
Agricultural equipment — Mechanical connections between towed and towing vehicles — Implement hitch rings and attachment to tractor drawbars

Matériel agricole — Liaisons mécaniques entre véhicules tracteurs et véhicules tractés — Attelages à anneau pour instruments et fixation à la barre d'attelage



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2008

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 21244 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 4, *Tractors*.

.....

Agricultural equipment — Mechanical connections between towed and towing vehicles — Implement hitch rings and attachment to tractor drawbars

1 Scope

This International Standard specifies dimensional requirements for the hitch rings of agricultural trailers and trailed implements designed to be attached to agricultural tractor drawbars of clevis type according to ISO 6489-3.

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.

ISO 6489-3:2004, *Agricultural vehicles — Mechanical connections between towed and towing vehicles — Part 3: Tractor drawbar*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 angle of yaw

A

rotation around a vertical axis of the vehicle passing through the coupling point

3.2 angle of pitch

B

rotation around a horizontal axis passing through the coupling point and perpendicular to the longitudinal plane of symmetry of the vehicle

3.3 angle of roll

C

rotation around a horizontal axis passing through the coupling point and located in the plane of symmetry of the vehicle

4 Specifications

4.1 The hitch dimensions shall be in accordance with Figure 1 and Table 1, and Figure 2 and Table 2, and shall allow rotation as shown in Figure 3 and as specified in Table 3.

4.2 The dimensions relative to the standard specifications are divided into the six categories based on tractor PTO power as defined in ISO 6489-3.

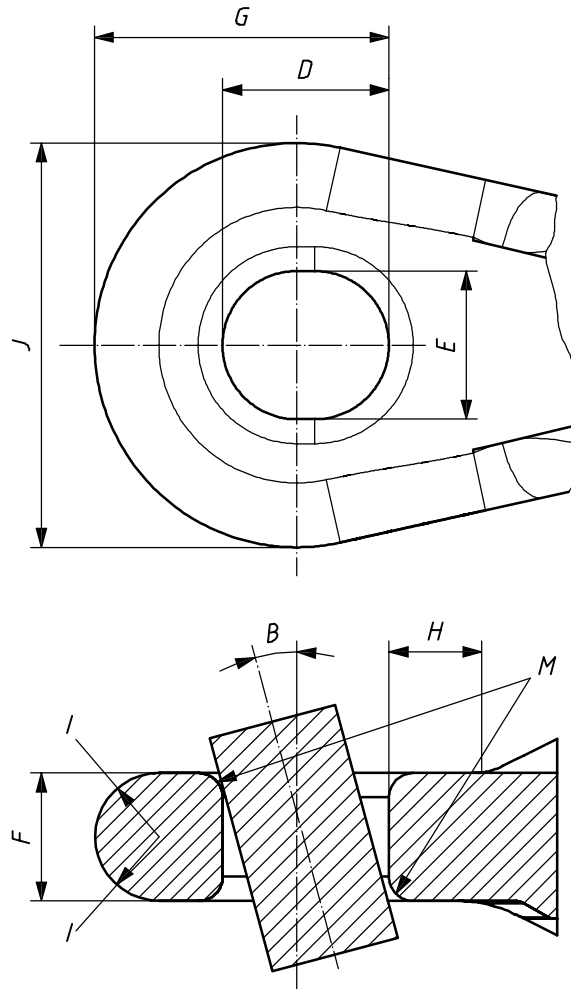
NOTE For information on hitch combinations, see Annex A.

4.3 Draft loads, PTO power according to ISO 6489-3:2004, Table 1, and the maximum static vertical load requirements of the towed agricultural implement shall dictate the hitch category, and whether a hitch ring (see Figure 1) or ball ring hitch (see Figure 2) is to be used.

A ball ring hitch may be used when a tighter connection between the tractor and implement is required.

4.4 The maximum static vertical load shall be determined in accordance with ISO 6489-3:2004, Table 5.

4.5 The hitch design shall be for connection to a clevis type drawbar only.



For use only with a drawbar clevis.

