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Acts whose titles are printed in light type are those relating to day-to-day management of agricultural matters, and are generally valid for a limited period.

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II

(Acts whose publication is not obligatory)

COMMISSION

COMMISSION DIRECTIVE

of 1 July 1982

adapting to technical progress Council Directive 76/891/EEC on the approximation of the laws of the Member States relating to electrical energy meters

(82/621/EEC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,

Having regard to Council Directive 76/891/EEC of 4 November 1976 on the approximation of the laws of the Member States relating to electrical energy meters ⁽¹⁾, and in particular the third paragraph of Article 3 thereof,

Whereas, pursuant to Article 3 of Directive 76/891/EEC, it is necessary to review the maximum permissible errors in electrical energy meters for the EEC initial verification in order to take account of experience gained and of results obtained at international level;

Whereas experience gained in this sector within the Community suggests the definitive retention of the tolerances in respect of maximum permissible errors already set out by way of general rate in the Annex to the said Directives which are more stringent than those adopted at international level;

Whereas the measures provided for in this Directive are in accordance with the opinion of the Committee on the Adaptation to Technical Progress of the Directives for

the Elimination of Technical Barriers to Trade in Measuring Instruments,

HAS ADOPTED THIS DIRECTIVE:

Article 1

Member States which availed themselves of the option provided in the second paragraph of Article 3 of Directive 76/891/EEC shall, before 1 January 1983, repeal the measures adopted by virtue of that option.

They shall forthwith inform the Commission thereof.

Article 2

This Directive is addressed to the Member States.

Done at Brussels, 1 July 1982.

For the Commission

Karl-Heinz NARJES

Member of the Commission

⁽¹⁾ OJ No L 336, 4. 12. 1976, p. 30.

COMMISSION DIRECTIVE

of 1 July 1982

adapting to technical progress for the second time Council Directive 73/360/EEC on the approximation of the laws of the Member States relating to non-automatic weighing machines

(82/622/EEC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,

Having regard to Council Directive 71/316/EEC of 26 July 1971 on the approximation of the laws of the Member States relating to common provisions for both measuring instruments and methods of metrological control ⁽¹⁾, as last amended by the Act of Accession of Greece, and in particular Article 17 thereof,

Whereas, since the preparation and adoption of Directive 73/360/EEC ⁽²⁾, as last amended by Commission Directive 76/696/EEC ⁽³⁾, new and more advanced weighing machines have been developed; whereas the said Directive should therefore be amended to take account of technical progress;

Whereas the measures provided for in this Directive are in accordance with the opinion of the Committee on the Adaptation to Technical Progress of the Directives for the Elimination of Technical Barriers to Trade in Measuring Instruments,

HAS ADOPTED THIS DIRECTIVE:

Article 1

In the Annex to Directive 73/360/EEC, the texts of items 2.4.3, 10.4.5, 10.4.7, 10.4.8, 10.4.9, 10.8.1.2,

10.8.1.5, 10.13.2.1.6, 10.13.2.3.1 and 16.4.4 are hereby replaced, and items 10.13.12.1.10 and 11.5.1.3 added in accordance with the Annex hereto. Items 10.13.2.2.3 and 12.3.1.7.2 are hereby deleted.

Article 2

Member States shall bring into force the laws, regulations and administrative provisions necessary in order to comply with this Directive on 1 May 1983. They shall forthwith inform the Commission thereof.

Article 3

This Directive is addressed to the Member States.

Done at Brussels, 1 July 1982.

For the Commission

Karl-Heinz NARJES

Member of the Commission

⁽¹⁾ OJ No L 202, 6. 9. 1971, p. 1.

⁽²⁾ OJ No L 335, 5. 12. 1973, p. 1.

⁽³⁾ OJ No L 236, 27. 8. 1976, p. 26.

ANNEX

2.4.3. *Repeatability*

Ability of a weighing machine to provide measurement results that agree with each other for the same load deposited several times on the load receptor under virtually identical conditions, not taking account of systematic errors.

10.4.5. *Quality of printing of results*

Printing of the results must be clear and virtually indelible under normal conditions of use.

10.4.7. *Names or symbols of the units of measurement*

The weighing results provided by graduated machines must contain the names or symbols of the units of measurement listed in Chapter I of the Annex to Council Directive 80/181/EEC of 20 December 1979.

If printing takes place, the name or symbol of the corresponding unit of measurement must be printed by the machine on the document intended for the contracting parties. The name or symbol of the unit of measurement must be indicated either after each weighing result or at the head of the corresponding printed column.

10.4.8. *Limit of indication of results*10.4.8.1. *Machines with continuous indication*

Stops must limit the movement of the indicating element, while allowing it to pass below zero and above the range of self-indication over a non-graduated space of not less than four scale intervals and not more than nine scale intervals.

This requirement does not apply to machines fitted with a circular scale dial incorporating a multiple-revolution pointer.

10.4.8.2. *Machines with discontinuous indication*

Indication must be rendered impossible above the maximum capacity plus nine scale intervals.

10.4.9. *Limit of printing of the results*

Printing must be impossible:

- above the maximum capacity plus nine scale intervals,
- on self- or semi-self-indicating machines when the machine is not in stable equilibrium or not in equilibrium determined as a mean of the oscillations.

In all instances, the limits of indication and printing of the results must be identical.

10.8.1.2. *Accuracy of setting*

It must be possible to adjust tare devices to within one quarter of the smallest verification scale interval of the machine.

However, in the case of non-automatic discontinuous control tare devices, it must be possible to effect the adjustment to within at least half a scale interval.

10.8.1.5. *Visability of operation*

The operation of tare devices must be visibly indicated when the indication of the machine before taring:

- is 0.5 scale interval or more, in the case of weighing machines with continuous indication,
- differs from zero, in the case of weighing machines with discontinuous indication.

10.13.2.1.6. *Use of symbols*

The symbol of the monetary unit must accompany the indication and printing of the price-to-pay and the unit price. This latter must also include the symbol of the unit of mass to which it refers.

The figures and the symbols must be printed by the machine on records issued to the contracting parties.

The symbols must appear either after each indication or printing of the price-to-pay and/or unit price, or at the head of each corresponding printed column.

10.13.2.1.10. Value of the price-to-pay scale intervals

National regulations shall apply in this regard.

10.13.2.3.1. Discontinuous indication and printing of the price-to-pay

The devices for indicating and printing the price-to-pay must include at least four positions.

In the case of a price-to-pay lower than unity, the zero must always appear before the decimal point.

11.5.1.3. Semi-self-indicating machines with weight receptor

These machines shall be authorized if their self-indication range is of the form 1×10^n kg (n being a whole number, less than, greater than or equal to zero).

16.4.4. *Repeatability*

Repeatability tests shall be carried out on at least three different loads, between the maximum range and the minimum range, repeating the different weighings ten times each. After each weighing, the machine shall be reset at zero. During these tests, the machine must satisfy the requirements set out in section 5.

COMMISSION DIRECTIVE

of 1 July 1982

adapting to technical progress for the third time Council Directive 71/318/EEC on the approximation of the laws of the Member States relating to gas volume meters

(82/623/EEC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,

Having regard to Council Directive 71/316/EEC of 26 July 1971 on the approximation of the laws of the Member States relating to common provisions for both measuring instruments and methods of metrological control ⁽¹⁾, as last amended by the Act of Accession of Greece, and in particular Article 17 thereof,

Whereas, in view of technical developments in the field in question, Directive 71/318/EEC ⁽²⁾, as last amended by Commission Directive 78/365/EEC ⁽³⁾, should be amended;

Whereas the measures provided for in this Directive are in accordance with the opinion of the Committee on the Adaptation to Technical Progress of the Directives for the Elimination of Technical Barriers to Trade in Measuring Instruments,

HAS ADOPTED THIS DIRECTIVE:

Article 1

In the Annex to Directive 71/318/EEC the texts of items I.B. 3.2.3, I.B. 8, I.B. 9.2.1, I.B. 10, II. 5.2.1,

III. 3.1.1, III. 3.3 and III. 7.1 are hereby replaced in accordance with the Annex to this Directive.

Article 2

Member States shall bring into force the laws, regulations and administrative provisions necessary in order to comply with this Directive on 1 May 1983. They shall forthwith inform the Commission thereof.

