

**Three-Point Hitch, Implement
Quick-Attaching Coupler,
Agricultural Tractors—
SAE J909 DEC78**

SAE Standard
Last Revised December 1978

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THREE-POINT HITCH, IMPLEMENT QUICK-ATTACHING COUPLER, AGRICULTURAL TRACTORS—SAE J909 DEC78

SAE Standard

Report of the Tractor Technical Committee, approved June 1966, last revised by the Agricultural Tractor Technical Committee, December 1978. Conforms to reports of FIEI and ASAE. Rationale statement available.

φ 1. **Purpose**—It is intended to establish those dimensions which are necessary to assure adequate clearance between components and to assure proper functioning of the tractor-implement combination when the implement is attached to the tractor hitch linkage by means of the quick-attaching coupler and, in addition, to retain provision for attaching the implement directly to the tractor hitch linkage when necessary or desirable.

φ 2. **Scope**—This specification sets forth the dimensions for the attachment of standard three-point hitch implements or equipment to the rear of agricultural wheeled tractors equipped with a standard three-point free-link hitch and quick-attaching coupler. It does not provide for interchangeability between tractors and couplers.

φ 2.1 In general, the dimensions associated with the tractor and the implement for use with the quick coupler are the same as those for the standard three-point free-link hitch specified in ASAE Standard ASAE S217, Three-Point Free-Link Attachment for Hitching Implements to Agricultural Wheel Tractors. This standard sets forth only those additional requirements that are necessary to provide for use with the coupler.

φ 3. **Special Hitch Coupler Categories**—It has been found from experience that certain large implements used with dual rear tires and narrow crop spacings require a Special Category Narrow Hitch.

φ 3.1 **Special Category III Narrow Hitch Coupler (III-N)**—The dimen-

sions of the Category III Narrow Hitch Quick-Attaching Coupler are as follows:

3.1.1 Table 1: Dimensions (A), (S), (T), (U), (V), and (W) shall be in accordance with Category II. All other dimensions shall be in accordance with Category III.

3.1.2 Table 2: Dimensions (B₁) and (C₁) shall be in accordance with Category II. All other dimensions shall be in accordance with Category III.

3.2 **Special Category IV Narrow Hitch Coupler (IV-N)**—The dimensions of the Category IV Narrow Hitch Quick-Attaching Coupler are:

3.2.1 Table 1: Dimensions (A), (S), (T), (V), and (W) shall be as follows:

- (A) 925 mm (36.42 in.)/930 mm (36.61 in.)
- (S) 858 mm (33.78 in.)
- (T) 1174 mm (46.22 in.)
- (V) 858 mm (33.78 in.)
- (W) 1174 mm (46.22 in.)

All other dimensions shall be in accordance with Category IV.

3.2.2 Table 2: Dimension (B₁) shall be 919 mm (36.18 in.)/922 mm (36.30 in.). Dimension (C₁) shall be in accordance with Category III. All other dimensions shall be in accordance with Category IV.

φ TABLE 1—DIMENSIONS ASSOCIATED WITH QUICK ATTACHING COUPLER (SEE FIG. 1)

