Form 36

DPC: 21/30405891 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000
Fax: +44 (0)20 8996 7400
www.bsigroup.com

Date: 09 June 2021
Origin: European

Latest date for receipt of comments: 27 July 2021

Project No. 2019/03501

Responsible committee: B/513/3 Machines for the production of cement, lime and gypsum - Safety

Interested committees:

Title: Draft BS EN 1009-6 Machines for mechanical processing of minerals and similar solid materials - Safety. Part 6: Specific requirements for mobile machinery.

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

i) has any issues related to 3rd party IPR, patent or copyright
ii) affects other national standard(s)
iii) requires additional national guidance or information

WARNING: THIS IS A DRAFT AND MUST NOT BE REGARDED OR USED AS A BRITISH STANDARD. THIS DRAFT IS NOT CURRENT BEYOND 27 July 2021

This draft is issued to allow comments from interested parties; all comments will be given consideration prior to publication. No acknowledgement will normally be sent. **See overleaf for information on the submission of comments.**

No copying is allowed, in any form, without prior written permission from BSI except as permitted under the Copyright, Designs and Patent Act 1988 or for circulation within a nominating organization for briefing purposes. Electronic circulation is limited to dissemination by e-mail within such an organization by committee members.

Further copies of this draft may be purchased from BSI Shop http://shop.bsigroup.com or from BSI Customer Services, Tel: +44(0) 20 8996 9001 or email cservices@bsigroup.com. British, International and foreign standards are also available from BSI Customer Services.

Information on the co-operating organizations represented on the committees referenced above may be obtained from https://standardsdevelopment.bsigroup.com/.

Responsible Committee Secretary: Ms Charlotte Hennessey (BSI)
Direct tel: 020 8996 6436
E-mail: charlotte.hennessey@bsigroup.com

AVA Documents Document Sharing Hub

Full document details: 21/30405891 DC

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at **https://standardsdevelopment.bsigroup.com/**. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx

1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex **(e.g. 3.1)**	Paragraph/Figure/ Table/Note	**Type of comment**	**Commend (justification for change) by the MB**	**Proposed change by the MB**	**Secretariat observations on each comment submitted**
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

AVA Documents
Document Sharing Hub

Full document details: 21/30405891 DC

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 1009-6

June 2021

ICS 73.120; 91.220

English Version

Machines for mechanical processing of minerals and similar solid materials - Safety - Part 6: Specific requirements for mobile machinery

Machines pour le traitement mécanique des minéraux et des matières solides similaires - Sécurité - Partie 6 : Prescriptions spécifiques pour les unités mobiles

Maschinen für die mechanische Aufbereitung von Mineralien und ähnlichen festen Stoffen - Sicherheit - Teil 6: Spezifische Anforderungen für mobile Maschinen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 151.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2021 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. prEN 1009-6:2021 E

Documents
Document Sharing Hub

Full document details: 21/30405891 DC

Contents

Page

European foreword ... 5
Introduction ... 6
1 Scope ... 7
2 Normative references ... 8
3 Terms and definitions ... 10
4 Safety requirements and/or protective/risk reduction measures ... 12
4.1 General ... 12
4.2 Openings ... 12
4.2.1 General ... 12
4.2.2 Compact mobile machines ... 13
4.2.3 Heavy mobile machines ... 13
4.2.4 Extra heavy mobiles machines ... 14
4.3 Access ... 14
4.3.1 General ... 14
4.3.2 Compact mobile machines ... 14
4.3.3 Heavy mobile machines ... 15
4.3.4 Extra-heavy mobile machines ... 16
4.4 Visibility ... 16
4.5 Control devices ... 17
4.5.1 General ... 17
4.5.2 Emergency-stop ... 17
4.5.3 Travel mode ... 17
4.5.4 Travelling while processing mode ... 18
4.5.5 Setup mode ... 18
4.5.6 Control devices to enable safe packing and unpacking of self-propelled machines from containers ... 18
4.6 Safeguarding ... 18
4.6.1 Apron feeder ... 18
4.6.2 Integrated belt conveyor ... 18
4.6.3 Magnetic separators ... 20
4.6.4 Autonomous radial conveyors ... 20
4.6.5 Engine compartment ... 20
4.7 Safety related parts of control systems ... 20
4.8 Hydraulics and pneumatics ... 20
4.9 Electrical equipment ... 21
4.9.1 General ... 21
4.9.2 Electrostatic charges ... 21
4.10 Lifting, tying down and transport ... 21
4.10.1 General ... 21
4.10.2 Tying-down points ... 21
4.10.3 Lifting points ... 21
4.10.4 Towing attachment points (for mobile plants) ... 21
4.11 Maintenance ... 21
4.11.1 General ... 21
4.11.2 Routine maintenance ... 22

