LEONARDO
HELICOPTERS

CT0301

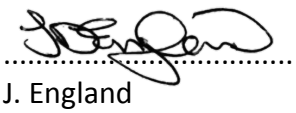
TOOLING CONTRACTORS TOOLING CONTROL DOCUMENT

ISSUE 12

TOOLING CONTRACTORS

TOOLING CONTROL DOCUMENT

APPROVED BY:



J. England
Central Tooling Manager

Document Implementation

The requirements of this document shall be deemed to be accepted and complied with by the supplier where the contract invokes its implementation.

Acceptance and conformance is instigated by the supplier signing and returning the contract (Purchase Order) acknowledgement copy to Procurement Leonardo Helicopters (UK), acknowledging via the e 'business portal, or after 14 days the contract is deemed accepted through auto acknowledgement.

Document Control

This Document is controlled and managed by Leonardo Helicopters (UK) Central Tooling Department. The Document status is controlled through its issue number. Any amendments will result in the complete document being re-issued with the next issue number assigned.

Documents or manuals relevant to Suppliers can be requested via the following internet address https://www.leonardocompany.com/fornitori-suppliers/business-unit-procurement/elicotteri-helicopters-1/site-requirements/aw-uk-requirements. Any requests for amendment to be formally requested in writing to the Central Tooling Department, Box 12, Leonardo Helicopters (UK), Lysander Road, Yeovil, Somerset, BA20 2YB

REVISION HISTORY

Issue	CHANGE DESCRIPTION	ISSUE DATE
9	REVISION RE-WRITTEN	09/02/2018
10	REVISION HISTORY ADDED PARA 5.2.1 – LINE BUILD TOOLING STORAGE BOXES PART C REWORKED PARA 5.2.5 – TOOL CONTROL REWORKED PARA 5.3 – QUOTATION REQUIREMENT CRITERIA ADDED PARA 6.2.1 – PROTECTECTIVE REQUIREMENTS ADDED PARA 6.2.2 – IDENT & RE-CERTIFICATION PLATES WAS 6.2.1 PARA 6.2.3 – COMPANY BRANDING WAS 6.2.2 PARA 6.2.4 – INSPECTION – WAS 6.2.3 AND BEEN REWORKED PARA 6.2.5 – REQUIREMENTS FOR CALIBRATION of EQUIPMENT WAS 6.2.4 PARA 6.2.6 – CE MARKING WAS 6.2.5 PARA 6.2.7 – HSP 2055 WAS 6.2.6 PARA 7.3.2 – INSPECTION CLAUSE REWORKED PARA 7.3.3 – INSPECTION CLAUSE REWORKED PARA 7.6 – ONSITE WORKING REWORKED PARA 7.7 – GOODS RECIEPTING PARA 10 – ANNEX C ADDED	20/07/2018
11	Leonardo MW Ltd REPLACED WITH Leonardo Helicopters (UK) LMW Ltd REPLACED WITH LHUK PAGE 2 DOCUMENT CONTROL - WEB ADDRESS CORRECTED PARA 4 - REJECTION STATISTICS CHANGED TO QUALITY STATISTICS PARA 5.2.1 - SECTION REWRITTEN PARA 5.2.2 - SECTION REWRITTEN PARA 5.2.3 - SECTION REMOVED PARA 5.2.5 – FOAM LINER SENTENCE REWORDED, TOOL CONTROL IDENTIFICATION SENTENCE REWORDED PARA 5.3 - QUOTATION REQUIREMENT CRITERIA ADDED PARA 6.2.2 - BOX IDENT PLATE SENTENCE RE-WORDED PARA 7.2.2 - SECTION REMOVED PARA 7.7 - WORDING EDITED ANNEX C – SECTION 1.2 – TRD SENTENCE REMOVED ANNEX C SECTION 2.2 – SECTION REWRITTEN TO INCLUDE ALTERNATIVE METHOD TO FOAM LINERS ANNEX C SECTION 2.4 – NOTE ADDED TO INCLUDE ITEMS FIXED TO JIG WITH LANYARD TO BE INCLUDED IN INVENTORY ANNEX C SECTION 4 – TOOL CONTROL COMPLIANCE ADDED.	12/04/2019
12	5.2.1 a. – MATERIAL FOR BOXES - BIRCH PLYWOOD 5.2.5 A. – NOTE ADDED REGARDING SECURING OF FOAM WITHIN LID OF CASE, AND INVENTORY. 5.2.5 A. – NOTE ADDED REGARDING INVENTORY BEING REQUIRED FOR ALL BOXED ITEMS ANNEX C. 2.2 - SENTENCE ADDED - 'If the tool comes apart as part of its function, then all individual items must be in separate slots' ANNEX C 2.4 - SENTANCE ADDED - 'An inventory must be included with every boxed item, including where there is only 1 item within the box.'	18/11/2019

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1. SCOPE

This document defines the contractual obligations which are applicable to Tooling Contracts placed on suppliers to produce Tool Designs, Specifications and Documentation, procure or manufacture Tooling, Equipment, Rigs and Gauges and/or the supply of Services or Labour. The appropriate clauses shall apply to a contract dependent upon the item or service being procured.

This document supersedes all WSTD and CT0591 Vol. 2 tooling standards.

2. PURPOSE

The purpose of this document is:

- To communicate to the Contractor the extent of Leonardo Helicopters (UK) Tooling supply conditions.
- To have a set of Contractual Obligations agreed by the Contractor.

3. DEFINITIONS

LHUK	Leonardo Helicopters (UK), Yeovil, Somerset, BA20 2YB
Tooling	Any Jig, Fixture, Template, Gauge, Master, Rig, Test Equipment or Validation Equipment including mechanical test and alignment, hydraulic, electrical, fuel or pneumatic equipment or part thereof.
CATIA	Computer Aided Three dimensional Interactive Application
CAD	Computer Aided Design
HSP2055	Leonardo Health and Safety Policy relating to work equipment and machinery safety
C.E.	Conformité Européene (European Conformity)
PUWER	Provision and Use of Work Equipment Regulations
UKAS	United Kingdom Accreditation Service

4. PERFORMANCE MEASUREMENT

Continued LHUK approval will be based upon the supplier's ability to conform to LHUK contractual requirements in all respects. Supplier Performance Measures are in place for the monitoring of:

- DSA (Delivery Schedule Adherence) statistics
- Quality statistics
- Documentation deficiencies
- Milestone achievement
- Periodic review of approval criterion

Approval will be revoked at the discretion of the Central Tooling Manager, if poor contractual adherence is exhibited over a prolonged period of time.

5. GENERAL REQUIREMENTS

On receipt of the Purchase Order, the supplier accepts a duty to comply fully with the Leonardo Helicopters (UK) Commercial Purchasing Business Terms & Conditions (Doc Ref WA3582) and the applicable contractual obligations detailed herein.

5.1. Supplier Duty

- A file of all Contracts shall be maintained & protected from loss, damage or misuse and held secure in strict confidence for a period not less than 5 years.
- Work being performed for certain LHUK customers (e.g. Ministry of Defence) may require the supplier to provide access to his premises and/or relevant data pertaining to the contract. The supplier shall, after reasonable notice, facilitate access to the supplier's premises or relevant data.

5.2. Storage and Transportation Containers

An appropriate storage/transportation container shall be provided for all tooling, unless specified otherwise. Refer to Drawing Notes, on the associate Tooling Design to establish which of the criteria detailed below should be applied. Note: In instances where the design of the equipment to be manufactured pre-dates these criteria, or is not clear from the design, guidance should be obtained from Leonardo Helicopters (UK) Central Tooling Department

The dimensions and layout of all boxes shall be carefully considered to ensure the packaged tooling is practically condensed in order to keep overall dimensions to a minimum.

5.2.1. Line Build Tooling Storage Boxes

The use of 'Pelican Protector Cases' shall be the preferred option in all suitable instances. Cases shall have a box lining using machined Plastizote Foam liners to support and protect the tool. Each loose or separate assembly or item making up the tool requires its own pocket so it can be easily inventoried. If an item within a kit is supplied in a box, this item must be removed from the box and must have its own holding position.

The tool number shall be clearly and prominently marked onto the top and sides of the container.

All Identification should be carried out in one of the following methods:
- Stencilling (using permanent marker pen or paint)
- Permanent Vinyl Lettering

A Tooling and/or Calibration Ident Plate shall also be attached to all boxes. See 6.2.2

Where the use of 'Pelican Protector Cases' is not possible, or where the weight of the container alone, or including contents exceeds 15Kg, a wooden storage box shall be provided as per the following guidelines.

a. General Construction

All wooden storage boxes shall be made from Birch Plywood of suitable thickness to the

weight of the box including contents (12mm is the preferred thickness for most applications in order to reduce weight). All joints are to be glued and screwed. In instances where this method is not believed to withstand the load of the tooling, joints should be reinforced by securing softwood battens to the inside of the joint.

The use of softwood within box construction should be avoided, unless each softwood part is clearly stamped i.a.w ISPM Regulations, see Section 5.2.3.

All hardware shall be appropriate for use in an industrial environment.

