



MMC INTERNATIONAL CORP

OPERATING AND MAINTENANCE INSTRUCTIONS

GAS TIGHT CLOSED SAMPLING SYSTEMS **(1/2 LITER DIRECT SAMPLING)** **(1/3 LITER AVAILABLE)** **(1 LITER SYSTEM AVAILABLE FOR 3" VAPOR VALVES)**

NOTE: ONLY SUPPLIED PER PURCHASE ORDER SPECIFICATION

(SEE ADDENDUM TO THIS MANUAL FOR DRYNESS CHECKING ACCESSORIES)

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SECTION I

1.0 INTRODUCTION:

The MMC Closed Gauging Sampling system is part of a growing family of MMC products designed to make the gauging and sampling of bulk petroleum and chemical products, more accurate and safer.

The easy use and safety in utilization of MMC Product equipment is always foremost in the minds of our designers.

The use of MMC Restricted Gauging and Sampling Equipment, in conjunction with MMC Vapor Control Valves is well known and established worldwide.

In keeping with a growing demand and in some cases prescribed legislation, MMC developed a Closed Hand Gauging System, which has the same gauging feature as its Restricted Hand Gauging Equipment.

The Closed Hand Gauging System, as does the Restricted Gauging System, allows an operator to determine cargo Ullage, Interface, and Temperature.

In addition, and as prime objective of the system design, operator exposure to product vapors is virtually eliminated.

As a natural next step in the development of equipment for use in Closed Applications, MMC has also developed the Closed Portable Sampling System. Information on the Closed Portable Sampling System is available upon request.

1.1 SYSTEM OVERVIEW:

MMC's Portable Closed Sampling System and its sample collections valve, operate in conjunction with but independently of a cargo tank's existing vapor control valve. Once the system is attached to any MMC vapor control valve, an operator can extract and bottle a product sample in place, without transfer of the collected sample to another container.

In addition, and as prime objective of the system design, operator exposure to product vapors, and the traditional physical handling of the collected products, has been greatly reduced.

The system is gas tight and has been designed to meet or exceed the current vapor control regulations.

To achieve the above design goals, the system uses a unique combination of vapor return hose assembly, sample collection valve and sample bottle fill attachment.

System operation is simple, easily understood, and not complicated using laboratory type accessories.

The entire system is made in the U.S.A.

SECTION II

2.0 **DESCRIPTION OF SYSTEM COMPONENTS AND FEATURES:**

(Please refer to Dwg S-2562-ISM)

2.1 **CLOSED SAMPLING GAUGING TAPE AND REEL HOUSING:**

- 2.1.0 With reference to Drawing B-2562-406 PET, the basic components of the Closed Sampling Tape System are shown in pictorial form.

Drawing S-2562-ISM gives more detailed description of the various features of the basic tape reel housing, which are common to the unit when constructed for cargo gauging usage or sampling application. When constructed, the units are for the specific purpose ordered, and are not interchangeable.

A full re-wind, tape-reading label is posted just below the sight port indicating the correct tape reading at the fully re-wound stop position.

The fully rewound stop position is mechanically set by an internal tape head stop bushing, located within the stub barrel attached to the tape wiper housing.

It is recommended however, that the operator visually sight the gauge tape reading to confirm full re-wind, before closing the associated vapor control valve or sampling valve.

The primary view port, located on the side of the tape reel housing, just above the tape wiper assembly, can be used for tape payout determination with reference to an established zero ullage reference point.

When used as such, and due to the equipment construction, a zero-ullage correction must be applied to the sighted tape reading. An appropriate correction figure is posted just above this view port.

- 2.1.1 As also can be seen on drawing S-2562-ISM, a dual-purpose winding crank is provided. At the completion of tape payout or re-wind operation, the crank may be re-positioned to serve as a tape reel lock. An operating instruction label is posted on the reel housing, adjacent to the handle drum.

Like the cargo-gauging unit, the sampling unit has other appropriate operation labels and caution notices. A spring-loaded tape wiper and grounding cable are also supplied for the sampling unit.

An internal feature not shown in drawing S-2562-ISM, is the use of a spring-loaded anti-rotation arm, which follows the sampling tape payout, and will stop reel motion when a tape is fully extended.

Please exercise special care when a gauging tape is fully extended so that the anti-rotation arm is not over stressed.

2.2 SAMPLING BARREL:

Item 3 in Drawing B-2562-406 PET is a separable piece from the main reel housing.

This sub-assembly is threaded end to end to allow assembly to the stub barrel connector.

2.2.1 The short stub barrel piece, attached to the reel housing wiper assembly remains in place when the sampling collection diverter valve and sampler barrel are removed for storage.

2.2.2 Reference Drawing B-2562-406 PET with items 1, 2, 3 assembled. Attach item 4 to the deck valve; once attached assemble items 5 and 6 to complete the final assembly of the closed sampling system.

2.3 SAMPLE BOTTLES:

The sample bottle(s) supplied with the system are wide mouth, ½ liter capacity, high density polyethylene type. Each bottle comes with its own self-sealing cap and meets the requirements of the department of transportation, DOT-2E, for packaging and transportation of hazardous materials. (See Section IX for specifications and chemical compatibility).

2.4 NOTICE:

Please be aware that transportation of hazardous materials requires special external packaging, handling, and or other specific carrier requirements.

It is solely the responsibility of the end user of the sample bottle(s) supplied by MMC, to determine if it is suitable for the intended collection, storage or transportation of a product, whether it is called petroleum by-product, chemical or other such fluids, generally known to be hazardous by their natural or manufactured nature.

2.4.1 The ½ liter sample bottle(s) supplied are only intended for use with supplied MMC sample fill attachment.

2.4.2 One-liter capacity bottles are also available. The use of one liter capacity bottles requires a different fill assembly, due to the larger mouth of this size bottle fill attachment, please consult factory for ordering details.

2.5 VAPOR RETURN HOSE:

The vapor return hose is connected at one end to the sample fill attachment, and at the other end to the vapor return check valve fitting mounted on the tape wiper housing. The quick coupling hose fitting supplied for this connection depresses the fixed check valve, and thereby allows free gas flow.

SECTION III

3.0 **BASIC OPERATING PROCEDURE:**

(Please refer to Figure 1 (CLOSAD44.SKD), and Drawing B-2562-406-PET

As can be seen in Figure 1 (CLOSAD44.SKD), a simple 4-step procedure is described.

The enlarged details of the sampler barrel, pictorially illustrates the stages of operation.

Notice that pictured in stage (1) the bottom of the zone sampler can be seen as it would appear with its associated gauging tape at its fully re-wound and locked in place condition.

Stage (2) shows that the zone sampler can be seen as it would appear with its associated gauging tape at its fully re-wound and locked in place condition.

Stage (3) shows tape payout through window view port in the tape reel housing.

Stage (4) shows a filled sampler tube returned to its full stow position. The gauging tape reel should at this time be locked in place with the provided reel drum handle lock. See Drawing S-2562-ISM. (The Sampler collection Assembly Valve Sampler Barrel).

Stage (5) shows a product filling the view port window, after the zone sampler has been lowered against the previously closed sampling collection assembly valve.

The above assumes that the flow control valve of the attached sample bottle fill attachment has still been left in its recommended starting closed position.

Therefore, at this stage, the fluid sample has only been released to the interior of the sampler barrel by the action of lowering the ball check zone sampler tube against the surface of the interior ball of the sampler valve.

To ensure full opening of the ball check at the bottom of the sampler tube, the sampler valve ball has built-in spring-loaded pusher pin which is released when the sampler valve was placed in its closed position.

The spring-loaded pusher pin is automatically aligned with the zone sampler axis when the sampler valve was placed in its closed position. This action ensures that the zone sampler ball check valve is fully pushed up, allowing free liquid flow.

When the sampler valve is in its open position, or in transit to the open position, the pusher pin is depressed, but does not enter through the bore of the ball of the sampler valve. This feature ensures free passage of the sampler tube through the valve.

The only remaining step is to now collect the extracted sample within the provided sampler bottle(s).

SECTION IV

4.0 SAMPLE COLLECTION WITH INERT GAS SYSTEMS:

The prior section has discussed the basic operating procedure to extract a product sample from a typical ships' cargo tank, equipped with and MMC vapor control valve.

The actual collection and bottling of the extracted sample, including the use and function of the sampling unit's vapor return system will now be discussed.

The discussion in Section 3.0 in conjunction with the flow diagram test of Figure 1 (CLOSAD44.SKD), provides a quick and easy understanding of the basic operational procedure.

However, at first view, the need for the vapor return hose, and use of the fill attachment sample flow control valve, may not be fully understood.

Obviously by name, the vapor return hose assembly is meant to return vapor from the fill attachment sample bottle to the tape housing.

One may wonder why it's starting with a clean sample bottle, and then open the fill attachment sample control valve, allowing the extracted sample to fill the bottle and displace the clean air within it, would it matter to simply allow the bottle to vent atmosphere?

Of course, one obvious reason would be that we wish to avoid possible vapor emission, but we also must bear in mind that we are about to empty a sealed container with liquid in it.

Let us review for a minute how we arrived at the point of filling the sample bottle.

We first opened both the vapor control valve and sampling valve, lowered our sample tube, allowed some dwell time, then steadily raised that sample tube to its full stow position within the sample valve barrel attachment to the tape housing.

Having then visually confirmed the full stow position at the primary sight port, we closed the tanks vapor control valve, thereby disconnecting us from the product tank, and its internal tank pressure.

We then closed that sample valve, allowing its spring-loaded push button to rise up.

We then lower out sampler tube, and in so doing, push up its internal ball check valve, allowing product to flow out the sampler tube into the sample valve interior.

We have yet to open the fill attachment sample flow control valve.

However, if we consider that the tank from which we extracted the sample may have had some positive pressure above the liquid level, primarily due to an inert gas system, we will have also trapped some positive pressure within the connected tape reel housing and sampler valve attachment.

The actual amount of pressure trapped within the connected sampler assembly will not be a constant but will vary from site to site. In most cases, the sampling assembly will cool the trapped vapor and slightly lower its pressure reading.

When we now slowly open the fill attachment sample flow control valve, any interior positive pressure should assist in pushing the extracted sample into the bottle.

However, with the vapor return hose connected, as previously described, a pressure balance between the interior housing pressure, and sample bottle, has been established. As the bottle is filling and thereby displacing the air/vapor mixture within it, a declining but balancing pressure is being maintained within the bottle. Therefore, a sudden burst of fluid into the sample bottle will not occur, and fluid flow will mainly be due to simple gravity flow.

Normally with the minimum amount of pressure capacity trapped within the sampling system, at the near completion of bottle filling, little or no positive pressure remains trapped in the system.

However, before removing a filled sample bottle, close the sample flow control valve, and disconnect the vapor return hose.

In summary then, were it not for the balancing vapor flow path established by the vapor return hose, an unwanted burst of product sample into the same bottle would occur.

Apart from the above, but in the case of a tank or vessel not having any significant positive pressure, the possible development of an interior negative pressure becomes of concern, as discussed in Section 5.0.

SECTION V

5.0 SAMPLE COLLECTION WITH NO POSITIVE TANK PRESSURE:

In the case of extracting a product sample from a tank with little or no positive pressure, the basic procedure described in Sections 3 and 4, is the same.

However, and again bearing in mind that we are dealing with gas tight closed system, the vapor return hose plays another important function.

It may be easy to consider why this is so by the following analogy.

- 5.1 When we fully stowed the filled sampler tube within its barrel housing and closed both the vapor control valve and sampler valve, and then lowered the sampler tube to release the extracted fluid from within it, we have in essence a container with liquid at the bottom with some product vapor above the liquid.

