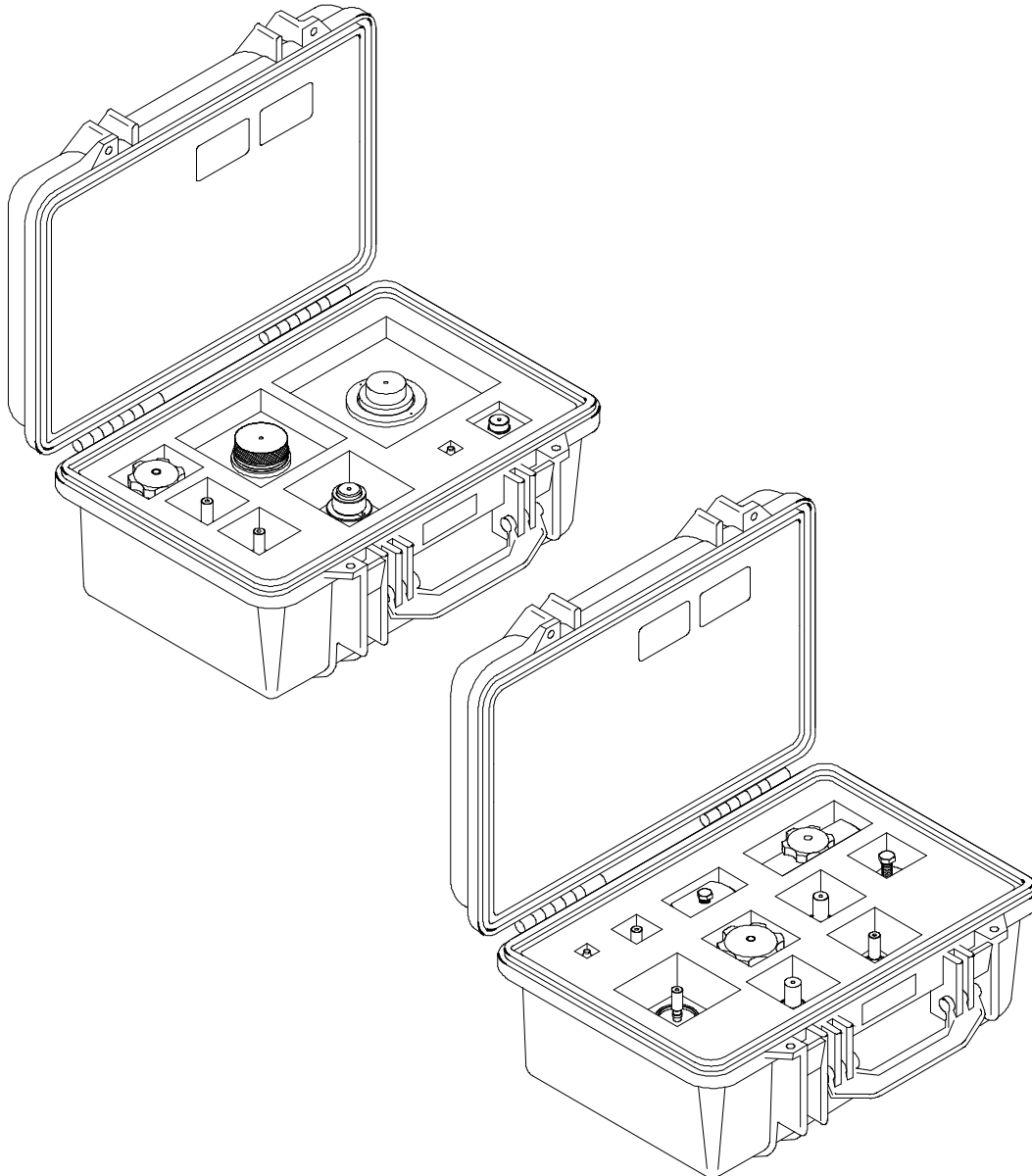


# GSE & TOOL MANUAL

<b>TITLE</b>	<b>TOOL KIT, M/R DRIVE SEALS REPLACEMENT P/N 3G6305G01531</b>
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	<b>GSE &amp; TOOL USE AND MAINTENANCE MANUAL</b>	Manual number: <b>MAN-3G6305G01531 REV. A</b> <hr/> Pag. 2 of 23
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**REVISION HISTORY**

REV	CHANGE DESCRIPTION	DATE
A	First issue	12/11/2021

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## 1. SCOPE

### 1.1. APPLICABILITY




The contents of this document are meant to provide information on the P/N 3G6305G01531 TOOL KIT, M/R DRIVE SEALS REPLACEMENT.

### 1.2. OBJECT

The object of this document is to describe the AGE and its components, its main features and it will also provide all needed maintenance requirements to keep in service the P/N 3G6305G01531 TOOL KIT, M/R DRIVE SEALS REPLACEMENT.

### 1.3. WARNING AND SAFETY INSTRUCTIONS

A number of symbols are used throughout this document to indicate information to which the user should pay attention to. These are indicated below along with the specific meaning.

