INTERNATIONAL STANDARD

ISO 730-1

Second edition
1990-04-01

Agricultural wheeled tractors — Rear-mounted three-point linkage —

Part 1: Categories 1, 2 and 3

Tracteurs agricoles à roues — Attelage trois points monté à l'arrière —

Partie 1: Catégories 1, 2 et 3

Reference number
ISO 730-1 : 1990 (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 approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 730-1 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry.*

This second edition cancels and replaces the first edition (ISO 730-1 : 1977), of which it constitutes a minor revision.

ISO 730 consists of the following parts, under the general title *Agricultural wheeled tractors — Rear-mounted three-point linkage*:

- *Part 1: Categories 1, 2 and 3*
- *Part 2: Category 1N (narrow hitch)*
- *Part 3: Category 4*

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Printed in Switzerland

Agricultural wheeled tractors — Rear-mounted three-point linkage —

Part 1 : Categories 1, 2 and 3

1 Scope

This part of ISO 730 specifies the dimensions and requirements of the three-point linkage for the attachment of implements or equipment to the rear of agricultural wheeled tractors.

It applies to the three categories of agricultural wheeled tractors shown in table 1.

Table 1 — Categories

Category	PTO power at rated rotational frequency of engine kW
1	up to 48
2	up to 92
3	from 80 to 185

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 730. 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 730 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 789-2: 1983, *Agricultural tractors — Test procedures — Part 2: Hydraulic power and lifting capacity.*

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

ISO 7072: 1982, *Agricultural wheeled tractors — Three-point linkage — Linch pins — Dimensions.*

3 Definitions

For the purposes of this part of ISO 730, the following definitions apply. General definitions are given in 3.1, components and dimensions in 3.2. The last element of the definition number, in 3.2, is also the key number in figures 1 and 2.

3.1 General

3.1.1 linkage: Combination of one upper link and two lower links, each articulated to the tractor and the implement at opposite ends, in order to connect the implement to the tractor.

3.1.2 hitch point: Articulated connection between link and implement; for geometrical purposes the hitch point is the centre of the articulated connection between link and implement.

3.1.3 link point: Articulated connection between link and tractor; for geometrical purposes the link point is the centre of the articulated connection between link and tractor.

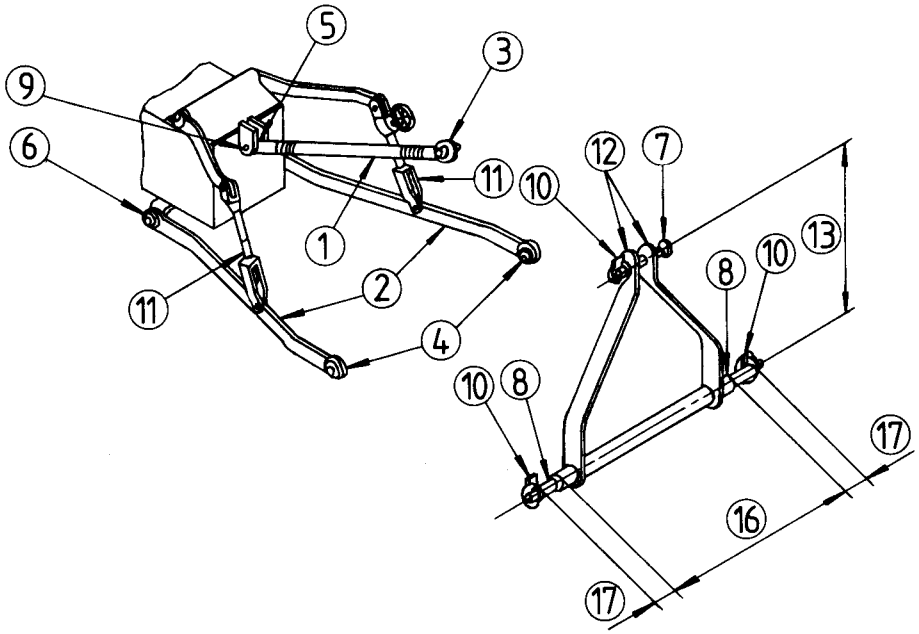
3.2 Linkage components and dimensions

3.2.1 upper link: Upper linkage element, fitted with an articulated connection at both ends.

