Instructions manual for the calculation of the repairability index of electrical and electronic equipments

June 6th, 2021
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Determination of dismantling steps

Motor and motor brush

Price of the equipment if sold without battery

In case the equipment is sold without a battery, the price of the equipment to be considered for the calculation of criterion 4 on spare parts prices shall include the price of a compatible battery at the time of the index calculation.

Robotic electric lawnmowers

Determination of dismantling steps

Motor and motor brush
This instructions manual provides explanations and details for an application of the decree and orders relating to the repairability index of electrical and electronic equipment according to a uniform operating procedure for rating.

The obligation to calculate and display the repairability index does not apply to free, loaned, second-hand, re-used, reconditioned or rented equipments.

1 – Instructions sorted by criteria

This manual provides instructions to be followed, presented in two ways:
- details by key words;
- a detailed operating procedure.

Criterion 1 – Documentation

Documents/informations
The information can be freely distributed at the initiative of the producer in various physical or dematerialized documents. Scoring points are awarded if the information referred to is available in any document.

Language of documents
In accordance with the law of August 4, 1994 on the use of the French language, information intended for consumers must be drawn up in French; English is tolerated for very technical aspects intended for professional repairers (example: technical bulletins).

technical bulletins
This wording covers announcements made by the producer to professional repairers, informing them, for example, of recently discovered bugs, of the corrections to be made, of the supply disruption of parts which have been replaced by others. Points are awarded if the edition of a technical bulletin is planned on an ongoing basis (when necessary).

Information on access to professional repairers
The producer or importer is free to indicate to consumers the professional repairers of his choice, but it is advisable to mention at least the repairer directories listed by Ademe.

Instructions for self-repair
Points corresponding to years of availability are only granted if one or more operations are specified to consumers for self-repair, with adequate safety instructions, in a specific section under the title “self-repair”, for example in the technical manual or of the instructions for use and maintenance. Article L 441-5 of the Consumer Code specifies the responsibility of the producer regarding self-repair.

Criterion 2 – Disassembly, accessibility, tools, fasteners
Operating mode - Understanding the concept of a step of disassembly and single access to a part

Reminder of regulatory provisions

« Une étape est une opération qui aboutit à la dépose d’un composant ou d’une pièce ou à un changement d’outil. Un composant peut comprendre une ou plusieurs pièces.


Les fixations ou liaisons sont définies comme des techniques d’assemblage, de fixation ou de scellage.

Les éléments de fixation ou de liaison ne sont pas considérés comme des pièces. »

Definition of a step

The disassembly sequence is defined as the order of steps needed to remove a part from a product (which might include getting access to fasteners). A step consists of an operation that finishes with the removal of a part or a component, and/or with a change of tool.

A component may include one or several parts.

Figure 1 shows the procedure for counting steps.

Figure 1 - Example of a disassembly process

In this example, all the actions carried out (listed on the left and on the right) can be broken down into three steps. The only actions that constitute the end of a step are the removal of a part, the removal of a subset,
a change of tool. Conversely, the following does not constitute the end of a step: to grab a tool, to put a tool down and to remove a fastener.

For safety reasons, the action "Unplug the equipment from the mains" is a step, even if it does not result in a change of tool or the removal of a part or component.

In addition, exceptions to the step counting rules are specified in part 2 of the instructions manual, by equipment category.

**Start and end of step counting**

When the intended target is a part, the counting of disassembly steps always begins with complete equipment connected to the mains.

The end of disassembly takes place when the part is dissociated. Special cases are dealt with below.

When the intended target is a part and its removal implies firstly the removal of a block (made up of several parts), the end of the disassembly process takes place when this part is finally removed from this block.

The actions constituting the end of a step remain the same: removing a part, changing a tool, removing a component (subset of parts).

When the intended target is a subset (example: “door locking system” for the washing machine category), the end of the disassembly takes place when each of the parts of this subset is separated, therefore accessible individually.

Nota Bene:

- The hand is not considered as a tool.

- A fastener is not considered as a part.

