

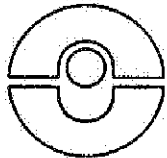
UIC Code

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1st edition, 01-07-1988

**Technical specification
for the supply
of rolled or forged steel wheel centres
for tractive and trailing stock
Tolerances and surface roughness**



**NUMERISATION DANS
L'ETAT DU DOCUMENT**

International Union of Railways

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Leaflet to be classified in Volumes :

- V - Transport stock
- VIII - Technical specifications

Amendments

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This specification is :

- *obligatory* for all technical documents compiled by UIC or ORE ;
- *recommendatory* for all technical documents of UIC member railways.

Note

This leaflet is part of a set including :

- Leaflet 510-1 : Wagon running gear - Normalisation
- Leaflet 515 : Coaches - Running gear
- Leaflet 530-2 : Wagons - Running safety
- Leaflet 541-3 : Brakes - Disc brakes and disc brake linings
- Leaflet 571-1 : Standard wagons - Ordinary two-axle wagons - Characteristics
- Leaflet 571-2 : Standard wagons - Ordinary bogie wagons - Characteristics
- Leaflet 571-3 : Standard wagons - Wagons adapted for certain types of traffic - Characteristics
- Leaflet 571-4 : Standard wagons - Wagons for combined transport - Characteristics
- Leaflet 579-1 : Wagons - Periodical overhaul - Method for establishing its frequency and nature
- Leaflet 853-1 : Technical specification for the supply of tyres for ordinary use on tractive stock

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1 - Purpose and scope of application

1.1 - This leaflet stipulates :

- tolerances in accordance with Table 1 (see also § 5.1) and surface roughness in accordance with Table 2 (see also § 5.2) for the rolled or forged steel wheel centres of tractive and trailing stock.

The characteristics of this leaflet are valid for applications corresponding to the speeds defined in Leaflet 510-2 for tyred wheels.

This technical specification is broadly in line with ISO standard 1005/2 (Tyres, wheel centres and tyred wheels for tractive and trailing stock - Dimensional, balancing and assembly requirements), which among other things deals with the same subject.

1.2 - Provisions on wheel centre quality are contained in Leaflet 812-1.

2 - References

- Leaflet 810-1 : Tyres for tractive and trailing stock - Quality provisions.
- Leaflet 812-1 : Rolled or forged steel wheel centres for tractive and trailing stock - Quality provisions.
- Leaflet 812-4 : Tyred wheels for tractive and trailing stock (1)
- Leaflet 813 : Wheelsets for tractive and trailing stock.
- ISO 1101/1 : Tolerancing of form and location - Part 1 : General, symbols, indications on drawings.

(1) Currently in preparation.

3 - Information to be supplied by purchaser

The following information should be supplied by the purchaser in the invitation to tender and order documents :

- a) the number of this technical specification ;
- b) a dimensioned drawing of the product ;
- c) the finish required for the different parts (see § 4) ;
- d) tolerances and surface roughness, if different from this technical specification ;
- e) any optional inspections required (see Table 1 and § 6.1).

4 - Finish

The finish required at delivery of the various components making up a wheel centre may be any one of the following :

- a) as rolled or forged, when the wheel centre has not been machined other than the machining operation which the manufacturer has to perform for the wheel centre to comply with this specification ;
- b) rough-machined, when machining is required ;
- c) finished, when final machining has taken place (not applicable to bores or bearing surfaces) ;
- d) ready for assembly, for bores or bearing surfaces machine-finished before assembly.

In the absence of other indications in the order or appended documents, the following finished states shall be required :

- hub and centre : as rolled or forged
- hub surfaces : finished
- rim and bore : rough-machined

5 - Characteristics

5.1 - Tolerances

5.1.1 - Tolerances shall be those shown in Table 1.

5.1.2 - The manufacturer should ensure that tolerance conditions be met so that once the tyred wheels are mounted on the axle (see Leaflet 813, § 5.2) the tolerances for wheelsets stipulated in Table 1 of Leaflet 813 may also be met without further machining being required.

