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product sections

**STANDARD & NEW
PRODUCT
VARIATIONS**



NEW PRODUCT
Closed Gauging
Systems with
built-in viewing
window wipers



MMC International Corporation

ESSENTIAL AND FIELD-PROVEN EQUIPMENT

For Maritime Petroleum & Chemical Transport Vessels
and the Land-Based Petro-Chemical Industry



Click on any item above or in the side column
listings for equipment specification page

MMC Vapor Control Valves, Cam-Lock Flanges and Product Measurement & Sampling Instruments

MMC International Corporation manufactures vapor control valves, quick connect coupling flanges, product sampling equipment, and its various product measurement instruments, which meet or exceed the standards for "intrinsically safe" equipment set by national governments and certifying agencies around the world.

MMC's primary products include Cam-Lock flanges, tank gauging station valves, deck covers, oil-water separators, cargo UTI measurement devices for closed and restricted application, high level alarm systems, gas samplers, product samplers and related items **for the maritime petroleum and chemical transport industry as well as land-based petro-chemical facilities.**

MMC is widely acknowledged for its long history of technological innovation, dependability, and quality of its products.

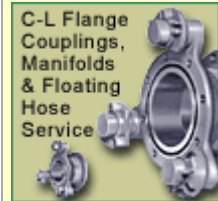


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Jan. 1, 2004

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Keeping You In Control

MMC International Corporation

Providers of "Intrinsically Safe" Equipment to Maritime Petroleum & Chemical Transport Vessels and the Petro-Chemical Industry

General Company Background

MMC International Corporation primarily manufactures equipment and instrumentation for use in the hazardous or potentially hazardous environments found aboard petroleum and chemical transport vessels. Its products are also used in petrochemical and pharmaceutical processing facilities. The firm maintains sales and service offices in North America, Europe, Asia and Australia.

The enterprise that became MMC started in the early 1940s as the Marine Plastics Corporation, making deck surfacing for tankers and military vessels. After the close of World War II, the name was changed to the Marine Moisture Control Company to reflect the firm's rapid expansion as a manufacturer of equipment for the removal of moisture from shipboard machinery and cargo spaces. Over the next several decades, MMC moisture control devices--such as its corrosion-preventing gear case dehydrators--became standard components throughout the world's fleets of tankers and dry cargo vessels.

The MMC product line continued to expand with lube oil clarifier coalescers, hydraulic valve systems, draft-indicating and tank-gauging systems, cargo-handling hose couplings, and other crucial items required by petroleum and chemical transport vessels.

In 1972, MMC pioneered solid-state electronic gauging equipment for use in hazardous shipboard environments. That new line of equipment was designed to meet the emerging international standards of explosion-proof or flameproof safety in the petroleum and chemical transport fields. Today, this category of highly specialized safety gear is referred to internationally as "Intrinsically Safe Equipment" and MMC remains a state-of-the-art leader in the field it helped invent. Since the 1970s, MMC's Intrinsically Safe Equipment products have been approved by international certifying agencies such as Factory Mutual, CSA, SAA, EECS, NKK, NK (Japan) and HK.

By the 1980s, MMC's product line had grown to include mechanical, electro-mechanical and electronic monitoring and safety equipment used by industrial facilities involved in the transport, storage and processing of a wide variety of chemicals. In addition, the firm's technology was adapted for environmental monitoring purposes, spawning yet another new product line beyond the maritime field.

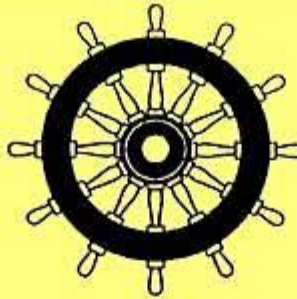
Thus, by 1990, the company changed its name to MMC International Corporation to more accurately reflect the diversity of its product lines, the broad base of its technological research goals, and the global reach of its sales operations.



Equipment for petroleum and chemical transport vessels.

Spec No.	Products List and Features	Page
002-3b	Standard Vapor Control Valves (Ball Type) 1 1/2" & 2-inch "B" series and (3-4inch "S" type)	5
003-3c	Vapor Control Check Valves (Automatic Closing) Crew installable; for std. 4-inch "A" type, flange-mounted & "U" type; custom fitted to existing ullage ports per supplied dimensions	7
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008-3g	Standard Sampling Tapes & Sounding Equipment For petroleum and chemical tankers & storage terminals	13

REGISTERED TRADEMARK OF  MMC INTERNATIONAL CORP.



