ANSI/ASAE S515 JAN1993 (R2017)
Pallet Load Transfer System for Vegetable Harvesters, Shuttle Vehicles, and Road Trucks

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Pallet Load Transfer System for Vegetable Harvesters, Shuttle Vehicles, and Road Trucks

Developed by the ASAE Fruit and Vegetable Production Engineering Committee; approved by the ASAE Power and Machinery Division Standards Committee; adopted by ASAE January 1993; approved as an American National Standard January 1994; revised editorially November 1994; reaffirmed by ASAE December 1997; reaffirmed by ANSI November 1998, February 2003; reaffirmed by ASAE February 2003; reaffirmed by ASABE and ANSI February 2008; reaffirmed by ASABE and ANSI February 2013, December 2017.

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1 Purpose and Scope

1.1 The purpose of this Standard is to ensure compatibility between all vehicles used in a palletized load transfer system for vegetables. This Standard applies to vegetable harvesters, field shuttle vehicles, trailers, over-the-road trucks, and yard facilities used in such a system. Typical vehicles are shown in figure 1. Various manufacturers, vehicle leasing companies, and growers need to interchange and mate up their respective equipment; thus the need for standardization. The system is used to transfer entire pallet loads from one vehicle's conveyor to another conveyor. Only those dimensions and specifications needed to ensure the successful transfer are included.

1.1.1 The load transfer system is used to transfer a palletized load of produce cartons on a standard Grocery Manufacturers Association, GMA, pallet, 1016 × 1219 mm (40 × 48 in.), or other pallets with one dimension of 1219 mm (48 in.), or ISO pallets with one dimension of 1200 mm. Although the system has not yet been used with agricultural pallet bins with one dimension of 1200 mm it is designed to be compatible with them also.

1.1.2 The powered conveyors that are built into each harvester, vehicle, and yard facility within the system are all covered by this Standard.

1.1.3 The mating parts for aligning the conveyors to ensure proper transfer are covered.

2 Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Standards organizations maintain registers of currently valid standards.

ANSI/ASAE S318.10 DEC92, Safety for Agricultural Equipment

ANSI/ASAE 493 DEC92, Guarding for Agricultural Equipment

ASAE S335.4, Operator Controls on Agricultural Equipment

ASAE EP363.1 DEC92, Technical Publications for Agricultural Equipment

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ASAE S441, Safety Signs

ASAE EP443, Color Coding Hand Controls

3 Powered Conveyor Specifications

3.1 The conveyor shall be two pallet lines wide. Each pallet line shall be 1240 to 1245 mm (48.8 to 49.0 in.) from conveyor centerline to the inside of the required outside guide rail as shown in figure 2. The outside guide (shown in figure 2) should restrain the pallet at the pallet bottom and only extend above the top of the outer carry chain 16 to 22 mm (0.63 to 0.87 in.).

3.2 The powered conveyor shall use a minimum of four powered chains; two minimum per each pallet line to carry the pallets. It is recommended that both the head and tail shafts be common to both pallet lines. If only two chains per pallet are used, they should be near the outer edges of the pallet; 1140 to 1160 mm (45.0 to 45.7 in.) between chains as shown in figure 2. If more chains are used, it is recommended they be spaced to lie centered underneath a pallet bottom board. Optionally a support bar may be located 13 mm (0.5 in.) below the center pallet board. Such bars are intended to support a broken or weak pallet without creating excessive drag. If the system is used with ISO pallets or bins (which are narrower than GMA pallets), then the “center guide” shown is required. The guide will keep the narrower ISO pallets and bins on top of the carry chains. The center guide is recommended for GMA pallets as well.

3.3 The deck top (see figure 2) shall be a minimum of 38 mm (1.5 in.) below the carrying surface of the chains to prevent sagging pallets from dragging. It should be continuous grating and/or plate without breaks or large holes to prevent broken pallet boards from catching or jamming.

3.4 It is recommended that the outside chain be 6 mm (0.25 in.) higher than the center chain to tilt the pallets slightly toward each other to stabilize the cartons.

3.5 It is recommended that the conveyor speed be adjustable between 15 and 27 m/min (50 and 90 ft/min) and powered in both the load and unload directions.

3.6 The top of the conveyor chains, as shown in figure 1, shall be the following height above the ground:

— for harvesters, 1346 to 1422 mm (53 to 56 in.) unloaded;

— for field shuttle vehicles, an adjustment means such as hydraulic rams or other means shall be provided to adjust the height from 1220 to 1422 mm (48 to 56 in.). The left and right side lift means shall be independently controlled. This is required to allow for the unevenness of field conditions;

— for trailers and over-the-road trucks, measured with a full load, 1320 to 1372 mm (52 to 54 in.).

4 Conveyor Alignment Means

4.1 The conveyors on different vehicles or structures are to be held in alignment by means of two horns and two sockets. As shown in figure 1, the mating of the horns and sockets will align the conveyors for proper load transfer.

4.1.1 The harvesters or stationary yard conveyors shall be equipped with two sockets.

4.1.2 The over-the-road trucks shall be equipped with two sockets.

4.1.3 Any shuttle vehicle or field truck in the system shall be equipped with two horns on at least one end. In addition, if feasible, it is recommended they be equipped with two horns on the other end.

4.1.4 Trailers shall have two sockets on the tail end and optionally two sockets on the head end.

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