In the process of releasing the extracted fluid from the sampler tube, we simply exchange the interior location of the liquid and air vapor mixture.

The liquid is now at the bottom of the container, or for instance and in this case, a metal can, with a mixture of air and product vapor above it.

If we now open the fill attachment sample flow control valve, product will begin to fill the bottle, but at the same time were it not the vapor return hose returning to the system, the same amount of air displaced from the sample bottle we would at some point develop a negative pressure above the outgoing fluid. If this condition were allowed, product flow would soon diminish to trickle.

- 5.2 To complete our analogy, were it now not for the vapor return hose, the situation would be similar to punching one hole in the top of a can of oil holding a finger over the hole while turning the can upside down and expect it to completely empty the can.

5.2.1 From ordinary experience we know that the can does not completely empty. However, the reason it does not empty may not be obvious. The answer of course is that a pressure imbalance between the greater outside atmosphere pressure and the lesser interior void space pressure above the liquid in the closed end of can has developed.

- 5.3 In the special case of those products requiring a later read vapor pressure measure, the development of a negative pressure above the product sample would not be desirable.

- 5.4 The above now completes the description of sample collection during typical cargo tank internal conditions.

- 5.5 Please also refer to Section VII for other important considerations and recommended practices.

SECTION VI

6.0 **OTHER EQUIPMENT FEATURES AND USAGE:**

6.1 **MAIN REEL HOUSING PRESSURE-VACUUM PUSH BUTTON:**

Situated at the top of the main reel housing is a push button spring-loaded valve.

This valve is a carry-over from the standard closed Gauging Unit, where it serves a different purpose than used on the closed sampling unit.

- 6.1.1 In the case of sample collection, as described in Section V, the valve should be depressed to verify. Complete draining of the extracted sample.
- 6.1.2 Be aware however, that this valve should not be depressed during sample collection as described in Section IV.
- 6.1.3 The black nylon actuator of the push button assembly can be unscrewed from the check valve to which it is attached. This check valve is similar to the previously described vapor return hose check valve.
- 6.1.4 With the nylon actuator assembly removed, this with an appropriate connection fitting can be used for the attachment of a pressure gauge. A 5-PSI full-scale pressure would be suitable for product tank pressure measurements. Full-scale pressure would be suitable for the product tank pressure measurements.

6.2 **TAPE WIPER USAGE AND LIMITATIONS:**

The tape wiper housing between the main reel housing and stub connection barrel, contains a spring-loaded hand knob actuated wiper assembly.

When re-winding a gauging tape with its attached sample tube to the full stow position, it is recommended that the wiper be used.

It is our experience that no wiper construction can do a perfect tape cleaning for all products encountered in the field. However, the presently included tape wiper is adequate for most products.

- 6.2.1 The wiper assembly is plate mounted to the wiper housing with four socket head screws. Removal of these screws allow complete removal of the assembly from the housing.
- 6.2.2 The wiper blades are of Viton material and are easily cleaned or replaced. The plate end of the wiper blade shafts is gear operated with nylon gears, and “O” ring sealed against the mounting plate.

- 6.2.3 For closed gauging and sampling applications, the wiper assembly mounting plate is gasket sealed when assembled to the wiper housing. In the event of wiper replacement or cleaning, the sealing gasket between the mounting plate and housing should always be replaced with the original or new gasket.
- 6.2.4 The wiper has been intentionally spring-loaded to avoid lowering a tape without having first released the wiper.

Experience has shown that with a closed assembly, it is easy for the operator to begin lowering a tape without first releasing a previously locked wiper. The result of such a mistake is broken or badly kinked gauging tape.

While it is of some inconvenience to have to hold the wiper closed when re-winding a tape, a tape assembly still mounted to a vapor control valve, does allow a comfortable two hand operation, without undue operator stress.

6.3 REEL HOUSING PRODUCT DRAINAGE AND OTHER FACTS:

The bottom of the reel housing has been so designed as to allow any product accumulation due to excess product dripping from a re-wound tape, to return back and through the tape wiper housing and attached barrels, to the source tank.

However, it's recommended that the reel housing cover be removed for interior inspection and clean out as necessary.

The frequency of this inspection and clean out largely depends on the types of products being sampled. Obviously the more viscous product will require greater housekeeping.

The interior of the main sampler housing is nylon coated throughout. Other interior parts being either nylon coated or otherwise treated to allow easy clean out with standard cleaning solution.

6.4 VIEW PORTS, MAIN REEL ASSEMBLY (Please refer to Drawing A-2562-146):

The gauging tape viewing port provided with this equipment, employs specially tempered glass.

It is easily removed for cleaning or replacement purposes.

- 6.4.1 It is not claimed that this port will always provide a perfectly clear view of the gauging tape. However, the location and size are a compromise between ease of use, function, and the maintenance of gas tight unit.

6.5 SAMPLER VALVE CLEAN OUT PORT:

In line and opposite the sampler valve drain port, a similar pipe plugged port is provided.

If desired, this port can be used as an alternate drain port location.

The opposite in-line port can also serve as a blowout port for cleaning purposes.

While other uses of this auxiliary port can be imagined, it is not recommended that such be attempted without a thorough understanding of the basic system operation.

SECTION VII

7.0 **SYSTEM GROUNDING AND OTHER GAUGING AND/OR SAMPLING PRECAUTIONS:**

As previously mentioned, the sampler assembly is provided with a grounding cable.

It is recommended that the sampler assembly grounding cable be properly connected to a known good hull vessel ground, at all times during usage.

However, please also refer to the specific equipment grounding directives of your company or other regulatory bodies, which should be strictly adhered to as the primary operator responsibility.

- 7.1** The sampling of products known to be static accumulators should only be carried out with prior approval of the local site authorities.

While such judgements are a matter of experience and established recommendations, if in doubt, do not proceed with a sampling operation until such is resolved, with the proper authorities.

- 7.2** In the process of sample collection, excess product may remain within the valve interior, due to the sample bottle capacity. This may be the case when double dipping using a 1/3-liter sampler, with a 1/2 liter sampler bottle.

- 7.3** In the case of sampling static accumulative type products, the above procedures are not recommended without an inert gas blanket over the product.

In the latter case, the excess product should be collected in another sampler bottle, and either returned to tank by approved means, or otherwise safely disposed of.

- 7.4** The sampling of certain products may require the use of special protective devices. The sole use of this equipment does not eliminate the need for such additional protective measures, unless so authorized by responsible parties.

SECTION VIII

8.0 EQUIPMENT CARE AND MAINTENANCE:

The care and maintenance of this equipment is the responsibility of the end user.

Depending on the types of different products which are to be sampled, the necessity for cleaning of the reel housing becomes self-evident.

The sampler valve barrel and associated equipment is easily cleaned with any standard cleaning solution or solvent.

- 8.1** The gauging tape, which serves to raise and lower the provided sampler tube, is also used to provide a ground path between the sampler tube and main reel housing.

The continuity of the gauging tape ground path should be verified at frequent intervals. A simple ohmmeter check is all that is required.

- 8.2** The lack of ground continuity through the gauging tape to the main tape reel housing and then to the hub grounding cable, is a cause for concern.

A first check would be the grounding cable to housing, and then the gauging tape snap hook end.

- 8.3** A gauging tape with a broken or fractured steel core should be replaced.

- 8.4** If a gauging tape requires replacement, please be careful to notice the order of parts removal, to ensure a correct re-assembly. Always re-check the ground continuity upon completion of gauging tape replacement.

- 8.5** A removed reel housing cover with its associated sealing gasket, should be routinely inspected for damage.

If this gasket is found to be in any way questionable, it should be replaced with new and un-greased gasket. All cover hold down screws are “O” ring sealing type. They should not be replaced with ordinary machine screws. Upon cover replacement, an even cross order or screw tightening should be carried out.

- 8.6** In order to maintain the factory delivered gas tight condition of this equipment, a supply of all necessary gasket and seals should be on hand before any repairs are attempted.

- 8.7** Routine low-pressure (5-PSI) assembly leakage check should be performed. To properly perform this test, a precise control on an air source and accurate low-pressure gauges are required.

It is recommended that such testing only be performed by qualified personnel or an authorized repair center.

SECTION IX

9.0 **GAUGING TAPE REPLACEMENT** (See Drawing I-2562-181):

The gauging tape used for the sampling system is similar to the gauging tapes used for MMC's electronically operated gauging tapes.

The tapes used are chrome brushed stainless steel.

Gauging tape replacement is not difficult but requires careful attention to the travel path of the tape it exits from the tape reel assembly, passes over the interior guide rollers, cursor pin assembly, anti-chafing rollers and through the wiper housing.

- 9.1 To replace a tape, remove the sampler, tape wiper assembly, stub barrel connector and main reel housing cover
- 9.2 With the main reel housing cover removed, the tape reel and tape pay out through the wiper housing can be seen. Take careful note of how the tape is directed around the various rollers and guides. (See Drawing I-2562-181). Particularly, note the tape path between the upper right roller, the guide roller just below it, cursor pin assembly, and tape wiper housing split ring bushing.
- 9.3 With the above in mind, or recorded with a simple hand sketch, the screws holding the reel hub cover can be removed. The reel hub cover is both a reel interior cover, and also the reel drive shaft to reel driver. The underside of the cover has a crossbar, which couples it to the reel drive shaft assembly. The coupling action is accomplished by means of the cover cross bar engaging the slotted ends of the drive shaft assembly.

With the reel hub cover removed, note that the outer reel plate is still retained to the reel hub core by a single flat head screw.

Note that directly opposite the flat head screw (180° away) a small pinhead can be seen in a reel plate hole on the same screw hole diameter as the flat head screw. Also note, that the screw hole and pin are at this time aligned with the drive shaft coupling slots.

The interior hub end of the gauging tape is now also in view. Note the placement of the terminating epoxy molding piece at the end of the tape within the hub core. Also, note the two black grounding wires leading out from this molding.

- 9.4 Remove the two grounding screws attaching the black wire leads from the tape to drive shaft and reel core.
- 9.5 Unlock the tape and wind the tape reel so that the molded snap hook end is drawn up through the wiper housing into the reel housing interior. (Note: The stub barrel connector attached to the tape wiper housing, must have first been removed. When removed, the tape full rewind stop bushing at its top end can be pushed out and removed from the tape.

Remove the flat head screw holding the outer reel plate to the reel core.

Note that the spring-loaded anti-rotation arm can now be seen pressing against the outside layer of the tape. With a little manipulation, the old tape can now be lifted away from the fixed inner reel plate.

- 9.6** A new tape can now be installed in a reverse manner. However, to make this process easier, be sure to correctly place the new reeled tape on the hub core first, with the reel housing in a flat horizontal position. Ensure that the anti-rotation arm is now again pressing against the outside layer of the new tape.

- 9.7** Unwind enough tape to bring the snap hook end down through the tape wiper assembly, without passing it around the interior rollers and guides.

As soon as enough slack tape is let out, replace the outer reel plate and its flat head screw attachment to the reel core.

The slack tape can now be positioned around the interior roller and guides with this basic tape placement accomplished, the tape reel core and drive shaft ground screws can be replaced.

With the partially assembled tape reel still freewheeling on the drive shaft, align the slotted end of the shaft to be in line with the flat head screw on the outer reel plate and the reel core stop pin directly across from it.

The reel hub cover can now be re-installed by visually aligning its underside cross bar with the drive shaft end slots. Replace all core cover screws.