Article 3

This Directive is addressed to the Member States.

Done at Brussels, 1 July 1982.

For the Commission

Karl-Heinz NARJES

Member of the Commission

⁽¹⁾ OJ No L 202, 6. 9. 1971, p. 1.

⁽²⁾ OJ No L 202, 6. 9. 1971, p. 21.

⁽³⁾ OJ No L 104, 18. 4. 1978, p. 26.

ANNEX

- I.B. 3.2.3. When not connected to a detachable additional device, the exposed ends of the drive shafts must be suitably protected.
- I.B. 8. Location of verification marks and seals
- 8.1. The location of the marks and seals must be so chosen that dismantling of the part sealed by one of the marks or seals will result in damage thereto.
- 8.2. When the inscriptions mentioned in item I.B. 4.1 are affixed on a special data plate, and if this plate is not to be a permanent fixture, one of the marks or seals must be so located that it is damaged if the special plate is removed, the object being to prevent removal of the said plate.
- 8.3. Locations should be provided for verification marks or seals:
- (a) on all plates carrying an inscription required by this Annex with the exception of plates which are permanent fixtures;
 - (b) on all parts of the meter which cannot otherwise be protected against interference liable to:
 - affect or alter the indication on the indicating device of the meter,
 - alter or break the connection between the measuring device and the indicating device,
 - remove or displace metrologically important parts of the meter;
 - (c) on the connection with the detachable additional devices or on the protective devices referred to in item I.B. 3.2.3.
- I.B. 9.2.1. Gas meters submitted for EEC initial verification shall be in working order. EEC initial verification is no guarantee of the proper functioning or accuracy of reading of additional devices as referred to in items I.B. 3.1 or I.B. 3.2. No EEC verification marks or EEC seals shall be affixed to such additional devices, save for the connections provided for in Item I.B. 8.3. c.
- I.B. 10. Verification marks and seals
- 10.1. *Affixture*
- Meters having undergone successfully the verification tests:
- shall be provided with an EEC initial verification mark,
 - shall receive EEC seals in the locations mentioned in item I.B. 8.3.
- 10.2. *Purpose*
- The affixing of EEC initial verification marks and seals on a gas meter certifies solely that the meter satisfies the requirements of this Directive.
- II. 5.2.1. When the maximum torques indicated on the gas meter pursuant to item I.B. 3.2.1 or I.B. 3.2.2 are applied to the drive shafts, the indication of the gas meter at $Q_{\min}$ must not vary by more than 1.5 %, without prejudice to item II. 6.3.2.
- III. 3.1.1. Meters must incorporate both upstream and downstream in the gas circuit a static pressure tapping for measuring the pressure absorption; the pressure measured upstream shall constitute the reference pressure.
- III. 3.3. *Pressure tappings*
- 3.3.1. Bores for pressure tappings must have a diameter of at least 3 mm. In the case of slit-shaped pressure tappings, slits must have a width of at least 2 mm and a cross-section in the direction of flow of at least 10 mm².
- 3.3.2. Pressure tappings must be provided with a means of closure so as to make them gas-tight.
- 3.3.3. The pressure tapping for the reference pressure must be clearly and indelibly marked 'p_r' and the other pressure tapping 'p'.

III. 7.1. *Accuracy tests*

A meter is considered to satisfy the requirements concerning the maximum permissible errors if the requirements are met at the following flow rates:

$Q_{\min}$, $0.10 Q_{\max}$ (if this value is greater than $Q_{\min}$), $0.25 Q_{\max}$, $0.40 Q_{\max}$, $0.70 Q_{\max}$ and $Q_{\max}$.

If the examination is conducted under different conditions, the guarantees must be at least equal to those obtained by the tests mentioned above.

COMMISSION DIRECTIVE

of 1 July 1982

adapting to technical progress Council Directive 76/765/EEC on the approximation of the laws of the Member States relating to alcoholometers and alcohol hydrometers

(82/624/EEC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

HAS ADOPTED THIS DIRECTIVE:

Having regard to the Treaty establishing the European Economic Community,

Having regard to Council Directive 71/316/EEC of 26 July 1971 on the approximation of the laws of the Member States relating to common provisions for both measuring instruments and methods of metrological control ⁽¹⁾, as last amended by the Act of Accession of Greece, and in particular Article 17 thereof,

Whereas, since the adoption of Directive 76/765/EEC ⁽²⁾, new techniques have been developed in the field of thermometers used in determining alcoholic strength; whereas that Directive should be amended accordingly;

Whereas the measures provided for in this Directive are in accordance with the Committee on the Adaptation to Technical Progress of the Directives for the Elimination of Technical Barriers to Trade in Measuring Instruments,

Article 1

The text of section 9 of the Annex to Directive 76/765/EEC is hereby replaced in accordance with the Annex to this Directive.

Article 2

Member States shall bring into force the laws, regulations and administrative provisions necessary in order to comply with this Directive on 1 May 1983. They shall forthwith inform the Commission thereof.

Article 3

This Directive is addressed to the Member States.

Done at Brussels, 1 July 1982.

For the Commission

Karl-Heinz NARJES

Member of the Commission

⁽¹⁾ OJ No L 202, 6. 9. 1971, p. 1.

⁽²⁾ OJ No L 262, 27. 9. 1976, p. 143.

ANNEX

9. THERMOMETERS USED IN DETERMINING ALCOHOLIC STRENGTH

9.1. Thermometers incorporated in the instrument used to determine alcoholic strength

If the instrument used to determine alcoholic strength belongs to Class II or III, a thermometer of the mercury-expansion type with glass casing may be incorporated therein.

9.1.1. The thermometer shall be graduated to 0.1 or 0.2 or 0.5 °C and it need not have any scale mark at 0 °C.

9.1.2. The minimum scale spacing shall be:

0.8 mm in the case of thermometers graduated to 0.1 and 0.2 °C;

1.0 mm in the case of thermometers graduated to 0.5 °C.

9.1.3. The thickness of the lines shall not be more than one fifth of the scale spacing.

9.1.4. The maximum permissible error, positive or negative, shall be:

0.10 °C if the thermometer is graduated to 0.1 °C;

0.20 °C if the thermometer is graduated to 0.2 or 0.5 °C.

9.1.5. During EEC initial verification, the error of the incorporated thermometer shall be determined at a minimum of three points in the scale range.

9.2. Thermometers not incorporated in an instrument used to determine alcoholic strength

9.2.1. If the instrument used to determine alcoholic strength belongs to Class I, the thermometer employed in conjunction with it shall be:

- either of the metallic resistance type, enabling the temperature of the mixture of water and alcohol to be determined with a maximum permissible error of ± 0.10 °C,
- or of the mercury-expansion type with a glass casing graduated to 0.1 or 0.5 °C.

Mercury thermometers shall have a scale mark at 0 °C, the minimum scale spacing shall be 0.8 mm and the thickness of the lines shall not be more than one fifth of the scale spacing.

The maximum permissible error, positive or negative, shall be one scale interval.

9.2.2. If the instrument used to determine alcoholic strength belongs to Class II or III, the thermometer employed in conjunction with it shall be of the mercury-expansion type with glass casing.

9.2.2.1. The thermometer shall be graduated to 0.1 or 0.2 or 0.5 °C. It shall have a scale mark at 0 °C.

9.2.2.2. The minimum scale spacing shall be:

0.8 mm in the case of thermometers graduated to 0.1 or 0.2 °C;

1.0 mm in the case of thermometers graduated to 0.5 °C.

9.2.2.3. The thickness of the lines shall not be more than one fifth of the scale spacing.

9.2.2.4. The maximum permissible error shall be:

± 0.10 °C if the thermometer is graduated to 0.1 °C;

± 0.20 °C if the thermometer is graduated to 0.2 or 0.5 °C.

