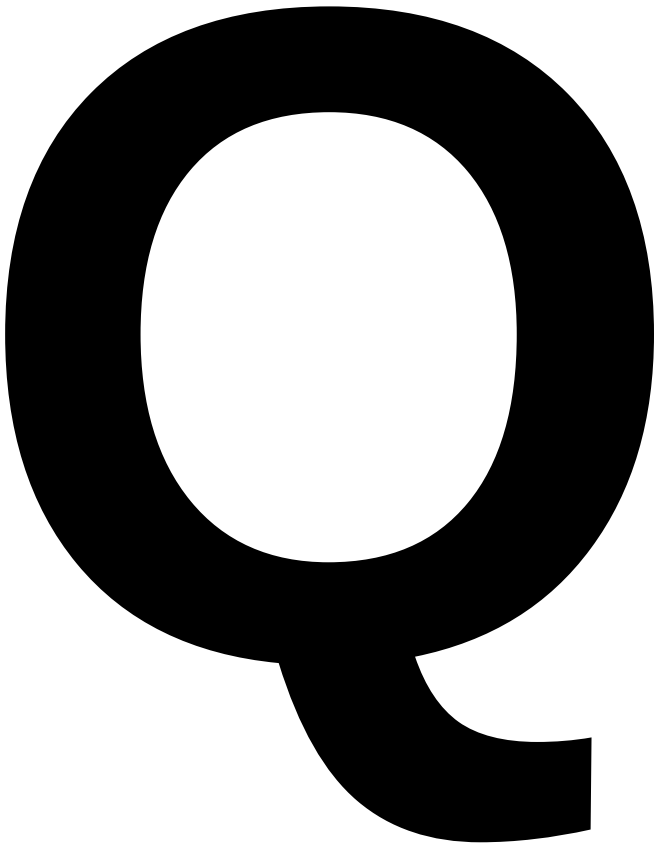
Technical Delivery Specifications

供货质量技术规范



AVK HOLDING A/S

Dear supplier
致各供应商

In publishing this supplement, "Technical delivery specification for castings", we have tried to gather all the conditions applying to the supply of castings, other raw materials and components to the AVK Group. Our intention with this manual is to create a better communication, improving day-to-day working conditions for everybody.
在此《铸件供货技术规范》手册中，我们尽可能罗列所有AVK集团的铸件、原材料和零部件等的供货条件。出版此手册的目的是为了创建相互之间更好的沟通交流，改善日常工作环境。

Because of its clear definitions, this supplement will provide the individual AVK Departments with a simple and exact description for notification to the suppliers regarding faults and defects and required modifications which have been found through receiving inspection of the shipments.
本手册明确定义了各种铸造缺陷，根据此手册，各AVK公司的质量部门在进货检验过程中能轻松、准确地发现铸件缺陷，这些缺陷是AVK收货检验时发现的。

AVK is an international organization with suppliers all over the world. Language often presents a problem - what is the English word for this and that. This supplement will eliminate the language barrier. In the supplement we have included all frequent errors and illustrated them by means of a series of photos. Each photo has a reference number which is to be used when communicating with the purchase department on quality issues.
AVK是家跨国集团，其供应商遍布世界各地。因此，在语言表达上通常会存在差异——例如同一个铸造缺陷究竟用哪个英语词汇来表达。本手册消除了这种语言障碍，它包含所有我们经常遇到的铸件缺陷，并且借助一系列的照片进行形象的描述。每张照片上有一个参考编号，可用此编号来与采购部门交流质量问题。

Further, this supplement contains already known technical terms, handling and packing instructions etc.
此外，本手册还包括经常用到的技术术语、操作和包装指南等内容。

We hope this supplement will be a good tool to everyone and we would like to know your opinion as a user. Also if you would recommend any amendments in some fields.
我们希望本手册能对大家有所帮助，也希望借以了解用户的意见。亦欢迎各供应商提出各种改进建议。

Quality has to be worked every day and we hope this supplement will be a tool for this. Therefore, the objective for all of us must be to ensure
质量是每天的工作，我们希望本手册能成为一个保证质量的有效工具。我们所有人的目标是确保：

The right quality at the right time.
时刻保证质量
Kind regards
此致

Arne Hjortshøj 安勒.约尔塞
Purchasing Manager AVK集团采购经理
Michael Christensen 迈克.克里斯藤森
Group Quality Manager 集团质量经理

Contents: 目录

Scope and application 应用范围

The aim of this Specification is to provide suppliers to the AVK Group with details of AVK requirements for metal castings. This Specification covers all AVK companies, collectively referred to as AVK. The requirements in this Specification shall be supplementary to the requirements specified on AVK drawings and in relevant documentation. AVK will apply these specifications as a basis for their inspection processes during receiving inspection and production. All castings in grey or ductile iron, steel or copper alloys are required to comply with this Specification.
本规范的目的是为AVK集团的所有供应商提供详细的铸件供货规范。本规范适用于所有AVK公司（以下统称为AVK）。本规范中的要求是对AVK图纸和相关技术文件的补充说明。AVK将以这些规范为基础，对来料和生产进行检验。所有铸件，包括灰铁、球铁、铸钢及铜合金铸件，都要符合本规范要求。

Information contained in this Specification may be superseded by information on the purchase order.
此规范中的要求可能会被具体定单中的要求所取代。

In case of ambiguity or dubiety about the meaning or effect of this Specification questions should be referred to AVK.
如果对本规范中的某些条款有疑问，应及时与AVK联系。

Any requirement specified on the purchase order shall take precedence over this Specification.
相对于此规范来讲，采购定单上的任一具体要求都需要优先考虑。

1. Requirements 要求

1.1 Castings 铸件

All castings supplied must meet the requirements in this Specification and must be in accordance with the relevant specifications stated on the order, drawing etc.
所有供应的铸件必须满足本规范的要求，而且必须符合订单及图纸等的规定和要求。

All castings supplied shall be free from contamination and impurities, surface imperfections & defects, porosities and other defects unless within agreed tolerance limits as specified herein.
所有供应的铸件应该没有粘砂、毛刺、表面缺陷如渣孔，气孔或其他缺陷，除非它们在规定的允许范围之内。

Edges and corners should not be sharper than a radius of 3 mm.
边和角的圆角不能小于R3。

The casting material and specification shall be as stated on the drawing (minimum specification). Alternative materials may only be used upon written permission from AVK or when specified on purchase order.
铸件的材质和规格须符合图纸要求（最低要求）。只在AVK书面许可或采购定单有说明时，可以使用替代材质。

The castings shall conform to the dimensions and tolerances stated on the drawing. If tolerances are not stated on the drawing, they shall be to ISO 8062 CT9.
铸件的铸造尺寸应该符合图纸上的尺寸和公差要求，若图纸未注明公差，则应该符合ISO 8062 CT9的标准。

All castings shall be marked with date code, foundry identification mark and casting number (where applicable) to ensure traceability. The position of date code and casting number shall be agreed between AVK and the supplier, unless stated on the relevant drawing.
所有铸件应该标有铸造日期、铸造厂代号和铸件号，以便于日后的跟踪。除非在图纸上另有说明，否则铸造日期和铸件号的位置应由AVK和供应商达成一致。

All castings shall be free from adhering or burnt-on sand and scale. They shall be well dressed and fettled and shot blasted to SIS 05 5900 SA 2½ quality prior to coating.
所有铸件应该没有机械与化学粘砂和皱纹。在涂漆之前，应该按照 SIS 05 5900 SA 2½ 的规定对铸件进行清理、抛丸。

No pitting, burnt-on sand, voids, porosity, indentations, weld splatter or other defects are acceptable. Surface profile shall be such as to enable a peak-to-valley height of between 50 µm and 100 µm after shot blasting. This is equivalent to a minimum standard of SIS 05 5900 SA 2½ quality.
铸件不允许有凹坑、粘砂、缺肉、渣孔气孔、收缩、焊接，铁水飞溅或其他缺陷。铸件在抛丸清理之后，保确保表面粗糙度的峰与谷之间的高度差在50µm～100µm之间，这相当于SIS 05 5900 SA 2½ 的最低质量标准。

Where part lines exist that contain a step or flash, they shall be settled until they are smooth and blended in. The general profile of castings should be as smoothly contoured as other design considerations will allow. The maximum allowable mismatch, wall thickness variation and disposition of tolerances will be in accordance with ISO 8062 CT9.
当在分型面存在飞边或台阶时，应该对其进行清理，确保其光滑、平整。铸件的外廓应该像设计时考虑的一样光滑平整。允许的最大错箱、壁厚偏差和执行的公差应该符合 ISO 8062 CT9 的标准。

Failure to meet the above requirements shall be cause for rejection of the casting.
未达到以上要求铸件可能被判报废。

1.2 Coating 涂层

When specified on purchase order, the castings must be completely covered with one even coat of zinc phosphate primer, applied either by brush, spray or dipping. The paint should be allowed to dry for one hour before further handling.
如定单有说明，铸件必须整个涂上一层磷酸锌底漆，可以采用刷漆、喷漆或浸漆等方式。涂漆后的铸件必须干燥一小时，再进行下一步操作。

1.3 Materials 材质

The European Standards *EN 1561: 2011 & EN 1563: 2011* replace National Standards & introduce new designations to describe the irons in common usage throughout the AVK group.
欧洲标准 EN 1561：2011及EN 1563:2011将取代国家标准，对AVK集团使用的铸铁的材质要求做出新的概括。
This data sheet provides a cross reference to the previous designations.

