INTERNATIONAL STANDARD

ISO 11001-1

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Agricultural wheeled tractors and implements — Three-point hitch couplers —

Part 1: U-frame coupler

Tracteurs agricoles à roues et instruments — Coupleurs rapides trois points —

Partie 1: Coupleur par cadre en U

Reference number
ISO 11001-1:1993(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 11001-1 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Sub-Committee SC 4, *Tractors*.

ISO 11001 consists of the following parts, under the general title *Agricultural wheeled tractors and implements — Three-point hitch couplers*:

— *Part 1: U-frame coupler*

— *Part 2: A-frame coupler*

— *Part 3: Link coupler*

— *Part 4: Bar coupler*

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Agricultural wheeled tractors and implements — Three-point hitch couplers —

Part 1:
U-frame coupler

1 Scope

This part of ISO 11001 specifies the essential dimensions for the attachment of three-point hitch implements to agricultural wheeled tractors equipped with a three-point free link hitch according to ISO 730-1, ISO 730-3 or ISO 8759-2, and a U-frame hitch coupler.

NOTE 1 In general, the dimensions associated with the tractor and the implement for use with hitch couplers are the same as those for the three-point linkage specified in ISO 730-1, ISO 730-3 or ISO 8759-2, and those for the clearance zone specified in ISO 2332[1)].

The three-point hitch coupler systems constitute a special method of implement mounting. The hitch couplers are an additional component located between the three-point linkage and the implement, making it possible to hitch and unhitch from the operator's seat. Due to the special construction and function of hitch couplers, it may be necessary to vary the length of the links indicated in the referenced standards.

This part of ISO 11001 applies to categories 2, 3 and 4 of agricultural wheeled tractors as defined in ISO 730-1 and ISO 730-3.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 11001. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 11001 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 730-1:1990, *Agricultural wheeled tractors — Rear-mounted three-point linkage — Part 1: Categories 1, 2 and 3.*

ISO 730-3:1982, *Agricultural wheeled tractors — Three-point linkage — Part 3: Category 4.*

ISO 8759-2:1985, *Agricultural wheeled tractors — Front-mounted linkage and power take-off — Part 2: Front linkage.*

3 Principle of frame coupler system

A frame coupler system is a one-phase implement coupler where the three-point linkage of the tractor (see ISO 730-1, ISO 730-3 or ISO 8759-2) is fitted with a U-frame and the implement has the provisions to be mounted to the frame. Hitching and unhitching can be operated from the tractor operator's seat.

4 Coupler dimensions

Coupler dimensions shall comply with figure 1 and table 1.

4.1 The upper hook offset (dimension b_5) shall be not more than 15,75 mm greater or 6,35 mm less than the lower socket offset (dimension b_1).

1) ISO 2332:1983, *Agricultural tractors and machinery — Connections — Clearance zone for the three-point linkage of implements.*

4.2 The implement shall provide clearance when attached to the coupler to permit lowering all elements of the coupler 120,9 mm minimum for categories 2 and 3, and 146 mm minimum for category 4, to ensure satisfactory attachment and detachment of the implement from the coupler.

4.3 The upper hook of the quick coupler shall be at the centre of the lower sockets within 3 mm.

4.4 The 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 ISO 730-1 and ISO 730-3, are fulfilled.

4.5 Implement components, other than the hitch pins, that are in alignment with the lower socket width (dimension δ_1) shall not extend forward of the centreline of the lower socket for a distance of 203 mm above the lower socket. Components above this height, extending laterally more than 381 mm from the coupler centreline, shall not extend more than 25 mm forward of the vertical centreline through the upper hook opening.

4.6 The lower socket width (δ_1) shall be maintained within the area defined by dimensions b_2, h_6, h_7 and b_9.

4.7 The lower link to coupler pins may be recessed to provide design freedom to obtain structural integrity in the coupler frame, resulting in a common dimension for l_3 and l_6, and l_4 and l_7, respectively.