Transportation containers shall be manufactured from carcassing timber treated to ISPM Regulations. See sub section d.

b. Container Protection

All storage boxes and transportation containers are to be protected with clear varnish.

c. Internal Layout

Storage boxes shall include sufficient internal components to support and protect the tool. The preferred method of box lining is using machined Plastizote Foam liners, however if this is not suitable because of the size or shape of the tool or box then the tool must have holding positions which are able to secure the tool in place and have an outline definition of the component part into the box *(see Fig 1).*

Each loose or separate assembly or item making up the tool requires its own pocket or holding position so it can be easily inventoried.

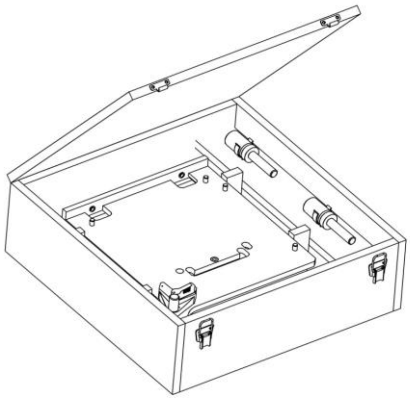


Fig 1 REF STORAGE BOX,
PLYWOOD CONSTRUCTION

d. Weight and CofG Identification and Provisions

If the weight of the container in whole, a removable part of the container, or the container including contents exceeds 5Kg then the actual weight shall be clearly identified on the top and all sides, with a note stating **'CHECK CofG'**, in a prominent position.

If the weight of the container in whole, or including contents exceeds 5Kg then handles should be attached in a position best placed to assist with lifting.

Should a lid or any removable section of the container exceed 15Kg, then lifting eyes and handles should be attached with a prominent note stating;
'LIFTING POSITION STRICTLY FOR (*..item..*) ONLY'

When the weight of the container alone, or including contents exceeds 15Kg, then battens, of a minimum thickness of 100 mm should be attached to the base of the container to enable movement with Forklift or Pallet Trucks.

When the weight of the container alone, or including contents does not exceed 15Kg, then battens, of a minimum thickness of 30 mm should be attached to the base of the container for finger clearance.

All identification on the storage box/case should be carried out in one of the following methods:
- Stencilling (using permanent marker pen or paint)
- Permanent Vinyl Lettering

e. Tool Number

The tool number shall be clearly and prominently marked onto the top and sides of the container.

All Identification should be carried out in one of the following methods:
- Stencilling (using permanent marker pen or paint)
- Permanent Vinyl Lettering

A Tooling and/or Calibration Ident Plate shall also be attached to all boxes. See 6.2.2

5.2.2. Transmission (TCE) Tooling Storage Boxes

Wooden storage boxes, as per the below guidelines are the mandatory storage requirements for TCE boxes.

a. General Construction

As per Section 5.2.1.a.

b. Container Protection

As per Section 5.2.1.b.

c. Internal Layout

Storage boxes shall include sufficient internal components to support and protect the tool. All stand-alone components of the tooling shall be clearly laid out within the box, as a means of simply identifying missing parts.

Felt protection shall be bonded at all fixture - box contact points.

Should the Tooling consist of separate assemblies/items, then tool control provisions should be created (*see Section 5.2.5*).

d. Weight and CofG Identification and Provisions

As per Section 5.2.1.d.

e. Tool Number

As per Section 5.2.1.e.

5.2.3. ISPM (INTERNATIONAL STANDARDS FOR PHYTOSANITARY MEASURES) 15 REGULATIONS

ISPM Regulations define the Phytosanitary measures required to reduce the introduction and spread of quarantine pests associated with the international movement of raw wood packaging materials.

Full details can be obtained from the www.gov.uk website.

Note: Containers wholly made from processed wood material (Plywood, Particle Board, Orientated Strand Board) are exempt from these regulations.

5.2.4.5.2.5. Tool Control

All tooling/equipment supplied shall be boxed or displayed in an organised manner, meeting the requirements of Tool Control. The fundamental principle of Tool Control ensures all items of tooling and any detachable parts are accountable at all times.

There are two types of control:

- Tool Kits
- Toolboxes

The type of Tool Control to be conformed to shall be Tool Kits, unless otherwise stated within the Purchase Order. The requirements for both types are:

A. Tool Kits

- Supplied in a storage box/container as per section 5.2.
- Have each separate/loose assembly or item in its own holding position within the storage box/container.
- Each loose item and any items which are removable from tool/assembly, where practical, must be etched with the work centre number prefixed with the letter “K”, for example “K300#####”. If unsure of the work centre number, please obtain from the Central Tooling Department.
- Supply a Tool Kit Inventory. Using the Central Tooling Template(s) create an inventory to list and identify every item within the kit which must be laminated and fixed securely to the inside of the lid. An inventory must be included with every boxed item, including where there is only 1 item within the box. The inventory consists of two mandatory parts. See Annex C for examples of inventory.
- Foam within the lid of the case/box must be glued to the lid with the flat face of the foam facing out. The laminated inventory must then be securely affixed to the flat face of them foam.

B. Toolboxes

- Suitably sized lockable toolbox is required with 3 keys.
- Have a foam insert with custom pockets for each item in every drawer. Where a drawer is empty a blank insert must be inserted.
- Each loose item and any items which are removable from tool/assembly, where practical, must be etched with the Toolbox name.
- Supply a Toolbox Inventory. Using the Central Tooling Template create an inventory to list and identify every item within the kit which must be laminated and fixed securely to the inside of the lid. The inventory consists of two mandatory parts.

An editable soft copy version of all inventories must be supplied upon completion, as per Section 7.7.

Please see Annex C for the Tool Control guide which provides more specific details.

5.2.5.5.2.6. Protective Treatments

All equipment supplied that could be adversely affected by Environmental and/or Galvanic Corrosion in transportation, storage, or use, shall be protective treated prior to delivery.

In general terms, but not inclusive, this will be in the form of a light prohibitory oil. Typical examples would be datum and functional faces that have not been painted, parts which have been Chemi Blacked and Machining Fixtures.

5.3. Quotations

Below are the technical requirements for all Tooling Quotations:

- Quotations must be on company headed paper,
- Quotations must have a reference number and be dated,
- Quotations must be signed by a representative of the company,
- The LHUK part number for each tool must be identified,
- The LHUK tool number and description of each tool being quoted,
- Design Issue at which the design/manufacture/modification is being quoted for
- Individual costs for each tool being quoted,
- Individual lead time for manufacture of each tool being quoted,
- Individual design cost and lead time for each tool if applicable,
- Individual CE document cost for each tool if applicable,
- Individual HSP2055 compliance document cost for each tool if applicable.
- Include a list of documentation to be supplied as per the Technical Requirement Document (TRD)

For a contract which may have an extended duration to completion, the supplier may request that any subsequent Tool Order raised to perform the work should be prepared with several line items to reflect the various activities. These line items must have tangible verifiable milestones. The supplier can then invoice progressively for each line item as the contract is discharged.

6. SPECIFIC REQUIREMENTS

6.1. Tool Design

- The Supplier shall undertake the tool design to achieve the Tool Engineer's requirements and/or written instructions to achieve a cost-effective tool, which achieves a practical solution.
- Any supporting data (Engineer drawings, specifications, etc.) provided to enable the tool design(s) to be effected are to be security controlled and administered as confidential documents.
- The Supplier shall ensure that the design is compliant with UK law supply requirements for relevant Health & Safety or other applicable legislation to minimise / prevent potential injury to personnel and damage to the product.
- The Design shall be subject to a Design Review to establish conformance to the contractual, legislatory obligations, or other defined or specified requirements.
- The Design shall be finally approved for compliance by authorised personnel within Central Tooling to ensure the design inputs, health and safety and design standards have been met.
- The 3D design should be created in line with the detailed PSN Graph Structure, and Part/ Product Properties populated as shown in ANNEX B. The design deliverable shall consist of all constituent parts of the design. All draw sheets shall be within a single CATDrawing, supplemented with PDF copies.
- All 3D and 2D models shall be submitted to Central Tooling for design approval, prior to launch of manufacture.
- All Design work undertaken on behalf of the Leonardo Helicopters Central Tooling Department must comply with the following conventions.

6.1.1. CAD Software

All new Tooling Designs shall be created in CATIA V5, in a version no later than RELEASE 22.

In instances where reference information from our legacy CADAM and CATIA V4 software must be utilised, specific requirements relating to its use will be dealt with on a case by case basis.

6.1.2. Drawing Identities

A drawing sheet must only have one identity. The correct number should be obtained from the Purchase Order.

6.1.3. Drawing Sheets

a. **CATIA V4** - When creating Draw Sheets in CATIA V4, Leonardo standard Draw Formats shall be used. These are available on request.

b. **CATIA V5** - When creating Draw Sheets in CATIA V5, Leonardo standard Draw Formats shall be selected relating to the respective aircraft for which the Tooling is being designed, the type of equipment being designed and the part of the drawing being drawn. Specific formats are available for CE (Conformité Européenne) compliant designs, Equipment used by the Transmissions division, non-aircraft specific designs, GA (General Assembly) sheets,

Detail sheets and sheets used solely for Setting/Inspection information.

