FLOW & CONTROL SYSTEM PRIVATE LTD

Catalogue:
Acrylic Body Rotameters

Flow & Control System Private Limited, India

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Flow & Control System Private Ltd
Works: 16/5, Main Mathura Road Plot No: 11,
Lane No: 2 Karkhana Bagh,
Opposite: DPS School, Faridabad – 121001

Read this Manual Before Installation

This manual contains essential information about Magnetic liquid level indicators Please read all instructions carefully and follow the steps given in order.

Manual Conventions

This manual uses specific styles and symbols to share technical details, supporting information, and safety guidance. General explanations are written in plain text, while special notices are highlighted as Notes, Cautions, and Warnings.

- Notes: Provide additional information or clarification about an operating step. Notes are meant to assist understanding and do not normally include actions.
- ⚠ Caution: Indicate conditions that could cause minor injury, equipment damage, or reduce system integrity. Cautions also highlight unsafe practices or the need for special tools, materials, or protective gear.
- Warnings: Identify serious hazards that could lead to major injury or death. A warning signals an immediate danger if proper precautions are not taken.

Safety Instructions

- Always follow standard safety practices when working with electrical equipment, especially high-voltage systems. Disconnect power before touching or servicing any components.

⚠ Warning: Explosion risk — do not connect or disconnect any device unless power is turned off or the area is verified to be non-hazardous.

Low Voltage Directive:

This product is intended for Installation Category II, Pollution Degree 2. Any use beyond manufacturer instructions may reduce the equipment's safety and protection.

Warranty

All Flow & Control System mechanical level controls carry a three-year warranty, and electronic level controls carry an eighteen-month warranty from the date of factory shipment. If a unit fails within the warranty period and inspection confirms a manufacturing defect, Flow & Control System will repair or replace it free of charge, excluding transportation costs.

The company is not responsible for misapplication, labour costs, or any direct or indirect damages arising from installation or use. No other warranties apply unless specified in writing for certain products.

Quality Assurance

Flow & Control System maintains a rigorous quality management system to ensure consistent product and service excellence. The company's corporate quality assurance program is ISO 9001 certified, demonstrating compliance with recognized international standards and a commitment to total customer satisfaction.

Copyright Notice

Table of Contents:

Acrylic Body Rotameter: (Low Flow) FCSALP Series

Introduction:

Acrylic Body Rotameters are manufactured from crystal-clear acrylic, a transparent plastic known for its excellent strength, rigidity, and optical clarity. The material is lightweight, durable, and ideal for visual flow indication. Designed for inline installation with flanged or screwed connections, and offered with various wetted-part materials to suit different applications.

These rotameters are used for measuring the flow of **liquids and gases** across a wide range of industries, including **water treatment plants, ETP/STP units, beverage processing, nitrogen/oxygen/PSA systems, air plants, and organic chemical industries**.

The **FCSALP series** features **rear-end process connections, an integrated control valve, and a panel-mounted design**. These models are specifically engineered for **low-flow measurement applications**.

Features:

- Easy Installation
- Durable
- Cost effective
- Best Visibility
- Light weight with compact design
- Applicable for Gas and Liquid both
- Integrated Control Valve
- Available with multi outputs
- Unique Flush Panel Mounting
- Suitable for Pressure (up to 20 kg/cm2)
- Effective Instant Flow Rate Indication

Specifications:

Components	MOC
Meter Body	Crystal clear acrylic.
Float	Ceramic, SS316/ SS304/ P.P/ Aluminum/ PTFE/PVC
Scale	Laser engraved on Meter Body
Mounting	Vertical Panel Mounting with Rear Connection
Gland Packing	Neoprene/PTFE/Silicone
Connection	B S P / NPT Male or Female
Accuracy	±2% of FSD
Repeatability	0.5%
Rangeability	10.1
Pressure Rating	10 Kg/cm2

