

ACCESS TO CONFINED SPACES

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1 PURPOSE

The purpose of the instructions is to give rules for safety for access and work in confined spaces. The risks are primarily that there will be a shortage of oxygen and that there will be toxic chemicals in the inhaled air. The risk of the electrical equipment should also be considered.

2 DEFINITIONS

Confined spaces are process containers such as tanks, heat exchangers, columns, steam boilers, silos and reactors. Large pipes that are big enough for access and pits deeper than 1.2 metres are also included in this.

3 RESPONSIBILITY

The work permit issuer is responsible for ensuring that the rules in these instructions are fulfilled when the work status is issued.

4 DESCRIPTION

4.1 Standby person

When accessing confined spaces a trained standby person must always be present (the expertise requirement is stated in [HMSS-337](#)):

- The standby person must be in visual or audible contact with the person inside the area.
- must have access to the same protective equipment as the persons entering.
- must be fully equipped with and instructed according to the requirements given on the reverse of the yellow sheet of the permit form.

4.2 Blinds

Access blinds must be erected in accordance with the established blind and blanks list. Blinds must be installed as close to the apparatus as possible. Each blind that is an access action is marked with a red rectangular sign so that it can be separated from other blinds which are only involved with shut downs, which are marked with yellow rectangular signs. On the red sign should be noted the ID ((shut down-list designation or similar which explains what should be shut down), no (number/letter) of action, date when it was put up and the signature of the person who put it up.

Blind and blanks lists must be produced according to the process stated in appendix 1 "standard for blind and blanks lists". The symbols in the diagram may be different.

4.3 Approval of blind and blanks list

Each blind and blanks list must have a "Reviewer" (supervisor, operations planner or engineer) and an "Approver" (production manager, operations manager, operations preparation executive or maintenance coordinator). When producing the list, one must physically check on site in the factory that all connections are included in the blind and blanks list. This applies to each new access. The list must be signed.

It may be that one wishes to have open flanges in a confined space when entering. In such cases, the open flange must be included in the blind and blanks list and have its own ID and be marked.

If one is not able to blind adjacent to the confined space, the space between the space and the blind must be treated as part of the confined space and any connections, sockets or blanks must be included in the blind and blanks list.

4.4 Installing/removing blind and blanks list

Access blinds must be erected and removed in accordance with the established blind and blanks list. The blinds must be adapted to the relevant system pressure. A separate work permit must be written for installing and removing blinds.

Installing and removing blinds can be carried out by both operations and maintenance personnel. When maintenance personnel install blinds the flange pair must be marked in the field with red signs in good time, if possible two weeks before the work commences. When the blinds are installed the sign must be moved from the flange to the blind.

When installing and removing blinds they must be physically checked and signed by a person other than that who carried out the installation or removal of the blinds. This check can only be carried out by operations personnel.

The original that was signed to confirm that it corresponds with reality is stored in the department in the specified location. When the blind and blanks list is physically used in the facility, a work copy must be used, signatures are then entered in the original.

4.5 Access for more than one day

If an access goes on for several days, the blind and blanks list must be signed each day, after a physical check, before a new work permit is issued.

4.6 JSA

A job safety analysis (JSA) must be made as part of the planning process before an access. The JSA must be documented.

4.7 Access meeting

Before making an access for the first time an access meeting must be held. A protocol must be established at the meeting. Those persons involved in the access must participate. Those persons must at least include those making the access, standby person(s) and

representatives of the operations department issuing the work permit. The JSA must be discussed at the meeting and the risks that exist must be covered. The participants must sign the protocol. Personnel who were not present at the first meeting but later became involved with the work, for example a relief standby person, must read through and sign the protocol from the access meeting. The protocol from the access meeting can be a standard form.

See Appendix 2 "Standard protocol for access meeting".