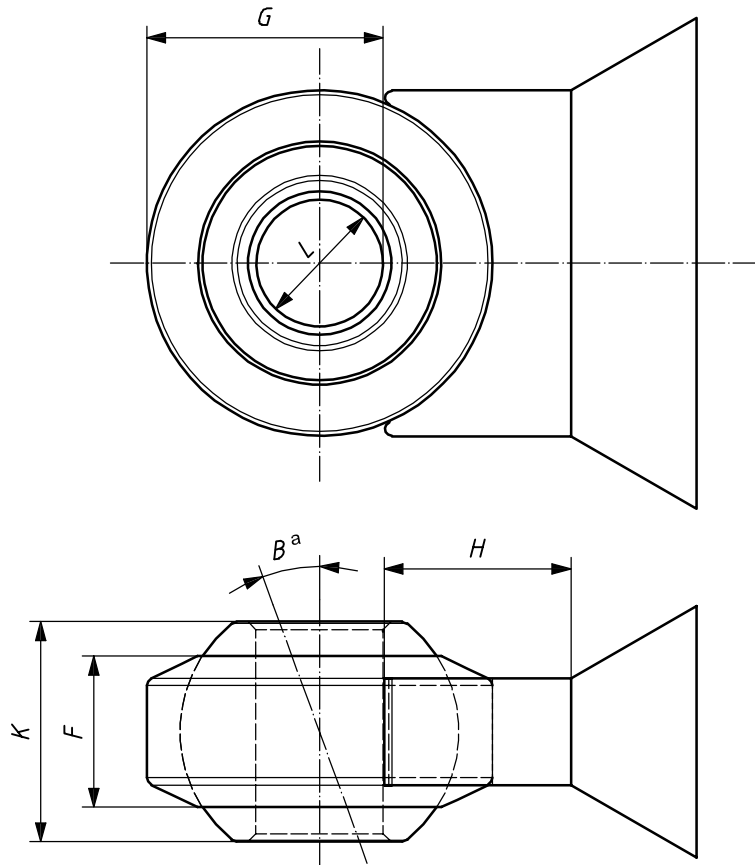
NOTE For angle *B*, see Table 3.

Figure 1 — Hitch ring of implement (see Table 1)

Table 1 — Hitch ring specifications (see Figure 1)

Dimensions in millimetres

Parameter	Drawbar category					
	0	1	2	3	4	5
Slot length, <i>D</i>	21–40	33–48	33–60	41–66	55–70	73–85
Slot width (min.), <i>E</i>	21	33	33	41	55	73
Thickness (max.), <i>F</i>	30	36	38	48	50	60
Distance (max.), <i>G</i>	55	85	95	95	110	140
Distance (min.), <i>H</i>	35	40	50	50	65	80
Radius, <i>I</i>	0,5 <i>F</i>	0,5 <i>F</i>	0,5 <i>F</i>	0,5 <i>F</i>	0,5 <i>F</i>	0,5 <i>F</i>
Width (max.), <i>J</i>	95	107	115	140	160	190
Radius, <i>M</i>	As required to provide adequate articulation between the tractor and the implement.					
Pin diameter (min.)	In accordance with ISO 6489-3:2004, Table 4.					



For use only with a drawbar clevis.

NOTE For angle B , see Table 3. For dimensions F , G and H , see Table 1.

^a In all directions.

Figure 2 — Ball hitch ring of implement (see Table 2)

Table 2 — Hitch ring specifications (see Figure 2)

Dimensions in millimetres

Parameter	Drawbar category					
	0	1	2	3	4	5
Ball thickness (max.), K	45	65	65	85	85	95
Drawpin hole diameter, L , $^{+0,8}_{-0,25}$	19	31	31	39	51	71
Pin diameter (min.)	In accordance with ISO 6489-3:2004, Table 4.					

