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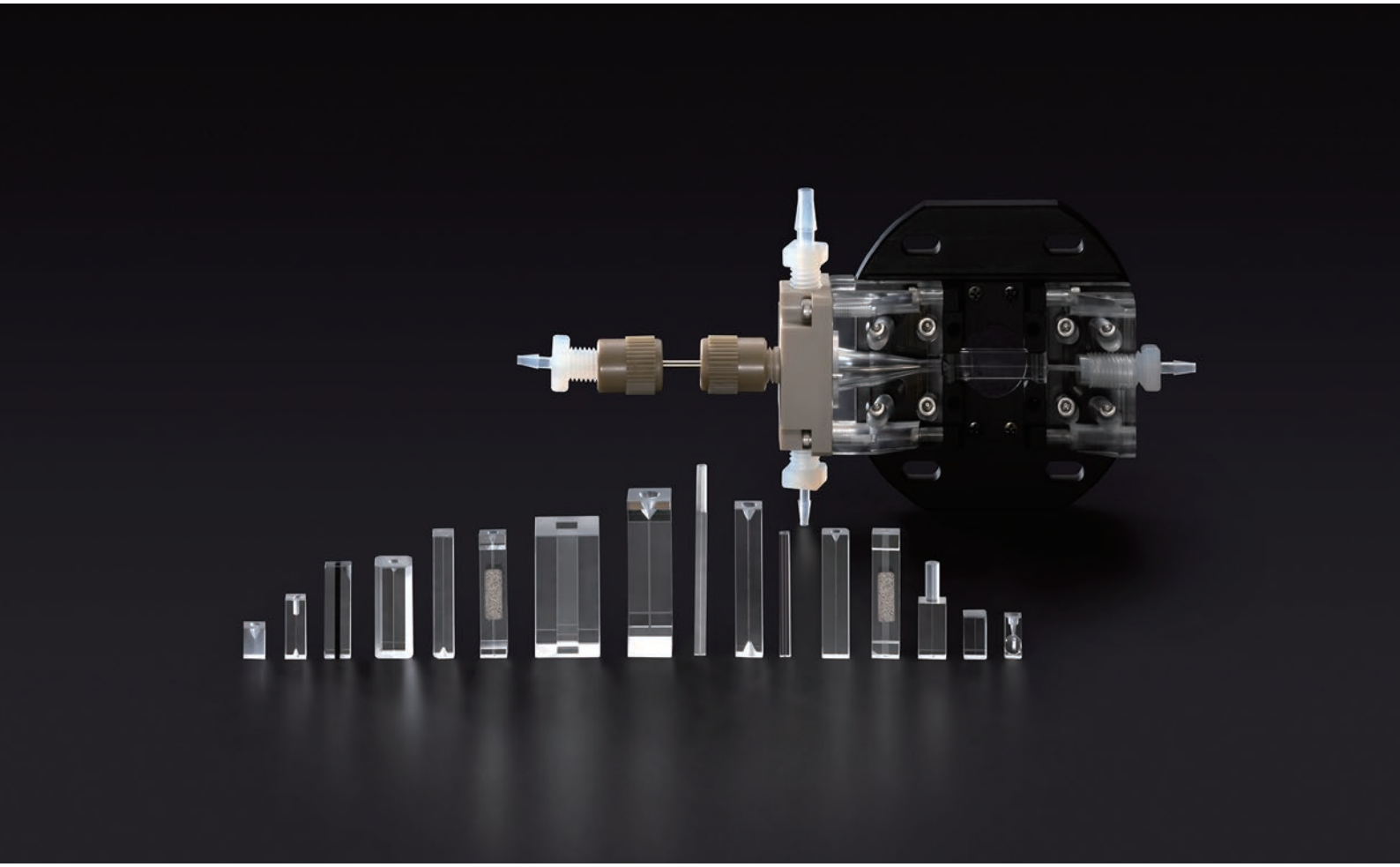
# Flow cells



# Flow cells

Hamamatsu provides a wide variety of quartz glass flow cells (cuvettes) designed and fabricated based on our accumulated expertise in glass processing.
These flow cells have high dimensional accuracy that ensures the ideal flow rate and flow speed control.

