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## PROPERTY INSURANCE COMMITTEE

### Prevention Specifications

# CEA Rules for the approval of Installers of Fire Fighting Systems in accordance with CEA 4046

*CEA 4047: September 2005 (en)*

## **Preface**

The transition period is xxx (to be defined by the certification bodies).

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# 1 Scope of application

## 1.1 General

General requirements are specified in the CEA 4046 – Base requirements for Installers of Fire Fighting Systems. The present document contains the approval procedures to check that these base requirements are met.

*Note: references in the text refer to the corresponding sections of CEA 4046 - Base requirements for Installers of Fire Fighting Systems*

The approval body approves installers of fire fighting systems (FFS) upon application. Eligible for approval are installers, able to render the following services:

- a) Assessment of risk
- b) FFS configuration (design)
- b) FFS installation
- c) FFS commissioning and handing over to the client (including instruction)
- d) Issue of a declaration of conformity for the FFS
- e) Service/maintenance of the FFS.

It is the intention that the approval granted under this procedure should be applicable in all European countries (unless specifically limited by geographic region).

For electronic parts, control devices etc. the installer must be qualified in accordance with the rules for detection systems or co-operate with an approved installer for detection systems.

## 1.2 Type of installations

One approval can be granted for each of the following types of systems:

- a) Sprinkler systems
- b) Water spray systems
- c) Foam extinguishing systems
- d) CO<sub>2</sub>- fire fighting systems (low pressure systems)
- e) Gas-extinguishing systems (CO<sub>2</sub> high pressure systems, non-liquefied inert gases, halocarbons)

*Note: As far as the term "fire fighting system" is used hereunder without specifying the type of extinguishing system, the statements shall refer to the type of system for which the applicant has filed and/or has received approval as an installer.*

*If need be, this document shall also be valid for fire fighting systems which are not mentioned above.*

# 2 Definitions and abbreviations

### **Approval body:**

Independent body which approves installers of FFS (Note: an approval body may operate its own testing and inspection activities or oversee these activities carried out on its behalf by other bodies.)

**Applicant:** the company filing an application of approval as an installer of FFS.

**Approved FFS:** System meeting in all respects the CEA Rules for Fire Fighting Systems Design and Installation. This includes in particular the requirement of using exclusively approved components and systems.

**Installation:** Configuration (design), installation, commissioning/handling over and service/maintenance of fire fighting systems.

**Permanent establishment:** business location from which the installation (according to section 1.1) is performed. The business locations shall completely belong to the legal entity of the applicant.

**Branch office:** Permanent establishment of the installer which according to company law and organisation is linked to the plant of the installer (dependent on an approved and registered company)

**Trainee:** person under educational process

### 3 Normative references

These rules contain undated references to other rules and standards. The latest edition of the cross-referenced rule shall be applied.

- **EN 287** Qualification of welders; fusion welding
- series **EN ISO 9000** Quality Assurance Systems
- **ISO 2859** Acceptance sampling inspection based on the number of defective units or faults (inspection by attributes)
- **CEA 4046** – Base Requirements for the Approval of Installers of Fire Fighting Systems

### 4 Procedure of the approval

#### 4.1 Application

The application shall be filed in writing using a sample form like the example with the minimum required contents in Annex A. The form must be thoroughly completed.

The applicant shall attach the following documents:

- Certificate of registration of the permanent establishment in the official register
- Certificate of registration of the applicant's legal entity in the Trade/Companies Register (as applicable)
- Demonstration that the applicant is the owner of the approved FFS, or a registered dealer of the owner (according to section 5.8)
- Proof of credit worthiness e.g. by certificate of non-objection issued by the responsible local tax office, by bank reference from the applicant's house bank or by a published balance sheet.
- Detailed proof of training for the chief responsible specialist
- Proof of the qualification of the chief responsible specialist (see Section 5.1.3.1)
- Specimen copy of the service/maintenance contract for a FFS
- Proof of a certified Quality Assurance System (QA-System) according to series EN ISO 9000 for the permanent establishment. If there is no QA-System during the preliminary approval the company has to show evidence of continuing working on QA-System.  
*Note: Annex B contains the conditions for approval of QA certificates issued by third parties. The scope of the QA certificate shall cover the installation of FFSs.*
- Proof of an operations liability insurance taken out for a minimum insured amount of 1.5 million Euros per loss incident for covering life and property damage.

#### 4.2 Validity of the approval

The approval is given for a certain period of time.

In the beginning, preliminary approval will be given. Afterwards, the applicant can apply for full approval for a certain period of time. A revocation of approval is possible.

##### 4.2.1 Preliminary approval

Installers filing an application for approval for the first time can be approved on a preliminary basis for a period of 36 months (no extension is possible). The preliminary approval will be documented and become effective by a certificate. The date of this certificate is decisive for the beginning of the approval. After expiry of the preliminary approval, the respective installer can make an application for full approval, if the corresponding requirements are met. The request for full approval must be filed at least two months before the end of the 36-month period.

##### 4.2.2 Full approval

The full approval has an extension of 36 months. This approval can be extended upon application for a further period of 36 months on request two months before end of the 36-month period. Full approval and the extension will be documented by a certificate. The date of this certificate is decisive for the beginning of full approval.

Before extension of the approval a check will be made that all requirements according to CEA 4046 – Base Requirements for Installers of Fire Fighting Systems are still met.

### **4.2.3 Revocation of approval**

#### **4.2.3.1 Preliminary approval**

The preliminary approval as an installer of fire fighting systems will be withdrawn if one of the conditions for the approval specified in this document is not or no longer fulfilled. If a condition in a branch office is no longer fulfilled, the entire approval can be withdrawn.

The preliminary approval shall be revoked in the case of attempted or proven fraud.

The preliminary approval procedure cannot be re-initiated before 12 months has elapsed after withdrawal of preliminary approval.

#### **4.2.3.2 Full approval**

Full approval will be withdrawn if one of the conditions for the approval is no longer fulfilled. If a condition in a branch office is no longer fulfilled, the entire approval can be withdrawn.

