

General Specifications

Model TB450G NTU-compliant Surface Scattered Type Turbidity Meter

EXA TB

GS 12E04A03-01E

GENERAL

With the rapid growth of industry and the advanced consumer living, the demand for the industrial and drinking water has increased, requiring the water with high quality. Concurrently water pollution caused by a large amount of such used water discharged into rivers has worsened year after year, raising a significant social problem nowadays.

In the circumstances necessity of the turbidity meters, originally used for operational control at drinking water treatment plants, has been recently expanding into many applications like detecting turbidity of chemical processes and measuring concentration of suspended solids in wastewater of various industries.

Ever since their release in 1959, a long experience and accumulated achievement with turbidity meters, mainly at water supply and wastewater treatment plants, have established Yokogawa's process-use turbidity meters as highly reliable products for many users.

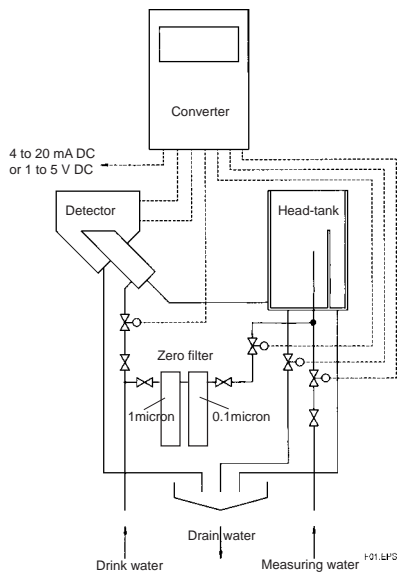
The New Model TB450G NTU-compliant surface scattered type turbidity has been successfully designed to indicate turbidity in the NTU (nephelometric turbidity units), the unit used worldwide, in addition to its microprocessor-based, superior performance and high reliability. Moreover the improvement of the light source and the photodetecting element enables lower turbidity measurement with the resolution ten times larger than that of the existing surface scattered type turbidity meters: the TB450G can measure turbidity at one tenth of turbidity level the present models can detect.



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SYSTEM CONFIGURATION

Example: A system with automatic cleaning and automatic zero calibration.



Note: The 0.1micron filter is not used for the high-range type.

FEATURES

- Equipped with a microprocessor, allowing provision of advanced performance and high reliability
- NTU turbidity unit display is available by Right-angled scattering light
- Minimum range 0 to 0.1 NTU
- Enhanced self-testing functions such as detection of a disconnected lamp, a converter check, and upper and lower limit alarm
- Provide with multiple function such as automatic cleaning, universal-range, and automatic zero calibration
- Use of surface scattering light measuring method eliminates the measurement errors caused by contamination on the cell port
- Provide with measures against air bubbles by signal smoothing

SPECIFICATIONS

- Application: Turbidity of drinking water, sewage water, river and water of used in general processes
- Measuring Method : Right-angled Surface Scattering-light measuring method conforming to EPA 180.1 and ASTM D1889-88a
- Measuring Range : (0 to 0.1) to (0 to 100) NTU for Low Range
(0 to 10) to (0 to 2000) NTU for High Range
- Integral Indicator : 4-digit LED with unit NTU (Resolution of Low Range ; 0.001 NTU, Resolution of High Range ; 0.01 NTU)
- Output Range : 3 ranges selectable
Local switch (Default) / Remote switch (selectable)

CHARACTERISTICS

Linearity:

Low Range (-L);

When the upper limit value of span is 40 NTU or less;
 $\pm 2\%$ of the range upper limit or ± 0.02 NTU, whichever is greater.

When the upper limit value of span is 100 NTU or less;
 $\pm 4\%$ of the range upper limit

High Range (-H);

When the upper limit value of span is 1000 NTU or less;
 $\pm 2\%$ of the range upper limit

When the upper limit value of span is 2000 NTU or less;
 $\pm 5\%$ of the range upper limit

Repeatability:

Low Range (-L)

2% of the range upper limit or 0.004 NTU, whichever is greater.

