

PROTECTION, PACKAGING AND LABELLING REQUIREMENTS

Issue 30.2

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Revision Notes

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- Document amended to update all links to SABRe Edition 4 (June 2023).
- Added ISPM-15 wooden packaging requirements to section 7.1
- Added Plastic Packaging Tax (PPT) information to section 7.1
- Added section 9 to cover Quantities

30

- Minor amendment to wording in section 5.1

30.1

- Added PPAP care reference in section 1
- Added multiple serial label example to section 5.5
- Changed ref to 'total shipped qty' and changed 'attached' to 'adhered' in section 5.6.1
- Changed 'attached' to 'adhered' and changes to wording for FAIRs in section 5.9
- Changes to 'outer-most', 'primary/secondary' and 'human-readable' in section 5.10
- Amended error in text and diagrams (dimension errors) in section 7.3.1
- Added Held Out Of Service / Serviceable Used Material in section 8.2
- New ISPM picture in section 7.1
- Added pallet guidelines to section 7.1
- New kitting label example and unique identifier number for matched KN kits added to section 5.7.1

30.2

- Plastic Packaging wording updated in section 7.1

1 Purpose

The purpose of this document is to formally communicate Rolls-Royce requirements and expectations to the global supply chain related to the protection, packaging and labelling (PPL) of product being shipped to Rolls-Royce and between Rolls-Royce locations.

The protection, packaging and labelling (PPL) requirements are available to view and download from the Rolls-Royce Global Supplier Portal (GSP) <https://suppliers.rolls-royce.com> For any queries/clarification relating to this document, please contact your PPAP Care.

2 Scope and applicability

The protection, packaging and labelling requirements are applicable to all internal and external suppliers, Partner Managed Inventory suppliers or partners who supply product related to Rolls-Royce contracts / purchase orders unless otherwise specified in the product definition or Rolls-Royce contract / purchase order.

3 Definitions and glossary / terminology

Refer to SABRe definitions and glossary / terminology for additional information, which you can view and download from the Rolls-Royce Global Supplier Portal (GSP) <https://suppliers.rolls-royce.com>.

- Polythene and Polyethylene shall be regarded as being the same.
- "Forklift truck(s)" has been abbreviated to FLT
- "Manual handling equipment" has been abbreviated to MHE

4 General requirements

The general requirements shall be taken as applicable in every instance and serve as the starting point from which tailoring to each area of activity (Build and Production, After Market Spares and Internal Supply) can begin. Labelling is wholly applicable across all areas of activity and requires no further adaptation.

4.1 Protection, packaging and labelling requirements

The supplier shall:

Ensure that products are protected, packaged and labelled in accordance with the requirements of this document to a standard that will provide protection against damage, deterioration, corrosion, tampering and other risks during shipment to Rolls-Royce, plus the storage and subsequent distribution within Rolls-Royce and / or external despatch to Rolls-Royce customers.

If 3 Quality Notifications are raised as a result of a packaging failure, regardless of blame, Rolls-Royce will initiate a review of element 10 of the PPL data sheet of the Production, Product, Approval, Process (PPAP). The modification of the current packaging may be mandated in order to stop recurring quality issues.

4.2 Documented protection, packaging and labelling instructions

The supplier shall:

- Establish a documented (product group / commodity specific) protection, packaging and labelling instruction(s) that shall be made available to personnel involved in the protection, packaging and labelling process to ensure that the product is consistently protected, packaged and labelled in manner that meets the requirements of the protection, packaging and labelling requirements document.
- Establish a process to inspect all labels prior to shipment to ensure they are placed correctly, readable and scan correctly. The documented process should be available to Rolls-Royce (as point 1).
- Ensure that the packaging complies with any specific requirements stated on the product definition.

4.3 Approval for new packaging for new and changed PPAP (Production Parts Approval Process) identified parts

The supplier shall:

- Ensure that all packing is approved in line with Rolls-Royce requirements and signed off as fit for purpose, with transit and handling trials completed to meet and prove out the quality and shipping standards.
- Approval must be signed off in line with the PPAP requirements defined in Chapter B of SABRe as part of the Parts Submission Warrant.
- The data sheet and packaging approvals shall be submitted as part of the PPAP Parts Submission Warrant (PSW) and signed off by the nominated customer representative as part for the PPAP submission.

5 Labelling & Information

5.1 General labelling requirements

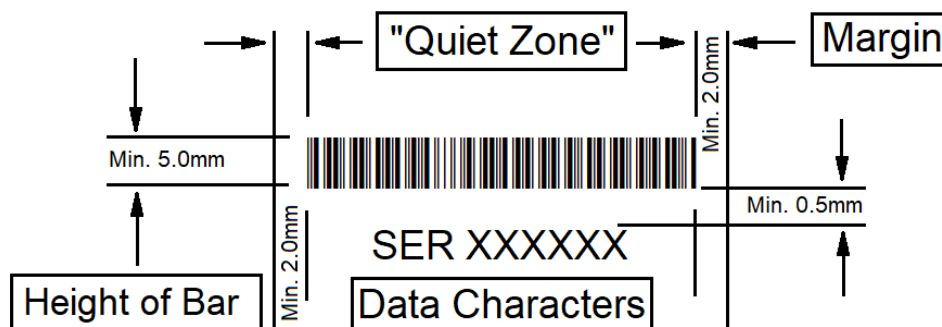
The supplier shall:

- Ensure all individual components and products are identifiable with part and serial number for identification after separation from packaging (required unless proven otherwise). This is achieved using text identifiers and 2D barcodes.
- Place all applicable labels in such a way that during storage, including stacking, a minimum of 1 label is always visible for identification assuming shelves are faced / dressed correctly. (Apply a label on the top and front face of the packaging where possible)
- Ensure that products and packages are labelled in accordance with the two basic categories i.e. packaging label (see 5.5), receipt labels (see 5.6)
- Use kit labels (see 5.7) and concession labels (see 5.8) when applicable.
- Ensure any package containing multiple quantities of the same item is labelled with the total quantity and not multiple labels for single items (see 5.10).

5.2 1-D Bar code standards for all labels

The supplier shall:

- Ensure that bar-code symbology to code 128 (preferred) to ISO/ IEC 15417 symbology specification, or code 39 to ISO / IEC 16388 is used and is legible / readable.
- Ensure that all human-readable identification (text) associated with the bar-code markings has a height equal to or greater than 3.0 mm and can be read clearly without magnification.
- Ensure that the human readable identification is positioned anywhere below the bar-code providing that the "Quiet Zone" is not invalidated.
- Ensure that the human readable interpretation is contained in a one-line string of characters.
- Ensure that the height of bar is 5mm minimum, but where space is limited, 3 mm minimum is acceptable.



5.3 Text Element Identifiers (TEI) for all Labels

The supplier shall:





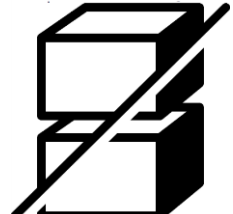
- Ensure that the text element identifiers (see section 5.5.3 for acceptable TEIs) are used to identify the text being read. The TEI shall consist of the characters followed by a space. The bar code, when read, must display exactly the human readable text - including the 'TEI'.

5.4 Warning Label(s)

It is recommended that supplementary information be given on the correct handling, opening and storage of all packages. Any package over 10Kg must include its maximum weight in kilograms at least once in an easily identifiable text and size.

The supplier shall:

- Use warning labels as in Table 1 (equivalents are acceptable)
- Include a minimum of 2 centre of gravity (COG) labels when the COG is not in the centre of the container). Optionally, the use of "lift here" labels indicating the correct lifting location can be used. (COG labels only necessary when manipulation is via FLT or MHE).

TABLE 1: Warning Symbols and their Application	
Do not Manual Handle	
Centre of Gravity	
Lift Here	
Parts Close to Top of Box	
Do Not Stack	

Maximum Stacking Height



5.5 Packaging label

5.5.1 Packaging label information

The supplier shall:

- Ensure that the packaging labels are attached to all layers of packaging solution and visible from the dominant angle of interaction (e.g. stacked on racking, top down from open packaging).



NOTE: See 5.5.3 for packaging label Information that shall be included on the label as a basic (minimum) requirement and / or when applicable.

