


PURCHASING SPECIFICATION CUSTOMIZED PARTS

INDEX DEVELOPMENT		
Ind.: A	Date: 04/19	
Ind.: B	Date: 06/19	
Ind.:	Date:	

List of evolutions

INDEX	DATE	PAGE	OBJECT
A B	04/19 07/19		Creation Modification

Introduction

This specification governs the content of our inspection requirements that our suppliers will have to carry out when they produce parts to drawing.

It applies to all EXXELIA drawings and in particular when a drawing mentions critical coasts or key characteristics. It applies to current or resumed production after a long interruption of production.

Preamble

Reminder of the sampling rules used by EXXELIA (ISO 2859 - Inspection générale niveau 1), this table serves as a reference for the mention "ISO sampling" included in the table of supplier deliverables.

Quantity	Sampling	Number of defects
=1	1	0
>2-8	2	0
>9-15	2	0
>16-25	3	0
>26-50	5	0
>51-90	8	0
>91-150	13	0
>151	Limited to 20	0
Then 20 for every 1000 pieces		0

Reminder of the general tolerance tables used by EXXELIA

Tolerance class ISO 2768

Machining mm

Precision class	Linear Dimension					Broken edges (chamfer or radius)			Angular Dimension (shortest side)			
	>0,5 up to 3 included	>3 up 6	>6 up 30	>30 up 120	>120 up 400	>0,5 up to 3 included	>3 up 6	>6	≤10	>10 up 50 included	>50 up 120	>120 up 400
f (fine)	±0,05	±0,05	±0,1	±0,15	±0,2	±0,2	±0,5	±1	±1°	±30'	±20'	±10'
m (medium)	±0,1	±0,1	±0,2	±0,3	±0,5	±0,2	±0,5	±1	±1°	±30'	±20'	±10'
c (coarse)	±0,2	±0,3	±0,5	±0,8	±1,2	±0,4	±1	±2	±1°30'	±1°	±30'	±15'
v (very coarse)	/	±0,5	±1	±1,5	±2,5	±0,4	±1	±2	±3°	±2°	±1°	±30'

Geometric tolerances mm

Precision class	Straightness - Flatness					Perpendicularity			Symmetry			Beat
	≤10	>10 up 30 included	>30 up 100	>100 up 300	>300 up 1000	≤100	>100 up 300	>300 up 1000	≤100	>100 up 300	>300 up 1000	
H	0,02	0,06	0,1	0,2	0,3	0,2	0,3	0,4	0,5	0,5	0,5	0,1
K	0,05	0,1	0,2	0,4	0,6	0,4	0,6	0,8	0,6	0,6	0,8	0,2
L	0,1	0,2	0,4	0,8	1,2	0,6	1	1,5	0,6	1	1,5	0,5

Mode of operation

The tables define 4 categories of parts, depending on whether the drawings have KEY characteristics (K), critical dimensions or neither. The case of tools is also discussed.

The data expected during a FAI (First Article Inspection or resumption of manufacture after a long interruption), are defined with regard to the control file and the possible structure of subcontracting. This does not preclude subsequent modifications of these two points but these changes will require a formal agreement from EXXELIA.

To facilitate the reading of our needs during an FAI, it is necessary to include the data expected during a FAI (FAI column) and add the deliverables defined by type in the "Subsequent orders" columns

The data expected in subsequent deliveries are defined by part type and ranking type and specify the sampling levels and the content of the measurement reports that must accompany the parts. This is done in conjunction with the FAI or according to the parts control plan.

In specific cases of key characteristics, a marking is required to identify precisely the readings made on each part. It should be noted that the identification of the parts checked elsewhere, without being mandatory, can help EXXELIA in its measurement correlation operations.

The need for key features concerns very specific cases such as pairing parts, see the technical annex below for more information.

Another specific case on visual requirements is defined (visual aspect considered as critical) because it applies to parts subjected to high constraints of perfection. It should be noted that only certain faces can be subject to this requirement when it concerns in particular aspect faces.