High Range (-H)

2% of the range upper limit.

Supply Voltage Effects: $\pm 1\%$ of the range upper limit / within $\pm 10\%$ of rated voltage

Ambient Temperature Effects: $\pm 1\%$ of the range upper limit / 10 degC (Calibration disk)

Response Time: 2 minutes or less (90 % response)

Warm-up Time: Approx. 30 minutes

Model and Code

[Style: S1]

Model	Suffix Codes	Option Codes	Description
TB450G	.....	.....	NTU-compliant Surface Scattered Type Turbidity Meter
Measuring Range	-L	.....	Low range (0 to 0.1) to (0 to 100) NTU
	-H	.....	High range (0 to 10) to (0 to 2000) NTU
Output	-4	.....	4 to 20 mA DC
	-5	.....	1 to 5 V DC
Power Supply	-1	.....	100V AC, 50/60 Hz
	-3	.....	110V AC, 50/60 Hz
	-6	.....	200V AC, 50/60 Hz
	-7	.....	220V AC, 50/60 Hz
Sampling System	-NN	.....	None sampling system (Note 1)
	-NN	.....	Always -NN
Optional Specification		/P /R /SCT	Mounting Bracket for Pipe mounting Mounting Bracket for Rack mounting With Stainless Steel Tag-plate

(Note 1) A head tank (deforming tank) must be arranged separately so that the flow rate of the water sample reached the specified flow (1.5 to 2 l/m).
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Accessories

Name	Q'ty	Remark
Calibration Disk	1	In converter
Silicon Cloth	1	
Lamp	2	Spare
Fuse	4 each	1A, 3A (Spare)
Soft PVC Tube (ø33 Xø25 Black)	1 set (1m X 2)	For detector piping
Clamp	2	For detector piping

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Spare Parts

Name	Part No.	Recommend (*1)
Change Lamp	K9412AK	2 times / year (*2)
1 micron Filter	K9008ZD	1 time / year
0.1 micron Filter	K9725LX	1 time / year
Fuse (1A)	A1109EF	1 time / year
Fuse (3A)	A1094EF	1 time / year
Soft PVC Tube 2m (ø33 Xø25 Black)	K9411ZF	1 time / year

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(*1) Recommended replace period depends on application condition.

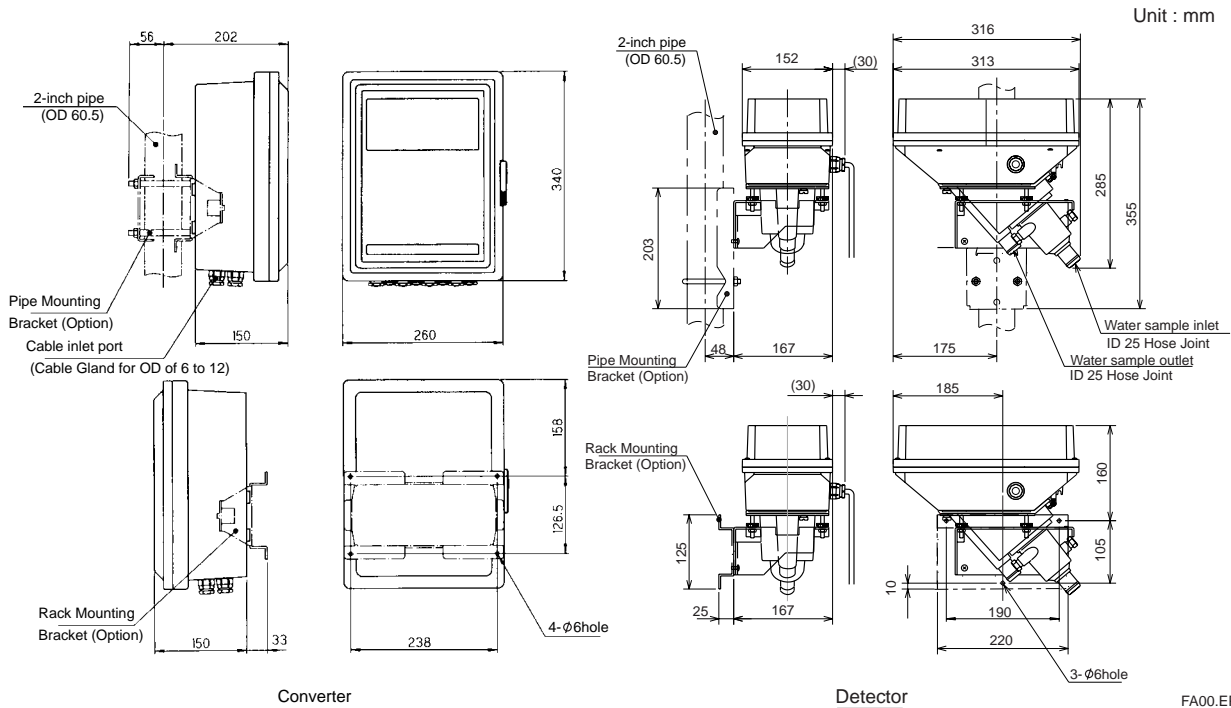
(*2) Please change soon when lamp disconnection (Err12) or lamp life error (Err25) is appeared.

