

Standard of Japan Photo and Video Accessory Association (JPVAA)

Max payload of camera tripods / monopods / heads

JPVAA S102-2015(E)

This translation is based on the original Standard (JPVAA S102-2015“カメラ用 三脚・一脚・雲台の最大搭載荷重”). In the event of any doubts arising as to the contents, the original Standard in Japanese shall prevail.

Established on 01 July, 2015

Prepared by

The Tripod Committee, Japan Photo and Video Accessory Association

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Revision history

Date	Notes
01 July, 2015	Established

Standard of Japan Photo and Video Accessory Association (JPVAA) “Max Payload of Camera Tripods / Monopods / Heads”

1. Scope

This standard defines the standard when declaring max payload specifications of tripods / monopods / heads for photo cameras.

2. Definitions of terms

The definitions of most terms used in this standard are based on definitions in JPVAA's organization standard JPVAA S101-2015 “Camera-yo Sankyaku” (Tripods for Cameras), as well as the following:

- a) P_{max} declared max payload
- b) P_{test} value measured in the test

3. Tests

3.1. Test conditions

3.1.1. Preparation before tests

Tests shall be executed after keeping the product in a high temperature high humidity environment (temperature 75°C, humidity 70%, 24 hours), and then returning to ordinary temperature.

3.1.2. Judging pass or fail of tests

Set the target max payload that the product will declare, test if P_{test} satisfies the P_{max} value explained in Section 5. and judge pass / fail. In case the test fails, the product's max payload shall be amended to a value not greater than the P_{max} that can be satisfied by the tested P_{test} value.

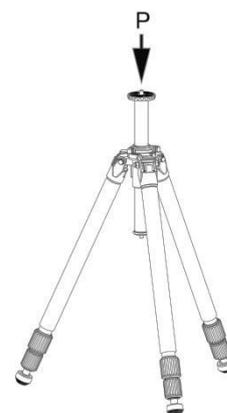
3.2. Tripod tests

3.2.1. Center column lock strength

3.2.1.1. Test method

Extend the center column, lock the knob with the prescribed torque (see Section 4.), apply load in the direction of pushing down the center column.

The load when the center column starts moving is the P_{test} .



3.2.2. Leg payload

3.2.2.1 Test method

Extend each section of the leg midway of the extension stroke, lock the leg locks, stand the leg vertically and apply load in the direction of pushing down. The load when the leg starts moving is the P_{test} . Test each of the 3 legs.

If the leg lock is a lock nut type, lock the leg locks with a torque not exceeding the prescribed maximum tightening torque (see Section 4.) before testing.



3.2.3. Body strength

3.2.3.1. Test method

Contract the legs to the shortest positions, place the tripod on a surface without asperity (plastic tile or equivalent) with the legs spread, apply load to the center of the tripod in the direction of pushing down. The load limit when the tripod cannot support the load is the P_{test} . For tripods with variable leg angles, test for each leg angle.



3.3. Monopod tests

3.3.1. Leg payload

3.3.1.1. Test method

Extend each section of the leg midway of the extension stroke, lock the leg locks, stand the leg vertically and apply load in the direction of pushing down. The load when the leg starts moving is the P_{test} .

If the leg lock is a nut locking type, lock the leg locks with a torque not exceeding the prescribed maximum tightening torque (see Section 4.) before testing.



3.4. Head tests

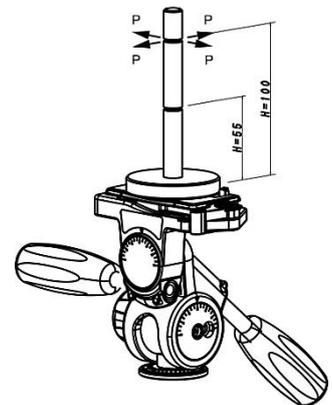
3.4.1 Test jig

For head tests, use a jig that can be attached to the head's camera attachment screw, and can be applied loads at heights of $H=55\text{mm}$ and $H=100\text{mm}$ from the head's camera attachment surface. Test results of $H=100\text{mm}$ is used if the product will declare P_{max} of 2kg (19.6N) or greater, while $H=55\text{mm}$ is used for P_{max} under 2kg (19.6N), therefore if it is already decided whether P_{max} will be 2kg (19.6N) or greater / under 2kg (19.6N), the tests can be done with either of the H heights.

