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INSTITUTION OF GAS ENGINEERS AND MANAGERS IGEM/TSP/24/079

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IGEM/G/1 Edition 3
Communication XXXX

Defining the boundaries between the Network, the primary meter installation and installation pipework

Draft For Comment

1 This draft Standard IGEM/G/1 Edition 3 has been prepared by an IGEM Panel under the Chairmanship of Jeremy Obbard.

3 This Draft for Comment is presented to Industry for comments which are required by 24th May 2024, and in accordance with the attached Reply Form.

4 This is a draft document and should not be regarded or used as a fully approved and published Standard. It is anticipated that amendments will be made prior to publication.

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Attached is the Draft for Comment of IGEM/G/1 – "Defining the boundaries between the Network, the primary meter installation and installation pipework" and the associated comment form.

We wish to make it as easy as possible for those of you representing industry bodies to issue the draft to your Members. You can either forward this email with attachment complete or forward it without the attachment and invite them to visit our website via where the Draft and Comment Form are posted. https://www.igem.org.uk/resource-library-search.html?information_type=out-for-comment

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For information on other IGEM Standards, visit our website, www.igem.org.uk

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SECTION 1 : INTRODUCTION

1.1 This Standard provides a framework and a consistent approach for the arrangement of Natural Gas distribution mains, services, primary meter installations and installation pipework.

IGEM/G/1 Edition 3 supersedes the 1st, 2nd, 3rd Impressions and Edition 2 (Communication 1765), of IGEM/G/1 which are obsolete.

1.2 For the purposes of this Standard, definitions have been agreed between parties involved in the introduction of competition into metering activities in Great Britain. The Institution of Gas Engineers and Managers (IGEM) consulted appropriate regulatory bodies (HSE, Ofgem and Gas Safe Register), associations of gas transporters (GTs), suppliers and shippers, meter asset managers (MAMs), installation pipework owners and installers and manufacturers of pipe, meters, regulators and other equipment associated with gas systems at the end of networks.

1.3 Arising from the provision in the Gas Act 1986 (as amended), metering services and, in particular, the provision of gas supply meters at gas consumers' premises are provided by competitive service providers under the Review of Gas Metering Arrangements (RGMA).

In order to facilitate the operation of the market and to provide necessary controls, a number of industry documents were published which included:

- OFGAS Gas Metering Definitions
- OFGAS Codes of Practice, CoP1/a, 1/b and 1/c, which specify standards and processes applicable to meter installations
- MAM Code of Practice (MAMCoP)

IGEM/G/1 Edition 3 builds on the above documents to provide additional and supplementary detail to assist parties who have statutory duties under legislation in the development of arrangements and to assist in the provision of a safe and secure supply of gas to consumers.

Note: AMICOP replaced CoP 1/a,1/b and 1/c. AMICOP and MAMCOP were then replaced by MCoP as at 1st January 2021

1.4 In defining the boundaries between the Network, the primary meter installation and installation pipework, there are repercussions with respect to the boundaries of responsibility between a GT/gas conveyor with network management responsibilities, the primary meter installation owner/MAM and the installation pipework owner/operator. Notwithstanding the Notes (below), the document is consistent with the intent of current editions of:

- Gas Safety (Management) Regulations (GS(M)R)
- Gas Safety (Installation and Use) Regulations (GS(I&U)R)
- Pipelines Safety Regulations (PSR)
- Pressure Systems Safety Regulations (PSSR).

Note 1: This Standard contains specific terminology, some of which has been altered for the purpose of clarity.

Note 2: This Standard does not include all possible configurations, and the law may allow deviation from the common practices shown. For example, the designation of an "emergency control" in a particular situation will, ultimately, rest on the facts of the case, that is primarily on intended use by a consumer of gas.

1.5 This Standard recognises inconsistency between relevant official CoPs, guidance to legislation, and national and industry standards, including those listed in Appendix 2.

This Standard consolidates the varied use of different terms across such publications, to provide a base for their future amendment and to represent current best practice.
Any definitions relating to this Standard but not contained within it are given in IGEM/G/4, which is free to access and download from www.igem.org.uk.

1.6 This Standard makes use of the terms "must", "shall" and "should" when prescribing particular requirements. Notwithstanding Sub-Section 1.9:

- the term "must" identifies a requirement by law in Great Britain (GB) at the time of publication
- the term "shall" prescribes a requirement which, it is intended, will be complied with in full and without deviation
- the term "should" prescribes a requirement which, it is intended, will be complied with unless, after prior consideration, deviation is considered to be acceptable.

Such terms may have different meanings when used in legislation, or Health and Safety Executive (HSE) Approved Codes of Practice (ACOPs) or guidance, and reference needs to be made to such statutory legislation or official guidance for information on legal obligations.

1.7 It is now widely accepted that the majority of accidents in industry generally are in some measure attributable to human as well as technical factors. People who initiated actions that caused or contributed to accidents might have acted in a more appropriate manner to prevent them.

To assist in the control of risk and proper management of these human factors, due regard should be taken of HSG48 and HSG65.

1.8 The primary responsibility for compliance with legal duties relating to health and safety at work rests with the employer. The fact that certain employees, for example "responsible engineers", are allowed to exercise their professional judgement does not allow employers to abrogate their primary responsibilities. Employers must:

- have done everything to ensure, so far as is reasonably practicable, that there are no better protective measures that can be taken other than relying on the exercise of professional judgement by "responsible engineers
- have done everything to ensure, so far as it is reasonably practicable, that "responsible engineers" have the skills, training, experience and personal qualities necessary for the proper exercise of professional judgement
- have systems and procedures in place to ensure that the exercise of professional judgement by "responsible engineers" is subject to appropriate monitoring and review
- not require "responsible engineers" to undertake tasks which would necessitate the exercise of professional judgement that is not within their competence. There should be written procedures defining the extent to which "responsible engineers" can exercise their professional judgement. When "responsible engineers" are asked to undertake tasks which deviate from this, they should refer the matter for higher review.

1.9 Notwithstanding Sub-Section 1.6, this Standard does not attempt to make the use of any method or specification obligatory against the judgement of the responsible engineer. Where new and better techniques are developed and proved, they should be adopted without waiting for the modification of this Standard. Amendments to this Standard will be issued when necessary and their publication will be announced in the Journal of IGEM and other publications as appropriate.

1.10 Requests for interpretation of this Standard in relation to matters within their scope, but not precisely covered by the current text, should be either:

- addressed to Technical Services, IGEM, IGEM House, 26 & 28 High Street, Kegworth, Derbyshire, DE74 2DA; or
- emailed to technical@igem.org.uk.

These will be submitted to the relevant Committee for consideration and advice, but in the context that the final responsibility is that of the engineer concerned. If any advice is given by or on behalf of IGEM, this does not imply acceptance of liability for the consequences and does not relieve the responsible engineer of any of his or her obligations.

1.11 This Standard was published on xxxx.

SECTION 2 : SCOPE

2.1 This Standard is applicable to all NG systems and provides a framework for the arrangement of gas distribution mains, services, primary meter installations and installation pipework and includes:

- definitions for the boundaries between gas networks, the primary meter installation (including any associated meter regulator) and installation pipework
- illustrations of a range of arrangements which are deemed appropriate for the gas industry as it currently operates and which will simplify any new arrangements that are required, to ensure a safe and secure supply of gas to a consumer
- illustrations of a range of legacy arrangements, which are not recommended with respect to their design or layout
- identification of boundaries and interfaces.

Note: The definition of these boundaries and interfaces is essential so that relevant information can be exchanged between organisations and persons who have a duty to ensure a safe and secure supply of gas to premises.

2.2 The term "regulator" is intended to mean "meter regulator" unless otherwise stated.

2.3 Pressures quoted are gauge pressures unless otherwise stated.

2.4 Italicised text is informative and does not represent formal requirements.

2.5 Appendices are informative and do not represent formal requirements unless specifically referenced in the main sections by the terms "must", "shall" or "should".

SECTION 3 : LEGISLATION, CODES OF PRACTICE AND OFFICIAL GUIDANCE

3.1 GENERAL

3.1.1 This Standard is set out against a background of Legislation in force in GB at the time of publication (see Appendix 2). The devolution of power to the Scottish, Welsh and Northern Ireland Assemblies means that there may be variations to the Legislation described below for each of them and consideration of their particular requirements must be made. Similar considerations are likely to apply in other countries and reference to appropriate national Legislation will be necessary.

All relevant Legislation must be complied with and relevant Approved Codes of Practice (ACoPs), official Guidance Notes and referenced codes, standards, etc. shall be taken into account.

Care shall be taken to ensure that the latest editions of the relevant documents are used.

Appendix 2 lists Legislation, Guidance Notes, standards etc. which are identified within this Standard as well as further items of Legislation that may be applicable. Where Standards are quoted, equivalent national or international standards etc. equally may be appropriate. Unless otherwise stated, the latest version of the referenced document should be used.

3.1.2 This Standard assumes that organisations and persons are aware of relevant legislation. It does not change, replace or supersede the requirements of legislation nor any arrangements that are in place to manage the supply of gas, nor does it detail any duties or requirements that may arise as a conveyor of gas on the Network; the operator of a pipeline; the user of a pressure system; the owner of a primary meter; an installer or a gas consumer.

3.2 SELECTED EXTRACTS FROM THE REGULATIONS AND THE ASSOCIATED HSE ACoPs AND GUIDANCE

Note 1: This Standard does not always use precisely the definitions given below (see Sub-Section 1.4). Where definitions for terms within this Sub-Section are not given in Section 4 or 5, the definition as given in the appropriate Regulations, ACOP or Guidance applies.

Note 2: The following GS(I&U)R definitions do not appear here as they have been replaced by G/1 definitions in section 2: "distribution main", "emergency control", "gas fittings", "installation pipework", "meter bypass".

3.2.1 GS(M)R

3.2.1.1 *Regulation 6 (8)*

"A person who conveys gas in a network shall, where he is requested to do so by a person proposing to carry out work in relation to a gas fitting, provide him with information about the operating pressures of the gas at the outlet of a service pipe."

3.2.2 A GUIDE TO THE GAS SAFETY (MANAGEMENT) REGULATIONS GS(M)R 1996 GUIDANCE ON REGULATIONS (L80)

3.2.2.1 *Guidance 2 (paragraph 2)*

"An emergency control is a valve intended for use by a consumer for turning off the gas supply in an emergency. An emergency control will always be found at

the end of a service pipe but additional controls may be found in premises, for example, if the primary meter is moved to assist a disabled person."

"A service pipe connects the distribution main to individual premises, terminating at the outlet of the emergency control valve immediately upstream of the installation pipework and other gas fittings."

3.2.2.2 *Guidance 2 (Paragraph 8)*

"A network starts from a processing facility, storage facility or interconnector importing gas into Great Britain but does not include it. However, where a pipeline, for the time being, is used to convey gas from Great Britain, it will be necessary for the gas transporter on that pipeline to prepare a safety case in accordance with these Regulations. The end of the network is the outlet of the emergency control at the end of the service pipe."

3.2.3 **GS(I&U)R**

3.2.3.1 *Part A Regulation 2(1)*

"'service pipe' means a pipe for distributing gas to a premises from a distribution main, being a pipe between the distribution main and the outlet of the first emergency control downstream from the distribution main."

3.2.3.2 *Part B Regulation 9(1)*

"No person shall for the first time enable gas to be supplied for use in any premises unless there is provided an appropriately sited emergency control to which there is adequate access."

3.2.3.3 *Part B Regulation 9(2)*

"Any person installing an emergency control shall ensure that:

a) any key, lever or hand-wheel of the control is securely attached to the operating spindle of the control;

b) any such key or lever is attached so that –

   1) the key or lever is parallel to the axis of the pipe in which the control is installed when the control is in the open position; and

   2) where the key or lever is not attached so as to move only horizontally, gas cannot pass beyond the control when the key or lever has been moved as far as possible downwards;

c) either the means of operating the key or lever is clearly and permanently marked or a notice in permanent form is prominently displayed near such means as to indicate when the control is open and when the control is shut; and

d) any handwheel indicates the direction of opening or closing of the control."

3.2.3.4 *Part B Regulation 9(3)*

"Where a person installs an emergency control which is not adjacent to a primary meter, he shall immediately thereafter prominently display on or near the means of operating the control a suitably worded notice in permanent form indicating the procedure to be followed in the event of an escape of gas."

3.2.3.5 *Part B Regulation 14(1)*

"No person shall install a primary meter or meter bypass used in connection with a primary meter unless –

1) there is a regulator controlling the pressure of gas supplied through the meter or the bypass, as the case may be, which provides adequate automatic means for preventing the gas fittings connected downstream side of the regulator from being subjected to a pressure greater than that for which they were designed;
2) where the normal pressure of the gas supply is 75 mbar or more at the inlet to the regulator, there are also adequate automatic means for preventing, in case the regulator should fail, those gas fittings from being subjected to such a greater pressure; and
3) where the regulator contains a relief valve or liquid seal, such valve or seal is connected to a vent pipe of adequate size and so installed that it is capable of venting safely."

3.2.4 GUIDANCE TO GS(I&U)R (L56)

3.2.4.1 Guidance 2 (Paragraph 25)

"The emergency control is a valve intended, and readily accessible, for use by the consumer, i.e. end-user, of gas. For example, a valve located in a meter room which is locked for security, and accessible only to a landlord, gas supplier, gas transporter and/or emergency services, cannot be regarded as an 'emergency control'. Where a meter is fitted, the meter control valve may be used as the emergency control, subject to certain conditions – see Regulation 9 (1)."

3.2.4.2 *Guidance 2 (Paragraph 26)*

"Although there may be more than one emergency control serving a particular premises, it is the outlet of the first emergency control downstream of the distribution main which marks the interface between a 'service pipe' and 'installation pipework'. There is a similar interface in other related legislation, e.g., the Pipelines Safety Regulations 1996."

3.2.4.3 *Guidance 9 (1) (Paragraph 150)*

"Whenever a new gas supply is made available for use in premises, an emergency control should also be provided. Where there is a gas meter, the meter control may serve as the emergency control as long as the following conditions are met:

(a) Each individual premises (e.g. each house, flat, maisonette, or caravan) using a supply of gas should be provided with an emergency control, whether or not that premises contains a gas meter.
(b) The emergency control should be situated as near as is reasonably practicable to the point where the gas supply pipe enters the premises.
(c) It should be readily accessible to all consumers, i.e. gas users, in the premises concerned (e.g. not located in a basement or cellar).
(d) A valve located in a meter room which is normally locked, and accessible only to a landlord, gas supplier, gas transporter and/or emergency services for example, cannot act as an 'emergency control'.
(e) An emergency control should be protected against unauthorised operation (i.e. tamper-proof) but if situated in a locked compartment, the occupier(s) of the premises should be provided with keys (see also regulation 13(3)–(4)). In such cases, the emergency service provider should also hold keys where access cannot be ensured for them at all times, e.g. through keys held by the responsible person for the premises."

3.2.4.4 Guidance 9 (2) (Paragraph154)

"The emergency control can operate by a key, lever or a handwheel which should be securely attached to the operating spindle. Where a key or lever is used, the 'open' position should be when the key or lever is parallel with the axis of the pipe. The 'off' position should be approximately one quarter turn of the key or lever to the right or left, where the key or lever moves in the vertical plane, the move to the 'off' position should be in the downwards direction. Either the key or lever itself, or a nearby permanent notice, should indicate how the control operates and when the gas is 'off' and 'on'."

3.2.5 **PSR**

3.2.5.1 Regulation 3(4)

"A pipeline for supplying gas to premises shall be deemed not to include anything downstream of an emergency control."

3.2.5.2 Regulation 3(5)

"Emergency control means a valve for shutting off the supply of gas in an emergency, being a valve intended for use by a consumer of gas."

SECTION 4 : PRIMARY DEFINITIONS

4.1 INTRODUCTION

The definitions in this section represent IGEM's interpretation of legislation in Great Britain and the Ofgas Gas Metering Definitions. In general, all the definitions accommodate all "standard gas supply arrangements" (see Sub-Section 6.2 and Appendix 3). However, some also accommodate "legacy gas supply arrangements" (see Sub-Section 6.3 and Appendix 4).

For this Standard, the following definitions shall be adopted.

4.1.1 NETWORK

The Network comprises interconnecting pipes which are downstream of a gas reception terminal, processing facility, storage facility or importing interconnector, and used for the conveyance of gas to consumers as defined in GS(M)R.

Note: 'The Network' and 'a network' are terms described and used in GS(M)R. A "network" is a specific part of the "Network" and is operated by a single undertaking.

4.1.2 BOUNDARIES OF THE NETWORK

The extremity of the Network is the outlet of the emergency control valve (ECV) as defined by relevant legislation and explained further in clause 4.1.3.

Note 1: Where following the design risk assessment for a Multi-Occupancy Building (MOB) a GT or gas conveyor provides a thermal cut off valve (TCO) and/or an excess flow valve (EFV) located immediately on the outlet of the ECV, it will be either:

a) an integral part of the ECV, or
b) a separate fitting connected directly to the outlet of the ECV with the joint protected with an anti-tamper type seal indicating the GT or gas conveyor's ownership of the fitting.

In either case, it is part of the GT or gas conveyor's responsibility to:
a) account for the expected pressure drop of the fitting in the design of the network pipeline, and
b) inspect/maintain/replace the fitting as required.

In either case, the outlet of the fitting is designated as being part of the ECV and hence the end of the Network.

Note 2: Where a person/organisation other than a GT or gas conveyor e.g. Responsible Person for the Building, deems it is necessary following a risk assessment of the building, that additional safety devices such as EFV and/or TCO are necessary, they are required to obtain agreement from the upstream gas conveyor who is to install it as described in Note 1.

Note 3: Where a MAM decides that an EFV/TCO is required, they have to obtain approval from the upstream gas conveyor, an appropriate communication and approval process is The Energy Networks Association (ENA) GT2 process.

4.1.3 EMERGENCY CONTROL VALVE (ECV)

The ECV is a valve, not being an additional emergency control valve (AECV), for shutting off the supply of gas in an emergency. An ECV is a valve intended for use by a consumer of gas. The outlet of the ECV terminates and thus defines the end of the Network.

Note 1: This definition is a variation of the legal definition 'Emergency Control' in GS(I&U)R.

Note 2: The requirements of an ECV, as stated in legislation and supporting HSE guidance are contained within Section 3.2

Note 3: The ECV is a single point of isolation, which shuts off the flow of gas in all circumstances.

4.1.4 ADDITIONAL EMERGENCY CONTROL VALVE (AECV)

The AECV is a valve, not being the ECV, for shutting off the supply of gas in an emergency, intended for use by a consumer of gas. AECV(s) may be located within either the primary meter installation or installation pipework and, as such, may not isolate all of the consumer's pipework and/or the primary meter installation.

An AECV does not denote the end of the Network and is always fitted downstream of the ECV. The existence of an AECV does not affect the existence of an ECV (which is always required).

Note 1: Advice on installation and labelling AECVs is given in IGEM/GM/6, IGE/GM/8, BS 6400-1, BS 6400-2, BS 6891, IGEM/G/5, IGEM/UP/2 and IGE/TD/4, as appropriate.

4.1.5 PRIMARY METER INSTALLATION

4.1.5.1 A primary meter installation includes a primary meter (refer to section 5) and any associated volume conversion system, valve, filter, meter regulator or pressure regulating installation (PRI), flexible connection, meter by-pass, interconnecting pipework, fitting and support.

4.1.5.2 A primary meter installation commences at either:

- the outlet of the first common valve through which all the gas entering the primary meter installation will pass and which is upstream of the first meter regulator/PRI (including any filtration) upstream of the meter or,
- in the case of a meter upstream of a meter regulator/PRI, or of an unregulated supply, the outlet of the first common valve upstream of the primary filter(s) for the primary meter installation.

4.1.5.3 A primary meter installation terminates at:

- the outlet connection of the meter (if a meter outlet liner with a soldered outlet connection is fitted) or,
- the outlet of the meter outlet adaptor if fitted or,
- the outlet of the MOV (or outlet spool) if fitted or,
- the outlet of the tee fitted downstream of the meter where a meter by-pass re-joins the pipework on the outlet of the meter or,
- in the case of a meter upstream of a meter regulator/PRI:
  - the outlet of the meter regulator/PRI outlet valve (PRIOV) or spool piece for a meter regulator by-pass or,
  - where a twin stream meter regulator/PRI is installed, the outlet of the tee where the two streams join or,
  - the outlet of the primary meter installation outlet valve (MIOV) if fitted or,
  - in the case of a semi-concealed domestic meter with a flexible connection downstream of the meter, the outlet of the meter box outlet adaptor

  whichever is appropriate for the system.

Note: Legacy gas supply primary meter installations will not necessarily comply with these arrangements so a separate definition applies for these (see A 4.2).

4.1.6 INSTALLATION PIPEWORK

Installation pipework is any pipework downstream of an ECV, for conveying gas for a particular consumer and any associated valve or other gas fitting, including any pipework used to connect a gas appliance to other installation pipework and any shut off device at the inlet to the appliance, but it does not mean:

- a service pipe
- a pipe comprised in a gas appliance
- any valve attached to a storage container or cylinder.

SECTION 5 : SECONDARY DEFINITIONS

This Standard should be read alongside IGEM/G/4 "Definitions for the gas industry", which is freely available to download from www.igem.org.uk.

arrangements — Processes, practices and contracts that an organisation or person has in place to manage their undertaking.

consumer — End-user of gas (not the Landlord or the bill payer).

distribution main — Pipeline through which a GT or gas conveyor, is conveying gas for consumption at multiple downstream locations. A distribution main is part of the Network.

Note: This definition is a variation of the legal definition taken from GS(I&U)R.

duty holder — Person or organisation having responsibility in law.

gas conveyor — Person who conveys gas through pipes and the Network and having duties under GS(M)R and PSR and who may also hold a Gas Transporter licence.

Note 1: There cannot be a gas conveyor on pipe designated as installation pipework.

Note 2: The Gas Act 1986 Schedule 2a, paragraph 1a permits a landlord to be a gas conveyor without a gas transporter's licence. However, they would still be required to comply with GS(M)R (unless that pipework is adopted formally by another upstream conveyor); PSR and GS(I&U)R.

gas fitting — Gas pipework, valves (other than the ECV), regulators, meters, fittings, apparatus and appliances designed for use by consumers of gas for heating, lighting, cooking or other purposes for which gas can be used, but it does not mean:

- any part of a distribution main or service (pipe)
- any part of a pipeline upstream of a distribution main or service (pipe)
- a gas storage vessel
- a gas cylinder or cartridge designed to be disposed of when empty.

Note: This definition is a variation of the legal definition taken from GS(I&U)R.

gas meter — Instrument designed to measure, memorise and display the quantity of fuel gas (volume or mass) that has passed through it.