5.5.2 Colour coded strip

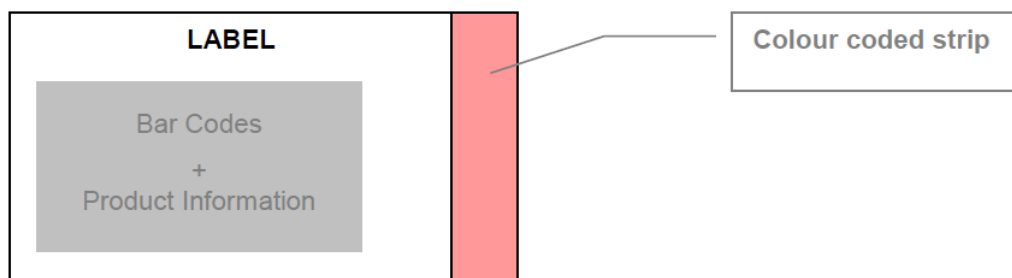
The use of a colour coded strip on labelling is only applicable for items that have received a temporary preservative to safeguard components against corrosion during manufacture and final storage.

It does not apply to the preservation of raw material, forgings or castings except where these are magnesium alloy nor non-metallic materials.

The supplier shall:

- Include a colour coded strip to signify the year of preservation and packaging of metallic components and parts containing metallic components in accordance with Table 2.

Table 2: 9 Year Preservation Colour Cycle		
YEAR	COLOUR	PANTONE COLOUR NUMBER
2020	Orange	151
2021	Pink	211
2022	Red	192
2023	Black	NA
2024	Purple	252
2025	Green	358
2026	Blue	298
2027	Brown	478
2028	Yellow	115
2029	Orange	151



5.5.3 Packaging label requirements

The supplier shall:

Include the following packaging label Information as a basic (*minimum*) requirement and / or when applicable.

		Required	When Applicable
Text + Barcode	PNR - Part Number – Part Number is the identity for the subject part, assembly or material item and is specified on the Rolls-Royce purchase order. Data format is PNR [space], followed by the part number + barcode.	✓	
	Description - Data format is the description of the product i.e. key words taken from the component definition + barcode (barcode is optional).	✓	
	QTY – Quantity refers to the total quantity of items (e.g. 1, 5, 10, 100) contained within the package. Data format is QTY [space] followed by the total number of items + barcode. The unit of measure e.g. sets, rolls, kg/lbs, meters, feet etc) are only required when applicable.	✓	

VC - Vendor Code - Non-serialised parts only - Data format is VC [space] followed by the supplier vendor code + barcode. (Allocated by Rolls-Royce). SPL supplier identification code can be used as an alternative - Data format is SPL [space] followed by the supplier code + barcode. Local Service Providers (LSP) do not have to provide traceable vendor code or SPL information.	✓	
SER - Serial Number – The Serial number is required on the label if the part is serialised, as instructed by the engineering component definition e.g. drawing / Rolls-Royce technical specification, Data format is SER [space] followed by the unique serial number and barcode. For Rules on composition of serial numbers, please see relevant engineering specifications as defined on the engineering component definition.		✓
MFR - Manufacturer – When identified on the engineering component definition as 'CAGE' or 'MFR', the five characters Commercial and government entity (CAGE) code is required. This identifies the organization controlling the design and part number assignment of the product. Data format is MFR [space] followed by the five digit manufacturers code + barcode (refer to relevant Engineering standards shown for CAGE code guidance and applicability).		✓
DMF - Date of Manufacture – The Date of Manufacture is only required for parts that have a shelf life, when identified on the engineering component definition or purchase order instructs the requirement. This must be the date the life-limiting process was completed (e.g., etch date / cure date / manufacture date). Data format is DMF [space], followed by day, month and year separated by a period (i.e., DD.MM.YYYY) + barcode. Vulcanised rubber parts must state the material group (A, B, X etc.) If an expiry date is applicable it should be in the same date format but not barcoded. No other date or date references should be on the label except for data contained within the 2D barcode where applicable.		✓
Colour coded strip to signify the year of preservation / packaging of <u>metallic components</u> and parts containing metallic components		✓
2D Barcode (Data Matrix) shall be included when instructed by contract and/or the engineering component definition.		✓
Precautionary use data e.g. Hazardous material.		✓

5.6 Receipt label

The receipt label has a standard format designed to permit fast processing of receipts using bar-codes.

The supplier shall:

- Attach a receipt label as specified within two categories as follows:
 - Receipt label: e-manifest suppliers - attached to the outer-most packaging (see 5.6.1).
 - Receipt label: non e-manifest suppliers - attached to the outer-most packaging (see 5.6.2).

The requirements of section 5.6 are not applicable to Rolls-Royce Repair & Overhaul business.

5.6.1 Receipt label (E-Manifest)

E-manifest is a global collection service between the supplier, logistics provider and Rolls-Royce.

The supplier shall:

- Ensure that a receipt label is adhered in a prominent position on the outside of the outer-most packaging (only one receipt label per total shipped qty, not per box).
- Ensure that a duplicate copy of the receipt label is adhered to the reverse side of the release documentation (see 5.9).

EXAMPLE



Manifest Collection	
Sequence / Purchase Doc No. / Item / Serial No.	
	321/5500000052/00001/N
Material Part Number/Qty/Sloc/Plant	
	LK7654321/1/ENG D/1202
Release Note	
	987654321

Batches containing critical parts (RRES90002), the e-manifest receipt label shall be identified as a “Y” **(Yes)**. Batches that do not contain critical parts the e-manifest bar code label shall be identified as “N” **(No)**.

NOTE 1: Each e-manifest label will have a unique numerical sequence i.e. a sequential number that must not be used more than once on the same collection day. This number MUST be 3 digits in length.

NOTE 2: The 1-D bar-coded elements required on the receipt label will comply with the standards defined in section 5.2

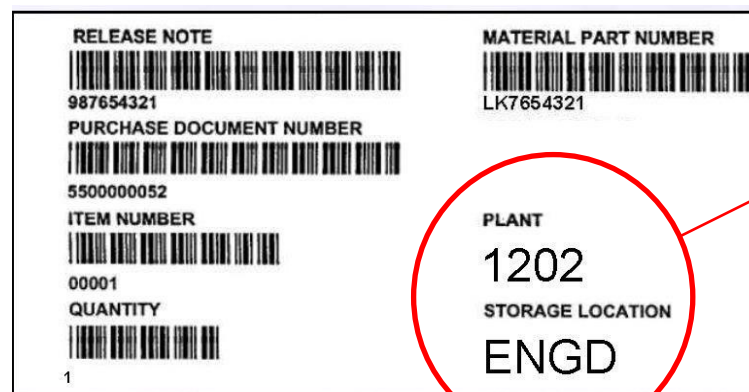
The requirements of Section 5.6.1 are not applicable to Rolls-Royce Repair & Overhaul business.






5.6.2 Receipt label (non-E-Manifest)

The supplier shall:

- Ensure that a copy of the receipt label is adhered in a prominent position on the outside of the outer-most packaging (only one receipt label per total batch, not per box).
- Ensure that a duplicate copy of the receipt label is adhered to the reverse of the release documentation (see 5.9).

Example



RELEASE NOTE  987654321 PURCHASE DOCUMENT NUMBER  5500000052 ITEM NUMBER  00001 QUANTITY  1	MATERIAL PART NUMBER  LK7654321 PLANT 1202 STORAGE LOCATION ENG D
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Taken from
delivery schedule
Or purchase order

NOTE: The 1-D bar-coded elements required on the receipt label will comply with the standards defined in section 5.2 and 5.3.

5.7 Kit labels

5.7.1 Kit label requirements

Kit number: Alpha numeric format

Bar code (Kit number) Standard format (see 5.2 and 5.3).

Note: Where a kit uses multiple boxes, the bar code is only required on Box 1; subsequent boxes shall not to have a bar code identifier. **Each box must have a label listing the part number and serial number combinations of all lower level serialised parts within the box.** A unique kit identifier number is to be used on all boxes that are part of a matched set to ensure all boxes are kept together as the correct kit.

Unique Identifier: A unique identifier number is to be used when multiple boxes that make up a kit must stay together (i.e. a matched kit). This helps match up kit boxes if the boxes become mixed up during transportation and storage. Matched kits comprising of multiple boxes should always be banded together in sets where feasible.

Box Number: To display the number of boxes that makes up a kit.
of 1 where only 1 box makes a kit.
1 of 2, 2 of 2 etc where multiple boxes make up a kit.

Weight: See 7.1 and 7.4

Kit label (Example)



5.8 Concession labels

The supplier shall:

- Ensure that the concession label is attached to the protection layer, primary, secondary and tertiary packaging of parts subject to concession in accordance with SABRe 8.7.3 Rolls-Royce deviation permit / concession using all documentation outlined in this section.