Sampling Parts

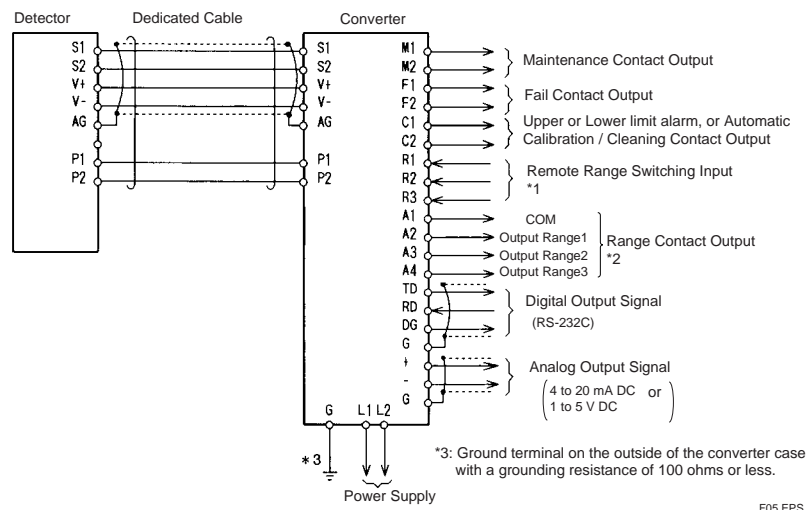
Name	Part No.
Pinch Valve for Drain water (100, 110V AC)	K9411JG
Pinch Valve for Drain water (200, 220V AC)	K9411JH
Solenoid Valve for Cleaning water or Zero water (100V AC)	A1014MZ
Solenoid Valve for Cleaning water or Zero water (200V AC)	A1015MZ
Solenoid Valve for Cleaning water or Zero water (110V AC)	A1016MZ
Solenoid Valve for Cleaning water or Zero water (220V AC)	A1017MZ
Motor Operated Valve for Sampling water (100, 110V AC)	K9411VE
Motor Operated Valve for Sampling water (200, 220V AC)	K9411VF
Head Tank (With Manual Valve)	K9411GC
Head Tank (With Pinch Valve 100, 110V AC)	K9411JA
Head Tank(With Pinch Valve 200, 220V AC)	K9411JB
Mounting Bracket for Head Tank	K9411BB

