

Foreword

The formulation of this national standard was initiated by the Agricultural Machinery Testing and Evaluation Center (AMTEC) under the project entitled “Development of Standards for Slaughterhouse Equipment for Large Ruminants” which was funded by the Department of Agriculture- National Meat Inspection Service (DA- NMIS).

This standard has been technically prepared in accordance with BPS Directives Part 3:2003 – 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:

AWS D1.1:2000 Structural Welding Code – Steel

Baumeister, T., E.A. Avallone and T. Baumeister III. 1978. Marks’ Standard Handbook for Mechanical Engineers. 8th ed. McGraw- Hill, Inc.

Cook, F.M. 1976. Hide Pulling Method and Apparatus. United States Patent. Patent No. US3936908. 6pp.

Grandin, T. 1993. Teaching Principles of Behavior and Equipment Design for Handling Livestock. Journal of Animal Science. 71: 1065- 1070.

Grandin, T.G. 2005. Recommended Animal Handling Guidelines and Audit Guide for Cattle, Pigs and Sheep (2005 Edition). American Meat Institute Foundation. 2005.

Regenstein, J.M. 2004. Kosher and Halal: Animal Welfare Issues. 6th Annual Animal Care and Handling Conference. Kansas City, MO: February 19, 2004

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Slaughterhouse Equipment – Dehider – Methods of Test

1 Scope

This standard specifies the methods of test and inspection for a dehider. Specifically, it shall be used to:

- 1.1** verify the mechanism, dimensions, materials, accessories of the dehider and the list of specifications submitted by the manufacturer;
- 1.2** determine the performance of the equipment;
- 1.3** evaluate the safety features;
- 1.4** report the results of the tests.

2 References

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

- PAES 411:2000 Agricultural Structures – Slaughterhouse for Swine, Small and Large Animals – General Requirements
- PAES 519:2008 Slaughterhouse Equipment – Dehider - Specifications

3 Definitions

For the purpose of this standard, the definitions given in PAES 520 and the following shall apply:

3.1

blade clearance

distance between two blades in the blade assembly

3.2

dehiding time

average time consumed to totally dehide the animal

3.3

live weight

weight of animal prior to slaughter

3.4

overall height

measurement from highest point of the hide puller to its base

3.5

overall length

measurement between the longer side of the dehider including all protruding parts

3.6

overall width

measurement between the shorter side of the dehider including all protruding parts

4 General Conditions for Test and Inspection

4.1 Role of manufacturer/dealer

The manufacturer shall submit the operator's manual of the dehider and shall abide with the terms and conditions set forth by the official testing agency.

4.2 Role of the operator

An officially designated operator shall be skilled and shall be able to demonstrate, operate, adjust and repair matters related to the operation of the equipment.

4.3 Test site conditions

The dehider shall be tested as installed in the slaughterhouse. The site should have ample provisions for material handling, temporary storage and workspace conforming to PAES 411.

4.4 Test instruments

The suggested list of minimum test instruments needed to carry out the dehider test is shown in Annex A.

4.5 Test material

Test materials to be used shall have a live weight of not less than 500kg. There shall be at least three (3) animals for the test trials.

4.6 Termination of test for dehider

If during the test, the dehider encounters major component breakdown or malfunction, the test engineer shall terminate the test.

5 Test and Inspection

5.1 Verification of the manufacturer's technical data and information

This inspection is carried out to verify the mechanism, dimensions, materials and accessories of the dehider in comparison with the list of manufacturer's technical data and information. All data shall be recorded in Annex B.

5.2 Performance test

5.2.1 This is carried out to obtain actual data on overall performance and safety features of the equipment.

5.2.2 Measurement of initial data

Initial data, such as weight of the test animal, shall be obtained and recorded in Annex C before the test operation.

5.2.3 Operation of the dehider

5.2.3.1 The dehider shall be operated at the recommended settings of the manufacturer.

5.2.3.2 This procedure shall be repeated for the succeeding trial(s).

5.2.3.3 Handheld flayer

5.2.3.3.1 The animal shall be suspended on the overhead rail system on its hind legs.

5.2.3.3.2 The skin shall be cut along the midline of the animal to start the dehidng process.

5.2.3.3.3 The hide shall be separated from the animal's body.

5.2.3.3.4 The process will continue until the hide is detached.

5.2.3.3.5 The hide shall be inspected to verify damages caused by the dehider.

5.2.3.3.6 Operating pressure of the dehider shall be recorded and shall be compared with the operating pressure specified by the manufacturer.