5.9 Labelling information for release documentation

The supplier shall:

- Refer to SABRe release documentation for details of the information to be stated on the release documentation.
- Ensure that a receipt label is adhered to the reverse of the release documentation.
- Ensure that all information provided with the product e.g. labels, release documentation, references on the packaging etc., is stated in English unless otherwise authorised by the Rolls-Royce region receiving the goods.
- Enclose the release documentation in a document wallet and attach to the outside of the outer-most packaging.
- Include the information related to serialised parts with each batch of serialised parts or kit containing serialised parts as applicable. This information will be supplied either as a label or labels attached to the reverse of the release documentation or a list of serial numbers (text + barcode) as appropriate (see 5.2 to 5.5).
- Where a FAIR applies, enclose a copy of the signed First Article Inspection Report (FAIR) approval form in a separate document wallet where possible attached to the outside of the outer-most packaging. The FAIR document wallet shall be clearly identified 'FAIR'. If there is insufficient space for this document wallet, then the FAIR approval form shall be added to the wallet containing the product release documentation.
- Enclose a copy of customs documentation (when exporting a product) in a documentation wallet clearly identified as "customs documentation".
- State the country of origin on the outer-most packaging (when exporting a product).

5.10 Labelling requirements for shipments containing multiple serial numbers

Where multiple serialised parts are supplied in one container, the serial number information relevant to each part must be on all layers of packaging (excluding dunnage). For example:

- Outer-most packaging for delivery.
- Protection layer / Primary / Secondary packaging for storage.
- Individual part packaging for individual part sales (e.g. turbine blades).

The supplier shall:

- Provide a 1-D barcode for each serial number, accompanied by human-readable text. The serial number information on the outer packaging can be supplied as a label or multiple sheets if a label is not practicable (e.g. if the surface of the package is too small to support multiple labels). These sheets must be securely attached to the packaging in a separate document wallet from the Certificate of Conformance. The serial numbers on the label shall be in the same format as that shown in section 5.5.1.
- If packaging multiple quantities ensure the quantity is displayed only once on the, secondary or tertiary packaging (labels displaying QTY 1 for each serial number is **UNACCEPTABLE**)



6 Protection

6.1 Shipping caps, covers & plugs

The primary purpose of the cap, cover or plug is to stop the ingress of dust, grease, foreign objects and any other contaminant that may lead to damage of the part or larger assembly. Foreign object debris (FOD) should be removed before placement of any closure type.

The supplier shall:

- Ensure shipping caps, plugs and covers are fitted to any open orifice such as pipes, inlets and internal ducting.
- Ensure that shipping caps, covers and plugs are plastic (not rubber) and of sufficient flexibility that cracking will not occur. Shipping caps, covers and plugs shall be push-on type and have broad flanges (*Refer to ARP 5862 Shipping Caps, Covers and Plugs for further information*)
- Ensure that PVC Shipping caps, covers and plugs do **NOT** contact with titanium alloys under any circumstances.
- Ensure that the packaging / protection used does not present a risk of part damage upon removal
- Ensure that shipping caps, covered plugs fit the part securely and cannot easily fall off during transport and storage.

6.2 Protection Layer

Packaging layer definitions are depicted in section 7.2.

The protection layer is distinct from dunnage. Common types of protection layers are polythene bags, antistatic bags, polythene wraps, VCI paper, heat sealed bags. All types of protection layers must be sealed.

6.3 Dunnage

Dunnage is the material used to provide adequate support, bracing and protection of product during shipment i.e. padding in a shipping container to prevent unnecessary movement of load. Dunnage should be selected to minimise the overall size of the packaging, be from a recycled or sustainable source, present no FOD risk and meet the drop test requirements set in section 6.4. Dunnage examples can be found in Appendix 2: Dunnage – Location and Cushioning Materials as per DEF STAN 81-41 Part 2.

The supplier shall:

- Use dunnage as necessary to provide adequate support, bracing and protection of product during shipment
- Ensure that bubble wrap is not in direct contact with metallic parts

*NOTE: Heavy application of dunnage does not substitute as primary packaging unless authorised by Rolls-Royce during PPAP approval e.g. bubble wrap around pipes. **This requires written justification.***

6.3.1 Prohibited Dunnage Materials

The following dunnage materials shall **NOT** be used

- Any material that may present a risk of being caught inside hollow components.
- Polystyrene loose chippings.
- Shredded paper / tissue paper.
- PVC where it is in direct contact with titanium alloys.
- Empty cartons where they could be mistaken as containing a product.

6.4 Drop Test Requirements

The drop test requirements apply to the primary packaging (see 7.3) as provided to Rolls-Royce. The need to test additional packaging layers is not required as the primary packaging is required to provide enough protection. The use of Work in Progress (WIP) movement equipment is still required to meet the drop test requirement when it is used to transport goods between internal/external facilities.

The supplier shall:

- Ensure that the packaging is compliant with the guidelines set out in Section 7
- Ensure that the packaging can withstand the following conditions without damage and/or subsequent deterioration of the product contained within:
 - Packages up to 10 kg dropped from 90 cm.
 - Packages between 10 and 50 kg dropped from 60 cm.
 - Packages above 50 kg - An end drop of 60 cm or through 10°, whichever is lower.
A horizontal impact of 2.5 m per second.

6.5 Corrosion Protection of Metallic Product(s)

Table 3 below shows the initial protection of metallic product required to provide corrosion protection. Refer to relevant engineering standards shown on the product definition for further information related to corrosion protection of metallic product.

Table 3: Corrosion protection of metallic product		
<i>This table provides the basic requirements for the corrosion protection of metallic product. Refer to relevant engineering standards shown on the product definition for further information related to corrosion protection of metallic product.</i>		
Material	Corrosion Protection	
Low alloy steel 12% Chromium steels	Corrosion preventive oil	+ Polythene film over wrap
	VCI paper / film ^[1]	+ Polythene film over wrap + Non-absorbent container
Austenitic stainless steels Nickel or Cobalt base alloys Titanium alloys	No preservation required	
Aluminium alloys Copper alloys	Corrosion preventive oil (<i>unpainted surfaces</i>)	+ Polythene film over wrap + Non-absorbent container
Magnesium alloys		
<i>NOTE 1: VCI paper / film (Volatile Corrosion Inhibitor).</i> <i>NOTE 2: Application of preservative materials shall be preceded by thorough cleaning of products to remove foreign objects from processing and handling, i.e., metal chips, abrasives, blasting grit, metal finishing compounds, fluxes, cutting fluids, lubricants, test fluids, moisture, fingerprints etc.</i>		

7 Packaging

7.1 General packaging requirements

The supplier shall:

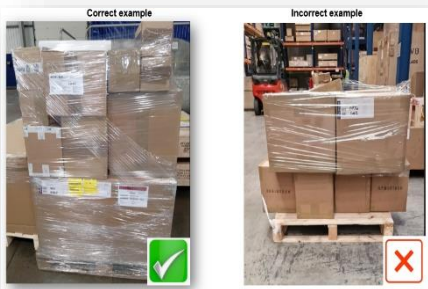
- Ensure that new, used and scrap product is **NOT** mixed in the same package.
- Ensure that all information provided with the product e.g. labels, release documentation, references on the packaging etc., is stated in English unless otherwise authorised by the Rolls-Royce region receiving the goods.
- Ensure that the product is packed, labelled and marked in a manner that will allow the product to be removed from the packaging without damaging the product in the process. The packaging is to be labelled or marked to show where care is required to avoid damaging the product during opening.
- Ensure that graphical symbols are used to convey appropriate handling instructions when required, in accordance with international standards.
- Ensure that the heaviest side of the package is indicated when the centre of gravity is off centre.
- Ensure that when a package is physically too large or too heavy for safe manual handling it will be attached to a pallet base of suitable size and strength to enable mechanical handling. The packages must not overhang the edges of the pallet base for the full height of the load.