Finally, another case is also described for the material or treatment that may appear as a key characteristic and then require physical, chemical or mechanical control while guaranteeing nature. To do this, the material or treatment is marked K in the plane.

It is therefore strongly recommended to carefully review Exxelia's expectations when reading our drawings, particularly for KEY (K) characteristics, and the surrounded dimensions or © shape tolerances for parts with critical dimensions.

Marking

When a marking (mentions in the table) is necessary, it comes from a mention in the drawing, or from the simple existence of key characteristics (in which case to approach EXXELIA to have the markings defined).

The marking will be as follows: Year-Week-Place (YYWWP or YYWW00X). Total freedom in the management of the rank in relation to week changes, numbering can be done from 1 to 999 or from 001 to 999.

The location and size of the marking area are defined on the drawing.

The marking must be permanent, technical at the supplier's initiative: Laser, micro-percussion, hot stamping, cold stamping, tip engraving EXCEPT mention contrary to the drawing which would impose a particular type of marking. The marking must not cause damage to the treatments or burrs or detachable particles.

Note: Ink markings that do not meet EXXELIA's cleaning requirements are prohibited

Whenever possible, the supplier shall identify either by an authorised provisional marking on a label attached to the part (but not glued) or on packaging or by packaging, except for the parts used for the control sample.

Scratches and cosmetic defects

Generally speaking, EXXELIA expects parts without cosmetic defects given the expected functionalities.

The identification of the existence of a defect is done by visual inspection without magnification, office lighting, on all sides.

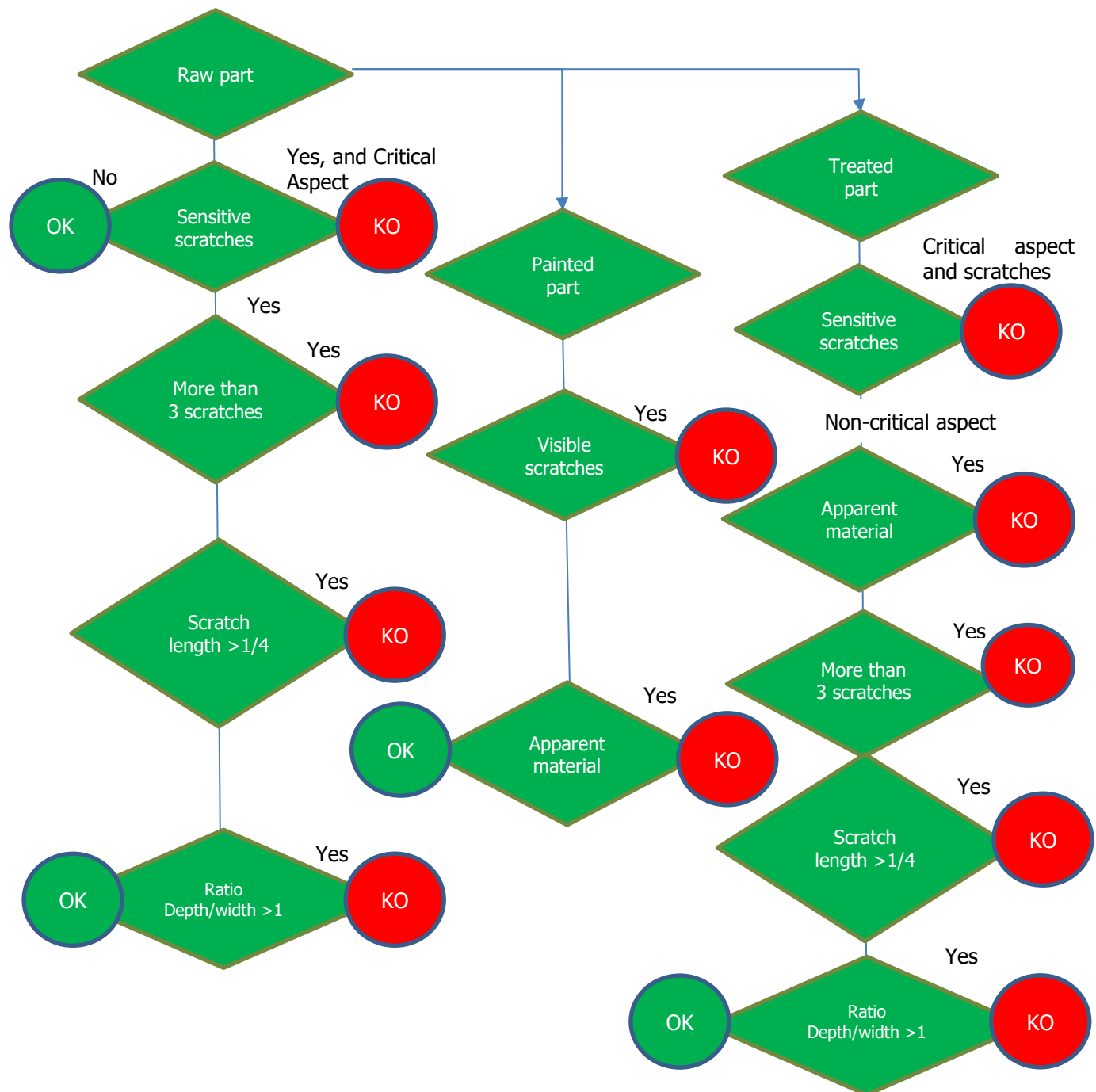
The precise analysis of the defect may require optical or physicochemical means to decide on its nature and acceptances.

