

1 **PHILIPPINE**  
2 **NATIONAL**  
3 **STANDARD**  
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PNS/BAFS xxx:2026  
ICS 65.060.20

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21 **Moldboard Plow — Specifications**  
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48 **1 Scope**

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50 This standard specifies the requirements for the manufacture and performance  
51 of tractor-drawn moldboard plows (two-wheel and four-wheel).

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53 **2 Normative References**

54

55 The following documents are referred to in the text in such a way that some or all  
56 their contents constitute the requirements of this document. The latest edition of  
57 the referenced documents (including any amendments) applies.

58

59 Agricultural Machinery Testing and Evaluation Center (AMTEC)-University of the  
60 Philippines Los Baños (UPLB). (2004). Agricultural machinery —  
61 Moldboard Plow — Specifications (PNS/PAES 131:2004).

62 <https://amtec.ceat.uplb.edu.ph/wp-content/uploads/2019/07/paes-131.pdf>

63

64 Bureau of Agriculture and Fisheries Standards (BAFS)-Department of  
65 Agriculture (DA). (2022). Technical means for ensuring safety —  
66 Guidelines (PNS/BAFS 330:2022).

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68 BAFS-DA. (2020). Production Machinery — Four-Wheel Tractor —  
69 Specifications (PNS 301:2020)

70

71 BAFS-DA. (2024). After-sales service — Guidelines (PNS/BAFS 192:2024).

72

73 BAFS-DA. (2024). Methods of sampling for agricultural and biosystems power  
74 and machinery — Guidelines (PNS/BAFS 391:2024).

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76 BAFS-DA. (2024). Operator's manual for agricultural and biosystems power and  
77 machinery — Guidelines (PNS/BAFS 390:2024).

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79 BAFS-DA. (202x). Disc/Moldboard Plow — Methods of test (PNS/BAFS  
80 xxx:2025).

81

82 Occupational Safety and Health Center (OSHC)-Department of Labor and  
83 Employment (DOLE). (2020). Occupational safety and health standards.

84 [https://oshc.dole.gov.ph/wp-content/uploads/2020/02/OSH-Standards-  
85 2020-Edition.pdf](https://oshc.dole.gov.ph/wp-content/uploads/2020/02/OSH-Standards-2020-Edition.pdf)

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### 3 Terms and Definitions

For the purpose of this Standard, the following definitions shall apply. The preferred terms are written in bold type after the Clause number, while admitted terms are listed in italicized type after the definition, which could be interchangeably used in interpreting the provisions of this Standard.

#### 3.1

##### **colter**

flat knife or revolving disc, mounted in front of the plow bottom, which cuts the soil vertically (AMTEC-UPLB, 2004)

#### 3.2

##### **frame**

structure to which the standards are fitted (AMTEC-UPLB, 2004)

#### 3.3

##### **frog**

central part of the plow to which the share, moldboard, and landside are attached (AMTEC-UPLB, 2004)

#### 3.4

##### **hitch**

part of an implement designed to connect it to a power source (AMTEC-UPLB, 2004)

#### 3.5

##### **landside**

part of the plow that presses and slides against the furrow wall, providing lateral stability during operation (AMTEC-UPLB, 2004)

#### 3.6

##### **landside heel**

part, attached to the rear of a landside, which applies the vertical load of the plow bottom to the furrow bottom (AMTEC-UPLB, 2004)

#### 3.7

##### **moldboard**

part of the plow which lifts, inverts, and throws the furrow slice to one side (AMTEC-UPLB, 2004)

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**3.7.1****general-purpose moldboard**

plow bottom that has less curvature than the stubble and can be used easily for stubble, ordinary trash, and stalk cover land (AMTEC-UPLB, 2004)

**NOTE** See Figure 1a.

**3.7.2****slatted moldboard**

plow bottom, which is used in sticky soils and soils that do not scour on a solid moldboard (AMTEC-UPLB, 2004)

**NOTE** See Figure 1b.

**3.7.3****sod moldboard**

plow bottom that has a long, narrow, and less sloping moldboard with a gradual twist that allows complete inversion of the furrow slice with minimum breakage (AMTEC-UPLB, 2004)

**NOTE** See Figure 1c.

**3.7.4****stubble moldboard**

plow bottom that has short, broader, and curved more abruptly along the top edge and is suited to work in soil that has been cultivated from year to year (AMTEC-UPLB, 2004)

