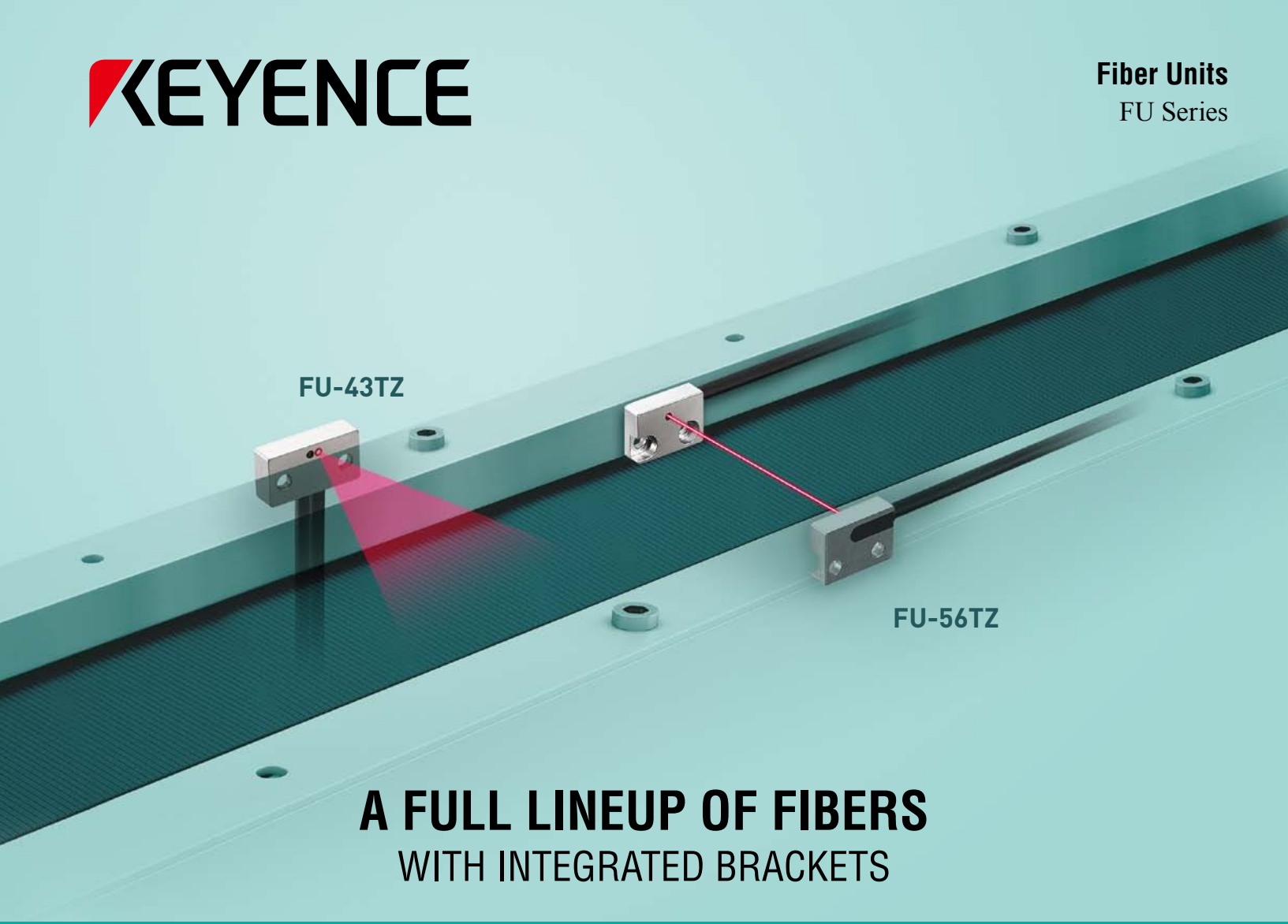
KEYENCE

**Fiber Units**
FU Series



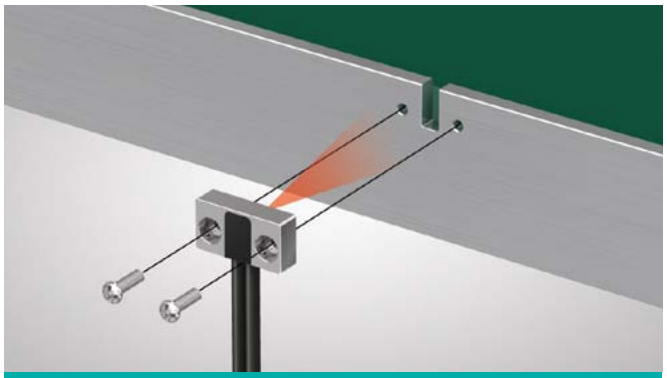

# A FULL LINEUP OF FIBERS
## WITH INTEGRATED BRACKETS

**Fiber Units FU Series**

## INTEGRATED BRACKET TYPE

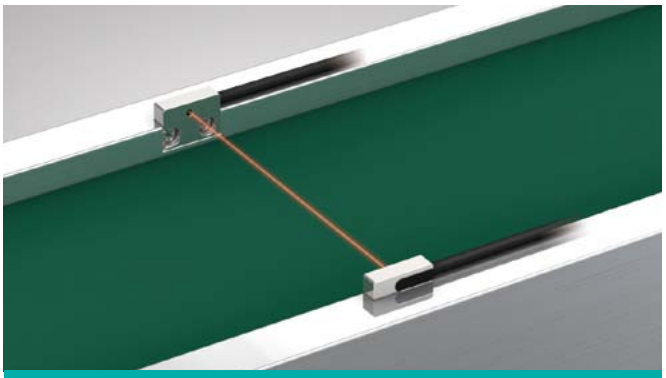
A variety of models to match any installation condition

### NEW MODELS



### FU-43TZ

The small size and integrated bracket of the FU-43TZ enable flush, unobtrusive mounting in nearly any situation.



### FU-56TZ

The FU-56TZ combines high power and a compact size into an easy to mount bracket.

# KEYENCE SOLUTIONS

KEYENCE CONTINUES TO SOLVE CONVENTIONAL FIBER PROBLEMS!

## PROBLEM 1 MOUNTING

### MOUNTING

Due to the design of conventional fibers, it is not possible to mount the fiber cable flush to the side of a machine. This can lead to cable loops on the side of the machine that can easily catch tools or products and cause damage. KEYENCE fibers avoid this by allowing to flush and unobtrusive mounting to the sides of machines.

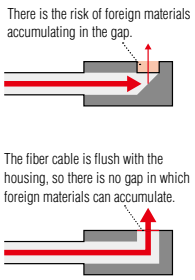
## PROBLEM 2 DECREASED POWER

CUT TYPE

Light decrease is large, due to the cut.

BEND TYPE

Light decrease is small, due to the bend.



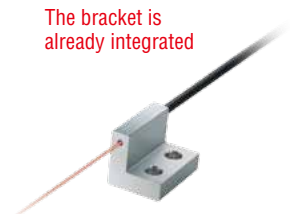

### DECREASED POWER

Conventional fibers achieve perpendicular detection by cutting the end of the fiber at a 45 degree angle. This leads to decreased light intensity and a gap in the housing. KEYENCE flat pack fibers achieve perpendicular detection without the loss of power by utilizing highly flexible cable that can bend 90 degrees and mount flush with the housing.

## PROBLEM 3 INSTALLATION TIME

Conventional installation required several different components.