Dimensions designated in Fig. 1. (A, B, etc.)	Category I				Category II				Category III ^d				Category IV ^d			
	mm		in.		mm		in.		mm		in.		mm		in.	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
A Lower socket inside span	686.56	689.61	27.03	27.15	828.66	834.13	32.62	32.84	969.78	975.36	38.18	38.40	1171	1174	46.10	46.22
B Lower socket width	27.94	29.46	1.10	1.16	64.26	66.55	2.53	2.62	64.26	66.55	2.53	2.62	87	89	3.42	3.50
C Lower socket offset ^a	—	103.13	—	4.06	—	127	—	5.00	—	127	—	5.00	—	165	—	6.50
D Lower socket diameter	38.10	38.61	1.50	1.52	38.10	38.61	1.50	1.52	38.10	38.61	1.50	1.52	52	52.5	2.05	2.07
E Lower socket overhang	—	88.9	—	3.50	—	88.9	—	3.50	—	88.9	—	3.50	—	89	—	3.50
F Lower socket depth	—	88.9	—	3.50	—	88.9	—	3.50	—	88.9	—	3.50	—	127	—	5.00
G Upper hook width ^b	—	31.75	—	1.25	—	31.75	—	1.25	—	31.75	—	1.25	—	45	—	1.77
H Upper hook overhang	—	73.15	—	2.88	—	73.15	—	2.88	—	73.15	—	2.88	—	82	—	3.23
I Upper hook opening	32.51	33.27	1.28	1.31	32.51	33.27	1.28	1.31	32.51	33.27	1.28	1.31	45.7	46.5	1.80	1.83
J Upper hook offset ^a	—	103.13	—	4.06	—	127	—	5.00	—	127	—	5.00	—	165	—	6.50
K Upper hook depth	—	91.44	—	3.60	—	91.44	—	3.60	—	91.44	—	3.60	—	102	—	4.02
L Upper hook height	—	98.30	—	3.87	—	98.30	—	3.87	—	103.13	—	4.06	—	117	—	4.61
M Implement mast clearance ^c	41.15	—	1.62	—	41.15	—	1.62	—	41.15	—	1.62	—	54	—	2.13	—
N Upper hook vertical spacing	375.41	377.96	14.78	14.88	375.41	377.96	14.78	14.88	477.01	479.56	18.78	18.88	680	683	26.77	26.89
O Coupler frame height	282.21	—	11.15	—	283.21	—	11.15	—	365.76	—	14.40	—	508	—	20.00	—
P Coupler leg clearance height inside	203	—	8	—	203	—	8	—	203	—	8	—	330	—	13.00	—
Q Coupler leg clearance height outside	178	—	7	—	178	—	7	—	178	—	7	—	305	—	12.00	—
R Coupler frame clearance width	559	—	22	—	559	—	22	—	559	—	22	—	660	—	25.98	—
S Coupler frame inside width	657.10	—	25.87	—	796.81	—	31.37	—	931.68	—	36.68	—	1104	—	43.46	—
T Coupler frame lower outside width	—	806.46	—	31.75	—	1005.08	—	39.57	—	1130.30	—	44.50	—	1420	—	55.91
U Coupler frame upper outside width	—	879.61	—	34.63	—	1065.53	—	41.95	—	1158.75	—	45.62	—	1420	—	55.91
V Lower link attaching pin inside	620.8	—	24.44	—	762.0	—	30.00	—	903.2	—	35.56	—	1104	—	43.46	—
W Lower link attaching pin outside	—	828.12	—	32.60	—	1019.05	—	40.12	—	1174.75	—	46.25	—	1420	—	55.91
X Coupler frame overall span	—	222.25	—	8.75	—	222.25	—	8.75	—	222.25	—	8.75	—	305	—	12.01
Y Upper hook reach	47.75	—	1.88	—	47.75	—	1.88	—	47.75	—	1.88	—	63	—	2.48	—
Z Implement lower frame clearance ^c	41.15	—	1.62	—	41.15	—	1.62	—	41.15	—	1.62	—	54	—	2.13	—

^aThe upper hook offset (dimension J) shall be no more than 15.75 mm (0.62 in.) greater or 6.35 mm (0.25 in.) less than the lower socket offset (dimension C).

^bThe implement must provide clearance when attached to the coupler to permit lowering all elements of the coupler 120.9 mm (4.75 in.) minimum for category I, II and III and 146 mm (5.75 in.) minimum for category IV-N and IV, for satisfactory attachment and detachment of the implement from the coupler.

The upper hook on the quick coupler shall be on center of the lower sockets within 3.00 mm (0.12 in.) and the upper hook opening on the implement shall be on center of the lower hitch pin shoulders within 3.0 mm (0.12 in.).

Provisions shall be made for adequate upper hook clearance on those implements which require landing or leveling.

^cThe lower implement attaching point on the quick-attaching coupler shall be located in the vertical position

such that the lift range, power range, and leveling adjustment, as specified in ASAE Standard ASAE S217, Three-Point Free-Link Attachment for Hitching Implements to Agricultural Wheel Tractors, are fulfilled.