以下数据表为新旧标准的对照。

New EN Standards 新EN标准		Old National Standards 老的国家标准		US Equivalent Standards 相应的美国标准
	European 欧洲	**UK** 英国	**Germany** 德国	**USA** 美国
Grey Iron 灰铁				
Standard 标准	**EN 1561 : 2011 (Grey Iron)**	**BS 1452**	**DIN 1691**	**ASTM A48**
Grade Designation 等级	**EN-GJL-250**	Grade 250	GG25	Class 35B
Ductile Iron 球铁				
Standard 标准	**EN 1563 : 2011 Ductile Iron**	**BS 2789**	**DIN 1693**	**ASTM A536**
Grade / Designation 等级	**EN-GJS-500-7**	Grade 500/7	GGG50	80-55-06
	No Direct Equalivant Use EN-GJS-450-10 无与EN-GJS-450-10 相对应的标准	Grade 420/12	No Direct Equivalent Similar to GGG40 无与GGG40直接对应的标准	65-45-12

NB: (1) It is advisable to specify on AVK purchase orders that hardness should be maintained within the range HB160 - 210.
建议AVK采购定单上标明硬度应控制在 HB160－210 范围之内。

(2) BS EN 1561 does not apply to Grey Iron used for pipes and fittings according to Pr EN 877-1. - 6Rain water goods.
根据Pr EN 87701.- 7下水道铸件的规定，BS EN 1561 是不能适用于管道与管道联接件上的灰铁。

(3) BS EN 1563 does not apply to ductile irons used for pipes, fittings and accessories which are subject to:
BS EN 1563 对用在以下管接件及其配件上的球铁不适用：

BS EN 545 Ductile iron pipes, fittings and accessories, and their joints for water pipelines (requirements and test methods).
输水系统上的球铁管与管接件、辅件（要求及测试方法）

BS EN 598 Ductile iron pipes, fittings and accessories, and their joints for sewerage applications (requirements and test methods).
用于污水处理的球铁管接件、配件（要求及测试方法）

BS EN 969 Specification for ductile iron pipes, fittings and accessories, and their joints for gas pipelines (requirements and test methods).
用于煤气输送管道的球铁管与管接件、辅件（要求及测试方法）

ISO 2531 Ductile iron pipes, fittings and accessories for pressure pipelines.
用于煤气输送管道的球铁管与管接件、辅件（要求及测试方法）

A draft standard Pr EN 1503-3 also is under development and will cover the additional requirements for irons for water shells etc. It should also include requirements resulting from the Pressure Equipment Directive.
目前正在制作 Pr EN 1503-3 标准，它含括水管件在铸铁材料上的特殊要求，以及对压力设备的要求。

Copper Alloy & Steels: To be as specified in AVK Purchase Order
铜合金和钢：将在AVK的采购定单中具体说明

1.3.1 Nodularity 球化率

Classification of ductile iron is given in EN ISO 945 – 2008.
球铁的分类依照EN ISO945-2008

Nodularity shall not be less than 80%, nodular shape shall be form V or VI.
球化率应不小于80%，石墨形态应为形态V或者VI.

2. Surface 表面

To ensure compliance with international standard and AVK customers' requirements in respect to corrosion protection, fitness for purpose and performance and to ensure high-quality end-product surface finish the following requirements must be met:
为了保证铸件符合国际标准和AVK的客户对侵蚀防护、装配及性能的要求，也为了保证最终产品的高质量，铸件表面必须满足以下要求：

1. Internal and external surfaces shall have a surface finish as follows:

   Ra = 25-50 µm and 50-100 µm for hand moulding;
   内表面和外表面应该具有如下精度：
   Ra = 25-50 µm ， 手工造型 Ra = 50-100 µm

2. Thin and/or sharp flashes and burrs must be ground off;
   薄的和/或尖锐的披锋或毛刺应该打磨光滑

3. Cavities or flashes from core joints are unacceptable;
   不允许砂芯分型面处有凹坑或毛刺

4. All surfaces shall be free from adhering sand and other impurities;
   所有表面不能有粘砂和其他夹杂物

5. Feeder in-gates on machined surfaces shall not be higher than 3 mm.
   加工表面上的内浇口不能高于3毫米（否则加工余量太大）

3. Casting defects 铸造缺陷

3.1 Defects on faces not to be machined 非加工面上的缺陷

3.1.1 The maximum acceptable number of single defects as described below (fig. 3.1.1) must not exceed 5 per 25 cm^2
最大可接受的表面缺陷数量如图3.1.1
每25平方厘米可存在的单个缺陷数量不得超过5个，见下图：

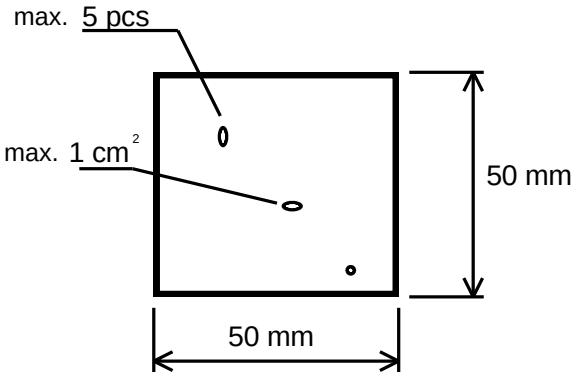


fig. 3.1.1

3.1.2 Spacing between defects must not be less than 5 mm.
各缺陷的间距不能小于5毫米

3.2 Defects on non-sealing faces 非密封面上的缺陷

3.2.1 For non-sealing faces, defects within limits listed below will normally be acceptable, subject to agreement by AVK:
对于非密封面，通过协商，AVK可接受在下表限定内的缺陷：

Category of casting defect 铸造缺陷种类	Pressure-carrying walls 承压壁	Non pressure-carrying walls 非承压壁
Max. cavity depth 最大凹坑深度	0.75 mm *	1.00 mm
Max. rise height 最大突起高度	0.75 mm	0.75 mm
Max. Size 最大尺寸	1.00 cm^2	1.00 cm^2

* Specified wall thickness must not be reduced.

*不能影响规定的壁厚。

3.2.2 Spacing between defects shall be not less than 5 mm. Defective areas shall be ground smooth and be free from sharp edges.
各缺陷的间距不能小于5毫米，有缺陷的区域应该打磨光滑、无锋边、锐角。

3.3 Defects on edges 边缘上缺陷

3.3.1 For edges not connecting with sealing faces, defects within limits listed below will normally be accepted subject to agreement by AVK:
对于不与密封连接的边缘，通过协商，AVK可接受以下限定内的缺陷：

Size: max. depth 2.0 mm, max. length 20.0 mm 尺寸：最大深度 2.0 毫米，最大长度 20.0 毫米

Repair of casting defects on edges by grinding will normally be accepted, subject to agreement by AVK, if perfect surface is obtained. Grinding area shall not exceed above dimensions without prior agreement by AVK.
根据AVK的规定，在不影响其他功能的前提下可以通过打磨去除边缘缺陷。未经AVK同意，打磨区域不能超过以上规定的尺寸。

Repair of casting defects by welding or Iron Kit will not be accepted on ductile or grey iron.
球铁和灰铁铸件不允许焊补或用填料修补。

Welding on steel castings may be accepted provided the repair is at least 30 mm from cutting area for machining.
如果焊补区域距离加工位置超过30毫米，则铸钢件允许焊补。

Weld repairs on steel castings shall be leak-tight under hydrostatic pressure of at least 1.5 x the maximum working pressure of the equipment.
应对钢件上的焊补区域做水压(防漏)试验，压力至少为工作压力的1.5倍。

3.3.2 For edges connecting with sealing faces, defects within limits listed below will normally be accepted subject to agreement by AVK:
对于与密封面连接的边缘，经过协商，AVK可以接受以下限定内的缺陷：

Size: max. depth 1.0 mm, max. length 15.0 mm 尺寸：最大深度1.0毫米，最大长度15.0毫米

3.4 Defects on sealing faces 密封面上的缺陷

3.4.1 For sealing faces defects within limits listed below will be accepted subject to agreement by AVK:
对于密封面的缺陷，经过协商，AVK可接受下表限定内的缺陷：

Category of casting defect 铸件缺陷种类	Sealing face 密封面
Max. cavity depth 最大凹坑深度	0.2 mm
Max. protrusion height 最大突起高度	0.2 mm
Max. size 最大尺寸	1.0 cm^2

3.4.2 Spacing between defects shall be at least 10 mm. Defective areas must be smooth and free from sharp edges.
缺陷之间的距离不能小于10毫米，缺陷区域应该光滑、去除锋边锐角。

Repair of casting defects by grinding will be accepted provided perfect castings are obtained. Grinding must not exceed the requirements of all clauses in section 3 of this Specification and the sealing face must remain intact. Additional grinding shall not be carried out without the prior agreement of AVK.
如果打磨可以去除缺陷又不影响其他功能，则允许对有缺陷铸件进行打磨。但打磨不能超出本规范第3节中所有条款规定的尺寸，而且密封面必须保证完好无损。未经AVK事先同意，不能在其他区域做另外打磨。

Where recesses are cast for the purpose of accepting a seat ring or other components, ***without further machining***, the surface finish shall be uniform and free from protrusions or other defects that could interfere with good sealing or location. This shall also apply to "O" ring grooves cast in bonnets, etc. No steps at any core box "part line" can be accepted.
放置密封圈或其他零件的凹槽处（不再加工），表面必须平整光滑，不能有突起或其他缺陷，以免影响装配和密封性。这也适用于阀盖等零件中用于放置O型圈的凹槽。在任何芯盒的分型面处不允许有披锋或台阶。

3.5 Defects on faces to be machined 加工面上的缺陷

3.5.1 Cavities of any form which disappear during machining are acceptable.
任何能在加工过程中被加工掉的孔洞缺陷都可以接受。

3.5.2 Solid protrusions or peaks of any kind within machining allowance as specified under section 4 are acceptable.
按照第4节的规定，在加工余量范围内的所有固态突起或尖峰也可以接受。

3.6 Part line deviations / mismatch 分型线偏移/错位

3.6.1 Mould mismatch 模型错位

Shall not exceed the relevant tolerance given in ISO 8062: 1994 (E) CT 5, table 1.
Grinding off mismatch must produce an even and smooth joint.
错位不能超过 ISO 8062: 1994 (E) CT 5, 表1中的相关要求。
错位的打磨必须保证结合处平整光滑。

3.6.2 Core deviation 偏芯

Shall not exceed the relevant tolerance given in ISO 8062: 1994 (E) CT 4, table 1, except for sealing faces, where the accepted deviation shall not exceed + or - 0.3 mm.
Smoothing / leveling of core deviations on sealing faces must be done with great care.
偏芯不应超出 ISO 8062: 1994 (E) CT 4, 表1中的相关要求，但密封面偏芯不应超过±0.3毫米。
对密封面偏芯的修整必须十分小心。

3.7 Wall thickness 壁厚

3.7.1 Wall thickness shall not vary greater than the allowable tolerance specified in ISO 8062: (E) CT 11, table 1.
壁厚偏差不应超出 ISO 8062: (E) CT 11, 表1中的相关要求。

3.8 Subsurface material defects 内部缺陷

Included shrinkage cavities and holes will not normally be accepted. However, where the casting thickness exceeds the normal shell wall thickness, then provided the area is not required to be machined, internal shrinkage which has no detrimental effect on the strength or leak tightness can be accepted.
内部缩孔和气孔一般不能接受，但如果铸件有缩孔处的壁厚超出该铸件壁厚的正常值，而且缺陷区域不需要加工，对强度或密封性没有影响的内部缩孔可以接受。