**Definition of a fastener**

A hardware device that mechanically or magnetically connects or fixes two or more objects, parts or pieces. A fastener is generally non-permanent, i.e., it can be easily removed or disassembled without damaging the objects, parts or pieces connected or fixed together (e.g., screws or clips). Welds and some glues are in contrast to permanent fixings. Adhesives are considered non-reusable fasteners unless new ones are supplied with the spare part.

**Criterion 3 - Availability of spare parts**

**Definition of spare parts distributor**

The definition of a spare parts distributor is given in the glossary appended to this manual.

**Commitments on the availability of spare parts and delivery times (except Sunday and fest days)**

To award points to the A columns, the producer should have his own in-house repair service (example: via the after-sales service).

Whether for the period of availability of spare parts or the delivery time, the producer or the importer must retain, among all of their practices towards authorized and independent repairers, the period or the most penalizing time for each spare part. In the event that the producer or importer does not make spare parts directly available to independent repairers, then points are not awarded in column C for criteria 3.1, 3.2, 3.3, 3.4.

In addition, in the event that the producer or importer does not have an approved repairers network, the points are awarded based on the most penalizing practices towards independent repairers.
Delivery time
The delivery time is understood in working days between the day of the order and the day of arrival at the actor concerned.

Criterion 4 - Price of spare parts
Operating mode - calculation of the ratio for the price criterion

Reminder of regulatory provisions

« Sous-critère 4.1. Rapport entre le prix de vente des pièces par le constructeur ou l’importateur et le prix de vente des équipements par le constructeur ou l’importateur.

Le critère est établi en faisant le rapport entre :

le prix hors taxe de la pièce la plus chère de la liste 2 + (moyenne des prix hors taxe des autres pièces de la liste 2) / 2

et

le prix hors taxe du modèle de l’équipement concerné,

où chaque prix s’entend comme le prix hors taxes du barème tarifaire en vigueur au moment du calcul de l’indice et figurant dans les conditions générales de vente du fabricant ou de l’importateur, ou à défaut dans tout document contractuel pertinent.

Dans le cas où un fabricant ou un importateur dispose, pour les pièces ou les équipements considérés, de plusieurs barèmes tarifaires selon les différentes catégories de clients distributeurs ou vendeurs, les prix retenus pour le calcul de l’indice sont ceux du barème ayant représenté la part la plus élevée du chiffre d’affaires du fabricant ou de l’importateur pour le type de pièces ou le type d’équipement concernés, au cours du dernier exercice clos.

Dans le cas où certaines de ces pièces sont indissociables ou bien dans le cas où la pièce visée est intégrée à un module, qui est seul disponible, le prix à prendre en compte est le prix cumulé des pièces ou le prix du module. »

Translation (for guidance only)

The criterion is established by calculating the ratio between:

the pre-tax price of the most expensive part in list 2 + (average of the pre-tax prices of the other parts in list 2) / 2

and

the pre-tax price of the model of the equipment concerned,

Each price is taken from the tariff schedule valid at the moment of the calculation as the pre-tax price in the tariff schedule valid at the moment of the calculation as mentionned in the and conditions of sale of the manufacturer or the importer general terms of sale, or if its not available, in any relevant contractual document.

Deduction of delivery costs

The principle adopted is to make a calculation excluding transport or delivery costs. If the latter are included in the tariffs of the general terms and conditions of sale, it is up to the producer or importer to deduct them in order to calculate the ratio.

In particular for the price of spare parts, two methods are possible for deducting transport or delivery costs: individually for each of the parts in list 2 or on a flat-rate basis (in absolute value or as a percentage). The same applies to the price of new equipment.

Spare part(s) forming part of a batch
If one or more of the parts in list 2 are part of a batch offered for sale or of any other subset of inseparable parts, the price of the part concerned is the price of this batch or subset.

**Part not available**
In the event that, at the time the index is calculated, a part from list 2 is not available, the number of points awarded for criterion 4 relating to the price of spare parts is 0.

**Parts not managed by the producer or importer**
If parts from list 2 are not managed by the producer or importer, the price of the parts to be considered is then that of the supplier's general terms and conditions of sale or any other any other relevant contractual document at the time of the index calculation. The producer or importer must then keep a copy of this document to be presented in the event of a control.

**Options for products**
If options are offered for the same model, and do not influence the technical characteristics for the purpose of calculating the index, then the calculation of the price ratio to be achieved is based on the price of spare parts and the price of the most current version of the product concerned.