BUREAU VERITAS APPROVAL NUMBER

BV 0062/02

MARINE DIVISION
17 Bis Place des Reflets - La Défense 2
92400 Courbevoie - France
Tel. 33 1 42 91 52 91
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Published on <http://www.veristar.com>

Certificate N°:
07373/** EC
File Number : ACM 1411306005
MED item number : A.1.2.2
This certificate is not valid unless presented with the product related
booklets required by CE marking

**BUREAU
VERITAS**

EUROPEAN COUNCIL DIRECTIVE 96/98 EC on MARINE EQUIPMENT (M.E.D.)

**EC TYPE EXAMINATION CERTIFICATE
(CERTIFICATE OF TYPE APPROVAL)**

This is to certify that Bureau Veritas, acting within the scope of its notification, did undertake the relevant type approval procedures for the equipment identified below which was found to be in compliance with the International Instruments and testing standards under the requirements of Council Directive 96/98/EC, as amended.

OIL / WATER INTERFACE DETECTORS

Intrinsically safe, portable cargo multi-purpose monitoring devices and associated tank entry vapor control valves.

MANUFACTURED BY:

MMC INTERNATIONAL CORP.
Inwood (NY) - UNITED STATES OF AMERICA

REGULATIONS & STANDARDS (in accordance with Council Directive 96/98/EC, as amended by Commission Directive 2002/53/EC):
IMO Resolution MEPC 5 (XIII),
MARPOL 73/78 Convention as amended, Annex I, Regulation 15 (3)(b).

Expiry date: 02/06/2007

Local Office : BUREAU VERITAS PORT
EVERGLADES CENTRE

At Paris la Défense, on : 04/26/2002


F. ROSAS
BVN Lead Surveyor




J. BENOIT
Marine Equipment Certification Manager
For BUREAU VERITAS, EC Notified Body N°0062



The BUREAU VERITAS is allowed to affix the MED Conformity Mark to approved equipment and issue a Declaration of Conformity, only when the producer/product assistance module referred to in the Directive 96/98/EC, is fully recognized with.
This Certificate remains valid until its date of expiry, unless suspended or revoked, providing the conditions in the attached Subtotals are respected with the equipment remains satisfactory in service. This Certificate does not apply to equipment which has been tested or modified from the specimen tested.
Should the specified standards be amended during the validity of this Certificate, the producer is free to re-approve prior to it being placed on board vessels to which the amended standard apply.
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Issued under the authority of the French Maritime Administration.

BV mod. A4 B 736 August 2001



**USA-Made
Product Lines**



MMC International Corporation



SPEC SHEET

002-3b

Version 01

PRODUCT SPECIFICATION SHEET

**Vapor Control Valves for Gauging
and Sampling Petroleum and Chemicals**

The "B" Series: 2" (50mm) "B" Valve, 2" (50mm) Micro "B" Valve, and the 1 1/2" (38mm) Mini Micro "B" Valve



Closed gauging tape is shown connected to Micro "B" valve.

Suitable for positive tank isolation, MMC B-type vapor-control valves are positive shut-off units that support Trimode tank gauging functions (ullage, interface & temperature) as well as oxygen sensing. They are available in three models. The original B-type, Micro "B" and the MMC (Asia) F50 are all 2-inch (50mm) full-bore valves. The Mini Micro "B" is 1 1/2-inch (38mm). All valves are flanged for ease in installation and accurate positioning. Constructed of 316 stainless steel with a bronze cap, they have stainless steel ball valves with Teflon seals. In addition, 1/2 or 1/3 liter sampling is available in all 2 inch sizes with the use of MMC sampling tapes. All gauging tapes fit directly into any type of MMC vapor-control valve.

SPECIFICATIONS:

Material:

- 316 stainless steel with bronze cap. Teflon ball valve seals. Viton ® used for all other seals. A stainless steel cap and a selection of other seal materials are optional. (Viton ® is a registered trademark of DuPont Dow Elastomers.)

