

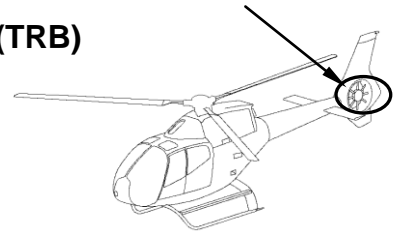
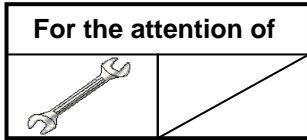
No. EC120-64A003

Civil version(s): B

ALERT SERVICE BULLETIN

PROTECTIVE MEASURE

TIME LIMITS - MAINTENANCE CHECKS - Tail rotor
Inspection of the drain holes alignment of the Tail Rotor Blades (TRB)



Revision No.	Date of issue
Revision 0	2021-02-09

Summary:

The purpose of this ALERT SERVICE BULLETIN is to perform a one-time inspection of the drain hole alignment for each TRB.

Compliance:

Compliance with this ALERT SERVICE BULLETIN is mandatory.



[ASB EC120-64A003](#)

No. EC120-64A003

1. PLANNING INFORMATION

1.A. EFFECTIVITY

1.A.1. Helicopters/installed equipment or parts

EC120 helicopters equipped with TRBs:

- MP/N C642A0300102 all Serial Numbers (S/N)
- MP/N C642A0300103 all S/N
- MP/N C642A0300104 all S/N
- MP/N C642A0300105 with S/N lower than M30500 except the S/N listed in [Appendix 4.D.](#)

NOTE

Refer to the Log Cards (FM) to identify the current modification status of the helicopter.

1.A.2. Non-installed equipment or parts

TRBs:

- MP/N C642A0300102 all S/N
- MP/N C642A0300103 all S/N
- MP/N C642A0300104 all S/N
- MP/N C642A0300105 with S/N lower than M30500 except the S/N listed in [Appendix 4.D.](#)

1.B. ASSOCIATED REQUIREMENTS

Not applicable.

1.C. REASON

Following an airworthiness investigation on EC130 and EC135 on the TRBs the requirement has been transferred to the EC120 based on the similarities in design and production method.

The purpose of this ALERT SERVICE BULLETIN is to perform a one-time inspection of the drain hole alignment for each TRB.

1.D. DESCRIPTION

This ALERT SERVICE BULLETIN consists in:

- inspecting the drain hole alignment on the TRBs,
- if necessary, replace the TRB(s).

1.E. COMPLIANCE

1.E.1. Compliance at H/C manufacturer level

Not applicable.

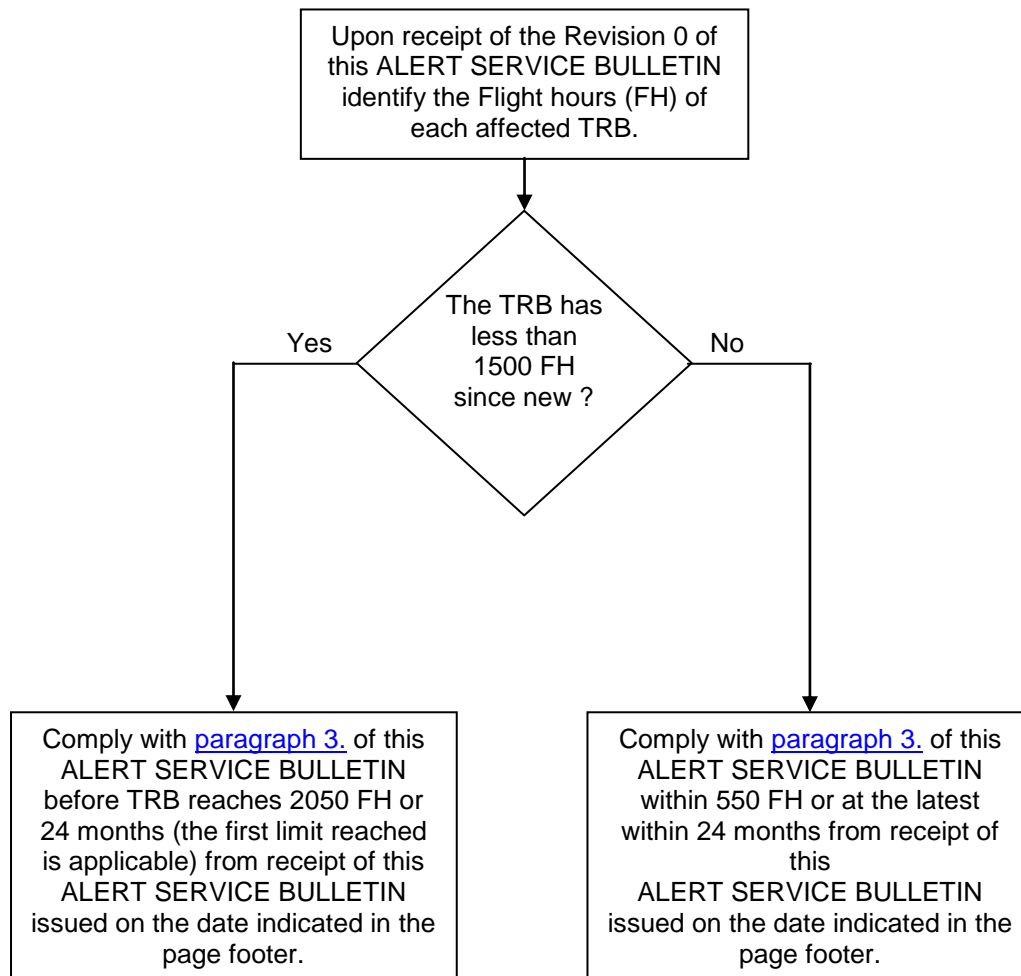
No. EC120-64A003

1.E.2. Compliance in service

Helicopters/installed equipment or parts:

The work must be performed on the helicopter by the operator.

Comply with flowchart below:



Non-installed equipment or parts:

The work must be performed on the non-installed equipment or parts by the operator.

Comply with paragraph [3.B.2.](#) to [3.B.4.](#) except [3.B.4.a.](#) within 24 months from receipt of Revision 0 of this ALERT SERVICE BULLETIN or before installation on the helicopter (the first limit reached is applicable).

1.F. APPROVAL

Approval of modifications:

Not applicable.



Approval of this document:

The technical information contained in this ALERT SERVICE BULLETIN Revision 0 was approved on February 08, 2021 under the authority of EASA Organization Approval No. 21J.700 for civil version helicopters subject to an Airworthiness Certificate.

1.G. MANPOWER



For compliance with this ALERT SERVICE BULLETIN, Airbus Helicopters recommends the following staff qualification:

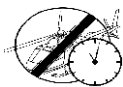
Qualification: 3 Mechanical Technicians (one for the dimensional check, one to keep his foot on yaw pedal during the dimensional check and one to light up).



The Estimated Man-hours are indicated for reference purposes only and based on a standard helicopter configuration.

Estimated Man-hours: 4 hours for the Mechanical Technicians.

Estimated helicopter downtime is indicated for reference purposes only, based on a standard helicopter configuration.



Helicopter downtime is estimated at 1/2 day (excluding the time for replacing the TRBs) to inspect the TRBs.

1.H. WEIGHT AND BALANCE



There is no change in weight and moment.

1.I. POWER CONSUMPTION

Not applicable.

1.J. SOFTWARE UPGRADES/UPDATES

Not applicable.

1.K. REFERENCES

The following documents are required for compliance with this ALERT SERVICE BULLETIN.

Standard Practices Manual (MTC):

MTC: 20-04-01-102: Use of cleaning products on individual parts and on helicopters - Cleaning

MTC: 20-04-01-402: Cleaning of removed individual parts with liquid solvents - Cleaning

MTC: 20-07-03-406: Instructions applicable when working on an aircraft electrical circuit and power generating systems - Technical instructions

MTC: 20-07-03-408: Appearance checks on an aircraft after an inspection or repair - Technical instructions

Aircraft Maintenance Manual (AMM):

AMM: 24-00-00,3-1: General Safety Instructions - Electrical Power Supply System

AMM: 64-21-00,4-3: Disassembly - Tail Rotor Hub

AMM: 64-21-00,4-4: Assembly - Tail Rotor Hub

Information Notice (IN):

IN: 3447-I-00: GENERAL - Introduction of the digital Service Bulletin reporting service R-TEX

IN: 3481-I-00: The Marketplace: an AirbusWorld eOrdering service

1.L. OTHER AFFECTED PUBLICATIONS

Not applicable.

1.M. PART INTERCHANGEABILITY OR MIXABILITY

Not applicable.

2. EQUIPMENT OR PARTS INFORMATION

2.A. EQUIPMENT OR PARTS: PRICE - AVAILABILITY - PROCUREMENT

Price

A new blade is to be ordered by the Customer at tariff price (with application of the commercial conditions of the Customer if any) and Airbus Helicopters will reimburse via a credit note the Customer for the remaining hours of the blade to be replaced not used by the customer (prorata price calculation on the current blade price).

This reimbursement will be possible only if the blade in category B is confirmed in written by Airbus Helicopter through a TE opened before the end of the compliance time of this ALERT SERVICE BULLETIN (24 months from receipt of revision 0 of this ALERT SERVICE BULLETIN issued on the date indicated in the page footer).

Availability

Delivery lead times will be indicated by the Sales and Customer Relations Department on the operator's request.

Procurement

Order the required quantity from the Airbus Helicopters Network Sales and Customer Relations Department:

Airbus Helicopters
Etablissement de Marignane
Direction des Ventes et Relation Client
13725 MARGNANE CEDEX
FRANCE

NOTE 1

On the purchase order, please specify the mode of transport, the destination and the serial numbers of the helicopters to modify.

NOTE 2

*For ALERT SERVICE BULLETINS, order by:
Telex: HELICOP 410 969F
Fax: +33 (0)4.42.85.99.96.*

2.B. LOGISTIC INFORMATION

Not applicable.

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2.C. EQUIPMENT OR PARTS REQUIRED PER HELICOPTER/COMPONENT

Equipment or parts to be ordered separately:

Key Word	Qty	New P/N	Item	Old P/N →	Instruction
Tail Rotor Blade	AR	C642A0300102	1	C642A0300102	
		or		or	
Tail Rotor Blade	AR	C642A0300103	2	C642A0300103	Discard
		or		or	if
		or		C642A0300104	Category B
		or		or	
Tail Rotor Blade	AR	C642A0300105	3	C642A0300105	

Consumables to be ordered separately:

As per Work Cards and Tasks mentioned in this ALERT SERVICE BULLETIN.

You can order the consumables from the AirbusWorld Marketplace through e-ordering (IN No. 3481-I-00).

If you can't get access to e-ordering, please contact your Logistic Focal Point.

Special tools:

As per Work Cards and Task mentioned in this ALERT SERVICE BULLETIN and list below:

Key Word	Qty	Tool P/N or equivalent	Item
Smartphone	1	Commercial P/N	zz
Digital camera	1	Commercial P/N	yy
Computer	1	Commercial P/N	xx
Steel ruler	1	Commercial P/N	ww
Light	1	Commercial P/N	vv
Red color marker	1	Commercial P/N	uu

2.D. EQUIPMENT OR PARTS TO BE RETURNED

Not applicable.