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EXTERNAL DIMENSIONS



CONNECTION DIAGRAM



*1: Remote Range Switching Method

	R1-R2	R1-R3
Output Range 1	OFF	OFF
Output Range 2	ON	OFF
Output Range 3	OFF	ON

ON input resistance; 200 ohms or less
 OFF input resistance; 100k ohms or more

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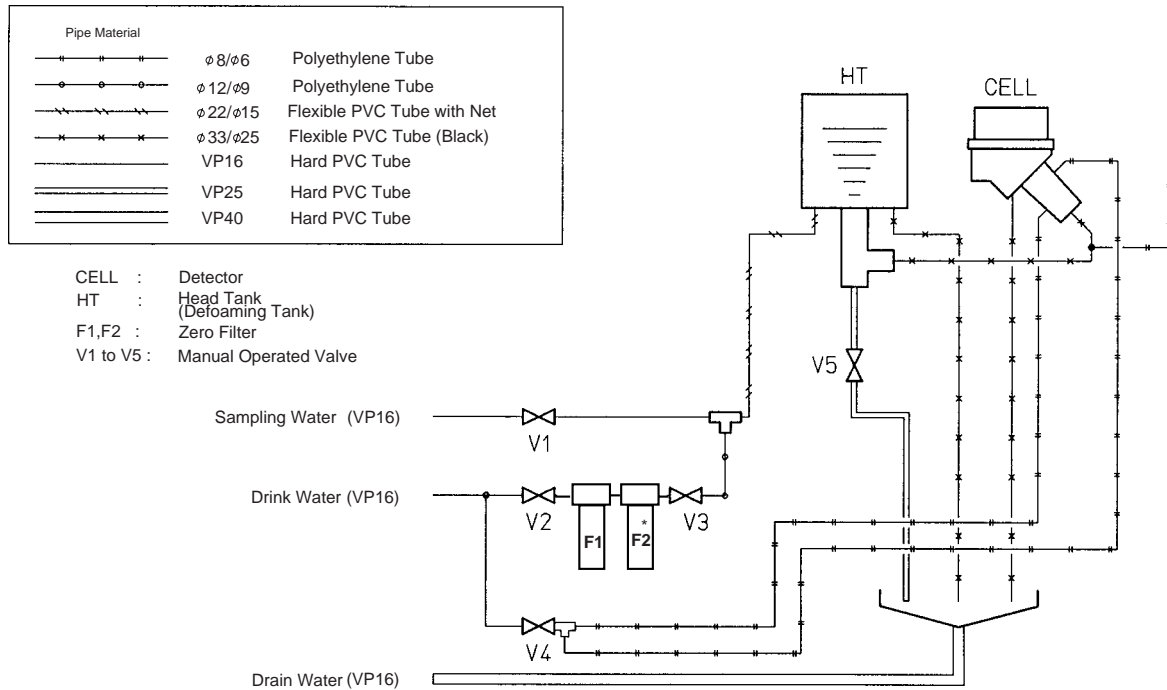
*2: Range Contact Output

	A1-A2	A1-A3	A1-A4
Output Range 1	Close	Open	Open
Output Range 2	Open	Close	Open
Output Range 3	Open	Open	Close