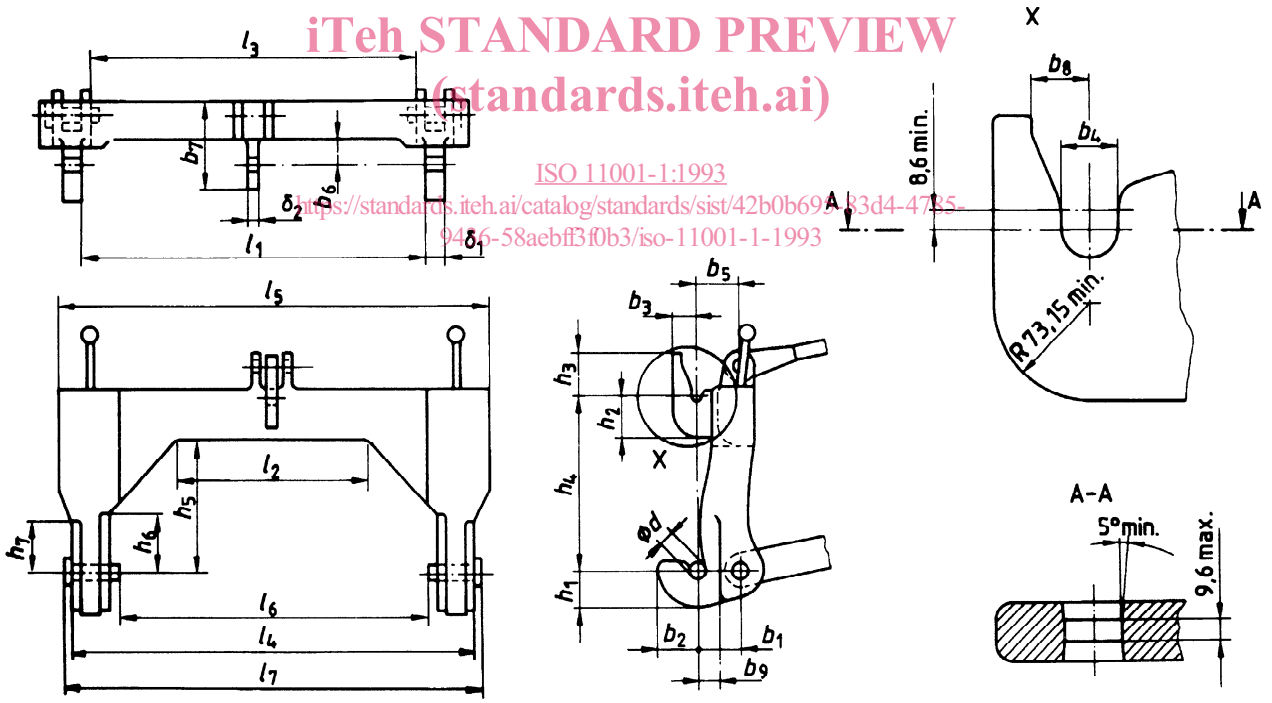


Figure 1 — Coupler dimensions

Table 1 — Coupler dimensions

Dimensions in millimetres

Dimensions	Designation	Category 2		Category 3		Category 4	
		min.	max.	min.	max.	min.	max.
l_1	Lower socket inside span	828,56	834,13	969,78	975,36	1 171	1 174
δ_1	Lower socket width	64,26	66,55	64,26	66,55	87	89
b_1	Lower socket offset	—	127	—	127	—	165
d	Lower socket diameter	38,10	38,61	38,10	38,61	52,0	52,5
b_2	Lower socket overhang	—	88,9	—	88,9	—	89
h_1	Lower socket depth	—	88,9	—	88,9	—	127
δ_2	Upper hook width	—	31,75	—	31,75	—	45
b_3	Upper hook overhang	—	73,15	—	73,15	—	82
b_4	Upper hook opening	32,51	33,27	32,51	33,27	45,7	46,5
b_5	Upper hook offset	—	127	—	127	—	165
h_2	Upper hook depth	—	91,44	—	91,44	—	102
h_3	Upper hook height	—	98,3	—	103,13	—	117
h_4	Upper hook vertical spacing	375,41	377,96	477,01	479,56	680	683
b_6	Implement mast clearance	41,15	—	41,15	—	54	—
h_5	Coupler frame height	283,21	—	365,76	—	508	
h_6	Coupler leg clearance height inside	203	—	203	—	330	—
h_7	Coupler leg clearance height outside	178	—	178	—	305	
l_2	Coupler frame clearance width	559	—	559	—	660	
l_3	Coupler frame inside width	796,81	—	931,68	—	1 104	—
l_4	Coupler frame lower outside width	—	1 005,08	—	1 130,30	—	1 420
l_5	Coupler frame upper outside width	—	1 065,53	—	1 158,75	—	1 420
l_6	Lower link attaching pin inside	762	—	903,2	—	1 104	—
l_7	Lower link attaching pin outside	—	1 019,05	—	1 174,75	—	1 420
b_7	Coupler frame overall span	—	222,25	—	222,25	—	305
b_8	Upper hook reach	47,75	—	47,75	—	63	—
b_9	Implement lower frame clearance	41,15	—	41,15	—	54	—

5 Dimensions associated with implement

Dimensions associated with the implement shall comply with figure 2 and table 2.

