

PHILIPPINE NATIONAL STANDARD

PNS/PAES 256:2011
(PAES published 2011)
ICS 65.060.01

Agricultural machinery – Corn Picker – Specifications



BUREAU OF PRODUCT STANDARDS

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National Foreword

This Philippine Agricultural Engineering Standards PAES 256:2011, Agricultural machinery – Corn Picker - Specifications was approved for adoption as Philippine National Standard by the Bureau of Product Standards upon the recommendation of the Agricultural Machinery Testing and Evaluation Center (AMTEC) and the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development of the Department of Science and Technology (PCARRD-DOST).

Foreword

The formulation of this national standard was initiated by the Agricultural Machinery Testing and Evaluation Center (AMTEC) through the project “Development of Standards for Agricultural Production and Postharvest Machinery” funded by the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development – Department of Science and Technology (PCARRD – DOST)

This standard has been technically prepared in accordance with PAES 010-2 – Rules for the Structure and Drafting of International Standards.

The word “shall” is used to indicate mandatory requirements to conform to the standard.

The word “should” is used to indicate that among several possibilities one is recommended as particularly suitable without mentioning or excluding others.

In the preparation of this standard, the following documents/publications were considered:

Corn Harvester. <http://www.britannica.com/EBchecked/topic/137811/corn-harvester>. <accessed on August 06, 2009>

PAES 212:2004 Agricultural Machinery – Rice reaper – Specifications

Sammann, Ernest F. Corn Harvester. United States Patent. May 16, 1977

Mak, Randall L., Oaks, Fair. Young. Corn Harvester Machine with Mechanism for Picking Up Downed Cornstalks and Retrieving Ears Therefrom. United States Patent. August 15, 1983

Underwood, Chester E. Corn Harvesting Apparatus. United States Patent. August 21, 1989

Rauch, Hans. Corn Harvesting Attachment. United States Patent. August 13, 1998

Britt, Donald B. Corn Harvester. United States Patent. January 19, 1990

Soteropulos, Gust. Corn Harvesting Machine. United States Patent. November 10, 1969

1 Scope

This standard specifies the manufacturing and performance requirements for the single-row side-mounted corn picker.

2 References

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this National Standard:

AWS D1.1:2000	Structural Welding Code - Steel
PAES 102:2000	Agricultural Machinery – Operator’s Manual – Content and Presentation
PAES 311:2001	Engineering Materials - Screws for Agricultural Machines – Specifications and Applications
PAES 313:2001	Engineering Materials – Bolts and Nuts for Agricultural Machines – Specifications and Applications
PAES 257:2010	Agricultural Machinery – Corn Picker – Methods of Test

3 Definitions

For the purpose of this standard the following definitions shall apply:

3.1

corn (*Zea mays*)

cereal grass belonging to the Poaceae family

3.2

corn ear

fruit of the corn plant with husk

3.3

single-row side-mounted corn picker

machine attached to the side of tractor designed for picking corn (Fig. 1)