→ P.03

# Flow cell assemblies

These flow cell assemblies consist of various component combinations for feeding liquids, and are designed to easily install into analytical instruments such as flow cytometers.

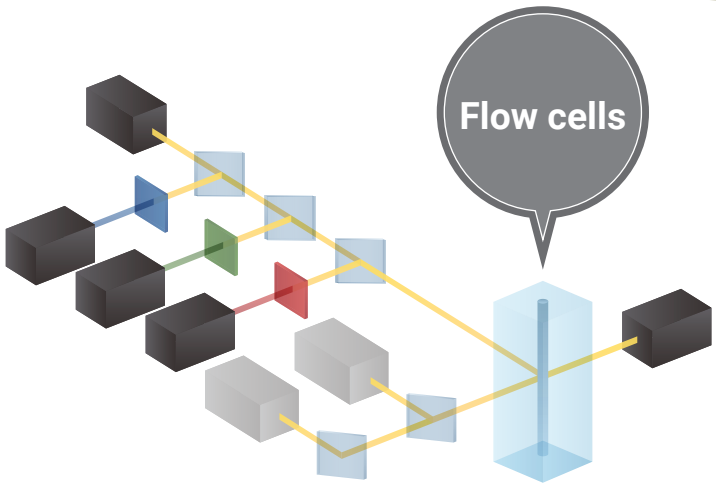
→ P.05

# Main application: Flow cytometer

Flow cytometers are a type of cell analyzer that measures the size, number and state of cells. A wide variety of flow cytometers capable of high-precision and high-throughput measurements are available in different sizes and performance specs.

## Measurement method

A sample solution containing the target cells is guided to flow through the flow cells while controlling the amount and speed of cell flow so as to align each cell in a single file stream. A laser beam is irradiated onto the flowing cells being aligned, and the resulting generated fluorescence or scattered light is measured.
The flow cells in this way serve as a “pathway“ for the target cells and light in the flow cytometer.

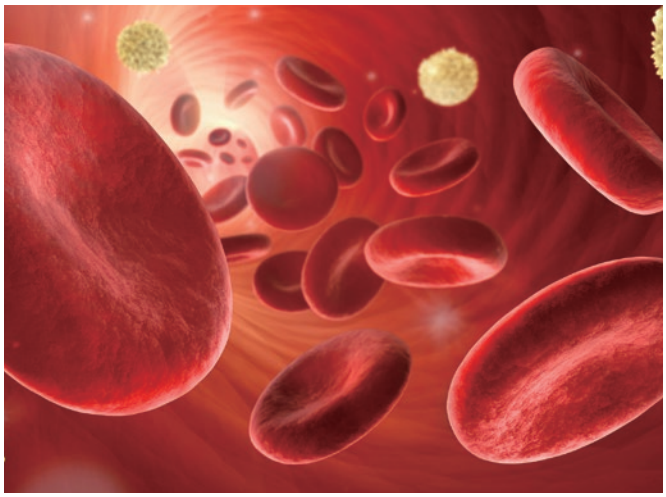



## High dimensional accuracy ensures precise control of the flow path and optical systems.

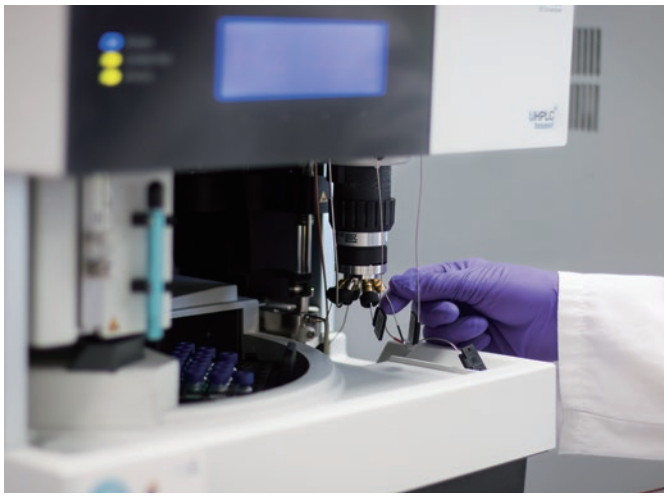
Measuring cells with a high degree of accuracy requires precisely controlling flow rate and flow speed of the sample liquid. This requires the flow cells to have high dimensional accuracy since it significantly affects flow control. Hamamatsu flow cells have high dimensional accuracy that ensures precise control of the flow path and also improves flexibility and freedom in designing the optical systems.

