to (PMA – 5) bar and maintain this pressure for a period of 5 s;
d. Increase the pressure steadily within 5 s to PMA and maintain this pressure for a period of 5 s;
e. Repeat steps (c) and (d) 24 000 times;
f. During the test, no leakage or permanent deformation shall occur.

5.5 Determination of watertightness under bending

5.5.1 *Test set-up and equipment*

The repair coupling shall be mounted in the test assembly in accordance with Figure 2.

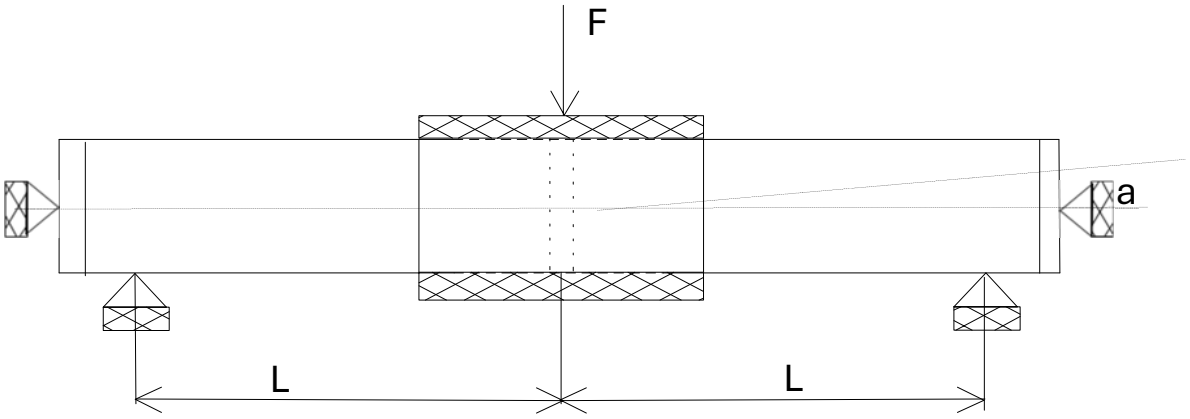


Figure 2 Test setup for repair coupling

5.5.2 *Test requirements for the repair coupling*

Table 3 Relationship between DN and angular deflection

DN	Angle a
40 < DN ≤ 300	3°30’
300 < DN ≤ 400	2°30’

5.5.3 *Procedure for the repair coupling*

a. Fill the test assembly with water, vent it and close the vent opening;
b. Increase the pressure and apply the bending force F steadily within 30 s to the pressure specified in Clause 4.3.4.2 and the values given in Table 3, and maintain both for a period of 2 hours;
c. Measure the angle “α”;
d. During the test, no leakage or permanent deformation shall occur.

6 Marking

6.1 General

The following markings and indications shall be permanently and clearly applied to each product:

- manufacturer's name and/or registered trade mark;
- date of manufacture or production coding;
- PN (PFA) rating of the repair clamp or repair coupling;
- minimum and maximum pipe diameter for which the repair clamp or repair coupling is suitable;
- material type;
- type designation.

6.2 Certification mark

After the conclusion of a Kiwa certification agreement, the certification mark shall also be applied to the product in a durable and indelible manner.

For products in contact with drinking water:

The Kiwa Water Mark "KIWA".

7 Requirements for the quality management system

No additions and/or deviations from chapter 7 of BRL K14100.

8 Summary of investigations required for type testing and inspections

This chapter provides a summary of the activities carried out within the framework of certification:

8.1 Evaluation matrix

Requirement	Article BRL	Investigation within the scope of		
		Pre-certification	Supervision after certificate is granted [a), b)]	
			Check	Frequency
Material requirements				
Material requirements	4.2.1	X	X	Every visit
Product requirements				
Technical product information	4.3.1	X	X	Every visit
Pressures	4.3.2.2	X	X	Every visit
Fastening products	4.3.2.3	X	X	Every visit
Sealing material	4.3.2.4	X	X	Every visit
Protection	4.3.3	X	X	Every visit
Mechanical strength	4.3.4.1	X		Every visit
Watertightness under internal pressure	4.3.4.2	X	X	Every visit
Watertightness under external (negative) pressure	4.3.4.3	X		
Watertightness under cyclic internal pressure	4.3.4.4	X		
Bending	4.3.4.5	X		
Marking				
General	6.1	X	X	Every visit
Certification mark	6.2	X	X	Every visit

a) In the event of changes to the product or production process Kiwa shall, in consultation between the supplier, determine whether the product meets the performance requirements..