COMMISSION DIRECTIVE

of 1 July 1982

adapting to technical progress Council Directive 77/313/EEC on the approximation of the laws of the Member States relating to measuring systems for liquids other than water

(82/625/EEC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,

Having regard to Council Directive 71/316/EEC of 26 July 1971 on the approximation of the laws of the Member States relating to common provisions for both measuring instruments and methods of metrological control ⁽¹⁾, as last amended by the Act of Accession of Greece, and in particular Article 17 thereof,Whereas, in view of technical developments in the field in question, Directive 77/313/EEC ⁽²⁾ should be amended;

Whereas the measures provided for in this Directive are in accordance with the opinion of the Committee on the Adaptation to Technical Progress of the Directives for the Elimination of Technical Barriers to Trade in Measuring Instruments,

HAS ADOPTED THIS DIRECTIVE:

Article 1

The Annex to Directive 77/313/EEC is hereby amended as follows:

1. Item 2.2.6.2.3 is replaced by the following:

'2.2.6.2.3. The compartments of the tank shall be fitted with an anti-swirl device, except where the measuring system has a gas

separator in conformity with item 1.6.2.1.4.'

2. The following item is inserted after item 3.1.2.4.2:

'3.1.3. In the case of the measuring systems referred to in 2.2 and 2.4, EEC pattern approval may be granted on the basis of drawings and diagrams, provided that they comply with the provisions of section 4.'

3. A section 4 is added in accordance with the Annex.

Article 2

Member States shall bring into force the laws, regulations and administrative provisions necessary in order to comply with this Directive on 1 May 1983. They shall forthwith inform the Commission thereof.

Article 3

This Directive is addressed to the Member States.

Done at Brussels, 1 July 1982.

For the Commission

Karl-Heinz NARJES

Member of the Commission

⁽¹⁾ OJ No L 202, 6. 9. 1971, p. 1.

⁽²⁾ OJ No L 105, 28. 4. 1977, p. 18.

ANNEX

4. MEASURING SYSTEMS FITTED TO ROAD TANKERS

4.1. General requirements

The measuring systems fitted to road tankers referred to in items 2.2 and 2.4 may obtain EEC pattern approval solely on the basis of an examination of the documents produced, if the latter are in conformity with one of the standard schemes referred to in item 4.2 and meet the requirements set out below:

4.1.1. Indication of the standard scheme adopted must be added to the markings specified in item 1.16.

4.1.2. The components of the measuring system must have received EEC pattern approval when such approval is specified either in Directive 71/319/EEC of 26 July 1971 relating to meters for liquids other than water, Directive 71/348/EEC of 12 October 1971 relating to ancillary equipment for meters for liquids other than water or in this Directive.

4.1.3. If a tank has several compartments, the outlet pipes from the compartments may be connected to a measuring system separately or through a manifold, unless otherwise specified in the relevant standard scheme. The provisions of the second paragraph of item 2.2.1 shall apply in all cases.

Where a measuring system is connected to several compartments through a manifold, there shall be a device for preventing several compartments from communicating with the measuring system simultaneously. This requirement does not, however, apply if the measuring system has a gas separator in conformity with item 1.6.2.1.4.

4.1.4. If a road tanker has two measuring systems which can be connected as required to one or more specific compartments, the pipes and valves must be arranged so that the two measuring systems cannot be connected to the same compartments simultaneously. In addition, the connections between compartments and measuring systems must be clearly marked so as to prevent a compartment being mistakenly connected to a measuring system not designed to measure the product which it contains.

4.1.5. If an anti-swirl device is specified requirement, it may be combined with the valve in the bottom of the compartment.

4.1.6. The pipework, valves and taps between compartments and measuring systems must be arranged in such a way that it is impossible to connect a measuring system to a tank separate from the road tanker.

4.1.7. The filter normally provided immediately upstream of the meter or the degassing equipment may be incorporated in the latter.

4.1.8. It must be possible to seal devices which allow delivery without passing through the meter in order to comply with any national requirements.

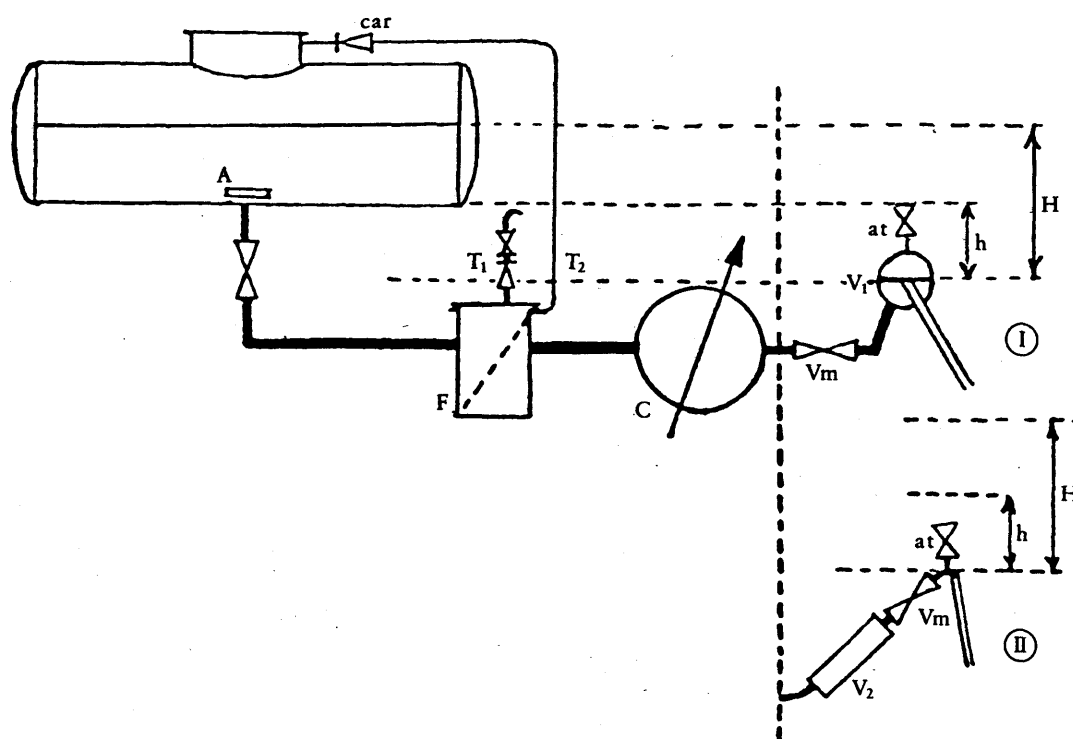
4.1.9. Where measuring systems include two-way valves, the latter must be so designed as to render simultaneous communication between the three orifices impossible.

4.2. Standard schemes

Standard scheme S 1

Operation by gravity with permanent vent at point of transfer

Allows : metered delivery only (empty hose).



Key to standard scheme S 1

If the tank has several compartments, the measuring system must be directly and permanently connected to a specific compartment without a manifold.

A: Anti-swirl device.

F: Filter. The filter must be designed and installed in such a way that it can be cleaned without emptying the meter or the sight-glass (V_1 or V_2 respectively).

The whole of the filter must be situated below the level of the point of transfer.

T_1, T_2 : Variants authorized for gas evacuation.

T_1 : blow-off valve and non-return valve to prevent admission of gas into the measuring system.

T_2 : return to the gaseous phase in the tank compartment.

car: Non-return valve to prevent gas flow in the event of thermal overpressure in the tank.

C: Meter.

V_m : Operating valve.

I and II: Variants of the empty-hose delivery system.

V_1 : Weir-type sight glass.

V_2 : Sight glass as defined in item 1.1.8, also serving as a gas indicator.

at: Permanent air vent of sufficient cross-section to ensure that pressure in the meter is at least equal to atmospheric pressure.

Permanent venting may be provided by a vertical tube without a valve. If this tube is connected to the top of the tank, the 'car' non-return valve is not needed.