- Where shipments include multiple packages, use a pallet to consolidate the goods and follow guidance below to ensure safe loading, transportation and unloading:

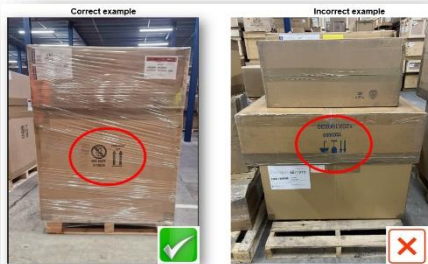
The pallet is the true base of the structure. If there are any cracks or broken pieces, then the structure could lean or fall. Ensure pallets are thoroughly inspected to make sure they are structurally sound:



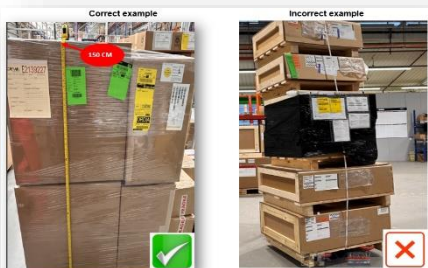
Ensure heavier items are stacked at the bottom of the pallet. Ensure shrink wrap is connected tightly to the pallet and wrapped around all 4 corners of the pallet:



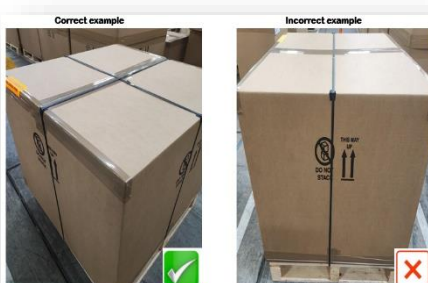
Observe and follow all packaging and/or stacking instructions .e.g. Fragile, Do Not Stack:



Pallet stacks should be a maximum height of 1.5m where reasonably practicable. Avoid item overhang where reasonably practicable:



If banding is implemented, ensure that this is secured to the pallet using a minimum of two bands. One width ways and one length ways:



- Use plastic banding, with appropriate edge protection, when required – **metal banding shall not be used.**
- Ensure all packaging materials and pallets used are in good condition. Materials shall be inspected for surface or edge defects, punctures or environmental deterioration that may affect the protection level offered by the packaging, jeopardise the structural integrity, create Foreign Object Debris (FOD) or a Health & Safety risk. For reusable solutions the level of packaging condition must be maintained over the intended lifespan of the item.
- Ensure that the packaging material will not contaminate the goods enclosed.
- Wherever possible, use packaging which allows the reclamation of mixed materials with the minimum of effort (for example, avoiding the use of bonding systems that prevent separation of individual materials).
- Ensure packaging used is sufficient to prevent damage and preserve product integrity whilst also being minimised to reduce waste.
- Select packaging based on its ease of recycling, if more than one packaging material satisfies the requirement for product protection.
- Polythene bags shall be made from material of minimum 0,125 mm thickness, of good clarity and free from plasticisers and anti-oxidants.
- Make use of packaging materials with recycled content wherever possible.
- Rolls-Royce is committed to environmental sustainability, reducing our carbon footprint and adherence to Plastic Packaging Tax (PPT) legislation in the UK implemented to drive the development and use of more sustainable packaging. As part of this commitment, we are introducing new guidelines on plastic packaging materials used by our suppliers.

Effective immediately, we expect all suppliers to prioritise the use of recycled plastic packaging with a minimum of 30% recycled content for their products delivered to Rolls-Royce. The packaging in scope is that which is designed for use in the protection, handling and delivery of product. At present pallet wrap and shrink film are out of scope of this change.

All plastic packaging materials in scope must contain a minimum of 30% recycled content.

We require our partners to have internally certified the recycled content of in scope plastic packaging, this will involve either self-certifying or via independent third-party verification (e.g., FSC, recycled content certifications) to verify the sustainability of their packaging materials.

We will assume that you can provide the 30% or greater recycled content plastic packaging as required unless you notify us of your inability to do so.

It is crucial that Rolls-Royce and all its suppliers are proactively taking the necessary steps to comply and provide further evidence upon request to support this requirement. Rolls-Royce will test compliance to these requirements via supplier audits and our FAIR process.

- Avoid packaging where opening requires the removal of loose fasteners such as wood screws, to reduce risk of Foreign Object Debris contamination.
- Ensure outer packaging dimensions are aligned to standard transport requirements for air, road and sea transport to ensure maximised shipment volume utilisation
- Ensure that dunnage and packaging is not directly attached to the product by any means creating a risk of damage during separation.
- Ensure that all products are packed individually.

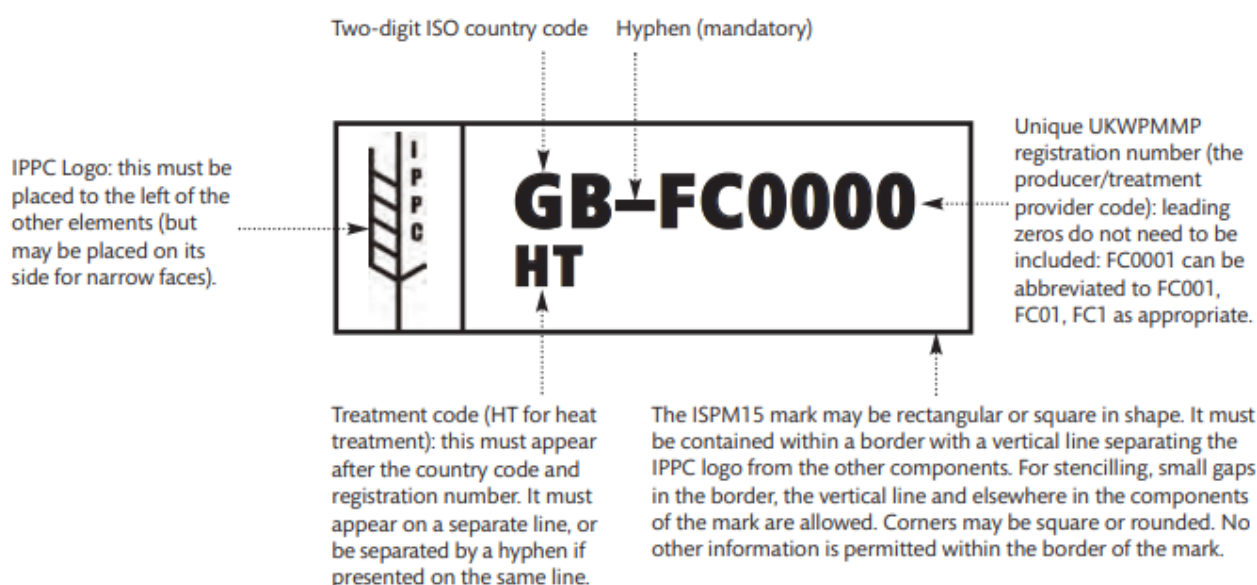
NOTE 1: Individual packaging is **NOT** mandated when:

- *Materials such as bar, sheet, tube, forgings, castings and partially machined components that have no finished surfaces that may be susceptible to damage.*
- *Small light components are packed together (surface to surface contact) and will not cause any damage, deterioration or contamination.*
- *When written authority is given by the Rolls-Royce technical authority (ref. PPAP process)*

NOTE 2: Banding of multiple packages is **NOT** permitted where the method of transportation to the delivery destination will include airfreight unless each individual package has release documentation and a receipt label attached (Not applicable to raw materials, forgings, casting etc).

NOTE 3: The use of staples is only acceptable for packaging construction / reinforcement and must not be used for closing / sealing any openings.

- Any wooden packaging or packaging material intended for export shall be compliant with the requirements of ISPM-15, as a minimum, and any other phytosanitary measures required by the destination country. Any international shipping using wooden packaging materials (with a few exemptions such as 'presswood' pallets made from sawdust and wood shavings) have to be suitably treated to prevent the spread of pests and diseases and marked with a specific marking like the one below to denote it has been treated:



The mark must contain the minimum information of:

- the IPPC symbol
- the ISO two-letter country code (see ISO 3166-1-alpha-2 code listed at www.iso.org/iso/english_country_names_and_code_elements)
- the IPPC abbreviation for the approved measures (i.e. HT or MB)
- the control numbers or letters of a facility authorized by the NPPO.

No additional information should be included in the mark and the IPPC symbol must not be altered in any way (e.g. the symbol placed at an angle or a mirror image of symbol is not permitted). The symbol is protected in many countries and used by NPPOs under authority of the FAO. Therefore the mark may only be used by facilities approved by an NPPO. ISPM 15 does not prescribe a minimum size for the mark but must be easily read by import authorities without the use of visual aids. Some minimum sizes for marks may be prescribed by NPPOs to ensure that officials in importing countries can easily read the mark. The use of red or orange should be avoided because these colours are often used in the labelling of dangerous goods such as toxic or flammable agents. The mark may not be hand drawn and must be applied so that it remains upon the article being certified without the likelihood of it being removed easily. Tags or other less permanent markings which are attached to the wood packaging material should not be used. The mark need only be applied to a complete unit, in a visible location, preferably twice on the opposing vertical faces (and in some cases in multiple locations), where it can easily be seen. On pallets, this could be on an inner face of the vertical blocks which separate the floors of the pallet, because these may be more visible to an inspector when looking into a container. Additionally, where wood packaging material is comprised of both manufactured and non-manufactured wood, for ease of visibility, producers may choose to apply the mark to the manufactured component of the wood packaging material. The application of the mark should be interpreted by NPPOs as a symbol that the entire unit is certified regardless of the unit's composition.