**NOTE** See Figure 1d.

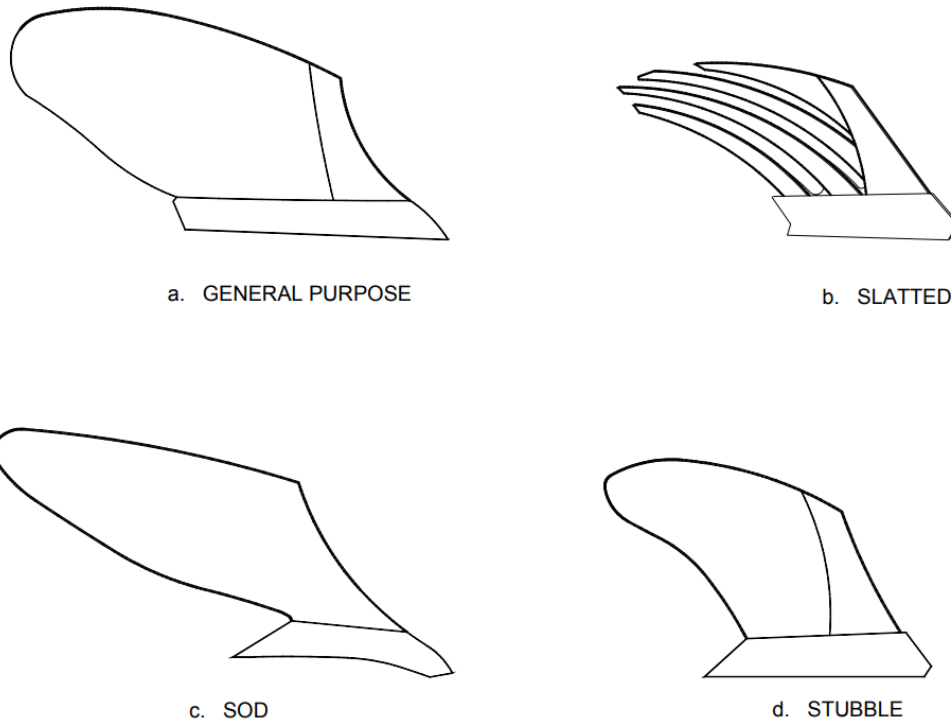


Figure 1. Types of moldboard (AMTEC-UPLB, 2004)

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**moldboard plow**

sliding implement that cuts, lifts, inverts, and throws to one side a layer of soil (furrow slice) to bury surface materials (AMTEC-UPLB, 2004)

**NOTE 1** The main component consists of the share, moldboard, and landside.

**NOTE 2** See Figure 2.

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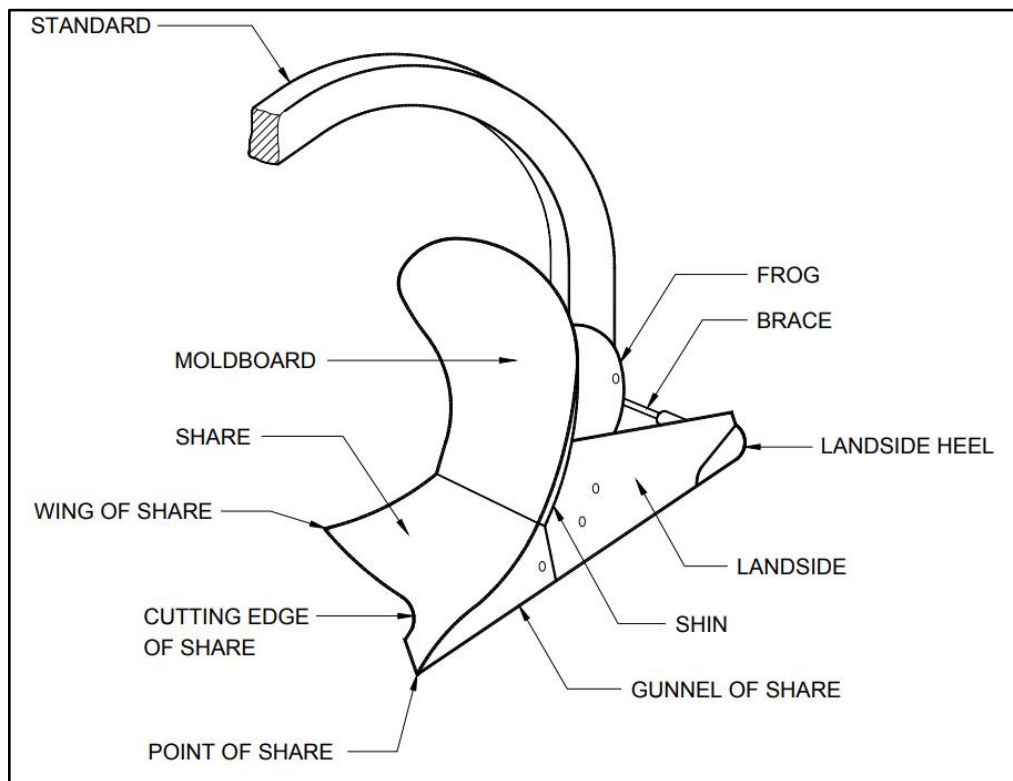


Figure 2. Moldboard plow (AMTEC-UPLB, 2004)

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### 184 **left-hand plow**

185 throws the furrow slice to the left of the plow's direction (AMTEC-UPLB, 2004)

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### 188 **right-hand plow**

189 throws the furrow slice to the right of the plow's direction (AMTEC-UPLB, 2004)