Flow & Control System Private Limited

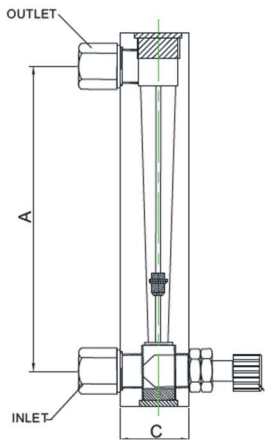
ISO 9001-2015 Certified Company

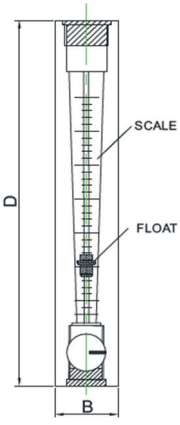
CIN No: U74140DL2015PTC277814

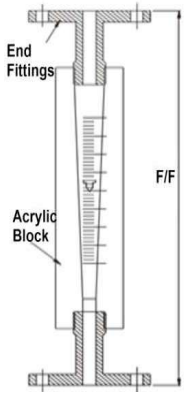
Acrylic Body Rotameter: (Low Flow) FCSALP Series

Standard Range in FCS-ALP Series

Model	Air (LPM)	Water (LPH)	Connection (BSP F/M)	A (mm)	B (mm)	C (mm)	D (mm)	Rated Pressure
FCSALP1	0–50	0–100	¼" & ½"	114	28	28	150	10 kg/cm^2
FCSALP2	0–100	0–200	¼" & ½"	159	28	28	195	10 kg/cm^2
FCSALP3	0–200	0–300	½"	110	30	35	150	10 kg/cm^2
FCSALP4	0–500 / 0–1000	0–600 / 0–1200	½"	165	30	35	205	10 kg/cm^2
FCSALP5	0–1000 / 0–1500	0–2000 / 0–2500	½" & ¾"	200	42	48	250	15 kg/cm^2
FCSALP6	0–3000	0–3600	¾"	165	38	42	220	15 kg/cm^2







**All above models are available with Panel Mounting Plate as per client's requirement.

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Acrylic Rotameter: (High Flow) FCSAH Series

Introduction:

The models of **FCSAH series** comes with Top – Bottom connection Flanged / screwed end type / TC end type. These are High Flow Rotameters.

Features:

Easy Installation,	Light weight with compact design	Suitable for High Pressure (up to 40 kg/cm2)
Inline Vertical Upward	Best Visibility	Available with Flow Switch
Durable & Cost Effective	Applicable for Gas and Liquid both	Available in Flanged and Threaded both

FCS-AHP Series:

Specifications:

Components	MOC
Meter Body	Crystal clear acrylic.
Float	Ceramic, SS316/ SS304/ P.P/ Aluminum/ PTFE/PVC
Scale	Laser engraved on Meter Body
Mounting	Vertical Mounting Top Bottom Connection
Gland Packing	Neoprene/PTFE/Silicone
Flange/End Fitting	MS/SS304/SS304L/SS316/SS316L
Connection	Flanged/ TC End/ BSP Threaded M' / F'
Accuracy	±2% of FSD
Repeatability	0.5%
Rangeability	10.1
Pressure Rating	40 Kg/cm2

Contact
Alarm

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Acrylic Rotameter: (High Flow) FCSAH Series

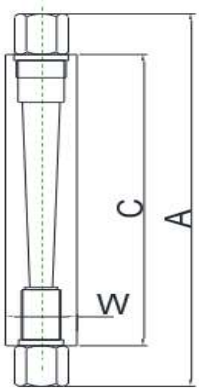
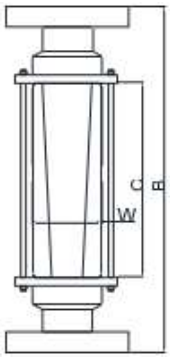


Fig - 'A'

*These models are Inner body thread type



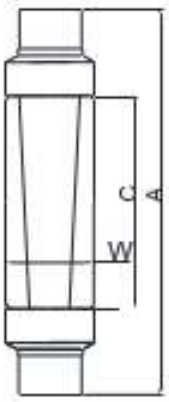


Fig - 'B'