3.2.2 lower link: Lower linkage element, fitted with an articulated connection at both ends.

3.2.3 upper hitch point: Articulated connection between the upper link and the implement.

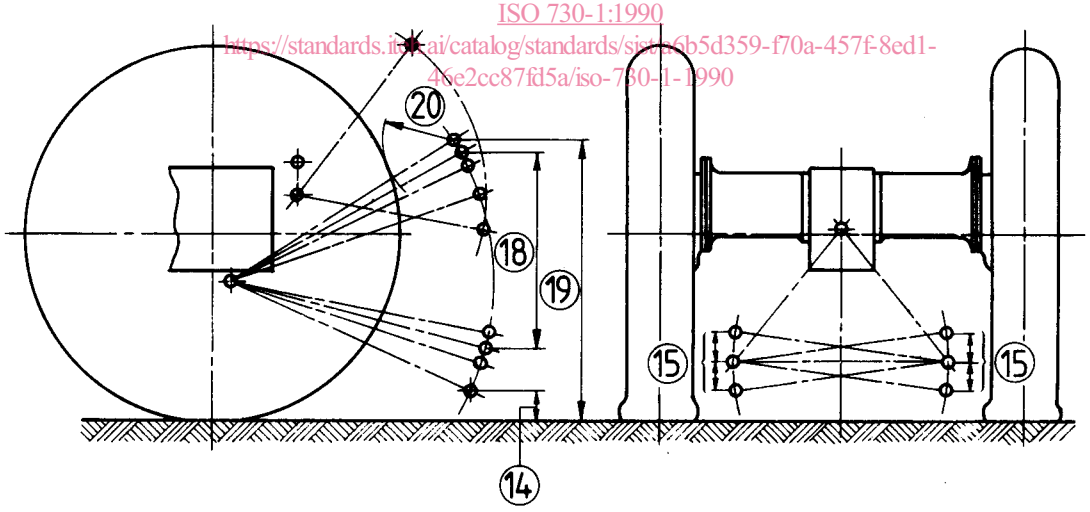
3.2.4 lower hitch point: Articulated connection between a lower link and the implement.



Key to linkage components

(1) upper link
(2) lower link
(3) upper hitch point
(4) lower hitch point
(5) upper link point
(6) lower link point
(7) upper hitch attachment
(8) lower hitch attachment
(9) upper link attachment
(10) linch pin
(11) lift rods
(12) mast
(13) mast height
(16) lower hitch point span
(17) linch hole distance

Figure 1 — Terminology: Components of three-point hitch



Key to linkage dimensions

(14) lower hitch point height
(15) levelling adjustment
(18) movement range
(19) transport height
(20) lower hitch point clearance

Figure 2 — Terminology: Dimensions of three-point hitch

3.2.5 upper link point: Articulated connection between the upper link and the tractor.

3.2.6 lower link point: Articulated connection between a lower link and the tractor.

3.2.7 upper hitch attachment: Pin, usually detachable and forming part of the upper link assembly, on which the upper link is connected to the implement.

3.2.8 lower hitch attachment: Pin, or clevis and pin, usually attached to the implement, by which a lower link is secured.

3.2.9 upper link attachment: Pin by which the upper link is connected to the tractor.

3.2.10 linch pin: Pin, usually fitted with a spring retaining device, by which an articulated connection is retained in position. (See ISO 7072.)

3.2.11 lift rods: Connections that transmit force to the lower links for raising and lowering.

3.2.12 mast: Component that provides location of the upper hitch point on the implement.

3.2.13 mast height: Vertical distance between the upper hitch point and the common axis of the lower hitch points.

3.2.14 lower hitch point height: Height of the centre of the lower hitch points above ground level when they are fully lowered.

3.2.15 levelling adjustment range: Movement, measured vertically, of one lower hitch point higher or lower than the other, to allow inclination of the implement.

