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## Equipment for harvesting — Combine harvesters and functional components —

### Part : Vocabulary

*Matériel de récolte — Moissonneuses-batteuses et leurs composants fonctionnels —  
Partie : Vocabulaire*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 7, *Equipment for harvesting and conservation*.

This single-part third edition cancels and replaces the second edition (ISO 6689-1:1997), which has been technically revised. In addition, ISO 6689-2:1997 has been consolidated into the latest edition of ISO 8210.

The main changes compared to the previous edition are as follows:

- Many of the terms and definitions in this document have been updated or corrected to reflect more current vocabulary (terminology).

A list of all parts in the ISO 6689 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

# Equipment for harvesting — Combine harvesters and functional components —

## Part : Vocabulary

### 1 Scope

This document specifies terms and definitions relating to combine harvesters and their component parts. In association with ISO 8210, which lays down methods of measuring characteristics and performance requirements for the terms defined, this document identifies dimensions and other characteristics aimed at allowing comparison of operations of the component parts.

[SECRETARY'S NOTE: Vocabulary for automated machines will be a topic for future study and the next revision.]

### 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 for this document. For dated references, only the cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 712:2009, *Cereals and cereal products — Determination of moisture content — Reference method*

ISO 789-3:2015, *Agricultural tractors — Test procedures — Part 3: Turning and clearance diameters*

ISO 8210, *Equipment for harvesting — Combine harvesters — Test procedure and performance assessment*

ISO 14396:2002, *Reciprocating internal combustion engines — Determination and method for the measurement of engine power — Additional requirements for exhaust emission tests in accordance with ISO 8178*

### 3 Terms and definitions

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

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>.

#### 3.1 Crop terminology

Note 1 to entry In the following, the term “grain” covers the whole range of grains, seed, legumes and fruits which are capable of being recovered from crops by a combine harvester.

##### 3.1.1

##### **grain damage**

damage attributable to the machine, expressed as the percentage by mass, to one decimal place, of damaged kernels in the sample

##### 3.1.1.1

##### **visible grain damage**

damage where the grain coat appears broken to the naked eye

**3.1.1.2**

**invisible grain damage**

damage which requires instruments or special procedures for determination

**3.1.2**

**unthreshed head**

any head, pod, cob or part thereof from which all or part of the grain has not been detached

**3.1.3**

**returns**

**tailings**

material from the grain-cleaning mechanism which is recirculated for reprocessing

**3.1.4**

**material-other-than-grain (MOG) to grain ratio**

**MOG:G ratio**

total mass of MOG divided by total mass of grain in the sample

**3.1.5**

**harvest residue**

MOG portion of the crop including weed seed discharged from the combine harvester

**3.1.5.1**

**chaff**

harvest residue discharged from the cleaning device(s)

**3.1.5.2**

**straw**

harvest residue discharged from the separating device(s)

**3.1.6**

**moisture content**

moisture content of the sample expressed on the wet basis (mass of water in 100 grams of unprocessed sample), calculated as specified in ISO 712

**3.1.7**

**plant length**

length of the plant from its base at ground level, to its tip, when the plant is straightened, expressed in millimetres

**3.1.8**

**stubble length**

length of the plant stalk still attached to the ground after the crop has been harvested, and having been straightened, expressed in millimetres

**3.2 Combine harvester terminology**

**3.2.1**

**combine harvester**

**grain-harvester**

mobile grain-harvesting machine for cutting, picking, stripping or picking up crop, threshing, separating, cleaning and conveying grain into a grain hopper and discharging harvest residue

**3.2.1.1**

**beater**

rotary device used primarily for transportation perpendicular to the rotating axis

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### 3.2.1.2 threshing cylinder threshing drum

rotating assembly, fitted with rasp bars, beater bars or spikes on its periphery and their supports, for threshing the crop, which, in conjunction with an adjacent element, is primarily to promote threshing, where the crop being threshed is contained between rotating and adjacent elements for less than 360°

### 3.2.1.3 threshing rotor

rotating assembly similar to a *threshing cylinder* (3.2.1.2) except that the crop is contained for 360° and may pass around the rotor axis one or more times

### 3.2.1.4 concave

concave-shaped element adjacent to the *threshing cylinder* (3.2.1.2) or *threshing rotor* (3.2.1.3), fitted primarily to promote threshing

Note 1 to entry: In the case of a concave that is permeable to grain flow, either in whole or in part, it has the important secondary function of primary separation.