The latest versions of these formats are available on request.

Note: Due to obligations relating to copyright, formats are periodically updated at year start.

6.1.4. Projection

Third angle projection shall be used in all instances, unless a particular view or section needs to be projected in any other way for clarity. The direction of the view or section must be clearly shown and noted by arrow/s and letter/s.

Letters or numbers shall be used sequentially (omitting 1 and 0). The same letters may only be used on different sheets of a design.

If a view or section is drawn on a sheet other than where it originates, the respective sheet and location reference should be defined in the originating view.

6.1.5. Standard Drawing Information

The following is an explanation of the information (some abbreviated) which shall be denoted on the drawing sheet where applicable.

I. Title
This box should include the tooling description, taken from the respective RFQ.

II. Tool Number
The tool number consists of the component part number suffixed by the tool W number, this should be taken from the respective Purchase Order.

III. Sheet Numbering
The first sheet only shall denote the sheet number and number of sheets.
Any additional sheets shall denote the sheet number only.

IV. Design Issue
The first issue shall be recorded as A and subsequent issues in alphabetical order (omitting letters I and O). After letter Z use double letters AA, BB, etc.

The Issue Status box must be on sheet one and amended to show the issue status of all the other sheets. Sheet one will always be the current issue. On existing designs if it is not practicable to put the Issue status box on sheet one a clear note must be added to state on which sheet it can be found.

Initially all sheets will be of the same issue. Subsequently only the sheet containing the Issue status box (sheet 1) and the modified sheets will be raised in issue. i.e. sheet 4 may go from issue A to D if it has not been changed during issue B or C.

V. Modifications
When a modification is made to a particular sheet, raise it to the next issue letter by referring to the Issue status box, on sheet one.

On sheet one, record a precise description of the modifications to that sheet and list of the sheet numbers on which alterations have been made. State CLERICAL CHANGE ONLY if the changes do not physically affect the tool.

On the specific sheets which have been altered, record enough information about the alterations to easily identify the changes. Retain the original item number and identify the parts that have been modified by appending the issue letter. Append the Issue letter to the relevant modified items.

VI. Initials and Date

The Tooling Engineer and company name responsible for the design or modification shall record their company initials and the date.

VII. Parts List

The Parts List is located in the lower, right corner of the Draw Sheet, forming part of the Format View. This should be populated and extended as required. In instances where the Parts List becomes too large to fit alongside the GA views, it is permitted to move the Parts List to a subsequent sheet.

All fields of the Parts List should be populated. The 'Description' field should be used to define the stock material sizes required to manufacture the respective part, or sufficient detail to order 'Bought Out' items.

In instances where a specific or recommended supplier needs to be defined, then a drawing note shall be added.

VIII. Dimensional Tolerances

The general tolerances denoted on the sheet format should cover most accuracy requirements in design.

If not, the calculated limits for a dimension should be quoted - largest dimension on top, smallest dimension under it - both above the dimension line.

For limits and fits as applied to interchangeable items, when not denoted on the drawing refer to the latest issue of MDS 1000 I.S.O. Metric, Limits Fits and Tolerances, available on request.

The limits MUST be quoted, but the relevant letters and numbers can be appended.

IX. Geometric Tolerances

Geometrical Tolerances shall be applied over and above normal dimensional tolerances when it is necessary to control more precisely a feature of a manufactured part.

For general geometric tolerance practice refer to the current issue of BS8888.

X. Estimated Weight of Tool

The estimated weight of the Tooling (calculated by CATIA) should be identified in the designated area of the Title Block.

XI. Standards Notes

Standards Notes are an integral part of the Format View on all GA and Setting/Inspection sheets. The pre-populated notes cover the majority of design

scenarios. Notes not relevant to the design shall be deleted and additional notes shall be added when appropriate.

In no circumstance shall Note 1 be deleted from the GA drawing format, or Note 1 & 2 from the Setting/Inspection Sheet Format.

Individual notes may be positioned next to the relevant features on the drawing, as applicable.

XII. Welding and Welding Symbols

Dimensioning and Symbolic representation of welded joints shall be applied in designs requiring CE Compliance and/or FEA (Finite Element Analysis).

For Symbolic Representation guidelines refer to BS EN ISO 2553:2013.

6.1.6. Issue For Manufacture

All drawings must receive approval from the responsible person within Central Tooling, prior to manufacture.

6.1.7. Document Management

Any drawing supplied in either hard or soft format prior to final approval must be overlaid with the legend '**PRELIMINARY ISSUE'.**

6.1.8. Metric And Imperial Systems

The system used when designing Tooling shall reflect that of the associate aircraft. When creating an imperial design the uses of metric Bought-Out components is permitted when imperial versions are either unavailable, or more difficult to obtain.

When dimensioning Imperial Tooling, dual Imperial/Metric dimensioning should be used.

6.1.9. Port And Starboard Tools

Where tools are required for Port and Starboard (identical or nearly identical) component parts, it is only necessary to draw the port tool. In these instances the following example not should be added:-

1 off as drawn *(Tool Number)* Port

1 off opp. hand *(Tool Number)* Stbd

Any variations between port and starboard can be shown on the port-drawn tool, provided they are pictorially and dimensionally clear.

Always check which hand the component part is drawn (normally port).

Tools which are symmetrical about a ℄ (particularly aircraft ℄) can be noted on the assembly sheet one as follows:-

SYMMETRICAL ABOUT ℄ UNLESS OTHERWISE STATED.

6.1.10. Itemising

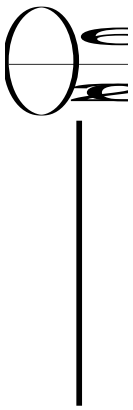
The components parts of any design shall be itemised in the following order:

a. Welded assemblies (FAB) - using numbers for the complete assembly and upper case letters for the constitute parts**.**
b. Tool steel and special metal flats.
c. Mild steel flats.
d. Tool steel and special metal rounds.
e. Mild steel rounds.
f. Other material flats.
g. Other material rounds.
h. Bought Out Standard parts (B.O) - e.g. W.D.S, Wixroyd.
i. Bought Out Jig Bushes (B.O) - Talbot Tool GRIP Range.
j. Bought Out Fasteners (B.O) - Screws, Bolts, Dowels e.t.c.

Springs shall be scheduled to a relevant specification.

6.1.11. Ballooning

When the item number sequence has been decided, the method of ballooning will be as follows:-



- Item No.
- Sheet No. on which item is drawn. If dimensioned on Assembly Sheet, show that Sheet No.

If the item has no design, the acronym N.D should be used.
If the item is Bought Out, the acronym B.O should be used.

- Leader line - preferably terminating in a dot or an arrow head may be used

6.1.12. Standard Parts

The use of Standard Parts should be considered, and where feasible the preferred option for every Tooling application. This shall include the modification of Standard Parts where possible.

Where modification is required, the drawing shall provide full details of the base component and the modifications required.

6.1.13. Item Detailing

Views detailing component parts shall be laid out within the drawing in an organised manor, keeping the number of draw sheets to a minimum. When multiple parts are detailed on the

same draw sheet, each part will be clearly defined by drawing a frame around all associated projections. Drawing call-up information shall be positioned in the lower left corner of the Draw Sheet or the part frame as appropriate in accordance with the details below:

I. Drawing Call Up - Welding Assembly Items

Welded assemblies will be numbered as stated in 6.1.10.

Item No. (01) *'X'* off *(Quantity)*, Mat'l *(Material)*, Stress Relieve, *(Material Treatments)*

II. Drawing Call Up - Component Parts

Item No. (01) *'X'* off *(Quantity),* Mat'l *(Material)*, *(Material Treatments), (Specific Notes)*

6.1.14. Manufacturing Direct From CAD Model

Where a component part can be manufactured directly from Digital CAD Data, orthographic and/or Isometric views shall be created to denote hole tolerances, threads and surface finishes. Where features are required which are not covered by general tolerancing, the required accuracy shall also be denoted.

The wording MACHINE DIRECT FROM CAD MODEL shall be placed in 'Specific Notes' section of the drawing Call Up.

6.1.15. Using Datums

To facilitate manufacture, designs should include whichever of the following is applicable:-

Datum faces, holes, Ball Reference Pin (Ickey Ball)

Most dimensions should originate from these datums, so avoiding dimensioning from different sources.

Where STN .. H or V lines are used as dimensions, show the number of decimal places which represent the required accuracy as shown in the GENERAL TOLERANCE block, or the dimension must be shown with specific tolerances.

If the STN .. H or V lines are not used as dimensions, they must be suffixed with note REF.

Stations must be noted F (Forward) or A (Aft).

Datum holes, faces or nominated features on a Tool or Gauge shall be quoted on the Tool Drawing. The actual dimensions must be marked adjacent to the feature.

When Inspection and/or setting shall be performed directly from CATIA data the primary/datum axis (x 0, y 0, z 0) of the Jig/Fixture assembly shall match that of the corresponding aircraft. All datum and inspection point values will therefore relate to those of

the aircraft system.

6.1.16. Machining Symbols And Surface Roughness

All symbols to be to the current standard of BS8888.

6.1.17. Sections

All Sectional Views to be to the current standard of BS8888.