If included cavities and porosities are found in castings after machining or in pressure testing to an extent affecting density and/or strength, the castings will be rejected. In such circumstances AVK reserve the right to reject all castings from the same foundry production batch.
若在铸件加工后或在压力试验中发现内部缩孔和气孔会影响密度和(或)强度，则该铸件需要报废。在这种情况下，AVK有权将来自同一铸造厂的同一批货物作为不合格品处理。

4. Machining allowance 加工余量

The material to be removed by machining shall not exceed 7 mm (see fig. 4.1) or the limits specified in table 4.1.
要被加工掉的材料不能超过7毫米（见下图4.1）或超过表4.1中的限定。

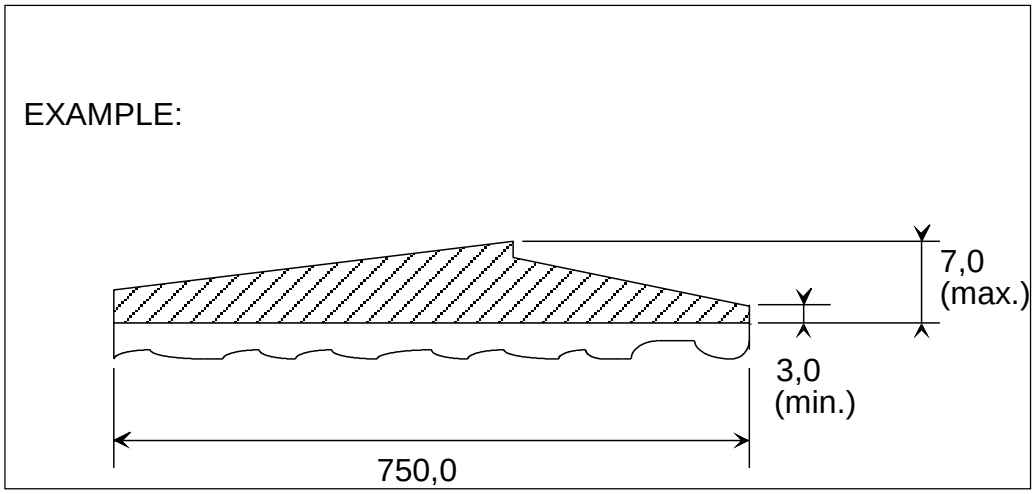


fig. 4.1

Table 4.1 表4.1

Maximum length or width 最大长度或宽度	Minimum 最小 mm	Maximum * 最大 mm
0 - 50 mm	1.5	2.5
51 - 100 mm	1.5	3.0
101 - 200 mm	2.0	4.0
201 - 500 mm	2.5	5.0
501 - 1.000 mm	3.0	7.0

* Maximum allowance includes:
最大加工余量包括:

casting draft, mismatch, inlet gates, flash etc.
拔模斜度、错位、浇口、披锋等等。

5. Quality inspection 质量检验

5.1 Samples, approval and release for production 样品、检测通过、批量生产

5.1.1 When new pattern equipment is laid down or renewed, test samples will be required by AVK. With the order for test samples AVK will enclose drawing, measuring record for casting and, if machining is to be carried out by the supplier, inspection form for machined part.
在新开模具或修改模具后，AVK会要求铸造厂提供样品。AVK将与样品定单一起提供铸件图纸、测量报告表格。若加工由供应商完成，则AVK同时提供加工零件的检验表格。

5.1.2 When the supplier has notified AVK that the test samples are ready, a preliminary measuring and inspection will be carried out by AVK inspection staff stationed near the supplying foundry, where possible. This inspection and measuring aims at excluding the worst and immediately measurable or visually detectable faults. Upon release of test samples by local inspection staff, the samples shall be forwarded to the AVK facility in question.
Certification according to clause 5.3 has to be included.
当供应商通知AVK样品已经准备完毕，如可能， AVK将派附近检验人员到铸造厂进行初步的测量和检测。检查和测量的目的是排除严重的、可以立即检验出来的或目测出来的缺陷。样品通过AVK检验人员的检验后，再发送到AVK相关部门。
发货的同时必须附上5.3中所要求的相关文件。

5.1.3 The Quality Assurance Department at the AVK facility in question will measure and inspect the sample. Subsequently the sample will be machined (if not delivered in machined condition); coating will be carried out and then final assembly and pressure testing conducted.
首先，AVK的质量部门将对样品进行测量和检验；然后，对样品进行加工（如发货的是毛坯）；再给样品涂漆；最后进行装配和压力测试。

5.1.4 The outcome of this process will be reviewed by the Quality Assurance Department and a report to the supplier will be issued in co-operation with the purchaser responsible at the AVK facility in question. Copies of the report will be sent to the supplier and in some circumstances to the Quality Assurance Department at Customer. The sample may then either be released for trial batch production or it may be rejected.
这一系列检验的结果将由质量部门审核，并与AVK相关的采购人员一起出具检验报告，再发至供应商（在特定情况下也可能提交客户处的质量部门）。之后，或者样件被判报废，或者通知供应商可以开始试验性批量生产。

5.1.5 If the sample is released for trial batch production, AVK will order a suitably sized batch. If the sample has been rejected, the seriousness of the fault / faults will be evaluated and if the fault is minor, the sample may be approved for trial batch production. The fault must be corrected before the next shipment. If the fault is major, a new sample will be requested from the supplier.
若样品通过则可以开始试验批量生产，AVK将下达一个数量适当的试验性批量定单。若样品不合格，则应根据其缺陷的严重程度而定：若缺陷较小，则样品可能通过，并进行试验性批量生产，但是在必须在下次发货之前改正这些缺陷；若缺陷较大，则要求供应商提供新样品。

5.1.6 The trial batch will be delivered to the future production site, where the Quality Department will carry out an extended receiving inspection, i.e. all functional dimensions will be measured and the castings will be inspected visually. If any difference from the drawing or original sample is found, and the difference is essential for the finished item, the Quality Assurance Department at the AVK

facility in question will review the matter and the supplier will be notified of their conclusion and where applicable, AVK local inspection staff will receive copies of this notification. If no differences are found or if the differences are not essential or crucial to the finished product, trial batch documents will be prepared and will follow the production order through the production process.
试验性批量生产的铸件将被运送到后续的生产现场，质量部门会进行一次正式的进料检验，例如：对所有功能性尺寸进行测量，对所有铸件进行目测。若发现铸件与图纸或与原来的样品不符，并且这种差异涉及到将来成品的重要尺寸或性能，则AVK质量保证部门将对此差异进行再度检验，并将结论通知供应商。在可能的情况下，AVK地方检查人员也将收到这些通知的复印件。若未发现有差异，或此差异不重要，AVK则会对试生产订单的产品做质量跟踪，在整个成品生产过程中记录下每个工序的质量状况。

5.1.7 The trial batch follow-up form will follow the production order documents through the production process in the AVK facility in question until the item has been finished satisfactorily. After each operation, the AVK operator will add his comments for each individual operation on the trial batch follow-up form.
试验性批量生产的铸件质量跟踪表格将随生产定单一起追踪每道生产工序，直到最终产品圆满完成。每次操作之后，AVK操作工将在实验性批量生产的铸件质量跟踪表格上填上他们的意见。

5.1.8 Upon completion of the production process, the comments on the trial batch documents will be reviewed by the Quality Assurance Department, who will prepare a report for the supplier. If there are no comments, the casting will be released for batch production and the supplier will be notified; the Quality Assurance Department at Customer will receive copies of this Release Notification.
在生产过程完成后，试验性批量生产质量文件上的意见将送交质量部门审查，他们将向供应商提供一份报告。若没有其他意见，则铸件可以进行正式批量生产，并且会通知供应商。客户处的质量部门也将收到此允许正式批量生产的通知单复印件。

5.1.9 After release for batch production orders can be placed.
在试验性生产通过之后，可以开始正式批量生产。

After test samples have been approved and released for production by AVK, their function, look, quality and material and the production methods applied must not be changed without the prior written consent of AVK.
一旦样品通过开始批量生产，若事先未经过AVK的书面同意，样品的功能、外表、质量、材质以及所采用的生产方法均不能改变。

The approval of any test samples by AVK shall not reduce the liability for warranty by the supplier. All cases of non-conformance with the specifications supplied by AVK shall be notified to AVK prior to any delivery with a view to obtaining a concession. Delivery, if any, shall be made separately and shall bear a note of the concession granted.
样品通过检验并不意味着供应商所负责任的减少。若出现与AVK规范不符的情况，必须在发货之前必须通知AVK，双方对发货进行协商。如果AVK同意发货,则应单独包装，并且附上AVK的让步通知发货的通知单。

5.2 Quality inspection for batch production 批量生产的质量检验

The supplier must ensure that finished goods conform to AVK specifications and the previously approved sample.
供应商必须保证成品符合AVK的质量规范并与已通过审核的样件一致。

5.2.1 Subsequent continual receiving inspection will be carried out by the AVK Quality Assurance Department and any comments on faults will be forwarded to the individual suppliers (Claim report); see also clause 7 of this Specification. Care shall be taken to ensure that descriptions are as clear and adequate as possible, supported by sketches or markings on drawings if needed. In order to prevent any misunderstandings the Casting Defect Reference Master will be used as general illustration in the claim report. In case of major differences or substantial faults, the purchaser responsible at AVK and the Logistics Department will be advised and provided with copies of the report.
接下来的接收检验也由AVK质量部门完成，不合格产品检验报告将送交有关的供应商(详见本规范第7条的投诉报告),对产品缺陷的描述应尽可能清楚、充分，若需要的话，可以使用简图或在图纸上做标注。为了防止误解，投诉报告中将使用铸造缺陷参考图片代号来描述缺陷。当发现较大的差异或严重错误时，也会向相关的AVK采购人员和物流部门提供报告的复印件。

5.2.2 Batch production quality inspection. The supplier must ensure that the finished castings comply with AVK specifications. AVK representatives may visit suppliers to check pattern equipment prior to production and to inspect castings prior to shipment. AVK will focus on this inspection activity in order to reduce rejection and complaint rates.
批量生产的质量检验。供应商必须保证成品铸件符合AVK的质量规范。在批量生产前，AVK代表可能到供应商生产现场检查模具设备，也可能在发货前对铸件进行检验。AVK非常重视此检验，以便减少铸件的报废率和投诉。