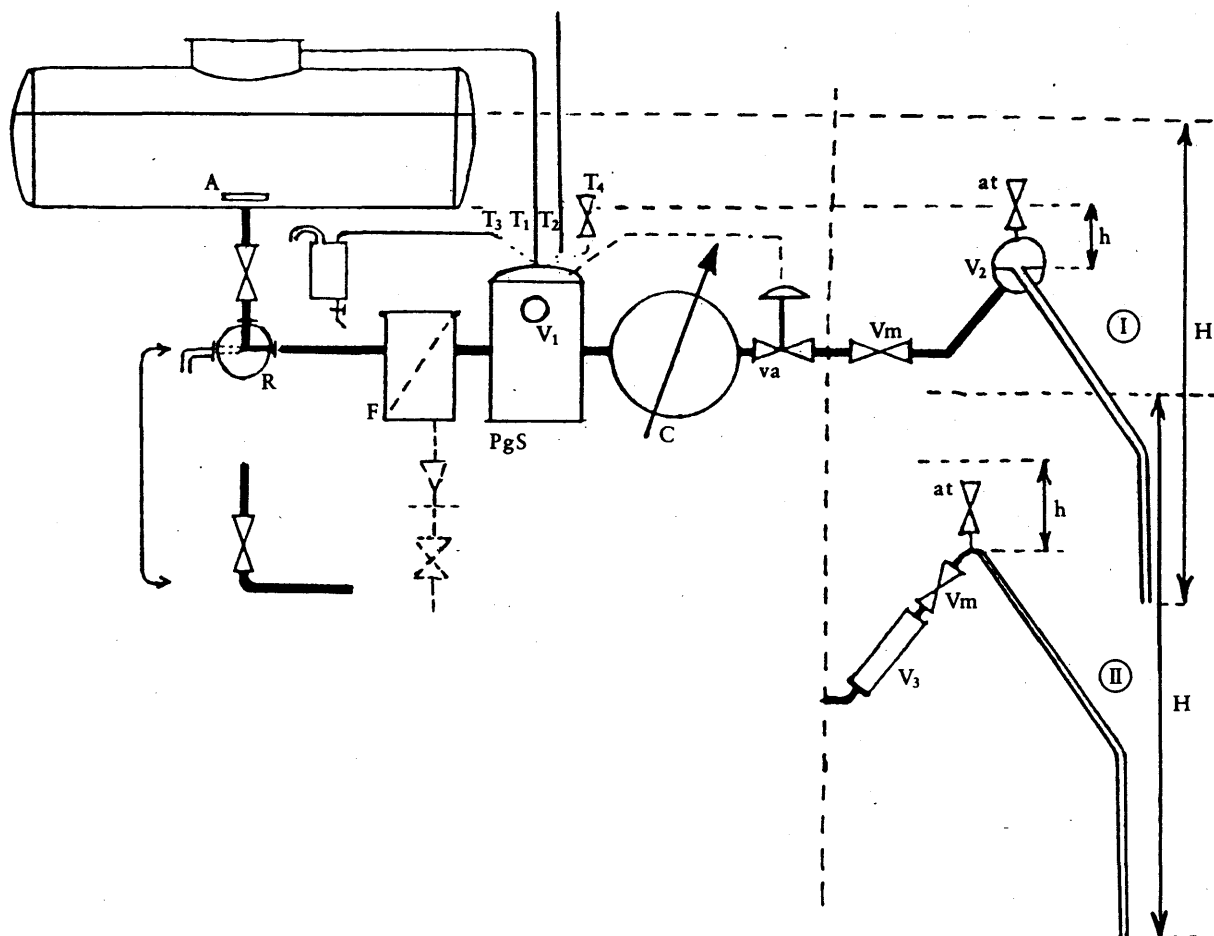
H: Head of liquid.

h: Height of bottom of tank above point of transfer. This must be sufficient to ensure a flow rate at least equal to the meter's minimum flow rate until the tank is completely empty.

Standard scheme S 2

Operation by gravity without permanent vent at point of transfer during delivery

- Allows : (a) metered delivery (empty hose);
 (b) direct unmetered delivery, emptying and filling of the tank without passing through the meter.



Key to standard scheme S 2

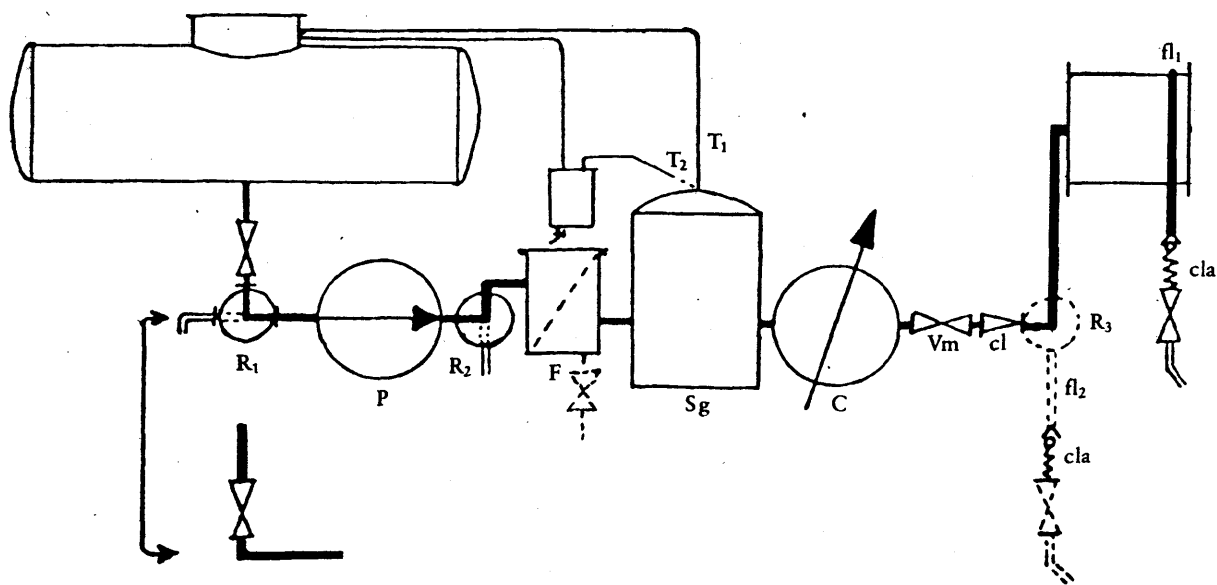
The pipework between compartments and measuring systems must be such as to ensure permanent connections.

- A : Anti-swirl device.
- R : Two-way valve allowing metered delivery, unmetered delivery and emptying and filling of the tank without passing through the meter.
This valve is optional. It may be replaced by a direct connection.
- F : Filter. A drain valve is authorized only if it includes a non-return valve preventing any admission of gas to the measuring system.
- PgS: Special gas extractor as defined in item 1.1.5.
- V₁: Sight glass of special gas extractor.
- T₁, T₂, T₃, T₄: Variants authorized for the venting device.
T₁: return to tank.
T₂: vent to the atmosphere.
T₃: vessel to catch liquid particles entrained by the gases.
T₄: blow-off valve.
- C : Meter.
- va: Valve automatically closed by the special gas extractor when the pressure is insufficient to prevent vaporization in the meter or when a gas pocket accumulates in this special gas extractor. In addition, this valve must close in the event of a failure in its control system.
- I and II: Variants of the empty-hose delivery system.
Variant I: weir-type sight glass V₂.
Variant II: sight glass as defined in item 1.1.8, also performing the function of a gas indicator V₃.
- Vm: Operating valve.
The automatic valve va and the operating valve Vm may be combined in a special valve performing both functions. In that case, the two functions must be independent of each other.
In Variant II, this special valve must be placed after the sight glass V₃.
- at: Manual vent. It may be automatic (e.g., automatically closed during the measuring operation and opened on completion thereof).
- H: Head of liquid.
- h: Height of bottom of tank above point of transfer. This must be sufficient to ensure a flow rate at least equal to the meter's minimum flow rate until the tank is completely empty.

Standard scheme S 3

The measuring system includes a pump, a gas separator and one or two full hoses.

- Allows:*
- (a) metered delivery by pump (full hose);
 - (b) direct unmetered delivery (with or without pump), emptying and filling of the tank without passing through the meter.