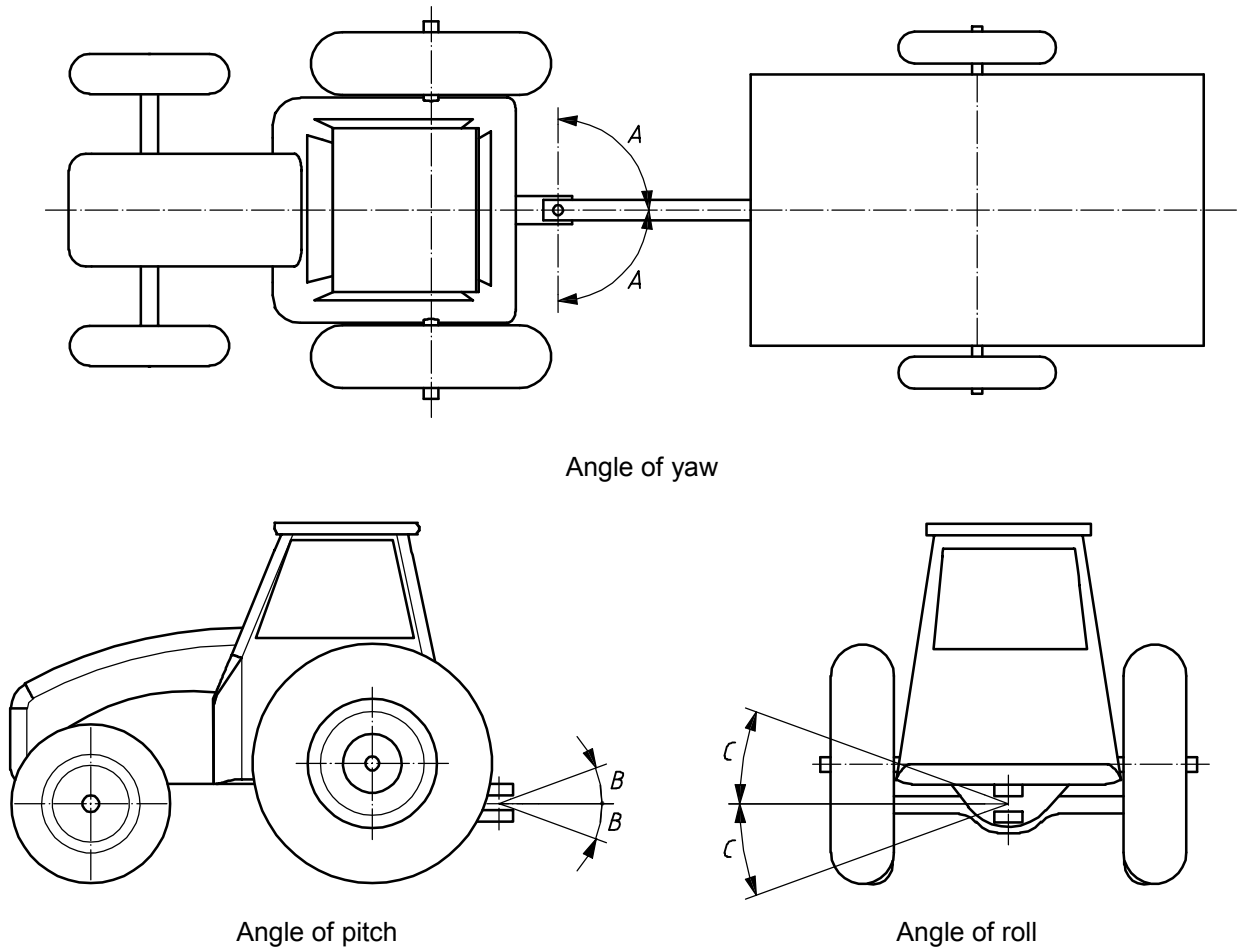


Figure 3 — Minimum angles of articulation of drawbar (see Table 3)

Table 3 — Angles of articulation (see Figure 3)

Angles in degrees

Parameter	Drawbar category					
	0	1	2	3	4	5
Angle of yaw, A^a	90	90	90	90	90	90
Angle of pitch, B	20	20	20	20	15	15
Angle of roll, C	20	20	20	20	15	15

^a The intent is to provide more clearance in the connection than is allowed by the tractor rear tires and implement hitch.