AVK shall be entitled to inspect the production at the facilities of the supplier, to have samples taken and to make other appropriate tests at the supplier's. The scope of sampling and the inspection time shall be agreed with the supplier.
AVK有权对供应商的生产进行检验，有权在供应商处取样并进行适当的其他检验。取样范围和检查时间由双方协商而定。
The supplier shall, free of charge, replace, rework or repair any defective goods delivered or shadefray any expenses incurred by AVK in connection with the adjustment of any such defect goods delivered or faulty delivered subject to proper notification and agreement by the supplier.
供应商应该免费更换、重新生产或修补任何已发送的有缺陷的产品，或者根据双方协议，支付由此而导致AVK产生的相关费用。

AVK shall notify the supplier before reworking any defective goods delivered. Upon approval by the supplier such adjustment shall be made at the expense of the supplier. AVK has the right to make the decision on the best and most economical solution. In the case of defective goods delivered or faulty deliveries, the supplier shall refund to AVK the freight expenses of AVK, and upon proper notification and agreement by the supplier, the supplier shall further defray the return freight in case of a return of goods.
在对已发送的有缺陷产品进行返工之前，AVK会通知供应商。在得到供应商的确认后，相关的返工费用由供应商承担。AVK有权作出最好最经济的返工方案。如果所发送货物有缺陷或者发货错误，供应商应支付AVK相关的运输费用。在双方协商后，如货物需退还，供应商应支付所需的运输费。

5.3 Inspection reports and certificates 检验报告和证书

5.3.1 Material Certification 材质证明

Material certificates complying with DIN 50049 / EN 10204 - 3.1, shall be available on all items, which acc. to the drawings, are marked with melt date.
*材质报告遵照**DIN 50049/EN 10204 - 3.1**，依照图纸适用于所有的产品，材质报告标注铸造日期。*

Material certificates shall be uploaded to AVK SharePoint Sever by AVK guy.
材质报告将由AVK上传到AVK SharePoint服务器。

When required, and requested prior to manufacture, suppliers shall submit material certification for castings or other material/components supplied to AVK. This certification shall include mechanical, physical and chemical properties of the material supplied.
在铸件加工之前，供应商根据要求向AVK提供AVK产品的材料证书。此证书应包括所有供应材料的机械、物理及化学性能。

5.3.2 Inspection reports 检验报告

All samples from new, corrected or refurbished patterns shall be supplied with 100% dimension inspection reports according to the measuring record. Such samples shall be packed separately and bear proper markings on the packing (samples, order no., etc.).
所有新模具、修改后模具或修整后模具生产出来的样品，应该提供100％的尺寸检验报告。这些样品应该单独包装，并且在包装上标上适当的记号（如样品、订单号等）。

All batch production shall be supplied with 100% dimension inspection reports by each delivery.
所有的批量生产产品都需在出货时提供100%尺寸检验报告。

5.4 Marking, identification and traceability 标识和跟踪

5.4.1 All items must be marked clearly with all information shown on the relevant piece part drawing. The lettering must be legible and have no sharp corners.
所有铸件必须根据相关图纸铸出清晰的标识。铸字必须清晰可辨，无尖角。

5.4.2 When required the casting date shall be positioned on the casting below the AVK reference no. of the supplying foundry, or according with drawing specification.
如有要求，铸造日期应该位于供应商编码下方，或按照图纸的说明确定位置。
The format shall be as the following example: 15H20
格式如下所示：15H20

15 = 2015	15=2015年
H = 8th month = August	H=第8个月=8月
20 = date cast	20=铸造日

Letters / numbers shall be 10 mm high x 5 mm wide raised min. 1.5 mm above surface level.
字母/数字规格：10毫米高X5毫米宽，凸字，凸出表面至少1.5毫米。

When a foundry operates their own cast dating system, this may be used in preference to the above provided AVK are provided with any information required to recognize the cast date.
如铸造厂有自己的铸造日期系统，在向AVK提供相关的信息(如何识别其铸造日期系统)后，可以采用自己铸造日期系统。

6. Handling, storage and packing 操作、储存和包装

6.1 All castings are to be handled, stored and packed in such a way that each casting is prevented from causing damage to itself or another casting which would have a detrimental effect to its performance. Each package must bear quantity, AVK part no., description, supplier name, date and purchase order no.
所有铸件的操作、储存和包装必须确保每个铸件都不遭受损坏，并确保对其他铸件的性能没有不利影响。每个包装箱上需标有数量、AVK零件号、产品名称、供应商名称、日期和订单号

6.2 All shipments must comply to such technical requirements and other rules and instructions as are stated on the relevant order. The supplier shall be liable for any costs or damage inflicted upon AVK as a consequence of any non-observance of such rules and instructions on the part of the supplier.
所有的发货产品必须符合订单上的技术要求和相关说明。如果供应商不遵守这些规定而导致AVK遭受损失，由此产生的费用由供应商承担。

6.3 All consignments shall be delivered on approved EURO pallets (1200 mm x 800 mm), According to DS/EN 13545, and AVK specification for pallets and Frames.
所有的货物都应该放置于标准的EURO托盘上（1200 mm x 800）,托盘必须符合DS/EN 13545标准，或者符合AVK关于托盘箱框的要求。

Maximum weight on each pallet shall not exceed 1000 kg. Frames must be used; max. 5 frames per pallet. The last frame shall cover the castings in such a way that further pallets can be placed directly on top of the first pallet.
每个托盘承受的最大重量不超过1000 kg。且必须使用箱框，每个托盘按照标准最多放5个箱框。最后一只箱框在包装铸件时应使下一个托盘可以直接放在其上。

Metal bands shall be secured around each pallet and frame assembly. All pallets shall have a label affixed showing item no. and quantity. Any necessary repacking of the castings on pallets will be invoiced by AVK to its supplier at current hourly wage rate.
使用金属打包带将托盘与箱框扎紧。所有托盘都应贴上一个标签，说明零件号及数量。如果供应商包装不合格而AVK有必要对其重新包装，AVK将按照时下的每小时工资向供应商开票收取。

6.4 If the above is not observed, the castings will be returned at supplier's cost. Furthermore, any costs incurred by AVK production will be invoiced to the supplier.
若不遵守以上规定，铸件将被退回，相关费用由供应商承担。另外，AVK由此遭受的任何损失费用也将向供应商开票收取。

7. Rejection 铸件报废

7.1 In case of rejection, the supplier will receive a claim report from AVK and is required to reply immediately. The claim report will give the supplier details of the rejected items, such as position of defect(s) and type of defect according to Castings Defects Reference Master.
如有铸件质量投诉，供应商将收到AVK发来的投诉报告，且供应商要立即答复。投诉报告将说明报废铸件的详细情况，例如：根据铸件缺陷参考图，缺陷的位置和类型。

Procedure for handling of NCR Material: 处理不良报告（**NCR**）的流程

I. The supplier/foundry has 2 working days to decide on the following options:
供应商/铸造厂有2个工作日时间对以下内容做出选择

A: Accept or rejection based on the NCR report
承认或者否认NCR的内容

B: Accept or rejection of cost for rework at the plant at AVK.
接受或拒绝AVK工厂因返工而收取的费用

C: Accept or rejection based on sample of NCR Material
承认或者否认NCR代表件代表的问题

D: Return of hole batch of NCR Material for rework by the supplier
返还整批不合格产品给供应商进行返工处理

II. AVK cannot rework or scarp NCR Material doing the above mentioned period. If this should happen by mistake or otherwise the supplier/foundry cannot be hold responsible for this, and AVK cannot claim compensation.
在以上选择期限内，AVK不得自行返工或擅自处理不合格产品。如果AVK错误地在此期间进行返工或丢弃不合格产品，供应商不对此负责，且AVK不得提出赔偿申请。

III. Should the supplier wish to have a sample of the NCR Material, AVK has to deliver samples in the fastest possible way. The supplier then has 7 days to accept or reject after receiving the NCR Material.
如果供应商要一个NCR的样品，AVK必须尽快发出样品。供应商在收到样品后有7天的时间决定承认或者否认NCR的内容。

IV. If the supplier don't respond within the above mentioned time frame, AVK. can scarp or rework the material and still claim compensation
如果供应商没有在规定时间内做出答复，AVK可以自行对不合格产品进行返工或者做出其他处理，而且可以就此提出索赔。

7.2 Each supplier will receive monthly rejection reports when necessary (page 18) specifying number of castings rejected for specific items; specification of defects (Castings Defects Reference Master No. NX).

若有必要，供应商每个月都会收到一份报废产品报告，列明报废铸件的型号、数量及具体缺陷情况（铸件缺陷参考图编码NX）

These reports will be the basis of financial settlements with the supplier. The supplier may request that rejected castings be returned to him (at his cost) or may visit AVK to verify rejections. The Castings Defects Reference Master will be a key instrument in the communication with the supplier. The pictures illustrate the most frequent faults and defects, found by AVK production world-wide. Therefore the illustrations and numbers constitute the reference material everyone in the AVK Group shall refer to in their claim reports and monthly reports to the suppliers.

这些报告将作为以后与供应商进行财务清算的基本依据。供应商可以要求将不合格的铸件退回（费用由供应商承担），或者访问AVK以便核实情况。铸件缺陷参考图是与供应商关于铸件报废交流的一个重要依据。

图片展示的是全球各地的AVK生产工厂发现的最经常出现的错误和缺陷。在给供应商的索赔报告和月度废品报告中，AVK相关人员使用由这些图示和数字组成的参考材料。

8. Purchase specification for new / replacement patterns
新订与替换模具的采购规范

8.1 Ownership in pattern 模具的所有权

AVK shall enjoy full ownership and title in all patterns purchased and shall have the right to withdraw the pattern from the possession of the supplier at any time.

AVK拥有全部采购模具的所有权，且AVK有权力在任何时候从供应商处移走模具。

8.2 Maintenance 模具维护

The supplier shall be responsible for all maintenance of patterns. Routine maintenance of the pattern is to be provided free of charge by the supplier assuming the pattern remains in the uninterrupted possession of the supplier.

供应商负责模具的全部维护。供应商要向爱惜自己的财产一样对模具进行免费的日常保养。

The supplier shall guarantee that the complete pattern, including any loose items, will produce components in accordance with drawings specified on the pattern order.

供应商应该保证整套模具（包括活块）生产出来的零件都符合样品订单中图纸的要求。

8.3 Life of pattern 模具的使用寿命

All patterns shall have a guaranteed life as agreed between the supplier and AVK and as detailed on the order. This is the expected life before AVK would be liable for any cost associated with major repair or refurbishment, assuming the pattern remains in the uninterrupted possession of the supplier.