3.2.16 lower hitch point span: Distance between the shoulders of the lower hitch pins against which the sides of the lower link ball joints abut.

3.2.17 linch hole distance: Distance from the centreline of the linch pin hole to the shoulder of the hitch pin.

3.2.18 movement range: Total vertical movement of the lower hitch points corresponding to the power travel of the lift, excluding any adjustment in the lift rod linkage.

3.2.19 transport height: Height of the lower hitch points above the ground using the full extent of manual adjustment provided in the lift rods in conjunction with the movement range, the lower hitch point axis being maintained horizontal to the ground in a transverse plane.

3.2.20 lower hitch point clearance: Clearance expressed as a radial dimension from a lower hitch point to the outside diameter of the tyre, mudguard or other part of the tractor, measured in a longitudinal vertical plane with the implement raised and all link side-sway prevented.

3.2.21 mast adjustment: Usable range of pitch of the mast in a vertical plane. It is measured as the maximum and minimum heights of the lower hitch points above the ground between which the mast (3.2.12) can be adjusted to any inclination between the vertical and 10° rearwards from the vertical.

NOTES

1 Mast adjustment is not shown in figures 1 and 2.

2 Adjustment of the mast controls the pitch of the implement. Specifying the mast adjustment to be provided enables the tractor designer to determine the minimum acceptable adjustment of the length of the top link in relation to the linkage attachment point. It also permits the implement designer to determine the range of implement operating depths over which pitch adjustment can be obtained.

4 Dimensions

Dimensions are given in millimetres. They are based on the assumption that the tractor manufacturer's normal wheel equipment is fitted.

4.1 Hitch points

The dimensions concerning the hitch points shall be as given in figures 3 and 4, and tables 2 and 3.

The clearance around hitch points shall be as given in ISO 2332.

4.2 Link points

It is recommended that alternative height positions for the upper link point are provided.

4.3 Lift, power lift, and levelling adjustments

The ranges of lift, power lift and levelling adjustments shall be as given in table 4.

4.4 Interchangeability

Provision may be made in the design of the lower links, or by the use of double-ended hitch attachments, to enable implements based on the dimensions of category 1 to be fitted to linkages made in accordance with category 2 or vice versa. The same applies in the case of categories 2 and 3.

5 Power lift capacity

Tractors shall have appropriate power lift capacity taking into account such parameters as tractor power output, axle load or brake performance. For test methods, see ISO 789-2.