6.1.18. Engineering Design Reference

When appropriate the Tooling Engineer must identify, as a note, on the Tool Design the Engineering Drawing Part Number/Numbers used when designing the tool.

6.1.19. I.C.Y. CATIA 'Digital Master Inspection Model' And 'ICY Inspection Sheet'

Where primary inspection and/or re-certification is to be controlled directly from CATIA data utilising a remote measuring system, e.g. Laser Tracker, then a CATIA digital master inspection model will be created. This model will be supported with a 2D Inspection sheet, located appropriately within the tooling drawing set.

The Inspection sheet will include, as a minimum:

An isometric view or views of the assembled tool, clearly identifying:

- The position and co-ordinates or numeric labels of all Datum Points and / or datum features (points used to create a datum system).
- The position and co-ordinates or numeric label of all Inspection Points and Offset Target Points (points to be inspected in order to confirm tool standard).
- Reference to any specific tolerances required.
- Reference note indicating the 'digital master inspection model' number
- Relevant sections and enlarged views required to clarify information
- Additional views may be required to clarify puck offsets specific to the measurement system employed.
- Surfaces requiring inspection to be clearly identified (by means of hatching or similar) including the required tolerance

N.B. Inspection Points (IP) and Offset Target Points (OTP) will be identified with the same numeric label, e.g. where nominal and offset co-ordinates are given for a single feature.

A co-ordinate chart detailing all Datum Points is optional. Points may be identified on leader lines within drawing views. A reference co-ordinate chart and box is located within the ICY/Setting Sheet Format View.

The Digital Master Model will include, as a minimum:

- All 'Datum Points' (points used to create an RMS datum system) and 'Inspection Points' (points measured to confirm the tool standard).
- Any Offset Target Points specific to the measurement system employed. To be agreed with the I.C.Y. Department during tool design.

- All surfaces requiring inspection.
- All vector lines within hole patterns.
- An Aircraft co-ordinate ref system. The model will be filed with this system active.

Jig features and non-inspected framework / surfaces will also be included for clarity, whilst giving due consideration to model size.

6.2. Requirements for Tool Manufacture

The following conditions supplement the Tooling Design. Acceptance of a LHUK contract requires compliance of the following:

6.2.1. Protection Requirements

Specific surface protection requirements and treatments will be defined on the respective drawing. General requirements are as follows:

- **Fabricated Steel Components -** Unless otherwise specified all non-functional and datum tool surfaces shall be painted with the following paint system.

  One primer-coat
  One under-coat compatible with top coat
  One topcoat as per the respective Aircraft colour code, *see ANNEX A.*

- **Fabricated Aluminium Components -** Unless otherwise specified, Aluminium component parts shall not be painted in whole. Coloured bands to indicate the aircraft that the tooling should be used on shall be applied as required. Etch Primer shall be used to improve paint adhesion.

When paint is specified on the respective drawing, the use of Powder Coat is an accepted alternative at the supplier's discretion. When Powder Coating is specified on the respective drawing, Powder Coat shall not be substituted with paint.

6.2.2. Ident & Re-Certification Plates

In all instances where it is viable, an Ident Plate *(see fig 3)* shall be applied to the tool.

When denoted on the Tooling Design, a Re-Certification Plate *(see fig 4)* shall be applied to the tool.

Ident and Re-Certification Plates shall either be screwed or riveted to the tool as deemed applicable, on non-working faces in a clearly visible and easily accessible location.

Ident plates shall be stamped, CNC Engraved or Laser Etched at the supplier's discretion with the part number and tool number from the Purchase Order, issue of tool, inspection stamp, and date in the applicable positions of the ident plate.

If a re-certification plate is required, the tool number and WAW number, which can be obtained on request from Central Tooling if not stated in the Purchase Order, should also be stamped, CNC Engraved or Laser Etched at the supplier's discretion, in the applicable positions

of the re-certification plate.

The Supplier or third party's recorded inspection/acceptance mark shall be applied to the plate on approval of the tool.

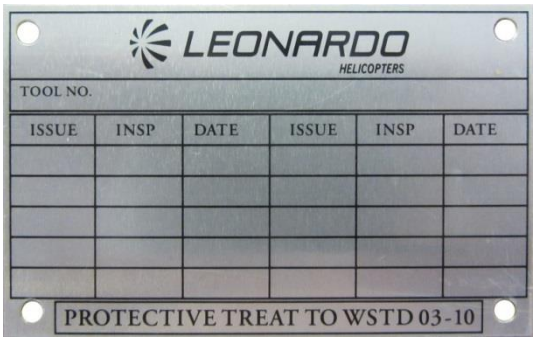


Fig 3

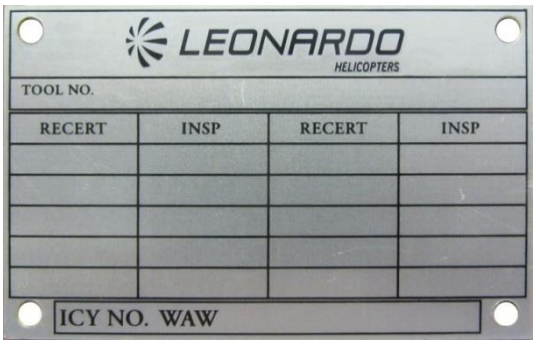


Fig 4

In instances where it is not viable to attach Labels to the tool due to insufficient size, material or shape, then the Tool shall be marked with the tool identity, as per the PO, with an inspection stamp adjacent and if applicable the WAW number, by one of the following methods:

- CNC Engraving
- Laser Etching
- Stamping
- Tagging (permanently attached with lanyard)
- Cable Identification Sleeves

Where a storage box is being supplied; an Ident Plate and/or Re-certification Plate shall also be attached to the box.

Note: attaching an ident plate to the storage box, should only be carried out in addition to, and not in lieu of physical tool identification.

6.2.3. Company Branding

The manufacturer may attach as a permanent fixture the manufacturing Company's official label to the tool, or if not possible due to size or shape the company's name may be stamped or etched in a prominent and non-wearing position.

6.2.4. Inspection

- Unless through prior agreement, all products must be inspected in accordance with the Inspection Clauses defined in Section 7.3. prior to delivery to LHUK.

- Any product received without an inspection stamp and/or an approved Certificate of Conformity will be quarantined pending corrective action. Repeated rejections will impact your approval status.

- When an Inspection Report is required as part of the deliverable, details relating to the applicable Inspection Template will denoted on the Technical Requirements Document with the RFQ.

- Inspection Templates are available for Calibrated and Non-Calibrated Jigs and Fixtures, document ref CT0118 and CT0218 respectively. A fully populated front sheet should be supplied with all reports; however the use of the template body is at the discretion of the supplier. When using a non LMW format, the conditions denoted in the template should be met, and presented in a clear and easily comprehensible manner.

- As a minimum, all dimensions defined to two decimal places (±0.05) or to a specific tolerance, outside of General Drawing Tolerances should be measured and the results annotated within the Inspection Report. When hole positions are created for Liner Bushes, the hole position and diameter shall only be recorded with the Liner Bush installed. Dowel holes positions do not need to be recorded within a report. In instances where measurements are required of a Jig, Fixture or Gauge in an assembled condition, those dimensions will be denoted on the drawing GA, or a dedicated Setting Sheet.

- Where it is believed a drawing may contain an error or the drawing is an aged design that may not conform to the defined standards, advice should be sought from the responsible Tooling Engineer.

6.2.5. Requirements for Calibration of Equipment

- The equipment to be calibrated shall be undertaken within the agreed identified costs submitted or as specified by the catalogue recorded value.

- All calibrations to be performed to a British Standard, a nationally recognised equivalent or to the equipment Manufacturers specification as qualified by the Central Tooling CT0112.

- Primary Standard equipment e.g. held by a Calibration Centre and used to calibrate Secondary Standard equipment e.g. Shop Floor equipment, shall be calibrated to achieve the British Standard, Nationally recognised standard or Manufacturers Specification in conformance to approved procedures to UKAS requirements.

- Secondary Standard equipment, e.g. Shop Floor equipment, may be calibrated to the above recognised standards but need only meet the specification accuracy as qualified by the Central Tooling Manuals CT0112, available on request.

- The Supplier shall record the attributes calibrated with the resultant data and retain for a period of 3 years.

- Where equipment is outside the defined range then: It may be adjusted (where it is specifically designed so) to bring back within the required range. LHUK to be informed of the discrepancy for impact on product's calibrated with the said equipment; if it is not possible to readjust the equipment back within the desired range then the Supplier shall provide a Repair quotation to LHUK for acceptance qualifying the costs of Parts, Labour and re-calibration.

- The Supplier shall provide LHUK with an electronic Certificate of Calibration in a Microsoft Word or Excel format and kept for 3 years from the date of calibration.

- All calibrated equipment shall have an identity label attached qualifying the date at which the equipment is due for re-calibration.

6.2.6. CE Marking

- Where the design is producing equipment for which CE Marking is required by way of legislatory requirements, then the Supplier shall be responsible for the supply of design and CE documentation in line with the Essential Health & Safety Requirements (EHSR's) for that specific equipment and those documents denoted on the associate Technical Requirements document

- A Technical File shall be supplied to LHUK Central Tooling department in both PDF and Word formats containing all CE documentation.

