

PORTABLE TANK MEASURING SYSTEM



Type approved by CE(BV), USCG,
ABS & the Korea Administration

Introduction

TANKTECH, as a safety equipment's special manufacturer for the flammable fuel tanks and marine cargo tanks has pursued one road since its foundation. It is provided with total system rendering specifications in planning and after service for maintenance after delivery so that it may perform its duties in carrying out such diversified projects such as tanker for oil product, tanker for chemical and product carrier, etc. throughout the world.

The quality of the project must be the prime sources to attract more customers, and we are trying to the utmost to make our customers satisfy themselves with our safety workmanship in the project.



View of Installation
Shut On/Off Valve
Model : TVC-02



>> TANKTECH Portable Tank Measuring System

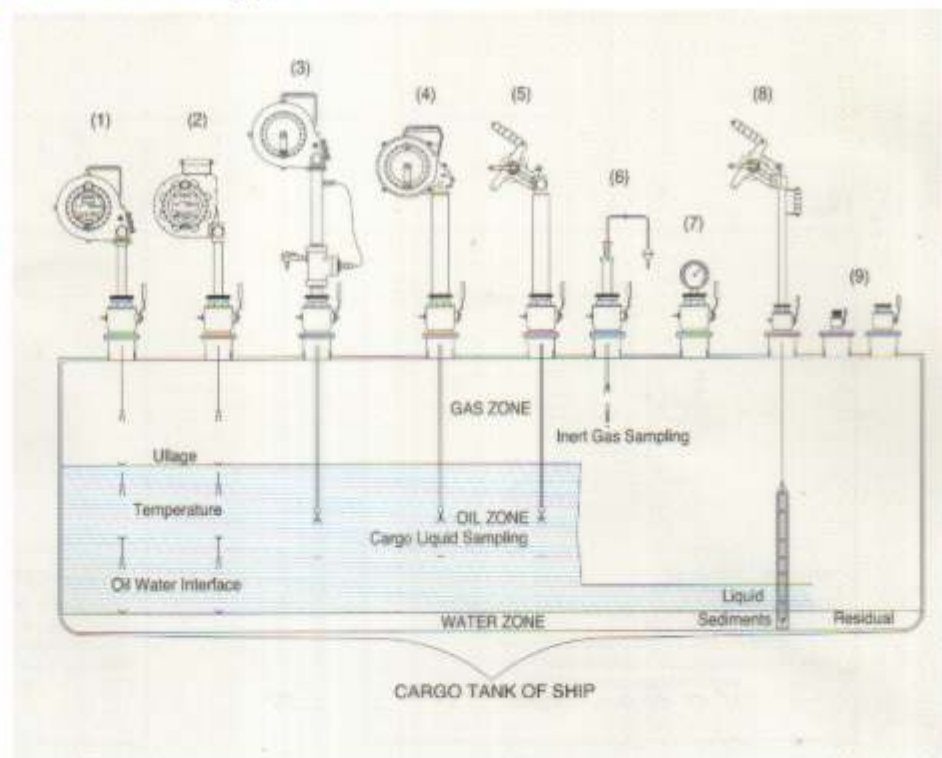
Compliance rules

Equipment type	Function	Compliance with
Portable oil / water interface detector	Ullage level	SOLAS 1974, REGULATION 60 PARAGRAPH 7
	Oil - water interface level	IMO, MSC / Circ.551 (IBC BCH CODE)
	Temperature gauging	IMO MARPOL73 / 78 ANNEX I-CHAP II - REGULATION 15, (3) (b)
Cargo liquid sampling device	Liquid sampling	IMO RESOLUTION MEPC.5 (XII) ANNEX 4
		OCIMF, API STANDARD RESTRICTED WITH CLOSED SAMPLING OF LIQUID SAMPLING
Inert gas sampling hose & adaptor	Oxygen and flammable gas concentration measuring	IMO REQUIREMENT ON TANKER SAFETY AND POLLUTION PREVENTION, 1978-RESOLUTION A.446(XI), 6.6
Pressure gauge	Inert gas pressure gauging	IMO REQUIREMENT ON TANKER SAFETY AND POLLUTION PREVENTION, 1978-RESOLUTION A.446(XI), 6.6 (b)
Tank bottom liquid and sediments checking device	Tank bottom dryness & sediments checking	IMO REQUIREMENT ON TANKER SAFETY AND POLLUTION PREVENTION, 1978-RESOLUTION A.446(XI) 4.4.4
Shut on / off valve	Vapor lock installation of portable tank measuring system	IMO MARPOL 1973 / 78 ANNEX I, REGULATION 13b (3) SOLAS 1974, REGULATION 60 PARAGRAPH 7 (REQUIREMENT OF CLOSED ULLAGE SYSTEM) IMO MARPOL73 / 78 ANNEX I-CHAP II - REGULATION 15, (3) (b) SOLAS REGULATION 62, PARAGRAPH 17