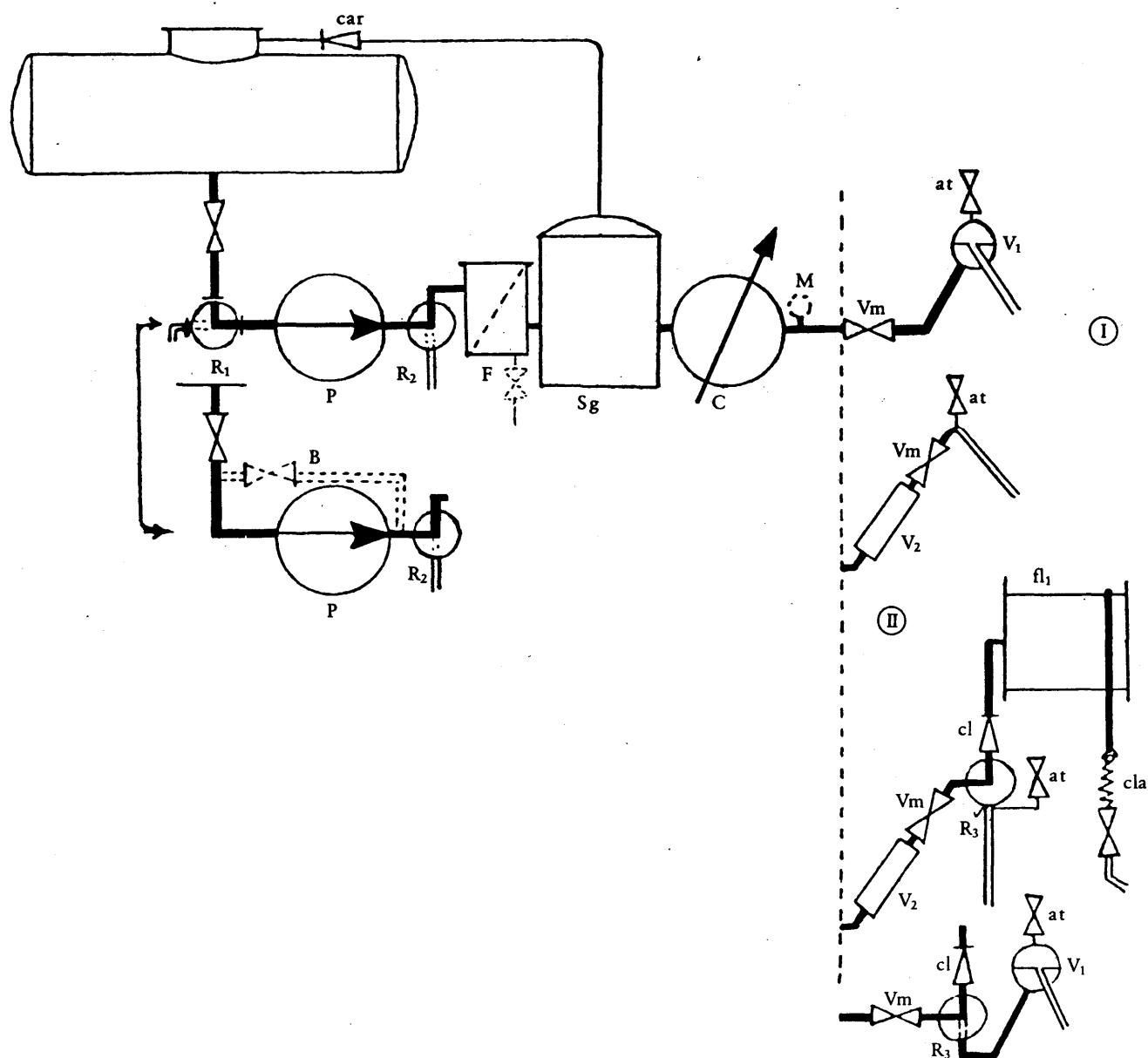
Key to standard scheme S 3

- R₁:** Two-way valve allowing metered delivery, unmetered delivery and filling and emptying of the tank without passing through the meter.
This valve is optional. It may be replaced by a direct connection.
- P:** Pump. The pump may be reversible. In that case, a non-return valve must be added between the valve R₂ and the gas separator Sg.
- R₂:** Optional two-way valve, for direct unmetered delivery.
- F:** Filter. The filter may be fitted with a drain valve.
- Sg:** Gas separator as defined in item 1.6.2.1.4. The liquid level in the separator must be higher than that in the meter.
- T₁, T₂:** Variants authorized for the venting device.
T₁: direct return to the tank.
T₂: return to the tank via a vessel to catch liquid particles entrained by the gases.
- C:** Meter.
- Vm:** Operating valve.
- cl:** Non-return valve.
- fl₁:** Full hose on reel.
- fl₂:** Optional second full hose (very short) for delivery at high flow rates.
- cla:** Valve to prevent the full hose from emptying.
- R₃:** Device allowing deliveries to be made with either hose in a two-hose measuring system. This device must be in conformity with the first paragraph of item 1.10.1 and the second paragraph of item 2.2.4.

Standard scheme S 4

The measuring system has a pump, a gas separator, one empty hose or one full and one empty hose.

- Allows:**
- (a) metered delivery by pump (full or empty hose);
 - (b) metered gravity-feed delivery (empty hose);
 - (c) direct unmetered delivery (which or without pump), emptying and filling of the tank without passing through the meter.



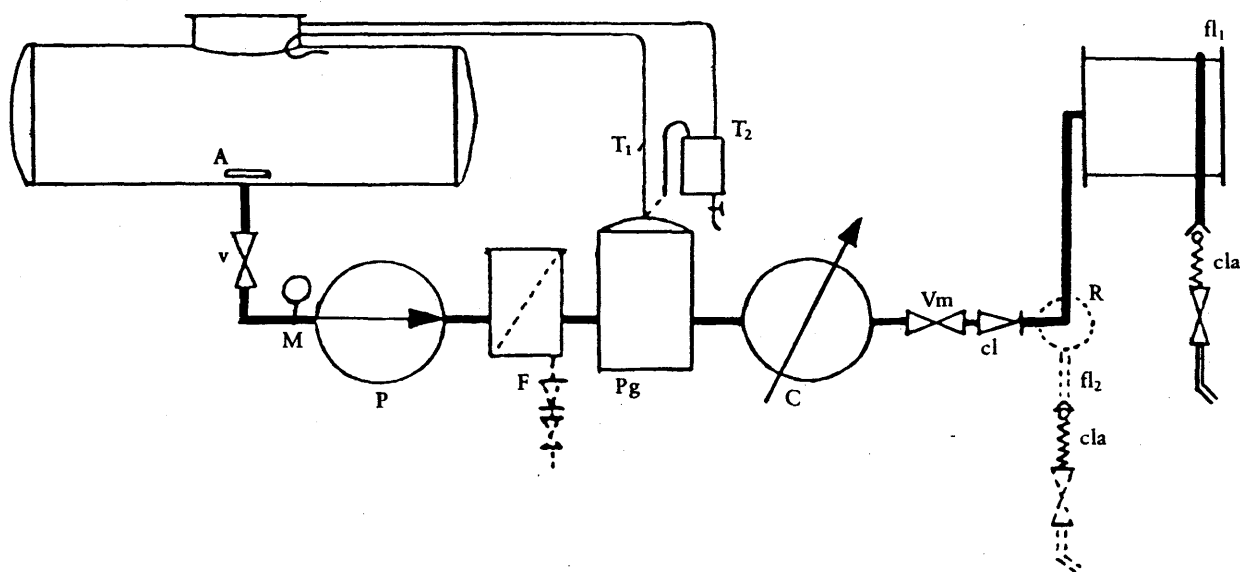
Key to standard scheme S 4

- R₁** Two-way valve for metered delivery, unmetered delivery and emptying and filling of the tank without passing through the meter.
This valve is optional. It may be replaced by a direct connection.
- P:** Pump. The pump may be reversible. In that case, a non-return valve must be added between valve R₂ and the gas separator Sg.
- B:** Optional bypass allowing metered gravity-feed delivery (empty hose). This bypass is authorized only if there is no valve R₁.
- R₂:** Optional two-way valve for direct unmetered delivery.
- F:** Filter. The filter may be fitted with a drain valve.
- Sg:** Gas separator as defined in item 1.6.2.1.4. The liquid level in the gas separator must be above that in the meter.
- car:** Non-return valve preventing gas flow (in the case of empty hose delivery).
- C:** Meter.
- M:** Pressure gauge take-off; this is only compulsory when there is a bypass B.
This take-off makes it possible to check, during initial verification, that the pressure in the meter is at least equal to atmospheric pressure during gravity-feed delivery.
- at:** Automatic or manual vent. When there is a bypass B, this vent must be automatic and of sufficient cross-section to ensure that the pressure in the meter is at least equal to atmospheric pressure.
- Vm:** Operating valve.
- I and II:** Variants of the delivery device:
Variant I: empty hose.
Variant II: combinations of one full and one empty hose.
- cl:** Non-return valve.
- V₁:** Weir-type sight glass.
- V₂:** Sight glass as defined in item 1.1.8, also serving as a gas indicator.
- fl₁:** Full hose on reel.
- cla:** Valve to prevent the full hose from emptying.
- R₃:** Device allowing deliveries to be made via either the full or empty hose. This device must be in conformity with the first paragraph of item 1.10.1 and the second paragraph of item 2.2.4.