  The Technical file should include but not limited to: General Description of the equipment; GA of the equipment; GA of any power and control circuits; Risk Assessment; Test reports/certificates; Instructions for use; Maintenance requirements; Where appropriate, copies of EC Declaration of Conformity for any bought products in the equipment; Copy of EC Declaration of Conformity.

  Note: In instances where the undertaking of design and manufacture of CE compliant equipment is being fulfilled by different suppliers, the EC Declaration of Conformity shall be supplied by the manufacturer.

- The final review of the design must be completed by an authorised Leonardo Helicopters (UK) Tooling Engineer, prior to manufacture.

- Where equipment is not required to be CE marked but includes bought out kit items e.g. Multimeters, Manometers, Lifting accessories etc. these must be supplied with the manufacturers CE documentation.

- When manufacturing a duplicate piece of equipment or tooling, hence the Technical File has been previously created, then a CE Mark shall be attached to the item in line with regulation and a Declaration of Conformity shall be supplied for the associate item. A Declaration of Conformity will also be required for CE compliant, components parts used in the manufacture.

6.2.7. HSP 2055

Note: HSP2055 compliance documents will contain all elements of CE documentation up to but not including Declaration of Conformity or CE marking. A supplier Certificate of Conformity will be issued within the documentation

- When the design is producing Aircraft staging, working platforms & associated steps then the Supplier shall be responsible for the supply of HSP2055 compliance documentation in line with the Health & Safety Requirements and legislatory requirements for this type of equipment.

- Signed HSP2055 compliance documents will be submitted to LHUK Central Tooling department in both PDF and Word format.

- Benches, racks, and storage trolleys require the HSP 2055 Technical file to be submitted in the first instance of that equipment. All subsequent identical equipment's are manufactured to the same standards as the issued HSP 2055.

- Staging, steps and working platforms require a HSP 2055 technical file for every item. Every identical subsequent item requires its own specific HSP 2055 Technical File.

- Modification to any existing benches, racks, storage trolleys, staging, and steps will require the HSP 2055 document to be updated to reflect the latest changes to that piece of equipment.

- Delivery/Identification of all benches, racks, trolleys, staging and steps equipment that is delivered to LHUK must be part marked as per the short text within each purchase order. It must also include the relevant barcode identity which will be supplied by the Central Tooling Department, and is to be attached to each item by the supplier prior to delivery. Part marking must be in an easily visible location.

- The detailed design shall be delivered to Central Tooling compliant with Section 6.1. In instances where CAD Software is used for design of this equipment, that is not compatible with CATIA V5, then 3D models shall be delivered in STEP format and 2D Drawings in DXF.

7. CONTRACTUAL OBLIGATIONS

7.1. Tool Design & specifications

- Where requested by LHUK, tooling designs, specifications, models, standards or sketches shall be provided to LHUK. For “non-design” tooling, digital photographs shall be provided where requested.

- All design information is proprietary information of LHUK.

7.2. Tooling/Equipment Manufacture/Supply

7.2.1. Supportability Clause

The supplier shall maintain the ability to repair, service and supply spares for tooling supplied for a period of twelve years from acceptance of the tooling by LHUK, and shall, if requested by LHUK, carry out such repairs or service such spares at a reasonable cost.

7.3. Inspection of Equipment, Products or Work

7.3.1. Inspection Clause

Tooling which is manufactured to a specification or standard for the contract shall be accepted by LHUK as compliant after either a Leonardo sourced inspection, or the successful manufacture of the first component using the tool. Should the inspection fail or the first component manufactured be unacceptable to LHUK by reason of faulty tooling (such fault being attributable to the supplier) LHUK reserves the right to reject the tooling or part of the tooling and, at LHUK’s option:-

- Require the supplier to modify, repair or replace at the suppliers option, the defective tooling or part thereof at no cost to LHUK and reimburse LHUK with the cost for any scrapped components or rework , or

- Require the supplier to credit the cost of the tooling or part thereof together with the costs incurred by LHUK in the dismantling and return of the rejected tooling or part, or
- Repair, rework or otherwise correct the rejected tooling or part and charge the supplier with the cost thereof.

7.3.2. Inspection Clause

Each item of tooling being supplied to a LHUK contract must be new and unused (unless specified to the contrary or the contract relates to repair/refurbishment) and be subject to inspection for conformance with the tool design, specification, standard or specific contractual requirements for release by your Inspection Organisation. Evidence of this inspection and release shall be shown by the impression of your official inspection stamp on the nameplate or in the close proximity of the Part Number and Tool Number.

7.3.3. Inspection Clause

Tooling and equipment being supplied to a LHUK contract must be subject to inspection for conformity to the Tool Design/specification, standard or documented requirements and an inspection report prepared. Reports forming part of the deliverable shall conform to Section 6.2.4. The supplier shall hold all inspection reports for a period of 3 years for onward transmission to LHUK when requested. A Certificate of Conformity shall be supplied to confer conformity with a delivery/advice note.

7.3.4. Calibration Clause

For measuring equipment which requires calibration and periodic re-certification then a Certificate of Conformity stating Calibration traceable to national or international standards, is required.

LHUK, without prior approval may effect remedial or repair action to non-conforming tooling in urgent cases where the supplier would not achieve the timescale. In such cases the supplier and LHUK shall agree which party shall bear the costs and expenses thereof or in what proportion these costs and expenses shall be divided between them.

The warranty shall remain in effect provided the remedial or repair action does not result in any detriment to the goods.

In no event will this warranty cover defects due to normal wear and tear, disregard by LHUK of operating instruction, excessive overloading by LHUK of operating conditions.

7.4. Packaging & Delivery

7.4.1. Packaging Clause

Tooling shall be adequately protected against corrosion, contamination and damage during shipment and handling. All fluid openings and connectors must be protected against contamination and damage.

Hydraulic or fuel component parts or openings shall be plugged or sealed with appropriate

blanks/caps/plugs that will not deteriorate in contact with these fluids. Only closures of metal material are acceptable for sealing fuel system component, but must be so designed as to prevent the fitting of these components without the removal of the closures.

Plastic closures are acceptable for non-fluid application such as electrical connectors.

7.4.2. Delivery Clause

All Tooling to be delivered must be directed to LHUK Jig & Tool Receiving Wharf unless otherwise stated on the Tooling purchase order. Note: If delivery is out of hours or no receiving personnel are available, then the tooling must be directed to the main LHUK Receiving Wharf, but must be identified as for the attention of the Jig & Tool Receiving Wharf.

7.5. Regulatory Requirements

7.5.1. Statutory Legislation Clause

Each Tool or part thereof supplied under the LHUK contract shall be free from defects whether patent or latent, in both material and workmanship and shall be manufactured, assembled, supplied and/or serviced in accordance with current British Standards and comply with the Health and Safety at Work Act 1974, CE Marking , P.U.W.E.R. requirements or any statutory modification or re-enactment for the time being in force, where hazard to safety, health or property exists the Supplier shall provide full details in writing of any precaution to be taken by LHUK prior to delivery or servicing of the supplies.

7.5.2. Environmental Clause

The disposal of any waste materials created by the execution of a LHUK contract shall be in accordance with the requirements of the Control of Pollution Act 1974, the Control of Pollution (Special Waste) Regulations 1980, the Collection and Disposal of Waste Regulations 1988, or any statutory modifications or re-enactment for the time being in force.

7.6. On Site Working

For a contract that requires the supplier to perform tooling work at Leonardo Helicopter UK site or facility, the supplier must be approved for on-site work. The personnel carrying out the required work for the supplier must also be approved and be competent, trained and skilled for the required work. For this to happen, the supplier must;

- Complete a WA3589 – Safety & Environment Questionnaire
- Complete a WA1918 – General Conditions of work on site
- Supply Public Liability Insurance Certificate
- Supply Health and Safety Policy
- Supply any applicable certificates such as CHAS, Safe Contractor etc.

Once approved the supplier must ensure the personnel undertaking the task have been inducted and approved by an authorised Central Tooling Engineer. This is a one off approval per individual involving;

- Contractor Induction Training Presentation
- FOD Awareness DVD
- ISO 14001 – Workplace Environmental Awareness DVD

For each job the supplier will need to supply a risk assessment and method statement for the required task.

Whilst onsite the personnel must ensure complete cooperation to Leonardo Helicopter Tool Control if work is being undertaken in a FOD controlled area.

The Contractor shall work within LWM Ltd. Policies and in a safe manor at all times whilst on site.

7.7. Good Receipting

On completion of the tooling contract, milestone activity or line item, a Certificate of Conformity or PO Compliance Certificate shall be raised and supplied, along with a digital photograph of each tool (unless otherwise stated on the individual item text on the purchase order, or if there is a copy of the inventory being supplied with a photograph within), an editable soft copy version of the inventory, and additional specified documents (e.g. CE Technical File, or HSP 2055). This will form part of the goods receipting process.

If a photo is required, the photo should be in a PDF format and be identified with the relevant LHUK Part No./Tool No. (e.g. WG1593-0328-041 W105.pdf). The photo must show the entire tool.