Mounting Flange Dimensions:

- 2" "B" Valve (2318-2S-F316-BC) - 6" (152) O.D., BC 4 3/4" (121) - Bolt Holes (4) 3/4" (19).
- 2" Micro "B" (2318-2S-FMS-BC) - Bolt Holes (4) 3/4" (19).
- 1 1/2" Mini Micro "B" (2318-2S-F316BC) - 5" (127) O.D., BC 3 7/8" (98) - Bolt Holes (4) 5/8" (16).
- 2" F50 50mm MMC-A (JIS) - 155mm (6.1") O.D., BC 120mm (4.72") - Bolt Holes (4) 19 (0.75").

Weights:

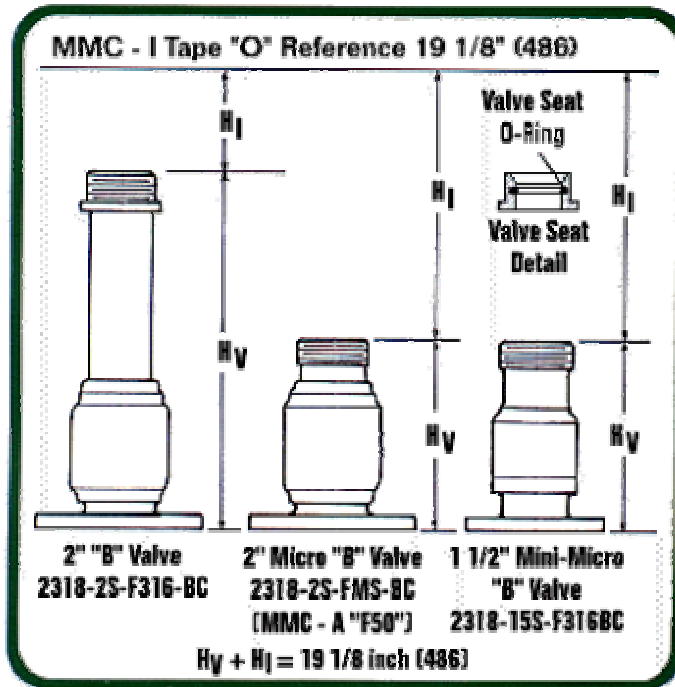
- 2" "B" Valve (2318-2S-F316-BC) - 14 lb. (6.35 kg).
- 2" Micro "B" (2318-2S-FMS-BC) - 13 lb. (5.9 kg).
- 1 1/2" Mini Micro "B" (2318-2S-F316BC) - 9 lb. (4.1 kg).
- 2" F50 MMC-A (JIS) - 19.8 lbs. (9 kg).

Pressure Rating:

- 150 psi (10kg/cm sq), bubble tight at 2 psi (0.14kg).

Overall Valve Dimensional Specifications

MMC Type "B" Vapor Control Valve Dimensions

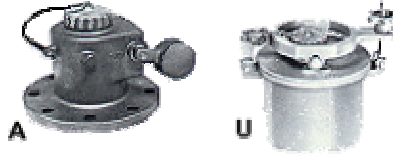


Note: H1 dimension fixed by gauging tape construction.

Model Numbers and Technical Specs: MMC Type "B" Valves

Model	HV	HI	HV & HI
2318-2S-F316-BC 2" "B" Valve	13 1/8	6	19 1/8
2" Flange-6" O.D. (4 3/4 BC-[4] 3/4" Holes)	(333)	(152)	(486)
2318-2S-FMS-BC BC-2" Micro "B"	7	12 1/8	19 1/8
2" Flange-6" O.D. (4 3/4 BC-[4] 3/4" Holes)	(178)	(308)	(486)
F50 2" MMC-A Valve JIS 10K	(178)	(308)	(486)
50 Flange-155 O.D. (120) BC-4 Holes (19)	7	12 1/8	19 1/8
2318-1.5S-F316BC 1 1/2" Mini Micro "B"	7	12 1/8	19 1/8
1 1/2" Flange-5" O.D. (3 7/8 BC-[4] 5/8" Holes)	(178)	(308)	(486)

Vapor Control Check Valves for Standard and Ullage Mounts



Model A Check Valve vapor-control valves can be supplied with either a spring-actuated or a naturally counter-weighted closing mechanism (counter-weighted type shown above). The housing is available in bronze or 316 stainless steel. Model A can be used for all three (UTI) gauging functions and sample collection with extended tube sampler tapes. The 4" flange is rated at 150 lb psi.