3. ACCOMPLISHMENT INSTRUCTIONS

3.A. GENERAL

- As per Work Card 20-04-01-102 (MTC), read and comply with the use of cleaning products on individual parts and on helicopters.
- As per Task 24-00-00,3-1 (AMM), read and comply with the General Safety Instructions.

3.B. WORK STEPS

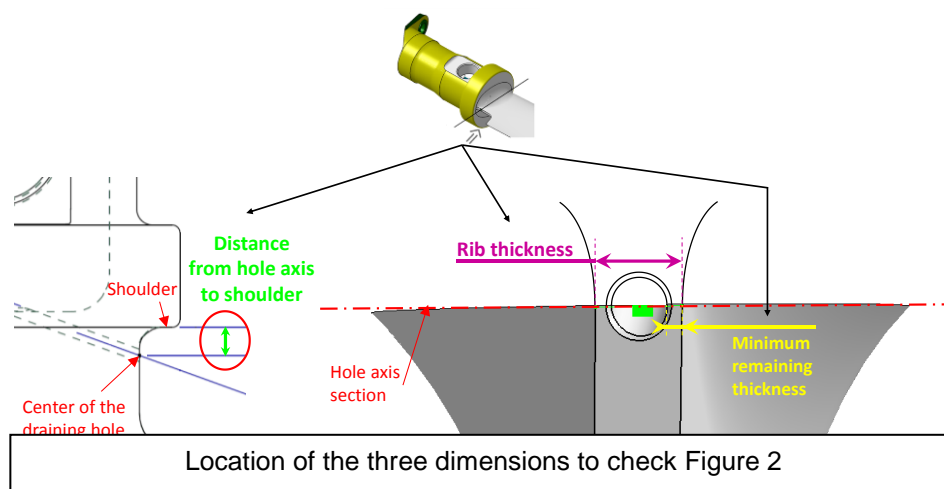
3.B.1. Preliminary steps

- Disconnect all the electrical power supplies as per Work Card 20-07-03-406 (MTC).
- Install the access equipment.
- Clean the TRBs in the drain hole (a) area as per Work Card 20-04-01-402 (MTC) ([Figure 1](#)).

3.B.2. Dimensional check of the TRBs

- The dimensional check procedure consists in checking the three following dimensions:
 - . Distance from the hole Axis to the Shoulder (DAS),
 - . RIB Thickness (RIBT),
 - . Remaining Thickness (RT).

Location of the 3 dimensions to control



Location of the three dimensions to check Figure 2

- There are three different means of measurement which are listed in the order of application. If a mean is not accessible or not conclusive, use the next one in the following order:
 1. Smartphone application.
 2. PowerPoint method.
 3. Contact customer support with a specific procedure.

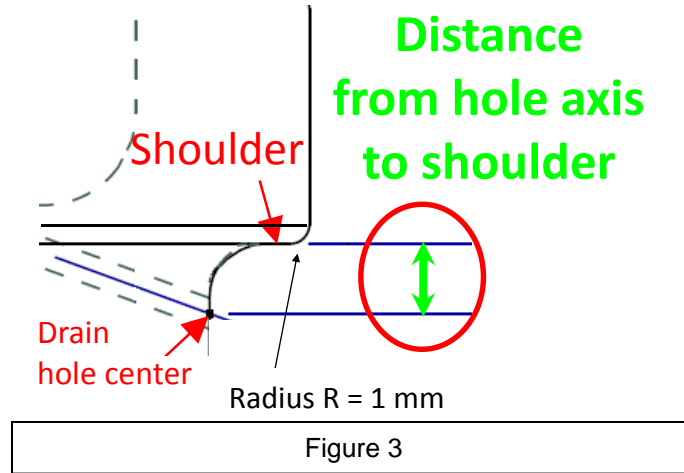
NOTE 1

These means are detailed in the following paragraphs:
[3.B.3.a.](#), [3.B.3.b.](#) and [3.B.3.c.](#)

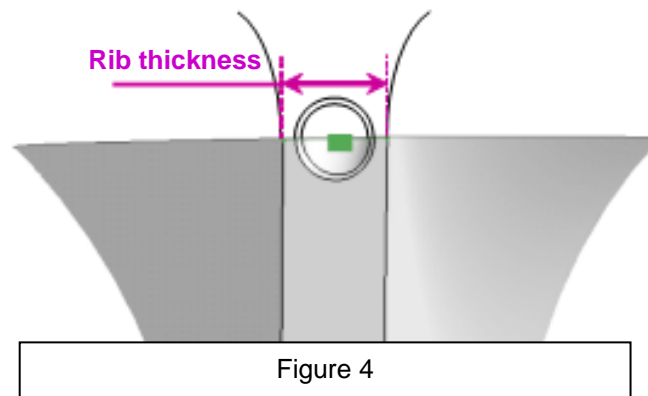
No. EC120-64A003

- Check one criterion on each three previous dimensions:

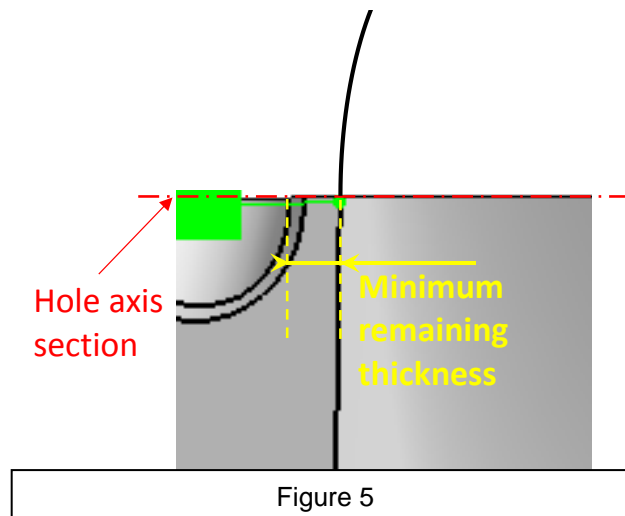
- . the DAS is less than or equal to 4.7 mm (0.185 in). This distance corresponds to the distance between the center of the drain hole and the shoulder without taking into account the radius ($R = 1$ mm) of the shoulder as per Figure 3 below:



- . the RIBT is more than or equal to 2.2 mm (0.086 in). at the level of the hole center, as described in Figure 4,



- . the RT is more than 0.1 mm (0.004 in). This distance corresponds to the minimum distance between the rib edge and the drain hole circle. The chamfer of the drain hole must not be taken into account (cf. Figure 5 below),



- these three criteria must be checked.

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3.B.3.a. Measurement of the TRBs with a smartphone

Purpose is to determine if TRB is in category A or B.

- Download the cell phone application on a smartphone (zz) by following the link below:
 - .application_for_Android version: [app for android](#)
 - .application_for_IOS version: <https://testflight.apple.com/join/4uSkiIO>
(PIN CODE Airbus1234)
- . the use of this smartphone application on the TRB (c) (not shown) installed on the helicopter requires first to rotate the outer bearing (b) (figure 6).

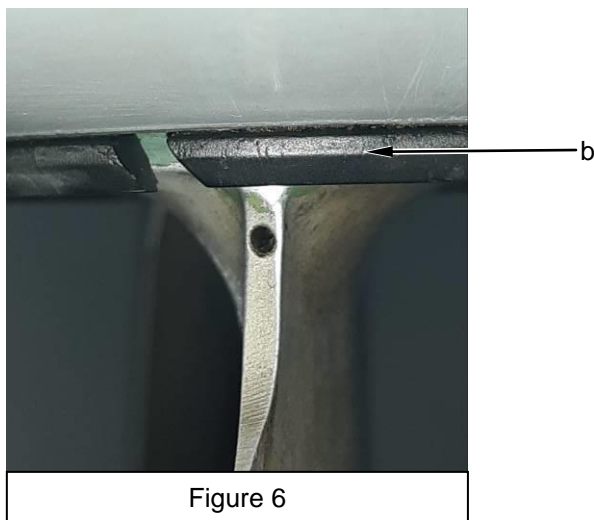


Figure 6

- If the outer bearing (b) (Figure 6) can be rotated:
 - . Read and comply with the instructions given in [Appendix 4.B.](#) to use the cell phone application procedure,
 - . Measure the TRBs using the smartphone (zz).
- If the outer bearing (b) (Figure 6) cannot be rotated:
 - . Remove the TRB (c) (not shown) as per Task 64-21-00,4-3 (AMM).
 - . Read and comply with the instructions given in [Appendix 4.B.](#) to use the cell phone application procedure,
 - . Measure the TRBs using the smartphone (zz).
- Interpret the results as per [paragraph 3.B.3.d.](#)
- If in doubt or category B, comply with paragraph 3.B.3.b.

3.B.3.b. Measurement of the TRBs with Powerpoint method

Purpose is to determine if TRB is in category A or B.

- If the outer bearing (b) (Figure 6) can be rotated:
 - Comply with the PowerPoint procedure described in [Appendix 4.C.](#)
- If the outer bearing (b) (Figure 6) cannot be rotated:
 - . Remove the TRB (c) (not shown), if not already removed in the paragraph 3.B.3.a., as per Task 64-21-00,4-3 (AMM).
- Comply with the PowerPoint procedure described in [Appendix 4.C.](#)

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- Sign in to the "TIPI" website with the computer (xx) by following the link below:
www.airbushelicopters.com/techpub
- Download the powerpoint file on the computer (xx) by following the link below:
[measurement_tool_mm](#) (millimeter measurement unit)
or
[measurement_tool_in](#) (inch measurement unit)
- Comply with the work steps described in the video which is available by following the link "dailymotion" or QR-Code or the link "TIPI" below:



<https://www.dailymotion.com/video/k7tdvxe7HuzbzswwBcEc>

[video on TIPI](#)

- Interpret the results as per [paragraph 3.B.3.d.](#)
- If in doubt or category B, comply with paragraph 3.B.3.c.