Note: A "smart meter" is defined as a meter with additional functionalities, for example two-way data communication.

gas transporter (GT) — Company, licensed by Ofgem, which transports gas through its network on behalf of a gas shipper.

inlet isolation valve (IIV) — Valve, not being an ECV and always installed upstream of an ECV, to enable isolation of gas to all parts of a building, by an authorised party.

legacy gas supply arrangements — Configurations that are not consistent with the installations defined in this document as being standard

	gas supply arrangements.
legacy meter owner	The owner of an installation which was originally installed by a GT prior to 2004 in a configuration not consistent with "standard gas supply arrangements", and which has not been updated to meet the "standard arrangements".
meter asset manager (MAM)	Organisation that works on behalf of the supplier and/or meter owner and is responsible for ensuring the design; installation; commissioning; maintenance; removal and disposal of gas supply primary meter installations is performed by suitably qualified persons or organisations, in accordance with industry standards and legislation. *Note: The meter asset manager may be the meter owner.*
meter by-pass	Pipe and associated gas fittings used to supply gas to a consumer without passing through the meter. *Note: This definition is a variation of the legal definition taken from GS(I&U)R.*
meter inlet valve (MIV)	Valve fitted upstream of, and adjacent to, a gas meter to shut off the supply of gas.
meter installation inlet valve (MIIV)	Valve fitted upstream of all the other components of a primary meter installation to shut off the supply of gas.
meter installation outlet valve (MIOV)	Valve fitted downstream of all the other components of a primary meter installation to shut off the supply of gas through a primary meter installation.
meter outlet adaptor	Fitting which facilitates the connection of a gas consumer's installation pipework to the outlet of a meter.
meter outlet valve (MOV)	Valve fitted downstream of, and adjacent to, a gas meter to shut off the supply of gas.
meter owner	Person owning a meter and/or a meter installation (see also "legacy meter owner").
meter regulator	Device located in close proximity to a primary meter which is solely to control the pressure of the gas within the measurement device and/or installation pipework and is not separated from the measurement device by buried pipework, except short lengths specifically included in the installation design for access purposes.
operator (of a gas pipeline)	Person who is to have or (once gas is conveyed) has, control over the conveyance of gas in the pipeline.
pipeline isolation valve (PIV)	Either a Distribution Main Valve (DMV) or a Service Isolation Valve (SIV) (see IGEM/G/4).
Premises (HSWA 1974)	"premises" includes any place, and in particular, includes: (a) any vehicle, vessel, aircraft or hovercraft, (b) any installation on land (including the foreshore and other land intermittently covered by water), any offshore installation, and any other installation (whether floating, or resting on the seabed or the

subsoil thereof), or resting on other land covered with water or the subsoil thereof, and

(c) any tent or movable structure.

"domestic premises" means premises occupied as a private dwelling (including any garden, yard, garage, outhouse or other appurtenance of such premises which is not used in common by the occupants of more than one such dwelling), and "non-domestic premises" shall be construed accordingly;

primary meter — Gas meter, the index reading of which constitutes the basis of charge for all gas supplied through that meter.

Note: This definition is a variation of the legal definition taken from GS(I&U)R.

pressure regulating installation (PRI) — Assembly of equipment designed to regulate, or reduce, the pressure of gas. A PRI comprises all pressure-containing and associated equipment between the upstream face of the PRIIV and the downstream face of the PRIOV.

standard gas supply arrangements — Gas supply arrangements that are recognised by IGEM/G/1, as being preferred arrangements.

regulator/PRI inlet valve (PRIIV) — Valve fitted upstream of, and adjacent to, a regulator/PRI to shut off the supply of gas.

regulator/PRI outlet valve (PRIOV) — Valve fitted downstream of, and adjacent to, a regulator/PRI to shut off the supply of gas.

"Sub-deduct Arrangement" — As described within the Uniform Network Code; Transportation principal document; Section G Supply Points Sub-Section 2.4 is an arrangement of pipes and meters, installed before 1 March 1996, which National Grid recognised on such date as being such an arrangement, by which a part of the gas which is conveyed by a System to premises for the purposes of supply to those premises, is further conveyed to other premises for the purposes of supply to those other premises;

Note: supply in this context means as supplied by licensed gas supplier.

supplier — Holder of a licence from Ofgem to supply (i.e sell to a consumer) gas by pipes to premises in GB through a primary meter.

Note: This definition is a variation of the legal definition taken from GS(M)R.

SECTION 6 : STANDARD AND LEGACY GAS SUPPLY ARRANGEMENTS

6.1 GENERAL

6.1.1 Except where permitted under Sub-Section 6.3, all new system designs shall comply with the standard gas supply arrangements in IGEM/G/1, and all relevant legislation, codes of practise and technical standards.

6.2 STANDARD GAS SUPPLY ARRANGEMENTS

6.2.1 The end of the Network and the inlet and outlet of a primary meter installation shall be defined so that the boundaries of responsibility are clear and arrangements between duty holders made which ensure a safe and secure supply of gas.

6.2.2 The primary meter installation and installation pipework shall be wholly downstream of the outlet of the ECV. All standard gas supply arrangements require this to be the case, in which case the primary meter installation and installation pipework are not part of the Network. The owners or users of the primary meter installation and of the installation pipework would not, therefore, be conveyors of gas on the Network and would not be subject to the general duties required of a gas conveyor under GS(M)R.

Similarly, the owners or users of a primary meter installation and of installation pipework are not operators of a pipeline and, therefore, are not subject to the requirements of PSR. However, the meter installation may be subject to the requirements of PSSR.

Note: The provision of distribution mains, services, primary meter installations and installation pipework in accordance with standard gas supply arrangements and in compliance with the relevant requirements of legislation assist in the development and maintenance of arrangements.

6.2.3 Appendix 3, Figures 3 to 32 inclusive illustrate standard gas supply arrangements with a number of generic examples. The examples are not exhaustive and, where other types of system are provided, the principles set out in Appendix 3 shall be applied.

6.3 NEW INSTALLATIONS THAT DO NOT MEET THE REQUIREMENTS FOR STANDARD SUPPLY ARRANGEMENTS

6.3.1 Whilst new installations should normally be designed to comply with the requirements for standard gas supply arrangements, as described in Appendix 3, there will be exceptions to this for certain applications where an onward distribution system exists downstream of the primary meter installation.

In these cases, the Network will extend downstream of the primary meter installation. For this to be considered, all of the following conditions apply:

- As the entire primary meter installation will form part of the Network, the MAM must ensure that there is a GT or gas conveyor and a valid GS(M)R Safety Case in place covering the primary meter installation.
- The party responsible for part of the Network downstream of the meter installation – must be a gas conveyor and have a valid GS(M)R Safety Case
- There will be no ECV located upstream of, or within the primary meter installation (although suitable means of pipeline isolation must be incorporated)
- All extremities of the downstream network must terminate at ECVs

Such arrangements are shown in Figures 35 and 51.

6.4 LEGACY GAS SUPPLY ARRANGEMENTS

6.4.1 The following should be noted:

- Some existing arrangements will not be fully consistent with the specified definitions and standard gas supply arrangements but, nevertheless, the interface between duty holders has to be defined. Appendix 4 illustrates a number of examples of such arrangements. These suggestions do not form any part of any definition in this document, unless otherwise stated. For such systems, any arrangements may be complex.
- Several of the arrangements shown in Appendix 4 (for example Figure 40) depict installation pipework upstream of the primary meter installation but downstream of the ECV and including pressure regulating equipment. Responsibility/ownership of this pipework will vary from installation to installation in that the pipework may be owned or be the responsibility of the upstream GT, another GT, or the premises owner. In particular, the MAM would need to establish which party owns/is responsible for such pipework
- In other arrangements, (for example Figure 46) elements of the primary meter installation are located upstream of the designated ECV, that is they are on the Network. In some cases, these elements will be the responsibility of/owned by the upstream GT but, in other cases, there may be another gas conveyor operating this part of the Network. For clarity, such diagrams differentiate between the upstream GT network (denoted 'distribution network') and the part of the meter installation that is on the Network (denoted 'Network').

6.4.2 Sub-deduct arrangements are no longer acceptable and shall be reported to the relevant GT who in discussion and agreement with the consumer will determine the best way of modifying the system to remove the sub deduct arrangement.

6.4.3 Parties agreeing to continue with legacy gas supply arrangements should be fully aware of the legal issues involved. In particular, compliance with GS(M)R, PSR and GS(I&U)R must be achieved. If all parties do not agree to the legacy arrangements, a process shall be instigated which is aimed at changing the arrangement such that all parties involved accept them. Such changes shall aim to approach standard gas supply arrangements and not further diverge from them. Where legacy arrangements continue in-service following agreement, the demarcation of responsibility shall be recorded for future reference.

Note: Ideally, such changes would lead to the full achievement of standard gas supply arrangements, but it is recognised that this may not always be practicable or commercially acceptable to all parties.

Legacy gas supply arrangements are generally not considered appropriate for new gas supply arrangements, although the exception stated in clause 6.3.1 may apply in some circumstances.

APPENDIX 1 : ACRONYMS AND ABBREVIATIONS

ACRONYMS AND ABBREVIATIONS

ACoP	Approved Code of Practice
AECV	additional emergency control valve
CoP	Code of Practice
DMV	distribution main valve
ECV	emergency control valve
ETM	Electronic token meter
FIV	filter inlet valve
FOV	filter outlet valve
GC	gas chromatograph
GS(I&U)R	Gas Safety (Installation and Use) Regulations
GS(M)R	Gas Safety (Management) Regulations
GT	gas transporter
GTNIV	gas transporter network isolation valve
HSWA	Health and Safety at Work etc. Act
HSE	Health and Safety Executive
IGE	Institution of Gas Engineers
IGEM	Institution of Gas Engineers and Managers
IV	isolation valve
IIV	inlet isolation valve
MAM	meter asset manager
MBV	meter by-pass valve
MHSWR	Management of Health and Safety at Work Regulations
MIIV	meter installation inlet valve
MIOV	meter installation outlet valve
MIV	meter inlet valve
MOP	maximum operating pressure
MOV	meter outlet valve
OFGEM	Office of Gas and Electricity Markets
PE	polyethylene
PIV	pipeline isolation valve
PRI	pressure regulating installation
PRIIV	PRI inlet valve
PRIOV	PRI outlet valve
PSR	Pipelines Safety Regulations
PSSR	Pressure Systems Safety Regulations
RD	rotary displacement
RGMA	review of gas metering arrangements
SIV	service isolation valve
SPAA	Supply Point Administration Agreement
UNC	Uniform Network Code.

APPENDIX 2 : REFERENCES

A2.1 LEGISLATION

Primary legislation

- Gas Act 1986 (as amended)
- Health and Safety at Work etc. Act 1974

Secondary Legislation

- Gas Safety (Installation and Use) Regulations 1998, as amended
- Gas Safety (Management) Regulations 1996
- Management of Health and Safety at Work Regulations 1999
- Pipelines Safety Regulations 1996
- Pressure Systems Safety Regulations 2000.

Note: See these at www.legislation.gov.uk.

A2.2 OFFICIAL CODES OF PRACTICE

- Code of Practice for Meter Asset Managers and Approved Meter Installers (MCoP)

A2.3 INSTITUTION OF GAS ENGINEERS AND MANAGERS (IGEM)

• IGEM/GM/4 Edition 3	Flow metering Practices. Inlet pressure exceeding 38 bar and not exceeding 100 bar
• IGEM/GM/5 Edition 3	Selection, installation and use of electronic gas meter volume conversion systems
• IGEM/GM/6 Edition 2	Non-domestic meter installations. Standard designs
• IGEM/GM/7A Edition 2	Electrical connections for gas metering equipment
• IGEM/GM/7B Edition 2	Hazardous area classification for gas metering. equipment
• IGEM/GM/8 (1-5) Edition 2	Non-domestic meter installations. Flow rate exceeding 6 m3 h-1 and inlet pressure not exceeding 38 bar
• IGE/UP/1 Edition 2 Reprint with Amendments	Strength testing, tightness testing and purging of industrial and commercial gas installations
• IGE/UP/1A Edition 2 Reprint with Amendments	Strength testing, tightness testing and direct purging of small low pressure industrial and commercial Natural Gas installations
• IGEM/UP/1B Edition 3	Tightness testing and direct purging of small, liquefied petroleum gas/air, natural gas and liquefied petroleum gas installations
• IGEM/UP/1C	Strength testing, tightness testing and direct purging of Natural Gas and LPG meter installations
• IGEM/UP/2 Edition 3	Installation pipework on industrial and commercial premises
• IGE/UP/9 Edition 2	Application of Natural Gas and fuel oil systems to gas turbines and supplementary and auxiliary fired burners
• IGEM/TD/1	Steel pipelines for high pressure gas transmission

Edition 5

- IGEM/TD/3 Edition 5 — Steel and PE pipelines for gas distribution
- IGE/TD/4 Edition 4 — PE and steel gas services and service pipework
- IGEM/TD/13 Edition 2 — Pressure regulating installations for transmission and distribution systems
- IGEM/G/4 Edition 2 — Definitions for the gas industry
- IGEM/G/5 Edition 2 — Gas installations in multi-occupancy buildings .

A2.4 **BRITISH STANDARDS INSTITUTION (abbreviated titles)**

- BS 6400-1 — Domestic meter installations (≤ 75 mbar)
- BS 6400-2 — Domestic meter installations (> 75 mbar ≤ 2 bar)
- BS 6891 — Domestic pipework installations
- CP 331 Part 2 & 3 — Code of practice for installation of pipes and meters for town gas

A2.5 **HSE**

- L56 — Safety in the installation and use of gas systems and appliances (ACoP and Guidance)
- L80 — A guide to the Gas Safety (Management) Regulations 1996 (Guidance)
- L82 — A guide to the Pipelines Safety Regulations 1996 (Guidance)
- L122 — Safety of pressure systems (ACoP).

A2.6 **OTHER DOCUMENTS**

- OFGAS Gas Metering Definitions 1996
- Meter Competition Focus Group - Definitions Expert Group Final Report 30th June 2000

APPENDIX 3 : STANDARD GAS SUPPLY ARRANGEMENTS

All new system designs are required to comply with current Standards.

All references to 'Meter Installation' in the figures will be taken to mean 'Primary Meter Installation'.

Figure 2 provides an overview of which Standards apply to the different types of equipment in different applications.

The examples which follow show a number of more detailed line diagrams of standard gas supply arrangements and indicate the boundary between the Network, a primary meter installation and installation pipework.

The line diagrams do not show all aspects of a system, but simply the major components. Components such as creep relief valves, top hat strainers, purge and vent points, installation pre-heating, equipotential bonding etc. generally are not shown. See Figure 1 for the key to Figures 3 to 32.

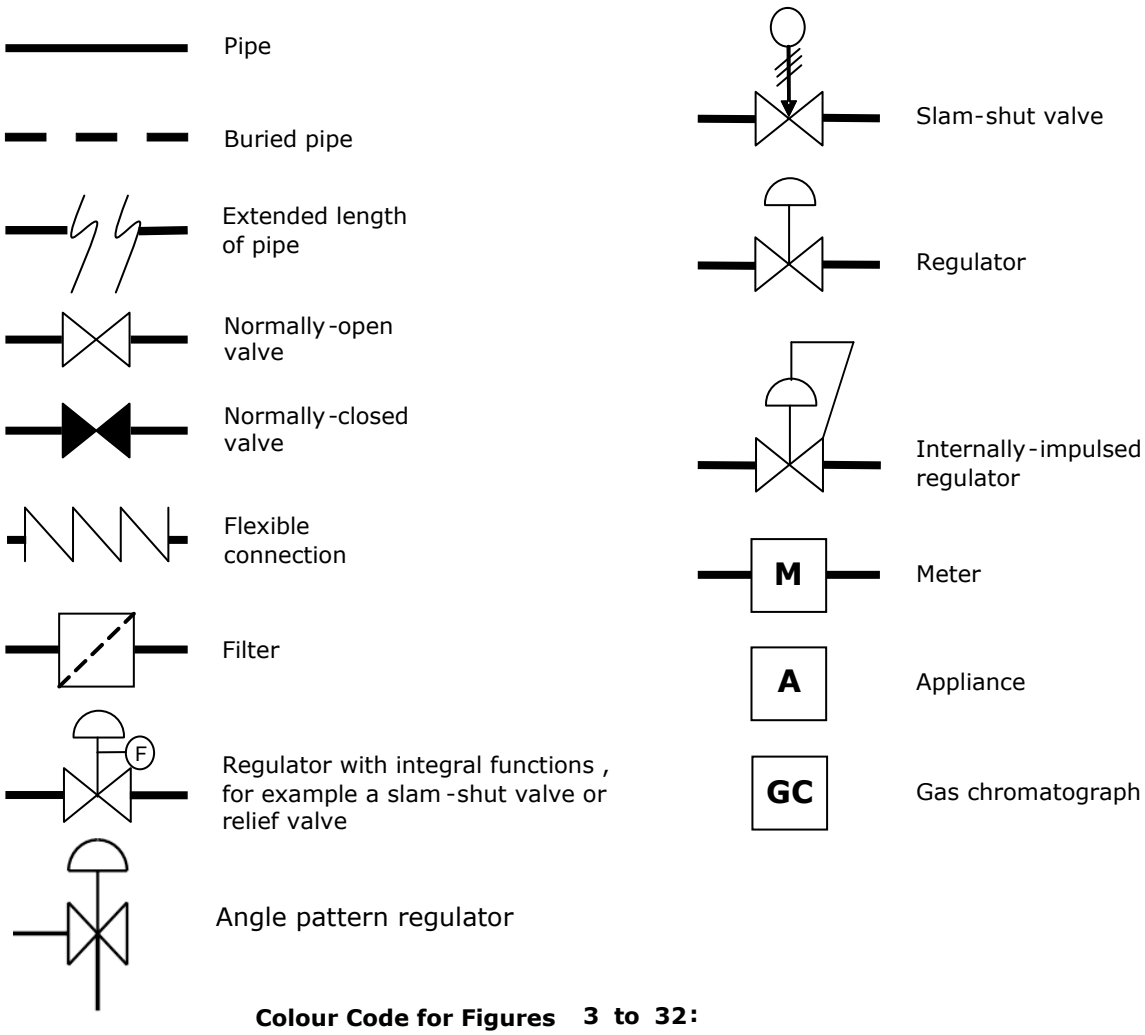


FIGURE 1 - KEY TO FIGURES 3 to 32

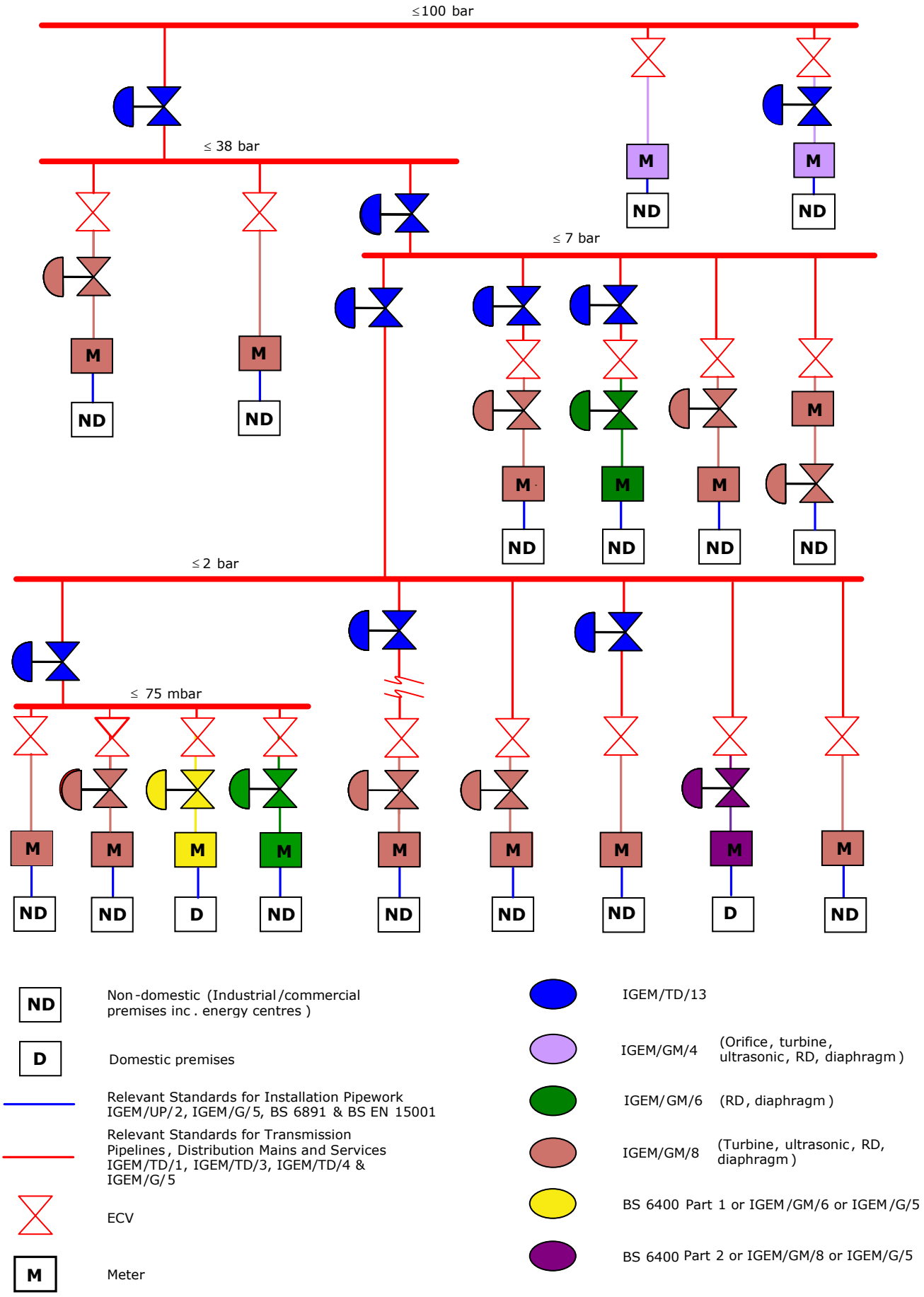
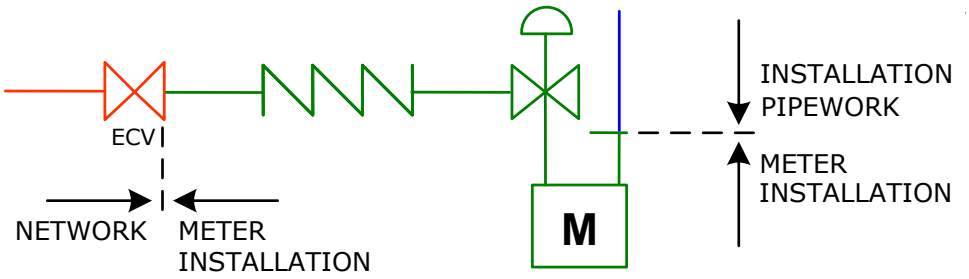


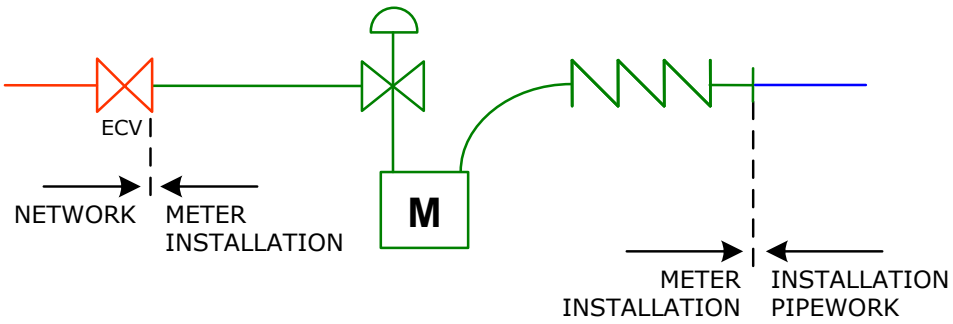
FIGURE 2 - NORMATIVE DOCUMENTS APPLICABLE TO STANDARD GAS SUPPLY ARRANGEMENTS



Functional standards:

- Network to IGEM/TD/4
- meter installation to BS 6400-1
- installation pipework to BS 6891 and/or IGEM/UP/2.