Model U Check Valves are similar to Model A units but are only available with a spring-actuated check valve for tank sealing. What makes Model U units different is that they fit directly onto existing ullage pipes. The U valve assembly is used instead of the existing ullage hatch. There are no installation costs; no hot work; no staging; no gas freeing of the tanks. U valves are suitable for all three (UTI) gauging functions, including sampling (1/2 liter) with extended tube sampling tape. They also support oxygen sensing functions. All ullage readings require an 8" correction to zero.

For ball valve type U valves, see the **U/B Vapor Control Valves** section.

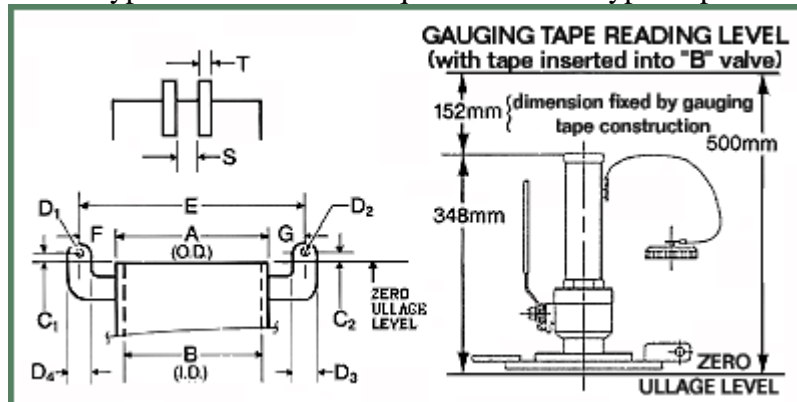
All valves are custom made to fit existing ullage pipe hinges. See the **Required Dimensions Chart** section for a dimensional diagram and chart that will allow you to fill in and fax the details of your tanks existing Ullage hatchcover mounting dimensions to MMC for a quotation.

REQUIRED DIMENSIONS CHART

Ordering Data for MMC Types "U," "U/B" or "U/MB" Vapor Control Valves for Ullage Hatch Mounting

Print out this form to your printer, complete it with the appropriate dimensions and fax to **CROSS 210-4183472**

Below: Typical Dimensions Required for U/B Type Vapor Valve



Fill in the chart below with the dimensions of your tanks

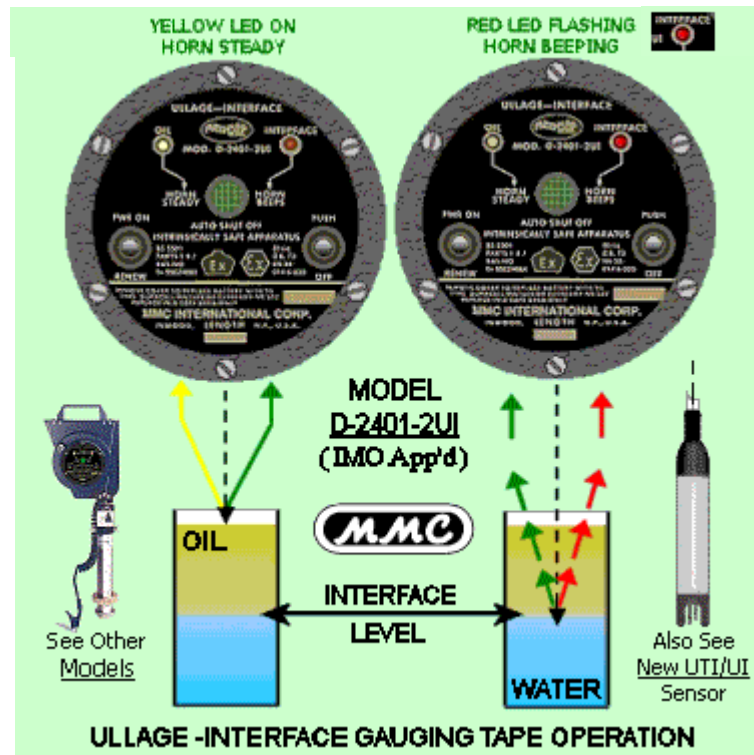
MMC International Corporation
PRODUCT SPECIFICATION SHEET

UI Oil-Water Interface Gauging Tapes
For Tankers, Shore Terminals and
Environmental Applications

These portable FLEXI-DIP® "UI" gauging tapes provide a convenient and accurate means for measuring ullage and a lower oil-water interface. They are suitable for marine and land-based tank facilities and also for environmental monitoring well applications

MMC's UI gauging tapes are capable of detecting all floating and non-conductive hydrocarbons. Each instrument is designed for ease of use. Gauging for liquid or Interface level is accomplished simply and quickly. When the electronic probe is lowered and senses a hydrocarbon, a steady horn tone is sounded and a yellow LED illuminates. When sensing an Oil-water interface, or a heavier than water non-conductive liquid, an intermittent horn tone sounds and a red LED begins flashing.