3.4.2. Quick release static payload

3.4.2.1 Test method

Set the head's camera attachment surface level, attach the jig on the quick release plate, apply load of P_{max} on the jig's position of $H=55\text{mm}$ or $H=100\text{mm}$ in 4 directions as the diagram, and check if there is no abnormality in the quick release function.

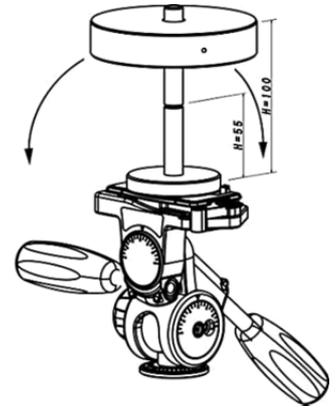


3.4.3. Quick release dynamic payload

3.4.3.1. Test method

Set the head's camera attachment surface level, attach the jig on the quick release plate, attach a weight of $1/2P_{max}$ on the jig so the center of gravity of the jig is at the position of $H=55\text{mm}$ or $H=100\text{mm}$, and with the head's locking handles unlocked to free position let the weight turn to the tilt direction and the portrait tilt direction with its own weight, and check if there is no abnormality in the quick release function.

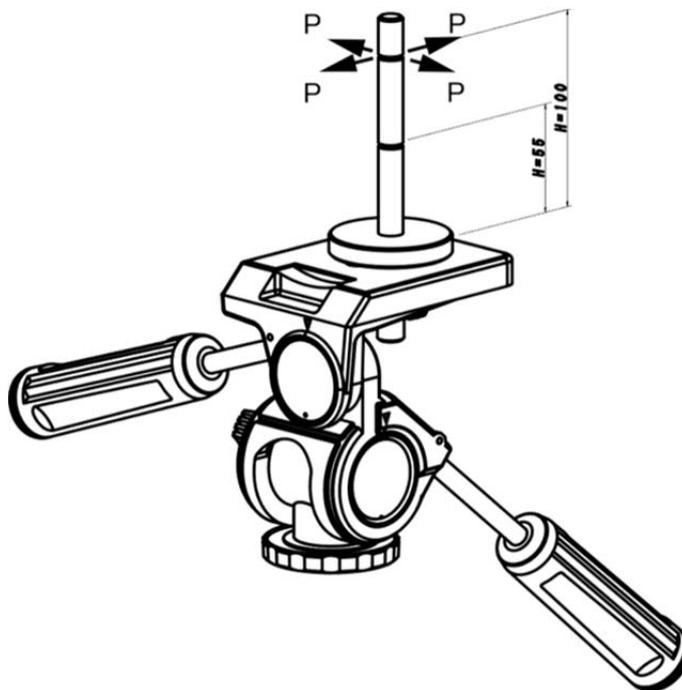
If the head has a friction control function, set it to the minimum before testing.



3.4.4. Head locking strength

3.4.4.1. Test method

Set the head's camera attachment surface level, lock the locking handle / knob with a torque not exceeding the prescribed maximum tightening torque (see Section 4.), attach the jig to the head's camera screw, apply load of P_{max} on the jig's position of $H=55\text{mm}$ or $H=100\text{mm}$ in 4 directions as the diagram, and check that it does not start to move.



4. Knob / handle maximum tightening torque

When conducting tests, the prescribed maximum tightening torque on the knob / handle should be as follows. It is not necessary to tighten up to the prescribed maximum tightening torque.

4.1. Knobs operated by fingers

Prescribed maximum tightening torque = $87.5 * D / 1000$ (Nm)