3.B.3.c. Measurement of the TRBs - backup solution

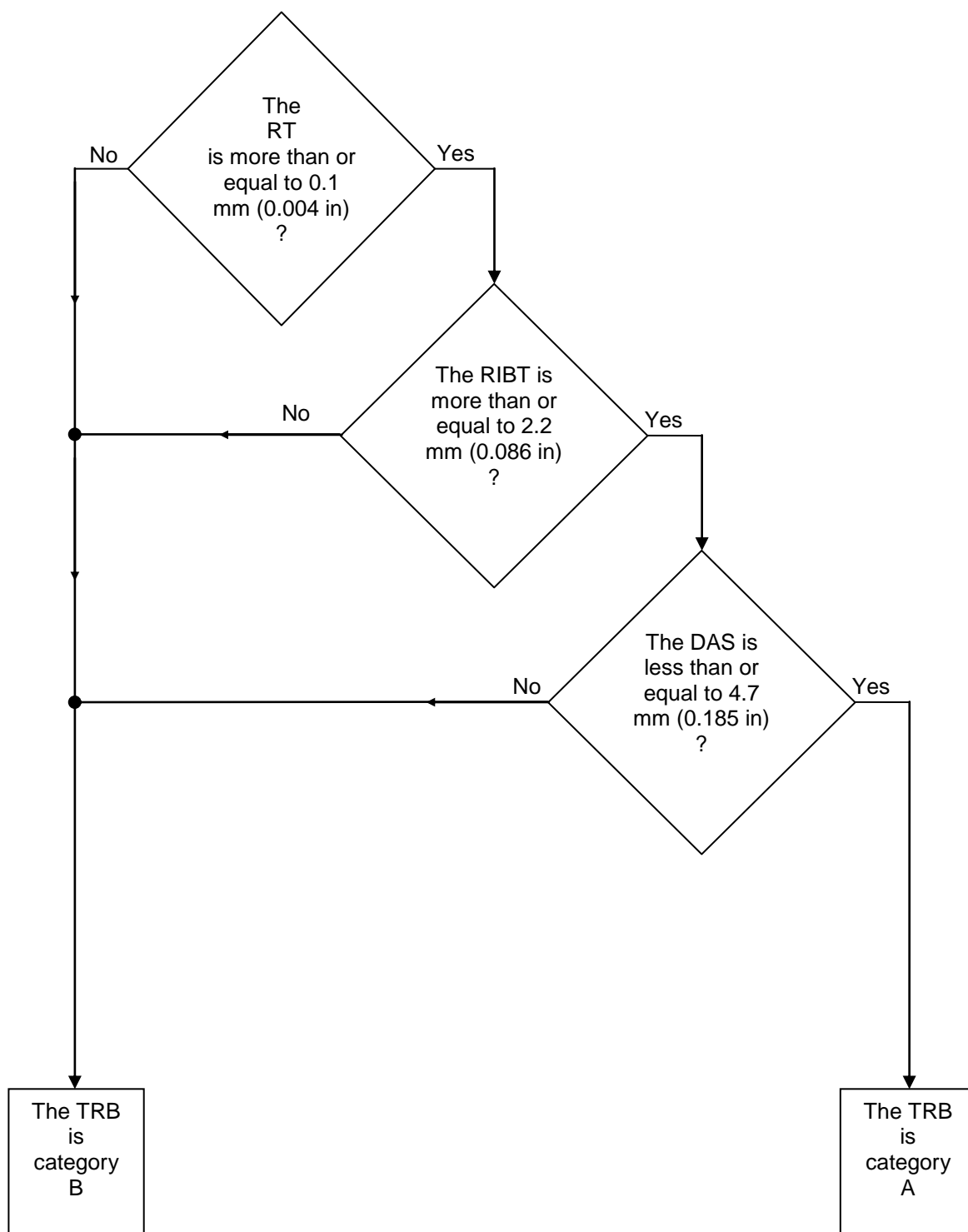
- Take a picture of each TRB with a smartphone (zz) or a digital camera (yy) as per work steps dedicated to picture of TRBs described in the video by following the link "dailymotion" or QR-Code or the link "TIPI" below:



<https://www.dailymotion.com/video/k7tdvxe7HuzbzswwBcEc>

- Send the pictures for measurement to the following address:
 - . with WebTEK access:
 - .. create a Technical Event (TE) on WebTEK: <https://keycopter.airbushelicopters.com>,
 - .. select the TE business domain: "ASB Fenestron Blade",
 - .. the TE title must contain at least the following key words "ASB 64A003" if at least one blade status is questionable,
 - . without WebTEK access:
 - .. to the following address: technicalsupport.helicopters@airbus.com,
- Comply with [paragraph 3.B.3.d.](#) following receipt of measurement performed by backup solution.

3.B.3.d. Interpretation of the results



No. EC120-64A003

- If the TRB is category "A":
 - . continue to comply with [paragraph 3.B.5.](#)
- If the TRB is category "B":
 - . complete and return the response sheet in [Appendix 4.A.:](#)
 - .. with WebTEK access:
 - ... create a Technical Event (TE) on WebTEK: <https://keycopter.airbushelicopters.com>,
 - ... select the TE business domain: "ASB Fenestron Blade",
 - ... TE title must contain at least the following key words "ASB 64A003",
 - .. without WebTEK access:
 - ... to the following address: technicalsupport.helicopters@airbus.com,
 - . continue to comply with paragraph 3.B.4.

3.B.4. Replacement of the TRB

3.B.4.a. For installed equipment or parts (in case of category B)

- Remove the TRB (c) (not shown), if not already removed in the paragraph 3.B.3.a. or 3.B.3.b. as per Task 64-21-00,4-3 (AMM).
- Install an airworthy TRB (1) or (2) or (3) (not shown) as per Task 64-21-00,4-4 (AMM).
- Discard the TRB (c) (not shown).

3.B.4.b. For non-installed equipment or parts (in case of category B)

Discard the TRB (c) (not shown).

3.B.5. Final steps

- If necessary, install the TRB (c) (not shown) as per Task 64-21-00,4-4 (AMM).
- Perform an appearance check on the helicopter after inspection or repair as per Work Card 20-07-03-408 (MTC).
- Connect all the electrical power supplies as per Work Card 20-07-03-406 (MTC).
- Remove the access equipment.

No. EC120-64A003

3.C. RECORD OF COMPLIANCE

Compliance with this document:

- For installed equipment, record full compliance with this ALERT SERVICE BULLETIN, with the revision number, in the Log Card (FM) of the Tail Rotor Hub (TRH).
- For non-installed equipment, record full compliance with this ALERT SERVICE BULLETIN, with the revision number, in the EASA Form One of the TRB.
- Please confirm compliance with this ALERT SERVICE BULLETIN as per Information Notice No. 3447-I-00: QR-Code or hypertext link



NOTE 2

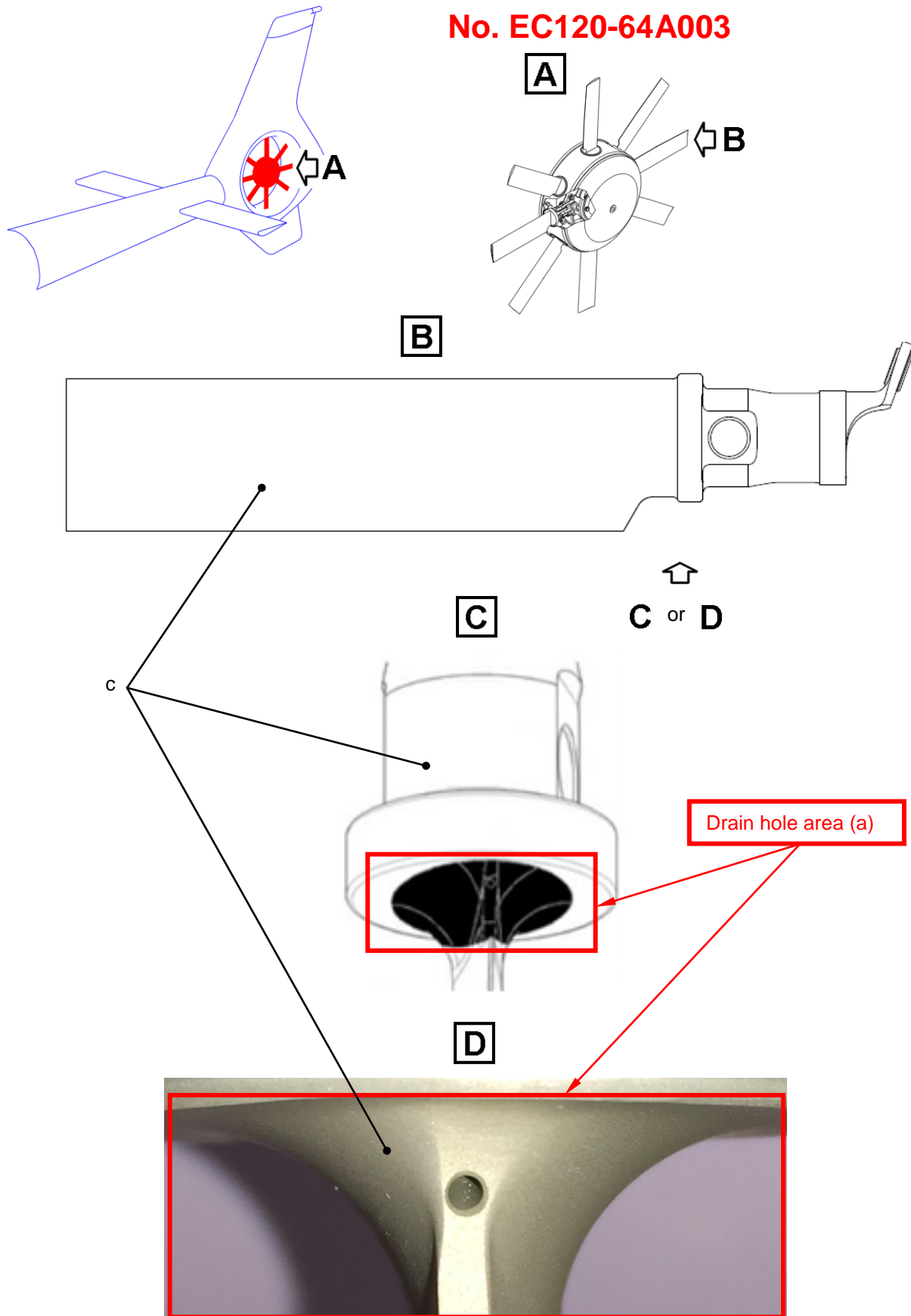
The recording of compliance with ALERT SERVICE BULLETINS in the R-Text tool does not replace the recording in the helicopter documents.

[ASB EC120-64A003](#)

3.D. OPERATING AND MAINTENANCE INSTRUCTIONS

Not applicable.

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Return to [paragraph 3.B.1.](#)

Figure 1

No. EC120-64A003

4. APPENDIX

4.A. Information sheet for category B TRB

ALERT SERVICE BULLETIN Response Form

No. 64A003

Complete the form and return it to:

Airbus Helicopters - Etablissement de Marignane
Customer Support

<https://keycopter.airbushelicopters.com>

Keep a completed copy of this response sheet in the Aircraft Log Book.

Date:

Customer (Name):

Helicopter:

Type:

Version:

Serial Number:

Total flight hours:

Dimensional check (next page):

NOTE: one line in the chart per blade

No. EC120-64A003

ALERT SERVICE BULLETIN Response Form

No. 64A003

Inspection date	Tail Rotor Hub (TRH)			Tail Rotor Blade (TRB)						
	Part Number (MP/N)	Serial Number (S/N)	TSN (FH)	Part Number (MP/N)	Serial Number (S/N)	TSN (FH)	Distance from the hole axis to the shoulder (DAS) 4.7 mm (0.185 in) max criteria	Rib thickness (RIBT) 2.2 mm (0.086 in) mini criteria	Minimum remaining thickness(RT) 0.2 mm (0.008 in) mini criteria	Minimum remaining thickness (RT) 0.1 mm (0.004 in) mini criteria

Remarks:

Date: _____

Signature: _____

Please make a copy of this page. The original form must remain in the ALERT SERVICE BULLETIN.

No. EC120-64A003

4.B. Manual to use the cell phone application

Introduction

This document is made to provide information about the A.I.R Blade® H120 application: how to install the application and furthermore how to use the services and functions available.