7.2 Packaging Layer Definitions

The layers of packaging referred to in this document are as shown in Figure 1 and described below:

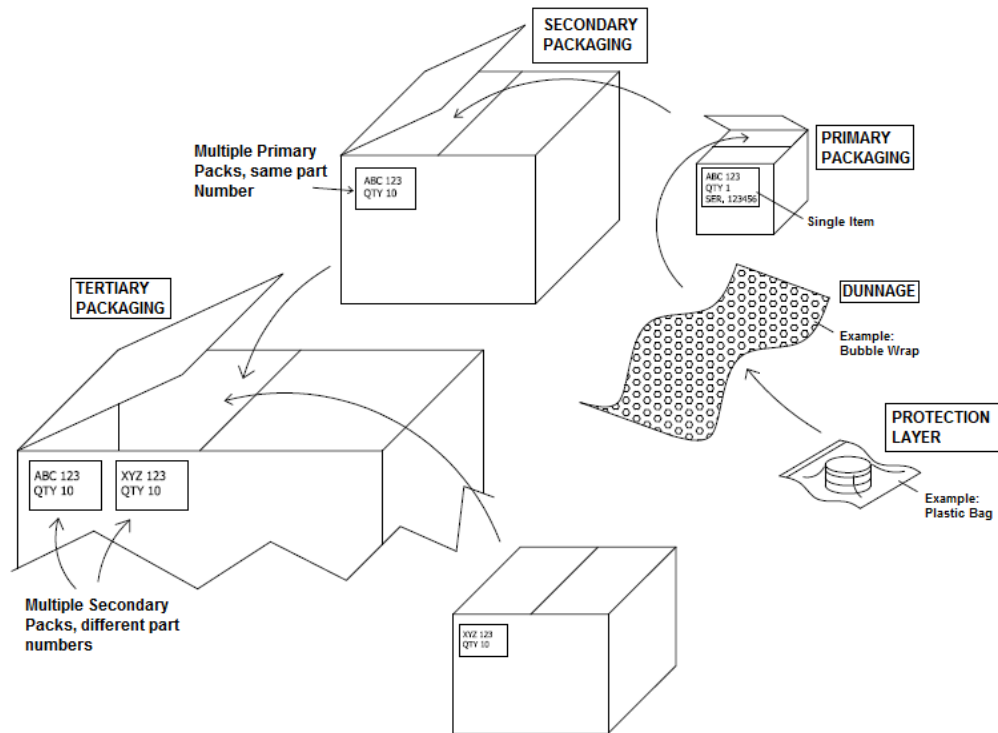


Figure 1: Packaging Layers

Protection Layer (see Sec. 6): Where required, this layer provides first level product protection against corrosion, damage or material ingress e.g. polythene bag.

Primary packaging: This layer protects the product from damage, deterioration and corrosion during transport, handling and storage. The product remains in this packaging until ready for use or further processing.

Secondary packaging: This layer is used to contain multiple primary packages of the **same** part number or kit number. Its purpose is to consolidate multiple primary packaged products of the same part number during shipment / delivery by road, sea or air from the supplier's premises to Rolls-Royce.

Tertiary packaging: Where required, this consolidates multiple packages (primary or secondary) of **differing** part number being shipped to the same delivery address. Tertiary packaging is not permitted for parts collected on Rolls-Royce collection services.

7.3 Primary, secondary & tertiary packaging

7.3.1 Primary Packaging Layer

The supplier shall ensure that the primary packaging fulfils the following:

- Dimensions of primary packaging are optimised to achieve protection requirements within a minimum volume. It is expected that primary packaging dimensions will not exceed an additional 100mm of product length, width and depth (an equal 50mm max gap around all sides of part) unless a specific requirement for greater can be demonstrated and approved by Rolls Royce (Figure 2).
- Is standardised so that it is the same for every shipment of each product between batches and deliveries.
- States the weight of the package when it exceeds 10KG (22lbs).
- Sharp edges to be protected, to prevent damage to both product and packaging

NOTE 1: When the supplier uses the primary packaging as the only level of packaging, the requirements of both the primary & secondary packaging shall apply.

NOTE 2: Where secondary packaging is used, overall pack dimensions shall not increase significantly. The primary layer should provide all damage protection required for single quantity items as used by aftermarket spares.

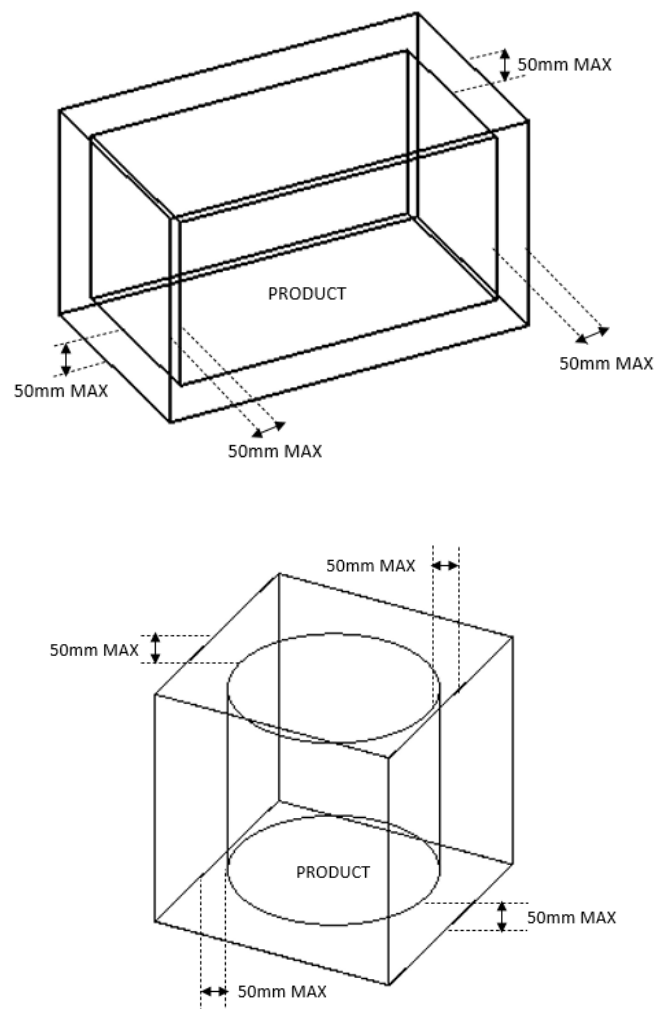


Figure 2: Primary packaging dimensional requirements

7.3.2 Secondary Packaging

The supplier shall ensure that the secondary packaging provides the following:

- A robust package to protect the primary packaged product against damage, stacking, crushing, strapping, impact, careless or accidental handling and mechanical handling, during transport, handling and storage
- Includes any protective materials (dunnage) where required.
- Is appropriate for the size, shape & weight of the product (+50mm rule applies as Primary packaging).
- Contains primary packages of the same product / part number / kit number.
- States the total weight in kilograms on the packaging adjacent to the associated release documentation (in accordance with section 5.9 Labelling information for release documentation), when over 10kg. Total weight will be inclusive of packaging materials. Weight may be hand written using a permanent marker in clear and legible text.

7.3.3 Tertiary Packaging

The supplier shall ensure that the tertiary packaging, where used, fulfils the following:

- A robust package to securely contain the secondary packaged product
- Should only be used where required, to consolidate multiple packages (primary or secondary) of differing part number being shipped to the same delivery address.
- Has a clearly visible and legible statement label on the outside that shows what products and quantities are contained within.
- States the total weight in kilograms on the packaging adjacent to the associated release documentation (in accordance with section 5.9). Total weight will be inclusive of packaging materials. Weight may be hand written using a permanent marker in clear and legible text.

7.4 Exceptionally large or heavy items / loads

Exceptionally large or heavy items / loads are defined as having the largest dimension of either height, width or length exceeding 2.5 metres (98.4 inches), or weight in excess of 3000kgs.

The supplier shall:

- Ensure the safe delivery and handling of exceptionally large or heavy items / loads.
- Ensure that exceptionally large or heavy items / loads will only be delivered to Rolls-Royce to either:
 - A pre-defined packaging and handling specification formally agreed by the Rolls-Royce receiving site.
 - Prior one-off agreement by the Rolls-Royce receiving site to accept a delivery to a specifically defined packaging and handling specification.
 - The Rolls-Royce Business Unit purchase department placing the order has arranged contact with the supplier and the receiving Rolls-Royce site - as / where applicable.