The approval is revoked once the tolerated number of defective systems specified in Section 5.11 (construction site inspection procedure) is exceeded during the time in which the candidate is subjected to stricter spot checks or once the maximum number of scores according to annex C is exceeded.

The approval shall also be revoked in the case of a proven attempted or proven fraud or in case of cessation of business.

The approval procedure cannot be re-initiated before 12 months has elapsed after withdrawal of approval.

### **4.2.4 Appeal**

The installer has the possibility to appeal against the approval body's decision. The effects of the approval body's decision are on hold until the result of the appeal.

## **5 Evaluation criteria**

The installer shall fulfil all conditions for the approval defined also in CEA 4046 – Base Requirements for Installers of Fire Fighting Systems. The approval Body reserves the right to verify compliance of the conditions by suitable measures complying at least with the following.

### **5.1 Specialist staff**

The approval body shall check the number of the installer's own qualified staff. It shall be controlled by checking personal data (e.g. employment contract, the working time table) of the employees, whether the staff is fulltime employed by the installer.

Note In the case of sprinkler FFS (applicable only to installers of fire fighting systems according to Section 1.2 a): Proof of one fitter per 1.000 annually installed sprinklers must be furnished. For up to 150,000 annually installed sprinklers, proof shall be furnished of one responsible specialist (including the chief responsible specialist) for each 10,000 installed sprinklers per year.

#### **5.1.1 Qualification of the responsible and chief responsible specialists**

The qualification of the responsible and chief responsible specialists shall be proved by checking personal data (e.g. certificates, employment contracts, training).

#### **5.1.2 Qualification of the technicians**

##### **5.1.2.1 Head of workshops**

The qualification of the head of the workshops shall be proved by checking personal data (e.g. certificates, employment contracts, training).

### **5.1.2.2 Site supervisors and field inspectors**

The qualification of the site supervisors and field inspectors shall be proved by checking personal data (e.g. certificates, employment contracts, training). A site supervisor can be a fitter who has the requisite experience to supervise the site.

### **5.1.2.3 Fitters**

The qualification of the fitters shall be proved by checking personal data (e.g. journeyman/craft certificate, employment contracts, training).

### **5.1.2.4 Welders**

The qualification of the welders shall be proved by checking personal data (e.g. qualified certificate according to EN 287).

## **5.1.3 Workforce**

### **5.1.3.1 Chief responsible specialist**

The chief responsible specialist shall prove his or her qualification in the framework of an examination held by the approval body.

Three months at the latest after the withdrawal of a chief responsible specialist, a new individual shall be appointed who shall have substantiated his qualification in the framework of an examination in the approval body. The same applies to the responsible specialists in the branch offices.

A check must be made to establish whether the Chief responsible specialist has the technical and in-house competence for detecting inadequate technical work performed by the company or deficiencies attributable to the installer and the authority of initiating corrective action within an appropriate framework.

Approval as a chief responsible specialist is associated with the applicant. A change of the chief responsible specialist to another installer firm will not transfer the approval to this firm.

### **5.1.3.2 Responsible specialists in the branch offices**

The responsible specialists shall prove their qualification in the framework of an examination by the approval body.

A check must be made to establish whether the Chief responsible specialist in the branch offices has the technical and in-house competence for detecting inadequate technical work performed by the company or deficiencies attributable to the installer and the authority of initiating corrective action within an appropriate framework.

### **5.1.3.3 Site supervisor**

The installer shall prove that on each construction site there is a minimum of one site supervisor.

### **5.1.3.4 Field inspector**

The installer shall prove that there is at least one field inspector.

### **5.1.3.5 External workers**

A check must establish how many external workers are working for the installer by the construction site inspection procedure (see section 5.11 of these rules).

The external workers shall be named to the approval body in an annex to the notification of installation or shall be listed in the construction diary and/or weekly report. The approval body reserves the right to have the status of the hired help proved by the "hirer's tracer note".

Newly hired staff on construction sites not reported to the approval body rank with outside staff according to section 5.11.

### **5.1.3.6 Duty of notification, identification**

As proof of the employment of newly contracted fitters in the company, the staff questionnaire according to Annex D shall be enclosed for registration purposes. E.g. a staff I.D. card (example see annex E) is issued by the approval body on the basis of these data and shall be returned unasked within four weeks after withdrawal of the fitter. Both change and employment of one or more employees shall be notified according to Annex D to the approval body without delay.

The fitters of the installer shall be able to prove their identity by the "staff I.D. card" according to Annex E on the construction site. A differently-coloured "trainee staff I.D. card" shall be issued to trainees from the 2<sup>nd</sup> training year onwards as well as to staff of the installer normally not involved in installation work. For the purposes of construction site surveys the holders of the "staff I.D. card" will count as the company's own employees. For the purposes of construction site surveys, the holders of the differently-coloured "trainee staff I.D. cards" neither count as company's own employees nor as external workers. Fitters without a staff I.D. card shall count as external workers.

The approval body will perform at least once a year an inspection of the company's documentation relevant for proving employment in the company and for proving the qualification of the company's own employees (wage tax card, social insurance statement, employment contract, payroll accounting for the hourly paid for the past 3 months) and reserves the right to carry out additional inspections. Such inspections may be performed also by third parties acting on behalf and under the control of the approval body. If the inspection of the installer's workforce reveals that the staff I.D. cards have been issued without justification, the corresponding staff shall count with retroactive effect as external workers on all construction sites where they have been encountered.

Newly employed technicians contracted by the installer are not counted as fitters of the installer (staff I.D. card) before 3 months have elapsed after employment, i.e. up to this time these workers count as external workers. To installers approved on a preliminary basis, this rule shall apply one year after having been granted the preliminary approval. After this 12-month period, newly employed technicians will not count as fitters of the installer before 3 months have elapsed after employment.

If technicians with a staff card change over to another installer these three months can be reduced to one month. For the purposes of notification of this technician, the former work contract has to be proved. If an inspection of the installer's staff reveals that the corresponding employees had been working less than 12 months in the company of the installer, these individuals shall count with retroactive effect as external workers on all construction sites where they have been encountered in the first 3 months.

## 5.2 Products and spare parts

The use of approved products and the number of spare parts shall be checked.