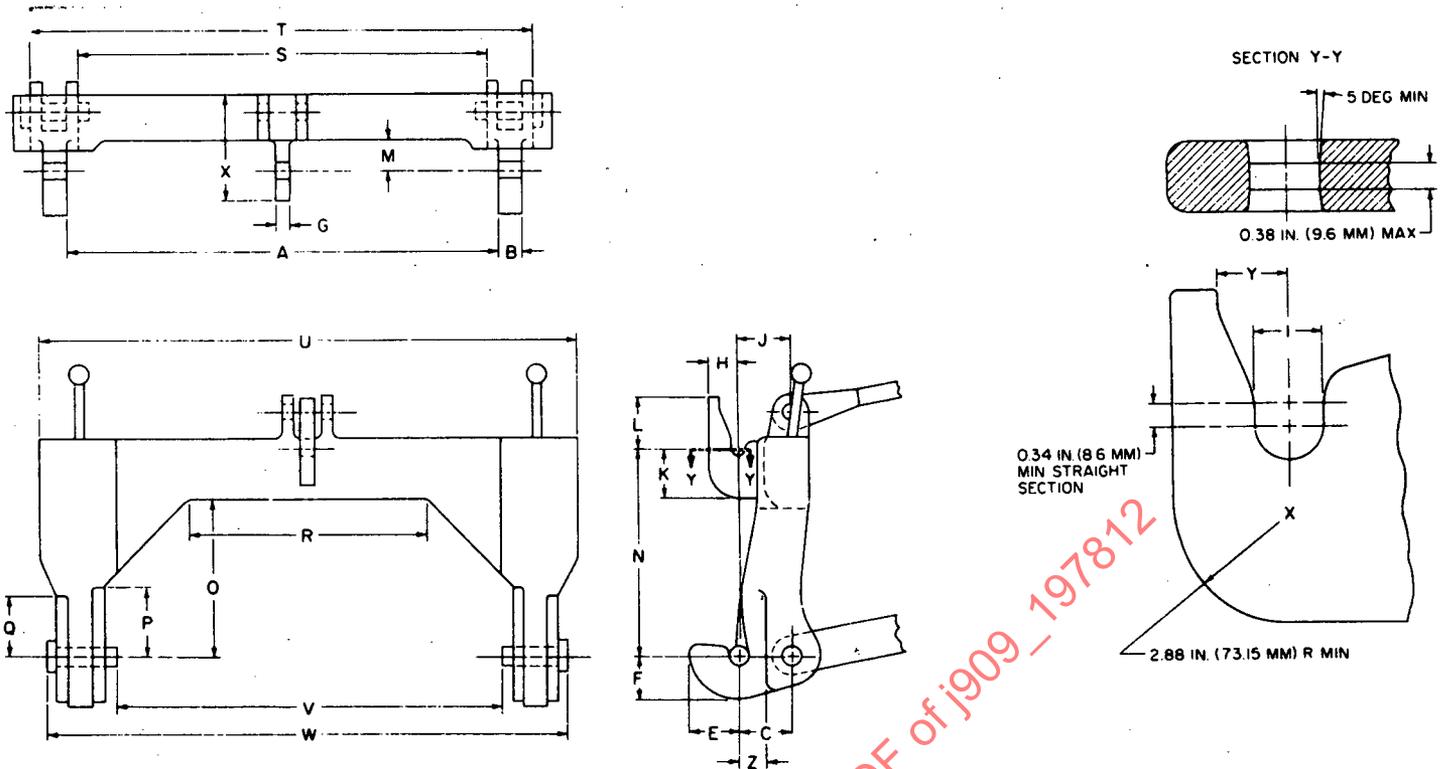
Implement components, other than the hitch pins, that are in alignment with the lower socket width (dimension B) shall not extend forward of the centerline of the lower socket for a distance of 203 mm (8 in.) above the lower socket.

Components above this height and extending laterally more than 381 mm (15 in.) from the coupler centerline shall not extend more than 25 mm (1.0 in.) forward of the vertical centerline through the upper hook opening. The lower socket width (B) shall be maintained within the area defined by dimensions P, Q, and Z.

^dSee Section 3 for category IV-N or III-N narrow hitch dimensions.

^eLower link to coupler pins may be recessed to provide design freedom to obtain structural integrity in coupler frame, resulting in a common dimension of S and V, T and W respectively.

The φ symbol is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.