7.5 Reusable containers

Reusable containers may be introduced by Rolls-Royce for deliveries that are managed by an inbound collection service.

The supplier shall:

- Ensure that reusable containers are fit for purpose. The supplier shall contact the Rolls-Royce packaging service provider when a reusable container has been deemed to be unfit for purpose.
- Store Rolls-Royce supplied re-usable containers indoors at all times. The minimum requirement is undercover, in a shelter, protected by three sides, a roof, and not in standing water.
- Ensure that reusable containers are NOT used to deliver any product other than those designated and labelled on the container.
- Each supplier to have a process for removing old labels before reusing packaging.

8 Build and Production, After Market Spares and Internal Supply Requirements

8.1 Build and Production

All sections of Protection, Packaging and Labelling are applicable for the supply of product into Rolls Royce whose intended final assembly will be carried out internally at the build line.

The supplier shall:

- Label all parts where economically feasible with a minimum PRN and SER identification as described in section 5.1 and 5.5 to facilitate identification after packaging removal and post kit assembly.
- Design packaging in such a way that repetitive strain injury can be minimised or avoided

8.2 After Market Spares

All sections of Protection, Packaging and Labelling are applicable for the supply of product intended as aftermarket spares.

The supplier shall:

- Ensure that all items are individually packed in primary packaging that meets the required level of part protection as defined in section 7.3.
- Ensure that all primary packaging is labelled as if being shipped singly regardless of the use of secondary or tertiary packaging.
- Ensure that the packaging of all Held Out Of Service / Serviceable Used Material being returned to the Aftermarket Distribution Centre (Barton Warehouse) does not exceed the dimensions L100 X W120 X H130cm wherever possible.
- Ensure that where it is not possible to restrict Held Out of Service / Serviceable Used material packaging dimensions to L100 x W120 x H130cm for parts returning to the Aftermarket Distribution Centre (Barton Warehouse), email notification is sent to adc.enquirydesk@Cevalogistics.com of part details and ETA.

8.3 Internal Supply

The use of reusable and WIP equipment is accepted between internal areas of Rolls Royce. The protection and labelling of the part must still be completed in accordance with this document. The packaging requirements however do not apply.

9 Quantities

The supplier must

Ensure products supplied in accordance with required demand of the purchase order or contract

Quantity discrepancies applicable for supplying product direct to Rolls Royce Plants, Aftermarket and Customer Stores, see allowance table 1

Table 1

Delivery Type		Range required	Tolerance
AOG/Build Stop/Build Launch EPKD		Quantity >1	0
Direct Line Feed (OBU/MMC/Build - Kit Form)		Quantity >1	0
Aftermarket or Customer Stores		Quantity 1-30	+ 1
Aftermarket or Customer Stores		Quantity >30	+/- 3%

*Quantity allowance table for International Standard/Commercial off the shelf/Rolls-Royce Standard Parts only

10 Change History

Issue	Date	Description of Change	Author	Owner	Approval
21	01-04-2008	Minor amendment in Sections 4.1 and 4.6 to improve clarity / align with RPS 259 + slight modification to 4.10.1 to align with associated Supplier Delivery Specification.	-	-	K. R. Angus.
22	01-10-2008	Major re-construction of process content to identify specific protection, packaging and labelling sections. Elements of the Supplier Delivery Specification (Briefing Pack) transferred to the main SABRe process.	D. Brown C. Peters	R. Hawkins	R. Hawkins D. Brown C. Peters
23	01-04-2009	Section 4.3 Flowchart removed. Minor amendments to sections 4 – 8. Section 7.7 added to reflect concession label requirements.	D. Brown C. Peters	R. Hawkins	R. Hawkins D. Brown C. Peters
24	01-10-2011	Amendments so all section related to the clarification of mandated requirements.	C. Peters	R. Hawkins	R. Hawkins C. Peters
25	01-04-2012	Title change to a guidelines document. Section 6.10 (Drop test) added.	C. Peters	R. Hawkins	R. Hawkins C. Peters

26	02-09-2013	Title change to become a requirements document, clarification added around "Date of Manufacture" on the primary packaging label. Labelling requirements for multiple serial numbers (Section 7.9) added. Section 6.3.1 updated to include recycling improvements. Turbine Blades requirements clarified to apply only to Finished Machined Turbine Blades.	P. Lewin	P. Adkins	SABRe Steering Committee Nigel Smitten
27	28-07-2014	Changes made to refine the details required for parts serialisation project (sections 7 and 8). New section added (section 4.3) stating parts which are subject to PPAP require formal sign off of the packaging as part of the PSW.	J.Bird	N.Smitten	N.Smitten. T.Moffitt
28	01-06-2015	Document structured simplified to support ease of use. Definition of packing levels improved to remove confusion. Addition of visual guidance on packing levels. Changes to section 8 to provide improved guidance on packing requirement.	R. Speed	N.Smitten	N.Smitten T.Moffitt
29	11-10-2023	SABRe links amended so they are correct to SABRe Edition 4, Rev 1.0. ISPM-15 wooden packaging requirements and plastic packaging tax (PPT) to section 7.1. Quantities for Integrators added to section 9.	A.Ingram	D.Smith	D.Smith M.Russell I.Miller D.Bridgett
30	20-11-2023	Revised 5.1 for clarification	B. Howse M. Lin	D. Smith	D.Smith M.Russell I.Miller D.Bridgett
30.1	16-02-2024	Additions/word refinement as listed in 'Revision Notes' section above.	Antony Ingram	Debbie Smith	Debbie Smith Martin Russell
30.2	06-09-2024	Plastic Tax wording updated in section 7.1	Antony Ingram	Debbie Smith	Debbie Smith Martin Russell

Document update policy

This document may be updated periodically. Major amendments will be shown as an update from one revision number to a higher revision number (e.g., revision 1 to revision 2) and therefore the content of the higher revision will be regarded as the latest requirements. A minor amendment will be shown as a number change after a decimal point (e.g., revision 1.1 to revision 1.2) and therefore any of these revisions shall be regarded as the latest requirements until a major amendment is introduced.

11 Appendix 1: Commodity Specific Packaging Guidance

The following tables should be used **for guidance only**, each part number delivered into RR should have the appropriate packing proven and tested with the packaging data sheet correctly filled in and submitted for approval by the RR nominated representative (PPAP Care/ME and Inbound Logistics Controller). The data sheet and packaging approvals shall be submitted as part of the PPAP Parts Submission Warrant (PSW) and signed off by the nominated customer representative as part for the PPAP submission in line with Chapter B of SABRe.

Commodity Category	Protection Layer	Dunnage	Primary Packaging
Accessories / Ancillaries (e.g. Gear Box, Fuel Pump, Sensors etc.).	Leak-proof Polythene bag	See section 6.3	Container/ Carton
	<p>Additional Information:</p> <p>Protection: Accessories shall be inhibited when necessary to achieve the agreed shelf life. Openings shall be sealed to prevent leakage of fluids from within the unit and / or entry to foreign matter. Protection shall be made to guard external features of the unit against damage as required.</p> <p>Caps, covers and plugs must be physically unable to pass into the unit so that they cannot be inadvertently left in situation. Any part of the blank (e.g. sealing gasket, 'O' rings, etc.) shall be such that they remain attached to the protective blank and do not break on normal removal or enter into the unit. They shall be free of cavities that could cover foreign objects and release them into the accessory after being fitted. In addition, they shall be of distinctive appearance, being dissimilar in colour to the accessory and shall be clearly identified (e.g. 'Transportation Blank').</p> <p>All protective fittings shall be defined by the supplier's Drawing Introduction Sheet (DIS) / Master Parts List (MPL).</p> <p>Packaging: The supplier shall ensure that the packaging prevents the damage or deterioration of the product. Specific requirements concerning the method of protecting and packaging shall be defined and instructed by the supplier.</p> <p>Containers: All accessories shall be packed in a leak-proof Polythene bag and placed within the appropriate external container. The design of the container shall be such that no damage to nor change of calibration of the unit shall result from dropping the container.</p>		
Anulus Fillers (if not in agreed returnable packaging)	Polythene Bag	Bubble Wrap	Carton
Asbestos or Asbestos Containing Materials Which can produce Dust during Handling or Transport	Polythene Bag	Bubble Wrap	Carton
	<p>Additional Information:</p> <p>Coat with a Film of Silicone Resin or Rubber. Pack as single items in Polythene Bag and Seal. Attach Asbestos Warning Label Pack in Quantities Specified on Order. Overwrap with Polythene and Attach Asbestos Warning Label.</p>		
Asbestos Containing Materials, Firmly Bonded with Rubber or Resin	Pack in Quantities specified on order. overwrap with Polythene and attach asbestos warning label	Bubble Wrap	Carton