供应商与AVK共同协商，关于模具的使用寿命达成一致，并在采购订单上注明。在模具寿命之内，AVK不对其负责，供应商要像爱惜自己的财产一样对模具进行修理和维护。

8.4 Identification 鉴定

Patterns are to be permanently marked "Property of AVK" and are to include the part numbers of components produced by the pattern together with supplier's serial number.

模具上将永久性标上“AVK财产”的字样，而且将标上模具生产的零件号及供应商的代码。

The supplier is to maintain full records of quantities produced from the pattern and any maintenance carried out on the pattern. Each pattern must have a number and if there are more than one pattern of the same item in the moulding equipment, the patterns must bear consecutive numbering (e.g. 1-2-3-4).
供应商应该保存使用该模具生产出来的铸件数量的记录和所有的模具维护记录。每套模具必须有一个编号，若同一个铸件多个模具时，则模具必须有编号（例如：1-2-3-4）。（一模多型也应对模型编号。）

8.5 Purpose 目的

Castings produced for AVK are generally pressure-containing parts and shall be free of contamination and impurities, surface imperfections, porosity or other defects.
Castings supplied may be subjected to a pneumatic or hydraulic pressure test at AVK works, after assembly.
Failure to meet specified requirements will result in components being rejected.
为AVK生产的铸件一般为承压零件，铸件应该没有粘砂、毛刺、表面缺陷、渣孔气孔或其他缺陷。
铸件在AVK工厂可能进行气压或水压试验（在装配之后）。若不能满足规定的要求，则铸件将被判为不合格。

8.6 Specification 规范

All components supplied from the pattern shall be in full accordance with the specification requirements. Application for concessions shall be made in writing to the AVK ordering company.
所有通过模具生产出来的铸件都应该完全满足本规范的要求。让步接收申请必须书面呈交给相关的AVK订货公司。

9. Responsibility and liability 责任和义务

When orders are placed for pattern equipment, the supplier shall take full responsibility for the design and manufacture of the pattern. However, AVK shall be consulted on the pattern design as the assembly and performance of the finished product may be affected. The position of ejector pin marks, the avoidance of split lines in critical areas and porosity are of paramount importance.
当下达模具订单后，供应商应对模具的设计和制作完全负责。但是关于模具的设计建议咨询AVK，因为最终产品的装配和性能可能受其影响。起模杆的位置、避免关键部位出现分型面和气孔都十分重要。

The supplier shall take full responsibility for the selection of size and output rate of the manufacturing process to meet AVK production requirements. AVK shall supply all necessary technical documentation and is responsible for the design & construction and retains the ownership of the Intellectual Property Rights in the equipment, designs and specifications etc.
供应商负责制定其生产工艺及产能，以满足AVK的生产需求。AVK将提供所有必要的技术文件，负责设计并对其做出解释，并拥有对设备、设计、技术规范等知识产权的所有权。

10. Confidentiality 保密性

All aspects of the design of the product and production methods disclosed by AVK are strictly confidential and AVK's competitive position shall be protected at all times. The supplier shall ensure that any subcontract suppliers maintain this confidentiality. They must not be disclosed to or used by any person within the organization of the supplier other than such persons as are involved in the production of goods for delivery to AVK. Without the consent of AVK in writing, the supplier must not advertise or in any other way make public that he is supplying castings to, or has entered into any agreement for the supply of castings to AVK. The supplier does not have any rights to dispose of the pattern, transfer the pattern to another supplier or permit the pattern to be used for any other purpose without AVK's express permission in writing.

AVK所提供的产品设计及生产工艺的全部内容都应严格保密，在任何时候都要保护AVK的竞争能力。供应商应该确保其外协厂家亦遵守此保密协议。这些信息不能泄漏给供应商组织下的任何个人（AVK产品的生产人员除外），或被他们使用。未经AVK书面同意，供应商不能宣传他们正在为AVK生产铸件或已经签订供应铸件的协议。未经AVK书面许可，供应商没有权力转移、转让模具，或将模具用于其他用途。

Note: This is supplementary to any instructions on specific casting drawings. In event of any dubiety or contradiction between instructions on drawings and this standard, the supplying foundry shall be responsible for obtaining clarification from AVK before proceeding.

附注：本标准是对铸件图纸的补充说明。若图纸与本标准之间有分歧或矛盾，在开始生产之前供应商需向AVK联系，弄清原委，以防误解。

ENCLOSURES:附件

Defects 缺陷

1A: Not coated properly: holiday in coated surface
喷涂不当：表面漏涂

1B: Not coated properly: run in coated surface
喷涂不当：表面涂层蔓延

1C: Not coated properly: coating mask not used
喷涂不当：未用喷漆罩

1D: Not coated properly: excessive coating
喷涂不当：涂料过多

1E: Not coated properly: failed holiday free test
喷涂不当：未通过漏涂检测

1F: Not coated properly: chipped
喷涂不当：有缺口

1G: Not coated properly: wrong color
喷涂不当：颜色不对

1H: Not coated properly: color bleed
喷涂不当：颜色渗透

1I: Not coated properly: over spray
喷涂不当：过度喷漆

1J: Not coated properly: blast media not cleaned out before coating
喷涂不当：喷涂前没清除干净

1K: Not coated properly: debris in coating
喷涂不当：涂层里有碎片

1L: Not coated properly: old coating not removed
喷涂不当：旧涂层未去除干净

1M: Not coated properly: out gassing
喷涂不当：起泡

2A: Not machined properly: hole not drilled
加工不当：未钻孔

2B: Not machined properly: hole not tapped
加工不当：孔未攻丝

2C:	Not machined properly: not machined, missed operation 加工不当：未加工，操作遗漏
2D:	Not machined properly: not machined parallel 加工不当：加工不平行
2E:	Not machined properly: not to print requirements, too big 加工不当：不符合要求——太大
2F:	Not machined properly: not to print requirements, too small 加工不当：不符合要求——太小
2G:	Not machined properly: chatter on machined surface 加工不当：加工面上有刀痕
2H:	Not machined properly: surface too rough 加工不当：表面太粗糙
2I:	Not machined properly: hole in wrong location 加工不当：孔位置错误
2J:	Not machined properly: chucked off center 加工不当：装夹偏心
2K:	Not machined properly: broken tap 加工不当：攻丝攻穿了
2L:	Not machined properly: rough grinding 加工不当：打磨粗糙
3A:	Failed pressure test two times: “A1” dimension out of tolerance 两次没通过压力试验：尺寸“A1”超差
3B:	Failed pressure test two times: “B1” dimension out of tolerance 两次没通过压力试验：尺寸“B1”超差
3C:	Failed pressure test two times: core shift at parting line 两次没通过压力试验：芯子分型面错芯
3D:	Failed pressure test two times: parting line gap 两次没通过压力试验：分型线间隙
3E:	Failed pressure test two times: excess material 两次没通过压力试验：多肉
3F:	Failed pressure test two times: lack of material 两次没通过压力试验：缺肉

4A: Cracked or broken casting:
铸件开裂或损坏

4B: Cracked or broken part:
零件开裂或损坏

5A: Stripped threads: bolts
螺纹脱落：螺栓

5C: Stripped threads: bolt hole
螺纹脱落：螺栓孔

5E: Stripped threads: other
螺纹脱落：其他

6A: Bad casting: lack of material, poured short, metal bleed
不良铸件：缺肉、未浇满、炸箱（涨箱）

6B: Bad casting: excess material, scap / swell / sag / erosion of mold
不良铸件：多肉，模型出现断裂、膨胀、浮芯及塌箱

6C: Bad casting: cold shut, rat tail or misrun
不良铸件：冷隔、鼠尾或未浇满

6D: Bad casting: sand fall-out, drop
不良铸件：掉砂，脱落

6E: Bad casting: cast to wrong dimension
不良铸件：尺寸不良

6F: Bad casting: excessive chilling, hard spots
不良铸件：急冷、硬质点

6G: Bad casting: pattern cracking, fin, vein
不良铸件：模具裂痕、飞边、毛刺

6H: Bad casting: core shift
不良铸件：偏芯

6I: Bad casting: cope and drag shift
不良铸件：上下箱错位

6J: Bad casting: inclusion, dirt / sand / slag etc.
不良铸件：夹杂，夹砂、夹渣等

6K: Bad casting: poor chemistry
不良铸件：化学成分不良

6L: Bad casting: hot tears
不良铸件：热裂

6M: Bad casting: rough surface / bad marking
不良铸件：表面粗糙、标识模糊

6N: Bad casting: excess material, sand sticker
不良铸件：多肉、粘砂

6O: Bad casting: warped
不良铸件：变形

6P: Bad casting: gap, core fin not removed or not cleaned
不良铸件：未清理芯飞边而导致缺肉,空隙

6Q: Bad casting: run out, weak core
不良铸件：泥芯不良，铁水渗入

6R: Bad casting: welded
不良铸件：焊接

6S: Bad casting: core improperly set
不良铸件：芯位置不良

6T: Bad casting: wash
不良铸件：内表凹坑，夹渣

6U: Bad casting: blow holes
不良铸件：气孔

6V: Bad casting: mismatch
不良铸件：错箱

7A: Porosity: minor
气孔：较小

7B: Porosity: moderate
气孔：中等

7C: porosity: major
气孔：较大

8A: Thorn: gasket
断裂：垫圈

8B: Thorn: O-ring
断裂：O型圈

8C: Thorn: other
断裂：其他

9A: Improper set-up: machining center
装配错误：加工中心

10A: Damage: during packing or handling
损坏：包装或搬运过程中

11A: Incorrect packing: between pallets
错误包装：在托盘之间

11B: Incorrect packing: pallet and frames
错误包装：在托盘和箱框之间

11C: Incorrect packing: in box
错误包装：箱子内部

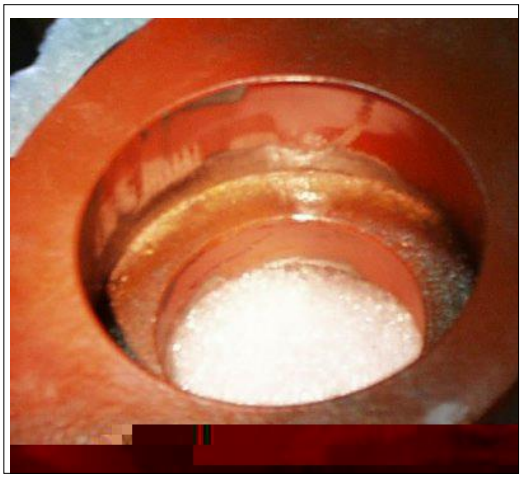
11D: Delivery wrong product or incorrect quantity
送错货或送货数量不对