The approval body reserves the right to test the quality of the fittings used on a spot test basis or to have these fittings tested by a body approved by the approval body.

The installer shall keep a sufficient number of spare parts on stock satisfying the requirements of the corresponding annexes F to J or having a just-in-time stockage together with a quick delivery agreement with the spare parts supplier (to comply with section 5.7). The supplier shall have a QA-System related to this agreement.

## 5.3 Quality system

The quality assurance system shall be proved by checking the corresponding document (Annex B).

## 5.4 Reference systems

The installer shall furnish proof to the approval body of a minimum number of reference systems specified in more detail in section 5.4.1 and 5.4.2.

### 5.4.1 Minimum number of reference systems during the preliminary approval

During the preliminary approval of 36 months, the installer shall furnish proof of the minimum number of reference systems specified in table 1:

Type of fire fighting system	Number of systems
a) Sprinkler systems	8
b) Water spray systems	3
c) Foam extinguishing systems	3
d) CO <sub>2</sub> -fire extinguishing (low pressure systems)	3
e) Gas-extinguishing systems (CO <sub>2</sub> high pressure systems, non-liquefied inert gases, halocarbons)	5 for each type

**Table 1:** Minimum number of reference systems to be presented during the preliminary approval



#### 5.4.2 Minimum number of reference systems after full approval

After full approval, proof shall be furnished of the following annual minimum number of reference systems specified in table 2:

Type of fire fighting system	Number of systems
a) Sprinkler systems	3
b) Water spray systems	1
c) Foam extinguishing systems	1
d) CO <sub>2</sub> -fire fighting systems(low pressure systems)	1
e) Gas-extinguishing systems (CO <sub>2</sub> high pressure systems, non-liquefied inert gases, halocarbons)	2

**Table 2:** Annual minimum number of reference systems to be presented by fully approved installers.

These systems shall be verified on site by the approval body for conformity with the corresponding rules for Design and Installation. During the preliminary approval of an approval of installers of FFS according to section 1.2 e), concentration measurements and door-fan-tests have to be done by the approval body. This verification of the reference systems must not reveal any substantial deficiencies. Defects for which the installer is responsible shall be eliminated at the installer's expense. The approval body reserves the right to re-check. If deficiencies occur, this might have an impact on approval.

#### 5.5 Design of new installations

When systems are inspected, significant design details shall be considered and deviations noted by the approval body, including for example:

- design in accordance with the design and installation rules
- correct hydraulic calculations
- installation according to design documents
- on-site modifications reflected in as-built drawings where appropriate
- correct system operation in accordance with test requirements of the installation rules
- the correct use of components.

Installers with preliminary approval shall submit to the approval body the design documentation for each system before commencement of the installation and shall notify the approval body of all deviations without delay. The installer shall be liable to pay the costs for the inspection of the planning documentation.

#### 5.6 Workshop and Equipment

The installer of FFS according to section 1.2 a), b) and c) shall equip and operate a workshop meeting with the minimum requirements specified in Annex K, unless this work is fully subcontracted. It shall be checked by inspection whether the minimum requirements (CEA 4046 – Base Requirements for the Approval of Installers of Fire Fighting Systems) for workshop and equipment are met.

If pipe connections are produced in the workshop by welding of pipes  $\leq$ DN 50 for fire fighting systems, the applicant shall use a welding procedure approved by the approval body. The welding procedure approval will be associated with the installer on condition that the production takes place in the permanent establishment of the installer and that the pipes are marked with the installer's mark.

The installer should have a demonstration system which meets the requirements of annex M.

If the installer partly or fully subcontracts workshop work to another company, the subcontractor's workshop shall be subject to the same inspection procedure. The installer continues to have full responsibility (including penalties) for any work carried out by the subcontractor.

#### 5.7 Service and maintenance

It must be proved that fault messages can be received at any time. By checking the distance between the installer's workshop/branch office and the construction site, a check shall be made to see if repair work on

the fire fighting system can be commenced 12 hours at the latest after receipt of the fault message and be completed within 36 hours if technically possible.

## **5.8 Link with the manufacturers of components**

The installer shall deliver a confirmation(s) of the component manufacturers and/or system owner.

*Note: not required if the applicant is the system owner at the same time.*

## **5.9 Insurance liability**

The installer shall provide proof of an operations liability insurance.

## **5.10 Minimum Documentation**

Each fire fighting system for which the installer has been contracted shall be notified to the approval body four weeks, if possible, however, minimum two weeks, ahead of the commencement of installation by means of a notification of installation. This requirement applies to extensions of sprinkler systems only when more than 50 sprinklers are involved or there is a new alarm valve.

Failure to notify systems shall result in those systems being included in the rating of the construction site inspection procedure for the calendar year in which the approval body becomes aware of the existence of the system.

The installation of fire fighting systems on one site by more than one installer shall be permitted provided that overall responsibility is taken by a single installer. Each installer shall submit a notification of installation specifying its specific scope and responsibilities and naming the lead installer. A copy of the agreement between the installers shall be submitted.

The installation of a FFS by an association of independent companies - according to the relevant legislation - consisting of several installers shall be permitted on condition that a leading and responsible installer is appointed in the contractual agreement of the independent companies. A copy of this agreement shall be submitted with the notification of installation by the lead installer. The FFS shall count as the lead installer's FFS and will rank in the construction site inspection procedure as the lead installer's FFS. The ratio of own employees to external workers shall be calculated based on the number of workers used collectively by all the companies involved. In order to minimise the number of different components on a single site, an exemption permit shall be obtained, where necessary, for one of the installers to allow the use of equipment approved for the other or others.

## **5.11 Construction site inspection procedure**

The construction site inspection applies only to sprinkler and water spray systems, and to other systems in the preliminary approval phase. The rating system specified in Annex C applies only to sprinkler and water spray systems.

The installer shall co-operate in the construction site inspection procedure. Construction site inspections are carried out in order to verify compliance with the rules for the approval of installers (CEA 4046 – base requirements for Installers of FFS). The evaluation is based solely on the actual situation at the time of inspection (snapshot). During the preliminary approval phase each construction site shall be checked at least once. The ratio of own employees to external workers shall be verified, as well as the occupational qualification (e.g. welding) of all individuals involved in the installation. The installer's own employees shall be able to prove their identity by the staff I.D. card. The representative of the approval body shall inform the site supervisor of the relevant data according to formula annex C. The site supervisor shall countersign annex C and obtain a copy. The signature of the site supervisor shall be legally binding upon the installer.

