ANSI/ASABE S625.1 JUL2018 (R2023)
Drawbar Pin Dimensions and Requirements for Towing Machine with Clevis

American Society of Agricultural and Biological Engineers

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1 Purpose and Scope

This standard establishes dimensional and minimum strength requirements for agricultural drawbar hitch pins used in single point attaching of a towed machine to towing machines or leading machines. Application of this standard assumes a clevis on the towing machine conforming to ANSI/ASABE AD 6489-3:2004 and a ring on the towed machine conforming to ASABE/ISO 21244:2008. Additionally, this standard defines loading conditions for drawbar pin retention systems.

When the towing machine does not conform to ANSI/ASABE AD 6489-3:2004 or the towed machine does not conform to ASABE/ISO 21244:2008, fit and performance of pins designed per this standard may be affected. However, usage of applicable specifications derived from this standard is encouraged for such cases.

Note: ANSI/ASABE AD6489-3:2004 and ASABE/ISO 21244:2008 provide essential information related to tractor drawbars and associated implement hitch rings.

2 Normative References

The following referenced documents are indispensable for the application 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.

ANSI/ASABE AD6489-3:2004 Agricultural vehicles — Mechanical connections between towed and towing vehicles — Part 3: Tractor drawbar

ISO 21244:2008 Agricultural equipment — Mechanical connections between towed and towing vehicles — Implement hitch rings and attachment to tractor drawbars. (This standard has been nationally adopted identically by ASABE, ASABE/ISO 21244:2008.)

3 Terms and Definitions

3.1 drawbar pin: cylindrical component by which the motive and controlling forces are transferred from the towing machine to the towed machine under normal operating conditions

3.2 drawbar pin keeper: a primary mechanical means by which the drawbar pin is vertically retained and prevents the drawbar pin from being inadvertently dislodged during normal operations

3.3 drawbar pin keeper latch: a mechanical means that prevents the drawbar pin keeper from being inadvertently dislodged.

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3.4 drawbar pin secondary keeper: a linch pin or similar device, independent of the drawbar pin keeper, placed through a cross drilled hole near the bottom of the drawbar pin as a secondary means to prevent the drawbar pin from being inadvertently dislodged if the drawbar pin keeper fails

NOTE: When minimum drawbar pin projection below the drawbar is necessary, for reasons which may include reduction of crop damage or crop entanglement, a special drawbar pin may be used. For such a special drawbar pin, length S may be reduced to R (Table 1) and the cross drilled hole (Clause 4.1.3) may be eliminated or relocated. However, an alternate secondary means of pin retention which meets the strength requirements of a drawbar pin secondary keeper (Clause 4.4.1 and Clause 5) is required, with all other drawbar pin secondary keeper requirements optional.

3.5 towing machine: any tractor or self-propelled vehicle providing the forces to move and control a unit of agricultural field equipment

3.6 towed machine: any unit of agricultural field equipment that receives the forces for movement and control from a towing machine

NOTE: in trains of multiple units of agricultural field equipment, a unit of agricultural field equipment may be both a towing and a towed machine. See Figure 4.

3.7 towed machine hitch: mechanical connection by which the motive and controlling forces are transferred from the towing or leading machine to the towed machine

3.8 leading machine: any unit of agriculture field equipment that furnishes the forces necessary to move and control another towed machine

3.9 clevis: a U shaped structure with opposing holes, located on a common axis, through which a pin can be passed.

4 Requirements

4.1 Drawbar pin

4.1.1 Shall be designed according to Figure 1 and with the dimensions in Table 1.

4.1.2 Shall be designed with a head or similar means to resist the downward forces experienced during normal transport and field operations

4.1.3 Shall be designed with a cross drilled hole or similar feature near the bottom for the use of a drawbar pin secondary keeper.

4.1.4 Shall have adequate strength to resist both the impact loading and longitudinal loading. See Clause 5.

4.1.5 Shall be permanently marked with identification. For pin designs that can accommodate a tag, the text on the tag should be the following format, “ANSI/ASABE S625 Cat__” For pins that cannot accommodate a tag, the text “S625 C_” should be added to the head of the pin.

4.1.6 May have a handle to aid the operator during hitching and unhitching operations with a maximum height dimension as specified in Table 1 and Figure 1. The end user is responsible for selecting the appropriate pin for the application.

4.1.7 Length and head configurations may be optimized on pins supplied by the towing hitch manufacturer

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