**Absence of a part**
If the equipment does not include a part listed in list 1 or 2 of the category concerned, then the price of the absent part does not appear in the calculation of the ratio.

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**Criterion 5 - Criterion specific to the category of equipment concerned**

**Usage meter unit**
When the unit for the usage meter is not specified in the decree corresponding to the category of equipment, the producer has to define it in the most relevant way to representing wear.

**Remote assistance**
Remote assistance includes any system that is intended to facilitate the search for information in the event of a breakdown, information to identify the origin of a breakdown, or remote assistance to carry out the repair. In the case of remote repair assistance, the service must be able to provide technical and accurate support to the user.

Remote assistance services include remote information (website, FAQs, etc.), remote diagnostic assistance (phone call line, chat, application included in the equipment, interactive decision tree, etc.) and remote repair assistance (phone call line, video call, remote control of the equipment, etc.).

Remote help services must be completely free of charge (including telephone calls in the case of a hotline).

**Other details of a transversal nature**

**Scope of application**
The reparability index applies mandatorily to all equipments on the market as of the 1st of January 2021 and that are part of the categories of products defined by decree.

**Updates of calculated grades**
Aside from the price criteria, that is calculated only once (as of the date of the first calculation), if one or several technical characteristics that are relevant to the calculation significantly evolve, the producer or the importer can recalculate the grade associated to the index of a product model. They then need to inform the sellers so that they can display the updated grade. It is advised to only update the index of a model only once every 12 month.
The specific dispositions of the French Overseas territories
In the absence of any specific regulation concerning Overseas Territories, the provisions relating to the repairability index apply automatically in the departments of Reunion, Guadeloupe, Martinique, Guyana and Mayotte and in Saint Martin and Saint-Pierre-et-Miquelon. When a model is put on market both in Mainland France and in its Overseas territories, the criteria 3, 4 and 5 are set considering the metropolitan situation.

However, the provisions relating to the repairability index are not applicable in French Polynesia, New Caledonia, Wallis and Futuna, Saint-Barthélémy, and the French Southern and Antarctic Lands.

Use of European vocabulary (criteria 1, 2 and 3)
The vocabulary used to describe the information to be documented, whatever the category concerned, as well as certain spare parts, is taken from Commission Regulation (EU) 2019/2023 of 1 October 2019 for washing machines and Commission Regulation (EU) 2019/2021 of 1 October 2019 for electronic displays. The list of these documents and items is given in Annex 1 of this notice.

Different commitments of availability period between documentation and spare parts (criteria 1 and 3)
The producer or importer may make different commitments for the periods of availability of documentation and spare parts for the same equipment, for example: 9 years for the availability of documentation and 7 years for the availability of spare parts.

Absence of a part on the equipment
If the equipment does not include a part listed in List 1 or 2 of the category concerned, then the points corresponding to the part in question are awarded. For WIFI and Bluetooth modules, see the special case of televisions below.

Concerning criterion 4 relating to price, the price of the absent part does not appear in the calculation.

2 - Additional details by equipment category

Washing machines
Drum (including spider and bearings)
For this subset of parts, it is not required that disassembly leads to complete dissociation of the elements. The removal of the sub-assembly is sufficient.

Motor and motor brush
When a motor of the equipment does not include brushes, the requirements for the calculation of the index relate only to the motor concerned.

Printed Circuit Boards
This wording refers only to the power electronic board.

Determination of dismantling steps
The following action is considered as a step:

- Putting the washing machine on the side

The following actions are not considered as steps:

- Disconnecting the water inlet and outlet pipes.
- Emptying the water from the washing machine

Smartphones
Display device
The display device is a subset including the panel and the touch device.
Laptop Computers
Firmware
In the case of laptops, the drivers (for printer, keyboard, microphone, etc.) are examples of firmware.

Televisions
External power source and remote control
The external power source and the remote control do not need to be disassembled for counting the disassembly steps. The steps to be counted are limited to disconnecting the power source and removing the battery from the remote control.

WIFI and Bluetooth function
Some equipments have WIFI or Bluetooth functions, but not specific modules. In this case, the lines are not grayed out and the points are awarded considering the parts providing these functions.