Documents
Document Sharing Hub
Full document details: 21/30405891 DC

4.12 Noise 22
4.12.1 Noise reduction as a safety requirement 22
4.12.2 Verification of requirements on noise based on noise emission values 22
4.13 Vibrations 23
4.14 Mobile machine movement 23
4.15 Hot parts 23
4.15.1 General 23
4.15.2 Thermal guarding 23
4.15.3 Fire extinguisher 23
4.16 Fuel tanks, DEF/urea tanks, hydraulic tanks 24
4.16.1 General 24
4.16.2 Filler openings 24
4.16.3 Fuel tanks 24
4.17 Batteries 24
4.18 Additional requirements for wheeled machinery 24
4.19 Exhaust gas 25
5 Verification of the safety requirements and/or protective/risk reduction measures 25
6 Information for use 25
6.1 General 25
6.2 Accompanying documents (in particular: instruction handbook) 25
6.2.1 General 25
6.2.2 Instructions for transport, handling and storage of the machine and its dismountable parts 26
6.2.3 Instructions for the installation and the use of the machine 26
6.2.4 Maintenance and inspection instructions 27
6.3 Marking 27
6.4 Pictorials 27
6.5 Signals and warning devices 28
Annex A (informative) List of significant hazards 29
Annex B (normative) Examples of mobile machines 41
Annex C (informative) Examples of machine components and attachments 48
C.1 Mobile integrated conveyors 48
C.2 Other types of mobile conveyors 49
C.3 Heavy mobile and compact mobile means of access 50
C.4 Examples of magnetic separators 52
Annex D (normative) Noise test code 53
D.1 Scope 53
D.2 Sound power level determination 53
D.2.1 A-weighted emission sound pressure levels on a contour (mandatory) 53
D.2.2 A-weighted sound power level (optional) 53
D.2.2.1 Reference box 53
D.2.2.2 Measurement positions 54
D.2.2.3 Uncertainty 58
D.3 Determination of A-weighted emission sound pressure levels at workstations 59

AVA Documents
Document Sharing Hub

Full document details: 21/30405891 DC

D.3.1 Uncertainty **59**
D.4 Installation conditions **60**
D.5 Operating conditions **60**
D.5.1 General **60**
D.5.2 Fast Idle condition (mandatory) **60**
D.5.3 Process condition (optional) **60**
D.6 Information to be recorded **61**
D.7 Information to be reported **61**
D.8 Declaration of noise emission values in the instruction handbook **61**
D.9 EXAMPLE I – MANDATORY DATA THAT NEEDS TO BE INCLUDED IN THE NOISE EMISSION DECLARATION (SOUND PRESSURE LEVELS) **62**
D.10 EXAMPLE II - OPTIONAL DATA THAT CAN BE GIVEN IN THE NOISE EMISSION DECLARATION (SOUND POWER LEVEL WITH PROCESS NOISE INFO) **63**
Annex ZA (informative) **Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered** **64**
Bibliography **68**

Documents
Document Sharing Hub
Full document details: 21/30405891 DC

European foreword

This document (prEN 1009-6:2021) has been prepared by Technical Committee CEN/TC 151 “Construction equipment and building material machines - Safety”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

EN 1009 consists of the following parts, under the general title *Machines for mechanical processing of minerals and similar solid materials — Safety*:

— Part 1: Common requirements for single machines and processing plants

— Part 2: Specific requirements for feeding machinery

— Part 3: Specific requirements for crushing and milling machinery

— Part 4: Specific requirements for screening machinery

— Part 5: Specific requirements for cleaning, recycling, sorting and mud treatment machinery

— Part 6: Specific requirements for mobile machinery.

AVA Documents
Document Sharing Hub

Full document details: 21/30405891 DC

Introduction

This document is a type-C standard as stated in EN ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A or B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (regulators, accident prevention organizations, market surveillance etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e.g. for maintenance (small, medium and large enterprises);

— consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate in the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

Documents
Document Sharing Hub
Full document details: 21/30405891 DC

1 Scope

This document, together with EN 1009-1:2020+A1:202X, specifies safety requirements and verification for the design and construction of mobile machinery for crushing, screening, feeding, conveying minerals and by-products: (cement, lime, gypsum. sand, gravel, industrial minerals, metalliferous ore, and hard and soft rock aggregates, coal) and by-products (slag and ashes, production and demolition waste) in construction and industry.

In addition, this document specifies the type of information on safe working practices (including residual risks) to be provided by the manufacturer.

The requirements of this document are complementary to the common requirements formulated in EN 1009-1:2020+A1:202X, EN 1009-2:2020+A1:202X, EN 1009-3:2020+A1:202X, EN 1009-4:2020+A1:202X, EN 1009-5:2020+A1:202X. This part does not repeat the requirements from EN 1009-1:2020+A1:202X, but adds or replaces them.