5.2 - Surface roughness

5.2.1 - Unless otherwise stipulated, the mean surface roughness R_a of machined surfaces should be in accordance with Table 2.

5.2.2 - For as rolled or as forged parts, surface roughness should be specified by the purchasing railway in the order or appended documents.

6 - Inspection

6.1 - Dimensional and geometrical tolerances

When the letter "m" is shown in the column "Inspection" in Table 1, checks to ensure that the corresponding dimensions comply with stipulations shall be mandatory. The dimensional and geometrical tolerances marked "o" in the column entitled "Inspection" in Table 1 shall only require checking if the purchasing railway so stipulates in the order.

Definitions of the various geometrical tolerances are given in ISO International Standard 1101/1.

6.2 - Surface roughness

If surface roughness is to be checked to ensure compliance with stipulations, the number of wheel centres to be checked and all other necessary information shall be provided by the purchasing railway in the order or appended documents.

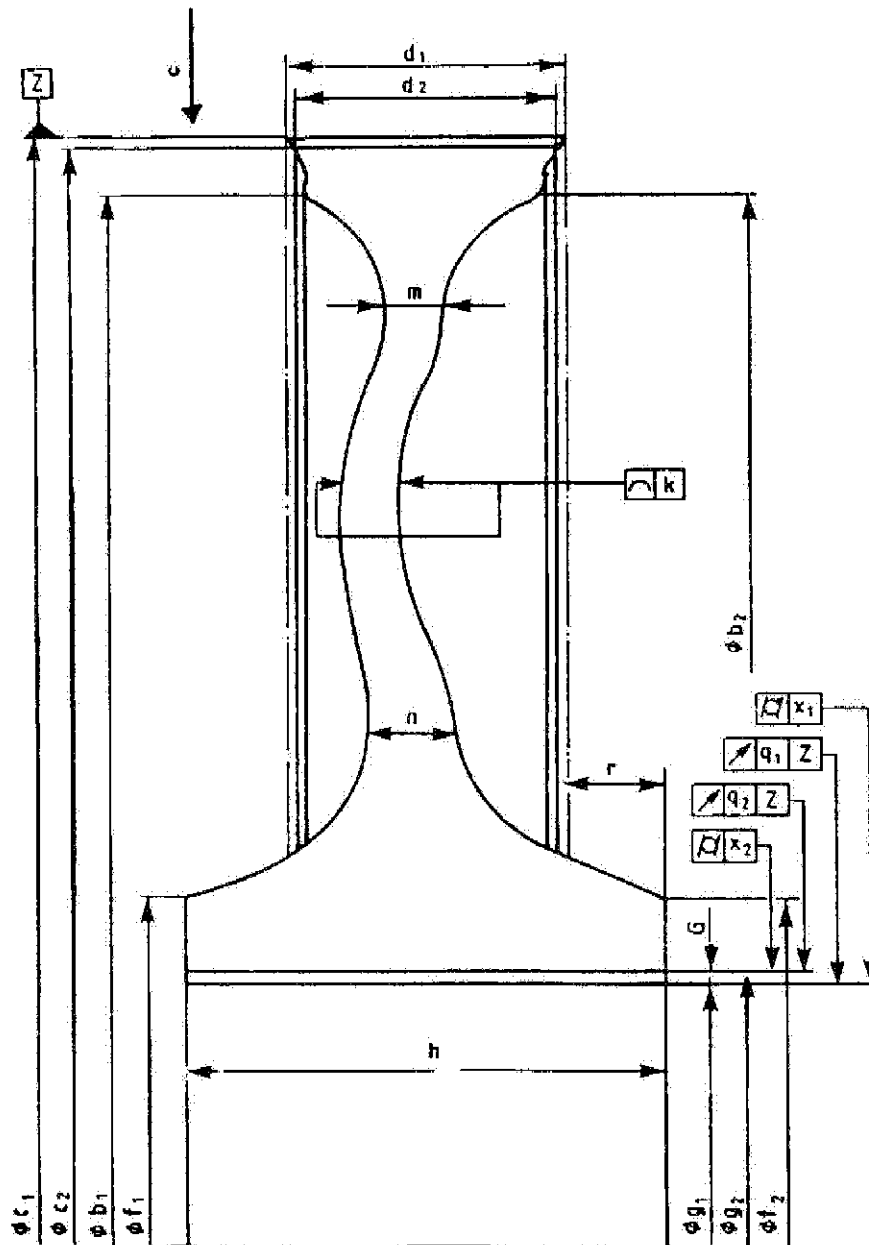


Figure 1 - Symbol for dimensions and geometrical tolerances

Table 1 - Tolerances

Dimensions and shape	Finish	Symbols in Fig.1 for 1)		Tolerances mm	Inspection 2)
		dimensions	geometrical tolerances		
Rim Outside diameter	rough-machined	c_1	3)	+ 1 0	m
	ready for assembly	c_2		4)	m
Inside diameter (outer edge)	as rolled or forged	b_1		0 - 6	m
	finished			0 - 4	m
Inside diameter (inner edge)	as rolled or forged	b_2		0 - 6	m
	finished			0 - 4	m
Width	rough-machined ready for assembly	d_1	3)	+ 1 0	m
		d_2		0 - 0.5	m
Hub Outside diameter (outer edge)	as rolled or forged	f_1		+ 10 0	m
	finished			+ 5 0	m
Outside diameter (inner edge)	as rolled or forged	f_2		+ 10 0	m
	finished			+ 5 0	m
Inside diameter	rough-machined	g_1	5)	0 - 2	m
Bore	ready for assembly	g_2		6)	m
Length	finished			+ 3 0	7) m