FIGURE 3 - STANDARD ARRANGEMENT SUPPLY MOP ≤ 75 mbar CAPACITY ≤ 6 $m^3 h^{-1}$



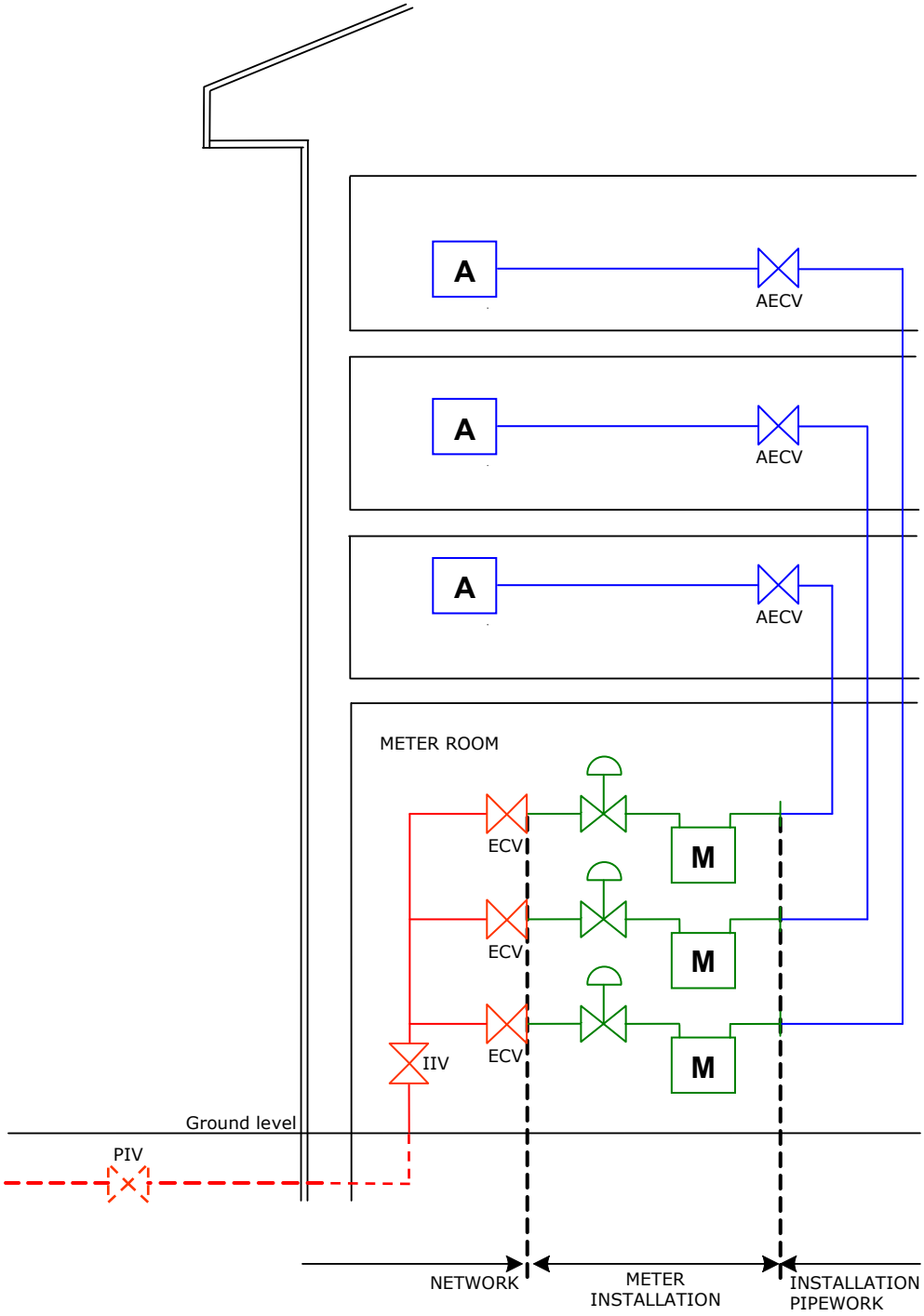
Note: If the outlet flexible connection is fitted on the inlet as Figure 3, the installation becomes as Figure 3.

Note 2: BS 6400-1 permits the use of two flexible connections, one on outlet and one on inlet only in certain instances, in semi concealed meter installations.

Functional standards:

- Network to IGEM/TD/4
- meter installation to BS 6400-1
- installation pipework to BS 6891 and/or IGEM/UP/2

FIGURE 4 - STANDARD ARRANGEMENT SUPPLY MOP ≤ 75 mbar SEMI-CONCEALED INSTALLATION CAPACITY ≤ 6 $m^3 h^{-1}$

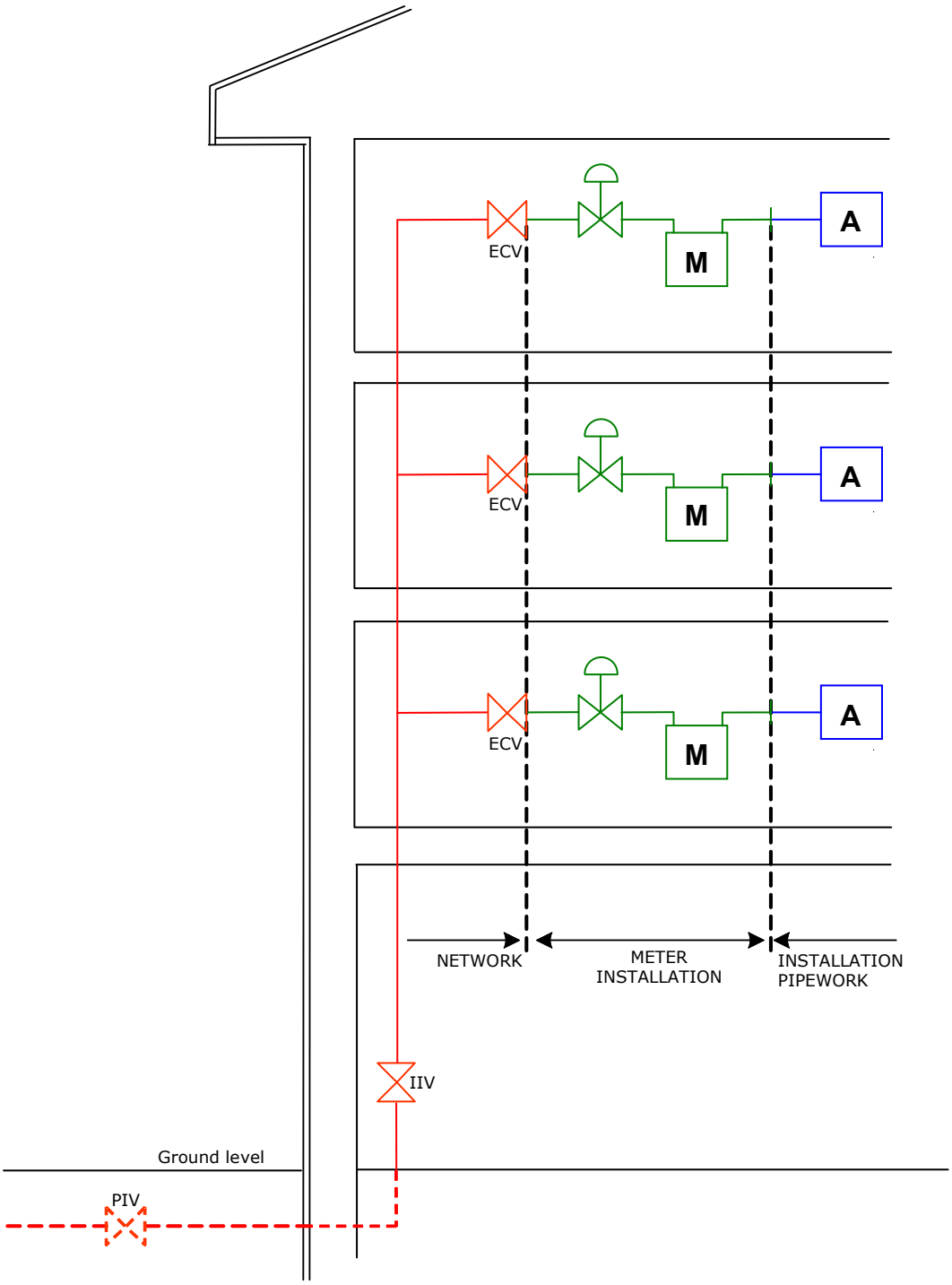


Functional standards:

- IGEM/G/5
- Network to IGEM/TD/3 or IGEM/TD/4
- meter installation to BS 6400-1, IGEM/GM/6 or IGEM/GM/8
- installation pipework to BS 6891 and/or IGEM/UP/2

Note: Where a GT or UIP only installs Network pipework up to an IIV, then the GT adoption process must be followed for the pipework between the IIV and ECV.

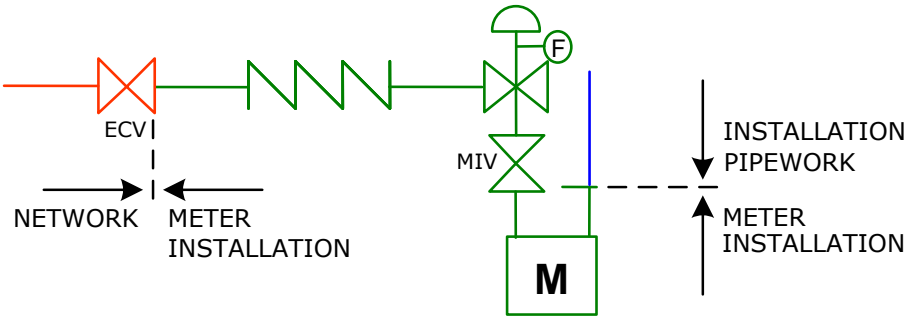
FIGURE 5 - STANDARD ARRANGEMENT SUPPLY MOP ≤ 75 mbar LOCATED IN HIGH RISE BUILDINGS (BANKED METERS)



Functional standards:

- IGEM/G/5
- Network to IGEM/TD/3 or IGEM/TD/4
- meter installation to BS 6400-1, IGEM/GM/6 or IGEM/GM/8
- installation pipework to BS 6891 and/or IGEM/UP/2

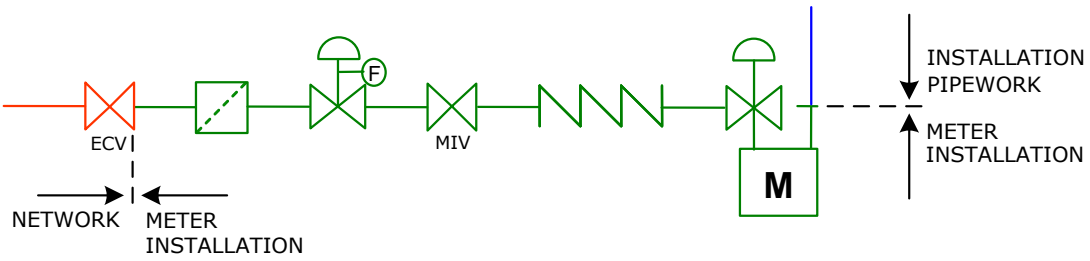
FIGURE 6 - STANDARD ARRANGEMENT SUPPLY MOP ≤ 75 mbar LOCATED IN HIGH RISE BUILDINGS (SINGLE SERVICE RISER TO INDIVIDUAL METERS)



Functional standards:

- Network to IGEM/TD/4
- meter installation to BS 6400-2
- installation pipework to BS 6891 and/or IGEM/UP/2.

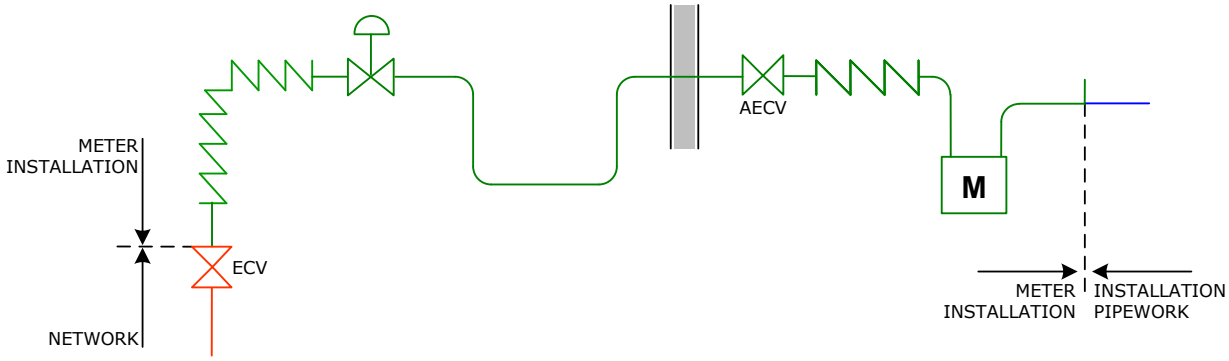
FIGURE 7 - STANDARD ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 2 bar CAPACITY ≤ 6 $m^3 h^{-1}$ (see also Figure 8)



Functional standards:

- Network to IGEM/TD/4
- meter installation to BS 6400-2
- installation pipework to BS 6891 and/or IGEM/UP/2.

FIGURE 8 - STANDARD ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 2 bar CAPACITY ≤ 6 $m^3 h^{-1}$ (see also Figure 7)

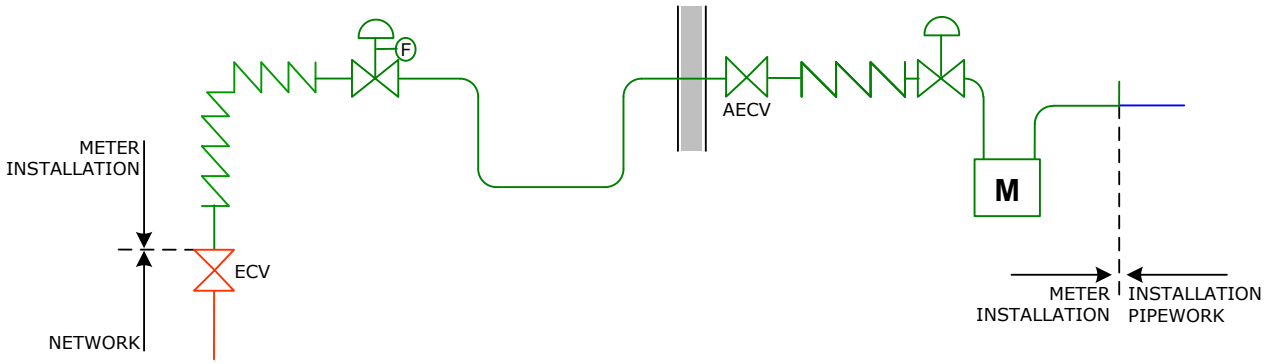


Functional standards:

- Network to IGEM/TD/4
- meter installation to BS 6400-1
- installation pipework to BS 6891.

Note: The most common situation which results in this layout is where an ETM meter has been relocated into the property to aid accessibility for a person of limited mobility.

FIGURE 9 - STANDARD ARRANGEMENT SUPPLY MOP ≤ 75 MBAR METER RE-POSITIONED INSIDE THE PREMISES CAPACITY ≤ 6 M^3 H^{-1}

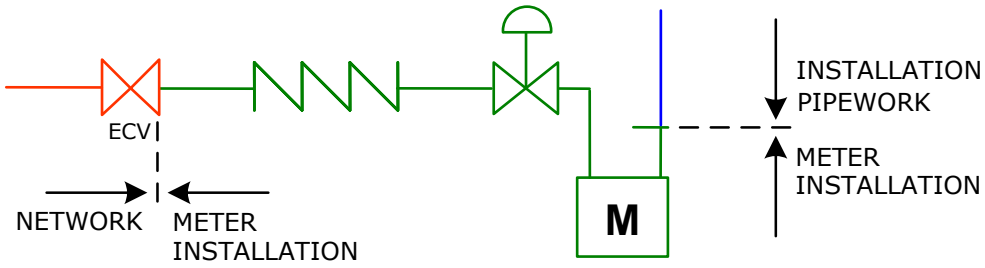


Functional standards:

- Network to IGEM/TD/4
- meter installation to BS 6400-2
- installation pipework to BS 6891.

Note: The most common situation which results in this layout is where an ETM meter has been relocated into the property to aid accessibility for a person of limited mobility.

FIGURE 10 - STANDARD ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 2 bar METER RE-POSITIONED INSIDE THE PREMISES CAPACITY ≤ 6 m^3 h^{-1}

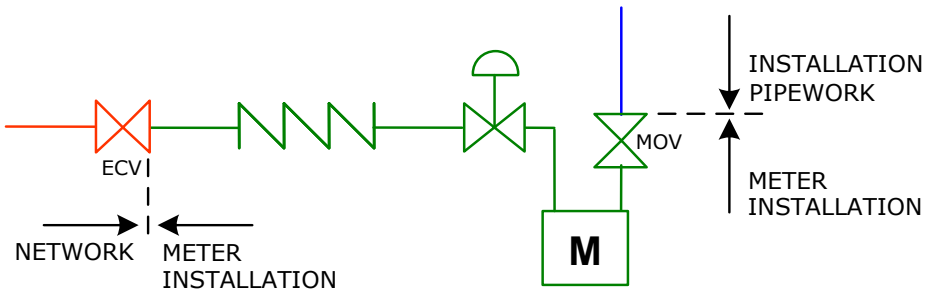


Functional standards:

- Network to IGEM/TD/4
- meter installation to IGEM/GM/6 or IGEM/GM/8
- installation pipework to IGEM/UP/2.

Note: IGEM/GM/6 requires a MOV on installations with a capacity exceeding 16$m^{-3}h^{-1}$ (see Figure 12).

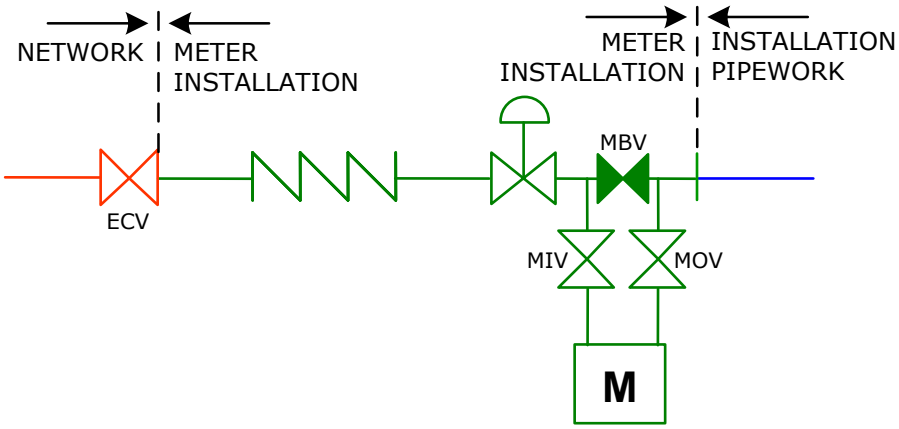
FIGURE 11 - STANDARD ARRANGEMENT SUPPLY MOP ≤ 75 mbar 6 m^3 h^{-1} < CAPACITY ≤ 25 m^3 h^{-1}



Functional standards:

- Network to IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/6 or IGEM/GM/8
- installation pipework to IGEM/UP/2.

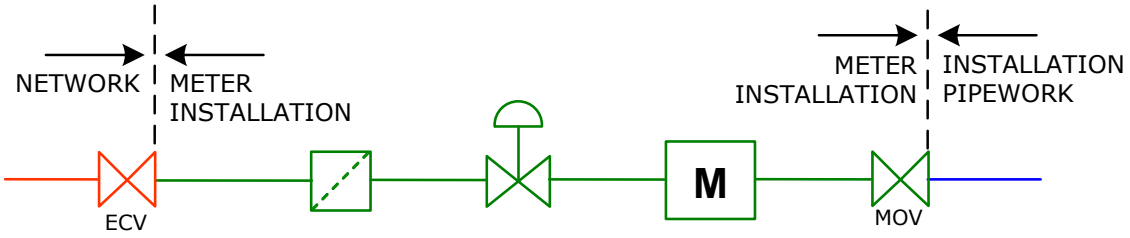
FIGURE 12 - STANDARD ARRANGEMENT SUPPLY MOP ≤ 75 mbar CAPACITY > 16 m^3 h^{-1}



Functional standards:

- Network to IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/8
- installation pipework to IGEM/UP/2.

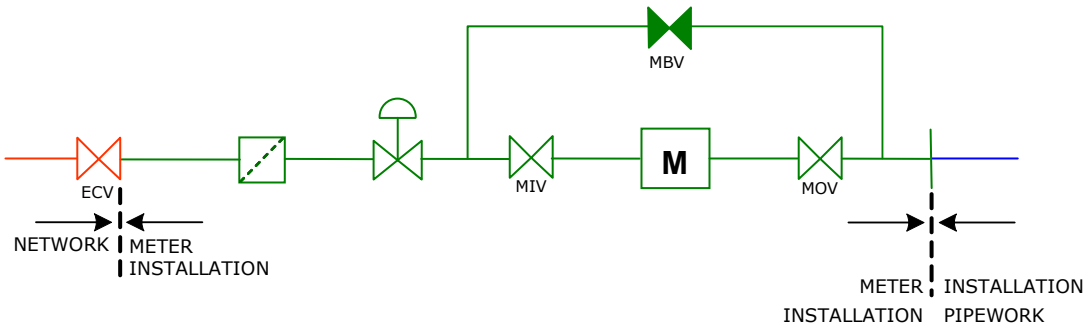
FIGURE 13 - STANDARD ARRANGEMENT SUPPLY MOP ≤ 75 mbar DIAPHRAGM METER WITH BY-PASS CAPACITY > 6 m^3 h^{-1}



Functional standards:

- Network to IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/6 or IGEM/GM/8
- installation pipework to IGEM/UP/2.

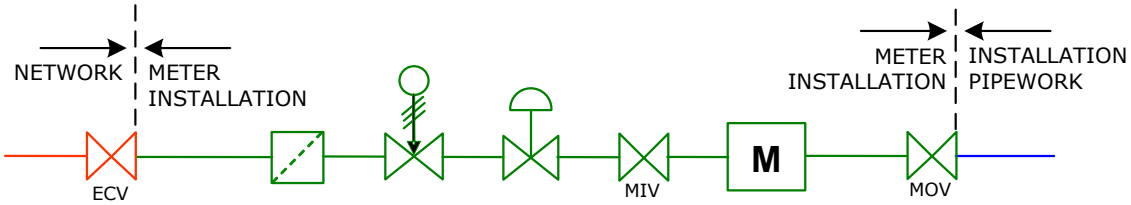
FIGURE 14 - STANDARD ARRANGEMENT SUPPLY MOP ≤ 75 mbar RD OR TURBINE METER CAPACITY > 6 $m^3 h^{-1}$



Functional standards:

- Network to IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/8
- installation pipework to IGEM/UP/2.

