



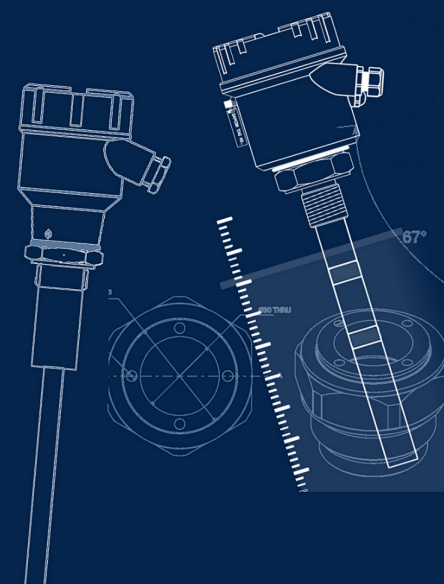
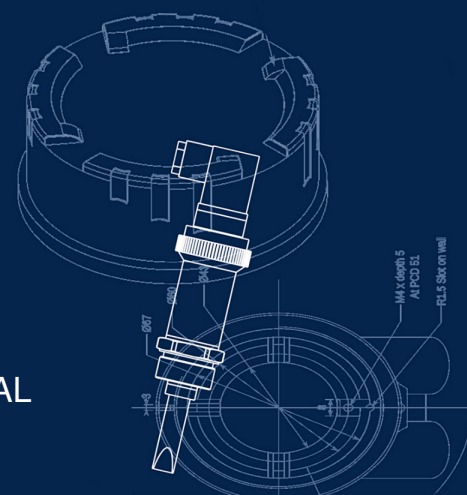
Grown...to meet challenges

INSTRUCTION MANUAL

Float & Board

Level Indicator

Version 1.2



SAPCON INSTRUMENTS PVT. LTD.

30+ Years in Process Control Instrumentation

An ISO 22000 company

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Revision History

Revision	Date	Author(s)	Description
1.0	24 Aug 2021	RND	First Version Editing
1.1	1 Sept 2021	RND	Specs Revision
1.2	7 Feb 2023	RND	Order Code Chart Updation

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- The images shown in this manual may differ from the actual instrument / housing in terms of dimensions, color and design. Please refer to GA drawings for dimensional details.
- Values (of performance) described in this manual were obtained under ideal testing conditions. Hence, they may differ under industrial environment and settings.

1 Introduction

Float & Board type level gauge is a weighing liquid level measuring system applicable for non-pressurized storage tanks/vessels. It is basically a balanced counter weight system with an arrow shaped pointer which smoothen the indication process. It is suitable for most liquid applications whose specific gravity is ≥ 0.8 . Additionally, it effectively works in the phenomena of turbulence by ensuring stability using guided rope assembly with an anchor.



Figure 1: Float & Board

2 Operating Principle

The working principle of Float & Board is based on the buoyancy principle and is linked as per balanced counter weight system. A float is connected to a pointer with the help of wire rope via an array of pulley and limb pipes along with a scale board. The pointer slides over a scale board parallel to the tank in a vertical direction. When the material level rises, the float moves upward with the application media results in a pointer goes downward and vice versa.

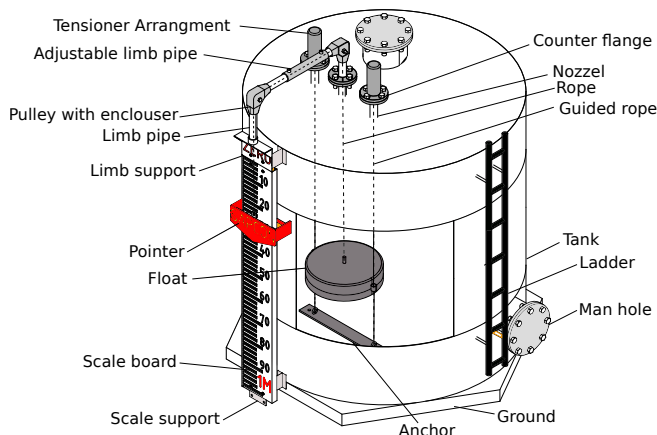


Figure 2: Description of Parts

3 Features

- Better Visibility from longer distance.
- Reflective radium sticker for night vision.
- weatherproof powder coated scale board.
- Low Maintenance.
- Adjustable horizontal pipe.
- Efficient performance in turbulence.