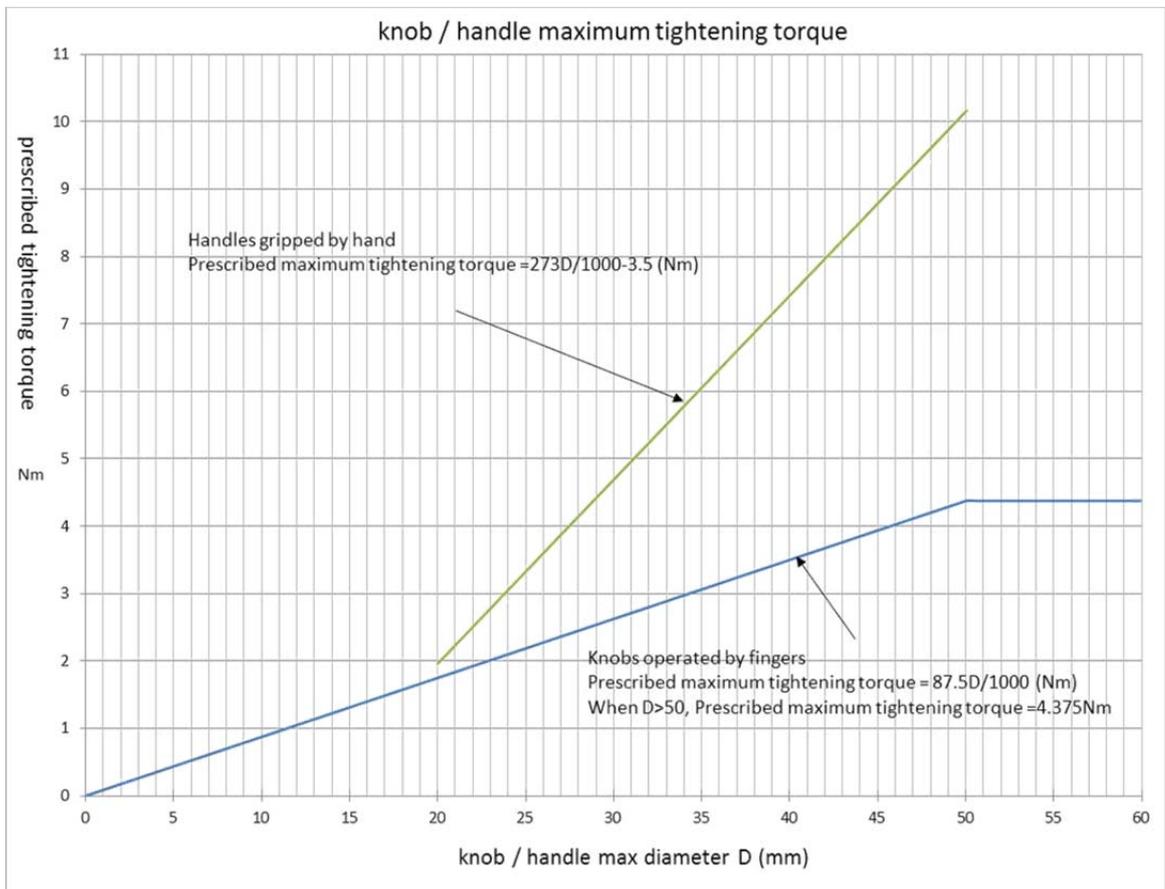
D is the knob's max diameter or width (mm) $x \leq 50$

Note: If D is greater than 50mm, the prescribed torque is 4.375Nm.

4.2. Handles gripped by hand

Prescribed maximum tightening torque = $273 * D / 1000 - 3.5$ (Nm)

D is the handle's diameter (mm) $20 \leq x \leq 50$



5. Max payload Pmax

The declared max payload Pmax value must satisfy the conditions listed below.

For tripods and heads, Pmax should adopt the lowest value among the multiple conditions.