Commodity Category	Protection Layer	Dunnage	Primary Packaging
Ball / Roller Bearings & Spare Roller Elements	Bag made from heat sealed, plasticised PVC sheet.	See section 6.3	Carton / Container
Burner Parts /Assemblies	Polythene film / bag	Polythene, Foam or Bubble Wrap	Carton
Castings	As Received	Industry standard practices shall be adopted.	Industry standard practices shall be adopted.
	<p>Additional Information:</p> <p>Castings do not require corrosion protection and normal industry standard practices shall be adopted except for castings made from magnesium alloys or non-corrosion resistant alloys where appropriate corrosion protection shall be applied.</p> <p>Castings with fully / partially machined or finished surfaces that may be susceptible to damage shall be packaged in a manner that will prevent damage, deterioration or corrosion.</p>		
Casings (Aluminium & Magnesium)	Polythene film / bag	Fibre-board Furniture or Bubble Wrap	Wood or Plywood Case or Double or Triple Wall Corrugated Board Framed Container
	<p>Additional Information:</p> <p>For magnesium casings a 'MAGNESIUM' label attached to both the primary and secondary packaging.</p>		
Composites	External Surfaces Covered with Polythene film / bag	Fibre-board Furniture or Polythene, Foam or Bubble Wrap	Carton, Wood or Plywood Case or HDF Container

Commodity Category	Protection Layer	Dunnage	Primary Packaging
Compressor Blades and Vanes	Refer to Additional Information	Refer to Additional Information	Carton (Sectioned Box)
	Non-Serialised Parts	The parts shall be wrapped in an individual Polythene bag and then packed in a sectioned box with a Receipt Label attached	
	Serialised Parts	The parts shall be wrapped in an individual Polythene bag with the packaging label attached and then packed in a sectioned box with a Receipt Label attached. All serial numbers shall be listed in text and barcode format on the outside of the box.	
	Parts shipped as a kit	Where compressor blades and/or vanes are shipped as a kit, the parts shall be packed in a sectioned box. The box shall have the packaging label attached showing the serial numbers for all serialized parts within the kit – as described in section 5.10.	
Electrical Components	Polythene Bag / Antistatic Bag	Bubble Wrap	Carton or Wood Case or HDF Container
	<p>Additional Information:</p> <p>A label shall be attached to the outside of the Primary Packaging that has a statement similar to the following:</p> <p>'This equipment contains parts and assemblies susceptible to damage by electrostatic discharge (ESD). Use precautionary procedures when touching, removing or inserting parts or assemblies'.</p>		
Fabrications (Large)	Polythene film / bag	HD Fibre-board or Wood Furniture or Bubble Wrap	Wood or Plywood Case or HDF Container
Forgings	As Received	Industry standard practices shall be adopted.	Industry standard practices shall be adopted.
	<p>Additional Information:</p> <p>Forgings do not require corrosion protection and normal industry standard practices shall be adopted.</p> <p>Forgings with fully / partially machined or finished surfaces that may be susceptible to damage shall be packaged in a manner that will prevent damage, deterioration or corrosion.</p>		
Gears	Polythene film / bag with Mouldable Wrap as Required.	Polythene Foam or Bubble Wrap.	Individual Carton
	<p>Additional Information:</p> <p>Apply appropriate corrosion protection (see section 6.5).</p>		

Commodity Category	Protection Layer	Dunnage	Primary Packaging
Jet Pipes (Plain) and Power Plant Components	Polythene film / bag Plus Protective Film / bag to for External Surfaces.	Fibre-board and / or Bubble Wrap	Specially Designed Case
Kits	Refer to Additional Information	Refer to Additional Information	Kit Box
	Additional Information: Supplier(s) shall agree their own designs of kit boxes with Rolls-Royce. This does not apply to reusable containers supplied by Rolls-Royce. For parts defined as serialised by the engineering component definition, a serial number label shall be attached to the kit box exterior for each serialised part contained within the kit box – as described in section 5.10. Where any changes are made to the detail of a Kit Detail label, the labels attached to all boxes in circulation for this kit shall be replaced.		
Magnesium Parts	The supplier shall ensure that packages that contain components manufactured from magnesium carry a 'MAGNESIUM' label that is attached to both the primary and secondary packaging (i.e. Black lettering on a Red Background). Apply appropriate corrosion protection (see section 6.5).		
Non-Metallic Parts	Polythene film / bag	See section 6.3	Carton
	Additional Information Apply mouldable wrap on sharp edges and projections or use protectors on orifices to prevent the ingress of dirt or grime. Overwrap in Polythene film / bag to attain a 0,125mm minimum thickness around the component. Alternatively, if Polythene bags (1000g minimum) are used, the opening shall be heat sealed or folded over and closed with adhesive tape. Vacuum skin packaging with Polythene film / bag may be used to pack non-metallic items Particular care shall be taken when packing thin items such as gaskets or rubbing strips, to ensure a level of protection which will prevent folding or creasing.		
Nozzle Guide Vane	Polythene film / bag	Bubble Wrap	Carton
Raw Materials	As Received	Industry standard practices shall be adopted.	Industry standard practices shall be adopted.
	Additional Information: Raw materials such as bar, billet, sheet, tube, plate etc., do not require corrosion protection and normal industry standard practices shall be adopted except for magnesium alloys where appropriate corrosion protection shall be applied.		

Commodity Category	Protection Layer	Dunnage	Primary Packaging
Rubber / Synthetic Parts (including Composite Metallic / Non-metallic & Rubber Assemblies)	Opaque sealed envelopes	See section 6.3	Carton
<p>Additional Information: ARP5316 Storage of elastomer seals</p> <p>Acceptable packaging media:</p> <ul style="list-style-type: none"> ➤ Heat sealable opaque material (to prevent exposure to sunlight) ➤ <p>Polythene coated Kraft paper.</p> <ul style="list-style-type: none"> ➤ Aluminium foil, with paper or Polythene laminated coatings. ➤ Opaque Polythene bag. ➤ Manila envelopes <p>Packaging shall be achieved in conditions of low relative humidity not exceeding 75%. Components packaged shall be free from strain and no part shall be tied or tagged. Acceptable master packaging is 2 ply brown paper sacks.</p> <p>Packaging of vulcanised rubber products shall be in accordance with the controlling specification. Vulcanised rubber components shall be delivered from the supplier with 90% or greater shelf life remaining.</p> <p>Vulcanised rubber components delivered through a 'Direct Line Feed' system shall be delivered with 50% or greater of shelf life remaining. Note - Direct Line Feed is a method of supply whereby an external service provider delivers parts direct to a bin or carousel in the Rolls-Royce manufacturing areas, monitoring the usage rate and maintaining required stocking levels.</p> <p>Sealed units (e.g. fuel systems & accessories) are excluded from the above requirements, however any rubber elements installed within such products shall continue to be controlled in accordance with the relevant / governing technical specification requirements - prior to any physical incorporation, testing and final shipment to Rolls-Royce.</p>			
Rings, Seals & Spacers (Large Steel)	A sealed polythene film / bag or sealed box (Parts Super cleaned where applicable)	Fibre-board Furniture Bubble Wrap for Lighter Components).	Triple or Double Fluted Board Container
Shafts & Wheels 10 to 15 kg	A sealed polythene film / bag	Polythene Foam or Fibreboard Furniture or Punched Triwall	Rigid Carton Lined with Triple Wall Corrugated Board
	<p>Additional Information:</p> <p>Preservation – VCI paper / film (see section 6.5).</p> <p>For etched integral bearing surfaces on shafts de-watering oil may be used.</p> <p>For additional information refer to applicable engineering standards.</p>		

Commodity Category	Protection Layer	Dunnage	Primary Packaging
Shafts & Wheels over 15 kg	Polythene film / bag	Fibre-board Furniture or Punched Triwall	Timber Case or Double or Triple Wall Corrugated Board Framed Container.
	Additional Information: Preservation – VCI paper / film (see section 6.5). For etched integral bearing surfaces on shafts de-watering oil may be used. For additional information refer to applicable engineering standards.		
Small Parts	Polythene film / bag	See section 6.3	Carton
	Additional Information Small light components where 'surface to surface' e.g. 'metal to metal' contact will not cause any damage or contamination can be packaged together. Each package shall represent a single part number The primary package shall be restricted to a maximum weight of 2KG / 4.4 pounds, unless otherwise specified on the Rolls-Royce purchase order. Large quantity orders shall be made up of multiple primary packages of 2KG Max up to a maximum of 10KG. Additional protection of small parts e.g. plastic sleeve containers to protect each individual part, can be included within the primary packaging.		
Taper Bolts, Blade Pins and Bushes	Polythene film / bag with Further Protection as Necessary	Polythene	Carton
Thrust Reverser and Re-heat Jet Pipes	Polythene film / bag	Not Applicable	Specially Designed Case
Tubes / Pipes (Flexible)	Polythene film / bag with Caps (see section 6.1).	Polythene Foam or Bubble Wrap.	Rigid Carton
	Additional Information: A label stating 'Do not bend / manipulate prior to installation' is required to be attached to the secondary packaging.		

