

ASAE S482 DEC98
Drawbars—Agricultural Wheel Tractors



American Society of Agricultural Engineers

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Proposed by the Equipment Manufacturers Institute; approved by the ASAE Tractor Committee; approved by the Power and Machinery Division Standards Committee; adopted by ASAE March 1994; reaffirmed and revised editorially December 1998; revised editorially March 1999.

1 Purpose and scope

1.1 This Standard provides dimensions and vertical static load limits for drawbars of agricultural wheel type tractors.

1.1.1 To facilitate interchangeability of towed implements and wheeled type tractors within established power categories.

1.1.2 To facilitate interchangeability of drawbar attachments such as drawbar extenders and safety chain attachments.

1.1.3 To provide limits for vertical static loads imposed by towed implements.

1.1.4 To provide dimensions relating the drawbar to the tractor power take-off shaft.

1.2 Dimensions comprising the standard specifications are divided into four categories:

Category	Maximum drawbar power kW (P)
I	15–35
II	30–100
III	60–170
IV	135–300

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 S338.2 JUL93, *Safety Chain for Towed Equipment*
ASAE S203.13 MAR94, *Front and Rear Power Take-Off for Agricultural Tractors*

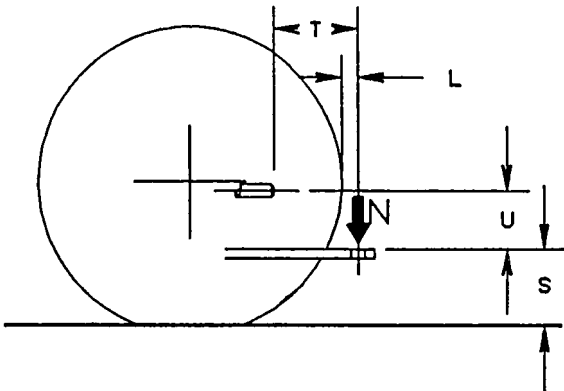


Figure 1 – Tractor power take-off and drawbar

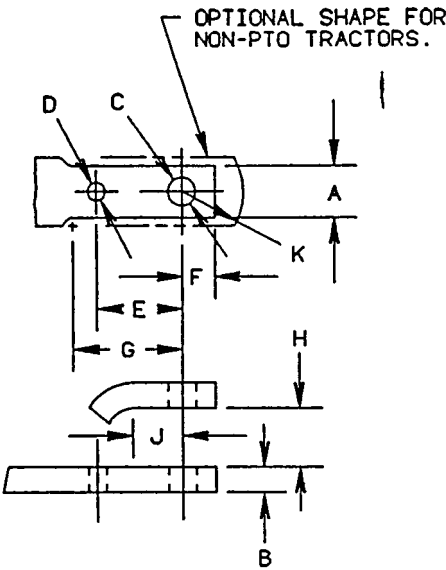


Figure 2 – Tractor drawbar and clevis

ASAE S207.12 MAR94, *Operating Requirements for Tractors and Power Take-Off Driven Implements*

ASAE S217.11 *Three-Point Free-Link Attachment for Hitching Implements to Agricultural Wheel Tractors*

SAE J711 MAR91, *Tire Selection Tables for Agricultural Machines of Future Design*

SAE J708, DEC84 *Agricultural Tractor Test Code*

SAE J2708 APR93, *Agricultural Tractor Test Code (OECD)*

3 Definitions

3.1 maximum drawbar power: Power obtained per SAE J708 and SAE J2708.

3.2 regular drawbar: The operating position of the drawbar matching the standard dimension from hitch pin hole to end of PTO shaft for the particular type PTO shaft on the tractor.

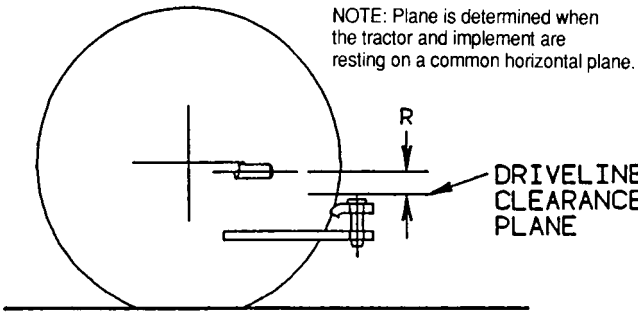


Figure 3 – Driveline clearance plane

Table 1 – Drawbar specification—Unless otherwise specified, all dimensions in millimeters—(See figures 1, 2, and 3)