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EXAMPLE PIPING DIAGRAM

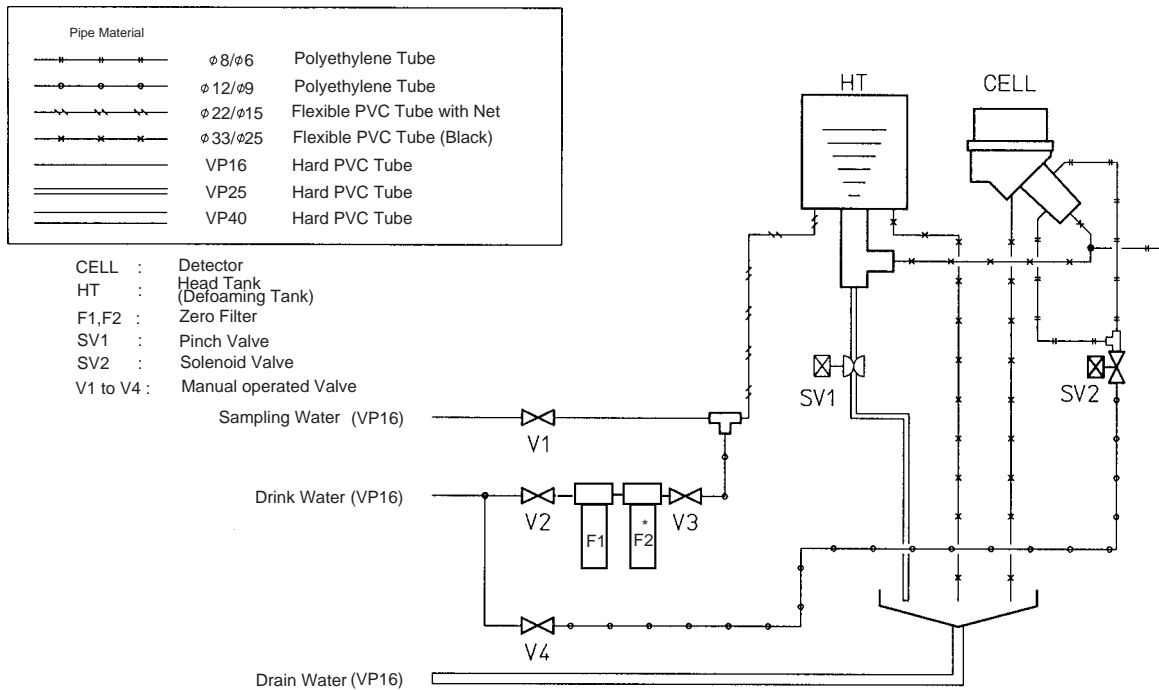
Without Automatic Cleaning and Automatic Zero Calibration



* F2 filter is not included in high range "H" measuring system.

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With Automatic Cleaning without Automatic Zero Calibration



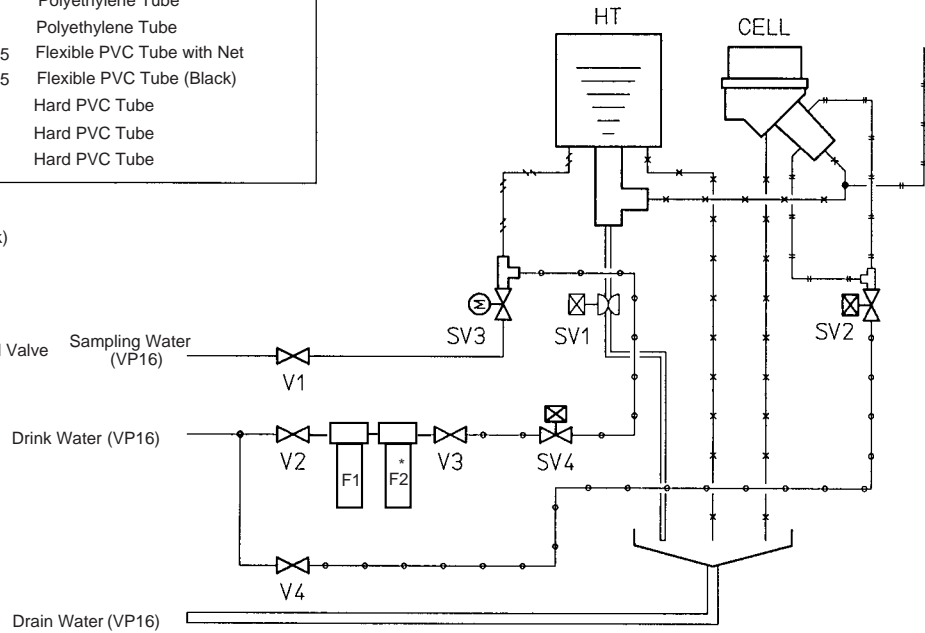
* F2 filter is not included in high range "H" measuring system.