Standard scheme S 5

The measuring system includes a pump, a gas extractor and one or two full hoses.

It only allows metered deliveries by pump (full hose).



Key to standard scheme S 5

If the tank has several compartments, the measuring system must be directly and permanently connected to a specific compartment without a manifold.

A: Anti-swirl device.

V: 'Open or closed' type valve rendering any slowing-down at the pump intake practically impossible.

M: Pressure gauge to check that the pressure at the pump intake is never less than atmospheric pressure

P: Pump.

F: Filter.

A drain valve is authorized only if it includes a non-return valve preventing any admission of gas to the measuring system.

Pg: Gas extractor. Two variants, T₁ and T₂, and authorized for the venting device.

T₁: Direct link between the gas extractor and the tank. In this case the pipework must lead into the tank along the wall in order to facilitate separation of liquid particles and gases.

T₂: Gas extractor connected to the tank by a vessel to catch liquid particles entrained by the gases.

C: Meter.

Vm: Operating valve.

cl: Non-return valve.

fl₁: Full hose on reel.

fl₂: Optional full second hose (very short) for deliveries at high flow rates.

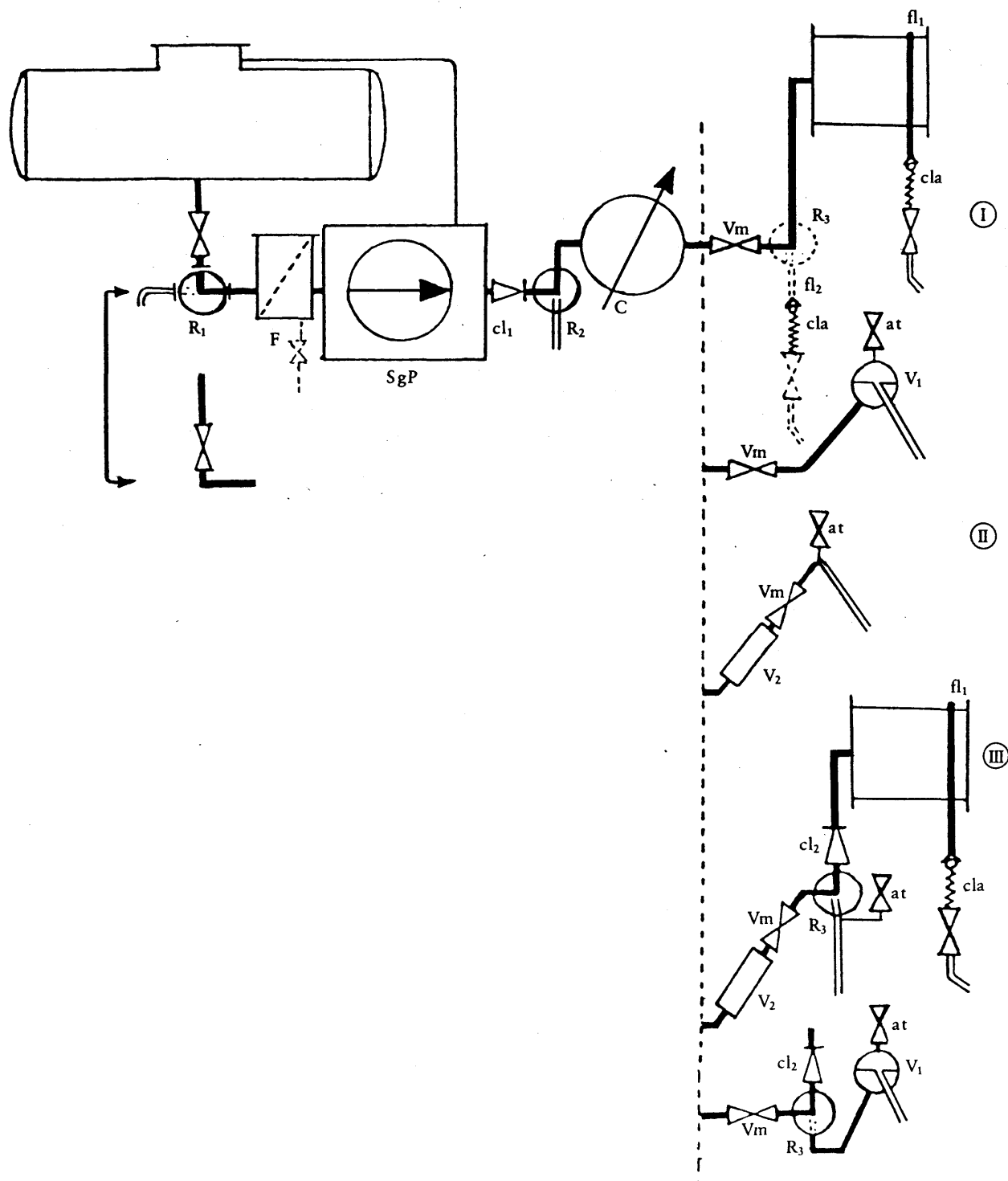
cla: Valve to prevent the full hose from emptying.

R: Device allowing deliveries to be made with either hose in a two-hose measuring system. The device must be in conformity with the first paragraph of item 1.10.1 and the second paragraph of item 2.2.4.

Standard scheme S 6

The measuring system includes a gas separator combined with the supply pump, one or two full hoses, or one empty hose, or one full and one empty hose.

- Allows:
- (a) metered delivery by pump (full or empty hose);
 - (b) direct delivery with or without pump, without passing through the meter, and emptying and filling of the tank without passing through the meter.



Key to standard scheme S 6

R₁: Two-way valve allowing metered delivery, unmetered delivery and emptying and filling of the tank without passing through the meter.

This valve is optional. It may be replaced by a direct connection.

F: Filter. The filter may be fitted with a drain valve.

SgP: Gas separator combined with the supply pump as described in the first paragraph of item 1.6.2.1.2. This subassembly must satisfy the requirements laid down in item 1.6.2.1.4. It must have received EEC pattern approval.

cl₁: Non-return valve. This valve may be located downstream of the meter.

R₂: Optional two-way valve for direct unmetered delivery.

C: Meter.

I, II, III: Variants of the delivery device:

Variant I: one or two full hoses;

Variant II: empty hose;

Variant III: combinations of one full and one empty hose.

Vm: Operating valve.

V₁: Weir-type sight glass.

V₂: Sight glass as defined in item 1.1.8, also serving as a gas indicator.

fl₁: Full hose.

fl₂: Optional second full hose (very short) for deliveries at high flow rates.

cla: Valve to prevent the full hose from emptying.

cl₂: Non-return valve.