This gauging system is certified as "Intrinsically Safe" for use in all class IIB hazardous atmospheres



Restricted UI gauging tape with type MB vapor valve barrel, is shown at left side of the above illustration.

Standard Applications:

- Restricted ("R" type) & Closed [Closed \("C" type\)](#) (Marine Tankers via MMC [vapor control valves](#)).
- Restricted & Closed via our storage tank [tank-top gauging stations](#).

Open & Environmental UI Gauging Tapes**Other Applications:**

- Open gauging ("O" type) (Non-Toxic product vapors only).
- Environmental gauging ("E" type) (Typical well monitoring vapors only). Low cost polyethylene coated tape available, all other tapes are Tefzel®, (Dupont Corp.), coated and anti-static treated by MMC.

SPECIFICATIONS**Accuracy:** (All Models)

- Tape & Sensor: +/- 1/8" (+/- 3mm), +/- 0.01% of F.S. tape LGT (F.S. = Full Scale).

Sensor: Dual function Sonic, Liquid level & Interface.

Battery: 9-Volt Eveready # 522 or Mallory MN1604.

Operation: U-Ullage, I-Interface (oil/water), with Auto-Shut Off.

Tape Lengths:

- Single-Sided: 50 ft. (15m), 75 ft. (25m), 100 ft. (30m). Special Restricted & Open, 120 ft. (37m), 165 ft. (50m).
- Single-Sided: Environmental, 100 ft. engineering scale (ft., 1/10 ft., 1/100 ft.). See application note above.

Typical Weights:

- 50 ft/15m - "R" 8lbs (3.6kg) "F" 7 lbs. (3.2kg).
- 100 ft/30m - "R" 9lbs (4.1 kg) "F" 8lbs. (3.6kg).
- 165 ft/50m - "R" 11 lbs (5 kg) "F" 10 lbs. (4.5 kg).

Approvals: Intrinsically safe--BASEEFA, CSA, SAA.

IMO--USCG, LLoyds.

Type App'd--BV, DNV, CCS, NKK.

All MMC Flexi-Dip Gauging Tape systems come with a sturdy, molded plastic carrying case for convenient transportation and safe storage, and include a spare battery and instruction manual.



**USA-Made
Product Lines**



MMC International Corporation



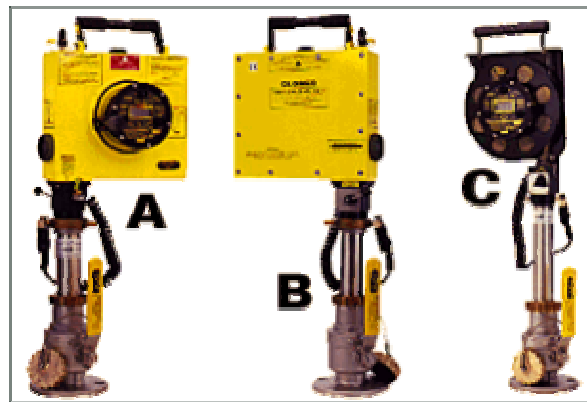
SPEC SHEET

006-3u
Version 01

MMC International Corporation
PRODUCT SPECIFICATION SHEET

**Portable Electronic Gauging Tapes
for Petroleum and Chemical Tanks**
CLOSED (GAS-TIGHT) and RESTRICTED

MMC is the world's leading manufacturer of portable instruments for measuring ullage, oil-water interface, temperature, and bottom dryness in shipboard and land-based petroleum and chemical tank systems. All MMC systems are manufactured in the United States and are certified as intrinsically safe by Factory Mutual, BASEEFA, CSA and SAA.



A, above, is the front view of the Flexi-Dip CLOSED Gauging Tape. B is the rear view of the same unit. C is the Flexi-Dip RESTRICTED Gauging Tape. All units are shown connected to MMC's [type "MB" vapor control valve](#).