A.I.R Blade (Artificial Image Recognition for Blade) is an application for smartphone (not for tablet) made to support the EC120 ALERT SERVICE BULLETIN Tail Rotor blades check.

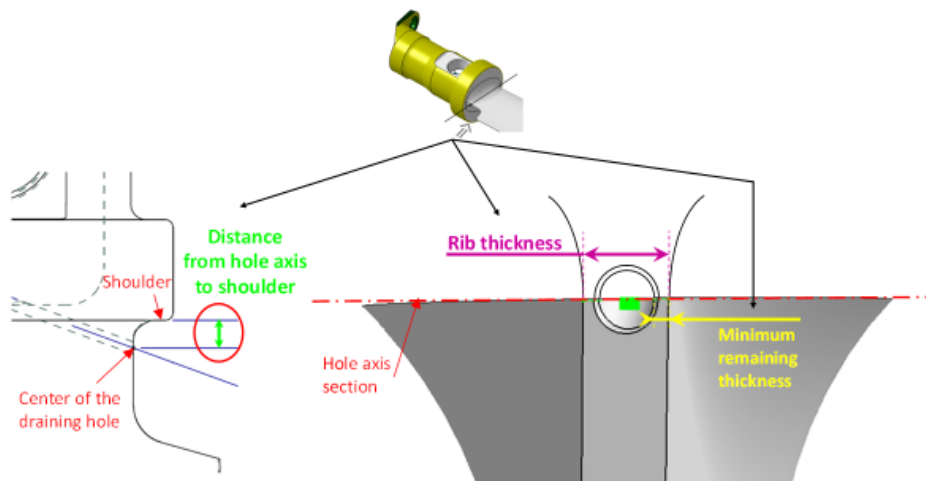
A.I.R Blade is available for android and IOS smartphone.



Its purpose is to automatically display on a picture of the blade the dimensions to be checked. The three dimensions are:

- Minimum remaining thickness [MIN RT].
- RIB Thickness [RIB T].
- Distance hole axis to shoulder [DAS].

Location of the 3 dimensions to control



Setup

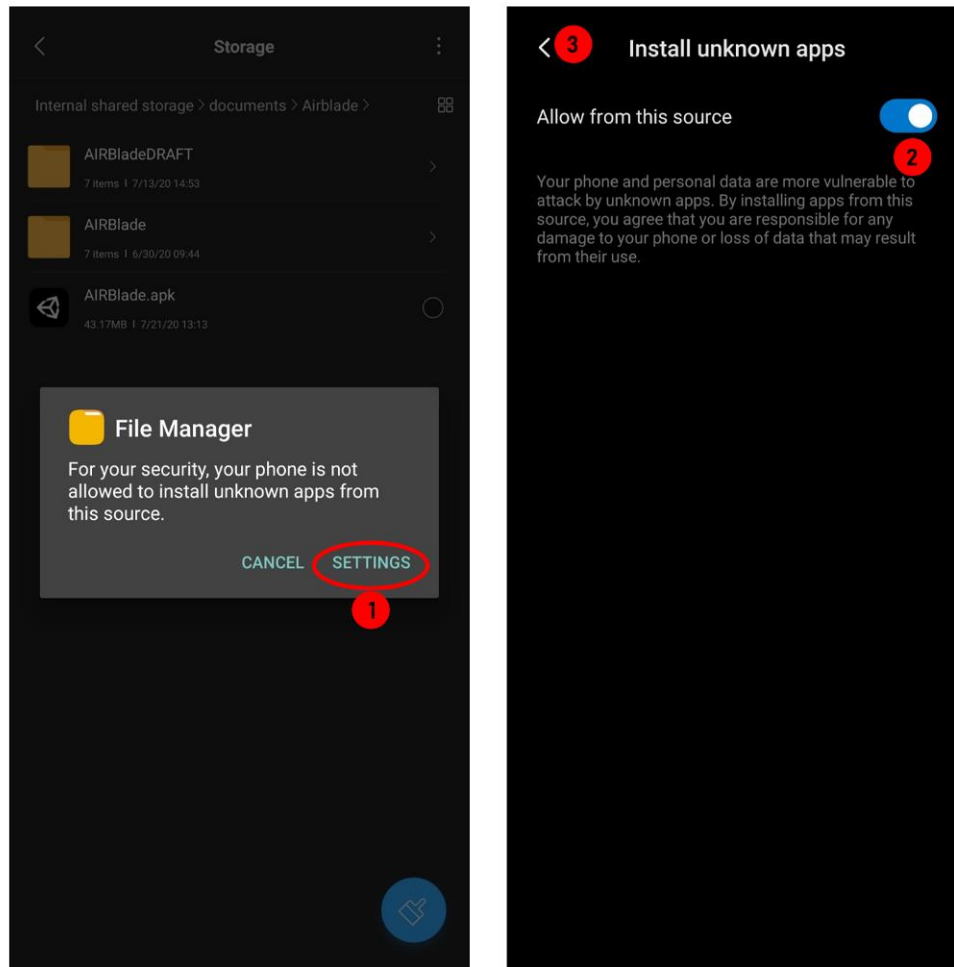
Preliminary checks:

- Check that you have enough space on your smartphone to install the application (the size of the application is 290Mo).

To install the app, follow this procedure:

- Transfer the apk file on a Smartphone. NB: It is advised to store it on a specific folder to find the file more easily.
- On your smartphone, open your file manager app. Find the apk A.I.R Blade file where you stored it, then click on it to launch the automatic installation.
- The system might tell you that you are not allowed to install it, in this case, follow this procedure:
 - Click on settings when you have the following message: "For your security, your phone is not allowed to install unknown apps from this sources).
 - Click on the "Allow from this source button".
 - Then go back or use the arrow button on the top left corner.

No. EC120-64A003



After the application installation, you can click on 'open' to launch it.

No. EC120-64A003

Welcome page



Autotest

Save Picture

Zoom function

Dimensions to be checked

Remote position controller fo RIB T (only)

SCAN To detect the drain hole of the H120 Blade

No. EC120-64A003

AIRBLADE principles :

AIRBLADE (Artificial Image Recognition) will try to detect

- Firstly the drain hole
 - if the drain hole is not detected perform measurement of the TRBs with a computer (PPT method) in accordance with the paragraph 3.B.3.b.
- Secondly the ruler
 - if the ruler is detected, the application will use it to perform the picture calibration permitting to evaluate the criteria.
 - If the ruler is not detected, the application will applied a consecutive calibration.

Ruller set-up:

Please note that for AIRBLADE, the ruler must be on the metric system (in millimeters not in inch), with graduation at 1.0 mm steps (not 0.5mm).

- if the blade is installed on the helicopter: please follow the same procedure as per Appendix 4.C. "PowerPoint procedure if the blade is installed on the helicopter": until step 9.
- if the blade is not installed on the helicopter: please follow the same procedure as per Appendix 4.C. "PowerPoint procedure if the blade is not installed on the helicopter": until step 6.

Please make sure that the ruler is exactly on the same plan as the drain hole.

No. EC120-64A003

Detection

1. Click on the scan button.
2. The application gives you several recommendations to take a picture:
 - ✓ The handle of the blade must be visible and at the top of the screen
 - ✓ Drain hole must be clear, use the focus, by tapping on the hole, to obtain a clear picture
 - ✓ Use at least zoom 3X
 - ✓ Disable the flash

In accordance with these recommendations, you should get picture like this:



3. Compliantly with these recommendations, take the picture of the blade drain hole.

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4. The application will scan the picture to find the blade drain hole (see picture below), it display you the circle that it found:



Several detection situations are possible:

- a. No hole found -> take the picture again.
- b. One hole found -> Check if it's the drain hole of the blade -> Click on yes.
- c. Multiple holes are found -> Select the one corresponding to the drain hole of the blade by clicking yes or no.

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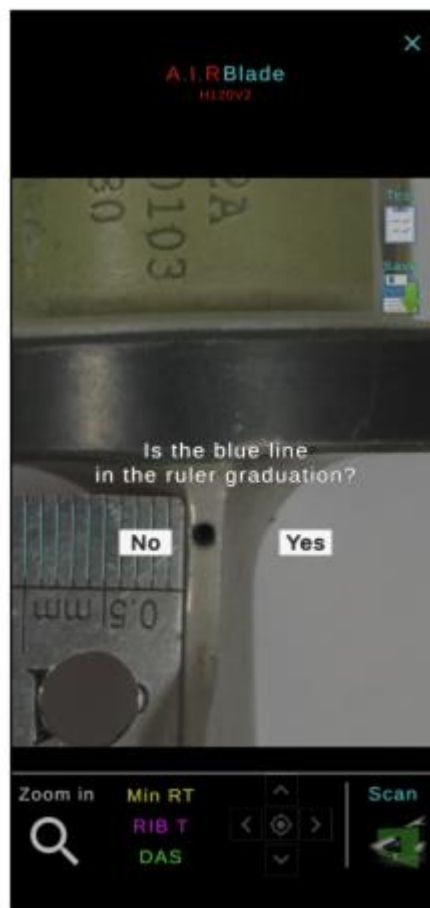
The system will launch an analysis to detect if a ruler is present in the picture in order to use it to perform an automatic calibration

If the system does not detect it the application will applied conservative criteria
The detection depends of the light and the ruler quality

If the system detects the ruler, three control points will be performed:

(If one answer of one of the control is "no" this step will be skipped)

1. Is the blue line graduation coincides with the ruler graduation?



No. EC120-64A003

2. Is the ruler in mm ?



No. EC120-64A003

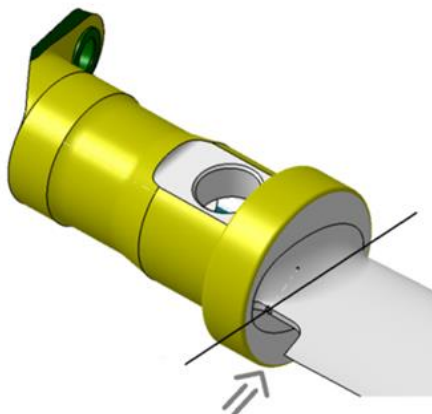
3. Is the main graduation 1 mm (not 0.5 mm)