b) During the inspection, the inspector checks the products against a selection of the product requirements as detailed above. The frequency of inspection visits is specified in §9.5 of BRL K14100.

9 Agreements on the implementation of certification

No additions and/or deviations from chapter 9 of BRL K14100.

10 List of documents

10.1 Public law and Rules and Regulations

BJZ2011048144 June 29th, 2011	Regulation of the State Secretary for Infrastructure and the Environment containing rules regarding materials and chemicals to be used in drinking water and hot tap water supply (Regulation on materials and chemicals for drinking water and hot tap water supply)[1]

10.2 Normative documents

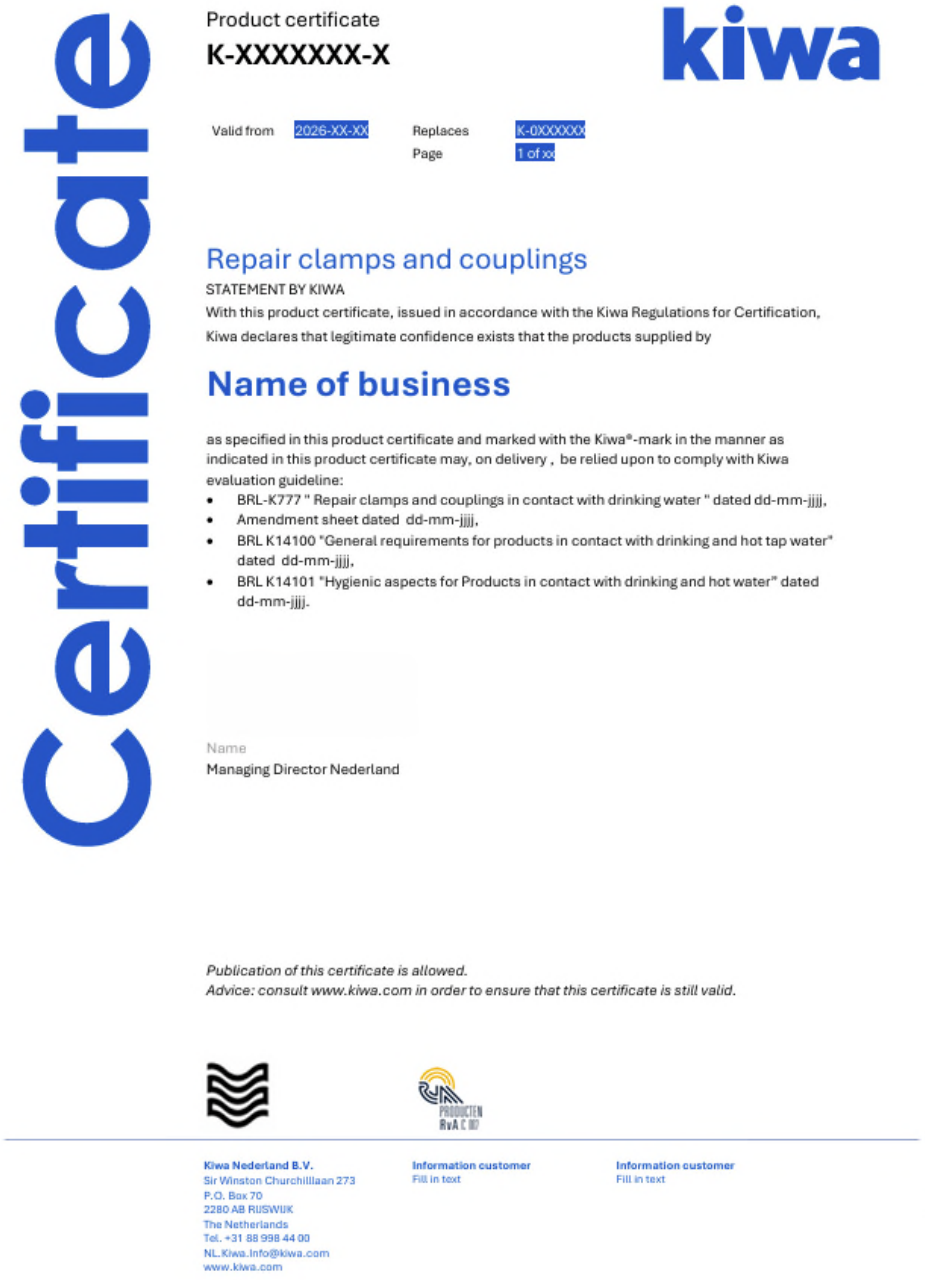
Number	Title	Version *
EN-ISO/IEC 17020	Conformity assessment - General criteria for the operation of various types of bodies performing inspection	
EN ISO/IEC 17021	Conformity assessment - Requirements for bodies providing audit and certification of management systems	
EN-ISO/IEC 17024	Conformity assessment - General requirements for bodies operating certification of persons	
EN-ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories	
EN-ISO/IEC 17065	Conformity assessment - Requirements for bodies certifying products, processes, and services	
NEN 6075	Determination of the resistance to smoke movement between spaces, July 1991, including modification sheet NEN 6075/A1.	May 1997
BRL-K746	Coating system applications for drinking water applications	
BRL-K759	Coating systems for drinking water applications	
BRL-K17504	Certification of vulcanised rubber products for cold and hot drinking water applications	
NEN 927	Pressure gauges – testing and gauging	
NEN-EN 805	Water supply – Requirements for systems and components outside buildings	
NEN-EN 1333	Flanges and their joints – Pipework components – Definition and selection of PN	
NEN-EN-ISO 4016	Hexagon head bolts – Product grade C	
NEN-EN-ISO 4034	Hexagon regular nuts (style 1) – Product grade C	
NEN-EN-ISO 7091	Plain washers – Normal series – Product grade C	
NEN-EN-ISO 9001	Quality management systems – Requirements	
NEN-EN-ISO 6708	Pipe components – Definition and selection of DN (nominal size)	
NEN-EN 14525	Ductile iron and steel wide tolerance couplings and flange adaptors for use with pipes of different materials: ductile iron, Grey iron, steel, PVC-U, PVC-O, PE, fibre-cement	