φ FIG. 1—DIMENSIONS ASSOCIATED WITH QUICK-ATTACHING COUPLER (LETTER DESIGNATIONS A, B, C, ETC., CORRESPOND TO DIMENSIONS IN TABLE 1)

TABLE 2—DIMENSIONS ASSOCIATED WITH IMPLEMENT (SEE FIG. 2)

	Category I				Category II				Category III ^d				Category IV ^d			
	mm		in.		mm		in.		mm		in.		mm		in.	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
A ₁ Lower hitch pin or adapter outside diameter ^a	36.33	36.58	1.43	1.44	36.33	36.58	1.43	1.44	36.33	36.58	1.43	1.44	49.7	50.8	1.96	2.00
B ₁ Lower hitch pin inner shoulder spread ^a	681.0	684.3	26.81	26.94	822.5	825.5	32.38	32.50	963.7	966.7	37.94	38.06	1165	1168	45.87	45.99
C ₁ Lower hitch pin outer shoulder spread ^a	750.83	753.88	29.56	29.68	970.28	973.33	38.20	38.32	1111.50	1114.55	43.76	43.88	1358	1361	53.46	53.58
D ₁ Lower hitch pin inner and outer shoulder dia. ^a	50.55	63.75	1.99	2.51	50.55	63.75	1.99	2.51	50.55	63.75	1.99	2.51	63	101.6	2.48	4.00
E ₁ Coupler mast pin diameter	31.50	31.75	1.24	1.25	31.50	31.75	1.24	1.25	31.50	31.75	1.24	1.25	44.2	45	1.74	1.77
F ₁ Coupler mast pin vertical spacing	379.48	382.53	14.94	15.06	379.48	382.53	14.94	15.06	481.08	484.13	18.94	19.06	684.5	687.5	26.95	27.07
G ₁ Coupler mast pin horizontal spacing ^b	—	38.1	—	1.50	—	38.1	—	1.50	—	38.1	—	1.50	—	50.8	—	2.00
H ₁ Lower socket clearance ^c																
J ₁ Upper hook clearance ^c																
K ₁ Lower hitch pin or adapter alignment																

To be in line within 0.015 mm (0.015 in.) per 1 mm (1 in.) of pin length.

^aFor implements with cantilever mounted lower hitch pins, special quick coupler hitch pins must be supplied to dimensions A₁, B₁, C₁, and D₁. Adapter bushings may be supplied which convert existing three-point hitch pins to dimensions A₁, B₁, C₁, and D₁ in lieu of special quick coupler hitch pins.

For three-point hitch implements on which the lower hitch points consist of straddle mounted pins, no additional thrust surfaces are required, providing the pin diameter and support dimensions conform to dimensions A₁, B₁, C₁, and G₁.

The method used and dimensions related to attaching the pins or adapter bushings to the implement shall be at the discretion of the implement manufacturer.

^bThe lower implement attaching point on the quick-attaching coupler shall be located in the vertical position such that the lift range, power range, and levelling adjustment, as specified in ASAE Standard ASAE S217, Three-Point Free-Link Attachment for Hitching Implements to Agricultural Wheel Tractors, are fulfilled.

Implement components, other than the hitch pins, that are in alignment with the lower socket width (dimension B₁ see Fig. 1 and Table 1) shall not extend forward of the centerline of the lower socket for a distance of 203 mm (8 in.) above the lower socket.

Components above this height and extending laterally more than 381 mm (15 in.) from the coupler centerline shall not extend more than 25 mm (1.0 in.) forward of the vertical centerline through the upper hook opening.

^cThe implement must provide clearance when attached to the coupler to permit lowering all elements of the coupler 120.9 mm (4.75 in.) minimum for category I, II, and III and 146 mm (5.75 in.) minimum for category IV-N and IV, for satisfactory attachment and detachment of the implement from the coupler.

The upper hook on the quick coupler shall be on center of the lower sockets within 3.0 mm (0.12 in.) and the upper hook opening on the implement shall be on center of the lower hitch pin shoulders within 3.0 mm (0.12 in.).

Provision shall be made for adequate upper hook clearance on those implements which require landing or levelling.

^dSee Section 3 for category IV-N or III-N narrow hitch dimensions.