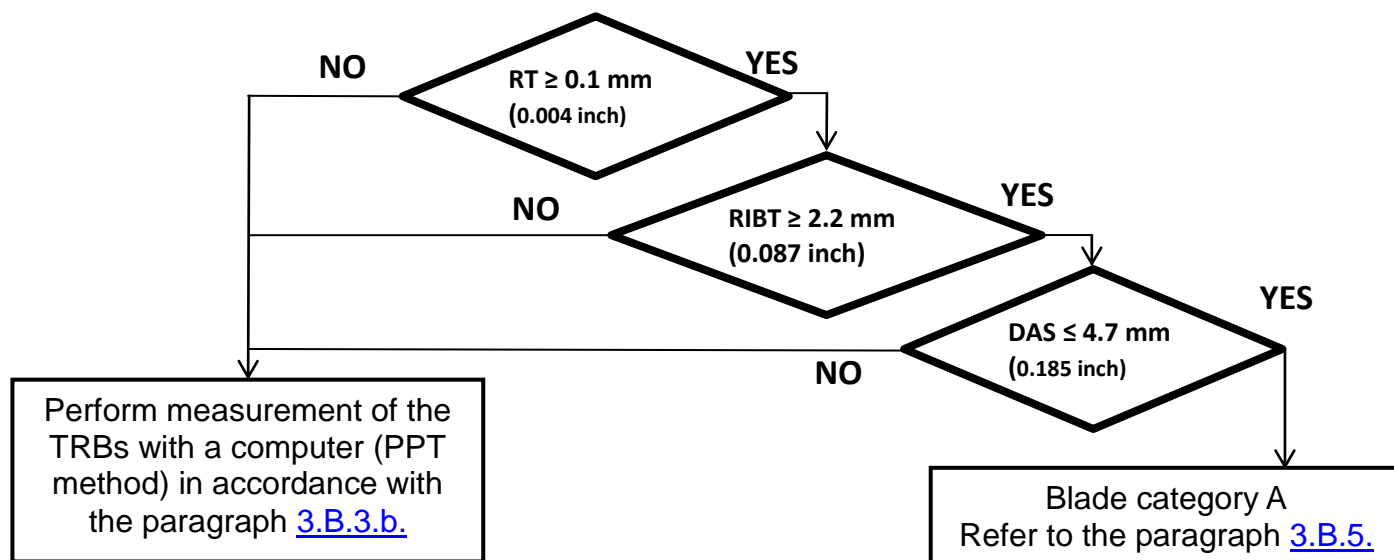
No. EC120-64A003

Measurements

The area to be checked is:



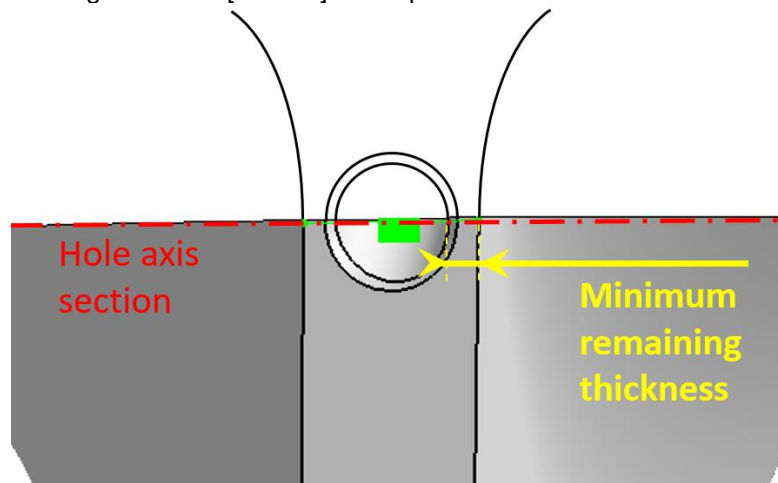
Perform all the measurements as describe below, record them and refer to the following flowchart:



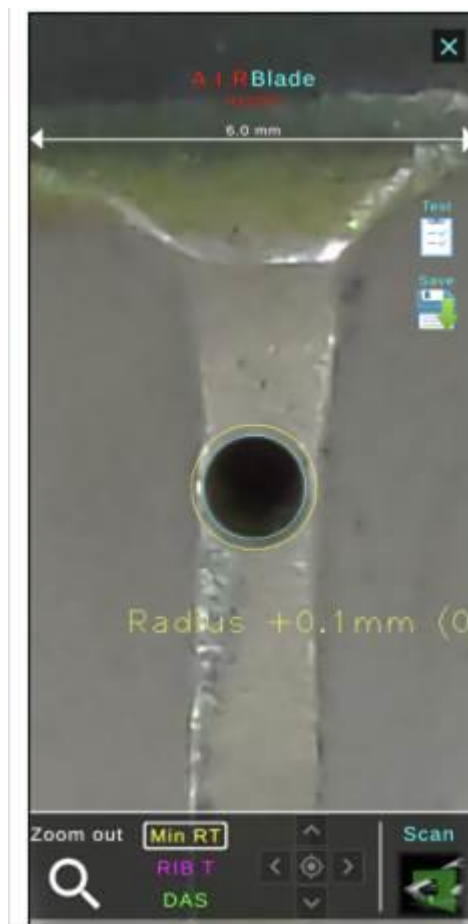
No. EC120-64A003

MIN RT: Minimum remaining thickness (defined as RT in paragraph [3.B.2.](#))

The minimum remaining thickness [Min RT] correspond to:



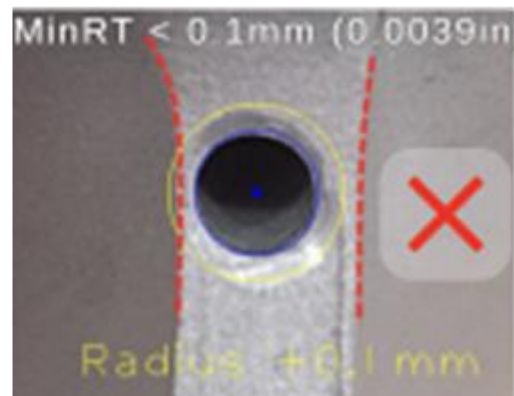
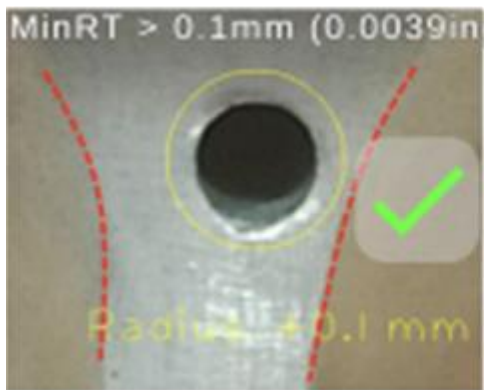
For the Minimum remaining thickness, tap on Min RT:



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A yellow circle representing the hole radius + 0.1 mm (0.004 in.) centered on the hole center will appear. This circle will allow you to evaluate if the Minimum remaining thickness, is more than or equal to 0.1 mm (0.004 in.).

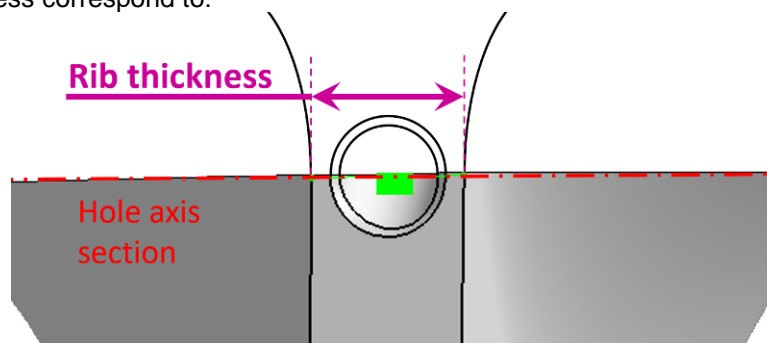
Min RT > 0.1 mm (0.004 in) if the yellow circle is contained within the RIB Thickness, See the example below:



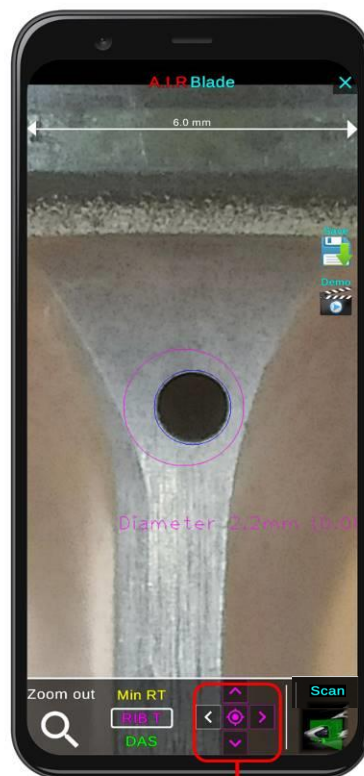
No. EC120-64A003

RIB T: RIB Thickness

The RIB Thickness correspond to:

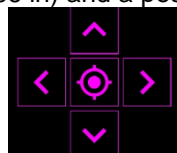


For the RIB Thickness, tap on RIB T:



Use the Pad to move the magenta circle

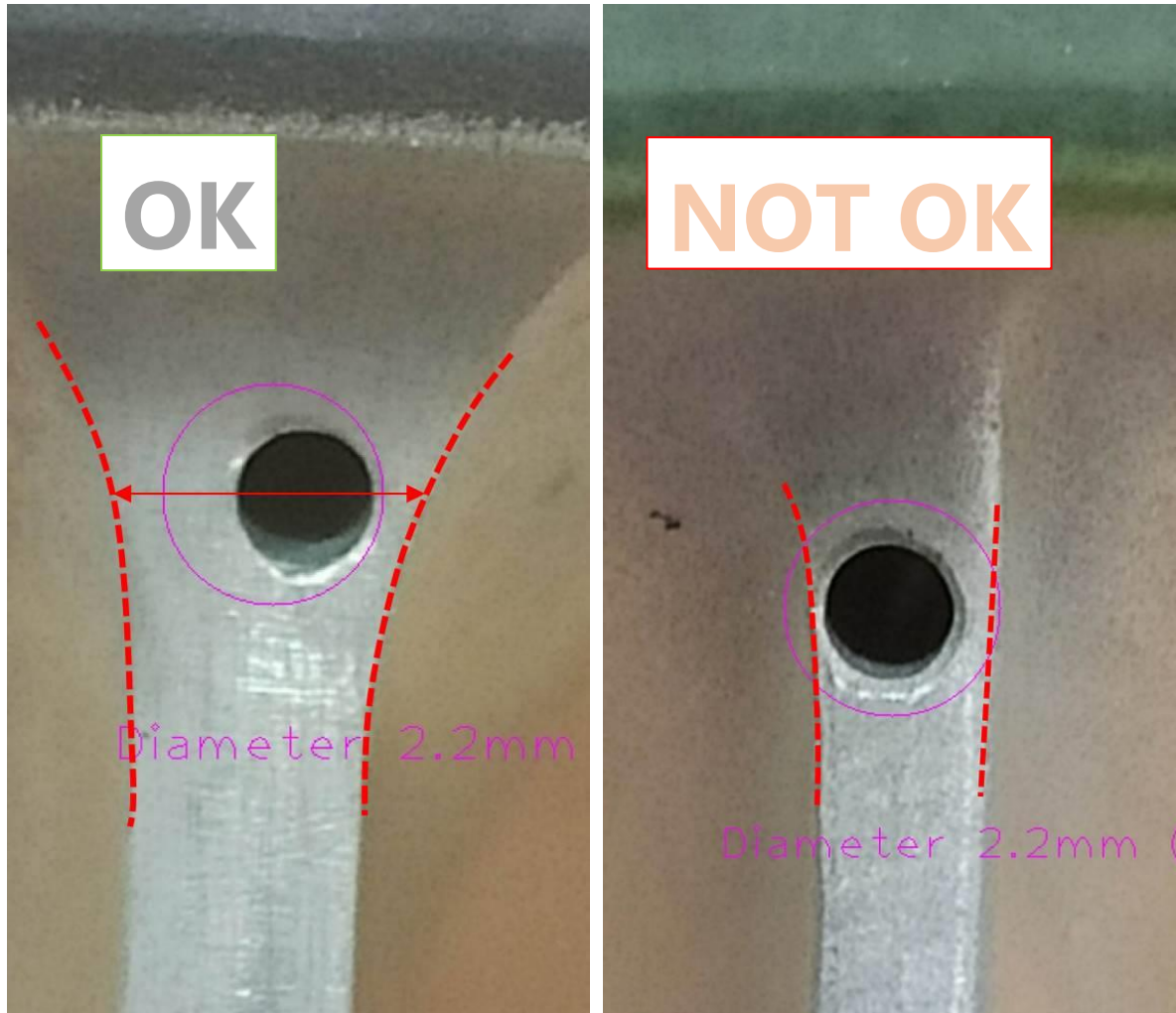
A magenta circle with radius 2.2 mm (0.086 in) and a position remote controller will appear.