* These models are outer body threaded Adopter type and Flanged type

Standard Range in FCS-AH Series

Model No.	Flow Range (Max) LPM 'Air'	Flow Range (Max) LPH 'Water'	Connection BSP 'F' / 'M' Flanged	A (mm)	B (mm)	C (mm)	W (mm)	Rated Pressure
FCSAH-1	0 – 80	0 – 100	¼" & ½"	190	-	150	28	
FCSAH-2	0 – 150 0 – 300	0 – 300 0 – 600	¼" & ½" ½"	190	-	150	30	
FCSAH-3	0 – 500 0 – 1000	0 – 1000 0 – 1500	½" ¾"	240	-	200	38	10 kg/cm²
FCSAH-4	0 – 1200	0 – 2000	¾" & 1	240	-	200	40	
FCSAH-5	0 – 1000 0 – 1500	0 – 1500 0 – 2500	½" ¾" & 1	250	275	150	38	
FCSAH-5/T	0 – 1000 0 – 1500	0 – 1500 0 – 2500	½" ¾" & 1"	-	375	170	40	
FCSAH-6	0 – 1800 0 – 2500	0 – 3000 0 – 6000	¾" 1" & 1½"	300	325	190	55	
FCSAH-7	0 – 2500 0 – 3000	0 – 6000 0 – 8000	1" 1½"	400	450	260	60	
FCSAH-8	0 – 6000 0 – 8000	0 – 12000 0 – 15000	1½" 2" & 2½"	400	450	260	70	20 kg/cm²
FCSAH-9	-	0 – 20000	2" & 2½"	400	450	260	70	
FCSAH-10	-	0 – 30000 0 – 40000	2" 2½" & 3"	400	450	260	85	
FCSAH-11	-	0 – 50000	3" & 4"	400	450	260	100	
FCSAH-10 (larger)	-	0 – 60000 0 – 80000	3" 4"	400	450	260	100	

(FCSAH-1 to FCSAH-5 Smaller Models) & (FCSAH-5/T to FCSAH-10 Large Models)

A: Total Height (Full vertical height of the flowmeter from top to bottom)
B: Connection Centre Distance {Distance between inlet & outlet connection centers (installation height)}
C: Tube Length {Length of the transparent tapered measuring tube (reading scale area)}
W: Body Width (Maximum outer width/diameter of the meter)

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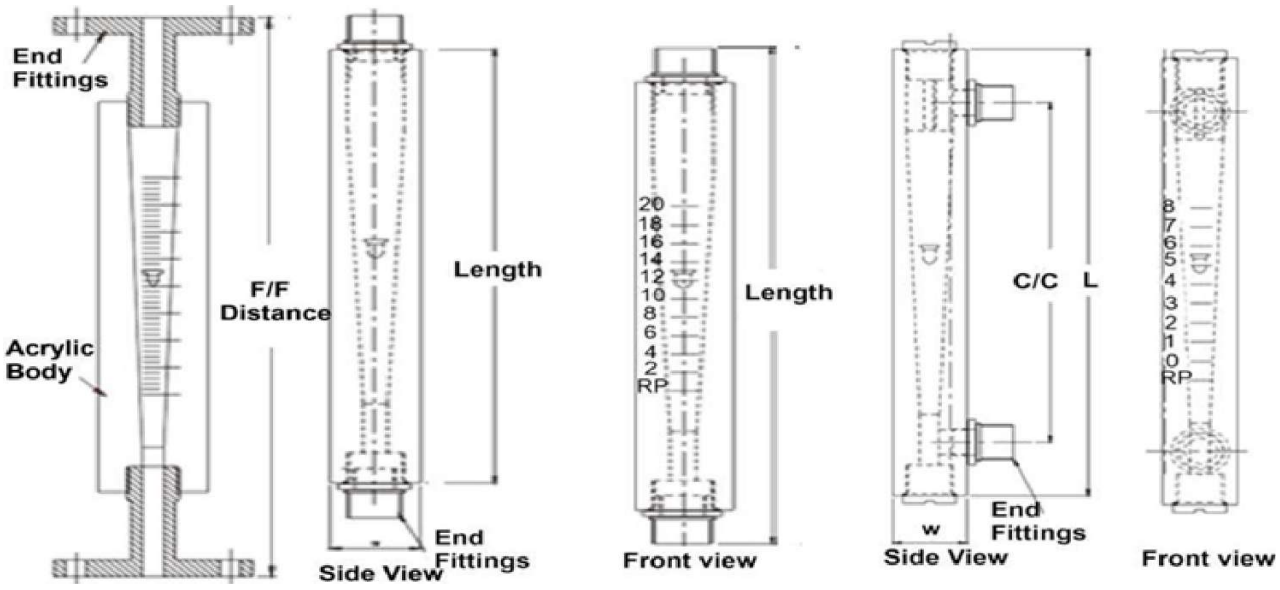
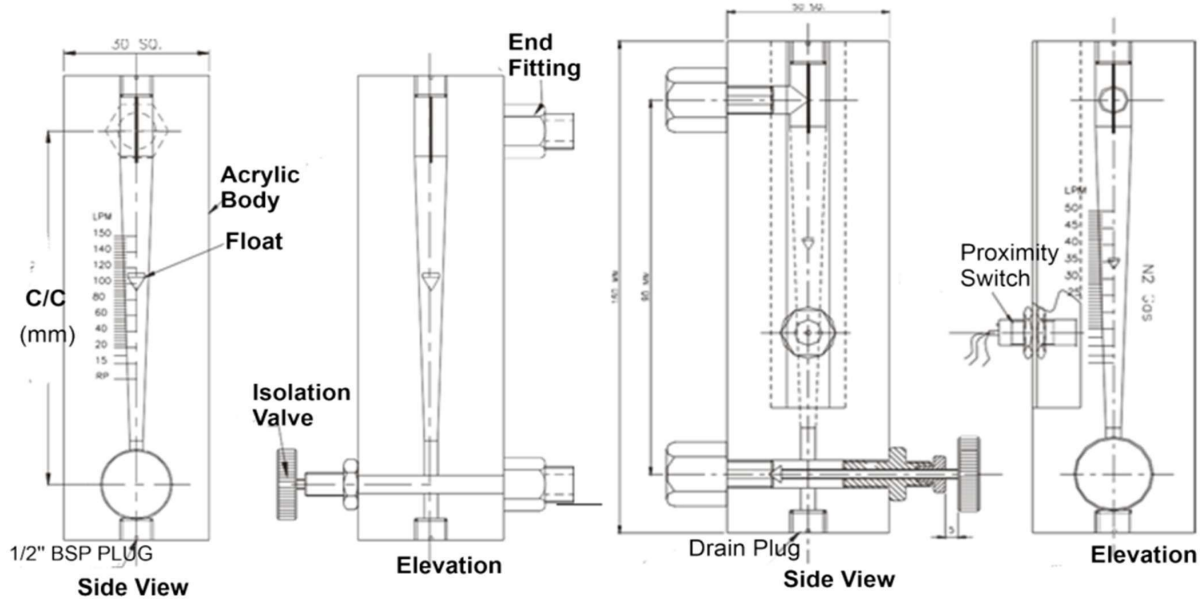