5.2.3.3.7 The time to completely dehide the carcass shall be taken and recorded.

5.2.3.3.8 Data shall be recorded in Annex C.

5.2.3.3.9 The same procedure shall be conducted for the next animal.

5.2.3.4 Hide puller

5.2.3.4.1 The skin shall be cut along the midline of the suspended animal.

5.2.3.4.2 The hide clamps shall be attached to the skin of the animal

- 5.2.3.4.3 The time to completely dehide the carcass shall be recorded.
- 5.2.3.4.4 For vertical puller, power consumption shall be measured using a power meter.
- 5.2.3.4.5 Electrical energy consumed shall be computed using the formula in Annex D.
- 5.2.3.4.6 For side pullers with cylinder, the actual operating pressure shall be obtained and shall be compared with the rated operating pressure specified by the manufacturer.
- 5.2.3.4.7 The hide, the spine and the carcass shall be inspected after the process.
- 5.2.3.4.8 All data shall be recorded in Annex C.
- 5.2.3.4.9 The same procedure shall be conducted for the next animal.

5.3 Test trial

A minimum of three (3) animals shall be used for the test, with one animal per trial.

6 Test Report

The test report shall include the following information in the order given:

- 6.1 Title
- 6.2 Summary
- 6.3 Purpose and Scope of Test
- 6.4 Methods of Test
- 6.5 Description of the Machine
 - Table 1 – Machine Specifications
- 6.6 Results and Discussions
- 6.7 Observations (include pictures)
 - Table 2 –Performance test data
- 6.8 Name(s), signature(s) and designation(s) of test engineer(s)

Annex A

Suggested List of Minimum Test Instruments

Items	Quantity
A.1 Test animal characteristics	
A.1.1 weighing scale, capacity: 1000 kg	1
A.1.2 tape measure, capacity: 3 m	1
A.2 Dimension	
A.2.1 steel tape, capacity: 5m	1
A.2.2 Vernier caliper: 0.05mm accuracy, 200mm length	1
A.3 Power consumption	
power meter: 60Hz, 220V	1
A.4 Calculations	
scientific calculator	1
A.5 Operating speed	
tachometer	1
A.6 Dehiding time	
Digital timer, accuracy: 0.1 sec	1
A.7 Pressure	
pressure gauge: 0-20 bars	1

Annex B
(informative)

Specifications of Dehider

Name of Applicant/ Distributor: _____
 Address: _____
 Tel No: _____
 Name of Manufacturer: _____
 Address: _____
 Tel No: _____

GENERAL INFORMATION

Classification: _____ Maximum Weight Capacity: _____
 Serial No: _____ Brand/Model: _____
 Production Date of Dehider to be Tested: _____
 Testing Agency: _____ Test Engineer: _____
 Date of Test: _____ Location of Test: _____

Items to be inspected

ITEMS	Manufacturer's Specification	Verification by the Testing agency
B.1 Handheld flayer		
B.1.1 Main body		
B.1.1.1 overall dimensions		
B.1.1.1.1 length, mm		
B.1.1.1.3 weight, mm		
B.1.1.2 material		
B.1.2 Cutting blade		
B.1.2.1 diameter, mm		
B.1.2.2 thickness, mm		
B.1.2.3 teeth per inch		
B.1.2.4 blade clearance, mm		
B.1.2.5 material		
B.1.3 Handle		
B.1.3.1 material		
B.1.3.2 length, mm		
B.1.4. Operating speed, m/s		
B.1.5 Operating pressure, bar		
B.2 Hide puller		
B.2.1 Main frame		
B.2.1.1 overall dimensions		
B.2.1.1.1 length, mm		
B.2.1.1.2 width, mm		
B.2.1.1.3 height, mm		
B.2.1.2 thickness, mm		
B.2.1.3 material		

ITEMS	Manufacturer's Specification	Verification by the Testing agency
B.2.2 Drum roller (for vertical puller)		
B.2.2.1 dimensions		
B.2.2.1.1 length, mm		
B.2.2.1.2 diameter, mm		
B.2.2.2 material		
B.2.3 Transmission (for vertical puller)		
B.2.3.1 length, mm		
B.2.3.2 material		
B.2.4 Chain guard (for vertical puller)		
construction material		
B.2.5 Hide clamp		
material		
B.2.6 Cylinder		
B.2.6.1 material		
B.2.6.2 bore, mm		
B.2.6.3 stroke, mm		
B.2.6.4 operating pressure range, bars		
B.2.7 Electric motor (for vertical puller)		
B.2.7.1 brand		
B.2.7.2 manufacturer		
B.2.7.3 serial number		
B.2.7.4 rated power, kW		
B.2.7.5 rated speed, rpm		

ANNEX D

Formula Used During Calculation and Testing

D.1 Electrical Energy Consumption

$$E_c = P_c T_o$$

Where:

E_c electrical energy consumption, kW-h

P_c power consumed, kW

T_o operating time, h