This remote controller will permit you to move the circle to evaluate if the RIB Thickness is more than or equal to 2.2 mm (0.086 in).

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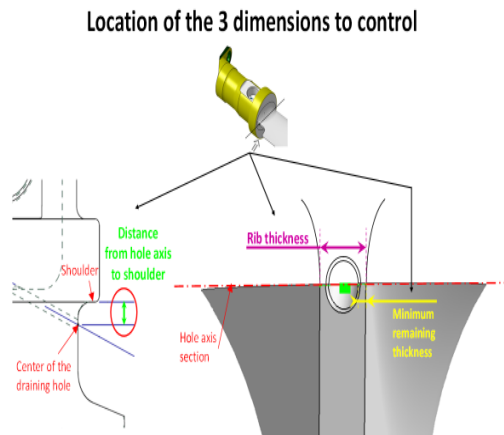
RIB T \geq 2.2 mm (0.087 in) if the magenta circle is contained within the RIB Thickness. Move the magenta circle using the controller to fit it within the RIB Thickness. See the example below:



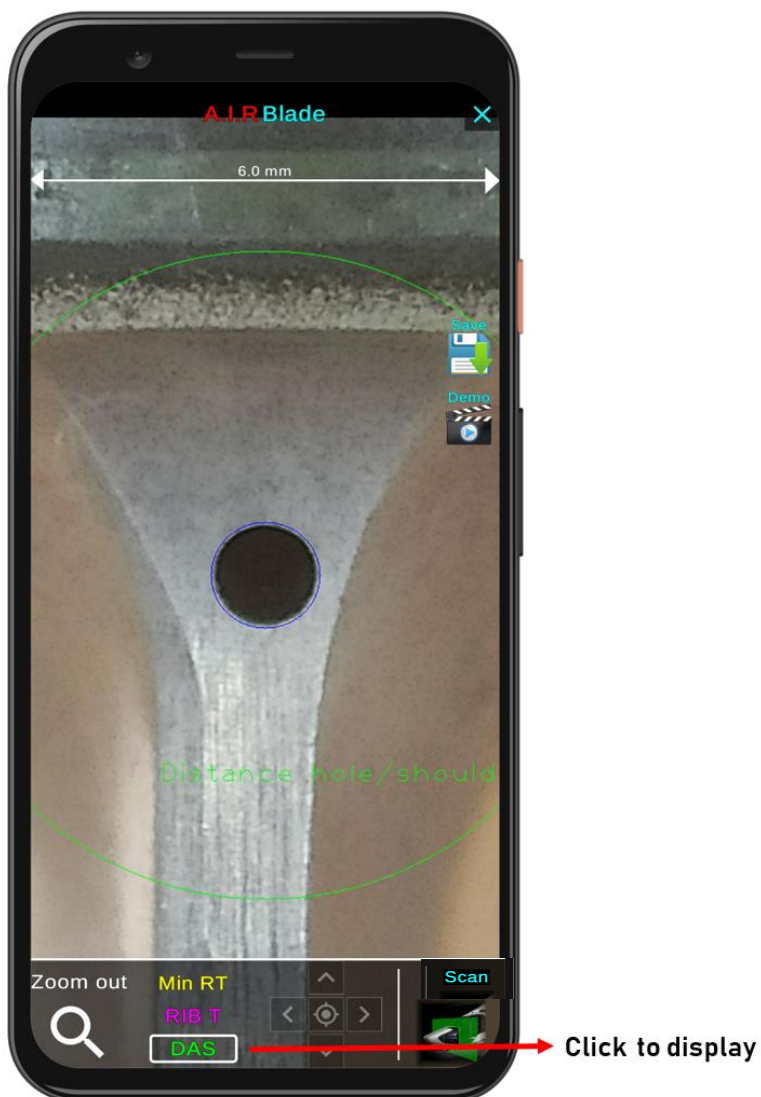
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DAS: Distance hole axis to shoulder

The distance hole axis to shoulder correspond to:



To display the distance hole axis to shoulder, click on DAS:

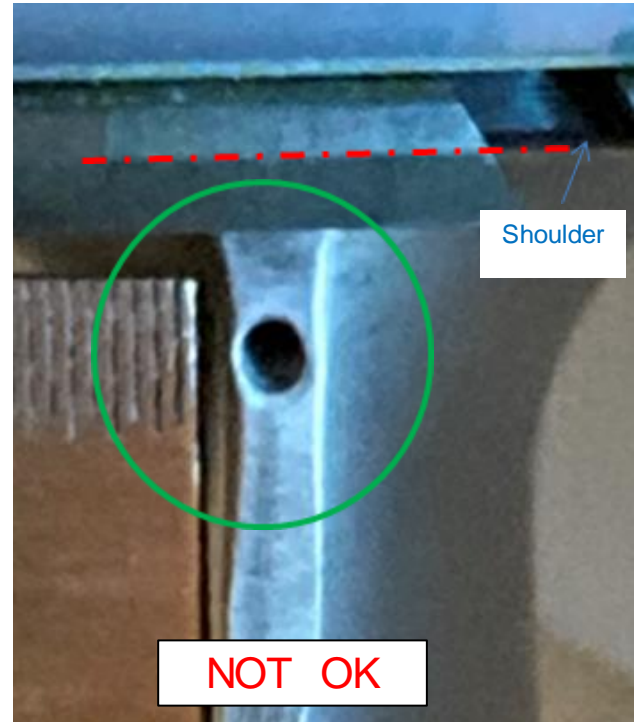
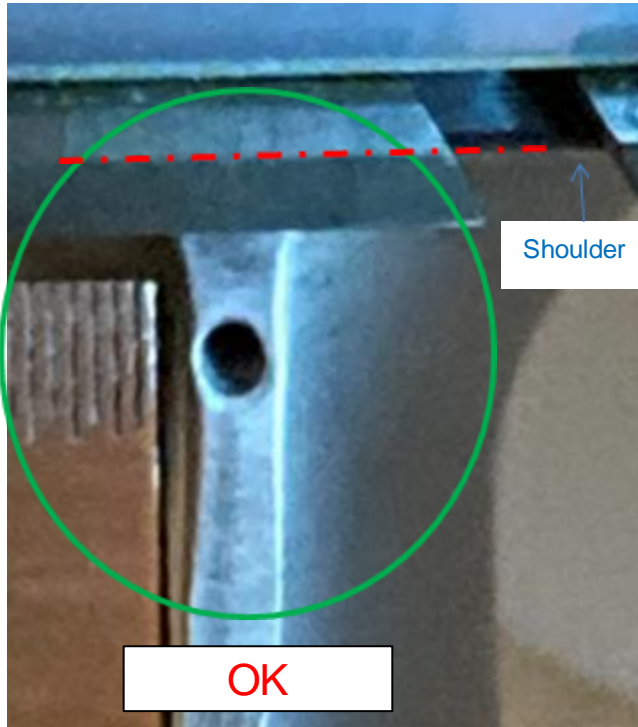


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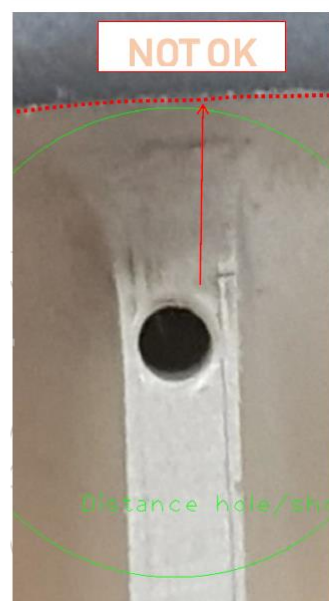
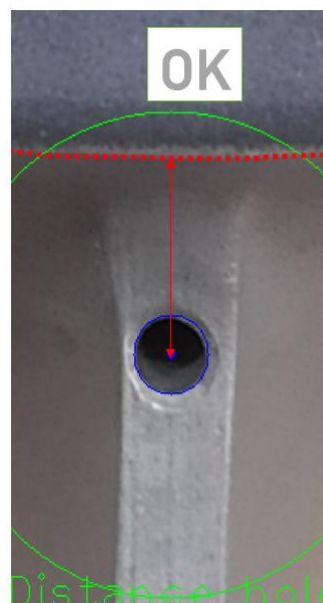
A green circle with radius 4.7 mm (0.185 in), centred on the hole, will appear allowing you to evaluate if the distance hole axis to shoulder is less than or equal to 4.7 mm (0.185 in).

DAS \leq 4.7 mm (0.185 in) if the shoulder edge is contained within the circle as the example below:

If the blade is installed on the helicopter



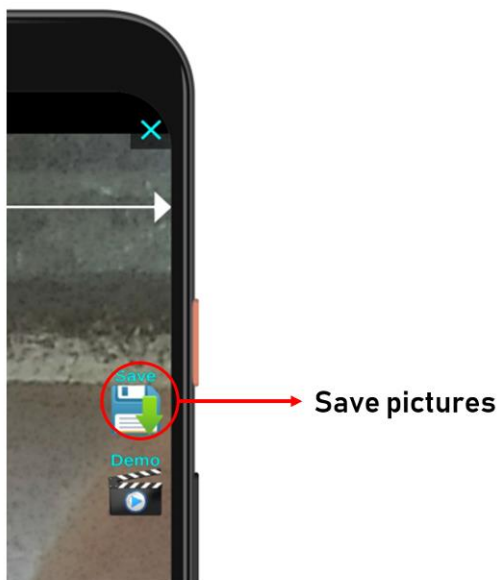
If the blade is not installed on the helicopter



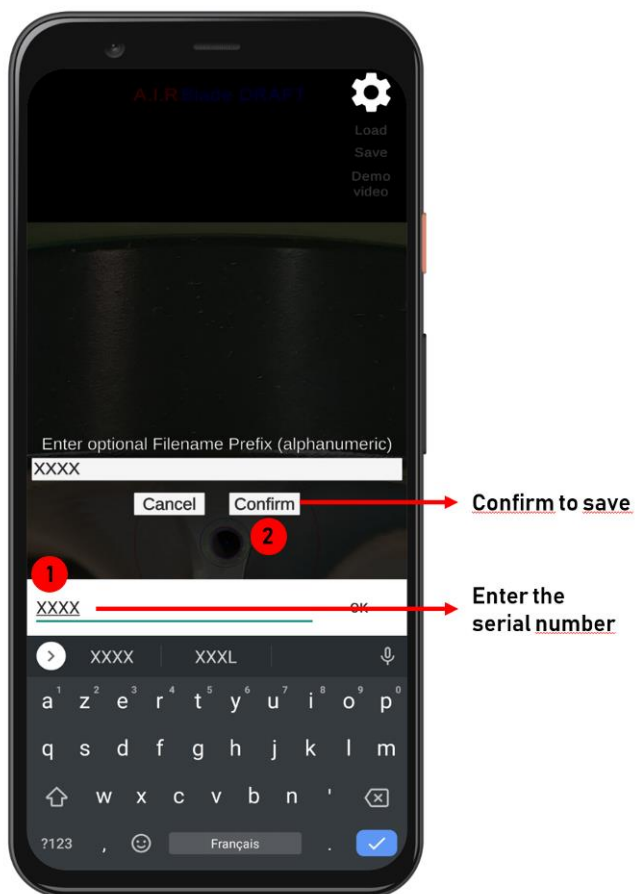
No. EC120-64A003

Picture Saving

You can save the pictures with the “Save” button, at the top right corner of the application.