 <b>Warning</b>	...Indicates a danger that might arise from a product and might result in severe injuries or even death, if no precautions are taken.
 <b>Caution</b>	... Indicates a potentially dangerous situation, which might result injury or damage to the equipment.
 <b>Notice</b>	...Indicates a note providing information to help the reader during the procedure.

*Table 1 – Warning Instruction*

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## 2. DOCUMENTS

### 2.1. APPLICABLE DOCUMENTS

The following table lists the applicable documents

REF	REFERENCE OF DOCUMENT	TITLE
N.A.	N.A.	N.A.

*Table 2 – Applicable Documents*

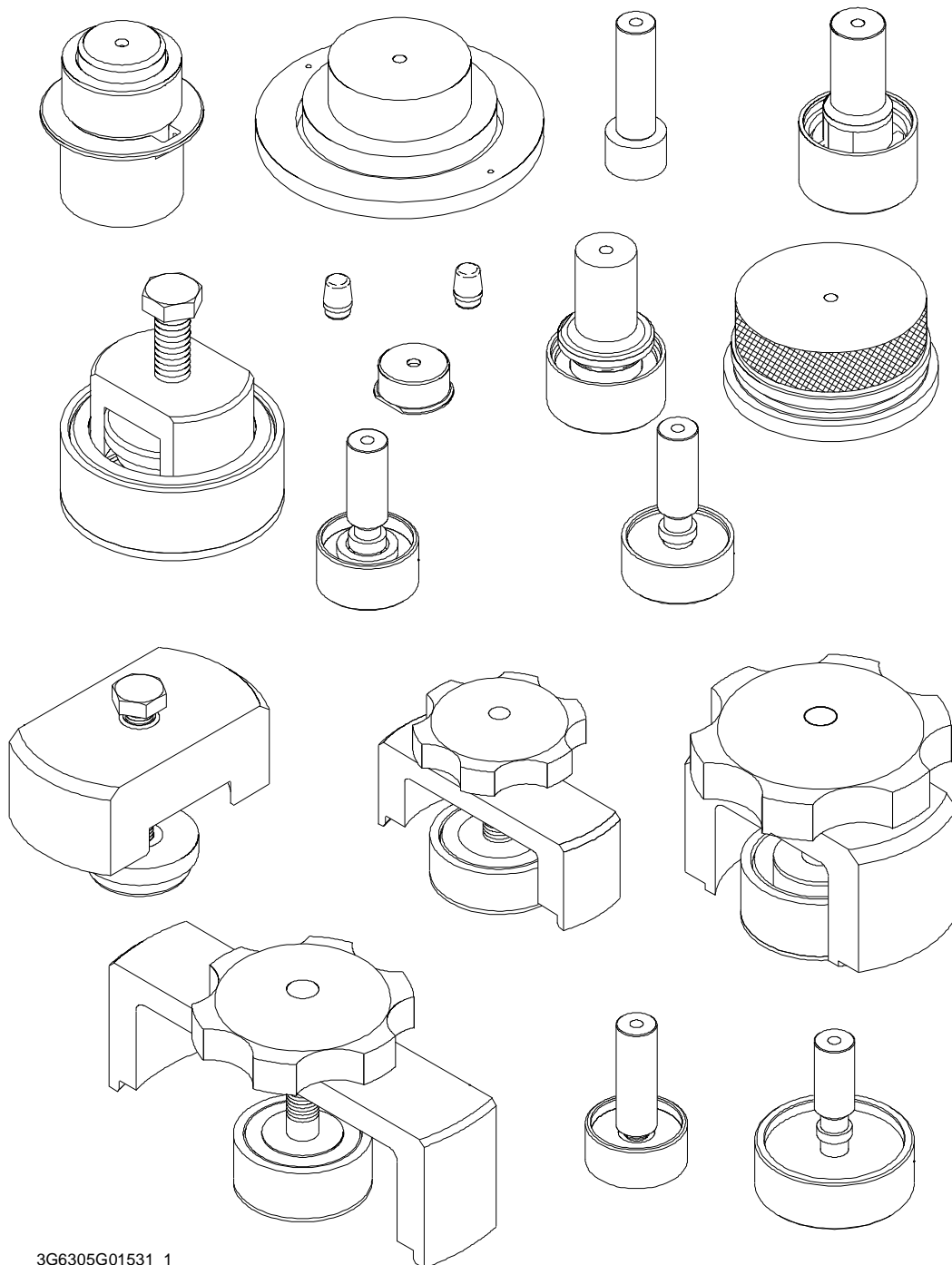
### 2.2. ACRONYMS USED

The main acronyms used in this document are listed below:

LHD	Leonardo Helicopter Division
HC	Helicopter
P/N	Part Number
S/N	Serial Number
N.A.	Not Applicable
MGB	Main Gear Box
T/R	Tail Rotor
ECS	Environmental Control System

### 3. DESCRIPTION

The function of this tool is to repair the MGB by replacing the following components: Seal, lip (T/R drive quill assy); Seal, lip (upper module assy); Seal, lip (fan drive quill assy); Seal, lip (ECS pump 1/2/3 drive quill assy).



