International Standard 5673

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Agricultural tractors — Power take-off drive shafts for machines and implements

Tracteurs agricoles — Arbre de transmission à cardans de prise de force pour machines et instruments

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Foreword

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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.

International Standard ISO 5673 was developed by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, and was circulated to the member bodies in January 1978.

It has been approved by the member bodies of the following countries :

Australia	Germany, F.R.	South Africa, Rep. of
Austria	India	Spain
Belgium	Italy	Sweden
Bulgaria	Korea, Dem. P. Rep. of	Switzerland
Chile	Mexico	Turkey
Czechoslovakia	New Zealand	United Kingdom
Denmark	Poland	USA
Finland	Romania	USSR

The member body of the following country expressed disapproval of the document on technical grounds :

France

Printed in Switzerland

Agricultural tractors — Power take-off drive shafts for machines and implements

0 Introduction

The purpose of this International Standard is to assist the designer in choosing adequate principles for the positioning of power input connections to provide the best possible matching conditions between different types of agricultural tractors and implements to ensure interchangeability.

1 Scope

This International Standard specifies

— a system for classifying power take-off (PTO) drive shafts;

— the requirements for PTO yoke bosses;

— the PTO drive shaft sizes;

— the positioning of the power input connection (PIC) for PTO-driven implements;

— the clearance zones.

2 Field of application

This International Standard applies to PTO drive shafts required for the connection of agricultural machines and implements to agricultural tractors.

3 References

ISO 500, *Agricultural tractors — Power take-off and drawbar — Specification.*

ISO 730/1, *Agricultural wheeled tractors — Three-point linkage — Part 1 : Categories 1,2, and 3.*

ISO 730/2, *Agricultural wheeled tractors — Three-point linkage — Part 2 : Category 1 N (Narrow hitch).*

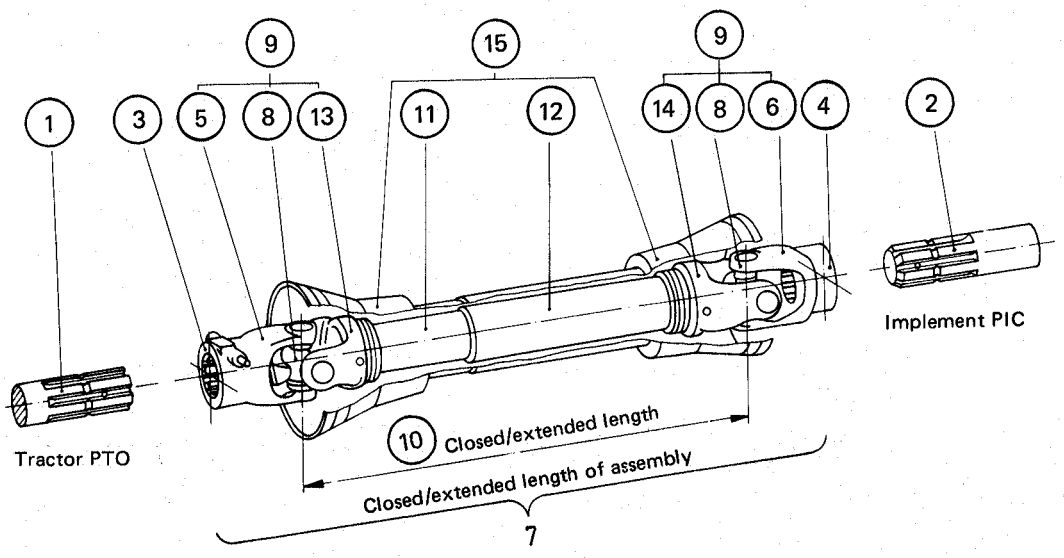
ISO 2332, *Agricultural tractors and machinery — Connections — Clearance zone for the three-point linkage of implements.* [1)]

4 Definitions (see also figure 1)

4.1 closed length : The distance between the centres of the journal cross-assemblies, when the PTO drive shaft is fully closed.

4.2 extended length : The distance between the centres of the journal cross-assemblies, when the PTO drive shaft is fully extended, without exceeding the maximum allowable extension.

1) At present at the stage of draft.



1. PTO
2. PIC
3. PTO yoke boss
4. PIC yoke boss
5. PTO yoke
6. PIC yoke
7. Closed/extended length of assembly PTO drive shaft
8. Journal cross-assembly
9. Universal joint
10. PTO drive shaft closed/extended length
11. Inner shaft
12. Outer shaft
13. Inner shaft yoke
14. Outer shaft yoke
15. PTO drive shaft guard

Figure 1 — Designation of PTO drive shaft details.

This diagram is included solely for the purpose of illustration and for references to terms and definitions. It does not purport to denote design requirements.

5 Classification of PTO drive shafts

PTO drive shafts are classified by the tractor PTO type (connection) (see ISO 500) and torque shown in table 1.