### Other application

- Blood cell counters



- HPLC



# Flow cells

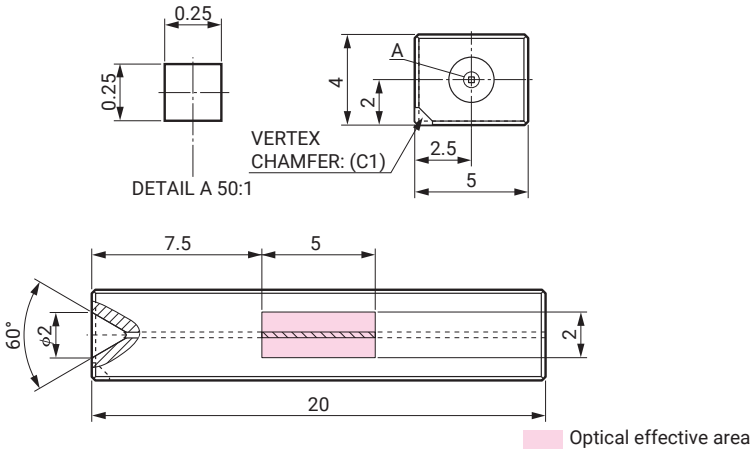
**Flow cells J11020 series**

**Specifications**

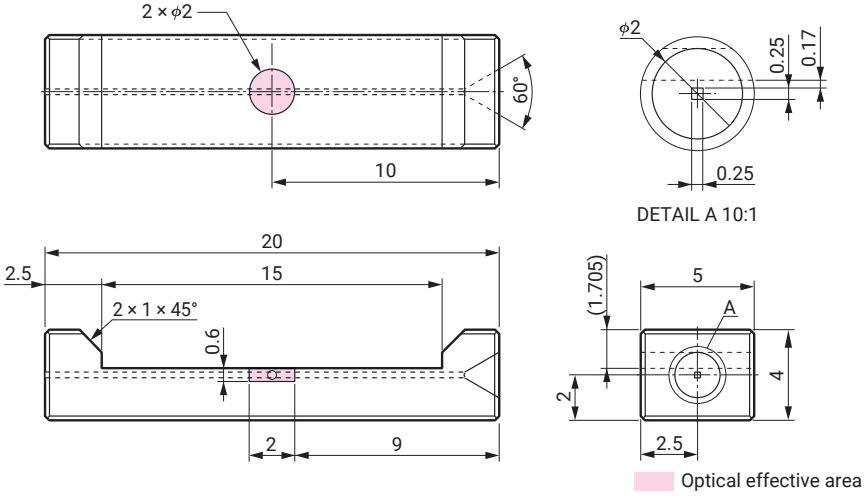
| Parameter | J11020-000-XXX | | | | | | Unit |
|---|---|---|---|---|---|---|---|
| Suffix | -23A | -24A | -25A | -33A | -34A | -35A | |
| Flow channel size | 0.150 × 0.150 | 0.200 × 0.200 | 0.250 × 0.250 | 0.150 × 0.150 | 0.200 × 0.200 | 0.250 × 0.250 | mm |
| Optical effective areas | 5.0 × 2.0 | | | Φ2.0 / 2.0 × 0.6 | | | mm |
| Material | Synthetic silica | | | | | | — |
| Operating ambient temperature | +15 to +35 | | | | | | °C |
| Operating ambient relative humidity | <85 | | | | | | %RH |
| Storage temperature | 0 to +45 | | | | | | °C |
| Weight | 0.87 | | | 0.57 | | | g |