APPLICATION

- Chemical Tankers
- Crude Oil Tankers
- Clean Product Tankers
- Offshore Storage Tanks
- Slop Tanks
- Tank Farm Storage and Tanks Slop
- Solvents Tanks Farms

Useful measuring jobs on deck of tanker



>> Chart for TANKTECH Portable Tank Measuring System

TANKTECH PMS SERIES

(1)



GAS-TIGHT TYPE PORTABLE OIL / WATER INTERFACE DETECTOR
 MODEL T2000-TFC-01
 TOP CONN. : PF 2-1/4" TAP
 FUNCTION: ULLAGE, TEMPERATURE OIL / WATER INTERFACE

(2)



GAS-TIGHT TYPE PORTABLE OIL / WATER INTERFACE DETECTOR
 MODEL T2000-TFC-02
 TOP CONN. : PF 2-1/4" TAP
 FUNCTION: ULLAGE, TEMPERATURE OIL / WATER INTERFACE

(3)



RESTRICTED TYPE PORTABLE OIL / WATER INTERFACE DETECTOR
 MODEL T2000-TFS-01
 TOP CONN. : PF 2-1/4" TAP
 FUNCTION: ULLAGE, TEMPERATURE OIL / WATER INTERFACE

(4)



CARGO SAMPLING DEVICE
 MODEL T2000-TSS-02
 TOP CONN. : PF 2-1/4" TAP
 FUNCTION: LIQUID SAMPLING

(9)



SHUT ON / OFF VALVE
 MODEL: TVC-02
 TOP CONN. : PF 2-1/4" TAP
 FLANGE CONN. : 80A JIS 5K F.F OR 50A JIS 5K F.F
 FUNCTION: VAPOR LOCK INSTALLATION OF PMS MAIN TANK GAUGING STATION (ULLAGE GAUGING & SAMPLING)

(9)



SHUT ON / OFF VALVE
 MODEL: TVC-01
 TOP CONN. : PF 2-1/4" TAP
 FLANGE CONN. : 50A JIS 5K F.F
 FUNCTION: VAPOR LOCK INSTALLATION OF PMS BOTTOM DRYNESS CHECKING, ETC.

Supply with the portable type manufactured a suitable use, to measure the various data in tank

(5)



CARGO LIQUID SAMPLING DEVICE
 MODEL T2000-TSS-01
 TOP CONN. : PF 2-1/4" TAP
 FUNCTION: CLOSED LIQUID SAMPLING
 DURING OPERATION
 LIQUID AUTO DRAIN
 BY 2WAY VALVE

(6)



INERT GAS SAMPLING HOSE & ADAPTOR
 MODEL T2000-TCS-01
 TOP CONN. : PF 2-1/4" TAP
 FUNCTION: ADAPTOR FOR
 OXYGEN MEASURING

(7)



PRESSURE GAUGE
 MODEL T2000-TPG-01
 TOP CONN. : PF 2-1/4" TAP
 FUNCTION: INERT PRESSURE
 GAUGING

(8)



**TANK BOTTOM LIQUID AND
 SEDIMENTS CHECKING DEVICE**
 MODEL T2000-TLS-01
 TOP CONN. : PF 2-1/4" TAP
 FUNCTION: TANK BOTTOM
 DRYNESS CHECKING
 & ETC.

(9)



SHUT ON / OFF VALVE
 MODEL TVC-04
 TOP CONN. : PF 2-1/4" TAP FOR ULLAGE GAUGING
 M118XP1.5 TAP FOR SAMPLING(1.0 Liter)
 FLANGE CONN. : 100A JIS 5K F.F
 FUNCTION: VAPOR LOCK INSTALLATION OF PMS
 MAIN TANK GAUGING STATION
 (ULLAGE GAUGING & SAMPLING)

(9)



SELF CLOSING VALVE
 MODEL TVC-03
 TOP CONN. : PF 2-1/4" TAP
 FLANGE CONN. : 80A OR 100A JIS 5K F.F
 FUNCTION: VAPOR LOCK INSTALLATION OF PMS
 MAIN TANK GAUGING STATION
 (ULLAGE GAUGING & SAMPLING)

>> Restricted Type Portable Oil / Water Interface Detector for ullage, oil / water interface & temperature gauging

BENEFITS

- High accuracy & Responsibility
- Easy construction
- Easy operation & maintenance

GENERAL

Tankers shall be provided with an effective oil/water interface detectors approved by the Administration.

