SLOVENSKI STANDARD
SIST EN 15163:2017

01-september-2017

Nadomešča:
SIST EN 15163:2008

Stroji in oprema za pridobivanje in obdelavo naravnega kamna - Varnost - Zahteve za enožične diamantne žage

Machines and installations for the exploitation and processing of natural stone - Safety - Requirements for diamond wire saws

Maschinen und Anlagen zur Gewinnung und Bearbeitung von Naturstein - Sicherheit - Anforderungen für Dia-mantseilsägen und Diamant Multi-Drahtsägen

Machines et installations pour l'exploitation et la transformation de la pierre naturelle - Sécurité - Exigences pour les scies à fil diamanté et le diamant à plusieurs fils scies

Ta slovenski standard je istoveten z: EN 15163:2017

ICS:

25.100.01	Rezalna orodja na splošno	Cutting tools in general
73.120	Oprema za predelavo rudnin	Equipment for processing of minerals

SIST EN 15163:2017 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 15163

June 2017

ICS 73.120

Supersedes EN 15163:2008

English Version

Machines and installations for the exploitation and processing of natural stone - Safety - Requirements for diamond wire saws

Machines et installations pour l'exploitation et la transformation de la pierre naturelle - Sécurité - Exigences pour les scies à fil diamanté

Maschinen und Anlagen zur Gewinnung und Bearbeitung von Naturstein - Sicherheit - Anforderungen für Diamantseilsägen

This European Standard was approved by CEN on 17 March 2017.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 15163:2017 E

Contents

Page

Figures

Tables

European foreword

This document (EN 15163:2017) 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 European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2017, and conflicting national standards shall be withdrawn at the latest by December 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 15163:2008.

This document has been prepared under a mandate 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.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document has been prepared to be a harmonized standard to provide one means of conforming to the essential health and safety requirements of the Machinery Directive and associated EFTA Regulations.

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

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 at 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.

1 Scope

This European Standard deals with all significant hazards, hazardous situations and events, as listed in Clause 4, which are relevant to diamond wire saws, as defined and listed in Clause 3.

Diamond wire saws may be used in quarries or in sawmill for cutting natural stones (e.g. marble, granite), when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 4).

This European Standard specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards.

This European Standard deals only with diamond wire saws using coated diamond wire as tool.

This European Standard deals all significant hazards that may occur within the expected lifetime of the machinery including the phases of transport, assembly, dismantling, disabling and scrapping.

This European Standard does not deal with the significant hazards arising by the use of other facilities/devices not described in this document, that may be fitted on the machines or that may be used during the work cycle.

This European Standard does not deal with:

— operation under extreme ambient conditions (outside the limits defined in EN 60204-1:2006);

— upstream and downstream conveying elements, not integrated with diamond wire saws, for transporting of the work-pieces.

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

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 166:2001, *Personal eye-protection - Specifications*

EN 207:2017, *Personal eye-protection equipment — Filters and eye-protectors against laser radiation (laser eye-protectors)*

EN 863:1995, *Protective clothing - Mechanical properties - Test method: Puncture resistance*

EN 1005-2:2003+A1:2008, *Safety of machinery - Human physical performance - Part 2: Manual handling of machinery and component parts of machinery*

EN 1005-4:2005+A1:2008, *Safety of machinery - Human physical performance - Part 4: Evaluation of working postures and movements in relation to machinery*

EN 1037:1995+A1:2008, *Safety of machinery - Prevention of unexpected start-up*

EN 1837:1999+A1:2009, *Safety of machinery - Integral lighting of machines*

EN 13087-3:2000, *Protective helmets - Test methods - Part 3: Resistance to penetration*

EN 50370-1:2005, *Electromagnetic compatibility (EMC) - Product family standard for machine tools - Part 1: Emission*

EN 50370-2:2003, *Electromagnetic compatibility (EMC) - Product family standard for machine tools - Part 2: Immunity*