*Figure 1 – Tool Kit, MGB Drive Seal Replacement*

#### 4. TOP ASSEMBLY DRAWINGS

Refer to P/N 3G6305G01531 TOOL KIT, M/R DRIVE SEALS REPLACEMENT.

#### 5. IDENTIFICATION

The tool identification P/N is marked on each case on the LHD identification tag.

AGUSTA

P/N 3G6305G01531

MFG. DATE  MOD

C. I.  GRWT Kg.

CASE 1/2

AGUSTA

P/N 3G6305G01531

MFG. DATE  MOD

C. I.  GRWT Kg.

CASE 2/2

Figure 2 – LHD Identification tag with P/N





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### 6. OVERALL DIMENSIONS

Case 1

- Length: 810 mm
- Width: 521 mm
- Height: 320 mm

Case 2

- Length: 628 mm
- Width: 498 mm
- Height: 303 mm

### 7. WEIGHT

- Total Weight: 52 kg

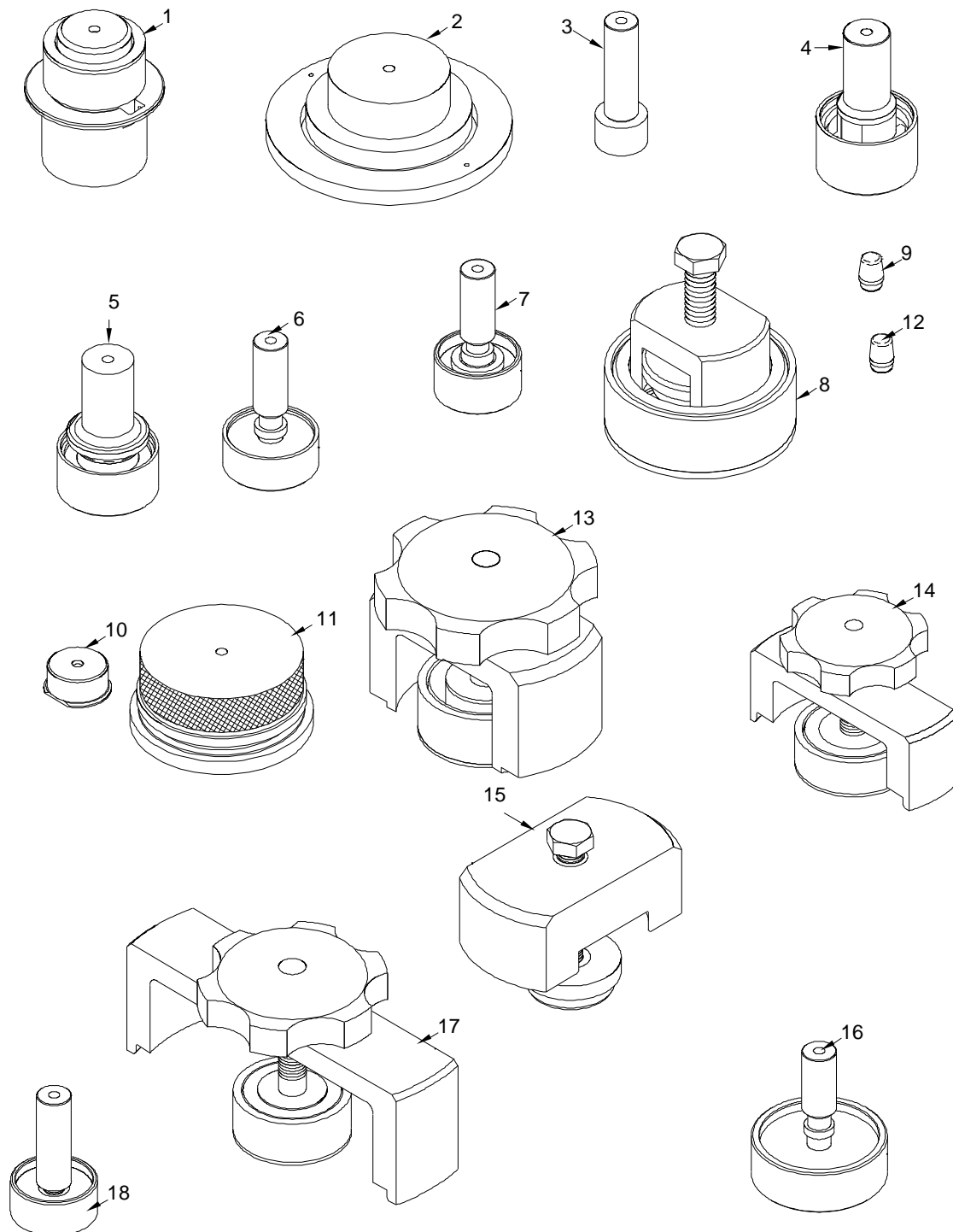
Case 1

- Total Weight: 26 kg

Case 2

- Total Weight: 26 kg

**8. MAIN PARTS**



3G6305G01531\_2

Figure 3 – Main Parts

The main parts of the Tool Kit, MGB Drive Seal Replacement are:







- 1 Tool, pump 1/2/3 drive quill seal housing rem.
- 2 Tool, pump 1/2/3 drive quill lip seal rem.
- 3 Guide, fan drive quill seal housing installation.
- 4 Tool, upper module lip seal rem.
- 5 Tool, gimbal carbon seal instl.
- 6 Tool, fan drive quill seal housing rem.
- 7 Puller, rotor brake adapter flange rem.
- 8 Tool, upper module lip seal instl.
- 9 Tool, ECS drive quill lip seal rem.
- 10 Tool, pump 1/2/3 drive quill lip seal instl.
- 11 Guide, pumps/ECS drive quill seal hous instl.
- 12 Tool, T/R drive quill lip seal instl.
- 13 Tool, gimbal carbon seal removal
- 14 Tool, fan/ECS drive quill lip seal instl.
- 15 Tool, fan drive quill lip seal rem.
- 16 Tool, T/R drive quill lip seal rem.
- 17 Tool, T/R drive quill seal housing rem.
- 18 Tool, ECS drive quill seal housing rem.

## **9. MAIN FEATURES DESCRIPTION**

The tool kit is composed of tools collected in two cases.

## 10. WARNING AND SAFETY NOTES

### 10.1. WARNING NOTE

 <b>Warning</b>	<p>Use this equipment only for the purpose that it is designed for. Any other use can result in injury or serious material damage to the components.</p>
 <b>Caution</b>	
 <b>Notice</b>	<p>The Manual can never integrally replace the adequate competence of the user.</p>
 <b>Warning</b>	<p>Before and after each use of the equipment is necessary to perform the checks required. Do not operate with a tool damaged or partially completed, or partially assembled.</p>
 <b>Caution</b>	
 <b>Notice</b>	<p>This Manual provides guidelines and instructions of the equipment that are in addition to - but are not intended to replace or modify but only to integrate - any general or specific rule, regulation, decree or law that is in force in the place where the equipment is in use.</p>

*Table 3 – Warning Note*

## 10.2. SAFETY NOTES

Remember to wear protective overalls, safety shoes, protective gloves and glasses during all operational and maintenance phases.



*Figure 4 – Safety Notes*

## 11. STORAGE

The Tool shall be properly stored to provide protection from external weather conditions, damage and dirty particles.

The Kit shall be stored in the dedicated transportation boxes (part of the Kit).

Ensure that the tool parts are clean before storage.

### 11.1. LUBRICATION BEFORE STORAGE

N.A.

### 11.2. STORAGE CONFIGURATION

The tool has no particular storage configuration.

## 12. MAINTENANCE

NOTE: Correct regular maintenance allows preventing most faults and safeguards of tool performance in time, thereby making it last longer.

Every year carry out regular maintenance on a regular basis as detailed in this manual.

NOTE: Inspection intervals for tool parts placed inside in ready storage is 12 months.

### 12.1. CLEANING

Before inspection and after each use, carry out the cleaning of the tool components.

#### 12.1.1. SPECIAL TOOLS, FIXTURE AND EQUIPMENT

No special tools, fixture and equipment are required for cleaning.

#### 12.1.2. PART REQUIREMENTS

The parts to clean should be free from the moisture, emulsified water, soaps and metal shavings that can develop of corrosive acids.

They must also be free from wide grease and / or slosh deposits.

#### 12.1.3. MANUAL CLEANING

- A. Clean thoroughly all metal surfaces with a clean lint-free cloth (Local supply) moistened with Cleaning Solvent (MIL-PRF-680C, Type II) to do general spot cleaning of large groups areas. For nylon or Teflon surfaces, the use of a biodegradable, water dilutable cleaning compound (MIL-PRF-87937 D, Type II) is required.
- B. Repeat the cleaning process again by means another clean lint-free cloth (Local supply).
- C. Drying.
  - Verify that the solvent should not be trapped in the cavity. Normally, the solvent evaporates at room temperature in a satisfactory manner.

## 12.2. CHECKS

Before and after each use or at least every year, carry out the check of kit component.

Before each use ensure that the manual is available to the operator, in the event of loss, request a copy to Leonardo Helicopters Division.

The Tool kit shall be submitted to following checks to guarantee the functionality.

All required checks shall be registered on CHECK RECORDS Table. Ref. *TLC\_Table 1*

After each use of tool ensure to have registered the number of uses on HISTORICAL USES RECORD Table. Ref. *TLC\_Table 2*

The Tool Log Card template contained in the Annex A of this manual can be replaced with any other log card template in use in the plant where the equipment is in use.