When requirements of this document are different from those which are stated in EN 1009-1:2020+A1:202X, EN 1009-2:2020+A1:202X, EN 1009-3:2020+A1:202X, EN 1009-4:2020+A1:202X, EN 1009-5:2020+A1:202X the requirements of this document takes precedence over the requirements of EN 1009-1:2020 for machines that have been designed and built according to the provisions of this document.

This document, together with EN 1009-1:2020+A1:202X, EN 1009-2:2020+A1:202X, EN 1009-3:2020+A1:202X, EN 1009-4:2020+A1:202X, EN 1009-5:2020+A1:202X deals with all the identified significant hazards, hazardous situations and events relevant to machinery for cleaning, recycling, mud treatment when they are used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer associated with the whole lifetime of the machine (see Annex A).

This document does not apply to machines with a seated or standing operator while driving.

This document does not cover:

— design relating to road traffic regulations (e.g. lighting, dimensions, speed limit plate);

— hazards arising from the use of the machines in potentially explosive atmospheres as well as from processing of explosive materials and risks related to electromagnetic compatibility;

— hazards arising from the use of the laser sensors.

NOTE For travelling on public roads, national traffic regulations apply (e.g. braking, steering, lighting, towing etc.) until harmonized requirements are available.

This document is not applicable to mobile machines, which are manufactured before the date of publication of this document by CEN.

Documents
Document Sharing Hub
Full document details: 21/30405891 DC

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1009-1:2020+A1:202X,[1)] *Feeding, crushing, milling, sizing and sorting machines for mechanical processing of minerals and similar solid materials — Safety — Part 1: Common requirements for single machines and processing plants*

EN 1009-2:2020+A1:202X[1)], *Feeding, crushing, milling, sizing and sorting machines for mechanical processing of minerals and similar solid materials — Safety — Part 2: Specific requirements for feeding machinery*

EN 1009-3:2020+A1:202X[1)], *Feeding, crushing, milling, sizing and sorting machines for mechanical processing of minerals and similar solid materials — Safety — Part 3: Specific requirements for crushing and milling machinery*

EN 1009-4:2020+A1:202X[1)], *Feeding, crushing, milling, sizing and sorting machines for mechanical processing of minerals and similar solid materials — Safety — Part 4: Specific requirements for screening machinery*

EN 1009-5:2020+A1:202X[1)], *Feeding, crushing, milling, sizing and sorting machines for mechanical processing of minerals and similar solid materials — Safety — Part 5: Specific requirements for cleaning, recycling, sorting and mud treatment machinery*

EN 620:202X[1)], *Continuous handling equipment and systems - Safety and EMC requirements for fixed belt conveyors for bulk materials*

EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005)*

EN 61496-1:2013, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2012)*

EN ISO 2860:2008, *Earth-moving machinery — Minimum access dimensions (ISO 2860:1992)*

EN ISO 2867:2011, *Earth-moving machinery — Access systems (ISO 2867:2011)*

EN ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2010)*

EN ISO 3746:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:2010)*

EN ISO 4871:2009, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

---

[1] Under preparation.

Documents
Document Sharing Hub
Full document details: 21/30405891 DC

EN ISO 7010:2020, *Graphical symbols — Safety colours and safety signs — Registered safety signs (ISO 7010:2020)*

EN ISO 9614-2:1996, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 2: Measurement by scanning (ISO 9614-2:1996)*

EN ISO 11201:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201:2010)*

EN ISO 11202:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions applying approximate environmental corrections (ISO 11202:2010)*

EN ISO 12100, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

EN ISO 13856-3:2013, *Safety of machinery — Pressure-sensitive protective devices — Part 3: General principles for design and testing of pressure-sensitive bumpers, plates, wires and similar devices (ISO 13856-3:2013)*

EN ISO 14122-1:2016, *Safety of machinery — Permanent means of access to machinery — Part 1: Choice of fixed means and general requirements of access (ISO 14122-1:2016)*

EN ISO 14122-2:2016, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways (ISO 14122-2:2016)*

EN ISO 14122-3:2016, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails (ISO 14122-3:2016)*

EN ISO 14122-4:2016, *Safety of machinery — Permanent means of access to machinery — Part 4: Fixed ladders (ISO 14122-4:2016)*

ISO 3864-1:2011, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings*

ISO 3864-2:2016, *Graphical symbols — Safety colours and safety signs — Part 2: Design principles for product safety labels*

ISO 3864-3:2012, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for graphical symbols for use in safety signs*

ISO 7000:2019, *Graphical symbols for use on equipment*

ISO 9244:2008,[2] *Earth-moving machinery — Machine safety labels. General principles*

[2] As impacted by ISO 9244:2008/AMD 1:2016.