Projection of hub in relation to rim	finished	r		+ 3 0	7)	m
	rough-machined		x_1	0.5 0.2	8) 9)	o
Cylindrical form of inside diameter (bore)	ready for assembly		x_2	0.02 10)		m
	rough-machined		q_1	1.0 0.2	8) 9)	m
Bore runout	ready for assembly		q_2	0.3		o
	as rolled or forged		k	8		o
finished		8			o	
Thickness at connection to rim	as rolled or forged	m		+ 8 0		m
	finished			+ 5 0		m
Thickness at connection to rim	as rolled or forged	n		+ 10 0		m
	finished			+ 5 0		m

- 1) See ISO 1101/1
- 2) m = mandatory, o = recommended
- 3) The machining allowance of rim C must be 3 mm
- 4) See indications in order or on drawing
- 5) The machining allowance of bore G must be 3 mm
- 6) The tolerance on the diameter and the degree of tightness required to ensure correct fit on the axle must be in accordance with the specification or the drawing
- 7) For tractive stock, these values may be different
- 8) Applicable provided no wheel balancing is requested or when the rim is the reference point for balancing
- 9) Applicable provided the hub bore acts as the reference point for balancing
- 10) Any taper within the permitted tolerance limits should be such that when the wheel centre is fitted on the axle the largest diameter is at the entry end of the axle

Table 2 - Surface roughness

Part of wheel centre	Finish	Mean surface roughness Ra (μ m)
Bore	Finished	\leq 12.5
	Ready for assembly for fitting on axle	0.8 - 3.2
Rim	Finished	\leq 12.5
	Ready for assembly for tyres to be shrink-fitted	\leq 3.2
All other parts	Finished and ready for assembly	\leq 12.5

812-5

OR

Application

From 1 July 1988.

All UIC railways.

Record references

Heading under which the question has been examined :

- New leaflet 812-5 - "Technical specification for the supply of rolled or forged steel wheel centres for tractive and trailing stock - Tolerances.
(Sub-Committee for Specifications : Paris, January 1988).