The certificate of conformity/purchase order compliance certificate must be on company headed paper and shall contain:-

- The Purchase Order Number
- The Purchase Order line item number
- The LHUK Part Number

- The LHUK Tool Number
- A statement to certify that all requirements of the Contract (Tooling Purchase Order) and this Document are complied with
- Relevant authorised signature

The completion documentation shall be sent to Central Tooling electronically to central_tooling@leonardocompany.com or posted to Leonardo Helicopters (UK), Central Tooling Box 12, Lysander Road, Yeovil, Somerset, BA20 2YB. Upon receipt of the Certificate of Conformity, relevant tooling photograph, acceptable inventory, and additional specified documents (e.g. CE Technical File, or HSP 2055), payment will be authorised (subject to audit or other evidence as may be required) where upon ownership title of the tooling shall pass to LHUK

Contracts placed on your Company shall invoke the LHUK Commercial Purchasing Business Terms & Conditions document WA3582, refer to Section 17 for specific Terms and Conditions.

8. ANNEX A – PAINT COLOURS

PAINT COLOURS

Equipment Type Colours

Equipment Type	Colour	BS4800 Code	RAL Code
Lifting Equipment	Orange	BS4800- 06.E.51	RAL 1028
Ground Support Equipment	Yellow	BS4800-08.E.51	RAL 1006
Interchangeability Media	Red	BS 4800-04.E.53	RAL 3020
Welded Staging	Aluminium White		RAL 9006
Transmissions	Unpainted	N/A	N/A

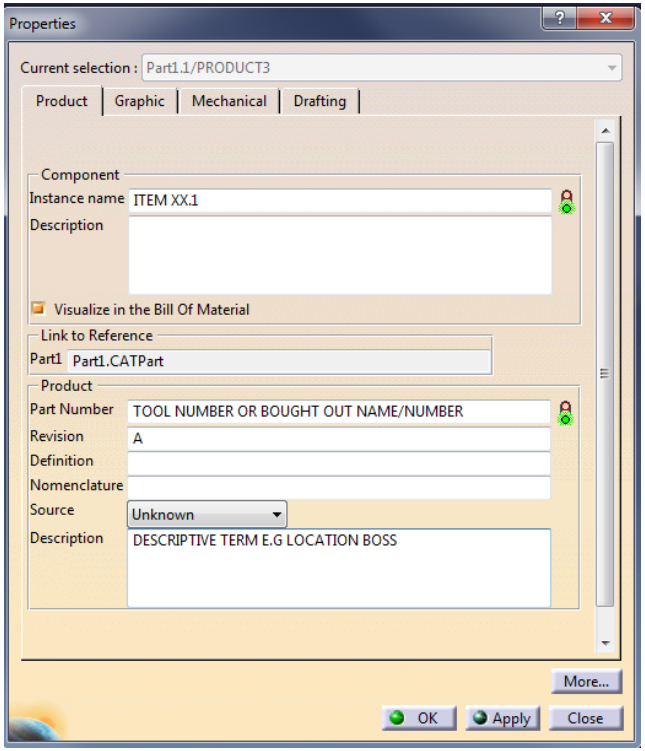
All other tooling shall be painted in aircraft platform colours.

Aircraft Platform Colours

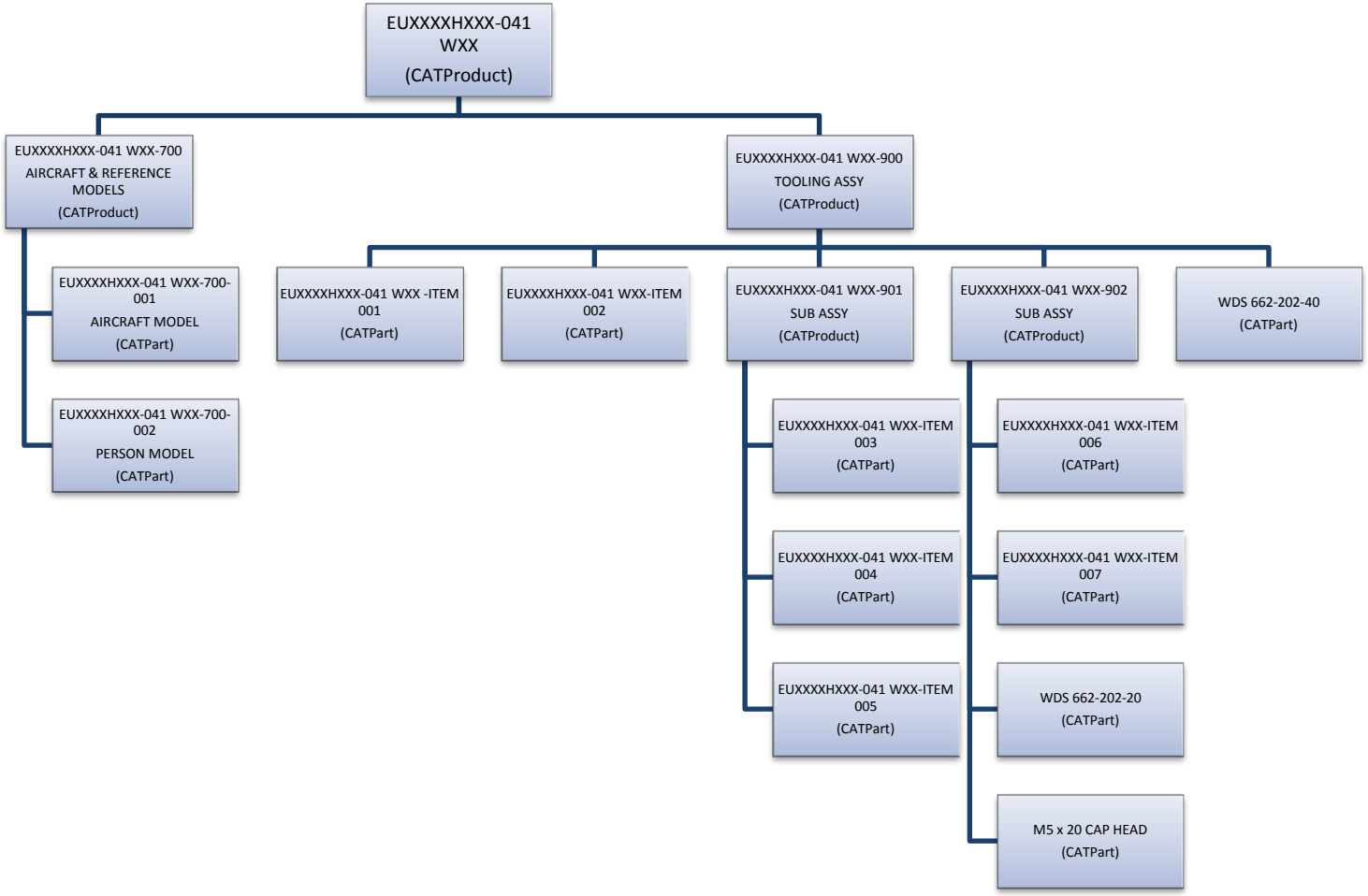
PLATFORM	COLOUR	BS4800 CODE	RAL CODE
APACHE	Mulberry	BS4800-02.C.39	RAL 4002
AW101	Dark Blue	BS4800-20.D.45	RAL5010
AW139	Ruby Red	-	RAL 3003
AW149	Pearl Violet	-	RAL 4011
AW159	Pure White	-	RAL 9010
AW169	Sulpha Yellow	-	RAL 1016
AW189	Beige Green	-	RAL 1000
AW609	Jet Black	-	RAL 9005
CHINOOK	Pink	-	RAL 3015
SUPER LYNX	Blue	BS4800-18.E.51	RAL 5012
SEAKING	Green	BS4800-14.E.53	RAL 6032

The aircraft platform shall be identified in the drawing title block.

9. ANNEX B – 3D DESIGN STRUCTURE



3D Design Structure



10. ANNEX C – TOOL CONTROL GUIDE

1. TOOL CONTROL OVERVIEW

The founding principle of tool control is that all tools, including items of a tool, are accounted for at all times. The accountability shall show who has the tool and where the tool is being used.

This means that within a tool kit, there must be a system which ensures that all assemblies/items within that kit are accounted for and at the end of use, must ensure all items and assemblies are present.

There are different layers of tool control to cover the type of tool or the function of the tool. These are:

1.1. Tool Kits

These are designed tools which have one or more assembly or item within the kit and will be used by one person. Most tools will come under this type of tool control. This will consist of:

- Storage box/container
- Holding position for every separate/loose assembly or item
- Assembly/Item Etching
- Tool kit inventory

1.2. Toolboxes

Toolbox will be used where standard hand tools are to be stored in one box or in some circumstances toolboxes may be used to control designed tools which have numerous separate items as part of the tool or where more than one operator will be using the tool(s). This will consist of:

- Toolbox
- Foam inserts
- Assembly/Item Etching
- Toolbox folder – including inventory
- Tally Board with Tallies

2. TOOL KITS

2.1. Storage Box/Container

The storage box should be delivered in accordance with CT0301, Section 5.2.