- 9.8** With all interior parts in place and correctly positioned, check by ohm meter that the snap hook end of the tape is grounded to the main reel housing.

With tape ground confirmed, the main reel housing cover can now be replaced. The screws provided for cover attachment to the main reel housing have built-in “O” ring head seals. Do not replace these screws with ordinary machine screws.

- 9.9** Re-install the wiper housing, being sure to replace its mounting plate to the wiper housing gasket.

- 9.10** Re-install the stub barrel piece into the tape wiper housing. Be sure to first replace the split full stop bushing into the top of the barrel adapter.

- 9.11** As a final check, the gauging tape may be hand unwound from the reel to its full length, at which time the anti-rotation arm engagement should be confirmed.

- 9.12** Rewind the freed tape with some slight hand drag.

SECTION X

10.0 SAMPLING/VAPOR VALVE ADAPTORS FOR NON-MMC VALVES:

(Please refer to Drawings A-2562-190 and A-2562-372)

At the time of this manual writing, the above-mentioned outline drawings illustrate the available adaptors for use on non MMC vapor control valves.

- 10.1** Requests for other special valve adaptors will be quoted upon request. Please have available dimensional and mechanical details of the intended valve.

SECTION XI

SOME FINAL WORDS:

It is always the intention of the designers of the specialized equipment to present to the end user something better than that which came before its introduction.

The present sampling equipment you have purchased from MMC was so conceived while it is truly hoped that the equipment will prove its worth, we here at MMC are always open to your constructive suggestions for improvement.

Please also feel free to contact MMC directly for any further technical advice or procedure recommendations.

SECTION XII

GENERAL GUIDE TO CHEMICAL RESISTANCE OF SUPPLIED SAMPLE BOTTLES:

MATERIAL: (BOTTLE AND CAP) FLORINATED HIGH DENSITY POLYETHYLENE

MAXIMUM TEMPERATURE: +120° C TO -100° C

COLOR: TRANSLUCENT

Meets the U.S. Department of Transportation, DOT-2E requirements for packaging and transportation of hazardous materials. (See also caution Notice Section 2.6.1 of the instruction manual).

Chemical Class	Rating
Acids, Dilute or Weak	Excellent
Acids, Strong and Concentrated	Excellent
Aliphatic Alcohol	Excellent
Aldehydes	Good
Bases	Excellent
Esters	Excellent
Hydrocarbons, Aliphatic	Excellent
Hydrocarbons, Aromatic	Excellent
Hydrocarbons, Halogenated	Good
Ketones	Excellent
Strong Oxidizers	Fair

The above guide is provided solely as general overview of chemical compatibility. Compatibility with specific chemicals should be further investigated before usage.

MMC does not make or claim suitability of the supplied sample bottles as being approved for sampling usage by any specific regulatory body, or in meeting the requirements of any industry or testing society standard.

WARRANTY

MMC CLOSED GAS TIGHT SAMPLING SYSTEMS:

The seller, MMC or its licensed agents, fully warrants equipment of its manufacture against defects in materials or workmanship for a period of one year from the date of shipment. No other warranty period, in excess of one year, may be expressed or implied by sub-agents or others, unless authorized in writing by MMC. The liability of the seller under this warranty is limited, at seller's option, solely to repair or replace with equivalent equipment.

The seller, upon the expiration of the warranty period, has the option to apply a limited credit, not to exceed the original equipment sales price, toward the purchase of a new piece of equipment, if returned equipment is beyond reasonable repair. In any event, non-warranty repair charges will be quoted to the buyer, for authorization, before repair work commences.

In the event of Returns for Warranty Repairs:

This warranty does not include mechanical failure due to wear or corrosion from normal usage, nor does it cover limited life electrical components or elastomer seals.

- A. The buyer is to notify the seller in writing upon discovery of the defects.
- B. Upon receipt of written authorization from the seller, the equipment is to be returned as directed, transportation prepaid by the buyer.
- C. Buyer is to disclose the use of this product within hazardous chemical substances. It is the responsibility of the buyer to clean or decontaminate this product before returning for repairs. Buyer's refusal will void repair warranty at seller's option.
- D. If seller's examination of such equipment disclosed to his satisfaction that defects were not caused by negligence, misuse, improper installation, accident or unauthorized repair or alteration by the buyer, repairs will be immediately affected.
- E. Buyer is to provide shipping instructions for the return, including mode of transportation. This warranty does not include mechanical parts failure due to wear or corrosion from normal usage, nor does it cover limited life electrical components or elastomer seals.

This warranty is in lieu of all other warranties, expressed or implied, including that implied of fitness for a particular purpose to the original purchaser or to any other person. Seller shall not be liable for consequential damages of any kind.

IMPORTANT:

The equipment has been certified as intrinsically safe instrument for only those classes or categories of hazardous areas so stated on the equipment label, bearing the mark of the applicable approval agency. No other usage is implied or otherwise authorized.

Unauthorized repair or component replacement by the user will void this warranty and may affect the intrinsic safety of the equipment.

SECTION XIV

REPLACEMENT PARTS LIST

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>
1.	SAMPLING TAPE 100FT/40M WITH SNAPHOOK	TAP40M(100FT)-W-HOOK-C
2.	1/3 LITER ZONE SAMPLER, STAINLESS STEEL	A-2518-3-1/3 LTR
3.	½ LITER ZONE SAMPLER STAINLESS STEEL	A-2518-1-1/2-LTR
4.	PRIMARY VIEW ASSEMBLY	DWG. A-2562-146-SG-PRIM*
5.	WIPER ASSEMBLY COMPLETE	B-2562-26-WPR-ASSY
6.	WIPER ASSEMBLY GASKET (BUNA-N)	A-2562-90-WPR-GSKT
7.	GASKET, REEL HOUSING COVER (BUNA-N)	B-2562-322-BN-SML
8.	COVER SCREWS, “O” RING SEALED	SCR-10-32X-5/8-SLOT-PH
9.	SAMPLE COLLECTION VALVE	A-2518-55V
10.	GROUNDING CABLE ASSEMBLY	B-2562-72A
11.	½ FILLING ATTACHMENT ASSEMBLY	DWG. B-2562-185-BTL-FL*
12.	PUSH BUTTON ACTUATOR, NYLON	A-2562-134
13.	“O” RING, STUB BARREL COUPLING END	O/R2 134V

*Order by Drawing Part Number, included in this manual.

SECTION XV

LIST OF DRAWINGS:

<u>DRAWING NUMBER</u>	<u>REV.</u>	<u>DESCRIPTION</u>
FIG 1 (CLOSAD44.SKD)	-	Basic Operating Procedure (Pictorial Process Diagram)
D-2562-328	-	Closed Sampling Systems Tape Reel Housing Interior View
B-2562-406-PET	-	Petroleum Service Sampling System
B-2562-406-CHE	-	Chemical Service Sampling System
B-2562-171	F	Barrel Attachment for 1/3 & 1/2 Liter Closed Sampling System and Tank Dryness Checking
S-2562-1SM	F	MMC Closed Sampling Universal Tape Reel Housing & Stub Barrel Adapter for use with Self-Contained MMC Sampling Vapor Valves
A-2562-146	B	Primary Sight Glass Assembly
B-2562-185	N	Assembly 1/3 & 1/2 Liter Sampling, Sampling Bottle Filling Attachment
A-2562-190	C	MMC Closed Sampling Barrel to "TS" Valve Short Coupling Adaptor
A-2562-372	B	MMC Closed Sampling Barrel to "TT" Valve Short Coupling Adaptor
A-2518-1	-	1/2 Liter Zone Sampler Assembly
B-2562-72	A	Grounding Cable with Ground Clamp for All Portable Cargo Gauging and Sampling Tapes
A-2318-55V	-	Portable Sample Collection Assembly Vapor Valve
B-2562-238	B	Vapor Return Hose

SECTION XVI

16.0 ADDENDUM FOR DRYNESS CHECKING ACCESSORIES:

LIST OF DRAWINGS

<u>DRAWING NUMBER</u>	<u>REV.</u>	<u>DESCRIPTION</u>
A-2670-1	-	Outline Drawing Standard Sounding Bob (Brass)
A-2670-2	D	Sounding Bob Stainless Steel (24mm)

MMC PORTABLE SAMPLING SYSTEM

CLOSED (GAS-TIGHT) 1/3 AND 1/2 LITER SAMPLING.

BASIC OPERATING PROCEDURE

(FOR USE WITH ANY EXISTING "MMC" VAPOR VALVE)