4 Applications

It is suitable for non-vapourized & non-corrosive liquids some of which are as follows:

- Water Treatment Plant - Water, DM Water, Fire Water
- Oil Refineries - Edible Oil, Lube Oil, Diesel, Crude Oil
- Sugar Industry - Molasses
- Dairy Industry - Milk

5 Mechanical Specifications

Please refer to Table 1 for Mechanical Specifications.

PARAMETER	VALUE
Operating Temperature	Up to 100°C
Operating Pressure	Ambient
Specific Gravity	≥ 0.8
Float	<ul style="list-style-type: none"> • Size: Ø300mm x 75mm • Material: SS 316L with tested pressure 2kg/cm²
Pulley	SS 316
Pulley Enclosure	SS 304/Mild Steel with powder coated
Limb Pipe	MS powder coated/SS 304
Rope	<ul style="list-style-type: none"> • Size: ø2mm • Material: SS 304/SS 316
Rope Clamp	SS 304/SS 316
Tensioner Arrangement	Mild Steel with powder coated/SS 304
Mounting Flange	<ul style="list-style-type: none"> • Size: 1" to 3" ANSI Standard/ANSI with 10mm thickness • Material Mild Steel with powder coated/SS 304
Counter Flange with Nozzle (Optional)	Mild Steel with powder coated/SS 304
Anchor	<ul style="list-style-type: none"> • Type: Surface mount welded plate/wetted pipe • Material: SS 304
Scale Board	150mm wide pure polyester weatherproof powder coated aluminium board/SS 304
Scale Marking	Printed scale with black marking(cm) & radium red reflective marking(meter)
Scale Support	Mild Steel with powder coated/SS 304
Pointer	Mild Steel with powder coated/SS 304 Pointer with frictionless roller
Accuracy	$\pm 10mm$

Table 1: Mechanical Specifications

6 Model Options

Float and Board is available with following type of variants:

- Non-guided: Up to 8 meter
- Guided: Up to 20 meter

6.1 Model Variants

Both the models mentioned above has following types of variants to install the instrument in industrial sites:

1. Ground Level Tank:

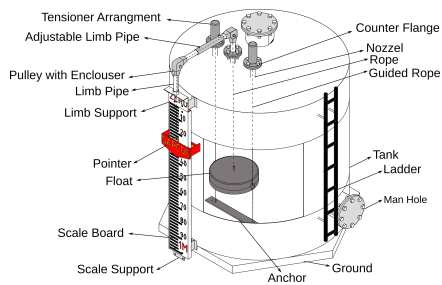


Figure 3: Ground Level Tank

2. Overhead Tank x Scale mount at Tank Level

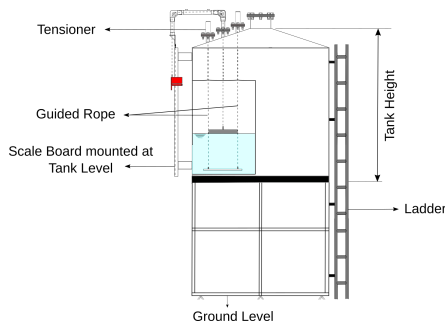


Figure 4: Overhead Tank with Scale Mount at Tank Level

3. Overhead Tank x Scale mount at Ground Level

4. Underground Level Tank x Scale mount at Ground Level

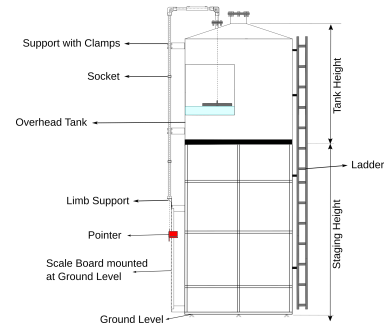


Figure 5: Overhead Tank with Scale Mount at Ground Level

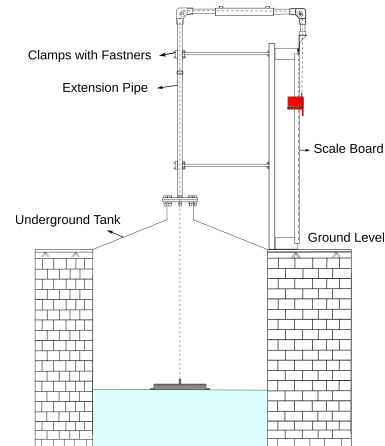


Figure 6: Underground Tank with Scale Mount at Ground Level

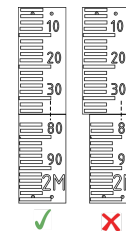


Figure 7: Scale Board Position

7 Installation Guidelines

While installing the instrument, please take care of the following points:

- Scale boards are vertically aligned while installing more than one scale board in the tank.

8 Calibration

To carry out calibration process, please follow the steps mentioned below:

1. For Low Level: Tank filled up to minimum level

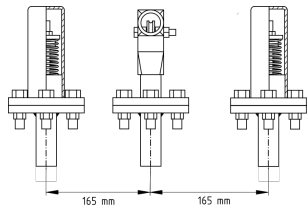


Figure 8: Distance between Tensioner Arrangement

- To perform the calibration process, empty the tank up to low level/zero level.
- Connect the wire rope through pulleys via limb pipe to the pointer.
- Stretch the rope in tension and connect it to the pointer such that the pointer hold at Top Position(ZERO) whereas float drops downward.

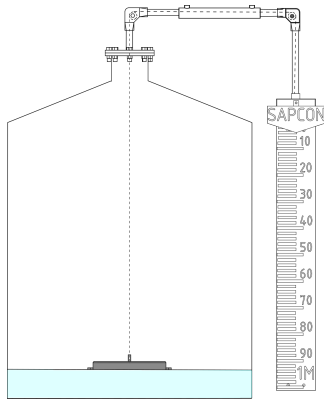


Figure 9: Calibration at Low Level

2. For High Level: Tank filled up to maximum level

- To perform the calibration process, fill the tank with material up to high level.
- Connect the wire rope through pulleys via limb pipe to the pointer.
- Stretch the rope in tension and connect it to the pointer such that the pointer goes Bottom Position(Meter) whereas float goes upward.

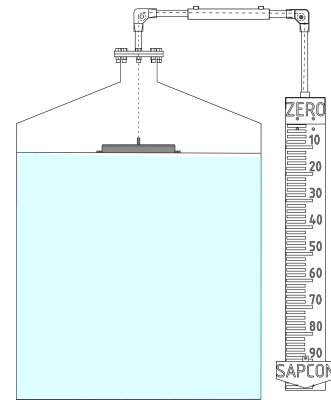


Figure 10: Calibration at High Level

Should you require further information regarding installation, use or working of the instrument, please don't hesitate to contact us. Kindly provide the following information at the time of contacting:

- Instrument Model and Serial Number
- Purchase Order Number and Date of Purchase
- Description of the query
- Your contact details

In an attempt to serve you better, we are open seven days a week (9:30am to 7:30pm). We are available at:

- www.sapconinstruments.com
- sales@sapcon.in
- +91-731-4757575

9 Customer Support

Thank you for going through the instructions given in this manual. To further ease the process of installation and use, we have developed special demo videos which are hosted on YouTube.