Corded electric lawnmowers
Motor and motor brush
In the case where a motor of the equipment does not include brushes, the requirements related to the calculation of the index shall apply only to the motor concerned.

Battery powered lawnmowers
Determination of dismantling steps
For this category, the action "disconnecting the equipment from the mains" is not considered as a step.

Motor and motor brush
In the case where a motor of the equipment does not have brushes, the requirements related to the calculation of the index shall apply only to the motor concerned.

Price of the equipment if sold without battery
In case the equipment is sold without a battery, the price of the equipment to be considered for the calculation of criterion 4 on spare parts prices shall include the price of a compatible battery at the time of the index calculation.

Robotic electric lawnmowers
Determination of dismantling steps
For this category, the action "disconnecting the equipment from the mains" is not considered as a step.

Motor and motor brush
In case a motor of the equipment does not include brushes, the requirements related to the calculation of the index shall apply only to the motor concerned.
Annexe I – Vocabulaire européen – European vocabulary

Eco-conception des lave-linges / Ecodesign of washing machines

RÈGLEMENT (UE) 2019/2023 DE LA COMMISSION

COMMISSION REGULATION (EU) 2019/2023

Liste des informations à fournir (documentation) - List of required informations for the consumer

<table>
<thead>
<tr>
<th>→ Les informations de réparation et d’entretien du lave-linge ménager ou du lave-linge séchant ménager mentionnées au point a) comprennent :</th>
<th>→ the household washing machine or household washer-dryer repair and maintenance information referred to in (a) shall include :</th>
</tr>
</thead>
<tbody>
<tr>
<td>une identification sans équivoque du lave-linge ménager ou du lave-linge séchant ménager</td>
<td>the unequivocal household washing machine or household washer-dryer identification</td>
</tr>
<tr>
<td>un schéma de démontage ou une vue éclatée</td>
<td>a disassembly map or exploded view</td>
</tr>
<tr>
<td>un manuel technique d’instructions relatives à la réparation</td>
<td>technical manual of instructions for repair</td>
</tr>
<tr>
<td>une liste du matériel de réparation et de test nécessaire</td>
<td>list of necessary repair and test equipment</td>
</tr>
<tr>
<td>les informations concernant les composants et le diagnostic (telles que les valeurs théoriques minimales et maximales pour les mesures)</td>
<td>component and diagnosis information (such as minimum and maximum theoretical values for measurements)</td>
</tr>
<tr>
<td>des schémas de câblage et de raccordement</td>
<td>wiring and connection diagrams</td>
</tr>
<tr>
<td>les codes d’erreur et de diagnostic (y compris les codes spécifiques au fabricant, le cas échéant)</td>
<td>diagnostic fault and error codes (including manufacturer-specific codes, where applicable)</td>
</tr>
<tr>
<td>les instructions pour l’installation des logiciels et micrologiciels pertinents, y compris les logiciels de réinitialisation</td>
<td>instructions for installation of relevant software and firmware including reset software</td>
</tr>
<tr>
<td>les informations sur les modalités d’accès aux données relatives aux incidents de défaillance signalés enregistrées dans le lave-linge ménager ou le lave-linge séchant ménager (le cas échéant)</td>
<td>information on how to access data records of reported failure incidents stored on the household washing machine or washer-dryer (where applicable)</td>
</tr>
</tbody>
</table>

Liste des pièces détachées à mettre à disposition – List of spare parts to be made available

| Moteur et balais de moteur | Motor and motor brushes |
| Transmission entre moteur et tambour | Transmission between motor and drum |
| Pompes | Pumps |
| Amortisseurs et ressorts | Shock absorbers and springs |
| Tambour de lavage, croisillon de tambour et roulements correspondants (séparément ou en lot) | Washing drum, drum spider and related ball bearings (separately or bundled) |
| Générateurs de chaleurs et éléments chauffants, y compris les pompes à chaleur, (séparément ou groupés) | Heaters and heating elements, including heat pumps (separately or bundled) |
| Conduites et matériel connexe y compris l’ensemble des flexibles, vannes, filtres et systèmes aquastop (séparément ou groupés) | Piping and related equipment including all hoses, valves, filters and aquastops (separately or bundled) |
| Cartes de circuit imprimé | Printed circuit boards |
| Affichages électroniques | Electronic displays |
| Manocontacts | Pressure switches |
| Thermostats et capteurs | Thermostats and sensors |
| Logiciels et micrologiciels, y compris logiciels de réinitialisation | Software and firmware including reset software |
| Portes | Door |
| Charnières et joints de porte | Door hinge and seals |
| Autres joints | Other seals |
| Assemblage de verrouillage de la porte | Door locking assembly |
| Accessoires en matière plastique tels que distributeurs de détergent | Plastic peripherals such as detergent dispensers |