And this device shall be provided for a rapid and accurate determination of the oil/water interface in slop tanks and shall be available for use in other tanks where the separation of oil and water is effected and from which it is intended to discharge effluent direct to the sea.

This device should be tested according to the IMO Resolution MEPC 5 (XIII) for the prevention of pollution from ships.

RESTRICTED TYPE



MODEL: T2000-TFS-01

SPECIFICATION

Accuracy of ullage, interface detection	+ / - 2 mm
Indication of level divided by ullage and interface	Visible and Audible
Tape length	15 M / 30 M / 40 M
Tape graduation	Metric
Tape resolution	1 mm
Tape accuracy	+ / - 3.2 mm
Diameter of probe	34 mm
Minimum detectable level	10 mm
Ambient temperature range	-20° C to 70° C
Temperature sensor measurement range	-20° C to 110° C
Temperature measurement resolution	0.1° C
Accuracy over calibration range	+ / - 0.1° C (0° C to 60° C)
Temperature reading mode	°C(Celsius)
LCD display	4- 7 Segment
Top Coupling (Connection)	PF 2-1/4" TAP
Weight	5.9 kg / 30M
Overall dimensions (H X W X T)	610 X 300 X 135 mm
Battery	9 Volt (Model : MN1604)
Intrinsically safe type	Ex ia IIB T4

MATERIAL

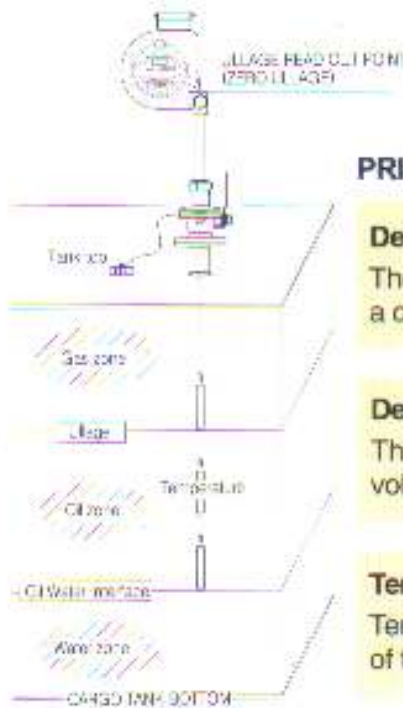
Body : Aluminum plate (JIS- 6061)

COATING

In/Out : Epoxy nylon coating

Color : Black

Thickness(In / Out Side) : 50mic.



PRINCIPLE

Detection of Ullage

The detection method is based upon the principle of detecting a change in impedance using ultra sonic technology.

Detection of interface

The detection method is based upon measuring the different voltage according to conductivity of water.

Temperature measurement

Temperature measurement is obtained by the output voltage of the built-in semiconductor element.

FOR EASY DISTINGUISH



User can easily know the location of sensor probe by beep and LCD display.

TEMPERATURE
22.6

TEMPERATURE
22.8

TEMPERATURE
23.3

	Position of detection	Beep	LCD Indication
Intermittent beep	Gas	— — — — —	GAS
Frequent beep	Oil zone	— — — — —	OIL
Continuous beep	Water zone	— — — — —	WATER

>> Gas-Tight Type Portable Oil / Water Interface Detector for ullage, oil / water interface & temperature gauging

BENEFITS

- Displays oil, gas, water & temperature at once
- Gas-tight seals toxic gases
- Simple one switch operation on / off

GENERAL

Tankers shall be provided with an effective oil/water interface detectors approved by the Administration.

And this device shall be provided for a rapid and accurate determination of the oil/water interface in slop tanks and shall be available for use in other tanks where the separation of oil and water is effected and from which it is intended to discharge effluent direct to the sea.

This device should be tested according to the IMO Resolution MEPC 5 (XIII) for the prevention of pollution from ships.