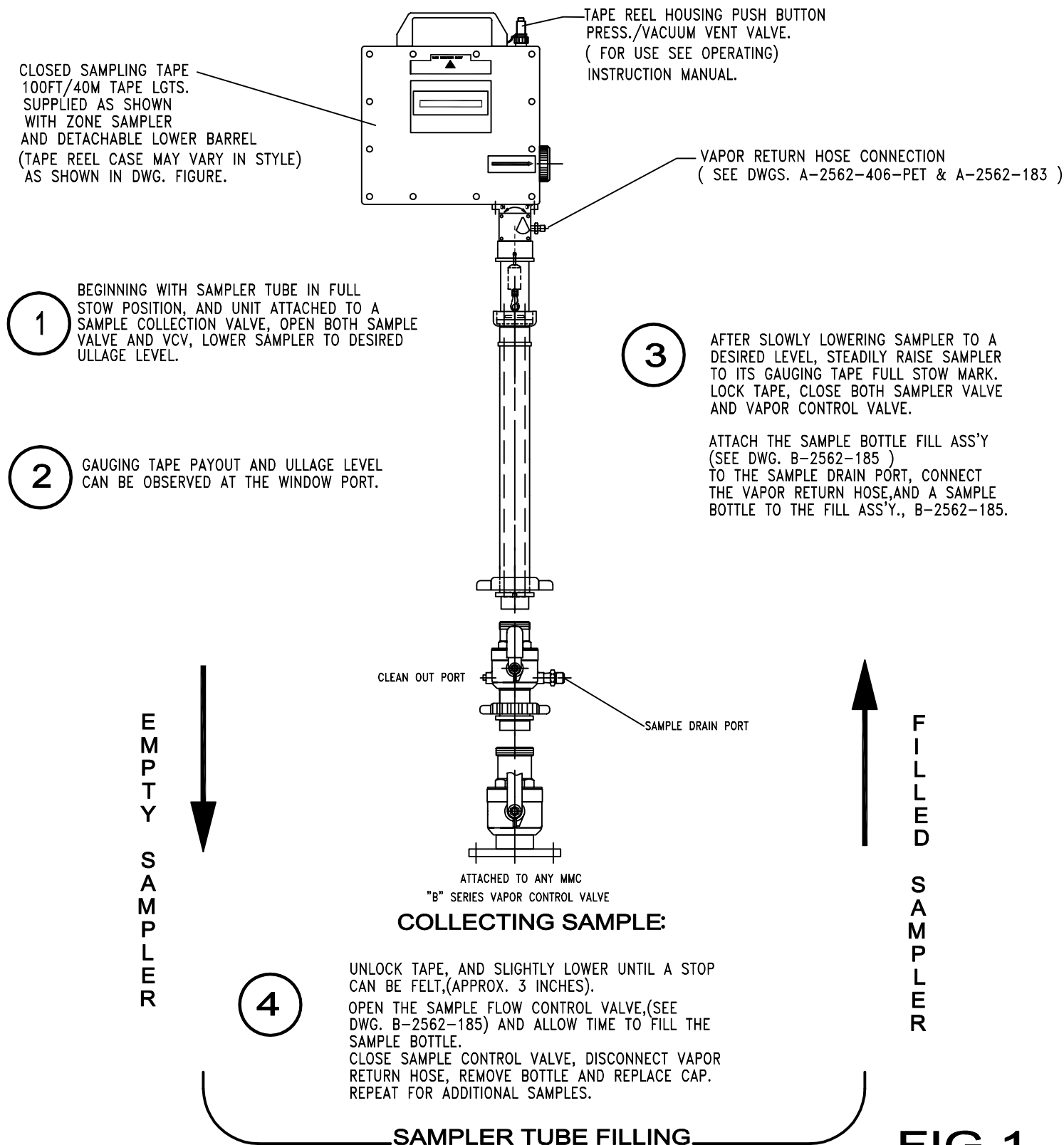
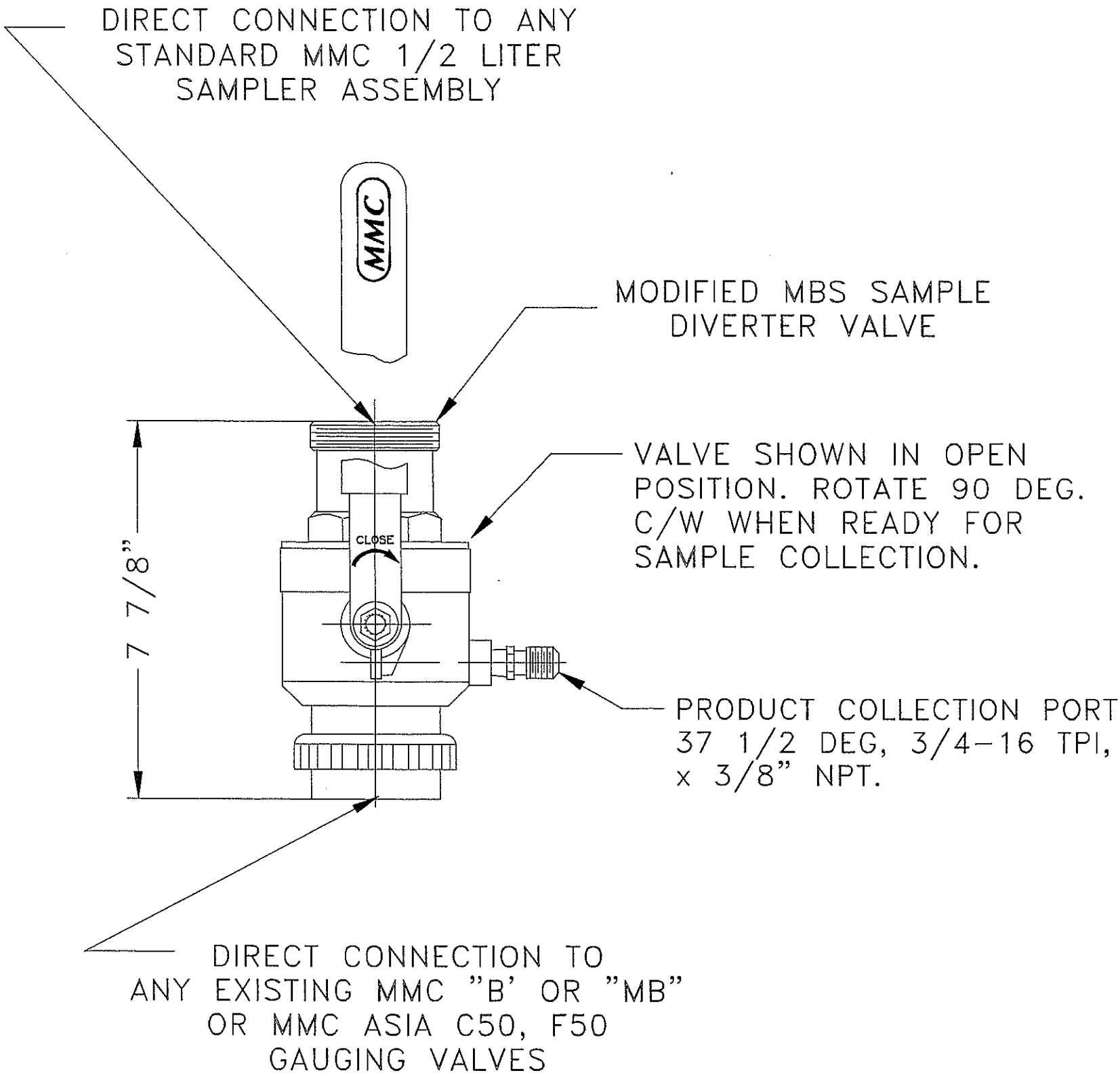


FIG.1



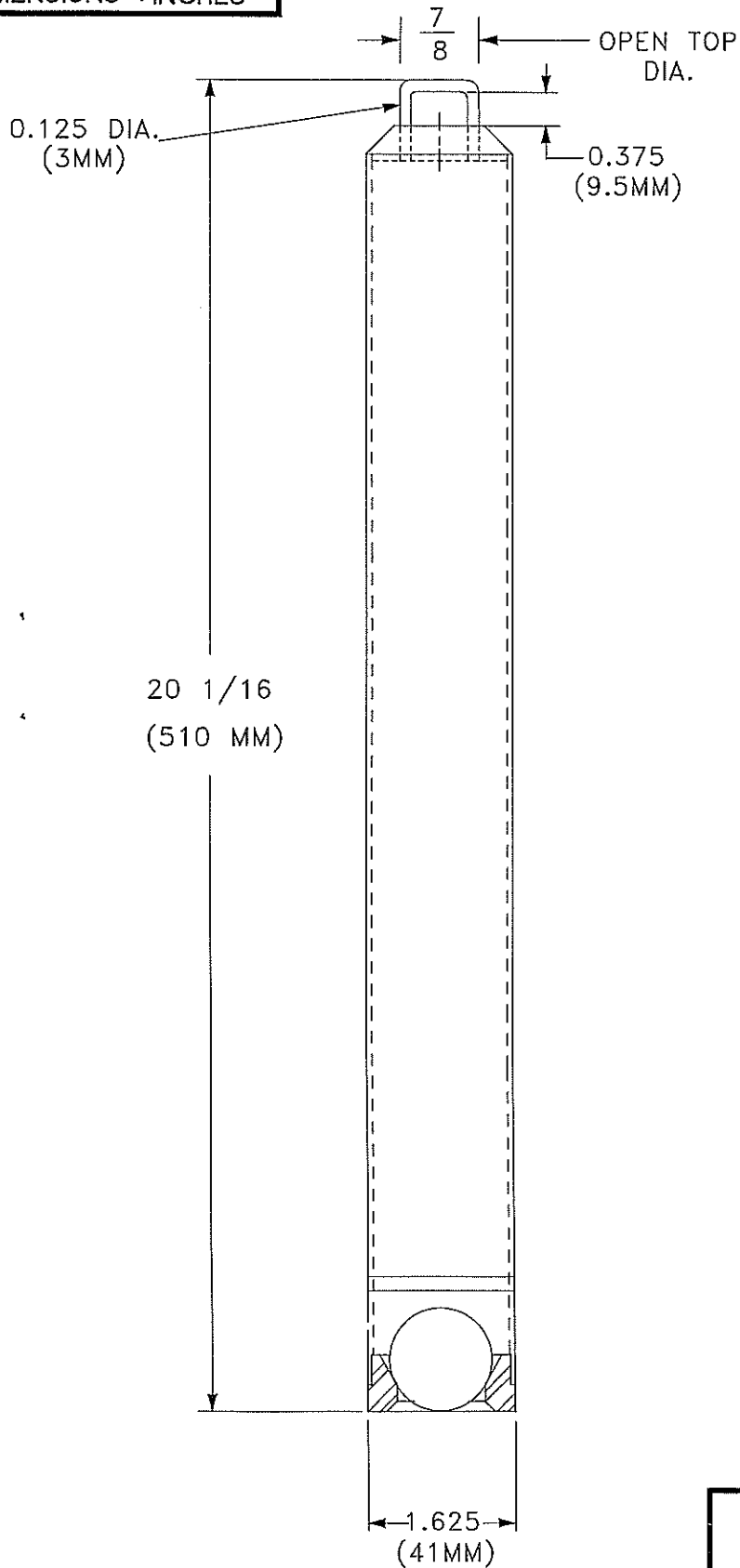
NOTE:
SEE DWG'S B-2562-405-PET
AND DWG. B-2562-406-PET
FOR TYPICAL INSTALLATION.
OF SHOWN DIVERTER VALVE.

PORTABLE SAMPLE COLLECTION VALVE FOR USE ON EXISTING MMC "B" , "MB", C50, F50 VAPOR CONTROL VALVES			
APP'D	DWG. NO.	REV.	
	A-2318-55V		

NEXT ASS'Y	JOB NUM.
MMC INTERNATIONAL CORP. INWOOD NEW YORK 11096	DRN BY : F.S.G DATE : 11-10-17

DIMENSIONS : INCHES

UNAUTHORIZED USE, MANUFACTURE OR
REPRODUCTION IN WHOLE OR PART,
IS STRICTLY PROHIBITED.



MATERIAL SPECIFICATION

ALL METAL PARTS TYPE 304 STN.STL.
WITH TEFLON SEAL BALL

WGT. 2 LBS (0.9KG)

1/2 LITER
ZONE SAMPLER ASSEMBLY
FOR USE WITH ANY MMC
VAPOR VALVES OR TANK
TOP FIXTURES

NEXT ASS'Y

JOB NUM.

MMC INTERNATIONAL CORP.
INWOOD NEW YORK 11096

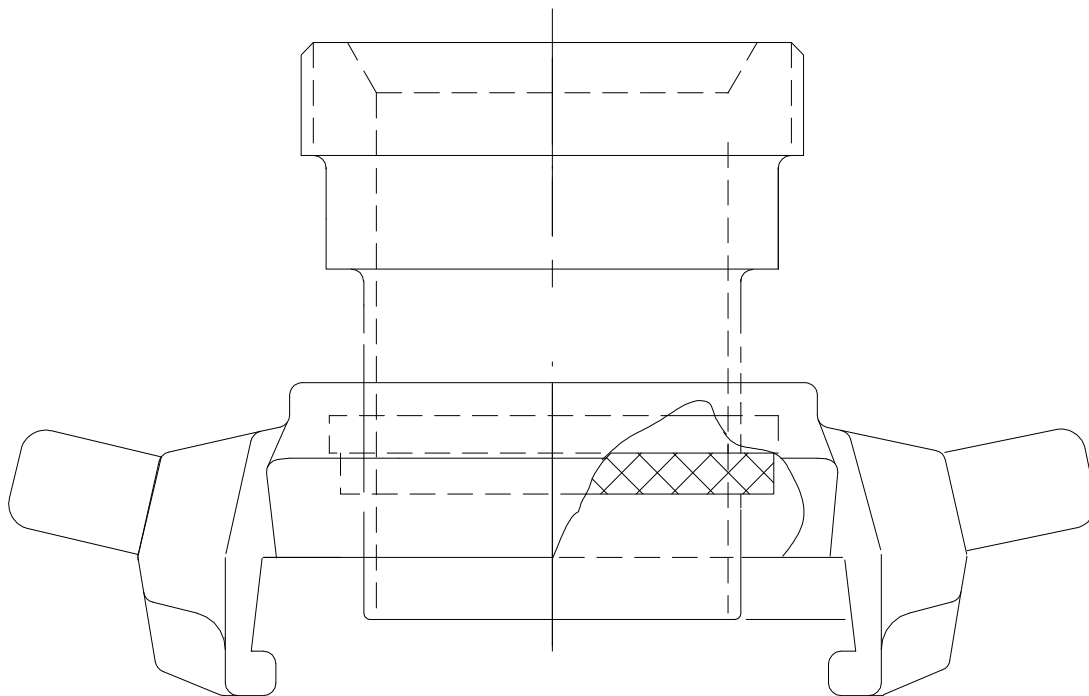
DRN BY : F.S.G
DATE : 3-8-95

APP'D

DWG. NO.