12A: Incorrect drawing version
版本错误

Painting defects　喷涂缺陷

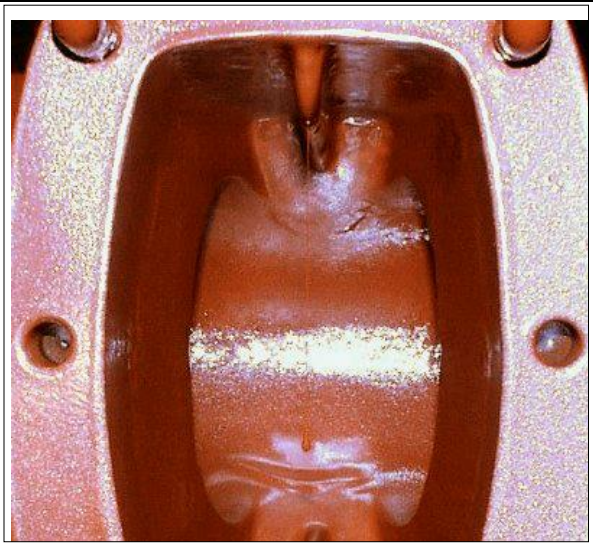
1A:
holiday in coated surface
表面漏涂

1B:
run in coated surface
表面涂层蔓延



1C:
coating mask not used
没用喷涂罩

1D:
excessive coating
涂料过多

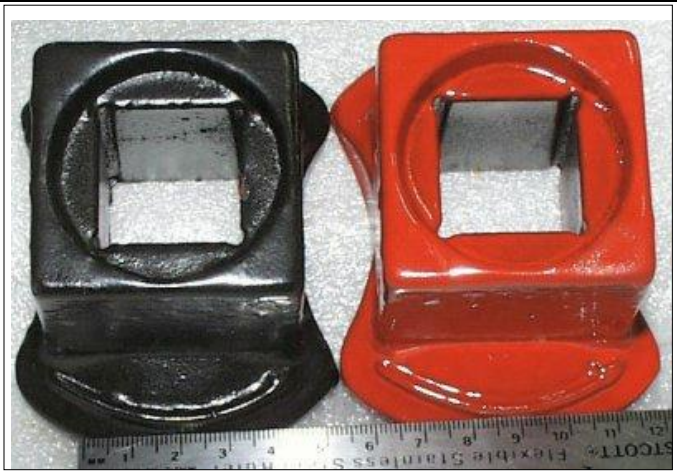


1E:
failed holiday free test
没通过漏涂检测

NO PHOTO

1F:
chipped
涂层有缺口

1G:
wrong color
颜色不对



1H:
color bleed
颜色渗透

NO PHOTO

1I:
Over spray
过多喷涂

1J:
blast media not cleaned out before coating
喷涂前没清理干净

1K:
debris in coating
涂层里有碎片

1L:
old coating not removed
旧涂层没去除干净

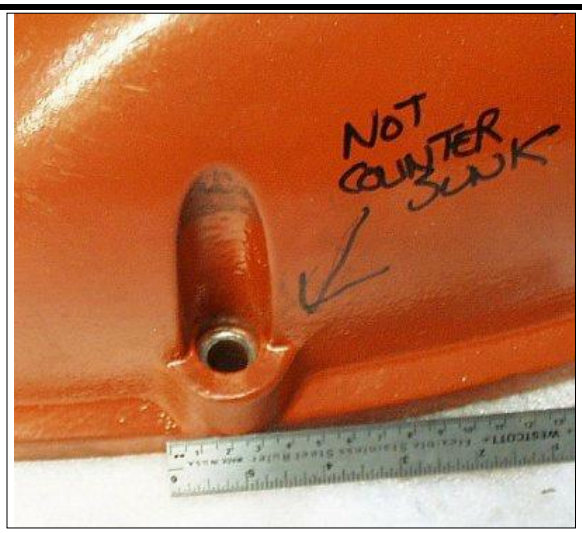
1M:
out gassing
起泡

Machining Defects　加工缺陷

2A:
hole not drilled
没钻孔

2B:
hole not tapped
没攻丝

2C:
not machined, missed operation
没加工，加工漏工序

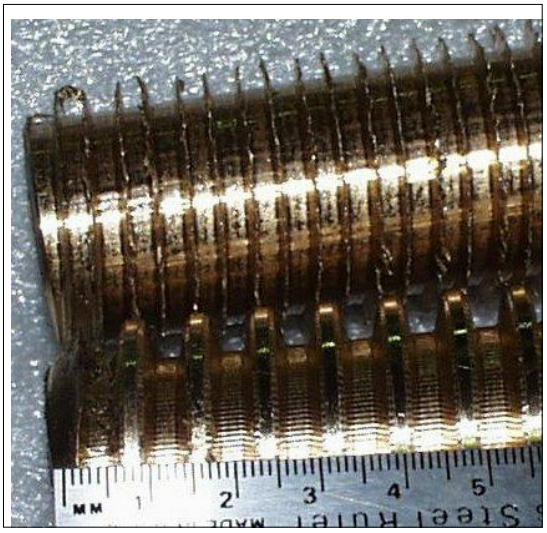


2D:
not machined parallel
加工不平行

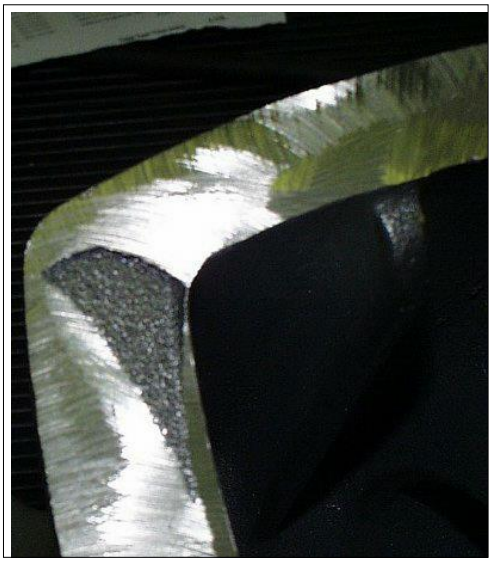
2E:
not to print requirements, too big
加工不符合要求，太大。

2F:
not to print requirements, too small
加工不符合要求，太小。

2G:chatter on machined surface
加工面上有刀痕



2H:
surface too rough
表面太粗糙



2I:
hole in wrong location
孔位置不对

2J:
chucked off center
装夹偏芯

2K:
broken tap
攻丝攻穿了

2L:
rough grinding
打磨粗糙

Failed pressure test:

压力测试不合格

3A:
"A1" dimension out of tolerance
A1尺寸超差

NO PHOTO 没有照片

3B:
"B1" dimension out of tolerance
B1尺寸超差

NO PHOTO 没有照片

3C:
core shift at parting line
芯子分型面错芯

NO PHOTO 没有照片

3D:
parting line gap
分型面间隙太大

NO PHOTO 没有照片

3E:
exess material
多肉

NO PHOTO 没有照片

3F:
lack of material
缺肉

NO PHOTO 没有照片

Cracks 开裂

4A:
Cracked or broken casting
铸件开裂或损坏

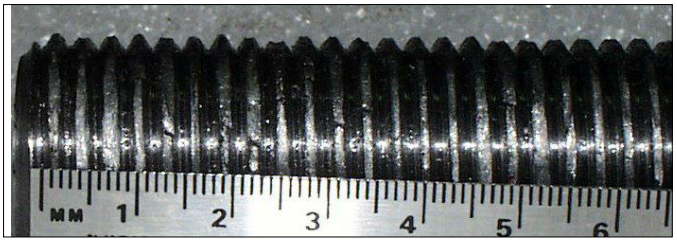
4B:
Cracked or broken part
断裂

Stripped threads 螺纹脱落

5A: Stripped thread **:**bolts
外螺纹脱落

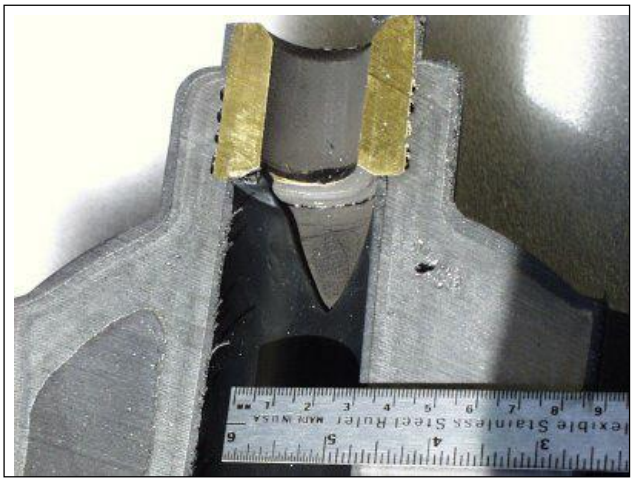
5B:
bolt hole
内螺纹脱落

5C:
Other
螺纹脱落，其他位置

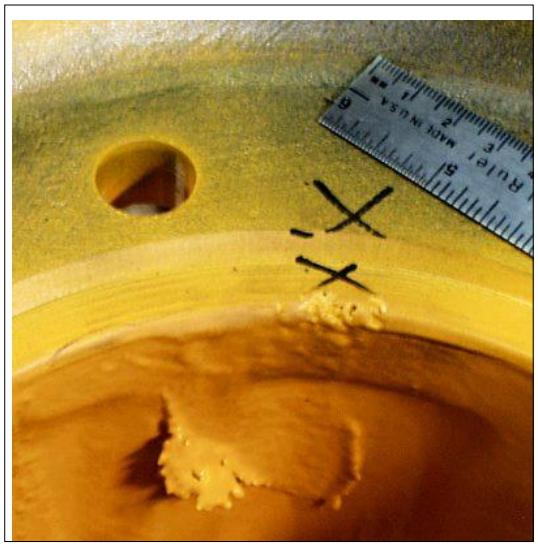


Casting defects 铸造缺陷

6A:
lack of material, poured short, metal bleed
不良铸件，缺肉，没浇满，炸（涨）箱



6B:
exess material, scap / swell / sag / erosion of mold
不良铸件，多肉，模型断裂，塌箱，漂芯



6C:
cold shut, rat tail or misrun
冷隔，鼠尾，没浇足

6D:
sand fall-out, drop
掉砂，脱落

6E:
cast to wrong dimension
铸件尺寸不对

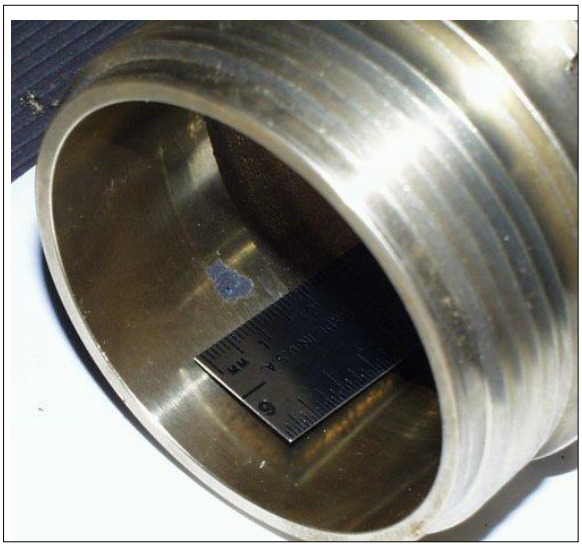
6F:
excessive chilling, hard spots
急冷，硬质点