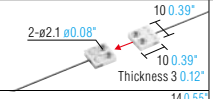
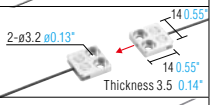
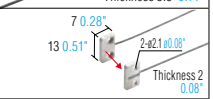
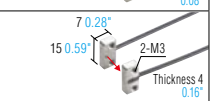
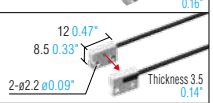
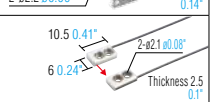
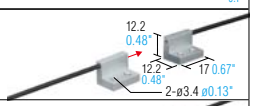
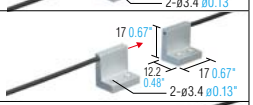
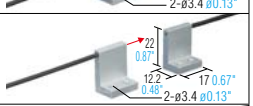
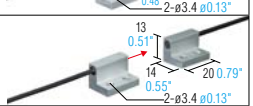
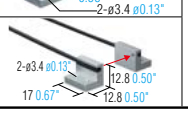
The bracket is already integrated



### INSTALLATION TIME

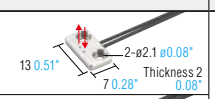
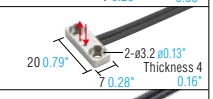
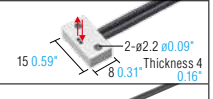
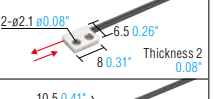
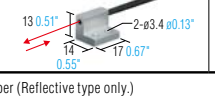
By featuring an integrated bracket, these fiber units eliminate the costs associated with designing or purchasing a mounting bracket. This also makes installation quicker and easier to save additional time during installation.