2.2. Assembly/ Item Holding position

The preferred method is to insert a foam insert into the storage box or container. The foam insert is required to have custom cut pockets for each individual assembly or item. It is not acceptable for more than 1 assembly or item to be stored in the same pocket. Plastizote shadow/dual colour foam liners are to be used for the foam inserts. Pick & pluck foam is not acceptable.

If a foam insert is not suitable for the storage box/container or the tool then the box must be laid out in such a manner that every individual assembly/item has its own holding position which holds the

item securely. If the tool comes apart as part of its function, then all individual items must be in separate slots. It must be laid out in such a way that every assembly or item can easily be identified and allows the operator or storeman see if an item is missing.

Items, such as pins, which are permanently fixed to the tool with lanyard, must also have their own holding position within the box.

Items which are permanently assembled to the tool must ensure they cannot be easily undone and therefore secured in place with Loctite or other suitable method. An example of this is slip bush locking screws. Locking screws should be Loctite into positon to prevent these items from becoming loose unintentionally. If the lock screw is required to be undone as part of the design then the item must have its own holding positon within the storage container.

In some circumstances it may be necessary to have different layers/compartments within the box. This is acceptable providing it is identified in the inventory and each assembly/item has its own slot..

2.3. Assembly/Item Etching

All assemblies/item within a kit require etching with the work centre number prefixed with a “K”. for example K300#####.

This is to identify the assembly/item belongs to that kit.

Where items are either too small to etch or there isn’t a suitable face to etch, then this should be identified in the inventory by adding text “ITEM NOT ETCH” after the item description.

On an assembly, where practical, any item which is easily removed must also be etched.

2.4. Inventory

The inventory is a method of listing out all the assemblies and items within the kit. This will be used by aircraft operators and tool store operatives to identify items within the kit and check if any items are missing. The inventory should be laminated and secured firmly to the flat side of the foam within the lid of the container. To help standardise the inventory layout there are several Tool Kit Inventory Templates of different sizes that should be used which can be supplied on request.

An inventory must be included with every boxed item, including where there is only 1 item within the box.

The inventory is made up of the following fields:

2.4.1. Tool Part number & Tool Number

The tool part number and tool number is added to the top of the inventory template. The part number should be taken from the Purchase Order and include the slash number after the tool number. i.e. /2.

2.4.2. Tool Work Centre

The work centre should be added below the tool part number. This will be the material master number on the order excluding the #TOOL. i.e. 300#####

2.4.3. Slot Number

The left hand column identifies the slot number in the photo. This will aid the Tool Store Operative in identify a missing item.

2.4.4. Assembly/Item Description

Each assembly/item in a slot will need a description to help identify the assembly/item. Where possible for single items the tool design item number should be added in addition to a description. This will help in identifying replacement items.

Where an assembly has an item which is easily removed, for example and slip bush locking screw, then the description should be split out to note the quantity and description of the item, please see FIG.a.

It is important to note that items such as thumb screws for pins etc. should be treated as separate items and not that of an assembly.

2.4.5. Calibration Number (if Applicable)

Where a calibrated item, for example a DTI, is part of the designed tool then the item will have its own calibrated equipment number. In these circumstances Central Tooling shall issue the equipment number on request. Central Tooling will endeavour to identify this upfront, if you have any queries over this then the tooling engineer should be able to assist.

2.4.6. Picture

A picture of the tool in the tool controlled foam is required. The photo will need to include slot numbers which tally up with the inventory.

Where a kit may have separate layers/compartments then the inventory may consist of several photos showing the different levels/compartments with corresponding slot numbers.
Please see FIG. a for an example of a completed inventory.

If there is an assembly with items which are easily removable it is necessary to include a close up photo of the assembly as shown in FIG.a.

Note: Any item attached with lanyard should also be listed on the inventory.

Please see FIG. a for an example of a completed Tool Kit Inventory.

3. TOOLBOXES

3.1. Toolbox

The toolbox needs to be a suitable sized toolbox for the contents which is lockable supplied with 3 keys.

3.2. Foam Insert

A foam insert is required with custom cut pockets for each individual assembly or item. It is not acceptable for more than 1 assembly or item to be stored in the same pocket. It is acceptable for some small items to be stored as a set, for example Allen key set, drill bit block etc. This quantity will need to be clearly stated on the inventory description, i.e. Allen Key Set 10pc.

Where there is an empty drawer then the drawer must have blank foam insert fitted to prevent items which do not form part of the toolbox being stored.

Plastizote Shadow/Dual Colour foam liners are to be used for the foam inserts.

3.3. Assembly/Item Etching

All assemblies/item within a kit require etching with the toolbox name. Any tool which is easily detachable into more than 1 item must be engraved on each item.

Where items are either too small to etch or there isn't a suitable face to etch then this should be identified in the inventory by adding text "ITEM NOT ETCH" after the item description.

3.4. Toolbox Folder

The toolbox folder is a standard folder which can be free-issued by Central Tooling. Section 2 of this folder contains the inventory which will need creating. The other sections of the folder are standard Central Tooling documents & Forms. To help standardise the inventory layout there is a Toolbox Inventory templates that should be used and can be supplied on request.

The inventory is made up of the following fields:

3.4.1. Toolbox Name

The toolbox name is added to the top of the inventory template. The part number should be taken from the Purchase Order and include the slash number after the tool number. i.e. /2.

3.4.2. Toolbox Work Centre

The work centre should be added below the tool part number. This will be the material master number on the order excluding the #TOOL. i.e. 300#####

3.4.3. Slot Number

The left hand column identifies the slot number in the photo. This will aid the Tool Store Operative in identify a missing item.

3.4.4. Assembly/Item description

Each assembly/item in a slot will need a description, of the assembly/description.

Where an assembly may be stored in its own container or as a set then this will need to identify the number of item, see Fig b below.

It is important to note that items such as thumb screws for pins etc. should be treated as separate items and not that of an assembly.

Where items, such as pins, can be lanyarded to the assembly, these are not required to be listed on the inventory as these are deemed to be permanently fixed to the assembly.

3.4.5. Manufacturer

The manufacturer of the tool should be input in the manufacturer column if it is a standard/bought out tool. If the assembly/item is from a designed tool then the manufacturer should be "Central Tooling".

3.4.6. Manufacturer Part Number

The manufacturer part number needs to be added the manufacturer part number column to aid in reordering. If the item is from a designed tool the manufacturer part number should be the item number called up on the drawing. This will help in identifying replacement items.

3.4.7. Production Code/Serial Number

Where a calibrated item, for example a DTI, is part of the designed tool then the item will have its own serial number. In these circumstances Central Tooling shall issue the required number on request. Central Tooling will endeavour to identify this upfront, if you have any queries over this then the tooling engineer should be able to assist.

3.4.8. Picture

A picture of each drawer is required to show the layout of each item in the tool controlled foam. The photo will need to include slot numbers which tally up with the inventory.

Where an item may be stored in its own box/compartment, then the inventory will need to include photos of the box/compartment opened to see the items inside it.

Please see FIG. b for an example of a completed Toolbox Inventory.

3.5. Tally Board & Tallies

A tally board is required for every toolbox unless otherwise instructed. As part of the RFQ a tally board design should be included which will give details to the size of the tally board, quantity of tallies, arrangement and the engraving required on the tallies.

Each row of tallies needs to be a different colour.

The tallies should be made from dual or triple coloured traffolyte.

4. Tool Control Compliance

On delivery of the tool an inspection shall be carried out to ensure the tool is compliant with the guidelines listed within annex C of this document. Any tool failing to comply with the required standard shall be rejected and rework will be required.