Documents
Document Sharing Hub
Full document details: 21/30405891 DC

ISO 9533:2010, *Earth-moving machinery — Machine-mounted audible travel alarms and forward horns — Test methods and performance criteria*

ISO 17063:2003, *Earth-moving machinery — Braking systems of pedestrian-controlled machines — Performance requirements and test procedures*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1009-1:2020+A1:202X, EN 1009-2:2020+A1:202X, EN 1009-3:2020+A1:202X, EN 1009-4:2020+A1:202X, EN 1009-5:2020+A1:202X and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.2
mobile machine
mobile machinery
crawler or wheel, self-propelled, trailed or towed machine movable from a worksite to another or from a place to another on the same worksite

Note 1 to entry: A crawler machine is also known as a track or tracked machine.

3.3
compact mobile machine
machinery, designed where main components for example a feed hopper, vibrating feeder, crusher, vibrating screen, etc. do not need to be removed prior to transportation between worksites

Note 1 to entry: Typically transport is enabled by folding components such as hopper walls, conveyors and platforms.

Note 2 to entry: *Attachments* (3.7) can be removed from the machine.

3.4
heavy mobile machine
machinery, designed where main components for example a feed hopper, vibrating feeder, crusher, vibrating screen that needs to be removed prior to transportation between worksites

3.5
extra-heavy mobile machine
mobile machine (3.2), designed to remain on one worksite during its intended life and where main components for example a feed hopper, vibrating feeder, crusher, vibrating screen need to be shipped separately and assembled on worksite

Note 1 to entry: Generally, extra-heavy mobile machines have an operating mass greater than 150 t.

3.7
attachment
part or mechanism fitted to the machine to enhance or change its application

Note 1 to entry: Attachments can include but are not limited to, magnetic separator, metal detector, additional vibrating screen, side conveyor, dust suppression, belt scale, hydraulic rock pick and hopper extensions.

Documents
Document Sharing Hub
Full document details: 21/30405891 DC

3.8
feed material
charged material
material which has been loaded into the receiving hopper and /or the feed device

[Source: ISO 21873-1:2015, 3.10]

3.9
by-pass device
device that separates and diverts material before the main crushing or screening process

Note 1 to entry: By-pass devices can include, a chute for mixing with processed material, reversible belt conveyors, vibrating screen.

3.10
by-pass conveyor
discharge device for material separated by the bypass device

3.11
discharge device
mechanism that removes processed or unprocessed material

Note 1 to entry: Examples of discharge devices can include, belt conveyor, screw conveyor, chute, vibrating feeder, reciprocating plate feeder.

3.12
return conveyor
mechanism for transferring material back to the crusher or vibrating screen or feed devices for re-processing

3.16
gradient
maximum inclination the machine is able to traverse, front to back and side to side, without losing stability, causing component damage or spilling fluids

3.17
control system
system for controlling the operation of the mobile machinery

Note 1 to entry: This system includes an operator interface and mechanical, hydraulic, pneumatic, electric or electronic components for controlling the operation of the mobile machinery

3.18
prime mover
engine, motor or other device which provides mechanical energy for linear or rotational movement

[SOURCE: ISO 21873-1:2015, 3.7]

Note 1 to entry: Examples of prime movers include an internal combustion engine, an electrical generator, an electric motor

3.20
routine maintenance
maintenance that is specified in the periodic maintenance schedule in the instruction handbook for performing scheduled daily/weekly/monthly maintenance on the machine

AVA Documents
Document Sharing Hub

Full document details: 21/30405891 DC

3.21
tracked radial machine
mobile machine (3.2) which has tracks to enable mobility from one location to another and in addition has wheels which are used primarily to enable radial travel of the machine

3.22
bridging
blocked material in the crushing chamber where the moving crushing parts are free to move

3.23
operator's position
area from which an operator controls the travel and/or work functions of the machine

Note 1 to entry: The operator's position for mobile machinery is not a fixed position when the machine is remote controlled.

4 Safety requirements and/or protective/risk reduction measures

4.1 General

Machinery shall comply with the safety requirements and/or protective/risk reduction measures of this clause.

In addition, the machine shall be designed according to the principles of EN ISO 12100 for relevant, but not significant hazards, which are not dealt with by this document.

All safety requirements of EN 1009-1:2020+A1:202X apply to mobile machines unless specified requirement in this document.

When relevant, safety requirements of EN 1009-2:2020+A1:202X to EN 1009-5:2020+A1:202X apply to mobile machines unless specified requirement in this document.

Mobile machines shall be designed and built to minimise the need for inspection and maintenance inside the machine, e.g. for a screen by the following means:

— moveable chutes and conveyors to increase access;

— external media tensioning systems;

— moveable chutes and conveyors to increase access;

— side and end access openings, separating screens, angle adjustment.

Means shall be provided for the instruction handbook (whether in physical or digital format) to be accessible and available for use. A space intended for the safekeeping of the instruction handbook and other instructions shall be provided on the machine.