## THRUBEAM MODELS

| Type: Beam emitting direction | | Fiber unit length (Diameter), Ambient temperature, Appearance (mm inch) | Cable bend radius (mm inch) | Detecting distance (mm inch)*1: MEGA FINE | Detecting distance (mm inch)*1: Other power modes | Optical axis diameter (mm inch) (Standard target to be detected) | Minimum detectable object (mm inch)*2 | Model Weight Case material |
|---|---|---|---|---|---|---|---|---|
| Top | | 1 m 3.3' Free-cut (ø1.0 ø0.04") -40 to +50°C -40 to 122°F   | R2 0.08" ToughFlex | MEGA: 810 31.89" FINE: 170 6.69" | ULTRA: 520 20.47" SUPER: 340 13.39" TURBO: 260 10.24" HSP: 90 3.54" | ø0.5 ø0.02" | ø0.005 ø0.0002" Opaque | **FU-51TZ** Approx. 5 g Aluminum |
| | | 2 m 6.6' Free-cut (ø1.3 ø0.05") -40 to +50°C -40 to 122°F   | | MEGA: 2900 114.17" FINE: 610 24.02" | ULTRA: 1900 74.80" SUPER: 1200 47.24" TURBO: 850 33.46" HSP: 260 10.24" | ø1 ø0.04" | | **FU-52TZ** Approx. 15 g Aluminum |
| Flat | | 1 m 3.3' Free-cut (ø1.0 ø0.04") -40 to +50°C -40 to 122°F   | | MEGA: 500 19.69" FINE: 140 5.51" | ULTRA: 340 13.39" SUPER: 230 9.06" TURBO: 180 7.09" HSP: 80 3.15" | ø0.5 ø0.02" | | **FU-53TZ** Approx. 10 g SUS303 |
| | | 2 m 6.6' Free-cut (ø2.2 ø0.09") -40 to +50°C -40 to 122°F   | | MEGA: 2900 114.17" FINE: 610 24.02" | ULTRA: 1900 74.80" SUPER: 1200 47.24" TURBO: 850 33.46" HSP: 260 10.24" | ø1 ø0.04" | | **FU-54TZ** Approx. 25 g SUS303 |
| | | 2 m 6.6' Free-cut (ø2.2 ø0.09") -40 to +50°C -40 to 122°F   | | MEGA: 1900 74.80" FINE: 410 16.14" | ULTRA: 1500 59.06" SUPER: 900 35.43" TURBO: 700 27.56" HSP: 270 10.63" | ø1.13 ø0.044" | | **FU-56TZ** Approx. 20 g Aluminum |
| Side | | 1 m 3.3' Free-cut (ø1.0 ø0.04") -40 to +50°C -40 to 122°F   | | MEGA: 740 29.13" FINE: 140 5.51" | ULTRA: 480 18.90" SUPER: 280 11.02" TURBO: 200 7.87" HSP: 70 2.76" | ø0.5 ø0.02" | | **FU-57TZ** Approx. 5 g SUS303 |
| Top | Optical axis height 10 mm 0.39" | 2 m 6.6' Free-cut (ø2.2 ø0.09") -40 to +50°C -40 to 122°F   | | MEGA: 2200 86.61" FINE: 450 17.72" | ULTRA: 1700 66.93" SUPER: 1000 39.37" TURBO: 760 29.92" HSP: 290 11.42" | ø1.13 ø0.044" | | **FU-L51Z** Approx. 30 g Aluminum |
| | Optical axis height 15 mm 0.59" | 2 m 6.6' Free-cut (ø2.2 ø0.09") -40 to +50°C -40 to 122°F   | | | | | | **FU-L52Z** Approx. 30 g Aluminum |
| | Optical axis height 20 mm 0.79" | 2 m 6.6' Free-cut (ø2.2 ø0.09") -40 to +50°C -40 to 122°F   | | | | | | **FU-L53Z** Approx. 30 g Aluminum |
| Top (Built-in lens) | Optical axis height 10 mm 0.39" | 2 m 6.6' Free-cut (ø2.2 ø0.09") -40 to +50°C -40 to 122°F   | | MEGA: 3600 141.73" FINE: 3100 122.05" | ULTRA: 3600 141.73" SUPER: 3600 141.73" TURBO: 3600 141.73" HSP: 2100 82.68" | ø3.5 ø0.14" | ø0.2 ø0.01" Opaque | **FU-L50Z** Approx. 30 g Aluminum |
| Side | Optical axis height 10 mm 0.39" | 2 m 6.6' Free-cut (ø2.2 ø0.09") -40 to +50°C -40 to 122°F   | | MEGA: 1900 74.80" FINE: 410 16.14" | ULTRA: 1500 59.06" SUPER: 900 35.43" TURBO: 700 27.56" HSP: 270 10.63" | ø1.13 ø0.044" | ø0.005 ø0.0002" Opaque | **FU-L54Z** Approx. 30 g Aluminum |

*1 When using the FS-N Series. "3600 mm 141.73'" is assumed as the maximum distance because the fiber cable has a length of 2 m 6.6'.
*2 The minimum detectable object was determined at the optimal detecting distance and sensitivity setting.