FLEXI-DIP Closed Trimode Gauging Tape

The Portable Closed Flexi-Dip measuring tape is a battery-operated electronic unit that is totally gas-tight. When installed in a vapor-control valve mounted on a storage (cargo) tank, it forms a tightly sealed system that prevents toxic vapors from escaping and creates a closed gauging system for that tank. The tape is marked in metric or english units and is anti-static coated (as is the sensor). In addition, the tape is color marked to make tape direction and motion easily seen and to ensure full rewind position. A coiled grounding cable with large alligator clip is standard. This closed system is recognized by many worldwide regulatory bodies as equivalent to a fixed gauging system as long as the tape remains in the valve from the beginning until the end of loading or discharging of the tank.

SPECIFICATIONS

Accuracy

- of Tape Reading: Fluid level +/- 1/8 inch (3mm), +/- 0.01% of F.S. tape LGT (F.S. = Full Scale).
- of Temperature Display: +/- 0.5° F (+/- 0.3° C), +/- 1 digit error.

Ambient Temperature Limits: -20° F (-7° C) to 120° F (49° C).

Product Temperature Limits: -40° F (-40° C) to 180° F (82° C).

Battery: 9-Volt Eveready # 522 or Mallory MN1604.

Tape Lengths: 50 ft. (15m), 75 ft. (25m), 100 ft. (30M).

Typical Weights: 14 lbs. (6.4 KG).

Pressure Limits: 3 psi working, 7.5 psi maximum.

Approvals: Intrinsically safe--FM, BASEEFA, CSA, SAA, NKK (Japan).

FLEXI-DIP Gauging Tapes (Restricted and Open)

Restricted and Open Gauging Tapes provide a convenient and accurate means for measuring ullage, product temperature and the oil-water interface. The units are configured to operate in the trimode, bimode, interface or temperature mode. Each instrument is designed to maximize ease of use. A single penetration of each tank can provide comprehensive data about internal tank conditions. When the electronic probe senses hydrocarbon, a steady tone is heard; when sensing water, it emits an intermittent tone. Temperature is shown on an LED display in the hub of the instrument.

SPECIFICATIONS

Accuracy

- of Tape: +/- 1/8" (+/- 3mm), +/- 0.01% of F.S. tape LGT (F.S. = Full Scale).
- of Temperature Display: +/- 0.5° F (+/- 0.3° C) +/- 1 digit error.
- of Calibration Range: 32° F (0° C) to 176° F (80° C).
- of Probe: For dryness to within 3/8 inch (10mm) of bottom.

Ambient Temperature Limits

- LCD: same as above.
- Sensor: same as above.

Application:

- Open gauging ("O" type) (Safe product vapors only).
- Restricted gauging ("R" type) via MMC vapor-control valve.

Battery: 9-Volt Eveready # 522 or Mallory MN1604.

Operation: U-Ullage, I-Interface (oil/water), T-Temperature.

Tape Length

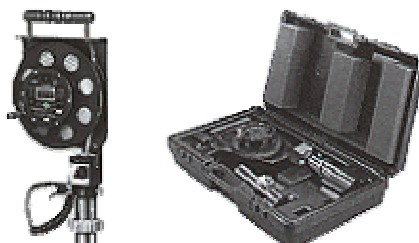
- Dual-Marked: 50 ft. (15m), 75 ft. (25m), 100 ft. (30m), 120 ft. (37m), 165 ft. (50m).
- Single-Sided: 30m, 100 ft. engineering scale (ft., 1/10 ft., 1/100 ft.)

Typical Weights:

- 50 ft/15m - "R" 8lbs (3.6kg) "F" 7 lbs. (3.2kg).
- 100 ft/30m - "R" 9lbs (4.1 kg) "F" 8lbs. (3.6kg).
- 165 ft/50m - "R" 11 lbs (5 kg) "F" 10 lbs. (4.5 kg).

Approvals: Intrinsically safe--FM, BASEEFA, CSA, SAA, NKK (Japan).

Note: Calibrations for Temperature and Linear Measurement Accuracy are performed in accordance with the instruments and procedures in NIST Test No. 250972 and MIL-STD-45662A, and in a manner that meets or exceeds API industry standards. Certification documents are available upon request.