## Dimensional outline examples (Unit: mm)

● Standard type (J11020-000-25A)



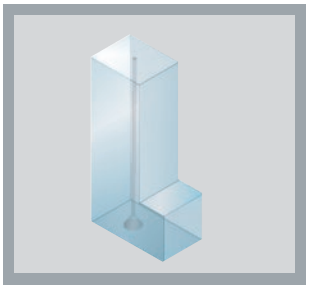

● Thin cover glass type (J11020-000-35A)



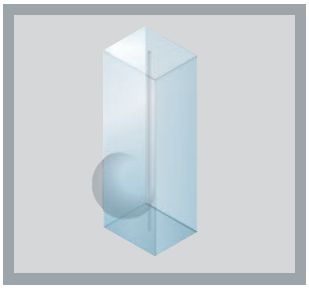

* The external dimensions of the J11020-000-23A/-24A/-33A/-34A are the same as the -25A and -35A except for the channel size. See the specification table to find their channel size.

## Customization examples

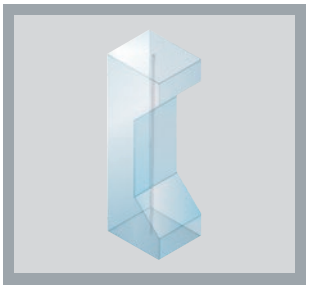
We welcome requests for different shapes and custom options.
Customization tasks not listed on this page will also be available, so please contact us for details.



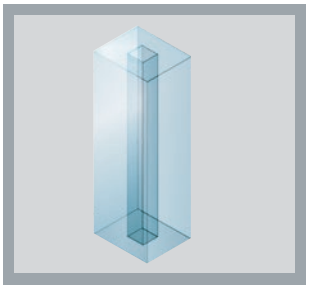
Shape custom: with step



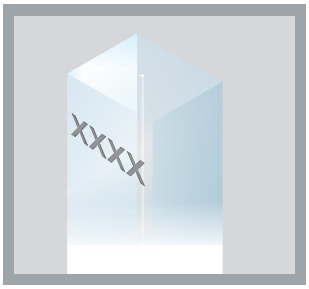
Shape custom: with lens



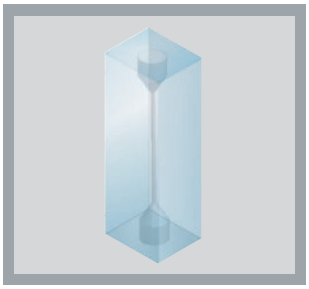
Shape custom: thin cover glass



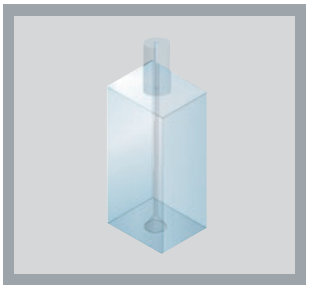
Shape custom: Large channel



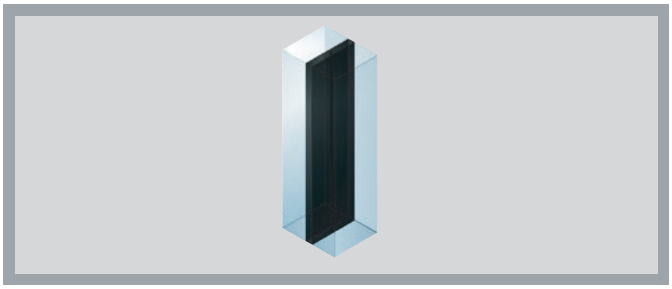

Other custom: Marking



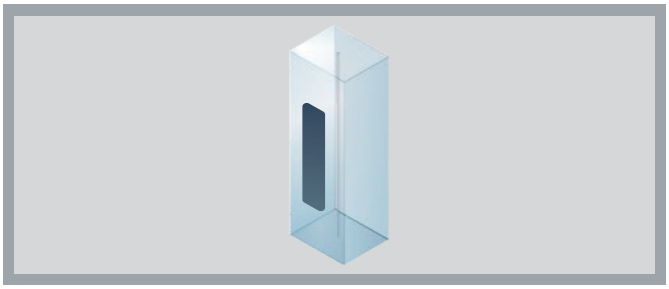
Other custom: With grinding (Pattern1)