4.2 Openings

4.2.1 General

For exceptional maintenance as defined in EN 1009-1:2020+A1:202X, 3.16, openings shall be in accordance with EN ISO 2860:2008.

Where noise encapsulation or noise barrier is fitted, all maintenance openings shall be in accordance with EN ISO 2860:2008. This exemption applies to openings in the encapsulation itself and its surrounding structures.

Documents
Document Sharing Hub
Full document details: 21/30405891 DC

4.2.2 Compact mobile machines

4.2.2.1 General

By exception to EN 1009-1:2020+A1:202X, 4.2 openings shall be in accordance with EN ISO 2860:2008.

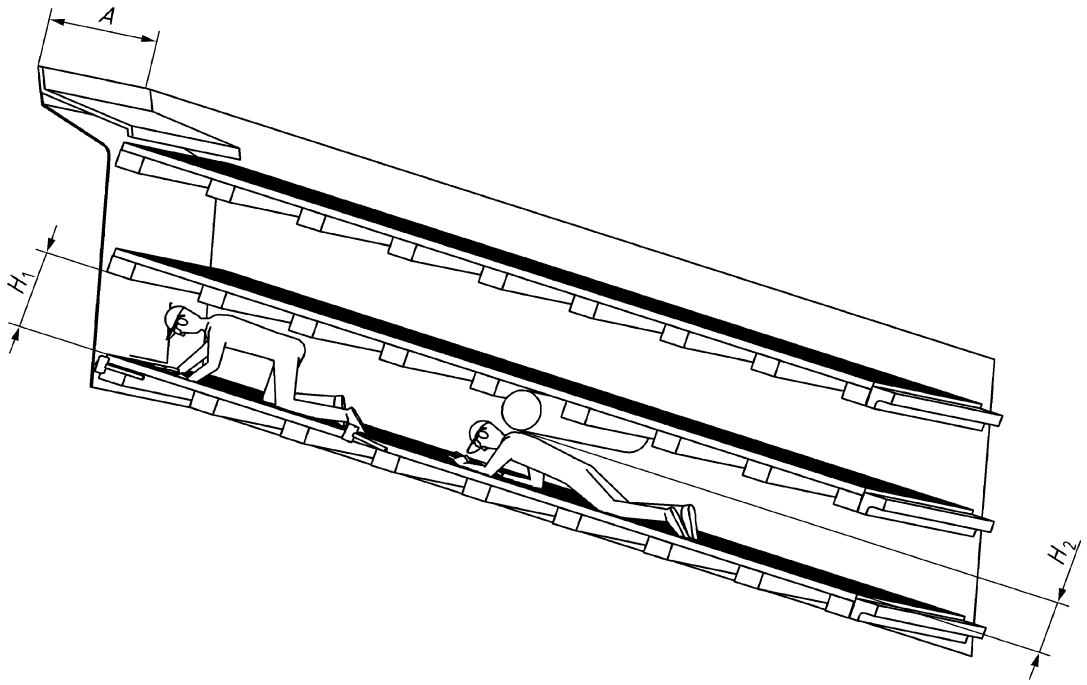
4.2.2.2 Access opening

Access opening for upper body access for the purpose of maintenance shall measure 330 mm × 580 mm as a minimum.

4.2.2.3 Passage opening

For a screening machine installed in a compact mobile machine, when access inside the screen is required for inspection and maintenance, in adaption to EN 1009-4:2020+A1:202X, 4.2.4.3.2, 4.2.4.4.1, 4.2.4.4.2 and 4.2.4.2, the distance between the deck and the obstacle (H_2) shall be minimum 366 mm and distance between two decks under cross beam (H_1) shall be minimum 450 mm. See Figure 1.

Dimensions in millimetres



Key

A	minimum width of opening
H_1 = 450	distance between two decks under cross beam
H_2 = 366	distance between the deck and the obstacle

Figure 1 — Passage dimensions between two decks if crawling is required

4.2.3 Heavy mobile machines

Screening machinery installed in heavy mobile machines, shall meet EN 1009-4:2020+A1:202X when the screen needs to be removed for transportation constraints.

Screening machinery that remain in the mobile machine for transportation shall meet 4.2.2.

Documents
Document Sharing Hub

Full document details: 21/30405891 DC

4.2.4 Extra heavy mobiles machines

Screening machinery installed in extra-heavy mobile machines shall meet EN 1009-4:2020+A1:202X.

4.3 Access

4.3.1 General

Where there is an operator's station as defined in EN 1009-1:2020+A1:202X, 3.9 which is elevated, means of access shall be provided.

NOTE Operator's station is preferably accessible from the ground.

Means of access, shall be provided in areas where routine maintenance and inspection are to be performed with the following exceptions:

The access shall not be provided if there is a risk of injury related to the position of the means of access.

Clear instructions to work safely in these areas shall be provided in the instructions for use.