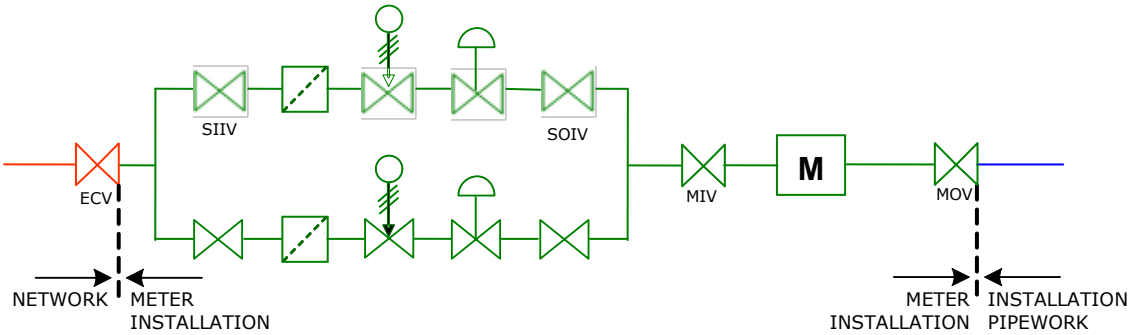
FIGURE 15 - STANDARD ARRANGEMENT SUPPLY MOP ≤ 75 mbar RD OR TURBINE METER WITH BY-PASS CAPACITY > 6 $m^3 h^{-1}$



Functional standards:

- Network to IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/8
- installation pipework to IGEM/UP/2.

FIGURE 16 - STANDARD ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 2 bar SINGLE STREAM DIAPHRAGM, RD OR TURBINE METER CAPACITY > 6 $m^3 h^{-1}$

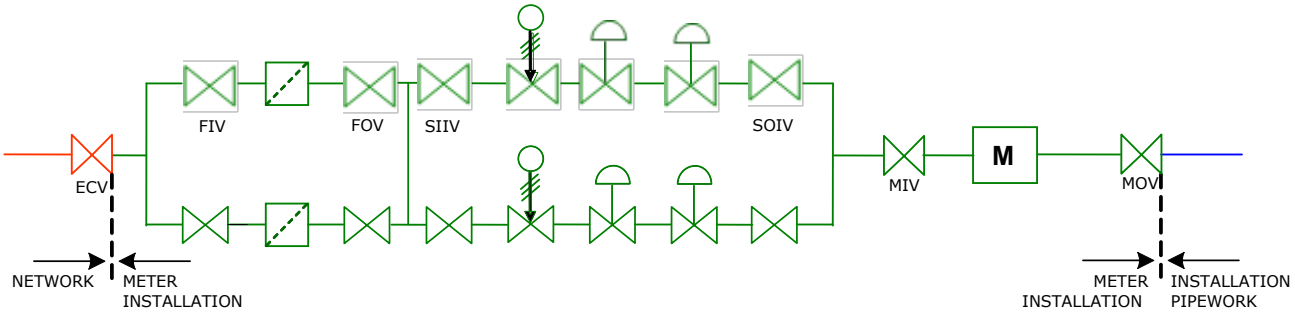


Note: *A meter by-pass may be fitted.*

Functional standards:

- Network to IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/8
- installation pipework to IGEM/UP/2.

FIGURE 17 - STANDARD ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 2 bar TWIN STREAM DIAPHRAGM, RD OR TURBINE METER CAPACITY > 6 $m^3 h^{-1}$

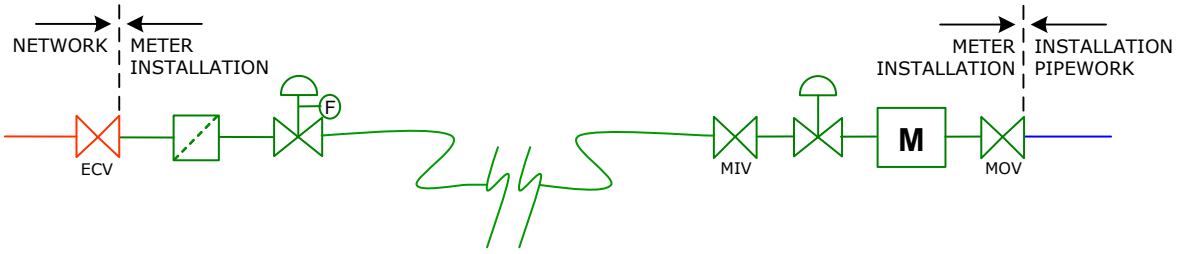


Note: *A meter by-pass may be fitted.*

Functional standards:

- Network to IGEM/TD/1, IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/8
- installation pipework to IGEM/UP/2 or BS EN 15001.

FIGURE 18 - STANDARD ARRANGEMENT 2 bar < SUPPLY MOP ≤ 38 bar TWIN STREAM DIAPHRAGM, RD, TURBINE OR ULTRASONIC METER CAPACITY > 6 $m^3 h^{-1}$



Note 1: *It is imperative that the low pressure section of this installation, i.e. downstream of the regulator that is downstream of the MIV, is clearly labelled to indicate that the ECV and the remaining part of the meter installation comprising higher pressure regulating and safety devices are situated remotely.*

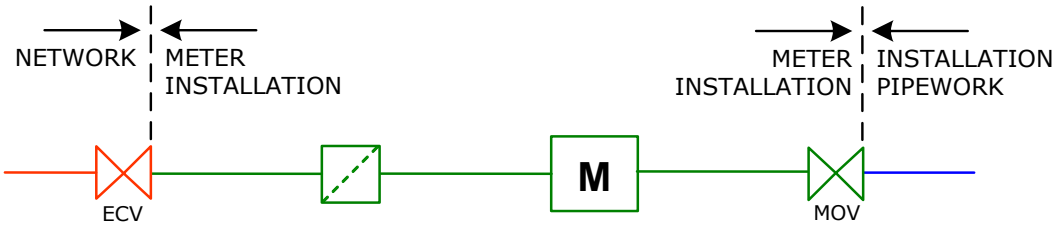
Note 2: *In cases where the MIV shown above is, in fact, the ECV, upstream components form part of the Network and therefore are not part of the meter installation*

Note 3: *It is imperative that the valve shown as the ECV satisfies all requirements within the definition shown in clauses 4.1.3 and 3.2, including those for accessibility by the occupiers of the premises.*

Functional standards:

- Network to IGEM/TD/1, IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/8
- installation pipework to IGEM/UP/2 or BS EN 15001

FIGURE 19 - STANDARD ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 38 bar REMOTE REGULATORS SEPARATED BY ABOVE GROUND PIPEWORK CAPACITY > 6 $m^3 h^{-1}$

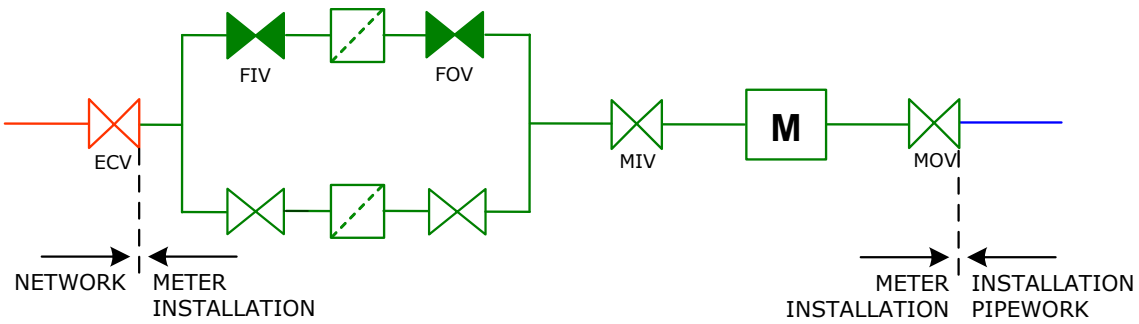


Note: *An unregulated supply may require exemption if GS(I&U)R Reg 40 applies.*

Functional standards:

- Network to IGEM/TD/1, IGEM/TD/3 or IGEM/TD/4
- meter installation to IGE/GM/8 (MOP ≤ 38 bar) or IGEM/TD/13 and IGEM/GM/4 (MOP > 38 bar)
- installation pipework to IGEM/UP/2

FIGURE 20 - STANDARD ARRANGEMENT ANY SUPPLY MOP UNREGULATED SINGLE STREAM NON-DOMESTIC CAPACITY > 6 $m^3 h^{-1}$

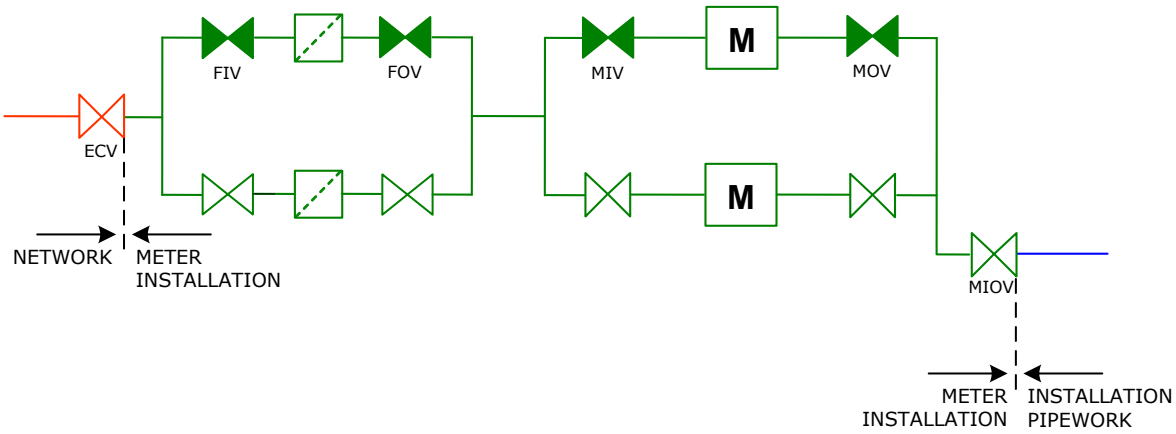


Note: An unregulated supply may require exemption if GS(I&U)R Reg 40 applies.

Functional standards:

- Network to IGEM/TD/1, IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/8 (MOP ≤ 38 bar) or IGEM/TD/13 and IGEM/GM/4 (MOP > 38 bar)
- installation pipework to IGEM/UP/2.

FIGURE 21 - STANDARD ARRANGEMENT ANY SUPPLY MOP UNREGULATED TWIN FILTER STREAM NON-DOMESTIC CAPACITY > 6 $m^3 h^{-1}$

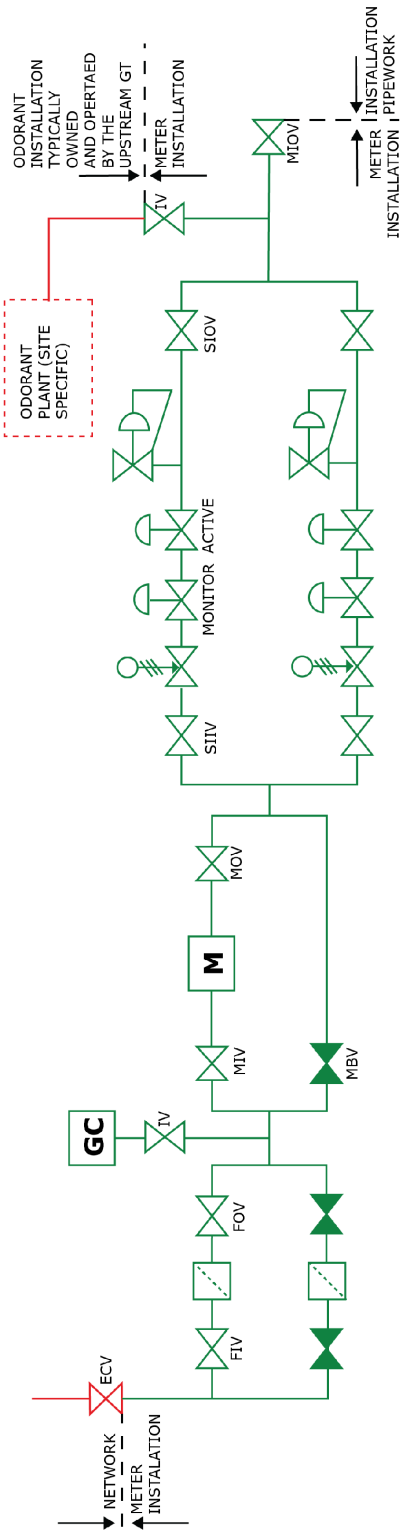


Note: An unregulated supply may require exemption if GS(I&U)R Reg 40 applies.

Functional standards:

- Network to IGEM/TD/1, IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/8 (MOP ≤ 38 bar) or IGEM/TD/13 and IGEM/GM/4 (MOP > 38 bar)
- installation pipework to IGEM/UP/2.

FIGURE 22 - STANDARD ARRANGEMENT ANY SUPPLY MOP UNREGULATED TWIN FILTER AND TWIN METER STREAM NON-DOMESTIC CAPACITY > 6 $m^3 h^{-1}$

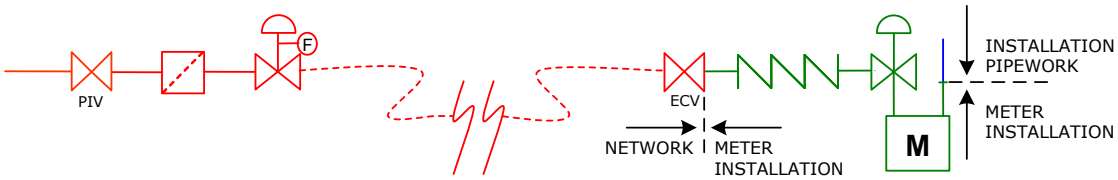


Note: Example of supply to power generation plant

Functional standards:

- Network to IGEM/TD/1, IGEM/TD/3 or IGEM/TD/4
- PRI to IGEM/TD/13
- meter installation to IGEM/GM4 OR IGEM/GM/8
- installation pipework to IGEM/UP/2 OR BS EN 15001.

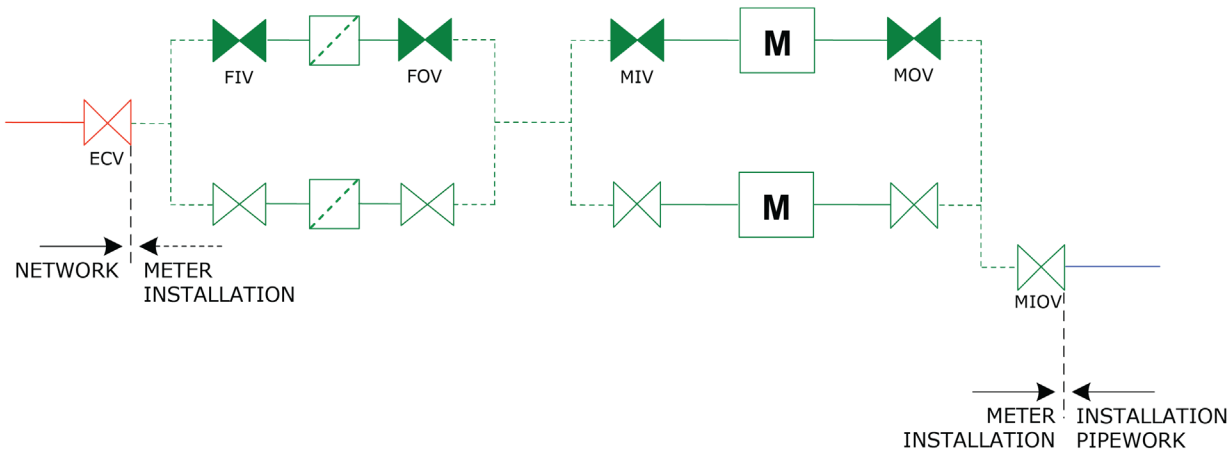
FIGURE 23 - STANDARD ARRANGEMENT TYPICAL INSTALLATION SUPPLY MOP > 7bar



Functional standards:

- Network to IGEM/TD/4
- Service Regulator to IGEM/TD/13
- meter installation to BS 6400-1
- installation pipework to BS 6891.

FIGURE 24 - STANDARD ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 2 bar REMOTE SERVICE REGULATOR, ECV AND LOCAL LOW PRESSURE REGULATOR CAPACITY ≤ 6 m^3 h^{-1}

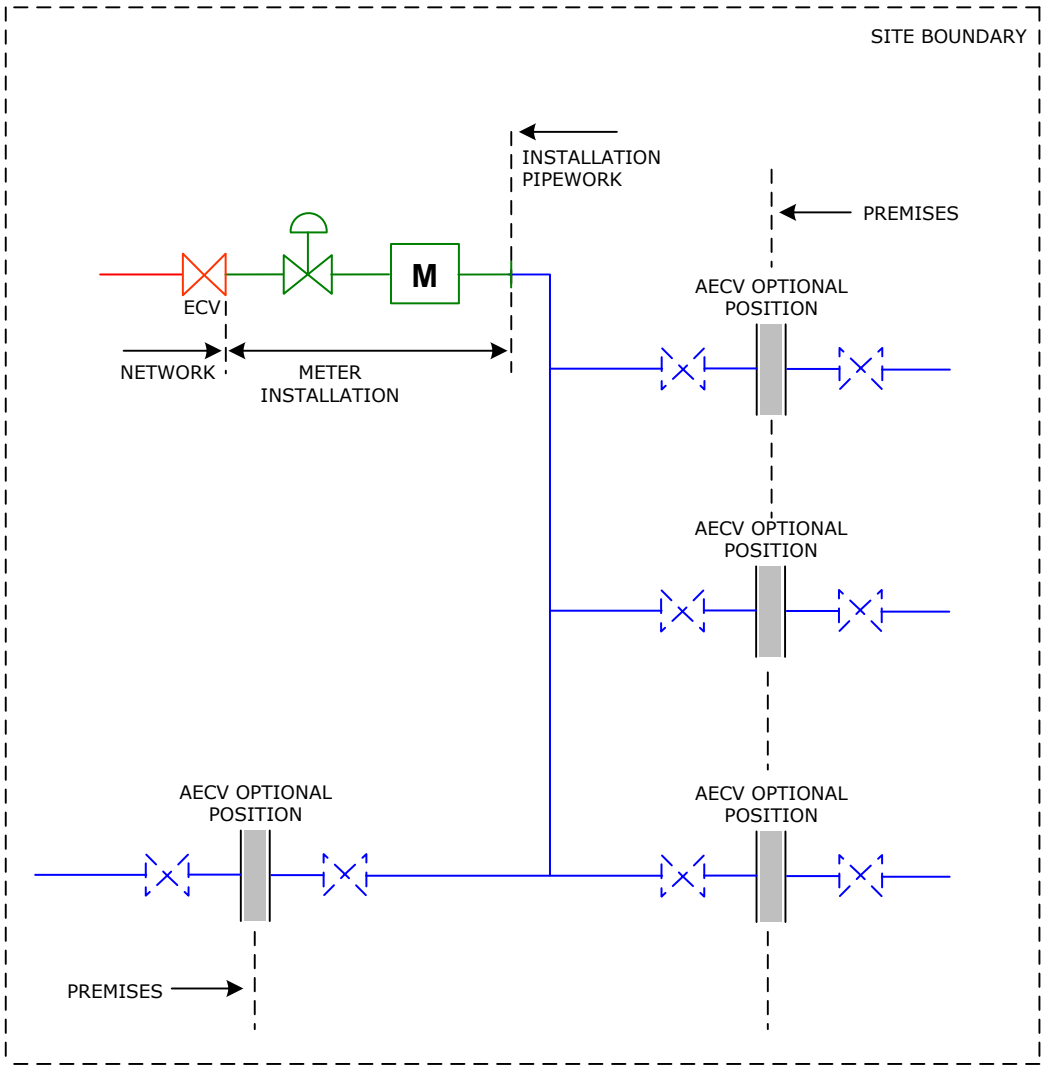


Note: An unregulated supply is shown however, the principles would apply to an installation incorporating a PRi, which would generally be located between the filter and meter streams.

Functional standards:

- Network to IGEM/TD/1, IGEM/TD/3 and IGEM/TD/4
- meter installation to IGE/GM/8 (for MOP < 38 bar) or IGEM/GM/4 and IGEM/TD/13 (for MOP > 38 bar)
- installation pipework to IGEM/UP/2 or BS EN 15001.

FIGURE 25 - STANDARD ARRANGEMENT LARGE INSTALLATION ABOVE AND BELOW GROUND PIPEWORK



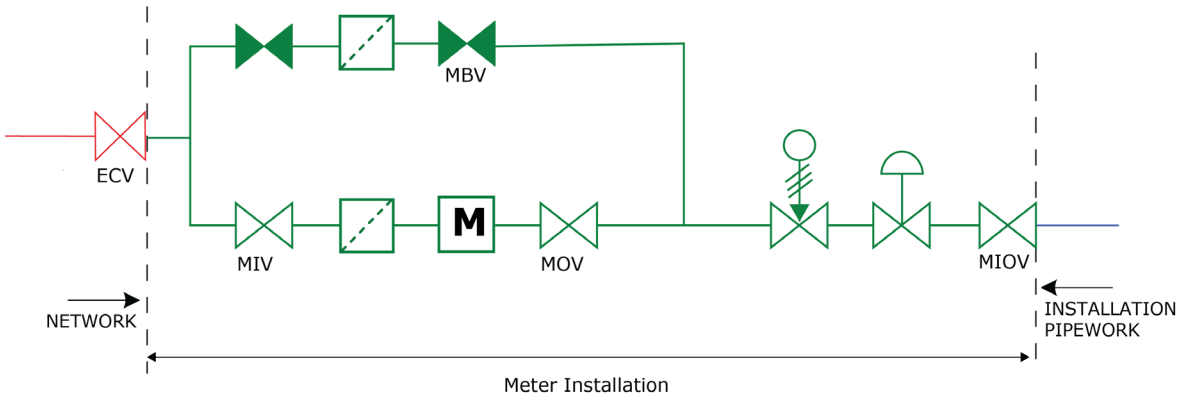
Note 1: Buildings and site occupied by a single business , for example; a hospital, a school , etc.

Note 2: it is imperative that the valve shown as the ECV satisfies all requirements within definition shown in 4.1.3 and 3.2 including those for accessibility by the occupiers of the premises.

Functional standards:

- Network to IGEM/TD/1, IGEM/TD/3 and IGEM/TD/4
- meter installation to IGEM/GM/6 or IGEM/GM/8
- installation pipework to BS 6891 and/or IGEM/UP/2.