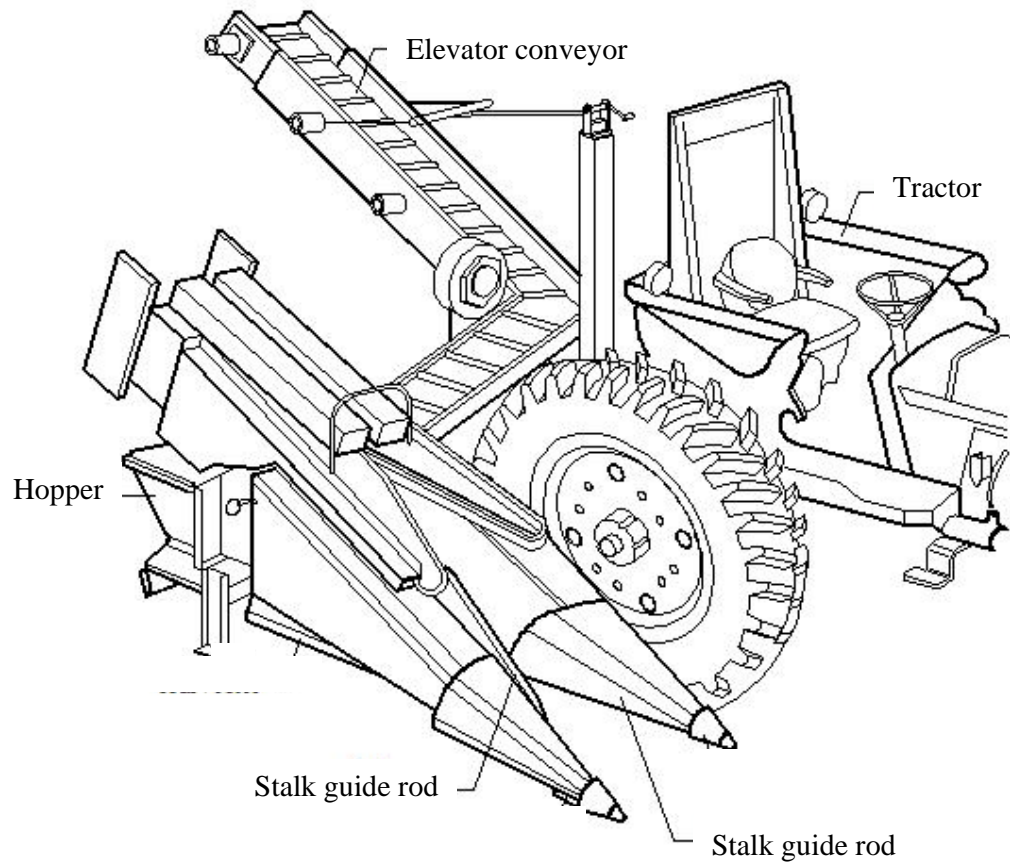


Figure 1. Single-row side-mounted corn picker

3.4

snapping rolls

part of the corn picker that pulls the corn stalk downward thereby, stripping the corn ear during operation

3.5

stalk guide rod

direct the stalks of the corn plant to the snapping rolls

3.6

stripper plate

part of the corn picker that prevents the corn stalk from bending and separate the corn ear from the stalk

4 Classification

The classification of corn picker shall be the following:

4.1 Picking device

4.1.1 Fluted snapping rolls

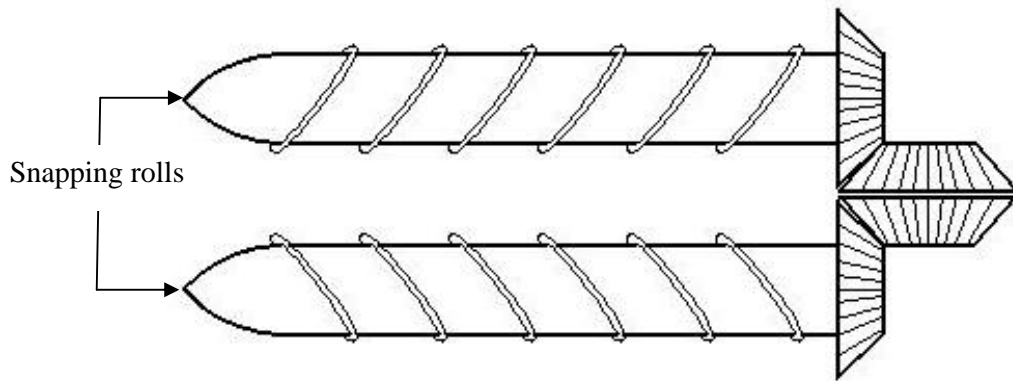


Figure 2. Fluted snapping rolls

4.1.2 Fluted snapping rolls with horizontal threads

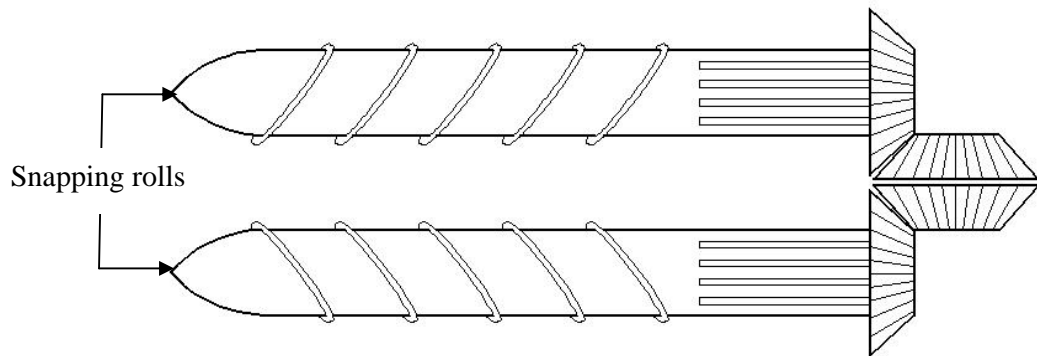


Figure 3. Fluted snapping rolls with horizontal threads

5 Manufacturing Requirements

- 5.1 Steel bars and metal sheet shall be used for the manufacture of the different components of the corn picker.
- 5.2 Bolts and screws to be used shall conform to PAES 311 and 313.
- 5.3 Sizes of the parts of the corn picker shall conform to the specifications of the manufacturer.

6 Performance Requirements

The corn picker when tested in accordance with PAES 257 shall conform to the following requirements (Table 1):

Table 1. Performance criteria for corn picker

Criteria	Performance Data
Field efficiency (%), minimum	65
Picking efficiency (%), minimum	99.5
Conveyance efficiency (%), minimum	99.0
Total machine efficiency (%), minimum	98.5
Noise level, db(A), maximum	92*

*Allowable noise level for six hours of continuous exposure based on Occupational Safety and Health Standards, Ministry of Labor, Philippines. 1983.

7 Safety, Workmanship and Finish

- 7.1 All rotating components of corn picker shall be statically and dynamically balanced.
- 7.2 Seat with safety belt shall be provided which will adequately support the operator in the operation. Adequate and comfortable support and protection shall be provided
- 7.3 All surfaces shall be coated with a suitable paint material.
- 7.4 The corn picker shall be free from manufacturing defects.
- 7.5 Provision for grease points for mechanical parts and non-sealed type bearings shall be integrated.
- 7.6 There shall be provision of belt cover or guard and belt tightening.
- 7.7 There shall be provision for the safety of the operators for moving parts.

- 7.8** All welded parts shall be water-tight and smoothly polished and it shall pass visual inspection criteria (AWS D1.1:2000) for discontinuity of materials.
- 7.9** Welded joints shall not be less than 4 mm (1/8 inch) side fillet welded. Undercut shall not exceed 2 mm (1/16 inch) for any length of weld.

8 Warranty for Manufacturing and Durability

- 8.1** Warranty against defective materials and workmanship shall be provided for parts and services except for normal wear and tear of consumable maintenance parts such as belts within one year from the date of purchase.
- 8.2** The construction shall be rigid and durable without breakdown of its major components for at least one year from the date of purchase.

9 Maintenance and Operation

- 9.1** Each corn picker unit shall be provided with a set of standard tools prescribed by the manufacturer.
- 9.2** An operator's manual which conform to PAES 102, shall be provided.
- 9.3** The corn picker shall be easy to clean, operate and maintain

10 Testing

Corn picker shall be tested in accordance with PAES 257.

11 Marking

- 11.1** Each corn picker shall be marked in English with the following information using a stencil or by directly punching it on a plate and shall be positioned at a most conspicuous place:
- 11.1.1** Registered trademark of the manufacturer
 - 11.1.2** Brand
 - 11.1.3** Model
 - 11.1.4** Serial number
 - 11.1.5** Rated capacity, ha/h

- 11.1.6** Power requirement, kW
- 11.1.7** Name and address of the dealer
- 11.1.8** Name and address of the distributor, if imported

- 11.1.9** Country of manufacture (if imported) / “Made in the Philippines” (if manufactured in the Philippines)

- 11.2** Appropriate safety precautions shall be provided. Markings shall be stated in English and Filipino and shall be printed in red color with a white background.

- 11.3** The markings shall have a durable bond with the base surface material.

- 11.4** The markings shall be all weather resistant and under normal cleaning procedures, it shall not fade, discolor, crack or blister and shall remain legible.

Philippine Agricultural Engineering Standards

AMTEC-UPLB – PCARRD Project: “Development of Standards for Agricultural Production and Postharvest Machinery”

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