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

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 60825-1:2014, *Safety of laser products - Part 1: Equipment classification and requirements (IEC 608251:2014)*

prEN 61439-1:2016, *Low-voltage switchgear and controlgear assemblies - Part 1: General rules (IEC 61439-1:2016)*

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 4413:2010, *Hydraulic fluid power - General rules and safety requirements for systems and their components (ISO 4413:2010)*

EN ISO 4414:2010, *Pneumatic fluid power - General rules and safety requirements for systems and their components (ISO 4414:2010)*

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

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 11204:2010, *Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions applying accurate environmental corrections (ISO 11204:2010)*

EN ISO 11688-1:2009, *Acoustics - Recommended practice for the design of low-noise machinery and equipment - Part 1: Planning (ISO/TR 11688-1:1995)*

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

EN ISO 13849-1:2015, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2015)*

EN ISO 13850:2015, *Safety of machinery - Emergency stop function - Principles for design (ISO 13850:2015)*

EN ISO 13857:2008, *Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

EN ISO 14119:2013, *Safety of machinery - Interlocking devices associated with guards - Principles for design and selection (ISO 14119:2013)*

EN ISO 14120:2015, *Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)*

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)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and the following apply.

3.1
diamond wire saw
integrated fed machine designed for cutting natural stones (e.g. marble, granite), in quarries or in sawmills, by the use of one or more coated diamond wires as tools

Note 1 to entry: Diamond wire saws may work in one main axis as well as in several axes

Note 2 to entry: Diamond wire saws include three types of machines as listed below:

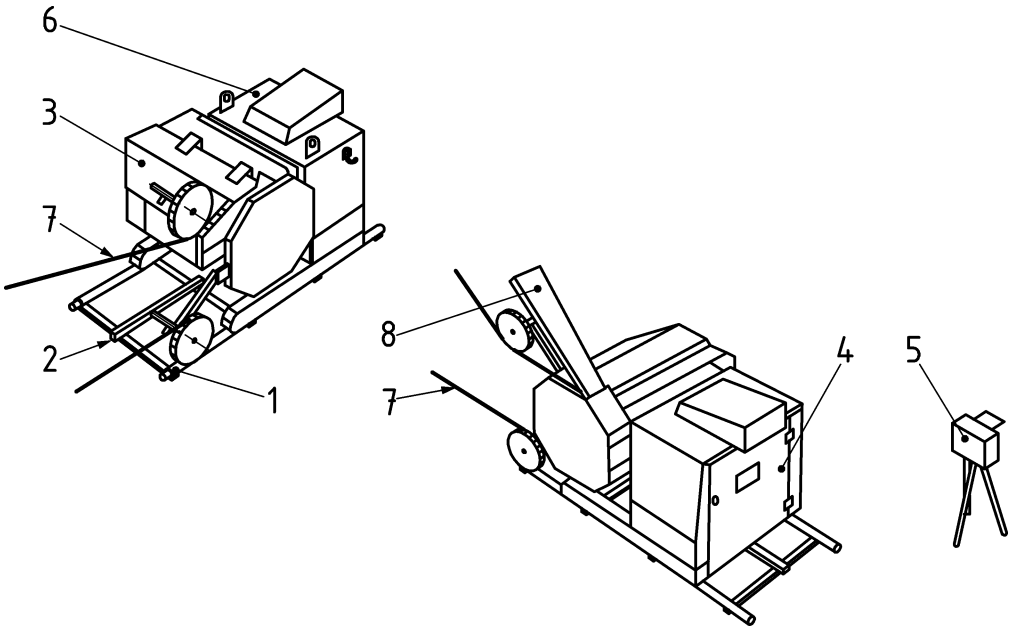
- transportable diamond wire saws;
- stationary diamond mono-wire saws;
- stationary diamond multi-wire saws

3.1.1
transportable diamond wire saw
diamond wire saw powered by an electric motor as main drive, for cutting natural stones into benches, blocks and slabs using an only coated diamond wire as tool and where the cutting is performed by the movement of the wire joined to moving back of the machine on its rail

Note 1 to entry: See Figure 1.