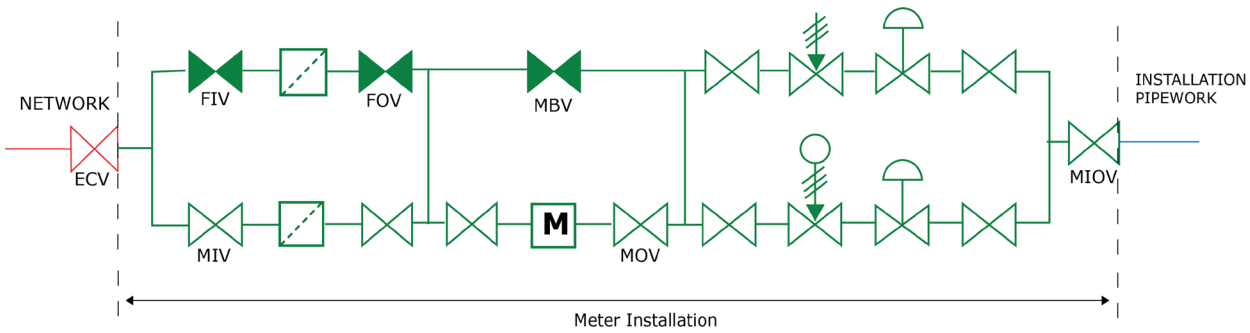
FIGURE 26 - STANDARD ARRANGEMENT SUPPLY MOP ≤ 75 mbar CAPACITY > 6 $m^3 h^{-1}$



Functional Standards:

- Network to IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/8
- installation pipework to IGEM/UP/2

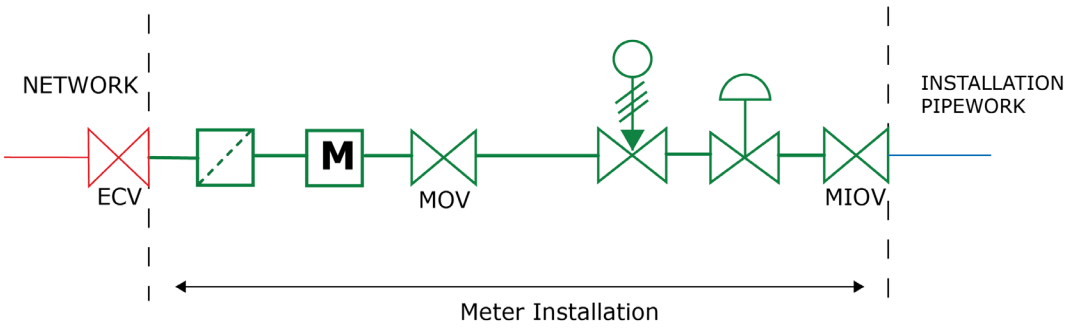
FIGURE 27 - STANDARD ARRANGEMENT75 mbar < MOP ≤ 2 bar SINGLE STREAM UPSTREAM METERING AND BYPASS RPD, TURBINE, ULTRASONIC METER CAPACITY > 6 m^3 h^{-1}



Functional Standards:

- Network to IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/8
- installation pipework to IGEM/UP/2

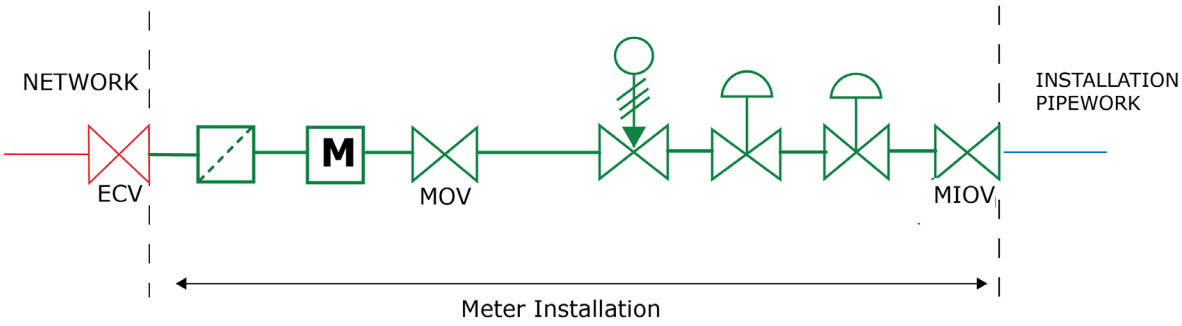
FIGURE 28 - STANDARD ARRANGEMENT 75 mbar <MOP< 2 bar TWIN STREAM, UPSTREAM METERING WITH METER BY-PASS RPD OR TURBINE METER CAPACITY > 6 m^3h^{-1}



Functional Standards:

- Network to IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/8
- installation pipework to IGEM/UP/2

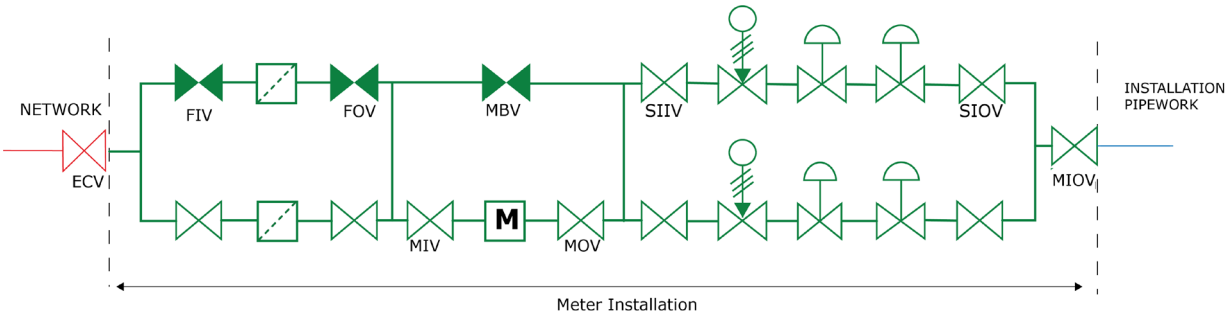
FIGURE 29 - STANDARD ARRANGEMENT 75 mbar <MOP< 2 bar SINGLE STREAM UPSTREAM METERING RD, TURBINE ULTRASONIC METER CAPACITY > 6m³ h⁻¹



Functional Standards:

- Network to IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/8
- installation pipework to IGEM/UP/2

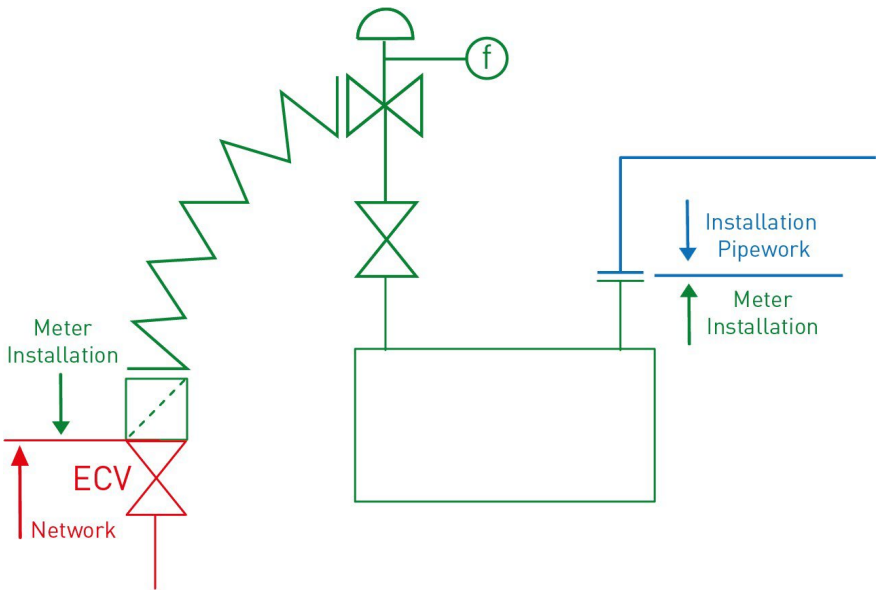
FIGURE 30 - STANDARD ARRANGEMENT 2 bar < MOP ≤ 7 bar SINGLE STREAM UPSTREAM METERING RD, TURBINE, ULTRASONIC METER CAPACITY > 6 m³ h⁻¹



Functional Standards:

- network to IGEM/TD/3 or IGEM/TD/4
- meter installation to IGEM/GM/8
- installation pipework to IGEM/UP/2

FIGURE 31 - STANDARD ARRANGEMENT 2 bar < MOP < 7 bar TWIN STREAM UPSTREAM METERING WITH METER BYPASS RD, TURBINE, ULTRASONIC CAPACITY > 6 m^3h^{-1}



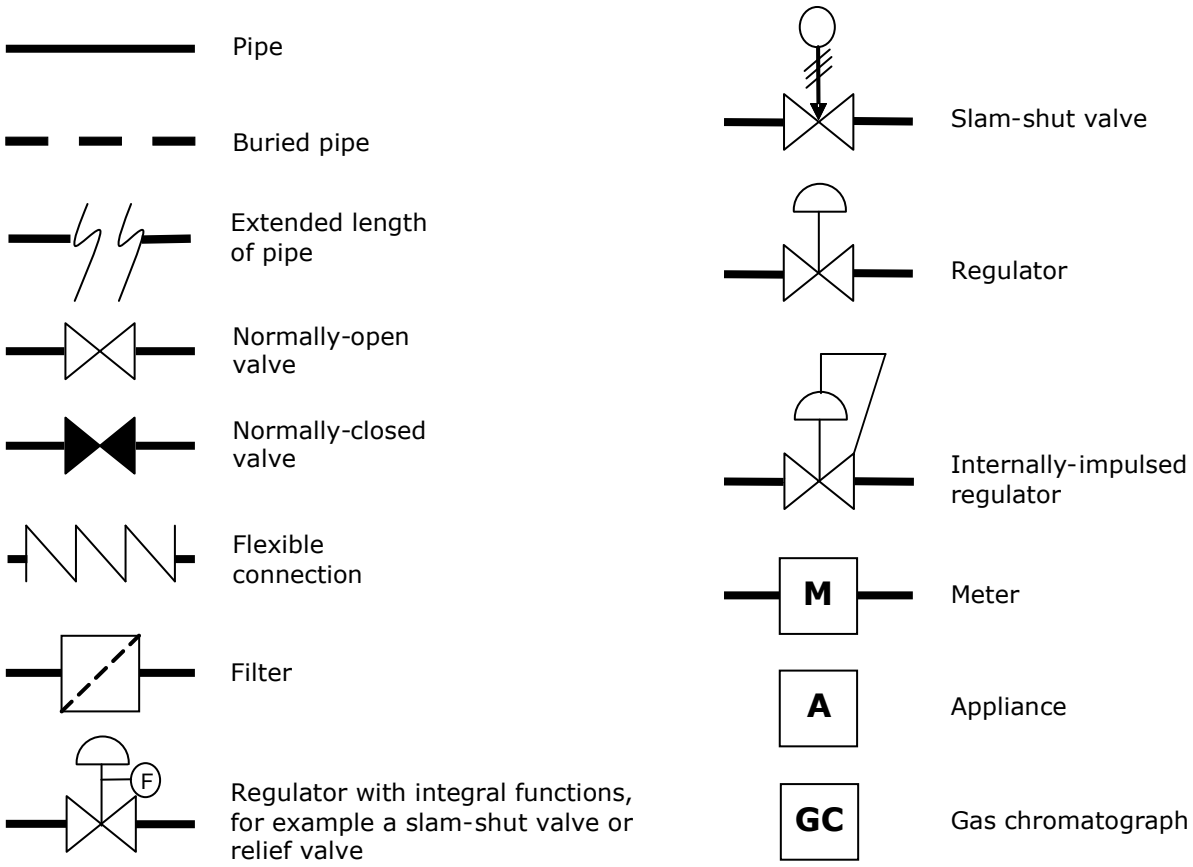
Functional Standards:

- network to IGEM/TD/3 or IGEM/TD/4
- meter installation to BS 6400-2
- installation pipework to BS 6891

Note: In many cases on old installations, the ECV and filter were jointed by lock-tight making it impracticable to separate them. In such cases, the ECV and filter will normally have been painted at the same time, in the same colour, with the joint painted. If the filter feels like it cannot be separated from the ECV, the filter may be considered to be part of the ECV and its outlet deemed to be the outlet of the ECV.

FIGURE 32 - STANDARD ARRANGEMENT 75 mbar <MOP ≤ 2 bar CAPACITY ≤ 6m^3 h^{-1}

APPENDIX 4 : LEGACY GAS SUPPLY ARRANGEMENTS



Colour Code for Figures 34 to 67:

- Pipeline which is on the Network
- Parts of a meter installation not on the Network
- Installation pipework
- Ancillary plant
- Installation pipework or pipeline which is on the Network

FIGURE 33 - KEY TO FIGURES 34 TO 67

A4.1 BACKGROUND

A4.1.1 The following examples are not a comprehensive list of legacy arrangements but are intended to illustrate a number of arrangements that are not consistent with standard gas supply arrangements but where the network, primary meter installation and installation pipework interfaces need to be defined.

A4.1.2 The line diagrams indicate the boundary between the Network, primary meter installation and installation pipework. They do not identify the demarcation between the GT/gas conveyor(s), the MAM and the owner of the installation pipework, but these will need to be identified in practice. This document is not intended to suggest such demarcation.

Note 1: The line diagrams do not show all aspects of the system; simply the major components. Components such as creep relief valves, top hat strainers, purge and vent points, pre-heating, etc., are not shown.

Note 2: All references to 'Meter Installation' in the figures will be taken to mean 'Primary Meter Installations'. Where other types of meters are shown e.g. Sub-deduct, secondary, etc, they have been annotated as appropriate

A4.1.3 On many legacy arrangement low pressure installations (and some standard arrangement installations), two prefabricated lead connections were fitted on the inlet and outlet of the primary meter installation. In accordance with CP 331 Part 2, the outlet connection was part of the primary meter installation.

In 1985, BS 6400 superseded CP 331 Part 2 and was then revised in 2006 to include requirements that lead components be removed from within primary meter installations as part of 'pre-installation and safety precautions'. This same requirement was stated for when 'carrying out work' on primary meter installations.

BS 6891, published in 2005, covering installation pipework, in Commentary and Recommendation (C & R), allows connection to be made to a prefabricated outlet lead connection but only if this lead component is in good condition, sound, well supported and is of adequate size. Furthermore, BS 6891 states in C & R that the connection may be made to steel or copper pipework using appropriate fittings.

Where there is a standalone lead connection on the outlet of the primary meter installation it is defined as part of the primary meter installation (see figure 59) and as such under MAMCoP if the primary meter installation is being replaced, this lead connection is to be replaced as part of it.

A4.2 RULES THAT DEFINE PRIMARY METER INSTALLATIONS IN LEGACY INSTALLATION

A4.2.1 Primary Meter Installation — The primary meter installation includes the meter and any associated gas meter volume conversion system, together with all associated valves, filters, pressure regulator**, flexible connections, meter bypass (where fitted), interconnecting pipe work, fittings and all necessary supports (But does not include any data logging equipment, calorimeter or pigging equipment).

A4.2.2 A primary meter installation commences at:-

- the outlet of the 1st common above ground valve* through which all the gas entering the primary meter installation will pass or in the absence of such a valve:
  - the outlet of the first common above ground flanged joint, or
  - the outlet of the first above ground valves where there is no common above ground flange, or

- the outlet of a buried ECV (where it satisfies the rules for an ECV and is only separated from the installation by a short length of buried pipework for access) and which is upstream of the first Meter Regulator/Pressure Reducing Installation (PRI) ** (including any filtration), or,

- in the case of meters upstream of the pressure regulators, (or of unregulated supplies), the outlet of the 1st common above ground valve* through which all the gas entering the primary meter installation will pass or in the absence of such a valve:
  - the outlet of the first common above ground flanged joint, or
  - the outlet of the first above ground valves where there is no common above ground flange, or
  - the outlet of a buried ECV (where it satisfies rules for an ECV and is separated from the installation by a short length of buried pipework for access) and which is upstream of the primary installation filters.

Note 1: Which is not an integral component of a prefabricated metering module. This valve may not (especially on above 75mbar installations) be the emergency control valve, in which case the consumer does not require access to it.

Note 2: Devices located in close proximity to the meter which are solely to control pressure of the gas within the measuring instrument and/or installation outlet pipe work and are not separated from measurement devices by buried pipework, except short lengths specifically included in the installation design for access purposes.

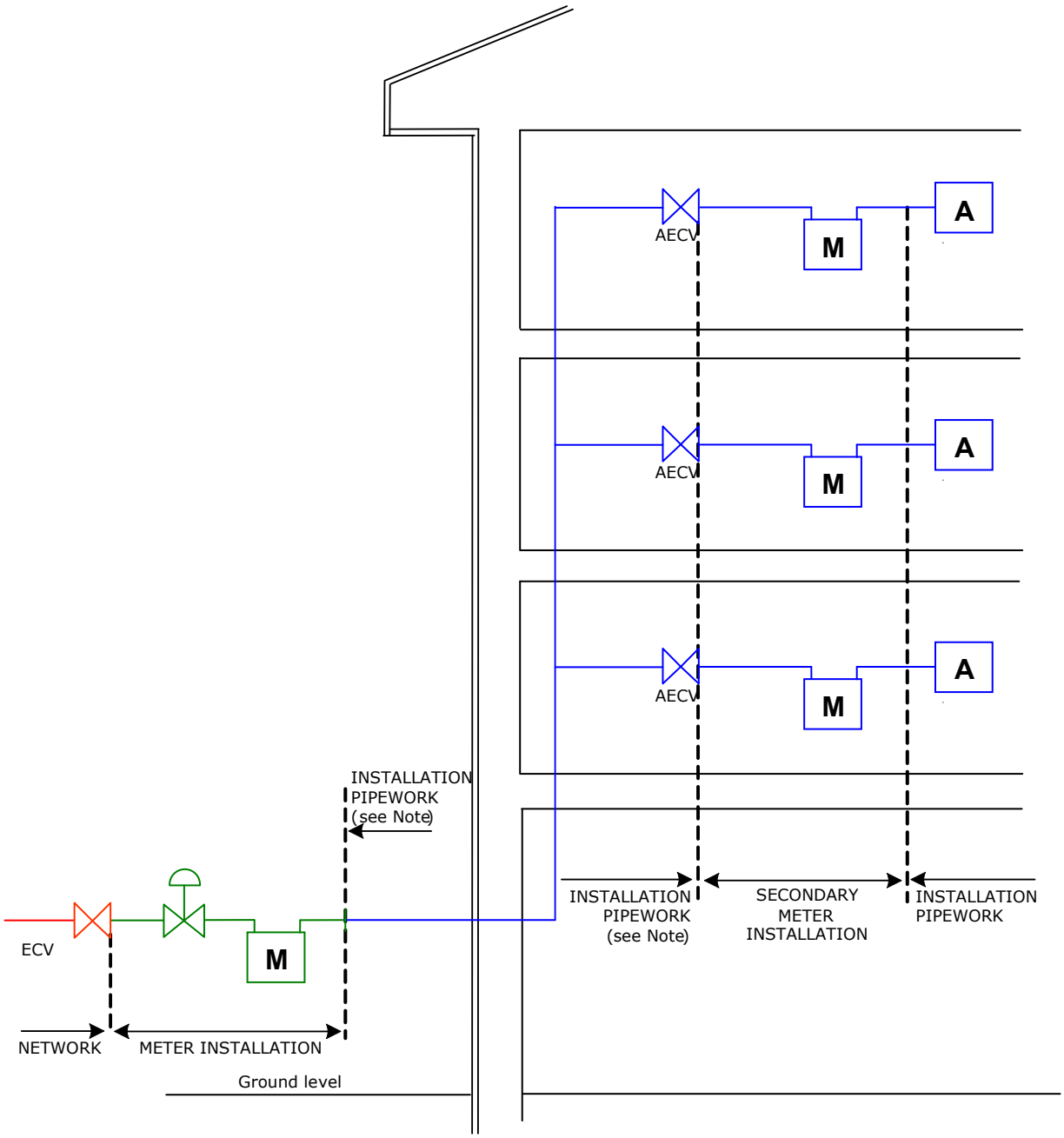
A4.2.3 A primary meter installation terminates at either:-

- the outlet connection of the meter (if a meter outlet liner with a soldered outlet connection is fitted) or,
- the outlet connection of the meter outlet adapter (where fitted); or
- the outlet connection of any additional flexible included on the outlet of the primary meter installation, or
- in the case of semi-concealed domestic meters, the outlet of the meter box outlet adapter (Where fitted); or
- the outlet of the meter outlet valve (where fitted); or,
- the outlet of the tee fitted downstream of the meter where a meter bypass re-joins the pipe work on the outlet of the meter (where fitted); or,
- in the case of meters upstream of pressure regulators, either
  - the outlet of the regulator outlet valve, or
  - where a twin stream regulator installation is installed the outlet of the tee where the two streams join, or
- if provided the outlet of the meter installation outlet valve, whichever is appropriate for the installation.

A4.2.4 In some cases historically, a single primary meter installation PRI has been used to feed multiple meters which measure gas to separate downstream systems, which may or may not be owned/operated by the same consumer. Typically, these installations consist of a large medium/intermediate pressure installation, with one or more smaller "Parasite" installations which branch off between the PRI and the main meter. In most cases, these legacy installations have been issued with separate MPRNs. In these installations, the designation of the ECV, thereby determining the end of the Network, is complicated, as is the pressure management within the installations, which makes exchanging them individually difficult. The large primary meter installation is, however, defined as commencing at the first above ground valve or flange.

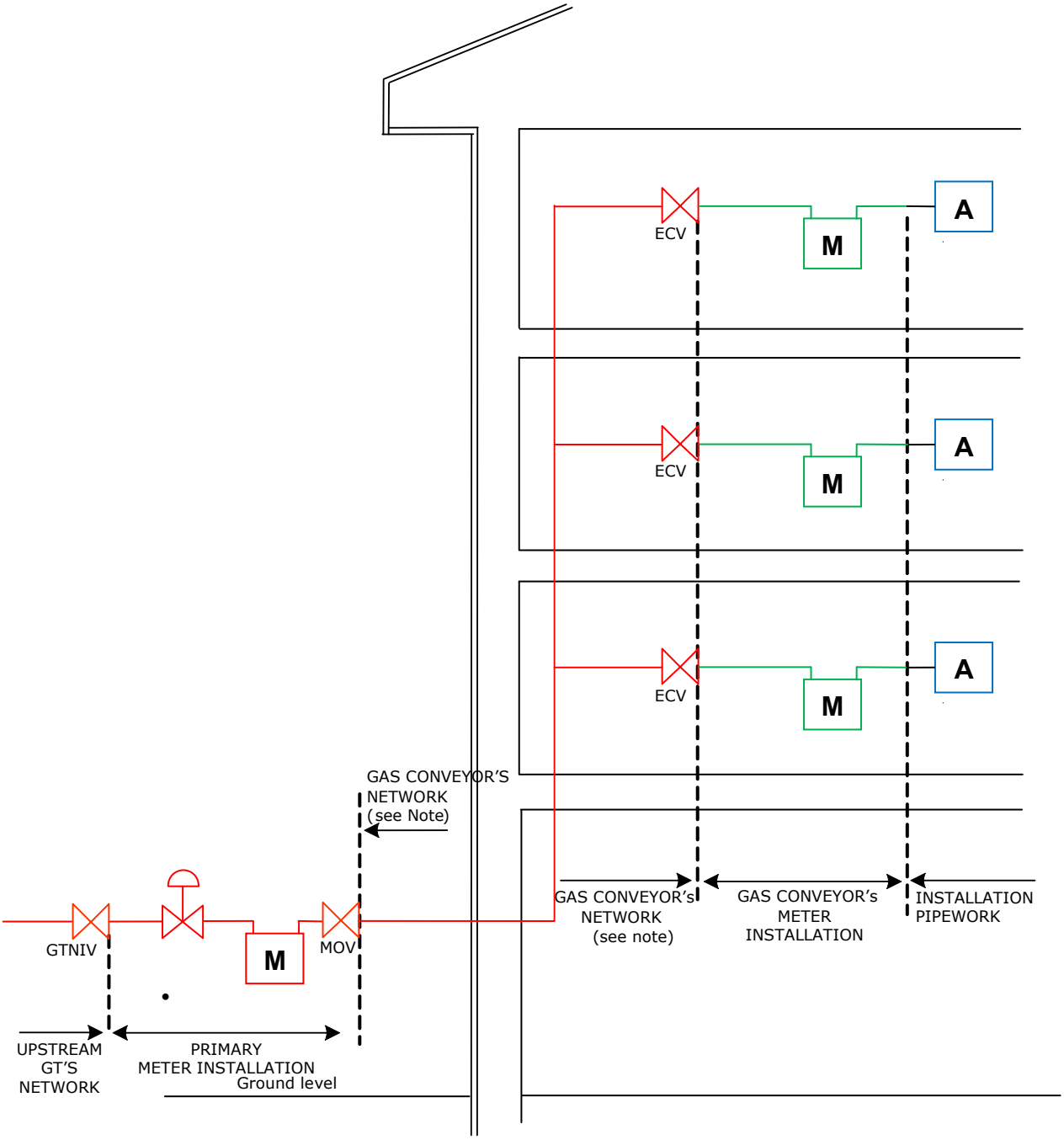
Note 1: This is not referring to sub-deduct arrangements or secondary meter installations.