Painted parts with scratches or chips on the paint and parts with treatments exposed by scratches or punches made after treatment are systematically rejected.

If the scratches are sensitive to the nail, then parts with a scratch whose depth is greater than its width, or many scratches (more than 3 per side or more than 3 per 25cm² area), or a scratch whose maximum length (example rectangular area: diagonal) exceeds a quarter of the characteristic dimension of the face examined may be rejected.

If scratches are not sensitive to the nail (called scratches) they are accepted unless the visual aspect (the whole part or the face concerned) is noted Critical.

The decision tree is as follows; it accompanies the above text to clarify the terms.



Supplier Deliverables						
1st order		Subsequent orders				
FAI file (to be added in addition to the "Subsequent orders" deliverables)		Non-critical ratings	Critical ratings	Key features (K)	Treatments and materials	Visual
Parts without critical ratings		ISO sampling Value of the measurement of all the dimensions not verified during the process (final measurement by the outgoing quality) and the conformity mark of the dimensions verified during the process or guaranteed by a gauge at any time (ratings reported OK). With, if possible, a temporary identification of the measured parts				ISO sampling Cleanliness, treated area and spared area, Absence of burrs, Absence of scratches exposing the treatments, Helicoil, marking
Part with critical ratings (surrounded ratings or shape tolerances ©)	Provide the detailed parts control plan: The ratings 100% measured. The ratings 100% controlled. The ratings measured by sampling. The ratings controlled by sampling. The ratings guaranteed by the process and assemblies that will not be measured. The ratings guaranteed by capability analyses that will not be measured. The methods used to check the key characteristics. The means of measurement used. Provide the dimensional ratio according to the part category and the ranking category Provide a declaration of the subcontracted processes and controls made upon receipt of this service, with an identification of the subcontractor(s) allowing a verification of the order flows.	ISO sampling Value of the measurement of all the dimensions not verified during the process (final measurement by the outgoing quality) and the conformity mark of the dimensions verified during the process or guaranteed by a gauge at any time (dimensions reported OK). With, if possible, a temporary identification of the measured parts	ISO sampling Values of all critical dimensions recorded on the sampling parts With, if possible, a temporary identification of the measured parts		Material certification Processing certificate to verify compliance with FAI declarations Example: original certificate of the supplier of the material, record of thicknesses and materials of the treatment	In the event that the visual aspect is noted as critical, all parts must be checked according to the requirements of the drawing, mainly the absence of burrs and detachable parts, the deburring of sharp corners, the absence of chips in the tapped and blind holes, the absence of scratches sensitive to the nail without defined roughness, including scratches covered by the treatment, no variations in treatment colour on a part (except in the attachment area) and within the same batch, the absence of manufacturing residue (cutting fluid, fingerprints, silicone compounds...). A single and/or cellular packaging will ensure that there is no contact between parts during transport and handling. This packaging must comply with the rules for recycling packaging. If the visual is not critical, the criteria of the other parts are used, in ISO sampling
Without ratings or Key Features (K)						
Part with Key Ratings or Characteristics (K)		ISO sampling Value of the measurement of all the dimensions not verified during the process (final measurement by the outgoing quality) and the conformity mark of the dimensions verified during the process or guaranteed by a gauge at any time (dimensions reported OK). With, if possible, a temporary identification of the measured parts	ISO sampling Values of all critical dimensions recorded on the sampling parts With, if possible, a temporary identification of the measured parts	All parts. All key characteristic dimensions (noted K on drawings) recorded on each part, the reading is identified piece by piece with marking of the parts	In the event that Material/Processing is defined as a key characteristic: Material : Measurement of the material for each part (measurement process): - Hardness for steels - Electrical conductivity for aluminium alloys - Chemical analysis if none of the above processes are conclusive - Or other process on supplier's proposal and Exxelia validation Treatments : Ultrasonic/florescenceX type unitary measurement of treatment thicknesses, otherwise measurements by savings or combs or on a specimen representative of the parts of the batch for necessarily destructive measurements.	All the parts Cleanliness, treated area and spared area, No burrs, No scratches exposing treatments, Helicoil, marking
Tools and equipment			See the measurement reading that must be specified on the tool order. Assembly OK	See the measurement reading that must be specified on the tool order. Assembly OK	According to request	The appearance must be of good hold (no burrs, no hurtful stops...)
Marking	Year-Week-Place (YWWP or 00X). Total freedom in the management of the rank in relation to week changes, Location defined on the drawing Permanent marking at the supplier's initiative: Laser, Micropercussion, hot and cold marking, engraving at the tip EXCEPT mention contrary to drawing Temporary marking authorised on a label or packaging or by separate packaging.					