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### 192 **two-way plow**

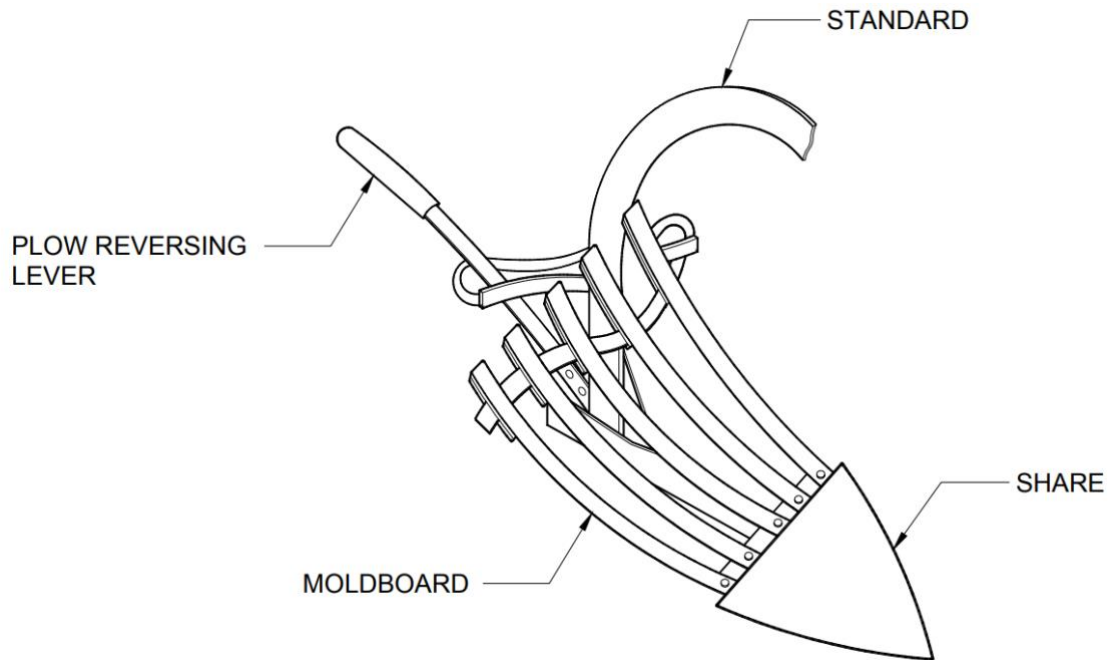
193 throws the furrow slice either to the left or right of the plow's direction (AMTEC-  
194 UPLB, 2004)

195 *admitted term:* reversible plow

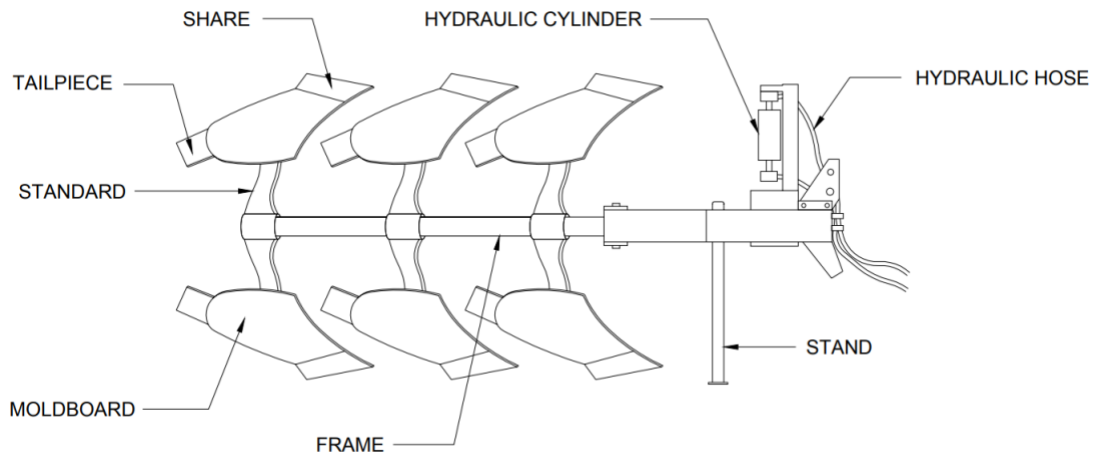
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197 **NOTE** It consists of both the right-hand and left-hand plow with one type  
198 being used at a time.

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**Figure 3.** Reversible plow for two-wheel tractor (AMTEC-UPLB, 2004)



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**Figure 4.** Reversible plow for four-wheel tractor (AMTEC-UPLB, 2004)

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**plow bottom**

working part of the plow, which includes the share, moldboard, and landside, all attached to the frog (AMTEC-UPLB, 2004)