Note 2: Where as a result of the removal of meters/meter installations, a pressure regulator/PRI which was formally a Network PRI is left providing a sole feed to a single meter and is in close proximity to it and is only separated by above ground pipework, it can be considered to be part of the meter installation.



Note: *The ECV has to be accessible to ALL premises occupiers. Where this is not achievable or there are any other aspects of the ECV that do not comply with relevant legislation and standards, this arrangement is not appropriate and designs such as given in Figure 5 and Figure 6 will need to be considered, see clauses 3.2.2 and 3.2.3, and Figure 35, and the valves renominated accordingly.*

FIGURE 34 - LEGACY ARRANGEMENT REMOTE BULK METER AECVs AND SECONDARY METERS WITHIN INDIVIDUAL DWELLINGS



Note 1: *Acceptable for new installations provided all the conditions of Clause 6.3.1 are required to be met, including the requirement for both the MAM and the downstream conveyor to be in possession of Safety Cases which have been accepted by the HSE. It is essential that agreement of the MAM is obtained.*

Note 2: *In the context of this arrangement GTNIV denotes the last valve on the GT's network immediately upstream of the primary meter installation and is* ***not the ECV***

FIGURE 35 - LEGACY ARRANGEMENT TYPICAL REMOTE BULK METER ECVs AND GAS CONVEYOR'S METERS WITHIN INDIVIDUAL DWELLINGS

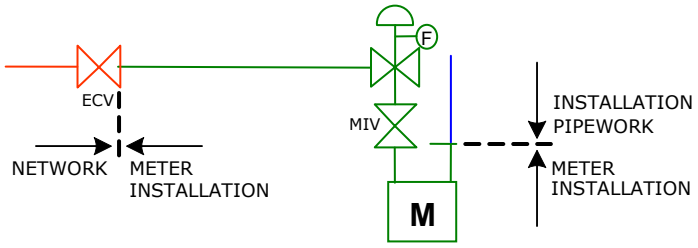


FIGURE 36 - LEGACY ARRANGEMENT 2 bar < SUPPLY MOP ≤ 7 bar CAPACITY ≤ 6 $m^3 h^{-1}$ (see also Figure 37)

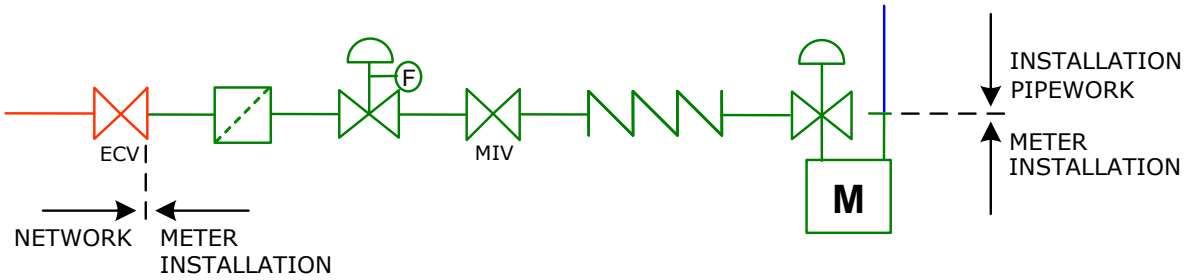
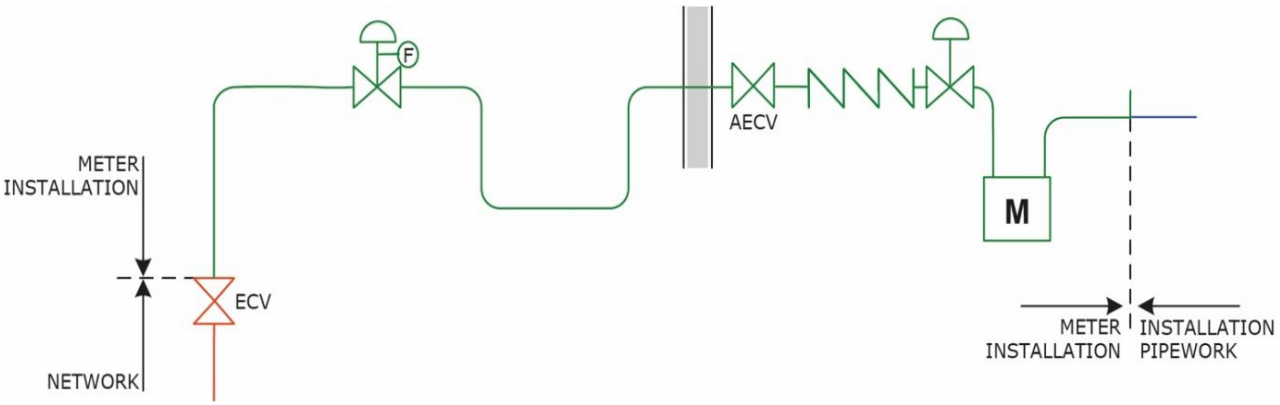


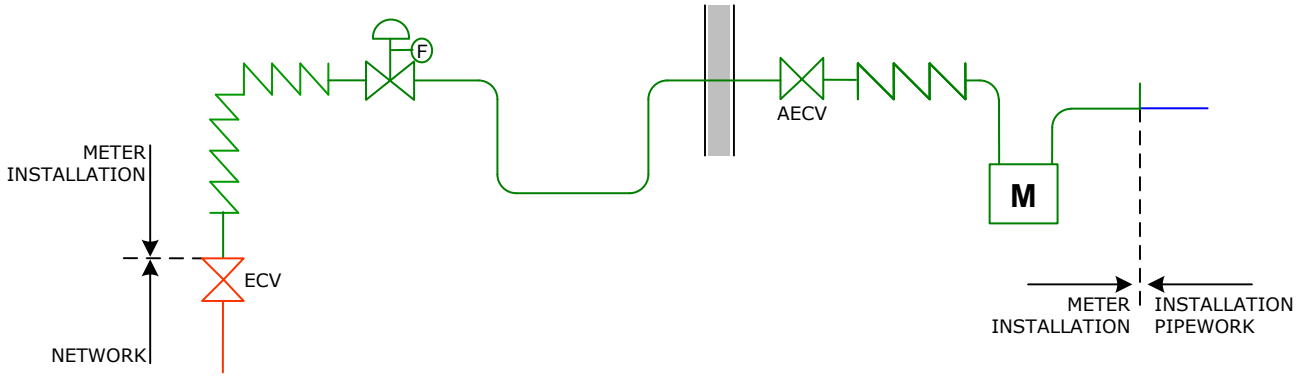
FIGURE 37 - LEGACY ARRANGEMENT 2 bar < SUPPLY MOP ≤ 7 bar CAPACITY ≤ 6 $m^3 h^{-1}$ (see also Figure 36)



Note 1: The most common situation which results in this layout is where an ETM meter has been relocated into the property to aid accessibility for a person of limited mobility.

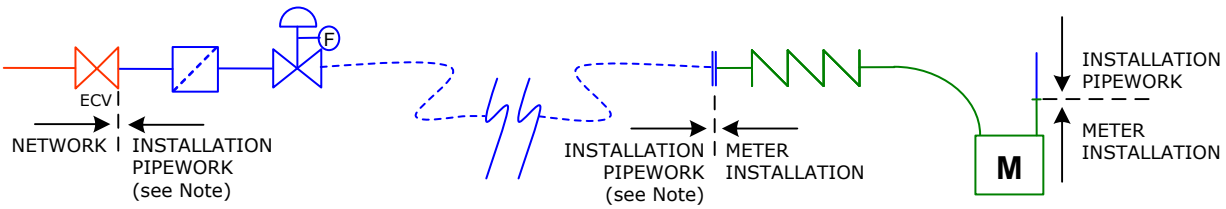
Note 2: A Flex may be present at the ECV outlet.

FIGURE 38 - LEGACY ARRANGEMENT 2 bar < SUPPLY MOP ≤ 7 bar METER RE-POSITIONED INSIDE THE PREMISES CAPACITY ≤ 6 $m^3 h^{-1}$



Note: Inlet to regulator may be rigid or flexible connection.

FIGURE 39 - LEGACY ARRANGEMENT 2 bar < SUPPLY MOP ≤ 7 bar METER RE-POSITIONED INSIDE THE PREMISES CAPACITY ≤ 6 $m^3 h^{-1}$

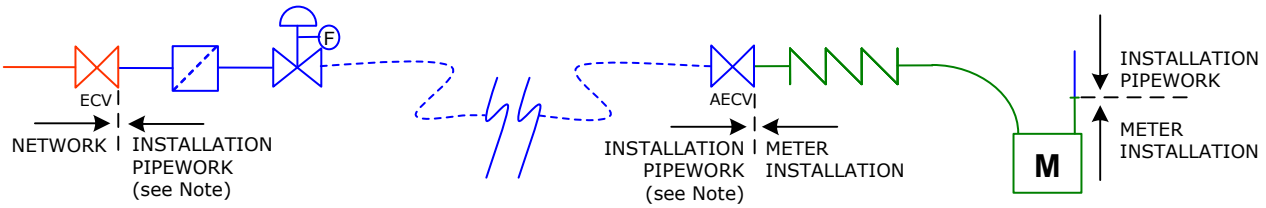


Note 1: For installation pipework between the ECV and the inlet of the meter installation, refer to Sub-Section 6.4 and A4.1.2 regarding ownership and responsibilities for the plant and pipework.

Note 2: Procedures are required to be put in place to ensure that, following any change of MAM, the entire installation, including all pipework and equipment downstream of the ECV is appropriately managed.

Note 3 It is imperative that the valve shown as the ECV satisfies all requirements within definition shown in clause 4.1.3 and Sub-Section 3.2, including those for accessibility by the occupiers of the premises.

FIGURE 40 - LEGACY ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 7 bar REMOTE REGULATOR

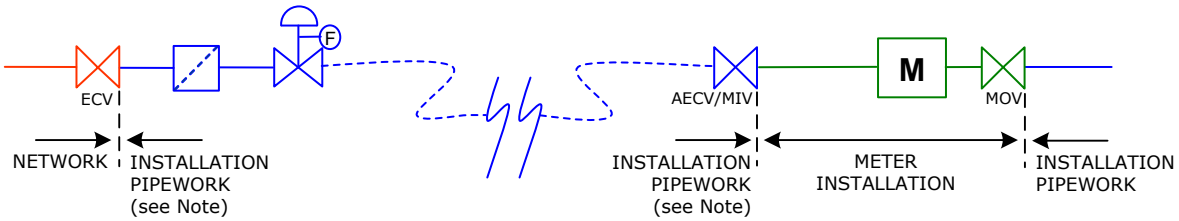


Note 1: For installation pipework between the ECV and the inlet of the meter installation, refer to Sub-Section 6.4 and A4.1.2 regarding ownership and responsibilities for the plant and pipework.

Note 2: Procedures are required to be put in place to ensure that, following any change of MAM, the entire installation, including all pipework and equipment downstream of the ECV is appropriately managed.

Note 3: It is imperative that the valve shown as the ECV satisfies all requirements within definition shown in clause 4.1.3 and Sub-Section 3.2, including those for accessibility by the occupiers of the premises. If this is not practicable the AECV could be re-designated as the ECV. In this case the organisation responsible for the pipework between the original ECV and the re-designated ECV is required to meet the requirements of GSMR and have an appropriate safety case accepted by the HSE..

FIGURE 41 - LEGACY ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 7 bar REMOTE REGULATOR AND AECV



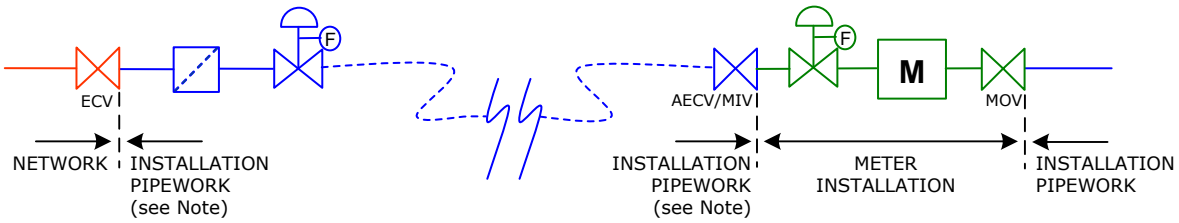
Note 1: For installation pipework between the ECV and the inlet of the meter installation, refer to Sub-Section 6.4 and A4.1.2 regarding ownership and responsibilities for the plant and pipework.

Note 2: Procedures are required to be put in place to ensure that, following any change of MAM, the entire installation, including all pipework and equipment downstream of the ECV is appropriately managed.

Note 3: It is imperative that the valve shown as the ECV satisfies all requirements within definition shown in clause 4.1.3 and Sub-Section 3.2, including those for accessibility by the occupiers of the premises. If this is not practicable the AECV could be re-designated as the ECV. In this case the organisation responsible for the pipework between the original ECV and the re-designated ECV is required to meet the requirements of GSMR and have an appropriate safety case accepted by the HSE.

Note 4: Meter outlet valve may or may not be present for smaller installations.

FIGURE 42 - LEGACY ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 7 bar REMOTE REGULATOR AND AECV



Note 1: *For installation pipework between the ECV and the inlet of the meter installation, refer to Sub-Section 6.4 and A4.1.2 regarding ownership and responsibilities for the plant and pipework.*

Note 2: *Procedures are required to be put in place to ensure that, following any change of MAM, the entire installation, including all pipework and equipment downstream of the ECV is appropriately managed.*

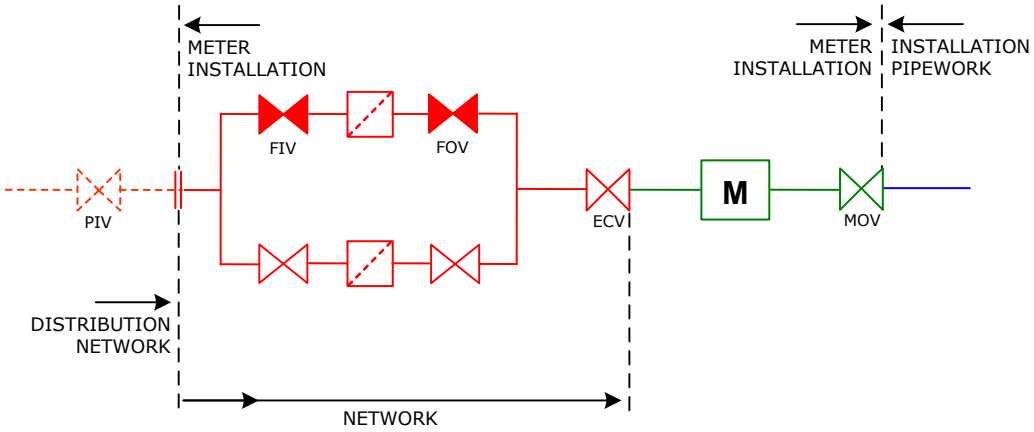
Note 3: *It is imperative that the valve shown as the ECV satisfies all requirements within definition shown in clause 4.1.3 and Sub-Section 3.2, including those for accessibility by the occupiers of the premises. If this is not practicable the AECV could be re-designated as the ECV. In this case the organisation responsible for the pipework between the original ECV and the re-designated ECV is required to meet the requirements of GSMR and have an appropriate safety case accepted by the HSE.*

Note 4: *Meter outlet valve may or may not be present for smaller installations.*

FIGURE 43 - LEGACY ARRANGEMENT 75 mbar ≤ SUPPLY MOP ≤ 7 bar REMOTE REGULATOR, AECV AND LOCAL LOW PRESSURE REGULATOR

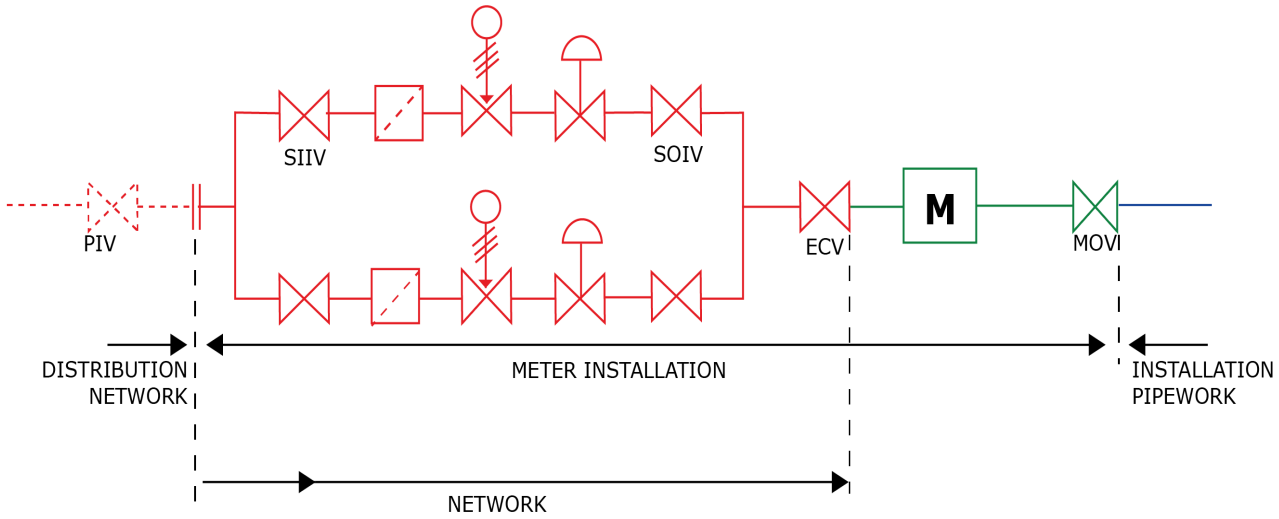
FIGURE 44 - LEGACY ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 7 bar REMOTE SERVICE REGULATOR AND NO METER REGULATOR CAPACITY > 6 $m^3 h^{-1}$

Note: *If this meter installation is exchanged, a new meter regulator will usually be required as part of the meter installation, and the owner of the service regulator may need to increase its set point to allow for the new meter regulator.*



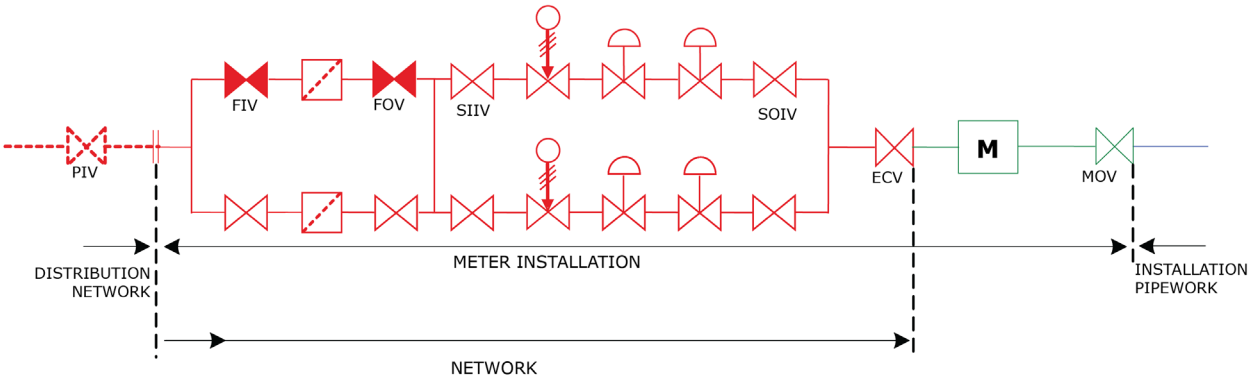
Note: As the Network extends to include part of the meter installation, it is a requirement that the MAM holds a GSMR safety case (see Sub-Section 6.3).

FIGURE 45 - LEGACY ARRANGEMENT ANY SUPPLY MOP UNREGULATED WITH TWIN STREAM FILTER SET CAPACITY > 6 $m^3 h^{-1}$



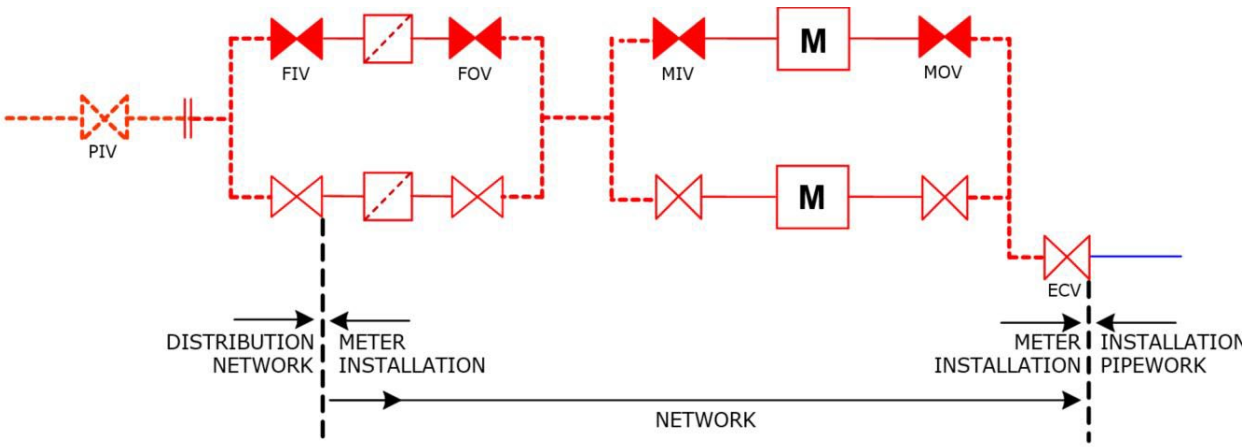
Note: As the Network extends to include part of the meter installation, it is a requirement that the MAM holds a GSMR safety case (see Sub-Section 6.3).