A-2518-1

REV.



MATERIAL:

TYPE 304 STN STEEL.

PT # S2562TS-CPL-SHT

**MMC
CLOSED SAMPLING BARREL
TO "TS" VALVE
SHORT COUPLING ADAPTOR**

NEXT ASS'Y

A-2562-182 & -183

JOB NUM.

MMC INTERNATIONAL CORP.
INWOOD NEW YORK 11096

DRN BY : F.S.G

DATE : 4-15-94

APP'D

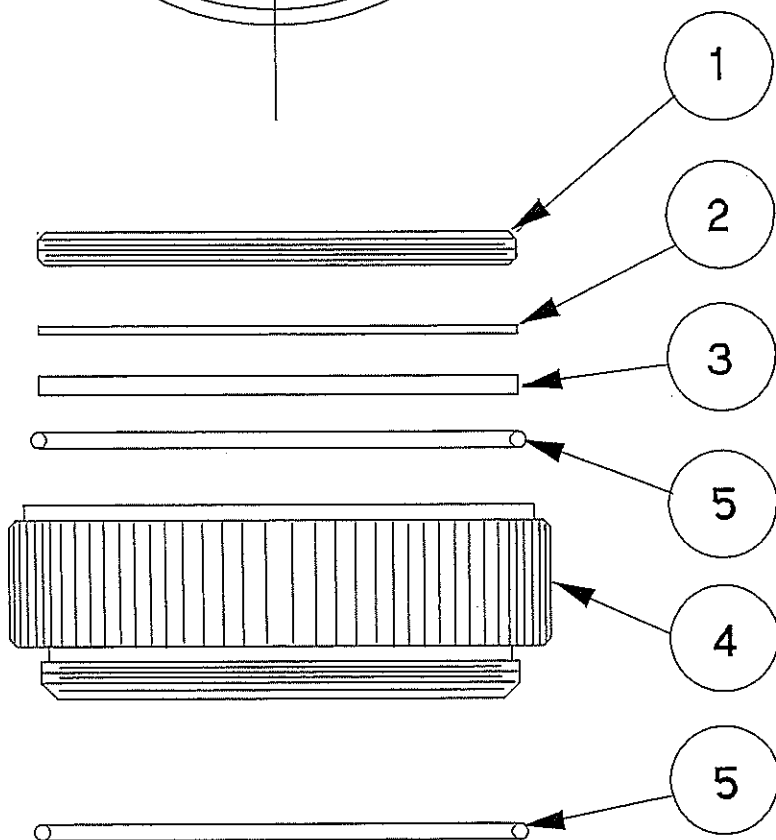
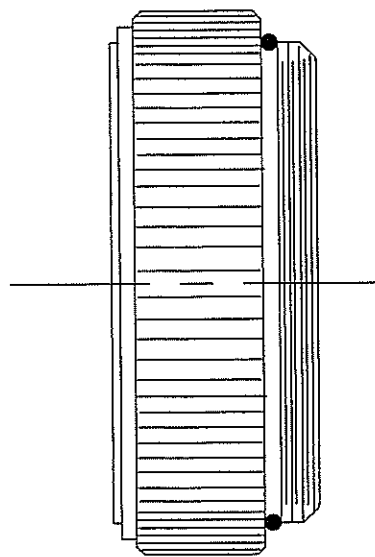
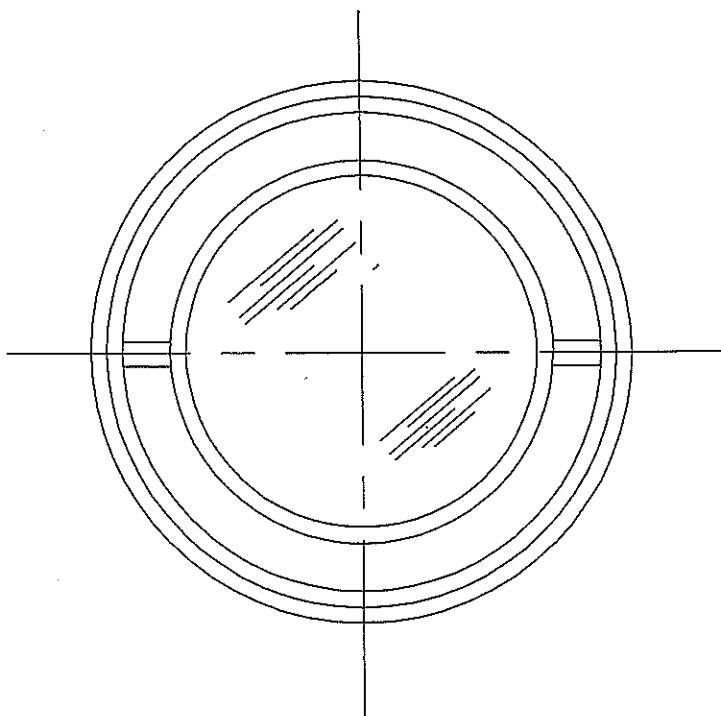
DWG. NO.

A-2562-190

REV.

C

UNAUTHORIZED USE, MANUFACTURE OR
REPRODUCTION IN WHOLE OR PART,
IS STRICTLY PROHIBITED.



REQ	ITEM	DESCRIPTION
2	5	"O" RING, 2-129, VITON
1	4	BODY, SIGHT GLASS ASS'Y
1	3	SIGHT GLASS, TEMPERED
1	2	NYLON WASHER
1	1	RETAINING RING, THREADED

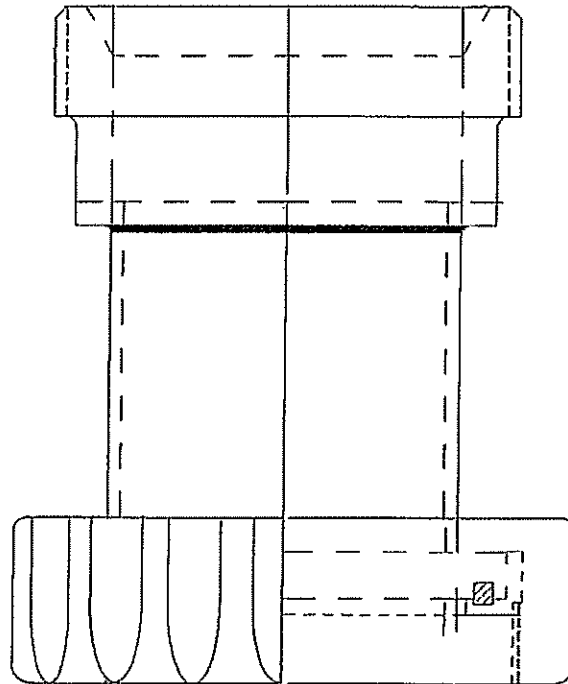
REV.B PT# 5 WAS BUNA-N , 10-3-14
REV.A REVERSED LISTING ORDER OF PT'S 4&5,9/98

NEXT ASS'Y D-2562-117	JOB NUM.
MACHINING DETAILS B-2562-172	
MMC INTERNATIONAL CORP. INWOOD NEW YORK 11696	DRN BY : F.S.G DATE : 5/92

PRIMARY SIGHT GLASS ASSEMBLY CLOSED HAND GAUGING		
APP'D	DWG. NO. A-2562-146	REV. B

DIMENSIONS : INCHES

UNAUTHORIZED USE, MANUFACTURE OR
REPRODUCTION IN WHOLE OR PART,
IS STRICTLY PROHIBITED.



MATERIAL:

ALL TYPE 304 STN STEEL,
WITH BRONZE VALVE SECURING
COLLAR.

PT # SC2562TT-CPL-MMC

MMC ADAPTOR
CLOSED SC SAMPLING BARREL
TO TANKTECH TVC-02
VAPOR VALVE

NEXT ASS'Y

JOB NUM.

MMC INTERNATIONAL CORP.
INWOOD NEW YORK 11096

DRN BY : F.S.G
DATE : 06-08-09

APP'D

DWG. NO.

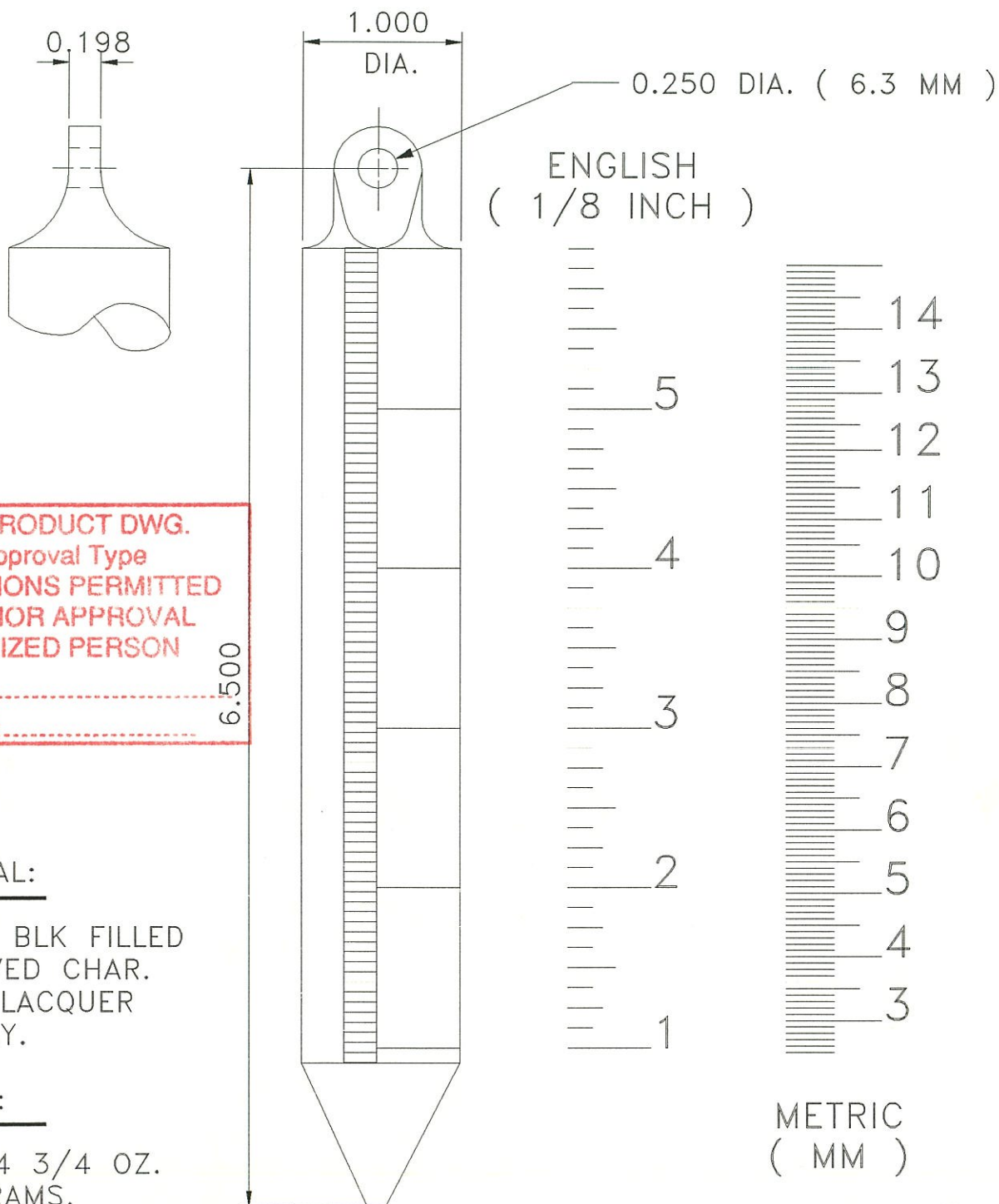
A-2562-372

REV.

