

PHILIPPINE NATIONAL STANDARD

**PNS/BAFS PABES 287:2019
ICS 65.060.99**

Production Machinery – Aquaculture Feeder – Specifications



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Foreword

The formulation of this national standard was initiated by University of the Philippines Los Baños – Agricultural Machinery Testing and Evaluation Center (UPLB – AMTEC) through the project “Testing and Evaluation of Machinery Generated from PCAARRD-funded Projects” funded by the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development – Department of Science and Technology (PCAARRD – DOST). This is in collaboration with the Bureau of Agriculture and Fisheries Standards (BAFS). This covers the development of PNS for Aquaculture Feeder.

This Standard has been technically prepared in accordance with International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) Directives Part 2, 8th Edition - Principles and rules for the structure and drafting of ISO and IEC documents.

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.

1 Scope

This standard specifies the fabrication and performance requirements for aquaculture feeder.

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.

PAES 101:2000, *Agricultural Machinery – Technical Means for Ensuring Safety – General*

PAES 102:2000, *Agricultural Machinery – Operator’s Manual – Content and Presentation*

PAES 103:2000, *Agricultural Machinery – Method of Sampling*

PNS/BAFS/PAES 192:2016, *Agricultural Machinery – Guidelines on After-Sales Service*

PNS/BAFS/PABES 288:2019, *Production Machinery – Aquaculture Feeder – Methods of Test*

3 Terms and Definitions

For the purpose of this Standard, the following terms and definitions shall apply.

3.1

aquaculture feeder

feeder specifically designed and utilized for the culture of aquatic animals

3.2

discharge rate

dispensing rate

weight of feeds discharged from the feeder per unit time or per trigger actuation

3.3

dispenser

distributing device

part of the feeder which discharges the feeds

3.4

hopper

part of the feeder which contains the feeds before feeding operation

3.5

hopper capacity

amount of feeds to fill up the hopper

4 Classification

The classification of aquaculture feeder should be based on but not limited to the following type of mechanism of feed discharge.

4.1 Automatic Feeder

Feeder automatically dispenses feeds at predetermined discharge rate and schedule. Feeds are distributed by alternating movements, rotations, or vibrations generated by any mechanical means, or compressed air as shown in Figure 1.

4.2 Demand Feeder

Feeder is controlled by the fish according to appetite. Feed discharge is actuated by the contact of the fish to the trigger connected to a plate or plug at the bottom of the hopper as shown in Figure 2. As the plate or plug moves through the movement of the trigger, small quantity of feeds is discharged.