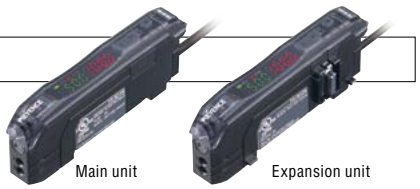
## REFLECTIVE MODELS

| Type: Beam emitting direction | | Fiber unit length (Diameter), Ambient temperature, Appearance (mm inch) | Cable bend radius (mm inch) | Detecting distance (mm inch)*1: MEGA FINE | Detecting distance (mm inch)*1: Other power modes | Minimum detectable object (mm inch)*2 | Model Weight Case material |
|---|---|---|---|---|---|---|---|
| Flat | | 1 m 3.3' Free-cut (ø1.0 ø0.04") -40 to +50°C -40 to 122°F   | R2 0.08" ToughFlex | MEGA: 2 to 120 0.08" to 4.72" FINE: 2 to 24 0.08" to 0.94" | ULTRA: 2 to 77 0.08" to 3.03" SUPER: 2 to 50 0.08" to 1.97" TURBO: 2 to 32 0.08" to 1.26" HSP: 2 to 8 0.08" to 0.31" | ø0.005 ø0.0002" Gold wire | **FU-41TZ** Approx. 5 g SUS303 |
| | | 2 m 6.6' Free-cut (ø2.2 ø0.09" × 2) -40 to +50°C -40 to 122°F   | | MEGA: 1 to 500 0.04" to 19.69" FINE: 1 to 70 0.04" to 2.76" | ULTRA: 1 to 320 0.04" to 12.60" SUPER: 1 to 190 0.04" to 7.48" TURBO: 1 to 130 0.04" to 5.12" HSP: 1 to 50 0.04" to 1.97" | | **FU-42TZ** Approx. 24 g SUS303 |
| | | 2 m 6.6' Free-cut (ø2.2 ø0.09" × 2) -40 to +50°C -40 to 122°F   | | MEGA: 1 to 500 0.04" to 19.69" FINE: 1 to 70 0.04" to 2.76" | ULTRA: 1 to 320 0.04" to 12.60" SUPER: 1 to 190 0.04" to 7.48" TURBO: 1 to 130 0.04" to 5.12" HSP: 1 to 50 0.04" to 1.97" | | **FU-43TZ** Approx. 22 g SUS303 |
| Top | | 1 m 3.3' Free-cut (ø1.0 ø0.04" × 2) -40 to +50°C -40 to 122°F   | | MEGA: 1 to 160 0.04" to 6.30" FINE: 1 to 36 0.04" to 1.42" | ULTRA: 1 to 120 0.04" to 4.72" SUPER: 1 to 81 0.04" to 3.19" TURBO: 1 to 60 0.04" to 2.36" HSP: 1 to 13 0.04" to 0.51" | | **FU-44TZ** Approx. 3 g SUS304 |
| Side | | 1 m 3.3' Free-cut (ø1.0 ø0.04" × 2) -40 to +50°C -40 to 122°F   | | MEGA: 1 to 160 0.04" to 6.30" FINE: 1 to 36 0.04" to 1.42" | ULTRA: 1 to 120 0.04" to 4.72" SUPER: 1 to 81 0.04" to 3.19" TURBO: 1 to 60 0.04" to 2.36" HSP: 1 to 18 0.04" to 0.71" | | **FU-47TZ** Approx. 4 g SUS303 |
| Top | Optical axis height 10 mm 0.39" | 2 m 6.6' Free-cut (ø2.2 ø0.09") -40 to +50°C -40 to 122°F   | | MEGA: 760 29.92" FINE: 170 6.69" | ULTRA: 580 22.83" SUPER: 430 16.93" TURBO: 320 12.60" HSP: 90 3.54" | | **FU-L41Z** Approx. 25 g Aluminum |

*1 When using the FS-N Series. Standard target: White matte paper (Reflective type only.)
*2 The minimum detectable object was determined at the optimal detecting distance and sensitivity setting.

## FIBEROPTIC AMPLIFIER **FS-N Series**

FS-N Series amplifiers make installation easier than ever, while also ensuring stable detection.




### SPECIFICATIONS

| Type | | Single output | | | | Dual outputs | | | | Monitor output | Zero line |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cable | | M8 connector | | Cable | | M8 connector | | Cable | — |
| Model | NPN | FS-N11N | FS-N12N | FS-N11CN | FS-N12CN | FS-N13N | FS-N14N | — | — | FS-N11MN | FS-N10 |
| | PNP | FS-N11P | FS-N12P | FS-N11CP | FS-N12CP | FS-N13P | FS-N14P | FS-N13CP | FS-N14CP | — | |
| Main unit/expansion unit | | Main unit | Expansion unit | Main unit | Expansion unit | Main unit | Expansion unit | Main unit | Expansion unit | Main unit | Expansion unit (no output line) |
| Control outputs | | 1 output | 1 output | 1 output | 1 output | 2 output | 2 output | 2 output | 2 output | 1 output | None |
| Monitor output (1 to 5 V) | | — | — | — | — | — | — | — | — | 1 output | — |
| External input | | — | — | 1 input | 1 input | 1 input | 1 input | — | — | — | — |