Note 2 to entry: Transportable diamond wire saws are generally intended for outdoor use, usually in quarries. The machinery, by the use of appropriate provisions and other machines, can be easily transported to several points of the quarry.

Note 3 to entry: During the cutting operation, the coated diamond wire can be cooled by water.



Key

1	rails	4	additional control panel on board of the machine	7	coated diamond wire
2	rack	5	remote-control panel - main control panel	8	rear upper fixed guard
3	drive unit for the tool	6	supports for electrical cables		

Figure 1 — Example of a transportable diamond wire saw

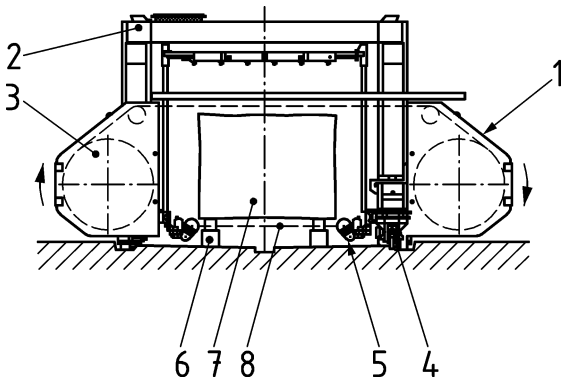
3.1.2
stationary diamond mono-wire saw
diamond wire saw, intended for both indoor and outdoor use, powered by an electric motor as main drive, for cutting natural stones into benches, blocks and slabs using an only diamond wire as tool and where the cutting is performed by the movement of the wires joined to the moving down of the structure of machine along its vertical columns or joined to the horizontal translation of the machinery or the block trolley

Note 1 to entry: During the cutting operation, the coated diamond wire is cooled by water

3.1.2.1
travelling diamond mono-wire saw
stationary diamond mono-wire saw with a carriage on which the machinery may move towards the stone block

Note 1 to entry: the machinery, by means of the movement on its carriage, in addition to the vertical cutting, allows performing the horizontal cutting of the stone block.

Note 2 to entry: See Figure 2.



Key

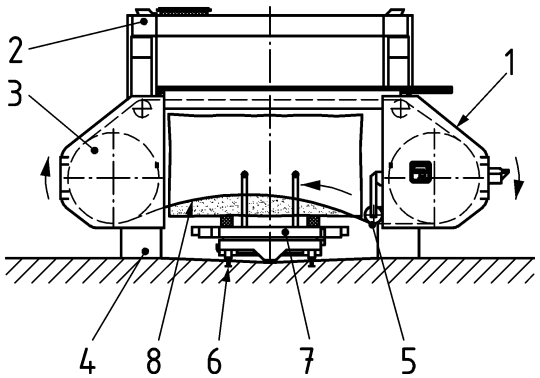
1	guard	4	carriage	7	block
2	machine frame	5	guide wheel	8	coated diamond wire
3	wire wheel	6	sill		

Figure 2 — Example of a travelling diamond mono-wire saw

3.1.2.2
stationary block diamond mono-wire saw
stationary diamond mono-wire saw standing on its foundations and the stone block may be moved under the machinery by a block trolley, or by other machines or devices not integrated with the machinery

Note 1 to entry: If the stone block is moved by the block trolley, the machinery, by means of the movement of the block trolley on its rails, in addition to the vertical cutting, allows performing the horizontal cutting of the stone block.