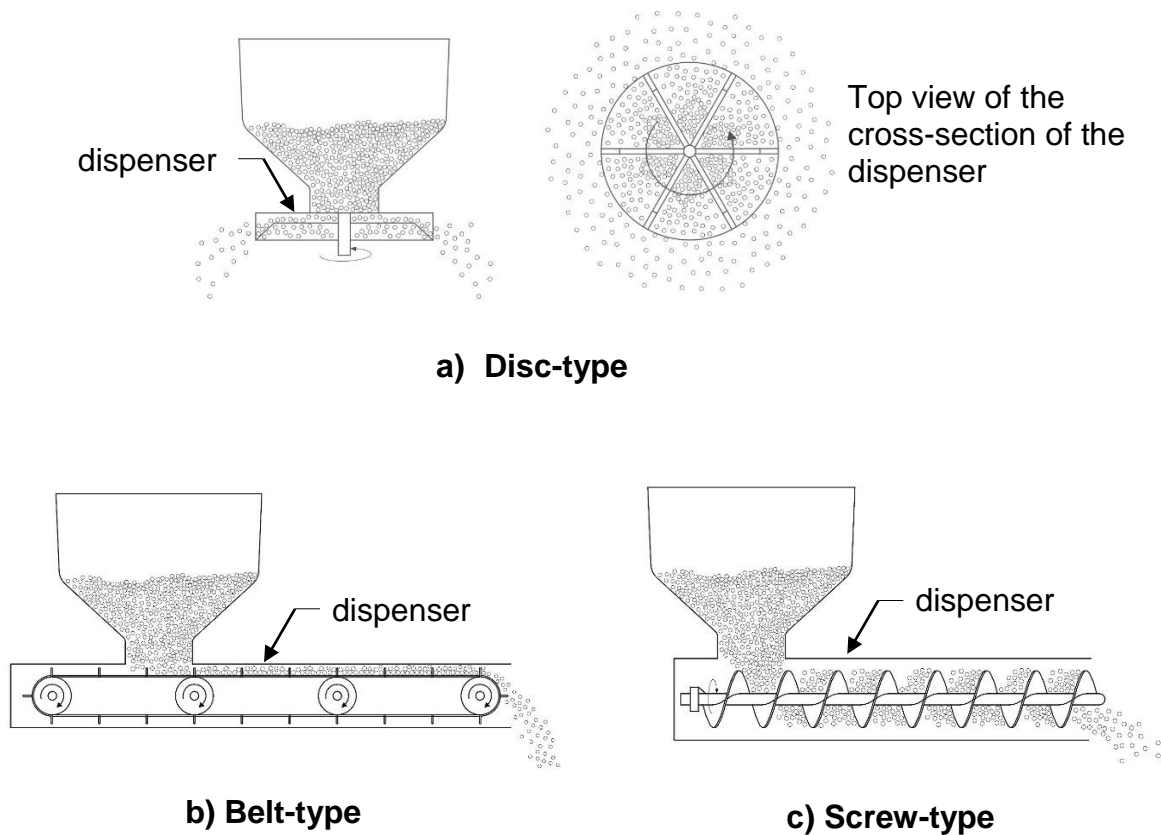


Figure 1 – Types of automatic feeder (1 of 2)

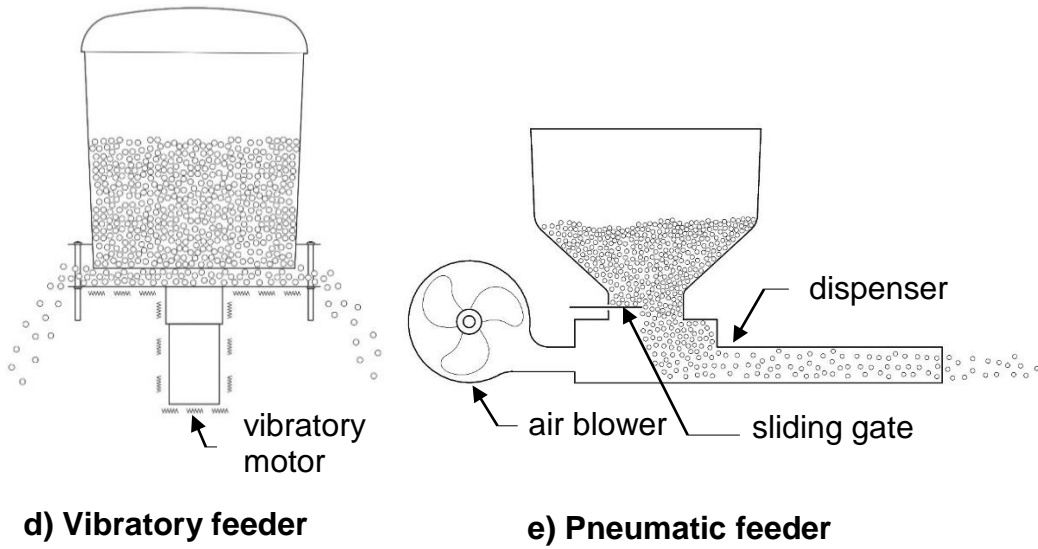


Figure 1 – Types of automatic feeder (2 of 2)