If pipework connections are used with procedures or components not covered by any generally accepted standard and one or several parts of the connection or the entire connection are objected to by the approval body, the installer shall confirm in writing that the components of the connections are correct and guarantee that the entire system works without any subsequent defect.

Together with the notification of installation, the installer shall submit for each construction site a declaration of consent of the client permitting access to the construction site by the approval body's representative at any time. The notification of installation shall contain the names of the site supervisor and if applicable of the site project manager.

Once the approval has been obtained, a certain number of construction sites shall be selected and checked by the approval body on the basis of a spot check procedure in analogy to ISO 2859. The scope of the spot

check shall depend on the number of installed fire fighting systems and on the number of defects detected by inspections on the construction sites in the past calendar year. The evaluation of the inspections performed on construction sites for the calendar year shall include the surveys conducted up the end of the first quarter of the following year. The scope of the spot check and the number of defects detected are specified in Table 3. The procedure used for the classification into a standard, reduced or stricter scope of spot checks is illustrated in Fig. 1.

If inspections on construction sites are impossible because of late notification of installations or none at all, the installer's construction sites shall be checked for one year according to the stricter spot check procedure.

Number of systems	Stricter spot check			Standard spot check			Reduced spot check		
	d	e	f	a	b	c	g	h	i
up to 20	8	1	2	4	0	1	2	0	1
21 - 50	16	2	3	8	1	2	4	1	2
51 - 90	24	4	6	12	1	3	6	2	3
91 - 150	40	6	8	20	2	5	10	3	4
151 - 280	64	10	12	32	3	7	16	4	6
281 - 500	100	15	17	50	5	10	25	5	7
501 - 1200	160	23	25	80	8	14	40	7	9

Explanations: a, d, g: Scope of the spot check; b, e, h: tolerated number of defects; c, f, i: Number of defects leading to stricter spot checks or withdrawal of approval when exceeded (see Fig. 1)

**Table 3:** Random spot check procedure on similar lines to ISO 2859

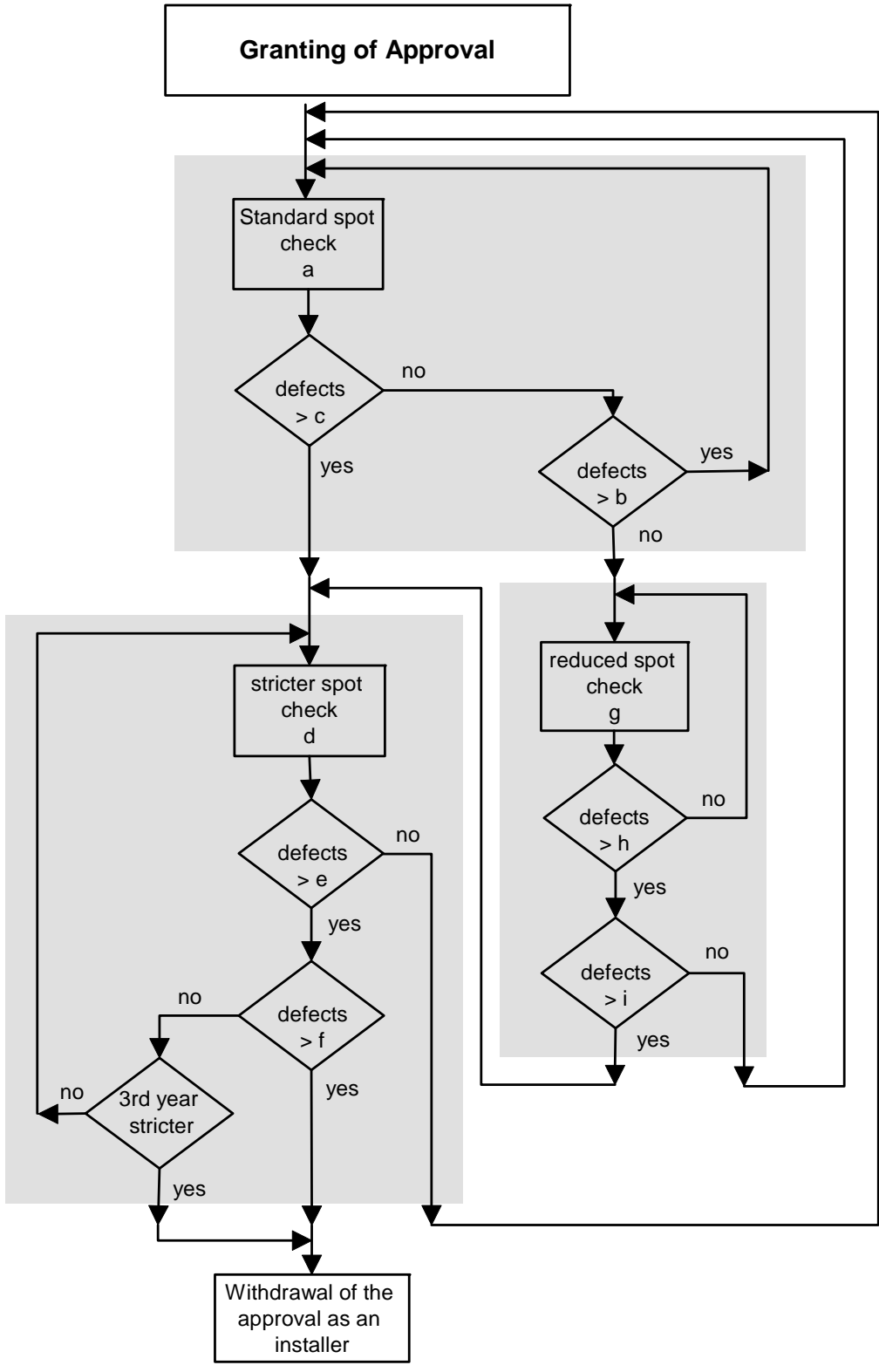


Fig. 1: Classification into standard, stricter and reduced random spot checks

## **5.12 Other requirements**

The approval body shall check that the installer:

- meets its financial obligations in relation to the approval body
- guarantees that client and system data are treated confidentially and are not disclosed to unauthorised third parties
- notifies the approval body without delay by registered mail of all changes relating the conditions of this document, together with other required documentation,
- guarantees to correct at its own expense all defects detected as the result of inspections by the approval body of the systems for which it can be held responsible,
- guarantees to observe all legal and official regulations,
- co-operates in the construction site inspection procedure according to Section 5.11 of these rules

If the requirements for approval are not met, the approval body reserves the right to withdraw the approval.