Other custom: With grinding (Pattern2)

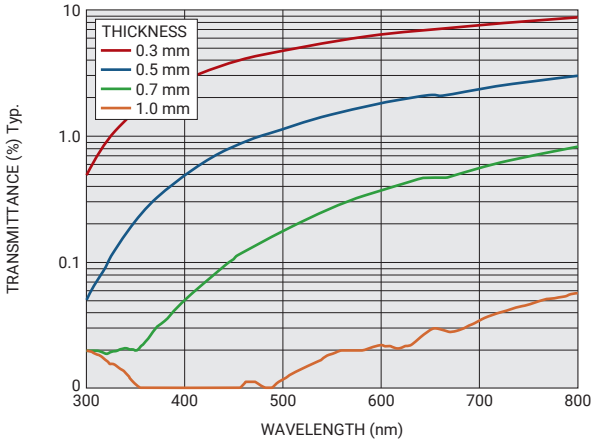


Material custom: Synthetic black quartz



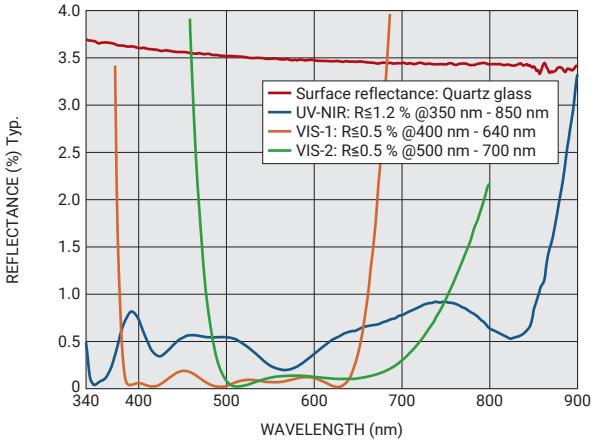
Other custom: AR coating

● Transmittance of synthetic black quartz




* The values on the above chart are sample values only
* Cannot be used for the UV spectral range.