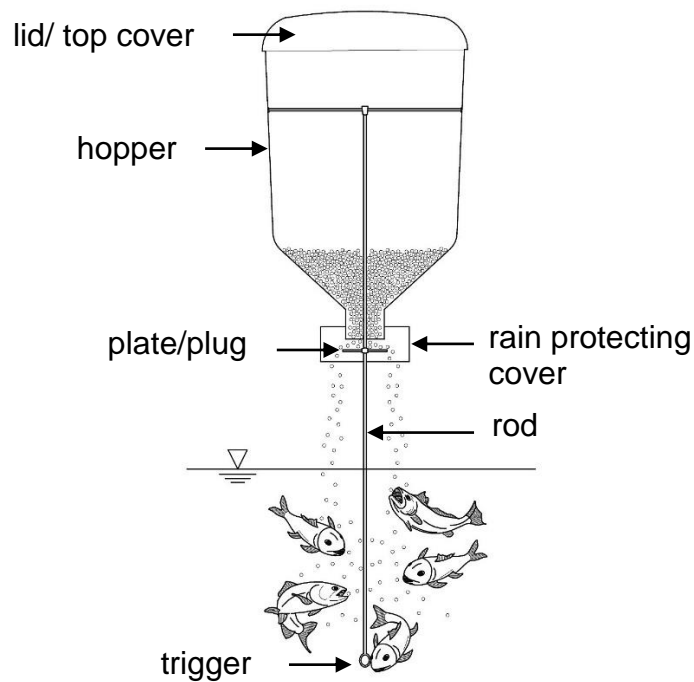


Figure 2 – Demand feeder

5 Fabrication Requirements

5.1 Water and rust resistant materials shall be used for the manufacture of the different components of the aquaculture feeder.

5.2 The feed hopper shall be provided with lid or cover.

5.3 Supporting frame shall be able to support the whole aquaculture feeder assembly during operation.

5.4 Bolts and nuts, screws, bearings, bushing and seals to be used shall conform to PAES or other international standards.

6 Performance Requirements

6.1 The discharge rate shall meet the manufacturer's specification.

6.2 The discharge rate shall have a maximum coefficient of variation of 10 %.

7 Safety, Workmanship, and Finish

7.1 The aquaculture feeder shall be free from any manufacturing defects that may be detrimental to its operation.

7.2 The base or frame assembly of the aquaculture feeder shall be rigid and durable without any noticeable cracks and weak joints.

7.3 All metal surfaces shall be free from rust.

7.4 Mechanism for emergency stop shall be provided.

7.5 The external part of the aquaculture feeder shall be free from sharp edges and rough surfaces that may injure the operator. Warning notices shall be provided in accordance with PAES 101:2000.

8 Warranty for Fabrication and Services

Warranty shall be provided for parts and services except for normal wear and tear of expendable or consumable maintenance parts for at least one (1) year upon the acceptance of procuring entity of the aquaculture feeder. General requirements of the warranty shall conform to PNS/BAFS/PAES 192:2016.

9 Maintenance and Operation

9.1 Each unit of aquaculture feeder shall be provided with a set of manufacturer's standard tools required for maintenance.

9.2 Operator's manual based on PAES 102:2000, maintenance schedule, and list of the warrantable parts of the aquaculture feeder shall be provided.

9.3 The aquaculture feeder shall be easy to operate, maintain and repair.

10 Sampling

Aquaculture feeder shall be sampled for testing in accordance with PAES 103:2000 or any other suitable method of selection.

11 Testing

The sampled aquaculture feeder shall be tested in accordance with PNS/BAFS PABES 288:2019.

12 Marking and Labeling

12.1 Each unit of aquaculture feeder shall be marked at the most visible place with the following information.

12.1.1 Registered trademark of the manufacturer

12.1.2 Brand

12.1.3 Model

12.1.4 Year of Manufacture

12.1.5 Serial number

12.1.6 Name, address, and contact details of the manufacturer/importer/distributor

12.1.7 Country of manufacture/origin (if imported)/ "Made in the Philippines" (if manufactured in the country)

12.1.8 Feed hopper capacity, kg

12.1.9 Discharge rate, kg/min

12.1.10 Power requirement, kW

12.2 Safety/Precautionary markings shall be provided. It shall be stated in English and Filipino and printed in red color with a white background.

12.3 The markings shall be durably bonded to the base surface material. It shall be all weather resistant and under normal cleaning procedures. It shall not fade, discolor, peel, crack, or blister and shall remain legible.

Bibliography

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Varadi, L. (1984). *Mechanized feeding in aquaculture*. In *Inland Aquaculture Engineering*, (pp. 445-460). Rome, Italy: Publications Division, Food and Agriculture Organization of the United Nations

Yeoh, S.J., Taip, F.S., Endan, J., Talib, R.A. & Mazlina, M.K.S. (2010). *Development of automatic feeding machine for aquaculture industry*. *Pertanika Journal of Science & Technology*, 18(1), 105-110.

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