## **5.13 Publicity**

Advertising the approval of the installer shall reflect the correct contents of the issued certificate. The applicable regulations contained in the certificate shall be observed. Advertising is only permitted in connection with the approved permanent establishment. Advertising shall not take place in connection with services of the applicant which are not covered by the approval. In case of doubt, the approval body shall be consulted.

The installer may make reference to the approval (and also during preliminary approval) using the approval body's logo in the correct way.

The logo may be used for instance on letter heads, advertising material, publications and advertising brochures of the installer.

**Annex A**  **APPLICATION**  **REQUEST FOR EXTENSION**  **MODIFICATION**

for an approval as

**Installer of fire fighting systems (FFS)**

<b>1</b>	<b>Applicant</b>	Installer-Approval No. (only for extension/modification)		<b>E</b>
	Name of company	[Redacted]		
	Street	[Redacted]		
	postal code, town	[Redacted]		
	Telephone	Fax	e-mail	
<b>2</b>	<b>Type of system</b>			
	<input type="checkbox"/> a) Sprinkler systems	<input type="checkbox"/> e) Gas-fire fighting systems (CO <sub>2</sub> , high pressure systems, non-liquefied inert gases or halocarbons)		
	<input type="checkbox"/> b) Water spray systems	[Redacted]		
	<input type="checkbox"/> c) Foam extinguishing systems	[Redacted]		
	<input type="checkbox"/> d) CO <sub>2</sub> -fire fighting systems (low pressure systems)			
<b>3</b>	<b>Chief responsible specialist</b>			
	family name, given name	[Redacted]	born	[Redacted]
	3.1 educational qualification	[Redacted]		
	3.2 Training in the field of fire fighting systems	[Redacted]		
	3.3 Experience in the field of fire fighting systems	[Redacted]		
<b>4</b>	<b>Attached documents</b>			
	4.1	<input type="checkbox"/> Proof of the registration in the register of craftsmen (as applicable)		
	4.2	<input type="checkbox"/> Proof of company registration		
	4.3	<input type="checkbox"/> Certificate of non-objection of the competent local tax office or bank reference (as appropriate)		
	4.4	<input type="checkbox"/> Proof of a certified quality assurance system acc. to series EN ISO 9000 in place in the applicant's company		
	4.5	<input type="checkbox"/> Proof of the qualification of the chief responsible specialist (No. 3 of the application)		
	4.6	<input type="checkbox"/> Contract with an approved installer of fire detection systems (as applicable)		
	4.7	<input type="checkbox"/> Sample of the service/maintenance contract		
	4.8	<input type="checkbox"/> Delivery contract for externally bought approved system components		
	4.9	<input type="checkbox"/> Proof of a business liability insurance		
	4.10	<input type="checkbox"/> Staff questionnaire according to Annex D		
4.11	<input type="checkbox"/> [Redacted]			
<b>5</b>	The Rules for the Approval of Installers of Fire fighting systems (CEA 4046) are recognised by the applicant's signature as a part of the contract. If any provisions in this contract become invalid, the remaining provisions of the contract shall not be affected thereby.			
	The applicant agrees to have the personal and operational data indicated by him recorded and processed by EDP.			

## **Annex B Treatment of QA-Certificates (EN ISO 9000)**

Certifications of QA-systems which have not been conducted by the certification body of the approval body are accepted as a basis for an approval as an installer under the following conditions:

The certification body must have been approved by an accreditation body which is a member of "European Accreditation" (shortly EA, formerly EAC) and must have signed the "Multilateral Agreement" (MLA) .

- The certificate according to series EN ISO 9000 defines clearly that the installation of fixed fire protection systems is covered by the certificate. In the case of doubt, a corresponding declaration of the certifying body shall be submitted.
- A QA manual shall be submitted by the installer upon request. Additional documentation (e.g. procedural instructions and job/assembly instructions) shall be submitted, if necessary. The inspection of the documentation is to reveal whether or not the requirements of the relevant rules for the Design and Installation have been considered.
- In the framework of the procedure for approval as an installer, the certification body will conduct a site-specific audit to verify that the approved products are installed in accordance with the job/assembly instructions and that Design and Installation are performed in accordance with the rules.

If deficiencies are discovered in the course of the inspection of the above QA documentation or during the site specific audit, corrective action is specified by the certification body and the site-specific audit is repeated, if necessary, at a later date.

A site-specific audit is conducted as a rule once during the validity of the EN ISO 9000 certificate.

# Annex C Rating system for construction site surveys

## Survey report of the Sprinkler/Water spray system during the construction approval

<b>Installer:</b>	<b>Report No.</b>	<b>file No.:</b>
<b>Post code, place:</b>	<b>Date:</b>	<b>Inspected by:</b>
<b>Street:</b>		
<b>Address of the construction site:</b>		
<b>Notification of installation Date:</b>		<b>Supervision of works:</b>
<b>which buildings or parts of buildings will be protected?</b>		
Progress of extinguishing system : <input type="checkbox"/> Material delivered <input type="checkbox"/> Assembly started <input type="checkbox"/> Pipework installed <input type="checkbox"/> Control unit installed <input type="checkbox"/> Residual work <input type="checkbox"/> Construction site idle <input type="checkbox"/> Construction site cleared		

**Deviations from the rules:** The deficiencies described in Section B shall be valued according to weighting, maximum in combination with the scores put in square brackets! The scores for deficiencies in Section C are mandatory.