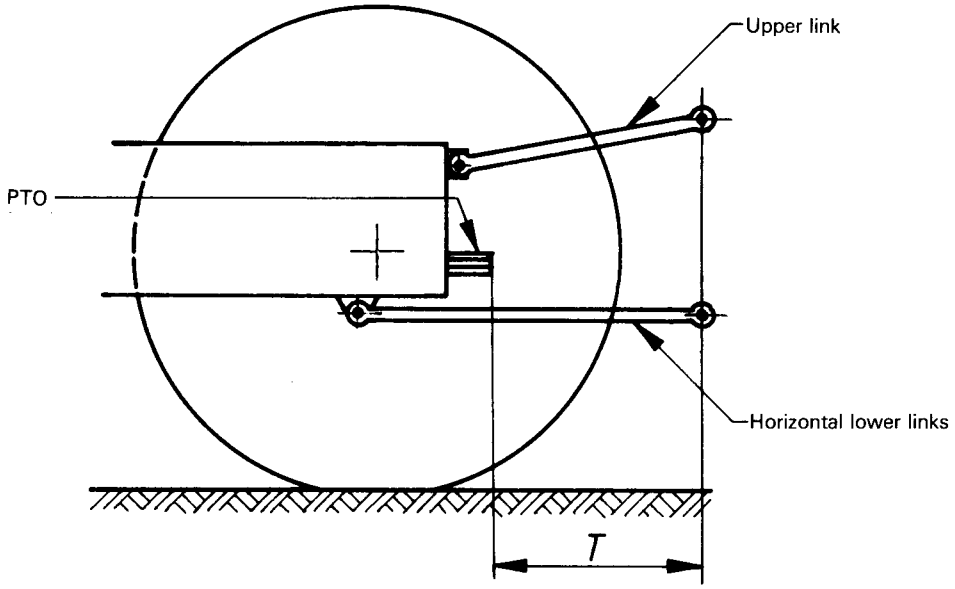


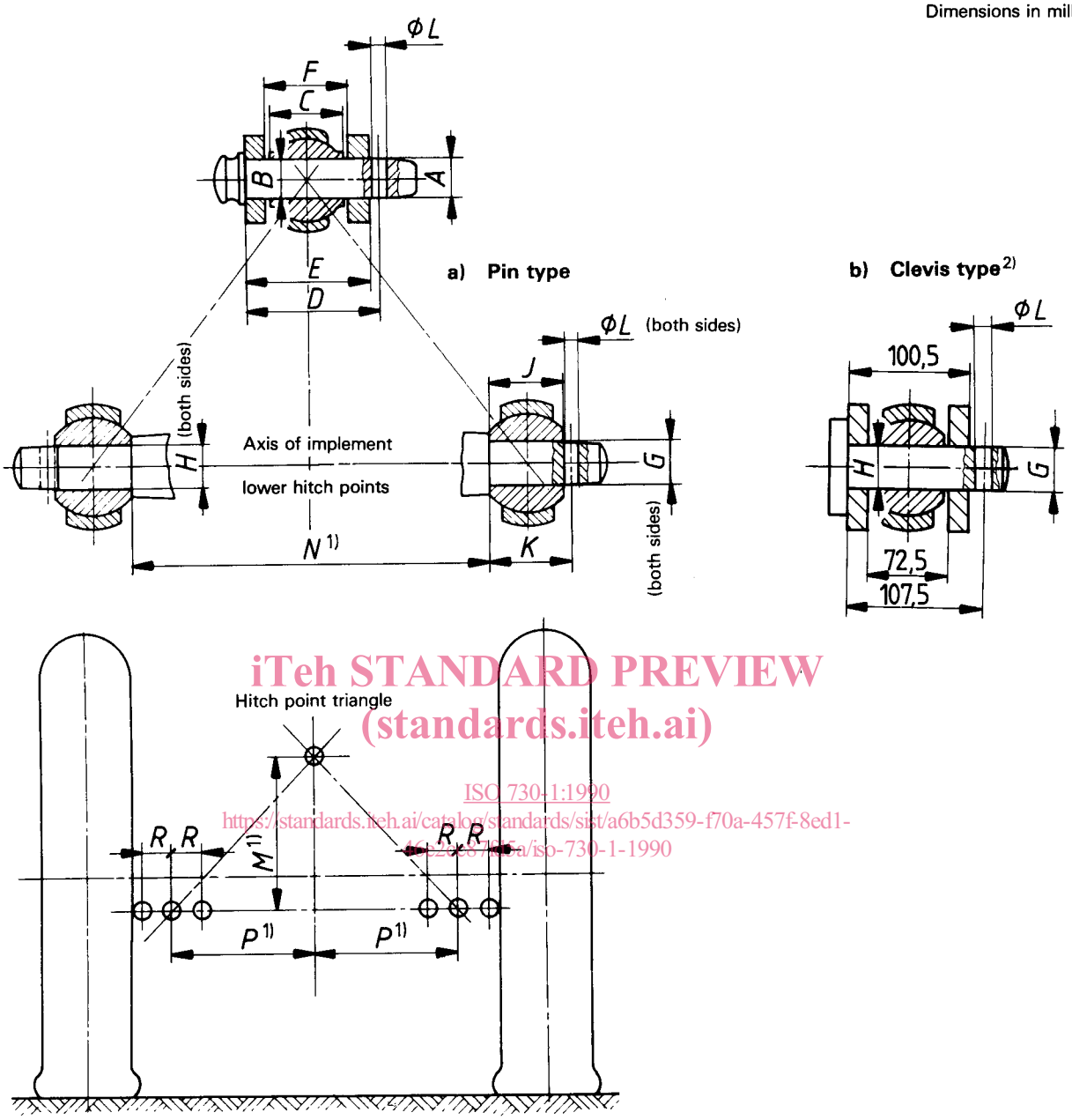
Figure 3 — Distance from PTO (power take-off) to lower link points