### 12.2.1. SPECIAL TOOLS, FIXTURE AND EQUIPMENT

No special tools, fixture and equipment are required for the checks.

### 12.2.2. VISUAL EXAMINATION

NOTE: Replace the parts that do not obey the inspection requirements.

Restore the marking of the parts that results damaged or not readable.

All required visual checks are listed on Table 4.

PERIODICITY	CHECK TYPE	COMPONENTS	
BEFORE AND AFTER EVERY USE	VISUAL EXAMINATION	Evidence of impact;	All
	Crushing or stripping	All	
	Cracks	All	
	Dents	All	
	Wear	All	
	Distortions	All	
	Corrosion	All	
	Loose or defective attaching parts (warning flag)	All	
	Unsticking of parts	All glued parts.	
	Damage to the threads	All	
	Marking	All	
	Damage to the pins and to the shell	N.A.	
	Damage to the insulation sleeves and wires	N.A.	

*Table 4 – Visual Check*



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### **12.2.3. PERIODICAL CHECKS**

Not Applicable.

### **12.2.4. DIMENSIONAL CHECKS**

Not Applicable.

### **12.2.5. SPECIAL CHECKS SUMMARY**

Not Applicable.

## **12.3. REPLACEMENT**

All the parts for which it is allowed the components replacement are listed in Paragraph 15.

### **12.3.1. REPLACEMENT PROCEDURES**

The replacement of parts of the kit does not require specific procedures.

## **13. CALIBRATION**

No Calibration is required.

## **14. SHELF LIFE**

Not Applicable.