*admitted term: plow body*

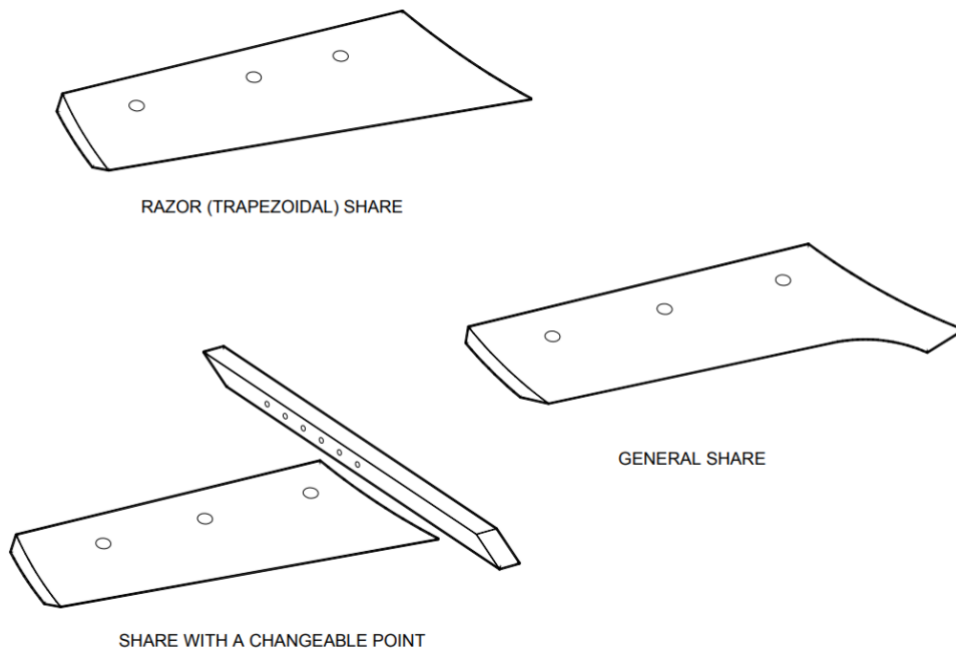
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**3.10**

**share**

part of the plow that penetrates the soil and cuts the furrow slice horizontally (AMTEC-UPLB, 2004)

**NOTE** It may be a single integral piece or may consist of replaceable components as shown in Figure 5.



**Figure 5.** Types of share (AMTEC-UPLB, 2004)

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**3.11**

**shin**

leading edge of the moldboard located above the landside (AMTEC-UPLB, 2004)

**3.12**

**standard**

upright support which connects the plow bottom to the tillage implement frame (AMTEC-UPLB, 2004)

*admitted term: beam*

**NOTE** See Figure 2.

**3.13**

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**suction, horizontal**

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distance by which the point of the share is bent out of line with the landside to cut the proper furrow width (see Figure 6a for tractor-drawn moldboard plow) (AMTEC-UPLB, 2004)

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*admitted term: horizontal clearance*

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**3.14**

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**suction, vertical**

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distance by which the point of the share is bent downward for the plow to penetrate the soil to the proper depth (AMTEC-UPLB, 2004)

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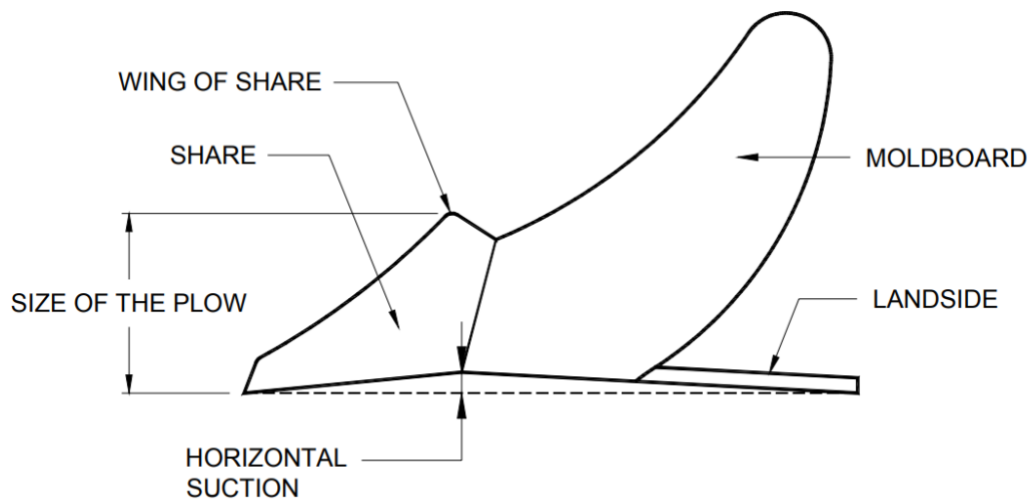
*admitted term: vertical clearance*

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**NOTE** See Figure 6b for tractor-drawn moldboard plow.