Sapcon's YouTube channel, SAPCON INSTRUMENTS, lists all these videos: <https://goo.gl/dnxfcz>

1) Common Parts

Mechanical Assembly

MECH_FAB: Float and Board Level Indicator suitable for Liquids (Water, Oils, Chemicals etc.) whose Specific Gravity ≥ 0.8

Type

NG: Non-Guided x Full Travel

G: Guided x Full Travel

Installation Type

GT : Ground Level Tank

OHT : Overhead Tank x Scale Mount at Tank Level

OHTG : Overhead Tank x Scale Mount at Ground Level

UT : Underground Level Tank x Scale Mount at Ground Level (Except "G")

Dish Float

DFS7 : $\varnothing 300 \times 75$ mm, SS 316L with tested pressure 2 kg/cm²

Pointer

PRMS : MS (powder coated) with radium reflective stickers & PP roller for frictionless sliding on board

PRS4 : SS 304 with radium reflective stickers & PP roller for frictionless sliding on board

Pulley with Enclosure

PEMS : SS 316 pulley wheel x MS Enclosure with powder coated

PES4 : SS 316 pulley wheel x SS 304 Enclosure

Limb Pipe

P7MS : MS x Adjustable limb pipe 500 mm to 1000 mm long x MS pipe support with powder coated

P7S4 : SS 304 x Adjustable limb pipe 500 mm to 1000 mm long x SS 304 support

Tensioner Arrangement (Only with "G")

TAMS: CS spring x 1" power coated flange as per ASME/ANSI B16.5 with 10mm thickness, MS & Guided Rope, SS 304

TAS4: SS 304 spring x 1" flange as per ASME/ANSI B16.5 with 10mm thickness, SS 304 & Guided Rope, SS 316

Anchor (Only with "G")

APS6: SS 316 surface mount plate

Mounting

F10MS: 1" flange as per ASME/ANSI B16.5 with 10 mm thickness, MS with powder coated

F10S4: 1" flange as per ASME/ANSI B16.5 with 10 mm thickness, SS 304

Example -

MECH_FAB-NG-GT-DFS7-PRMS-PEMS-P7MS-F10MS

2) Scale Board

SCB-AL-W150-TH1.5-L500-FAB': 150 mm wide, weatherproof, powder-coated aluminum scale with black marking (cm)

SCB-AL-W150-TH1.5-L1000-FAB': 150 mm wide, weatherproof, powder-coated aluminum scale with black marking (cm) & red radium marking (meter)

SCB-S4-W150-TH1-L500-FAB': 150 mm wide, weatherproof, SS 304 Scale with black marking (cm)

SCB-S4-W150-TH1-L1000-FAB': 150 mm wide, weatherproof, SS 304 scale with black marking (cm) & red radium marking (meter)

3) Scale Support

SSU-MS-L124-HIT80-TH2-FAB': MS powder-coated with fasteners

SSU-S4-L124-HIT80-TH2-FAB': SS 304 with fasteners

4) Rope

WR-S4-D2-CMN': $\varnothing 2$ mm wire-rope with clamp, SS 304

WR-S6-D2-CMN': $\varnothing 2$ mm wire-rope with clamp, SS 316

5) Accessories

1) Counter Flange with Nozzle & Fastener'

FLG-MS-ANSI-10-NOZ-GI-L100-BLT-NT-WS: 1" Flange as per ASME/ANSI B16.5 with 10 mm thickness with nozzle & fastener, MS

FLG-S4-ANSI-10-NOZ-S4-L100-BLT-NT-WS: 1" Flange as per ASME/ANSI B16.5 with 10 mm thickness with nozzle & fastener, SS304

Note:

1. Scale Support Quantity (SSU) = Scale Quantity (SCB) + 1
2. Rope Length -
 - Non-Guided = Tank Height + Staging Height + 3
 - Guided = 3 x Tank Height + Staging Height + 3