● Optical thin film coating




Ex.: AR (Anti-Reflection) coating: reflectance characteristics

* The values on the above chart are sample values only

# Flow cell assemblies

**Flow cell assemblies J12800 series**

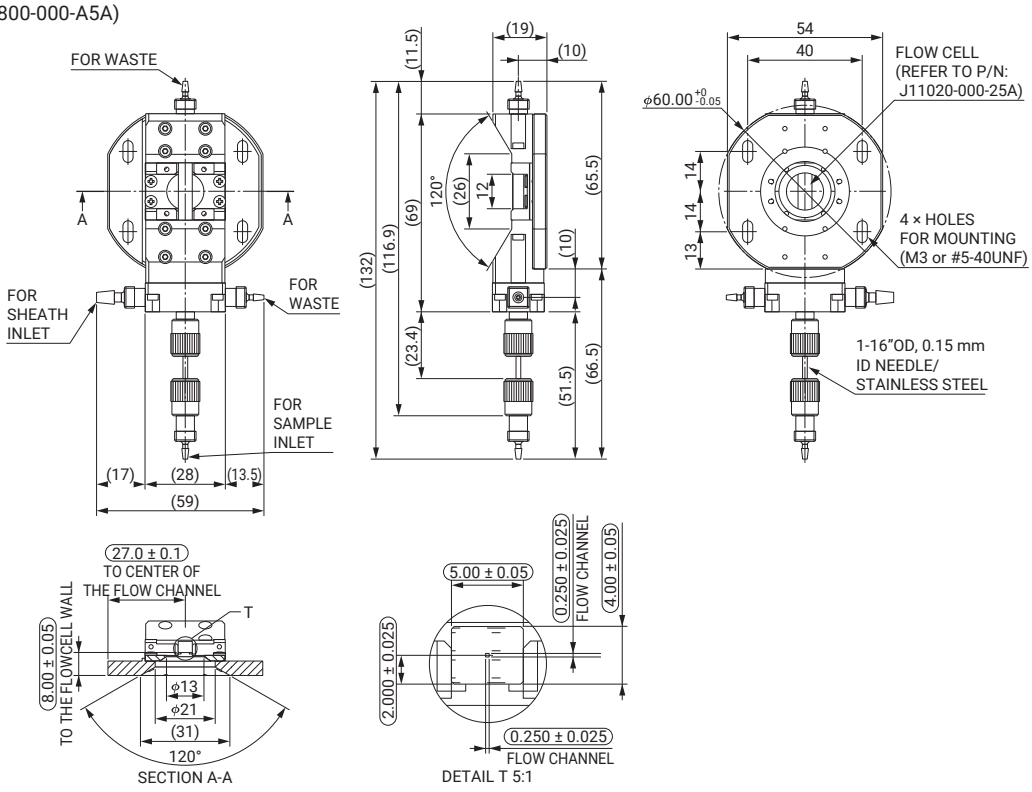
**Specifications**

| Parameter | | | | J12800-000-XXX | | | | | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| Suffix | | | | -A3A | -A4A | -A5A | -B3A | -B4A | -B5A | |
| Flow cell | Flow channel size | | | 0.15 × 0.15 | 0.20 × 0.20 | 0.25 × 0.25 | 0.15 × 0.15 | 0.20 × 0.20 | 0.25 × 0.25 | mm |
| | Optical effective areas | | | 5.0 × 2.0 | | | Φ2.0 | | | mm |
| | Material | | | Synthetic silica | | | | | | — |
| | Pressure resistance | | Max. | 450 | | | | | | kPa |
| Assembly | Recommended input sheath flow rate | | | 7.0 | 13.5 | 19.0 | 7.0 | 13.5 | 19.0 | ml/min |
| | Input sheath flow rate | | Max. | 9.5 | 15 | 24 | 9.5 | 15 | 24 | ml/min |
| | Operating sheath pressure | | | 10 to 180 | 10 to 120 | 10 to 100 | 10 to 180 | 10 to 120 | 10 to 100 | kPa |
| | Pressure resistance | | Max. | 450 | | | | | | kPa |
| | Connector ① | Sample inlet port | | IDEX P-646 | | | | | | — |
| | | Sheath inlet port | | IDEX P-647 | | | | | | — |
| | | Waste port | | IDEX P-646 | | | | | | — |
| | | Reverse flow port | | IDEX P-646 | | | | | | — |
| | Sample needle inside diameter | | | 0.15 | | | | | | mm |
| | Operating ambient temperature | | | +15 to +35 | | | | | | °C |
| | Operating ambient relative humidity ② | | | <85 | | | | | | %RH |
| | Storage temperature | | | 0 to +45 | | | | | | °C |
| | Weight | | | 60.6 | | | 60.3 | | | g |

① See P.6 for applicable tubes. ② No condensation.