Parameters		Category			
		I	II	III	IV
A	Drawbar width ¹⁾	50±2.0	60±3.5	80±4.0	120±4.0
B	Drawbar thickness (max to min)	30 to 25	40 to 30	50 to 40	60 to 40
C	Drawbar pin hole dia	26+0.8 -0.25	33+0.8 -0.25	42+0.8 -0.25	52+0.8 -0.25
C1	Nominal drawbar pin dia	25	30	40	50
D	Auxiliary hole dia	21+0.8 -0.25	21+0.8 -0.25	21+0.8 -0.25	26+0.8 -0.25
E	Distance	102±0.8	102±0.8	102±0.8	130±0.8
F	Distance (max)	30	40	50	60
G	Distance (min)	130	130	180	180
H	Height (min)	No clevis	70	70	90
J	Distance (min)	No clevis	60	70	80
K	Radius (max) ²⁾	75	75	75	100
L	Longitudinal distance from hitch pin hole to tire OD (min) ³⁾	25	25	25	25
N	Vertical drawbar load—kN (max)	1+0.15P	1+0.15P	7.8+0.06P	11.2+0.04P
P	Drawbar power (kW) range	15 to 35	30 to 100	60 to 170	135 to 300
R	Driveline clearance plane (min)	200	200	220	250
S	Height of drawbar (min to max)	330 to 500	330 to 500	380 to 560	380 to 560
U	Drawbar to PTO—vertical	200 to 300	200 to 320	220 to 350	250 to 350

¹⁾Width may be exceeded on tractors not equipped with PTO's but must be consistent with dimension K.

²⁾Clearance for implement clevis when drawbar width exceeds dimension A.

³⁾With drawbar centered laterally and largest R1 tire specified by the manufacturer using SAE J711 tire dimensions.

3.3 extendible drawbar: An adjustable multiple operating position drawbar matching the standard longitudinal dimension from hitch pin hole to end of PTO shaft for the particular type PTO shaft on the tractor plus providing extended and/or retracted hitch pin hole dimensions.

3.4 drawbar extender: An add-on bar or similar means attached to the tractor drawbar to lengthen the distance from end of PTO to hitch pin hole beyond the standard dimension.

3.5 short drawbar position: A position intended to connect non-PTO driven equipment that applies a high vertical load to the drawbar.

Table 2 – Position and vertical static load for drawbars All dimensions are in millimeters (see figure 1)

PTO ²⁾ Type	Dimension $T \pm 10$			Vertical static load correction factor for N value in table 1	
	Short ¹⁾	Regular	Extended	Short position	Extended position
1	250	350	500	1.6	0.8
2	250	400	550	1.6	0.7
3	350	500	650	1.4	0.7

¹⁾The L dimension does not apply to this position; not intended for PTO use.

²⁾See ASAE S203 for identification of PTO type.

3.6 extended drawbar position: A position intended for a special PTO drive shaft condition where equal angularity of the drive shaft joints cannot be obtained using the regular position.

3.7 driveline clearance plane: The imaginary horizontal plane which establishes the uppermost permissible limit of protrusion of the drawbar hitch assembly, when the tractor and implement are a common horizontal plane.

4 Specifications

4.1 The drawbar dimensions shall conform to figures 1, 2, and 3 and tables 1 and 2.

4.2 Dimension L in figure 1 applies to the regular drawbar position of the PTO usage.

4.3 Provision shall be made for safety chain intermediate support as specified by ASAE/ANSI S338.

4.4 The vertical location of the drawbar below the PTO centerline shall consider the drawbar pin, pin retention device, and clevis for the driveline clearance plane, dimension R (see figure 3). The clevis may be removed to maintain the R dimension for PTO operation. If so, the operators manual should state that the drawbar with clevis installed is not compatible for use with PTO drives.

4.5 The drawbar hitch point shall be directly in line with the centerline of the tractor PTO shaft, and provision shall be made on the tractor for locking the drawbar in this position.

5 Vertical loads on drawbars

5.1 The maximum vertical static loads which the implement shall impose upon the tractor drawbar are shown in table 1, for the regular drawbar. Loads for short and extended drawbar positions are shown in table 2. The point of loading N (see figure 1) shall correspond to the regular, short, or extended dimension as specified in table 2. (The dynamic loads imposed upon the tractor drawbar and implement hitch are considerably higher than static loads.)