6G:
pattern cracking, fin, vein
模具开裂，飞边毛刺

6H:
core shift
偏芯

6I:
cope and drag shift
上下箱错位

6J:
inclution, dirt / sand / slag etc.
夹渣，夹砂



6K:
poor chemistry

化学成份不良

NO PHOTO 没有照片

6L:
hot tears
热裂

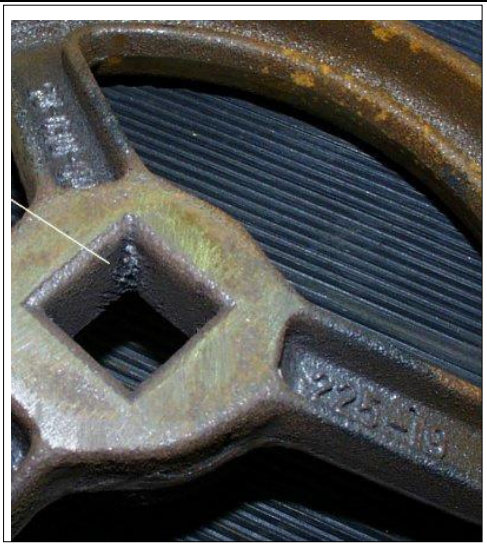
NO PHOTO 没有照片

6M
rough surface / bad marking

表面粗糙，铸字不清

6N:
excess material, sand sticker

多肉，粘砂



6O:
warped
变形

NO PHOTO　没有照片

6P:
gap, core fin not removed or not cleaned

芯子飞边毛刺没去除

6Q:
run out, weak core
芯子不良，铁水渗入

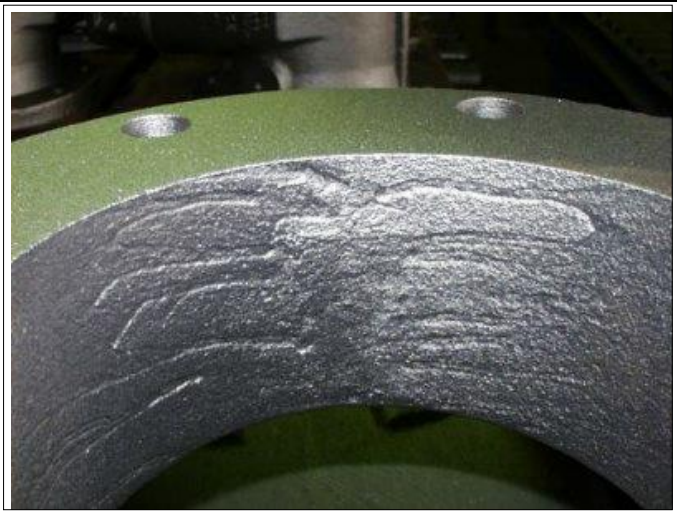
6R:
Welded
焊补

6S:
core improperly set

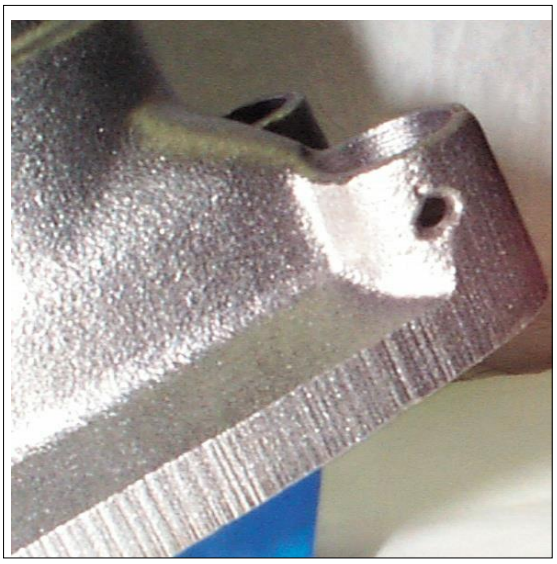
下芯时位置不对

NO PHOTO 没有照片

6T:
Wash
内表凹坑，夹渣



6U:
blow holes
气孔



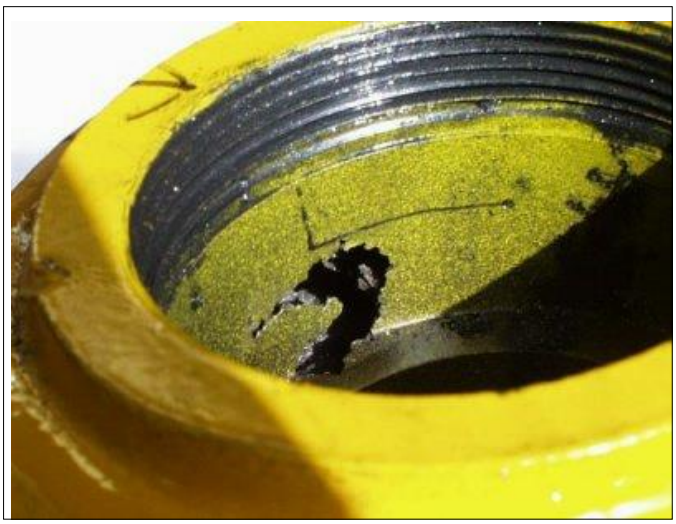
6V:
mismatch
错箱

Porosity
气孔

7A:
Minor
轻微气孔

7B:
Moderate
中等程度气孔

7C:
Major
严重气孔



Torn: 断裂

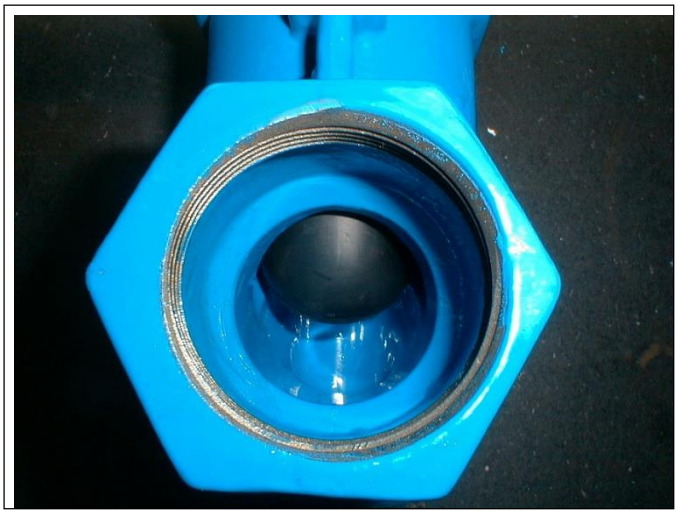
8A:
Gasket
密封圈断裂

8B:
o-ring
o-ring密封圈断裂

8C:
Other
其他

Improper set-up　装配错误

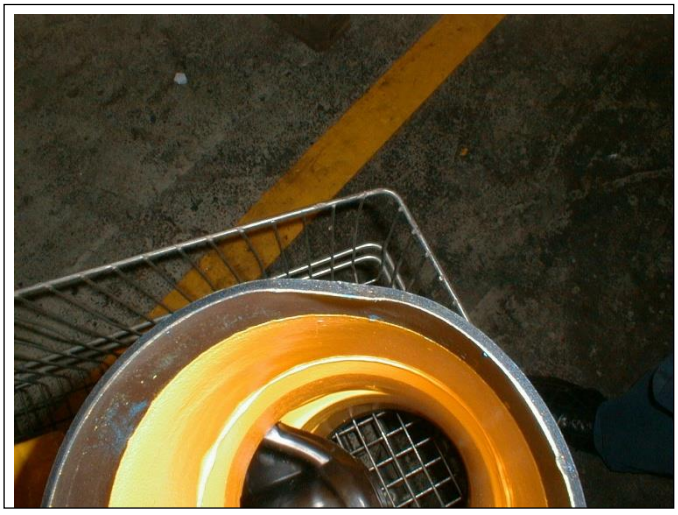
9A:
machining center
加工不同心



Damage 损坏

10A:
Packing
包装是碰坏

10B:
Drop
掉下来砸坏



Incorrect Packing

包装错误

11A:
between pallets
托盘与拖盘之间

11B:
pallet and frames
拖盘与箱框

11C:
in box
箱子里面

11D:
Delivery wrong product or incorrect quantity
送错货或送货数量不对

NO PHOTO 没有照片

12A:
Incorrect drawing version
版本错误

NO PHOTO 没有照片

Non Conformity Report 投诉报告

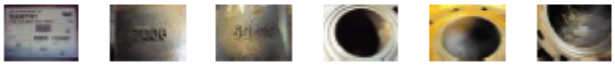
Non Conformity Report

GENERAL

Scenario	China Supplier	Status	Started
Number	01490	Created on	09-07-2015 09:17:34
Parent		Start date	09-07-2015 11:02:19
Created by	Niels Martin Jørgensen [nijo]	Created by company	AVK International A/S
Modified on	27-07-2015 11:26:21	Modified by	Stella Feng [stfe]