APPENDIX INSTRUCTION

Instructions for setting up critical and key characteristics, ratings and tolerances

Object of the document

The purpose of this appendix is to define the method of implementing the critical rating and key characteristics.

Characteristics, ratings and tolerances to be defined as critical

The ratings and tolerances to be defined as critical are:

- The ratings that enter in a chain of ratings
- The characteristics (material for example) and ratings from the FMECA
- Customer interface ratings or characteristics imposed by the customer
- Functional adjustments (e.g. centring a bearing) or characteristics with a functional impact

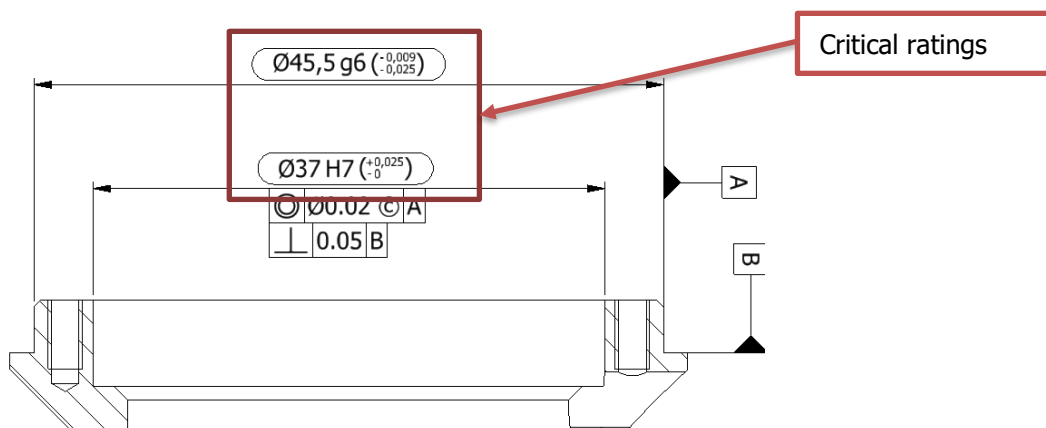
Characteristics, ratings and tolerances to be defined as keys

- The ratings whose unit measurement is required for part matching.
- The ratings or characteristics for which the customer requests a unit measurement.