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With Automatic Cleaning and Automatic Zero Calibration

Pipe Material		
	φ8/φ6	Polyethylene Tube
	φ12/φ9	Polyethylene Tube
	φ22/φ15	Flexible PVC Tube with Net
	φ33/φ25	Flexible PVC Tube (Black)
	VP16	Hard PVC Tube
	VP25	Hard PVC Tube
	VP40	Hard PVC Tube

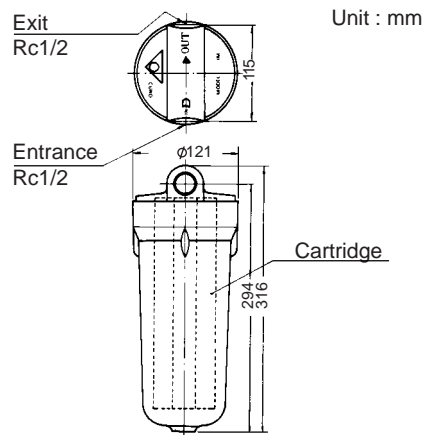
- CELL : Detector
- HT : Head Tank (Defoaming Tank)
- F1,F2 : Zero Filter
- SV1 : Pinch Valve
- SV2,SV4 : Solenoid Valve
- SV3 : Motor Valve
- V1 to V4 : Manual operated Valve



* F2 filter is not included in high range "-H" measuring system.

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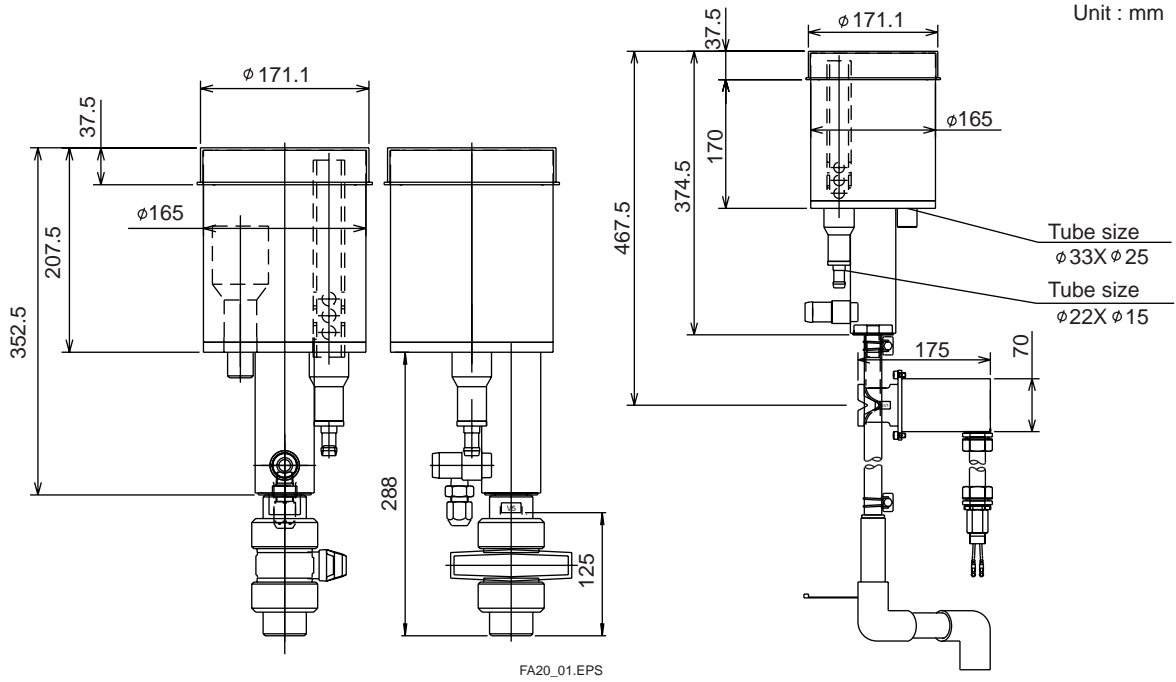
0.1 micron filter with case (Part No. K9725LW) or 1 micron filter with case (Part No. K9411UA)