## 15. SPARE PARTS

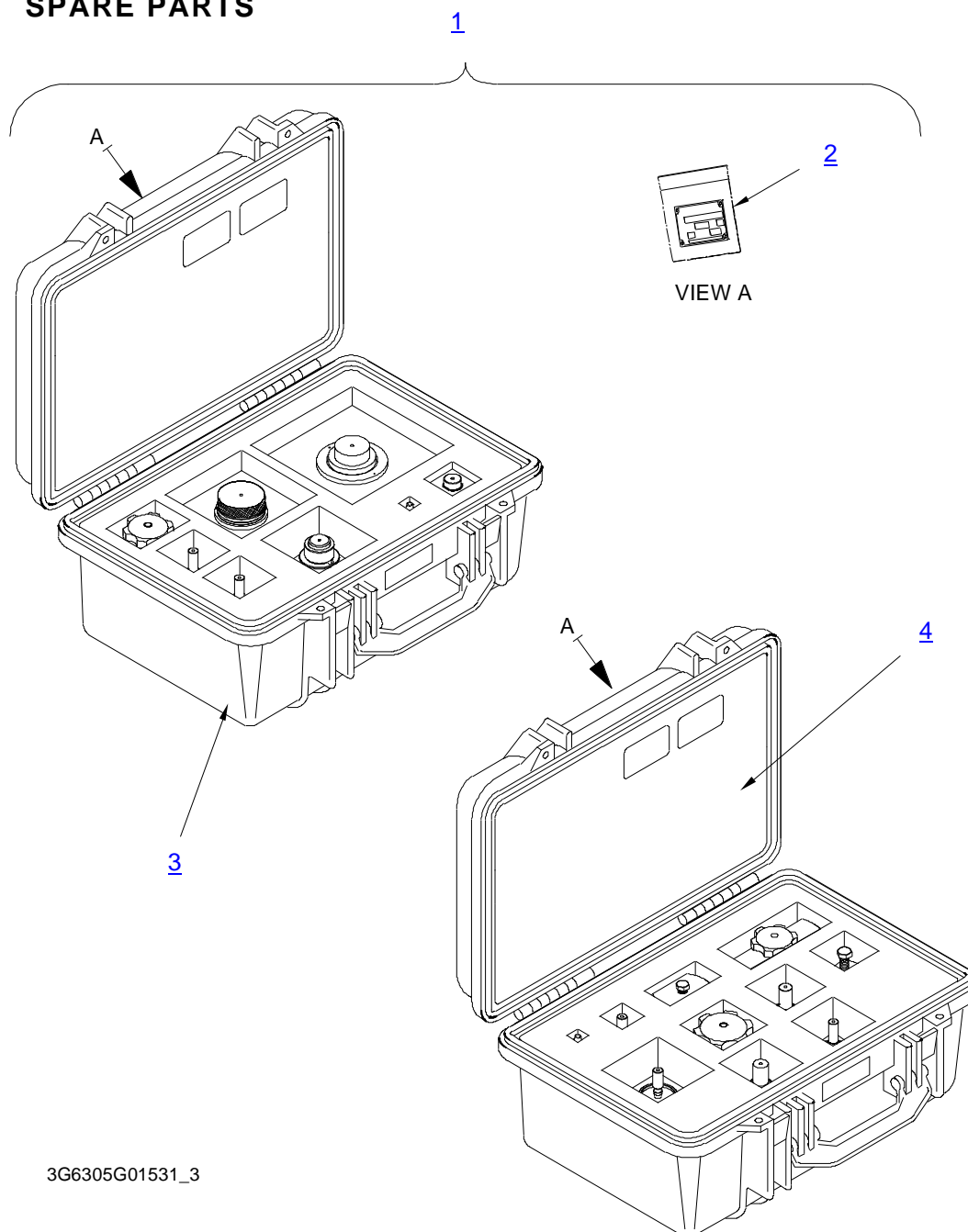
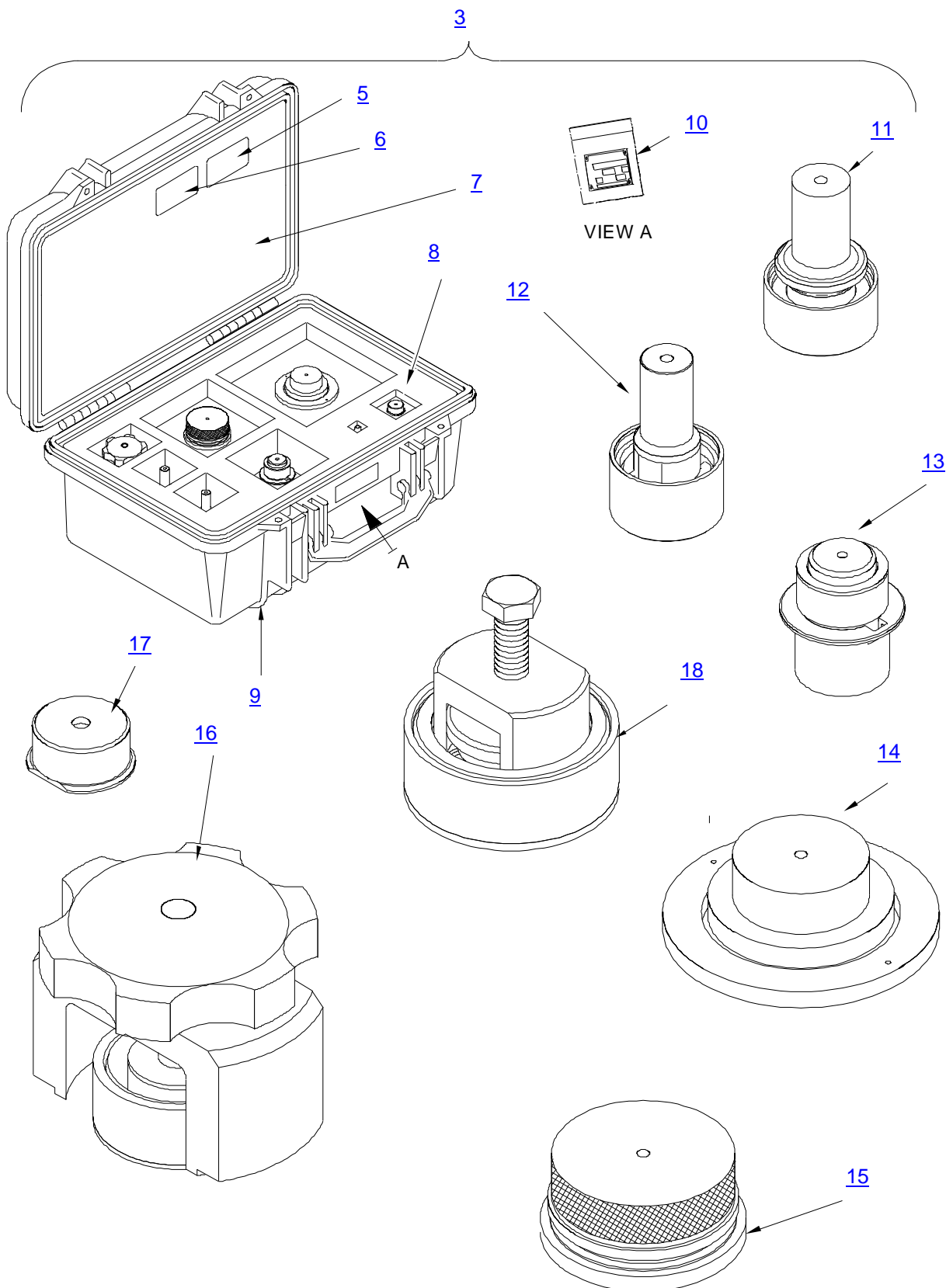


Figure 5 – Spare Parts

ITEM	P/N	DESCRIPTION	Q.TY
1	3G6305G01531	TOOL KIT, M/R DRIVE SEALS REPLACEMENT	REF.
2	A304A001A1	PLATE, IDENTIFICATION	2
3	3G6305G19631	TOOL KIT, M/R DRIVE SEALS REPL, CASE 1 (For Breakdown ref. to <a href="#">Figure 6</a> to and <a href="#">Table 6</a> )	1
4	3G6305G19731	TOOL KIT, M/R DRIVE SEAL REPL, CASE 2 (For Breakdown ref. to <a href="#">Figure 7</a> and <a href="#">Table 7</a> )	1