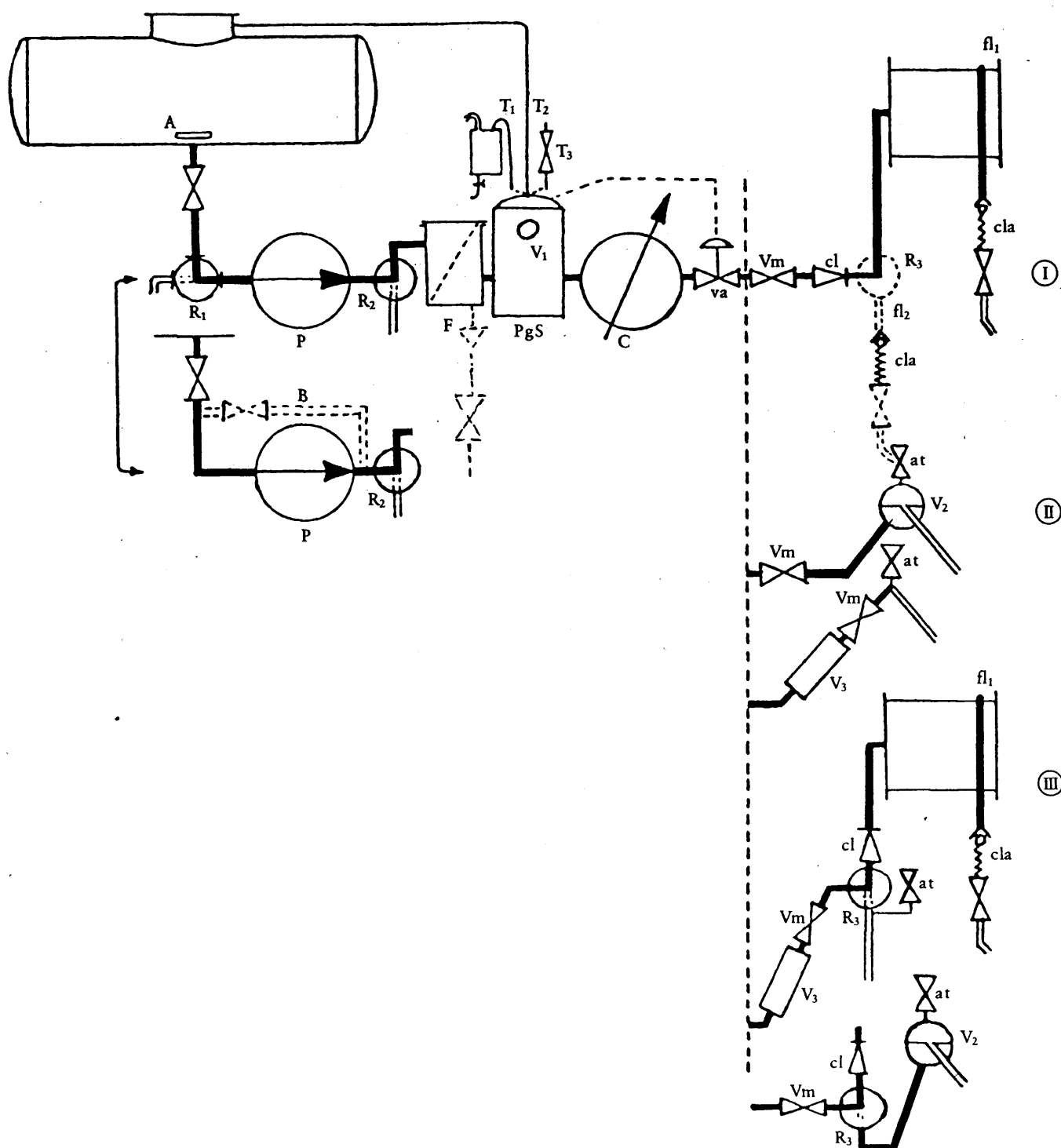
at: Automatic or manual air vent.

R₃: Device allowing deliveries to be made by either of two available delivery methods. This device must be in conformity with the first paragraph of item 1.10.1 and the second paragraph of item 2.2.4.

Standard scheme S 7

The measuring system includes a pump, a special gas extractor, one or two full hoses, or one empty hose or one full hose and one empty hose.

- Allows:*
- (a) metered delivery by pump (full or empty hose);
 - (b) metered gravity-feed delivery (empty hose);
 - (c) direct delivery with or without pump, without passing through the meter, and emptying and filling of the tank without passing through the meter.



Key to standard scheme S 7

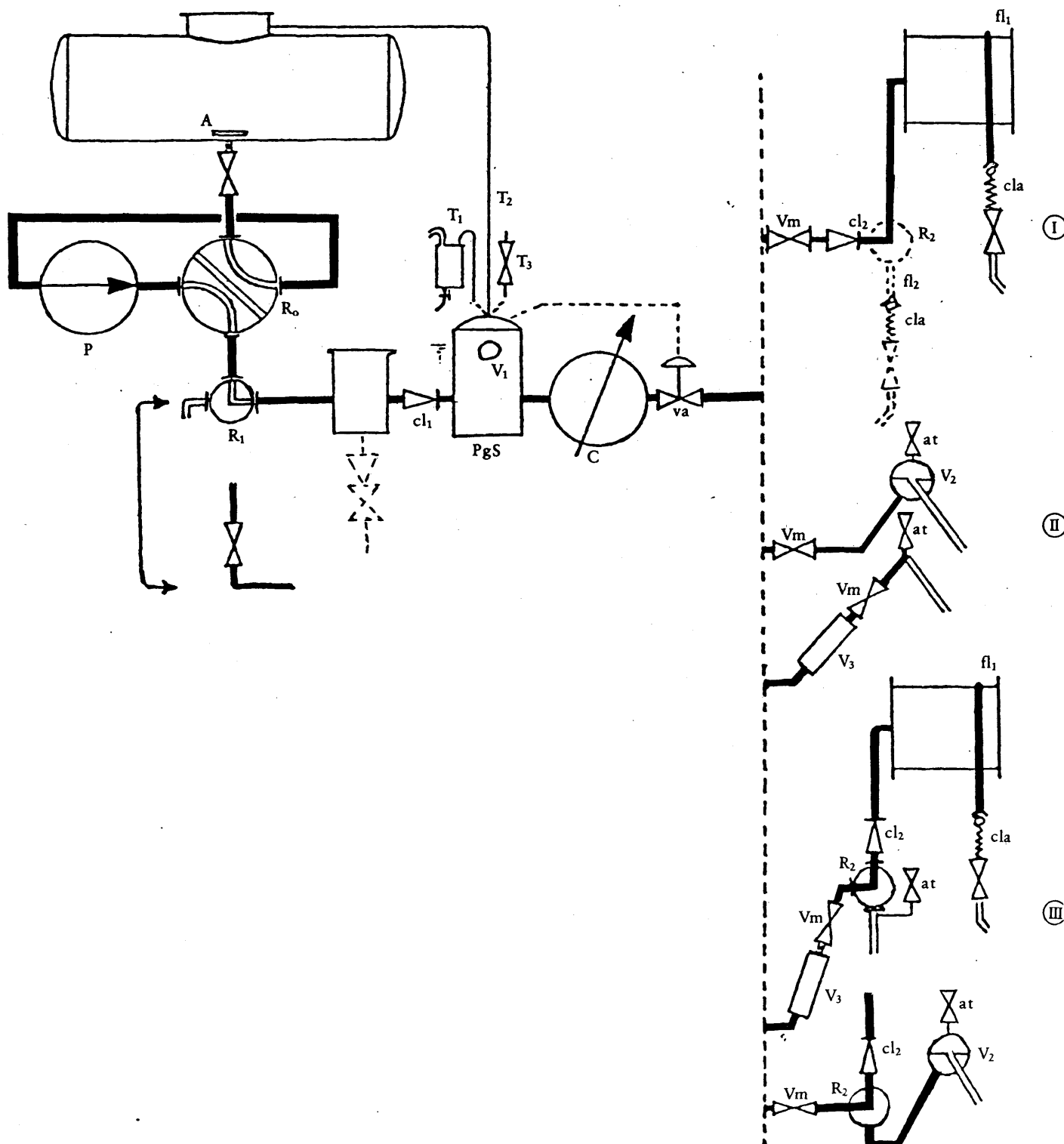
If the tank has several compartments and if it is possible to use a manifold, the valves in the bottom of the compartments and the valves on the intake pipe must be of the 'open or closed' type. Pipes between compartments and the measuring system must be permanently connected.

- A: Anti-swirl device.
- R₁: Two-way valve allowing metered delivery, unmetered delivery and emptying and filling of the tank without passing through the meter.
This valve is optional. It may be replaced by a direct connection.
- P: Pump. The pump may be reversible. In that case, a non-return valve must be incorporated between the valve R₂ and the special gas extractor PgS.
- B: Optional bypass allowing metered gravity-feed delivery (empty hose). This bypass is authorized only if there is no valve R₁.
- R₂: Optional two-way valve for direct unmetered delivery.
- F: Filter. A drain valve is authorized only if it includes a non-return valve preventing any admission of gas to the measuring system.
- PgS: Special gas extractor as defined in item 1.1.5.
- V₁: Sight glass of special gas extractor.
- T₁, T₂, T₃: Variants authorized for the venting device.
T₁: vessel to catch liquid particles entrained by the gases.
T₂: return to the tank.
T₃: blow-off valve.
- C: Meter.
- va: Valve automatically closed by the special gas extractor when the pressure is insufficient to prevent vaporization in the meter or when a gas pocket accumulates in the extractor. In addition, this valve must close in the event of a failure in its control system.
- I, II, III: Variants of the delivery device.
Variant I: one or two full hoses;
Variant II: empty hose;
Variant III: combinations of one full and one empty hose.
- Vm: Operating valve.
The automatic valve va and the operating valve Vm may be combined in a special valve performing both functions. In that case, the two functions must be independent of each other. This special valve must be placed downstream of the sight glass V₃ in those variants (II and III) which include the latter.
- cl: Non-return valve.
- V₂: Weir-type sight glass.
- V₃: Sight glass as defined in item 1.1.8, also serving as a gas indicator.
- fl₁: Full hose on reel.
- fl₂: Optional second full hose (very short) for delivery at high flow rates.
- cla: Valve preventing the full hose from emptying.
- at: Automatic or manual air vent.
- R₃: Device allowing deliveries to be made by either of two available delivery methods. This device must be in conformity with the first paragraph of item 1.10.1 and the second paragraph of item 2.2.4.