#### 3.2.1.4.1 concave grate

portion of a concave which is permeable, for separation

### 3.2.1.5 transition grate

permeable element which provides transition from one cylinder/concave unit to the next, or from a cylinder concave unit, or *concave grate extension* (3.6.16.1) to *straw walkers* (3.2.1.7.4) or rack

Note 1 to entry: See [Figure 6](#).

### 3.2.1.6 vane

a smooth, stationary, projection or series of adjacent projections fitted to guide crop in a desired direction

#### 3.2.1.6.1 rotor vane

an arced or helical vane around a rotor fitted to improve material conveyance in the axial direction

#### 3.2.1.6.2 vane angle

angle of the vane relative to the direction material would travel without the influence of the vane

Note 1 to entry: Typically calculated rather than directly measured.

### 3.2.1.7 separating devices

all non-threshing separation elements

#### 3.2.1.7.1 separating cylinder

rotating element, which in conjunction with an adjacent element, is fitted primarily to promote grain separation, where the crop being separated is contained between rotating and adjacent elements for less than 360°

#### 3.2.1.7.2 separating rotor

rotating element, which in conjunction with an adjacent element, is fitted primarily to promote separating, where the crop being separated is contained between rotating and adjacent elements for 360° and crop may pass around the rotor axis one or more times

### 3.2.1.7.3

#### **threshing and separating rotor**

rotating element, which combines the functions of the *threshing rotor* (3.2.1.3) and the *separating rotor* (3.2.1.7.2)

### 3.2.1.7.4

#### **straw walker**

multiple, permeable platforms, mounted on rotating cranks, for the primary purpose of separating

### 3.2.1.7.5

#### **auxiliary separating device**

any device, for example rotors, forks, fingers, that purports to augment the separating process, but that may not be used to factor upwards the walker or separating area of a combine harvester

### 3.2.1.7.6

#### **separating grate**

#### **rotary separating grate**

rear or final portion of the grate designed to separate grain from the MOG by centrifugal force

Note 1 to entry: See [Figure 8](#).

### 3.2.1.8

#### **cleaning devices**

apparatus with the primary function to clean grain by separating MOG, returns (tailings) and other foreign material from the clean grain and then deliver clean grain to the handling system and returns (tailings) into the reprocessing system

#### 3.2.1.8.1

##### **shoe**

historically refers to the main cleaning device, an oscillating structure which supports the cleaning sieve or sieves and which may also support the *chaffer sieve* (3.2.1.8.3) and *chaffer sieve extension* (3.2.1.8.3.1)

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Note 1 to entry: See [Figure 6](#), Key 7 and [Figure 8](#), Key E.

#### 3.2.1.8.2

##### **precleaner sieve**

an adjustable or non-adjustable sieve that provides first stage cleaning grain from chaff

#### 3.2.1.8.3

##### **chaffer sieve**

usually the upper sieve used for the primary cleaning grain from chaff while allowing grain to pass through

##### 3.2.1.8.3.1

##### **chaffer sieve extension**

##### **tailings sieve**

a permeable sieve located at the rear of the *chaffer sieve* (3.2.1.8.3) with primary purpose to allow unthreshed heads to pass through

#### 3.2.1.8.4

##### **cleaning sieve**

typically the lower sieve used for final cleaning of grain

### 3.2.1.9

#### **conveying device**

device that primarily conveys material within the combine harvester

Note 1 to entry: Their areas may not be classified as separating areas or added to other separating areas.

Note 2 to entry: EXAMPLES - Grain pans, augers, paddles and other non-permeable conveyors.



**3.2.1.10****straw spreader**

device for spreading discharged straw without further cutting or chopping action on the straw when the chaff and straw streams are separate

**3.2.1.11****straw chopper**

device for further mulching or cutting of the straw

**3.2.1.12****chaff spreader**

device for auxiliary distribution of the chaff material delivered from cleaning devices when the chaff and straw streams are separate

**3.2.1.13****straw and chaff spreader**

device(s) for spreading material (harvest residue) from both the separator and cleaning devices

**3.3 Header terminology****3.3.1****head****header****feed table**

portion of the combine comprising the mechanism for gathering, cutting, stripping or picking crop

**3.3.1.1****primary cutting mechanism (standards.iteh.ai)**

device on the header for severing plant stalks

Note 1 to entry: This may include reciprocating, rotary, continuous, scissor-type, or other mechanisms for severing, and lies primarily in a horizontal plane.

**3.3.1.2****secondary cutting mechanism**

any other cutting device that does not serve as a primary cutting device

**3.3.1.3****cutterbar****sickle****knife**

reciprocating component of the head for cutting the crop

**3.3.1.3.1****cutterbar frequency**

number of cycles which the *cutterbar* (3.3.1.3) makes in a given period of time, expressed in cycles per minute

Note 1 to entry: One cycle is the full movement of the *cutterbar* (3.3.1.3) in one direction and return to the starting point.