Table 5 – Spare Parts



3G6305G01531\_4

Figure 6 – Spare Parts



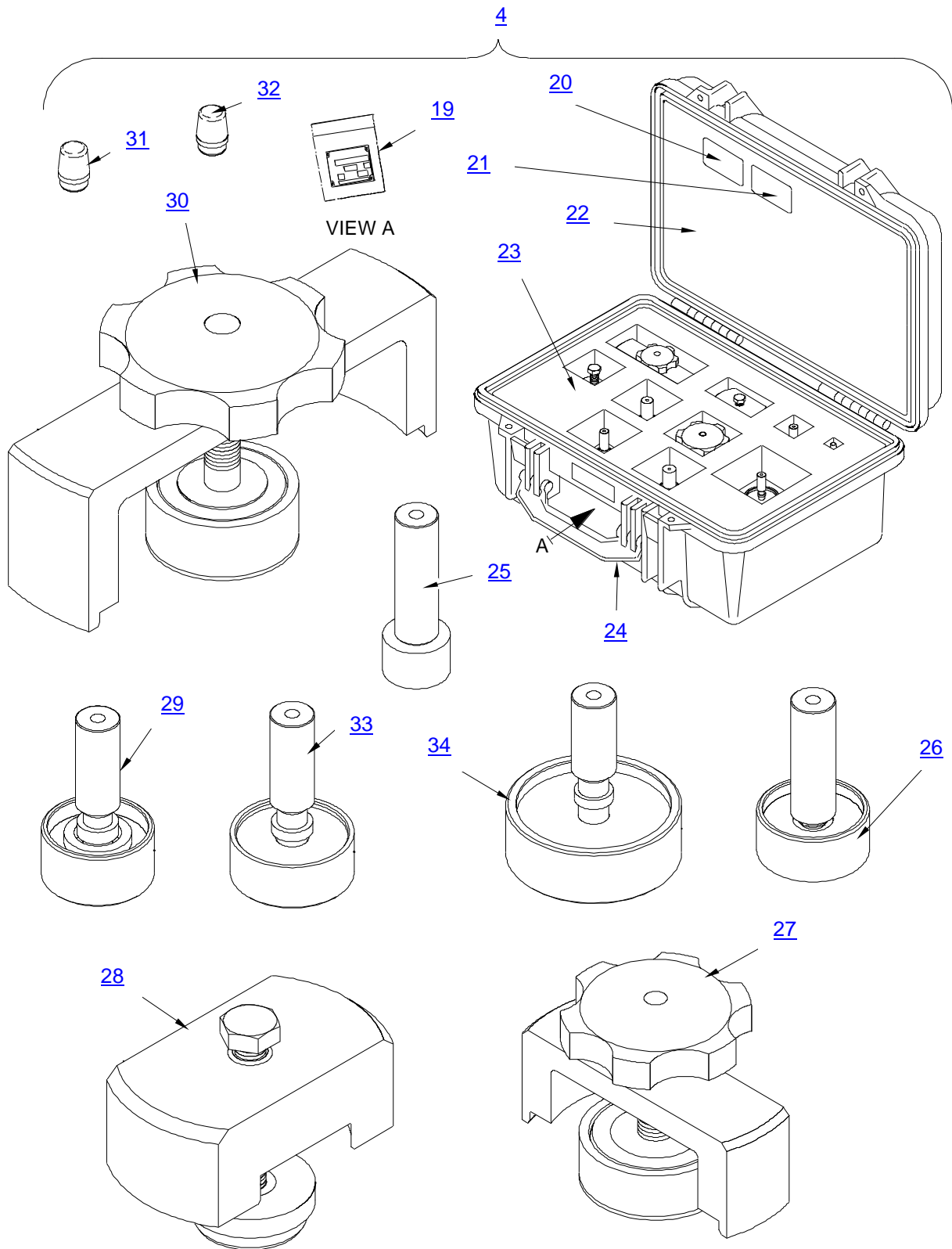
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ITEM	P/N	DESCRIPTION	Q.TY
3	3G6305G19631	TOOL KIT, M/R DRIVE SEALS REPL, CASE 1	REF
5	3G0205G00193	NAMEPLATE	1
6	3G0205G00293	NAMEPLATE	1
7	3G6305G19652	UPPER FOAM	1
8	3G6305G19651	LOWER FOAM	1
9	1650	CASE	1
10	A304A001A1	PLATE, IDENTIFICATION	1
11	3G6305G13231	TOOL, GIMBAL CARBON SEAL INSTL	1
12	3G6305G14031	TOOL, UPPER MODULE LIP SEAL REMOVAL	1
13	3G6305G17131	TOOL, PUMP 1-2-3 DRIVE Q. SEAL HOUS. REM.	1
14	3G6305G17631	TOOL, PUMP 1-2-3 DRIVE Q. LIP SEAL REM.	1
15	3G6305G18251	GUIDE, PUMPS/ECS DRIVE Q. SEAL HOUS INST.	1
16	3G6305G13731	TOOL, GIMBAL CARBON SEAL REM.	1
17	3G6305G17931	TOOL, PUMP 1-2-3 DRIVE Q. LIP SEAL INSTL.	1
18	3G6305G14331	TOOL, UPPER MODULE LIP SEAL INSTL	1