Product Code: FCSA-VF
Vertical Flanged Connection

Product Code: FCSA-VS
Vertical Screwed Connection

Product Code: FCSAS
Rear Screwed Connection



Product Code: FCSAPSIV

Panel Mounted

Product Code: FCSAP-SCIVF

Panel Mounted

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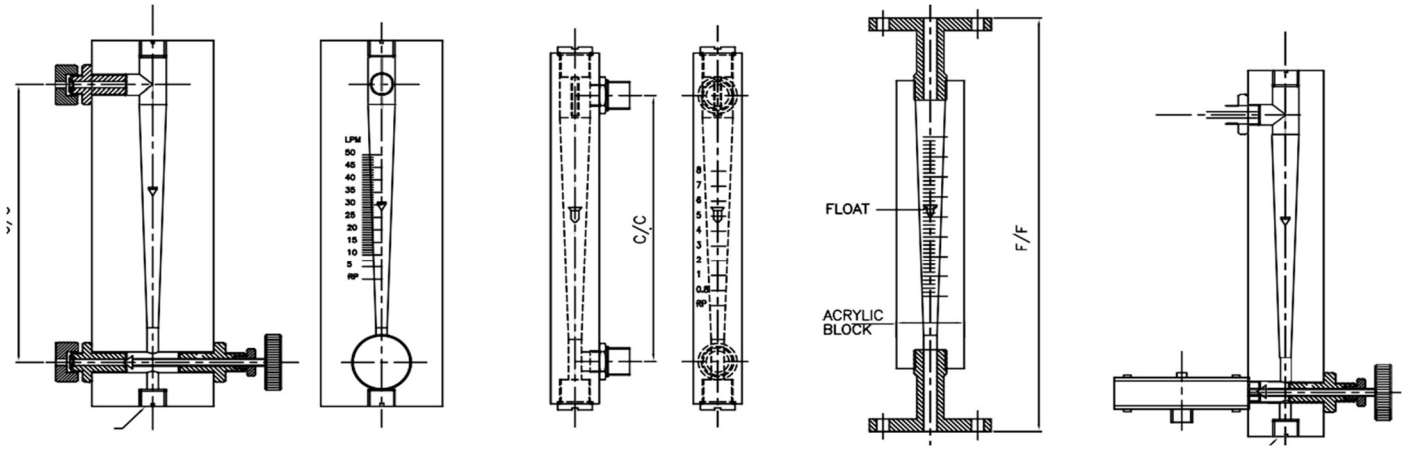
Installation & Maintenance Manual: Acrylic Body Rotameter