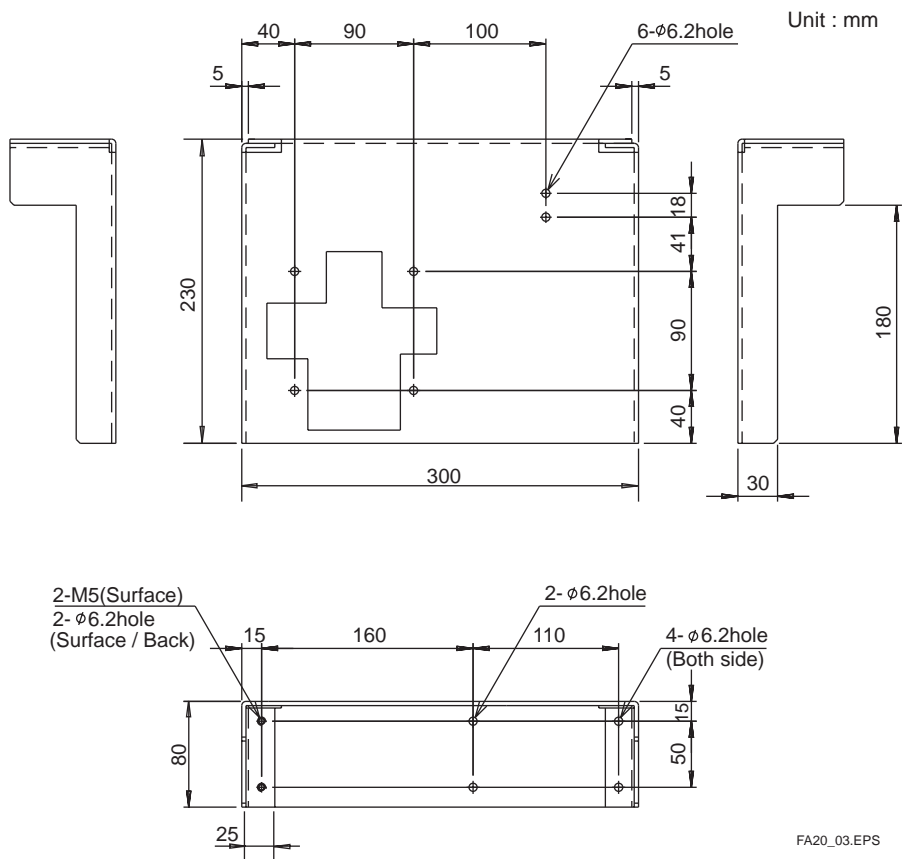
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Head Tank (With Manual operated Valve) ; K9411GC

Head Tank (With Pinch Valve) ; K9411JA, K9411JB



Mounting Bracket for Head Tank ; Part No. K9411BB



ENQUIRY SHEET FOR THE TB450G TURBIDITY METER

Thank you for enquiring about our turbidity meter. Please fill in the following information or put a tick next to the relevant item(s):

1. General Information

- (1) Customer/company name : _____
- (2) Contact person : _____ Sect. : _____ (Phone: _____)
- (3) Plant name : _____
- (4) Process to be measured : _____
- (5) Measurement objective : Indication Recording Alarm Control
- (6) Power supply : _____ VAC, _____ Hz

2. Measuring Conditions

- (1) Water sample temperature : Min. _____ to Max. _____ degC, Normal : _____ degC
- (2) Water sample pressure : Min. _____ to Max. _____ kPa, Normal : _____ kPa
- (3) Flow rate : Min. _____ to Max. _____ l / min , Normal : _____ l / min
- (4) Presence of slurry or contamination : No Yes
- (5) Water sample composition : _____
- (6) Others : _____

3. Installation

- (1) Ambient temperature : _____
- (2) Location : Indoors _____
- (3) Others : _____

4. Specification Requirements

- (1) Measuring range : _____ to _____ NTU
- (2) Transmission output : 4 to 20 mA 1 to 5 V
- (3) System components used : NTU-compliant surface scattered type turbidity meter
 Spare Parts Sampling Parts
- (4) Other Information : _____