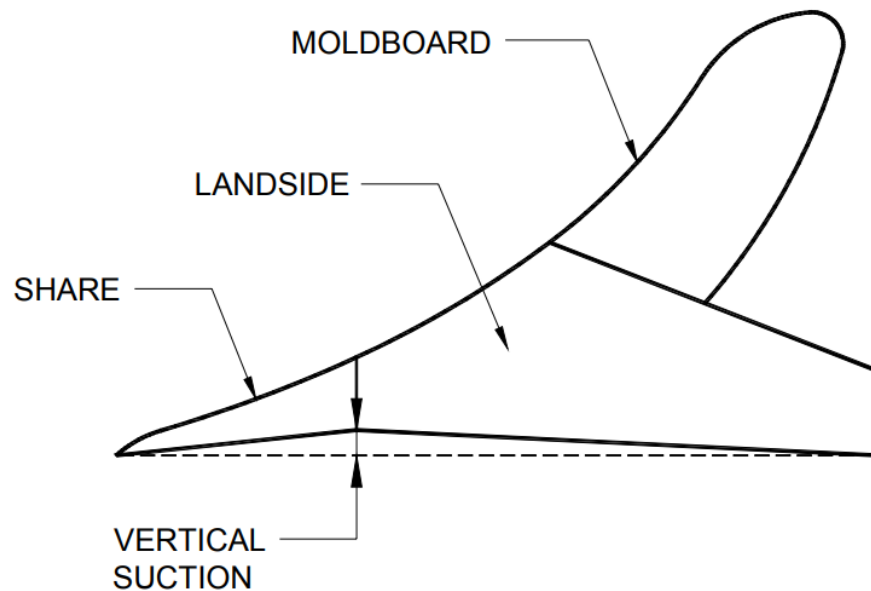
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**a. Top View**

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## b. Side View

**Figure 6.** Horizontal and vertical suction of a tractor-drawn moldboard plow (AMTEC-UPLB, 2004)

### 3.15

#### tailpiece

optional accessory, attached to the wing of the moldboard to improve inversion of the furrow slice (AMTEC-UPLB, 2004)

### 3.16

#### trash board

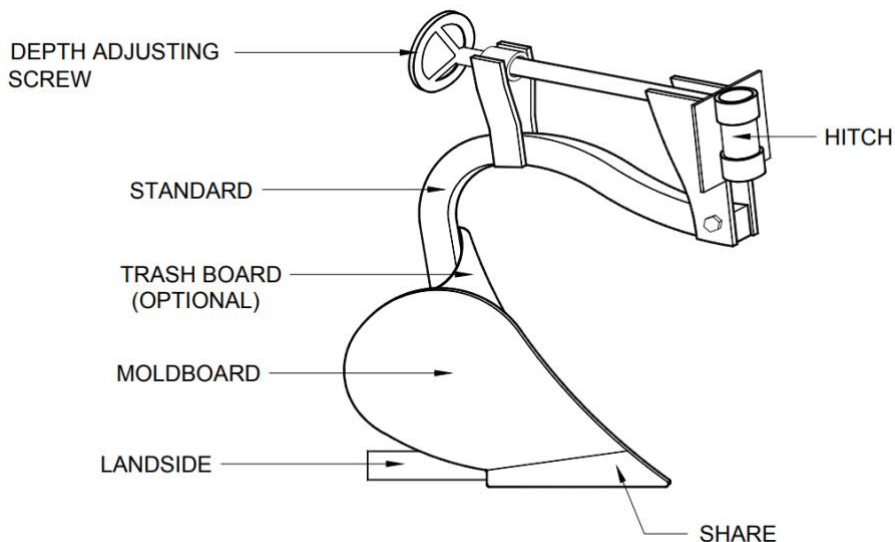
optional accessory, mounted above the shin, which deposits the upper edge of the furrow in the furrow bottom (AMTEC-UPLB, 2004)

## 4 Classification

### 4.1 Tractor-drawn moldboard plow

#### 4.1.1 Two-wheel tractor

The two-wheel tractor-drawn moldboard plow design is shown in Figure 7.