Annex A (informative)

Permissible mechanical connection combinations between towed and towing vehicles

See Table A.1.

Table A.1 — Permissible mechanical connection combinations

Towing vehicle	Towed vehicle
ISO 6489-1:1991 hook type	ISO 5692:1979/ISO 5692-1:2004 hitch ring (50 mm hole centre, 30 mm ring diameter)
ISO 6489-1:2001 hook type ^a	ISO 5692:1979/ISO 5692-1:2004 hitch ring (50 mm hole centre, 30 mm ring diameter)
	ISO 20019:2001 hitch ring (50 mm hole centre, 30 mm to 41 mm ring diameter)
ISO 6489-2:2002 bolt type	ISO 5692-2:2002 coupling ring (40 mm socket)
	ISO 8755:1986 40 mm drawbar coupling ^b
ISO 6489-3:2004 drawbar (category 2)	ISO 5692:1979/ISO 5692-1:2004 hitch ring (50 mm hole centre, 30 mm ring diameter)
	ISO 5692-2:2002 coupling ring (40 mm socket)
	ISO 8755:1986 40 mm drawbar coupling
	ISO 1102:1986 50 mm drawbar coupling ^c
	ISO 21244 implement hitch ring (category 2)
ISO 6489-3:2004 drawbar (other categories)	ISO 21244 implement hitch ring (other categories)
ISO 6489-4:2004 piton type	ISO 5692:1979/ISO 5692-1:2004 hitch ring (50 mm hole centre, 30 mm ring diameter)
ISO 24347:2005 ball type	ISO 24347:2005 (80 mm ball diameter)
Only the combinations given above are recommended.	
^a Connecting an ISO 6489-1:2001 hook, manufactured in accordance with the maximum sizes permitted, to hitch-rings in accordance with ISO 5692-1 and of minimum dimensions (30 mm ring diameter) according to ISO 20019, could result in a “jerky” connection between the tractor and the trailer and result in less driving comfort.	
^b Primarily used on trailers towed behind trucks (on-road).	
^c Could result in a “jerky” connection between the tractor and the trailer and result in less driving comfort.	

Bibliography

- [1] ISO 1102:1986, *Commercial road vehicles — Mechanical connections between towing vehicles and trailers — 50 mm drawbar couplings*
- [2] ISO 5692:1979, *Agricultural vehicles — Mechanical connections on towed vehicles — Hitch-rings — Specifications*
- [3] ISO 5692-1:2004, *Agricultural vehicles — Mechanical connections on towed vehicles — Part 1: Dimensions for hitch rings of 50/30 mm cross section*
- [4] ISO 5692-2:2002, *Agricultural vehicles — Mechanical connections on towed vehicles — Part 2: Coupling ring 40 with socket*
- [5] ISO 6489-1:1991, *Agricultural vehicles — Mechanical connections on towing vehicles — Part 1: Hook type*
- [6] ISO 6489-1:2001, *Agricultural vehicles — Mechanical connections between towed and towing vehicles — Part 1: Dimensions of hitch-hooks*
- [7] ISO 6489-2:2002, *Agricultural vehicles — Mechanical connections between towed and towing vehicles — Part 2: Specifications for clevis coupling 40*
- [8] ISO 6489-4:2004, *Agricultural vehicles — Mechanical connections between towed and towing vehicles — Part 4: Dimensions of piton-type coupling*
- [9] ISO 8755:1986, *Commercial road vehicles — Mechanical connections between towing vehicles and trailers — 40 mm drawbar coupling*
- [10] ISO 20019:2001, *Agricultural vehicles — Mechanical connections on towed vehicles — Dimensions for hitch rings*
- [11] ISO 24347:2005, *Agricultural vehicles — Mechanical connections between towed and towing vehicles — Dimensions of ball-type coupling device (80 mm)*

ICS 65.060.10

Price based on 7 pages