Put the blade serial number as the name:



The picture are stored in the folder “AIRBlade” in the path following /DCIM/AIRBlade.

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4.C. Manual to use PowerPoint method

- When the smartphone application is not available or if one of the dimensions is not within the criteria, you can use the PowerPoint method.

PowerPoint procedure if the blade is installed on the aircraft:

- Equipment:

- . 1 smartphone (zz) (use one as modern as possible to obtain the best picture quality)
- . 1 steel ruler (ww) (mm or inch)
- . 1 light (vv) or a second smartphone (zz) for lighting

- Remark: if you use a ruler in mm, you must use the PowerPoint in mm and if you use a ruler in inches, you must use the PowerPoint in Inches.

- Number of people: 2 to 3:

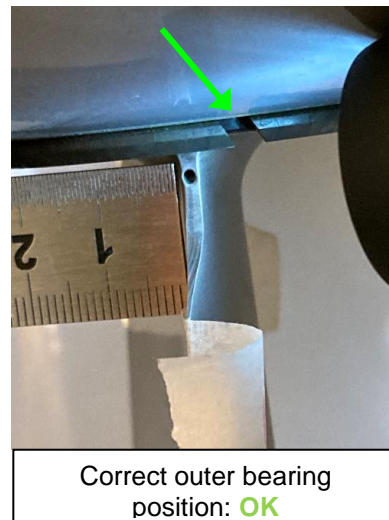
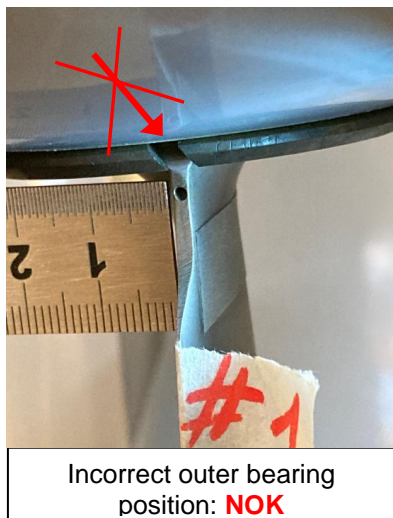
- . 1 for taking pictures
- . 1 for positioning the ruler and the grazing light
- . 1 for maintaining the yaw pedal in position (optional)

PowerPoint procedure:

Actions of the 1st step: Pictures

1. Push the left-hand yaw pedal ($\approx \frac{3}{4}$ travel) to turn the blade pitch and to ease picture taking with the appropriate angle.
2. This yaw pedal position will have to be maintained during all this procedure step either by someone keeping his foot on the pedal or by a wedge blocking the pedal in full left yaw position.
3. Clean the tail rotor blades
4. Before starting, bond some tapes to the blades with the numbers from 1 to 8 to make picture management in the following steps easier. This number must be visible on the picture as described on the video.
5. Make sure that on all 8 blades the outer bearings are rotated as described as the picture below.

- rotate the outer bearing until the slot of the bearing is close to the draining hole (not strictly aligned with the draining hole) in order to see the shoulder of the blade through the slot of the bearing,



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NOTE 1

If the outer bearing (c) (Figure 6) cannot be moved or if it is too difficult to turn it around the blade pitch rotation axis, the blade have to be removed.

The PowerPoint procedure once blade is not installed on the aircraft will have to be used instead.

6. Position the steel ruler against the rib of the blade as seen in the video to obtain a dimensional jig. Be careful to put the ruler angle as near the rib plane on which the hole is drilled and to the hole as possible (see Note 2 – 2nd point). Be careful to set the ruler parallel to the rib plane (or perpendicular to the smartphone view).
7. Add a grazing light from the right-hand side of the fenestron to highlight the rib edges.
8. Position the smartphone with the 2nd person as seen in the video. Put the smartphone against the previous blade (cf. video) to improve stability and limit the risks of blurred picture. Depending on the location of your smartphone lens, it will be more appropriate to take a horizontal picture or vertical picture to place the lens in the blade rib alignment.
9. Tilt your smartphone parallel to the blade until you obtain a picture perpendicular to the blade shoulder (cf. Note 2 – 3rd point).

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10. You must obtain first a clear image on your screen, then zoom in until reaching a picture such as in the video or the correct pictures in the following notes.
11. Take the picture.
12. Turn the tail rotor clockwise and start again from the action No. 6 on the second blade and after for all the 8 blades.

Actions of the 2nd step: PowerPoint method

1. Transfer the 8 pictures from your smartphone to the computer and rename it from 1 to 8.
2. Open the PowerPoint file in mm or Inches depending on the ruler choice.
3. Look at the examples on the 3 dimensions on the PowerPoint.
4. Insert all pictures on the file, make sure that the tape on the picture is the same than the blade number in the PowerPoint.
5. Activate gridlines to make alignments easier and tick the boxes on the picture properties to keep the original proportions of the picture.
You must only perform it once for the complete file (not for each picture).
6. Turn the picture until the ruler lines are vertical.
7. Crop the picture to keep only visible the ruler, the hole and the shoulder of the blade through the slot of the outer bearing (see the video to find the size needed before the zoom in step).
8. Move the calibration jig in front of the picture (or send backward the picture as described in the video).
9. Adjust the size of the picture using the PowerPoint ruler (top right-hand corner) until the calibration jig corresponds to the steel ruler lines spacing.
10. Criteria assessment:
 - o Distance from the hole Axis to the Shoulder (DAS) ≤ 4.7 mm (0.185 in):
Place the circle of your green jig to match the circle of the drain hole. Then, check if the distance on the picture is below 4.7 mm jig as illustrated in the PowerPoint example.
 - o RIB Thickness (RIBT) ≥ 2.2 mm (0.086 in):
Place one of the two ends of the pink jig on one rib edge and check if the rib still goes beyond the other end as illustrated in the PowerPoint example.
 - o Minimum remaining Thickness (RT) ≥ 0.1 mm (0.004 in):
As there is never complete alignment of the drain hole, choose the side with the minimum remaining thickness. Then, place the internal circle of the red jig to match the drain hole circle. Focus on the side where you measure the remaining thickness. The thickness of the jig is 0.1 mm. If the rib edge is visible outside the jig, it means that the remaining thickness is greater than 0.1 mm. If not, the edge is inside the jig and the remaining thickness is less than 0.1 mm. If the chamfer of the drain hole intersects the rib edge, draw a line as explained in Note 2.

PowerPoint procedure if the blade is not installed on the aircraft:

- Equipment:
 - . 1 smartphone (zz) (use one as modern as possible to obtain the best picture quality)
 - . 1 steel ruler (ww) (mm or inch)
 - . 1 light (vv) or a second smartphone (zz) for lighting
- Remark: if you use a ruler in mm, you must use the PowerPoint in mm and if you use a ruler in inches, you must use the PowerPoint in Inches.
- Number of people: 1 to 2
 - . 1 for taking pictures
 - . 1 for positioning the ruler and the grazing light (optional)

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Actions of the 1st step: Pictures

1. Clean the tail rotor blade.
2. Position the blade and make sure it is stable on a table or equivalent
3. Position the steel ruler against the rib of the blade equivalent as what was detailed in the video for the blades installed on the aircraft to obtain a dimensional jig.
Be careful to put the ruler angle as near the rib plane on which the hole is drilled and to the hole as possible (see Note 2 – 2nd point). Be careful to set the ruler parallel to the rib plane (or perpendicular to the smartphone view).
4. Add a grazing light from one of the side of the blade to highlight the rib edges.
5. Position the smartphone (could be done by a 2nd person). Put the smartphone above the blade trying to improve stability and limit the risks of blurred picture.
Depending on the location of your smartphone lens, it will be more appropriate to take a horizontal picture or vertical picture to place the lens in the blade rib alignment.
6. Tilt your smartphone parallel to the blade until you obtain a picture perpendicular to the blade shoulder (cf. Note 2 – 3rd point).
7. You must obtain first a clear image on your screen, then zoom in until reaching a picture such as in the video or the correct pictures in the following notes.
8. Take the picture.

Actions of the 2nd step: PowerPoint method

1. Transfer the picture from your smartphone to the computer.
2. Open the PowerPoint file in mm or Inches depending on the ruler choice.
3. Look at the examples on the 3 dimensions on the PowerPoint.
4. Insert the picture on the file.
5. Activate gridlines to make alignments easier and tick the boxes on the picture properties to keep the original proportions of the picture.
6. Turn the picture until the ruler lines are vertical.
7. Crop the picture to keep only visible the ruler, the hole and the shoulder of the blade (see the video to find the size needed before the zoom in step).
8. Move the calibration jig in front of the picture (or send backward the picture as described in the video).
9. Adjust the size of the picture using the PowerPoint ruler (top right-hand corner) until the calibration jig corresponds to the steel ruler lines spacing.
10. Criteria assessment:
 - o Distance from the hole Axis to the Shoulder (DAS) ≤ 4.7 mm (0.185 in):
Place the circle of your green jig to match the circle of the drain hole. Then, check if the distance on the picture is below 4.7 mm jig as illustrated in the PowerPoint example.
 - o RIB Thickness (RIBT) ≥ 2.2 mm (0.086 in):
Place one of the two ends of the pink jig on one rib edge and check if the rib still goes beyond the other end as illustrated in the PowerPoint example.
 - o Minimum remaining Thickness (RT) ≥ 0.1 mm (0.004 in):
As there is never complete alignment of the drain hole, choose the side with the minimum remaining thickness. Then, place the internal circle of the red jig to match the drain hole circle. Focus on the side where you measure the remaining thickness. The thickness of the jig is 0.1 mm. If the rib edge is visible outside the jig, it means that the remaining thickness is greater than 0.1 mm. If not, the edge is inside the jig and the remaining thickness is less than 0.1 mm. If the chamfer of the drain hole intersects the rib edge, draw a line as explained in Note 2 below.

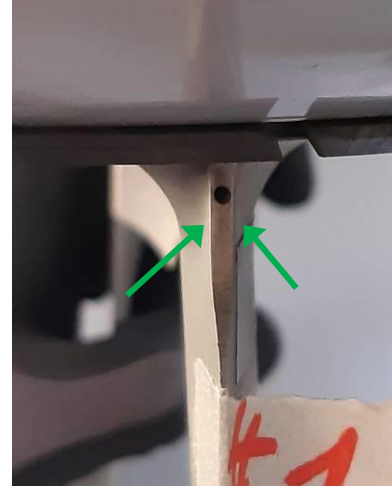
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NOTE 2

To optimize the quality of the measurements, make sure:
- To change the orientation of the blades using the yaw pedals so that the drain hole center is aligned with the smartphone lens.
Both TRB sides must be visible as follows.