<b>A</b>	<b>Documentation of the installer:</b> <input type="checkbox"/> Configuration documents not submitted beforehand (in the case of a preliminary approval ) [4] <input type="checkbox"/> Notification of installation not submitted in due time [4] <input type="checkbox"/> Date of assembly not in agreement with the notification of installation [4] <input type="checkbox"/> Notification of installation not fully completed [2]	<i>(The question of whether installations for which no notification had been submitted are largely completed before the indicated date or are not commenced before that date shall also be included in the rating.)</i>
Note:		

<b>B</b>	<b>Pipe connections:</b> <input type="checkbox"/> Coupling <input type="checkbox"/> Screw connection <input type="checkbox"/> quick Tees <input type="checkbox"/> quick Clip <input type="checkbox"/> A-Welding <input type="checkbox"/> E-welding <input type="checkbox"/> Brazing <input type="checkbox"/> Flanging
Bead creation with check gauge & tape measure: <input type="checkbox"/> yes <input type="checkbox"/> no    prefab pipes ≤ DN 50 labelled: <input type="checkbox"/> yes <input type="checkbox"/> no [2]	
Pipes deburred at interfaces/sleeves/quick Tees: <input type="checkbox"/> yes <input type="checkbox"/> no [4]	
Note:	
Alarm valve(s), make:	
Sprinkler/L.-nozzles, make:	
Components approved: <input type="checkbox"/> yes <input type="checkbox"/> no [4]	
Assembly plans, parts lists available: <input type="checkbox"/> yes <input type="checkbox"/> no	
Condition of the operated beader and threading machine o.k. <input type="checkbox"/> yes <input type="checkbox"/> no [2]	
Note:	

<b>Assembly staff on the construction site:</b> (This personnel shall be listed up by names on Sheet 2 of Annex C. Assembly personnel without I.D. card do not count as outside staff if reported, blocking period observed and I.D. card not yet issued ).															
Welder without proof of qualification acc. to EN 287-1 : <input type="checkbox"/> yes <input type="checkbox"/> no [4]										Name:					
<b>C</b>	<b>total staff</b>	<b>Number of external workers</b>									<b>Survey rating results</b>				
			1	2	3	4	5	6	7	8	9	10	<b>Section</b>	<b>Scores</b>	<b>Total scores A-C</b>
		1	6										<b>A</b>		
		2	0	8								4			
		3	0	8	10							↓			
		4	0	0	8	12						e.g.: 7→8	<b>B</b>		
		5	0	0	8	10	12								
		6	0	0	8	10	12	16							
		7	0	0	6	8	10	12	16						
		8	0	0	6	8	10	12	16	16					<b>Spot check unsatisfactory?</b>
9	0	0	0	8	10	12	16	16	16				<input type="checkbox"/> yes <input type="checkbox"/> no		
10	0	0	0	8	10	12	16	16	16	16	<b>C</b>				
Rating table for a share of >30% of external workers															

Date of issue:	Name of site supervisor:
Signature of inspector:	Signature:





**Specifics:**

### Explanations on the rating system used for construction site surveys

The classification in the framework of the spot check procedure is performed in accordance with the Rules for the Approval of Installers of Fire fighting systems (section 6). As regards the rating system, the standard spot check status shall apply to installers approved on a preliminary basis.

The result of a spot check (construction site survey) shall be considered unsatisfactory if

- a) the number of scores is 5 or more,
- b) a construction site survey is not possible because of a notification of installation submitted too late,
- c) no notification of installation has been submitted.

Decisive for a classification into the stricter spot check procedure and/or the reduced check procedure is the number of unsatisfactory spot checks according to the rules (table 3, column c), f), i)).

### Cumulative rating system for the rating of construction site surveys

The credited rating scores of all spot checks are valid for 12 months. According to the status of classification, action is taken against the installer once the total number of scores exhibited in Table M1 is exceeded.

installed systems/year	Spot check status standard			Spot check status stricter			Spot check status reduced			
	No. of spot checks	Total number of scores of the sum of spot checks		No. of spot checks	Total number of scores of the sum of spot checks			No. of spot checks	Total number of scores of the sum of spot checks	
		A	B		C	D	E		F	G
bis 20	4	20	24	8	24	32	40	2	12	14
21-50	8	40	48	16	48	64	80	4	24	28
51-90	12	60	72	24	72	98	120	6	36	42
91-150	20	100	120	40	120	160	200	10	60	70
151-280	32	160	192	64	192	256	320	16	96	112
281-500	50	250	300	100	300	400	500	25	150	175
501-1200	80	400	480	160	480	640	800	40	240	280

**Table M1:** Cumulative rating system for construction site survey rating

Sanctions imposed for exceeding the total number of scores according to Columns A, B, C, D, E, F, G:

- F, A, C = Warning for all installers (approved installers and installers approved on a preliminary basis)  
= and extension of the status of an installer approved on a preliminary basis by one year
- G, B, D = Withdrawal of the approval for installers approved on a preliminary basis  
= Downgrading of approved installers into the status of an installer approved on a preliminary basis
- E = Withdrawal of the approval as an installer

Before action is taken against an installer, the installer is given 3 weeks to express his view of the situation.  
Action taken against the installer is reported in writing to the management.