B

DIMENSIONS : INCHES

UNAUTHORIZED USE, MANUFACTURE OR
REPRODUCTION IN WHOLE OR PART,
IS STRICTLY PROHIBITED.



CERTIFIED PRODUCT DWG.

Related/Approval Type

NO MODIFICATIONS PERMITTED
WITHOUT PRIOR APPROVAL
OF AUTHORIZED PERSON

CHIEF. ENG.

ISSUE DATE:.....

MATERIAL:

BRASS, BLK FILLED
ENGRAVED CHAR.
CLEAR LACQUER
OVERLAY.

WEIGHT:

1 LB. 4 3/4 OZ.
589 GRAMS.

OUTLINE DRAWING

STANDARD SOUNDING BOB
(INNAGE/DRYNESS)

NEXT ASS'Y

JOB NUM.

MMC INTERNATIONAL CORP.
INWOOD NEW YORK 11696

DRN BY : F.S.G

DATE : 10-28-94

APP'D

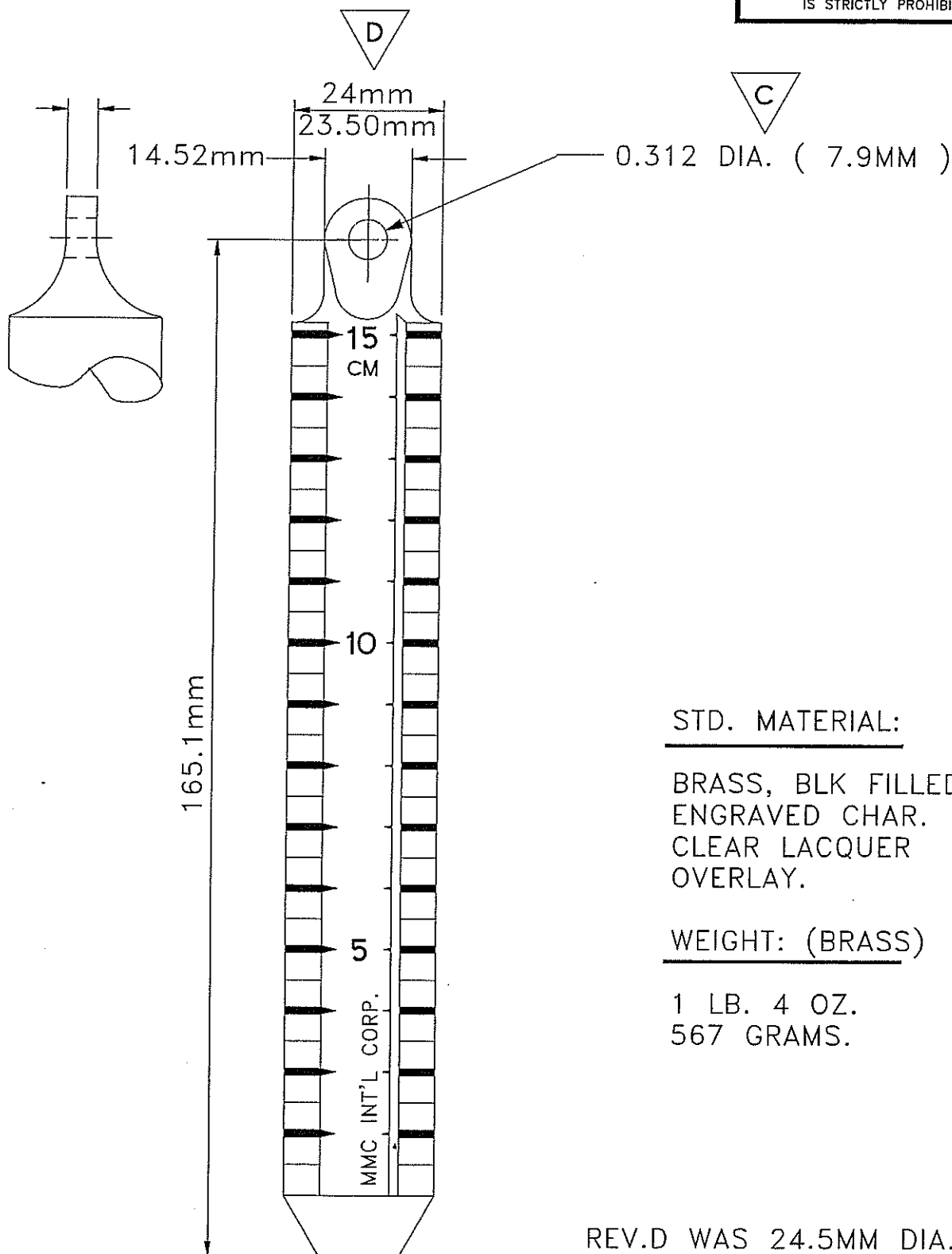
DWG. NO.

A-2670-1

REV.

DIMENSIONS : INCHES

UNAUTHORIZED USE, MANUFACTURE OR
REPRODUCTION IN WHOLE OR PART,
IS STRICTLY PROHIBITED.



STD. MATERIAL:

BRASS, BLK FILLED
ENGRAVED CHAR.
CLEAR LACQUER
OVERLAY.

WEIGHT: (BRASS)

1 LB. 4 OZ.
567 GRAMS.

REV.C, WAS 1/4'DIA.HOLE
REV.B, REMOVED STN.STL. MAT'L OPTION, 02/15/06
SEE DWG. A-2670-2SS FOR STAINLESS STEEL VERSION

REV.D WAS 24.5MM DIA.

OUTLINE DRAWING

24.0 mm DIA. SOUNDING BOB
(INNAGE/DRYNESS)
CHECKING

NEXT ASS'Y

JOB NUM.

MMC INTERNATIONAL CORP.
INWOOD NEW YORK 11096

DRN BY : F.S.G

DATE : 12-01-00

APP'D

DWG. NO.

A-2670-2

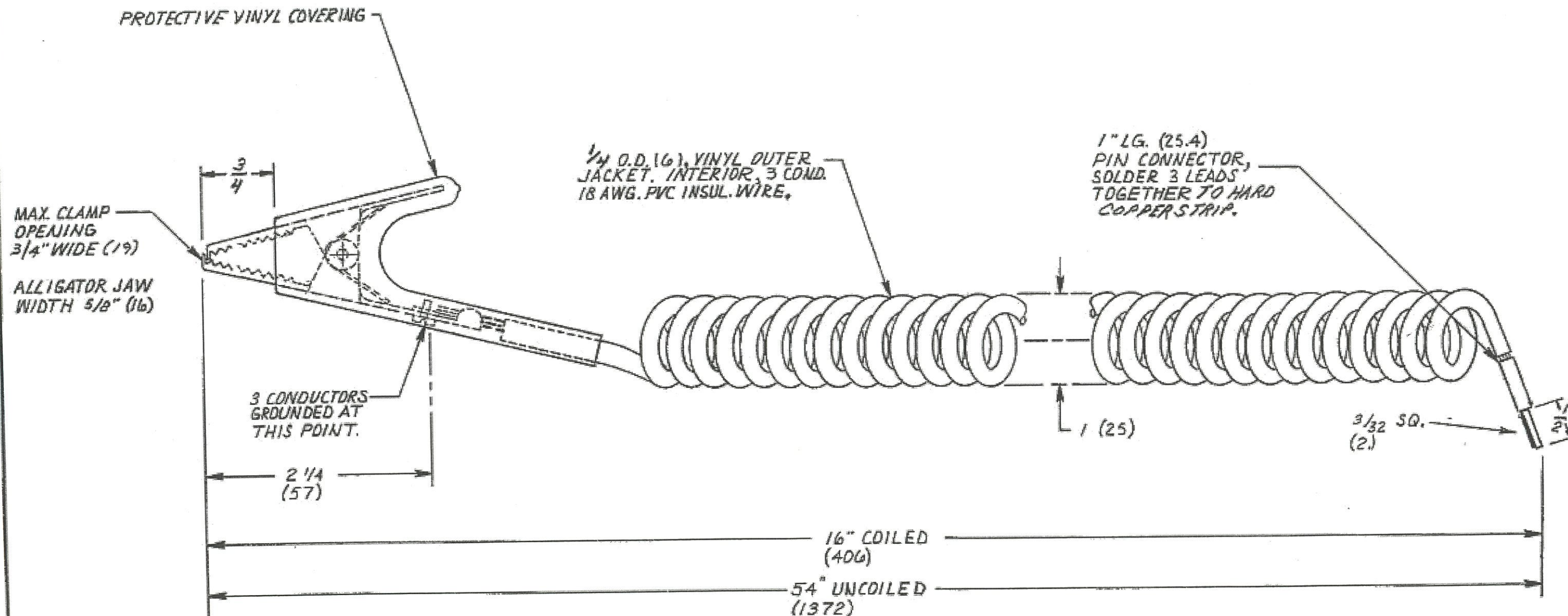
REV.