4.8 Other activities

- Activities that may affect the access blinds on equipment where an access permit is issued are not permitted.
- It is not permitted to install connections, hoses or other types of equipment on open flanges or pipes, on equipment where access permits are issued, if not stated in the access permit.
- A work permit related to equipment where an entry permit is issued will not normally be issued.

4.9 Oxygen metering

- An oxygen test must be carried out before entering the confined space. If the oxygen level is lower than normal, an air respirator must be used. If there is a risk of exposure to chemicals with hygienic limits these must be metered.
- Continuous oxygen metering must (personal portable instrument) be used during access. The instrument must have an alarm when the oxygen levels fall below 19%.

4.10 Breathing protection

Criteria must be established specifying necessary breathing protection. The breathing protection must protect against the different contaminations such as too low oxygen levels. In event of different types of contamination (check hygienic limits) the total of these must be observed. In the event of a risk of contamination to the inhaled air, measurements must be carried out at least twice in 24 hours, unless a respirator is used. When using an air respirator, the air must not be taken from the instrument or working air network.

4.11 Nitrogen rich environments

When accessing nitrogen rich environments there must be two standby persons, at least one of whom must be trained for access in event of emergency. One of the standby persons must be equipped with an air respirator, rescue harness and lifeline. The safety technicians must also take part in the JSA covering access to nitrogen atmospheres and when there is a risk of oxygen deficiency.

4.12 Rescue plan

There must be a rescue plan for each access that indicates how personnel in the confined space should be rescued in the event of an accident. The rescue plan is produced within the framework of the JSA.

4.13 Electrical equipment

- When electrically powered equipment must be used in confined spaces with conductive walls, it must be connected to a safety transformer (max 50V), which must be located outside the area in question.
- In other areas where voltage >50V is used, the electrical equipment must be connected via an earth leakage circuit breaker (max 30 mA).

4.14 Archiving blind and blanks list

- The blind and blanks list that is completed, that is signed off that the equipment has been restored, is stored within the department for at least one month.

5 EXCEPTIONS

In locations where access is frequent, such as autoclaves, silos, PVC filters, salt removers etc. special procedures can be applied, but must then be based on a job safety analysis.

APPENDIX 1

STANDARD FOR BLIND AND BLANKS LISTS

Example: T261 Actions for access to confined spaces

Check that the location on the blind diagram corresponds with reality

date sign.....

This check must be made before each new access. New access is a new stop, new project or other activity that requires access. Checks can be carried out by the supervisor, operations planner or engineer. If the diagram is not correct it must be redrawn and approved, that is new "review" and "approve".

If there is a mixer or other electrical equipment that must be isolated or locked this must be included on the list of "implemented and checked".

The person (operations or maintenance personnel) that has carried out blind installation/removal signs that it is implemented/restored. Checking and signing that the blind installation/removal has been carried out is done by operations personnel.

		Checks are carried out by an authorised person				
		Completed	Checks	Restored	Checks	
<u>Action regarding:</u>		Conn. in mm.	Sign/Date	Sign/Date	Sign/Date	Sign/Date
Supply line	Blinded or blanked	A 100	/	/	/	/
Supply line / Feedback line	Blinded or blanked	B 50	/	/	/	/
Gas line	Blinded or blanked	C 50	/	/	/	/
Drain	Blinded or blanked	D 50	/	/	/	/
Drain	Blinded or blanked	E 50	/	/	/	/
Nitrogen to T261	Dismantled	F 12	/	/	/	/
Manhole	Opening	G	/	/	/	/
Rupture discs	Dismantled	H 50	/	/	/	/