**Eco-conception des dispositifs d’affichage / Ecodesign of electronic displays**


**Liste des informations à fournir (documentation) - List of required informations for the consumer**

<p>| Les informations disponibles sur la réparation et la maintenance comprennent : | The available repair and maintenance information shall include: |
| une identification sans équivoque du lave-linge ménager ou du lave-linge séchant ménager | the unequivocal appliance identification |
| un schéma de démontage ou une vue éclatée | a disassembly map or exploded view |
| une liste du matériel de réparation et de test nécessaire | list of necessary repair and test equipment |
| les informations concernant les composants et le diagnostic (telles que les valeurs théoriques minimales et maximales pour les mesures) | component and diagnosis information (such as minimum and maximum theoretical values for measurements) |
| des schémas de câblage et de raccordement | wiring and connection diagrams |</p>
<table>
<thead>
<tr>
<th>Les codes d’erreur et de diagnostic (y compris les codes spécifiques au fabricant, le cas échéant)</th>
<th>Diagnostic fault and error codes (including manufacturer-specific codes, where applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>les informations sur les modalités d’accès aux données relatives aux incidents de défaillance signalés enregistrées dans le lave-linge ménager ou le lave-linge séchant ménager (le cas échéant)</td>
<td>Information on how to access data records of reported failure incidents stored on the household washing machine or washer-dryer (where applicable)</td>
</tr>
</tbody>
</table>

**Liste des pièces détachées à mettre à disposition – List of spare parts to be made available**

<table>
<thead>
<tr>
<th>Les sources d’alimentation internes</th>
<th>Internal power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Les sources d’alimentation externes</td>
<td>External power supply</td>
</tr>
<tr>
<td>Les connecteurs pour connecter les équipements externes ( câble, antenne, USB, DVD et Blue-Ray)</td>
<td>Connectors to connect external equipment (cable, antenna, usb, dvd and blue-ray)</td>
</tr>
<tr>
<td>Les condensateurs</td>
<td>Capacitors</td>
</tr>
<tr>
<td>Les piles et accumulateurs</td>
<td>Batteries and accumulators</td>
</tr>
<tr>
<td>Les modules DVD/Blue-Ray le cas échéant</td>
<td>DVD/Blue-Ray module</td>
</tr>
<tr>
<td>Les modules HD/SSD</td>
<td>HD/SSD module</td>
</tr>
<tr>
<td>La télécommande</td>
<td>Remote control</td>
</tr>
</tbody>
</table>
Annex II – Glossary