Description:

Flow & Control System Acrylic Body Rotameters are designed for measuring liquid or gas flow. Each meter is built around a solid transparent acrylic block with an internal tapered bore and a freely moving float. Optional features include a ball check valve and a needle-type control valve.
These meters are robust, easy to assemble and disassemble, and suitable for a wide range of applications. As the flow moves upward through the meter, the float rises to a position where its weight and buoyancy forces balance. The float's vertical position, read directly on the engraved scale on the acrylic block, indicates the instantaneous flow rate.



Side View | Elevation | Side View | Elevation | Flanged Vertical Connection | With Isolation Valve & DP Regulator

Unpacking:

Inspect the outer packing immediately upon receipt to check for any transit damage. If any damage is found, report it to the insurance agency without delay. Unpack the rotameter carefully to avoid handling damage.

Application:

For accurate performance, the rotameter should be used only with the fluid and operating conditions for which it has been calibrated. These conditions are specified in the test report supplied with the instrument.
For proper operation:

- **Liquids:** Operating pressure should be at least three times the pressure drop.
- **Gases:** Operating pressure should be at least five times the pressure drop.

Pressure drop values for each model are provided at the end of the leaflet.
Accuracy: ±2% of full-scale flow (from 100% to 10%)
Repeatability: ±0.5% F.S.

Operation:

Open the valves slowly and carefully to set the required flow rate. Sudden or rapid valve movement may cause the float to jump, which can damage the measuring block.
The **upper edge of the float** (as shown in Fig. b)
represents the actual flow rate. Each rotameter is supplied with a calibrated scale showing flow in the required units. For proper alignment, a reference line marked **R.P.** is provided on the scale.

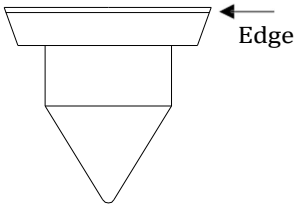


Fig B

Rotameter With DP Regulator:

The acrylic rotameter can be supplied with a differential pressure (DP) regulator to maintain a constant pressure drop across the manual needle valve, ensuring a stable and consistent flow rate.
The spring-loaded diaphragm actuates an internal ball valve or variable orifice to control the pressure differential.

Maintenance:

The instrument generally requires no routine maintenance.
If the measuring tube or float becomes dirty, clean them before further operation.

Dismantling the Flowmeter:

1) Shut off the flow completely.
2) For **vertical flanged connections**: loosen and remove all upper and lower bolts and carefully remove the rotameter assembly. For **rear screwed connections**: use two spanners—one to hold the flowmeter fitting and one for the pipeline fitting—to prevent external force from being applied to the acrylic block and avoid cracking.
3) Gently remove the end fittings or flange body.
4) Carefully take out the float and its retainer from the block.

Cleaning & Assembly of the Flowmeter:

1) Clean the float and the tapered bore using a soft brush, then rinse the entire unit with clean water. Do not use solvents, as they will react with and damage the acrylic body.
2) Use new O-rings and refit the components in their correct positions. Handle the body, float, and float retainers carefully to avoid drops or damage, especially to the float's indicating edge.
3) Reassemble all fittings with care and ensure all threaded joints are leak-tight.
4) The flowmeter is now ready for use again.