Commodity Category	Protection Layer	Dunnage	Primary Packaging
Tubes / Pipes (Rigid)	Polythene film / bag with Caps (see section 6.1).	Refer to additional information shown below.	Rigid Carton
	<p>Additional Information:</p> <p>Long heavy pipes (tubes) assemblies with outside diameters of 25mm or greater and length greater than 1 metre, shall be packed in double thickness Polythene sleeves and <u>double</u> heat sealed at both ends.</p> <p>Whenever long heavy pipes (tubes) and lightweight pipes (tubes) are to be packed as batches or kits, cardboard partitioning and / or bubble wrap shall be used to avoid movement and provide separation during transit. Alternatively pipes (tubes) shall be transported in Rolls-Royce approved kit or transit cages / containers.</p> <p>Lightweight pipes (tubes) can be packaged in a carton in batch quantities of greater than one if packaged in a manner that will prevent damage.</p> <p><u>Under no circumstances shall pipes (tubes) protrude from the container.</u></p>		
Finished Machined Turbine Blades	Refer to Additional Information	Refer to Additional Information	Carton (Sectioned Box)
	<p>Additional Information:</p> <p>Where turbine blades are shipped as a kit, the parts shall be packed in a sectioned box with the packaging label attached - with all serial numbers listed in text and barcode format on the outside of the box – as described in section 5.10.</p> <p>Where turbine blades are sold as individual parts, the individual packaging label shall be attached on a tag, or on a label that is placed on a suitable bag or container enclosing the item (Primary packaging). The individual parts may then be packed in a sectioned box with a receipt label attached – with all serial numbers listed in text and barcode format on the outside of the box (Secondary packaging). A tag is defined as: a label bearing the required information which may be applied by cord, plastic tie, etc. but not adhered to the product directly. NOTE: Care shall be taken to ensure that tag identification label attaching materials, particularly cord, do not cause contamination or damage of the item being identified. This applies also to the use of aluminium or zinc identification tabs, which have been known to contaminate nickel based alloys at room temperature</p>		
White Metal Bearings Lead Bronze Bearings	Polythene film / bag	Polystyrene Moulding or Bubble Wrap	Carton

NOTE 1: Polythene film / bag – The supplier shall ensure that polythene film / bags are sealed when used as the first level of primary packaging for the product.

NOTE 2: When a specific commodity category is not addressed within the commodity specific packaging requirements matrix shown above then the supplier shall ensure that products are protected, packaged and labelled in accordance with the requirements of the appropriate sections of this document to standard that will provide adequate protection against damage, deterioration, corrosion, tampering and other risks during shipment to Rolls-Royce plus the storage and subsequent distribution within Rolls-Royce.

12 Appendix 2: Dunnage – Location and Cushioning Materials

MATERIAL	SPECIFICATION NUMBER	PART 5 PROCESS	BRIEF DESCRIPTION AND REMARKS	RECOMMENDED USE
Fibreboard, solid, Kraft-lined chipboard	Def Stan 81-1	D5	Consists of chipboard with a pure kraft lining on one face. Possesses good scoring and bending properties.	As a load spreading or blocking material in the form of partitions, cells, pads or die-cut fitments.
Board, corrugated, Double-faced, Types A, B and C	Def Stan 81-46	D5	Consists of a corrugated fluting and a facing of kraft on each side. The number of corrugations is Type A - 105-129 flutes per metre Type B - 150-185 flutes per metre Type C - 120-145 flutes per metre Produced in seven substances.	As a load spreading or blocking material in the form of pads cells, blocks or die-cut fitments.
Paper, corrugated, Single-faced, Coarse flute	Def Stan 81-99	D3 D5	Consists of a paper fluting and facing with 105-125 flutes per metre (32-38 flutes per foot).	As a wrapping or blocking material in the form of rolls, tubes or pads.
Board, corrugated, (two flute, three liner)	Def Stan 81-106	D5	Consists of two sheets of corrugated fluting and three sheets of kraft liner arranged alternately. The flutings of Type 1 shall be: outer fluting, either 120-145 flutes per metre or, 150-185 flutes per metre and inner fluting, either 105-125 flutes per metre or 120-145 flutes per metre. Both flutings of Types 2 shall be 105-125 flutes per metre.	As a load spreading or blocking material in the form of pads cells, blocks or die-cut fitments.
Board, corrugated, (three flute, four liner)	Def Stan 81-107	D5	Consists of three sheets of corrugated fluting and four sheets of kraft liner arranged alternately. The number of corrugations of the outer fluting shall be either 120-145 or 150-185 flutes per metre and the other two flutings shall be 105-125 flutes per metre.	As a load spreading or blocking material in the form of pads cells, blocks or die-cut fitments.
Fibreboard, corrugated, Double-faced, 'E' flute	Def Stan 81-108	D5	Consists of a corrugated fluting and a facing of kraft or jute on each side. The number of corrugations is 290-320 flutes per metre (84-96 flutes per foot).	As a load spreading or blocking material in the form of pads cells, blocks or die-cut fitments

MATERIAL	SPECIFICATION NUMBER	PART 5 PROCESS	BRIEF DESCRIPTION AND REMARKS	RECOMMENDED USE
Board, corrugated, (three flute, four liner) Medium grade	Def Stan 81-115	D5	Consists of three sheets of fluted semi-chemical or kraft fluting with four sheets of kraft liner arranged alternately. The fluting shall be AAA, ACC, BAA, BCC, CAA, and CCC.	As a load spreading or blocking material in the form of pads cells, blocks or die-cut fitments
Paper kraft, embossed, Four ply (for cushioning)	Def Stan 81-110	D3	Consists of four plies embossed kraft paper in the form of rolls or sheets perforated so as to be torn easily into pads.	As a resilient non-abrasive wrapping material
Synthetic-fibre needlefelts	BS 7200	D6	Consists of two felts (soft or hard) each of 5 and 10 mm thickness made from specified synthetic fibres. It should be noted that these felts are temperature dependent.	As a non-abrasive or, in with metal or timber supports, a facing material.
Electrostatic conductive foam sheet	Def Stan 81-125	D7 Note 1	The material consists of carbon black filled or impregnated polyether urethane foam of inter-communicating cellular structure.	As a conductive material for protection against static electricity in accordance with BS EN 61340-5-1
Polyethylene, bubble film, for packaging	Def Stan 81-122	D3	The material consists of two layers of polyethylene of different thicknesses, each layer may be coated on one side with a non-PVC coating. The thicker film layer is embossed with either the cylindrical cell shape (Type A or Type B). The two layers of material are sealed to entrap air within the embossed areas and produce a uniformly distributed closed cell structure.	As a resilient space-filling material.
Cross-linked expanded ethylene-vinyl acetate sheets and mouldings	Def Stan 81-119	D7	Consists essentially of ethylene-vinyl copolymer free from diluents and fillers. Supplied in the form of substantially non-intercommunicating thin walled cells filled with air or an incombustible gas. Available in sheets, cut parts or mouldings. The standard colours are white and grey. It is non silver staining.	As a resilient cushioning material in the form of sheets, cut parts or mouldings. Thicknesses over 30 mm may be prepared by laminating thinner sheets by heat welding or by means of a suitable adhesive.
Expanded polystyrene	BS 3837	D4	The material consists of polystyrene derived mainly from styrene monomer expanded to form a cellular structure consisting substantially of closed cells. Expanded polystyrene to BS 3837 is designated by specifying the appropriate grade, type and structure. It is produced in several grades, two types and various structures. SD (standard duty) and HD (high duty) grades of type N (normal) material and cut board structure are recommended for use in Services packaging. NOTE The relative nominal apparent density of grade SD is 16 kg/m ³ and grade HD is 24 kg/m ³	As a load-spreading or blocking material in the form of fitments. (See Notes 1 and 2)



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