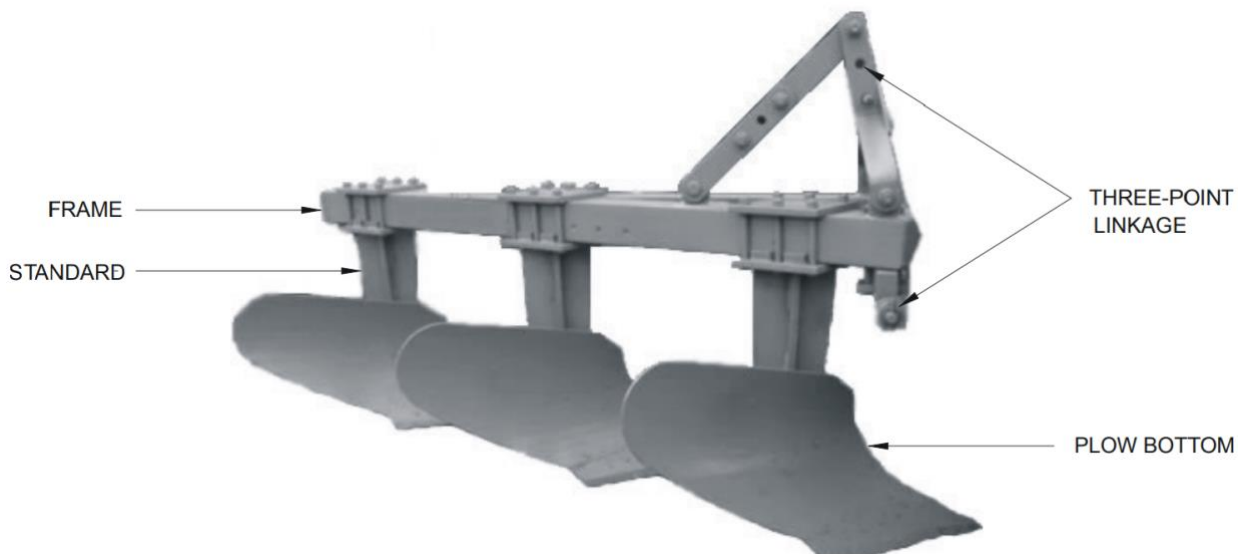


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281 **Figure 7.** Moldboard plow for two-wheel tractor (AMTEC-UPLB, 2004)  
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283 **4.1.2 Four-wheel tractor**

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285 **4.1.2.1 Tractor-mounted moldboard plow**  
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287 Type of plow mounted on the tractor's three-point linkage depends upon the  
288 tractor for its general operation, as shown in Figure 8.  
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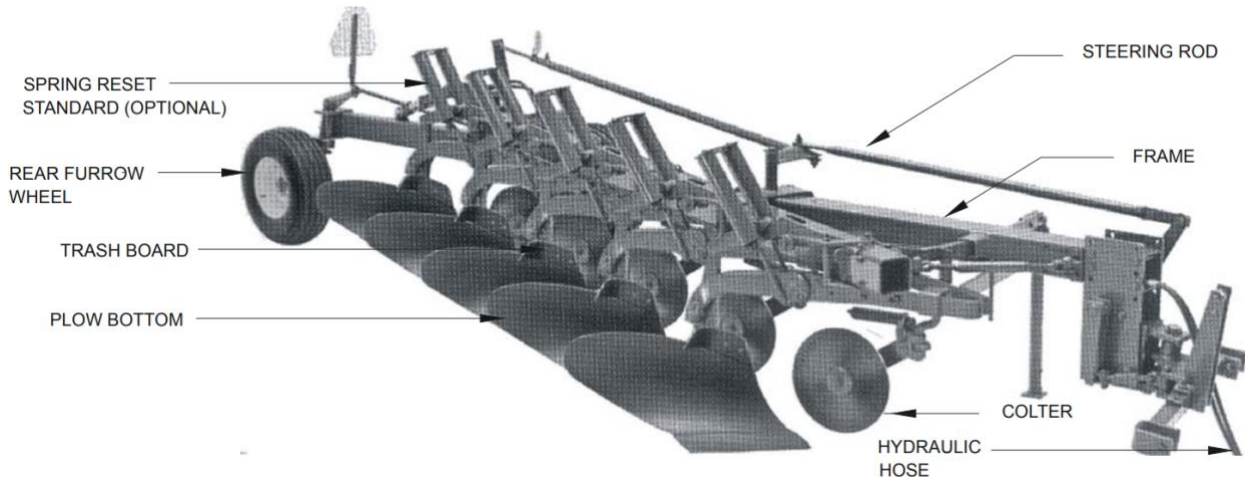


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291 **Figure 8.** Tractor-mounted moldboard plow (AMTEC-UPLB, 2004)  
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294 **4.1.2.2 Semi-mounted moldboard plow**

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Type of plow that has the front end directly connected to the tractor's three-point linkage and its rear end is supported by furrow and land wheels. The plow is also equipped with hydraulic lines and cylinders for its lifting and/or depth control as shown in Figure 9.

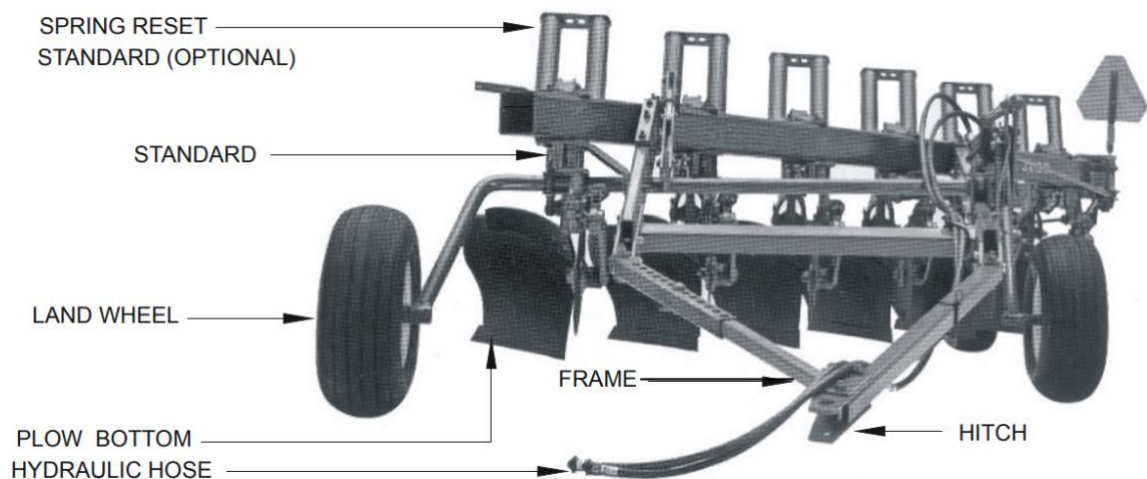


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**Figure 9.** Semi-mounted moldboard plow (AMTEC-UPLB, 2004)

**4.1.2.3 Trailing moldboard plow**

Type of plow hitched to the drawbar or lower links of the tractor, supported by two or three wheels and equipped with hydraulic lines and cylinders for lifting and/or depth control as shown in Figure 10.