All MMC Flexi-Dip Gauging Tape systems come with a sturdy, molded plastic carrying case for convenient transportation and safe storage, and include a spare battery and instruction manual.

MMC International Corporation

PRODUCT SPECIFICATION SHEET**Sampling Tapes and Sounding Equipment
for Petroleum and Chemical Tanks****CLOSED and RESTRICTED SYSTEMS**

A Flexi-Dip standard **CLOSED** Sampling Tape System is shown above, left; a Flexi-Dip **RESTRICTED** Sampling Tape System is shown above, right. Typical 1/2-liter stainless steel sampler and a standard six inch API brass sounding bob are shown at center. Included as accessories with either sampling tape system are a 1/2 liter Stn. Stl. sampler, a 6" Brass Bob and a sturdy carrying case.

1. Standard Closed (FIPS) Sampling System

The Flexi-Dip (FIPS) system is designed for use with a wide range of standard MMC vapor-control valves such as the B, MB, MMB and F/C50 styles. The system is specifically designed for applications areas where the escape of tank vapors during gauging or sampling is prohibited.

Once the (FIPS) sampling system is attached to any existing MMC vapor-control valve, it can extract a sample in place but then requires valve closure, removal from the valve and manual dumping of the collected product. Standard sounding and tank bottom dryness checks can also be performed by attaching sampling bobs to the snap hook on the tape end header.

For other closed sampling systems, see the [Product Sampling Valves and Systems](#) page.

CLOSED SYSTEM SPECIFICATIONS

Accuracy of Tape Reading: +/- 1/8 inch (3mm), +/- 0.01% of F.S. tape LGT (F.S. = Full Scale).

Tape Lengths: 50 ft. (15m), 75 ft. (25m), 100 ft. (30M), 120 ft. (37M) stainless steel, or up to 30M Tefzel coated anti-static treated type, for chemical applications.

Typical Weights: 14 lbs. (6.4 KG).

Pressure Limits: 3 psi working, 7.5 psi maximum.

2. Flexi-Dip RESTRICTED Sampling Tape Systems (Minimal Gas Leakage)

Flexi-Dip **Restricted** Sampling Tape systems are available for use with MMC's various vapor-control valves. Each Flexi-Dip Sampling Tape comes complete with tape with snap hook, 1/2 liter sampler and Std. API brass bob.

Restricted tapes are designed for manual sample collection, sounding and tank bottom dryness checking. Similar to the FIPS system, once the **Restricted** sampling unit is attached to any existing MMC vapor-control valve, it can extract a sample in place but then requires valve closure, removal from the valve and manual dumping of the collected product. Standard sounding and tank bottom dryness checks can also be performed.

RESTRICTED SYSTEMS SPECIFICATIONS

Accuracy of Tape Reading: +/- 1/8 inch (3mm), +/- 0.01% of F.S. tape LGT (F.S. = Full Scale).

Application: R-Restricted sampling (1, 1/2- and 1/3-liter) through MMC vapor control-valve.

Tape Lengths: 50ft/15m, 75ft/22.5m, 100ft/30m, 120ft/37m, stainless steel and plastic coated.

Typical Weights W/O Sampler: Reel, frame, tape, etc.

- 100 ft/30m for 1-liter sampling - 9 lbs (4.1kg).
- 100 ft/30m for 1/2-liter sampling - 10lbs. (4.5kg) with adaptor.

3. Samplers

All stainless steel construction (all brass also available).

- 1-liter - 3.5" O.D. X 10" lg - For 4" size "S" valve, [Model 1LTR-3.5X10LG].
- 1-liter - 2.5" O.D. X 16"lg - For 3" size Mini "S" valve, [Model 1LTR-2.5X16LG].
- 1/2-liter -1.625" O.D. X 18" lg - For all 2" size valves [Model 1/2LTR-1.625X18].
- 1/3-liter -1.375" O.D. X 28" lg - Mini-Micro "MMB" 1 1/2" valve, [Model 1/2LTR-1.375X28].
- See [sampler variations](#)

4. Sounding Bobs

Standard supply, American 6" brass type; special order stainless steel bobs are quoted upon request.

Brass sounding Bobs can be supplied with either english or metric markings, Stainless steel bobs are dual marked.

See [sounding and innage bob variations](#)

For tank dryness checking via. 1" bore valves, 24.5mm brass bobs can be ordered as an added optional accessory.