FIGURE 46 - LEGACY ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 2 bar TWIN STREAM RD OR TURBINE METER CAPACITY > 6 $m^3 h^{-1}$



Note: As the Network extends to include part of the meter installation, it is a requirement that the MAM holds a GSMR safety case (see Sub-Section 6.3).

FIGURE 47 - LEGACY ARRANGEMENT 2 bar ≤ SUPPLY MOP ≤ 100 bar TWIN STREAM WITH SEPARATE FILTER SET RD, TURBINE OR ULTRASONIC METER CAPACITY > 6 $m^3 h^{-1}$



Note: As the Network extends to include part of the meter installation, it is a requirement that the MAM holds a GSMR safety case (see Sub-Section 6.3).

FIGURE 48 - LEGACY ARRANGEMENT ABOVE AND BELOW GROUND PIPEWORK CAPACITY > 6m^3h^{-1}

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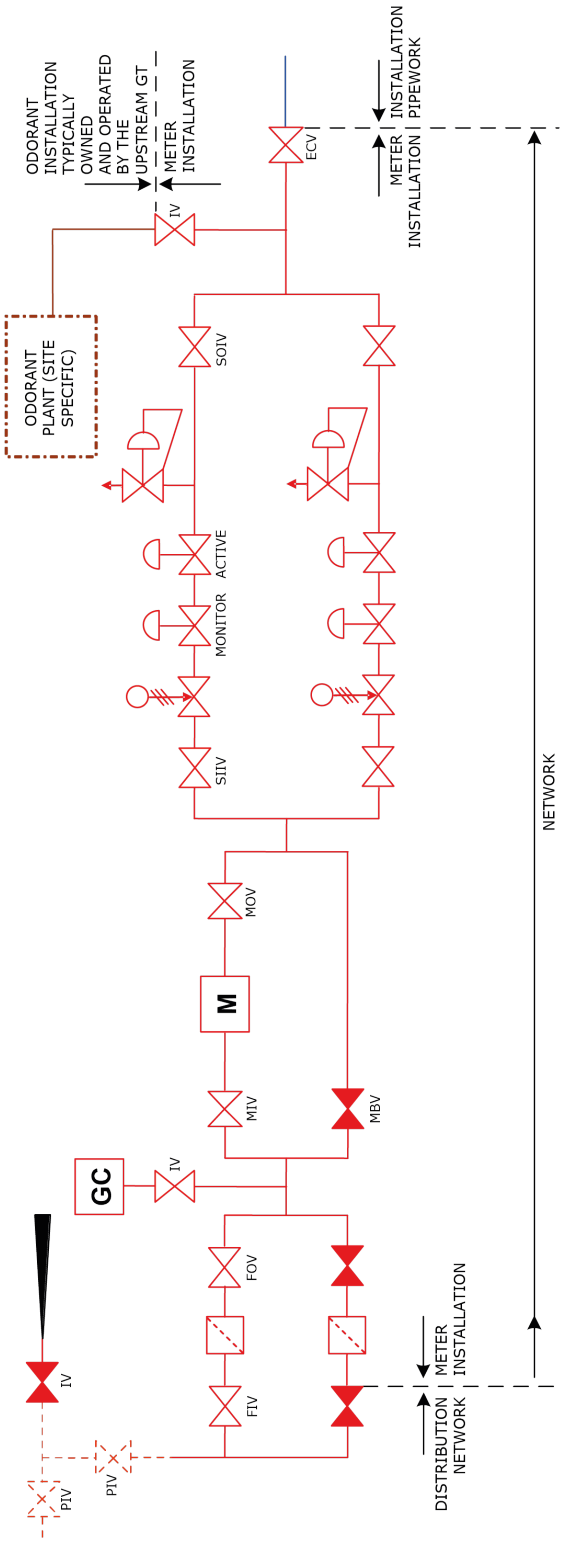


Note: As the Network extends to include part of the meter installation, it is a requirement that the MAM holds a GSMR safety case (see Sub-Section 6.3).

FIGURE 49 - LEGACY ARRANGEMENT TYPICAL HIGH PRESSURE PRIMARY METER INSTALLATION

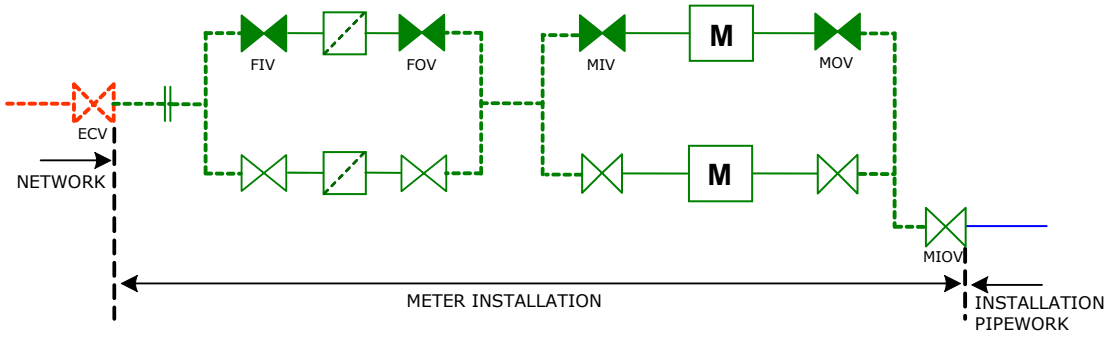
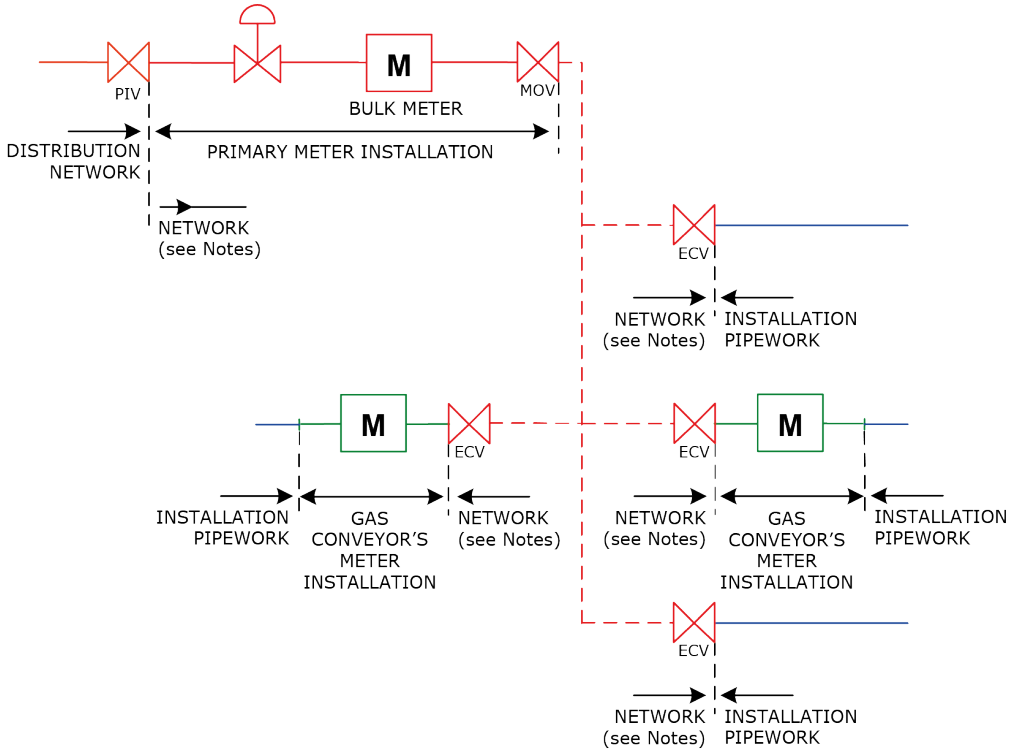


FIGURE 50 - LEGACY ARRANGEMENT TYPICAL PRIMARY METER INSTALLATION INCORPORATING ABOVE AND BELOW GROUND PIPEWORK CAPACITY >6 m^3h^{-1}



Note 1: Acceptable for new installations provided all the conditions of clause 6.3.1 are met, including the requirement for both the MAM and the downstream conveyor to be in possession of Safety Cases which have been accepted by the HSE. It is essential that agreement of the MAM is obtained.

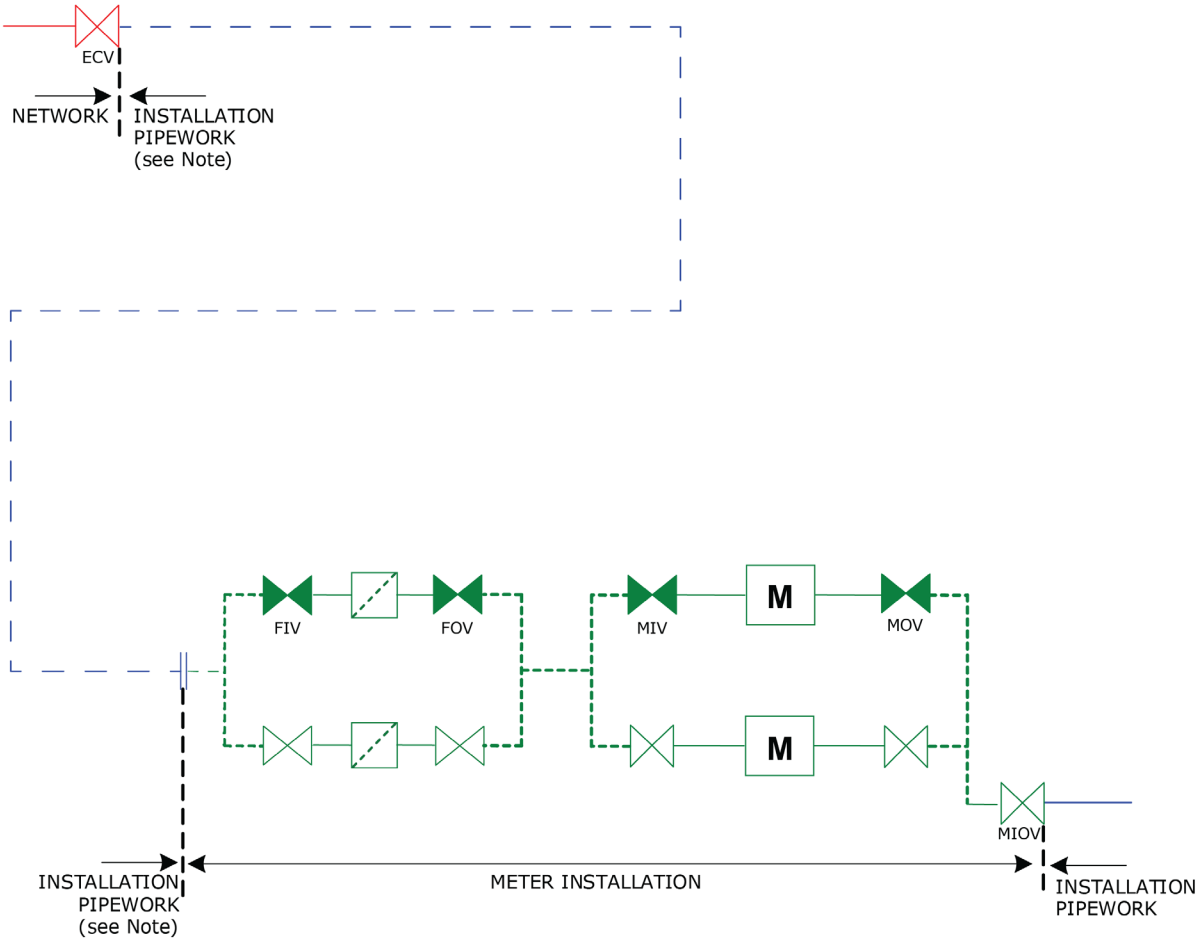
Note 2: Typical examples include a housing estate under control of a local authority or Housing Trust or a business park site under the control of a single undertaking e.g. Ministry of Defence, University etc. where buildings are let to the individual building occupiers (consumers of gas) and access is not provided to the building occupiers to the valve at the meter (marked PIV), to use to shut off the supply of gas in an emergency.

Note 3: The estate may have developed from a site where all buildings were occupied by the site owner. If the site owner continues to be a consumer of gas, they are required to consult with the upstream GT and MAM to avoid creation of a sub-deduct arrangement.

Note 4: GS(M)R and PSR apply to all ECVs; GS(I&U)R only applies downstream of the ECVs.

Note 5: All gas conveyor's meters downstream of the Primary (Bulk) Meter Installation will normally have meter regulators installed upstream of the meter.

FIGURE 51 - LEGACY ARRANGEMENT A GAS CONVEYOR'S NETWORK DOWNSTREAM OF A GT's NETWORK



Note: *For installation pipework between the ECV and the inlet of the meter installation, refer to Sub-Section 6.4 and A4.1.2 regarding ownership and responsibilities for the plant and pipework.*

FIGURE 52 - LEGACY ARRANGEMENT INSTALLATION WITH REMOTE ECV ABOVE AND BELOW GROUND PIPEWORK CAPACITY > 6 m^3h^{-1}

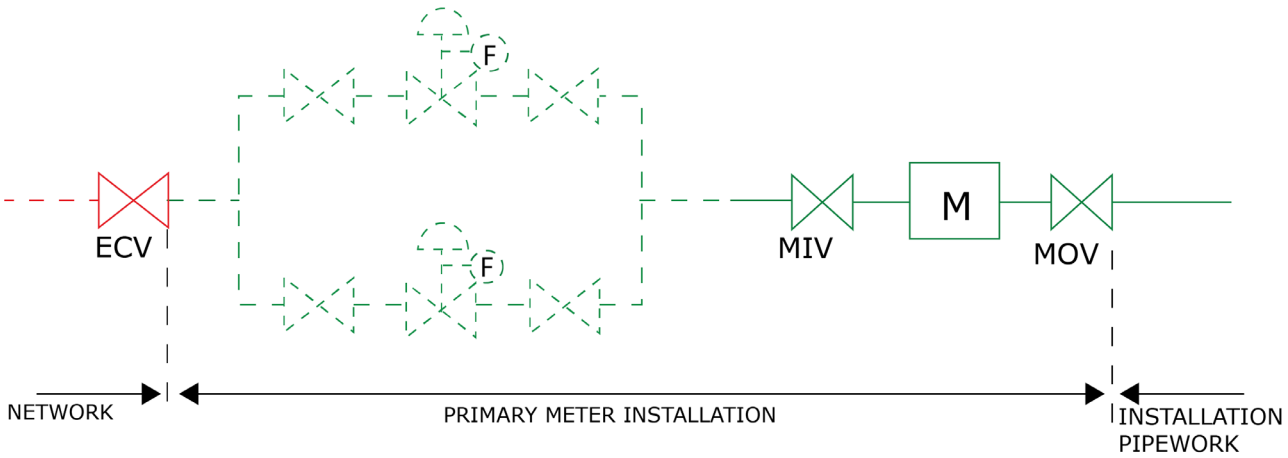
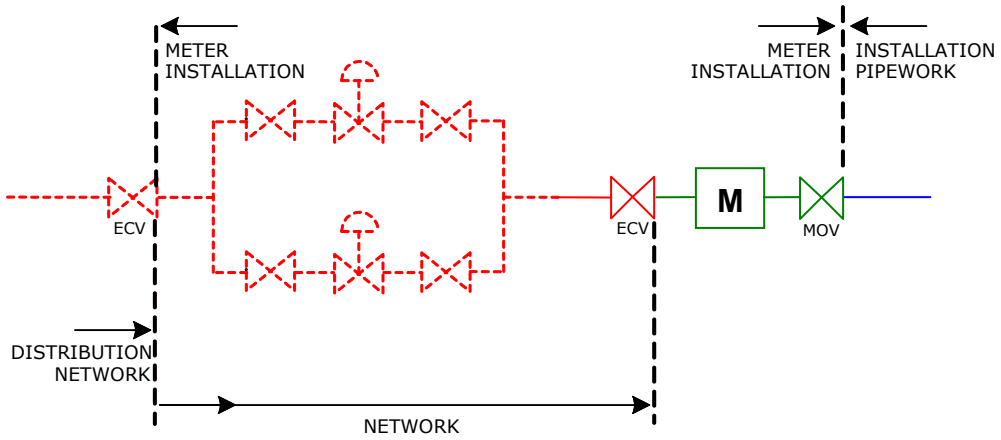
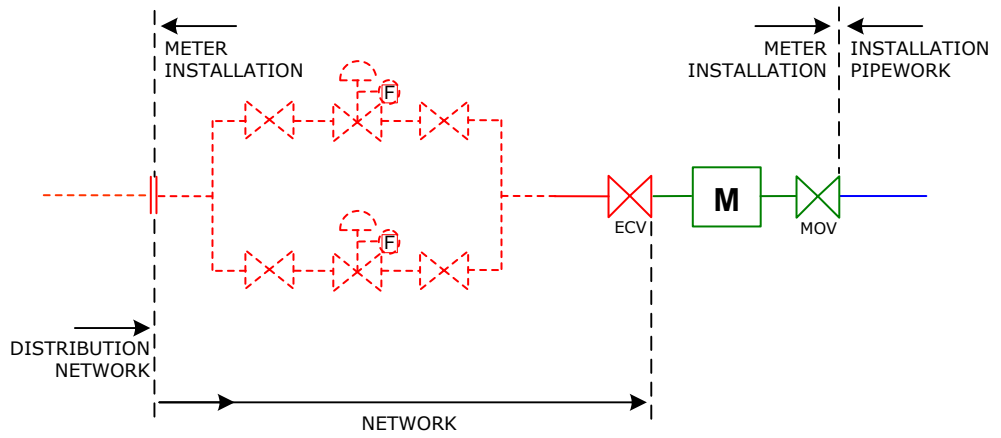


FIGURE 53 - LEGACY ARRANGEMENT SUPPLY MOP > 75 mbar TWIN STREAM UNDERGROUND REGULATOR SET WITH ONLY SHORT LENGTHS OF BURIED PIPEWORK



Note: As the network extends to include part of the meter installation, it is a requirement that the MAM holds a GSMR safety case (see Sub-Section 6.3).

FIGURE 54 - LEGACY ARRANGEMENT SUPPLY MOP_≤ 75 mbar TWIN STREAM UNDERGROUND REGULATOR SET WITH ONLY SHORT LENGTHS OF BURIED PIPEWORK



Note: As the Network extends to include part of the meter installation, it is a requirement that the MAM holds a GSMR safety case (see Sub-Section 6.3).

FIGURE 55 - LEGACY ARRANGEMENT SUPPLY MOP > 75 mbar TWIN STREAM UNDERGROUND REGULATOR SET WITH ONLY SHORT LENGTHS OF BURIED PIPEWORK

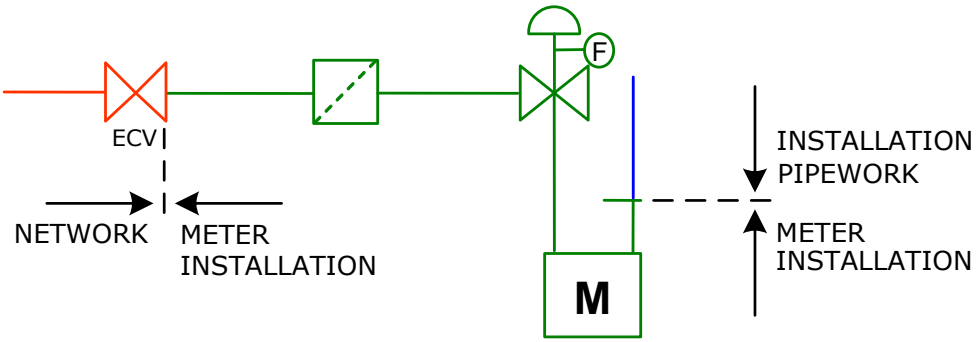
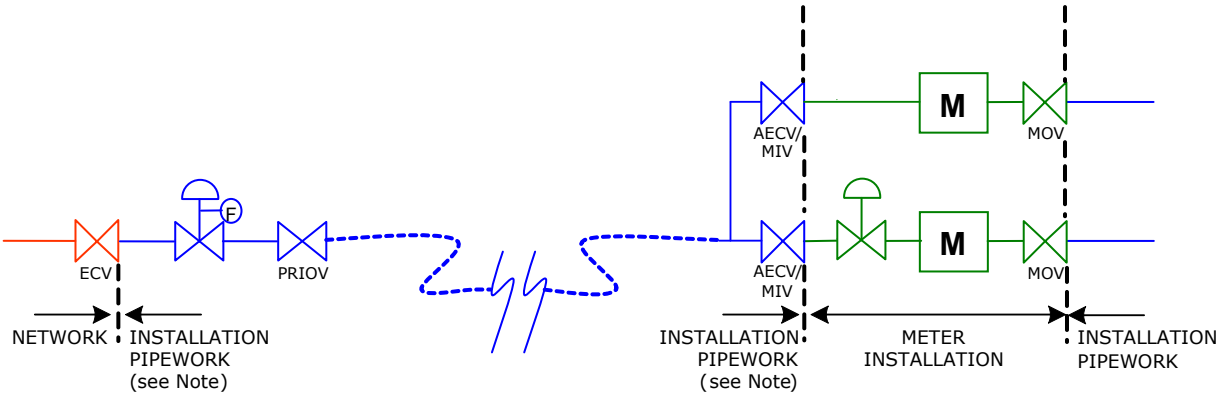


FIGURE 56 - LEGACY ARRANGEMENT 75mbar < SUPPLY MOP ≤ 7 bar INSTALLATION WITHOUT MIV CAPACITY ≤ 6 m^3 h^{-1}



Note 1: For installation pipework between the ECV and the inlet of the meter installation, refer to Sub-Section 6.4 and A4.1.2 regarding ownership and responsibilities for the plant and pipework.

Note 2: Procedures are required to be put in place to ensure that, following any change of MAM, the entire installation, including all pipework and equipment downstream of the ECV is appropriately managed.

Note 3: It is imperative that the valve shown as the ECV satisfies all requirements within definition shown in clause 4.1.3 and Sub-Section 3.2, including those for accessibility by the occupiers of the premises. If this is not practicable the AECV could be re-designated as the ECV. In this case the organisation responsible for the pipework between the original ECV and the re-designated ECV is required to meet the requirements of GSMR and have an appropriate safety case accepted by the HSE.