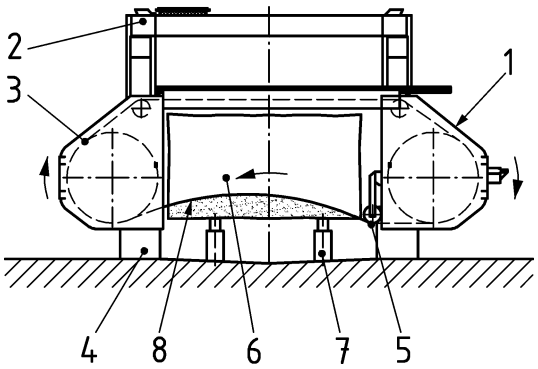
Note 2 to entry: See Figure 3 for a stationary block diamond mono-wire saw with block trolley and Figure 4 for a stationary block diamond mono-wire saw without block trolley.



Key

1	guard	4	foundations	7	block trolley
2	machine frame	5	guide wheel	8	coated diamond wire
3	wire wheel	6	rails for block trolley		

Figure 3 — Example of a stationary block diamond mono-wire saw with block trolley



Key

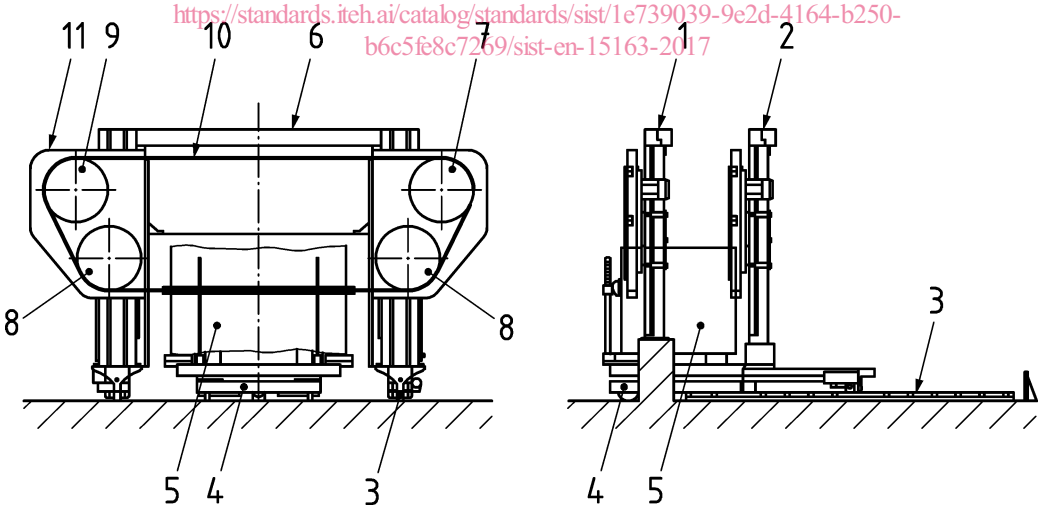
1	guard	4	foundations	7	sill
2	machine frame	5	guide wheel	8	coated diamond wire
3	wire wheel	6	block		

Figure 4 — Example of a stationary block diamond mono-wire saw without block trolley

3.1.2.3
stationary-mobile combined diamond mono-wire saw
stationary diamond mono-wire saw constituted by two frames, the first one is standing on its foundations, the second one is mobile on its rails and may move towards the stone block

Note 1 to entry: The machinery, by means of the movement on its rails, in addition to the vertical cutting, allows performing the horizontal cutting of the stone block

Note 2 to entry: See Figure 5.