Standard scheme S 8

The measuring system includes a pump, a three-way valve, a special gas extractor, one or two full hoses, or one empty hose or one full and one empty hose.

- Allows:
- (a) metered delivery by pump (full or empty hose);
 - (b) gravity-feed metered delivery (empty hose);
 - (c) direct delivery with or without pump, without passing through the meter, and emptying and filling of the tank without passing through the meter.



Key to standard scheme S 8

If the tank has several compartments and if it is possible to use a manifold, the valves in the bottom of the compartments and the valves on the intake pipe must be of the 'open or closed' type. Pipes between compartments and the measuring system must be permanently connected.

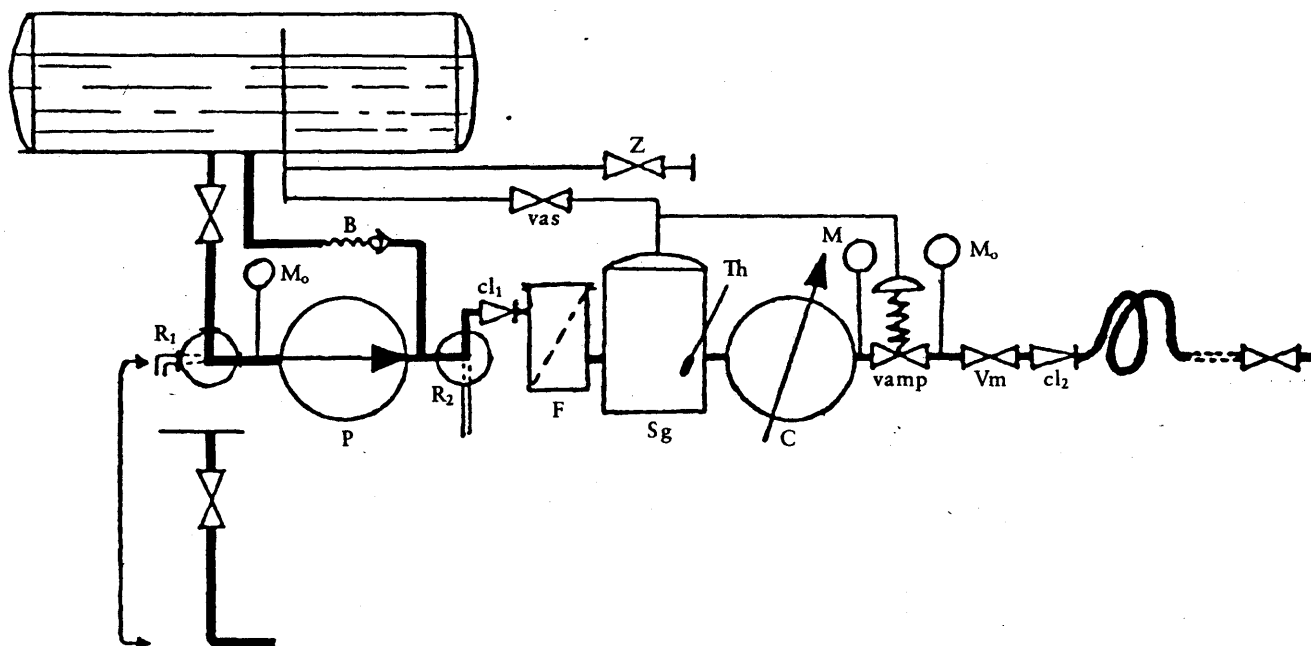
- A: Anti-swirl device.
- P: Pump.
- R₀: Three-way valve which, in conjunction with valves R₁ and R₂, enables the following operations to be carried out:
1. Metered or unmetered delivery by pump (full or empty hose);
 2. Gravity-feed metered or unmetered delivery (empty hose), emptying and filling of the tank;
 3. Filling of the tank with the aid of pump P.
- R₁: This two-way valve is optional. It may be replaced by a direct connection.
- F: Filter:
A drain valve is authorized only if it includes a non-return valve preventing any admission of gas to the measuring system
- cl₁: Non-return valve.
- PgS: Special gas extractor as defined in item 1.1.5.
- V₁: Sight glass for special gas extractor.
- T₁, T₂, T₃: Variants authorized for the venting device.
- T₁: vessel to catch liquid particles entrained by the gases.
 - T₂: return to the tank.
 - T₃: blow-off valve.
- C: Meter.
- va: Valve automatically closed by the special gas extractor when the pressure is insufficient to prevent vaporization in the meter or when a gas pocket accumulates in the extractor. In addition, this valve must close in the event of a failure in its control system.
- I, II, III: Variants of the delivery device.
- Variant I: one or two full hoses.
 - Variant II: empty hose.
 - Variant III: combinations of one full and one empty hose.
- Vm: Operating valve.
The automatic valve va and the operating valve Vm may be combined in a special valve performing both functions. In that case, the two functions must be independent of each other. This special valve must be placed downstream of the sight glass V₃ in those variants (II and III) which include the latter.
- cl₂: Non-return valve.
- V₂: Weir-type sight glass.
- V₃: Sight glass as defined in item 1.1.8 also acting as a gas indicator.
- fl₁: Full hose on reel.
- fl₂: Optional second full hose (very short) for delivery at high flow rates.
- cla: Valve preventing the full hose from emptying.
- at: Automatic or manual venting.
- R₂: Device allowing deliveries to be made by either of two available delivery methods. This device must be in conformity with the first paragraph of item 1.10.1 and the second paragraph of item 2.2.4.

Standard scheme S 9

The measuring system includes a pump, a gas separator, a pressure-maintaining valve and a full hose.

Allows: (a) metered delivery by pump (full hose);

(b) delivery with or without pump, without passing through the meter, and emptying and filling of the tank without passing through the meter.



Key to standard scheme S 9

- R₁: Two-way valve for metered delivery, emptying and filling of the tank without passing through the meter.
This valve is optional. It may be replaced by a direct connection.
- P: Pump.
- B: Adjustable pump bypass connected to the tank.
- R₂: Optional two-way valve for direct unmetered delivery.
- cl₁: Non-return valve stipulated in item 2.4.1. It may also be positioned between the filter and gas separator.
- F: Filter.
- Sg: Gas separator in conformity with either item 1.6.2.1.4 or the second paragraph of item 2.4.3.1. The venting device is connected to the gaseous phase of the tank. For safety reasons, a valve may be fitted to this device; in that case, it must be fitted between the tank and the branch to the valve 'vamp'.
- C: Meter.
- vamp: Automatic pressure-maintaining valve adjusted to maintain a pressure at least 100 kPa higher than the saturated vapour pressure in the tank.
- Vm: Operating valve.
- cl₂: Non-return valve.
- Z: Gaseous-phase pipe which may be used only to fill the vehicle tank and recover the product during checking of the measuring system.
- Th: Thermometer. This thermometer must be situated near the meter, either in the gas separator or at the meter inlet or outlet.
- M: Compulsory pressure gauge.
- M₀: Optional pressure gauges.
- Note: (a) to ensure that the requirements stipulated in item 2.4.5 are observed, it must be clearly stated on a plate that the gaseous phases in the vehicle tank and customer's tank must not be connected.
(b) Safety valves may be incorporated; in that case, they must comply with the requirements of item 2.4.6.
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