FIGURE 57 - LEGACY ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 7 bar REMOTE REGULATOR WITH ECV ON ITS INLET SUPPLYING MULTIPLE PRIMARY METER INSTALLATIONS

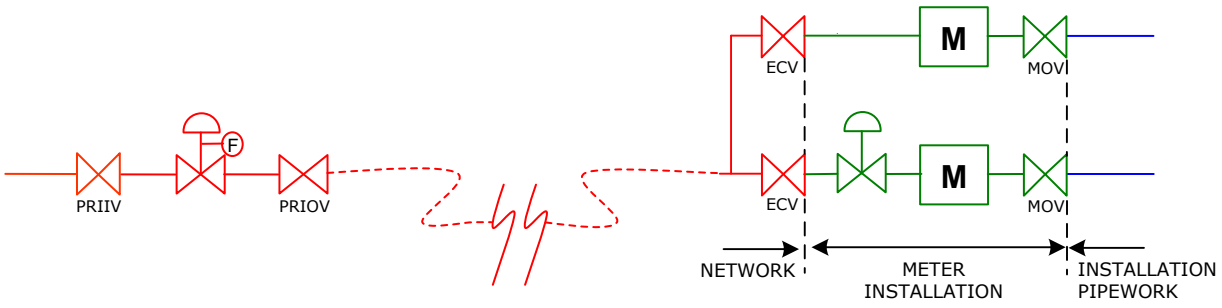
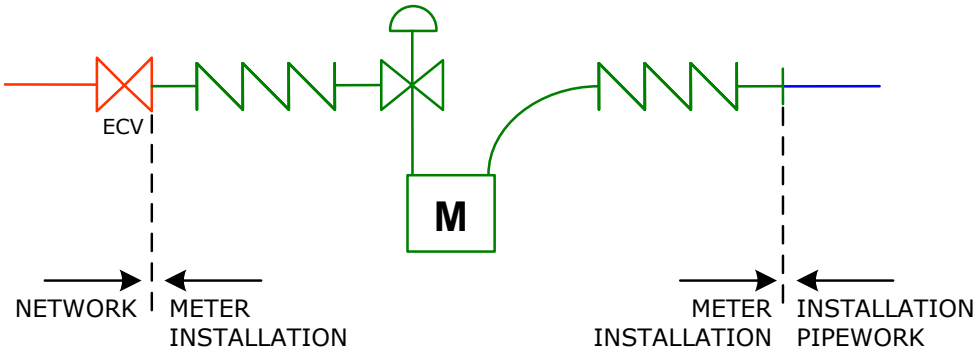


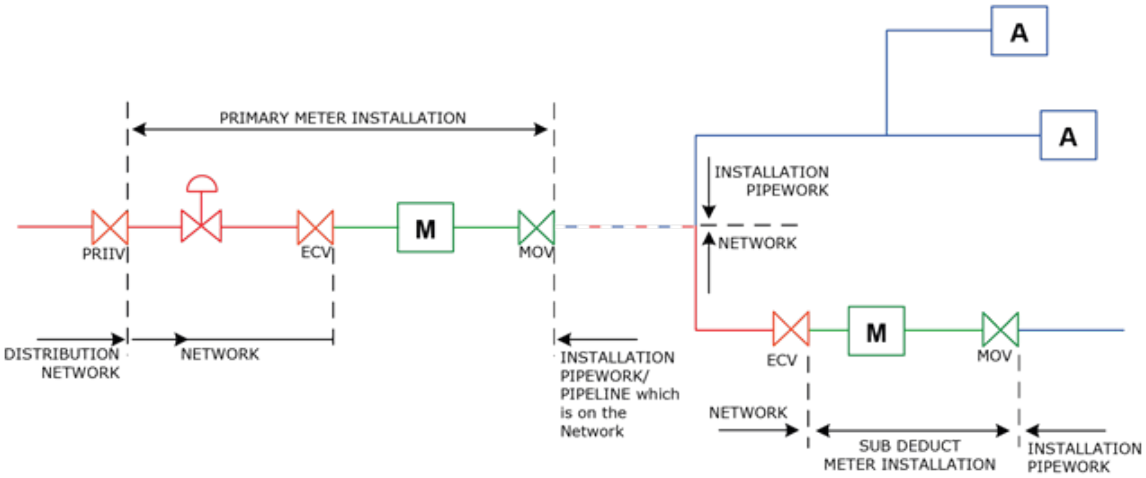
FIGURE 58 - LEGACY ARRANGEMENT 75 mbar < MOP ≤ 7 bar REMOTE REGULATOR SUPPLYING MULTIPLE PRIMARY METER INSTALLATIONS EACH WITH LOCAL ECV



Note 1: When replacing the meter installation, the outlet flexible will need to be removed.

Note 2: The flexible connections may be made out of lead.

FIGURE 59 - LEGACY ARRANGEMENT SUPPLY MOP ≤ 75 mbar CAPACITY ≤ 6 m³ h⁻¹ DOMESTIC DIAPHRAGM PRIMARY METER INSTALLATION INSTALLED WITH TWO FLEXIBLES



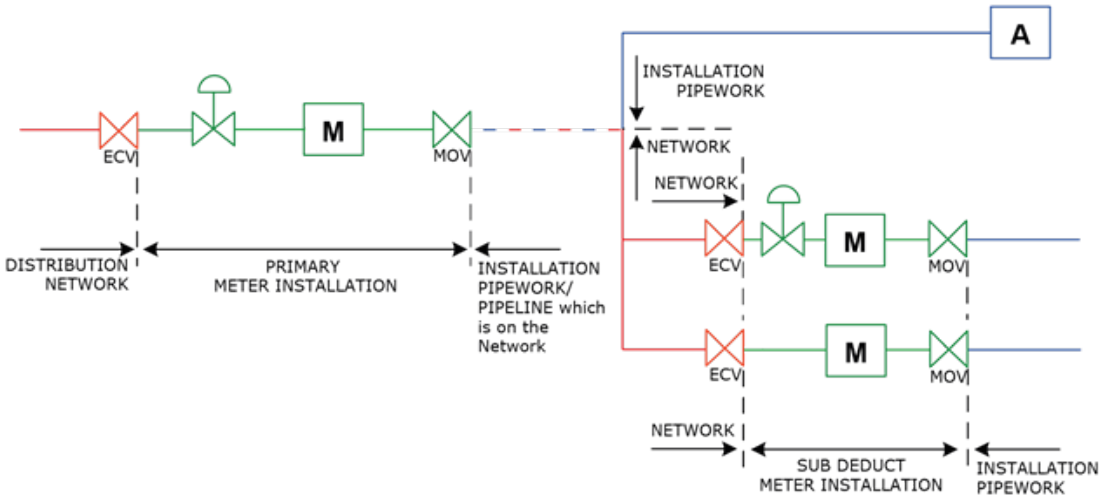
Note 1: The arrangement up to the MOV may also be applicable to Figure 61.

Note 2: For installation pipework/pipeline which is on the Network, refer to Sub-Section 6.4; the definition in Section 5 and A4.1.2 regarding ownership and responsibilities for the plant and pipework.

Note 3: This arrangement is no longer acceptable and is to be reported to the relevant GT (refer to clause 6.4.2).

Note 4: As the Network extends to include part of the meter installation, it is a requirement that the MAM holds a GSMR safety case (see Sub-Section 6.3).

FIGURE 60 - LEGACY ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 7 bar TYPICAL UNC SUB- DEDUCT ARRANGEMENT ECV LOCATED WITHIN THE PRIMARY METER INSTALLATION



Note 1: The arrangement up to the MOV may also be applicable to Figure 60.

Note 2: For installation pipework/pipeline which is on the Network, refer to Sub-Section 6.4; the definition in Section 5 and A4.1.2 regarding ownership and responsibilities for the plant and pipework.

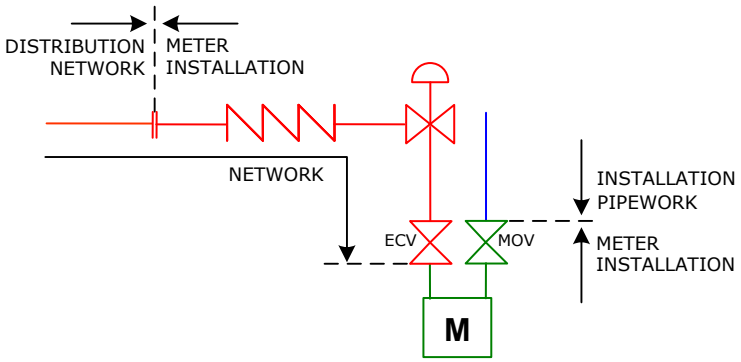
Note 3: This arrangement is no longer acceptable and is to be reported to relevant GT (refer to clause 6.4.2)

Note 4: Given the unsuitability of this type of arrangement, any incoming MAM is recommended to liaise with the GT and Consumer, to understand any possible future changes that may occur at the site.

Note 5: Although the upstream meter installation has an ECV on its inlet, the presence of downstream ECV's implies that the upstream meter installation is actually on the Network, as such it is a requirement that the MAM holds a GSMR safety case.

Note 6: It is imperative that the valve shown as the ECV satisfies all requirements within definition shown in clause 4.1.3 and Sub-Section 3.2, including those for accessibility by the occupiers of the premises.

FIGURE 61 - LEGACY ARRANGEMENT TYPICAL UNC SUB - DEDUCT ARRANGEMENT ECV ON INLET TO PRIMARY METER INSTALLATION



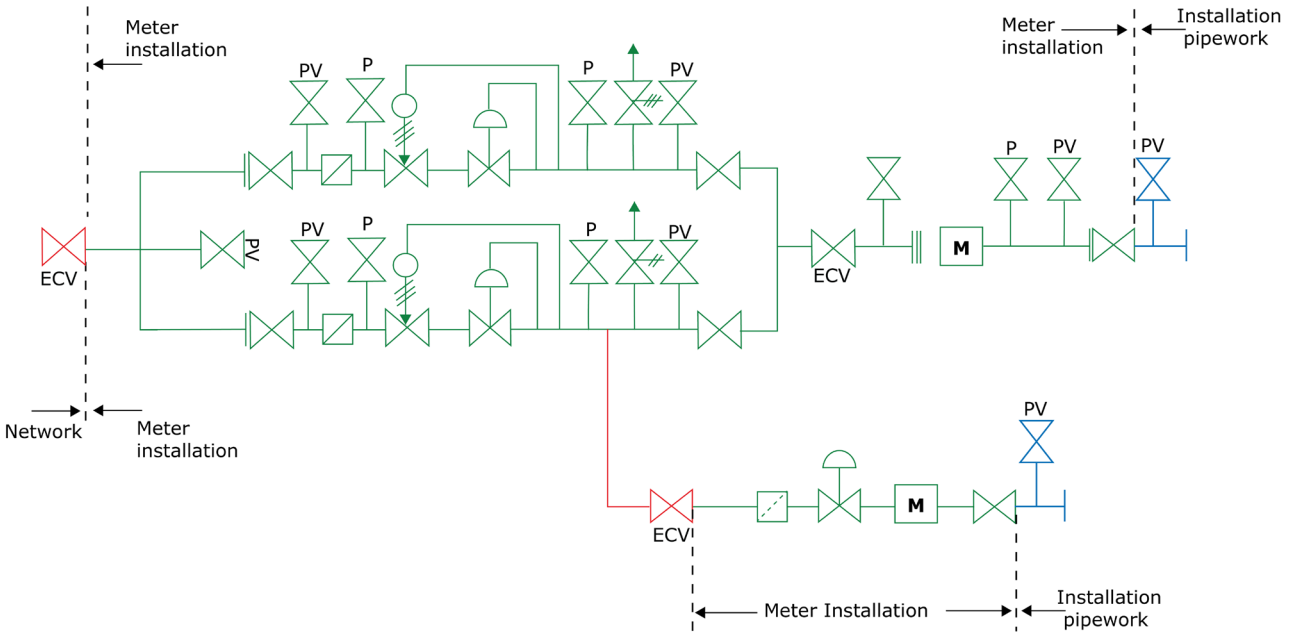
Note 1: As the Network extends to include part of the meter installation, it is a requirement that the MAM holds a GSMR safety case (see Sub-Section 6.3).

Note 2: Given the unsuitability of this type of arrangement, any incoming MAM is recommended to liaise with the GT and Consumer, to understand any possible future changes that may occur at the site.

Note 3: It is imperative that the valve shown as the ECV satisfies all requirements within definition shown in clause 4.1.3 and Sub-Section 3.2, including those for accessibility by the occupiers of the premises.

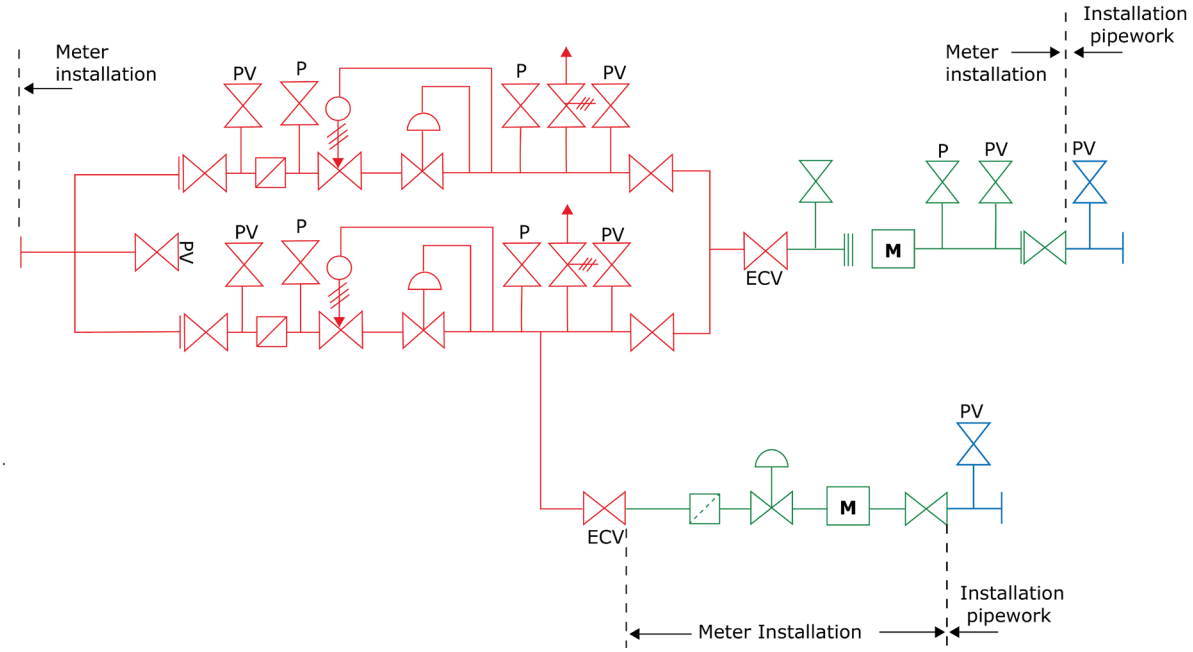
Note 4: This type of meter installation cannot be replaced by another MAM without the GT first upgrading their service pipe to terminate with an appropriate ECV.

FIGURE 62 - LEGACY ARRANGEMENT SUPPLY MOP ≤ 75 mbar ECV LOCATED DOWNSTREAM OF METER REGULATOR



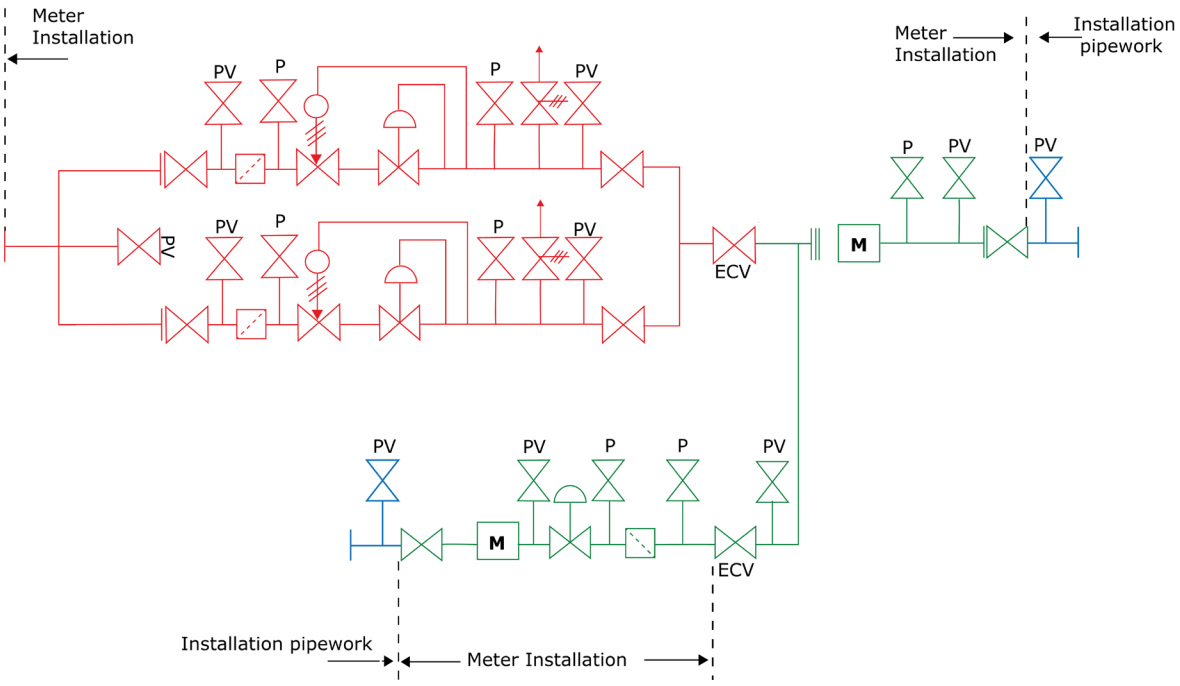
Note: Although the upstream meter installation has an ECV on its inlet, the presence of downstream ECV's implies that the upstream meter installation is actually on the Network, as such it is a requirement that the MAM holds a GSMR safety case.

FIGURE 63 - SMALL PRIMARY METER INSTALLATION CONNECTED TO LARGE PRIMARY METER INSTALLATION PRI STREAM OUTLET, LARGE PRIMARY METER INSTALLATION IS DOWNSTREAM OF AN ECV.



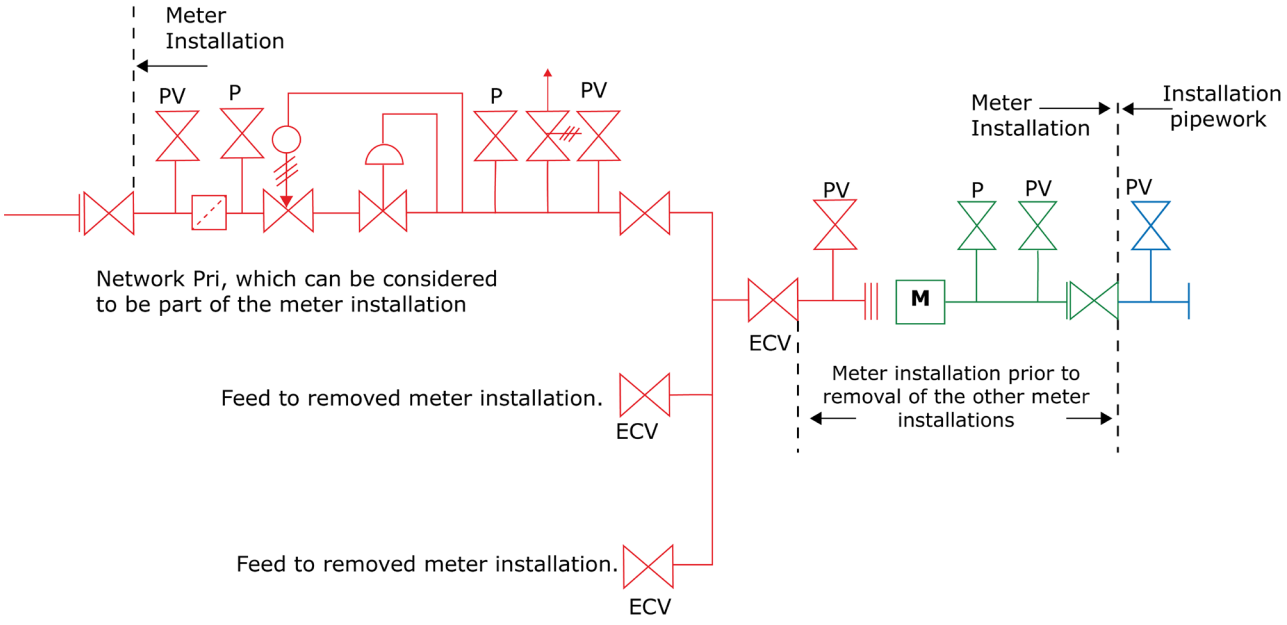
Note: As the Network extends to include part of the meter installation, it is a requirement that the MAM holds a GSMR safety case (see Sub-Section 6.3).

FIGURE 64 - SMALL PRIMARY METER INSTALLATION CONNECTED TO LARGE PRIMARY METER INSTALLATION PRI STREAM OUTLET, LARGE PRIMARY METER INSTALLATION HAS NO UPSTREAM SINGLE POINT OF ISOLATION, ECV ON METER INLET.



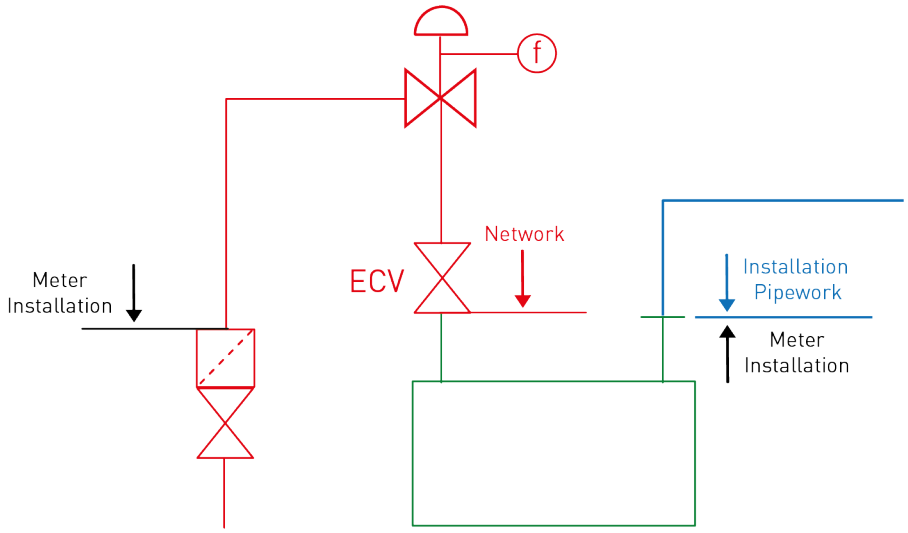
Note: As the Network extends to include part of the meter installation, it is a requirement that the MAM holds a GSMR safety case (see Sub-Section 6.3).

FIGURE 65 SMALL PRIMARY METER INSTALLATION CONNECTED TO LARGE PRIMARY METER INSTALLATION METER INLET SPOOL, DOWNSTREAM OF THE ECV



Note: Where as a result of the removal of meters/meter installations, a pressure regulator/PRI which was formally a Network PRI is left providing a sole feed to a single meter is in close proximity to it and is only separated by above ground pipework, it can be considered to be part of the meter installation.

FIGURE 66 EX NETWORK PRI NOW ONLY FEEDING ONE DOWNSTREAM METER IN A SINGLE KIOSK



Note 1: *As the Network extends to include part of the meter installation, it is a requirement that the MAM holds a GSMR safety case, see clause 6.3.*

Note 2: *In many cases on old installations the ECV and Filter were joined together by thread lock sealant, and it is impractical to separate them. In such cases the ECV and Filter will normally have been painted at the same time, in the same colour, with the joint painted. If the filter feels like it cannot be separated from the ECV, the filter may be considered to be part of the ECV and its outlet deemed to be the outlet of the ECV.*

FIGURE 67 - LEGACY ARRANGEMENT 75 mbar < SUPPLY MOP ≤ 2 bar CAPACITY ≤ 6 m^3 h^{-1}

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