NOTE Due to the transportation requirements it is not always possible to construct and position means of access to all routine maintenance areas without additional risk, for example high risk areas are material loading points and engine exhaust.

The height of first step of ladders or multiple steps above ground, platform, walkway or passageway shall be no greater than 500 mm maximum height, target height 400 mm.

In mobile machinery, the service platform surrounding the screening machinery is normally lifted together with the screening machinery from transport and maintenance position to operating position. If it is foreseeable that in some situations (e.g. process disturbance or blockage) the operator needs to access the platform when the machine is stopped but still lifted in operating position (typically 20-30 degrees), means shall be provided with additional grips and anti-slip surface according to EN ISO 14122-2:2016, 4.2.4.7, but by exception EN ISO 14122-2:2016, 4.2.4.7, the maximum angle of pitch (α) shall not be greater than 30 degrees.

The requirements of EN 1009-4:2018, 4.1 shall apply with the following exceptions: The requirements in Paragraph 4 indent 2 (fall protection) are not required when the screen can be set to the horizontal position and when a service platform is provided.

For a mobile machine with a conveyor at a maximum distance of 1 m below the screen EN 1009-4:2020+A1:202X, 4.1 Paragraph 4 indent 3 is not required.

EN 1009-4:2020+A1:202X, 4.1, Paragraph 3 does not apply when drive of the screen and relevant upstream and downstream machinery (e.g. bypass) functions are protected against unexpected start-up by the lockable disconnection device as specified in 4.5.1.

Mobile cone and gyratory crusher machinery:

EN 1009-3:2020+A1:202X, 4.3.3 applies with the following exceptions and additions:

— a temporary working platform is not required if other means, designed in order to prevent operator from falling, are provided;

— guardrails are not required, if parts of the machines prevent falling outside of the machine.

4.3.2 Compact mobile machines

Means of access for compact mobile machines by exception to EN 1009-1:2020+A1:202X, 4.4 shall be in accordance with EN ISO 2867:2011.

Documents
Document Sharing Hub
Full document details: 21/30405891 DC

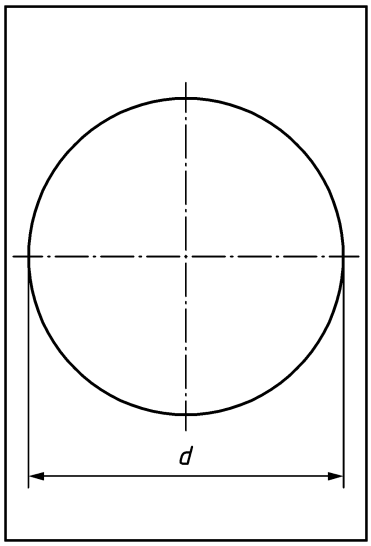
As an addition to EN ISO 2867:2011, compact mobile machines shall be fitted with self-closing gates complying with EN ISO 14122-3:2016, 7.4.1 when:

— there is a passage provided through the guardrail and

— the opening gives access to a fixed ladder with an angle of pitch from more than 75° up to 90° (as defined in EN ISO 14122-1:2017, 3.1).

Platforms at a height of less than 2 m, shall have the minimum dimension of 300 mm × 400 mm and shall be fitted with either handholds, handrails or guardrails (see EN ISO 2867:2011, 6.3.1).

By exception to EN 1009-1:2020+A1:202X, 4.2.1 and Annex B, the passage opening for access to the prime mover enclosure shall have a clear body opening with a minimum cross sectional dimension (*d*) of 580 mm. See Figure 2.



Key

d minimum cross sectional dimension

Figure 2 — Passage of the body

NOTE Dimension 580 mm is defined in EN ISO 2860:2008.

4.3.3 Heavy mobile machines

Means of access for heavy mobile machines shall be in accordance with EN 1009-1:2020+A1:202X, 4.4 with following exceptions:

— inspection platforms for crushers, feeders or screens shall be in accordance with EN ISO 2867:2011;

— any other operator's station where EN ISO 14122-1:2016 requirements cannot be achieved due to safety risk (e.g. exposure to moving machine parts, processed material or heat) shall be designed in accordance with EN ISO 2867:2011;

— when noise encapsulation or noise barrier is fitted, access systems inside or next to noise encapsulations shall be in accordance with EN ISO 2867:2011 if dimension constrains cannot allow using EN ISO 14122:2016 series.

Means of access from ground level to the main platform/walkway shall always be in accordance with EN ISO 14122-1:2016, however if access is required to the platform when the machine is in transport

Documents
Document Sharing Hub

Full document details: 21/30405891 DC

configuration then an additional access system can be provided in accordance with EN ISO 2867:2011.

