

Delivery conditions for Castings

Spheroidal graphite cast iron

Content	Page
1 Scope	2
2 References	2
3 Part categories.....	3
4 Requirements	3
4.1 General requirements	3
4.2 Requirements on part category A	3
4.3 Surface quality	3
4.4 Treatment of bad spots by manufacturer	4
5 Other requirements.....	4

Changes

2023-07-27:

The following changed in comparison to RN 860-2:2023-04-13:

- a) updated references
- b) Chapter 4.2: Inclusion of radius design
- c) Chapter 4.2: Correction regarding material samples / omission of RN 1550
- d) Labelling completely transferred to RN 1936
- a) editorially revised

Responsible Division: PK	Editor: M. Förste	Approval: see doc. workflow	Technical reference: C. Eschert	Page: 1 / 4
-----------------------------	----------------------	--------------------------------	------------------------------------	----------------

1 Scope

This factory standard applies in addition to the standards for raw castings of spheroidal graphite cast iron quoted in chapter 2 and has priority over the standards listed below.

2 References

The following documents, cited in part or in whole, shall apply for the use of this standard. In the case of dated references, only the referenced edition applies; in the case of undated references, the latest edition of the referenced document (including all amendments) applies. The applicable version of the standards listed below shall apply to all contents not covered by this factory standard.

EN 1370	Founding – Examination of surface condition
EN 1559-1	Founding – Technical conditions of delivery – Part 1: General
EN 1559-3	Founding – Technical conditions of delivery – Part 3: Additional requirements for iron castings
EN 1563	Founding – Spheroidal graphite cast irons
EN 10204	Metallic products – Types of inspection documents
EN ISO 6501-1	Metallic materials - Brinell hardness test - Part 1: Test method
EN ISO 6892-1	Metallic materials - Tensile testing - Part 1: Method of test at room temperature
EN ISO 8062-3	Geometrical product specifications (GPS) – Dimensional and geometrical tolerances for moulded parts – Part 3: General dimensional and geometrical tolerances and machining allowances for castings
EN ISO 12944-4	Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Part 4: Types of surface and surface preparation
RN 72	Packaging and Preservation; Supply parts for production
RN 79	Colour Coatings
RN 1567	Remanent magnetism in components
RN 1936	Labelling; Raw material, parts and gearboxes
0-124-77303	Production specification radius design

3 Part categories

Materials for parts made of cast iron with spheroidal graphite are specified according to EN 1563. The following material classification applies in general:

Table 1 Materials and part categories

Part category	EN 1563 designation
A) Housings and intermediate housings	EN-GJS-400-15 (5.3106)
B) Covers, clutch carriers, bearing housings, shaft nuts, other small parts	

4 Requirements

4.1 General requirements

- | | |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Heat treatment: | <ul style="list-style-type: none"> residual stresses in the casting must be minimised (controlled cooling in the mould is preferable to stress relieving) the casting must be stress-relieved on delivery |
| General tolerances ¹⁾ : | ISO 8062-3 tolerance grade DCTG11 |
| Geometrical tolerances ¹⁾ : | ISO 8062-3 tolerance grade GCTG5 |
| Machining allowances ¹⁾ : | ISO 8062-3 grade H, RMA |
| Radioactivity: | ≤ 0,10 Bq/g |

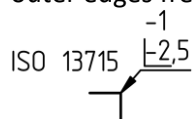
¹⁾ Unless specified otherwise in drawing or order

4.2 Requirements on part category A

- | | |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Samples: | <ul style="list-style-type: none"> separately cast test samples according to EN 1563 for the preparation of the material certificate acc. to chapter 5 f) |
| Radius design ¹⁾ : | acc. to production specification 0-124-77303 |

4.3 Surface quality

- | | | | | | |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------|------------------|--------------|
| Surface roughness: | <ul style="list-style-type: none"> inspection acc. to EN 1370 using BNIF reference samples <table> <tbody> <tr> <td>raw-cast state:</td> <td>5 S1 to 6 S1</td> </tr> <tr> <td>ground surfaces:</td> <td>1 S2 to 2 S2</td> </tr> </tbody> </table> | raw-cast state: | 5 S1 to 6 S1 | ground surfaces: | 1 S2 to 2 S2 |
| raw-cast state: | 5 S1 to 6 S1 | | | | |
| ground surfaces: | 1 S2 to 2 S2 | | | | |
| Surface treatment: | <ul style="list-style-type: none"> shot-blasted acc. to EN ISO 12944-4 primed according to RN 79 | | | | |
| Bad spots: | <ul style="list-style-type: none"> depth ≤ 1/3 x wall thickness and/or size ≤ 1 x wall thickness treatment according to chapter 4.4 special approval required for: accumulation of minor bad spots and/or for larger bad spots | | | | |
| Additional requirements: | <ul style="list-style-type: none"> no production welds no sand pockets, mineralisation or other impurities castings are oil-tight and free of cracks outer edges free of burrs | | | | |



4.4 Treatment of bad spots by manufacturer

- | | |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Repair: | <ul style="list-style-type: none"> ▪ do not fill bad spots, but grind them properly
(no visible impurities, shrink holes etc., minimized notch effect) |
| Documentation: | <ul style="list-style-type: none"> ▪ measure bad spots, write dimensions clearly and legibly on the casting
(indicate length, width, depth, residual wall thickness and position) ▪ photograph model number for identification (housings only) ▪ photograph casting so that bad spot(s) can be localized ▪ make close-ups so that dimensions of bad spot(s) are clearly visible |
| Information, Approval: | <ul style="list-style-type: none"> ▪ Photographs of casting and/or bad spot(s) and ▪ short description of bad spot(s)
(type, position, dimensions etc.) |

must be sent to the purchasing and quality assurance departments of REINTJES for an assessment and the decision for further action

5 Other requirements

-
- a) Steel and forging plant
- certified acc. to: [DIN EN ISO 9001 ff.](#)
 - approved by at least two member societies of IACS
-
- b) Measurement of hardness and tensile strength
- part category A [always](#)
 - part category B [on special request only](#)
-
- c) Packaging and Preservation
- [RN 72](#)
-
- d) Remanent Magnetism
- [RN 1567](#)
-
- e) Labelling
- [RN 1936](#)
-
- f) Documentation (must be digitally available upon delivery)
- acceptance test certificate EN 10204 - 3.1 indicating chemical composition, Brinell hardness and tensile strength
 - REINTJES quality control plan (geometric dimensions)
 - initial sample acceptance drawing (only if requested in the order)
 - evidence of radioactivity and remanent magnetism