5.1 For implements with cantilever-mounted lower hitch pins, special quick coupler hitch pins shall be supplied to dimensions d_1, l_1, l_2 and d_2. Adapter bushings may be supplied which convert existing three-point hitch pins to dimensions d_1, l_1, l_2 and d_2 instead 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 d_1, l_1, l_2 and b_1.

The method used and dimensions related to attaching the pins or adaptor bushings to the implement are at the discretion of the implement manufacturer.

5.2 The 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 ISO 730-1 and ISO 730-3, are fulfilled.

5.3 Implement components, other than the hitch pins, that are in alignment with the lower socket width [dimension δ_1 (see figure 1 and table 1)] shall not extend forward of the centreline of the lower socket for a distance of 203 mm above the lower socket.

Components above this height extending laterally more than 381 mm from the coupler centreline shall

not extend more than 25 mm forward of the vertical centreline through the upper hook opening.

5.4 The adapter or lower hitch pin shall be in line within 0,015 mm per 1 mm of pin length.

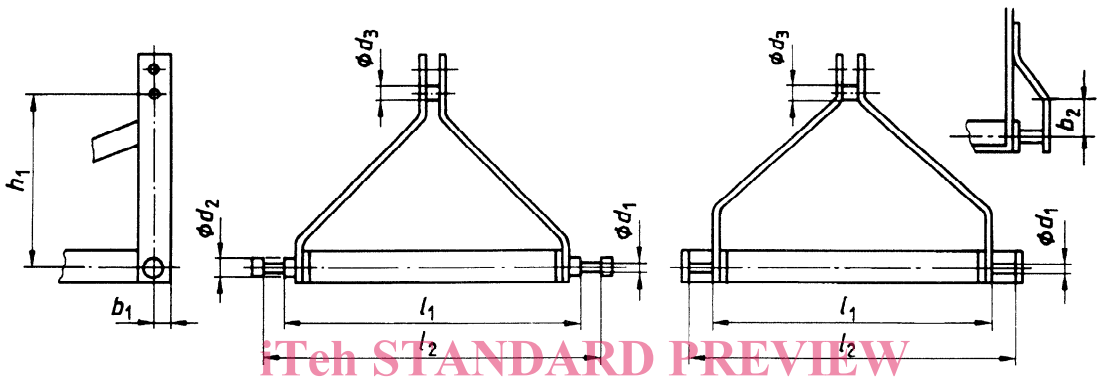
5.5 The implement shall provide clearance when attached to the coupler to permit lowering all elements of the coupler 120,9 mm minimum for categories 2 and 3, and 146 mm minimum for category 4, for satisfactory attachment and detachment of the implement from the coupler.

5.6 The upper hook opening on the implement shall be at the centre of the lower hitch pin shoulders within 3 mm.

5.7 Provisions shall be made for adequate upper hook clearance in those implements which require landing or levelling.

6 Locking device

A positive latch shall be provided to prevent an unintentional separation of the implement.



a) Light duty b) Heavy duty

Figure 2 — Dimensions associated with implement

Table 2 — Dimensions associated with implement

Dimensions in millimetres

Dimensions	Designation	Category 2		Category 3		Category 4	
		min.	max.	min.	max.	min.	max.
d_1	Lower hitch pin or adapter outside diameter	36,33	36,58	36,33	36,58	49,7	50,8
l_1	Lower hitch pin inner shoulder spread	822,5	825,5	963,7	966,7	1 165	1 168
l_2	Lower hitch pin outer shoulder spread	970,28	973,33	1 111,50	1 114,55	1 358	1 361
d_2	Lower hitch pin inner and outer shoulder diameter	50,55	63,75	50,55	63,75	63,0	101,6
d_3	Coupler mast pin diameter	31,50	31,75	31,50	31,75	44,2	45,0
h_1	Coupler mast pin vertical spacing	379,48	382,53	481,08	484,13	684,5	687,5
b_1	Coupler mast pin horizontal spacing	—	38,1	—	38,1	—	50,8
b_2	Lower socket clearance (see 5.5)	70	—	70	—	90	—

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