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**Figure 10.** Trailing moldboard plow (AMTEC-UPLB, 2004)

## **5 Manufacturing Requirements**

- 5.1** For both two-wheel and four-wheel tractors, cast iron, mild steel, stainless steel, and/or hard plastic should be used. Carbon steel with at least 0.75% carbon content (e.g. AISI 1080) or alloy steel with at least 0.0005% boron content should be used in the manufacture of the share (AMTEC-UPLB, 2001, *modified*).
- 5.2** For four-wheel tractor-drawn plows, the moldboard may be covered with plastic or ceramics when used in sticky soils.
- 5.3** The hitch of the moldboard plow shall be compatible with the two-wheel tractor as specified in PAES 107:2000 (Agricultural machinery — Hitch for walking-type agricultural tractor — Specifications).
- 5.4** The hitch of the moldboard plow shall be compatible with the hydraulic system and the three-point hitch of the tractor specified in PNS/BAFS 301:2020 (Production Machinery — Four-Wheel Tractors — Specifications).

## **6 Performance Requirements**

- 6.1** The maximum depth of cut of the plow specified by the manufacturer shall be attained.
- 6.2** During operation, the moldboard plow shall have the ability to plow throughout the complete depth of cut, and the computed actual field capacity shall achieve the declared field capacity.
- 6.3** The moldboard plow shall have no failure of components during test operation.

## **7 Safety, Workmanship, and Finish**

- 7.1** The machine shall be free from defects that may be detrimental to its use and shall be free from sharp edges and surfaces that may harm the operator. All metal parts should be machine-bent, pressed, and cut, and all rough surfaces should be machine-finished and smoothed.

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354 **7.2** Except for the plow bottom, other uncoated metallic surfaces shall be free from  
355 rust and shall be painted properly.

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357 **7.3** Warning notices shall be provided in conformance with PNS/BAFS 330:2022  
358 (Technical means for ensuring safety — Guidelines).

359

360 **7.4** The use of the moldboard plow in terms of the operator's exposure to  
361 permissible noise level shall conform to Annex A (Occupational safety and  
362 health standards - [Rule 1074.01– 1074.03]).

363

364 **7.5** If the machine exceeds the noise level of 92 dB(A), an ear protective device  
365 shall be provided by the manufacturer.

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## 368 **8 After-sales Service Requirements**

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371 Requirements for after-sales services shall be in conformance with PNS/BAFS  
372 192:2024 (After-sales service — Guidelines).

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## 375 **9 Maintenance and Operation**

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378 **9.1** Each unit of the moldboard plow shall be provided with a set of standard tools  
379 for operation and basic maintenance as prescribed by the manufacturer.

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381 **9.2** An operator's manual for the moldboard plow shall be provided in conformance  
382 with PNS/BAFS 390:2024 (Operator's manual for agricultural and biosystems  
383 power and machinery — Guidelines). The operator's manual shall include  
384 emphasis on the safety and health hazards, especially the use of basic personal  
385 protective equipment.

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## 388 **10 Sampling**

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390 The moldboard plow shall be sampled for testing in conformance with  
391 PNS/BAFS 391:2024 (Methods of sampling for agricultural and biosystems  
392 power and machinery — Guidelines) or other suitable method of selection

393 validated by the testing authority.

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## 396 **11 Testing**

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398 The sampled moldboard plow shall be tested in conformance with PAES 132:  
399 2004 (Agricultural Machinery – Disc/Moldboard Plow – Methods of Test) or its  
400 latest issuance or other relevant standards for testing.

401

## 402 **12 Markings and Labeling**

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404 **12.1** Each unit of disc/moldboard plow shall be engraved or embossed with the  
405 following information, either on the body or on a metal nameplate/s permanently  
406 attached at the most conspicuous place:

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409 a) Registered trademark of the manufacturer:

410 b) Brand;

411 c) Model;

412 d) Serial number;

413 e) Date of manufacture (optional); and

414 f) Country of manufacture/origin (if imported) / “Made in the Philippines” (if  
415 manufactured in the country).

416

417 **12.2** Safety/precautionary markings shall be provided when appropriate. Markings  
418 shall be stated in English or Filipino and shall be printed in red color with a  
419 white background. **(AGREED)**

420

421 **12.3** The markings shall have a durable bond with the base surface material.