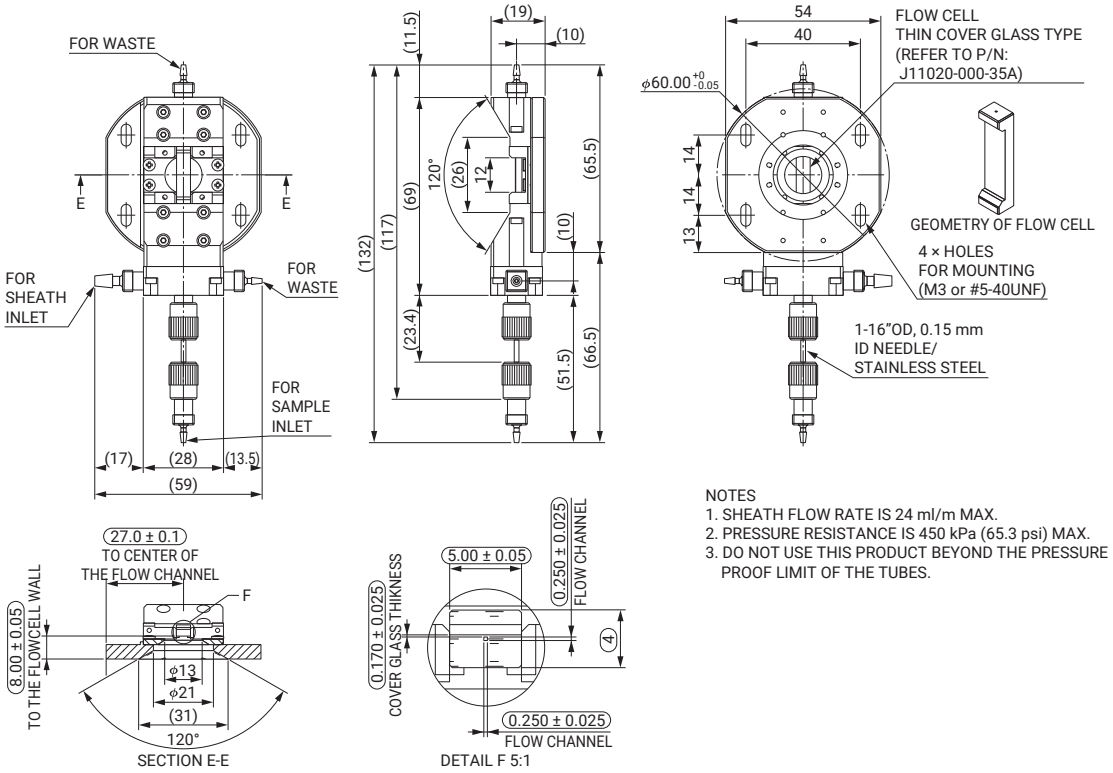
## Dimensional outline (Unit: mm)

● Standard type (J12800-000-A5A)




* The external dimensions of the J12800-000-A3A/-A4A are the same as the -A5A except for the channel size. See the specification table to find their channel size.

● Thin cover glass type (J12800-000-B5A)




NOTES
1. SHEATH FLOW RATE IS 24 ml/m MAX.
2. PRESSURE RESISTANCE IS 450 kPa (65.3 psi) MAX.
3. DO NOT USE THIS PRODUCT BEYOND THE PRESSURE PROOF LIMIT OF THE TUBES.

* The external dimensions of the J12800-000-B3A/-B4A are the same as the -B5A except for the channel size. See the specification table to find their channel size.

● Tube size and fitting screw list

| Item | Tube size | Fitting screw |
|---|---|---|
| Sheath inlet | 3.20 mm (1/8") | 1/4-28UNF |
| Bubble release | 1.58 mm (1/16") | 1/4-28UNF |
| Waste | 1.58 mm (1/16") | 1/4-28UNF |
| Sample inlet | 1.58 mm (1/16") | 1/4-28UNF |

# Q&A

## Flow cells questions

**Q.01** Is it possible to change the flow cell specs such as flow channel size and wall thickness?

**A.01** Yes, it is possible to customize the specs. Please contact us to discuss your specifications, applications, and requirements.

**Q.02** I need a 3D model for optical design. Can you provide it?

**A.02** Yes, we can provide it.

**Q.03** Can you give us information on the basic optical properties of the flow cell glass such as transmittance?

**A.03** Yes, that information is available.

**Q.04** I'd like to consult with you about a customization need. Do you require any information for the consultation?

**A.04** It would make things easier to discuss if you could provide us with a simple drawing or figure for the customization.

**Q.05** Are flow cells made from material other than quartz glass available?

**A.05** We are sorry but these are not available in other than quartz glass.

## Flow cell assemblies questions

**Q.01** Can you fabricate a flow cell assembly using a flow cell with an AR lens or by processing black quartz?

**A.01** It may be possible in some cases. Please contact us for details.

**Q.02** Is it possible to drill mounting holes in the plastic or metal parts of a flow cell assembly?

**A.02** Yes, it is possible. Please consult with us about this.

**Q.03** Can I replace or remove an already assembled flow cell?

**A.03** No, you can't because the flow cell is assembled by using adhesives.



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