Troubleshooting:

Symptom:	Probable Cause:	Action to be taken:
1. Leakage at joints	O-ring or packing failure	Replace packings. Check operating conditions.
2. Rotameter showing higher or lower flow rate than expected	Incorrect operating pressure	Maintain operating pressure as specified in the test report.
3. Rotameter shows correct reading initially, then shows lower reading after a few months	Float damaged or corroded. Scaling or foreign particle deposition inside the tapered bore or on the float.	(a) Replace the float. (b) For gas service check for leakage. Clean the rotameter using a suitable soft brush.
4. Rotameter shows correct reading initially, then shows higher reading after a few days	Wrong operating pressure	Maintain operating pressure as per the test report.
5. Float fluctuates	(a) Flow rate too high / incorrect rotameter selection. (b) Excessive operating pressure.	Use a rotameter suitable for the correct flow rate. Ensure operating pressure stays within the rated limit.
6. Frequent breakage of glass tube	Heavy turbulence or water hammer	Check the piping layout and eliminate sources of shock or vibration.

- Product Code
- Name of the Liquid
- Operating Temperature
- Operating Pressure
- Operating Density
- Center to Center Distance
- Operating Specific Gravity
- Connection Details
- Material Of Construction
- Accessories
- Nozzle Size

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Quality Assurance Plan: Acrylic Body Rotameter

Quality Assurance Plan: Acrylic Body Rotameter

No.	Component	Check Characteristic	Type of Check	Quantum of Check	Reference Standard Documents/Acceptance Norms	Format of Records	Scope				Remarks(if any)
							M	C	V	W	
					A Materials						
1	Acrylic Block, Rod, Hex bar, Isolation Valve	Surface finish & Dimensions.	Visual Dimensional & Chemical	100%	As per requirement given in P.O, approved Drawings, & given Std. Specification	Goods Receipt Note & Mfr.'s/Lab T.C	✓	✓	C		
				Random							
				100%							
					B. BOUGHT OUTS / JOB WORK						
1	Fasteners, Packing etc.	Surface finish & Dimensions.	Visual & Dimensional	Random	From Approved Vendor.	Goods Receipt Note	✓	✓	C		
2											
					C. IN PROCESS						
1	Machining	Dimension	Measurement	100%	As per Approved Drawing Of Mfr.	Internal Inspection Report	✓	✓	C		
2	Assembly	Dimensions & conformity orientation	Visual & Dimensional				✓	✓	C		
3	Testing	Leak Tightness	Hydro Test		No leak at rated pressure for 20 min.		✓	✓	C		
4	Calibration	w.r.t. Master Calibrator	Calibration		Calibration as per ISA RP-16.6		✓	✓	C		
5	Buffing, Painting & Cleaning	Surface finish	Visual		As per P.O. & approved Drawing Of Mfg.		✓	✓	C		
6	Final Inspection	• Final finish & Appearance	Visual		• Good Finish		✓	✓	C		
		• Completeness of supply with spares & access.			• As per P.O. & App. Drawing		✓	✓	C		

◦Legends:

◦C: Customer, ◦M: Manufacturer, ◦P: Perform, ◦V: Verify, ◦W: Witness

◦Performance Test Procedure: ◦Performance Test: M-100%, C-10%

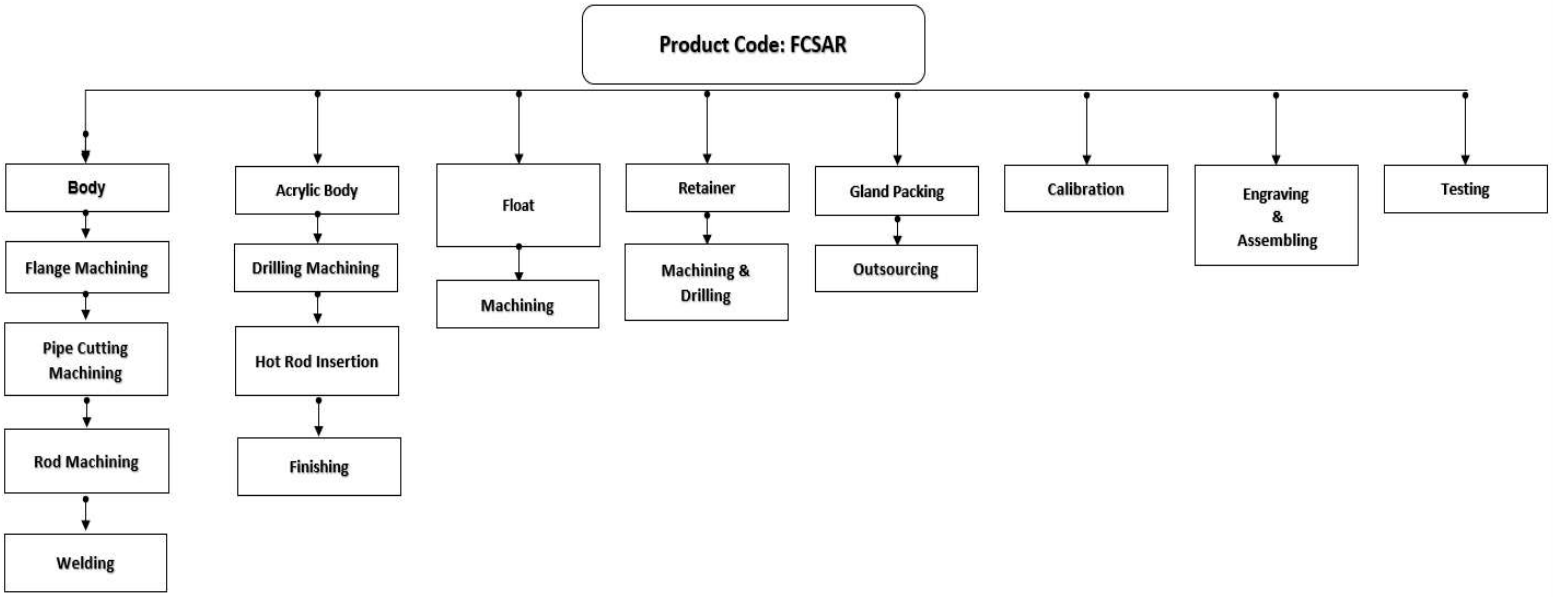
◦Testing 100% by M/s Flow & Control (P) Ltd. and Client may witness randomly as agreed upon.

Prepared By: (QC Engineer) ..... Approved By: (Technical Head) .....

Remarks:

Process Flow Chart: Acrylic Body Rotameter

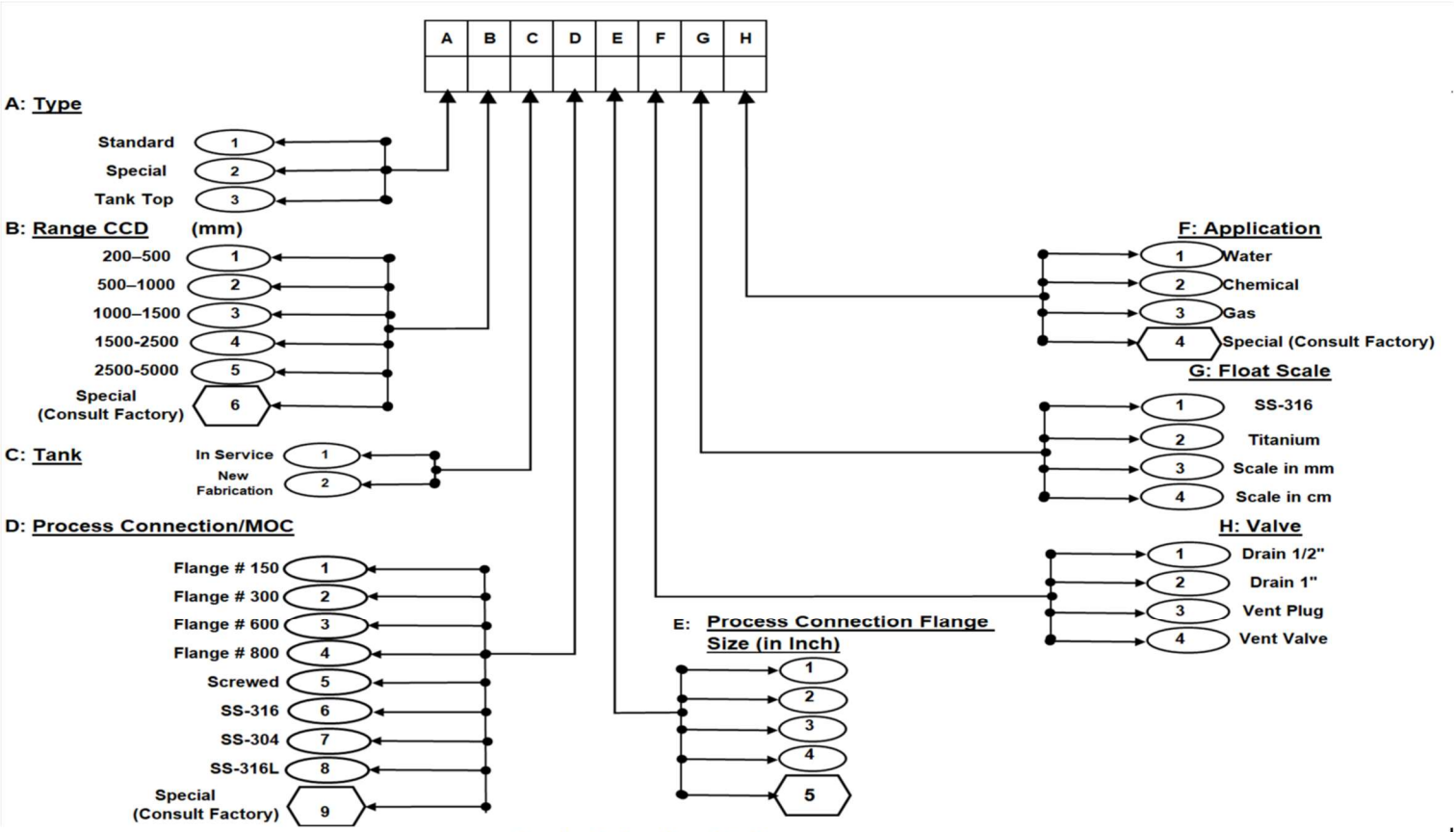
	CR Number:	Process Flow Chart: Acrylic Body Rotameter Model No: FCSAR	PFC NO: FCS/PFC/AR/ Rev 00 Date: 06/Oct/2025	Reviewd By:	Approved By:



Reviewed & Approved By: Technical Head

Remarks:

DE codification: Acrylic Body Rotameter



Code Selection Reference:

Type	A	1	2	3	-	-	-	-	-	-
Range	B	1	2	3	4	5	6	-	-	-
Tank	C	1	2	-	-	-	-	-	-	-
Process Connection/MOC	D	1	2	3	4	5	6	7	8	9
Process Connection Flange Size (inch)	E	1	2	3	4	5	-	-	-	-
Application	F	1	2	3	4	-	-	-	-	-
Float Scale	G	1	2	3	4	-	-	-	-	-
Valve	H	1	2	3	4	-	-	-	-	-

*Note: For any Specific Requirement Please Consult Factory at above mentioned Email/Numbers

Assured Quality & Less Service Cost

Service Policy

Owners may return any Flow & Control System instrument or component for rebuilding or replacement. Returns must be shipped prepaid. The company will repair or replace the gauge free of charge, excluding transportation costs, provided that, if:

- **Returned within the warranty period; and**
- **The factory inspection finds the cause of the claim to be covered under the warranty.**

If the issue arises from conditions beyond our control or is not covered under warranty, charges for labour and replacement parts will apply. In certain cases, it may be necessary to ship replacement parts or a new instrument before the original is returned.

To arrange this, please provide the model and serial numbers of the instrument to be replaced. Credit for returned materials will be determined based on warranty applicability. Claims for misapplication, labour, or consequential damages will not be accepted.

Return Material Procedure

To ensure efficient processing of returned materials, a Return Material Authorization (RMA) number must be obtained from the factory before shipment. This can be arranged through your local Flow & Control System representative or by contacting the factory directly. Please provide the following information:

1. Company Name **2. Description of Material** **3. Serial Number**

4. Reason for Return **5. Application**

Units previously used in a process must be thoroughly cleaned in accordance with Occupational Safety and Health Administration (OSHA) standards before return. A Material Safety Data Sheet (MSDS) must accompany any unit exposed to process media. All returns must be shipped prepaid, and all replacements will be dispatched F.O.B. factory.

Flow & Control System Private Limited

ISO 9001-2015 Certified Company

CIN No: U74140DL2015PTC277814

Our Footprints in India and Across the Globe

Trusted by leading organizations in Energy, Oil & Gas, Power & Process Industries.

Manufacturing Units:

MIDDLE EAST

Flow & Control System Private Ltd.
INTERNATIONAL SOLUTIONS 4 INDUSTRIAL SERVICES

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