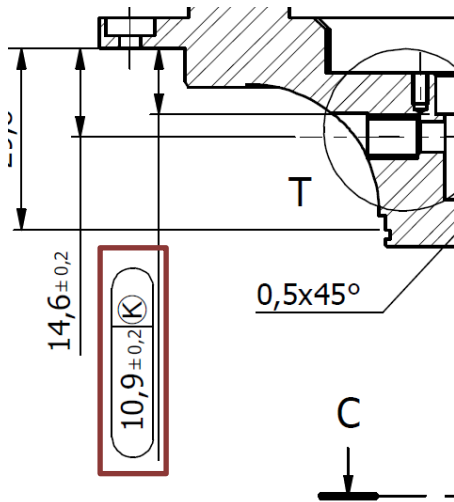
Implementation and enforcement

Dimensional ratings

The dimensional ratings defined as critical are surrounded by a bubble.

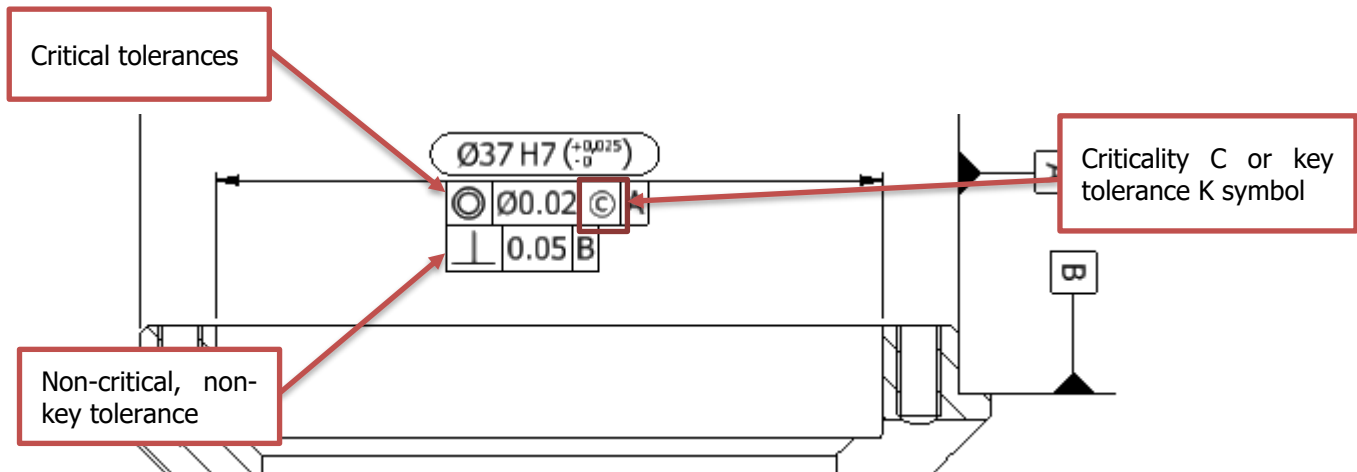


Dimensional ratings defined as keys are indicated by a symbol (K) or (K)



Dimensional tolerances

The dimensional tolerances will be indicated by a C or K symbol following the tolerance value and a note text will recall the definition of the symbols used, as in the example below.



1. Ebavurage soigné
2. Angles vifs : R0.2 ou Ch 0.2x45° max.
3. Protection : Surtec 650 selon SPA 1018 (sur toutes les faces)
4. Peinture : PU hydrodiluable selon SPA 1017 (sur les faces identifiées)
5. Préparation avant peinture selon SPA 1017
6. Les tolérances notées © sont définies comme cotes critiques
7. Les tolérances notées ® sont définies comme caractéristiques clés
8. Marquage pour sérialisation Y:year, W: Week, X: Chiffre à incrémenter en fonction

Critical features and keys

Critical or key characteristics will be indicated by a © or (K) symbol.