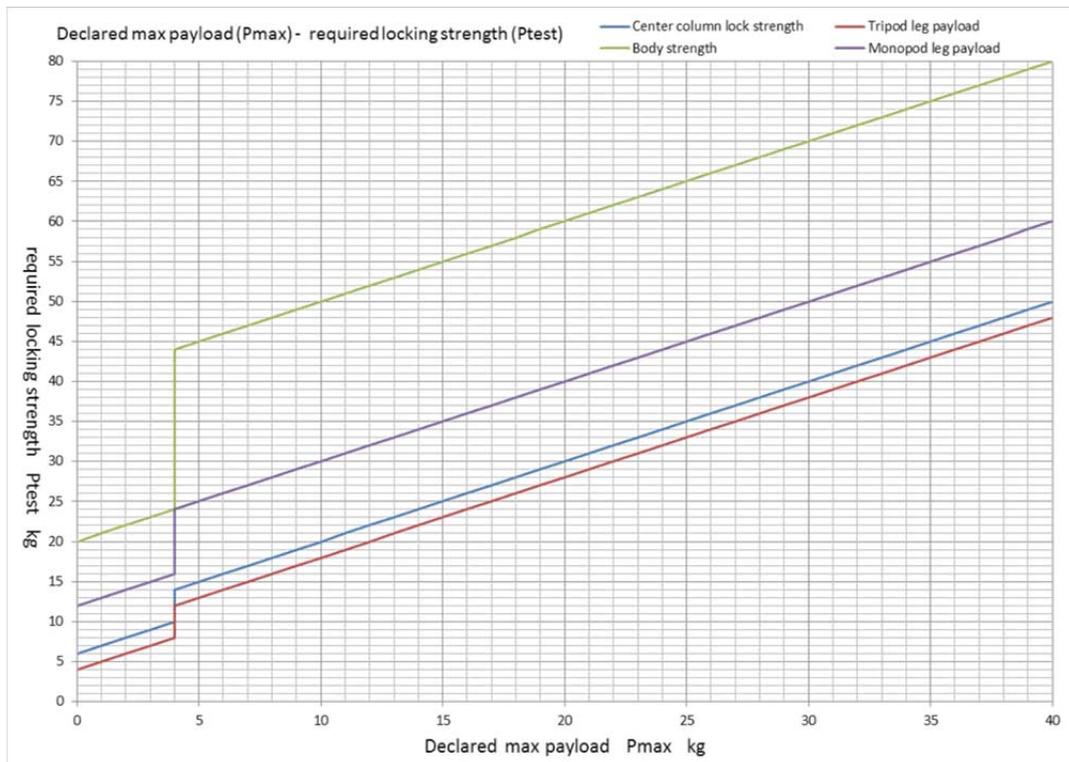
For set products of tripod+head or monopod+head, the payload of the set product is [Pmax of tripod or monopod – weight of head], or [Pmax of head], whichever is lower.

5.1. Tripods

Test	Conditions
Center column lock strength	Models with Pmax 4kg(39.2N) or greater: $P_{test} \geq P_{max} + 10\text{kg}(98.1\text{N})$ Models with Pmax under 4kg(39.2N): $P_{test} \geq P_{max} + 6\text{kg}(58.8\text{N})$
Leg payload	Models with Pmax 4kg(39.2N) or greater: $P_{test} \geq P_{max} + 8\text{kg}(78.5\text{N})$ Models with Pmax under 4kg(39.2N): $P_{test} \geq P_{max} + 4\text{kg}(39.2\text{N})$
Body strength	Models with Pmax 4kg(39.2N) or greater: $P_{test} \geq P_{max} + 40\text{kg}(392.3\text{N})$ Models with Pmax under 4kg(39.2N): $P_{test} \geq P_{max} + 20\text{kg}(196.1\text{N})$