POST CHECK

Leak check
End flanges installed

Signature

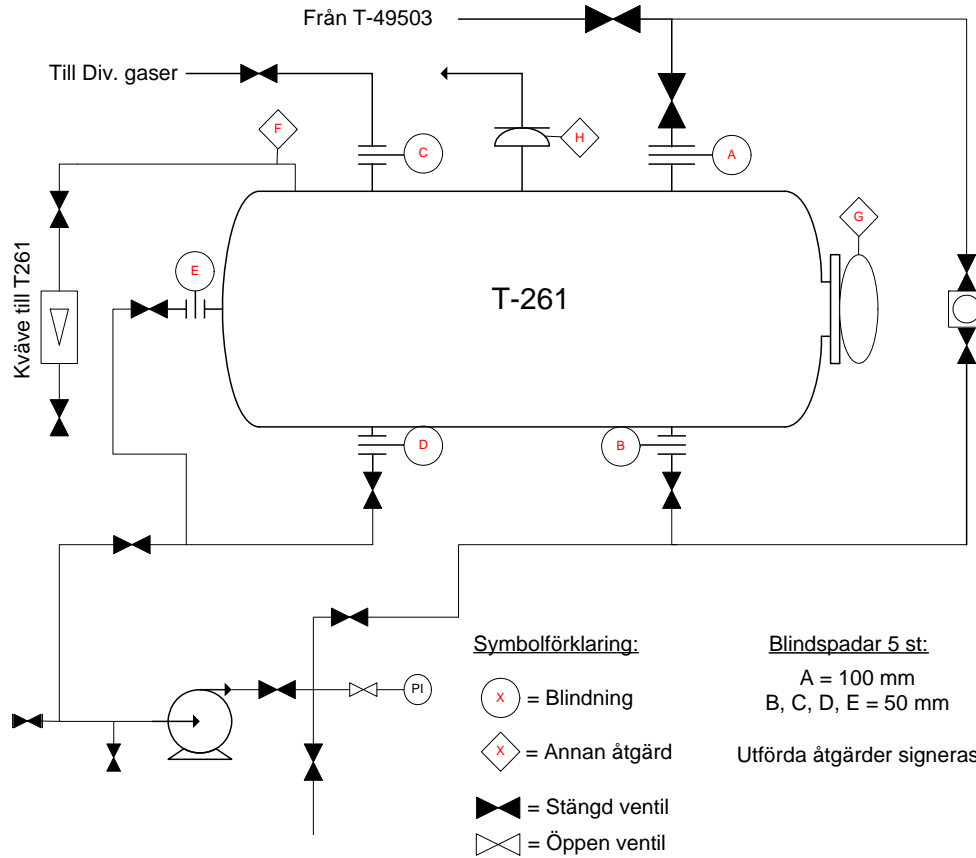
Validity
10 yearsDate
2015-07-01Reg No
HMSS-342Unit
HSE&QReviewer
Mats AnderssonApprover
Helén AxelssonVersion
16

Cleaned



Each blind or action is marked in the field by a red sign marked access measure. The sign must be marked with ID, No (number /letter according to list), Date and Signature.

If the work extends over several days, a new check must be carried out each day in conjunction with the issue of a new work permit and acknowledged in the check appendix on the next page.



		Checks are carried out by an authorised person							
		Checks	Checks	Checks	Checks	Checks	Checks	Checks	
		Conn. in mm.	Sign./Dat.	Sign./Dat.	Sign./Dat.	Sign./Dat.	Sign./Dat.	Sign./Dat.	Sign./Dat.
Action regarding									
Blinded or blanked	A	100	/	/	/	/	/	/	/
Blinded or blanked	B	50	/	/	/	/	/	/	/
Blinded or blanked	C	50	/	/	/	/	/	/	/
Blinded or blanked	D	50	/	/	/	/	/	/	/
Blinded or blanked	E	50	/	/	/	/	/	/	/
Dismantled	F	12	/	/	/	/	/	/	/
Opening	G		/	/	/	/	/	/	/

Validity
10 years

Date
2015-07-01

Reg No
HMSS-342

Unit
HSE&Q

Reviewer
Mats Andersson

Approver
Helén Axelsson

Version
16

Dismantled	H	50	/	/	/	/	/	/	/
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APPENDIX 2 Form access protocol

Click on the link below to access the electronic form.

[Access meeting protocol for access to confined spaces](#)