GAS-TIGHT TYPE



MODEL: T2000-TFC-02

SPECIFICATION

Accuracy of ullage, interface detection	+/- 2 mm
Indication of level divided by ullage and interface	Visible and Audible
Tape length	15 M / 30 M / 40 M
Tape graduation	Metric
Tape resolution	1 mm
Tape accuracy	+/- 3.2 mm
Diameter of probe	34 mm
Minimum detectable level	10 mm
Ambient temperature range	- 20 °C to 70 °C
Temperature sensor measurement range	- 20 °C to 110 °C
Temperature measurement resolution	0.1 °C
Accuracy over calibration range	+/- 0.1 °C (0 °C to 60 °C)
Temperature reading mode	°C (Celsius)
LCD display	4-7 Segment
Top Coupling	PF 2- 1/4" TAP
Weight	7.7 kg/30M
Overall dimensions (H X W X T)	585 X 346X 195 mm
Battery	9 Volt (Model : MN1604)
Intrinsically safe type	Ex ia IIB T4

MATERIAL

Body : Aluminum casting (JIS-AC4C-T6)

COATING

In/Out : Epoxy nylon coating

Color : Black

Thickness(In / Out Side) : 50mic.

ADVANTAGES

Easy operatable
Rotating handle & push stopper for measuring and rewinding

LCD display
Showing ullage, temperature & oil/water interface



Only one switch action
(On / Off) for all measurements simulation

Grounding clamp
for static discharge

Quick coupling & convertible adaptor
to other maker

Non-corrosive tape scale
coated by Tefzel® ETFE

Teflon sensor probe head
Protection of corrosion and tank explosion due to spark.
Sensor probe is kept ultrasonic,
RTD temperature & conductivity sensor.

Gas-tight & waterproof casing
for intrinsic safety

Audible & distinguishable sound
of gas, oil & water

Anti-fog glass window
for easy tape scale reading

Tape wiper
for cleaning and long lifetime

Gas-tight storage tube of
sensor probe

Quick opening and
closing deck valve

Demonstration tube

Sensor probe
for submerging & non-floating

Model : T2000-TFC-02
Gas-Tight Type

>> Gas-Tight Type Cargo Liquid Sampling Device for liquid sampling

BENEFITS

- *Manual Liquid Sampling*
- *Protect operator Prevent*
- *Environmental pollution*
- *Easy construction*
- *Easy operation & maintenance*

GENERAL

This device is used for collecting sample of oil, stored in oil tank.
The T2000-TSS Series Sampling Device is designed for gauging the height of liquid level, measuring the depth of water on the bottom of the tank and collecting sample of liquids, being stored in the tank without pressure relieving from the tank. It makes prevent the loss of valuable vapor from tank.
And protect operator from excessive poisonous vapor.

GAS-TIGHT TYPE



MODEL: T2000-TSS-02

SPECIFICATION

Tape length	15 M / 30 M / 40 M
Tape graduation	Metric
Tape resolution	1 mm
Tape accuracy	+ / - 3.2 mm
Top coupling (Connection)	PF 2-1/4" TAP
Weight	8.95 kg
Overall dimensions (H X W X T)	900 X 346X 199 mm
Capacity of Sampling bottle	0.5 or 1.0 Liter

MATERIAL

Body : Aluminum casting (JIS-AC4C-T6)

COATING

In/Out : Epoxy nylon coating

Color : Black

Thickness(In / Out Side) : 50mic.

>> Gas-Tight Type Cargo Liquid Sampling Device for Closed liquid sampling during operation

BENEFITS

- *Handsfree Auto-drain liquid*
- *Protect operator prevent*
- *Environmental pollution*
- *Easy construction*
- *Easy operation & maintenance*

GENERAL

This device is used for collecting sample of oil, stored in oil tank.
The T2000-TSS Series Sampling Device is designed for gauging the height of liquid level, measuring the depth of water on the bottom of the tank and collecting sample of liquids, being stored in the tank without pressure relieving from the tank. It makes prevent the loss of valuable vapor from tank.

And protect operator from excessive poisonous vapor.

GAS-TIGHT TYPE



MODEL: T2000-TSS-01

SPECIFICATION

Tape length	15 M / 30 M / 40 M
Tape graduation	Metric
Tape resolution	1 mm
Tape accuracy	+ / - 3.2 mm
Top coupling (Connection)	PF 2-1/4" TAP
Weight	10.7 kg
Overall dimensions (H X W X T)	1080 X 346X 199 mm
Capacity of Sampling bottle	0.5 Liter

MATERIAL

Body : Aluminum casting (JIS-AC4C-T6)

COATING

In/Out : Epoxy nylon coating

Color : Black

Thickness(In / Out Side) : 50mic.