D

REVISIONS

SYM	DESCRIPTION	DATE	APP'D.
A	REVISED/UPDATE	2/14/94	JLA

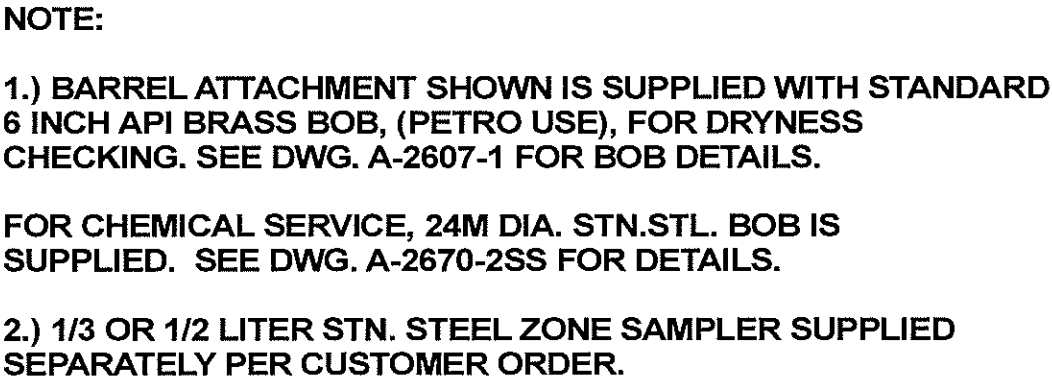
ORIGINAL



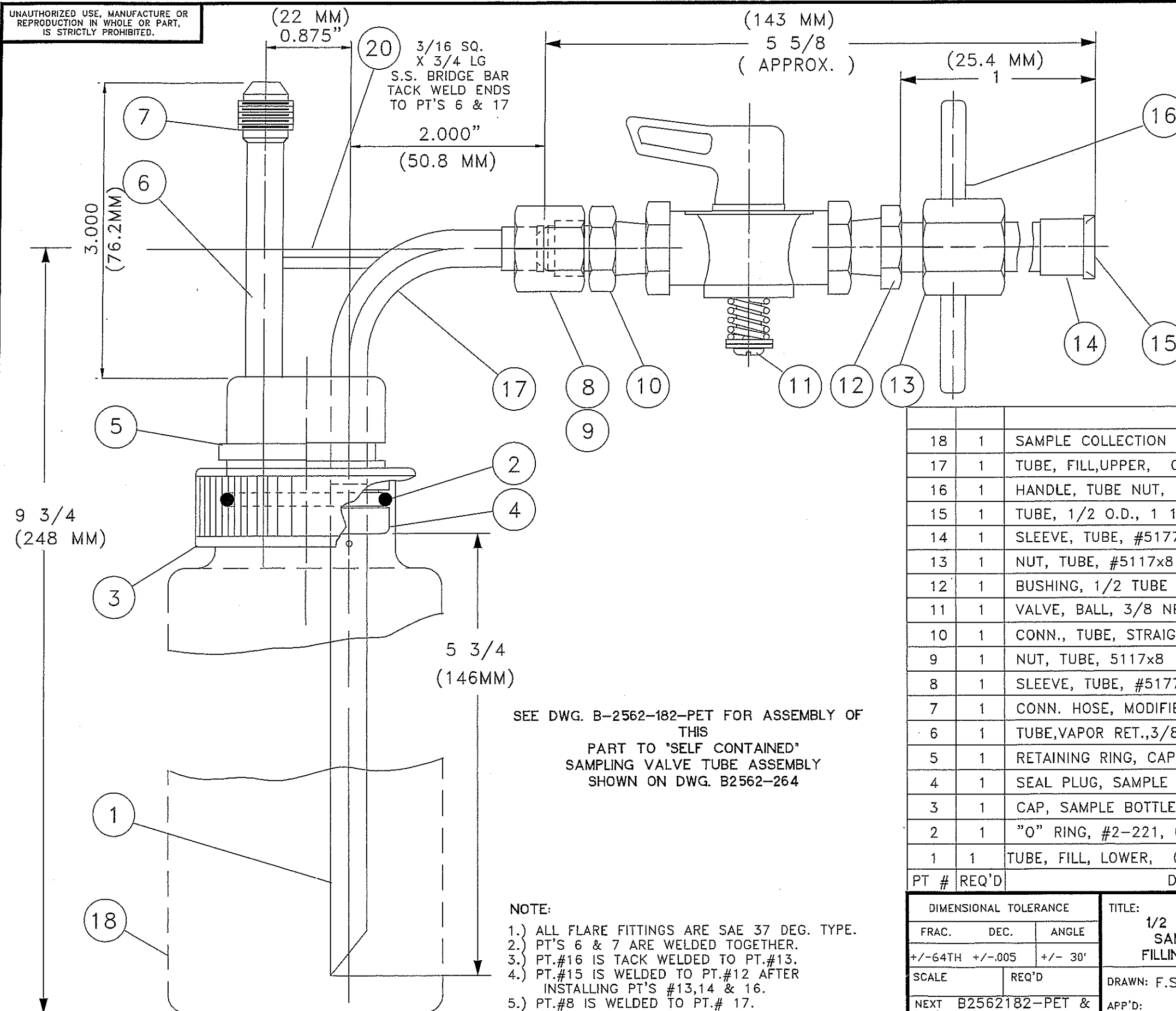
(D/M.) = MM

DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED			GROUNDING CABLE WITH GROUND CLAMP FOR ALL PORTABLE CARGO GAUGING AND SAMPLING EQUIPMENT		MARINE MOISTURE CONTROL CO., INC.	
FRAC.	DEC.	ANG.				
± 1/64	± .005	± 30°			INWOOD, L.I. NEW YORK	
SCALE FULL	NO. REQ'D	DRAWN S. BARBOUR DATE 9-28-89		DWG. NO. B-2562-72		REV A
NEXT ASSY. S-2562-1XXX			CHECKED	DATE		
			APPROVED	DATE 9/28/89		

REVISIONS			
SYM	DESCRIPTION	DATE	APP'D
B	DWG. UPDATE	12/94	
C	PT.5 WAS -13C	2/95	
D	DIM WAS 21 3/4 .	04/96	
E	DWG UPDATE PER B2562-338,LESS SIGHT GLASS ASS'Y	5/06	
F	PT.5 WAS 2283-13C	9/17	

[illegible]

UNAUTHORIZED USE, MANUFACTURE OR
REPRODUCTION IN WHOLE OR PART,
IS STRICTLY PROHIBITED.



REVISIONS

SYM	DESCRIPTION	DATE	APP'D
C	DRAWING PRODUCTION UPDATE	11/94	
D	PARTS LIST UP-DATE	12/94	
E	PARTS LIST UP-DATE	02/96	
F	PARTS LIST UP-DATE	03/97	
G	PARTS LIST UP-DATE	05/97	
H	ADD'D MAT'L I.D. TO PT#11, & STYLE NOTE	03/00	
J	ADD MISSING PT#19/20	09/05	
K	DELETED PT.19	05/06	
L	PT.2 SHOWN IN ACTUAL ASSY'D LOCATION	10/11	
M	NEXT ASSEMBLY CHANGED TO B2562-PET & CHE	04/12	
N	ADDED SI (MM) DIM.	08/11	

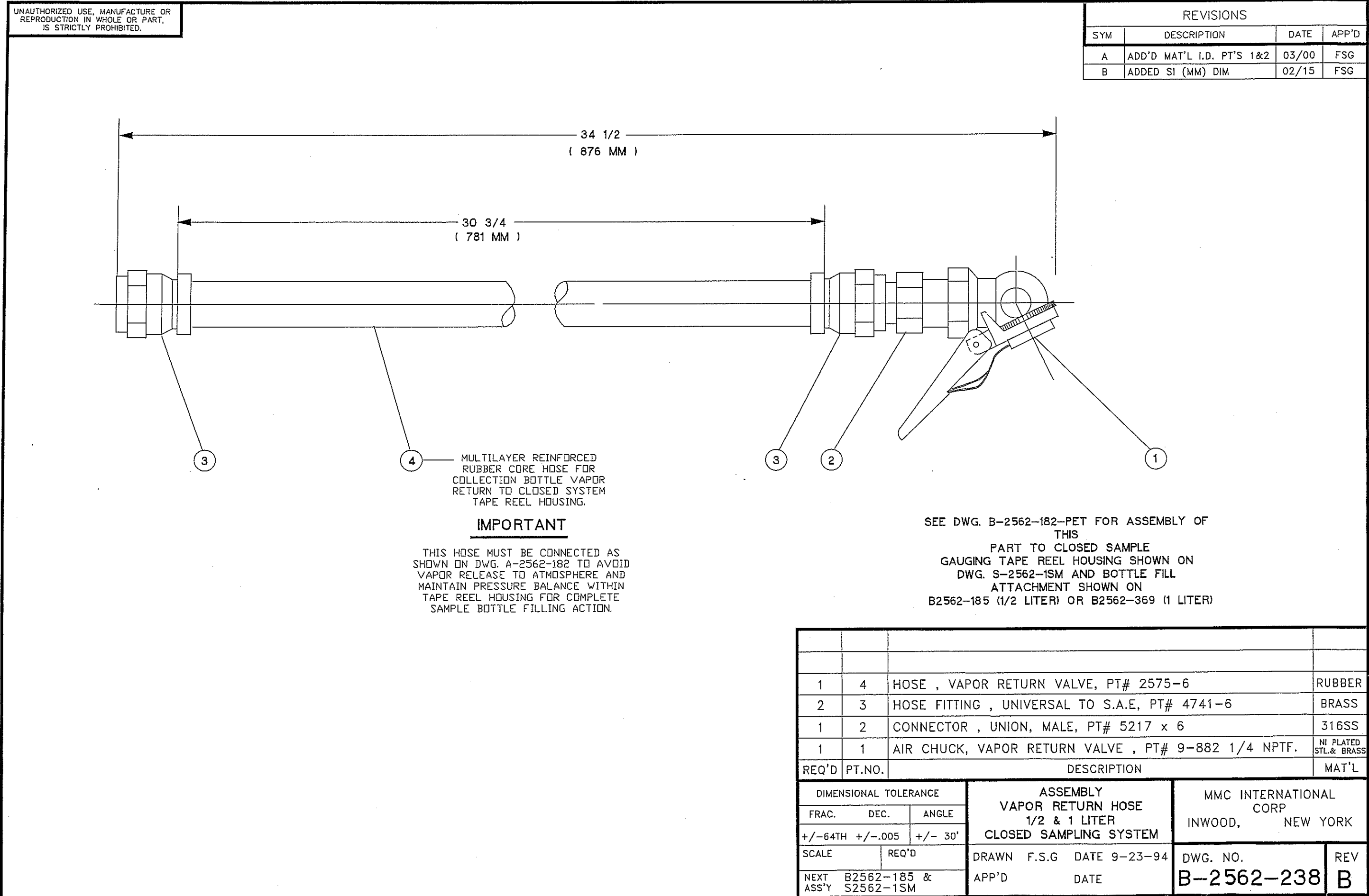
PT #	REQ'D	DESCRIPTION	MAT'L
18	1	SAMPLE COLLECTION BOTTLE, 1/2 LITER, D.O.T APP'D, & CAP	304SS
17	1	TUBE, FILL, UPPER, 0.500 O.D. x 0.062 WALL, A-2562-246	304SS
16	1	HANDLE, TUBE NUT, 1/4 DIA. EARS, 7/8 LG., WLD'D TO PT# 13	304SS
15	1	TUBE, 1/2 O.D., 1 1/16 LG., A-2562-246	304SS
14	1	SLEEVE, TUBE, #5177x8	304SS
13	1	NUT, TUBE, #5117x8	304SS
12	1	BUSHING, 1/2 TUBE x 3/8 NPT., FROM PT# 7, A-2562-243	304SS
11	1	VALVE, BALL, 3/8 NPTF, S-80 STYLE, ASTM A-351, CF8M	316SS
10	1	CONN., TUBE, STRAIGHT, 1/2 TUBE x 3/8 NPT., #5217x8x6	304SS
9	1	NUT, TUBE, 5117x8	304SS
8	1	SLEEVE, TUBE, #5177x8	304SS
7	1	CONN. HOSE, MODIFIED, #5217x6x6, A-2562-243	304SS
6	1	TUBE, VAPOR RET., 3/8 O.D. x 0.065 W x 3 15/16 LG, A-2562-243	304SS
5	1	RETAINING RING, CAP, A-2562-245	NYL.
4	1	SEAL PLUG, SAMPLE BOTTLE HOLDER, A-2562-223	NYL.
3	1	CAP, SAMPLE BOTTLE HOLDER, A-2562-295, BLK. ANODIZE	ALUM.
2	1	"O" RING, #2-221, 0.139 X SEC.	VITON
1	1	TUBE, FILL, LOWER, 0.500 O.D. x 0.046 WALL, A-2562-356	304SS

SEE DWG. B-2562-182-PET FOR ASSEMBLY OF
THIS
PART TO "SELF CONTAINED"
SAMPLING VALVE TUBE ASSEMBLY
SHOWN ON DWG. B2562-264

NOTE:

- 1.) ALL FLARE FITTINGS ARE SAE 37 DEG. TYPE.
- 2.) PT'S 6 & 7 ARE WELDED TOGETHER.
- 3.) PT.#16 IS TACK WELDED TO PT.#13.
- 4.) PT.#15 IS WELDED TO PT.#12 AFTER INSTALLING PT'S #13, 14 & 16.
- 5.) PT.#8 IS WELDED TO PT.#17.