ATTACHMENTS

PICTURES



DSC02265JPG DSC02266JPG DSC02267JPG DSC02268JPG DSC02269JPG DSC02270JPG

SUPPLIER

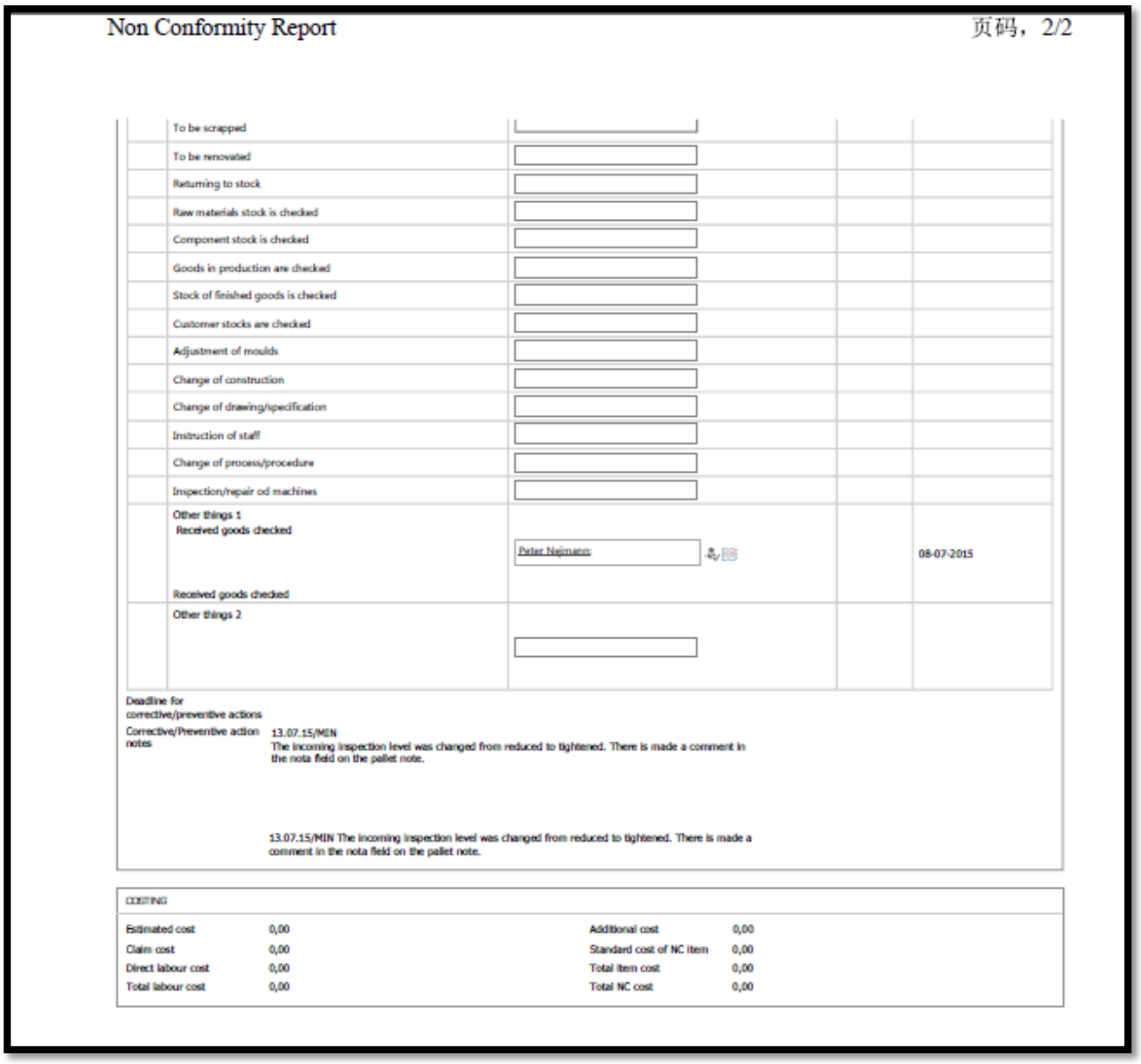
Number	7006
Name	Wujiang Union Casting Co., Ltd.
Address	Union Village Meiyang Town Wujiang City CN
Phone	
E-mail	

OTHER

Department	AVK DK - ØST 2		
Internal source of discovery	2	Internal source of discovery (person)	jmn
Item	554507391		
Description	90 GR. FL/PL BEND UNCO. DN080		
Product series	PARTS		
Receiver	Niels Martin Jørgensen;		
Customer order number		Order number	
Purchase order	p209867	Serial number	
Heat number	50416	Total batch quantity	100
Quantity of rejected	100	Quantity of scrapped	0
Failure group	2 Not machined properly		
Failure	2C: Not machined, missed operation		
Failure detailed description	Bad chamfering. 倒角不正确		
	Bad chamfering. 倒角不正确		
Expected date of response	14-07-2015 11:02:19		
Root cause			
Credit note schedule		Credit note invoice	
Supplier response date	07-08-2015	Concession	
Item type	3. Raw material / purchased par		

CORRECTIVE/PREVENTIVE ACTIONS

Action	Responsible	Executed	Date
Concession			
Returning to supplier			
Next supply will be checked	Michael Nielsen;		13-07-2015
Re-invoicing to supplier			
Written response from supplier	Jens Østergaard;		



Non Conformity Report 页码，2/2

	To be scrapped			
	To be renovated			
	Returning to stock			
	Raw materials stock is checked			
	Component stock is checked			
	Goods in production are checked			
	Stock of finished goods is checked			
	Customer stocks are checked			
	Adjustment of moulds			
	Change of construction			
	Change of drawing/specification			
	Instruction of staff			
	Change of process/procedure			
	Inspection/repair od machines			
	Other things 1 Received goods checked Received goods checked	Peter Nejmann		08-07-2015
	Other things 2			

Deadline for corrective/preventive actions

Corrective/Preventive action notes

13.07.15/MEN
The incoming inspection level was changed from reduced to tightened. There is made a comment in the nota field on the pallet note.

13.07.15/MIN The incoming inspection level was changed from reduced to tightened. There is made a comment in the nota field on the pallet note.

COSTING

Estimated cost	0,00	Additional cost	0,00
Claim cost	0,00	Standard cost of NC item	0,00
Direct labour cost	0,00	Total item cost	0,00
Total labour cost	0,00	Total NC cost	0,00

Material Test Certificate 材质报告

XXXXXX Foundry Co., Ltd

Material TEST CERTIFICATE

PRODUCT: xxx		Certificate No：xxx	
MATERIAL： xxx		Melt Number： xxx	
TECHNICAL SPECIFICATIONS OR STANDARDS: xxx		QUANTITY: xxx	
CUSTOMER： xxx		PURCHASE ORDER NO.: xxx	
MECHANICAL PROPERTIES	SPECIFICATIONS		RESULTS
	Minimum	Maximum	
TENSILE STRENGTH（Mpa）	xxx		xxx
YIELD STRENGTH（Mpa）	xxx		xxx
ELONGATION IN ZIN（%）	xxx		xxx
HARDNESS（HB）	xxx	xxx	xxx
CHEMICAL COMPOSITION	SPECIFICATIONS		RESULTS
	Minimum	Maximum	
C（%）			xxx
Si（%）			xxx
Mn（%）			xxx
S（%）			xxx
P（%）			xxx
Re（%）			xxx
Mg（%）			xxx

Graphite Form (min80%form V orVI)		Graphite Size （5-8）		Pearlite % ≤50		Ferrite % ≥50	
xxx	xxx	xxx		xxx		xxx	
Pressure test		xxx		Pressure	xxx	Time	xxx
Inspection Date				Inspector		Approved By	
xxx				xxx		xxx	

Inspection Certificate Comply With3.1,EN10204

Sample Plan 抽检计划

Note: The sample plan complies with the standard of ISO 2859 Inspection S4 and S2 Level AQL=1.5
注：该抽检计划遵照 ISO2859 检验 S4 及 S2 等级 AQL=1.5 的标准

Batch Size 批次数量	Sample Size (level) 抽检等级		Accept 接收	Reject 拒收
	S4	S2		
2-8	5*	5*	0	1
9-15	5*	5*	0	1
16-25	5*	5*	0	1
26-50	5	5*	0	1
51-90	5	5*	0	1
91-150	8	5*	1	2
151-280	13	5	1	2
281-500	13	5	2	3
501-1200	20	5	3	4
1201-3200	32	8	3	4
3201-10000	32	8	3	4

* Minimum sample level established by AVK exceeds AQL requirements.
*最低的抽检等级由 AVK 设定优先于 AQL 的要求。

Roles for inspection:
检验分工

- AVK supplier use sample size S4. AVK 供应商适用抽检等级 S4.
  Sign of shall be done by Suppliers quality manager and production responsible.
  供应商处的质量经理和生产负责人需签字确认。

- AVK SH use sample size S4.
  AVK 上海适用抽检等级 S4.
  Sign of shall be done by AVK SH inspector.
  AVK 上海质量工程师需签字确认。

- AVK customer (IQC) use sample size S2.
  AVK 客户（IQC）适用抽检等级 S2.

If there are any problems experience with the sampling – contact the AVK Quality department for further action.
如若对该抽检计划有任何问题和疑问-请联系 AVK 质量部门。

AVK Inspection Form　AVK检验报告格式

This document refers to AVK Tech QMS Doc. No. 03.160.

Expect... AVK

INSPECTION REPORT (Sheet 1 of 7)

☑ Released (BOX dimension)
☐ Prototype (ALL dimension)

Supplier:	Weifang Jinli Foundry Co.,Ltd.			**Supplier no.:**	GP4310	**Date.:**	24-08-2015
Drawing no.:	40010001	**Drawing Rev:**	AI	**Material:**	DI EN 1563; GJS-500-7		
Item no.:	4001000191	**3D weight:**	11,92	**Description:**	Body DN100 PN16		
Order No.:	PROV1191	**Batch size:**	1400	**Approval Supplier:**		**Approval SH:**	**Approval Customer:**

NO	Drawing Location	Drawing			Actual Measurements															Remark
					By Supplier					By Local Engineer					By local AVK					
		Dimension	Min	Max	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
1	1.D	53,7	52,9	54,5																
2	1.E	105	103,00	106,00																
3	1.J	192	190,00	193,00																
4	2.M	6	5	7																
5	4.G	172	171,2	172,8																
6	4.L	6	5	7																
7	5.K	6	5	7																
8	6.E	190	189,00	191,00																
9	8.F	6	5	7																
10	10.E	6	5	7																
11	11.E	57	56,75	57,25																
12	11.G	19	17,00	21,00																
Surface inspection																				
Text and Logo																				
Part Number																				
Size																				
Pressure class																				
General surface																				
Core shift																				
Sharp edges																				
Weight																				
Material certificate																				
A and B dimension check by inspection tool																				

Batch production: Inspection size and AQL laval shall be according AVK inspection document 04.062

丹麦埃维柯有限公司　AVK 上海代表处

译注：陈丽萍　Liby Chen

校准：汪恩裔　Ben Wang

2015.9.2