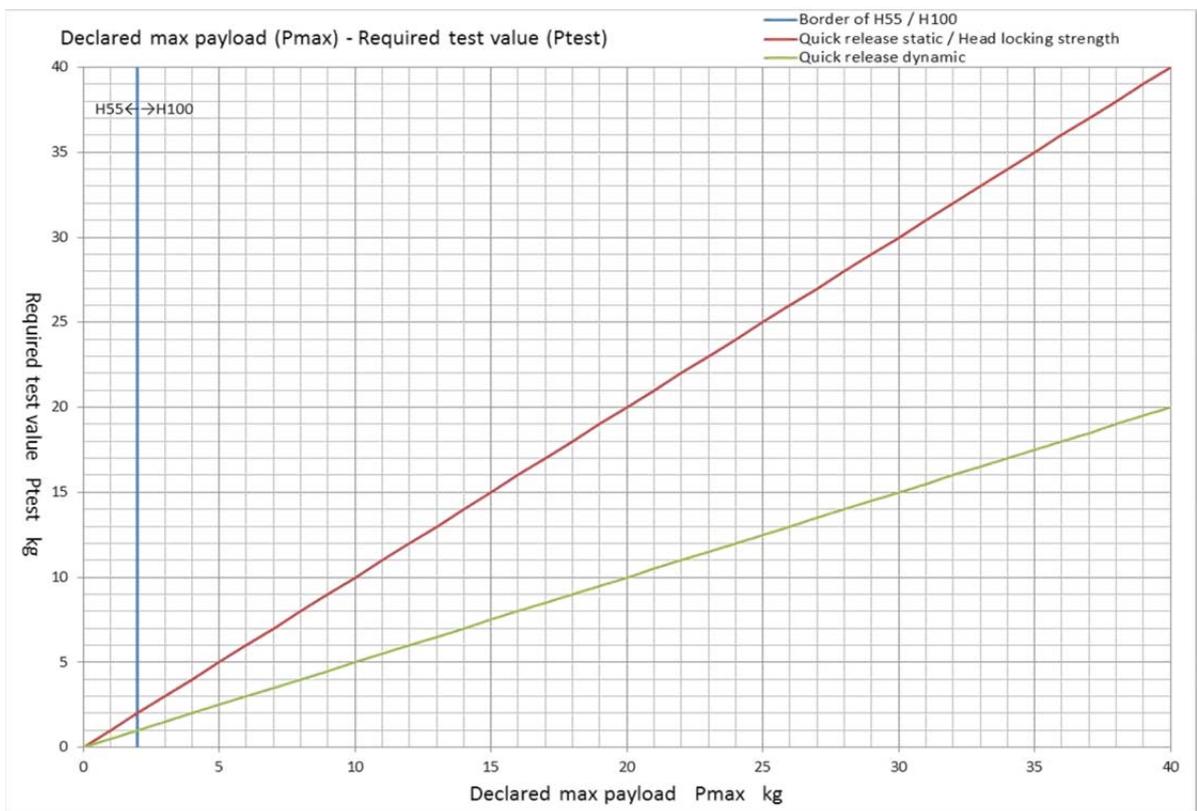
5.2. Monopods

Test	Conditions
Leg payload	Models with Pmax 4kg(39.2N) or greater: $P_{test} \geq P_{max} + 20\text{kg}(196.1\text{N})$ Models with Pmax under 4kg(39.2N): $P_{test} \geq P_{max} + 12\text{kg}(117.7\text{N})$



5.3. Heads

Test	Conditions
Quick release static payload	Models with Pmax 2kg (19.6N) or greater: $P_{test}(H100) \geq P_{max}$
	Models with Pmax under 2kg (19.6N): $P_{test}(H55) \geq P_{max}$
Quick release dynamic payload	Models with Pmax 2kg (19.6N) or greater: $P_{test}(H100) \geq 1/2P_{max}$
	Models with Pmax under 2kg (19.6N): $P_{test}(H55) \geq 1/2P_{max}$
Head locking strength	Models with Pmax 2kg (19.6N) or greater: $P_{test}(H100) \geq P_{max}$
	Models with Pmax under 2kg (19.6N): $P_{test}(H55) \geq P_{max}$



6. How to indicate max payload

For products satisfying the JPVAA testing standard, an asterisk (or an arbitrary icon) should be indicated where the max payload is indicated on product catalogs, product instructions, etc., and clearly write the footnote “based on JPVAA S102-2015 testing standard”.

The footnote can be omitted if it is clearly written “based on JPVAA S102-2015 testing standard” elsewhere.

7. Re-examination and revision of the Standard

Contents of this Standard shall be adequately reviewed and revised to meet the needs of the times.

Standard of Japan Photo and Video Accessory Association (JPVAA) “Max Payload of Tripods / Monopods / Heads” Comments

These comments explain about the issues defined in the Standard, and related issues, and is not part of the Standard.

Background

For tripod / monopod / head users to conduct photo shooting operations safely and comfortably, it is an important factor to know the payload capability of the legs or the head, and it is essential to indicate the “max payload” (there are various terms such as max payload weight, suggested load, payload, etc.) to help users selecting the product.

However, the load figures indicated on materials like catalogs can differ greatly between manufacturers, and there has been no uniformed standard for the testing method, which makes it confusing for users.

JPVAA's Tripod Committee set up the “Technical Working Group”, holding its first meeting in December 2013, to create a standard testing method for “max payload” of tripods, monopods, and heads, aiming to realize fair competition among manufacturers and to benefit users selecting the safe product matching the need, with a technical, transparent, uniform testing method. Since the discussion required technical knowledge, the working group members were consisted mainly of engineers and R&D staff of the Tripod Committee member companies.