DIMENSIONAL TOLERANCE			TITLE: ASSEMBLY 1/2 LITER SAMPLING SAMPLING BOTTLE FILLING ATTACHMENT		MMC INTERNATIONAL CORP	
FRAC.	DEC.	ANGLE			INWOOD, NEW YORK	
+/-64TH	+/-0.005	+/- 30'				
SCALE		REQ'D	DRAWN: F.S.G DATE: 1/4/94		DWG. NO.	
NEXT B2562182-PET & ASS'Y B2562-182-CHE			APP'D: DATE:		B2562-185	
					REV N	



UNAUTHORIZED USE, MANUFACTURE OR
REPRODUCTION IN WHOLE OR PART,
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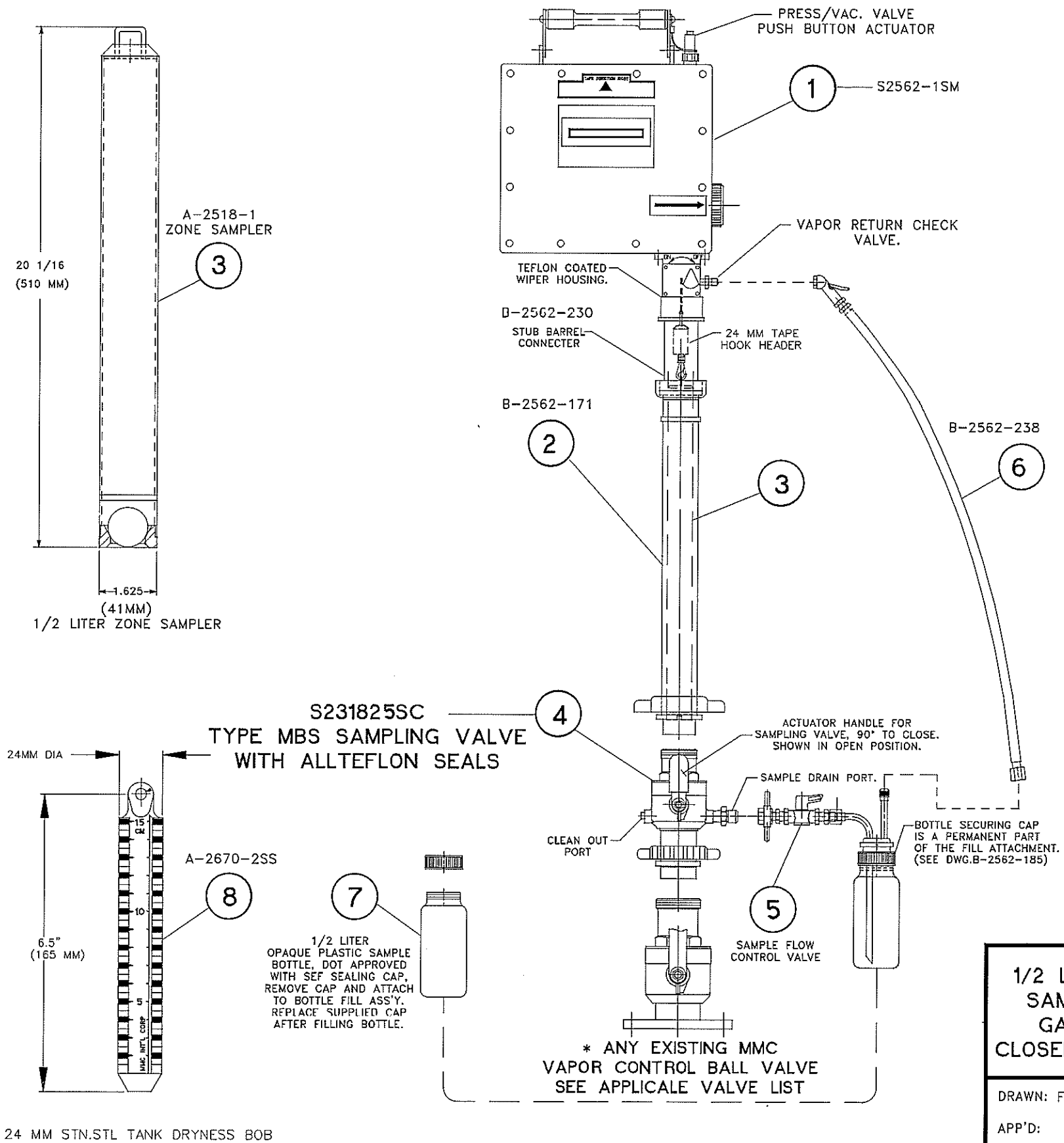
BASIC SYSTEM COMPONENTS (CHEMICAL SERVICE)

1. CLOSED SAMPLING TAPE, 100FT/40M LGT WITH VITON COVER SEAL.
2. SAMPLER BARREL, STN.STL.
3. 1/2 LITER ALL STN.STL. ZONE SAMPLER
4. SAMPLE COLLECTION DIVERTER VALVE (TYPE MBS WITH ALLTEFLON SEALS)
5. SAMPLE BOTTLE FILL ATTACHMENT. PT# BTLFL-B-2562-185
6. VAPOR RETURN HOSE ASS'Y
7. 1/2 LITER SAMPLE BOTTLE, 12 PCS. STD. SUPPLY
8. 24MM DIA. STAINLESS STEEL INNAGE BOB, 150MM SCALE, A-2670-2SS

INSTRUCTION MANUAL PACKED WITH PT.#1
CARRYING CASE

APPLICABLE EXISTING VAPOR VALVE LIST

(MMC TYPE) (OTHERS VALVE TYPES)
B, MB, F50, C50 "TS" WITH ADAPTOR
MJ580, PT# S2562TS-CPL-SHT
W/O ADAPTORS. "TT" WITH ADAPTOR
PT# A-2562-372-TT



1/2 LITER PORTABLE
SAMPLING SYSTEM
GAS TIGHT FOR
CLOSED SYSTEMS APPL.

CHEMICAL SERVICE
SAMPLING SYSTEM

MMC INTERNATIONAL
CORP
INWOOD, NEW YORK

DRAWN: F.S.G DATE: 01/05/18
APP'D: DATE:

DWG. NO. REV
B2562-406-CHE

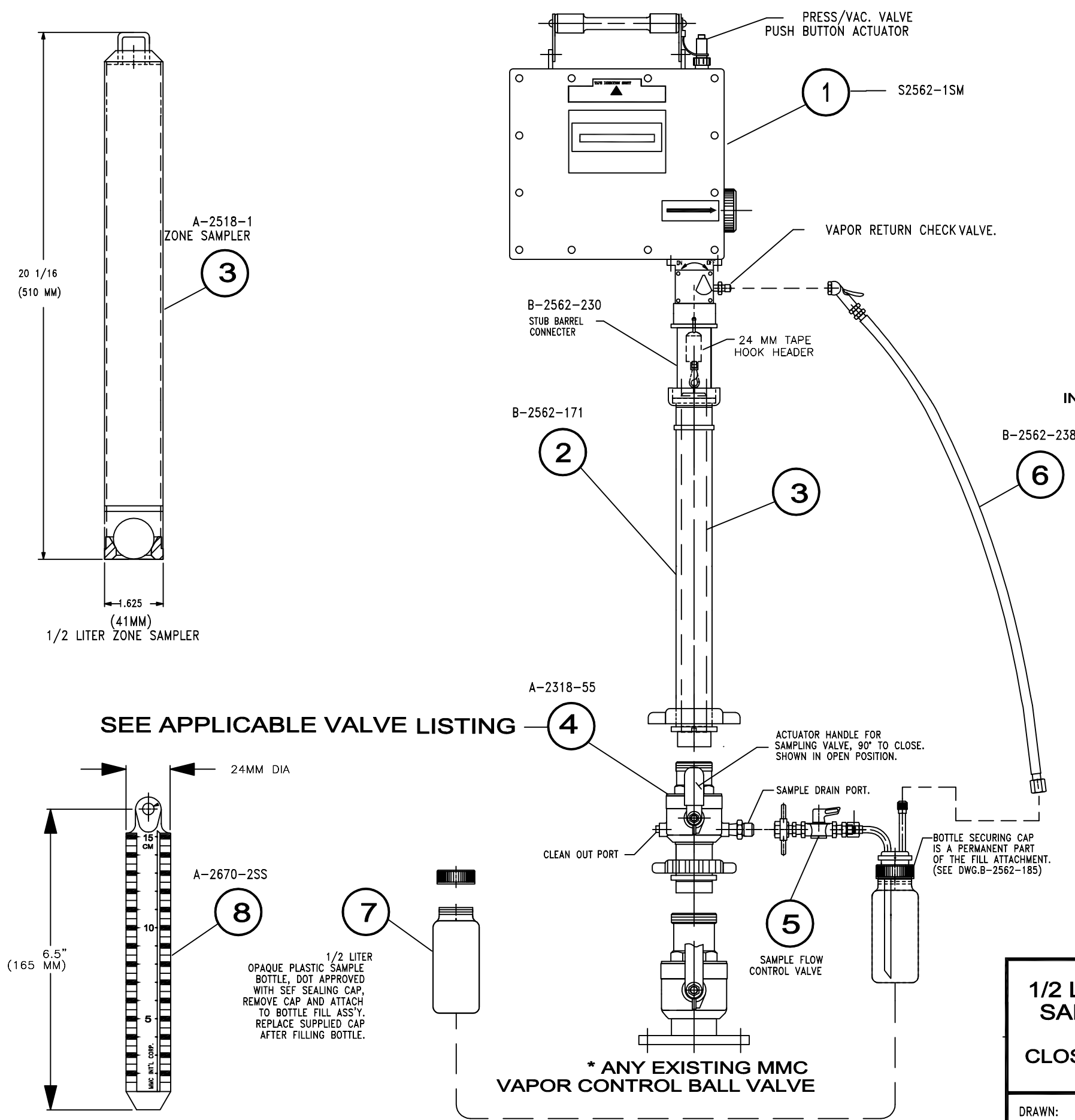
BASIC SYSTEM COMPONENTS (PETROLEUM SERVICE)

1. CLOSED SAMPLING TAPE, 40 MTER LGT
2. SAMPLER BARREL
3. 1/2 LITER ALL STN.STL. ZONE SAMPLER
4. SAMPLE COLLECTION DIVERTER VALVE
(SEE APPLICABLE VALVE LISTING)
5. SAMPLE BOTTLE FILL ATTACHMENT.
PT# BTLFL-B-2562-185
6. VAPOR RETURN HOSE ASS'Y
- 7.. SAMPLE BOTTLE, 1 SUPPLIED
8. 24MM DIA. STAINLESS STEEL INNAGE
BOB, 150MM SCALE, A-2670-2SS

INSTRUCTION MANUAL PACKED WITH PT.#1 CARRYING CASE

APPLICABLE VAPOR VALVE LIST

(MMC TYPE) (OTHERS VALVE TYPES)
B, MB, F50, C50 "TS" WITH ADAPTOR
MJ580, SD1 PT# S2562TS-CPL-SHT
W/O ADAPTORS.



1/2 LITER PORTABLE
SAMPLING SYSTEM
GAS TIGHT FOR
CLOSED SYSTEMS APPL.

PETROLEUM SERVICE
SAMPLING SYSTEM

MMC INTERNATIONAL CORP
INWOOD, NEW YORK

DRAWN: F.S.G DATE: 09/26/17
APP'D: DATE:

DWG. NO.
B2562-406-PET

REV

24 MM STN.STL TANK DRYNESS BOB