## Annex D Staff questionnaire to be completed for registration and issue of the I.D. card

Data of the installer			
Address of the company		Company logo	
Is the staff I.D. card to contain the Ass.-Logo?		<input type="checkbox"/> yes	<input type="checkbox"/> no
<b>Staff data</b> (staff acc. to CEA 4046, Section 5.1.3.7)		(These data will be stored in our EDP system. These data will be used considering the Data Protection Act)	
Last name, first name:			
Social insurance number:			
Date of hire of the worker in the installer's company:			
Function of the worker:			
Professional training:			
Craft certificate * issued by:		<input type="checkbox"/> Chamber of Crafts	<input type="checkbox"/> Chamber of industry and commerce
Region:			
Date:			
Welding qualification acquired:		<input type="checkbox"/> yes	<input type="checkbox"/> no
e.g. Designation EN 287:		Validity of the qualification:	
For trainees – end of training period on:			
* The activity report showing 3 years of experience in the field of assembly shall be attached to this questionnaire in form of a separate annex in cases where no occupational training can be substantiated.			
(photograph of the worker)			<b>Important!</b>
			<ol style="list-style-type: none"> <li>1. The installer warrants the consent of its staff for EDP processing of personal data.</li> <li>2. Craft certificate or activity report and welding qualification shall be attached to this questionnaire.</li> <li>3. The staff I.D. card is issued only if the questionnaire contains all relevant data and is valid subject to the result of the examination of the personnel records of the installer.</li> <li>4. The I.D. card shall be returned when the worker leaves the installer's company</li> <li>5. The assembly personnel of the installer will receive staff I.D. cards.</li> <li>6. The holders of trainee staff I.D. cards will count as neutral staff for construction site survey purposes.</li> </ol>
(Date/signature of the management or authorised representative)			
To be completed by the approval body			
I.D. card No.:		valid until:	

Kind of the I.D. card:	<input type="checkbox"/> staff	<input type="checkbox"/> trainee staff
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## Annex E Staff I.D. card

All staff working on fire fighting systems shall be able to prove their identity on the construction site by an I.D. card identifying them as members of the installer which shall contain the following data:

- Last name and first name
- Social insurance number
- I.D. card number
- Expiration date of the I.D. card
- Address of the company and/or logo of the installer
- Association Logo (if the company is a member and a consent in writing can be produced)
- Approval body's Logo.

The I.D. card bears the title "Staff I.D. card" and shall contain the sentence "The holder of this I.D. card is authorised to carry out work on the fire fighting systems". The I.D. card shall also be equipped with a photograph of the holder.

The validity of the I.D. card shall be limited to 3 years. The I.D. card is property of the approval body and shall be returned once the underlying circumstances change and/or the holder leaves the company.

## Annex F Minimum quantities of spare parts to be kept in stock for the installation of sprinkler systems

Note: For an installer of other types of water extinguishing systems multiple stockpiling is not required.

Sprinkler/ Sprinkler type	Nominal diameter/ type of installation	Temperature rating	Response sensitivity	Minimum quantity to be kept in stock
Spray sprinkler	DN10/pendent	68°C/74°C	Standard	50 units
	DN10/pendent	68°C/74°C	Special and quick action	50 units
	DN15/pendent	68°C/74°C	Standard	50 units
	DN15/pendent	68°C/74°C	Special and quick action	50 units
	DN20/pendent	68°C/74°C	Standard	50 units
	DN20/pendent	68°C/74°C	Special and quick action	50 units
	DN10/upright	68°C/74°C	Standard	50 units
	DN10/upright	68°C/74°C	Special and quick action	50 units
	DN15/upright	68°C/74°C	Standard	50 units
	DN15/upright	68°C/74°C	Special and quick action	50 units
	DN20/upright	68°C/74°C	Standard	50 units
	DN20/upright	68°C/74°C	Special and quick action	50 units
	DN10/pendent	all the others	Standard, Special and quick action	25 units *
	DN15/pendent	all the others	Standard, Special and quick action	25 units *
	DN20/pendent	all the others	Standard, Special and quick action	25 units *
	DN10/upright	all the others	Standard, Special and quick action	25 units *
DN15/upright	all the others	Standard, Special and quick action	25 units *	
DN20/upright	all the others	Standard, Special and quick action	25 units *	
Standard sprinklers	DN10, 15, 20	all	Standard, Special and quick action	25 units *
Flat spray sprinklers	pendent	all	Standard, Special and quick action	25 units *
	upright	all	Standard, Special and quick action	25 units *
<ul style="list-style-type: none"> <li>• after initial application</li> </ul>				

**Table F1: Minimum quantities of sprinklers to be kept in stock**

System component	Nominal diameter	Minimum quantity to be kept in stock
Wet alarm valve station	per to nominal diameter DN 100, 150, 200 **	1 unit
Dry alarm valve station	per to nominal diameter DN 100, 150 **	1 unit
Supply control fitting	Nominal diameter DN 50 **	1 unit
Stop valve	per to nominal diameter DN 80, 100, 150, 200 **	1 unit
Accelerator	fitting the valve station	2 units
Alarm pressure switch	fitting the valve station	2 units
Pressure switch		2 units
Mechanical alarm bell		2 units
Stone trap	per nominal diameter DN 80, 100, 150 **	1 unit
Pipe supports	per nominal diameter DN 25 to DN 150	100 units
	per to nominal diameter DN 200 & DN 250	25 units
Pipe coupling	per to nominal diameter	25 units *

• after initial application

\*\* after initial application of other valve stations and/or other nominal diameters, minimum quantity to be kept in stock: 1 unit

**Table F2: Minimum quantity of other system components to be kept in stock for sprinkler systems**


## Annex G Minimum quantities of spare parts to be kept in stock for the installation of Water spray systems

Note: for an installer of other water extinguishing systems, multiple stockpiling is not required.

System component	Characteristic value	Response sensitivity	Minimum quantity to be kept in stock
Spray nozzle	K-factor 57		25 units
	K-factor 80		25 units
	K-factor 115		25 units
Other types of nozzles			25 units *
Exciter	68°C/72°C	Standard	50 units
	all the others	Standard	25 units *
	all	Special and quick action	25 units *
Spray water valve station	per to nominal diameter DN 100, 150**		1 unit
Supply control fitting	Nominal diameter DN 50 **		1 unit
Stop valve	per to nominal diameter DN 80, 100, 150, 200 **		1 unit
Alarm pressure switch	fitting the valve station		2 units
Pressure switch			2 units
Mechanical alarm bell			2 units
Stone trap	per to nominal diameter DN 80, 100, 150**		1 units
Pipe support	per to nominal diameter DN 25 to DN 150		100 units
	per to nominal diameter DN 200 u. DN 250		25 units
Pipe coupling	per to nominal diameter		25 Units *
Non return valve	Per type		1 unit
<ul style="list-style-type: none"> <li>• after initial application</li> </ul> <p>** After initial application of other valve stations and/or other nominal diameters, minimum quantity to be kept in stock: 1 unit.</p> <p><b>Table G1:</b> Minimum quantity of system components to be kept in stock for spray water extinguishing systems</p>			



## Annex H Minimum quantities of spare parts to be kept in stock for the installation of foam extinguishing systems

Note: For an installer of other water extinguishing systems multiple stockpiling is not required.