Table 1 — Classification of PTO drive shafts

Tractor PTO type	PTO drive shafts		Nominal transmitted power kW
	Size[1]	Nominal torque N·m	
1 (540 min^{-1} 6 splines)	1	100	6
	2	160	9
	3	250	14
	4	400	23
	5	630	36
	6	1 000	57
2 (1 000 min^{-1} 21 splines)	3	160	17
	4	250	26
	5	400	42
	6	630	66
	7	1 000	105
3 (1 000 min^{-1} 20 splines)	4	250	26
	5	400	42
	6	630	66
	7	1 000	105
	8	1 600	167

1) Sizes of PTO shafts relate to constant life conditions but different rotational frequencies (540 min^{-1} or 1 000 min^{-1}).

NOTE — Nominal values relate to average operating agricultural conditions.

6 Yoke bosses

6.1 For a particular type of PTO yoke bosses shall be identical and it is preferable that PIC yoke bosses should also be identical. (For dimensional details, see ISO 500.) However where, for economic or manufacturing reasons, identical PIC yoke bosses are not possible for certain PTO types 1 and 2, the alternatives given in table 2 are recommended.

6.2 The yoke boss shall be fitted with a locking device to prevent axial displacement when working.

Table 2 — Recommended alternative PIC yoke bosses

PTO type	Nominal shaft torque N·m	PIC yoke bore diameter mm		
1 (6 splines)	100	20	25	
	160	20	25	30
	250		25	30
	400		25	30
	630			30
2 (21 splines)	160	20	25	30
	250		25	30
	400		25	30
	630			30

7 PTO drive shaft length

The nominal closed length of the PTO drive shaft shall be as given in table 3.

Table 3 — Nominal closed length

Nominal PTO drive shaft length centre to centre fully closed mm	
460	(recommended for types 1 and 2)*
510	
560	
610	
—	
710	
—	
1 010	

* The length adjustment for category 1 N (ISO 730/2) should be one of the above graded values.

8 Positioning of PIC

8.1. Mounted implements

The positioning of the PIC for mounted implements shall be as shown in figure 2.

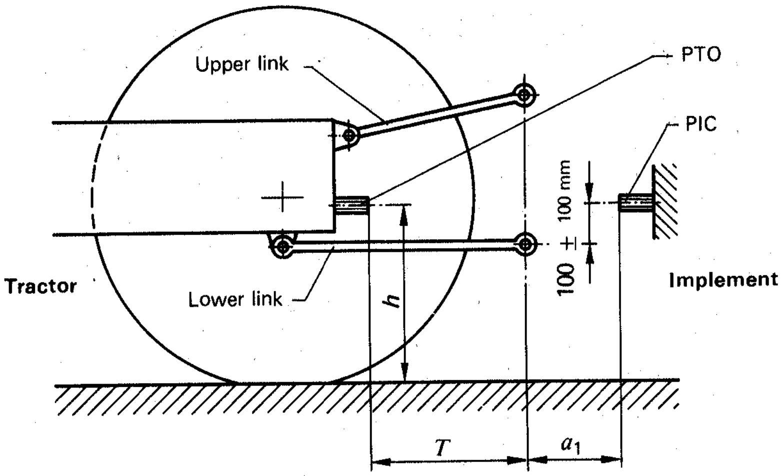


Figure 2 — Positioning of PIC for mounted implements

Table 4 — Dimensions relating to positioning of PIC for mounted implements

Dimensions in millimetres

PTO type	a_1[1)]	T	h	Lateral deviation from vertical mid-plane
1	150^{+30}_{0}	see ISO 730/1 and ISO 730/2	see ISO 500	± 50
2	150^{+30}_{0}			
3	300^{+30}_{0}			

1) The + tolerances are to be preferred for future design.

8.2 Trailed implements (drawbar)

The positioning of the PIC for trailed implements shall be as shown in figure 3.

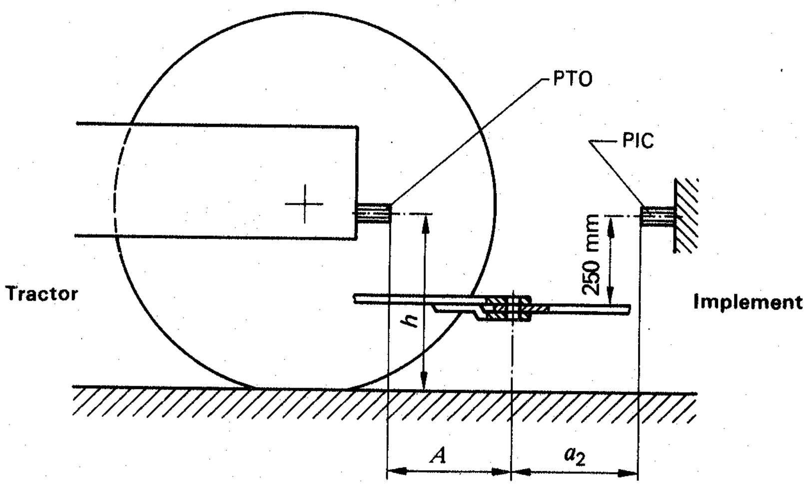


Figure 3 — Positioning of PIC for trailed implements

Table 5 — Dimensions relating to positioning of PIC for trailed implements

Dimensions in millimetres

PTO type	a_2	$A \pm 10$	h	Lateral deviation from vertical mid-plane
1	equal to A	400 355,6[1)]	see ISO 500	± 75
2		400		
3		500		

1) This dimension is indicated for a transitional period.