As an addition to EN ISO 2867:2011, heavy mobile machines shall be fitted with self-closing gates complying with EN ISO 14122-3:2016, 7.4.1 when:

— there is a passage provided through the guardrail; and

— the opening gives access to a fixed ladder with an angle of pitch from more than 75° up to 90° (as defined in EN ISO 14122-1:2017, 3.1).

— By exception to EN 1009-1:2020+A1:202X, 4.2.1 and Annex B, the passage opening for access to the prime mover enclosure shall have a clear body opening with a minimum cross sectional dimension (*d*) of 580 mm. See Figure 2.

NOTE Dimension 580 mm is defined in EN ISO 2860:2008.

4.3.4 Extra-heavy mobile machines

All Means of access including inspection and maintenance means of access shall be in accordance with EN 1009-1:2020+A1:202X, 4.4 except small platforms designed for construction and assembly on site, for which EN ISO 2867 can apply, because of the short period of utilisation. These platforms can remain on the machine until disassembly or partial disassembly.

In addition, when noise encapsulation or noise barrier is fitted, access systems inside or next to noise encapsulations shall be in accordance with EN ISO 2867:2011 if dimension constrains cannot allow using EN ISO 14122:2016 series.

For stairs, to allow travelling on worksite, the first steps are permitted to be retractable or other similar solution (e.g. folding).

4.4 Visibility

Mobile machinery shall be provided with lighting complying with the following Table 1, whatever is the working time (day and/or night) or the working place (indoor or outdoor).

The main control station, where installed, shall be fitted with an inner lighting system.

For remote controlled machines or machines without a main control station, lighting complying with Table 1, row “Main control station” shall be installed at least at the machine power start/stop switch position(s).

By exception to EN 1009-1:2020+A1:202X for maintenance and sampling, a means shall be provided to plug corded hand lamps and / or rechargeable cordless hand lamps.

Table 1 — Minimum illumination levels

Location	Minimum illumination level
Main control station	50 lux
Stairs and ladders	15 lux
Travelling	15 lux [a]
[a] Measured 1 m out from tractive drive system, e.g. track shoe, at centre height of gearbox or idler.	

Documents
Document Sharing Hub
Full document details: 21/30405891 DC

If necessary to provide lighting when the power source has been isolated, EN 60204-1:2006, 5.3.5 concerning excepted circuits shall apply.

4.5 Control devices

4.5.1 General

For mobile machines EN 1009-1:2020+A1:202X, 4.10 applies with the following exemptions and additional requirements.

The requirement in EN 1009-1:2020+A1:202X, 4.10.1 for lockable disconnection device for mobile machines with a combustion engine as the only power source can be fulfilled with a lockable battery disconnect device.

Requirements in EN 1009-1:2020+A1:202X, 4.10.6.3 applies when putting the machine in operation.

Before starting the main power source (e.g. combustion engine, hydraulic system or electric motor), a prestart warning (as defined in EN 1009-1:2020, 3.12) of 5 s, followed by a delay of 4 s (with no prestart warning) and then a further prestart warning of 3 s are required. For extra heavy mobile machines (as defined in 3.5) and heavy mobile machines (as defined in 3.4), duration of warnings can be increased to adapt to the complexity of the installation.

4.5.2 Emergency-stop

In addition to EN 1009-1:2020+A1:202X, 4.10.4, for emergency stops in mobile machines, at least one of the following methods can be used:

a) one or more push button operated switches which shall be installed in such a way that at least one may be reached within 10 m from any accessible point of the machine;

b) one or more pull cord operated switches along the accessible length of the installation.

Where possible, emergency stops for mobile machinery shall not be placed where an operator shall enter a hazard zone to operate the emergency stop.

4.5.3 Travel mode

In addition to EN 1009-1:2020+A1:202X, 4.10, operation of travelling functions shall only be permitted by continuous actuation of a hold-to-run control device, the control device shall be minimum IP65.

Before selection of travel mode, wired control or Cable-less Control System (CCS) shall be selected, when more than one method exists, only one control method shall be permitted.

Activation of travel mode shall be from a defined selection on the control device and shall be followed by a prestart warning of 5 s followed by a delay of 4 s (with no prestart warning) and then a further prestart warning of 3 s. Immediately after the prestart warning, a continuous audio and visual warning shall start for travel mode.

A visual indication shall be provided to show that the travel mode is engaged and prestart warning is complete.

Control system shall reset the prestart warning and prevent the machine from entering travel mode if any hold to run track direction lever/button is engaged before or during the prestart warning sequence.

Inactivity of hold to run track controls exceeding 3 min shall cause machine to disable travel mode. Reactivation of travel mode shall be necessary to continue travelling.

Loss of communication of the CCS whilst travel mode is active shall result in immediate safe-standstill or activation of an emergency stop shutdown in accordance with EN 1009-1:2020+A1:202X, 4.13. On reestablishment of communication, reactivation of travel mode shall be necessary to continue travelling.