*Table 6 – Spare Parts*



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Figure 7 – Spare Parts



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ITEM	P/N	DESCRIPTION	Q.TY
4	3G6305G19731	TOOL KIT, M/R DRIVE SEAL REPL, CASE 2	REF
19	A304A001A1	PLATE, IDENTIFICATION	1
20	3G0205G00194	NAMEPLATE	1
21	3G0205G00294	NAMEPLATE	1
22	3G6305G19752	UPPER FOAM	1
23	3G6305G19751	LOWER FOAM	1
24	1610	CASE	1
25	3G6305G19151	GUIDE, FAN DRIVE QUILL SEAL HOUSING INST.	1
26	3G6305G18631	TOOL, ECS DRIVE QUILL SEAL HOUSING REM.	1
27	3G6305G16231	TOOL, FAN/ECS DRIVE QUILL LIP SEAL INST	1
28	3G6305G16831	TOOL, FAN DRIVE QUILL LIP SEAL REM.	1
29	3G6305G19231	PULLER, ROTOR BRAKE ADAPTER FLANGE REM	1
30	3G6305G14631	TOOL, T/R DRIVE QUILL SEAL HOUSING REM.	1
31	3G6305G18331	TOOL, ECS DRIVE QUILL LIP SEAL REMOVAL	1
32	3G6305G15731	TOOL, T/R DRIVE QUILL LIP SEAL INSTL	1
33	3G6305G16031	TOOL, FAN DRIVE QUILL SEAL HOUSING REM	1
34	3G6305G14831	TOOL, T/R DRIVE QUILL LIP SEAL REM.	1

Table 7 – Spare Parts

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## 16. CE MARKING

No CE marking is required for the P/N 3G6305G01531 TOOL KIT, M/R DRIVE SEALS REPLACEMENT.



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# ANNEX A

## TOOL LOG CARD



# TOOL LOG CARD

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<b>TOOL KIT P/N:</b> [1]	<b>TOOL KIT DESCRIPTION:</b> [2]	<b>TOOL KIT S/N:</b> [3]
<b>TOOL P/N:</b> [4]	<b>TOOL S/N:</b> [5]	<b>REMARKS:</b> [6]

## Section 1: CHECKS RECORD

[7] N° check	[8] DATE	[9] P/N TO CHECK	[10] CHECK	[11] FREQUENCY	[12] RESULT	[13] NOTE	CERTIFICATION [14]
							STAMP & SIGNATURE [15]
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
<b>FINAL ACCEPTANCE [16]</b>							
<b>STAMP &amp; SIGNATURE [17]</b>							<b>DATE [18]</b>

TLC\_Table 1





# TOOL LOG CARD

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<b>TOOL KIT P/N:</b> [1]	<b>TOOL KIT DESCRIPTION:</b> [2]	<b>TOOL KIT S/N:</b> [3]
<b>TOOL P/N:</b> [4]	<b>TOOL S/N:</b> [5]	<b>REMARKS:</b> [6]

## Section 2: HISTORICAL USES RECORD

[19] N°USE	[8] DATE	[6] NOTE	[13] CERTIFICATION	[19] N°USE	[8] DATE	[6] NOTE	[13] CERTIFICATION
			[14] STAMP & SIGNATURE				[14] STAMP & SIGNATURE
1				11			
2				12			
3				13			
4				14			
5				15			
6				16			
7				17			
8				18			
9				19			
10				20			

TLC\_Table 2

## LOG CARD FILLING INSTRUCTIONS

<b>FIELD #</b>	<b>HEADER</b>	<b>NOTE</b>
<b>1</b>	Part number of the tool Kit	
<b>2</b>	Tool Kit denomination	
<b>3</b>	Serial Number of the tool Kit	
<b>4</b>	Part Number of the tool (part of kit)	
<b>5</b>	Serial Number of the tool (if applicable)	
<b>6</b>	Indicate any details of the use	
<b>7</b>	Sequential number of check performed	
<b>8</b>	Date of the activity	
<b>9</b>	PN of tool or component (part of tool) checked/affected by issue	
<b>10</b>	Typology or description of checks /issue	
<b>11</b>	Check frequency	
<b>12</b>	Check result	
<b>13</b>	Check remarks	
<b>14</b>	Performance certification	
<b>15</b>	Stamp and signature of the personnel which performs the check	
<b>16</b>	Section related to the final approval	
<b>17</b>	Stamp and signature of the personnel which performs the final approval	
<b>18</b>	Date on which the final check was made	
<b>19</b>	Sequential number of performed used of the tool	