The definitions of the following terms are specified in the decree relating to the repairability index for electrical and electronic equipment: “Making available on the market”, “Placing on the market”, “producer”, “importer”, “distributor”, “Seller”, “distance selling”, “model”.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>Source/Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authorized repairer</td>
<td>The authorized repairer is often referred to as a technical station or authorized service center. It is a professional repairer for whom one or more contracts precisely define the relationship between the authorized repairer and the producer(s).</td>
<td>Based on the technical expertise of the repairability index working groups</td>
</tr>
<tr>
<td>Independent repairer</td>
<td>Independent repairers are repairers in the sense of “professional craftsmen repairers” designating repair companies listed in the trade directory with an APE or NAFA code. They are professional repairers who do not fall into the category of authorized repairers. For example, 95.11 Z-Z: Repair of computers and peripheral equipment; 95.21 Z-Z: Repair of televisions, radio receivers, VCRs, CD and DVD players, camcorders for domestic use; 95.22 Z-Z: Repair of household appliances and home and garden equipment.</td>
<td>According to Standard NF EN 45554 &quot;General methods for the evaluation of the repair, reuse and improvement capacity of energy-related products&quot;, 2020.</td>
</tr>
<tr>
<td>Professional repairer</td>
<td>Authorized repairer or independent repairer.</td>
<td></td>
</tr>
<tr>
<td>Distributor of spare parts</td>
<td>Any moral or physical person in the supply chain, other than the producer or importer, who offers a spare part for sale. They are commonly referred to as &quot;spare parts wholesalers&quot;.</td>
<td></td>
</tr>
<tr>
<td>Disassembly</td>
<td>The process by which a product, spare part or fastener is disassembled so that it can then be reassembled and made operational.</td>
<td></td>
</tr>
<tr>
<td>Reassembly</td>
<td>The process by which a product, a spare part or a fastener is reassembled so as to fulfill its functional role and be made operational.</td>
<td></td>
</tr>
<tr>
<td>Reuse / Reusable</td>
<td>The process by which a product, spare part or fastener, having reached the end of its first use, is used for the same purpose for which it was designed. Reuse after a second or subsequent use(s) is also considered to be reuse.</td>
<td></td>
</tr>
<tr>
<td>Factory Restoration</td>
<td>A specific functionality or setting to be activated by the customer, if the product allows it, to restore the default value of a specific functionality of the device as set at the factory and available when the customer first uses the product.</td>
<td>Inspired by the Commission regulation (EU) 2019/2021 Of 1 October 2019 laying down ecosdesign requirements for electronic displays pursuant to Directive 2009/125/EC of the European Parliament and of the Council, amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EC) No 642/2009</td>
</tr>
<tr>
<td>Update / Upgrade</td>
<td>The process of improving the functionality, performance, capacity or aesthetics of a product. This process may involve changes to the software, firmware and/or a hardware component of the product.</td>
<td>According to Standard NF EN 45554 &quot;General methods for the evaluation of the repair, reuse and improvement capacity of energy-related products&quot;, 2020.</td>
</tr>
<tr>
<td>Corrective update</td>
<td>An update performed after a failure has been detected and intended to restore an asset or software to a state in which it can perform a required function. This type of update corrects hardware or software malfunctions or non-conformity but does not add new functionality.</td>
<td>Inspired by the AFNOR NF EN 13306 X 60-319 standard of June 2011 &quot;All the technical, administrative and management actions during the life cycle of an asset, intended to maintain</td>
</tr>
<tr>
<td><strong>Evolutionary update</strong></td>
<td>Upgrading, which consists of gradually modifying the software application by adding new features or additional modules, or by replacing an existing function with another, or even by proposing a different approach.</td>
<td>or restore it to a state in which it can perform the required function</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Fastener</strong></td>
<td>A hardware device that mechanically or magnetically connects or fixes two or more objects, parts or pieces. A fastener is generally non-permanent, i.e., it can be easily removed or disassembled without damaging the objects, parts or pieces connected or fixed together (e.g., screws or clips). Welds and some glues are in contrast to permanent fixings. Adhesives are considered non-reusable fasteners unless new ones are supplied with the spare part.</td>
<td>Inspired by, &quot;Fasteners - Their Needs and Types&quot;, Bright Hub Engineering, 2020.</td>
</tr>
<tr>
<td><strong>Reusable fastener</strong></td>
<td>See the definition of &quot;reusable&quot;.</td>
<td>According to Standard NF EN 45554 &quot;General methods for the evaluation of the repair, reuse and improvement capacity of energy-related products&quot;, 2020.</td>
</tr>
<tr>
<td><strong>Removable fastener</strong></td>
<td>an original fastener system that can be completely removed (without causing damage or leaving residue)</td>
<td></td>
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<tr>
<td><strong>Proprietary tool</strong></td>
<td>A tool that is not commercially available and is owned exclusively by one party or company, and under which its use by another party (an end user or customer) involves copyright, license and/or cost.</td>
<td>Inspired by Will Kenton, &quot;Proprietary Technology&quot;, 2019.</td>
</tr>
<tr>
<td><strong>Part / Spare parts</strong></td>
<td>A unitary element in the composition of the equipment.</td>
<td></td>
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</tbody>
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