The Technical Working Group had discussed in a monthly basis, and drew up ad draft with the consent among the members, and established the JPVAA Standard for max payload testing in its 15th meeting in May 2015 and released to tripod manufacturing companies.

By indicating “based on JPVAA testing standard” on products satisfying this standard, users should be able to use the products without worries.

By having more tripod manufacturers using this standard, we believe that this standard will contribute in minimizing accidents and troubles during photo shooting by the users.

We hope that users who love photography and love tripod / monopod / head products can enjoy photo shooting safely and comfortably.

Detail comments of the defined contents

3.1.1. Preparation before tests

Assuming that the product shall perform satisfactory when the end user starts using it after production, shipping, and distribution of the product, the Standard defines that the tests should be conducted after keeping the product in a high temperature high humidity environment (temperature 75°C, humidity 70%, 24 hours) and then returning to ordinary temperature.

3.2.1. Center column lock strength

The Standard assumes that there should be no problems when the user loads the camera equipment on the product, and also part of the user's own weight is applied onto the product.

3.2.2. Leg payload (Tripods)

Since a tripod holds camera equipment with 3 opened legs, we discussed and defined the minimum vertical payload required on one leg.

3.2.3. Body strength

The Standard assumes that there should be no problems when the user loads the camera equipment on the product, and also part of the user's own weight is applied onto the product.

3.3.1. Leg payload (Monopods)

Unlike tripods, a monopod supports the camera equipment weight and part of the user's own weight with just one leg, so the Standard requires higher test values than tripods.

3.4.2. Quick release static payload

The Standard is defined assuming that the user's valuable equipment should not fall off easily.

3.4.3. Quick release dynamic payload

The Standard is defined assuming that the user's valuable equipment should not fall off easily even when the user mistakenly takes his hands off the camera equipment.

3.4.4. Head locking strength

The Standard is defined assuming that the camera equipment can be fixed at the desired position.

4. Knob / handle maximum tightening torque

Locking strength tests should be tested with a tightening torque achievable by any user, so that any user can obtain the performance commensurate with the max payload. Considering this, the Standard prescribes a realistic maximum tightening torque against the diameter of the knob / handle.

If there was a knob with a design that is small but can achieve strong torque easily, and any user can achieve higher torque than the Standard's prescribed torque, we must consider excluding this standard as an exception. However we did not find such exceptional knob, and decided to review the Standard when such knob is developed.

5. Max payload Pmax

For Pmax of tripods and monopods, the Standard changes the conditions between products with Pmax 4kg (39.2N) or greater, and products with under 4kg (39.2N). Today photographic equipment weighing 4kg (39.2N) or greater is also very expensive, so we made the standards stricter considering that such users can use without worries.

For heads, the Standard changes the conditions between products with Pmax 2kg (19.6N) or greater, and products with under 2kg (19.6N). We considered that the head's functions and performance are large factors for the usability of the tripod, and that many tripods / heads with max

payload under 2kg (19.6N) are affordable products made of plastic.

- System of units -

For the system of units, historically MKS gravitational units have been used in the tripod industry, but from April 1974 JIS (Japanese Industry Standards) has decided to use SI (International System of Units). In this Standard, by right we should use SI, but in the market max payload indications are mostly in MKS gravitational units, so in this document we used MKS gravitational units and SI together, or SI alone, and for the graphs we used MKS gravitational units.

JPVAA max payload standard – recommendation and special instructions

“Max payload”, indicated for users to shoot photos safely and stably when using the tripod / monopod / head, is an important factor when choosing the product, and is indicated in catalogs and other material of each manufacturer. Since there has been no standard for the measurement method for it, sometimes consumers wavered over when deciding the product. Therefore in the JPVAA Tripod Committee, after discussion in its Technical Working Group, has established JPVAA's voluntary standard of a unified testing method, in order to help consumers choose their products. This standard should match with consumer benefits, so it is recommended not only for JPVAA member companies, but for all companies manufacturing and selling tripods, monopods, and heads, to positively adopt this standard.

This JPVAA standard is a non-binding standard, but max payload specs based on the testing standard can indicate so in their catalogs and instructions.

Along with the new standard, JPVAA's organization standard “*camera-yo sankyaku* (tripods for cameras)” (last revision Dec. 4th 2003) has also been revised.

[Special instructions]

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