Table 2 — Distance from PTO (power take-off) to lower link points

Dimensions in millimetres

Dimension	Category 1		Category 2		Category 3	
	min.	max.	min.	max.	min.	max.
Distance from end of power take-off to centre of lower hitch point, with the lower link horizontal, T	500	575	550	625	575	675
NOTE — Dimension T may be obtained by the use of hitch couplers.						

Dimensions in millimetres



1) See footnotes 2) and 3) below table 3.

2) The clevis type mounting only applies to categories 2 and 3. The dimension 72,5 mm is included in order to accommodate certain implement couplers.

Figure 4 — Dimensions concerning hitch points

Table 3 — Dimensions concerning hitch points

Dimensions in millimetres

Symbol	Dimension	Category 1		Category 2		Category 3	
		min.	max.	min.	max.	min.	max.
	Upper hitch points						
A	Diameter of hitch pin	18,92	19,00	25,27	25,40	31,50	31,75
B	Diameter of hitch pin hole	19,30	19,51	25,70	25,91	32,00	32,25
C	Width of ball	—	44	—	51	—	51
D	Linch pin hole distance	76	—	93	—	102	—
E	Width between outer faces of yoke	—	69	—	86	—	95
F	Width between inner faces of yoke	44,5	—	52	—	52	—
	Lower hitch points						
G	Diameter of hitch pin	21,79	22,00	27,79	28,00	36,4	36,6
H	Diameter of hitch pin hole	22,40	22,73	28,70	29,03	37,40	37,75
J	Width of ball	34,8	35,0	44,8	45,0	44,8	45,0
K	Linch pin hole distance[1]	39	—	49	—	52	—
	Linch pin hole						
L	Diameter of linch pin hole for upper hitch pin	12	—	12	—	12	—
	for lower hitch pins	12	—	12	—	17	—
M	Mast height[2]	460 ± 1,5		610 ± 1,5		685 ± 1,5	
N	Lower hitch point span[3]	683 ± 1,5		825 ± 1,5		965 ± 1,5	
P	Lateral distance from lower hitch point to centreline of tractor[3]	359		435		505	
R	Lateral movement of lower hitch point	100	—	125	—	125	—

1) When lateral stays picking up on the lower hitch point holes are used to limit side-sway of the implement, the minimum dimensions should be 51 mm, 61 mm and 64 mm for categories 1, 2 and 3 respectively.

2) Additional mast heights may be provided on specialized implements.

3) It may be necessary to vary these dimensions in case of specialized implements. Where a shorter distance between the lower hitch points appears necessary, the following values are preferred :

N = 400 mm for category 1	*P* = 218 mm for category 1
683 mm for category 2	364 mm for category 2
825 mm for category 3	435 mm for category 3

Table 4 — Lift, power lift and adjustment ranges

Dimensions in millimetres

Reference sub-clause	Term	Category 1	Category 2	Category 3
3.2.14	Lower hitch point height	200 (max.)	200 (max.)	230 (max.)
3.2.15	Levelling adjustment range	100 (min.)	100 (min.)	125 (min.)
3.2.18	Movement range	560 (min.)	650 (min.)	735 (min.)
3.2.19	Transport height (lower hitch point axis to be horizontal throughout)	820 (min.)	950 (min.)	1 065 (min.)
3.2.20	Lower hitch point clearance	100 (min.)	100 (min.)	100 (min.)
3.2.21	Mast adjustment			
	minimum height for highest position	508	610	660
	maximum height for lowest position	200	200	230

UDC 631.372 : 629.114.2.013.3/.7

Descriptors : agricultural machinery, agricultural tractors, couplings, specifications, dimensions.

Price based on 6 pages