System component	Characteristic value	Minimum quantity to be kept in stock
Low expansion foam nozzle		10 units
Medium expansion foam nozzle		10 units
High expansion foam generator		1 unit *
Low expansion foam pipe	per to rated quantity L2, L4, L8, L16	1 unit*
Medium expansion foam pipe	per to rated quantity L2, L4, L8	1 unit*
Venturi admixing device	per to nominal diameter DN 100, 150, 200*	1 unit
Spray water alarm station	per to nominal diameter DN 100, 150*	1 unit
Supply control fitting	Nominal diameter DN 50*	1 unit
Stop valve	per to nominal diameter DN 80, 100, 150, 200*	1 unit
Alarm pressure switch	fitting the valve station	2 units
Pressure switch		2 units
Mechanical alarm bell		2 units
Stone trap	per to nominal diameter DN 80, 100, 150	1 unit
Pipe support	per to nominal diameter DN 25 up to DN 150	100 units
	per to nominal diameter DN 200 a. DN 250	50 Units
Non-return valve	Per type	1 unit
* after initial application		
<b>Table H1:</b> Minimum quantity of system components to be kept in stock for foam extinguishing systems		



## Annex J Minimum quantities of spare parts to be kept in stock for the installation of low pressure CO<sub>2</sub>-fire fighting systems

System component	Characteristic value	Minimum quantities in stock *
Fire detection element, non-electric	up to 100 °C, per temperature rating	10 units
Fire detection element, non-electric	over 100 °C, per temperature rating	5 units
Fire detection element, electric	per to type	3 units
Electric control device, complete or the corresponding number of configuration components - Detection/control/monitoring assemblies - Interfacing devices - Evaluation/display and connection pcb's - Power units, batteries - Monitoring modules - Non-automatic detectors - Stop pushbuttons - Subsequent flooding pushbutton per assembly		3 units           3 units
Non electric control device, complete with e.g. delay device, actuation devices, blocking devices, solenoid pneumatic valves, non-return valves, pressure reducers, filter, protective device against creeping gas		3 units
Safety valves		2 units
Pressure gauges		5 units
Range valve with actuation device	per to nominal diameter	1 units
Nozzles	per to rating class	5 units
Means of alarm	per to type	5 units
* if included in the system		
<p><b>Table J1:</b> Minimum system components to be kept in stock for the installation of low pressure CO<sub>2</sub>-FFSs.</p>		

## Annex K Minimum requirements for workshops

The workshop shall have a minimum useful floor area of 80 m<sup>2</sup>.

The minimum requirements in terms of available machines, equipment and tools are specified in Table H1.

Machines, equipment, tools	Minimum quantity
Threading machine for pipe threads of up to 2"Ø	1
Grooving machine	1
Drill (up to 30 mm Ø)	1
Welding equipment	2
Machine for cutting of pipes up to DN 200	1
Equipment for hydraulic tests (only for installers of systems 4.2a)	1
Hand drill	1
Abrasive cutting off machine	1
Set of pipe wrenches and fitter tools	1
<b>Table K1:</b> Minimum equipment of workshops	

## Annex M Demonstration system

### M1 Demonstration system for systems according to Sections 1.2 e)

The Demonstration system shall cover at least one extinguishing area. The triggering shall be calculated in order to connect several extinguishing areas.

The demonstration system shall contain the following components:

1) Fire detection, electrical triggering and alarm

For fire alarm system without standard interface (if available)

Fire alarm system control unit (with integrated control of extinguishing systems)

Fire detector (at least two smoke detectors)

For fire alarm system with standard interface (if available)

Fire alarm system control unit

Fire detector (at least two smoke detectors)

Electrical triggering device

Manual activating device

CO<sub>2</sub>-stop button (for CO<sub>2</sub>-systems)

Electrical alarm

2) Non-electrical triggering and alarm devices

Pneumatic alarm (if applicable)

Non-electrical delay device (if applicable)

Non-electrical blocking device (if applicable)

3) Battery

≥ 2 containers each 80 l (not CO<sub>2</sub>)

≥ 2 containers each at least 40 l (only CO<sub>2</sub>)

monitoring stocks of extinguishing agent

manometer (not CO<sub>2</sub>)

weighing equipment

4) Pipework

Nozzles

Pressure reduction device

Range valve

Security valve

5) Monitoring

According to the Standards for Design and Installation

6) Pressure relief device

Corresponding calculation

Regarding the demonstration system corresponding drawings including calculation of pipework shall be delivered to the approval body.

During acceptance of the system it shall be proved by a discharge test, that the measuring personal is used to operate the concentration measuring equipment.

## **M2 Demonstration system for systems according to Sections 1.2 a) and b)**

The demonstration system shall contain the following components:

1) alarm check valve

Wet-, dry and pre-action alarm valve station

Spray water valve station

*Note: including complete pipework according to this document.*

*If alarm valve stations of several manufacturers are used the above mentioned number of alarm valve stations of each manufacturer shall be installed in the demonstration system.*

*If the applicant confirms, that he will complete the demonstration system by an pre-action alarm valve station in case of placing the order of a pre-action alarm valve station, he may renounce the pre-action alarm valve station for the time being. It may be useful to assign a blind flange for a subsequent installation.*

2) Pipework

It shall be connected to the pipework:

3 hanging sprinklers (wet pipe system)

3 standing sprinklers (dry pipe system)

3 standing sprinklers (pre-action system)

3 open nozzles (water spray system).

At the end of the pipework testing pipes shall be installed.

3) Triggering

Alarm valve station pre-action by fire detection system

Water spray valve station: by pneumatic stimulating pipework

4) providing of water and compressed air

the blameless function of the valve station should be guaranteed.

5) alarm

mechanical by an alarm bell

electrical by optical signal

the above mentioned alarm devices shall be assigned for each alarm valve station.

6) Monitoring

According to the rules for Design and Installation