AVA Documents Document Sharing Hub

Full document details: 21/30405891 DC

4.5.4 Travelling while processing mode

For travelling while processing mode, 4.5.3 applies with the following modifications:

— travelling shall only be possible using CCS control;

— inactivity of hold to run track controls exceeding 5 min shall cause machine to disable travel mode. Reactivation of travel mode shall be necessary to continue travelling.

4.5.5 Setup mode

In addition to EN 1009-1:2020+A1:202X, 4.10.6, a mobile machine may be fitted with a setup mode.

Setup mode is designed to allow for folding / unfolding conveyors or other items of the mobile machine, normally necessary to put the machine into working position or convert from transport position, for example. All movements not needed for setup shall be disabled.

4.5.6 Control devices to enable safe packing and unpacking of self-propelled machines from containers

A means shall be provided to enable safe initiation of the prime mover of the machine from outside of shipping containers.

The lockable disconnection device, as detailed in EN 1009-1:2020+A1:202X, 4.10.1 or a lockable battery disconnect device as detailed in 4.5.1 of this document, shall be installed at a location that is readily and easily accessible in relation to machines loaded in shipping containers.

4.6 Safeguarding

4.6.1 Apron feeder

By exemption to EN 1009-2:2020+A1:202X, 4.4.3, the flat underside surface of aprons does not require a guard, provided there is no nip point.

4.6.2 Integrated belt conveyor

For belt conveyor on mobile machines EN 1009-2:2020+A1:202X, 4.8.2 applies with the following exceptions and additions:

— In exception to EN 620:202X, 4.3.5.1 and 4.3.5.2, shall be replaced by the following requirements:

  Means shall be provided to prevent parts of the conveyor (including the belt) falling above defined pathways.

  The pathways and the traffic zone shall be defined by the manufacturer and provided in the instructions for use (see 6.2.3).

  Where a conveyor passes above traffic zones, the conveyor shall be designed to avoid the belt or material falling, or a protection shall be provided.

  This requirement is considered to be achieved if the distance between two consecutive return idlers is less than 6 m or if conveyor frame is below the belt.

— In adaption to EN 620:202X, 4.3.2.1, regarding *Crushing and shearing points between conveyed material and fixed components of the conveyor*: Loading and unloading points shall be designed such that, the crushing and shearing hazards due to the conveyed loads (e.g. striking materials against the chute or falling on another conveyor) shall be either beyond reach, according to EN ISO 13857:2019,

Documents
Document Sharing Hub
Full document details: 21/30405891 DC

or safeguarded according to EN 620:202X, 4.2. For compact mobile machines and heavy mobile machines, if distance or safeguarding is not possible due to space or transport constraints:

- a rubber curtain or similar device shall be installed to reduce the risk of contact and a warning sign shall be fitted;
- when previous devices cannot be installed and when the risk is low, at least a warning sign shall be fitted.

  NOTE The factors to be considered when evaluating the risk level, are, e.g. particle size, density, capacity, speed, flow.

- In adaptation to EN 620:202X, 4.3.4.6, in mobile machines, a rubber protective skirt can be provided between the feed hopper and a belt. The rubber protective skirt shall have a strength of at least 150 N (i.e. to resist to a finger push).
- In addition to EN 620:202X, 4.3.2.2 regarding *Raising, lowering, rotating and translating equipment*, a counterbalancing valve or lowering control device fulfil the requirement.
- 4.3.2.3 does not apply (not relevant).
- 4.3.6 does not apply (covered by 4.3 of this document).
- 4.4 does not apply (covered by EN 1009-1:2020+A1:202X and prEN 1009-6:2021).
- 4.5 does not apply (covered by EN 1009-1:2020+A1:202X).
- 4.6 does not apply (covered by EN 1009-1:2020+A1:202X).
- 4.8.2 does not apply (not relevant).
- 4.9 does not apply (covered by EN 1009-1:2020+A1:202X).
- In addition to EN 620:202X, 4.10.1 Uncontrolled motion, in the case of an hydraulic driven conveyor, a check valve can fulfil the requirement.
- 4.10.2.3, 4.10.2.4, 4.10.2.5, 4.10.2.6 and 4.10.2.7 do not apply (covered in EN 1009-1:2020+A1:202X, EN 1009-2:2020+A1:202X and prEN 1009-6:2021).
- 4.10.2.2 does not apply, except the safety functions for the conveyor, according to EN 620:202X Annex B, when the devices are installed.

  NOTE The PLrs specified in EN 620:202X, Table B.1 apply only if the corresponding device(s) is(are) installed.

- In adaption to EN 620:202X, 5.1, Table 3 shall apply, except the following rows:
  - 4.3.5.1;
  - 4.3.5.2;
  - 4.3.6;
  - 4.4;
  - 4.5;

Documents
Document Sharing Hub
Full document details: 21/30405891 DC