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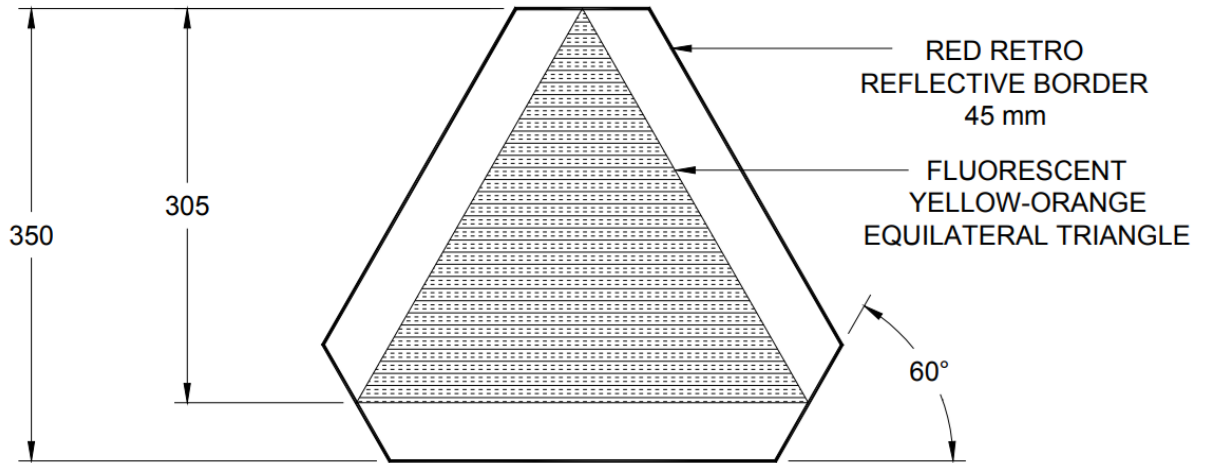
423 **12.4** The markings shall be weather resistant, and under normal cleaning  
424 procedures, they shall not fade, discolor, crack, or blister, and shall remain  
425 legible.

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427 **12.5** Reflectors shall be attached to the rear of the moldboard plow for safety during  
428 transport.

429

430 **12.6** During transport, the moldboard plow frame shall be fitted with a slow-moving  
431 vehicle (SMV) emblem. The emblem shall be located at the rear of the plow with  
432 the dimensional requirements as shown in Figure 11.



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**Figure 11.** Slow-Moving Vehicle (SMV) Emblem (AMTEC-UPLB, 2004)

**12.7** Other markings and labeling shall comply with the applicable regulations set by the competent authority.

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**Annex A**

441

(Informative)

442

443

**Occupational safety and health standards (Rule 1074.01–1074.03)**

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445

**A.1 Threshold limit values for noise**

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448 **A.1.1** The threshold limit values refer to sound pressure that represents conditions  
 449 under which it is believed that nearly all workers may be repeatedly exposed  
 450 without adverse effect on their ability to hear and understand normal speech.

451

452 **A.1.2** Feasible administrative or engineering controls shall be utilized when workers  
 453 are exposed to sound levels exceeding those specified in Table A.1 hereof when  
 454 measured on a scale of a standard sound level meter at slow response. If such  
 455 controls fail to reduce sound within the specified levels, ear protective devices  
 456 capable of bringing the sound level to permissible noise exposure shall be  
 457 provided by the employer and used by the worker.

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459

**Table A.1.** Permissible noise exposure (OSHC-DOLE, 2020)

Duration per day, h	Sound levels (slow response), dB(A)
8	90
6	92
4	95
3	97
2	100
1½	102

1	105
$\frac{1}{2}$	110
$\frac{1}{4}$	115

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461 **A.2 Permissible noise exposure**

462

463 **A.2.1** The values specified in Table A.1 apply to the total time of exposure per working  
 464 day, regardless of whether this is one continuous exposure or a number of short-  
 465 term exposures, but do not apply to impact or impulsive types of noise.

466

467 **A.2.2** If the variation in noise level involves maximum intervals of one second or less,  
 468 it shall be considered as continuous. If the interval is over one second, it  
 469 becomes impulse or impact noise.

470

471 **A.2.3** When the daily noise exposure is composed of two or more periods of noise  
 472 exposure of different levels, their combined effect should be considered rather  
 473 than the effect of each.

474

475 **A.2.4** If the sum of the fractions in Equation 1 exceeds one, then the mixed exposure  
 476 should be considered to exceed the threshold limit value. C indicates the total  
 477 time exposure at a specified noise level, and T indicates the total time of  
 478 exposure permitted at the level. However, the permissible levels indicated in  
 479 Table A.1 shall not be exceeded for the corresponding number of hours per day  
 480 allowed. Noise exposures of less than 90 dB(A) are not covered by Equation 1.

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$$X = \frac{C_1}{T_1} + \frac{C_2}{T_2} + \frac{C_3}{T_3} + \dots + \frac{C_n}{T_n} \quad (1)$$

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483

484 **A.2.5** Exposures to impulsive or impact noise shall not exceed 140 dB(A) peak sound  
 485 pressure level (ceiling value).