FIG. a – EXAMPLE OF COMPLETED KIT INVENTORY

LEONARDO HELICOPTERS

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30030000

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DESIGNED TOOL KIT INVENTORY

SLOT	DESCRIPTION	CAL ITEM
1	ITEM 007 – ø15.87 SHORT LOCATION PIN	
2	ITEM 007 – ø15.87 SHORT LOCATION PIN	
3	ITEM 007 – ø15.87 SHORT LOCATION PIN	
4	ITEM 007 – ø15.87 SHORT LOCATION PIN	
5	ITEM 006 – ø15.87 LONG LOCATION PIN	
6	ITEM 006 – ø15.87 LONG LOCATION PIN	
7	ITEM 006 – ø15.87 LONG LOCATION PIN	
8	ITEM 006 – ø15.87 LONG LOCATION PIN	
9	ITEM 008 – ø15.87 LONG STEPPED LOCATION PIN	
10	ITEM 008 – ø15.87 LONG STEPPED LOCATION PIN	
11	ITEM 008 – ø15.87 LONG STEPPED LOCATION PIN	
12	ITEM 008 – ø15.87 LONG STEPPED LOCATION PIN	
13	ITEM 018 – ø15.92 SLIP BUSH	
14	ITEM 018 – ø15.92 SLIP BUSH	
15	ITEM 018 – ø15.92 SLIP BUSH	
16	ITEM 018 – ø15.92 SLIP BUSH	
17	ITEM 015 – ø15.90 SLIP BUSH	
18	ITEM 015 – ø15.90 SLIP BUSH	
19	ITEM 015 – ø15.90 SLIP BUSH	
20	ITEM 015 – ø15.90 SLIP BUSH	
21	ITEM 213 – 4 x 36LG DOWEL – NOT ETCHED	
22	ITEM 213 – 4 x 36LG DOWEL – NOT ETCHED	
23	ITEM 213 – 4 x 36LG DOWEL – NOT ETCHED	
24	ITEM 213 – 4 x 36LG DOWEL – NOT ETCHED	
25	ITEM 020 - ø15.92 LONG LOCATION PIN	
26	ITEM 020 - ø15.92 LONG LOCATION PIN	
27	ITEM 020 - ø15.92 LONG LOCATION PIN	
28	ITEM 020 - ø15.92 LONG LOCATION PIN	
29	ITEM 201 - ø16.01 STEPPED LOCATION PIN	
30	ITEM 201 - ø16.01 STEPPED LOCATION PIN	
31	ITEM 201 - ø16.01 STEPPED LOCATION PIN	
32	ITEM 210 - NYLON BUNG COSNISTING OF	
	1 OFF M6 x 60LG CAP HEAD SCREW – CIRCLED BLUE – NOT ETCHED	
	1 OFF Ø26 x 30 NYLON BUNG – CIRCLED GREEN – NOT ETCHED	
33	ITEM 205 – ø16.02 SLIP BUSH	
34	ITEM 204 – ø19.05 SLIP BUSH	
35	ITEM 203 – ø18.80 SLIP BUSH	
36	ITEM 202 – ø18.50 SLIP BUSH	
37	ITEM 206 – ø19.04 STEPPED LOCATION PIN	
38	ITEM 206 – ø19.04 STEPPED LOCATION PIN	
39	ITEM 206 – ø19.04 STEPPED LOCATION PIN	
40	ITEM 206 – ø19.04 STEPPED LOCATION PIN	
41	ITEM 207 – ø15.70 NYLON LOCATION PIN CONSITING OF	
	1 OFF ITEM 208 – KNURLLED PIN HANDLE – CIRCLED PURPLE	
	1 OFF ITEM 209 – NYLON PIN SHAFT – CIRCLED ORANGE – NOT ETCHED	
42	ITEM 218 - ø15.975 STEPPED LOCATION PIN	
43	ITEM 218 - ø15.975 STEPPED LOCATION PIN	

LEONARDO HELICOPTERS

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AgustaWestland Products

DESIGNED TOOL KIT INVENTORY

44	ITEM 218 - ø15.975 STEPPED LOCATION PIN	
45	ITEM 218 - ø15.975 STEPPED LOCATION PIN	
46	ITEM 220 – ø15.985 SLIP BUSH	
47	ITEM 219 – ø15.975 LONG LOCATION PIN	
48	ITEM 219 – ø15.975 LONG LOCATION PIN	
49	ITEM 219 – ø15.975 LONG LOCATION PIN	
50	ITEM 219 – ø15.975 LONG LOCATION PIN	
51	PLATE ASSEMBLY CONSISTING OF	
	4 OFF SHOLDER SCREWS – CIRCLED RED – NOT ETCHED	

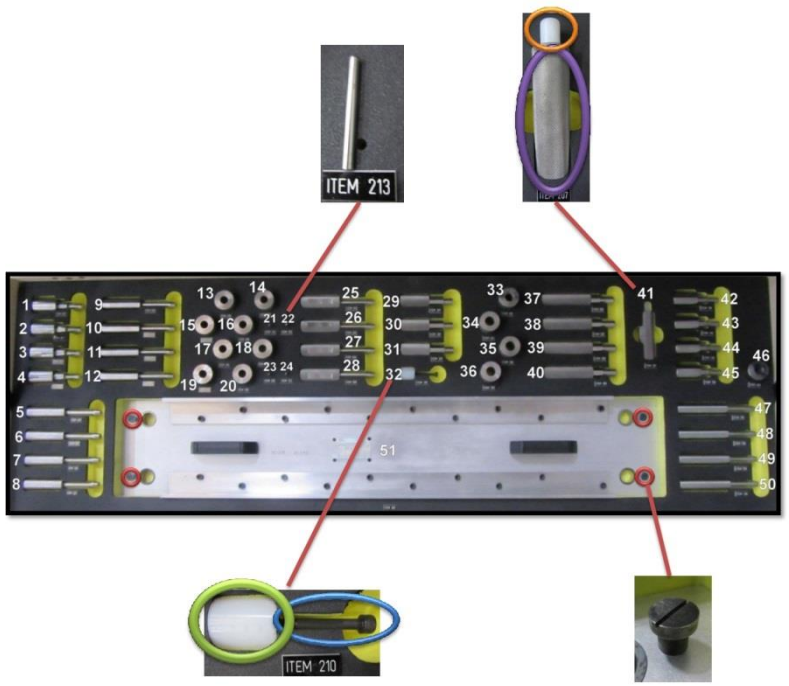

FIG. b – EXAMPLE OF COMPLETED TOOLBOX INVENTORY

Yeovil Aircraft Operations
Central Tooling

WIST 1 Inventory
SAP No. 30041569 Issue. 1

AgustaWestland

Drawer 10 Mirrors, measuring & pallet knifes

Slot	Description	Manufacturer	Manufacturer Part No.	Prod. Code / Serial No.
1	METRIC HEX SET 2-12MM - 11 PIECE	SNAP ON	AWM110DHK	
2	HEX 12MM	SNAP ON	AWM12D	
3	HEX 10MM	SNAP ON	AWM10D	
4	HEX 9MM	SNAP ON	AWM9D	
5	HEX 8MM	SNAP ON	AWM8D	
6	HEX 7MM	SNAP ON	AWM7D	
7	HEX 6MM	SNAP ON	AWM6D	
8	HEX 5MM	SNAP ON	AWM5D	
9	HEX 4MM	SNAP ON	AWM4D	
10	HEX 3MM	SNAP ON	AWM3D	
11	HEX 2.5MM	SNAP ON	AWM2-1/2D	
12	HEX 2MM	SNAP ON	AWM2D	
13	INSPECTION MIRROR	BLUE POINT	GA295	
14	INSPECTION MIRROR	BLUE POINT	GA295	
15	NYROC BLADE	SNAP ON	NYZ7001	
16	NYROC BLADE	SNAP ON	NYZ7001	
17	NYROC BLADE HOLDER	SNAP ON	NYZ7026EH	
18	NYROC BLADE HOLDER	SNAP ON	NYZ7026EH	
19	INSPECTION MIRROR OVAL	BLUE POINT	PTM157	
20	INSPECTION MIRROR OVAL	BLUE POINT	PTM157	
21	0-25MM METRIC MICROMETER. 30043846	MITUTOYO	103-137	GAC42582
22	DIGITAL VERNIER 6" 30043845	MITUTOYO	500-196-30	GAC42581
23	TAP WRENCH	BLUE POINT	YA577A	
24	SCISSORS	BAHCO	SC127	
25	STEEL RULE 12"	PEC TOOLS	262-012	
26	STEEL RULE 6"	PEC TOOLS	262-006	
27	STEEL RULE 6"	PEC TOOLS	262-006	
28	FEELER GAUGE .05MM TO 1MM	BLUE POINT	FBM320	
29	TAP M4	VOLKEL	M4 ISO 2 HSSG	
30	TAP M4	VOLKEL	M4 ISO 2 HSSG	
31	TAP M4	VOLKEL	M4 ISO 2 HSSG	
32	TAP M5	VOLKEL	M5 ISO 2 HSSG	
33	TAP M5	VOLKEL	M5 ISO 2 HSSG	
34	TAP M5	VOLKEL	M5 ISO 2 HSSG	
35	TAP M6	VOLKEL	M6 ISO 2 HSSG	
36	TAP M6	VOLKEL	M6 ISO 2 HSSG	
37	TAP M6	VOLKEL	M6 ISO 2 HSSG	
38	MAGNIFIER X10 LED	BAHCO	3046-OP	
39	TAPE MEASURE 10 FT	SNAP ON	TPMA10	
40	CLAW PICK UP TOOL	SNAP ON	GA353B	
41	PALLET KNIFE 6"	KENNEDY	KEN5335560K	
42	PALLET KNIFE 6"	KENNEDY	KEN5335560K	
43	PALLET KNIFE 4"	KENNEDY	KEN5335540K	
44	PALLET KNIFE 4"	KENNEDY	KEN5335540K	
45	INSPECTION MIRROR LED	SNAP ON	UIM2LT	
46	AWL	SNAP ON	SG5ASABR	
47	AWL MINATURE	SNAP ON	SG3ASABR	
48	PICK MINATURE	SNAP ON	SG3ASH45BR	
49	PICK MINATURE	SNAP ON	SG3ASH	
50	HOOK MINATURE	SNAP ON	SG3ASI	
51	SCRIBE STRAIGHT/90 DEGREE END	SNAP ON	YA33	
52	PICK UP TOOL MAGNETIC	SNAP ON	PHT	

Drawer 10 Mirrors, measuring & pallet knifes

Issue 1

Yeovil Aircraft Operations
Central Tooling

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