## FIBER UNIT **FU-43TZ/56TZ**

### SPECIFICATIONS

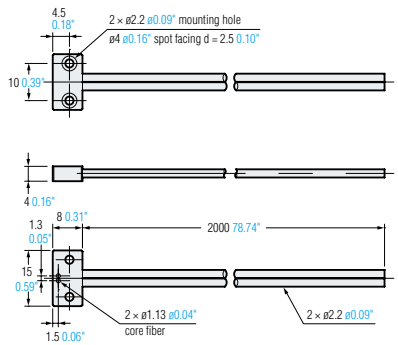
| Model | | FU-43TZ | FU-56TZ |
|---|---|---|---|
| Type | | Reflective | Thrubeam |
| Detecting distance (mm inch)*1 when using the FS-N Series | MEGA | 1 to 500 0.04" to 19.69" | 1900 74.80" |
| | ULTRA | 1 to 320 0.04" to 12.60" | 1500 59.06" |
| | SUPER | 1 to 190 0.04" to 7.48" | 900 35.43" |
| | TURBO | 1 to 130 0.04" to 5.12" | 700 27.56" |
| | FINE | 1 to 70 0.04" to 2.76" | 410 16.14" |
| | HSP | 1 to 50 0.04" to 1.97" | 270 10.63" |
| Standard target to be detected (optical axis diameter) | | — | ø1.13 mm ø0.04" opaque |
| Minimum detectable object*2 | | ø0.005 mm ø0.0002" gold wire | ø0.005 mm ø0.0002" opaque |
| Enclosure rating | | IP67 (IEC60529) | |
| Ambient temperature | | -40 to +50°C -40 to 122°F (No freezing) | |
| Ambient humidity | | 35 to 85% RH (No condensation) | |
| Fiber allowable bend radius | | 2 mm 0.08" | |
| Fiber cable length | | 2 m 6.6' (Free-cut) | |
| Material | | Case: SUS303<br>Core fiber: acrylic<br>Fiber sheath: polyethylene | Case: aluminum (fluorine coating)<br>Core fiber: acrylic<br>Fiber sheath: polyethylene |
| Weight | | Approx. 22 g | Approx. 20 g |

*1 Standard target: White matte paper (Reflective type only).
*2 The minimum detectable object was determined at the optimal detecting distance and sensitivity setting.

### DIMENSIONS

Unit: mm inch

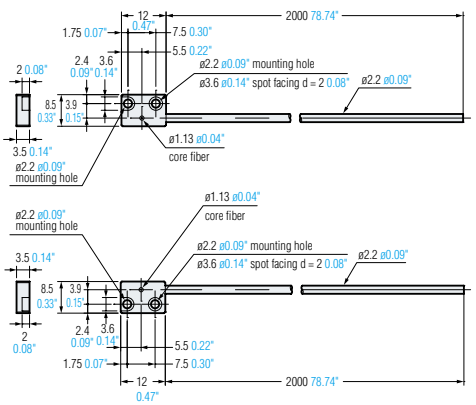
**FU-43TZ**




Case material: SUS303

[Accessories]
- M2 screw: P = 0.4 × L = 6, P = 0.02" × L = 0.24", nickel-plated iron
- M2 nut: across-flats = 4 0.16", t = 1.2 0.05", nickel-plated iron
- Fiber cutter

**FU-56TZ**




Case material: aluminum (fluorine coating)

[Accessories]
- M2 screw: P = 0.4 × L = 6, P = 0.02" × L = 0.24", nickel-plated iron
- M2 nut: across-flats = 4 0.16", t = 1.2 0.05", nickel-plated iron
- Fiber cutter

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