Key

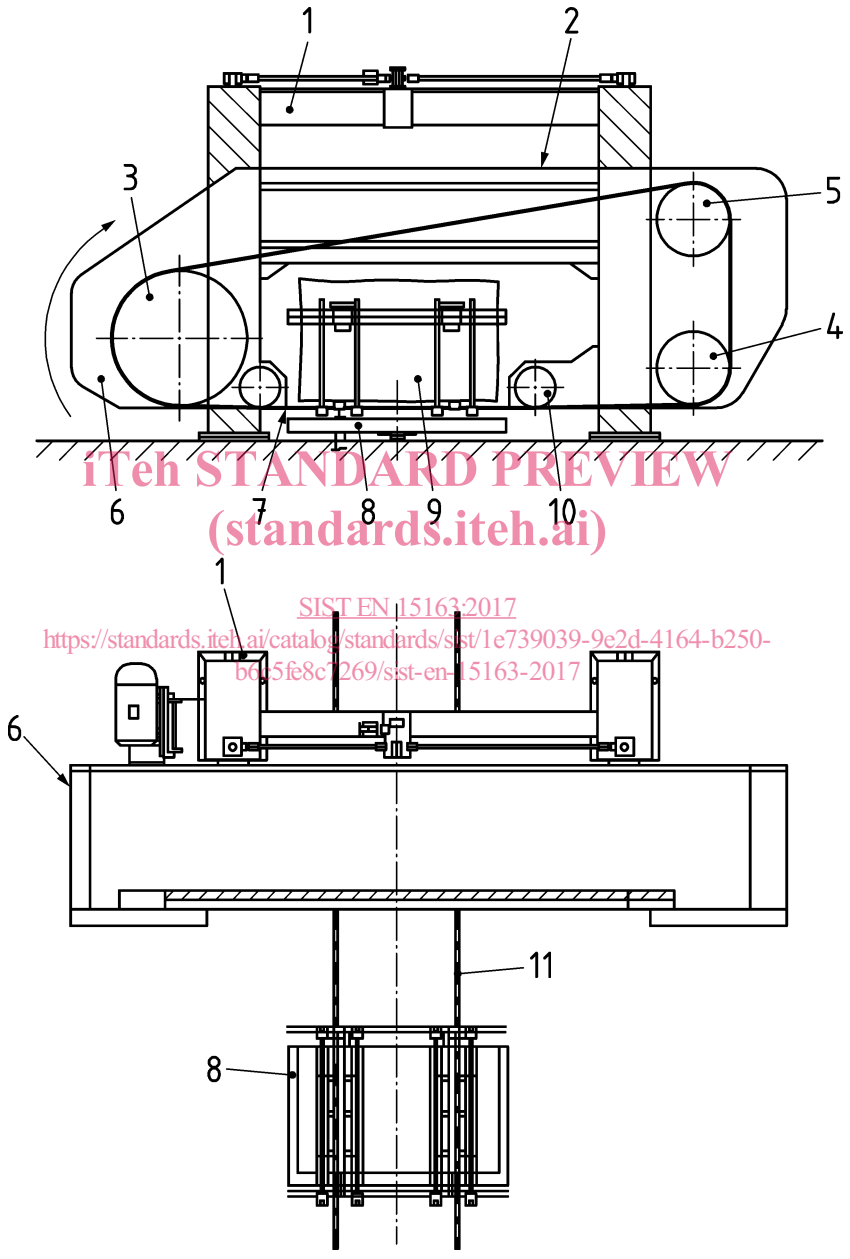
1	stationary wire saw	5	block	9	tensioning wire wheel
2	mobile wire saw	6	machine frame	10	coated diamond wire
3	mobile wire saw rails	7	drive wheel	11	guard
4	block trolley	8	idle wire wheel		

Figure 5 — Example of a stationary-mobile combined diamond mono-wire saw

3.1.3
stationary diamond multi-wire saw
diamond wire saw, intended both for indoor and outdoor use, powered by an electric motor as main drive, for cutting blocks of natural stones into slabs using more coated diamond wires as tools and where the cutting is performed by the movement of the wires joined to moving down of the structure of machine along its vertical columns

Note 1 to entry: During the cutting operation the coated diamond wires are cooled by water.

Note 2 to entry: See Figure 6 and Figure 7.



Key

1	machine frame	5	tensioning wire wheel	9	block
2	saw frame	6	guard	10	guide-wire wheel
3	drive wheel	7	coated diamond wire	11	trolley rail
4	idle wire wheel	8	block trolley		

Figure 6 — Example of a stationary diamond multi-wire saw with a single drive-wheel