**3.3.1.3.2****cutterbar stroke**

distance that a point on the *cutterbar* (3.3.1.3) travels with respect to the centreline of the knife finger or guard in one half-cycle, expressed in millimetres

**3.3.1.4****rotary cutter**

rotary component of the head for cutting the crop

**3.3.1.5**

**pick-up attachment**

device for gathering previously cut crop (usually from a windrow) and conveying the cut crop to the combine harvester

**3.3.1.6**

**maize head**

**cornhead**

head designed to strip, gather and convey maize to the combine harvester

**3.3.1.6.1**

**snapping rolls**

portion of *maize head* (3.3.1.6) that grips and pulls the stalks to dislodge maize

**3.4 Combine harvester action terminology**

**3.4.1**

**cutting**

detaching of the grain and necessary portion of the straw, stem, stalk or grass from the remaining portion thereof, rooted to the ground

**3.4.2**

**feeding**

conveying of the cut, picked, stripped, or picked up crop into the threshing mechanism

**3.4.3**

**threshing**

detaching grain from the head, cob or pod

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**3.4.4**

**separating**

isolating detached grain, small debris, and incompletely threshed grain from the MOG

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**3.4.5**

**cleaning**

isolating desired grain from chaff, small debris and incompletely threshed grain, cob or pod

**3.4.5.1**

**sieving**

isolating desired grain by using a permeable device that allows desired grain to pass through and the undesired material is carried over the device

**3.4.5.2**

**screening**

isolating of desired grain by using a permeable device where the desired grain is carried over the device, and the undesired material penetrates it

**3.4.5.3**

**blowing**

**pneumatic cleaning**

use of air to lift the lighter debris from the grain

**3.4.5.4**

**chaffing**

use of a combination of air and mechanical means to separate lighter debris from the grain

**3.5 Combine harvester characteristics terminology**

Note 1 to entry Measurements of combine harvester characteristics should be performed as detailed in this section and ISO 8210, 5.

Note 2 to entry All linear measurements should be reported in metres to two decimal places.

### 3.5.1

#### **combine harvester mass**

mass of the machine, determined separately for the front and rear axles, with empty grain holding tank, full fuel and consumable fluid tanks, and including a standard mass of 75 kg in the operator's position

#### 3.5.1.1

##### **combine harvester mass equipped for road travel**

*combine harvester mass* (3.5.1) without head mass or any accessories

Note 1 to entry: If the head cannot be removed from the base machine then the head mass is quoted.

#### 3.5.1.2

##### **combine harvester mass equipped for operation in the field**

*combine harvester mass* (3.5.1) complete with accessories and appropriate head or pick-up fitted, fully raised, and with the reel fully forward

### 3.5.2

#### **combine harvester length**

overall length of the combine harvester measured parallel to the longitudinal centreline

Note 1 to entry: See ISO 8210, 3.1.

### 3.5.3

#### **combine harvester height**

vertical distance from the plane on which the combine harvester rests to the highest point on the combine harvester, measured under the conditions specified for measuring *combine harvester mass for operation in the field* (3.5.1.2)

Note 1 to entry: See ISO 8210, 5.3.

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### 3.5.4

#### **combine harvester width**

overall width of the machine measured both in the road travel condition and equipped for field operation, under the conditions specified in ISO 8210, 5.3.3

### 3.5.5

#### **engine net power**

power obtained on a test bed at the end of the crankshaft or its equivalent and at the corresponding engine speed with the equipment and auxiliaries listed in ISO 14396

Note 1 to entry: If the power measurement can only be carried out with a mounted gear-box, the losses in the gear-box should be added to the measured power to give the engine power.

### 3.5.6

#### **turning diameter**

diameter of the circular path described by the centre of tyre contact with the surface of the test site of the wheel describing the largest circle when the combine harvester is executing its sharpest practicable turn under the test conditions described in ISO 789-3, 5 and with configuration as specified in ISO 8210, 5.3

Note 1 to entry: If the left-hand and right-hand turning radius is not equal, both should be stated.

Note 2 to entry: See ISO 789-3, Figure 3; ISO 8210, Table 2, 5.4.4.

### 3.5.7

#### **clearance diameter**

diameter of the smallest circle which will enclose the outermost points of projection of the combine harvester and its equipment while executing its sharpest practicable turn under the conditions of 3.5.6

Note 1 to entry: If the left-hand and right-hand turning radius is not equal, both should be stated.