Non pivoted blade: **NOK**



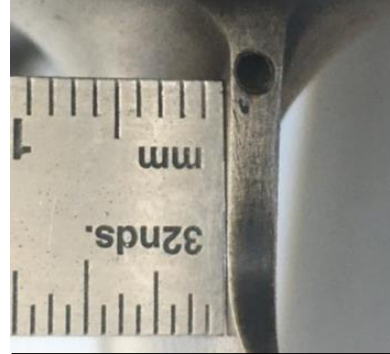
Pivoted blade: **OK**

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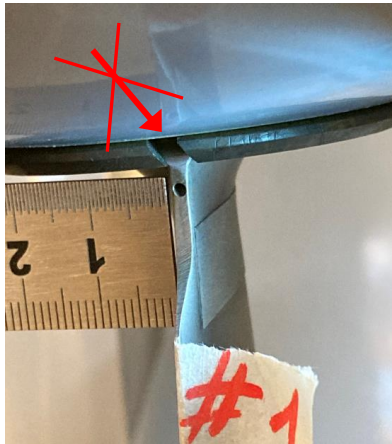
- to position the steel ruler as near the drain hole as possible, and in the same plane, parallel to the blade plane on which the hole is drilled,



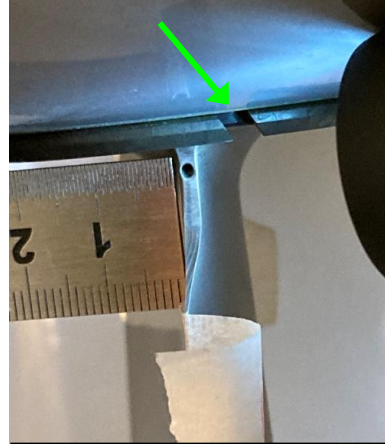
Incorrect ruler location: **NOK**



Correct ruler location: **OK**



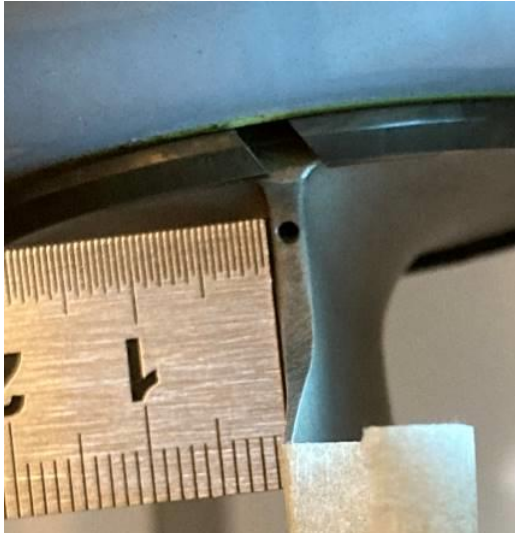
Incorrect outer bearing position: **NOK**



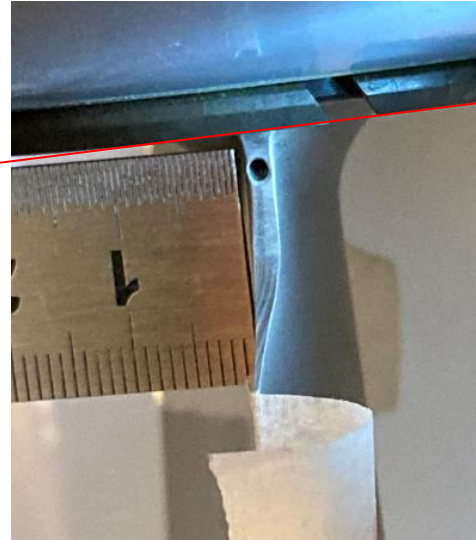
Correct outer bearing position: **OK**

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- to keep the smartphone parallel to the blade to see the shoulder as a line and not a plane. On the left-hand picture below, the distance from the hole axis to the shoulder will be completely incorrect,



Non shifted blade : **NOK**



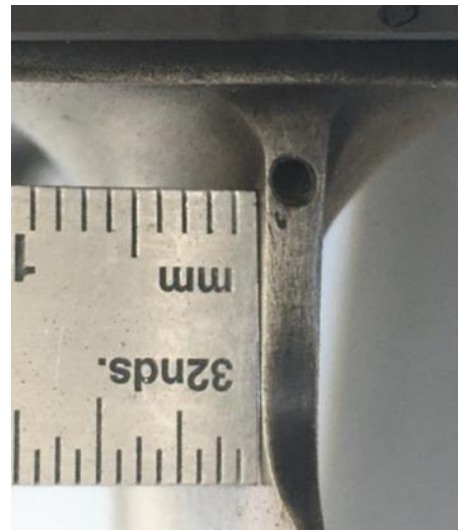
Reference plane

Shifted blade : **OK**

- to put the smartphone against the previous blade to make sure that it is stable during picture taking and thus to avoid blurred pictures,



Blurred picture: **NOK**



Clear picture: **OK**

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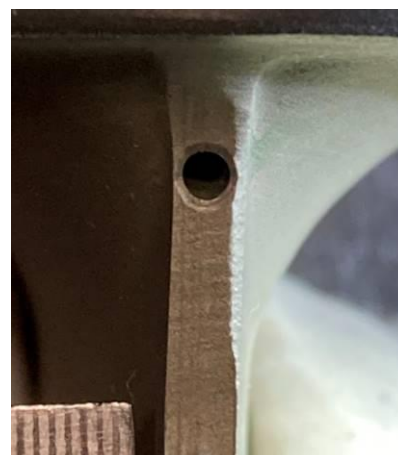
- to use a grazing light to be able to detect rib edges,



No grazing light : **NOK**



Too much grazing light : **NOK**



Correct grazing light to detect edges : **OK**

- to use the zoom after setting the focus on the picture.

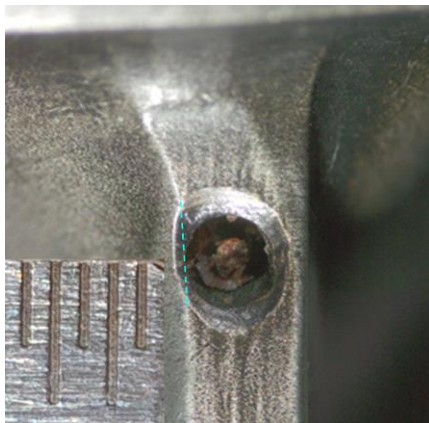
NOTE 3

To make sure to keep a good tracking of pictures with the corresponding blades, make sure:

- to identify by drawing a red mark on the cover aligned with the first blade to photograph,
- to always turn the tail rotor clockwise when you are on the left-hand side,
- to rename the pictures from 1 to 8 before opening the PowerPoint.

NOTE 4

For particular blades, when the drain hole chamfer overlaps the rib edge on one side, make sure to identify the missing edge by drawing a line linking both sides within the PowerPoint as described below:



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NOTE 5

To perform an accurate measurement with the PowerPoint method, make sure:

- to take time to calibrate accurately the picture dimensions using the ruler and the red calibration jig,
- after inserting the picture in the PowerPoint, to force the picture size to keep the original proportions,
- after each picture measurement, to check if the calibration jig size still match the jig box pattern (see pictures below).

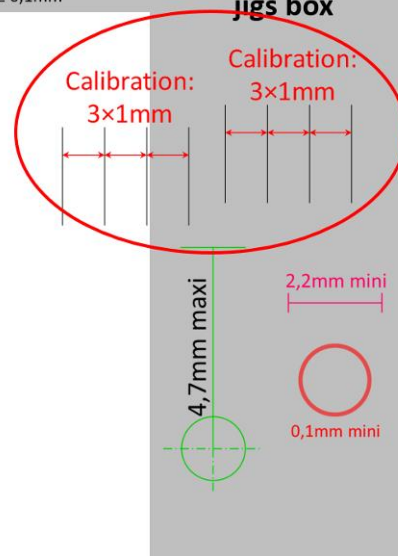
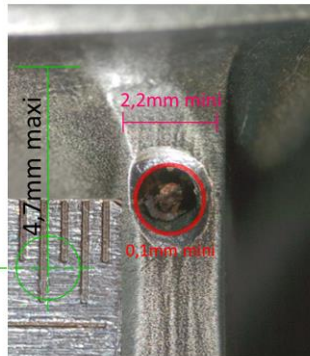
Blade N°1

Fill-out if TRB is not compliant to the ASB criteria

PN	
SN	

OK if distance hole axis to shoulder $\leq 4,7\text{mm}$
 OK if rib thickness $\geq 2,2\text{mm}$
 OK if remaining thickness $\geq 0,1\text{mm}$

Measurement jigs box



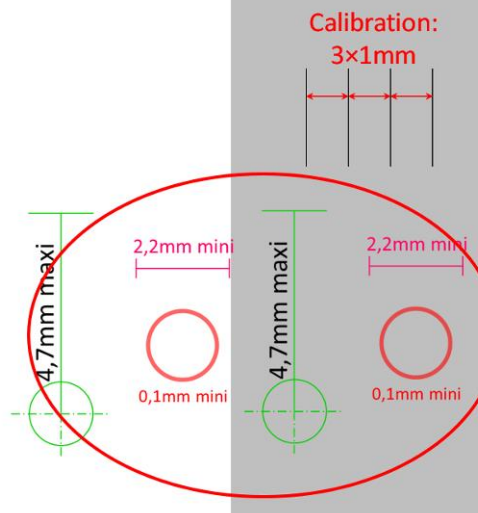
Blade N°1

Fill-out if TRB is not compliant to the ASB criteria

PN	
SN	

OK if distance hole axis to shoulder $\leq 4,7\text{mm}$
 OK if rib thickness $\geq 2,2\text{mm}$
 OK if remaining thickness $\geq 0,1\text{mm}$

Measurement jigs box



4.D. Excluded S/N of the TRBs

Excluded S/N of the TRBs							
M30055	M30064	M30068	M30079	M30160	M30161	M30162	M30163
M30164	M30165	M30168	M30169	M30170	M30171	M30172	M30173
M30174	M30175	M30176	M30178	M30179	M30180	M30181	M30182
M30183	M30184	M30186	M30187	M30189	M30190	M30191	M30192
M30193	M30194	M30195	M30196	M30197	M30198	M30199	M30200
M30201	M30202	M30203	M30204	M30205	M30206	M30207	M30208
M30209	M30210	M30211	M30212	M30213	M30214	M30215	M30216
M30217	M30218	M30219	M30220	M30221	M30222	M30223	M30224
M30225	M30226	M30227	M30228	M30229	M30230	M30231	M30234
M30236	M30237	M30240	M30241	M30242	M30244	M30245	M30246
M30249	M30251	M30252	M30253	M30254	M30256	M30257	M30260
M5641	M5642	M5643	M5649	M5650	M5655	M5657	M5660
M5666	M5700						