View of Sampling

>> Inert Gas Sampling Hose & Adaptor for oxygen and flammable gas concentration measuring

BENEFITS

- *Protect operator prevent*
- *Environmental pollution*
- *Easy construction*
- *Easy operation & maintenance*

RELATED REGULATIONS AND CONTENTS

The IMO requirements on tanker safety and pollution prevention, 1978-Resolution A. 446(XI), 6.6 : before each tank is crude oil washed, the oxygen level shall be determined at a point 1 meter from the deck and at the middle region of the ullage space and neither of these determinations shall exceed 8% by volume.

to Use with TVC-02



MODEL: T2000-TOS-01

SPECIFICATION

Hose size	O.D 8 x I.D 6 mm
Hose length	25M / 35M
Top coupling (Connection)	PF 2 - 1/4" TAP

MATERIAL

Adaptor : Stainless steel casting (JIS - SCS16A)

>> Pressure Gauge for inert gas pressure gauging

BENEFITS

- *Protect operator prevent*
- *Environmental pollution*
- *Easy construction*
- *Easy operation & maintenance*

GENERAL

Portable Pressure gauge is connected with TANKTECH shut on / off valve and used on it.

to Use with TVC-02

SPECIFICATION

Pressure range	- 1000 to 3000 mmH ₂ O
Accuracy	1.5% of full scale
Top coupling (Connection)	PF 2 - 1/4" TAP



MODEL: T2000-TPG-01

MATERIAL

Adaptor : Stainless steel casting (JIS - SCS16A)

>> Tank Bottom Liquid and Sediments Checking Device for tank bottom dryness checking, etc.

BENEFITS

- *Protect operator prevent*
- *Environmental pollution*
- *Easy construction*
- *Easy operation & maintenance*

GENERAL

After cleaning inside cargo tank, this device is being used for checking the dryness of the cargo tank bottom.

RELATED REGULATIONS AND CONTENTS

The IMO requirements on tanker safety and pollution prevention, 1978-Resolution A. 446(XI), 4.4.4 ; means such as level gauges, hand dipping, an stripping system performance gauges as referred to in paragraph 4.4.8 shall be provided for checking that the bottoms of cargo tanks are dry after the crude oil washing.

Suitable arrangements for hand dipping must be provided at the after-most portion of a cargo tank and in three other suitable locations unless other approved means are fitted for efficiently ascertaining that the bottom of every cargo tank is dry.

to Use with TVC-01



MODEL: T2000-TLS-01

SPECIFICATION

Tape length	30 M / 40 M / 50M
Tape graduation	Metric
Tape resolution	1 mm
Tape accuracy	+ / - 3.2 mm
Top coupling (Connection)	PF 2-1/4" TAP
Weight	5.2 kg/30M
Overall dimensions (H X W X T)	795 x 240 x 100 mm

MATERIAL

Body : Stainless steel plate (JIS - SUS316)

COATING

In/Out : Epoxy nylon coating

Color : Black

Thickness(In / Out Side) : 0.5mic.

>> Shut On / Off Valve (Vapor Control Valve) for tank gauging station



MODEL: TVC-02

SPECIFICATION FOR SHUT ON / OFF VALVE

Ball inside diameter	2" (50mm)
Flange connection	80A or 50 A JIS 5K F.F slip on flange
Top coupling (Connection) for Ullage gauging, sampling	PF 2 - 1/4" TAP
Weight	7.6 kg
Material (body / trim)	SCS16A / SUS316



MODEL: TVC-03

SPECIFICATION FOR SELF CLOSING VALVE

Check Disc diameter	2" (50mm)
Flange connection	80A or 100 A JIS 5K F.F slip on flange
Top coupling (Connection) for Ullage gauging, sampling	PF 2 - 1/4" TAP
Weight	8.3 kg
Material (body / trim)	SCS16A / SUS316



MODEL: TVC-04

SPECIFICATION FOR SHUT ON / OFF VALVE

Ball inside diameter	4" (100mm)
Flange connection	100 A JIS 5K F.F slip on flange
Top coupling (Connection) for Ullage gauging	PF 2 - 1/4" TAP
Top coupling (Connection) for Large capacity sampling(1.0 Liter)	M118 x P1.5 TAP
Weight	13.6 kg



MODEL: TVC-01

SPECIFICATION FOR SHUT ON / OFF VALVE

Ball inside diameter	1" (25mm)
Flange connection	50 A JIS 5K F.F slip on flange
Top coupling (Connection) for tank bottom dryness checking	PF 2 - 1/4" TAP
Weight	30 kg