*) If no date of issue is indicated in this column, the current version of the document applies.

Note: If normative documents are dated then their validity is checked annually. Changes to the applicable normative documents are published on the services page of the Kiwa website.

[1] Valid from July 1st, 2017 onwards

Model certificate (example)



Certificate

Product certificate

K-XXXXXXX-X

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Valid from 2026-XX-XX Replaces K-0XXXXXX

Page 1 of xx

Repair clamps and couplings

STATEMENT BY KIWA

With this product certificate, issued in accordance with the Kiwa Regulations for Certification, Kiwa declares that legitimate confidence exists that the products supplied by

Name of business

as specified in this product certificate and marked with the Kiwa®-mark in the manner as indicated in this product certificate may, on delivery , be relied upon to comply with Kiwa evaluation guideline:

- BRL-K777 " Repair clamps and couplings in contact with drinking water " dated dd-mm-jjjj,
- Amendment sheet dated dd-mm-jjjj,
- BRL K14100 "General requirements for products in contact with drinking and hot tap water" dated dd-mm-jjjj,
- BRL K14101 "Hygienic aspects for Products in contact with drinking and hot water" dated dd-mm-jjjj.

Name

Managing Director Nederland

Publication of this certificate is allowed.
Advice: consult www.kiwa.com in order to ensure that this certificate is still valid.

PRODUCTEN RvA C 167

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